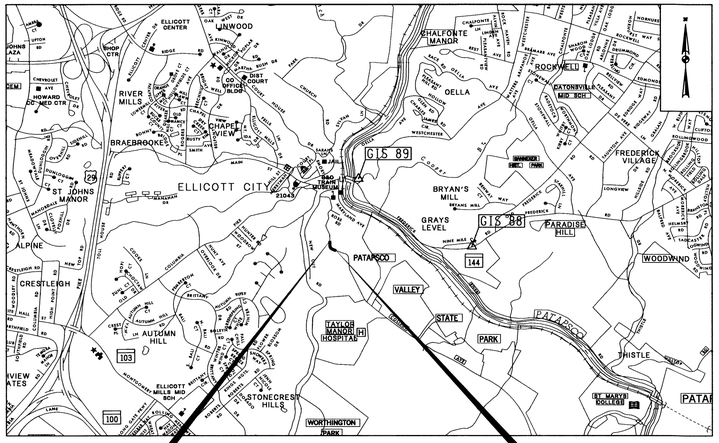
## INDEX OF SHEETS






LOCATION MAP
SCALE 1" = 2000'

LIMIT OF WORK
COLLEGE AVENUE
STA. 105+16
CAPITAL PROJECT NO. J-4213

LIMIT OF WORK
COLLEGE AVENUE
STA. 100+45
CAPITAL PROJECT NO. J-4213

CAPITAL PROJECT NO. J-4213

# COLLEGE AVENUE - SLOPE REPAIR

## HOWARD COUNTY, MARYLAND
## DEPARTMENT OF PUBLIC WORKS

### CONVENTIONAL SIGNS

- DRAINAGE AREA BOUNDARY
- EXISTING SIGN
- LIMIT OF GRADING — C — F —
- ELECTRICAL HAND BOX – SIGNALS H.B.
- PROPOSED MEDIAN BARRIER
- BURIED UTILITY LINES & NO. OF CABLES 4
- STATE, COUNTY OR CITY LINES
- PROPOSED TRAFFIC BARRIER
- EXISTING TRAFFIC BARRIER
- FENCE LINE — X — X —
- RIGHT OF WAY LINE
- EXISTING ROADWAY
- RAILROAD
- BASE OR SURVEY LINE 9 +50 32
- FIRE HYDRANT F.H. 10

- TEST PIT TP-4
- PROPOSED HMA PAVEMENT GRIND AND OVERLAY
- PROPOSED FULL DEPTH HMA PAVEMENT
- PROPOSED RIPRAP
- EXISTING CULVERT
- PROPOSED CULVERT
- EXISTING DROP INLET
- UTILITY POLE
- MARSH
- HEDGE
- GROUND ELEVATION DATUM LINE 173.5
- GRADE ELEVATION DATUM LINE 204.2

## GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. ALL INFORMATION AND DETAILS ON THESE DRAWINGS SHALL BE CONSTRUCTED AS PER THE PLANS OR AS DIRECTED BY THE HOWARD COUNTY ENGINEER.
3. ALL STATIONING AND DIMENSIONING ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.
4. STORM DRAINAGE SLOPES ARE TO BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE HOWARD COUNTY ENGINEER.
5. APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN. THESE LOCATIONS ARE BASED ON UTILITY PLANS OR TOPOGRAPHIC SURVEYS. TEST PIT LOCATIONS ARE PROVIDED IN THE SPECIFICATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO RESOLVE ANY DISCREPANCIES BETWEEN THE UTILITY LOCATIONS SHOWN ON THE PLANS AND THE TEST PIT INFORMATION PROVIDED. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS.

   COMCAST 410-461-1362
   BGE (CONTRACTOR SERVICES) 410-850-4620
   BGE (UNDERGROUND DAMAGE CONTROL) 410-787-9068
   MISS UTILITY 1-800-257-7777
   HOWARD COUNTY BUREAU OF UTILITIES 410-313-4900
   HOWARD COUNTY DIVISION OF CONSTRUCTION INSPECTION 410-313-1880
   VERIZON 1-800-743-0033 / 410-224-9210
6. SEE HOWARD COUNTY STANDARD DETAILS NO'S G-1.01 AND G-1.02 FOR STANDARD SYMBOLS AND ABBREVIATIONS.
7. HORIZONTAL COORDINATES ARE BASED ON MD NAD 83/91 HORIZONTAL DATUM AND VERTICAL ELEVATIONS ARE BASED ON NAVD 1988 VERTICAL DATUM, TRANSFERRED FROM NATIONAL GEODETIC SURVEY CONTROL STATIONS; GIS 88 AND GIS 89.

   GIS 88: N 581,287.96 E 1,373,675.53 ELEV. 182.37
   GIS 89: N 583,158.79 E 1,370,739.95 ELEV. 124.76
8. A STAGING AND STOCKPILE AREA WILL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE HOWARD COUNTY ENGINEER.
9. TOPOGRAPHY SURVEY INFORMATION BASED ON FIELD SURVEY PERFORMED BY JOHNSON, MIRMIRAN & THOMPSON DATED MARCH, 2008.
10. DRAINAGE STRUCTURE LOCATIONS:

    a) STATIONS FOR PRECAST AND CAST-IN-PLACE STD. A-10 INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE. OFFSETS ARE GIVEN TO THE FACE OF THE CURB. TOP ELEVATIONS ARE GIVEN TO THE TOP OF CURB (T.C.)

    b) STATIONS FOR MODIFIED SHA PRECAST STD. RECTANGULAR COG INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE. OFFSETS ARE GIVEN TO THE FACE OF THE CURB. TOP ELEVATIONS ARE GIVEN TO THE TOP OF CURB (T.C.)

    c) STATIONS AND OFFSETS FOR OPEN END GRATE INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE. TOP ELEVATIONS ARE GIVEN TO THE TOP OF INLET GRATE (T.G.)

    d) STATIONS AND OFFSETS FOR 48" PRECAST STD. MANHOLES ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE. TOP ELEVATIONS ARE GIVEN TO THE TOP OF MANHOLE RIM (T.R.)

    e) STATIONS FOR STD. TYPE 'C' ENDWALL ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE. OFFSETS ARE GIVEN TO THE CENTER POINT OF THE ENDWALL FACE.

## WATER CONSTRUCTION NOTES

1. ALL WATER MAINS SHALL BE D.I.P., CLASS 54 MINIMUM.
2. TOPS OF ALL WATER PIPES SHALL HAVE NOT LESS THAN 4'-0" OF COVER UNLESS OTHERWISE NOTED.
3. VAVLES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
4. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE PLANS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND 1005 OF THE STANDARD SPECIFICATIONS.
5. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
6. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF UTILITIES AT LEAST 48 HOURS IN ADVANCE OF SCHEDULED SHUTDOWNS OF THE EXISTING WATER MAIN. SHUTDOWNS OF THE EXISTING WATER MAIN FOR NEW CONNECTIONS AND REMOVAL OF EXISTING SERVICE CONNECTIONS SHALL BE AS SPECIFIED UNDER SECTION 1002.06-CONNECTIONS OF THE STANDARD SPECIFICATIONS.
7. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
8. THE ABANDONMENT OF EXISTING PIPELINE APPURTENANCES SHALL BE AS SPECIFIED UNDER SECTION 1015.03 OF THE STANDARD SPECIFICATIONS.
9. TRACER WIRE AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL WATER MAINS IN ACCORDANCE WITH DETAIL PLATE G-8.21 OF THE STANDARD SPECIFICATIONS.

*PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12966, EXPIRATION DATE: MAY 19, 2014

EP-13-035

THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Robertson — 4/7/13
Howard Soil Conservation District — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/6/13
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — 11/7/13
CHIEF, BUREAU OF ENGINEERING — 11-8-13
CHIEF, BUREAU OF HIGHWAYS — 11-8-13

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — WARREN R. KLUS — No. 12966 — REGISTERED PROFESSIONAL ENGINEER — 10/22/13

| | |
|---|---|
| DES: | SER |
| DRN: | SER |
| CHK: | WRK |
| DATE: | 10/2013 |

| BY | NO. | | DATE |
|---|---|---|---|
| | | | |

CAPITAL PROJECT NO. J-4213
MAP NO. | BLOCK NO.

TITLE SHEET
COLLEGE AVENUE SLOPE REPAIR
ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 1 OF 9

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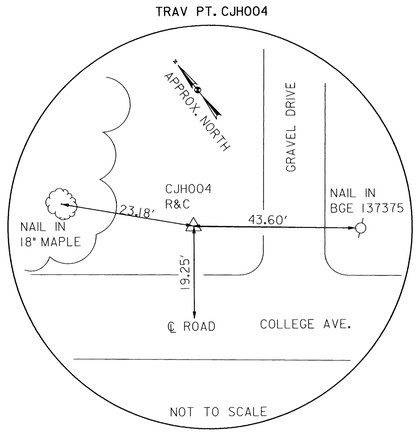
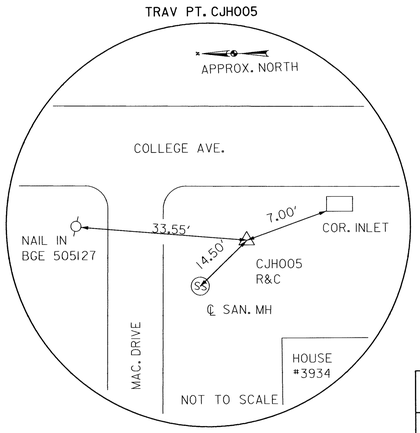
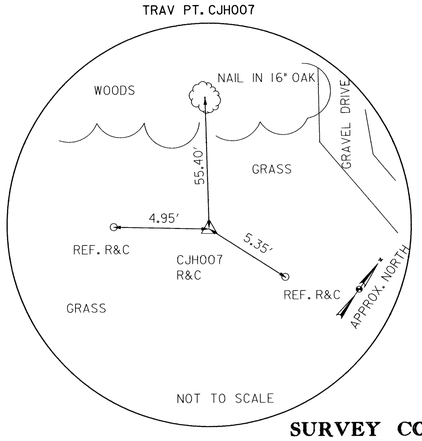
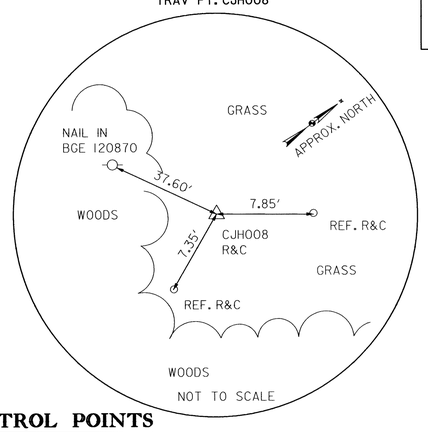
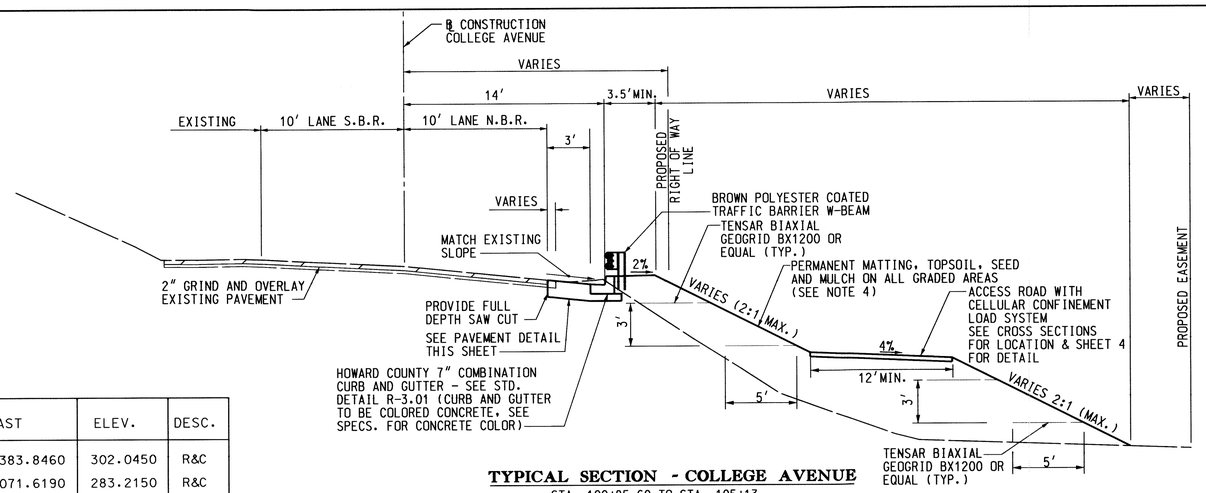


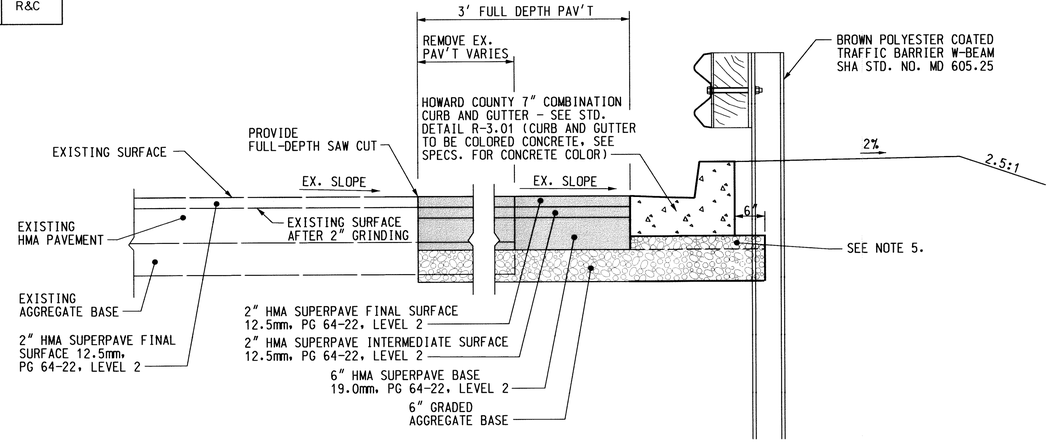




| PT. | NORTH | EAST | ELEV. | DESC. |
|---|---|---|---|---|
| CJH004 | 581150.7980 | 1370383.8460 | 302.0450 | R&C |
| CJH005 | 581317.5790 | 1370071.6190 | 283.2150 | R&C |
| CJH007 | 581355.9600 | 1370168.4850 | 259.0700 | R&C |
| CJH008 | 581274.1630 | 1370308.0960 | 266.4800 | R&C |

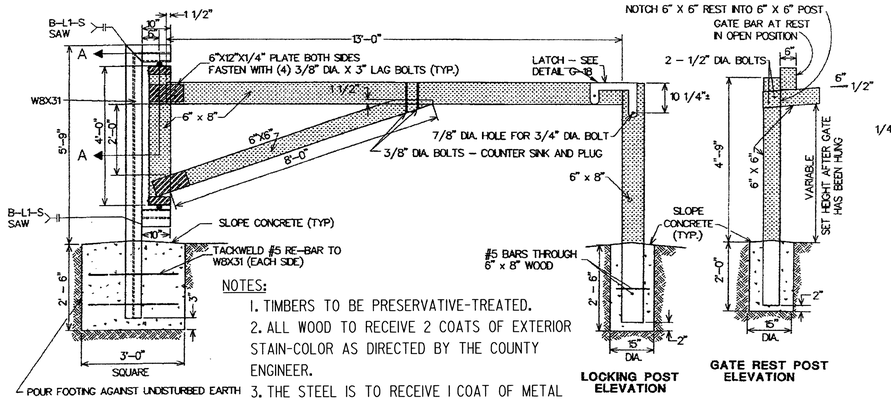



## TYPICAL SECTION - COLLEGE AVENUE

STA. 100+85.60 TO STA. 105+13
N.T.S

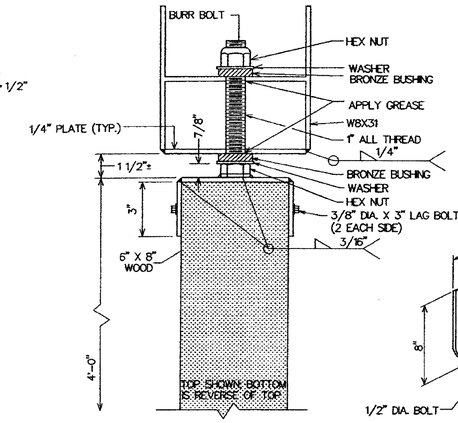


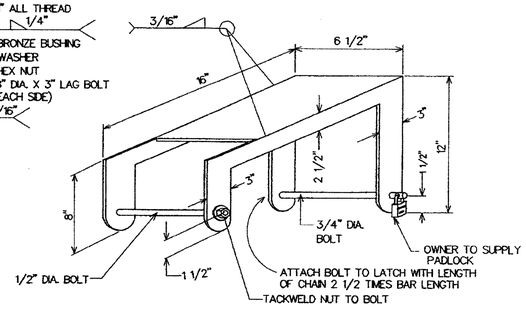

## SURVEY CONTROL POINTS




NOTES:

1. TIMBERS TO BE PRESERVATIVE-TREATED.
2. ALL WOOD TO RECEIVE 2 COATS OF EXTERIOR STAIN-COLOR AS DIRECTED BY THE COUNTY ENGINEER.
3. THE STEEL IS TO RECEIVE 1 COAT OF METAL PRIMER AND 2 COATS OF FINISH PAINT. COLOR AS DIRECTED BY THE COUNTY ENGINEER.
4. ALL STEEL TO BE A-36-REBAR GRADE 60.
5. CONCRETE TO BE MIX #2.




## WOOD ACCESS GATE DETAIL

N.T.S

NOTES:

1. ALL FULL DEPTH SAW CUTS REQUIRED WILL NOT BE MEASURED BUT THE COST WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE PAVEMENT ITEMS.

2. UNLESS SPECIFIED OTHERWISE, ALL EXCAVATION REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED PAVEMENT AND GRADING SHALL BE CONSIDERED CLASS I EXCAVATION AND WILL BE PAID FOR AT THE CUBIC YARD UNIT PRICE BID FOR CLASS I EXCAVATION.

3. REMOVAL OF EXISTING HOT MIX ASPHALT CURB AND PAVEMENT SHALL BE INCLUDED IN THE PRICE BID FOR CLASS I EXCAVATION.

4. UNLESS NOTED OTHERWISE, ALL GRADED SLOPES 3:1 OR FLATTER SHALL RECEIVE 4" TOPSOIL, ALL GRADED SLOPES STEEPER THAN 3:1 SHALL RECEIVE 2" TOPSOIL. PERMANENT MATTING SHALL BE MDSHA TYPE 'B' SOIL STABILIZATION MATTING.

5. COST OF GRADED AGGREGATE BASE MATERIAL IN THIS LOCATION WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR THE CURB & GUTTER ITEM.

*PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12966, EXPIRATION DATE: MAY 19, 2014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

11/12/13
DIRECTOR OF PUBLIC WORKS

11/7/13
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

11-8-13
CHIEF, BUREAU OF ENGINEERING

11-8-13
CHIEF, BUREAU OF HIGHWAYS

JOHNSON, MIRMIRAN & THOMPSON
*Engineering A Brighter Future®*
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — WALTER R. KULIS — REG. NO. 12966 — REGISTERED PROFESSIONAL ENGINEER — 11/1/13

| DES: SER | BY | NO. | | DATE |
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| DRN: SER | | | | |
| CHK: WRK | | | | |
| DATE: 10/2013 | | | | |

CAPITAL PROJECT NO.
J-4213
MAP NO. | BLOCK NO.

TYPICAL SECTIONS AND DETAILS
COLLEGE AVENUE
SLOPE REPAIR
ELECTION DISTRICT 1 | HOWARD COUNTY, MARYLAND

SCALE NONE
SHEET 2 OF 9

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## DRAINAGE STRUCTURE SCHEDULE

| NO. | STATION | OFFSET | TYPE | STD. NO. | DEPTH |
|---|---|---|---|---|---|
| I-1**** | 102+00 | 14.0', RT. | PRECAST STD. TYPE A-10 INLET | D-4.03 | 5.22' |
| I-2**** | 102+51 | 14.0', RT. | MODIFIED SHA PRECAST STD. RECTANGULAR COG 15' INLET | SEE DETAIL*** | 8.88' |
| I-3**** | 103+00 | 14.0', RT. | MODIFIED SHA PRECAST STD. RECTANGULAR COG 15' INLET | SEE DETAIL*** | 7.46' |
| I-4**** | 104+96 | 14.0', RT. | CAST-IN-PLACE STD. TYPE A-10 INLET | D-4.04 | 11.37' |
| I-5**** | 104+06 | 14.0', RT. | CAST-IN-PLACE STD. TYPE A-10 INLET | D-4.04 | 13.43' |
| M-1 | 104+06 | 48.0', RT. | 48" STD. PRECAST MANHOLE | G-5.12 | 12.25' |
| E-1 | 104+08 | 73.9', RT. | STD. TYPE 'C' ENDWALL | D-5.21 | — |
| I-6 | 104+86 | 14.8', LT. | STD. PRECAST OPEN END GRATE INLET** | D-4.36 | 11.17' |
| I-7* | 104+29 | 13.5', LT. | STD. PRECAST OPEN END GRATE INLET** | D-4.36 | 11.29' |
| I-8 | 102+34 | 16.0', LT. | STD. PRECAST OPEN END GRATE INLET** | D-4.36 | 9.51' |

* REPLACE EX. INLET WITH 1/4' DEPRESSION IN OPENING
** SINGLE OPENING
*** SEE SHEET 4
**** TOP EXPOSED PORTION OF INLETS TO BE COLORED CONCRETE. SEE SPECS FOR COLOR

## PIPE SCHEDULE

| FROM | TO | TYPE | LENGTH (L.F.) |
|---|---|---|---|
| I-1 | I-2 | 15"RCP, CL. IV | 46 |
| I-2 | I-3 | 18"RCP, CL. IV | 41 |
| I-3 | I-5 | 18"RCP, CL. IV | 87 |
| I-4 | I-5 | 18"RCP, CL. IV | 71 |
| I-5 | M-1 | 18"HDPEP, SMOOTH | 27 |
| M-1 | E-1 | 18"HDPEP, SMOOTH | 25 |
| I-6 | I-4 | 18"RCP, CL. IV | 28 |
| I-7 | I-5 | 18"RCP, CL. IV | 34 |
| I-8 | I-2 | 18"RCP, CL. IV | 35 |

## PLUNGE POOL SCHEDULE*

| LOCATION | BOTTOM LENGTH | BOTTOM WIDTH |
|---|---|---|
| E-1 | 9.0' | 9.0' |

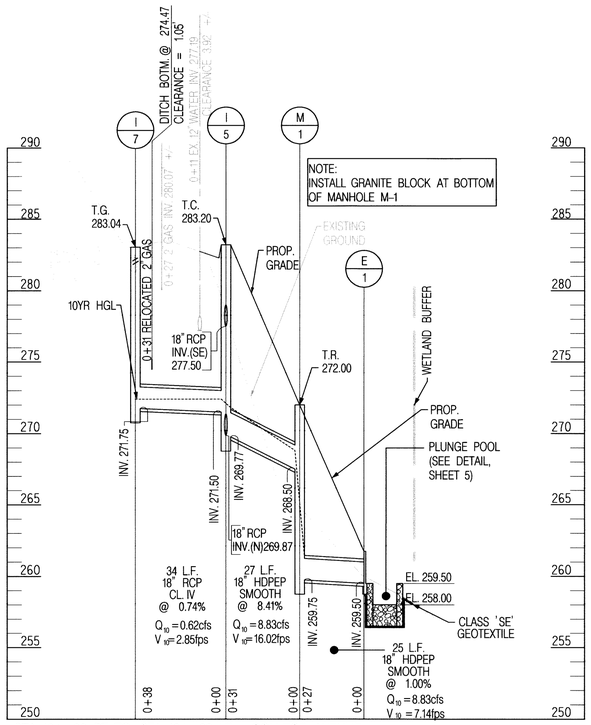
* SEE DETAIL, SHEET 4

NOTE

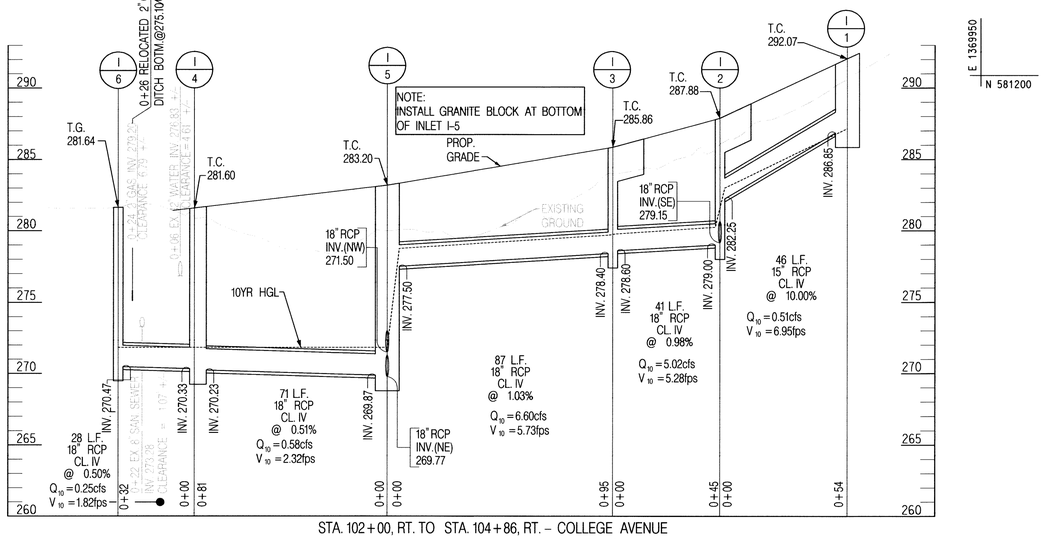
CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES CROSSING INVERTS PRIOR TO CONSTRUCTION

## UTILITY TEST PIT SCHEDULE

| NO. | LOCATION | UTILITY | DEPTH | REMARKS |
|---|---|---|---|---|
| TP-1 | STA. 104+24, 4.6' LT. | 2" GAS | 3.07 | RELOCATED 'BY OTHERS' |
| TP-2 | STA. 104+14, 7.6' RT. | 12" WATER | 4.54 | |
| TP-3 | STA. 102+33, 13.2' LT. | 2" GAS | 3.04 | RELOCATED 'BY OTHERS' |
| TP-4 | STA. 104+88, 6.5' LT. | 1 1/4" GAS | 2.60 | RELOCATED 'BY OTHERS' |
| TP-5 | STA. 104+94, 10.0' RT. | 12" WATER | 3.24 | |
| TP-6 | STA. 104+73, 6.4' LT. | 1 1/4" GAS | 2.50 | RELOCATED 'BY OTHERS' |
| TP-7A | STA. 102+53, 9.8' RT. | 12" WATER | 4.18 | |
| TP-8 | STA. 102+94, 8.7' RT. | 12" WATER | 4.10 | |
| TP-9 | STA. 101+98, 10.3' RT. | 12" WATER | 4.80 | |




STA. 104+08, RT. TO STA. 104+29, LT. – COLLEGE AVENUE
PROFILE SCALE: HOR. 1" = 30'
VERT. 1" = 5'




STA. 102+00, RT. TO STA. 104+86, RT. – COLLEGE AVENUE
PROFILE SCALE: HOR. 1" = 30'
VERT. 1" = 5'




STA. 102+34, LT. TO STA. 102+50, RT.
COLLEGE AVENUE
PROFILE SCALE: HOR. 1" = 30'
VERT. 1" = 5'

| CURVE NO.1 | CURVE NO.2 | CURVE NO.3 | CURVE NO.4 | CURVE NO.5 |
|---|---|---|---|---|
| Δ = 10°22'26.80" LT | Δ = 5°01'01.96" RT | Δ = 25°58'32.22" RT | Δ = 14°44'57.92" RT | Δ = 28°09'29.82" RT |
| D = 11°27'32.96" | D = 7°38'21.97" | D = 28°38'52.43" | D = 17°21'44.47" | D = 31°49'51.59" |
| R = 500.00' | R = 750.00' | R = 200.00' | R = 330.00' | R = 180.00' |
| T = 45.39' | T = 32.86' | T = 46.13' | T = 42.71' | T = 45.14' |
| L = 90.53' | L = 65.68' | L = 90.67' | L = 84.95' | L = 88.46' |
| E = 2.06' | E = 0.72' | E = 5.25' | E = 2.75' | E = 5.57' |
| S/E = EX. SLOPE | S/E = EX. SLOPE | S/E = EX. SLOPE | S/E = EX. SLOPE | S/E = EX. SLOPE |

### 10" WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS

| | |
|---|---|
| 470 | L.F. – STA. 100+45 TO STA. 105+13, 12.0' RT. |
| 470 | L.F. – STA. 100+45 TO STA. 105+13, 12.0' LT. |

### 5" YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS

| | |
|---|---|
| 940 | L.F. – STA. 100+45 TO STA. 105+13, ℄ (DOUBLE YELLOW LINES) |

### METAL BOLLARD STD. NO. G-7.42

| | | | |
|---|---|---|---|
| 1 | EA. – STA. 100+65, 52' RT. | 1 | EA. – STA. 102+43, 59' RT. |
| 1 | EA. – STA. 100+82, 45' RT. | 1 | EA. – STA. 103+05, 68' RT. |
| 1 | EA. – STA. 100+97, 43' RT. | 1 | EA. – STA. 103+73, 91' RT. |
| 1 | EA. – STA. 101+99, 58' RT. | 1 | EA. – STA. 103+96, 92' RT. |

### BROWN POLYESTER COATED TYPE 'K' TRAFFIC BARRIER END TREATMENT ANY OPTION STD. NO. MD 605.10

| | |
|---|---|
| 1 EA. | – STA. 100+64, RT. |
| 1 EA. | – STA. 105+16, RT. |

### BROWN POLYESTER COATED TRAFFIC BARRIER W-BEAM USING 6-FOOT POST STD. NO. MD 605.25

444 L.F. – STA. 100+64 TO STA. 105+16. RT.

NOTE: UTILIZE MD SHA STD. NO. MD 605.26 TO SPAN OVER PROPOSED INLETS.

### REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W-BEAM

434 L.F. – STA. 100+64 TO STA. 105+15, RT.

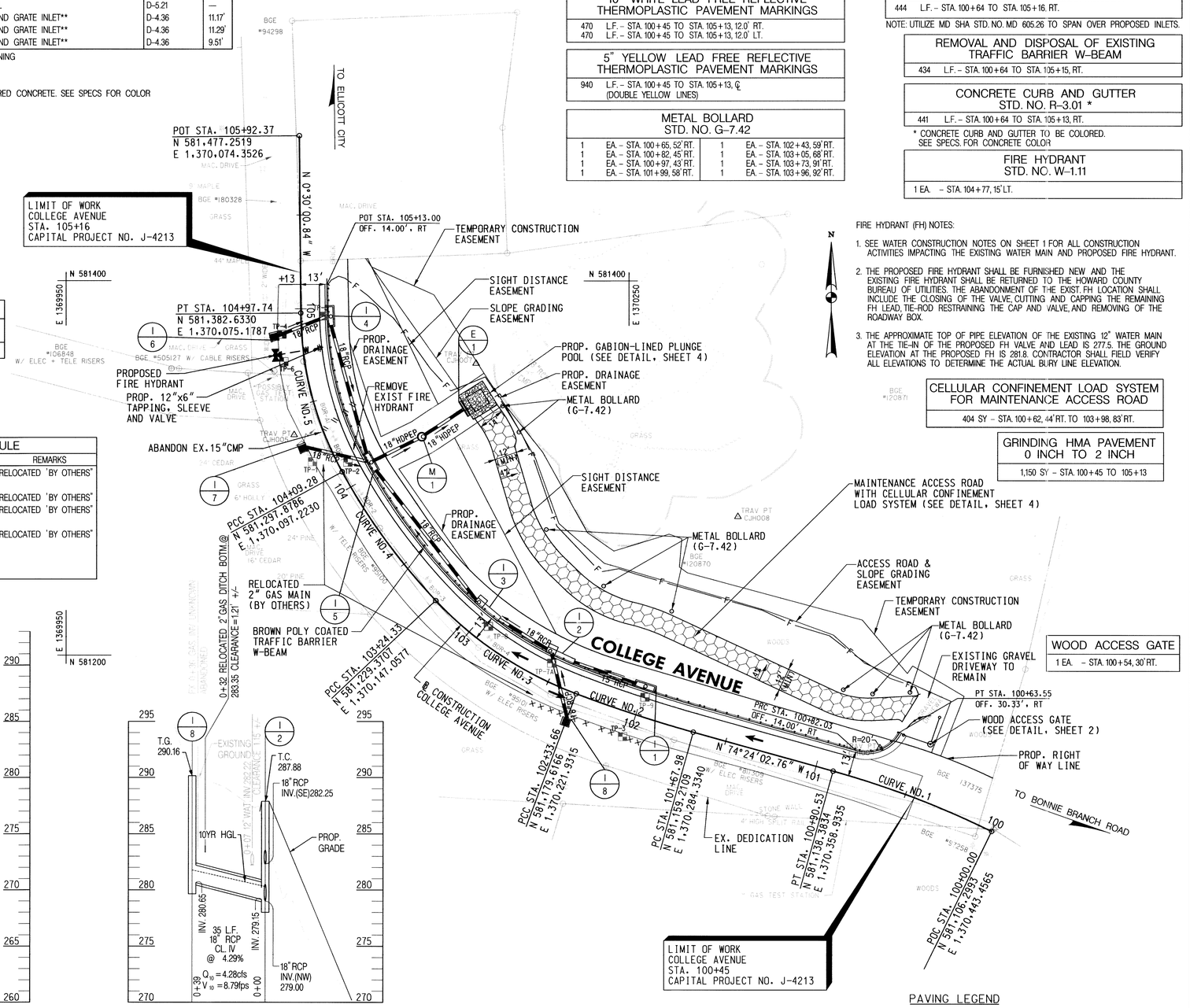
### CONCRETE CURB AND GUTTER STD. NO. R-3.01 *

441 L.F. – STA. 100+64 TO STA. 105+13, RT.

* CONCRETE CURB AND GUTTER TO BE COLORED. SEE SPECS. FOR CONCRETE COLOR

### FIRE HYDRANT STD. NO. W-1.11

1 EA. – STA. 104+77, 15' LT.




FIRE HYDRANT (FH) NOTES:

1. SEE WATER CONSTRUCTION NOTES ON SHEET 1 FOR ALL CONSTRUCTION ACTIVITIES IMPACTING THE EXISTING WATER MAIN AND PROPOSED FIRE HYDRANT.
2. THE PROPOSED FIRE HYDRANT SHALL BE FURNISHED NEW AND THE EXISTING FIRE HYDRANT SHALL BE RETURNED TO THE HOWARD COUNTY BUREAU OF UTILITIES. THE ABANDONMENT OF THE EXIST. FH LOCATION SHALL INCLUDE THE CLOSING OF THE VALVE, CUTTING AND CAPPING THE REMAINING FH LEAD, TIE-ROD RESTRAINING THE CAP AND VALVE, AND REMOVING OF THE ROADWAY BOX.
3. THE APPROXIMATE TOP OF PIPE ELEVATION OF THE EXISTING 12" WATER MAIN AT THE TIE-IN OF THE PROPOSED FH VALVE AND LEAD IS 277.5. THE GROUND ELEVATION AT THE PROPOSED FH IS 281.8. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATIONS TO DETERMINE THE ACTUAL BURY LINE ELEVATION.

### CELLULAR CONFINEMENT LOAD SYSTEM FOR MAINTENANCE ACCESS ROAD

404 SY – STA. 100+62, 44' RT. TO 103+98, 83' RT.

### GRINDING HMA PAVEMENT 0 INCH TO 2 INCH

1,150 SY – STA. 100+45 TO 105+13

### WOOD ACCESS GATE

1 EA. – STA. 100+54, 30' RT.

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PAVING LEGEND

PROPOSED FULL DEPTH HMA PAVEMENT

PROPOSED HMA PAVEMENT GRIND AND OVERLAY

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/12/13

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Shaver 11/7/13

CHIEF, BUREAU OF ENGINEERING — 11-8-13

CHIEF, BUREAU OF HIGHWAYS — 11-8-13

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STATE OF MARYLAND — WALKER R. KILLIAN — No. 12966 — REGISTERED PROFESSIONAL ENGINEER — 11/1/13

| DES: SER | BY | NO. | | DATE |
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| DRN: SER | | | | |
| CHK: WRK | | | | |
| DATE: 10/2013 | | | | |

CAPITAL PROJECT NO.
J-4213
MAP NO. | BLOCK NO.

ROADWAY PLAN SHEET
COLLEGE AVENUE SLOPE REPAIR
ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE 1"=30'

SHEET 3 OF 9

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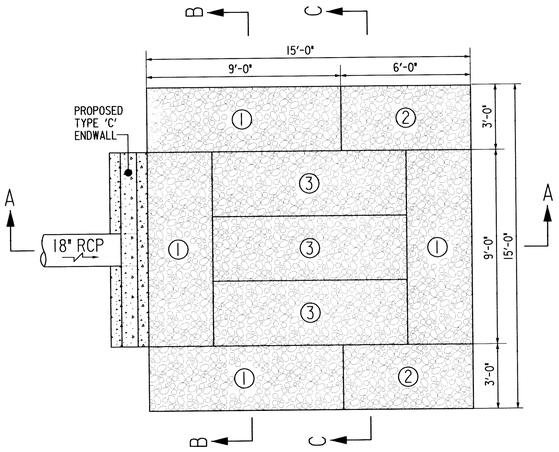
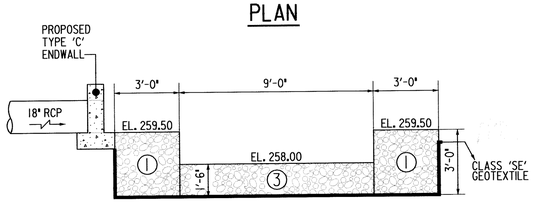
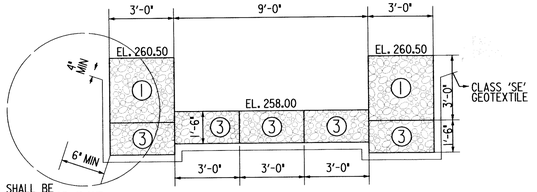



PLAN

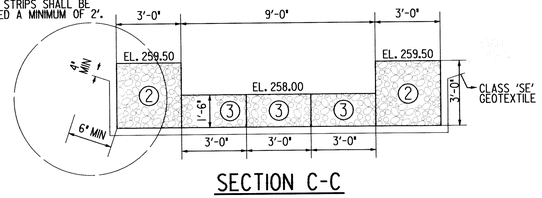



SECTION A-A




SECTION B-B

GEOTEXTILE SHALL BE EMBEDDED A MINIMUM OF 4" AND EXTEND AT LEAST 6" BEYOND THE EDGE OF THE GABION BASKET ADJACENT STRIPS SHALL BE OVERLAPPED A MINIMUM OF 2".

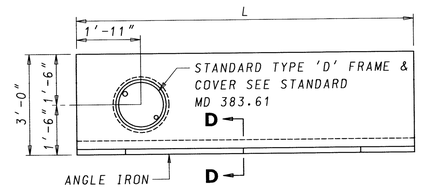



SECTION C-C

| GABION BASKET SCHEDULE | | | | |
|---|---|---|---|---|
| BASKET TYPE # | DIMENSION (FT) L | W | H | AMOUNT |
| ① | 9.0 | 3.0 | 3.0 | 4 |
| ② | 6.0 | 3.0 | 3.0 | 2 |
| ③ | 9.0 | 3.0 | 1.5 | 3 |

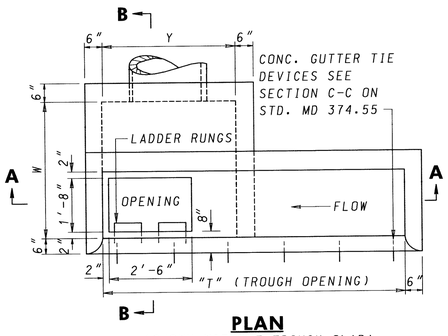
## GABION-LINED PLUNGE POOL DETAIL

N.T.S.



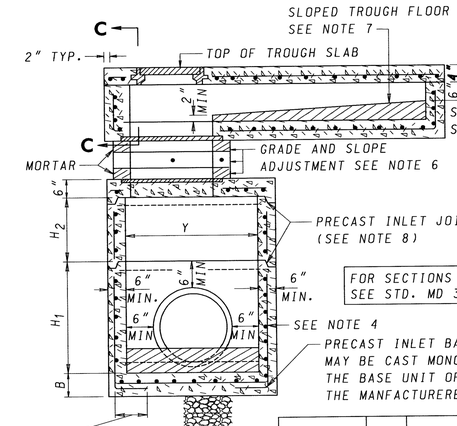

## PRECAST CONCRETE TROUGH SLAB

(6" THICK)




## PLAN

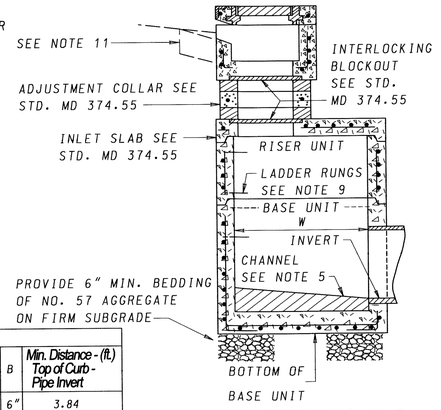
(SHOWN WITHOUT TROUGH SLAB)




## SECTION A-A

(SHOWN AS PRECAST)

| PIPE SIZE MIN. TO MAX. | PRECAST DIMENSIONS W | A Ilt. W | Y | $H_1$ BASE | $H_2$ RISER | B | Min. Distance - (ft.) Top of Curb - Pipe Invert |
|---|---|---|---|---|---|---|---|
| 12" | 4'-0" | | 4'-0" | 2'to 10' | 1'to 5' | 6" | 3.84 |
| 15" - 24" | 4'-0" | | 4'-0" | 3'to 10' | 1'to 5' | 6" | 4.11-4.92 |
| 27" - 33" | 4'-0" | | 4'-0" | 4'to 10' | 1'to 5' | 6" | 5.19-5.73 |
| 36" | 4'-0" | | 4'-0" | 5'to 10' | 1'to 5' | 6" | 6.00 |
| 42" | 4'-0" | 6'-0" | 6'-0" | 5'to 10' | 1'to 5' | 6" | 6.55 |
| 48" - 54" | 4'-0" | 6'-0" | 6'-0" | 6'to 10' | 1'to 5' | 6" | 7.09-7.63 |
| 60" | 4'-0" | | 6'-0" | 7'to 10' | 1'to 5' | 6" | 8.17 |
| 66" - 72" | 6'-0" | | 8'-0" | 8'to 10' | 1'to 5' | 8" | 8.71-9.25 |
| 78" - 84" | 6'-0" | | 8'-0" | 9'to 10' | 1'to 5' | 8" | 9.80-10.34 |




## SECTION B-B

(SHOWN AS PRECAST)

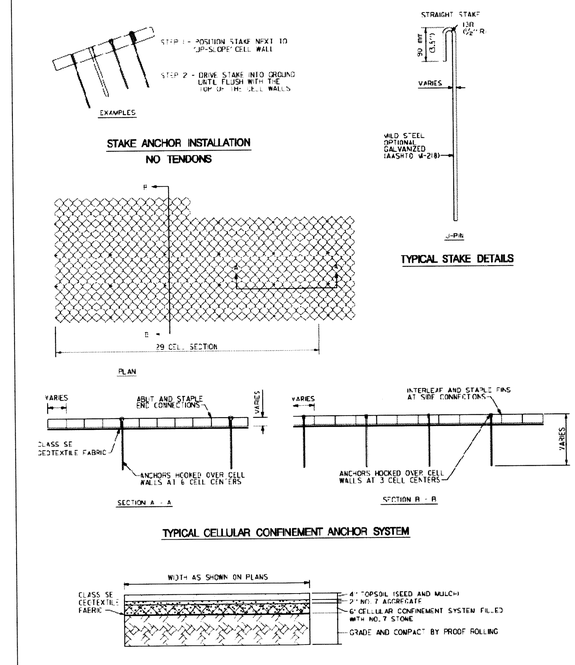
| INLET TYPE | T | L |
|---|---|---|
| COG - 5 | 5'- 0" | 6'- 0" |
| COG - 10 | 10'- 0" | 11'- 0" |
| COG - 15 | 15'- 0" | 16'- 0" |
| COG - 20 | 20'- 0" | 21'- 0" |

## MODIFIED SHA PRECAST STD. RECTANGULAR COG INLET DETAIL

N.T.S.

## NOTES

1. THIS STANDARD TO BE USED WITH TYPE A COMBINATION CURB AND GUTTER ONLY..
2. CURB OPENINGS SHALL NOT ENCROACH ON CROSSWALK AREAS.
3. CONCRETE SHALL BE MIX NO.6 (4500 PSI) FOR PRECAST UNITS AND MIX NO.3 (3500 PSI) FOR STRUCTURES CAST IN PLACE.
4. INLET MAY BE PRECAST OR CAST IN PLACE. REINFORCEMENT SHALL BE NO.4 BARS PLACED IN THE CENTER OF INLET WALLS AT 6" C/C 2 WAYS OR 2 LAYERS OF 4x4-W4.0xW4.0 WELDED WIRE FABRIC WITH $1\frac{1}{2}$" COVER.
5. A CONCRETE OR BRICK CHANNEL WHICH SLOPES AT LEAST 2 IN./FT TOWARD THE OUTLET SHALL BE PROVIDED IN THE FIELD.
6. GRADE AND SLOPE ADJUSTMENTS SHALL BE COMPLETED IN THE FIELD USING PRECAST ADJUSTMENT COLLAR AND MORTAR.
7. SLOPED TROUGH FLOOR TO BE CAST IN THE FIELD AND USED ONLY WHEN ROAD GRADE IS 1.5% OR LESS. WHEN SLOPED TROUGH FLOOR IS USED, ROUGHEN PRECAST TROUGH FLOOR.
8. PRECAST INLET JOINTS- THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING THE MANUFACTURER'S RECOMMENDED ASTM OR AASHTO APPROVED SEALANT.
9. LADDER RUNGS SHALL BE PLACED IN VERTICAL ALIGNMENT AT 1'-3" C/C. RUNG TYPE SHALL BE IN ACCORDANCE WITH STANDARDS MD 383.91 OR MD 383.92. RUNGS ARE INCIDENTAL TO THE COST OF THE INLET.
10. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVINIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123. SEE STD. MD 374.55 & MD 374.64.
11. SEE STANDARD MD 374.65 FOR DEPRESSED GUTTER PAN.
12. SEE STANDARD MD 374.64 FOR ALTERNATE PRECAST COG TROUGHS.
13. PAY MEASUREMENTS FOR CAST IN PLACE UNIT SHALL BE THE SAME AS THE PRECAST UNIT. REFER TO NOTE 14. ALL OTHER DIMENSIONS SHOWN FOR PRECAST SHALL APPLY TO CAST IN PLACE.
14. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 6'-2" MEASURED FROM THE PIPE INVERT TO THE TOP OF THE TROUGH SLAB. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 6'-2" INCLUDING ALL APPURTENANCES.
15. PRECAST BASE UNIT WALLS MAY TAPER PER MANUFACTURER'S DESIGN.




## ACCESS ROAD WITH CELLULAR CONFINEMENT LOAD SYSTEM DETAIL

N.T.S.

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/12/13

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Shaum 11/7/13

CHIEF, BUREAU OF ENGINEERING — 11-8-13

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STATE OF MARYLAND — PAUL FRANKLIN DERSEY — No. 15466 — REGISTERED PROFESSIONAL ENGINEER — 10-8-13

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| DATE:10/2013 | | | | | |

CAPITAL PROJECT NO. J-4213
MAP NO. | BLOCK NO.

DRAINAGE DETAILS
COLLEGE AVENUE SLOPE REPAIR
ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE NONE
SHEET 4 OF 9

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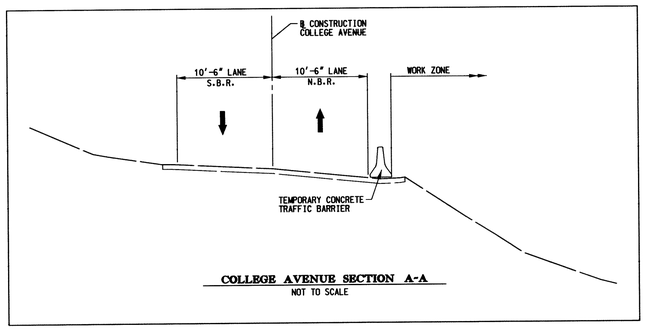
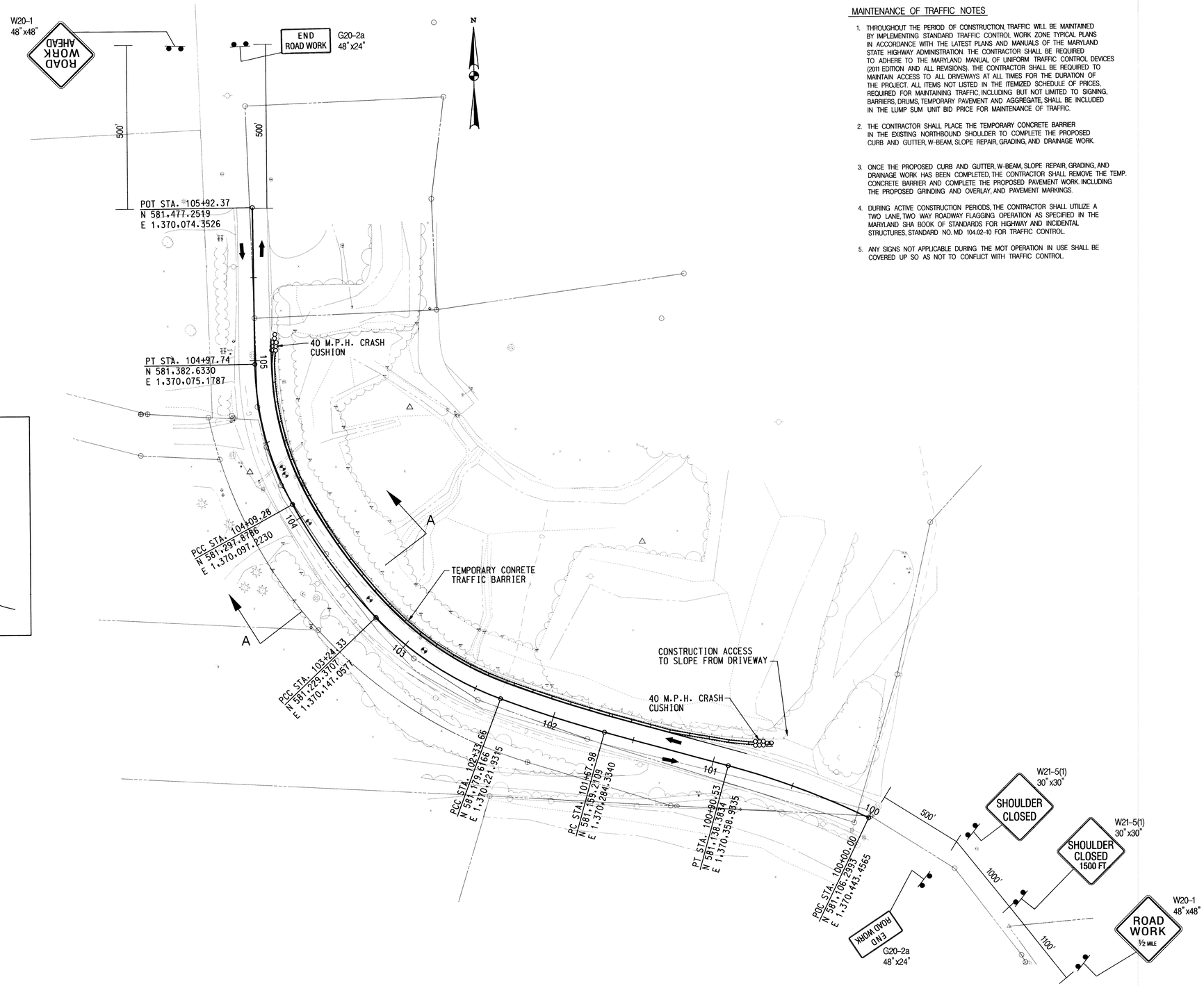
## MAINTENANCE OF TRAFFIC NOTES

1. THROUGHOUT THE PERIOD OF CONSTRUCTION, TRAFFIC WILL BE MAINTAINED BY IMPLEMENTING STANDARD TRAFFIC CONTROL WORK ZONE TYPICAL PLANS IN ACCORDANCE WITH THE LATEST PLANS AND MANUALS OF THE MARYLAND STATE HIGHWAY ADMINISTRATION. THE CONTRACTOR SHALL BE REQUIRED TO ADHERE TO THE MARYLAND MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (2011 EDITION AND ALL REVISIONS). THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES FOR THE DURATION OF THE PROJECT. ALL ITEMS NOT LISTED IN THE ITEMIZED SCHEDULE OF PRICES, REQUIRED FOR MAINTAINING TRAFFIC, INCLUDING BUT NOT LIMITED TO SIGNING, BARRIERS, DRUMS, TEMPORARY PAVEMENT AND AGGREGATE, SHALL BE INCLUDED IN THE LUMP SUM UNIT BID PRICE FOR MAINTENANCE OF TRAFFIC.
2. THE CONTRACTOR SHALL PLACE THE TEMPORARY CONCRETE BARRIER IN THE EXISTING NORTHBOUND SHOULDER TO COMPLETE THE PROPOSED CURB AND GUTTER, W-BEAM, SLOPE REPAIR, GRADING, AND DRAINAGE WORK.
3. ONCE THE PROPOSED CURB AND GUTTER, W-BEAM, SLOPE REPAIR, GRADING, AND DRAINAGE WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL REMOVE THE TEMP. CONCRETE BARRIER AND COMPLETE THE PROPOSED PAVEMENT WORK. INCLUDING THE PROPOSED GRINDING AND OVERLAY, AND PAVEMENT MARKINGS.
4. DURING ACTIVE CONSTRUCTION PERIODS, THE CONTRACTOR SHALL UTILIZE A TWO LANE, TWO WAY ROADWAY FLAGGING OPERATION AS SPECIFIED IN THE MARYLAND SHA BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES, STANDARD NO. MD 104.02-10 FOR TRAFFIC CONTROL.
5. ANY SIGNS NOT APPLICABLE DURING THE MOT OPERATION IN USE SHALL BE COVERED UP SO AS NOT TO CONFLICT WITH TRAFFIC CONTROL.




**COLLEGE AVENUE SECTION A-A**
NOT TO SCALE




## MAINTENANCE OF TRAFFIC LEGEND

- TEMP F-SHAPE CONC TRAFFIC BARRIER
- 40 M.P.H. CRASH CUSHION
- TRAFFIC FLOW ARROWS

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DIRECTOR OF PUBLIC WORKS — 11/12/13

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STATE OF MARYLAND — WALTER R. KULIK — NO. 12966 — REGISTERED PROFESSIONAL ENGINEER — 10/22/13

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| CHK: WRK | | | | |
| DATE: 10/2013 | | | | |

CAPITAL PROJECT NO.
J-4213
MAP NO. | BLOCK NO.

MAINTENANCE OF TRAFFIC PLAN
COLLEGE AVENUE
SLOPE REPAIR
ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE 1"=30'

SHEET 5 OF 9

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# HOWARD SOIL CONSERVATION DISTRICT
# STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (410) 313-1855.
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 3 calender days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 7 days as to all other disturbed or graded areas on the project site.
4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
5. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
6. Site Analysis:

| | | |
|---|---|---|
| Total Area of Site | 0.90 | Acres |
| Area Disturbed | 0.76 | Acres |
| Area to be roofed or paved | 0.03 | Acres |
| Area to be vegetatively stabilized | 0.56 | Acres |
| Total Cut | 105 | Cu. Yds. |
| Total Fill | 2250 | Cu. Yds. |
| Off-site waste/borrow area locations: | UNKNOWN | |

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
9. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
10. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each workday, whichever is shorter.
11. Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.
12. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the enforcement authority. Unless otherwise specified and approved by the approval authority, no more than 30 acres cumulatively may be disturbed at a given time.

# B-4-4 STANDARDS AND SPECIFICATIONS
# FOR
# TEMPORARY STABILIZATION

## Definition

To stabilize disturbed soils with vegetation for up to 6 months.

## Purpose

To use fast growing vegetation that provides cover on disturbed soils.

## Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

## Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

| Hardiness Zone (from Figure B.3): 6B | | | | Fertilizer Rate (10-20-20) | Lime Rate |
|---|---|---|---|---|---|
| Species | Application Rate (lb/ac) | Seeding Dates | Seeding Depths | | |
| Annual Ryegrass | 40 | 3-1 to 5-15 and 8-1 to 10-15 | 0.5 in. | 436 lb/ac (10lb/1000 sf) | 2 tons/ac (90 lb/1000 sf) |
| Foxtail Millet | 30 | 5-16 to 7-31 | 0.5 in. | | |
| Pearl Millet | 20 | 5-16 to 7-31 | 0.5 in. | | |

# B-4-5 STANDARDS AND SPECIFICATIONS
# FOR
# PERMANENT STABILIZATION

## Definition

To stabilize disturbed soils with permanent vegetation.

## Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

## Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

## Criteria

A.

Seeding Mixtures

1. General Use
   a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b. Additional planting specifications for exceptional sites such as shorelines, stream banks or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
   c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
   d. For areas receiving low maintenance, apply urea form Fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

Permanent Seeding Summary

| Hardiness Zone (from Figure B.3): 6B<br>Seed Mixture (from Table B.3): | | | | Fertilizer Rate (10-20-20) | | | Lime Rate |
|---|---|---|---|---|---|---|---|
| Species | Application Rate (lb/ac) | Seeding Dates | Seeding Depths | N | $P_2O_5$ | $K_2O$ | |
| Switch Grass | 10 | 3-1 to 5-15 and 5-16 to 6-15 | 0.5 in. | 45 lb/ac (1.0lb/1000 sf) | 90 lb/ac (2.0lb/1000 sf) | 90 lb/ac (2.0lb/1000 sf) | 2 tons/ac (90 lb/1000 sf) |
| Creeping Red Fescue | 15 | 3-1 to 5-15 and 5-16 to 6-15 | 0.5 in. | | | | |
| Wild Indigo | 2 | 3-1 to 5-15 and 5-16 to 6-15 | 0.5 in. | | | | |

2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions ot purpose. Enter selected mixture(s), application rates and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total maisture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

      Notes:
      Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77 'Turfgrass Cultivar Recommendations for Maryland'

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection. and assures a pure genetic line.
   c. Ideal Times of Seeding for Turf Grass Mixtures
      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6B)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons or on adverse sites.

# B-4-1 STANDARDS AND SPECIFICATIONS
# FOR
# INCREMENTAL STABILIZATION

## Definition

Establishment of vegetative cover on cut and fill slopes

## Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

## Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

## Criteria

A. Incremental Stabilization - Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.

2. Construction sequence example (Refer to Figure B.1):

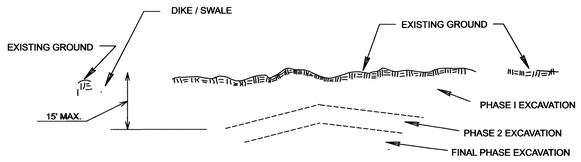
a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.

b. Perform Phase 1 excavation, prepare seedbed, and stabilize.

c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.

d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.




INCREMENTAL STABILIZATION - CUT

B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.

2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.

3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

4. Construction sequence example (Refer to Figure B.2):

a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.

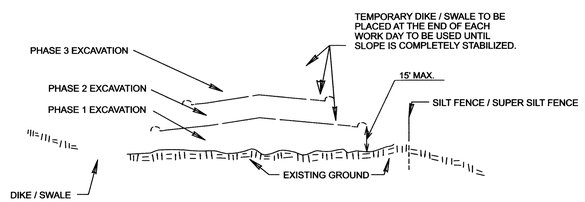
b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

c. Place Phase 1 fill, prepare seedbed, and stabilize.

d. Place Phase 2 fill, prepare seedbed, and stabilize.

e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.




INCREMENTAL STABILIZATION - FILL

*PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
THIS DEVELOMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/7/13

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/12/13
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Sharow 11/7/13
CHIEF, BUREAU OF ENGINEERING — Thomas E. Butler 11-8-13
CHIEF, BUREAU OF HIGHWAYS — 11-8-13

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — PAUL FRANKLIN CLEMENT — No. 15466 — PROFESSIONAL ENGINEER — 7/15

| DES: HL | BY | NO. | | DATE |
|---|---|---|---|---|
| DRN: HL | | | | |
| CHK: RS | | | | |
| DATE: 10/2013 | | | | |

CAPITAL PROJECT NO.
J-4213
MAP NO. | BLOCK NO.

EROSION & SEDIMENT CONTROL NOTES AND DETAILS
COLLEGE AVENUE SLOPE REPAIR
ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE N.T.S.
SHEET 6 OF 9

FILE: q:\smg\040444_howard county\dsw 1\ssk_029soil&sevenvalv\cad\dgn\ES-0002_CollegeAve.dgn
DATE: 10/18/2013 4:49:04 AM

# B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

## Definition

Using vegetation as cover to protect exposed soil from erosion.

## Purpose

To promote the establishment of vegetation on exposed soil.

## Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

## Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

## Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.

2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.

3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.

4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

# B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

## Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

## Purpose

To provide a suitable soil medium for vegetative growth.

## Conditions Where Practice Applies

Where vegetative stabilization is to be established.

## Criteria

A. Soil Preparation

1. Temporary Stabilization

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

2. Permanent Stabilization

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:

i. Soil pH between 6.0 and 7.0.

ii. Soluble salts less than 500 parts per million (ppm).

iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.

iv. Soil contains 1.5 percent minimum organic matter by weight.

v. Soil contains sufficient pore space to permit adequate root penetration.

b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.

c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

4. Areas having slopes steeper than 2:1 require special consideration and design.

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter. 55/64 inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.

c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

# B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

## Definition

The application of seed and mulch to establish vegetative cover.

## Purpose

To protect disturbed soils from erosion during and at the end of construction.

## Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

## Criteria

A. Seeding

1. Specifications

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.

b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.

c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding.

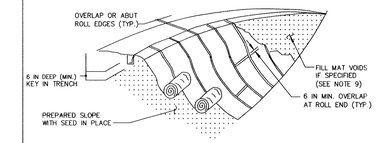
Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.

d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALLATION OF THE STORM DRAIN SHALL BE LIMITED TO THAT WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY.
2. SPOIL FROM THE TRENCHING OPERATION IS TO BE PLACED ON THE UPHILL SIDE OF CONSTRUCTION.
3. STOCKPILING WILL NOT BE ALLOWED ON-SITE WITHOUT PRIOR APPROVAL FROM THE INSPECTOR AND ENGINEER.

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION — STANDARD SYMBOL PSSMS ~ 2:1



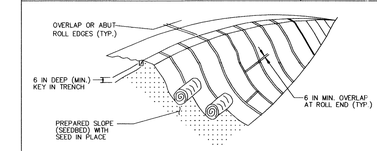

ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

| MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL | | |
|---|---|---|
| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION — STANDARD SYMBOL TSSMS ~ 1:1




ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

| MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL | | |
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| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |

*PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

Howard SCD — Date 11/7/13

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/6/13

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — 11/7/13

CHIEF, BUREAU OF ENGINEERING — 11-8-13

CHIEF, BUREAU OF HIGHWAYS — 11-8-13

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72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — PAUL FRANKLIN CLEMENT — REGISTERED PROFESSIONAL ENGINEER — 15466 — 7/15/13

| DES: HL | DRN: HL | CHK: RS | DATE: 10/2013 |
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CAPITAL PROJECT NO.
J-4213

MAP NO. | BLOCK NO.

EROSION & SEDIMENT CONTROL NOTES
COLLEGE AVENUE
SLOPE REPAIR

ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE N.T.S.

SHEET 7 OF 9

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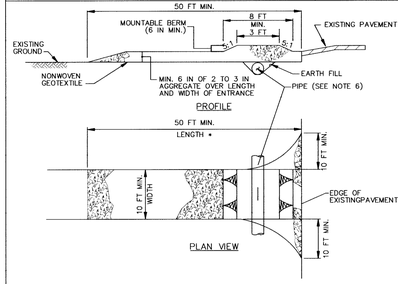
## DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE




CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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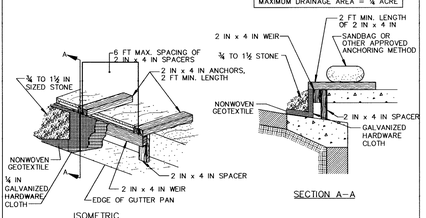
## DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE




CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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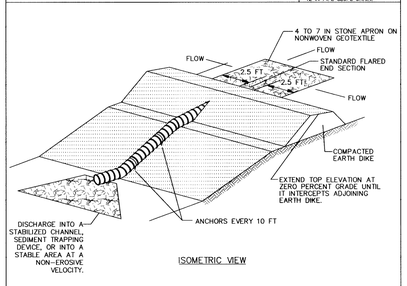
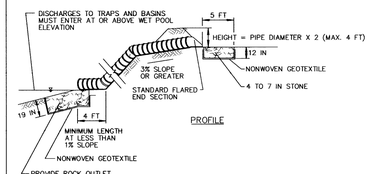
## DETAIL D-1 PIPE SLOPE DRAIN

STANDARD SYMBOL: PSD - 12

DESIGNATION PSD-12 REFERS TO 12 IN PIPE SLOPE DRAIN.




1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
|---|---|---|

## DETAIL D-1 PIPE SLOPE DRAIN

STANDARD SYMBOL: PSD - 12

DESIGNATION PSD-12 REFERS TO 12 IN PIPE SLOPE DRAIN.

CONSTRUCTION SPECIFICATIONS

1. THE HEIGHT OF THE EARTH DIKE MUST BE AT LEAST 2 TIMES THE PIPE DIAMETER MEASURED FROM THE INVERT OF THE PIPE. EXTEND THE TOP ELEVATION OF DIKE AT ZERO PERCENT GRADE UNTIL IT INTERCEPTS THE TOP OF THE ADJOINING EARTH DIKE.
2. FLEXIBLE PIPE IS PREFERRED, HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. ALL CONNECTIONS MUST BE WATERTIGHT.
3. ATTACH A FLARED END SECTION TO THE INLET END OF PIPE WITH A WATERTIGHT CONNECTION. AT THE INLET OF THE PIPE SLOPE DRAIN, INSTALL 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PLACED 12 INCHES IN DEPTH ON NONWOVEN GEOTEXTILE AND EXTEND OUT 5 FEET FROM THE INLET IN ALL DIRECTIONS.
4. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
5. SECURELY ANCHOR THE PIPE SLOPE DRAIN (PSD) TO THE SLOPE. SPACE THE ANCHORS EVERY 10 FEET.
6. HAND TAMP THE SOIL AROUND AND UNDER THE PIPE AND END SECTION IN 4 INCH LIFTS TO THE TOP OF THE EARTH DIKE.
7. UPON COMPLETING INSTALLATION OF THE PSD, STABILIZE ASSOCIATED DISTURBANCES WITH SEED, MULCH, AND TACK.
8. INSTALL OUTLET PROTECTION AS SPECIFIED ON APPROVED PLAN.
9. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REMOVE ACCUMULATED SEDIMENT AND DEBRIS.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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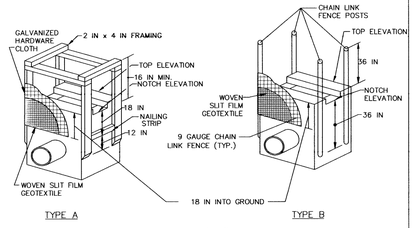
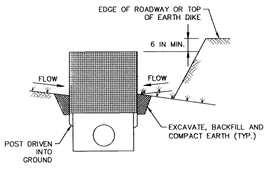
## DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE




1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
|---|---|---|

## DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
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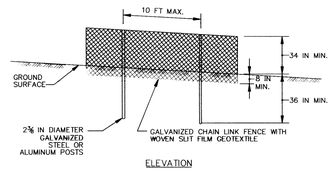
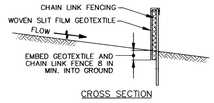
## DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF




CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HOG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |
|---|---|---|

By the Developer:

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

Steve Sharar — 11/7/13 (Date)

Steve Sharar
Signature of Developer
Print name below Signature

By the Engineer:

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

Paul F. Clement — 10/18/13 (Date)

PAUL F. CLEMENT
Signature of Engineer
Print name below Signature

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

John K. Robertson — 11/7/13 (Date)

Howard SCD

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John F. Hom 11/12/13 — DIRECTOR OF PUBLIC WORKS
Steve Sharar 11/7/13 — CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION
Thomas E. Butler 11-8-13 — CHIEF, BUREAU OF ENGINEERING
Neil R. Hall 11-8-13 — CHIEF, BUREAU OF HIGHWAYS

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — PAUL FRANKLIN CLEMENT — No. 15466 — REGISTERED PROFESSIONAL ENGINEER — 10/18/13

| DES: HL | DRN: HL | CHK: RS | DATE:10/2013 |
|---|---|---|---|

| BY | NO. | | DATE |
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| | | | |

CAPITAL PROJECT NO.
J-4213
MAP NO. | BLOCK NO.

EROSION & SEDIMENT CONTROL DETAILS
COLLEGE AVENUE SLOPE REPAIR
ELECTION DISTRICT 1 — HOWARD COUNTY, MARYLAND

SCALE N.T.S.
SHEET 8 OF 9

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## SEQUENCE OF CONSTRUCTION

| | ESTIMATED* TIME TO COMPLETE (DAYS) |
|---|---|
| 1. CONTRACTOR SHALL OBTAIN GRADING PERMIT FROM HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS PRIOR TO BEGINNING CONSTRUCTION. | – – – |
| 2. CONTRACTOR SHALL CONTACT HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES, AND PERMITS AT (410) 313–2455 TO SCHEDULE A PRE–CONSTRUCTION MEETING AT LEAST 72 HOURS BEFORE CONSTRUCTION IS TO BEGIN. | – – – |
| 3. INSTALL STABILIZED CONSTRUCTION ENTRANCE (SCE) 1–1 | 1 |
| 4. CLEAR AND GRUB TO INSTALL PERIMETER CONTROLS. | 3 |
| 5. INSTALL SUPER SILT FENCE SSF 1–1, SSF 1–2, SSF 1–3, SSF 1–4, SSF 1–5, AND SANDBAGS IN AREA OF PLUNGE POOL. | 5 |
| 6. INSTALL GABION–LINED PLUNGE POOL. AFTER CONSTRUCTING PLUNGE POOL, THE ASSOCIATED SUPER SILT FENCE (SSF 1–5) CAN BE REMOVED ONCE PERMISSION IS OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR. | 1 |
| 7. INSTALL PIPE SLOPE DRAIN (PSD–18) WITH SANDBAGS, AS SHOWN ON THE PLAN VIEW. | 1 |
| 8. INSTALL ENDWALL E–1 AND 18" HDPEP UPSTREAM TO MANHOLE M–1. | 2 |
| 9. BEGIN SLOPE GRADING OPERATIONS AND CONSTRUCT MAINTENANCE ACCESS ROAD, INSTALLING GEOGRID AS SHOWN ON TYPICAL SECTION. | 40 |
| 10. AS GRADING OPERATIONS PROCEED, INSTALL STORM DRAIN SYSTEM FROM MANHOLE M–1 TO INLET I–5. PROVIDE INLET PROTECTION FOR I–5, AS SHOWN. CONSTRUCT CURB/GUTTER, AND TRAFFIC BARRIER. | 10 |
| 11. REPLACE EXISTING INLET WITH INLET I–7, ABANDONING PIPE SLOPE DRAIN. INSTALL REMAINDER OF STORM DRAIN SYSTEM, PROVIDING INLET PROTECTION, AS SHOWN. | 3 |
| 12. INSTALL FIRE HYDRANT, SERVICE LINE, AND VALVE. | 2 |
| 13. AS ROADWAY EMBANKMENT REACHES FINAL GRADE, PROVIDE CELLULAR CONFINEMENT LOAD SYSTEM (FOR MAINTENANCE ACCESS ROAD), TOPSOIL, SOIL STABILIZATION MATTING, AND SEED/MULCH AS SHOWN ON TYPICAL SECTION. | 15 |
| 14. GRIND AND OVERLAY HMA PAVEMENT ON COLLEGE AVENUE | 5 |
| 15. ONCE ALL DISTURBED AREAS ARE STABILIZED AND WITH THE APPROVAL OF THE HOWARD COUNTY INSPECTOR, REMOVE EROSION AND SEDIMENT CONTROLS. | 2 |
| | 90 DAYS |

* ESTIMATED TIME TO COMPLETE IS FOR PLANNING PURPOSES ONLY. CONTRACTOR SHALL DEVELOP ACTUAL CPM SCHEDULE

NOTES:

1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE.
2. TRACKING OF SEDIMENT ONTO ROADS IS NOT PERMITTED. IF SEDIMENT IS TRACKED ONTO ROADS, IT SHOULD BE CLEARED AND HAULED OFF SITE AT THE END OF EACH WORKING DAY.
3. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISION THERETO.
4. SUPER SILT FENCE TO BE INSTALLED AS REQUIRED BY THE SEDIMENT CONTROL INSPECTOR.
5. STOCKPILING WILL NOT BE PERMITTED ON SITE.

### STABILIZED CONSTRUCTION ENTRANCE

| | |
|---|---|
| SCE 1–1 | STA. 100+58, 12.0' RT. 25 TON |

### STANDARD INLET PROTECTION

| | |
|---|---|
| I–6 | STA. 104+86, 14.8' LT. |
| I–7 | STA. 104+29, 13.5' LT. |
| I–8 | STA. 102+34, 16.0' LT. |

### CURB INLET PROTECTION

| | |
|---|---|
| I–1 | STA. 102+00, 14.0' RT. |
| I–2 | STA. 102+50, 14.0' RT. |
| I–3 | STA. 103+00, 14.0' RT. |
| I–4 | STA. 104+96, 14.0' RT. |
| I–5 | STA. 104+06, 14.0' RT. |

### PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

ALL GRADED SLOPE AREAS B-4-6-D, 2734 SY

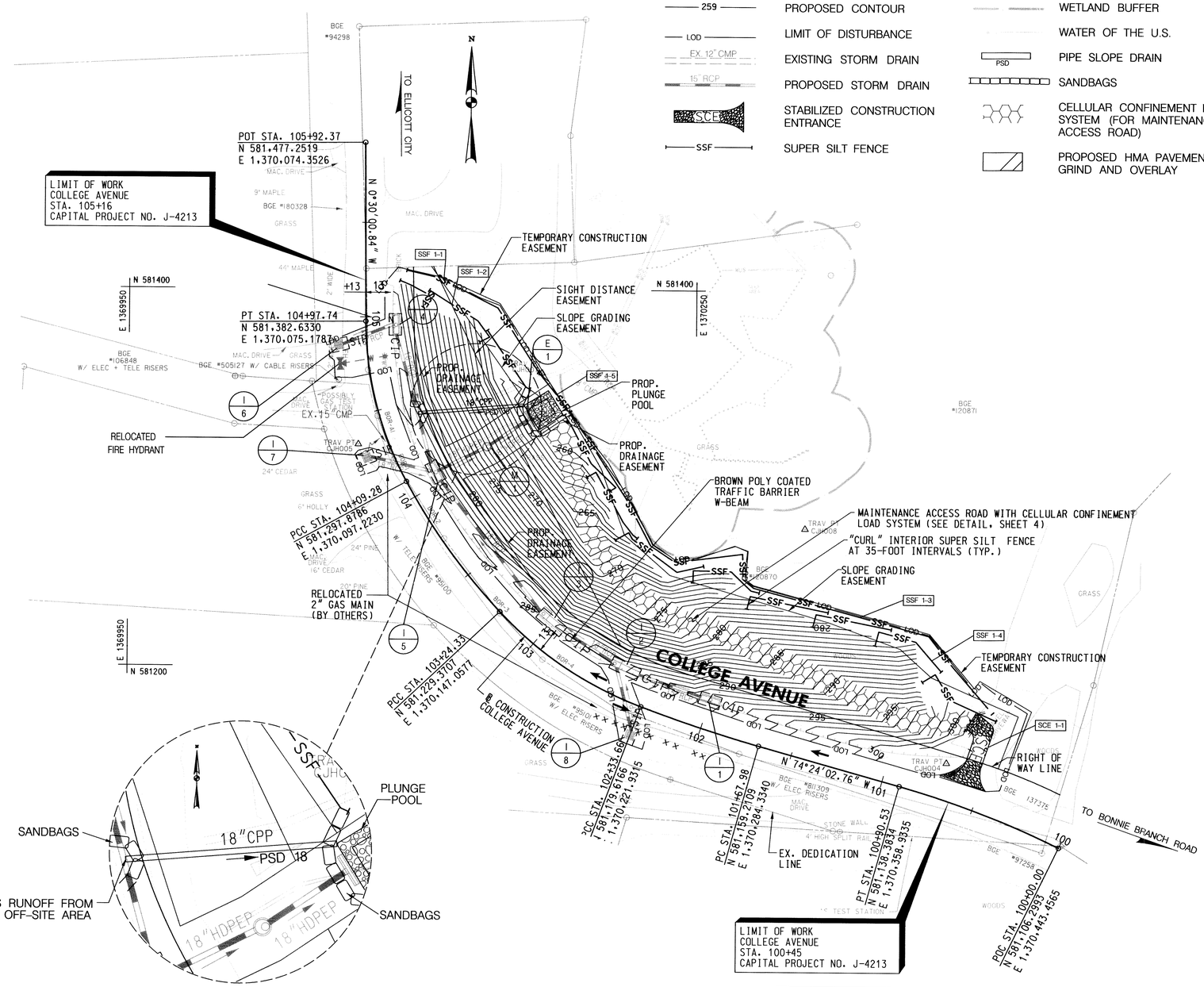
### SUPER SILT FENCE

| | | |
|---|---|---|
| SSF 1–1 | FROM STA. 105+21, 18.3' RT. TO STA. 104+44, 87.2' RT. | 107 LF |
| SSF 1–2 | FROM STA. 105+19, 18.1' RT. TO STA. 104+31, 79.9' RT. | 111 LF * |
| SSF 1–3 | FROM STA. 103+98, 93.6' RT. TO STA. 100+61, 59.3' RT. | 305 LF |
| SSF 1–4 | FROM STA. 103+97, 84.2' RT. TO STA. 100+54, 48.7' RT. | 388 LF * |
| SSF 1–5 | FROM STA. 104+44, 87.2' RT. TO STA. 103+98, 93.6' RT. | 27 LF |

* ALL INTERIOR SUPER SILT FENCE (SSF 1–2 & SSF 1–4) SHALL BE "CURLED" AT 35–FT INTERVALS.

### PIPE SLOPE DRAIN

PSD 18 56 LF 18" CORRUGATED PE PIPE, TYPE S. STA. FROM 104+42, 20.1' RT. TO 104+20, 73.8' RT.




*PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15466, EXPIRATION DATE: JULY 15, 2015

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
THIS DEVELOMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/7/13

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/12/13
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — 11/7/13
CHIEF, BUREAU OF ENGINEERING — 11-8-13
CHIEF, BUREAU OF HIGHWAYS — 11-8-13

JOHNSON, MIRMIRAN & THOMPSON
*Engineering A Brighter Future®*
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — PAUL FRANKLIN GILBERT — No. 15466 — PROFESSIONAL ENGINEER — 10/31/13

| DES: HL | BY | NO. | | DATE |
|---|---|---|---|---|
| DRN: HL | | | | |
| CHK: RS | | | | |
| DATE:10/2013 | | | | |

CAPITAL PROJECT NO. J–4213
MAP NO. BLOCK NO.

EROSION & SEDIMENT CONTROL PLAN
COLLEGE AVENUE SLOPE REPAIR
ELECTION DISTRICT 1 HOWARD COUNTY, MARYLAND

SCALE 1"=30'
SHEET 9 OF 9

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