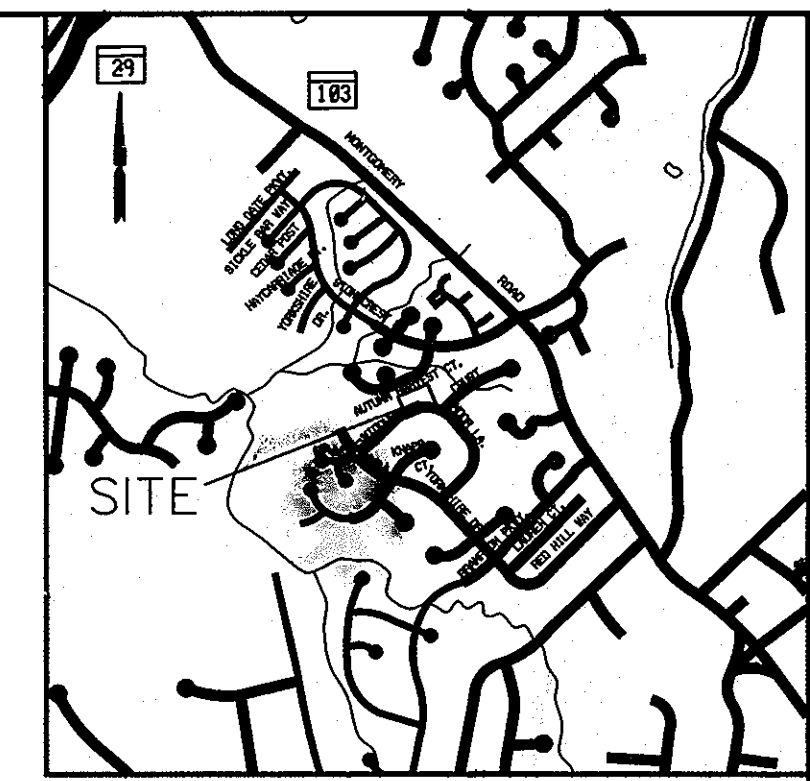


BRAMPTON HILLS, SECTION 2, AREA 1 OPEN SPACE LOT 58 LONG GATE, SECTION 1, AREA 3 OPEN SPACE LOT 105

STORMWATER MANAGEMENT RETROFIT CAPITAL PROJECT #D-1141 #D-1158 HOWARD COUNTY STORMWATER MANAGEMENT DIVISION



VICINITY MAP
Scale: 1" = 2000'
ADC MAP: 16-E-1

LEGEND

- EX. TREES
- EXIST. MAJOR CONTOUR
- EXIST. MINOR CONTOUR
- PROP. CONTOURS
- EXIST. PROPERTY LINE
- EX. STREAM
- WETLANDS
- WETLAND BUFFER
- TOP OF STREAM BANKS
- 75' STREAM BUFFER
- 25' POND BUFFER
- LIMIT OF DISTURBANCE
- SILT FENCE
- REMOVABLE PUMPING STATION
- ORANGE SAFETY FENCE
- INTAKE & DISCHARGE HOSES
- SANDBAG DAM
- 15-25% SLOPES
- >25% SLOPES
- NO WOODY VEGETATION ZONE

INDEX OF SHEETS

| SHEET NO. | DESCRIPTION |
|-----------|---|
| 1 | TITLE SHEET |
| 2 | SITE DEVELOPMENT AND STORMWATER MANAGEMENT PLAN |
| 3 | PROFILES AND DETAILS |
| 4 | GCL SEAMING AND ANCHOR TRENCH DETAILS |
| 5 | GRADING AND SEDIMENT CONTROL PLAN |
| 6 | SEDIMENT CONTROL NOTES & DETAILS |
| 7 | DRAINAGE AREA AND SOILS MAP |

SITE ANALYSIS DATA CHART

- TOTAL PROJECT AREA: 1.52 ACRES. (PHASE I) 0.45 ACRES (PHASE II)
- DISTURBED AREA: 0.91 ACRES (39,576 SF). (PHASE I) 0.24 ACRES (10,469 SF) (PHASE II)
- PROPOSED USE FOR THE SITE: RETROFIT EXISTING STORMWATER FACILITY, CAPITAL PROJECT #D-1141 STABILIZE EXISTING STREAMBANK #D-1158
- CURRENT ZONING: R20 (LOT 58) / RSC (LOT 105)
- OPEN SPACE AREA: LOT 105: 19,675 SF, 0.45 AC.
LOT 58: 46,637 SF, 1.07 AC.
- F-83-133, P.N. 5561, BRAMPTON HILLS, 2/1, OPEN SPACE LOT 58;
F-86-120, LONG GATE, 1/3, OPEN SPACE LOT 105
P-83-029, P-86-037, SDP 87-213, F-09-054

INDEX OF SHEETS

- TITLE SHEET
- PHASE I SITE DEVELOPMENT AND STORM WATER MANAGEMENT PLAN
- PHASE I PROFILE AND DETAILS
- PHASE I GCL SEAMING AND ANCHOR TRENCH DETAILS
- PHASE II GEOMETRY SHEET
- PHASE II PROFILE SHEET
- PHASE II GRADING PLAN
- PHASE II DETAIL SHEET
- PHASE II STEEP SLOPES
- PHASE I GRADING AND SEDIMENT CONTROL PLAN
- PHASE II EROSION AND SEDIMENT CONTROL PLAN
- SEDIMENT CONTROL NOTES AND DETAILS
- SEDIMENT CONTROL NOTES AND DETAILS
- PHASE I LANDSCAPE PLAN
- PHASE II LANDSCAPE NOTES AND DETAILS
- DRAINAGE AREA AND SOILS MAP

22. DEPARTMENT OF PLANNING AND ZONING AND HSCD HAVE DETERMINED THAT THE DISTURBANCES WITHIN THE 100-YEAR FLOODPLAIN, WETLANDS, STREAM AND BUFFERS FOR THE PROPOSED STREAM RESTORATION PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTIONS 16.115(C) AND 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.

HAZARD CLASSIFICATION STATEMENT

THE BREACH HEIGHT UNDER PROPOSED CONDITIONS IS 6.47 FEET. THE RESULTING BREACH DISCHARGE IS 341 CFS. THE DOWNSTREAM CHANNEL PASSES THROUGH A RESIDENTIAL COMMUNITY BEFORE PASSING THROUGH A 48" CORRUGATED METAL CULVERT UNDER AUTUMN HARVEST COURT, A SMALL RESIDENTIAL ROADWAY. THE BREACH DISCHARGE WAS ENTERED INTO THE HEC-RAS MODEL DEVELOPED FOR THE FLOODPLAIN STUDY, AND IT WAS DETERMINED THAT A BREACH WILL INUNDATE THE ROAD.

THE DEPTH OVER THE ROADWAY WOULD BE APPROXIMATELY 1.04 FEET, AT 2.52 FPS. THIS IMPACT IS WITHIN THE "LOW DANGER ZONE" PER USBR "DOWNSTREAM HAZARD CLASSIFICATION GUIDELINES", 1988. FURTHERMORE, THE DEPTH OVER THE ROADWAY IS LESS THAN THE 1.5-FOOT REQUIREMENT FOR CLASS "A" DAMS, PER MD-378.

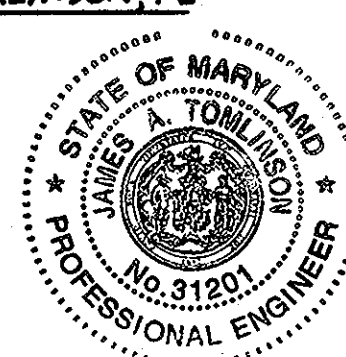
CHANNEL CROSS SECTIONS WERE SURVEYED ALONG THE BREACH LIMITS, INCLUDING IN THE VICINITY OF ADJACENT RESIDENCES. THE CLOSEST RESIDENCE TO THE BREACH LIMITS WAS LOT 64; THE SURVEY SHOWS AN ELEVATION OF 402 FEET BELOW THE EXISTING STRUCTURE. THE BREACH ELEVATION IN THIS AREA IS 400.41; THUS, THE STRUCTURE WILL NOT BE IMPACTED IN THE EVENT OF A BREACH.

THEREFORE, THIS POND IS A CLASS "A" HAZARD.

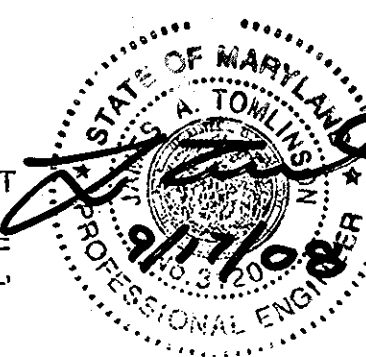
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

James A. Tomlinson
SIGNATURE
JAMES A. TOMLINSON PE
PRINT NAME

PE No: 31201
DATE: 12/14/09



"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. 31201 EXPIRATION DATE: 12/31/09"



21. FLOODPLAIN STUDY CONDUCTED BY KCI TECHNOLOGIES AND APPROVED APRIL 22, 2008.

| ADDRESS CHART | |
|------------------------|-------------------|
| LOT/PARCEL * | STREET ADDRESS |
| OPEN SPACE LOT 58/380 | 4715 WIDDUP COURT |
| OPEN SPACE LOT 105/404 | |

| PERMIT INFORMATION CHART | | | |
|--------------------------|--------|--------------|------------------------|
| SUBDIVISION NAME | | SECTION/AREA | LOT/PARCEL NO. |
| BRAMPTON HILLS | | 2/1 | OPEN SPACE LOT 58/380 |
| LONG GATE | | 1/3 | OPEN SPACE LOT 105/404 |
| PLAT * GRID * | ZONING | TAX MAP | ELEC. DIST. |
| 5561 2230 | 1 6 | R20 RSC | 31 30 |
| WATER CODE | | SEWER CODE | |
| N/A | | N/A | |

| HOWARD COUNTY SURVEY CONTROL | | | | |
|------------------------------|--------|------------|-------------|-----------|
| DESIGNATION | PID | NORTHING | EASTING | ELEVATION |
| 241A | A18498 | 579133.629 | 1360260.265 | 357.194 |
| GOLF GPS N | JV6895 | 568014.977 | 1365020.350 | 514.716 |

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 5 DAYS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS SHOWN HEREON WERE PROVIDED BY HOWARD COUNTY SURVEY DIVISION AND AB CONSULTANTS.
- WATER QUALITY MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT SINCE THE PROJECT WILL NOT ADD IMPERVIOUS AREA. THE 1-YEAR DISCHARGE FROM EX. M-46 IS BEING ROUTED THROUGH THE POND TO PROVIDE LIMITED CHANNEL PROTECTION.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
- THE WETLAND DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES, INC. IN AUGUST 2005. A WETLAND DELINEATION WAS PERFORMED FOR PHASE II IN APRIL 2009.
- TOPOGRAPHIC SURVEY OF THE SITE WAS PERFORMED BY AB CONSULTANTS, INC. IN SEPTEMBER 2005. A TOPOGRAPHIC SURVEY WAS PERFORMED FOR PHASE II IN NOVEMBER 2008.
- A NONTIDAL WETLANDS AND WATERWAYS AUTHORIZATION HAS BEEN OBTAINED FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (TRACKING NUMBER 200664586/06-NT-3217) THE MDE TRACKING NUMBER FOR PHASE II IS 200963252.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
- SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY.
- EXISTING GROUND AND/OR VEGETATION DISTURBED BY THE PROPOSED WORK SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION OR BETTER BY CONCLUSION OF THE PROJECT.
- THE PROPOSED PROJECT IS LOCATED OFF WIDDUP COURT.
- THE EXISTING PUBLIC DETENTION POND WAS CONSTRUCTED UNDER CONTRACT F-83-25. 100-YR FLOODPLAIN DRAINAGE AND UTILITY ELEVATION WAS RECALCULATED UNDER CONTRACT F-09-054.
- THIS STREAM IS DESIGNATED USE I-P. NO WORK SHALL BE CONDUCTED WITHIN THE STREAM CHANNEL BETWEEN MARCH 1ST AND JUNE 15TH, INCLUSIVE (COMAR 26.08.02.11).
- THE SUBJECT PROPERTIES ARE ZONED R20 (LOT 58) AND RSC (LOT 105) PER THE 2/02/04 COMPREHENSIVE ZONING PLAN.
- THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BECAUSE IT IS A CAPITAL IMPROVEMENT PROJECT WITH LESS THAN 40,000 SQUARE FEET OF DISTURBANCE.
- THE STORMWATER MANAGEMENT FACILITY SHOWN ON THESE PLANS IS A DETENTION POND.
- FLOODPLAIN STUDY CONDUCTED BY KCI TECHNOLOGIES AND APPROVED APRIL 22, 2008.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

William J. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
10/2/08
DATE

Cindy ...
CHIEF, DIVISION OF LAND DEVELOPMENT
1/7/09
DATE

Dennis ...
DIRECTOR, DEP.
1-7-09
DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

James A. Tomlinson
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)
DATE: 9/17/08
JAMES A. TOMLINSON PE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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 THE BEGINNING OF THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT."

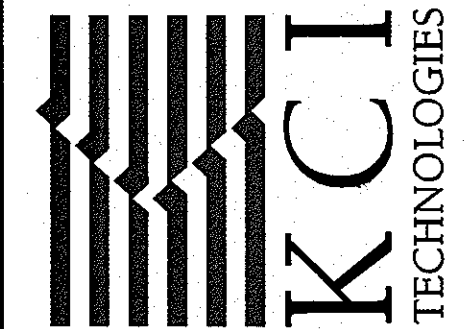
Howard E. Saltzman
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)
DATE: 9-12-08
Howard E. Saltzman

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

Howard ...
HOWARD COUNTY
DATE: 01/30/08

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|-------------------------------------|-----------|
| 1 | ADDED NEW INDEX OF SHEETS | SEPT 2010 |
| 1 | ADDED GENERAL NOTES | SEPT 2010 |
| 1 | ADDED SECOND CAPITAL PROJECT NUMBER | SEPT 2010 |
| 1 | ADDED #D1158 TO TITLE BLOCK | SEPT 2010 |
| 1 | UPDATED PAGE NUMBER | SEPT 2010 |

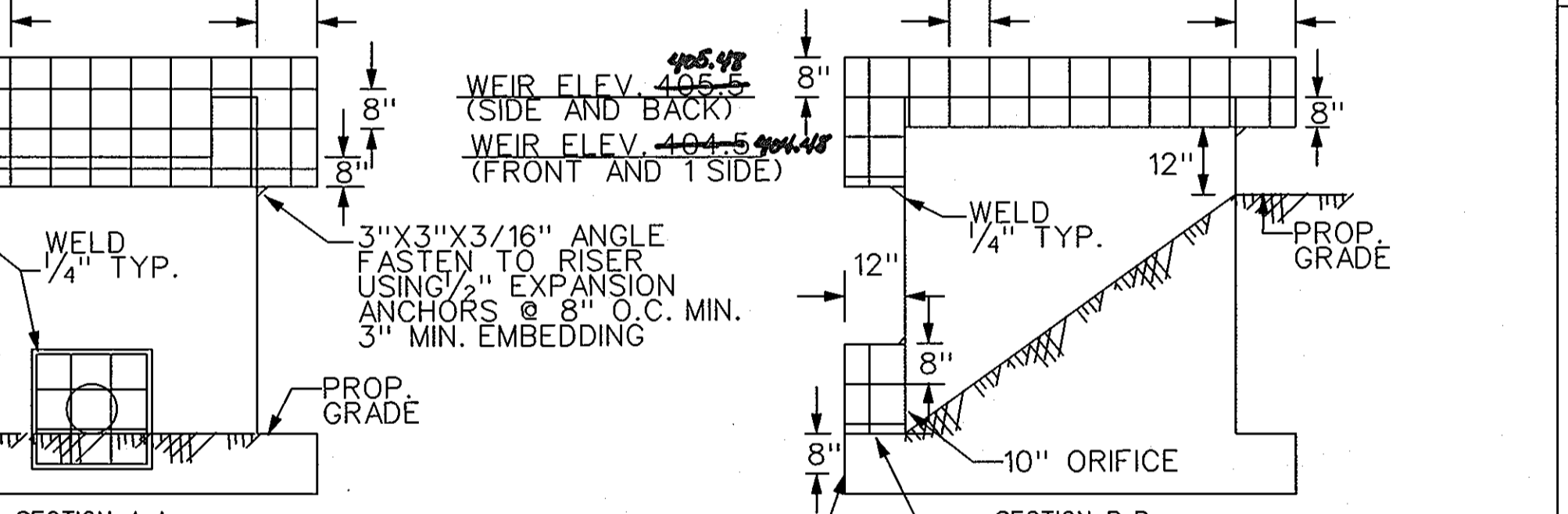
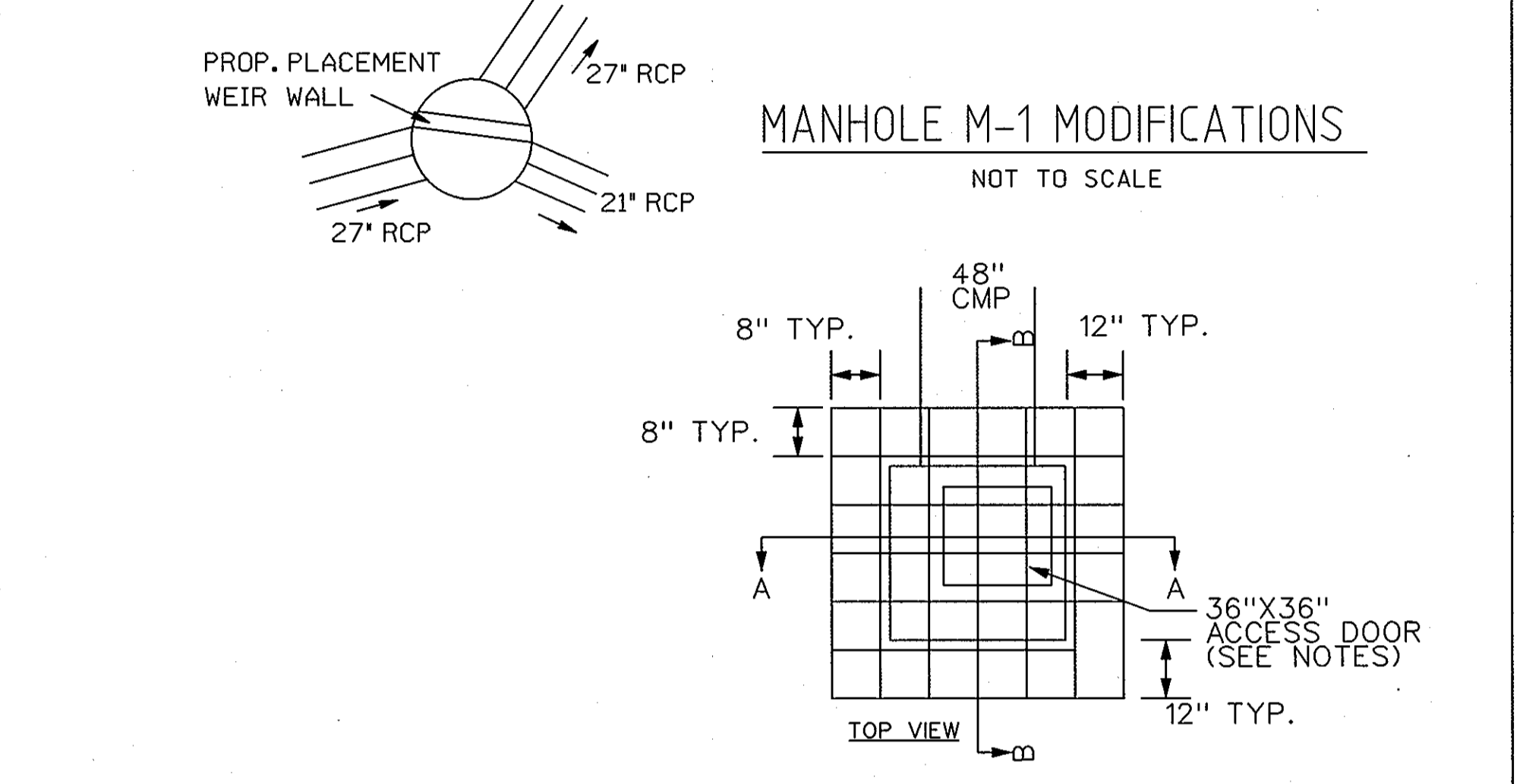
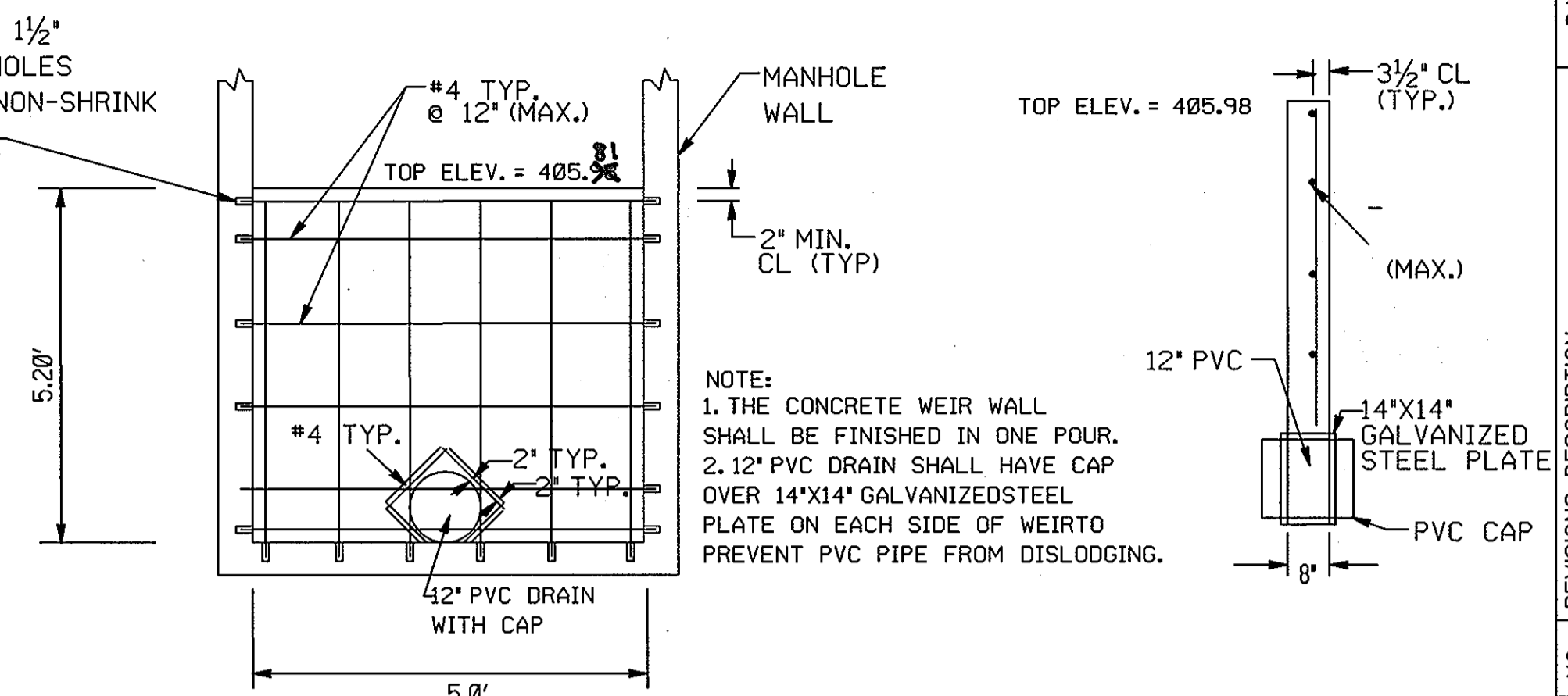
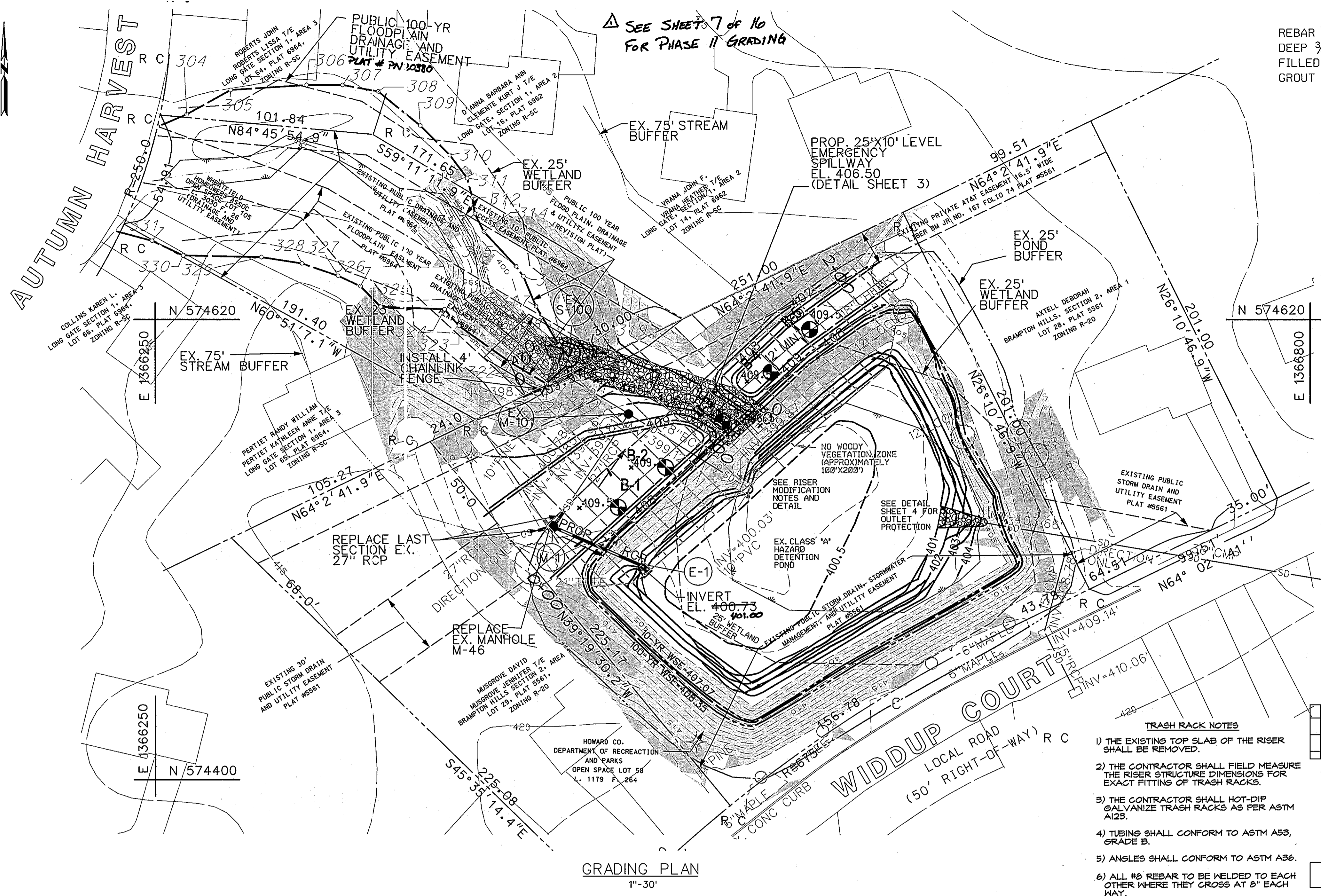
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FAX: (410) 316-7817
WWW.KCI.COM



BRAMPTON HILLS, SECTION 2, AREA 1, OPEN SPACE LOT 58 & LONG GATE, SECTION 1, AREA 3, OPEN SPACE LOT 105
STORMWATER MANAGEMENT RETROFIT
CAPITAL PROJECT #D-1141 D-1158.
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
675 COLUMBIA UNIVERSITY DRIVE, COLUMBIA, MARYLAND 21046
ELECTRO: BOB BROWN, 410-313-4471
WETLANDS: HOMEOWNERS ASSOCIATION
PLAT 5561, TAX MAP 30, GRID 156, PARCEL 380, ZONING R20, RSC
LONG GATE, LOT 105, PLAT 688A, TAX MAP 30, GRID 6, PARCEL 404, ZONING RSC
LONG GATE, LOT 105, PLAT 688, TAX MAP 30, GRID 6, PARCEL 404, ZONING RSC

TITLE SHEET

SCALE: N/A
DATE: MARCH 2008
KCI JOB NO.: 01043223.03
CAPITAL PROJECT NO.: D-1158, D-1141
PERMIT ISSUE:
CONSTRUCTION ISSUE:



STORMWATER MANAGEMENT SUMMARY TABLE

| STUDY POINT | AREA AC. | WQV REQ. CF | WQV PROV. CF | REV REQ. CF | REV PROV. CF | Q10 EX. CFS | Q10 PROP. CFS | Q100 EX. CFS | Q100 PROP. CFS |
|-------------|----------|-------------|--------------|-------------|--------------|-------------|---------------|--------------|----------------|
| DA-01 | 20.35 | 0.0 | 0.0 | 0.0 | 0.0 | 73 | 73 | 133 | 133 |
| DA-02 | 11.90 | 0.0 | 0.0 | 0.0 | 0.0 | 123 | 123 | 215 | 215 |
| DA-03 | 11.70 | 0.0 | 0.0 | 0.0 | 0.0 | 133 | 128 | 290 | 258 |
| DA-04 | 15.46 | 0.0 | 0.0 | 0.0 | 0.0 | 195 | 192 | 387 | 355 |

THE PROPOSED IMPROVEMENTS INVOLVE RETROFITTING AN EXISTING DETENTION POND TO ROUTE ADDITIONAL STORM DRAIN FLOW THROUGH THE FACILITY. THERE IS NO PROPOSED IMPERVIOUS AREA, SO WQV AND REV ARE NOT REQUIRED. THERE IS NO PROPOSED DEVELOPMENT, SO CPV IS NOT REQUIRED. Q10 AND Q100 ARE BEING SATISFIED WITHIN THE DETENTION FACILITY. Q10 AT THE POND OUTFALL WILL BE REDUCED FROM 133 TO 128 CFS. Q100 IS BEING REDUCED AT THE POND OUTFALL FROM 290 TO 258 CFS.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 10/2/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 1/7/09
CHIEF, DIVISION OF LAND DEVELOPMENT

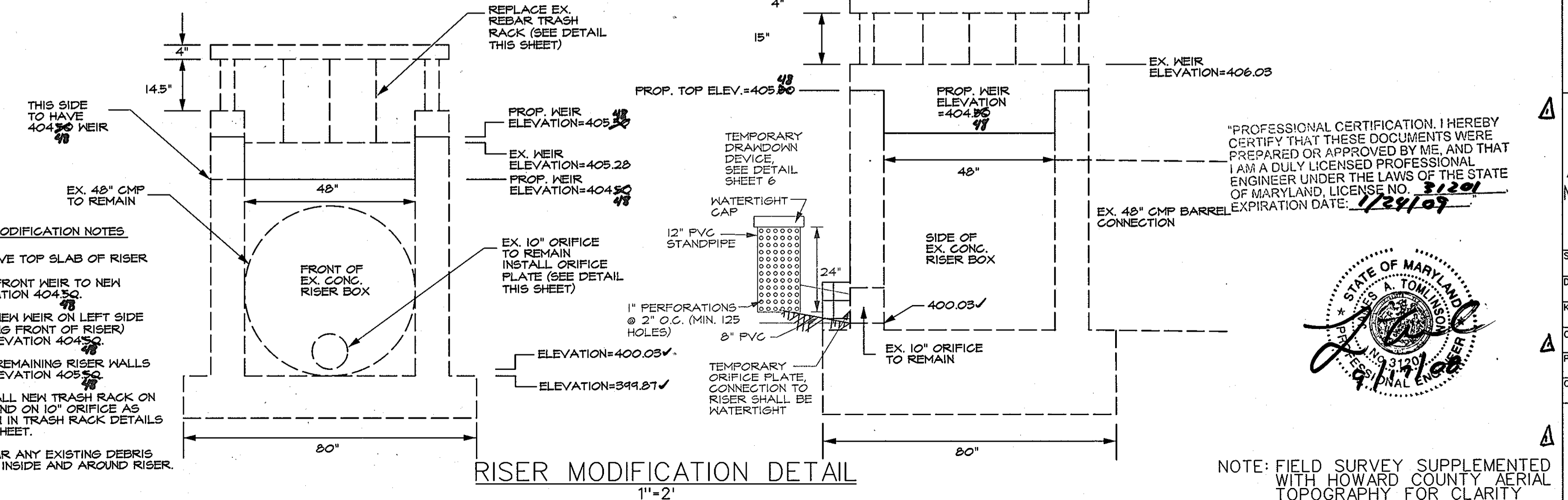
[Signature] 1/3/09
DIRECTOR, DEP.

FLOODPLAIN COORDINATE TABLE

| NO. | NORTH | EAST | ELEV. | NO. | NORTH | EAST | ELEV. |
|-----|-------------|--------------|--------|-----|-------------|--------------|--------|
| 318 | 574607.7079 | 1356442.1696 | 400.23 | 304 | 574717.9934 | 1366264.9343 | 400.22 |
| 319 | 574601.2205 | 1356447.4892 | 400.23 | 305 | 574729.6984 | 1366285.9634 | 400.22 |
| 320 | 574598.6256 | 1356446.4572 | 400.23 | 306 | 574732.0770 | 1366322.0556 | 400.22 |
| 321 | 574589.2839 | 1356436.0714 | 400.23 | 307 | 574732.0770 | 1366339.2261 | 400.23 |
| 322 | 574599.5339 | 1356419.9448 | 400.23 | 308 | 574728.9984 | 1366356.1625 | 400.23 |
| 323 | 574617.0499 | 1356394.6592 | 400.23 | 309 | 574712.6231 | 1366376.1245 | 400.23 |
| 324 | 574624.9644 | 1356387.6756 | 400.23 | 310 | 574698.6045 | 1366390.1931 | 400.23 |
| 325 | 574626.1321 | 1356357.3146 | 400.23 | 311 | 574687.6083 | 1366398.4402 | 400.23 |
| 326 | 574636.0234 | 1356347.6638 | 400.23 | 312 | 574678.5526 | 1366400.8658 | 400.23 |
| 327 | 574640.9719 | 1356337.0390 | 400.23 | 313 | 574670.7004 | 1366402.0776 | 400.23 |
| 328 | 574646.8579 | 1356319.8500 | 400.23 | 314 | 574662.1371 | 1366406.3592 | 400.23 |
| 329 | 574649.8407 | 1356300.4655 | 400.22 | 315 | 574645.5294 | 1366421.6694 | 400.23 |
| 330 | 574650.6544 | 1356263.2476 | 400.22 | 316 | 574640.1287 | 1366425.1726 | 400.23 |
| 331 | 574657.6609 | 1356248.3915 | 400.22 | 317 | 574626.4565 | 1366431.1410 | 400.23 |

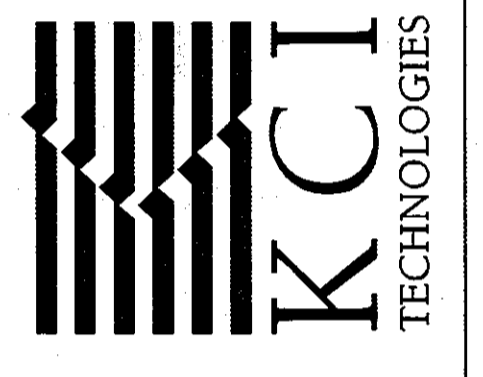
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 9/30/08
HOWARD SCD



| NO. | REVISIONS DESCRIPTION | DATE |
|-----|--------------------------------|-----------|
| 1 | ADDED NOTE ON PHASE II GRADING | SEPT.2010 |
| 1 | ADDED "PHASE I" TO SHEET TITLE | SEPT.2010 |
| 1 | ADDED #PHIS TO TITLE BLOCK | SEPT.2010 |
| 1 | UPDATED PAGE NUMBER | SEPT.2010 |

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BRAMPTON HILLS, SECTION 2, AREA 1, OPEN SPACE LOT 58 & LONG GATE, SECTION 1, AREA 3, OPEN SPACE LOT 105
STORMWATER MANAGEMENT RETROFIT CAPITAL PROJECT #D-1141-D-1158

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
675 COLUMBIA GATEWAY DRIVE, 5TH FLOOR, COLUMBIA, MARYLAND 21046
WHICHFIELD (410) 393-6417
ELECTRONIC DISTRICT NO. 2, HOWARD COUNTY, MD
PO BOX 2830 BALTIMORE, MD 21202

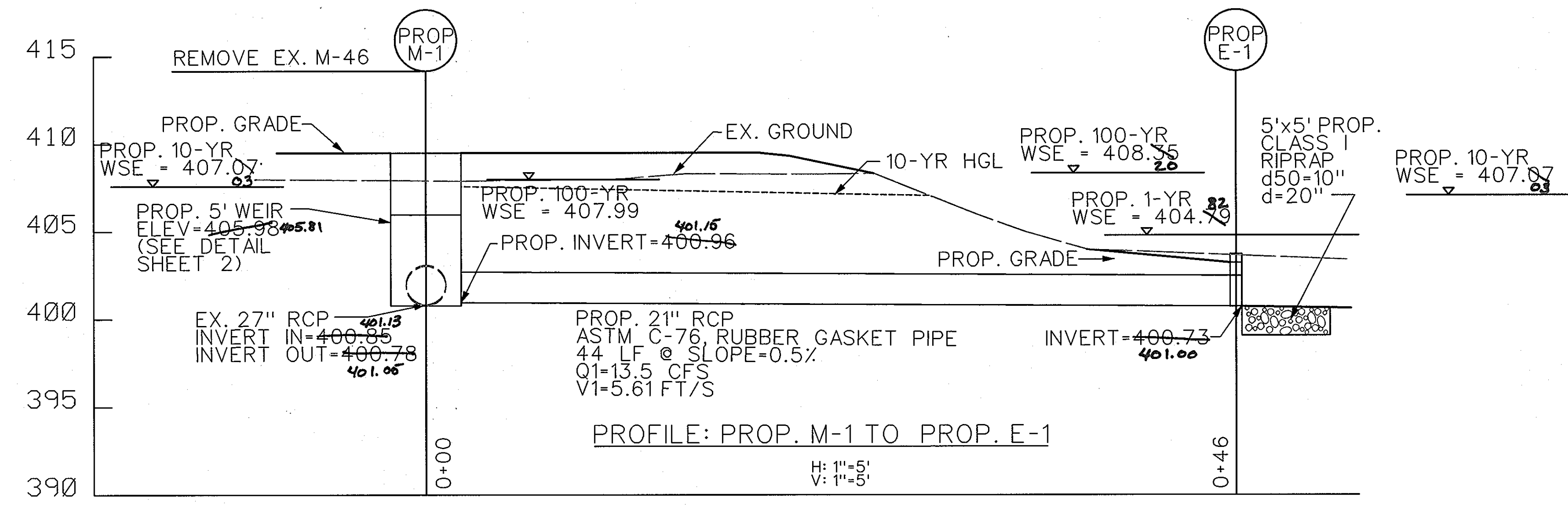
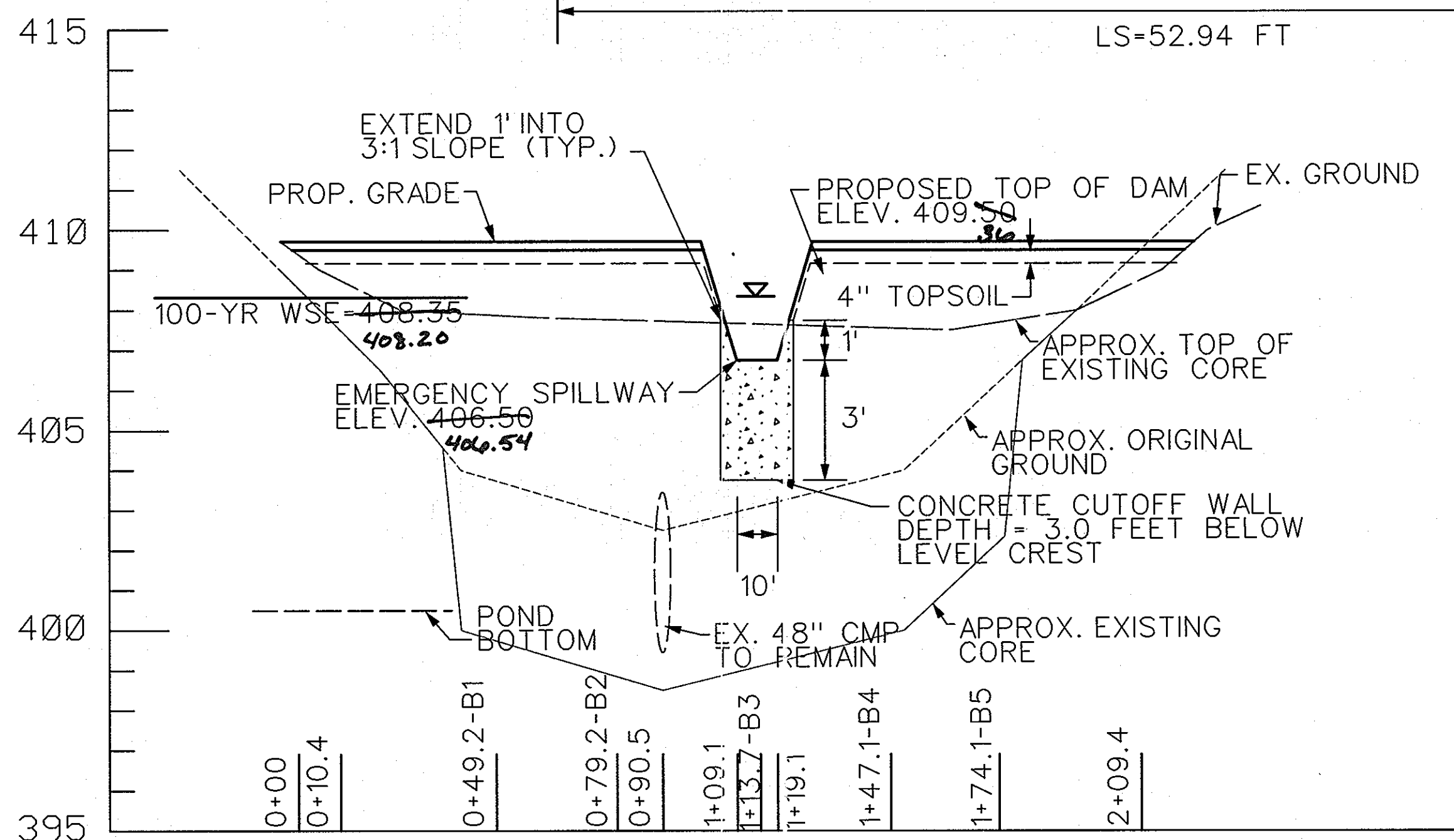
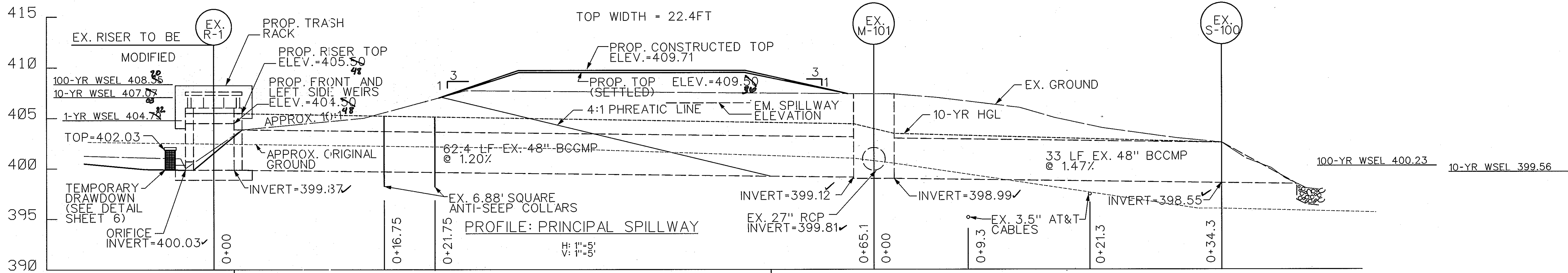
PLAT 55898A, TAX MAP 30, GRID 106, PARCEL 3000A, ZONING RESRCC, 404 ZONING RESC.
LONG GATE 18, LOT 58, PLAT 55898A, TAX MAP 30, GRID 6, PARCEL 604, ZONING RESC.
LONG GATE 12, LOT 14, PLAT 6881, TAX MAP 30, GRID 6, PARCEL 604, ZONING RESC.

PHASE I SITE DEVELOPMENT AND STORMWATER MANAGEMENT PLAN

SCALE: AS SHOWN
DATE: SEPTEMBER 2008
KCI JOB NO.: 01043223.03
CAPITAL PROJECT NO.: D-1158, D-1141
PERMIT ISSUE:
CONSTRUCTION ISSUE:

NOTE: FIELD SURVEY SUPPLEMENTED WITH HOWARD COUNTY AERIAL TOPOGRAPHY FOR CLARITY

SHEET NO.: 2 OF 16
SDP-08-019

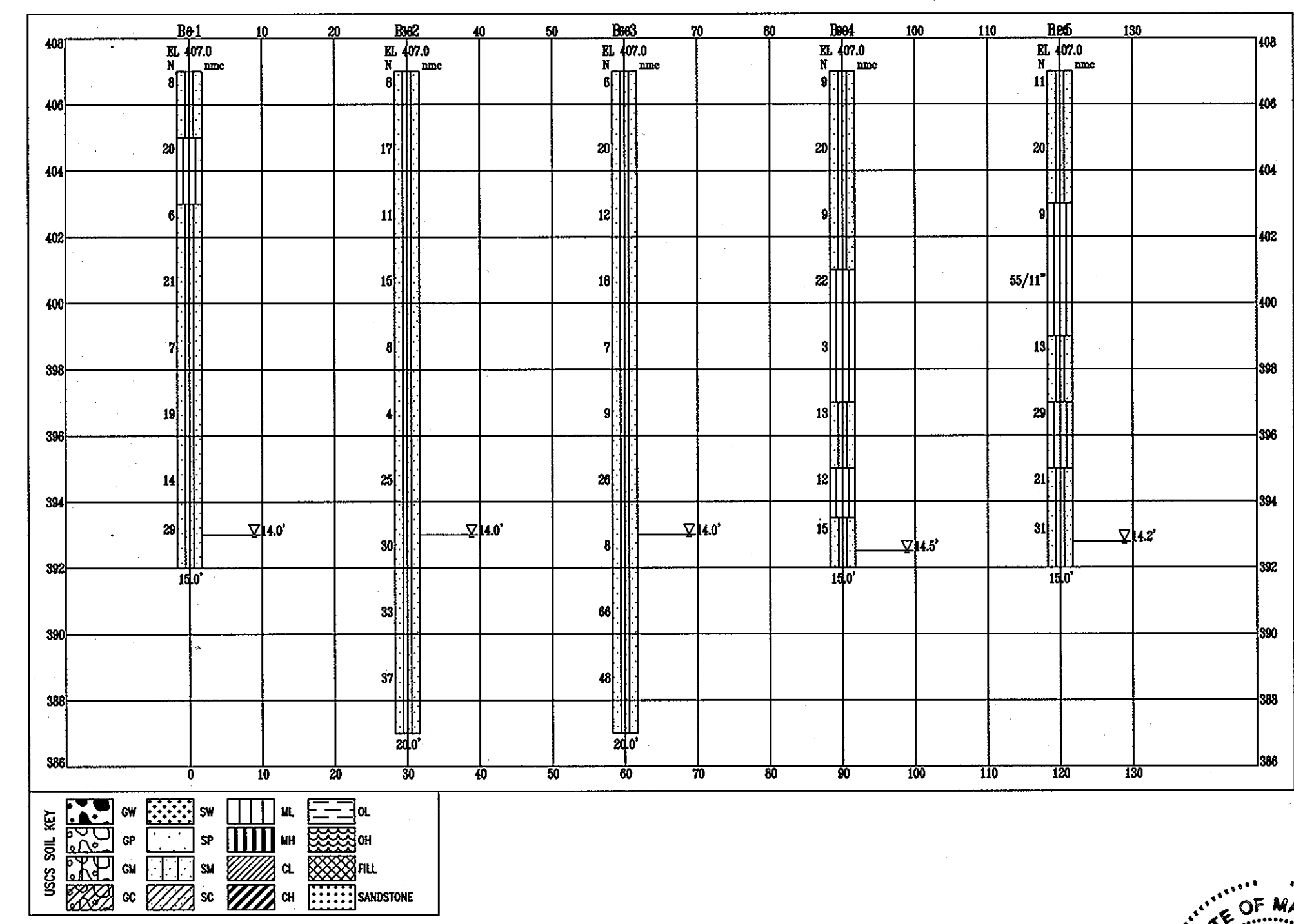
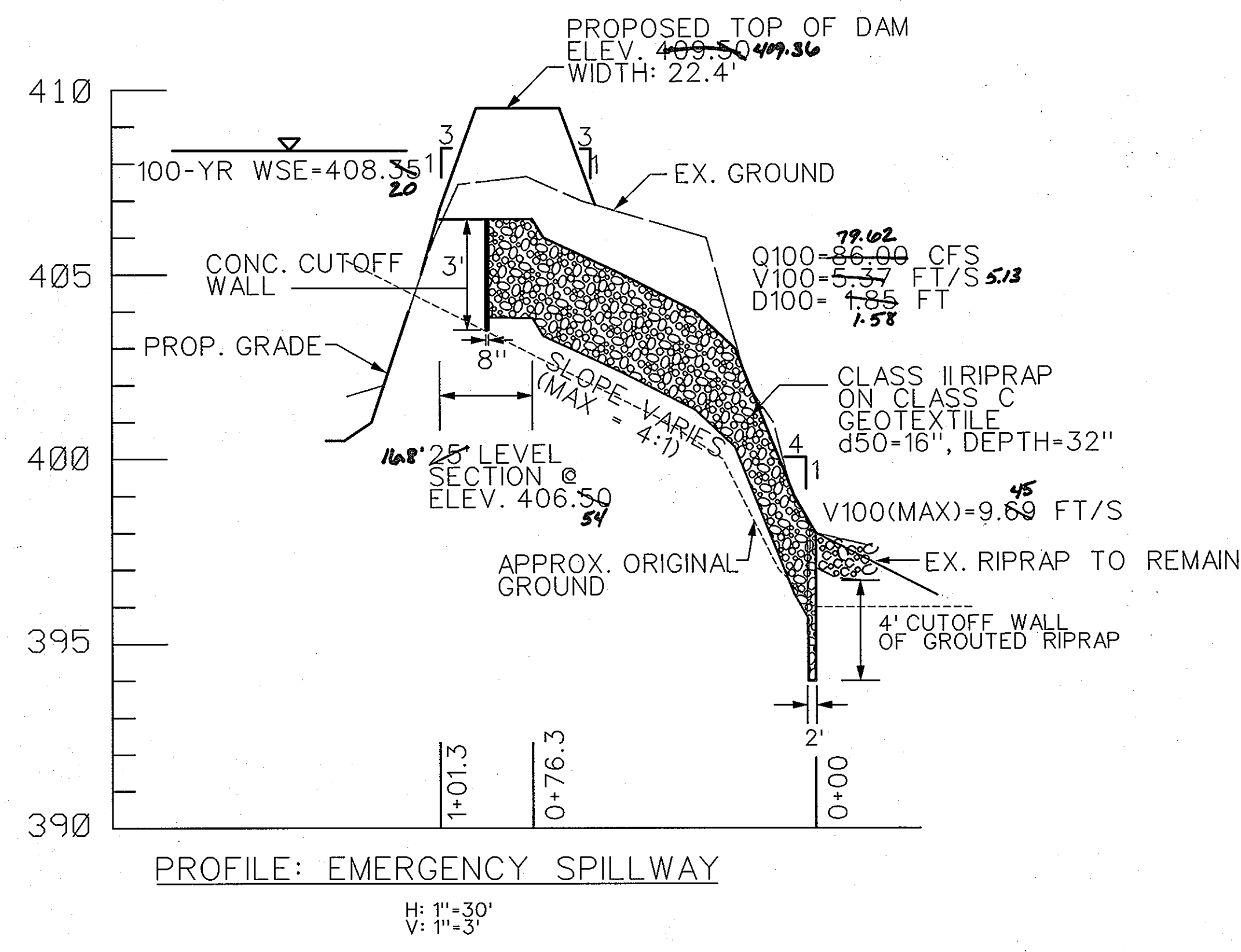


STRUCTURE TABLE

| NO. | TYPE | TOP ELEV. | NORTHING | EASTING |
|-----|-----------|-----------|----------|---------|
| M-1 | MOD-G5.11 | 409.50 | 574521 | 1366439 |
| E-1 | D-5.11 | 403.47 | 574502 | 1366481 |

PIPE SCHEDULE

| DIA. | LENGTH | TYPE |
|------|-----------|---------|
| 21" | 44' 45.1' | CL. III |
| 27" | 10' | CL. III |



APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 10/2/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION & DATE

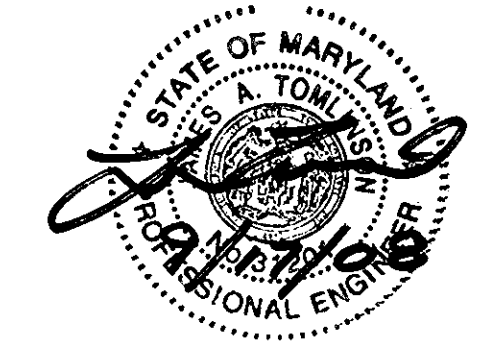
[Signature] 12/08
 CHIEF, DIVISION OF LAND DEVELOPMENT & DATE

[Signature] 1/7/09
 DIRECTOR, DEP. & DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD COUNTY CONSERVATION DISTRICT.

[Signature] 7/30/08
 HOWARD SCD DATE

"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. 121109, EXPIRATION DATE: 12/31/09"



NO. REVISIONS DESCRIPTION DATE

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|--------------------------------|------------|
| 1 | ADDED 'PHASE I' TO SHEET TITLE | SEPT. 2008 |
| 1 | ADDED 'PHASE I' TO TITLE BLOCK | SEPT. 2008 |
| 1 | UPDATED PAGE NUMBER | SEPT. 2008 |

10 NORTH PARK DRIVE
 HUNT VALLEY, MD 21030
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 FAX: (410) 316-7817
 WWW.KCI.COM

KCI
 TECHNOLOGIES

BRAMPTON HILLS, SECTION 2 AREA 1 OPEN SPACE LOT 58 & LONG GATE SECTION 1 AREA 3 OPEN SPACE LOT 105
 STORMWATER MANAGEMENT RETROFIT
 CAPITAL PROJECT #D-1141, D-1158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT DIVISION
 6751 COLUMBIA GATEWAY DRIVE, 5TH FLOOR, COLUMBIA, MARYLAND 21046

WHEATFIELD HOMEOWNERS ASSOCIATION
 P.O. BOX 2159 BALTIMORE, MD 21282
 ELECTION DISTRICT NO. 2, HOWARD COUNTY, MD
 PLAT 65688A
 ADJACENT LOTS: BRAMPTON HILLS 24, LOTS 24A-D, PLAT 5561, TAX MAP 30, GRID 42, PARCEL 380, ZONING R2C
 LONG GATE 10, LOT 65, PLAT 6994, TAX MAP 30, GRID 6, PARCEL 404, ZONING R2C
 LONG GATE 12, LOT 14, PLAT 6991, TAX MAP 30, GRID 6, PARCEL 404, ZONING R2C

PHASE I PROFILES AND DETAILS

SCALE: AS SHOWN

DATE: SEPTEMBER 2008

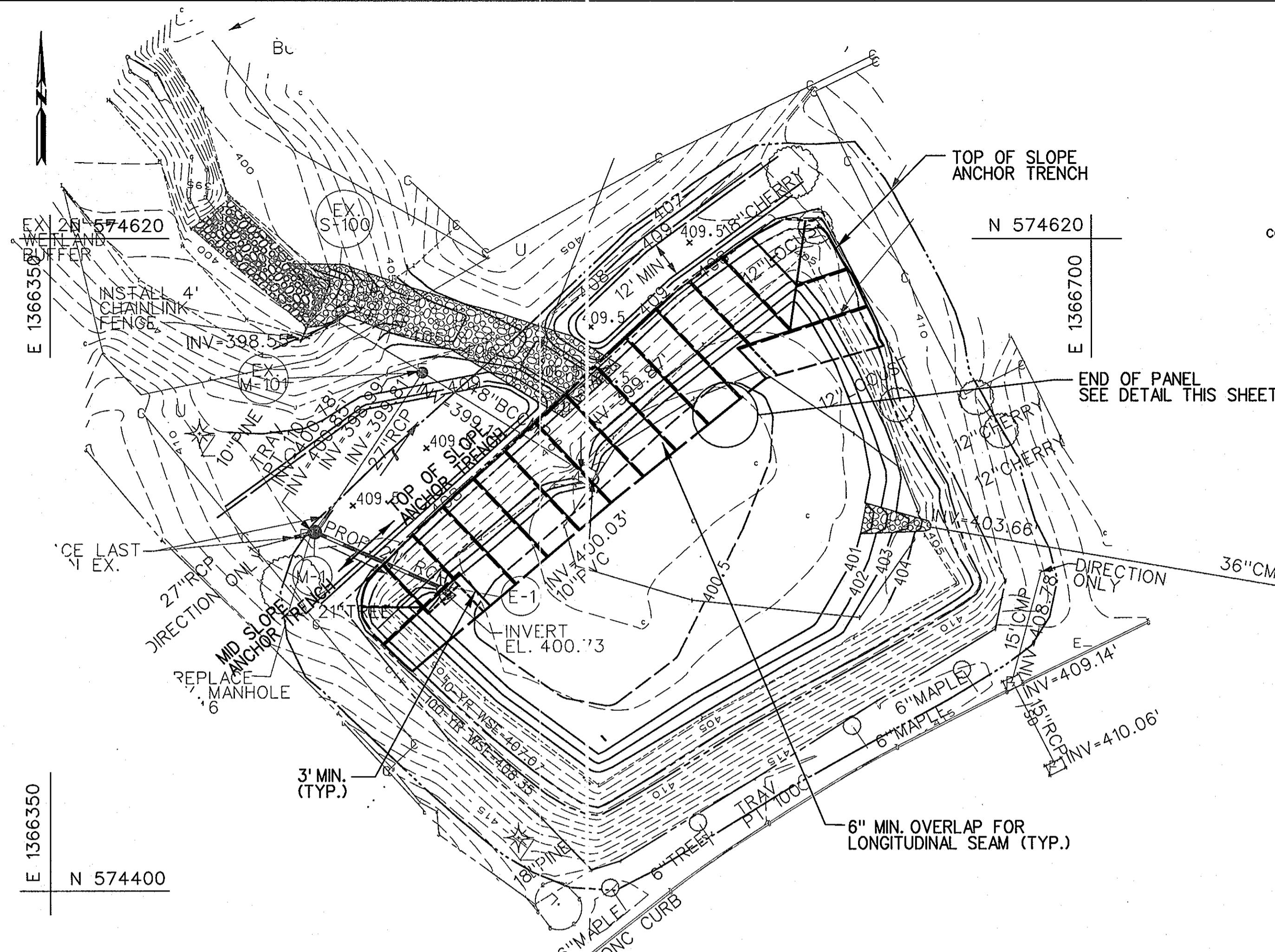
KCI JOB NO.: 01043223.03

CAPITAL PROJECT NO.: D-1158, D-1141

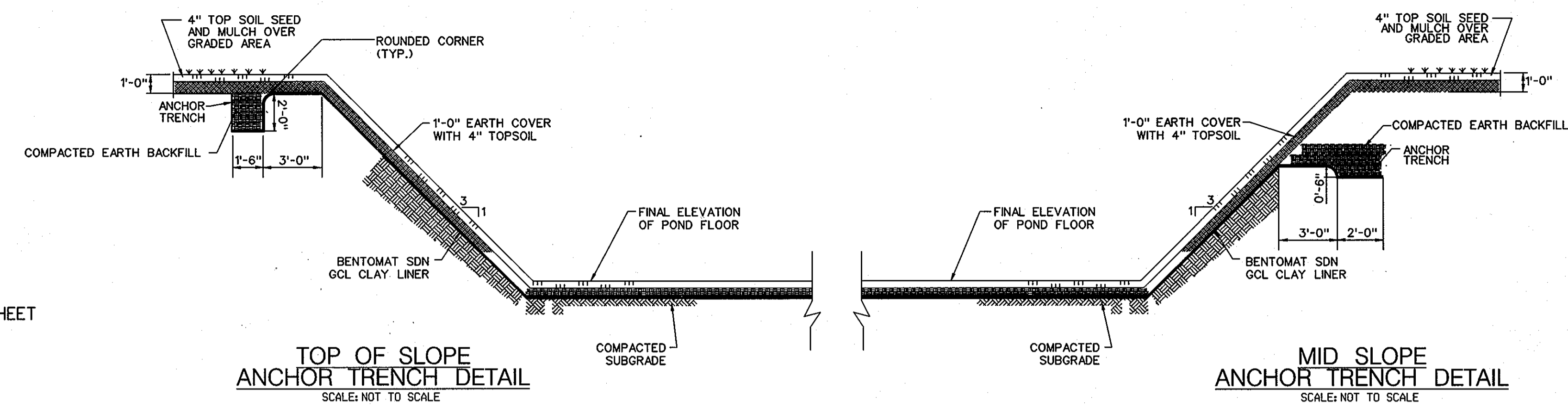
PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO. 3 OF 16
 SDP-08-019

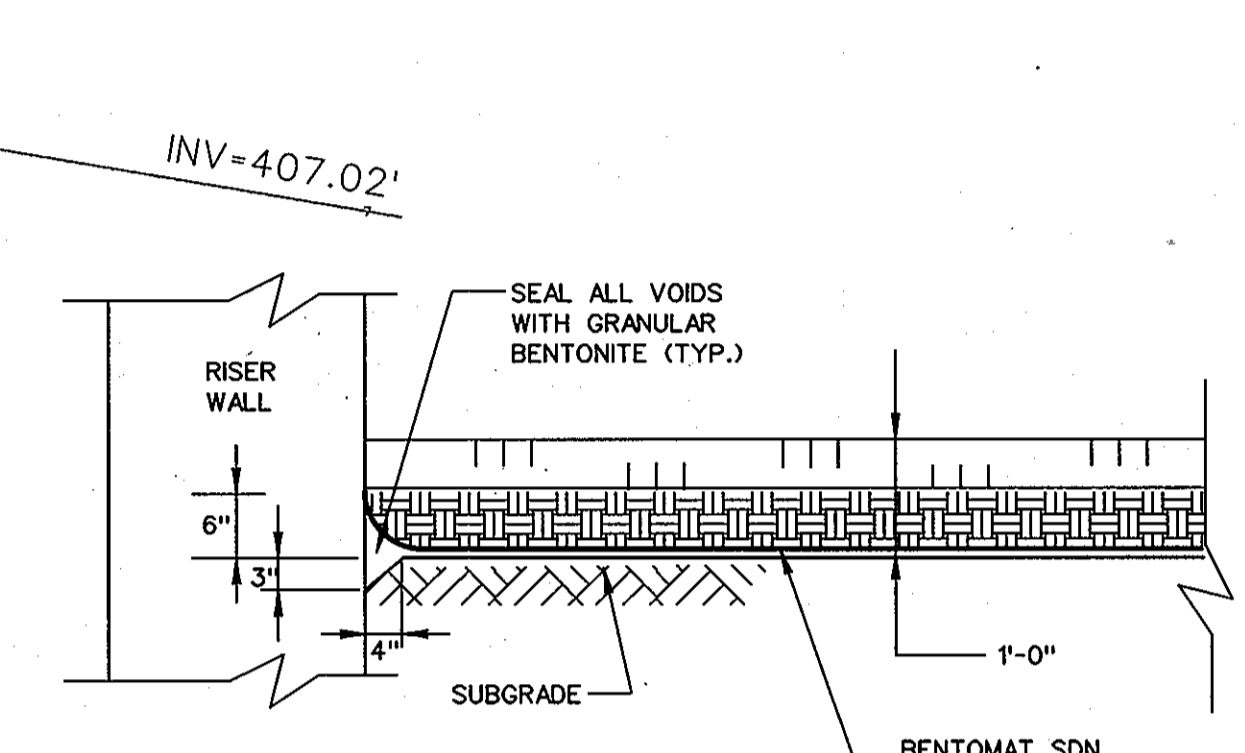


GCL SEAMING SCHEMATIC DETAIL
SCALE: 1" = 30'

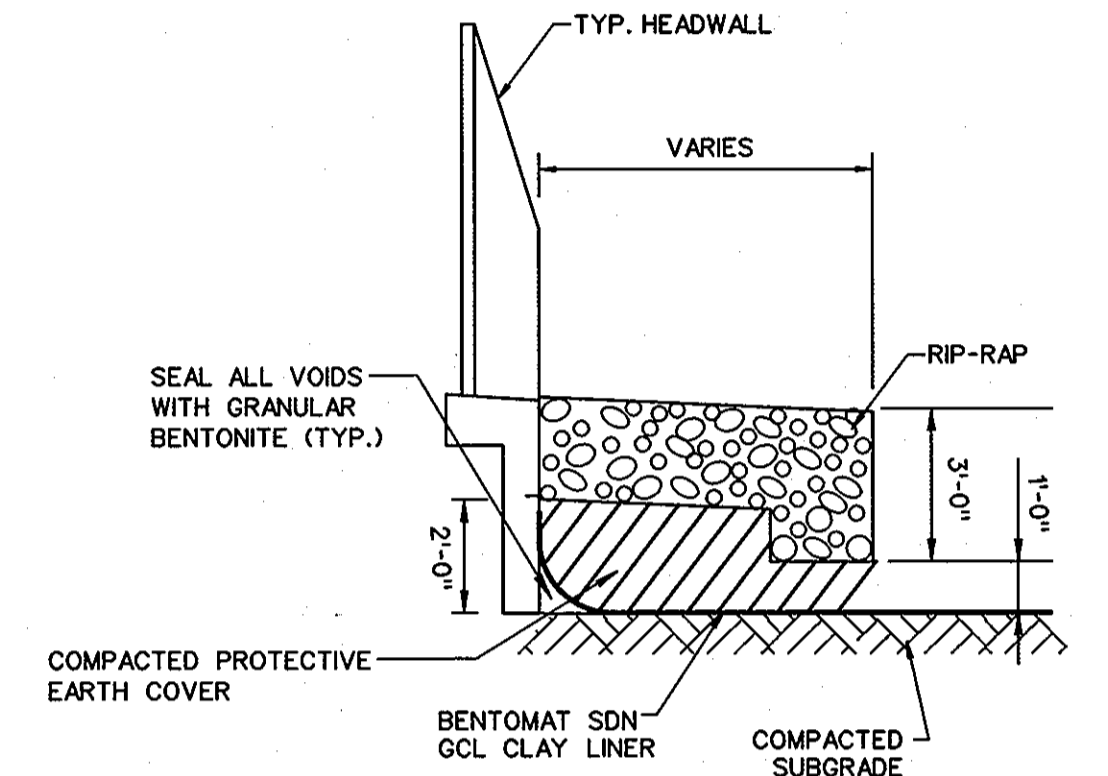


TOP OF SLOPE ANCHOR TRENCH DETAIL
SCALE: NOT TO SCALE

MID SLOPE ANCHOR TRENCH DETAIL
SCALE: NOT TO SCALE



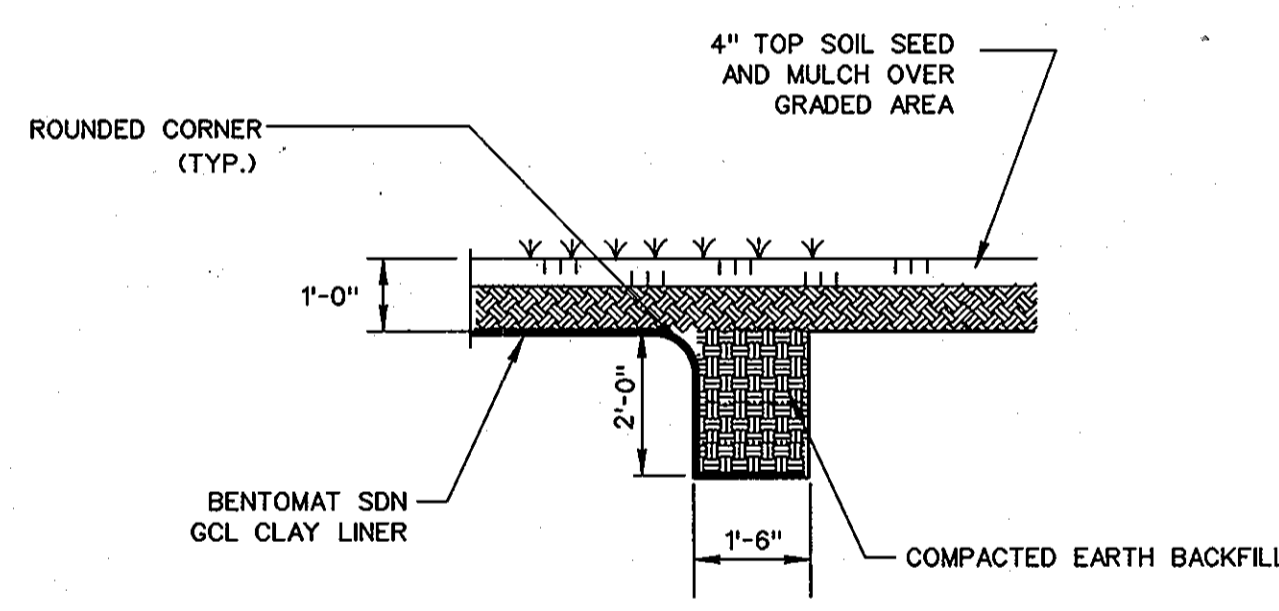
RISER STRUCTURE GCL PENETRATION DETAIL
SCALE: NOT TO SCALE



TYPICAL OUTFALL PROTECTION GCL DETAIL
SCALE: NOT TO SCALE

| OUTFALL PROTECTION | | | | | |
|--------------------|-------|--------|-------|-------|-----|
| PIPE DIA. | TYPE | LENGTH | WIDTH | DEPTH | D50 |
| 24" | CL. I | 5' | 5' | 19" | 10" |
| 36" | CL. I | 22' | 10' | 19" | 10" |

ALL OUTFALL PROTECTION SHALL BE PLACED ON CLASS C GEOTEXTILE



END OF PANEL DETAIL
SCALE: NOT TO SCALE

- NOTES:**
- SEAMS AT THE ENDS OF THE PANELS SHOULD BE CONSTRUCTED SUCH THAT THEY ARE SHINGLED IN THE DIRECTION OF THE GRADE TO PREVENT THE POTENTIAL FOR RUNOFF FLOW TO ENTER THE OVERLAP ZONE. END PANEL SEAMS ARE NOT PERMITTED ON SLOPES.
 - THE END OF ALL SEAMS SHALL BE A MINIMUM OF 3' FROM THE TOE OF SLOPE.

- NOTES:**
- SUBGRADE SURFACE SHALL BE SMOOTH AND FREE OF VEGETATION, SHARP EDGED ROCKS, STONES, STICKS, CONSTRUCTION DEBRIS AND OTHER FOREIGN MATTER THAT COULD DAMAGE THE GCL. THE SUBGRADE SURFACE SHALL BE ROLLED WITH A SMOOTH-DRUM COMPACTOR TO REMOVE ANY WHEEL RUTS, FOOTPRINTS OR OTHER ABRUPT GRADE CHANGES. SUBGRADE SURFACE SHALL BE APPROVED BY THE ENGINEER PRIOR TO GCL INSTALLATION.
 - GCL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. EQUIPMENT WHICH CAN DAMAGE THE GCL SHALL NOT BE ALLOWED TO TRAVEL DIRECTLY ON IT. THE GCL SHALL BE PLACED SO THAT SEAMS ARE PARALLEL TO THE DIRECTION OF THE SLOPE. THE GCL SHALL NOT BE LEFT UNCOVERED OVERNIGHT.
 - COVER SOILS SHALL CONSIST OF A COHESIVE MATERIAL (SC, CL, OR SIMILAR) FREE OF ANGULAR STONES OR OTHER FOREIGN MATTER THAT COULD DAMAGE THE GCL. COVER SOILS SHALL BE APPROVED BY THE ENGINEER.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

William Donnan 10/2/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

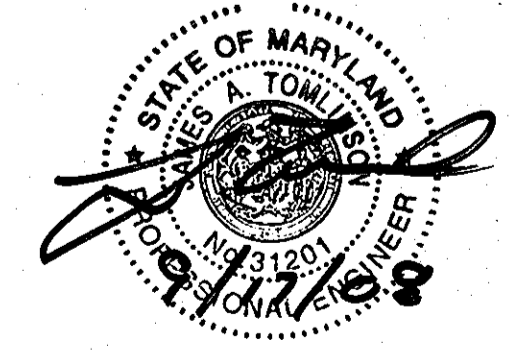
Cindy Kiser 12/09
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Dennis E. Siedel 1/6/09
DIRECTOR, DEP. DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

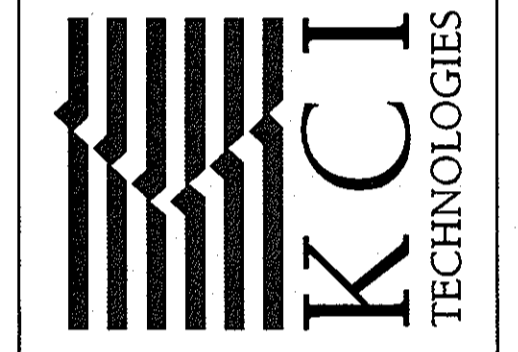
[Signature] 9/30/08
HOWARD SOIL CONSERVATION DISTRICT INSTE

"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. 11201 EXPIRATION DATE: 1/29/09"



| NO. | REVISIONS DESCRIPTION | DATE |
|-----|--------------------------------|------------|
| 1 | ADDED 'PHASE I' TO SHEET TITLE | SEPT. 2010 |
| 1 | ADDED 'D-1158' TO TITLE BLOCK | SEPT. 2010 |
| 1 | UPDATED PAGE NUMBER | SEPT. 2010 |

10 NORTH PARK DRIVE
HUNT VALLEY, MD 21030
PHONE: (410) 316-7800
FAX: (410) 316-7817
WWW.KCI.COM



BRAMPTON HILLS, SECTION 2, AREA 1, OPEN SPACE LOT 58 & LONG GATE, SECTION 1, AREA 3, OPEN SPACE LOT 105
STORMWATER MANAGEMENT RETROFIT CAPITAL PROJECT #D-1141, D-1158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE, 5TH FLOOR, COLUMBIA, MARYLAND 21046
(410) 330-4417
WATERWAYS ASSOCIATION
P.O. BOX 2350 BALTIMORE, MD 21202
ELECTION DISTRICT NO. 2, HOWARD COUNTY, MD
PLAT 559698A, TAX MAP 30, GRID 126, PARCEL 10642, ZONING R005C
LONG GATE, 1/2 LOT 14, PLAT 6984, TAX MAP 30, GRID 6, PARCEL 404, ZONING R005C
LONG GATE, 1/2 LOT 14, PLAT 6981, TAX MAP 30, GRID 6, PARCEL 404, ZONING R005C

**PHASE I
GCL SEAMING AND
ANCHOR TRENCH
DETAILS**

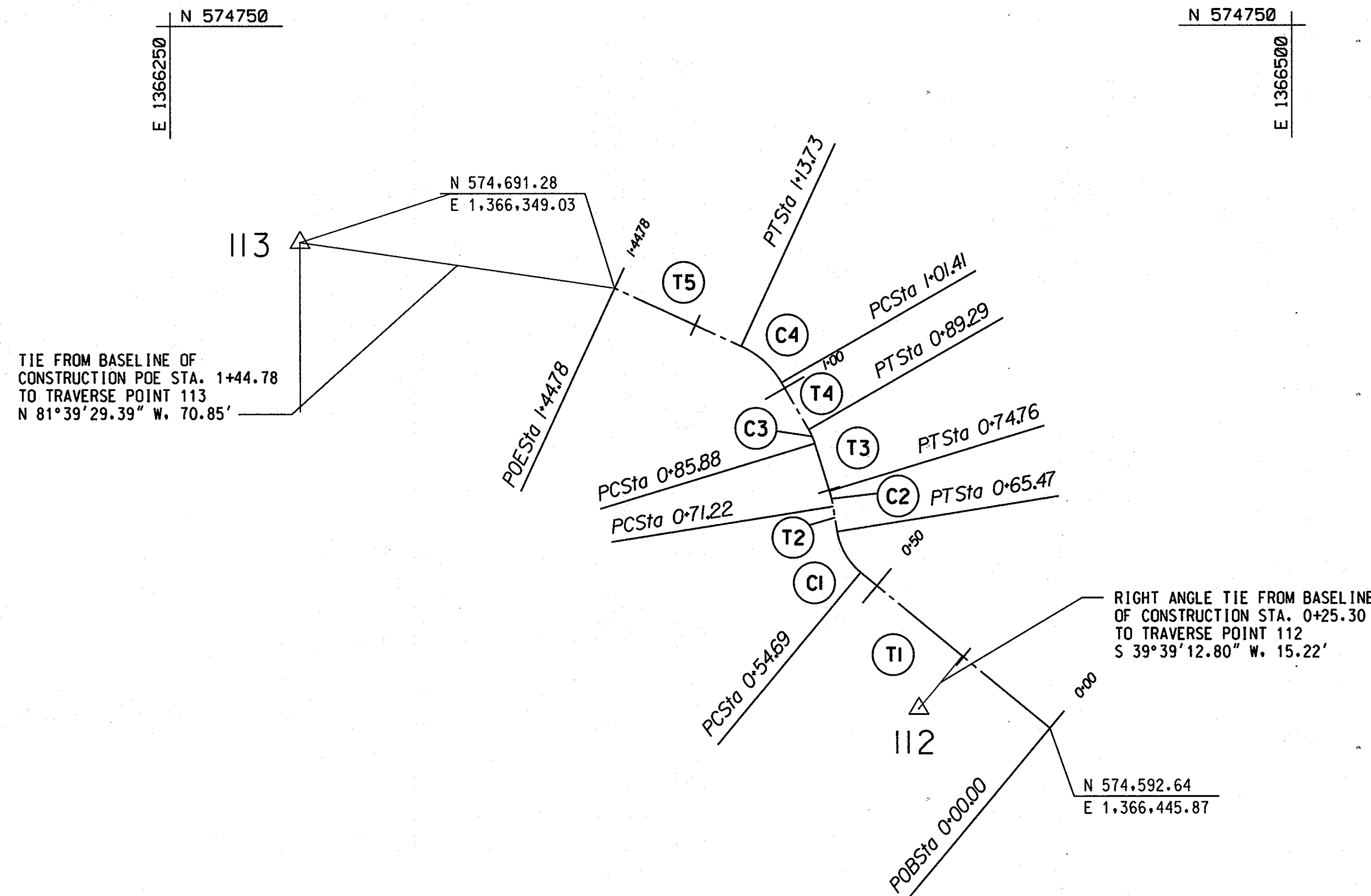
SCALE: 1" = 30'
DATE: SEPTEMBER 2008
KCI JOB NO.: 01043223.03
CAPITAL PROJECT NO.: D-1158, D-1141
PERMIT ISSUE:
CONSTRUCTION ISSUE:



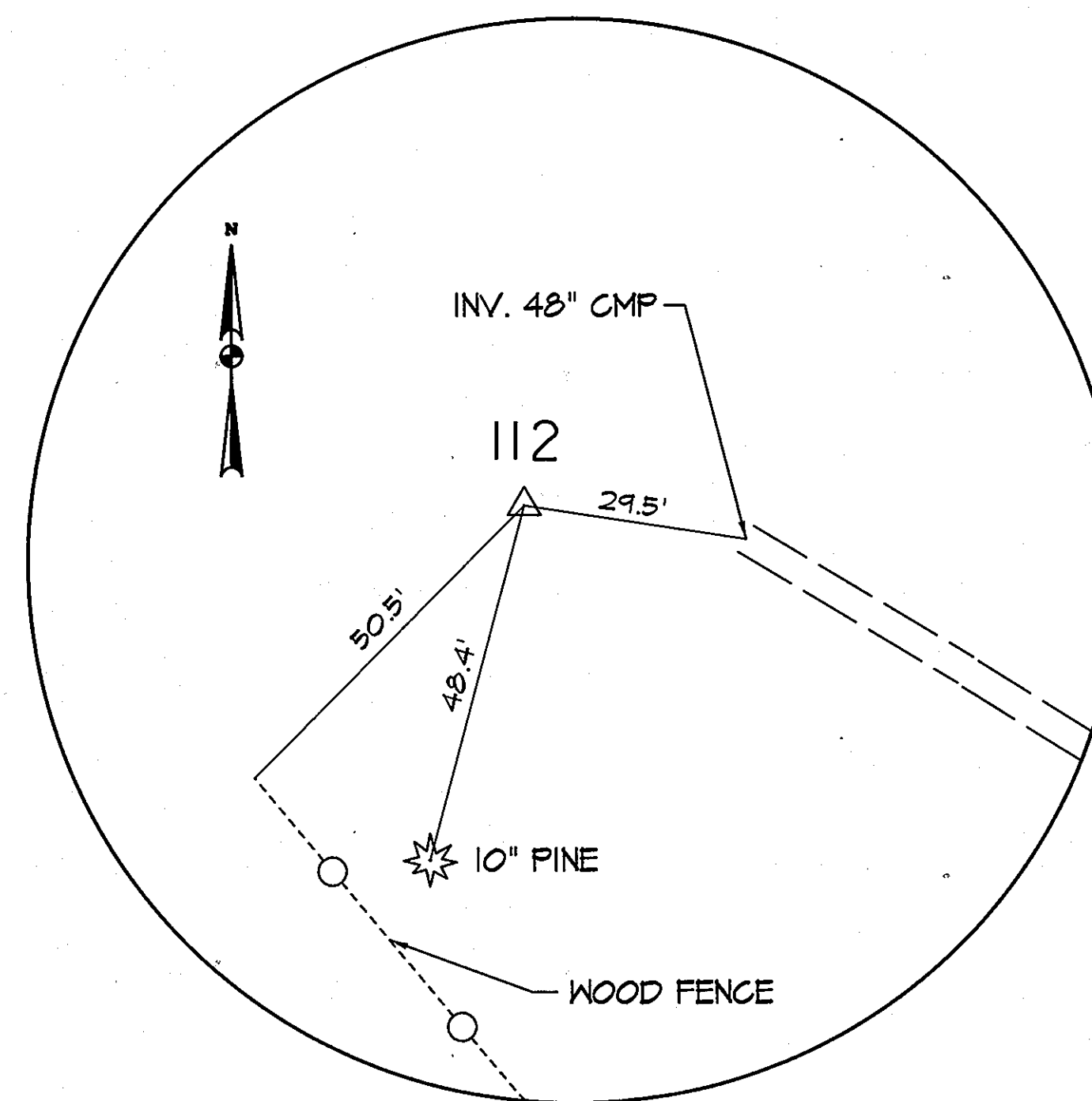
| CURVE DATA | | | | | |
|------------|--------|--------|--------------|---------|-------------------------|
| CURVE NO. | RADIUS | LENGTH | DELTA | TANGENT | CHORD BEARING |
| C1 | 15.00' | 10.78' | 41°11'30.11" | 5.64' | N 29°45'02.15" W 10.55' |
| C2 | 26.00' | 3.53' | 07°46'59.30" | 1.77' | N 13°02'46.74" W 3.53' |
| C3 | 15.00' | 3.41' | 13°00'44.10" | 1.71' | N 23°26'38.44" W 3.40' |
| C4 | 20.00' | 12.31' | 35°16'25.21" | 6.36' | N 47°35'13.10" W 12.12' |

| TANGENT DATA | | |
|--------------|------------------|----------|
| TANGENT NO. | BEARING | DISTANCE |
| T1 | N 50°20'47.20" W | 54.69' |
| T2 | N 09°09'17.09" W | 5.75' |
| T3 | N 16°56'16.39" W | 11.13' |
| T4 | N 29°57'00.49" W | 12.12' |
| T5 | N 65°13'25.70" W | 31.05' |

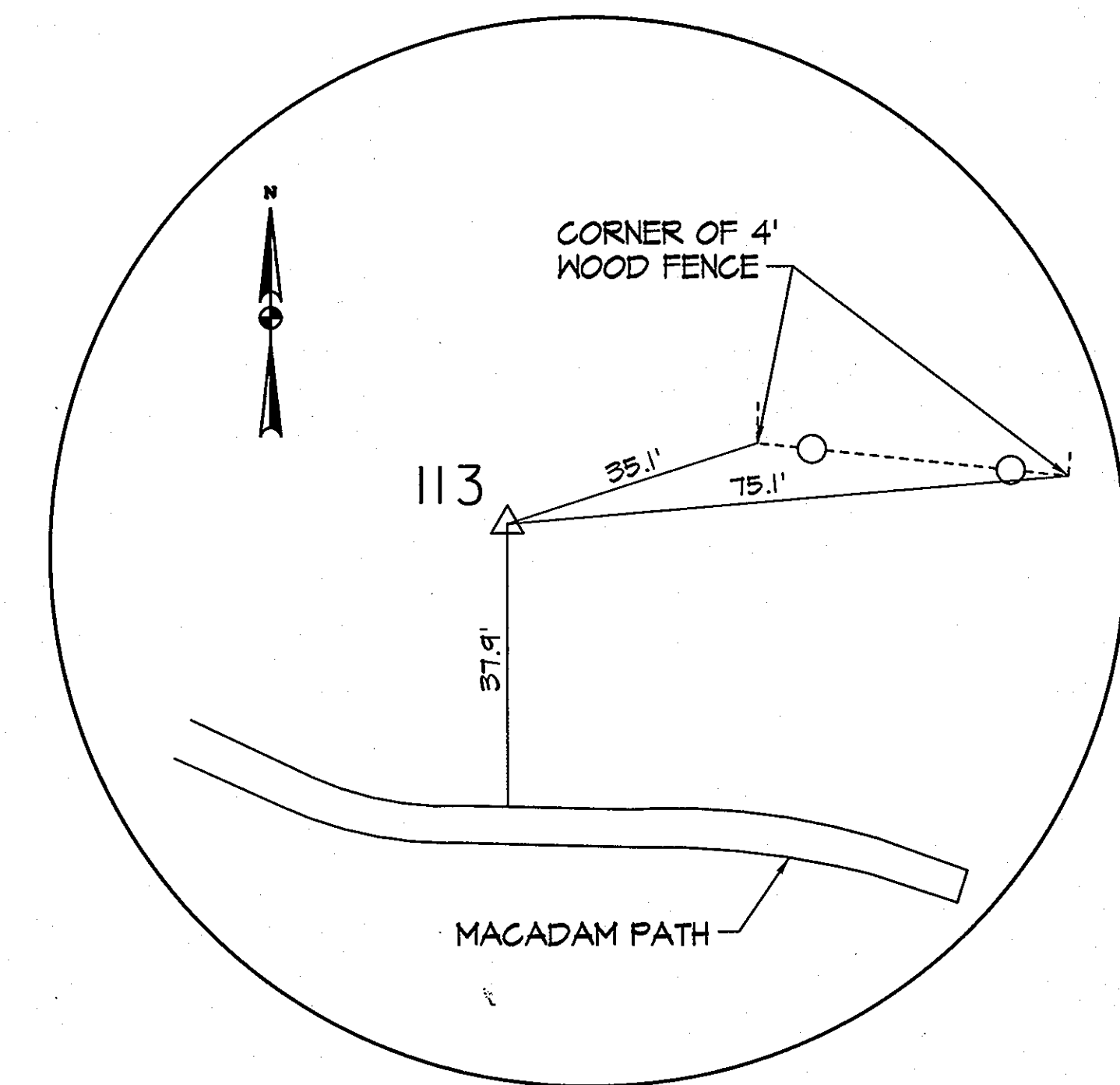
| TRAVERSE COORDINATE LIST | | | |
|--------------------------|--------------|----------------|-----------|
| PT # | NORTHING | EASTING | ELEVATION |
| 112 | N 574.597.07 | E 1.366.416.69 | 401.43 |
| 113 | N 574.701.56 | E 1.366.278.93 | 395.33 |



N 574500
E 1366250



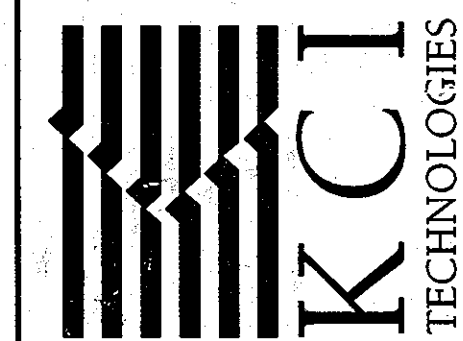
TRAVERSE POINT 112
60 PENNY NAIL
1" = 20'



TRAVERSE POINT 113
60 PENNY NAIL
1" = 20'

| NO. | REVISIONS DESCRIPTION | DATE | |
|-----|-----------------------|--------------|-----------|
| | | ENTIRE SHEET | SEPT 2010 |
| 1 | | | |

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com



BRAMPTON HILLS SECTION 2 AREA 1 OPEN SPACE LOT 88 & LONG GATE SECTION 1 AREA 3 OPEN SPACE LOT 105
S CAPITAL PROJECT #D-1141, #D-1168
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
8870 COLUMBIA BATTERY AVE., COLUMBIA, MD 21046
UNAPPORTIONED INTERESTS ASSOCIATION
1900 BEECHWOOD BOWLING AVE. #202B
ELECTON DISTRICT NO. 2, HOWARD COUNTY, MD
PROFESSIONAL ENGINEER
STATE OF MARYLAND
LONG GATE 105 LOT 88, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

PHASE II
GEOMETRY
SHEET

SCALE: 1" = 20'
DATE: SEPTEMBER, 2010
KCI JOB NO.: 01-081795.15
CAPITAL PROJECT NO.: D1158, D1141
PERMIT ISSUE:
CONSTRUCTION ISSUE:

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Alma Vasson 10/5/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Katsuhiko 10/16/10
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Morgan S. Suttle 10/19/10
DIRECTOR DATE

STATE OF MARYLAND
ALMA VASSON
PROFESSIONAL ENGINEER
NO. 91290
EXPIRES 12/31/11

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. 31501 EXPIRATION DATE: JANUARY 24, 2011

PLOTTED: 10:33 PM on Friday, August 27, 2010
BY: Ashley, Filmer, P550, Netural Res GMA Emp
FILE: M:\2008\01081795.15\Drawings\SDP01.dwg



SPECIAL CONTRACTOR NOTES

- 100-YEAR FLOODPLAIN ELEVATION IS SHOWN ON THE PLANS.
- NO STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR FLOODPLAIN.
- CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
- UPON COMPLETION OF THE WORK, BUT PRIOR TO DEMOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
- ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER. TREE STUMPS MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS.
- REMOVED TREES AND BRUSH SHALL BE REMOVED FROM THE SITE.

RIFLE GRADE CONTROL SCHEDULE

| FROM STATION | TO STATION | LENGTH |
|--------------|------------|--------|
| 0+61 | 0+75 | 14' |
| 0+93 | 1+00 | 7' |
| 1+18 | 1+36 | 18' |

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

STONE TOE PROTECTION SCHEDULE

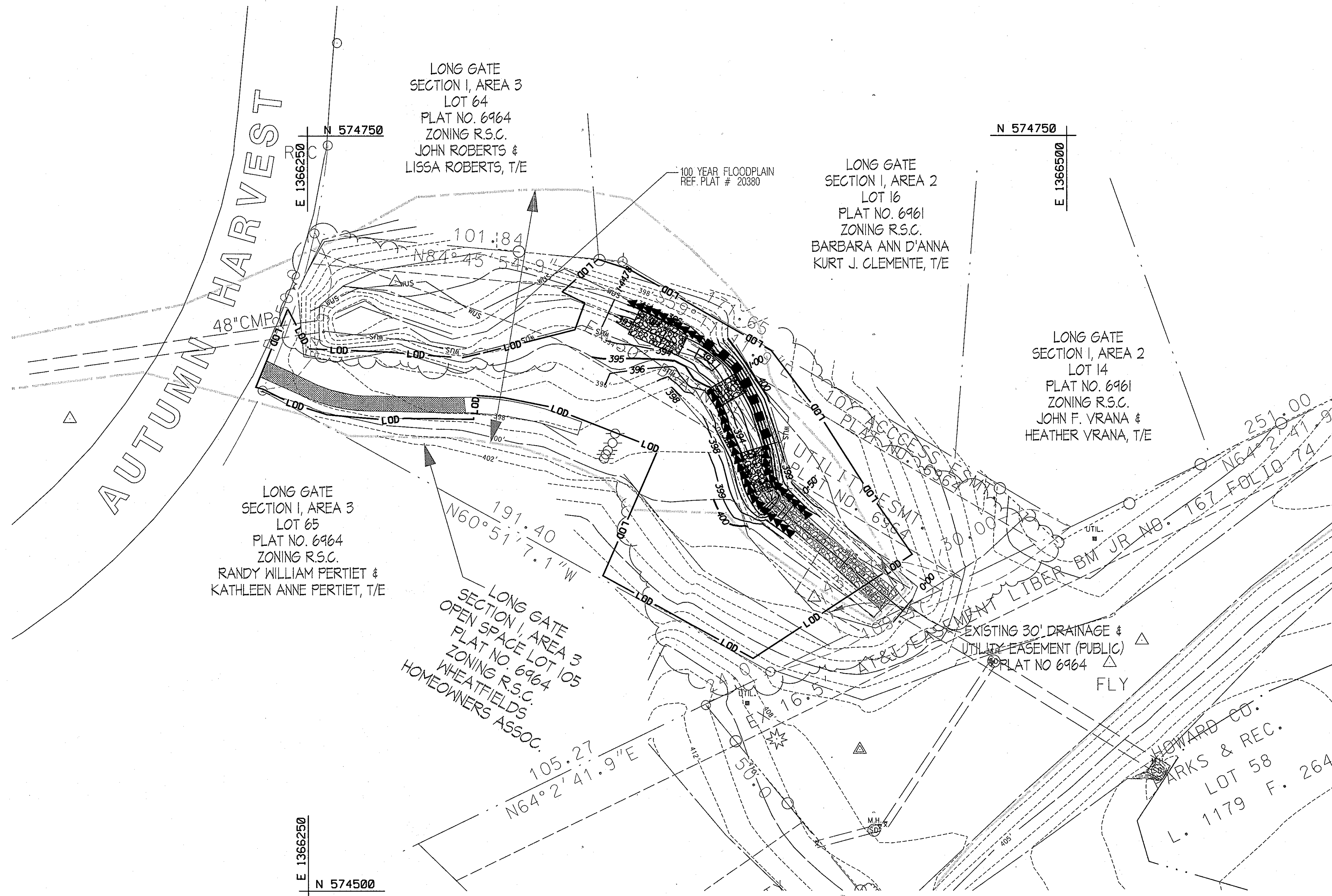
| FROM STATION | TO STATION | OFFSET* |
|--------------|------------|---------|
| 0+44 | 0+75 | R |
| 0+44 | 1+00 | L |
| 1+14 | 1+40 | R |

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

IMBRICATED BANK PROTECTION SCHEDULE

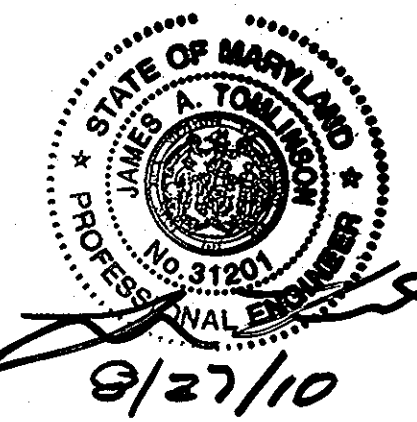
| FROM STATION | TO STATION | OFFSET* |
|--------------|------------|---------|
| 0+75 | 1+14 | R |

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION



LEGEND

| | | |
|----------------------------|-----------|-----|
| LIMIT OF DISTURBANCE | --- | LOD |
| EXISTING MAJOR CONTOURS | ----- | 387 |
| EXISTING MINOR CONTOURS | ----- | |
| EXISTING FENCE | —○— | |
| IMBRICATED BANK PROTECTION | ■ ■ ■ ■ ■ | |
| STONE TOE PROTECTION | ▶▶▶▶▶ | |
| WATERS OF THE US | —WUS— | |
| PROPERTY LINE | ----- | |
| RIFLE GRADE CONTROL | ----- | |
| 100 YEAR FLOODPLAIN | ----- | |



APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 10/15/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/19/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/19/10
 DIRECTOR DATE

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. 31201 EXPIRATION DATE: JANUARY 24, 2011

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|-----------------------|-----------|
| 1 | ENTIRE SHEET | SEPT 2010 |

936 RIDGEBROOK ROAD
 SPARKS, MARYLAND 21152
 TELEPHONE: (410) 316-7800
 FAX: (410) 316-7818
 www.kci.com



BRAMPTON HILLS SECTION 2, AREA 1, OPEN SPACE LOT 58 & LONG GATE SECTION 1, AREA 3, OPEN SPACE LOT 105
 STONE TOE PROTECTION PROJECT #D-1141, #D-1158
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
 1ST FLOOR, 1000 EAST COLUMBIA AVENUE, COLUMBIA, MD 21046
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
 1ST FLOOR, 1000 EAST COLUMBIA AVENUE, COLUMBIA, MD 21046
 ADJACENT LOTS: PLAT 6966 (A) MAP 30, 3000 USE HAZEL, HOWARD COUNTY, MARYLAND, ZONING R.S.C. 388, ZONING R.S.C. 389, ZONING R.S.C. 390, ZONING R.S.C. 391, ZONING R.S.C. 392, ZONING R.S.C. 393, ZONING R.S.C. 394, ZONING R.S.C. 395, ZONING R.S.C. 396, ZONING R.S.C. 397, ZONING R.S.C. 398, ZONING R.S.C. 399, ZONING R.S.C. 400, ZONING R.S.C. 401, ZONING R.S.C. 402, ZONING R.S.C. 403, ZONING R.S.C. 404, ZONING R.S.C. 405, ZONING R.S.C. 406, ZONING R.S.C. 407, ZONING R.S.C. 408, ZONING R.S.C. 409, ZONING R.S.C. 410, ZONING R.S.C. 411, ZONING R.S.C. 412, ZONING R.S.C. 413, ZONING R.S.C. 414, ZONING R.S.C. 415, ZONING R.S.C. 416, ZONING R.S.C. 417, ZONING R.S.C. 418, ZONING R.S.C. 419, ZONING R.S.C. 420, ZONING R.S.C. 421, ZONING R.S.C. 422, ZONING R.S.C. 423, ZONING R.S.C. 424, ZONING R.S.C. 425, ZONING R.S.C. 426, ZONING R.S.C. 427, ZONING R.S.C. 428, ZONING R.S.C. 429, ZONING R.S.C. 430, ZONING R.S.C. 431, ZONING R.S.C. 432, ZONING R.S.C. 433, ZONING R.S.C. 434, ZONING R.S.C. 435, ZONING 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R.S.C. 1063, ZONING R.S.C. 1064, ZONING R.S.C. 1065, ZONING R.S.C. 1066, ZONING R.S.C. 1067, ZONING R.S.C. 1068, ZONING R.S.C. 1069, ZONING R.S.C. 1070, ZONING R.S.C. 1071, ZONING R.S.C. 1072, ZONING R.S.C. 1073, ZONING R.S.C. 1074, ZONING R.S.C. 1075, ZONING R.S.C. 1076, ZONING R.S.C. 1077, ZONING R.S.C. 1078, ZONING R.S.C. 1079, ZONING R.S.C. 1080, ZONING R.S.C. 1081, ZONING R.S.C. 1082, ZONING R.S.C. 1083, ZONING R.S.C. 1084, ZONING R.S.C. 1085, ZONING R.S.C. 1086, ZONING R.S.C. 1087, ZONING R.S.C. 1088, ZONING R.S.C. 1089, ZONING R.S.C. 1090, ZONING R.S.C. 1091, ZONING R.S.C. 1092, ZONING R.S.C. 1093, ZONING R.S.C. 1094, ZONING R.S.C. 1095, ZONING R.S.C. 1096, ZONING R.S.C. 1097, ZONING R.S.C. 1098, ZONING R.S.C. 1099, ZONING R.S.C. 1100, ZONING R.S.C. 1101, ZONING R.S.C. 1102, ZONING R.S.C. 1103, ZONING R.S.C. 1104, ZONING R.S.C. 1105, ZONING R.S.C. 1106, ZONING R.S.C. 1107, ZONING R.S.C. 1108, ZONING R.S.C. 1109, ZONING R.S.C. 1110, ZONING R.S.C. 1111, ZONING R.S.C. 1112, ZONING R.S.C. 1113, ZONING R.S.C. 1114, ZONING R.S.C. 1115, ZONING R.S.C. 1116, ZONING R.S.C. 1117, ZONING R.S.C. 1118, ZONING R.S.C. 1119, ZONING R.S.C. 1120, ZONING R.S.C. 1121, ZONING R.S.C. 1122, ZONING R.S.C. 1123, ZONING R.S.C. 1124, ZONING R.S.C. 1125, ZONING R.S.C. 1126, ZONING R.S.C. 1127, ZONING R.S.C. 1128, ZONING R.S.C. 1129, ZONING R.S.C. 1130, ZONING R.S.C. 1131, ZONING R.S.C. 1132, ZONING R.S.C. 1133, ZONING R.S.C. 1134, ZONING R.S.C. 1135, ZONING R.S.C. 1136, ZONING R.S.C. 1137, ZONING R.S.C. 1138, ZONING R.S.C. 1139, ZONING R.S.C. 1140, ZONING R.S.C. 1141, ZONING R.S.C. 1142, ZONING R.S.C. 1143, ZONING R.S.C. 1144, ZONING R.S.C. 1145, ZONING R.S.C. 1146, ZONING R.S.C. 1147, ZONING R.S.C. 1148, ZONING R.S.C. 1149, ZONING R.S.C. 1150, ZONING R.S.C. 1151, ZONING R.S.C. 1152, ZONING R.S.C. 1153, ZONING R.S.C. 1154, ZONING R.S.C. 1155, ZONING R.S.C. 1156, ZONING R.S.C. 1157, ZONING R.S.C. 1158, ZONING R.S.C. 1159, ZONING R.S.C. 1160, ZONING R.S.C. 1161, ZONING R.S.C. 1162, ZONING R.S.C. 1163, ZONING R.S.C. 1164, ZONING R.S.C. 1165, ZONING R.S.C. 1166, ZONING R.S.C. 1167, ZONING R.S.C. 1168, ZONING R.S.C. 1169, ZONING R.S.C. 1170, ZONING R.S.C. 1171, ZONING R.S.C. 1172, ZONING R.S.C. 1173, ZONING R.S.C. 1174, ZONING R.S.C. 1175, ZONING R.S.C. 1176, ZONING R.S.C. 1177, ZONING R.S.C. 1178, ZONING R.S.C. 1179, ZONING R.S.C. 1180, ZONING R.S.C. 1181, ZONING R.S.C. 1182, ZONING R.S.C. 1183, ZONING R.S.C. 1184, ZONING R.S.C. 1185, ZONING R.S.C. 1186, Z

CONSTRUCTION SPECIFICATIONS - MARYLAND CODE 37B POND - JANUARY 2000

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD PRACTICE MD-37B. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION
AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT AND STRUCTURAL WORKS SHALL BE CLEARED AND STUMPED TO TOP. ALL TREES, BRUSH, ROOTS AND OTHER OBSTRUCTIONAL MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHOULDER AREAS SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBER AND OTHER OBSTRUCTIONAL MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE FOR DRY STORMWATER MANAGEMENT PONDS. MINIMUM A 25-FOOT BUFFER AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL
MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, BRUSH, RUBBER, STYRENE FOAM, RUBBER, RUBBER, RUBBER AND OTHER OBSTRUCTIONAL MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT SHALL BE TAKEN FROM THE CENTER OF THE BORROW AREA. SOIL SHALL BE AT LEAST 30% SAND AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. THE FILL MATERIAL SHALL BE COMPACTED TO THE REQUIRED DENSITY AND PLACEMENT SHALL BE TO BE DETERMINED BY AASHTO METHOD T-99. THE FILL MATERIAL SHALL BE COMPACTED TO THE REQUIRED DENSITY AND PLACEMENT SHALL BE TO BE DETERMINED BY AASHTO METHOD T-99.

PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE GRADED PRIOR TO PLACEMENT OF FILL. MATERIAL SHALL BE PLACED IN MAXIMUM 8 INCH THICK LAYERS (BEFORE COMPACTION LAYERS) AND BE CONTINUED OVER THE ENTIRE LENGTH OF THE FILL. THE MOST FERTILE BORROW MATERIAL SHALL BE PLACED IN THE DOWN-SLOPE PORTION OF THE FILL. THE FILL MATERIAL SHALL BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVELLED BY NOT LESS THAN ONE TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT RUBBER TYRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DENSITY OF COMPACTION CAN BE OBTAINED. THE PRINCIPLE USED, THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT FILL MATERIAL WILL CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

CUT OFF TRENCH - THE CUT OFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION WITH THE TRENCH SIDES TO BE AT LEAST 1:1. THE TRENCH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

EMBANKMENT CORE - THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE CORE SHALL BE 1:1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL
BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE AT NO TIME DURING THE BACKFILLING OPERATION. THE FILL SHALL BE PLACED TO OPERATE CLOSER THAN FOUR FEET MEASURED HORIZONTALLY TO ANY PART OF A STRUCTURE UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A MINIMUM 28 DAY UNCOMPACTED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTANCE OF 2000 PSI. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE OF FLOWABLE FILL SHALL BE UNDER (BEDDING) OVER AND ON THE SIDES OF THE PIPE. THE FILL SHALL EXTEND UP TO THE SPRING OR RISE OR TO THE CONDUIT. THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADJOINING WALLS SHALL BE TAKEN SAND BAGS, ETC. TO PREVENT FLOODING THE PIPE. WHEN USING FLOWABLE FILL ALL METAL PIPES SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL Voids ADJACENT TO THE FLOWABLE FILL AT NO TIME DURING THE BACKFILLING OPERATION. THE FILL SHALL BE PLACED TO OPERATE CLOSER THAN FOUR FEET MEASURED HORIZONTALLY TO ANY PART OF A STRUCTURE UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURE BACKFILL FLOWABLE FILL ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION. CORRUGATED METAL PIPE - ALL IF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (POLYMER COATED) STEEL PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE WHEN USED WITH FLOWABLE FILL OR OTHER WATER CONDITIONS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-245 & M-246 WITH WATER TIGHT COUPLING BANDS OR FLANGES. MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE WHEN USED WITH FLOWABLE FILL OR OTHER WATER CONDITIONS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-245 & M-246 WITH WATER TIGHT COUPLING BANDS OR FLANGES. MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE WHEN USED WITH FLOWABLE FILL OR OTHER WATER CONDITIONS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-245 & M-246 WITH WATER TIGHT COUPLING BANDS OR FLANGES. MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE WHEN USED WITH FLOWABLE FILL OR OTHER WATER CONDITIONS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-245 & M-246 WITH WATER TIGHT COUPLING BANDS OR FLANGES.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC. MUST BE COMPRISED OF THE SAME SPECIFICATION AND COATING AS THE PIPE METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH THE USE OF RUBBER OR NEOPRENE GASKETS. MATERIALS WITH AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATER TIGHT. THE IRON PIPE FOR BARREL CONNECTION TO THE RISER SHALL BE WELDED. AROUND WHEN THE PIPE AND RISER ARE METAL, ANTI-SEEP COLLARS SHALL CONFORM WITH THE NEED IN SUCH A MANNER AS TO BE COMPLETELY WATER TIGHT. DIPLE BANDS ARE NOT CONSIDERED TO BE WATER TIGHT.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH WHERE ROCK OR SOFT SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPOUT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-901.

2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRDLE FOR THEIR ENTIRE LENGTH. THE BEDDING / CRDLE SHALL BE MADE OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRDLE IS NOT REQUIRED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE - BELL AND SPOUT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER. THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE - THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1020 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) SHALL BE USED FOR ALL OTHER PIPE. SHALL CONFORM TO THE FOLLOWING: "10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE III. "12" THROUGH "24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M254 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATER TIGHT.

3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH WHERE ROCK OR SOFT SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

DRAINAGE DIAGRAMS - WHEN A DRAINAGE DIAGRAM IS USED A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 (13-1855).

CARE OF WATER DURING CONSTRUCTION

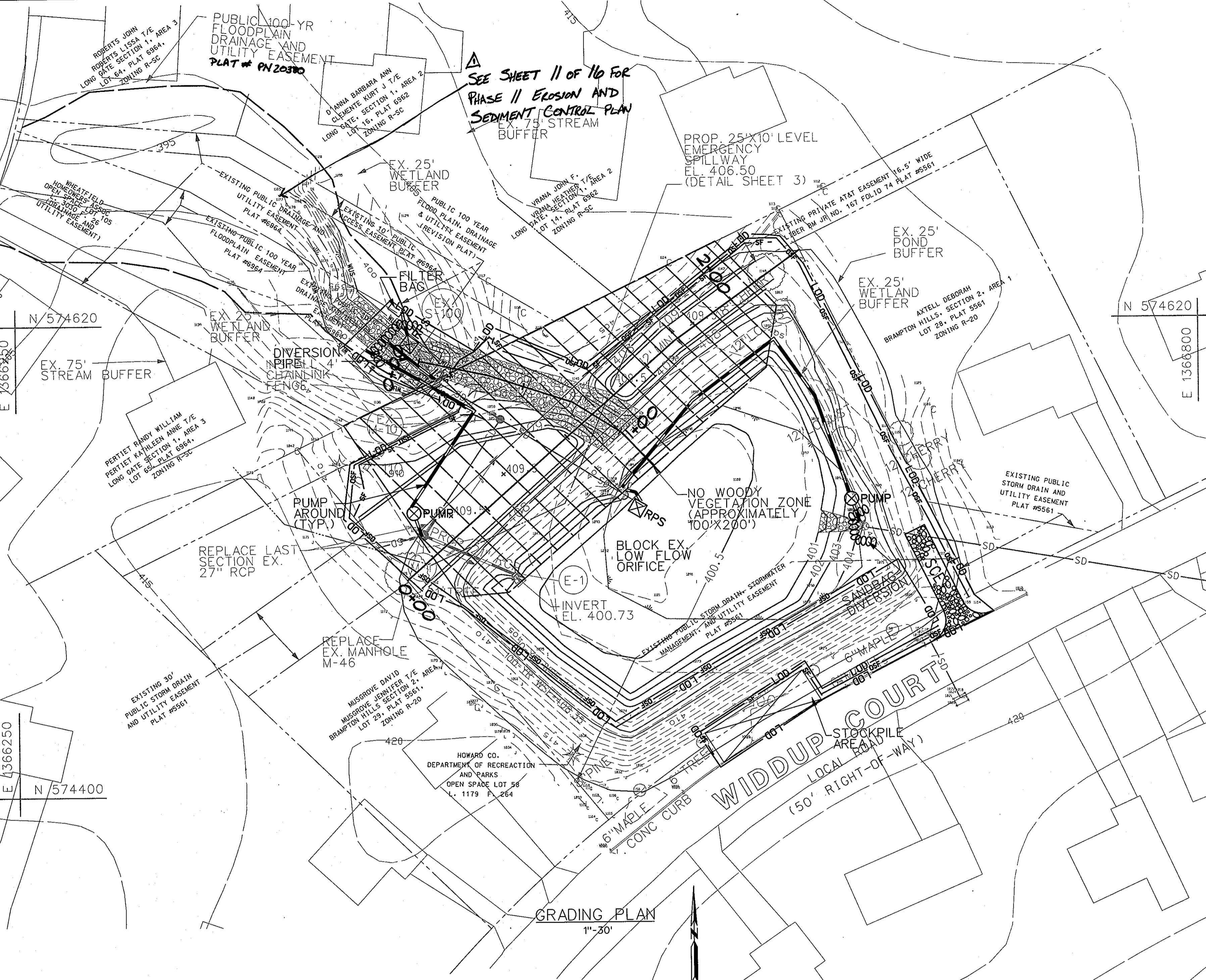
ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEAVES, COFFERDAMS, DRAINAGE CHANNELS AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACE OF THE EMBANKMENT, SPILLWAY, AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE PLANS AND THE STATE AND FEDERAL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.



PHASE I SEQUENCE OF CONSTRUCTION

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 (13-1855).
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 most current MARYLAND STANDARDS AND SPECIFICATION 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) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removals has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:
Total Area of Site: 1.07 Acres (46,609 SF) (Phase I) 0.45 Ac. (19,495 SF) (Phase II)
Area Disturbed: 0.91 Acres (39,576 SF) (Phase I) 0.24 Ac. (10,499 SF) (Phase II)
Area to be reseeded or paved: 0.0 Acres
Area to be vegetatively stabilized: 0.91 Acres (Phase I) 0.24 Ac. (Phase II)
Total Cut: 988 Cu. Yds. (Phase I) 365 Cu. Yds. (Phase II)
Total Fill: 458 Cu. Yds. (Phase I) 113 Cu. Yds. (Phase II)
Offsite waste/borrow area location: To Be Determined
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. 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.
11. 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 work day, whichever is shorter.

1. OBTAIN GRADING PERMIT. NO WORK SHALL BE PERFORMED DURING THE PERMIT CLOSURE PERIOD (MAY 1 THROUGH JUNE 15, INCLUSIVE). REFER TO MDE PERMIT, AUTHORIZATION NUMBER 200864586/06-NT-3217.....1 DAY
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AND THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION (410-313-1880) AT LEAST 5 DAYS PRIOR TO BEGINNING ANY WORK.....1 WEEK
3. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE BUT NOT BE LIMITED TO THE COUNTY PROJECT MANAGER, THE ENGINEER, AND A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION.....1 DAY
4. CLEAR AND GRUB THOSE AREAS WITHIN THE LIMIT OF DISTURBANCE REQUIRED TO ESTABLISH THE PROPOSED SEDIMENT CONTROL MEASURES.....1 DAY
5. WITH A CLEAR 5-DAY (NO PRECIPITATION) FORECAST FROM THE NATIONAL WEATHER SERVICE, AFTER ALL MATERIALS ARE ON SITE, AND WITH PERMISSION FROM THE INSPECTOR, CONSTRUCT ALL PERIMETER CONTROL DEVICES. NO ADDITIONAL WORK SHALL BE PERFORMED UNTIL THESE DEVICES ARE APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.....3 DAYS
6. INSTALL DIVERSION IN 27" RCP UPSTREAM OF M-46. REMOVE M-46 AS SHOWN IN THE PLANS. INSTALL M-1. REPAIR THE LAST SECTION OF THE EX. 27" RCP AS SHOWN. INSTALL 21" RCP USING SANDBAGS, BLOCK THE 21" RCP WITHIN M-1.....2 WEEKS
7. INSTALL REMAINING PUMP AROUND PRACTICES.....1 DAY
8. GRADE THE BOTTOM OF THE POND AND POND EMBANKMENT. ADJUST M-101 TO MEET NEW GRADE. INSTALL EMERGENCY SPILLWAY.....2 WEEKS
9. INSTALL POND LINER PER DETAILS AND MANUFACTURER'S SPECIFICATIONS.....1 DAY
10. INSTALL E-1 AND RIPRAP OUTFALL PROTECTION.....2 DAYS
11. PERFORM RISER MODIFICATIONS. WEIR AT ELEVATION 404.50 TO BE PROVIDED ON FRONT AND LEFT WHILE FACING FRONT STRUCTURE.....1 DAY
12. PLACE TOPSOIL AND PERMANENTLY STABILIZE ALL DISTURBED AREAS.....2 DAYS
13. PLACE TOPSOIL AND PERMANENTLY STABILIZE ALL DISTURBED AREAS.....2 DAYS
14. CONSTRUCT THE M-1 WEIR, AND REMOVE BLOCKAGE OF 21" RCP.....1 DAY
15. WHEN THE SITE IS STABILIZED, AND WITH THE PERMISSION OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION, REMOVE ALL PERIMETER CONTROL DEVICES AND STABILIZE ANY AREAS DISTURBED BY THIS ACTIVITY.....2 DAYS
16. PERFORM AS-BUILT SURVEY AND PREPARE AS-BUILT DRAWINGS PER HSCD STANDARDS. SUBMIT AS-BUILTS AND OBTAIN APPROVAL FROM HSCD.

OPERATION AND MAINTENANCE SCHEDULE

- ROUTINE MAINTENANCE:**
1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
 2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPE AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
 3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
 4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIPRAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
- NON-ROUTINE MAINTENANCE:**
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE INSPECTED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
 2. SEDIMENT SHALL BE REMOVED FROM THE POND NO LATER THAN WHEN THE CAPACITY OF THE POND IS HALF FULL OF SEDIMENT OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS. UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.
- *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. 13291
EXPIRATION DATE: 1/24/09
- NOTE: FIELD SURVEY SUPPLEMENTED WITH HOWARD COUNTY AERIAL TOPOGRAPHY FOR CLARITY

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signatures]
CHIEF, DEVELOPMENT ENGINEERING DIVISION 5/12/09 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT 4/21/09 DATE
DIRECTOR, DEP. 4/21/09 DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT

[Signature]
DATE 9/30/08

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|--|-----------|
| 1 | ADDED "PHASE I TO SHEET AND SOC CONTROL" | SEPT 2008 |
| 2 | ADDED "PHASE II TO TITTLE BLOCK" | SEPT 2008 |
| 3 | ADDED "ADDITIONAL SITE ANALYSIS INFO" | SEPT 2008 |
| 4 | UPDATED PAGE NUMBER | SEPT 2008 |

10 NORTH PARK DRIVE
HUNT VALLEY, MD 21030
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KCI TECHNOLOGIES

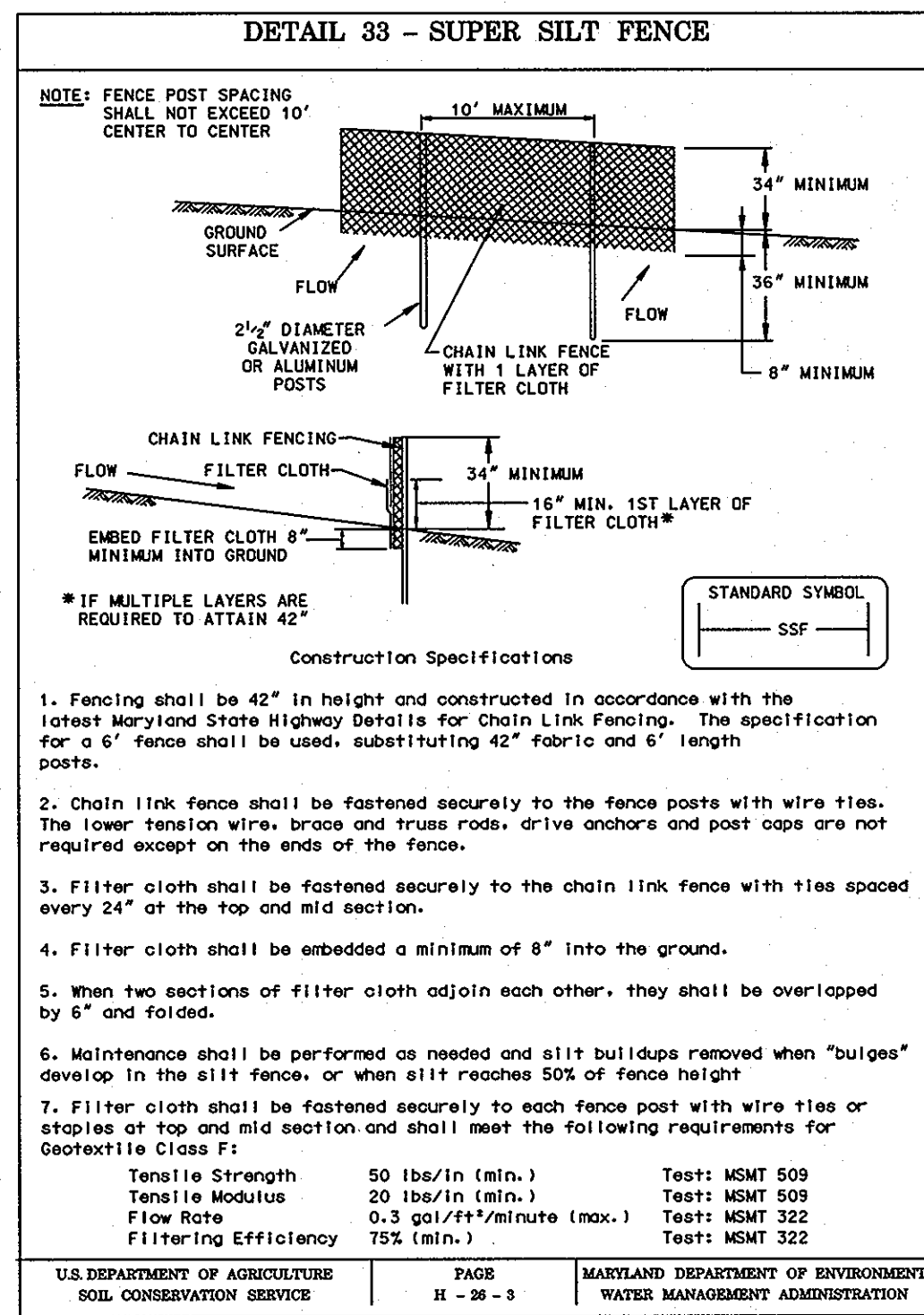
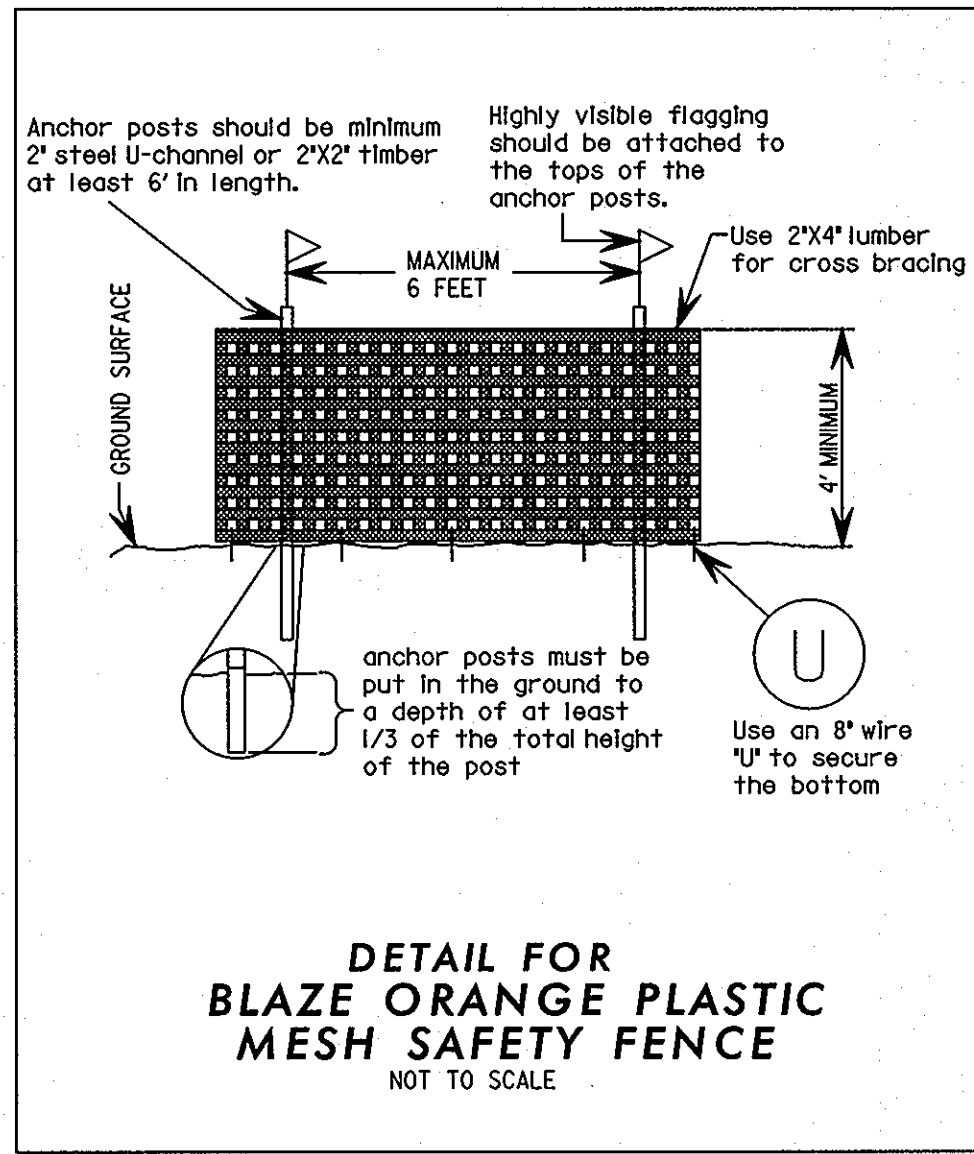
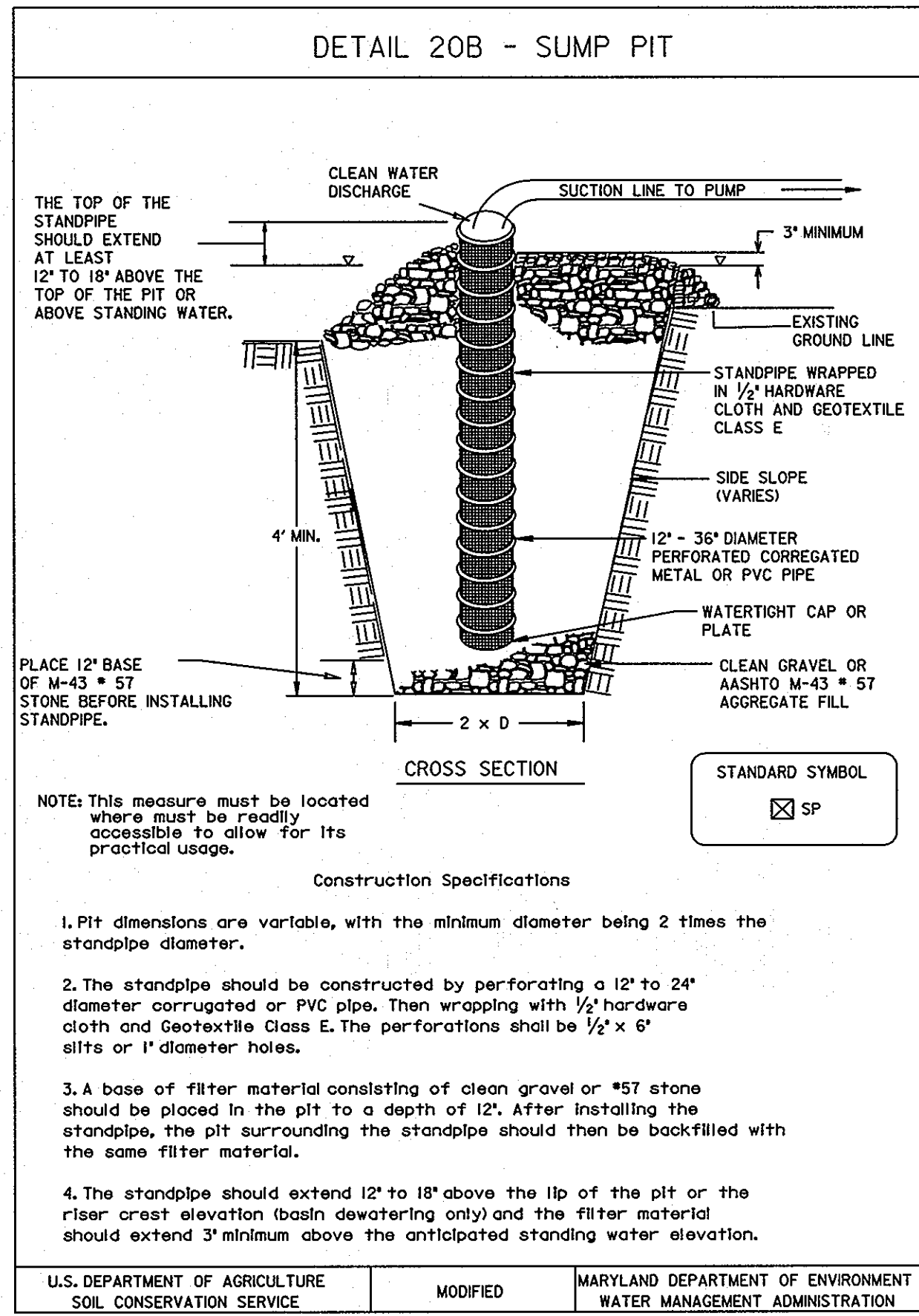
BRAMPTON HILLS, SECTION 2, AREA 1, OPEN SPACE LOT 58 & GATE, SECTION 1, AREA 3, OPEN SPACE LOT 105
LONG GATE, SECTION 1, AREA 3, OPEN SPACE LOT 105
STORMWATER MANAGEMENT RETROFIT CAPITAL PROJECT #D-1141, D-1158

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/STORMWATER MANAGEMENT DIVISION
675 COLUMBIA GATEWAY PARK, 5TH FLOOR, COLUMBIA, MARYLAND 21046
HUNTSVILLE, ALABAMA ASSOCIATION
400 318-8877
ELECTION DISTRICT NO. 2, HOWARD COUNTY, MD
PO BOX 21538 BALTIMORE, MD 21282

PLAT 550698A, TAX MAP 30, GRID 52E PARCEL 3000A, ZONING REB-52, 300 ZONING REQ.
ADJACENT LOTS: LONG GATE 1/2 LOT 65, PLAT 688A, TAX MAP 30, GRID 6 PARCEL 6A, ZONING REC.
LONG GATE 1/2 LOT 14, PLAT 688A, TAX MAP 30, GRID 6 PARCEL 6A, ZONING REC.

SCALE: 1"=30'
DATE: SEPTEMBER 2008
KCI JOB NO.: 01043223.03
CAPITAL PROJECT NO.: D-1158, D-1141
PERMIT ISSUE:
CONSTRUCTION ISSUE:

SHEET NO. 10 OF 16
SDP-08-019



SOILS COMPACTION NOTES:

In general, existing on-site soils free from environmental contamination, building debris, frozen, organic or wet materials and with a Unified Soils Classification of CL-M, or more granular, with a plasticity index less than 12 can be reused as compacted fill. On-site soils with a Unified Soils Classification of CL, CH, or MH or with liquid limits greater than 40 and plastic indices greater than or equal to 12 are not suitable as structural fill. If imported materials are required it should have a Unified Soils Classification of SM or more granular and less plastic and a maximum dry density of at least 105-pcf in accordance with the modified proctor test method (ASTM D-1557) or as approved by the Engineer.

Fill should be placed in horizontal, eight-inch maximum loose lifts and compacted to at least 92 percent of the Modified Proctor maximum dry density (ASTM D-1557). The moisture content of the fill should be properly controlled during placement. Fill being placed on hillsides should be benched to prevent a sliding failure plane.

In-place density tests should be performed by an engineering technician on a full-time basis under the supervision of a geotechnical engineer licensed in the State of Maryland to verify that the proper degree of compaction is being obtained.

MDE PERMIT CONDITIONS:

No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

Place materials in a location and manner that does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.

Notify the Administration's Compliance Program at least 5 days before starting authorized work activities and five days after completion.

Contractor shall conduct authorized activities in a manner consistent with the Best Management Practices specified by the Administration.

Temporary stream access crossings shall not be constructed or utilized unless shown on the Approved Plan.

Runoff of accumulated water containing sediment or other suspended materials shall not be discharged into waters of the State unless treated by an approved sediment control device or structure.

Any disturbance of stream banks, channel bottom, wetlands, and wetlands buffer authorized by this Authorization or Approved Plan shall be the minimum necessary to conduct permitted activities. All disturbed areas shall be stabilized vegetatively no later than seven days after construction is completed or in accordance with the approved grading or sediment and erosion control plan.

Authorized Person shall restore the construction site upon completion of authorized activities. Undercutting, mandarding, or degradation of the stream banks or channel bottom, any deposition of sediment or other materials, and any alteration of wetland vegetation, soils, or hydrology, resulting directly or indirectly from construction or authorized activities, shall be corrected by Authorized Person as directed by the Administration activities.

PHASE II SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY 'MISS UTILITY' AT 1-800-257-7777, AND THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION (410)-537-3510 AT LEAST SEVEN (7) DAYS PRIOR TO BEGINNING ANY WORK. (7 DAYS)
2. CONTRACTOR SHALL STAKE OUT LOD. (1 DAY)
3. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE COUNTY PROJECT MANAGER, HOWARD COUNTY INSPECTOR, A REPRESENTATIVE FROM MARYLAND DEPARTMENT OF ENVIRONMENT, AND HOWARD COUNTY CONSTRUCTION INSPECTION, BUREAU OF UTILITIES. (1 DAY)
4. OBTAIN GRADING AND ALL NECESSARY PERMITS FOR CONSTRUCTION FROM THE COUNTY AT THE PRE-CONSTRUCTION MEETING. THE MDE PERMIT NUMBER FOR THIS PROJECT IS 200963252/09-NT-0423. THE STREAM CLOSURE PERIOD IS MARCH 1 THROUGH JUNE 15. (1 DAY)
5. CONTRACTOR SHALL TAKE EXTRA PRECAUTION FOR TRANSPORTING MATERIALS TO THE CONSTRUCTION SITE. CONTRACTOR SHALL MINIMIZE THE IMPACT ON STREAMBED, SIDE SLOPES, EXISTING TREES, WETLANDS, U.S. OF WATERS, EXISTING UTILITIES AND OTHER EXISTING FEATURES.
6. ALL NECESSARY EASEMENTS AND/OR RIGHT OF WAYS SHALL BE OBTAINED PRIOR TO THE START OF THE CONSTRUCTION. (1 DAY)
7. ALL IN-STREAM WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE PUMP AROUND IMPLEMENTATION SEQUENCE AND CRITERIA.
8. PLACE SEDIMENT CONTROL DEVICES INCLUDING SCE, ORANGE SAFETY FENCE AND SILT FENCE. NO WORK SHALL BE PERFORMED UNTIL THESE DEVICES ARE APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. THE PORTIONS OF EXISTING SIDEWALK AT THE SCE LOCATION WILL HAVE TO BE REMOVED AND RE-CONSTRUCTED AFTER THE COMPLETION OF THE GRADING TASK. (3 DAYS)
9. INSTALL SANDBAGS, PUMP, FILTER BAG, INTAKE PIPE AND DISCHARGE PIPE ON THE CHANNEL AT STA. 0+35 AND 1+48.45. (1 DAY)
10. WITH THE APPROVAL OF SEDIMENT CONTROL INSPECTOR, COMMENCE WITH IN-STREAM WORK.
11. PERFORM STREAM GRADING AND STREAM RESTORATION WORK AS SHOWN ON PLANS FROM STA. 0+40 TO STA. 1+44.78. CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA WHICH CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY END OF EACH DAY. REMOVE SANDBAG DAM AND RESTORE BASEFLOW THROUGH THE STREAM CHANNEL AT THE END OF EACH DAY. (1 WEEK)
12. PERMANENTLY STABILIZE ALL DISTURBED AREAS WITH TOPSOIL, SEED AND MULCH. (2 DAYS)
13. WHEN THE SITE IS STABILIZED AND WITH THE PERMISSION OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL DEVICES AND STABILIZE ANY AREAS DISTURBED BY THIS ACTIVITY. (2 DAYS)

MGWC 1.2: PUMP-AROUND PRACTICE

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's 5/32 s or utility company's 5/32 s satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's 5/32 staking areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|-----------------------|-----------|
| 1 | ENTIRE SHEET | SEPT 2010 |

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BRAMPTON HILLS SECTION 2, AREA 1, OPEN SPACE LOT 68 & LONG GATE SECTION 1, AREA 3, OPEN SPACE LOT 105
STORMWATER MANAGEMENT RETROFIT
CAPITAL PROJECT #D-141, PD-158
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
410-537-3510
ELECTION DISTRICT NO. 2, HOWARD COUNTY, MD
PLAT: 09/08/09, MAP: 30, 30B, 30C, 30D, 30E, 30F, 30G, 30H, 30I, 30J, 30K, 30L, 30M, 30N, 30O, 30P, 30Q, 30R, 30S, 30T, 30U, 30V, 30W, 30X, 30Y, 30Z, 30AA, 30AB, 30AC, 30AD, 30AE, 30AF, 30AG, 30AH, 30AI, 30AJ, 30AK, 30AL, 30AM, 30AN, 30AO, 30AP, 30AQ, 30AR, 30AS, 30AT, 30AU, 30AV, 30AW, 30AX, 30AY, 30AZ, 30BA, 30BB, 30BC, 30BD, 30BE, 30BF, 30BG, 30BH, 30BI, 30BJ, 30BK, 30BL, 30BM, 30BN, 30BO, 30BP, 30BQ, 30BR, 30BS, 30BT, 30BU, 30BV, 30BW, 30BX, 30BY, 30BZ, 30CA, 30CB, 30CC, 30CD, 30CE, 30CF, 30CG, 30CH, 30CI, 30CJ, 30CK, 30CL, 30CM, 30CN, 30CO, 30CP, 30CQ, 30CR, 30CS, 30CT, 30CU, 30CV, 30CW, 30CX, 30CY, 30CZ, 30DA, 30DB, 30DC, 30DD, 30DE, 30DF, 30DG, 30DH, 30DI, 30DJ, 30DK, 30DL, 30DM, 30DN, 30DO, 30DP, 30DQ, 30DR, 30DS, 30DT, 30DU, 30DV, 30DW, 30DX, 30DY, 30DZ, 30EA, 30EB, 30EC, 30ED, 30EE, 30EF, 30EG, 30EH, 30EI, 30EJ, 30EK, 30EL, 30EM, 30EN, 30EO, 30EP, 30EQ, 30ER, 30ES, 30ET, 30EU, 30EV, 30EW, 30EX, 30EY, 30EZ, 30FA, 30FB, 30FC, 30FD, 30FE, 30FF, 30FG, 30FH, 30FI, 30FJ, 30FK, 30FL, 30FM, 30FN, 30FO, 30FP, 30FQ, 30FR, 30FS, 30FT, 30FU, 30FV, 30FW, 30FX, 30FY, 30FZ, 30GA, 30GB, 30GC, 30GD, 30GE, 30GF, 30GG, 30GH, 30GI, 30GJ, 30GK, 30GL, 30GM, 30GN, 30GO, 30GP, 30GQ, 30GR, 30GS, 30GT, 30GU, 30GV, 30GW, 30GX, 30GY, 30GZ, 30HA, 30HB, 30HC, 30HD, 30HE, 30HF, 30HG, 30HH, 30HI, 30HJ, 30HK, 30HL, 30HM, 30HN, 30HO, 30HP, 30HQ, 30HS, 30HT, 30HU, 30HV, 30HW, 30HX, 30HY, 30HZ, 30IA, 30IB, 30IC, 30ID, 30IE, 30IF, 30IG, 30IH, 30II, 30IJ, 30IK, 30IL, 30IM, 30IN, 30IO, 30IP, 30IQ, 30IR, 30IS, 30IT, 30IU, 30IV, 30IW, 30IX, 30IY, 30IZ, 30JA, 30JB, 30JC, 30JD, 30JE, 30JF, 30JG, 30JH, 30JI, 30JJ, 30JK, 30JL, 30JM, 30JN, 30JO, 30JP, 30JQ, 30JR, 30JS, 30JT, 30JU, 30JV, 30JW, 30JX, 30JY, 30JZ, 30KA, 30KB, 30KC, 30KD, 30KE, 30KF, 30KG, 30KH, 30KI, 30KJ, 30KL, 30KM, 30KN, 30KO, 30KP, 30KQ, 30KR, 30KS, 30KT, 30KU, 30KV, 30KW, 30KX, 30KY, 30KZ, 30LA, 30LB, 30LC, 30LD, 30LE, 30LF, 30LG, 30LH, 30LI, 30LJ, 30LK, 30LL, 30LM, 30LN, 30LO, 30LP, 30LQ, 30LR, 30LS, 30LT, 30LU, 30LV, 30LW, 30LX, 30LY, 30LZ, 30MA, 30MB, 30MC, 30MD, 30ME, 30MF, 30MG, 30MH, 30MI, 30MJ, 30MK, 30ML, 30MN, 30MO, 30MP, 30MQ, 30MR, 30MS, 30MT, 30MU, 30MV, 30MW, 30MX, 30MY, 30MZ, 30NA, 30NB, 30NC, 30ND, 30NE, 30NF, 30NG, 30NH, 30NI, 30NJ, 30NK, 30NL, 30NM, 30NO, 30NP, 30NQ, 30NR, 30NS, 30NT, 30NU, 30NV, 30NW, 30NX, 30NY, 30NZ, 30OA, 30OB, 30OC, 30OD, 30OE, 30OF, 30OG, 30OH, 30OI, 30OJ, 30OK, 30OL, 30OM, 30ON, 30OO, 30OP, 30OQ, 30OR, 30OS, 30OT, 30OU, 30OV, 30OW, 30OX, 30OY, 30OZ, 30PA, 30PB, 30PC, 30PD, 30PE, 30PF, 30PG, 30PH, 30PI, 30PJ, 30PK, 30PL, 30PM, 30PN, 30PO, 30PP, 30PQ, 30PR, 30PS, 30PT, 30PU, 30PV, 30PW, 30PX, 30PY, 30PZ, 30QA, 30QB, 30QC, 30QD, 30QE, 30QF, 30QG, 30QH, 30QI, 30QJ, 30QK, 30QL, 30QM, 30QN, 30QO, 30QP, 30QQ, 30QR, 30QS, 30QT, 30QU, 30QV, 30QW, 30QX, 30QY, 30QZ, 30RA, 30RB, 30RC, 30RD, 30RE, 30RF, 30RG, 30RH, 30RI, 30RJ, 30RK, 30RL, 30RM, 30RN, 30RO, 30RP, 30RQ, 30RR, 30RS, 30RT, 30RU, 30RV, 30RW, 30RX, 30RY, 30RZ, 30SA, 30SB, 30SC, 30SD, 30SE, 30SF, 30SG, 30SH, 30SI, 30SJ, 30SK, 30SL, 30SM, 30SN, 30SO, 30SP, 30SQ, 30SR, 30SS, 30ST, 30SU, 30SV, 30SW, 30SX, 30SY, 30SZ, 30TA, 30TB, 30TC, 30TD, 30TE, 30TF, 30TG, 30TH, 30TI, 30TJ, 30TK, 30TL, 30TM, 30TN, 30TO, 30TP, 30TQ, 30TR, 30TS, 30TT, 30TU, 30TV, 30TW, 30TX, 30TY, 30TZ, 30UA, 30UB, 30UC, 30UD, 30UE, 30UF, 30UG, 30UH, 30UI, 30UJ, 30UK, 30UL, 30UM, 30UN, 30UO, 30UP, 30UQ, 30UR, 30US, 30UT, 30UU, 30UV, 30UW, 30UX, 30UY, 30UZ, 30VA, 30VB, 30VC, 30VD, 30VE, 30VF, 30VG, 30VH, 30VI, 30VJ, 30VK, 30VL, 30VM, 30VN, 30VO, 30VP, 30VQ, 30VR, 30VS, 30VT, 30VU, 30VV, 30VW, 30VX, 30VY, 30VZ, 30WA, 30WB, 30WC, 30WD, 30WE, 30WF, 30WG, 30WH, 30WI, 30WJ, 30WK, 30WL, 30WM, 30WN, 30WO, 30WP, 30WQ, 30WR, 30WS, 30WT, 30WU, 30WV, 30WW, 30WX, 30WY, 30WZ, 30XA, 30XB, 30XC, 30XD, 30XE, 30XF, 30XG, 30XH, 30XI, 30XJ, 30XK, 30XL, 30XM, 30XN, 30XO, 30XP, 30XQ, 30XR, 30XS, 30XT, 30XU, 30XV, 30XW, 30XZ, 30YA, 30YB, 30YC, 30YD, 30YE, 30YF, 30YG, 30YH, 30YI, 30YJ, 30YK, 30YL, 30YM, 30YN, 30YO, 30YP, 30YQ, 30YR, 30YS, 30YT, 30YU, 30YV, 30YW, 30YZ, 30ZA, 30ZB, 30ZC, 30ZD, 30ZE, 30ZF, 30ZG, 30ZH, 30ZI, 30ZJ, 30ZK, 30ZL, 30ZM, 30ZN, 30ZO, 30ZP, 30ZQ, 30ZR, 30ZS, 30ZT, 30ZU, 30ZV, 30ZW, 30ZX, 30ZY, 30ZZ

SEDIMENT CONTROL NOTES AND DETAILS

| | |
|----------------------|-----------------|
| SCALE: | N/A |
| DATE: | SEPTEMBER, 2010 |
| KCI JOB NO.: | 01-081795L15 |
| CAPITAL PROJECT NO.: | D1158, D1141 |
| PERMIT ISSUE: | |
| CONSTRUCTION ISSUE: | |

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

John R. Robertson 10/12/10
HOWARD SCD DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Mark D. ... 10/15/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

V. ... 10/19/10
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Thomas E. ... 10/19/10
DIRECTOR DATE

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. 31291, EXPIRATION DATE: JANUARY 24, 2011

PLOTTED: 10/13 PM ON Friday, August 27, 2010
BY: Ashley P. Fisher, Division P&Z, Technical Res. GMA
FILE: M-2008-01081795L15-Cravings_Vis2c.dwg

MASTER PLANT SCHEDULE

LIVE STAKES (SHEET 10 OF 11) (1333 SQ FT / 0.03 AC)

| Qty | Botanical Name | Common Name | Size | Form | Spacing/Rate |
|-----|-----------------|---------------|------------------------|---------------|--------------|
| 83 | Cornus racemosa | Gray Dogwood | 3' Length 1"-1.5" dia. | Dormant stems | 2' O.C. |
| 83 | Cornus amomum | Silky Dogwood | 3' Length 1"-1.5" dia. | Dormant stems | 2' O.C. |
| 83 | Salix sericea | Silky Willow | 3' Length 1"-1.5" dia. | Dormant stems | 2' O.C. |
| 83 | Salix nigra | Black Willow | 3' Length 1"-1.5" dia. | Dormant stems | 2' O.C. |

RIPARIAN ZONE (SHEET 10 OF 11) (6402 SQ FT / 0.15 AC)

| Qty | Botanical Name | Common Name | Size | Form | Spacing/Rate |
|-----|-------------------------|--------------------|-----------|-----------|--------------|
| 22 | Lindera benzoin | spicebush | 3' Height | Container | 6'-8' O.C. |
| 22 | Viburnum dentatum | arrowwood viburnum | 3' Height | Container | 6'-8' O.C. |
| 22 | Amelanchier canadensis | serviceberry | 3' Height | Container | 6'-8' O.C. |
| 5 | Platanus occidentalis | sycamore | 5' Height | Container | 11' O.C. |
| 5 | Quercus palustris | pin oak | 5' Height | Container | 11' O.C. |
| 5 | Liriodendron tulipifera | tulip poplar | 5' Height | Container | 11' O.C. |
| 5 | Acer rubrum | red maple | 5' Height | Container | 11' O.C. |
| 5 | Liquidambar styraciflua | sweet gum | 5' Height | Container | 11' O.C. |

TURF GRASS ZONE (SHEET 10 OF 11) (570 SQ FT / 0.01 AC)

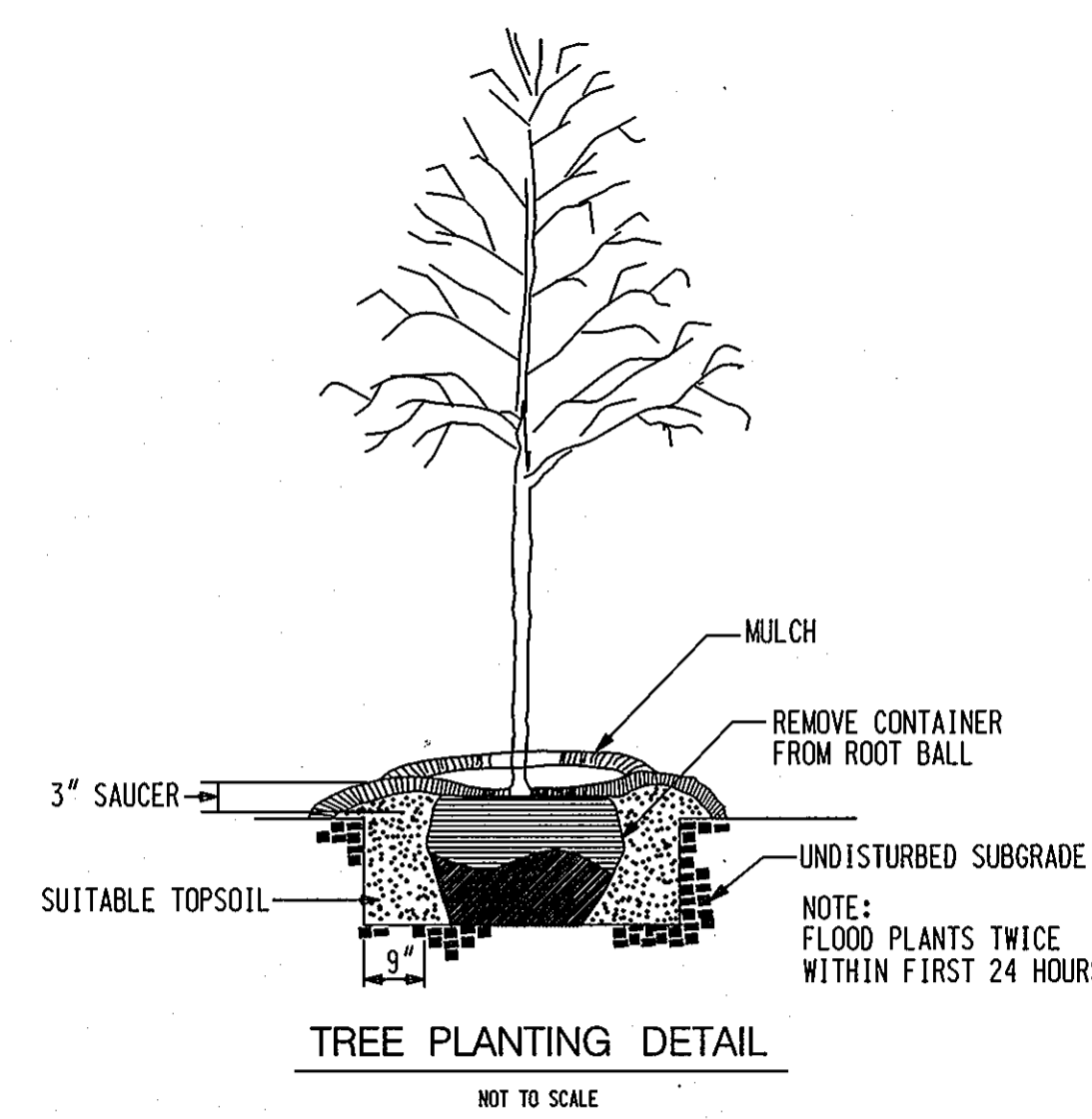
| Qty(lbs) | Botanical Name |
|----------|--|
| 2.0 | SHA Special Purpose Seed Mix 920.06.07 (b) |

Application Rate of 200 lbs / ac

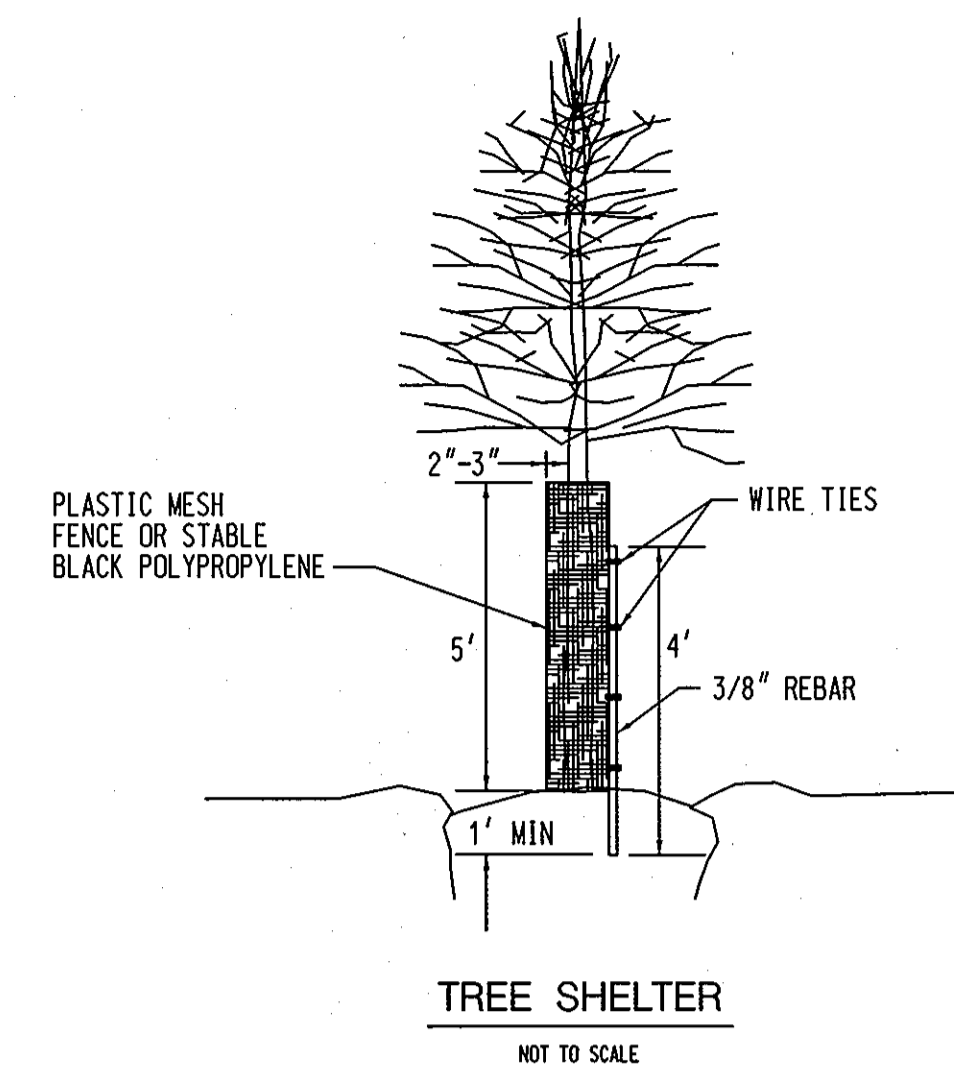
PERMANENT SEEDING FOR LIVE STAKES AND RIPARIAN ZONE (SHEET 10 OF 11) (7735 SQ FT / 0.18 AC)

| Botanical Name | Common Name | Application Rate (lbs/ac) | % of Mix | Quantity (lbs) | Remarks |
|----------------------|-------------------|---------------------------|----------|----------------|---------|
| Panicum virgatum | Switchgrass | 18.0 | 24% | 3.24 | - |
| Poa palustris | Fowl Bluegrass | 30.0 | 40% | 5.40 | - |
| Panicum clandestinum | Deer Tongue Grass | 18.0 | 24% | 3.24 | - |
| Bromus ciliatus | Fringed Brome | 9.0 | 12% | 1.62 | - |
| SEED TOTAL | | | | 13.5 | |

Total Application Rate of 75 lbs / ac



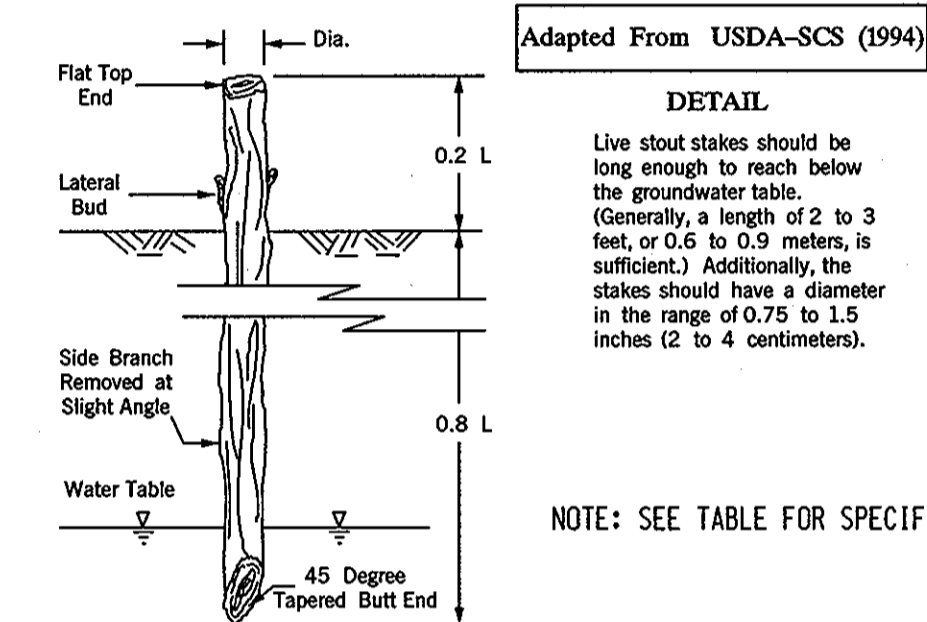
NOTE: TREE SHELTERS TO BE ADDED TO ALL TREES PLANTED



TREE PLANTING DETAIL

TREE SHELTER

DETAIL 2.4: LIVE STAKES

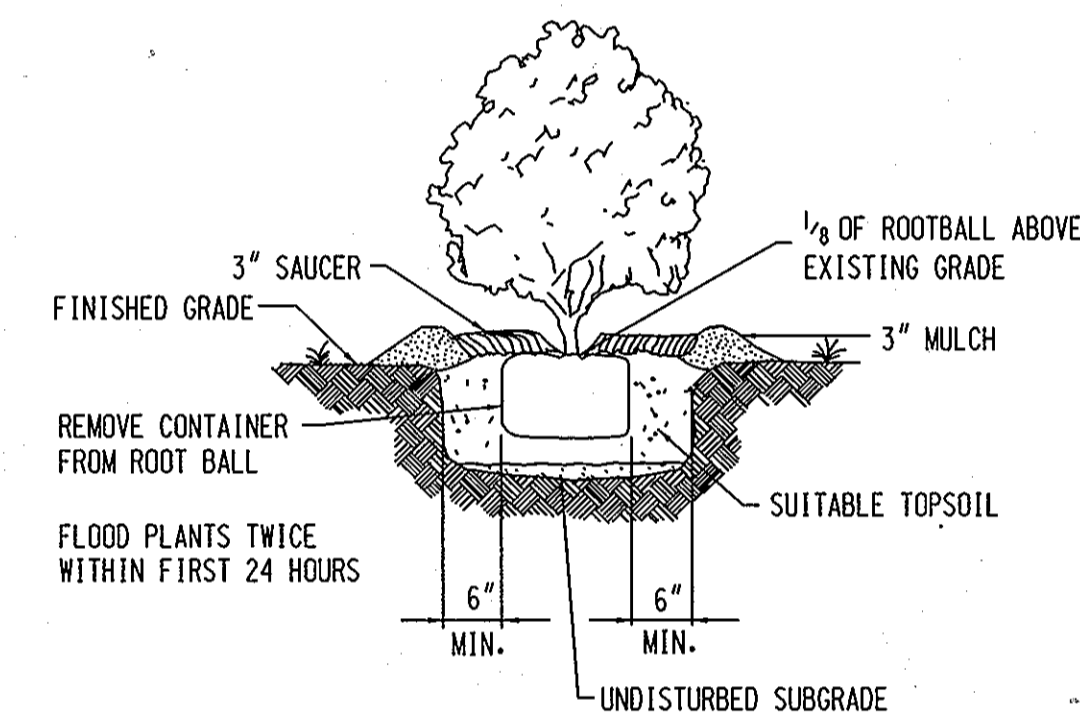


Adapted From USDA-SCS (1994)

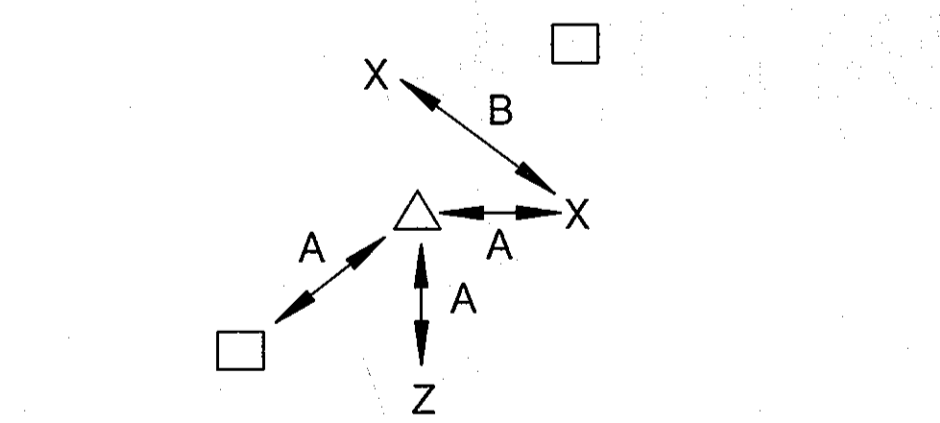
DETAIL
Live stout stakes should be long enough to reach below the groundwater table. (Generally, a length of 2 to 3 feet, or 0.6 to 0.9 meters, is sufficient.) Additionally, the stakes should have a diameter in the range of 0.75 to 1.5 inches (2 to 4 centimeters).

NOTE: SEE TABLE FOR SPECIFIC SIZE INFORMATION

SECTION VIEW
Live stout stakes shall be spaced 2 to 3 feet (0.6 to 0.9 meters) apart to give a density of 2 to 4 cuttings per square yard (0.8 square meters).

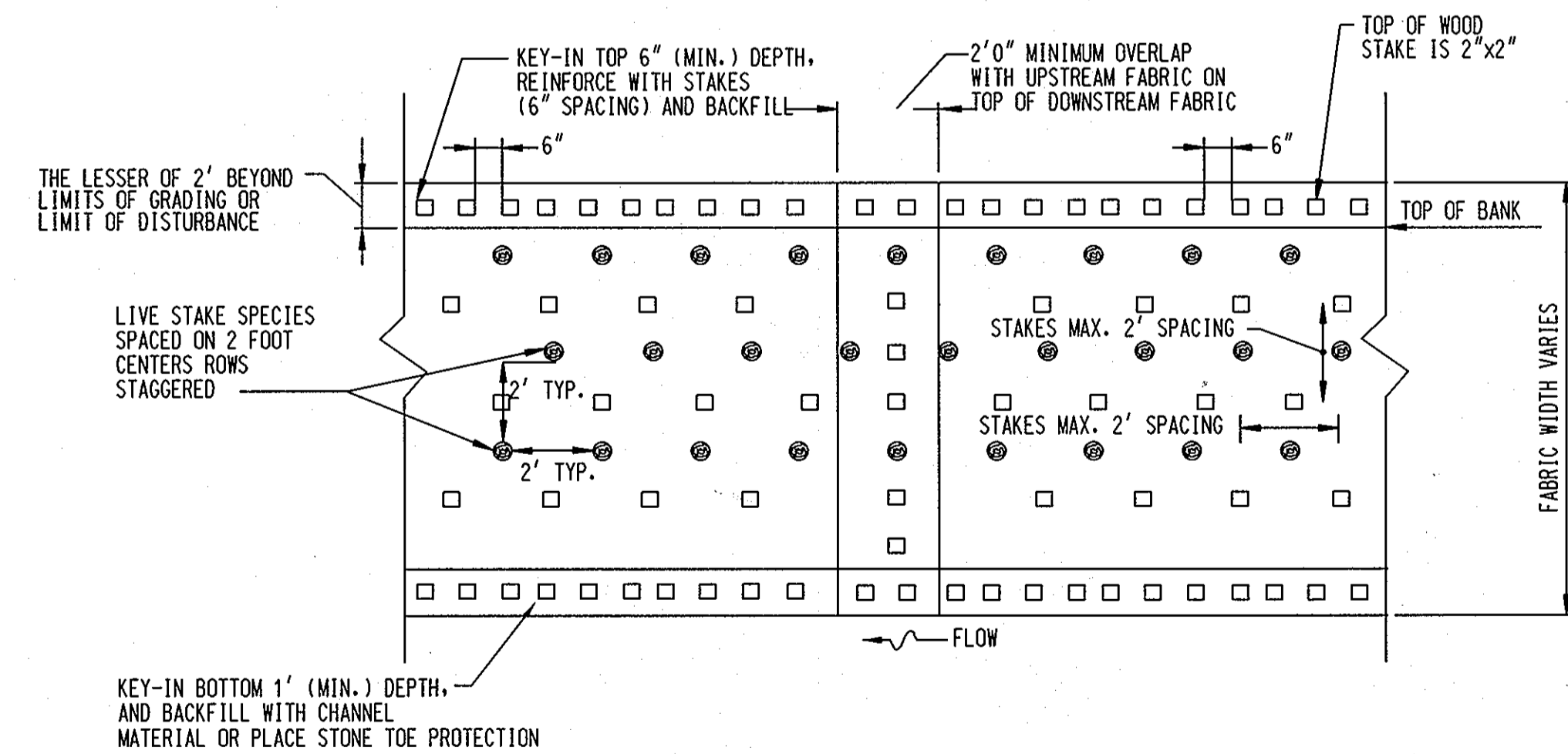


SHRUB PLANTING DETAIL



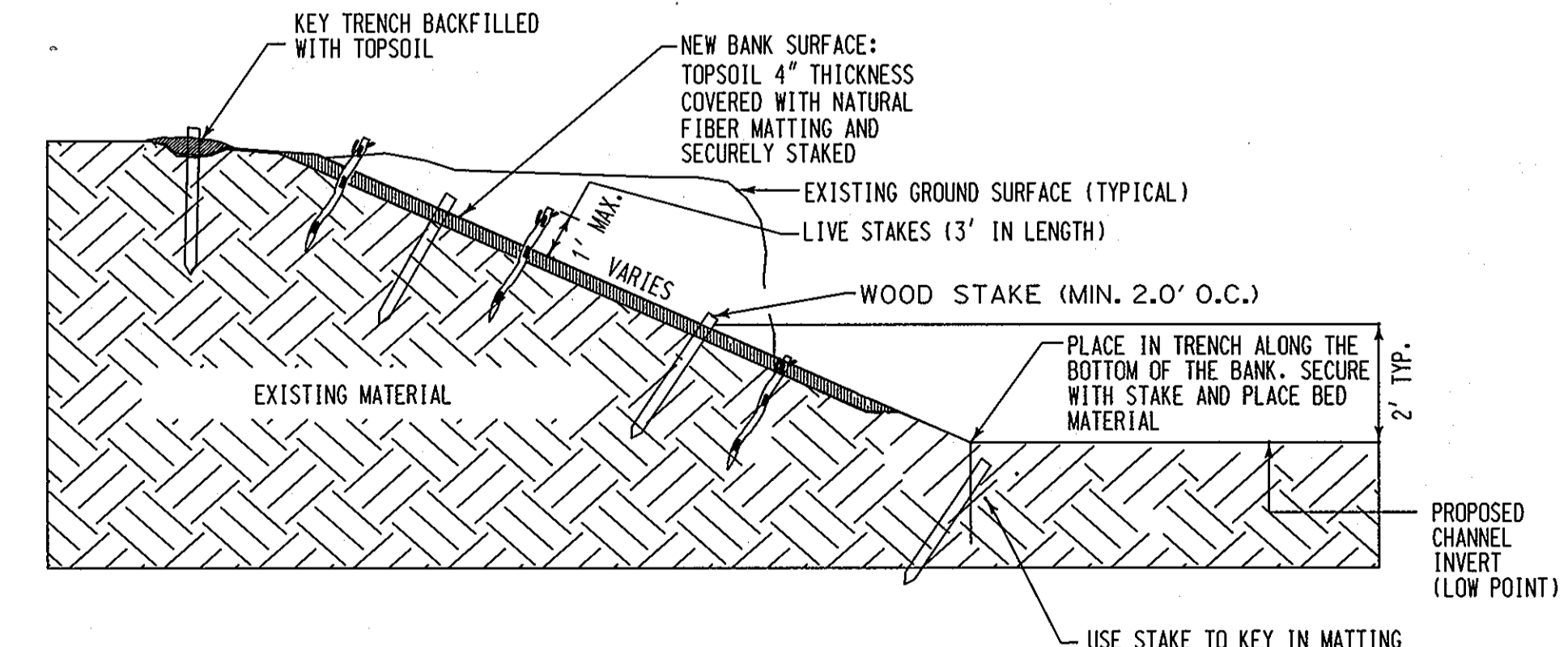
△, □ TREE SPECIES A: MINIMUM SPACING PER SCHEDULE
X, Z SHRUB SPECIES B: DUPLICATE SPECIES SPACING MINIMUM 2-TIMES MINIMUM SPACING

TREE AND SHRUB RANDOM SPACING



TYPICAL PLAN VIEW
NATURAL FIBER MATTING WITH LIVE STAKES

NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING TO THE BOTTOM OF TOE PROTECTION AND A MINIMUM OF TWO FEET PAST TOP OF BANK. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF ONE FOOT AND SECURELY FASTENED WITH STAKES. (SEE SPECIFICATIONS FOR MATERIALS)



NATURAL FIBER MATTING SECTION
WITH LIVE STAKES

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* DATE 10/15/10

CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* DATE 10/19/10

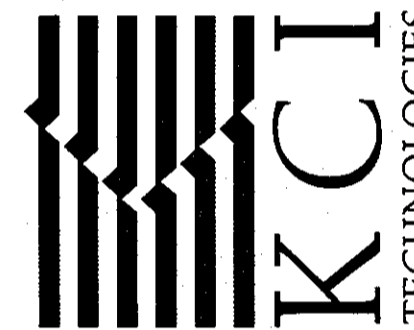
DIRECTOR *[Signature]* DATE 10/19/10

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 31201, EXPIRATION DATE: JANUARY 24, 2011

[Signature] 10/27/10

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|-----------------------|-----------|
| 1 | ENTIRE SHEET | SEPT 2010 |

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com



BRAMPTON HILLS SECTION 2, AREA 1, OPEN SPACE LOT 89 & LONG GATE SECTION 1, AREA 3, OPEN SPACE LOT 105
STORMWATER MANAGEMENT RETENTION CAPACITY PROJECT #D-1141, #D-1188
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION
4200 SOUTH
1100 WEST BAYVIEW, ANNAPOLIS, MD 21403
ELECTION DISTRICT NO. 2, HOWARD COUNTY, MD

LANDSCAPE NOTES AND DETAILS

SCALE:

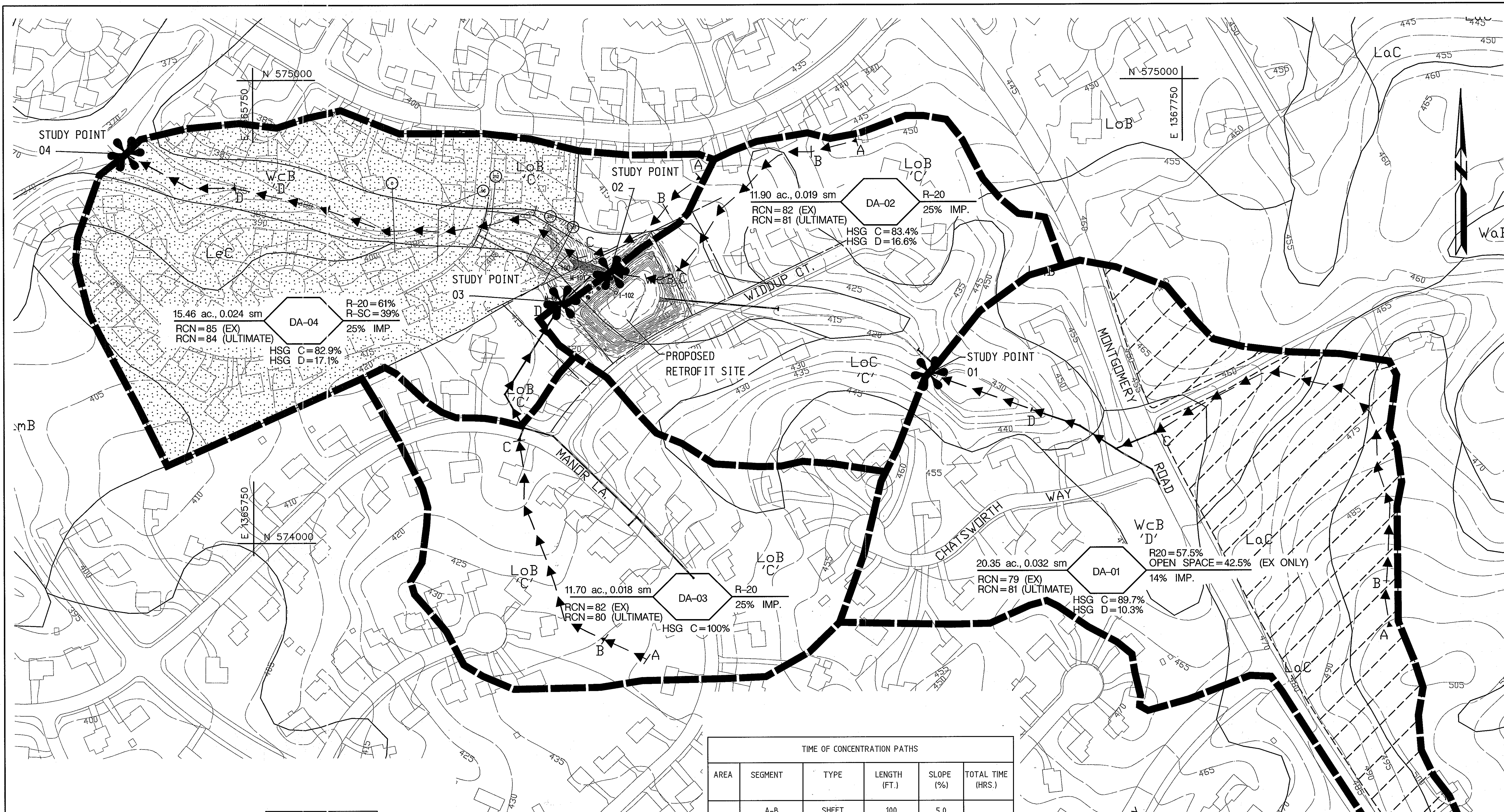
DATE: SEPTEMBER, 2010

KCI JOB NO.: 01-081795.15

CAPITAL PROJECT NO.: D1158, D1141

PERMIT ISSUE:

CONSTRUCTION ISSUE:



APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Robert DeMunn 10/2/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Cindy Kline 1/30/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Deanna E. Butler 1/3/09
 DIRECTOR, DEP. DATE

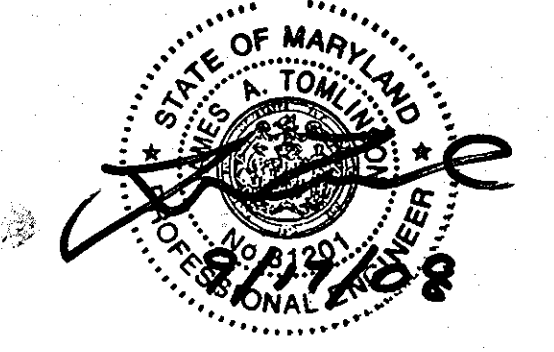
| SOILS TABLE | |
|-------------|-------|
| SYMBOL | TYPE |
| | LoB C |
| | LoC C |
| | LmB C |
| | WcB D |

- LEGEND**
- EX. WOODS (EX. CONDITIONS ONLY)
 - ZONING: R-SC* (8 LOTS / AC.)
 - DRAINAGE AREA BOUNDARY
 - SOILS BOUNDARY
 - TIME OF CONCENTRATION PATH
 - STUDY POINT

*REMAINDER OF SITE ZONED R-20 (2 LOTS PER AC.)

| TIME OF CONCENTRATION PATHS | | | | | |
|-----------------------------|---------|---------------|--------------|-----------|-------------------------|
| AREA | SEGMENT | TYPE | LENGTH (FT.) | SLOPE (%) | TOTAL TIME (HRS.) |
| 1 | A-B | SHEET | 100 | 5.0 | 0.23 (EX) 0.18 (ULT) |
| | B-C | SHALLOW CONC. | 890 | 4.8 | |
| | C-D | STORM DRAIN | 292 | 6.0 | |
| 2 | A-B | SHEET | 100 | 10.0 | 0.15 (EX) 0.11 (ULT) |
| | B-C | SHALLOW CONC. | 400 | 7.5 | |
| 3 | A-B | SHEET | 100 | 5.0 | 0.21 (EX) 0.16 (ULT) |
| | B-C | SHALLOW CONC. | 500 | 5.6 | |
| 4 | A-B | SHEET | 100 | 12.5 | 0.20 (EX) 0.16 (ULT) |
| | B-C | SHALLOW CONC. | 224 | 6.7 | |
| | C-D | CHANNEL | 1255 | 3.2 | |

"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. 17201 EXPIRATION DATE: 12/31/09"



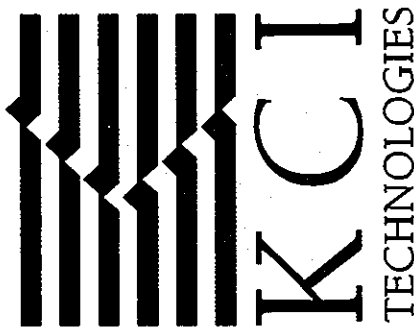
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Scott Selby 1/30/08
 HOWARD SCD DATE

| NO. | REVISIONS DESCRIPTION | DATE |
|-----|-----------------------------|------------|
| 1 | UPDATED PAGE NUMBER | SEPT. 2010 |
| 1 | ADDED D#1158 TO TITLE BLOCK | SEPT. 2010 |

KCIFILE: M:\2004-01043223.03\drawings\Drawings\Plan.dwg

10 NORTH PARK DRIVE
 HUNT VALLEY, MD 21030
 PHONE: (410) 316-7800
 FAX: (410) 316-7817
 WWW.KCI.COM



BRAMPTON HILLS, SECTION 2 AREA 1 OPEN SPACE LOT 88 & LONG GATE, SECTION 3, OPEN SPACE LOT 105
 STORMWATER MANAGEMENT RETROFIT
 CAPITAL PROJECT #D-1141-D-1158

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT DIVISION
 675 COLUMBIA GATEWAY DRIVE, 5TH FLOOR, COLUMBIA, MARYLAND 21046

WHEATFIELD HOMEOWNERS ASSOCIATION
 P.O. BOX 2189 BALTIMORE, MD 21282
 ELECTION DISTRICT NO. 2, HOWARD COUNTY, MD
 RAFT BRAMPTON HILLS, 21 LOTS 28A-39B, TAX MAP 30, GRID 42, PARCEL 380, ZONING R20.
 ADJACENT LOTS: BRAMPTON HILLS 21 LOTS 28A-39B, TAX MAP 30, GRID 42, PARCEL 380, ZONING R20.
 LONG GATE 10 LOT 88, PLAT 6964, TAX MAP 30, GRID 42, PARCEL 464, ZONING R20.
 LONG GATE 12 LOT 11, PLAT 6961, TAX MAP 30, GRID 42, PARCEL 462, ZONING R20.

DRAINAGE AREA AND SOILS MAP

SCALE: 1" = 100'
 DATE: SEPTEMBER 2008
 KCI JOB NO.: 01043223.03
 CAPITAL PROJECT NO.: D-1158, D-1141
 PERMIT ISSUE:
 CONSTRUCTION ISSUE: