

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 11/21/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 12/3/10
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 12/4/17
 DIRECTOR

LEGEND	
EXISTING GRADE (4/2006)	---
PROPOSED GRADE	—
EX. 100 YEAR FLOODPLAIN
PROP. 100 YEAR FLOODPLAIN	----

NOTE:
 ALL CROSS SECTIONS ARE FROM
 LEFT TO RIGHT LOOKING UP STREAM

NO.	REVISIONS DESCRIPTION	DATE

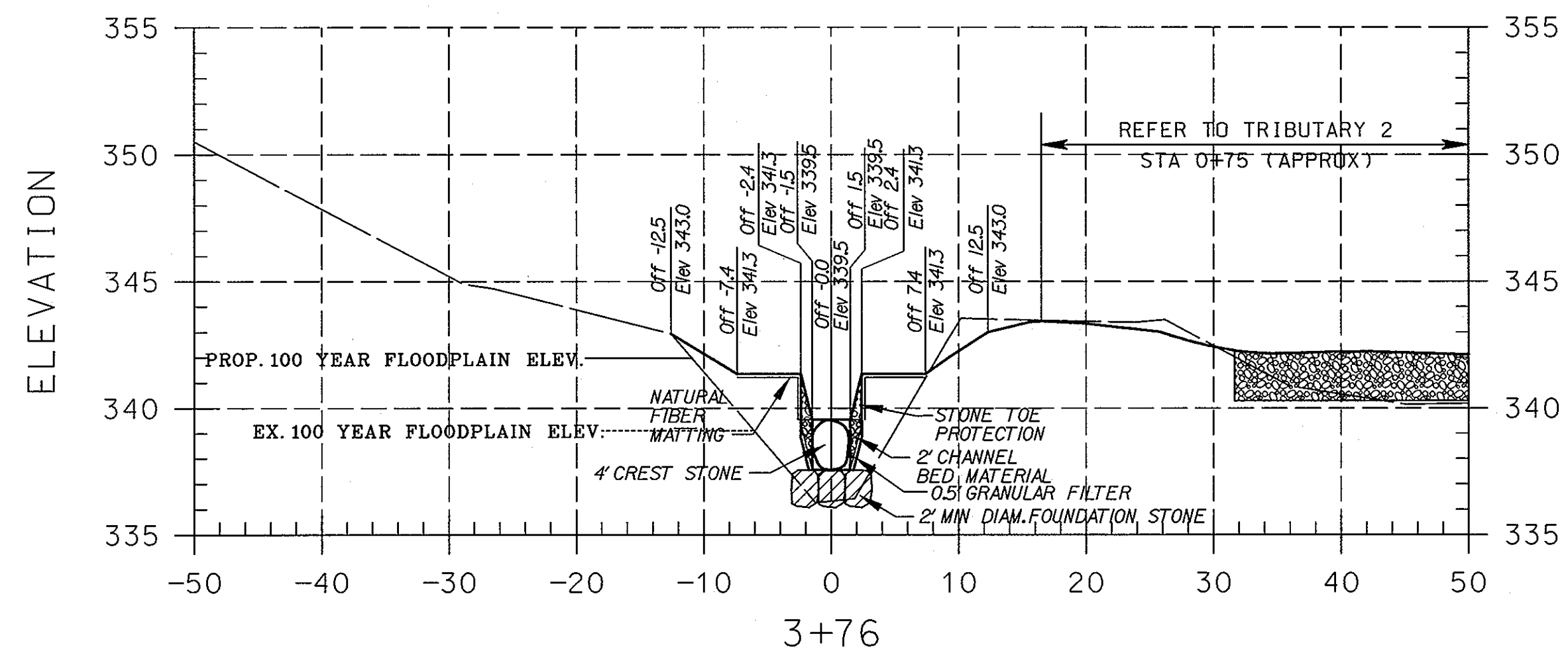
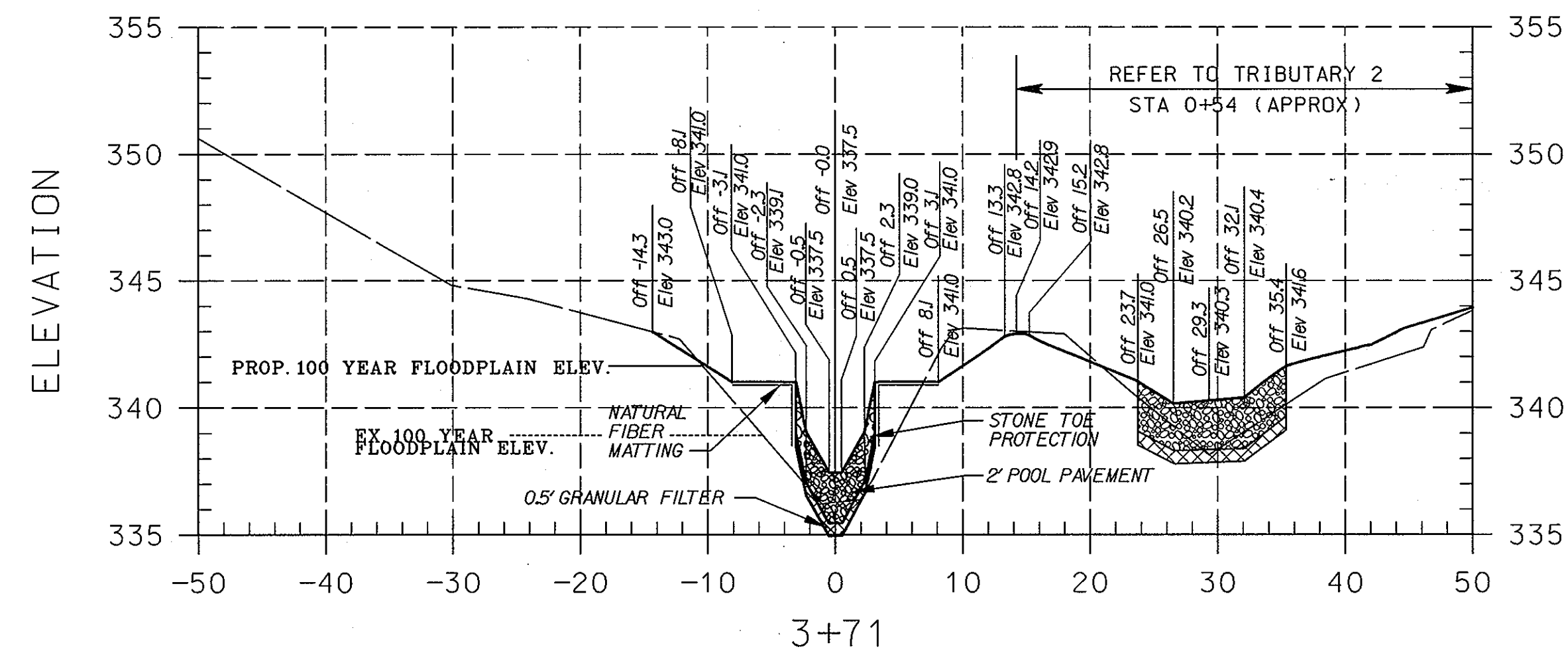
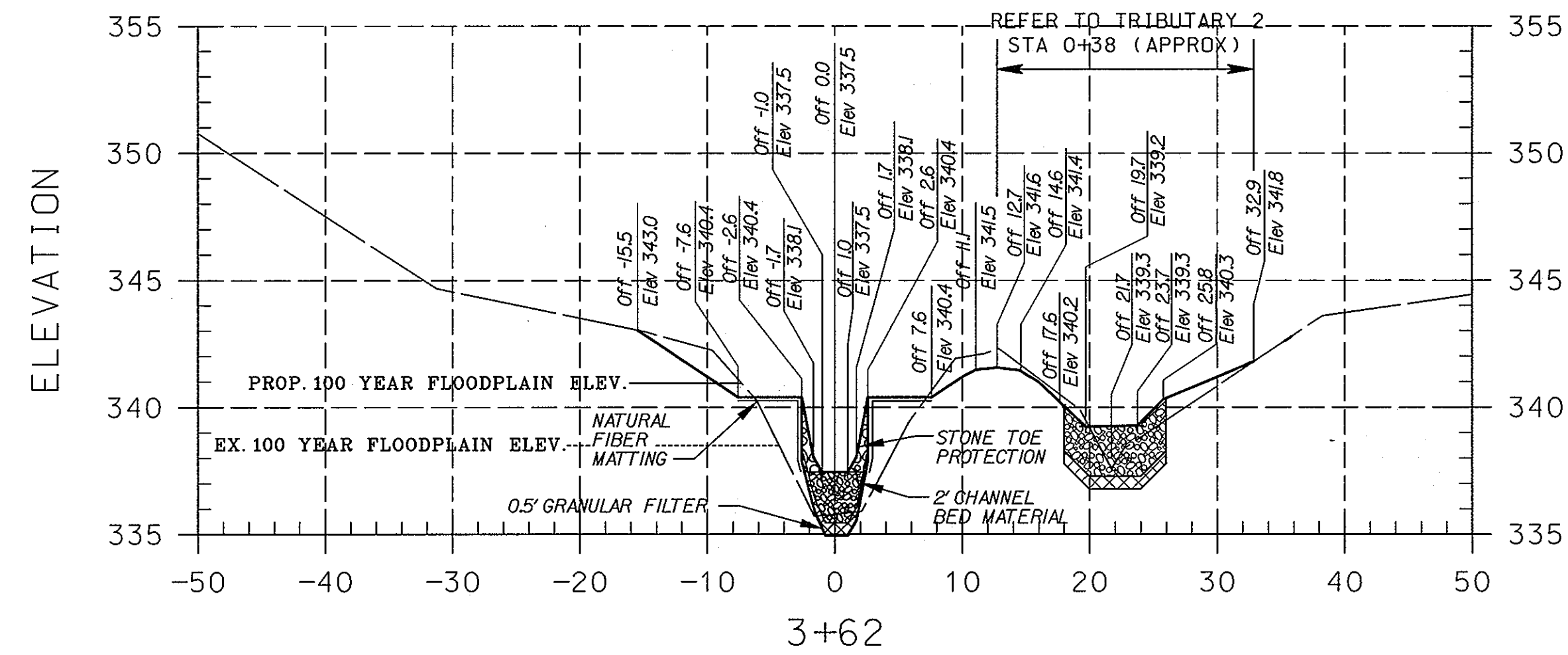
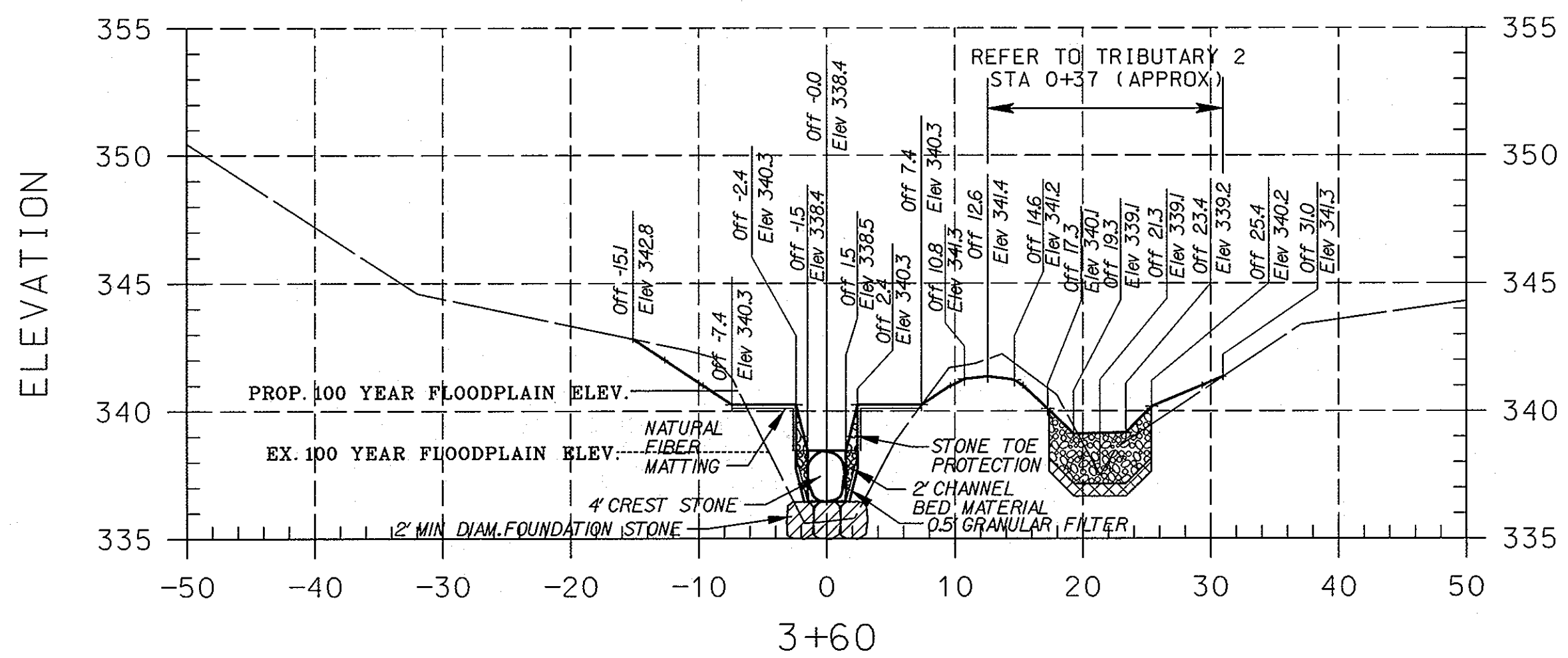
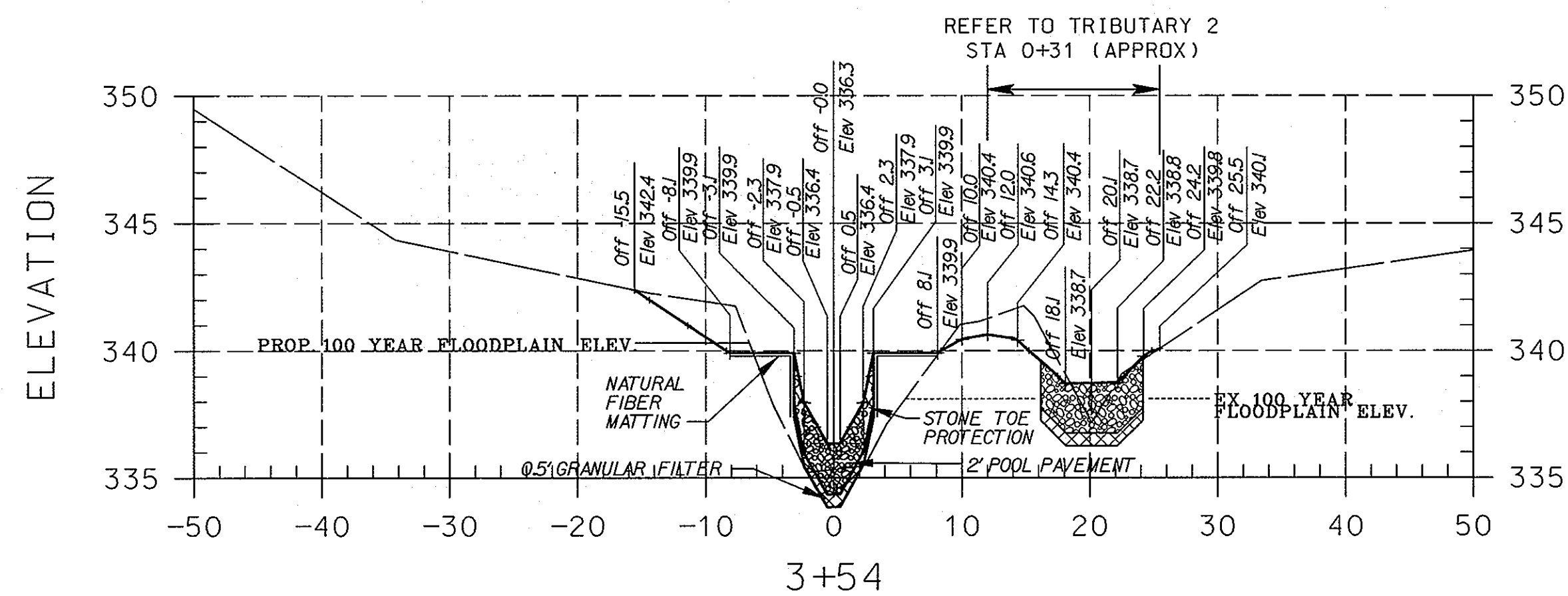
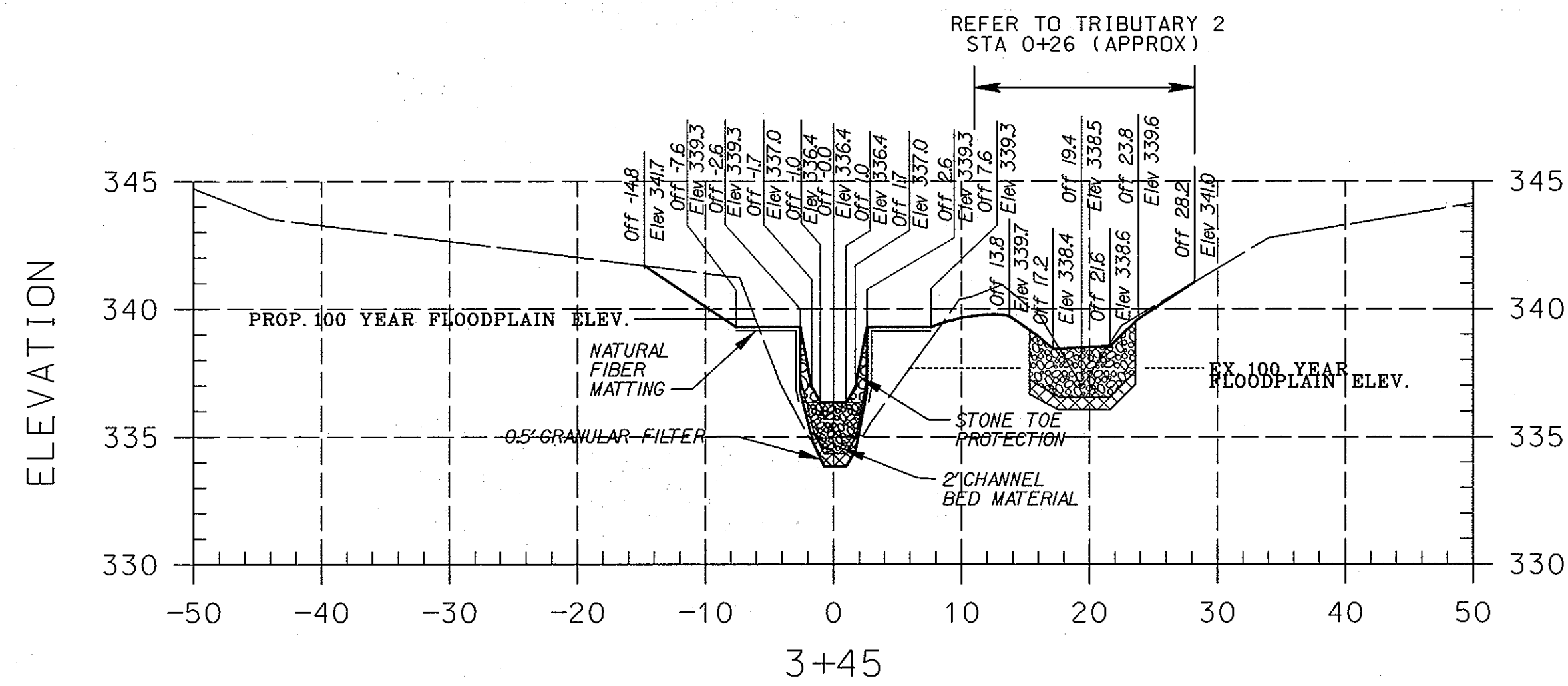
10 NORTH PARK DRIVE
 HUNT VALLEY, MD 21030
 PHONE: (410) 316-7800
 FAX: (410) 316-7817
 www.kci.com



BRIGHTFIELD
 SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6785 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

SIDE TRIBUTARY
 CROSS
 SECTIONS

SCALE:	HOR. 1" = 10'
	VERT. 1" = 5'
DATE:	10/19/07
KCI JOB NO.:	01-043223.12
CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



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[Signature] 11/21/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/13/07
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 11/14/07
 DIRECTOR DATE

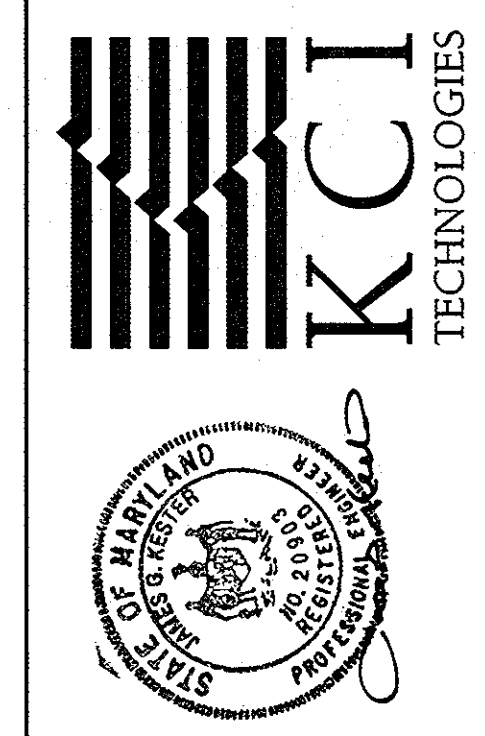
LEGEND

EXISTING GRADE (4/2006)	---
PROPOSED GRADE	—
EX. 100 YEAR FLOODPLAIN	----
PROP. 100 YEAR FLOODPLAIN	----

NOTE:
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 LEFT TO RIGHT LOOKING UP STREAM

NO.	REVISIONS DESCRIPTION	DATE

10 NORTH PARK DRIVE
 HUNT VALLEY, MD 21030
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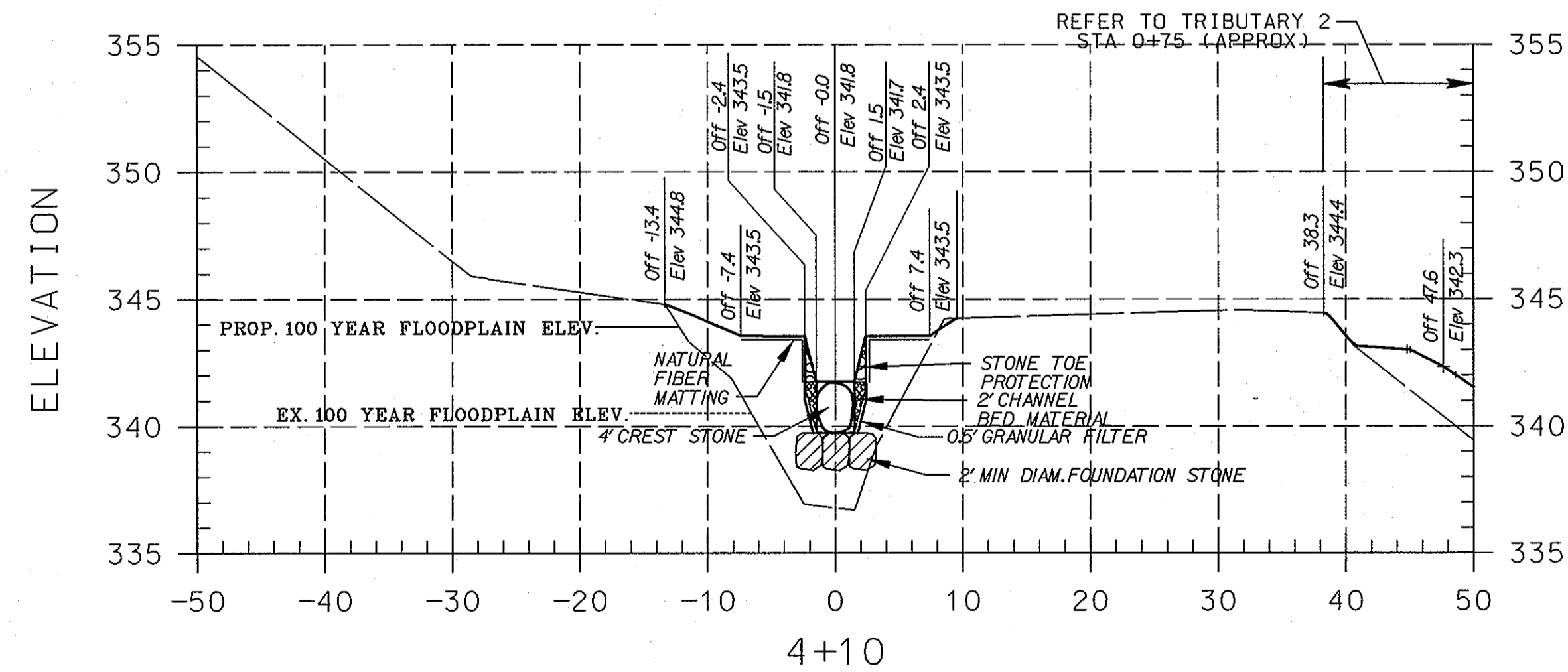
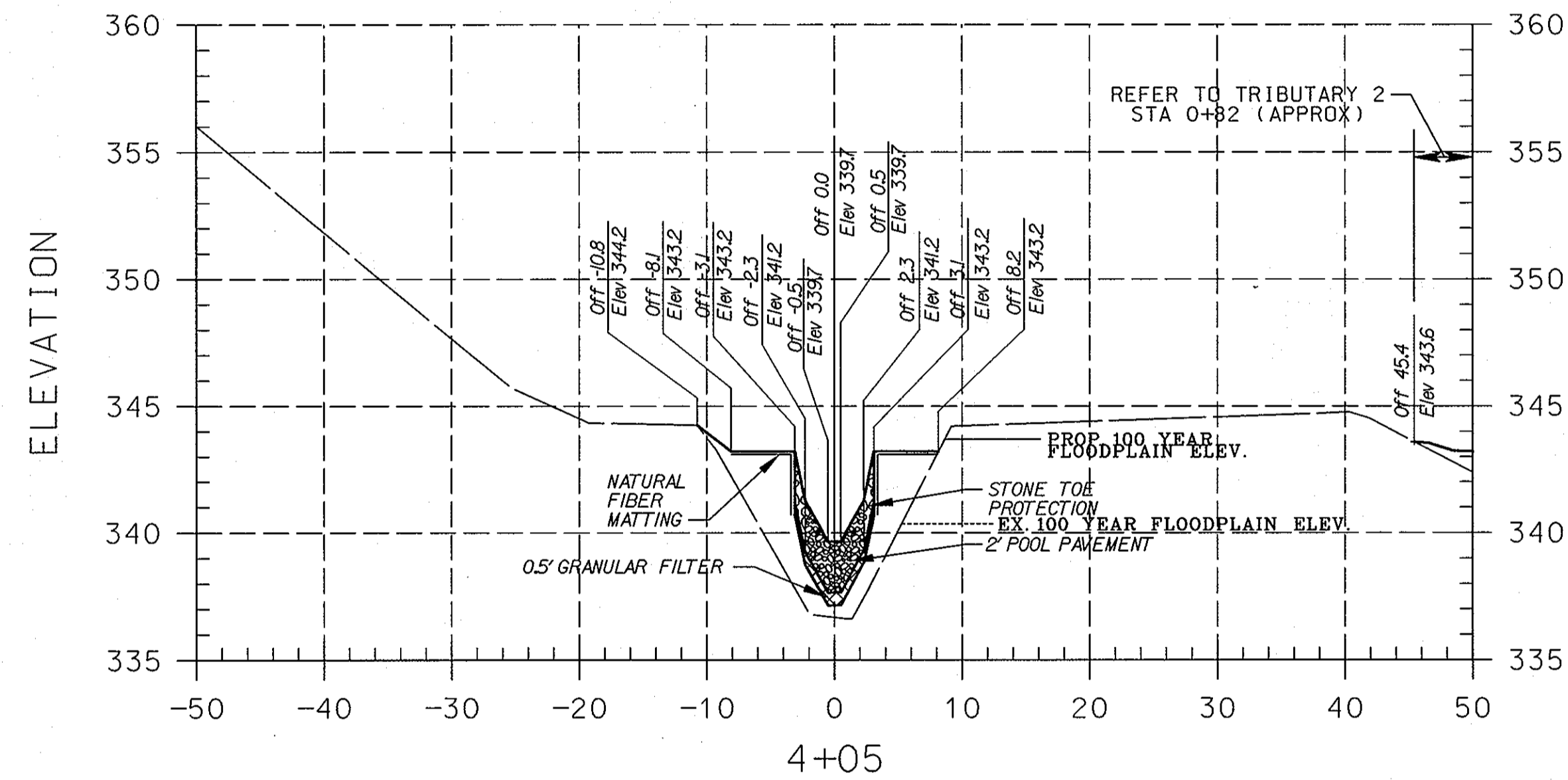
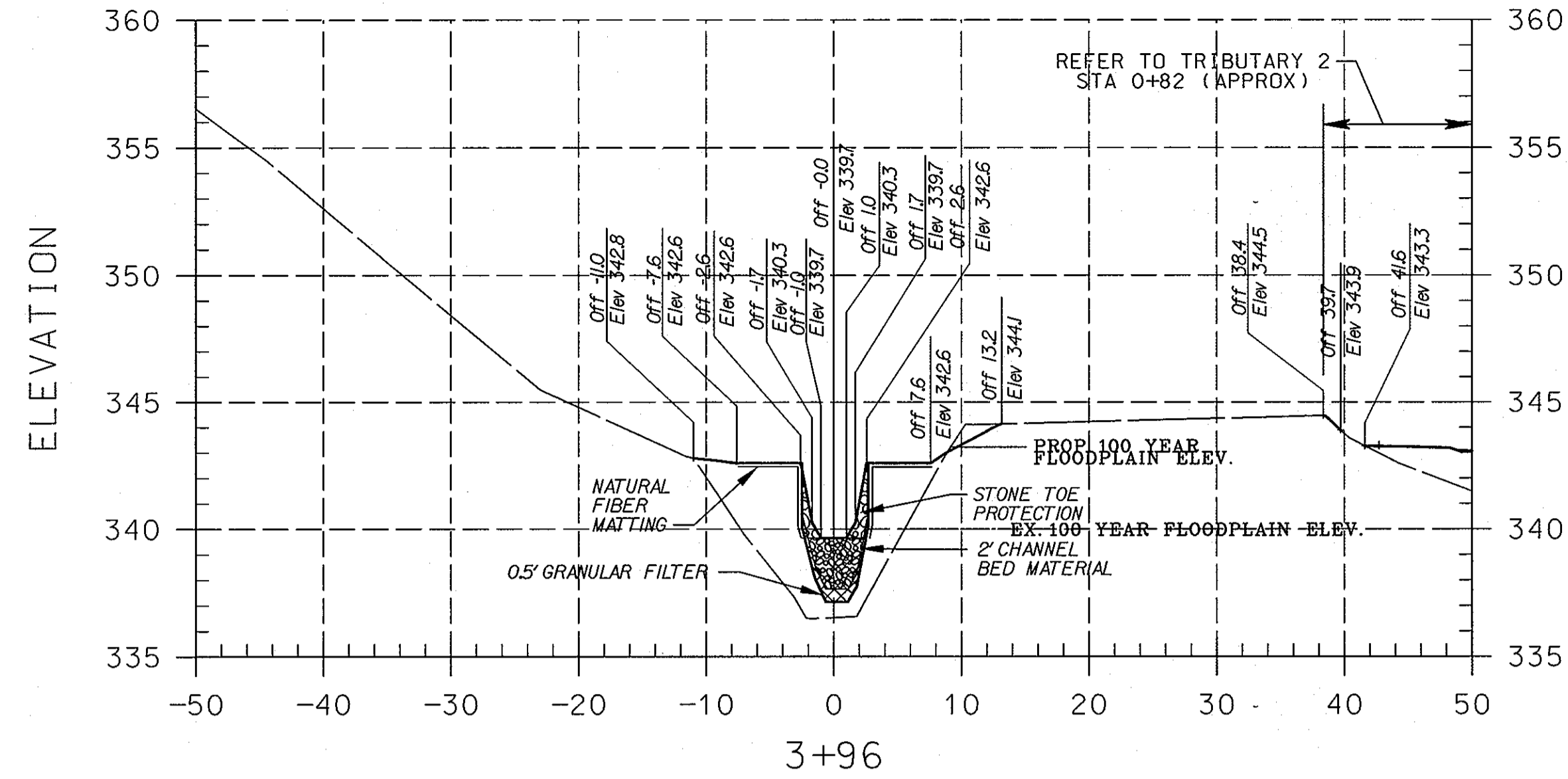
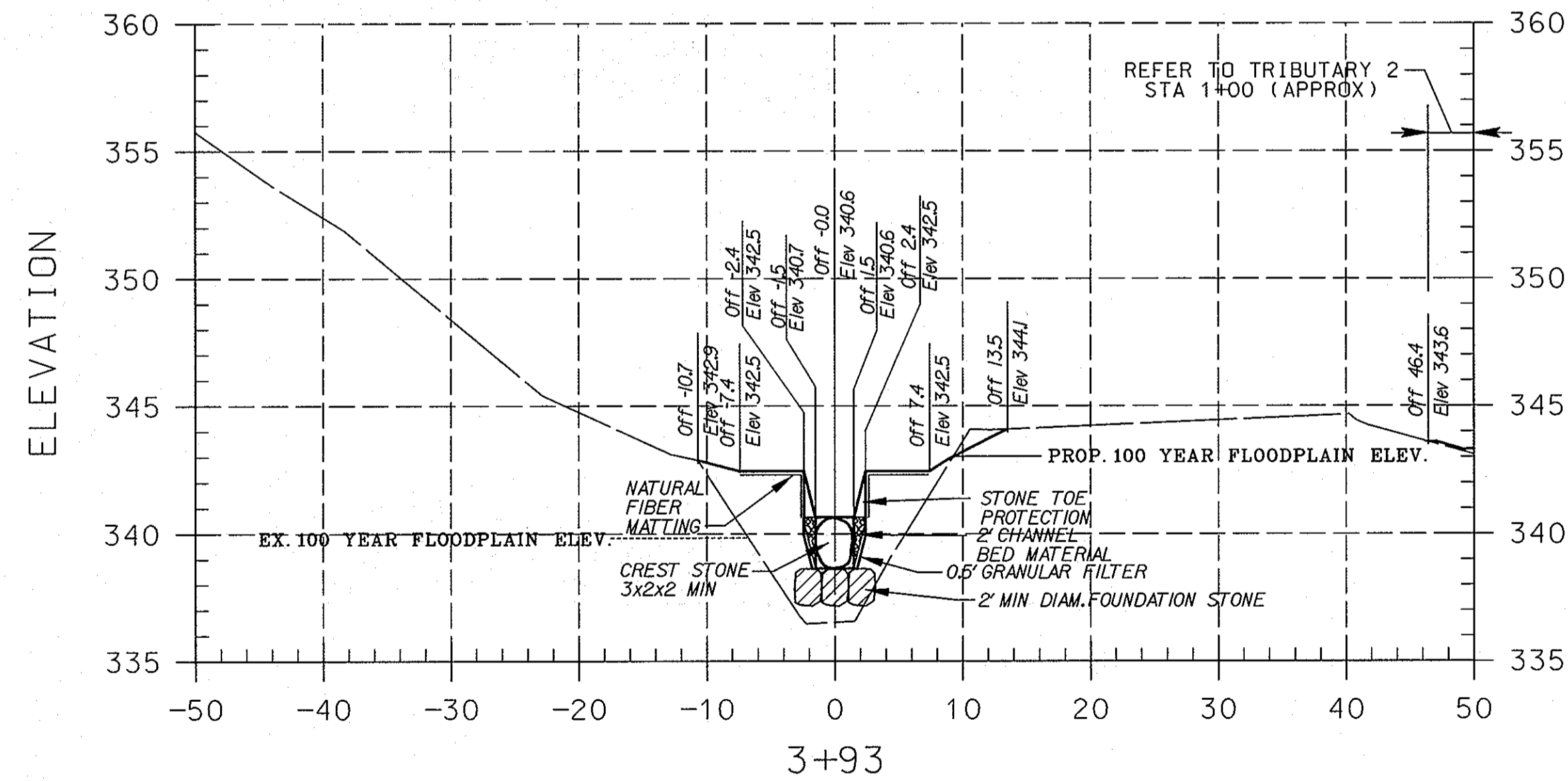
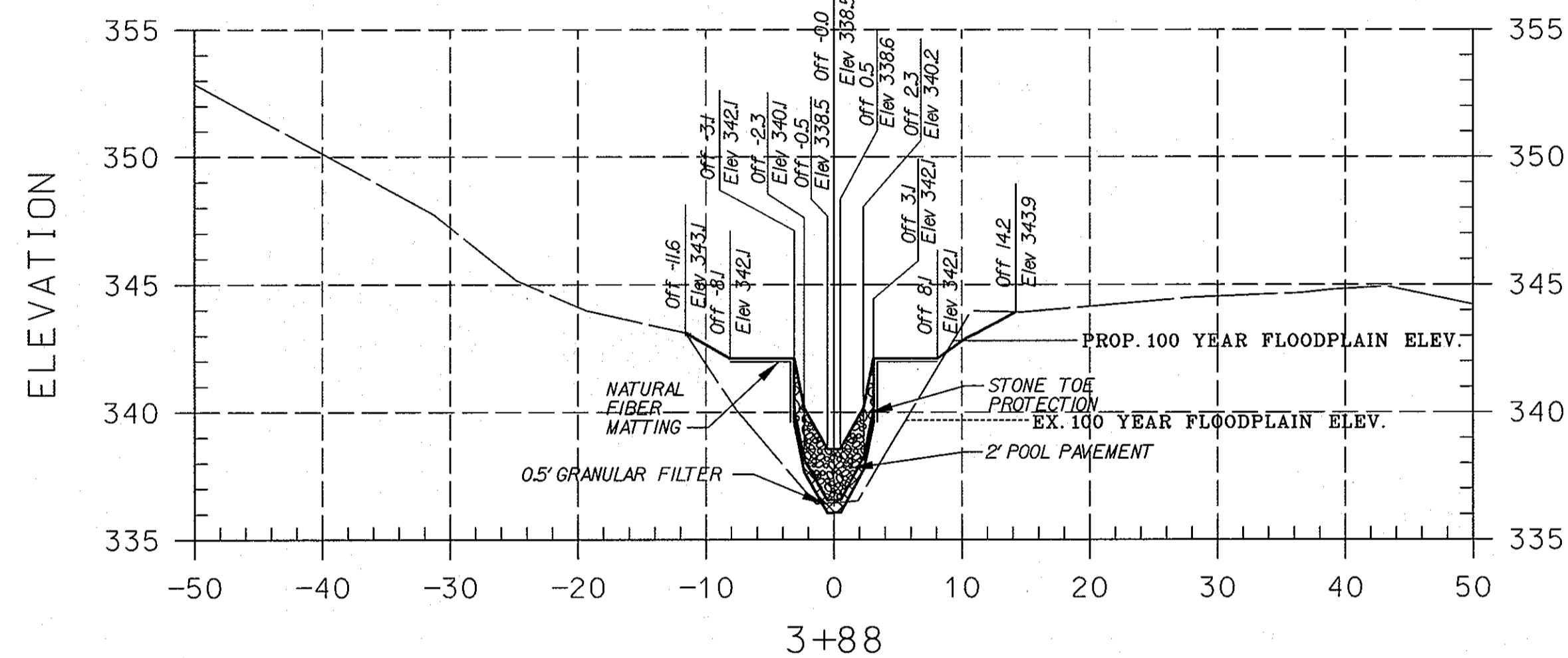
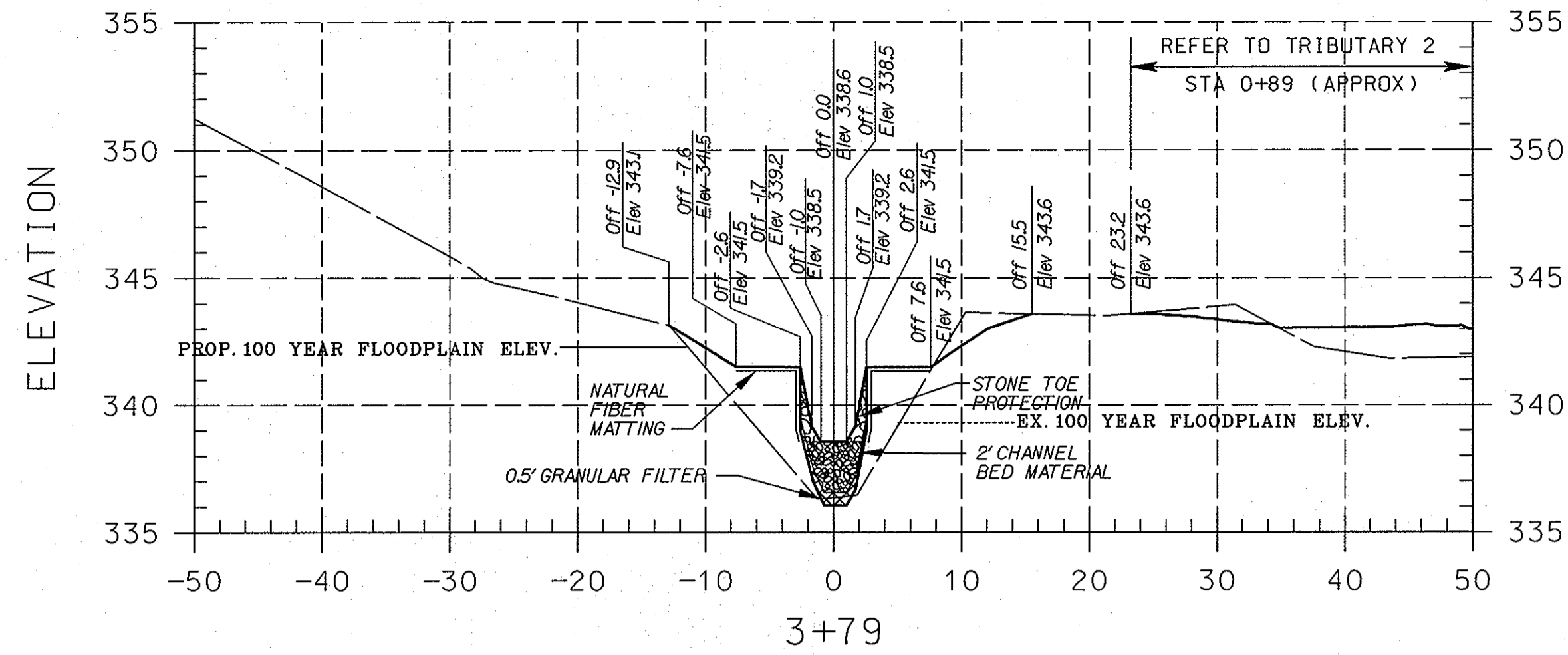


**BRIGHTFIELD
 SECTION 1, AREA 2**

HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6761 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

**SIDE TRIBUTARY
 CROSS
 SECTIONS**

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CONSTRUCTION ISSUE:	



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[Signature] 12/1/07
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 12/6/07
 DIRECTOR

LEGEND	
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PROPOSED GRADE	—
EX. 100 YEAR FLOODPLAIN
PROP. 100 YEAR FLOODPLAIN	—

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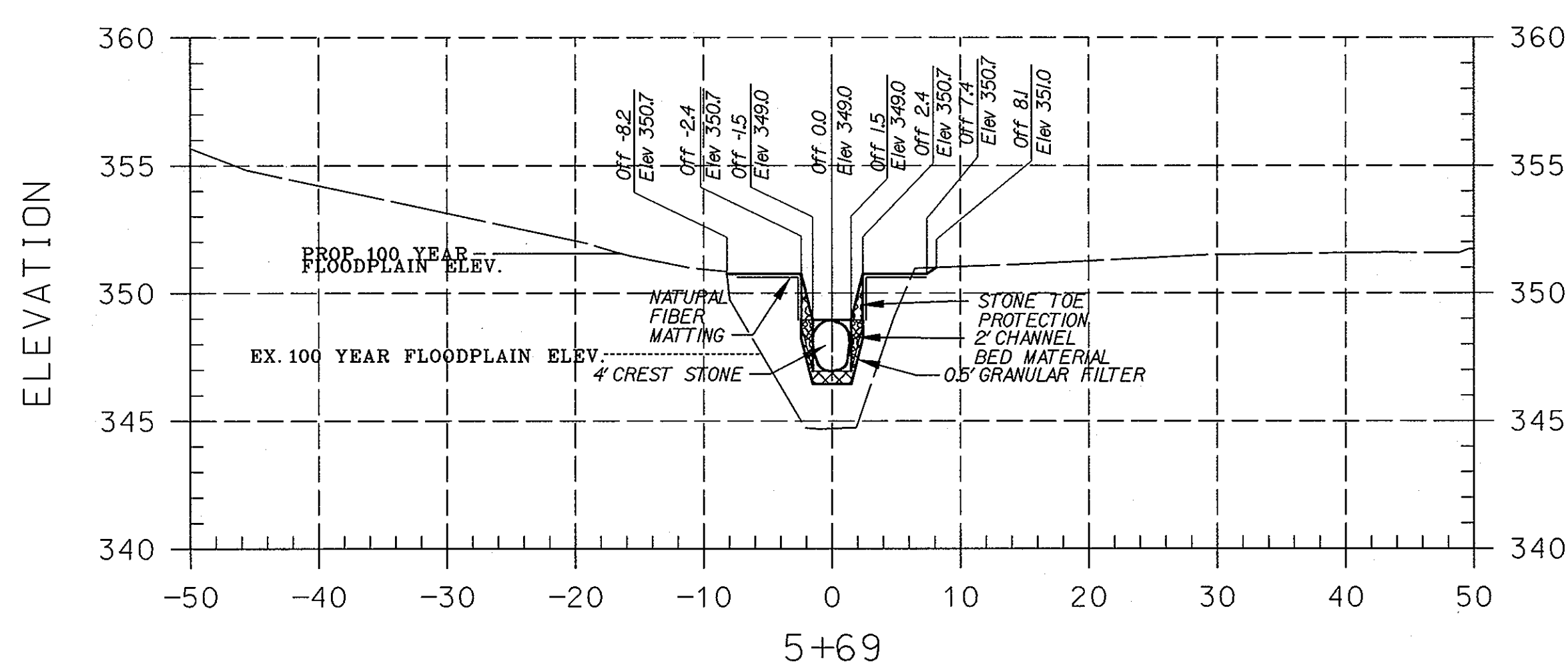
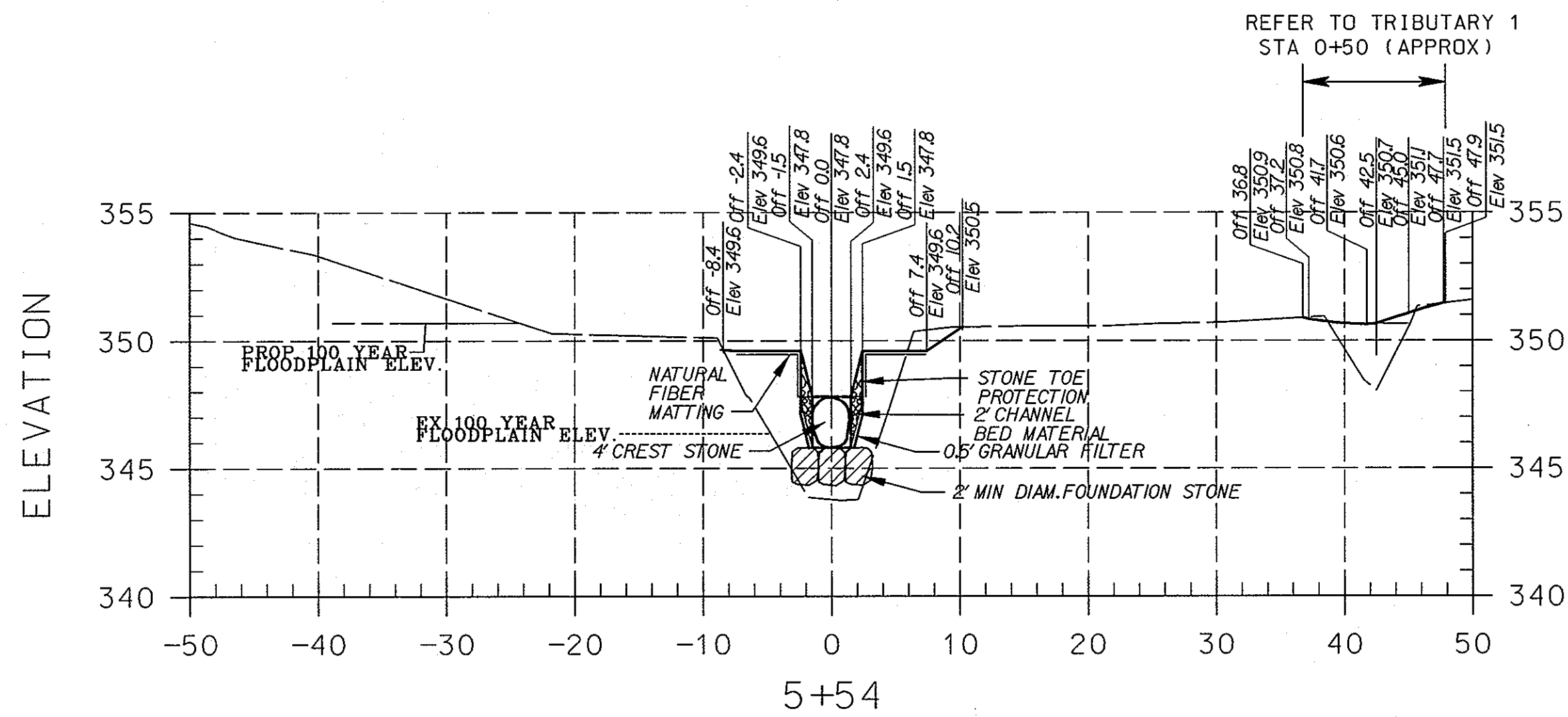
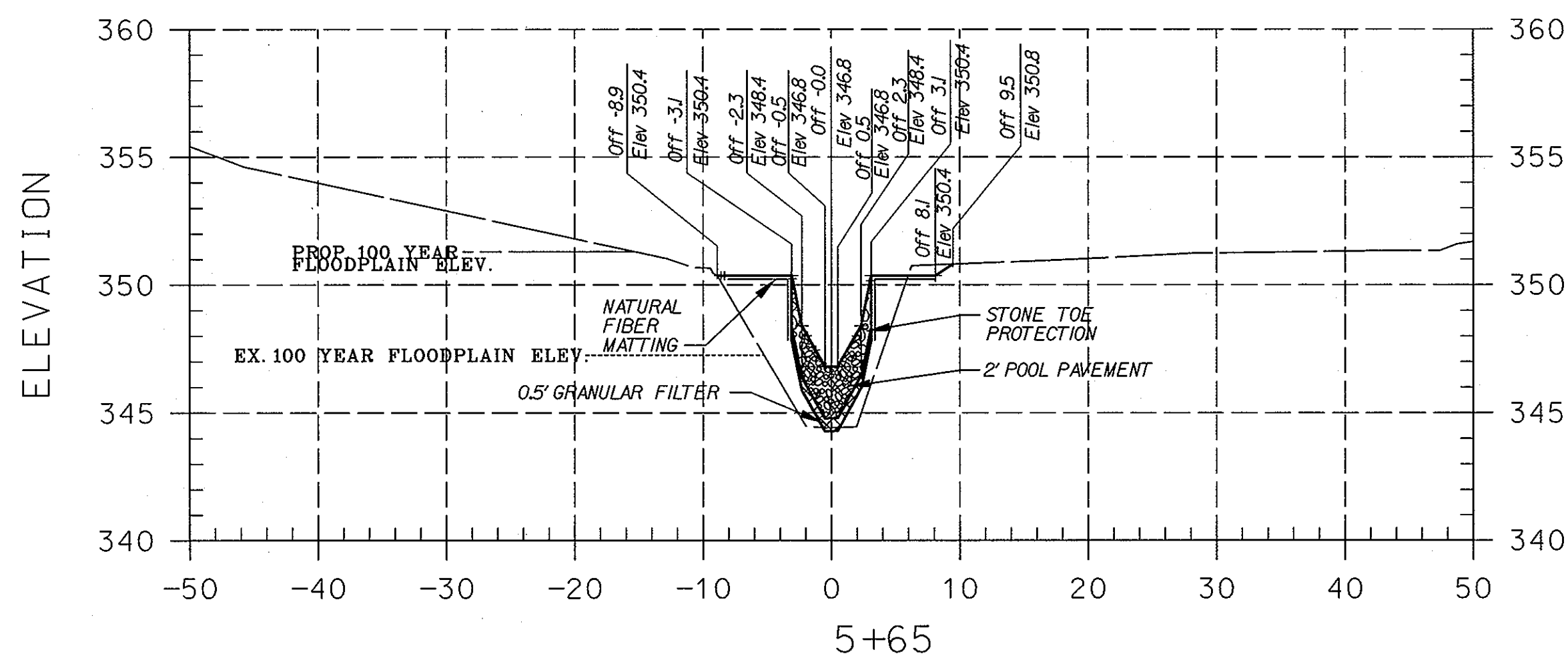
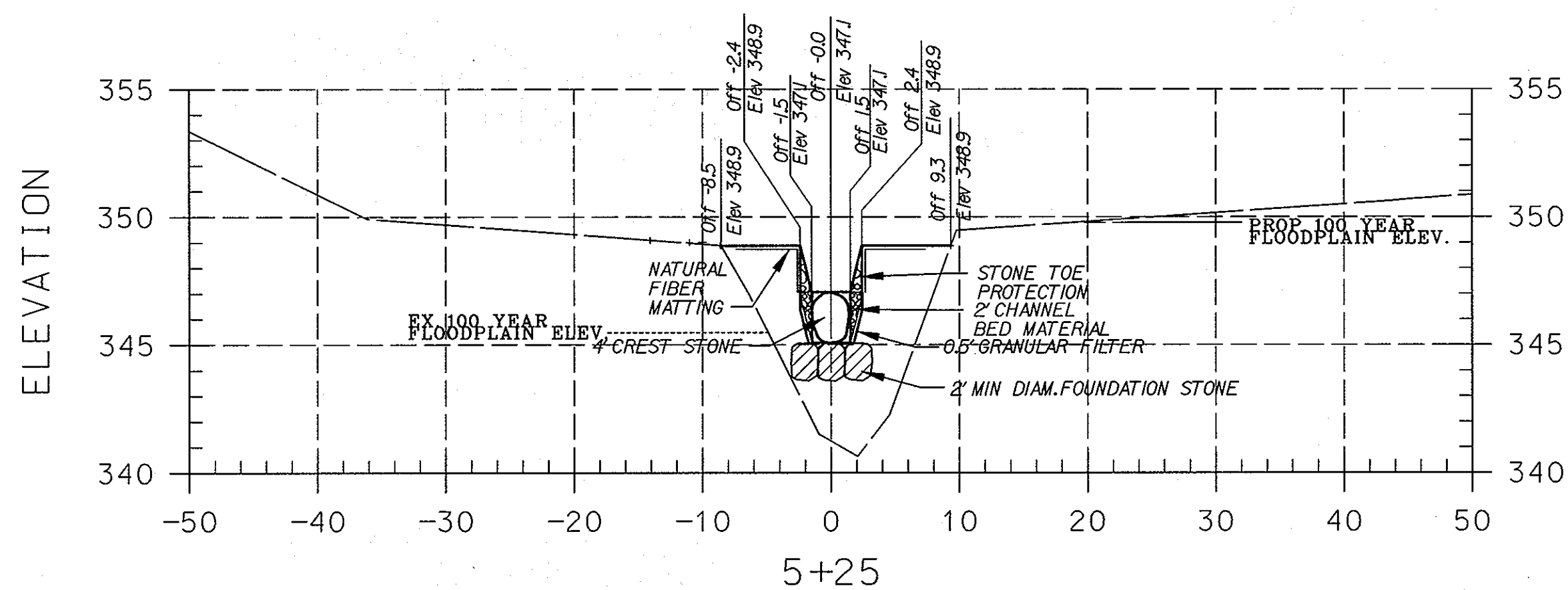
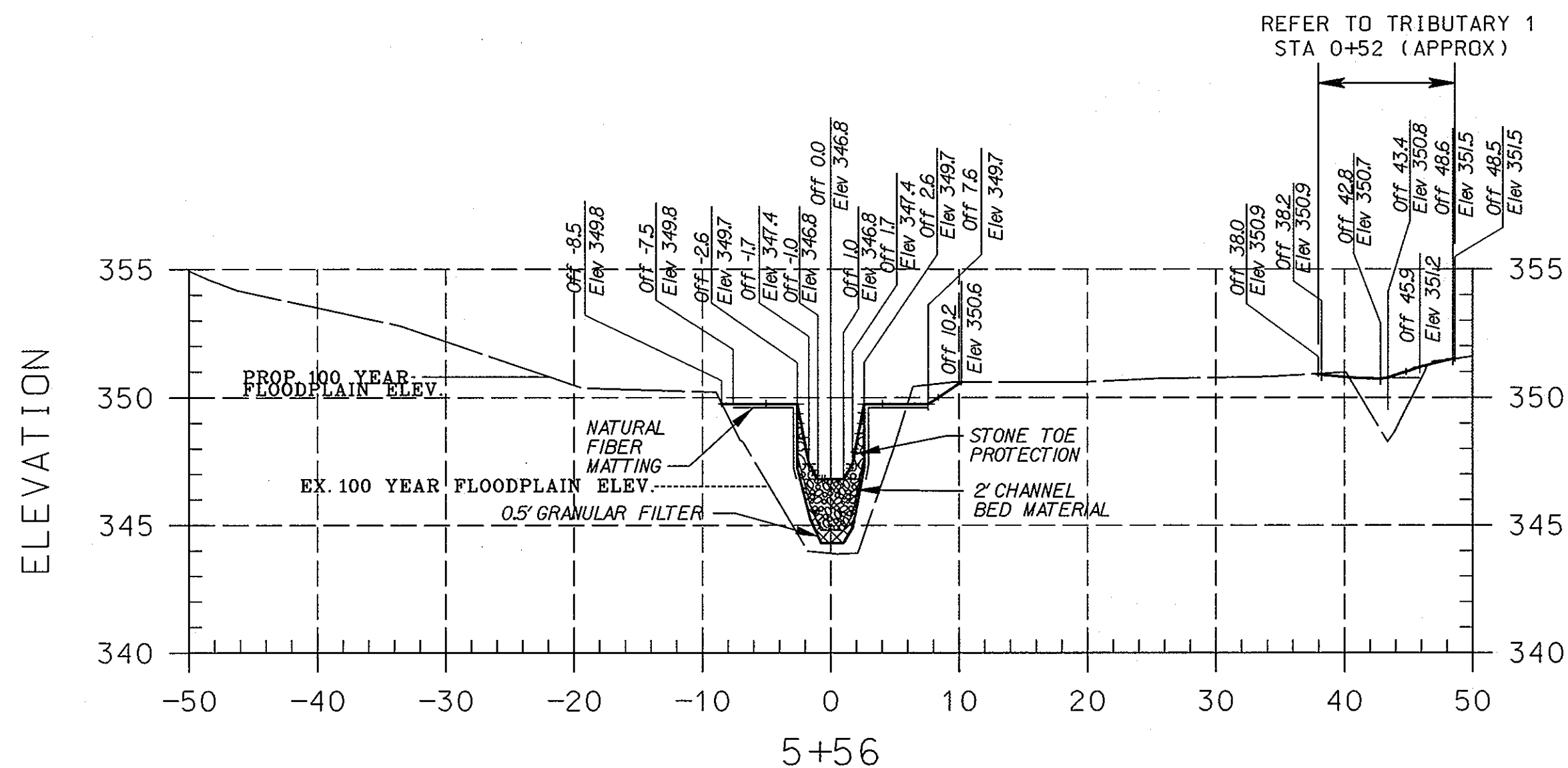
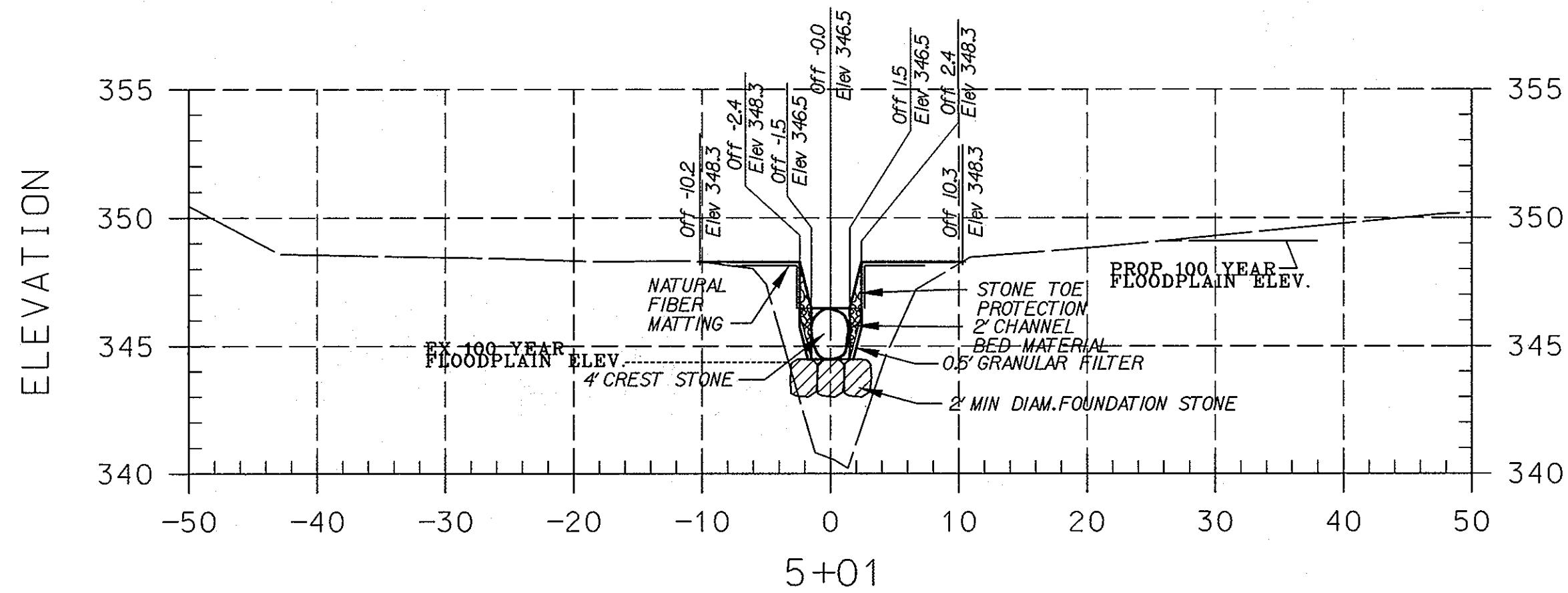
10 NORTH PARK DRIVE
 HUNT VALLEY, MD 21030
 PHONE: (410) 316-7800
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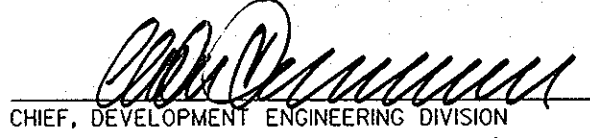

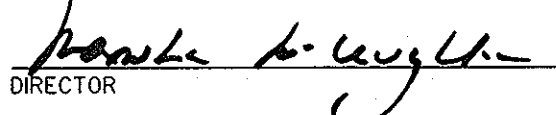
BRIGHTFIELD
 SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 675 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

SIDE TRIBUTARY
 CROSS
 SECTIONS

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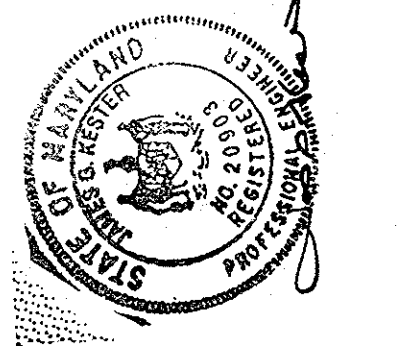
 11/21/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 12/6/07
 CHIEF, DIVISION OF LAND DEVELOPMENT
 12/6/07
 DIRECTOR

LEGEND	
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PROP. 100 YEAR FLOODPLAIN	-----

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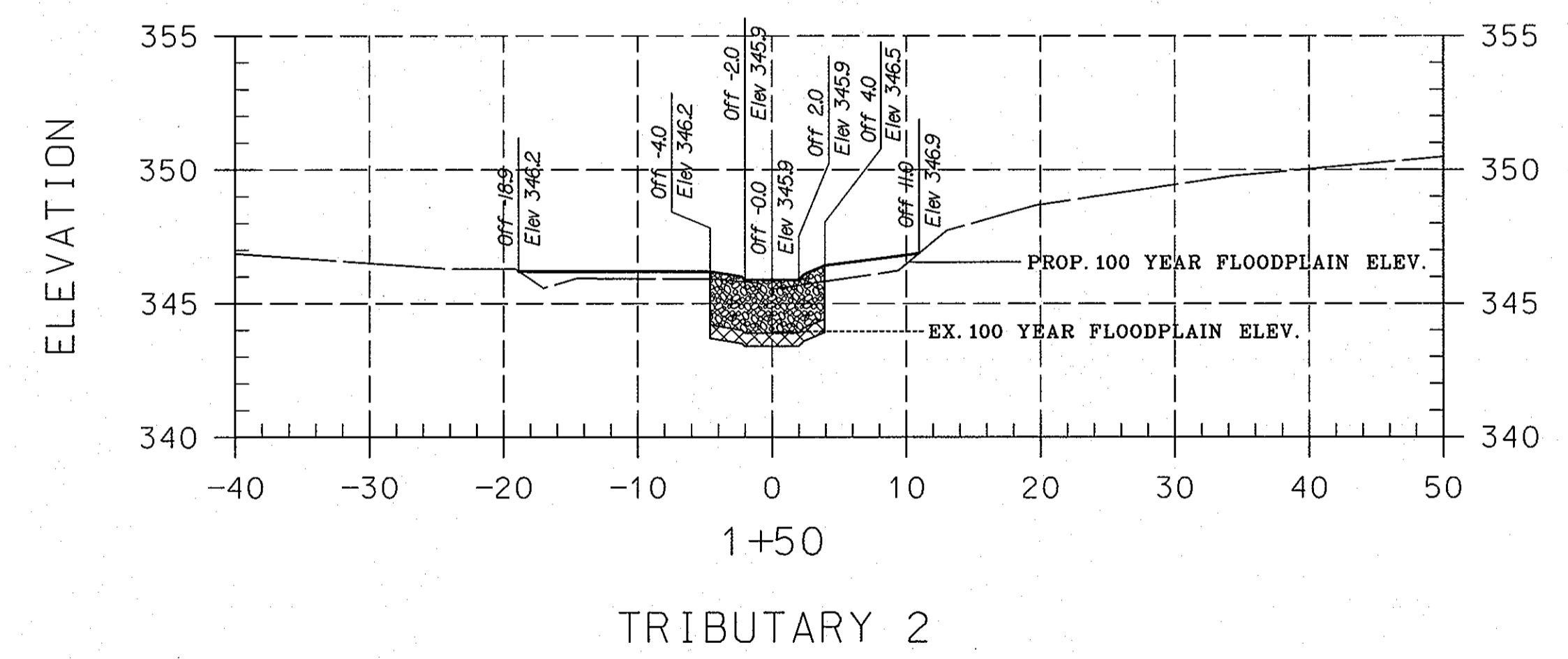
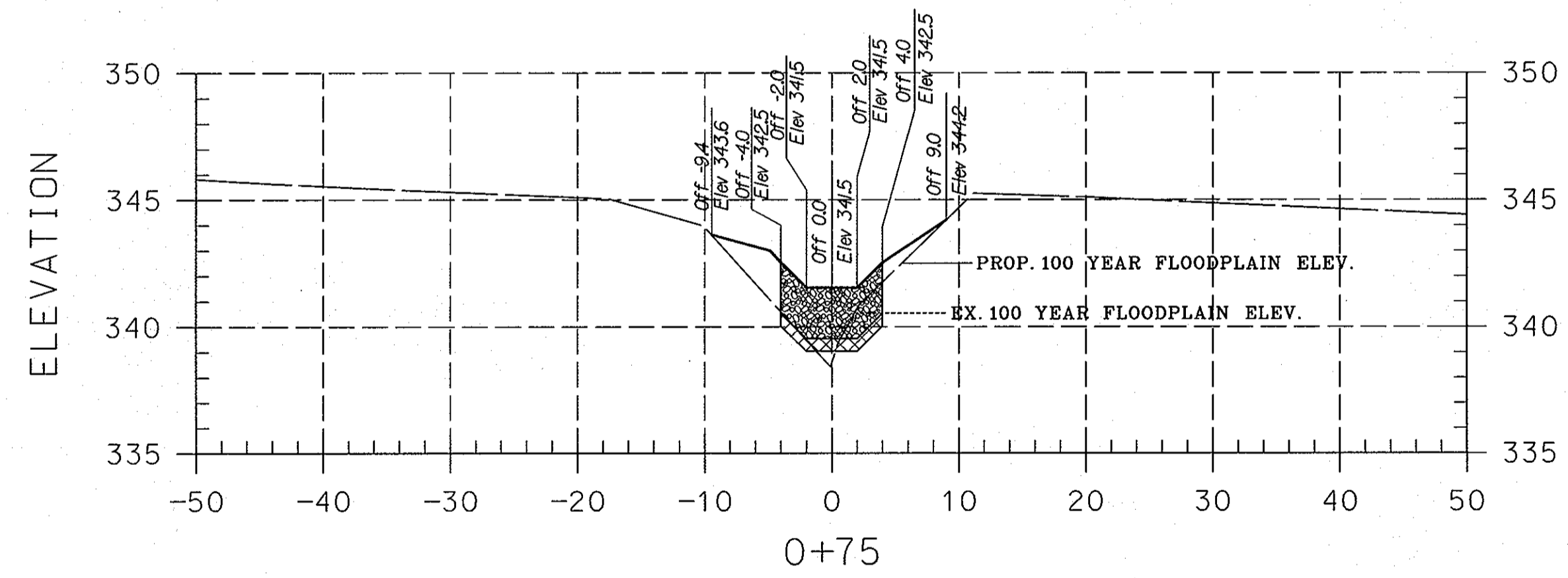
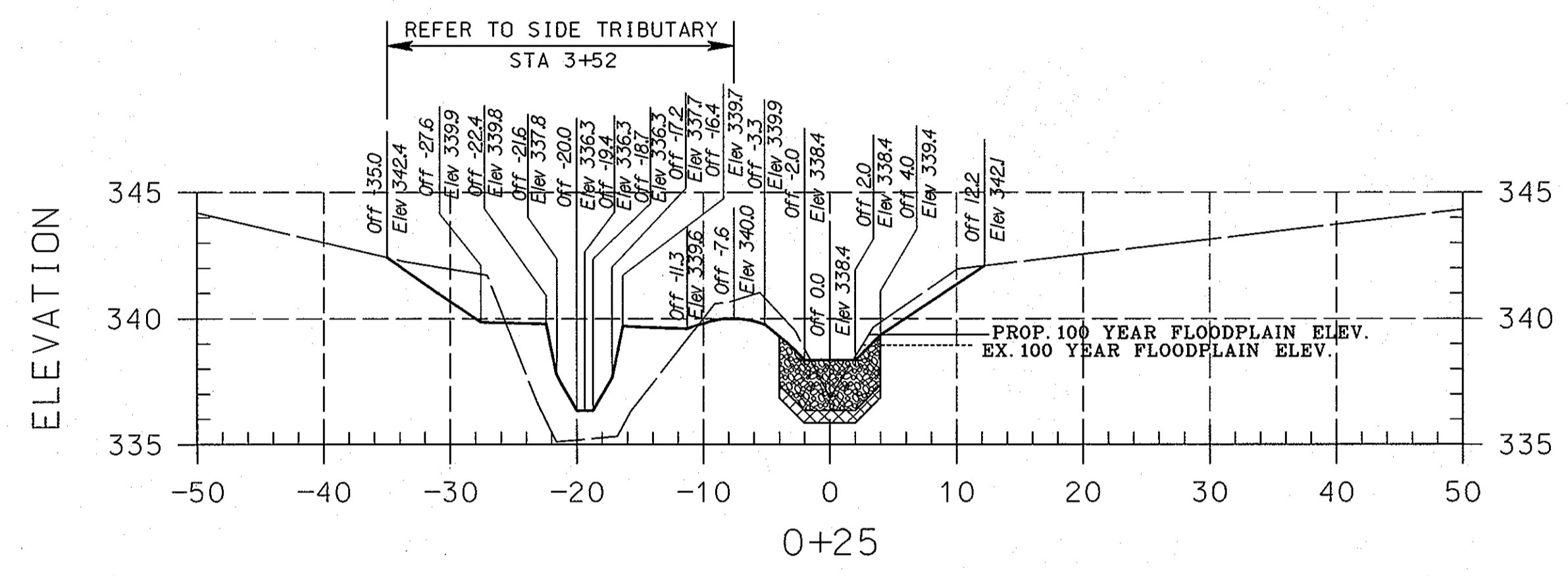
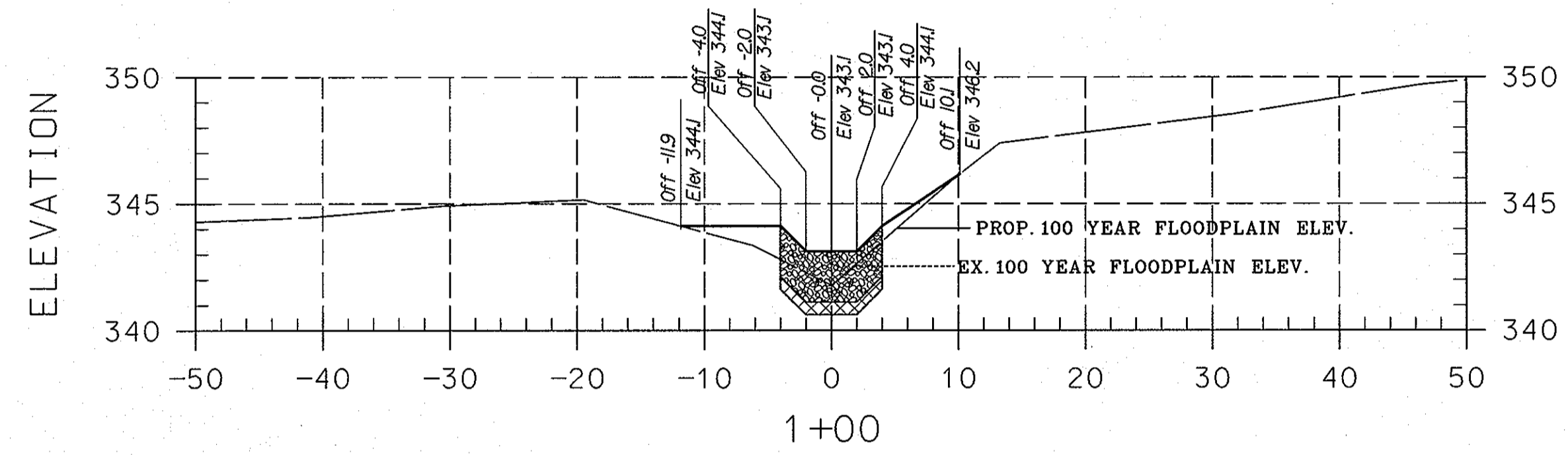
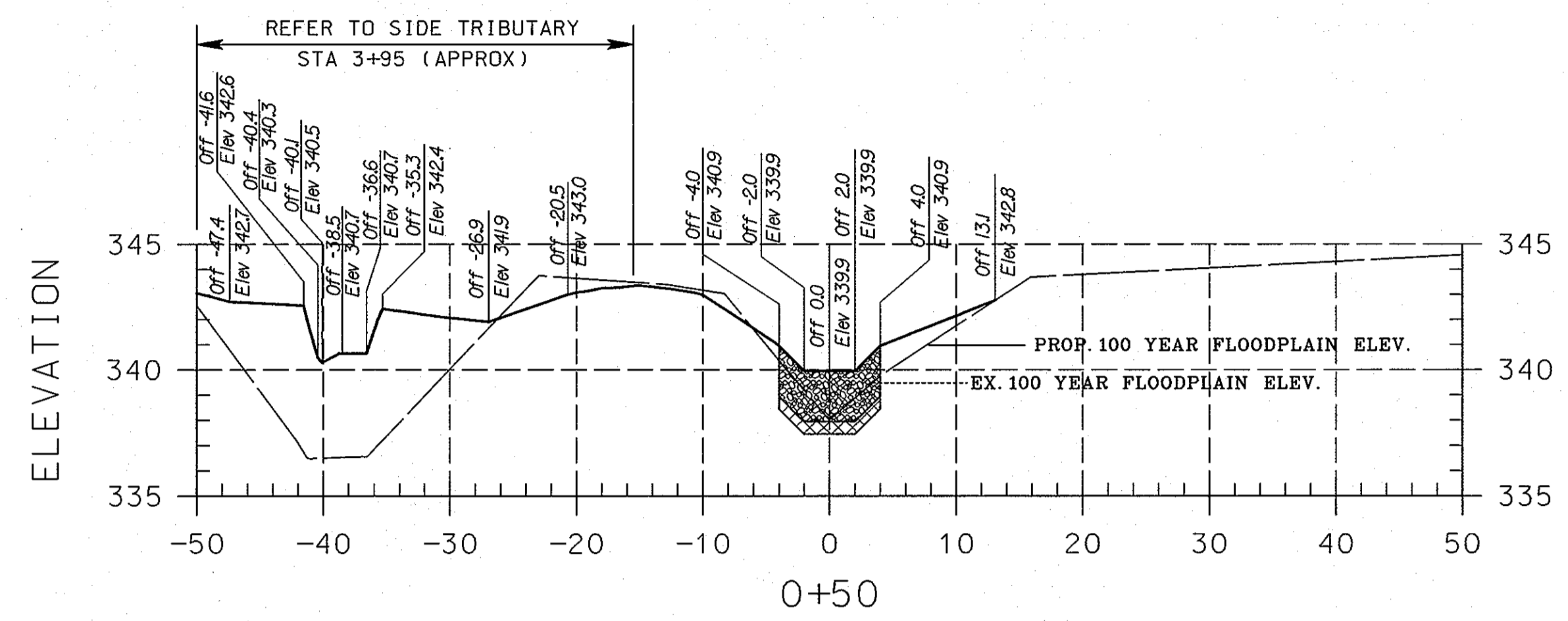
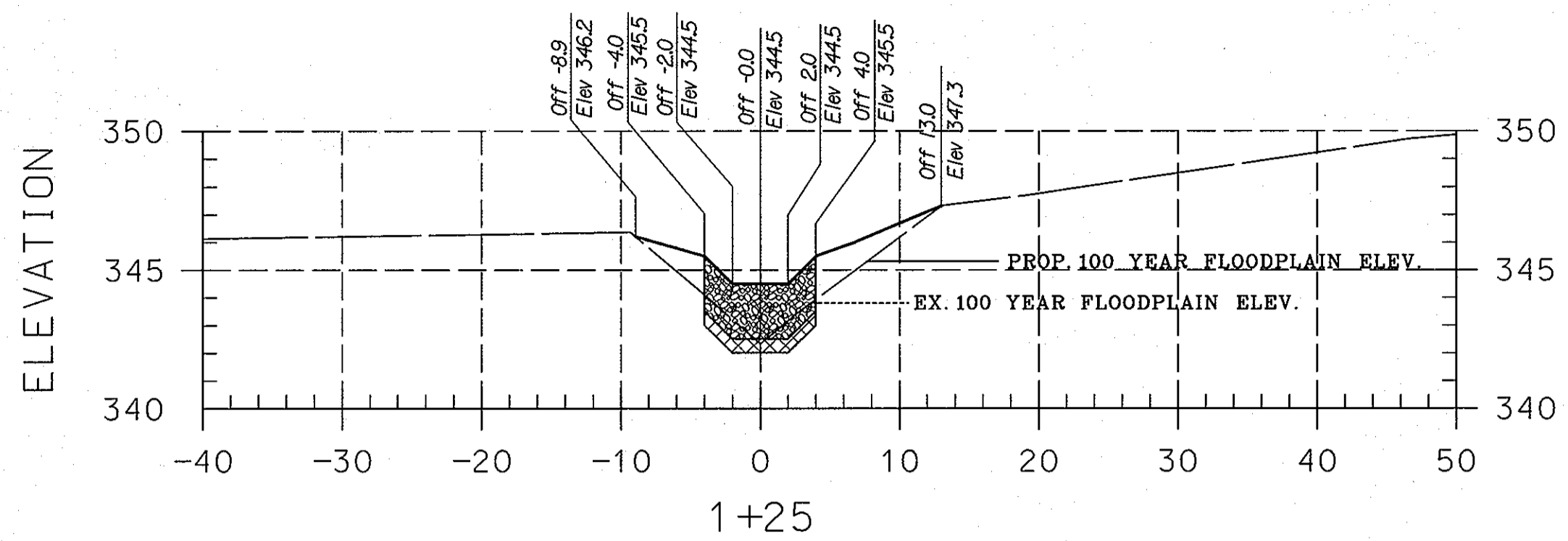
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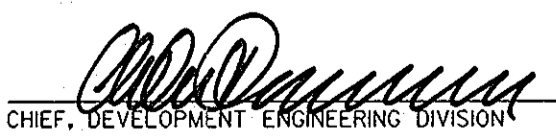

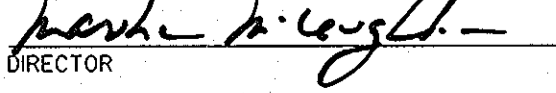
BRIGHTFIELD
 SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 675 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

SIDE TRIBUTARY
CROSS
SECTIONS

SCALE:	HOR. 1" = 10' VERT. 1" = 5'
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CAPITAL PROJECT NO.:	D-1126
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CONSTRUCTION ISSUE:	



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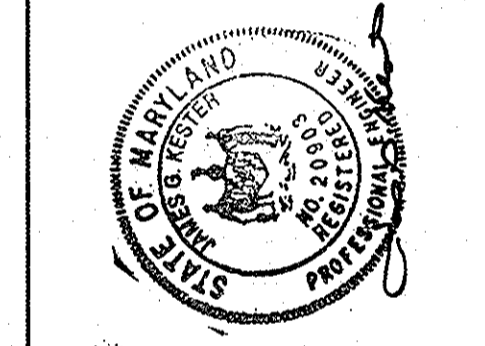
 11/27/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/15/10
 CHIEF, DIVISION OF LAND DEVELOPMENT
 12/16/10
 DIRECTOR

LEGEND	
EXISTING GRADE (4/2006)	---
PROPOSED GRADE	—
EX. 100 YEAR FLOODPLAIN
PROP. 100 YEAR FLOODPLAIN	-----

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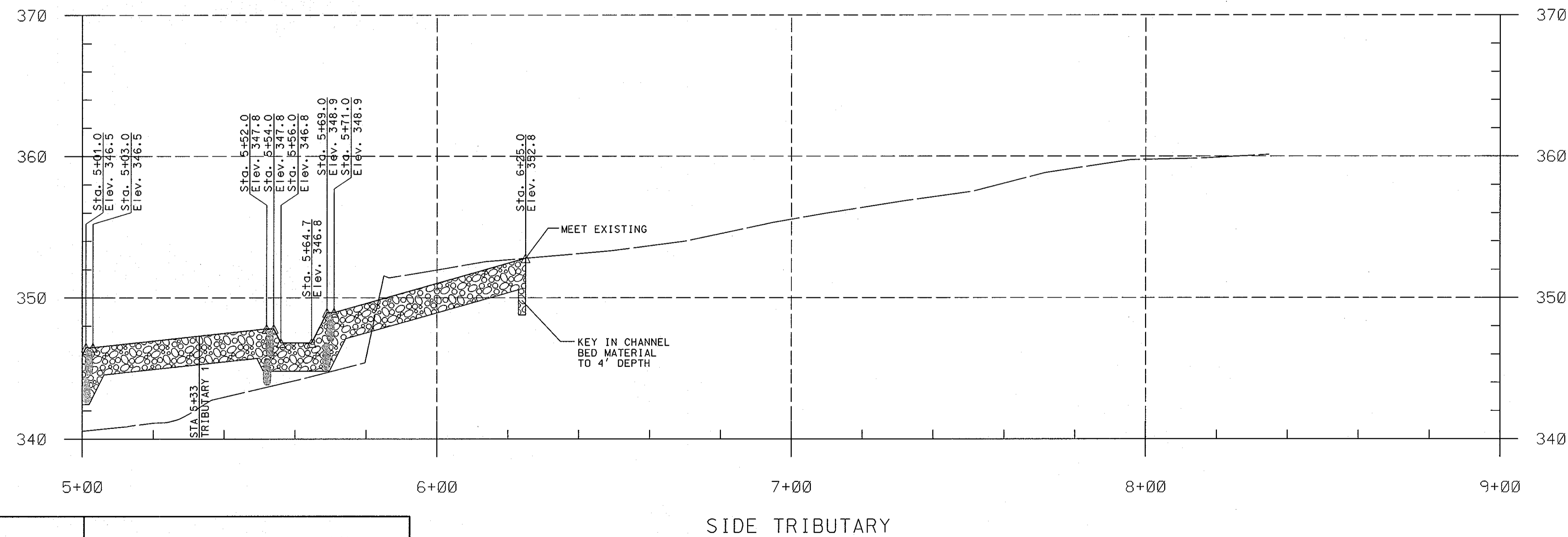
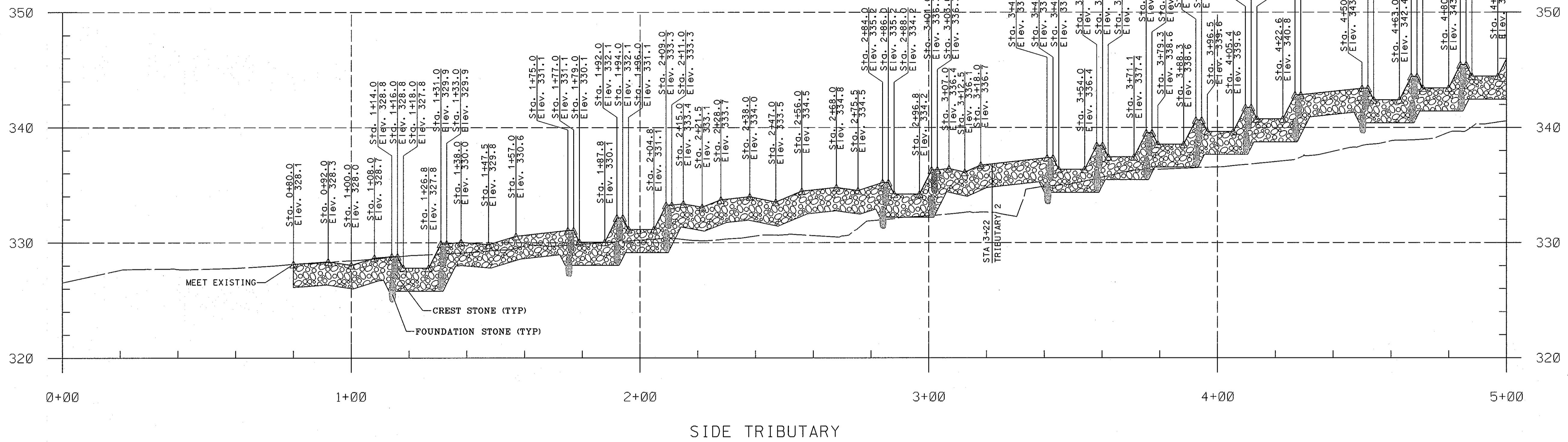
10 NORTH PARK DRIVE
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BRIGHTFIELD
SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6781 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

TRIBUTARY 2
CROSS
SECTIONS

SCALE:	HOR. 1" = 10'
	VERT. 1" = 5'
DATE:	10/19/07
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CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



LEGEND	
EXISTING GROUND (1/2006)	---
PROPOSED GRADE	---
CHANNEL BED MATERIAL	

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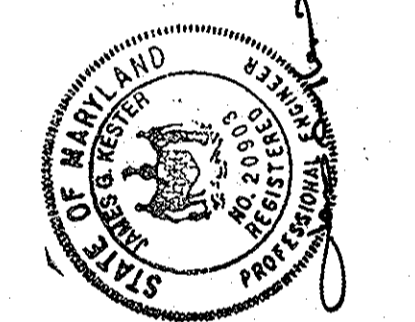
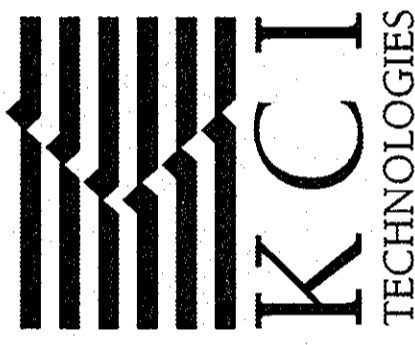
[Signature] 11/20/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/3/07
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 12/6/07
 DIRECTOR DATE

NOTE: THE PLACEMENT OF FILL MATERIAL SHALL CONFORM TO SOIL COMPACTION NOTES ON THE EROSION AND SEDIMENT CONTROL NOTES SHEET 26 OF 33.

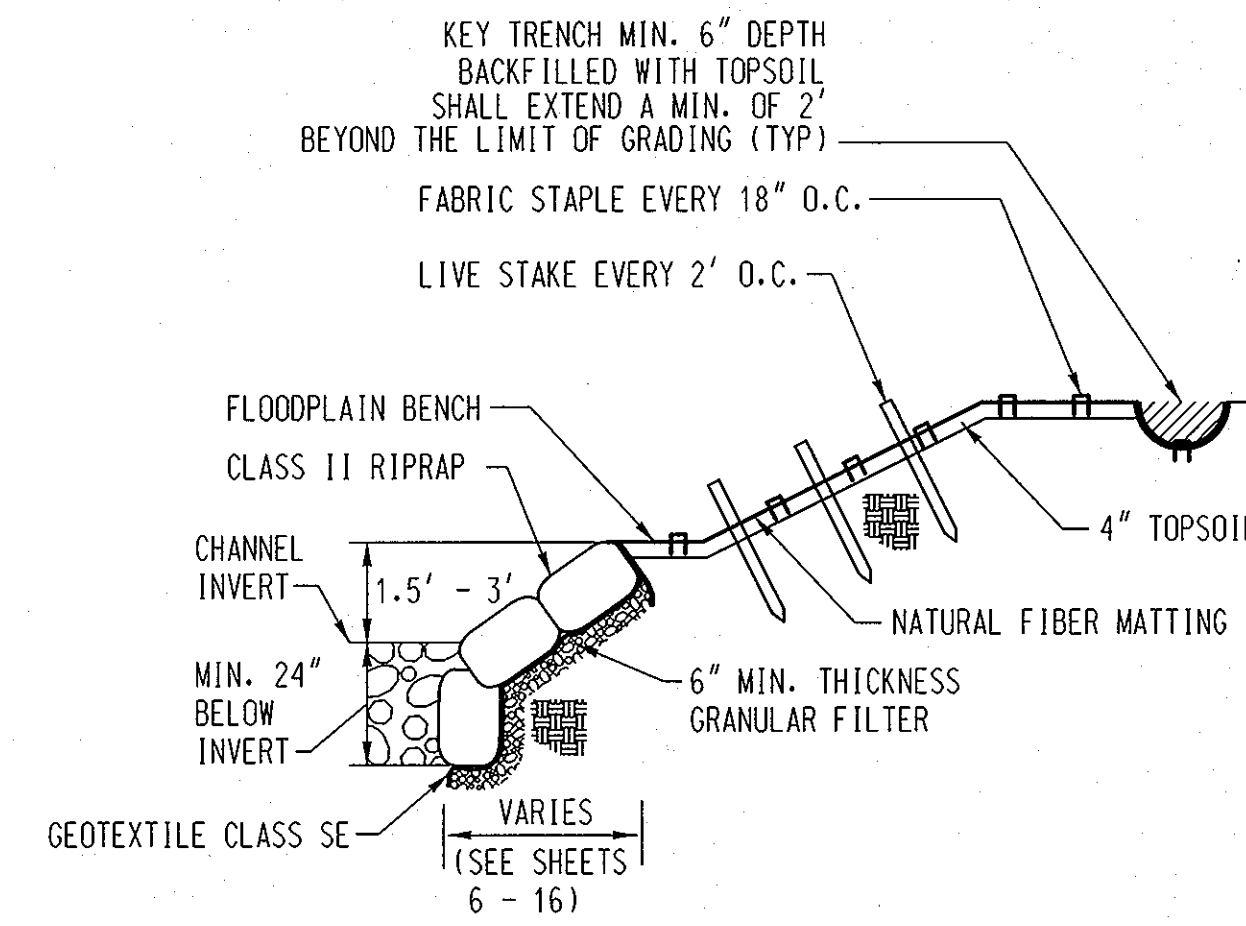
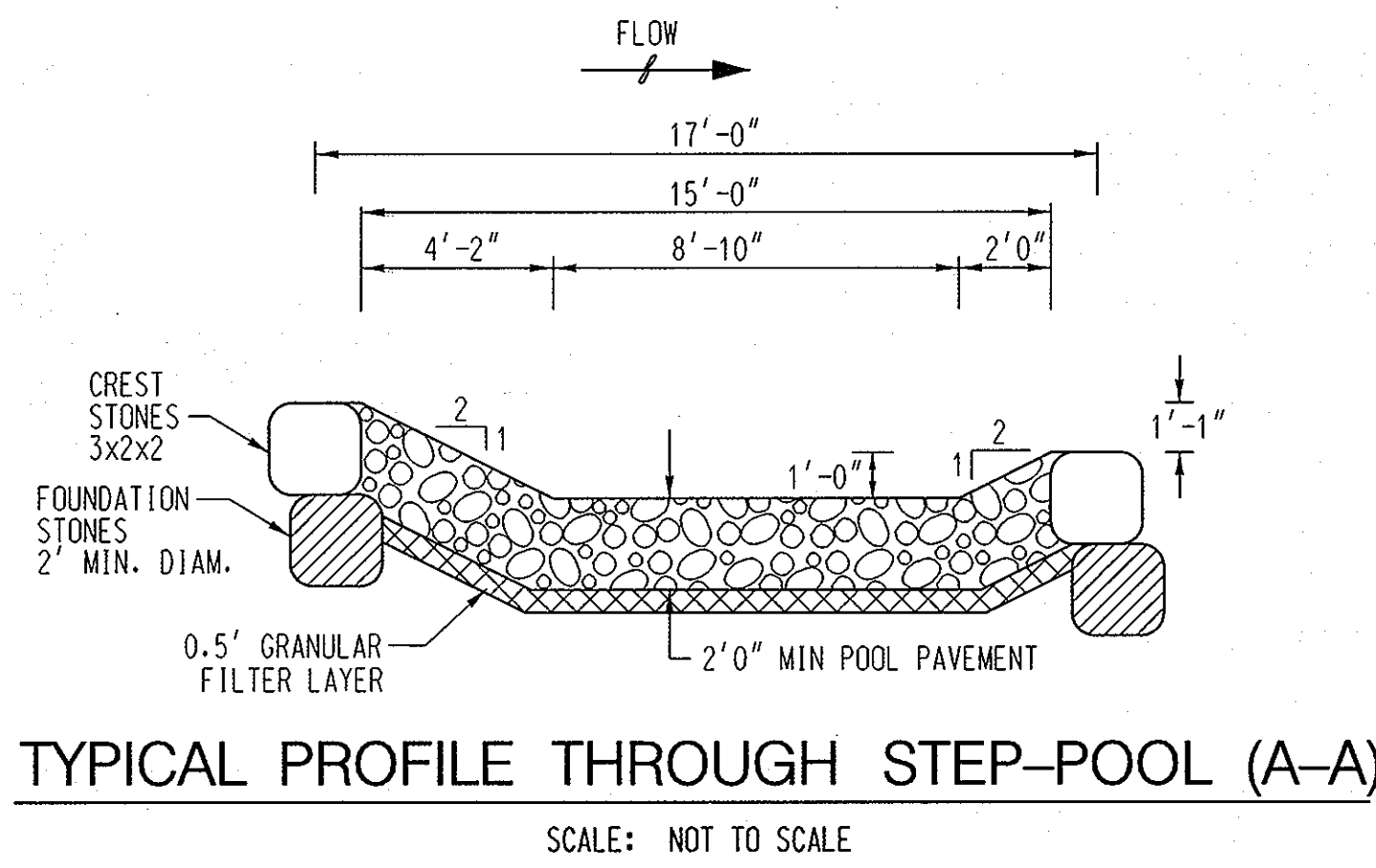
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BRIGHTFIELD
 SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 8781 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

SIDE TRIBUTARY
 PROFILE

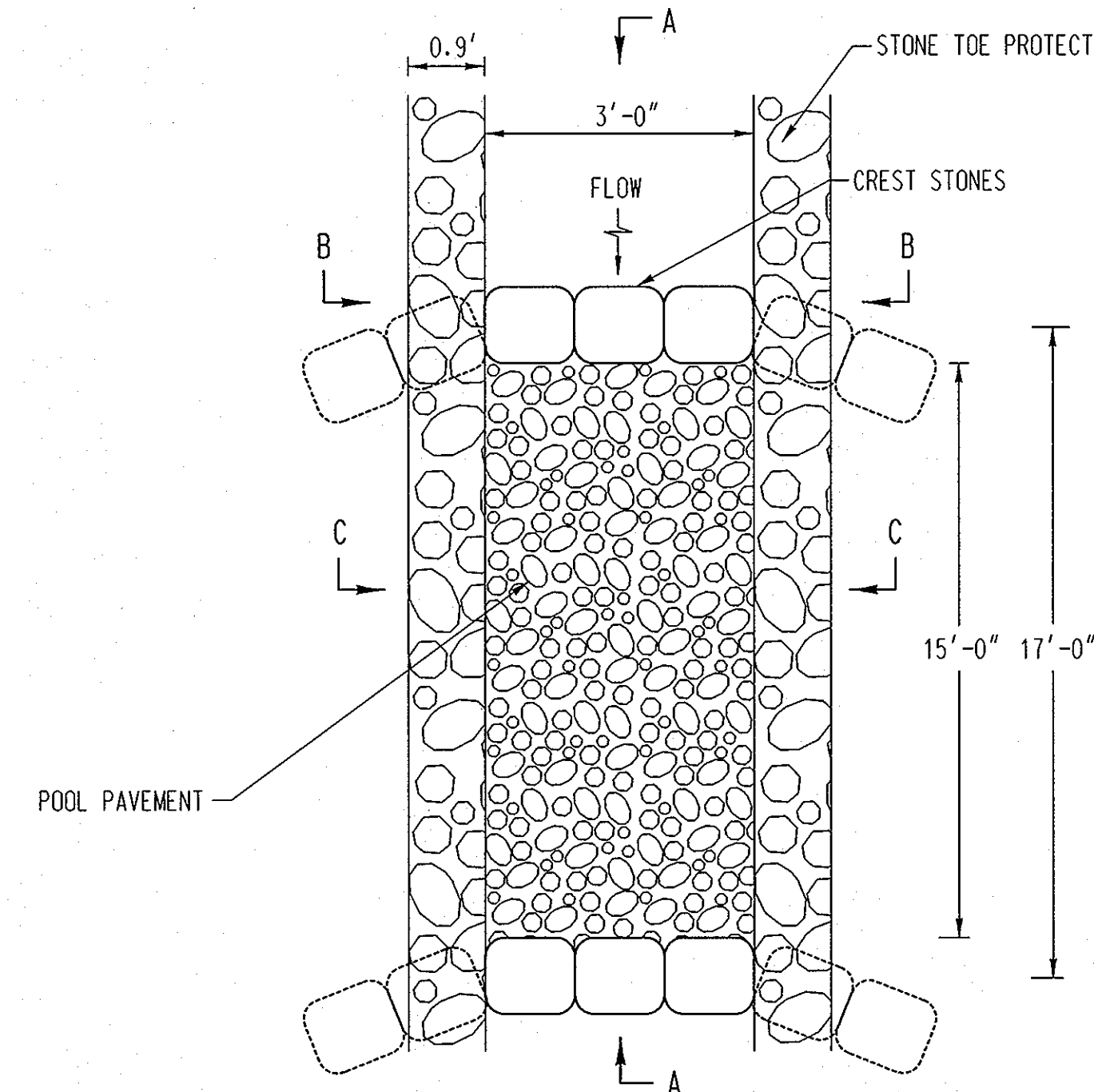
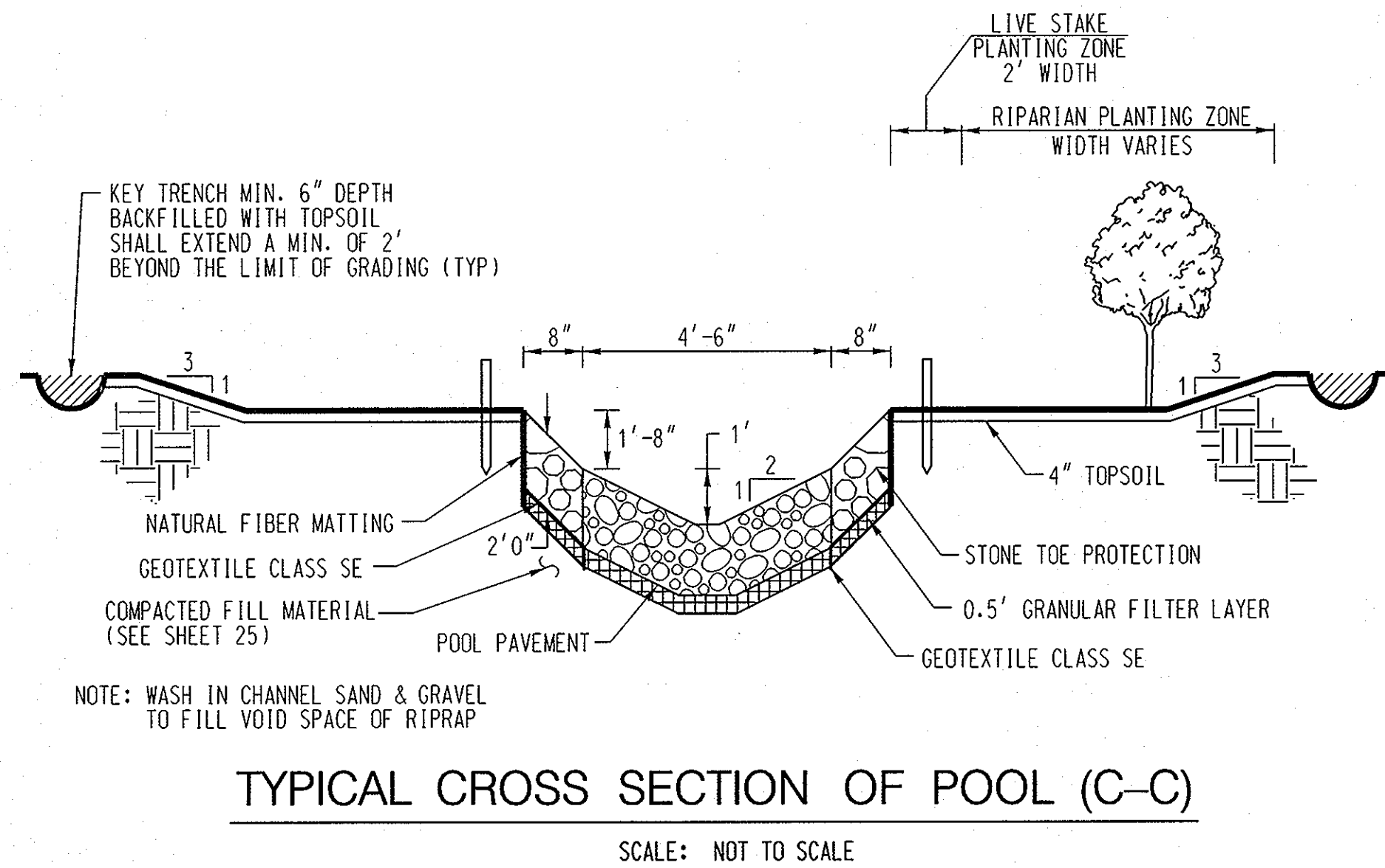
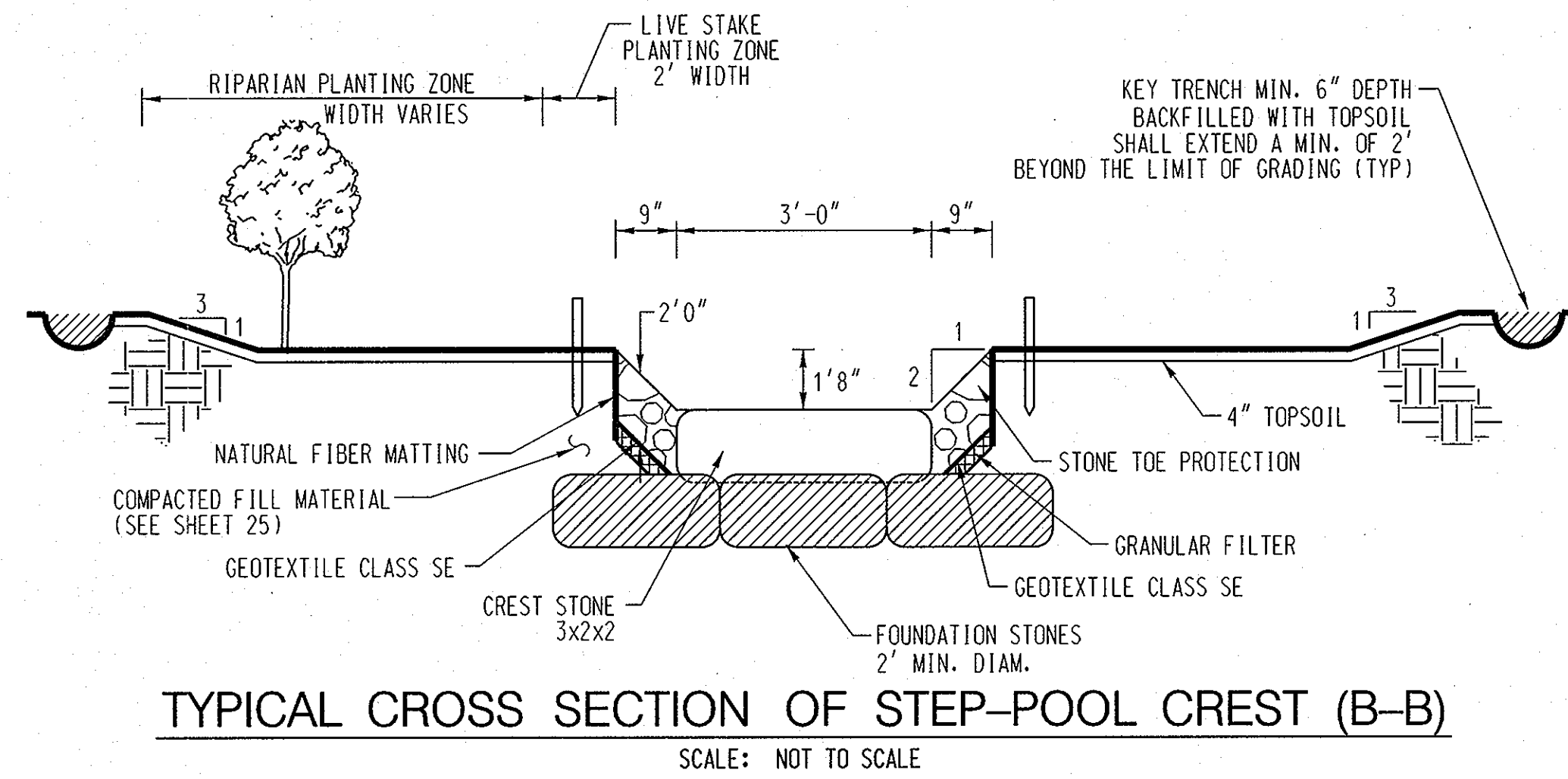
SCALE:	HOR. 1" = 20', VERT. 1" = 5'
DATE:	10/19/07
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CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



GRANULAR FILTER	
% LESS THAN	US STANDARD SIEVE
100	2 1/2 IN
85-100	1 IN
60-100	1/2 IN
35-70	NO. 10
20-50	NO. 40
3-20	NO. 200

POOL PAVEMENT	
% BY WEIGHT	STONE SIZE
60	MDSHA CLASS I
30	MDSHA CLASS 0
10	CHANNEL SAND AND GRAVEL



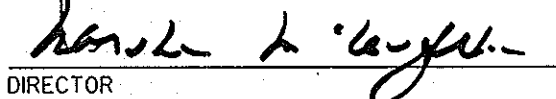
CHANNEL BED MATERIAL	
% BY WEIGHT	STONE SIZE
10	MDSHA CLASS II
50	MDSHA CLASS I
20	MDSHA CLASS 0
20	CHANNEL SAND AND GRAVEL



STEP POOL SYSTEMS
SIDE TRIBUTARY
STA 1+14 TO 1+33
STA 1+75 TO 2+11
STA 2+84 TO 3+03
STA 3+41 TO 4+29
STA 4+50 TO 5+03
STA 5+52 TO 5+71

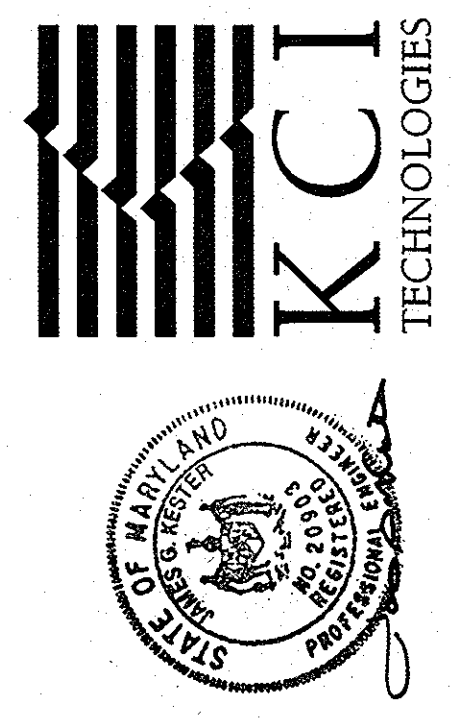
NOTE: ALL STONE (CREST STONES, FOUNDATION STONES, STONE TOE, CHANNEL BED MATERIAL, AND POOL PAVEMENT) SHALL BE NATURALLY COLORED (NOT WHITE) AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

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 12/13/07
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 12/14/07
 DIRECTOR

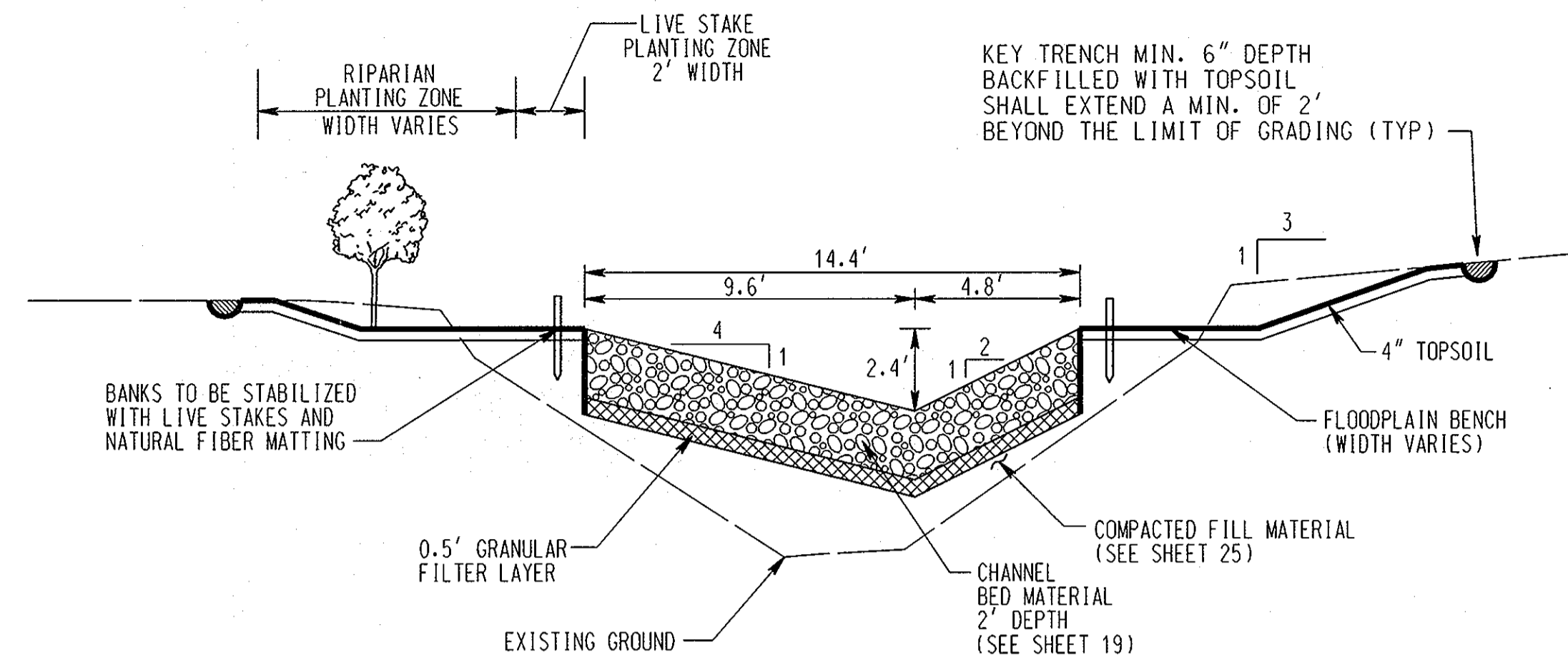
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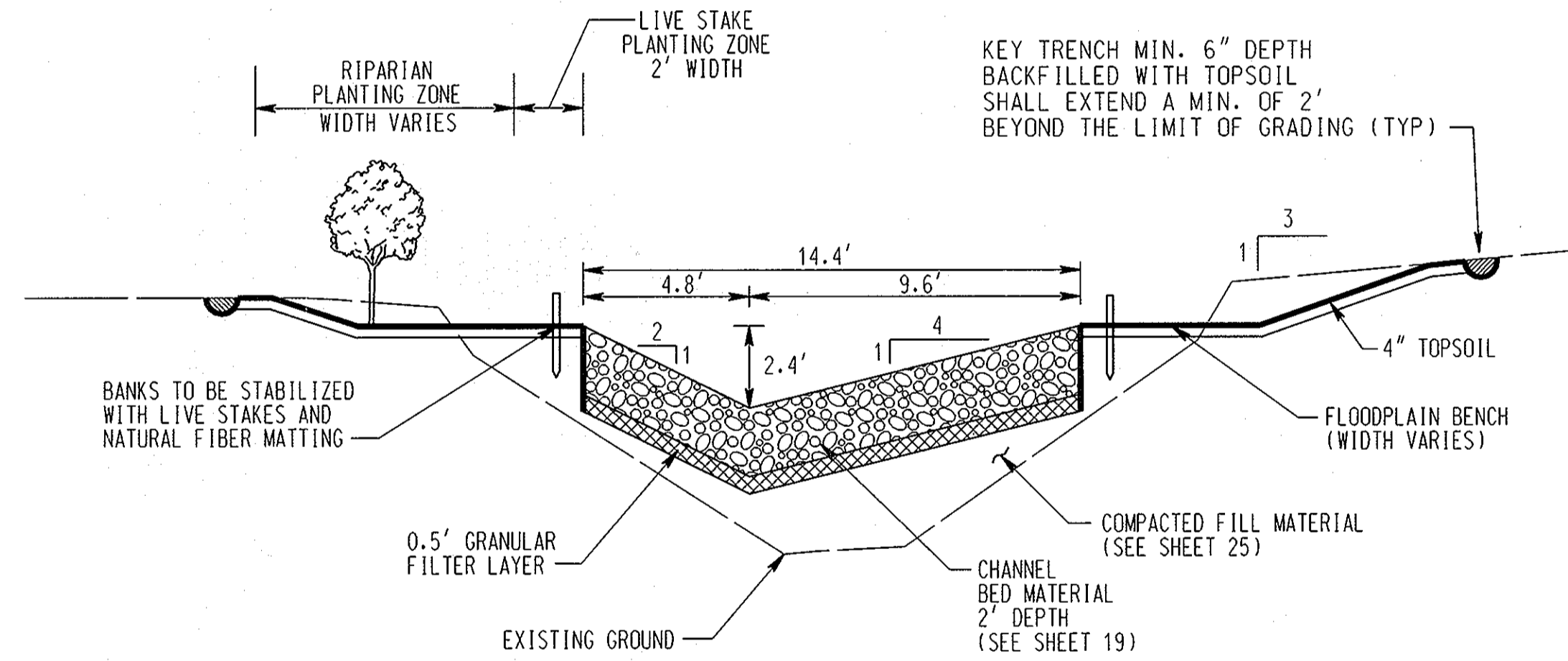
BRIGHTFIELD
SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6751 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

STREAM DETAILS AND TYPICAL SECTIONS
 SCALE: NOT TO SCALE
 DATE: 10/19/07
 KCI JOB NO.: 01-043223.12
 CAPITAL PROJECT NO.: D-1126
 PERMIT ISSUE: DE02 OF 04
 CONSTRUCTION ISSUE:
 19 OF 33
 SHEET NO.: 19 OF 33



TYPICAL SECTION - POOL A - SIDE TRIBUTARY
NOT TO SCALE

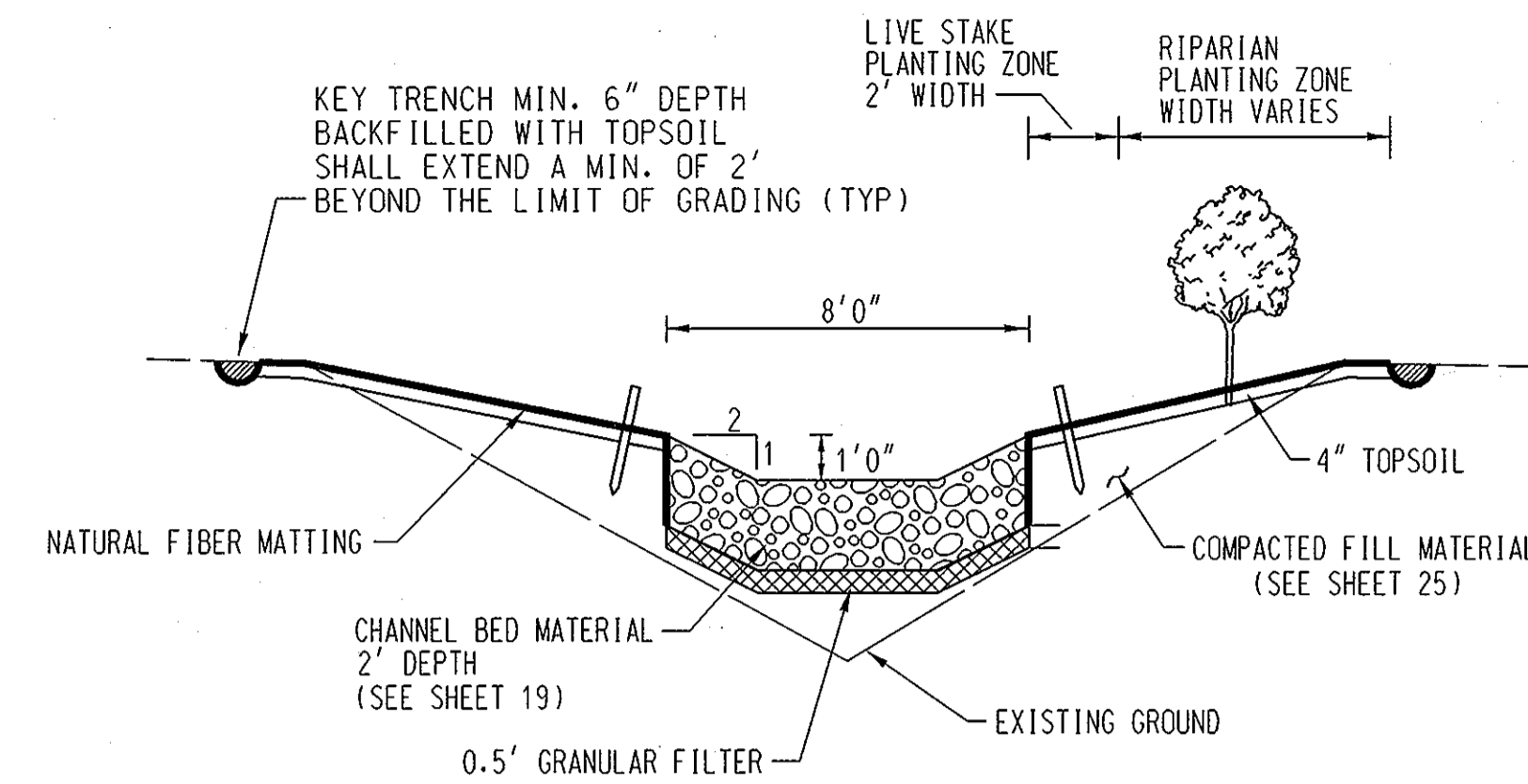
TYPICAL RIFFLE SECTIONS	
SIDE TRIBUTARY	
STA 1+00	
STA 2+21.5	
STA 3+12.5	



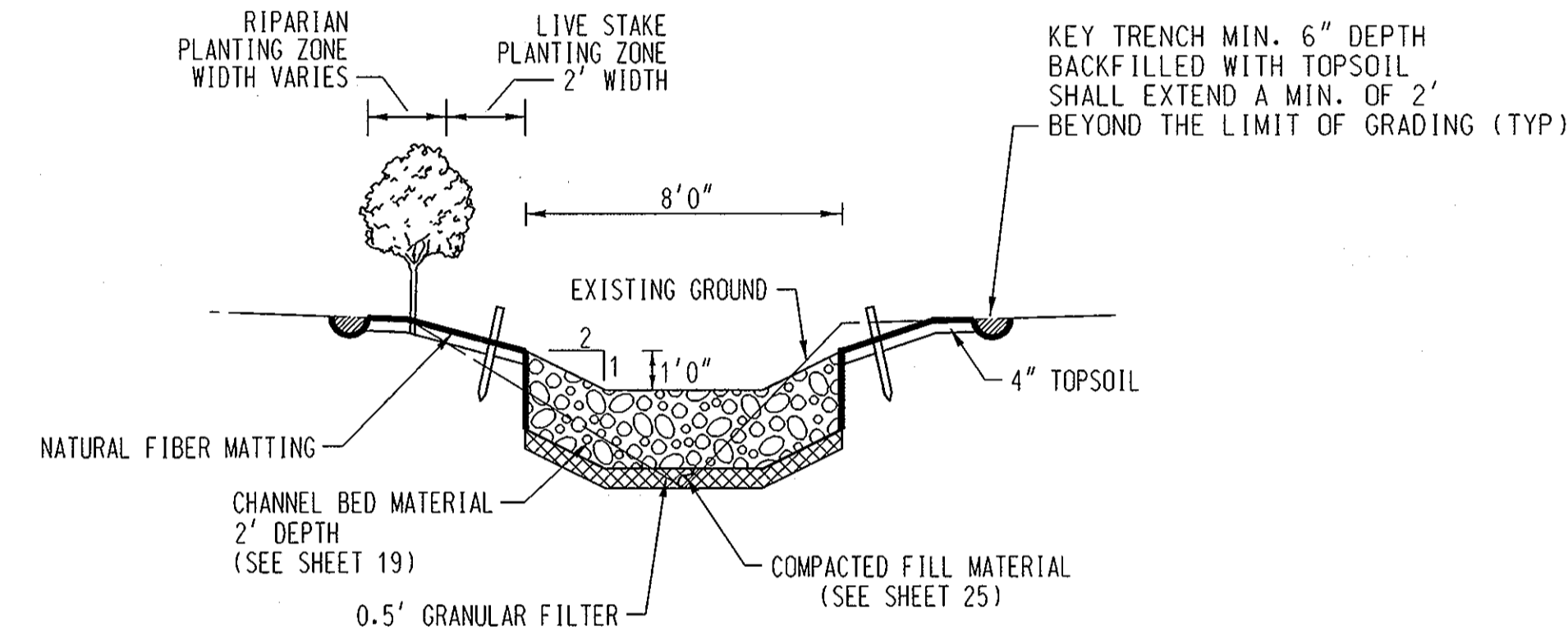
TYPICAL SECTION - POOL B - SIDE TRIBUTARY
NOT TO SCALE

TYPICAL RIFFLE SECTIONS	
SIDE TRIBUTARY	
STA 1+47.5	
STA 2+47	
STA 2+75	

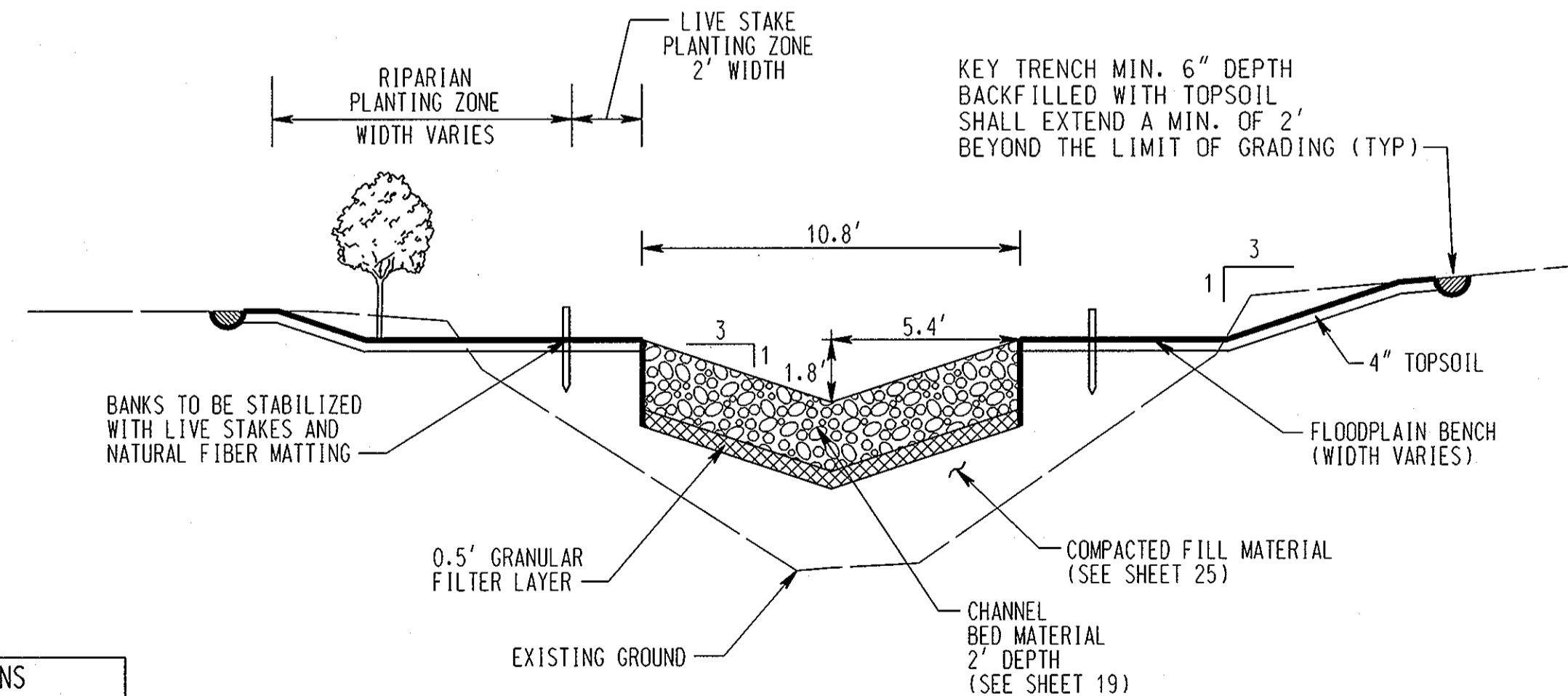
TYPICAL RIFFLE SECTIONS	
SIDE TRIBUTARY	
STA 0+92	STA 3+07
STA 1+08	STA 3+18
STA 1+38	STA 3+36
STA 1+57 TO 1+70	STA 4+33.8 TO 4+45
STA 2+15	STA 5+08 TO 5+30
STA 2+28 TO 2+38	STA 5+43 TO 5+47
STA 2+56 TO 2+68	STA 5+76



TYPICAL SECTION - TRIBUTARY 2
NOT TO SCALE

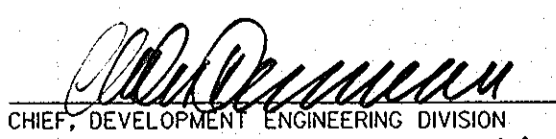
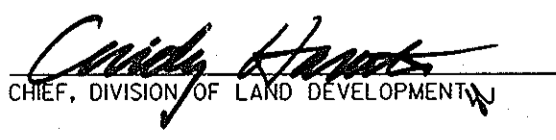
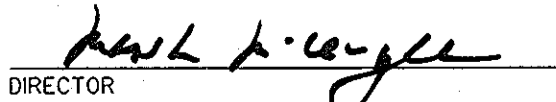


TYPICAL SECTION - TRIBUTARY 1
NOT TO SCALE



TYPICAL RIFFLE SECTION - SIDE TRIBUTARY
NOT TO SCALE

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 12/13/07
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STREAM DETAILS AND TYPICAL SECTIONS

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[Signature] 12/9/07
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[Signature] 12/6/07
 DIRECTOR DATE

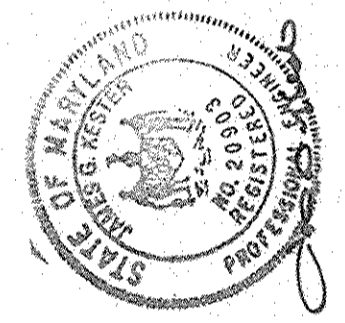
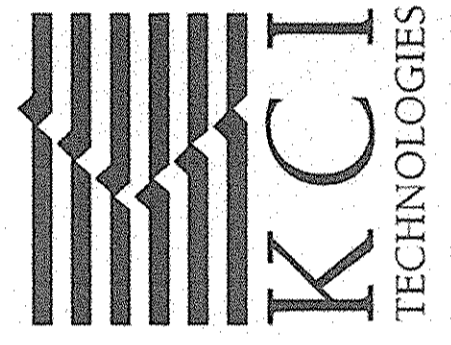
LEGEND	
(C)	SOILS GROUP
-----	SOILS BOUNDARY
	STONE TOE PROTECTION
[White Box]	0%-14.99% SLOPES
[Light Gray Box]	15.0%-24.99% SLOPE
[Dark Gray Box]	>25.0% SLOPES

NOTE: THE ACCESS ROAD SHALL BE ADJUSTED IN THE FIELD TO AVOID TREES AND/OR MINIMIZE DISTURBANCE.

NO.	REVISIONS DESCRIPTION	DATE

KCI FILE: MA_2004 \ 01043223.12 \ PES00BRIGHT.DGN

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



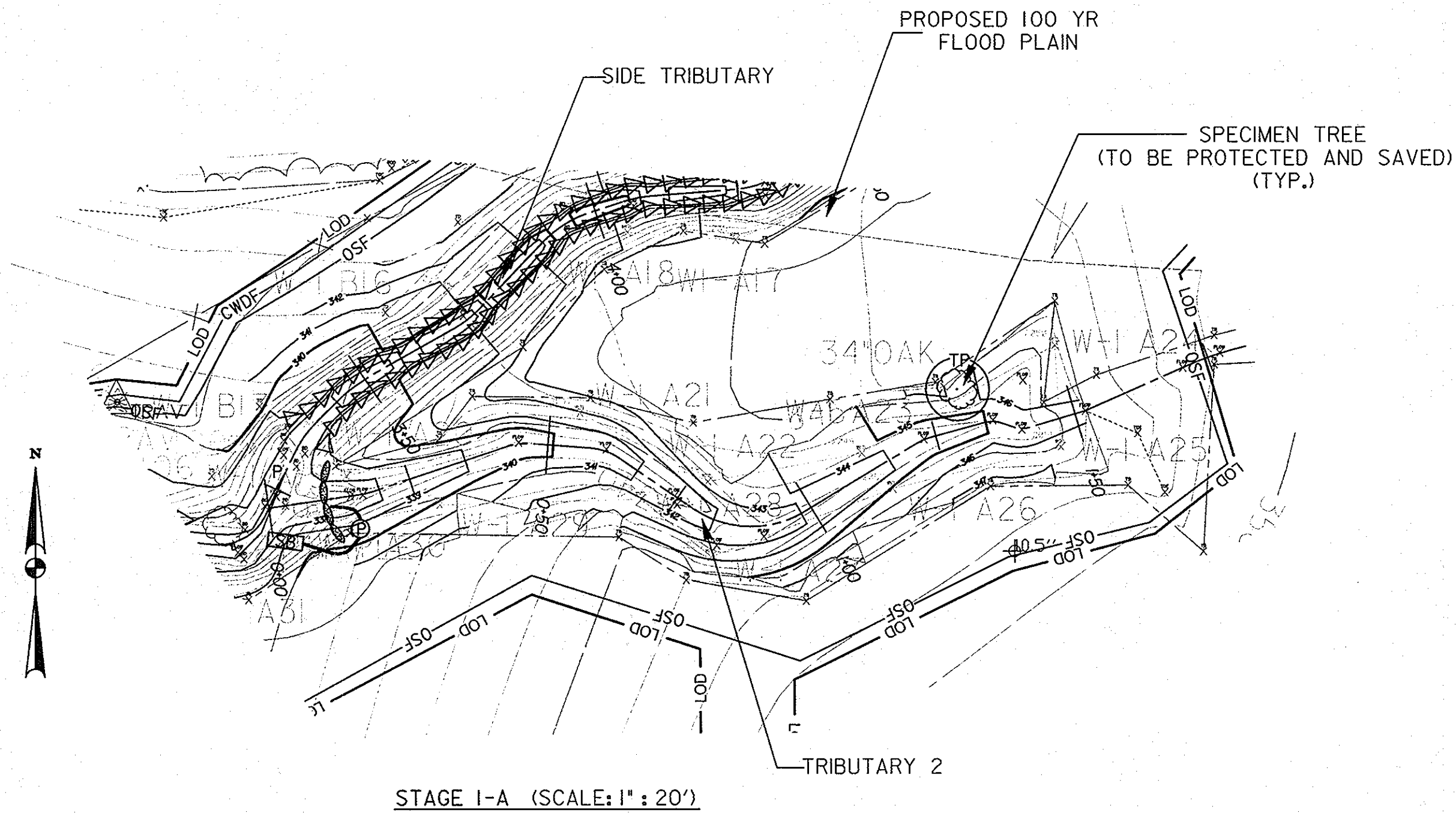
**BRIGHTFIELD
 SECTION 1, AREA 2**

HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6761 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

**EROSION
 AND
 SEDIMENT
 CONTROL**

**ACCESS/STOCKPILE
 PLAN**

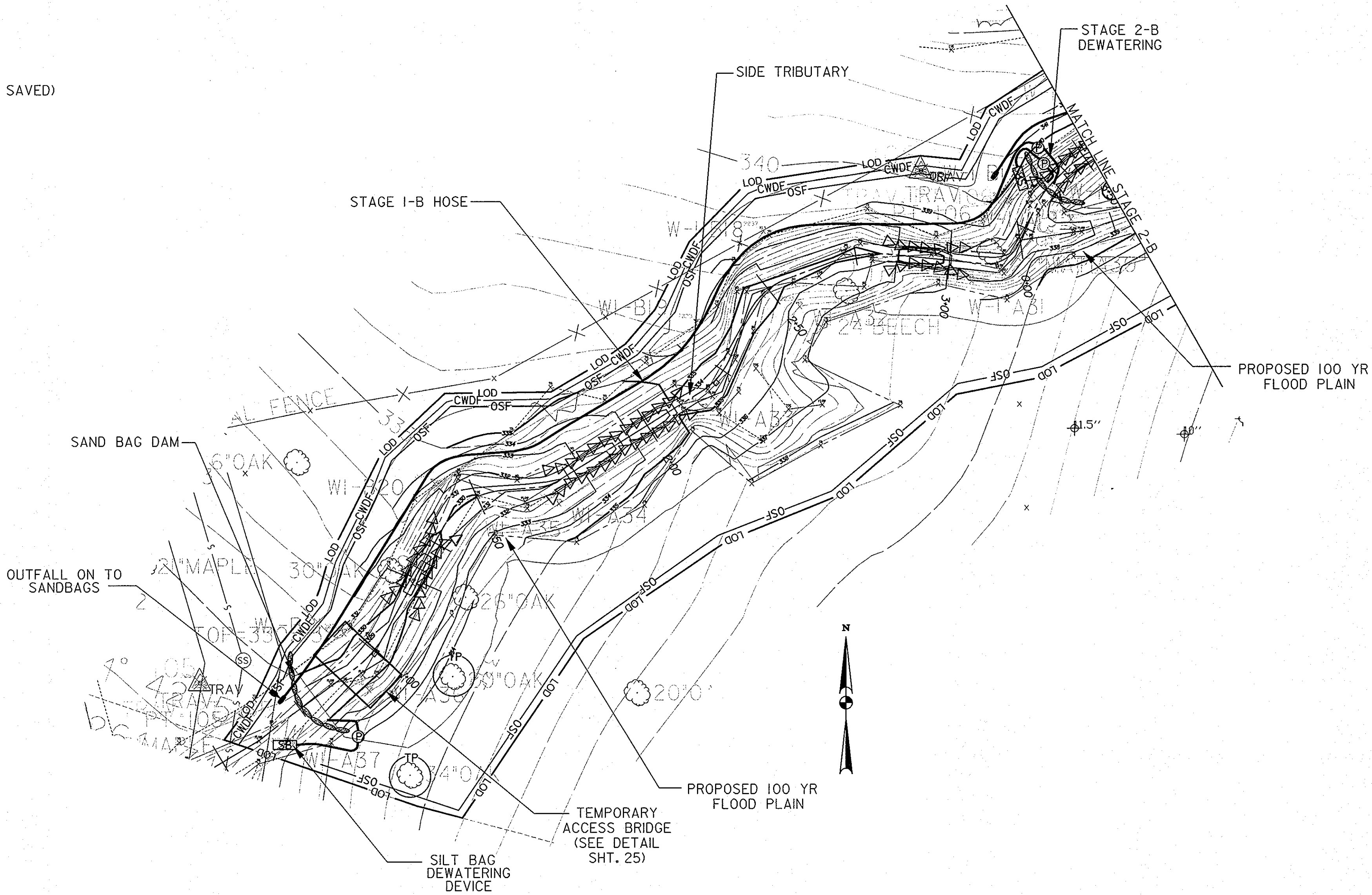
SCALE:	1" = 50'
DATE:	10/19/07
KCI JOB NO.:	01-043223.12
CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



STAGE I-A (SCALE: 1" = 20')

SEQUENCE OF CONSTRUCTION
STAGE I-A
TIME PERIOD: 3 WEEKS

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 24 HOURS IN ADVANCE OF ANY WORK BEING DONE. A GRADING PERMIT SHALL BE OBTAINED FROM THE COUNTY PRIOR TO CONSTRUCTION. THE MDE NONTIDAL WETLANDS AND WATERWAYS PERMIT WAS OBTAINED ON JULY 27, 2007.
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE FOR SITE ACCESS ACCORDING TO THE LOCATION SHOWN ON SHEET NO. 21 AND CONSTRUCT WATER BREAKS AT LOCATIONS SHOWN ON SHEET NO. 21 ACCORDING TO DETAIL ON SHEET NO. 25.
3. CONSTRUCT DOWNSTREAM SAND BAG DAM AT TRIBUTARY 2 STA. 0+10. SEDIMENT LADEN WATER SHALL NOT BE DISCHARGED DIRECTLY IN TO DOWNSTREAM TRIBUTARY. IF REQUIRED, DEWATER ENTRAPPED AREA BEHIND SAND BAGS USING A SILT BAG DEWATERING DEVICE PRIOR TO DISCHARGE IN TO THE SIDE TRIBUTARY.
4. PROVIDE TREE PROTECTION FOR SPECIMEN TREE AT TRIBUTARY 2, STA. 1+30, LEFT, ACCORDING TO LANDSCAPE DETAIL SHEET.
5. CONSTRUCT TRIBUTARY 2 (STONE BED MATERIAL) DURING A PERIOD OF DRY WEATHER. STABILIZE DISTURBED AREAS WITH PROPOSED FIBER MATTING OR SEED AND MULCH AT THE END OF EACH DAY.
6. UPON COMPLETION, REMOVE THE TRIBUTARY 2 SAND BAG DAM. REMOVE ANY SEDIMENT CONTROL MEASURES AT THE DISCRETION OF THE INSPECTOR.
7. STABILIZE ANY REMAINING DISTURBED AREA WITH PROPOSED FIBER MATTING OR SEED AND MULCH. WITH PERMISSION OF THE INSPECTOR, PROCEED TO STAGE I-B.



STAGE I-B (SCALE: 1" = 20')

SEQUENCE OF CONSTRUCTION
STAGE I-B
TIME PERIOD: 3 WEEKS

TIME RESTRICTION NOTES:

1. PUMPING IS NOT PERMITTED BETWEEN THE HOURS OF 7 PM AND 7 AM, MONDAY THROUGH FRIDAY.
2. CONSTRUCTION EQUIPMENT SHALL NOT BE STARTED NOR RUN BETWEEN THE HOURS OF 7 PM AND 7 AM, MONDAY THROUGH FRIDAY.
3. FOR SATURDAY WORK, THE ABOVE HOURS SHALL BE FROM 5 PM AND 9 AM RESPECTIVELY.
4. NO WORK SHALL BE DONE ON SUNDAY.
5. WHILE PUMPS ARE SHUT DOWN, CONTRACTOR SHALL ENSURE THAT FLOW IS MAINTAINED THROUGH PROJECT SITE IN SUCH A MANNER THAT SEDIMENT-LADEN FLOW IS NOT DISCHARGED DOWNSTREAM.

1. CONSTRUCT UPSTREAM SAND BAG DAM ON THE SIDE TRIBUTARY AT STA. 3+37. PLACE PUMP AROUND HOSE ON THE NORTH STREAM BANK. BEGIN PUMP AROUND OPERATION DISCHARGING ONTO SAND BAGS AT OUTFALL.
2. CONSTRUCT DOWNSTREAM SAND BAG DAM AT STA. 0+75. SEDIMENT LADEN WATER SHALL NOT BE DISCHARGED DIRECTLY INTO THE STREAM. DEWATER ENTRAPPED AREA BEHIND SAND BAGS TO A SILT BAG DEWATERING DEVICE PRIOR TO DISCHARGE IN TO THE SIDE TRIBUTARY. PLACE TEMPORARY ACCESS BRIDGE.
3. CONSTRUCT SIDE TRIBUTARY FROM STA. 0+75 TO STA. 3+37 (STONE TOE PROTECTION, STONE RIFFLE AND POOL SECTIONS). STABILIZE DISTURBED AREAS WITH PROPOSED FILTER MATTING OR SEED AND MULCH AT THE END OF EACH DAY.
4. UPON COMPLETION, REMOVE DOWNSTREAM DAM ON THE SIDE TRIBUTARY. REMOVE THE SAND BAG DAM AT STATION 3+36 AND ANY OTHER SEDIMENT CONTROL MEASURES AT THE DISCRETION OF THE INSPECTOR.
5. STABILIZE ANY REMAINING DISTURBED AREA WITH PROPOSED FIBER MATTING OR SEED AND MULCH. WITH THE PERMISSION OF THE INSPECTOR, PROCEED TO STAGE 2A.

NOTES:

1. THE SUBJECT TRIBUTARY TO DEEP RUN IS A USE I-P STREAM, THEREFORE, IN-STREAM CONSTRUCTION IS PROHIBITED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE OF ANY YEAR. EVERY EFFORT MUST BE TAKEN TO AVOID UNDUE DISTURBANCE TO THE STREAM CHANNEL.
2. THIS STREAM DIVERSION PLAN IS A SUGGESTED METHOD OF CONSTRUCTION ONLY. THE CONTRACTOR HAS THE OPTION OF SUBMITTING A DIFFERENT PLAN TO THE ENGINEER, THE HOWARD SCD, AND THE HOWARD COUNTY PROJECT MANAGER FOR APPROVAL.
3. THIS PLAN DOES NOT COVER PASSING THE TWO YEAR STORM EVENT. IN THE EVENT OF A STORM, THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL AND PROTECTION OF ANY EQUIPMENT, TOOLS, MATERIALS, OR OTHER ITEMS NEEDED TO COMPLETE THE WORK THAT COULD BE AFFECTED BY THE STORM FLOWS.
4. REFER TO EROSION AND SEDIMENT CONTROL DETAILS FOR PUMP AROUND PRACTICE.
5. RELOCATE SAND BAG DAMS AS NECESSARY TO FACILITATE GRADING WHERE STAGES OF CONSTRUCTION TIE TOGETHER.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

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

[Signature] 11/20/07 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

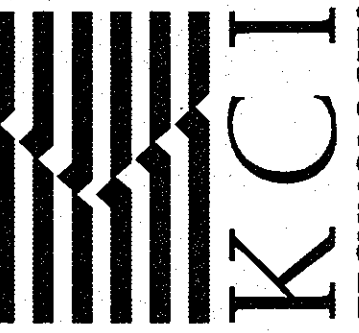
[Signature] 11/27/07 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 12/1/07 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 12/6/07 DATE
DIRECTOR

NO.	REVISIONS DESCRIPTION	DATE

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



BRIGHTFIELD
SECTION 1, AREA 2
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
STORMWATER MANAGEMENT DIVISION
COLUMBIA, MARYLAND 21046

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20'

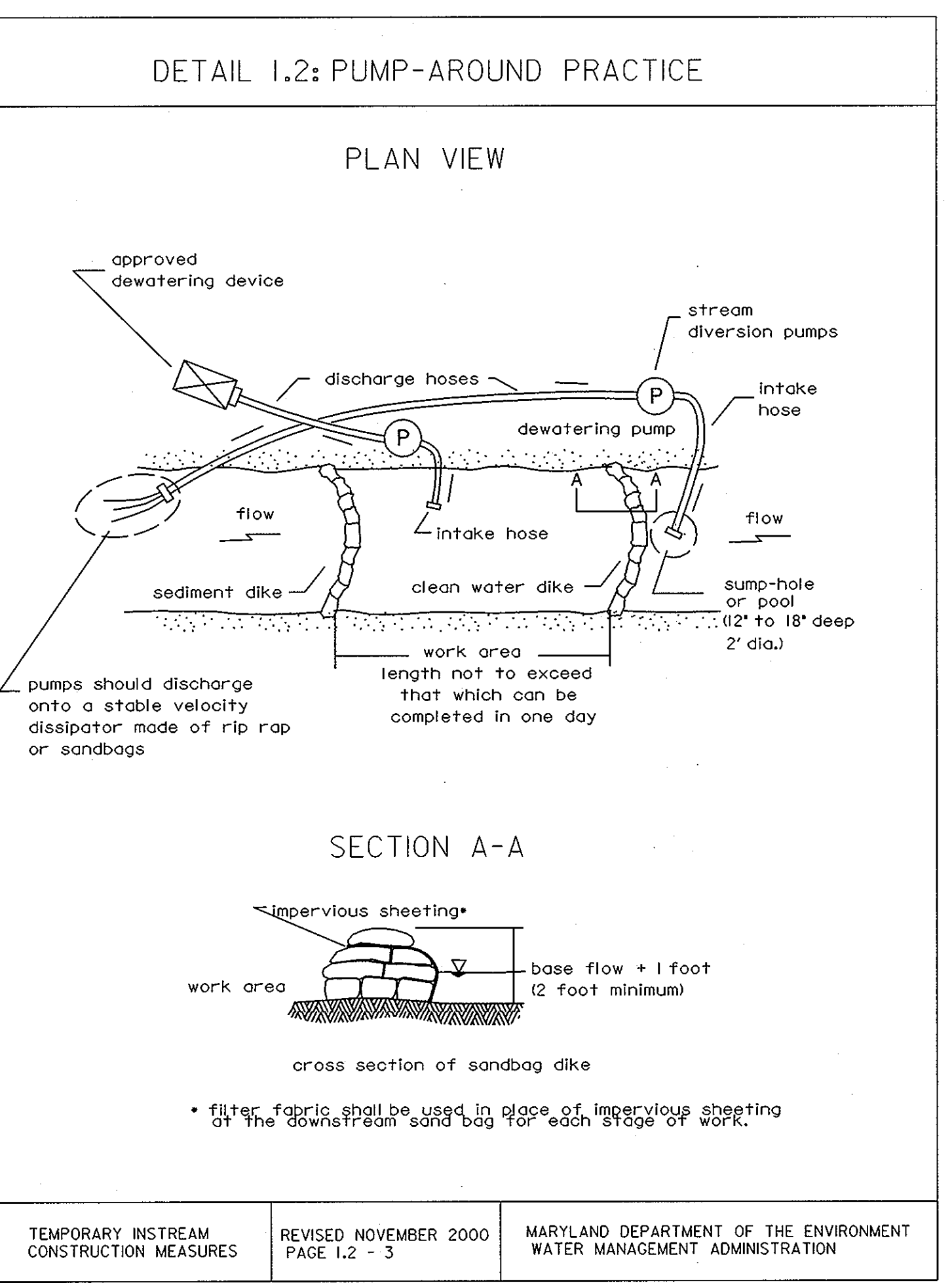
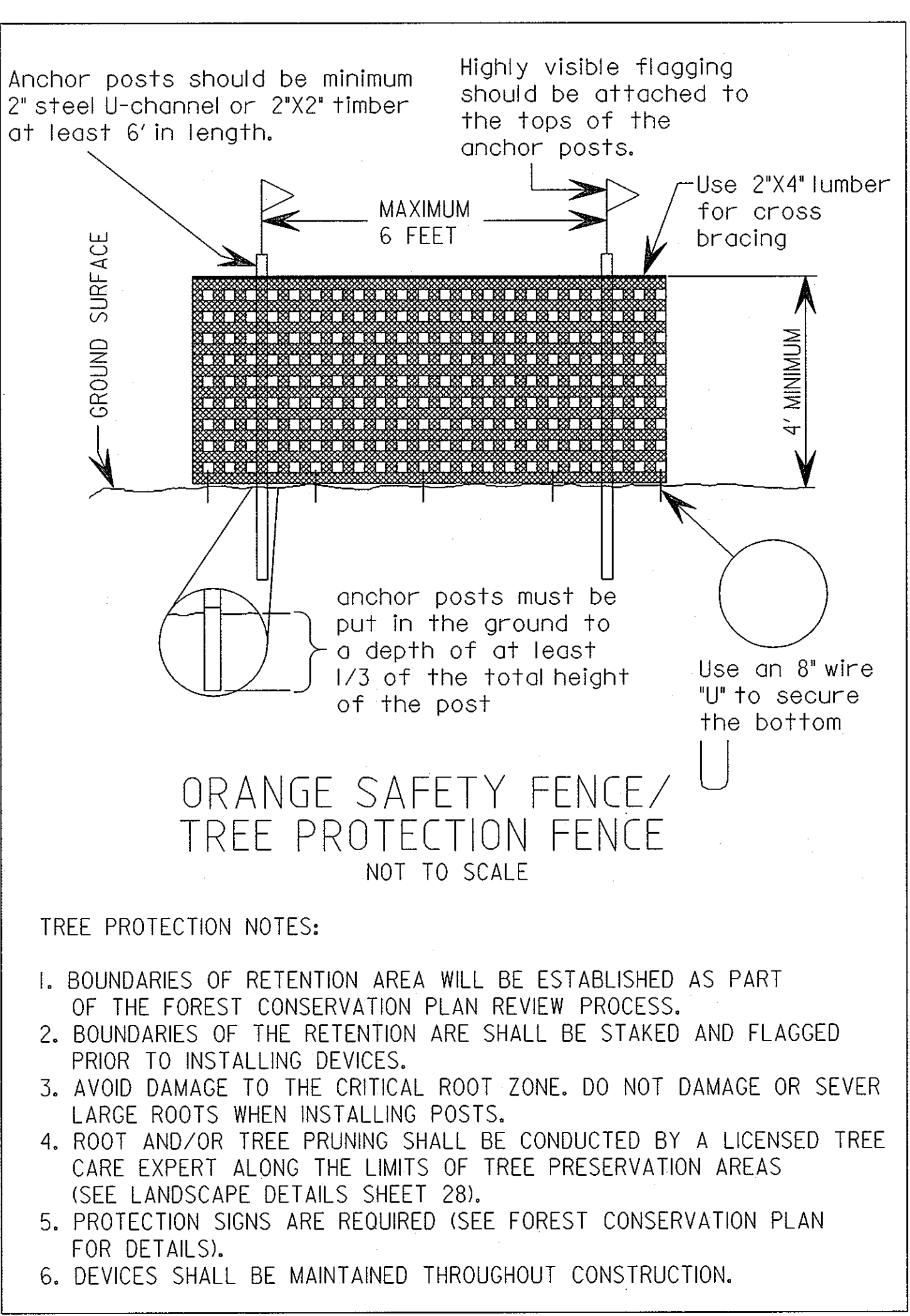
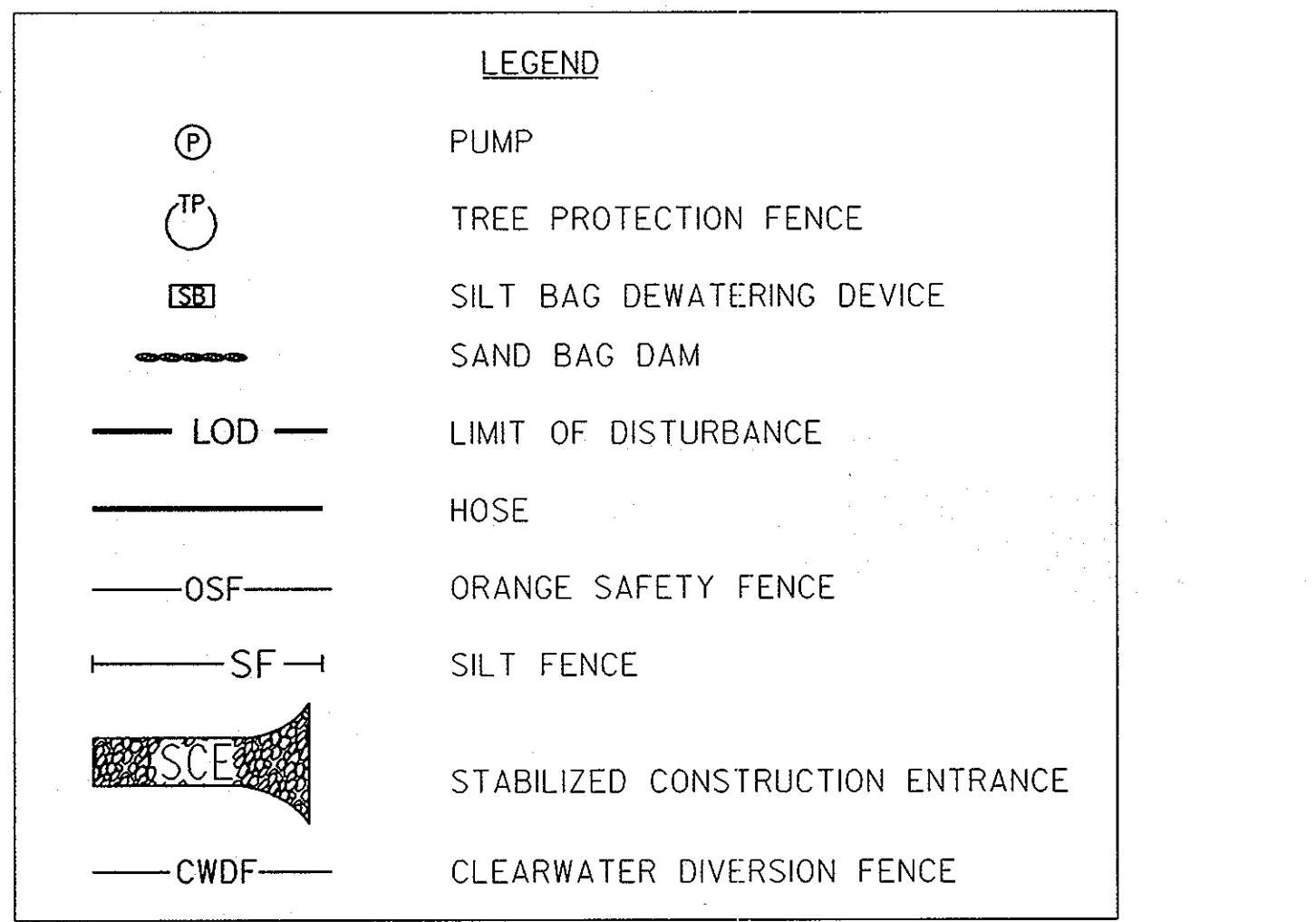
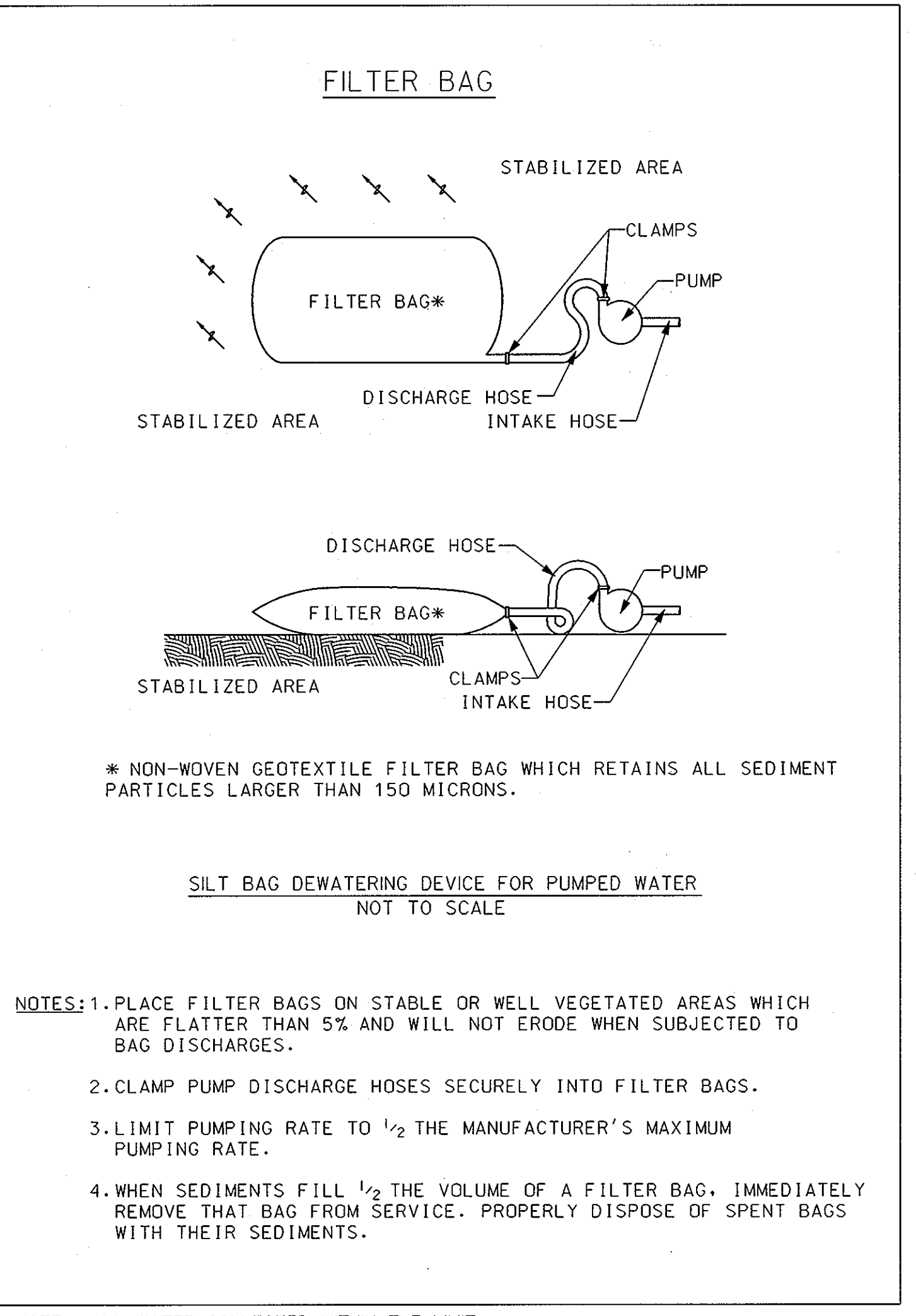
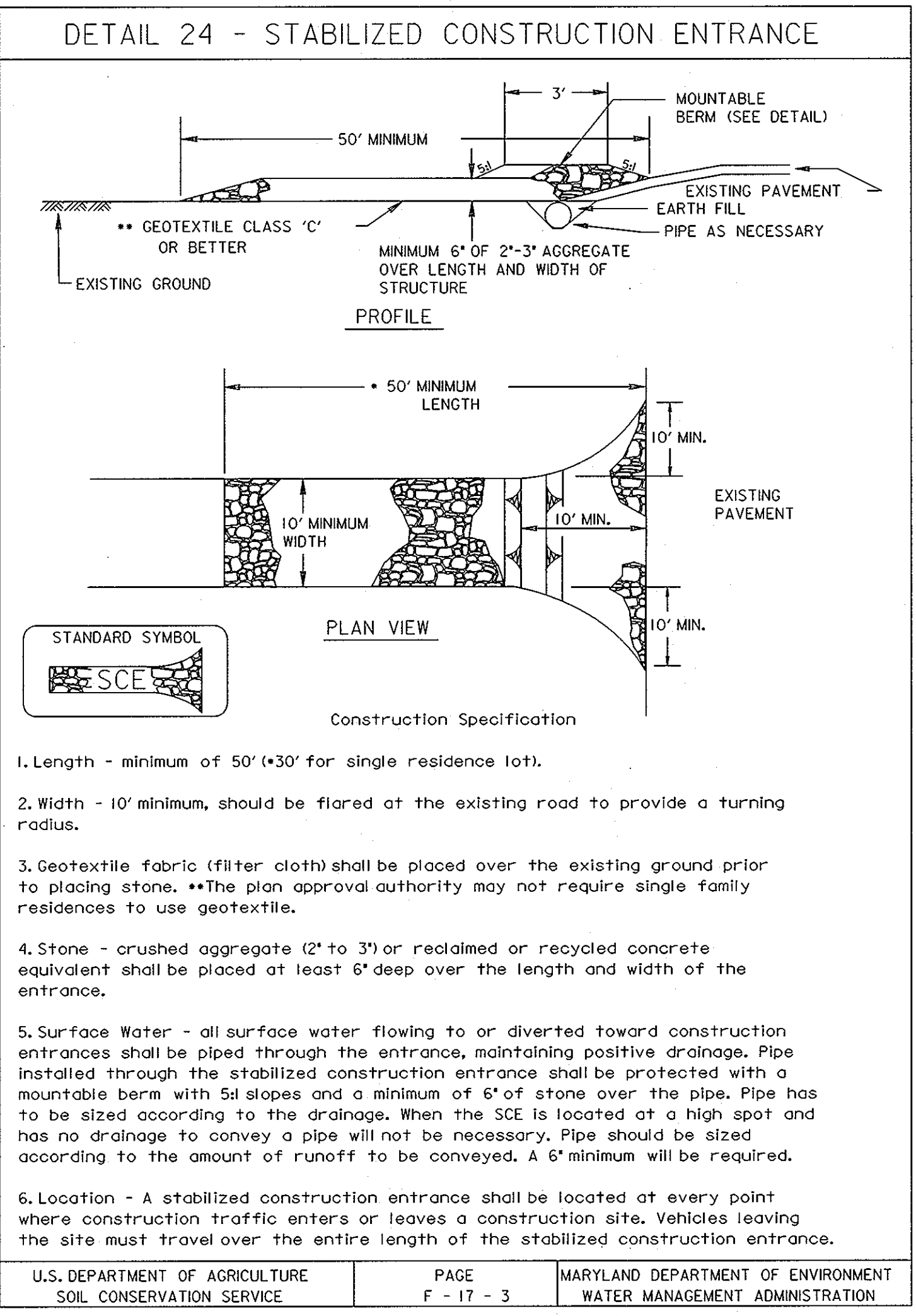
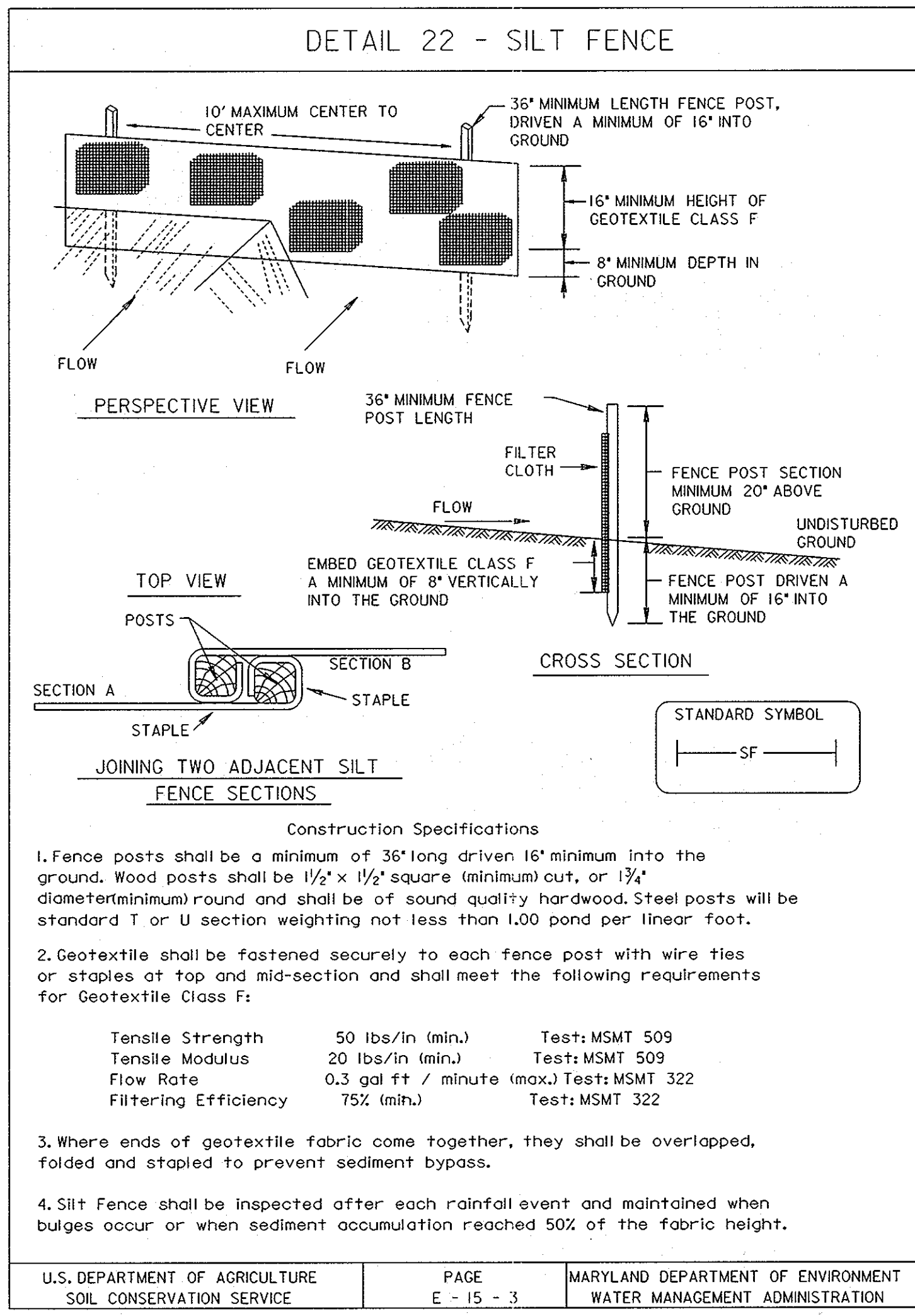
DATE: 10/19/07

KCI JOB NO.: 01-403223.12

CAPITAL PROJECT NO.: D-1126

PERMIT ISSUE:

CONSTRUCTION ISSUE:



REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SCD DATE 11/20/07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Chief, Development Engineering Division DATE 11/27/07

Chief, Division of Land Development DATE 12/4/07

Director DATE 12/4/07

PLOTTED: 10:53 AM on Friday, October 19, 2007
FILE: M:\2006-2007\04-3223\24-00.dwg Management 11/19/07

DATE

NO. REVISIONS DESCRIPTION

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

BRIGHTFIELD SECTION 1, AREA 2
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
STORMWATER MANAGEMENT DIVISION
676 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

EROSION AND SEDIMENT CONTROL DETAILS

SCALE: NTS
DATE: 10/19/07
KCI JOB NO.: 01-043223.12
CAPITAL PROJECT NO.: D-1126
PERMIT ISSUE:
CONSTRUCTION ISSUE:

24 OF 33
SHEET NO.: 24 OF 33
SDP-07-063

MWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

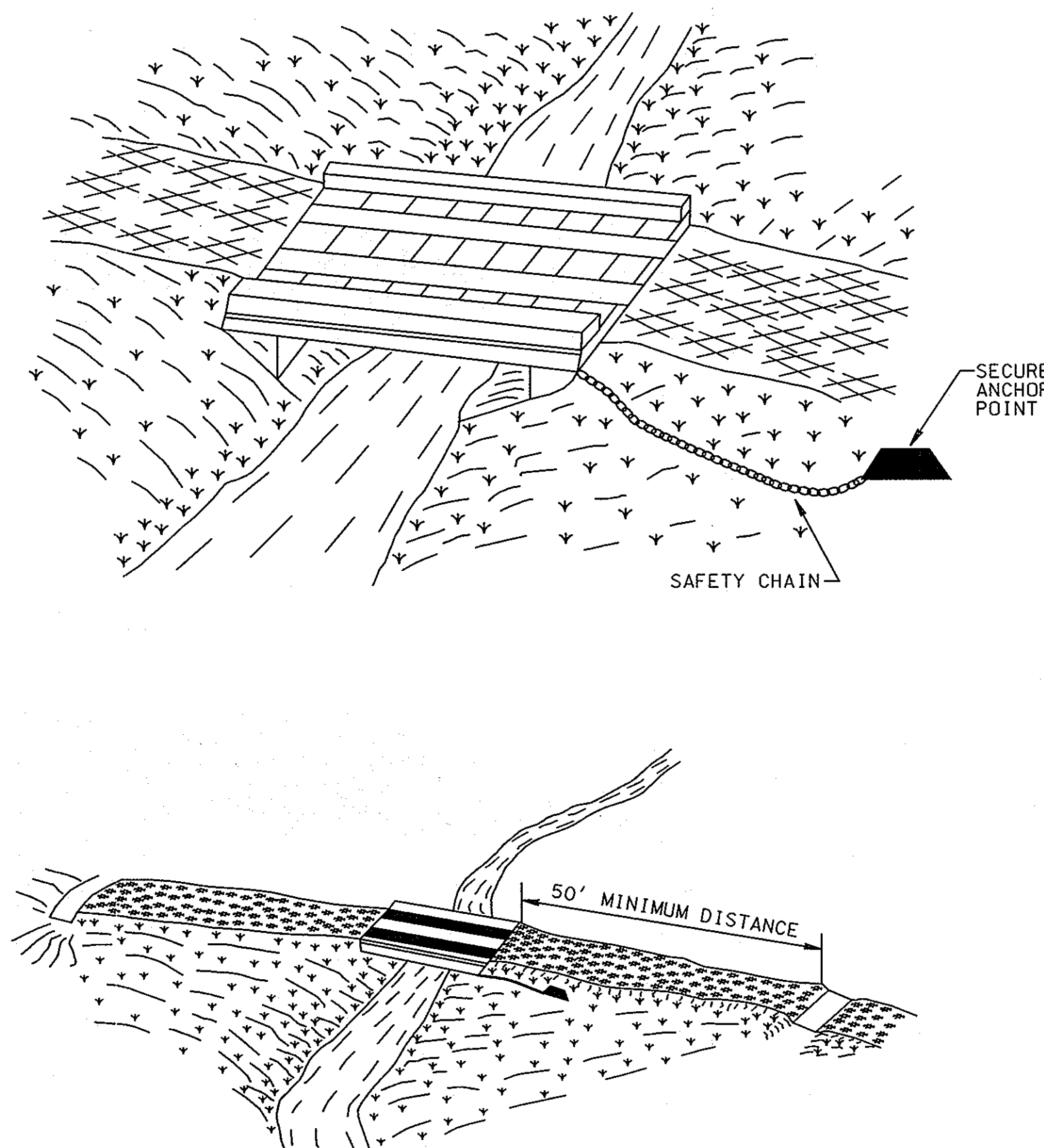
The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

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):

- 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 or utility company's satisfaction.
- 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.
- 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 staging 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.
- 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.
- 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 workday, 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.
- 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.
- Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
- Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
- All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
- After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
- A pump around must be installed on any tributary or storm drain outfall, which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
- If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream, when construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
- The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
- After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

DETAIL 35 - TEMPORARY ACCESS BRIDGE



TEMPORARY ACCESS BRIDGE

Construction Specifications

1. Restriction - Construction, use, or removal of a temporary access bridge will not normally have any time of year restrictions since construction, use, or removal should not affect the stream or its banks, unless the bridge is built with a pier(s) in the water.
2. Bridge Placement - A temporary bridge structure shall be constructed at or above the bank elevation to prevent the entrapment of floating materials and debris.
3. Abutments - Abutments shall be placed parallel to, and on, stable banks.
4. Bridge Span - Bridges shall be constructed to span the entire channel. If the channel width exceeds 8', (as measured from top-of-bank to top-of-bank), then a footing, pier, or bridge support may be constructed within the waterway. One additional footing, pier, or bridge support will be permitted for each additional 8' width of the channel. However, no footing, pier, or bridge support will be permitted within the channel for waterways less than 8' wide.
5. Stringers - Stringers shall either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials.
6. Deck Material - Decking materials shall be of sufficient strength to support the anticipated load. All decking members shall be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway below.
7. Run Planks (optional) - Run planking shall be securely fastened to the length of the span. One run plank shall be provided for each track of the equipment wheels. Although run planks are optional, they may be necessary to properly distribute loads.
8. Curbs or fenders - Curbs or fenders may be installed along the outer sides of the deck. Curbs or fenders are an option which will provide additional safety.

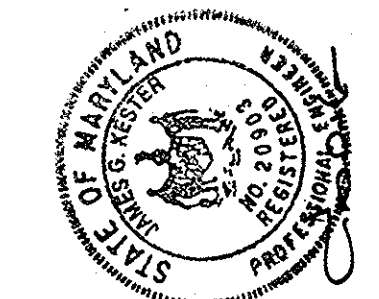
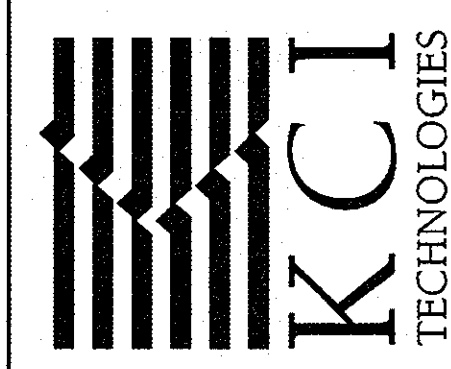
TEMPORARY ACCESS BRIDGE

9. Bridge Anchors - Bridges shall be securely anchored at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that floodwaters float the bridge. Acceptable anchors are large trees, large boulders, or driven steel anchors. Anchoring shall be sufficient to prevent the bridge from floating downstream and possibly causing an obstruction to the flow.
10. Stabilization - All areas disturbed during installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding."

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 29 - 9	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 29 - 9A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 29 - 9B	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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NO.	REVISIONS DESCRIPTION	DATE

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



BRIGHTFIELD
SECTION 1, AREA 2
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
STORMWATER MANAGEMENT DIVISION
676 COLUMBIA WATERWAY DRIVE
COLUMBIA, MARYLAND 21046

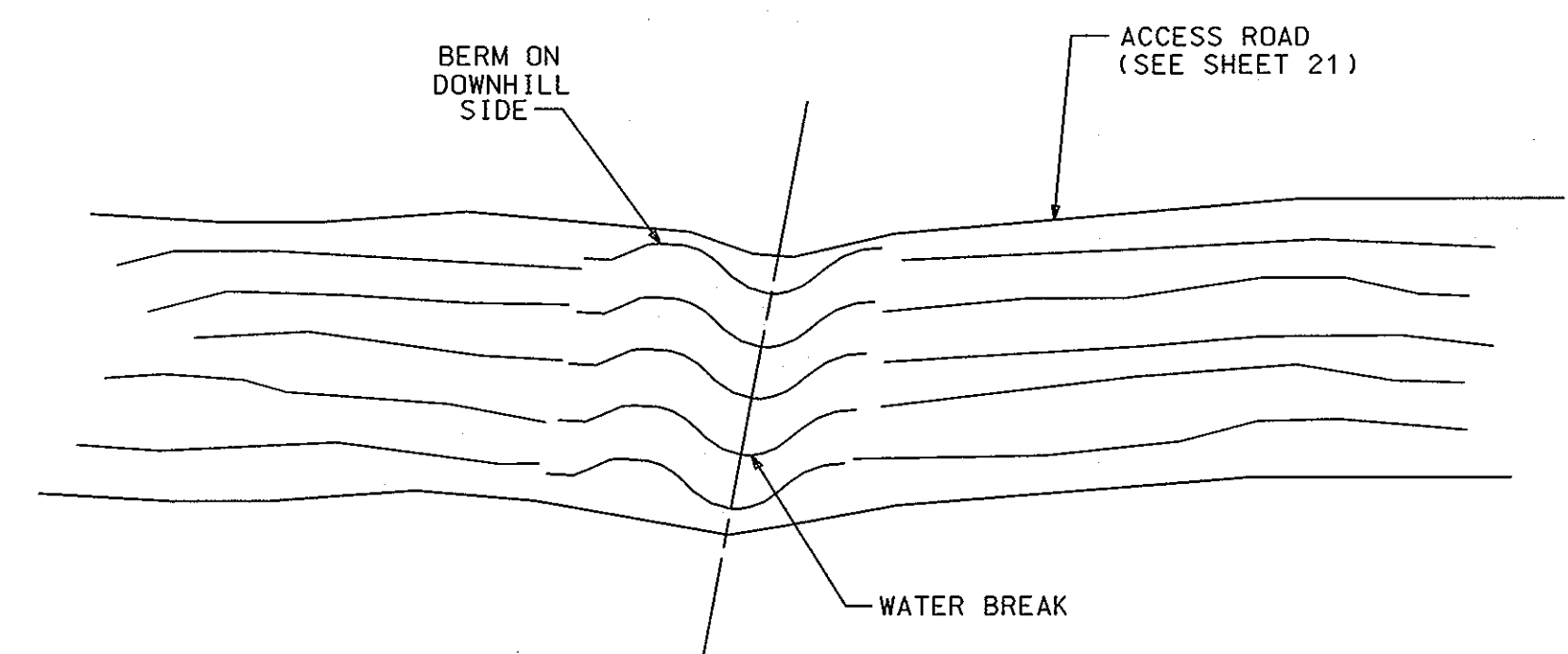
EROSION
AND
SEDIMENT
CONTROL
DETAILS

SCALE:	N.T.S.
DATE:	10/19/07
KCI JOB NO.:	01-043223J2
CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

25 OF 33
SHEET NO.: 25 OF 33

WATER BREAK NOTES

1. WATER BREAKS ARE TO BE AT AN ANGLE OF 30 TO 45 DEGREES DOWNSLOPE TO TURN SURFACE WATER OFF THE ACCESS ROAD.
2. EXCAVATE A TRENCH 3 TO 4 INCHES BELOW THE SURFACE OF THE ACCESS ROAD WITH A 1 FOOT BERM ON THE DOWNHILL SIDE OF THE TRENCH. USE SPOIL MATERIALS TO DEVELOP THE BREAK HEIGHT.
3. THE UPHILL END OF THE BREAK SHALL EXTEND BEYOND THE SIDE DITCH LINE OF THE ROAD AND TIE INTO THE BANK TO FULLY INTERCEPT ANY DITCH FLOWS.
4. THE OUTFLOW END OF THE BREAK IS TO BE FULLY OPENED AND EXTENDED FAR ENOUGH BEYOND THE EDGE OF THE ACCESS ROAD TO SAFELY DISPERSE RUNOFF WATER ONTO THE UNDISTURBED FOREST FLOOR.
5. ON SANDY SOILS, A FIVE TO EIGHT INCH DIAMETER POLE SHALL BE PLACED IN THE FULL LENGTH OF THE TRENCH. THIS POLE SHALL BE PEGGED AND COVERED WITH SOIL ON THE DOWNSLOPE SIDE.
6. ENSURE THAT THE OUTLET IS OPEN AND CONSIDER THE NEED FOR ENERGY DISSIPATING WATER SPREADERS AT OR BELOW DRAIN OUTLET ON SENSITIVE AREAS.
7. UPON COMPLETION OF THE OPERATION, EXPOSED SOIL RESULTING FROM THE CREATION OF WATER BREAKS MUST BE SEEDING AND MULCHED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS FOR THE ACCESS ROAD.



WATER BREAK DETAIL
N.T.S.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA - NATURAL RESOURCES CONSERVATION SERVICE

DATE: 11/20/07

HOWARD COUNTY

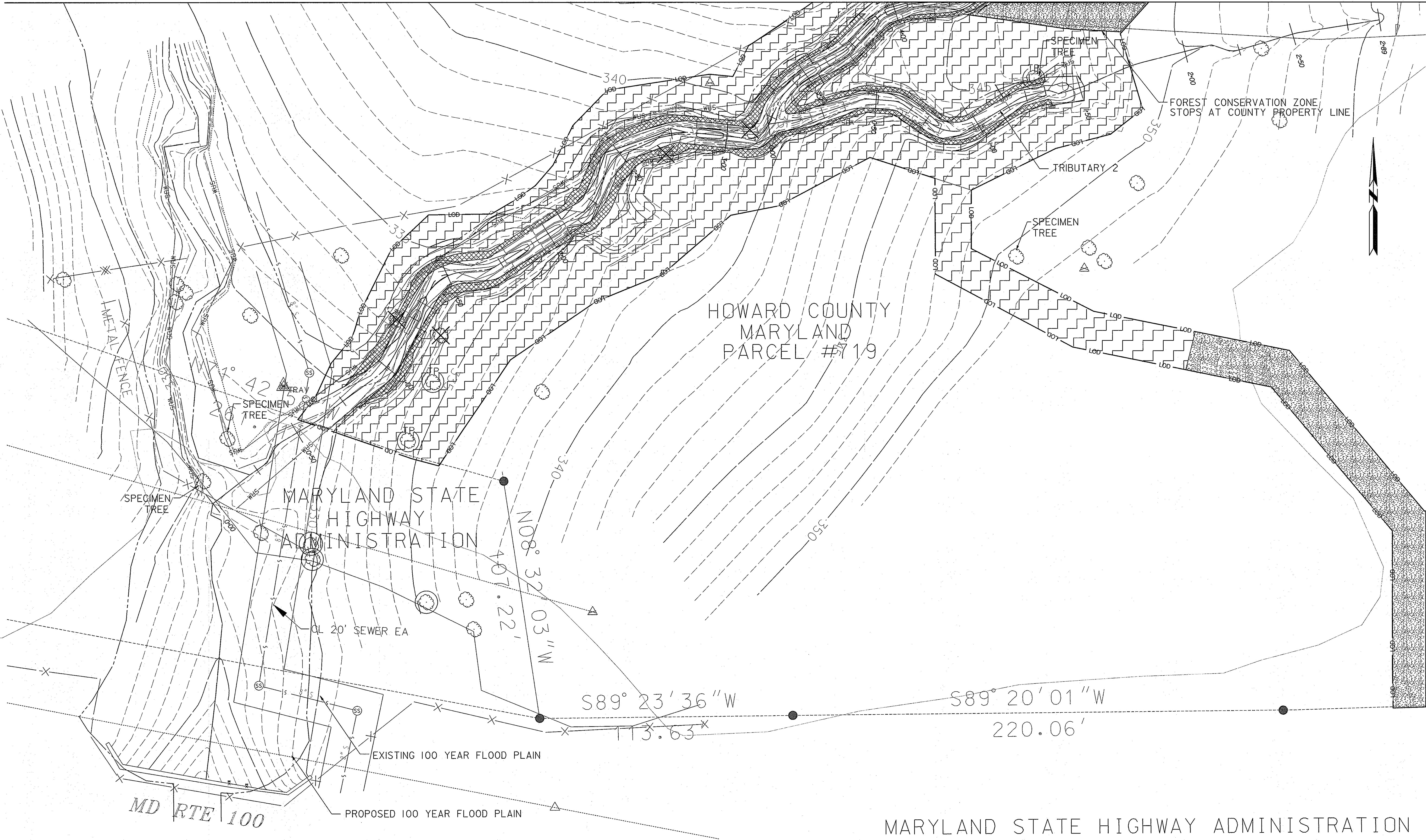
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Chief, Development Engineering Division: 11/20/07

Chief, Division of Land Development: 12/4/07

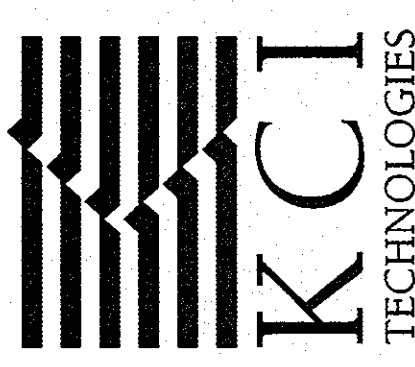
Director: 12/4/07

Plotted: 10:54 AM on Friday, October 19, 2007
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User: EROSION



NO.	REVISIONS DESCRIPTION	DATE

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



BRIGHTFIELD SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 6781 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

LANDSCAPE PLAN

SCALE:	1" = 20'
DATE:	10/19/07
KCI JOB NO.:	01-043223.12
CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 11/21/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12/13/07
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 12/6/07
 DIRECTOR DATE

LEGEND

RIPARIAN ZONE	
FOREST CONSERVATION PLANTING ZONE	
LIVE STAKE ZONE	

MARYLAND STATE HIGHWAY ADMINISTRATION

PLOTTED: 03:32 PM on Friday, October 19, 2007
 FILE: H:\2007\01-043223.12\01-043223.12.dwg



THE BRIGHTFIELD ASSOCIATION, INC.
 LOT 142

THE BRIGHTFIELD ASSOCIATION, INC.
 LOT 213

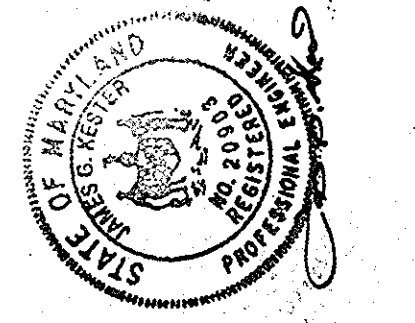
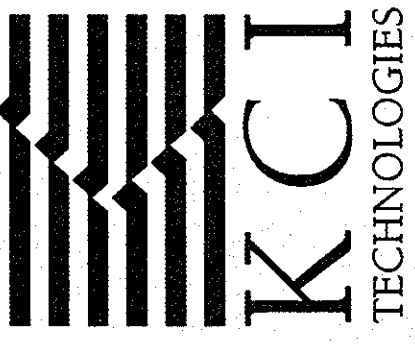
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 ARC LENGTH = 1009.16
 CHORD LENGTH = 1174.74
 CHORD BEARING = S88° 19' 30" E

RADIUS = 1125.00
 ARC LENGTH = 523.95'
 CHORD LENGTH = 519.23'
 CHORD BEARING = S88° 19' 30" E

SEE MATCH LINE SHEET 26

NO.	REVISIONS DESCRIPTION	DATE

10 NORTH PARK DRIVE
 HUNT VALLEY, MD 21030
 PHONE: (410) 316-7800
 FAX: (410) 316-7817
 www.kci.com



BRIGHTFIELD SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6751 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

LANDSCAPE PLAN

SCALE: 1" = 20'
 DATE: 10/19/07
 KCI JOB NO.: 01-043223J2
 CAPITAL PROJECT NO.: D-1126
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 11/2/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12/3/07
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

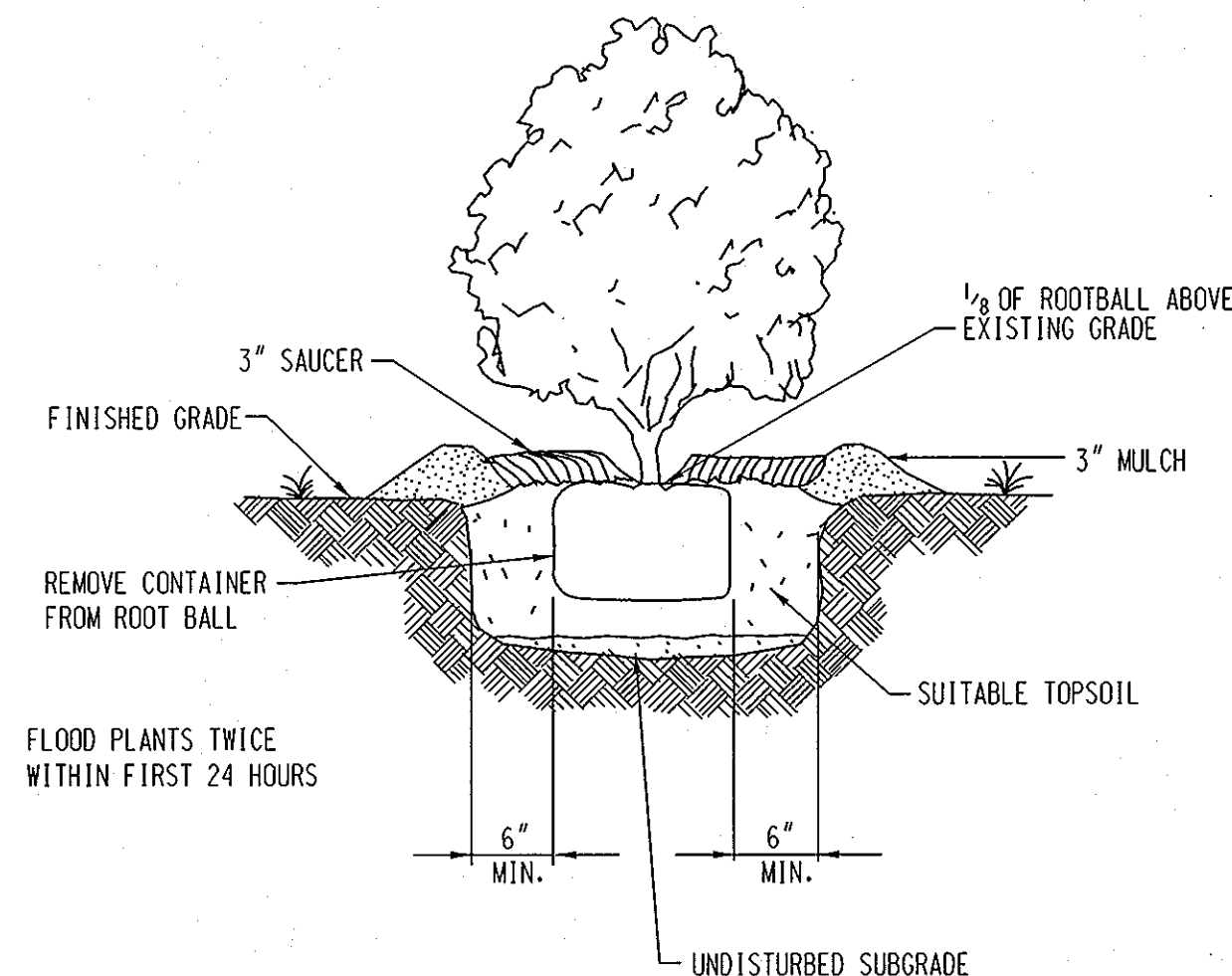
[Signature] 1/4/08
 DIRECTOR DATE

LEGEND	
RIPARIAN ZONE	[Hatched Pattern]
FOREST CONSERVATION PLANTING ZONE	[Stippled Pattern]
LIVE STAKE ZONE	[Cross-hatched Pattern]

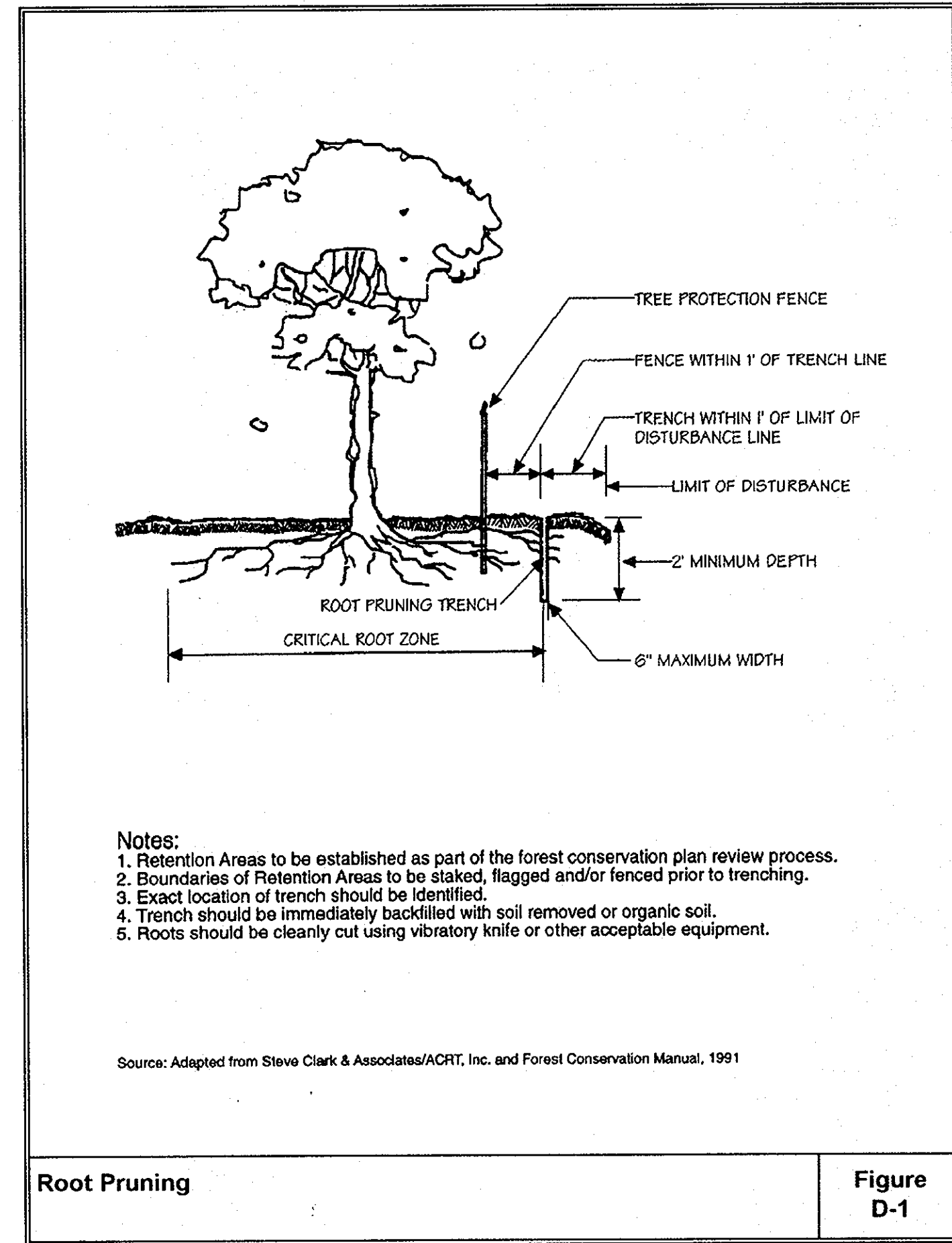
PLANTING SCHEDULE					
PLANTING ZONE	QUANTITY	COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING
LIVE STAKE ZONE 0.076 ac.	208	Silky Dogwood	Cornus amomum	36" Live Stake	24" O.C.
	207	Red-osier Dogwood	Cornus sericea	36" Live Stake	24" O.C.
	207	Arrow-wood Viburnum	Viburnum dentatum	36" Live Stake	24" O.C.
	207	Black Willow	Salix nigra	36" Live Stake	24" O.C.
		Seeding - Riparian Formula*			
RIPARIAN ZONE 0.285 ac.	50	Spice Bush	Lindera benzoin	24-36" Ht. Cont. Grown	10' O.C.
	37	Silky Dogwood	Cornus amomum	24-36" Ht. Cont. Grown	10' O.C.
	37	Arrowwood Viburnum	Viburnum dentatum	24-36" Ht. Cont. Grown	10' O.C.
	33	Pin Oak**	Quercus Palustris	5' Ht. Cont. Grown	10' O.C.
	32	Tulip Poplar**	Liriodendron tulipifera	5' Ht. Cont. Grown	10' O.C.
	33	Sweetgum**	Liquidambar styraciflua	5' Ht. Cont. Grown	10' O.C.
	Seeding - Riparian Formula*				
FOREST CONSERVATION ZONE 0.52 ac.	36	Pin Oak**	Quercus Palustris	4'-5' Ht. (2gal-3gal) Cont. Grown	11' O.C.
	36	Tulip Poplar**	Liriodendron tulipifera	4'-5' Ht. (2gal-3gal) Cont. Grown	11' O.C.
	36	Sweetgum**	Liquidambar styraciflua	4'-5' Ht. (2gal-3gal) Cont. Grown	11' O.C.
	36	Red Maple**	Acer Rubrum	4'-5' Ht. (2gal-3gal) Cont. Grown	11' O.C.
	36	Black Cherry**	Prunus Serotina	4'-5' Ht. (2gal-3gal) Cont. Grown	11' O.C.
		Seeding - Riparian Formula*			

* Seed Entire Area
** Install Tree Shelter Per Detail On Sheet 33
Riparian Formula Seed Mix (0.91 ac)
Complete Seed Mix to be applied at a rate of 50 LBS/AC

Total Qty	Unit	Common Name	Botanical Name	Type	Condition	Spacing/Rate	Ind. Status
8.7	Lbs	Riverbank wild rye	Elymus riparius	Cool Season	Seed	10 Lbs/Ac-20%	FACW
8.7	Lbs	Virginia wild rye	Elymus virginicus	Cool Season	Seed	10 Lbs/Ac-20%	FACW
17.3	Lbs	Annual ryegrass	Lolium multiflorum	N/A	Seed	20 Lbs/Ac-40%	NI
4.3	Lbs	Switchgrass	Panicum virgatum	Warm Season	Seed	5 Lbs/Ac-10%	FAC
4.3	Lbs	Wood reedgrass	Cinna arundinacea	Warm Season	Seed	5 Lbs/Ac-10%	FACW
						50 Lbs/Ac	TOTAL MIX

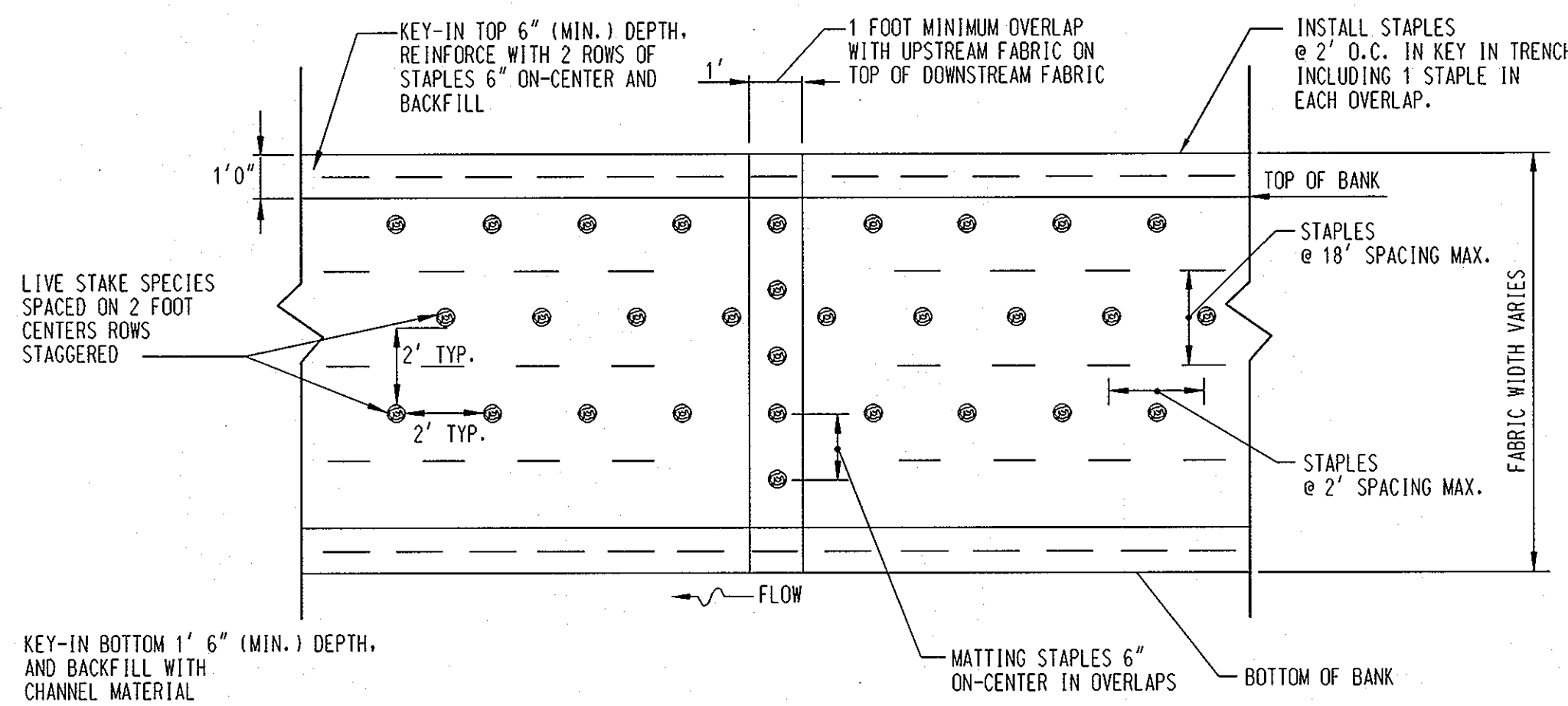
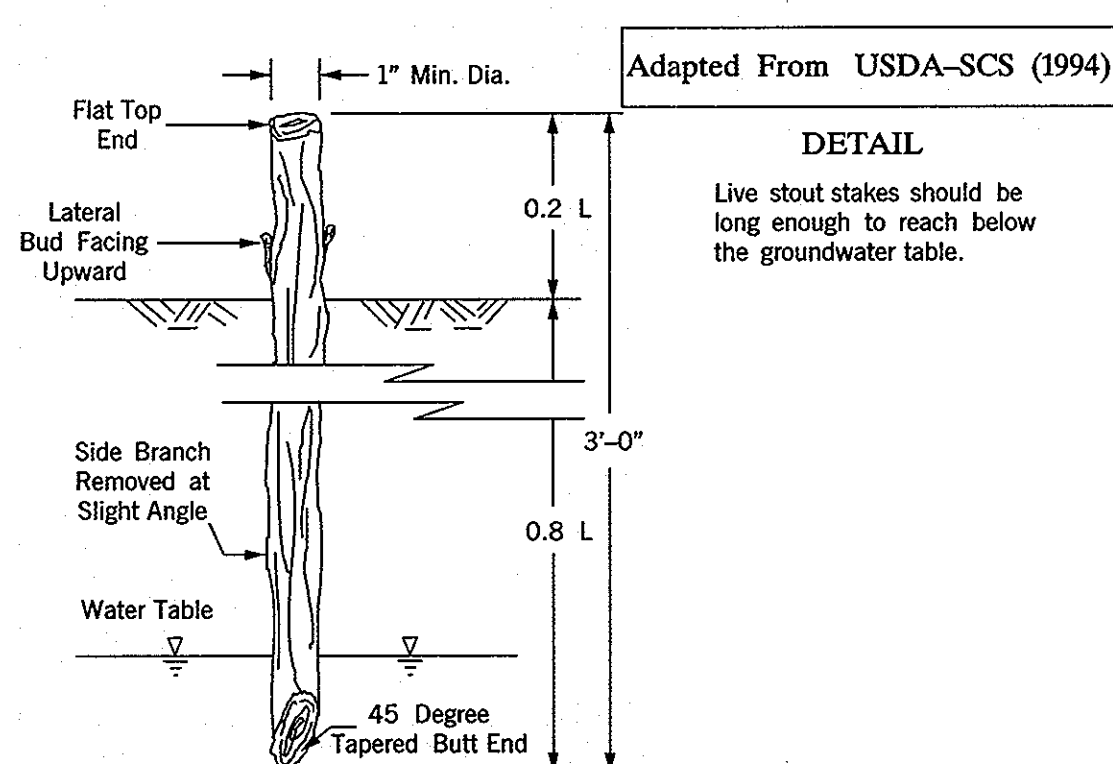


SHRUB PLANTING DETAIL
NOT TO SCALE



Root Pruning
Figure D-1

DETAIL 2.4: LIVE STAKES

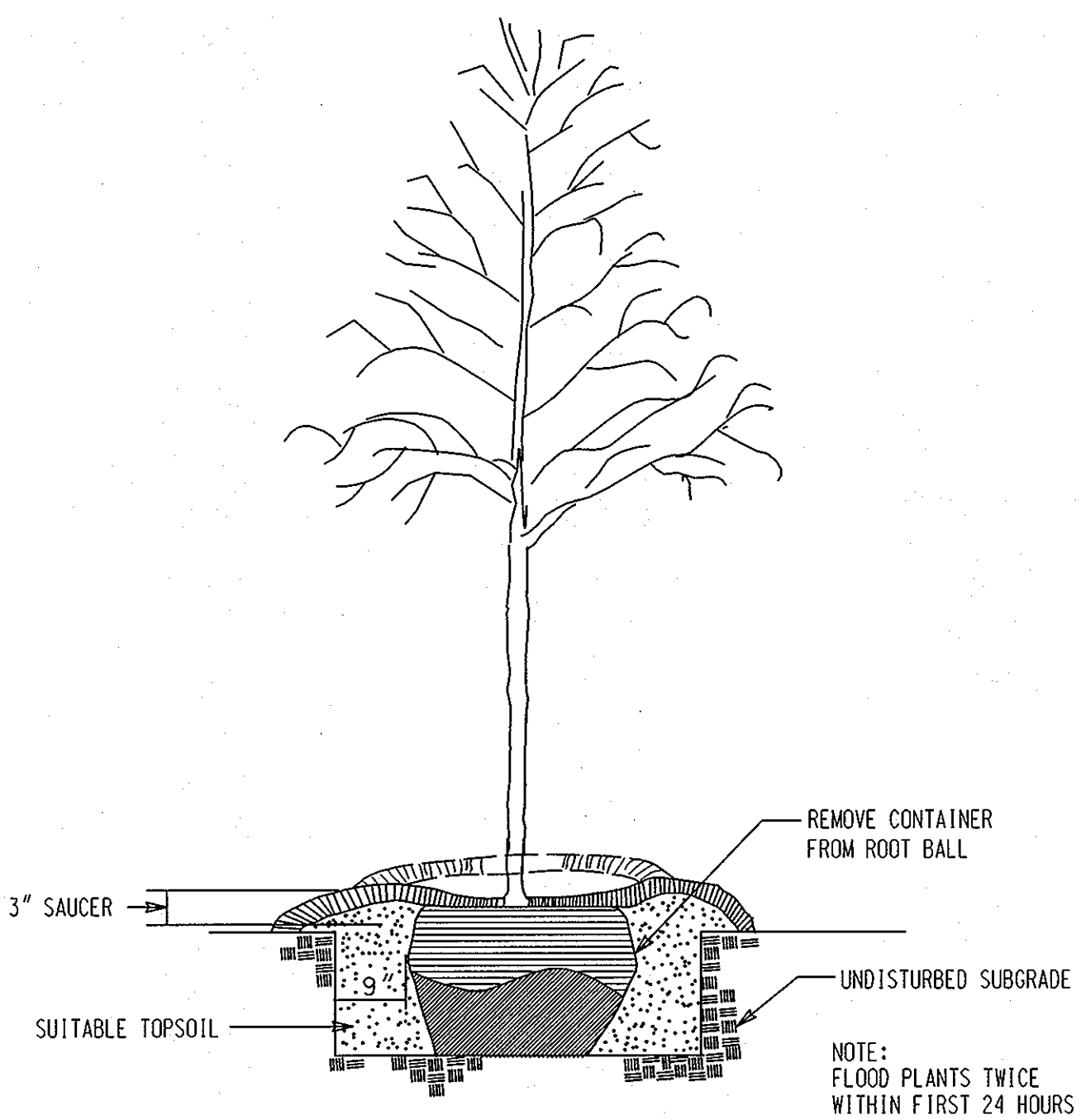


TYPICAL PLAN VIEW NATURAL FIBER MATTING WITH LIVE STAKES AND ROOTED CUTTINGS
NOT TO SCALE

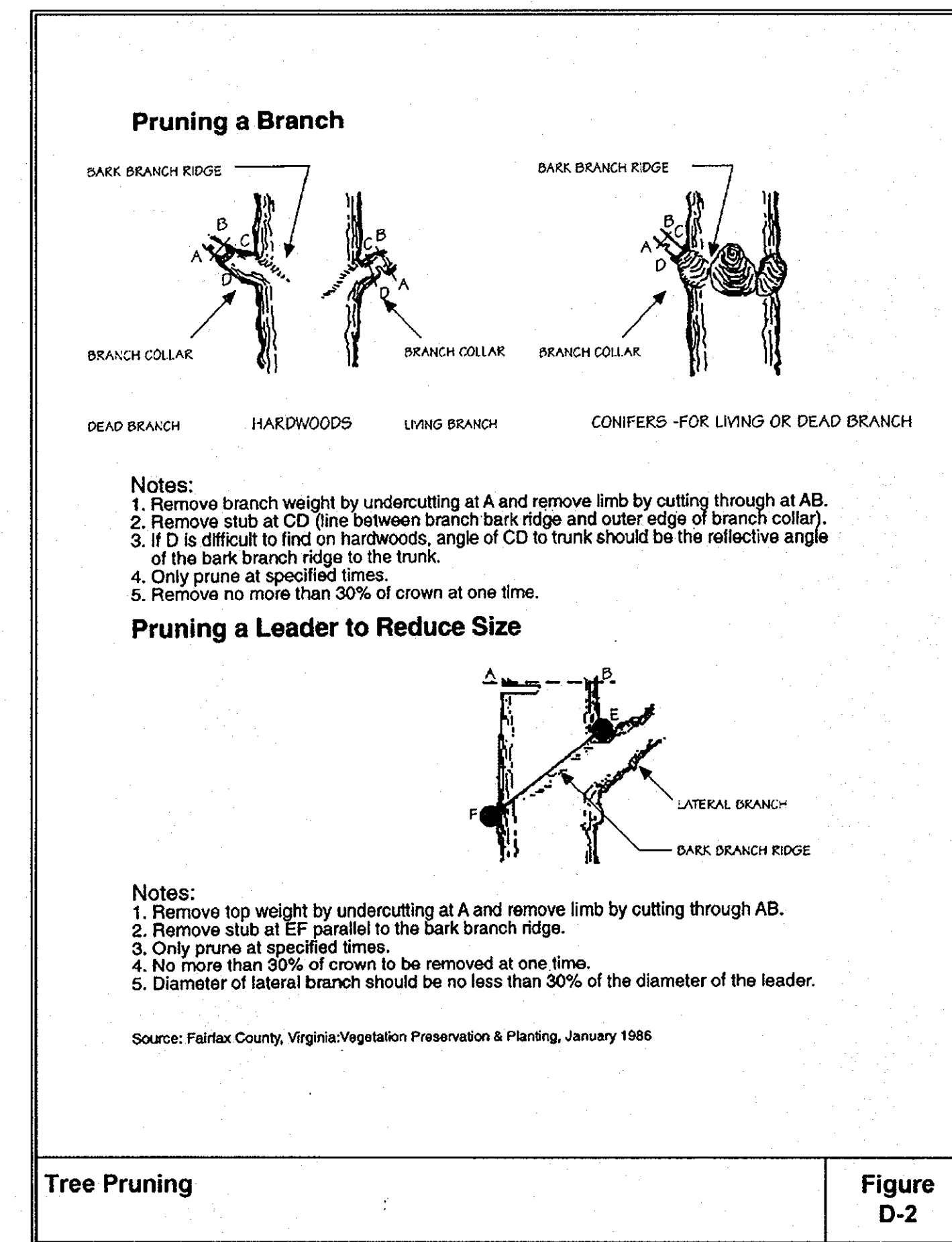
Natural Fiber Matting. Matting for the bank treatment areas shall consist of a machine produced mat of degradable natural fibers and shall meet the following *minimum* specifications:

Material:	Woven coir fiber yarn or twine
Thickness:	0.25 in.
Elongation (Dry/Wet):	29%/35%
Weight:	20 oz/SY
Open Area:	50%
Size:	6 ft. wide X 150 ft in length (100 SY per roll)
Flow Velocity:	8 ft./sec.
Life Expectancy:	3 years

Staples. Staples for securing the soil stabilization matting shall be U or T shaped steel wire having minimum gauges of No. 11 and No. 8, respectively. The length of the U shaped staple shall be a minimum of 12 in. and the width shall be 1 to 1 1/2 in. on average. The T shaped staples shall have a main and secondary leg and a 4 in head. The length of the main leg shall be a minimum of 18 in and the secondary leg shall be a minimum of 2 in.



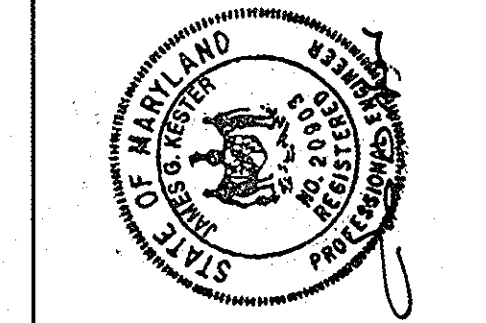
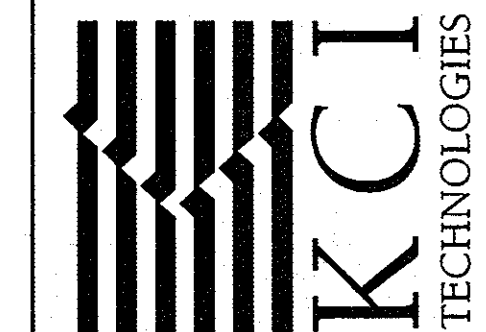
TREE PLANTING DETAIL
NOT TO SCALE



Tree Pruning
Figure D-2

NO.	REVISIONS DESCRIPTION

10 NORTH PARK DRIVE
HUNT VALLEY, MD 21030
PHONE: (410) 316-7800
FAX: (410) 316-7817
www.kci.com



BRIGHTFIELD SECTION 1, AREA 2
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
STORMWATER MANAGEMENT DIVISION
651 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

LANDSCAPE DETAILS

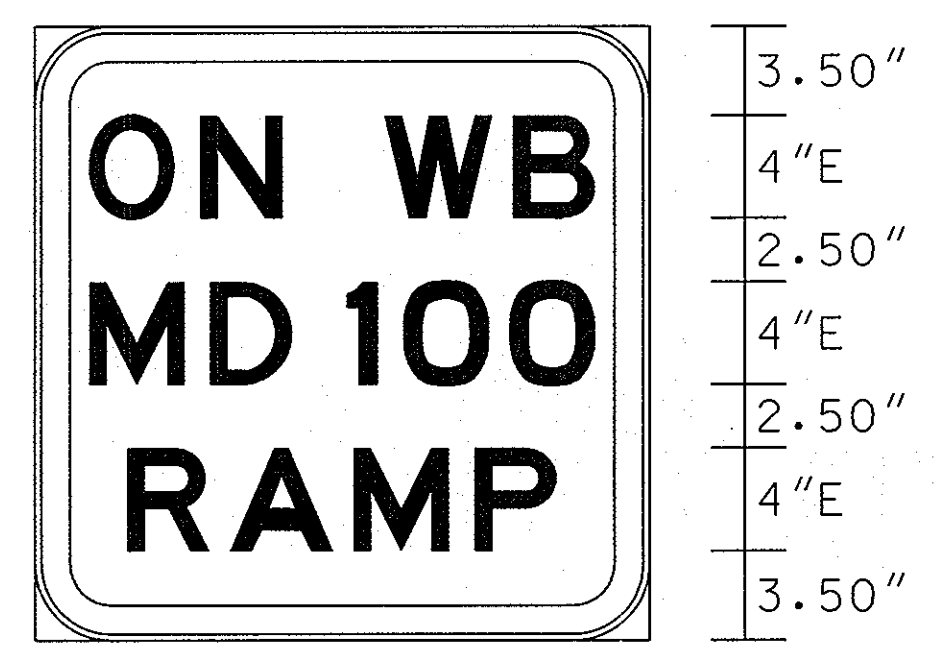
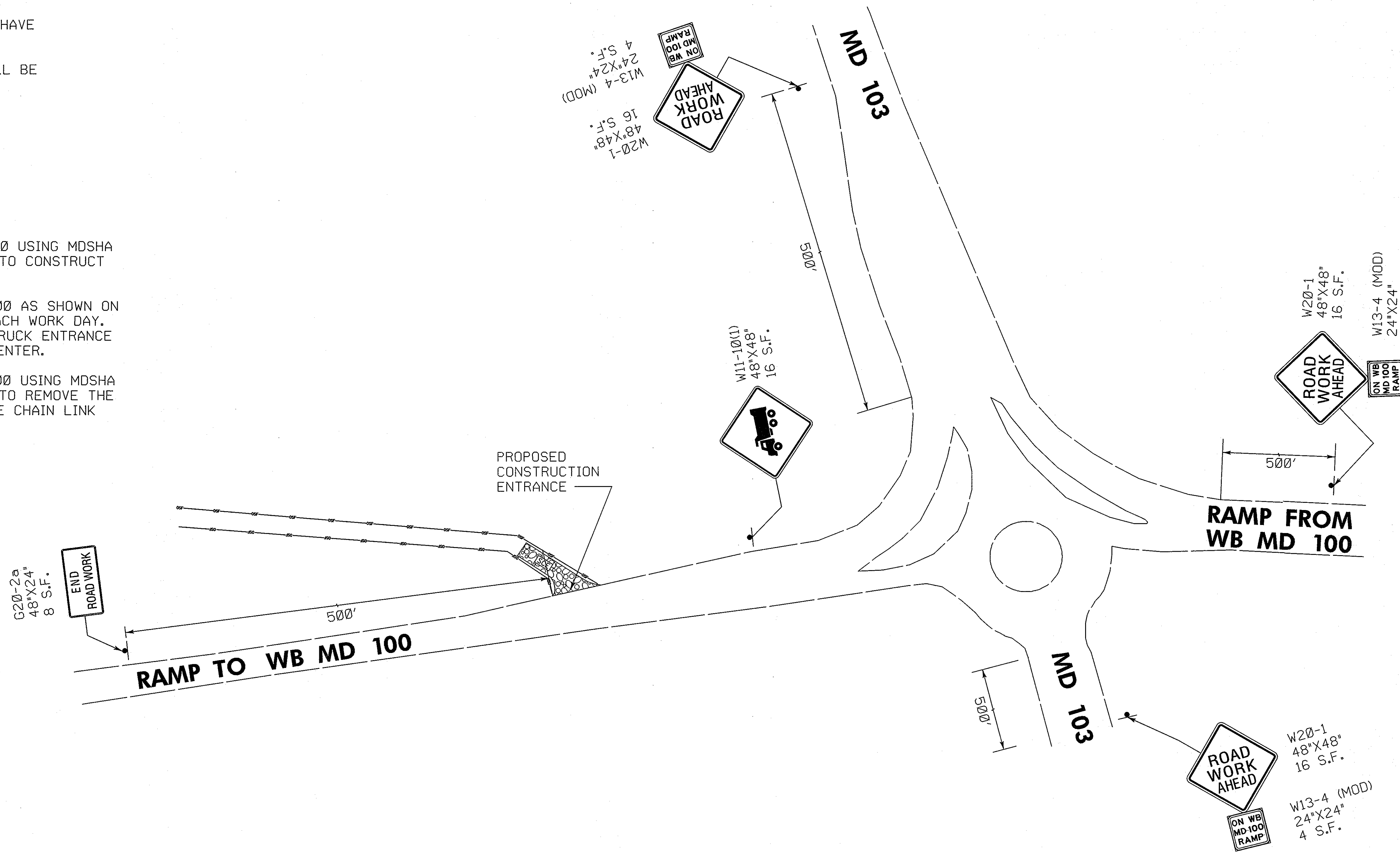
SCALE:	NTS
DATE:	10/19/07
KCI JOB NO.:	01-043223.12
CAPITAL PROJECT NO.:	D-1126
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES AND PRACTICES SHALL CONFORM WITH THE GUIDELINES OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (LATEST REVISION) AND THE MSHA "STANDARD SIGN BOOK".
2. THE TRAFFIC CONTROL PLAN DEPICTS THE MINIMUM TRAFFIC CONTROLS REQUIRED DURING CONSTRUCTION TO MAINTAIN VEHICULAR TRAFFIC FLOW AND THE SAFETY OF VEHICLES AND WORKERS. ADDITIONAL DEVICES OR ADJUSTMENT OF THE LOCATION OF DEVICES SHALL BE INCORPORATED AS DIRECTED BY THE ENGINEER.
3. IN THE EVENT THAT ADJACENT CONSTRUCTION PROJECTS OCCUR SIMULTANEOUSLY WITH THIS PROJECT, COORDINATION OF THE TRAFFIC CONTROL PLANS FOR EACH PROJECT WILL BE REQUIRED. SPECIFICALLY THE LOCATION OF OVERLAPPING ADVANCE WARNING SIGNS SHALL BE ADJUSTED AS REQUIRED.
4. ALL TEMPORARY SIGNS INSTALLED FOR THIS PROJECT SHALL HAVE HIGH PERFORMANCE WIDE ANGLE RETROREFLECTIVE SHEETING.
5. ALL ACCESS TO/FROM THE TEMPORARY TRUCK ENTRANCE SHALL BE FROM THE RAMP TO WESTBOUND MD 100.

SEQUENCE OF OPERATIONS

1. MAINTAIN EXISTING TRAFFIC ALONG RAMP TO WESTBOUND MD 100 USING MDSA STANDARD NO. MD 104.04-02 FOR SHOULDER WORK OPERATIONS TO CONSTRUCT THE TEMPORARY TRUCK ENTRANCE.
2. MAINTAIN EXISTING TRAFFIC ALONG RAMP TO WESTBOUND MD 100 AS SHOWN ON MAINTENANCE OF TRAFFIC PLAN FOR WORK EFFORTS DURING EACH WORK DAY. DURING NON-WORK HOURS, BLOCK ACCESS TO THE TEMPORARY TRUCK ENTRANCE WITH CHANNELIZING DEVICES SPACED AT 5-FOOT CENTER TO CENTER.
3. MAINTAIN EXISTING TRAFFIC ALONG RAMP TO WESTBOUND MD 100 USING MDSA STANDARD NO. MD 104.04-02 FOR SHOULDER WORK OPERATIONS TO REMOVE THE TEMPORARY TRUCK ENTRANCE AND RESTORE THE AREA. REPLACE CHAIN LINK FENCE.



W13-4 (MOD)
SIGN DETAIL
(NOT TO SCALE)

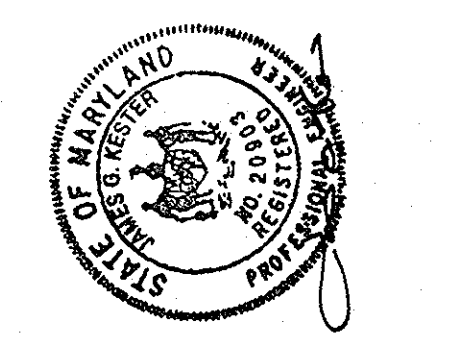
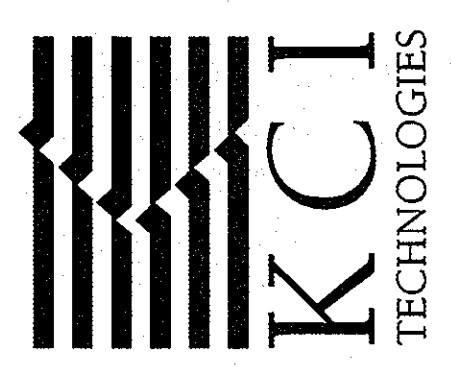
A PERMIT FOR TEMPORARY ACCESS OFF OF THE RAMP TO WB MD 100 SHALL BE OBTAINED BY HOWARD COUNTY THROUGH SHA DISTRICT 7.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 11/21/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 11/15/07
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 12/6/07
 DIRECTOR

NO.	REVISIONS DESCRIPTION	DATE

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



BRIGHTFIELD
 SECTION 1, AREA 2
 HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
 STORMWATER MANAGEMENT DIVISION
 6761 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MARYLAND 21046

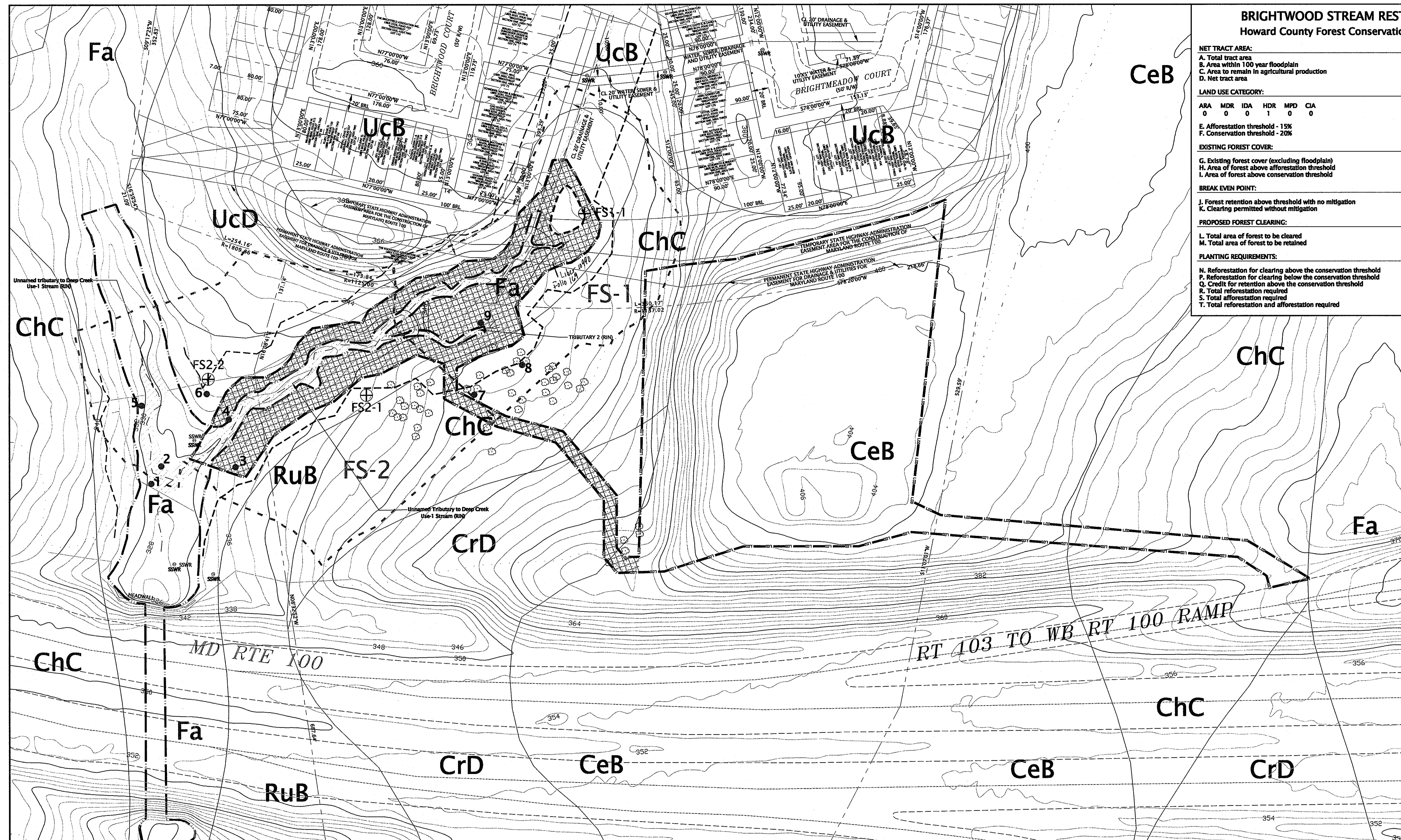
MAINTENANCE OF TRAFFIC PLAN

SCALE: NOT TO SCALE
 DATE: 10/19/07
 KCI JOB NO.: 01-043223.12
 CAPITAL PROJECT NO.: D-1126
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:
 30 OF 33
 SHEET NO.: 30 OF 33

BRIGHTWOOD STREAM RESTORATION
Howard County Forest Conservation Worksheet

NET TRACT AREA:	
A. Total tract area	1.06
B. Area within 100 year floodplain	0.19
C. Area to remain in agricultural production	0.00
D. Net tract area	0.87
LAND USE CATEGORY:	
ARA MDR IDA HDR MPD CIA	0 0 0 1 0 0
E. Afforestation threshold - 15%	0.13
F. Conservation threshold - 20%	0.17
EXISTING FOREST COVER:	
G. Existing forest cover (excluding floodplain)	0.85
H. Area of forest above afforestation threshold	0.72
I. Area of forest above conservation threshold	0.68
BREAK EVEN POINT:	
J. Forest retention above threshold with no mitigation	0.31
K. Clearing permitted without mitigation	0.54
PROPOSED FOREST CLEARING:	
L. Total area of forest to be cleared	0.85
M. Total area of forest to be retained	0.00
PLANTING REQUIREMENTS:	
N. Reforestation for clearing above the conservation threshold	0.17
P. Reforestation for clearing below the conservation threshold	0.35
Q. Credit for retention above the conservation threshold	0.00
R. Total reforestation required	0.52
S. Total afforestation required	0.00
T. Total reforestation and afforestation required	0.52

- There are 0.19 acres of the net tract area that are included in the 100 year floodplain limits. (Floodplain information provided by KCI Technologies, Inc.)
- Total area of Wetlands: 0.0 acres.
- Total linear feet of Waters of the U.S.: +/- 765 feet.
- Total tract area: +/- 1.06 acres.
- Total area of forest in net tract area: +/- 0.85 acres.
- There are 0.85 acres of the forest to be cleared within the tract area.
- Existing zoning: County Park & Rec.
- Existing landuse: Park Land.
- No rare, threatened or endangered species were encountered on the project site during site visits to the property. In addition, correspondence from MD DNR Forest, Wildlife & Heritage Service indicates that there are no records of RTE Species on the site.
- Base information provided by: KCI Technologies, Inc. 10 North Park Drive, Hunt Valley, MD 21030-1888
- LEGAL OWNER**
Howard County Department of Parks & Recreation
7120 Oakland Mills Road
Columbia, MD 21046-1677
- All stream channels marked as RIN are considered Waters of the U.S.



HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 11/27/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12/3/07
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 12/6/07
DIRECTOR DATE

On-Site Soil Classification	
CeB	Chillum loam Slopes 2-5%
ChC	Chillum-russett loam Slopes 5-10%
CrD	Croom & eyesboro soils Slopes 10-15%
Fa	Fallsington sandy loam Slopes 0-2%
RuB	Russett & beltsville soils Slopes 2-5%
SaB	Sassafras loam Slopes 2-5%
SaC	Sassafras loam Slopes 5-10%
UcB	Urban land-chillum-beltsville complex, Slopes 0-5%
UcD	Urban land-chillum-beltsville complex, Slopes 5-15%

Forest Stand Classification	
FS-I	Red Maple/Sweet Gum Forest Stand Forest Retention Priority: High
FS-II	Tulip Poplar Forest Stand Forest Retention Priority: High

SPECIMEN TREE LIST * DBH: Diameter at Breast Height (4.5' High on Uphill Side of Tree)				
Tree ID#	Scientific Name	Common Name	DBH*	Vigor
1	Liriodendron tulipifera	Tulip Poplar	41.0	GOOD
2	Acer rubrum	Red Maple	36.0	GOOD
3	Quercus prinus	Chestnut Oak	34.8	GOOD
4	Quercus palustris	Pin Oak	30.0	GOOD
5	Acer rubrum	Red Maple	30.0	GOOD
6	Quercus palustris	Pin Oak	36.0	GOOD
7	Quercus palustris	Pin Oak	40.0	GOOD
8	Quercus palustris	Pin Oak	30.0	GOOD (TWIN)
9	Quercus palustris	Pin Oak	34.0	GOOD

100 75 50 25 0 50
SCALE IN FEET

--- PROPERTY BOUNDARY	RIN STREAM CLASSIFICATION	GPS LOCATED TREE UNDER 30" DBH
-200 EXISTING SITE TOPOGRAPHY	100 YEAR FLOODPLAIN	1-1 FOREST STAND SAMPLE POINTS
--- TREELINE	LIMIT IF DISTURBANCE	NET TRACT AREA
--- AREAS OF FIELD SURVEYED U.S. WATERWAYS	S4A SOIL BOUNDARY & CLASSIFICATION	FOREST TO BE CLEARED
--- STREAM BUFFER	--- FOREST STAND BREAK LINE	
--- STREAM CENTERLINE	2 SPECIMEN TREES	

SIGNATURE BLOCK

DATE: 10/21/07
MICHAEL D. TRUMBHAUER

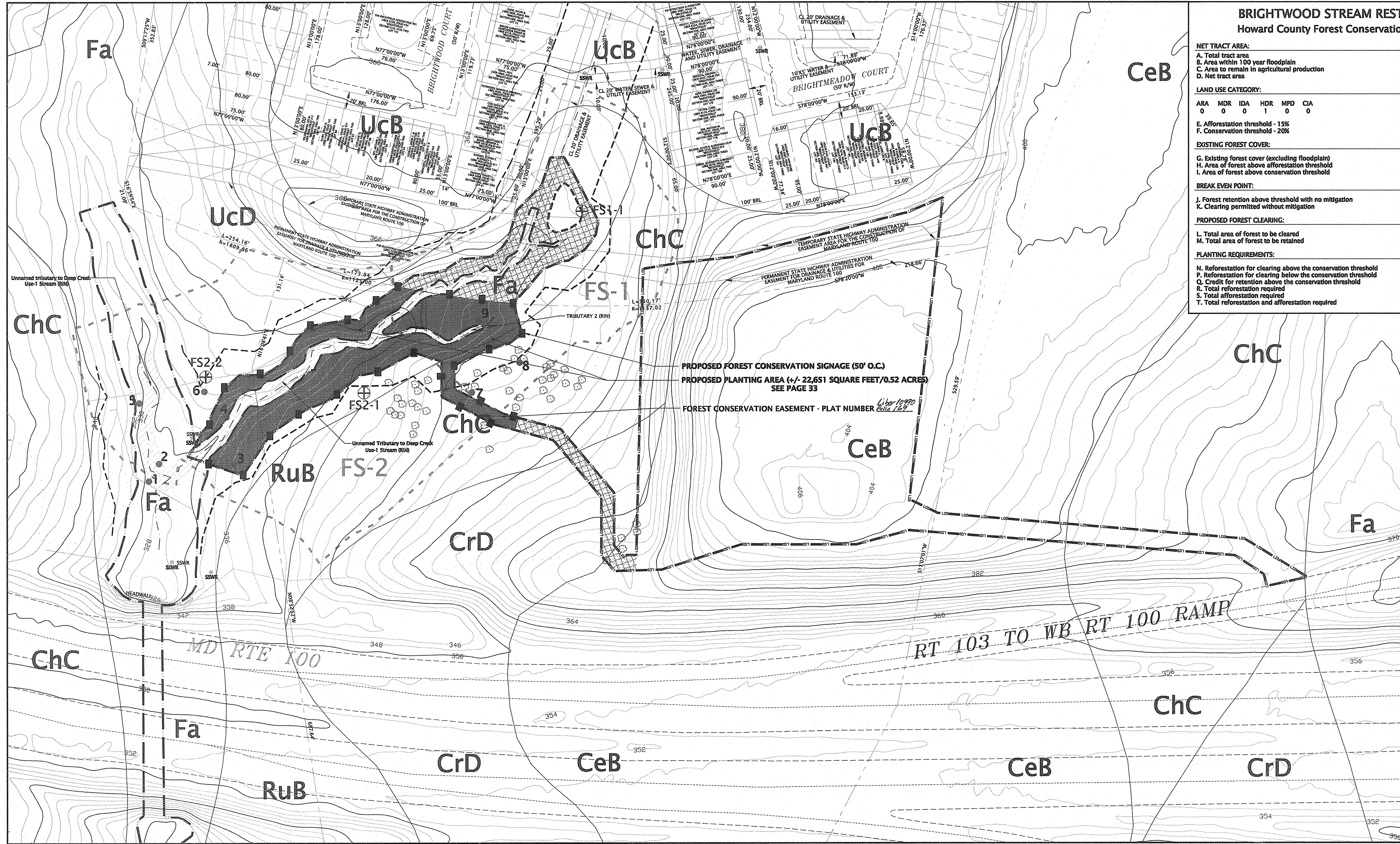
FORREST STAND DELINEATION FOR BRIGHTWOOD COURT STREAM RESTORATION

PREPARED FOR: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
PAGE 31 OF 33
PREPARED BY: JBP
DATE: OCTOBER 19, 2007
SDP-07-063

BRIGHTWOOD STREAM RESTORATION
Howard County Forest Conservation Worksheet

NET TRACT AREA:	
A. Total tract area	1.06
B. Area within 100 year floodplain	0.19
C. Area to remain in agricultural production	0.00
D. Net tract area	0.87
LAND USE CATEGORY:	
ARA MDR IDA HDR MPD CIA	0 0 0 1 0 0
E. Afforestation threshold - 15%	
F. Conservation threshold - 20%	
EXISTING FOREST COVER:	
G. Existing forest cover (excluding floodplain)	0.85
H. Area of forest above afforestation threshold	0.72
I. Area of forest above conservation threshold	0.68
BREAK EVEN POINT:	
J. Forest retention above threshold with no mitigation	0.31
K. Clearing permitted without mitigation	0.54
PROPOSED FOREST CLEARING:	
L. Total area of forest to be cleared	0.85
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PLANTING REQUIREMENTS:	
N. Reforestation for clearing above the conservation threshold	0.17
P. Reforestation for clearing below the conservation threshold	0.35
Q. Credit for retention above the conservation threshold	0.00
R. Total reforestation required	0.52
S. Total afforestation required	0.00
T. Total reforestation and afforestation required	0.52

- SEE PLANTING SCHEDULE (SHEET 28 OF 32) FOR SUMMARY OF FOREST CONSERVATION TREE PLANTING.
- SEE SECOND PAGE OF PLANTING PLAN FOR NOTES AND DETAILS.



HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 11/2/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12/3/07
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 12/6/07
DIRECTOR DATE

100 75 50 25 0 50
SCALE IN FEET

PROPERTY BOUNDARY	RIN	STREAM CLASSIFICATION	GPS LOCATED TREE UNDER 30" DBH
EXISTING SITE TOPOGRAPHY	100	100 YEAR FLOODPLAIN	FOREST STAND SAMPLE POINTS
TREELINE	100	LIMIT IF DISTURBANCE	NET TRACT AREA
AREAS OF FIELD SURVEYED U.S. WATERWAYS	54A	SOIL BOUNDARY & CLASSIFICATION	FOREST TO BE CLEARED
STREAM BUFFER	100	FOREST STAND BREAK LINE	FOREST TO BE RETAINED
STREAM CENTERLINE	2	SPECIMEN TREES	PLANTING AREA

SIGNATURE BLOCK

[Signature] DATE: 10/21/07
MICHAEL D. TRUMBauer

ENVIRONMENTAL MANAGEMENT, INC.
260 Gateway Drive, Suite 21-C
Bel Air, MD 21014
Phone: (410) 893-9016
Fax: (410) 893-9380
E-mail: info@cheserv.com

FORREST STAND DELINEATION FOR BRIGHTWOOD COURT STREAM RESTORATION

PREPARED FOR: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
PAGE 32 OF 33
PREPARED BY: JRP
DATE: OCTOBER 19, 2007

SDP-07-063

SDP-07-063

GENERAL PLANTING NOTES

1. In order to be considered successful the site shall maintain at a minimum, 85% cover of surviving plant species. It is the intent of the plan to restore native trees and shrubs to the stream buffer. Native volunteer species are expected and will be counted in survival rate calculations.
2. The Contractor is responsible for the location of all underground utilities (SEE UTILITY NOTIFICATION). Repairs of utilities damaged during planting shall be at the Contractor's expense.
3. Tree protection signage is to be installed around the perimeter of all planting areas, facing away from planting area, at 50-foot intervals. Signs shall be secured to posts with galvanized bolts.

FOREST CONSERVATION PLAN NOTES

1. Stake and flag the limits of clearing as identified on the approved plans.
2. After the limits of clearing have been staked and flagged, a pre-construction meeting at the construction site will be held to field-verify the limits of clearing specified on the approved plan, authorize necessary adjustments and authorize the installation of protection devices. The meeting shall include the owner or their representative, the on-site foreman in charge of land disturbance, the engineering consultant and a representative from the Howard County Department of Planning and Zoning.
3. Tree protection fence and signage shall be short-term forest protection devices, and shall be located along the limits of clearing or as identified in this plan set. Refer to this sheet for the appropriate details and installation sheet.
4. The tree protection fence and temporary signage (temporary protection devices) shall be installed prior to any land clearing or grading and shall be maintained during the entire project. None of these devices shall be in any way anchored or attached to the trees to be saved.
5. Equipment, machinery, vehicles, materials, debris, temporary structures, and/or excessive pedestrian traffic must be confined to the construction entrance to minimize impacts on the surrounding environmentally sensitive area.
6. After the project has been completed, the remaining trees will be evaluated for damage or impacts which may have occurred during the construction process. If trees are found to be damaged or dead as a direct result of the construction process, corrective action must be taken. The corrective measures may include the following and must be carried out by a qualified tree professional:
 - * Removal of dead or dying trees should be limited to individual trees which could be hazardous as other damaged trees should be left to provide wildlife habitat. Removal should be authorized by County Inspection/enforcement staff.);
 - * Pruning of dead or declining limbs;
 - * Soil aeration;
 - * Fertilizing;
 - * Watering;
 - * Wound repair; and/or
 - * Clean-up of retention areas.
7. Provided that the forest conservation areas have not been impacted during the construction process, authorization will be given to remove temporary protection devices.
8. When removing the temporary tree protection devices, care shall be taken to not disturb or clear additional area within the limit of clearing. Hand removal of vines, excessive dead material, and trash is permitted. The burial of discarded materials is not permitted on the site.
9. The long-term management and protection measures for the forest conservation areas will be addressed separately in an agreement between the Howard County Department of Parks and Recreation and the Howard County Department of Planning and Zoning.

UTILITY NOTIFICATION

Utility information presented herein is based on best available information. The contractor shall notify "Miss Utility" 1-800-257-7777 at least 48 hours prior to any excavation.

SPECIMEN TREE PRESERVATION NOTES

1. After the limits of disturbance (LOD) have been staked and flagged, a pre-construction meeting at the site will be held to review the LOD in relation to Specimen trees, authorize necessary adjustments to protect Individual Specimen trees where feasible, and authorize the use of Specimen tree protection techniques where appropriate to protect Specimen trees along or within the LOD that are believed to be preservable. The meeting shall include the owner or their representative, the on-site foreman in charge of land disturbance, the engineering consultant and a representative from the Howard County Department of Planning and Zoning.
2. Specific tree preservation techniques for Individual preservable Specimen trees within or adjacent to the LOD as identified during the field meeting will be decided in the field by a specialist in urban forestry practices, prior to the start of construction in the area of the subject tree(s). Techniques to be employed may include, but are not limited to: Injection fertilization, crown reduction, root pruning, artificial root zone aeration, geotextile matting, tree wells and retaining walls.

PRE-PLANTING SPECIFICATIONS

1. Acceptable planting time is between March 1 to May 15, or September 30 to December 31. Ideal planting weather is cloudy and cool. Planting shall not take place in sub-freezing temperatures or when the ground is frozen, or when weather conditions will adversely affect plant materials.
2. The contractor shall notify the Howard County Department of Planning and Zoning representative at least 48 hours prior to the start of construction to arrange a pre-planting meeting.
3. Planting shall begin within 24 hours of plant material delivery to the site. Plant materials which are unplanted for more than 24 hours shall be protected from direct sun and weather and kept moist. Nursery stock shall not be left unplanted for more than 2 weeks. All planting stock will be planted as received and top pruning will be completed prior to planting.
4. All planting stock shall be protected from sun scald, desiccation and structural damage during transport to the site. Materials held for planting will be moistened and placed in a cool, shaded area until ready for placement. During planting, all materials will be kept moist with the roots protected from desiccation.
5. When conditions detrimental to plant growth are encountered, such as rubble fill or obstructions, notify Howard County Staff before planting.
6. Planting soil for all plant materials shall consist of 100% soil excavated from the planting area.
7. Mulch for all trees and shrubs shall be approved tan root, wood chips, or other approved long fiber mulch. All mulch material to be at least one year old. Mulch may be applied by hand or by suitable equipment.
8. The contractor shall make the necessary arrangements to obtain clean fresh water for use during planting operations and the subsequent maintenance period.

QUALITY ASSURANCE

1. Names of plant material listed in the plant schedule conform generally with names accepted by the nursery trade. The Contractor is to provide stock true to botanical name.
2. Plant material shall meet or exceed the selection, sizing, transportation and protection requirements of the American Standard for Nursery Stock published by the American Association of Nurserymen.
3. Source Quality Control: Plant materials will be subject to inspection and approval of the Howard County Staff upon delivery for conformity to specification requirements as to quality, size and variety. This approval shall not impair the right of inspection during the process of the work, or the right of rejection due to damage suffered in handling or transportation on site. Rejected plants shall be removed immediately from the site, and replaced with acceptable plant material.
4. The contractor shall thoroughly investigate the availability of all plant materials in the quantities called for on the drawing immediately upon receiving notification of the bid award. Should the contractor discover that certain plant materials, seed mixes, and/or other related items pertaining to the work are unavailable within a +/- 400 mile radius of the project site, he shall then request a substitution. Substitutions in plant species, size, quantities or other materials shall be made only with the written approval of Howard County Staff. Only species native to the Maryland area will be permissible for substitution.

PLANTING SPECIFICATIONS

1. Refer to the planting schedule and planting plan for plant quantities, type, spacing and size.
2. Planting and staking techniques for trees shall be in accordance with the Landscape Specification Guidelines, 3rd edition published by the Landscape Contractors Association of Maryland, D.C. and Virginia, 1986, and the specifications of this plan set (see details this sheet).
3. Other than the selective control of invasive/exotic species and maintenance or replacement of planted trees and shrubs, there will be no modifications of habitat by mowing or other means of mechanical manipulation.
4. If sprouting of primary woody roots exist on the outside of the soil/root mass upon the removal of the plants from the containers, the Contractor shall carefully separate the soil/root mass prior to planting. Do not remove plants from containers until time of planting. All plants shall be sound, healthy, vigorous, well branched, plants free of disease, pests, eggs or larvae. No heeled-cold storage or collected stock will be accepted.
5. Back-fill shall be 100% native soil. During the back-fill procedure, thoroughly water the soil around the root ball while tamping the back-fill soil to eliminate any air pockets. After back-filling is complete, saucer is formed, and the top of the root ball and saucer are mulched, water thoroughly on the interior of the tree saucer until filled, even if it is raining, to saturate the rootball.
6. Remove all tags, labels, and wire from the plant material after planting.
7. Plants shall have been growing in the same general climate conditions as the location of this project for at least 2 years prior to planting.

SEEDING SPECIFICATIONS

1. Prior to seeding, the surface shall be cleared of all roots, brush, wire and other objects that may interfere with seeding operations.
2. Scarify the soil surface to allow good soil to seed contact.
3. Mix the seeds with two parts of cleaned washed sand (by volume) and the appropriate mix of fertilizer. Following seed broadcasting, roll or rake the area to ensure good soil-seed contact.
4. Seed shall not be broadcast over wooded and shrub planting sites. The seed should be dropped between the plants from a "bin" seeder, and care should be taken to ensure that no seeds are disturbed over the planted sites.

PRODUCT SPECIFICATIONS

- FERTILIZER:**
All fertilizer shall be granular, packet or pellet with 35 to 80 percent total nitrogen in a slow release form. Fertilizer shall be a complete fertilizer with a minimum analysis of 6 percent nitrogen, 12 percent phosphorus, and 10 percent potassium. Fertilizer shall be added depending on the size of the plant and the manufacturer's recommendation. Fertilizer shall be applied in the fall following the first growing season.
- MULCH:**
Material shall be well-aged, fine-shredded hardwood, dark brown in color, or approved equal. Material shall be mulching grade: uniform in size and free of foreign matter.

CLEAN-UP AFTER PLANTING

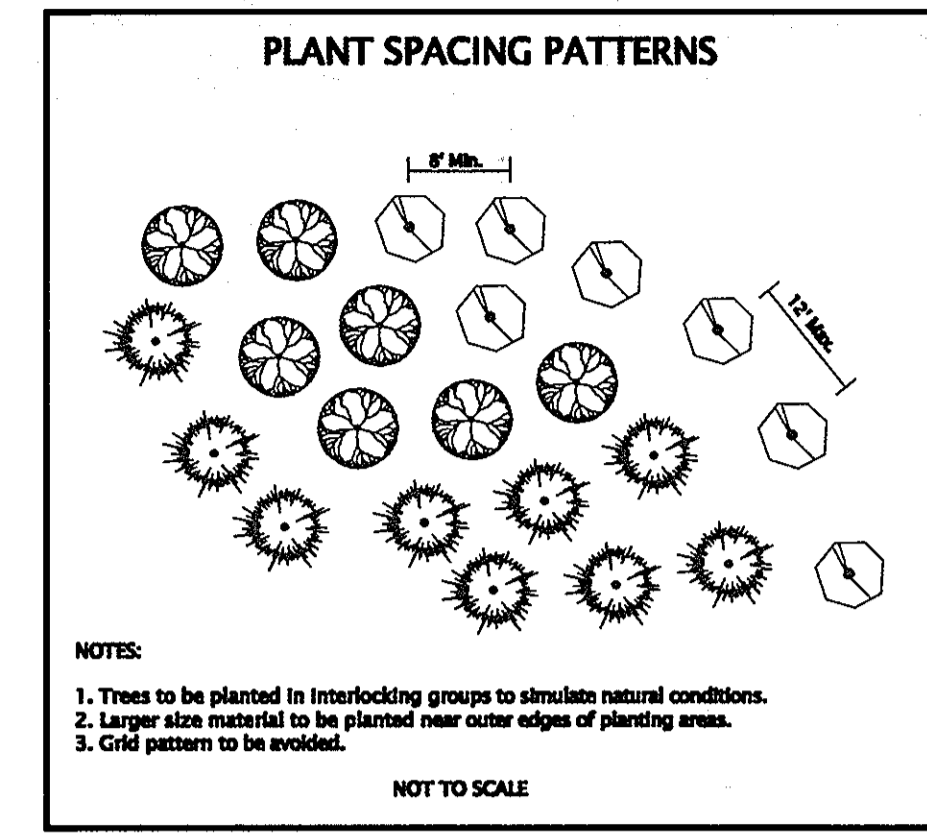
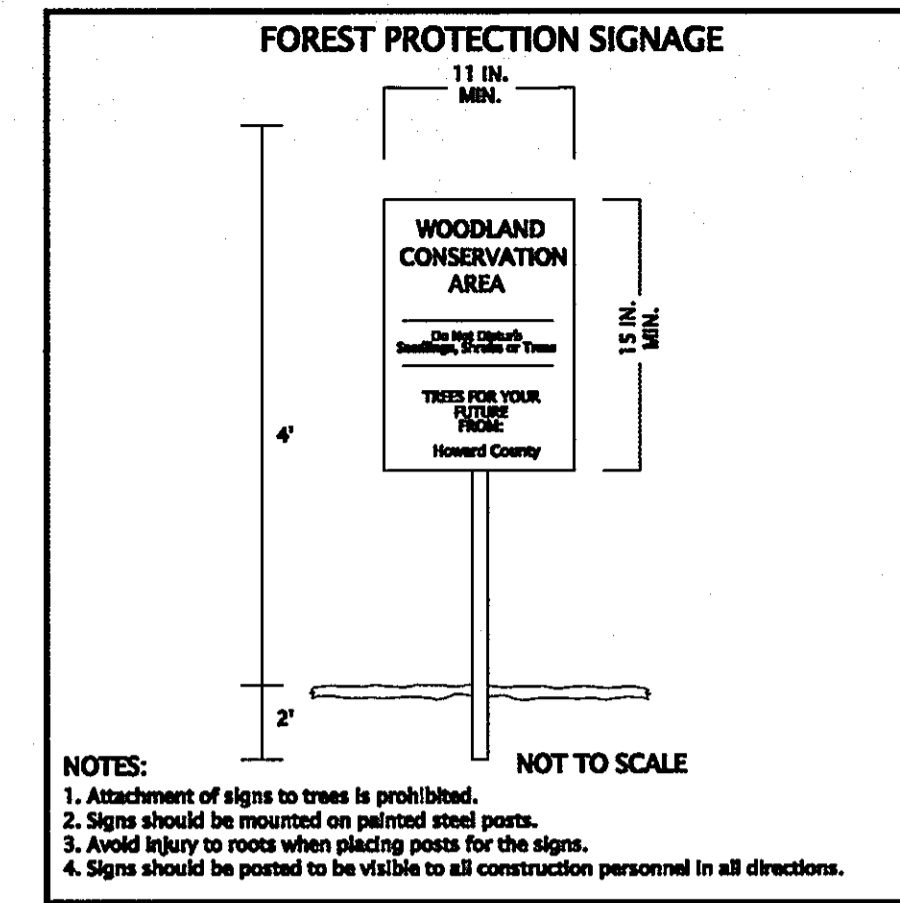
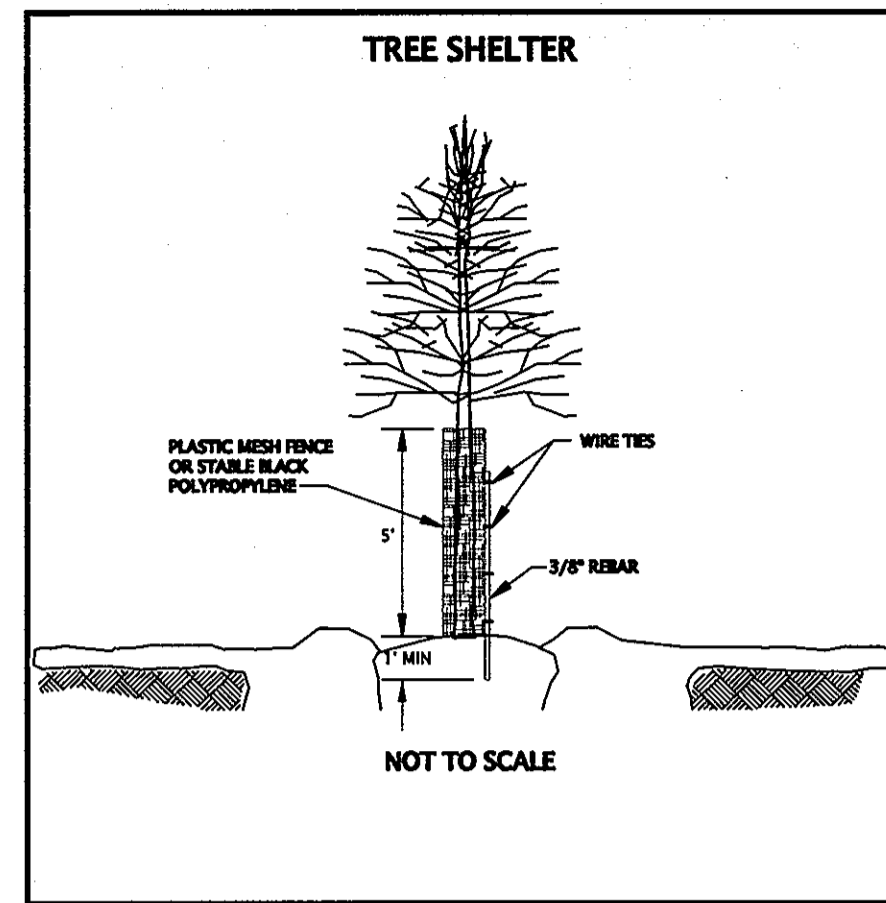
At the completion of the job, the contractor shall remove all excess materials from the job site and clean-up all areas affected by this work or storage of materials. The contractor shall replace or repair, at no cost to the owner, all site areas surrounding items damaged by work of his contract.

MAINTENANCE

1. Vegetation demonstrating immediate stress or dieback will be replaced by the contractor. In addition, soil and climate factors will be analyzed in relation to plant growth. The following management techniques shall be utilized.
2. Thoroughly water plant material as needed throughout the first growing season or as directed by Howard County Staff.
3. Replace dead or dying plants with identical species or approved alterations. Remove debris that impairs plant growth as needed during the first growing season.

FINAL INSPECTION

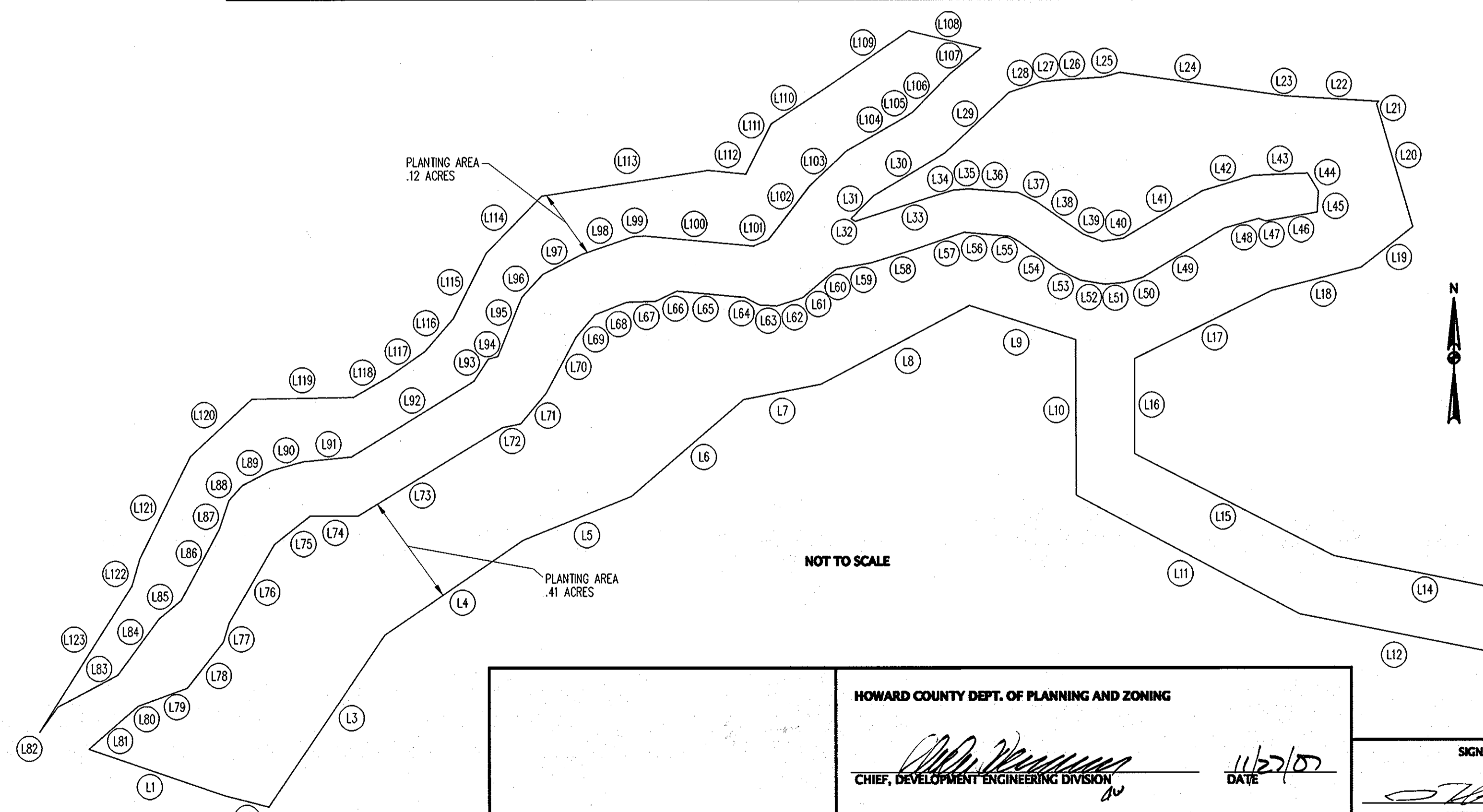
1. The Contractor will notify Howard County Staff at least 24 hours prior to the anticipated completion date. Inspection of planting will be made by Howard County Staff with the contractor present upon completion of planting and clean-up.
2. A written final acceptance will be made when all conditions within these specifications and plan set have been met to the satisfaction of the Howard County Department of Planning and Zoning.



NOTE: REFER TO LANDSCAPE DETAILS (SHEET 29 OF 33) FOR TREE AND SHRUB PLANTING DETAILS.

FOREST CONSERVATION PLANTING AREA

LINE NO.	BEARING	DISTANCE	LINE NO.	BEARING	DISTANCE	LINE NO.	BEARING	DISTANCE	LINE NO.	BEARING	DISTANCE	LINE NO.	BEARING	DISTANCE
L1	N 70°55'50.52" W	39.70	L27	N 85°38'51.07" E	21.82	L51	N 85°02'26.41" E	5.77	L76	N 30°28'27.71" F	28.28	L101	N 67°42'41.65" E	4.56
L2	N 70°06'29.52" W	12.55	L28	N 85°06'29.44" E	5.24	L52	N 80°01'34.82" E	7.01	L77	N 15°45'4.56" E	25.29	L102	N 37°30'13.15" E	18.88
L3	S 33°58'38.74" W	57.50	L29	N 72°00'24.15" E	9.20	L53	S 63°31'32.82" E	6.78	L78	N 38°19'15.80" E	16.16	L103	N 46°25'24.55" E	13.72
L4	S 55°36'57.56" W	46.39	L30	N 46°22'15.09" E	24.50	L54	S 54°43'42.78" E	13.26	L79	N 70°02'48.06" E	14.46	L104	N 59°48'39.06" E	18.43
L5	S 67°51'34.40" W	32.19	L31	N 59°14'43.3" E	22.82	L55	S 30°04'18.39" E	2.84	L80	N 48°59'29.24" E	11.03	L105	N 57°23'55.8" E	2.89
L6	S 40°02'24.08" W	40.84	L32	N 44°47'43.03" E	8.85	L56	S 84°57'56.51" E	12.58	L81	N 48°30'12.71" E	7.03	L106	N 44°06'40.84" E	15.27
L7	S 78°48'15.22" W	21.98	L33	N 55°44'10.46" W	1.39	L57	N 70°58'58.54" E	14.49	L82	N 36°46'19.05" E	8.62	L107	N 50°10'45.4" E	10.60
L8	S 67°01'34.47" W	46.30	L34	S 72°00'21.48" W	19.44	L58	N 72°41'39.13" E	12.65	L83	N 62°08'46.02" E	18.75	L108	N 76°21'46.25" W	20.44
L9	S 72°05'17.23" W	30.68	L35	S 72°42'54.88" W	8.92	L59	N 80°22'28.66" E	9.52	L84	N 36°05'22.97" E	18.75	L109	S 55°18'7.90" W	29.16
L10	N 00°18'52.80" W	43.20	L36	S 85°49'28.95" W	4.17	L60	N 49°13'48.30" E	6.81	L85	N 49°50'26.79" E	7.97	L110	S 56°33'26.36" W	16.88
L11	N 67°56'55.81" W	69.77	L37	S 59°02'6.04" W	23.46	L61	N 49°13'48.30" E	5.72	L86	N 28°18'13.63" E	22.09	L111	S 72°04'46.81" W	15.50
L12	S 78°34'39.24" W	51.84	L38	N 62°37'16.95" W	5.69	L62	N 72°34'11.73" E	7.52	L87	N 18°37'28.35" E	8.56	L112	N 84°19'3.47" W	10.48
L13	S 12°02'51.27" W	17.68	L39	N 52°12'15.99" W	15.60	L63	S 86°45'37.08" E	4.78	L88	N 41°27'5.56" E	5.48	L113	S 81°12'1.19" W	46.46
L14	S 78°37'53.15" W	46.00	L40	N 69°13'39.88" W	5.58	L64	S 63°08'46.70" E	4.54	L89	N 62°58'2.22" E	9.02	L114	S 44°14'9.97" W	22.01
L15	S 67°49'5.83" W	46.00	L41	S 81°23'35.12" W	5.85	L65	S 84°76'9.11" E	18.76	L90	N 74°11'24.34" E	9.21	L115	S 26°37'40.72" W	20.23
L16	S 00°00'0.00" E	26.46	L42	S 59°02'6.04" W	13.88	L66	N 84°53'41.44" E	6.64	L91	N 81°52'32.70" E	13.37	L116	S 40°46'35.73" W	12.85
L17	S 63°38'34.63" W	42.30	L43	S 73°16'1.79" W	14.68	L67	N 88°09'28.39" E	7.50	L92	N 58°01'38.48" E	39.88	L117	S 55°04'43.28" W	12.05
L18	S 75°20'23.16" W	25.42	L44	S 87°46'5.60" W	14.99	L68	N 88°46'0.85" E	9.30	L93	N 33°34'22.30" E	7.33	L118	S 59°27'31.81" W	11.46
L19	S 51°41'46.95" W	18.25	L45	N 30°47'15.28" W	5.70	L69	N 40°19'15.28" E	8.15	L94	N 74°20'32.92" E	2.70	L119	S 89°14'2.36" W	28.13
L20	S 16°29'21.84" E	35.28	L46	N 02°37'36.76" E	5.86	L70	N 28°04'52.18" E	17.49	L95	N 22°08'59.79" E	17.61	L120	S 48°43'9.34" W	23.23
L21	S 44°22'28.35" W	1.01	L47	N 80°04'36.63" E	14.37	L71	N 39°42'57.60" E	11.86	L96	N 42°26'13.72" E	8.50	L121	S 28°23'13.03" W	31.72
L22	S 86°34'14.97" E	26.10	L48	S 73°59'25.97" E	2.14	L72	N 77°47'8.25" E	5.22	L97	N 62°35'57.30" E	17.42	L122	S 18°28'12.21" W	7.84
L23	S 86°34'14.97" E	24.86	L49	N 74°18'57.58" E	9.75	L73	N 58°25'57.77" E	46.83	L98	N 71°02'1.16" E	14.73	L123	S 32°18'26.79" W	47.70
L24	S 81°51'43.07" E	45.94	L50	N 58°53'48.35" E	26.25	L74	S 89°56'9.55" E	13.86	L99	N 85°51'5.50" E	3.23			
L25	N 75°42'43.55" E	4.91	L51	N 73°49'8.98" E	5.51	L75	N 51°37'50.29" E	12.38	L100	S 84°31'43.32" E	30.06			



HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* 11/27/07 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* 11/27/07 DATE

DIRECTOR: *[Signature]* 12/6/07 DATE

SIGNATURE BLOCK: *[Signature]* DATE 10/21/07 MICHAEL D. TRUMBauer

FOREST STAND DELINEATION FOR BRIGHTWOOD COURT STREAM RESTORATION

PREPARED FOR: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

260 Gateway Drive, Suite 21-C Bel Air, MD 21014 Phone: (410) 885-9016 Fax: (410) 885-9386 Email: info@hcesm.com

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DATE: OCTOBER 18, 2007