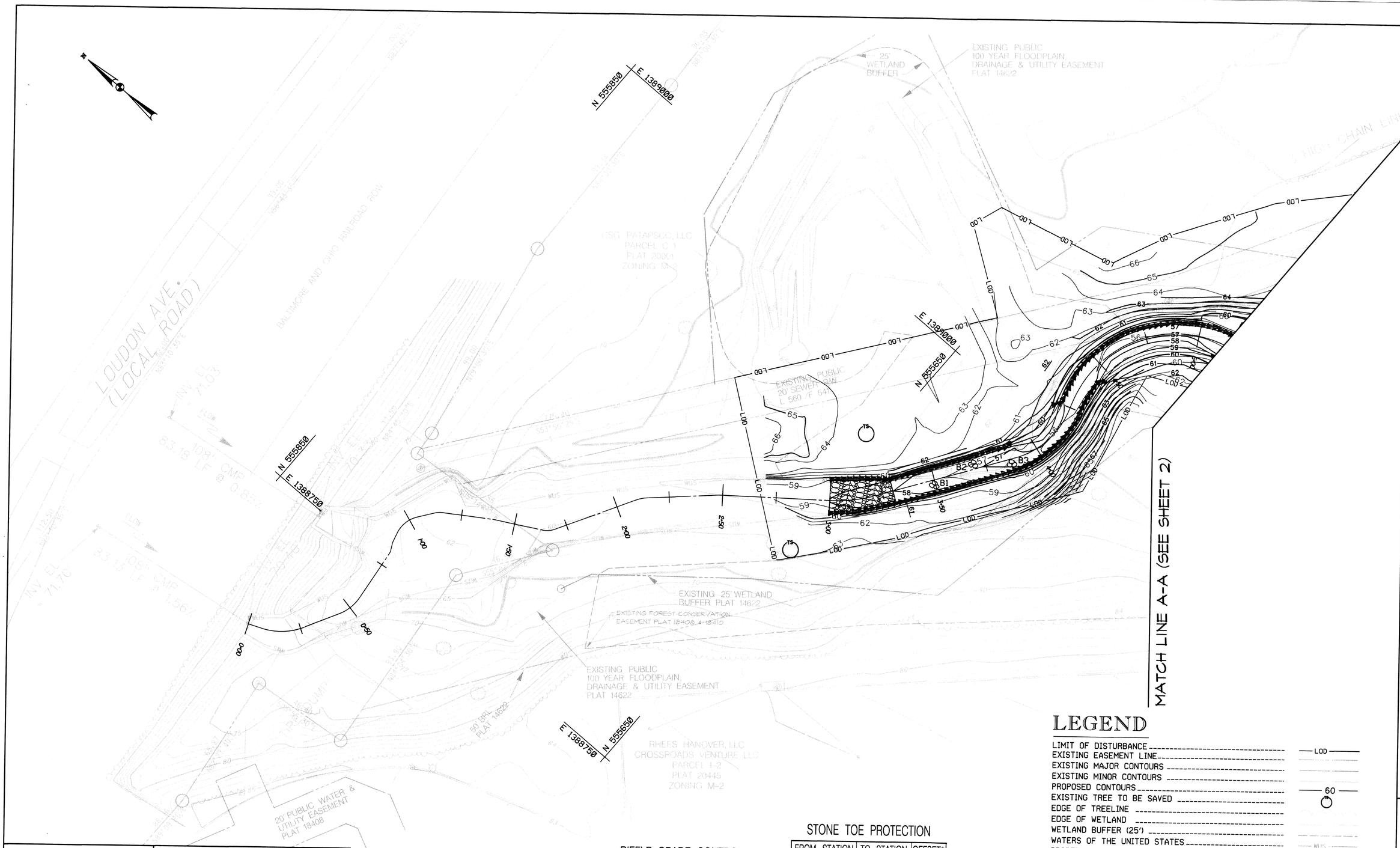

RIFFLE GRADE CONTROL

FROM STATION	TO STATION
3+00	3+30

BOULDER CLUSTER

NAME	STATION	OFFSET*
B1	3+49	R
B2	3+70	L
B3	3+85	R

*FACING DOWNSTREAM, STATION FROM BASELINE OF CONSTRUCTION

STONE TOE PROTECTION

FROM STATION	TO STATION	OFFSET*
3+00	3+90	L
3+00	4+46	R
4+22	5+37	L
5+10	6+51	R

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

NOTE: THE HYDROLOGIC AND HYDRAULIC FLOOD ANALYSES AND FLOOD DELINEATION SHOWN HERE ON WAS BASED ON A 100-YEAR, 24-HOUR RAINFALL AMOUNT OF 8.51 INCHES BASED ON NOAA ATLAS 14 RAINFALL DATA. SUCH A RAINFALL AMOUNT EXCEEDS THE HOWARD COUNTY REQUIREMENT OF 7.2-INCHES. DUE TO THIS, THE FLOODPLAIN ELEVATIONS AND LIMITS EXCEEDED THE HOWARD COUNTY REQUIREMENTS.

LEGEND

LIMIT OF DISTURBANCE	LOD
EXISTING EASEMENT LINE	
EXISTING MAJOR CONTOURS	
EXISTING MINOR CONTOURS	
PROPOSED CONTOURS	60
EXISTING TREE TO BE SAVED	
EDGE OF TREELINE	
EDGE OF WETLAND	
WETLAND BUFFER (25')	
WATERS OF THE UNITED STATES	WUS
PROPERTY LINE	
EXISTING ROAD EDGE	
EXISTING SEWER LINE	S
STONE TOE PROTECTION	
BOULDER CLUSTER	
RIFFLE GRADE CONTROL	
EXISTING TREE	
EXISTING/PROPOSED 100-YR WSE*	
IMPACTS TO EXISTING FCE	
AS-BUILT CONTOURS	

*MINIMAL CHANGES BETWEEN EXISTING AND PROPOSED 100-YR WSE. SEE THE HI TECH DRIVE STREAM HYDROLOGY AND HYDRAULICS REPORT FOR FURTHER INFORMATION.

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. 18470, EXPIRATION DATE: OCTOBER 28, 2011

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

NO.	REVISIONS DESCRIPTION	DATE

KCIFILE: M:\ 2004 \ 01043223.26 \

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STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PARCEL 20, BLOCK 38, ZONING M-2
TAX MAP: 37, GRID: 17
ELECTION DISTRICT 1
HOWARD COUNTY, MARYLAND

AS- BUILT GRADING PLAN

SCALE: 0 0.25 0.5 1.0 INCHES — 1" = 20'

DATE: July, 2012

KCI JOB NO.: 01081795.58

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

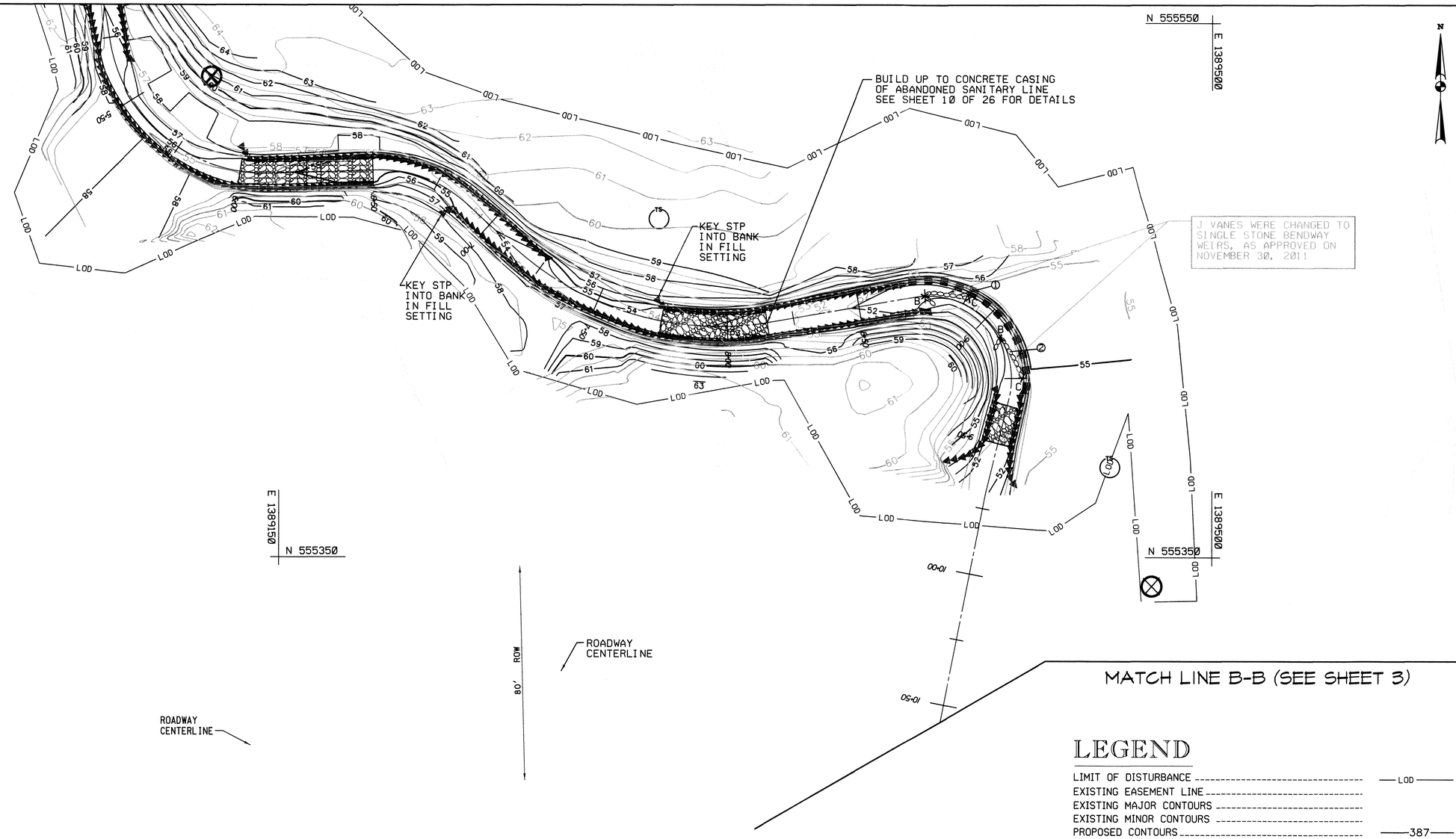
CONSTRUCTION ISSUE:

SHEET NO.: 1 OF 15

SDP-10-095

PT: Elizabeth, Spencer Division: P:\50_Natural Res. Eng.
PE: M:\2004\01081795.58\drawings\asbuilt\as_built.dgn

MATCH LINE A-A (SEE SHEET 1)



MATCH LINE B-B (SEE SHEET 3)

RIFFLE GRADE CONTROL

FROM STATION	TO STATION
6+00	6+50
7+75	8+15
9+35	9+50

IMBRICATED WALL

FROM STATION	TO STATION	OFFSET*
8+70	9+30	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

J VANE

VANE NO.	POINT C	POINT B	OFFSET*
1	8+90	8+75	L
2	9+25	9+09	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

STONE TOE PROTECTION SCHEDULE

FROM STATION	TO STATION	OFFSET*
4+20	5+37	L
5+10	6+51	R
5+98	7+26	L
6+83	8+78	R
7+72	8+70	L
9+30	9+61	R
9+30	9+65	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

NOTE: THE HYDROLOGIC AND HYDRAULIC FLOOD ANALYSES AND FLOOD DELINEATION SHOWN HERE ON WAS BASED ON A 100-YEAR, 24-HOUR RAINFALL AMOUNT OF 8.51 INCHES BASED ON NOAA ATLAS 14 RAINFALL DATA. SUCH A RAINFALL AMOUNT EXCEEDS THE HOWARD COUNTY REQUIREMENT OF 7.2-INCHES. DUE TO THIS, THE FLOODPLAIN ELEVATIONS AND LIMITS EXCEEDED THE HOWARD COUNTY REQUIREMENTS.

LEGEND

- LIMIT OF DISTURBANCE — LOD —
- EXISTING EASEMENT LINE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED CONTOURS — 387 —
- EXISTING TREE TO BE SAVED
- EXISTING TREE TO BE REMOVED
- EDGE OF TREELINE
- EDGE OF WETLAND
- WETLAND BUFFER (25')
- WATERS OF THE UNITED STATES
- PROPERTY LINE
- EXISTING ROAD EDGE
- EXISTING SEWER LINE
- IMBRICATED WALL
- STONE TOE PROTECTION
- RIFFLE GRADE CONTROL
- J VANE
- J VANE NUMBER
- EXISTING TREE
- EXISTING/PROPOSED 100-YR WSE*
- IMPACTS TO EXISTING FCE
- AS-BUILT CONTOURS

*MINIMAL CHANGES BETWEEN EXISTING AND PROPOSED 100-YR WSE. SEE THE HI TECH DRIVE STREAM HYDROLOGY AND HYDRAULICS REPORT FOR FURTHER INFORMATION.

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APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

BY: Elizabeth Spencer Division: P1050 NaturalRes Emp
FILE: M:\2008\01081795.58\drawings\psd2hec...cabl.dgn

NO.	REVISIONS DESCRIPTION	DATE

KCIFILE: M:\ 2004 \ 01043223.26 \

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HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
PARCEL 286 TAX MAP 29 ZONING M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS- BUILT GRADING PLAN

SCALE: 0 0.25 0.5 1.0 INCHES
1" = 20'

DATE: July, 2012

KCI JOB NO.: 01081795.58

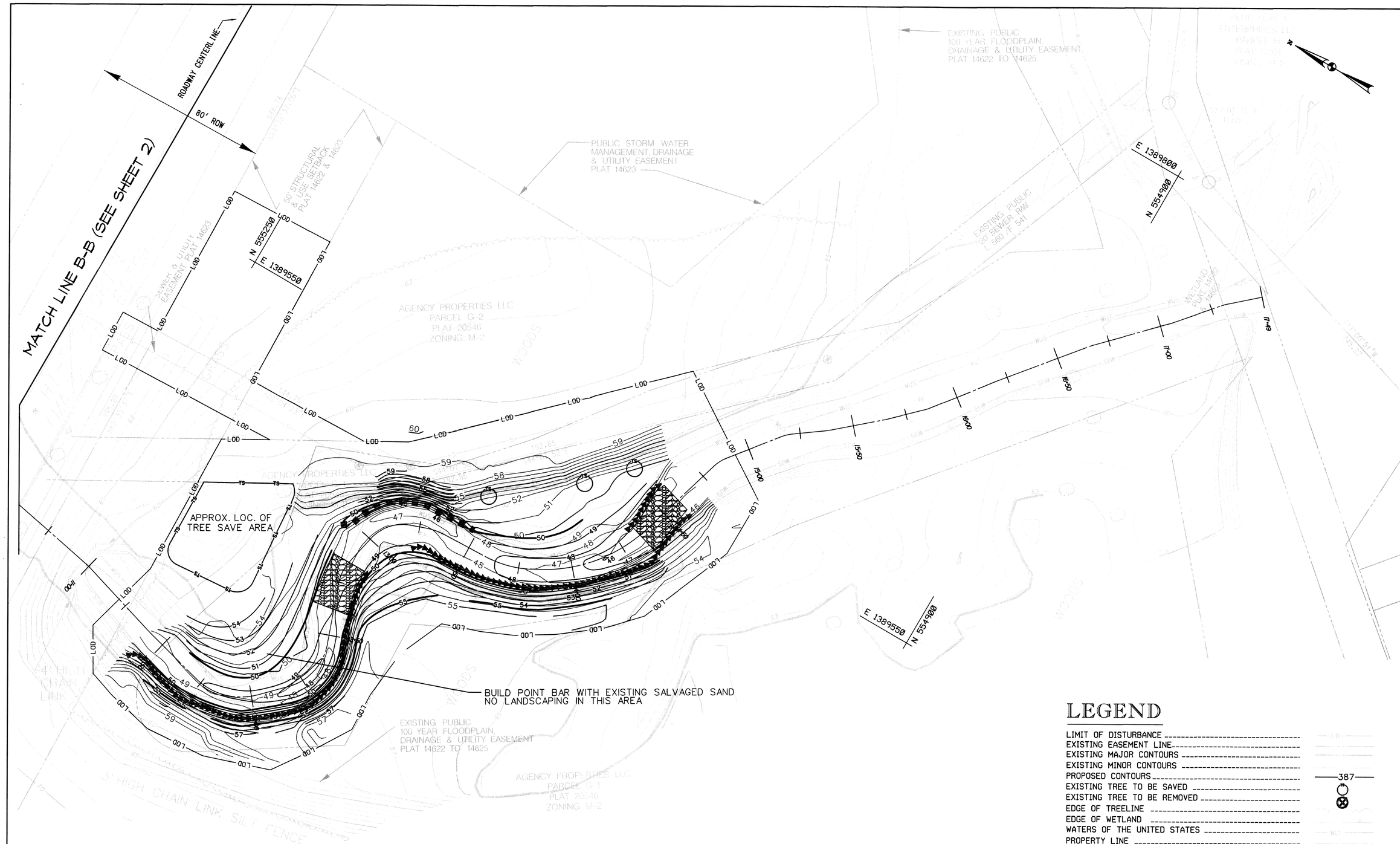
CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 2 OF 15

SDP-10-095



LEGEND

LIMIT OF DISTURBANCE	LOD
EXISTING EASEMENT LINE	
EXISTING MAJOR CONTOURS	387
EXISTING MINOR CONTOURS	
PROPOSED CONTOURS	
EXISTING TREE TO BE SAVED	
EXISTING TREE TO BE REMOVED	
EDGE OF TREELINE	
EDGE OF WETLAND	WL
WATERS OF THE UNITED STATES	
PROPERTY LINE	
EXISTING ROAD EDGE	
EXISTING SEWER LINE	S
IMBRICATED WALL	
STONE TOE PROTECTION	
RIFFLE GRADE CONTROL	
TREE SAVE AREA	TS
EXISTING TREE	
EXISTING/PROPOSED 100-YR WSE*	
AS-BUILT CONTOURS	

*MINIMAL CHANGES BETWEEN EXISTING AND PROPOSED 100-YR WSE. SEE THE HI TECH DRIVE STREAM HYDROLOGY AND HYDRAULICS REPORT FOR FURTHER INFORMATION.

STONE TOE PROTECTION

FROM STATION	TO STATION	OFFSET*
11+41	12+89	R
13+23	14+60	R
14+30	14+60	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

IMBRICATED WALL

FROM STATION	TO STATION	OFFSET*
12+98	13+47	L

*FACING DOWNSTREAM, MEASURED FROM BASELINE OF CONSTRUCTION

RIFFLE GRADE CONTROL

FROM STATION	TO STATION
12+62	12+85
14+35	14+59

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APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

BY: Elizabeth Spencer Division: POGO Natural Res. Emp.
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NO.	REVISIONS DESCRIPTION	DATE

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COLUMBIA, MARYLAND 21046
PARCEL 286, TAX MAP 28, ZONING M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS- BUILT GRADING PLAN

SCALE: 0 0.25 0.5 1.0 INCHES
1" = 20'

DATE: July, 2012

KCI JOB NO.: 01081795.58

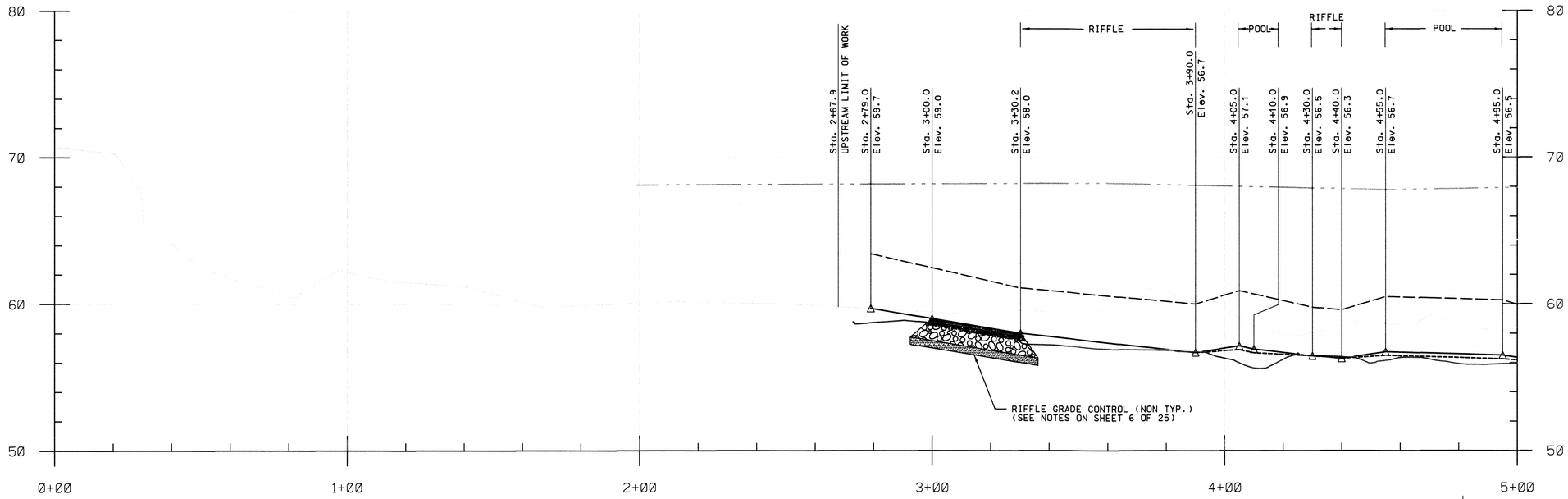
CAPITAL PROJECT NO.: D - 1122

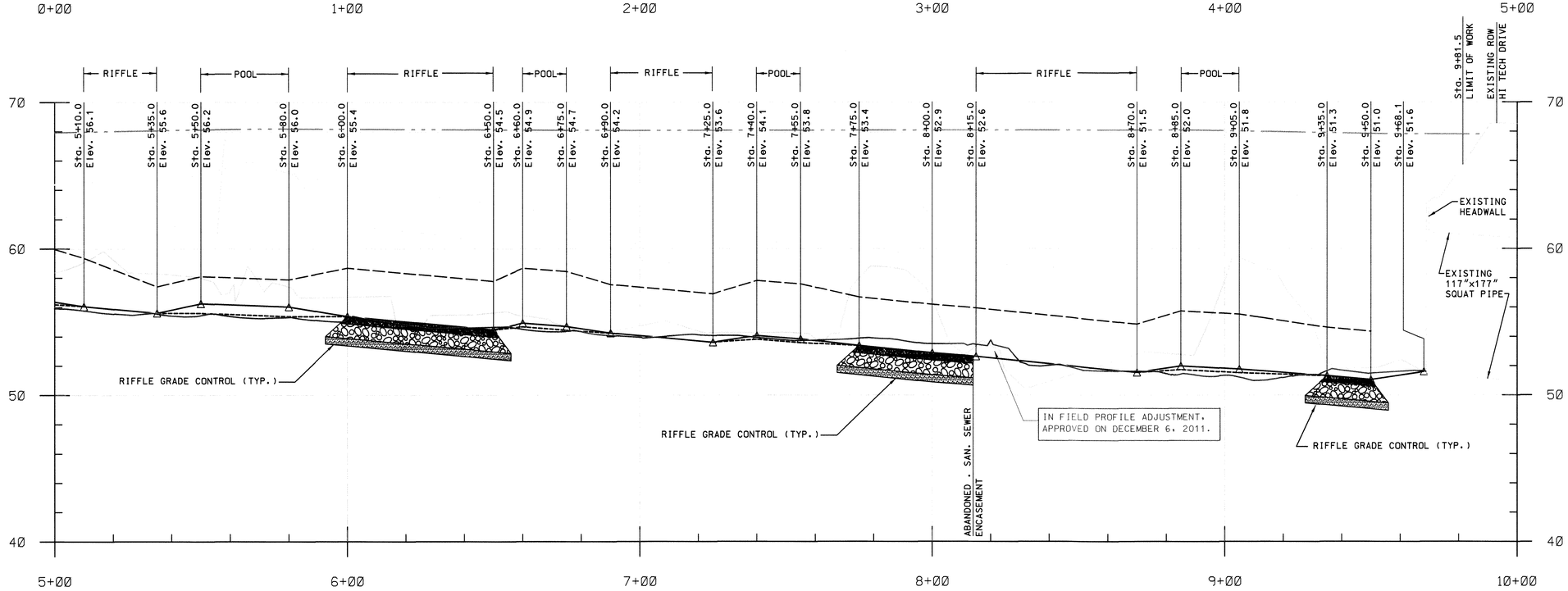
PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 3 OF 15

SDP-10-095





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APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

LEGEND

EXISTING GROUND
PROPOSED GROUND
PROPOSED THALWEG
PROPOSED TOP OF BANK
EXISTING TOP OF BANK RIGHT
EXISTING TOP OF BANK LEFT
100-YR PROPOSED WATER SURFACE ELEVATION
100-YR EXISTING WATER SURFACE ELEVATION
AS-BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

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6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
PARCEL 286, TAX MAP 38, ZONING M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS-BUILT PROFILE

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1"=20', VERT. 1"=4'

DATE: July, 2012

KCI JOB NO.: 01081795.58

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 4 OF 15

SDP-10-095

BY: Elizabeth Spencer Division: F055' Natural Res Emp
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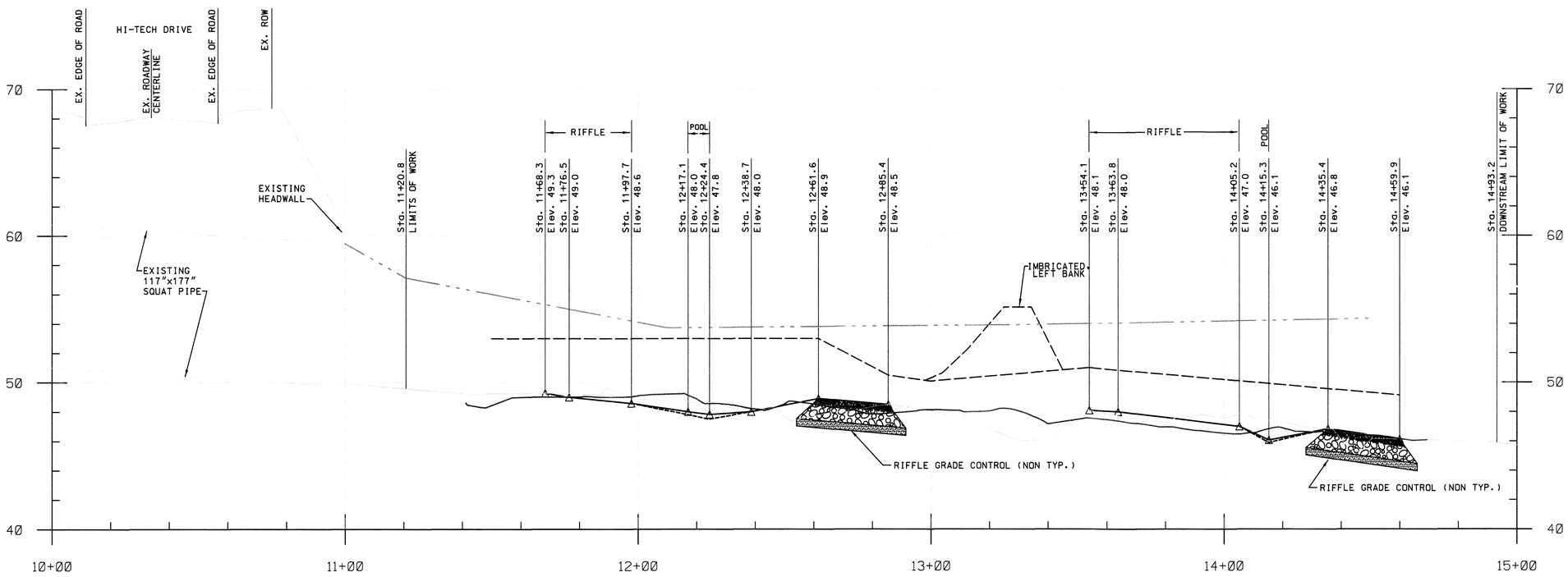

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APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

LEGEND

EXISTING GROUND
PROPOSED GROUND
PROPOSED THALWEG
PROPOSED TOP OF BANK
EXISTING TOP OF BANK RIGHT
EXISTING TOP OF BANK LEFT
100-YR PROPOSED WATER SURFACE ELEVATION
100-YR EXISTING WATER SURFACE ELEVATION
AS-BUILT GRADE

NOTE:

1. NON TYPICAL RIFFLE GRADE CONTROLS ARE TO BE BUILT WITH THE SAME MATERIAL AND MANNER AS TYPICAL RIFFLE GRADE CONTROLS EXCEPT THEIR CROSS SECTION SHAPE IS TO MATCH THE GRADING CONTOURS SHOWN ON SHEET 9.
2. ALL GRADING ON THIS SHEET IS NON TYPICAL AND IS TO TIE-IN TO EXISTING BANK AND BED IN VARIOUS WAYS. ALL PROPOSED GRADING SHALL BE DONE TO REFLECT THE CONTOURS NOTED ON SHEET 9.
3. POOLS AND RIFFLES CALLED OUT ON THIS SHEET ONLY ARE NON TYPICAL. MATERIAL USED FOR THE BED SHOULD BE CHANNEL BED MATERIAL HOWEVER THE CROSS SECTIONAL SHAPE SHALL BE DETERMINED FROM THE CONTOURS DISPLAYED ON SHEET 9.

NO.	REVISIONS DESCRIPTION	DATE

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6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PARCEL 285, TAX MAP: 38, ZONING: M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS-BUILT PROFILE

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1"=20', VERT. 1"=4'

DATE: July, 2012

KCI JOB NO.: 01081795.58

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 5 OF 15

SDP-10-095

BY: Elizabeth Spencer Division: P050 Natural Res. Engr.
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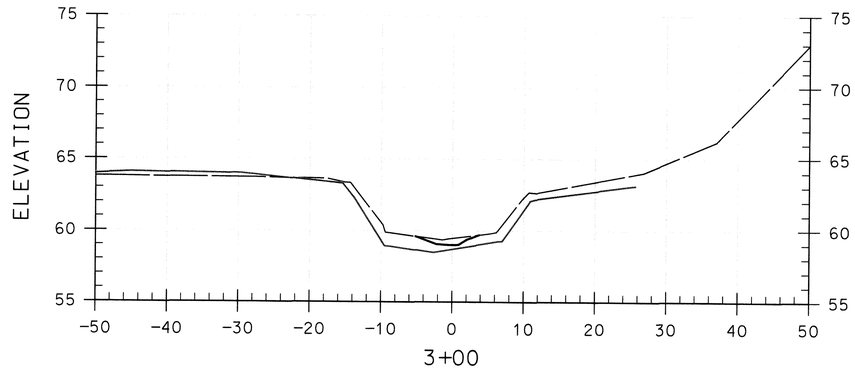

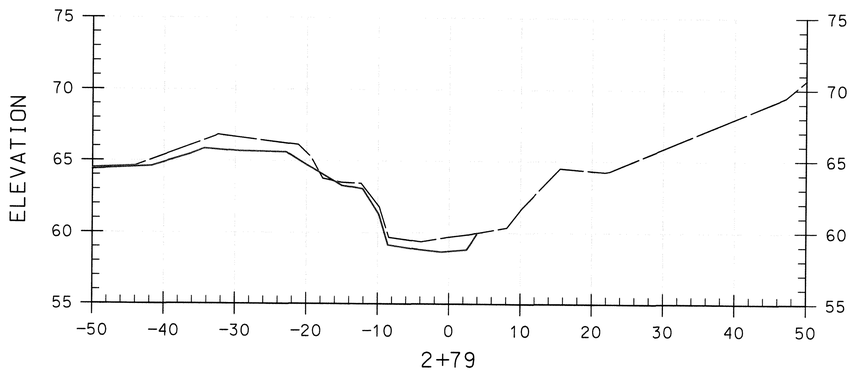

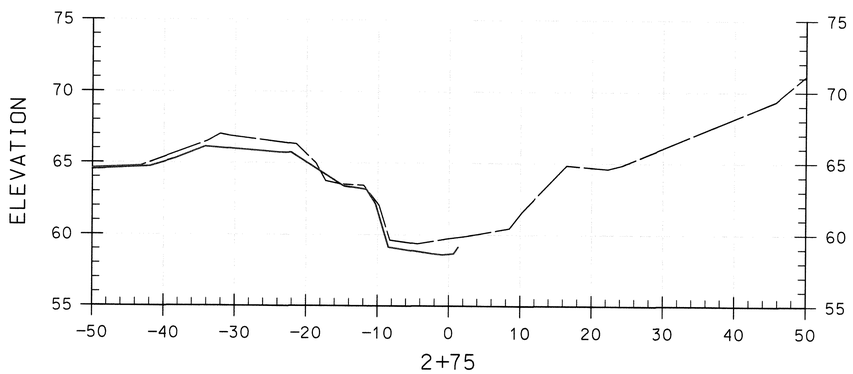

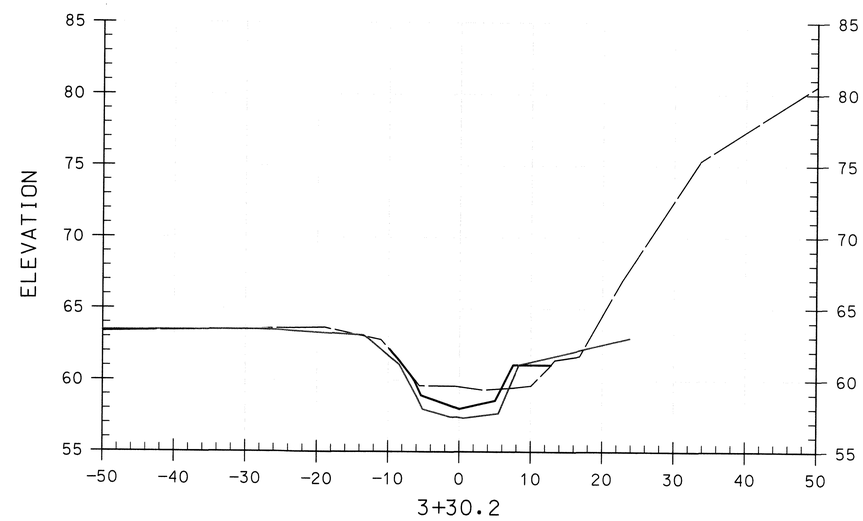

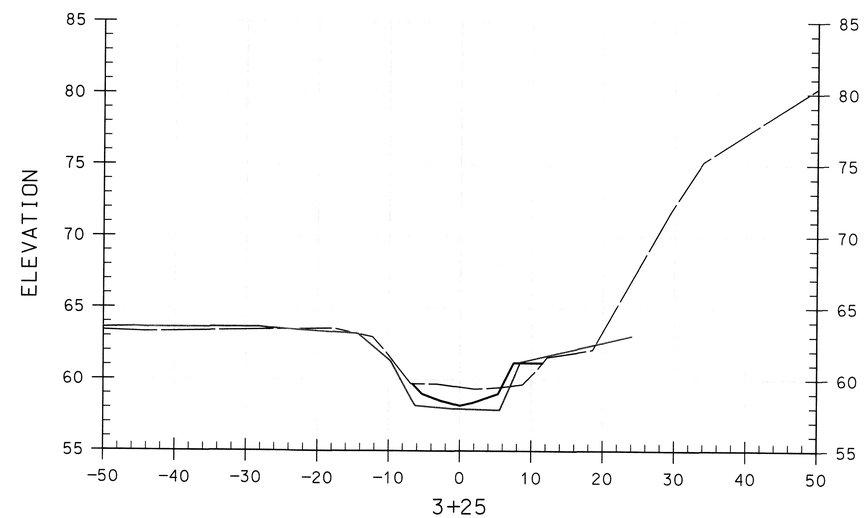

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APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

KCI FILE: M:\ 2004 \ 01043223.26 \

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6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PARCEL 285, TAX MAP: 38, ZONING: M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1" = 10'
VERT. 1" = 5'

DATE: July, 2012

KCI JOB NO.: 01-043223.26

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 6 OF 15

SDP-10-095

BY: Ashley Plexer Division PGS5 Natural Res Emp
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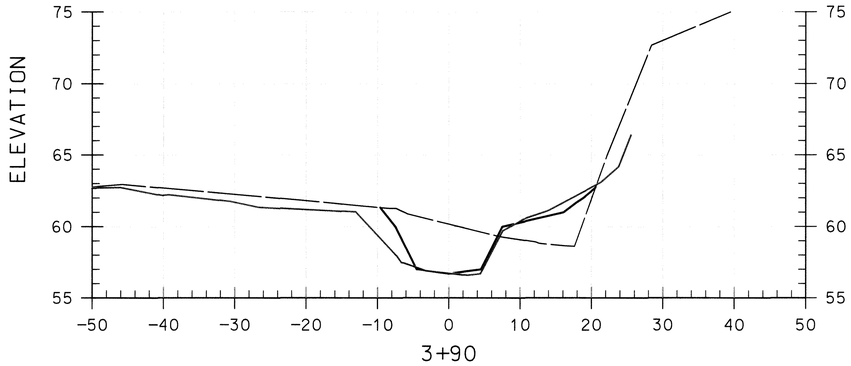

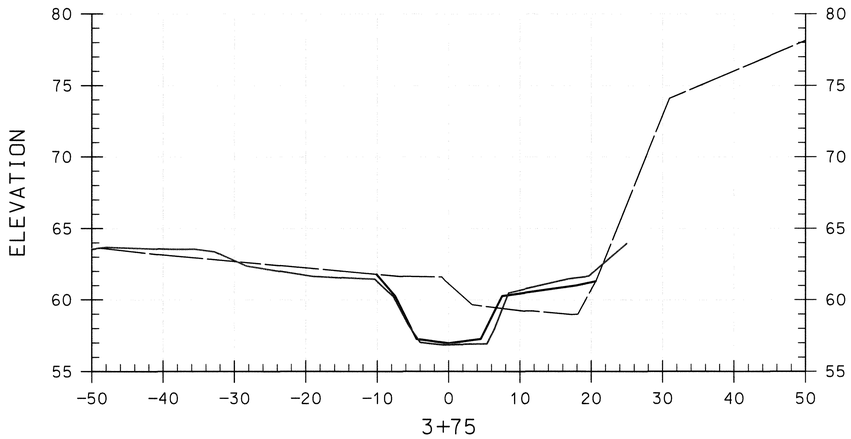

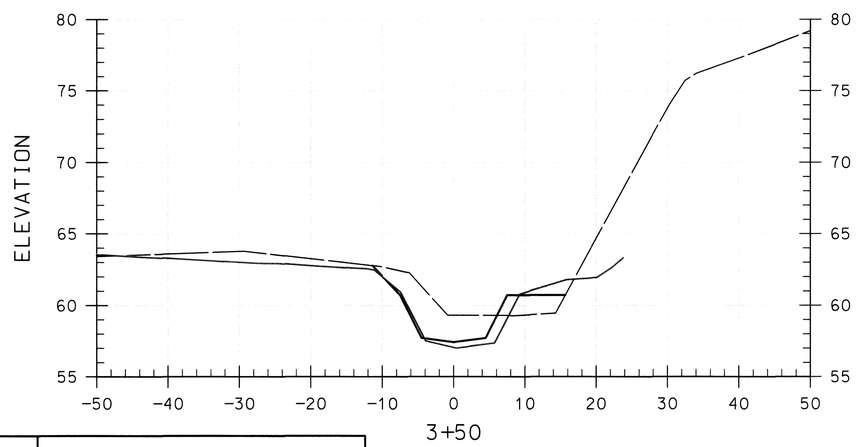

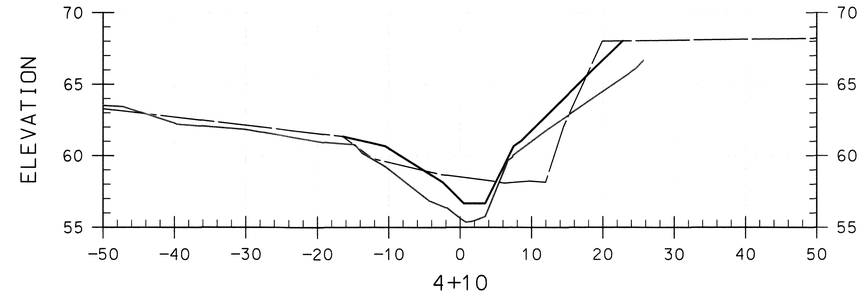

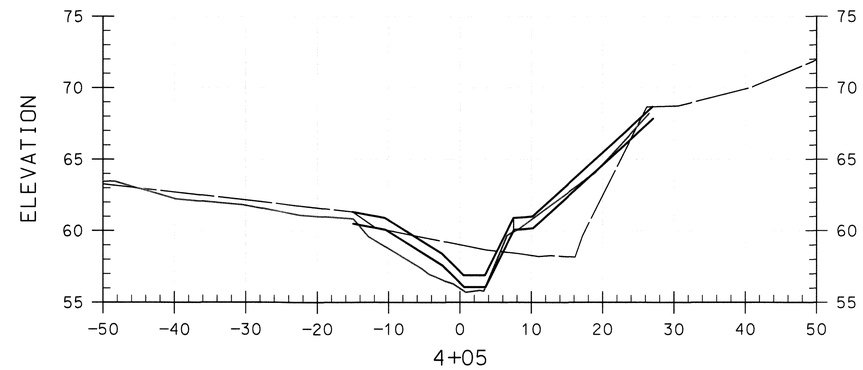

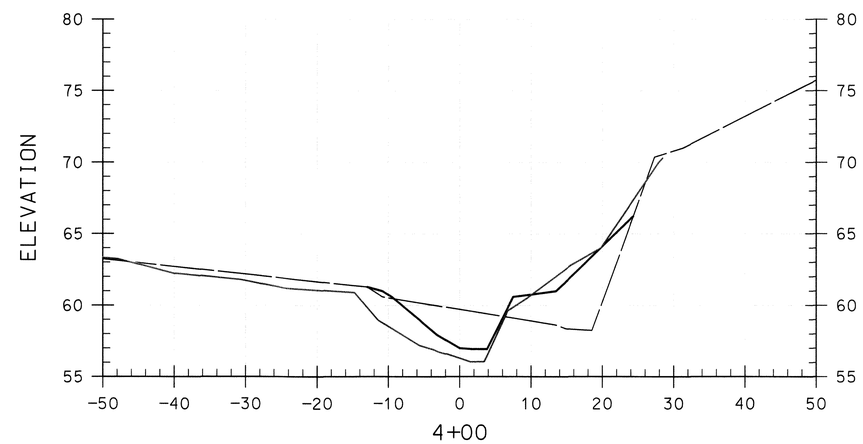

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APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

KCIFILE: M:\ 2004 \ 01043223.26 \

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STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
TAX MAP: 38 GRID: 17 ZONING: M-2
PARCEL: PETER TAX LOT 3
ELECTION DISTRICT: 01
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1" = 10'
VERT. 1" = 5'

DATE: July, 2012

KCI JOB NO.: 01-043223.26

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 7 OF 15

SDP-10-095

BY: Ashley Plexer Division:P050 Natural Res Emp
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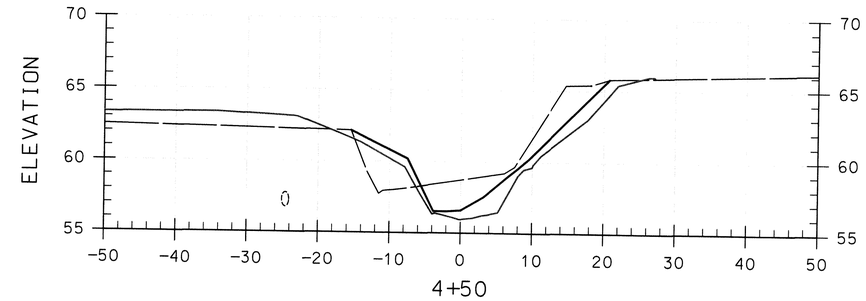

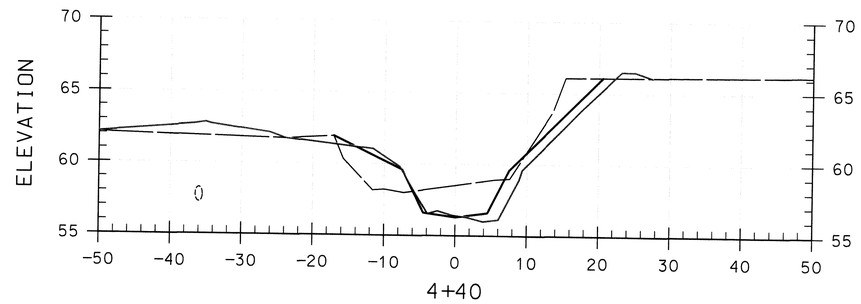

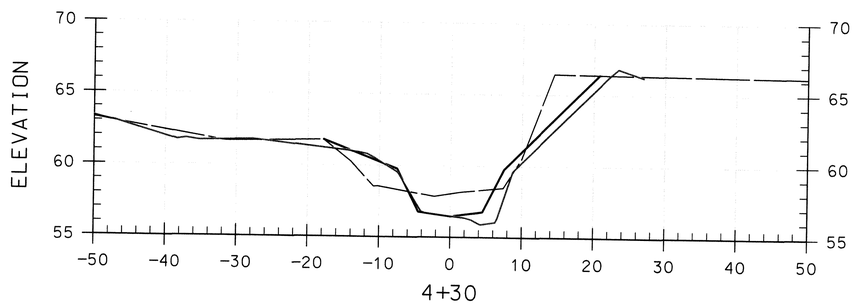

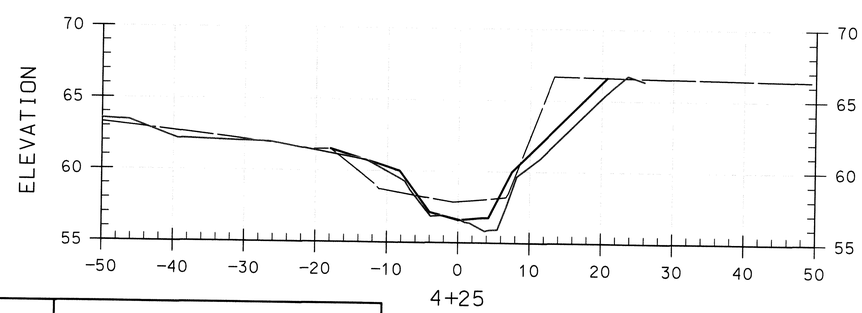

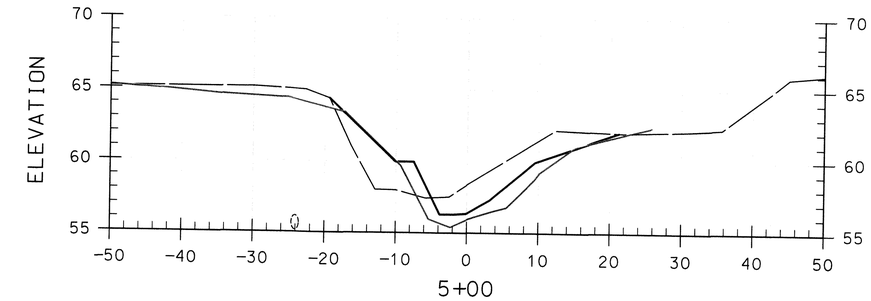

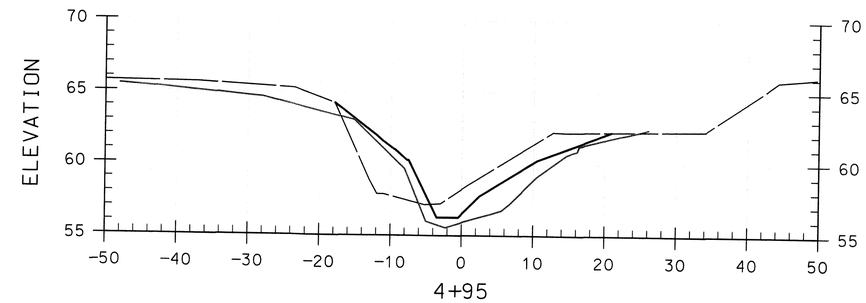

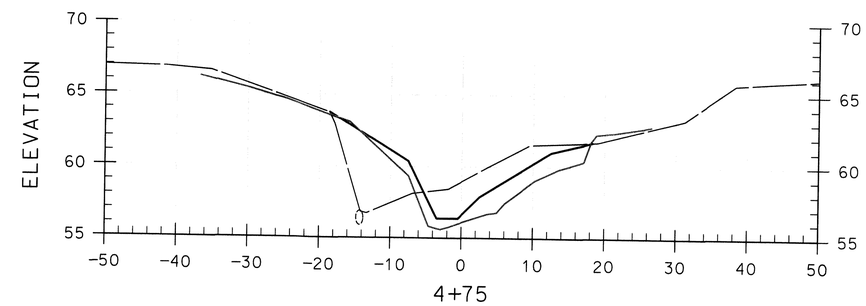

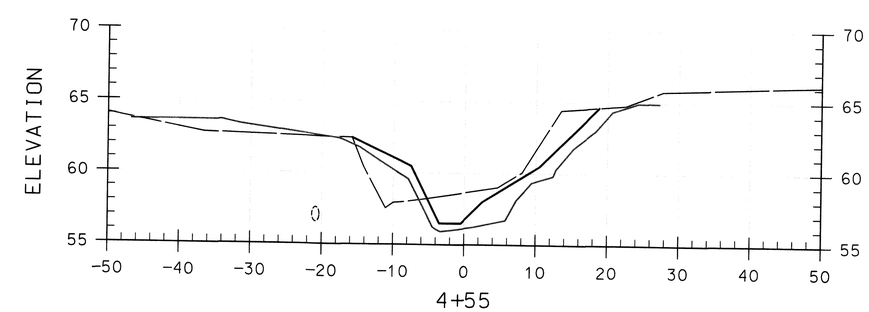

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME , AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18470. EXPIRATION DATE: OCTOBER 28, 2011

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

KCIFILE: M:\ 2004 \ 01043223.26 \

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STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
PARCEL 285, TAX MAP 38, ZONING M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

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CAPITAL PROJECT NO.: D - 1122

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SDP-10-095

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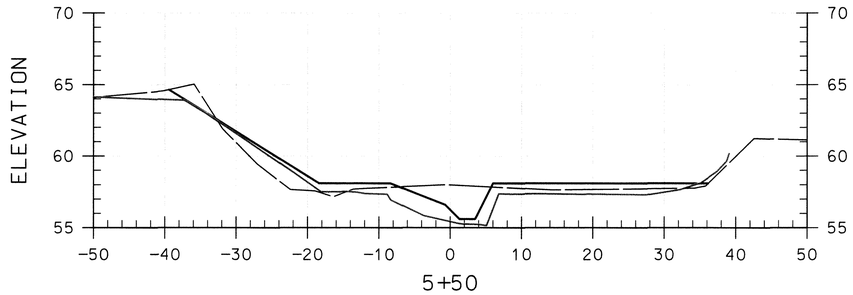

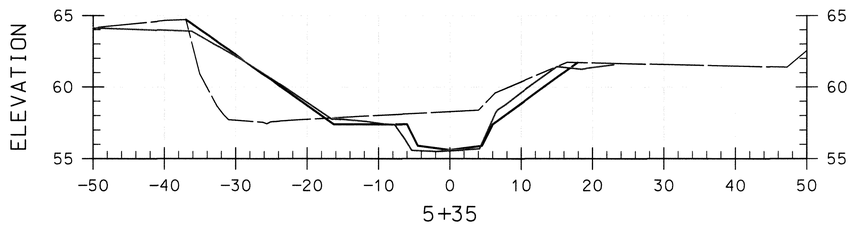

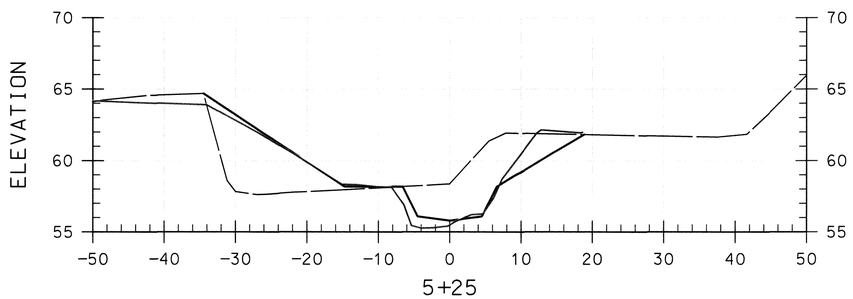

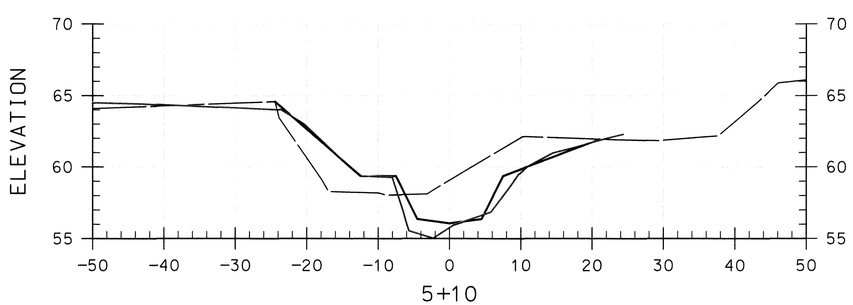

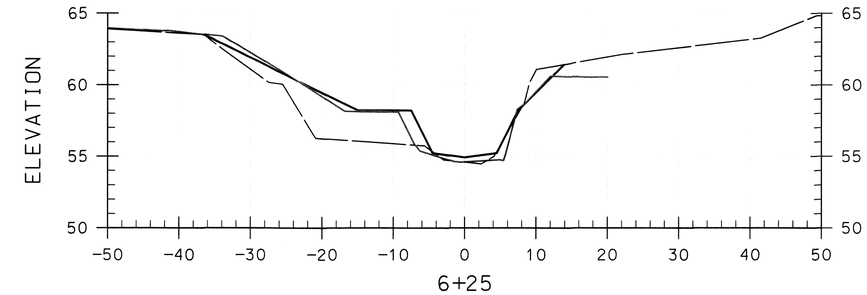

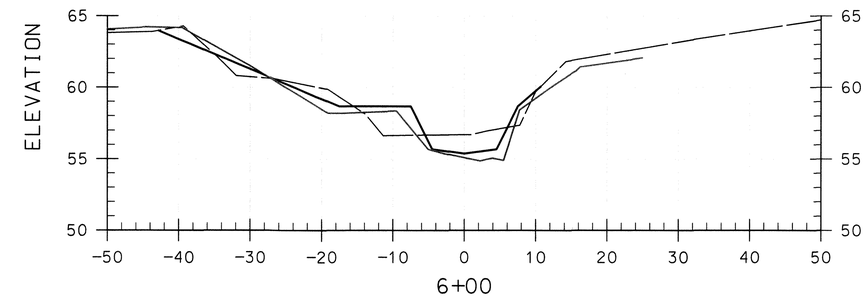

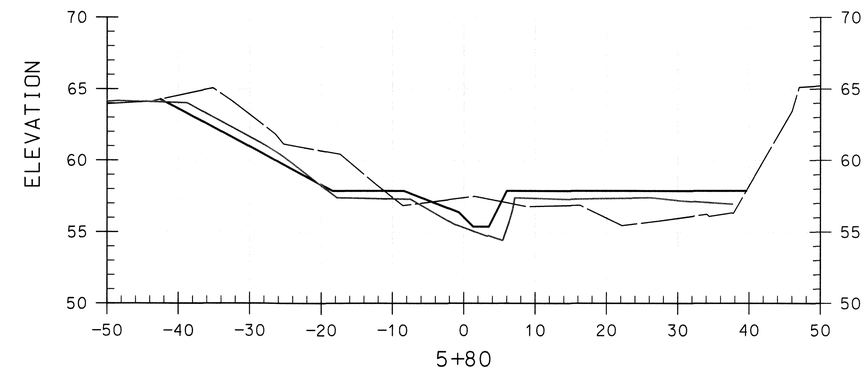

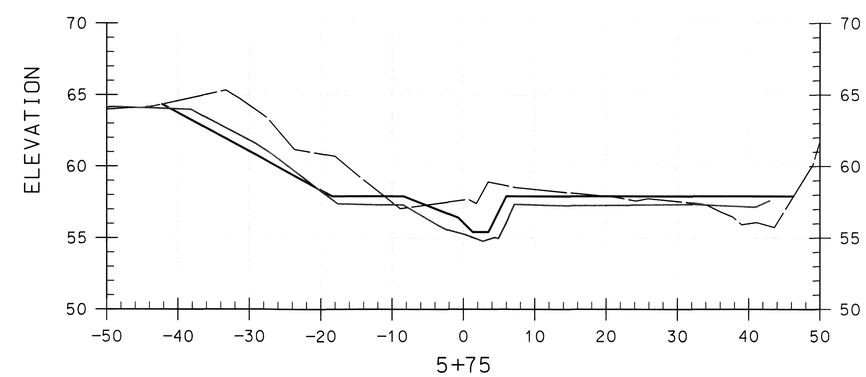

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LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

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COLUMBIA, MARYLAND 21046
PARCEL 286, TAX MAP 38, ZONING M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

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CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

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SDP-10-095

BY: Ashley Piner Division: PGSO Natural Res. Emp
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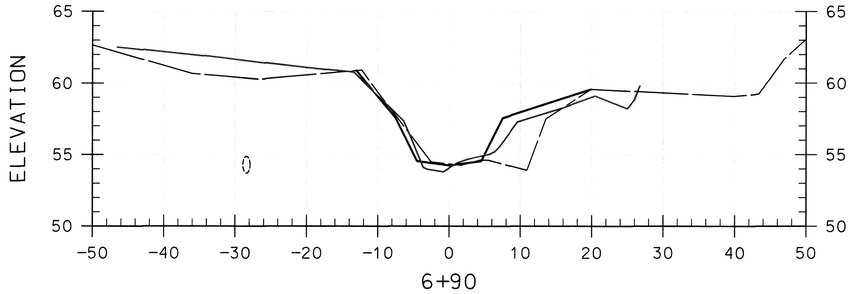

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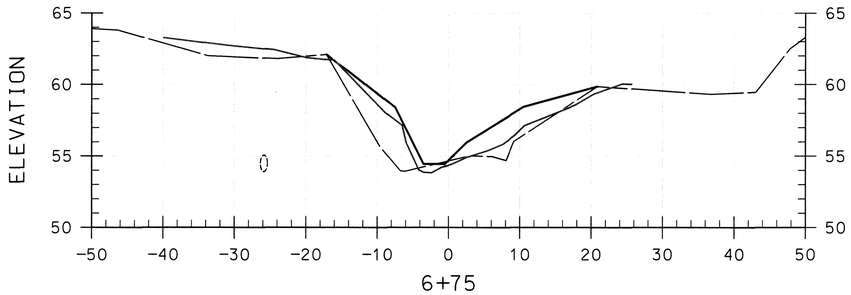

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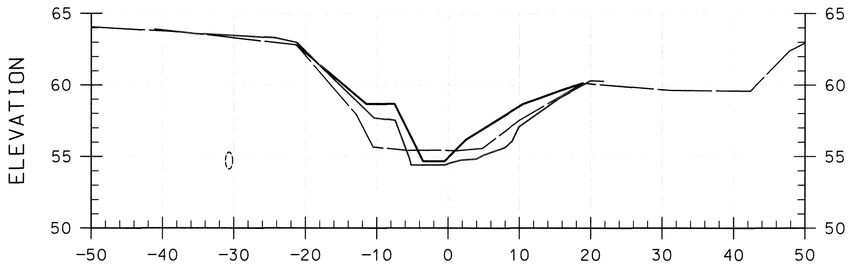

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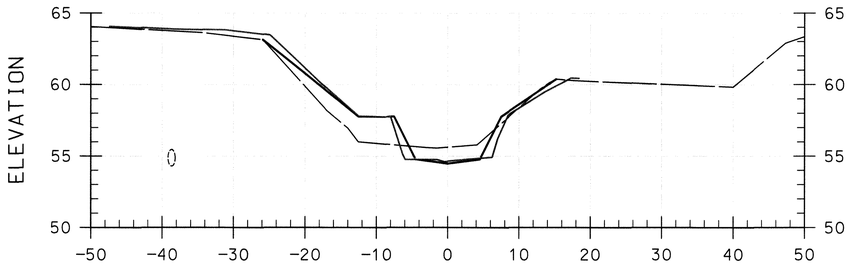

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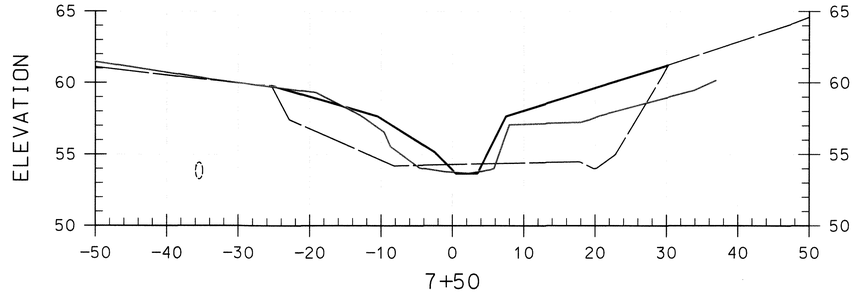

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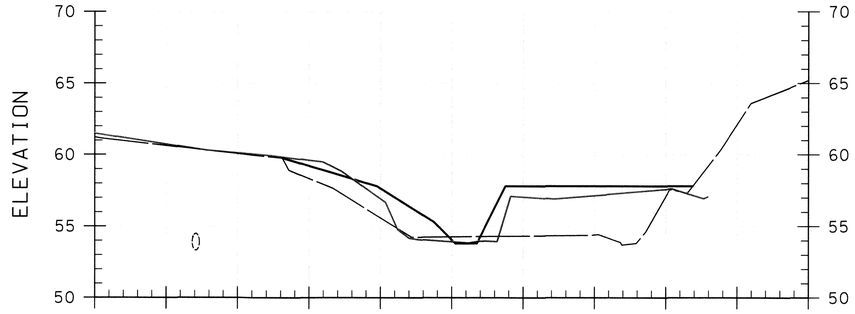

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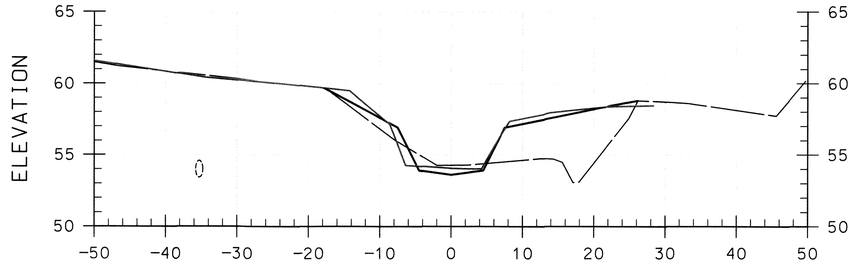

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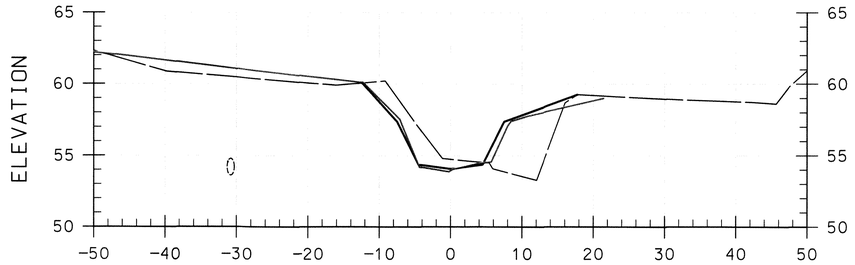

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6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
PARCEL 285, TAX MAP 38, ZONING M-2
ELECTION DISTRICT 01, TOWN OF ELLICOTT CITY
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

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CAPITAL PROJECT NO.: D - 1122

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SDP-10-095

BY: Ashley Flower Division: PO50 Natural Res Emp
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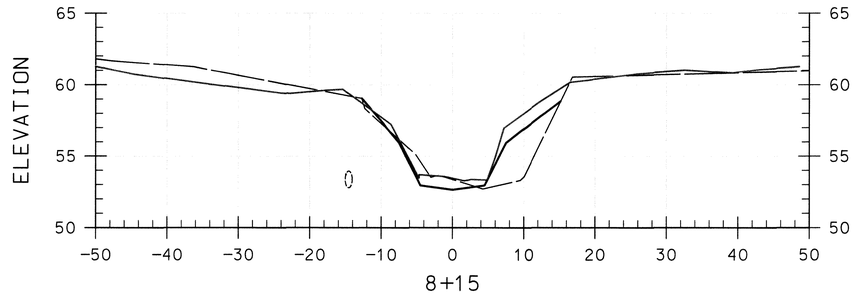

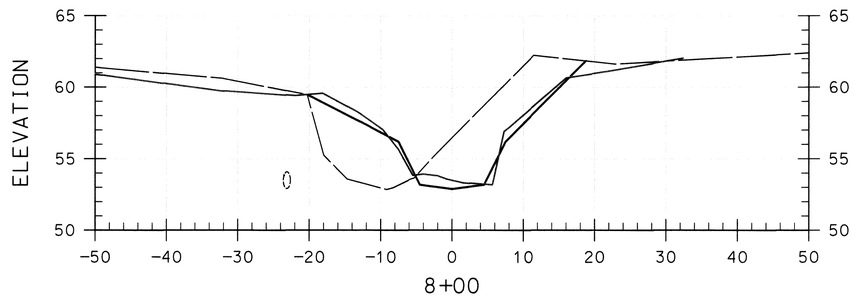

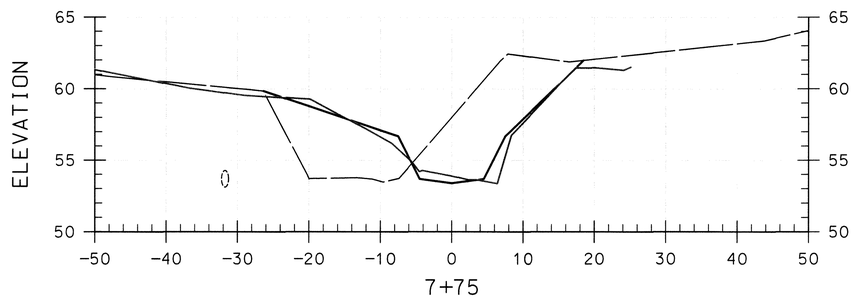

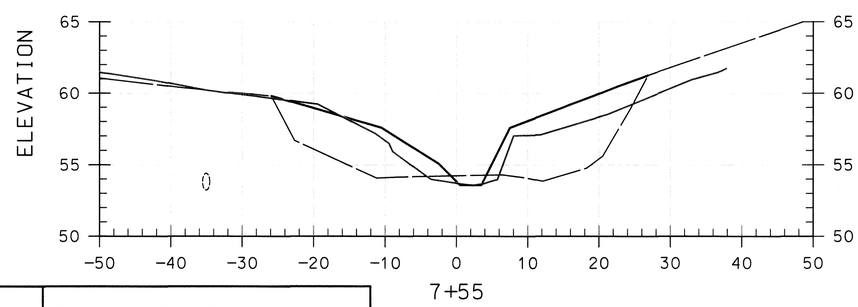

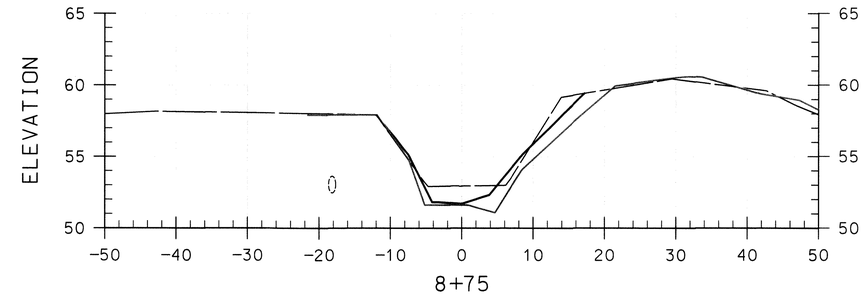

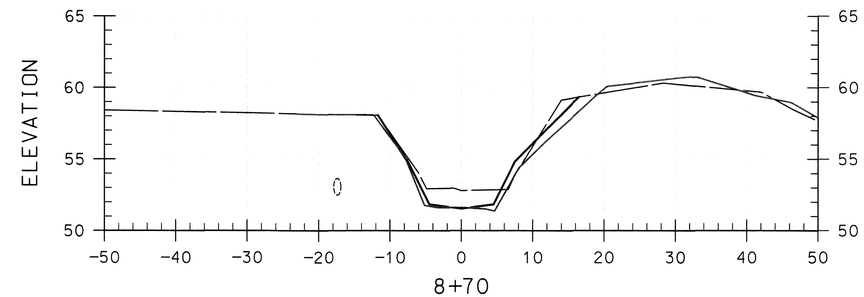

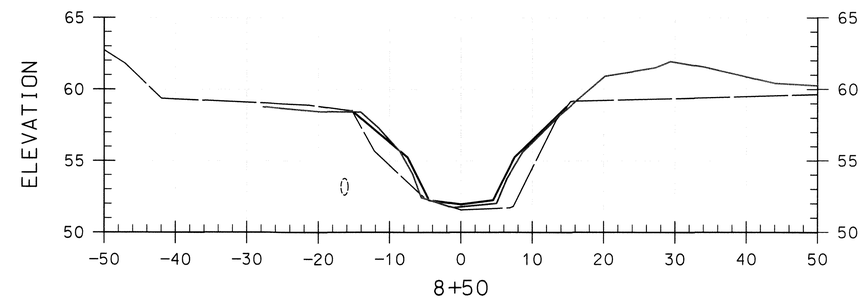

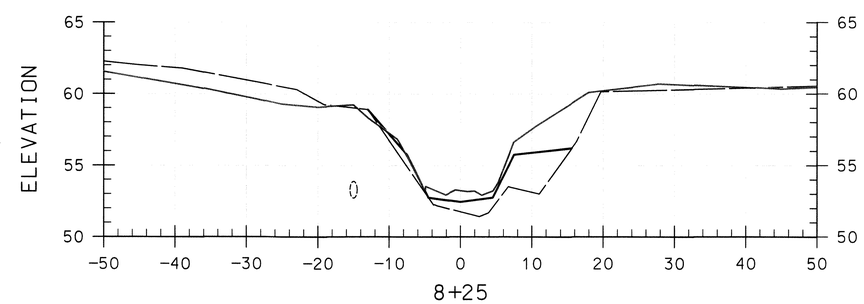

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BY: Ashley Piner Division: PG50 NoEarthRes Emp
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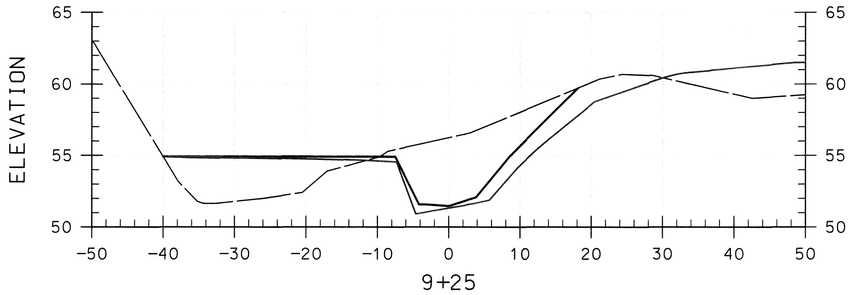

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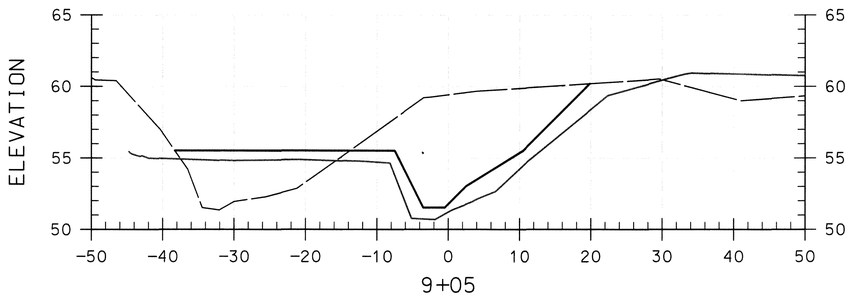

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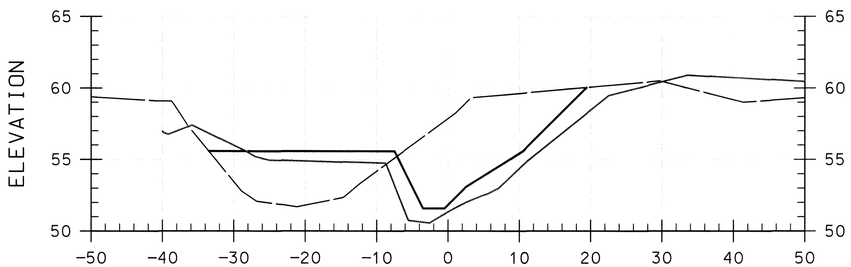

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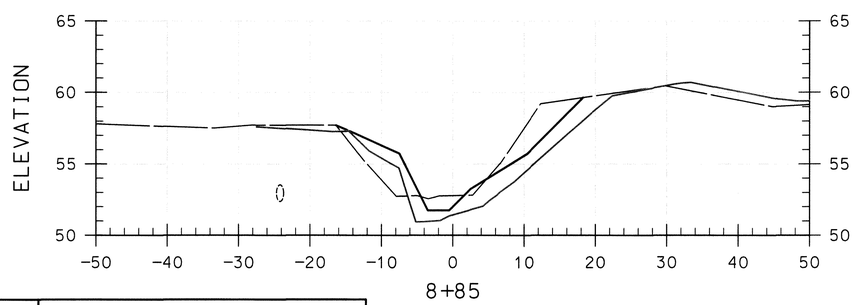

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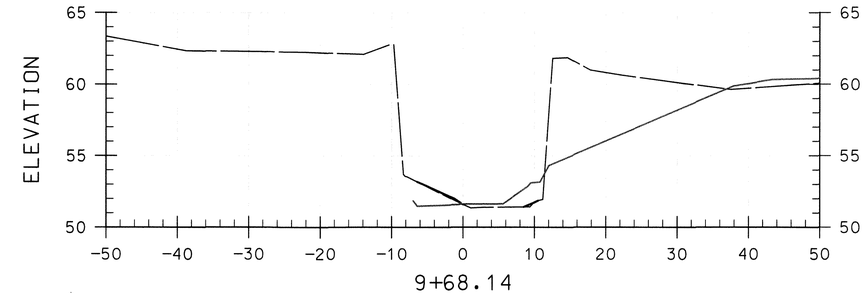

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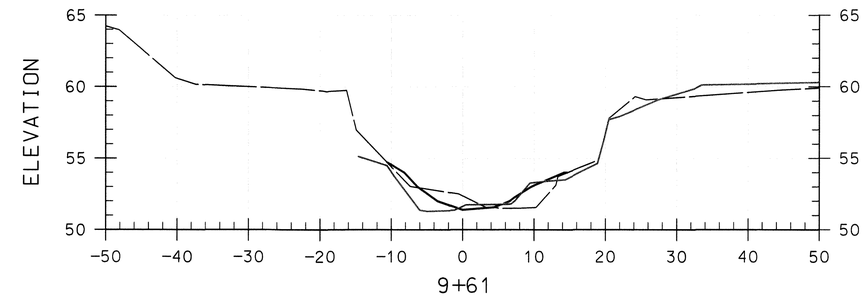

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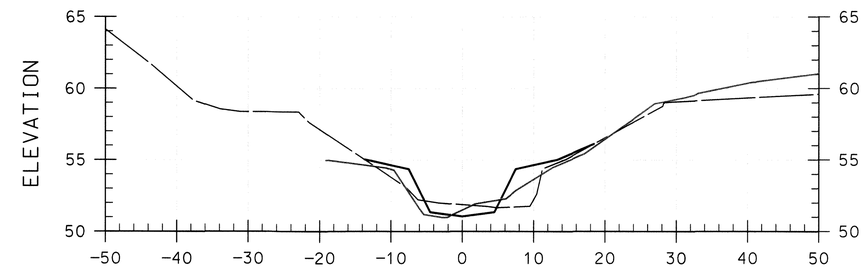

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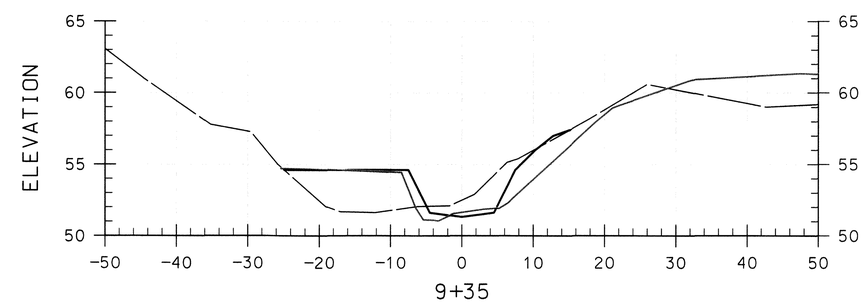

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CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

KCI FILE: M:\ 2004 \ 01043223.26 \

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6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PARCEL TAX MAP: 37 ZONING: M-2
ELECTION DISTRICT: 01
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1" = 10'
VERT. 1" = 5'

DATE: July, 2012

KCI JOB NO.: 01-043223.26

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 12 OF 15

SDP-10-095

BY: Ashley Piner Division: PGSD NaturalRes Emp
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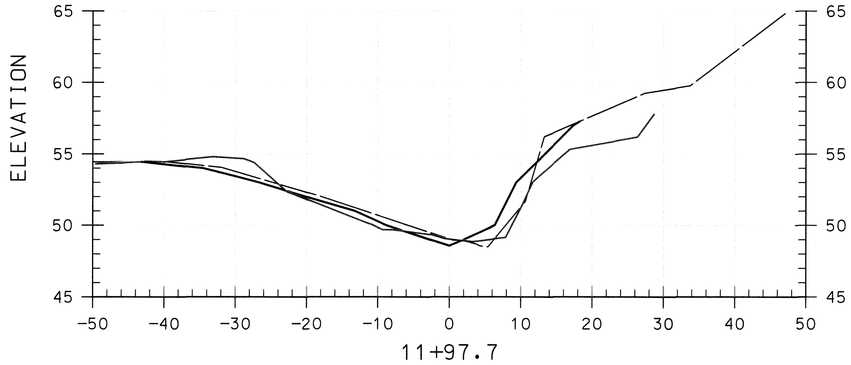

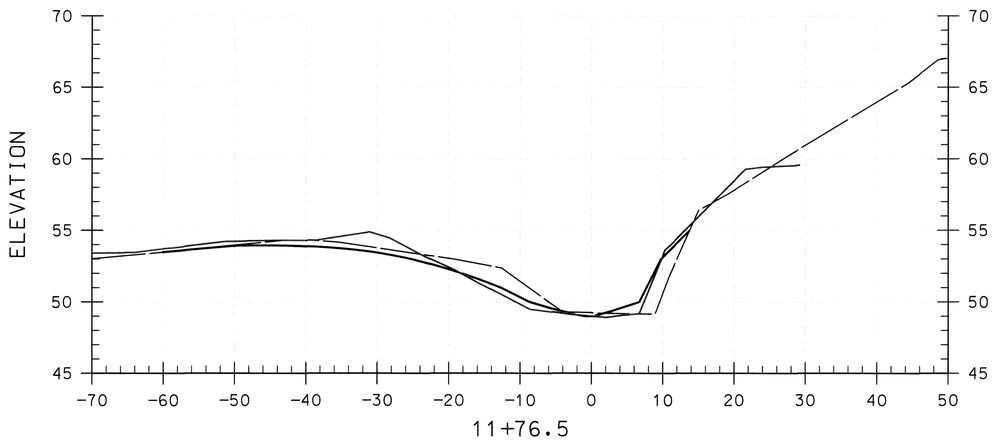

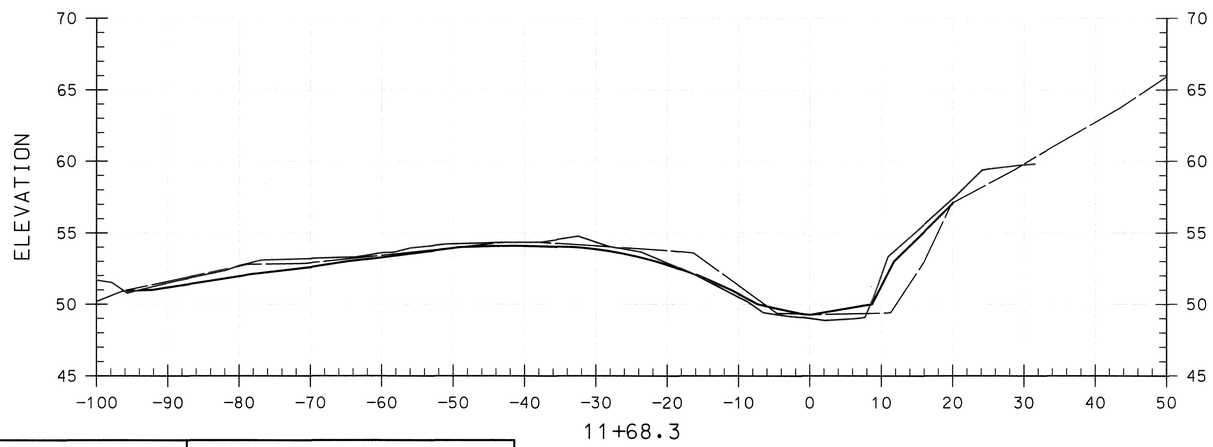

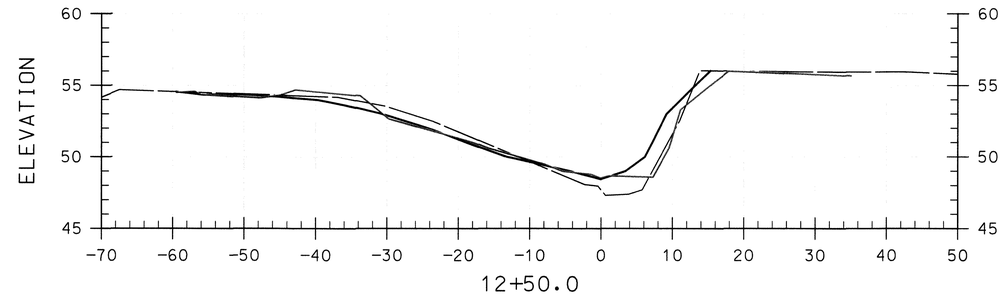

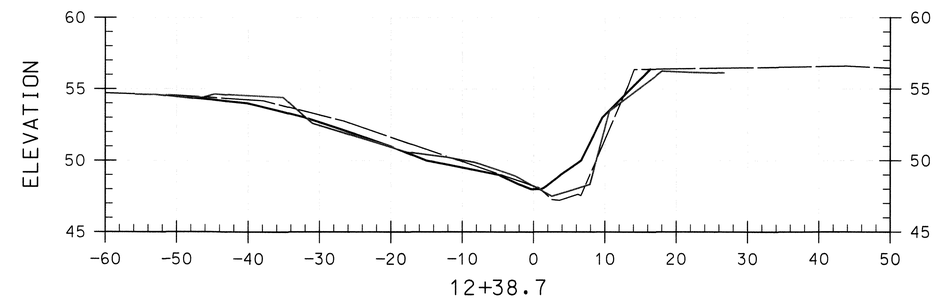

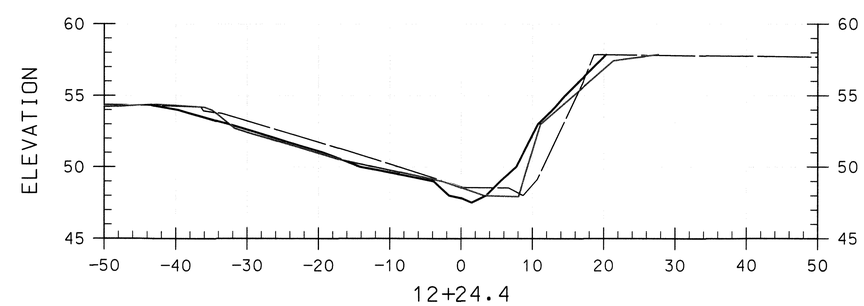

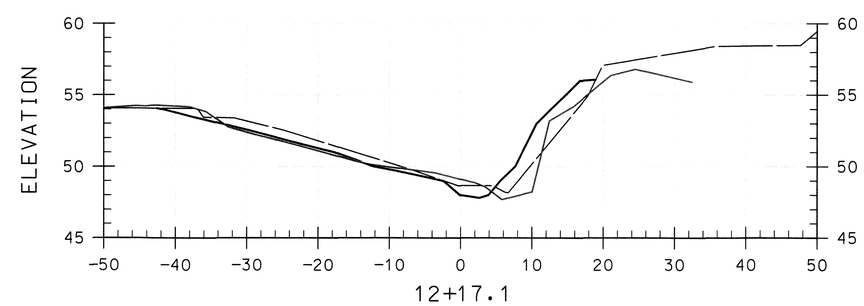

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DIRECTOR — DATE

LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

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COLUMBIA, MARYLAND 21046

PARCEL 285, TAX MAP 38, ZONING M-2
ELECTION DISTRICT 6
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1" = 10'
VERT. 1" = 5'

DATE: July, 2012

KCI JOB NO.: 01-043223.26

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 13 OF 15

SDP-10-095

BY: Ashley Piper Division: P000 Natural Res Eng
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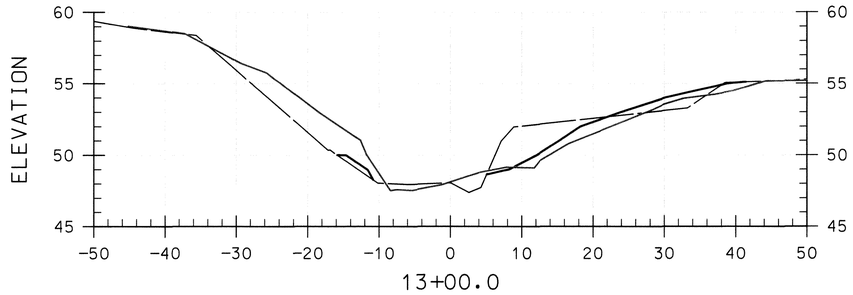

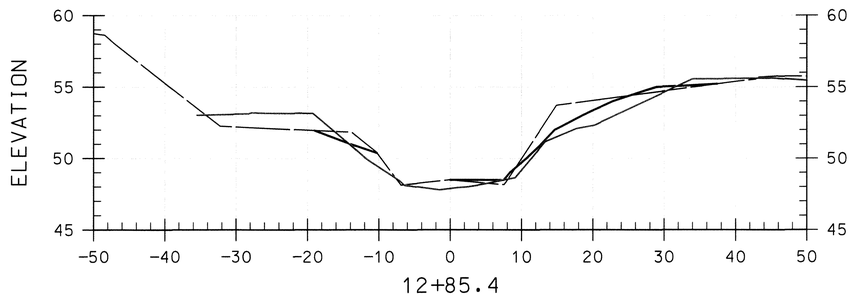

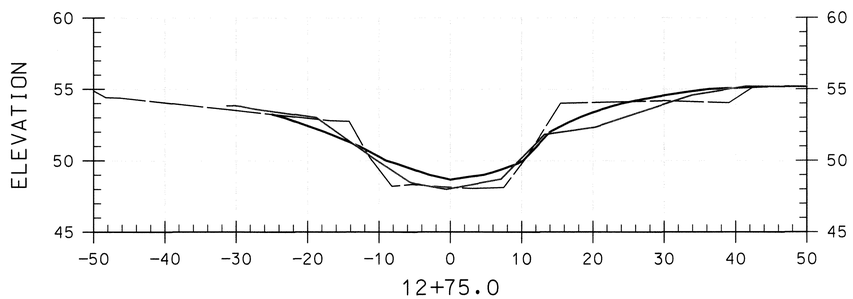

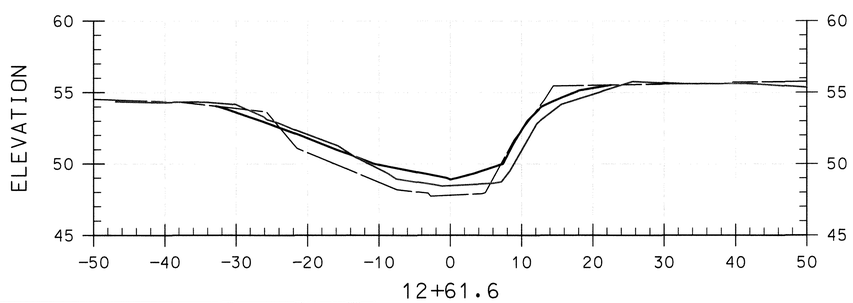

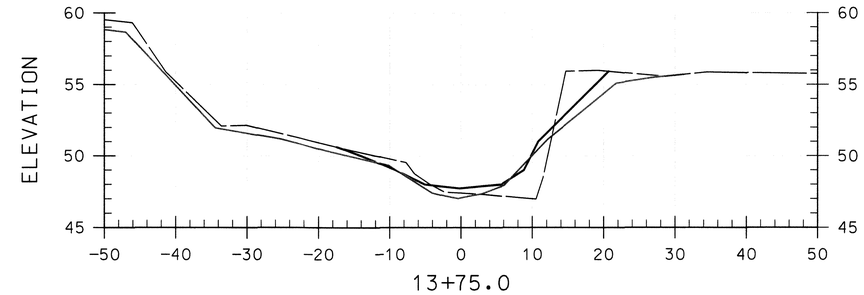

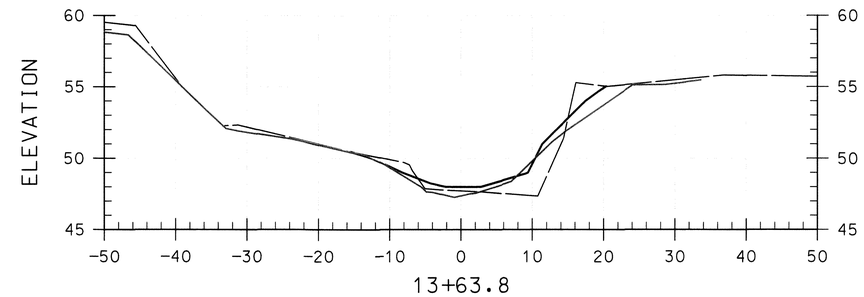

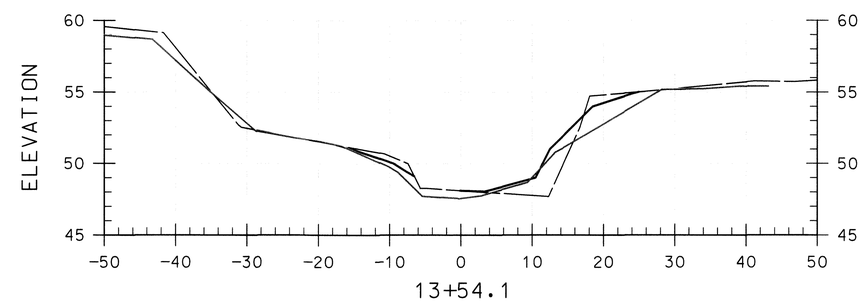

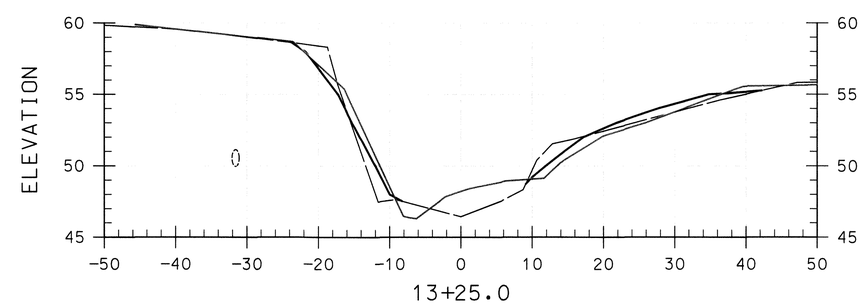

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LEGEND

EXISTING GROUND

PROPOSED GRADE

AS BUILT GRADE

NO.	REVISIONS DESCRIPTION	DATE

KCI FILE: M:\ 2004 \ 01043223.26 \

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COLUMBIA, MARYLAND 21046
PARCEL 285, TAX MAP 38, ZONING M-2
ELECTION DISTRICT 01
HOWARD COUNTY, MARYLAND

AS- BUILT CROSS SECTIONS

SCALE: 0 0.25 0.5 1.0 INCHES
HOR. 1" = 10'
VERT. 1" = 5'

DATE: July, 2012

KCI JOB NO.: 01-043223.26

CAPITAL PROJECT NO.: D - 1122

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 14 OF 15

SDP-10-095

BY: Ashley, Pioner Division PROG: Natural Res. Emp
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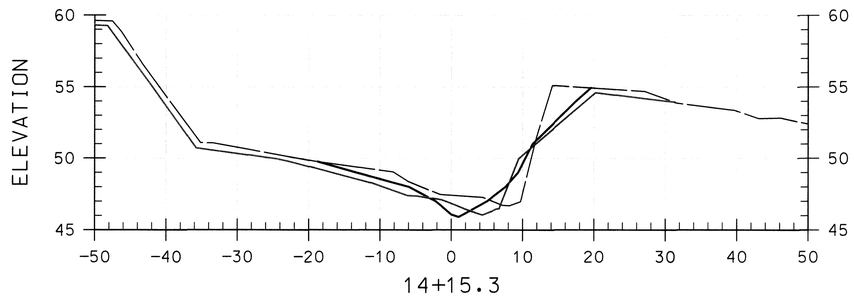

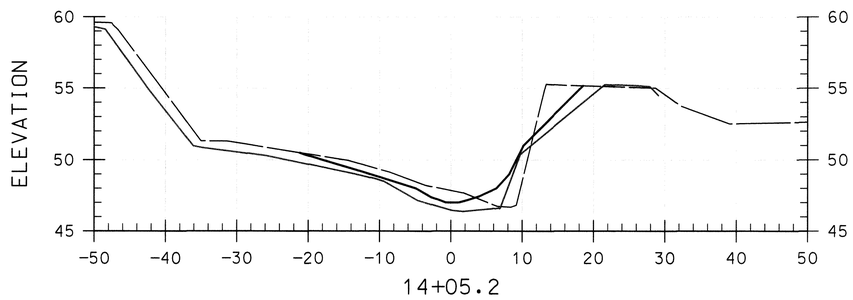

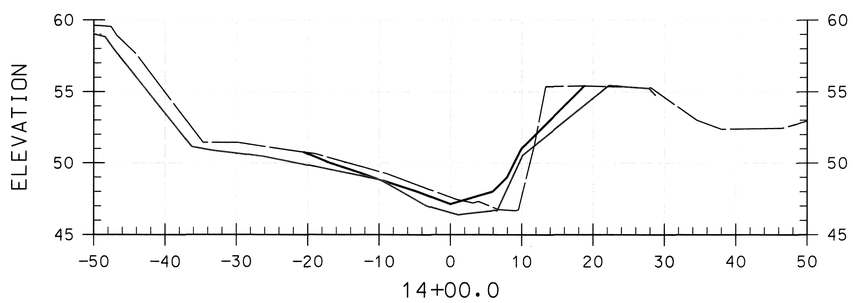

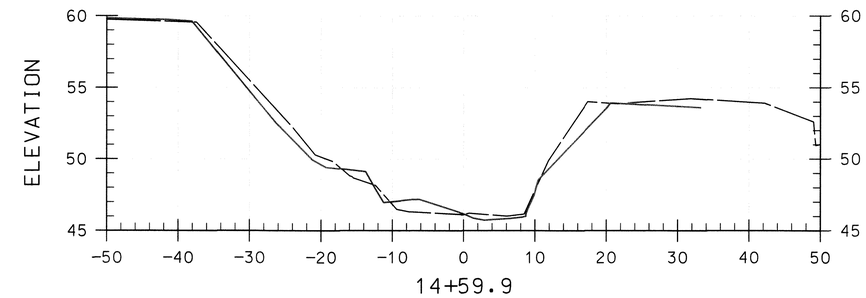

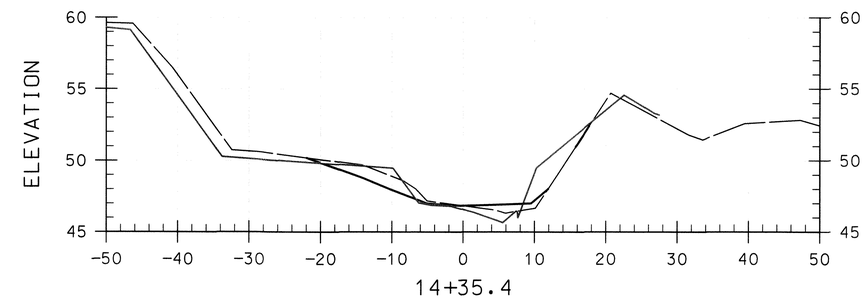

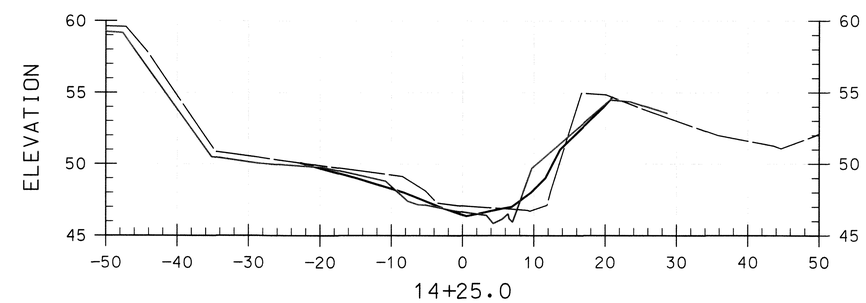

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AS- BUILT CROSS SECTIONS

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BY: Ashley, Peter Division: PGSO NaturalRes Emp
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