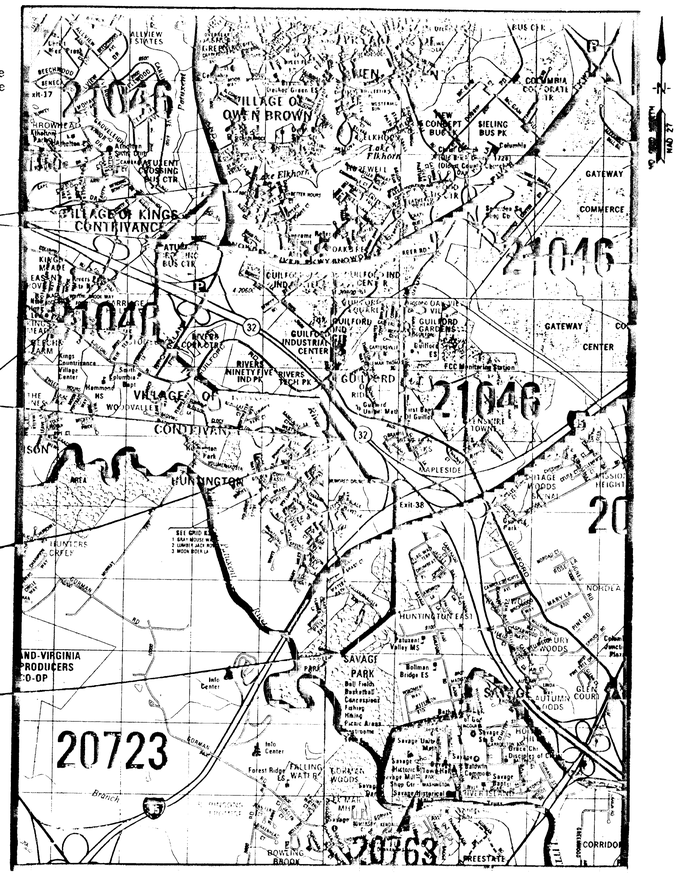


HOWARD COUNTY PATHWAY SYSTEM – PHASE 3b

HOWARD COUNTY, MARYLAND

SEGMENTS 1 AND 2

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT N-3954

INDEX

SEGMENT 1 PLANS

SEGMENT 2 PLANS

STRUCTURAL PLANS

Site Analysis

12210	Linear Feet of Path
330	Linear Feet of Bridge
995	Linear Feet of Boardwalk
4.5 Ac.	Total Area Disturbed
2.4 Ac.	Area of Vegetative Stabilization
2.1 Ac.	Area of Impervious Surface
0.40 Ac.	Area of Pervious Surface (Asphalt Stone Dust)
7875 S.F.	Area of Temporary Wetland Disturbance
2700 S.F.	Area of Permanent Wetland Disturbance

Limits of Bituminous Pathway i 0+00 - i 29+37 28+00 - 112+10
(Bikers / Pedestrians)
Stone Dust Pathway 113+10 – 115+20
(Equestrians, Pedestrians, Bikers)

VICINITY MAP

SCALE: 1" = 2000'
COPYRIGHT: ADC,
PERMIT USE NO. 20694273

RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS, THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION. SEE APPROPRIATE RIGHT-OF-WAY PLAT OR PLATS.

THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF SAID LOCATIONS. CALL 'MISS UTILITY', 1-800-257-7777 FOR UTILITY LOCATIONS AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION.

GENERAL NOTES

1. COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC SYSTEM POINT NOS. 2241004, 2241011 & 2341002. NAD 27 DATUM
2. CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO (2) WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN THE VICINITY OF PROPOSED UTILITIES AT NO COST TO THE COUNTY THEN IF DIRECTED BY THE ENGINEER, TEST PITS SHALL BE DUG AT UTILITY CROSSINGS TO DETERMINE EXISTING HORIZONTAL AND VERTICAL ALIGNMENT OF UTILITIES.
3. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

   MISS UTILITY 1-800-257-7777
   CONSTRUCTION INSPECTION DIVISION, HOWARD COUNTY (410) 313-1880
   STATE HIGHWAY ADMINISTRATION (410) 531-5533
   BALTIMORE GAS & ELECTRIC COMPANY - UNDERGROUND ELECTRIC
   DISTRIBUTION CUSTOMER SERVICE (410) 685-0123
   ENGINEERING DAMAGE CONTROL (410) 234-5621
   BELL ATLANTIC TELEPHONE 1-800-870-0000
   AMERICAN TELEPHONE & TELEGRAPH CABLE LOCATION DIVISION (410) 393-3553
   COLONIAL PIPELINE COMPANY (410) 781-4641
   BUREAU OF UTILITIES, HOWARD COUNTY (410) 313-4900

4. AVOID DAMAGE TO TREES ON THE PATHWAY TO MAXIMUM EXTENT. OTHER TREES WITHIN LIMITS OF CONSTRUCTION SHALL NOT BE DESTROYED WITHOUT APPROVAL OF THE ENGINEER. *TREES > 12"Ø WITHIN 5' OF LOD WILL BE PROTECTED BY TREE PROTECTIVE FENCING.*
5. CONTRACTOR SHALL REMOVE TREES, STUMPS, AND ROOT ALONG LINE OF EXCAVATION AS DIRECTED BY THE ENGINEER. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE *LUMP SUM PRICE BID.* FOR CLEARING AND GRUBBING. *CARE SHALL BE TAKEN TO AVOID DISTURBANCE OF EXISTING TREES TO REMAIN.*
6. PLACE REGULATION WARNING SIGNS AS REQUIRED TO COMPLY WITH MARYLAND STATE HIGHWAY ADMINISTRATION MANUAL OF TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS. PAYMENT FOR THIS ITEM SHALL BE INCIDENTAL TO OTHER BID ITEMS. ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO ANY ASPHALT PAVING. NO TRAFFIC STUDY IS REQUIRED.
7. ALL GRADING SHALL BE LIMITED TO 16' R.O.W. INCLUDING SIDE SLOPES AND STABILIZATION *(EXCEPT WHERE LOD INDICATES A WIDER AREA.* FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED AS FOLLOWS:
   A. SEVEN (7) CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES, AND ALL SLOPES GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1); AND
   B. FOURTEEN (14) CALENDAR DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
8. FOR DETAILS NOT SHOWN ON THESE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, THE CONTRACTOR SHALL ABIDE BY THE MARYLAND STATE HIGHWAY ADMINISTRATION'S "BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES," "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" AND THE SPECIAL PROVISIONS. IN THE EVENT OF ANY DISCREPANCY BETWEEN THESE SOURCES, THE SPECIAL PROVISIONS SHALL GOVERN.
9. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
10. *THE PATHWAY SHALL BE MAINTAINED AFTER CONSTRUCTION, BY THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARK.*
11. *UNLESS INDICATED OTHERWISE PATHWAY SHALL NOT EXCEED 5% SLOPE.*

LEGEND

▭	CULVERT
╥╥	BRIDGE
—··—	WETLAND LIMIT
– – – – –	25' WETLAND BUFFER
—— TPD ——	TREE PROTECTIVE DEVICE
⌒⌒⌒	EXISTING TREELINE
⌒⌒⌒	PROPOSED TREELINE
—···—	STREAM
(L1) (C1)	TANGENT/CURVE SEGMENT NO.
├— SF —┤	SILT FENCE
┥	PROPOSED SIGN
— — — —	PROPERTY LINE
▨	PROPOSED BOARDWALK
SCE	STABILIZED CONSTRUCTION ENTRANCE

NOTE:
UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS. CULVERT BOARDWALK AND BRIDGE LOCATIONS.

SITE DEVELOPMENT PLAN
Pathway Phase 3a- SDP-98-46
Pathway Phase 3b, Segment 1- SDP-99-79
Pathway Phase 3b, Segment 2- SDP-99-

- MDE TRACKING NO. 18952492
- DEPARTMENT OF PLANNING AND ZONING WAIVER NO. SDP-98-46

HOWARD COUNTY FIELD BOOK SURVEY REFERENCES

BOOK NO.	DATE SURVEYED
268	12/18/90 - 3/28/91
269	3/28/91 - 4/11/91
277	4/12/91 - 12/6/91
180	12/20/91 - 1/23/92

RELEVANT BACKGROUND INFORMATION

Plan Files F-79-44C, VKC 3/1
TAX MAP NO.: 42, 47
ZONING: NT AND R-20
ELECTION DISTRICT: 3
FDP Phase 148 (VKC 1/1, 178 PT. 1, 187 (RCP 2/1, 169 PT. 1 (VKC 3/1)
WETLANDS DELINEATED BY:
EBA ENGINEERING, INC.
SETON BUISNESS PARK
5800 METRO DRIVE
BALTIMORE, MD. 21215-3209
(410) 358-7171

FLOODPLAIN STUDY IS BASED ON:

HOWARD COUNTY WATERSHED MODEL UPDATE
LITTLE PATUXENT RIVER WATERSHED,
SUBMITTAL 2-REVISED HYDROLOGY DATA
PREPARED BY: BERNARD JOHNSON, INC., MAY 2, 1985

LITTLE PATUXENT RIVER WATERSHED MODEL UPDATE
FOR HOWARD COUNTY, MARYLAND
HEC-2 MODELS FOR BW-1 LITTLE PATUXENT RIVER
PREPARED BY BJI, NOVEMBER, 1985

Director, Department of Recreation and Parks Date

NOTE: THE DESIGN FOR THIS PROJECT HAS INCORPORATED FACILITIES FOR ELDERLY AND HANDICAPPED CITIZENS IN COMPLIANCE WITH STATE AND FEDERAL LEGISLATION.

DEVELOPERS CERTIFICATE

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

3/10/00
Signature of Developer Date

ENGINEERS CERTIFICATE

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

3/10/00
Signature of Engineer Date

APPROVED:

Reviewed for HOWARD SCD and meets Technical Requirements.

USDA: Natural Resources Conservation Service Date

APPROVED:

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

Howard SCD Date

LOCATION MAP
Scale 1"=2000'

SHA CONTRACT NO. HO 8325125 FAP NO.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

3/10/00
DIRECTOR OF PUBLIC WORKS DATE

3/10/00
CHIEF, BUREAU OF ENGINEERING DATE

GPI GREENMAN-PEDERSEN, INC.

DES: K.P.
DRN: C.A.
CHK: D.J.M.
DATE: 9/97

BY	NO	REVISION	DATE

TITLE SHEET

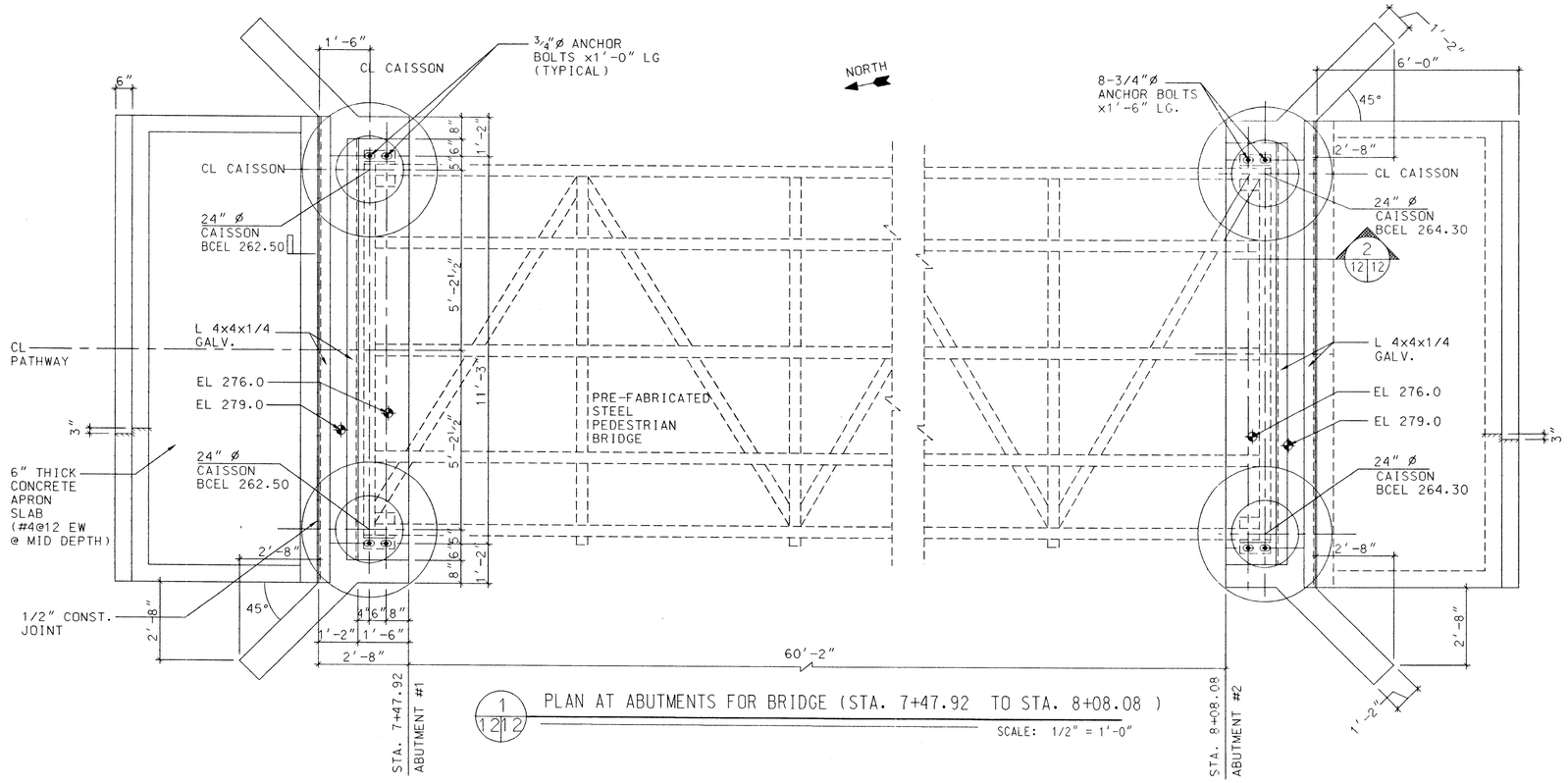
600' SCALE MAP NO. ____ BLOCK NO. ____

HOWARD COUNTY PATHWAY SYSTEM
PHASE 3b SEGMENTS 1 AND 2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET
Sheet No 1

SCALE AS SHOWN

SHEET 1 OF 39



1 12|12 PLAN AT ABUTMENTS FOR BRIDGE (STA. 7+47.92 TO STA. 8+08.08)

SCALE: 1/2" = 1'-0"

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

BRIDGE REACTIONS	DOWNWARD LOAD UPWARD LOAD			
	P (LBS)	H (LBS)	L (LBS)	
DEAD LOAD	5125			
UNIFORM LIVE LOAD	13.175			
VEHICLE LOAD PLUS 30 PSF ICE LOAD	5.250			
WIND UPLIFT 20 PSF	-5.106			
WIND	5869	1443		
SEISMIC	N/A	N/A	N/A	*
THERMAL			1.793	**

"P" - VERTICAL LOAD EACH BASE PLATE (4 PER BRIDGE)
"H" - HORIZONTAL LOAD EACH FOOTING (2 PER BRIDGE)
* "L" - LONGITUDINAL LOAD AT FIXED BEARING (2 PER BRIDGE)
** "L" - LONGITUDINAL LOAD EACH BASE PLATE (4 PER BRIDGE)

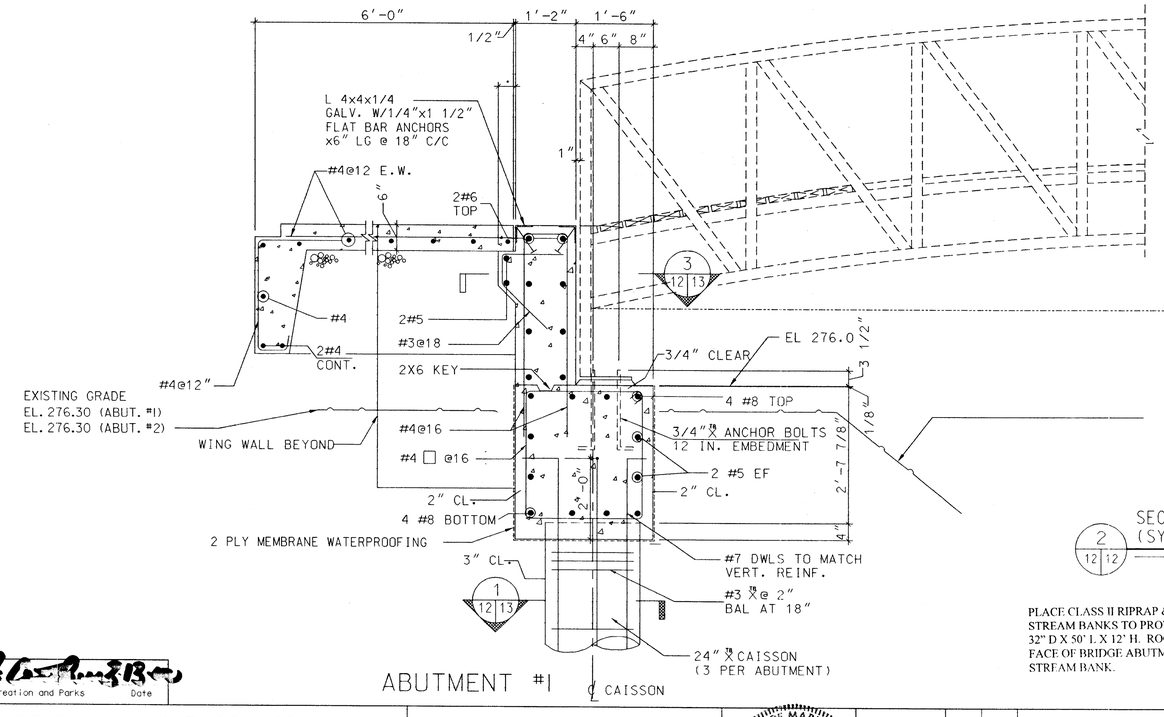
NOTE: ALL DIMENSIONS AND VALUES ARE SUBJECT TO CHANGE AFTER FINAL DESIGN OF BRIDGE BY BRIDGE MANUFACTURER.

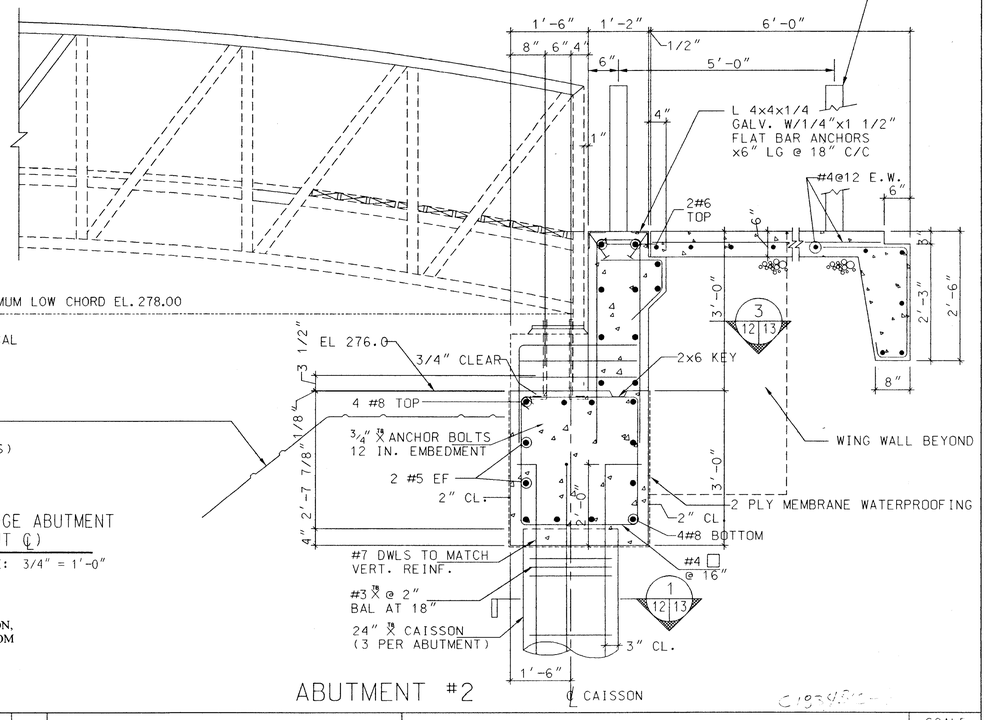
3 BRIDGE REACTION TABLE

NOTES:

1. BCEL = ESTIMATED BOTTOM OF CAISSON ELEVATION.
2. CENTER CAISSONS ON CENTER LINE OF ABUTMENT.
3. PROVIDE 4'-0" BELL @ CAISSONS INDICATED.
4. FOR GENERAL NOTES, SEE SHEET 16.
5. FOR DESIGN FORCES AND REACTIONS OF PRE-FABRICATED BRIDGE ON ABUTMENTS, SEE TABLE THIS DRAWING.
6. SLOPE ABUTMENT SEAT 1/8". SEE SECTION THRU ABUTMENT.
7. SLOPE APPROACH APRON 2% IN DIRECTION OF POSITIVE DRAINAGE. SEE CIVIL DWGS FOR DETAILS.
8. BRIDGE SURFACE, APRON SLAB, & PAVEMENT SURFACE TO BE FLUSH.
9. FOR GENERAL PLAN SEE SHEET 3.

LAYOUT FOR 4"X6" POSTS ON APPROACH RAILING, TYP. FOR ALL PREFABRICATED BRIDGES. SEE DETAIL FOR POSTS ON SHEET 13 OF 39.





2 12|12 SECTION THRU BRIDGE ABUTMENT (SYMMETRICAL ABOUT ℄)

SCALE: 3/4" = 1'-0"

PLACE CLASS II RIPRAP & FILTER CLOTH ON STREAM BANKS TO PROTECT BRIDGE FOUNDATION, 32" D X 50' L X 12' H. ROCK SHALL BE PLACED FROM FACE OF BRIDGE ABUTMENT TO BOTTOM OF STREAM BANK.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/16/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MILETIC — REGISTERED PROFESSIONAL ENGINEER

DES: JWS
DRN: MM
CHK: JWS
DATE: 7/99

BY	NO.	REVISION	DATE

BRIDGE #1 DESIGN
STA. 7+47.92 - STA. 8+08.08

600' SCALE MAP NO. _____ BLOCK NO. _____

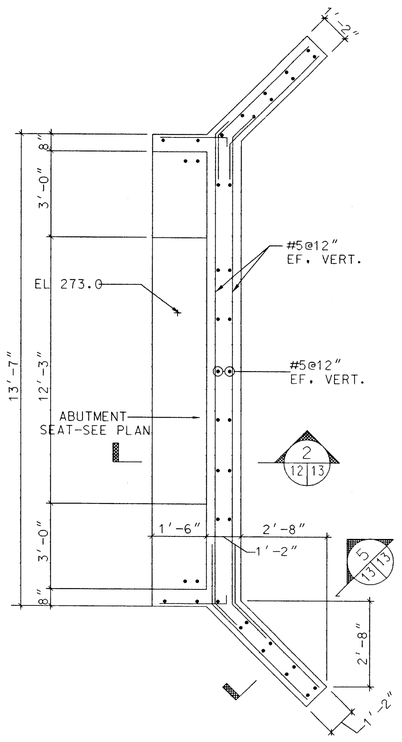
HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 2

CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND BID SET SHEET NO. 21

SCALE AS SHOWN

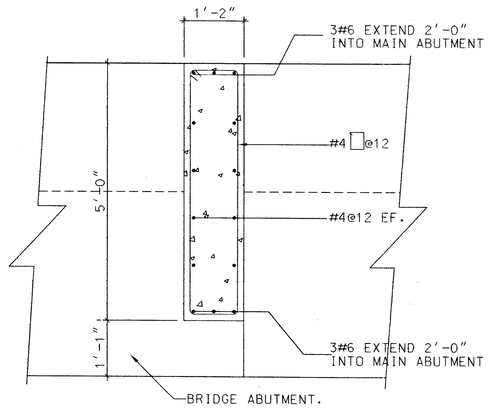
SHEET 12 OF 39

96029S24.DGN



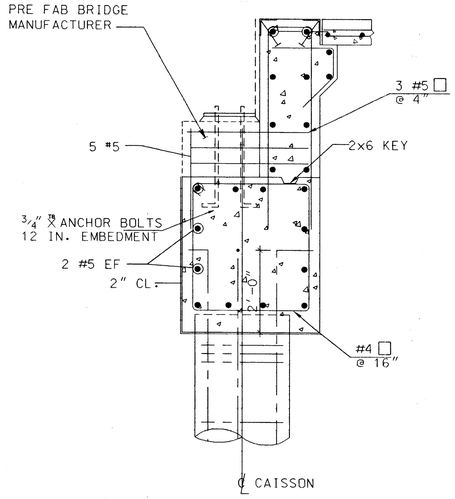
PLAN SECTION OF BACKWALL OF ABUTMENTS FOR 60'-2" BRIDGE 1 ONLY.

3 — SCALE: 1/2" = 1'-0"

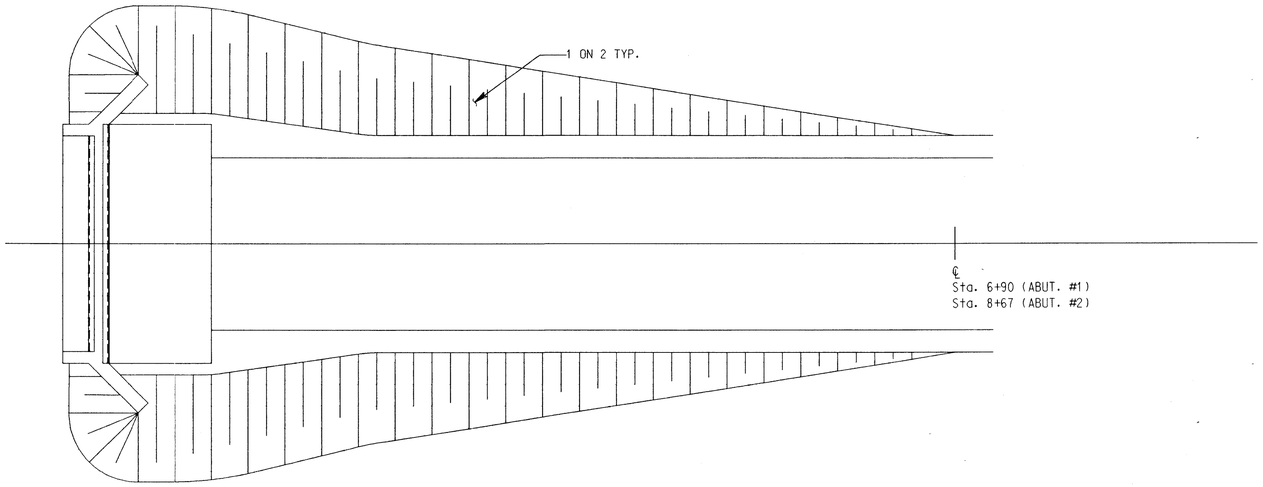


5 — 12.13 | 13 — SECTION THRU WINGWALL

SCALE: 3/4" = 1'-0"

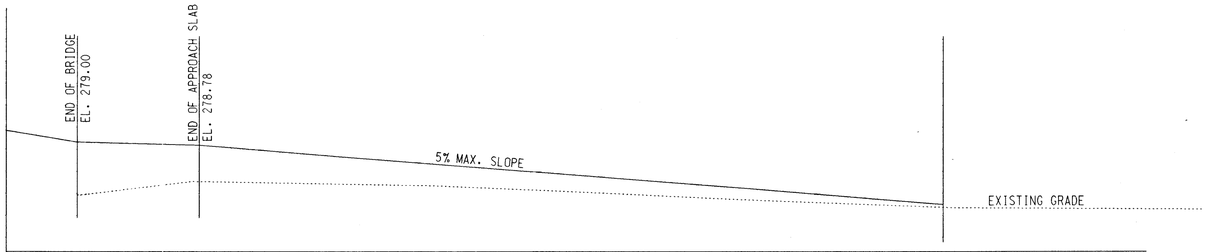


OPTIONAL PEDESTAL

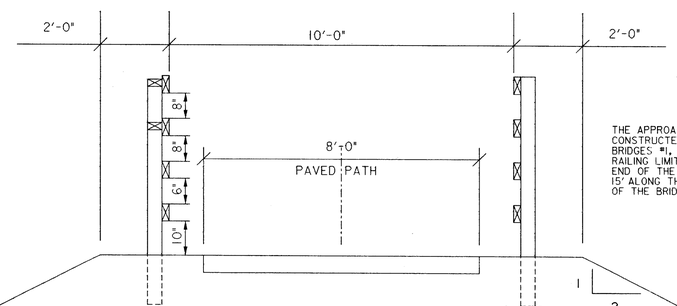


TYPICAL GRADING PLAN

SCALE: NONE



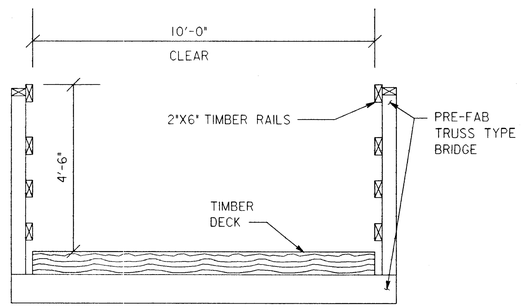
PROFILE



THE APPROACH RAILING SHALL BE CONSTRUCTED FOR PREFABRICATED BRIDGES #1, #4a AND #6. THE APPROACH RAILING LIMITS SHALL EXTEND FROM THE END OF THE PREFABRICATED BRIDGES 15' ALONG THE PATHWAY ON BOTH SIDES OF THE BRIDGE

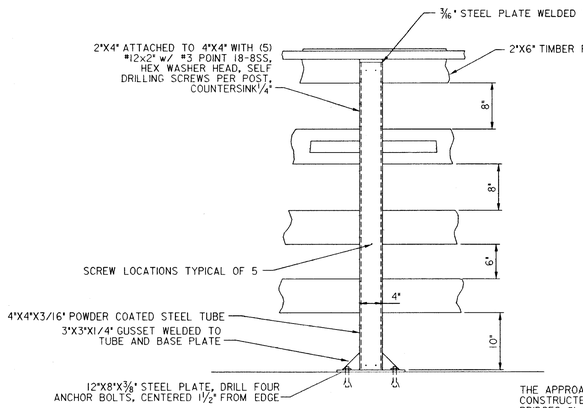
TYPICAL APPROACH SECTION

SCALE: NONE



TYPICAL BRIDGE SECTION

SCALE: NONE



THE APPROACH RAILING SHALL BE CONSTRUCTED FOR PREFABRICATED BRIDGES #1, #4a AND #6. THE APPROACH RAILING LIMITS SHALL EXTEND FROM THE END OF THE PREFABRICATED BRIDGES 15' ALONG THE PATHWAY ON BOTH SIDES OF THE BRIDGE

TYPICAL APPROACH RAIL DETAIL ATTACHED TO CONCRETE APRON

N.T.S.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/16/00

DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13778 — REGISTERED PROFESSIONAL ENGINEER

DES: JWS
DRN: MM
CHK: JWS
DATE:. 7/99

BY	NO.	REVISION	DATE

BRIDGE #1
SECTIONS
STA. 17+47.92 - STA. 18+08.08

600' SCALE MAP NO. _____ BLOCK NO. _____

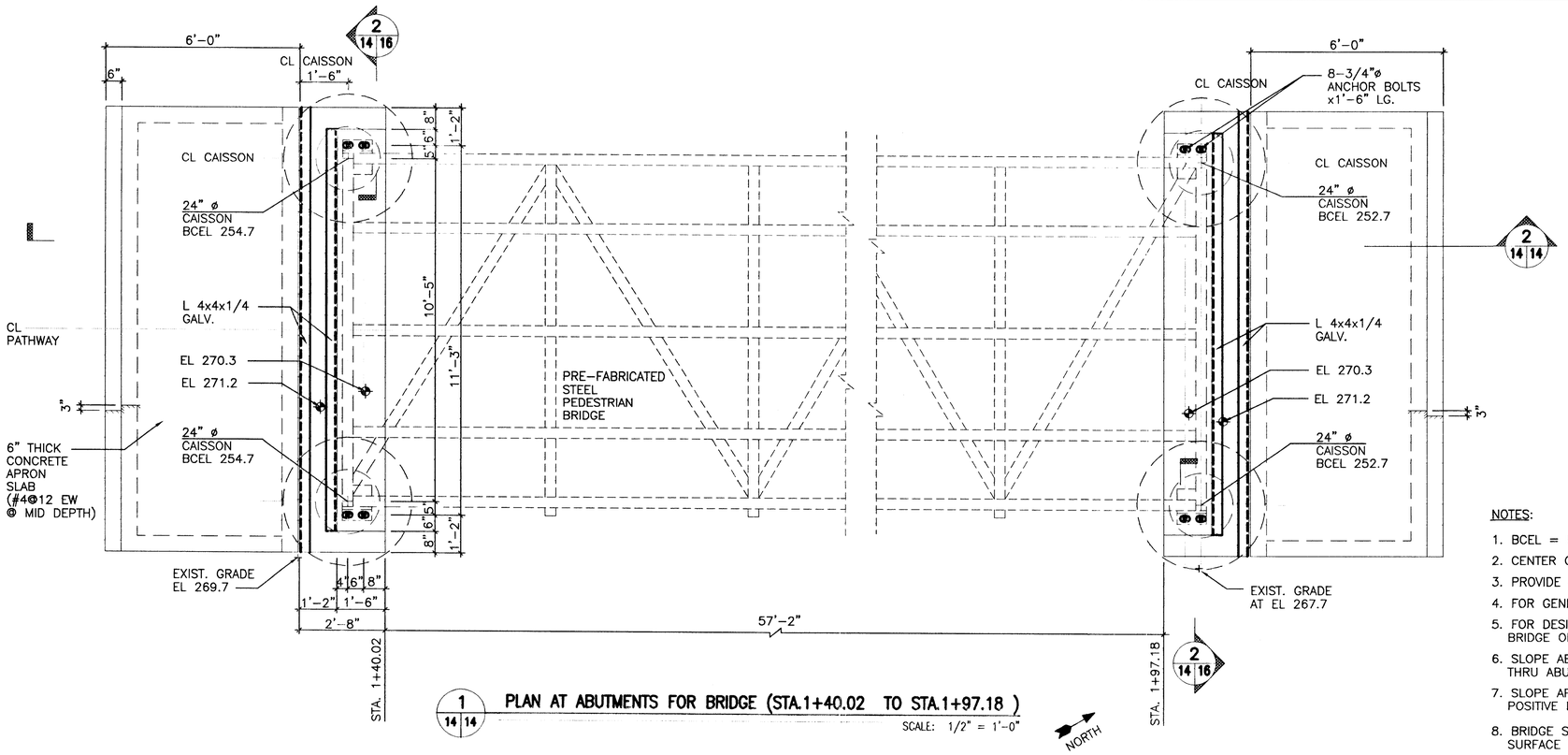
HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 2

CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND BID SET SHEET NO. 22

SCALE AS SHOWN

SHEET 13 OF 39

96029S25.DGN



1 **PLAN AT ABUTMENTS FOR BRIDGE (STA.1+40.02 TO STA.1+97.18)**
14 14
SCALE: 1/2" = 1'-0"

NORTH

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

BRIDGE REACTIONS	DOWNWARD LOAD UPWARD LOAD			
	P (LBS)	H (LBS)	L (LBS)	
DEAD LOAD	4,875			
UNIFORM LIVE LOAD	12,750			
VEHICLE LOAD PLUS 30 PSF ICE LOAD	5,250			
WIND UPLIFT 20 PSF	-4,875			
WIND	5,164	13,734		
SEISMIC	N/A	N/A	N/A	*
THERMAL			1,706	**

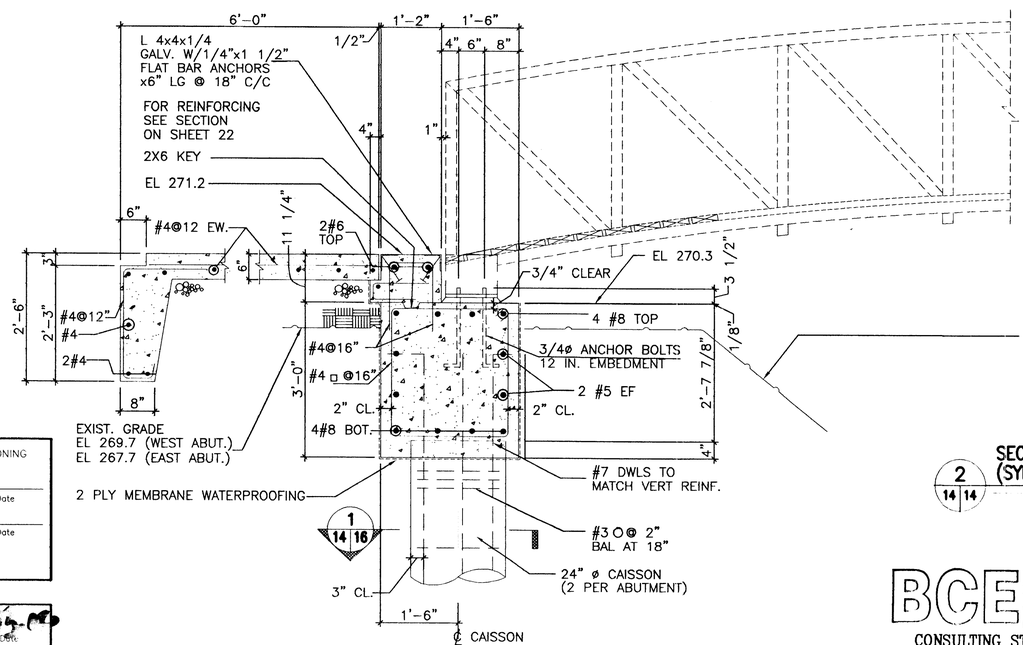
"P" – VERTICAL LOAD EACH BASE PLATE (4 PER BRIDGE)
"H" – HORIZONTAL LOAD EACH FOOTING (2 PER BRIDGE)
* "L" – LONGITUDINAL LOAD AT FIXED BEARING (2 PER BRIDGE)
** "L" – LONGITUDINAL LOAD EACH BASE PLATE (4 PER BRIDGE)

NOTE: ALL DIMENSIONS AND VALUES ARE SUBJECT TO CHANGE AFTER FINAL DESIGN OF BRIDGE BY BRIDGE MANUFACTURER.

3 **BRIDGE REACTION TABLE**
14 14

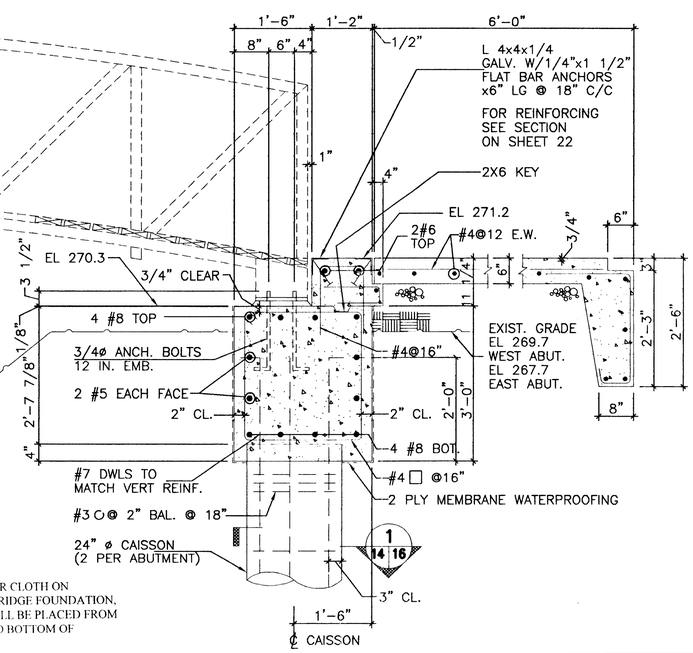
NOTES:

1. BCEL = ESTIMATED BOTTOM OF CAISSON ELEVATION.
2. CENTER CAISSONS ON CENTER LINE OF ABUTMENT.
3. PROVIDE 4'-0" BELL @ CAISSONS INDICATED.
4. FOR GENERAL NOTES, SEE SHEET S25.
5. FOR DESIGN FORCES AND REACTIONS OF PRE-FABRICATED BRIDGE ON ABUTMENTS, SEE TABLE THIS DRAWING.
6. SLOPE ABUTMENT SEAT 1/8". SEE SECTION THRU ABUTMENT.
7. SLOPE APPROACH APRON 2% IN DIRECTION OF POSITIVE DRAINAGE. SEE CIVIL DWGS FOR DETAILS.
8. BRIDGE SURFACE,APRON SLAB & PAVEMENT SURFACE TO BE FLUSH.



PRE-FABRICATED
STEEL
PEDESTRIAN
BRIDGE

FINISH
GRADE
(SEE CIVIL DWGS)



2 **SECTION THRU BRIDGE ABUTMENT (SYMMETRICAL ABOUT CL)**
14 14
SCALE: 3/4" = 1'-0"

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date

Chief, Division of Land Development — Date

Director, Department of Recreation and Parks — Date

BCE BRANDES & CASSAGNOL ENGINEERS, P.C.
1411 K STREET, N. W. SUITE 830
WASHINGTON, D. C. 20005
(202) 393-1380, FAX (202) 393-1382
CONSULTING STRUCTURAL ENGINEERS

PLACE CLASS II RIPRAP & FILTER CLOTH ON STREAM BANKS TO PROTECT BRIDGE FOUNDATION, 32" D X 50' L X 12' H. ROCK SHALL BE PLACED FROM FACE OF BRIDGE ABUTMENT TO BOTTOM OF STREAM BANK.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/6/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

3/6/00

DES: RPC				
DRN: RA				
CHK: NB				
DATE: DATE	BY	NO.	REVISION	DATE

BRIDGE #4a DESIGN
STA. 1+40.02 TO STA. 1+97.18

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 1

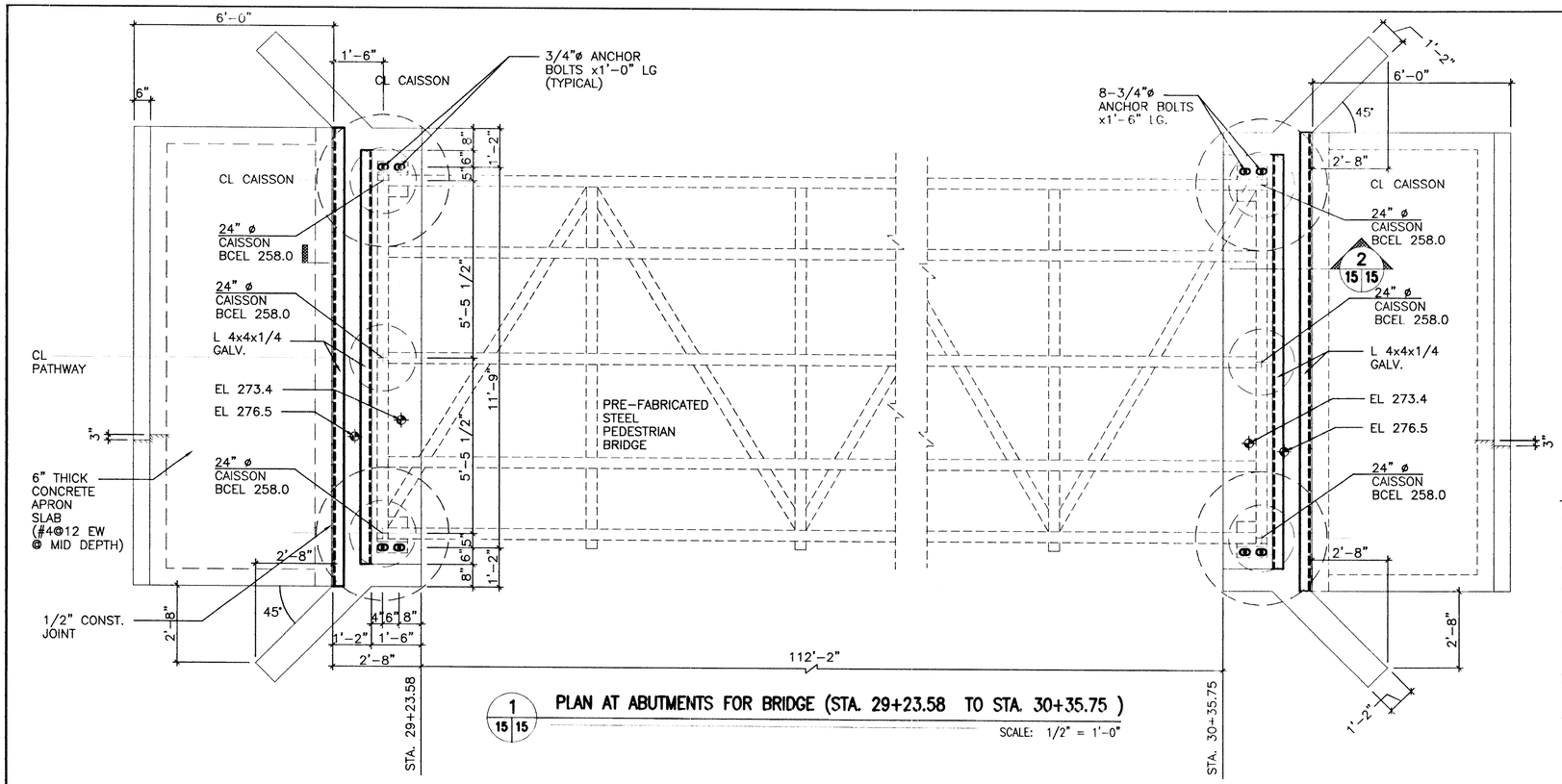
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 14 OF 39

BID SET SHEET NO. 23

960295.12.DWG



1 / 15 15 PLAN AT ABUTMENTS FOR BRIDGE (STA. 29+23.58 TO STA. 30+35.75)

SCALE: 1/2" = 1'-0"

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

BRIDGE REACTIONS	DOWNWARD LOAD UPWARD LOAD			
	P (LBS)	H (LBS)	L (LBS)	
DEAD LOAD	15,500			
UNIFORM LIVE LOAD	24,438			
VEHICLE LOAD PLUS 30 PSF ICE LOAD	5,250			
WIND UPLIFT 20 PSF	-9,775			
WIND	15,108	25,827		
SEISMIC	N/A	N/A	N/A	*
THERMAL			1,550	**

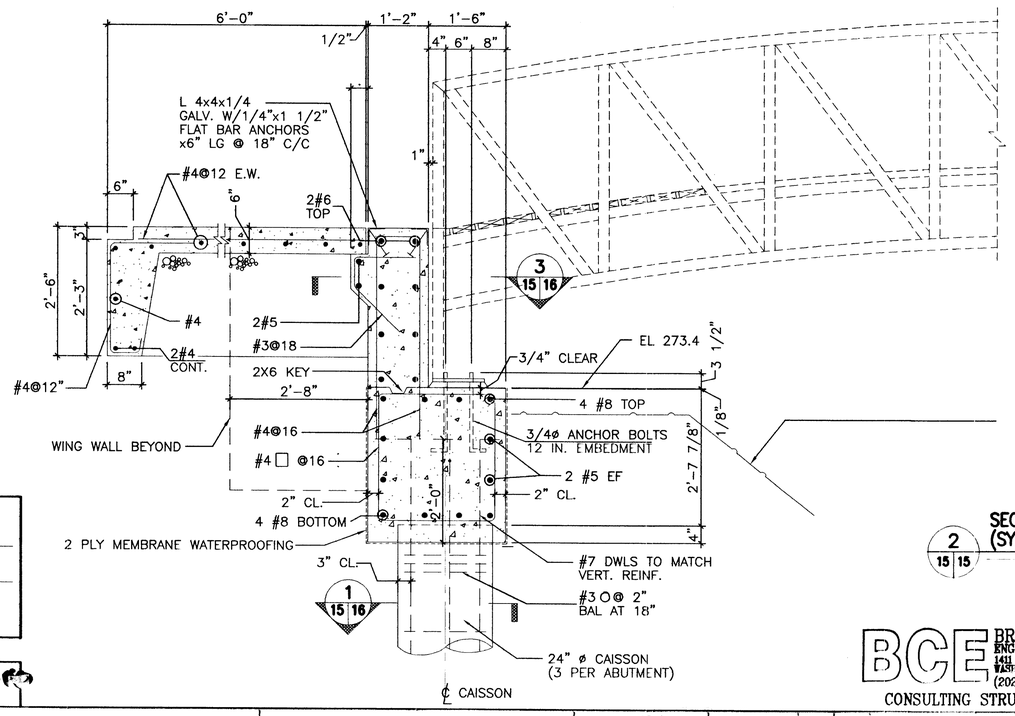
"P" – VERTICAL LOAD EACH BASE PLATE (4 PER BRIDGE)
"H" – HORIZONTAL LOAD EACH FOOTING (2 PER BRIDGE)
* "L" – LONGITUDINAL LOAD AT FIXED BEARING (2 PER BRIDGE)
** "L" – LONGITUDINAL LOAD EACH BASE PLATE (4 PER BRIDGE)

NOTE: ALL DIMENSIONS AND VALUES ARE SUBJECT TO CHANGE AFTER FINAL DESIGN OF BRIDGE BY BRIDGE MANUFACTURER.

3 / 15 15 BRIDGE REACTION TABLE

NOTES:

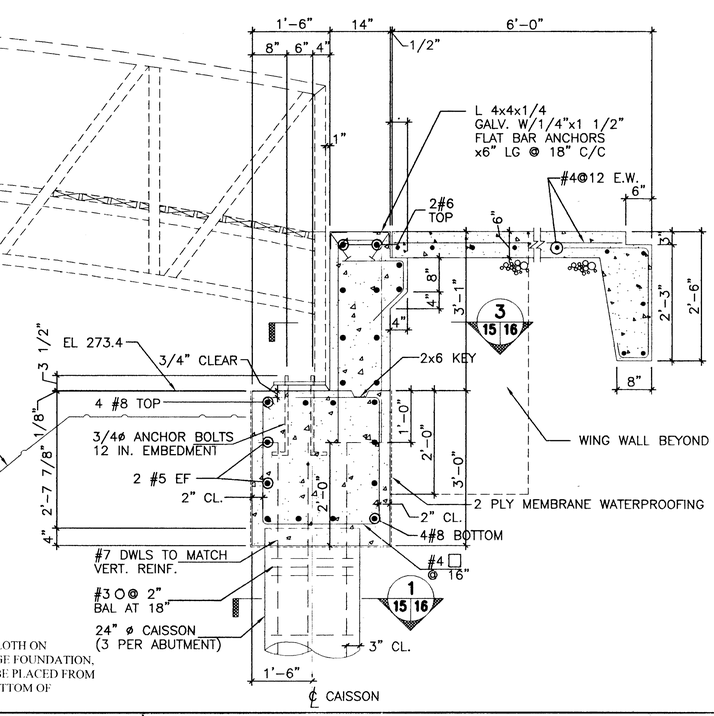
1. BCEL = ESTIMATED BOTTOM OF CAISSON ELEVATION.
2. CENTER CAISSONS ON CENTER LINE OF ABUTMENT.
3. PROVIDE 4'-0" BELL @ CAISSONS INDICATED.
4. FOR GENERAL NOTES, SEE SHEET S25.
5. FOR DESIGN FORCES AND REACTIONS OF PRE-FABRICATED BRIDGE ON ABUTMENTS, SEE TABLE THIS DRAWING.
6. SLOPE ABUTMENT SEAT 1/8". SEE SECTION THRU ABUTMENT.
7. SLOPE APPROACH APRON 2% IN DIRECTION OF POSITIVE DRAINAGE. SEE CIVIL DWGS FOR DETAILS.
8. BRIDGE SURFACE, APRON SLAB, & PAVEMENT SURFACE TO BE FLUSH.



PRE-FABRICATED STEEL PEDESTRIAN BRIDGE

CL SYMMETRICAL

FINISH GRADE (SEE CIVIL DWGS)



2 / 15 15 SECTION THRU BRIDGE ABUTMENT (SYMMETRICAL ABOUT CL)

SCALE: 3/4" = 1'-0"

PLACE CLASS II RIPRAP & FILTER CLOTH ON STREAM BANKS TO PROTECT BRIDGE FOUNDATION, 32" D X 50' L X 12' H. ROCK SHALL BE PLACED FROM FACE OF BRIDGE ABUTMENT TO BOTTOM OF STREAM BANK.

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date

Chief, Division of Land Development — Date

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

BCE BRANDES & CASSAGNOL ENGINEERS, P. C.
1411 K STREET, N. W., SUITE 830
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2/18/00

DES: RPC					
DRN: RA					
CHK: NB					
DATE: .	BY	NO.	REVISION	DATE	600' SCALE MAP NO. ____ BLOCK NO. ____

BRIDGE #6 DESIGN
STA. 29+23.58 TO STA. 30+35.75

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 1

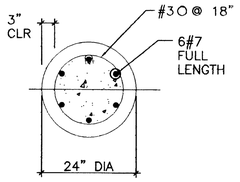
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

BID SET SHEET NO. 24

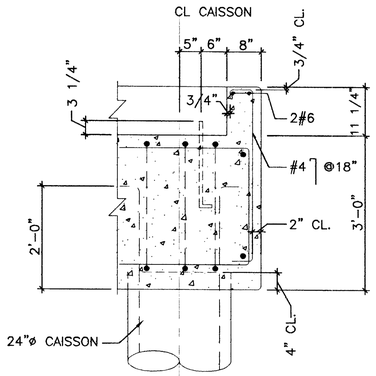
SCALE AS SHOWN

SHEET 15 OF 39

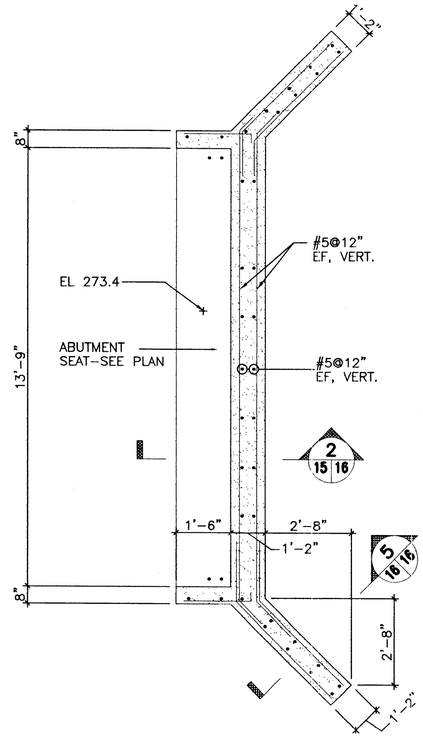
960295Z4.DWG



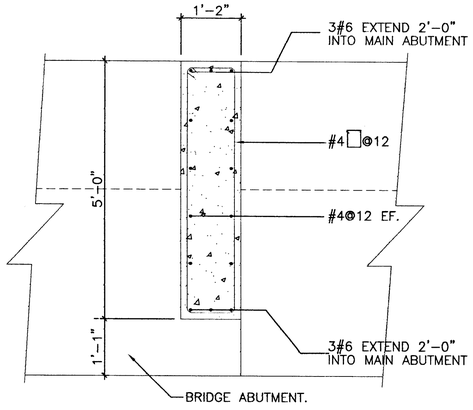
1 14,15 16 **PLAN DETAIL OF CAISSON**
SCALE: 3/4" = 1'-0"



2 14 16 **SECTION**
SCALE: 3/4" = 1'-0"



PLAN SECTION OF BACKWALL OF ABUTMENTS FOR 112'-2" BRIDGE 6 ONLY.
3 15 16
SCALE: 1/2" = 1'-0"



5 15,16 16 **SECTION THRU**
SCALE: 3/4" = 1'-0"

4 14 16 **TYPICAL CAISSON DETAIL**
SCALE: 3/4" = 1'-0"

GENERAL NOTES

A. GENERAL

1. ALL CONSTRUCTION AND MATERIALS MUST BE IN ACCORDANCE TO THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION MATERIALS".
2. ALL CONSTRUCTION SHALL ALSO BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY DESIGN MANUAL III, VOLUME IV AND OTHER APPLICABLE STANDARDS AND SPECIFICATIONS.

B. LOADS FOR PREFABRICATED BRIDGES

BRIDGE DESIGN MUST BE BASED ON COMBINATION OF FOLLOWING LOADS WHICH WILL PRODUCE MAXIMUM CRITICAL MEMBER STRESSES. (SEE BRIDGE REACTION TABLES GIVEN ON SHEETS 21, 22, 23, 24.

LIVE LOAD	-------	85 PSF
VEHICULAR LOAD	-------	10,000 LBS (NO IMPACT)
WIND LOAD	-------	75 PSF
TOP CHORD LOAD	-------	300 PLF (AASHTO 10.8.1)
		400 PLF (AASHTO 3.15.1.1.2)
STREAM LOAD VELOCITY	----	11 FT/SEC.

C. CAISSONS

1. CAISSONS ARE GIVEN AS AN OPTION TO THE CONTRACTOR. CONTRACTOR MAY OPT FOR A DIFFERENT TYPE OF DEEP FOUNDATION. THE CONTRACTOR'S OPTION MUST BE SUBMITTED FOR APPROVAL BY THE ENGINEER OF RECORD.
2. CAPACITY UTILIZED FOR DRILLED CAISSONS BEARING ON ROCK IS 5 KSF PLUS SKIN FRICTION OF 1 KSF.
3. BOTTOM OF CAISSON ELEVATIONS ON DRAWINGS ARE FOR ESTIMATION PURPOSES ONLY, AND MAY NEED TO BE ALTERED TO ACHIEVE ADEQUATE BEARING. CAISSONS SHALL BE DRILLED WITHOUT DISTURBING SURROUNDING SOIL. EXCAVATION SHALL BE KEPT FREE FROM WATER. CAISSON SHAFT SIZES SHALL BE IN STRICT ACCORDANCE WITH THE PROJECT DOCUMENTS.
4. CAISSONS SHALL BE INSPECTED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER PRIOR TO REMOVING CASING. CAISSONS SHALL BE CONCRETED FULL HEIGHT IMMEDIATELY SUBSEQUENT TO INSPECTION AND APPROVAL. CAISSON CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE GEOTECHNICAL REPORT AND THE PROJECT.

D. SHOP DRAWINGS

1. THE GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS FOR APPROVAL. THE GENERAL CONTRACTOR SHALL STATE ON THE SHOP DRAWINGS THAT CONTRACT DOCUMENT REQUIREMENTS HAVE BEEN MET AND THAT ALL DIMENSIONS, CONDITIONS AND QUANTITIES HAVE BEEN REVIEWED AND VERIFIED AS SHOWN AND ON THE SHOP DRAWINGS.

E. CONCRETE (CAST-IN-PLACE)

1. ALL STRUCTURAL CONCRETE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318-83.
2. CONTRACTOR SHALL SUBMIT MIX DESIGNS ACCOMPANIED BY APPROPRIATE GRAPHS AND BACKGROUND DATA FOR APPROVAL. MIX DESIGN SHALL INDICATE 7 AND 28 DAY STRENGTHS, CEMENT CONTENT, AIR CONTENT, WATER-CEMENT RATIO, AMOUNT OF FINE AND COARSE AGGREGATES, AND ADMIXTURES.
3. MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS:

ABUTMENTS, APRON SLAB	3500 PSI
CAISSONS	3000 PSI
PEA-GRAVEL CONCRETE	2500 PSI
ALL OTHER CONCRETE	3000 PSI

4. ALL CONCRETE SHALL BE AIR-ENTRAINED. SLABS POURED ON GRADE SHALL BE MINIMUM 6 IN. THICK, PLACED OVER 4 IN. OF WASHED GRAVEL UNLESS NOTED OTHERWISE.
5. EXPOSED CONCRETE SHALL HAVE 3/4" CHAMFERED EDGES. ALL CONCRETE WORK, REINFORCING PLACEMENT, FORMWORK AND SHORING SHALL BE INSPECTED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER. CONCRETE QUALITY CONTROL, INSPECTION AND TESTING SHALL BE IN STRICT ACCORDANCE WITH THE PROJECT SPECIFICATIONS, AS WELL AS LOCAL BUILDING REQUIREMENTS.
6. USE OF ADDITIVES SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER. USE OF ADDITIVES CONTAINING CALCIUM CHLORIDE SHALL NOT BE PERMITTED.

F. CONCRETE PROTECTION FOR REINFORCEMENT (CAST-IN-PLACE CONCRETE)

1.

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3 IN.
FORMED CONCRETE EXPOSED TO EARTH OR WEATHER NO 6 BAR OR LARGER	2 IN.

G. REINFORCING STEEL

1. REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, GRADE 60. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION. ALL REINFORCING BARS SHALL BE EPOXY COATED.

85 PSF PEDESTRIAN LOADING OR LOADED PICKUP TRUCK (5,200 LB VEHICLE WITH 70% OF THE WEIGHT ON THE REAR AXLE) NO IMPACT, WHICH EVER PRODUCES THE MAXIMUM STRESS.

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date

Chief, Division of Land Development — Date

Director, Department of Recreation and Parks — Date

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CONSULTING STRUCTURAL ENGINEERS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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3/10/00

DES: RPC
DRN: RA
CHK: NB
DATE:

BY	NO	REVISION	DATE

BRIDGE #1, 4A AND 6 DESIGN
GENERAL NOTES AND DETAILS
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 1
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND
BID SET SHEET NO. 25

SCALE AS SHOWN

SHEET 16 OF 39

960295S5.DWG

GENERAL NOTES

1. DESIGN/CONSTRUCTION/MATERIAL SPECIFICATIONS:
ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF MD SHA STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS INCLUDING ALL SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION. THE DESIGN IS IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 16TH EDITION, AND THE AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES DATED AUGUST 1997.

2. TIMBER AND STEEL DESIGN: ELASTIC DESIGN, WORKING STRESS DESIGN METHOD.

3. CONCRETE DESIGN: SERVICE DESIGN LOAD, fc = 1400 psi

4. REINFORCING DESIGN: SERVICE DESIGN LOAD, fs = 24,000 psi

5. LIVE LOAD: PEDESTRIAN LIVE LOAD 85 psf, H-5 MAINTENANCE VEHICLE LOAD

6. CONCRETE: ALL CONCRETE FOR ABUTMENT BACKWALLS SHALL BE MIX NO. 3, 3500 psi.

7. REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60. SPLICES NOT SHOWN SHALL BE LAPPED AS PER STANDARD BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED. ONLY GRADE 60, EPOXY COATED REINFORCING STEEL WILL BE PERMITTED ON THIS PROJECT.

8. STRUCTURAL STEEL:
STRUCTURAL STEEL SHALL CONFORM TO ASTM A-709, GRADE 50W OR A-588 WEATHERING STEEL INCLUDING ADDITIONAL REQUIREMENTS FOR CHARPY V-NOTCH TESTING OF AASHTO SPECIFICATION M 223 FOR PRIMARY LOAD CARRYING MEMBERS.

9. STREAM PROTECTION:
DURING THE COURSE OF THE CONSTRUCTION, THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO PREVENT ANY DAMAGE TO THE STREAM FROM POLLUTION BY DEBRIS, SEDIMENT OR OTHER FOREIGN MATERIAL OR FROM THE MANIPULATION OF EQUIPMENT AND/OR MATERIALS IN OR NEAR THE STREAM. HE SHALL NOT RETURN TO THE STREAM OR TO A DITCH IMMEDIATELY FLOWING INTO THE STREAM ANY WATER WHICH HAS BEEN USED FOR WASH PURPOSES OR SIMILAR OPERATIONS WHICH CAUSE THIS WATER TO BECOME POLLUTED WITH SAND, SILT, CEMENT, OIL OR OTHER IMPURITIES. WASTE WATER SHALL BE FILTERED USING HAY BALES AND GEOTEXTILE FABRIC OR SIMILAR MATERIALS. THE CONTRACTOR SHALL SUBMIT HIS COLLECTION AND FILTERING SYSTEM TO THE RESIDENT ENGINEER FOR APPROVAL PRIOR TO THE BEGINNING OF CONSTRUCTION.

10. PREREQUISITE EXPERIENCE:
CONTRACTOR SHALL HAVE PREVIOUS EXPERIENCE IN THE REPAIR AND REHABILITATION OF STEEL TRUSS SUPERSTRUCTURES. CONTRACTOR SHALL HAVE AN AVID UNDERSTANDING OF TRUSS STRUCTURES AND HAVE EXPERIENCE IN THE ASSEMBLY, TEMPORARY SUPPORT, AND DISASSEMBLY OF STEEL TRUSS STRUCTURES.

11. RECONSTRUCTION NOTES:
THE CONTRACTORS ATTENTION IS DIRECTED TO THE FACT THAT, DUE TO THE NATURE OF RECONSTRUCTION PROJECTS, THE EXACT EXTENT OF RECONSTRUCTION WORK CANNOT ALWAYS BE ACCURATELY DETERMINED PRIOR TO THE COMMENCEMENT OF WORK. THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED BASED ON FIELD INSPECTION INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO THE CONSTRUCTION DETAILS AND EXTENT OF WORK EFFORTS. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH ACTUAL FIELD CONDITIONS.

THE CONTRACTOR SHALL EXAMINE AND VERIFY IN THE FIELD ALL EXISTING CONDITIONS AND DIMENSIONS WITH THOSE SHOWN ON THE PLANS. IF FIELD CONDITIONS OR DIMENSIONS DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL USE THE FIELD CONDITIONS AND DIMENSIONS AND MAKE THE APPROPRIATE CHANGES TO THE PLANS AT THE APPROVAL OF THE ENGINEER.

DIMENSIONS OF THE EXISTING STRUCTURES SHOWN ON THE PLANS ARE FOR GENERAL REFERENCE ONLY AND HAVE BEEN TAKEN FROM A FIELD INSPECTION. ORIGINAL RECORD PLANS OF THE STRUCTURE ARE UNAVAILABLE. THE CONTRACTOR SHALL TAKE ALL SUCH FIELD MEASUREMENTS AS ARE NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK, AND THE CONTRTACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS MADE SHALL BE INDICATED ON THE SHOP DRAWINGS SUBMITTED FOR APPROVAL.

THE CONTRACTOR SHALL BE REQUIRED TO PROTECT HIS WORKERS AT ALL TIMES IN CONFORMANCE WITH APPLICABLE OSHA REGULATIONS.

ALL MATERIAL FALLING ON THE AREA BELOW AND ADJACENT TO THE BRIDGE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR ON A REGULAR RECURRING BASIS.

DETAILS SHOWN ON THE PLANS INDICATE THE AREAS OF STEEL DETERIORATION NOTED DURING THE FIELD INSPECTION. ALL THE MAJOR AREAS, KNOWN TO EXIST AT THE TIME OF CONTRACT PREPARATION, HAVE BEEN SHOWN TO INDICATE THE APPROXIMATE EXTENT OF DETERIORATION TO BE REPAIRED BY THE CONTRACTOR. IF THE PRESSURE WASH CLEANING OF THE STRUCTURE REVEALS ADDITIONAL AREAS OF DETERIORATION THAT REQUIRE REPAIR, THE CONTRACTOR SHALL SUBMIT A METHOD OF REPAIR TO THE ENGINEER FOR APPROVAL. THE PRICE TO PERFORM THE ADDITIONAL REPAIRS SHALL BE MUTUALLY AGREED UPON BY THE CONTRACTOR AND THE ENGINEER WITH THE APPROPRIATE CONTRACT ADJUSTMENTS BEING MADE PRIOR TO THE WORK BEING (COMPLETED) PERFORMED.

12. STEEL REPAIRS:
ALL STEEL REPAIRS SHALL BE AS SHOWN ON THE PLANS. ANY ADDITIONAL REPAIRS OR LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO WORK EFFORTS BY THE CONTRACTOR. FLAME CUTTING OR WELDING OF THE EXISTING STEEL SHALL NOT BE PERMITTED IN THIS PROJECT. MEMBERS OF THE STRUCTURE THAT RESULT OR ARE PROPOSED TO BE REMOVED, STORED, AND REINSTALLED SHALL BE NUMBERED, TAGGED, AND RECORDED TO ENSURE PROPER PLACEMENT UPON REINSTALLATION. THE CONTRACTOR AND THE RESIDENT ENGINEER SHALL KEEP A SIMILAR LOG BOOK CONTAINING THE MEMBERS WITH THE ASSIGNED DESIGNATIONS.

13. RIVET REPLACEMENTS:
THE EXISTING STRUCTURE CONTAINS MANY LOCATIONS WHERE RIVET REPLACEMENTS ARE REQUIRED. THESE LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO ANY ATTEMPT OF RIVET REMOVAL BY THE CONTRACTOR. FLAME CUTTING OF THE EXISTING RIVETS WILL NOT BE PERMITTED AS A REMOVAL OPTION. RIVET HEADS SHALL BE SHEAR CUT USING A PNEUMATIC RIVET BREAKER AND DRIVEN OUT WITH A HAND HELD PUNCH. OPTIONAL METHODS OF REMOVAL SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS SO AS TO NOT DAMAGE EXISTING STEEL TO REMAIN IN PLACE. IF THE CONTRACTOR'S OPERATIONS DAMAGE ANY EXISTING STEEL, WHICH IS TO REMAIN IN PLACE, THE DAMAGED AREAS SHALL BE REPAIRED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER. THE REPAIRS SHALL BE MADE IN SUCH A MANNER AS TO MATCH THE APPEARANCE OF THE EXISTING STRUCTURE.

14. WELDING NOTES:
ALL FIELD AND SHOP WELDS SHALL CONFORM TO THE PLANS AND AASHTO/AWS BRIDGE WELDING CODE D-1.5. ALL WELDS SHALL BE PERFORMED BY CERTIFIED WELDER APPROVED BY THE OFFICE OF MATERIALS AND RESEARCH.

15. STRUCTURAL LIFTING OPERATIONS:
IN ORDER TO REMOVE AND REPLACE THE EXISTING TRUSS EXPANSION BEARINGS, THE CONTRACTOR SHALL LIFT THE EXISTING STEEL STRUCTURE AT THE DESIGNATED LIFTING POINTS. LIFTING SHALL OCCUR AT BOTH POINTS SIMULTANEOUSLY AND UNIFORMLY. THE JACKING DIFFERENCE BETWEEN THE ADJACENT LIFTING POINTS SHALL NOT EXCEED .125 OF AN INCH. ALL REPAIRS STATED IN THE PLANS, INCLUDING ANY ADDITIONAL REPAIRS DISCOVERED IN THE FIELD, SHALL BE COMPLETED PRIOR TO LIFTING EFFORTS. THE STRUCTURE SHALL BE LIFTED UNDER THE SELFWEIGHT OF THE STEEL TRUSS STRUCTURE.

THE FINAL POSITION OF THE LIFTED STRUCTURAL STEEL MEMBERS SHALL BE DIRECTLY AT THEIR ORIGINAL POSITIONS WITHOUT ANY HORIZONTAL DISPLACEMENT.

ALL DETAILS OF LIFTING PROCEDURES INCLUDING BUT NOT LIMITED TO LIFTING POINT LOCATIONS, CALCULATED LIFTING FORCES, LIFTING EQUIPMENT, SUPPORTING SYSTEMS, TYPES AND GRADES OF MATERIAL, LIFTING HEIGHTS AND THE SCHEMATIC HYDRAULIC LAYOUT SHALL BE DEVELOPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MARYLAND AND SUBMITTED TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS FOR APPROVAL. THE SUBMISSION OF PROPOSED LIFTING PROCEDURES SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION SPECIFICATION, CATEGORY 400, STRUCTURES, STRUCTURAL LIFTING OPERATIONS OF THE SPECIFICATIONS.

THE CONTRACTOR MAY EMPLOY, SUBJECT TO THE APPROVAL OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, ANY LIFTING EQUIPMENT AND METHOD, WHICH HE CONSIDERS SUITABLE, PROVIDED THE EXISTING MEMBERS ARE NOT DAMAGED OR OVERSTRESSED AND ARE SAFELY BRACED AT ALL TIMES, AND ARE SUPPORTED ON FIXED SUPPORTS IMMEDIATELY AFTER THEIR ACTUAL LIFTING.

JACKING LOADS AS INDICATED ON SHEET 38 OF 39 ARE FOR EXISTING SUPERSTRUCTURE DEAD LOADS ONLY AND DO NOT INCLUDE THE WEIGHT OF ANY TEMPORARY WALKWAYS, RAILING, DECK SYSTEM, EQUIPMENT OR OTHER DEAD AND LIVE LOADS DUE TO THE CONTRACTOR'S OPERATIONS.

16. PAINTING NOTES:
THE TOP FLANGES OF THE EXISTING STRINGERS, INCLUDING THE VERTICAL EDGES, SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH GUIDELINES SET FORTH BY THE STEEL STRUCTURES PAINTING COUNCIL (S.S.P.C.). THE TOP FLANGES SHALL BE HAND TOOL CLEANED, (SSPC-SP2), AND POWER TOOL CLEANED,(SSPC-SP3), TO REMOVE ALL LOOSE MILL SCALE, LOOSE RUST, LOOSE PAINT, AND OTHER DETRIMENTAL FOREIGN MATTER. CLEANING IS NOT INTENDED TO REMOVE ADHERENT MILL SCALE, RUST, AND PAINT. MILL SCALE, RUST AND PAINT ARE CONSIDERED ADHERENT IF THEY CANNOT BE REMOVED BY LIFTING WITH A DULL PUTTY KNIFE.

AFTER THE DESIGNATED STEEL SURFACES HAVE BEEN CLEANED TO THE SATISFACTION OF THE ENGINEER, THE SURFACES SHALL BE SOLVENT CLEANED, (SSPC-SP1), TO REMOVE ALL VISIBLE OIL, GREASE, SOIL, DRAWING AND CUTTING COMPOUNDS, AND OTHER SOLUBLE CONTAMINANTS FROM THE STEEL SURFACES. THE SOLVENT CLEANING SHALL BE COMPLETED PRIOR TO THE APPLICATION OF THE PAINT SYSTEM.

THE PAINT COATING SYSTEM SHALL BE A SURFACE TOLERANT, HIGH BUILD, TWO PART, EPOXY PAINT FROM THE APPROVED LIST OF MATERIALS. THE COLOR TO BE SIMILAR TO THAT OF THE NATURAL COLOR OF THE STEEL SUPERSTRUCTURE, (RUST-BROWN).

17. GABION NOTES:
PROPOSED GABION WINGWALLS SHALL BE DESIGNED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL. THE GABION WINGWALLS ARE TO BE DESIGNED BASED ON THE EXISTING SITE AND SOIL CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBLILITY TO COLLECT THIS INFORMATION TO DEVELOP THE RETAINING WALL DESIGN(S). THE DIMENSIONS GIVEN IN THE PLANS ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT REPRESENTATIVE OF ANY DESIGN. THE STONE USED TO FILL THE GABION BASKETS SHALL BE OF A SIMILAR COLOR TO THAT OF THE EXISTING GRANITE BLOCK GRAVITY ABUTMENTS AND ARE TO BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.

18. TIMBER DECK/RAILING SYSTEMS:
ALL TIMBER SHALL BE CHROMATED-COPPER-ARSENATE (CCA) TREATED SOUTHERN PINE, STRUCTURAL LUMBER GRADED NO. 1 OR BETTER, KILN DRIED AFTER TREATMENT. THE MINIMUM CCA TREATMENT RETENTION SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISION SPECIFICATIONS. ANY AREAS DAMAGED DURING THE FABRICATION OR INSTALLATION OF THE DECK PANELS AND RAILINGS SHALL BE RETREATED WITH AN APPROVED PRESERVATIVE TREATMENT AT NO ADDED COST TO THE OWNER. ALL FASTENERS USED IN THE DECK AND RAILING SYSEMS SHALL BE HOT DIPPED GALVANIZE COATED. TENSIONING OF THE STRESSING RODS USED THROUGHOUT THE DECK PANELS SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISION SPECIFICATIONS.

85 PSF PEDESTRIAN LOADING OR LOADED PICKUP TRUCK (5,200 LB VEHICLE WITH 70% OF THE WEIGHT OF THE REAR AXLE) NO IMPACT, WHICHEVER PRODUCES THE MAXIMUM STRESS.

NOTES:

1. FOR ADDITIONAL GENERAL NOTES SEE SHEET 16 OF 39.

Director, Department of Recreation and Parks

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
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FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13758 — REGISTERED PROFESSIONAL ENGINEER

DES: JGR
DRN: JGR
CHK: JWS
DATE: 6/99

BY	NO	REVISION	DATE

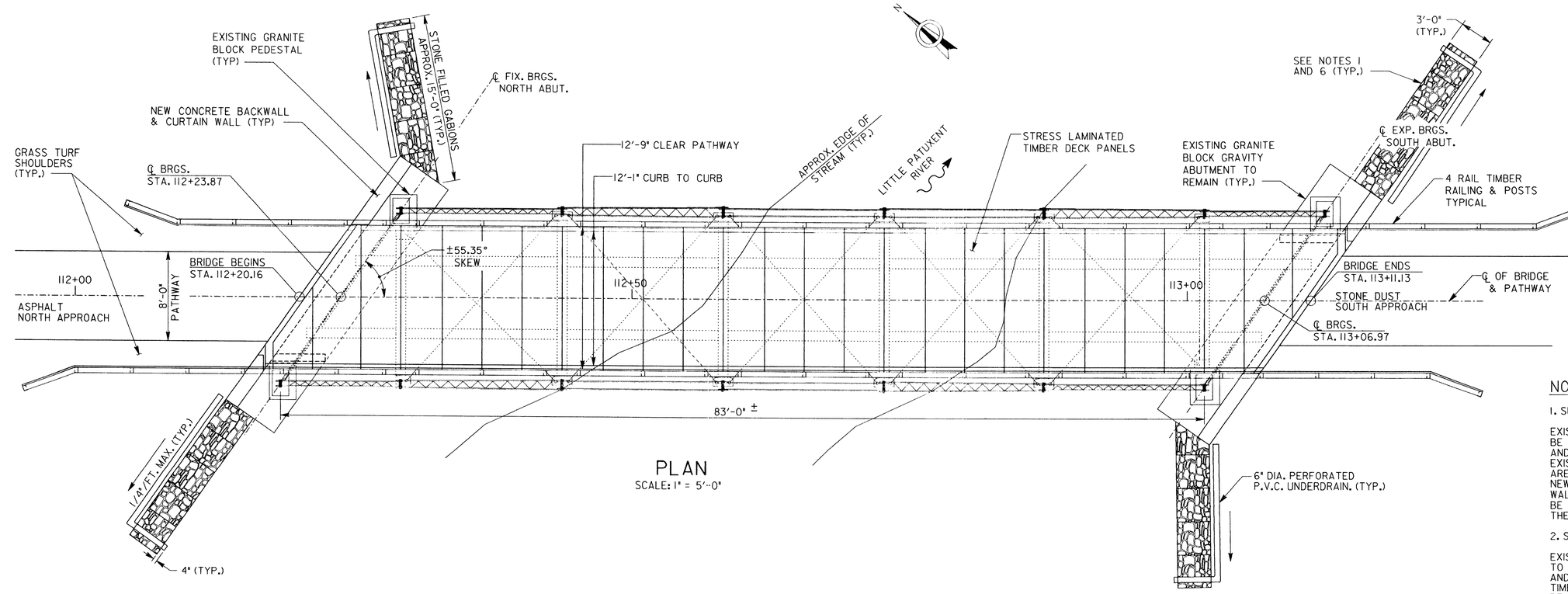
GENERAL NOTES

600' SCALE MAP NO. _____ BLOCK NO. _____

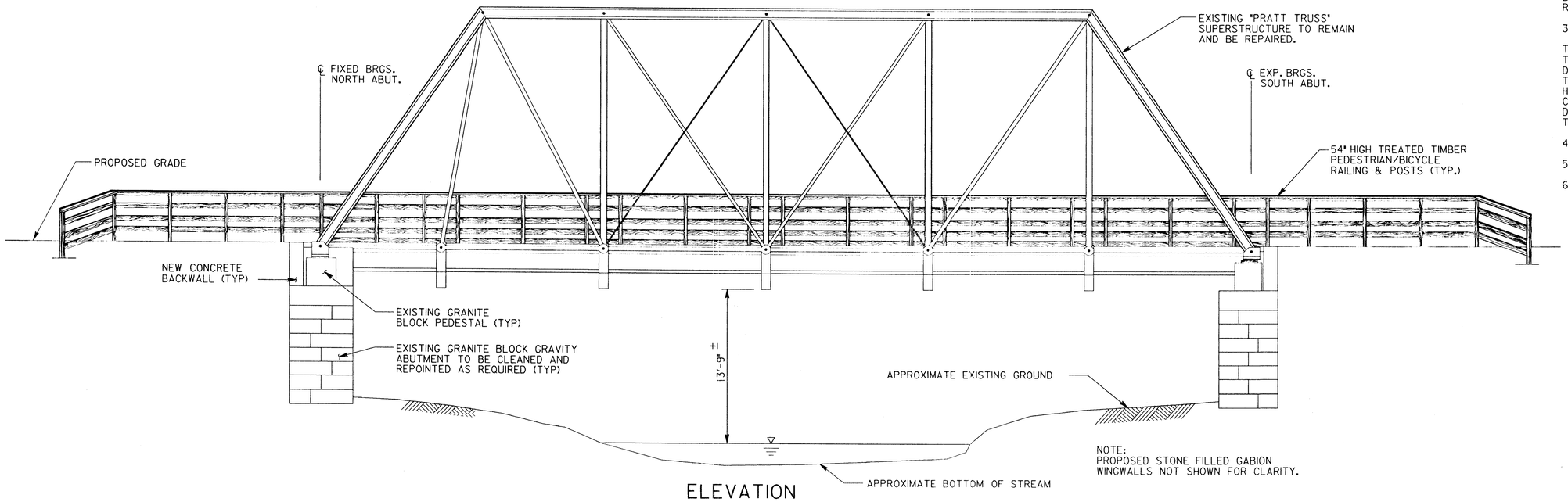
HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 BID SET SHEET NO. 26

SCALE AS SHOWN

SHEET 19 OF 39



PLAN
SCALE: 1" = 5'-0"



ELEVATION
(LOOKING DOWNSTREAM)
SCALE: 1" = 5'-0"

NOTES:

1. SUBSTRUCTURE:

EXISTING GRANITE BLOCK GRAVITY ABUTMENTS TO BE PRESSURE WASH CLEANED REMOVING ALL DEBRIS AND GRAFFITI. REPOINT GROUTED JOINTS AS REQUIRED. EXISTING CONCRETE BACKWALLS AT BOTH ABUTMENTS ARE TO BE REMOVED, DISPOSED AND REPLACED WITH NEW REINFORCED CONCRETE BACKWALLS AND SUPPORT WALLS. NEW STONE FILLED GABION WINGWALLS ARE TO BE CONSTRUCTED. THE CONTRACTOR SHALL PROVIDE THE DESIGN OF GABION WINGWALLS.

2. SUPERSTRUCTURE:

EXISTING RIVETED "PRATT TRUSS" SUPERSTRUCTURE TO BE PRESSURE WASH CLEANED, REMOVING ALL DEBRIS AND GRAFFITI, AND REHABILITATED AS PER PLANS. A NEW TIMBER DECK AND RAILING TO BE INSTALLED. EXISTING BEARINGS AND ANCHOR BOLTS TO BE REMOVED AND REPLACED.

3. UTILITIES:

THERE ARE NO VISIBLE UTILITY SERVICES NOTED AT THE BRIDGE SITE. ADDITIONAL UTILITY LINES, ABANDONED OR IN SERVICE, MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT HIS OPERATIONS AND TAKE THE NECESSARY PRECAUTIONS TO PREVENT INTERFERENCE WITH OR DAMAGE TO THESE OR OTHER FACILITIES DURING THE COURSE OF CONSTRUCTION OPERATIONS.

4. FOR GENERAL NOTES SEE SHEETS 16 AND 19 OF 39.

5. FOR TRANSVERSE SECTION SEE SHEET 21 OF 39.

6. FOR GABION DETAIL SEE SHEET 29 OF 39.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3065
FAX: (301) 490-2649 www.gpinet.com

DANIEL JOSEPH MALETIC — STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

PROPOSED
PLAN & ELEVATION

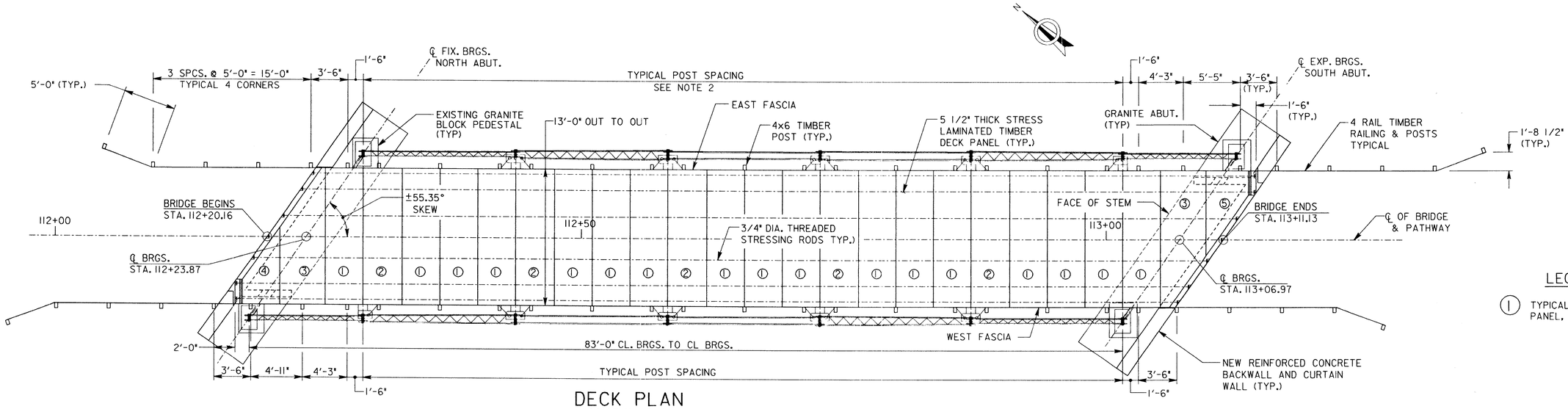
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 27

SCALE AS SHOWN

SHEET 20 OF 39

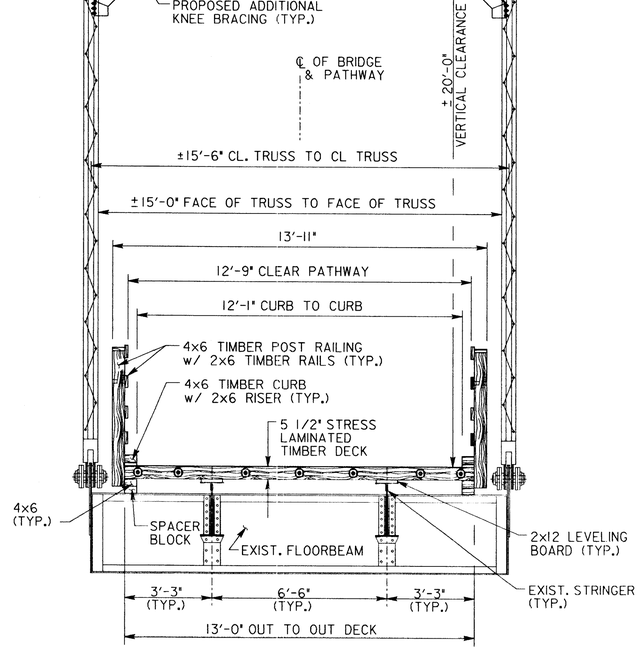


DECK PLAN

SCALE: 1" = 5'-0"

LEGEND

(1) TYPICAL STRESS LAMINATED PANEL, TYPE I



TRANSVERSE SECTION

SCALE: 3/8" = 1'-0"

NOTES:

1. DECK SUPPORTING SYSTEM AND GABION WINGWALLS NOT SHOWN FOR CLARITY.
2. FOR TYPICAL POST SPACING OF TIMBER RAILING SEE SHEET 27 OF 39.
3. DECK PANELS SHALL NOT BE CONTINUOUS OVER ANY FLOORBEAMS. PANELS SHALL BE END BUTTED TOGETHER AT CENTERLINE OF FLOORBEAMS.
4. FOR TYPICAL DECK PANEL SEE SHEETS 22 AND 23 OF 39.
5. FOR TIMBER DECK CONNECTION DETAILS SEE SHEET 24 OF 39.
6. ALL TIMBER SHALL BE CCA PRESSURE TREATED TO A MINIMUM LEVEL OF 0.40 PCF OF TIMBER UNLESS NOTED OTHERWISE. ALL DECK TIMBER SHALL BE KILN DRIED AFTER THE PRESERVATIVE TREATMENT IS COMPLETE.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — NO. 13794 — REGISTERED PROFESSIONAL ENGINEER

DES: JGR
DRN: JGR
CHK: JWS
DATE: 6/99

BY	NO	REVISION	DATE

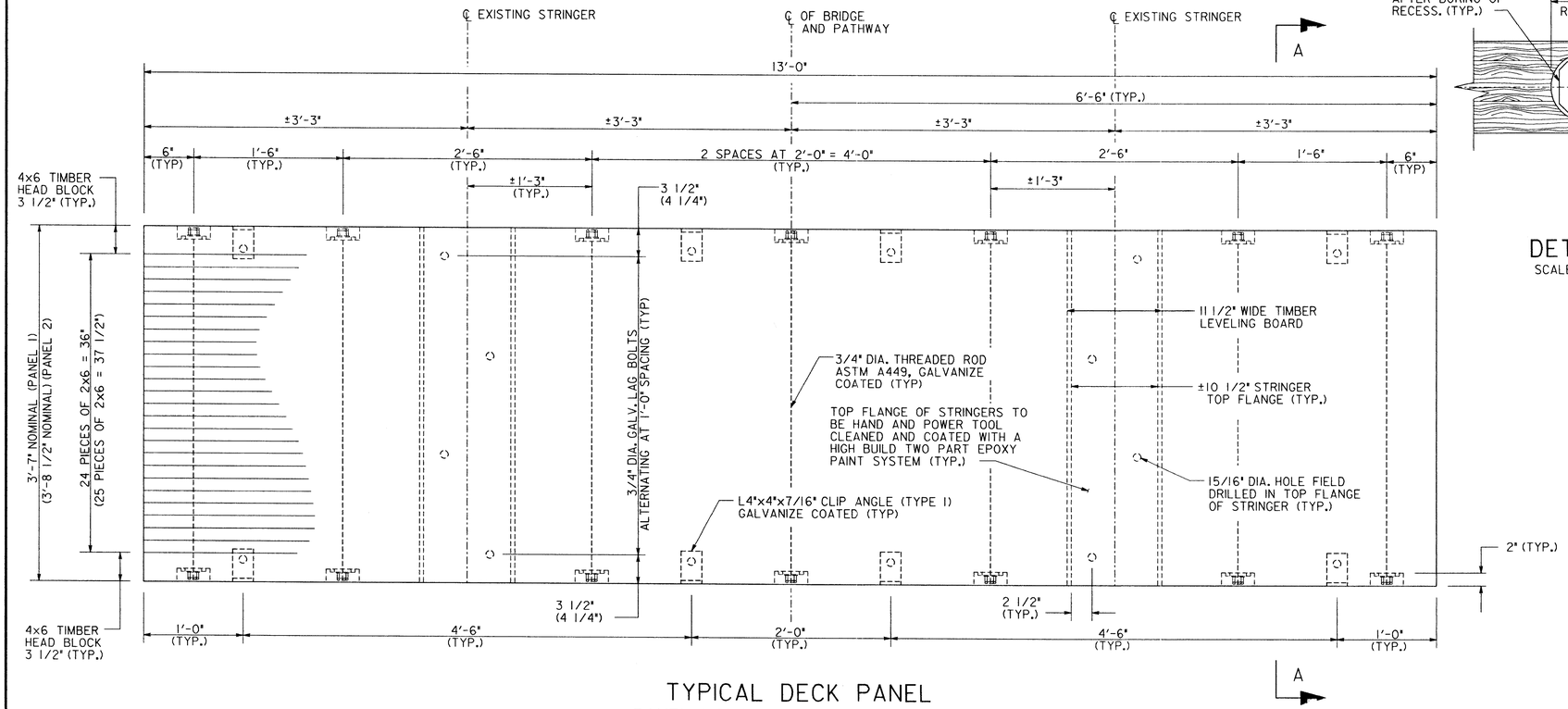
TIMBER DECK
SHEET 1

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 28

SCALE AS SHOWN

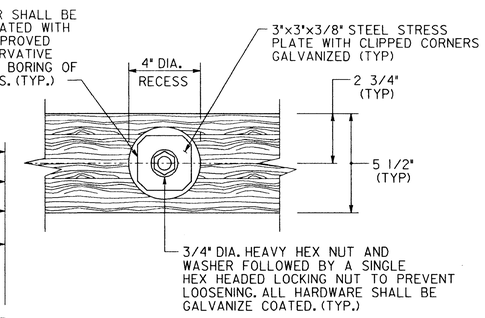
SHEET 21 OF 39



TYPICAL DECK PANEL

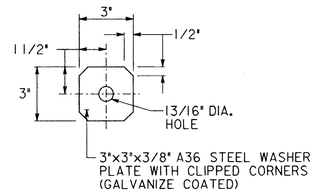
PANEL 1 SHOWN, (PANEL 2 SIMILAR)

SCALE: 1 1/2" = 1'-0"



DETAIL A

SCALE: 3" = 1'-0"

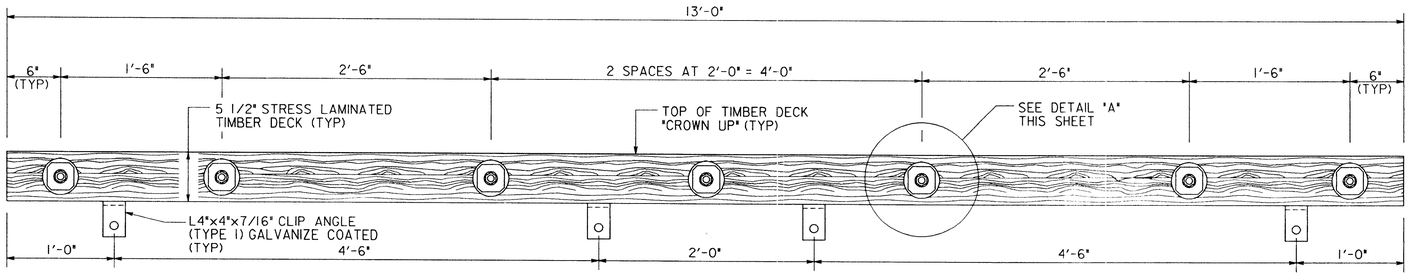


TYPICAL STRESS PLATE

SCALE: 3" = 1'-0"

NOTES:

1. FOR DECK PLAN SEE SHEET 21 OF 39.
2. FOR SECTION A-A SEE SHEET 24 OF 39.
3. FOR TYPE I, TYPICAL CLIP ANGLE SEE SHEET 25 OF 39.
4. LAMINATED PANELS SHALL BE ASSEMBLED IN A FASHION WHERE INDIVIDUAL PIECES ARE ORIENTED "CROWN UP" (TYP.)
5. ALL TIMBER SHALL BE CHROMATED-COPPER-ARSENATE (CCA) TREATED TO A MINIMUM LEVEL OF .40 PCF UNLESS OTHERWISE STATED IN THE PLANS.
6. ALL TIMBER USED IN THE FABRICATION OF THE DECK PANELS SHALL BE GRADE NO. 1 OR BETTER, STRUCTURAL TIMBER THAT IS KILN DRIED AFTER THE PRESERVATIVE TREATMENT IS COMPLETE.
7. ANY SURFACE OF TREATED TIMBER FOR THE DECK OR RAILING SYSTEM THAT HAS BEEN DAMAGED DUE TO SHIPPING, HANDLING, SAWING, BORING OR BY OTHER MEANS SHALL BE RE-TREATED WITH AN APPROVED MATERIAL COMPATIBLE TO THAT OF THE C.C.A. TREATMENT. IF AT ANY TIME THE RESIDENT ENGINEER DEEMS AN AREA TO BE RE-TREATED DUE TO POOR WORKMANSHIP OR INSTALLATION, THE CONTRACTOR WILL DO SO AT NO ADDITIONAL COST TO THE OWNER.
8. ALL FASTENERS AND HARDWARE USED IN THE DECK AND RAILING SYSTEMS SHALL BE GALVANIZE COATED UNLESS OTHERWISE NOTED.
9. NO SURFACE OF THE HEX HEAD LOCKING NUTS OR STRESSING RODS SHALL EXTEND BEYOND THE SURFACE OF THE INDIVIDUAL DECK PANELS TO ENSURE A SNUG FIT BETWEEN ADJACENT PANELS.
10. FOR TIMBER DECK PANEL STRESSING SEQUENCE SEE SPECIAL PROVISIONS SPECIFICATION CATEGORY 400, STRUCTURES, STRESS LAMINATED TREATED TIMBER BRIDGE DECK.
11. FOR GENERAL NOTES SEE SHEET 19 OF 39.
12. TOP OF STRINGER FLANGES TO BE HAND TOOL CLEANED (SP-2) AND POWER TOOL CLEANED (SP-3) IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL (SSPC). AFTER REMOVAL OF ALL RUST, LOOSE MILL SCALE, PAINT AND OTHER DETRIMENTAL FOREIGN MATTER, THE SURFACE SHALL BE SOLVENT CLEANED (SP-1) PRIOR TO THE APPLICATION OF THE HIGH BUILD TWO PART EPOXY PAINT.
13. THE SURFACE TOLERANT HIGH BUILD TWO PART EPOXY PAINT SYSTEM SHALL BE ACCEPTED BY THE E.I.C. FROM THE APPROVED LIST OF MATERIALS AND SHALL BE OF A COLOR SIMILAR TO THAT OF THE NATURAL COLOR OF THE SUPERSTRUCTURE STEEL.



TRANSVERSE DECK SECTION

SCALE: 1 1/2" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13734 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

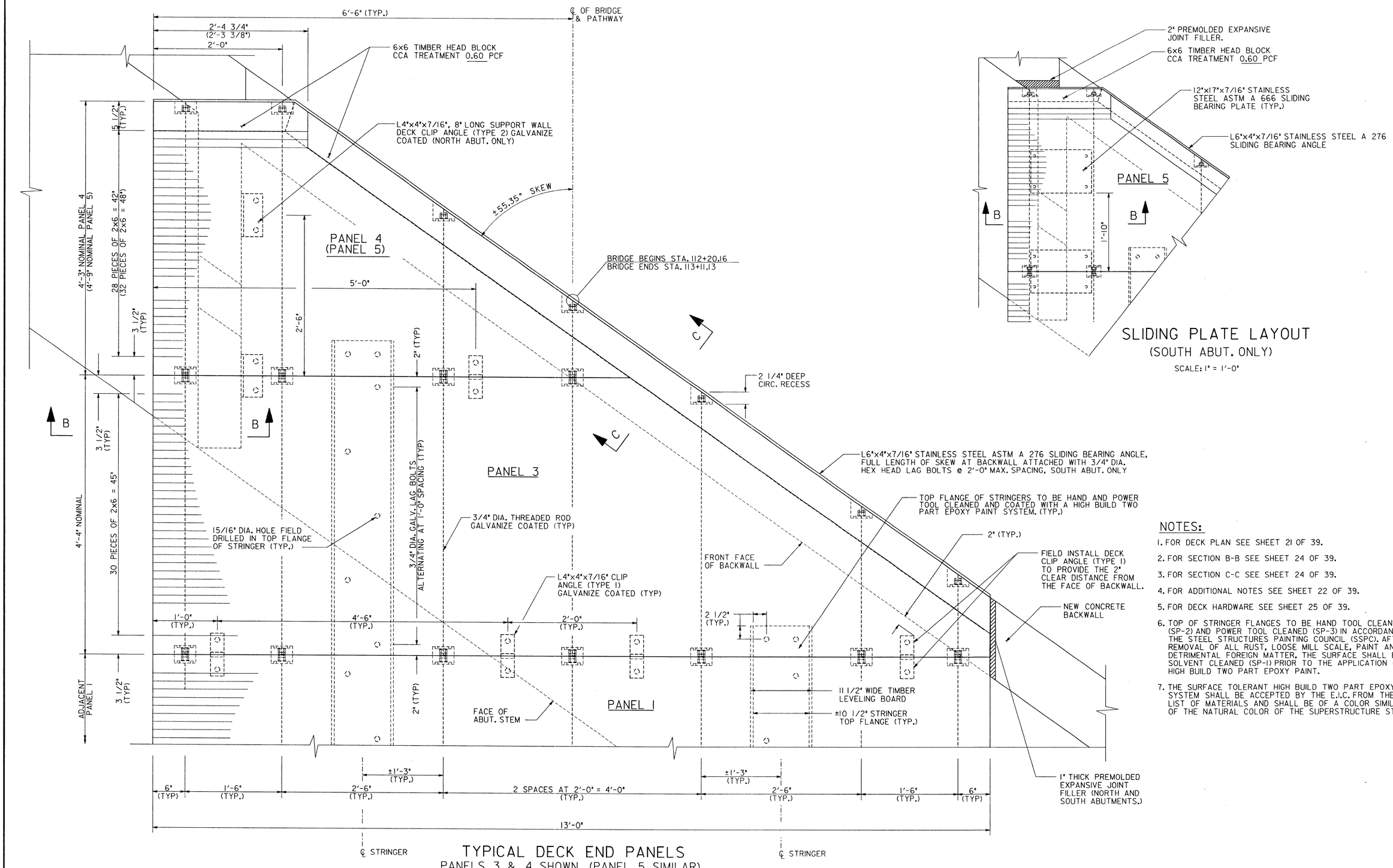
TIMBER DECK
SHEET 2

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 29

SCALE AS SHOWN

SHEET 22 OF 39



TYPICAL DECK END PANELS
PANELS 3 & 4 SHOWN, (PANEL 5 SIMILAR)

SCALE: 1 1/2" = 1'-0"

SLIDING PLATE LAYOUT
(SOUTH ABUT. ONLY)

SCALE: 1" = 1'-0"

NOTES:

1. FOR DECK PLAN SEE SHEET 21 OF 39.
2. FOR SECTION B-B SEE SHEET 24 OF 39.
3. FOR SECTION C-C SEE SHEET 24 OF 39.
4. FOR ADDITIONAL NOTES SEE SHEET 22 OF 39.
5. FOR DECK HARDWARE SEE SHEET 25 OF 39.
6. TOP OF STRINGER FLANGES TO BE HAND TOOL CLEANED (SP-2) AND POWER TOOL CLEANED (SP-3) IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL (SSPC). AFTER REMOVAL OF ALL RUST, LOOSE MILL SCALE, PAINT AND OTHER DETRIMENTAL FOREIGN MATTER, THE SURFACE SHALL BE SOLVENT CLEANED (SP-1) PRIOR TO THE APPLICATION OF THE HIGH BUILD TWO PART EPOXY PAINT.
7. THE SURFACE TOLERANT HIGH BUILD TWO PART EPOXY PAINT SYSTEM SHALL BE ACCEPTED BY THE E.I.C. FROM THE APPROVED LIST OF MATERIALS AND SHALL BE OF A COLOR SIMILAR TO THAT OF THE NATURAL COLOR OF THE SUPERSTRUCTURE STEEL.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI — GREENMAN-PEDERSEN, INC.
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STATE OF MARYLAND — DANIEL JOSEPH MALETIC No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

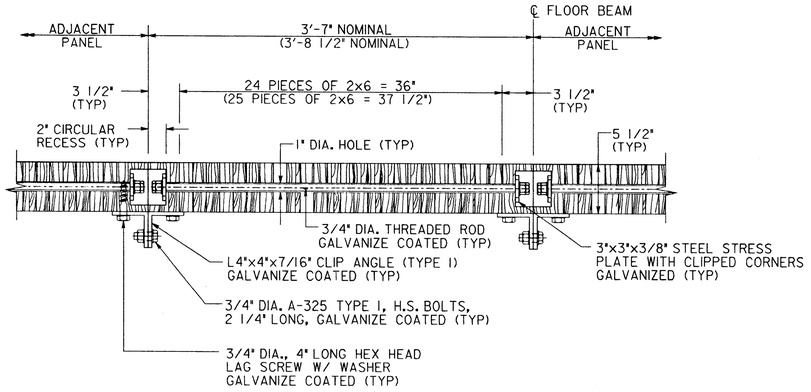
TIMBER DECK
SHEET 3

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 30

SCALE AS SHOWN

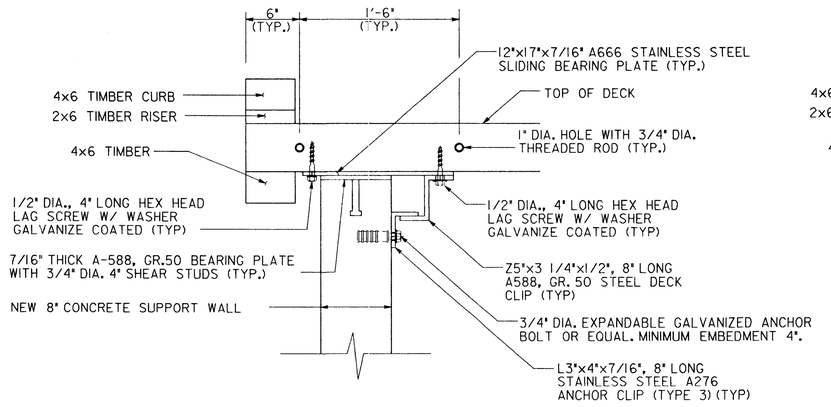
SHEET 23 OF 39



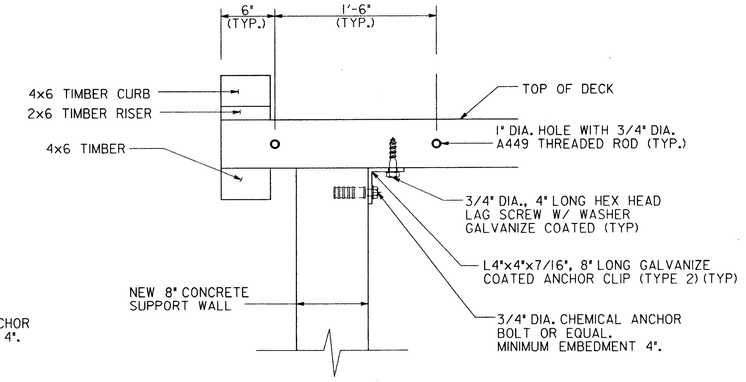
SECTION A-A

PANEL 1 SHOWN, (PANEL 2 SIMILAR)

SCALE: 1 1/2" = 1'-0"



SOUTH ABUT. EXPANSION

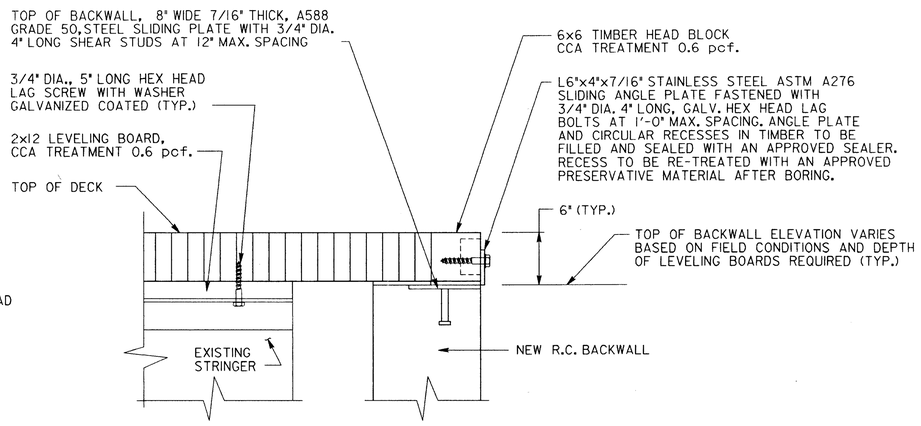


NORTH ABUT. FIXED

SECTION B-B

DECK CONNECTION AT CONCRETE SUPPORT WALL

SCALE: 1 1/2" = 1'-0"

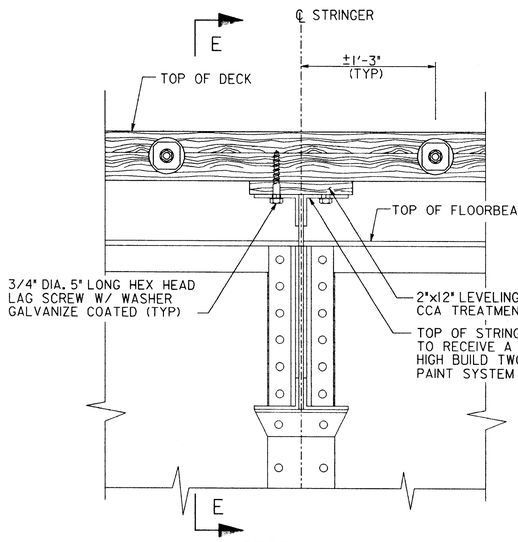


SECTION C-C

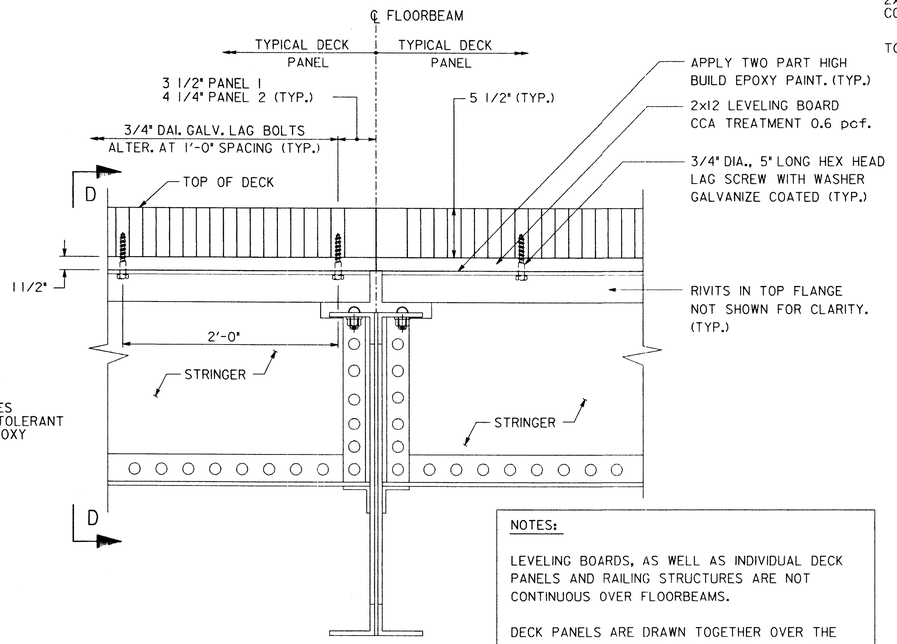
SCALE: 1 1/2" = 1'-0"

NOTES:

1. FOR DECK CLIP ANGLES, TYPES 1, 2, 3 AND Z CLIP ANGLE DETAILS SEE SHEET 25 OF 39.
2. FOR ADDITIONAL DECK NOTES SEE SHEET 22 OF 39.
3. FOR GENERAL NOTES SEE SHEET 19 OF 39.
4. TOP OF STRINGER FLANGES TO BE HAND TOOL CLEANED (SP-2) AND POWER TOOL CLEANED (SP-3) IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL (SSPC). AFTER REMOVAL OF ALL RUST, LOOSE MILL SCALE, PAINT AND OTHER DETRIMENTAL FOREIGN MATTER, THE SURFACE SHALL BE SOLVENT CLEANED (SP-1) PRIOR TO THE APPLICATION OF THE HIGH BUILD TWO PART EPOXY PAINT.
5. THE SURFACE TOLERANT HIGH BUILD TWO PART EPOXY PAINT SYSTEM SHALL BE ACCEPTED BY THE E.I.C. FROM THE APPROVED LIST OF MATERIALS AND SHALL BE OF A COLOR SIMILAR TO THAT OF THE NATURAL COLOR OF THE SUPERSTRUCTURE STEEL.



SECTION D-D



SECTION E-E

NOTES:

LEVELING BOARDS, AS WELL AS INDIVIDUAL DECK PANELS AND RAILING STRUCTURES ARE NOT CONTINUOUS OVER FLOORBEAMS.

DECK PANELS ARE DRAWN TOGETHER OVER THE FLOORBEAMS UTILIZING THE TYPICAL DECK CLIP ANGLES AS SHOWN IN SECTION A-A THIS SHEET.

TYPICAL DECK PANEL CONNECTION

SCALE: 1 1/2" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE — 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE

GPI GREENMAN-PEDERSEN, INC.
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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

TIMBER DECK
SHEET 4

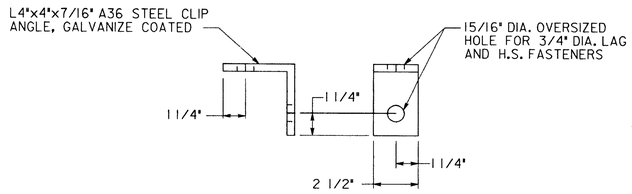
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

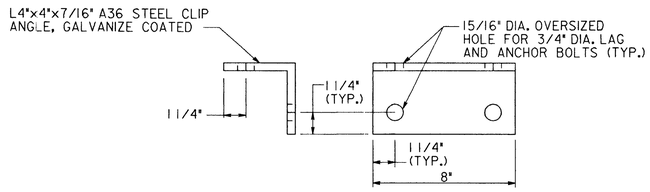
BID SET SHEET NO. 31

SCALE AS SHOWN

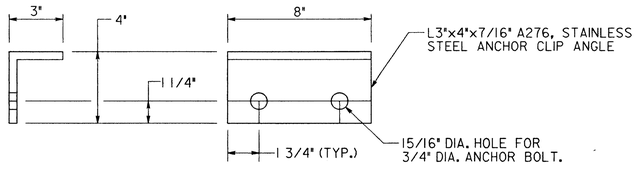
SHEET 24 OF 39



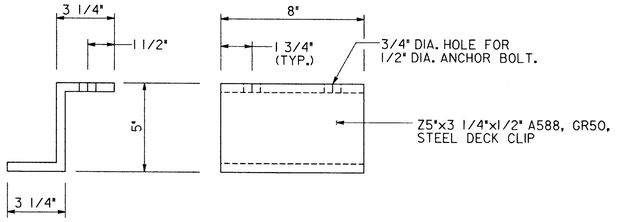
TYPICAL DECK CLIP ANGLE
TYPE 1 (188 REQD.)
SCALE: 3" = 1'-0"



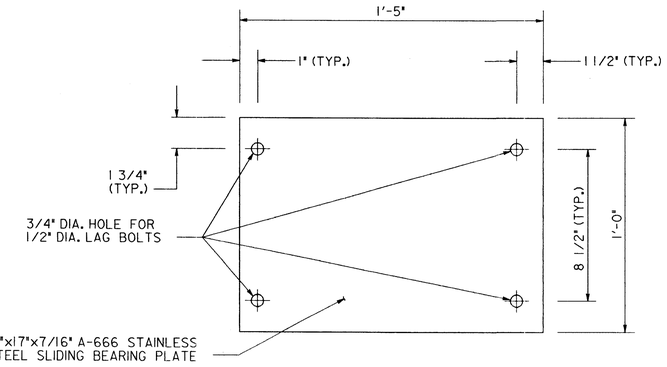
DECK CLIP ANGLE AT SUPPORT WALL
TYPE 2 (2 REQD.)
SCALE: 3" = 1'-0"



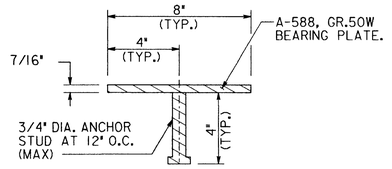
TYPICAL ANCHOR CLIP ANGLE
TYPE 3 (2 REQD.)
SCALE: 3" = 1'-0"



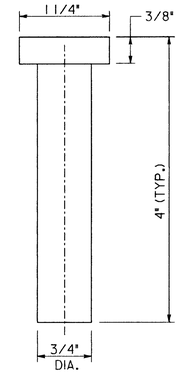
TYPICAL "Z" DECK CLIP
(2 REQD.)
SCALE: 3" = 1'-0"



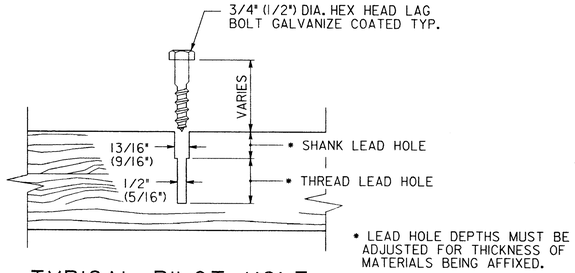
SLIDING BEARING PLATE
SCALE: 3" = 1'-0"



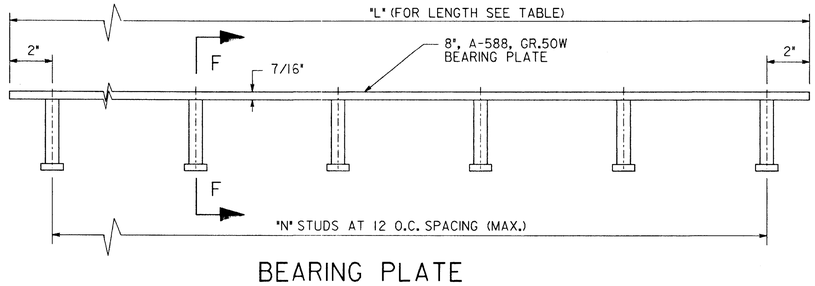
SECTION F-F
SCALE: 3" = 1'-0"



ANCHOR STUD CONNECTOR
SCALE: 1" = 1"



TYPICAL PILOT HOLE
SCALE: 3" = 1'-0"



BEARING PLATE
SCALE: N.T.S.

BEARING PLATE TABLE		
SOUTH ABUTMENT LOCATION	LENGTH "L"	# STUDS "N"
SUPPORT WALL	1'-8 3/4"	3
SUPPORT WALL	2'-6 1/2"	4
BACK WALL	13'-9 1/2"	15

NOTES:
1. FOR DECK PANEL DETAILS SEE SHEETS 22 AND 23 OF 39.
2. FOR ABUTMENT DETAILS SEE SHEETS 28 AND 29 OF 39.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — NO. 13754 — REGISTERED PROFESSIONAL ENGINEER

DES: JGR
DRN: JGR
CHK: JWS
DATE: 6/99

BY	NO	REVISION	DATE

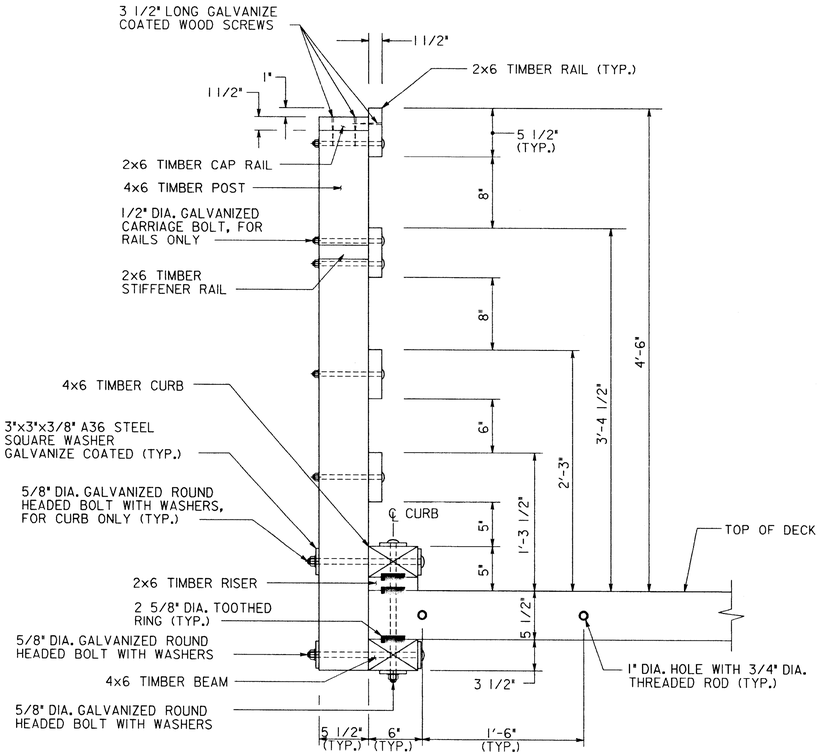
600' SCALE MAP NO. _____ BLOCK NO. _____

TIMBER DECK SHEET 5

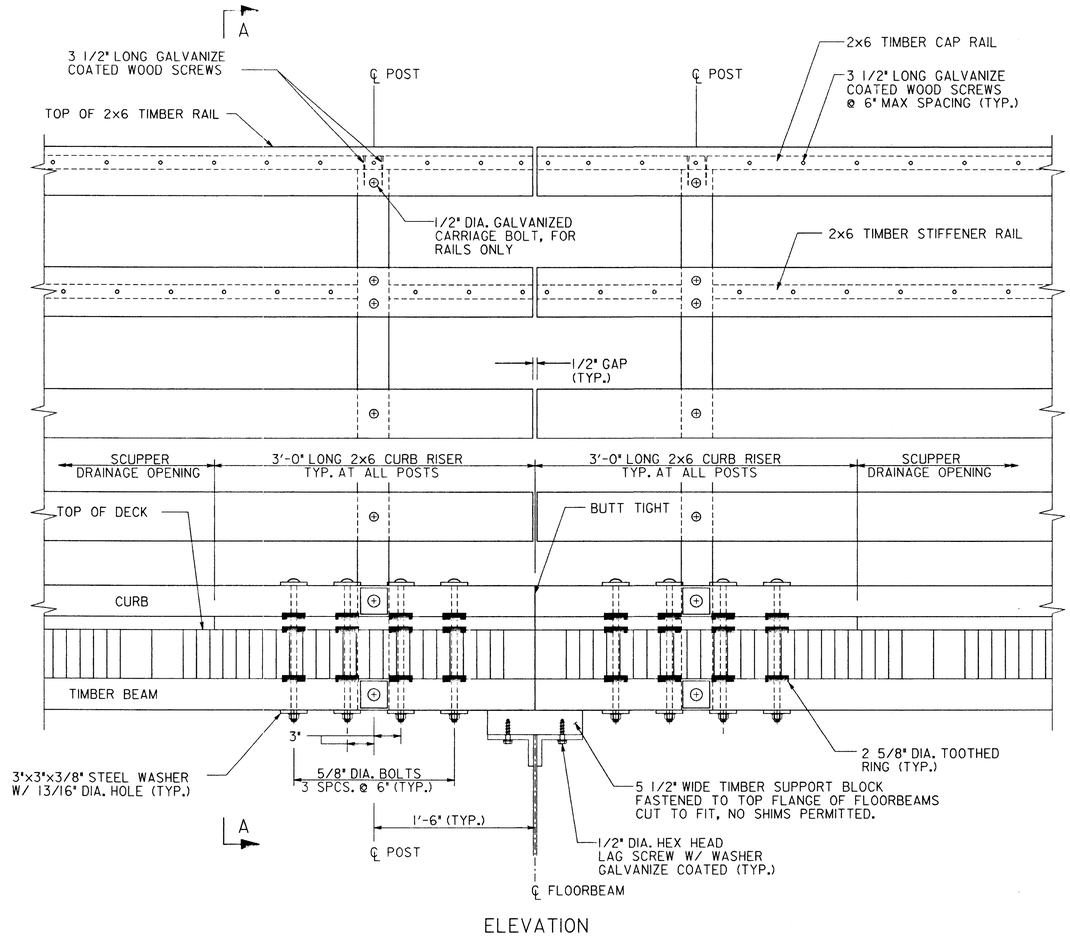
HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954
BID SET SHEET NO. 32

SCALE AS SHOWN

SHEET 25 OF 39



SECTION A-A



ELEVATION

RAILING DETAILS

SCALE: 1 1/2" = 1'-0"

NOTES:

1. FOR ADDITIONAL TIMBER RAILING DETAILS SEE SHEET 27 OF 39.
2. FOR POST SPACING OF TIMBER RAILING SEE SHEETS 21 AND 27 OF 39.
3. CURB BEAMS, RISERS, AND TIMBER BEAMS SHALL NOT BE CONTINUOUS OVER ANY FLOORBEAMS. ALL THESE MEMBERS SHALL BE END BUTTED TOGETHER AT CENTERLINE OF FLOORBEAMS.
4. FOR TYPICAL DECK PANELS SEE SHEETS 22 AND 23 OF 39.
5. ALL RAILING TIMBER SHALL BE CCA PRESSURE TREATED TO A MINIMUM LEVEL OF 0.40 PCF, EXCEPT FOR MEMBERS IN DIRECT CONTACT WITH SOIL. MEMBERS WHICH ARE IN DIRECT CONTACT WITH SOIL SHALL BE CCA PRESSURE TREATED TO A MIN. LEVEL OF 0.60 PCF OF TIMBER.
6. ALL HARDWARE AND FASENERS USED IN THE DECK, RAILING AND ASSORTED ASSEMBLIES SHALL BE GALVANIZE COATED UNLESS OTHERWISE NOTED.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13758 — REGISTERED PROFESSIONAL ENGINEER

DES: JGR				
DRN: JGR				
CHK: JWS				
DATE: 6/99	BY	NO	REVISION	DATE

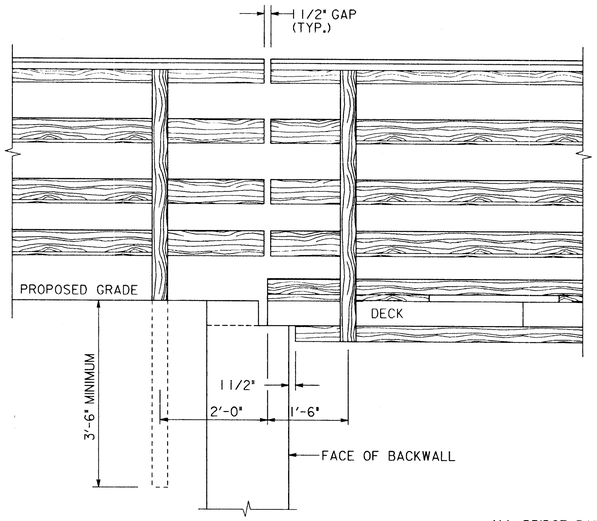
TIMBER RAILING
SHEET 1

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 33

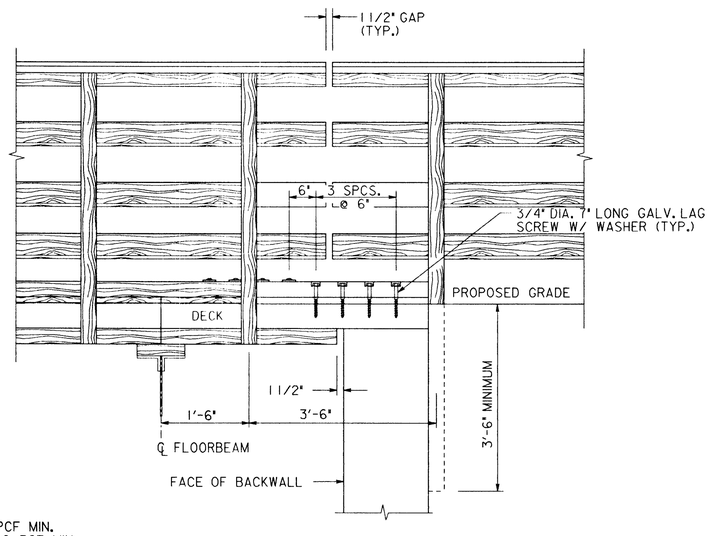
SCALE AS SHOWN

SHEET 26 OF 39



(NW AND SE CORNERS)

ALL BRIDGE RAIL POSTS - CCA .40 PCF MIN.
ALL APPROACH RAIL POSTS - CCA .60 PCF MIN.



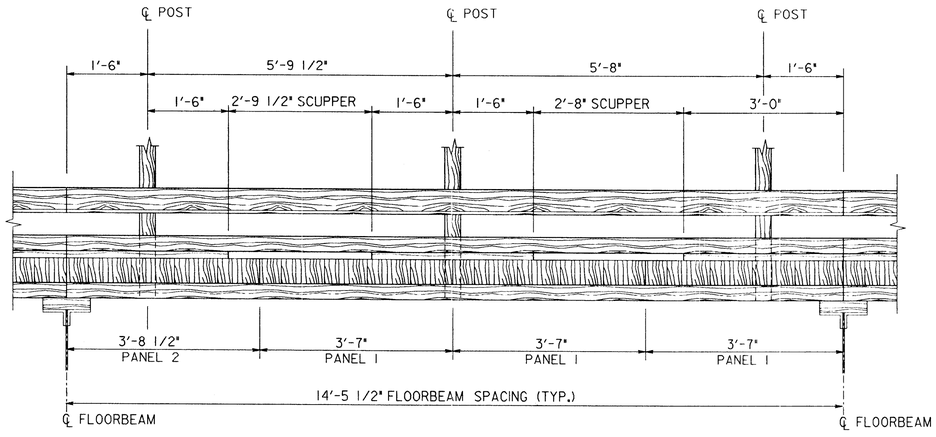
(NE AND SW CORNERS)

BRIDGE/APPROACH RAIL DETAIL

SCALE: 3/4" = 1'-0"

NOTES:

1. FOR POST SPACING OF TIMBER RAILING SEE SHEET 21 OF 39.
2. FOR ADDITIONAL TIMBER RAILING DETAILS SEE SHEET 26 OF 39.
3. CURB BEAMS, RISERS, AND TIMBER BEAMS SHALL NOT BE CONTINUOUS OVER ANY FLOORBEAMS. ALL THESE MEMBERS SHALL BE END BUTTED TOGETHER AT CENTERLINE OF FLOORBEAMS.
4. FOR TYPICAL DECK PANELS SEE SHEETS 22 AND 23 OF 39.
5. ALL RAILING TIMBER SHALL BE CCA PRESSURE TREATED TO A MINIMUM LEVEL OF 0.40 PCF, EXCEPT FOR MEMBERS IN DIRECT CONTACT WITH SOIL. MEMBERS WHICH ARE IN DIRECT CONTACT WITH SOIL SHALL BE CCA PRESSURE TREATED TO A MIN. LEVEL OF 0.60 PCF OF TIMBER.
6. ALL HARDWARE AND FASTENERS USED IN THE DECK, RAILING AND ASSORTED ASSEMBLIES SHALL BE GALVANIZE COATED UNLESS OTHERWISE NOTED.



TYPICAL POST AND SCUPPER LAYOUT

SCALE: 3/4" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 17576 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

TIMBER RAILING
SHEET 2

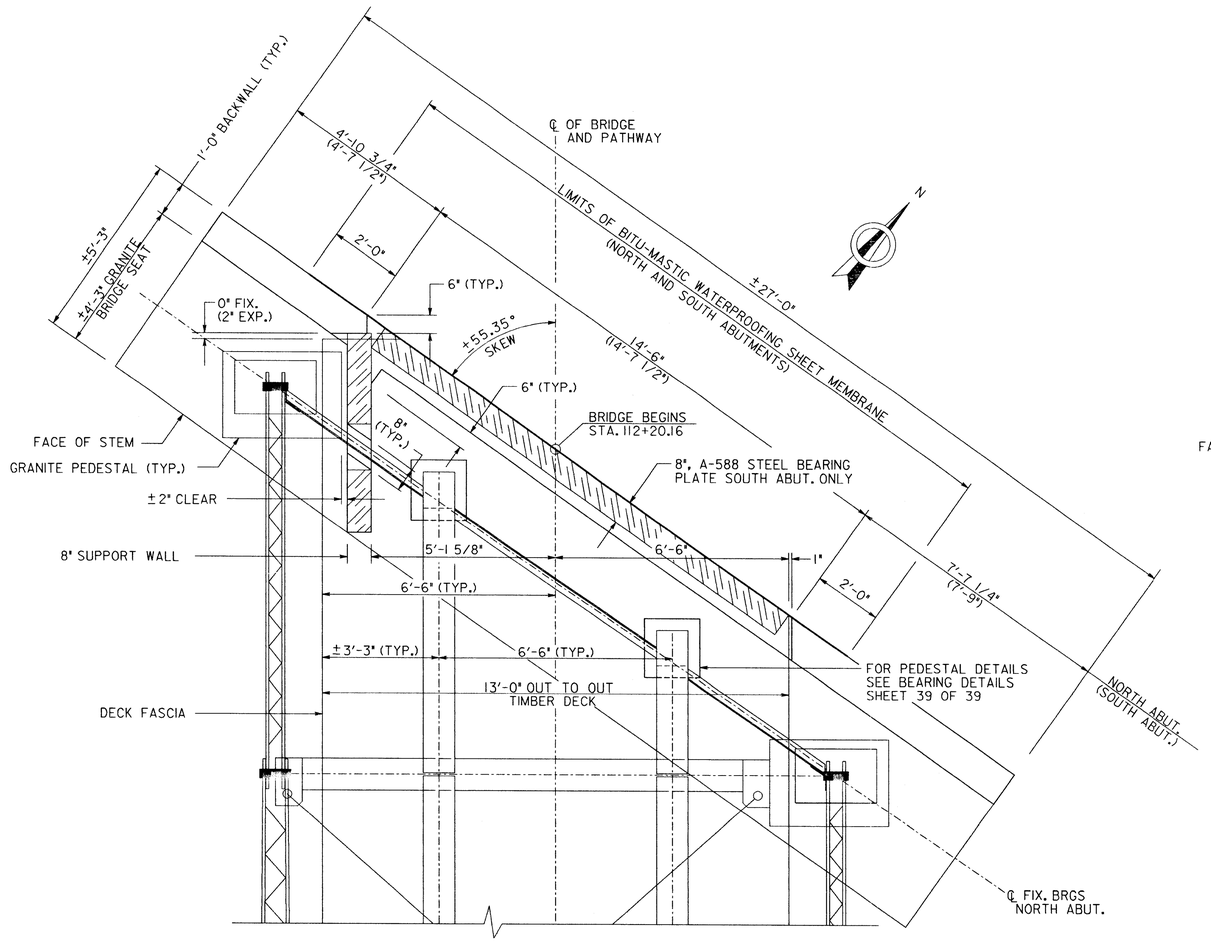
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

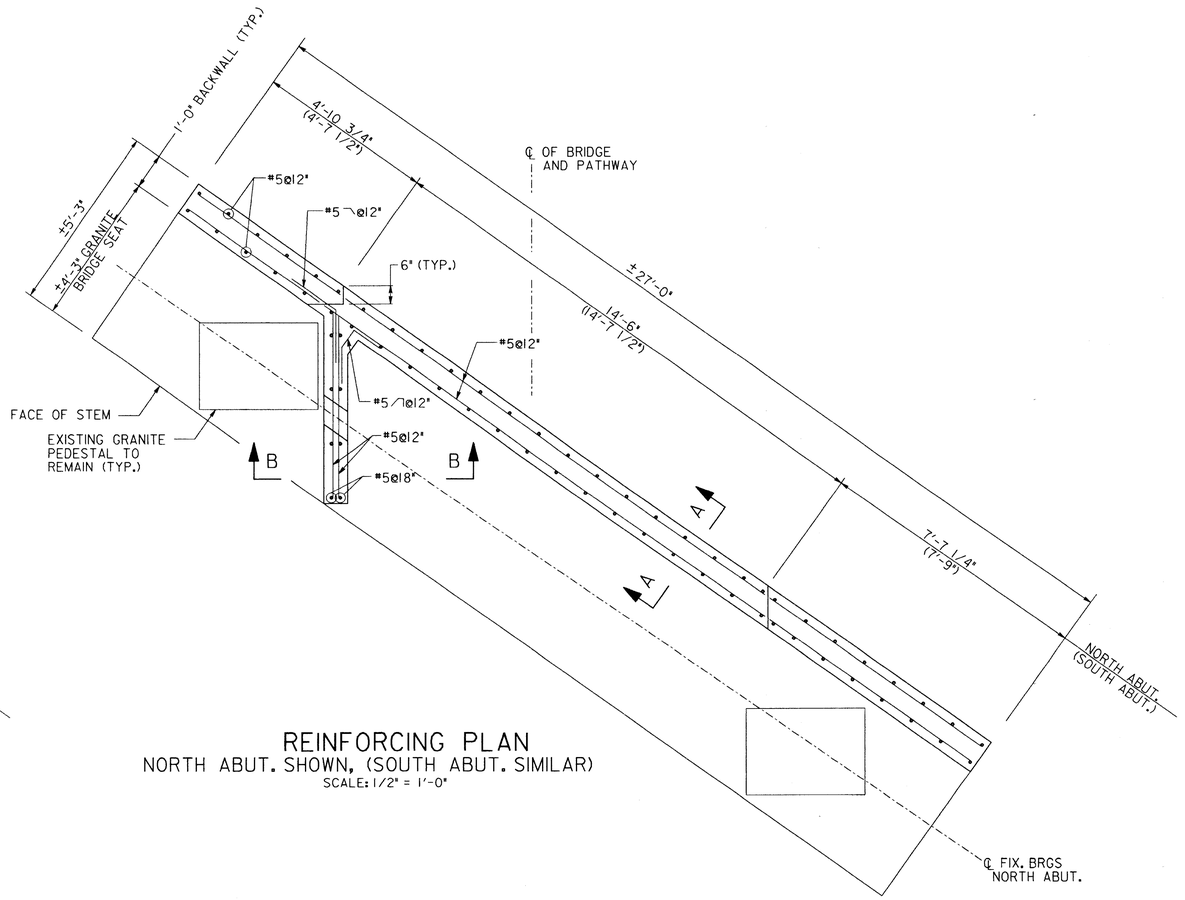
BID SET SHEET NO. 34

SCALE AS SHOWN

SHEET 27 OF 39



ABUTMENT PLAN
NORTH ABUT. SHOWN, (SOUTH ABUT. SIMILAR)
SCALE: 1/2" = 1'-0"



REINFORCING PLAN
NORTH ABUT. SHOWN, (SOUTH ABUT. SIMILAR)
SCALE: 1/2" = 1'-0"

NOTES:

1. FOR SECTIONS A-A AND B-B SEE SHEET 29 OF 39.
2. FOR BEARING DETAILS SEE SHEETS 38 AND 39 OF 39.
3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60 AND SHALL BE EPOXY COATED.
4. CONCRETE SHALL BE MIX NO. 3 (3500 PSI). MINIMUM COVER FOR ANY BAR SHALL BE 2". SPLICES NOT SHOWN SHALL BE AS PER STANDARD BAR LAP CHARTS (SEE SHEET XX OF XX). ALL KEYS ARE NOMINAL SIZE.
5. TOP OF EXISTING GRANITE BRIDGE SEAT TO BE PRESSURE WASH CLEANED TO REMOVE ALL DEBRIS FROM THE GRANITE SURFACE PRIOR TO THE PLACEMENT OF THE NEW CONCRETE PEDESTALS, BACKWALLS, AND SUPPORT WALLS. THE SURFACE PREPARATION OF THE GRANITE SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO PLACEMENT OF ANY CONCRETE.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13758 — REGISTERED PROFESSIONAL ENGINEER

DES:	XXX
DRN:	XXX
CHK:	XXX
DATE:	6/99

BY	NO	REVISION	DATE

ABUTMENT DETAILS SHEET 1

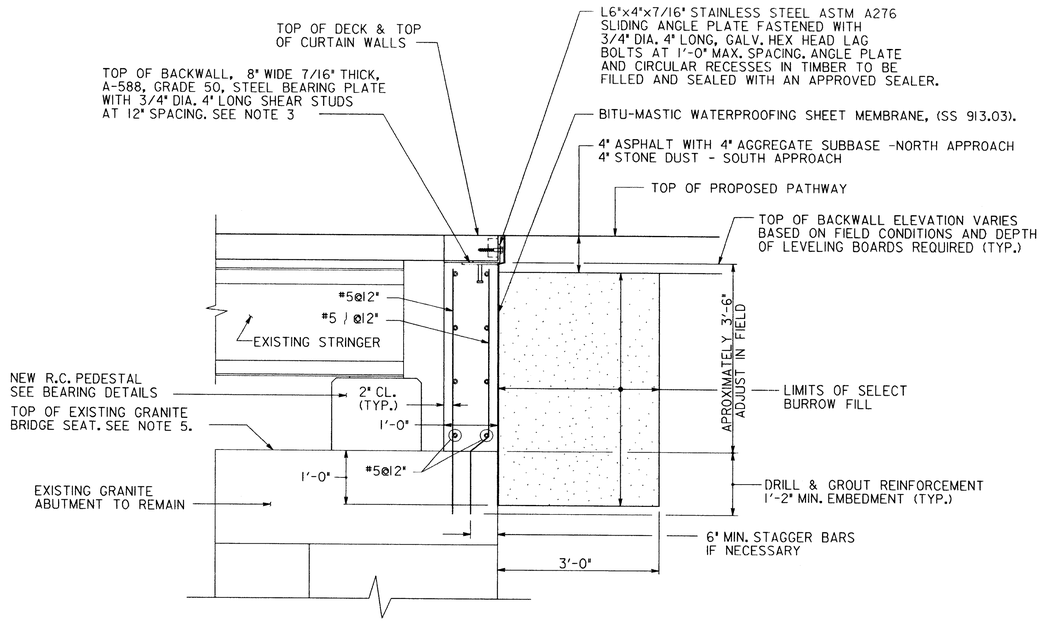
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 35

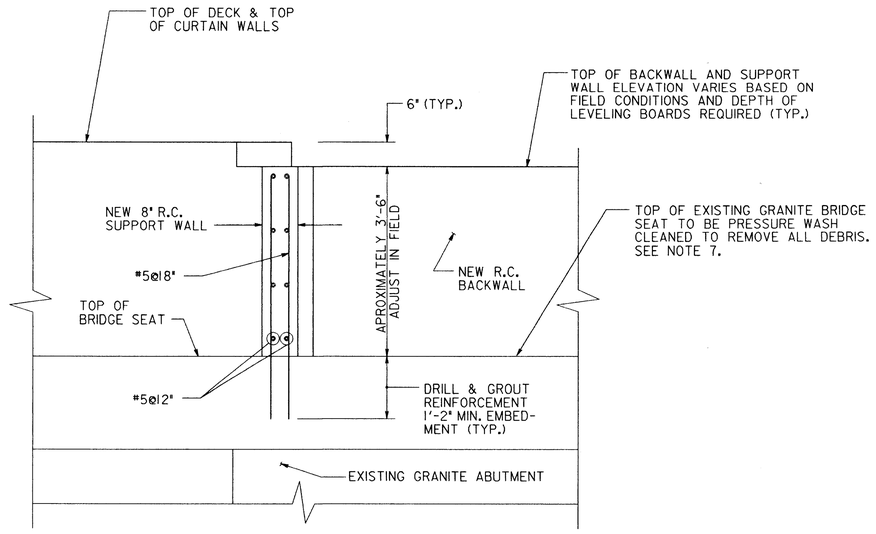
SCALE AS SHOWN

SHEET 28 OF 39



SECTION A-A

SCALE: 3/4" = 1'-0"

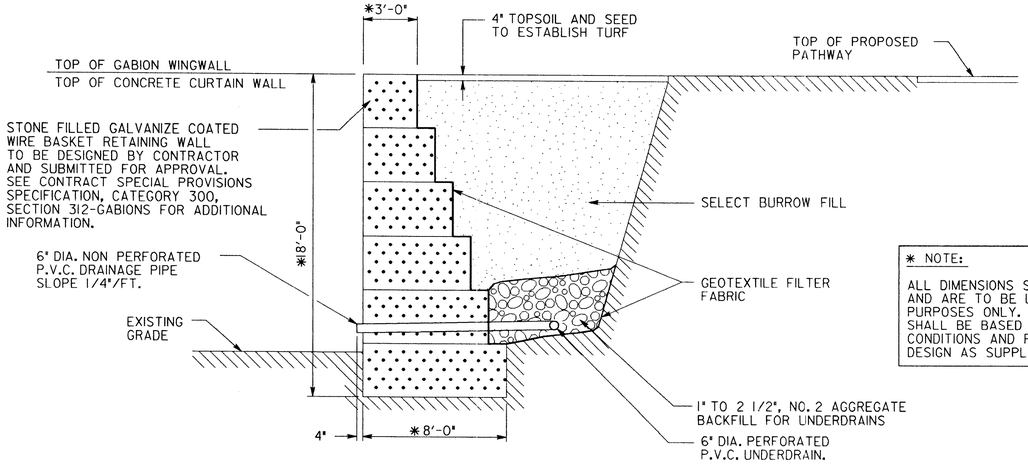


SECTION B-B

SCALE: 3/4" = 1'-0"

NOTES:

1. FOR ABUTMENT BACKWALL PLAN SEE SHEET 28 OF 39.
2. FOR BEARING DETAILS SEE SHEET 38 AND 39 OF 39.
3. FOR STEEL BEARING PLATE DETAILS SEE SHEET 25 OF 39.
4. FOR GABION LOCATIONS SEE SHEET 20 OF 39.
5. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60 AND SHALL BE EPOXY COATED.
6. CONCRETE SHALL BE MIX NO. 3 (3500 PSI). MINIMUM COVER FOR ANY BAR SHALL BE 2". SPLICES NOT SHOWN SHALL BE AS PER STANDARD BAR LAP CHARTS (SEE SHEET XX OF XX). ALL KEYS ARE NOMINAL SIZE.
7. TOP OF EXISTING GRANITE BRIDGE SEAT TO BE PRESSURE WASH CLEANED TO REMOVE ALL DEBRIS FROM THE GRANITE SURFACE PRIOR TO THE PLACEMENT OF THE NEW CONCRETE PEDESTALS, BACKWALLS, AND SUPPORT WALLS. THE SURFACE PREPARATION OF THE GRANITE SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO PLACEMENT OF ANY CONCRETE.



* NOTE:

ALL DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE USED FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS SHALL BE BASED ON ACTUAL FIELD CONDITIONS AND REQUIREMENTS OF THE DESIGN AS SUPPLIED BY THE CONTRACTOR.

* TYPICAL GABION SECTION

SCALE: 1/4" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/6/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13778 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

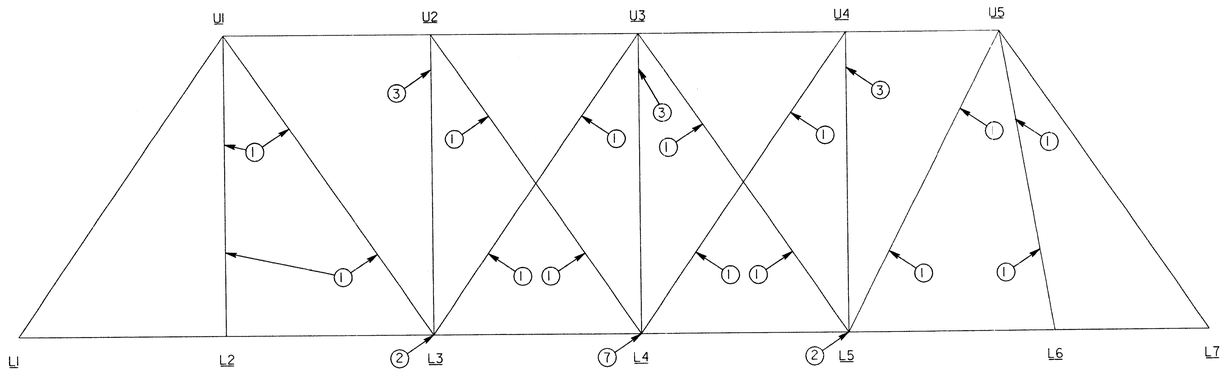
ABUTMENT DETAILS SHEET 2

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 36

SCALE AS SHOWN

SHEET 29 OF 39



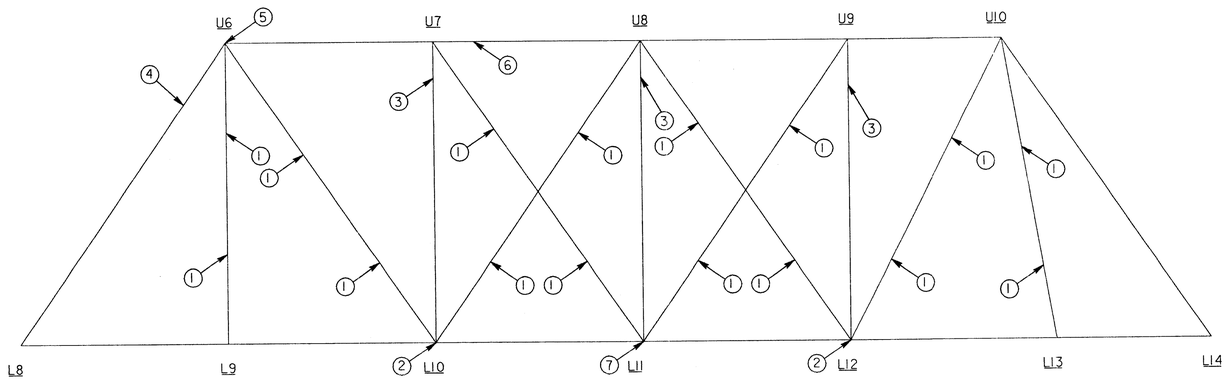
UPSTREAM TRUSS
(VIEW FROM CL LOOKING UPSTREAM)
SCALE: 1" = 5'-0"

LEGEND

(1) --- INSTALLATION OF I-BAR SPREADER BRACKET (STEEL REPAIR SHEET 7)
(2) --- REPLACEMENT OF HORSE SHOE BATTEN PLATE (STEEL REPAIR SHEET 7)
(3) --- INSTALLATION OF ADDITIONAL PORTAL BRACING (STEEL REPAIR SHEET 5)
(4) --- REPAIR OF DOUBLE ANGLE PORTAL BRACING (STEEL REPAIR SHEET 6)
(5) --- GUSSET PLATE REPLACEMENT (STEEL REPAIR SHEET 6)
(6) --- FLANGE REPAIR (STEEL REPAIR SHEET 7)
(7) --- VERTICAL MEMBER CHANNEL REPAIR (STEEL REPAIR SHEET 8)

NOTES:

1. EXISTING BRIDGE SUPERSTRUCTURE SHALL BE PRESSURE WASH CLEANED TO REMOVE DEBRIS AND GRAFFITI PRIOR TO ANY REPAIR WORK BEING PERFORMED.
2. FOR GENERAL NOTES SEE SHEET 19 OF 39.
3. FOR STEEL REPAIR DETAILS SEE SHEETS 32 THRU 37 OF 39.
4. ALL STEEL REPAIRS TO BE PAID FOR UNDER A CONTRACT LUMP SUM PRICE.
5. ALL RIVET REPLACEMENTS WITH H.S., A-325, TYPE 3 BOLTS SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO ANY ATTEMPT BY THE CONTRACTOR TO REMOVE THE EXISTING RIVET. ALL BOLTS SHALL BE ROUND HEADED.
6. CONTRACTOR SHALL HAVE PREVIOUS EXPERIENCE IN THE REPAIR AND REHABILITATION OF STEEL TRUSS SUPERSTRUCTURES.



DOWNSTREAM TRUSS
(VIEW FROM CL LOOKING DOWNSTREAM)
SCALE: 1" = 5'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES: JGR
DRN: JGR
CHK: JWS
DATE: 6/99

BY	NO	REVISION	DATE

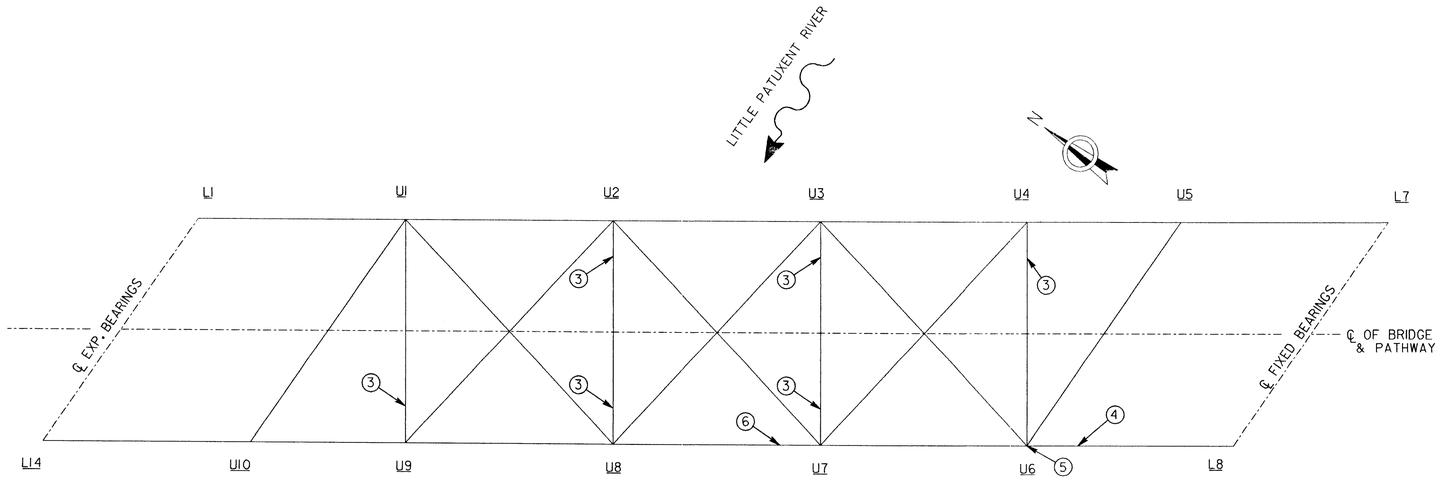
STEEL REPAIR LOCATIONS SHEET 1

600' SCALE MAP NO. _____ BLOCK NO. _____

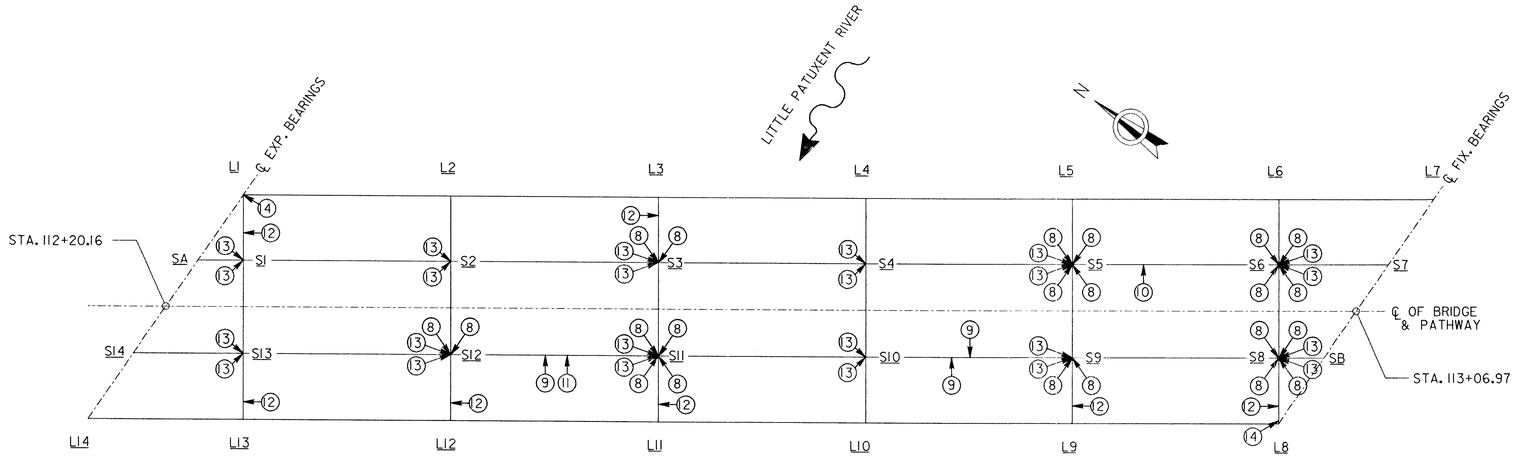
HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 37

SCALE AS SHOWN

SHEET 30 OF 39



TOP CHORD LATERAL WIND BRACING
(VIEW FROM ABOVE)
SCALE: 1" = 5'-0"



DECK SUPPORTING SYSTEM
(VIEW FROM ABOVE)
SCALE: 1" = 5'-0"

LEGEND

(1) --- INSTALLATION OF I-BAR SPREADER BRACKET (STEEL REPAIR SHEET 7)
(2) --- REPLACEMENT OF HORSE SHOE BATTEN PLATE (STEEL REPAIR SHEET 7)
(3) --- INSTALLATION OF ADDITIONAL PORTAL BRACING (STEEL REPAIR SHEET 5)
(4) --- REPAIR OF DOUBLE ANGLE PORTAL BRACING (STEEL REPAIR SHEET 6)
(5) --- GUSSET PLATE REPLACEMENT (STEEL REPAIR SHEET 6)
(6) --- FLANGE REPAIR (STEEL REPAIR SHEET 7)
(7) --- VERTICAL MEMBER CHANNEL REPAIR (STEEL REPAIR SHEET 8)
(8) --- REPLACEMENT OF WEB PLATE CONNECTION ANGLE (STEEL REPAIR SHEET 4)
(9) --- REPLACEMENT OF STRINGER BOTTOM FLANGE ANGLE (STEEL REPAIR SHEET 4)
(10) --- REPLACEMENT OF STRINGER TOP FLANGE ANGLE (STEEL REPAIR SHEET 4)
(11) --- STRINGER WEB PLATE REPAIR (STEEL REPAIR SHEET 4)
(12) --- FLOORBEAM WEB PLATE REPAIR (STEEL REPAIR SHEET 3)
(13) --- REMOVAL OF FLOORBEAM / STRINGER TOP FLANGE CONNECTION ANGLE (STEEL REPAIR SHEET 4)
(14) --- REPLACEMENT OF FLOORBEAM BEARING PLATE (STEEL REPAIR SHEET 3)

NOTES:

1. EXISTING BRIDGE SUPERSTRUCTURE SHALL BE PRESSURE WASH CLEANED TO REMOVE DEBRIS AND GRAFFITI PRIOR TO ANY REPAIR WORK BEING PERFORMED.
2. FOR GENERAL NOTES SEE SHEET 19 OF 39.
3. FOR STEEL REPAIR DETAILS SEE SHEETS 32 THRU 37 OF 39.
4. ALL STEEL REPAIRS TO BE PAID FOR UNDER A CONTRACT LUMP SUM PRICE.
5. ALL RIVET REPLACEMENTS WITH H.S., A-325, TYPE 3 BOLTS SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO ANY ATTEMPT BY THE CONTRACTOR TO REMOVE THE EXISTING RIVET.
6. CONTRACTOR SHALL HAVE PREVIOUS EXPERIENCE IN THE REPAIR AND REHABILITATION OF STEEL TRUSS SUPERSTRUCTURES.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI — GREENMAN-PEDERSEN, INC.
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STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 19750 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

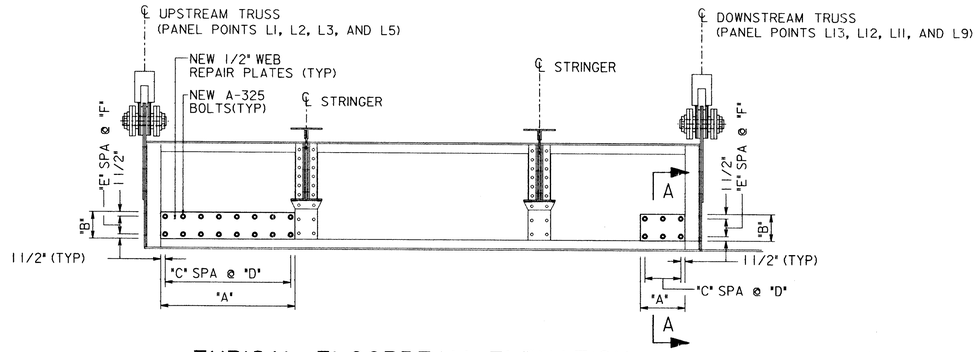
BY	NO	REVISION	DATE

STEEL REPAIR LOCATIONS SHEET 2
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 38

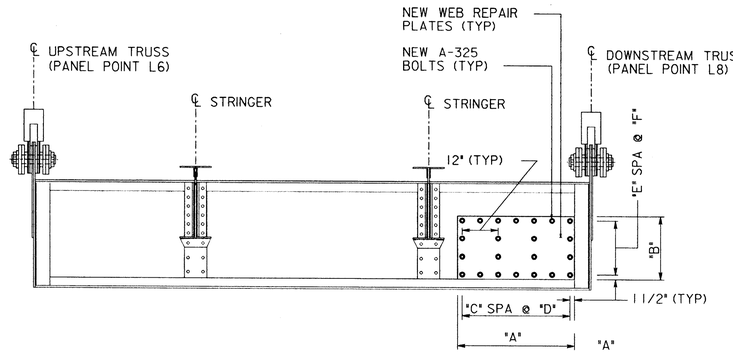
SCALE AS SHOWN

SHEET 31 OF 39



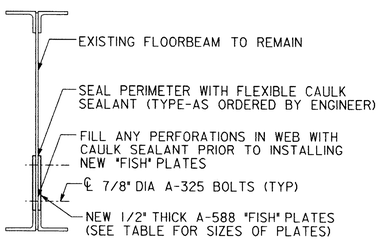
TYPICAL FLOORBEAM ELEVATION
REPAIR TYPE 12
(LOOKING UPSTATION)

SCALE: 1/2" = 1'-0"



FLOORBEAM L6-L8 ELEVATION
REPAIR TYPE 12
(LOOKING UPSTATION)

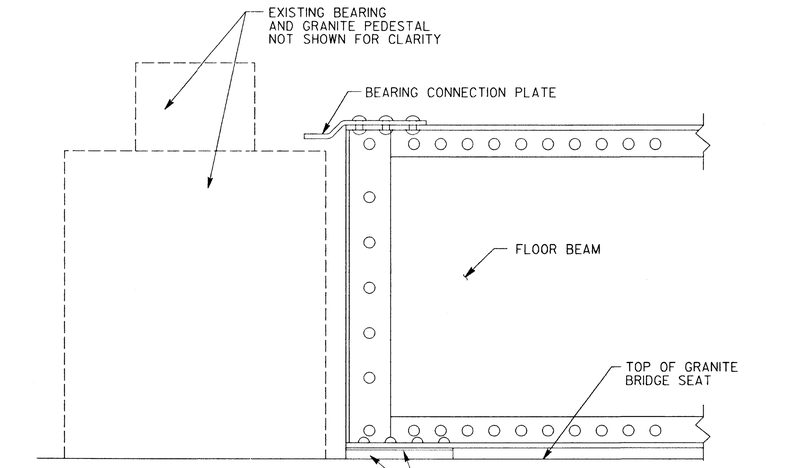
SCALE: 1/2" = 1'-0"



SECTION A-A

SCALE: 1" = 1'-0"

LOCATION		"A"	"B"	"C"	"D"	"E"	"F"
FLB L1 - L13	L1 END	3' - 9"	9"	7	6"	1	6"
FLB L1 - L13	L13 END	1' - 3"	9"	2	6"	1	6"
FLB L2 - L12	L2 END	--	--	-	-	-	-
FLB L2 - L12	L12 END	1' - 3"	9"	2	6"	1	6"
FLB L3 - L11	L3 END	1' - 3"	9"	2	6"	1	6"
FLB L3 - L11	L11 END	1' - 9"	9"	3	6"	1	6"
FLB L5 - L9	L5 END	--	--	-	-	-	-
FLB L5 - L9	L9 END	1' - 3"	9"	2	6"	1	6"
FLB L6 - L8	L6 END	--	--	-	-	-	-
FLB L6 - L8	L8 END	3' - 3"	1' - 9"	6	6"	3	6"



NOTE:

NEW BEARING PLATE(S) SHALL BE TAPPED TO ACCEPT NEW 7/8" DIA. H.S. FASTENERS TO MATCH THE EXISTING BOLT SPACING ALONG THE BOTTOM FLANGE OF FLOORBEAM.

CONTRACTOR SHALL SUBMIT A COMPLETE SET OF SHOP DRAWING TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

BEARING PLATE REPLACEMENTS (L1, L8)
REPAIR TYPE 14

SCALE: 1 1/2" = 1'-0"

NOTES:

1. THE PLATES SIZES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT INTENDED TO BE USED AS PAYMENT QUANTITIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN AND SUBMIT DETAILED SHOP DRAWINGS TO THE ENGINEER SHOWING THE PROPOSED PLATE SIZES AND WEIGHTS.
3. ALL FIELD DRILLING REQUIRED DURING THE INSTALLATION OF THE FLOOR BEAM WEB REPAIR PLATES, INCLUDING THE FLEXIBLE CAULK SEALANT, MATERIALS, EQUIPMENT AND TOOLS SHALL BE INCLUDED UNDER THE LUMP SUM CONTRACT PRICE.
4. ALL STEEL REPAIR PLATES SHALL BE ASTM A-588 (WEATHERING).
5. ALL NUTS, BOLTS AND WASHERS SHALL BE A-325, TYPE 3 (WEATHERING). ALL BOLTS SHALL HAVE ROUND HEADS.
6. SEE SHEET 31 OF 39 FOR LOCATIONS OF REPAIRS.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

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FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND
DANIEL JOSEPH MALETIC
No. 12759
REGISTERED PROFESSIONAL ENGINEER

DES: DLB
DRN: DLB
CHK: LL
DATE: 6/99

BY	NO	REVISION	DATE

STEEL REPAIRS SHEET 3

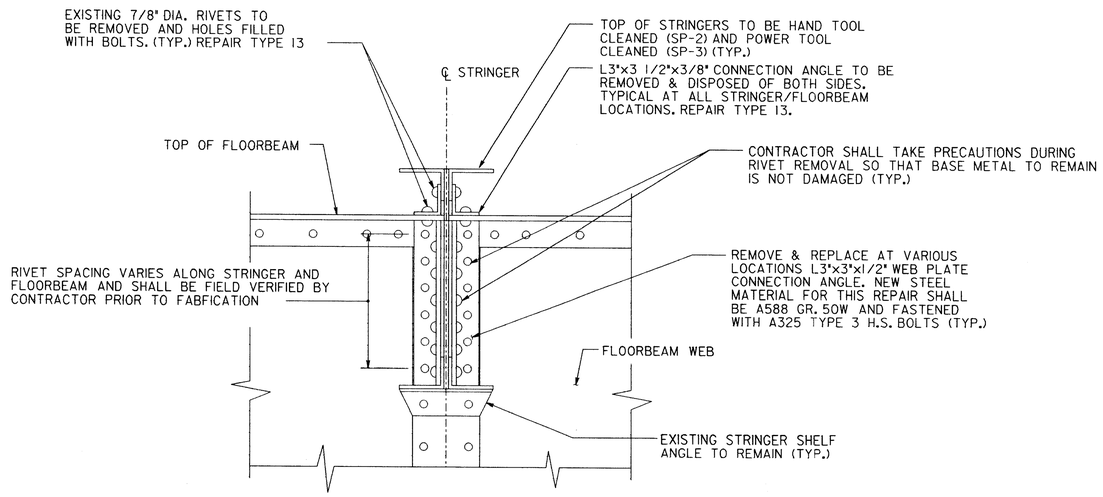
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

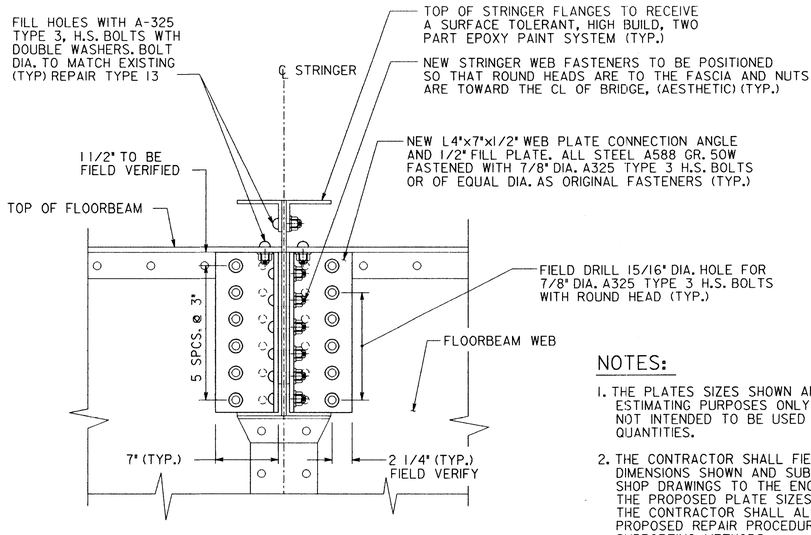
BID SET SHEET NO. 39

SCALE AS SHOWN

SHEET 32 OF 39



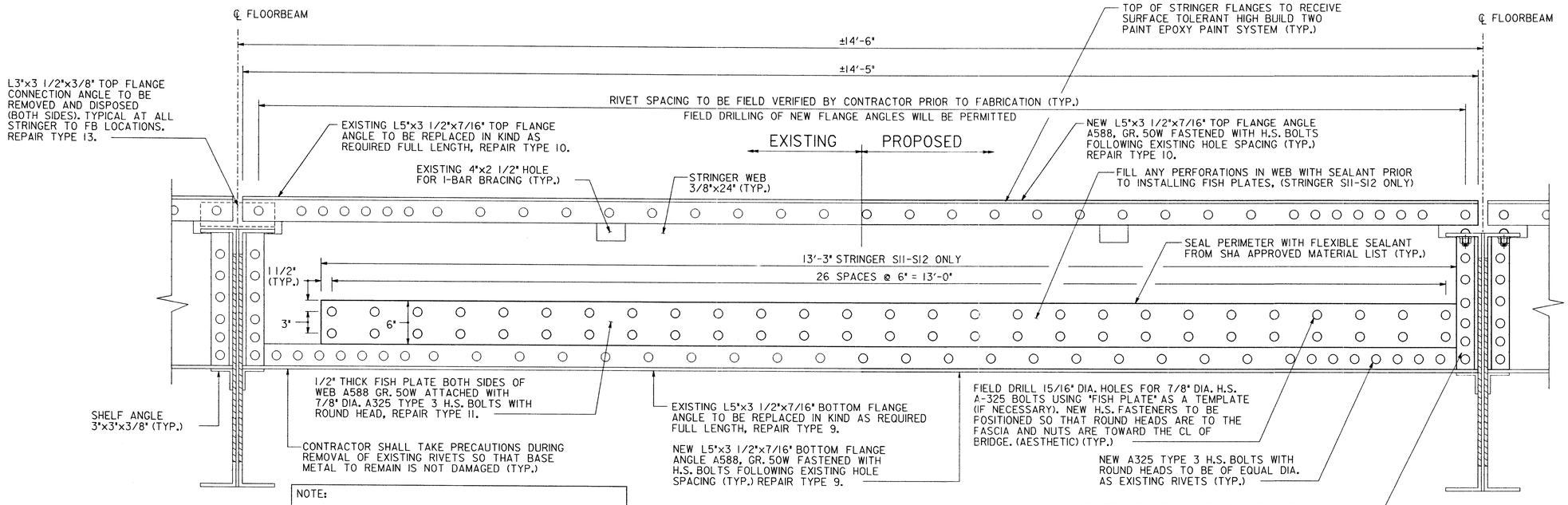
EXISTING CONNECTION



PROPOSED CONNECTION

STRINGER TO WEB CONNECTION REPAIR TYPE 8

SCALE: 1 1/2" = 1'-0"



NOTE:

IT IS NOT NECESSARY TO REMOVE & REPLACE BOTH STRINGER FLANGE ANGLES AT REPAIR LOCATIONS. CONTRACTOR SHALL RECEIVE APPROVAL BY E.I.C. PRIOR TO DISASSEMBLY OF FLANGES (TYP.)

STRINGER WEB AND FLANGE REPAIRS TYPE 9, 10 AND 11

SCALE: 1 1/2" = 1'-0"

NOTES:

1. THE PLATES SIZES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT INTENDED TO BE USED AS PAYMENT QUANTITIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN AND SUBMIT DETAILED SHOP DRAWINGS TO THE ENGINEER SHOWING THE PROPOSED PLATE SIZES AND WEIGHTS. THE CONTRACTOR SHALL ALSO SUBMIT HIS PROPOSED REPAIR PROCEDURES AND TEMPORARY SUPPORTING METHODS
3. ALL DRILLING OF THE REPAIR PLATES AND THE EXISTING FLOORBEAM WEB AS WELL AS THE FLEXIBLE CAULK SEALANT SHALL BE INCLUDED IN THE PRICE BID FOR THE INSTALLATION OF THE WEB REPAIR PLATES.
4. ALL STEEL REPAIR PLATES SHALL BE ASTM A-588.
5. ALL NUTS, BOLTS AND WASHERS SHALL BE A-325, TYPE 3 (WEATHERING). ALL BOLTS SHALL HAVE ROUND HEADS. NEW BOLT SIZE SHALL MATCH THE SIZE OF THE EXISTING HOLES / RIVETS UNLESS NOTED OTHERWISE.
6. SEE SHEET 31 OF 39 FOR LOCATIONS OF STEEL REPAIRS.
7. ALL FLOORBEAMS SHALL BE TEMPORARILY SUPPORTED AND SECURED IN PLACE PRIOR TO COMMENCEMENT OF ANY REPAIR WORK.
8. IT IS NOT NECESSARY TO REMOVE AND REPLACE BOTH STRINGER TO WEB CONNECTION ANGLES AT ALL LOCATIONS. CONTRACTOR SHALL REMOVE AND REPLACE CONNECTION ANGLES ONLY AT LOCATIONS APPROVED BY THE ENGINEER.
9. NO FLAME CUTTING OR WELDING OF ANY EXISTING MEMBER WILL BE ALLOWED.
10. FIELD DRILLING OF THE NEW FLANGE ANGLES WILL BE ALLOWED, UTILIZING THE EXISTING STRINGER WEB RIVET HOLES AS A GUIDING TEMPLATE.
11. TOP OF STRINGER FLANGES TO BE HAND TOOL CLEANED (SP-2) AND POWER TOOL CLEANED (SP-3) IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL (SSPC). AFTER REMOVAL OF ALL RUST, LOOSE MILL SCALE, PAINT AND OTHER DETRIMENTAL FOREIGN MATTER, THE SURFACE SHALL BE SOLVENT CLEANED (SP-1) PRIOR TO THE APPLICATION OF THE HIGH BUILD TWO PART EPOXY PAINT.
12. THE SURFACE TOLERANT HIGH BUILD TWO PART EPOXY PAINT SYSTEM SHALL BE ACCEPTED BY THE E.I.C. FROM THE APPROVED LIST OF MATERIALS AND SHALL BE OF A COLOR SIMILAR TO THAT OF THE NATURAL COLOR OF THE SUPERSTRUCTURE STEEL.

Director, Dept. of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI — GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13758 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

STEEL REPAIRS
SHEET 4

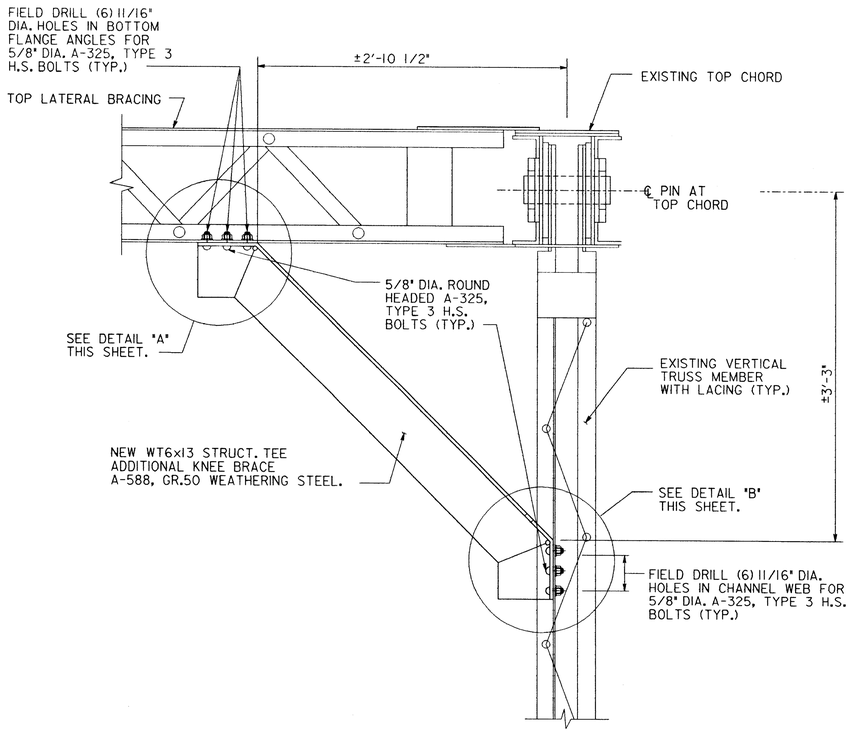
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 40

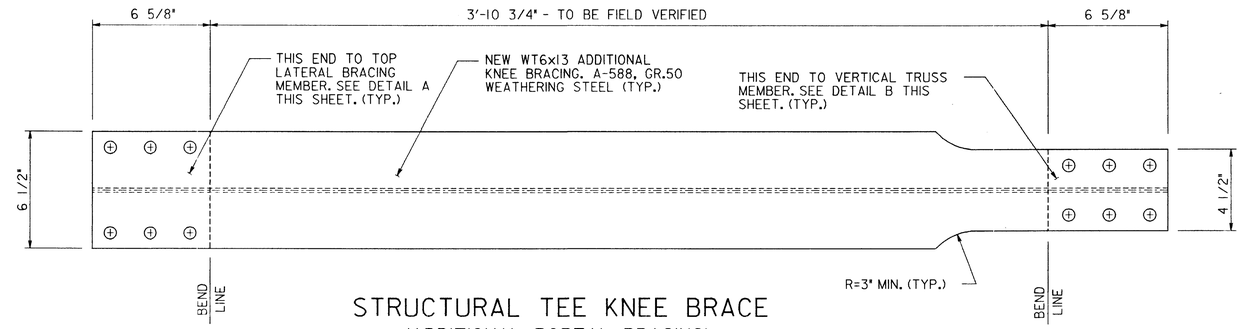
SCALE AS SHOWN

SHEET 33 OF 39



PROPOSED ADDITIONAL KNEE BRACING REPAIR TYPE 3

SCALE: 1 1/2" = 1'-0"



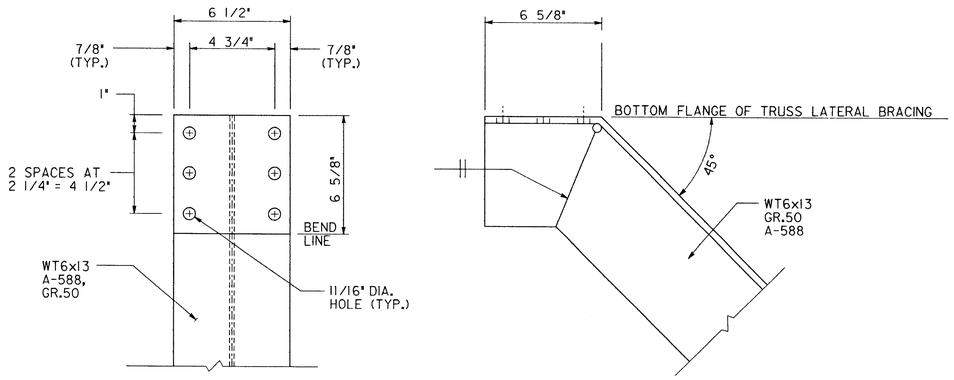
STRUCTURAL TEE KNEE BRACE

(ADDITIONAL PORTAL BRACING)

SCALE: 3" = 1'-0"

NOTES:

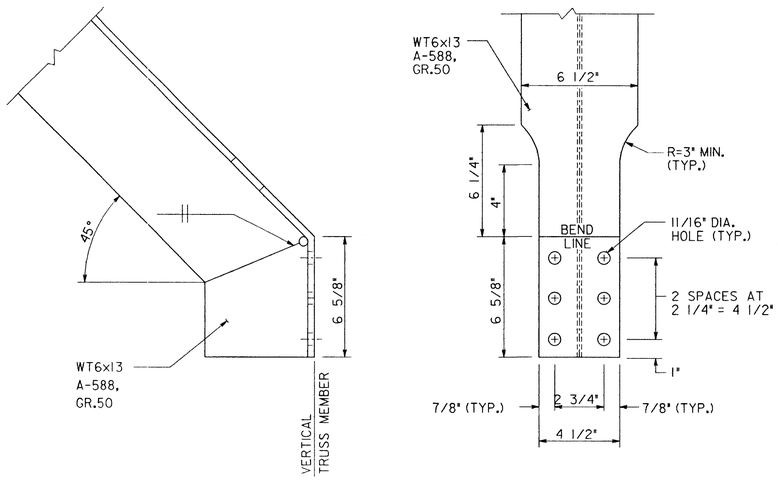
1. THE MEMBER SIZES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT INTENDED TO BE USED AS PAYMENT QUANTITIES. PAYMENT FOR STEEL REPAIRS AND ADDITIONS WILL BE INCLUDED UNDER THE LUMP SUM COST OF THE ENTIRE PROJECT.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN FOR COMPATIBILITY WITH EACH LOCATION OF A PROPOSED ADDITIONAL KNEE BRACING. THE CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OF THE BRACINGS.
3. ALL FIELD DRILLING REQUIRED IN THE INSTALLATION OF THE ADDITIONAL KNEE BRACINGS, INCLUDING ALL MATERIALS, EQUIPMENT AND TOOLS SHALL BE INCLUDED UNDER THE LUMP SUM CONTRACT PRICE.
4. ALL STEEL SHALL BE ASTM A-588, GR.50 (WEATHERING)
5. ALL NUTS, BOLTS AND WASHERS SHALL BE A-325, 5/8" DIA., TYPE 3 (WEATHERING). ALL BOLTS SHALL HAVE ROUND HEADS.
6. ALL WELDS SHALL BE PERFORMED BY A CERTIFIED WELDER WHO IS APPROVED BY THE OFFICE OF MATERIALS AND RESEARCH, CONFORMING TO AWS BRIDGE WELDING CODE D-1.5. ALL WELDS TO BE PERFORMED IN THE SHOP.
7. SEE SHEET 30 AND 31 OF 39 FOR LOCATIONS OF ADDITIONAL KNEE BRACING.



DETAIL A

(ADDITIONAL KNEE BRACING)

SCALE: 3" = 1'-0"



DETAIL B

(ADDITIONAL KNEE BRACING)

SCALE: 3" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI — GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC No. 13758 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

STEEL REPAIRS
SHEET 5

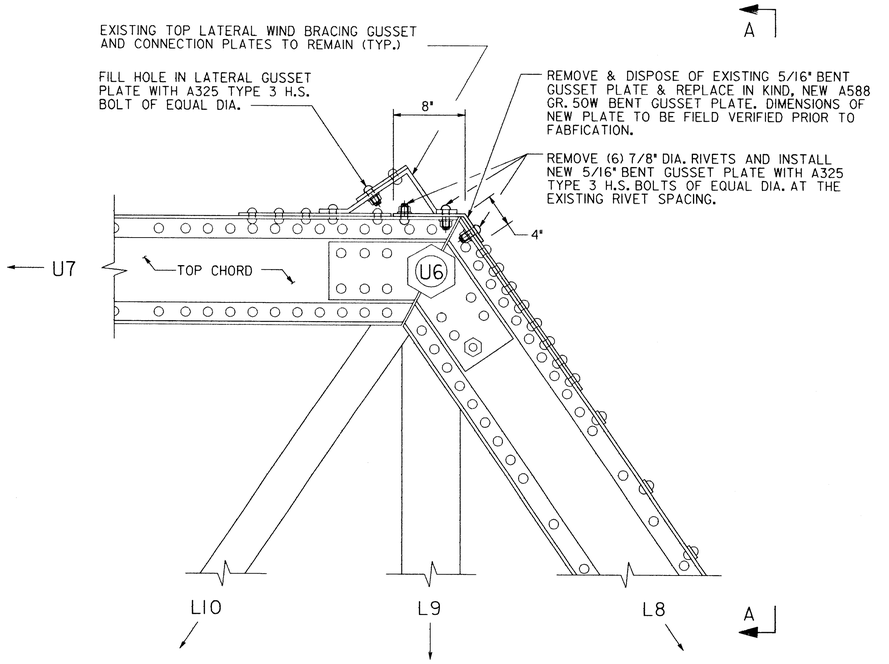
600' SCALE MAP NO. _____ BLOCK NO. _____

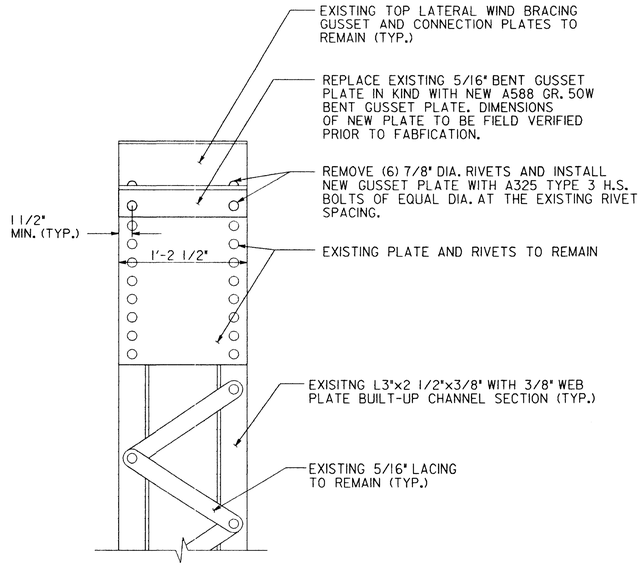
HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 41

SCALE AS SHOWN

SHEET 34 OF 39





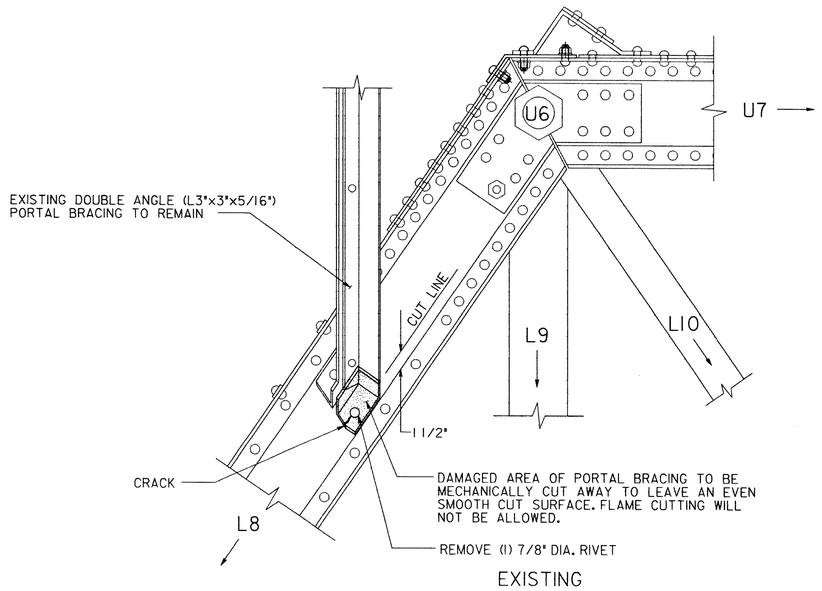
SECTION A-A

NOTES:

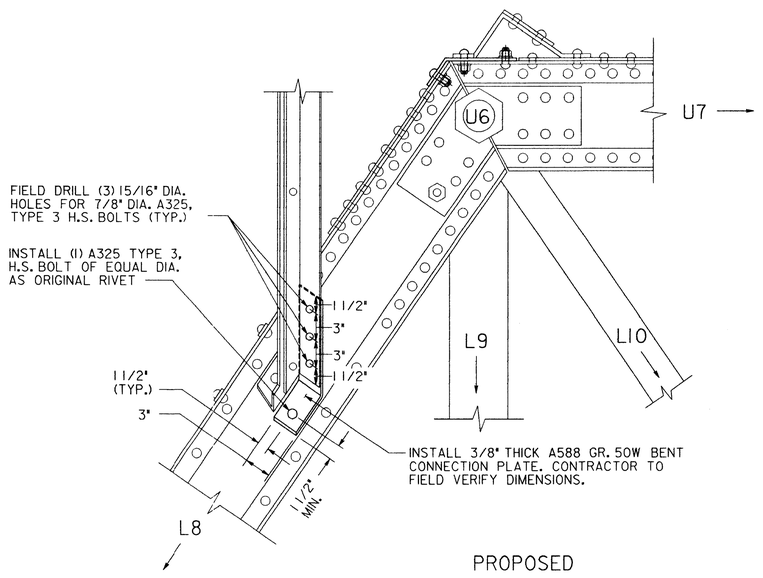
1. THE MEMBER SIZES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT INTENDED TO BE USED AS PAYMENT QUANTITIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN AND SUBMIT DETAILED SHOP DRAWINGS TO THE ENGINEER SHOWING THE PROPOSED PLATE SIZES AND WEIGHTS.
3. ALL FIELD DRILLING REQUIRED TO PERFORM THE REPAIRS, INCLUDING MATERIAL, EQUIPMENT AND TOOLS SHALL BE INCLUDED UNDER THE LUMP SUM CONTRACT PRICE.
4. ALL STEEL SHALL BE ASTM A-588, GR.50 (WEATHERING).
5. ALL NUTS, BOLTS AND WASHERS SHALL BE A-325, TYPE 3 (WEATHERING). BOLT DIA. SHALL MATCH EXISTING RIVET DIA. UNLESS OTHERWISE NOTED. ALL BOLTS SHALL HAVE ROUND HEADS.
6. SEE SHEET 30 AND 31 OF 39 FOR REPAIR LOCATIONS.
7. CONTRACTOR SHALL TAKE PRECAUTIONS DURING REMOVAL OF EXISTING RIVETS SO THAT BASE METAL OF REMAINING MEMBERS IS NOT DAMAGED.
8. ALL REPAIRS SHALL BE DONE PRIOR TO INSTALLATION OF THE TIMBER DECK.
9. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE STABILITY OF THE EXISTING STRUCTURE DURING STEEL REPAIR OPERATIONS.
10. CONTRACTOR SHALL HAVE PREVIOUS EXPERIENCE IN THE REPAIR AND REHABILITATION OF STEEL TRUSS SUPERSTRUCTURES.
11. CONTRACTOR SHALL TAKE PRECAUTIONS DURING REPAIR TYPE 5 SO THAT JOINT INTEGRITY IS NOT AFFECTED.

TOP CHORD GUSSET PLATE REPLACEMENT (U6)
REPAIR TYPE 5

SCALE: 1 1/2" = 1'-0"



EXISTING



PROPOSED

KNEE BRACING REPAIR (U6)
REPAIR TYPE 4

SCALE: 1 1/2" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3095
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

STEEL REPAIRS
SHEET 6

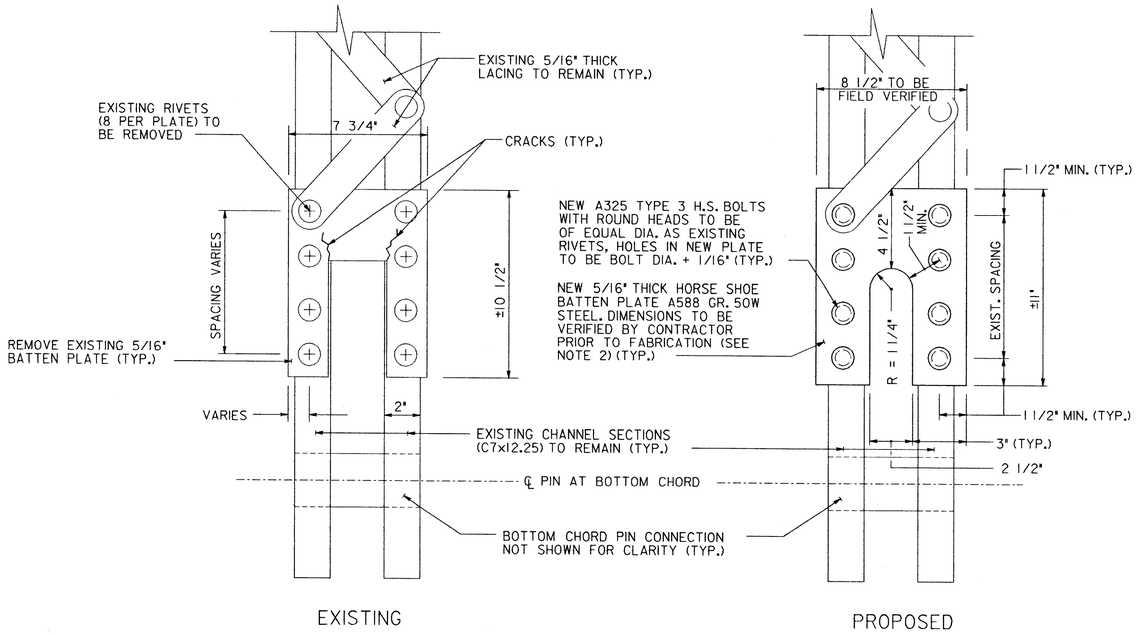
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 42

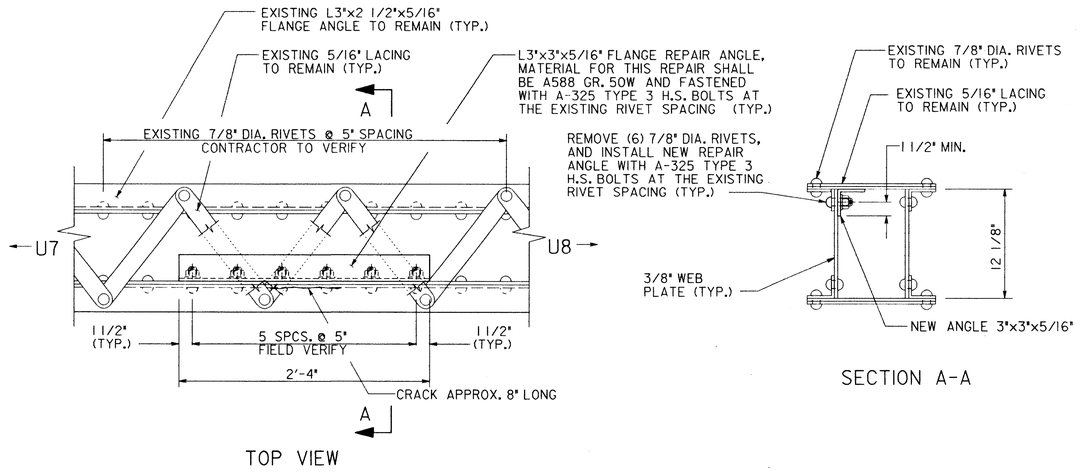
SCALE AS SHOWN

SHEET 35 OF 39



BATTEN PLATE REPLACEMENT
REPAIR TYPE 2

SCALE: 3" = 1'-0"

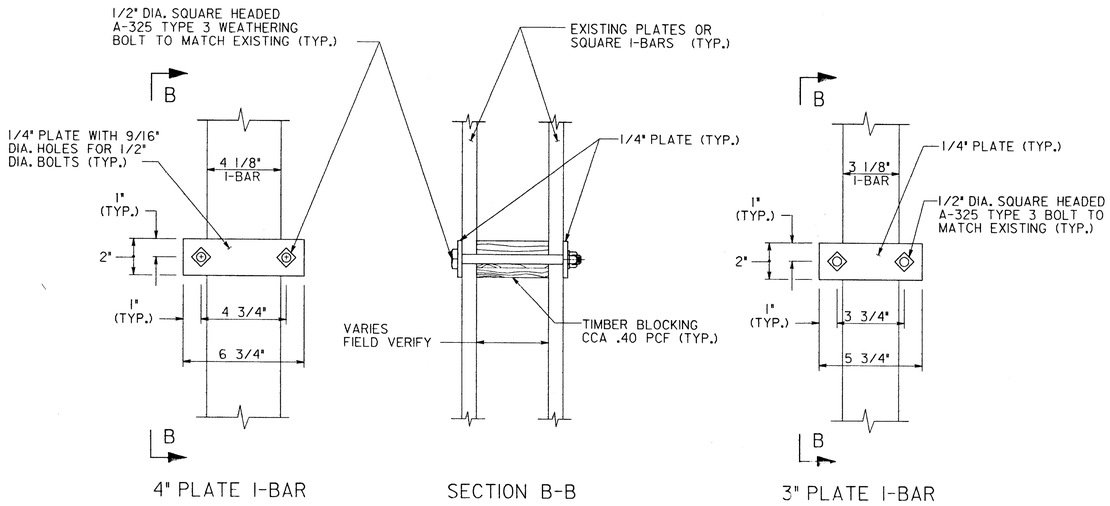


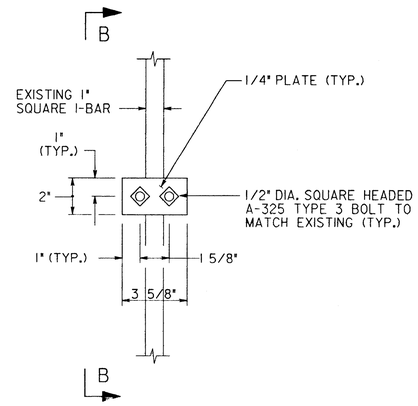
TOP CHORD FLANGE REPAIR FOR MEMBER U7-U8
REPAIR TYPE 6

SCALE: 1 1/2" = 1'-0"

NOTES:

1. THE MEMBER SIZES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT INTENDED TO BE USED AS PAYMENT QUANTITIES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS SHOWN AND SUBMIT DETAILED SHOP DRAWINGS TO THE ENGINEER SHOWING THE PROPOSED PLATE SIZES AND WEIGHTS.
3. ALL FIELD DRILLING REQUIRED TO PERFORM THE REPAIRS, INCLUDING MATERIAL, EQUIPMENT AND TOOLS, SHALL BE INCLUDED UNDER THE LUMP SUM CONTRACT PRICE.
4. ALL STEEL SHALL BE ASTM A-588, GR.50 (WEATHERING).
5. ALL NUTS, BOLTS AND WASHERS SHALL BE A-325 7/8" DIA. TYPE 3 (WEATHERING) UNLESS OTHERWISE NOTED. ALL BOLTS SHALL HAVE ROUND HEADS.
6. SEE SHEET 30 AND 31 OF 39 FOR REPAIR LOCATIONS.
7. CONTRACTOR SHALL TAKE PRECAUTIONS DURING REMOVAL OF EXISTING RIVETS SO THAT BASE METAL OF REMAINING MEMBERS IS NOT DAMAGED.
8. ALL REPAIRS SHALL BE DONE PRIOR TO INSTALLATION OF THE TIMBER DECK.
9. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE STABILITY OF THE EXISTING STRUCTURE DURING STEEL REPAIR OPERATIONS.





I-BAR SPREADER BRACKETS
REPAIR TYPE 1

SCALE: 3" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 17201 — REGISTERED PROFESSIONAL ENGINEER

DES:	JGR
DRN:	JGR
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

STEEL REPAIRS
SHEET 7

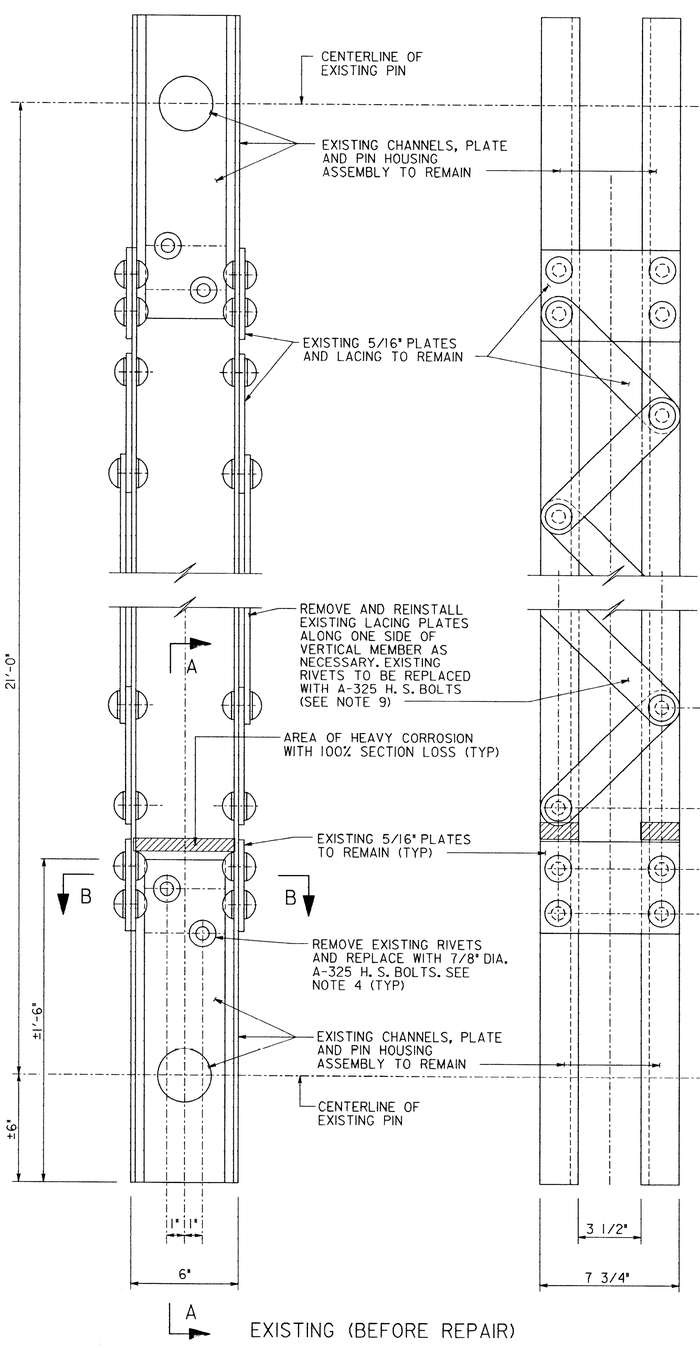
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

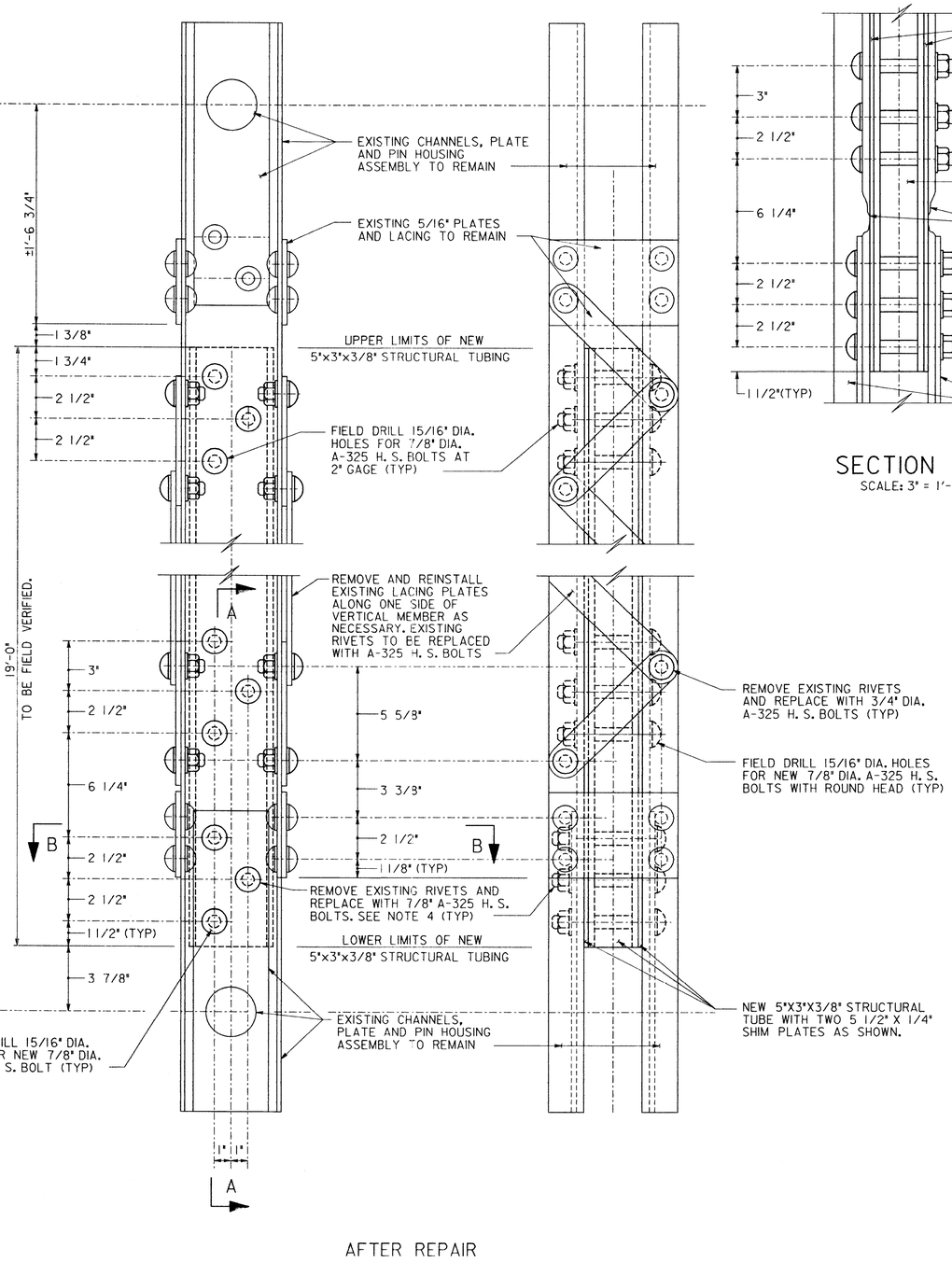
BID SET SHEET NO. 43

SCALE AS SHOWN

SHEET 36 OF 39

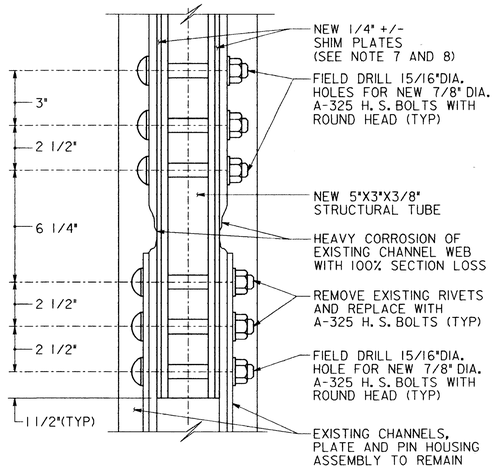


EXISTING (BEFORE REPAIR)

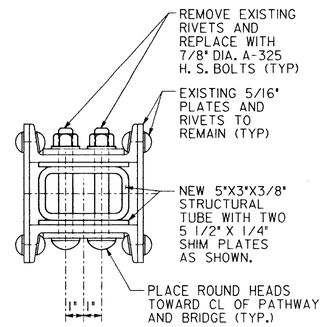


AFTER REPAIR

VERTICAL MEMBER REPAIR TYPE 7
(U8-L11 SHOWN, U3-L4 SIMILAR)
SCALE: 3" = 1'-0"



SECTION A-A
SCALE: 3" = 1'-0"



SECTION B-B
SCALE: 3" = 1'-0"

NOTES:

1. ALL NEW STEEL PLATES SHALL BE ASTM A-709 GRADE 50W OR A-588.
2. ALL BOLTS SHALL BE 7/8" DIA. A-325 TYPE 3 UNLESS OTHERWISE NOTED. ALL BOLTS SHALL HAVE ROUND HEAD.
3. ALL BOLT EDGE DISTANCE SHALL BE 1 1/2" UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SHORING PRIOR TO COMMENCEMENT OF ANY REPAIR WORK IN ORDER TO UNLOAD EXISTING VERTICAL MEMBER AND ENSURE OVERALL STABILITY OF THE EXISTING TRUSS.
5. NEW BOLTS SHALL MATCH EXISTING RIVET SIZE UNLESS OTHERWISE NOTED.
6. ALL DIMENSIONS, MEMBER SIZES AND FASTENER SPACING SHALL BE FIELD VERIFIED PRIOR TO FABRICATION. MINOR ADJUSTMENTS TO THE LONGITUDINAL BOLT SPACINGS THROUGH THE STRUCTURAL TUBING MAY BE NECESSARY TO AVOID CONFLICTS WITH THE EXISTING RIVET AND/OR REPLACEMENT BOLTS THROUGH EXISTING MATERIAL.
7. SHIM PLATES ARE NOT REQUIRED TO BE CONTINUOUS OVER THE FULL LENGTH OF THE NEW STRUCTURAL TUBING. SHIM PLATES MAY VARY IN THICKNESS TO FIT EXISTING CONDITIONS AND MAY BE WELDED TO THE STRUCTURAL TUBING AT THE OPTION OF THE CONTRACTOR.
8. SHIMS SHALL BE INSTALLED IN SUCH A MANNER TO PREVENT BOWING OUT OR DRAWING IN OF THE EXISTING CHANNEL SECTIONS. THE EXISTING CLEAR DISTANCE BETWEEN CHANNEL SECTIONS SHALL BE MAINTAINED TO ENSURE THE REATTACHMENT OF THE EXISTING LACING DOWN ONE SIDE OF THE VERTICAL MEMBER.
9. EACH MEMBER OF THE STRUCTURE TO BE REMOVED, STORED AND REINSTALLED SHALL BE NUMBERED, TAGGED AND RECORDED TO ENSURE PROPER LOCATION OF REINSTALLATION. MEMBERS DAMAGED DURING REMOVAL SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.
10. SEE SHEET 30 OF 39 FOR REPAIR LOCATIONS.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13959 — PROFESSIONAL ENGINEER — REGISTERED

DES:	LL
DRN:	LL
CHK:	JWS
DATE:	6/99

BY	NO	REVISION	DATE

STEEL REPAIRS
SHEET 8

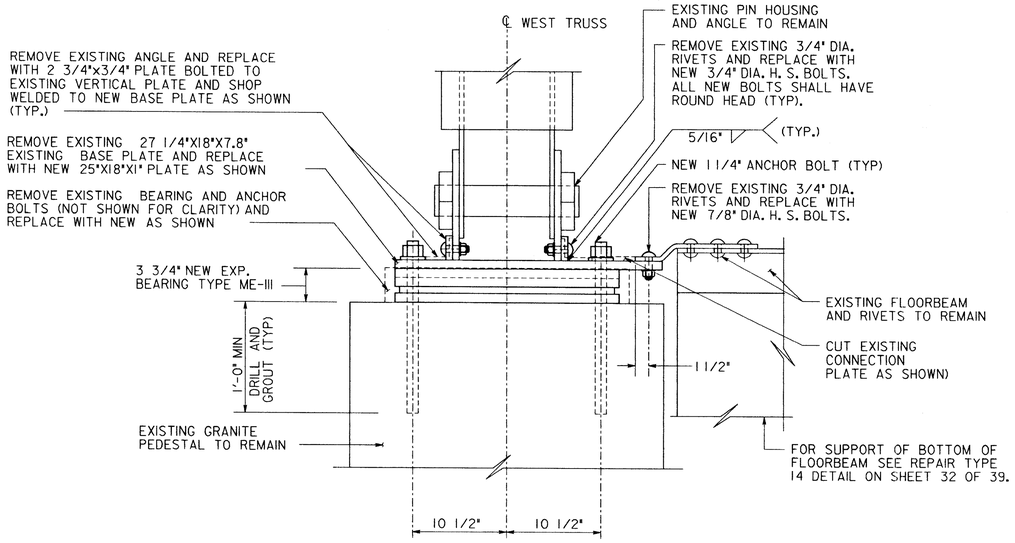
600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 44

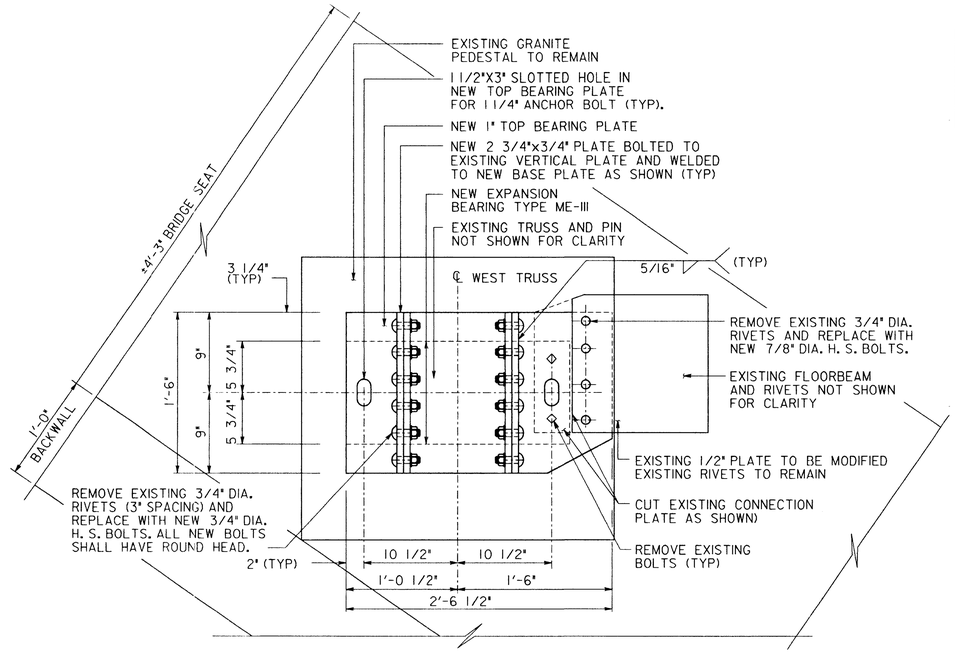
SCALE AS SHOWN

SHEET 37 OF 39

STRUCTURAL JACKING LOADS	
EXPANSION BEARING LOCATION	SELFWEIGHT D.L. (KIPS)
L1	14 K
L14	13 K



ELEVATION
LOOKING NORTH



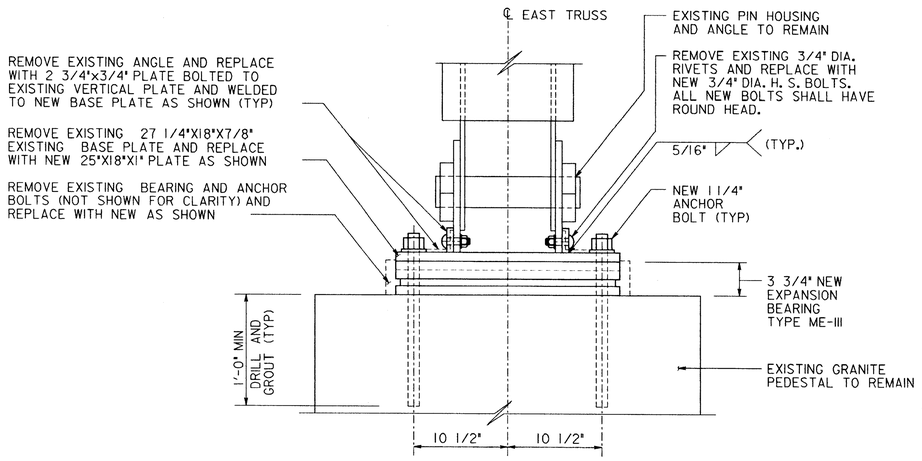
PLAN
(EXISTING BEARING NOT SHOWN FOR CLARITY)

WEST TRUSS EXPANSION BEARING DETAIL AT L1

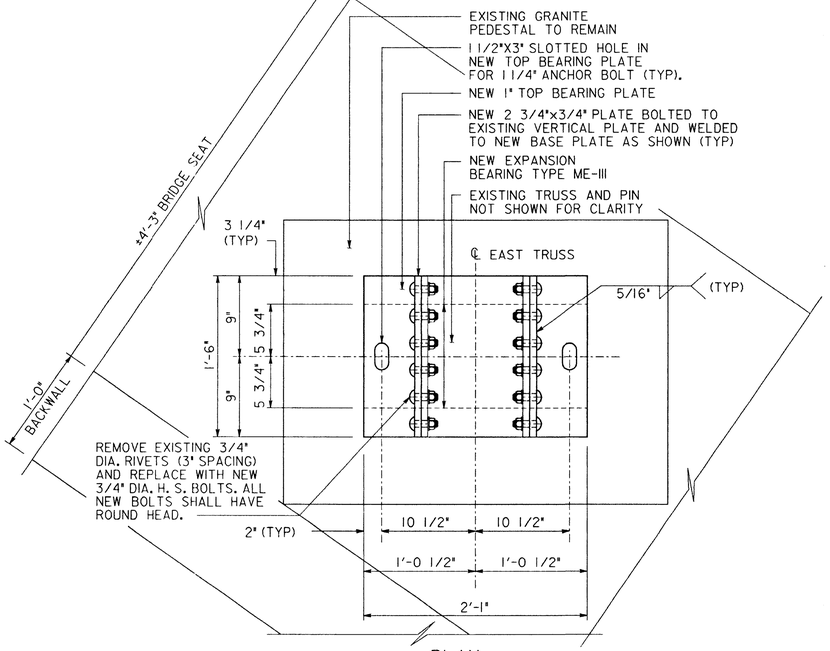
SCALE: 1 1/2" = 1'-0"

NOTES:

1. ALL NEW STEEL PLATES SHALL BE ASTM A 709 GRADE 50W OR A-588.
2. ALL BOLTS SHALL BE 7/8" DIA. A-325 TYPE 3 UNLESS OTHERWISE NOTED. ALL BOLTS SHALL HAVE ROUND HEADS.
3. ALL BOLT EDGE DISTANCE SHALL BE 1 1/2" UNLESS OTHERWISE NOTED.
4. FOR BEARING DETAILS SEE STANDARDS NO.
   BR-SS(9.01)-80-114
   BR-SS(9.02)-80-115
   BR-SS(9.03)-81-128
   BR-SS(9.04)-81-129
   ON SHEET NO. XX OF XX
5. FOR ADDITIONAL BEARING DETAILS SEE SHEET 39 OF 39.
6. ALL DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OF THE BEARING ASSEMBILES.
7. ALL WELDS SHALL BE PERFORMED BY A CERTIFIED WELDER AND IN ACCORDANCE WITH THE CURRENT EDITION OF AWS D-1.1 AND AWS D-1.5.
8. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL, A DETAILED PROCEDURE INCLUDING EQUIPMENT AND DESIGN COMPUTATIONS VERIFYING THE PROPOSED METHOD OF LIFTING AND SUPPORTING OF THE EXISTING TRUSS.
9. ALL STEEL REPAIRS TO THE TRUSS STRUCTURE SHALL BE COMPLETED PRIOR TO ANY LIFTING OPERATION OF THE TRUSS FOR BEARING REPAIRS AND REPLACEMENTS. THE JACKING LOADS GIVEN IN THE PLANS AND REPRESENTATIVE OF THE SELF WEIGHT OF THE STEEL SUPERSTRUCTURE IN ABSENCE OF THE DECK AND RAILING SYSTEMS. THE STRUCTURE SHALL BE LIFTED PRIOR TO INSTALLATION OF THE DECK AND RAILING SYSTEMS. THE JACKING LOADS GIVEN ARE APPROXIMATE.



ELEVATION
LOOKING NORTH



PLAN
(EXISTING BEARING NOT SHOWN FOR CLARITY)

EAST TRUSS EXPANSION BEARING DETAIL AT L14

SCALE: 1 1/2" = 1'-0"

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

James M. Irvin — 3/10/00
DIRECTOR OF PUBLIC WORKS — DATE

Robert Lepson — 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE

GPI — GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 18759 — REGISTERED PROFESSIONAL ENGINEER

DES: LL
DRN: LL
CHK: JWS
DATE: 6/99

BY	NO	REVISION	DATE

BEARING DETAILS SHEET 1

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 — BID SET SHEET NO. 45

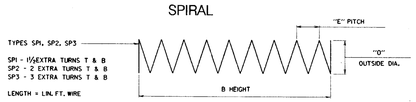
SCALE AS SHOWN

SHEET 38 OF 39

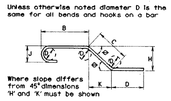
TYPICAL BAR BENDS

DETAILS AND NOTES

SPIRAL



Unless otherwise noted diameter D is the same for all bends and hooks on a bar



Where slope differs from 45° dimensions 'H' and 'K' must be shown

ENLARGED VIEW SHOWING BAR BENDING DETAILS

Notes:
1. All dimensions are out-to-out of bar or to tangent points for 135° and 180° hooks.
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size. Otherwise standard hooks are to be used.
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H' on truss bars. Where 'J' can exceed 'H' it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to fit within concrete.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer fabrication should have limits indicated.

NOTE TO FABRICATOR

BENDING TOLERANCE NOTE

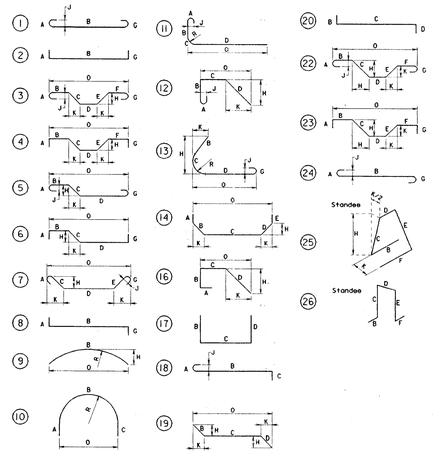
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

BAR BEND TYPES
GENERAL NOTES

NO. REBAR-BD(00J)-94-296 SHEET 1 OF 8

ACI TYPICAL BAR BENDS

STANDARD PIN BENDING



NOTE TO FABRICATOR

BENDING TOLERANCE NOTE

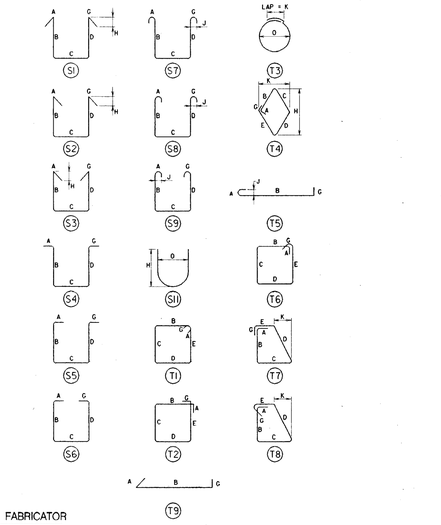
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

BAR BEND TYPES
ACI - STANDARD PIN BENDING

NO. REBAR-BD(00J)-94-296 SHEET 2 OF 8

ACI TYPICAL BAR BENDS

TIES AND STIRRUPS



NOTE TO FABRICATOR

BENDING TOLERANCE NOTE

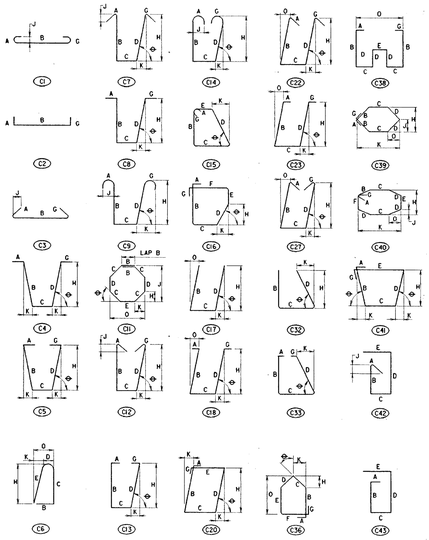
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

BAR BEND TYPES
ACI - TIES A

NO. REBAR-BD(00J)-94-296 SHEET 3 OF 8

TYPICAL BAR BENDS

TIES AND STIRRUPS



NOTE TO FABRICATOR

BENDING TOLERANCE NOTE

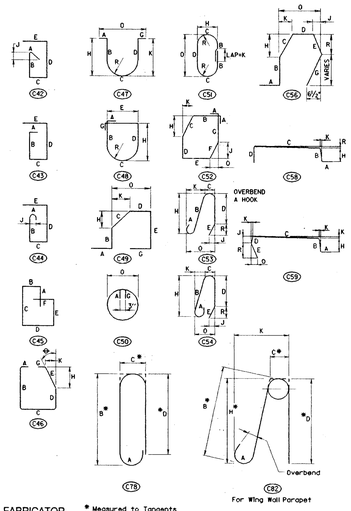
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

BAR BEND TYPES
TIES AND STIRRUPS

NO. REBAR-BD(00J)-94-296 SHEET 4 OF 8

TYPICAL BAR BENDS

TIES AND STIRRUPS



* Measured to Tangents of Curves.

NOTE TO FABRICATOR

BENDING TOLERANCE NOTE

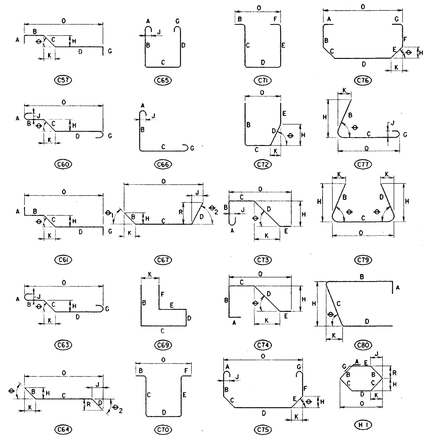
TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

BAR BEND TYPES
TIES AND STIRRUPS

NO. REBAR-BD(00J)-94-296 SHEET 5 OF 8

TYPICAL BAR BENDS

STANDARD PIN BENDING



NOTE TO FABRICATOR

BENDING TOLERANCE NOTE

TIES AND STIRRUPS SHALL BE BENT WITH A PLUS ZERO INCH (+0") MINUS (-) NORMAL ACI BENDING TOLERANCES

BAR BEND TYPES
STANDARD PIN BENDING

NO. REBAR-BD(00J)-94-296 SHEET 6 OF 8

Director, Department of Recreation and Parks Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BAL. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES:
DRN:
CHK:
DATE:

BY	NO	REVISION	DATE

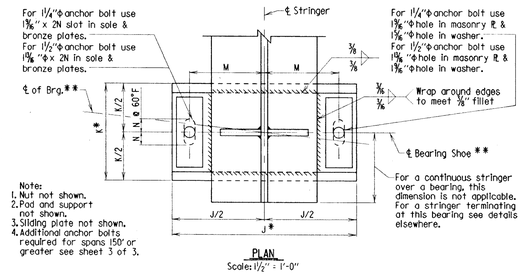
STANDARD SHEET

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1 & 2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 Bid Set Sheet No. 47

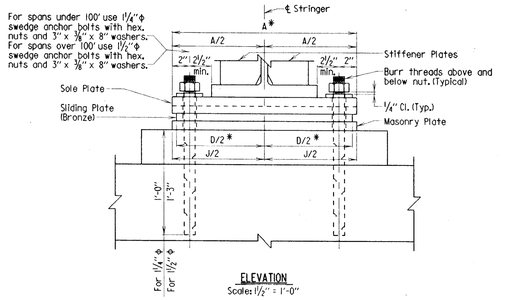
SCALE AS SHOWN

SHEET 39 OF 39



Note:
1. Nut not shown.
2. Pad and support not shown.
3. Sliding plate not shown.
4. Additional anchor bolts required for spans 150' or greater see sheet 3 of 3.

PLAN
Scale: 1½" = 1'-0"



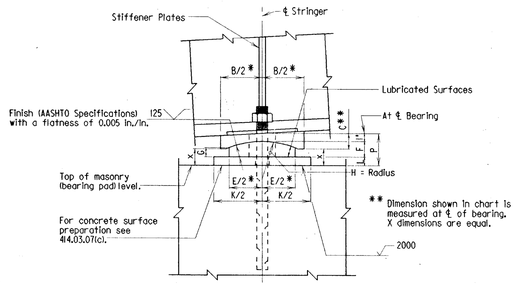
ELEVATION
Scale: 1½" = 1'-0"

* Edges may be left as cut or cast.

** Where bridge is not skewed, ℄ Brg. and ℄ shoe are coincident.

BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

NO. BR-SS(9.05)-99-335 SHEET 1 OF 2



SIDE VIEW
Scale: 1½" = 1'-0"

DATA SCHEDULE

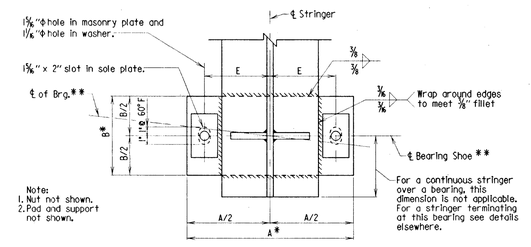
Type	Sole Plate A	Sole Plate B	Sole Plate C	Sliding Plate D	Sliding Plate E	Sliding Plate F	Sliding Plate G	Radius H	Masonry ℄ J	Masonry ℄ K	Masonry ℄ L	Hole Loc. M	Hole Loc. N	Hgt. P	Loads (Kips) Vert.	Loads (Kips) Horiz.	Loads (Kips) Dead	Total Expansion ± (0° F - 120°)
ME50 - I	21	9½	1¾	20	11½	1¾	1 ±	11	21	11	1	8½	1½	3¼	145	10	70	1
ME50 - II	23	10½	1⅞	22	8½	1¾	1 ±	12	23	12	1	9½	1½	3⅜	185	15	90	1
ME50 - III	25	11½	2	24	9½	1¾	1 ±	15	25	13	1	10½	1½	4	225	20	110	1
ME50 - IV	26	14⅜	2⅛	25	12½	2	1 ±	18	26	16	1	11	2	4⅛	310	30	155	1½
ME50 - V	29	15½	2⅜	28	13½	2¼	1 ±	18	29	17	1½	12½	2	4⅞	375	35	185	1¾
ME50 - VI	30	18½	2½	29	16½	2⅜	1 ±	18	30	20	1½	13	2½	5	475	45	235	2¼
ME50 - VII	31	20½	2½	30	18½	2⅜	1 ±	19	31	22	2	13½	3	5½	550	55	275	2¾
ME50 - VIII	32	20½	2½	30	18½	2⅜	1 ±	20	32	24	2	14	3	5⅝	630	60	315	2¾

Note: All dimensions are in inches.

Note:
1. Sole and masonry plates to be A 709 Grade 50, steel painted to match finished bridge color, convex plate shall be a self lubricating bronze bearing plate conforming to 910.01.
2. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
3. 1000 RMS (Finish all over) except where otherwise noted.
4. Rotation ½° ± Maximum.
5. Design Masonry Bearing Load 1.0 KSI.
6. Top of sole plate must be beveled to fit grade of bottom flange.
7. Unless otherwise noted, bearings shall be placed normal to ℄ of stringer.
8. Plates are to be shipped as units.
9. If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
10. All anchor bolts and washers shall be unpainted A 709 Grade 36 galvanized steel. All nuts shall be unpainted A 307 galvanized steel.
11. Medium span range is considered 50' to 150' simple span lengths and comparable span continuous units.

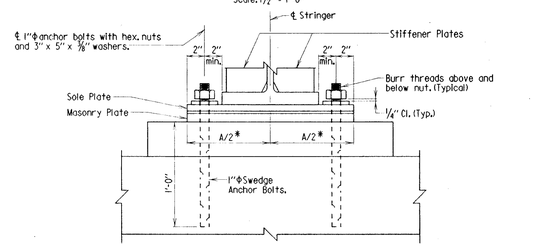
BRONZE EXPANSION BEARING
MEDIUM LENGTH SPANS
(GRADE 50 STEEL)

NO. BR-SS(9.05)-99-335 SHEET 2 OF 2



Note:
1. Nut not shown.
2. Pad and support not shown.

PLAN
Scale: 1½" = 1'-0"



ELEVATION
Scale: 1½" = 1'-0"

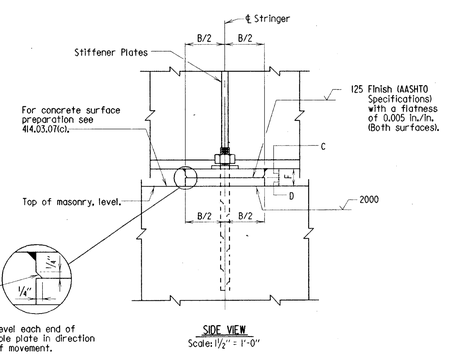
NOTE TO DESIGNER
Grade 50 bearings are to be used in new bridge projects.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ℄ Brg. and ℄ shoe are coincident.

EXPANSION BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

NO. BR-SS(9.07)-99-337 SHEET 1 OF 2



SIDE VIEW
Scale: 1½" = 1'-0"

DATA SCHEDULE

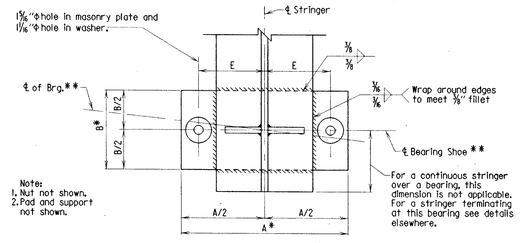
Type	Sole Plate A	Sole Plate B	Sole Plate C	Masonry ℄ A	Masonry ℄ B	Masonry ℄ D	Hole Loc. E	Hgt. F	Loads (Kips) Vert.	Loads (Kips) Dead
SE50 - I	17	9	1	17	9	1	6½	2	70	16
SE50 - II	19	9	1	19	9	1	7½	2	85	23
SE50 - III	21	9	1	21	9	1	8½	2	100	34

Note: All dimensions are in inches.

Note:
1. Sole and masonry plates to be A 709 Grade 50 steel painted to match finished bridge color.
2. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
3. 1000 RMS (Finish all over) except where otherwise noted.
4. Design Bearing Load 0.7 KSI.
5. Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at ℄ of bearing.
6. Unless otherwise noted, bearings shall be placed normal to ℄ of stringer.
7. Plates are to be shipped as units.
8. If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
9. This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
10. All anchor bolts and washers shall be unpainted A 709 Grade 36 galvanized steel. All nuts shall be unpainted A 307 galvanized steel.

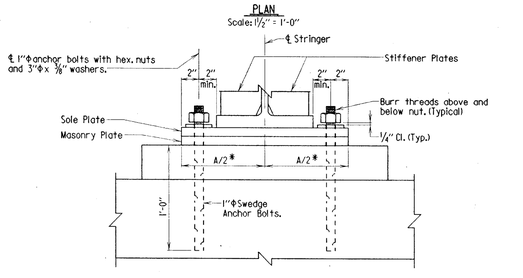
EXPANSION BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

NO. BR-SS(9.07)-99-337 SHEET 2 OF 2



Note:
1. Nut not shown.
2. Pad and support not shown.

PLAN
Scale: 1½" = 1'-0"



ELEVATION
Scale: 1½" = 1'-0"

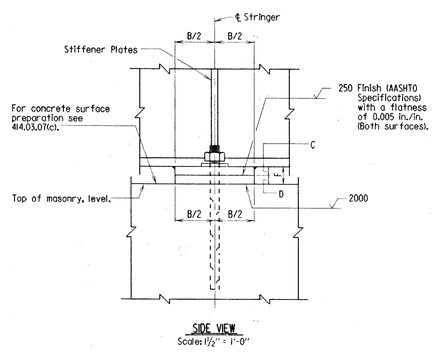
NOTE TO DESIGNER
Grade 50 bearings are to be used in new bridge projects.

* Edges may be left as cut or cast.

** Where bridge is not skewed, ℄ Brg. and ℄ shoe are coincident.

FIXED BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

NO. BR-SS(9.08)-99-338 SHEET 1 OF 2



SIDE VIEW
Scale: 1½" = 1'-0"

DATA SCHEDULE

Type	Sole Plate A	Sole Plate B	Sole Plate C	Masonry ℄ A	Masonry ℄ B	Masonry ℄ D	Hole Loc. E	Hgt. F	Loads (Kips) Vert.	Loads (Kips) Dead
SF50 - I	17	9	1	17	9	1	6½	2	70	16
SF50 - II	19	9	1	19	9	1	7½	2	85	23
SF50 - III	21	9	1	21	9	1	8½	2	100	34

Note: All dimensions are in inches.

Note:
1. Sole and masonry plates to be A 709 Grade 50 steel painted to match finished bridge color.
2. Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
3. 1000 RMS (Finish all over) except where otherwise noted.
4. Design Bearing Load 0.7 KSI.
5. Top of sole plate must be beveled to fit grade of bottom flange. If sole plate must be beveled, dimension 'C' shall be measured at ℄ of bearing.
6. Unless otherwise noted, bearings shall be placed normal to ℄ of stringer.
7. Plates are to be shipped as units.
8. If more than one size bearing is called for, Contractor may furnish all bearings of the larger size provided the bearing pads are altered to accommodate same. No increase in any prices bid will be allowed if this option is selected.
9. This bearing for use on simple span steel stringer bridges less than 50'-0" long and/or comparable continuous span lengths.
10. All anchor bolts and washers shall be unpainted A 709 Grade 36 galvanized steel. All nuts shall be unpainted A 307 galvanized steel.

FIXED BEARING
SHORT LENGTH SPANS
(GRADE 50 STEEL)

NO. BR-SS(9.08-99-338 SHEET 2 OF 2

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX (301) 490-2649 www.gpinet.com

DES:
DRN:
CHK:
DATE:

BY	NO	REVISION	DATE

STANDARD SHEET

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1 & 2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 Bid Set Sheet No. 48

SCALE AS SHOWN

SHEET 39b OF 39

BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	2'-5"	1'-9"	1'-5"
#5	3'-0"	2'-2"	1'-9"
#6	3'-7"	2'-7"	2'-1"
#7	4'-10"	3'-6"	2'-10"
#8	5'-5"	4'-7"	3'-8"
#9	8'-1"	5'-9"	4'-8"
#10	10'-3"	7'-4"	5'-11"
#11	12'-7"	9'-0"	7'-3"

*** LOCATION CATEGORY**

A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.
B - All bars not in Category A spaced less than 6 inches apart.
C - All bars not in Category A spaced 6 inches or more apart.

Note:
1. When bar lap is not specified on the plans, the above dimensions shall be used.
2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING

NO. M16.07)-81-127 SHEET 1 OF 3

BAR SIZE	* LOCATION CATEGORY			3 Times Bar Diameter	6 Times Bar Diameter	= c/c Spacing
	A	B	C			
#4	2'-11"	2'-7"	2'-1"	1½"	3"	3½"
#5	3'-8"	3'-3"	2'-7"	1⅞"	3¾"	4⅜"
#6	4'-5"	3'-10"	3'-1"	2¼"	4½"	5¼"
#7	5'-11"	5'-3"	4'-2"	2⅝"	5¼"	6⅛"
#8	7'-9"	6'-10"	5'-6"	3"	6"	7"
#9	9'-10"	8'-8"	6'-11"	3⅜"	6¾"	7⅞"
#10	12'-5"	11'-0"	8'-10"	3¾"	7⅝"	8⅞"
#11	15'-3"	13'-6"	10'-10"	4¼"	8½"	9⅞"

*** LOCATION CATEGORY**

A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.
B - All bars not in Category A spaced less than 6 inches apart.
C - All bars not in Category A spaced 6 inches or more apart.

Note:
1. When bar lap is not specified on the plans, the above dimensions shall be used.
2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

CASE NO.1 - For bars coated with epoxy with cover less than 3 times the bar diameter or clear spacing between bars less than 6 times the bar diameter.

BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO.1

NO. M16.07)-81-127 SHEET 2 OF 3

BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	2'-9"	2'-0"	1'-7"
#5	3'-6"	2'-6"	2'-0"
#6	4'-2"	3'-0"	2'-5"
#7	5'-7"	Does Not Exist	3'-3"
#8	7'-4"		4'-3"
#9	9'-4"		5'-4"
#10	11'-10"		6'-9"
#11	14'-6"		8'-3"

*** LOCATION CATEGORY**

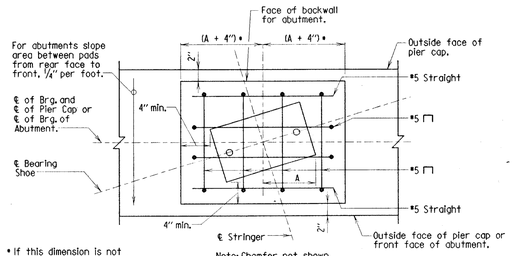
A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.
B - All bars not in Category A spaced less than 6 inches apart.
C - All bars not in Category A spaced 6 inches or more apart.

Note:
1. When bar lap is not specified on the plans, the above dimensions shall be used.
2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

CASE NO.2 - For bars coated with epoxy not in Case No.1.

BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO.2

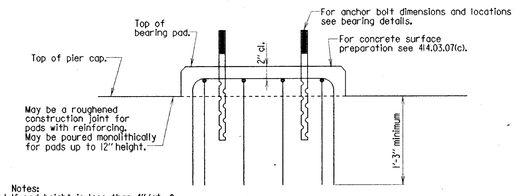
NO. M16.07)-81-127 SHEET 3 OF 3



* If this dimension is not shown on contract drawing it shall be established for the largest value necessary on a support to the nearest higher inch, and the same dimension used for every pad on that support.

Note: Chamfer not shown.

PLAN
Scale: 1" = 1'-0"

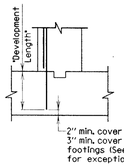


Notes:
1. If pad height is less than 4" (at ℄ of Bearing), all dimensions, etc. shown on this sheet will prevail except no reinforcing steel will be required and pad must be poured monolithically with support.
2. Anchor bolts shall be set in round holes drilled or cored into the masonry.
3. The drilled or cored holes shall have a diameter of at least 1" larger than the diameter of the bolts.
4. Holes shall be filled with nonshrink grout. Nonshrink grout shall have a min. comp. strength of 5000 p.s.i. in 7 days when tested in accordance with AASHTO T 106, except that the cube molds shall remain intact with a top firmly attached throughout the curing period. The nonshrink grout shall have a minimum expansion of 0.02% after 7 days when tested in accordance with AASHTO T-160.
5. For size of pad see pertinent substructure sheets. If not available see note in plan above.
6. Space reinforcing steel to clear anchor bolts.

ELEVATION
Scale: 1" = 1'-0"

BEARING PAD WHERE ONLY A SINGLE SHOE IS REQUIRED ON A SUPPORT

NO. BR-SB16.021-80-121 SHEET 1 OF 1



STANDARD STRAIGHT BAR

BAR SIZE	* LOCATION CATEGORY			3 Times Bar Diameter	6 Times Bar Diameter	= c/c Spacing
	A	B	C			
#4	1'-9"	1'-6"	1'-3"	1½"	3"	3½"
#5	2'-2"	1'-11"	1'-6"	1⅞"	3¾"	4⅜"
#6	2'-7"	2'-3"	1'-10"	2¼"	4½"	5¼"
#7	3'-6"	3'-1"	2'-6"	2⅝"	5¼"	6⅛"
#8	4'-7"	4'-1"	3'-3"	3"	6"	7"
#9	5'-9"	5'-1"	4'-1"	3⅜"	6¾"	7⅞"
#10	7'-4"	6'-6"	5'-2"	3¾"	7⅝"	8⅞"
#11	9'-0"	7'-11"	6'-4"	4¼"	8½"	9⅞"

* LOCATION CATEGORY:

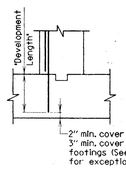
A- Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.
B- All bars not in Category A spaced less than 6" apart.
C- All bars not in Category A spaced 6" inches or more apart.

Note:
1. When development length is not specified on the plans, the above dimensions shall be used.
2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

CASE NO.1 - For bars coated with epoxy with cover less than 3 times the bar diameter or clear spacing between bars less than 6 times the bar diameter.

DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO.1

NO. M16.14)-90-214 SHEET 2 OF 3



STANDARD STRAIGHT BAR

BAR SIZE	* LOCATION CATEGORY		
	A	B	C
#4	1'-8"	1'-2"	1'-0"
#5	2'-1"	1'-6"	1'-2"
#6	2'-5"	1'-9"	1'-5"
#7	3'-4"	Does Not Exist	1'-11"
#8	4'-4"		2'-6"
#9	5'-6"		3'-2"
#10	6'-11"		4'-0"
#11	8'-6"		4'-11"

* LOCATION CATEGORY:

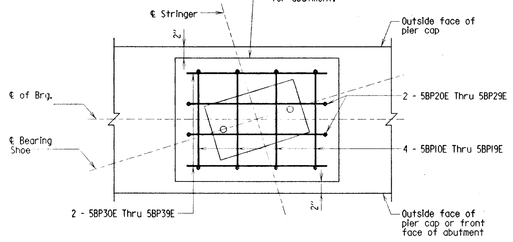
A- Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in: footings, pier caps, etc.
B- All bars not in Category A spaced less than 6" apart.
C- All bars not in Category A spaced 6" inches or more apart.

Note:
1. When development length is not specified on the plans, the above dimensions shall be used.
2. These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

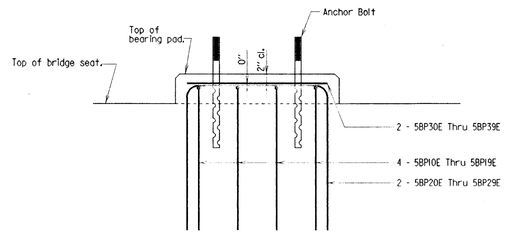
CASE NO.2 - For bars coated with epoxy not in Case No.1.

DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO.3 (3500 P.S.I.) CONCRETE EPOXY COATED REINFORCING CASE NO.2

NO. M16.14)-90-214 SHEET 3 OF 3



PLAN
Scale: 1" = 1'-0"



ELEVATION
Scale: 1" = 1'-0"

Other Related Standard
BR-SB16.021-80-121

REINFORCING BAR PLACEMENT DIAGRAM BEARING PAD TYPE BPE

NO. REBAR-PLT.00-91-254 SHEET 1 OF 1

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES:
DRN:
CHK:
DATE:

BY	NO	REVISION	DATE

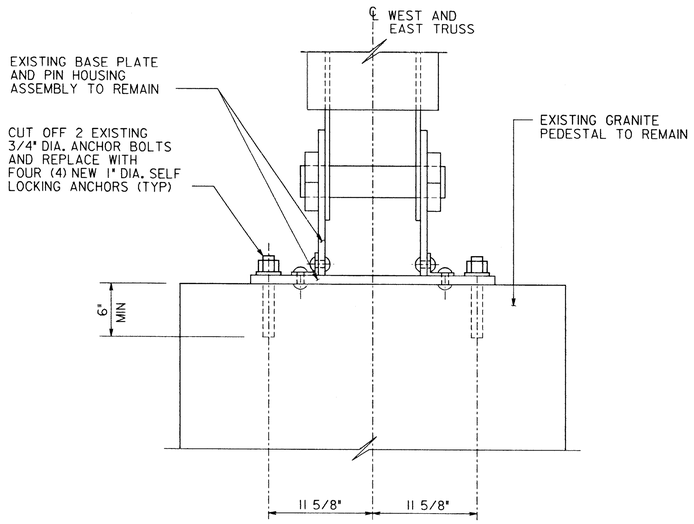
STANDARD SHEET

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY PHASE 3B, SEGMENTS 1 & 2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 Bid Set, Sheet No. 49

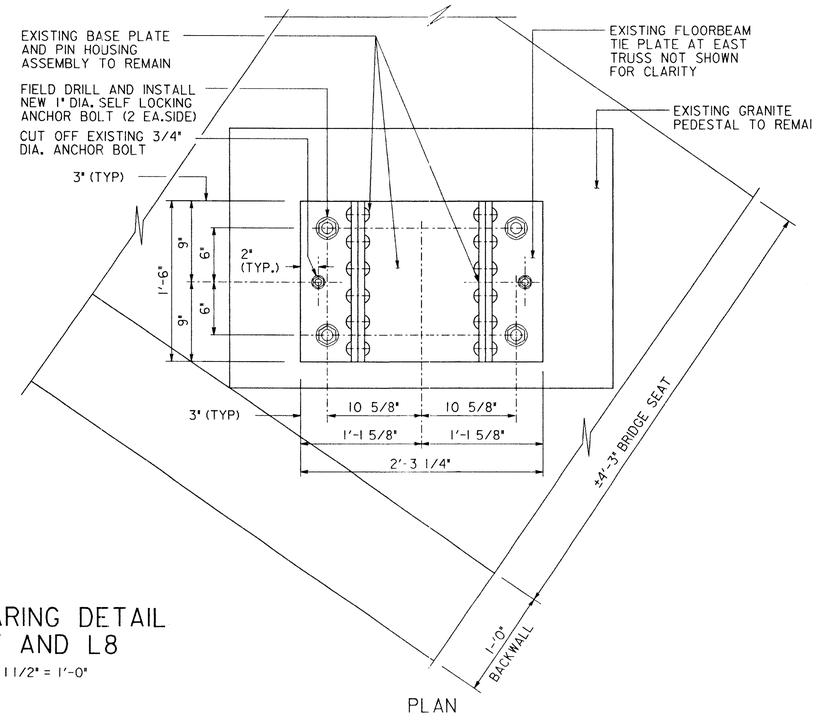
SCALE AS SHOWN

SHEET 39 OF 39



ELEVATION

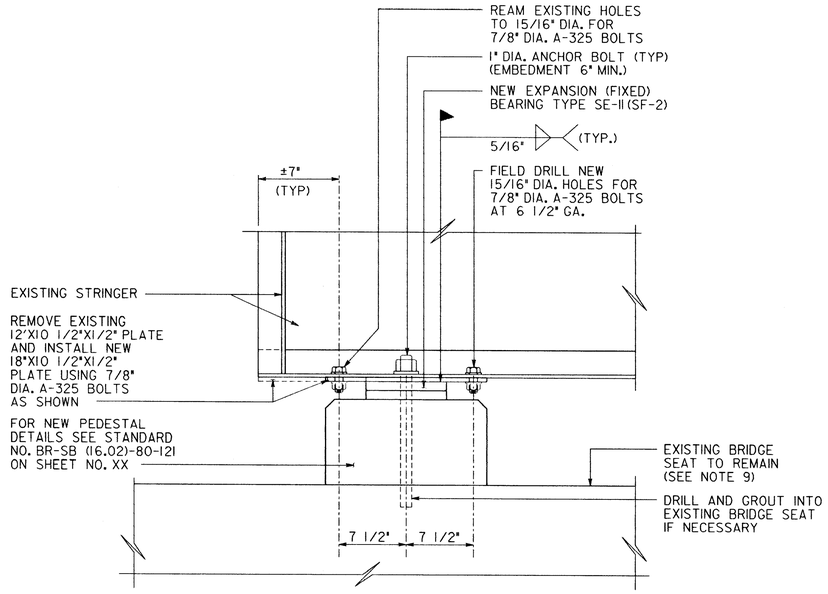
LOOKING SOUTH



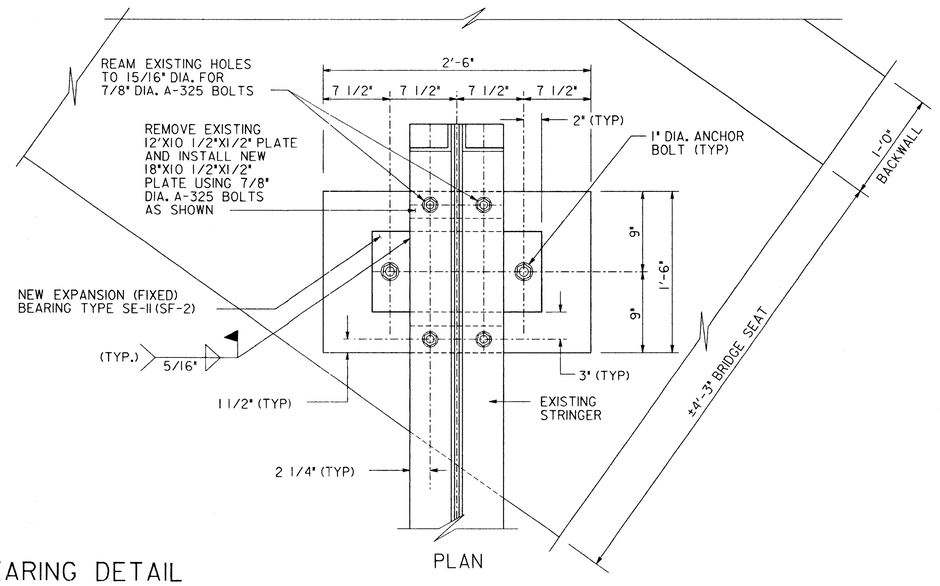
PLAN

FIXED BEARING DETAIL AT L7 AND L8

SCALE: 1 1/2" = 1'-0"



ELEVATION



PLAN

STRINGER BEARING DETAIL AT SA, SB, S7, AND S14

SCALE: 1 1/2" = 1'-0"

NOTES:

1. ALL NEW STEEL PLATES SHALL BE ASTM A 709 GRADE 50W OR A-588.
2. ALL BOLTS SHALL BE 7/8" DIA. A-325 TYPE 3 UNLESS OTHERWISE NOTED.
3. ALL BOLT EDGE DISTANCE SHALL BE 1 1/2" UNLESS OTHERWISE NOTED.
4. FOR BEARING DETAILS FOR A36 STEEL SEE STANDARDS NO. BR-SS(9.01)-80-114 BR-SS(9.02)-80-115 BR-SS(9.03)-81-128 BR-SS(9.04)-81-129 ON SHEET NO. XX OF XX
5. FOR PEDESTAL DETAILS SEE STANDARD NO. BR-SB(6.02)-80-121 ON SHEET NO. XX OF XX.
6. FOR ADDITIONAL BEARING DETAILS SEE SHEET 38 OF 39.
7. ALL DIMENSIONS SHALL BE FIELD VERIFIED.
8. ALL WELDS SHALL BE PERFORMED BY A CERTIFIED WELDER AND IN ACCORDANCE WITH THE CURRENT EDITION OF AWS D-1.1 AND AWS D-1.5.
9. TOP OF EXISTING GRANITE BRIDGE SEAT TO BE PRESSURE WASH CLEANED TO REMOVE ALL DEBRIS FROM THE GRANITE SURFACE PRIOR TO THE PLACEMENT OF THE NEW CONCRETE PEDESTALS, BACKWALLS, AND SUPPORT WALLS. THE SURFACE PREPARATION OF THE GRANITE SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO PLACEMENT OF ANY CONCRETE.

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 15778 — REGISTERED PROFESSIONAL ENGINEER

DES: LL
DRN: LL
CHK: JWS
DATE: 6/99

BY	NO	REVISION	DATE

BEARING DETAILS
SHEET 2

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY
PHASE 3B, SEGMENTS 1&2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 46

SCALE AS SHOWN

SHEET 39 OF 39

HOWARD COUNTY PATHWAY SYSTEM - PHASE 3b

HOWARD COUNTY, MARYLAND SEGMENTS 1

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT N-3954

INDEX

Site Analysis

9270	Linear Feet of Path
270	Linear Feet of Bridge
955	Linear Feet of Boardwalk
3.40 Ac.	Total Area Disturbed
1.85 Ac.	Area of Vegetative Stabilization
1.56 Ac.	Area of Impervious Surface
0.40 Ac.	Area of Pervious Surface (Asphalt Stone Dust)
7875 S.F.	Area of Temporary Wetland Disturbance
2416 S.F.	Area of Permanent Wetland Disturbance

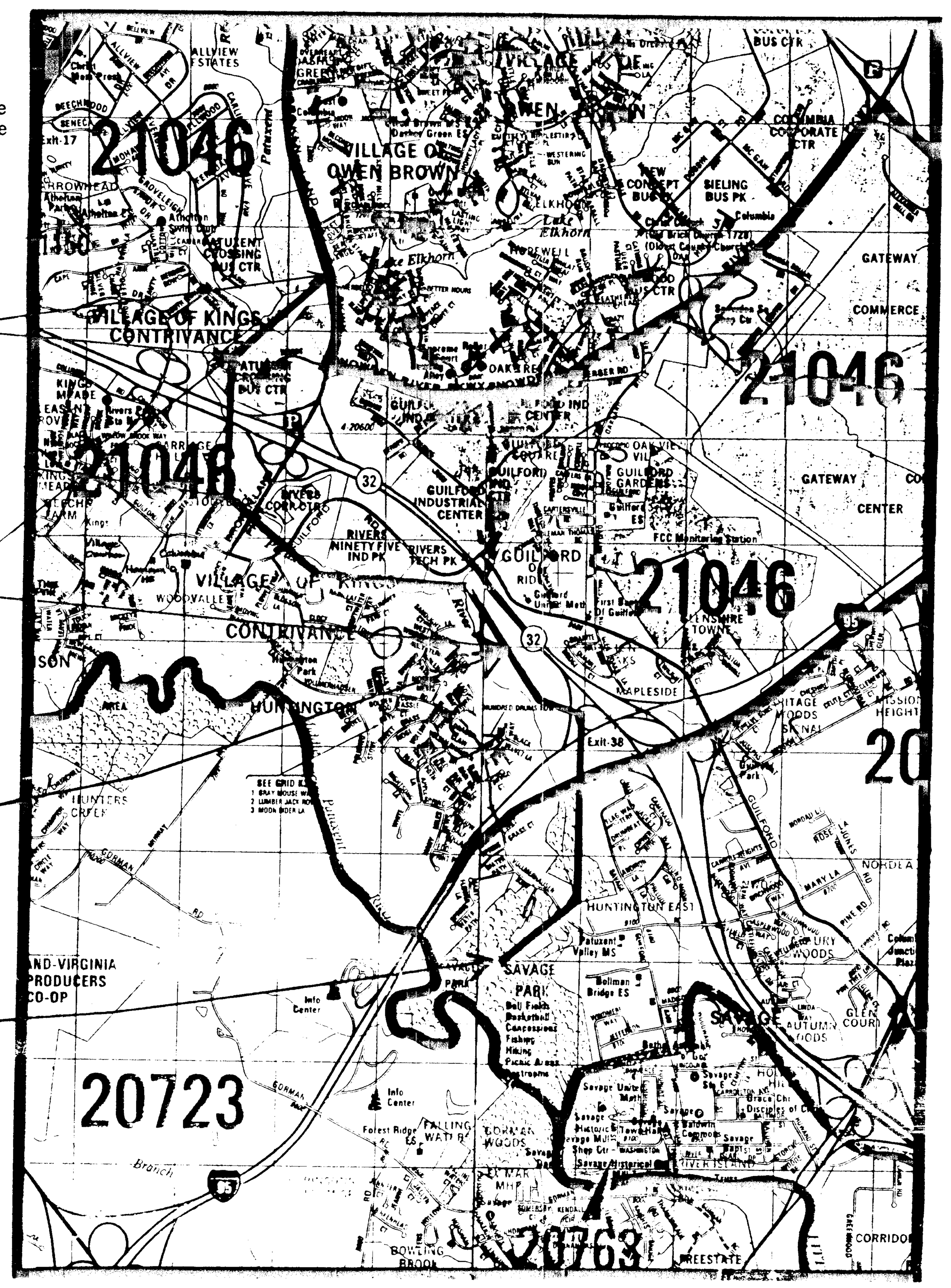
Limits of Bituminous Pathway 28+00 - 112+10
(Bikers / Pedestrians)
Stone Dust Pathway 113+10 – 115+20
(Equestrians, Pedestrians, Bikers)

LIMIT OF WORK PHASE 3b, SEG 2

LIMIT OF WORK PHASE 3b, SEG.1

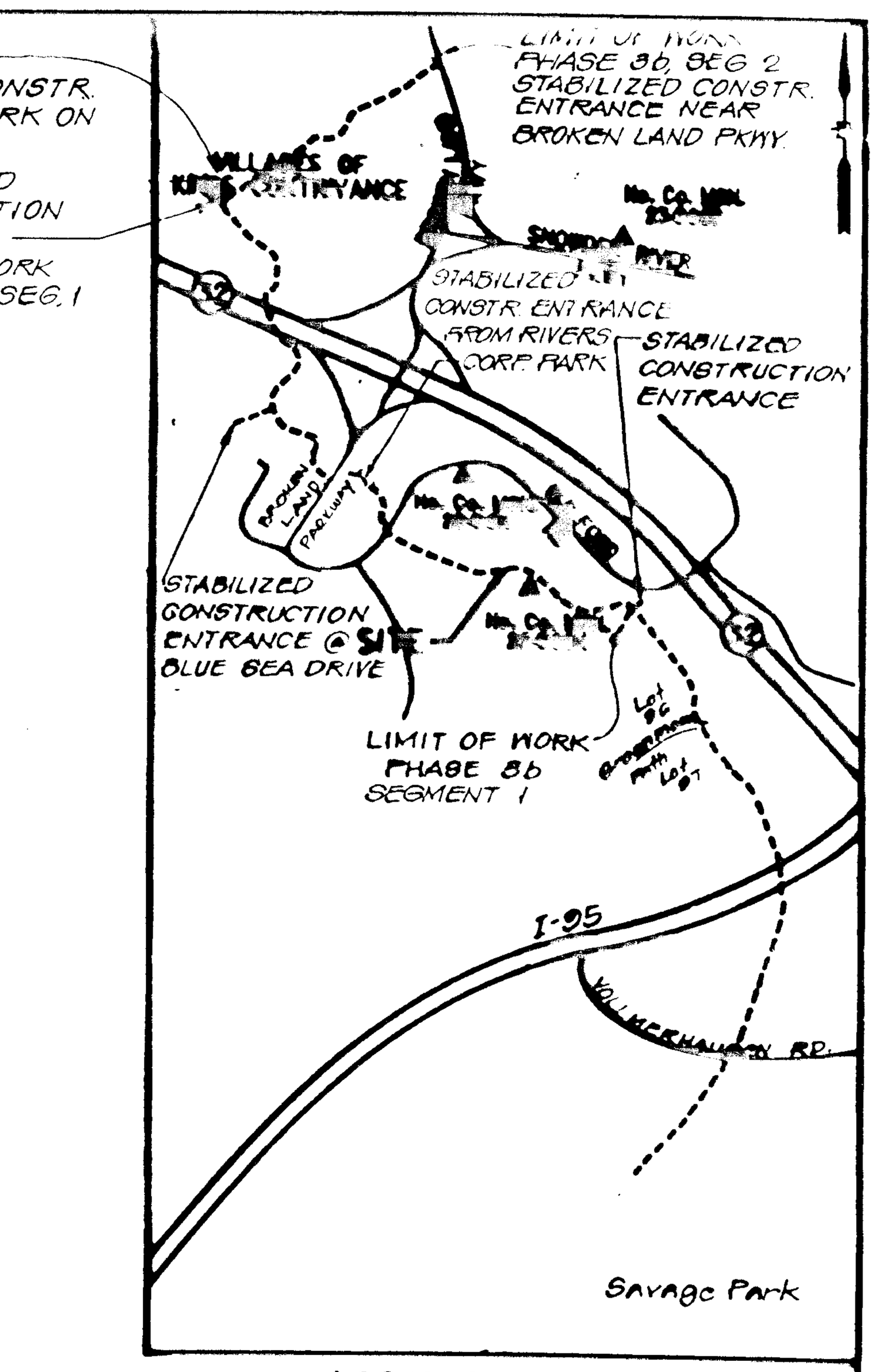
~~LIMIT OF WORK PHASE 3A~~ N/C

~~LIMIT OF WORK PHASE 3A~~ N/C



VICINITY MAP
SCALE: 1" = 2000'
COPYRIGHT: ADC,
PERMIT USE NO. 20694273

THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS DATED 12/18/90 THROUGH 1/23/92.



LOCATION MAP
Scale 1"=2000'

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

LEGEND

- CULVERT
- BRIDGE
- WETLAND LIMIT
- 25' WETLAND BUFFER
- TPD — TREE PROTECTIVE DEVICE
- EXISTING TREELINE
- PROPOSED TREELINE
- STREAM
- (L1) (C1) TANGENT/CURVE SEGMENT NO.
- SF — SILT FENCE
- PROPOSED SIGN
- PROPERTY LINE
- PROPOSED BOARDWALK
- SCE — STABILIZED CONSTRUCTION ENTRANCE

NOTE:
UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS. CULVERT BOARDWALK AND BRIDGE LOCATIONS.

SITE DEVELOPMENT PLAN
Pathway Phase 3a- SDP-98-46
Pathway Phase 3b, Segment 1- SDP-99-79
Pathway Phase 3b, Segment 2- SDP-00-05

- MDE TRACKING NO. 19952492

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 4/6/00
Chief, Division of Land Development — Date 4/18/00
Director (Acting) — Date 4/18/00

Director, Department of Recreation and Parks — Date 3-13-00

GENERAL NOTES

1. COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC SYSTEM POINT NOS. 2241004, 2241011 & 2341002. NAD 27 DATUM
2. CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO (2) WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN THE VICINITY OF PROPOSED UTILITIES AT NO COST TO THE COUNTY THEN IF DIRECTED BY THE ENGINEER, TEST PITS SHALL BE DUG AT UTILITY CROSSINGS TO DETERMINE EXISTING HORIZONTAL AND VERTICAL ALIGNMENT OF UTILITIES.
3. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

   MISS UTILITY 1-800-257-7777
   CONSTRUCTION INSPECTION DIVISION, HOWARD COUNTY (410) 313-1880
   STATE HIGHWAY ADMINISTRATION (410) 531-5533
   BALTIMORE GAS & ELECTRIC COMPANY - UNDERGROUND ELECTRIC
   DISTRIBUTION CUSTOMER SERVICE (410) 685-0123
   ENGINEERING DAMAGE CONTROL (410) 234-5621
   BELL ATLANTIC TELEPHONE 1-800-870-0000
   AMERICAN TELEPHONE & TELEGRAPH CABLE LOCATION DIVISION (410) 393-3553
   COLONIAL PIPELINE COMPANY (410) 781-4641
   BUREAU OF UTILITIES, HOWARD COUNTY (410) 313-4900
4. AVOID DAMAGE TO TREES ON THE PATHWAY TO MAXIMUM EXTENT. OTHER TREES WITHIN LIMITS OF CONSTRUCTION SHALL NOT BE DESTROYED WITHOUT APPROVAL OF THE ENGINEER, TREES > 12'Ø WITHIN 5' OF LOD WILL BE PROTECTED. SEE DETAIL SHEET NO. 15.
5. CONTRACTOR SHALL REMOVE TREES, STUMPS, AND ROOT ALONG LINE OF EXCAVATION AS DIRECTED BY THE ENGINEER. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID. FOR CLEARING AND GRUBBING. CARE SHALL BE TAKEN TO AVOID DISTURBANCE OF EXISTING TREES TO REMAIN.
6. PLACE REGULATION WARNING SIGNS AS REQUIRED TO COMPLY WITH MARYLAND STATE HIGHWAY ADMINISTRATION MANUAL OF TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS. PAYMENT FOR THIS ITEM SHALL BE INCIDENTAL TO OTHER BID ITEMS. ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO ANY ASPHALT PAVING. NO TRAFFIC STUDY IS REQUIRED.
7. ALL GRADING SHALL BE LIMITED TO 16' R.O.W. INCLUDING SIDE SLOPES AND STABILIZATION (EXCEPT WHERE LOD INDICATES A WIDER AREA. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED AS FOLLOWS:
   A. SEVEN (7) CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES, AND ALL SLOPES GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1); AND
   B. FOURTEEN (14) CALENDAR DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
8. FOR DETAILS NOT SHOWN ON THESE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, THE CONTRACTOR SHALL ABIDE BY THE MARYLAND STATE HIGHWAY ADMINISTRATION'S "BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES," "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" AND THE SPECIAL PROVISIONS. IN THE EVENT OF ANY DISCREPANCY BETWEEN THESE SOURCES, THE SPECIAL PROVISIONS SHALL GOVERN.
9. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
10. THE PATHWAY SHALL BE MAINTAINED AFTER CONSTRUCTION BY THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS.
11. UNLESS INDICATED OTHERWISE, NEW PATHWAY SHALL NOT EXCEED 5% SLOPE.

The New Town portion of this proposal is not subject to Forest Conservation Program requirements per Section 16.1202(b)(iv) & the Non-New Town zoned portions (700 L.f.) all fall within previously assigned rights-of-way for roads & utilities.

FEE-IN-LIEU OF STORMWATER MANAGEMENT APPROVAL WAS GRANTED ON FEBRARY 25, 1999.

RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION. SEE APPROPRIATE RIGHT-OF-WAY PLAT OR PLATS.

THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF SAID LOCATIONS. CALL "MISS UTILITY", 1-800-257-7777 FOR UTILITY LOCATIONS AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION.

HOWARD COUNTY FIELD BOOK SURVEY REFERENCES

BOOK NO.	DATE SURVEYED
268	12/18/90 - 3/28/91
269	3/28/91 - 4/11/91
277	4/12/91 - 12/6/91
180	12/20/91 - 1/23/92

RELEVANT BACKGROUND INFORMATION

Plan Files F-79-44C, VKC 3/1
TAX MAP NO.: 42,
ZONING: NT
ELECTION DISTRICT: 6

WETLANDS DELINEATED BY:
EBA ENGINEERING, INC.
SETON BUISNESS PARK
5800 METRO DRIVE
BALTIMORE, MD. 21215-3209
(410) 358-7171

FLOODPLAIN STUDY IS BASED ON:

HOWARD COUNTY WATERSHED MODEL UPDATE
LITTLE PATUXENT RIVER WATERSHED,
SUBMITTAL 2-REVISED HYDROLOGY DATA
PREPARED BY: BERNARD JOHNSON, INC., MAY 2, 1985

LITTLE PATUXENT RIVER WATERSHED MODEL UPDATE
FOR HOWARD COUNTY, MARYLAND
HEC-2 MODELS FOR BW-1 LITTLE PATUXENT RIVER
PREPARED BY BJI, NOVEMBER, 1985

The FDP Phases are Phase 148 (VKC 1/1), FDP Phase 184-A-III (RCP 1/1&2), FDP Phase 187 A-II (RCP 2/1), FDP Phase 238 (RCP 2/2), and FDP Phase 169 A-IV-PT. I (VKC 3/1).

DEVELOPERS CERTIFICATE

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

Signature of Developer 3/21/00 Date

ENGINEERS CERTIFICATE

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

Signature of Engineer 3/10/00 Date

APPROVED:

Reviewed for HOWARD SCD and meets Technical Requirements.

USDA-Natural Resources Conservation Service 4-4-00 Date

APPROVED:

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

Howard SCD 4/4/00 Date

SDP-1

SHA CONTRACT NO. HO 8325125 FAP NO.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS 3/21/00 DATE
CHIEF, BUREAU OF ENGINEERING 3/10/00 DATE

GPI GREENMAN-PEDERSEN, INC.

STATE OF MARYLAND — DANIEL JOSEPH MALUTIC No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES: K.P.
DRN: C.A.
CHK: D.J.M.
DATE: 9/97

BY | NO. | REVISION | DATE

TITLE SHEET

FOOT SCALE MAP NO. | BLOCK NO.

HOWARD COUNTY PATHWAY SYSTEM
PHASE 3b SEGMENTS 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET
Sheet No 2

SCALE AS SHOWN

SHEET 1 OF 12

SDP-99-79


LIMIT OF WORK
PHASE 3b, SEG. 2
LIMIT OF WORK
PHASE 3b, SEGMENT 1
Temporary Construction Entrance
Temporary Construction Entrance from Park on Carlinda Avenue.
Temporary Construction Entrance
Temp. Const. Easement From Rivers Corp. Park
Temp. Const. Entrance
Temporary Construction Easement
Phase 3b
Phase 3a
R-12
NT
R-SC
M-1
NIC
R-20
1"=50' SCALE PLAN VIEW SHEET # (TYP.)
APPROX. SHEET OUTLINE
APPROX. PATH ALIGNMENT
Stone Dust portion of trail extends from Old Guilford Road to Vollmerhausen Road, Sheets 11-15. (NIC)
MD RTE 32
VOLLMERHAUSEN ROAD
GUILFORD
PLEASANT GROVE
LAKE ELKHORN
MIDWAY BUSINESS PARK
EMPLOYMENT CENTER INDUSTRIAL
OAKVIEW VILLAGE
GUILFORD ELEM. SCHOOL
FEDERAL COM. COMM. GENERAL SERVICES ADM.
KINGDON GOULD, JR.
MURRAY HILL ROAD
MIDDLE BRANCH PATUXENT
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chief, Development Engineering
Date
Chief, Division of Land Development
Director
Date
Director, Department of Recreation and Parks
Date
3-21-00
APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000
SDP-2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 3/21/00	CHIEF, BUREAU OF ENGINEERING	DATE 3/21/00

Greenman-Pedersen, Inc.
ENGINEERS/ARCHITECTS/PLANNERS
LAUREL, MARYLAND

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — REGISTERED PROFESSIONAL ENGINEER

DES: B.B.
DRN: A.K.
CHK: K.P.
DATE:

BY	NO	REVISION	DATE

SHEET LAYOUT PLAN 1

600' SCALE MAP NO. ________ BLOCK NO. ________

HOWARD COUNTY PATHWAY SYSTEM – PHASE 3b, SEG. 1

CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

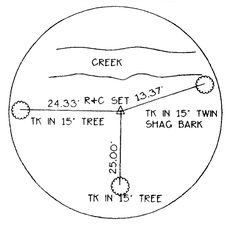
BID SET Sheet No 3

SCALE 1"=600'

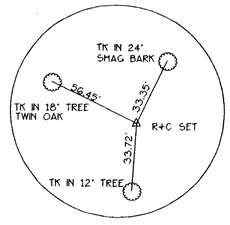
SHEET 2 OF 12

SDP. 99-79

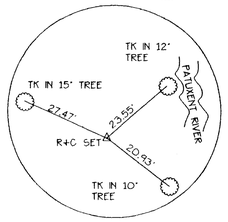
TRAVERSE #107
ELEVATION = 275.38'



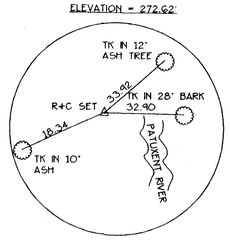
TRAVERSE #108
ELEVATION = 273.82'



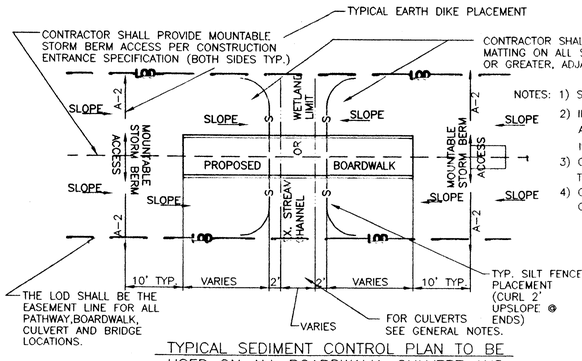
TRAVERSE #109
ELEVATION = 273.10'



TRAVERSE #110
ELEVATION = 272.62'



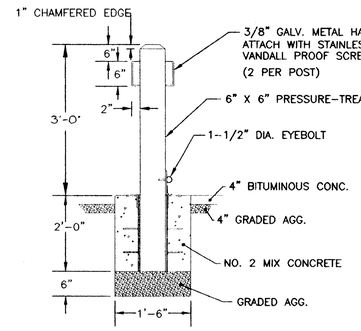
OPEN SPACE
LOT 339
VILLAGE OF KINGS CONTRIVANCE
PLAT #3904



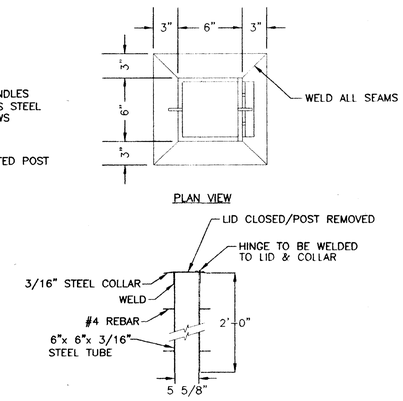
NOTES: 1) SEE WRA DETAILS SHEET 12.
2) INSTALL SEDIMENT AND EROSION CONTROL MEASURES AND NOTIFY SEDIMENT AND EROSION CONTROL INSPECTOR PRIOR TO PROCEDING WITH CONSTRUCTION.
3) CULVERT AREA TO BE BACKFILLED AND STABILIZED THE SAME WORK DAY.
4) CULVERT CROSSINGS SHALL BE INSTALLED WITH A 3 DAY CLEAR WEATHER FORECAST.

TYPICAL SEDIMENT CONTROL PLAN TO BE USED ON ALL BOARDWALK, CULVERT AND BRIDGE INSTALLATION
N.T.S.

UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.



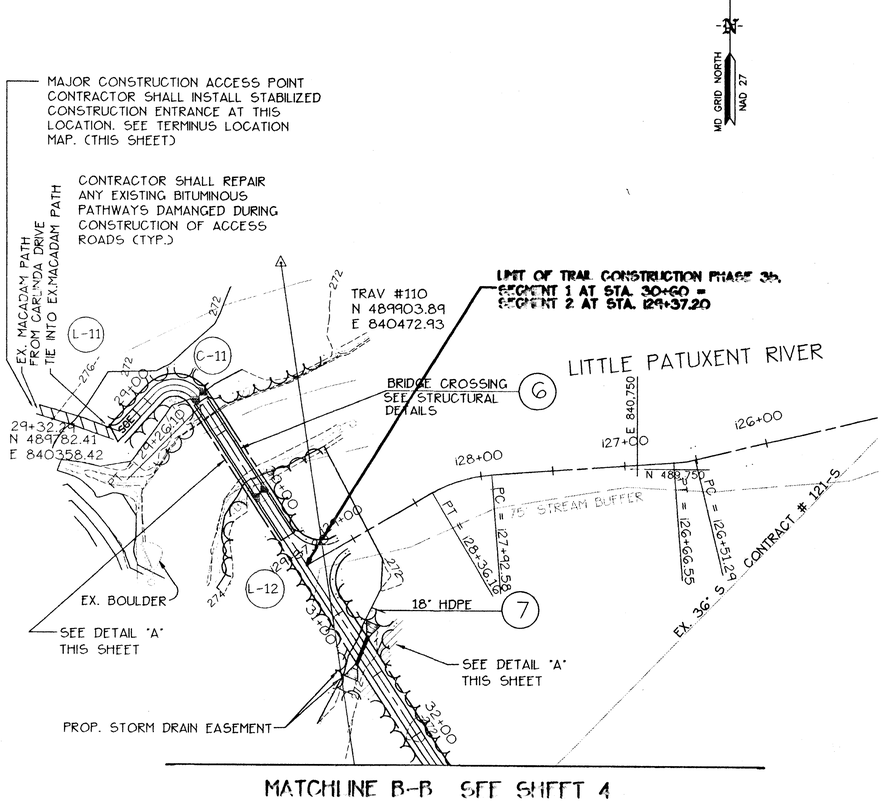
BOLLARD DETAIL
NOT TO SCALE

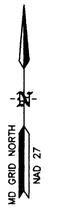


LID & CASING DETAIL

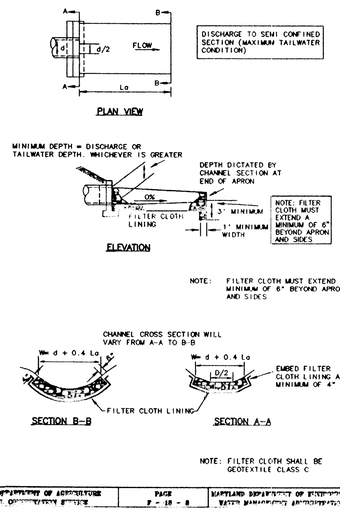
NOTES:
1.) PAINT ALL EXPOSED SURFACES WITH 2 COATS ALKYD INDUSTRIAL ENAMEL. COLORS TO BE APPROVED BY ENGINEER.

DETAIL "A"





DETAIL 25 - ROCK OUTLET PROTECTION I	ROCK OUTLET PROTECTION



Construction Specifications

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

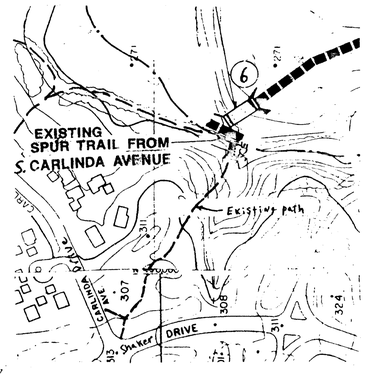
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.

3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

5. The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - B	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - BA	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



1"=200' MAP OF TERMINUS AT EXISTING PATHWAY NEAR CARLINDA DRIVE

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.

PARCEL A-3
SECTION G AREA 1
VILLAGE OF OWEN BROWN
PLAT #9509

℄ LINE DATA

LINE	DIRECTION	DISTANCE
L-11	N41 59'03"E	50.05'
L-12	S32 55'26"E	314.96'

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-11	75.00'	18.73'	9.41'	18.68'	S49 08'12"W	14 18'17"

SITE DEVELOPMENT PLANS SDP-3

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/6/00
Chief, Division of Land Development — Date 4/5/00
Director — Date 4/6/00
Director, Department of Recreation and Parks — Date 3/31/00

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/21/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/21/00

GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION EXPERTS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES: KP
BRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

600' SCALE MAP NO. _____ BLOCK NO. _____

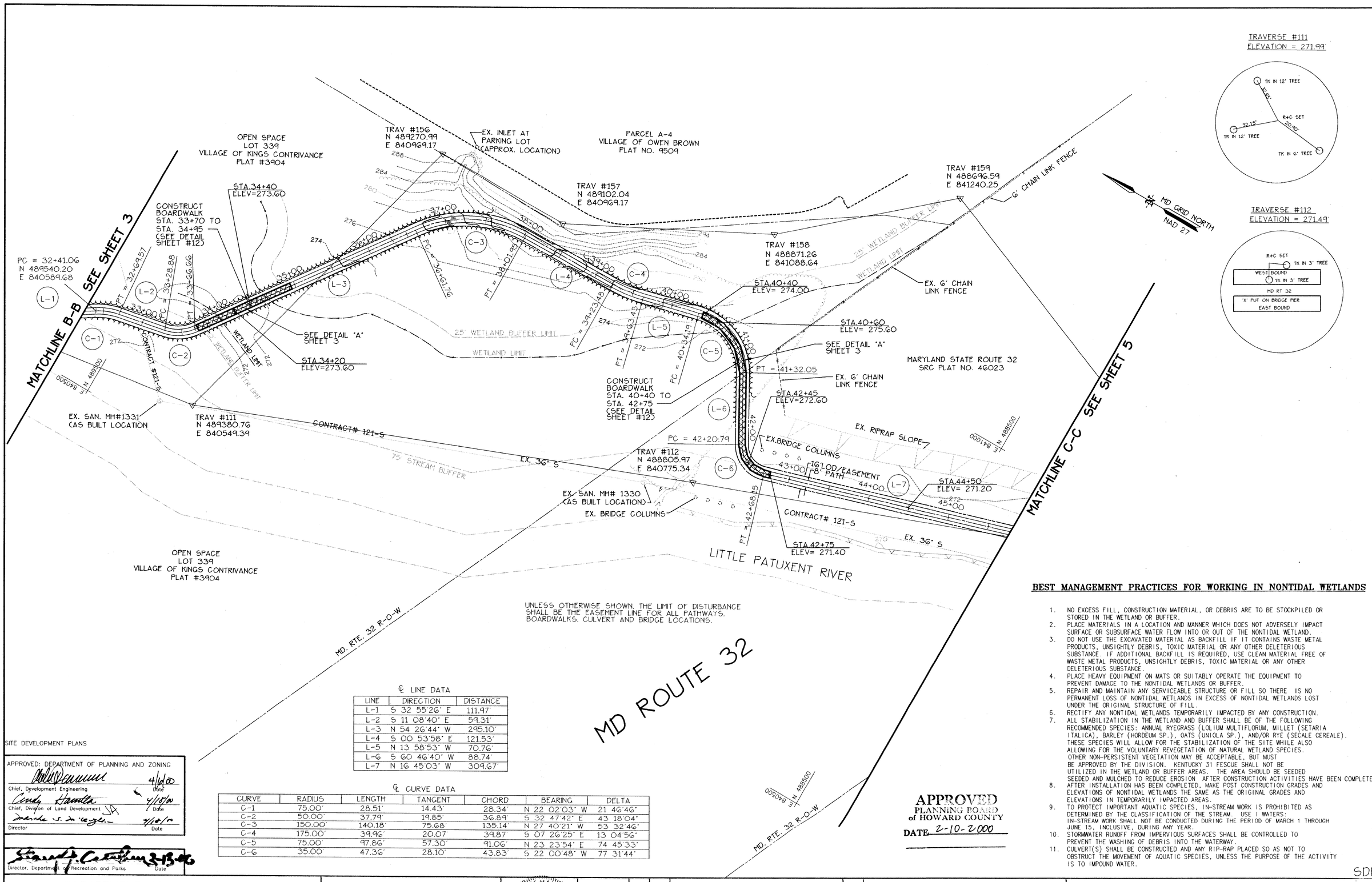
SITE PLAN
STA 28+00 - STA 32+41.06

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 1
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND BID SET SHEET NO. 4

SCALE 1" = 50'
SHEET 3 OF 12

HCPBS2.DWG

SDP-99-79



UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.

℄ LINE DATA

LINE	DIRECTION	DISTANCE
L-1	S 32 55'26" E	111.97'
L-2	S 11 08'40" E	59.31'
L-3	N 54 26'44" W	295.10'
L-4	S 00 53'58" E	121.53'
L-5	N 13 58'53" W	70.76'
L-6	S 60 46'40" W	88.74'
L-7	N 16 45'03" W	309.67'

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-1	75.00'	28.51'	14.43'	28.34'	N 22 02'03" W	21 46'46"
C-2	50.00'	37.79'	19.85'	36.89'	S 32 47'42" E	43 18'04"
C-3	150.00'	140.18'	75.68'	135.14'	N 27 40'21" W	53 32'46"
C-4	175.00'	39.96'	20.07'	39.87'	S 07 26'25" E	13 04'56"
C-5	75.00'	97.86'	57.30'	91.06'	N 23 23'54" E	74 45'33"
C-6	35.00'	47.36'	28.10'	43.83'	S 22 00'48" W	77 31'44"

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS ARE TO BE STOCKPILED OR STORED IN THE WETLAND OR BUFFER.
2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE.
4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS IN EXCESS OF NONTIDAL WETLANDS LOST UNDER THE ORIGINAL STRUCTURE OF FILL.
6. RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7. ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM, MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF NONTIDAL WETLANDS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9. TO PROTECT IMPORTANT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OF MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11. CULVERT(S) SHALL BE CONSTRUCTED AND ANY RIP-RAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/1/00

Chief, Division of Land Development — Date 4/10/00

Director — Date 4/10/00

Director, Department of Recreation and Parks — Date 3-13-00

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
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WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13758 — REGISTERED PROFESSIONAL ENGINEER

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

600' SCALE MAP NO. _____ BLOCK NO. _____

SITE PLAN
STA 32+41.06 – STA 47+40.47

HOWARD COUNTY PATHWAY SYSTEM–PHASE 3b, SEGMENT 1
CAPITAL PROJECT N–3954
HOWARD COUNTY, MARYLAND BID SET SHEET NO. 5

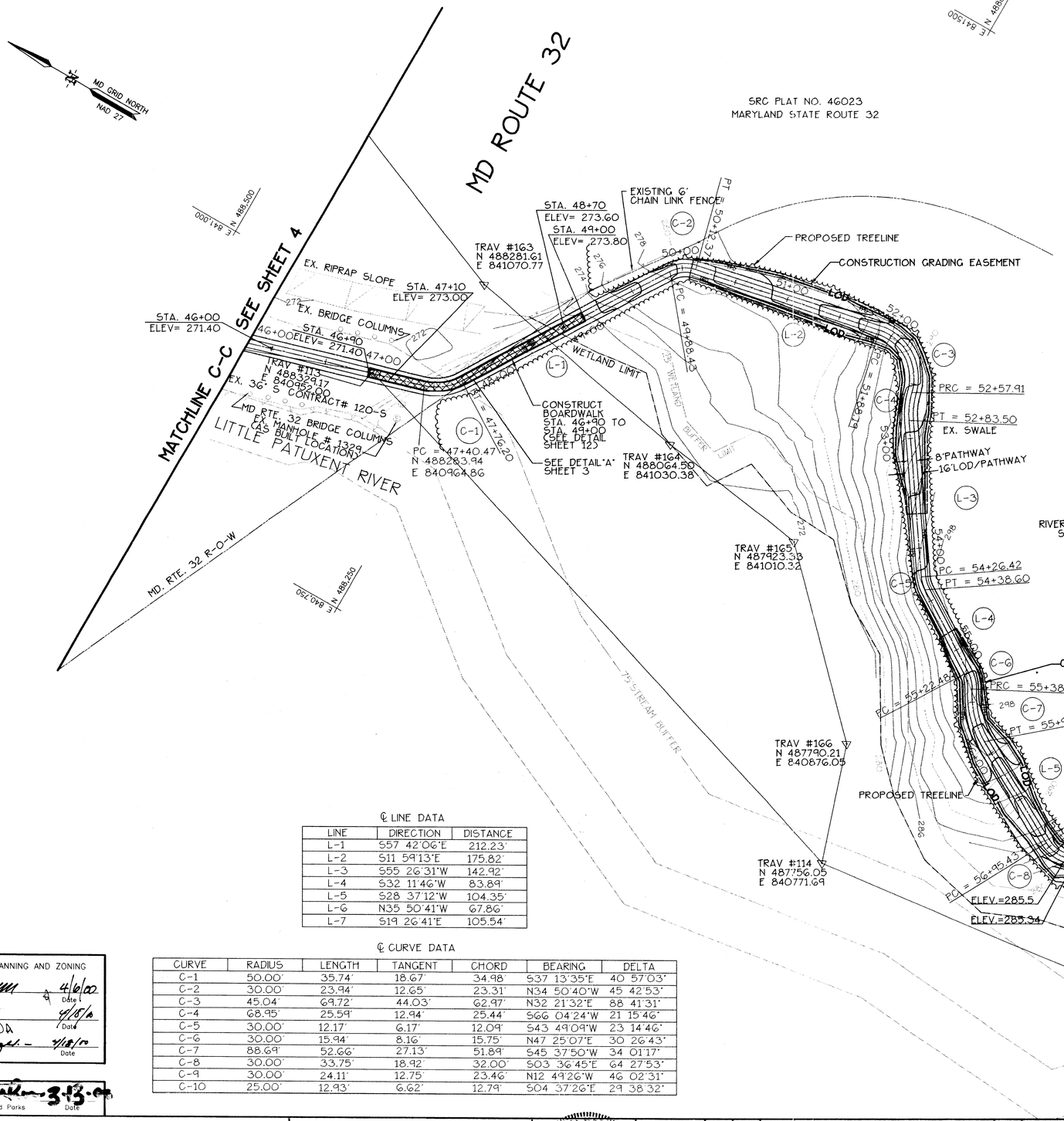
SCALE 1"=50'

SHEET 4 OF 12

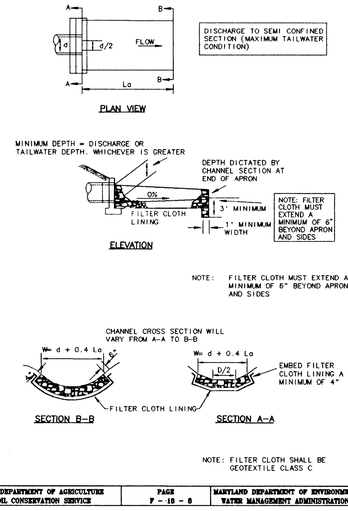
SDP-4

HCPBS03.DWG

4/3/1 SDP 99-79



DETAIL 25 – ROCK OUTLET PROTECTION I



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F – 18 – B	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ROCK OUTLET PROTECTION

Construction Specifications

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.

3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

5. The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F – 18 – 8a	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.

OPEN SPACE
LOT 3
RIVERS CORPORATE PARK
SECTION 1 AREA 1
PLAT NO. 7057

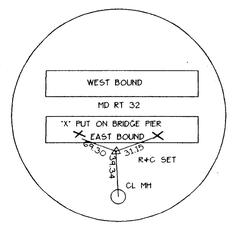
CONTRACTOR SHALL INSTALL TREE PROTECTIVE FENCING FROM STA. 50+00 TO STA. 59+00 LT. & RT. SEE DETAIL ON SHEET 12

℄ LINE DATA

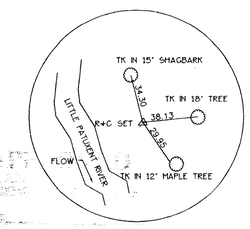
LINE	DIRECTION	DISTANCE
L-1	S57 42'06"E	212.23'
L-2	S11 59'13"E	175.82'
L-3	S55 26'31"W	142.92'
L-4	S32 11'46"W	83.89'
L-5	S28 37'12"W	104.35'
L-6	N35 50'41"W	67.86'
L-7	S19 26'41"E	105.54'

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-1	50.00'	35.74'	18.67'	34.98'	S37 13'35"E	40 57'03"
C-2	30.00'	23.94'	12.65'	23.31'	N34 50'40"W	45 42'53"
C-3	45.04'	69.72'	44.03'	62.97'	N32 21'32"E	88 41'31"
C-4	68.95'	25.59'	12.94'	25.44'	S66 04'24"W	21 15'46"
C-5	30.00'	12.17'	6.17'	12.09'	S43 49'09"W	23 14'46"
C-6	30.00'	15.94'	8.16'	15.75'	N47 25'07"E	30 26'43"
C-7	88.69'	52.66'	27.13'	51.89'	S45 37'50"W	34 01'17"
C-8	30.00'	33.75'	18.92'	32.00'	S03 36'45"E	64 27'53"
C-9	30.00'	24.11'	12.75'	23.46'	N12 49'26"W	46 02'31"
C-10	25.00'	12.93'	6.62'	12.79'	S04 37'26"E	29 38'32"



TRAVERSE #113
ELEVATION = 271.49'



TRAVERSE #114
ELEVATION = 271.38'

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/6/00

Chief, Division of Land Development — Date 4/8/00

Director — Date 4/10/00

Director, Department of Recreation and Parks — Date 3-13-00

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN–PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470–2772 BALT. (410) 880–3055
FAX: (301) 490–2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 21397 — REGISTERED PROFESSIONAL ENGINEER

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

600' SCALE MAP NO. _____ BLOCK NO. _____

SITE PLAN
STA 47+40.47 – STA 59+78.07

HOWARD COUNTY PATHWAY SYSTEM–PHASE 3b, SEGMENT 1
CAPITAL PROJECT N–3954
HOWARD COUNTY, MARYLAND BID SET SHEET NO. 6

SCALE 1"=50'

SHEET 5 OF 12

SDP-5

HCPBS04.DWG

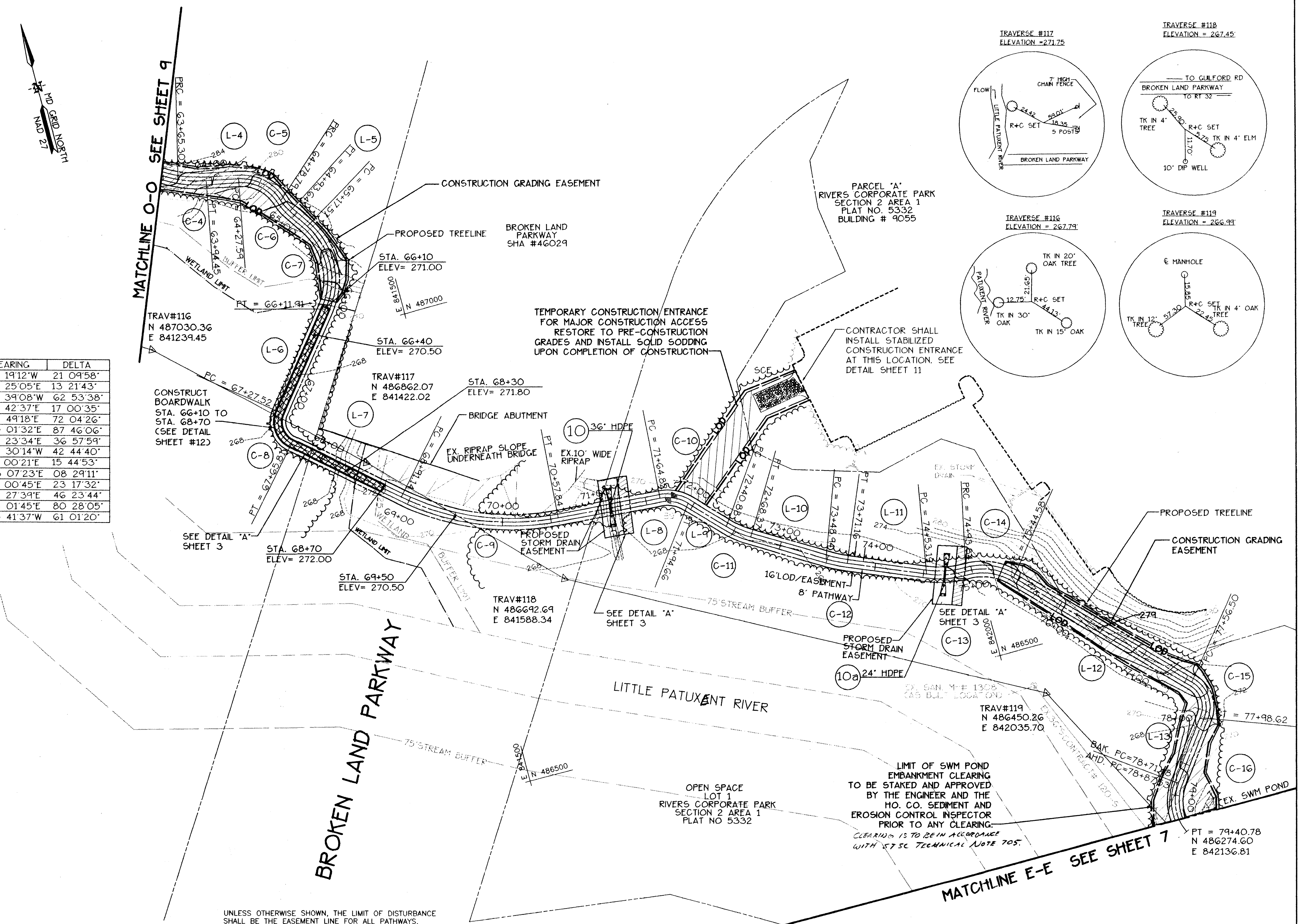
SDP-99-79

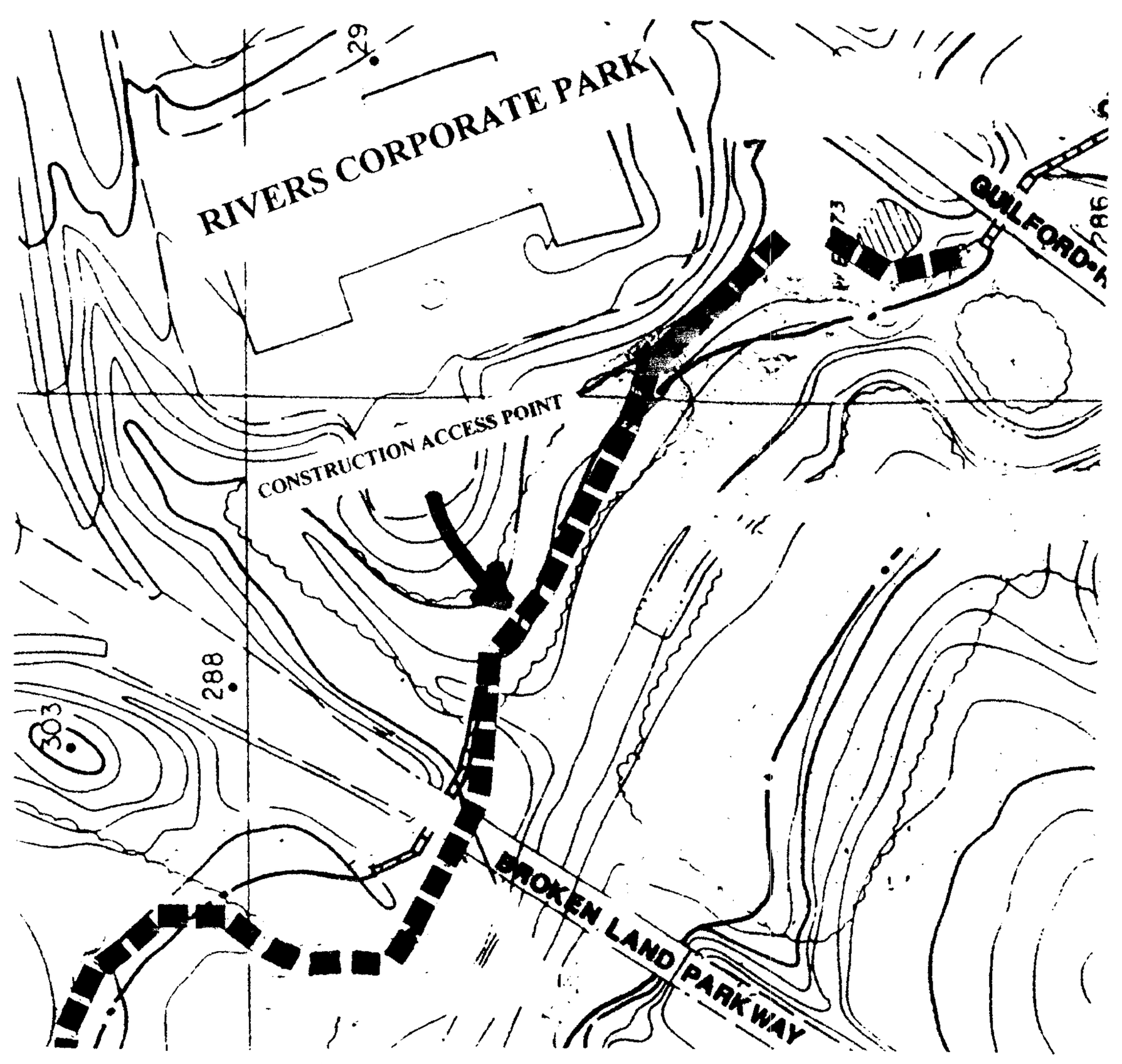
℄ LINE DATA

LINE	DIRECTION	DISTANCE
L-4	N79 05'57"W	33.15'
L-5	N33 12'55"W	23.93'
L-6	S38 51'31"W	115.60'
L-7	S48 54'35"E	125.33'
L-8	N85 52'34"W	106.98'
L-9	S43 07'54"E	46.22'
L-10	N58 52'48"W	80.57'
L-11	N67 21'59"W	82.03'
L-12	S44 15'47"W	211.92
L-13	S36 12'17"E	72.85

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-3	170.59'	63.02'	31.87'	62.66'	N76 19'12"W	21 09'58"
C-4	125.00'	29.15'	14.64'	29.09'	S72 25'05"E	13 21'43"
C-5	46.64'	51.20'	28.52'	48.67'	N47 39'08"W	62 53'38"
C-6	50.00'	14.84'	7.48'	14.79'	S24 42'37"E	17 00'35"
C-7	75.00'	94.34'	54.56'	88.25'	N02 49'18"E	72 04'26"
C-8	25.00'	38.30'	24.04'	34.66'	S05 01'32"E	87 46'06"
C-9	258.37'	166.70'	86.36'	163.82'	S67 23'34"E	36 57'59"
C-10	40.00'	29.84'	15.65'	29.15'	N64 30'14"W	42 44'40"
C-11	100.00'	27.49'	13.83'	27.40'	S51 00'21"E	15 44'53"
C-12	150.00'	22.22'	11.13'	22.20'	S63 07'23"E	08 29'11"
C-13	100.00'	40.65'	20.61'	40.37'	S79 00'45"E	23 17'32"
C-14	62.66	50.74	26.85	49.37	S67 27'39"E	46 23'44"
C-15	30.00	42.13	25.38	38.75	S04 01'45"E	80 28'05"
C-16	50.00'	53.25'	29.47'	50.77'	S05 41'37"W	61 01'20"





1"=200' SCALE MAP OF CONSTRUCTION ACCESS FROM RIVERS COPORATE PARK

UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 4/6/00
Chief, Development Engineering — Date

[signature] 4/18/00
Chief, Division of Land Development — Date

[signature] 4/10/00
Director — Date

[signature] 3.21.00
Director, Department of Recreation and Parks — Date

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SDP-6

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[signature] 3/21/00 — DIRECTOR OF PUBLIC WORKS — DATE
[signature] 3/21/00 — CHIEF, BUREAU OF ENGINEERING — DATE

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

SITE PLAN
STA 59+78.07 – STA 79+40.78

600' SCALE MAP NO. ______ BLOCK NO. ______

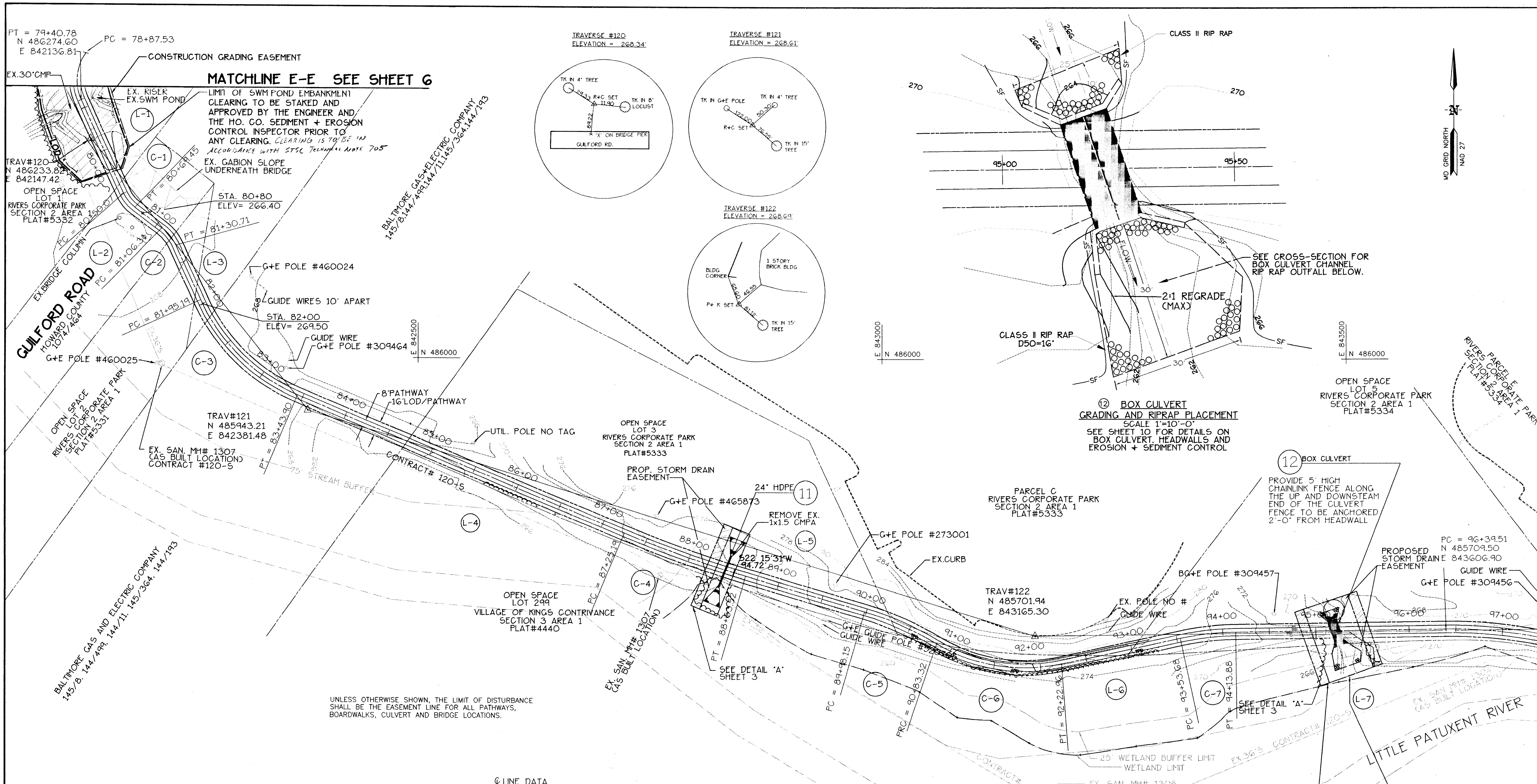
HOWARD COUNTY PATHWAY SYSTEM–PHASE 3b, SEGMENT 1
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

BID SET SHEET NO. 7

SCALE 1"=50'

SHEET 6 OF 12

SDP-99-79



PT = 79+40.78
N 486274.60
E 842136.81
PC = 78+87.53
CONSTRUCTION GRADING EASEMENT
EX.30"CMP
MATCHLINE E-E SEE SHEET 6
EX. RISER
EX.SWM POND
LIMIT OF SWM POND EMBANKMENT CLEARING TO BE STAKED AND APPROVED BY THE ENGINEER AND THE HO. CO. SEDIMENT + EROSION CONTROL INSPECTOR PRIOR TO ANY CLEARING.
EX. GABION SLOPE UNDERNEATH BRIDGE
TRAV#120
N 486233.82
E 842147.42
OPEN SPACE LOT 1 RIVERS CORPORATE PARK SECTION 2 AREA 1 PLAT#5332
STA. 80+80
ELEV= 266.40
PT = 81+30.71
EX.BRIDGE COLUMN
GUILFORD ROAD
HOWARD COUNTY 1074/464
G+E POLE #460024
GUIDE WIRES 10' APART
STA. 82+00
ELEV= 269.50
GUIDE WIRE
G+E POLE #309464
G+E POLE #460025
BALTIMORE GAS+ELECTRIC COMPANY 145/8.144/414.144/11.145/364.144/193
TRAVERSE #120
ELEVATION = 268.34'
TRAVERSE #121
ELEVATION = 268.61'
TRAVERSE #122
ELEVATION = 268.69'
GUILFORD RD.
8'PATHWAY
16'LOD/PATHWAY
UTIL. POLE NO TAG
TRAV#121
N 485943.21
E 842381.48
EX. SAN. MH# 1307 (AS BUILT LOCATION) CONTRACT #120-5
OPEN SPACE LOT 2 RIVERS CORPORATE PARK SECTION 2 AREA 1 PLAT#5331
OPEN SPACE LOT 3 RIVERS CORPORATE PARK SECTION 2 AREA 1 PLAT#5333
PROP. STORM DRAIN EASEMENT
24" HDPE
G+E POLE #465873
REMOVE EX. 1x1.5 CMPA
G+E POLE #273001
EX.CURB
PARCEL C RIVERS CORPORATE PARK SECTION 2 AREA 1 PLAT#5333
OPEN SPACE LOT 299 VILLAGE OF KINGS CONTRIVANCE SECTION 3 AREA 1 PLAT#4440
BALTIMORE GAS AND ELECTRIC COMPANY 145/8.144/499.144/11.145/364.144/193
SEE DETAIL "A" SHEET 3
TRAV#122
N 485701.94
E 843165.30
BG+E POLE #309457
EX. POLE NO #
GUIDE WIRE
G+E GUIDE POLE
GUIDE WIRE
CLASS II RIP RAP
SEE CROSS-SECTION FOR BOX CULVERT CHANNEL RIP RAP OUTFALL BELOW.
2:1 REGRADE (MAX)
CLASS II RIP RAP D50=16"
12 BOX CULVERT GRADING AND RIPRAP PLACEMENT
SCALE 1'=10'-0"
SEE SHEET 10 FOR DETAILS ON BOX CULVERT, HEADWALLS AND EROSION + SEDIMENT CONTROL
OPEN SPACE LOT 5 RIVERS CORPORATE PARK SECTION 2 AREA 1 PLAT#5334
12 BOX CULVERT
PROVIDE 5' HIGH CHAINLINK FENCE ALONG THE UP AND DOWNSTEAM END OF THE CULVERT FENCE TO BE ANCHORED 2'-0" FROM HEADWALL
PC = 96+39.51
N 485709.50
E 843606.90
PROPOSED STORM DRAIN EASEMENT
GUIDE WIRE
G+E POLE #309456
MATCHLINE F-F SEE SHEET 8
MD GRID NORTH NAD 27
SEE DETAIL "A" SHEET 3
LITTLE PATUXENT RIVER
25' WETLAND BUFFER LIMIT
WETLAND LIMIT
EX. SAN. MH# 1305 (AS BUILT LOCATION)
OPEN SPACE LOT 299 VILLAGE OF KINGS CONTRIVANCE SECTION 3 AREA 1 PLAT#4443
PLACE (D50=16") CLASS II RIPRAP DOWNSTREAM OF CULVERT AT EXISTING GRADES IN CHANNEL SEE DETAIL THIS SHEET.
GRADING AND RIPRAP AT BOX CULVERT SEE DETAIL THIS SHEET

UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.

℄ LINE DATA

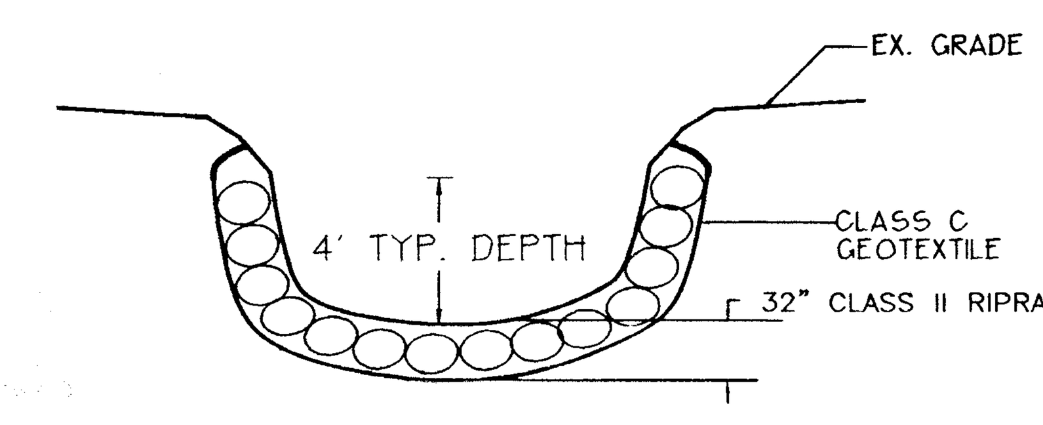
LINE	DIRECTION	DISTANCE
L-1	S24 49'02"E	109.29'
L-2	N52 35'11"W	36.85'
L-3	S24 37'17"E	64.48'
L-4	N67 13'19"W	381.29'
L-5	S73 42'40"E	134.63'
L-6	S77 44'48"W	130.72'
L-7	S89 14'35"W	225.63'

THE PATHWAY IS LOCATED ON EXISTING OLD GUILFORD ROAD ROADBED FROM APPROXIMATELY STA. 82+00 TO STA. 103+00.

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-1	40.00'	19.39'	9.89'	19.20'	S38 42'07"E	27 46'08"
C-2	50.00'	24.40'	12.45'	24.16'	N38 36'14"W	27 57'54"
C-3	200.00'	148.70'	77.98'	145.30'	S45 55'18"E	42 36'02"
C-4	1221.45'	138.34'	69.24'	138.26'	S70 27'59"E	06 29'21"
C-5	336.72'	85.17'	42.81'	84.94'	N66 27'55"W	14 29'30"
C-6	185.92'	139.64'	73.30'	136.38'	S80 44'11"E	43 02'02"
C-7	300.00'	60.19'	30.20'	60.09'	S83 29'42"W	11 29'47"

CONTRACTOR SHALL INSTALL TREE PROTECTIVE FENCING FROM STA. 90+50 TO 93+25, RIGHT. SEE DETAIL ON SHEET 15.



12 CROSS -SECTION OF BOX CULVERT CHANNEL RIPRAP OUTFALL
N.T.S.

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — 4/6/00 — Date

Chief, Division of Land Development — 4/18/00 — Date

Director — 4/18/00 — Date

Director, Department of Recreation and Parks — 5/3/00 — Date

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SDP-7

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 3/10/00 DATE — CHIEF, BUREAU OF ENGINEERING 3/10/00 DATE

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

SITE PLAN
STA 79+40.78 – STA 96+39.51

600' SCALE MAP NO. ______ BLOCK NO. ______

HOWARD COUNTY PATHWAY SYSTEM–PHASE 3b, SEGMENT 1

CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

BID SET SHEET NO. 8

SCALE 1"=50'

SHEET 7 OF 12

HCPB506.DWG

SDP.99.79

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — 4/6/00
Chief, Division of Land Development — 4/18/00
Director — 4/12/00
Director, Department of Recreation and Parks — 3-21-00

℄ LINE DATA

LINE	DIRECTION	DISTANCE
L-1	S40 01'18"E	118.53'
L-2	S55 54'00"E	117.97'
L-3	S77 43'05"W	271.10'
L-4	S41 17'14"E	486.88'

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-1	498.24'	441.19'	236.24'	426.92'	N65 23'21"W	50 44'07"
C-2	200.00'	55.43'	27.89'	55.25'	S47 57'39"E	15 52'43"
C-3	525.00'	425.00'	224.92'	413.49'	S79 05'28"E	46 22'55"
C-4	50.00'	53.23'	29.45'	50.75'	N71 47'05"W	60 59'41"

TYPICAL SIGNING LEGEND

R1-1 18" X 18"	W11-1 30" X 30"	D11-1 24" X 18" M7-1 12" X 9"	24" X 18"	R5-3 24" X 24"	W11-7 30" X 30"
(A)	(B)	(C) TYPICAL LEFT OR RIGHT TURN	(D)	(E)	(F)

**NOTE: ALL SIGNS TO HAVE REFLECTIVE SHEETING

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SDP-8

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — 3/21/00
CHIEF, BUREAU OF ENGINEERING — 3/21/00

GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES: KP
DRN: AAP/BEH
CHK: DJM
DATE: / /

BY | NO. | REVISION | DATE

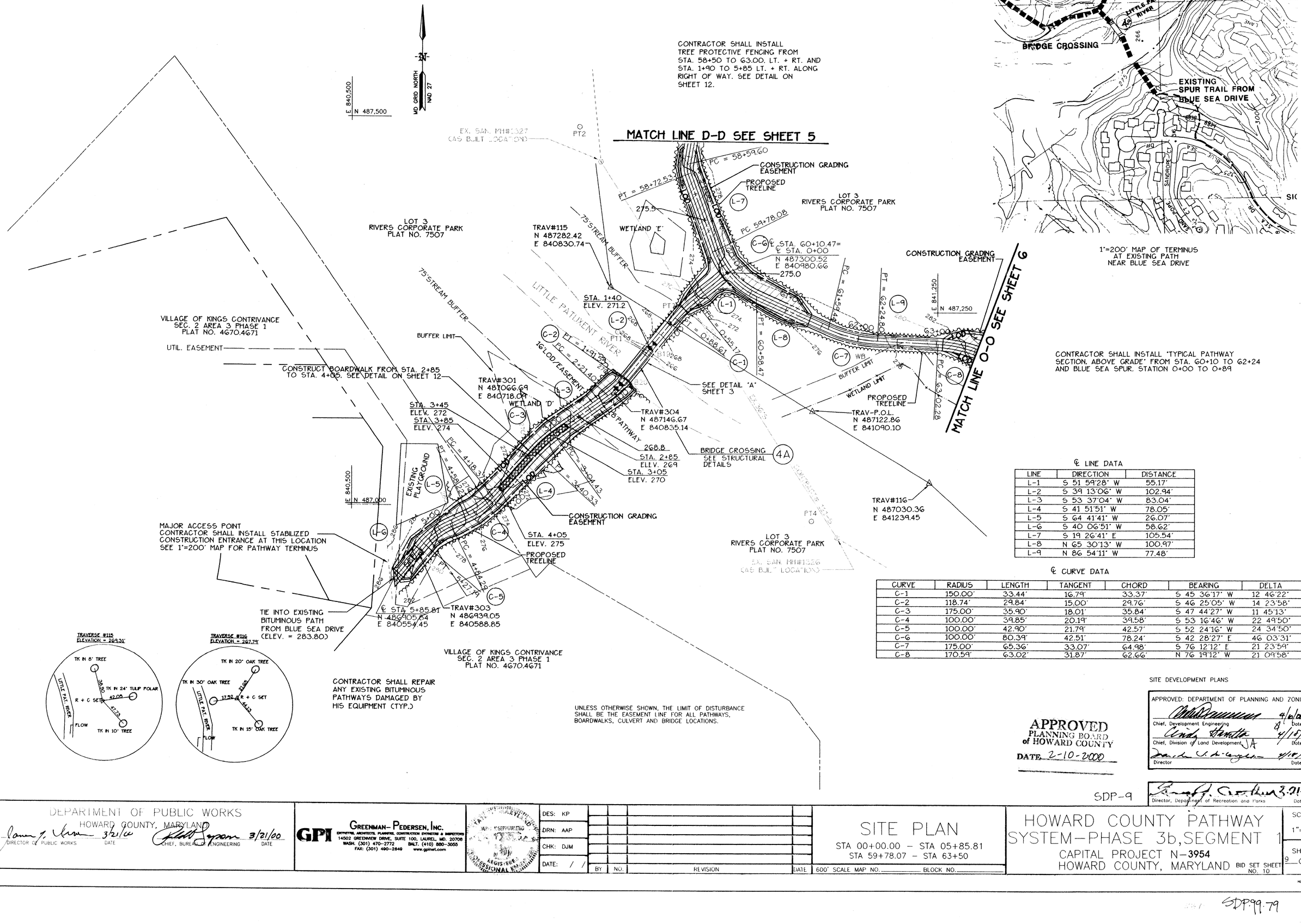
600' SCALE MAP NO. ______ BLOCK NO. ______

SITE PLAN
STA 96+39.51 - STA 115+20

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 1
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

SCALE 1"=50'
SHEET 8 OF 12
BID SET SHEET NO. 9

SDP-99-79



℄ LINE DATA

LINE	DIRECTION	DISTANCE
L-1	S 51 59'28" W	55.17'
L-2	S 39 13'06" W	102.94'
L-3	S 53 37'04" W	83.04'
L-4	S 41 51'51" W	78.05'
L-5	S 64 41'41" W	26.07'
L-6	S 40 06'51" W	58.62'
L-7	S 19 26'41" E	105.54'
L-8	N 65 30'13" W	100.97'
L-9	N 86 54'11" W	77.48'

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C-1	150.00'	33.44'	16.79'	33.37'	S 45 36'17" W	12 46'22"
C-2	118.74'	29.84'	15.00'	29.76'	S 46 25'05" W	14 23'58"
C-3	175.00'	35.90'	18.01'	35.84'	S 47 44'27" W	11 45'13"
C-4	100.00'	39.85'	20.19'	39.58'	S 53 16'46" W	22 49'50"
C-5	100.00'	42.90'	21.79'	42.57'	S 52 24'16" W	24 34'50"
C-6	100.00'	80.39'	42.51'	78.24'	S 42 28'27" E	46 03'31"
C-7	175.00'	65.36'	33.07'	64.98'	S 76 12'12" E	21 23'59"
C-8	170.59'	63.02'	31.87'	62.66'	N 76 19'12" W	21 09'58"

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/6/00

Chief, Division of Land Development — Date 4/5/00

Director — Date 4/10/00

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

Director, Department of Recreation and Parks — Date 3.21.00

SDP-9

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/21/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/21/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2849 www.gpinet.com

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

SITE PLAN

STA 00+00.00 – STA 05+85.81
STA 59+78.07 – STA 63+50

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY SYSTEM–PHASE 3b, SEGMENT 1

CAPITAL PROJECT N–3954
HOWARD COUNTY, MARYLAND BID SET SHEET NO. 10

SCALE 1"=50'

SHEET 9 OF 12

HCPDS17.DWG

SDP-99-79

PIPE SCHEDULE

Pipe Schedule Pipe No.	Inv. A	Inv. B	DIAMETER	SLOPE	K	R/W	N	Q_{10}	V_{10}
1	288.01	286.95	15"	5.03%	20'	6.0'/8.0'	1	0.6	0.49
2	282.58	280.83	24"	5.00%	18'	10.0'/12.0'	1	12.2	3.89
5	271.17	270.93	TWIN 24"	1.00%	24'	30.0'/18.0'	2	136	8.0
7	271.64	271.48	18"	0.75%	22'	7.0'/10.0'	1	7.91	4.47
10	262.82	262.68	15"	1.33%	18'	12.0'/16.0'	1	8.2	6.66
10a	271.11	270.95	24"	1.00%	16'	10.0'/12.0'	1	12	4.5
11	268.05	266.97	24"	2.92%	37'	16.0'/18.0'	1	24	9.96
12	262.40	261.40	60"x72"	4.35%	23'	SEE NOTE/DETAIL ON SHEET 7	2	625	12.27
13	265.28	263.41	15"	4.25%	44'	13.0'/14.5'	1	11.4	9.26
14	266.0	265.14	30"	3.44%	25'	16.0'/18.5'	1	33.6	6.84
16	267.64	266.36	15"	4.74%	27'	9.0'/10.0'	1	3.7	3.0

NOTES:

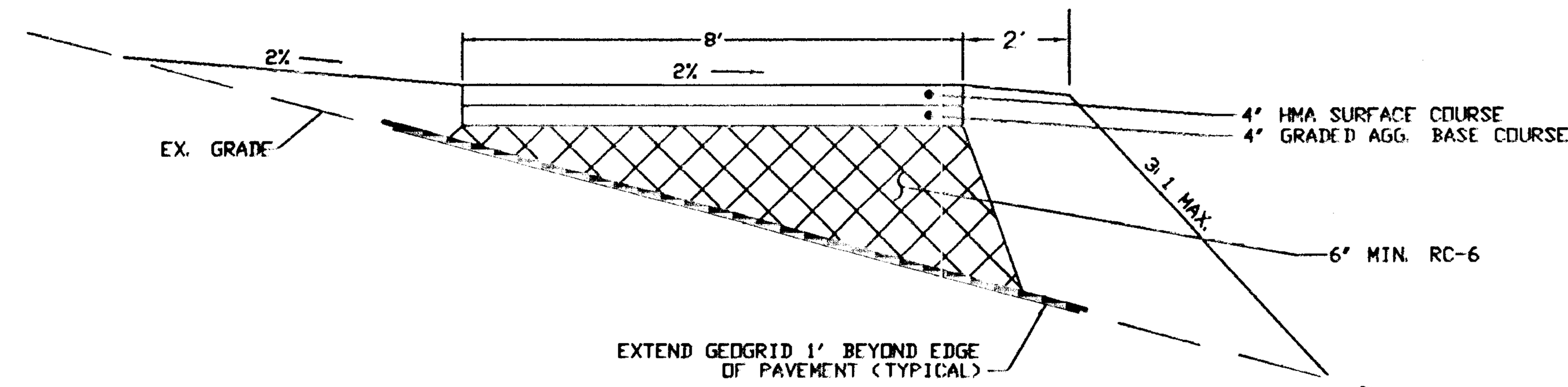
1. INVERTS ARE TO BE ADJUSTED AS DEEMED NECESSARY BY THE CONTRACTOR TO MATCH EXISTING GRADES. THE DOWN STREAM INVERT MUST BE LOWER THAN THE UPSTREAM.
2. ALL STORM DRAIN CULVERTS ARE TYPE S HDPE UNLESS OTHERWISE NOTED.
3. STORM DRAIN CULVERT #12 TO BE PRECAST CONCRETE BOX CULVERT (SHOP DRAWINGS TO BE SUPPLIED BY THE CONTRACTOR AND APPROVED BY HOWARD COUNTY DPW).
4. FOR CULVERT INSTALLATION SEE SEDIMENT AND EROSION CONTROL DETAILS, SHEETS 14 AND 15.

STRUCTURE LOCATION

STR. No.	END SECTION A		END SECTION B	
	STATION	OFFSET	STATION	OFFSET
1	0+64	6'	0+70	6'
2	2+05	6'	2+05	6'
5	20+79	11'	20+93	11'
7	31+24	9'	31+37	9'
10	71+14	6'	71+13	6'
10a	74+71	8'	74+71	8'
11	88+42	17'	88+39	20'
12	SEE SHEET 7			
13	97+76	22'	97+73	22'
14	101+30	6'	101+36	18'
16	108+66	11'	108+62	16'

NOTES:

1. ALL STATIONS AND OFFSETS ARE WITHIN + OR - 3'. ADJUSTMENTS TO BE MADE IN THE FIELD AS NECESSARY TO ACCOMMODATE EXISTING CONDITIONS.
2. ALL STATIONS ARE LOCATED AT THE CENTERLINE END OF THE PIPE.

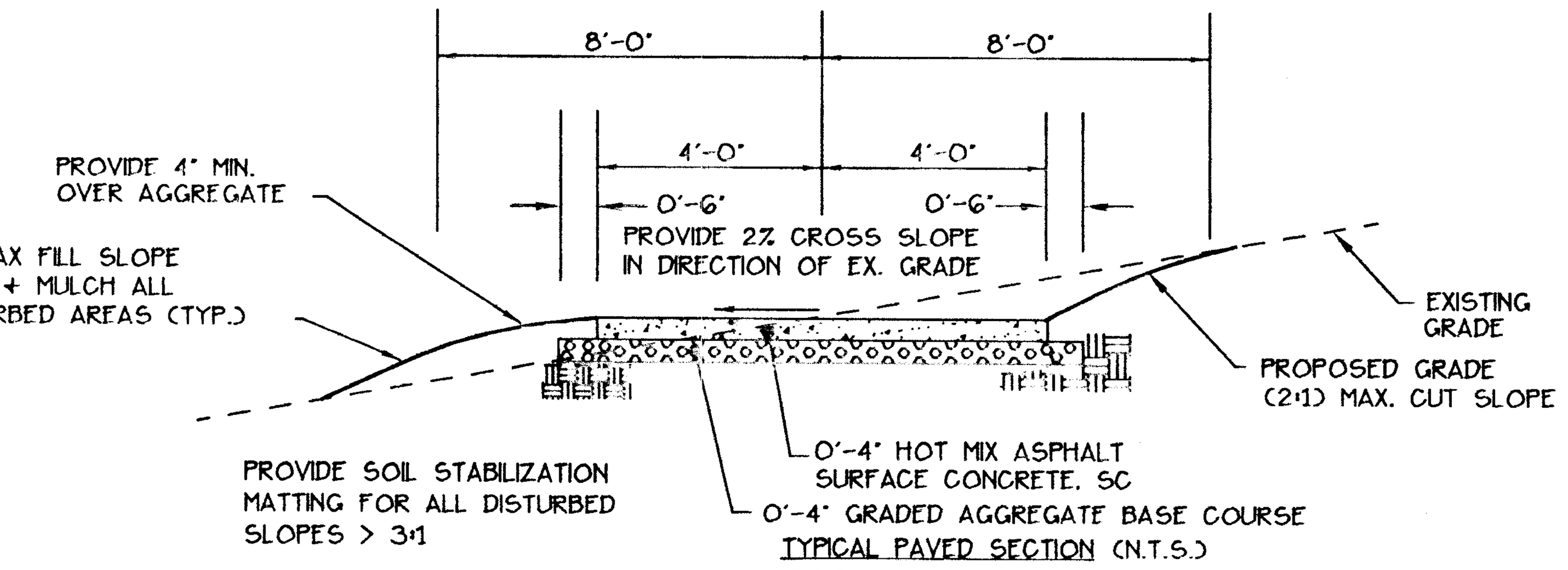


TYPICAL PATHWAY SECTION, ABOVE GRADE

SCALE: N. T. S.

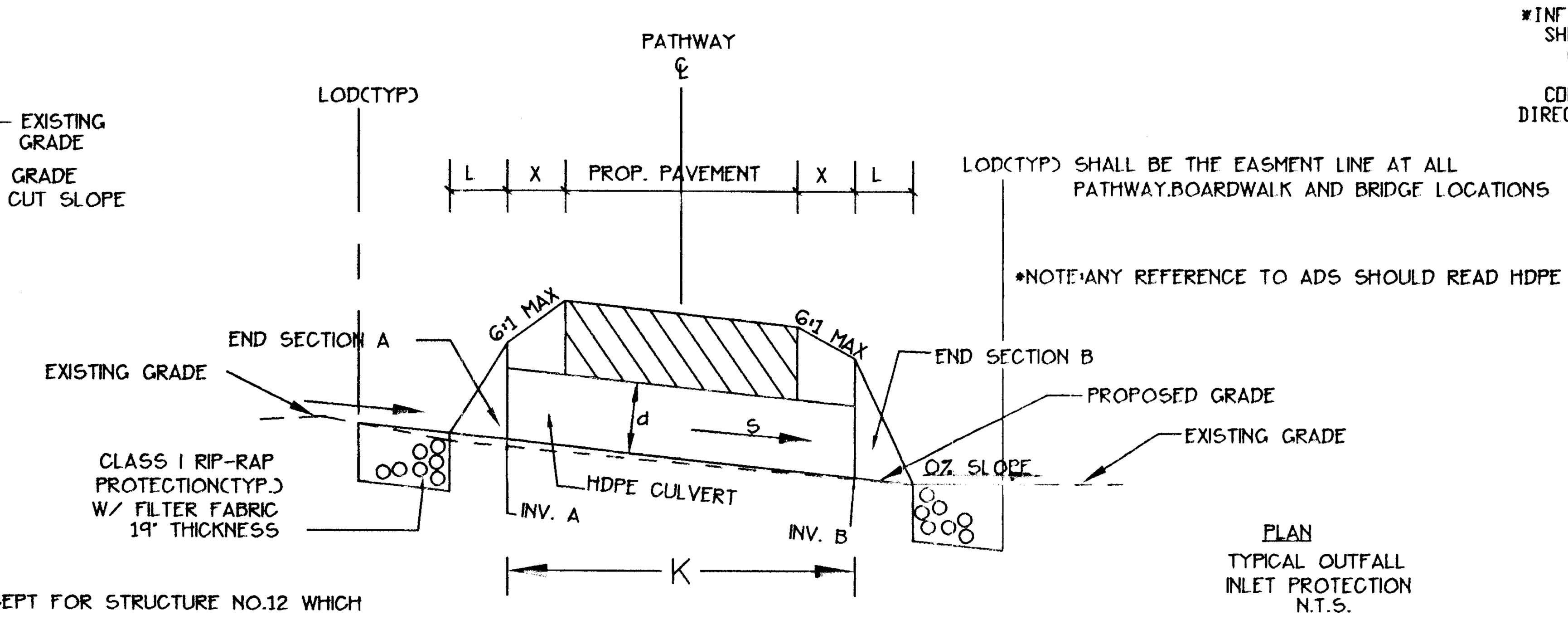
STA. 11+00 TO 17+00,
STA. 60+10 TO 62+24,
BLUE SEA SPUR STA 0+00 TO 0+89

AS REQUIRED BY THE MARYLAND HISTORIC TRUST, THIS TYPICAL SECTION IS PROPOSED FOR AREAS WHERE ARCHITECTURAL RESOURCES ARE BELOW EX. GRADE. TREES WITHIN THE PATHWAY SECTION SHALL BE CUT OFF AT GROUND LEVEL. CONTRACTOR SHALL GRIND 8" AND LARGER STUMPS TO A DEPTH 4" BELOW EX. GRADE.



TYPICAL PAVED SECTION (N.T.S.)

STATION 17+00 TO 29+37
STATION 29+00 TO 60+10 AND 62+24 TO 115+20
BLUE SEA SPUR STATION 0+89 TO 5+85.81



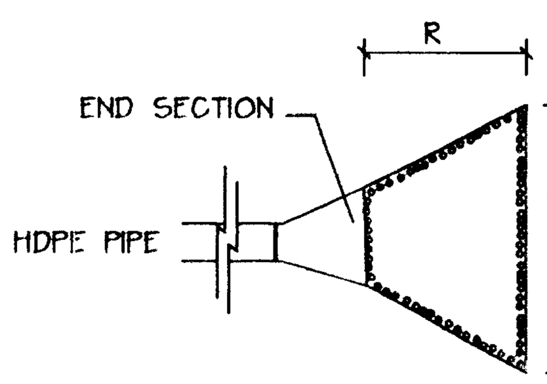
LOD(TYP) SHALL BE THE EASMENT LINE AT ALL PATHWAY,BOARDWALK AND BRIDGE LOCATIONS

*NOTE:ANY REFERENCE TO ADS SHOULD READ HDPE

TYPICAL CULVERT PROFILE

N.T.S.

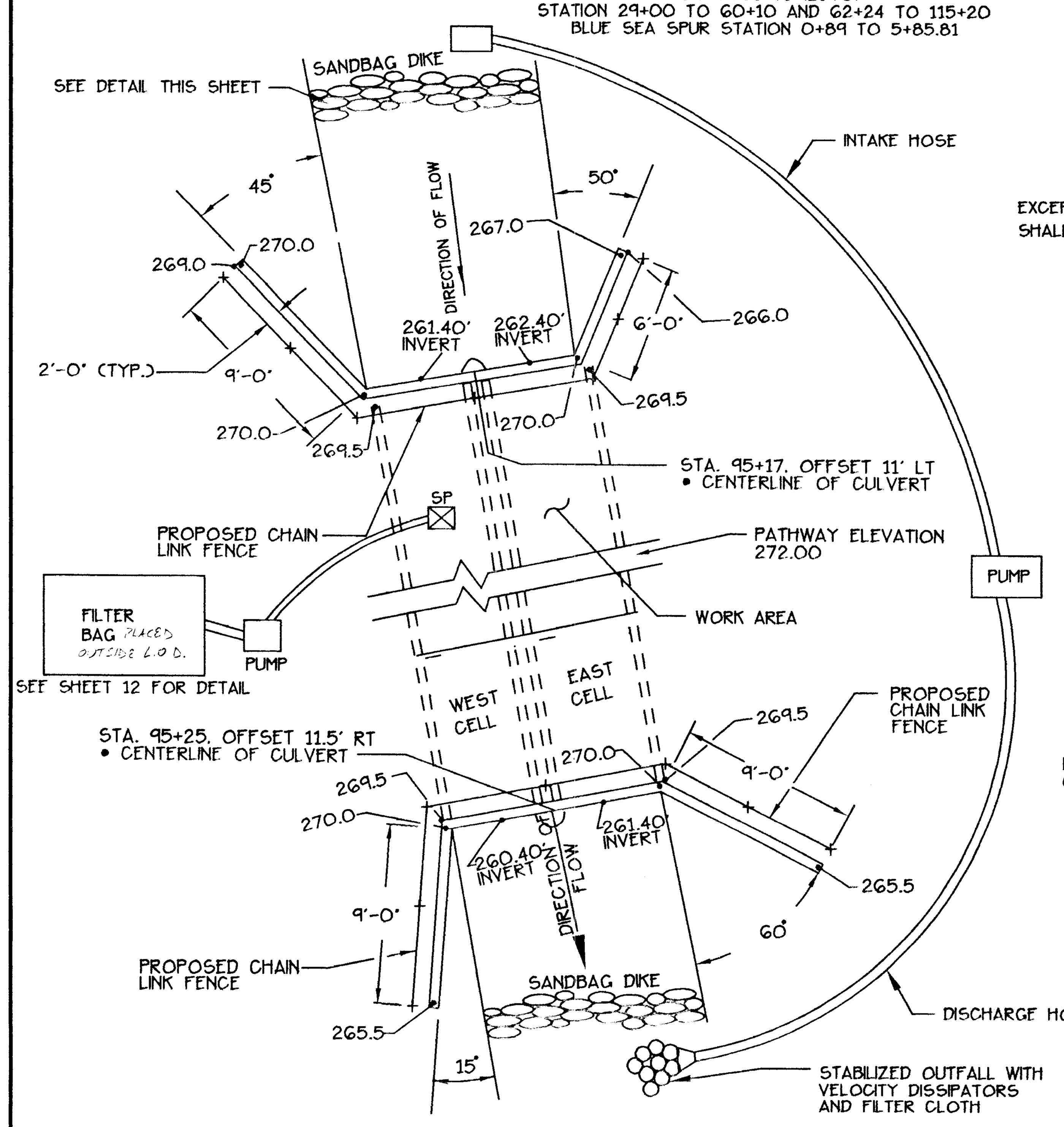
INV. A: UPSTREAM INV. OF CULVERT
INV. B: DOWNSTREAM INV. OF CULVERT
d: DIAMETER OF CULVERT (1.0' MINIMUM COVER)
S: SLOPE OF CULVERT
L: LENGTH OF END SECTION
N: NO. OF PARALLEL CULVERTS
K: LENGTH OF CULVERT
X: DISTANCE FROM EDGE OF PAVEMENT TO END OF PIPE



PLAN

TYPICAL OUTFALL INLET PROTECTION

N.T.S.

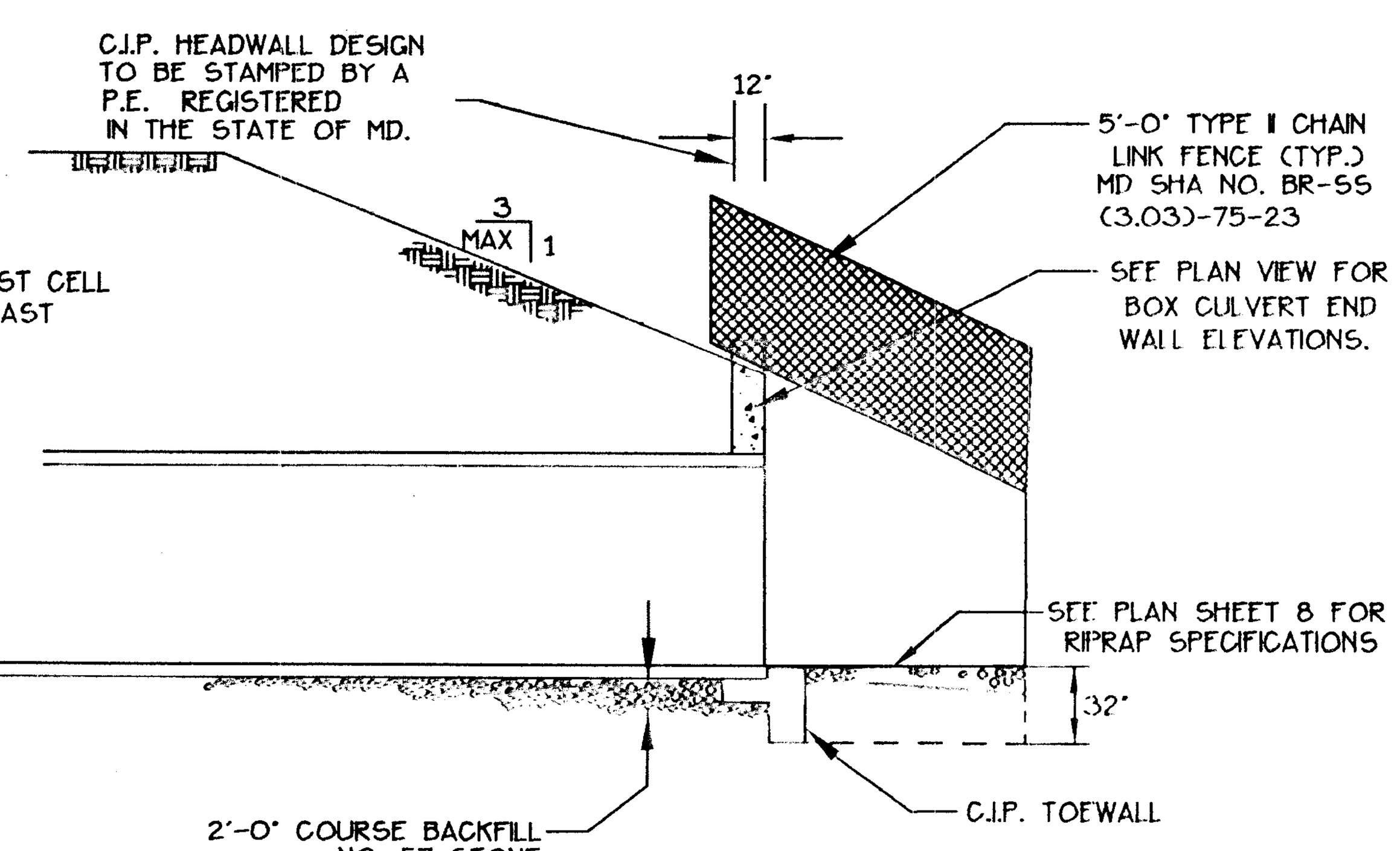


*NOTE: DEPRESS WEST CELL INVERT 1'-0" BELOW EAST CELL INVERT.

PLAN VIEW OF BOX CULVERT ENDWALL SECTIONS

(SEE RIP-RAP DETAIL SHEET 8)

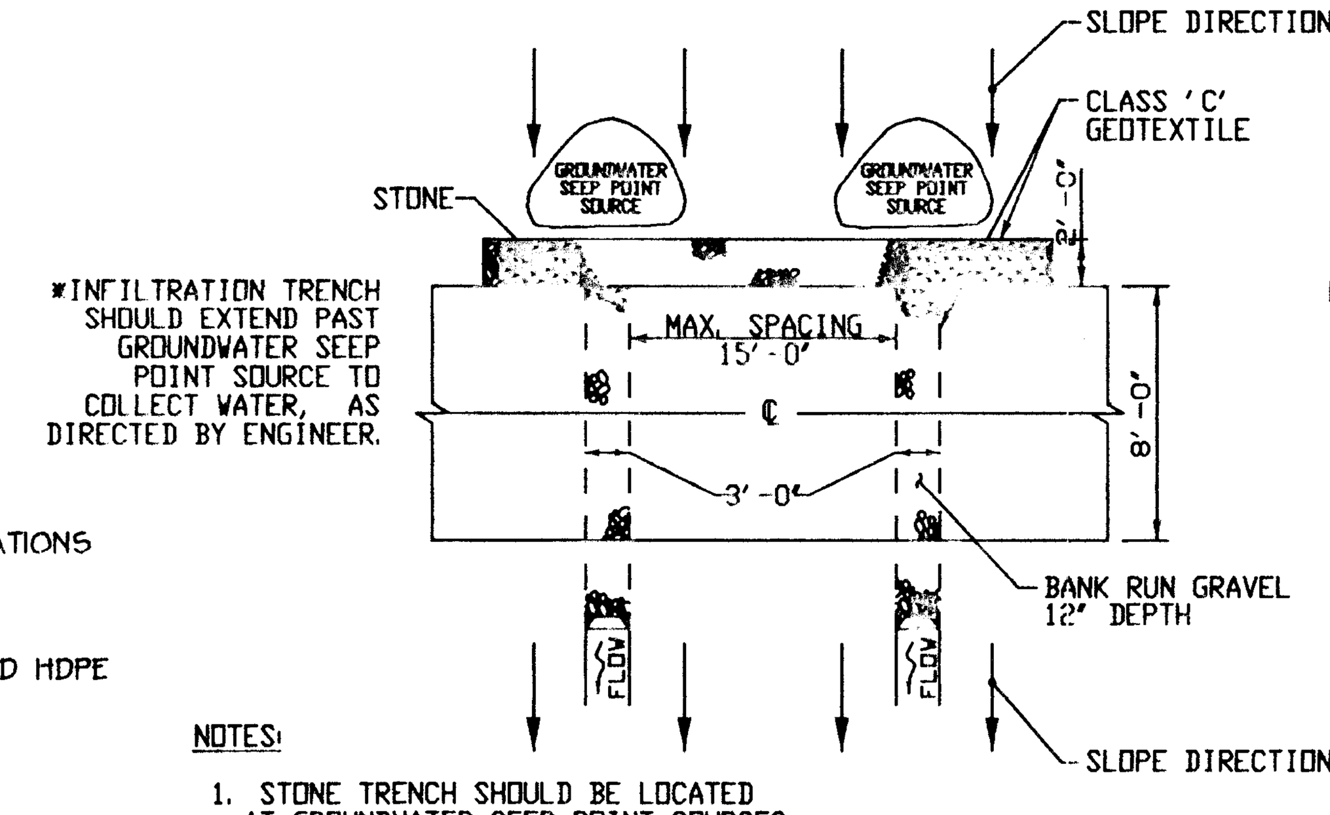
N.T.S.



BOX CULVERT

LONGITUDINAL SECTIONAL ELEVATION

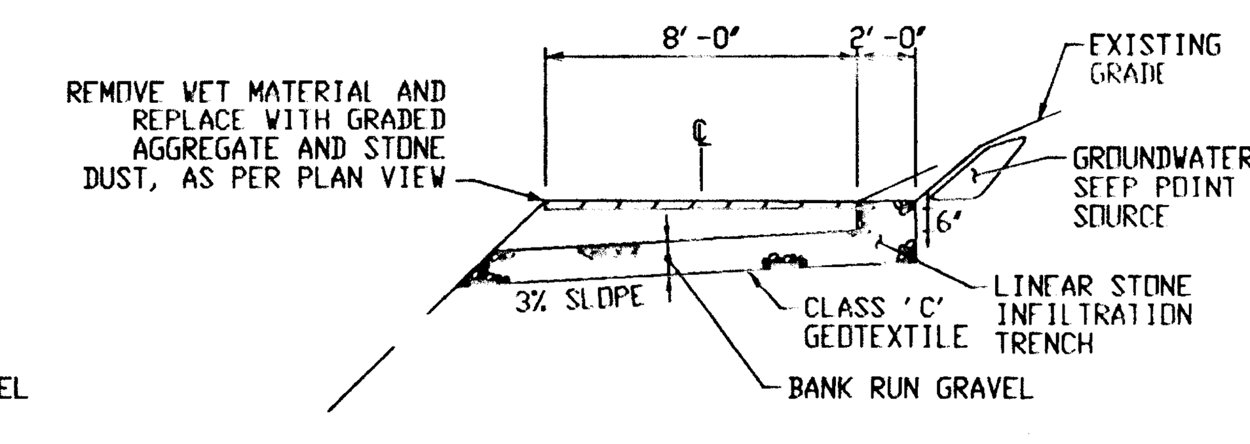
N.T.S.



NOTES:

1. STONE TRENCH SHOULD BE LOCATED AT GROUNDWATER SEEP POINT SOURCES.
2. ALL STONE TRENCHES SHOULD BE CONSTRUCTED WITH POSITIVE DRAINAGE.

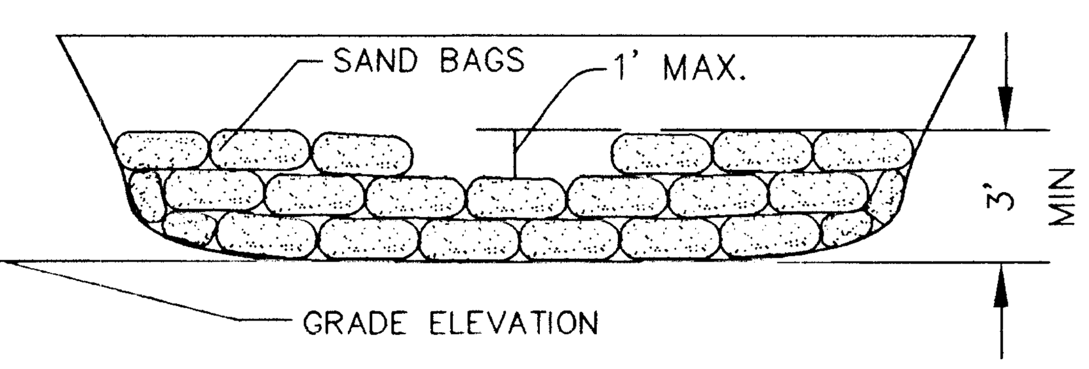
TYPICAL PLAN VIEW



TYPICAL CROSS SECTION

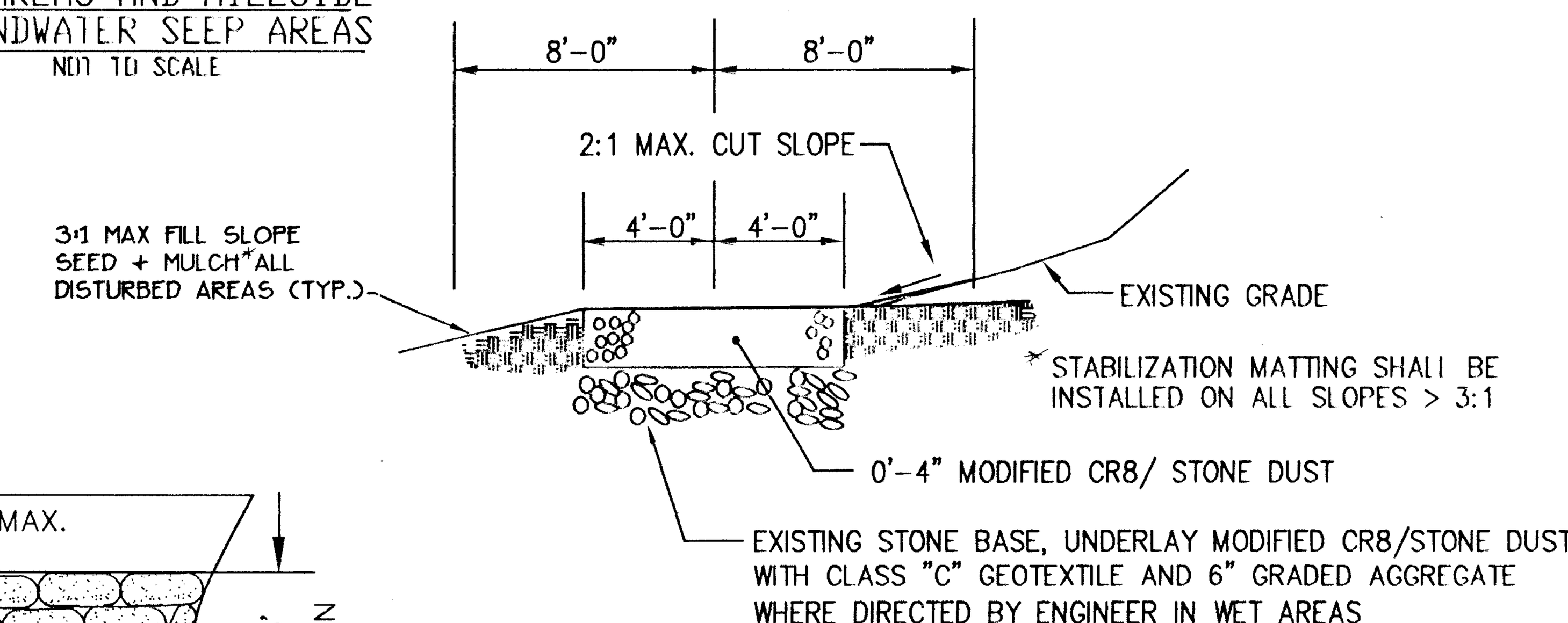
MODIFIED EQUESTRIAN TRAIL FOR WET AREAS AND HILLSIDE GROUNDWATER SEEP AREAS

NOT TO SCALE



IN STREAM SANDBAG DIKE

NOT TO SCALE



STONE DUST PATHWAY SECTION

STATION 115+20 TO 181+25

N.T.S.

1. THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OFTHE PRECAST CONCRETE BOX CULVERT AND THE CAST-IN-PLACE CONCRETE END WALLS AND TOE WALLS.
2. THE CONTRACTOR SHALL SUBMIT DESIGN COMPUTATIONS AND SHOP DRAWINGS DULY SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER CURRENTLY PRACTICING IN THE STATE OF MARYLAND, AND HAVE THEM APPROVED BY THE HOWARD COUNTY DPW.
3. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS SHALL BE THE SOLE JUDGE AS TO THE ADEQUACY OF THE DESIGN

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SITE DEVELOPMENT PLANS SDP-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering	Date 4/6/00
Chief, Division of Land Development	Date 4/18/00
Director	Date 4/18/00
Director, Department of Recreation and Parks	Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
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FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — REGISTERED PROFESSIONAL ENGINEER

DES: KP	BY	NO.	REVISION	DATE
DRN: AAP				
CHK: DJM				
DATE: / /				

DETAIL SHEET

600' SCALE MAP NO. ______ BLOCK NO. ______

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 1

CAPITAL PROJECT N-3954

HOWARD COUNTY, MARYLAND

BID SET SHEET NO. 11

SCALE AS SHOWN

SHEET 10 OF 12

HCPBS1BB.DWG

SDP-99-79

19.0 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal and vegetative treatment, etc.

Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed. The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

I. Provisions shall be made to safely conduct surface runoff to storm drains, protected outlets or to stable water courses to insure that surface runoff will not damage slopes or other graded

II. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. (Where the slope is to be mowed the slope should be no steeper than 3:1; 4:1 is preferred because of safety factors related to mowing steep slopes.) Slopes exceeding 2:1 shall require special design and stabilization considerations that shall be adequately shown on the plans.

III. Reverse benches shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.

A. Benches shall be a minimum of six-feet wide to provide for ease of maintenance.

B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.

C. The flow length within a bench shall not exceed 800' unless accompanied by appropriate design and computations. For flow channel stabilization see temporary

IV. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of earth dikes, ditches and swales or conveyed downslope by the use of a designed structure, except

A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.

B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainageways, graded swales, downspouts, etc.

C. The face of the slope will be protected by special erosion control materials, to include, but not limited to: approved vegetative stabilization practices (see section G), rip-rap or other approved stabilization methods.

V. Cut slopes occurring in ripable rock shall be serrated as shown on the following diagram. These serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1:1. These steps will weather and act to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carries to a suitable outlet.

VI. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

VII. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence or other related damages.

VIII. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.

IX. Stockpiles, borrow areas and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

X. All disturbed areas shall be stabilized structurally or vegetatively in compliance with 20.0 Standards and Specifications for Vegetative Stabilization.

SEQUENCE OF CONSTRUCTION*

Number of days

1. Contact the Howard County Sediment Control Inspector 48 hours prior to start Of work. Inform the inspector of the starting date.
3 days 2. Stabilized construction entrances to be installed at all access points to the path.
5 days 3. Contractor shall stake out entire length of project prior to any clearing and grubbing. The proposed pathway alignment shall be approved by Howard County DPW prior to construction.
224 days 4. Contractor to construct the path in 100 l.f. segments. Each segment to be stabilized with graded aggregate sub-base and seed & mulch immediately. Contractor shall gain permission from Sediment control inspector prior to the start of the next segment **
5 days 5. Wood chips from cleared trees to be used to stabilize the disturbed areas in the wooded sections of the path. Seed, mulch, and curlex to be used on the sections of the path exposed to sunlight. Shady Seed mix shall be used in all Shaded Areas. *
3 days 6. Remove all sediment and erosion control measures after acquiring approval from Howard County SCD Inspector.

Total Days 240

* Wetland Seed Mix to be installed in Wetland Areas.
** "Thank-You-Ma'am" Shall be installed in all Sloped areas. See Detail 9h.15.

Note: Before work begins, the contractor shall place protective tree fence around all trees > 12" diameter within 5' of L.O.D using the detail on sheet 15.

Wetland Seed Mix Table For Turf Establishment

Botanical Name	Common Name	Percent of Seed Mix	Purity Percent Min.	Weedseed Percent Max.	Germanation Percent Min.
Poa Trivialis L.	Rough Stalk Bluegrass	10	90	1	80
Agrostis Alba L.	Red Top	30	90	1	80
Lolium Species	Annual Ryegrass	30	90	1	80
Panicum Virgatum L.	Switch Grass	30	90	1	80

Note:
- Application rate shall be 120 lbs/Acre.
- Seed mix percentages are based upon weight.
- This seed mix will be used in areas that are delineated as wetlands on the Construction Documents unless otherwise directed by the engineer.
- Seeds shall be mixed offsite and delivered throughly mixed.
- This mix is to be used for temporary seeding when directed by the engineer.

Seed Mix Table For Turf Establishment In Shaded areas

Common Name	Percent of Seed Mix	Purity Percent Min.	Weedseed Percent Max.	Germanation Percent Min.
Shadow chewing fescue or other improved chewing fescue	30	90	1	80
Aurora hard fescue or other improved hard fescue	30	90	1	80
Flyer creeping red fescue or other creeping red fescue	20	90	1	80
Glade kentucky bluegrass or improved kentucky bluegrass	10	90	1	80
Manhattan II, Affinity or other improved perenial ryegrass	10	90	1	80

Note:
- Application rate shall be 20 lbs/Acre.
- Seed mix percentages are based upon weight.
- This seed mix will supersede any other permanent seed mixture listed in the Contract Documents unless otherwise allowed by the engineer.
- Seeds shall be mixed offsite and delivered throughly mixed.
- This mix is to be used for temporary seeding when directed by the engineer.

HOWARD SOIL CONSERVATION DISTRICT

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:
1. Preferred – Apply 2 tons/acres dolomitic limestone (92 lbs/1000 sq. ft.) And 600 lbs/acre 10–10–10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30–0–0 ureaform fertilizer (9 lbs/1000 sq. ft.)
2. Acceptable – Apply 2 tons/acres dolomitic limestone (92 lbs/1000 sq. ft.)and 1000 lbs/acre 10–10–10 fertilizer (23 lbs/1000 sq. ft.) Before seeding. Harrow or disk into upper three inches of soil.

Seeding: For the periods March 1 – April 30, and August 1 – October 15, seed with 60 lbs/acres (1.4 lbs/1000 sq. ft.) Of Kentucky 31 Tall Fescue per acres and 2 lbs/acre (0.05 lbs/1000 sq. ft.) Of weeping lovegrass. During the period of October 16 – Febroary 28, protect site by:
Option 1 – Two tons per acres of well anchored straw mulch and seed as soon as possible in the spring.
Option 2 – use sod.
Option 3 – seed with 60 lbs/acres Kentucky 30 tall fescue and mulch with 2 tons/acre well anchored straw.

Mulching: Apply 1–1/2 to 2 tons per acre (70 – 90 lbs/1000 sq. ft.)of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

Maintenance: Inspect all seeding areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: Apply 600 lbs/acre 10–10–10 fertilizer (14 lbs/1000 sq. ft.)

Seeding: For periods March 1 – April 30 and from August 15 – October 15, seed with 2–1/2 bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1 – August 14, seed with 3 lbs/acre of weeping lovegrass (0.07 lbs/1000 lbs/sq. ft.). For the period November 16 – February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: Apply 1–1/2 to 2 tons per acre (70 – 90 lbs/1000 sq. ft.)of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

HOWARD SOIL CONSERVATION DISTRICT

STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to start of any construction (313–1855).
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within:
   A) 7 calender days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes steeper than 3:1.
   B) 14 calender days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7 of the HOWARD COUNTY DESIGN MANUAL, Storm drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, sod, temporary seeding and mulching (section g). Temporary stabilization with mulch alone shall only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for there removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:

Total Area of Site	=	3.40 Acres
Area Disturbed	=	3.40 Acres
Area to be Roofed or Paved	=	1.58 Acres
Area to be Vegetatively Stabilized	=	1.82 Acres
Total Cut	=	3000 Cu. Yds.
Total Fill	=	3000 Cu. Yds.
Offsite waste/borrow area location		TO BE DETERMINED BY THE CONTRACTOR

* A site with a current active grading permit is needed for offsite waste/borrow

8. Any sediment control practice which is disturbed by grading activity for pigcement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:
   A. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   B. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   C. The original soil to be vegetated contains material toxic to plant growth.
   D. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type ran be found in the representative soil profile section in the Soil Survey published by USDA- SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications -- Soil to be used as topsoil must meet the following:
   A. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the oporopriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
   B. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
   C. Where the subsoil is either highly acidic or composed of heavy clays, (ground limestone shall be spread at the rate of 4–8 tons/acre (200–400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres:
   A. On soil meeting Topsoil specifications, obtain lest results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
      1. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
      2. Organic content of topsoil shall be not less than 1.5 percent by weight.
      3. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
      4. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

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

   B. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization -- Section I – Vegetative Stabilization Methods and Materials.

V. Topsoil Application
   A. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
      1. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.
      2. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting, from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
      3. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

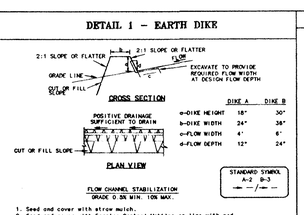
   VI. Alternative for Permanent Seeding – Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

   A. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following, requirements:
      1. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
      2. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
      3. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
   B. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding MD–VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

NOTE: LOCATIONS OF STABILIZED CONSTRUCTION ENTRANCES ARE TO BE PREAPPROVED BY THE INSPECTOR PRIOR TO INSTALLATION AND RELOCATION.

DETAIL 1 – EARTH DIKE



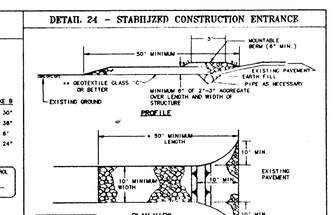
	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall only be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionol material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein. All fill free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

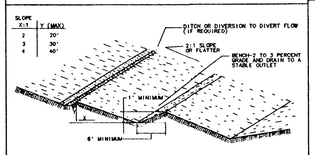


Construction Specification

1. Length – minimum of 50' (*30' for single residence lot).
2. Width – 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone – crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location – A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance

DETAIL 28 – BENCHED SLOPES

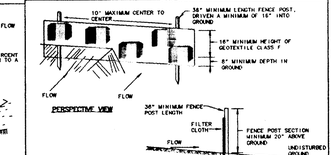
SLOPE X:1	Y (MAX)
2	20'
3	30'
4	40'



Construction Specifications

1. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.
2. All fill shall be placed and compacted in layers not to
3. Except for approved landfills or nonstructural fills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.
4. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills. Fill shall not be placed on a frozen foundation.
5. All benches shall be kept free of sediment during all phases of development.
6. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain or other suitable methods.
7. All graded areas shall be permanently stabilized immediately following finished grading.

DETAIL 22 – SILT FENCE



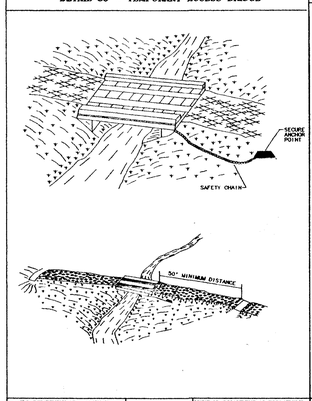
Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1"/2" x 1"/2" square (minimum) cut, or 1"/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

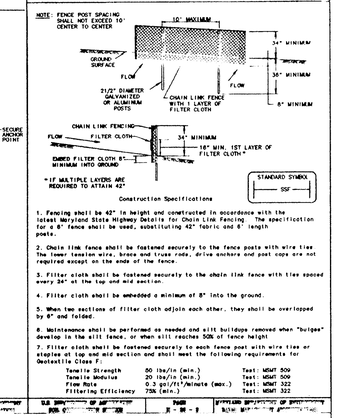
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

DETAIL 35 – TEMPORARY ACCESS BRIDGE



DETAIL 33 – SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 8' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except at the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

DETAILS 24, 22, AND 33 TO BE USED AT THE DISCRETION OF THE CONTRACTOR. And the Howard County Sediment and Erosion Control Inspector.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/6/00

Chief, Division of Land Development — Date 4/6/00

Director — Date 4/10/00

Director, Department of Recreation and Parks — Date 3.21.00

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SDP-11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/21/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/21/00

GPI GREENMAN–PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION EXPERTS & INVESTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470–3772 BALT. (410) 880–3055
FAX: (301) 490–2649 www.gpinet.com

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — REGISTERED PROFESSIONAL ENGINEER

DES: AT					
DRN: AT					
CHK: BB					
DATE: / /	BY	NO.	REVISION	DATE	

SEDIMENT & EROSION CONTROL DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

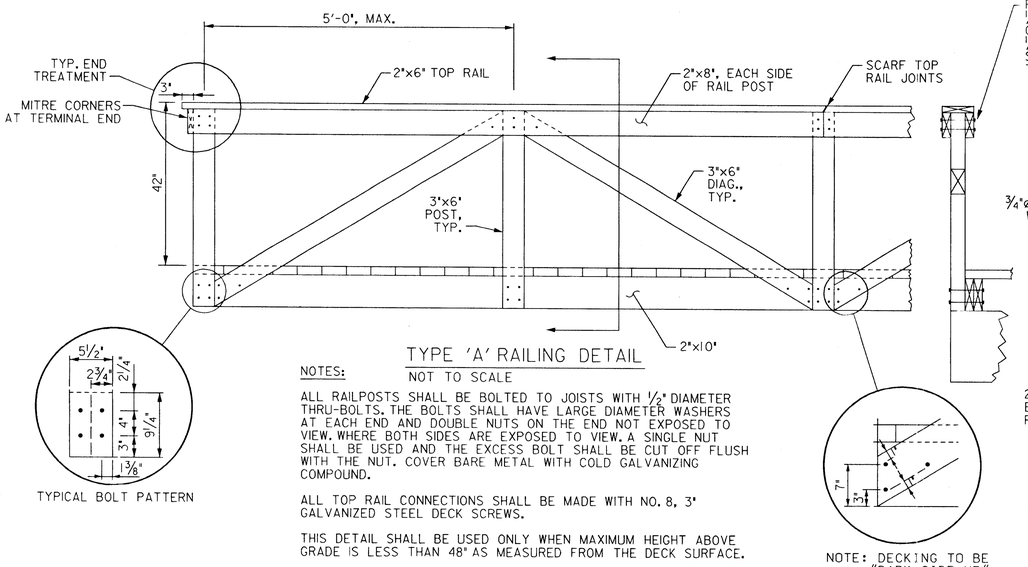
HOWARD COUNTY PATHWAY SYSTEM – PHASE 3b SEG.1
CAPITAL PROJECT N–3954
HOWARD COUNTY, MARYLAND — BID SET Sheet No.12

SCALE AS SHOWN

SHEET 11 OF 12

SDP-99-79

SED-DET.DWG



TYPICAL BOLT PATTERN

TYPE 'A' RAILING DETAIL

NOT TO SCALE

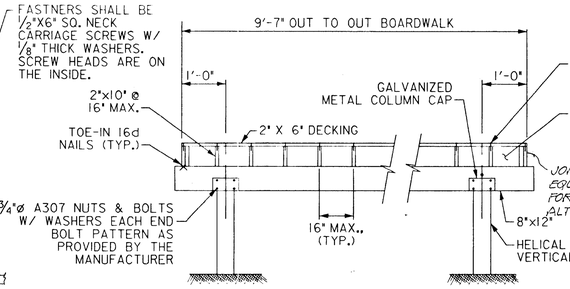
NOTES:

ALL RAILPOSTS SHALL BE BOLTED TO JOISTS WITH ½" DIAMETER THRU-BOLTS. THE BOLTS SHALL HAVE LARGE DIAMETER WASHERS AT EACH END AND DOUBLE NUTS ON THE END NOT EXPOSED TO VIEW. WHERE BOTH SIDES ARE EXPOSED TO VIEW, A SINGLE NUT SHALL BE USED AND THE EXCESS BOLT SHALL BE CUT OFF FLUSH WITH THE NUT. COVER BARE METAL WITH COLD GALVANIZING COMPOUND.

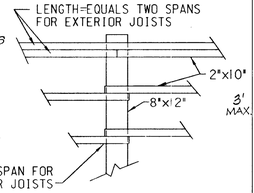
ALL TOP RAIL CONNECTIONS SHALL BE MADE WITH NO. 8, 3" GALVANIZED STEEL DECK SCREWS.

THIS DETAIL SHALL BE USED ONLY WHEN MAXIMUM HEIGHT ABOVE GRADE IS LESS THAN 48" AS MEASURED FROM THE DECK SURFACE.

NOTE: DECKING TO BE "BARK SIDE UP"

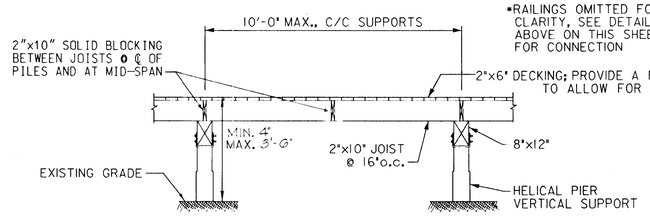


TYPICAL SECTION - PILE SUPPORT FRAMING

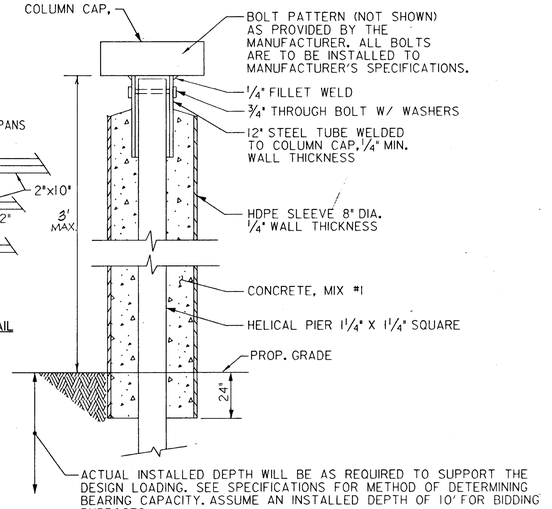


JOIST LAYOUT DETAIL

NTS



•RAILINGS OMITTED FOR CLARITY, SEE DETAIL ABOVE ON THIS SHEET FOR CONNECTION



HELICAL PIER VERTICAL SUPPORT

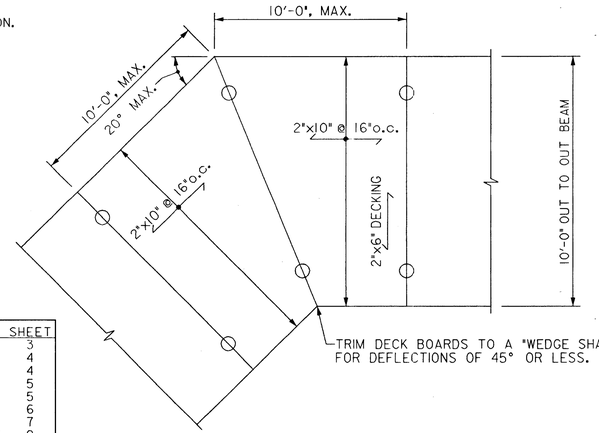
NOT TO SCALE

ELEVATION-TYPICAL BOARDWALK SUPPORT FRAMING

•PROVIDE RAILING ON BOTH SIDES SEE DETAIL ON THIS SHEET FOR CONNECTION.

BOARDWALK DETAILS

NOT TO SCALE

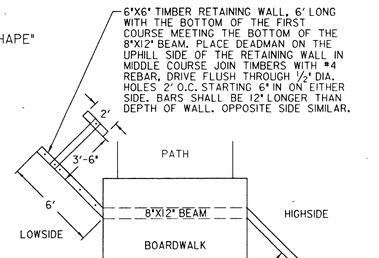


TYPICAL BOARDWALK FRAMING PLAN @ BENDS

NOT TO SCALE

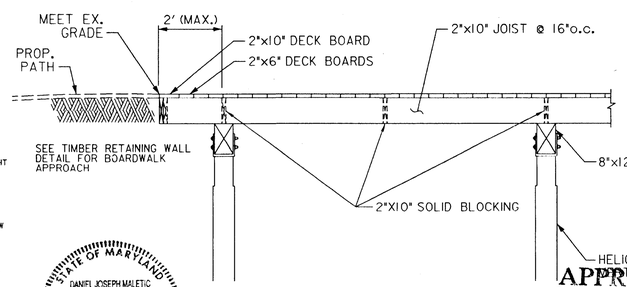
BOARDWALK & BRIDGE STRUCTURE TABLE

STRUCTURE	STATION	SHEET
BRIDGE CROSSING #1	17+47.92 - 18+08.08	3
BOARDWALK	17+30 - 17+70	4
BRIDGE CROSSING #6	29+23.58 - 30+35.75	4
BOARDWALK	33+70 - 34+95	5
BOARDWALK	40+40 - 42+75	5
BOARDWALK	46+90 - 49+00	6
BOARDWALK	66+10 - 68+70	7
REHAB. EX. TRUSS BRIDGE	112+20.16 - 113+11.13	9
BRIDGE CROSSING	1+40.02 - 1+97.18	10



TIMBER RETAINING WALL DETAIL

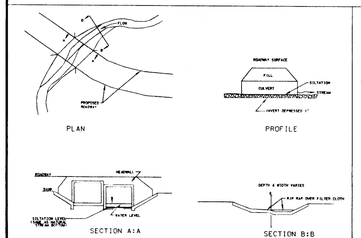
SCALE: N.T.S.



NOTE: RAILING OMITTED FOR CLARITY

BOARDWALK END DETAIL

NOT TO SCALE



I. DESCRIPTION

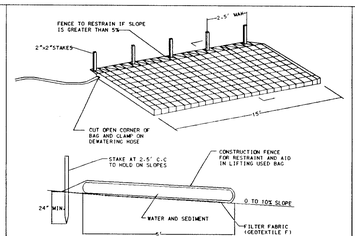
THIS WORK SHALL CONSIST OF DEPRESSING IN STREAM CULVERTS ONE FOOT BELOW THE NATURAL STREAM INVERT TO ENCOURAGE CHANNELIZATION AND TO ALLOW WATER TO POOL AND DEPOSIT SEDIMENTS. THUS IMPROVING FISH PASSAGE. IN THE EVENT OF A STORM, ALL SEDIMENT WILL BE WASHED AWAY, INSURING THE EFFECTIVENESS AND INTEGRITY OF THE CULVERT.

II. CONSTRUCTION REQUIREMENTS

THE CONSTRUCTION OF THE DEPRESSED CULVERT SHALL BE THE SAME AS FOR A STANDARD CULVERT. IN THE CASE OF DOUBLE OR TRIPLE-CELLED CULVERTS, ONLY ONE OR TWO CULVERTS SHALL BE DEPRESSED AS NECESSARY. STREAMS WITH HIGH SLOPE GRADIENTS MAY NOT BE SUITABLE FOR DEPRESSED CULVERTS BECAUSE INCREASED VELOCITIES MAY SCOUR THE BOTTOM AND RESTRICT SEDIMENTATION.

approved otherwise by the Administration.

WATER RESOURCES ADMINISTRATION	DEPRESSED CULVERT	Approved On 1/4/84 Chief, Waterway Permits	WPD 5.3



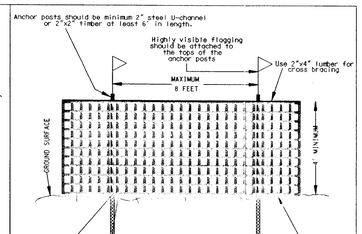
SECTION

NOTES:

1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGITATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
2. WIDTH AND LENGTH SHALL BE AS SHOWN.
3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURE TO THE PUMP DISCHARGE LINE.
4. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
5. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.
6. FILTER FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS "F":

TENSILE STRENGTH	50 lbs./in. (min)	TEST: MSMT 509
TENSILE MODULUS	20 lbs./in. (min.)	TEST: MSMT 509
FLOW RATE	0.3 gal./ft²/minute (max)	TESTS: MSMT 322
FILTERING EFFICIENCY	75% (min.)	TESTS: MSMT 322

WATER RESOURCES ADMINISTRATION	FILTER BAG TEMPORARY EROSION CONTROL MEASURE	Approved On 1/4/84 Chief, Waterway Permits	WPD FB



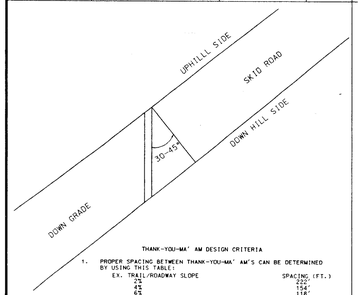
GENERAL NOTES

1. Limits of disturbance will be set as part of the review process for an approved TCP.
2. The boundaries of the limits of disturbance should be staked and flagged prior to erecting the protective device.
3. Anchor posts should be placed to avoid severing or damaging large tree roots.
4. Fencing material should be fastened securely to the anchor posts, cross bracing, and ground.

—— TPD ——

TREE PROTECTIVE DEVICE
BLAZE ORANGE PLASTIC MESH

TPD-O
OPTION 1

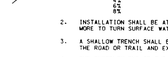


THANK-YOU-MA' AM DESIGN CRITERIA

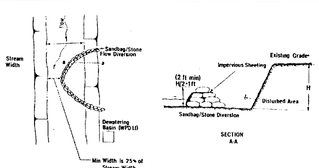
1. PROPER SPACING BETWEEN THANK-YOU-MA' AM'S CAN BE DETERMINED BY USING THIS TABLE:

EX. TRAIL/ROADWAY SLOPE	SPACING (FT.)
2%	250'
5%	134'
10%	73'
15%	50'

2. INSTALLATION SHALL BE AT AN ANGLE OF 30 DEGREES DOWN SLOPE OR MORE TO TURN SURFACE WATER OFF THE ROAD OR TRAIL.
3. A SHALLOW TRENCH SHALL BE DUG 4 TO 12 INCHES BELOW THE SURFACE OF THE ROAD OR TRAIL AND EXTEND 2 FT. BEYOND BOTH SIDES.
4. THE OVERFLOW END OF THE BAR SHALL BE FULLY OPEN AND EXTENDED FAR ENOUGH BEYOND THE EDGE OF THE ROAD OR TRAIL TO SAFELY DISPERSE RUNOFF WATER ONTO THE UNDISTURBED FOREST FLOOR.



WATER RESOURCES ADMINISTRATION	THANK-YOU-MA'AM TYPE WATER BAY CONSTRUCTION FOR SKID ROADS	Approved On 1/4/84 Chief, Waterway Permits	WPD TYM

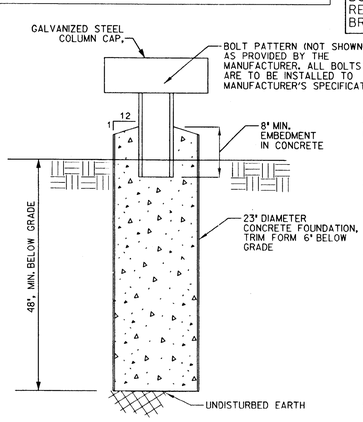


I. Description
The work shall consist of installing a flow diversion for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.

II. Material Specifications
1. Sandbags: Sandbags shall consist of materials which are resistant to ultra-violet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
2. Stones: Stone shall be washed and have a minimum diameter of 6 inches.
3. Sheeting: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

III. Construction Requirements
1. All erosion and sediment control devices shall be installed as the first order of work.
2. The diversion structure shall be installed form upstream to downstream.
3. The height of the diversion structure shall be one half the distance from stream bed to stream bank plus one foot, as indicated on the cross-section view.
4. All excavated materials shall be disposed of in a sod approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the WRA.
5. All areas disturbed by construction shall be purged to a dewatering basin prior to removing the structure in sufficient size to
6. Sheeting shall be overlapped such that the upstream portion covers the downstream portion with at least a 18-inch overlap.
7. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

WATER RESOURCES ADMINISTRATION	Sandbag/Stone Diversion	Approved On 1/4/84 Chief, Waterway Permits	WPD 2.3



ALTERNATE CONCRETE FOUNDATION DETAIL

NOT TO SCALE

GENERAL NOTES:

1. SPECIFICATIONS:
MD. STATE SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL, THE BOCA NATIONAL BUILDING CODE/1987, TENTH EDITION, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, (ACI 318-83, REVISED, 1986)

2. DESIGN LOADS:
THE BOARDWALK DECK AND FRAMING HAS EEEN DESIGNED FOR THE FOLLOWING LIVE LOAD: 100 P.S.F.

3. CONCRETE:
CONCRETE FOR VERTICAL PIER ENCASEMENT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. AT TWENTY-EIGHT (28) DAYS.

4. TIMBER:
ALL LUMBER SIZES AND LUMBER DIMENSIONS ARE NOMINAL. ALL LUMBER TO MEET OR EXCEED THE GRADES ESTABLISHED IN THE SPECIFICATIONS. ALL TIMBER BEAMS, JOISTS, DECKING AND POSTS SHALL BE SOUTHERN PINE NO. 1 OR BETTER, AND SHALL BE PRESSURE TREATED TO THE RETENTION VALUES LISTED BELOW IN LBS. PER CUBIC FEET:
-SUPERSTRUCTURE, 1.0
-DECK SURFACES, 0.6.
ALL BOLTS IN TIMBER SHALL BE INSTALLED WITH A 3" MINIMUM EDGE AND END DISTANCE, UNLESS NOTED OTHERWISE. INSTALL SOLID BLOCKING BETWEEN JOISTS AT ALL BEAMS AND RAIL POST LOCATIONS. ALL BOLTS IN TIMBER SHALL BE ¾" DIAMETER ASTM A-307, UNLESS NOTED OTHERWISE. ALL MULTIPLE "2x" BEAMS AND JOISTS SHALL BE FASTENED WITH ¾" DIAMETER BOLTS @ 16"o.c., STAGGERED TOP AND BOTTOM. NAIL SIZE AND SPACING SHALL BE IN ACCORDANCE WITH APPENDIX "C" OF THE BOCA NATIONAL BUILDING CODE/1987.

5. MISCELLANEOUS METALS:
ALL METAL FASTENERS, CONNECTORS AND BOLTS FOR TIMBER CONSTRUCTION SHALL BE HOT-DIPPED GALVANIZED STEEL. METAL FABRICATIONS SHALL BE GALVANIZED AFTER WELDING AND MACHINING.

GENERAL NOTES:

1. SPECIFICATIONS:
MD. STATE SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL, THE BOCA NATIONAL BUILDING CODE/1987, TENTH EDITION, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, (ACI 318-83, REVISED, 1986)

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5. MISCELLANEOUS METALS: HOT DIPPED
ALL METAL FASTENERS, CONNECTORS AND BOLTS FOR TIMBER CONSTRUCTION SHALL BE HOT-GALVANIZED STEEL. METAL FABRICATIONS SHALL BE GALVANIZED AFTER WELDING AND MACHINING. IF THE GALVANIZING IS REMOVED DURING ASSEMBLY, COLD GALVANIZING SHALL BE NEATLY APPLIED TO ALL EXPOSED AREAS.

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — 4/16/00 Date

Chief, Division of Land Development — 4/15/00 Date

Director — 4/10/00 Date

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

Director, Department of Recreation and Parks — Date

SDP-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DES:				
DRN:				
CHK:				
DATE:	BY	NO	REVISION	DATE

BOARDWALK CONSTRUCTION NOTES AND DETAILS

600' SCALE MAP NO. _____ BLOCK NO. _____

HOWARD COUNTY PATHWAY SYSTEM - PHASE 3b, SEGMENT 1
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954 BID SET SHEET NO. 13

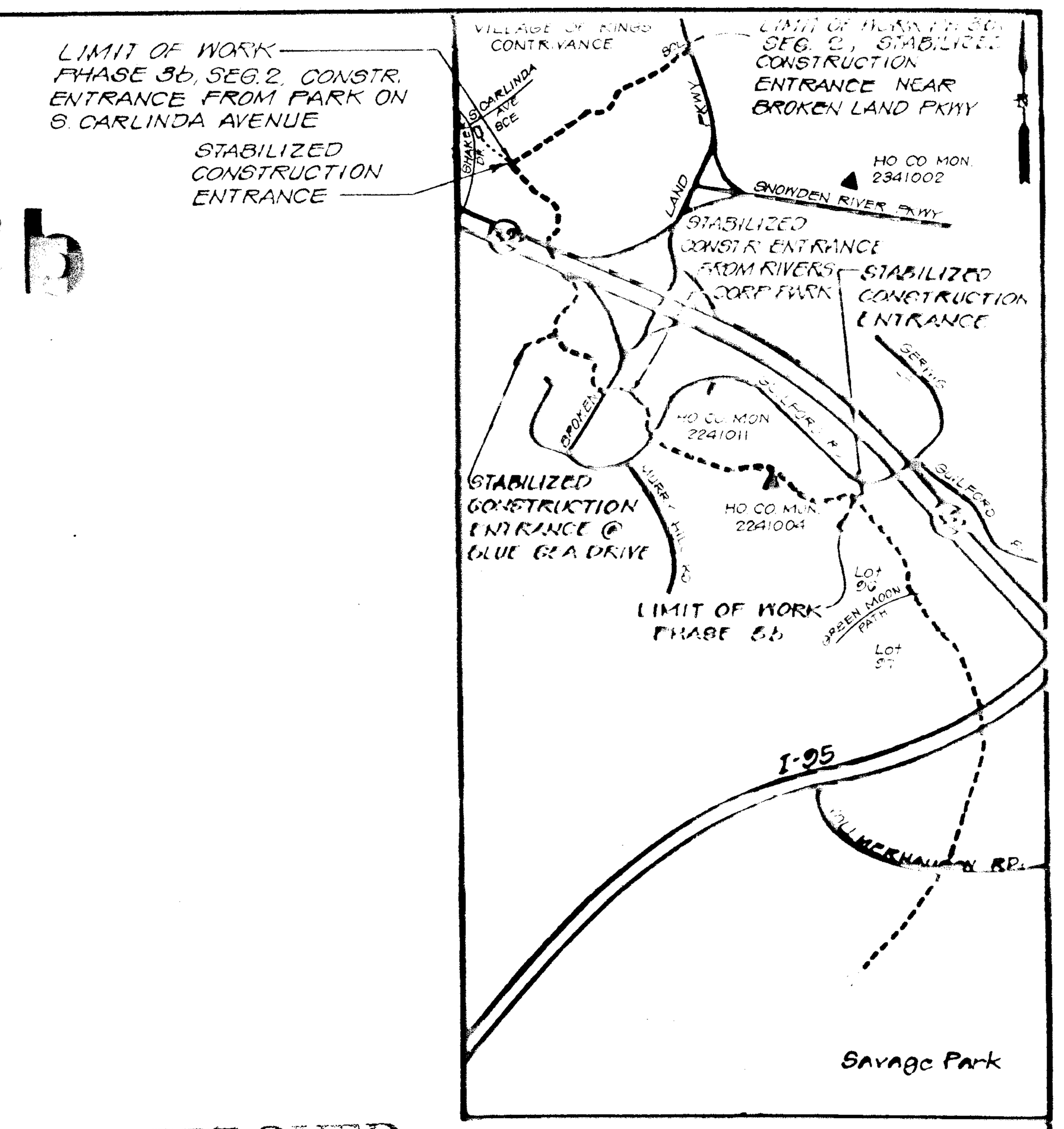
SCALE AS SHOWN

SHEET 12 OF 12

FILE: N:\1990\90161\90161_01\DGN\d101hcpw.dgn
DATE: 20-Dec-99 16:11

SDP-99-79

HOWARD COUNTY PATHWAY SYSTEM - PHASE 3b
HOWARD COUNTY, MARYLAND SEGMENT 2
DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT N-3954



LOCATION MAP
Scale 1"=2000'

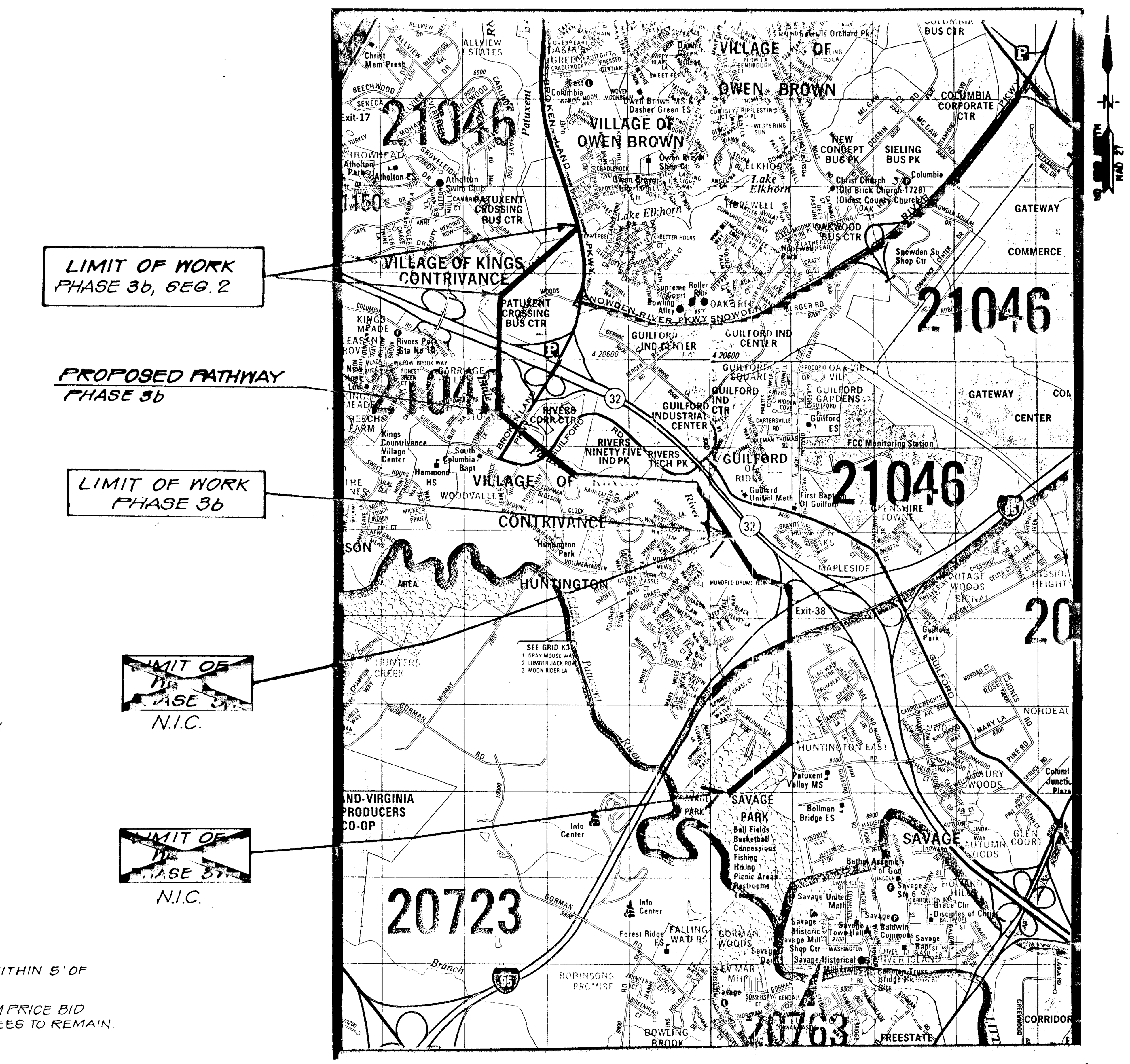
INDEX

SHEET NO.	SDP SHEET NO.	TITLE
1	1	TITLE SHEET
2	2	SHEET LAYOUT 1
3	3	SITE PLAN STA. i0+00 TO STA. i12+35.14
4	4	SITE PLAN STA. i12+35.14 TO STA. i29+37.20
5	5	DETAIL SHEET
6	6	SEDIMENT & EROSION CONTROL DETAILS
7	7	BOARDWALK NOTES & DETAILS

Site Analysis

2940	Linear Feet of Path
60	Linear Feet of Bridge
40	Linear Feet of Boardwalk
1.1 Ac.	Total Area Disturbed
0.55 Ac.	Area of Vegitative Stabilization
0.54 Ac.	Area of Impervious Surface
0 S.F.	Area of Temporary Wetland Disturbance
0 S.F.	Area of Permanent Wetland Disturbance
13,480 Sq. Ft.	Area of Stream Buffer Disturbance

Limit of Bituminous Pathway (Bikers / Pedestrians) i0+00 – i29+37.20



VICINITY MAP
SCALE: 1" = 2000'
COPYRIGHT: ADC,
PERMIT USE NO. 20694273

The Existing Topography is taken from field run survey with two foot contour intervals prepared by the Howard County Department of Public Works Dated 12-18-90 through 1-23-92

LEGEND

Symbol	Description
	CULVERT
	BRIDGE
	WETLAND LIMIT
	25' WETLAND BUFFER
—TPD—	TREE PROTECTIVE DEVICE
	EXISTING TREELINE
	PROPOSED TREELINE
	STREAM
(L1) (C1)	TANGENT/CURVE SEGMENT NO.
—SF—	SILT FENCE
	PROPOSED SIGN
	PROPERTY LINE
	PROPOSED BOARDWALK
SCE	STABILIZED CONSTRUCTION ENTRANCE

NOTE: UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS. CULVERT BOARDWALK AND BRIDGE LOCATIONS.

SITE DEVELOPMENT PLAN
Pathway Phase 3a- SDP-98-46
Pathway Phase 3b, Segment 1- SDP-99-79
Pathway Phase 3b, Segment 2- SDP-00-05

• MDE TRACKING NO. 18952492

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[signature] 4/6/00
Chief, Development Engineering Division — Date
[signature] 4/17/00
Chief, Division of Land Development — Date
[signature] 4/17/00
Director (Acting) — Date

[signature]
Director, Department of Recreation and Parks — Date

EXISTING FIELD RUN TOPOGRAPHY PREPARED BY GREENMAN PEDERSEN, INC.

HOWARD COUNTY FIELD BOOK SURVEY REFERENCES

BOOK NO.	DATE SURVEYED
268	12/18/90 - 3/28/91
269	3/28/91 - 4/11/91
277	4/12/91 - 12/6/91
180	12/20/91 - 1/23/92

RELEVANT BACKGROUND INFORMATION
FDP PHASE 155A, VOB 5/2
F-90-189, VOB 5/2, OS LOT 2
TAX MAP NO.: 42, GRIDS 2 & 3
ZONING: NT
FDP PHASE 148 (VKC 1/1, F-77-143, VKC 1/1, OS LOTS 339 & 340)
WETLANDS DELINEATED BY:
EBA ENGINEERING, INC.
SETON BUSINESS PARK
5800 METRO DRIVE
BALTIMORE, MARYLAND 21215-3209
410-358-7171

FLOODPLAIN STUDY IS BASED ON:

HOWARD COUNTY WATERSHED MODEL UPDATE
LITTLE PATUXENT RIVER WATERSHED,
SUBMITTAL 2-REVISED HYDROLOGY DATA
PREPARED BY: BERNARD JOHNSON, INC., MAY 2, 1985

LITTLE PATUXENT RIVER WATERSHED MODEL UPDATE
FOR HOWARD COUNTY, MARYLAND
HEC-2 MODELS FOR BW-I LITTLE PATUXENT RIVER
PREPARED BY BJI, NOVEMBER, 1985

DEVELOPERS CERTIFICATE

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

[signature] 3/10/00
Signature of Developer — Date

ENGINEERS CERTIFICATE

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

[signature] 3/10/00
Signature of Engineer — Date

APPROVED:

Reviewed for HOWARD SCD and meets Technical Requirements.

[signature] 4/4/00
USDA-Natural Resources Conservation Service — Date

APPROVED:

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

[signature] 4/4/00
Howard SCD — Date

SDP-1

GENERAL NOTES

1. COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC SYSTEM POINT NOS. 2241004, 2241011 & 2341002. NAD 27 DATUM
2. CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO (2) WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN THE VICINITY OF PROPOSED UTILITIES AT NO COST TO THE COUNTY THEN IF DIRECTED BY THE ENGINEER, TEST PITS SHALL BE DUG AT UTILITY CROSSINGS TO DETERMINE EXISTING HORIZONTAL AND VERTICAL ALIGNMENT OF UTILITIES.
3. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

   MISS UTILITY 1-800-257-7777
   CONSTRUCTION INSPECTION DIVISION, HOWARD COUNTY (410) 313-1880
   STATE HIGHWAY ADMINISTRATION (410) 531-5533
   BALTIMORE GAS & ELECTRIC COMPANY - UNDERGROUND ELECTRIC
   DISTRIBUTION CUSTOMER SERVICE (410) 685-0123
   ENGINEERING DAMAGE CONTROL (410) 234-5621
   BELL ATLANTIC TELEPHONE 1-800-870-0000
   AMERICAN TELEPHONE & TELEGRAPH CABLE LOCATION DIVISION (410) 393-3553
   COLONIAL PIPELINE COMPANY (410) 781-4641
   BUREAU OF UTILITIES, HOWARD COUNTY (410) 313-4900
4. AVOID DAMAGE TO TREES ON THE PATHWAY TO MAXIMUM EXTENT. OTHER TREES WITHIN LIMITS OF CONSTRUCTION SHALL NOT BE DESTROYED WITHOUT APPROVAL OF THE ENGINEER. TREES > 12"Ø WITHIN 5' OF LOD WILL BE PROTECTED BY TREE PROTECTIVE FENCING.
5. CONTRACTOR SHALL REMOVE TREES, STUMPS, AND ROOT ALONG LINE OF EXCAVATION AS DIRECTED BY THE ENGINEER. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CLEARING AND GRUBBING. CARE SHALL BE TAKEN TO AVOID DISTURBANCE OF EXISTING TREES TO REMAIN
6. PLACE REGULATION WARNING SIGNS AS REQUIRED TO COMPLY WITH MARYLAND STATE HIGHWAY ADMINISTRATION MANUAL OF TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS. PAYMENT FOR THIS ITEM SHALL BE INCIDENTAL TO OTHER BID ITEMS. ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO ANY ASPHALT PAVING. NO TRAFFIC STUDY IS REQUIRED.
7. ALL GRADING SHALL BE LIMITED TO 16' R.O.W. INCLUDING SIDE SLOPES AND STABILIZATION (EXCEPT WHERE LOD INDICATES A WIDER AREA). FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED AS FOLLOWS:
   A. SEVEN (7) CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES, AND ALL SLOPES GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1); AND
   B. FOURTEEN (14) CALENDAR DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
8. FOR DETAILS NOT SHOWN ON THESE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, THE CONTRACTOR SHALL ABIDE BY THE MARYLAND STATE HIGHWAY ADMINISTRATION'S "BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES," "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" AND THE SPECIAL PROVISIONS. IN THE EVENT OF ANY DISCREPANCY BETWEEN THESE SOURCES, THE SPECIAL PROVISIONS SHALL GOVERN.
9. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
10. THE PATHWAY SHALL BE MAINTAINED AFTER CONSTRUCTION BY THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARK
11. UNLESS INDICATED OTHERWISE NEW PATHWAY SHALL NOT EXCEED 5% SLOPE

This Project is exempt from the obligations of the Forest Conservation Program because it is on New Town zoned land, a planned unit development, substantially developed before Dec 31, 1992.

RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION. SEE APPROPRIATE RIGHT-OF-WAY PLAT OR PLATS.

THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF SAID LOCATIONS. CALL "MISS UTILITY", 1-800-257-7777 FOR UTILITY LOCATIONS AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION.

Fee-in-lieu of Storm Water Management Approval was granted on

SHA CONTRACT NO. HO 8325125 FAP NO.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
[signature] 3/10/00 — DIRECTOR OF PUBLIC WORKS, DATE
[signature] 3/10/00 — CHIEF, BUREAU OF ENGINEERING, DATE

GPI GREENMAN-PEDERSEN, INC.

STATE OF MARYLAND — DANIEL JOSEPH MALETIC — No. 13759 — REGISTERED PROFESSIONAL ENGINEER

DES: K.F.
DRN: C.A.
CHK: D.J.M.
DATE:

BY | NO. | REVISION | DATE | FOR SCALE MAP NO. | BLOCK NO.

TITLE SHEET

HOWARD COUNTY PATHWAY SYSTEM
PHASE 3b, SEGMENT 2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET
Sheet No 14

SCALE AS SHOWN

SHEET 1 OF 7

SDP-00-05

LIMIT OF WORK
PHASE 3b, SEC. 2

Temporary Construction Entrance

Temporary Construction Entrance from Park on Orlinda Avenue.

Temporary Construction Entrance

Temp. Const. Easement from Rivers Corp Park

"PARCEL 'E'" Temp. Const. Entrance

Temp. Const. Entrance

Temporary Construction Easement

LIMIT OF WORK
PHASE 3b, SEGMENT I

Phase 3b

Phase 3b

1"=50' SCALE PLAN VIEW SHEET # (TYP.)

APPROX. SHEET OUTLINE

APPROX. PATH ALIGNMENT

Stone Dust portion of trail extends from Old Guilford Road to Vollmerhausen Road. Sheets 11-15. (NIC)

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/6/00

Chief, Division of Land Development — Date 4/17/00

Director — Date 4/17/00

Director, Department of Recreation and Parks — Date

SDP-2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/10/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/10/00

Greenman-Pedersen, Inc.
ENGINEERS/ARCHITECTS/PLANNERS
LAUREL, MARYLAND

STATE OF MARYLAND
DANIEL JOSEPH MALETTA
REGISTERED PROFESSIONAL ENGINEER

DES: B.B.
DRN: A.K.
CHK: K.P.
DATE:

BY	NO	REVISION	DATE

SHEET LAYOUT PLAN 1

600' SCALE MAP NO. ____ BLOCK NO. ____

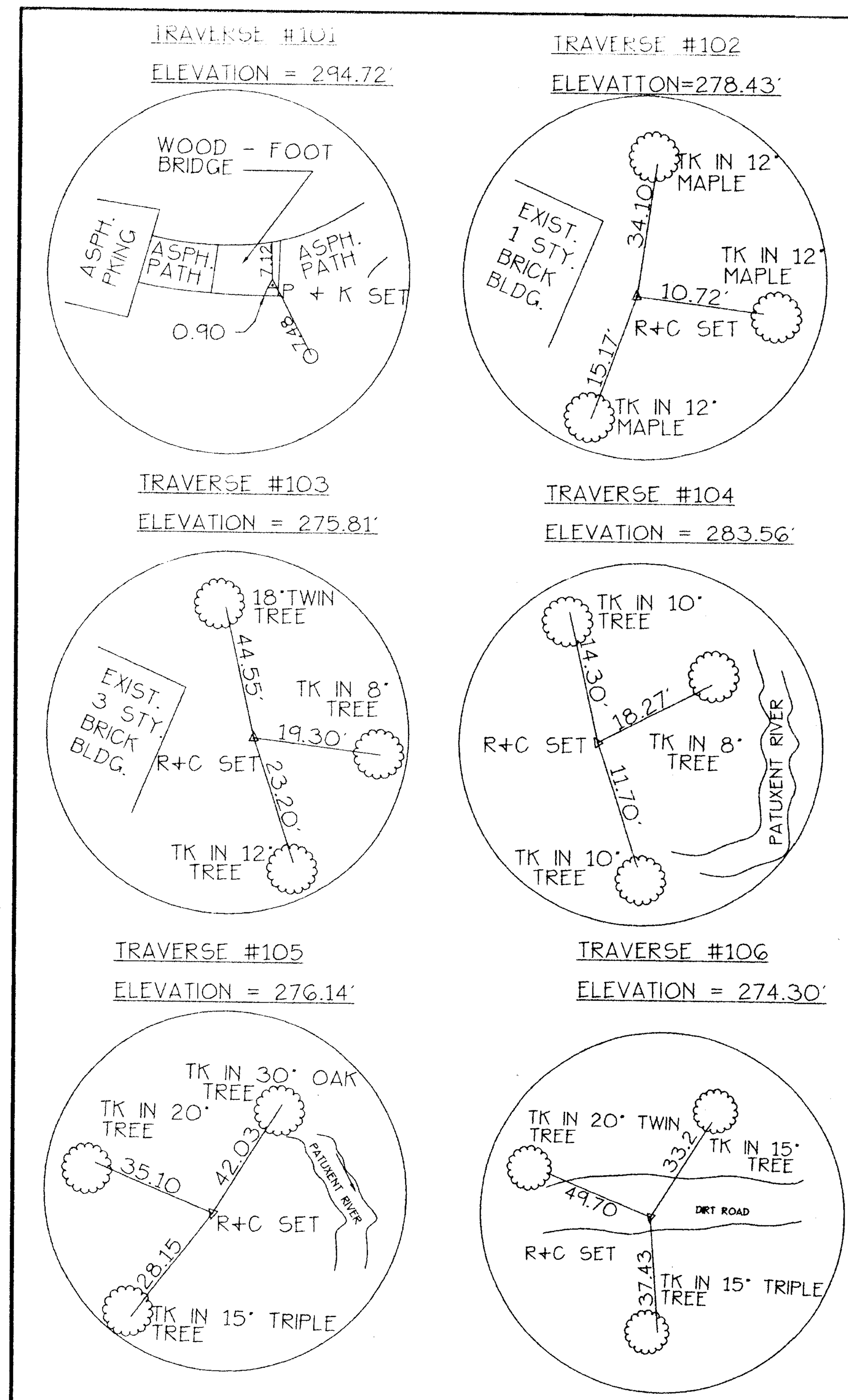
HOWARD COUNTY PATHWAY SYSTEM — PHASE 3b, SEG 2

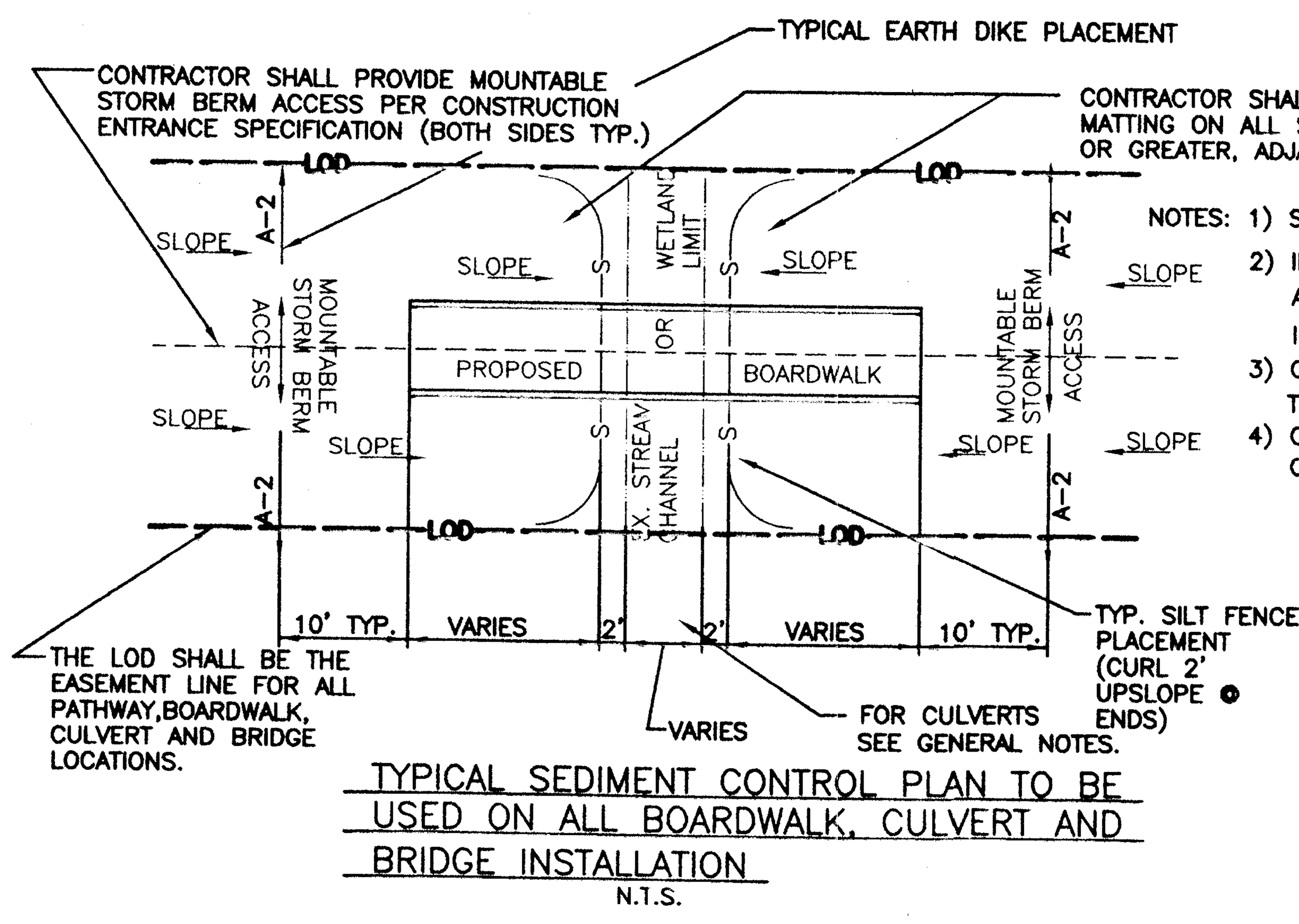
CAPITAL PROJECT N-3954 BID SET
HOWARD COUNTY, MARYLAND Sheet No 15

SCALE 1" = 600'

SHEET 2 OF 7

SDP-00-05

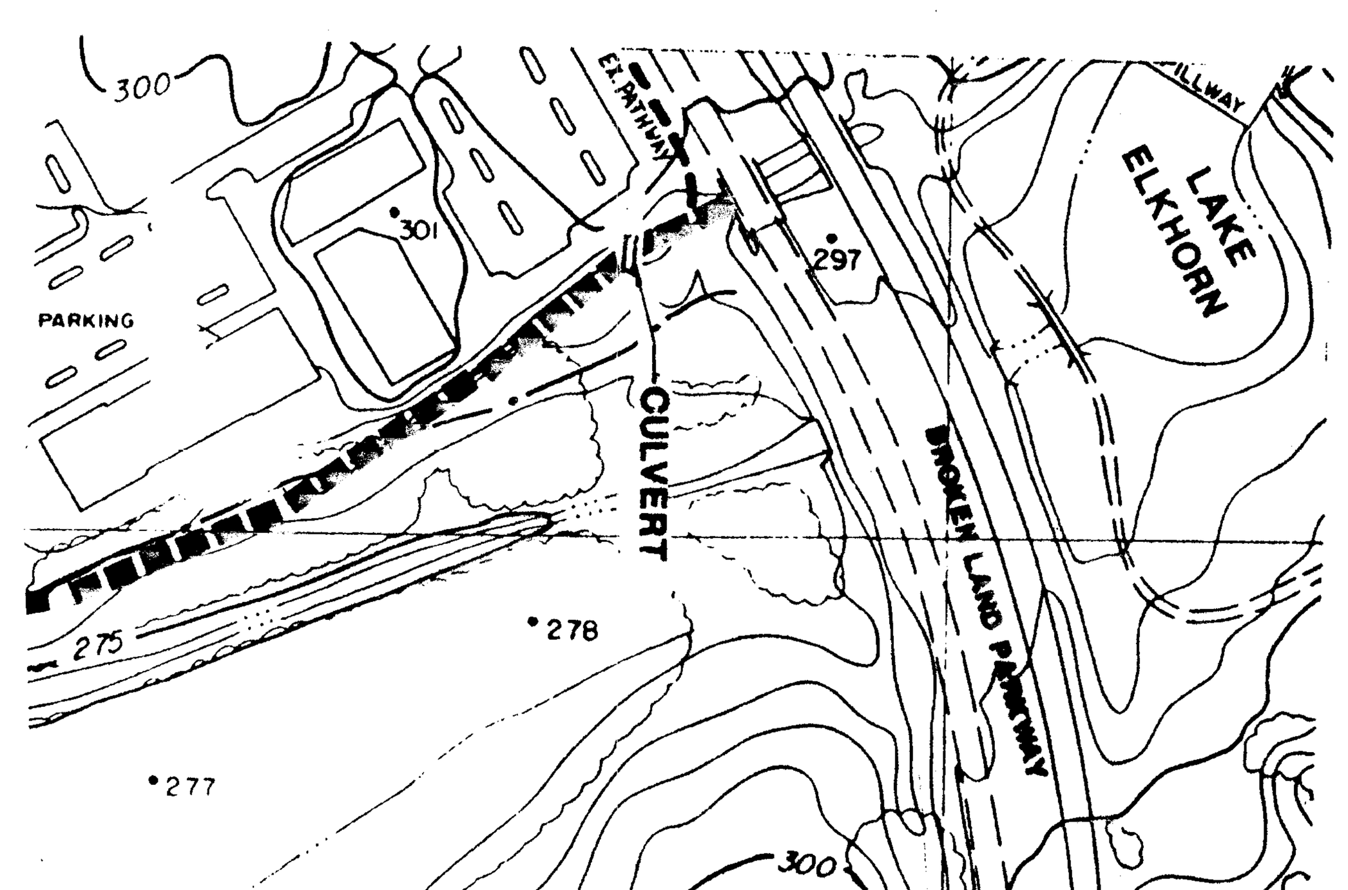




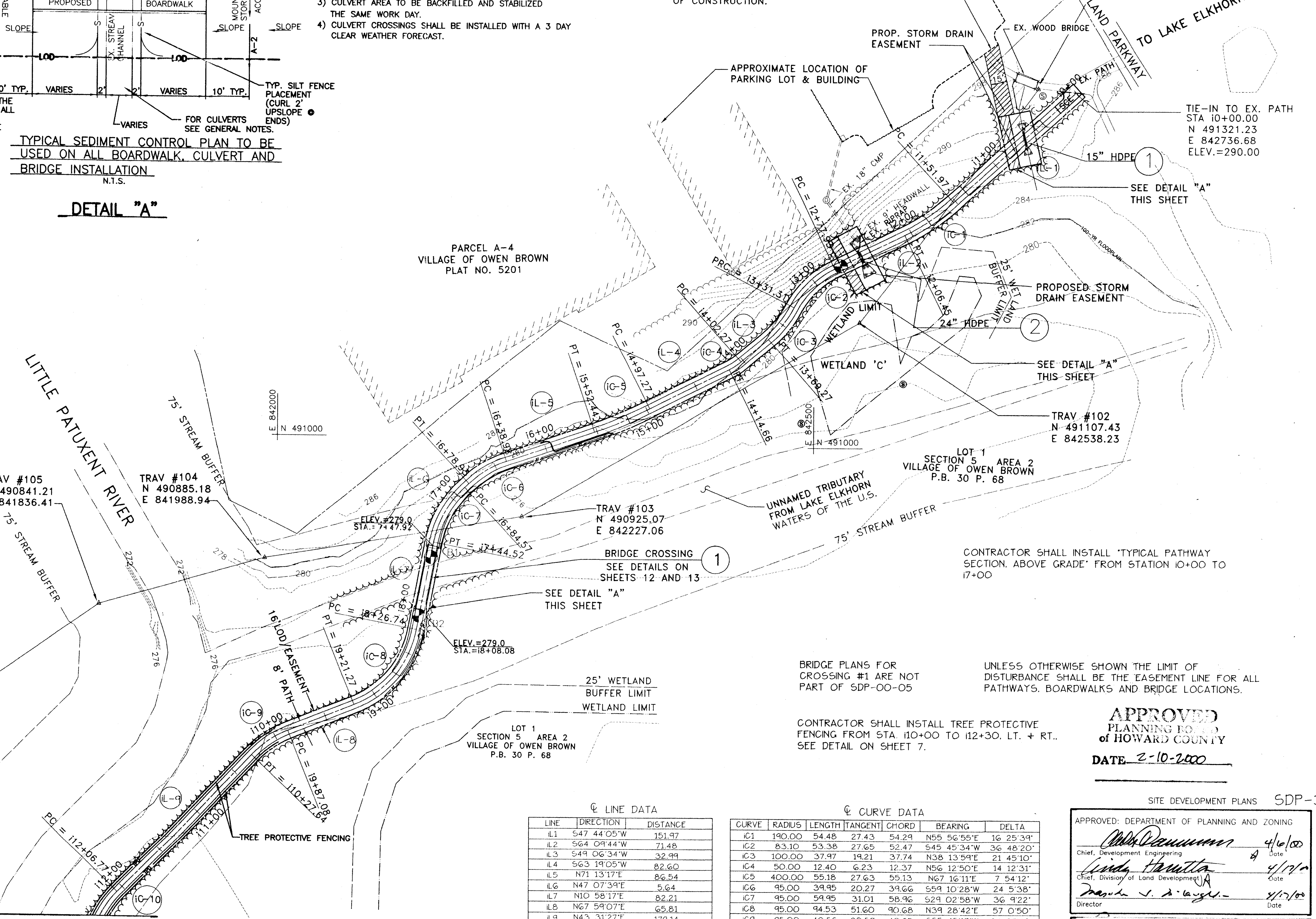
TYPICAL SEDIMENT CONTROL PLAN TO BE USED ON ALL BOARDWALK, CULVERT AND BRIDGE INSTALLATION
N.T.S.

DETAIL "A"

NOTES:
1) SEE WRA DETAILS SHEETS 6 & 7.
2) INSTALL SEDIMENT AND EROSION CONTROL MEASURES AND NOTIFY SEDIMENT AND EROSION CONTROL INSPECTOR PRIOR TO PROCEDING WITH CONSTRUCTION.
3) CULVERT AREA TO BE BACKFILLED AND STABILIZED THE SAME WORK DAY.
4) CULVERT CROSSINGS SHALL BE INSTALLED WITH A 3 DAY CLEAR WEATHER FORECAST.



1" = 200' MAP OF TERMINUS AT EXISTING PATHWAY NEAR BROKEN LAND PARKWAY



CONTRACTOR SHALL INSTALL 'TYPICAL PATHWAY SECTION, ABOVE GRADE' FROM STATION i0+00 TO i7+00

BRIDGE PLANS FOR CROSSING #1 ARE NOT PART OF SDP-00-05

UNLESS OTHERWISE SHOWN THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS AND BRIDGE LOCATIONS.

CONTRACTOR SHALL INSTALL TREE PROTECTIVE FENCING FROM STA. i10+00 TO i12+30, LT. + RT., SEE DETAIL ON SHEET 7.

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

MATCHLINE A-A SEE SHEET 4

℄ LINE DATA

LINE	DIRECTION	DISTANCE
iL1	S47 44'05"W	151.97
iL2	S64 09'44"W	71.48
iL3	S49 06'34"W	32.99
iL4	S63 19'05"W	82.60
iL5	N71 13'17"E	86.54
iL6	N47 07'39"E	5.64
iL7	N10 58'17"E	82.21
iL8	N67 59'07"E	65.81
iL9	N43 31'27"E	179.14

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
iC1	190.00	54.48	27.43	54.29	N55 56'55"E	16 25'39"
iC2	83.10	53.38	27.65	52.47	S45 45'34"W	36 48'20"
iC3	100.00	37.97	19.21	37.74	N38 13'59"E	21 45'10"
iC4	50.00	12.40	6.23	12.37	N56 12'50"E	14 12'31"
iC5	400.00	55.18	27.63	55.13	N67 16'11"E	7 54'12"
iC6	95.00	39.95	20.27	39.66	S59 10'28"W	24 5'38"
iC7	95.00	59.95	31.01	58.96	S29 02'58"W	36 9'22"
iC8	95.00	94.53	51.60	90.68	N39 28'42"E	57 0'50"
iC9	95.00	40.56	20.59	40.25	S55 45'17"W	24 27'40"
iC10	95.00	48.60	24.84	48.07	S28 52'08"W	29 18'37"

SITE DEVELOPMENT PLANS SDP-3

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chief, Development Engineering — Date 4/6/00
Chief, Division of Land Development — Date 4/17/00
Director — Date 4/17/00
Director, Department of Recreation and Parks — Date 3-21-00

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS — DATE 3/21/00
CHIEF, BUREAU OF ENGINEERING — DATE 3/21/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

REGISTERED PROFESSIONAL ENGINEER

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

600' SCALE MAP NO. — BLOCK NO.

SITE PLAN

STA i0+00.00 - STA i12+35.14

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b, SEGMENT 2

CAPITAL PROJECT N- 3954
HOWARD COUNTY, MARYLAND BID SET SHEET

SCALE 1"=50'
SHEET 3 OF 7

SDP-00-05

MATCHLINE A-A SEE SHEET 3
TRAVERSE #107
ELEVATION = 275.38'
CREEK
TK IN 15' TREE
TK IN 15' TWIN SHAG BARK
R+C SET
TRAVERSE #108
ELEVATION = 273.82'
TK IN 24" SHAG BARK
TK IN 18" TREE TWIN OAK
TK IN 12' TREE
TRAVERSE #109
ELEVATION = 273.10'
TK IN 12' TREE
TK IN 15' TREE
TK IN 10' TREE
PATUXENT RIVER
TRAVERSE #110
ELEVATION = 272.62'
TK IN 12' ASH TREE
TK IN 28' BARK
TK IN 10' ASH
MD GRID NORTH NAD 27
EX. 20' SEWER EASEMENT
EX. 36" S
PT = i12+55.37
PC = i13+30.58
i13+65.42
PC = i14+58.14
i14+98.77
LOT 1
SECTION 5 AREA 2
VILLAGE OF OWEN BROWN
PB.30 P.68
TRAV #107
N 490392.82
E 841336.66
LITTLE PATUXENT RIVER
PT = i17+40.12
i17+00.15
STA. i17+70
ELEV = 275.50
STA. i17+30
ELEV = 275.50
CONSTRUCT BOARDWALK FROM STA i17+30 TO STA i17+70 SEE DETAIL SHEET 7
TWIN 24" HDPE
PT = i20+64.24
PT = i19+51.73
PC = i18+92.02
i20+37.72
OPEN SPACE
LOT 1
SECTION 6 AREA 1
VILLAGE OF OWEN BROWN
PB.85 P.26
25' WETLAND BUFFER LIMIT
WETLAND LIMIT
SEE DETAIL 'A' SHEET 3
PROP. STORM DRAIN EASEMENT
EXISTING SPUR TRAIL FROM CARLINDA AVENUE
Existing path
SHAKER DRIVE
1"=200' MAP OF TERMINUS AT EXISTING PATHWAY NEAR CARLINDA DRIVE
CONTRACTOR SHALL REPAIR ANY EXISTING BITUMINOUS PATHWAYS DAMAGED DURING CONSTRUCTION OF ACCESS ROADS (TYP).
MAJOR CONSTRUCTION ACCESS POINT CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCE AT THIS LOCATION. SEE TERMINUS LOCATION MAP. (THIS SHEET)
BRIDGE PLANS FOR CROSSING #6 ARE NOT PART OF SDP-00-05
OPEN SPACE
LOT 339
VILLAGE OF KINGS CONTRIVANCE
PLAT #3904
75' STREAM BUFFER
E 841000 N 490500
E 841000 N 490000
E 841500 N 490000
PT = i21+44.57
i21+91.42
TRAV #109
N 489939.52
E 840789.86
TRAV #110
N 489903.89
E 840472.93
EX. MACADAM PATH FROM CARLINDA DRIVE TIE INTO EX.MACADAM PATH
ELEV.=276.5
STA.=29+23.58
BRIDGE CROSSING SEE STRUCTURAL DETAILS
LITTLE PATUXENT RIVER
PC = i23+87
i23+95.14
TREE PROTECTIVE FENCING
EX. SAN. MH# 1332 (AS BUILT LOCATION)
CONTRACTOR SHALL INSTALL TREE PROTECTIVE FENCING FROM STA. i12+30 TO i18+80. LT. + RT. AND STA. i21+25 TO i29+30 LT. + RT.. SEE DETAIL ON SHEET 7.
29+32.29
N 489782.41
E 840358.42
PT = 29+26.10
i24+86.36
i25+20.82
PT = i26+66.55
i26+51.29
PC = i27+92.58
i28+36.58
CONTRACT # 121-S
EX. BOULDER
18" HDPE
SEE DETAIL "A" SHEET 3
ELEV.=276.5
STA.=30+35.75
LIMIT OF WORK
STA. i29+37.20 = STA. 30+60.00
PHASE 3b, SEGMENT 2, SDP-00-05
SEE DETAIL "A" SHEET 3
PROP. STORM DRAIN EASEMENT
EX. 20' SEWER EASEMENT
EX. 36" S
UNLESS OTHERWISE SHOWN, THE LIMIT OF DISTURBANCE SHALL BE THE EASEMENT LINE FOR ALL PATHWAYS, BOARDWALKS, CULVERT AND BRIDGE LOCATIONS.
LIMIT OF SEGMENT 2

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

℄ LINE DATA

LINE	BEARING	LENGTH
iL10	N14 12'49"E	75.21
iL11	N35 13'25"E	92.72
iL12	N59 43'31"E	201.39
iL13	N83 49'46"E	151.90
iL14	N44 33'42"E	80.58
iL15	N28 33'47"E	127.17
iL16	N60 37'16"E	142.54
iL17	N55 46'54"E	91.22
iL18	N76 33'44"E	130.48
iL19	N85 45'54"E	126.03
iL20	N59 29'10"E	101.04
L11	N41 59'03"E	50.05'
L12	S32 55'26"E	314.96'

℄ CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
iC11	95.00	34.84	17.62	34.64	N24 43'07"E	21 0'36"
iC12	95.00	40.63	20.63	40.32	N47 28'28"E	24 30'5"
iC13	95.00	39.97	20.28	39.67	N71 46'38"E	24 6'15"
iC14	95.00	65.11	33.89	63.84	S64 11'44"W	39 16'4"
iC15	95.00	26.53	13.35	26.44	S36 33'44"W	15 59'55"
iC16	95.00	53.15	27.29	52.46	N44 35'31"E	32 3'29"
iC17	95.00	8.02	4.01	8.02	S58 12'05"W	4 50'22"
iC18	95.00	34.46	17.42	34.27	N66 10'19"E	20 46'50"
iC19	95.00	15.26	7.65	15.24	N81 09'49"E	9 12'10"
iC20	95.00	43.57	22.18	[illegible]	S72 37'32"W	26 16'44"
C11	75.00	18.73'	9.41'	18.68'	S49 08'12"W	14 18'17"

SITE DEVELOPMENT PLANS

SDP-4

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering — Date 4/6/00

Chief, Division of Land Development — Date 4/7/00

Director — Date 4/7/00

Director, Department of Recreation and Parks — Date 3-21-00

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/21/00

CHIEF, BUREAU OF ENGINEERING — DATE 3/21/00

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

DANIEL JOSEPH MALEVS — REGISTERED PROFESSIONAL ENGINEER

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY | NO. | REVISION | DATE

600' SCALE MAP NO. | BLOCK NO.

SITE PLAN
STA i12+35.14 – STA i29+37.20
STA 29+32.29 – STA 32+41.06

HOWARD COUNTY PATHWAY
SYSTEM-PHASE 3b, SEGMENT 2
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND

BID SET SHEET NO.

SCALE 1"=50'

SHEET 4 OF 7

SDP-00-05

PIPE SCHEDULE

Pipe Schedule Pipe No.	Inv. A	Inv. B	DIAMETER	SLOPE	K	R/W	N	Q_{10}	V_{10}
1	288.01	286.95	15"	5.03%	20'	6.0'/8.0'	1	0.6	0.49
2	282.58	280.83	24"	5.00%	18'	10.0'/12.0'	1	12.2	3.89
5	271.17	270.93	TWIN 24"	1.00%	24'	30.0'/18.0'	2	136	8.0
7	271.64	271.48	18"	0.75%	22'	7.0'/10.0'	1	7.91	4.47

NOTES:

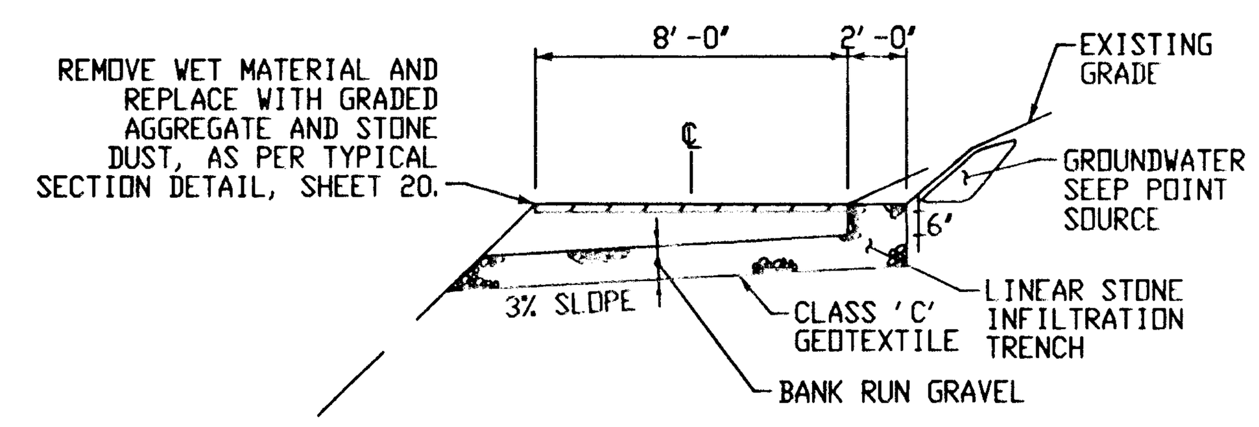
1. INVERTS ARE TO BE ADJUSTED AS DEEMED NECESSARY BY THE CONTRACTOR TO MATCH EXISTING GRADES. THE DOWN STREAM INVERT MUST BE LOWER THAN THE UPSTREAM.
2. ALL STORM DRAIN CULVERTS ARE TYPE S HDPE UNLESS OTHERWISE NOTED.
3. FOR CULVERT INSTALLATION SEE SEDIMENT AND EROSION CONTROL DETAILS, SHEETS 6 AND 7.

STRUCTURE LOCATION

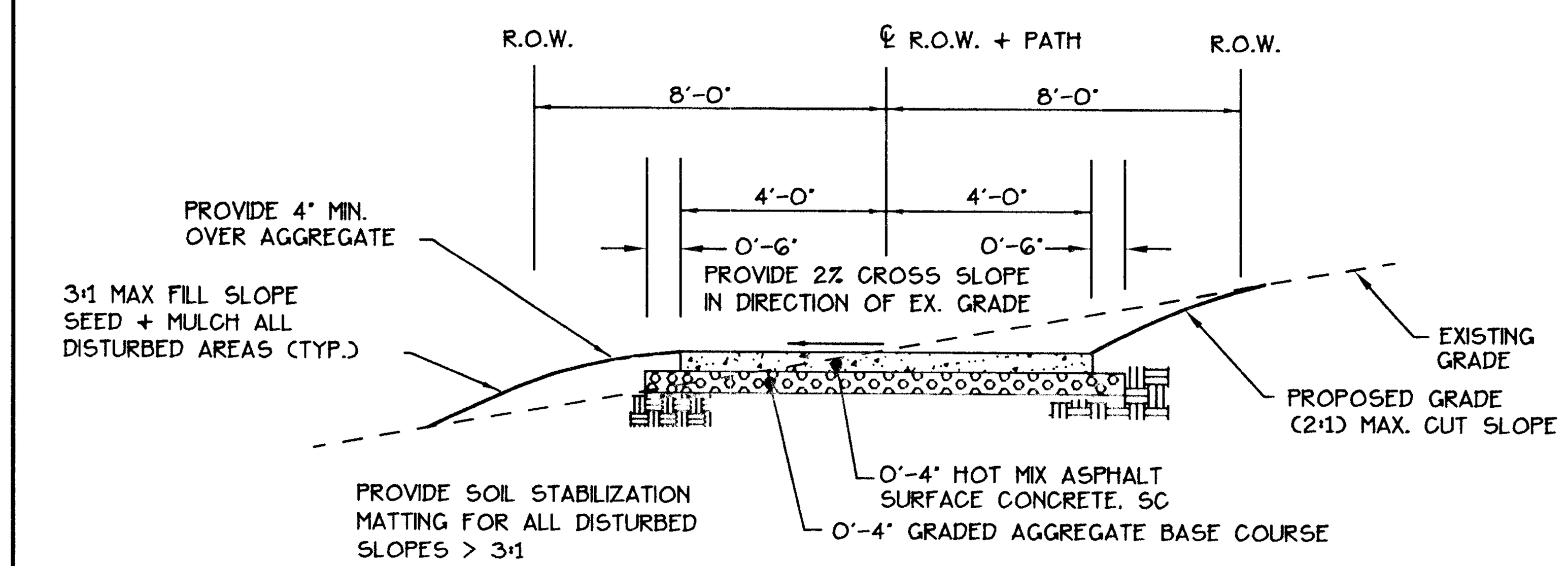
STR. No.	END SECTION A		END SECTION B	
	STATION	OFFSET	STATION	OFFSET
1	10+64	6'	10+70	6'
2	12+05	6'	12+05	6'
5	120+79	11'	120+93	11'
7	31+24	9'	31+37	9'

NOTES:

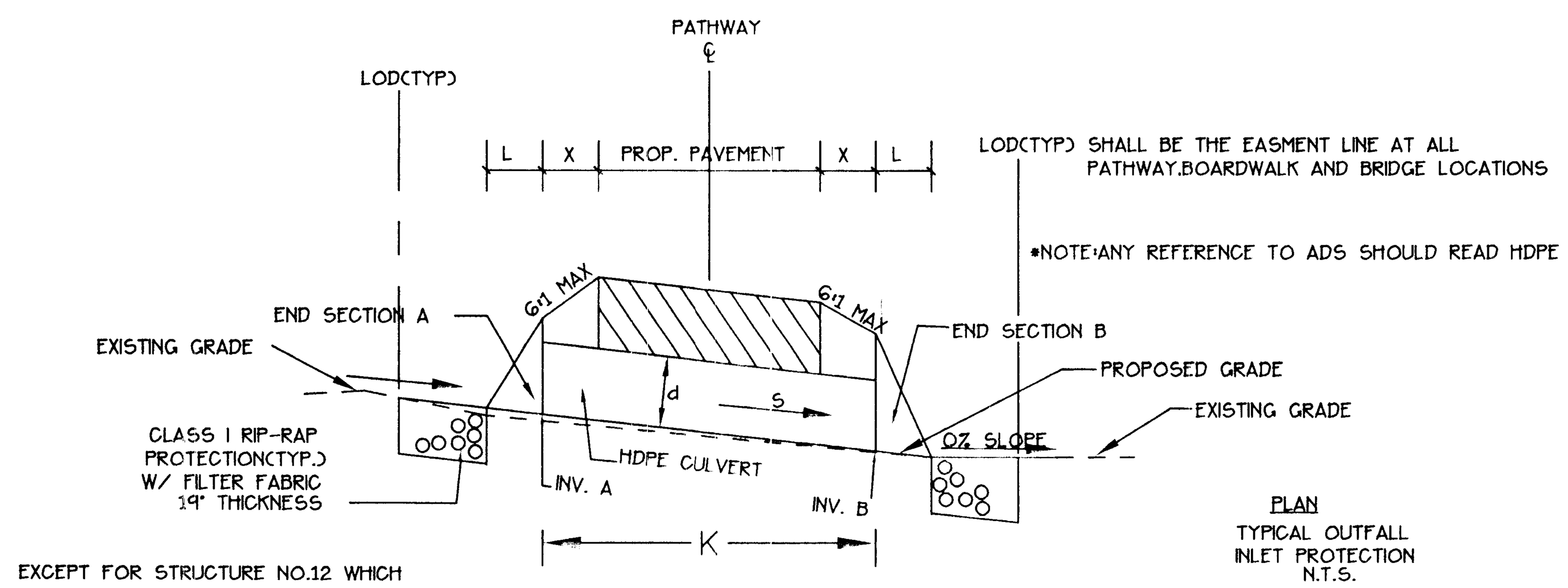
1. ALL STATIONS AND OFFSETS ARE WITHIN + OR - 3'. ADJUSTMENTS TO BE MADE IN THE FIELD AS NECESSARY TO ACCOMMODATE EXISTING CONDITIONS.
2. ALL STATIONS ARE LOCATED AT THE CENTERLINE END OF THE PIPE.



TYPICAL CROSS SECTION



TYPICAL PAVED SECTION
STATION 17+00 TO 129+37
N.T.S.

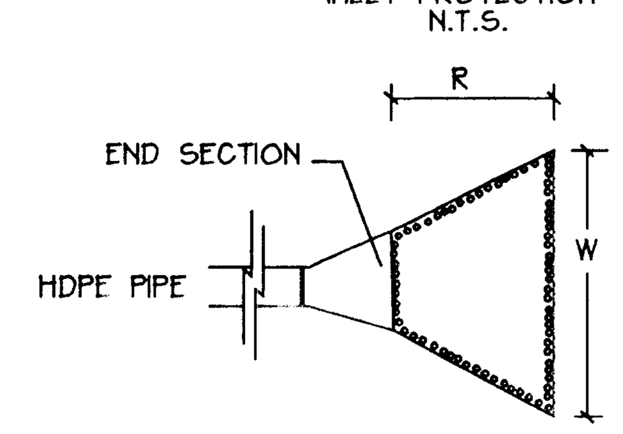


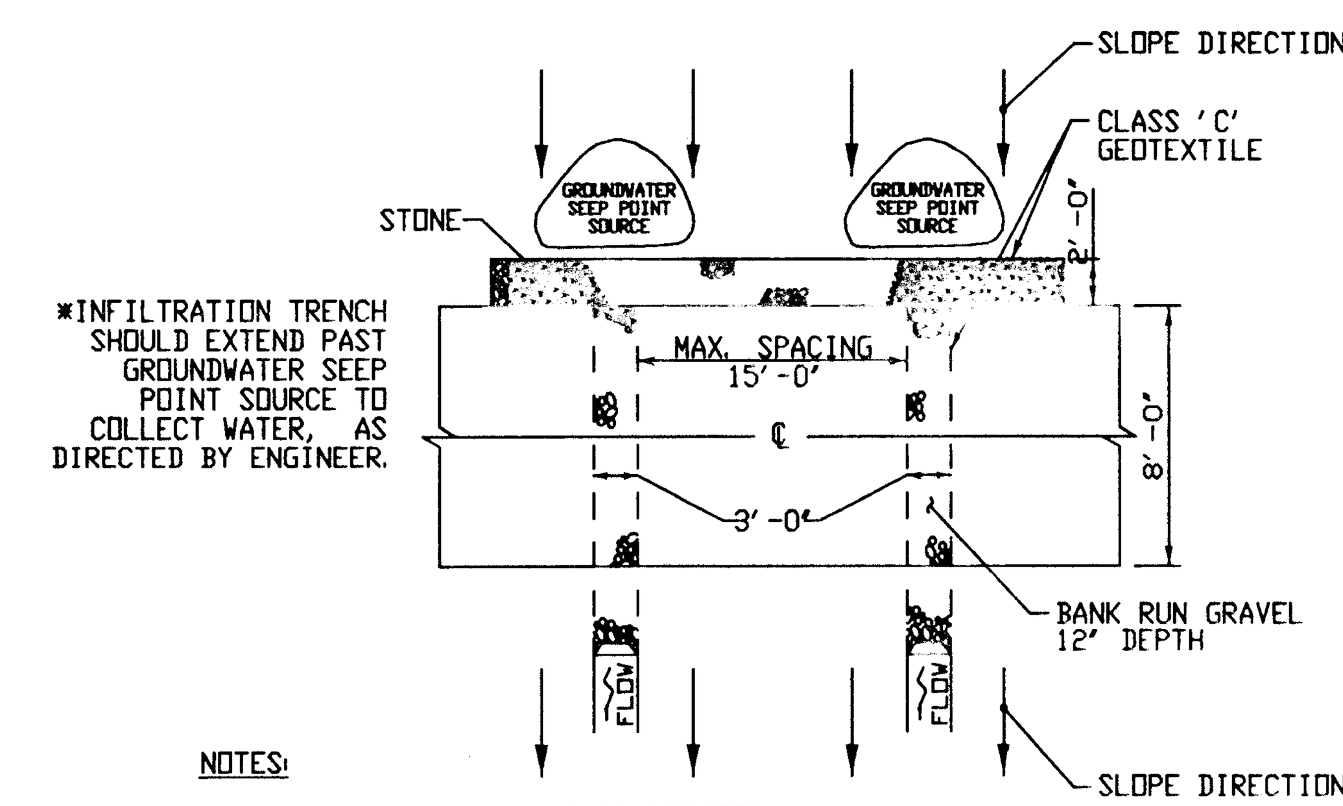
EXCEPT FOR STRUCTURE NO.12 WHICH SHALL HAVE CLASS II RIPRAP

TYPICAL CULVERT PROFILE
N.T.S.

INV. A: UPSTREAM INV. OF CULVERT
INV. B: DOWNSTREAM INV. OF CULVERT
d: DIAMETER OF CULVERT (1.0' MINIMUM COVER)
S: SLOPE OF CULVERT
L: LENGTH OF END SECTION
N: NO. OF PARALLEL CULVERTS
K: LENGTH OF CULVERT
X: DISTANCE FROM EDGE OF PAVEMENT TO END OF PIPE

PLAN
TYPICAL OUTFALL INLET PROTECTION
N.T.S.





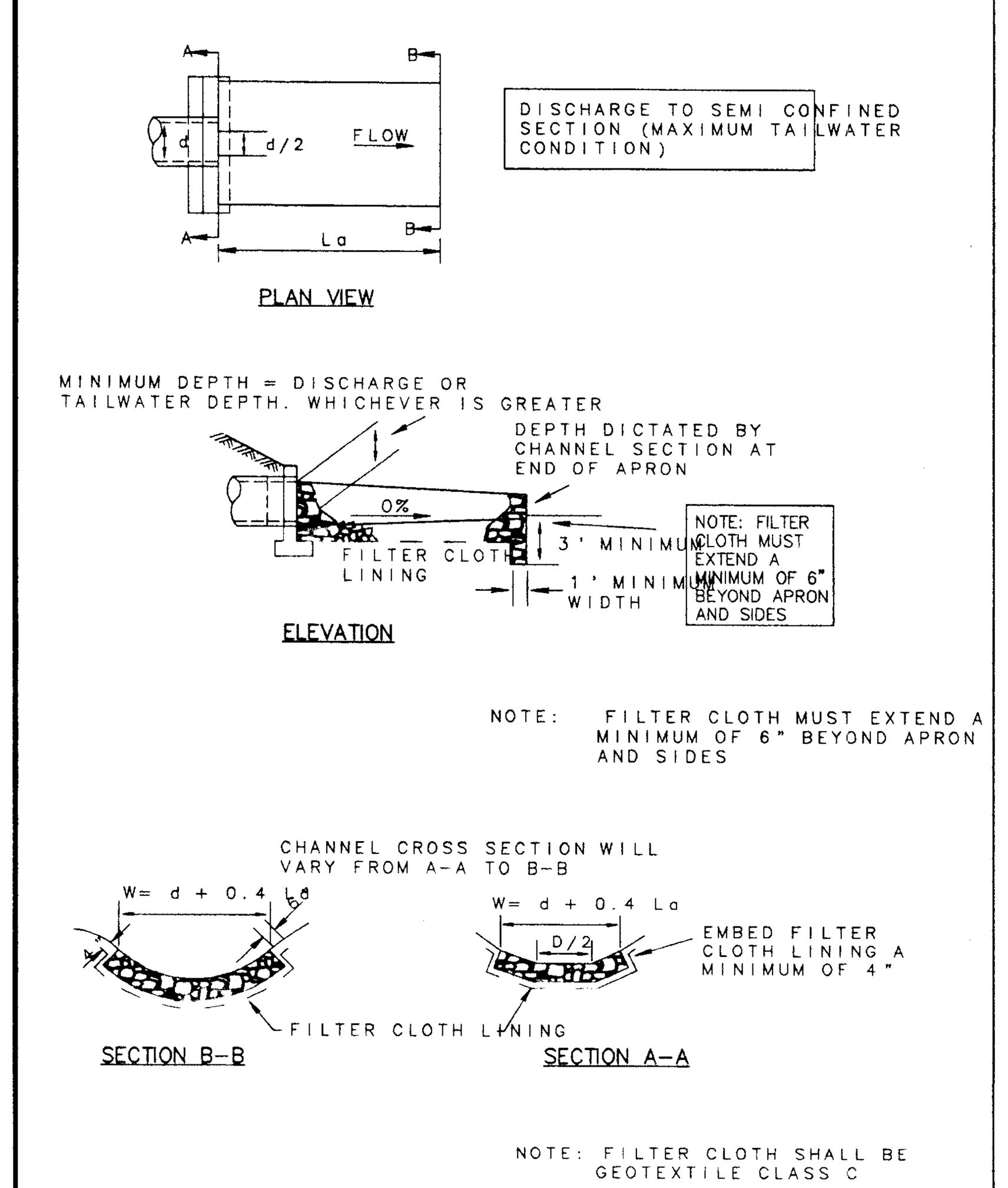
NOTES:

1. STONE TRENCH SHOULD BE LOCATED AT GROUNDWATER SEEP POINT SOURCES.
2. ALL STONE TRENCHES SHOULD BE CONSTRUCTED WITH POSITIVE DRAINAGE.

TYPICAL PLAN VIEW

MODIFIED PATHWAY FOR WET AREAS AND HILLSIDE GROUNDWATER SEEP AREAS
NOT TO SCALE

DETAIL 25 - ROCK OUTLET PROTECTION I



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - 8	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ROCK OUTLET PROTECTION

Construction Specifications

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

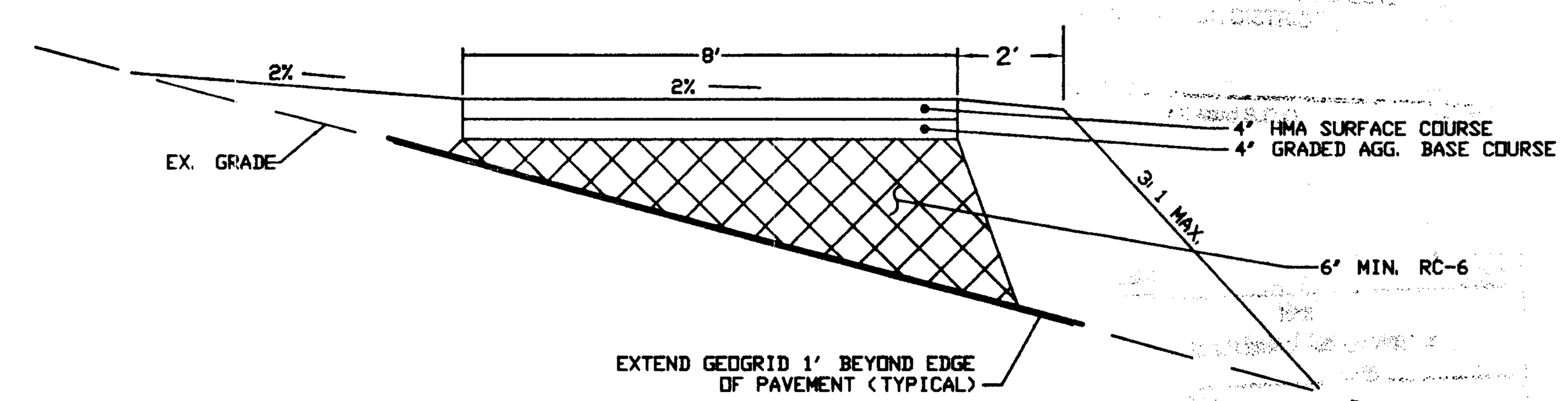
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.

3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

5. The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - 8A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



TYPICAL PATHWAY SECTION, ABOVE GRADE
SCALE: N.T.S. STA. 11+00 TO 17+00,

AS REQUIRED BY THE MARYLAND HISTORIC TRUST, THIS TYPICAL SECTION IS PROPOSED FOR AREAS WHERE ARCHITECTURAL RESOURCES ARE BELOW EX. GRADE. TREES WITHIN THE PATHWAY SECTION SHALL BE CUT OFF AT GROUND LEVEL. CONTRACTOR SHALL GRIND 8" AND LARGER STUMPS TO A DEPTH 4" BELOW EX. GRADE.

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SITE DEVELOPMENT PLANS SDP-5

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering 4/6/00 Date

Chief, Division of Land Development 4/17/00 Date

Director 4/17/00 Date

Director, Department of Recreation and Parks Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. 4/4/00

Reviewed for HOWARD S.C.D. and meets technical requirements 4/4/00 U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS 3/10/00 DATE
CHIEF, BUREAU OF ENGINEERING 3/10/00 DATE

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND DANIEL JOSEPH MALETIC No. 17583 REGISTERED PROFESSIONAL ENGINEER

DES: KP
DRN: AAP
CHK: DJM
DATE: / /

BY	NO.	REVISION	DATE

DETAIL SHEET

600' SCALE MAP NO. ______ BLOCK NO. ______

HOWARD COUNTY PATHWAY SYSTEM-PHASE 3b,SEGMENT 2
CAPITAL PROJECT N-3054
HOWARD COUNTY, MARYLAND

BID SET SHEET NO. 18

SCALE AS SHOWN

SHEET 5 OF 7

SDP-00-05

19.0 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal and vegetative treatment, etc.

Many counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed. The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

I. Provisions shall be made to safely conduct surface runoff to storm drains, protected outlets or to stable water courses to insure that surface runoff will not damage slopes or other graded

II. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. (Where the slope is to be mowed the slope should be no steeper than 3:1; 4:1 is preferred because of safety factors related to mowing steep slopes.) Slopes exceeding 2:1 shall require special design and stabilization considerations that shall be adequately shown on the plans.

III. Reverse benches shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.

A. Benches shall be a minimum of six-feet wide to provide for ease of maintenance.

B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.

C. The flow length within a bench shall not exceed 800' unless accompanied by appropriate design and computations. For flow channel stabilization see temporary

IV. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of earth dikes, ditches and swales or conveyed downslope by the use of a designed structure, except

A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.

B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainageways, graded swales, downspouts, etc.

C. The face of the slope will be protected by special erosion control materials, to include, but not limited to: approved vegetative stabilization practices (see section G), rip-rap or other approved stabilization methods.

V. Cut slopes occurring in ripable rock shall be serrated as shown on the following diagram. These serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1:1. These steps will weather and act to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carries to a suitable outlet.

VI. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

VII. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence or other related damages.

VIII. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.

IX. Stockpiles, borrow areas and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

X. All disturbed areas shall be stabilized structurally or vegetatively in compliance with 20.0 Standards and Specifications for Vegetative Stabilization.

SEQUENCE OF CONSTRUCTION*

Number of days		
	1.	Contact the oward County Sediment Control Inspector 48 hours prior to start Of work. I orm the inspector of the starting date.
3 days	2.	Stabilized construction entrances to be installed at all access points to the path.
5 days	3.	Contractor shall stake out entire length of project prior to any clearing and grubbing. The proposed pathway alignment shall be approved by Howard County DPW prior to construction.
224 days	4.	Contractor to construct the path in 100 l.f. segments. Each segment to be stabilized with graded aggregate sub-base and seed & mulch immediately. Contractor shall gain permission from Sediment control Inspector prior to the start of the next segment **
5 days	5.	Wood chips from cleared trees to be used to stabilize the disturbed areas in the wooded sections of the path. Seed, mulch, and curlex to be used on the sections of the path exposed to sunlight. Shady Seed mix shall be used in all Shaded Areas. *
3 days	6.	Remove all sediment and erosion control measures after acquiring approval from Howard County SCD Inspector.

* Wetland Seed Mix to be installed in Wetland Areas.

** "Thank-You-Ma'am" Shall be installed in all Sloped areas, See Detail Sh. 7

Total Days 240

Note: Before work begins, the contractor shall place protective tree fence around all trees > 12" diameter within 5' of L.O.D using the detail on sheet 7.

Wetland Seed Mix Table For Turf Establishment

Botanical Name	Common Name	Percent of Seed Mix	Purity Percent Min.	Weedseed Percent Max.	Germanation Percent Min.
Poa Trivialis L.	Rough Stalk Bluegrass	10	90	1	80
Agrostis Albo L.	Red Top	30	90	1	80
Lolium Species	Annual Ryegrass	30	90	1	80
Panicum Virgatum L.	Switch Grass	30	90	1	80

Note:
- Application rate shall be 120 lbs/Acre.
- Seed mix percentages are based upon weight.
- This seed mix will be used in areas that are delineated as wetlands on the Construction Documents unless otherwise directed by the engineer.
- Seeds shall be mixed offsite and delivered throughly mixed.
- This mix is to be used for temporary seeding when directed by the engineer.

Seed Mix Table For Turf Establishment In Shaded areas

Common Name	Percent of Seed Mix	Purity Percent Min.	Weedseed Percent Max.	Germanation Percent Min.
Shadow chewing fescue or other improved chewing fescue	30	90	1	80
Aurora hard fescue or other improved hard fescue	30	90	1	80
Flyer creeping red fescue or other creeping red fescue	20	90	1	80
Glade kentucky bluegrass or improved kentucky bluegrass	10	90	1	80
Manhattan II, Affinity or other improved perenial ryegrass	10	90	1	80

Note:
- Application rate shall be 20 lbs/Acre.
- Seed mix percentages are based upon weight.
- This seed mix will supersede any other permanent seed mixture listed in the Contract Documents unless otherwise allowed by the engineer.
- Seeds shall be mixed offsite and delivered throughly mixed.
- This mix is to be used for temporary seeding when directed by the engineer.

HOWARD SOIL CONSERVATION DISTRICT

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:
1. Preferred – Apply 2 tons/acres dolomitic limestone (92 lbs/1000 sq. ft.) And 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq. ft.)
2. Acceptable – Apply 2 tons/acres dolomitic limestone (92 lbs/1000 sq. ft.)and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) Before seeding. Harrow or disk into upper three inches of soil.

Seeding: For the periods March 1 – April 30, and August 1 – October 15, seed with 60 lbs/acres (1.4 lbs/1000 sq. ft.) Of Kentucky 31 Tall Fescue per acres and 2 lbs/acre (0.05 lbs/1000 sq. ft.) Of weeping lovegrass. During the period of October 16 – February 28, protect site by:
Option 1 – Two tons per acres of well anchored straw mulch and seed as soon as possible in the spring.
Option 2 – use sod.
Option 3 – seed with 60 lbs/acres Kentucky 30 tall fescue and mulch with 2 tons/acre well anchored straw.

Mulching: Apply 1-1/2 to 2 tons per acre (70 – 90 lbs/1000 sq. ft.)of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

Maintenance: Inspect all seeding areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.)

Seeding: For periods March 1 – April 30 and from August 15 – October 15, seed with 2-1/2 bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1 – August 14, seed with 3 lbs/acre of weeping lovegrass (0.07 lbs/1000 lbs/sq. ft.). For the period November 16 – February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring. or use sod.

Mulching: Apply 1-1/2 to 2 tons per acre (70 – 90 lbs/1000 sq. ft.)of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

HOWARD SOIL CONSERVATION DISTRICT

STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to start of any construction (313-1855).
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within:
   A) 7 calender days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes steeper than 3:1.
   B) 14 calender days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7 of the HOWARD COUNTY DESIGN MANUAL, Storm drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, sod, temporary seeding and mulching (section g). Temporary stabilization with mulch alone shall only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for there removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:

Total Area of Site	=	1.1 Acres
Area Disturbed	=	1.1 Acres
Area to be Roofed or Paved	=	.54 Acres
Area to be Vegetatively Stabilized	=	.55 Acres
Total Cut	=	300 Cu. Yds.
Total Fill	=	300 Cu. Yds.
Offsite waste/borrow area location		TO BE DETERMINED BY THE CONTRACTOR

* A site with a current active grading permit is needed for offsite waste/borrow

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:

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

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

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

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

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type ran be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications – Soil to be used as topsoil must meet the following:

A. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.

B. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

C. Where the subsoil is either highly acidic or composed of heavy clays, (ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres:

A. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

1. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
2. Organic content of topsoil shall be not less than 1.5 percent by weight.
3. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
4. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials,

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

B. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

V. Topsoil Application

A. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.

1. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.
2. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting, from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
3. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding – Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

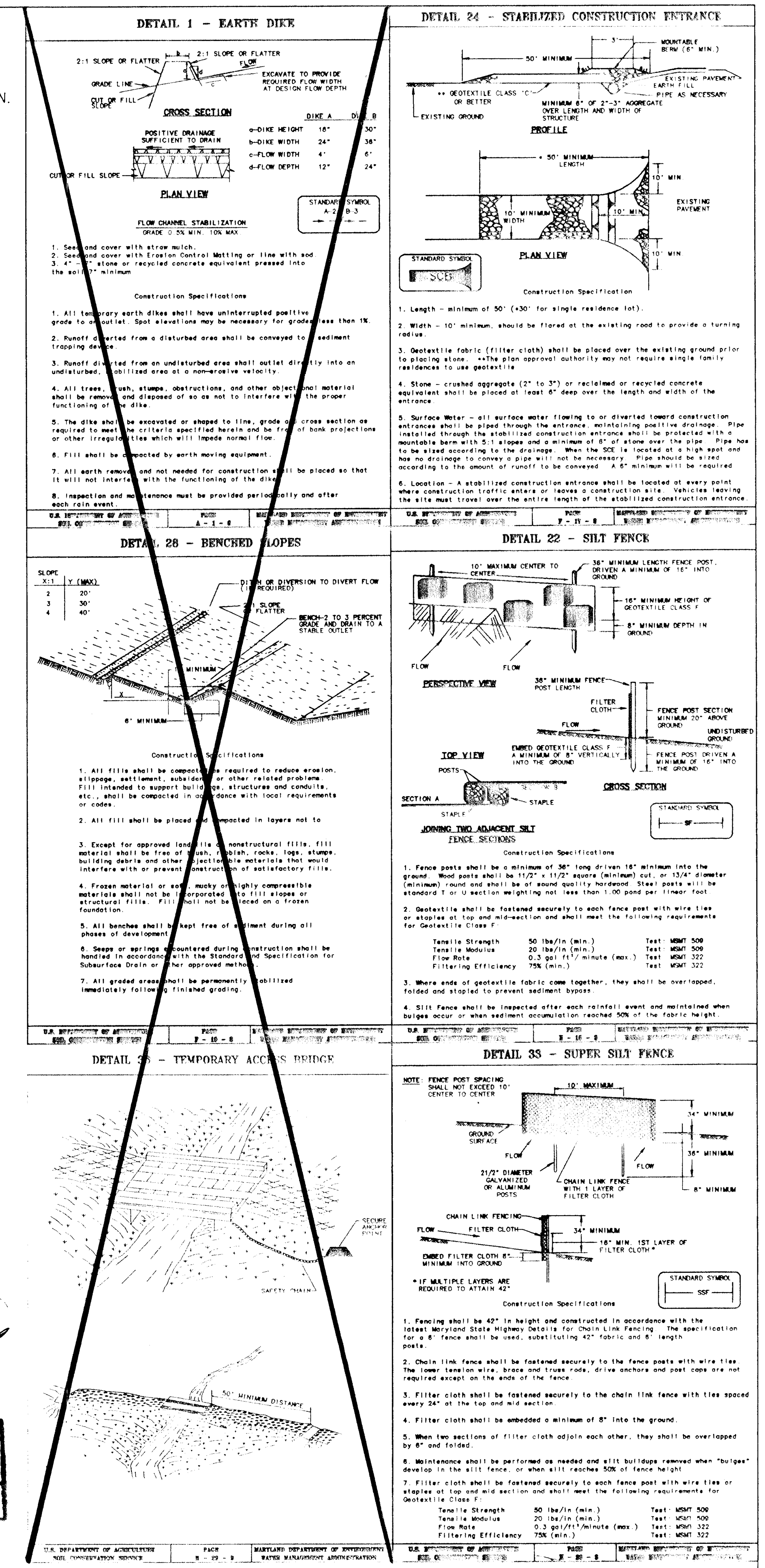
A. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following, requirements:

1. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
2. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
3. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

B. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

NOTE: LOCATIONS OF STABILIZED CONSTRUCTION ENTRANCES ARE TO BE PREAPPROVED BY THE INSPECTOR PRIOR TO INSTALLATION AND RELOCATION.



DETAILS 24, 22, AND 33 TO BE USED AT THE DISCRETION OF THE CONTRACTOR And the Howard County Sediment and Erosion Control Inspector.

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

Approved [signature] 4/4/00
Howard S.C.D. Date

Reviewed for HOWARD S.C.D. Name ... Technical Requirements [signature] 4/4/00 USDA, NATURAL RESOURCES CONS. SERVICE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] Chief, Development Engineering	4/6/00 Date
[signature] Chief, Division of Land Development	4/17/00 Date
[signature] Director	4/17/00 Date
[signature] Director, Department of Recreation and Parks	Date

APPROVED PLANNING BOARD of HOWARD COUNTY DATE 2-10-2000

SDP-6

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[signature] 3/10/00 DIRECTOR OF PUBLIC WORKS DATE
[signature] 3/10/00 CHIEF, BUREAU OF ENGINEERING DATE

GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND DANIEL JOSEPH MALETIC No 13759 REGISTERED PROFESSIONAL ENGINEER

DES: AT
DRN: AT
CHK: BB
DATE: / /

BY	NO.	REVISION	DATE

600' SCALE MAP NO. ______ BLOCK NO. ______

SEDIMENT & EROSION CONTROL DETAILS

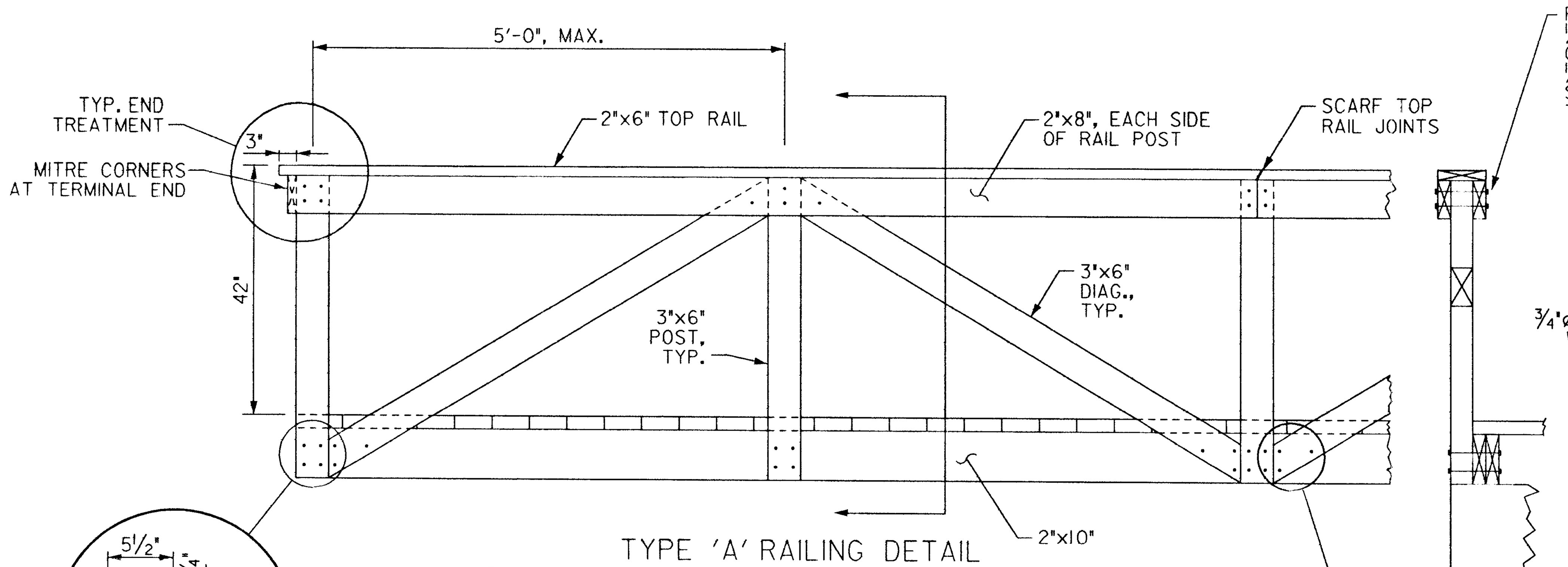
HOWARD COUNTY PATHWAY SYSTEM – PHASE 3b, Seg.2
CAPITAL PROJECT N-3954
HOWARD COUNTY, MARYLAND
BID SET Sheet No 19

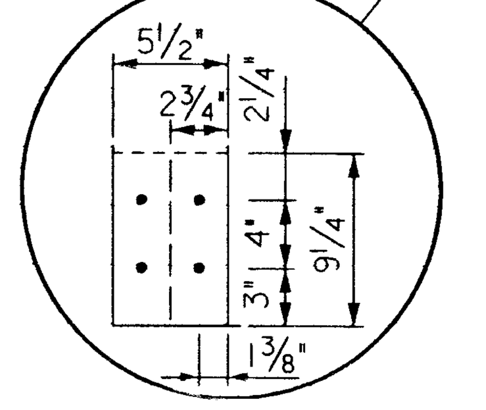
SCALE AS SHOWN

SHEET 6 OF 7

SDP-00-05

SED-DET.DWG





TYPICAL BOLT PATTERN

TYPE 'A' RAILING DETAIL

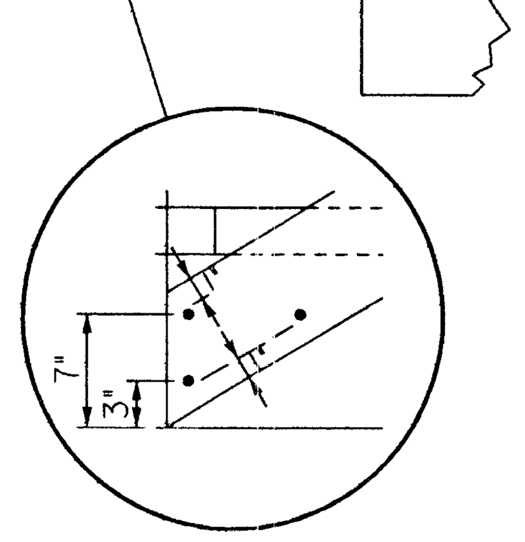
NOT TO SCALE

NOTES:

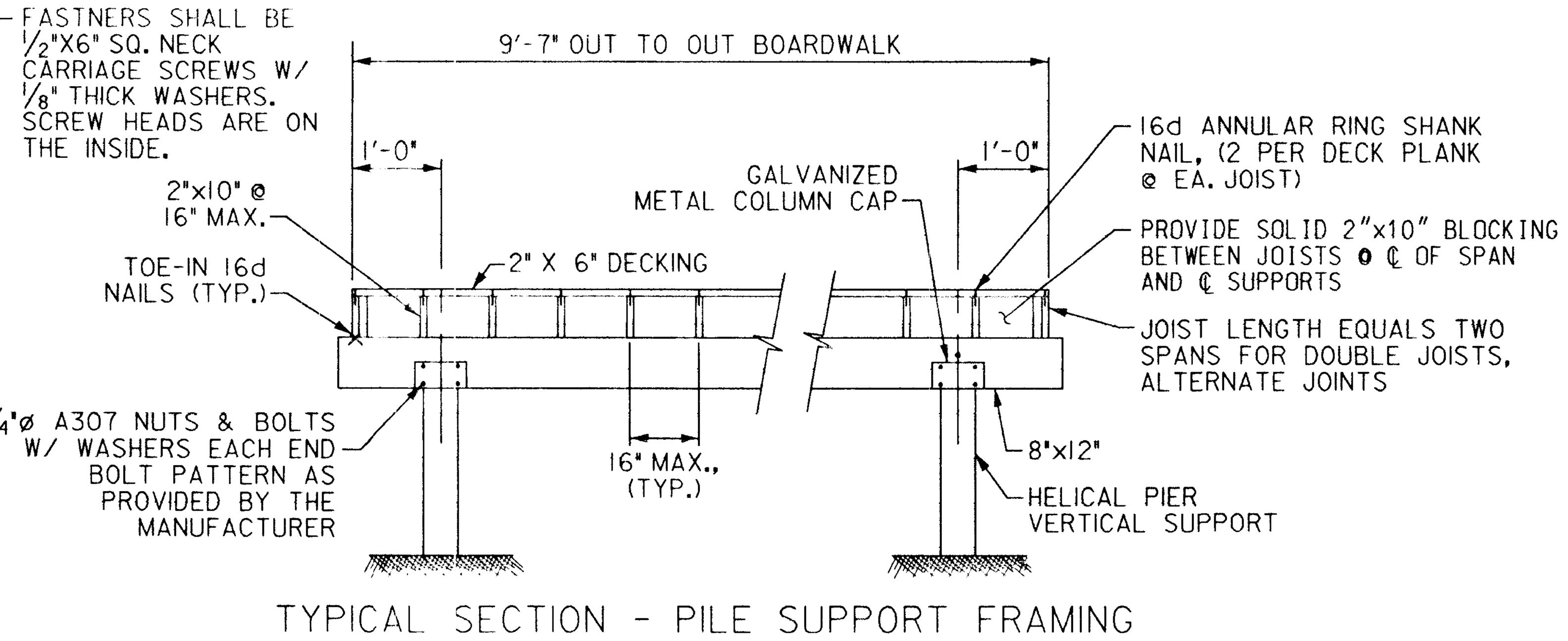
ALL RAILPOSTS SHALL BE BOLTED TO JOISTS WITH ½" DIAMETER THRU-BOLTS. THE BOLTS SHALL HAVE LARGE DIAMETER WASHERS AT EACH END AND DOUBLE NUTS ON THE END NOT EXPOSED TO VIEW. WHERE BOTH SIDES ARE EXPOSED TO VIEW, A SINGLE NUT SHALL BE USED AND THE EXCESS BOLT SHALL BE CUT OFF FLUSH WITH THE NUT. COVER BARE METAL WITH COLD GALVANIZING COMPOUND.

ALL TOP RAIL CONNECTIONS SHALL BE MADE WITH NO. 8, 3" GALVANIZED STEEL DECK SCREWS.

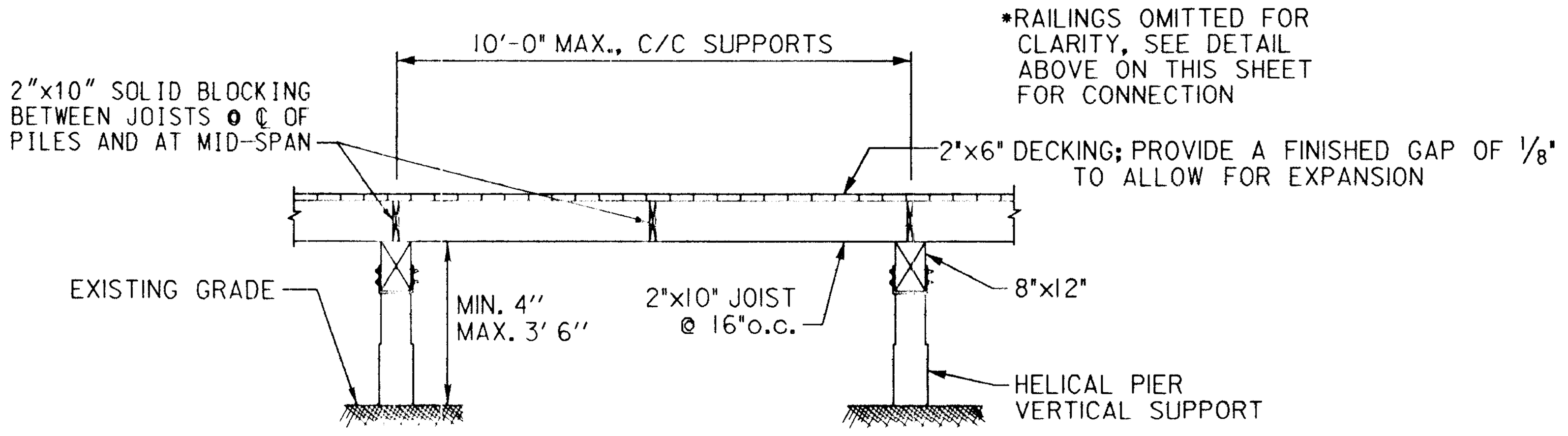
THIS DETAIL SHALL BE USED ONLY WHEN MAXIMUM HEIGHT ABOVE GRADE IS LESS THAN 48" AS MEASURED FROM THE DECK SURFACE.



NOTE: DECKING TO BE "BARK SIDE UP"



TYPICAL SECTION - PILE SUPPORT FRAMING

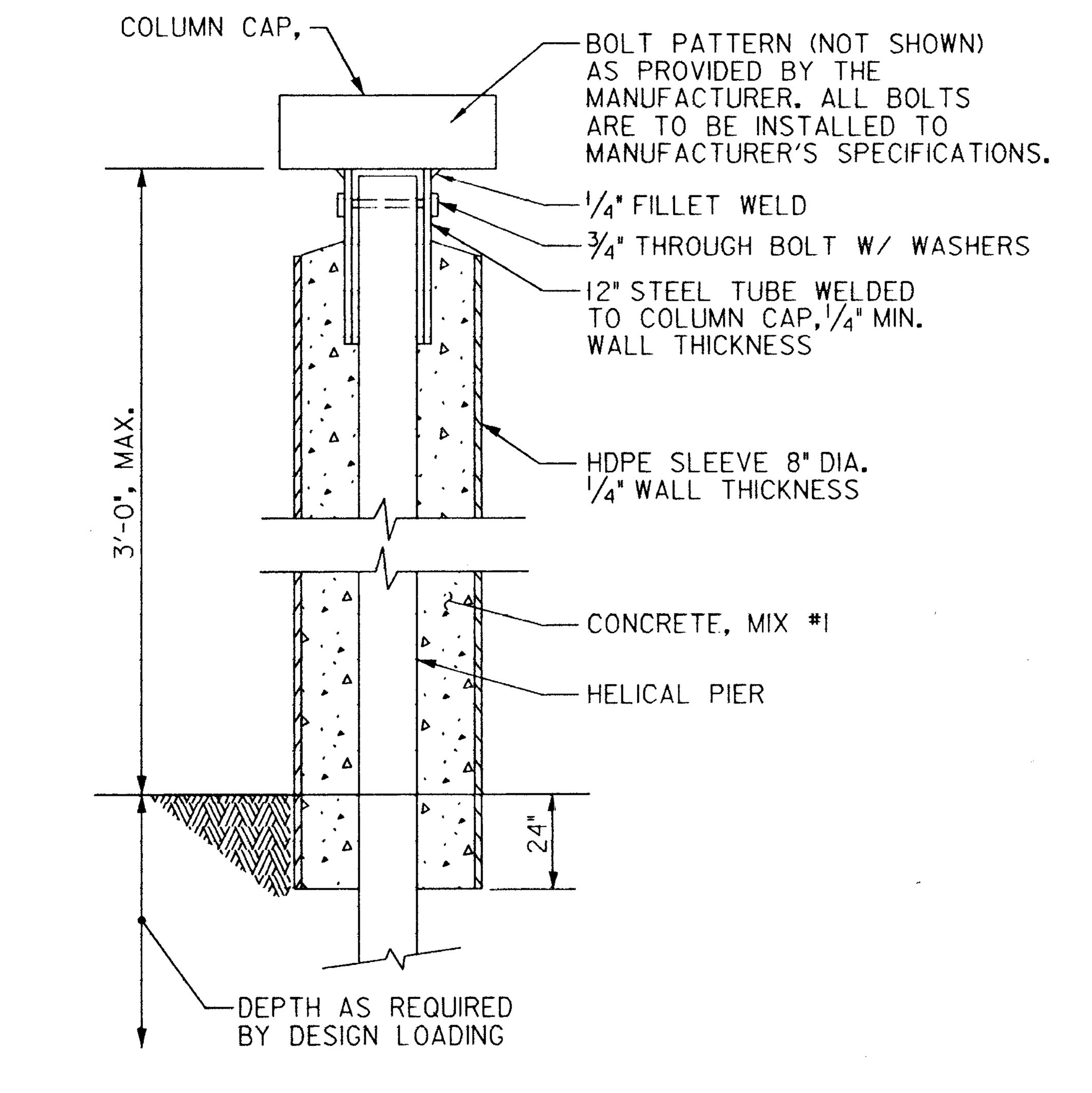


ELEVATION-TYPICAL BOARDWALK SUPPORT FRAMING

•PROVIDE RAILING ON BOTH SIDES SEE DETAIL ON THIS SHEET FOR CONNECTION.

BOARDWALK DETAILS

NOT TO SCALE



HELICAL PIER VERTICAL SUPPORT

NOT TO SCALE

GENERAL NOTES:

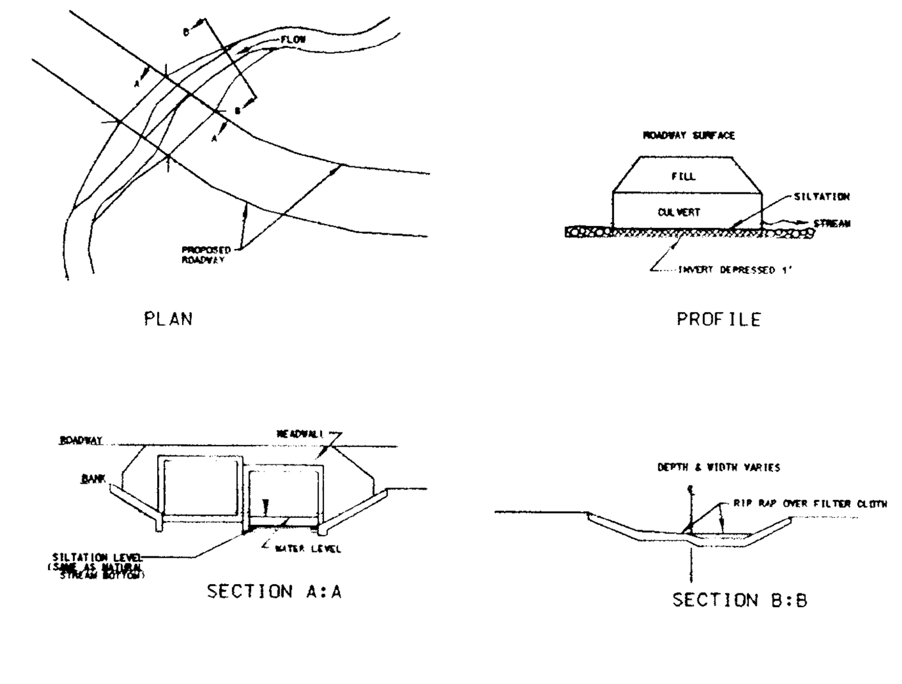
1. SPECIFICATIONS:
MD. STATE SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL, THE BOCA NATIONAL BUILDING CODE/1987, TENTH EDITION. BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, (ACI 318-83, REVISED, 1986)

2. DESIGN LOADS:
THE BOARDWALK DECK AND FRAMING HAS BEEN DESIGNED FOR THE FOLLOWING LIVE LOAD: 100 P.S.F.

3. CONCRETE:
CONCRETE FOR VERTICAL PIER ENCASEMENT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. AT TWENTY-EIGHT (28) DAYS.

4. TIMBER:
ALL LUMBER SIZES AND LUMBER DIMENSIONS ARE NOMINAL. ALL LUMBER TO MEET OR EXCEED THE GRADES ESTABLISHED IN THE SPECIFICATONS. ALL TIMBER BEAMS, JOISTS, DECKING AND POSTS SHALL BE SOUTHERN PINE NO. 1 OR BETTER, AND SHALL BE PRESSURE TREATED TO THE RETENTION VALUES LISTED BELOW IN LBS. PER CUBIC FEET:
-SUPERSTRUCTURE, 1.0
-DECK SURFACES, 0.6.
ALL BOLTS IN TIMBER SHALL BE INSTALLED WITH A 3" MINIMUM EDGE AND END DISTANCE, UNLESS NOTED OTHERWISE. INSTALL SOLID BLOCKING BETWEEN JOISTS AT ALL BEAMS AND RAIL POST LOCATIONS. ALL BOLTS IN TIMBER SHALL BE ¾" DIAMETER ASTM A-307, UNLESS NOTED OTHERWISE. ALL MULTIPLE "2x" BEAMS AND JOISTS SHALL BE FASTENED WITH ⅜" DIAMETER BOLTS @ 16"o.c., STAGGERED TOP AND BOTTOM. NAIL SIZE AND SPACING SHALL BE IN ACCORDANCE WITH APPENDIX "C" OF THE BOCA NATIONAL BUILDING CODE/1987.

5. MISCELLANEOUS METALS:
ALL METAL FASTENERS, CONNECTORS AND BOLTS FOR TIMBER CONSTRUCTION SHALL BE NOT DIPPED GALVANIZED STEEL. METAL FABRICATIONS SHALL BE GALVANIZED AFTER WELDING AND MACHINING. IF THE GALVANIZING IS REMOVED DURING ASSEMBLY, COLD GALVANIZING SHALL BE NEATLY APPLIED TO ALL EXPOSED AREAS.



I. DESCRIPTION

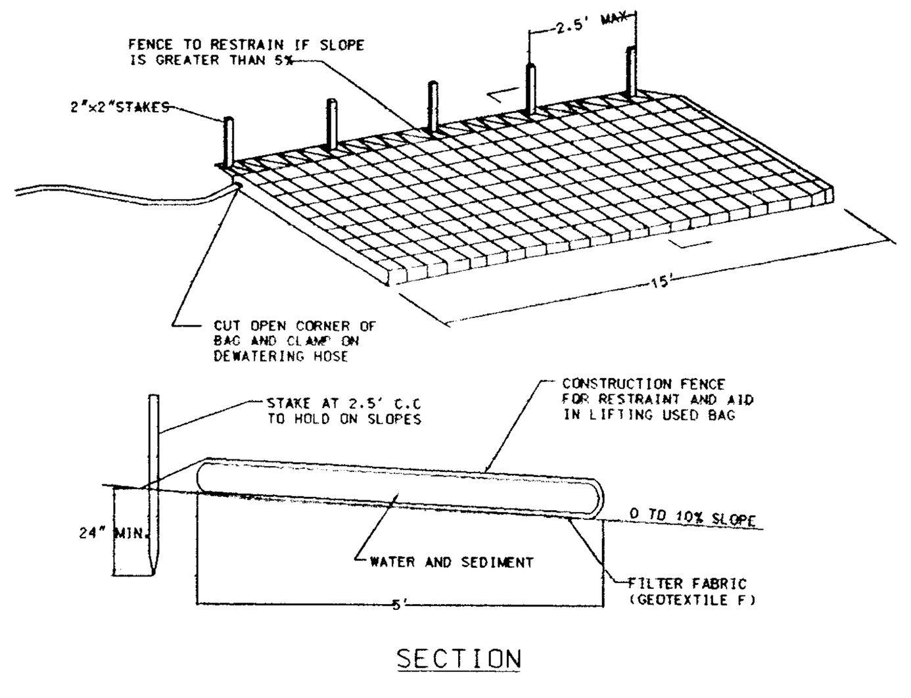
THIS WORK SHALL CONSIST OF DEPRESSING IN STREAM CULVERTS ONE FOOT BELOW THE NATURAL STREAM INVERT TO ENCOURAGE CHANNELIZATION AND TO ALLOW WATER TO POOL AND DEPOSIT SEDIMENTS, THUS IMPROVING FISH PASSAGE. IN THE EVENT OF A STORM, ALL SEDIMENT WILL BE WASHED AWAY, INSURING THE EFFECTIVENESS AND INTEGRITY OF THE CULVERT.

II. CONSTRUCTION REQUIREMENTS

THE CONSTRUCTION OF THE DEPRESSED CULVERT SHALL BE THE SAME AS FOR A STANDARD CULVERT. IN THE CASE OF DOUBLE OR TRIPLE-CELLED CULVERTS, ONLY ONE OR TWO CULVERTS SHALL BE DEPRESSED AS NECESSARY. STREAMS WITH HIGH SLOPE GRADIENTS MAY NOT BE SUITABLE FOR DEPRESSED CULVERTS BECAUSE INCREASED VELOCITIES MAY SCOUR THE BOTTOM AND RESTRICT SEDIMENTATION.

approved otherwise by the Administration.

WATER RESOURCES ADMINISTRATION	DEPRESSED CULVERT	Approved On 1/24/84 Chief, Waterway Permits	WPD 5.3

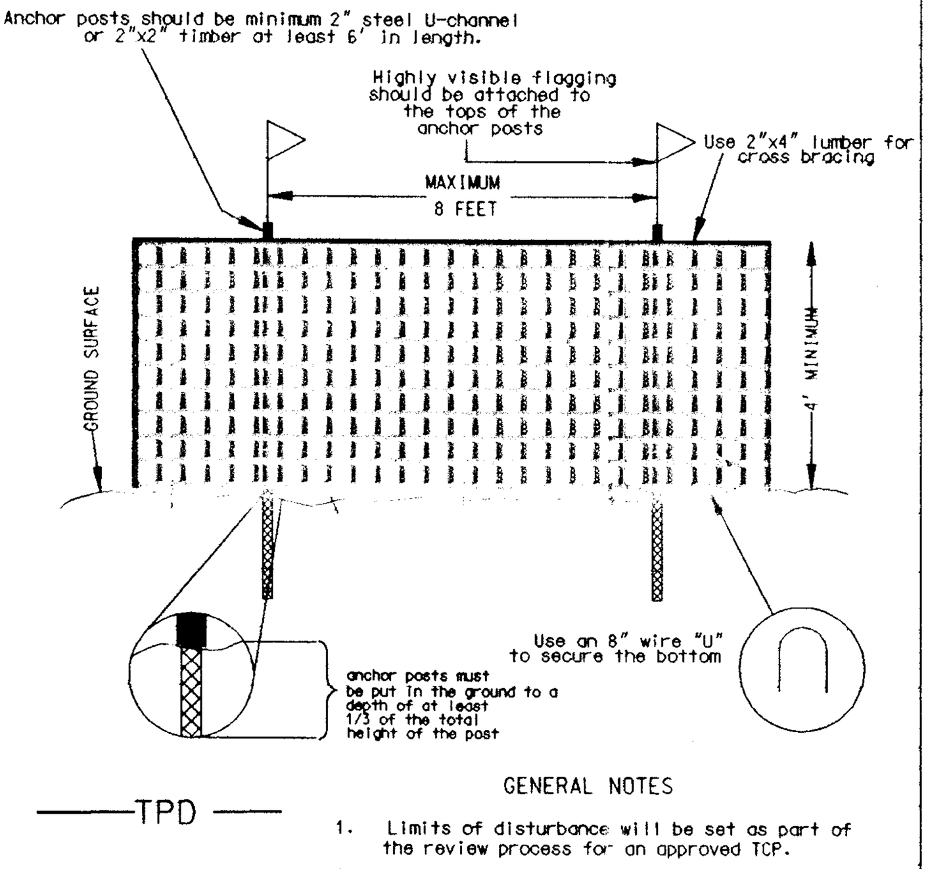


SECTION

NOTES:
1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGITATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
2. WIDTH AND LENGTH SHALL BEAS SHOWN.
3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURE TO THE PUMP DISCHARGE LINE.
4. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
5. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.
6. FILTER FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS "F".

TENSILE STRENGTH	50 lbs./in. (min)	TEST: MSMT 509
TENSILE MODULUS	20 lbs./in. (min.)	TEST: MSMT 509
FLOW RATE	0.3 gal. ft2/minute (max)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (min.)	TEST: MSMT 322

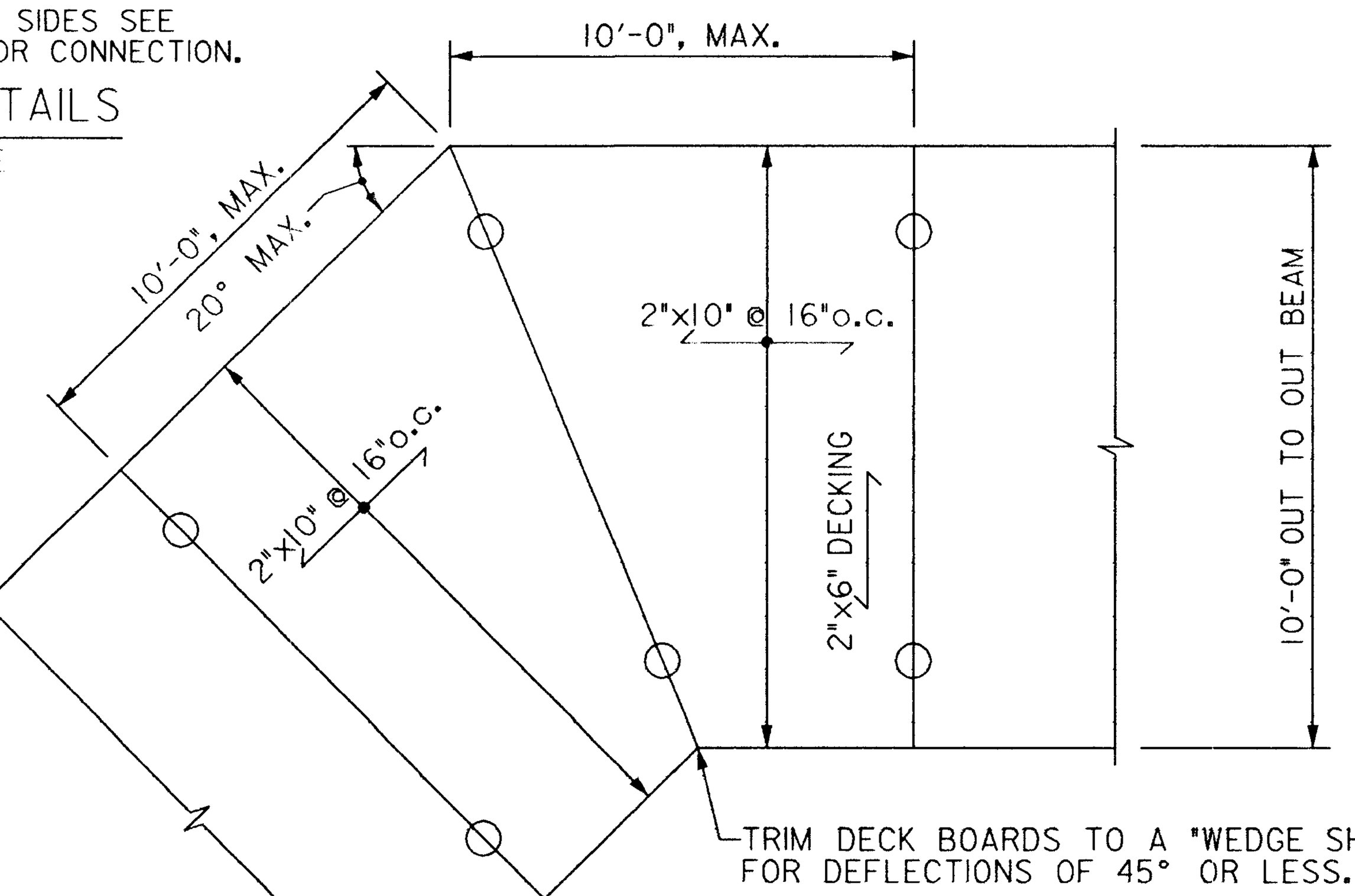
WATER RESOURCES ADMINISTRATION	FILTER BAG TEMPORARY EROSION CONTROL MEASURE	Approved On 1/24/84 Chief, Waterway Permits	WPD FB



—TPD—

GENERAL NOTES
1. Limits of disturbance will be set as part of the review process for an approved TCP.
2. The boundaries of the limits of disturbance should be staked and flagged prior to erecting the protective device.
3. Anchor posts should be placed to avoid severing or damaging large tree roots.
4. Fencing material should be fastened securely to the anchor posts, cross bracing, and ground.

TREE PROTECTIVE DEVICE
BLAZE ORANGE PLASTIC MESH
TPD-O
OPTION 3

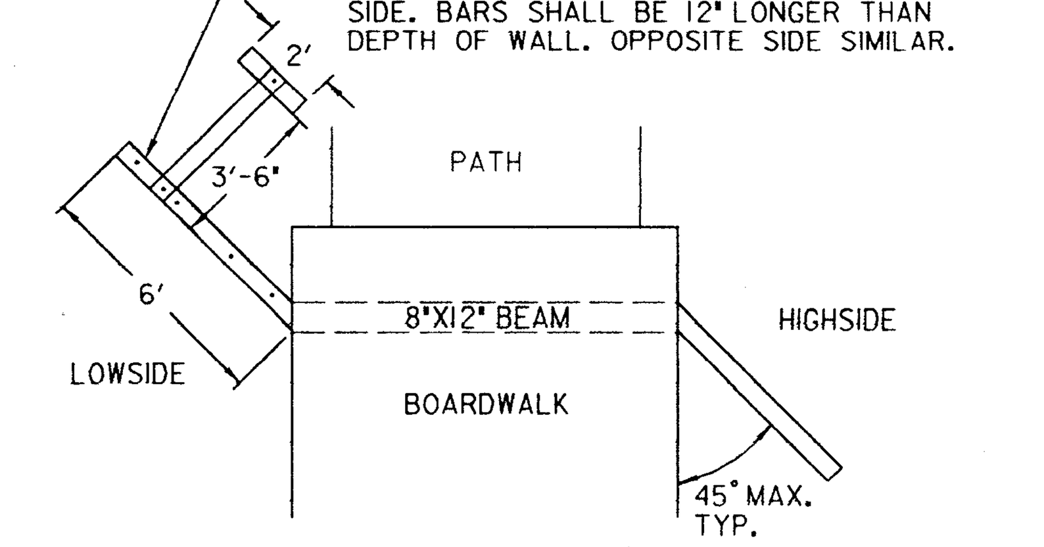


BOARDWALK AND BRIDGE STRUCTURE TABLE

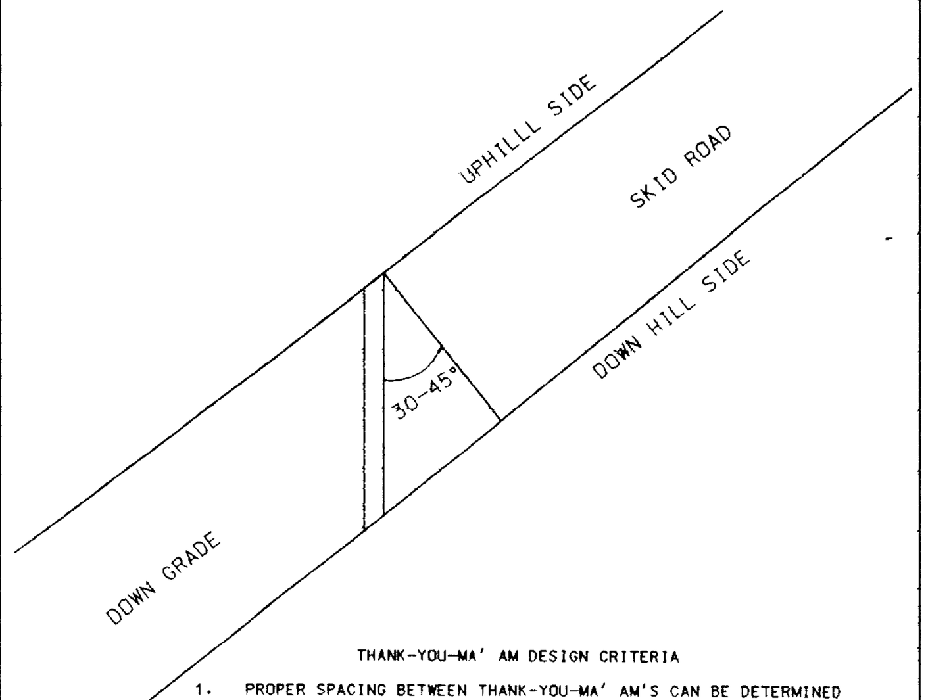
STRUCTURE	STATION	SHEET
BRIDGE	17+47.92 - 18+08.08	3
BOARDWALK	117+30 - 117+70	4

TYPICAL BOARDWALK FRAMING PLAN @ BENDS

NOT TO SCALE



TIMBER RETAINING WALL DETAIL
SCALE: N.T.S.



THANK-YOU-MA'AM DESIGN CRITERIA

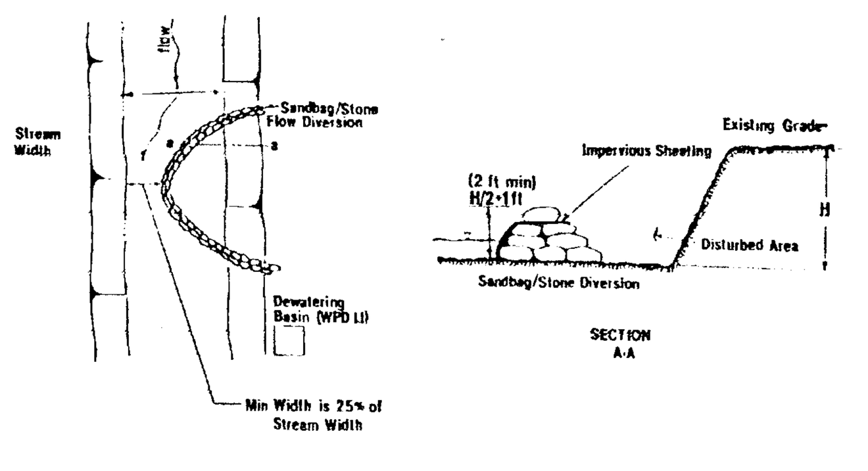
1. PROPER SPACING BETWEEN THANK-YOU-MA'AM'S CAN BE DETERMINED BY USING THIS TABLE:

EX. TRAIL/ROADWAY SLOPE	SPACING (FT.)
2%	222'
4%	154'
6%	118'
8%	95'

2. INSTALLATION SHALL BE AT AN ANGLE OF 30 DEGREES DOWN SLOPE OR MORE TO TURN SURFACE WATER OFF THE ROAD OR TRAIL.
3. A SHALLOW TRENCH SHALL BE DUG 6 TO 12 INCHES BELOW THE SURFACE OF THE ROAD OR TRAIL AND EXTEND 2 FT. BEYOND BOTH SIDES.
4. THE OVERFLOW END OF THE BAR SHALL BE FULLY OPEN AND EXTENDED FAR ENOUGH BEYOND THE EDGE OF THE ROAD OR TRAIL TO SAFELY DISPERSE RUNOFF WATER ONTO THE UNDISTURBED FOREST FLOOR.

6-12" DEEP

WATER RESOURCES ADMINISTRATION	THANK-YOU-MA'AM TYPE WATER BAY CONSTRUCTION FOR SKID ROADS	Approved On 1/24/84 Chief, Waterway Permits	WPD TYM

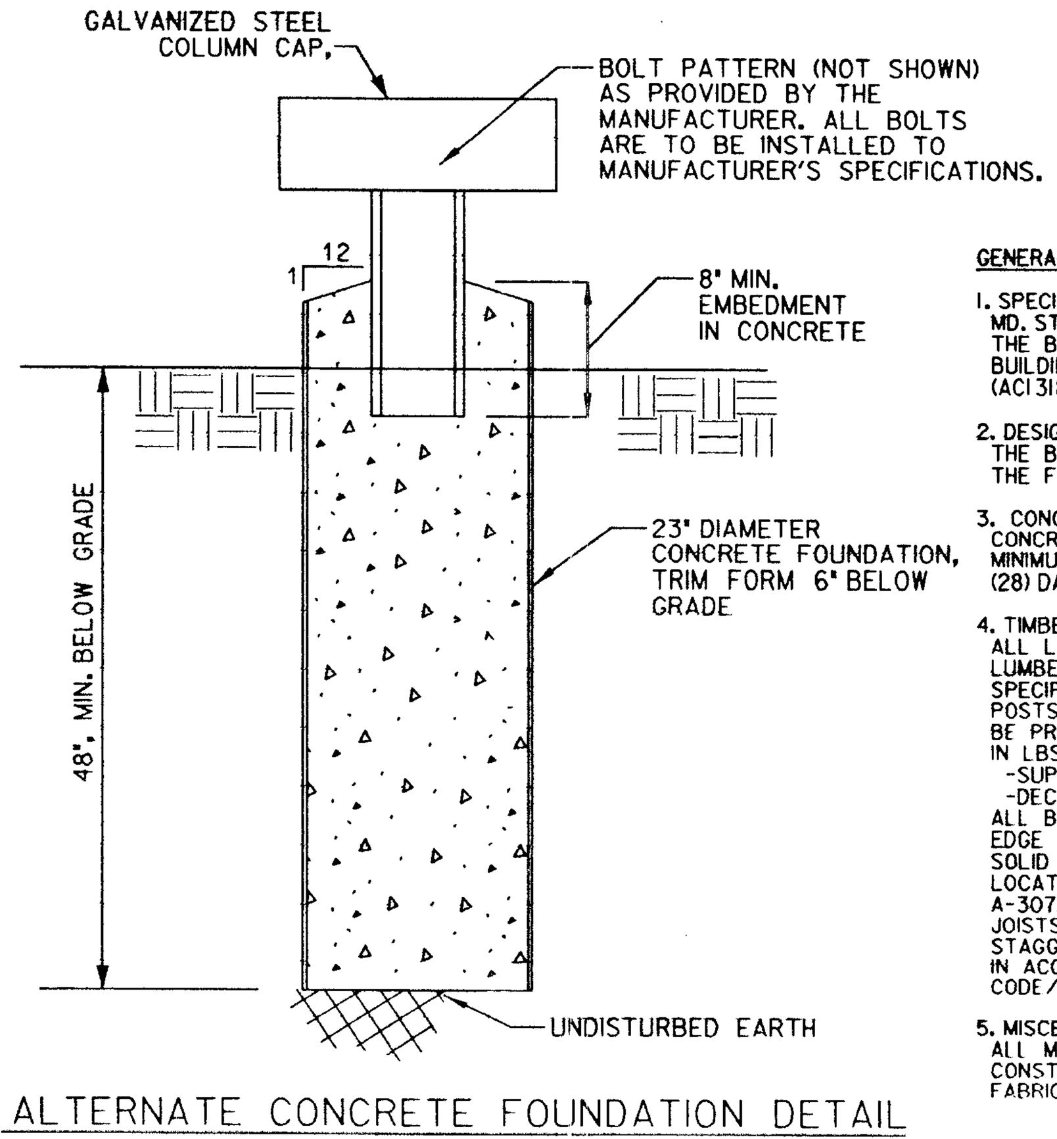


I. Description
The work shall consist of installing a flow diversion for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.

II. Material Specifications
1. Sandbags: Sandbags shall consist of materials which are resistant to ultra-violet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
2. Stone: Stone shall be washed and have a minimum diameter of 6 inches.
3. Sheeting: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

III. Construction Requirements
1. All erosion and sediment control devices shall be installed as the first order of work.
2. The diversion structure shall be installed form upstream to downstream.
3. The hieght of the diversion structure shall be one half the distance from stream bed to stream bank plus one foot, as indicated on the cross-section view.
4. All excavated materials shall be disposed of in a scd approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the WRA.
5. All dewarting of the construction area shall be pumped to a dewatering basin prior to re-entering the stream of sufficient size to
6. Sheeting shall be overlapped such that the upstream portion covers the downstream portion with atleast n 18-inch overlap.
7. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

WATER RESOURCES ADMINISTRATION	Sandbag/Stone Diversion	Approved On 1/24/84 Chief, Waterway Permits	WPD 2.3



ALTERNATE CONCRETE FOUNDATION DETAIL

NOT TO SCALE

GENERAL NOTES:

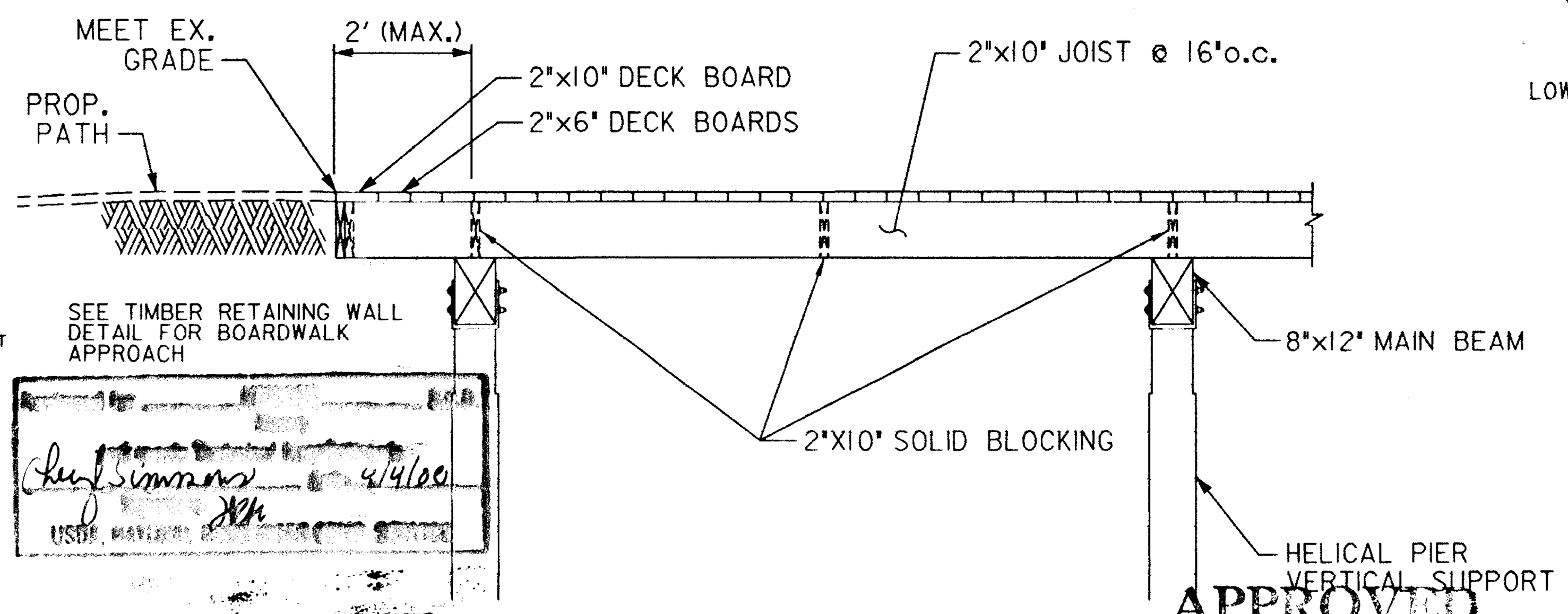
1. SPECIFICATIONS:
MD. STATE SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL, THE BOCA NATIONAL BUILDING CODE/1987, TENTH EDITION. BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, (ACI 318-83, REVISED, 1986)

2. DESIGN LOADS:
THE BOARDWALK DECK AND FRAMING HAS BEEN DESIGNED FOR THE FOLLOWING LIVE LOAD: 100 P.S.F.

3. CONCRETE:
CONCRETE FOR VERTICAL PIER ENCASEMENT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. AT TWENTY-EIGHT (28) DAYS.

4. TIMBER:
ALL LUMBER SIZES AND LUMBER DIMENSIONS ARE NOMINAL. ALL LUMBER TO MEET OR EXCEED THE GRADES ESTABLISHED IN THE SPECIFICATONS. ALL TIMBER BEAMS, JOISTS, DECKING AND POSTS SHALL BE SOUTHERN PINE NO. 1 OR BETTER, AND SHALL BE PRESSURE TREATED TO THE RETENTION VALUES LISTED BELOW IN LBS. PER CUBIC FEET:
-SUPERSTRUCTURE, 1.0
-DECK SURFACES, 0.6.
ALL BOLTS IN TIMBER SHALL BE INSTALLED WITH A 3" MINIMUM EDGE AND END DISTANCE, UNLESS NOTED OTHERWISE. INSTALL SOLID BLOCKING BETWEEN JOISTS AT ALL BEAMS AND RAIL POST LOCATIONS. ALL BOLTS IN TIMBER SHALL BE ¾" DIAMETER ASTM A-307, UNLESS NOTED OTHERWISE. ALL MULTIPLE "2x" BEAMS AND JOISTS SHALL BE FASTENED WITH ⅜" DIAMETER BOLTS @ 16"o.c., STAGGERED TOP AND BOTTOM. NAIL SIZE AND SPACING SHALL BE IN ACCORDANCE WITH APPENDIX "C" OF THE BOCA NATIONAL BUILDING CODE/1987.

5. MISCELLANEOUS METALS:
ALL METAL FASTENERS, CONNECTORS AND BOLTS FOR TIMBER CONSTRUCTION SHALL BE HOT DIPPED GALVANIZED STEEL. METAL FABRICATIONS SHALL BE GALVANIZED AFTER WELDING AND MACHINING.



SEE TIMBER RETAINING WALL DETAIL FOR BOARDWALK APPROACH

NOTE: RAILING OMITTED FOR CLARITY

BOARDWALK END DETAIL

NOT TO SCALE

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2-10-2000

SDP-7

SITE DEVELOPMENT PLANS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division	4/10/00 Date
Chief, Division of Land Development	4/12/00 Date
Director	4/13/00 Date

Director, Department of Recreation and Parks — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/10/00 DATE

CHIEF, BUREAU OF ENGINEERING — 3/10/00 DATE

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
14502 GREENVIEW DRIVE, SUITE 100, LAUREL, MD. 20708
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

STATE OF MARYLAND
DANIEL JOSEPH MALETIC
No. 13759
REGISTERED PROFESSIONAL ENGINEER

DES:
DRN:
CHK:
DATE:

BY	NO	REVISION	DATE

BOARDWALK CONSTRUCTION NOTES AND DETAILS

600' SCALE MAP NO. ______ BLOCK NO. ______

HOWARD COUNTY PATHWAY SYSTEM - PHASE 3b, SEGMENT 2
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT N-3954

BID SET SHEET NO. 20

SCALE AS SHOWN

SHEET 7 OF 7

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