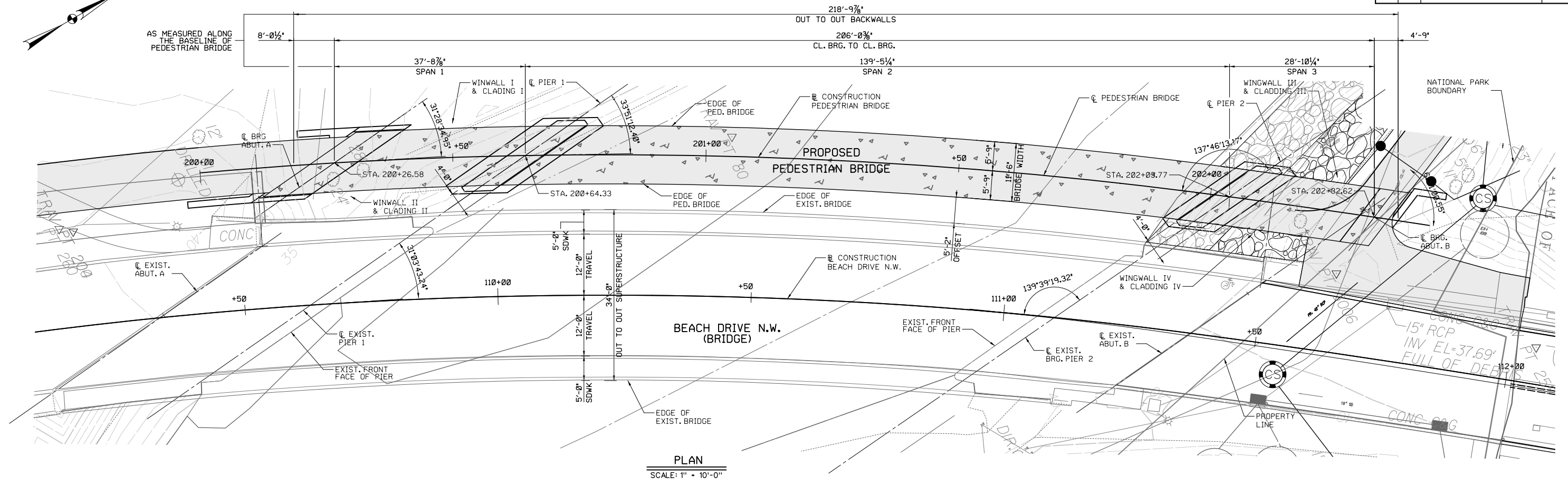
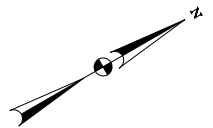
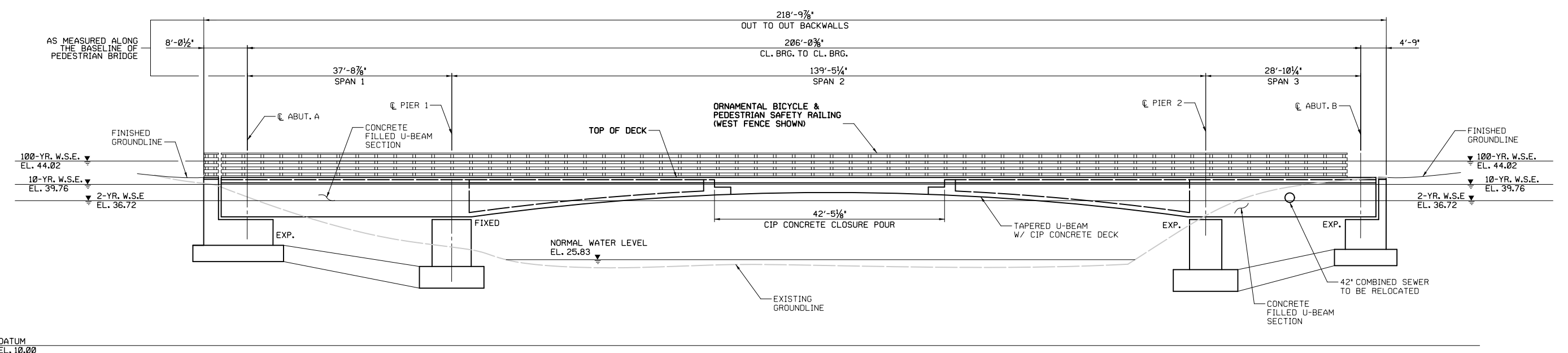


REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
3	D.C.		102	124



PLAN
SCALE: 1" = 10'-0"



ELEVATION
SCALE: 1" = 10'-0"

DATUM
EL. 10.00

NOT FOR CONSTRUCTION



NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
DESIGNED BY _____
CHECKED BY _____
DRAWN BY _____
PROJECT MGR. _____

DATE: 09-13-2013	SCALE: AS SHOWN	BR-01
GENERAL PLAN AND ELEVATION		DIVISION CHIEF
		DATE _____
		FILE _____
		SHEET 102 OF 124

9/12/2013 U:\202603049\012 Rock Creek Park Trail\TRANS\CADD\Sheet Files\pBR-0001.rct.dgn

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
3	D.C.		103	124

GENERAL NOTES:

SPECIFICATIONS

- AASHTO LOAD AND RESISTANCE FACTOR DESIGN (LRFD) BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION, 2013 INCLUDING ALL INTERIM SPECIFICATIONS
- AASHTO/AWS BRIDGE WELDING CODE D1.5M/D1.5:2010
- AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS, SIXTH EDITION 2013.

ALL CONSTRUCTION MATERIALS AND PROCEDURES SHALL BE GOVERNED BY THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND STRUCTURES DATED 2009, ISSUED BY THE DISTRICT OF COLUMBIA DEPARTMENT OF PUBLIC WORKS, AND THE SPECIAL PROVISIONS.

DESIGN METHOD AND LOADS

LOAD AND RESISTANCE FACTOR DESIGN METHOD.

THE BRIDGE IS DESIGNED FOR 85 PSF LIVE LOADING.

RATINGS:

RATINGS ARE BASED ON LOAD AND RESISTANCE FACTOR RATING METHOD UTILIZING THE LOADINGS STATED IN THE GENERAL NOTES.

HL-93 INVENTORY RATING = 1.47
HL-93 OPERATING RATING = 1.90

PREFABRICATED CONSTRUCTION

IN ADDITION TO THE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS, THE FOLLOWING REQUIREMENTS SHALL APPLY FOR THE CONSTRUCTION AND ERECTION OF PREFABRICATED PIER AND SUPERSTRUCTURE UNITS REQUIRED BY THIS PROJECT.

SHOP DRAWINGS, FOR APPROVAL BY THE ENGINEER, SHALL BE PROVIDED WHICH DETAIL THE METHOD OF FABRICATION AND SUPPORT AT THE PRECAST CONCRETE MANUFACTURING PLANT. SHOP DRAWING SHALL INCLUDE DETAILS OF ANY INSERTS REQUIRED FOR ERECTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A TRANSPORTATION AND ERECTION PLAN FOR THE PREFABRICATED UNITS TO THE ENGINEER FOR APPROVAL.

SHOP DRAWINGS FOR TEMPORARY SUPPORT OF THE PREFABRICATED PIER UNITS REQUIRED DURING ERECTION AND CASTING OF THE CLOSURE POUR SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL. SUBMISSION SHALL MEET THE REQUIREMENTS OF 703.16 OF THE STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STRUCTURAL GENERAL NOTES.

EXISTING REINFORCING STEEL

THE COST OF CLEANING AND BENDING EXISTING REINFORCING STEEL TO BE USED FOR BONDING WITH NEW WORK SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR "DEMOLITION". BROKEN OR OTHERWISE UNSUITABLE REINFORCING STEEL SHALL BE REPLACED WITH DRILLED AND GROUTED REINFORCEMENT OF EQUAL OR GREATER SIZE. PRIOR TO ANY REPLACEMENT WORK, DETAILS OF REPLACEMENT WORK SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL.

UTILITIES

PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR MUST NOTIFY "MISS UTILITY" 48 HOURS IN ADVANCE FOR THE EXACT LOCATION OF UTILITIES LOCATED ON THE SITE.

ALL EXISTING UTILITIES ON THE SITE, IF AFFECTED BY THE CONSTRUCTION, MUST BE PROTECTED AND TEMPORARILY SUPPORTED DURING CONSTRUCTION. ANY DAMAGE INCURRED TO UTILITIES MUST BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE. UTILITY RELOCATION, IF NECESSARY, SHALL BE COORDINATED WITH THE AGENCIES INVOLVED.

THE FOLLOWING COMPANIES HAVE UTILITIES WITHIN THE AREA OF CONTRACT LIMITS:

1. POTOMAC ELECTRIC AND POWER COMPANY
2. WATER AND SEWER UTILITY ADMINISTRATION OF THE DISTRICT OF COLUMBIA
3. VERIZON TELEPHONE COMPANY
4. WASHINGTON GAS COMPANY

THE EXISTENCE OF OTHER UTILITIES IS NOT KNOWN. FOR FULL INFORMATION REGARDING UTILITY PROTECTION, SEE 107.16, UTILITY PROTECTIVE ALERT IN THE STANDARD SPECIFICATIONS.

ANCHOR BOLT HOLES

HOLES FOR ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF 703.20(B) OF THE STANDARD SPECIFICATIONS. DRILLED ANCHOR BOLT HOLES SHALL ONLY BE ALLOWED AT THE ABUTMENTS. TEMPLATES SHALL BE USED FOR DRILLING HOLES AND INSTALLING ANCHOR BOLTS. ANCHOR BOLT HOLES SHALL BE CAST INTO THE PREFABRICATED PIER UNITS. UNFILLED HOLES SHALL BE PROTECTED AGAINST RUPTURE IN FREEZING WEATHER. EPOXY MORTAR SHALL BE USED TO FILL HOLES AROUND ANCHOR BOLTS.

REINFORCING STEEL

AASHTO M31, ASTM A615, GRADE 60.

ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH 704.09 OF THE STANDARD SPECIFICATIONS, EXCEPT AS FOLLOWS:

REINFORCING STEEL THAT IS ENTIRELY CAST INTO THE FOOTING OF THE PIER.

REINFORCING STEEL THAT IS CAST INTO FOOTING AND EXTENDS INTO THE MEDIAN BARRIER AND PIER.

REINFORCING STEEL EXEMPTED BY THE ENGINEER.

AT MECHANICAL SPLICES OF REINFORCING BARS, A FULL MECHANICAL CONNECTION SHALL DEVELOP IN TENSION OR COMPRESSION, AS REQUIRED, AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE BAR. THE ALLOWABLE SLIP SHALL NOT EXCEED 0.0100 INCH MAXIMUM AS DETERMINED BY CALIFORNIA TEST NO. 670. THE ULTIMATE TENSILE STRENGTH OF THE MECHANICAL COUPLER SYSTEM SHALL BE AT LEAST 90 PERCENT OF THE ULTIMATE TENSILE STRENGTH OF THE BAR AS DETERMINED BY CALIFORNIA TEST NO. 670. THE FATIGUE RESISTANCE ALLOWABLE SLIP FOR 10,000 CYCLES, AS DETERMINED BY CALIFORNIA TEST NO. 670 WITH A STRESS RANGE FROM +25 KIPS PER SQUARE INCH TO -25 KIPS PER SQUARE INCH, SHALL NOT EXCEED 0.05 INCH MAXIMUM.

PROVIDE EPOXY COATING FOR MECHANICAL SPLICE SYSTEMS ACCORDING TO APPLICABLE PORTIONS OF AASHTO M284.

THE CONTRACTOR SHALL CERTIFY THE MECHANICAL SPLICE SYSTEM IN ACCORDANCE WITH 106.03 OF THE STANDARD SPECIFICATIONS.

REINFORCED CONCRETE

ALL WORK SHALL BE DONE IN ACCORDANCE WITH 703 OF THE STANDARD SPECIFICATIONS, EXCEPT WHERE NOTED OTHERWISE.

MINIMUM CONCRETE COVER (UNLESS OTHERWISE NOTED):

- TOP OF BRIDGE DECK SLAB - 2"
- BOTTOM OF BRIDGE DECK SLAB - 1½"
- TOP OF PIER - 3"
- BOTTOM AND SIDES OF FOOTING - 3"
- ALL OTHER LOCATIONS - 2" (UNLESS OTHERWISE NOTED)

CONCRETE SHALL BE LIGHTWEIGHT CONCRETE FOR PREFABRICATED SUPERSTRUCTURE DECK SLABS AND CAST-IN-PLACE DECK SLABS. ALL OTHER CONCRETE SHALL BE STANDARD NORMAL WEIGHT CONCRETE.

LIGHTWEIGHT CONCRETE SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS ON PCC MIX DESIGN FOR CLASS H CONCRETE WITH THE EXCEPTION OF THE MINIMUM 28-DAY COMPRESSIVE STRENGTH. MINIMUM COMPRESSIVE STRENGTH OF LIGHTWEIGHT CONCRETE AT 28 DAYS SHALL BE 4500 PSI WHICH SHALL SUPERSEDE THE REQUIREMENT IN THE STANDARD SPECIFICATIONS. LIGHTWEIGHT CONCRETE SHALL MEET THE LOW PERMEABILITY REQUIREMENTS OF 817.05 OF THE STANDARD SPECIFICATIONS.

NORMAL WEIGHT CONCRETE SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS ON PCC MIX DESIGN FOR CLASS B CONCRETE. MINIMUM COMPRESSIVE STRENGTH OF NORMAL WEIGHT CONCRETE AT 28 DAYS SHALL BE 4500 PSI.

CONSTRUCTION JOINTS SHALL BE MADE ONLY WHERE SHOWN ON THE PLANS. ADDITIONAL JOINTS SHALL BE MADE ONLY WITH APPROVAL OF THE ENGINEER.

EXPOSED CONCRETE EDGES SHALL BE CHAMFERED ¾" X ¾", EXCEPT AS NOTED OTHERWISE.

GROUTED KEYS

GROUT USED FOR KEYS BETWEEN PRECAST SUPERSTRUCTURE UNITS SHALL MEET REQUIREMENTS OF 806.05(E) OF THE STANDARD SPECIFICATIONS. THE COST OF THE GROUTED KEYS (MATERIALS, LABOR, ETC.) SHALL BE INCLUDED IN THE ITEM FOR LIGHTWEIGHT SUPERSTRUCTURE CONCRETE.

PATCHING MATERIALS

ALL PATCHING MATERIALS REQUIRED FOR USE IN CONCRETE REPAIR SHALL BE FREE OF CHLORIDES.

WATERPROOFING MEMBRANE AND OVERLAY FOR CONCRETE

APPLY WATERPROOFING MEMBRANE AND ASPHALT OVERLAY IN ACCORDANCE WITH SPECIAL PROVISION 795 WATERPROOFING.

DRILLING HOLES IN CONCRETE

THE COST OF DRILLING HOLES IN CONCRETE AND GROUTING OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RESPECTIVE CONCRETE ITEM. WHERE DRILLING AND GROUTING IS DONE FOR THE ATTACHMENT OF RAILINGS OR OTHER DEVICES, THE COST SHALL BE PART OF THE ITEM TO BE ATTACHED.

STAY-IN-PLACE FORMS

STAY-IN-PLACE FORMS WILL NOT BE PERMITTED ON THIS PROJECT.

DIMENSIONS

ALL STRUCTURE DIMENSIONS ARE BASED ON A NORMAL TEMPERATURE OF 70°F. ALL PLAN DIMENSIONS ARE HORIZONTAL UNLESS OTHERWISE INDICATED.

VERIFICATION OF EXISTING DIMENSIONS AND ELEVATIONS

PRIOR TO CONSTRUCTION AND PREPARATION OF SHOP DRAWINGS, THE CONTRACTOR SHALL CHECK THE DIMENSIONS AND ELEVATIONS OF THE EXISTING STRUCTURE. IF THESE DIMENSIONS AND ELEVATIONS DO NOT AGREE WITH THOSE SHOWN ON THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL MAKE THE NECESSARY ADJUSTMENTS TO THE DIMENSIONS AND PROFILE GRADES SHOWN ON THE CONTRACT PLANS TO INSURE THAT THE NEW CONSTRUCTION WILL PROPERLY FIT ONTO THE EXISTING STRUCTURE.

TEMPORARY SUPPORT DURING CONSTRUCTION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, FABRICATION, ERECTION, MAINTENANCE AND REMOVAL OF ALL TEMPORARY STRUCTURES REQUIRED FOR THIS WORK. ALL TEMPORARY SUPPORT SYSTEMS, INCLUDING FALSEWORK, PROTECTION SHIELDS AND OTHER TEMPORARY STRUCTURES SHALL MEET THE REQUIREMENTS OF 703.16, FALSEWORK AND CENTERING.

PRIOR TO FABRICATION, THE CONTRACTOR SHALL SUBMIT SHOP/WORKING DRAWINGS, DESIGN CALCULATIONS AND ERECTION METHODS FOR ALL TEMPORARY SUPPORT SYSTEMS, DESIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER, TO THE ENGINEER FOR REVIEW AND COMMENTS. INCLUDED IN THE CONTRACTOR'S SUBMITTALS SHALL BE ADEQUATE DRAWINGS AND PROCEDURES FOR SAFELY EXECUTING THE TRANSITIONS OF TEMPORARY SUPPORT SYSTEMS BETWEEN PHASES OF WORK. AFTER ERECTING THE SYSTEM AT A NEW LOCATION, THE PROFESSIONAL ENGINEER SHALL CERTIFY THAT THE TEMPORARY SUPPORT SYSTEM HAS BEEN PROPERLY CONSTRUCTED.

BONDING NEW CONCRETE TO OLD CONCRETE

ALL NEW CONCRETE SHALL BE BONDED TO EXISTING CONCRETE WITH AN EPOXY RESIN ADHESIVE SYSTEM. THE SURFACES OF EXISTING CONCRETE WHICH ARE TO BE IN CONTACT WITH NEW CONCRETE SHALL BE CLEANED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

STONE MASONRY FACING

THE REPLACEMENT, RESETTING AND CONSTRUCTION OF STONE MASONRY FACING SHALL BE CONDUCTED ACCORDING TO THE REQUIREMENTS OF 708 OF THE STANDARD SPECIFICATIONS AND SHALL MATCH EXISTING ADJACENT MASONRY TO THE SATISFACTION OF THE ENGINEER.

ARCHITECTURAL TREATMENT

ARCHITECTURAL TREATMENT SHOWN ON FASCIA SIDE OF EXTERIOR PARAPETS ARE FOR BIDDING PURPOSES ONLY. PARAPET ARCHITECTURAL TREATMENT SHALL MATCH EXISTING STONE MASONRY FACING AT THE ABUTMENTS IN PATTERN AND COLOR. A SAMPLE PANEL, 2'-0"x2'-0" AND A MAXIMUM OF 2" THICK, SHALL BE PREPARED AND DELIVERED TO THE ENGINEER FOR APPROVAL. APPROVAL OF THE SAMPLE PANEL BY THE ENGINEER IS REQUIRED BEFORE ANY WORK INVOLVING THE ARCHITECTURAL TREATMENT BEGINS.

SAMPLE PANEL, 2'-0"x2'-0" AND A MAXIMUM OF 2" THICK, FOR ARCHITECTURAL TREATMENT SHOWN ON PIER ELEVATIONS SHALL BE PREPARED AND DELIVERED TO THE ENGINEER FOR APPROVAL. NO STAINING SHALL BE REQUIRED WITH THE PIER ARCHITECTURAL TREATMENT. APPROVAL OF THE SAMPLE PANEL BY THE ENGINEER IS REQUIRED BEFORE ANY WORK INVOLVING THE ARCHITECTURAL TREATMENT BEGINS.

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NOT FOR CONSTRUCTION

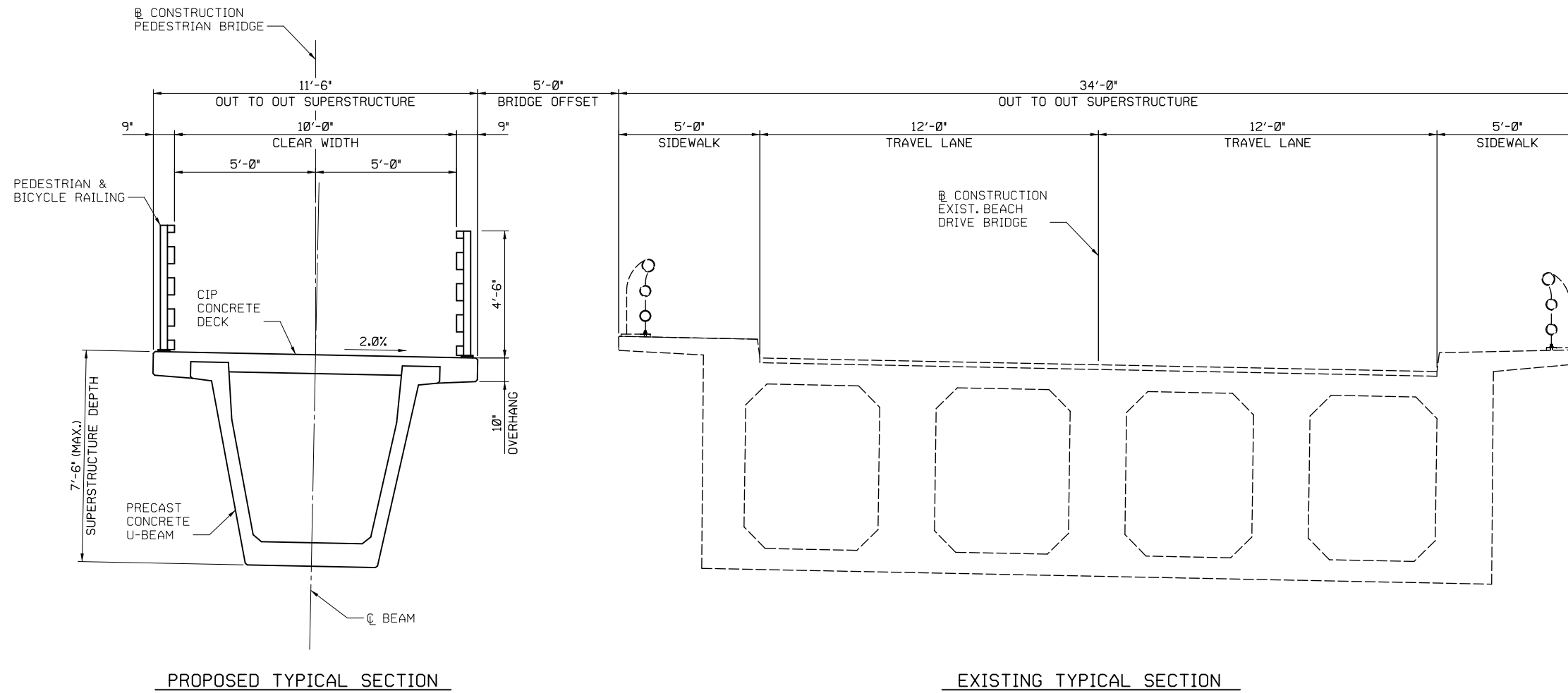


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NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION PROJECT MANAGEMENT DIVISION	
ROCK CREEK PARK MULTI-USE TRAIL REHABILITATION 30% DESIGN SUBMITTAL	PROJECT ENG. _____ DESIGNED BY _____ CHECKED BY _____ DRAWN BY _____ PROJECT MGR. _____

DATE: 09-13-2013	SCALE: AS SHOWN	BR-02
STRUCTURAL GENERAL NOTES		
DIVISION CHIEF		
DATE _____		
FILE _____		
SHEET 103 OF 124		



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

NOT FOR CONSTRUCTION



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NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
DESIGNED BY _____
CHECKED BY _____
DRAWN BY _____
PROJECT MGR. _____

DATE: 09-13-2013

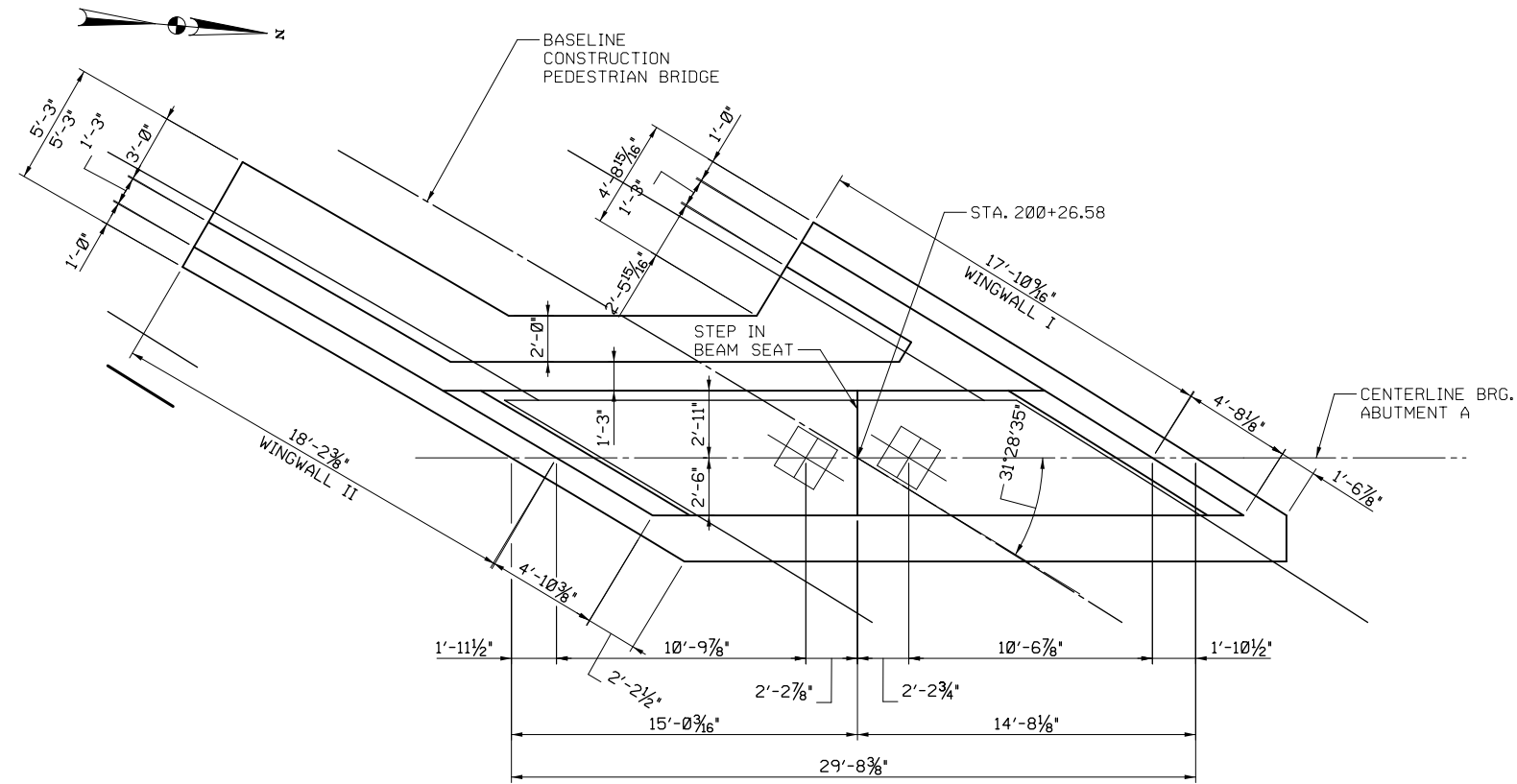
SCALE: AS SHOWN

BR-03

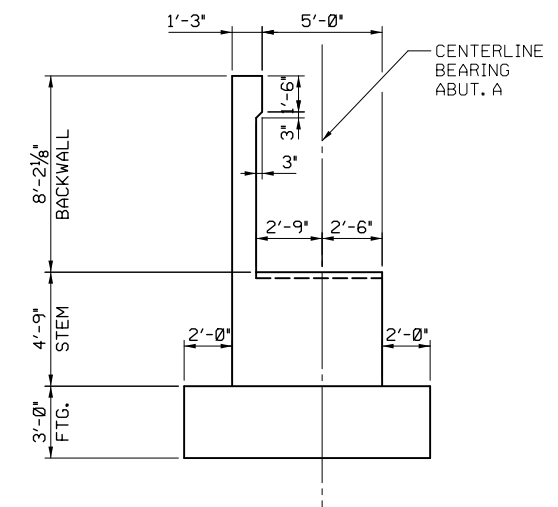
TYPICAL SECTION

DIVISION CHIEF

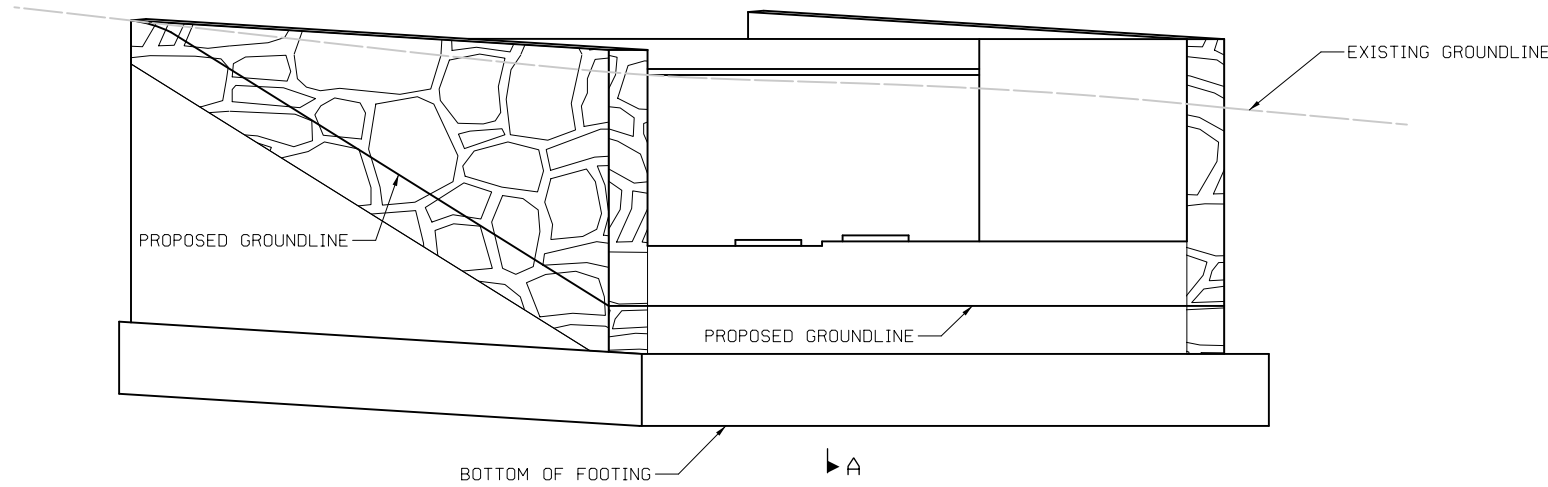
DATE _____
FILE _____
SHEET 104 OF 124



ABUTMENT A - PLAN
SCALE: 1/4" = 1'-0"



ABUTMENT A - TYPICAL SECTION
SCALE: 1/4" = 1'-0"



ABUTMENT A - ELEVATION
SCALE: 1/4" = 1'-0"

DATUM
EL. 15.00

NOT FOR CONSTRUCTION



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NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
DESIGNED BY _____
CHECKED BY _____
DRAWN BY _____
PROJECT MGR. _____

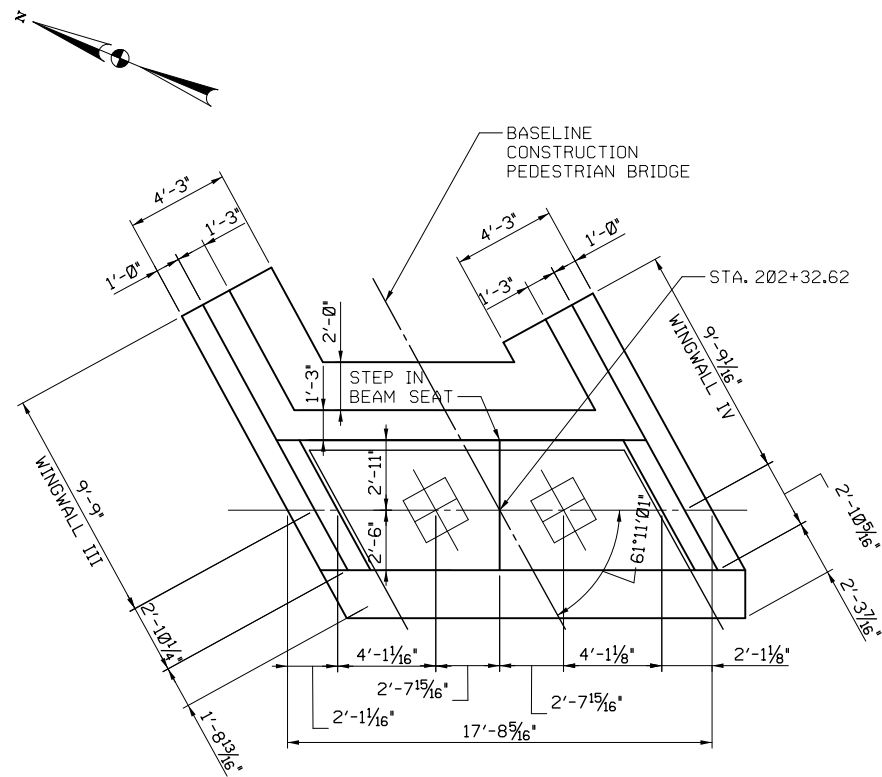
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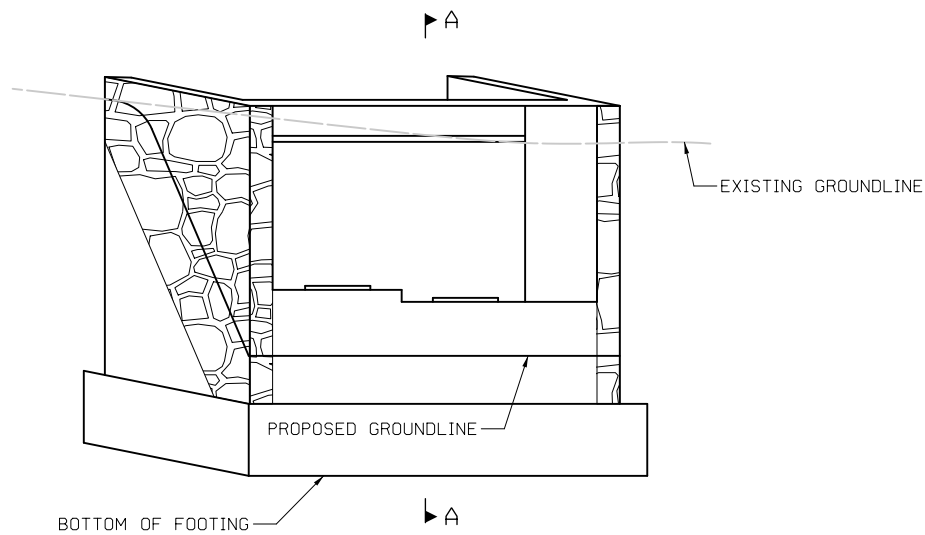
BR-04

ABUTMENT A - PLAN AND ELEVATION

DIVISION CHIEF
DATE _____
FILE _____
SHEET 105 OF 124

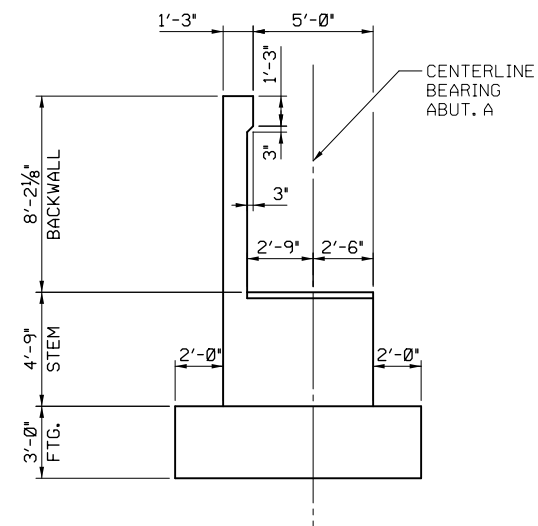


ABUTMENT B - PLAN
SCALE: 1/4" = 1'-0"



DATUM
EL. 20.00

ABUTMENT B - ELEVATION
SCALE: 1/4" = 1'-0"



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

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NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
DESIGNED BY _____
CHECKED BY _____
DRAWN BY _____
PROJECT MGR. _____

DATE: 09-13-2013

SCALE: AS SHOWN

BR-05

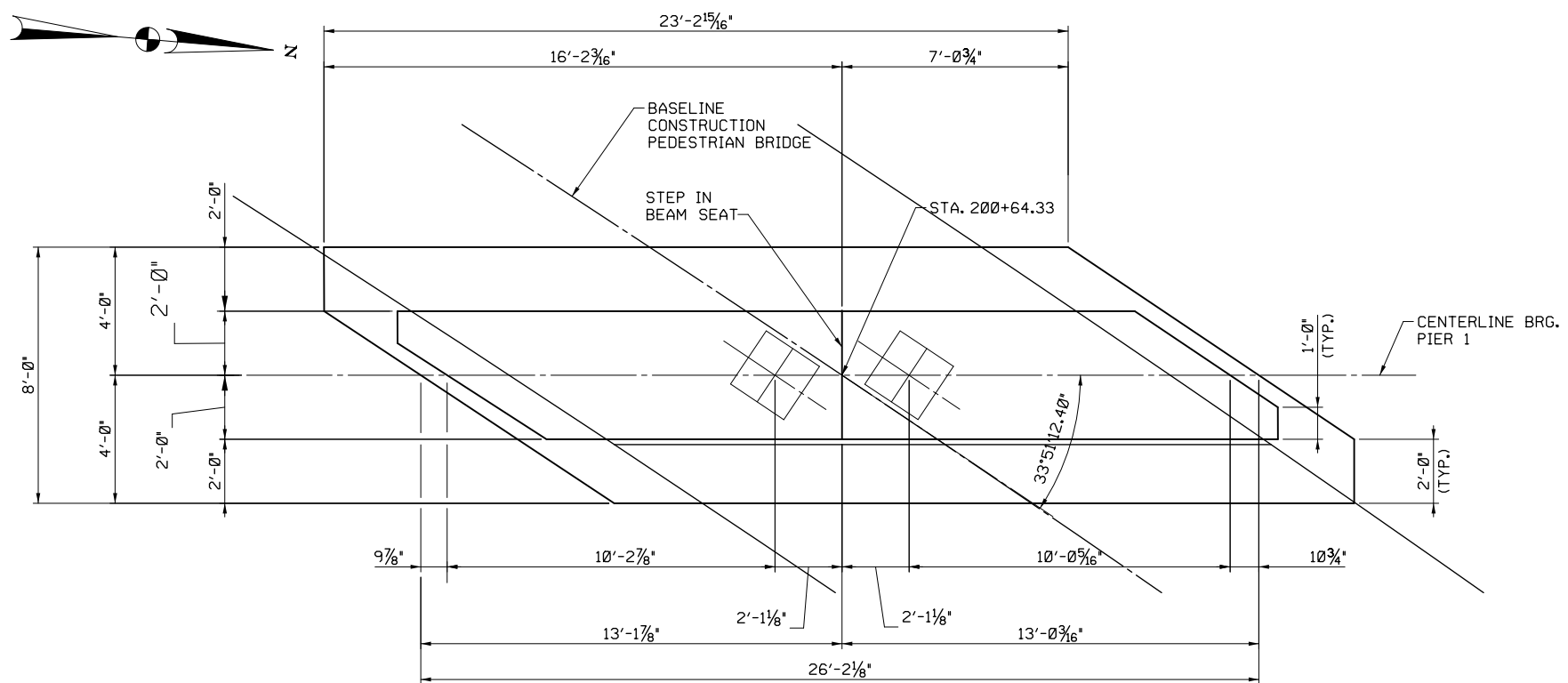
ABUTMENT B - PLAN AND ELEVATION

DIVISION CHIEF

DATE _____

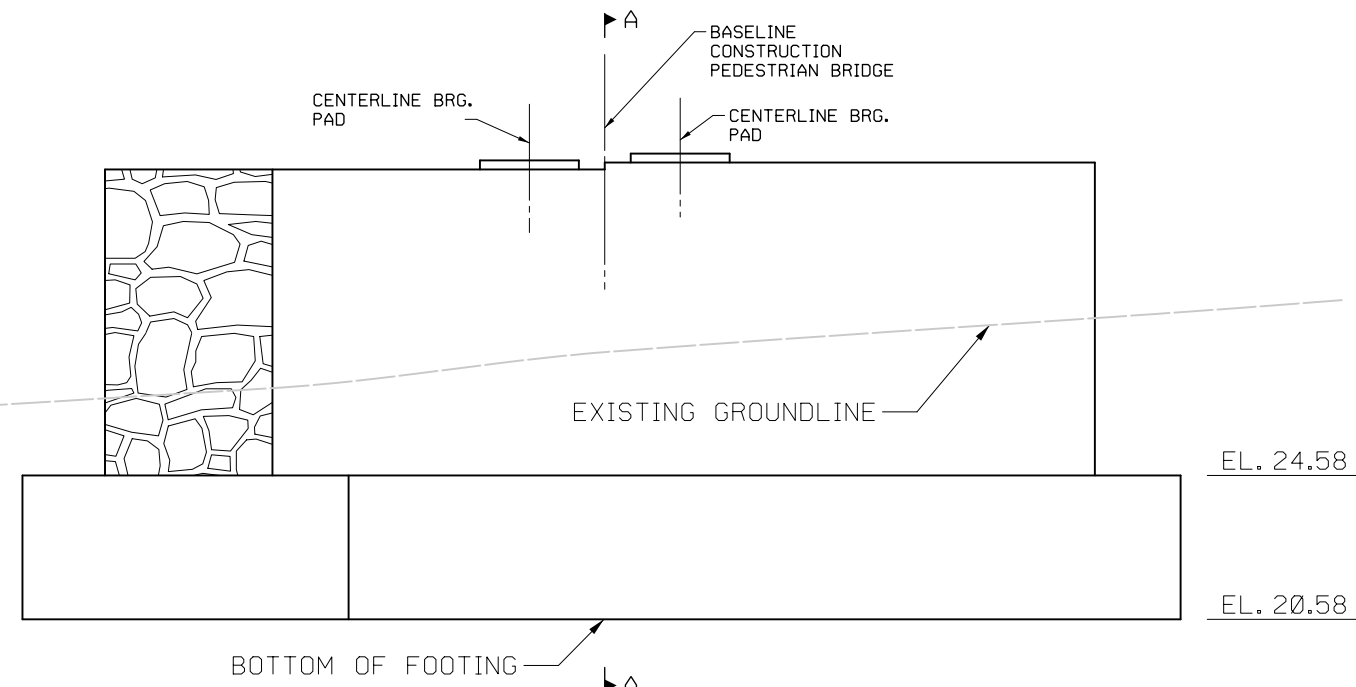
FILE _____

SHEET 106 OF 124



PLAN

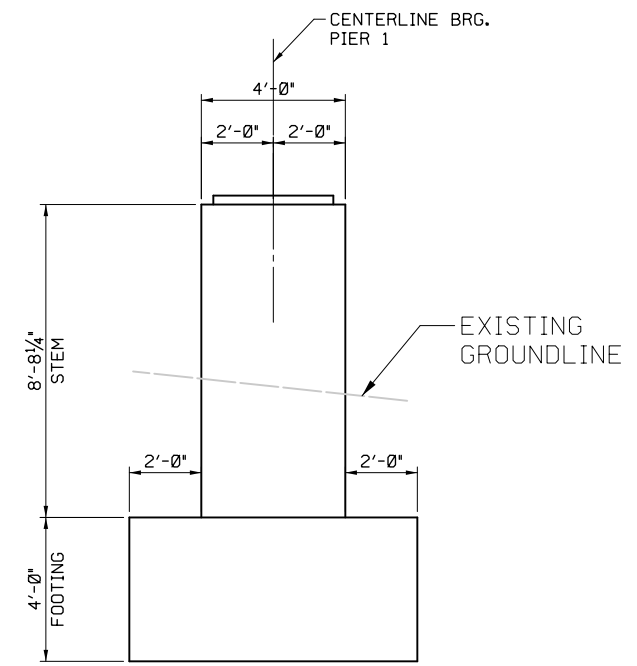
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ELEVATION

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

DATUM
EL. 18.00



PIER - TYPICAL SECTION

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

NOT FOR CONSTRUCTION



NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
DESIGNED BY _____
CHECKED BY _____
DRAWN BY _____
PROJECT MGR. _____

DATE: 09-13-2013

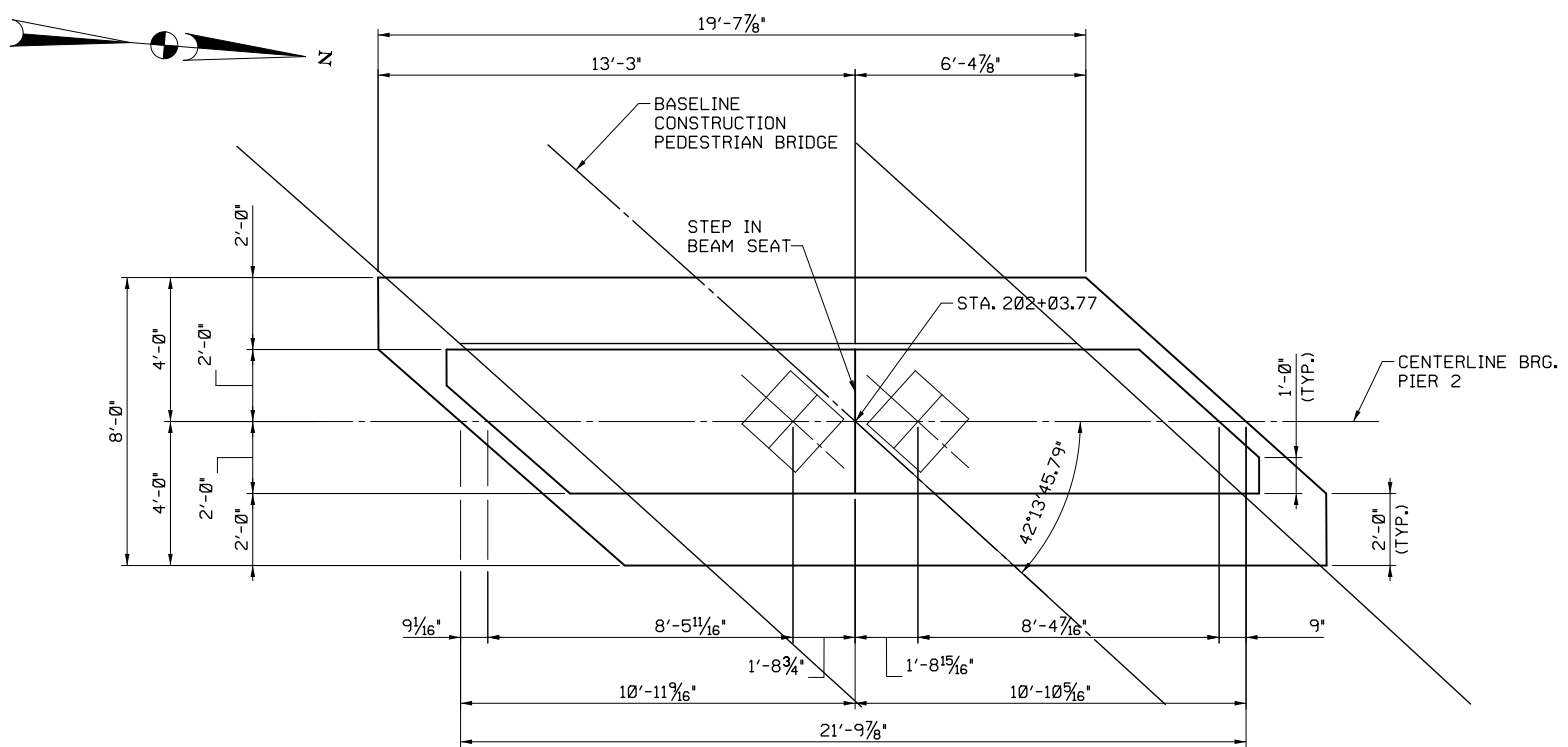
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BR-06

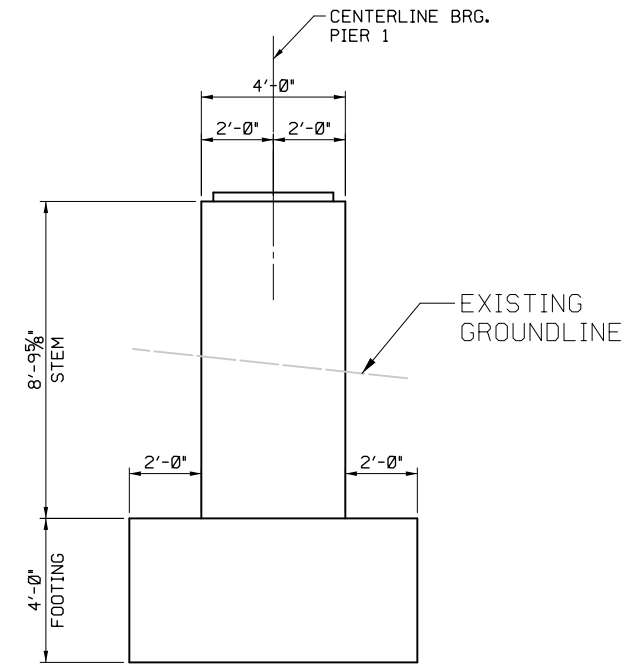
PIER 1 - PLAN AND ELEVATION

DIVISION CHIEF
DATE _____
FILE _____
SHEET 107 OF 124

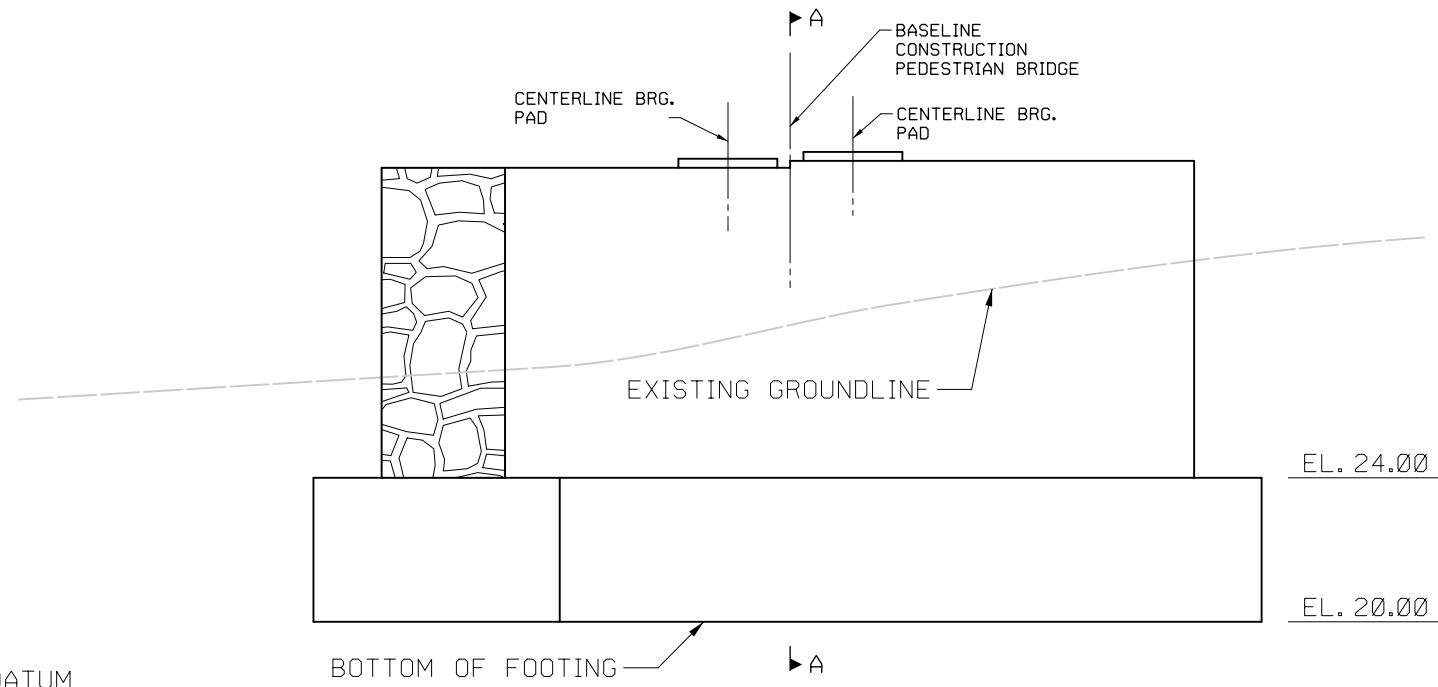
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PLAN
SCALE: 3/8" = 1'-0"



PIER - TYPICAL SECTION
SCALE: 3/8" = 1'-0"



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

DATUM
EL. 18.00

BOTTOM OF FOOTING

9/12/2013 U:\202605\049\012 Rock Creek Park Trail\TRANS\CADD\Sheet Files\pBR-0007.rct.dgn

NOT FOR CONSTRUCTION



NO.	DESCRIPTION	NAME	DATE

D.C. DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
DESIGNED BY _____
CHECKED BY _____
DRAWN BY _____
PROJECT MGR. _____

DATE: 09-13-2013	SCALE: AS SHOWN	BR-07
PIER 2 - PLAN AND ELEVATION		DIVISION CHIEF
		DATE _____ FILE _____ SHEET 108 OF 124

STORM WATER MANAGEMENT NOTES

- THE SITES FOR SWM FACILITIES SHOWN IN THESE PLANS WERE CHOSEN BASED ON INFORMATION PROVIDED IN THE ROCK CREEK WATERSHED IMPLEMENTATION PLAN - APPENDIX C: LOW IMPACT DEVELOPMENT RESTORATION SITES (AUGUST 2010, DISTRICT DEPARTMENT OF THE ENVIRONMENT - WATER PROTECTION DIVISION).
- REFER TO GEOTECHNICAL REPORT FOR INFORMATION ABOUT WATER TABLE DEPTH, BEDROCK DEPTH, INFILTRATION RATES, AND HYDROLOGIC SOIL TYPES.
- LID SITES SHALL BE PROTECTED FROM SILT AND DEBRIS UNTIL THE CONTRIBUTING DRAINAGE AREAS HAVE BEEN PERMANENTLY STABILIZED.

PROJECT SITE INFORMATION

<u>TOTAL AREA</u>	<u>TOTAL IMPERVIOUS AREA (WITHIN LIMIT OF DISTURBANCE)</u>
XXXX SF = XXXX ACRE	EXISTING (SF) = XXXX EXISTING REMOVAL (SF) = XXXX PROPOSED (SF) = XXXX NET (SF) = XXXX
<u>TOTAL LENGTH OF TRAIL IMPROVEMENTS</u>	
XXXX LF = XXXX MI	
<u>TOTAL AREA WITHIN LIMIT OF DISTURBANCE</u>	<u>TOTAL CUT / FILL</u>
XXXX SF = XXXX ACRE	CUT = XXXX FILL = XXXX PAVEMENT REMOVAL = XXXX

DDOE STORMWATER MANAGEMENT GUIDEBOOK (2012 DRAFT) CRITERIA/CALCULATIONS:

$$SWR_v = \frac{[P \times ((R_{vI} \times \%I) + (R_{vC} \times \%C) + (R_{vN} \times \%N)) \times SA]}{7.48/12}$$

Where:

- SWR_v = volume, in gallons, required to be retained onsite
- P = 90th percentile rainfall event for the District (1.2")
- R_{vI} = 0.95 (runoff coefficient for impervious cover)
- R_{vC} = 0.25 (runoff coefficient for compacted cover)
- R_{vN} = 0.00 (runoff coefficient for natural cover)
- %I = percent of site in impervious cover (decimal)
- %C = percent of site in compacted cover (decimal)
- %N = percent of site in natural cover (decimal)
- SA = surface area in square feet
- 7.48 = conversion factor, converting cubic feet to gallons
- 12 = conversion factor, converting inches to feet

$$S_{v\ practice} = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding})$$

Where:

- S_{v practice} = total storage volume of practice (cu. ft.)
- SA_{bottom} = bottom surface area of practice (sq. ft.)
- d_{media} = depth of the filter media (ft)
- η_{media} = effective porosity of the filter media (typically 0.25)
- d_{gravel} = depth of the underdrain and underground storage gravel layer (ft)
- η_{gravel} = effective porosity of the gravel layer (typically 0.4)
- SA_{average} = the average surface area of the practice (sq. ft.) typically = 1/2 x (top area plus the bottom (SA_{bottom}) area)
- d_{ponding} = the maximum ponding depth of the practice (ft.)

STATEMENT BY PERSON RESPONSIBLE FOR MAINTENANCE

THE UNDERSIGNED AGREES TO MAINTAIN AND OPERATE THE DISCHARGE FACILITIES IN SUCH A MANNER AS TO COMPLY WITH THE PROVISIONS OF SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5. RESPONSIBILITY FOR MAINTENANCE AND OPERATION MAY BE TRANSFERRED TO ANOTHER ENTITY UPON WRITTEN NOTICE TO THE WATERSHED PROTECTION DIVISION OF THE DISTRICT DEPARTMENT OF THE ENVIRONMENT FROM THE UNDERSIGNED AND THE ENTITY ASSUMING RESPONSIBILITY, CERTIFYING THAT THE TRANSFER OF RESPONSIBILITY FOR MAINTENANCE AND OPERATION IN COMPLIANCE WITH SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5 HAS BEEN ACCEPTED.

SIGNATURE OF THE PERSON RESPONSIBLE FOR MAINTENANCE (IT MAY BE THE APPLICANT)

NAME AND TITLE (PLEASE TYPE)

ADDRESS

DATE

PHONE NO

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN THE DISTRICT OF COLUMBIA

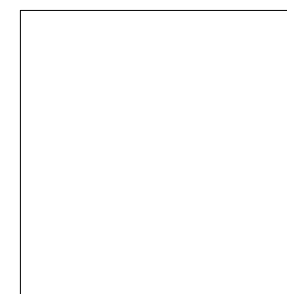
THIS IS TO CERTIFY THAT THE ENGINEERING FEATURES OF THIS STORMWATER DISCHARGE FACILITY HAVE BEEN DESIGNED / EXAMINED BY ME AND FOUND TO BE IN CONFORMITY WITH MODERN ENGINEERING PRINCIPLES APPLICABLE TO THE TREATMENT AND DISPOSAL OF STORMWATER POLLUTANTS. I FURTHER CERTIFY THAT THE FACILITY HAS BEEN DESIGNED IN ACCORDANCE WITH THE SPECIFICATION REQUIRED UNDER SECTION 526 THROUGH 535 OF DCMR-21, CHAPTER 5. IT IS ALSO STATED THAT THE UNDERSIGNED HAS FURNISHED THE APPLICANT WITH A SET OF INSTRUCTIONS FOR THE MAINTENANCE AND OPERATION OF THE STORMWATER DISCHARGE FACILITY.

NAME AND TITLE (PLEASE TYPE)

ADDRESS

DATE

PHONE NO



NOT FOR CONSTRUCTION



Stantec
Baltimore, MD
USA
Tel. 410.583.6700
Fax. 410.583.6704
www.stantec.com

NO.	DESCRIPTION	NAME	DATE
REVISIONS			

DATE: 09-13-2013	SCALE: N / A	SW-01
D.C. DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION PROJECT MANAGEMENT DIVISION		
ROCK CREEK PARK MULTI-USE TRAIL REHABILITATION 30% DESIGN SUBMITTAL		PROJECT ENG. _____ DESIGNED BY _____ CHECKED BY _____ DRAWN BY _____ PROJECT MGR. _____
STORM WATER MANAGEMENT NOTES		DIVISION CHIEF _____ DATE _____ FILE _____ SHEET 109 OF 124

LID SITE INFORMATION

NOTE: POTENTIAL LID SITES WERE CHOSEN BASED ON THE ROCK CREEK WATERSHED IMPLEMENTATION PLAN.

PROJECT NUMBER: RC.LID.130
 SITE LOCATION: PARKLAND- ARKANSAS AVENUE NW AND PINEY BRANCH PARKWAY NW
 FACILITY TYPE: BI-5 BIORETENTION - ENHANCED, 0-2 DRY SWALE
 ADC MAP LOCATION: 5408.E10
 OWNERSHIP: NPS
 DESCRIPTION OF EXISTING CONDITION: LARGE GRASSY OPEN FIELD ADJACENT TO ARKANSAS AVENUE NW AND PINEY BRANCH PARKWAY
 PROJECT DESCRIPTION: INSTALLATION OF BIORETENTION AND DRY SWALE TO TAKE RUNOFF FROM PINEY BRANCH PARKWAY AND ARKANSAS AVENUE NW, REFORESTATION.

SITE DATA:		AREA (SF)	%	Rv	TSS (mg/L)
TOTAL DRAINAGE AREA, SA:	XXXX	--	--	--	--
TOTAL NATURAL COVER, N:	XXXX	XXXX	0	49	
TOTAL COMPACTED COVER, C:	XXXX	XXXX	0.25	--	
LAWN:	XXXX			602	
LANDSCAPING:	XXXX			37	
TOTAL IMPERVIOUS COVER, I:	XXXX	XXXX	0.95	--	
ROOFTOP:	XXXX			15	
RES/COMM PARKING LOT:	XXXX			27	
INDUSTRIAL PARKING LOT:	XXXX			228	
DRIVEWAY/SIDEWALK/STREET:	XXXX			173	
COMMERCIAL STREET:	XXXX			468	
BMP/LID:	XXXX			0	

FIGURE 1 - LOOKING WEST FROM PINEY BRANCH PARKWAY & ARKANSAS AVE NW INTERSECTION



CALCULATIONS

COMPLIANCE CALCULATIONS: STORM WATER RETENTION VOLUME, SWRV (GAL): XXXX

$$SWRV = \frac{[P \times ((Rv_1 \times \%I) + (Rv_C \times \%C) + (Rv_N \times \%N)) \times SA]}{7.48/12}$$
 WHERE, DESIGN STORM P = 1.2 INCHES, SA = TOTAL DRAINAGE AREA (SF)
 STORAGE VOLUME, Sv (CF): XXXX

$$Sv_{practise} = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding})$$
 WHERE, d = DEPTH (FT), n = EFFECTIVE POROSITY, SA = SURFACE AREA (SF)
 RETENTION VALUE = 100% of Sv
 VOLUME RETAINED (CF, GAL): XXXX
 RETENTION VOLUME REMAINING (CF, GAL): XXXX
 PERCENT OF SWRV RETAINED: XXXX
 POLLUTANT REMOVAL: TOTAL SUSPENDED SOLIDS (TSS) LOAD (LB): XXXX
 TSS REMOVED (LB): XXXX

INFILTRATION TEST RESULTS

TEST LOCATION	DEPTH	VISUAL INSPECTION	USDA CLASSIFICATION	INFILTRATION RATE (IN/HR)
SW-02	4.00	CLAYEY SAND	SANDY LOAM	0.30
SW-03	4.10	CLAYEY SAND	SANDY LOAM	10.35
SW-04	8.60	SILTY SAND WITH GRAVEL	LOAM	14.85

DDOT STANDARD DRAWING NUMBERS

STD. DWG. NO.	DESCRIPTION	REMARKS
630.02	BIOSWALE ADJACENT TO ROADWAY	
609J1	CURB CUT WITH SPLASH BLOCK	
602J2	ROCK CHECK DAM	CHECK DAM SPACING = 40'

DATE: 09-13-2013	SCALE: N / A	SW-02
D.C. DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION PROJECT MANAGEMENT DIVISION		
ROCK CREEK PARK MULTI-USE TRAIL REHABILITATION 30% DESIGN SUBMITTAL		PROJECT ENG. _____ DESIGNED BY _____ CHECKED BY _____ DRAWN BY _____ PROJECT MGR. _____
STORM WATER MANAGEMENT NOTES		DIVISION CHIEF _____ DATE _____ FILE _____ SHEET 110 OF 124

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NO.	DESCRIPTION	NAME	DATE
REVISIONS			

LID SITE INFORMATION

NOTE: POTENTIAL LID SITES WERE CHOSEN BASED ON THE ROCK CREEK WATERSHED IMPLEMENTATION PLAN.

PROJECT NUMBER: RC.LID.354
 SITE LOCATION: BEACH DRIVE NW - BROAD BRANCH ROAD TO KLINGLE RUN
 FACILITY TYPE: BI-5 BIORETENTION - ENHANCED
 ADC MAP LOCATION: 5408_C9&B10
 OWNERSHIP: NPS
 DESCRIPTION OF EXISTING CONDITION: TWO LANE ROAD ADJACENT TO ROCK CREEK. ROAD HAS CURB AND GUTTER WITH DRAINAGE CULVERTS THAT DRAIN DIRECTLY INTO ROCK CREEK. SOME PARKING PULLOUTS ALONG BEACH DRIVE AND NEAR PIERCE MILL.
 PROJECT DESCRIPTION: INSTALL BIORETENTION CELLS AND/OR BIOSWALES FOR LENGTH OF ROAD TO RETAIN AND DETAIN STORM WATER FROM ROADWAY, BIORETENTION AT PARKING PULLOUTS.

SITE DATA:

	AREA (SF)	%	Rv	TSS (mg/L)
TOTAL DRAINAGE AREA, SA:	XXXX	--	--	--
TOTAL NATURAL COVER, N:	XXXX	XXXX	0	49
TOTAL COMPACTED COVER, C:	XXXX	XXXX	0.25	--
LAWN:	XXXX			602
LANDSCAPING:	XXXX			37
TOTAL IMPERVIOUS COVER, I:	XXXX	XXXX	0.95	--
ROOFTOP:	XXXX			15
RES/COMM PARKING LOT:	XXXX			27
INDUSTRIAL PARKING LOT:	XXXX			228
DRIVEWAY/SIDEWALK/STREET:	XXXX			173
COMMERCIAL STREET:	XXXX			468
BMP/LID:	XXXX			0

CALCULATIONS

COMPLIANCE CALCULATIONS: STORM WATER RETENTION VOLUME, SWRV (GAL): XXXX

$$SWRV = \frac{P \times [(Rv_1 \times \%I) + (Rv_C \times \%C) + (Rv_N \times \%N)] \times SA}{7.48/12}$$
 WHERE, DESIGN STORM P = 1.2 INCHES, SA = TOTAL DRAINAGE AREA (SF)
 STORAGE VOLUME, Sv (CF): XXXX

$$Sv_{practice} = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding})$$
 WHERE, d = DEPTH (FT), n = EFFECTIVE POROSITY, SA = SURFACE AREA (SF)
 RETENTION VALLE = 100% of Sv
 VOLUME RETAINED (CF, GAL): XXXX
 RETENTION VOLUME REMAINING (CF, GAL): XXXX
 PERCENT OF SWRV RETAINED: XXXX
 POLLUTANT REMOVAL: TOTAL SUSPENDED SOLIDS (TSS) LOAD (LB): XXXX
 TSS REMOVED (LB): XXXX

INFILTRATION TEST RESULTS

TEST LOCATION	DEPTH	VISUAL INSPECTION	USDA CLASSIFICATION	INFILTRATION RATE (IN/HR)
SW-01	3.95	SILTY GRAVEL WITH SAND	SANDY LOAM	0.30

DDOT STANDARD DRAWING NUMBERS

STD. DWG.	DESCRIPTION	REMARKS
630.01	BIORETENTION IN OPEN AREA	

FIGURE 1 - LOOKING WEST TOWARD KLINGLE RD & PORTER ST NW INTERCHANGE



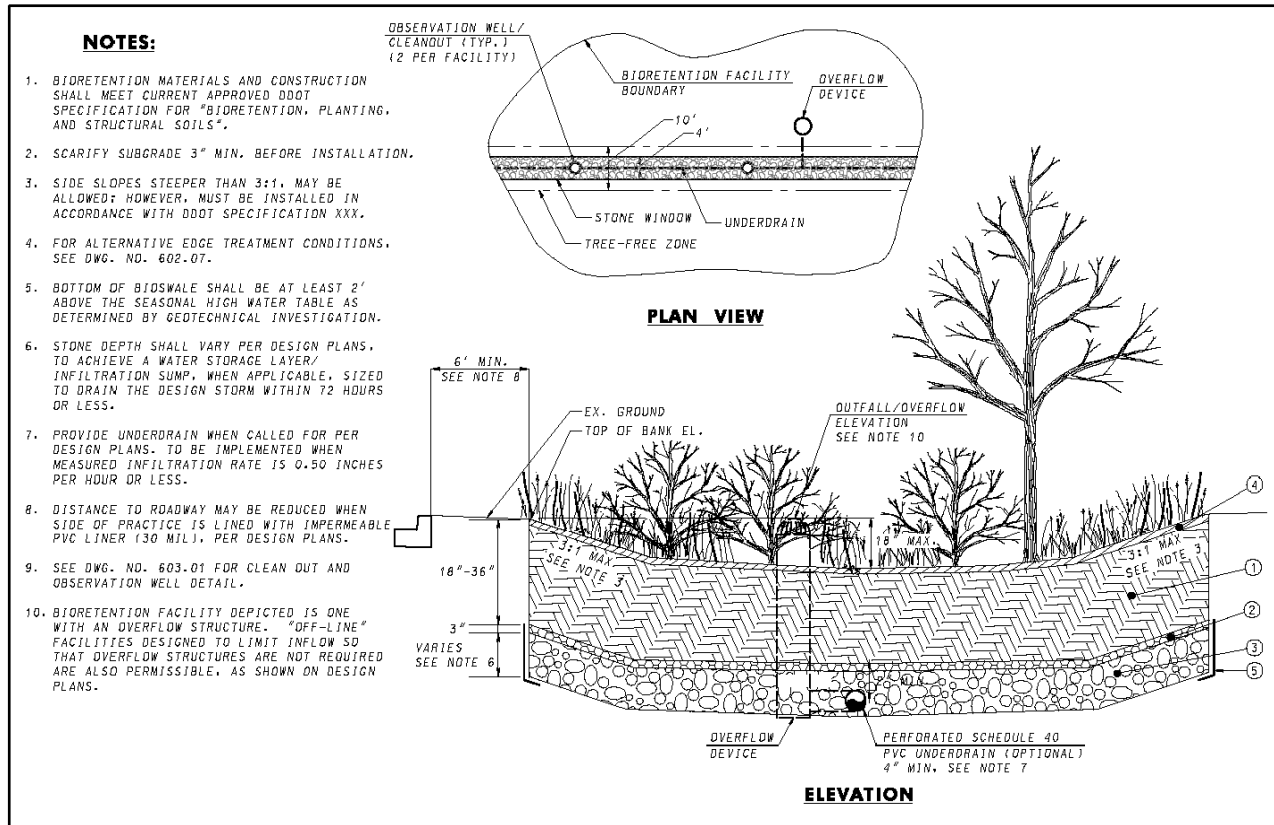
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NO.	DESCRIPTION	NAME	DATE

DATE: 09-13-2013	SCALE: N / A	SW-03
D.C. DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION PROJECT MANAGEMENT DIVISION		
ROCK CREEK PARK MULTI-USE TRAIL REHABILITATION 30% DESIGN SUBMITTAL		PROJECT ENG. _____ DESIGNED BY _____ CHECKED BY _____ DRAWN BY _____ PROJECT MGR. _____
STORM WATER MANAGEMENT NOTES		DIVISION CHIEF _____ DATE _____ FILE _____ SHEET 111 OF 124



NOTES:

- BIORETENTION MATERIALS AND CONSTRUCTION SHALL MEET CURRENT APPROVED DDOT SPECIFICATION FOR "BIORETENTION, PLANTING, AND STRUCTURAL SOILS".
- SCARIFY SUBGRADE 3" MIN. BEFORE INSTALLATION.
- SIDE SLOPES STEEPER THAN 3:1, MAY BE ALLOWED; HOWEVER, MUST BE INSTALLED IN ACCORDANCE WITH DDOT SPECIFICATION XXX.
- FOR ALTERNATIVE EDGE TREATMENT CONDITIONS, SEE DWG. NO. 602-07.
- BOTTOM OF BIOSWALE SHALL BE AT LEAST 2' ABOVE THE SEASONAL HIGH WATER TABLE AS DETERMINED BY GEOTECHNICAL INVESTIGATION.
- STONE DEPTH SHALL VARY PER DESIGN PLANS, TO ACHIEVE A WATER STORAGE LAYER/ INFILTRATION SUMP, WHEN APPLICABLE, SIZED TO DRAIN THE DESIGN STORM WITHIN 72 HOURS OR LESS.
- PROVIDE UNDERDRAIN WHEN CALLED FOR PER DESIGN PLANS. TO BE IMPLEMENTED WHEN MEASURED INFILTRATION RATE IS 0.50 INCHES PER HOUR OR LESS.
- DISTANCE TO ROADWAY MAY BE REDUCED WHEN SIDE OF PRACTICE IS LINED WITH IMPERMEABLE PVC LINER (30 MIL), PER DESIGN PLANS.
- SEE DWG. NO. 603-01 FOR CLEAN OUT AND OBSERVATION WELL DETAIL.
- BIORETENTION FACILITY DEPICTED IS ONE WITH AN OVERFLOW STRUCTURE. "OFF-LINE" FACILITIES DESIGNED TO LIMIT INFLOW SO THAT OVERFLOW STRUCTURES ARE NOT REQUIRED ARE ALSO PERMISSIBLE, AS SHOWN ON DESIGN PLANS.

LEGEND:

① BIORETENTION SOIL	④ MULCH
② CHOKER LAYER, AASHTO #8 STONE	⑤ GEOTEXTILE, CLASS 2
③ AASHTO #57 STONE, DOUBLE WASHED	

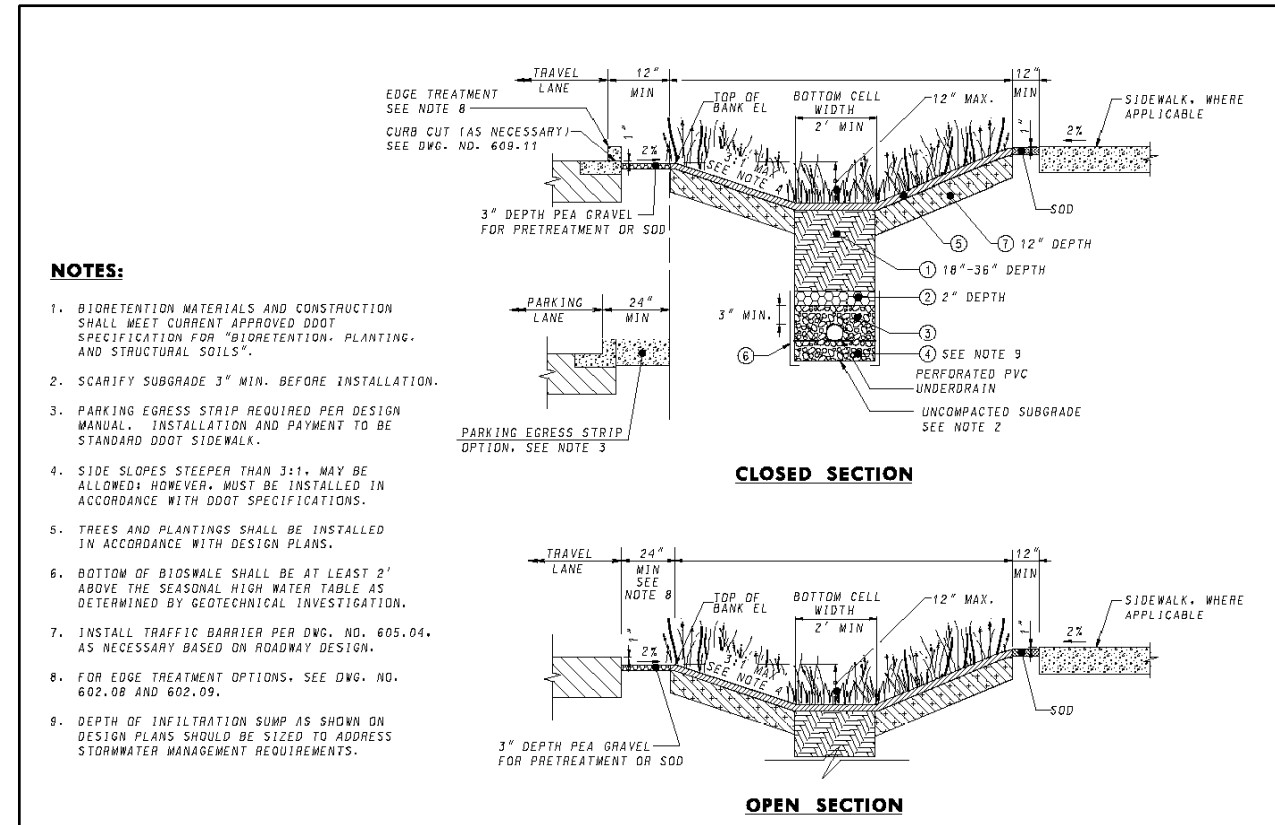
RECOMMENDED:	DEPUTY CHIEF ENGINEER
DATE	APPR.
REVISED	APPROVED:
ISSUED:	CHIEF TRANSPORTATION ENGINEER

BIORETENTION IN OPEN AREA

DRAFT Feb 28 2013

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 630.01



NOTES:

- BIORETENTION MATERIALS AND CONSTRUCTION SHALL MEET CURRENT APPROVED DDOT SPECIFICATION FOR "BIORETENTION, PLANTING, AND STRUCTURAL SOILS".
- SCARIFY SUBGRADE 3" MIN. BEFORE INSTALLATION.
- PARKING EGRESS STRIP REQUIRED PER DESIGN MANUAL. INSTALLATION AND PAYMENT TO BE STANDARD DDOT SIDEWALK.
- SIDE SLOPES STEEPER THAN 3:1, MAY BE ALLOWED; HOWEVER, MUST BE INSTALLED IN ACCORDANCE WITH DDOT SPECIFICATIONS.
- TREES AND PLANTINGS SHALL BE INSTALLED IN ACCORDANCE WITH DESIGN PLANS.
- BOTTOM OF BIOSWALE SHALL BE AT LEAST 2' ABOVE THE SEASONAL HIGH WATER TABLE AS DETERMINED BY GEOTECHNICAL INVESTIGATION.
- INSTALL TRAFFIC BARRIER PER DWG. NO. 605.04, AS NECESSARY BASED ON ROADWAY DESIGN.
- FOR EDGE TREATMENT OPTIONS, SEE DWG. NO. 602.08 AND 602.09.
- DEPTH OF INFILTRATION SUMP AS SHOWN ON DESIGN PLANS SHOULD BE SIZED TO ADDRESS STORMWATER MANAGEMENT REQUIREMENTS.

LEGEND:

① BIORETENTION SOIL	④ INFILTRATION SUMP, AASHTO #57 STONE, DOUBLE WASHED	⑦ PLANT BED SOIL
② CHOKER LAYER, AASHTO #8 STONE	⑤ MULCH	
③ AASHTO #57 STONE, DOUBLE WASHED	⑥ GEOTEXTILE	

RECOMMENDED:	DEPUTY CHIEF ENGINEER
DATE	APPR.
REVISED	APPROVED:
ISSUED:	CHIEF TRANSPORTATION ENGINEER

BIOSWALE ADJACENT TO ROADWAY

DRAFT Feb 28 2013

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 630.02

Thursday, September 12, 2013 AT 03:38 PM
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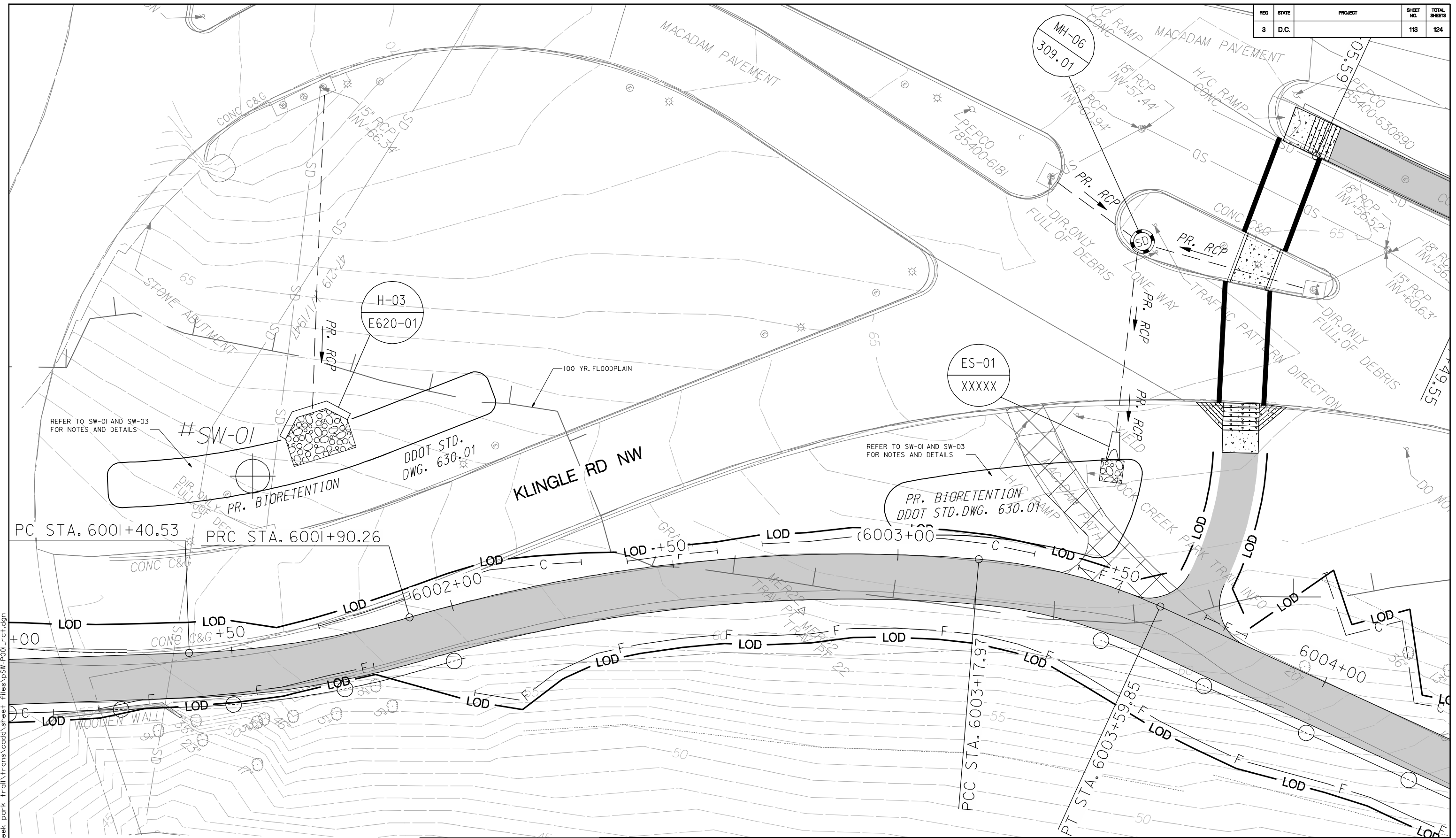
NOT FOR CONSTRUCTION



NO.	DESCRIPTION	NAME	DATE
REVISIONS			

DATE: 09-13-2013	SCALE: N / A	SW-04
D.C. DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION PROJECT MANAGEMENT DIVISION		
ROCK CREEK PARK MULTI-USE TRAIL REHABILITATION 30% DESIGN SUBMITTAL		PROJECT ENG. _____ DESIGNED BY _____ CHECKED BY _____ DRAWN BY _____ PROJECT MGR. _____
STORM WATER MANAGEMENT DETAILS		DIVISION CHIEF _____ DATE _____ FILE _____ SHEET 112 OF 124

REG.	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
3	D.C.		113	124



Thursday, September 12, 2013 AT 03:38 PM
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NOT FOR CONSTRUCTION
 HORIZONTAL SCALE: 1" = 100'



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NO.	DESCRIPTION	NAME	DATE
REVISIONS			

D.C. DEPARTMENT OF TRANSPORTATION
 INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION
 PROJECT MANAGEMENT DIVISION

ROCK CREEK PARK
MULTI-USE TRAIL REHABILITATION
30% DESIGN SUBMITTAL

PROJECT ENG. _____
 DESIGNED BY _____
 CHECKED BY _____
 DRAWN BY _____
 PROJECT MGR. _____

DATE: 09-13-2013	SCALE: 1" = 10'	SW-05
STORMWATER MANAGEMENT PLAN		
DIVISION CHIEF		
DATE _____		
FILE _____		
SHEET 113 OF 124		