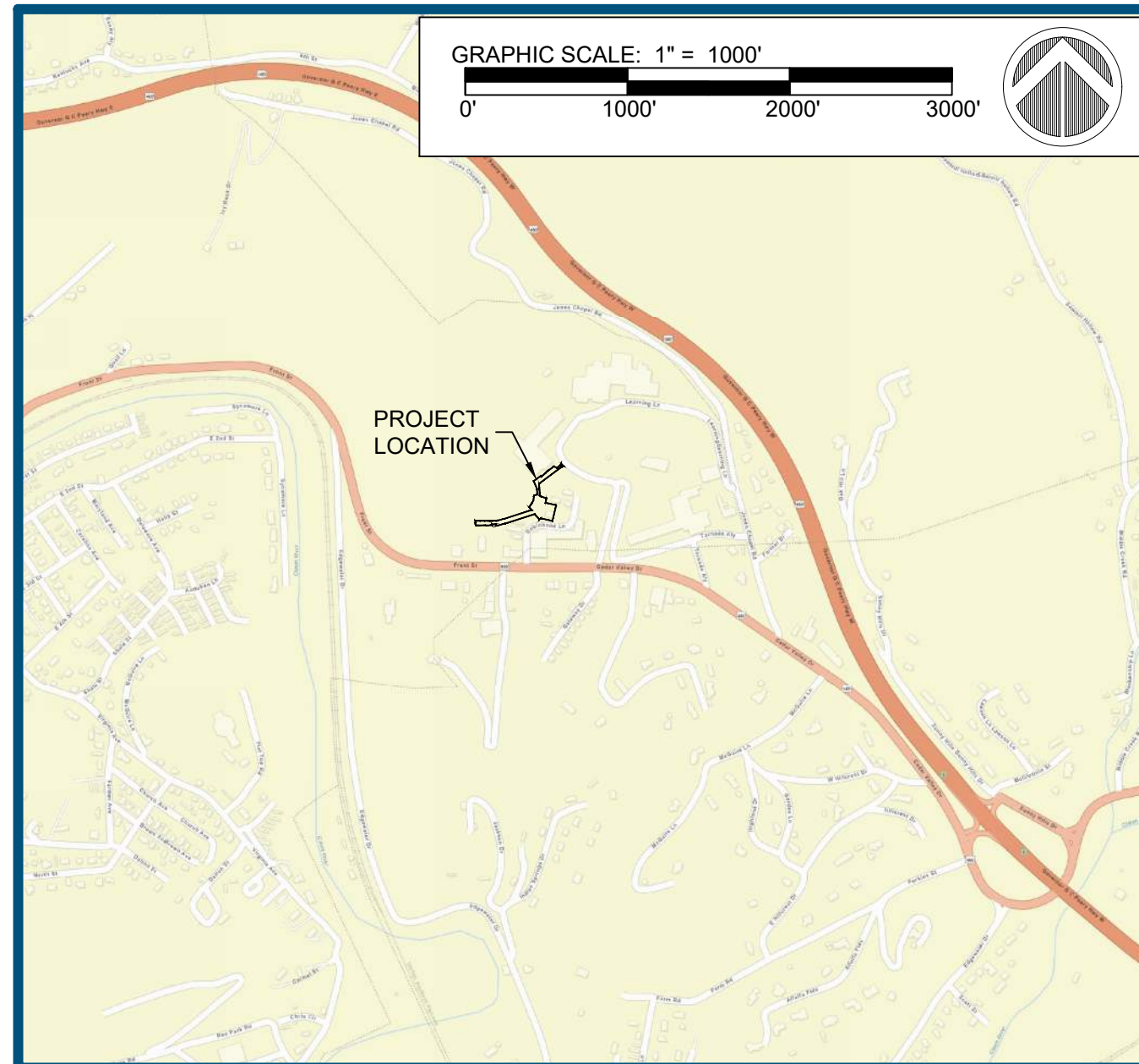
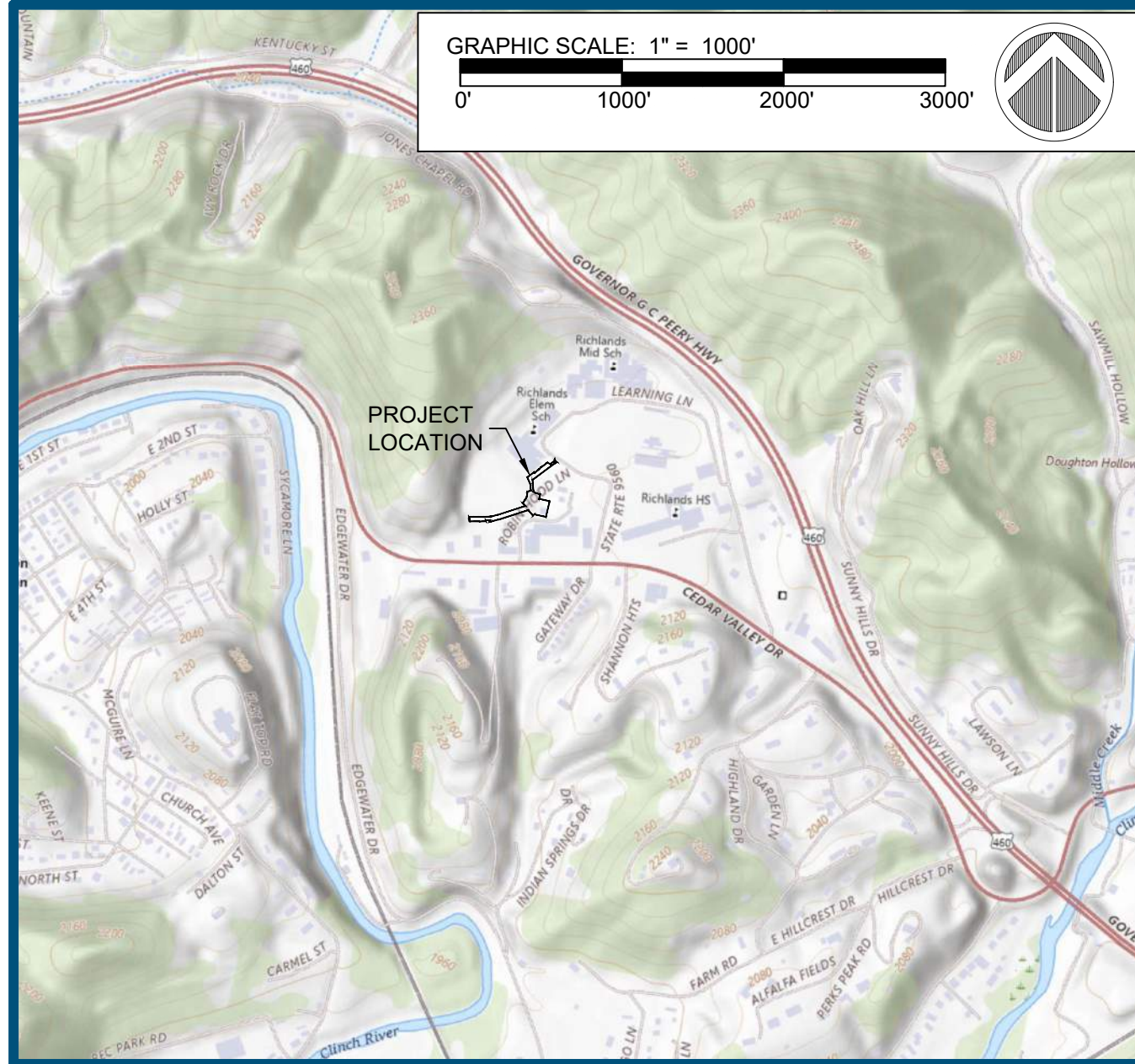


RICHLAND HIGH SCHOOL DETENTION BASIN FOR GRANT PROJECT CFPF 24-04-32 TAZEWELL COUNTY, VA

VICINITY MAP

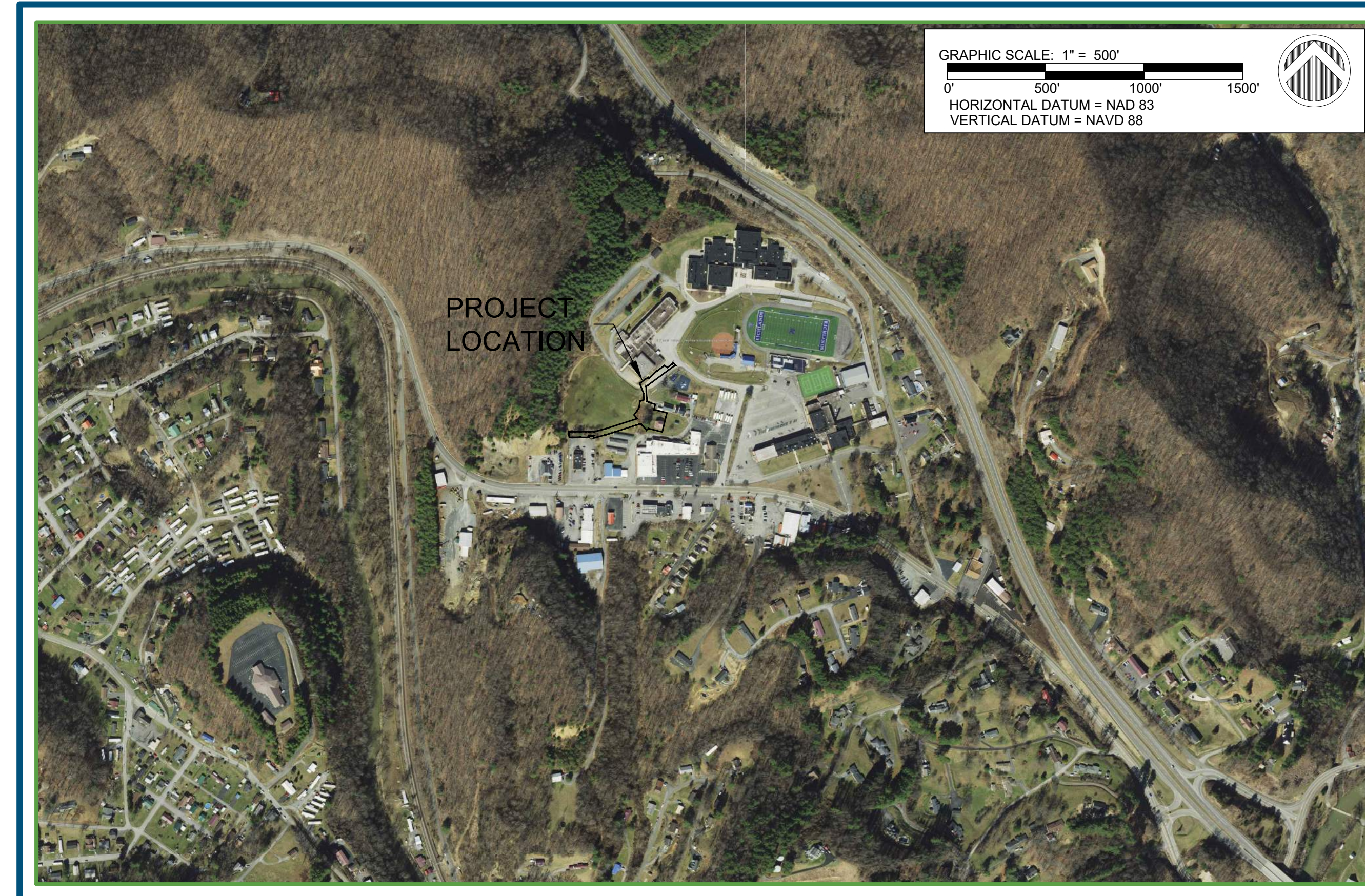


LOCATION MAP

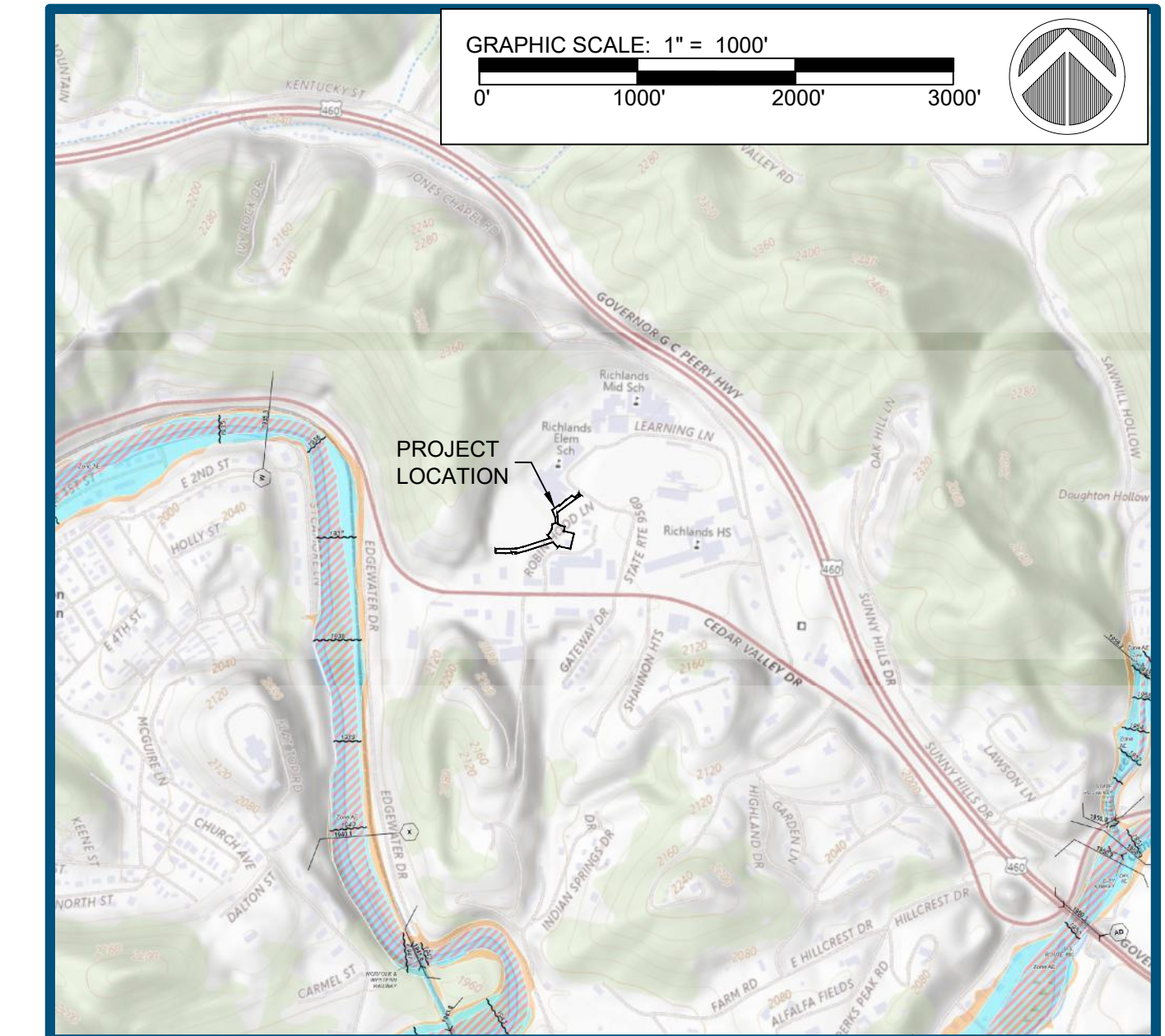


LATITUDE: N 37° 5' 37"
LONGITUDE: W 81° 46' 52"

AERIAL PHOTOGRAPH-PROJECT OVERVIEW



FEMA FIRMETTE




REFERENCE FEMA MAP: 51185C0308D & 51185C0309D

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	NOTES
3	EXISTING CONDITIONS
4	BMP RETROFIT DESIGN
5	BMP RETROFIT & OUTFALL PLAN & CROSS-SECTIONS
6	PR. BMP RETROFIT & OUTFALL PROFILE
7	PR. DITCH OUTFALL CROSS-SECTIONS
8	PR. DITCH OUTFALL & STORM CROSS-SECTIONS & DETAILS
9	BMP RETROFIT DETAILS
10	DRAINAGE AREAS
11	POND & DITCH CALCULATIONS
12	DITCH CALCULATIONS
13	DITCH CALCULATIONS
14	ESC NOTES AND NARRATIVE
15	ESC NOTES AND DETAILS
16	ESC DETAILS
17	BMP RETROFIT SEEDING PLAN & TABLES

APPLICANT:
NAME: TAZEWELL COUNTY
ADDRESS: 197 MAIN STREET
 TAZEWELL, VA 24651
CONTACT: C. ERIC YOUNG
PHONE NUMBER: 276.385.1208

PROPERTY INFO:
PROPERTY OWNER: TAZEWELL COUNTY PUBLIC SCHOOLS;
 ROMA 1, LLC
SITE ADDRESS: 171 ROBINHOOD LANE
 RICHLANDS, VA 24641
PROPERTY ID: 106A1020037-0040,105BA0035
 106A0023C, AND OTHERS
ZONING: R-2,B-2



30% DESIGN REVIEW BAILEY WILFONG 03/13/2026	RICHLAND HIGH SCHOOL DETENTION BASIN FOR GRANT PROJECT CFPF 24-04-32 TAZEWELL COUNTY, VA	
PERMIT PLAN DESIGN REVIEW BAILEY WILFONG 05/01/2026	PROJECT MANAGER: CA	JOB NUMBER: 111834
CONSTRUCTION PLAN REVIEW X _____ X	DESIGNED: KA	DESIGN TYPE: BMP
REVISIONS	DRAWN: KA	PLAN DATE: 6/22/2026
 HGS, LLC. A RES COMPANY 101 S. 15TH STREET, SUITE 104, RICHMOND, VA 23219 P. 804.353.6017 WWW.RES.US		
COVER SHEET		1 OF 17

JOB NUMBER: 111834

RICHLAND HIGH SCHOOL DETENTION BASIN FOR GRANT PROJECT CFPF 24-04-32

GENERAL NOTES:

1. THE PURPOSE OF THIS PROJECT IS TO RETROFIT AN EXISTING STORMWATER MANAGEMENT POND NEAR THE RICHLANDS ELEMENTARY SCHOOL PROPERTY. THE EXISTING POND IS NOT FUNCTIONING PROPERLY AND FLOODS ADJOINING PROPERTIES. THE STORAGE VOLUME OF THE POND WILL INCREASE AND THE EXISTING RISER STRUCTURE WILL BE REPLACED. THE POND WILL OUTFALL INTO A NEWLY REGRADED AND ENHANCED DITCH BEHIND THE ROMAS RESTAURANT PROPERTY ALONG FRONT STREET, BUS. 460. THE PROJECT SITE IS LOCATED AT 171 ROBINHOOD LANE, RICHLANDS, VA ON PROPERTY RECORDED IN THE NAME OF TAZEWELL COUNTY PUBLIC SCHOOLS. THE CONSTRUCTION OF THIS PROJECT WILL DISTURB APPROXIMATELY 0.90 ACRES.
2. THE PROPERTY SHOWN HEREON IS RECORDED IN THE NAME OF:

a. PARCEL ID#	OWNER	DEED/PAGE
106A1020037-0040	TAZEWELL COUNTY SCHOOL BOARD	1116/544
106A0023C	TAZEWELL COUNTY SCHOOL BOARD	560/612
UNKNOWN	TAZEWELL COUNTY SCHOOL BOARD	UNKNOWN
105BA0035	ROMA 1, LLC	UNKNOWN
3. THE PROPERTY IS CURRENTLY ZONED: R-2 (RESIDENTIAL, MEDIUM DENSITY) B-2 (BUSINESS/COMMERCIAL).
4. PROPERTY BOUNDARIES ARE BASED ON SURVEY DATA PROVIDED TO RES ON 3/2025 BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C.
5. THE PROPOSED USE OF THE PROPERTY WILL NOT CHANGE.
6. TOPOGRAPHIC SURVEY PROVIDED TO RES ON 3/2025 & 10/2025 BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C. CONTOUR INTERVAL IS 1 FOOT. HORIZONTAL DATUM: NAD83 US SURVEY FEET, VERTICAL DATUM: NAVD88.
7. SOILS INFORMATION IS BASED ON THE USDA WEB SOIL SURVEY'S DATABASE, APRIL 2026, FOR TAZEWELL COUNTY.
8. THE PROPERTIES SHOWN HEREON HAVE NO ARCHEOLOGICAL OR HISTORIC FEATURES AS INCLUDED IN THE STATE OR NATIONAL REGISTER OF HISTORIC PLACES BASED ON SURVEY RECEIVED.
9. THE PROPERTY SHOWN HEREON IS WITHIN ZONE "X" (UNSHADED, AREAS OF MINIMAL FLOOD HAZARD) ON FEDERAL EMERGENCY MANAGEMENT AGENCY COMMUNITY PANELS 51185C0308D AND 51185C0309D, EFFECTIVE DATE FOR BOTH PANELS: FEBRUARY 18, 2011.
10. SEDIMENT AND EROSION CONTROL WILL BE PROVIDED IN ACCORDANCE WITH VIRGINIA STORMWATER MANAGEMENT HANDBOOK (VERSION 1.1).
11. THIS PROJECT WILL DISTURB LESS THAN 1 ACRE (0.90 ACRES) AND DOES NOT LIE WITHIN THE CHESAPEAKE BAY WATERSHED; THEREFORE, A STORMWATER MANAGEMENT PLAN IS NOT REQUIRED. HOWEVER, CHANNEL ADEQUACY REQUIREMENTS MUST BE MET. BASED ON EXISTING DITCH SURVEY, PROVIDED OCTOBER 2025, FOR THE EXISTING DITCH BEHIND THE ROMAS RESTAURANT PARKING LOT, THE EXISTING AND PROPOSED DITCHES DO NOT SATISFY ADEQUATE CHANNEL REQUIREMENTS. BOTH THE EXISTING AND THE PROPOSED DITCHES DO NOT DETAIN THE 10-YEAR FLOWS; HOWEVER THE PROPOSED DITCH DOES PROVIDE SOME IMPROVEMENT WHEN COMPARED TO THE EXISTING DITCH.
12. TAZEWELL COUNTY WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE RETROFITTED DETENTION BASIN.
13. THERE ARE NO KNOWN CRITICAL ENVIRONMENTAL AREAS LOCATED WITHIN THE PROJECT AREA. A WATERS OF THE UNITED STATES (WOTUS) DELINEATION WAS NOT PERFORMED.
14. LIMITS OF DISTURBANCE (LOD) = 0.90 AC

CONSTRUCTION NOTES:

1. ALL EXISTING UNDERGROUND UTILITIES SHALL BE PHYSICALLY LOCATED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF ANY CONSTRUCTION IN THE VICINITY OF THESE UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH UTILITY COMPANIES WITHIN THE VICINITY OF THE PROJECT AND FOR ALL PROPOSED WORK.
2. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS AND UTILITIES WHICH OCCUR AS A RESULT OF PROJECT CONSTRUCTION WITHIN OR CONTIGUOUS TO EXISTING RIGHT-OF-WAY.
3. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM WITHIN THE LIMITS OF DISTURBANCE, UNLESS OTHERWISE NOTED.
4. STREET SURFACES SHALL BE MAINTAINED IN CLEAN CONDITION, MUD AND DUST FREE AT ALL TIMES. ADEQUATE MEANS SHALL BE PROVIDED TO CLEAN TRUCKS AND OTHER EQUIPMENT LEAVING THE SITE.
5. LAND CONSERVATION NOTES:
 - A.) MEASURES TO CONTROL EROSION, SILTATION AND STORM WATER SHALL BE PROVIDED PURSUANT TO, AND IN COMPLIANCE WITH, ALL CURRENT STATE AND LOCAL REGULATIONS. HOWEVER, THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE DEVELOPER, OR HIS AGENT, OF ANY LEGAL RESPONSIBILITY WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY TAZEWELL COUNTY.
 - B.) ALL SLOPES AND DISTURBED AREAS ARE TO BE TOP-SOILED AND SEEDED WITH SEVEN (7) DAYS OF REACHING FINAL GRADE.
 - C.) ADDITIONAL DITCH/SWALE LININGS SHALL BE PROVIDED AT THE DEVELOPER'S EXPENSE IF DETERMINED NECESSARY BY THE ENGINEER OF RECORD OR DESIGNEE DURING FIELD REVIEW.
6. DURING ROUGH GRADING OF THE SITE, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE ENGINEER IF GROUND WATER SEEPAGE IS IDENTIFIED. IDENTIFICATION OF SUCH GROUND WATER MAY REQUIRE THAT ADDITIONAL DRAINAGE CONNECTIONS BE MADE.
7. PRIOR TO TREE CLEARING THE ENGINEER OF RECORD, OR DESIGNEE, AND SUPERINTENDENT SHALL REVIEW TREES FOR SELECTIVE CLEARING WITHIN THE LIMITS OF DISTURBANCE VIA A SITE WALK. IT IS THE DESIGN INTENT TO MINIMIZE CLEARING TO THE GREATEST EXTENT POSSIBLE.
8. CONSTRUCTION STAKEOUT SHALL BE PERFORMED UNDER THE SUPERVISION OF A LICENSED SURVEYOR.
9. WOODY DEBRIS SHALL NOT BE LEFT ONSITE UNLESS SHOWN ON THE PLAN OR APPROVED BY THE ENGINEER OF RECORD OR DESIGNEE.
10. THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE OWNER OF COMPLYING WITH OTHER APPLICABLE LOCAL, STATE AND FEDERAL REQUIREMENTS.
11. EMERGENCY VEHICLE ACCESS SHALL BE PROVIDED DURING ALL PHASES OF CONSTRUCTION.

NOTICE REQUIRED:

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION AND/OR BLASTING AT LEAST TWO (2) WORKING DAYS, BUT NOT MORE THAN TEN (10) WORKING DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. NAMES AND TELEPHONE NUMBERS OF THE OPERATORS OF UNDERGROUND UTILITY LINES APPEAR BELOW. THESE NUMBERS SHALL ALSO BE USED TO SERVE IN AN EMERGENCY CONDITION.

MISS UTILITY 811 OR 800-552-7001

EMERGENCY

POLICE: 911 OR (276) 964-9134
FIRE & RESCUE: 911 OR (276) 964-9134

AS-BUILT SURVEY REQUIREMENTS:

FOLLOWING THE COMPLETED GRADING OF EACH AREA (DETENTION POND/PROPOSED DITCH) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER OF RECORD OR DESIGNEE A PRELIMINARY AS-BUILT SURVEY FOR APPROVAL. THE PRELIMINARY AS-BUILT SURVEY SHALL BE COMPLETED AND SUBMITTED PRIOR TO FINAL PLANTING ACTIVITIES. THE AS-BUILT SURVEY SHALL BE CONDUCTED AND CERTIFIED BY A LICENSED PROFESSIONAL LAND SURVEYOR (PLS).

THE AS-BUILT SURVEY SHALL BE CONDUCTED WITH THE REQUIRED DETAIL NEEDED FOR THE BELOW TOLERANCES AND USING SPOT SHOTS ACROSS A GRID AT 50-FOOT INTERVAL, GRADED AND UNGRADED, AND 1-FOOT ELEVATION CONTOURS FOR ALL DISTURBED AREAS WITHIN THE LOD. SPOT ELEVATIONS SHALL BE TAKEN EVERY 50 FEET AT A MINIMUM THROUGHOUT ALL PLANTING ZONES. SPOT ELEVATIONS ARE TO BE RECORDED TO THE NEAREST TENTH OF A FOOT. THE AS-BUILT SURVEY SHALL PROVIDE THE FOLLOWING:

1. SURVEY OF DETENTION BASIN GRADING CONTOURS.
2. SURVEY OF GABION BAFFLE WALL (TOP AND TOE) ELEVATIONS.
3. AREA OF RIPRAP INLET PROTECTION.
4. SURVEY OF POND OUTLET STRUCTURE (RIM, ORIFICE INVERT, OUTLET PIPE INVERTS AND SIZES).
5. SURVEY OF OUTLET PIPE INCLUDING LOCATION INVERTS, AND SIZE.
6. SURVEY OF OUTLET DITCH GRADING CONTOURS WITH INVERT SPOT ELEVATIONS.
7. AREA OF RIPRAP OUTLET PROTECTION.

GRADING TOLERANCES:

ALL FINAL GRADING SHALL COMPLY WITH THE FOLLOWING VERTICAL AND HORIZONTAL TOLERANCES RELATIVE TO THE DESIGN ELEVATION AND ALIGNMENT:

1. GRADING AREAS:
 - A. VERTICAL TOLERANCE: +/-0.25- FEET
 - B. HORIZONTAL TOLERANCE: +/-0.2- FEET
2. STRUCTURES:
 - A. VERTICAL TOLERANCE: +/-0.1- FEET
 - B. HORIZONTAL TOLERANCE: +/-0.2- FEET

THE DELIVERABLES ARE AS FOLLOWS:

1. UPON COMPLETION OF THE PROJECT, ALL AS-BUILT SURVEYS (SEE ABOVE) AS WELL AS 1-FOOT CONTOUR INTERVAL TOPOGRAPHY FOR ALL DISTURBED AREAS WITHIN THE LOD SHALL BE INTEGRATED INTO ONE COMPLETE SURVEY AND PROVIDED TO THE ENGINEER OF RECORD OR DESIGNEE IN THE FOLLOWING MANNER:
 - A. ONE (1) SIGNED AND SEALED HARD COPY PRINT AT THE SAME SCALE AS THE SEALED PLANS.
 - B. DIGITAL FILE(S) IN AUTOCAD 2018 OR NEWER FORMAT, WITH 3D SURFACE AND POINT FILES OF THE AS-BUILT DATA.



HGS, LLC A RES COMPANY
101 S. 15TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
WWW.RES.US

RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32

TAZEWELL COUNTY

NOTES

TAZEWELL COUNTY, VA

STAMP/SEAL:



30% DESIGN REVIEW

BAILEY WILFONG 03/13/2026
Signature Date

PERMIT PLAN DESIGN REVIEW

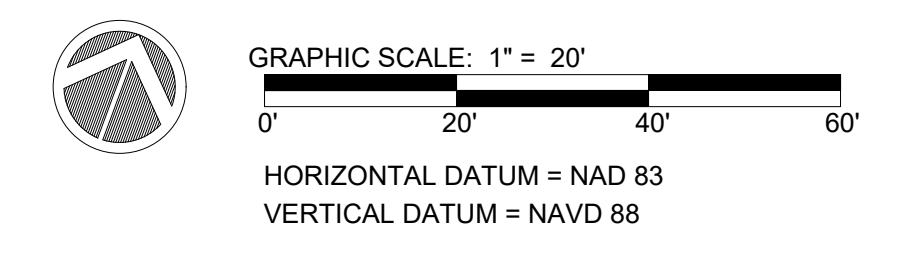
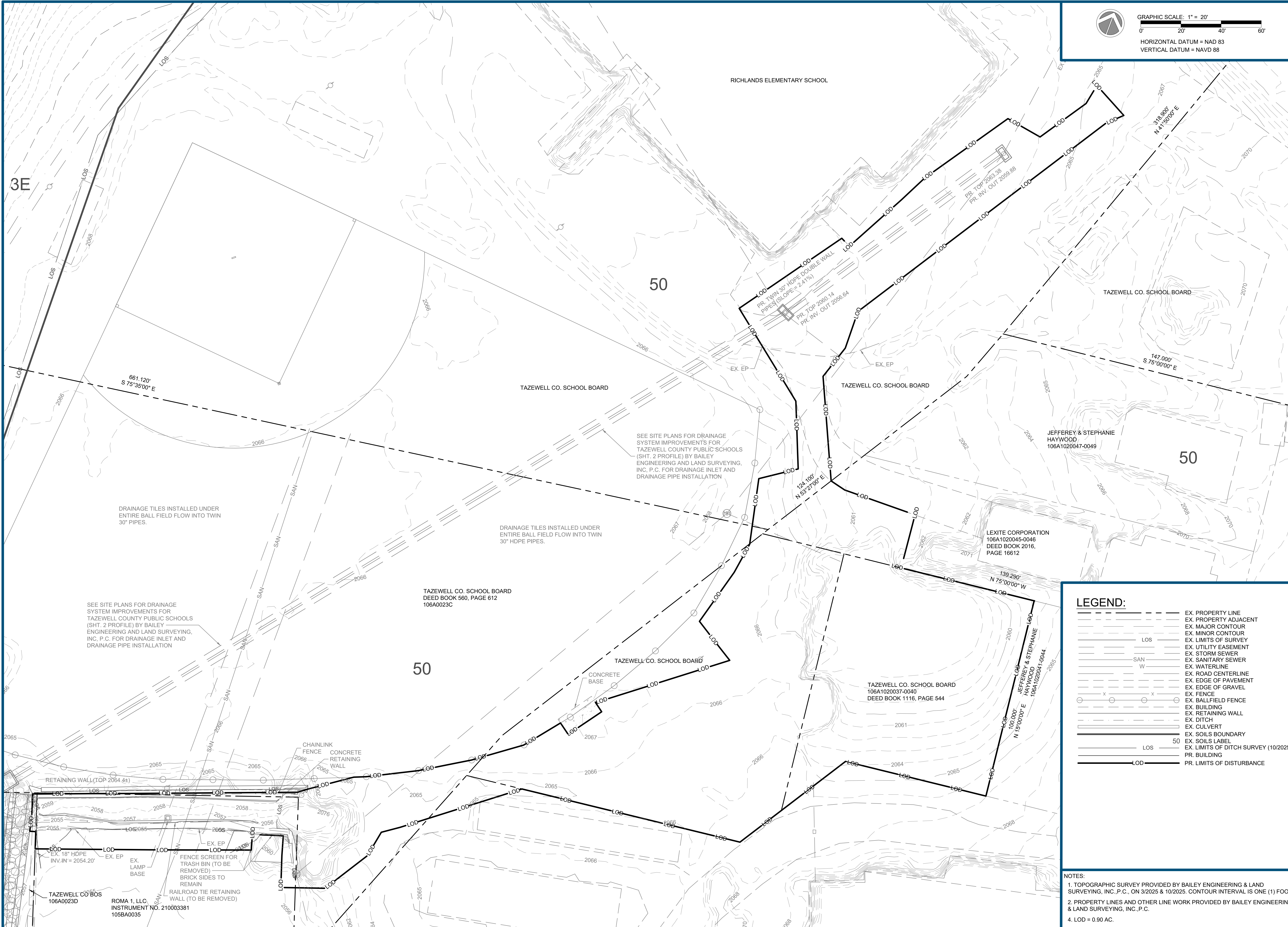
BAILEY WILFONG 05/01/2026
Signature Date

CONSTRUCTION PLAN REVIEW

Signature Date

REVISIONS:

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	



HGS, LLC, A RES COMPANY
 101 S. 15TH STREET, SUITE 101, RICHMOND, VIRGINIA 23219
 WWW.RES.US

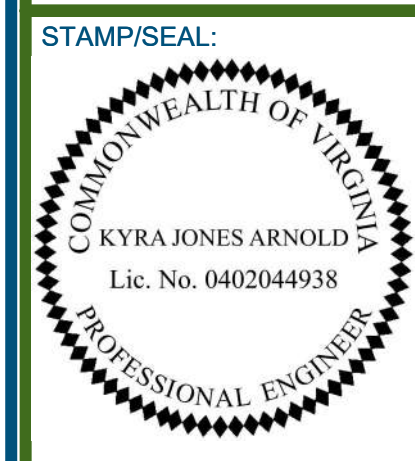
RICHLAND HIGH SCHOOL DETENTION BASIN
 FOR GRANT PROJECT CFPF 24-04-32
 TAZEWELL COUNTY

EXISTING CONDITIONS

TAZEWELL COUNTY, VA

LEGEND:

---	EX. PROPERTY LINE
---	EX. PROPERTY ADJACENT
---	EX. MAJOR CONTOUR
---	EX. MINOR CONTOUR
---	EX. LIMITS OF SURVEY
---	EX. UTILITY EASEMENT
---	EX. STORM SEWER
---	EX. SANITARY SEWER
---	EX. WATERLINE
---	EX. ROAD CENTERLINE
---	EX. EDGE OF PAVEMENT
---	EX. EDGE OF GRAVEL
---	EX. FENCE
---	EX. BALLFIELD FENCE
---	EX. BUILDING
---	EX. RETAINING WALL
---	EX. DITCH
---	EX. CULVERT
---	EX. SOILS BOUNDARY
---	EX. SOILS LABEL
---	EX. LIMITS OF DITCH SURVEY (10/2025)
---	PR. BUILDING
---	PR. LIMITS OF DISTURBANCE



30% DESIGN REVIEW

BAILEY WILFONG	03/13/2026
Signature	Date

PERMIT PLAN DESIGN REVIEW

BAILEY WILFONG	05/01/2026
Signature	Date

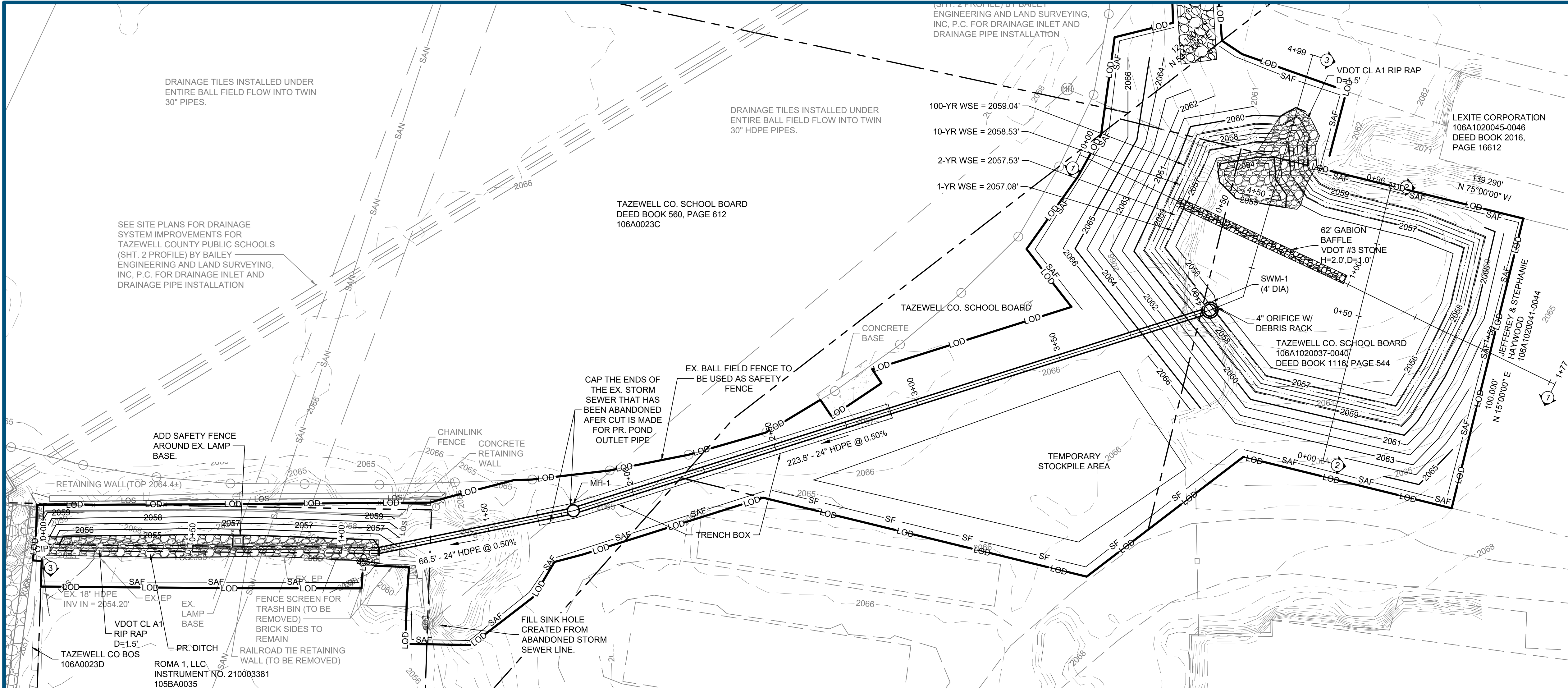
CONSTRUCTION PLAN REVIEW

Signature	Date
-----------	------

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	

NOTES:

1. TOPOGRAPHIC SURVEY PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C., ON 3/20/25 & 10/2025. CONTOUR INTERVAL IS ONE (1) FOOT.
2. PROPERTY LINES AND OTHER LINE WORK PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C.
3. LOD = 0.90 AC.



LEGEND:

- EX. PROPERTY LINE
- EX. PROPERTY ADJACENT
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. LIMITS OF SURVEY
- EX. UTILITY EASEMENT
- EX. STORM SEWER
- EX. SANITARY SEWER
- EX. WATERLINE
- EX. ROAD CENTERLINE
- EX. EDGE OF PAVEMENT
- EX. EDGE OF GRAVEL
- EX. FENCE
- EX. BALLFIELD FENCE
- EX. BUILDING
- EX. RETAINING WALL
- EX. DITCH
- EX. CULVERT
- EX. LIMITS OF DITCH SURVEY (10/2025)
- PR. BUILDING
- PR. DITCH
- PR. STORM PIPE EDGE
- PR. STORM PIPE CENTERLINE
- PR. STORM STRUCTURE
- PR. TRENCH BOX
- PR. RIP RAP
- PR. GABION BAFFLE
- PR. WATER SURFACE ELEVATION (WSE)
- PR. MAJOR CONTOUR
- PR. MINOR CONTOUR
- PR. LIMITS OF DISTURBANCE
- PR. CONSTRUCTION ENTRANCE
- PR. SILT FENCE
- PR. SAFETY FENCE (METAL & PLASTIC)
- PR. CULVERT INLET PROTECTION
- CROSS SECTION

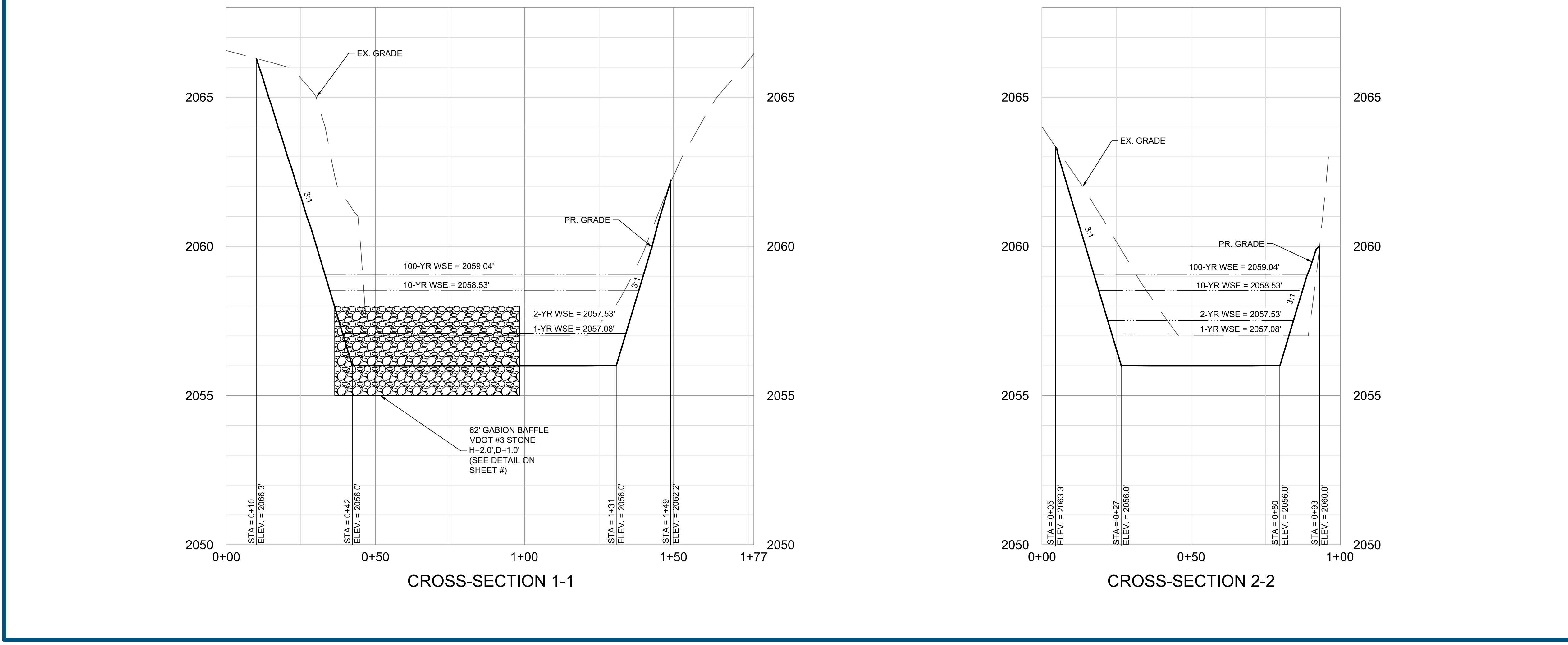
GRAPHIC SCALE: 1" = 20'
 HORIZONTAL DATUM = NAD 83
 VERTICAL DATUM = NAVD 88

HGS, LLC, A RES COMPANY
 101 S. 15TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
 WWW.RES.US

RICHLAND HIGH SCHOOL DETENTION BASIN
 FOR GRANT PROJECT CFPF 24-04-32
 TAZEWELL COUNTY
BMP RETROFIT & OUTFALL PLAN & CROSS-SECTIONS
 TAZEWELL COUNTY, VA

PROPOSED POND CROSS-SECTIONS

VERTICAL SCALE: 1" = 2'
 HORIZONTAL SCALE: 1" = 20'



LEGEND:

- EX. GRADE
- EX. WALL
- PR. GRADE
- PR. STORM PIPE EDGE
- PR. STORM STRUCTURE
- PR. RIP RAP
- PR. GABION BAFFLE
- PR. GEOTEXTILE FABRIC
- PR. WATER SURFACE ELEVATION (WSE)

STAMP/SEAL:

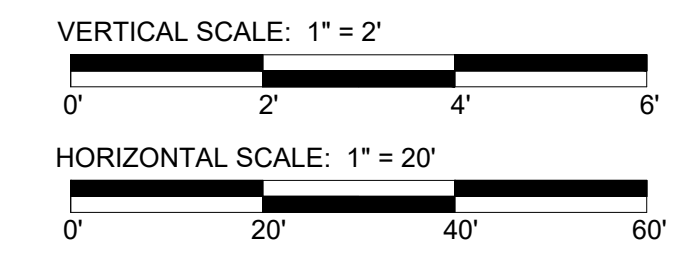
30% DESIGN REVIEW

BAILEY WILFONG	03/13/2026
Signature	Date
PERMIT PLAN DESIGN REVIEW	
BAILEY WILFONG	05/01/2026
Signature	Date
CONSTRUCTION PLAN REVIEW	
Signature	Date
REVISIONS:	

NOTES:

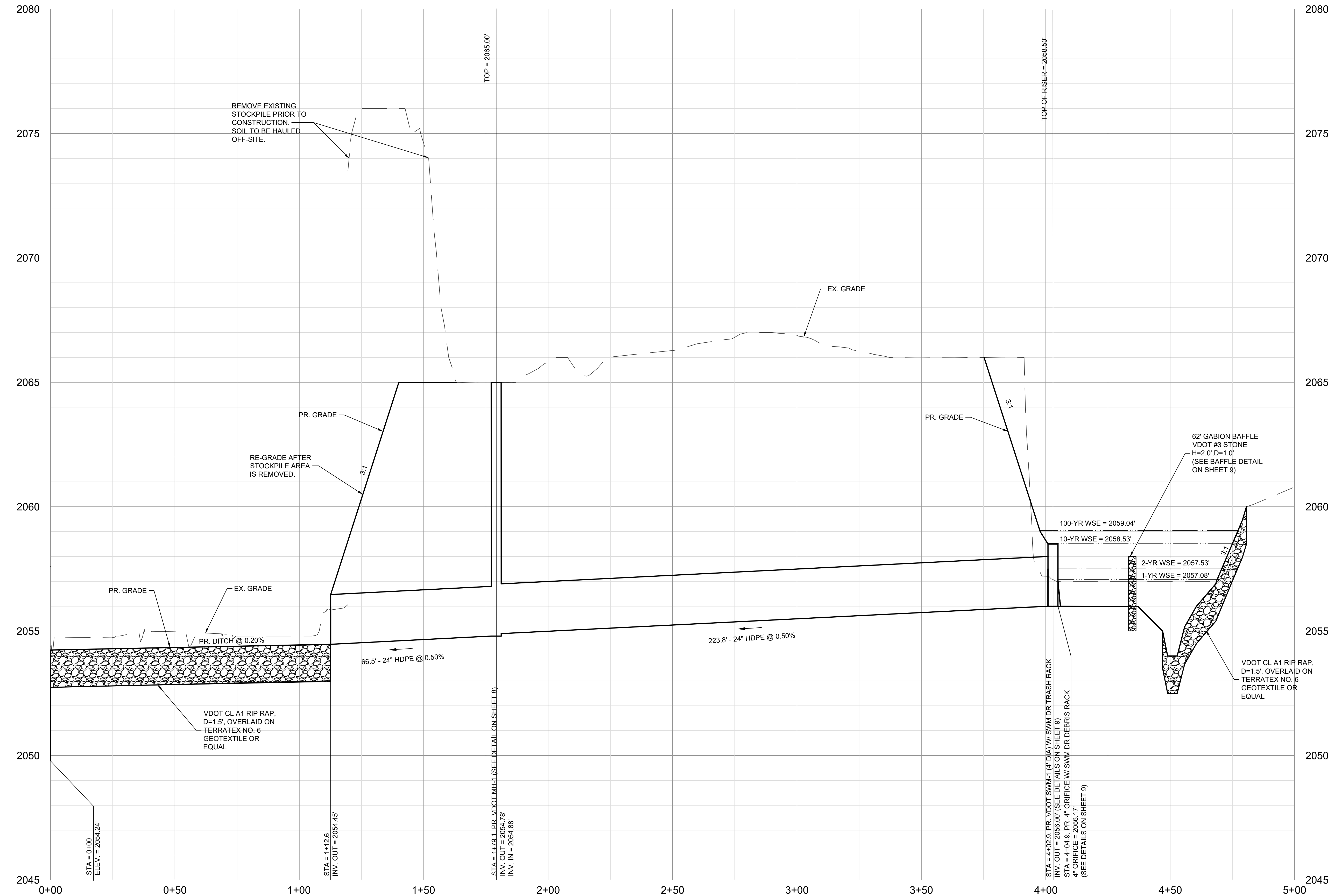
- TOPOGRAPHIC SURVEY PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C., ON 3/2025 & 10/2025. CONTOUR INTERVAL IS ONE (1) FOOT.
- PROPERTY LINES AND OTHER LINE WORK PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C.
- TRENCH BOX TO BE USED, WHERE SHOWN, DUE TO SITE CONSTRAINTS. CONTRACTOR MUST FOLLOW OSHA STANDARDS.
- LOD = 0.90 AC.

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	5 OF 17



LEGEND:

	EX. GRADE
	EX. WALL
	PR. GRADE
	PR. STORM PIPE EDGE
	PR. STORM STRUCTURE
	PR. RIP RAP
	PR. GABION BAFFLE
	PR. GEOTEXTILE FABRIC
	PR. WATER SURFACE ELEVATION (WSE)



POND OUTFALL
PROFILE 3-3

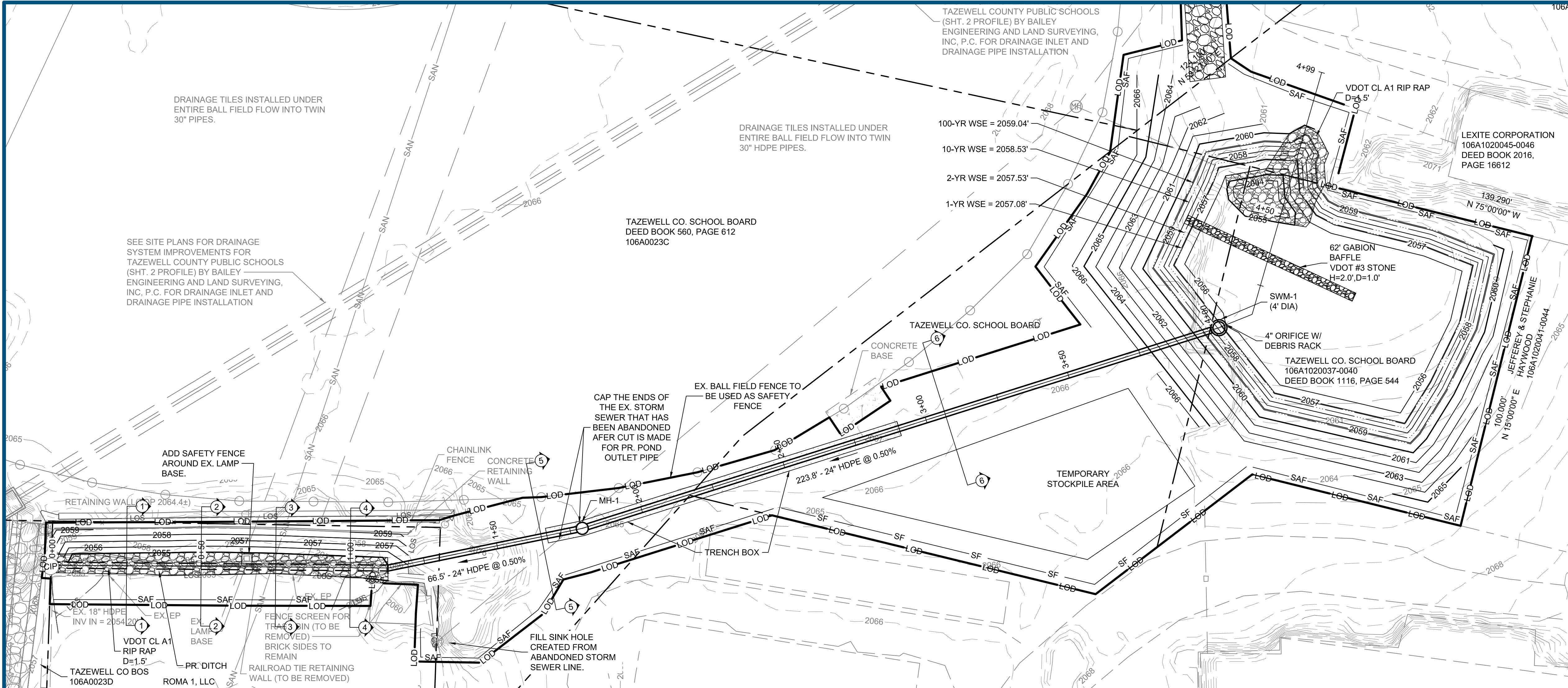


HGS, LLC, A RES COMPANY
101 S. 15TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
WWW.RES.US

RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32
TAZEWELL COUNTY
**PR. BMP RETROFIT & OUTFALL
PROFILE**
TAZEWELL COUNTY, VA



30% DESIGN REVIEW	
Signature	Date
Bailey Wilfong	03/13/2026
PERMIT PLAN DESIGN REVIEW	
Signature	Date
Bailey Wilfong	05/01/2026
CONSTRUCTION PLAN REVIEW	
Signature	Date
REVISIONS:	
PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO.:	6 OF 17



GRAPHIC SCALE: 1" = 20'
 0' 20' 40' 60'

HORIZONTAL DATUM = NAD 83
 VERTICAL DATUM = NAVD 88

LEGEND:

- EX. PROPERTY LINE
- EX. PROPERTY ADJACENT
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. LIMITS OF SURVEY
- EX. UTILITY EASEMENT
- EX. STORM SEWER
- EX. SANITARY SEWER
- EX. WATERLINE
- EX. ROAD CENTERLINE
- EX. EDGE OF PAVEMENT
- EX. EDGE OF GRAVEL
- EX. FENCE
- EX. BALLFIELD FENCE
- EX. BUILDING
- EX. RETAINING WALL
- EX. DITCH
- EX. CULVERT
- EX. LIMITS OF DITCH SURVEY (10/2025)
- PR. BUILDING
- PR. DITCH
- PR. STORM PIPE EDGE
- PR. STORM PIPE CENTERLINE
- PR. STORM STRUCTURE
- PR. TRENCH BOX
- PR. RIP RAP
- PR. GABION BAFFLE
- PR. WATER SURFACE ELEVATION (WSE)
- PR. MAJOR CONTOUR
- PR. MINOR CONTOUR
- PR. LIMITS OF DISTURBANCE
- PR. CONSTRUCTION ENTRANCE
- PR. SILT FENCE
- PR. SAFETY FENCE (METAL & PLASTIC)
- PR. CULVERT INLET PROTECTION
- CROSS SECTION

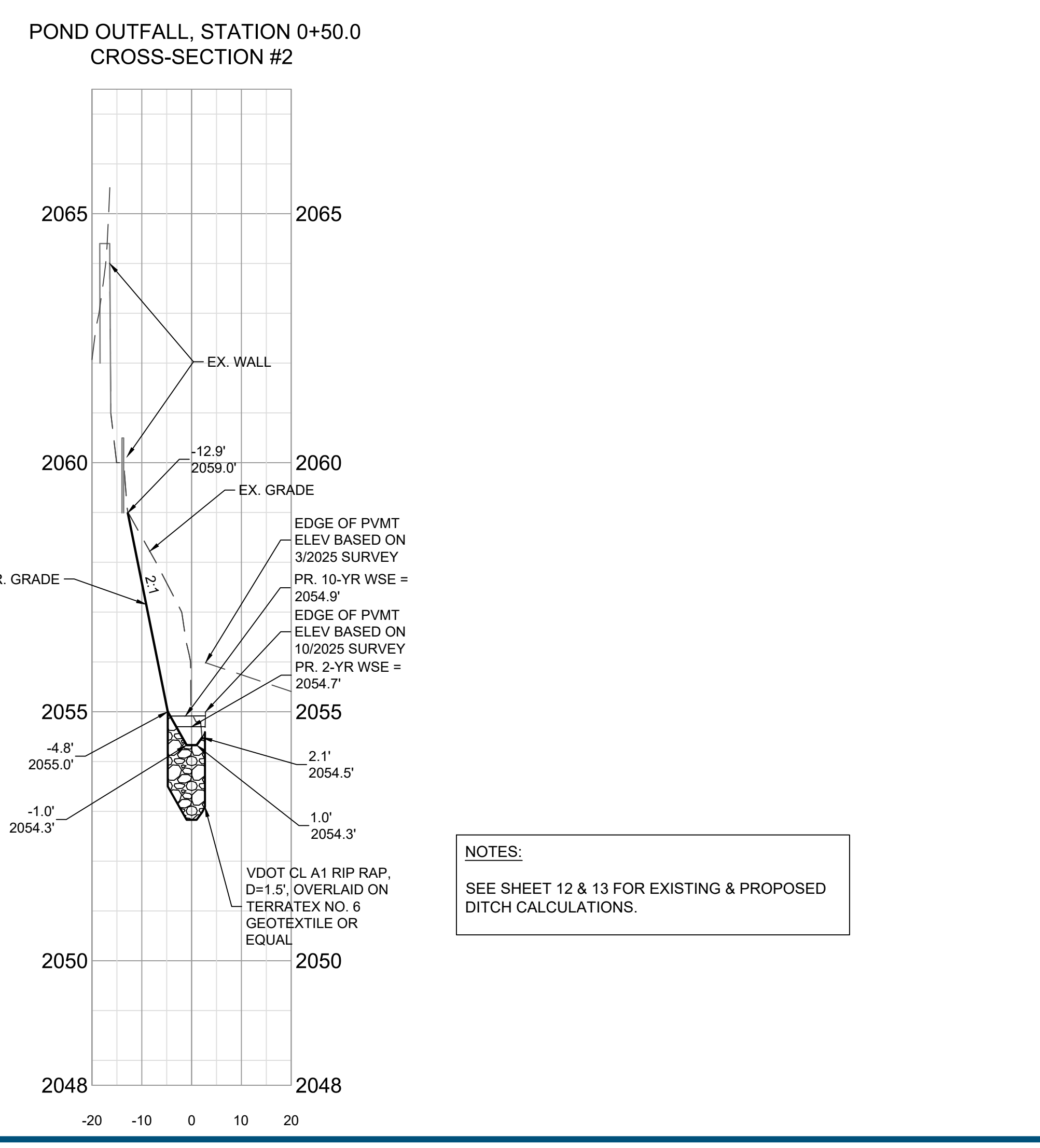
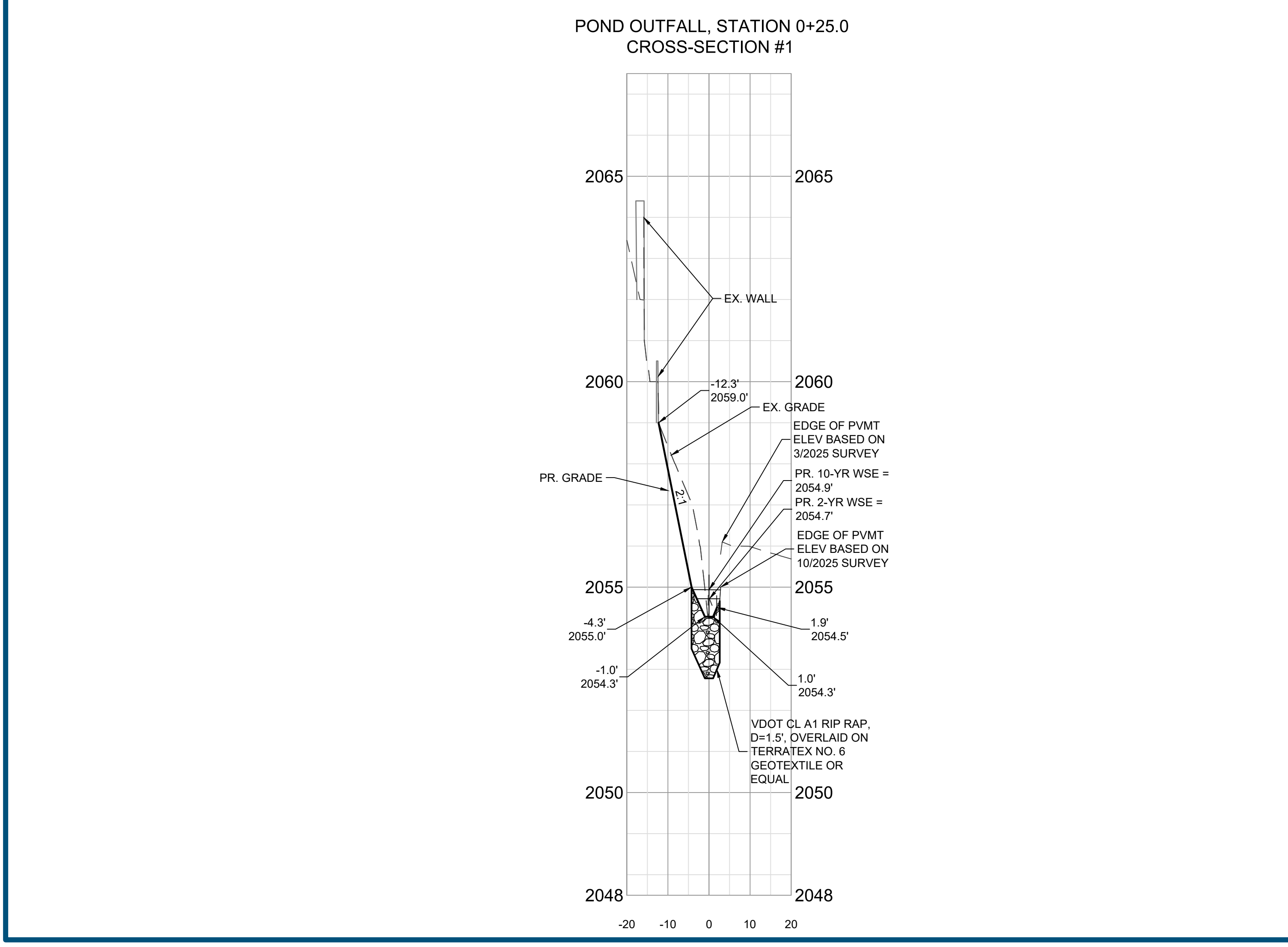
HGS, LLC, A RES COMPANY
 101 S. 15TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
 WWW.RES.US

**RICHLAND HIGH SCHOOL DETENTION BASIN
 FOR GRANT PROJECT CFPF 24-04-32**

TAZEWELL COUNTY

**PR. DITCH OUTFALL
 CROSS-SECTIONS**

TAZEWELL COUNTY, VA



VERTICAL SCALE: 1" = 2'
 0' 2' 4' 6'

HORIZONTAL SCALE: 1" = 20'
 0' 20' 40' 60'

LEGEND:

- EX. GRADE
- EX. WALL
- PR. GRADE
- PR. STORM PIPE EDGE
- PR. RIP RAP
- PR. GEOTEXTILE FABRIC
- PR. BACKFILL
- PR. BACKFILL (CL-1 #25 OR #26)
- PR. PIPE BEDDING (NO. 57 AGGR.)
- PR. WATER SURFACE ELEVATION (WSE)

NOTES:
 SEE SHEET 12 & 13 FOR EXISTING & PROPOSED DITCH CALCULATIONS.

NOTES:
 1. TOPOGRAPHIC SURVEY PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C., ON 3/2025 & 10/2025. CONTOUR INTERVAL IS ONE (1) FOOT.
 2. PROPERTY LINES AND OTHER LINE WORK PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C.
 3. TRENCH BOX TO BE USED, WHERE SHOWN, DUE TO SITE CONSTRAINTS. CONTRACTOR MUST FOLLOW OSHA STANDARDS.
 4. LOD = 0.90 AC.

STAMP/SEAL:

30% DESIGN REVIEW

BAILEY WILFONG	03/13/2026
Signature	Date

PERMIT PLAN DESIGN REVIEW

BAILEY WILFONG	05/01/2026
Signature	Date

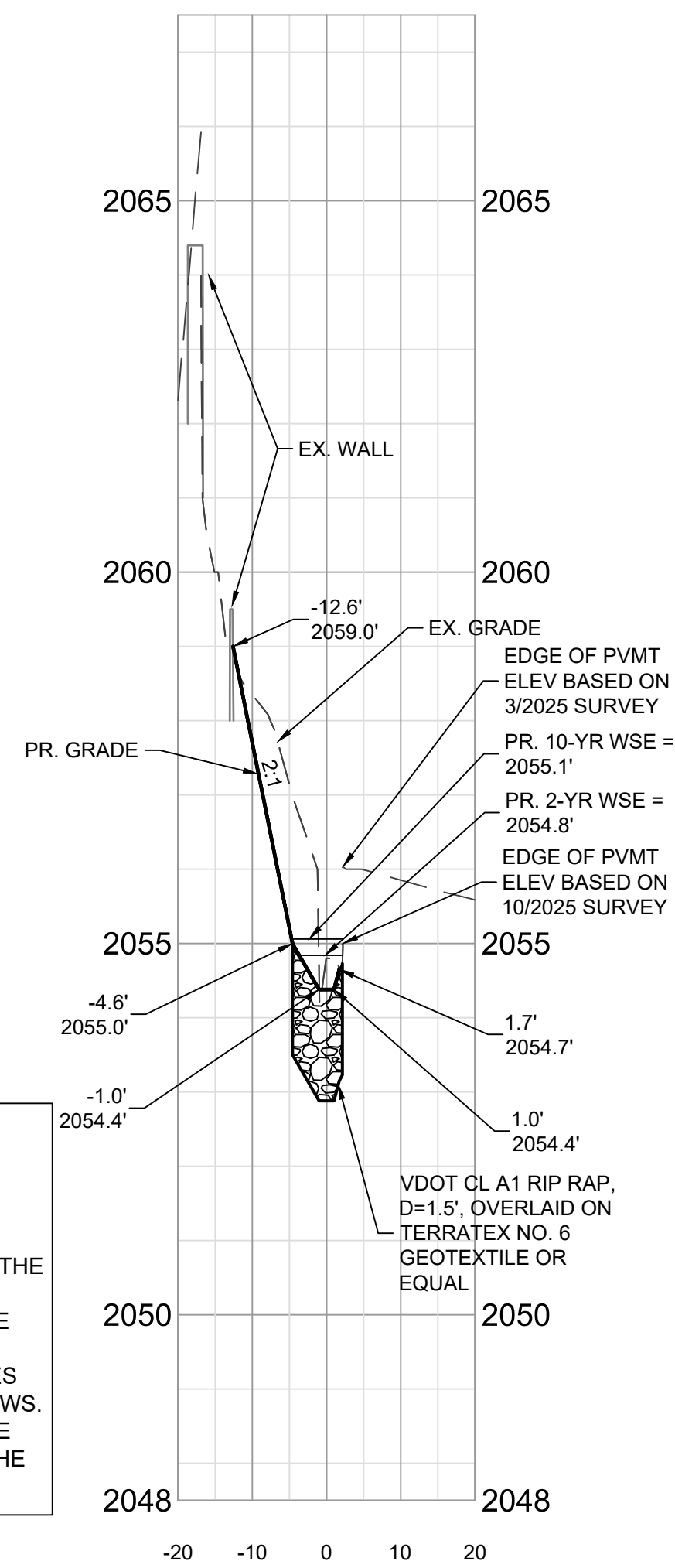
CONSTRUCTION PLAN REVIEW

---	---
Signature	Date

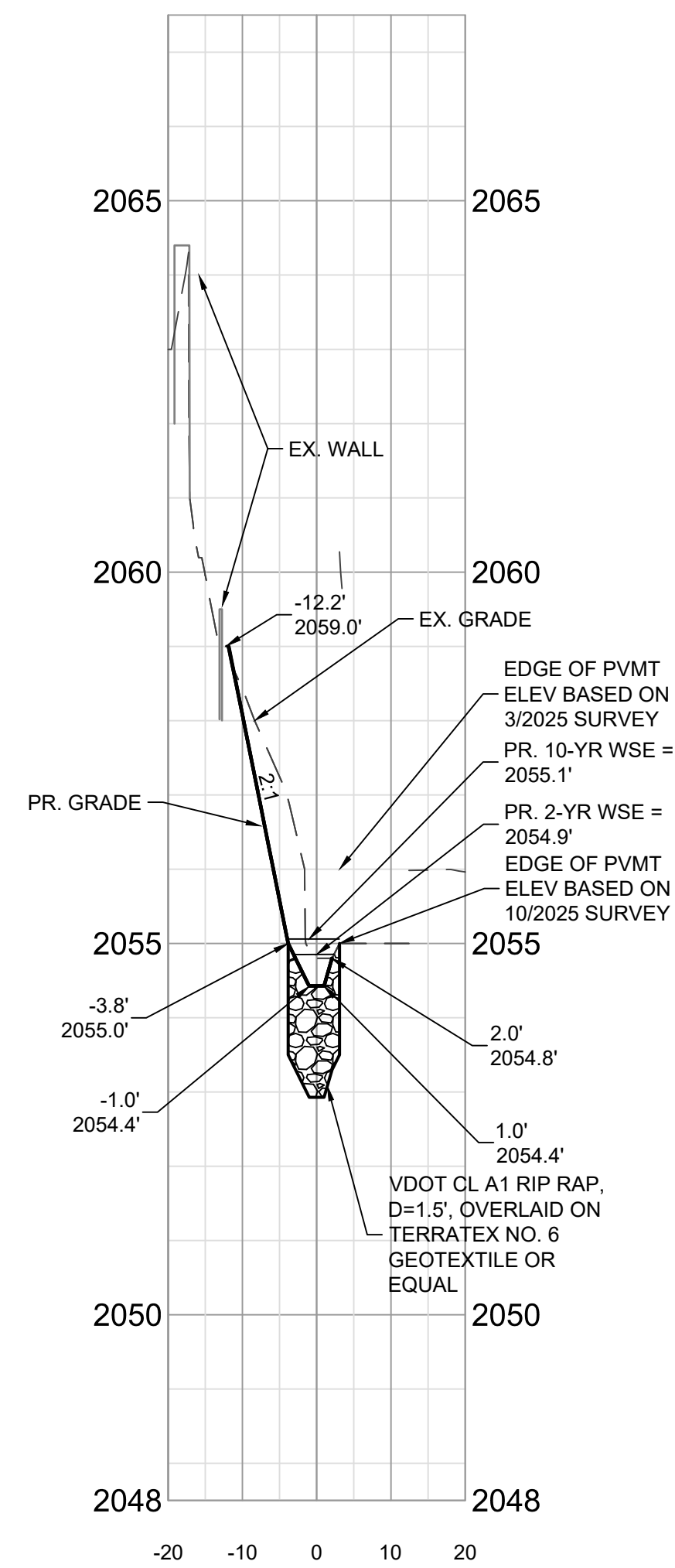
REVISIONS:

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	7 OF 17

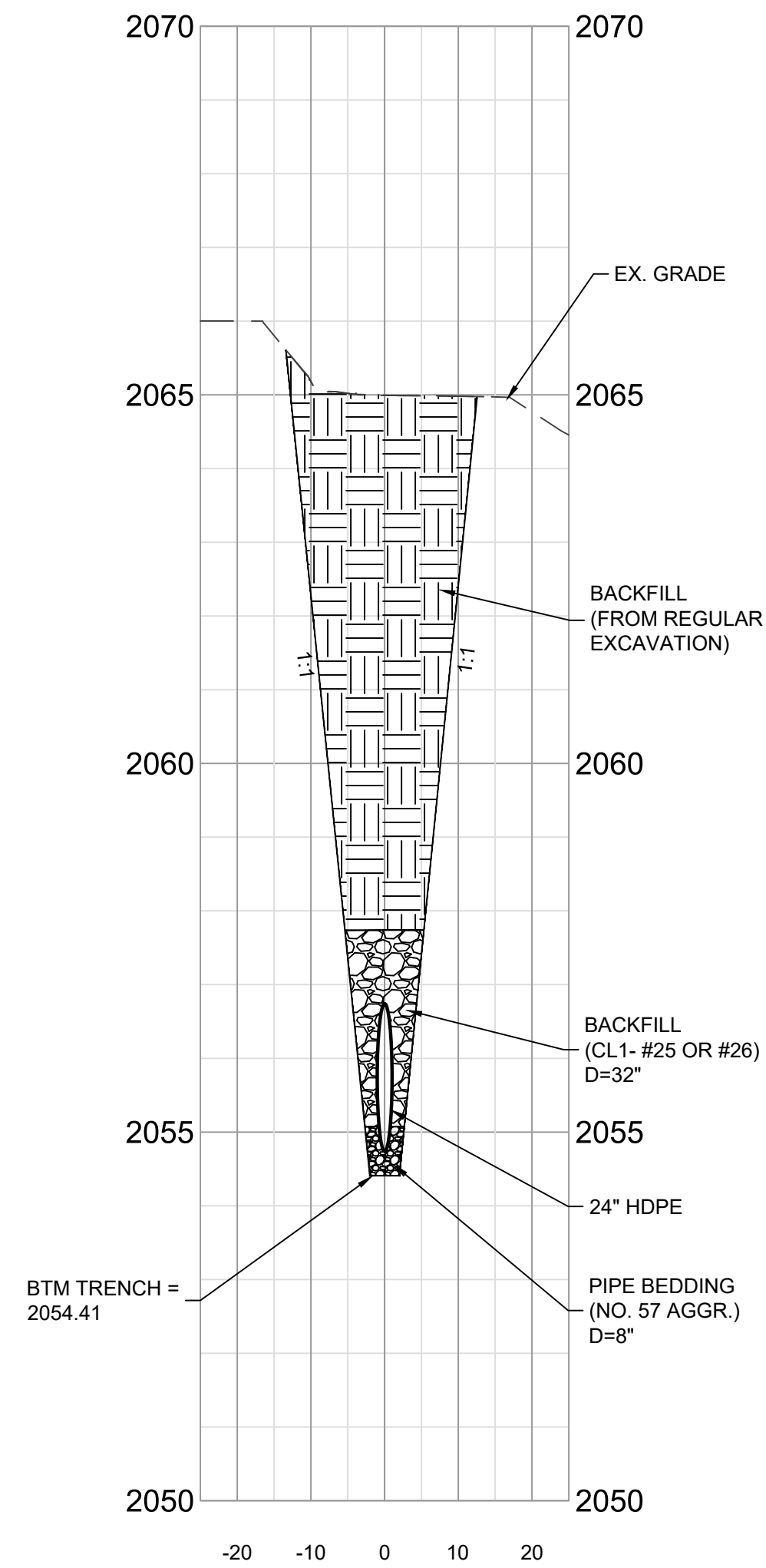
POND OUTFALL, STATION 0+75.0
CROSS-SECTION #3



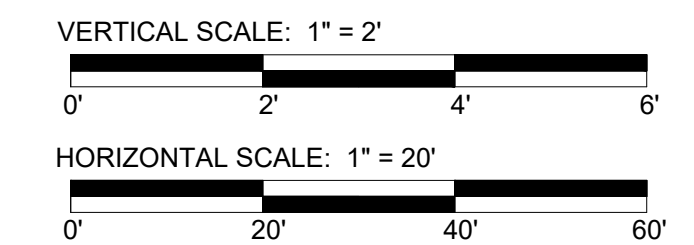
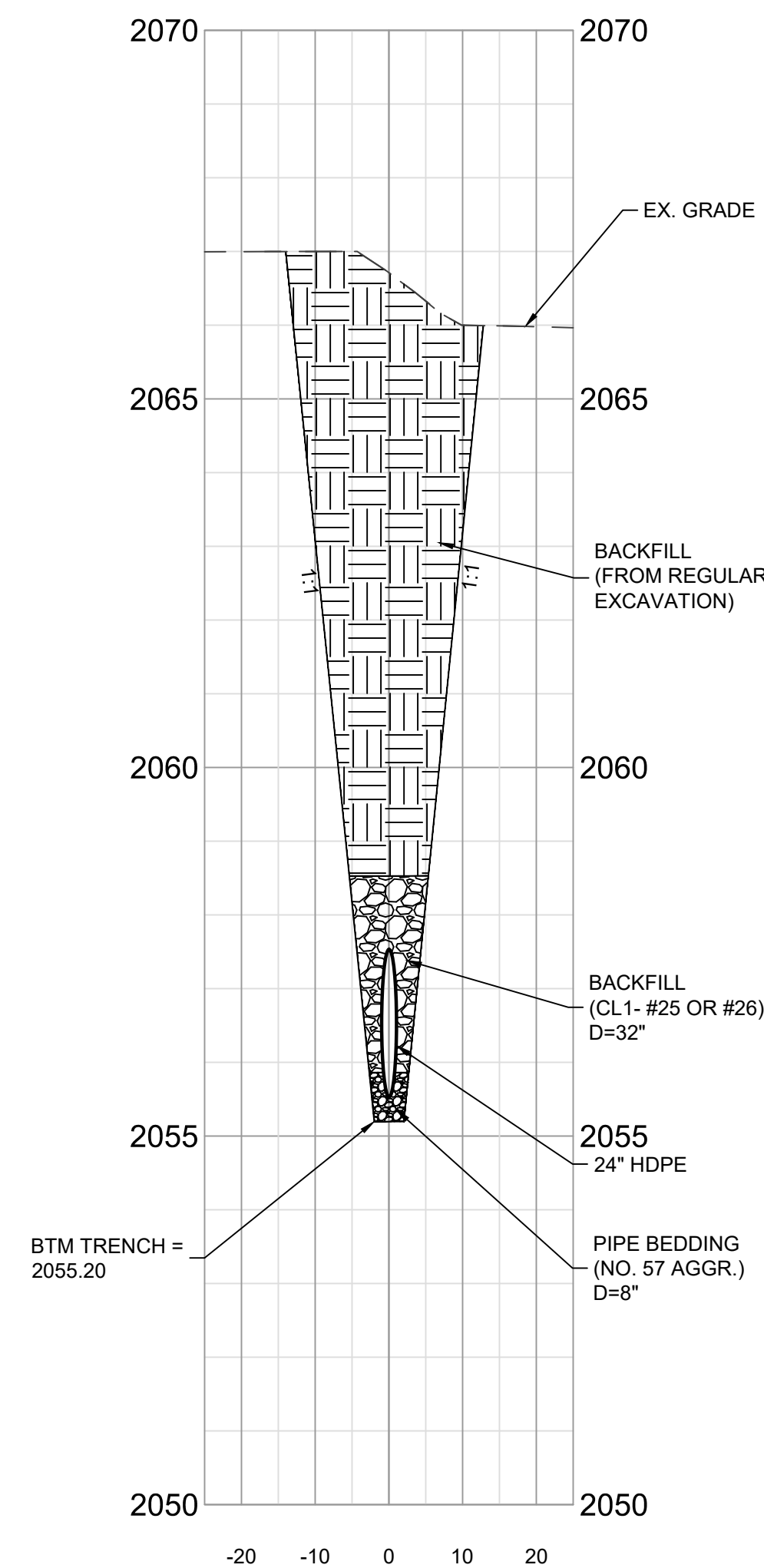
POND OUTFALL, STATION 1+00.0
CROSS-SECTION #4



POND OUTFALL, STATION 1+65.1
CROSS-SECTION #5



POND OUTFALL, STATION 3+06.7
CROSS-SECTION #6



LEGEND:

- EX. GRADE
- EX. WALL
- PR. GRADE
- PR. STORM PIPE EDGE
- PR. RIP RAP
- PR. GEOTEXTILE FABRIC
- PR. BACKFILL
- PR. BACKFILL (CL-1-#25 OR #26)
- PR. PIPE BEDDING (NO. 57 AGGR.)
- PR. WATER SURFACE ELEVATION (WSE)

NOTES:
SEE SHEET 12 & 13 FOR EXISTING & PROPOSED DITCH CALCULATIONS.
EXISTING DITCH SURVEY (10/2025) HAS THE EDGE OF PAVEMENT AT 2055'. THE PROPOSED 10-YR FLOWS OVERTOP THE PAVEMENT AT CROSS-SECTIONS 3-4. PROPOSED DITCH IS INADEQUATE, DOES NOT DETAIN THE PROPOSED 10-YR FLOWS. PROPOSED DITCH DOES PROVIDE SOME IMPROVEMENT WHEN COMPARED TO THE EXISTING DITCH.

RICHLAND HIGH SCHOOL DETENTION BASIN
 FOR GRANT PROJECT CFPF 24-04-32
 TAZEWELL COUNTY
**PR. DITCH OUTFALL & STORM
 CROSS-SECTIONS & DETAILS**
 TAZEWELL COUNTY, VA

STAMP/SEAL:

30% DESIGN REVIEW

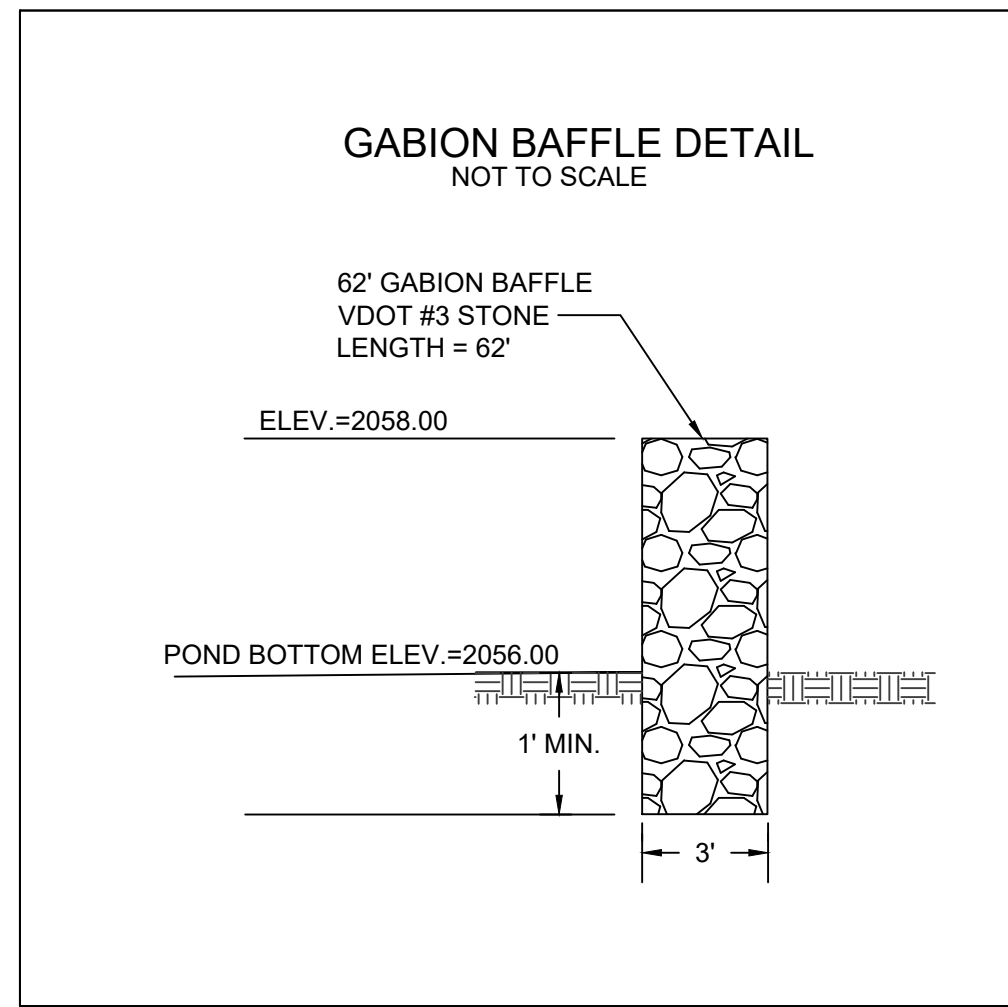
BAILEY WILFONG	03/13/2026
Signature	Date
PERMIT PLAN DESIGN REVIEW	
BAILEY WILFONG	05/01/2026
Signature	Date
CONSTRUCTION PLAN REVIEW	
Signature	Date
REVISIONS:	
PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	8 OF 17

2016 ROAD & BRIDGE STANDARDS

DEPTH FEET	BRICK		CONCRETE	
	THOUSANDS	CU. YARDS	THOUSANDS	CU. YARDS
4	0.5	0.785	1.437	
5	0.7	0.785	1.699	
6	0.9	0.785	1.961	
7	1.0	0.785	2.223	
8	1.2	0.785	2.485	
9	1.4	0.785	2.747	
10	1.6	0.785	3.009	
11	1.9	0.970	3.455	
12	2.2	0.970	3.817	
13	2.5	0.970	4.179	
14	2.8	0.970	4.541	
15	3.1	0.970	4.903	
16	3.4	0.970	5.265	
17	4.0	1.173	6.032	
INCREMENT	0.45	-	0.582	

MANHOLE FOR 12" - 48" PIPE CULVERTS

2016 ROAD & BRIDGE STANDARDS



2016 ROAD & BRIDGE STANDARDS

SWM-1

NOTES:

- COST OF TRASH RACK AND DEBRIS RACK ARE TO BE INCLUDED IN THE PRICE BID FOR THE STORMWATER MANAGEMENT STRUCTURE.
- STRUCTURE MAY BE PRECAST OR CAST IN PLACE. SEE SHEET 1 OF 3 FOR DETAILS ON CAST IN PLACE STRUCTURE.
- WEEP HOLES SHALL NOT BE PROVIDED. ANY LIFT HOLES SHALL BE PLUGGED.
- STEPS ARE TO BE PROVIDED WHEN HEIGHT OF STRUCTURE IS 4'-0" OR GREATER ABOVE INVERT OF OUTLET PIPE. FOR STEP DETAILS SEE STANDARD S1-1.
- SEE STANDARD SWM-DR FOR DETAILS ON PLATE, DEBRIS RACK AND TRASH RACK.
- MARK HEIGHT OF STRUCTURE, IN BLACK, WITH 4" HIGH NUMERALS AND 1" WIDE HORIZONTAL STRIPES AT 1' INTERVALS FROM INVERT OF WATER QUALITY ORIFICE (ALL VISIBLE SIDES).
- THE PERMANENT STORMWATER MANAGEMENT DRAINAGE STRUCTURE, STANDARD SWM-1 MAY BE MODIFIED WHERE THE STORMWATER MANAGEMENT BASIN IS TO BE USED AS A TEMPORARY SEDIMENT BASIN DURING PROJECT CONSTRUCTION. SEE STANDARD SWM-DR, SHEET 1 OF 5 FOR TEMPORARY MODIFICATION DETAILS.
- THE SIZE OF THE WATER QUALITY ORIFICE SHALL BE SPECIFIED ON THE PLANS. ADDITIONAL OPENINGS IN THE STORMWATER MANAGEMENT DRAINAGE STRUCTURE TO BE PROVIDED WHEN SPECIFIED ON THE PLANS.

PRECAST STORMWATER MANAGEMENT DRAINAGE STRUCTURE

VDOT		ROAD AND BRIDGE STANDARDS		REVISION DATE	
SHEET	2 OF 2	REVISION	DATE		
114.02		08/10			

VIRGINIA DEPARTMENT OF TRANSPORTATION

2016 ROAD & BRIDGE STANDARDS

SPECIFICATION REFERENCE: 105, 302

2016 ROAD & BRIDGE STANDARDS

SWM-DR

VDOT		ROAD AND BRIDGE STANDARDS		REVISION DATE	
SHEET	4 OF 5	REVISION	DATE		
114.07		07/16			

VIRGINIA DEPARTMENT OF TRANSPORTATION

2016 ROAD & BRIDGE STANDARDS

SPECIFICATION REFERENCE: 302

2016 ROAD & BRIDGE STANDARDS

SWM-DR

STORMWATER MANAGEMENT (SWM) DETAILS
DEBRIS RACK, METAL PLATE, WATER QUALITY ORIFICE, CONCRETE CRADLE
(FOR SWM DRAINAGE STRUCTURES, SWM RISER PIPES AND SWM DAMS)

VDOT		ROAD AND BRIDGE STANDARDS		REVISION DATE	
SHEET	2 OF 5	REVISION	DATE		
114.05					

VIRGINIA DEPARTMENT OF TRANSPORTATION

2016 ROAD & BRIDGE STANDARDS

SPECIFICATION REFERENCE: 302

2016 ROAD & BRIDGE STANDARDS

SWM-DR

STORMWATER MANAGEMENT (SWM) DETAILS
DEBRIS RACK, METAL PLATE, WATER QUALITY ORIFICE, CONCRETE CRADLE
(FOR SWM DRAINAGE STRUCTURES, SWM RISER PIPES AND SWM DAMS)

VDOT		ROAD AND BRIDGE STANDARDS		REVISION DATE	
SHEET	3 OF 5	REVISION	DATE		
114.06					

VIRGINIA DEPARTMENT OF TRANSPORTATION

2016 ROAD & BRIDGE STANDARDS

SPECIFICATION REFERENCE: 302

res

HGS, LLC, A RES COMPANY
101 S. 16TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
WWW.RES.US

RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32

TASZEWELL COUNTY
BMP RETROFIT DETAILS
TASZEWELL COUNTY, VA

STAMP/SEAL:
COMMONWEALTH OF VIRGINIA
KYRA JONES ARNOLD
Lic. No. 0402044938
PROFESSIONAL ENGINEER

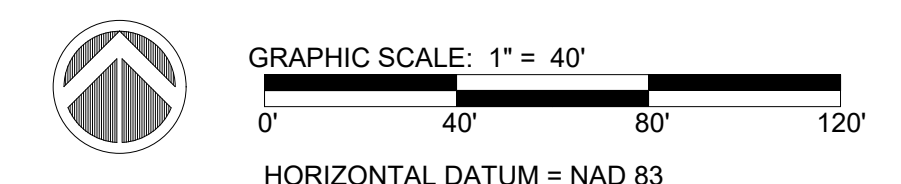
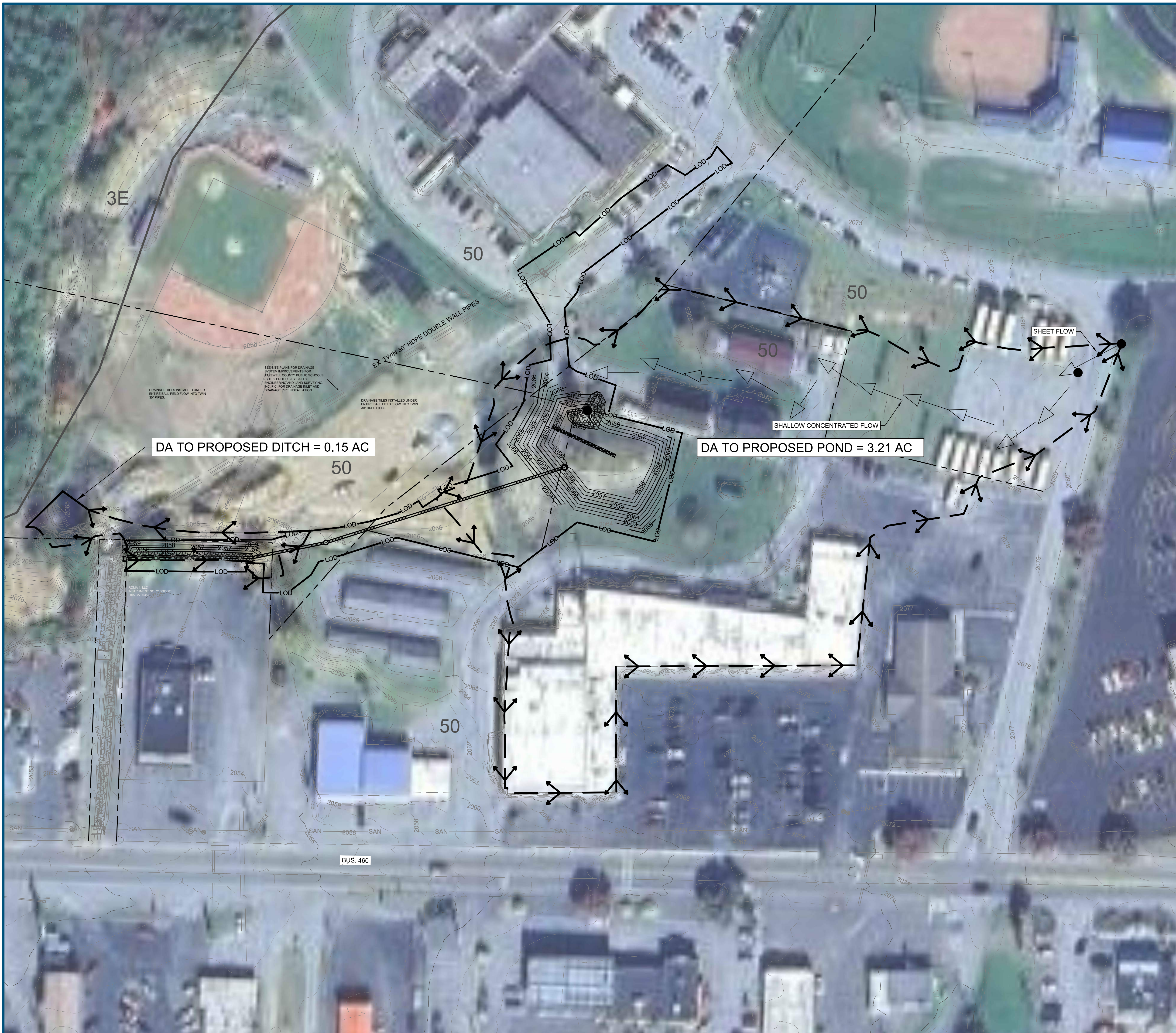
30% DESIGN REVIEW
BAILEY WILFONG 03/13/2026
Signature Date

PERMIT PLAN DESIGN REVIEW
BAILEY WILFONG 05/01/2026
Signature Date

CONSTRUCTION PLAN REVIEW
Signature Date

REVISIONS:
Signature Date

PROJECT MANAGER: CA
DESIGNED: KA
DRAWN: KA
JOB NUMBER: 111834
DESIGN TYPE: BMP
DATE: 6/22/2026
SHEET NO: 9 OF 17



LEGEND:

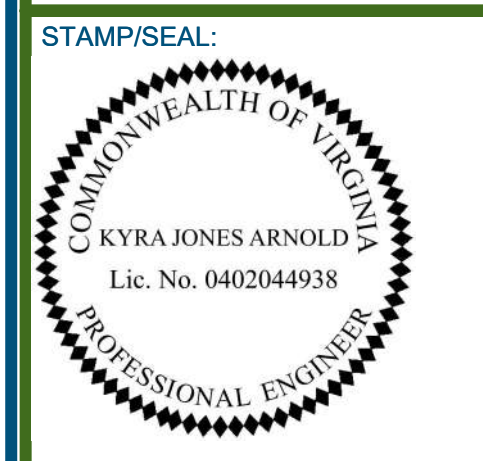
---	EX. PROPERTY LINE
---	EX. PROPERTY ADJACENT
---	EX. MAJOR CONTOUR
---	EX. MINOR CONTOUR
---	EX. LIMITS OF SURVEY
---	EX. UTILITY EASEMENT
---	EX. STORM SEWER
---	EX. SANITARY SEWER
---	EX. WATERLINE
---	EX. ROAD CENTERLINE
---	EX. EDGE OF PAVEMENT
---	EX. EDGE OF GRAVEL
---	EX. FENCE
---	EX. BALLFIELD FENCE
---	EX. BUILDING
---	EX. RETAINING WALL
---	EX. DITCH
---	EX. CULVERT
---	EX. SOILS BOUNDARY
---	EX. SOILS LABEL
---	PR. BUILDING
---	PR. DITCH
---	PR. STORM PIPE EDGE
---	PR. STORM PIPE CENTERLINE
---	PR. STORM STRUCTURE
---	PR. RIP RAP
---	PR. GABION BAFFLE
---	PR. MAJOR CONTOUR
---	PR. MINOR CONTOUR
---	PR. LIMITS OF DISTURBANCE
---	PR. DRAINAGE DIVIDE
---	PR. FLOW PATH

NOTE:
 DRAINAGE DIVIDES BASED ON SURVEY PROVIDED BY BAILEY ENGINEERING ON 3/2025 & 10/2025. DRAINAGE DIVIDES ALSO BASED ON CURRENT SITE CONDITIONS THAT MAY NOT BE REFLECTED IN THE PROVIDED SURVEY.



HGS, LLC, A RES COMPANY
 101 S. 15TH STREET, SUITE 101, RICHMOND, VIRGINIA 23219
 WWW.RES.US

**RICHLAND HIGH SCHOOL DETENTION BASIN
 FOR GRANT PROJECT CFPF 24-04-32
 TAZEWELL COUNTY
 DRAINAGE AREAS
 TAZEWELL COUNTY, VA**



30% DESIGN REVIEW	
BAILEY WILFONG	03/13/2026
Signature	Date
PERMIT PLAN DESIGN REVIEW	
BAILEY WILFONG	05/01/2026
Signature	Date
CONSTRUCTION PLAN REVIEW	
---	---
Signature	Date
REVISIONS:	

- NOTES:**
1. TOPOGRAPHIC SURVEY PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C., ON 3/2025 & 10/2025. CONTOUR INTERVAL IS ONE (1) FOOT.
 2. PROPERTY LINES AND OTHER LINE WORK PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C.
 3. TRENCH BOX TO BE USED, WHERE SHOWN, DUE TO SITE CONSTRAINTS. CONTRACTOR MUST FOLLOW OSHA STANDARDS.
 4. LOD = 0.90 AC.

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	10 OF 17

FLOWMASTER EXISTING DITCH CALCULATIONS

Existing Ditch Cross-Section 1: 2-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+01	2,055.00	
0+02	2,054.27	
0+02	2,054.80	
0+04	2,054.31	
0+04	2,054.82	
0+05	2,054.57	
0+05	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+05, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	6.5 in	
Roughness Coefficient	0.035	
Elevation	2,054.81 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.27 to 2,056.00 ft	
Flow Area	0.8 ft ²	
Wetted Perimeter	4.9 ft	
Hydraulic Radius	2.0 in	
Top Width	3.61 ft	
Normal Depth	6.5 in	
Critical Depth	4.3 in	
Critical Slope	0.052 ft/ft	
Velocity	0.84 ft/s	
Velocity Head	0.01 ft	

Existing Ditch Cross-Section 1: 10-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+01	2,055.00	
0+02	2,054.27	
0+02	2,054.80	
0+04	2,054.31	
0+04	2,054.82	
0+05	2,054.57	
0+05	2,055.00	
Roughness Segment Definitions		
Start Station & Elevation	End Station & Elevation	Roughness Coefficient
(0+00, 2,056.00)	(0+05, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	8.4 in	
Roughness Coefficient	0.035	
Elevation	2,054.97 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.27 to 2,056.00 ft	
Flow Area	1.4 ft ²	
Wetted Perimeter	5.4 ft	
Hydraulic Radius	3.2 in	
Top Width	3.90 ft	
Normal Depth	8.4 in	
Critical Depth	5.9 in	
Critical Slope	0.046 ft/ft	
Velocity	1.14 ft/s	
Velocity Head	0.02 ft	

Existing Ditch Cross-Section 2: 2-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+00	2,055.00	
0+01	2,054.80	
0+02	2,054.80	
0+02	2,054.49	
0+03	2,054.59	
0+03	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+03, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	6.2 in	
Roughness Coefficient	0.035	
Elevation	2,055.01 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.49 to 2,056.00 ft	
Flow Area	0.7 ft ²	
Wetted Perimeter	3.4 ft	
Hydraulic Radius	2.5 in	
Top Width	2.93 ft	
Normal Depth	6.2 in	
Critical Depth	4.4 in	
Critical Slope	0.041 ft/ft	
Velocity	0.97 ft/s	
Velocity Head	0.01 ft	
Specific Energy	0.53 ft	

Existing Ditch Cross-Section 2: 10-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+00	2,055.00	
0+01	2,054.80	
0+02	2,054.80	
0+02	2,054.49	
0+03	2,054.59	
0+03	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+03, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	8.4 in	
Roughness Coefficient	0.035	
Elevation	2,054.99 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.49 to 2,056.00 ft	
Flow Area	1.2 ft ²	
Wetted Perimeter	3.8 ft	
Hydraulic Radius	3.9 in	
Top Width	2.94 ft	
Normal Depth	8.4 in	
Critical Depth	5.8 in	
Critical Slope	0.036 ft/ft	
Velocity	1.31 ft/s	
Velocity Head	0.03 ft	
Specific Energy	0.73 ft	

Existing Ditch Cross-Section 3: 2-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+00	2,054.17	
0+01	2,054.80	
0+03	2,054.83	
0+03	2,054.65	
0+03	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+03, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	9.3 in	
Roughness Coefficient	0.035	
Elevation	2,054.95 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.17 to 2,056.00 ft	
Flow Area	0.8 ft ²	
Wetted Perimeter	4.2 ft	
Hydraulic Radius	2.2 in	
Top Width	3.20 ft	
Normal Depth	9.3 in	
Critical Depth	6.8 in	
Critical Slope	0.056 ft/ft	
Velocity	0.89 ft/s	
Velocity Head	0.01 ft	
Specific Energy	0.79 ft	
Froude Number	0.319	

Existing Ditch Cross-Section 3: 10-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+00	2,054.17	
0+01	2,054.80	
0+03	2,054.83	
0+03	2,054.65	
0+03	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+03, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	11.4 in	
Roughness Coefficient	0.035	
Elevation	2,055.12 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.17 to 2,056.00 ft	
Flow Area	1.3 ft ²	
Wetted Perimeter	4.6 ft	
Hydraulic Radius	3.5 in	
Top Width	3.29 ft	
Normal Depth	11.4 in	
Critical Depth	8.8 in	
Critical Slope	0.043 ft/ft	
Velocity	1.21 ft/s	
Velocity Head	0.02 ft	
Specific Energy	0.97 ft	
Froude Number	0.334	

Existing Ditch Cross-Section 4: 2-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+00	2,055.00	
0+01	2,054.80	
0+04	2,054.80	
0+05	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+05, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	2.6 in	
Roughness Coefficient	0.035	
Elevation	2,055.02 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.80 to 2,056.00 ft	
Flow Area	0.8 ft ²	
Wetted Perimeter	4.7 ft	
Hydraulic Radius	2.1 in	
Top Width	4.58 ft	
Normal Depth	2.6 in	
Critical Depth	1.4 in	
Critical Slope	0.039 ft/ft	
Velocity	0.86 ft/s	
Velocity Head	0.01 ft	
Specific Energy	0.23 ft	
Froude Number	0.359	
Flow Type	Subcritical	

Existing Ditch Cross-Section 4: 10-yr Flow

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Channel Slope	0.004 ft/ft	
Discharge	1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions		
Station (ft)	Elevation (ft)	
0+00	2,056.00	
0+00	2,055.00	
0+01	2,054.80	
0+04	2,054.80	
0+05	2,055.00	
Roughness Segment Definitions		
Start Station	Ending Station	Roughness Coefficient
(0+00, 2,056.00)	(0+05, 2,055.00)	0.035
Options		
Current Roughness Weighted Method	Pavlovskii's Method	
Open Channel Weighting Method	Pavlovskii's Method	
Closed Channel Weighting Method	Pavlovskii's Method	
Results		
Normal Depth	4.1 in	
Roughness Coefficient	0.035	
Elevation	2,055.14 ft Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.80 to 2,056.00 ft	
Flow Area	1.4 ft ²	
Wetted Perimeter	4.9 ft	
Hydraulic Radius	3.4 in	
Top Width	4.60 ft	
Normal Depth	4.1 in	
Critical Depth	2.4 in	
Critical Slope	0.033 ft/ft	
Velocity	1.18 ft/s	
Velocity Head	0.02 ft	
Specific Energy	0.37 ft	
Froude Number	0.380	
Flow Type	Subcritical	

NOTES:
SEE SHEETS 7 & 8 FOR CROSS-SECTION PROFILES.
EXISTING DITCH SURVEY (10/2025) HAS THE EDGE OF PAVEMENT AT 2055'. THE PROPOSED 10-YR FLOWS OVERTOP THE PAVEMENT AT CROSS-SECTIONS 2-4. EXISTING DITCH IS INADEQUATE, DOES NOT DETAIN THE PROPOSED 10-YR FLOWS.

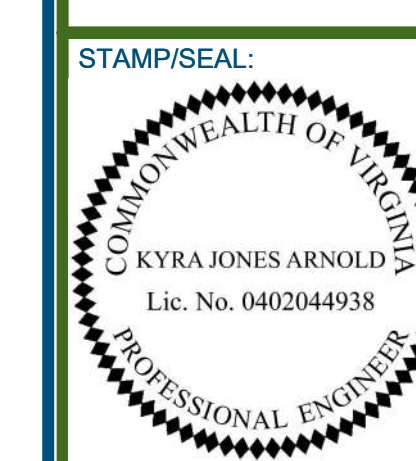


HGS, LLC, A RES COMPANY
SUITE 100, RICHMOND, VIRGINIA 23219
WWW.RES.US

RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32
TASWELL COUNTY

DITCH CALCULATIONS

TASWELL COUNTY, VA



30% DESIGN REVIEW	
BAILEY WILFONG	03/13/2026
Signature	Date
PERMIT PLAN DESIGN REVIEW	
BAILEY WILFONG	05/01/2026
Signature	Date
CONSTRUCTION PLAN REVIEW	
Signature	Date
REVISIONS:	
PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	12 OF 17

FLOWMASTER PROPOSED DITCH CALCULATIONS

Proposed Ditch Cross-Section 1: 2-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,056.00		
0+02	2,055.00		
0+05	2,054.30		
0+07	2,054.30		
0+08	2,054.50		
0+09	2,054.70		
0+09	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,056.00)	(0+09, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	5.1 in	Roughness Coefficient 0.069	
Elevation	2,054.72 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.30 to 2,056.00 ft		
Flow Area	1.6 ft ²	Wetted Perimeter 5.7 ft	
Hydraulic Radius	3.5 in	Top Width 5.57 ft	
Normal Depth	5.1 in	Critical Depth 1.7 in	
Critical Slope	0.146 ft/ft	Velocity 0.42 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.43 ft	

Proposed Ditch Cross-Section 1: 10-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,056.00		
0+02	2,055.00		
0+05	2,054.30		
0+07	2,054.30		
0+08	2,054.50		
0+09	2,054.70		
0+09	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,056.00)	(0+09, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	7.7 in	Roughness Coefficient 0.069	
Elevation	2,054.94 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.30 to 2,056.00 ft		
Flow Area	3.0 ft ²	Wetted Perimeter 7.0 ft	
Hydraulic Radius	5.1 in	Top Width 6.73 ft	
Normal Depth	7.7 in	Critical Depth 2.7 in	
Critical Slope	0.127 ft/ft	Velocity 0.55 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.65 ft	

Proposed Ditch Cross-Section 2: 2-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,056.00		
0+02	2,055.00		
0+06	2,054.30		
0+08	2,054.30		
0+09	2,054.50		
0+09	2,054.60		
0+10	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,056.00)	(0+10, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	4.9 in	Roughness Coefficient 0.069	
Elevation	2,054.70 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.30 to 2,056.00 ft		
Flow Area	1.7 ft ²	Wetted Perimeter 6.0 ft	
Hydraulic Radius	3.3 in	Top Width 5.90 ft	
Normal Depth	4.9 in	Critical Depth 1.6 in	
Critical Slope	0.148 ft/ft	Velocity 0.41 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.41 ft	

Proposed Ditch Cross-Section 2: 10-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,056.00		
0+02	2,055.00		
0+06	2,054.30		
0+08	2,054.30		
0+09	2,054.50		
0+09	2,054.60		
0+10	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,056.00)	(0+10, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	7.4 in	Roughness Coefficient 0.069	
Elevation	2,054.92 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.30 to 2,056.00 ft		
Flow Area	3.1 ft ²	Wetted Perimeter 7.4 ft	
Hydraulic Radius	4.9 in	Top Width 7.09 ft	
Normal Depth	7.4 in	Critical Depth 2.7 in	
Critical Slope	0.129 ft/ft	Velocity 0.53 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.62 ft	

Proposed Ditch Cross-Section 3: 2-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,059.00		
0+08	2,055.00		
0+12	2,054.40		
0+14	2,054.40		
0+14	2,054.70		
0+15	2,054.80		
0+15	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,059.00)	(0+15, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	5.2 in	Roughness Coefficient 0.069	
Elevation	2,054.84 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.40 to 2,059.00 ft		
Flow Area	1.7 ft ²	Wetted Perimeter 5.8 ft	
Hydraulic Radius	3.4 in	Top Width 5.69 ft	
Normal Depth	5.2 in	Critical Depth 1.7 in	
Critical Slope	0.145 ft/ft	Velocity 0.42 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.44 ft	

Proposed Ditch Cross-Section 3: 10-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,059.00		
0+08	2,055.00		
0+12	2,054.40		
0+14	2,054.40		
0+14	2,054.70		
0+15	2,054.80		
0+15	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,059.00)	(0+15, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	7.8 in	Roughness Coefficient 0.069	
Elevation	2,055.05 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.40 to 2,059.00 ft		
Flow Area	3.0 ft ²	Wetted Perimeter 7.1 ft	
Hydraulic Radius	5.1 in	Top Width 6.83 ft	
Normal Depth	7.8 in	Critical Depth 2.8 in	
Critical Slope	0.127 ft/ft	Velocity 0.54 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.65 ft	

Proposed Ditch Cross-Section 4: 2-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 0.69 cfs = Ditch Flow (0.23 cfs) + Pond Outflow Discharge (0.46 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,059.00		
0+08	2,055.00		
0+11	2,054.40		
0+13	2,054.40		
0+14	2,054.80		
0+15	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,059.00)	(0+15, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	5.4 in	Roughness Coefficient 0.069	
Elevation	2,054.85 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.40 to 2,059.00 ft		
Flow Area	1.6 ft ²	Wetted Perimeter 5.5 ft	
Hydraulic Radius	3.5 in	Top Width 5.40 ft	
Normal Depth	5.4 in	Critical Depth 1.7 in	
Critical Slope	0.144 ft/ft	Velocity 0.43 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.45 ft	
Froude Number	0.137		

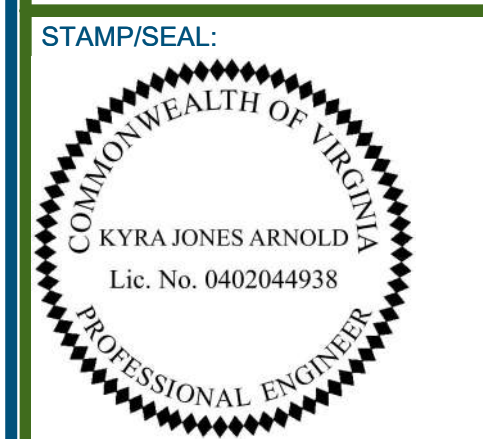
Proposed Ditch Cross-Section 4: 10-yr Flow			
Project Description			
Friction Method	Manning Formula	Solve For Normal Depth	
Input Data			
Channel Slope	0.002 ft/ft	Discharge 1.63 cfs = Ditch Flow (0.42 cfs) + Pond Outflow Discharge (1.21 cfs)	
Section Definitions			
Station (ft)	Elevation (ft)		
0+00	2,059.00		
0+08	2,055.00		
0+11	2,054.40		
0+13	2,054.40		
0+14	2,054.80		
0+15	2,055.00		
Roughness Segment Definitions			
Start Station	Ending Station	Roughness Coefficient	
(0+00, 2,059.00)	(0+15, 2,055.00)	0.069	
Options			
Current Roughness Weighted Method	Pavlovskii's Method		
Open Channel Weighting Method	Pavlovskii's Method		
Closed Channel Weighting Method	Pavlovskii's Method		
Results			
Normal Depth	8.0 in	Roughness Coefficient 0.069	
Elevation	2,055.07 ft	Top of Parking Lot Pavement = 2055'	
Elevation Range	2,054.40 to 2,059.00 ft		
Flow Area	3.0 ft ²	Wetted Perimeter 7.3 ft	
Hydraulic Radius	5.0 in	Top Width 7.04 ft	
Normal Depth	8.0 in	Critical Depth 2.8 in	
Critical Slope	0.126 ft/ft	Velocity 0.54 ft/s	
Velocity Head	0.00 ft	Specific Energy 0.67 ft	
Froude Number	0.144		

CROSS-SECTION	ROUGHNESS COEFFICIENT		SLOPE (%)		FLOW (CFS)		VELOCITY (FPS)				WATER SURFACE ELEVATION (FT)			
	EXISTING	PROPOSED	EXISTING	PROPOSED	2-YR	10-YR	EXISTING		PROPOSED		EXISTING		PROPOSED	
							2-YR	10-YR	2-YR	10-YR	2-YR	10-YR	2-YR	10-YR
1	0.035	0.069	0.4	0.2	0.69	1.63	0.84	1.14	0.42	0.55	2054.81	2054.97	2054.72	2054.94
2	0.035	0.069	0.4	0.2	0.69	1.63	0.97	1.31	0.41	0.53	2055.01	2055.19	2054.70	2054.92
3	0.035	0.069	0.4	0.2	0.69	1.63	0.89	1.21	0.42	0.54	2054.95	2055.12	2054.84	2055.05
4	0.035	0.069	0.4	0.2	0.69	1.63	0.86	1.18	0.43	0.54	2055.02	2055.14	2054.85	2055.07

NOTES:
SEE SHEETS 7 & 8 FOR CROSS-SECTION PROFILES.
EXISTING DITCH SURVEY (10/2025) HAS THE EDGE OF PAVEMENT AT 2055'. THE PROPOSED 10-YR FLOWS OVERTOP THE PAVEMENT AT CROSS-SECTIONS 3-4. PROPOSED DITCH IS INADEQUATE, DOES NOT DETAIN THE PROPOSED 10-YR FLOWS. PROPOSED DITCH DOES PROVIDE SOME IMPROVEMENT WHEN COMPARED TO THE EXISTING DITCH.



RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32
TASWELL COUNTY
DITCH CALCULATIONS
TASWELL COUNTY, VA



30% DESIGN REVIEW
BAILEY WILFONG 03/13/2026
Signature Date
PERMIT PLAN DESIGN REVIEW
BAILEY WILFONG 05/01/2026
Signature Date
CONSTRUCTION PLAN REVIEW

Signature Date
REVISIONS:
PROJECT MANAGER: CA
DESIGNED: KA
DRAWN: KA
JOB NUMBER: 111834
DESIGN TYPE: BMP
DATE: 6/22/2026
SHEET NO: 13 OF 17

EROSION & SEDIMENT CONTROL NOTES:

- ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK (VERSION 1.1), 9VAC25-875-560, EROSION AND SEDIMENT CONTROL REGULATIONS.
ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS, 9VAC25-875-560, MINIMUM STANDARDS

ALL LAND-DISTURBING ACTIVITIES UNDERTAKEN ON PRIVATE AND PUBLIC LANDS IN THE COMMONWEALTH OF VIRGINIA MUST MEET THE '19 "MINIMUM STANDARDS" FOR EROSION AND SEDIMENT CONTROL (ESC), 9VAC25-875-560, OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK (VERSION 1.1). THE APPLICANT WHO SUBMITS THE ESC PLAN TO THE PROGRAM AUTHORITY FOR APPROVAL IS RESPONSIBLE FOR ENSURING COMPLIANCE WITH THE MINIMUM STANDARDS THAT APPLY TO HIS/HER ACTIVITIES.

- 1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
6.1 THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.
6.2 SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
16.1 NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
16.2 EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
16.3 EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
16.4 MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
16.5 RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.
16.6 APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.

- 17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP OR VESMP AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA:
19.1 CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
19.2 ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
19.2.1 THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
19.2.2 NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
19.2.2.1 ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
19.2.2.2 PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
19.3 IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
19.3.1 IMPROVE THE CHANNELS TO A CONDITION WHERE A 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS; OR
19.3.2 IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE 10-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
19.3.3 DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A 10-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR
19.3.4 PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION.
19.4 THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
19.5 ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
19.6 IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OR VESMP AUTHORITY FOR A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
19.7 OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
19.8 ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
19.9 INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.
19.10 IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
19.11 ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.
19.12 ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (I) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (II) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (III) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5, 2, AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62.1-44.15-28 OF THE CODE OF VIRGINIA (VESMA) OR § 62.1-44.15-54 OR § 62.1-44.15-65 OF THE CODE OF VIRGINIA (ESCL).
19.13 FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15-2 A OF THE CODE OF VIRGINIA (ESCL) AND THIS SUBDIVISION 19 SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE VESMA AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES (I) ARE IN ACCORDANCE WITH PROVISIONS FOR TIME LIMITS ON APPLICABILITY OF APPROVED DESIGN CRITERIA IN 9VAC25-875-480 OR GRANDFATHERING IN 9VAC25-875-490, IN WHICH CASE THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15-2 A OF THE CODE OF VIRGINIA (ESCL) SHALL APPLY; OR (II) ARE EXEMPT PURSUANT TO § 62.1-44.15-34 G 2 OF THE CODE OF VIRGINIA (VESMA).
19.14 COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-875-600 SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.

CONSTRUCTION BMP NARRATIVE:

PROJECT DESCRIPTION:
THE PURPOSE OF THIS PROJECT IS TO RETROFIT AN EXISTING STORMWATER MANAGEMENT POND NEAR THE RICHLANDS ELEMENTARY SCHOOL PROPERTY. THE EXISTING POND IS NOT FUNCTIONING PROPERLY AND FLOODS ADJOINING PROPERTIES. THE STORAGE VOLUME OF THE POND WILL INCREASE AND THE EXISTING RISER STRUCTURE WILL BE REPLACED. THE POND WILL OUTFALL INTO A NEWLY REGRADED AND ENHANCED DITCH BEHIND THE ROMAS RESTAURANT PROPERTY ALONG FRONT STREET, BUS. 460. THE PROJECT SITE IS LOCATED AT 171 ROBINHOOD LANE, RICHLANDS, VA ON PROPERTY RECORDED IN THE NAME OF TAZEVELL COUNTY PUBLIC SCHOOLS. THE CONSTRUCTION OF THIS PROJECT WILL DISTURB APPROXIMATELY 0.90 ACRES.

EXISTING SITE CONDITIONS:

THE EXISTING POND IS FILLED WITH EXCESS SEDIMENT. THE EXISTING RISER AND OUTFALL STRUCTURES ARE DAMAGED AND/OR NOT FUNCTIONING PROPERLY. OVER 3 ACRES DRAINS INTO THE EXISTING POND. THE DITCH BEHIND ROMAS RESTAURANT IS FILLED WITH BRUSH AND A FEW TREES. THERE IS A RAILROAD TIE RETAINING WALL NEAR THE EXISTING DITCH THAT WILL BE REMOVED. THERE ARE ALSO TWO CONCRETE RETAINING WALLS AND A CHAIN LINK FENCE CLOSE TO THE EXISTING DITCH. THEY WILL REMAIN.

ADJACENT AREAS:

THE PROPERTY IS ADJACENT TO BUSINESSES TO THE SOUTH. THERE IS A NEWLY CONSTRUCTED BALL FIELD TO THE WEST OF THE SITE. RICHLANDS ELEMENTARY SCHOOL IS NORTH OF THE SITE AND RICHLANDS HIGH SCHOOL LIES TO THE EAST.

OFFSITE AREAS:

AS PART OF THIS PROJECT NO OFFSITE AREAS WILL BE DISTURBED.

SOILS:

REFER TO EXISTING CONDITIONS & DRAINAGE AREA PLAN SHEETS FOR SOILS MAP; THE SOILS WITHIN THE DRAINAGE AREAS SUMMARIZED BELOW:

Table with 6 columns: MAP UNIT SYMBOL, MAP UNIT NAME, HYDROLOGIC SOIL GROUP, DEPTH TO WATER TABLE (IN), HYDRIC RATING, HIGHLY ERODIBLE. Rows include BERKS-WEIKERT COMPLEX and UDORTHENT'S-URBAN LAND COMPLEX.

NOTE: SOILS INFORMATION SHOWN ABOVE IS FROM THE U.S. DEPARTMENT OF AGRICULTURE (USDA) NRCS WEB SOIL SURVEY.

CRITICAL AREAS:

THERE ARE NO KNOWN CRITICAL ENVIRONMENTAL AREAS LOCATED WITHIN THE PROJECT AREA. A WATERS OF THE UNITED STATES (WOTUS) DELINEATION WAS NOT PERFORMED.

CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs):

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL CONSTRUCTION BMPs SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE DEQ VIRGINIA STORMWATER MANAGEMENT HANDBOOK (VSMH). THE MINIMUM STANDARD OF THE VSMH SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. THE E&S INSPECTOR HAS THE AUTHORITY TO ADD OR DELETE CONSTRUCTION BMPs AS NECESSARY IN THE FIELD AS SITE CONDITIONS CHANGE. IN ADDITION, NO CONSTRUCTION BMPs, INCLUDING SEDIMENT BASINS OR TRAPS, CAN BE REMOVED WITHOUT WRITTEN AUTHORIZATION. ADDITIONALLY, NO CONSTRUCTION BMPs SHALL BE REMOVED UNTIL ALL UPSLOPE AREAS HAVE BEEN STABILIZED.

SAFETY FENCE (C-PCM-01):

SAFETY FENCING EITHER POLYETHYLENE SECURED TO CONVENTIONAL METAL T OR U POSTS OR CHAIN LINK METAL SAFETY FENCING SHALL BE INSTALLED AS SHOWN ON THE PLANS. SIGNS NOTING POTENTIAL HAZARDS SHALL BE USED AND POSTED SUCH THAT THEY ARE EASILY VISIBLE TO ANYONE APPROACHING THE PROTECTED AREA. FENCES AND GATES SHOULD BE CHECKED REGULARLY TO ENSURE STABILITY AND LOCKS USED WHEN THE SITE IS CLOSED.

TEMPORARY STONE CONSTRUCTION ENTRANCE (C-SCM-03):

A CONSTRUCTION ENTRANCE WITH A WASH RACK SHALL BE INSTALLED WHERE INDICATED ON THE PLANS. IT WILL BE NEEDED TO CLEAN THE TIRES OF VEHICLES AND EQUIPMENT DURING WET CONDITIONS IN ORDER TO PREVENT MUD/ROCKS/DEBRIS FROM BEING TRACKED OFF SITE OR INTO PUBLIC ROADWAYS.

SILT FENCE CULVERT INLET PROTECTION (C-SCM-05-1):

A SILT FENCE SEDIMENT BARRIER WITHOUT WIRE BACKING SHALL BE INSTALLED TO PROVIDE PROTECTION TO EXISTING CULVERTS SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

SILT FENCE (C-PCM-04):

SILT FENCE SEDIMENT BARRIERS WITHOUT WIRE BACKING SHALL BE INSTALLED ON THE DOWNSLOPE SIDE OF STOCKPILES AND AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW.

COMPOST FILTER SOCK (C-PCM-05):

COMPOST FILTER SOCK SHALL BE INSTALLED ON THE DOWNSLOPE SIDE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW. 12" DIAMETER MINIMUM. SEE TABLE C-PCM-05-2 AND TABLE C-PCM-05-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK FOR MINIMUM SPECIFICATIONS.

TEMPORARY SEEDING (C-SSM-09) AND MULCHING (C-SSM-11):

ALL DENUDED AREAS AND STOCKPILE LOCATIONS, WHICH WILL BE LEFT DORMANT FOR LONGER THAN 7 DAYS, SHALL BE SEEDDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED AND SHALL BE PER TABLE C-SSM-09-03 OF SPECIFICATION C-SSM-09, TEMPORARY SEEDING, OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK. SEE TABLE BELOW:

Table C-SSM-09-3 Plant Material for Temporary Seeding. Columns: Planting Dates, Species, Rate (pounds per acre). Rows include Sept. 1 - Feb. 15, Feb. 16 - Apr. 30, and May 1* - Aug. 31.

* The shift date for annual rye to German millet should be April 15 for the Piedmont and Coastal Plain, rather than May 1.

PERMANENT SEEDING (C-SSM-10) AND MULCHING (C-SSM-11):

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING AND MULCHING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE ACCORDING TO THE SEEDING PLAN. SEE SHEET 17. MULCH (STRAW OR FIBER) WILL BE USED TO PROTECT THE SEEDED AREAS FROM EROSION AND TO ALLOW SEEDS TO GERMINATE PROPERLY. PERMANENT MULCHING CAN BE USED IN LANDSCAPED AREAS. MULCH IS TO BE EITHER WOOD CHIPS OR BARK CHIPS/SHREDDED BARK. ALL PERMANENT MULCHING IS TO BE INSTALLED TO STANDARD AND SPECIFICATION C-SSM-11, MULCHING, OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.

SOIL STABILIZATION BLANKETS AND MATTING (C-SSM-05):

SOIL STABILIZATION BLANKETS AND MATTING SHALL BE INSTALLED WHERE INDICATED ON THE PLANS TO AID IN CONTROLLING EROSION IN CRITICAL AREAS AS WELL AS AIDING IN THE ESTABLISHMENT OF VEGETATION FOR PERMANENT STABILIZATION ON PREVIOUSLY DISTURBED SLOPES. CURLEX NETFREE OR EQUAL MAY BE USED WHERE ADDITIONAL STABILIZATION IS NEEDED. BLANKETS AND MATTING SHALL BE INSTALLED PER SPECIFICATION C-SSM-05, SOIL STABILIZATION BLANKETS & MATTING.

TREE PRESERVATION AND PROTECTION (C-SSM-01):

A FENCE BARRIER IS TO BE PLACED AROUND THE TREES AND VEGETATED AREAS WHICH WILL NOT BE DISTURBED TO PROTECT THE TREES AND OTHER VEGETATION FROM CONSTRUCTION EQUIPMENT AND SOIL COMPACTION.

DEWATERING STRUCTURE: PUMPED WATER FILTER BAG (C-SCM-10-4):

ALL SEDIMENT LADEN WATER THAT MUST BE REMOVED FROM THE WORK AREA MUST BE ROUTED THROUGH A FILTER BAG. THE FILTER BAG SHALL FILTER SEDIMENT-LADEN WATER BEFORE THE WATER IS DISCHARGED OFF SITE. BAGS SHALL BE PLACED IN A WELL-VEGETATED AREA AND DISCHARGE ONTO A STABLE, EROSION-RESISTANT AREAS. IF THIS IS NOT POSSIBLE, PROVIDE A GEOTEXTILE UNDERLAYMENT AND FLOW PATH.

DECK MATTING (AS NEEDED--SEE PROVIDED DETAIL):

DECK MATS SHOULD BE UTILIZED AS NEEDED BASED ON CONDITIONS TO PROVIDE ACCESS FOR EQUIPMENT AND CONSTRUCTION ACTIVITIES TO PLACES WHERE THE EXISTING GROUND NEEDS TO BE PROTECTED FROM THE EQUIPMENT. APPLICATIONS OF DECK MATS CAN INCLUDE UTILITY CROSSINGS, ASPHALT PROTECTION, WETLAND CROSSINGS, ETC. DECK MATS SHOULD BE PUT IN FOR THE LEAST AMOUNT OF TIME NECESSARY AND REMOVED WHEN NO LONGER NEEDED. MULCH SHOULD BE USED TO FILL GAPS BETWEEN MATS AT TURNS. IF NECESSARY, TO PROVIDE DRAINAGE CONNECTIVITY, PVC PIPES CAN BE LAID BENEATH THE MATS.

MANAGEMENT STRATEGIES:

- 1. CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. SEDIMENT TRAPPING / DIVERTING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING AND WILL BE SEEDDED AND MULCHED IMMEDIATELY FOLLOWING INSTALLATION.
3. TEMPORARY SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING WHEN DIRECTLY ADJACENT TO THE WATERCOURSE. IN ALL OTHER LOCATIONS, DISTURBED AREAS ARE TO BE STABILIZED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK.
4. AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
5. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
6. AFTER ACHIEVING ADEQUATE STABILIZATION OF PERMANENT SEEDING, THE TEMPORARY CONSTRUCTION BMPs WILL BE CLEANED UP AND REMOVED FOLLOWING WRITTEN APPROVAL OF THE TAZEVELL COUNTY SEDIMENT CONTROL INSPECTOR.
7. THE FEWEST NUMBER OF TREES POSSIBLE WILL BE CLEARED FROM WITHIN THE LOD. THE SUPERINTENDENT SHALL WORK WITH THE ENGINEER OF RECORD, OR DESIGNEE, TO DETERMINE LIMITS OF CLEARING.
8. SPECIMEN TREES NOT BEING CLEARED WILL BE PROTECTED WITH TEMPORARY TREE PROTECTION FENCING AND MULCH/DECK MATS WHERE WORK MUST OCCUR WITHIN THE CRITICAL ROOT ZONE (CRZ) OF THE TREE. IF THE CRZ EXTENDS INTO AREAS OF GRADING, ROOT PRUNING WILL BE USED TO MINIMIZE THE IMPACT TO THE SPECIMEN TREES.

PERMANENT STABILIZATION:

ALL DISTURBED AREAS ARE TO BE STABILIZED WITH PERMANENT SEEDING AND MULCHING IN ACCORDANCE WITH THE VIRGINIA STORMWATER MANAGEMENT HANDBOOK AFTER LAND DISTURBING ACTIVITIES ARE COMPLETED.

STORMWATER RUNOFF CONSIDERATIONS & WATER QUALITY AND QUANTITY COMPLIANCE:

THIS PROJECT WILL DISTURB LESS THAN 1 ACRE (0.90 ACRES) AND DOES NOT LIE WITHIN THE CHESAPEAKE BAY WATERSHED; THEREFORE, A STORMWATER MANAGEMENT PLAN IS NOT REQUIRED. HOWEVER, CHANNEL ADEQUACY REQUIREMENTS MUST BE MET, BASED ON EXISTING DITCH SURVEY, PROVIDED OCTOBER 2025. FOR THE EXISTING DITCH BEHIND THE ROMAS RESTAURANT PARKING LOT, THE EXISTING AND PROPOSED DITCHES DO NOT SATISFY ADEQUATE CHANNEL REQUIREMENTS. BOTH THE EXISTING AND THE PROPOSED DITCHES DO NOT DETAIN THE 10-YEAR FLOWS; HOWEVER, THE PROPOSED DITCH DOES PROVIDE SOME IMPROVEMENT WHEN COMPARED TO THE EXISTING DITCH.

CALCULATIONS:

POND & DITCH CALCULATIONS ARE SHOWN ON SHEETS 11-13.

CUT/FILL SUMMARY

SEE BELOW FOR ENGINEER'S ESTIMATE OF CUT/FILL. ALL EARTHWORK QUANTITIES MUST BE VERIFIED BY THE CONTRACTOR. ESTIMATED CUT = 885 C.Y. ESTIMATED FILL = 33 C.Y. ESTIMATED NET CUT/FILL = 852 C.Y. OF CUT

MAINTENANCE:

IN GENERAL, ALL CONSTRUCTION BMPs WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE SILT FENCE BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALFWAY TO THE TOP OF THE BARRIER. FILTERING DEVICES WILL BE INSPECTED FREQUENTLY AND REPAIRED/REPLACED ONCE THE SEDIMENT BUILD-UP PREVENTS THE STRUCTURE FROM FUNCTIONING AS DESIGNED. ALL SOIL STABILIZATION MATTING SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING THE DAMAGE TO THE SLOPE OR DITCH. SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED. CONSTRUCTION ACCESS ROADS TO BE MAINTAINED SUCH THAT STABILIZED VEHICLE ACCESS IS PROVIDED. IF CONDITIONS REQUIRE, ADDITIONAL MEASURES SUCH AS MULCH, DECK MATS, FILTER SOCK, ETC. MAY BE NEEDED. CONSULT THE ENGINEER OF RECORD OR DESIGNEE.



RICHLAND HIGH SCHOOL DETENTION BASIN FOR GRANT PROJECT CFPF 24-04-32 TAZEWELL COUNTY ESC NOTES AND NARRATIVE TAZEWELL COUNTY, VA

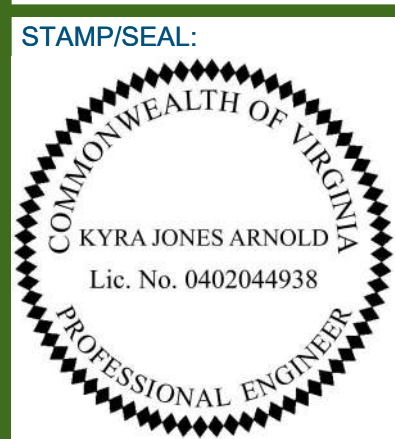
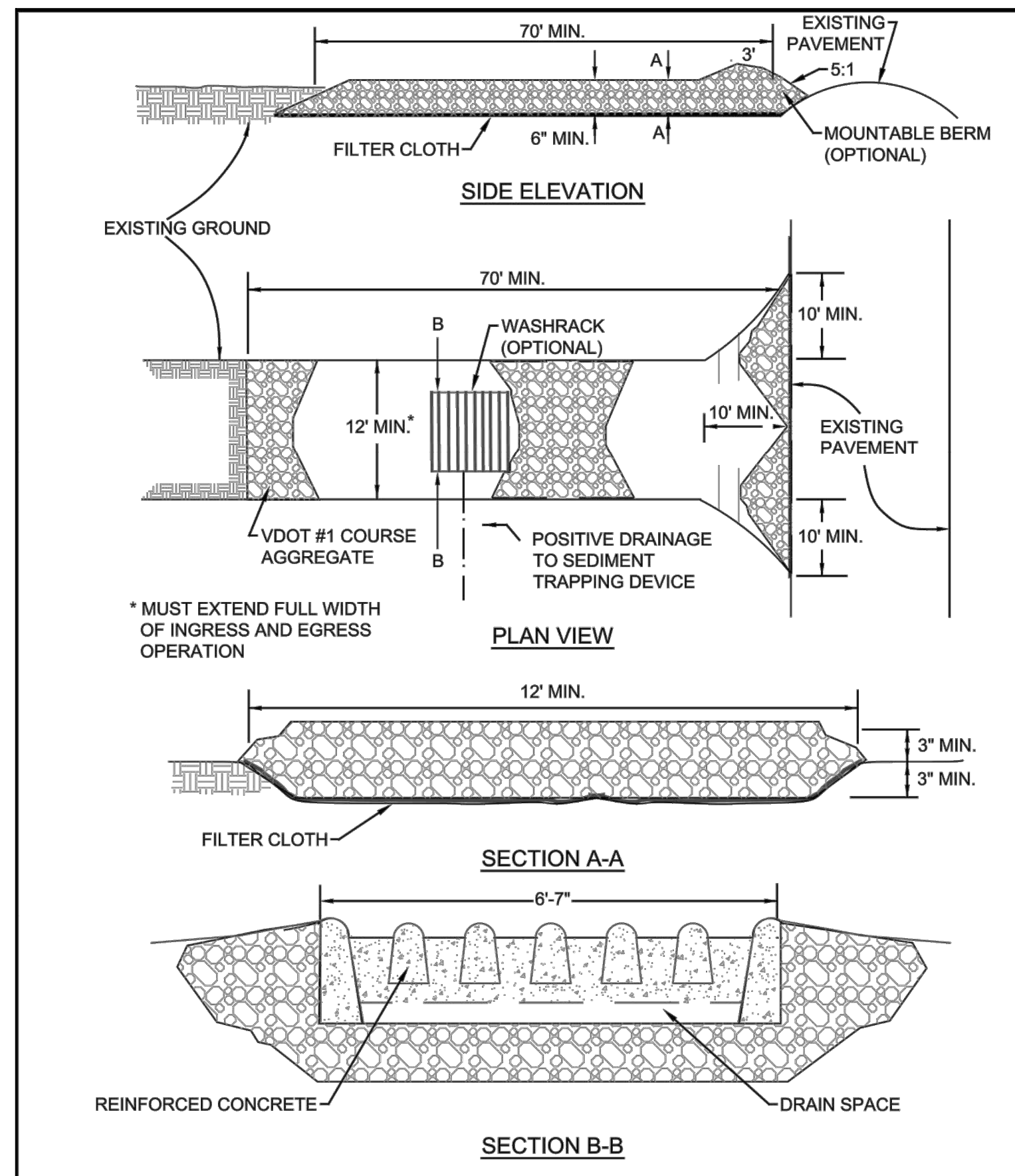


Table with 2 columns: Review Stage, Date. Rows include 30% DESIGN REVIEW, PERMIT PLAN DESIGN REVIEW, CONSTRUCTION PLAN REVIEW, and REVISIONS.

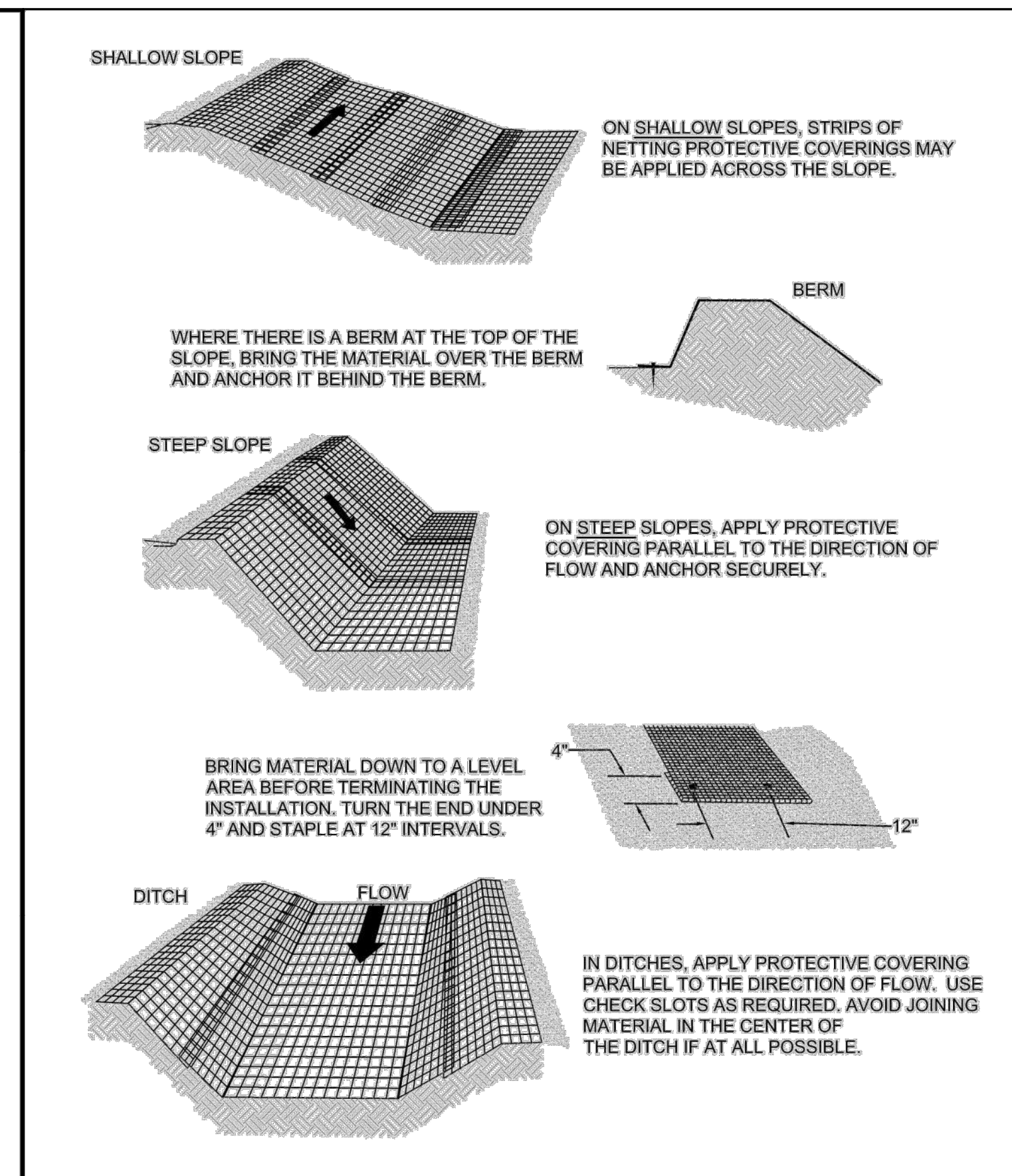
Table with 2 columns: Field Name, Value. Rows include PROJECT MANAGER, DESIGNED, DRAWN, JOB NUMBER, DESIGN TYPE, DATE, SHEET NO.



DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

STONE CONSTRUCTION ENTRANCE

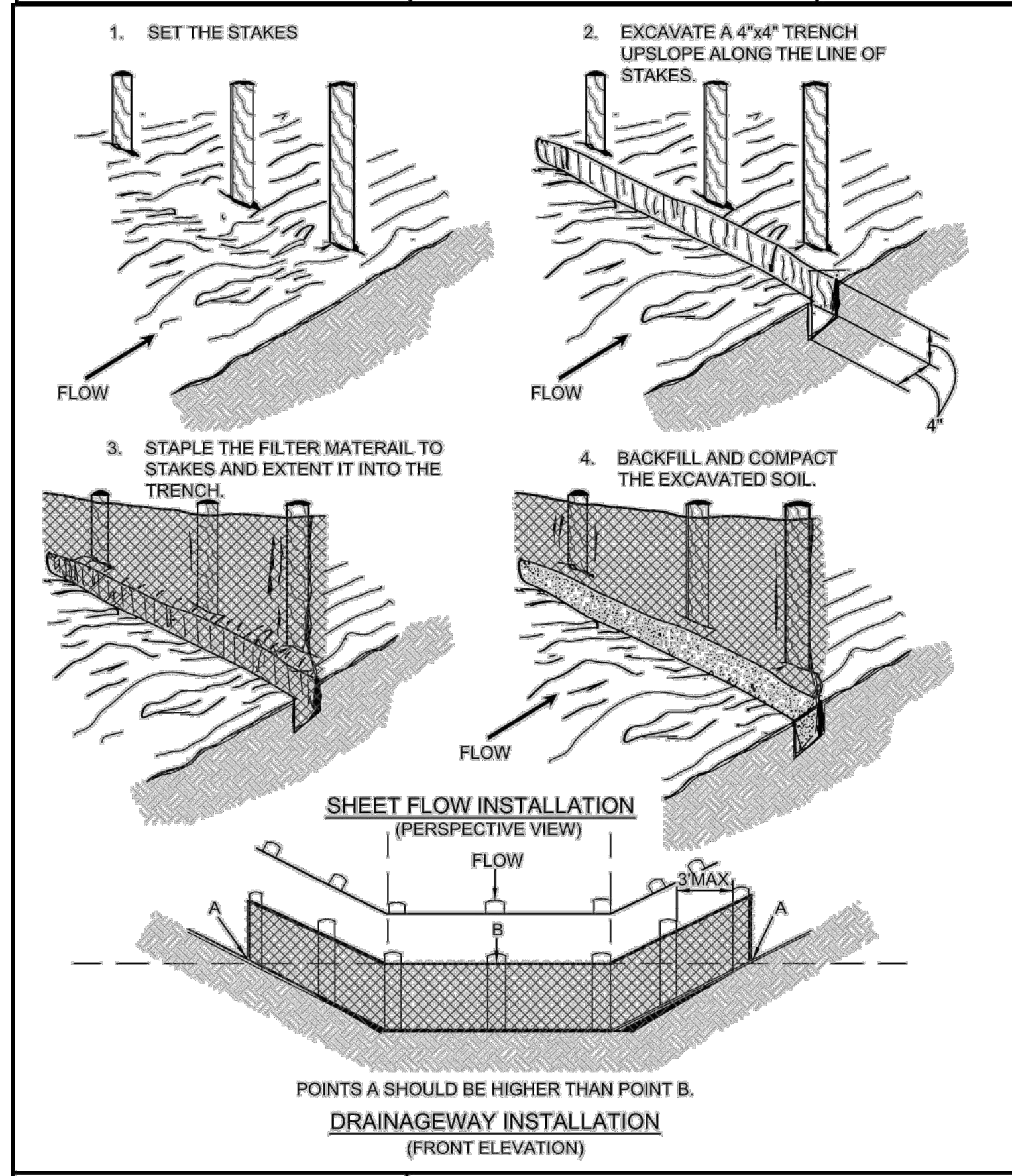
v1.1 SOURCE: VA. DSWC, MD ESC STDS C-SCM-03-1



DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

TYPICAL ORIENTATION OF TREATMENT - 1 (SOIL STABILIZATION BLANKET)

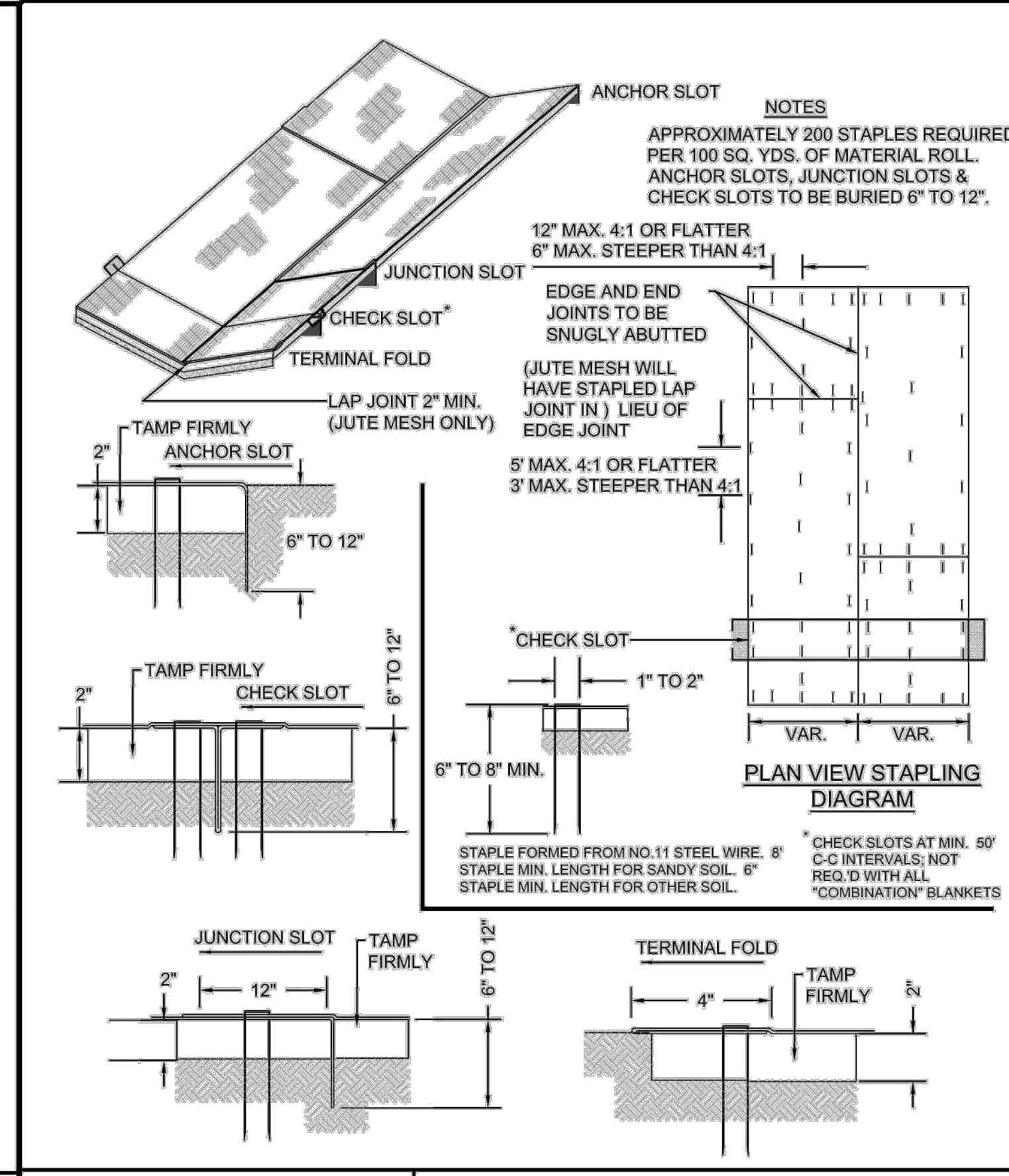
v1.1 SOURCE: ADAPTED FROM LUDLOW PRODUCTS BROCHURE C-SSM-05-1



DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

CONSTRUCTION OF SILT FENCE WITHOUT WIRE SUPPORT

v1.1 SOURCE: ADAPTED FROM STRAW & FAB. BARRIERS, SHERWOOD & WYANT C-PCM-04-2B



DEQ VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

TYPICAL TREATMENT - 1 (SOIL STABILIZATION BLANKET) INSTALLATION CRITERIA

v1.1 SOURCE: VDOT ROAD & BRIDGE STDS. C-SSM-05-2

- SEQUENCE OF CONSTRUCTION**
- LOD STAKEOUT: THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
 - PRE-CONSTRUCTION MEETING: PRIOR TO CLEARING OF TREES, INSTALLING SEDIMENT CONTROL MEASURES, OR GRADING, A PRECONSTRUCTION MEETING MUST BE CONDUCTED ON-SITE WITH THE TAZEWELL COUNTY AND TOWN OF RICHLANDS SEDIMENT CONTROL INSPECTORS AND ENGINEERS (48 HOURS NOTICE).
- UPON APPROVAL, STEPS 3-9 CAN BE PHASED ACROSS THE LIMITS OF DISTURBANCE TO FOLLOW THE INTENDED CONSTRUCTION SCHEDULE.
- SITE PREPARATION**
- CLEAR & GRUB: CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS.
 - CONSTRUCT AND STABILIZE PERIMETER CONTROLS INCLUDING SILT FENCE AND CULVERT INLET PROTECTION.
 - CLEAR, GRUB, AND GRADE FOR INSTALLATION OF SEDIMENT CONTROL DEVICES.
 - WRITTEN APPROVAL: ONCE THE SEDIMENT CONTROL DEVICES ARE INSTALLED, THE PERMITTEE MUST OBTAIN WRITTEN APPROVAL FROM THE INSPECTOR BEFORE PROCEEDING WITH ANY ADDITIONAL CLEARING, GRUBBING, OR GRADING.
 - PERFORM REMAINING CLEARING/GRUBBING AS NECESSARY TO PERFORM CONSTRUCTION OPERATIONS.
 - STAKE OUT THE PROPOSED OUTLET STRUCTURE, RISER STRUCTURE, OUTLET DITCH AND LIMITS OF DETENTION POND GRADING.
 - DRAWDOWN EXISTING POND AREA USING PUMP AND DEWATERING BAG. CONTRACTOR SHALL MONITOR CONDITIONS TO ENSURE WORK IN DRY CONDITIONS.
- SITE WORK**
- GRADE THE BASIN ACCORDING TO THE PROPOSED GRADING PLAN.
 - MAINTAIN DEWATERING PUMP UNTIL INSTALLATION OF OUTLET SPILLWAY AND PIPE.
 - EXCAVATE AND REMOVE THE EXISTING STOCKPILE AREA. MATERIAL TO BE HAULED OFF TO A PERMITTED DISPOSAL SITE.
 - EXCAVATE TRENCH AND INSTALL TRENCH BOX FOR PROPOSED SPILLWAY OUTLET PIPE.
 - INSTALL PIPE BEDDING AND OUTLET PIPE.
 - BACKFILL PIPE TRENCH TO GRADE SHOWN ON PLAN AND PROFILE. BACKFILL MATERIAL SHALL BE PLACED IN LIFTS AND COMPACTED.
 - EXCAVATE OUTLET DITCH TO PROPOSED SUBGRADE ELEVATION. SURVEY VERIFY DITCH INVERT ELEVATION PRIOR TO INSTALLING THE RIPRAP LAYER.
 - INSTALL RIPRAP FOR THE OUTLET DITCH.
 - INSTALL RISER STRUCTURE, LOW FLOW ORIFICE AND RISER TRASH RACK.
 - INSTALL THE BASIN INLET RIPRAP AND GABION BASKET BAFFLE.
 - STABILIZE DISTURBED AREAS WITH SPECIFIED SEED MIX PROVIDED ON SHEET 17.
 - UPON STABILIZATION OF SITE AND APPROVAL OF E&S INSPECTOR, REMOVE ALL EROSION AND SEDIMENT CONTROLS.

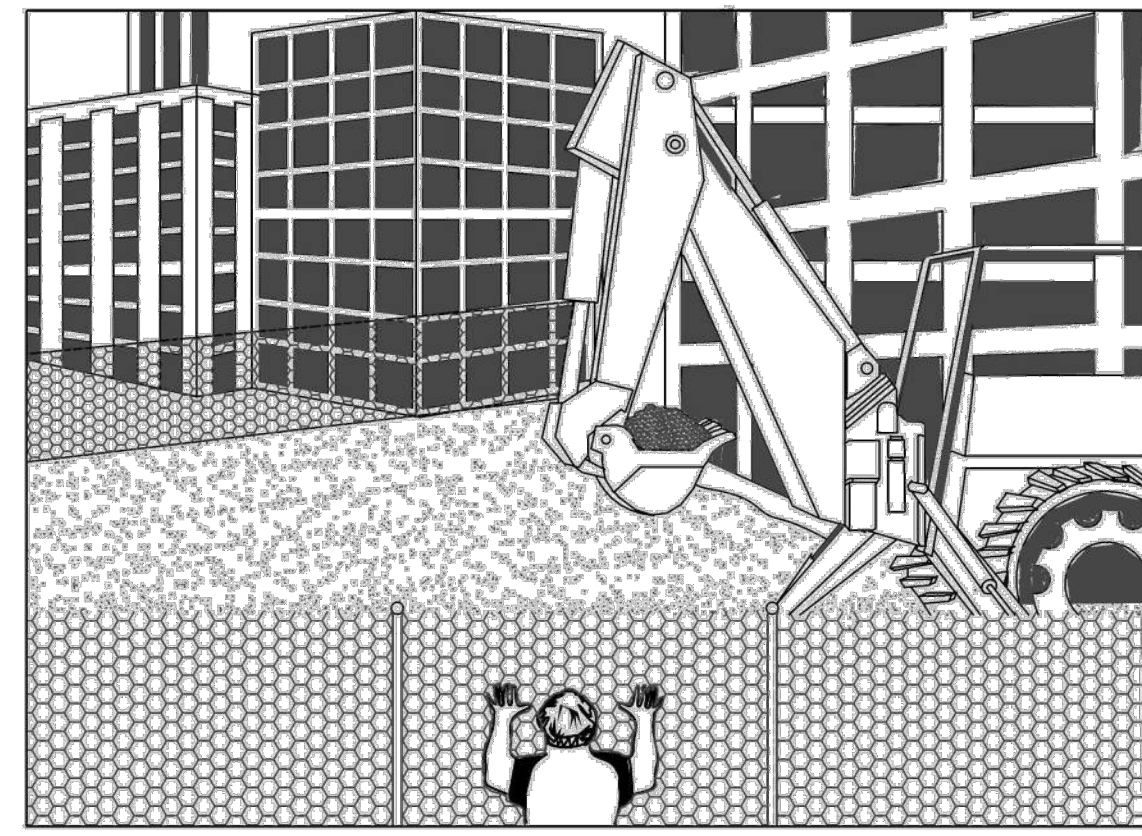
RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32
TAZEWELL COUNTY
ESC NOTES AND DETAILS
TAZEWELL COUNTY, VA

STAMP/SEAL:

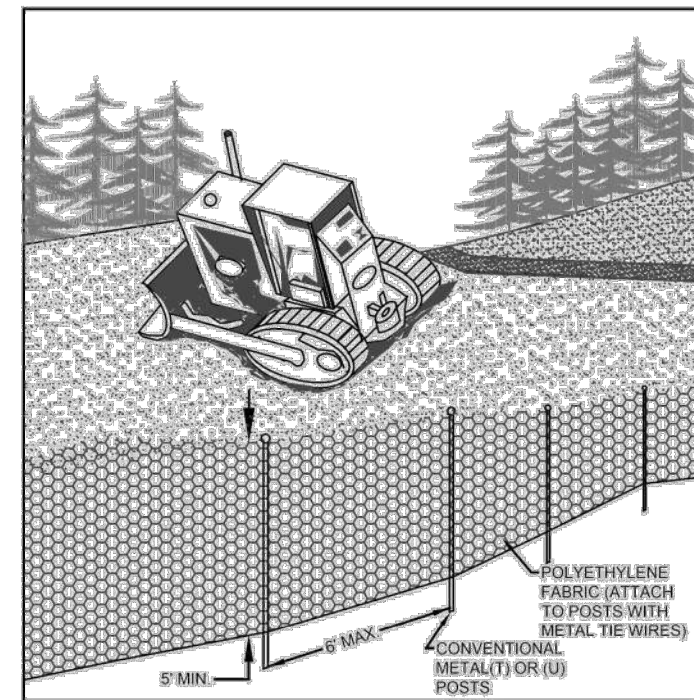
KYRA JONES ARNOLD
Lic. No. 0402044938
PROFESSIONAL ENGINEER

30% DESIGN REVIEW	
BAILEY WILFONG	03/13/2026
Signature	Date
PERMIT PLAN DESIGN REVIEW	
BAILEY WILFONG	05/01/2026
Signature	Date
CONSTRUCTION PLAN REVIEW	
Signature	Date
REVISIONS:	

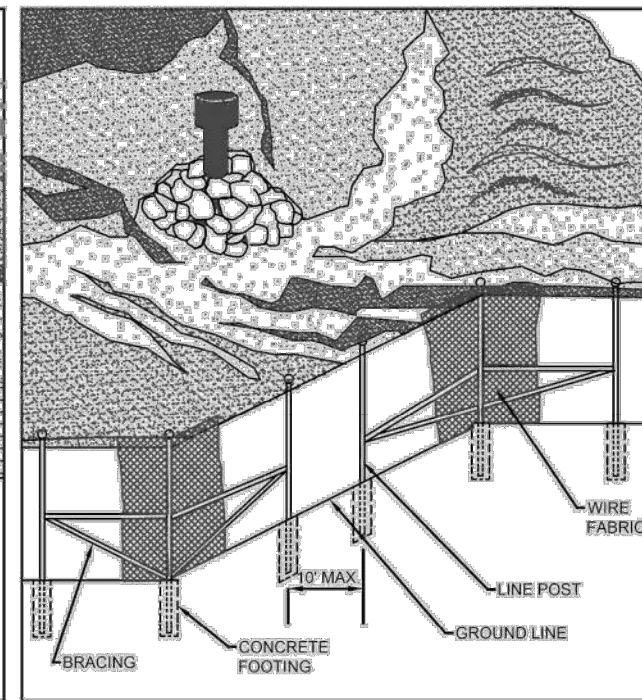
PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	15 OF 17



PERSPECTIVE VIEW



PERSPECTIVE VIEW
PLASTIC FENCE



PERSPECTIVE VIEW
METAL FENCE

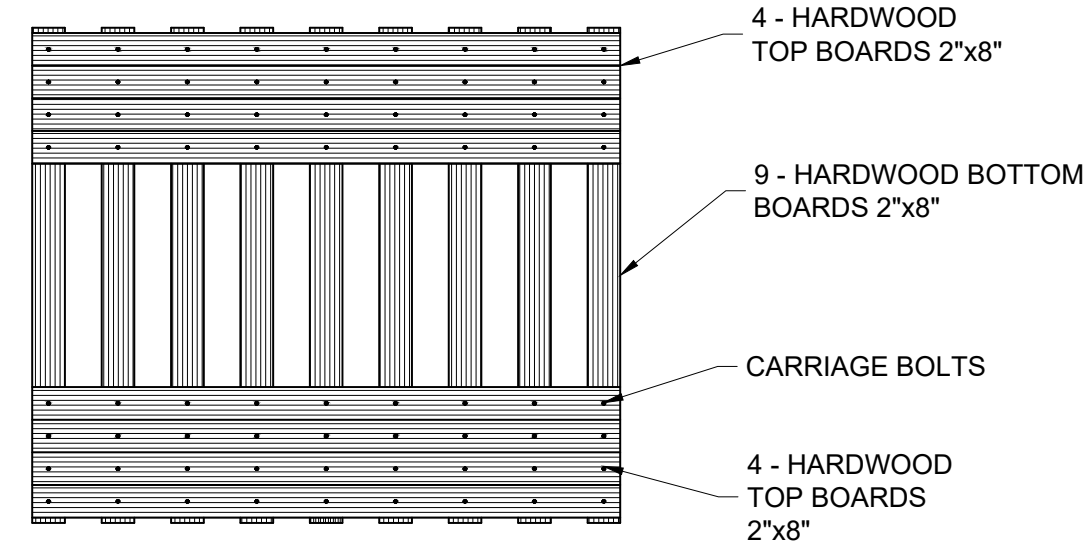


v1.1

SAFETY FENCE

SOURCE: VDOT STDS.
VA DSWC, CONWED PLASTICS

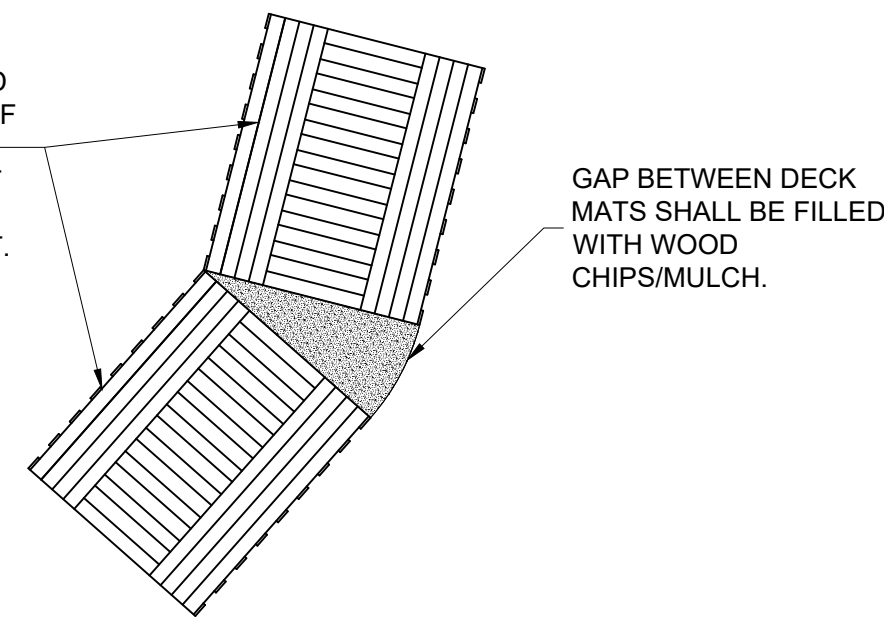
C-PCM-01-1



DECK MAT
NOT TO SCALE

TYPE: LAMINATED 2 PLY MAT
MATERIAL: HARDWOOD
APPLICATION: STRAIGHT ROADS WITH MODERATE
TURNS ON SANDY AND MUDDY ROADS
WEIGHT: 1,600 LBS EACH
WEIGHT CAPACITY: 40 TONS

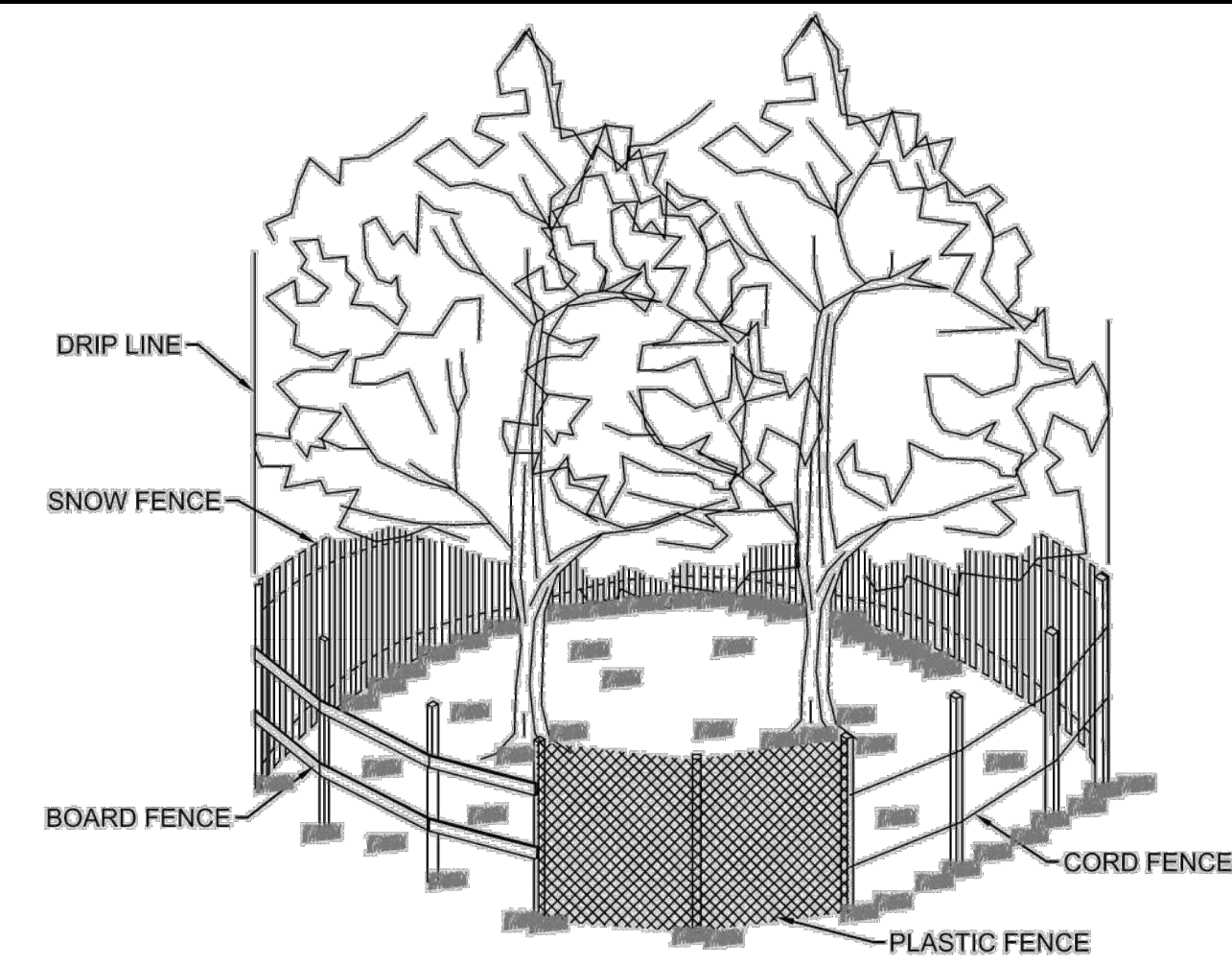
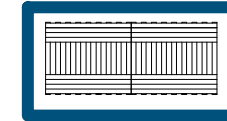
DECK MATS
DECK MATS SHOULD BE PLACED
ON A 6-12" LEVELING COURSE OF
WOOD CHIPS/MULCH. AN
ADDITIONAL LAYER MAY BE PUT
ON TOP OF MATS TO PROVIDE
PROTECTION FROM EQUIPMENT.



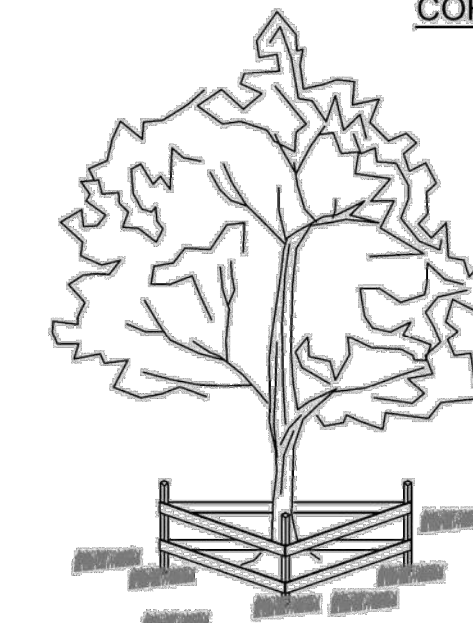
DECK MAT
TREATMENT OF ROAD TURNS
NOT TO SCALE

DECK MAT TEMPORARY ACCESS ROAD

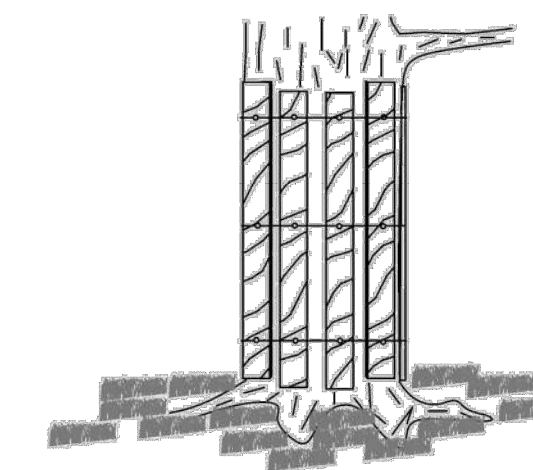
NOT TO SCALE



CORRECT METHODS OF TREE FENCING



TRIANGULAR BOARD FENCE



CORRECT TRUNK ARMORING

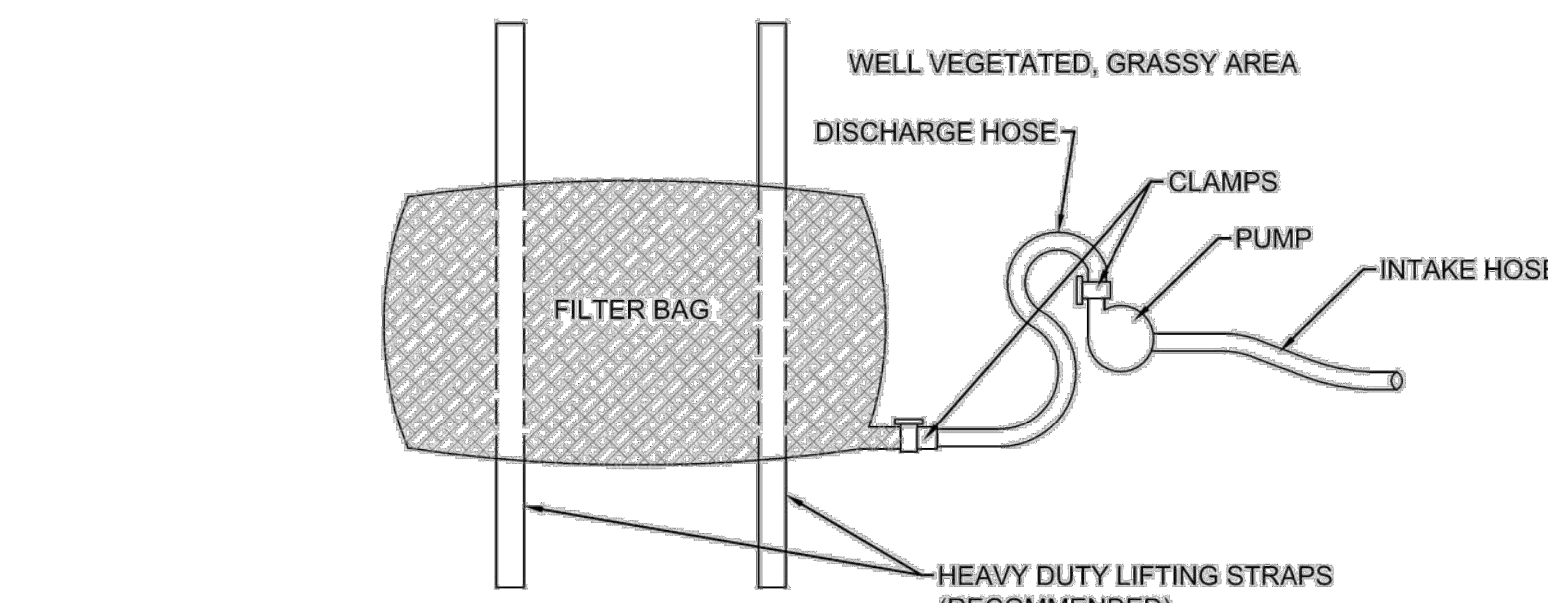


v1.1

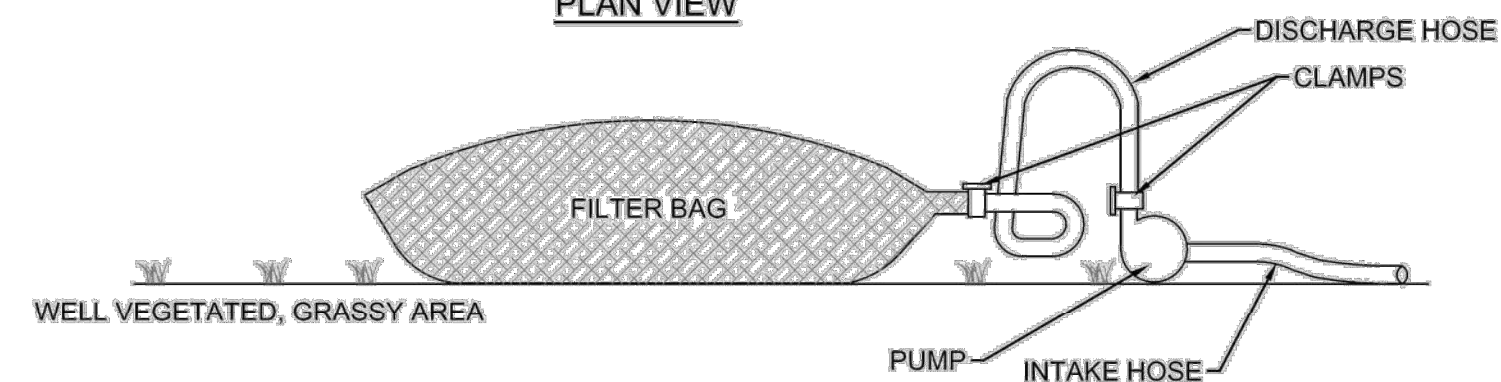
FENCING AND ARMORING

SOURCE: VA. DSWC

C-SSM-01-2



PLAN VIEW



ELEVATION VIEW

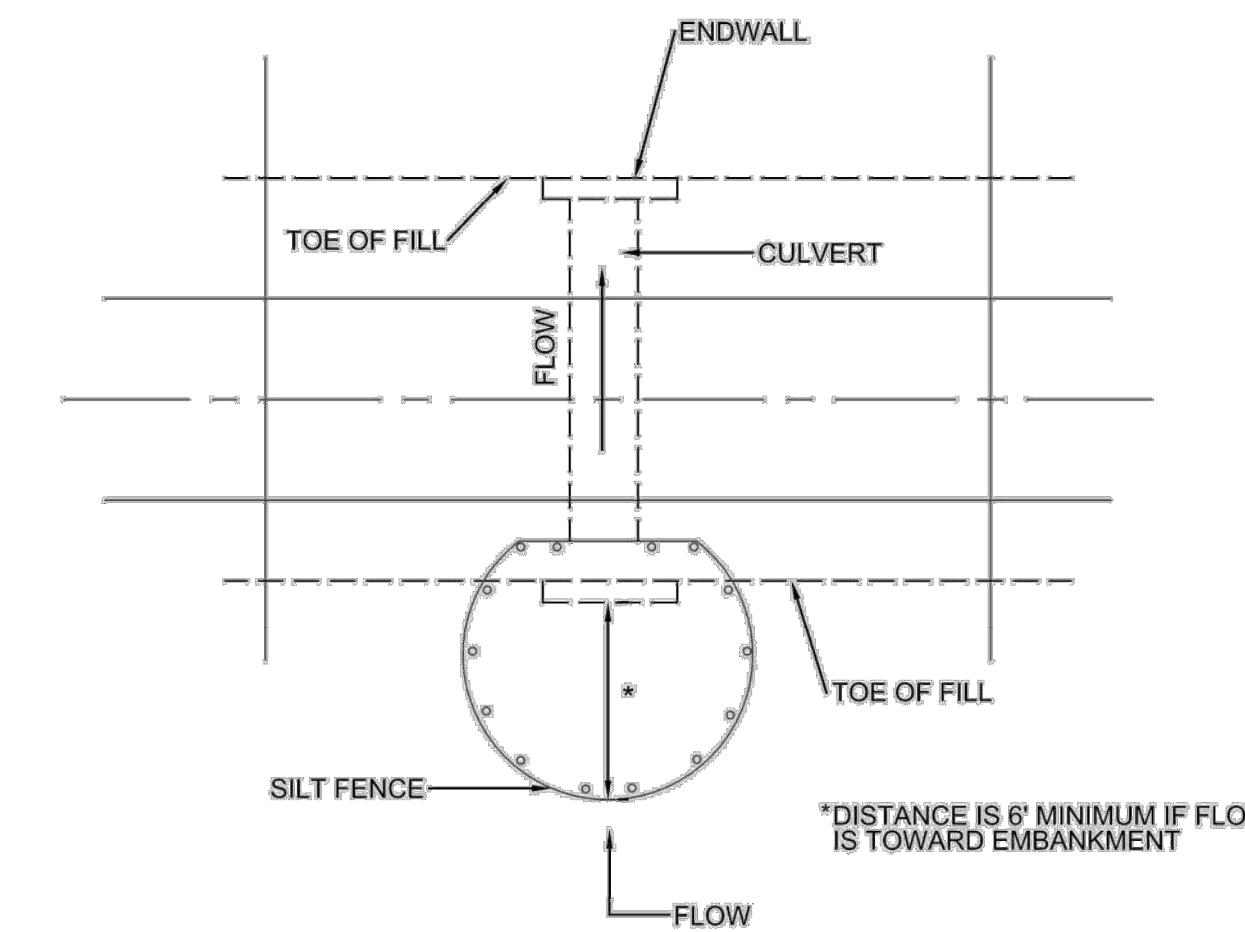


v1.1

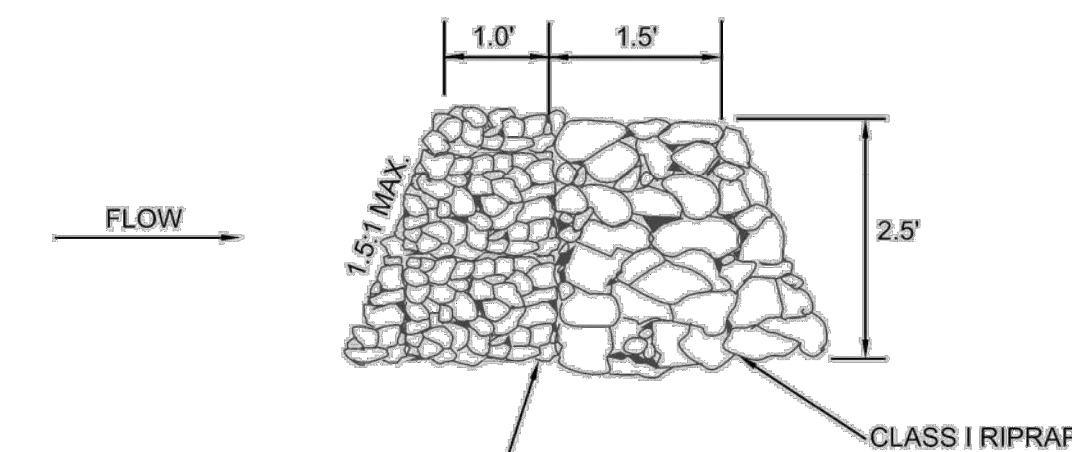
FILTER BAG

SOURCE: PADEP 2012

C-SCM-10-4



OPTIONAL STONE COMBINATION **



**VDOT #3, #357, #5, #56 OR #57 COARSE AGGREGATE
TO REPLACE SILT FENCE IN "HORSESHOE" WHEN
HIGH VELOCITY OF FLOW IS EXPECTED



v1.1

SILT FENCE CULVERT
INLET PROTECTION

SOURCE: VA. DSWC, VDOT

C-SCM-05-1



HGS, LLC, A RES COMPANY
101 S. 15TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
WWW.RES.US

RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32

TAZEWELL COUNTY

ESC DETAILS

TAZEWELL COUNTY, VA

STAMP/SEAL:



30% DESIGN REVIEW

BAILEY WILFONG 03/13/2026
Signature Date

PERMIT PLAN DESIGN REVIEW

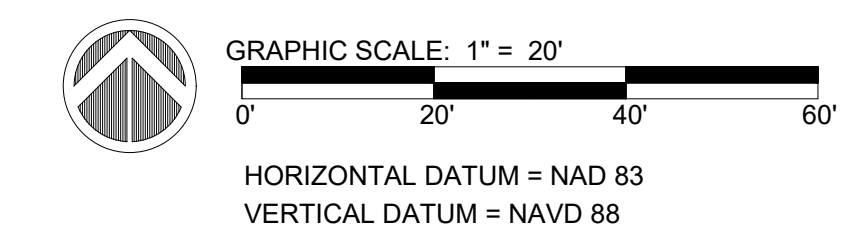
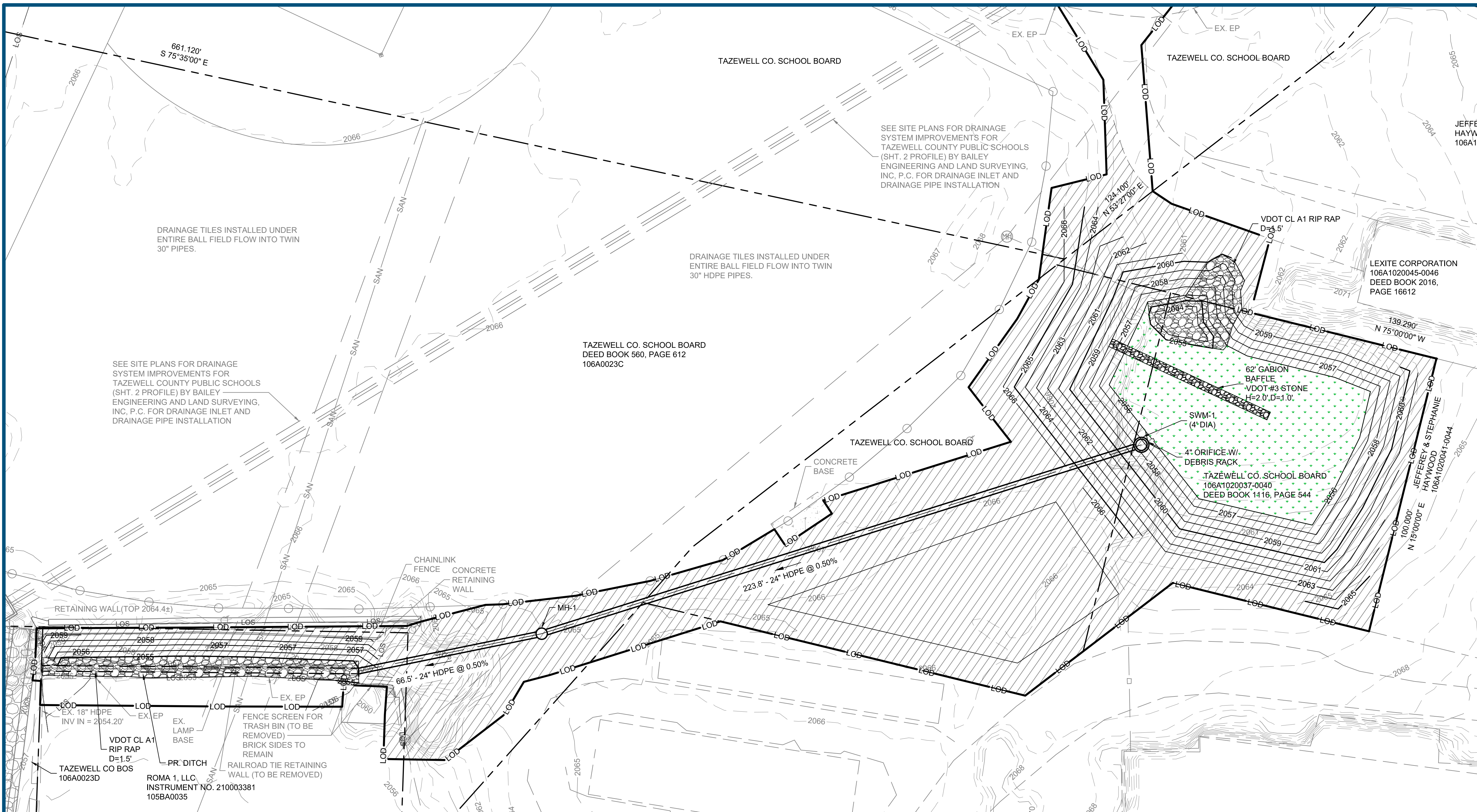
BAILEY WILFONG 05/01/2026
Signature Date

CONSTRUCTION PLAN REVIEW

Signature Date

REVISIONS:

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	



LEGEND:

---	EX. PROPERTY LINE
---	EX. PROPERTY ADJACENT
---	EX. MAJOR CONTOUR
---	EX. MINOR CONTOUR
---	EX. LIMITS OF SURVEY
---	EX. UTILITY EASEMENT
---	EX. STORM SEWER
---	EX. SANITARY SEWER
---	EX. WATERLINE
---	EX. ROAD CENTERLINE
---	EX. EDGE OF PAVEMENT
---	EX. EDGE OF GRAVEL
---	EX. FENCE
---	EX. BALLFIELD FENCE
---	EX. BUILDING
---	EX. RETAINING WALL
---	EX. DITCH
---	EX. CULVERT
---	EX. LIMITS OF DITCH SURVEY (10/2025)
---	PR. BUILDING
---	PR. DITCH
---	PR. STORM PIPE EDGE
---	PR. STORM PIPE CENTERLINE
---	PR. STORM STRUCTURE
---	PR. RIP RAP
---	PR. GABION BAFFLE
---	PR. MAJOR CONTOUR
---	PR. MINOR CONTOUR
---	PR. LIMITS OF DISTURBANCE
---	PR. WETLAND SEED MIX
---	PR. PERMANENT GRASS SEED MIX



HGS, LLC, A RES COMPANY
101 S. 15TH STREET, SUITE 104, RICHMOND, VIRGINIA 23219
WWW.RES.US

**RICHLAND HIGH SCHOOL DETENTION BASIN
FOR GRANT PROJECT CFPF 24-04-32**
TAZEWELL COUNTY
**BMP RETROFIT SEEDING PLAN &
TABLES**
TAZEWELL COUNTY, VA

WETLAND SEED MIX

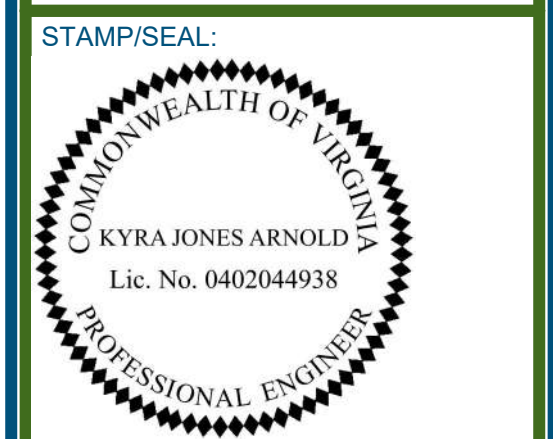
ACRES	0.1
POUNDS PER ACRE	16
TOTAL POUND	1.6

SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	% by weight
Grasses/Sedges			
Carex frankii, PA Ecotype	Frank's Sedge, PA Ecotype	OBL	20.0%
Carex lurida, PA Ecotype	Lurid Sedge, PA Ecotype	OBL	20.0%
Elymus riparius, PA Ecotype	Riverbank Wildrye, PA Ecotype	FACW	20.0%
Elymus virginicus, 'Madison'	Virginia Wildrye, 'Madison'	OBL	14.0%
Carex vulpinoidea, NC Ecotype	Fox Sedge, NC Ecotype	FACW	7.0%
Eleocharis obtusa	Blunt Spikerush	OBL	5.0%
Juncus effusus	Soft Rush	FACW	0.3%
Scirpus cyperinus, PA Ecotype	Woolgrass, PA Ecotype	FACW	0.3%
Forbs / Legumes			
Vernonia noveboracensis, PA Ecotype	New York Ironweed, PA Ecotype	OBL	13.5%
Asclepias incarnata, PA Ecotype	Swamp Milkweed, PA Ecotype	FACW	3.5%
Eupatorium perfoliatum, PA Ecotype	Boneset, PA Ecotype	FACW	2.5%
Mimulus ringens	Square Stemmed Monkeyflower	FACW	0.5%
Ludwigia alternifolia, PA Ecotype	Seedbox, PA Ecotype	OBL	0.5%
			100.0%

Table C-SSM-10-6 Suggested and Example Site-Specific Seeding Mixtures for Appalachian/Mountain Area

Site Condition	Seed Mix	Application Rate (pounds per acre)
Minimum-Care Lawn Commercial or Residential	Turf-Type Tall Fescue	90-100%
	Improved Perennial Ryegrass*	0-10%
	Kentucky Bluegrass	0-10%
High-Maintenance Lawn	Bluegrass - minimum of three to five varieties from VCIA list for use in Virginia	125
	Improved VCIA Turf-Type Tall Fescue	150 - 200
General Slope (3H:1V or less)	Tall Fescue****	50 - 75
	Red Top and/or Hard Fescue	10 - 20
	White Clover and/or Birdsfoot Trefoil***	10 - 20
	Seasonal Nurse Crop **	30 - 40
Low-Maintenance Slope (> 3:1) or Inaccessible Area***	Tall Fescue****	50 - 75
	Red Top or Hard Fescue	10 - 20
	Annual Lespedeza	10 - 15
	White Clover and/or Birdsfoot Trefoil***	10 - 20
	Seasonal Nurse/Cover Crop**	30 - 40

* Perennial ryegrass will germinate faster and at lower soil temperatures than fescue, thereby providing cover and erosion resistance for seedbed.
 ** Use seasonal nurse crop in accordance with seeding dates as stated below:
 March 1 through May 15 - annual/cereal rye
 May 16 through August 15 - foxtail/German millet
 August 16 through February 28 - annual/cereal rye
 *** All legume seed must be properly inoculated. Legumes recommended unless periodic N fertilization maintenance intended. Flatpae at 20 lbs/acre may be utilized where warranted. All legume seed must be properly inoculated. Weeping lovegrass may also be included in any slope or low-maintenance mixture during warmer seeding periods; add 10 to 20 lbs/acre in mixes.
 **** Increase seeding rate if Kentucky 31 is used rather than VCIA/VDOT improved varieties.
 Note: Seed mixes are suggested and subject to modification based on site-specific conditions by an agronomist or other qualified revegetation professionals. All seed rates expressed as PLS (Pure Live Seed; see Table C-SSM-10-9).



30% DESIGN REVIEW

BAILEY WILFONG	03/13/2026
Signature	Date

PERMIT PLAN DESIGN REVIEW

BAILEY WILFONG	05/01/2026
Signature	Date

CONSTRUCTION PLAN REVIEW

---	---
Signature	Date

REVISIONS:

---	---
Signature	Date

NOTES:

1. TOPOGRAPHIC SURVEY PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C., ON 3/2025 & 10/2025. CONTOUR INTERVAL IS ONE (1) FOOT.
2. PROPERTY LINES AND OTHER LINE WORK PROVIDED BY BAILEY ENGINEERING & LAND SURVEYING, INC., P.C.
3. TRENCH BOX TO BE USED, WHERE SHOWN, DUE TO SITE CONSTRAINTS. CONTRACTOR MUST FOLLOW OSHA STANDARDS.
4. LOD = 0.90 AC.

PROJECT MANAGER:	CA
DESIGNED:	KA
DRAWN:	KA
JOB NUMBER:	111834
DESIGN TYPE:	BMP
DATE:	6/22/2026
SHEET NO:	17 OF 17