

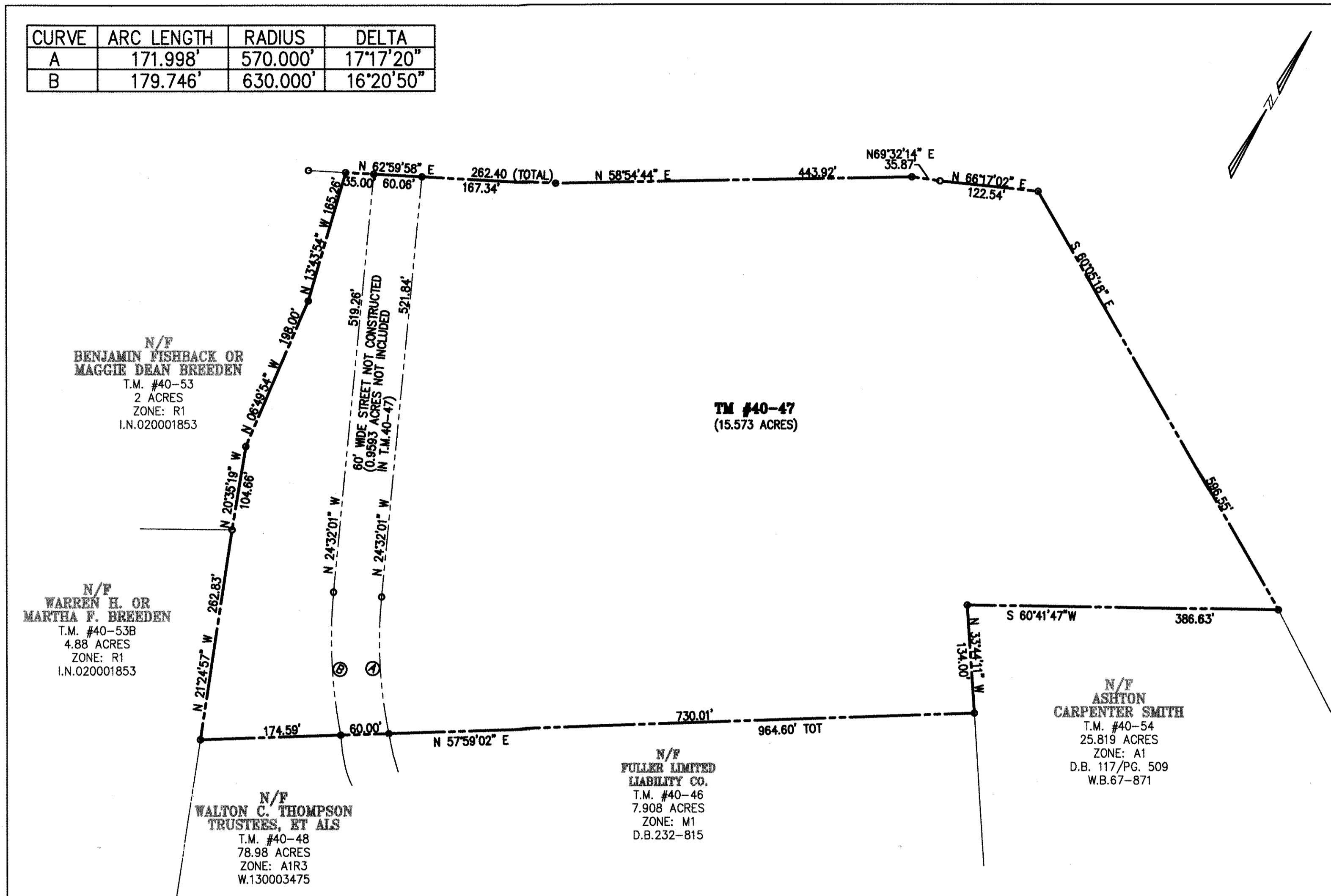
**GENERAL NOTES**

- All construction shall conform to existing State and County building codes. It is the contractor's responsibility to be aware of all applicable standards and specifications as well as required methods of construction. The contractor shall furnish all materials, labor, and equipment to perform all work, including restoration, for the completed installation of all improvements shown hereon or implied as necessary to complete the proposed improvements.
- The contractor or his agent shall be responsible for digging test pits to determine the exact location of any existing underground utilities prior to the beginning of construction. In particular, test pits adjacent to existing high pressure gas mains shall be performed in the presence of a gas company representative and shall be hand dug according to their instruction. Utilities shown hereon are based on available information.
- No title report was furnished. However, this property is subject to any existing easements, covenants and servitudes of record.
- All erosion and sediment control practices shall be constructed and maintained in accordance with the minimum standards and specifications of the 1992 Virginia Erosion and Sediment Control Handbook and County ordinances. Removal of said controls shall be authorized by the County inspector but, at least, shall not be removed until permanent vegetative cover is established on all denuded areas.
- Construction should be sequenced so that grading operations can begin and end as quickly as possible. Sediment trapping measures, such as silt fences, shall be installed and made functional before any land disturbing activity begins.
- Prior to development, the limits of clearing shall be clearly marked on the property and suitable protective barriers shall be erected five (5) feet outside the drip line of any tree or stand of trees to be preserved within 100 feet of the construction footprint. The barriers shall remain erected throughout all phases of construction. The storage of equipment, materials, debris or fill shall not be allowed with the area protected by the barrier.
- Engineered fill and backfill shall be approved select materials and shall be placed in six to eight inch layers and compacted at optimum moisture, plus or minus two percent, to a density of not less than 95 percent in accordance with A.A.S.H.T.O. T-99 or A.S.T.M. D-698.
- No subsurface investigation has been performed by Hinchey and Baines, PLC to attest to the soil conditions or the presence of toxic or contaminated waste.
- It shall be the responsibility of the contractor or developer to have sufficient soils and foundation testing performed to determine that the support values and C.B.R.'s are adequate for the standards shown on this plan.
- All construction involving problem soils must be performed under the full-time inspection of a professional geotechnical engineer.
- The contractor shall perform necessary grading to preclude the ponding of water on roadways and buildable areas.
- There is a small family gravesite on this site, see plan for location. In the event other gravesites are discovered during construction, the Planning Office should be notified immediately. All activities must cease and shall not resume until authorization to proceed is granted by the Planning Office. Gravesites shall be protected in accordance with state law.
- Prior to clearing and grading on slopes 25% or greater, all surface drainage will be routed away from the area to be graded.
- All fill materials and their subgrade will be approved by the soils engineer for this site.
- No portion of the land hereon is located in the F.I.R.M. 100-year special floodplain area zone "A", as indicated on Flood Insurance Rate Map (FIRM) number 51113C0175C, effective date January 05, 2007. The entire property is located in zone "X".
- All wetland permits, if required by federal, state, and local laws and regulations, shall have been obtained prior to initiating grading or any other on-site land disturbing activity.
- The developer shall be responsible for the relocation of any utilities which may be required as a result of this project. The relocation should be done prior to construction.
- The developer shall be responsible for any damage to the existing streets and utilities which occurs as a result of this project within or contiguous to the existing right-of-way.
- All construction in street right-of-way shall be in conformance with standards and specifications of the Virginia Department of Transportation and Madison county.
- There are no known historic buildings or features on site.
- Land Disturbance shall not commence until an Operator has submitted a NPDES Construction General Permit Registration Statement and received a Permit Coverage Number from the Virginia Department of Environmental Quality (DEQ).
- The approved plans and the prepared Stormwater Pollution Prevention Plan (SWPPP) shall be kept on the work site with the Land Disturbance Permit and Construction General Permit and shown upon request.
- The Permittee is responsible for providing as-built documentation that certifies that the completed Stormwater BMPs are in accordance with the approved plans and specifications. The applicant shall provide a written log of regular inspections sufficient to adequately document compliance.
- Any work performed within existing or proposed VDOT maintained Right-of-Way shall conform to the current editions of and latest revisions to the Virginia Department of Transportation (VDOT) Road and Bridge Specifications and Standards. In case of discrepancy or conflict between the Standards, Specifications or Regulations, the most stringent shall apply.
- Prior to initiation of work, a VDOT Land Use Permit for any work within VDOT's Right-of-Way shall be obtained.

# SITE PLAN

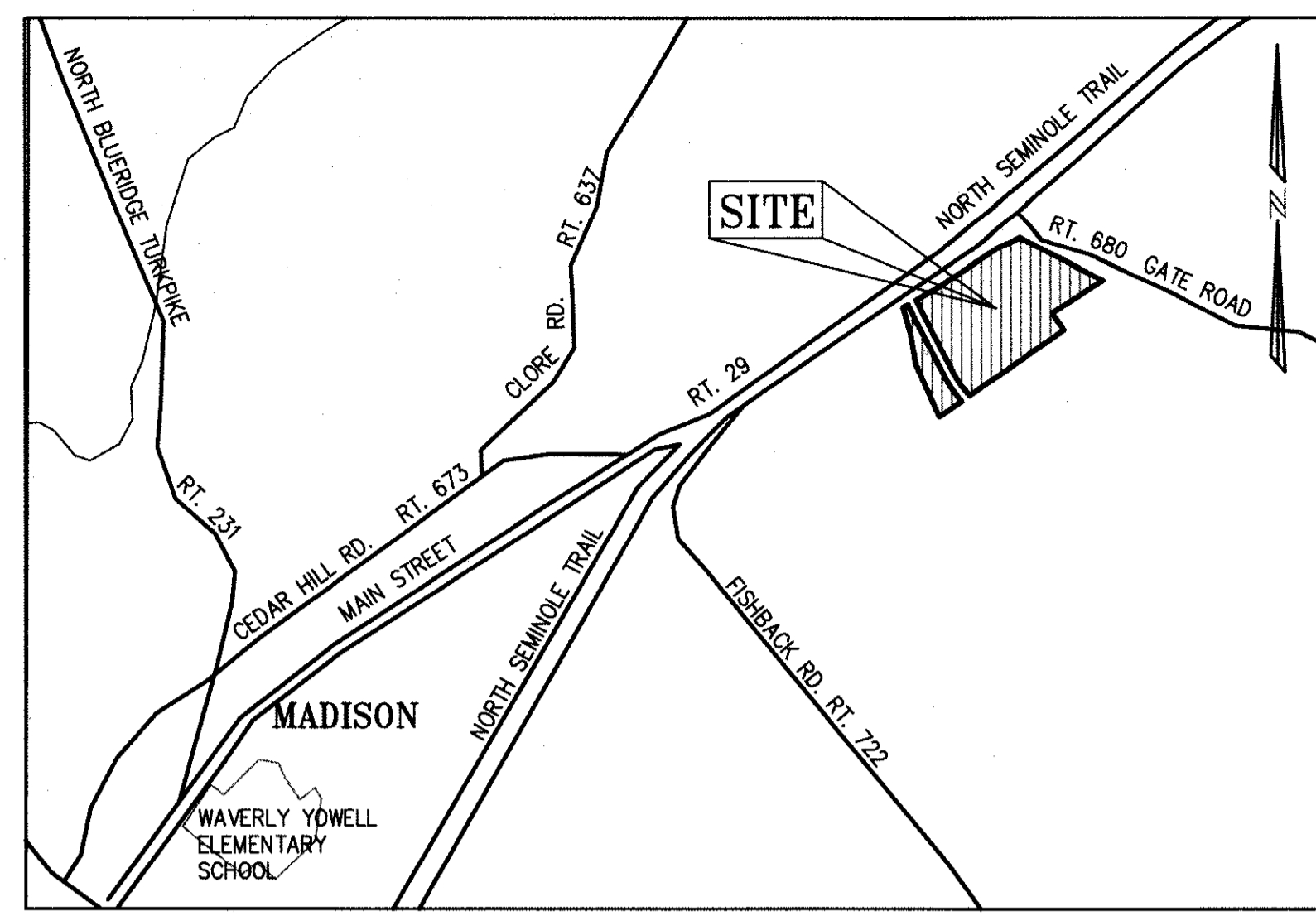
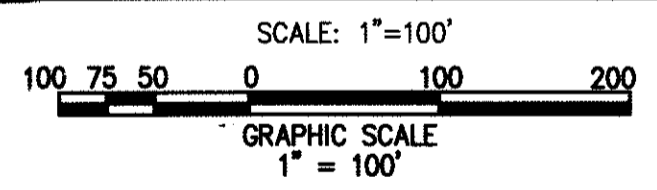
## MADISON RESCUE SQUAD

### MADISON COUNTY, VIRGINIA



CURVE	ARC LENGTH	RADIUS	DELTA
A	171.998'	570.000'	17°17'20"
B	179.746'	630.000'	16°20'50"

**BOUNDARY & ADJOINER INFORMATION**



**VICINITY MAP**  
SCALE: 1"=1,000'

**PLAN NOTES**

- PARCEL IDENTIFICATION: T.M. 40-47 (15.573 ACRES)
- OWNER/APPLICANT: MADISON COUNTY RESCUE SQUAD  
P.O. BOX 23  
MADISON, VA 22727
- PROPOSED DEVELOPMENT: RESCUE SQUAD BUILDING (29,250 S.F.)
- BOUNDARY INFORMATION TAKEN FROM BOUNDARY PLAT OF U.S. ROUTE 29, MADISON PROJECT, INC., PROPERTY BY WILLIAM P. GIMBEL, L.S., DATED FEBRUARY 10, 1995 AND BOUNDARY ADJUSTMENT SURVEY SHOWING A 3.003 ACRE PORTION OF: ASHTON CARPENTER SMITH PROPERTY BY WILLIAM P. GIMBEL, L.S. DATED DECEMBER 14, 2015.
- TOPOGRAPHICAL INFORMATION PROVIDED BY WILLIAM P. GIMBEL, L.S., DATED MARCH 28, 2016.
- PARKING TABULATION  
PARKING: OTHER USE = 1/150 SF GROSS FLOOR AREA  
REQUIRED: 20911 SF/150 = 140 SPACES  
PROVIDED: 169 SPACES INC. 7 HC  
  
\*(29,247 SF LESS 8856 SF BAYS + 2560 SF LESS 2040 SF BAYS)
- ZONING: CONDITIONAL B-1 (BUSINESS)  
USE: RESCUE SQUAD BUILDING  
SETBACKS: FRONT: 50' FROM R.O.W.  
SIDE/REAR YARDS: 50' ADJ. TO RESIDENTIAL OR AG ZONING  
  
BUILDING HEIGHT:  
MAXIMUM ALLOWED: 35'  
ACTUAL: 34'  
NO. OF STORIES: 1
- THE PROPOSED BUILDING WILL BE SERVED BY PRIVATE WELL AND SEPTIC. (FINAL DESIGN BY OTHERS) SEPTIC IMPROVEMENTS SHOWN ON THIS PLAN ARE FOR ILLUSTRATIVE PURPOSES ONLY.
- ALL CONSTRUCTION TO CONFORM TO MADISON COUNTY STANDARDS AND SPECIFICATIONS.

TRIP GENERATION NARRATIVE  
SINCE THE ITE TRIP GENERATION MANUAL DOES NOT HAVE A LAND USE CODE FOR RESCUE SQUADS, SPECIFIC PROJECT INFORMATION PROVIDED BY THE MADISON RESCUE SQUAD HAS BEEN USED TO DETERMINE THE PROJECTED TRAFFIC GENERATION.

12 EMPLOYEES @ 4 TRIPS/DAY = 48 VPD  
2,000 EMERGENCY RESPONSE CALLS PER YEAR WITH 6 TRIPS PER CALL (INCLUDES 2 CREW MEMBERS GOING TO STATION).  
(2,000 x 6) / 365 = 33 VPD  
TOTAL = 81 VPD

**SHEET INDEX**

- COVER SHEET
- EXISTING CONDITIONS AND DEMOLITION PLAN
- SITE SURVEY & SITE DETAILS
- SITE PLAN
- GRADING PLAN
- PLAN & PROFILE - SIGHT DISTANCE
- PLAN & PROFILE - ENTRANCE ROAD
- STORM SEWER PROFILES & COMPUTATIONS
- CULVERT PROFILES & COMPUTATIONS
- ADEQUATE CHANNEL CROSS SECTIONS
- EXISTING 36" CULVERT ANALYSIS
- PHASE 1 EROSION AND SEDIMENT CONTROL PLAN
- PHASE 2 EROSION AND SEDIMENT CONTROL PLAN
- EROSION AND SEDIMENT CONTROL NARRATIVE
- EROSION AND SEDIMENT CONTROL DETAILS
- POST-DEVELOPMENT DRAINAGE MAP (FOR QUALITY PURPOSES)
- STORMWATER MANAGEMENT QUALITY COMPUTATIONS (RRM SPREADSHEET)
- PRE-DEVELOPMENT DRAINAGE MAP (FOR QUANTITY PURPOSES)
- POST-DEVELOPMENT DRAINAGE MAP (FOR QUANTITY PURPOSES)
- STORMWATER MANAGEMENT QUANTITY COMPUTATIONS (HYDROGRAPHS)
- STORMWATER MANAGEMENT DETAILS
- STORMWATER MANAGEMENT NOTES & SUMMARY
- LANDSCAPE PLAN
- LANDSCAPE PLAN
- LIGHTING PLAN



**APPROVAL BLOCK**

COUNTY OF MADISON

APPROVED BY: *[Signature]* DATE: 7-20-17

MADISON COUNTY HEALTH DEPARTMENT

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

EROSION & SEDIMENT CONTROL

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

The Board of Supervisors on July 5, 2017 approved this site plan. Approval letters are attached.

The Board of Supervisors on July 5, 2017 set the erosion and sediment control bond in the amount of \$87,000.00.

**VDOT APPROVAL**

These plans have been reviewed for compliance with current VDOT Specifications and Standards and recommend approval.

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

VDOT CONTACT:  
Virginia Department of Transportation  
(Culpeper Land Use "North")  
1601 Orange Road  
Culpeper, VA 22701  
Contact: Anthony Hurlock  
Phone: (540) 829-7498  
Email: Anthony.Hurlock@VDOT.Virginia.gov

**NOTICE REQUIRED**

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST TWO WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.

**ENGINEER'S CERTIFICATION**

THE PROPERTY SHOWN HEREON IS IN THE NAME OF MADISON COUNTY RESCUE SQUAD AT INSTRUMENT NUMBER 110001123 AS FOUND IN THE LAND RECORDS OF MADISON COUNTY, VIRGINIA.

*[Signature]*  
ENGINEER LICENSE NUMBER: 017596 DATE: 6-14-2017

**HINCHEY & BAINES, PLC**  
ENGINEERING AND LAND PLANNING  
125 EAST DAVIS STREET  
SUITE 201  
CULPEPER, VIRGINIA 22701  
PHONE (540) 829-2220  
FAX (540) 829-2239



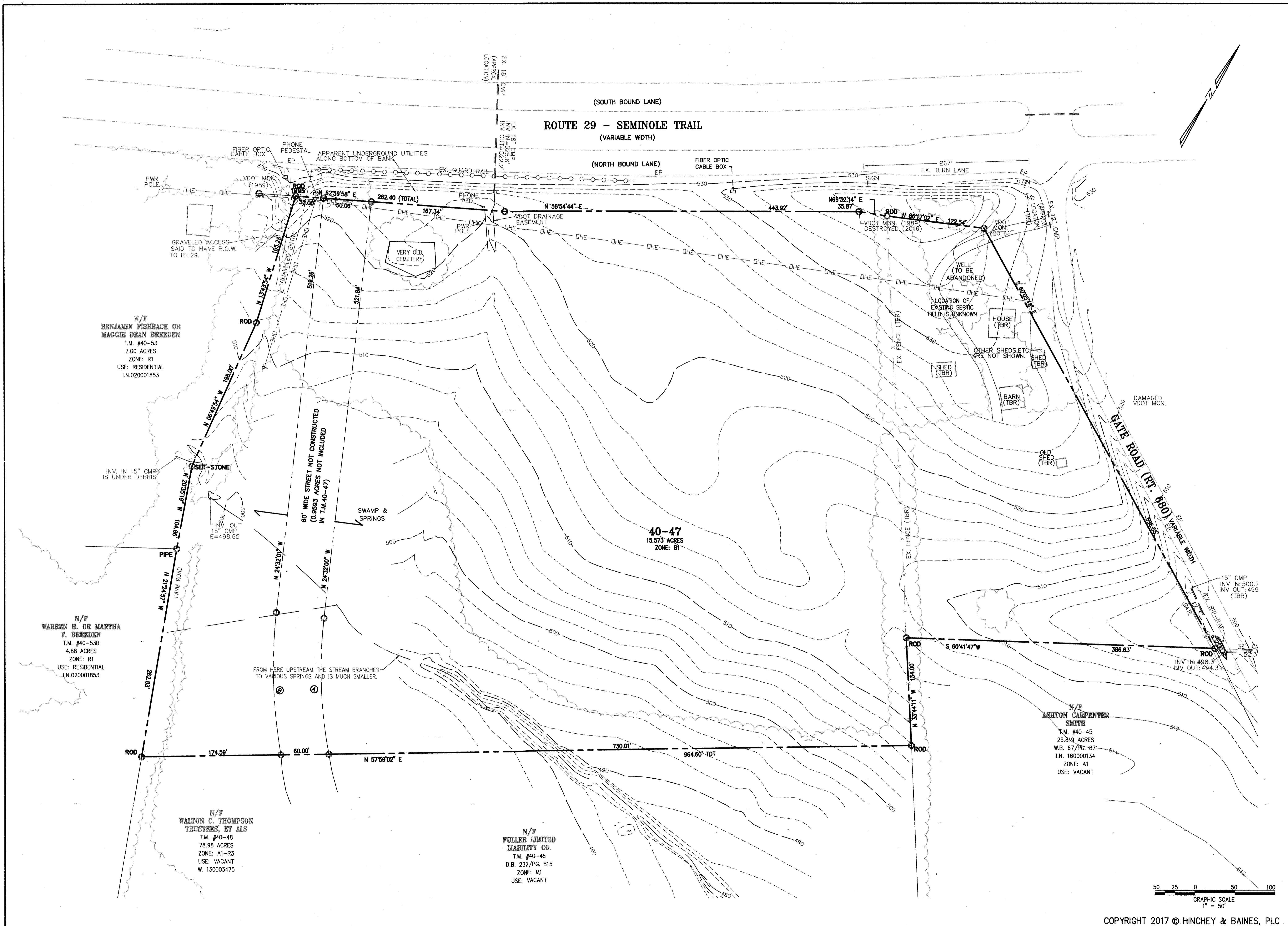
COVER SHEET  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED

DATE: 10/5/16

REVISIONS:  
2/28/17 PER COUNTY & DEQ COMMENTS  
5/5/17 PER DEQ COMMENTS  
6/14/17 PER PROP. PROPANE TANKS & REV. LIGHTING  
6/21/17 PER OIL SEPARATOR TANKS & REV. LIGHTING

SHEET 1 of 24  
FILE NO. 1275



N/F  
BENJAMIN FISHBACK OR  
MAGGIE DEAN BREKEDEN  
T.M. #40-53  
2.00 ACRES  
ZONE: R1  
USE: RESIDENTIAL  
I.N. 020001853

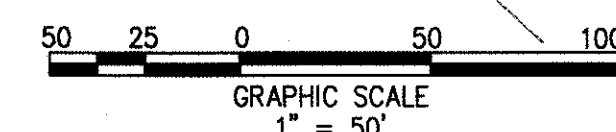
N/F  
WARREN H. OR MARTHA  
F. BREKEDEN  
T.M. #40-53B  
4.88 ACRES  
ZONE: R1  
USE: RESIDENTIAL  
I.N. 020001853

N/F  
WALTON C. THOMPSON  
TRUSTEES, ET ALS  
T.M. #40-48  
78.98 ACRES  
ZONE: A1-R3  
USE: VACANT  
W. 130003475

N/F  
FULLER LIMITED  
LIABILITY CO.  
T.M. #40-46  
D.B. 232/PG. 815  
ZONE: M1  
USE: VACANT

40-47  
15.573 ACRES  
ZONE: B1

N/F  
ASHTON CARPENTER  
SMITH  
T.M. #40-45  
25.819 ACRES  
W.B. 67/PG. 871  
I.N. 160000134  
ZONE: A1  
USE: VACANT



**HINCHEY & BAINES, PLC**  
ENGINEERING AND LAND PLANNING  
125 EAST DAVIS STREET  
SUITE 201  
CULPEPER, VIRGINIA 22701  
PHONE (540) 829-2220  
FAX (540) 829-2239

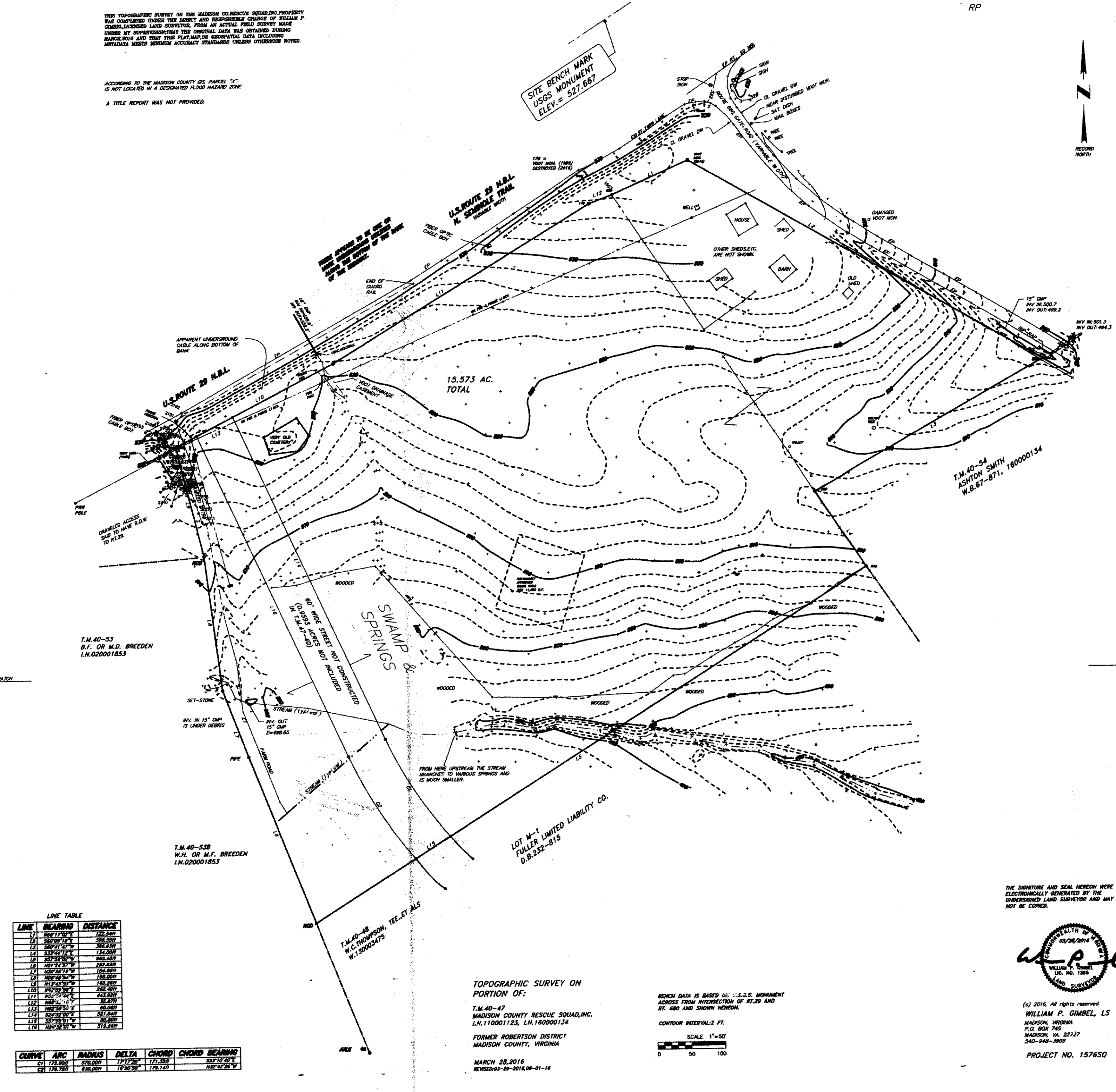


EXISTING CONDITIONS AND DEMOLITION PLAN  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED
DATE: 10/5/16
REVISIONS: 2/28/17 PER COUNTY & DEQ COMMENTS 5/5/17 PER DEQ COMMENTS
SHEET 2 OF 24
FILE NO. 1275

THIS TOPOGRAPHIC SURVEY ON THE MADISON COUNTY RESCUE SQUAD PROPERTY WAS CONDUCTED UNDER THE DIRECTION AND SUPERVISION OF WILLIAM P. GIBREL, LICENSED PROFESSIONAL LAND SURVEYOR, AND IN ACCORDANCE WITH THE STANDARDS AND PRACTICES OF THE PROFESSION AS SET FORTH IN THE VIRGINIA PROFESSIONAL LAND SURVEYING ACT AND THE REGULATIONS THEREUNDER. THE ORIGINAL DATA WAS OBTAINED USING A TOTAL STATION AND THIS PLAN IS BASED ON THE DATA OBTAINED THEREFROM. METADATA STATES SURVEY ACCURACY STANDARDS (UNLESS OTHERWISE NOTED):

ACCORDING TO THE MADISON COUNTY DEED PARCELS, THIS SITE IS NOT LOCATED IN A DESIGNATED FLOOD HAZARD ZONE. A FLOOD HAZARD REPORT HAS NOT BEEN PROVIDED.



LINE	BEARING	DISTANCE
11	S87°17'30\"	222.500
12	S87°17'30\"	222.500
13	S87°17'30\"	222.500
14	S87°17'30\"	222.500
15	S87°17'30\"	222.500
16	S87°17'30\"	222.500
17	S87°17'30\"	222.500
18	S87°17'30\"	222.500
19	S87°17'30\"	222.500
20	S87°17'30\"	222.500
21	S87°17'30\"	222.500
22	S87°17'30\"	222.500
23	S87°17'30\"	222.500
24	S87°17'30\"	222.500
25	S87°17'30\"	222.500
26	S87°17'30\"	222.500
27	S87°17'30\"	222.500
28	S87°17'30\"	222.500
29	S87°17'30\"	222.500
30	S87°17'30\"	222.500
31	S87°17'30\"	222.500
32	S87°17'30\"	222.500
33	S87°17'30\"	222.500
34	S87°17'30\"	222.500
35	S87°17'30\"	222.500
36	S87°17'30\"	222.500
37	S87°17'30\"	222.500
38	S87°17'30\"	222.500
39	S87°17'30\"	222.500
40	S87°17'30\"	222.500
41	S87°17'30\"	222.500
42	S87°17'30\"	222.500
43	S87°17'30\"	222.500
44	S87°17'30\"	222.500
45	S87°17'30\"	222.500
46	S87°17'30\"	222.500
47	S87°17'30\"	222.500
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49	S87°17'30\"	222.500
50	S87°17'30\"	222.500

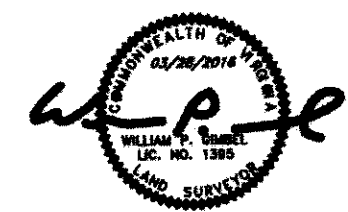
  

CURVE	ARC	RADIUS	DELTA	CHORD	CHORD BEARING
1	172.500'	276.000'	172.729°	172.500'	S87°17'30\"
2	172.500'	276.000'	172.729°	172.500'	S87°17'30\"
3	172.500'	276.000'	172.729°	172.500'	S87°17'30\"

TOPOGRAPHIC SURVEY ON PORTION OF:  
 T.M. 40-47  
 MADISON COUNTY RESCUE SQUAD, INC.  
 I.N. 110001123, I.N. 180000134  
 FORMER ROBERTSON DISTRICT  
 MADISON COUNTY, VIRGINIA  
 MARCH 28, 2016  
 W816045-99-30148-01-15

BENCH DATA IS BASED ON U.S.S. MONUMENT ADJACENT FROM INTERSECTION OF R.R. 23 AND RT. 600 AND SHOWN HEREON.  
 CONTOUR INTERVALS: FT.  
 SCALE: 1"=40'  
 0 20 40 80 100

THE SIGNATURE AND SEAL HEREON WERE ELECTRONICALLY GENERATED BY THE UNDERSIGNED LAND SURVEYOR AND MAY NOT BE COPIED.



(c) 2016. All rights reserved.  
 WILLIAM P. GIBREL, L.S.  
 MADISON, VIRGINIA  
 P.O. BOX 745  
 MADISON, VA 22127  
 540-348-3000  
 PROJECT NO. 157650

Piedmont Geotechnical, Inc.  
 14735 Wright Lane - Waterford, Virginia 20197-1601  
 540-882-9110 - Piedmont@aol.com

January 26, 2017

Soil Tech, Inc.  
 Attn: Mr. Bill Sledjeski  
 14730 F. Flint Lee Road  
 Chantilly, Virginia 20151

Re: Subsurface Exploration and Geotechnical Engineering Evaluation Proposed Rescue Squad Building  
 30 Gate Road  
 Madison, Virginia  
 PGI No. 2109VA

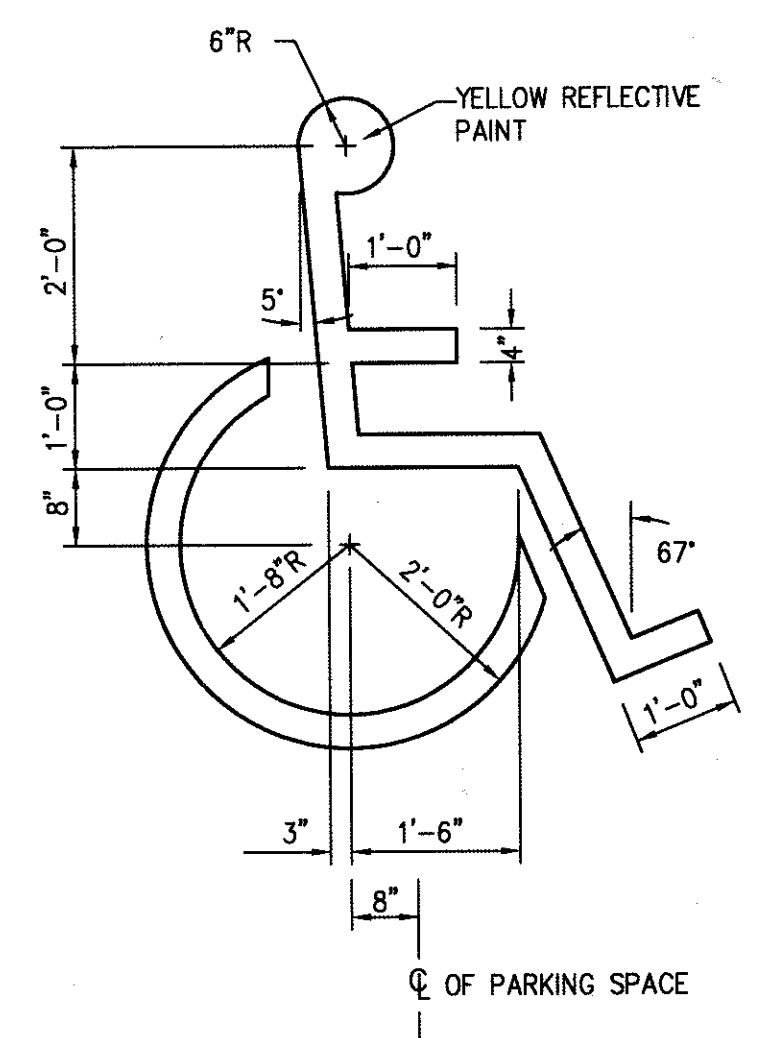
Dear Mr. Sledjeski:  
 Piedmont Geotechnical, Inc. has completed the authorized geotechnical engineering evaluation for a proposed Rescue Squad Building. The report describes the exploration methods employed, exhibits the data obtained, and presents our evaluation and recommendations. In summary, it is our judgment that the site is suitable for construction of the proposed improvements using conventional spread footing foundation support.  
 We have appreciated this opportunity to be of service to you. Should you have any questions regarding the content of this report, or if we may be of further service, please contact our office.

Sincerely,  
 Daniel S. Rom, P.E.  
 Vice President  
 DSR/jbp

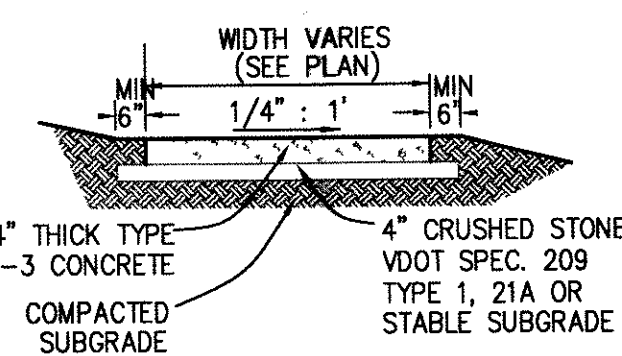
I hereby certify that the contents prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the Commonwealth of Virginia, License No. 12517, Expiration Date: September 30, 2018.

Geotechnical and Geo-Environmental Consulting  
 Virginia Licensed: District of Columbia, West Virginia, New York, North Carolina, Pennsylvania, Delaware, US Virgin Islands

**INTERNATIONAL HANDICAP SYMBOL**  
 NOT TO SCALE



**TYPICAL SECTION CONCRETE SIDEWALK**  
 NOT TO SCALE

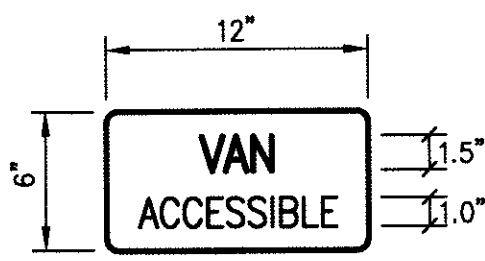


NOTE: SUBGRADE FOR ALL SIDEWALKS, SHALL BE COMPACTED TO MINIMUM 95% DENSITY AT OPTIMUM MOISTURE IN ACCORDANCE WITH AASHTO T99-61. SIDEWALK UNDERDRAINS ARE TO BE USED WHEN THE SIDEWALK LONGITUDINAL GRADIENT IS 3% OR MORE AND WHEN THE UNDERLYING SOIL HAS 34% OR MORE PASSING THE No. 200 SIEVE AND HAS A PI OF 13 OR LESS.



**ACCESSIBLE PARKING SIGN**

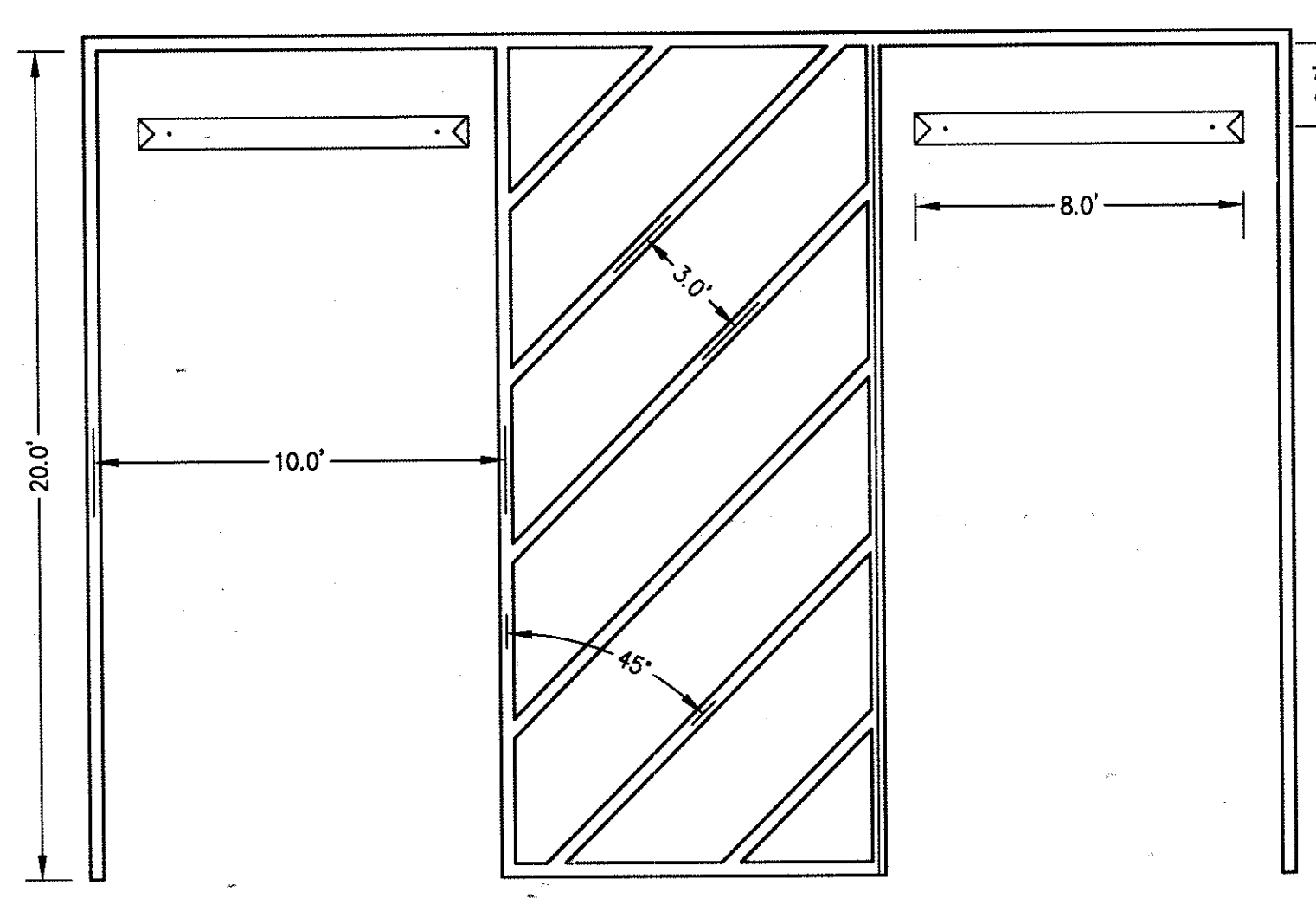
NEW VA. HANDICAPPED SIGN ON 0.80 GAUGE ALUM. COLORS: GREEN BORDER & LEGEND, WHITE CAPPED SYMBOL. WHITE EG. BACKGROUND



**VAN ACCESSIBLE PARKING SIGN**

COLORS: GREEN BORDER & LEGEND, WHITE EG. CAPPED SYMBOL. WHITE EG. BACKGROUND ON 0.80 GAUGE ALUM.

**PARKING LOT STRIPING DETAIL**  
 NOT TO SCALE

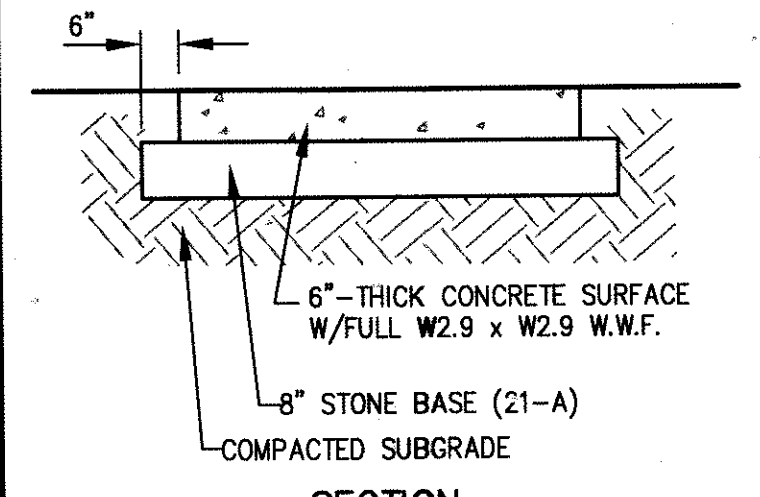
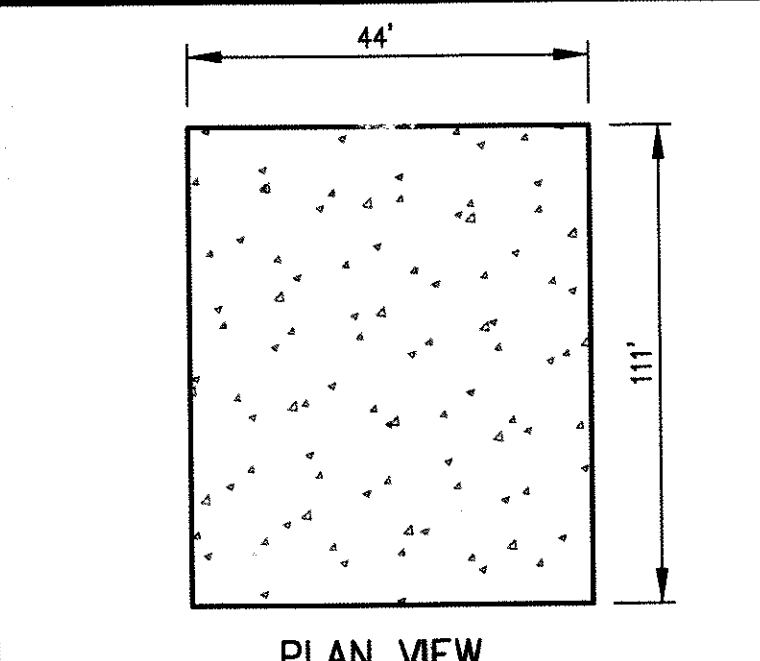
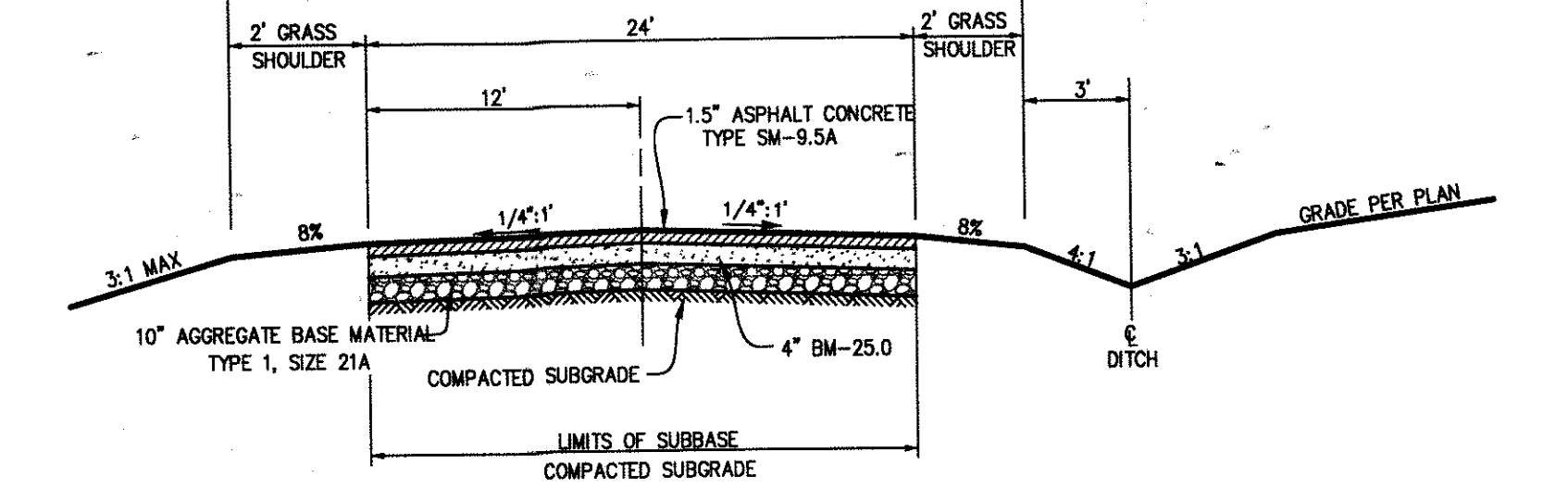


**STRIPING NOTES**

1. PARKING LOT STRIPING SHALL BE INSTALLED ACCORDING TO THE LAYOUT AS SHOWN ON THIS SITE PLAN.
2. PARKING SPACES SHALL BE PERMANENTLY MARKED IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL STANDARDS.
3. AS A MINIMUM, STRIPING LINES SHALL BE LOCATED ALONG THE SIDES AND (UNLESS CURBING IS PRESENT) ALONG THE HEAD OF EACH PARKING STALL.
4. ALL PARKING LOT STRIPING SHALL BE VDOT TRAFFIC-RATED WHITE PAINT AND A MINIMUM OF 4\"/>

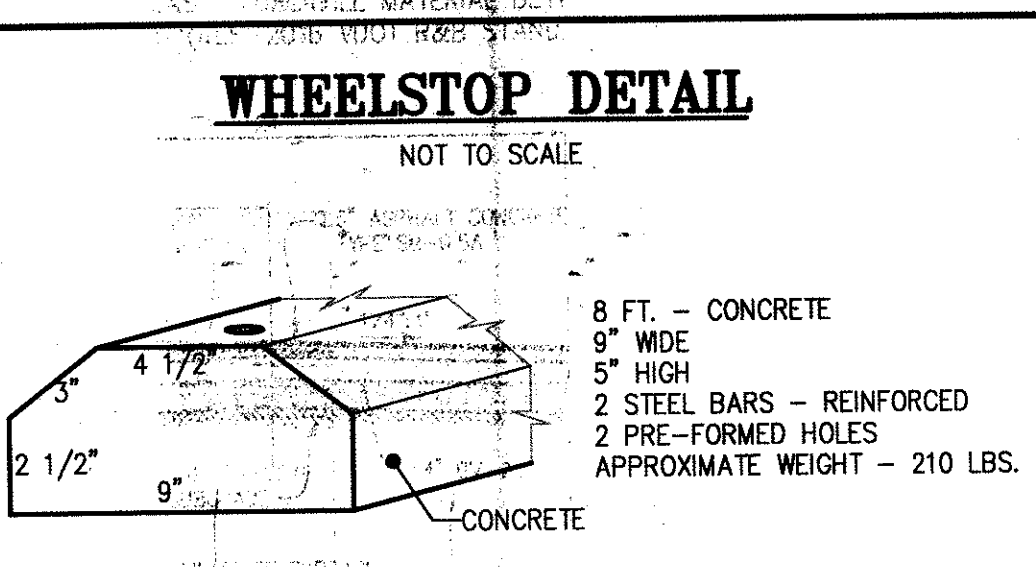
**TYPICAL SECTION ENTRANCE AND ONSITE PAVING**  
 NOT TO SCALE

NOTE: PERFORM CBR TEST PRIOR TO DETERMINATION OF FINAL SUBGRADE ELEVATION. SUBGRADE DEPTH IS BASED ON SUBGRADE CBR VALUE OF 6. SOILS TEST OF SUBGRADE MUST BE SUBMITTED FOR ACTUAL DETERMINATION OF REQUIRED SUBBASE THICKNESS PRIOR TO CONSTRUCTION. MINIMUM OF 6\"/>



**CONCRETE PAVEMENT DETAIL**  
 NOT TO SCALE

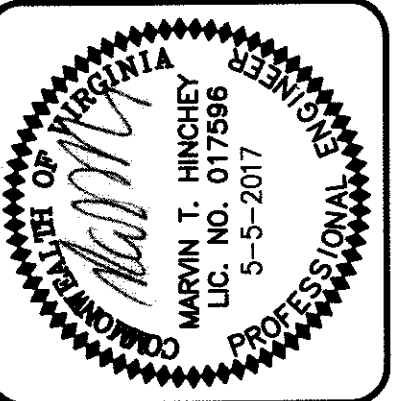
**WHEELSTOP DETAIL**  
 NOT TO SCALE



**SITE SURVEY**  
 NOT TO SCALE

**ENTRANCE**  
 NOT TO SCALE

HINCHEY & BAINES, PLC  
 ENGINEERING AND LAND PLANNING  
 PHONE (540) 829-2220  
 FAX (540) 829-2259  
 125 EAST DAVIS STREET  
 SUITE 201  
 CULPEPER, VIRGINIA 22701



SITE SURVEY & SITE DETAILS  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

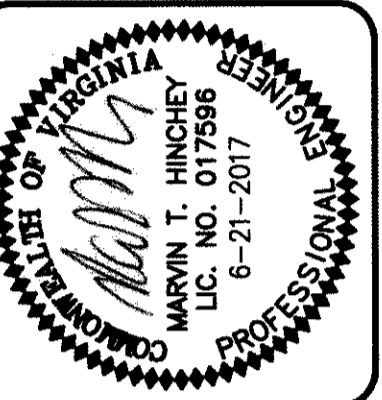
SCALE: AS NOTED

DATE: 10/5/16

REVISIONS:  
 2/28/17 PER COUNTY & DEQ COMMENTS  
 5/5/17 PER DEQ COMMENTS

SHEET 3 OF 24

FILE NO. 1275



**SITE PLAN**  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED  
 DATE: 10/5/16

REVISIONS:  
 2/28/17 PER COUNTY & DEQ COMMENTS  
 5/5/17 PER DEQ COMMENTS  
 6/14/17 PER PROP. PROPANE TANKS  
 6/21/17 PER OIL SEPARATOR TANKS

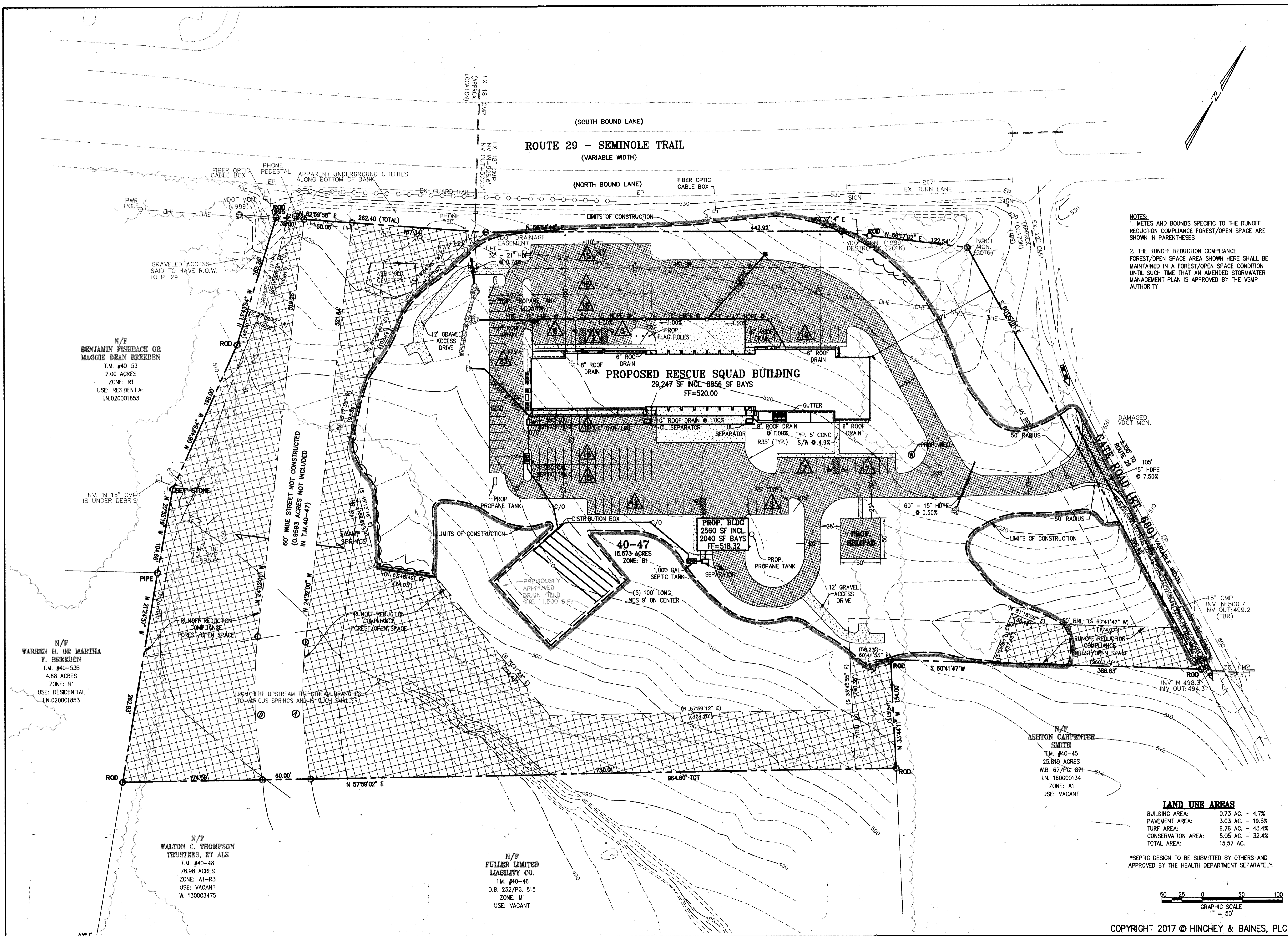
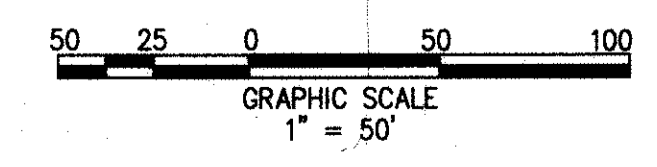
SHEET 4 OF 24  
 FILE NO. 1275

- NOTES:**
1. METES AND BOUNDS SPECIFIC TO THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE ARE SHOWN IN PARENTHESES
  2. THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE AREA SHOWN HERE SHALL BE MAINTAINED IN A FOREST/OPEN SPACE CONDITION UNTIL SUCH TIME THAT AN AMENDED STORMWATER MANAGEMENT PLAN IS APPROVED BY THE VSMP AUTHORITY

**LAND USE AREAS**

BUILDING AREA:	0.73 AC. - 4.7%
PAVEMENT AREA:	3.03 AC. - 19.5%
TURF AREA:	6.76 AC. - 43.4%
CONSERVATION AREA:	5.05 AC. - 32.4%
TOTAL AREA:	15.57 AC.

\*SEPTIC DESIGN TO BE SUBMITTED BY OTHERS AND APPROVED BY THE HEALTH DEPARTMENT SEPARATELY.



**ROUTE 29 - SEMINOLE TRAIL**  
 (VARIABLE WIDTH)

(SOUTH BOUND LANE)

(NORTH BOUND LANE)

LIMITS OF CONSTRUCTION

**PROPOSED RESCUE SQUAD BUILDING**  
 29,247 SF INCL. 8856 SF BAYS  
 FF=520.00

**PROP. BLDG**  
 2560 SF INCL.  
 2040 SF BAYS  
 FF=518.32

**40-47**  
 15.573 ACRES  
 ZONE: B1

N/F BENJAMIN FISHBACK OR MAGGIE DEAN BREKEDEN  
 T.M. #40-53  
 2.00 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N. 020001853

N/F WARREN H. OR MARTHA F. BREKEDEN  
 T.M. #40-53B  
 4.88 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N. 020001853

N/F WALTON C. THOMPSON TRUSTEES, ET ALS  
 T.M. #40-48  
 78.98 ACRES  
 ZONE: A1-R3  
 USE: VACANT  
 W. 130003475

N/F FULLER LIMITED LIABILITY CO.  
 T.M. #40-46  
 D.B. 232/PG. 815  
 ZONE: M1  
 USE: VACANT

N/F ASHTON CARPENTER SMITH  
 T.M. #40-45  
 25.819 ACRES  
 W.B. 67/PG. 871  
 I.N. 160000134  
 ZONE: A1  
 USE: VACANT

FROM HERE UPSTREAM THE STREAM BRANCHES TO VARIOUS SPRINGS AND MUCH SMALLER

60' WIDE STREET NOT CONSTRUCTED  
 (0.9593 ACRES NOT INCLUDED  
 IN T.M. 40-47)

GRAVELLED ACCESS SAID TO HAVE R.O.W. TO RT.29.

INV. IN 15" CMP IS UNDER DEBRIS

RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE

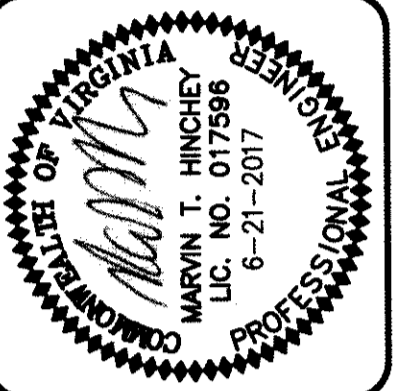
RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE

RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE

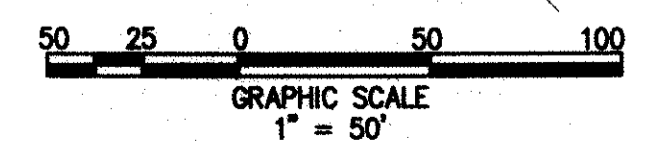
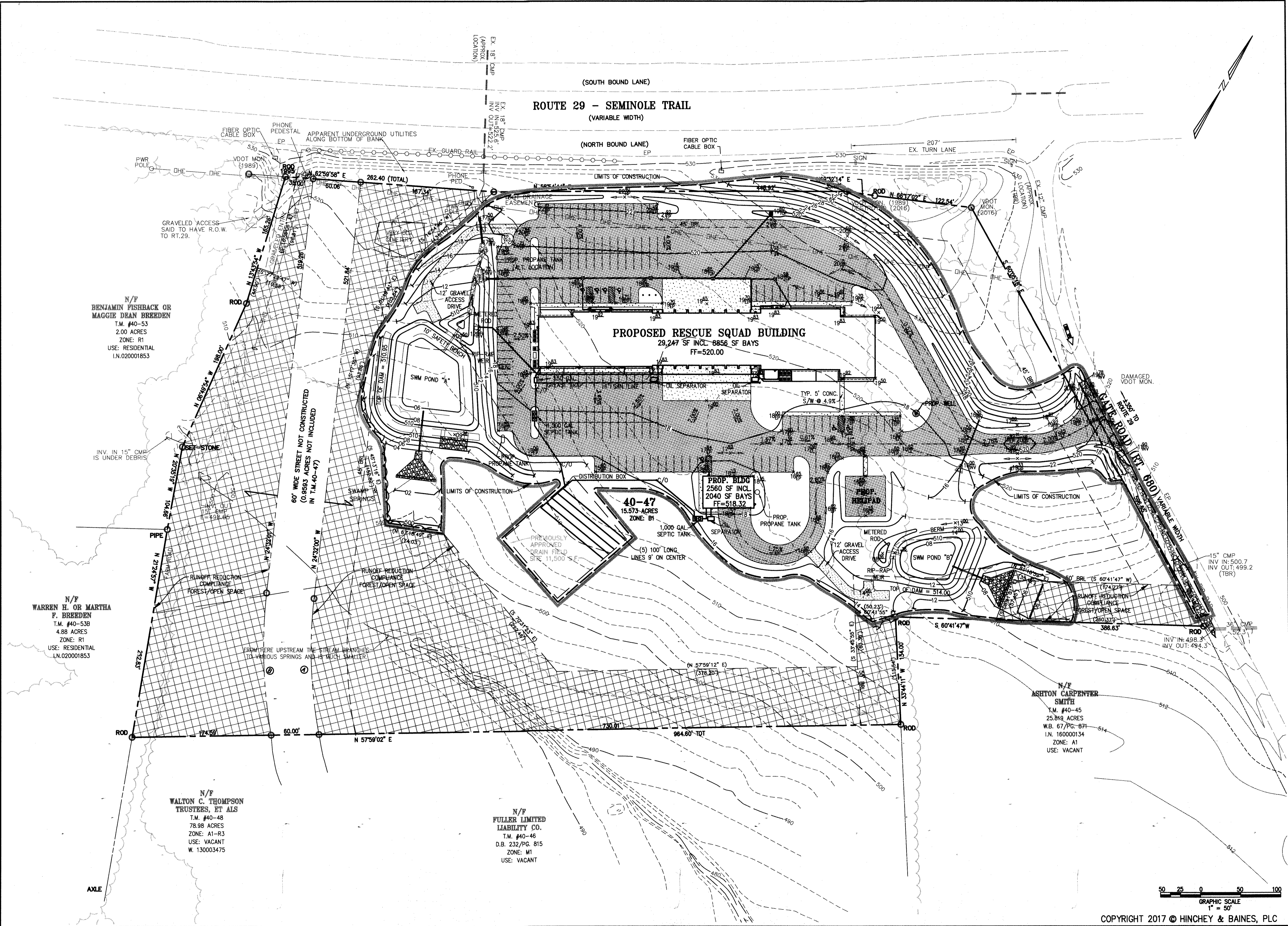
RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE

RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE

RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE



SCALE:	AS NOTED
DATE:	10/5/16
REVISIONS:	
	2/28/17 PER COUNTY & DEQ COMMENTS
	5/5/17 PER DEQ COMMENTS
	6/14/17 PER PROP. PROPANE TANKS
	6/21/17 PER OIL SEPARATOR TANKS
SHEET	5 OF 24
FILE NO.	1275



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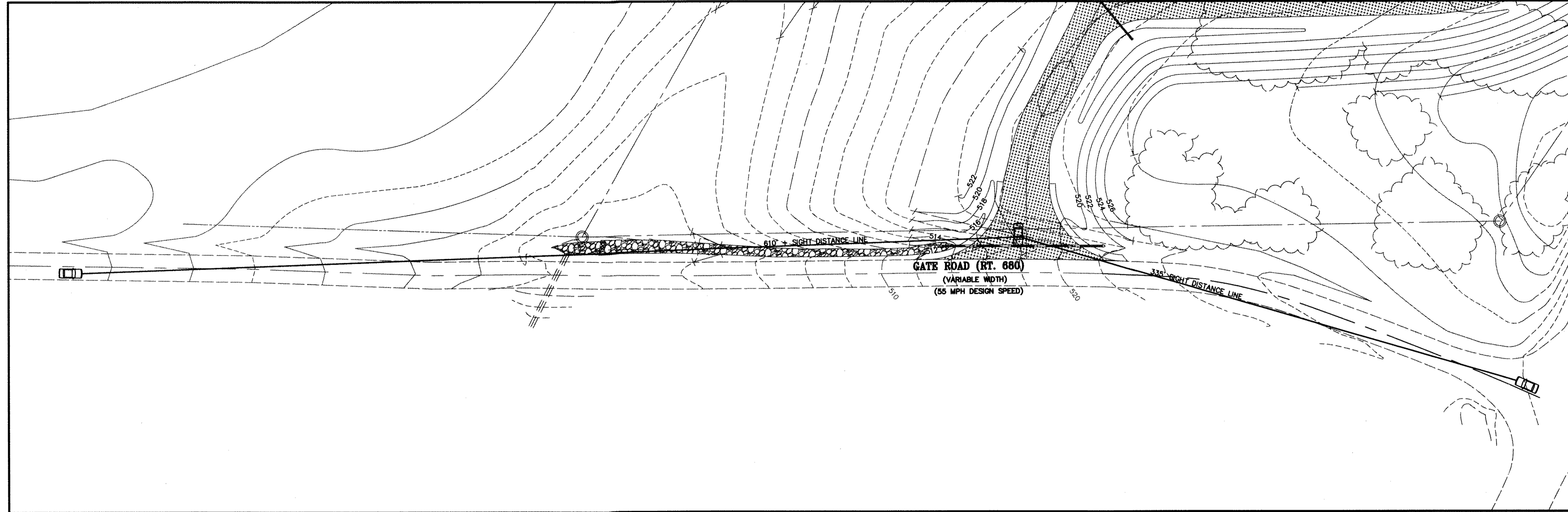
N/F  
**BENJAMIN FISHBACK OR  
 MAGGIE DEAN BREEDEN**  
 T.M. #40-53  
 2.00 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N.020001853

N/F  
**WARREN H. OR MARTHA  
 F. BREEDEN**  
 T.M. #40-53B  
 4.88 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N.020001853

N/F  
**WALTON C. THOMPSON  
 TRUSTEES, ET ALS**  
 T.M. #40-48  
 78.98 ACRES  
 ZONE: A1-R3  
 USE: VACANT  
 W. 130003475

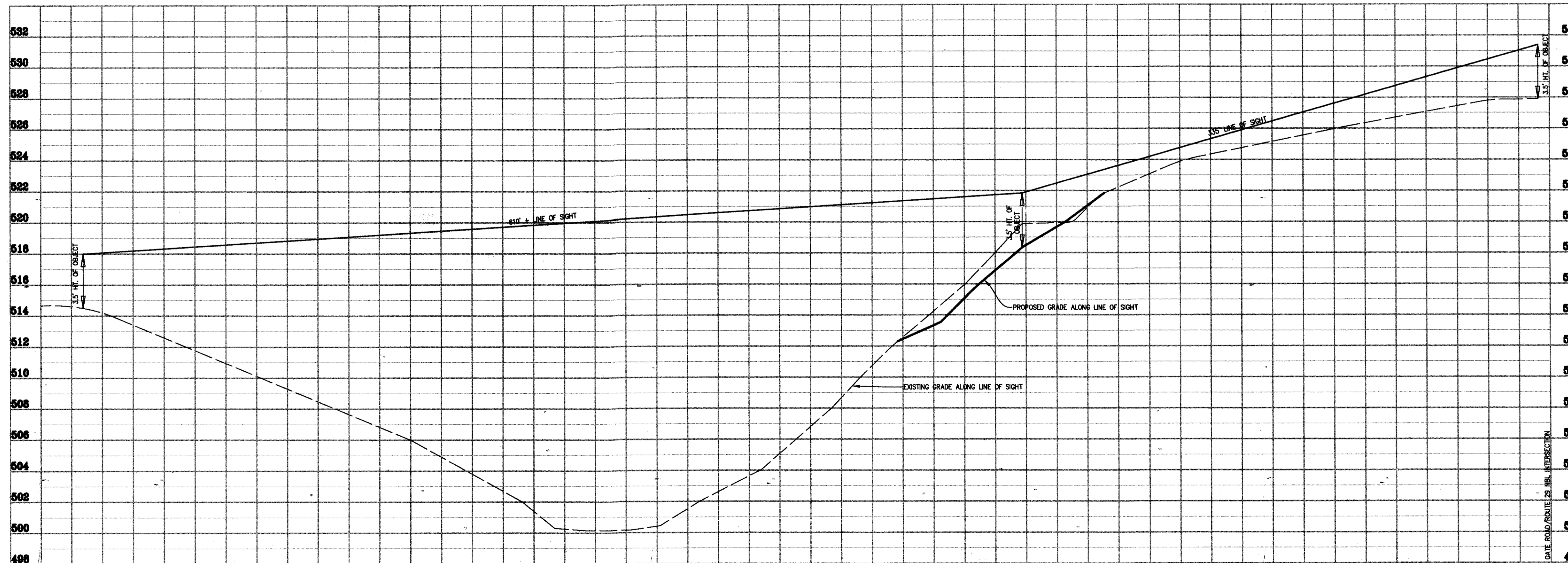
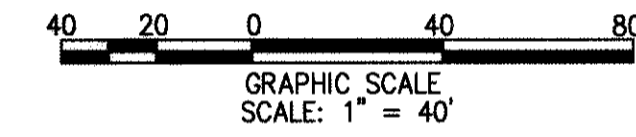
N/F  
**FULLER LIMITED  
 LIABILITY CO.**  
 T.M. #40-46  
 D.B. 232/PG. 815  
 ZONE: M1  
 USE: VACANT

N/F  
**ASHTON CARPENTER  
 SMITH**  
 T.M. #40-45  
 25.819 ACRES  
 W.B. 67/PG. 871  
 I.N. 160000134  
 ZONE: A1  
 USE: VACANT



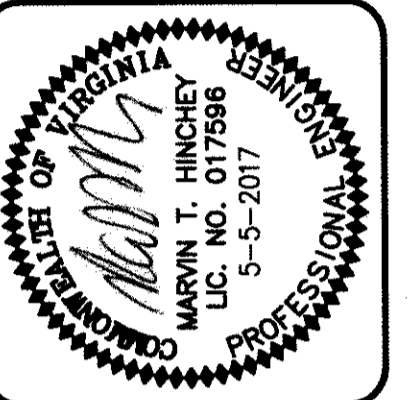
**SIGHT DISTANCE PLAN VIEW**  
SCALE: 1" = 40'

NOTE: UNPOSTED SPEED LIMIT FOR GATE ROAD,  
ASSUMED DESIGN SPEED OF 55 MPH.



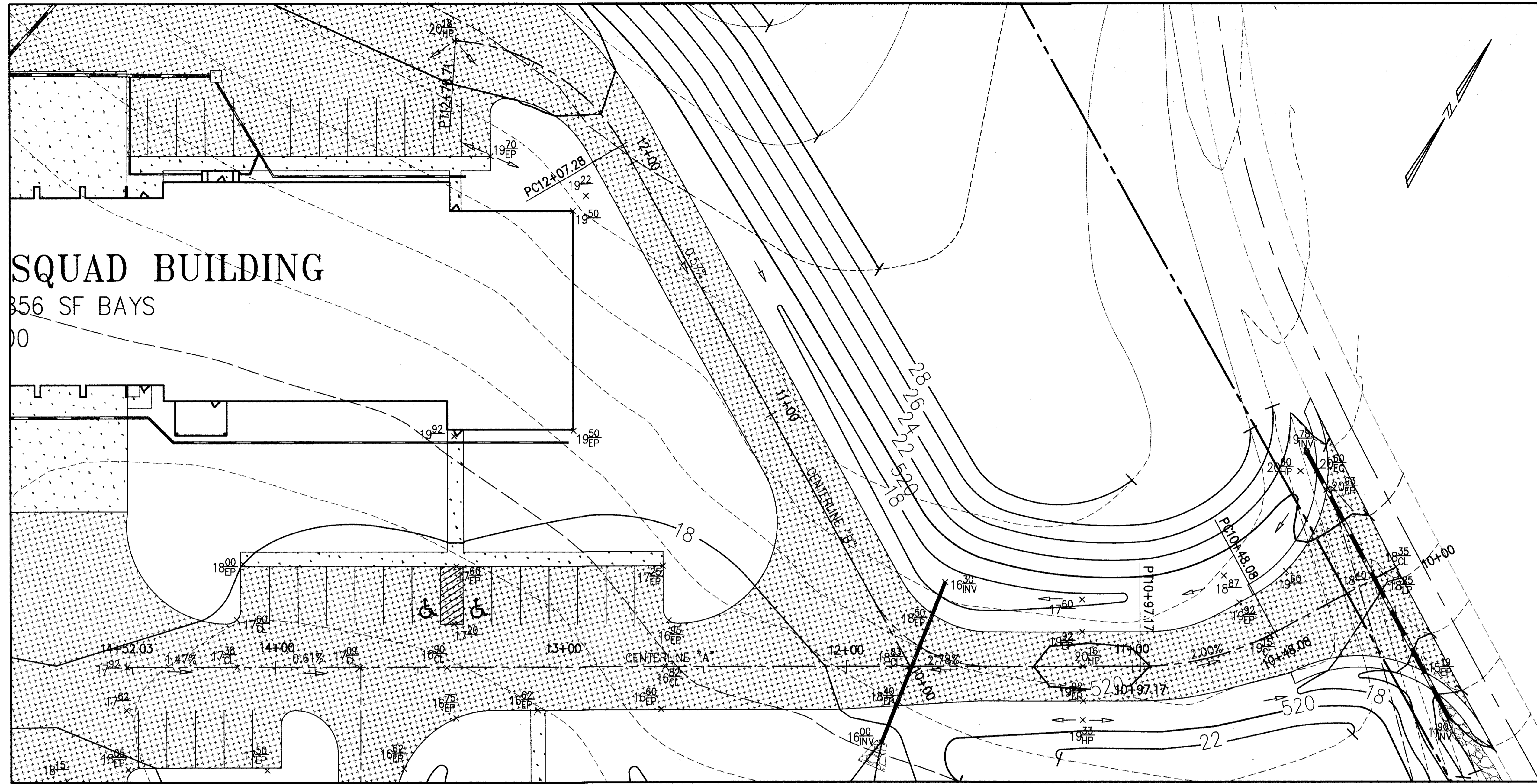
**SIGHT DISTANCE PROFILE**  
SCALE: VERT. 1" = 4'  
HORZ. 1" = 40'

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FAX (540) 829-2238  
125 EAST DAVIS STREET  
SUITE 201  
CULPEPER, VIRGINIA 22701



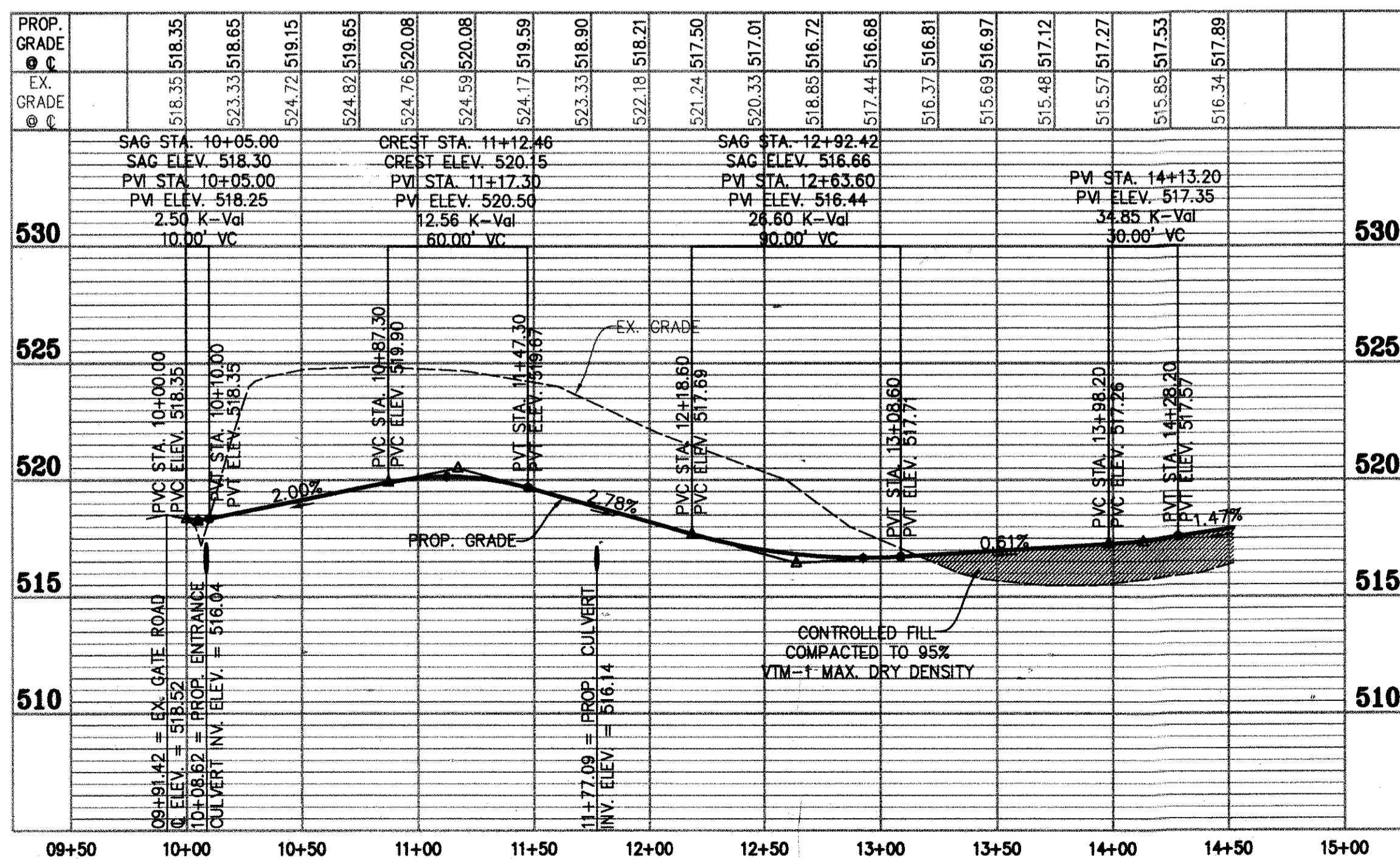
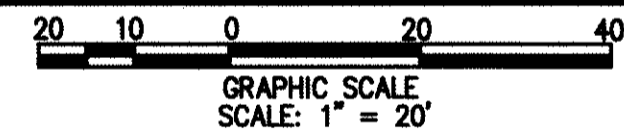
PLAN & PROFILE - SIGHT DISTANCE  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE:	AS NOTED
DATE:	10/5/16
REVISIONS:	2/28/17 PER COUNTY & DEQ COMMENTS
	5/5/17 PER DEQ COMMENTS
SHEET	6 OF 24
FILE NO.	1275



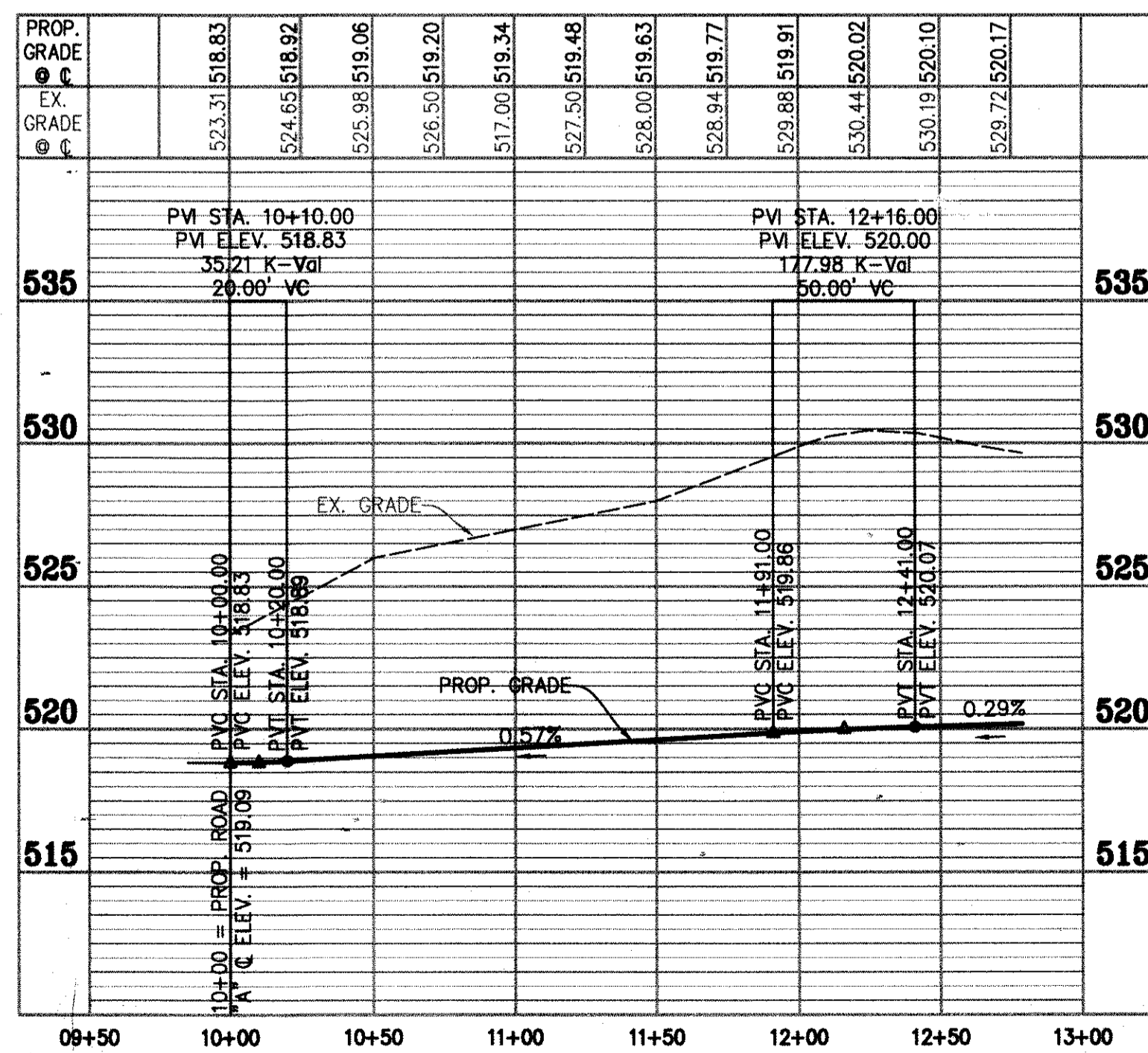
**ENTRANCE ROAD**

SCALE: 1" = 20'  
(DESIGN SPEED 25 MPH)



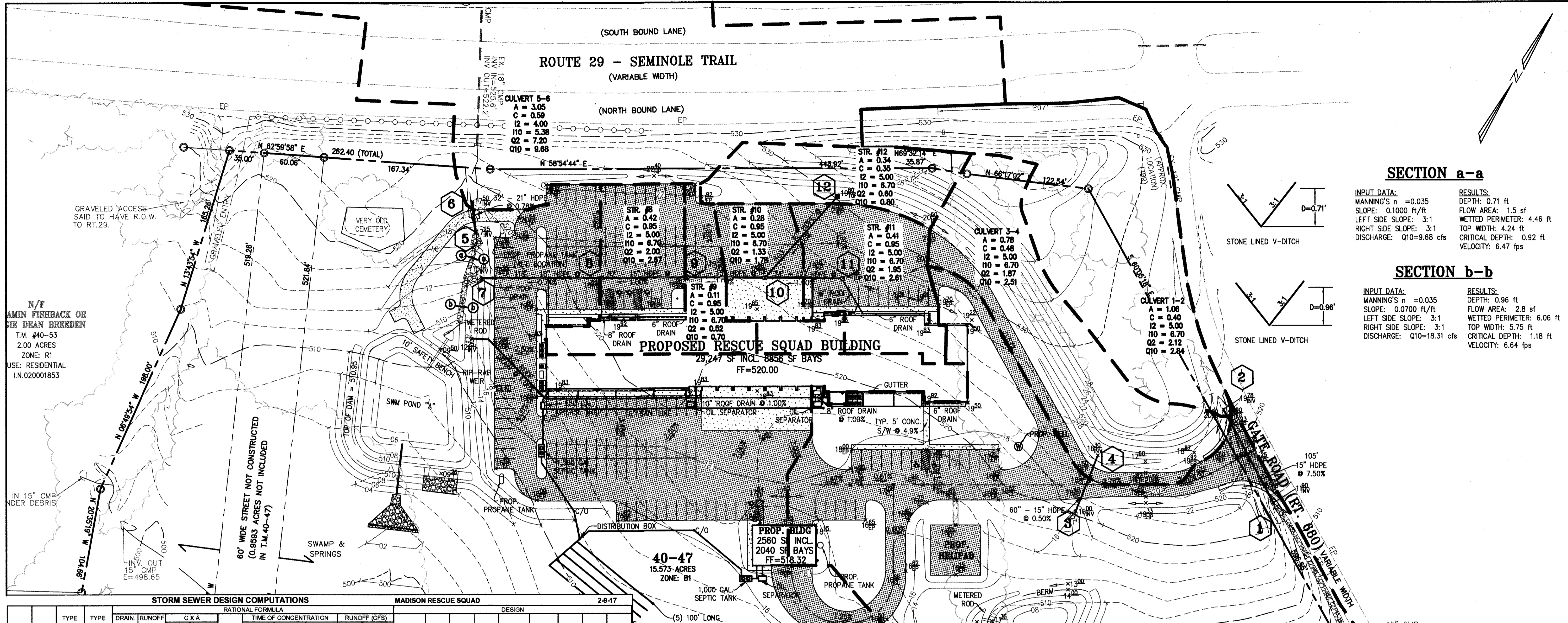
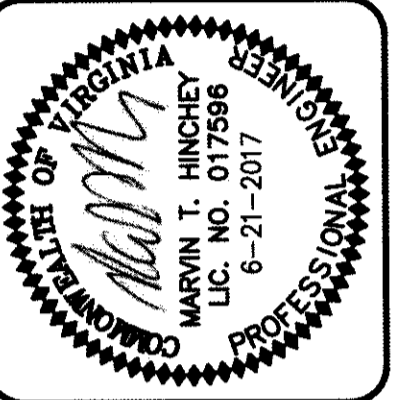
**CENTERLINE "A" PROFILE**

SCALE: VERT. 1" = 5'  
HORZ. 1" = 50'



**CENTERLINE "B" PROFILE**

SCALE: VERT. 1" = 5'  
HORZ. 1" = 50'



**SECTION a-a**

INPUT DATA:  
 MANNING'S n = 0.035  
 SLOPE: 0.1000 ft/ft  
 LEFT SIDE SLOPE: 3:1  
 RIGHT SIDE SLOPE: 3:1  
 DISCHARGE: Q10=9.68 cfs

RESULTS:  
 DEPTH: 0.71 ft  
 FLOW AREA: 1.5 sf  
 WETTED PERIMETER: 4.46 ft  
 TOP WIDTH: 4.24 ft  
 CRITICAL DEPTH: 0.92 ft  
 VELOCITY: 6.47 fps

**SECTION b-b**

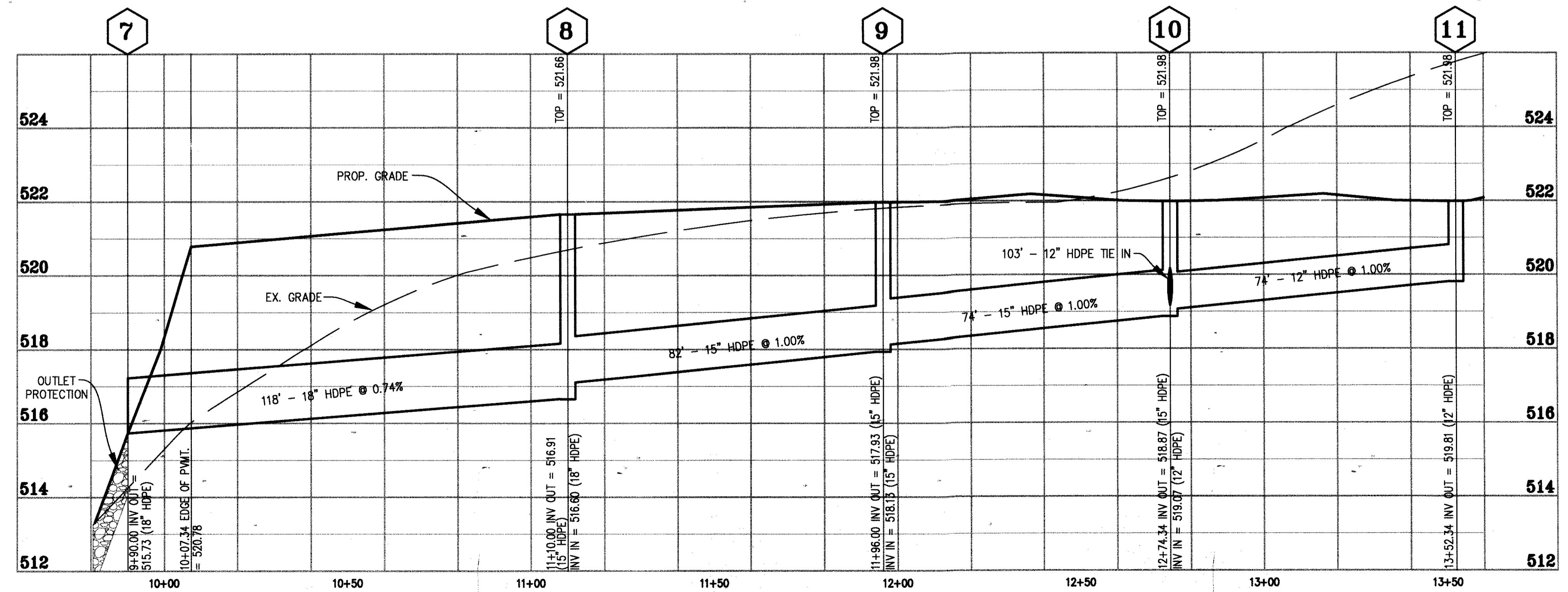
INPUT DATA:  
 MANNING'S n = 0.035  
 SLOPE: 0.0700 ft/ft  
 LEFT SIDE SLOPE: 3:1  
 RIGHT SIDE SLOPE: 3:1  
 DISCHARGE: Q10=18.31 cfs

RESULTS:  
 DEPTH: 0.96 ft  
 FLOW AREA: 2.8 sf  
 WETTED PERIMETER: 6.06 ft  
 TOP WIDTH: 5.75 ft  
 CRITICAL DEPTH: 1.18 ft  
 VELOCITY: 6.64 fps

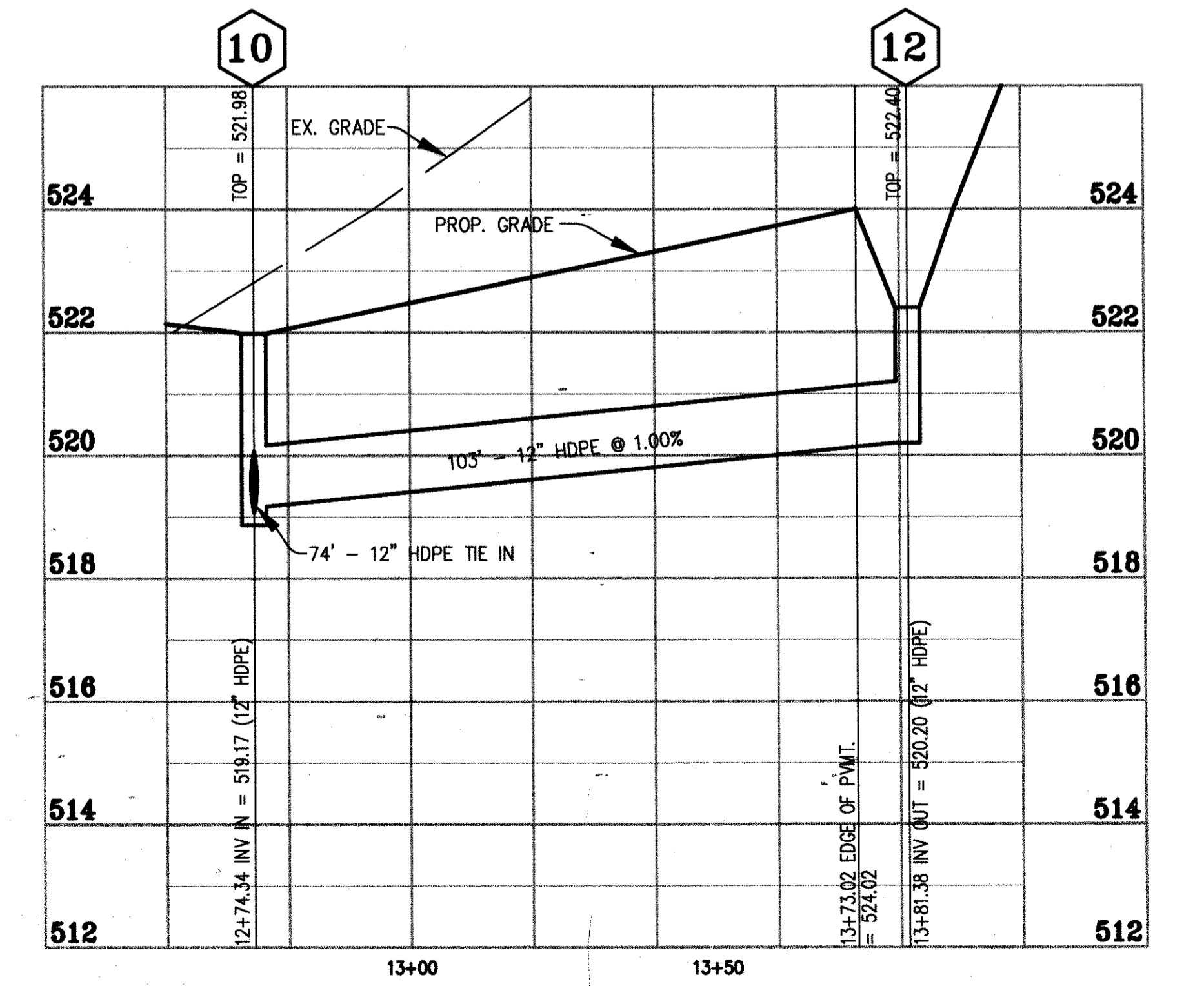
**STORM SEWER DESIGN COMPUTATIONS**

FROM	TO	TYPE STRUC. (FROM)	TYPE STRUC. (TO)	DRAIN AREA (Ac)	RUNOFF COEF. C	INCRE. ACCUM. (Ac)	C X A	TIME OF CONCENTRATION (min)	PIPE DIA. (IN)	SLOPE (%)	MAX. VEL. (FT/SEC)	LENGTH OF RUN (FEET)	FALL (FEET)	INV. UPPER	INV. LOWER			
11	10	DI-1	DI-1	0.41	0.95	0.39	0.39	6.70	5 min	12"	1.00	0.013	3.56	4.70	74"	0.74	519.81	519.07
12	10	DI-1	DI-1	0.34	0.35	0.12	0.12	6.70	5 min	12"	1.00	0.013	3.56	3.48	103"	1.03	520.20	519.17
10	9	DI-1	DI-1	0.28	0.95	0.27	0.77	6.70	5 min	15"	1.00	0.013	6.46	5.57	74"	0.74	518.87	518.13
9	8	DI-1	DI-1	0.11	0.86	0.10	0.88	6.70	5 min	15"	1.00	0.013	6.46	5.80	82"	0.82	517.93	517.11
8	7	DI-1	ES-1	0.42	0.85	0.40	1.28	6.70	5 min	18"	0.74	0.013	9.00	5.99	118"	0.87	516.60	515.73

**STORM SEWER DRAINAGE AREAS**  
 SCALE: 1"=50'



**STORM SEWER PROFILE 7-11**  
 SCALE: VERT. 1"=2'  
 HORZ. 1"=20'



**STORM SEWER PROFILE 10-12**  
 SCALE: VERT. 1"=2'  
 HORZ. 1"=20'

SCALE: AS NOTED

DATE: 10/5/16

REVISIONS:  
 2/28/17 PER COUNTY &  
 DEQ COMMENTS  
 5/5/17 PER DEQ COMMENTS  
 6/14/17 PER PROP. PROPANE  
 TANKS  
 6/21/17 PER OIL SEPARATOR  
 TANKS

SHEET 8 OF 24

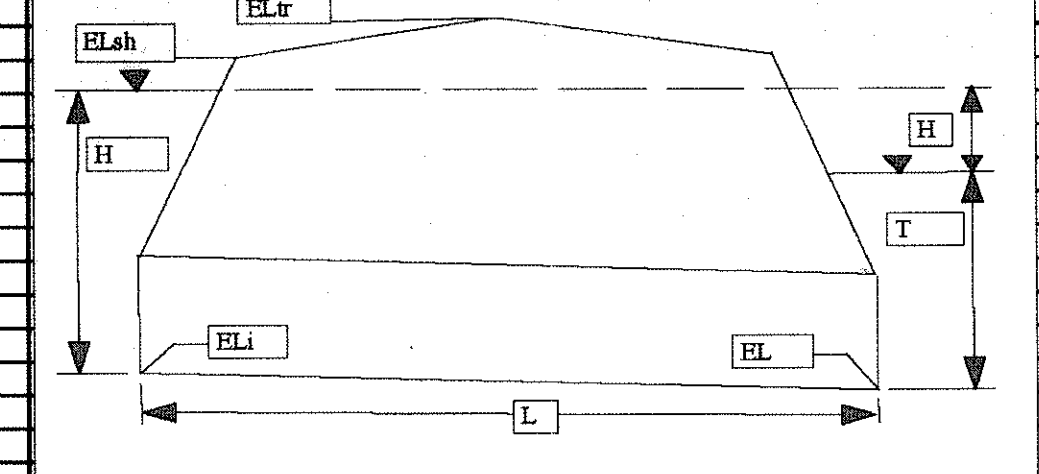
FILE NO. 1275



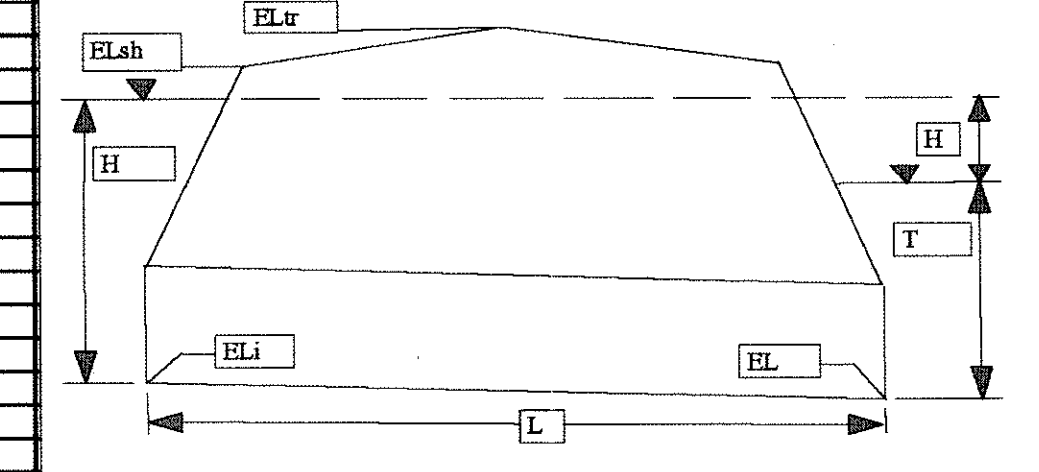
**RIP-RAP APRON COMPUTATIONS**

- CULVERT 1-2  
TOP WIDTH = 3.75'  
LENGTH = 9.00'  
END WIDTH = 10.25'  
CLASS = A-1
- CULVERT 3-4  
TOP WIDTH = 3.75'  
LENGTH = 9.00'  
END WIDTH = 10.25'  
CLASS = A-1
- CULVERT 5-6  
TOP WIDTH = 5.25'  
LENGTH = 10.50'  
END WIDTH = 12.25'  
CLASS = A-1
- STM SEWER OUTLET #7  
TOP WIDTH = 4.50'  
LENGTH = 9.50'  
END WIDTH = 11.00'  
CLASS = A-1
- ROOF DRAIN OUTLET  
TOP WIDTH = 3.00'  
LENGTH = 6.00'  
END WIDTH = 9.00'  
CLASS = A-1

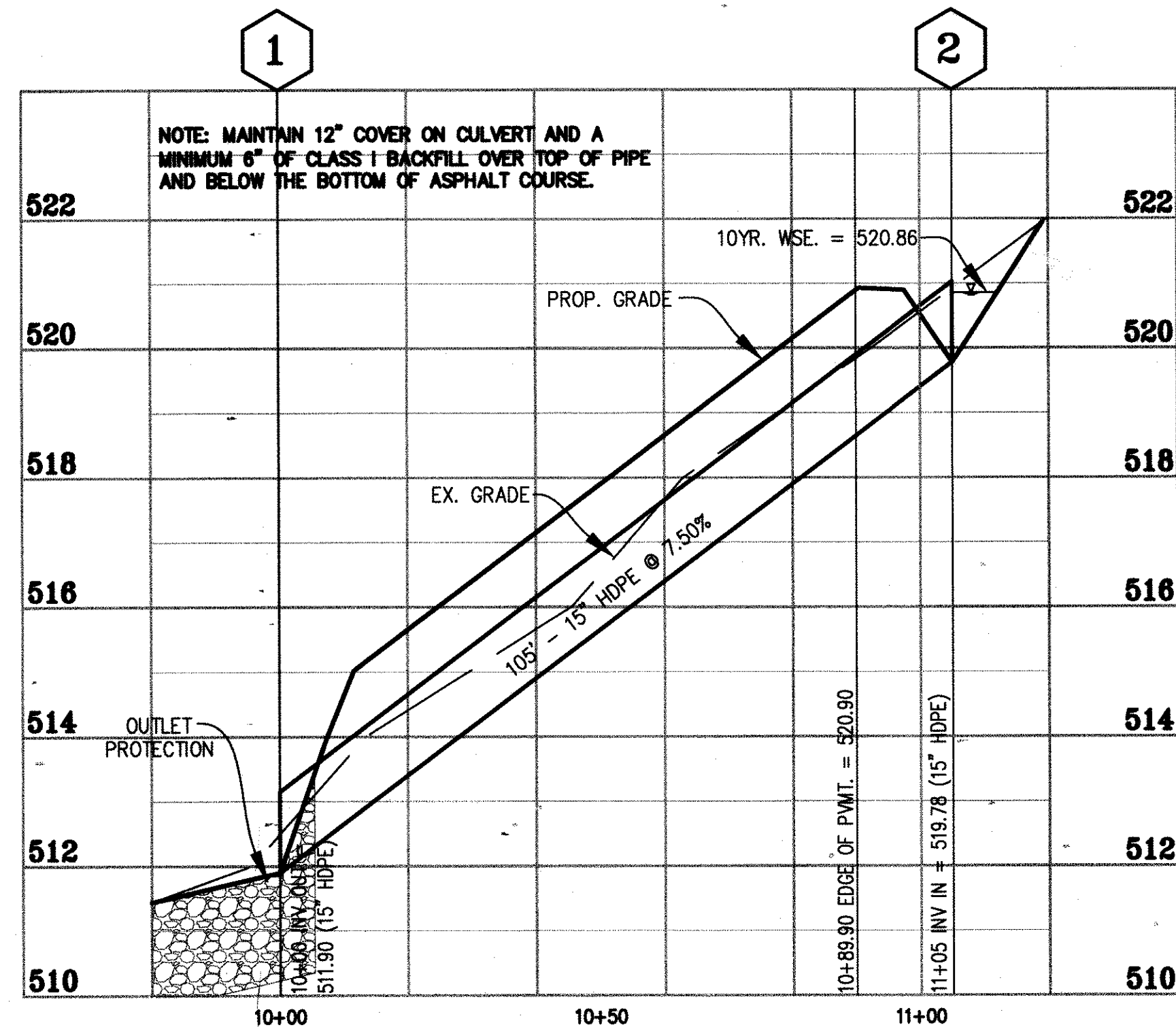
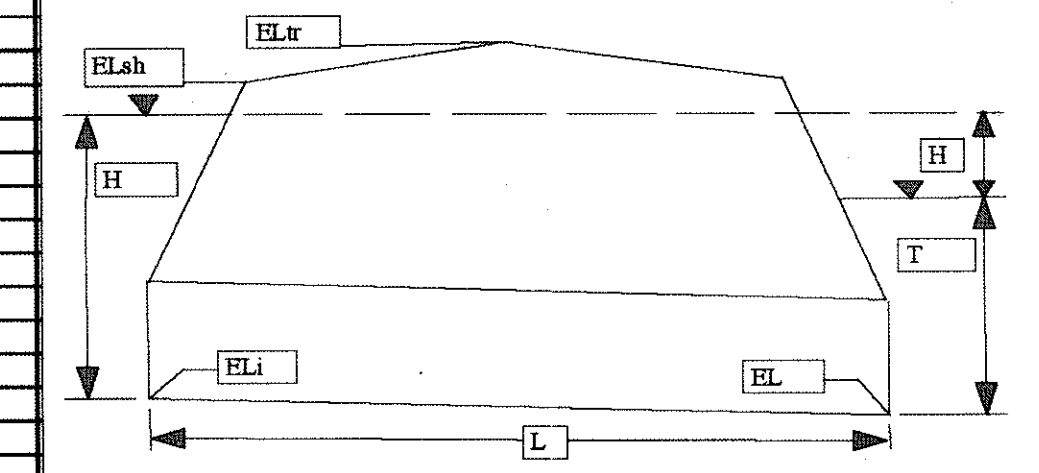
PROJECT: MADISON RESCUE	STA / STR: CULVERT 1-2	DESIGNER / DATE: BRIAN	2/9/2017
HYDROLOGICAL DATA			
METHOD: Rational (Q=CIA)	CULVERT TYPE: HDPE		
AREA = 1.06	ENT. TYPE: NONE		
5 min. C = 0.40	NO. OF PIPES = 1		
Intensity: 1 2 YEAR = 5.00	DIAMETER = 1.25 FT		
1 10 YEAR = 6.70			
MANNING'S			
N = 0.013	Ke = 0.5		
ELi = 519.78			
DESIGN FLOWS / TAILWATER			
R.I. (YEARS)	FLOW (CFS)	TW (FT)	
2	2.12		
10	2.84	0.34	
CULVERT DESCRIPTION:			
MATERIAL-SHAPE-SIZE-ENTRANCE			
15" HDPE WITH NO END SECTION	10 YEAR	2.84	2.84
HEADWATER CALCULATIONS			
TOTAL FLOW PER BARREL	INLET CONTROL	OUTLET CONTROL	CONTROL APPROX
Q	HW/D	HWI	EL(h)
2.84	0.87	1.08	520.86
OUTLET CONTROL			
dc	(dc+D)/2	ho	Ke
0.34	0.69	0.97	0.5
APPROX OUTLET VEL			
H	EL(ho)	HW ELEV.	OUTLET VEL.
0.33	513.19	520.86	9.72
COMMENTS: I.C. RD. O.T.			



PROJECT: MADISON RESCUE	STA / STR: CULVERT 3-4	DESIGNER / DATE: BRIAN	2/9/2017
HYDROLOGICAL DATA			
METHOD: Rational (Q=CIA)	CULVERT TYPE: HDPE		
AREA = 0.78	ENT. TYPE: NONE		
5 min. C = 0.48	NO. OF PIPES = 1		
Intensity: 1 2 YEAR = 5.00	DIAMETER = 1.25 FT		
1 10 YEAR = 6.70			
MANNING'S			
N = 0.013	Ke = 0.5		
ELi = 518.30			
DESIGN FLOWS / TAILWATER			
R.I. (YEARS)	FLOW (CFS)	TW (FT)	
2	1.87		
10	2.51	0.66	
CULVERT DESCRIPTION:			
MATERIAL-SHAPE-SIZE-ENTRANCE			
15" HDPE WITH NO END SECTION	10 YEAR	2.51	2.51
HEADWATER CALCULATIONS			
TOTAL FLOW PER BARREL	INLET CONTROL	OUTLET CONTROL	CONTROL APPROX
Q	HW/D	HWI	EL(h)
2.51	0.80	1.00	517.30
OUTLET CONTROL			
dc	(dc+D)/2	ho	Ke
0.66	0.64	0.96	0.5
APPROX OUTLET VEL			
H	EL(ho)	HW ELEV.	OUTLET VEL.
0.19	517.13	517.30	3.54
COMMENTS: I.C.			

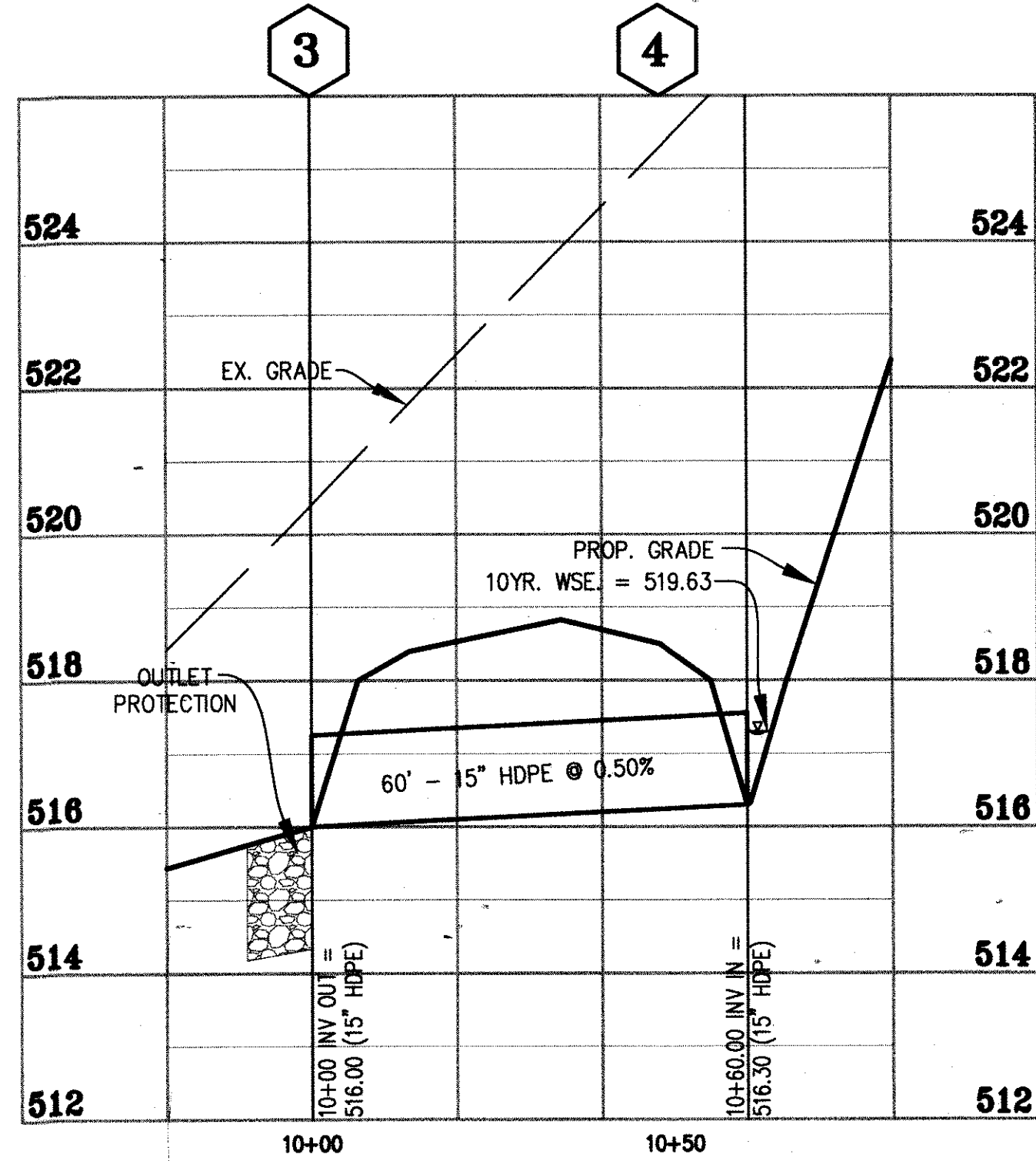


PROJECT: MADISON RESCUE	STA / STR: CULVERT 5-6	DESIGNER / DATE: BRIAN	10/3/2016
HYDROLOGICAL DATA			
METHOD: Rational (Q=CIA)	CULVERT TYPE: HDPE		
AREA = 3.05	ENT. TYPE: NONE		
10 min. C = 0.59	NO. OF PIPES = 1		
Intensity: 1 2 YEAR = 4.00	DIAMETER = 1.75 FT		
1 10 YEAR = 5.38			
MANNING'S			
N = 0.013	Ke = 0.5		
ELi = 517.50			
DESIGN FLOWS / TAILWATER			
R.I. (YEARS)	FLOW (CFS)	TW (FT)	
2	7.20		
10	9.68	1.07	
CULVERT DESCRIPTION:			
MATERIAL-SHAPE-SIZE-ENTRANCE			
21" HDPE WITH NO END SECTION	10 YEAR	9.68	9.68
HEADWATER CALCULATIONS			
TOTAL FLOW PER BARREL	INLET CONTROL	OUTLET CONTROL	CONTROL APPROX
Q	HW/D	HWI	EL(h)
9.68	1.16	2.02	519.52
OUTLET CONTROL			
dc	(dc+D)/2	ho	Ke
1.07	1.17	1.46	0.5
APPROX OUTLET VEL			
H	EL(ho)	HW ELEV.	OUTLET VEL.
0.50	519.21	519.52	5.86
COMMENTS: I.C.			

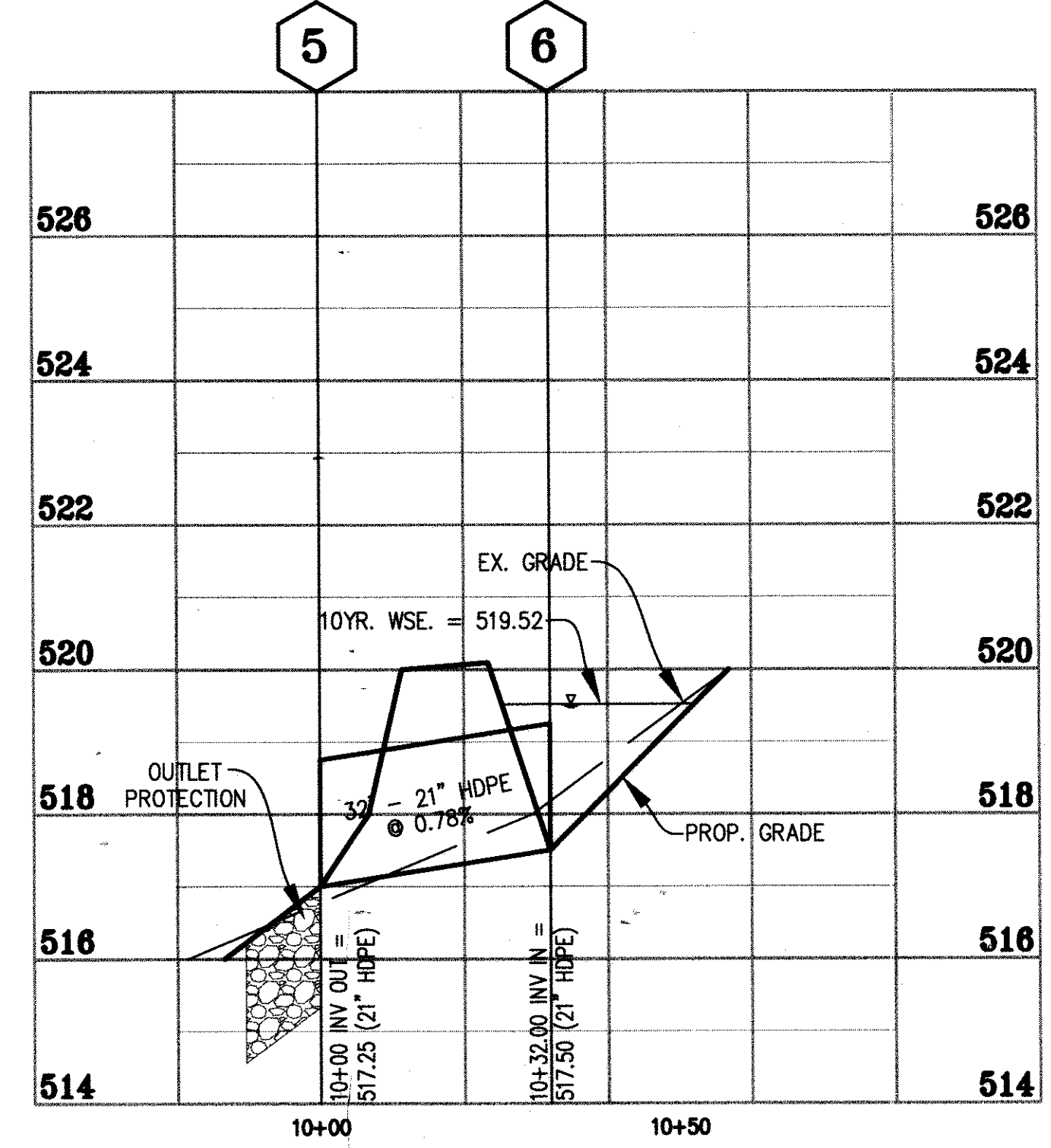


**CULVERT 1-2**  
SCALE: VERT. 1" = 2'  
HORZ. 1" = 20'

NOTE: ALL HDPE CULVERTS SHALL BE TYPE "S" (SMOOTH WALL)



**CULVERT 3-4**  
SCALE: VERT. 1" = 2'  
HORZ. 1" = 20'



**CULVERT 5-6**  
SCALE: VERT. 1" = 2'  
HORZ. 1" = 20'

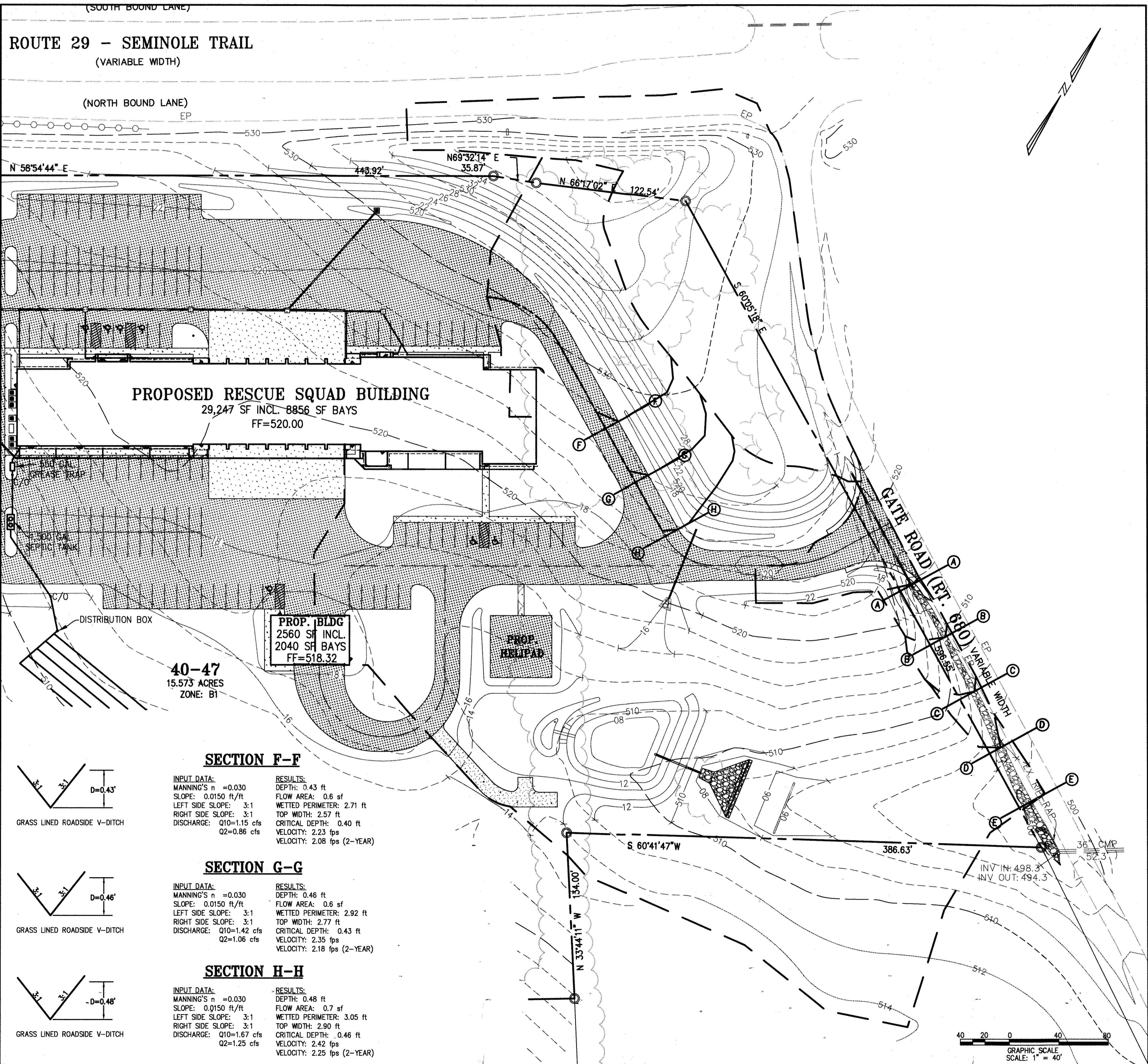
**HINCHEY & BAINES, PLC**  
ENGINEERING AND LAND PLANNING  
125 EAST DAVIS STREET  
SUITE 201  
CULPEPER, VIRGINIA 22701  
PHONE (540) 829-2220  
FAX (540) 829-2239



STORM CULVERT PROFILES & COMPUTATIONS  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

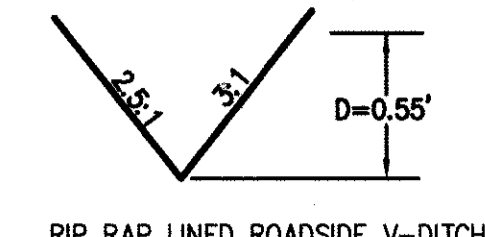
SCALE: AS NOTED  
DATE: 10/5/16  
REVISIONS:  
2/28/17 PER COUNTY &  
DEQ COMMENTS  
5/5/17 PER DEQ COMMENTS

SHEET 9 OF 24  
FILE NO. 1275



CALCULATION RESULTS ARE BASED ON THE 10 YEAR STORM UNLESS OTHERWISE INDICATED.

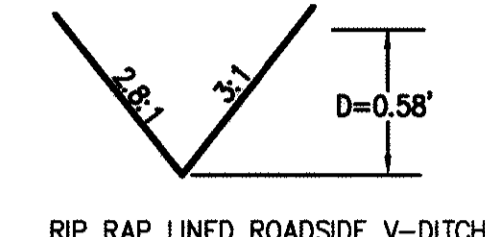
**SECTION A-A**



**INPUT DATA:**  
MANNING'S n = 0.040  
SLOPE: 0.0752 ft/ft  
LEFT SIDE SLOPE: 2.5:1  
RIGHT SIDE SLOPE: 3:1  
DISCHARGE: Q10=3.46 cfs  
Q2=2.58 cfs

**RESULTS:**  
DEPTH: 0.55 ft  
FLOW AREA: 0.8 sf  
WETTED PERIMETER: 3.23 ft  
TOP WIDTH: 3.03 ft  
CRITICAL DEPTH: 0.63 ft  
VELOCITY: 4.14 fps  
VELOCITY: 3.85 fps (2-YEAR)

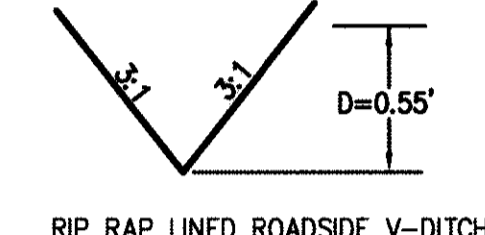
**SECTION B-B**



**INPUT DATA:**  
MANNING'S n = 0.040  
SLOPE: 0.0567 ft/ft  
LEFT SIDE SLOPE: 2.8:1  
RIGHT SIDE SLOPE: 3:1  
DISCHARGE: Q10=3.57 cfs  
Q2=2.67 cfs

**RESULTS:**  
DEPTH: 0.58 ft  
FLOW AREA: 1.0 sf  
WETTED PERIMETER: 3.53 ft  
TOP WIDTH: 3.34 ft  
CRITICAL DEPTH: 0.62 ft  
VELOCITY: 3.71 fps  
VELOCITY: 3.45 fps (2-YEAR)

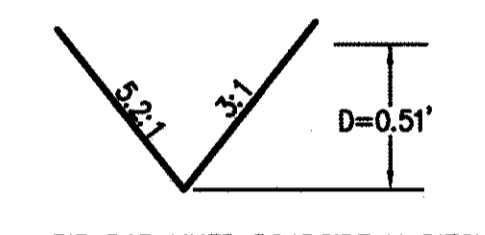
**SECTION C-C**



**INPUT DATA:**  
MANNING'S n = 0.040  
SLOPE: 0.0757 ft/ft  
LEFT SIDE SLOPE: 3:1  
RIGHT SIDE SLOPE: 3:1  
DISCHARGE: Q10=3.86 cfs  
Q2=2.88 cfs

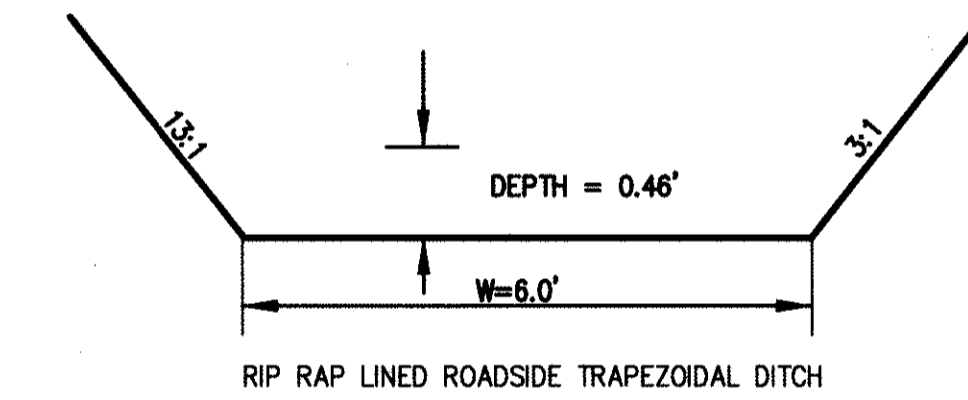
**RESULTS:**  
DEPTH: 0.55 ft  
FLOW AREA: 0.9 sf  
WETTED PERIMETER: 3.50 ft  
TOP WIDTH: 3.32 ft  
CRITICAL DEPTH: 0.63 ft  
VELOCITY: 4.19 fps  
VELOCITY: 3.90 fps (2-YEAR)

**SECTION D-D**



**INPUT DATA:**  
MANNING'S n = 0.040  
SLOPE: 0.0630 ft/ft  
LEFT SIDE SLOPE: 5.2:1  
RIGHT SIDE SLOPE: 3:1  
DISCHARGE: Q10=3.95 cfs  
Q2=2.95 cfs

**RESULTS:**  
DEPTH: 0.51 ft  
FLOW AREA: 1.1 sf  
WETTED PERIMETER: 4.33 ft  
TOP WIDTH: 4.20 ft  
CRITICAL DEPTH: 0.57 ft  
VELOCITY: 3.68 fps  
VELOCITY: 3.42 fps (2-YEAR)



**SECTION E-E**

**INPUT DATA:**  
MANNING'S n = 0.040  
SLOPE: 0.0494 ft/ft  
LEFT SIDE SLOPE: 13:1  
RIGHT SIDE SLOPE: 3:1  
DISCHARGE: Q10=17.38 cfs  
Q2=12.97 cfs

**RESULTS:**  
DEPTH: 0.46 ft  
FLOW AREA: 4.4 sf  
WETTED PERIMETER: 13.41 ft  
TOP WIDTH: 13.31 ft  
CRITICAL DEPTH: 0.51 ft  
VELOCITY: 3.94 fps  
VELOCITY: 3.62 fps (2-YEAR)

**RIP-RAP TABULATION**

CLASS: A1  
THICKNESS: 20"  
DEPTH: 0.60'

RIP-RAP SHALL BE PLACED IN THE ROADSIDE DITCH FROM THE OUTFALL OF THE ENTRANCE CULVERT TO THE EXISTING RIP-RAP IN THE ROADSIDE DITCH AT THE PROPERTY CORNER.

NOTE: APPROPRIATE ROADSIDE DITCH GRADES TO BE RE-ESTABLISHED ONCE EXISTING CULVERTS ARE REMOVED.

**ADEQUATE CHANNEL ANALYSIS**

SCALE: 1" = 40'

**THIS SHEET IS FOR CHANNEL ANALYSIS PURPOSES ONLY!**

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**HINCHEY & BAINES, PLC**  
ENGINEERING AND LAND PLANNING  
125 EAST DAVIS STREET  
SUITE 201  
CULPEPER, VIRGINIA 22701  
PHONE (540) 829-2220  
FAX (540) 829-2239



ADEQUATE CHANNEL ANALYSIS  
**MADISON RESCUE SQUAD**

FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED

DATE: 10/5/16

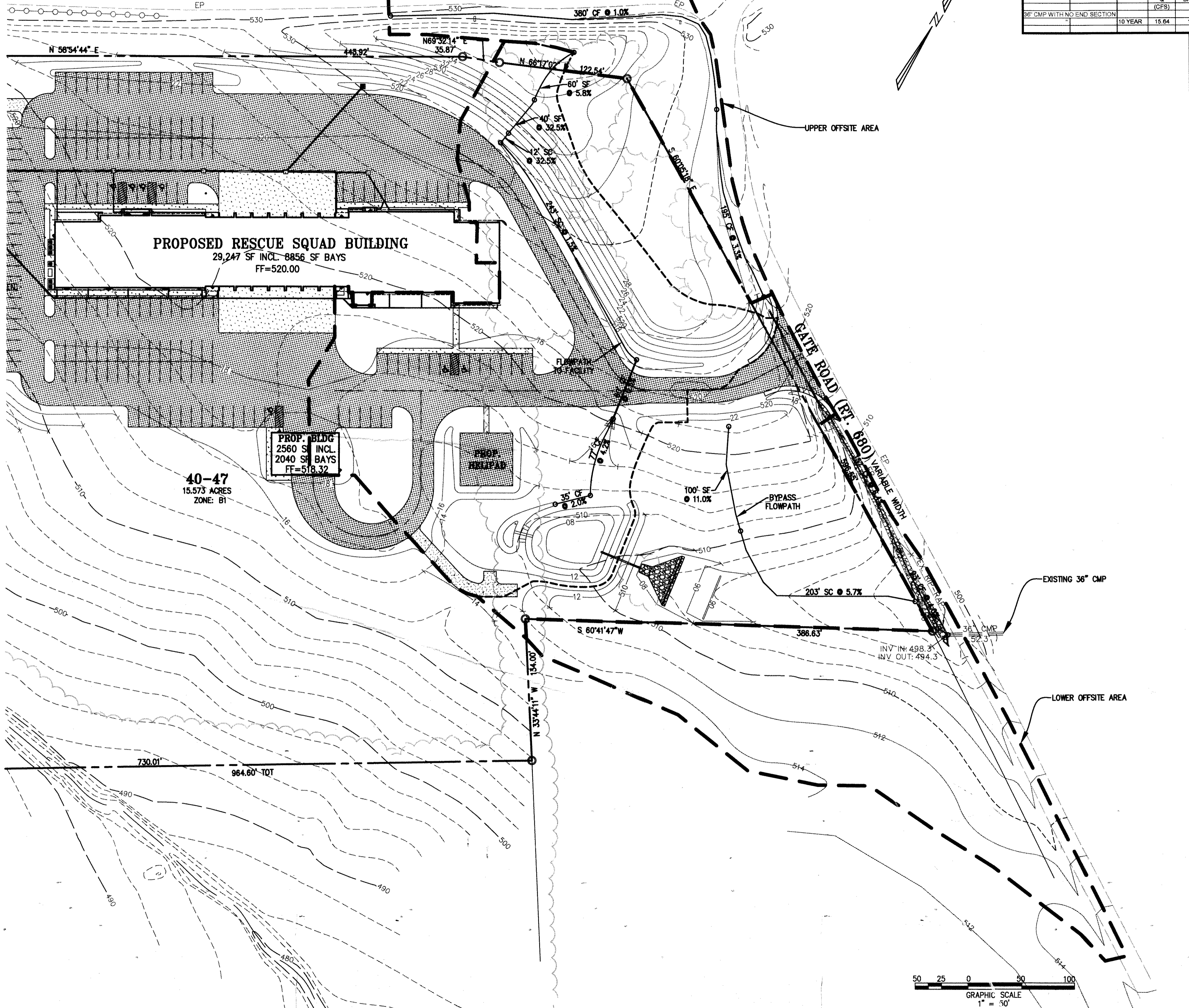
REVISIONS:  
2/28/17 PER COUNTY &  
DEQ COMMENTS  
5/5/17 PER DEQ COMMENTS

SHEET 10 OF 24

FILE NO. 1275

(SOUTH BOUND LANE)  
**ROUTE 29 - SEMINOLE TRAIL**  
 (VARIABLE WIDTH)

(NORTH BOUND LANE)



**ABBREVIATIONS**  
 SF = SHEET FLOW  
 SC = SHALLOW CONCENTRATED  
 CF = CHANNELIZED FLOW

PROJECT: MADISON RESCUE		STA / STR: EX 36" CULVERT		CULVERT DESIGN FORM	
FILE:	CULVERT	DESIGNER / DATE:	BRIAN		3/22/2017
CULVERT TYPE:	CMP				
ENT. TYPE:	NONE				
NO. OF PIPES:	1				
DIAMETER:	3 FT				
MANNING'S N:	0.023				
DESIGN FLOWS / TAILWATER					
KL:	2.5				
ELI:	498.30				
EL0:	494.30				
ELP:	501.98				
ELR:	501.98				
L:	32.30				
CULVERT DESCRIPTION:	TOTAL FLOW	FLOW PER BARREL	INLET CONTROL	HEADWATER CONTROL	OUTLET CONTROL
MATERIAL SHAPE SIZE ENTRANCE	Q	Q/B	HWI	HWL	EL(h)
36" CMP WITH NO END SECTION	10 YEAR 15.64	16.64	0.64	1.92	500.22
					0.79
					1.27
					2.14
					2.14
					0.5
					0.20
					496.64
					500.22
					10.61
					I.C.

**EXISTING 36" CMP CULVERT ANALYSIS NARRATIVE**

HYDROFLOW HYDROGRAPHS WERE USED TO ANALYZE THE ROUTED STORMWATER THROUGH THE DETENTION POND IN COMBINATION WITH THE ON-SITE BYPASS STORMWATER AND THE OFF-SITE BYPASS STORMWATER. THE MINIMUM TIME OF CONCENTRATION OF 5 MINUTES WAS USED FOR BOTH OF THE OFF-SITE AREAS. A CUMULATIVE RATE OF STORMWATER RUNOFF WAS CALCULATED TO BE 15.64 CFS DURING THE 10 YEAR STORM. THIS RATE WAS THEN USED TO ANALYZE THE EXISTING 36" CMP CULVERT UNDER GATE ROAD. THE CULVERT SPREADSHEET SHOWS THAT THE EXISTING CULVERT IS ADEQUATE TO HANDLE THE STORMWATER RUNOFF IN THE POST-DEVELOPMENT CONDITION.

**10 YEAR HYDROGRAPH**

**Hydrograph Summary Report**

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total stage used (cuft)	Hydrograph description
1	SCS Runoff	39.08	2	722	102,411	---	---	---	D.A.-A-PRE
2	SCS Runoff	25.43	2	722	69,573	---	---	---	D.A.-A-FORESTED
3	SCS Runoff	28.43	2	720	73,808	---	---	---	D.A.-A-POST(TO FACILITY)
4	SCS Runoff	14.71	2	726	48,897	---	---	---	D.A.-A-POST(BYPASS)
5	SCS Runoff	16.11	2	722	42,879	---	---	---	D.A.-A-POST(ADJ. CN)
6	Combine	29.63	2	722	91,776	4, 5	---	---	COMBINE
7	Reservoir	11.02	2	732	73,788	3	509.26	27,781	POND ROUTING
8	Combine	24.76	2	726	122,685	4, 7	---	---	FINAL
9	SCS Runoff	21.32	2	720	55,675	---	---	---	D.A.-B-PRE
10	SCS Runoff	5.757	2	732	27,616	---	---	---	D.A.-B-FORESTED
11	SCS Runoff	10.14	2	718	23,217	---	---	---	D.A.-B-POST(TO FACILITY)
12	SCS Runoff	4.626	2	718	9,301	---	---	---	D.A.-B-POST(BYPASS)
13	SCS Runoff	7.104	2	720	16,399	---	---	---	D.A.-B-POST(ADJ. CN)
14	Combine	11.57	2	718	25,700	12, 13	---	---	COMBINE
15	Reservoir	6.545	2	726	23,210	11	510.59	7,097	POND ROUTING
16	Combine	9.045	2	722	32,511	12, 15	---	---	FINAL
18	SCS Runoff	2.083	2	718	4,169	---	---	---	UPPER OFFSITE
19	SCS Runoff	6.894	2	716	13,923	---	---	---	LOWER OFFSITE
20	Combine	15.64	2	720	50,603	16, 18, 19	---	---	36 CULVERT

**Hyd. No. 16**

FINAL

Hydrograph type = Combine  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Inflow hyd(s) = 12, 15  
 Peak discharge = 9.045 cfs  
 Time to peak = 722 min  
 Hyd. volume = 32,511 cuft  
 Contrib. drain. area = 1.680 ac

**Hyd. No. 18**

UPPER OFFSITE

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Drainage area = 0.660 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 5.30 in  
 Storm duration = 24 hrs  
 Peak discharge = 2.083 cfs  
 Time to peak = 718 min  
 Hyd. volume = 4,169 cuft  
 Curve number = 65\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 5.0 min  
 Distribution = Type II  
 Shape factor = 484

**Hyd. No. 19**

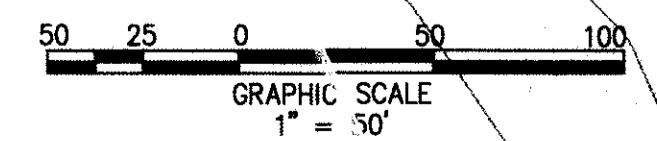
LOWER OFFSITE

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Drainage area = 1.570 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 5.30 in  
 Storm duration = 24 hrs  
 Peak discharge = 6.894 cfs  
 Time to peak = 716 min  
 Hyd. volume = 13,923 cuft  
 Curve number = 74\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 5.0 min  
 Distribution = Type II  
 Shape factor = 484

**Hyd. No. 20**

36 CULVERT

Hydrograph type = Combine  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Inflow hyd(s) = 16, 18, 19  
 Peak discharge = 15.64 cfs  
 Time to peak = 720 min  
 Hyd. volume = 50,603 cuft  
 Contrib. drain. area = 2.230 ac



**EX. 36" CMP ANALYSIS**  
 SCALE: 1" = 50'

**THIS SHEET IS FOR CULVERT ANALYSIS PURPOSES ONLY!**

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 125 EAST DAVIS STREET  
 SUITE 201  
 CULPEPER, VIRGINIA 22701



EXISTING 36" CULVERT ANALYSIS  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: 1" = 50'

DATE: 12/8/16

REVISIONS:  
 2/28/17 PER COUNTY &  
 DEQ COMMENTS  
 3/30-17 REVISE DA  
 5/5/17 PER DEQ COMMENTS

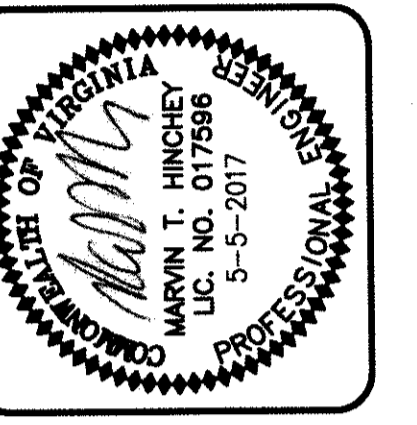
SHEET 10A OF 24

FILE NO. 1275

**EROSION/SEDIMENT CONTROL LEGEND**

- LIMITS OF CONSTRUCTION
- TEMPORARY CONSTRUCTION ENTRANCE WITH WASH RACK, SPEC 3.02
- SILTATION DIVIDE
- SILT FENCE, SPEC 3.05
- TEMP. SEEDING, SPEC 3.31
- DRY STORAGE
- WET STORAGE

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 CULPEPER, VIRGINIA 22701



**PHASE 1 EROSION & SEDIMENT CONTROL PLAN**  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

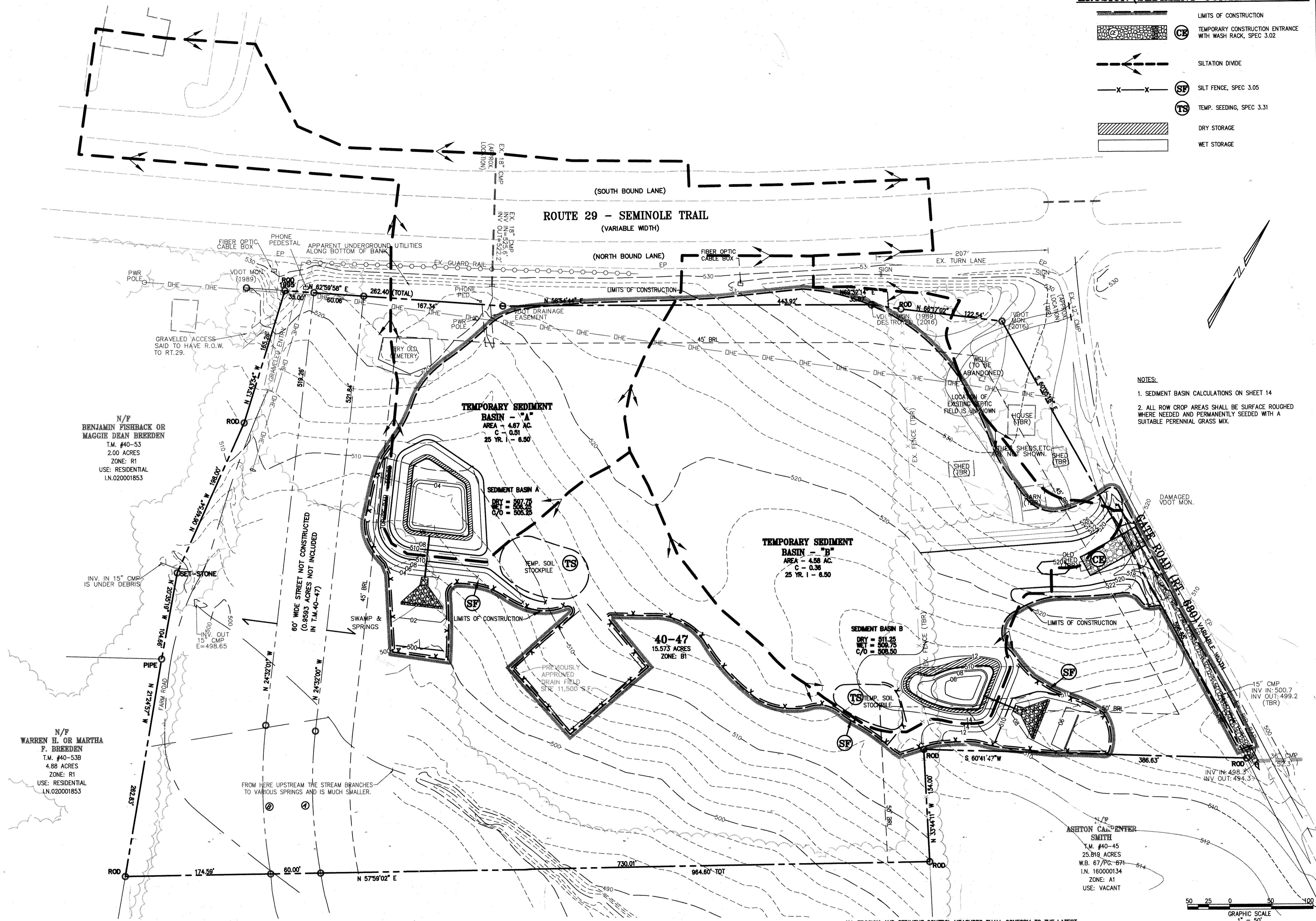
SCALE: 1" = 50'

DATE: 10/5/16

REVISIONS:  
 2/28/17 PER COUNTY &  
 DEQ COMMENTS  
 5/5/17 PER DEQ COMMENTS

SHEET 11 OF 24

FILE NO. 1275



**THIS SHEET IS FOR PHASE 1 EROSION & SEDIMENT CONTROL PURPOSES ONLY!**

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL CONFORM TO THE LATEST EDITION OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK".

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**EROSION/SEDIMENT CONTROL LEGEND**

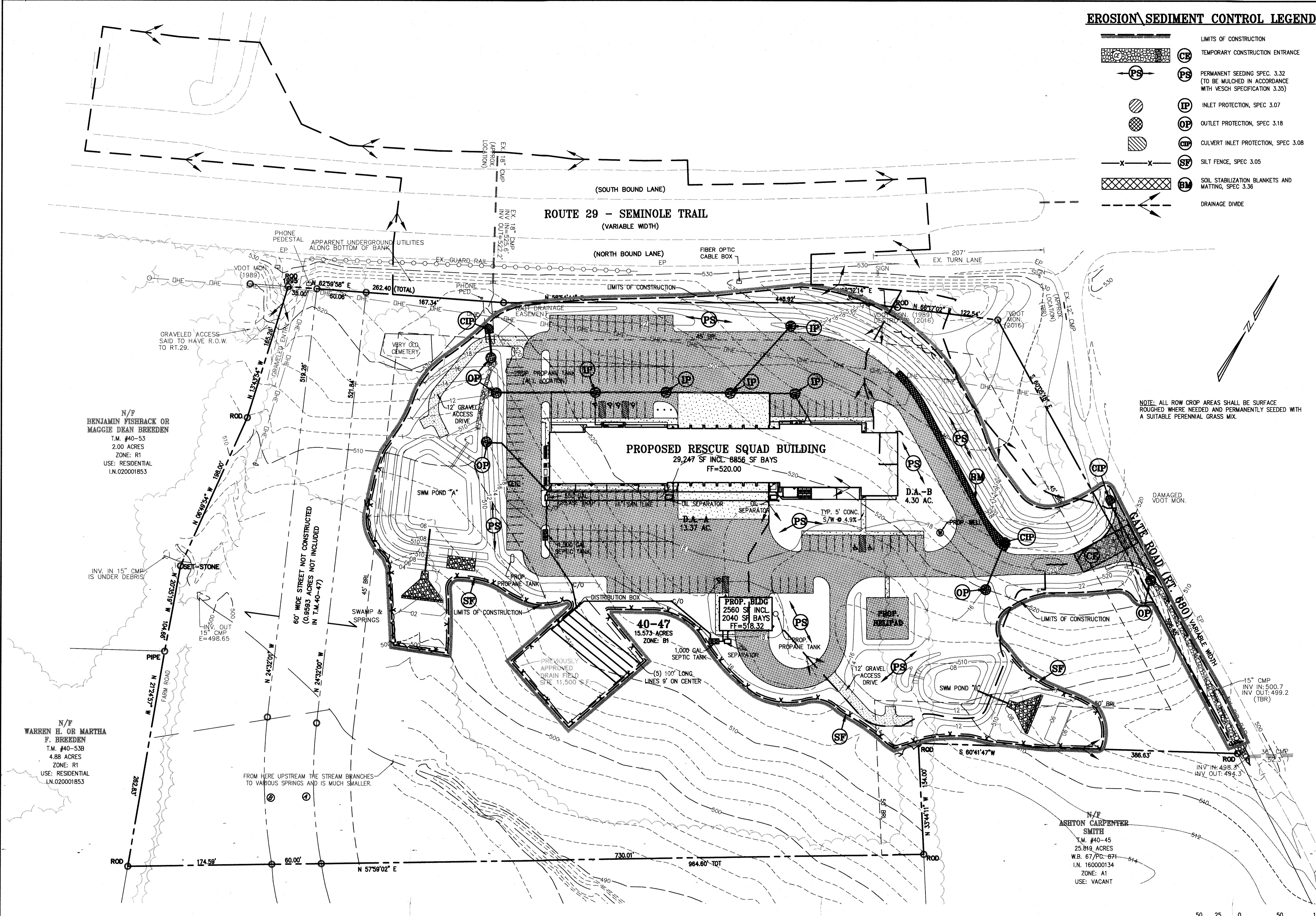
- LIMITS OF CONSTRUCTION
- TEMPORARY CONSTRUCTION ENTRANCE
- PERMANENT SEEDING SPEC. 3.32 (TO BE MULCHED IN ACCORDANCE WITH VESCH SPECIFICATION 3.35)
- INLET PROTECTION, SPEC 3.07
- OUTLET PROTECTION, SPEC 3.18
- CULVERT INLET PROTECTION, SPEC 3.08
- SILT FENCE, SPEC 3.05
- SOIL STABILIZATION BLANKETS AND MATTING, SPEC 3.36
- DRAINAGE DIVIDE

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 FAX (540) 829-2239



PHASE 2 EROSION AND SEDIMENT CONTROL PLAN  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE:	1" = 50'
DATE:	10/5/16
REVISIONS:	2/28/17 PER COUNTY & DEQ COMMENTS
	5/5/17 PER DEQ COMMENTS
	6/14/17 PER PROP. PROPANE TANKS
	6/21/17 PER OIL SEPARATOR TANKS
SHEET	12 OF 24
FILE NO.	1275



NOTE: ALL ROW CROP AREAS SHALL BE SURFACE ROUGHED WHERE NEEDED AND PERMANENTLY SEEDING WITH A SUITABLE PERENNIAL GRASS MIX.



**THIS SHEET IS FOR PHASE 2 EROSION & SEDIMENT CONTROL PURPOSES ONLY!**

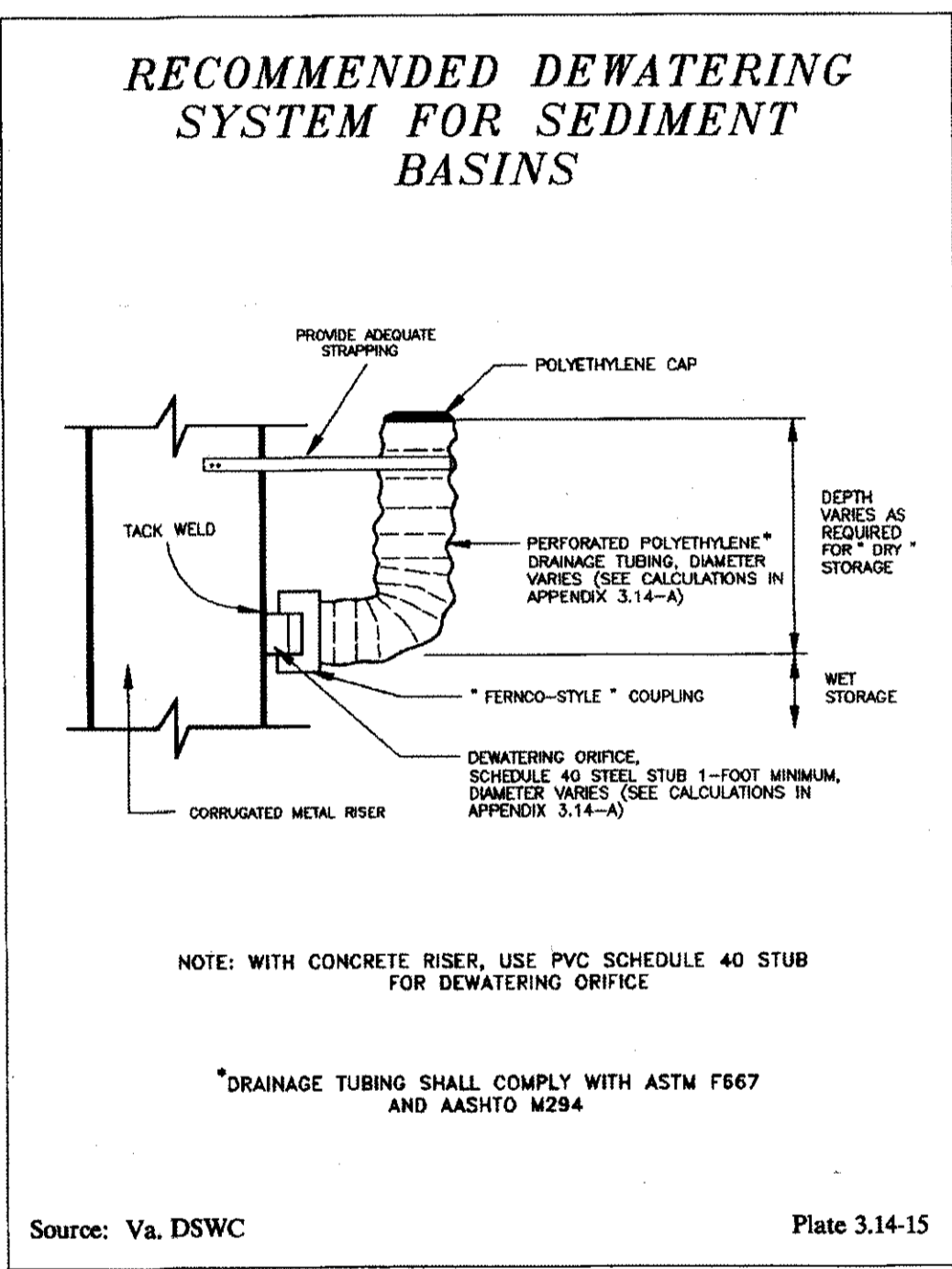
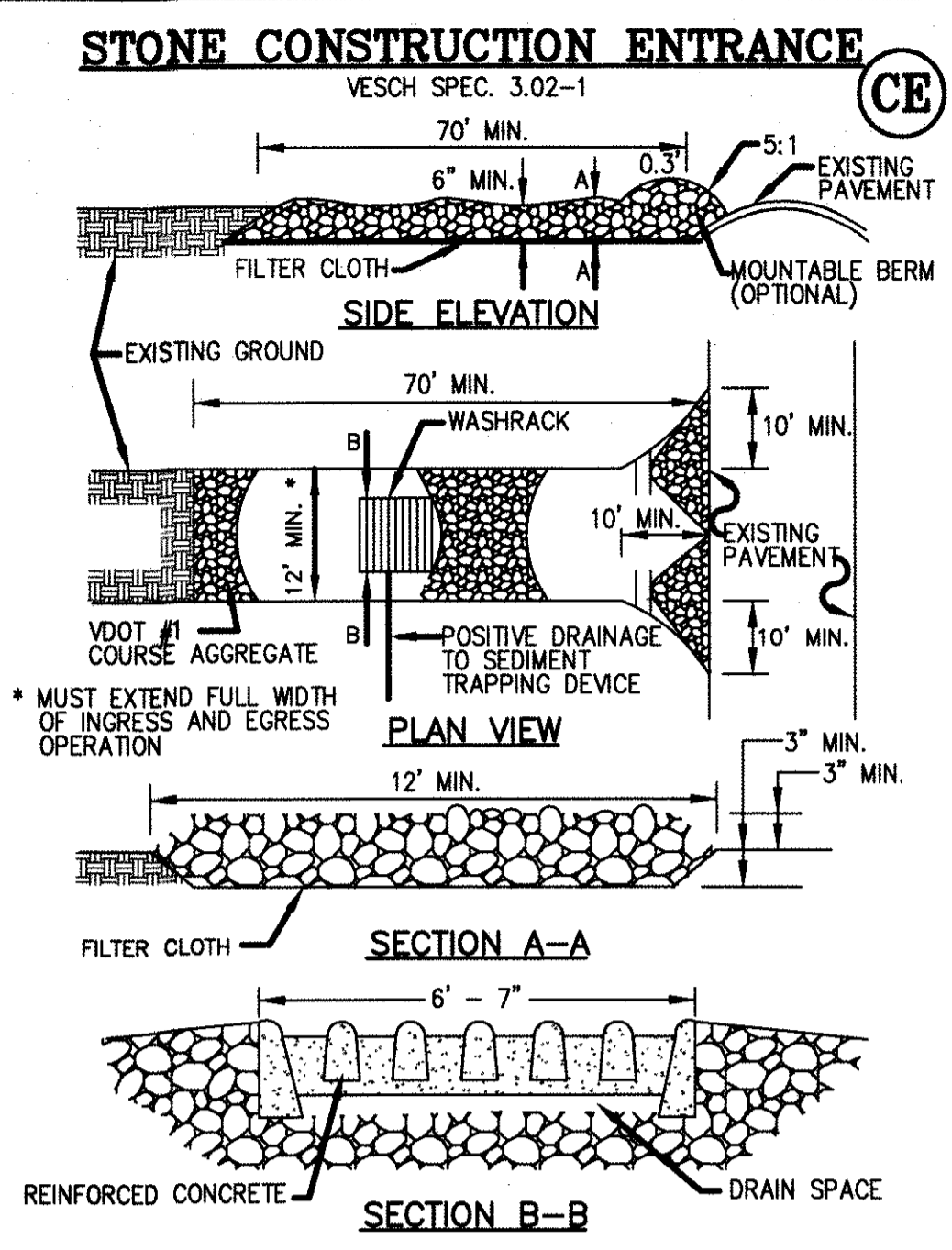
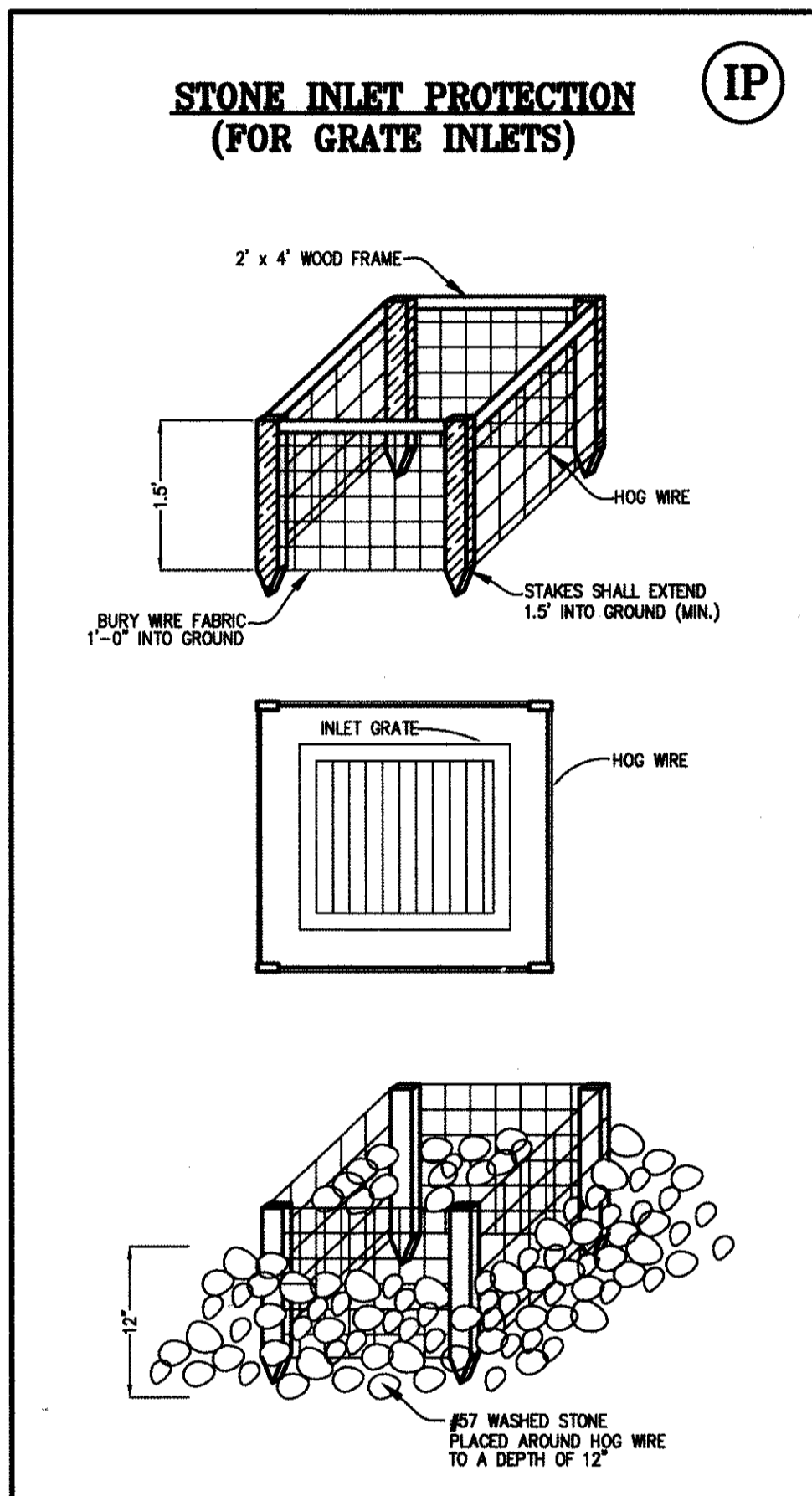
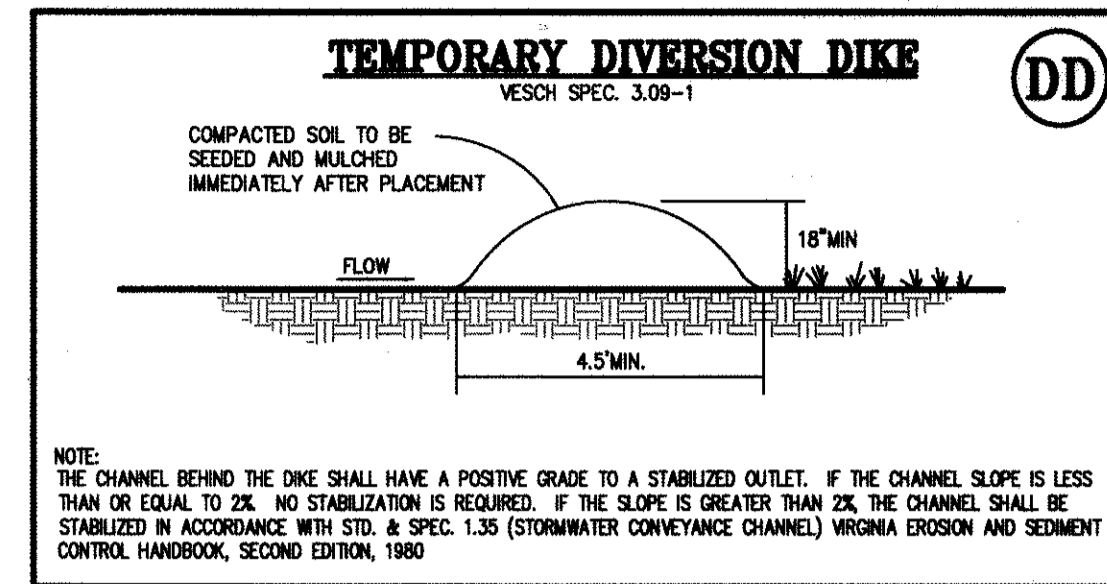
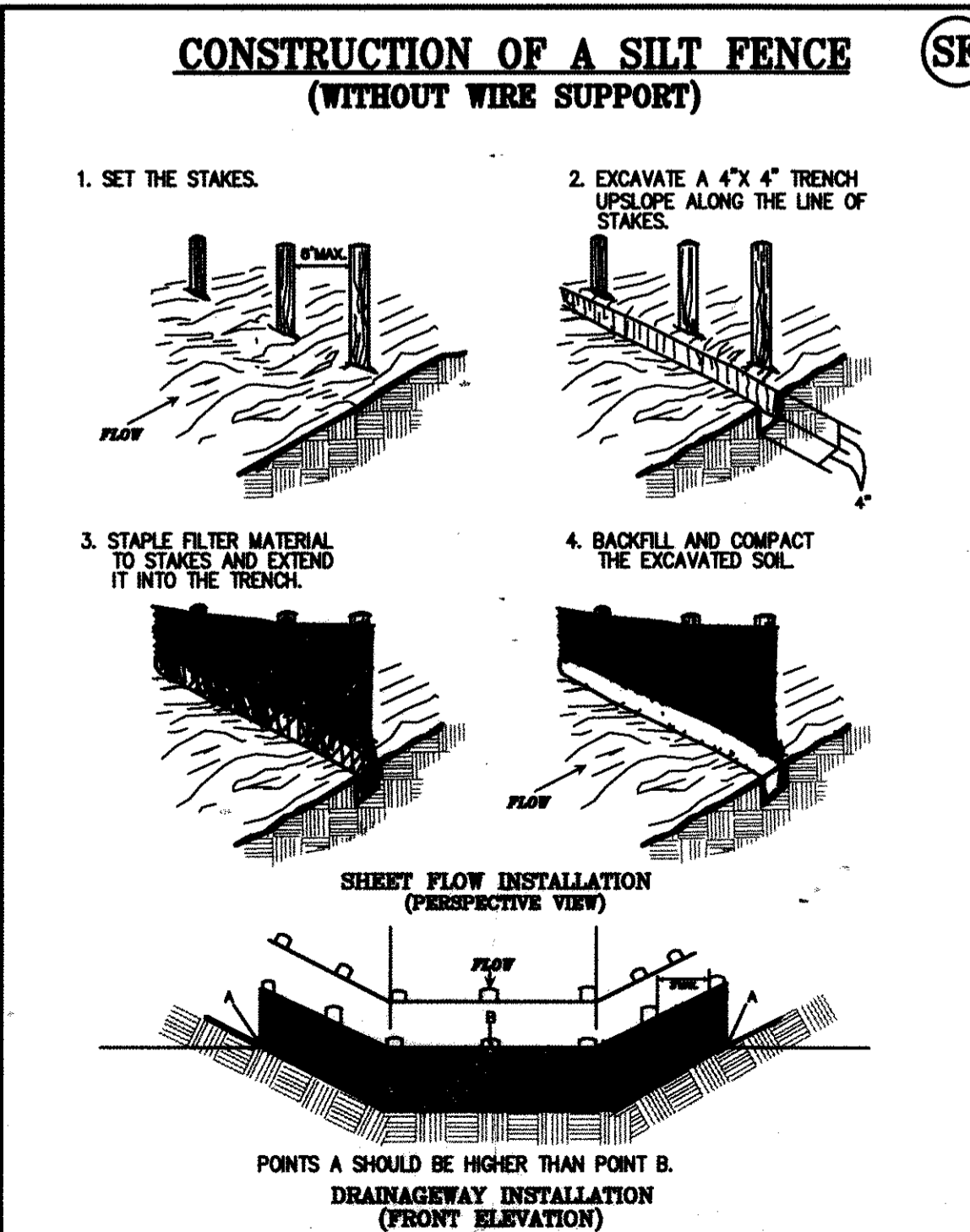
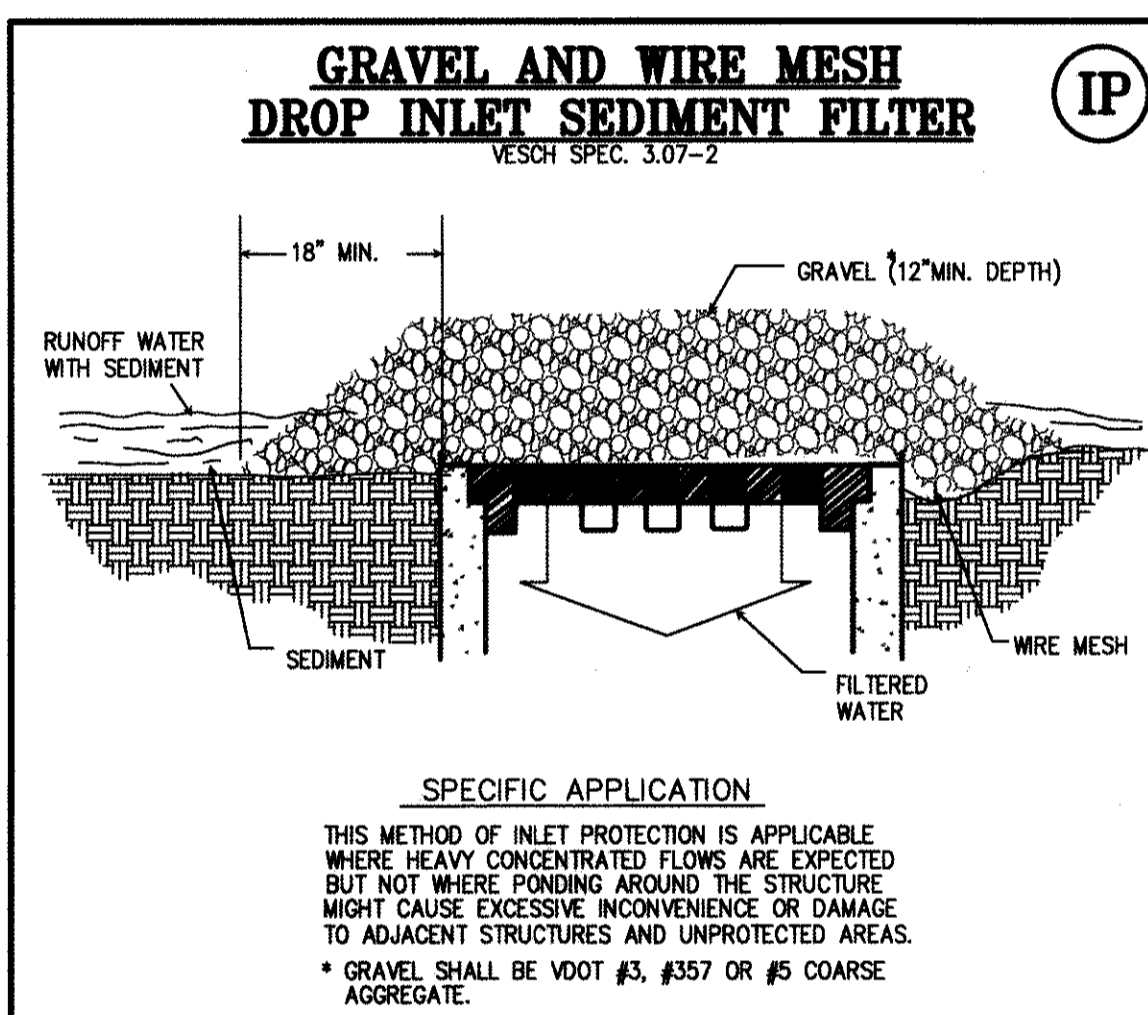
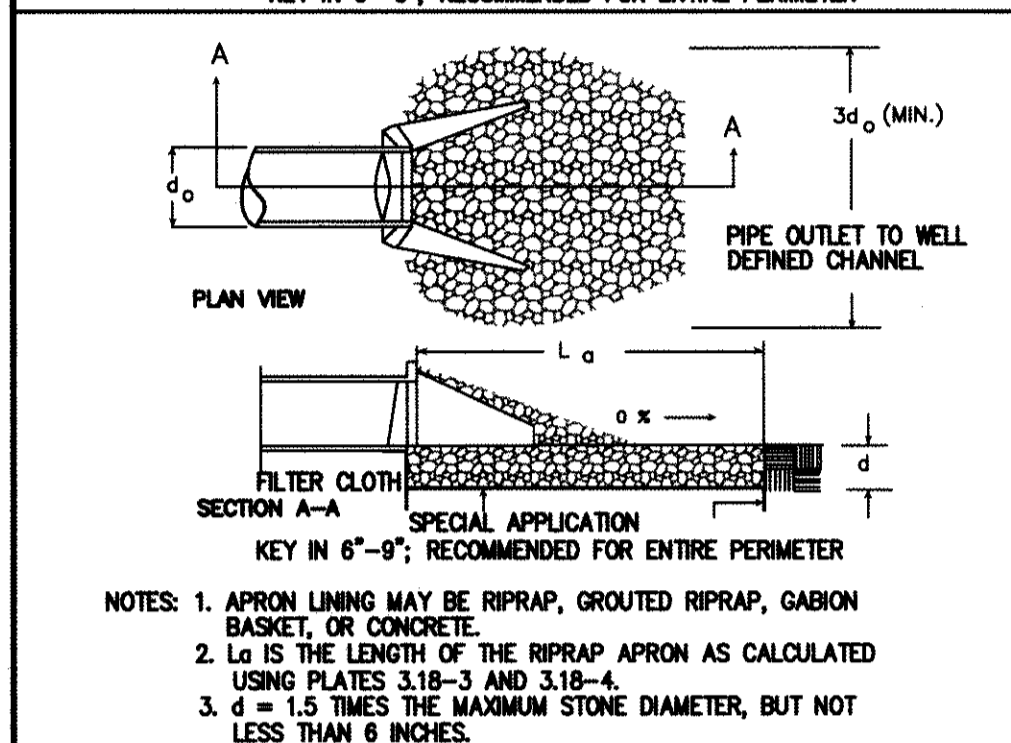
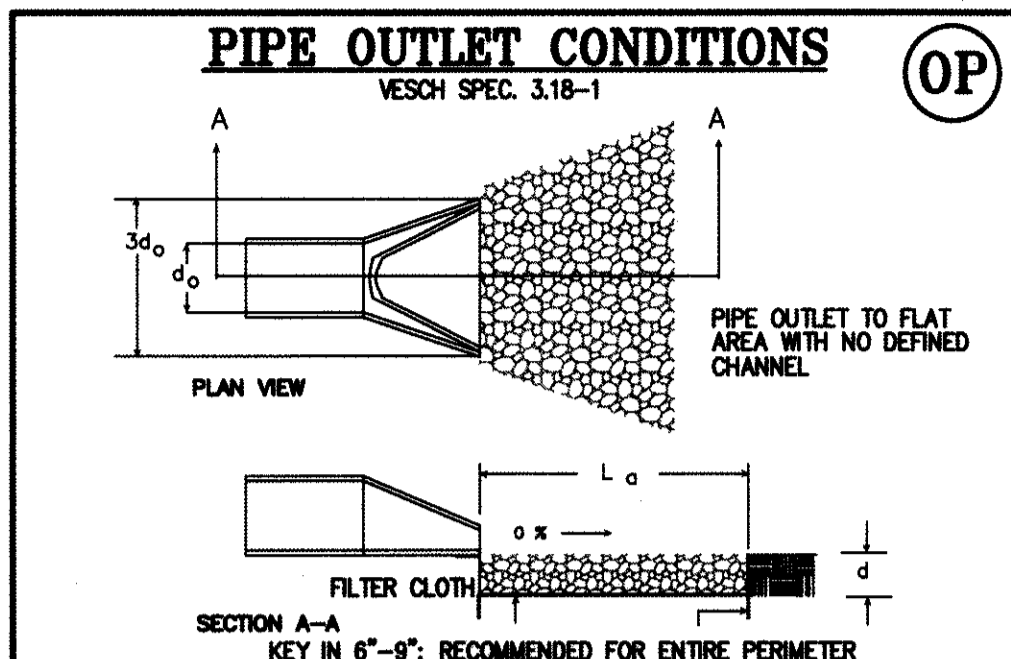
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N/P BENJAMIN FISHBACK OR MAGGIE DEAN BREEDEN  
 T.M. #40-53  
 2.00 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N.020001853

N/P WARREN H. OR MARTHA F. BREEDEN  
 T.M. #40-53B  
 4.88 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N.020001853

N/P ASHTON CARPENTER SMITH  
 T.M. #40-45  
 25.819 ACRES  
 W.B. 67/PG. 671  
 I.N. 160000134  
 ZONE: A1  
 USE: VACANT





#### SEDIMENT BASIN A DESIGN

HYDROLOGIC ANALYSIS:  
DRAINAGE AREA = 4.7 AC  
25-YR INTENSITY = 6.50 IN/HR  
RUNOFF COEFF. = 0.51  
Q (25-YR) = 15.48 CFS

STORAGE REQUIRED:  
WET = 312.9 CY (67 CY PER ACRE OF DRAINAGE)  
DRY = 312.9 CY (67 CY PER ACRE OF DRAINAGE)  
TOTAL = 625.8 CY (134 CY PER ACRE OF DRAINAGE)

BASIN SHAPE:  
LENGTH OF FLOW = 88'  
NORM. POOL AREA = 5,663 SF  
EFFECTIVE WIDTH = 64'  
\*\*BAFFLES REQUIRED\*\*

VOLUME AND ELEVATIONS:  
BOTTOM = EL. 504.00 = 0 CY STORAGE  
CLEANOUT = EL. 505.25 = 164 CY STORAGE  
WET STORAGE = EL. 508.25 = 315 CY STORAGE  
RISER CREST = EL. 507.75 = 655 CY

PRINCIPAL SPILLWAY DESIGN:  
RISER DIAMETER = 18 IN (SEE PLATE 3.14-8, VESCH)  
RISER HEAD (h) = 1.38' (DESIGN H.W. - RISER CREST)  
DESIGN HIGH WATER = EL. 508.75  
BARREL LENGTH = 46'  
BARREL HEAD (H) = 5.62724 (D.H.W. - CTR OF BARREL OUTLET)  
BARREL DIAMETER = 15 IN (SEE TABLE 3.14A OR 3.14B)  
BARREL SLOPE = 3.28%  
TRASH RACK DIA. = 27 IN (SEE PLATE 3.14-10 AND TABLE 3.14D)  
TRASH RACK HEIGHT = 8 IN

ANTI-SEEP COLLAR DESIGN:  
EMBANKMENT HGT = 6.75' \*\*ANTI-SEEP COLLAR NOT REQUIRED\*\*  
NOTE: EMBANKMENT SHALL BE OF SOILS HIGH IN SILT-CLAY CONTENT AND OUTLET BARREL SHALL BE GREATER THAN 10" IN DIAMETER.

DEWATERING ORIFICE COMPUTATIONS:  
S = 340.0 CY = 9180.0 CF (DRY STORAGE VOLUME)  
Q = 0.425 CFS  
h = 0.75 (RISER CREST - WET STORAGE ELEV./2)  
A = 0.1020 SF = 14.7 SQ IN  
d = 4.3 IN USE 4.0 INCH DIAMETER ORIFICE

FINAL DESIGN ELEVATIONS:  
TOP OF DAM = EL. 510.75  
DESIGN HIGH WATER = EL. 508.75  
EMERGENCY SPILLWAY CREST = N/A; 25 YR STORM THRU RISER  
PRINCIPAL SPILLWAY CREST = EL. 507.75  
DEWATERING ORIFICE INVERT = EL. 506.25  
CLEANOUT ELEVATION = EL. 505.25  
UPSTREAM TOE OF DAM = EL. 504.00

#### SEDIMENT BASIN B DESIGN

HYDROLOGIC ANALYSIS:  
DRAINAGE AREA = 4.6 AC  
25-YR INTENSITY = 6.50 IN/HR  
RUNOFF COEFF. = 0.36  
Q (25-YR) = 10.72 CFS

STORAGE REQUIRED:  
WET = 306.9 CY (67 CY PER ACRE OF DRAINAGE)  
DRY = 306.9 CY (67 CY PER ACRE OF DRAINAGE)  
TOTAL = 613.7 CY (134 CY PER ACRE OF DRAINAGE)

BASIN SHAPE:  
LENGTH OF FLOW = 97'  
NORM. POOL AREA = 4,009 SF  
EFFECTIVE WIDTH = 41'  
\*\*NO BAFFLES REQUIRED\*\*

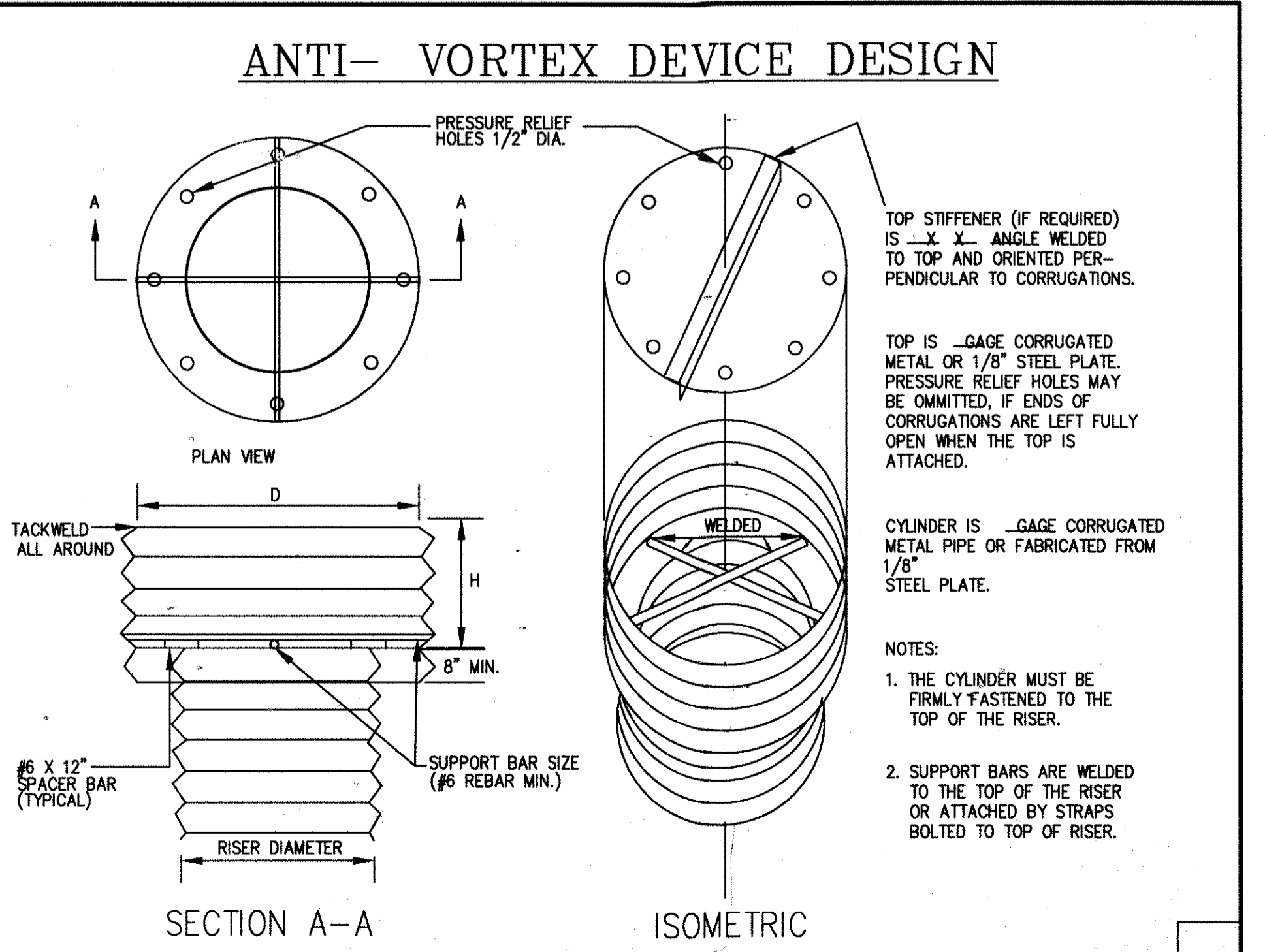
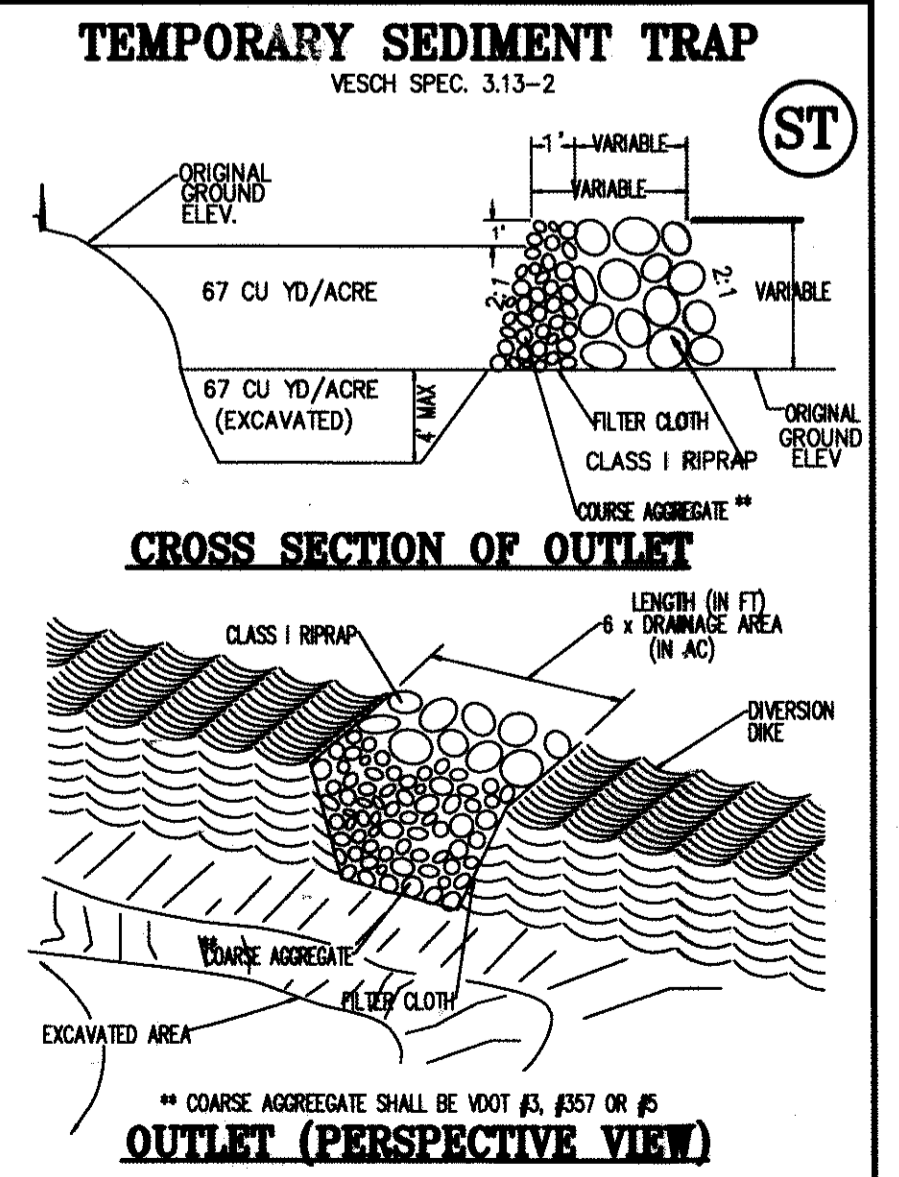
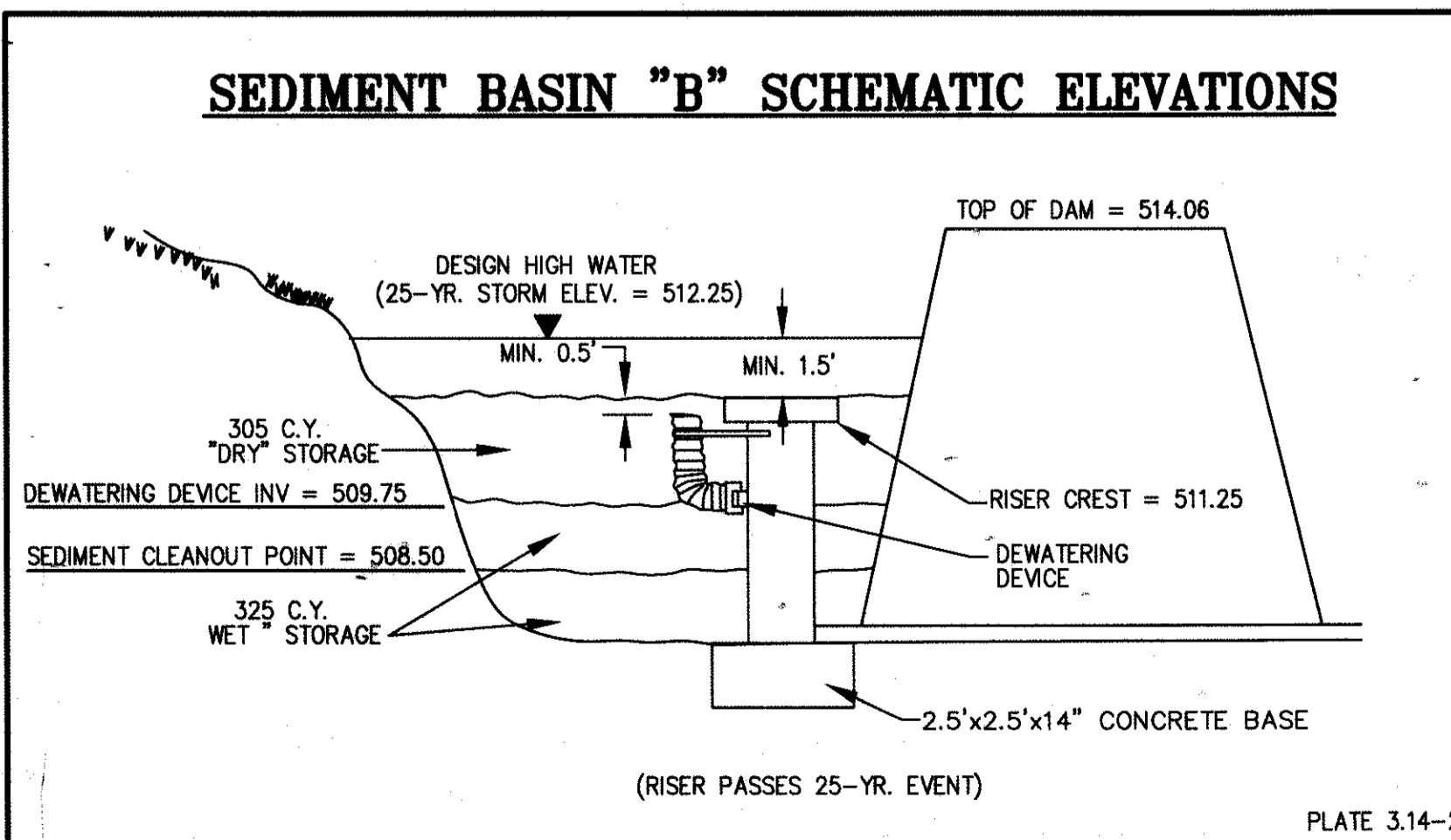
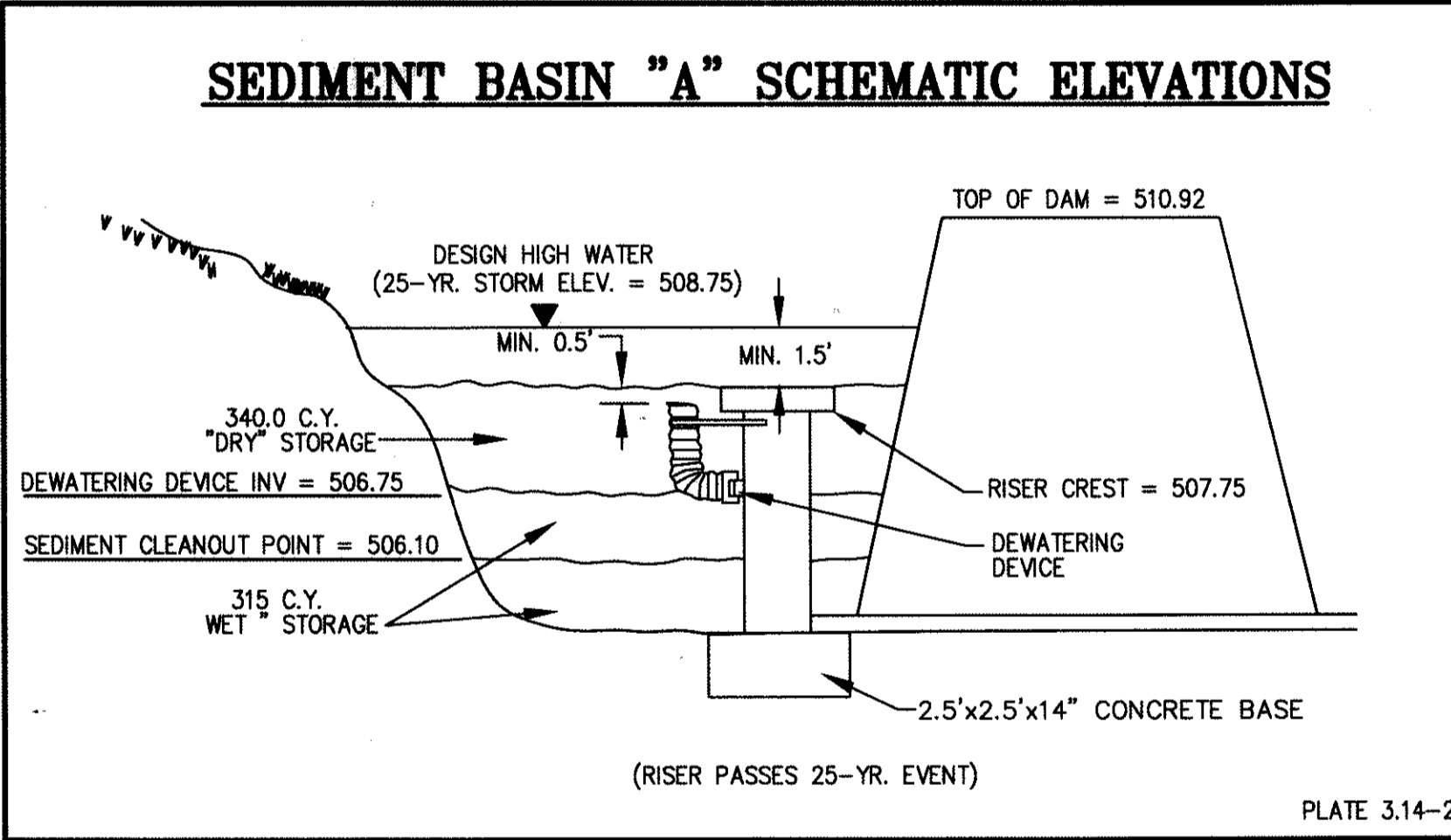
VOLUME AND ELEVATIONS:  
BOTTOM = EL. 506.00 = 0 CY STORAGE  
CLEANOUT = EL. 508.50 = 162 CY STORAGE  
WET STORAGE = EL. 509.75 = 325 CY STORAGE  
RISER CREST = EL. 511.25 = 630 CY

PRINCIPAL SPILLWAY DESIGN:  
RISER DIAMETER = 18 IN (SEE PLATE 3.14-8, VESCH)  
RISER HEAD (h) = 1.00' (DESIGN H.W. - RISER CREST)  
DESIGN HIGH WATER = EL. 512.25  
BARREL LENGTH (L) = 6.0' (D.H.W. - CTR OF BARREL OUTLET)  
BARREL DIAMETER = 15 IN (SEE TABLE 3.14A OR 3.14B)  
BARREL SLOPE = 1.00%  
TRASH RACK DIA. = 27 IN (SEE PLATE 3.14-10 AND TABLE 3.14D)  
TRASH RACK HEIGHT = 7 IN

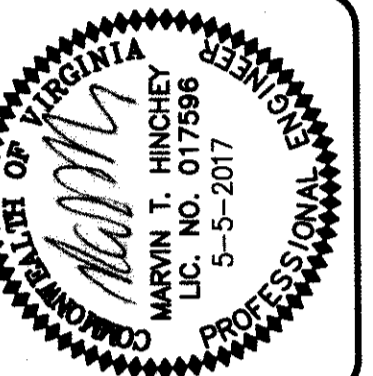
ANTI-SEEP COLLAR DESIGN:  
EMBANKMENT HGT = 8.25' \*\*ANTI-SEEP COLLAR NOT REQUIRED\*\*  
NOTE: EMBANKMENT SHALL BE OF SOILS HIGH IN SILT-CLAY CONTENT AND OUTLET BARREL SHALL BE GREATER THAN 10" IN DIAMETER.

DEWATERING ORIFICE COMPUTATIONS:  
S = 305.0 CY = 8235.0 CF (DRY STORAGE VOLUME)  
Q = 0.381 CFS  
h = 0.75 (RISER CREST - WET STORAGE ELEV./2)  
A = 0.0915 SF = 13.2 SQ IN  
d = 4.1 IN USE 4.0 INCH DIAMETER ORIFICE

FINAL DESIGN ELEVATIONS:  
TOP OF DAM = EL. 514.25  
DESIGN HIGH WATER = EL. 512.25  
EMERGENCY SPILLWAY CREST = N/A; 25 YR STORM THRU RISER  
PRINCIPAL SPILLWAY CREST = EL. 511.25  
DEWATERING ORIFICE INVERT = EL. 509.75  
CLEANOUT ELEVATION = EL. 508.50  
UPSTREAM TOE OF DAM = EL. 506.00



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EROSION AND SEDIMENT CONTROL DETAILS  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED

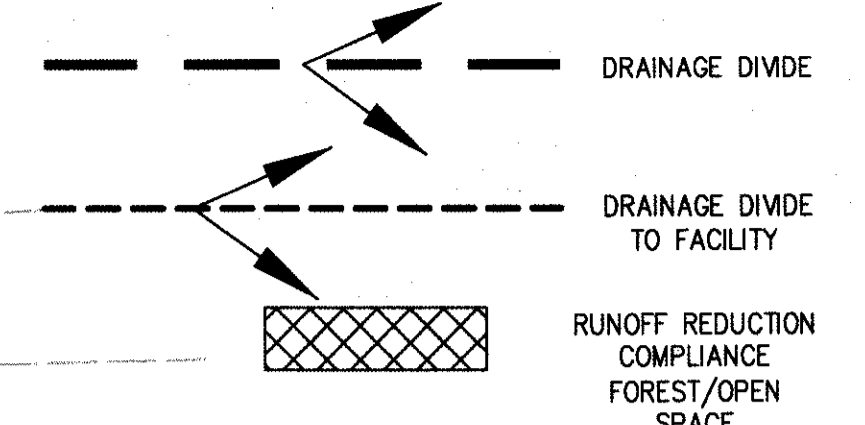
DATE: 10/5/16

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SHEET 14 OF 24

FILE NO. 1275

# LEGEND



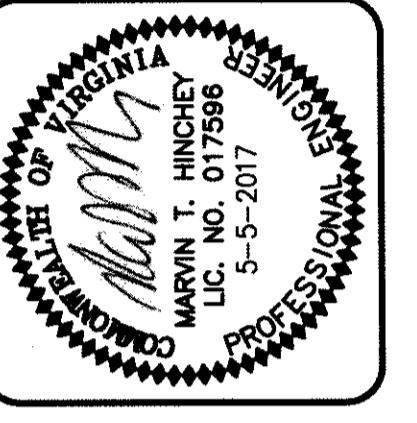
## POST-DEVELOPMENT LAND COVER AREAS

Drainage Area A	Drainage Area B
TOTAL AREA: 11.44	TOTAL AREA: 4.13
TO FACILITY: 3.29	TO FACILITY: 2.50
FOREST: 0.29 AC.	FOREST: 0.00 AC.
TURF: 1.04 AC.	TURF: 1.70 AC.
IMPERVIOUS: 1.96 AC.	IMPERVIOUS: 0.80 AC.
EYASS: 8.15	EYASS: 1.83
FOREST: 4.38 AC.	FOREST: 0.28 AC.
TURF: 2.82 AC.	TURF: 1.30 AC.
IMPERVIOUS: 0.95 AC.	IMPERVIOUS: 0.05 AC.

### NOTES:

1. METES AND BOUNDS SPECIFIC TO THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE ARE SHOWN IN PARENTHESES
2. THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE AREA SHOWN HERE SHALL BE MAINTAINED IN A FOREST/OPEN SPACE CONDITION UNTIL SUCH TIME THAT AN AMENDED STORMWATER MANAGEMENT PLAN IS APPROVED BY THE VSMF AUTHORITY

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 CULPEPER, VIRGINIA 22701



POST-DEVELOPMENT DRAINAGE MAP  
 (FOR WATER QUALITY PURPOSES)  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

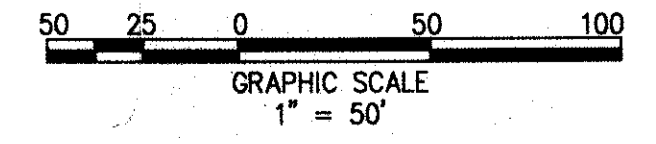
SCALE: AS NOTED  
 DATE: 10/5/16

REVISIONS:  
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 5/5/17 PER DEQ COMMENTS

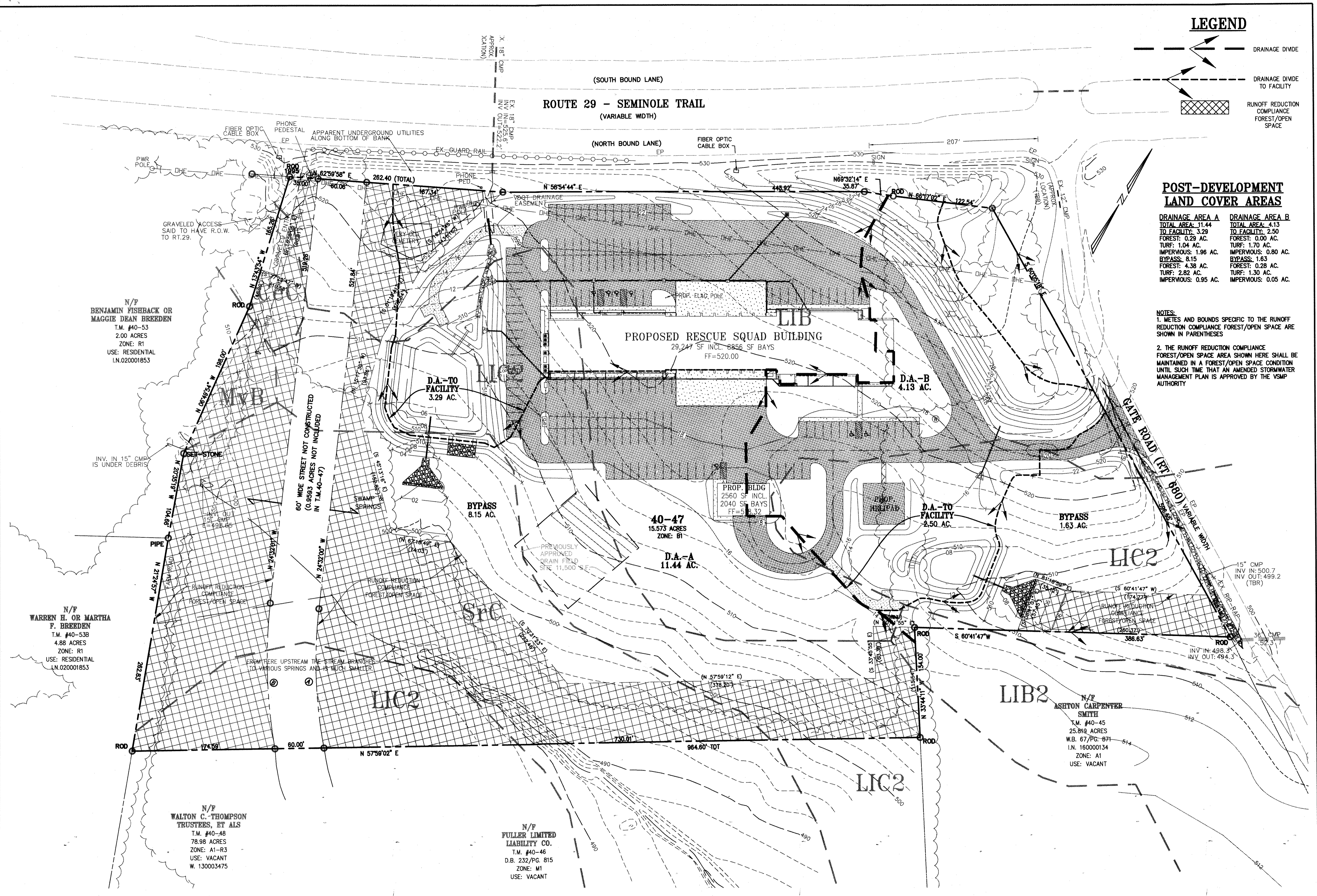
SHEET 15 OF 24  
 FILE NO. 1275

## POST-DEVELOPMENT DRAINAGE AREAS

SCALE: 1"=50'



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N/F  
**BENJAMIN FISHBACK OR  
 MAGGIE DEAN BREEDEN**  
 T.M. #40-53  
 2.00 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N. 020001853

N/F  
**WARREN H. OR MARTHA  
 F. BREEDEN**  
 T.M. #40-53B  
 4.88 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N. 020001853

N/F  
**WALTON C.-THOMPSON  
 TRUSTEES, ET ALS**  
 T.M. #40-48  
 78.98 ACRES  
 ZONE: A1-R3  
 USE: VACANT  
 W. 130003475

N/F  
**FULLER LIMITED  
 LIABILITY CO.**  
 T.M. #40-46  
 D.B. 232/PG. 815  
 ZONE: M1  
 USE: VACANT

**40-47**  
 15.573 ACRES  
 ZONE: B1  
**D.A.-A**  
 11.44 AC.

**D.A.-TO  
 FACILITY**  
 3.29 AC.

**D.A.-B**  
 4.13 AC.

**D.A.-TO  
 FACILITY**  
 2.50 AC.

N/F  
**ASHTON CARPENTER  
 SMITH**  
 T.M. #40-45  
 25.818 ACRES  
 W.B. 67/PG. 671  
 I.N. 160000134  
 ZONE: A1  
 USE: VACANT

**PROPOSED RESCUE SQUAD BUILDING**  
 29,247 SF INCL. 8856 SF BAYS  
 FF=520.00

**PROP. BLDG**  
 2560 SF INCL.  
 2040 SF BAYS  
 FF=58.32

**BYPASS**  
 8.15 AC.

**BYPASS**  
 1.63 AC.

60' WIDE STREET NOT CONSTRUCTED  
 (0.9593 ACRES NOT INCLUDED  
 IN T.M. #40-47)

EROSION CONTROL UPSTREAM THE STREAM BRANCHES  
 TO VARIOUS SPRINGS AND IS MUCH SMALLER

PREVIOUSLY APPROVED  
 DRAIN FIELD  
 11,500 SF

FIBER OPTIC CABLE BOX  
 PHONE PEDESTAL  
 APPARENT UNDERGROUND UTILITIES  
 ALONG BOTTOM OF BANK  
 EX. GUARD RAIL  
 EX. 18" CMP  
 INV. OUT: 525.21

INV. IN 15" CMP  
 IS UNDER DEBRIS

PIPE

ROD

ROD

ROD

ROD

ROD



DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 3.0

Project Name: MADISON RESCUE SQUAD  
 Date: 2/7/2017  
 BMP Design Specifications List: 2013 Draft Stds & Specs

**Site Information**

**Post-Development Project (Treatment Volume and Loads)**

Land Cover (acres)	
Forest/Open Space (acres) - undisturbed, protected forest/open space or reforested land	4.95
Managed Turf (acres) - disturbed, graded for yards or other turf to be mowed/managed	6.86
Impervious Cover (acres)	7.76
<b>Total</b>	<b>19.57</b>

Runoff Coefficients (Cv)	
Forest/Open Space	0.15
Managed Turf	0.65
Impervious Cover	0.95

Constants	
Annual Rainfall (inches)	43
TP Load Reduction Required (lb/yr)	5.23

**Drainage Area A**

Drainage Area A Land Cover (acres)	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover (%)
Forest/Open Space (acres)	0.19	4.76	0.00	0.00	4.95	25.29
Managed Turf (acres)	0.00	6.86	0.00	0.00	6.86	35.07
Impervious Cover (acres)	0.00	0.00	7.76	0.00	7.76	39.74
<b>Total</b>	<b>0.19</b>	<b>11.62</b>	<b>7.76</b>	<b>0.00</b>	<b>19.57</b>	<b>100.00</b>

**Stormwater Best Management Practices (RR = Runoff Reduction)**

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft <sup>3</sup> )	Runoff Reduction (ft <sup>3</sup> )	Remaining Runoff Volume (ft <sup>3</sup> )	Total BMP Treatment Volume (ft <sup>3</sup> )	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed by Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75	1.96	1.96	0	5,636	3,839	2,004	0	6.97	4.72	1.25	1.18	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compact Amended R/C/D Soils (Spec #2 & 4)	50	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	

**Summary:**  
 TOTAL IMPERVIOUS COVER TREATED (ac) = 7.76 AREA CHECK: OK  
 TOTAL MANAGED TURF AREA TREATED (ac) = 6.86 AREA CHECK: OK  
 TOTAL RUNOFF REDUCTION IN D.A. A (ft<sup>3</sup>) = 3,839  
 TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) = 2.56  
 TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr) = 4.53  
 SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

**Post-Development Requirement for Site Area**

TP Load Reduction Required (lb/yr) = 5.23

**LAND COVER SUMMARY - POST DEVELOPMENT**

Land Cover Summary		Treatment Volume and Nutrient Loads	
Forest/Open Space (acres)	4.95	Treatment Volume (acre-ft)	0.632
Weighted Rv (forest)	0.03	Treatment Volume (cubic feet)	18,479
% Forest	25%	TP Load (lb/yr)	11.61
Managed Turf (acres)	6.86	TN Load (lb/yr)	83.06
Weighted Rv (turf)	0.20		
% Managed Turf	35%		
Impervious Cover (acres)	7.76		
Rv (impervious)	0.95		
% Impervious	40%		
Site Area (acres)	19.57		
Site Rv	0.03		

**Drainage Area B**

Drainage Area B Land Cover (acres)	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover (%)
Forest/Open Space (acres)	0.00	0.28	0.00	0.00	0.28	14.30
Managed Turf (acres)	0.00	3.00	0.00	0.00	3.00	15.33
Impervious Cover (acres)	0.00	0.85	0.00	0.00	0.85	4.24
<b>Total</b>	<b>0.00</b>	<b>4.13</b>	<b>0.00</b>	<b>0.00</b>	<b>4.13</b>	<b>23.87</b>

**Stormwater Best Management Practices (RR = Runoff Reduction)**

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft <sup>3</sup> )	Runoff Reduction (ft <sup>3</sup> )	Remaining Runoff Volume (ft <sup>3</sup> )	Total BMP Treatment Volume (ft <sup>3</sup> )	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed by Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75	1.70	0.80	0	2,995	1,988	1,995	0	6.98	3.21	1.88	0.00	
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compact Amended R/C/D Soils (Spec #2 & 4)	50	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	

**Summary:**  
 TOTAL IMPERVIOUS COVER TREATED (ac) = 0.80 AREA CHECK: OK  
 TOTAL MANAGED TURF AREA TREATED (ac) = 1.70 AREA CHECK: OK  
 TOTAL RUNOFF REDUCTION IN D.A. B (ft<sup>3</sup>) = 1,988  
 TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr) = 1.88  
 TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr) = 3.33  
 SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

**Runoff Volume and Curve Number Calculations**

Enter design storm rainfall depth (in):

1-year storm	2-year storm	10-year storm
2.90	3.50	5.30

Use NOAA Atlas 14 (<http://hydro.nws.noaa.gov/hydro/atlas14/>)

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 3.0

BMP Design Specifications List: 2013 Draft Stds & Specs

**Site Summary**

Total Rainfall = 43 inches

**Site Land Cover Summary**

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest/Open (acres)	0.19	4.76	0.00	0.00	4.95	25.29
Managed Turf (acres)	0.00	6.86	0.00	0.00	6.86	35.07
Impervious Cover (acres)	0.00	0.00	7.76	0.00	7.76	39.74
<b>Total</b>	<b>0.19</b>	<b>11.62</b>	<b>7.76</b>	<b>0.00</b>	<b>19.57</b>	<b>100.00</b>

**Site TN and Land Cover Nutrient Loads**

Site Rv	0.03
Treatment Volume (ft <sup>3</sup> )	18,479
TP Load (lb/yr)	11.61
TN Load (lb/yr)	83.06
<b>Total TP Load Reduction Required (lb/yr)</b>	<b>5.23</b>

**Site Compliance Summary**

<b>Total Runoff Volume Reduction (ft<sup>3</sup>)</b>	<b>8,630</b>
<b>Total TP Load Reduction Achieved (lb/yr)</b>	<b>5.42</b>
<b>Total TN Load Reduction Achieved (lb/yr)</b>	<b>38.75</b>
<b>Remaining Post Development TP Load (lb/yr)</b>	<b>6.19</b>
<b>Remaining TP Load Reduction (lb/yr) Required</b>	<b>0.00</b>

\*\* TARGET TP REDUCTION EXCEEDED BY 0.19 LB/YEAR \*\*

**Drainage Area Summary**

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest/Open (acres)	4.67	0.28	0.00	0.00	0.00	4.95
Managed Turf (acres)	3.86	3.00	0.00	0.00	0.00	6.86
Impervious Cover (acres)	2.91	0.85	0.00	0.00	0.00	3.76
<b>Total Area (acres)</b>	<b>11.44</b>	<b>4.13</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>15.57</b>

**Drainage Area Compliance Summary**

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Reduced (lb/yr)	3.54	1.88	0.00	0.00	0.00	5.42
TN Load Reduced (lb/yr)	25.30	13.45	0.00	0.00	0.00	38.75

**Drainage Area A Summary**

**Land Cover Summary**

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest/Open (acres)	0.19	4.48	0.00	0.00	4.67	41
Managed Turf (acres)	0.00	3.86	0.00	0.00	3.86	34
Impervious Cover (acres)	0.00	2.91	0.00	0.00	2.91	25
<b>Total</b>	<b>0.19</b>	<b>11.25</b>	<b>0.00</b>	<b>0.00</b>	<b>12.44</b>	<b>100</b>

**BMP Selections**

Practice	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	BMP Treatment Volume (ft <sup>3</sup> )	TP Load from Upstream Practices (lbs)	Untreated TP Load to Practice (lbs)	TP Removed (lb/yr)	TP Remaining (lb/yr)	Downstream Treatment to be Employed
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	1.04	1.96	7,514.10	0.00	4.72	3.54	1.18	

**Summary:**  
 Total Impervious Cover Treated (acres) = 1.96  
 Total Turf Area Treated (acres) = 1.04  
 Total TP Load Reduction Achieved in D.A. (lb/yr) = 3.54  
 Total TN Load Reduction Achieved in D.A. (lb/yr) = 25.30

**Drainage Area B Summary**

**Land Cover Summary**

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest/Open (acres)	0.00	0.28	0.00	0.00	0.28	7
Managed Turf (acres)	0.00	3.00	0.00	0.00	3.00	73
Impervious Cover (acres)	0.00	0.85	0.00	0.00	0.85	21
<b>Total</b>	<b>0.00</b>	<b>4.13</b>	<b>0.00</b>	<b>0.00</b>	<b>4.13</b>	<b>100</b>

**BMP Selections**

Practice	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	BMP Treatment Volume (ft <sup>3</sup> )	TP Load from Upstream Practices (lbs)	Untreated TP Load to Practice (lbs)	TP Removed (lb/yr)	TP Remaining (lb/yr)	Downstream Treatment to be Employed
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	1.7	0.8	3,993.00	0.00	2.51	1.88	0.63	

**Summary:**  
 Total Impervious Cover Treated (acres) = 0.80  
 Total Turf Area Treated (acres) = 1.70  
 Total TP Load Reduction Achieved in D.A. (lb/yr) = 1.88  
 Total TN Load Reduction Achieved in D.A. (lb/yr) = 13.45

**Runoff Volume and CN Calculations**

Target Rainfall Event (in)	1-year storm	2-year storm	10-year storm
	2.90	3.50	5.30

Drainage Areas	RV & CN	Drainage Area A	Drainage Area B	Drainage Area C	Drainage Area D	Drainage Area E
1-year return period	RV wo RR (w-in)	0.58	0.58	0.00	0.00	0.00
2-year return period	RV w RR (w-in)	0.44	0.38	0.00	0.00	0.00
	CN adjusted	64	63	0	0	0
10-year return period	RV wo RR (w-in)	2.10	2.10	0.00	0.00	0.00
	RV w RR (w-in)	1.96	1.90	0.00	0.00	0.00

**Site Results (Water Quality Compliance)**

**Area Checks**

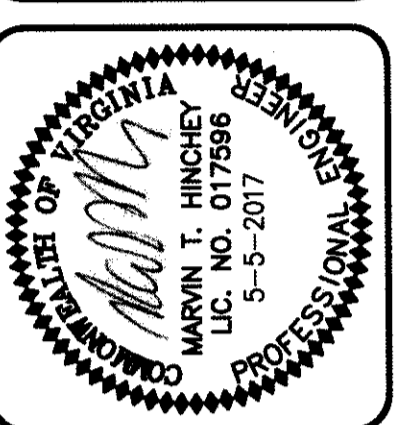
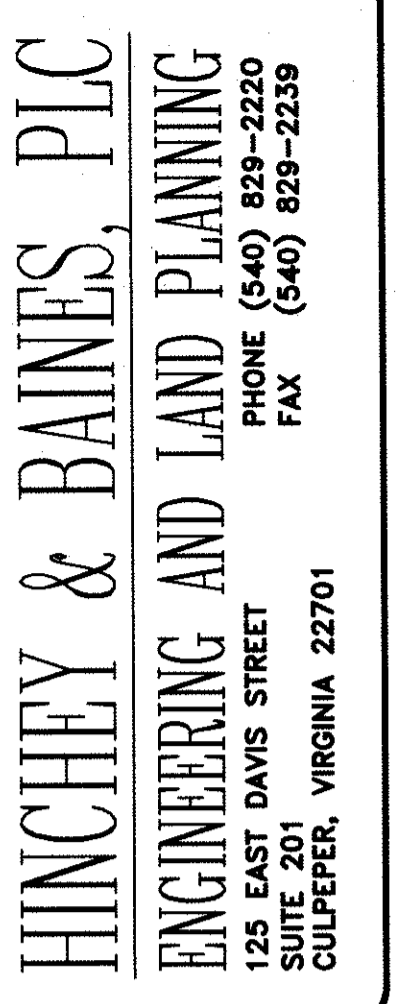
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	4.67	0.28	0.00	0.00	0.00	OK
IMPERVIOUS COVER (ac)	2.91	0.85	0.00	0.00	0.00	OK
IMPERVIOUS COVER TREATED (ac)	1.96	0.80	0.00	0.00	0.00	OK
MANAGED TURF AREA (ac)	3.86	3.00	0.00	0.00	0.00	OK
MANAGED TURF AREA TREATED (ac)	1.04	1.70	0.00	0.00	0.00	OK
<b>AREA CHECK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>

**Site Treatment Volume (ft<sup>3</sup>)** = 0

**Runoff Reduction Volume and TP by Drainage Area**

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft <sup>3</sup> )	5,836	2,995	0	0	0	8,831
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	8.07	3.21	0.00	0.00	0.00	11.28
TP LOAD REDUCTION ACHIEVED (lb/yr)	3.54	1.88	0.00	0.00	0.00	5.42
TP LOAD REMAINING (lb/yr)	4.53	1.33	0.00	0.00	0.00	5.86
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	25.30	13.45	0.00	0.00	0.00	38.75
<b>Total Phosphorus</b>						
FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	11.61					
TP LOAD REDUCTION REQUIRED (lb/yr)	5.23					
TP LOAD REDUCTION ACHIEVED (lb/yr)	5.42					
TP LOAD REMAINING (lb/yr)	6.19					
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00					

\*\* TARGET TP REDUCTION EXCEEDED BY 0.19 LB/YEAR \*\*



STORMWATER MANAGEMENT QUALITY COMPUTATIONS (RRM SPREADSHEET) **MADISON RESCUE SQUAD** FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED

DATE: 10/5/16

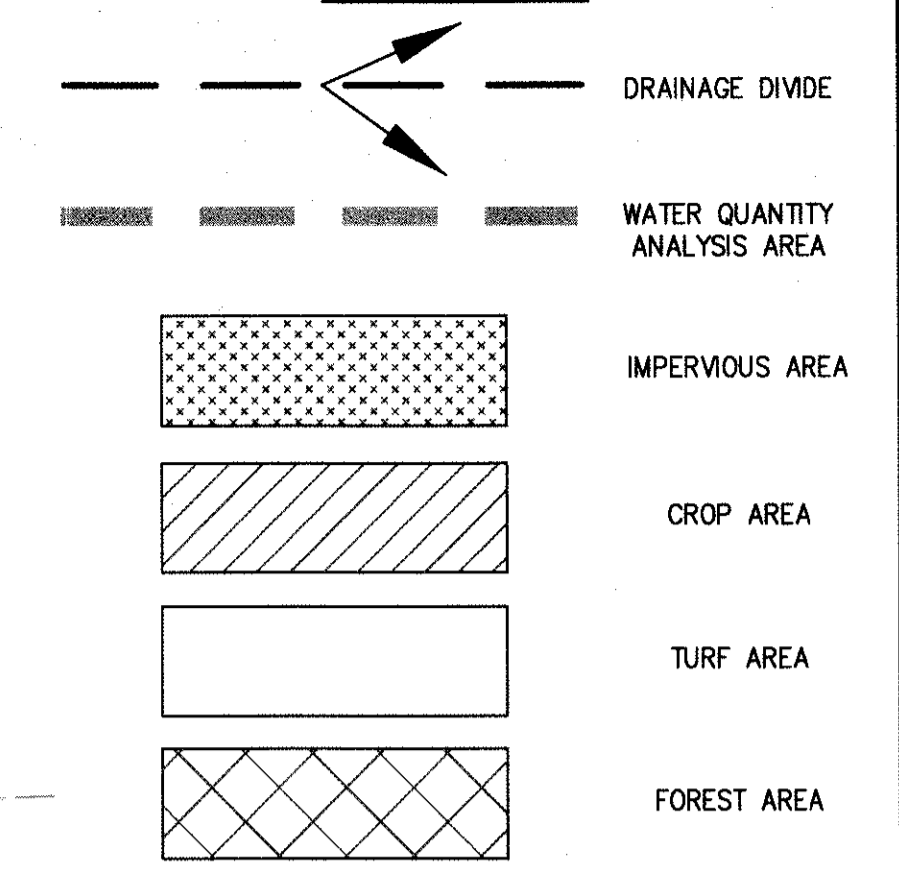
REVISIONS:  
 2/28/17 PER COUNTY & DEQ COMMENTS  
 5/5/17 PER DEQ COMMENTS

NO.	DESCRIPTION
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

SHEET 16 OF 24  
 FILE NO. 1275

**ABBREVIATIONS**  
 SF = SHEET FLOW  
 SC = SHALLOW CONCENTRATED  
 CF = CHANNELIZED FLOW

**LEGEND**



**HINCHEY & BAINES, PLC**  
**ENGINEERING AND LAND PLANNING**  
 PHONE (540) 829-2220  
 FAX (540) 829-2239  
 SUITE 201  
 125 EAST DAVIS STREET  
 CULPEPER, VIRGINIA 22701



**POST-DEVELOPMENT  
 LAND COVER AREAS FOR  
 ADJUSTED CN VALUES**

**DRAINAGE AREA A**  
 TOTAL AREA: 12.56 AC.  
 FOREST: 0.13 AC. (SOIL A) CN=30  
 FOREST: 3.55 AC. (SOIL B) CN=55  
 TURF: 0.06 AC. (SOIL A) CN=39  
 TURF: 1.85 AC. (SOIL B) CN=61  
 CROP: 5.65 AC. (SOIL B) CN=74  
 IMPERVIOUS: 1.32 AC. (SOIL B) CN=98  
 $[(0.13 \times 30) + (3.55 \times 55) + (0.06 \times 39) + (1.85 \times 61) + (5.65 \times 74) + (1.32 \times 98)] / 12.56 = 68.61$   
 COMBINED CN=69

**DRAINAGE AREA B**  
 TOTAL AREA: 6.34 AC.  
 FOREST: 0.91 AC. (SOIL A) CN=55  
 TURF: 0.58 AC. (SOIL B) CN=61  
 CROP: 4.65 AC. CN=74  
 IMPERVIOUS: 0.20 AC. (SOIL B) CN=98  
 $[(0.91 \times 55) + (0.58 \times 61) + (4.65 \times 74) + (0.20 \times 98)] / 6.34 = 70.84$   
 COMBINED CN=71

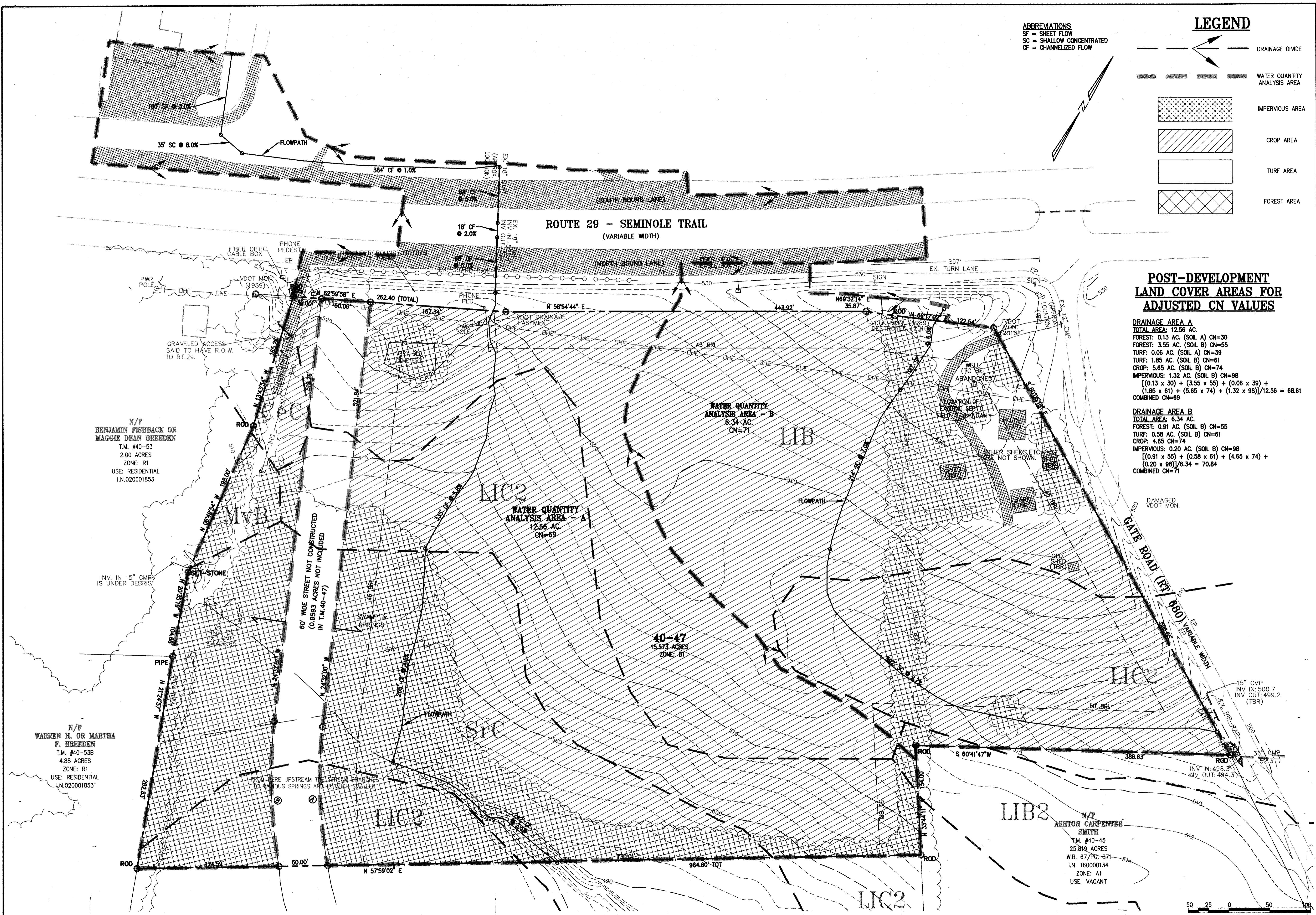
**PRE-DEVELOPMENT  
 WATER QUANTITY ANALYSIS  
 MADISON RESCUE SQUAD**

FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE: AS NOTED  
 DATE: 10/5/16

REVISIONS:  
 2/28/17 PER COUNTY &  
 DEQ COMMENTS  
 5/5/17 PER DEQ COMMENTS

SHEET 17 of 24  
 FILE NO. 1275



**PRE-DEVELOPMENT WATER QUANTITY ANALYSIS**

SCALE: 1"=50'



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N/F  
 BENJAMIN FISHBACK OR  
 MAGGIE DEAN BREEDEN  
 T.M. #40-53  
 2.00 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N. 020001853

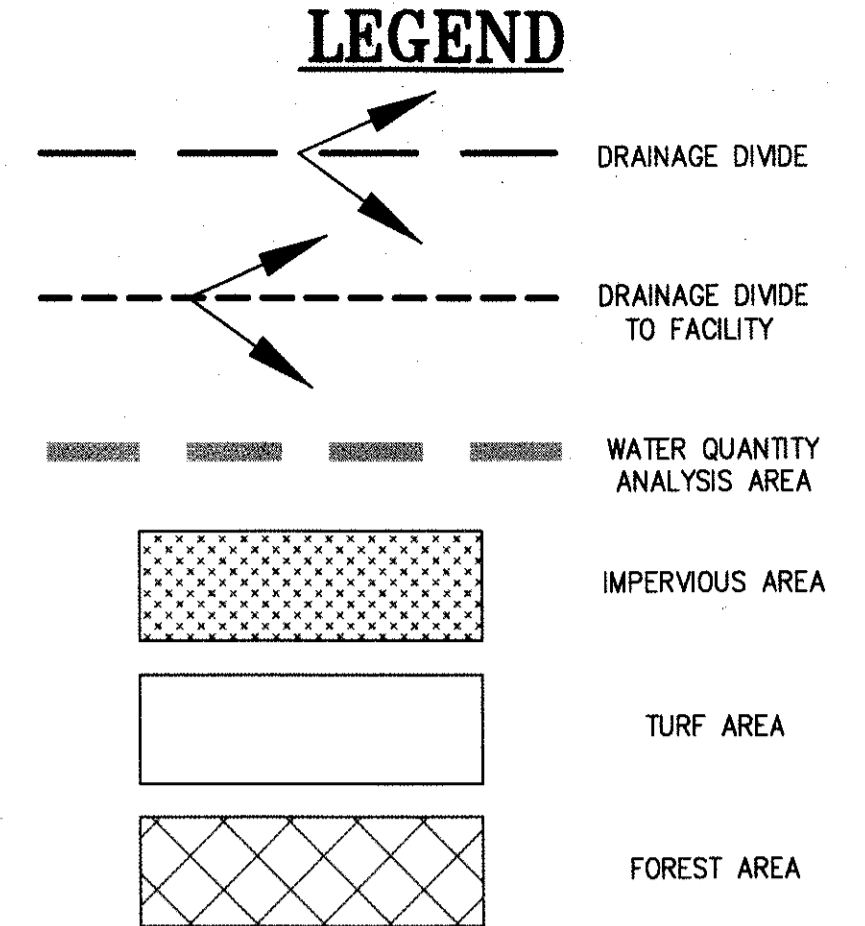
N/F  
 WARREN H. OR MARTHA  
 F. BREEDEN  
 T.M. #40-53B  
 4.88 ACRES  
 ZONE: R1  
 USE: RESIDENTIAL  
 I.N. 020001853

N/F  
 ASHTON CARPENTER  
 SMITH  
 T.M. #40-45  
 25.819 ACRES  
 W.B. 67/PG. 671  
 I.N. 160000134  
 ZONE: A1  
 USE: VACANT



**NOTES:**  
 1. METES AND BOUNDS SPECIFIC TO THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE ARE SHOWN IN PARENTHESES  
 2. THE RUNOFF REDUCTION COMPLIANCE FOREST/OPEN SPACE AREA SHOWN HERE SHALL BE MAINTAINED IN A FOREST/OPEN SPACE CONDITION UNTIL SUCH TIME THAT AN AMENDED STORMWATER MANAGEMENT PLAN IS APPROVED BY THE VSWP AUTHORITY

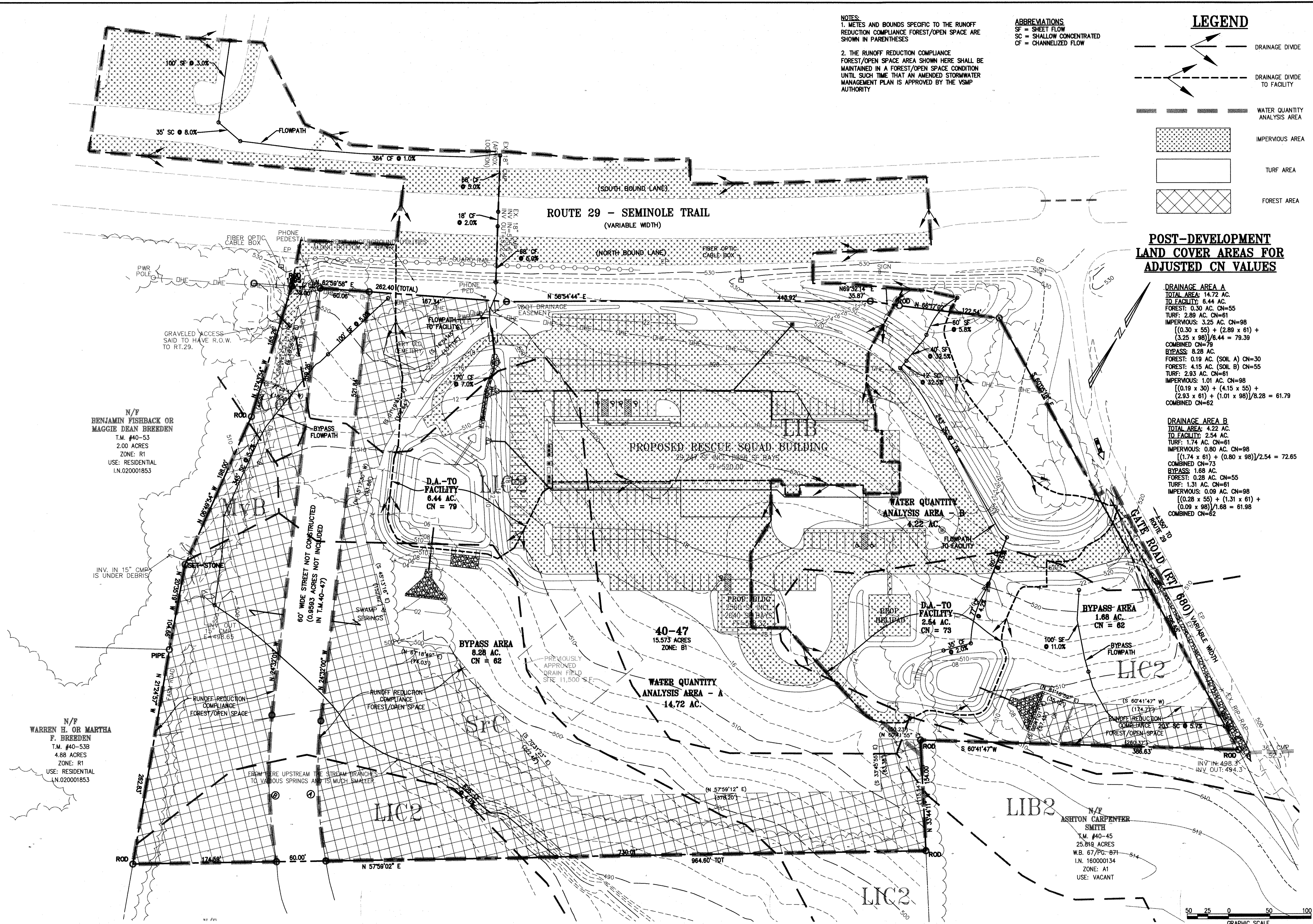
**ABBREVIATIONS**  
 SF = SHEET FLOW  
 SC = SHALLOW CONCENTRATED  
 CF = CHANNELIZED FLOW



**POST-DEVELOPMENT LAND COVER AREAS FOR ADJUSTED CN VALUES**

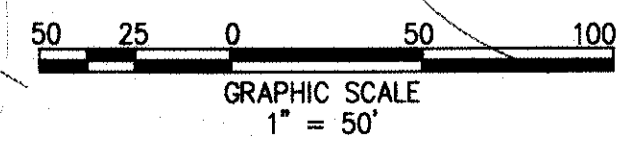
**DRAINAGE AREA A**  
 TOTAL AREA: 14.72 AC.  
 TO FACILITY: 6.44 AC.  
 FOREST: 0.30 AC. CN=55  
 TURF: 2.89 AC. CN=61  
 IMPERVIOUS: 3.25 AC. CN=98  
 $[(0.30 \times 55) + (2.89 \times 61) + (3.25 \times 98)]/6.44 = 79.39$   
 COMBINED CN=79  
 BYPASS: 8.28 AC.  
 FOREST: 0.19 AC. (SOIL A) CN=30  
 FOREST: 4.15 AC. (SOIL B) CN=55  
 TURF: 2.93 AC. CN=61  
 IMPERVIOUS: 1.01 AC. CN=98  
 $[(0.19 \times 30) + (4.15 \times 55) + (2.93 \times 61) + (1.01 \times 98)]/8.28 = 61.79$   
 COMBINED CN=62

**DRAINAGE AREA B**  
 TOTAL AREA: 4.22 AC.  
 TO FACILITY: 2.54 AC.  
 TURF: 1.74 AC. CN=61  
 IMPERVIOUS: 0.80 AC. CN=98  
 $[(1.74 \times 61) + (0.80 \times 98)]/2.54 = 72.65$   
 COMBINED CN=73  
 BYPASS: 1.68 AC.  
 FOREST: 0.28 AC. CN=55  
 TURF: 1.31 AC. CN=61  
 IMPERVIOUS: 0.09 AC. CN=98  
 $[(0.28 \times 55) + (1.31 \times 61) + (0.09 \times 98)]/1.68 = 61.98$   
 COMBINED CN=62



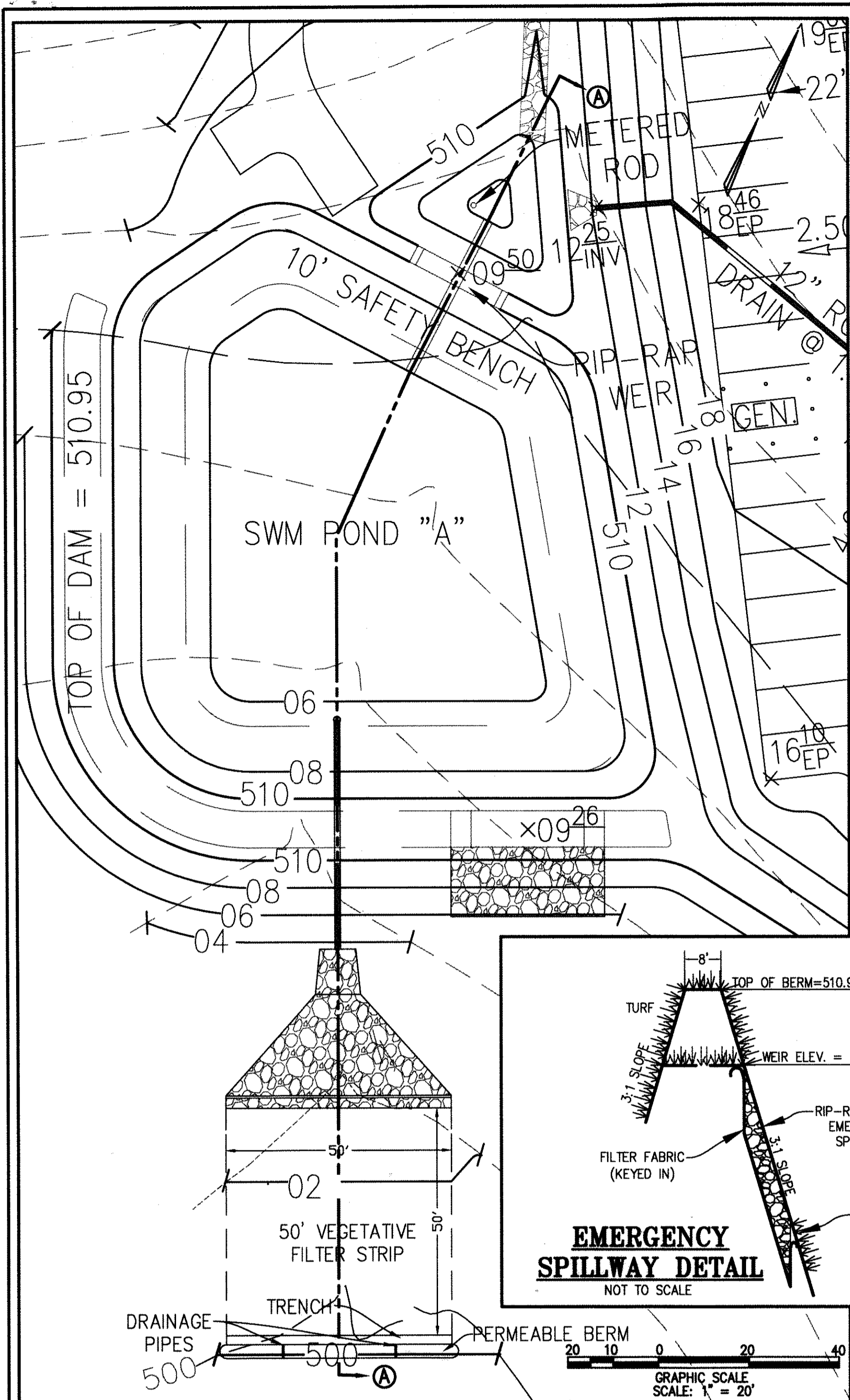
**POST-DEVELOPMENT WATER QUANTITY ANALYSIS**

SCALE: 1"=50'

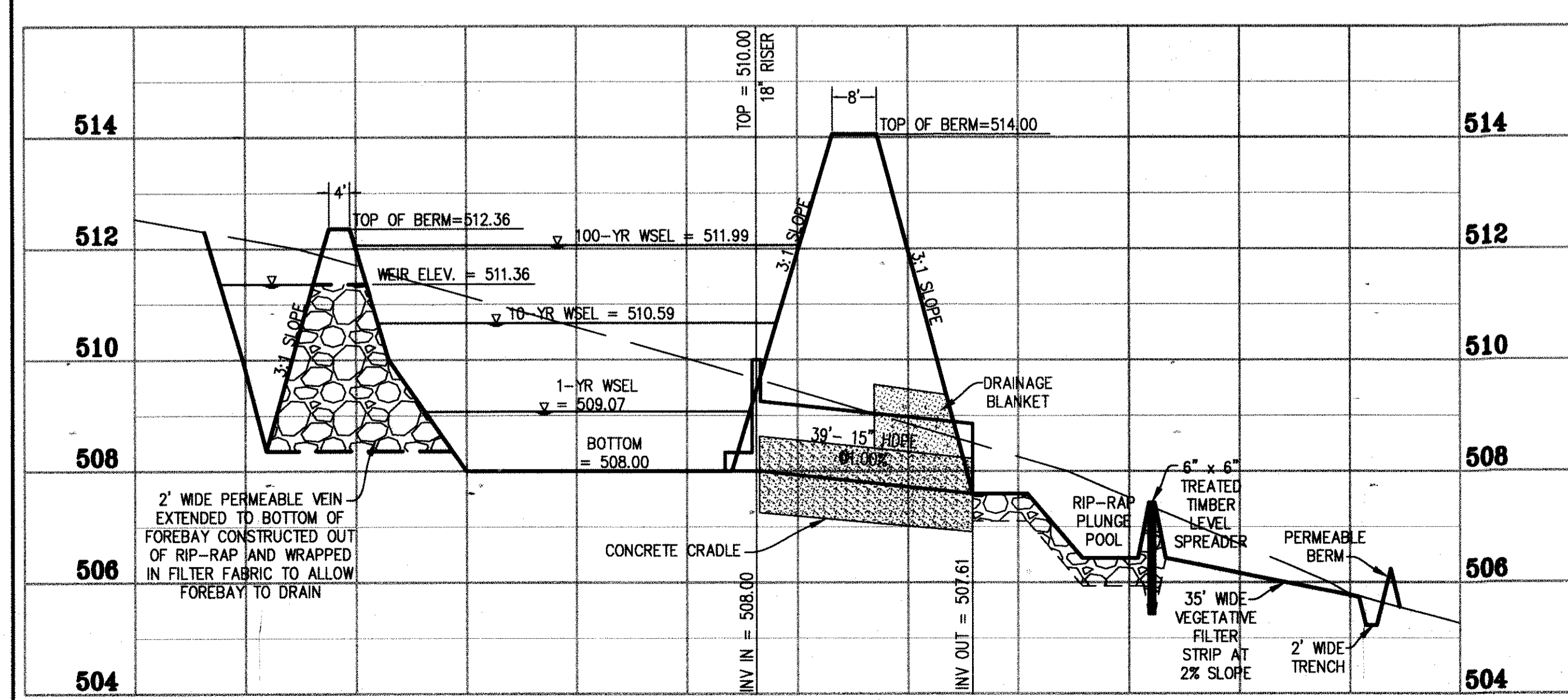


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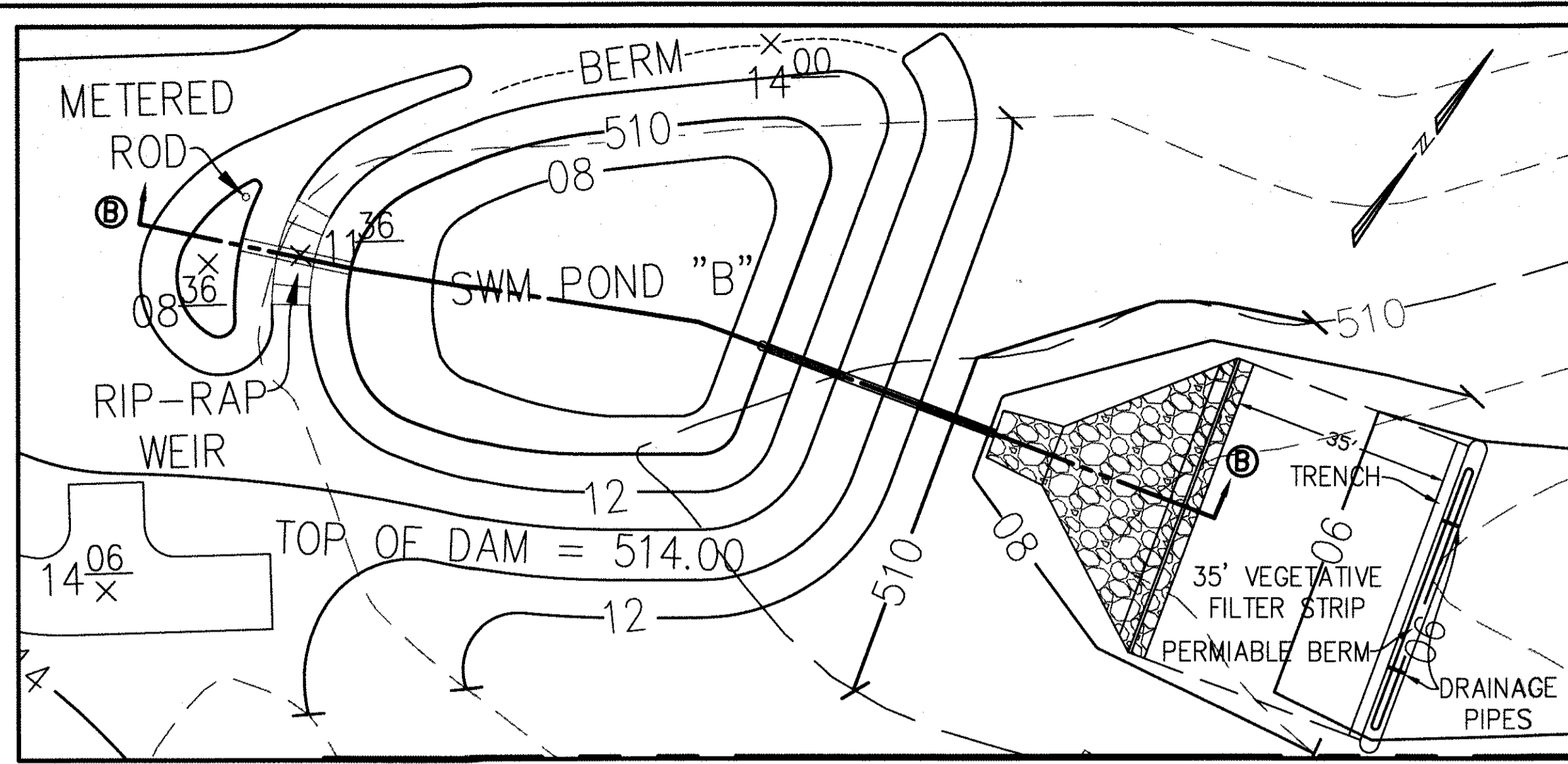




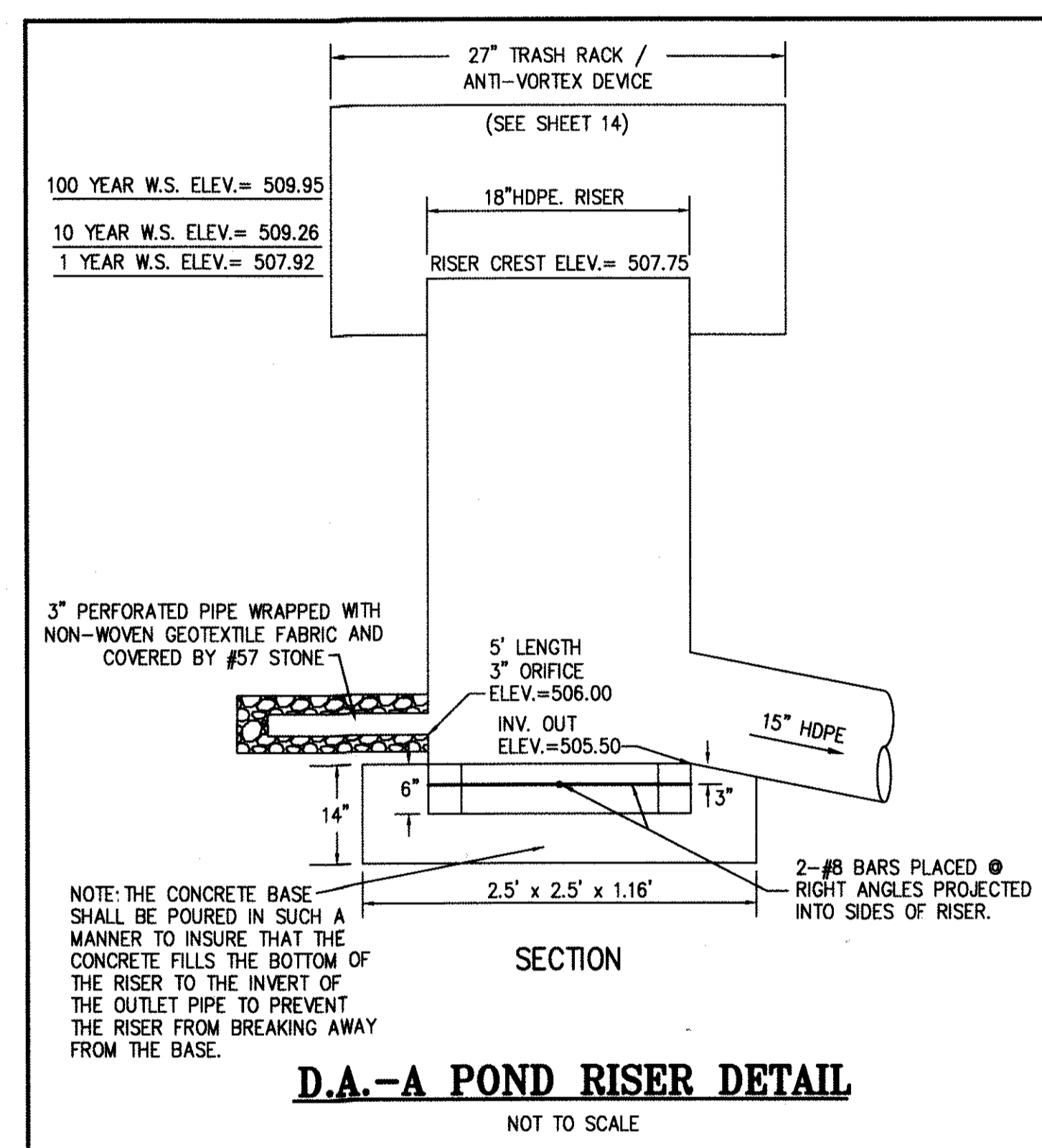
**D.A.-A DETENTION POND - PLAN VIEW**  
SCALE: 1"=20'



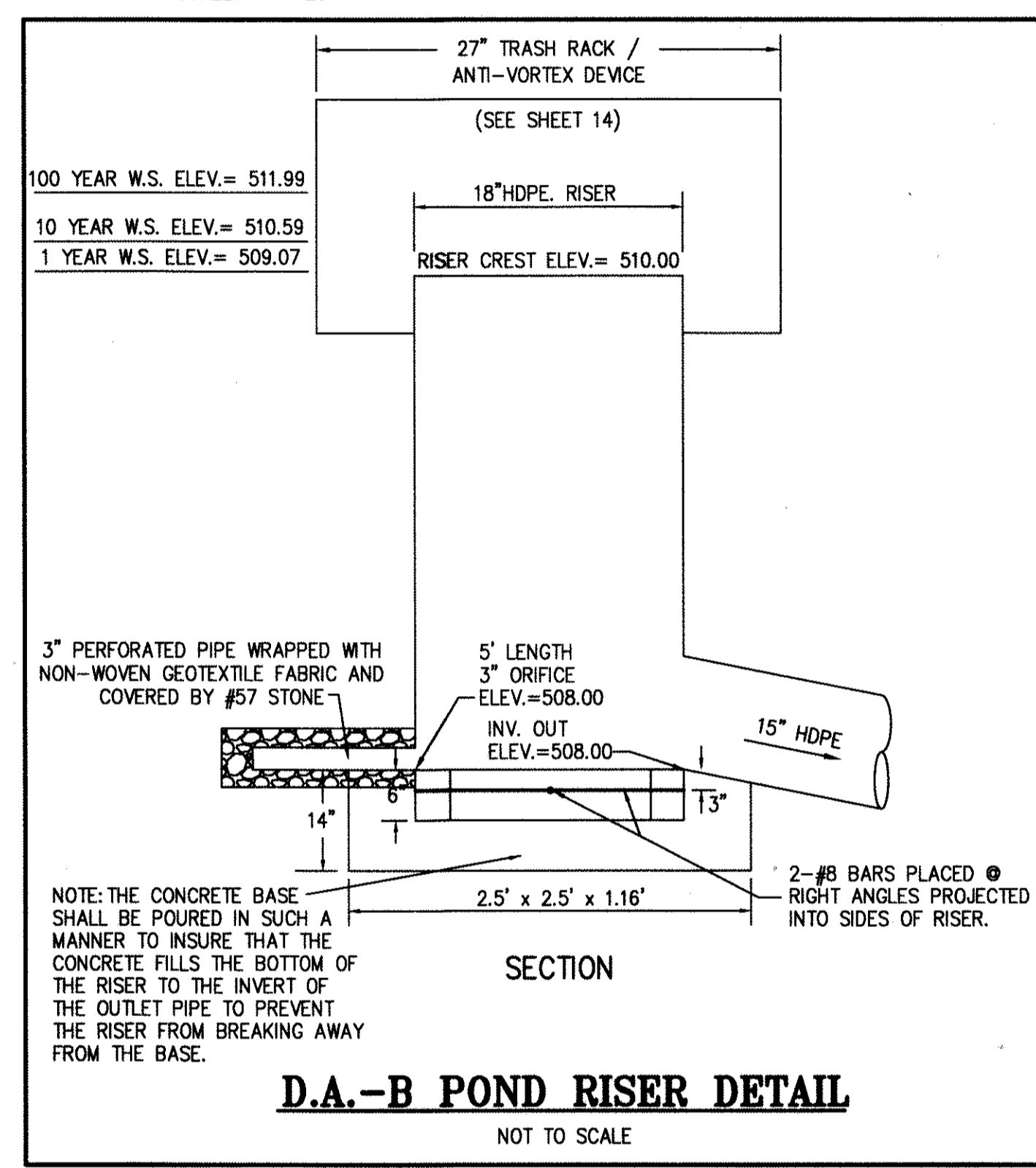
**D.A.-B DETENTION POND SECTION B-B**  
SCALE: 1"=20'



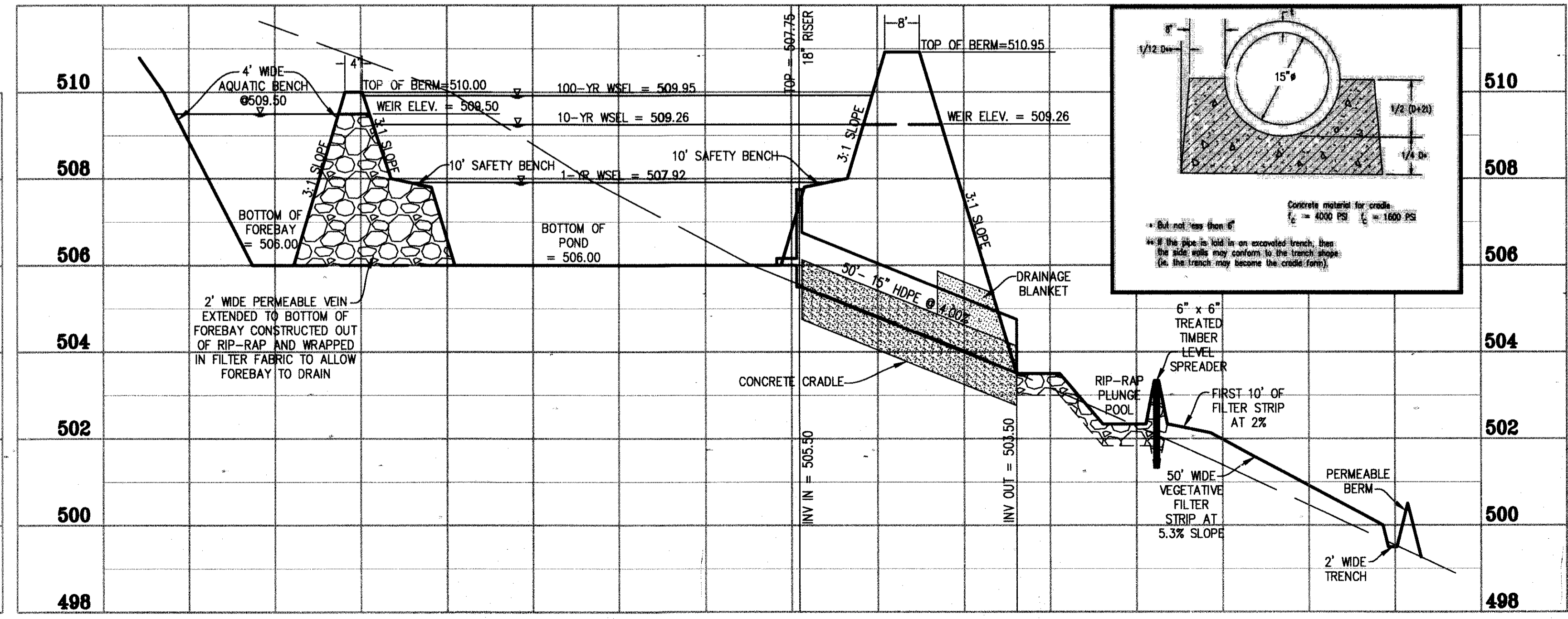
**D.A.-B DETENTION POND - PLAN VIEW**  
SCALE: 1"=20'



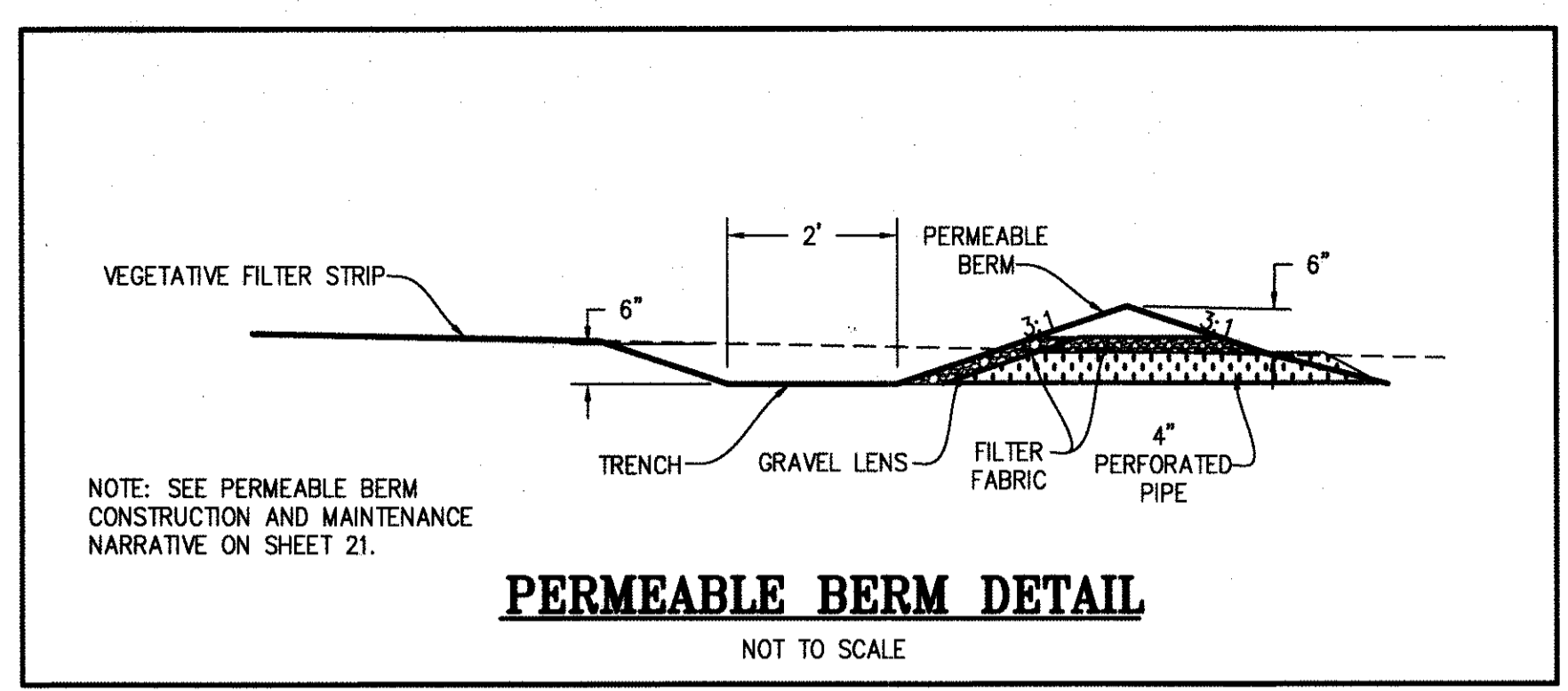
**D.A.-A POND RISER DETAIL**  
NOT TO SCALE



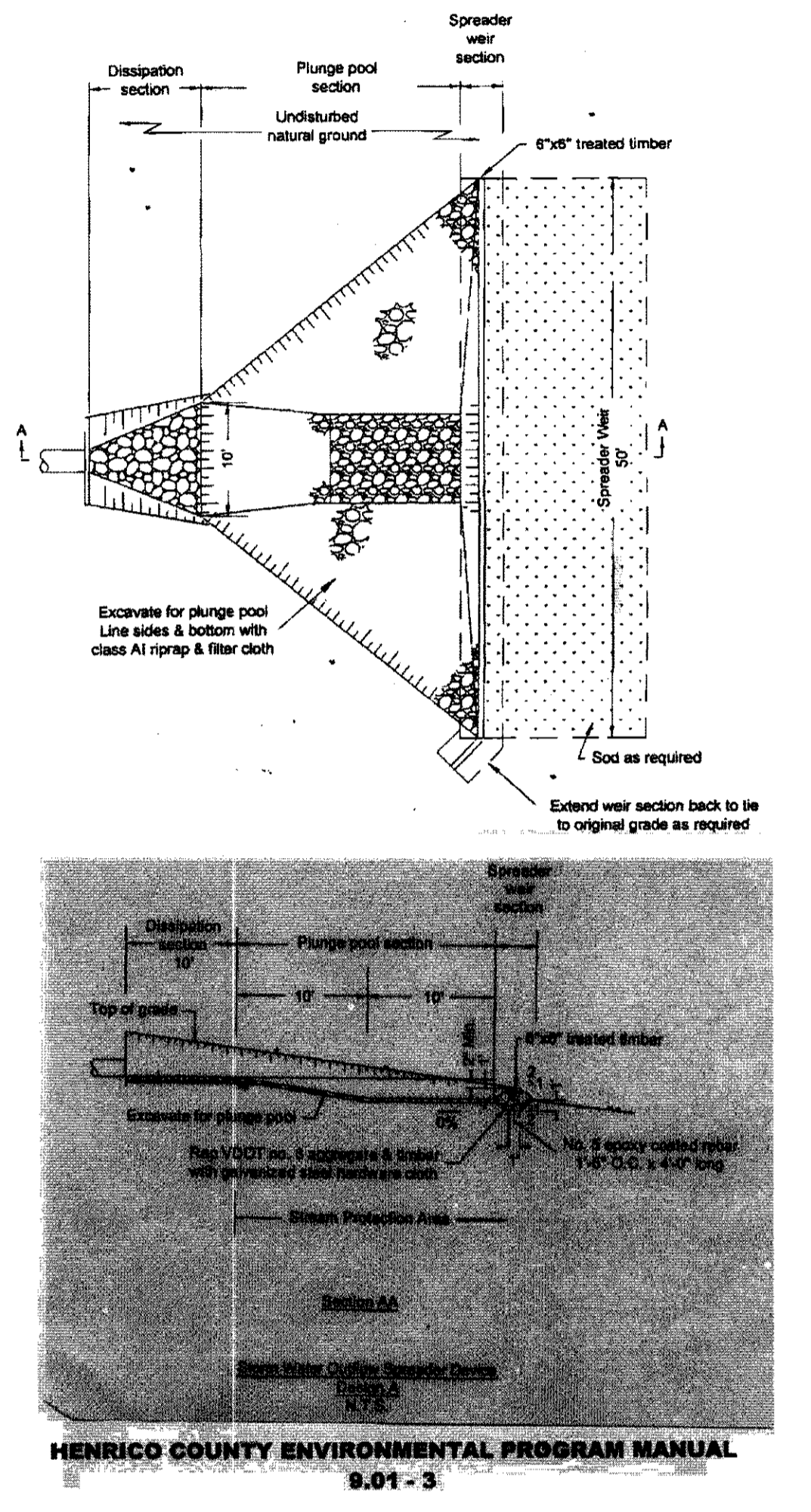
**D.A.-B POND RISER DETAIL**  
NOT TO SCALE



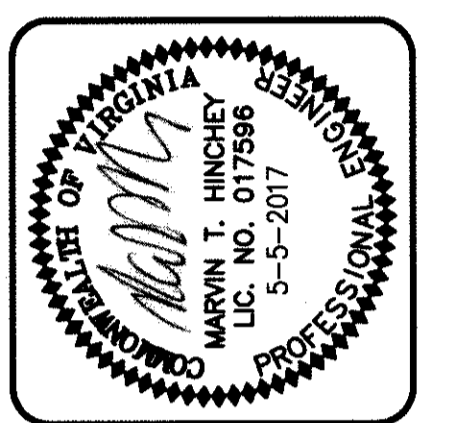
**D.A.-A DETENTION POND SECTION A-A**  
SCALE: 1"=20'



**PERMEABLE BERM DETAIL**  
NOT TO SCALE



**HINCHEY & BAINES, PLC**  
ENGINEERING AND LAND PLANNING  
PHONE (540) 829-2220  
FAX (540) 829-2239  
125 EAST DAVIS STREET  
SUITE 201  
CULPEPER, VIRGINIA 22701



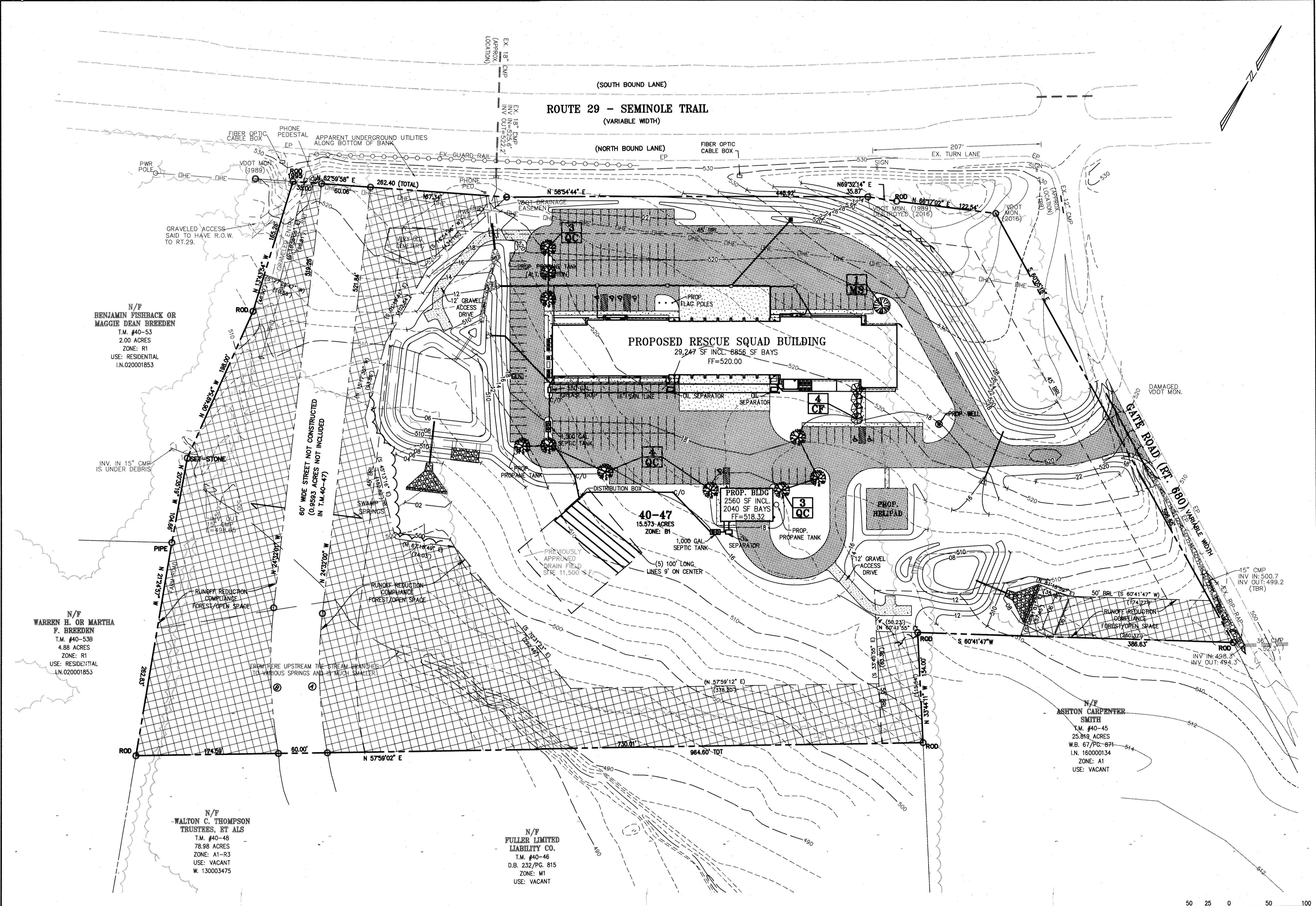
STORMWATER MANAGEMENT DETAILS  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE:	AS NOTED
DATE:	10/5/16
REVISIONS:	2/28/17 PER COUNTY & DEQ COMMENTS 5/5/17 PER DEQ COMMENTS
SHEET	20 OF 24
FILE NO.	1275





SCALE: 1" = 50'
DATE: 10/5/16
REVISIONS: 2/28/17 PER COUNTY & DEQ COMMENTS 5/5/17 PER DEQ COMMENTS 6/14/17 PER PROP. PROPANE TANKS 6/21/17 PER OIL SEPARATOR TANKS
SHEET 22 OF 24
FILE NO. 1275



**THIS SHEET IS FOR LANDSCAPING PURPOSES ONLY!**

**SPECIFICATIONS FOR PLANTING**

**PLANT IDENTIFICATION:** ALL PLANTS SHALL BE PROPERLY MARKED FOR IDENTIFICATION AND CHECKING.

**LIST OF PLANT MATERIAL:** THE CONTRACTOR WILL VERIFY PLANT QUANTITIES PRIOR TO BIDDING AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER. THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS REQUIRED TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS. SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE WRITTEN APPROVAL OF THE OWNER.

**PLANT QUALITY:** ALL SHRUBS SHALL BE DENSE, HEAVY TO THE GROUND, AND WELL GROWN, SHOWING EVIDENCE OF HAVING BEEN SHEARED REGULARLY. SHALL BE VIGOROUS, HEALTHY, AND OF GOOD COLOR. ALL PLANTS SHALL BE SOUND, FREE OF PLANT DISEASE OR INSECT EGGS, AND SHALL HAVE HEALTHY NORMAL ROOT SYSTEMS. PLANTS SHALL BE FRESHLY DUG AND NOT HELD-IN STOCK, NOR STOCK FROM COLD STORAGE. ALL PLANTS SHALL BE NURSERY GROWN. PLANTS SHALL NOT BE PRUNED PRIOR TO DELIVERY. THE SHAPE OF THE PLANT IN GENERAL SHALL CONFORM TO ITS NATURAL GROWTH PROPORTIONS, UNLESS OTHERWISE SPECIFIED. ALL PLANTS INCLUDING CONTAINER-GROWN SHALL CONFORM TO THE BRANCHING, CALIPER, AND HEIGHT SPECIFICATIONS OF THE MOST CURRENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

**PLANT SPACING:** PLANT SPACING IS TO SCALE ON PLAN. NO PLANTS EXCEPT ESPALIÉRED MATERIAL SHALL BE CLOSER THAN 30 INCHES TO BUILDINGS.

**SOIL MIX:** SOIL MIX WILL BE 2/3 EXISTING SOIL, 1/3 LEAF MOLD OR EQUAL ORGANIC MATERIAL, THOROUGHLY MIXED AND HOMOGENIZED.

**BALL SIZE:** THE BALL SIZE SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK.

**EXCAVATION:** HOLES FOR ALL PLANTS SHALL BE 18 INCHES LARGER IN DIAMETER THAN SIZE OF BALL OR CONTAINER, AND SHALL HAVE VERTICAL SIDES. HEDGES SHALL BE PLANTED IN A TRENCH 12 INCHES WIDER THAN BALL DIAMETER. BEDS FOR MASS PLANTING SHALL BE ENTIRELY ROTOTILLED TO A DEPTH OF 8 INCHES AND SHALL BE 18 INCHES BEYOND THE AVERAGE OUTSIDE EDGE OF PLANT BALLS. ORGANIC MATERIAL (I.E., LEAF MOLD) WILL BE INCORPORATED INTO PLANT BED BY TILLING AGAIN. PROPORTIONS OF SOIL TO ORGANIC MATERIAL WILL BE 2 PARTS TO 1 PART.

**PLANTING:** BACKFILLING SHALL BE DONE WITH SOIL MIX, REASONABLY FREE OF STONES, SUBSOIL, CLAY, LUMPS, STUMPS, ROOTS, WEEDS, BERMUDA GRASS, LITTER, TOXIC SUBSTANCES, OR ANY OTHER MATERIAL WHICH MAY BE HARMFUL TO PLANT GROWTH OR HINDER GRADING, PLANTING, OR MAINTENANCE OPERATIONS. SHOULD ANY UNFORESEEN OR UNSUITABLE PLANTING CONDITIONS ARISE SUCH AS FAULTY SOIL DRAINAGE OR CHEMICAL RESIDUES, THEY SHOULD BE CALLED TO THE ATTENTION OF THE OWNER FOR ADJUSTMENT BEFORE PLANTING. THE PLANT SHALL BE SET PLUMB AND STRAIGHT AND SHALL BE STAKED AT THE TIME OF PLANTING. BACKFILL SHALL BE WELL WORKED ABOUT THE ROOTS AND SETTLED BY WATERING. PLANTS WILL BE PLANTED HIGHER THAN SURROUNDING GRADE. SHRUBS WILL BE 1 INCH HIGHER AND TREES WILL BE 3 INCHES HIGHER. REMOVE ROPE FROM AROUND TREE TRUNKS AND LAY BACK BURLAP FROM TOP OF B&B MATERIAL. NYLON OR VINYL ROPE AND/OR BURLAP WILL BE COMPLETELY REMOVED FROM ALL PLANT MATERIAL PRIOR TO PLANTING.

**TRANSPLANTING TREES BY TREE MACHINES:** TREES SHALL BE MOVED BY MACHINES THAT PROVIDE A MINIMUM BALL DIAMETER OF 12 INCHES PER 1 INCH OF TREE CALIPER. HOLES ARE TO BE DUG BY THE SAME SIZE MACHINE AS THE ONE TRANSPORTING THE PLANT. THE PLANT MATERIAL SHALL BE TRANSPLANTED IN APPROXIMATELY THE SAME GROWING CONDITION AS IT IS PRESENTLY GROWING, IN TERMS OF SOIL TYPE AND MOISTURE CONTENT. FERTILIZE AND GUY AS DESCRIBED IN THESE PLANS AND SPECIFICATIONS.

**TRANSPLANTING EXISTING TREES:** HARDWOODS SHOULD BE TRANSPLANTED IN THE LATE FALL FOLLOWING THEIR LEAF DROP. EVERGREENS MAY BE TRANSPLANTED BEGINNING WITH THE FALL COOL-DOWN PERIOD (NORMALLY SEPTEMBER) AND MAY CONTINUE INTO SPRING PRIOR TO ELONGATION OF THE NEW GROWTH. PROPER DIGGING OF A TREE INCLUDES THE CONSERVATION OF AS MUCH OF THE ROOT SYSTEM AS POSSIBLE, PARTICULARLY THE FINE ROOTS. SOIL ADHERING TO THE ROOTS SHOULD BE DAMP WHEN TREE IS DUG, AND KEPT MOIST UNTIL PLANTING. THE SOIL (OR "ROOT") BALL SHOULD BE 12 INCHES IN DIAMETER FOR EACH INCH OF DIAMETER OF THE TRUNK. THE TREE SHOULD BE CAREFULLY EXCAVATED AND THE SOIL BALL WRAPPED IN BURLAP AND TIED WITH ROPE. SOIL AROUND BALLED AND BURLAPPED TREE ROOTS SHOULD BE DUG WITH THE TREE AND NOT JUST PACKED AROUND BARE ROOTS. BALLED AND BURLAPPED PLANT MATERIAL SHALL BE KEPT MOIST.

**CULTIVATION:** ALL TRENCHES AND SHRUB BEDS SHALL BE CULTIVATED, EDGED, AND MULCHED TO A DEPTH OF 3 INCHES WITH FINE SHREDDED HARDWOOD BARK. THE AREA AROUND ISOLATED PLANTS SHALL BE MULCHED TO AT LEAST A 6-INCH GREATER DIAMETER THAN THAT OF THE HOLE. PLANT BEDS ADJACENT TO BUILDINGS SHALL BE MULCHED TO THE BUILDING WALL.

**MAINTENANCE:** THE CONTRACTOR SHALL BE RESPONSIBLE DURING THE CONTRACT AND, UP TO THE TIME OF ACCEPTANCE, FOR KEEPING THE PLANTING AND WORK INCIDENTAL THERETO IN GOOD CONDITION, BY REPLANTING, PLANT REPLACEMENT, WATERING, WEEDING, CULTIVATING, PRUNING AND SPRAYING, STAKING, AND CLEANING UP, AND BY PERFORMING ALL OTHER NECESSARY OPERATIONS OF CARE FOR PROMOTION OF GOOD PLANT GROWTH, SO THAT ALL WORK IS IN SATISFACTORY CONDITION AT THE TIME OF ACCEPTANCE, AT NO ADDITIONAL COST TO THE OWNER.

**FERTILIZER:** FERTILIZER SHALL BE A SLOW-RELEASE TYPE CONTAINED IN POLYETHYLENE PERFORATED BAGS WITH MICROPORE HOLES FOR CONTROLLED FEEDING, SUCH AS "EASY GROW" AS MANUFACTURED BY SPECIALTY FERTILIZER, INC., BOX 355, SUFFERN, NEW YORK, 10901 OR APPROVED EQUAL. THE BAGS SHALL CONTAIN 1 OUNCE OF SOLUBLE FERTILIZER ANALYSIS 16-18-16 PER UNIT TO LAST FOR THREE YEARS AND SHALL BE APPLIED DURING PLANTING AS RECOMMENDED BY THE MANUFACTURER. IF FERTILIZER PACKETS ARE NOT USED, THE CONTRACTOR SHALL APPLY GRANULAR FERTILIZER TO THE SOIL MIX OF 10-6-6 ANALYSIS, 50% ORGANIC, AT THE FOLLOWING RATES:

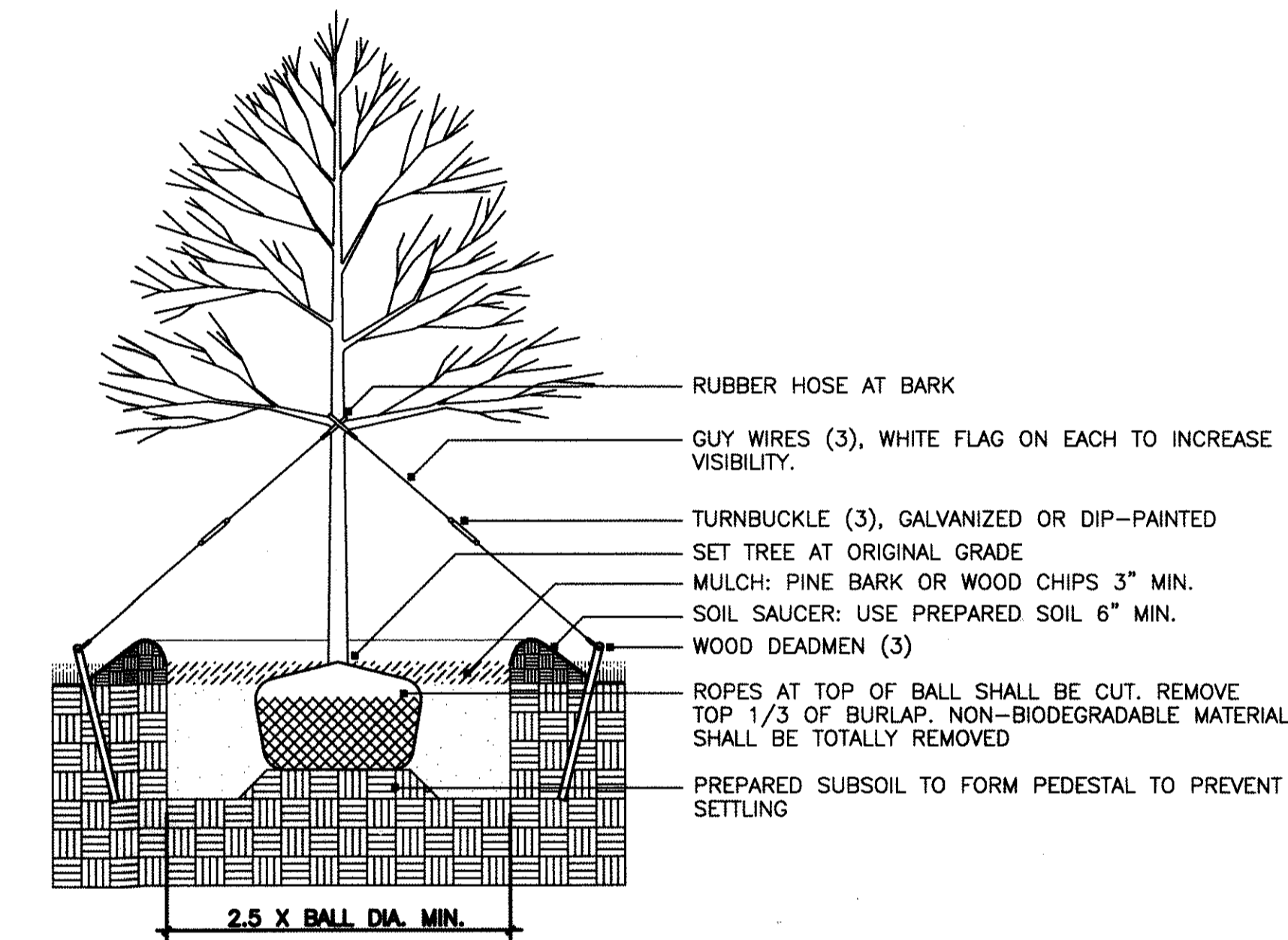
**TREE PITS:**  
2-3 LBS. PER CALIPER INCH

**SHRUB BEDS:**  
3-5 LBS. PER 100 SQ. FT.

**GROUND COVER:**  
2-3 LBS. PER 100 SQ.FT.

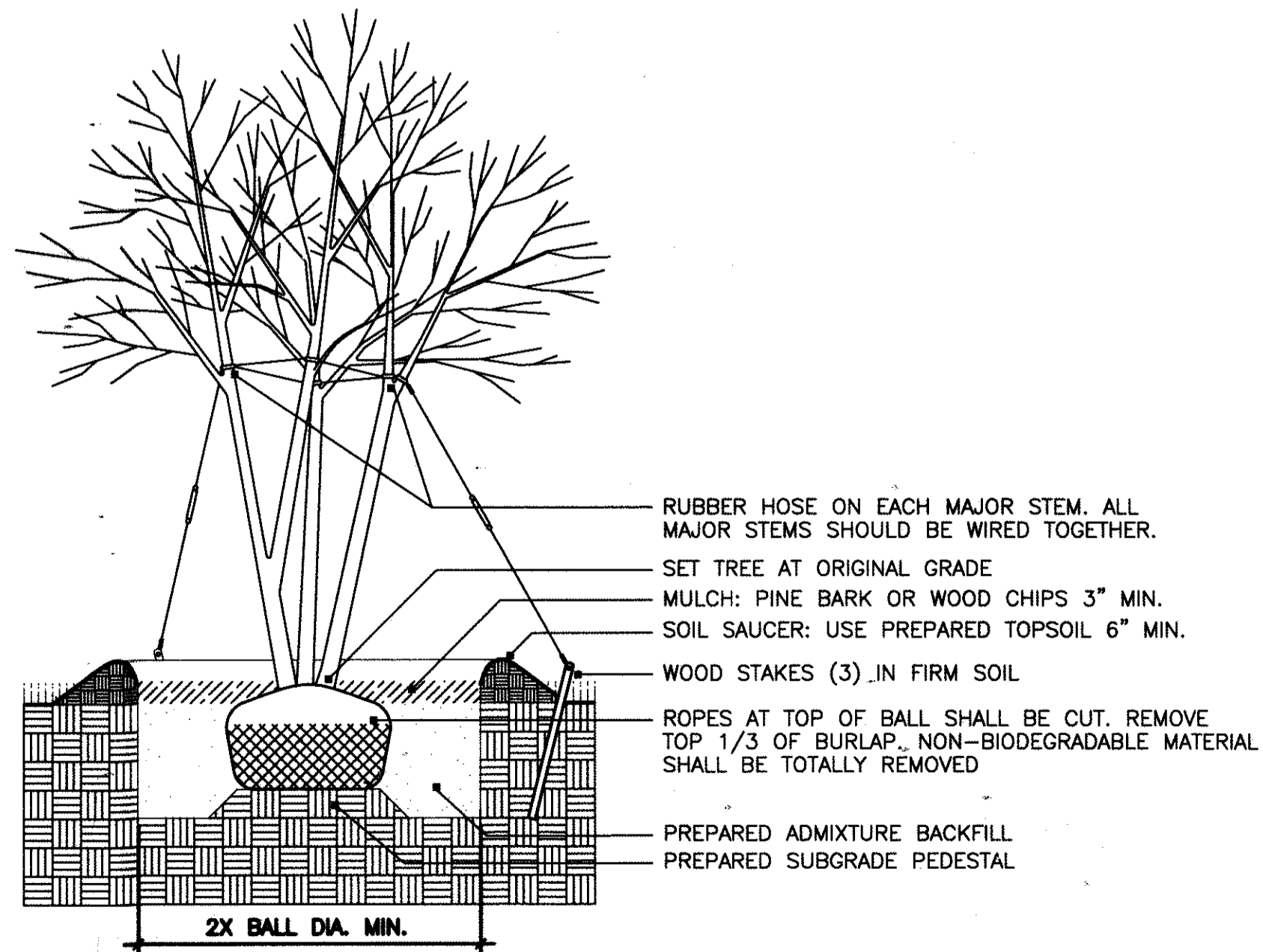
**GROUND COVER:** ALL AREAS OF GROUND COVER SHALL BE ROTOTILLED TO A DEPTH OF SIX INCHES. APPLY 2 INCHES OF ORGANIC MATERIAL AND ROTOTILL UNTIL THOROUGHLY MIXED. APPLY FERTILIZER AS STATED ABOVE.

- NOTES:
1. RUBBER HOSE MAY BE DELETED IF 3/4" NYLON STRAP IS USED.
  2. REMOVE WIRE OR NYLON TWINE FROM BALL.
  3. INSTALL TOP OF BALL 2" ABOVE FINISH GRADE.
  4. SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION
  5. SOME SMALL MATURING TREES MAY NOT NEED STAKING. (SEE SITE PLAN)
  6. LENGTH OF RUBBER HOSE TO BE 2/3 CIRCUMFERENCE OF TREE.
  7. PLACE 2 WOOD STAKES PARALLEL TO STREET.
  8. 4" SAUCER WILL BE OUTSIDE OF BACKFILL
  9. SEE SPECIFICATIONS FOR OTHER PLANTING REQUIREMENTS.



**SINGLE-STEM TREE PLANTING DETAIL**

NOT TO SCALE



**MULTI-STEM TREE PLANTING DETAIL**

NOT TO SCALE

**TREE CANOPY COVER CALCULATIONS**

GROSS SITE AREA (15.573 AC.)	=	678,360 SF.
AREA OF EXISTING WOODLANDS TO BE PRESERVED (WITHIN EASEMENTS)	=	158,895 SF
CANOPY AREA OF TREES TO BE PLANTED:	=	2,750 SF
<b>TOTAL CANOPY AREA PROVIDED:</b>	=	<b>161,645 SF</b>

**OPEN SPACE CALCULATIONS**

GROSS SITE AREA (15.573 AC.)	=	678,360 SF.
AREA TO BE PRESERVED (WITHIN CONSERVATION EASEMENTS):	=	215,000 SF
PERCENTAGE OF CONSERVED OPEN SPACE:	=	32%

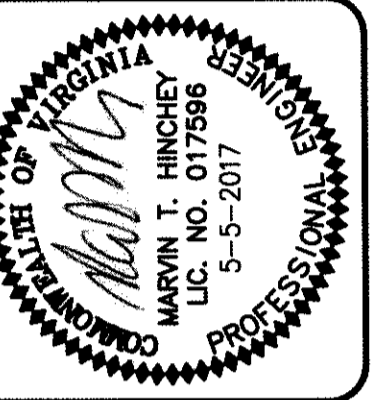
**PLANT LIST**

KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	CALIPER	HEIGHT	CANOPY SPREAD	REMARKS	TOTAL
<b>TREES:</b>								
CF	4	Cornus florida	Flowering Dogwood	2.5" cal.		150 SF		600 SF
QC	10	Quercus coccinea	Scarlet Oak	2.5" cal.		200 SF		2,000 SF
MS	1	Magnolia x soulangeana	Saucer Magnolia	2.5" cal.		150 SF		150 SF
TOTAL CANOPY AREA OF TREES TO BE PLANTED:								2,750 SF

**PLANT LEGEND**

- CF SMALL DECIDUOUS:  
Cornus florida/Flowering Dogwood
- QC LARGE DECIDUOUS:  
Quercus coccinea/Scarlet Oak
- MS MEDIUM DECIDUOUS:  
Magnolia x soulangeana/Saucer Magnolia

**HINCHEY & BAINES, PLC**  
**ENGINEERING AND LAND PLANNING**  
 125 EAST DAVIS STREET  
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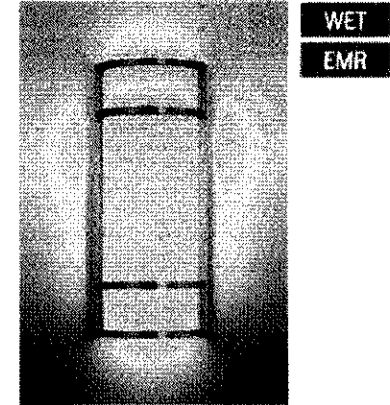


**LANDSCAPE DETAILS**  
**MADISON RESCUE SQUAD**  
 FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

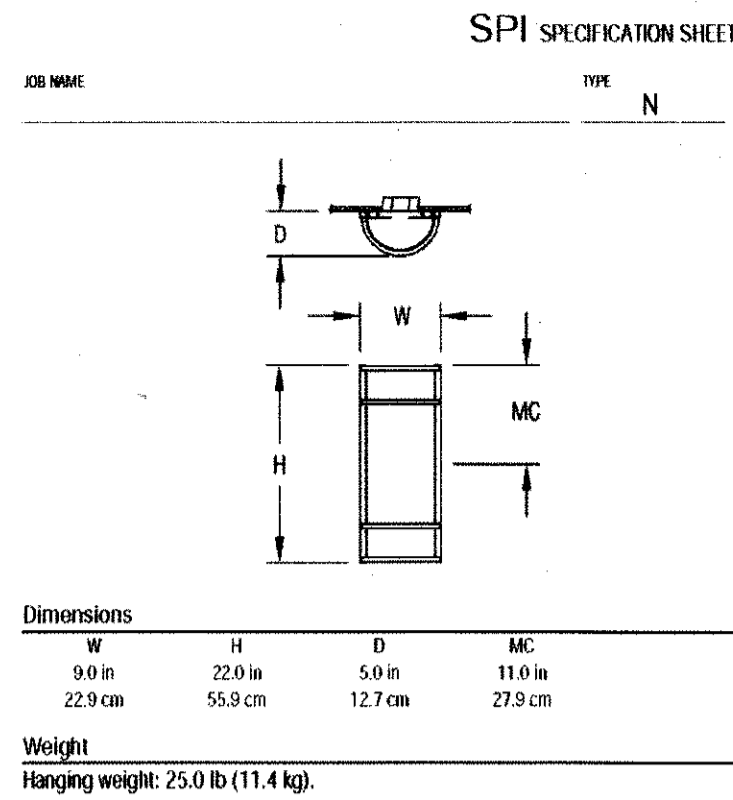
SCALE:	AS NOTED
DATE:	10/5/16
REVISIONS:	2/28/17 PER COUNTY & DEQ COMMENTS
	5/5/17 PER DEQ COMMENTS
SHEET	23 OF 24
FILE NO.	1275



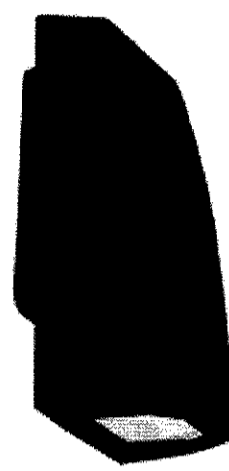
HARBOR EXTERIOR WALL  
AEW8073



Accessing the harbor half cylinder sconce are two 1/4" x 1/2" horizontal decorative bars. The clean lines of this exterior sconce are perfect for multiple applications including offices, retail buildings and health care facilities. Choose from a palette of both painted and metal finishes.



SLIM26/D10

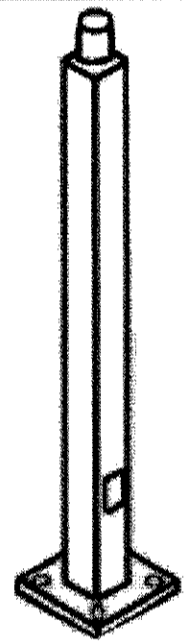


12, 18 and 26 Watt SLIM wallpacks are ultra efficient and deliver impressive light distribution with a compact low-profile design that's super easy to install as a downlight or uplight.

Color: Bronze Weight: 4.5 lbs

Project:	MCRS	Type:	0
Prepared By:		Date:	
Driver Info	LED Info		
Type: Constant Current	Watts: 26W		
120V: 0.27A	Color Temp: 5100K		
208V: 0.17A	Color Accuracy: 71 CRI		
240V: 0.15A	L70 Lifespan: 100000		
277V: 0.13A	Lumens: 3516		
Input Watts: 30W	Efficacy: 118 LPW		
Efficiency: 87%			

PS4-11-15WT



Square steel poles with welded tenon included for use with floodlights. Designed for ground mounting. Poles are stocked nationwide for quick shipment. Protective packaging ensures poles arrive at the job site good as new.

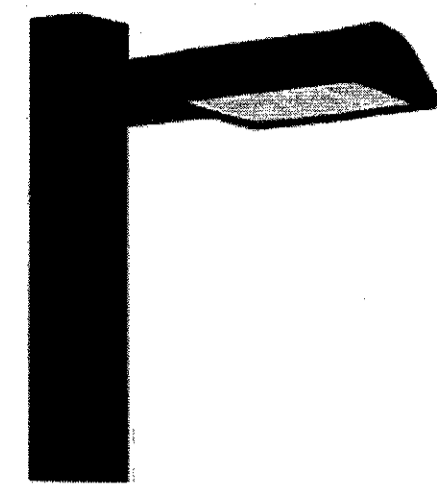
Color: Bronze Weight: 134.0 lbs

Project:		Type:	
Prepared By:		Date:	
Lamp Info	Ballast Info		
Type: N/A	Type: N/A		
Watts: 0W	120V: N/A		
Shape/Size: N/A	208V: N/A		
Base: N/A	240V: N/A		
ANSI: N/A	277V: N/A		
Hours: N/A	Input Watts: 0W		
Lamp Lumens: N/A			
Efficacy: N/A			

Technical Specifications

<b>Listings</b>	<b>Height:</b> 15 FT.	<b>Weight:</b> 134 lbs.
<b>CSA Listed:</b> Suitable for wet locations.	<b>Gauge:</b> 11	<b>Anchor Bolt:</b> Galvanized anchor bolts and galvanized hardware and anchor bolt template. All bolts have a 3" hook.
<b>Construction</b>	<b>Wall Thickness:</b> 1/8"	<b>Anchor Bolt Templates:</b> WARNING Template must be printed on 11" x 17" sheet for actual size. CHECK SCALE BEFORE USING. Templates shipped with anchor bolts and available.
<b>Shaft:</b> 46,000 p.s.i. minimum yield.	<b>Shaft Size:</b> 4"	<b>Pre-Shipped Anchor Bolts:</b> Bolts can be pre-shipped upon request for additional freight charge.
<b>Hand Holes:</b> Reinforced with grounding lug and removable cover.	<b>Hand Hole Dimensions:</b> 3" x 5"	<b>MaxEPA's/Max Weights:</b>
<b>Base Plates:</b> Slotted base plates 36,000 p.s.i.	<b>Bolt Circle:</b> 8 1/2"	70MPH 14.0 ft./400 lb
<b>Shipping Protection:</b> All poles are shipped in individual corrugated cartons to prevent finish damage.	<b>Base Dimension:</b> 8"	80MPH 10.2 ft./295 lb
<b>Color:</b> Bronze powder coating.		90MPH 7.6 ft./220 lb
<b>Tenon:</b> Welded 2 3/8" tenon included.		100MPH 5.6 ft./165 lb
		110MPH 4.2 ft./125 lb
		120MPH 3.0 ft./95 lb
		130MPH 2.1 ft./70 lb
		140MPH 1.4 ft./50 lb
		150MPH 0.8 ft./35 lb.
		<b>Other</b>
		<b>Terms of Sale:</b> Pole Terms of Sale is available.

ALED4T150/D10



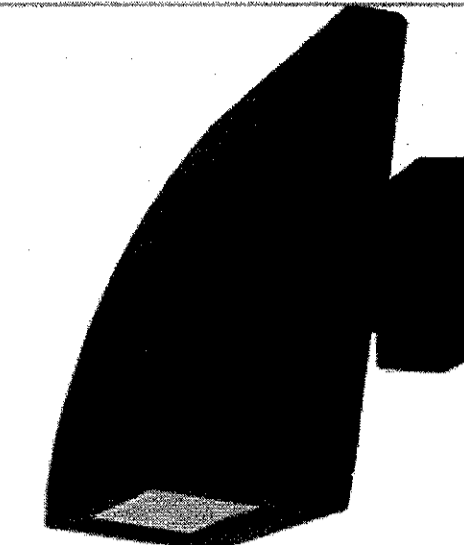
Specification grade area lights available with IES Type IV distribution. Suited for mounting on the sides of buildings and walls, and for illuminating the perimeter of parking areas. Patent pending thermal management system. 5 Year Warranty.

Color: Bronze Weight: 32.0 lbs

Project:	MCRS	Type:	P1
Prepared By:		Date:	
Driver Info	LED Info		
Type: Constant Current	Watts: 150W		
120V: 1.31A	Color Temp: 5000K		
208V: 0.80A	Color Accuracy: 71 CRI		
240V: 0.69A	L70 Lifespan: 100000		
277V: 0.60A	Lumens: 18464		
Input Watts: 155W	Efficacy: 119 LPW		
Efficiency: 96%			



WPLED104



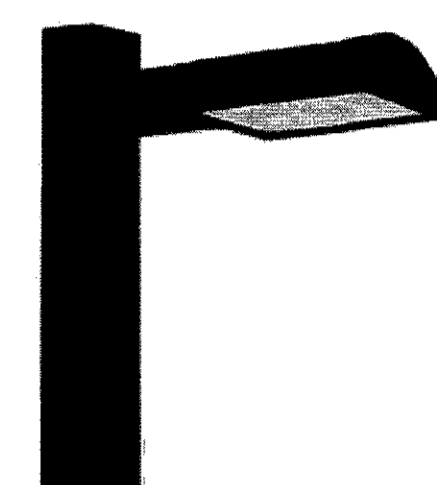
LED 104W Wallpacks. 3 cutoff options. Patent Pending thermal management system. 100,000 hour L70 lifespan. 5 Year Warranty.

Color: Bronze Weight: 26.0 lbs

Project:	MCRS	Type:	Q
Prepared By:		Date:	
Driver Info	LED Info		
Type: Constant Current	Watts: 104W		
120V: 0.95A	Color Temp: 5000K		
208V: 0.59A	Color Accuracy: 71 CRI		
240V: 0.51A	L70 Lifespan: 100000		
277V: 0.44A	Lumens: 13129		
Input Watts: 106W	Efficacy: 124 LPW		
Efficiency: 98%			



ALED3T150/D10



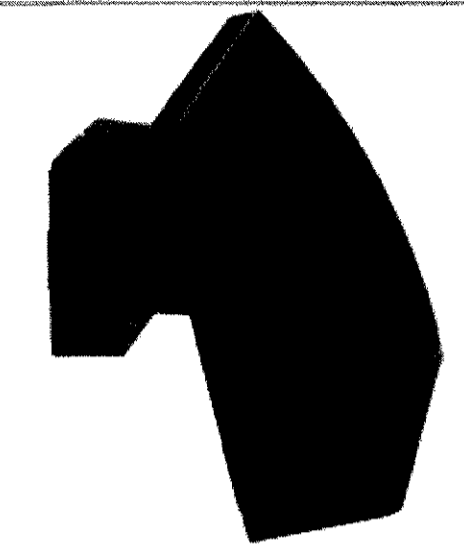
Specification grade area lights available with IES Type III distribution. For use for roadway, general parking and other area lighting applications where a larger pool of lighting is required. Patent pending thermal management system. 5 Year Warranty.

Color: Bronze Weight: 32.0 lbs

Project:	MCRS	Type:	P2
Prepared By:		Date:	
Driver Info	LED Info		
Type: Constant Current	Watts: 150W		
120V: 1.31A	Color Temp: 5000K		
208V: 0.80A	Color Accuracy: 71 CRI		
240V: 0.69A	L70 Lifespan: 100000		
277V: 0.60A	Lumens: 16839		
Input Watts: 155W	Efficacy: 108 LPW		
Efficiency: 97%			



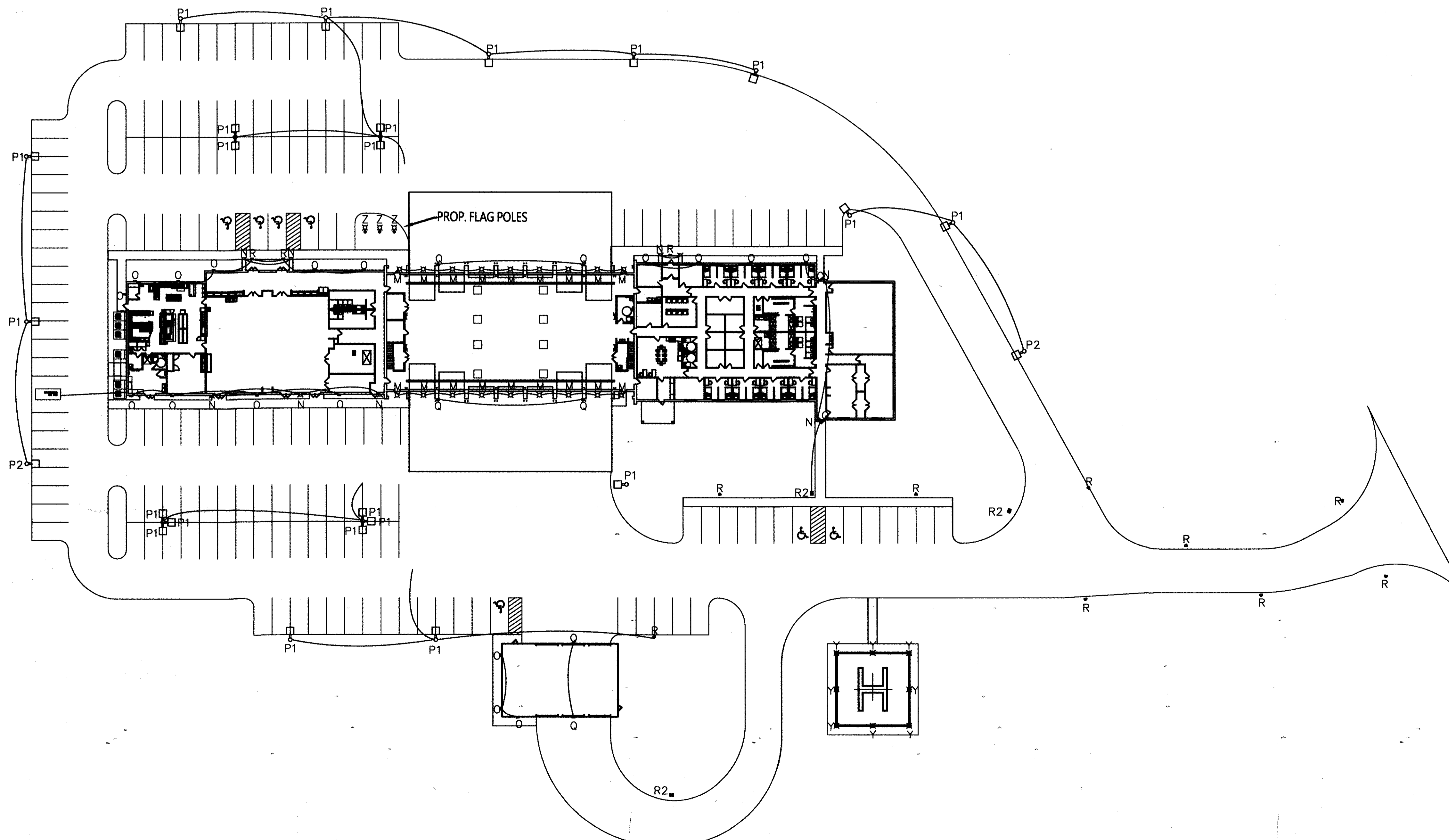
WPLED52/D10



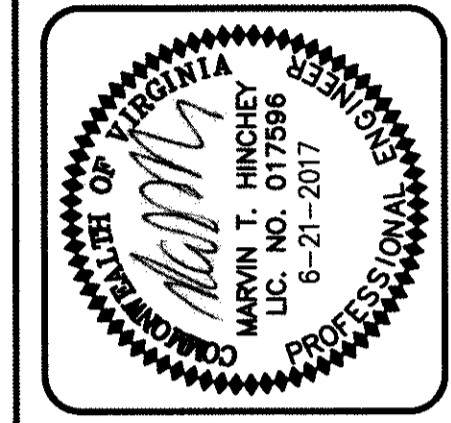
LED 52W Wallpacks. 3 cutoff options. Patent Pending thermal management system. 100,000 hour L70 lifespan. 5 Year Warranty.

Color: Bronze Weight: 17.6 lbs

Project:	MCRS	Type:	R
Prepared By:		Date:	
Driver Info	LED Info		
Type: Constant Current	Watts: 52W		
120V: 0.52A	Color Temp: 5000K		
208V: 0.37A	Color Accuracy: 73 CRI		
240V: 0.32A	L70 Lifespan: 100000		
277V: 0.28A	Lumens: 7122		
Input Watts: 50W	Efficacy: 121 LPW		
Efficiency: 89%			



HINCHEY & BAINES, PLC  
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PHONE (540) 829-2220  
FAX (540) 829-2239



LIGHTING PLAN  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE:	N/A
DATE:	10/5/16
REVISIONS:	2/28/17 PER COUNTY & DEQ COMMENTS
	5/5/17 PER DEQ COMMENTS
	6/14/17 PER LIGHTING REV.
	6/21/17 PER LIGHTING REV.
SHEET	24 of 24
FILE NO.	1275

THIS SHEET IS FOR LIGHTING PURPOSES ONLY!

SCALE: NOT TO SCALE

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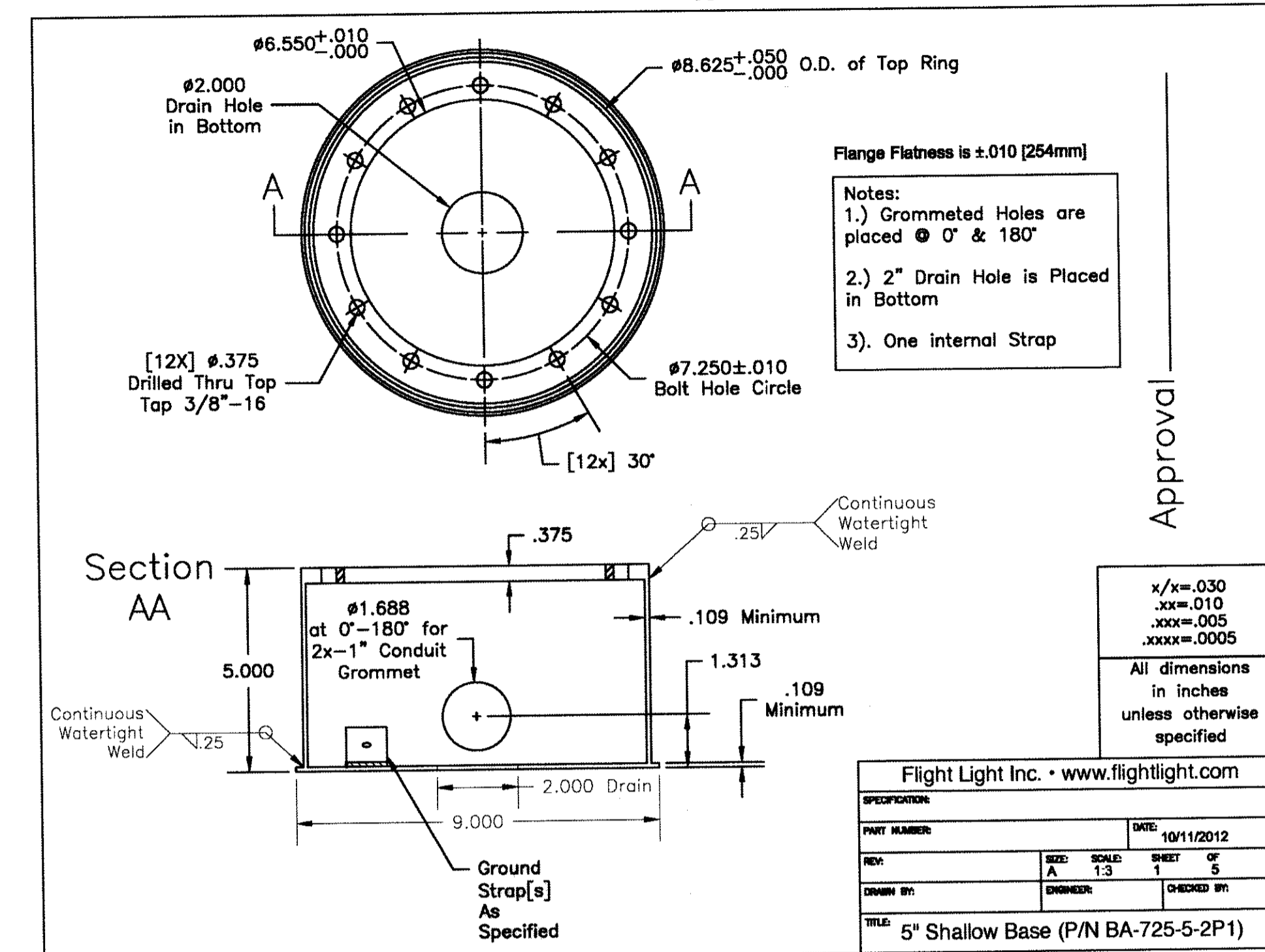


Flight Light Inc.  
2708 47th Ave.  
Sacramento, California, U.S.A.  
95822-3806

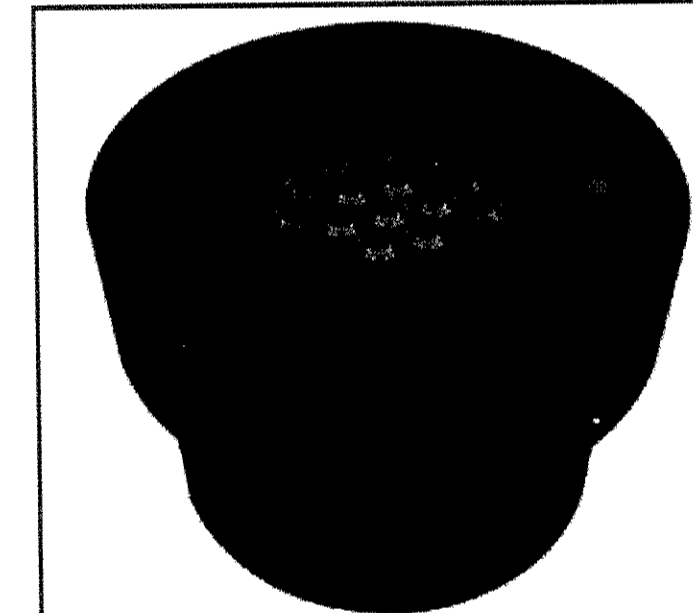
PH (916) 394-2800 FX (916) 394-2809  
TF (800) 806-3548 EM info@flightlight.com

HL-392  
LED or Halogen  
8" Helipad Semi-Flush  
Perimeter Inset Light

5" Shallow Base (P/N BA-725-5-2P1)  
• L-868A FAA Approved



**LED INGROUND LIGHT (XIG)**

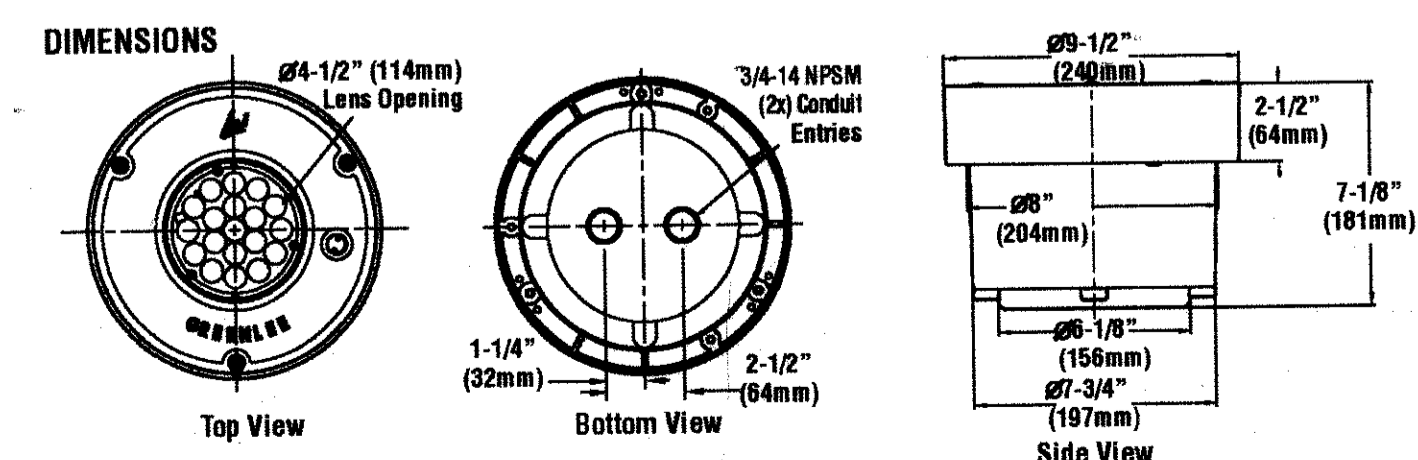


**DOE LIGHTING FACTS**  
Department of Energy has verified representative product test data and results in accordance with its Lighting Facts Program. Visit [www.lightingfacts.com](http://www.lightingfacts.com) for specific catalog strings.

US patent 8,152,334 and US & Int'l. patents pending  
**EXPECTED LIFE** - Minimum 60,000 hours to 100,000 hours depending upon the ambient temperature of the installation location. See LSI web site for specific guidance.  
**LEDS** - Select high-brightness LEDs in Cool White (5000K) or Warm White (3500K) color temperature. 68CRI  
**DRIVER CURRENT** - Available in 350mA  
**OPTICS / AIMING** - Available with 10°, spot, 25° or 40° flood horizontal beam angle distributions. Optics can be tilted +/- 15° from vertical via external aiming screw, with tamper-resistant spanner tool. Adjustment tool provided.  
**HOUSING** - Composite rough-in housing never corrodes; field-proven to last for more than 20 years without maintenance. Luminaire housing is 85% copper alloy for wet locations or aluminum for damp/dry locations. CNC precision machined to insure proper sealing.  
**DRIVER OVER CAPABILITY** - 4,000 lbs. vehicle weight.  
**OPTICAL UNIT** - 15mm low-iron tempered glass lens does not change color of light emitted. 19mm thick lens supplied with stainless steel trim option to retain flush surface. Sealed optical chamber is aimable from outside the unit to ensure integrity of the seal. No heat in the LED light beam means a cool lens - no risk of burns to bare feet. Optional slip resistant lens available, to enhance public safety.  
**INSTALLATION** - Rough-in housing can be shipped ahead for pre-casting in concrete. Luminaire connects to field wiring via IP-68 rated connector.  
**ELECTRICAL** - Universal frequency input (120-277V, 50/60 Hz). Surge protection meets ANSI C62.41.2, Scenario 1, Location Category C-low standards (6,000; 3,000A)  
**DRIVER** - State-of-the-art driver technology specifically designed for LSI LED fixtures provides unsurpassed system efficiency.  
**OPERATING TEMPERATURE** - -40°C to +50°C (-40°F to +122°F)  
**FINISH** - Clear-anodized natural aluminum finish or LSI's DuraGrip® polyester powder coat finishes available. DuraGrip finish withstands extreme weather changes without cracking or peeling, and is guaranteed for a full five years. Standard colors include black, white, bronze, metallic silver, graphite and satin verde green. Natural brass matte blast finished.  
**TRIM** - Optional 11" diameter x .18" thick stainless steel decorative trim has radial polish finish.  
**WARRANTY** - LSI LED fixtures carry a limited 5 year warranty.  
**PHOTOMETRICS** - Please visit our web site at [www.lsi-industries.com](http://www.lsi-industries.com) for detailed photometric data.  
**SHIPPING WEIGHT** - XIGB - 28 lbs., XIGA - 14 lbs.  
**LISTING** - Listed to U.S. and Canadian safety standards. Suitable for wet locations.

LIGHT OUTPUT - XIG					
	# of LEDs	Lumens (Nominal)			
		SP10	NFL25	FL40	
Cool White	350 mA	19	2159	2076	2066
	Watts		22	23	22
Warm White	350 mA	19	1445	1485	1347
	Watts		22	23	22

LED Chips are frequently updated therefore values may increase.



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LIGHTING DETAILS  
**MADISON RESCUE SQUAD**  
FORMER RAPIDAN DISTRICT - MADISON COUNTY, VIRGINIA

SCALE:	N/A
DATE:	10/5/16
REVISIONS:	2/28/17 PER COUNTY & DEQ COMMENTS
	5/5/17 PER DEQ COMMENTS
	6/14/17 PER LIGHTING REV.
	6/21/17 PER LIGHTING REV.
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