



CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMW ATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HA VE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

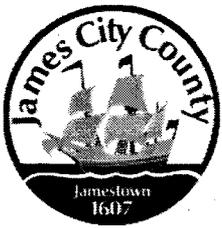
BMPNUMBER: YC014

DATE VERIFIED: April 15, 2016

QUALITY ASSURANCE TECHNICIAN: Charles E. Lovett II

A handwritten signature in cursive script that reads "Charles E. Lovett II".

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 13, 2010
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jo Anna Ripley, Stormwater
PO: 270712
RE: Files Approved for Scanning

General File ID or BMP ID: YC014

PIN: 2430100035A

Subdivision, Tract, Business or Owner

Name (if known):

KTP LLC

Property Description:

Retail Unit with attached Manufacturing

Site Address:

6623 Richmond Road

(For internal use only)

Box 23

Drawer: 9

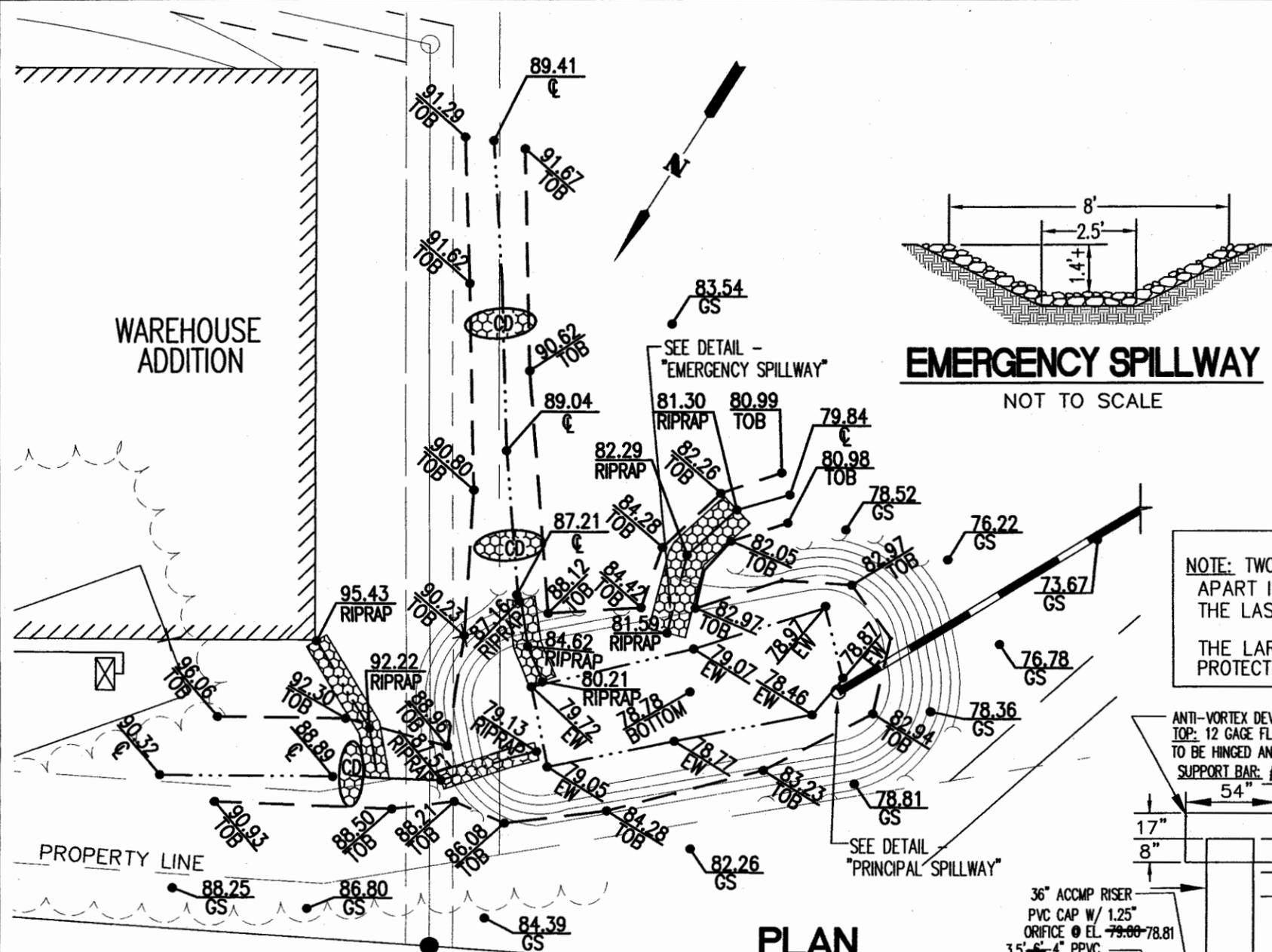
Agreements: (in file as of scan date)

N

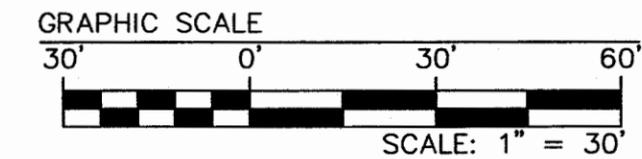
Book or Doc#:

Page:

Comments

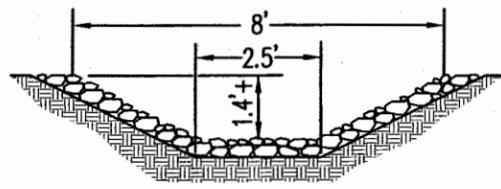


PLAN
SCALE: 1" = 30'



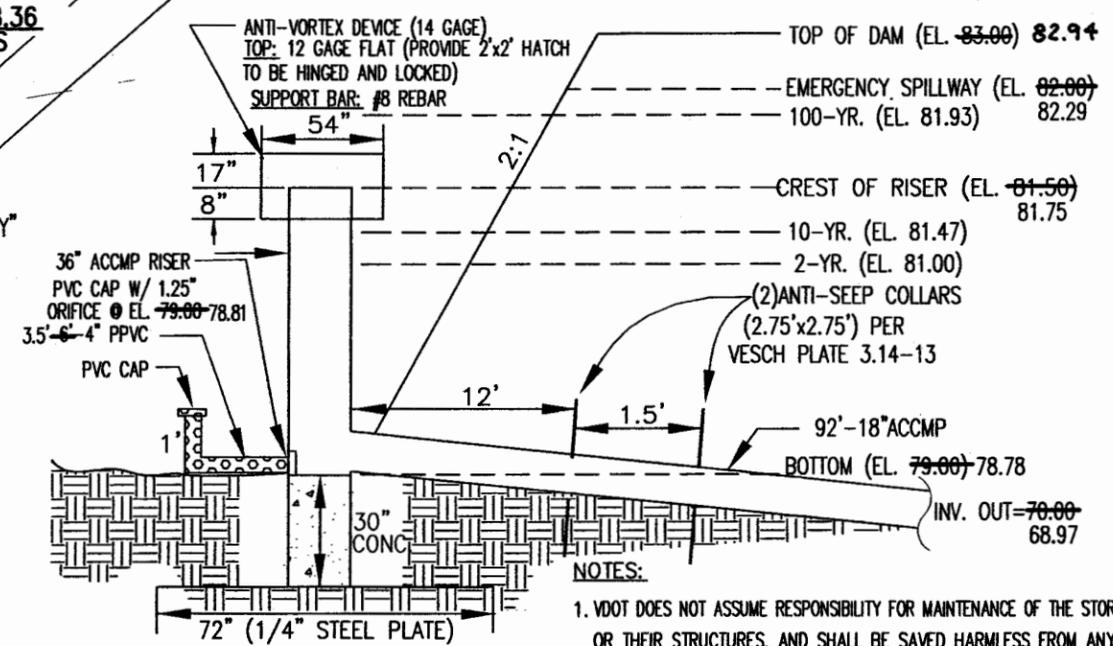
LEGEND:

- TOP OF BANK
 - - - - CENTERLINE OF DITCH/SWALE OR EDGE OF WATER
 - [RIPRAP SYMBOL] RIPRAP CHANNEL
 - [CD SYMBOL] RIPRAP CHECK DAM
 - $\frac{ELEVATION}{DESCRIPTION}$ SPOT ELEVATIONS
- DESCRIPTIONS:**
- € = CENTERLINE OF DITCH/SWALE
 - TOB = TOP OF BANK
 - EW = EDGE OF WATER (2/9/00)
 - GS = GROUND SHOT/FINISHED GRADE



EMERGENCY SPILLWAY
NOT TO SCALE

NOTE: TWO ROCK CHECK DAMS ARE ~~TO BE~~ ^{33'} ~~15'~~ ^{TO 20'} APART IN THE EXISTING OUTFALL CHANNEL. IN ADDITION, THE LAST 15' OF THE CHANNEL WHERE IT CONNECTS TO THE LARGER CHANNEL ^{IS} ~~NEEDS TO BE~~ RIPRAP LINED TO PROTECT THE EXISTING SEWER LINE BENEATH THE CHANNEL.



PRINCIPAL SPILLWAY
NOT TO SCALE

- NOTES:**
1. VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER PONDS OR THEIR STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE.
 2. ALL UNSUITABLE MATERIAL LOCATED UNDER THE DAM EMBANKMENT SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
 3. DETENTION POND SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 1 SPEC. 3.14 - TEMPORARY SEDIMENT BASIN AS OUTLINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, MOST CURRENT EDITION.

I HEREBY CERTIFY TO THE BEST OF MY JUDGMENT, KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE ACCESSIBLE PORTIONS OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGNED PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.

EXCEPTIONS: NONE.

H. L. Phillip Goering 2-23-01



(COUNTY PLAN NO. SP-37-99, BMP ID NO. YC 014)

Committed to Excellence
DJG
ENGINEERS • ARCHITECTS • SURVEYORS
449 McLaws Circle, P.O. Box 3505 Williamsburg, Virginia 23187
(757)253-0673 FAX: (757)253-2319 E-MAIL: williamsburg@djginc.com
NORFOLK - VIRGINIA BEACH AREA (757)874-5015

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POND RECORD DRAWING
WYTHE CANDY & GOURMET SHOP
WAREHOUSE ADDITION
JAMES CITY COUNTY, VIRGINIA

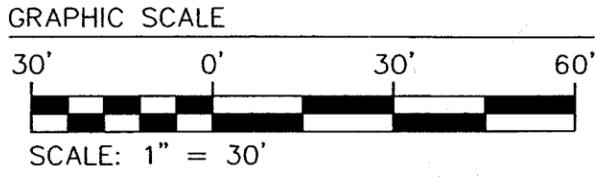
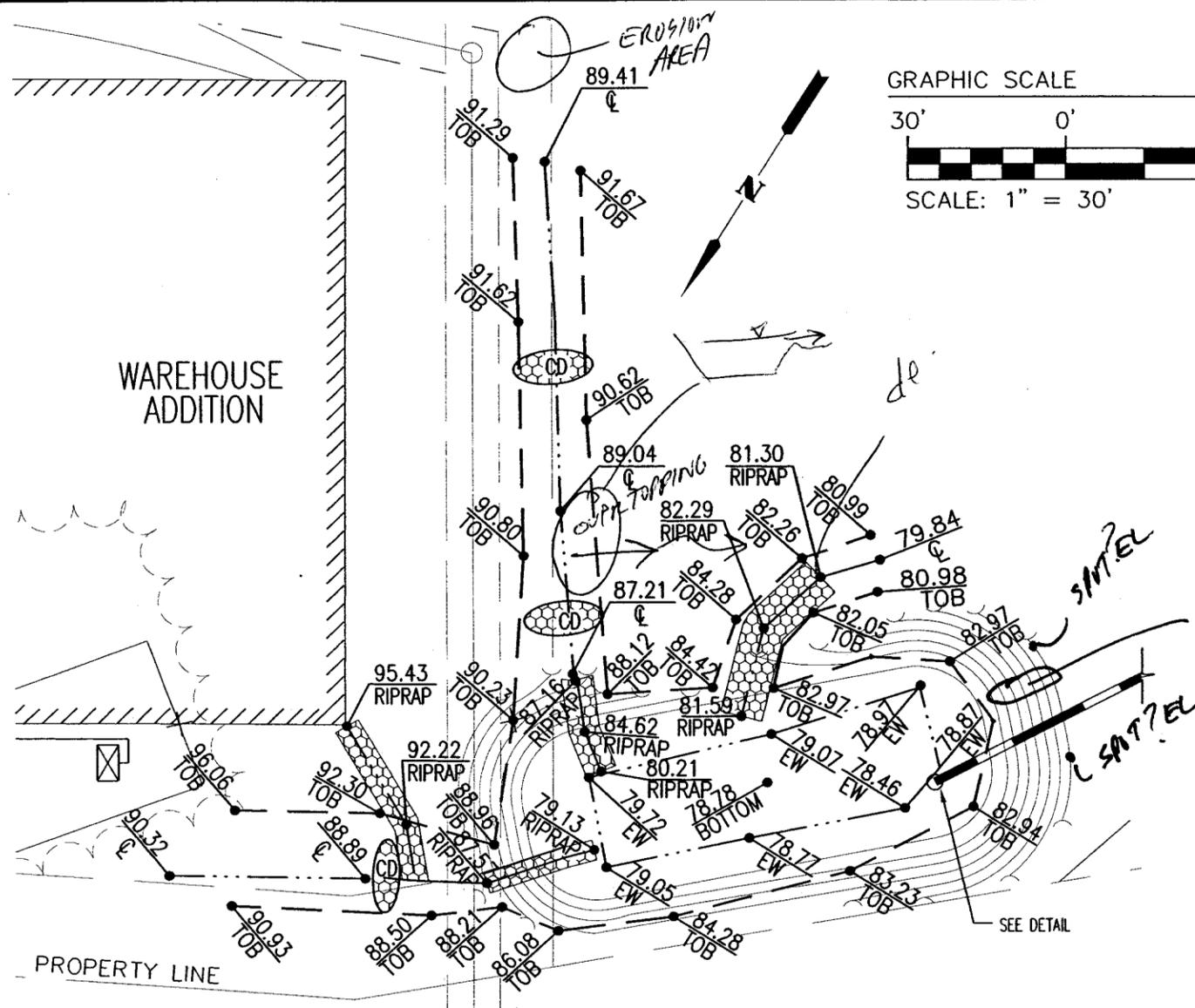
SCALE	DESIGNED	DRAWN	CHECKED	DATE
1" = 30'	DPL	DPL	HJPC	10/6/00

COMMISSION NUMBER
1990050

SHEET NUMBER
1
1 OF 1

2/23/01 - REVISIONS PER COUNTY COMMENTS (DATED 10/26/00)

APPROVED FEB 26 2001



LEGEND:

- TOP OF BANK
 - CENTERLINE OF DITCH/SWALE
 - RIPRAP CHANNEL
 - RIPRAP CHECK DAM
 - SPOT ELEVATIONS
- DESCRIPTIONS:**
- ☉ = CENTERLINE OF DITCH/SWALE
 - TOB = TOP OF BANK
 - EW = EDGE OF WATER (2/9/00)

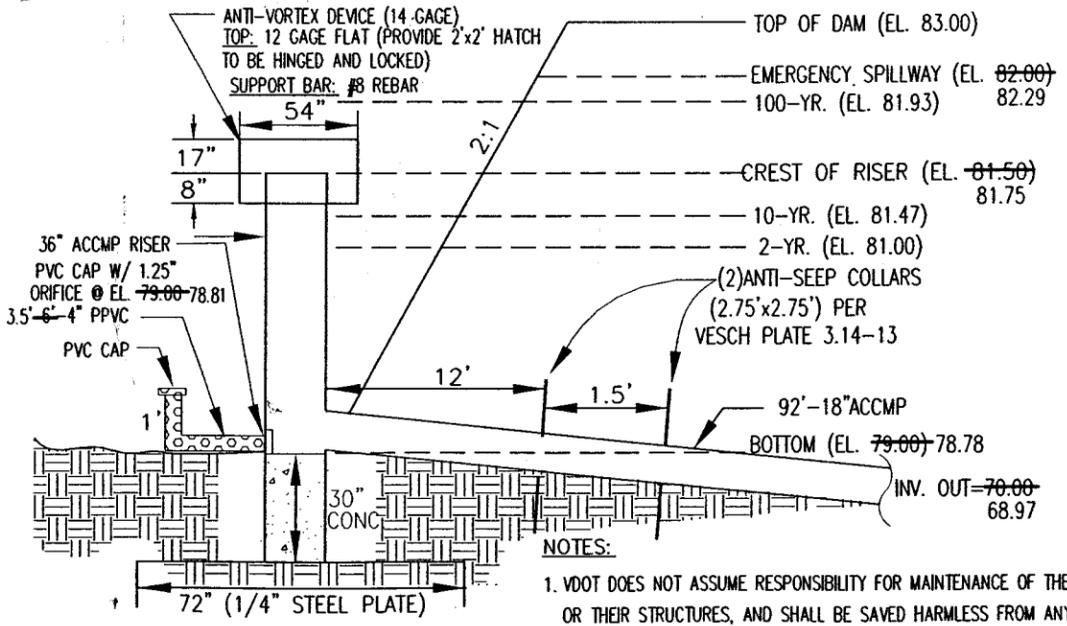
PLAN
SCALE: 1"=30'

I HEREBY CERTIFY TO THE BEST OF MY JUDGMENT, KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE ACCESSIBLE PORTIONS OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGNED PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.

EXCEPTIONS: NONE.

[Signature]
No. 33584

STAMP
SEAL



PRINCIPAL SPILLWAY
NOT TO SCALE

- NOTES:
- VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE STORMWATER PONDS OR THEIR STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE.
 - ALL UNSUITABLE MATERIAL LOCATED UNDER THE DAM EMBANKMENT SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
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POND RECORD DRAWING
WYTHE CANDY & GOURMET SHOP
WAREHOUSE ADDITION

SCALE	DESIGNED	DFL	DRAWN	DFL	CHECKED	DATE
1"=30'						10/6/00

COMMISSION NUMBER
1990050
SHEET NUMBER
1
1 OF 1

Committed to Excellence

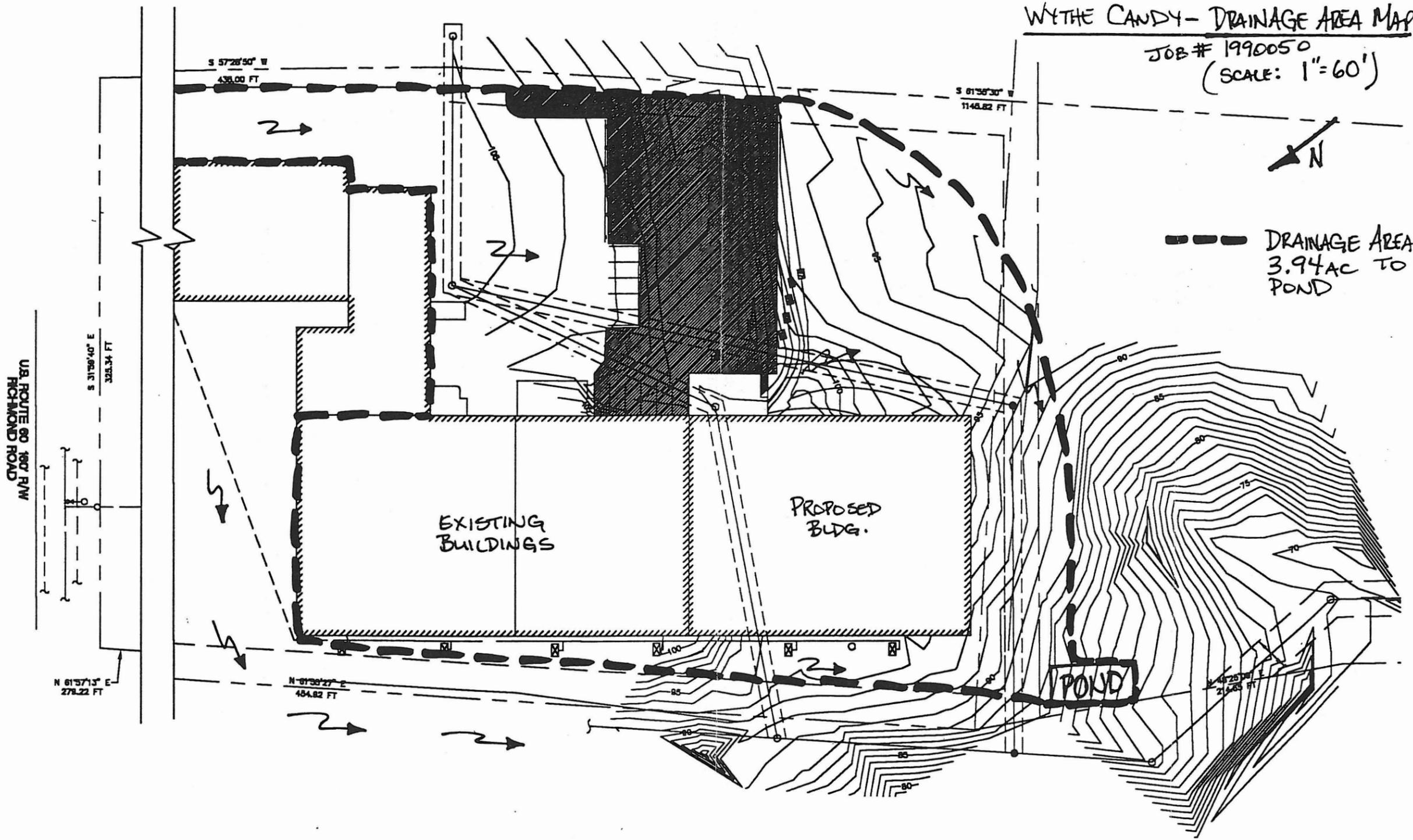
DJG INC.

ENGINEERS • ARCHITECTS • SURVEYORS

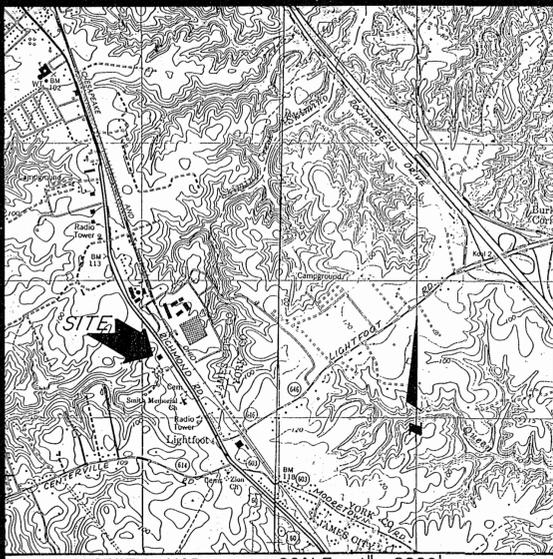
449 McLAWS CIRCLE, P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187
(757)253-0873 FAX: (757)253-2319 E-MAIL: williamsburg@djginc.com
NORFOLK - VIRGINIA BEACH AREA (757)874-5015

WYTHE CANDY - DRAINAGE AREA MAP

JOB # 1990050
(SCALE: 1"=60')



--- DRAINAGE AREA
3.94 AC TO
POND



VICINITY MAP SCALE 1" = 2000'

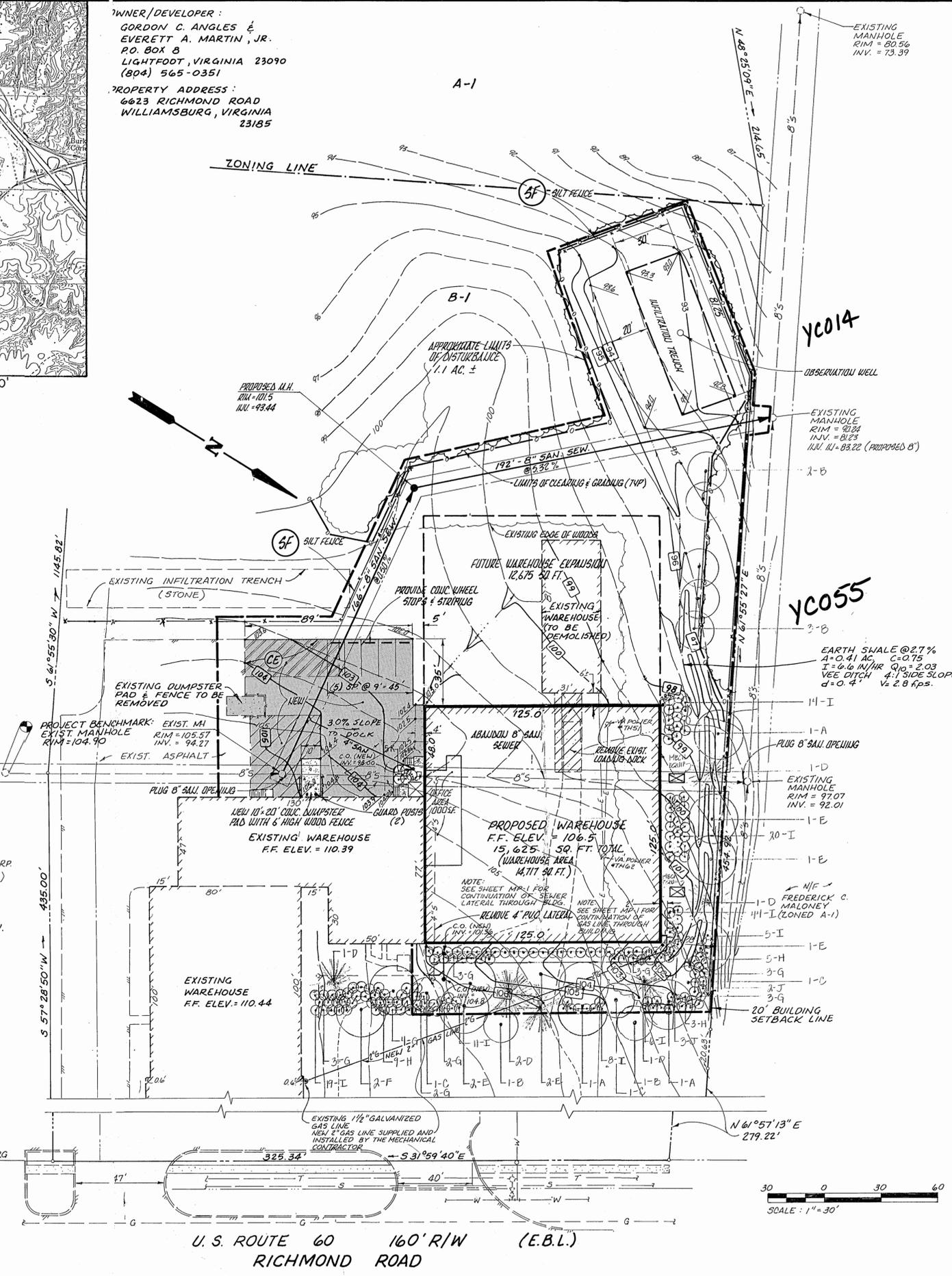
OWNER/DEVELOPER:
 GORDON C. ANGLES &
 EVERETT A. MARTIN, JR.
 P.O. BOX 8
 LIGHTFOOT, VIRGINIA 23090
 (804) 565-0351

PROPERTY ADDRESS:
 6623 RICHMOND ROAD
 WILLIAMSBURG, VIRGINIA
 23185

LEGEND

EXISTING	PROPOSED
8" S SAN. SEWER	8" SAN.
MANHOLE	N/A
GAS LINE	N/A
WATER LINE	N/A
FIRE HYDRANT	N/A
GATE VALVE	N/A
WATER METER	N/A
CULVERT	N/A
100' CONTOUR	100'
CONCRETE	CONCRETE
BIT. CONC.	BIT. CONC.
N/A CLEARING/GRADING LIMITS	N/A
N/A SILT FENCE	N/A
DITCH LINE	N/A
FENCE	N/A
GRAVEL EDGE	N/A
TREE LINE	N/A
PROPERTY LINE	N/A
R/W LINE	N/A
EASEMENT LINE	N/A
ZONING LINE	N/A
POWER LINE (ABOVE GRADE)	N/A
BUILDING LINE	N/A
DEMOLITION	N/A
TREE PROTECTION FENCE	N/A

NOTE:
 FUTURE EXPANSION SHALL RECEIVE FINAL SITE PLAN APPROVAL PRIOR TO CONSTRUCTION.



Land Use Summary

- Zoning of Site = B-1
- Tax Map (24-3) Parcel (1-35A)
- Area Tabulations:
 - Total Area = 483,060 S.F. (11.09 Ac.) = 100%
 - Building Area: Existing = 33,147 S.F., Proposed = 15,621 S.F., Total = 48,768 S.F. (1.12 Ac.) = 10.1%
 - Paved Area: Existing = 59,951 S.F., Proposed = 5,991 S.F., Total = 65,942 S.F. (1.51 Ac.) = 13.6%
 - Open Area = 368,588 S.F. (8.46 Ac.) = 76.3%
- Building Construction: Masonry & Metal, S-2 Low Hazard Storage, Type 2C, Maximum Building Height = 40
- Parking Calculations:
 - Retail Space = 3,000 S.F. @ 1 sp/200 = 15 spaces
 - Office Space = 3,121 S.F. @ 1 sp/250 = 13 spaces
 - Warehouse = 1 sp/2 employees @ 12 = 6 spaces
 - Handicap (1 space required & existing)
 - Total Spaces Required = 34 spaces
 - Total Existing Spaces = 29 spaces
 - Additional Spaces Provided = 5 spaces

SHEET INDEX

C-1 OF 3	SITE PLAN
C-2 OF 3	PROFILES AND DETAILS
C-3 OF 3	ENTRANCE PLAN
A-1	PLANS AND SECTIONS
A-2	ELEVATIONS AND DETAILS
S-1	FOUNDATION AND DETAILS
S-2	CULVERT, SECTION, AND DETAILS
M-1	MECHANICAL PUMPING PLAN
M-2	SECTION, DETAIL, AND DETAILS
E-1	ELECTRICAL PUMP PLAN, CHEMICAL



PREVIOUSLY APPROVED PLAN (1991)
 BMP REVISED FOR WAREHOUSE ADDITION 1999

SURVEY INFORMATION: DJG, INC. FB.141 PG.30

REVISIONS

No.	Date	Description
1	2/13/91	REV'D AS PER COUNTY COMMENTS
2	2/11/91	REV'D AS PER PLW DOCUMENTS

ENGINEERS ARCHITECTS SURVEYORS
 INTERIOR DESIGNERS PLANNERS

SITE PLAN
WAREHOUSE ADDITION
WYTHE CANDY & GOURMET SHOP

SCALE 1" = 30'

DESIGNED L.M.P.

DRAWN T.C.S./G.S.W.

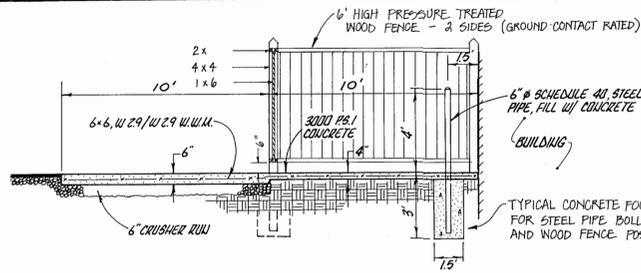
CHECKED L.M.P.

DATE 1/2/91

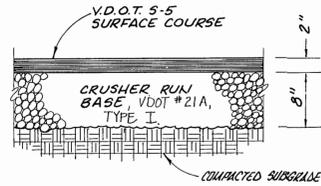
1900790

COMMISSION NO. SHEET

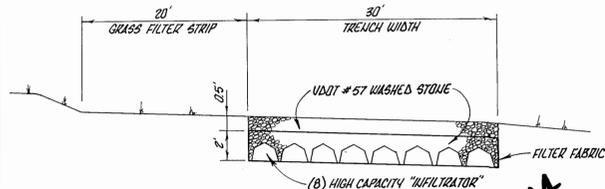
C-1 OF 3



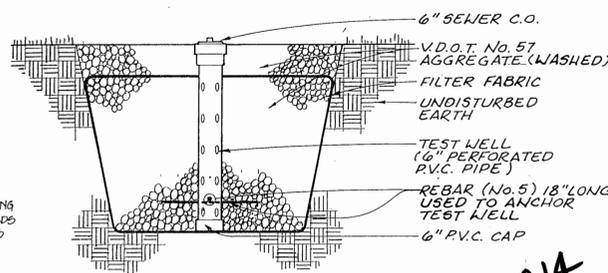
DUMPSTER PAD DETAIL
N.T.S.



NEW PAVEMENT SECTION
1" = 1'-0"

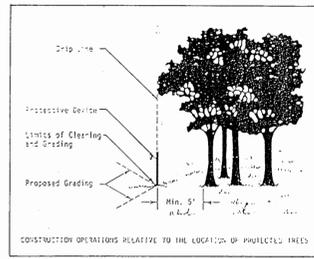


INFILTRATION TRENCH
N.T.S.



DETAIL - OBSERVATION WELL
N.T.S.

GENERAL NOTES:
1. ALL SANITARY SEWER SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE JAMES CITY SERVICE AUTHORITY. (REVISED 7/1/89)
2. THE INFILTRATION TRENCH SHALL NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED.



Source: Public Facilities Manual, Vol. III, Fairfax County, Virginia 1974
Excerpt from: Virginia Erosion and Sediment Control Handbook, 1990 Edition

TREE PROTECTION MEASURES

Marking: Prior to construction and before the preconstruction conference, individual trees and stands of trees to be retained within the limits of clearing shall be visibly marked with surveyor's ribbon applied in a band circling the tree at a height visible to equipment operators.

Cord Fence: A temporary cord fence shall be located and maintained outside the dripline of all trees to be preserved prior to commencement of clearing, grubbing and grading. Posts with a minimum size of 2 inches square or 2 inches in diameter set securely in the ground and protruding at least 4 feet above the ground shall be placed outside the dripline of trees to be preserved with two rows of cord 1/4 inch or thicker at least 2 feet apart running between posts with strips of colored surveyor's flagging tied securely to the string at intervals no greater than 3 feet.

No material, debris, fill, vehicles or equipment shall be stored within the cord fence enclosure, nor shall the topsoil layer be disturbed.

EROSION AND SEDIMENT CONTROL NOTES

THE PURPOSE OF THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS SHALL BE TO PRECLUDE THE TRANSPORT OF ALL WATERBORNE SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES FROM ENTERING ONTO ADJACENT PROPERTIES OR STATE WATERS. IF FIELD INSPECTION REVEALS THE INADEQUACY OF THE PLAN TO CONFINE SEDIMENT TO THE PROJECT SITE, APPROPRIATE MODIFICATIONS WILL BE MADE TO CORRECT ANY PLAN DEFICIENCIES.

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK". THE CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH ALL APPLICABLE MEASURES CONTAINED THEREIN WHICH MAY BE PERTINENT TO THIS PROJECT.
- ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED BY A TEMPORARY CONSTRUCTION ENTRANCE TO PREVENT TRACKING OF MUD ONTO PUBLIC RIGHT-OF-WAYS. AN ENTRANCE PERMIT FROM VDOT IS REQUIRED PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN STATE RIGHT-OF-WAYS.
- SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT ON-SITE MUST BE CONSTRUCTED AS A FIRST STEP IN GRADING AND BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE. EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS MUST BE SEED AND MULCHED WITHIN 15 DAYS OF INSTALLATION. AN ON-SITE PRE-CONSTRUCTION MEETING WILL BE HELD BETWEEN THE OFFICE OF CODE COMPLIANCE AND THE CONTRACTOR TO IDENTIFY THOSE MEASURES TO BE INITIALLY INSTALLED.
- MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK". MAINTENANCE WILL INCLUDE THE REPAIR OF MEASURES DAMAGED BY ANY SUBCONTRACTOR INCLUDING THOSE OF THE PUBLIC UTILITY COMPANIES. AT THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR WILL SUPPLY CODE COMPLIANCE WITH THE NAME OF THE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR ENSURING MAINTENANCE OF INSTALLED MEASURES ON A DAILY BASIS.

LANDSCAPING INFORMATION

LANDSCAPE AREAS AND PLANT MATERIAL REQUIREMENTS

ONE (1) TREE AND THREE (3) SHRUBS PER 400 SQUARE FEET OF TOTAL LANDSCAPE AREA PROVIDED.

TREES:	2 1/2" CAL. TREES	ORNAMENTAL TREES	EVERGREEN	OTHER	EXISTING	TOTAL
TREES:	6	3	5	4	AS SHOWN	18
SHRUBS:			13	39		52

TOTAL AREA: 6,990 S.F./0.16 ACRES

- TOTAL NURSERY STOCK TREES PROVIDED: 18
- TOTAL EXISTING TREES RETAINED: AS SHOWN
- TOTAL SHRUBS PROVIDED: 52

LANDSCAPE AREAS ADJACENT TO BUILDING AND PLANT MATERIAL REQUIREMENTS:

ONE (1) ORNAMENTAL TREE OR FIVE (5) SHRUBS PER 200 SQUARE FEET OF PLANTING AREA PROVIDED.

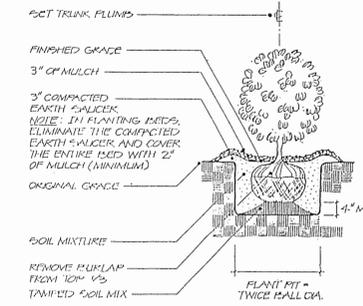
- TOTAL AREA REQUIRED: 4,630 S.F.
- TOTAL AREA PROVIDED ADJACENT TO BUILDING: 2,700 S.F.
- TOTAL AREA TRANSFERRED ELSEWHERE ON SITE: 1,930 S.F.
- TOTAL SHRUBS PROVIDED: 81
- TOTAL TREES PROVIDED: 7

NOTES:

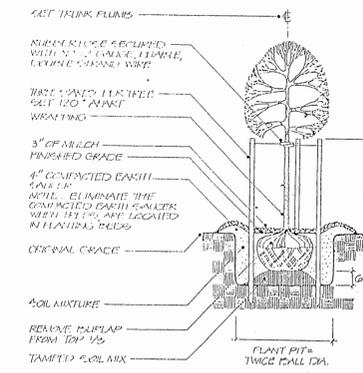
ALL REQUIRED PLANTINGS SHALL CONFORM WITH THE MOST RECENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND SHALL BE PLANTED IN ACCORDANCE WITH THE MOST RECENT EDITION OF GUIDELINES FOR PLANTING LANDSCAPE TREES AND PLANTING AND CARE OF TREES AND SHRUBS PUBLISHED BY THE VIRGINIA COOPERATIVE EXTENSION OFFICE.

PLANT SCHEDULE

ABBR	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SIZE
TREES:				
A	3	ACER RUBRUM	RED MAPLE	1 1/2" CAL. B&B SINGLE STEM
B	7	CORNUS KOUSA CHINENSIS	KOUSA DOGWOOD	8' HT. B&B MULTI-STEM
C	3	ILEX OPACA	AMERICAN HOLLY (FEMALE)	8' HT. B&B MULTI-STEM
D	6	PINUS THUNBERGII	JAPANESE BLACK PINE	8' HT/ 1 1/4" CAL. B&B SINGLE STEM
E	7	QUERCUS DARLINGTONIA	DARLINGTON OAK	2 1/2" CAL. B&B SINGLE STEM
F	2	QUERCUS DARLINGTONIA	DARLINGTON OAK	1 1/2" CAL. B&B SINGLE STEM
SHRUBS:				
G	23	EUONYMUS ALATUS	WINGED EUONYMUS	24"-30" B&B
H	17	ILEX GLABRA	INKBERRY	18"-24" B&B
I	127	MYRTICA CERIFERA	WAX MYRTLE	18"-24" B&B
J	5	MYRTICA PENNSYLVANICA	BAYBERRY	18"-24" B&B
K	5	JUNIPERUS CHINENSIS "SARGENTI"	SARGENT'S JUNIPER	18"-24" B&B OR CONT.



SHRUB PLANTING DETAIL
N.T.S.



TREE PLANTING DETAIL
N.T.S.

SOIL MIXTURE FOR TREES AND SHRUBS:

CONSISTING OF THE FOLLOWING:
FIVE (5) PARTS EXISTING SOIL TO ONE (1) PART PEAT MOSS AND 1/2 LB. PLANT FERTILIZER PER EACH CUBIC YARD OF MIXTURE.

PEAT MOSS:

BEGAN TO BLACK IN COLOR, NEEDS AND SEED FREE - GRANULED PEAT FERTILIZER CONTAINING NOT MORE THAN 9% MINERAL ON A DRY BASIS.

PLANT FERTILIZER:

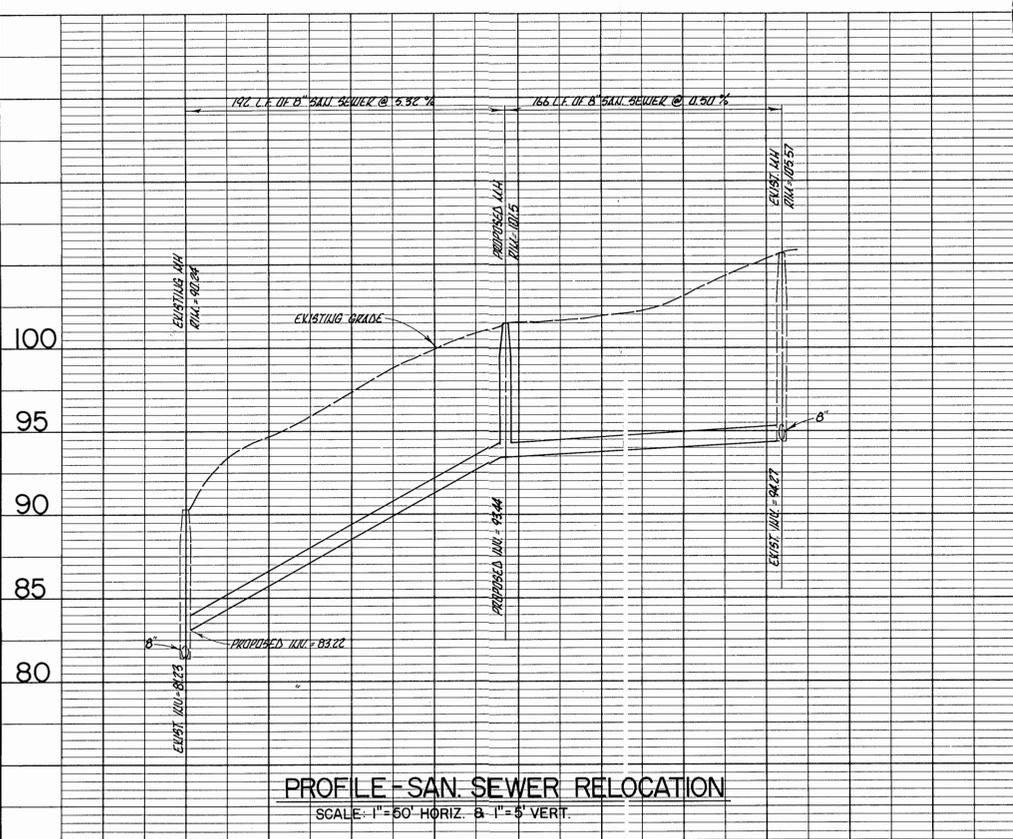
COMMERCIAL TYPE CONTAINING 10% NITROGEN, 10% PHOSPHORIC ACID AND 10% POTASH BY WEIGHT, 1/4 IN FORM OF NITROGEN IN THE FORM OF NITRATES, 1/4 IN FORM OF AMMONIA SALF AND 1/2 IN FORM OF ORGANIC NITROGEN.

MULCH:

SUPPLIED HARDWOOD MULCH FREE FROM DELICIOUS MATERIALS.

TREE WRAP:

STANDARD WATERPROOFED TREE WRAPPING PAPER, MINIMUM 2 1/2" WIDE, MADE OF TWO (2) LAYERS OF CREEP STRAIN PAPER COMBINED TOGETHER WITH ASPHALT.



PROFILE - SAN. SEWER RELOCATION
SCALE: 1" = 60' HORIZ. & 1" = 5' VERT.

PROFILE AND DETAILS
WAREHOUSE ADDITION
WYTHE CANDY & GOURMET SHOP

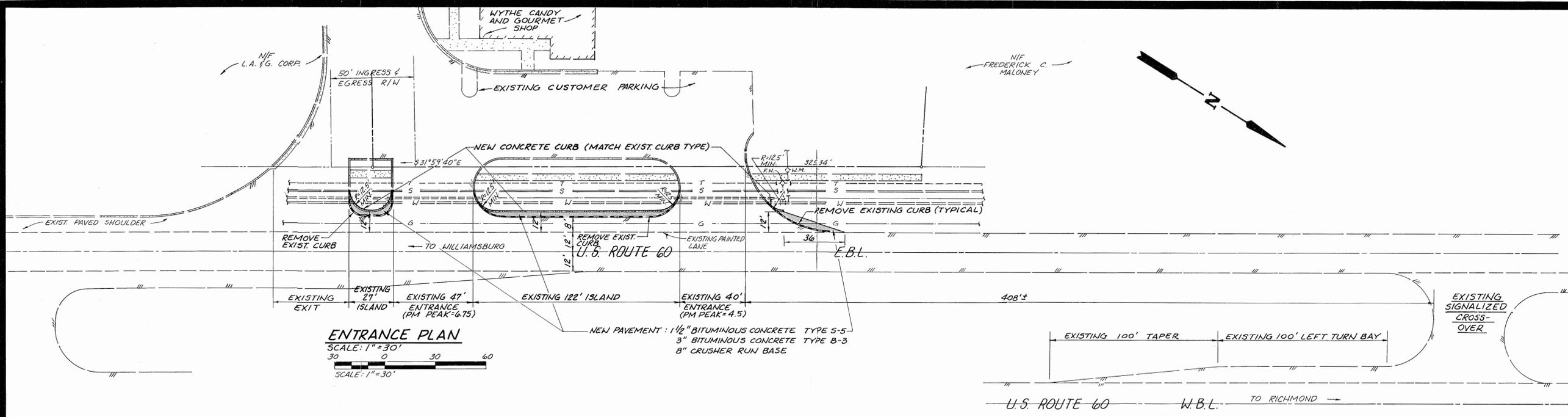
REV. 2-14-91 PER COUNTY COMMENTS
REV. 2-18-91 PER EID DOCUMENTS

THE DEYOING-JOHNSON GROUP, INC.
ENGINEERS - ARCHITECTS - SURVEYORS
P.O. BOX 197 WILLIAMSBURG, VIRGINIA 23187 (804) 253-0673

DATE JAN. 2, 1991
DESIGNED L.M.P.
DRAWN G.S.W.
CHECKED L.M.P.

1900790

C-2 of 3



VEHICULAR TRAFFIC MOVEMENTS

Traffic counts for delivery trucks were furnished by Owner based on actual records and projection of receiving and shipping. Traffic counts for retail store were furnished by Owner based on actual sales and average number of customers per vehicle for the period May thru August 1990, which represent months of maximum patronage.

Truck Movements (Warehouse):
 Maximum number of trucks entering between 8 AM and 4 PM daily Monday thru Friday = 8
 8 trucks ÷ 8 hours = 1 truck per hour

Car Movements (Retail Store):
 Maximum number of cars entering between 9 AM and 5 PM daily Monday thru Friday = 40
 40 cars ÷ 8 hours = 5 cars per hour
 Maximum number of cars entering between 9 AM and 5 PM daily Saturday thru Sunday = 60
 60 cars ÷ 8 hours = 7.5 cars per hour

Maximum weekday traffic = 5 cars plus 1 truck = 6 vehicles entering per hour
 Maximum weekend traffic = 7.5 vehicles entering per hour

For PM peak, use conservative estimate of 1.5 times maximum of 7.5 = 11.25 peak

Distribute PM peak between two existing entrances at a ratio of 40% entering first entrance and 60% entering second entrance. Second entrance includes deceleration lane.

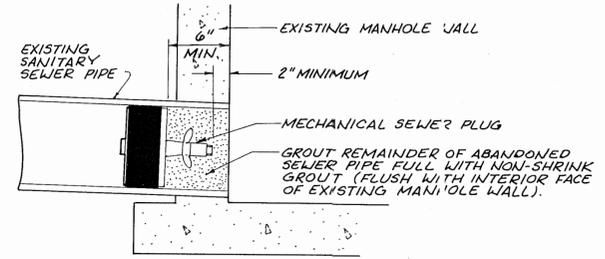
PM peak first entrance = 4.5 vehicles
 PM peak second entrance = 6.75 vehicles

ROAD CONSTRUCTION NOTES

1. ALL ROADS AND DRAINAGE FACILITIES SHOULD BE CONSTRUCTED IN ACCORDANCE WITH CURRENT REGULATIONS, SPECIFICATIONS AND STANDARDS, AND SUBDIVISION STREET REQUIREMENTS OF THE VDOT.
2. STANDARD PE-1 ENTRANCES WITH 24" OF 15" CONCRETE CULVERT PIPE SHALL BE REQUIRED FOR ALL DRIVEWAYS.
3. ALL SHOULDERS, DITCHES AND HACKSLOPES MUST BE STABILIZED PRIOR TO ACCEPTANCE OF ROADS INTO THE STATE SECONDARY ROAD SYSTEM.
4. THE ROAD CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL ITEMS OF ROAD WORK AND DRAINAGE WITH EXISTING AND PROPOSED UNDERGROUND UTILITIES (POWER, WATER, SEWER, AND TELEPHONE) SUCH THAT NO DUPLICATION OF WORK EFFORT IS INCURRED.
5. UPON COMPLETION, INSPECTION AND ACCEPTANCE, ALL ROADS AND DRAINAGE FACILITIES SHALL BE DEDICATED TO THE VIRGINIA DEPARTMENT OF TRANSPORTATION FOR INCLUSION IN THE STATE SECONDARY ROAD SYSTEM.
6. ALL ITEMS OF ROADWORK AND DRAINAGE NECESSARY FOR THE ROADS TO BE ACCEPTED INTO THE STATE SECONDARY ROAD SYSTEM WHETHER WRITTEN ON THESE PLANS OR NOT ARE HEREBY EXPRESSLY IMPLIED. NO OMISSIONS, ERRORS OR OVERSIGHTS ON THE PART OF THE ENGINEER OR OWNER SHALL DETRACT FROM THE CONTRACTOR'S RESPONSIBILITY OF COMPLETING ALL ITEMS OF ROADWORK AND DRAINAGE SATISFACTORY IN EVERY RESPECT TO JAMES CITY COUNTY AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION.
7. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE ROAD CONTRACTOR.
8. LATERAL UNDERDRAINS MAY BE REQUIRED WHERE FIELD CONDITIONS WARRANT. A CHANGE ORDER FOR SAME WILL BE EXECUTED IF REQUIRED BY VDOT, THE ENGINEER, COUNTY OR OWNER.
9. PAVED DITCHES MAY BE REQUIRED WHERE FIELD CONDITIONS WARRANT. GENERALLY, ALL DITCHES WITH SLOPES EXCEEDING 3% SHALL BE PAVED UNLESS OTHERWISE APPROVED BY THE ENGINEER, OWNER, VDOT AND THE LOCAL GOVERNING BODY.
10. TEMPORARY LINERS (SUCH AS POLYETHYLENE SHEETS) WILL BE PROVIDED IN ALL DITCHES THAT ARE TO BE PAVED UNTIL THE CONCRETE IS INSTALLED.
11. INFILTRATION TRENCHES SHALL NOT BE INSTALLED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED.
12. VIRGINIA DEPARTMENT OF TRANSPORTATION SHALL NOT BE RESPONSIBLE FOR MAINTENANCE OF SEDIMENT BASINS OR ANY DAMAGE THAT MAY OCCUR DUE TO FAILURE OF BASINS.

SPECIAL NOTES FOR NEW CURB AND PAVEMENT CONSTRUCTION WITHIN RTE. 60 R/W

- NEW PAVEMENT CROSS SLOPE TO MATCH EXISTING PAVEMENT CROSS SLOPE.
- FIELD ESTABLISH CURB ELEVATIONS BASED ON CROSS SLOPE OF NEW PAVEMENT.
- TIE-IN NEW CURB TO EXISTING CURB WITH MINIMUM RADIUS OF 12.5'.



SANITARY SEWER PLUG DETAIL
 (USE FOR ABANDONING EXISTING GRAVITY SAN. SEWER)
 NOT TO SCALE

ENGINEERS · ARCHITECTS · SURVEYORS
 INTERIOR DESIGNERS · PLANNERS



ENTRANCE PLAN
WAREHOUSE ADDITION
WYTHE CANDY & GOURMET SHOP

SCALE AS SHOWN.

DESIGNED L.M.P.

DRAWN R.D.S.

CHECKED L.M.P.

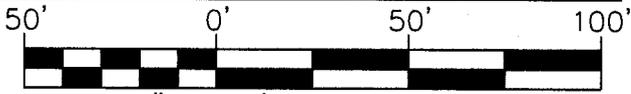
DATE 2/12/91

1900790
 COMMISSION NO.
 SHEET

C-3 OF 3

REVISIONS		
No.	Date	Description
1	2/13/91	ADDED ENTRANCE PLAN, NOTES & DETAIL
2	2/19/91	REV AS PER. BLD DOCUMENTS
3	3/14/91	ADDED 12" LANE

GRAPHIC SCALE



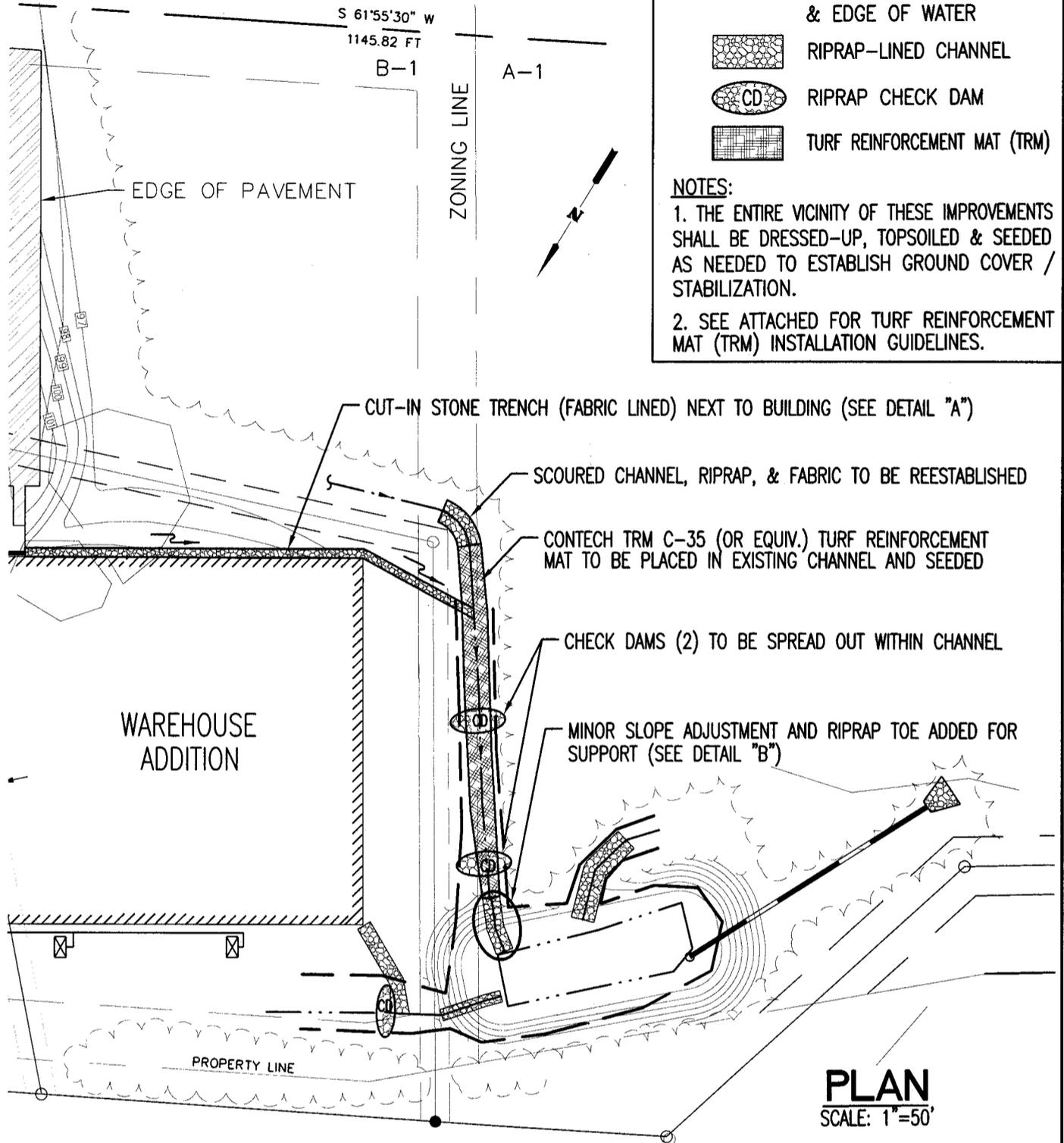
SCALE: 1" = 50'

LEGEND:

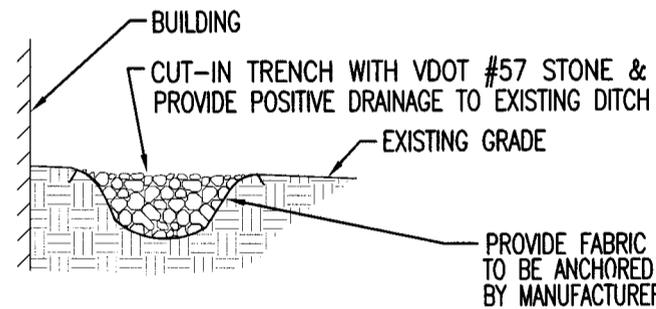
- TOP OF BANK
- CENTERLINE OF DITCH & EDGE OF WATER
- RIPRAP-LINED CHANNEL
- RIPRAP CHECK DAM
- TURF REINFORCEMENT MAT (TRM)

NOTES:

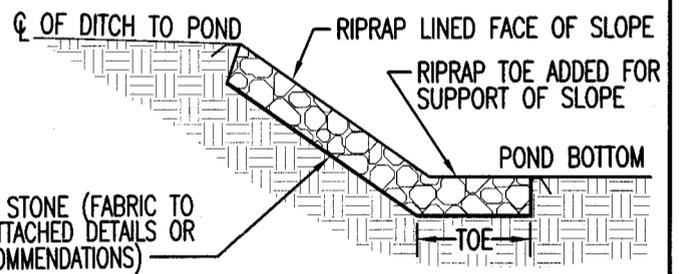
1. THE ENTIRE VICINITY OF THESE IMPROVEMENTS SHALL BE DRESSED-UP, TOPSOILED & SEEDED AS NEEDED TO ESTABLISH GROUND COVER / STABILIZATION.
2. SEE ATTACHED FOR TURF REINFORCEMENT MAT (TRM) INSTALLATION GUIDELINES.



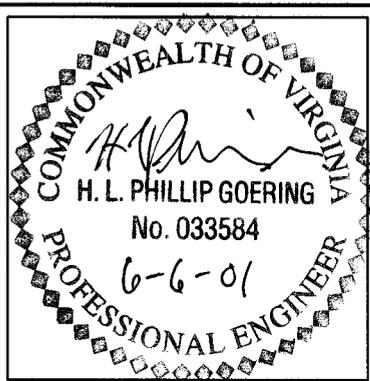
PLAN
SCALE: 1"=50'



A **STONE TRENCH DETAIL**
NOT TO SCALE



B **RIPRAP SLOPE W/TOE**
NOT TO SCALE



REF:

DRAWN: DFL
CHECKED: HLP

SITE IMPROVEMENTS TO THE WYTHE CANDY WAREHOUSE ADDITION

JAMES CITY COUNTY VIRGINIA

DATE: APRIL 26, 2001

SCALE: 1"= 50'



Committed to Excellence

ENGINEERS • ARCHITECTS • SURVEYORS

449 McLAWS CIRCLE, P.O. BOX 3505 WILLIAMSBURG, VIRGINIA 23187
(757)253-0673 FAX: (757)253-2319 E-MAIL: djginc@visi.net
NORFOLK - VIRGINIA BEACH AREA (757)874-5015

JOB NO.

1990050

**WYTHE CANDY & GOURMET SHOP
WAREHOUSE ADDITION**

**STORMWATER MANAGEMENT
CALCULATIONS**

SP-37-99
YC 014

BY

DJG, INC.
1006 RICHMOND ROAD
WILLIAMSBURG, VIRGINIA 23185
PHONE: (757)253-0673
FAX: (757)253-2319

MAY 10, 1999
DJG COMMISSION NO: 1990050



P.O. Box 3505
Williamsburg, Virginia 23187
(757) 253-0673
Fax (757) 253-2319

PROJECT WYTHE CANDY ADDITION
DATE 5/4/99 COMM NO. 1990050
CAL DL CKD _____ PAGE # _____
TITLE BMP DESIGN

- DRAINAGE AREA TO POND = 3.94 AC
- DISTURBED AREA TO POND = 0.87 AC
- IMPERVIOUS AREA TO POND = 3.04 AC

- BMP POINTS:

$$\text{OPEN SPACE} = \frac{7.59 \text{ AC}}{11.09 \text{ AC}} \times 10 = 6.84 \text{ POINTS}$$

$$\text{BMP REQUIRED} = 10 - 6.84 = 3.16 \text{ POINTS} \Rightarrow \underline{\underline{4 \text{ A. BMP}}}$$

- EVS VOLUME: 67 yd³/AC WET STORAGE = 1574 FT³
67 yd³/AC DRY STORAGE = 1574 FT³

$$\text{TOTAL} = 3148 \text{ FT}^3$$

- Needs to be based on drainage area

- BMP DESIGN #2 (V_d = V_r):

• VOLUME:

V_d = VOLUME DETAINED

$$V_r = 0.5 \times R_v \times A \times 3630$$

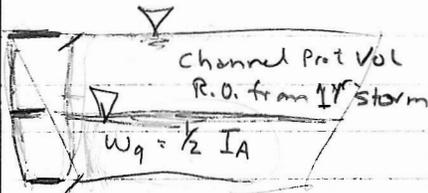
$$R_v = 0.05 + 0.009 \times I$$

I = PERCENT IMPERVIOUS COVER OF ONSITE WATERSHED = 77%

A = AREA OF CONTRIBUTING ONSITE WATERSHED = 3.94 AC

$$V_r = 0.5 \times (0.05 + 0.009 \times 77) \times 3.94 \times 3630 = 5313 \text{ FT}^3$$

$$V_d = 5313 \text{ FT}^3 \leftarrow \text{USE FOR DESIGN}$$



15,200 CF = 1.4
80 RCM
1.1 x 3.94 x 43560 = 15,700

• DETENTION:

Q_{AVE} = V_d / (T x 3600) = AVG. OUTFLOW RATE FOR DESIRED DETENTION TIME.

$$T = \text{DETENTION TIME (HRS)} = 24 \text{ HRS.}$$

$$Q_{AVE} = 5313 \text{ FT}^3 / (24 \text{ HR.} \times 3600) = 0.06 \text{ CFS.}$$

A_P = TOTAL PERFORATION AREA (S.F.)

$$H_{AVE} = 0.5 (\text{MAX HEAD} - \text{RADIUS OF OUTFLOW PIPE}) \text{ (FT.)}$$

18" INCH OUTFLOW PIPE

$$A_p = Q_{AVE} / (0.6 \times \sqrt{64.4 \times H_{AVE}}) \text{ (S.F.)}$$

$$A_p = 0.06 / (0.6 \times \sqrt{64.4 \times 1.375}) = 0.01 \text{ S.F. (d=1.35")}$$

6 PE design
No 1/2 year control

Calculated By: DFL Date: 5/5/98
 Checked By: HLPG Date:

DJG, INC
 P.O. BOX 3505
 WILLIAMSBURG, VIRGINIA 23187
STORMWATER MANAGEMENT POND DESIGN

PROJECT NO. 1990050
 PROJECT DESC. WYTHE CANDY ADDITION
 POND
 SHEET OF

BASIN STORAGE VOLUME:					PRINCIPAL SPILLWAY:				STAGE-DISCHARGE-STORAGE:								
ELEV.	AREA (FT)	SUM (A+Δ)/2	VOL. (CU.FT)	SUM VOL. (CU.FT)	RISER	ORIFICE DIA. (IN)	BARREL DIA. (IN)	BARREL LEN. (FT)	ELEV.	STAGE (FT)	Hp (FT)	Qp (CFS)	Ho(1) (FT)	Co(1) (CFS)	SUM Q (CFS)	TOTAL STORAGE (FT^3)	
79	1275	637.5	0	0	36	1.25	18	92	OR. (1.25")	79	-	-	-	-	-	-	
80	1634	1454.5	1455	1455	ORIFICE AREA, A (SQ.FT) = 0.00852				79.5	0.5	-	-	0.44792	0.03	0.03	1455	
81	2018	1826	1826	3281	n = 0.013				80	1	-	-	0.94792	0.05	0.05	2434	
82	2428	2223	2223	5504	C = 0.74				81	2	-	-	1.94792	0.07	0.07	4072	
					Q = CA(64.4*Ho)^0.5				C.R.	81.5	2.5	-	-	2.44792	0.08	0.08	4807
					BARREL INV.OUT = 70				82	3	13	32	2.94792	0.09	32.09	5504	
					CORRECTION FACTOR = 0.94 (FROM VESCH, TABLE 3.14-A)												
STORAGE ALGORITHM:																	
Z1 =	0.5	S1 =	1455	S2/S1 =	3.7838												
Z2 =	3	S2 =	5504	Z2/Z1 =	6.0												
b = (ln(S2/S1))/(ln(Z2/Z1))	Ks = S2/(Z2^b)		S(CU.FT)=Ks(Z^b)														
b =	0.743	Ks =	2433.80														

WYTHE CANDY ADDITION - PREDEVELOPMENT

WYTHE CANDY ADDITION - PREDEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 74
HYDRAULIC LENGTH MODIFIED (%) = 10
COMPOSITE CURVE NUMBER = 73
SLOPE ADJUSTMENT FACTOR = 1.15
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .069 HOURS
TIME OF CONCENTRATION ADJUSTED IS .116 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 6 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.028	.322
.056	1.017
.083	2.149
.111	3.259
.139	4.315
.167	5.262
.195	6.05
.222	5.968
.25	5.135
.278	3.52
.306	2.167
.334	1.109
.361	.378
.389	0

WYTHE CANDY ADDITION - PREDEVELOPMENT

WYTHE CANDY ADDITION - PREDEVELOPMENT

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 10 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 74
HYDRAULIC LENGTH MODIFIED (%) = 10
COMPOSITE CURVE NUMBER = 73
SLOPE ADJUSTMENT FACTOR = 1.15
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .069 HOURS
TIME OF CONCENTRATION ADJUSTED IS .116 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 14 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.028	.846
.056	2.628
.083	5.459
.111	8.079001
.139	10.423
.167	12.377
.195	13.85
.222	13.368
.25	11.328
.278	7.7
.306	4.701
.334	2.387
.361	.806
.389	0

WYTHE CANDY ADDITION - POND (POSTDEVELOPMENT)

WYTHE CANDY ADDITION - POND (POSTDEVELOPMENT)

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 2 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 77
HYDRAULIC LENGTH MODIFIED (%) = 20
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1.15
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .061 HOURS
TIME OF CONCENTRATION ADJUSTED IS .102 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 7 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.024	.4
.049	1.267
.073	2.646
.098	3.954
.122	5.127
.146	6.133
.171	6.917
.195	6.722
.22	5.723
.244	3.902
.268	2.389
.293	1.218
.317	.413
.342	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	30.09	55

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.000
0.024	0.002

0.049	0.005
0.073	0.011
0.098	0.019
0.122	0.030
0.146	0.041
0.171	0.052
0.195	0.059
0.220	0.064
0.244	0.067
0.268	0.069
0.293	0.070
0.317	0.070
0.342	0.070
0.366	0.070
0.391	0.070
0.415	0.070
0.439	0.070
0.464	0.069
0.488	0.069
0.513	0.069
0.537	0.069
0.561	0.069
0.586	0.069
0.610	0.069
0.635	0.069
0.659	0.069
0.683	0.069
0.708	0.069
0.732	0.069
0.757	0.069
0.781	0.069
0.805	0.068
0.830	0.068
0.854	0.068
0.879	0.068
0.903	0.068
0.928	0.068

MAXIMUM OUTFLOW IS .07 C.F.S.
 MAXIMUM STAGE IS 2 FT.
 MAXIMUM STORAGE IS 4072 CUBIC FEET

WYTHE CANDY ADDITION - POND (POSTDEVELOPMENT)

WYTHE CANDY ADDITION - POND (POSTDEVELOPMENT)

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 10 YEAR
 DRAINAGE AREA (ACRES) = 3.94
 AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
 HYDRAULIC LENGTH (FT) = 900
 IMPERVIOUS SURFACE (%) = 77
 HYDRAULIC LENGTH MODIFIED (%) = 20
 COMPOSITE CURVE NUMBER = 75
 SLOPE ADJUSTMENT FACTOR = 1.15
 PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS

(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .061 HOURS
TIME OF CONCENTRATION ADJUSTED IS .102 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 15 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.024	.959
.049	3.001
.073	6.198
.098	9.109999
.122	11.602
.146	13.618
.171	15.057
.195	14.394
.22	12.111
.244	8.205
.268	4.992
.293	2.528
.317	.852
.342	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	30.09	5504

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.001
0.024	0.004
0.049	0.013
0.073	0.027
0.098	0.045
0.122	0.061
0.146	5.334
0.171	14.340
0.195	13.298
0.220	10.287
0.244	6.750
0.268	3.883
0.293	1.780
0.317	0.482
0.342	0.070
0.366	0.070
0.391	0.070
0.415	0.070
0.439	0.070

0.464	0.070
0.488	0.069
0.513	0.069
0.537	0.069
0.561	0.069
0.586	0.069
0.610	0.069
0.635	0.069
0.659	0.069
0.683	0.069
0.708	0.069
0.732	0.069
0.757	0.069
0.781	0.069
0.805	0.069
0.830	0.068
0.854	0.068
0.879	0.068
0.903	0.068
0.928	0.068

MAXIMUM OUTFLOW IS 14.34 C.F.S.
MAXIMUM STAGE IS 2.47535 FT.
MAXIMUM STORAGE IS 4752 CUBIC FEET

WYTHE CANDY ADDITION - POND (POSTDEVELOPMENT)

WYTHE CANDY ADDITION - POND (POSTDEVELOPMENT)

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 100 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 77
HYDRAULIC LENGTH MODIFIED (%) = 20
COMPOSITE CURVE NUMBER = 75
SLOPE ADJUSTMENT FACTOR = 1.15
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .061 HOURS
TIME OF CONCENTRATION ADJUSTED IS .102 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 31 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
	0,0
.024	2.086
.049	6.482
.073	13.296
.098	19.344
.122	24.359
.146	28.249
.171	30.829
.195	29.148
.22	24.329
.244	16.408
.268	9.939
.293	5.012
.317	1.683
.342	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	32.09	5504

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.002
0.024	0.010
0.049	0.027
0.073	0.054
0.098	6.927
0.122	26.132
0.146	29.509
0.171	29.984
0.195	26.767
0.220	20.425
0.244	13.238
0.268	7.526
0.293	3.384
0.317	0.864
0.342	0.070
0.366	0.070
0.391	0.070
0.415	0.070
0.439	0.070
0.464	0.070
0.488	0.069
0.513	0.069
0.537	0.069
0.561	0.069
0.586	0.069
0.610	0.069
0.635	0.069
0.659	0.069
0.683	0.069
0.708	0.069
0.732	0.069
0.757	0.069
0.781	0.069
0.805	0.069
0.830	0.068
0.854	0.068
0.879	0.068
0.903	0.068
0.928	0.068

MAXIMUM OUTFLOW IS 29.98 C.F.S.
MAXIMUM STAGE IS 2.934104 FT.
MAXIMUM STORAGE IS 5409 CUBIC FEET

ROUTING STILL MEETS
 PREDEVELOPMENT
 W/ ADJUSTED CURVE #

WYTHE CANDY

WYTHE CANDY

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 2 YEAR
 DRAINAGE AREA (ACRES) = 3.94
 AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
 HYDRAULIC LENGTH (FT) = 900
 IMPERVIOUS SURFACE (%) = 77
 HYDRAULIC LENGTH MODIFIED (%) = (20) *seems very low*
 COMPOSITE CURVE NUMBER = 80
 SLOPE ADJUSTMENT FACTOR = 1
 PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
 (SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .058 HOURS
 TIME OF CONCENTRATION ADJUSTED IS .096 HOURS
 THE PEAK DISCHARGE FROM THIS WATERSHED IS 8 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
 INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.023	.495
.046	1.562
.069	3.23
.093	4.761
.116	6.066
.139	7.132
.162	7.899
.185	7.563
.208	6.37
.232	4.32
.255	2.63
.278	1.333
.301	.45
.324	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	30.09	5504

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
 OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.000
0.023	0.002

0.046	0.006
0.069	0.013
0.093	0.022
0.116	0.034
0.139	0.046
0.162	0.056
0.185	0.063
0.208	0.068
0.232	1.479
0.255	1.948
0.278	0.963
0.301	0.275
0.324	0.070
0.347	0.070
0.370	0.070
0.394	0.070
0.417	0.070
0.440	0.070
0.463	0.070
0.486	0.069
0.509	0.069
0.532	0.069
0.556	0.069
0.579	0.069
0.602	0.069
0.625	0.069
0.648	0.069
0.671	0.069
0.695	0.069
0.718	0.069
0.741	0.069
0.764	0.069
0.787	0.069
0.810	0.068
0.833	0.068
0.857	0.068
0.880	0.068

MAXIMUM OUTFLOW IS 1.948 C.F.S.
MAXIMUM STAGE IS 2.062558 FT.
MAXIMUM STORAGE IS 4161 CUBIC FEET

WYTHE CANDY

WYTHE CANDY

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 10 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 77
HYDRAULIC LENGTH MODIFIED (%) = 20
COMPOSITE CURVE NUMBER = 80
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .058 HOURS
TIME OF CONCENTRATION ADJUSTED IS .096 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 16 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.023	1.033
.046	3.234
.069	6.643
.093	9.692001
.116	12.214
.139	14.187
.162	15.512
.185	14.692
.208	12.276
.232	8.288
.255	5.024
.278	2.536
.301	.853
.324	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	30.09	5504

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.001
0.023	0.005

0.046	0.013
0.069	0.027
0.093	0.046
0.116	0.061
0.139	5.400
0.162	14.447
0.185	13.549
0.208	10.502
0.232	6.915
0.255	3.991
0.278	1.849
0.301	0.522
0.324	0.070
0.347	0.070
0.370	0.070
0.394	0.070
0.417	0.070
0.440	0.070
0.463	0.070
0.486	0.069
0.509	0.069
0.532	0.069
0.556	0.069
0.579	0.069
0.602	0.069
0.625	0.069
0.648	0.069
0.671	0.069
0.695	0.069
0.718	0.069
0.741	0.069
0.764	0.069
0.787	0.069
0.810	0.068
0.833	0.068
0.857	0.068
0.880	0.068

MAXIMUM OUTFLOW IS 14.447 C.F.S.
MAXIMUM STAGE IS 2.478914 FT.
MAXIMUM STORAGE IS 4757 CUBIC FEET

WYTHE CANDY

WYTHE CANDY

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 25 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 77
HYDRAULIC LENGTH MODIFIED (%) = 20
COMPOSITE CURVE NUMBER = 80
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .058 HOURS
TIME OF CONCENTRATION ADJUSTED IS .096 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 23 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
	0,0
.023	1.538
.046	4.801
.069	9.833999
.093	14.286
.116	17.917
.139	20.704
.162	22.51
.185	21.217
.208	17.666
.232	11.902
.255	7.201
.278	3.628
.301	1.218
.324	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	30.09	5504

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0.000	0.001
0.023	0.007

0.046	0.019
0.069	0.040
0.093	0.060
0.116	9.125
0.139	20.765
0.162	21.789
0.185	19.600
0.208	15.109
0.232	9.926
0.255	5.719
0.278	2.645
0.301	0.746
0.324	0.070
0.347	0.070
0.370	0.070
0.394	0.070
0.417	0.070
0.440	0.070
0.463	0.070
0.486	0.069
0.509	0.069
0.532	0.069
0.556	0.069
0.579	0.069
0.602	0.069
0.625	0.069
0.648	0.069
0.671	0.069
0.695	0.069
0.718	0.069
0.741	0.069
0.764	0.069
0.787	0.069
0.810	0.068
0.833	0.068
0.857	0.068
0.880	0.068

MAXIMUM OUTFLOW IS 21.79 C.F.S.
MAXIMUM STAGE IS 2.723518 FT.
MAXIMUM STORAGE IS 5108 CUBIC FEET

WYTHE CANDY

WYTHE CANDY

INPUT DESIGN DATA

DESIGN STORM FOR ANALYSIS = 100 YEAR
DRAINAGE AREA (ACRES) = 3.94
AVERAGE SLOPE OF DRAINAGE AREA (%) = 6
HYDRAULIC LENGTH (FT) = 900
IMPERVIOUS SURFACE (%) = 77
HYDRAULIC LENGTH MODIFIED (%) = 20
COMPOSITE CURVE NUMBER = 80
SLOPE ADJUSTMENT FACTOR = 1
PONDING ADJUSTMENT FACTOR = 1

RESULTS OF HYDRAULIC CALCULATIONS
(SCS TR-55 & TP-149 PROCEDURES)

WATERSHED LAG ADJUSTED (IMPER. AREAS & CHAN. IMPROV.) IS .058 HOURS
TIME OF CONCENTRATION ADJUSTED IS .096 HOURS
THE PEAK DISCHARGE FROM THIS WATERSHED IS 30 C.F.S.

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
INFLOW HYDROGRAPH

(HOURS)	(C.F.S.)
0,0	
.023	2.054
.046	6.398
.069	13.081
.093	18.954
.116	23.699
.139	27.298
.162	29.574
.185	27.791
.208	23.089
.232	15.537
.255	9.387999
.278	4.725
.301	1.584
.324	0

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CF)
0	0	0
1	.05	2434
2	.07	4072
3	30.09	5504

THE FOLLOWING ARE TIME INCREMENTS AND ORDINATES OF THE
OUTFLOW HYDOGRAPH

(HOURS)	(C.F.S.)
0.000	0.002
0.023	0.009
0.046	0.026
0.069	0.052
0.093	3.201
0.116	23.994
0.139	28.136
0.162	28.646
0.185	25.656
0.208	19.740
0.232	12.953
0.255	7.454
0.278	3.444
0.301	0.971
0.324	0.070
0.347	0.070
0.370	0.070
0.394	0.070
0.417	0.070
0.440	0.070
0.463	0.070
0.486	0.069
0.509	0.069
0.532	0.069
0.556	0.069
0.579	0.069
0.602	0.069
0.625	0.069
0.648	0.069
0.671	0.069
0.695	0.069
0.718	0.069
0.741	0.069
0.764	0.069
0.787	0.069
0.810	0.069
0.833	0.068
0.857	0.068
0.880	0.068

MAXIMUM OUTFLOW IS 28.646 C.F.S.
MAXIMUM STAGE IS 2.951899 FT.
MAXIMUM STORAGE IS 5435 CUBIC FEET

D.H.W



P.O. Box 3505
 Williamsburg, Virginia 23187
 (757) 253-0673
 Fax (757) 253-2319

PROJECT WYTHE CANDY WAREHOUSE ADDITION
 DATE 3/15/99 COMM NO. 1990050
 CAL DF CKD _____ PAGE # _____
 TITLE INFILTRATION TRENCH DESIGN

■ INFILTRATION TRENCH SOUTH OF THE PROPOSED BUILDING:

- PROP. IMP. AREA = $\frac{\text{EXIST. BLDGS.}}{2} + \frac{\text{PROP. BLDG.}}{2} + \text{PROP. PAVEMENT} + \text{EXIST. PAVEMENT}$
 $= \frac{15,675}{2} + \frac{12,675}{2} + 20,125 + 17,789 + 65,945$
 $= 107,946 \text{ s.f. (2.48 AC)}$

- REQ. VOLUME = $107,946 \text{ s.f.} \times 0.08 = 8636 \text{ CF.}$
- REQ. VOLUME (w/STONE) = $\frac{8636 \text{ CF}}{.4} = 21,590 \text{ CF.}$
- DESIGN = $136' \times 53' \times 3'$ DEEP = 21,624 CF ←

■ INFILTRATION TRENCH NORTH OF PROPOSED BUILDING:

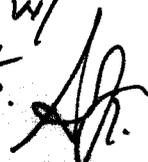
- PROP. IMP. AREA = $\frac{\text{EX. BLDG}}{2} + \frac{\text{PROP. BLDG.}}{2}$
 $= 24,213 \text{ s.f. (0.56 AC)}$

- REQ. VOLUME = $24,213 \times 0.08 = 1,937 \text{ CF}$
- REQ. VOLUME (w/STONE) = $\frac{1937}{.4} = 4,842 \text{ CF.}$

- DESIGN = $97' \times 25' \times 2'$ DEEP = 4,850 CF. ←

Note:
Channel
Repair Plan.

GAVE VERBAL
GO-AHEAD TO
PROCEED W/
CHANNEL
REPAIR.



06-21-01



Committed to Excellence

449 McLaws Circle • P. O. Box 3505, Williamsburg, VA 23187
(757) 253-0673 • Fax (757) 253-2319 • E-Mail: williamsburg@djginc.com
Norfolk - Virginia Beach Area (757) 874-5015

PROJECT WYTHE CANDY

DATE 4/16/01

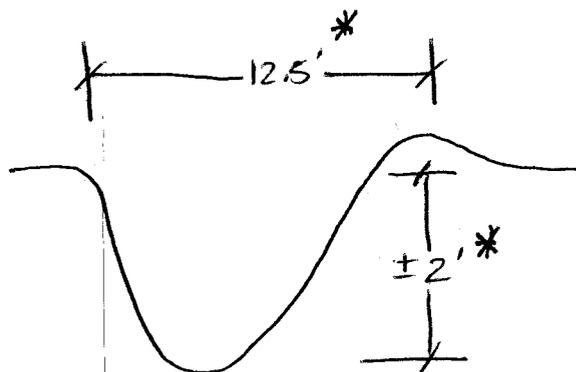
COMM NO. _____

CAL DFL CKD _____

PAGE # _____

TITLE Channel Adequacy Calc. (to pond)

DRAINAGE AREA TO SWAGE → TO POND: ≈ 3 ACRES



* FIELD CONFIRMED
BY SJ THOMAS 4/12/01.
DESIGN SECT
ASSUMED PARABOLIC,
TRAPEZOIDAL IN
FIELD 4' BW.

- $A = \frac{2}{3} (12.5')(2') = 16.67 \text{ FT}^2 \checkmark$

- SLOPE = 2.2% \checkmark

(89.41 - 87.21 / 100 = 2.2%)

- $R = \frac{(12.5)^2 (2)}{1.5(12.5)^2 + 4(2)^2} = \frac{312.5}{250.38} = 1.25'$

- PERMISSIBLE VELOCITY (V) = 5 FT/SEC.

- "n" VALUES:

$n_1 = 0.02$

$n_2 = 0.005$

$n_3 = 0$

$n_4 = 0.02$

$n_5 = 0.01$

$n_6 = 0$

$\sum n = 0.055$

- CALCULATE (V):

$V = \frac{1.49}{n} (R)^{2/3} (S)^{1/2} = \underline{4.66 \text{ FT/SEC}} \checkmark \text{ OK}$

- CALCULATE (Q):

$Q = VA = 4.66(16.67) = \underline{77.7 \text{ CFS}} \checkmark \text{ OK}$

ACTUAL Q_{10} ?
TO CHANNEL

(∴ CHANNEL IS ADEQUATE)

* USING TRM C-35 w/ PERMISSIBLE VELOCITY = 12 CFS (FOR BARE SOIL) / 18 CFS (FOR VEGETATED)



THE DeYOUNG-JOHNSON GROUP, INC.
 P.O. Box 3505
 WILLIAMSBURG, VIRGINIA 23187
 (804) 253-0673

JOB #1900790 WYTHE CANDY WAREHOUSE ADDITION

SHEET NO. 1 OF 1

CALCULATED BY PENCI DATE 2/11/91

CHECKED BY _____ DATE _____

SCALE SP-2-91 COMPS.

DETERMINE 2 YEAR STORM ADEQUACY PROPOSED INFILTRATION TRENCH

Existing Conditions:

Total area drainage limits to trench = 60,900 SF
 Impervious area = 7800 SF Use CN = 98 (Roof + Roof)
 Pervious area = 53,100 SF Use CN = 73 (Woods & Grass Poor Condition)

Average CN = 76
 Rainfall (2yr storm) = 3.5"
 Runoff Depth = 1.37"

Future Conditions:

Total area = 60,900 SF
 Impervious area = 34,290 SF Use CN = 98 (Roof + Roof)
 Pervious area = 26,610 SF Use CN = 61 (Improved grass condition)

Average CN = 82
 Rainfall (2yr storm) = 3.5"
 Runoff Depth = 1.79"

store difference

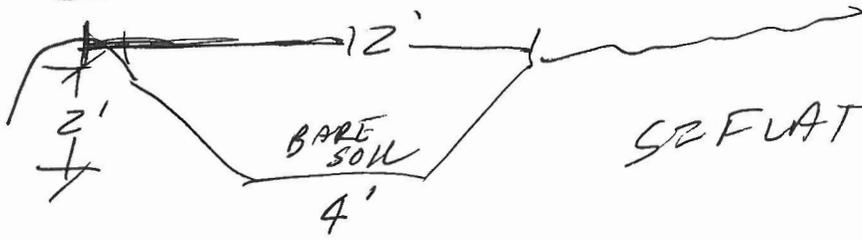
$1.79" - 1.37" = 0.42" (0.035') \text{ required}$

$\text{Area} = 60,900 \text{ SF} \times 0.035' = \underline{2132 \text{ C.F. required}} \quad \checkmark \text{ (OK)}$

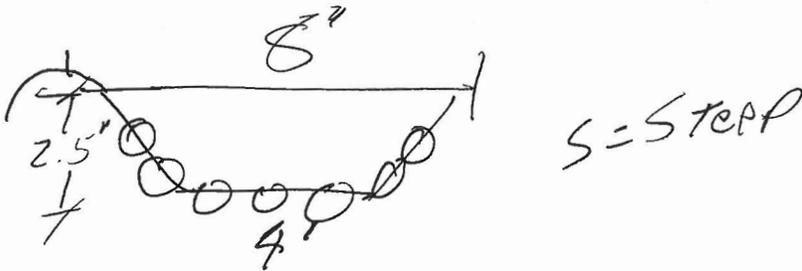
$\text{Proposed Trench Capacity} = \underline{2868 \text{ CF}}$

FLAT SECT

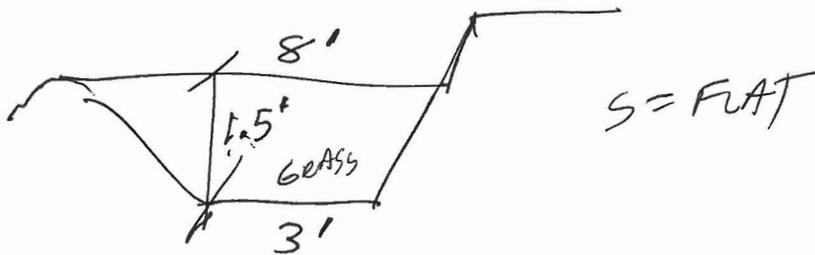
@ Low Berm Pt.



Curve @ MH

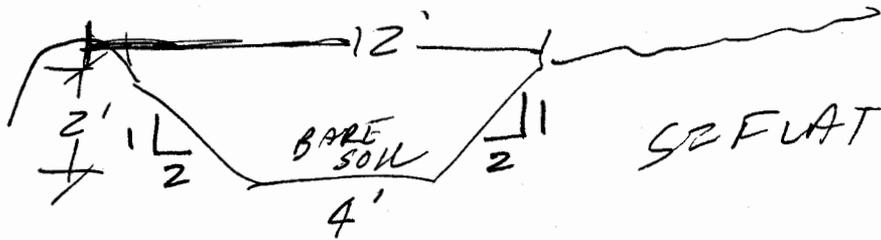


UPPER @ RIPRAP FLUME

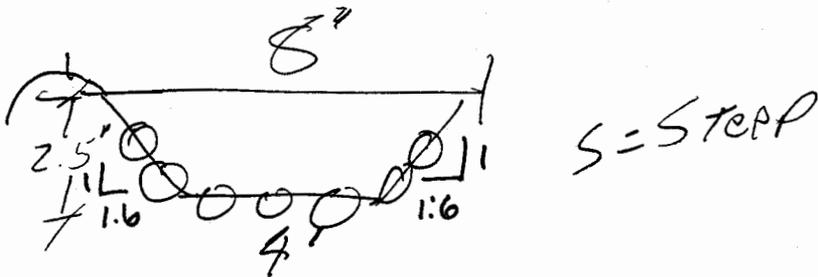


FLAT SECT

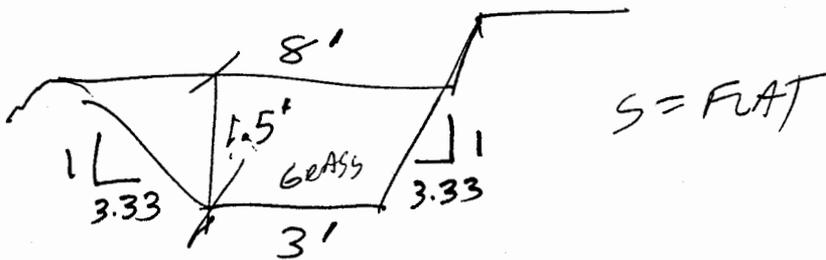
@ Low Berm Pt.



Curve @ MH



UPPER @ RIPRAP FLUME





1006 RICHMOND ROAD
WILLIAMSBURG, VA 23185
757-253-0673
FAX: 757-253-2319

COMMUNICATION RECORD

Project: Longhill Station 3/4 **Project Number:** 1980152

Subject: Pond "D" **Date:** 6/30/99

To: File **Telephone Conversation**
Memorandum
Other Meeting

Participants: **Representing**
Darryl Cook - James City County Code Compliance
Dawn Lemon, Phillip Goering - DJG, Inc.

The 2:1 side slope on the downstream face of dam is not optimal but is acceptable. The side slope will be investigated during construction to see if there is an opportunity to reduce the slope to 3:1.

The plans are now fully approvable by Code Compliance. Once a bond amount is determined and satisfied, a land disturbing permit may be obtained.

CC: FILE
DARRYL COOK
DAWN LEMON
PHILLIP GOERING

Signed PHILLIP GOERING



1006 RICHMOND ROAD
WILLIAMSBURG, VA 23185
757-253-0673
FAX: 757-253-2319

COMMUNICATION RECORD

Project: Wythe Candy **Project Number:** 1990050

Subject: SWM Pond **Date:** 6/30/99

To: File **Telephone Conversation**
Memorandum
Other Meeting

Participants: **Representing**
Darryl Cook - James City County Code Compliance
Dawn Lemon, Phillip Goering - DJG, Inc.

Darryl is going to review the latest calculations (attached), and inspect the Natural channel into which the proposed pond would discharge. He expects to reach a decision by Friday (7/2/99) as to the "approvability" of the proposed pond system.

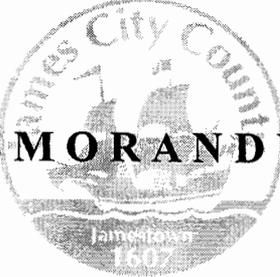
DJG is to explore the option of having the riser and barrel pipe made of reinforced concrete.

Of note, the sanitary sewer has not been laid, yet.

CC:

File
Darryl Cook
Dawn Lemon

Signed Phillip Goering



MEMORANDUM

Date: April 12, 2001
To: OK James Construction; DJG, Inc.
From: Scott J. Thomas, P.E. *SJT*
Subject: Wythe Candy Warehouse (County Plan SP-37-99)
County BMP ID Code: YC 014

Onsite Meeting Thursday April 12th 2001
Final Inspection/Request for Bond Release/South Channel Issue

This memorandum outlines a recent time-line for the above referenced project and summarizes requirements necessary to proceed with full release of the bond for the project.

Timeline

10/06/00 Record drawing received for the project.
10/25/00 Record drawing review and final construction (field) inspection performed by JCC ENV DIV.
10/26/00 JCC ENV DIV letter forwarded to Engineer requesting construction certification for the BMP, minor corrections to record drawing and four (4) construction related issues needed to be addressed (brief summary as follows):

- 1a) Channel berm failure and deep scour hole.
- 2a) Perimeter bare soil areas needed stabilized with seed & mulch.
- 3a) Removal of vegetated growth within 15 feet of BMP riser.
- 4a) Remove site erosion & sediment control measures (silt fence, etc.)

2/22/01 JCC ENV DIV letter dated 10/26/00 forwarded to Contractor.
2/26/01 Revised record drawing and construction certification received from Engineer. Both reviewed & found acceptable by JCC Environmental Division.
03/02/01 Followup final construction (field) inspection by JCC Environmental Division.

Based on the followup inspection, the channel berm failure was repaired, the scour hole was filled, some perimeter bare soil areas were seeded and mulched and vegetation around the BMP riser was properly removed. However, some of the initial construction related items were not performed and additional construction-related items were observed along the south channel.

- 1b) Bare soil areas present between the new building and the south channel require seeding & mulching.
- 2b) Silt fence along the south channel was not removed.
- 3b) Where the south channel enters the basin, riprap has slid off the underlying geotextile. Geotextile is exposed and slope stabilization rock needs restored.
- 4b) A small scour hole has formed just downstream of the area where rock fill was placed in the previous scour hole. Also, the outer channel side slope is eroding at the curve.
- 5b) Excessive sediment accumulations were present at the upstream side of the rock check dams.

Assessment

Based on our field inspections, it appears the dynamics of the south channel are changing in a relative short time period. The initial channel berm failure was an indicator of an adequacy problem (capacity) on the flatter channel segment and the scour hole was an indicator of an adequacy (erosion resistance) problem on the steeper channel segment. Once these areas were repaired and channel flow was re-established to the BMP, a subsequent outlet protection failure has resulted. In addition, once the two initial channel problem areas were corrected, the channel experienced additional erosion/capacity problems in a relatively quick manner.

Based on a review of the approved plans and computations for the project, there appeared to be no formal design section for the south channel to ensure erosion resistance of the steeper channel segment (through the curve) and to ensure adequate capacity at the flatter portion. Approved plan SP-37-99 called for the contractor to provide for positive drainage to pond through the swale. There was no typical design section shown on the plan and no formal design to provide a stormwater conveyance channel and diversion dike of adequate bottom width, side slope, channel depth, freeboard or lining.

Minimum Standard # 11 of the Virginia Erosion & Sediment Control Regulations 4VAC50-30 requires newly constructed stormwater conveyance channels to have adequate outlet protection and any required temporary or permanent channel linings to be installed. In addition, Minimum Standard 3.17 of the VESCH (Stormwater Conveyance Channels) requires the capacity of onsite channels to be sufficient to convey the 10-year design storm without overtopping the banks and velocity from a 2-year design storm to not exceed the permissible velocity of the lining being used.

Conclusion

In addition to addressing construction-related Items 1b-5b as outlined above, the lower portion of the south channel needs evaluated for erosion resistance (velocity) on its steep segment and for capacity (normal depth) on the flat segment and an adequate onsite channel segment needs to be provided. If the channel section **as constructed** is adequate for anticipated design flow conditions for the 2- and 10-year design storm events, then Items 1b-5b as outlined above need performed. If the channel section **as constructed** is considered inadequate for the anticipated design flow conditions for the 2-and 10-year storm events, then a properly constructed channel section, with acceptable linings, will be required to be established at this location.

G:\Shared\1999\SP-37-99.2a



JAMES CITY COUNTY - ENVIRONMENTAL DIVISION

Office Phone: 757-253-6670

Fax Number: 757-259-4032

DATE SENT: 02/22/01

Name: PATTY
Firm or Company: OK JAMES CONSTRUCTION
Facsimile Number: 220-9370
Number of pages including this transmittal: 2
From: SCOTT J. THOMAS

James City County
P O Box 8784
Williamsburg VA 23187-8784

Comments:
WYTHE CANDY WAREHOUSE

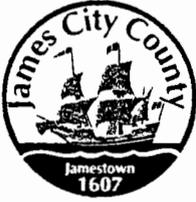
If you do not receive all pages, call 757-253-6670 as soon as possible



SCOTT J. THOMAS, P.E.
CIVIL ENGINEER

ENVIRONMENTAL DIVISION

101 MOUNTS BAY ROAD, P.O. Box 8784 (757) 253-6639
WILLIAMSBURG, VIRGINIA 23187-8784 FAX: (757) 259-4032
E-MAIL: scottt@james-city.va.us



DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. Box 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678
INTEGRATED PEST MANAGEMENT
(757) 259-4116

October 26, 2000

DJG, Inc.
P.O. Box 3505
449 McClaws Circle
Williamsburg, Va. 23187
Attn: Mr. Phillip Goering, P.E.

Re: Wythe Candy Warehouse Addition (County Plan No. SP-37-99)
6623 Richmond Road
Stormwater Management/BMP Facility (YC 014)

Dear Mr. Goering:

The Environmental Division has reviewed a record drawing as submitted to our office on October 6th for the above referenced project. The record drawing provides as-built information for a stormwater management/BMP dry detention facility and its associated stormwater conveyance channel systems as located in the southwest corner of the site.

Based on our review of the drawing and a concurrent field observation, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Construction Certification:

1. In accordance with Note # 18 on Sheet C2 of the approved plan, construction certification for the BMP is required. None was provided.

Record Drawing:

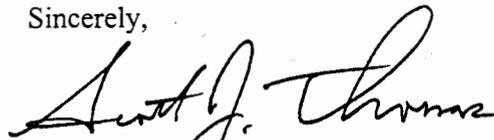
2. Show the following additional information on the record drawing: constructed dimensions for the emergency spillway including bottom width and lined depth; and provide additional spot elevations at the downstream (south) side of the fill embankment slope or toe as required to reflect the constructed downstream embankment slope.
3. A professional seal is required on the record drawing.
4. If possible add the following County identifiers to the lower right hand corner of the record drawing: County Plan Number SP-37-99 and BMP ID No. YC 014.

Construction - Related Items:

5. The stormwater conveyance channel which traverses from the paved parking area to the BMP along the south side of the new building has two significant problems. Firstly, at a location approximately 50 feet back (west) from the pond near the southwest corner of the warehouse, the downslope side channel berm appears to not be of sufficient height to contain channel flow and the channel is overtopping. Based on gully erosion and complete failure of the silt fence downslope of the channel berm, it is apparent that the channel is overtopping at this location and flow is being conveyed (bypassed) directly offsite in an uncontrolled manner. The channel and berm at this location need restored to its appropriate design channel section. Secondly, at a location approximately 100 feet back (west) from the pond near the southeast corner of the warehouse, there is 3 foot deep scour hole just downstream of the rock check dam. This scour hole needs properly repaired by filling and stabilizing with matting and/or seed and mulch.
6. There was a considerable amount of bare soil areas present in the southwest corner of the site, particularly along the access path to the pond (on the west side of the new warehouse), within and adjacent to the south stormwater conveyance channel, the emergency spillway vicinity and within the bottom of the basin. These areas need adequately stabilized by reseeding and mulching.
7. Remove excessive vegetative growth within 15 feet of the pond riser and clean the wire mesh and pipe perforations on the 4 inch PVC water quality orifice. Debris was present in the wire mesh screen around the perforated pipe.
8. Following adequate stabilization, all existing site silt fence control measures should be removed.

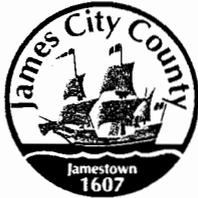
One reproducible and one blue/black line set of the record drawings are requested once the above items are adequately addressed. Please contact me at 757-253-6639 if you have any further comments or questions relative to record drawing or construction certification requirements or construction-related punch list items for this project.

Sincerely,



Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

G:\SWMProg\AsBuilts\SP-37-99.cert



DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678
INTEGRATED PEST MANAGEMENT
(757) 259-4116

October 26, 2000

DJG, Inc.
P.O. Box 3505
449 McClaws Circle
Williamsburg, Va. 23187
Attn: Mr. Phillip Goering, P.E.

Re: Wythe Candy Warehouse Addition (County Plan No. SP-37-99)
6623 Richmond Road
Stormwater Management/BMP Facility (YC 014)

Dear Mr. Goering:

The Environmental Division has reviewed a record drawing as submitted to our office on October 6th for the above referenced project. The record drawing provides as-built information for a stormwater management/BMP dry detention facility and its associated stormwater conveyance channel systems as located in the southwest corner of the site.

Based on our review of the drawing and a concurrent field observation, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Construction Certification:

1. In accordance with Note # 18 on Sheet C2 of the approved plan, construction certification for the BMP is required. None was provided.

Record Drawing:

2. Show the following additional information on the record drawing: constructed dimensions for the emergency spillway including bottom width and lined depth; and provide additional spot elevations at the downstream (south) side of the fill embankment slope or toe as required to reflect the constructed downstream embankment slope.
3. A professional seal is required on the record drawing.
4. If possible add the following County identifiers to the lower right hand corner of the record drawing: County Plan Number SP-37-99 and BMP ID No. YC 014.

Construction - Related Items:

5. The stormwater conveyance channel which traverses from the paved parking area to the BMP along the south side of the new building has two significant problems. Firstly, at a location approximately 50 feet back (west) from the pond near the southwest corner of the warehouse, the downslope side channel berm appears to not be of sufficient height to contain channel flow and the channel is overtopping. Based on gully erosion and complete failure of the silt fence downslope of the channel berm, it is apparent that the channel is overtopping at this location and flow is being conveyed (bypassed) directly offsite in an uncontrolled manner. The channel and berm at this location need restored to its appropriate design channel section. Secondly, at a location approximately 100 feet back (west) from the pond near the southeast corner of the warehouse, there is 3 foot deep scour hole just downstream of the rock check dam. This scour hole needs properly repaired by filling and stabilizing with matting and/or seed and mulch.
6. There was a considerable amount of bare soil areas present in the southwest corner of the site, particularly along the access path to the pond (on the west side of the new warehouse), within and adjacent to the south stormwater conveyance channel, the emergency spillway vicinity and within the bottom of the basin. These areas need adequately stabilized by reseeding and mulching.
7. Remove excessive vegetative growth within 15 feet of the pond riser and clean the wire mesh and pipe perforations on the 4 inch PVC water quality orifice. Debris was present in the wire mesh screen around the perforated pipe.
8. Following adequate stabilization, all existing site silt fence control measures should be removed.

One reproducible and one blue/black line set of the record drawings are requested once the above items are adequately addressed. Please contact me at 757-253-6639 if you have any further comments or questions relative to record drawing or construction certification requirements or construction-related punch list items for this project.

Sincerely,



Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

G:\SWMProg\AsBuilts\SP-37-99.cert

DJG, INC.
P.O. Box 3505
449 McLaws Circle
WILLIAMSBURG, VIRGINIA 23187

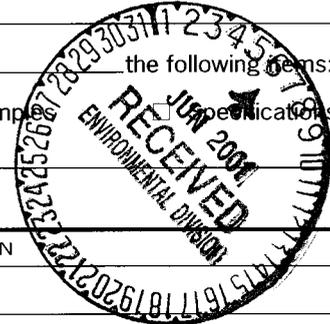
LETTER OF TRANSMITTAL

(757) 253-0673 or 874-5015
FAX (757) 253-2319

DATE	6/6/01	JOB NO.	1990050
ATTENTION	SCOTT THOMAS		
RE:	WYTHE CANDY - SITE IMPROVEMENT PLAN PER SITE MTG. ON 4/12/01 SP-37-99; YC014		

TO JCC ENVIRONMENTAL DIVISION
ATTN: SCOTT THOMAS
(HAND DELIVERY)

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____



COPIES	DATE	NO.	DESCRIPTION
1	6/6/01	1	SITE IMPROVEMENT PLAN
1	4/16/01	1	CHANNEL ADEQUACY CALCULATION
1	—	5	TURF RENOV. MAT INSTALLATION GUIDELINES

THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit _____ copies for approval
- For your use Approved as noted Submit _____ copies for distribution
- As requested Returned for corrections Return _____ corrected prints
- For review and comment _____
- FOR BIDS DUE _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

SCOTT,
PLEASE CONTACT MYSELF OR PHILIP
GOERING IF YOU HAVE ANY COMMENTS
OR QUESTIONS. THANK YOU!
DAWN LEMON

COPY TO File

SIGNED: Dawn Lemon

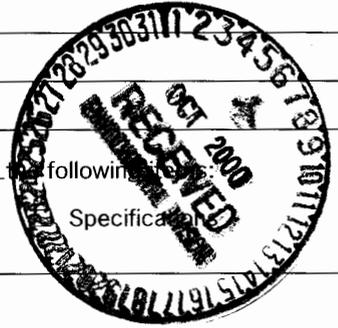
DJG, INC.
P.O. Box 3505
449 McLaws Circle
WILLIAMSBURG, VIRGINIA 23187

LETTER OF TRANSMITTAL

(757) 253-0673 or 874-5015
FAX (757) 253-2319

TO JCC ENVIRONMENTAL DIVISION
ATTN: DARRYL COOK
(HAND DELIVERY)

DATE	10/6/00	JOB NO.	1990050
ATTENTION	DARRYL COOK		
RE:	WYTHE CANDY POND RECORD DRAWING SUBMITTAL		
	YC 014		



- WE ARE SENDING YOU Attached Under separate cover via _____ following _____
- Shop drawings Prints Plans Samples
 Copy of letter Change order _____

COPIES	DATE	NO.	DESCRIPTION
3	10/6/00	1	WYTHE CANDY WAREHOUSE ADDITION - POND RECORD DRAWING

- THESE ARE TRANSMITTED as checked below:
- For approval Approved as submitted Resubmit _____ copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ corrected prints
 For review and comment _____
 FOR BIDS DUE _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS DARRYL,
PLEASE CALL IF YOU HAVE ANY QUESTIONS
@ 253-0673. THANK YOU!
Dawn Lemon

COPY TO File SIGNED: Dawn Lemon

Leah Hardenbergh

From: William Cain
Sent: Thursday, May 24, 2012 8:38 AM
To: Michael Woolson; Scott Thomas; Fran Geissler
Cc: Barry Moses; Melanie Davis; TC Cantwell; Tina Creech
Subject: RE: Candy Store

Mike pretty much hit all of the major points. The current status of the BMP is the barrel is exposed due to piping and the basin hasn't been operating properly for quite some time which was the genesis of the SUP condition provided with the 2006 SUP. I will be more than happy to work with Pat should he have any questions related to the upgrade. As Mike indicated, once the plan is complete and the record drawings have been approved, the information will be forwarded to Stormwater accordingly.

William Cain
Chief Civil Engineer



Engineering and Resource Protection
101-E Mounts Bay Road
Williamsburg, VA 23185
P: 757-253-6702
F: 757-259-4032
jamescitycountyva.gov

From: Michael Woolson
Sent: Thursday, May 24, 2012 8:04 AM
To: Scott Thomas; Fran Geissler
Cc: Barry Moses; William Cain; Melanie Davis; TC Cantwell; Tina Creech
Subject: RE: Candy Store

The SUP states that this BMP is required to be upgraded to more current standards. The original is an older design. The plan that Scott references below takes care of this SUP requirement. I guess there was some miscommunication, but this BMP (as I understate the way things are supposed to work) will fall back under our Division for the reconstruction and new as-builts/CC. Once those have been completed and signed off on, then it will go back over to your Division for regular/routine maintenance.

From: Scott Thomas
Sent: Wednesday, May 23, 2012 4:10 PM
To: Fran Geissler
Cc: Michael Woolson; Barry Moses; William Cain; Melanie Davis; TC Cantwell; Tina Creech
Subject: RE: Candy Store

There is a plan. The plan in our office was for the Candy Store Turn Lane and BMP Expansion SP-79-07. Woolson and Cain were the reviewers. Tina Creech will be assigned inspector. Approval 3/30/12, transmittal attached. Chesapeake Bay Exception administrative, CBE-12-090 issued 3/13/12, copy attached. The BMP upgrade I believe was for the facility in the back. Land Disturbing Permit not issued yet.

R	4	WAC	MDW	OK	YC	Y	2	SP-079-07	Candy Store Turn Lane and BMP Expansion	03/28/12	03/29/12	0.50	03/30/12	1.00	04/18/12	03/30/12	Approved	Yes	2	LDP required.
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							(6623 Richmond Road)												
--	--	--	--	--	--	--	----------------------	--	--	--	--	--	--	--	--	--	--	--	--

*Please note that County e-mail addresses have changed.
Please use: Scott.Thomas@jamescitycountyva.gov for all future correspondence*

Scott J. Thomas, P.E.
Director of Engineering and Resource Protection



101-E Mounts Bay Road
Williamsburg, VA 23185
P: 757-253-6639
F: 757-259-4032
jamescitycountyva.gov

From: Fran Geissler
Sent: Wednesday, May 23, 2012 12:06 PM
To: Scott Thomas
Cc: Pat Menichino
Subject: FW: Stormwater Facility YC-014

Scott: Apparently there is some confusion regarding what is needed at this site. The contractor was told the BMP was 'blown' and needed to be upgraded. He has a plan approved from ERP and is getting ready to get a LDP. Our records do not show that the BMP is blown and our visits to the site don't support that either. It does need maintenance. So clearly something else is going on. Who in ERP should Pat work with to sort this out? I'll be out of the office the rest of the week but available by cell phone and email. My number is 757-585-5653.

THanks for your help.

From: Pat Menichino
Sent: Wednesday, May 23, 2012 11:43 AM
To: Fran Geissler
Subject: Stormwater Facility YC-014

Fran,

This morning I met with a Mr. Mike Burnette at the Candy Factory located at 6623 Richmond Road. Mr. Burnette requested my assistance in determining the maintenance requirements for the two onsite existing stormwater facilities (YC-014 & YC055). Both of these stormwater facilities were constructed/completed and turned over to the Stormwater Division for oversight.

During our discussion Mr. Burnette said that YC-014 was scheduled to be reconstructed and that he had to complete the land disturbing permit process through ERP. Mr. Burnette said the County was requiring him to rebuild the stormwater facility, as part of his plan to alter the interior of the existing onsite buildings. He stated that the plan did not include any expansion of impervious surfaces.

I am unaware of any communication between ERP and Stormwater concerning proposed modifications to a stormwater facility that is under our inspection program.

I have indicated to Mr. Burnette that I will contact him concerning what maintenance he should perform on YC-014, once we have determined which division has jurisdiction in this matter.

Thanks

pat,

Patrick T. Menichino
Project Manager
Stormwater Specialist



General Services Department
5320 Palmer Lane, Suite 2A
Williamsburg, VA 23188
P: 757-259-1443
F: 757-259-5833
jccEgov.com

TRANSMITTAL

Environmental Division

MAR 28 2012

RECEIVED

DATE: March 27, 2012

TO: Proffer Administrator
Engineering and Resource Protection

FROM: Jose Ribeiro, Senior Planner

SUBJECT: SP-0079-2007, The Candy Store Taper & BMP Upgrade
6623 Richmond Road

ITEMS

ATTACHED: Site Plan
Response Letter
Revised E & S Narrative (1 copy)

NOTE: Please provide comments by April 4, 2012

Thank you for your review,

Plan is approved by the Engineering and Resource Protection Division. A Land-Disturbing Permit and Siltation Agreement, with surety, is required for this project. A Declaration of Covenants - Inspection/Maintenance Agreement is required for this project because of BMP upgrades. Stormwater Facility inspection fees apply to the project for the BMP. Registration for a state USMP general permit for construction activities is required through the Virginia DCR.

0.45 Acres Disturbed
YC watershed
HVC Code JL 28

Autif Thurn
03-30-12



Development Management

101-A Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784
P: 757-253-6671
F: 757-253-6822
devman@james-city.va.us

jamescitycountyva.gov

Building Safety and Permits
757-253-6620

Engineering and Resource Protection
757-253-6670

Planning
757-253-6685

Zoning Enforcement
757-253-6671

March 13, 2012

Mr. Matt Roth
Roth Environmental
700 Prescott Circle
Newport News, Virginia 23602

RE: The Candy Store, BMP Upgrade and Taper
RPA Development – Administrative Exception
CBE-12-090; SP-079-07

Dear Matt:

Pursuant to your water quality impact assessment received on February 27, 2012, an exception is requested to the County's Chesapeake Bay Preservation Ordinance to allow for encroachment into the Resource Protection Area (RPA) for an existing, noncomplying BMP upgrade at The Candy Store on Richmond Road. The project affects approximately 8,701 square feet of the landward RPA associated with an existing stormwater management facility. The existing BMP is a dry pond facility identified with County BMP ID Code Number YC-014 which was approved under County Plan SP-037-99 on July 26, 1999.

Based on our review of the plan and WQIA, this exception is **approved**.

RPA did not exist at the location of the BMP at the time of submission, review, approval and construction of the BMP. However, RPA is now present at the BMP location due to Chesapeake Bay Ordinance amendments effective January 1, 2004. Due to the ordinance amendments, the RPA now encompasses the entire existing BMP.

The BMP is being upgraded to meet the current County stormwater requirements for that type of BMP facility proposed. RPA impacts for this upgrade include a new emergency spillway, enlarging the facility, and a new riser and outlet structure. The BMP impacts the landward 50 feet of the RPA buffer. Approval of the waiver is conditioned on the implementation of site plan SP-079-07, once approved by the Planning Division.

The exception request will become null and void if construction of the improvements have not commenced within 12 months of the date of this letter. Please contact us at 253-6670 if there are any questions.

Sincerely,

Michael D. Woolson, LA
Senior Watershed Planner
Engineering and Resource Protection

cc: Mr. Kenny Jenkins (via email)



DEVELOPMENT MANAGEMENT

ANNOTATED
COMMENTS
(2/23/01) DFL

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

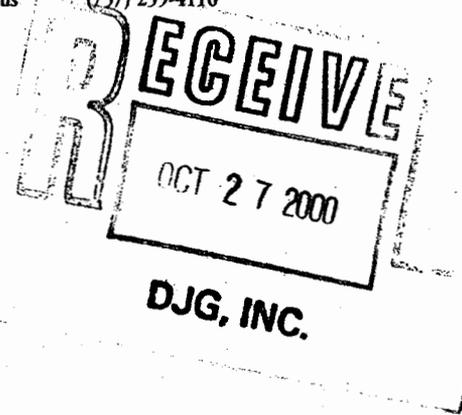
ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678
INTEGRATED PEST MANAGEMENT
(757) 259-4116

October 26, 2000

DJG, Inc.
P.O. Box 3505
449 McClaws Circle
Williamsburg, Va. 23187
Attn: Mr. Phillip Goering, P.E.



Re: Wythe Candy Warehouse Addition (County Plan No. SP-37-99)
6623 Richmond Road
Stormwater Management/BMP Facility (YC 014)

Dear Mr. Goering:

The Environmental Division has reviewed a record drawing as submitted to our office on October 6th for the above referenced project. The record drawing provides as-built information for a stormwater management/BMP dry detention facility and its associated stormwater conveyance channel systems as located in the southwest corner of the site.

Based on our review of the drawing and a concurrent field observation, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Construction Certification:

- ✓ In accordance with Note # 18 on Sheet C2 of the approved plan, construction certification for the BMP is required. None was provided. *RECEIVED DJG.*
 - *PROVIDED AS REQUESTED.*

Record Drawing:

- ✓ Show the following additional information on the record drawing: constructed dimensions for the emergency spillway including bottom width and lined depth; and provide additional spot elevations at the downstream (south) side of the fill embankment slope or toe as required to reflect the constructed downstream embankment slope.
 - *DIMENSIONS OF THE EMERGENCY SPILLWAY ARE PROVIDED ON DETAIL. SPOT ELEVATION ADDED TO THE DOWNSTREAM SIDE OF FILL EMBANKMENT AS REQUESTED.*
- ✓ A professional seal is required on the record drawing.
 - *SEAL PROVIDED AS REQUESTED.*
- ✓ If possible add the following County identifiers to the lower right hand corner of the record drawing: County Plan Number SP-37-99 and BMP ID No. YC 014.
 - *IDENTIFIERS PROVIDED AT THE LOWER RIGHT HAND CORNER OF THE DRAWING AS REQUESTED.*

RD ITEMS
OK. SAT
2-26-01

DJG, INC.
P.O. Box 3505
449 McLaws Circle
WILLIAMSBURG, VIRGINIA 23187

LETTER OF TRANSMITTAL

(757) 253-0673 or 874-5015
FAX (757) 253-2319

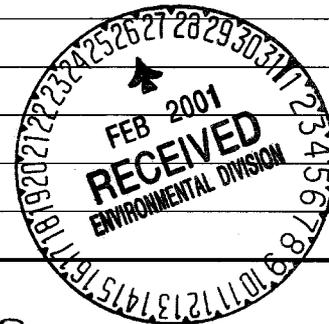
DATE	2/26/01	JOB NO.	1990050
ATTENTION	SCOTT THOMAS		
RE:	WYTHE CANDY - POND RECORD DRAWING RESUBMITTAL.		

TO JCC ENVIRONMENTAL DIVISION
ATTN: SCOTT THOMAS
(HAND - DELIVERED)

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:

- Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____

COPIES	DATE	NO.	DESCRIPTION
2	REV. 2/23/01	1	WYTHE CANDY WAREHOUSE ADDITION - POND RECORD DRAWING (11x17 DRAWING)
1	2/23/01	2	ANNOTATED COMMENTS



THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit 2 copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ corrected prints
 For review and comment _____
 FOR BIDS DUE _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS

SCOTT,
PLEASE DO NOT HESITATE TO CALL
IF YOU HAVE ANY COMMENTS OR
QUESTIONS! THANK YOU,
Dawn Lemon
ph. 253-0673

COPY TO File

SIGNED: Dawn J. Lemon



**James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities**

*FINAL INSPECTION FOR RECORD
DRAWING REVIEW.*

Database Inventory No. (if known): YC014 (SP-37-99)
 Name of Facility: Wythe Candy BMP No.: 1 of 1 Date: 10/25/00
 Location: 6623 Richmond Road
 Name of Owner: Wythe-Will Distribution Co.
 Inspector: St Thomas, MD wealson
 Type of Facility: DRY DETENTION EMBANKMENT
 Weather Conditions: Sunny, WARMs, High 80's
Emb - South

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

- O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory.
- Routine - The item checked requires attention, but does not present an immediate threat to the function of the BMP.
- Urgent - The item checked requires immediate attention to keep the BMP operational and prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:				
Grass Height	X			3" Height, stable
Vegetation Condition	X			
Tree Growth	X			
Erosion	X			None
Trash & Debris		X		Silt Fence needs removed.
Seepage	X			
Fencing or Benches	X			
Interior Landscaping/Planted Areas: <input type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input checked="" type="checkbox"/> Naturally Established Vegetation				
Vegetated Conditions	X			Bare Soil Conditions Mainly.
Trash & Debris	X			Minor woody debris.
Floating Material	X			
Erosion	X			
Sediment		X		4-6" deep at riser
Dead Plant	X			4-6" deep at riser.
Aesthetics	X			
Other				
<i>Rect. shaped Configuration.</i>				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools <input type="checkbox"/> Permanent Pool (Retention Basin) <input type="checkbox"/> Shallow Marsh (Detention Basin) <input checked="" type="checkbox"/> None (Detention Basin)				
Shoreline Erosion	X			Minor west side.
Algae	X			
Trash & Debris	X			
Sediment		X		4-6" deep at riser.
Aesthetics	X			
Other				
Inflow Structures (Describe Locations): 2 riprap channels, south + west of building * see note south channel				
Condition of Structure		X	X	channel erosion + overtopping.
Erosion			X	Severe Scour Hole @ SE CORN BLDG
Trash and Debris	X			
Sediment	X			
Aesthetics		X		
Other	X			3' deep scour hole @ RCD @ BLDG CORN.
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location): 36" ϕ ^{AC} CMP w/ CMP cap; Low Flow ORIF 1" \pm				
Condition of Structure	X			clean, Good Cond.
Corrosion	X			None, surf rust.
Trash and Debris		X		clean Low Flow orifice wire mesh screen.
Sediment	X			None, 15-1 Inlet Shaped.
Aesthetics	X			
Other				Riser 4' deep
Principal Outlet Structure - Barrel, Conduit, etc. : 18" ϕ AC CMP				
Condition of Structure	X			
Settlement	X			None.
Trash & Debris	X			
Sediment	X			
Erosion	X			
Other				OP is Adequat P.
Emergency Spillway (Overflow): 6' wide riprap channel; 1' deep				
Vegetation	X			
Lining	X			Riprap.
Erosion	X			Minor
Trash & Debris	X			None
Other				Signs of Spillway Use.

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			
Animal Burrows	X			
Graffiti	X			
Other	X			
Surrounding Perimeter Conditions:				
Land Uses	X			South Woods; North Building
Vegetation	X			
Trash & Debris	X			
Aesthetics	X			
Access /Maintenance Roads or Paths	X			Adequate along the side of building (south)
Other				
Remarks: <u>CHANNEL-SOUTH OF BLDG.</u> - SEVERE CHANNEL EROSION AT RCD 100' BACK FROM POND (NEAR BLDG CORN). 3 foot deep square hole. - ON SITE SDC 50' BACK FROM POND. CHANNEL SECTION NEEDS REESTABLISHED PER DESIGN. CHANNEL IS OVERTOPPING & BYPASSING BASIN. SF HAS FAILED - SF D/S EMB needs removed. - Riser - clean wire mesh screen perfor. PVC low flow orifice. clean vegetation around PVC low flow riser. - Better stabilization - Access Path, Channels, Pond Bottom & Sides. <u>NOTE:</u> A previously installed infiltration trench per approved plan SP-2-91, was removed during construction of the warehouse addition per approved plan SP-37-99. The new dry detention BMP controls the entire site.				
Overall Environmental Division Internal Rating: <u>3</u>				
Signature: <u>Scott Thomas PE</u>				Date: <u>10/26/00</u>
Title: <u>Civil Engineer Environmental Division</u>				

SWMProg\BMP\CoInspProg\DetRet.wpd

Date Record Created:

WS BMPNO:

YC014

Print Form

Created By:

WATERSHED YC
BMP ID NO 014
PLAN NO SP-37-99
TAX PARCEL (24-3)(1-35A)
PIN NO 2430100035A
CONSTRUCTION DATE 10/15/1999
PROJECT NAME Wythe Candy Warehouse
FACILITY LOCATION 6623 Richmond Road
CITY-STATE Williamsburg, Va. 23185
CURRENT OWNER Gordon C. Angles & Everett A. Martin, Jr
OWNER ADDRESS P.O. Box 8
OWNER ADDRESS 2
CITY-STATE-ZIP CODE Lightfoot, Va. 23090
OWNER PHONE
MAINT AGREEMENT Yes
EMERG ACTION PLAN No

PRINTED ON:
Saturday, March 13, 2010
2:20:57 PM

MAINTENANCE PLAN

No

SITE AREA acre

11.09

LAND USE

Gen Business

old BMP TYP

Dry Pond

JCC BMP CODE

F2 Dry ED with forebay

POINT VALUE

4

SVC DRAIN AREA acres

3.94

SERVICE AREA DESCRI

Warehouse & Parking

IMPERV AREA acres

3.00

RECV STREAM

Yarmouth Creek

EXT DET-WQ-CTRL

Yes

WTR QUAL VOL acre-ft

0.122

CHAN PROT CTRL

No

CHAN PROT VOL acre-ft

0

SW/FLOOD CONTROL

Yes

GEOTECH REPORT

No

CTRL STRUC DESC

AC CMP

CTRL STRUC SIZE inches

36

OTLT BARRL DESC

AC CMP

OTLT BARRL SIZE inch

18

EMERG SPILLWAY

Yes

DESIGN HW ELEV

81.93

PERM POOL ELEV

None

2-YR OUTFLOW cfs

2.00

10-YR OUTFLOW cfs

14.00

REC DRAWING

Yes

CONSTR CERTIF

No

LAST INSP DATE 10/25/2000 **Inspected by:**

INTERNAL RATING 3

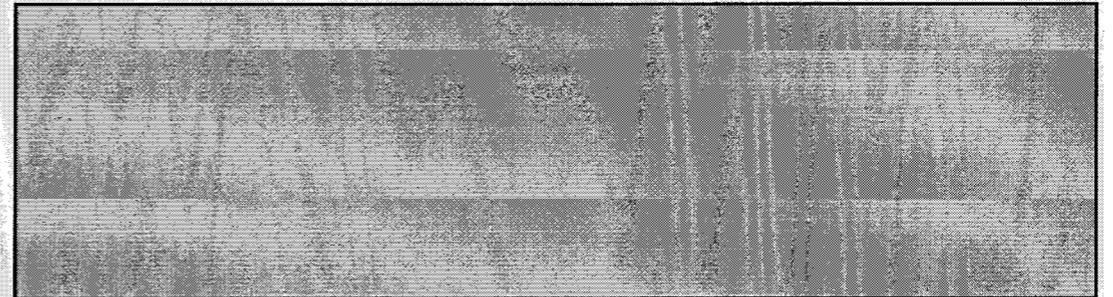
MISC/COMMENTS

Orig Infil Trench YC 010 per SP-2-91 removed. New BMP west of new building.

Get Last BMP No

Return to Menu

Additional Comments:



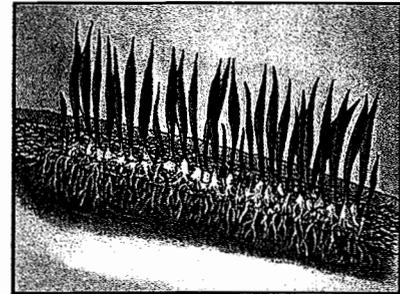
Permanent erosion control mats reinforce natural vegetation in critical applications.

PERMANENT SYNTHETIC BLANKETS

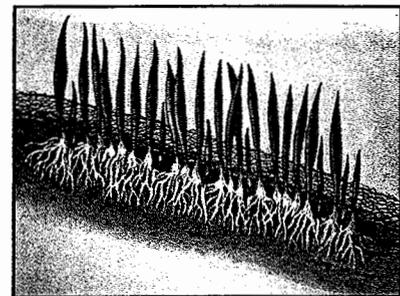
CONTECH's line of turf reinforcement mats (TRM) provide permanent erosion protection in severe and critical applications. In such environments, natural vegetation alone cannot endure the service conditions without experiencing harmful disruptions.

The lofty, three-dimensional, open structure of CONTECH TRM's make these blankets ideal for entrapping soil, retaining seeds, and—upon germination—reinforcing roots and stems of developing plants.

Vegetated slopes and channels act as natural filters to remove sediment, heavy metals and hydrocarbons. By improving the performance characteristics of natural vegetation, CONTECH TRM's have become a popular "green" alternative to paving, riprap and concrete linings for slopes or channels. Green solutions and bioengineering provide designers flexibility in mitigating and complying with today's stringent environmental laws and provisions of the Clean Water Act.



Soil-filled Turf Reinforcement Mats provide root structure reinforcement.



TRM's provide reinforcement to the stems and shoots of vegetation

Table 2
CONTECH PERMANENT SYNTHETIC TURF REINFORCEMENT MATS¹

CONTECH EROSION CONTROL PRODUCT	MASS (THICKNESS)	TENSILE STRENGTH (ELONGATION)	FLOW VELOCITY (FT/SEC)/SHEAR FORCE (LB/FT ²) PERFORMANCE LIMITS				COMPOSITION (STRUCTURE)
			BARE SOIL		VEGETATED		
			SHORT TERM 0.5 HRS.	LONG TERM 50 HRS.	SHORT TERM 0.5 HRS.	LONG TERM 50 HRS.	
TRM C-35	8 oz/sy (0.35")	145 x 110 lbs/ft (50% max)	12 (3.5)	6 (1.5)	18 (5)	8 (3)	100% polypropylene (stitched, random matrix)
TRM C-45	10 oz/sy (0.50")	170 x 125 lbs/ft (50% max)	18 (7)	8 (2)	18 (7)	10 (4)	100% polypropylene (stitched, random matrix)
TRM C-50	12 oz/sy (0.55")	170 x 125 lbs/ft (50% max)	18 (7)	8 (2)	18 (7)	10 (4)	100% polypropylene (stitched random matrix)
TRM C-60	14 oz/sy (0.60")	220 x 165 lbs/ft (40% max)	14 (6)	8 (2)	20 (8)	14 (5)	100% polypropylene (stitched, random matrix)
TRM C-61 ²	17 oz/sy (0.55")	350 x 250 lbs/ft (85% max)	12 (5)	7 (2)	20 (8)	14 (5)	100% polypropylene (stitched, random matrix)
Pyramat [®]	14 oz/sy (0.50")	4000 x 3500 lbs/ft (50% max)	20 (8)	10 (3)	25 (10)	14 (6)	100% polypropylene (woven, three-dimensional)

1. Figures are minimum average roll values unless otherwise indicated.
2. CONTECH TRM C-61 has a geotextile backing and is used in lieu of TRM C-60 in the presence of fine grained soils, where soil particle transportation and piping are probable.
3. All CONTECH TRM's are comprised of UV stabilized polyolefins (80% strength retained at 1000 hours U.V. exposure per ASTM 4355) to ensure long-term durability in exposed conditions.
4. Actual peak runoff durations should be determined using a hydrograph. From the hydrograph, the peak duration can be calculated as the difference in time to reach 90% of the peak discharge on the rising limb of the hydrograph and 90% of the peak on the receding limb of the hydrograph. The difference between these times should be used as the duration.

Turf Reinforcement Mat Installation Guidelines



Geosynthetic Products Division
Earthstopping Solutions™

Site Preparation

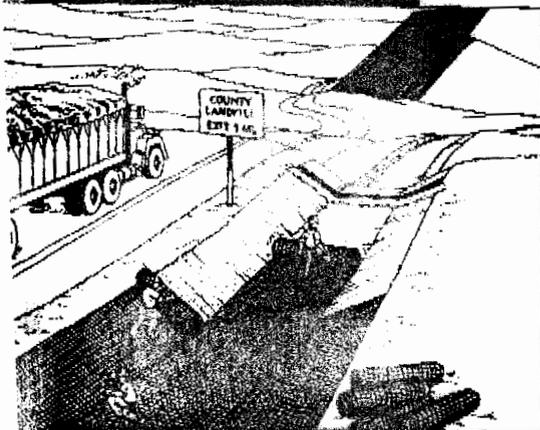
- Grade and compact area of installation.
- Prepare seedbed by loosening 50-75 mm (2-3 in) of topsoil above final grade.
- Incorporate amendments such as lime and fertilizer into soil.
- Remove all rocks, clods, vegetation or other obstructions so that the installed turf reinforcement mat (TRM) will have direct contact with soil surface.
- Do not mulch areas where mat is to be placed.

Seeding

- Apply seed to the soil surface before installing TRM or after installation for enhanced performance (preferable).
- When seeding prior to TRM installation, all check slots and other areas disturbed must also be reseeded.
- When soil filling, seed TRM and entire disturbed area after installation, prior to filling mat with soil.
- Contact your local US Natural Resource Conservation Service Plant Materials Specialist for seed recommendations.

TRM Placement: Banks and Slopes

- Extend TRM 600-900 mm (2-3 ft) over crest of slope and excavate a 300 x 150 mm (12 x 6 in) terminal anchor trench (Figure 4 on page 3).
- Anchor TRM in trench on 300 mm (1 ft) spacings, backfill and compact soil.
- Unroll TRM down slope with small netting on bottom, large netting on top.
- Overlap adjacent rolls at least 75 mm (3 in) and anchor every 450 mm (18 in).
- Lay TRM loose to maintain direct contact with soil. (Do not pull TRM taut. This may allow bridging of soil surface.)
- Secure TRM to ground surface using U-shaped wire staples (preferred) or geotextile pins. (See ground anchoring devices on page 3.)
- Refer to anchor pattern guide on page 3 for appropriate number and pattern of anchors.



TRM Placement: Channels

- Excavate an initial anchor trench 300 mm (12 in) deep and 150 mm (6 in) wide across the channel at the lower end of the project area (Figure 1).
- Excavate intermittent check slots 150 mm (6 in) deep and 150 mm (6 in) wide across the channel at 9.1 m (30 ft) intervals along the channel (Figure 2).
- Cut longitudinal channel anchor slots 100 mm (4 in) deep and 100 mm (4 in) wide along both sides of the installation to bury edges of TRM (Figure 3). Whenever possible, extend mat 600-900 mm (2-3 ft) above crest of channel side slopes.

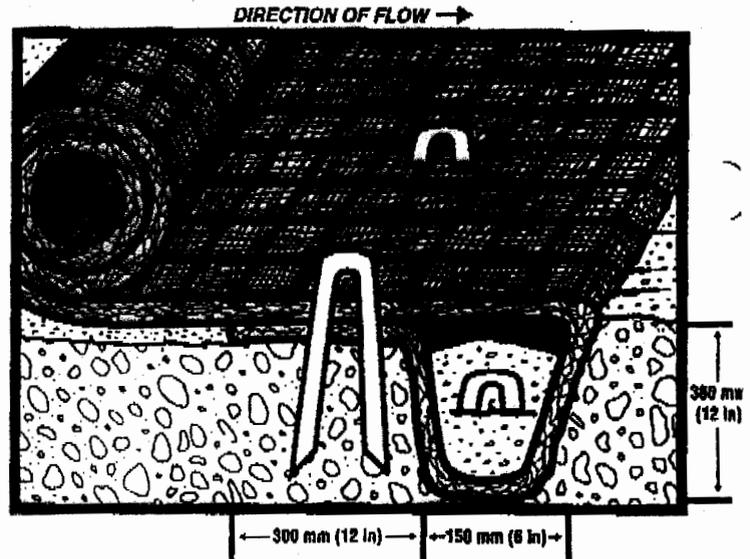


Figure 1: Initial Anchor Trench (Channels)

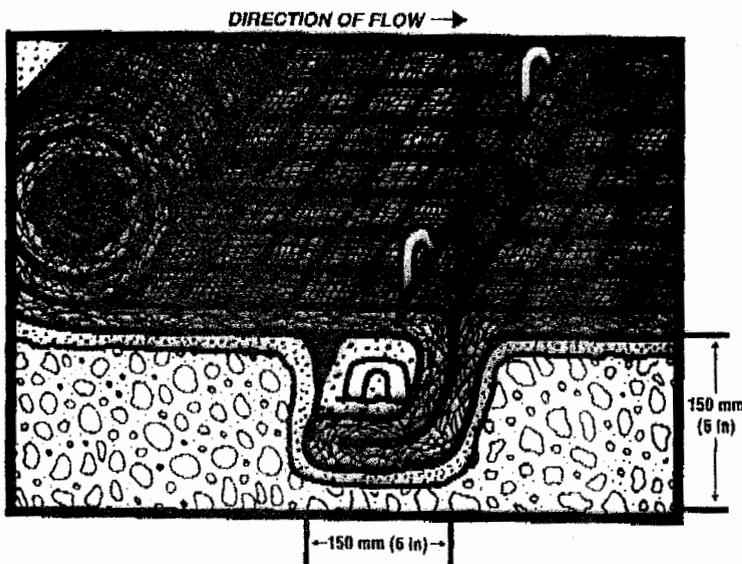


Figure 2: Intermittent Check Slot (Channels)

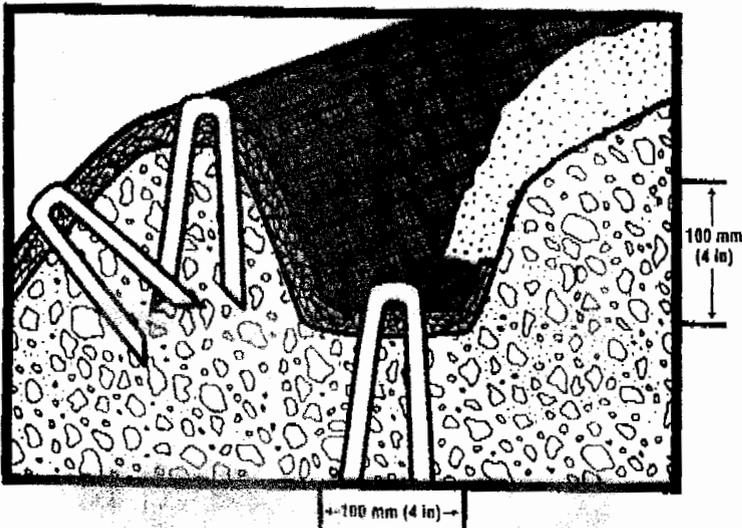


Figure 3: Longitudinal Anchor Trench (Channels)

- Beginning at the center of downstream end of the channel, place the end of the first roll in the anchor trench and secure with fastening devices at 300 mm (1 ft) intervals (Figure 1). Note: TRM will initially be upside down in anchor trench; smaller netting on top.
- In same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 75 mm (3 in).
- Again, secure at 300 mm (1 ft) intervals, backfill and compact soil.
- Unroll TRM over the compacted trench with smaller netting on bottom, large netting on top. Stop at next check slot or terminal anchor trench.
- Unroll adjacent rolls upstream in order to maintain a 75 mm (3 in) overlap and anchoring every 450 mm (18 in).
- Fold and secure all TRM rolls snugly into intermittent check slots. Lay TRM in the bottom and fold back against itself. Anchor through both layers of mat at 300 mm (1 ft) intervals then backfill and compact soil (Figure 2). Continue rolling TRM upstream over the compacted slot to the next check slot or terminal anchor trench.
- In low velocity channels of < 2.5 m/sec (< 8.2 ft/sec) excavated in cohesive soils, an alternate method may be used: place two rows of anchors on 150 mm (6 in) centers at 9.1 m (30 ft) intervals in lieu of excavated check slots.
- Overlap roll ends a minimum of 300 mm (1 ft) with upstream TRM on top. Begin all new rolls in a check slot. Anchor overlapped area by placing two rows of anchors, 300 mm (1 ft) apart on 300 mm (1 ft) intervals.
- Place outer edge of TRM in previously excavated longitudinal slots, anchor using prescribed staple pattern, backfill and compact soil (Figure 3).

- Anchor, backfill and compact upstream end of TRM in a 300 x 150 mm (12 x 6 in) terminal trench (Figure 4).
- Secure TRM to ground surface using U-shaped wire staples (preferred) or geotextile pins. (See ground anchoring devices below.)
- Refer to anchor pattern guide below for appropriate number and pattern of anchors.
- Seed and fill TRM with soil for enhanced performance.
- When using a TRM with a geotextile attached, always seed after installing mat, then fill with soil.

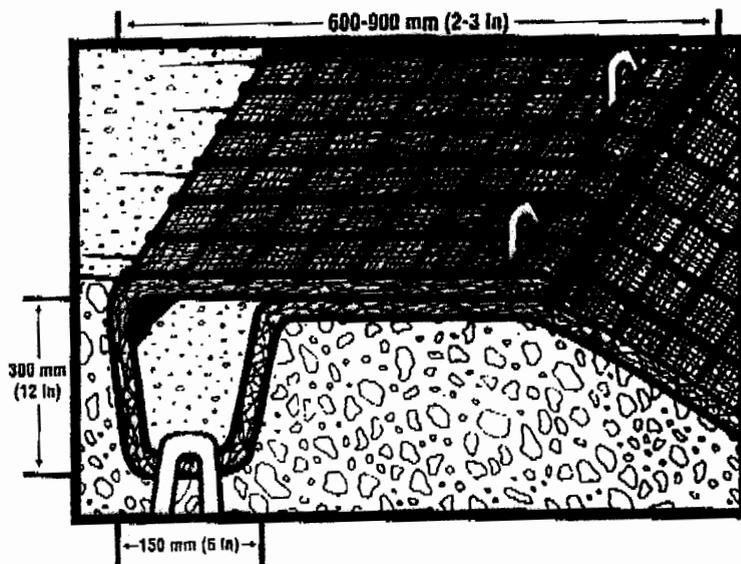


Figure 4: Terminal Anchor Trench (Slopes and Channels)

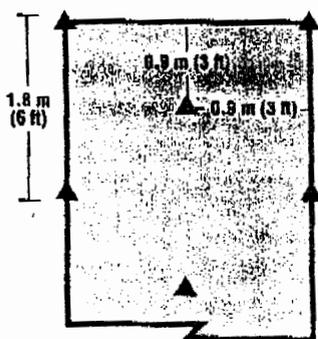
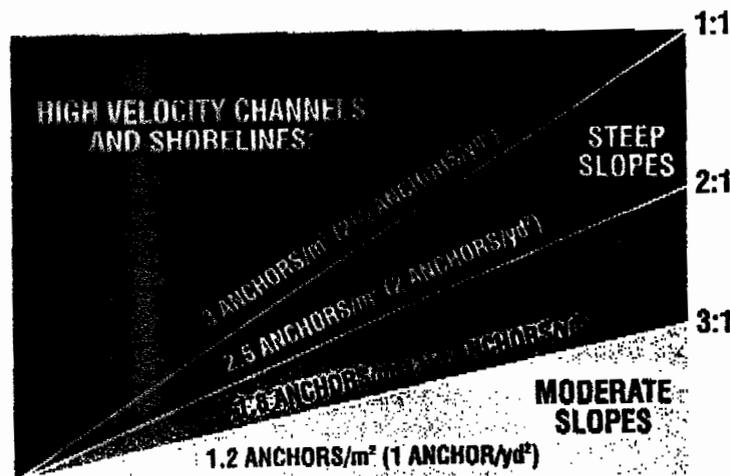
Ground Anchoring Devices

U-shaped wire staples or metal geotextile pins can be used to anchor TRMs to the ground surface. Wire staples should be a minimum of 4.3 mm (8 gauge). Metal pins should be at least 4.7 mm (3/16 in) diameter steel with a 38 mm (1 1/2 in) steel washer at the head of the pin. Wire staples and metal pins should be driven flush to the soil surface. All anchors should be between 200-450 mm (8-18 in) long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils. Heavier metal stakes may be required in rocky soils.

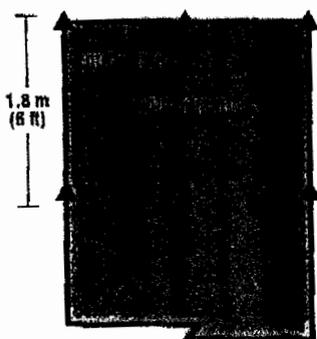
Anchor Pattern Guide

The colored areas in the adjacent diagram provide anchor recommendations based on slope gradient and/or anticipated flow conditions. When the correct number of anchors has been determined, refer to the four illustrations below to establish anchor pattern. All overlaps should be anchored at a 450 mm (18 in) frequency.

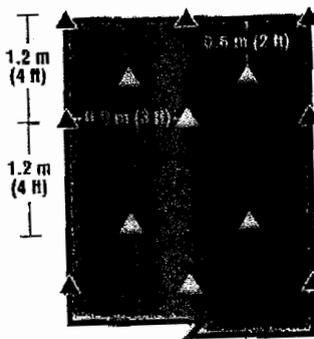
Increased anchoring may be required depending upon site conditions. Soil filling immediately after installation will decrease the recommended anchoring rate to the next lowest pattern. Example: Soil filling of matting in high velocity channels will reduce anchor pattern to 2 1/2 per m² (2 anchors per square yard).



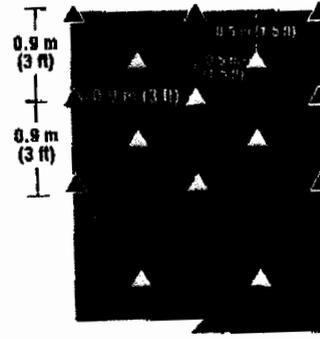
1.2 ANCHORS/m²
(1 ANCHOR/yd²)



1.8 ANCHORS/m²
(1 1/2 ANCHORS/yd²)



2.5 ANCHORS/m²
(2 ANCHORS/yd²)



3 ANCHORS/m²
(2 1/2 ANCHORS/yd²)

Soil Filling (Optional)

- If specified, soil filling is recommended for optimum performance.
- After seeding, spread and lightly rake 12-19 mm ($1/2$ - $3/4$ in) of fine topsoil into the TRM and completely fill the voids. Use backside of rake or other flat tool.
- If equipment must operate on the TRM, make sure it is of the rubber-tired type. No tracked equipment or sharp turns are allowed on the mat.
- Avoid any traffic over TRM if loose or wet soil conditions exist.
- Use shovels, rakes or brooms for fine grading and finishing.
- Smooth soil fill in order to just expose the top netting of matrix. Do not place excessive soil above the mat.
- Broadcast additional seed and mulch above the soil-filled TRM if desired.
- If possible, water as necessary to enhance growth.
- Consult manufacturer's technical representative or local distributor for installation assistance, particularly if unique conditions apply (i.e. fine sandy soils, infertile environments).

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