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- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: **MC034**

DATE VERIFIED: **December 31, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

Date: March 28, 2012

To: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

From: Leah Hardenbergh

PO: 110426

Re: Files Approved for Scanning

General File ID or BMP ID: **MC034**

PIN: **3840100029B**

Owner Name (if known): **COLONIAL FUNERAL MANAGEMENT LLC**

Legal Property Description: **PT INDIGO DAM**

Site Address: **3751 STRAWBERRY PLAINS**

(For internal use only):

Box # 3

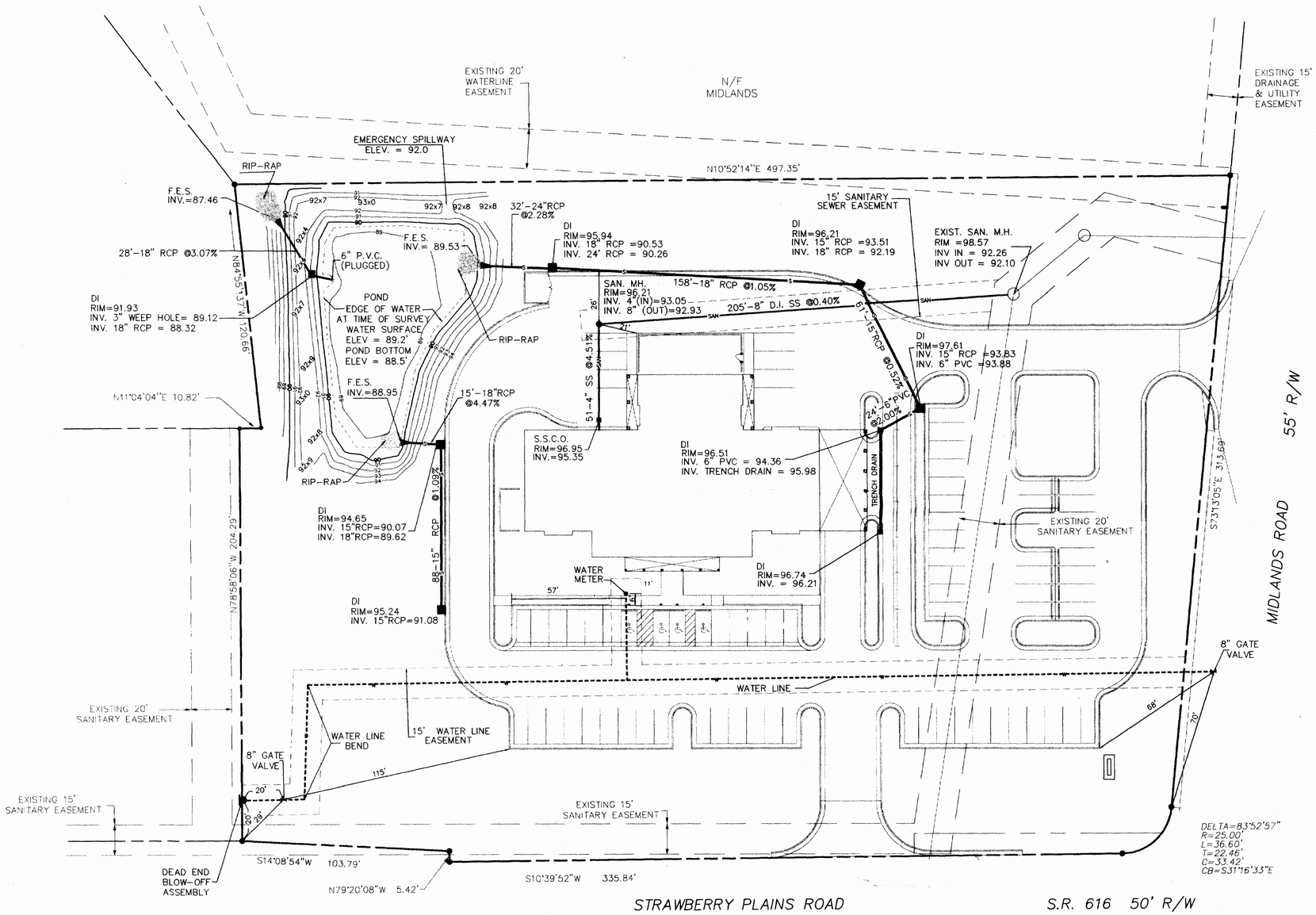
Agreements (in file as of scan date): N Book or Doc #:

MC-034

ontents for Stormwater Management Facilities As-built Files

ach file is to contain:

1. As-built plan
2. Completed construction certification
3. Construction Plan
4. Design Calculations
5. Watershed Map
6. Maintenance Agreement
7. Correspondence with owners
8. Inspection Records
9. Enforcement Actions



GRAPHIC SCALE
30 0 30 60 90
SCALE: 1"= 30'

NOTES:
UTILITY RECORD INFORMATION FROM AN ACTUAL FIELD SURVEY PERFORMED JANUARY & FEBRUARY, 2000. ALL OTHER GRAPHIC INFORMATION TAKEN FROM APPROVED SITE PLAN AND NOT FIELD VERIFIED.

COMMONWEALTH OF VIRGINIA
2/14/2000
STEPHEN A. ROMEO
NO. 1448-B
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel. (757) 253-2975
Fax (757) 220-9046
Email: info@landmarkdgrp.com

5544 Greenwich Road
Suite 200
Virginia Beach, VA 23462
Tel. (757) 473-2000
Fax (757) 497-7933
Email: info@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Consultants

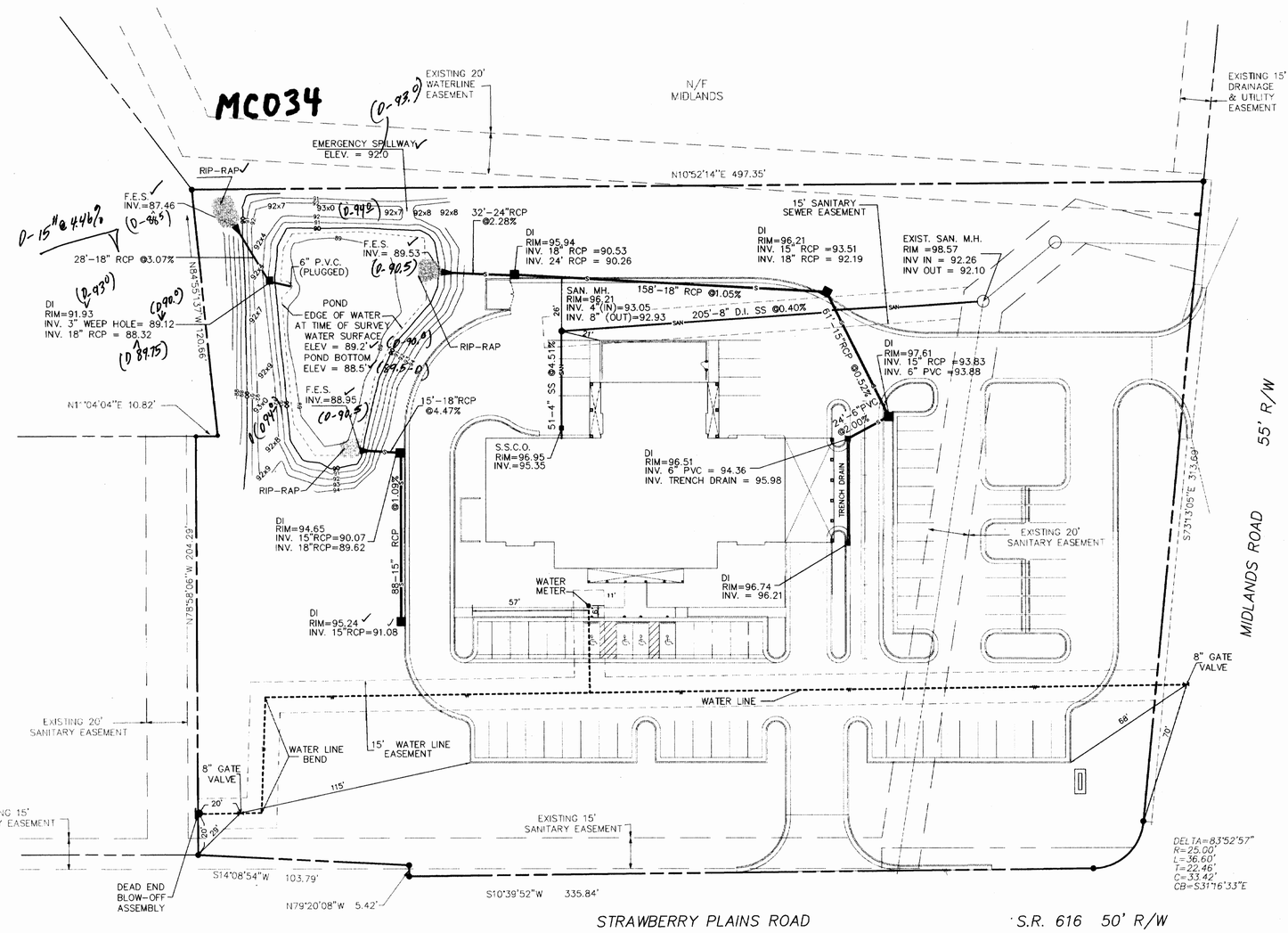
DES.	
DWN.	P.F.
CHK.	S.A.R.
DATE	02/14/00

RECORD DRAWING
NELSON FUNERAL HOME

JAMES CITY COUNTY VIRGINIA

SHEET	1 OF 1
SCALE:	1" = 30'
PROJ. NO.	1980070-000.99
DWG.	11192 W

MC 034; SP-44-98



DESIGN VALUES
100-YR DHW = 93.1
10-YR DHW = 91.94
2-YR DHW = 91.34

0-15" @ 44.6%

DESIGN AB
TD 94 92.5
DHW 93.1 93.5
BWT 89.5 4.0'
4.5'

(92.4)

SJT - AB Comments -

- Constructed Too Does not meet design, but Basin was All covered relative.
- Outlet Pipe sized was increased to 18" instead of 15". slope flatter therefore, wash.

SJT Review

SJT Review Set

NOTES:
UTILITY RECORD INFORMATION FROM AN ACTUAL FIELD SURVEY PERFORMED JANUARY & FEBRUARY, 2000. ALL OTHER GRAPHIC INFORMATION TAKEN FROM APPROVED SITE PLAN AND NOT FIELD VERIFIED.

GRAPHIC SCALE
30 0 30 60 90
SCALE: 1"= 30

JAMES CITY COUNTY
GEODETIC CONTROL MERIDIAN

COMMONWEALTH OF VIRGINIA
2/14/2000
STEPHEN A. ROMEO
NO. 1448-B
LAND SURVEYOR

4029 Ironbound Road
Suite 100
Williamsburg, VA 23188
Tel: (757) 253-0040
Fax: (757) 253-1998
Email: lmdg@landmarkdesgrp.com

5454 Greenwich Road
Suite 200
Virginia Beach, VA 23462
Tel: (757) 497-2000
Fax: (757) 497-7833
Email: lmdg@landmarkdg.com

LANDMARK DESIGN GROUP
Engineers • Planners • Surveyors
Landscape Architects • Environmental Consultants

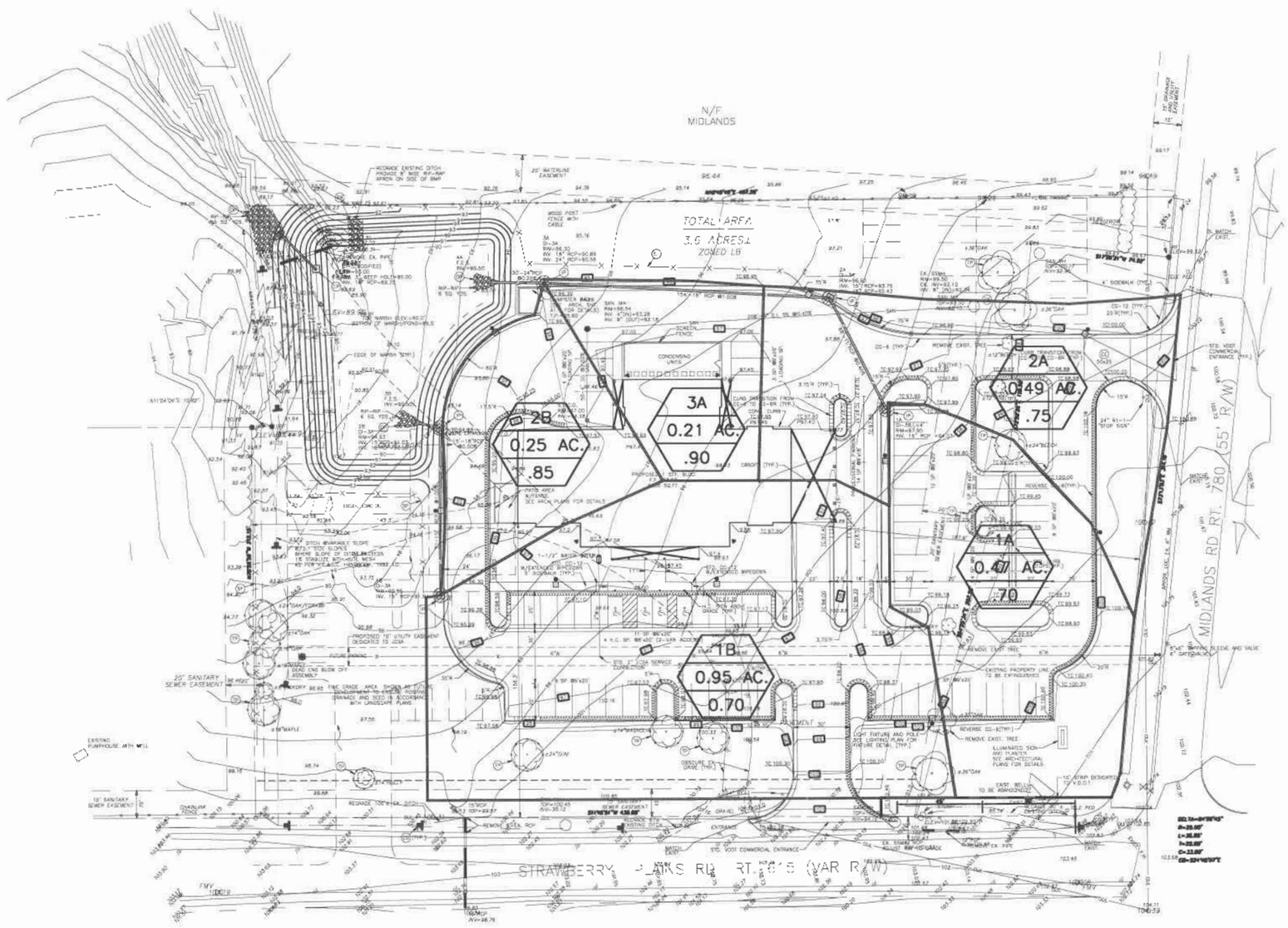
DES.	
DWN.	P.F.
CHK.	S.A.R.
DATE	02/14/00

RECORD DRAWING
NELSEN FUNERAL HOME
JAMES CITY COUNTY VIRGINIA

SHEET	1 OF 1
SCALE:	1" = 30'
PROJ. NO.	1980070-000.99
DWG.	11192 W

MC034_NELSON_FUNERAL_HOME - 005

MC034_NELSON_FUNERAL_HOME - 006



JAMES CITY COUNTY
SECTION CENTRAL MERIDIAN

NOTES:

1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PROVIDED BY THE OWNER. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE / NONEXISTENCE OF ANY UTILITIES ABOVE AND/OR BELOW GROUND.
2. THE LOCATIONS OF ALL UTILITIES ABOVE AND BELOW GROUND SHALL BE VERIFY PRIOR TO ANY CONSTRUCTION AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY UTILITIES DAMAGED DURING CONSTRUCTION AND SHALL REPAIR ANY UTILITIES DAMAGED BY CONSTRUCTION ACTIVITIES AT THEIR OWN EXPENSE.
3. THE EXISTING 50'± (NONBUILD) FUNERAL PROPERTY SHALL BE ABANDONED IN ACCORDANCE WITH CURRENT HEAD DEPARTMENT REGULATIONS.
4. CONSTRUCTION SHALL BE CONDUCTED IN STRICT CONFORMANCE WITH VIRGINIA AND FEDERAL OSHA LAWS, POLICIES AND STANDARDS.

PARKING SUMMARY

PARKING REQUIRED	= 20 SP.
PARKING PROVIDED	
REG. SPACES	= 73 SP.
H.C. SPACES	= 4 SP.
PROFESSIONAL PARKING	= 14 SP.
LOADING SPACES	= 2 SP.
TOTAL PROVIDED	= 93 SP.

GRAPHIC SCALE
30 0 30 60 90
SCALE: 1" = 30'

COMMONWEALTH OF VIRGINIA
STEPHEN A. ROMEO
No.
No. 1448-B
LAND SURVEYOR

Langley and McDonald, P.C.
Engineers • Surveyors • Planners
Landscape Architects • Environmental Consultants
VIRGINIA BEACH WILLIAMSBURG

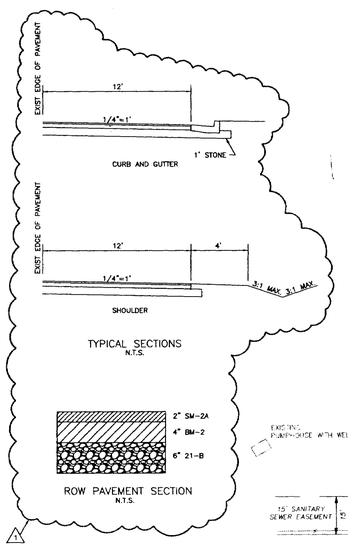
DES.	MWF
DWN.	MWF
CHK.	SAR
DATE	4/14/98

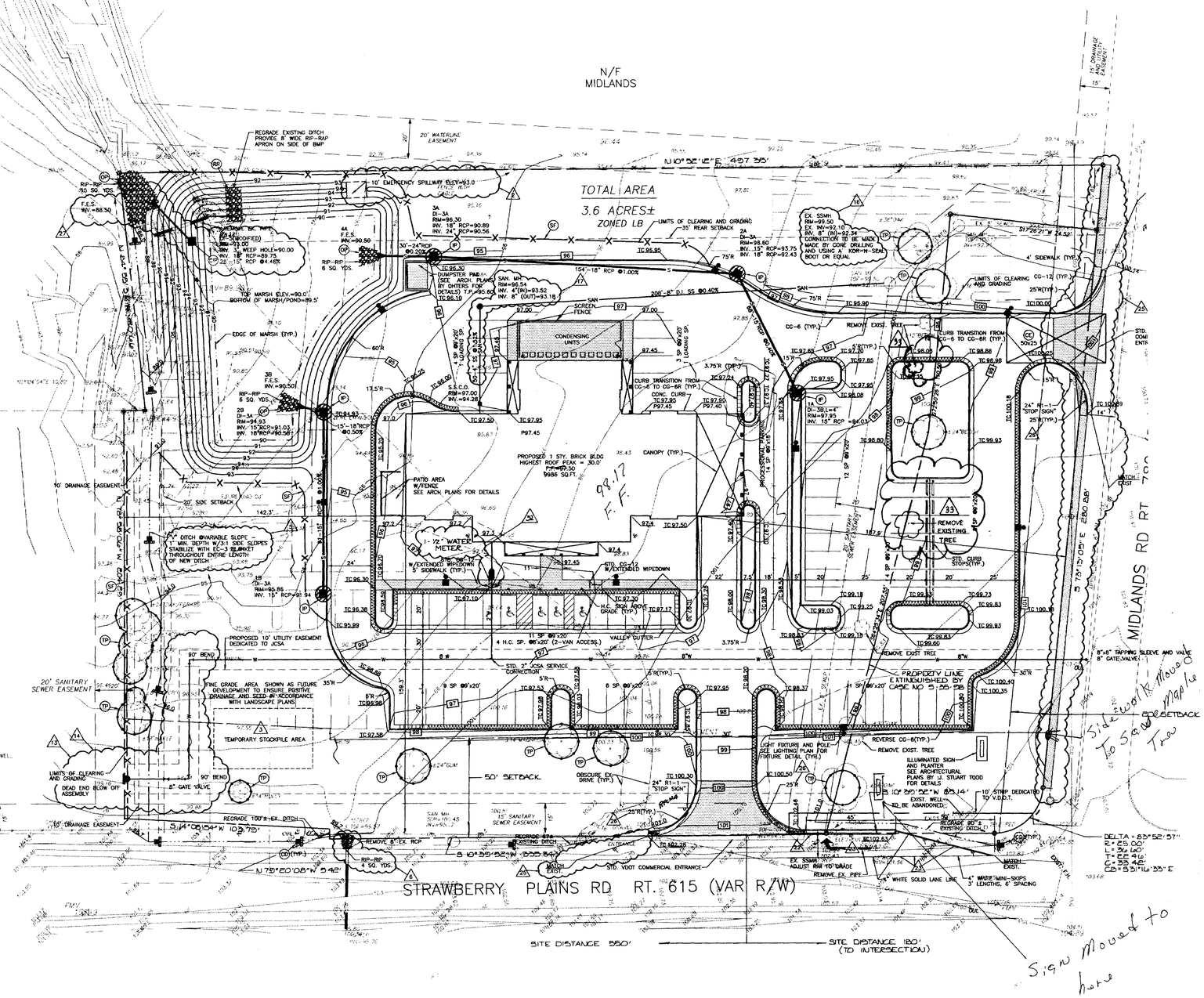
SITE PLAN
NELSEN FUNERAL HOME
JAMES CITY COUNTY VIRGINIA

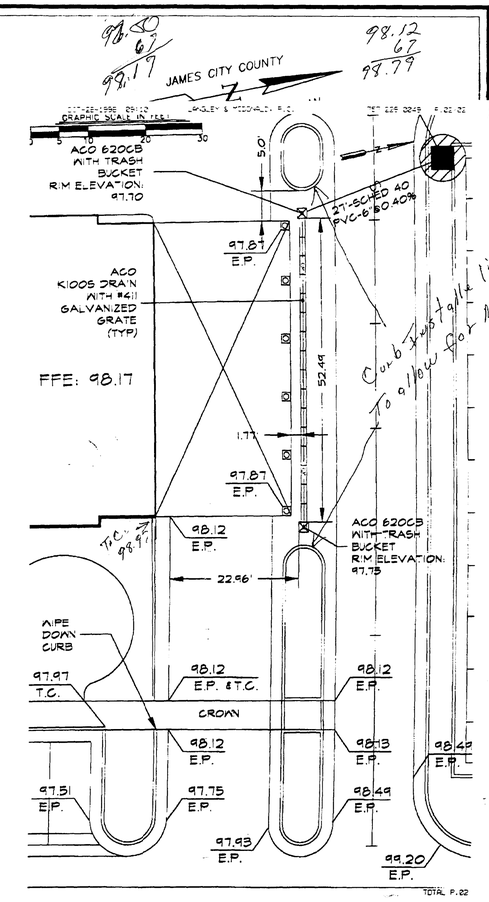
SHEET	C1 OF 7
SCALE:	1"=30'
PROJ. NO.	1980070
DWG.	

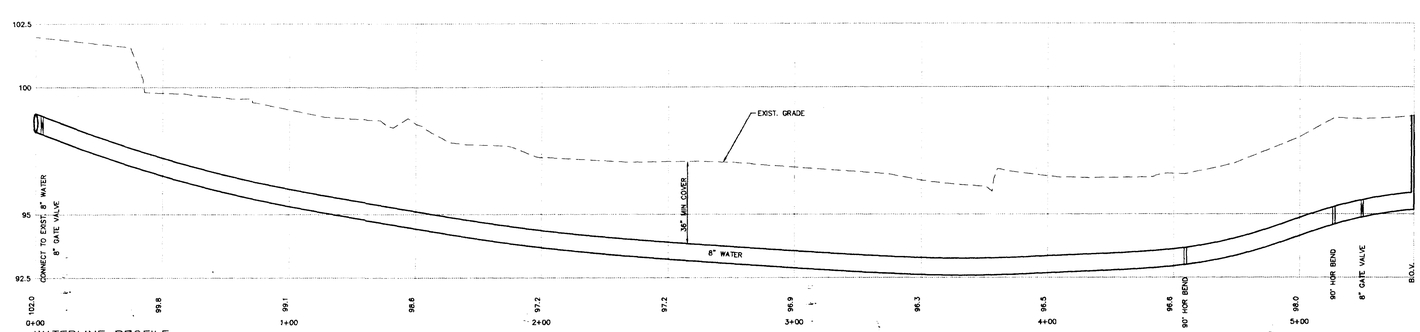
NOTES:

1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PROVIDED BY THE OWNER. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE / NONEXISTENCE OF ANY UTILITIES ABOVE AND/OR BELOW GROUND
2. THE LOCATIONS OF ALL UTILITIES ABOVE AND BELOW GROUND SHALL BE VERIFY PRIOR TO ANY CONSTRUCTION AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY UTILITIES DAMAGED DURING CONSTRUCTION AND SHALL REPAIR ANY UTILITIES DAMAGED BY CONSTRUCTION ACTIVITIES AT THEIR OWN EXPENSE.
3. THE EXISTING WELL (NORTHEAST CORNER OF PROPERTY) SHALL BE ABANDONED IN ACCORDANCE WITH CURRENT HEATH DEPARTMENT REGULATIONS.
4. DEMOLITION SHALL BE CONDUCTED IN STRICT COMPLIANCE WITH VIRGINA AND FEDERAL OSHA LAWS, POLICIES AND REGULATIONS.
5. LANDSCAPING MUST NO BLOCK THE SIGHT DISTANCE
6. EXTERIOR SIGNS WITHIN THE DISTRICT SHALL COMPLY WITH THE REGULATIONS FOR SIGNS IN ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE
7. ALL DISABLED PARKING SIGNS SHALL INCLUDE THE FOLLOWING LANGUAGE: "PENALTY, $100-$500 FINE, TOW-AWAY ZONE." SUCH LANGUAGE MAY BE PLACED ON A SEPERATE SIGN AND ATTACHED BELOW ABOVE GRADE SIGNS PROVIDING THAT THE BOTTOM EDGE OF THE ATTACHED SIGN IS NO LOWER THAN FOUR (4) FEET ABOVE THE PARKING SURFACE
8. UNLESS OTHERWISE NOTED ALL DRAINAGE EASEMENTS DESIGNATED SHALL REMAIN PRIVATE









WATERLINE PROFILE
HOR. SCALE: 1"=30'
VER. SCALE: 1"=3'

PARKING SUMMARY

PARKING REQUIRED	= 30 SP.
PARKING PROVIDED	
REG. SPACES	= 70 SP.
H.C. SPACES	= 4 SP.
PROCESSIONAL PARKING	= 14 SP.
LOADING SPACES	= 2 SP.
TOTAL PROVIDED	= 90 SP

GRAPHIC SCALE
30 0 30 60 90
SCALE: 1"= 30

REVISED: 6/15/98 PER JCC, JCSA AND VDOT COMMENTS

33	REVISE CURB - REMOVE TREES - ADD NEW TREES
32	RELOCATE WATER METER
31	ADD TEMP RISER TO MOD DI-5
30	REMOVE WEEP HOLE FROM MOD DI-3
29	ADD JCSA DETAILS
28	ADD BMP PLANTING PLAN
27	REVISE PIPE DATA
26	REVISE RADII LABELS
25	REVISE PAVEMENT FLARES
24	ADDED NOTE STATING LANDSCAPING NOT TO BLOCK SIGHT DISTANCE
23	ADD PAVEMENT STRIPING ITEMS
22	ADD CG-6 AT ENTRANCE ON STRAWBERRY PLAINS RD.
21	ADD JCSA GATE VALVE AND BOX DETAIL
20	REVISE JCSA S1-1 DETAIL
19	ADD STANDARD BEDDING DETAIL
18	REVISE DEAD END BLOW OFF DETAIL
17	REVISE SAN. INVERTS
16	ADD KOR-N-SEAL BOOT TO CONNECTION AT EX. SAN. MANHOLE
15	RELOCATE WATER METER
14	ADD INLINE GATE VALVE AND PIPE JOINT
13	CHANGE WATERLINE SIZE FROM 6" TO 8". AND REVISE ALIGNMENT
12	REVISE LIGHT POLE TYPE, HEIGHT AND LAYOUT
11	REVISE LANDSCAPING ALONG STRAWBERRY PLAINS RD AND LANDSCAPE SCHEDULE
10	REVISE LANDSCAPE PLANTING SCHEDULE
9	ADD HANDICAP ENFORCEMENT SIGN NOTE
8	ADD NOTE ABOUT SIGN REQUIREMENTS
7	ADD PLANTING PLAN OF BMP
6	ADD 4SQ. YDS. RIP-RAP
5	ADD EC-3 TYPE BLANKET TO "V" DITCH
4	ADD TEMP ORIFICE TO BMP OUTLET STRUCTURE
3	ADD TEMPORARY STOCKPILE AREA
2	ADD EMERGENCY SPILL WAY TO BMP
1	REVISED ROW PAVEMENT SECTION AND TYPICAL SECTIONS

REVISIONS JUNE 15, 1998

COMMONWEALTH OF VIRGINIA
6-12-98
STEPHEN A. ROMEO
No. 11-B

Landscape Architects • Environmental Consultants
WILLIAMSBURG VIRGINIA BEACH

RECEIVED
O.K. Jurisdiction Construction

DES.	MWF
DWN.	MWF
CHK.	SAR
DATE	4/14/98

SITE PLAN
NELSEN FUNERAL HOME
JAMES CITY COUNTY VIRGINIA

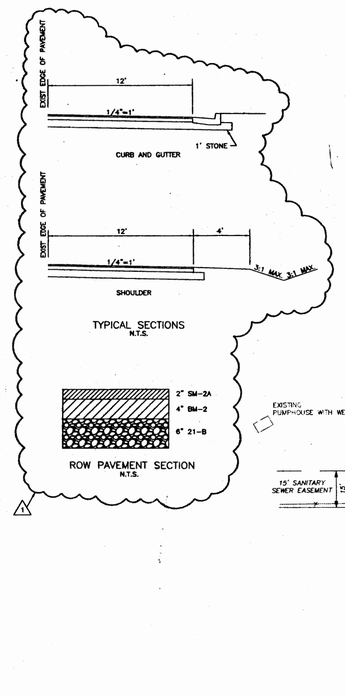
SHEET	C1 OF 7
SCALE:	1"=30'
PROJ. NO.	1980070
DWG.	70.33 W

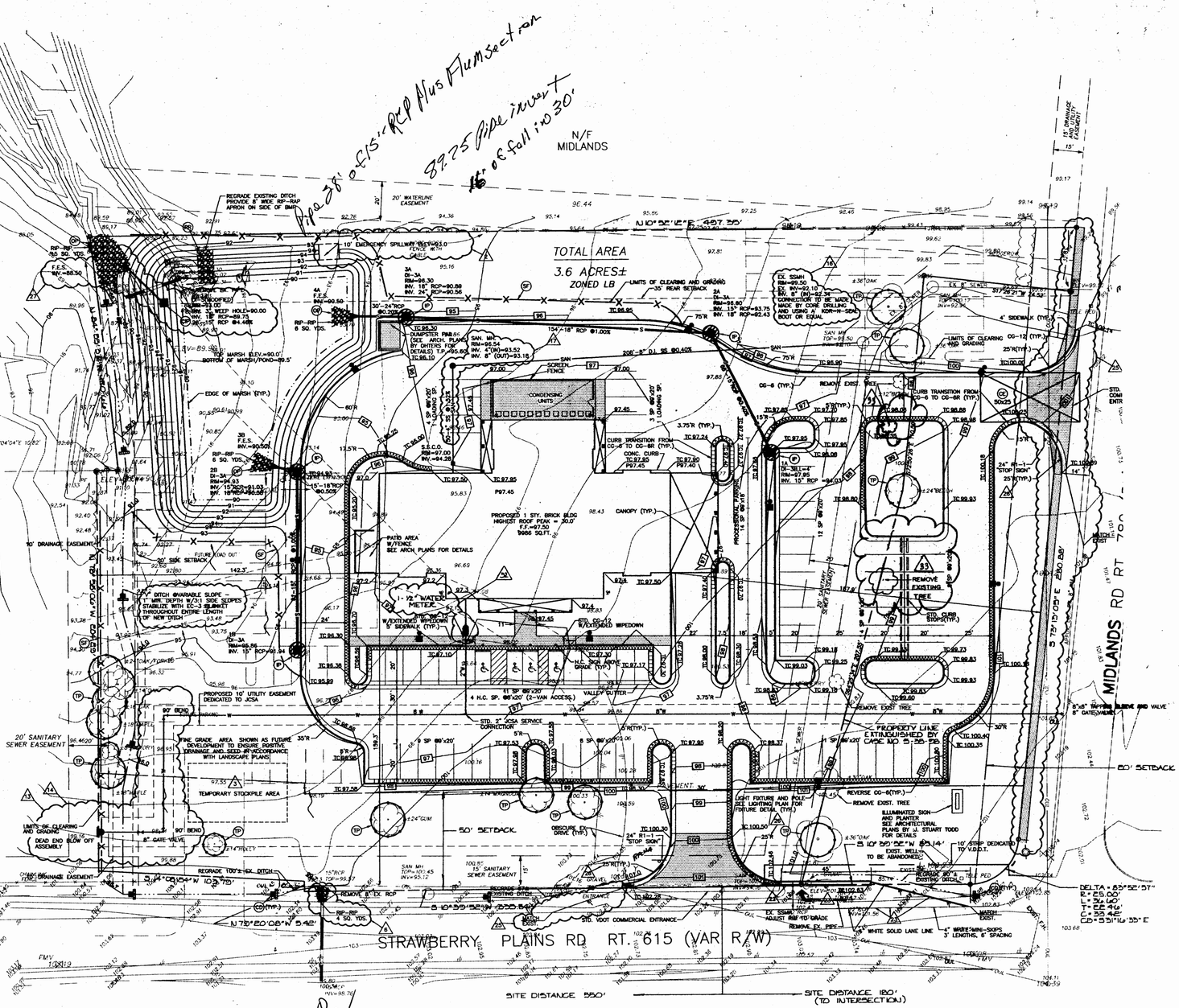
MC034_NELSON_FUNERAL_HOME - 008

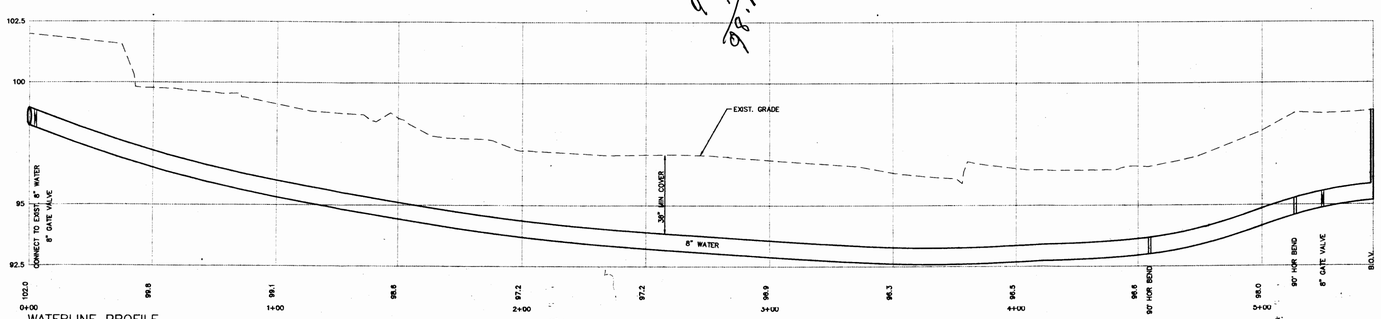
REVISED - 08/10/98 -ADJUSTMENTS FOR LIGHTNING DAMAGE REVISED: 7/23/98 Revise Property Line REV: 7/16/98 PER COUNTY COMMENTS

NOTES:

1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PROVIDED BY THE OWNER. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE / NONEXISTENCE OF ANY UTILITIES ABOVE AND/OR BELOW GROUND
2. THE LOCATIONS OF ALL UTILITIES ABOVE AND BELOW GROUND SHALL BE VERIFY PRIOR TO ANY CONSTRUCTION AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY UTILITIES DAMAGED DURING CONSTRUCTION AND SHALL REPAIR ANY UTILITIES DAMAGED BY CONSTRUCTION ACTIVITIES AT THEIR OWN EXPENSE.
3. THE EXISTING WELL (NORTHEAST CORNER OF PROPERTY) SHALL BE ABANDONED IN ACCORDANCE WITH CURRENT HEATH DEPARTMENT REGULATIONS.
4. DEMOLITION SHALL BE CONDUCTED IN STRICT COMPLIANCE WITH VIRGINIA AND FEDERAL OSHA LAWS, POLICIES AND REGULATIONS.
5. LANDSCAPING MUST NO BLOCK THE SIGHT DISTANCE
6. EXTERIOR SIGNS WITHIN THE DISTRICT SHALL COMPLY WITH THE REGULATIONS FOR SIGNS IN ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ZONING ORDINANCE
7. ALL DISABLED PARKING SIGNS SHALL INCLUDE THE FOLLOWING LANGUAGE: "PENALTY, $100-$500 FINE, TOW-AWAY ZONE." SUCH LANGUAGE MAY BE PLACED ON A SEPERATE SIGN AND ATTACHED BELOW ABOVE GRADE SIGNS PROVIDING THAT THE BOTTOM EDGE OF THE ATTACHED SIGN IS NO LOWER THAN FOUR (4) FEET ABOVE THE PARKING SURFACE
8. UNLESS OTHERWISE NOTED ALL DRAINAGE EASEMENTS DESIGNATED SHALL REMAIN PRIVATE





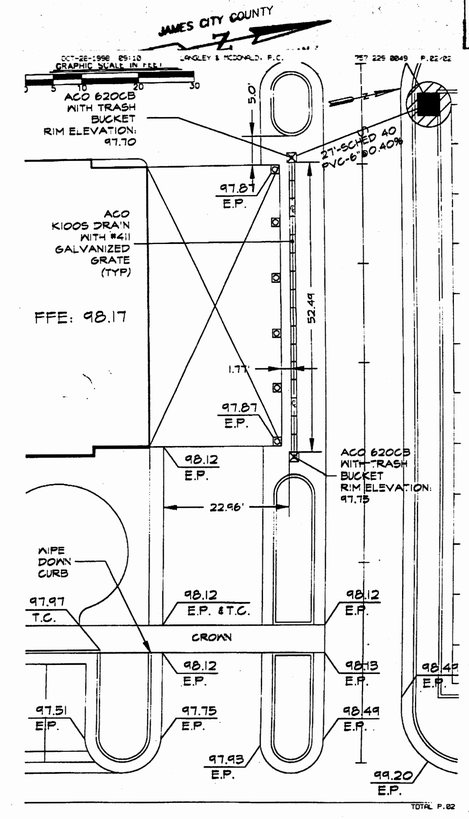


WATERLINE PROFILE
HOR. SCALE: 1"=30'
VER. SCALE: 1"=3'

PARKING SUMMARY

PARKING REQUIRED	= 30 SP.
PARKING PROVIDED	
REG. SPACES	= 70 SP.
H.C. SPACES	= 4 SP.
PROCESSIONAL PARKING	= 14 SP.
LOADING SPACES	= 2 SP.
TOTAL PROVIDED	= 90 SP

GRAPHIC SCALE
30 0 30 60 90
SCALE: 1"= 30



33	REVISE CURB - REMOVE TREES - ADD NEW TREES
32	RELOCATE WATER METER
31	ADD TEMP. RISER TO MOD. DI-5
30	REMOVE WEEP HOLE FROM MOD. DI-5
29	ADD JCSA DETAILS
28	ADD BMP PLANTING PLAN
27	REVISE PIPE DATA
26	REVISE RADII LABELS
25	REVISE PAVEMENT FLARES
24	ADDED NOTE STATING LANDSCAPING NOT TO BLOCK SIGHT DISTANCE
23	ADD PAVEMENT STRIPING ITEMS
22	ADD CG-6 AT ENTRANCE ON STRAWBERRY PLAINS RD.
21	ADD JCSA GATE VALVE AND BOX DETAIL
20	REVISE JCSA S1-1 DETAIL
19	ADD STANDARD BEDDING DETAIL
18	REVISE DEAD END BLOW OFF DETAIL
17	REVISE SAN. INVERTS
16	ADD KOR-N-SEAL BOOT TO CONNECTION AT EX. SAN. MANHOLE
15	RELOCATE WATER METER
14	ADD INLINE GATE VALVE AND PIPE JOINT
13	CHANGE WATERLINE SIZE FROM 6" TO 8", AND REVISE ALIGNMENT
12	REVISE LIGHT POLE TYPE, HEIGHT AND LAYOUT
11	REVISE LANDSCAPING ALONG STRAWBERRY PLAINS RD AND LANDSCAPE SCHEDULE
10	REVISE LANDSCAPE PLANTING SCHEDULE
9	ADD HANDICAP ENFORCEMENT SIGN NOTE
8	ADD NOTE ABOUT SIGN REQUIREMENTS
7	ADD PLANTING PLAN OF BMP
6	ADD 45Q. YDS. RIP-RAP
5	ADD EC-3 TYPE BLANKET TO "V" DITCH
4	ADD TEMP ORIFICE TO BMP OUTLET STRUCTURE
3	ADD TEMPORARY STOCKPILE AREA
2	ADD EMERGENCY SPILL WAY TO BMP
1	REVISED ROW PAVEMENT SECTION AND TYPICAL SECTIONS

REVISIONS JUNE 15, 1998

REVISED:6/15/98 PER JCC, JCSA AND VDOT COMMENTS

RECEIVED O.K. Jones Construction

COMMONWEALTH OF VIRGINIA 6-12-98 STEPHEN A. ROMEO No.

Will concede post hyd. analysis if cattails cleaned 10' from inflow outflow

OCT 2001 RECEIVED ENVIRONMENTAL DIVISION

Landscape Architects • Environmental Consultants
WILLIAMSBURG VIRGINIA BEACH

DES.	MWF
DWN.	MWF
CHK.	SAR
DATE	4/14/98

SITE PLAN
NELSEN FUNERAL HOME

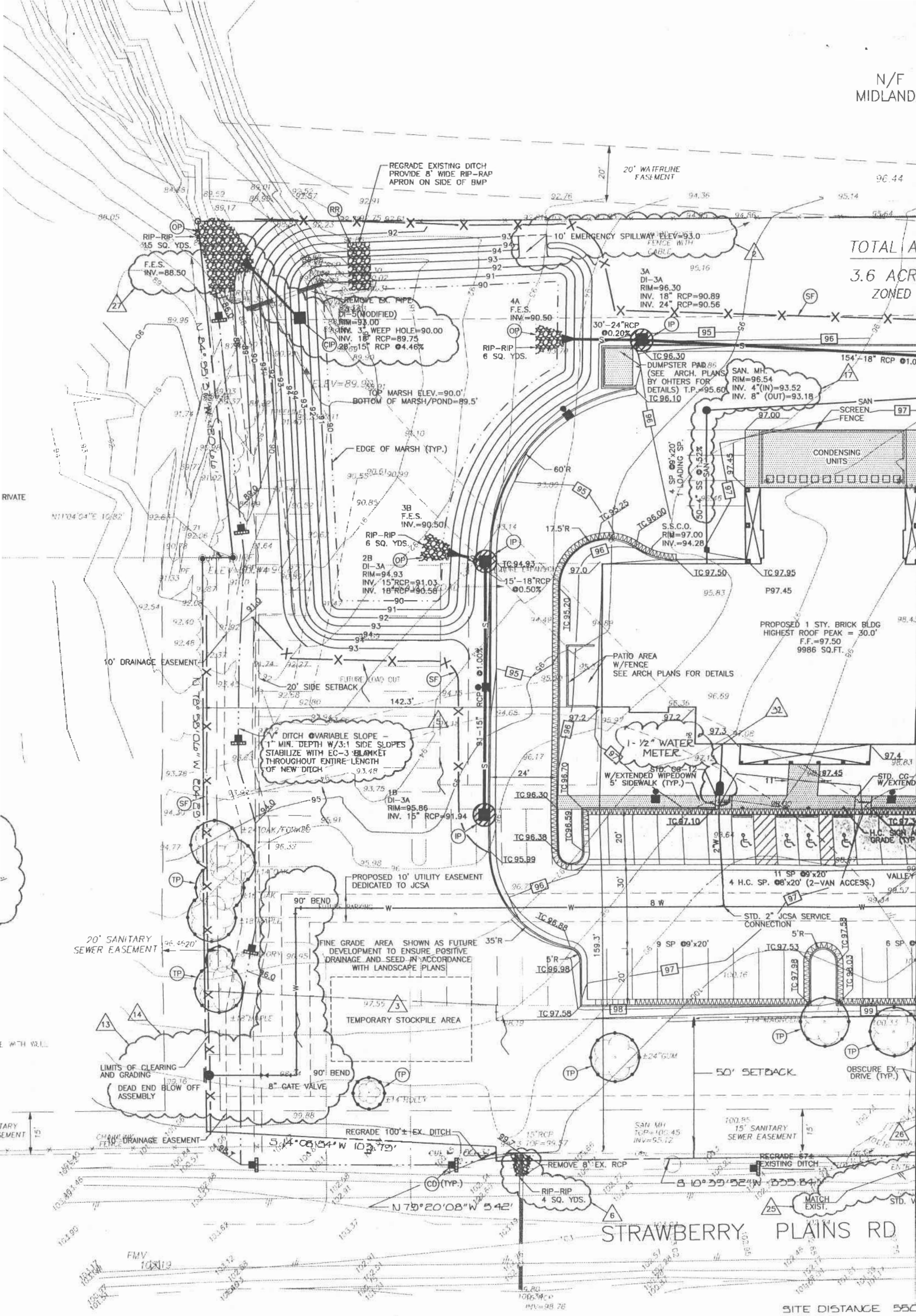
JAMES CITY COUNTY VIRGINIA

SHEET	C1 OF 7
SCALE:	1"=30'
PROJ. NO.	1980070
DWG.	7033 W

REVISED - 08/10/98 -ADJUSTMENTS FOR LIGHTNING DAMAGE ~~REVISED: 7/23/98 Revise Property Line~~ REV: 7/18/98 PER COUNTY COMMENTS

MC 034; SP-44-98

MC034_NELSON_FUNERAL_HOME - 009


N/F
MIDLAND
RIVATE
TOTAL A
3.6 ACR
ZONED
REGRADE EXISTING DITCH
PROVIDE 8' WIDE RIP-RAP
APRON ON SIDE OF BMP
20' WATERLINE
EASEMENT
10' EMERGENCY SPILLWAY ELEV=93.0
RIP-RIP
15 SQ. YDS.
F.E.S.
INV.=88.50
REMOVE EX. PIPE
DI-5(MODIFIED)
RIM=93.00
INV. 3" WEEP HOLE=90.00
INV. 18" RCP=89.75
28'-15" RCP @4.46%
3A
DI-3A
RIM=96.30
INV. 18" RCP=90.89
INV. 24" RCP=90.56
4A
F.E.S.
INV.=90.50
RIP-RIP
6 SQ. YDS.
30'-24"RCP
@0.20%
TC 96.30
DUMPSTER PAD
(SEE ARCH. PLANS
BY OHTERS FOR
DETAILS) T.P.=95.60
TC 96.10
154'-18" RCP @1.0
SAN. MH.
RIM=96.54
INV. 4"(IN)=93.52
INV. 8" (OUT)=93.18
SCREEN
FENCE
CONDENSING
UNITS
TOP MARSH ELEV.=90.0'
BOTTOM OF MARSH/POND=89.5'
EDGE OF MARSH (TYP.)
60'R
3B
F.E.S.
INV.=90.50
RIP-RIP
6 SQ. YDS.
2B
DI-3A
RIM=94.93
INV. 15"RCP=91.03
INV. 18"RCP=90.58
15'-18"RCP
@0.50%
TC 94.93
TC 95.25
TC 96.00
17.5'R
S.S.C.O.
RIM=97.00
INV.=94.28
TC 97.50
TC 97.95
P97.45
PROPOSED 1 STY. BRICK BLDG
HIGHEST ROOF PEAK = 30.0'
F.F.=97.50
9986 SQ.FT.
10' DRAINAGE EASEMENT
20' SIDE SETBACK
FUTURE LOAD OUT
142.3'
PATIO AREA
W/FENCE
SEE ARCH. PLANS FOR DETAILS
V DITCH @VARIABLE SLOPE -
1' MIN. DEPTH W/3:1 SIDE SLOPES
STABILIZE WITH EC-3 BLANKET
THROUGHOUT ENTIRE LENGTH
OF NEW DITCH
1B
DI-3A
RIM=95.86
INV. 15" RCP=91.94
1-1/2" WATER
METER
STD. CG-12
W/EXTENDED WIPEDOWN
5' SIDEWALK (TYP.)
TC 96.70
TC 96.30
TC 96.38
TC 95.99
TC 97.10
H.C. SIGN A
GRADE (TYP
PROPOSED 10' UTILITY EASEMENT
DEDICATED TO JCSA
11 SP @9'x20'
4 H.C. SP. @8'x20' (2-VAN ACCESS.)
90° BEND
STD. 2" JCSA SERVICE
CONNECTION
20' SANITARY
SEWER EASEMENT
FINE GRADE AREA SHOWN AS FUTURE
DEVELOPMENT TO ENSURE POSITIVE
DRAINAGE AND SEED IN ACCORDANCE
WITH LANDSCAPE PLANS
35'R
TC 96.68
TC 96.98
TC 97.58
TC 97.53
TC 97.98
TC 98.03
9 SP @9'x20'
6 SP
TEMPORARY STOCKPILE AREA
LIMITS OF CLEARING
AND GRADING
DEAD END BLOW OFF
ASSEMBLY
8" GATE VALVE
90° BEND
50' SETBACK
OBSCURE EX.
DRIVE (TYP.)
REGRADE 100'± EX. DITCH
10' DRAINAGE EASEMENT
S 14°08'54"W 103.79'
15'RCP
15' SANITARY
SEWER EASEMENT
REMOVE 8" EX. RCP
REGRADE 67± EXISTING DITCH
S 10°39'52"W 833.84'
(TYP.)
N 79°20'08"W 542'
RIP-RIP
4 SQ. YDS.
MATCH
EXIST.
STRAWBERRY PLAINS RD
SITE DISTANCE 550

CHECKED FOR ACCURACY NOTED, DURING THE AS-BUILT INSPECTION, SHALL BE CORRECTED BY THE DEVELOPER'S REPRESENTATIVES WITHIN 30 DAYS.

7. ROUTINE PERIODIC INSPECTIONS DURING CONSTRUCTION WILL BE PROVIDED BY THE JAMES CITY SERVICE AUTHORITY. THESE INSPECTIONS DO NOT RELIEVE THE DEVELOPER FROM HIS OBLIGATION AND RESPONSIBILITY FOR CONSTRUCTING A SANITARY SEWER SYSTEM IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE JAMES CITY SERVICE AUTHORITY.

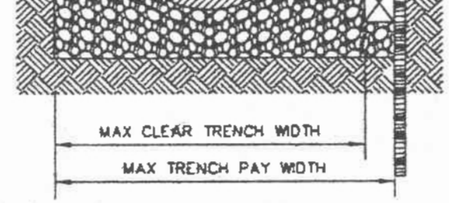
8. ANY CHANGES TO THE FINAL PLANS SHALL BE APPROVED BY THE JAMES CITY SERVICE AUTHORITY AND SHALL BE ACCURATELY INDICATED ON THE AS-BUILT DRAWINGS.

9. ALL LOTS SHALL BE PROVIDED WITH SEWER SERVICE CONNECTIONS. THE CONNECTIONS SHALL BE EXTENDED FROM THE MAIN TO THE PROPERTY LINE OR EASEMENT LINE, AND SHALL TERMINATE WITH A WYE, FITTING, PLUG AND CLEAN OUT WITH REMOVABLE PLUG AND METAL COVER.

10. THE DEVELOPER IS REQUIRED TO SUBMIT SEWER DATA SHEETS AND SHALL ACQUIRE A CERTIFICATE TO CONSTRUCT PRIOR TO COMMENCEMENT OF CONSTRUCTION.

11. ANY REQUIRED EASEMENTS, PERMITS, AND APPROVALS SHALL BE ACQUIRED BY THE DEVELOPER PRIOR TO COMMENCEMENT OF SANITARY SEWER CONSTRUCTION.

12. THE SEWER MAIN CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. HE SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION. HE SHALL ALSO NOTIFY "MISS UTILITY" PRIOR TO PERFORMING ANY UNDERGROUND EXCAVATION.



66"	21"	18"	6"
72"	21"	18"	6"
78"	23"	18"	6"
84"	23"	18"	6"
90"	25"	18"	6"
96"	25"	18"	12"
102"	30"	18"	12"
108"	31"	18"	12"
114"	34"	24"	12"
120"	36"	24"	12"

FIRM SUBGRADE
GRANULAR BEDDING MATERIAL

WHERE SPECIFICALLY REQUIRED, f'c=2000 PSI @ 28 DAYS CONCRETE AND SADDLE BLOCKS SHALL BE USED IN LIEU OF THE GRAVEL CRADLE.

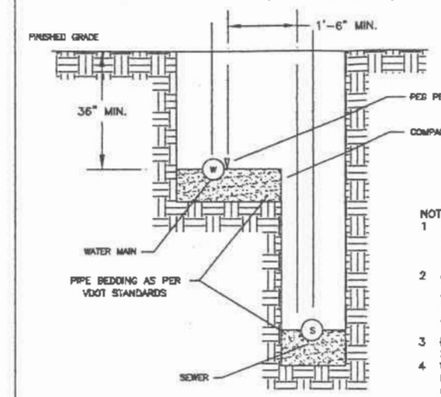
THE GRANULAR MATERIALS FOR BEDDING SHALL BE (ASTM C33 67) WASHED GRAVEL OR CRUSHED STONE FOR 180° AND SMALLER.

MAXIMUM CLEAR TRENCH WIDTH SHALL BE 2W PLUS THE OUTSIDE DIAMETER OF THE PIPE.

ELLIPTICAL PIPE SHALL BE BEDDED IN SAND. SEE CONTRACT DRAWINGS FOR AMOUNT OF BEDDING REQUIRED.

JAMES CITY SERVICE AUTHORITY	
BEDDING AND TRENCH WIDTHS	
DWG. NO. W10.0	SCALE : NONE
DWN. BY : EMG	DATE : 7/1/89

TYPICAL SECTION
(SEPARATE TRENCH)

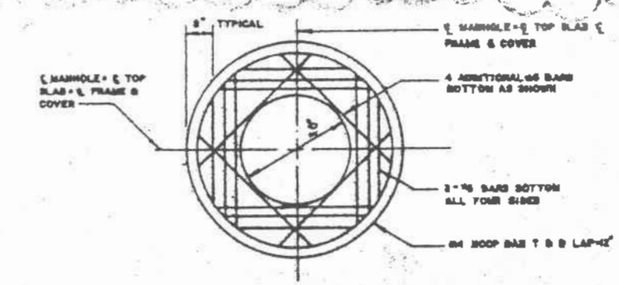


NOTES:
1 PEGGING O SEWER TR PERMISSIO (PAVED R
2 FOR WATE SHALL BE THE SEWE PROPERTY BY THE E
3 FOR THE SEE SPEC
4 VERTICAL FOR ALL (SEE ALSO

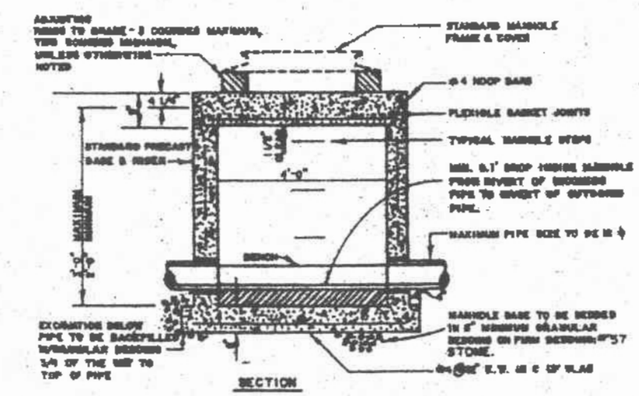
OPTIONAL SECTION
(COMBINED TRENCH)

19

REVISION DATE	COMMENT



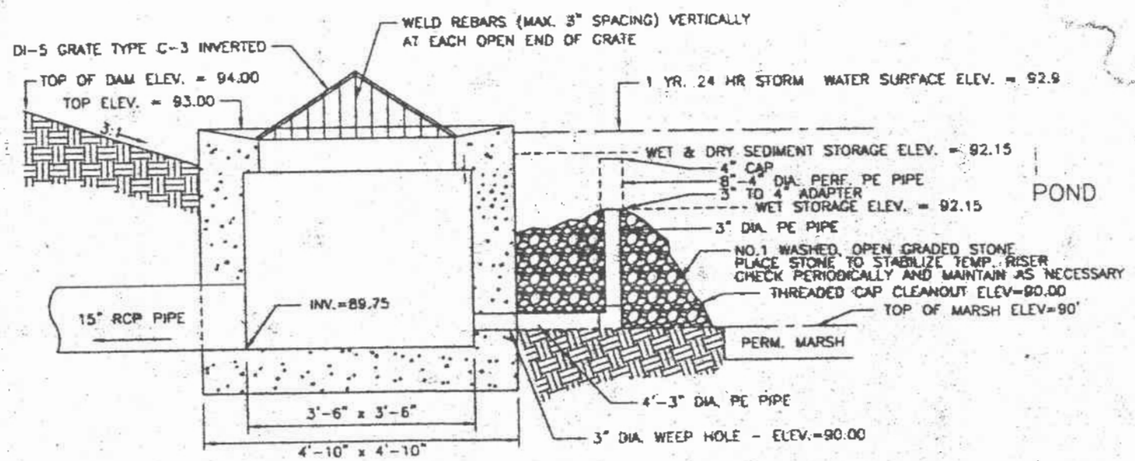
PLAN VIEW - PRECAST TOP SLAB



SECTION

NOTE:
EXTENDED BASE IS OPTIONAL.

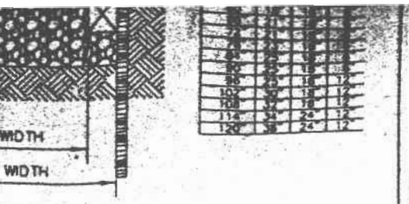
JAMES CITY SERVICE AUTHORITY	
SHALLOW MANHOLE	
DWG. NO. S 5.1	SCALE : NONE
DWN. BY : EMG	DATE : 7-1-89



MODIFIED VDOT DI-5
W/ TEMP. SEDIMENT CONTROL RISER
N.T.S.

CONTRACTOR TO INSTALL AND MAINTAIN TEMPORARY RISER WHILE BMP IS FUNCTIONING AS A TEMPORARY SEDIMENT BASIN.
THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SEDIMENT CONTROL MEASURES BEFORE COMPLETION OF PERMANENT BMP.

31



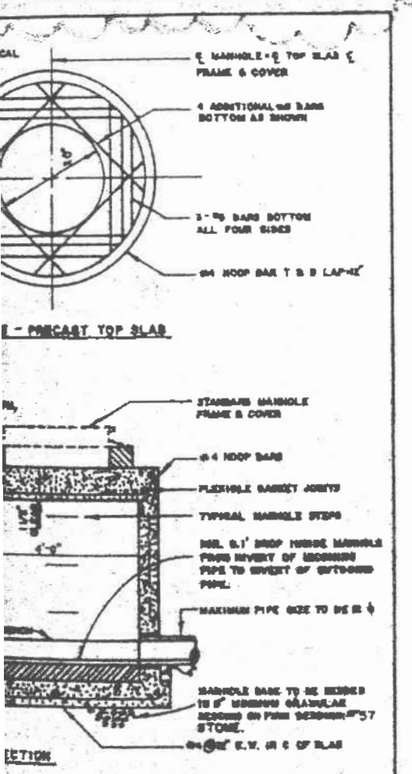
0 PSI @ 28 DAYS CONCRETE
N LIEU OF THE GRAVEL CRADLE.

SHALL BE (ASTM C33 67)
OR 90" AND SMALLER.

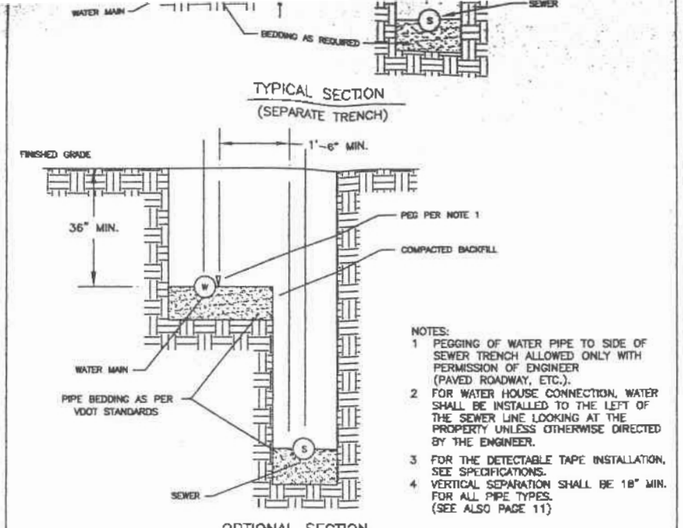
E 2W PLUS THE OUTSIDE

AND. SEE CONTRACT DRAWINGS

JAMES CITY SERVICE AUTHORITY	
BEDDING AND TRENCH WIDTHS	
DWG. NO. W10.0	SCALE : NONE
DWN. BY : EMG	DATE : 7/1/89



JAMES CITY SERVICE AUTHORITY	
SHALLOW MANHOLE	
DWG. NO. S 5.1	SCALE : NONE
DWN. BY : EMG	DATE : 7-1-89

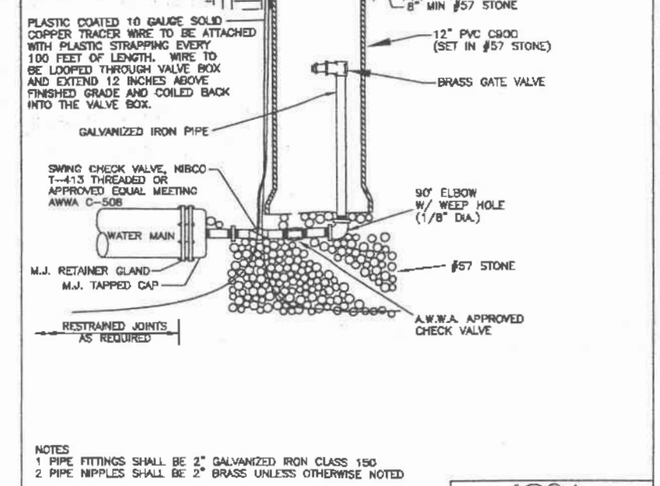


NOTES:
1 PEGGING OF WATER PIPE TO SIDE OF SEWER TRENCH ALLOWED ONLY WITH PERMISSION OF ENGINEER (PAVED ROADWAY, ETC.).
2 FOR WATER HOUSE CONNECTION, WATER SHALL BE INSTALLED TO THE LEFT OF THE SEWER LINE LOOKING AT THE PROPERTY UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3 FOR THE DETECTABLE TAPE INSTALLATION, SEE SPECIFICATIONS.
4 VERTICAL SEPARATION SHALL BE 18" MIN. FOR ALL PIPE TYPES. (SEE ALSO PAGE 11)

19

REVISION DATE	COMMENT

MINIMUM WATER & SEWER LINE SEPARATION	
DWG NO. W7.0	SCALE: NONE
DWN BY: RED	DATE:11-23-97

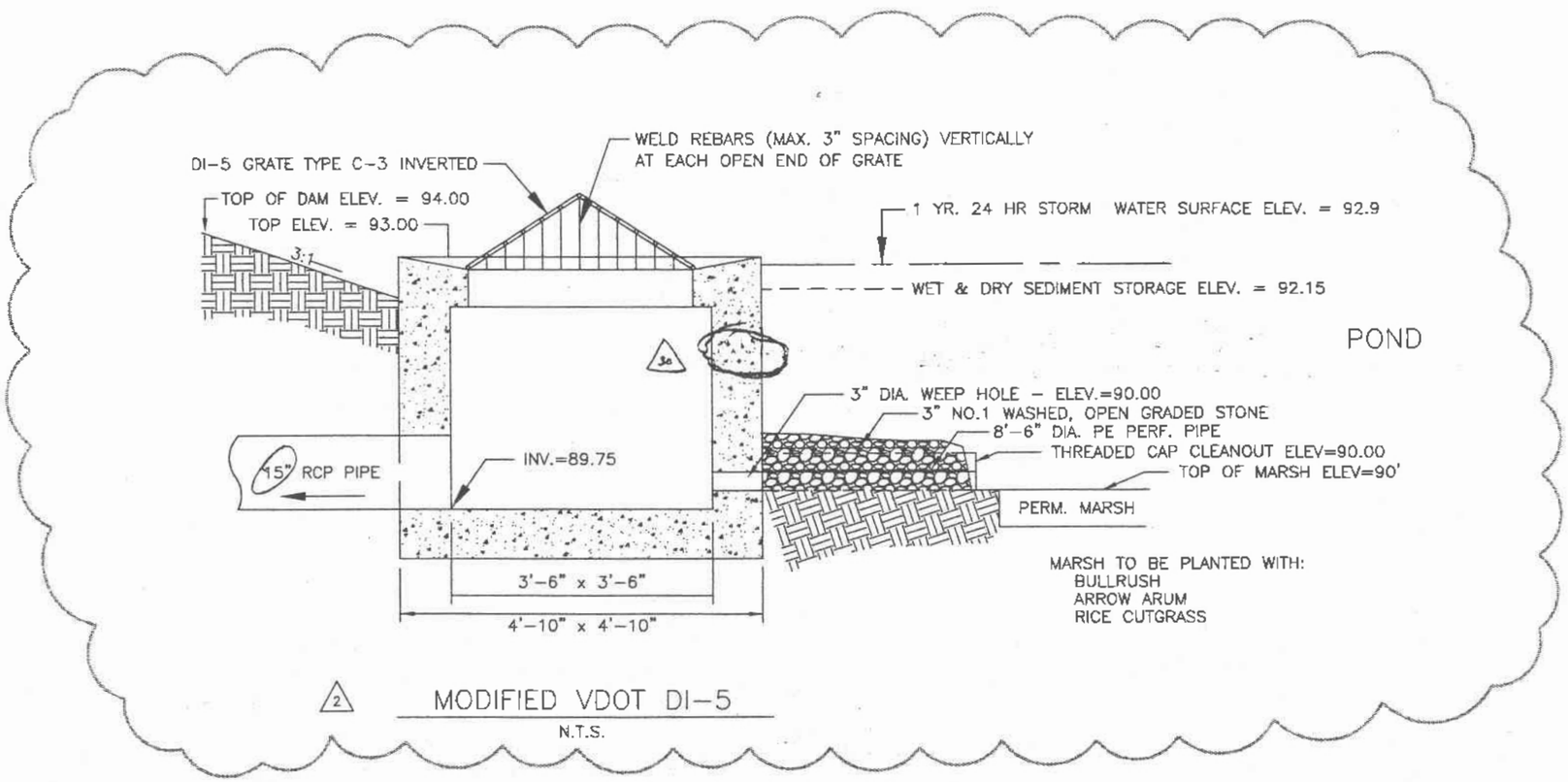


NOTES
1 PIPE FITTINGS SHALL BE 2" GALVANIZED IRON CLASS 150
2 PIPE NIPPLES SHALL BE 2" BRASS UNLESS OTHERWISE NOTED

NOTE:
DETAIL MODIFIED PER JCSA MARKUP

DEAD END BLOW-OFF ASSEMBLY	
PLATE: W4.0	SCALE: NONE
DWN BY: RED	DATE:11-23-97

18



2 MODIFIED VDOT DI-5

N.T.S.

JAMES CITY COUNTY REVISED 4/7/97
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. IN ADDITION TO THESE NOTES, ALL PROVISIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS SHALL APPLY TO THIS PROJECT.

1. 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.

2. 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. WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE, THE ROAD SHALL BE THOROUGHLY CLEANED AT THE END OF EACH DAY.

3. A PRECONSTRUCTION MEETING SHALL BE HELD ON-SITE BETWEEN THE COUNTY, THE DEVELOPER, THE PROJECT ENGINEER, AND THE CONTRACTOR PRIOR TO ISSUANCE OF THE LAND DISTURBING PERMIT. THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF CONSTRUCTION TO THE COUNTY FOR APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING. THE CONTRACTOR WILL SUPPLY THE ENVIRONMENTAL DIVISION WITH THE NAME OF THE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR ENSURING MAINTENANCE OF INSTALLED MEASURES ON A DAILY BASIS.

4. 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 SEEDED AND MULCHED IMMEDIATELY AFTER INSTALLATION. PERIODIC INSPECTIONS OF THE EROSION CONTROL MEASURES SHALL BE MADE TO ASSESS THEIR CONDITION. ANY NECESSARY MAINTENANCE OF THE MEASURES SHALL BE ACCOMPLISHED IMMEDIATELY UPON NOTIFICATION BY THE COUNTY AND SHALL INCLUDE THE REPAIR OF MEASURES DAMAGED BY ANY SUBCONTRACTOR INCLUDING THOSE OF THE PUBLIC UTILITY COMPANIES.

5. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRANSVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY LOWER WATER DOWNSLOPE WITHOUT CAUSING EROSION. A TEMPORARY FILL DIVERSION (STD. & SPEC. 3.10) SHALL BE INSTALLED PRIOR TO THE END OF EACH WORKING DAY.

6. SEDIMENT CONTROL MEASURES MAY REQUIRE MINOR FIELD ADJUSTMENTS AT TIME OF CONSTRUCTION TO INSURE THEIR INTENDED PURPOSE IS ACCOMPLISHED. ENVIRONMENTAL DIVISION APPROVAL WILL BE REQUIRED FOR OTHER DEVIATIONS FROM THE APPROVED PLANS.

7. THE CONTRACTOR SHALL PLACE SOIL STOCKPILES AT THE LOCATIONS SHOWN ON THIS PLAN OR AS DIRECTED BY THE ENGINEER. SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. OFF-SITE WASTE OR BORROW AREAS SHALL BE APPROVED BY THE ENVIRONMENTAL DIVISION PRIOR TO THE IMPORT OF ANY BORROW OR EXPORT OF ANY WASTE TO OR FROM THE PROJECT SITE.

8. THE CONTRACTOR SHALL COMPLETE DRAINAGE FACILITIES WITHIN 30 DAYS FOLLOWING COMPLETION OF ROUGH GRADING AT ANY POINT WITHIN THE PROJECT. THE INSTALLATION OF DRAINAGE FACILITIES SHALL TAKE PRECEDENCE OVER ALL UNDERGROUND UTILITIES. OUTFALL DITCHES FROM DRAINAGE STRUCTURES SHALL BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION OF SAME. THIS INCLUDES INSTALLATION OF EROSION CONTROL STONE OR PAVED DITCHES WHERE REQUIRED. ANY DRAINAGE OUTFALLS REQUIRED FOR A STREET MUST BE COMPLETED BEFORE STREET GRADING OR UTILITY INSTALLATION BEGINS.

9. PERMANENT OR TEMPORARY SOIL STABILIZATION MUST BE APPLIED TO ALL DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. SOIL STABILIZATION MUST ALSO BE APPLIED TO DENUDED AREAS WHICH MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS. SOIL STABILIZATION MEASURES INCLUDE VEGETATIVE ESTABLISHMENT, MULCHING AND THE EARLY APPLICATION OF GRAVEL BASE MATERIAL ON AREAS TO BE PAVED.

0. NO MORE THAN 300 FEET OF SANITARY SEWER, STORM SEWER, WATERLINES, OR UNDERGROUND UTILITY LINES ARE TO BE OPEN AT ONE TIME. FOLLOWING INSTALLATION OF ANY PORTION OF THESE ITEMS, ALL DISTURBED AREAS ARE TO BE IMMEDIATELY STABILIZED (I.E., THE SAME DAY).

1. IF DISTURBED AREA STABILIZATION IS TO BE ACCOMPLISHED DURING THE MONTHS OF DECEMBER, JANUARY, OR FEBRUARY, STABILIZATION SHALL CONSIST OF MULCHING IN ACCORDANCE WITH SPECIFICATION 3.35. SEEDING WILL THEN TAKE PLACE AS SOON AS THE SEASON PERMITS.

2. THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION, ON THIS PLAN SHALL MEAN THE SUCCESSFUL GERMINATION AND ESTABLISHMENT OF A STABLE GRASS COVER FROM A PROPERLY PREPARED SEEDBED CONTAINING THE SPECIFIED AMOUNTS OF SEED, LIME, AND FERTILIZER IN ACCORDANCE WITH SPECIFICATION 3.32, PERMANENT SEEDING. IRRIGATION SHALL BE REQUIRED AS NECESSARY TO ENSURE ESTABLISHMENT OF GRASS COVER.

ALL SLOPES STEEPER THAN 3:1 SHALL REQUIRE THE USE OF EROSION CONTROL BLANKETS SUCH AS EXCELSIOR BLANKETS TO AID IN THE ESTABLISHMENT OF A VEGETATIVE COVER. INSTALLATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 3.35, MULCHING AND MANUFACTURER'S INSTRUCTIONS. NO SLOPES SHALL BE CREATED STEEPER THAN 2:1.

INLET PROTECTION IN ACCORDANCE WITH SPECIFICATION 3.07 SHALL BE PROVIDED FOR ALL STORM DRAIN INLETS AS SOON AS PRACTICAL FOLLOWING CONSTRUCTION OF SAME.

TEMPORARY LINERS, SUCH AS POLYETHYLENE SHEETS, SHALL BE PROVIDED FOR ALL PAVED DITCHES UNTIL THE PERMANENT CONCRETE LINER IS INSTALLED.

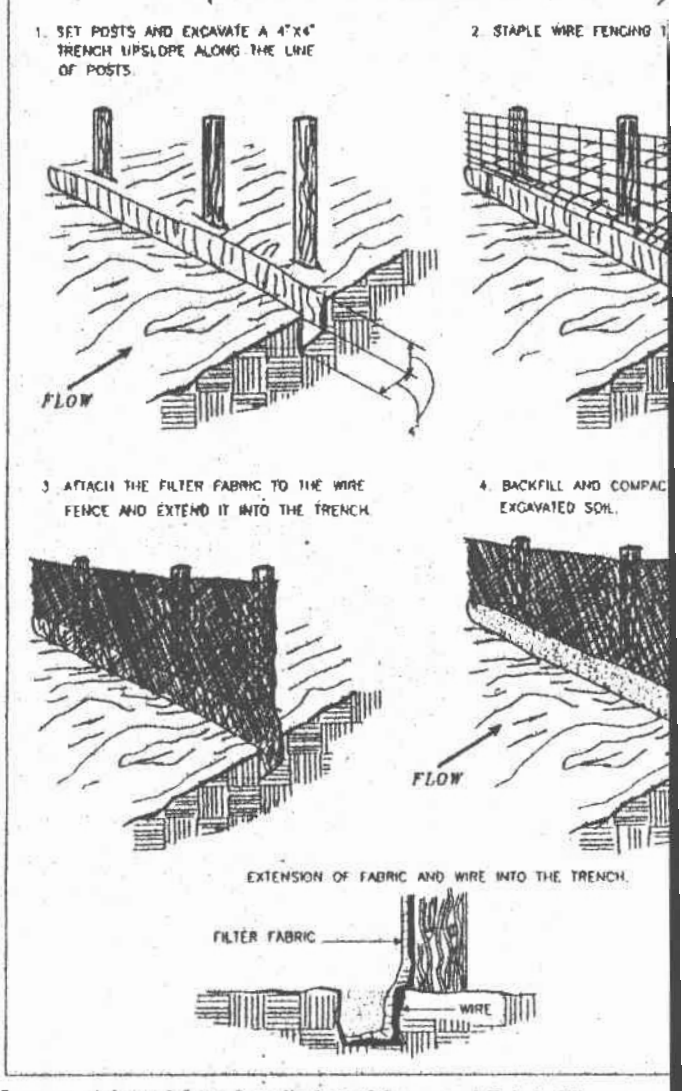
PAVED DITCHES SHALL BE REQUIRED WHEREVER EROSION IS EVIDENT. PARTICULAR ATTENTION SHALL BE PAID TO THOSE AREAS WHERE GRADES EXCEED 3 PERCENT.

TEMPORARY EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. AFTER STABILIZATION IS COMPLETE, ALL MEASURES SHALL BE REMOVED WITHIN 30 DAYS. TRAPPED SEDIMENT SHALL BE SPREAD AND SEEDED.

AS-BUILT DRAWINGS MUST BE PROVIDED FOR ALL DETENTION/BMP FACILITIES. ALSO UPON COMPLETION, THE CONSTRUCTION OF ALL DETENTION/BMP FACILITIES SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO INSPECTED THE STRUCTURE DURING CONSTRUCTION. THE CERTIFICATION SHALL STATE THAT TO THE BEST OF HIS/HER JUDGEMENT, KNOWLEDGE, AND BELIEF, THE STRUCTURE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVAL

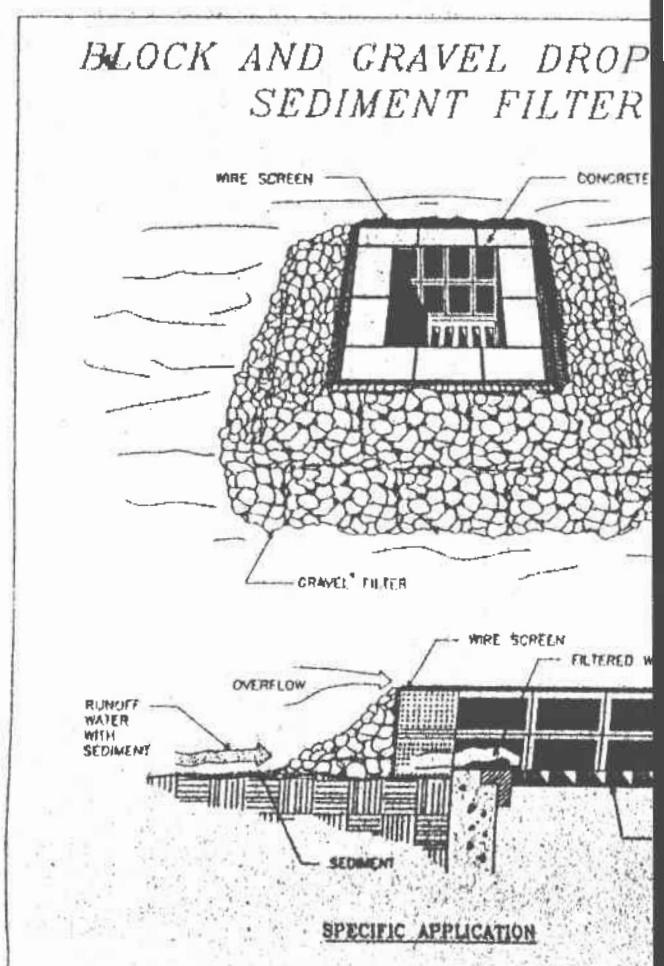
1992

CONSTRUCTION OF A SILT F
(WITH WIRE SUPPORT)



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant 1992

BLOCK AND GRAVEL DROP
SEDIMENT FILTER



SPECIFIC APPLICATION

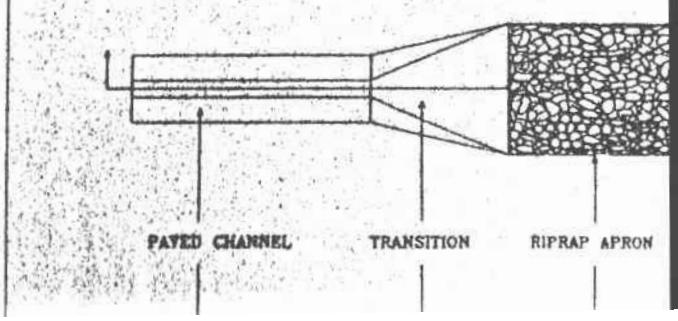
THIS METHOD OF INLET PROTECTION IS APPLICABLE W HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFL CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PON AROUND THE STRUCTURE.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AG

Source: Va. DSWC

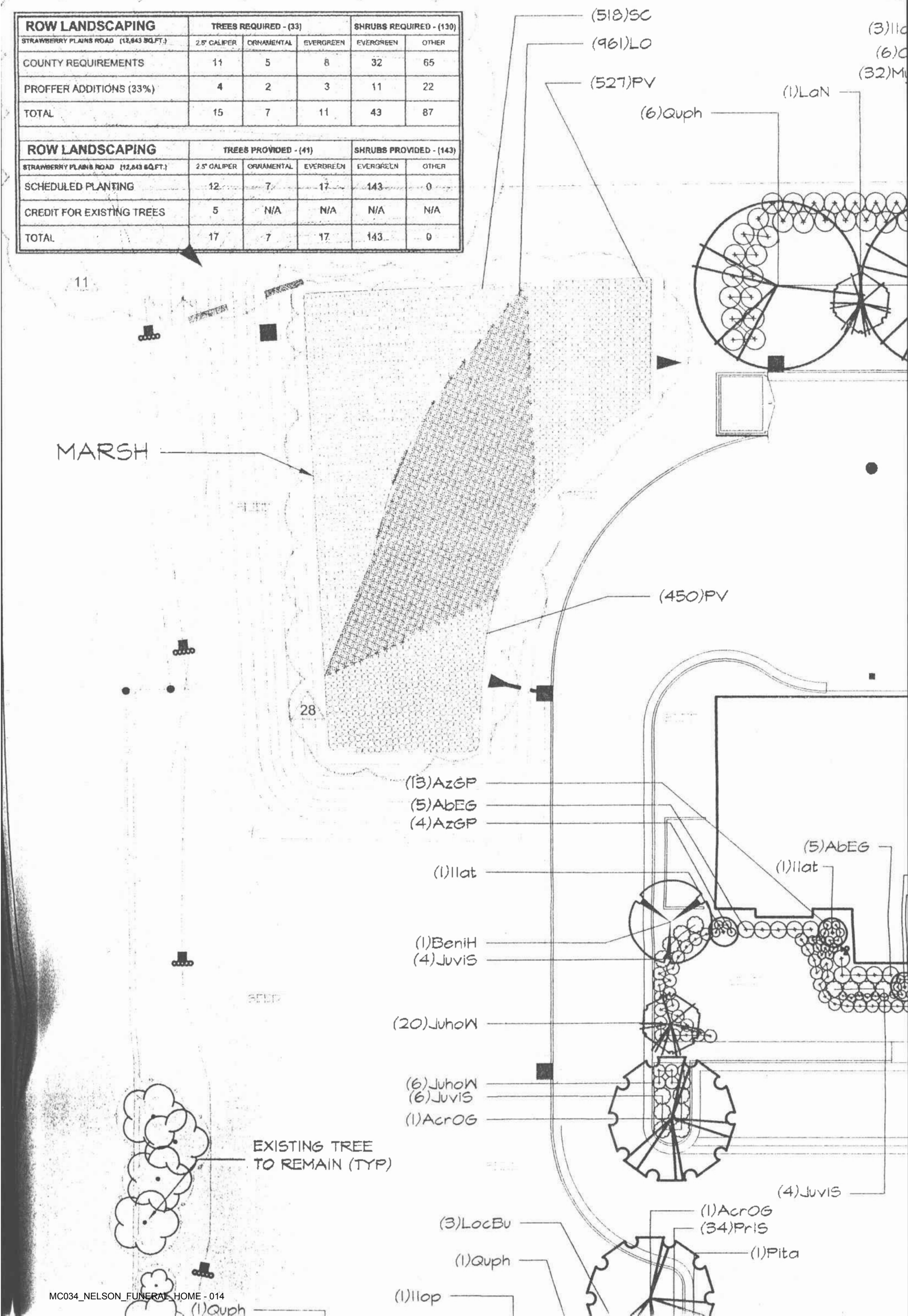
1992

PAVED CHANNEL OUTL



ROW LANDSCAPING	TREES REQUIRED - (33)			SHRUBS REQUIRED - (130)	
STRAWBERRY PLAINS ROAD (12,843 SQ.FT.)	2.5" CALIPER	ORNAMENTAL	EVERGREEN	EVERGREEN	OTHER
COUNTY REQUIREMENTS	11	5	8	32	65
PROFFER ADDITIONS (33%)	4	2	3	11	22
TOTAL	15	7	11	43	87

ROW LANDSCAPING	TREES PROVIDED - (41)			SHRUBS PROVIDED - (143)	
STRAWBERRY PLAINS ROAD (12,843 SQ.FT.)	2.5" CALIPER	ORNAMENTAL	EVERGREEN	EVERGREEN	OTHER
SCHEDULED PLANTING	12	7	17	143	0
CREDIT FOR EXISTING TREES	5	N/A	N/A	N/A	N/A
TOTAL	17	7	17	143	0



SHEET INDEX

COVER SHEET
C1 SITE PLAN
C2 LIGHTING PLAN
C3 DETAIL SHEET
C4 DETAIL SHEET
C5 DETAIL SHEET
C6 PLANTING PLAN
C7 PLANTING SCHEDULE AND PLANTING METHODS

STATISTICAL DATA

TAX MAP:	38-4-1-29B 38-4-1-34
TOTAL SITE AREA:	3.6±
TOTAL DISTURBED:	2.25 AC.
OPEN SPACE:	58%(2.1± AC.)
ZONING:	LB, with proffers, as approved by the Board of Supervisors on April 14, 1998 Case No. Z-14-97
USE:	FUNERAL HOME
BUILDING AREA:	9986 sq.ft.
PERCENTAGE OF IMPERVIOUS AREA:	42% (1.5 ± AC.)
PERCENTAGE OF SITE COVERED BY BUILDING	6.4%

PARKING SUMMARY

PARKING REQUIRED	= 30 SP.
PARKING PROVIDED	
REG. SPACES	= 70 SP.
H.C. SPACES	= 4 SP.
PROCESSIONAL PARKING	= 14 SP.
LOADING SPACES	= 2 SP.
TOTAL PROVIDED	= 90 SP

COPY DESIGN
PLAN SP-44-98
MC 034

GPIN: 38401000 29B

REVISED - 08/10/98 - CHANGED DUE TO LIG H
REV: 7/16/98 PER COUNTY COMMENTS
REVISED: 6/15/98 PER JCC/JCSA AND V

Engineering Calculations

Nelsen Funeral Home

April 22, 1998

SP-44-98
MC 034

Erosion and Sedimentation Control

The purpose of this project is the development of a 4.6 Ac. Parcel fronting on Strawberry Plains road and adjacent to Midlands Drive. The site is bounded to the rear by the Midlands apartments. The existing site is cleared with weeded plant growth and an existing driveway with slopes ranging between 0.4-3.0+%. The site's soil type is Craven.

Erosion and Sedimentation Control Measures

Structural

1. Silt Fence

   Silt fence is to be placed according to the construction plans.

2. Construction Entrance

   A temporary construction entrance shall be installed as indicated on the plans. During wet weather conditions construction vehicles will be required to have their wheels washed before exiting onto a public road.

3. Inlet Protection

   Temporary inlet protection will be provided as indicated on the plans.

4. Outlet Protection

   Outlet protection will be provided according to the construction plan, with stilling basins at each outfall.

5. Temporary Sediment Basin

   The permanent dry detention basin will serve as a temporary sediment basin. The basin shall be maintained throughout construction and ~~removed~~ converted to permanent configuration after completion of the ~~road~~ project and outfall construction.

Management

1. Construction shall be sequenced so that clearing; demolition and grading operations can begin and end as quickly as possible.
2. Sediment trapping measures shall be installed as a first step in construction.
3. Temporary seeding shall follow immediately after grading.
4. The job superintendent shall be responsible for the installation and maintenance of all erosion and sedimentation control practices.

Maintenance

In general all erosion and sedimentation control measures will be checked weekly and after each significant rainfall. The following items will be checked in particular:

1. The silt fence will be checked regularly and repaired if damaged.
2. Inlet protection will be checked regularly for sediment buildup. If the gravel is clogged with silt it will be removed and cleaned or replaced.

   All seeded areas will be checked regularly to see that good stand is maintained. Areas should be fertilized and re-seeded as needed

Langley & McDonald, P.C. DATE: 04/14/98 PROJECT NO. 1980070

Storm Sewer Design Computations

Nelsen Funeral Home

System "A"

201 =a 23.90 =b 10 YR STM		AREA DRAIN. "A"	RUNOFF COEF.	CA		INLET TIME	RAIN FALL	RUNOFF "Q"		INVERT ELEVATIONS		PIPE LNGTH	SLOPE	DIA	CAPA-CITY	VEL.	FLOW TIME	REMARKS
FROM POINT	TO POINT	ACRES	C	INCRE-MENT	ACCUM-ULATED	MIN-UTES	IN.\HR	INCRE-MENT	ACCUM-ULATED	UPPER END	LOWER END	FT.	FT./FT.	IN.	C.F.S.	F.P.S.	MIN.	
1A	2A	0.47	0.70	0.33		5.00	6.96	2.29	0.00	94.03	93.76	68	0.0040	15	4.08	3.33	0.34	
2A	3A	0.49	0.75	0.37	0.70	5.34	6.87	2.53	4.79	92.43	90.89	154	0.0100	18	10.50	5.94	0.43	
3A	4A	0.21	0.90	0.19	0.89	5.77	6.77	1.28	6.00	90.56	90.50	30	0.0020	24	10.11	3.22	0.16	

1.17

Langley & McDonald, P.C.
Hydraulic Grade Line
System "A"

Date: 04/14/98

TAILWATER = 93.00

BASIN NO	Qo CFS	PIPE LENGTH	PIPE DIA	Sfo	HF	VEL	HO	HI VEL-IN	BEND ANGLE	PIPE IN	Q in CFS	BEND LOSS	LOSS SUM H	INLET SHAPE	CB OR MANH	H.G.L.	RIM	RIM TO HGL
3	6.00	30	24	0.0007		3.22												
					0.0211		0.04	0.19	0	18	4.79	0.00	0.23	0.5	1.3	93.17	96.30	3.13
2	4.79	154	18	0.0021		5.94												
					0.3203		0.14	0.06	30	15	0.00	0.00	0.20	0.5	1.3	93.62	96.60	2.98
1	2.29	68	15	0.0013		3.33												
					0.0854		0.04	0.00					0.04	0.5	1.3	93.73	97.95	4.22

Langley & McDonald, P.C.
Storm Sewer Design Computations
Neslen Funeral Home
System "B"

DATE: 04/14/98

PROJECT NO.

201 =a 23.90 =b 10 YR STM		AREA DRAIN. "A"	RUNOFF COEF.	CA		INLET TIME	RAIN FALL	RUNOFF "Q"		INVERT ELEVATIONS		PIPE LNGTH	SLOPE	DIA	CAPA-CITY	VEL.	FLOW TIME	REMARKS
FROM POINT	TO POINT	ACRES	C	INCRE-MENT	ACCUM-ULATED	MIN-UTES	IN.\HR	INCRE-MENT	ACCUM-ULATED	UPPER END	LOWER END	FT.	FT./FT.	IN.	C.F.S.	F.P.S.	MIN.	
1B	2B	0.95	0.70	0.67		5.00	6.96	4.63	0.00	91.94	91.03	91	0.0100	15	6.46	5.26	0.29	
2B	3B	0.25	0.85	0.21	0.88	5.29	6.89	1.46	6.04	90.38	90.31	15	0.0050	18	7.39	4.18	0.06	

1.2

Langley & McDonald, P.C.
Hydraulic Grade Line

TAILWATER = 93.00

BASIN NO	Qo CFS	PIPE LENGTH	PIPE DIA	Sfo	HF	VEL	HO	HI VEL-IN	BEND ANGLE	PIPE IN	Q in CFS	BEND LOSS	LOSS SUM H	INLET SHAPE	CB OR MANH	H.G.L.	RIM	RIM TO HGL
2	6.04	15	18	0.0033		4.18												
					0.0497		0.07	0.15	90	15	0.00	0.00	0.22	0.5	1.3	93.19	95.86	2.67
1	4.63	91	15	0.0051		5.26												
					0.4670		0.11	0.00					0.11	0.5	1.3	93.73	94.93	1.20

Culvert Calculator Report
VDOT 15" Crossing Pipe

- EXISTING

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	100.64	ft	Headwater Depth/ Height	1.50	
Computed Headwater Elevation	100.64	ft	Discharge	6.30	cfs
Inlet Control HW Elev	100.64	ft	Tailwater Elevation	99.20	ft
Outlet Control HW Elev	100.57	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	98.76	ft	Downstream Invert	98.32	ft
Length	50.00	ft	Constructed Slope	0.008800	ft/ft

Hydraulic Profile					
Profile	M2		Depth, Downstream	1.01	ft
Slope Type	Mild		Normal Depth	1.08	ft
Flow Regime	Subcritical		Critical Depth	1.01	ft
Velocity Downstream	5.91	ft/s	Critical Slope	0.009703	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.25	ft
Section Size	15 inch		Rise	1.25	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev	100.57	ft	Upstream Velocity Head	0.49	ft
Ke	0.50		Entrance Loss	0.24	ft

Inlet Control Properties					
Inlet Control HW Elev	100.64	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	1.2	ft^2
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Relocated Ditch
Worksheet for Triangular Channel

Project Description	
Project File	e:\haestad\fmw\nelsen.fm2
Worksheet	Re-routed/Intception Ditch
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coefficient	0.030	
Channel Slope	0.010000	ft/ft
Left Side Slope	3.000000	H : V
Right Side Slope	3.000000	H : V
Discharge	7.90	cfs

Results		
Depth	0.95	ft
Flow Area	2.71	ft²
Wetted Perimeter	6.01	ft
Top Width	5.70	ft
Critical Depth	0.85	ft
Critical Slope	0.018749	ft/ft
Velocity	2.91	ft/s
Velocity Head	0.13	ft
Specific Energy	1.08	ft
Froude Number	0.74	
Flow is subcritical.		

Slope = 4%
Q = 8 cfs
V = 3.47 ft/sec

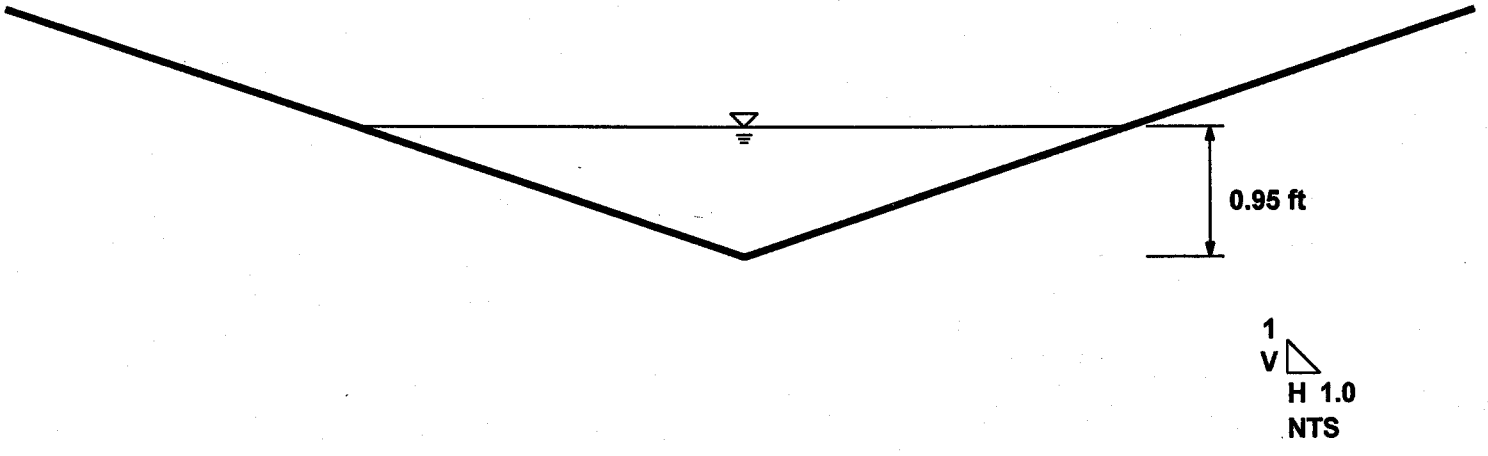
4.3%
8.1 cfs
V = 3.57 fps

needs EC-3 liner

Cross Section - Relocated Ditch
Cross Section for Triangular Channel

Project Description	
Project File	e:\haestad\fmw\nelsen.fm2
Worksheet	Re-routed/Intception Ditch
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.030	
Channel Slope	0.010000	ft/ft
Depth	0.95	ft
Left Side Slope	3.000000	H : V
Right Side Slope	3.000000	H : V
Discharge	7.90	cfs



Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject: NELSON FUNERAL HOME
1/2 24 hr Storm Stor.

Computed By _____ Checked By _____

Project No. _____
Client _____
Date _____ Sheet No. _____

GIVEN: I = 2.8

Soil type = CRAVEN ⇒ "C"

CN FOR URBAN AREAS = 94 @ 41% OF SITE ⇒ 38.6
= 74 @ 59% OF SITE ⇒ 46.6

COMPOSITE CN = 85

FROM TABLE 2-1 (210-VI-TR-55, 2nd Ed, JUNE 1986)

CN RAINFALL @ 2.5 = 1.18"
CN RAINFALL @ 3.0 = 1.59"

∴ @ 0.082" per .1" OF RAINFALL 2.8" ⇒ 1.43"

Volume of 1/2 24 hr Storm, Reqd DETENTION

4.51 AC = 196455 ft²
1.43" = 0.119'

196455 x 0.119 = 23378 cu FT reqd Storage

texture is given in appendix A for determining the HSG classification for disturbed soils.

Cover type

Table 2-2 addresses most cover types, such as vegetation, bare soil, and impervious surfaces. There are a number of methods for determining cover type. The most common are field reconnaissance, aerial photographs, and land use maps.

Treatment

Treatment is a cover type modifier (used only in table 2-2b) to describe the management of cultivated agricultural lands. It includes mechanical practices, such as contouring and terracing, and management practices, such as crop rotations and reduced or no tillage.

Hydrologic condition

Hydrologic condition indicates the effects of cover type and treatment on infiltration and runoff and is generally estimated from density of plant and residue cover on sample areas. *Good* hydrologic condition indicates that the soil usually has a low runoff potential for that specific hydrologic soil group, cover type, and treatment. Some factors to consider in estimating the effect of cover on infiltration and runoff are (a) canopy or density of lawns, crops, or other vegetative areas; (b) amount of year-round cover; (c) amount of grass or close-seeded legumes in rotations; (d) percent of residue cover; and (e) degree of surface roughness.

Table 2-1.—Runoff depth for selected CN's and rainfall amounts[1]

	Runoff depth for curve number of—												
Rainfall	40	45	50	55	60	65	70	75	80	85	90	95	98
	inches												
1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.17	0.32	0.56	0.79
1.2	.00	.00	.00	.00	.00	.00	.03	.07	.15	.27	.46	.74	.99
1.4	.00	.00	.00	.00	.00	.02	.06	.13	.24	.39	.61	.92	1.18
1.6	.00	.00	.00	.00	.01	.05	.11	.20	.34	.52	.76	1.11	1.38
1.8	.00	.00	.00	.00	.03	.09	.17	.29	.44	.65	.93	1.29	1.58
2.0	.00	.00	.00	.02	.06	.14	.24	.38	.56	.80	1.09	1.48	1.77
2.5	.00	.00	.02	.08	.17	.30	.46	.65	.89	1.18	1.53	1.96	2.27
3.0	.00	.02	.09	.19	.33	.51	.71	.96	1.25	1.59	1.98	2.45	2.77
3.5	.02	.08	.20	.35	.53	.75	1.01	1.30	1.64	2.02	2.45	2.94	3.27
4.0	.06	.18	.33	.53	.76	1.03	1.33	1.67	2.04	2.46	2.92	3.43	3.77
4.5	.14	.30	.50	.74	1.02	1.33	1.67	2.05	2.46	2.91	3.40	3.92	4.26
5.0	.24	.44	.69	.98	1.30	1.65	2.04	2.45	2.89	3.37	3.88	4.42	4.76
6.0	.50	.80	1.14	1.52	1.92	2.35	2.81	3.28	3.78	4.30	4.85	5.41	5.76
7.0	.84	1.24	1.68	2.12	2.60	3.10	3.62	4.15	4.69	5.25	5.82	6.41	6.76
8.0	1.25	1.74	2.25	2.78	3.33	3.89	4.46	5.04	5.63	6.21	6.81	7.40	7.76
9.0	1.71	2.29	2.88	3.49	4.10	4.72	5.33	5.95	6.57	7.18	7.79	8.40	8.76
10.0	2.23	2.89	3.56	4.23	4.90	5.56	6.22	6.88	7.52	8.16	8.78	9.40	9.76
11.0	2.78	3.52	4.26	5.00	5.72	6.43	7.13	7.81	8.48	9.13	9.77	10.39	10.76
12.0	3.38	4.19	5.00	5.79	6.56	7.32	8.05	8.76	9.45	10.11	10.76	11.39	11.76
13.0	4.00	4.89	5.76	6.61	7.42	8.21	8.98	9.71	10.42	11.10	11.76	12.39	12.76
14.0	4.65	5.62	6.55	7.44	8.30	9.12	9.91	10.67	11.39	12.08	12.75	13.39	13.76
15.0	5.33	6.36	7.35	8.29	9.19	10.04	10.85	11.63	12.37	13.07	13.74	14.39	14.76

[1]Interpolate the values shown to obtain runoff depths for CN's or rainfall amounts not shown.

MC034_NELSON_FUNERAL_HOME - 026

Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject Nelson Funeral Home
Wetland Sizing

Computed By _____ Checked By _____

Project No. _____
Client _____
Date _____ Sheet No. _____

Volume of Lower Stage (Marsh)

$$\left[\frac{(R_m)(R_d)}{12}\right] A \Rightarrow \frac{(.45)(.42)}{12} \times 4.51 = \underline{0.07 \text{ Ac ft}}$$

Area of Marsh @ 6" Depth

$$\frac{.07}{.5} = .14 \text{ Ac} \Rightarrow 6098 \text{ ft}^2 \checkmark$$

Nit. Loading

$$N = \left[\frac{44(.9)(.42)}{12}\right](2.0)(4.51)(2.72) \Rightarrow \underline{N = 34 \text{ Lb/yr}} \checkmark$$

~~314 P~~ 239.4 loading/wetland ac.

PH Loading

$$P = \left[\frac{44(.9)(.42)}{12}\right](.26)(2.72)(4.51) \Rightarrow \underline{4.4 \text{ Lbs/yr}} \checkmark$$

31.1 P load/wetl. ac.

Avg Ann. Load:

N: $\frac{34}{.14} = 243 \text{ Lb/yr} > 225 \text{ Lb/yr}^{(ND)} \Rightarrow 225 = \frac{34}{X_{AREA}} \Rightarrow$ Area Req = $\underline{.15 \text{ Ac}}$ $\underline{\underline{OK}}$

P: $\frac{4.4}{.14}$ 31.4 Lb/a < 45 Lb/yr $\underline{\underline{OK}}$

Area of Marsh to be increased to $\underline{\underline{0.15 \text{ Ac}}}$

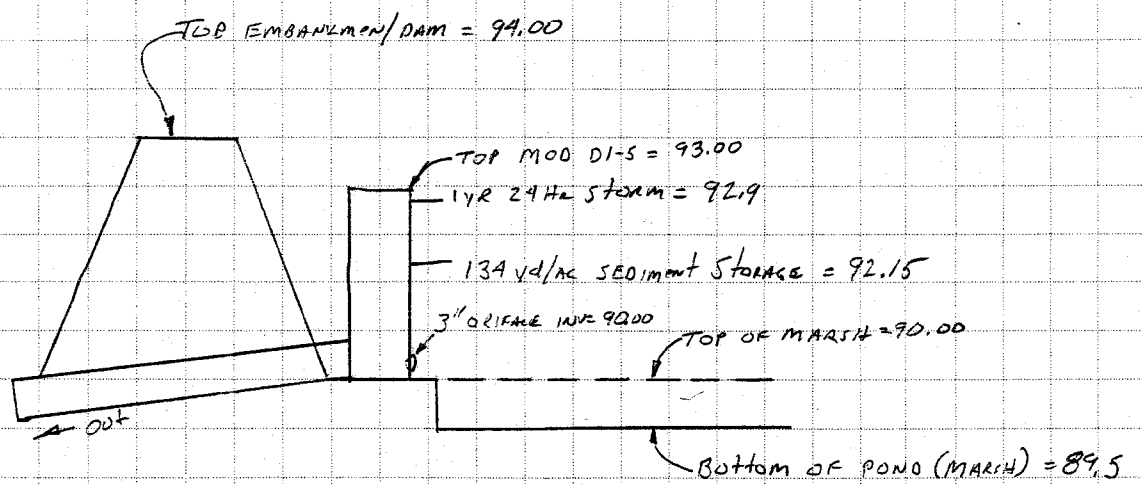
Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject NELSEN FUNERAL HOME
Pond Stage Storage

Computed By _____ Checked By _____

Project No. _____
Client _____
Date _____ Sheet No. _____

ELEV	AREA ♯	Avg. A ♯	INC. Vol. cu ft	Σ Vol
90	6405		(VOLUME OF MARSH NOT INCLUDED)	
		6957	6957	6957
91	7510			81
		8090	8090	15047
92	8671			
		9280	9280	24327
93	9889			
		10526	10526	34853
94	11163			



2YR STORM PEAK ELEV = 91.54
10YR STORM PEAK ELEV = 91.99
100YR STORM PEAK ELEV = 93.07 Design High Water

= elev ⇒ 91.2 - dewatering

SEDIMENT STORAGE

DRY = 67 x 4.51 = 302 cy - 8154

Wet 67 x 4.51 = 302 cy

Total = 302+302 = 604 cy ⇒ 16308 ♯ @ ELEV. 92.15

Nelsen Funeral Home

DETENTION BASIN DESIGN
SCS MODIFIED RATIONAL METHOD

DESIGN DATA:

Drainage Area Pre (Acres)	=	5.98 Acres
Drainage Area Post (Acres)	=	4.51 Acres
Runoff Coeff. (Pre)	=	0.48
Runoff Coeff. (Post)	=	0.62
Pre-Development TC (Min)	=	20 Min.
Post Development TC (Min)	=	10 Min.

RESULTS:

2 Year Design Storm

Pre-Development Runoff (CFS)	=	10.11 C.F.S.
Critcial Storm Duration (Min)	=	17.09 Min.
Peak Critical Storm Basin Inflow (CFS)	=	10.61 C.F.S.
Allowable Post Development Basin Discharge (CFS)	=	10.11 C.F.S.
Required Storage Volume for Detention Basin (CF)	=	2743.42 C.F.

10 Year Design Storm

Pre-Development Runoff (CFS)	=	13.33 C.F.S.
Critcial Storm Duration (Min)	=	18.63 Min.
Peak Critical Storm Basin Inflow (CFS)	=	13.41 C.F.S.
Allowable Post Development Basin Discharge (CFS)	=	13.33 C.F.S.
Required Storage Volume for Detention Basin (CF)	=	3552.31 C.F.

100 Year Design Storm

Pre-Development Runoff (CFS)	=	18.54 C.F.S.
Critcial Storm Duration (Min)	=	20.15 Min.
Peak Critical Storm Basin Inflow (CFS)	=	18.00 C.F.S.
Allowable Post Development Basin Discharge (CFS)	=	18.54 C.F.S.
Required Storage Volume for Detention Basin (CF)	=	4915.54 C.F.

EXECUTED: 04-13-1998 14:46:13 Return Freq: 2 years

```
*************************
*                       *
* Nelsen Funeral Home   *
*                       *
*                       *
*                       *
*                       *
*************************
```

Inflow Hydrograph: PRE-2 .HYD
Rating Table file: NELSEN .PND

----INITIAL CONDITIONS----
Elevation = 90.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
90.00	0.0	0	0.0	0.0
90.50	0.1	3,337	111.2	111.3
91.00	0.2	6,950	231.6	231.8
91.50	0.3	10,847	361.5	361.8
92.00	0.3	15,034	501.0	501.3
92.15	0.3	16,348	544.8	545.1
92.50	0.4	19,518	650.5	650.9
92.90	0.4	23,325	777.3	777.7
93.00	0.4	24,307	810.1	810.5
93.50	7.3	29,408	980.1	987.4

Time increment (t) = 0.017 hrs.

POND-2 Version: 5.20 S/N:
EXECUTED: 04-13-1998 14:46:13

Return Freq: 2 years

Pond File: NELSEN .PND
Inflow Hydrograph: PRE-2 .HYD
Outflow Hydrograph: POST-2 .HYD

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.00	-----	0.0	0.0	0.00	90.00
0.017	1.01	1.0	1.0	1.0	0.00	90.00
0.033	2.01	3.0	4.0	4.0	0.00	90.02
0.050	3.02	5.0	9.0	9.1	0.01	90.04
0.067	4.03	7.1	16.1	16.1	0.01	90.07
0.083	5.03	9.1	25.1	25.1	0.02	90.11
0.100	6.04	11.1	36.1	36.1	0.03	90.16
0.117	7.05	13.1	49.1	49.2	0.04	90.22
0.133	8.05	15.1	64.1	64.2	0.06	90.29
0.150	9.06	17.1	81.0	81.2	0.07	90.36
0.167	10.07	19.1	100.0	100.2	0.09	90.45
0.183	10.07	20.1	119.9	120.1	0.11	90.54
0.200	10.07	20.1	139.8	140.0	0.12	90.62
0.217	10.07	20.1	159.7	159.9	0.14	90.70
0.233	10.07	20.1	179.5	179.8	0.16	90.78
0.250	10.07	20.1	199.3	199.6	0.17	90.87
0.267	10.07	20.1	219.0	219.4	0.19	90.95
0.283	10.07	20.1	238.8	239.2	0.21	91.03
0.300	10.07	20.1	258.5	258.9	0.22	91.10
0.317	10.07	20.1	278.1	278.6	0.24	91.18
0.333	9.06	19.1	296.8	297.3	0.25	91.25
0.350	8.05	17.1	313.3	313.9	0.26	91.32
0.367	7.05	15.1	327.9	328.4	0.27	91.37
0.383	6.04	13.1	340.4	341.0	0.28	91.42
0.400	5.03	11.1	350.9	351.5	0.29	91.46
0.417	4.03	9.1	359.4	360.0	0.30	91.49
0.433	3.02	7.1	365.8	366.4	0.30	91.52
0.450	2.01	5.0	370.2	370.8	0.30	91.53
0.467	1.01	3.0	372.7	373.3	0.30	91.54
0.483	0.00	1.0	373.1	373.7	0.30	91.54

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: NELSEN .PND
Inflow Hydrograph: PRE-2 .HYD
Outflow Hydrograph: POST-2 .HYD

Starting Pond W.S. Elevation = 90.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 10.07 cfs
Peak Outflow = 0.30 cfs
Peak Elevation = 91.54 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 11,203 cu-ft

Total Storage in Pond = 11,203 cu-ft

2-YEAR
Routed

EXECUTED: 04-13-1998 14:46:13 Return Freq: 10 years

```
*************************
*                       *
* Nelsen Funeral Home   *
*                       *
*                       *
*                       *
*                       *
*************************
```

Inflow Hydrograph: PRE-10 .HYD
Rating Table file: NELSEN .PND

----INITIAL CONDITIONS----
Elevation = 90.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
90.00	0.0	0	0.0	0.0
90.50	0.1	3,337	111.2	111.3
91.00	0.2	6,950	231.6	231.8
91.50	0.3	10,847	361.5	361.8
92.00	0.3	15,034	501.0	501.3
92.15	0.3	16,348	544.8	545.1
92.50	0.4	19,518	650.5	650.9
92.90	0.4	23,325	777.3	777.7
93.00	0.4	24,307	810.1	810.5
93.50	7.3	29,408	980.1	987.4

Time increment (t) = 0.017 hrs.

POND-2 Version: 5.20 S/N:
EXECUTED: 04-13-1998 14:46:13

Return Freq: 10 years

Pond File: NELSEN .PND
Inflow Hydrograph: PRE-10 .HYD
Outflow Hydrograph: POST-10 .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.00	-----	0.0	0.0	0.00	90.00
0.017	1.38	1.4	1.4	1.4	0.00	90.01
0.033	2.75	4.1	5.5	5.5	0.00	90.02
0.050	4.13	6.9	12.4	12.4	0.01	90.06
0.067	5.50	9.6	21.9	22.0	0.02	90.10
0.083	6.88	12.4	34.3	34.3	0.03	90.15
0.100	8.25	15.1	49.3	49.4	0.04	90.22
0.117	9.63	17.9	67.1	67.2	0.06	90.30
0.133	11.01	20.6	87.5	87.7	0.08	90.39
0.150	12.38	23.4	110.7	110.9	0.10	90.50
0.167	13.76	26.1	136.6	136.9	0.12	90.61
0.183	13.76	27.5	163.9	164.2	0.14	90.72
0.200	13.76	27.5	191.1	191.4	0.17	90.83
0.217	13.76	27.5	218.2	218.6	0.19	90.95
0.233	13.76	27.5	245.3	245.7	0.21	91.05
0.250	13.76	27.5	272.4	272.8	0.23	91.16
0.267	13.76	27.5	299.4	299.9	0.25	91.26
0.283	13.76	27.5	326.3	326.9	0.27	91.37
0.300	13.76	27.5	353.3	353.9	0.29	91.47
0.317	12.38	26.1	378.8	379.4	0.30	91.56
0.333	11.01	23.4	401.6	402.2	0.30	91.64
0.350	9.63	20.6	421.6	422.2	0.30	91.72
0.367	8.25	17.9	438.9	439.5	0.30	91.78
0.383	6.88	15.1	453.5	454.1	0.30	91.83
0.400	5.50	12.4	465.2	465.8	0.30	91.87
0.417	4.13	9.6	474.3	474.9	0.30	91.91
0.433	2.75	6.9	480.5	481.1	0.30	91.93
0.450	1.38	4.1	484.1	484.7	0.30	91.94
0.467	0.00	1.4	484.9	485.5	0.30	91.94

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: NELSEN .PND
Inflow Hydrograph: PRE-10 .HYD
Outflow Hydrograph: POST-10 .HYD

Starting Pond W.S. Elevation = 90.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	13.76 cfs
Peak Outflow	=	0.30 cfs
Peak Elevation	=	91.94 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	14,558 cu-ft
Total Storage in Pond	=	14,558 cu-ft

10-YEAR ROUTED.

```
*************************
*                       *
* Nelsen Funeral Home   *
*                       *
*                       *
*                       *
*                       *
*************************
```

Inflow Hydrograph: PRE-100 .HYD
Rating Table file: NELSEN .PND

----INITIAL CONDITIONS----
Elevation = 90.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
90.00	0.0	0	0.0	0.0
90.50	0.1	3,337	111.2	111.3
91.00	0.2	6,950	231.6	231.8
91.50	0.3	10,847	361.5	361.8
92.00	0.3	15,034	501.0	501.3
92.15	0.3	16,348	544.8	545.1
92.50	0.4	19,518	650.5	650.9
92.90	0.4	23,325	777.3	777.7
93.00	0.4	24,307	810.1	810.5
93.50	7.3	29,408	980.1	987.4

Time increment (t) = 0.017 hrs.

EXECUTED: 04-13-1998 14:46:13 Return Freq: 100 years

Pond File: NELSEN .PND
Inflow Hydrograph: PRE-100 .HYD
Outflow Hydrograph: POST-100.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.00	-----	0.0	0.0	0.00	90.00
0.017	2.37	2.4	2.4	2.4	0.00	90.01
0.033	4.74	7.1	9.5	9.5	0.01	90.04
0.050	7.11	11.9	21.3	21.3	0.02	90.10
0.067	9.48	16.6	37.8	37.9	0.03	90.17
0.083	11.85	21.3	59.0	59.1	0.05	90.27
0.100	14.22	26.1	84.9	85.1	0.08	90.38
0.117	16.59	30.8	115.5	115.7	0.10	90.52
0.133	18.96	35.6	150.8	151.1	0.13	90.67
0.150	21.33	40.3	190.8	191.1	0.17	90.83
0.167	23.70	45.0	235.4	235.8	0.20	91.02
0.183	23.70	47.4	282.3	282.8	0.24	91.20
0.200	23.70	47.4	329.2	329.7	0.28	91.38
0.217	23.70	47.4	376.0	376.6	0.30	91.55
0.233	23.70	47.4	422.8	423.4	0.30	91.72
0.250	23.70	47.4	469.6	470.2	0.30	91.89
0.267	23.70	47.4	516.4	517.0	0.30	92.05
0.283	23.70	47.4	563.1	563.8	0.32	92.21
0.300	23.70	47.4	609.8	610.5	0.36	92.37
0.317	21.33	45.0	654.0	654.8	0.40	92.51
0.333	18.96	40.3	693.5	694.3	0.40	92.64
0.350	16.59	35.6	728.3	729.1	0.40	92.75
0.367	14.22	30.8	758.3	759.1	0.40	92.84
0.383	11.85	26.1	783.6	784.4	0.40	92.92
0.400	9.48	21.3	804.1	804.9	0.40	92.98
0.417	7.11	16.6	819.1	820.7	0.80	93.03
0.433	4.74	11.9	828.5	830.9	1.20	93.06
0.450	2.37	7.1	832.9	835.6	1.38	93.07
0.467	0.00	2.4	832.5	835.3	1.37	93.07

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: NELSEN .PND
Inflow Hydrograph: PRE-100 .HYD
Outflow Hydrograph: POST-100.HYD

Starting Pond W.S. Elevation = 90.00 ft

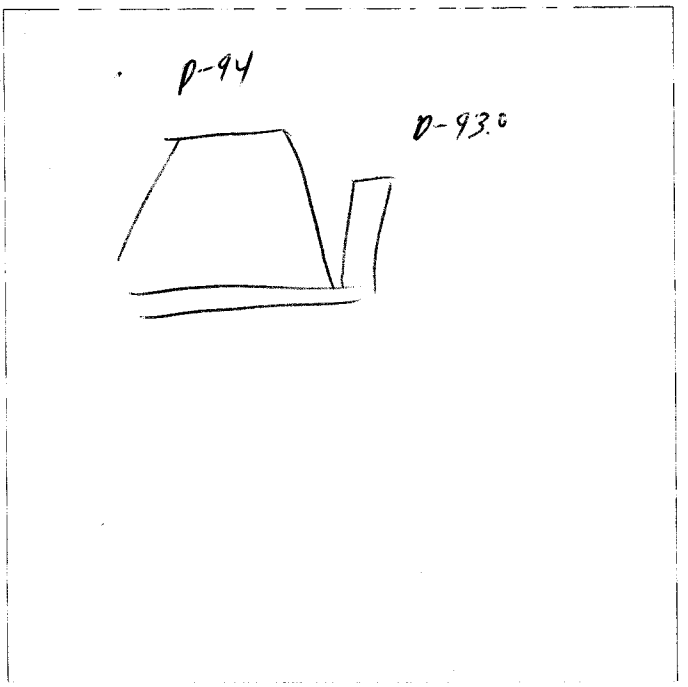
***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	23.70 cfs
Peak Outflow	=	1.38 cfs
Peak Elevation	=	93.07 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	25,033 cu-ft
Total Storage in Pond	=	25,033 cu-ft

100-YEAR
ROUTED


p-94
D-93.0

Nelsen Funeral Home

BASIN DRAWDOWN SUMMARY FOR 1yr 24 HR STORM

RISE	VOL(CF)	D	Q(OUT)	TIME(HR)	SUM(HR)
2.900	23399.00	2.775	0.3996	0.6451	0.6451
2.800	22471.00	2.675	0.3923	0.6571	1.3022
2.700	21543.00	2.575	0.3849	0.6697	1.9719
2.600	20615.00	2.475	0.3774	0.6831	2.6550
2.500	19687.00	2.375	0.3697	3.4867	6.1417
2.000	15047.00	1.875	0.3285	3.4209	9.5627
1.500	11002.00	1.375	0.2813	3.9948	13.5575
1.000	6957.00	0.875	0.2244	0.8604	14.4179
0.900	6262.00	0.775	0.2112	0.9142	15.3321
0.800	5567.00	0.675	0.1971	0.9796	16.3118
0.700	4872.00	0.575	0.1819	1.0614	17.3732
0.600	4177.00	0.475	0.1653	1.1678	18.5410
0.500	3482.00	0.375	0.1469	1.3143	19.8553
0.400	2787.00	0.275	0.1258	1.5348	21.3901
0.300	2092.00	0.175	0.1003	1.9240	23.3140
0.200	1397.00	0.075	0.0657	5.9074	29.2214

SUMMARY OF RUNOFF ANALYSIS AND DETENTION BASIN PERFORMANCE

2 YR - PRE-DEVELOPMENT PEAK DISCHARGE	= 10.11 CFS
2 YR - POST DEVELOPMENT PEAK DISCHARGE	= 10.61 CFS
10 YR - PRE-DEVELOPMENT PEAK DISCHARGE	= 13.33 CFS
10 YR - POST DEVELOPMENT PEAK DISCHARGE	= 13.41 CFS
10 YR - POST DEVELOPMENT ROUTING DISCHARGE	= 0.30 CFS @ Elevation 91.94
100 YR - POST DEVELOPMENT ROUTING DISCHARGE	= 1.38 CFS @ Elevation 93.07

NELSEN FUNERAL HOME

TABLE 3

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points		Fraction of Site Served by BMP		Weighted BMP Points
EXTENDED DAY DETENTION	9	x	125%	=	11.2
WET MARSH #3		x		=	
		x		=	
		x		=	

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 11.2

B. NATURAL OPEN SPACE CREDIT

Fraction of Site		Natural Open Space Credit (0.1 per 1%)		Points for Natural Open Space
0.0	x	0.0	=	0.0

C. TOTAL WEIGHTED POINTS

11.2	+	0	=	11.2
Structural BMP Points		Natural Open Space Points		TOTAL

TOTAL SITE AREA = 3.6 Act

Total TREATED AREA = 4.5 Act

Net % = 125%

Nelsen Funeral Home

Temorary Sediment Basin Drawdown

RISE	VOL(CF)	D	Q(OUT)	TIME(HR)	SUM(HR)
2.100	16308.00	1.975	0.3371	1.0391	1.0391
2.000	15047.00	1.875	0.3285	0.6842	1.7233
1.900	14238.00	1.775	0.3196	0.7032	2.4265
1.800	13429.00	1.675	0.3104	2.1717	4.5982
1.500	11002.00	1.375	0.2813	0.7990	5.3971
1.400	10193.00	1.275	0.2708	1.6594	7.0565
1.200	8575.00	1.075	0.2487	1.8072	8.8637
1.000	6957.00	0.875	0.2244	0.8604	9.7241
0.900	6262.00	0.775	0.2112	0.9142	10.6384
0.800	5567.00	0.675	0.1971	0.9796	11.6180
0.700	4872.00	0.575	0.1819	1.0614	12.6794
0.600	4177.00	0.475	0.1653	1.1678	13.8472
0.500	3482.00	0.375	0.1469	1.3143	15.1615
0.400	2787.00	0.275	0.1258	1.5348	16.6963
0.300	2092.00	0.175	0.1003	1.9240	18.6202
0.200	1397.00	0.075	0.0657	5.9074	24.5276

SUMMARY OF RUNOFF ANALYSIS AND DETENTION BASIN PERFORMANCE

Wet &Dry Storage Elevation = 92.15 –
Wet Storage Elevation = 91.05 – marsh elevation - 90.0

drawdown

Outfall Channel - Post Development
Worksheet for Irregular Channel

Project Description	
Project File	e:\haestad\fmw\nelsen o.fm2
Worksheet	Nelsen Outfall
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.050000 ft/ft			
Elevation range: 82.00 ft to 87.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	86.00	0.00	38.80	0.030
9.00	85.00			
12.00	84.00			
14.50	83.00			
16.50	82.00			
23.50	82.00			
26.50	83.00			
29.50	84.00			
32.50	85.00			
35.50	86.00			
38.80	87.00			
Discharge	0.30	cfs		

Results		
Wtd. Mannings Coefficient	0.030	
Water Surface Elevation	82.04	ft
Flow Area	0.25	ft^2
Wetted Perimeter	7.19	ft
Top Width	7.18	ft
Height	0.04	ft
Critical Depth	82.04	ft
Critical Slope	0.039168	ft/ft
Velocity	1.19	ft/s
Velocity Head	0.02	ft
Specific Energy	82.06	ft
Froude Number	1.12	
Flow is supercritical.		

Outfall Channel - Pre Development
Worksheet for Irregular Channel

Project Description	
Project File	e:\haestad\fmw\nelsen o.fm2
Worksheet	Nelsen Outfall
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.050000 ft/ft			
Elevation range: 82.00 ft to 87.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	86.00	0.00	38.80	0.030
9.00	85.00			
12.00	84.00			
14.50	83.00			
16.50	82.00			
23.50	82.00			
26.50	83.00			
29.50	84.00			
32.50	85.00			
35.50	86.00			
38.80	87.00			
Discharge	13.33	cfs		

Results		
Wtd. Mannings Coefficient	0.030	
Water Surface Elevation	82.34	ft
Flow Area	2.67	ft^2
Wetted Perimeter	8.84	ft
Top Width	8.70	ft
Height	0.34	ft
Critical Depth	82.46	ft
Critical Slope	0.018263	ft/ft
Velocity	4.99	ft/s
Velocity Head	0.39	ft
Specific Energy	82.73	ft
Froude Number	1.59	
Flow is supercritical.		

SP-44-98
MC 034

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) 253-2620

May 26, 2000

LandMark Design Group
4029 Ironbound Road, Suite 100
Williamsburg, Va. 23188
Attn: Mr. Peter Farrell, LS

Re: Nelson Funeral Home
Strawberry Plains Road & Midlands Road
Case No. SP-44-98

Dear Mr. Farrell:

The Environmental Division has reviewed a record drawing submitted to our office for the above referenced project. The record drawing dated February 14th 2000 provides as-built information for a dry type stormwater management/BMP detention facility located in the southwest corner of the site and its associated onsite storm drainage system.

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

1. In accordance with the Sheet C5, Note # 18 of the approved plan, construction certifications for the BMP were not provided.

2. It appears that all constructed dam elevations lowered sequentially including the top of dam, emergency spillway, riser crest and bottom of pond elevations. Although this normally would not be a significant alteration, the approved 100-year design high water surface elevation of 93.1 would overtop the lowest constructed elevation at the top of dam elevation shown at El. 92.4.

3. Based on a comparison between approved and record drawing grading (contours), there appears to be a reduction in the bottom surface area of the BMP, which subsequently could result in a reduction of available storage volume. Also, the approved plan called for a 15 inch diameter outlet barrel at 4.46 percent slope. An 18 inch diameter barrel was constructed at 3.07 percent. It is unclear whether an increased pipe size at a flatter slope would provide for similar pond hydraulics to the 15 inch pipe at a steeper slope.

It is noted that the facility appears to function properly based on recent rainfall events; however, based on Items # 2 and # 3 above, a hydraulic check routing is required. The check routing should based on design hydrologic data and constructed pond data (elevations, storage, etc.) to ensure freeboard is in compliance with the approved plan. Based on County requirements, a minimum of freeboard of 1 foot is required between the 100-year water surface elevation and the lowest top of dam elevation for this type of facility.

Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,

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

SJT/sjt

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) 253-2620

May 26, 2000

10/16/01 - 2 primary inflow pipe outfalls cleaned of veg + sed, 15' offset

LandMark Design Group
4029 Ironbound Road, Suite 100
Williamsburg, Va. 23188
Attn: Mr. Peter Farrell, LS

Re: Nelson Funeral Home
Strawberry Plains Road & Midlands Road
Case No. SP-44-98

Dear Mr. Farrell:

The Environmental Division has reviewed a record drawing submitted to our office for the above referenced project. The record drawing dated February 14th 2000 provides as-built information for a dry type stormwater management/BMP detention facility located in the southwest corner of the site and its associated onsite storm drainage system.

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

1. In accordance with the Sheet C5, Note # 18 of the approved plan, construction certifications for the BMP were not provided.

2. It appears that all constructed dam elevations lowered sequentially including the top of dam, emergency spillway, riser crest and bottom of pond elevations. Although this normally would not be a significant alteration, the approved 100-year design high water surface elevation of 93.1 would overtop the lowest constructed elevation at the top of dam elevation shown at El. 92.4.

3. Based on a comparison between approved and record drawing grading (contours), there appears to be a reduction in the bottom surface area of the BMP, which subsequently could result in a reduction of available storage volume. Also, the approved plan called for a 15 inch diameter outlet barrel at 4.46 percent slope. An 18 inch diameter barrel was constructed at 3.07 percent. It is unclear whether an increased pipe size at a flatter slope would provide for similar pond hydraulics to the 15 inch pipe at a steeper slope.

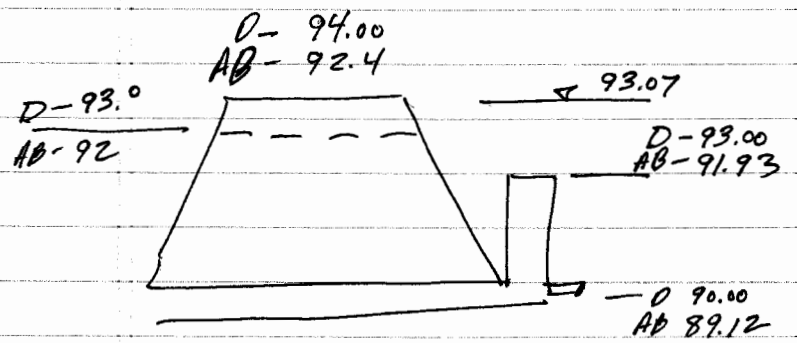
It is noted that the facility appears to function properly based on recent rainfall events; however, based on Items # 2 and # 3 above, a hydraulic check routing is required. The check routing should based on design hydrologic data and constructed pond data (elevations, storage, etc.) to ensure freeboard is in compliance with the approved plan. Based on County requirements, a minimum of freeboard of 1 foot is required between the 100-year water surface elevation and the lowest top of dam elevation for this type of facility.

Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,

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

SJT/sjt



Design		As-Built	
TOD	94.00	TOD	92.4 – LOW
ES	93.00	ES	92.0
R.C.	93.0	R.C.	91.93
L.F.O	90.0	L.F.O	89.12
BARREL	15" RCP		18" RCP
DIFF RC/ES	- 0'		0.07'
RC/TOD	- 1.0'		0.47'

MC 034
SAT 10/16/01

LANDMARK DESIGN GROUP
TRANSMITTAL

FEB 2000 RECEIVED ENVIRONMENTAL DIVISION

To: DARRYL COOKE

Company: J.C.C. ENVIRONMENTAL

From: PETER FARRELL, LS

Date: 2-28-00

Subject: NELSEN FUNERAL HOME

MAR 09 2000

LMDG Job No.: 1980077-000.99

Attached please find:
- X Prints
- ☐ Plans
- ☐ Specifications
- ☐ Drawings
- ☐ Report
- ☐ Letter
- ☐

Transmitted as checked below:
- ☐ For your use
- ☐ As requested
- X For review and comment
- ☐ For approval
- ☐ Approved
- ☐

Copies	Date	Drawing No.	Description
2	2-14-00	11192W	RECORD DRAWING

Notes: MR COOKE,
THESE PRINTS ARE FOR YOUR REVIEW OF THE STORM SYSTEM RECORD DRAWINGS. I ALSO GAVE COPIES TO KEITH LETCHWORTH FOR HIS REVIEW OF THE SANITARY AND WATER.
IF YOU HAVE ANY QUESTIONS PLEASE CALL ME.
THANKS,

PETER FARRELL, LS

Copies	Enclosures
1. File: 1980070-000.99	☐
2.	☐
3.	☐
4.	☐

LandMark Design Group, Inc.

Engineers • Planners • Surveyors • Landscape Architects • Environmental Consultants
4029 Ironbound Road, Suite 100, Williamsburg, VA 23188 (757) 253-2975 FAX: (757) 229-0049 lmdg@landmarkdgwb.com

O.K. James Construction, Inc.
General Contractors

"Member of the Associated General Contractors Of America"
Contractor's Class A License #2701-019072A

1643 B MERRIMAC TRAIL
WILLIAMSBURG, VA 23185
PHONE: (757) 253-0445
NORFOLK: (757) 640-8481
FAX: (757) 220-9370
O.K. JAMES, PRESIDENT

Letter of Transmittal

DATE: Wednesday, January 05, 2000

TO: James City County
Environmental Division
Post Office Box 8784
Williamsburg, VA 23187-8784
Phone: 757/253-6670

JAN 2000
RECEIVED
ENVIRONMENTAL DIVISION

ATTN: Jerry Lewis

FROM: P. A. "Pattie" Hinten Williams, Project Management Assistant

REFERENCE: NELSEN FUNERAL HOME; JOB #9806

SUBJECT: RELEASE OF EROSION & SEDIMENTATION CONTROL BOND

QUANTITY	NO.	DESCRIPTION
1 EACH	SUN452-301	BOND (Copy)
1 EACH	C1	"AS BUILT" SITE PLAN

REMARKS:

BASED ON THE ATTACHED INFORMATION PLEASE RELEASE OKJ's BOND (COPY ATTACHED) FOR THIS PROJECT. PLEASE FEEL FREE TO CALL WITH ANY QUESTIONS OR COMMENTS.

SENT VIA: ___ FAX NO. PAGES ___; _X_ US MAIL; ___ UPS; ___ E-MAIL; ___ COURIER; ___ PICKED UP

CC: FILE NO.: #OKJ 9806

Scott Thomas

From: Scott Thomas
Sent: Monday, April 10, 2000 12:05 PM
To: Darryl Cook; Gerry Lewis
Subject: As-Built Nelson Fun Home

I have spoken with Gerry and reviewed the record drawing for the Nelson Funeral Home BMP (County Plan SP-44-98) as submitted by Peter Farrell of Landmark on Feb 28, 2000. I have no problems with proceeding with release of the surety and scheduling for a final inspection. The as-built submitted appears to represent the design plan for the facility, except for the following:

1. The top of dam elevation is below that shown on the approved plan.
2. The outlet pipe size is 18 inch rather than 15 inch.
3. No construction certification was provided. Only an As-Built (ie. Record) drawing.

Although the constructed top of dam is not high enough, the whole facility appears to have been built sequentially lower. The constructed pond bottom elevation was lower than design and all design inverts for the BMP were also lower. The outlet pipe size should have no effect, since the larger size was put in place with a flatter slope, than that proposed for the 15 inch. Capacity and pond discharge should end up being roughly the same. As for Item 3, I believe that we currently have no recourse to require, review and make comment on certification for construction of the pond (embankment, core, compaction, soils, etc...).

In addition, the pond has been functional for some time now and made it through Hurricane Floyd.

What is the next course of action for our AB/CC process??

Scott

Longhill Gate SP-9-86

KAREN SPERRY
253-7552
6323 CHISWICK PARK
WMBG, VA. 23188

Pond 1 North side, small Pond NP = 60.00
15" RCP w/ES-1
24" RCP w/ES-1
NO ES (ROAD)
1 PIPE INFLOW (N)

- EMB is ROADWAY, 15' WATER TURD
- PERIMETER (N) WOODED VEG, SOUTH GRASS, LARGE WILLOWS (N) SIDE,
- POND UNUSUAL DARK BROWN COLOR & ORANGE
- PIPING + EROSION AT 24" CULVERT (SEVERE) & NEEDS FIXED.
- SHORELINE EROSION (S) NEEDS FIXED.
- REMOVE VEG FROM BACK FOREBAY NEAR SITE ENTRANCE.
- NEED OP @ INFLOW
- SLOPE EROSION NEEDS FIXED @ SLOPE NEAR INFLOW PIPE (MATTED)
- CLEAN + REMOVE SED, VEG + DEBRIS @ TWO PIPE OUTFALL INTO POND 2/2 (PLUME)
- ADD OP @ END OF PG-2A (PAVED CHANNEL) NEAR PIPE INLETS.
- DEPTH 3-4 ft.; SHALLOW AT SHORE + ENDS.

Pond 2 LAKE South NP = 55.0
36" CMP RISER w/ CMP CAP, 8" LOW FLOW ORIF
24" OUTFALL; ES

- CLEAN + REMOVE SED + VEG @ OUTFALL OF PAVED CHANNEL (#1) near road,
- PERIMETER VEG. WILLOWS, CATTAILS EAST, SHRUBS. OK
  WOODED BUFFER (WEST) NATURAL OK
- UNUSUAL DARK BROWN / ORANGE IRON OXIDE COLOR.
- Depth 1-2' BACK END.
- SHORELINE EROSION OK.
- SANITARY SEWER ALONG ~~WEST~~ EASTSIDE.
- BARE SOIL AREA ON ADJ SLOPE (EAST) NEEDS STABIL. (TUNNIS CA SIMP) (ALSO ERODED HOLES).
- FOUNTAIN IN MID LAKE HIT BY LIGHTENING.
- ADD OP + CLEAR VEG + SED PLUME (SEVERE) @ PG-2A #2 NEAR RISER SE CORNER OF POND. BAD. CLEAR PATH FOR POSITIVE DRAIN. NOT ALL VEG NEEDS REMOVED. WILLOWS → CLEAR SED + VEG PG-2A OUTFALL AT WEST SIDE (NEAR UNIT 5331)
- ES. TOP OF DAM OK. POND SIDE + DS SIDE NEEDS VEG, TREES CLEARED + REMOVED. (PINES)
- CLEAR D/S FILL EMB. OF ALL TREES, SHRUBS + WOODY VEG. ESTABLISH GRASS. CLEAR US EMBANK @ SHORELINE INTERFACE
- RISER CMP. NO TOP PLATE. CORRODED. WEEDS CLEANED + RESTORED. RISER ABOUT 30' INTO LAKE. COULD NOT INSPECT CLOSELY.
- CLEAR TREES 15' FROM BARREL OUTFALL. BARREL SLIGHT UNDERCUT NEEDS FILLED
- REMOVE SF DS OF BARREL PIPE CORRISION IN INVERT OF CHANNEL
- OP 20x10 LOOKS OK. SOME SIGNS OF D/S EROSION

SMALL BASIN @ SITE ENTRANCE (30x10)
VEG + SEDIMENT ~~CLEARED~~ NEEDS CLEARED
24" IN; 30" OUT

5331 TOWER HILL

AS-BUILT?

Question EL OF 5331, BF vs. ELEV OF ES, IF PRINCIPAL SPILLWAY IS INOPERABLE!!

SCALE 1" = 1000'
TEMPSFORD LANE
WINDSOR FOREST

WILL CONCEDE
POST HYD. ANALYSIS
IF CATTAILS
CLEANED 10' FROM
INFLOW/OUTFLOW
SKIP CARTER
10-3-01

EROSION AND SEDIMENTATION CONTROL BOND

Bond No. SUN452-301

COPY

KNOWN ALL MEN BY THESE PRESENTS: that we COLONIAL FUNERAL MANAGEMENT L. C. AND O. K. JAMES CONSTRUCTION, INC., Principal, and HARTFORD FIRE INSURANCE COMPANY, as Surety, are held and firmly bound unto the County of James City, Virginia, Obligee, of the Commonwealth of Virginia, in the Penal Sum of ($30,000) THIRTY THOUSAND AND00/100- dollars, for the payment hereof to the Obligee, the Principal binds its heirs, executors, administrators, successors and assigns, and the Surety binds itself, its successors, and assigns severally and jointly by their presents and to each hereby waive our homestead exemption as to this debt and obligation.

WHEREAS, the Principal desires to have approved by James City County, Virginia, a certain erosion and sedimentation control plan pursuant to the terms of the Code of the County of James City, Virginia, (and any amendment thereto) for a project known as Nelsen Funeral Home located at 3785 Strawberry Plains Road, Williamsburg, VA 23185, and in order to have said plan approved, said Principal must have complied with all terms and provisions of said code.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the above Principal shall satisfactorily complete the erosion and sedimentation control measures in accordance with the approved plan and Chapter 5A of the Code of the County of James City, Erosion and Sedimentation Control, and shall fully indemnify and save harmless the Obligee from all costs and damages which the Obligee may suffer by reason of the Principal's failure to do so, then this obligation shall be void; otherwise, to remain in full force and effect.

PROVIDED FURTHER, that this is a continuous bond and the Surety hereby waives notice of any extension hereunder granted by Obligee to Principal.

IN WITNESS WHEREOF, the Principal and the Surety have caused their respective names to be hereunto subscribed and their seals to be hereunto affixed, this 15TH day of JULY 19 98, duly authorized.

CORPORATION

Colonial Funeral Management L.C. and
O. K. James Construction, Inc.
Principal

(Impress Corporate Seal here)

ATTEST:

By O. Kent James
President

By Nicole M Young

INDIVIDUAL OR PARTNERSHIP

Principal

Principal

(Impress Corporate Seal here)

HARTFORD FIRE INSURANCE COMPANY
Surety

Mark S. Moses
Witness

By
Attorney in Fact ROBERT C. BUCKALEW

Michael Lewis
Names & Address of Resident Agent

MICHAEL LEWIS (TAYLOR JOHNSON GROUP)
831 SEAHAWK CIRCLE,
VIRGINIA BEACH, VA. 23450

HARTFORD PLAZA, HARTFORD, CONNECTICUT 06115
Address of Home Office

POWER OF ATTORNEY MUST BE ATTACHED

0358c.pre
Rev. 8/92

COPY

HARTFORD FIRE INSURANCE COMPANY

Hartford, Connecticut

POWER OF ATTORNEY

Know all men by these Presents, That the HARTFORD FIRE INSURANCE COMPANY, a corporation duly organized under the laws of the State of Connecticut, and having its principal office in the City of Hartford, County of Hartford, State of Connecticut, does hereby make, constitute and appoint

ROBERT C. BUCKALEW, W. TAYLOR JOHNSON, JR.,
MICHAEL LEWIS, BRAD S. MOSES, JILL SNEAD AGE,
NANCY E. DRAKE and LORI L. KINESTON
of VIRGINIA BEACH, VIRGINIA

its true and lawful Attorney(s)-in-Fact, with full power and authority to each of said Attorney(s)-in-Fact, in their separate capacity if more than one is named above, to sign, execute and acknowledge any and all bonds and undertakings and other writings obligatory in the nature thereof on behalf of the Company in its business of guaranteeing the fidelity of persons holding places of public or private trust; guaranteeing the performance of contracts other than insurance policies; guaranteeing the performance of insurance contracts where surety bonds are accepted by states and municipalities, and executing or guaranteeing bonds and undertakings required or permitted in all actions or proceedings or by law allowed, and to bind the HARTFORD FIRE INSURANCE COMPANY thereby as fully and to the same extent as if such bonds and undertakings and other writings obligatory in the nature thereof were signed by an Executive Officer of the HARTFORD FIRE INSURANCE COMPANY and sealed and attested by one other of such Officers, and hereby ratifies and confirms all that its said Attorney(s)-in-Fact may do in pursuance hereof.

This power of attorney is granted by and under authority of the following provisions:

(1) By-Laws adopted by the Stockholders of the HARTFORD FIRE INSURANCE COMPANY at a meeting duly called and held on the 9th day of March, 1971.

ARTICLE IV

SECTION 8. The President or any Vice-President, acting with any Secretary or Assistant Secretary, shall have power and authority to appoint, for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, one or more Resident Vice Presidents, Resident Assistant Secretaries and Attorneys-in-Fact and at any time to remove any such Resident Vice-President, Resident Assistant Secretary, or Attorney-in-Fact, and revoke the power and authority given to him.

SECTION 11. Attorneys-in-Fact shall have power and authority, subject to the terms and limitations of the power of attorney issued to them, to execute and deliver on behalf of the Company and to attach the seal of the Company thereto any and all bonds and undertakings, and other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by an Executive Officer and sealed and attested by one other of such Officers.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Directors of the HARTFORD FIRE INSURANCE COMPANY at a meeting duly called and held on the 12th day of February, 1993.

Resolved, that the signatures of such Officers and the seal of the Company may be affixed to any such power of attorney or to any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified

by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

In Witness Whereof, the HARTFORD FIRE INSURANCE COMPANY has caused these presents to be signed by its Vice-President, and its corporate seal to be hereto affixed, duly attested by its Secretary, this 7th day of June, 1996.

Attest:

Richard R. Hermanson
Secretary

HARTFORD FIRE INSURANCE COMPANY

Paul L. Marabella
Vice-President

STATE OF CONNECTICUT
COUNTY OF HARTFORD } ss.

On this 7th day of June, A.D. 1996, before me personally came Paul L. Marabella, to me known, who being by me duly sworn, did depose and say: that he resides in the County of Hartford, State of Connecticut; that he is the Vice-President of the HARTFORD FIRE INSURANCE COMPANY, the corporation described in and which executed the above instrument; that he knows the seal of the said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

STATE OF CONNECTICUT
COUNTY OF HARTFORD } ss.

JEAN H. WOZNIAK NOTARY PUBLIC CONNECTICUT

Jean H. Wozniak
Notary Public
My Commission Expires June 30, 1999

CERTIFICATE

I, the undersigned, Secretary of the HARTFORD FIRE INSURANCE COMPANY, a Connecticut Corporation, DO HEREBY CERTIFY that the foregoing and attached POWER OF ATTORNEY remains in full force and has not been revoked; and furthermore, that the Resolutions of the Board of Directors, set forth in the Power of Attorney, are now in force.

Signed and sealed at the City of Hartford. Dated the 15TH day of JULY 1998

Robert L. Post
Secretary

Form S-3507-8 VA (HF) Printed in U.S.A.