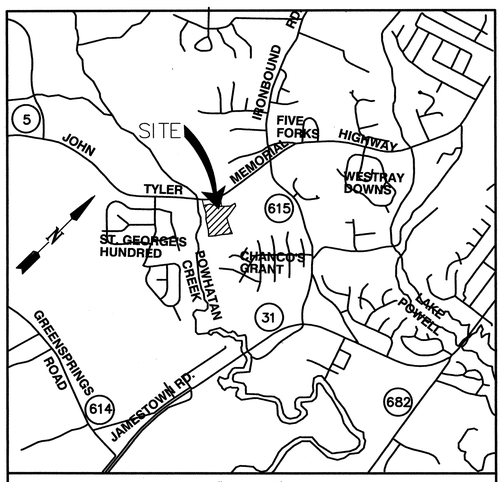
JAMES CITY SERVICE AUTHORITY
FIVE FORKS WATER TREATMENT FACILITY

JAMES CITY COUNTY, VIRGINIA
IFB #03-0047

JCSA
JAMES CITY SERVICE AUTHORITY

RECORD DRAWINGS

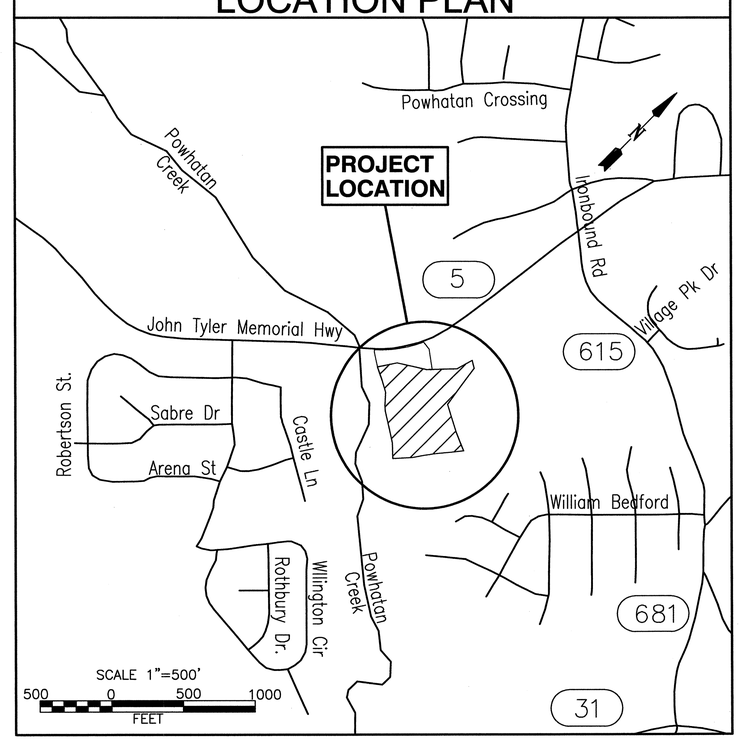


1" = 2000'

VICINITY MAP

NOTE: IN ACCORDANCE WITH SECTION 15.2-2232 OF THE VIRGINIA STATE CODE THIS SITE PLAN WAS REVIEWED AND APPROVED BY THE JAMES CITY COUNTY PLANNING COMMISSION ON JANUARY 13, 2003. A SPECIAL USE PERMIT (SUP-22-01) WAS GRANTED BY THE BOARD OF SUPERVISORS ON JUNE 11, 2002.

LOCATION PLAN



ENGR./ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
SAS	CLR	CLR	SAS	01/03

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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REVISIONS

NO.	DESCRIPTION	BY	DATE
	RECORD DRAWINGS	KCF	JUNE 08

BUCHART HORN, INC.
480 McLAWS CIRCLE
WILLIAMSBURG, VA 23185
PHONE (757) 220-8369
FAX (757) 220-3721

FIVE FORKS WATER TREATMENT FACILITY

COVER SHEET

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. G-1

SHEET NO. 1 OF 123

BH PROJECT NO. 75676-00

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3.	C-1	ENVIRONMENTAL INVENTORY
4.	C-2	GRADING PLAN
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6.	C-4	GRADING PLAN
7.	C-5	GEOMETRIC PLAN, SIGNING AND MARKING
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122.	PCS-19	CHEMICAL STORAGE TANK LEVEL INDICATOR PANEL
123.	PCS-20	CLEANING PUMP AND WATER PUMP CONTROL PANELS

CODE REVIEW

PROJECT NAME AND LOCATION
FIVE FORKS WATER TREATMENT FACILITY
JAMES CITY COUNTY, WILLIAMSBURG, VA

PROJECT DESCRIPTION
GROUNDWATER TREATMENT FACILITY

APPLICABLE CODES
VIRGINIA UNIFORM STATEWIDE BUILDING CODE
BOCA BASIC BUILDING CODE 1996

BUILDING CONSTRUCTION TYPE - 3B

BUILDING USE AND CONSTRUCTION CLASSIFICATIONS

			BLDG CODE	(MIXED/SEPARATED 313.1.2) ACTUAL/ALLOWED
USE GROUP:	F-2	FACTORY	306.3	12388SF/14400=.86
USE GROUP:	H-4	HAZARDOUS	307.6	900/14400=.06
				=.92

BUILDING AREA:
FIRST FLOOR 13288 SF
13288 SF TOTAL
MEZZANINE 1150 SF
PERMITTED BY 505.2
NOT TO EXCEED 1/3 AREA OF ROOM
1150 SF/7205/SF = 16% - (LESS THAN 33% ALLOWED)

OCCUPANCY LOADS AND EGRESS REQUIREMENTS

LOAD CALCULATED	AREA IN SF	SF PER PERSON	OCCUPANT LOAD	EGRESS WIDTH REQ'D	EGRESS WIDTH PROVIDED	# OF EXITS REQ'D	# OF EXITS PROVIDED
INDUSTRIAL AREA	12388	100	124	37	252	2	6
CHEMICAL STORAGE	900	300	3	2.1	72	1	2
MEZZANINE(STOR/MECH)	1150	300	4	1.2	36	1	1
			131				

FIRE PROTECTION SYSTEM REQUIREMENTS

	SYSTEM	BLDG CODE
FIRE SUPPRESSION	YES	904.5
FIRE ALARM SYSTEM	NO	918.4.3
SMOKE DETECTION SYSTEM	NO	920.0
FIRE DETECTION SYSTEM	YES	417.5.3

TRAVEL DISTANCE TO EXITS(F-2)

	DISTANCE	BLDG CODE
MAX LENGTH-EXIT ACCESS	300/100	1006.5
MAX LENGTH-COMMON PATH OF TRAVEL	75	1011.2.1
SPACES W/ONE MEANS OF EGRESS, MAX DISTANCE	75/25	1017.2
DEAD ENDS	20	1011.2

FIRE RATING REQUIREMENTS
STRUCTURAL ELEMENTS
EGRESS COMPONENTS

	RATING REQ'D	BUILDING CODE
EXT BEARING WALLS	2/1	602.0/705.2
EXT NON-BEARING	-/1	602.0/705.2
FIRE WALLS	2	602.0
INTERIOR BEARING WALLS	0	602.0
FLOOR/CEILING ASSEMBLIES	0	602.0
ROOF/CEILING ASSEMBLIES	0	602.0
COLUMNS	NOT LESS THAN RATING OF WALL SUPPORTED	602.0
BEAMS	0	602.0
EXIT ACCESS CORRIDOR	1	1011.4
SHAFTS(OTHER THAN STAIRS)	2	602.0
CORRIDOR DOORS	20 MIN	717.1
SMOKE BARRIER PARTITIONS	1	602.0
SMOKE BARRIER DOORS	20 MIN	717.1
MIXED USE SEPARATION	3	313.1.2
NONLOAD BEARING PARTITIONS	0	602.0

NOTE:
DRAWINGS ARE GROUPED AND IDENTIFIED AS GENERAL, CIVIL, LANDSCAPE, ARCHITECTURAL, STRUCTURAL, PROCESS AND INSTRUMENTATION, PROCESS MECHANICAL, MECHANICAL, ELECTRICAL, AND PROCESS ELECTRICAL. THIS IS DONE AS A CONVENIENCE TO THE CONTRACTOR TO HELP LOCATE MORE QUICKLY WORK GENERALLY FALLING INTO ONE OF THE ABOVE CATEGORIES. IT SHOULD NOT BE ASSUMED, HOWEVER, THAT ALL WORK NORMALLY PERFORMED BY ONE SUBCONTRACTOR OR TRADE WILL BE FOUND ON ANY ONE DRAWING OR GROUP OF DRAWINGS. ALL WORK CALLED FOR UNDER THIS CONTRACT SHALL BE COMPLETED AS REQUIRED REGARDLESS OF THE IDENTIFICATION OF THE DRAWING IN WHICH IT MAY BE SHOWN.

RECORD DRAWINGS

ENGR./ARCH. SAS
DESIGN BY CLR
DRAWN BY CLR
CHECK BY SAS
DATE 01/03

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NO.	DESCRIPTION	BY	DATE
	RECORD DRAWINGS	KCF	JUNE 08

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FIVE FORKS WATER TREATMENT FACILITY

DRAWING INDEX

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. G-2

SHEET NO. 2 OF 123

BH PROJECT NO. 75676-00

GENERAL NOTES:

1. EXISTING UTILITY LOCATIONS SHOWN ARE BASED ON DRAWINGS TITLED "GROUNDWATER TREATMENT FACILITY SITE PREPARATION" AS PREPARED BY AES CONSULTING ENGINEERS DATED MAY 2002.

2. PRIOR TO WORK COMMENCING, LOCATE ALL UNDERGROUND UTILITIES THAT MAY EXIST WITHIN THE CONSTRUCTION AREA WHETHER OR NOT INDICATED. NOTIFY ALL OF THE OWNERS OF UTILITY SERVICES AT LEAST 72 HOURS IN ADVANCE OF PERFORMING ANY CONSTRUCTION WORK WITHIN THE PROXIMITY OF THEIR LINES OR APPUTENANCES. ALL DAMAGE TO THESE UTILITIES, FINES OR ASSESSMENTS, AND THE REPAIRS THERETO SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY.

3. THE ENGINEER AND THE OWNER DO NOT ASSUME ANY RESPONSIBILITY FOR THE ACCURACY OR SUFFICIENCY OF THE DATA PROVIDED FOR EXISTING UTILITY, AND FURTHERMORE WILL ASSUME NO RESPONSIBILITY FOR ANY COST OR CONDITION RESULTING FROM ANY INACCURACY OR INSUFFICIENCY IN THIS REGARD.

4. THERE IS A "ONE-CALL" UTILITY COORDINATION SERVICE AVAILABLE:
MISS UTILITY (800)-552-7001
THE CONTRACTOR IS CAUTIONED THAT NOT ALL UTILITY SERVICE OWNERS BELONG TO THIS "ONE-CALL" SERVICE.

5. SURVEY AND MAPPING PROVIDED BY AES CONSULTING ENGINEERS, WILLIAMSBURG, VA.

6. PROVIDE GRAVITY SEWER LATERALS AS INDICATED ON THESE PLANS. CARE SHALL BE TAKEN TO ENSURE THAT DEBRIS DOES NOT ENTER THE EXISTING SYSTEM.

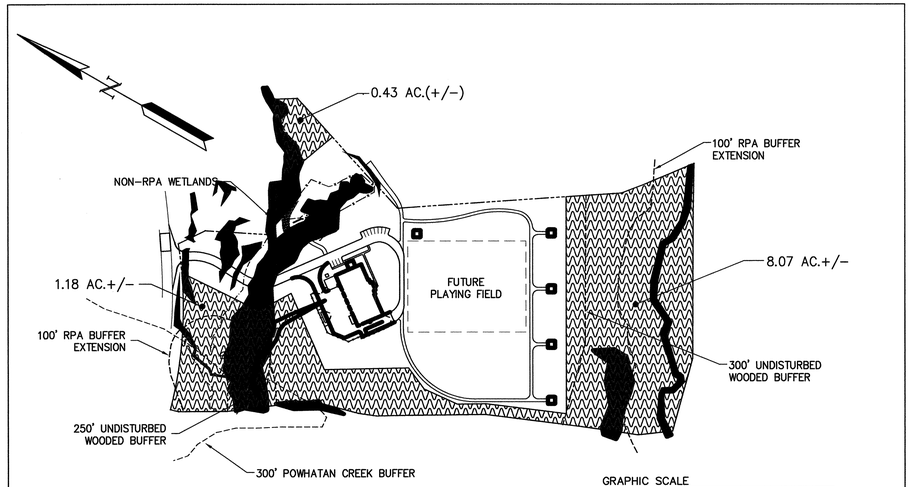
7. ALL UTILITIES SHALL BE PLACED UNDERGROUND.

8. A LAND DISTURBANCE PERMIT IS REQUIRED FOR THIS PROJECT. THE CONTRACTOR WILL BE REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE LAND DISTURBANCE PERMIT. THE OWNER WILL SECURE THE LAND DISTURBANCE PERMIT PRIOR TO START OF CONSTRUCTION FOR THIS PROJECT.

9. VERIFY THE LOCATION AND ELEVATION OF ALL POINTS OF CONNECTION AND WORK TO EXISTING UTILITIES PRIOR TO CONNECTION.

10. ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM WITH THE CURRENT JCSA STANDARDS AND SPECIFICATIONS FOR WATER DISTRIBUTION AND SANITARY SEWER SYSTEMS; VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE STANDARDS, VOLUMES I & II (LATEST EDITION); VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS (LATEST EDITION); THE HAMPTON ROADS PLANNING DISTRICT COMMISSION (HRPDC) REGIONAL STANDARDS; COMMONWEALTH OF VIRGINIA DEPARTMENT OF HEALTH "WATERWORKS REGULATIONS"; AND ANY OTHER APPLICABLE COUNTY OR STATE ORDINANCES, CODES, REGULATIONS AND LAWS PERTAINING TO ANY CONSTRUCTION ACTIVITY.

11. CONTRACTOR WILL BE REQUIRED TO CLOSELY COORDINATE WITH OTHER CONTRACTOR'S ON THE WORK SITE AS OUTLINED ON THESE BID DOCUMENTS AND DRAWINGS.



CONSERVATION EASEMENTS
(OBTAINED FROM DRAWINGS DEVELOPED BY AES CONSULTING ENGINEERS DATED MAY 2002)

SOIL No.	SOIL NAME	TYPICAL SLOPES	EROSION FACTOR (K)	EROSION FACTOR (T)
11C	CRAVEN-UCHEE COMPLEX	6-10%	0.32-0.37	3
14B	EMPORIA FINE SANDY LOAM	2-6%	0.20-0.28	4
15E	EMPORIA COMPLEX	15-25%	0.20-0.28	4
29B	SLAGLE FINE SANDY LOAM	2-6%	0.24	3
34B	UCHEE LOAMY FINE SAND	2-6%	0.20-0.28	5

INFORMATION TAKEN FROM "SOIL SURVEY OF JAMES CITY AND YORK COUNTIES AND THE CITY OF WILLIAMSBURG, VIRGINIA" ISSUED IN APRIL, 1985, BY THE UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE IN COOPERATION WITH VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY.

SOIL SUSCEPTIBILITY TO EROSION CLASSIFICATION (K)
0.23 AND LOWER – LOW ERODIBILITY
0.23 TO 0.36 – MODERATE ERODIBILITY
0.36 AND UP – HIGH ERODIBILITY

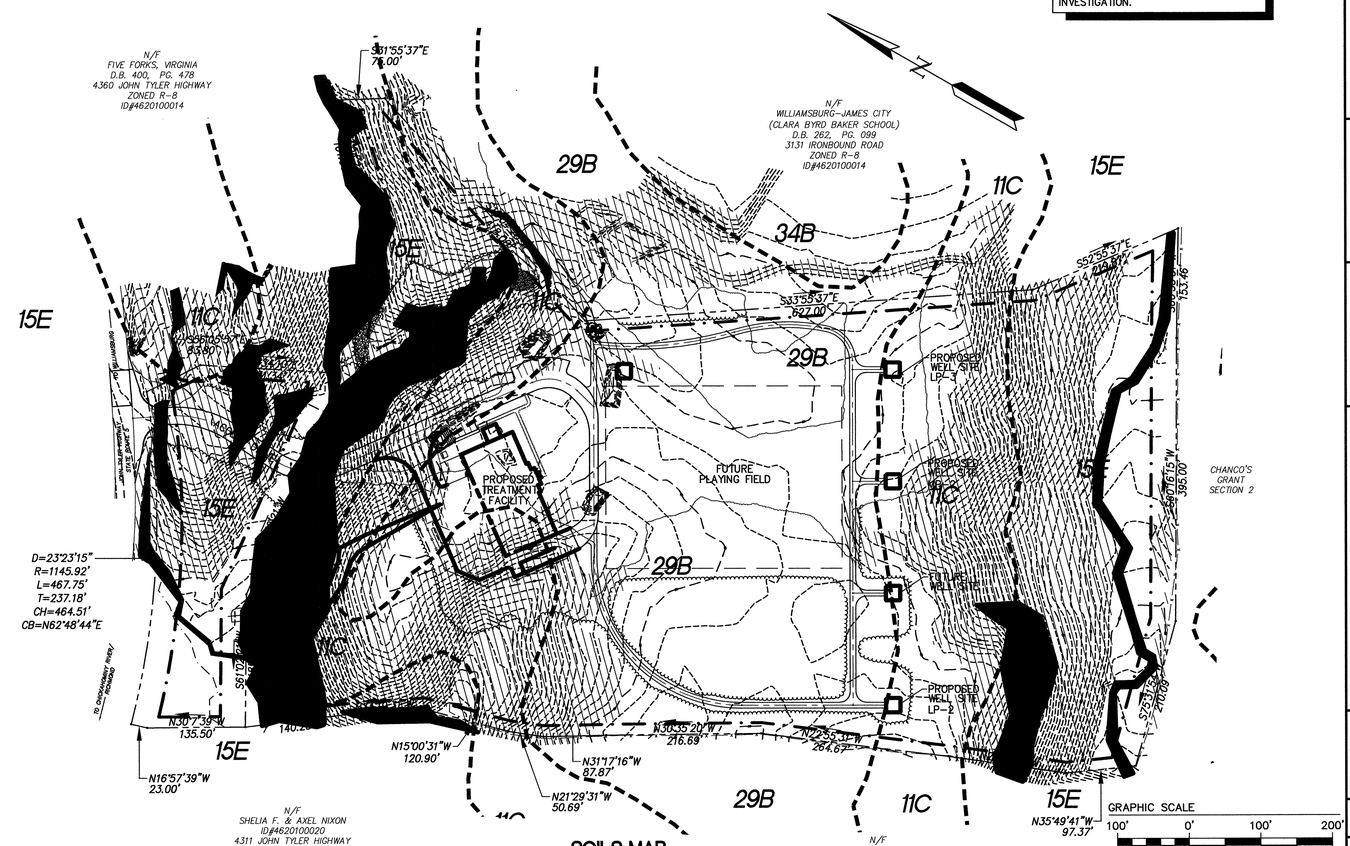
THE MAP SHOWN IS A "BEST FIT MODEL" OF THE SCS MAPS WITH EXISTING BASE INFORMATION.

- DENOTES HIGHLY ERODIBLE SOILS / CRITICAL EROSION AREAS
- DENOTES 25% OR GREATER SLOPES
- CONSERVATION EASEMENT
- SOIL BOUNDARY

ENVIRONMENTAL INVENTORY IMPACTS

TIDAL WETLANDS:	NONE ON SITE
TIDAL SHORES:	NONE ON SITE
NON-TIDAL WETLANDS IN RPA:	NOT IMPACTED
100 FT RPA BUFFER:	NOT IMPACTED
NON-TIDAL WETLANDS IN RMA:	NOT IMPACTED
HYDRIC SOILS:	NONE ON SITE
25% SLOPES OR GREATER:	NOT IMPACTED

BOUNDARY INFORMATION DOES NOT REPRESENT AN ACTUAL FIELD SURVEY OF BOUNDARY. BOUNDARY SHOWN IS A COMPOSITE OF AVAILABLE BOUNDARY INFORMATION AND LIMITED FIELD INVESTIGATION.



SOILS MAP
(OBTAINED FROM DRAWINGS DEVELOPED BY AES CONSULTING ENGINEERS DATED MAY 2002)

CIVIL LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	CLEAN OUT	
	WATER METER	
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	

EXISTING		PROPOSED
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREELINE	
	LIMITS OF CLEARING	
	SILT FENCE	
	INLET PROTECTION	
	CHECK DAM	
	STRAW BALE BARRIER	
	RIP RAP	
	REVERSE ROLL TOP GUTTER	
25.1	GROUND ELEVATION	25.1
	PROPOSED TOP OF CURB ELEV.	TC= ELEV
	GRADING LINE TIE-IN	
80	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80

ENGR./ARCH. TOF
DESIGN BY TOF
DRAWN BY BMB
CHECK BY HG
DATE 01/03

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REVISIONS			
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FIVE FORKS WATER TREATMENT FACILITY

ENVIRONMENTAL INVENTORY

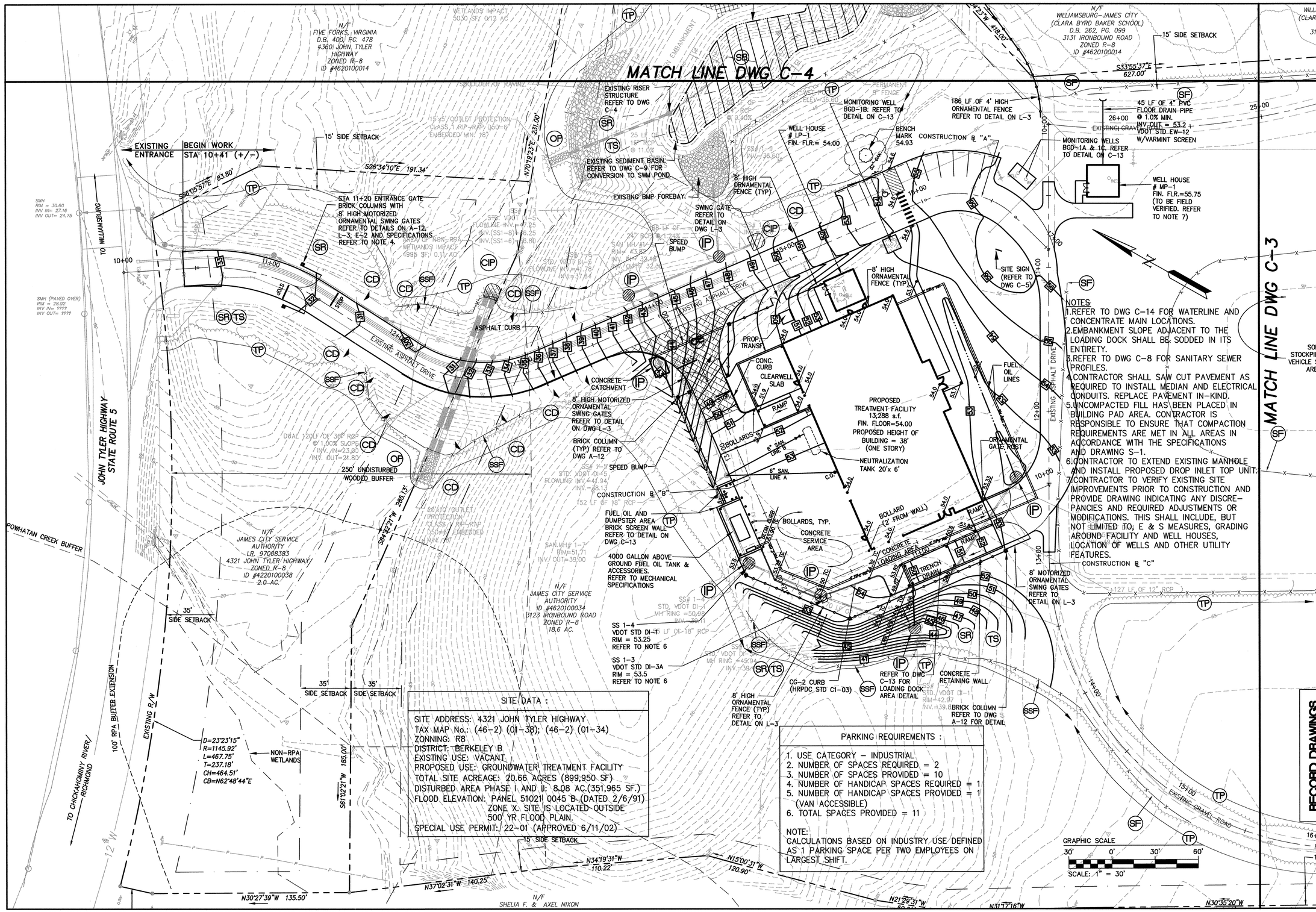
JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-1

SHEET NO. 3 OF 123

BH PROJECT NO. 75676-00

RECORD DRAWINGS



SITE DATA :

SITE ADDRESS: 4321 JOHN TYLER HIGHWAY
TAX MAP No.: (46-2) (01-38); (46-2) (01-34)
ZONNING: R8
DISTRICT: BERKELEY B
EXISTING USE: VACANT
PROPOSED USE: GROUNDWATER TREATMENT FACILITY
TOTAL SITE ACREAGE: 20.66 ACRES (899,950 SF)
DISTURBED AREA PHASE I AND II: 8.08 AC.(351,965 SF.)
FLOOD ELEVATION: PANEL 51021 0045 B (DATED 2/6/91) ZONE X. SITE IS LOCATED OUTSIDE 500 YR FLOOD PLAIN.
SPECIAL USE PERMIT: 22-01 (APPROVED 6/11/02)

PARKING REQUIREMENTS :

1. USE CATEGORY - INDUSTRIAL
2. NUMBER OF SPACES REQUIRED = 2
3. NUMBER OF SPACES PROVIDED = 10
4. NUMBER OF HANDICAP SPACES REQUIRED = 1
5. NUMBER OF HANDICAP SPACES PROVIDED = 1 (VAN ACCESSIBLE)
6. TOTAL SPACES PROVIDED = 11

NOTE:
CALCULATIONS BASED ON INDUSTRY USE DEFINED AS 1 PARKING SPACE PER TWO EMPLOYEES ON LARGEST SHIFT.

NOTES

1. REFER TO DWG C-14 FOR WATERLINE AND CONCENTRATE MAIN LOCATIONS.
2. EMBANKMENT SLOPE ADJACENT TO THE LOADING DOCK SHALL BE SODDED IN ITS ENTIRETY.
3. REFER TO DWG C-8 FOR SANITARY SEWER PROFILES.
4. CONTRACTOR SHALL SAW CUT PAVEMENT AS REQUIRED TO INSTALL MEDIAN AND ELECTRICAL CONDUITS. REPLACE PAVEMENT IN-KIND.
5. UNCOMPACTED FILL HAS BEEN PLACED IN BUILDING PAD AREA. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT COMPACTION REQUIREMENTS ARE MET IN ALL AREAS IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWING S-1.
6. CONTRACTOR TO EXTEND EXISTING MANHOLE AND INSTALL PROPOSED DROP INLET TOP UNIT.
7. CONTRACTOR TO VERIFY EXISTING SITE IMPROVEMENTS PRIOR TO CONSTRUCTION AND PROVIDE DRAWING INDICATING ANY DISCREPANCIES AND REQUIRED ADJUSTMENTS OR MODIFICATIONS. THIS SHALL INCLUDE, BUT NOT LIMITED TO; E & S MEASURES, GRADING AROUND FACILITY AND WELL HOUSES, LOCATION OF WELLS AND OTHER UTILITY FEATURES.

ENGR/ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

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	RECORD DRAWINGS	KCF	JUNE 08

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FIVE FORKS WATER TREATMENT FACILITY

GRADING PLAN

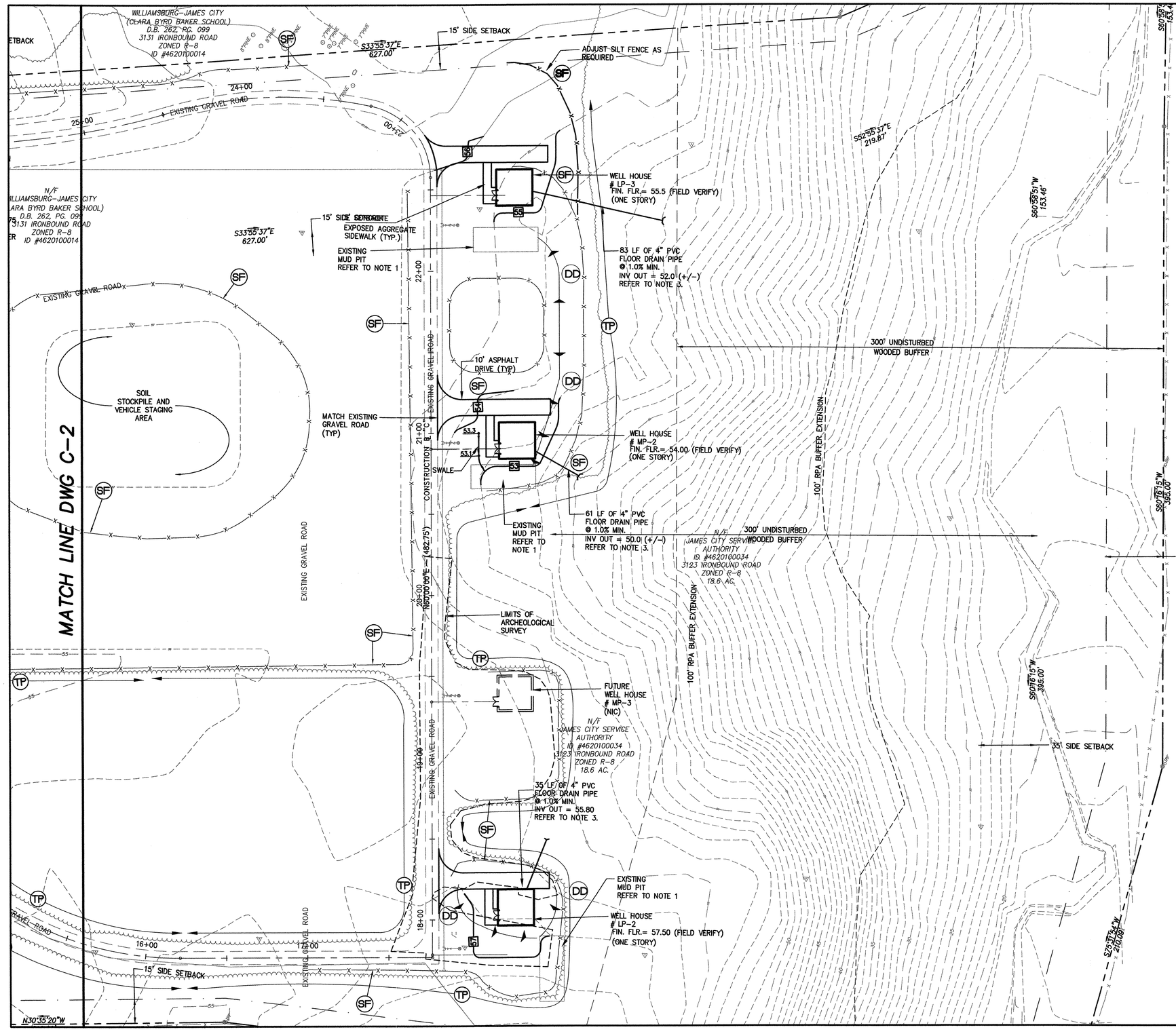
RECORD DRAWINGS

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-2

SHEET NO. 4 OF 123

BH PROJECT NO. 75676-00



NOTES

1. MUD PIT LOCATIONS SHOWN WILL BE INSTALLED, DEMUCKED AND FILLED BY WELL DRILLING CONTRACTOR (NOT PART OF THIS CONTRACT). COMPLETION OF WELL DRILLING ESTIMATED AS DECEMBER 2003. CONTRACTOR SHALL COORDINATE WITH WELL DRILLER BEFORE BEGINNING CONSTRUCTION IN THIS AREA.
2. REFER TO DWG C-14 FOR WATERLINE AND CONCENTRATE MAIN LOCATIONS.
3. PROVIDE VDOT STD EW-12 WITH VARMINT SCREEN (REFER TO DETAIL ON DWG C-13). FOR WELL FACILITY LP-3, CONTRACTOR SHALL FIELD LOCATE ROUTING OF FLOOR DRAIN SO AS TO NOT IMPACT EXISTING TREES.

RECORD DRAWINGS

ENGR/ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

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FIVE FORKS WATER TREATMENT FACILITY

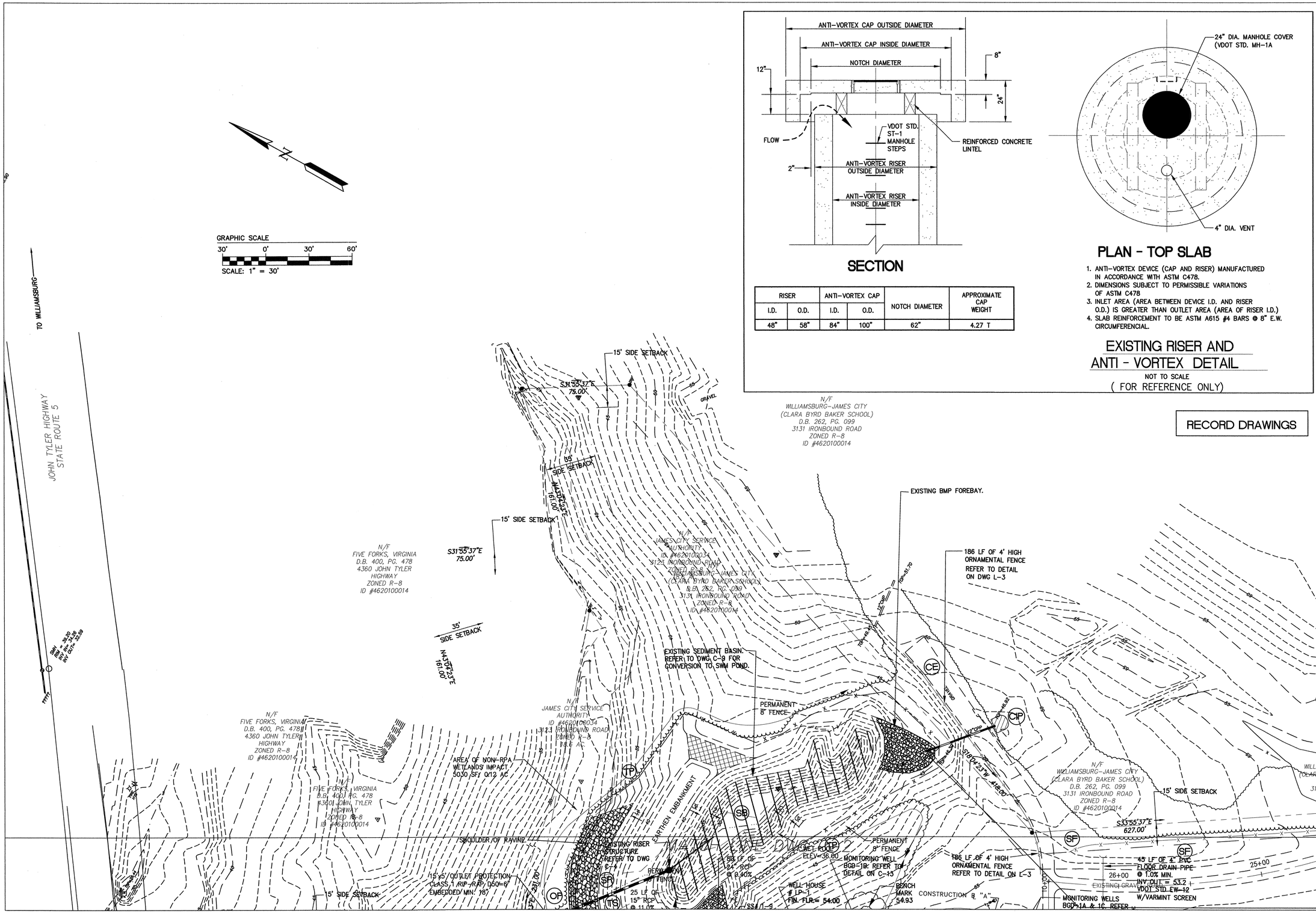
GRADING PLAN

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-3

SHEET NO. 5 OF 123

BH PROJECT NO. 75676-00



SECTION

RISER		ANTI-VORTEX CAP		NOTCH DIAMETER	APPROXIMATE CAP WEIGHT
I.D.	O.D.	I.D.	O.D.		
48"	58"	84"	100"	62"	4.27 T

PLAN - TOP SLAB

1. ANTI-VORTEX DEVICE (CAP AND RISER) MANUFACTURED IN ACCORDANCE WITH ASTM C478.
2. DIMENSIONS SUBJECT TO PERMISSIBLE VARIATIONS OF ASTM C478
3. INLET AREA (AREA BETWEEN DEVICE I.D. AND RISER O.D.) IS GREATER THAN OUTLET AREA (AREA OF RISER I.D.)
4. SLAB REINFORCEMENT TO BE ASTM A615 #4 BARS @ 8" E.W. CIRCUMFERENCIAL.

EXISTING RISER AND ANTI - VORTEX DETAIL

NOT TO SCALE

(FOR REFERENCE ONLY)

RECORD DRAWINGS

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FIVE FORKS WATER TREATMENT FACILITY

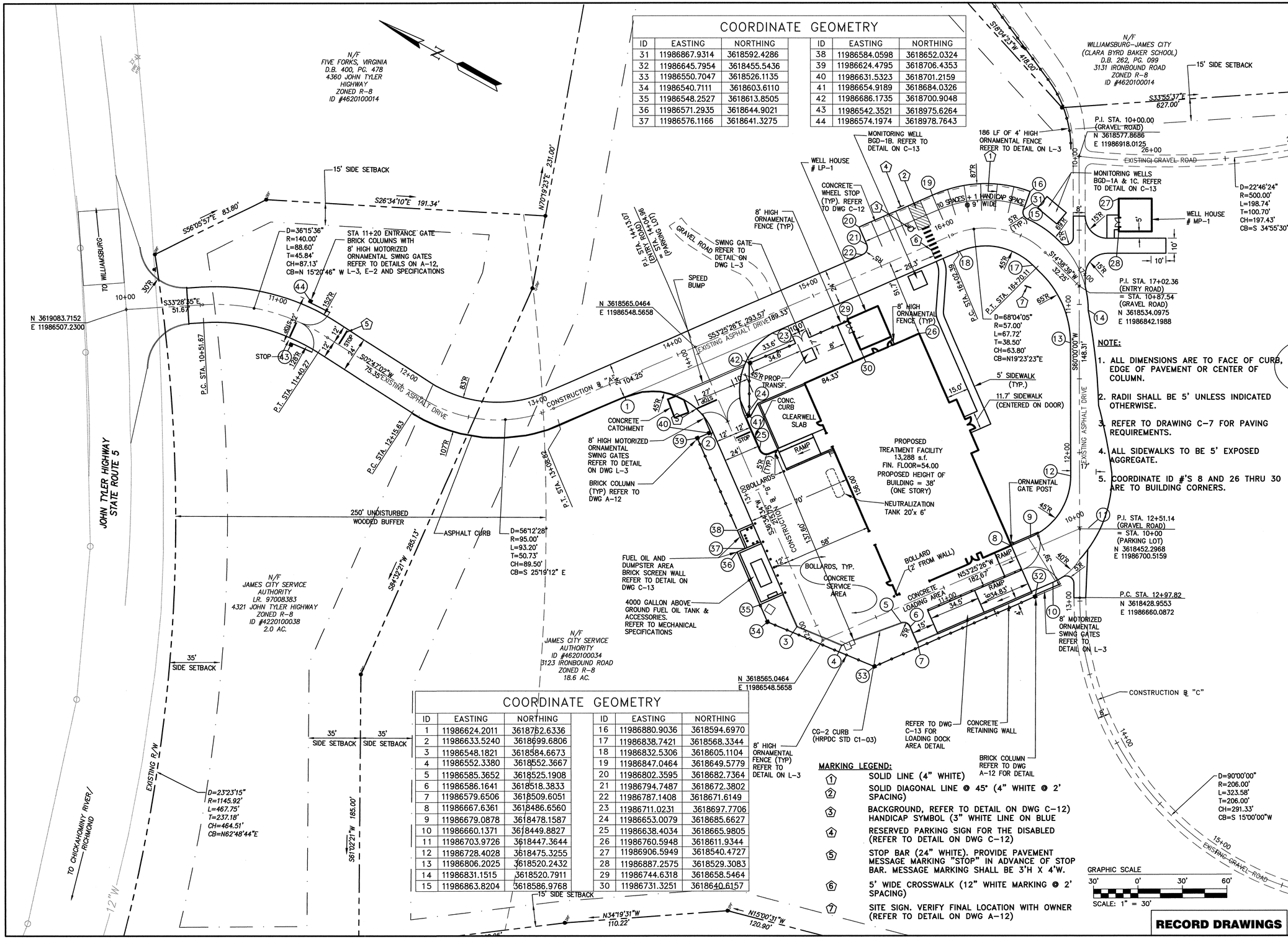
GRADING PLAN

JCSA
JAMES CITY SERVICE AUTHORITY

DRAWING NO.
C-4

SHEET NO.
6 OF 123

BH PROJECT NO.
75676-00



COORDINATE GEOMETRY

ID	EASTING	NORTHING	ID	EASTING	NORTHING
31	11986867.9314	3618592.4286	38	11986584.0598	3618652.0324
32	11986645.7954	3618455.5436	39	11986624.4795	3618706.4353
33	11986550.7047	3618526.1135	40	11986631.5323	3618701.2159
34	11986540.7111	3618603.6110	41	11986654.9189	3618684.0326
35	11986548.2527	3618613.8505	42	11986686.1735	3618700.9048
36	11986571.2935	3618644.9021	43	11986542.3521	3618975.6264
37	11986576.1166	3618641.3275	44	11986574.1974	3618978.7643

COORDINATE GEOMETRY

ID	EASTING	NORTHING	ID	EASTING	NORTHING
1	11986624.2011	3618762.6336	16	11986880.9036	3618594.6970
2	11986633.5240	3618699.6806	17	11986838.7421	3618568.3344
3	11986548.1821	3618584.6673	18	11986832.5306	3618605.1104
4	11986552.3380	3618552.3667	19	11986847.0464	3618649.5779
5	11986585.3652	3618525.1908	20	11986802.3595	3618682.7364
6	11986586.1641	3618518.3833	21	11986794.7487	3618672.3802
7	11986579.6506	3618509.6051	22	11986787.1408	3618671.6149
8	11986667.6361	3618486.6560	23	11986711.0231	3618697.7706
9	11986679.0878	3618478.1587	24	11986653.0079	3618685.6627
10	11986660.1371	3618449.8827	25	11986638.4034	3618665.9805
11	11986703.9726	3618447.3644	26	11986760.5948	3618611.9344
12	11986728.4028	3618475.3255	27	11986906.5949	3618540.4727
13	11986806.2025	3618520.2432	28	11986887.2575	3618529.3083
14	11986831.1515	3618520.7911	29	11986744.6318	3618658.5464
15	11986863.8204	3618586.9768	30	11986731.3251	3618640.6157

MARKING LEGEND:

1. SOLID LINE (4" WHITE)
2. SOLID DIAGONAL LINE @ 45° (4" WHITE @ 2' SPACING)
3. BACKGROUND, REFER TO DETAIL ON DWG C-12) HANDICAP SYMBOL (3" WHITE LINE ON BLUE
4. RESERVED PARKING SIGN FOR THE DISABLED (REFER TO DETAIL ON DWG C-12)
5. STOP BAR (24" WHITE). PROVIDE PAVEMENT MESSAGE MARKING "STOP" IN ADVANCE OF STOP BAR. MESSAGE MARKING SHALL BE 3'H X 4'W.
6. 5' WIDE CROSSWALK (12" WHITE MARKING @ 2' SPACING)
7. SITE SIGN. VERIFY FINAL LOCATION WITH OWNER (REFER TO DETAIL ON DWG A-12)

NOTE:

1. ALL DIMENSIONS ARE TO FACE OF CURB, EDGE OF PAVEMENT OR CENTER OF COLUMN.
2. RADII SHALL BE 5' UNLESS INDICATED OTHERWISE.
3. REFER TO DRAWING C-7 FOR PAVING REQUIREMENTS.
4. ALL SIDEWALKS TO BE 5' EXPOSED AGGREGATE.
5. COORDINATE ID #'S 8 AND 26 THRU 30 ARE TO BUILDING CORNERS.

RECORD DRAWINGS

ENGR/ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

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NO.	DESCRIPTION	BY	DATE
	RECORD DRAWINGS	KCF	JUNE 08

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FIVE FORKS WATER TREATMENT FACILITY

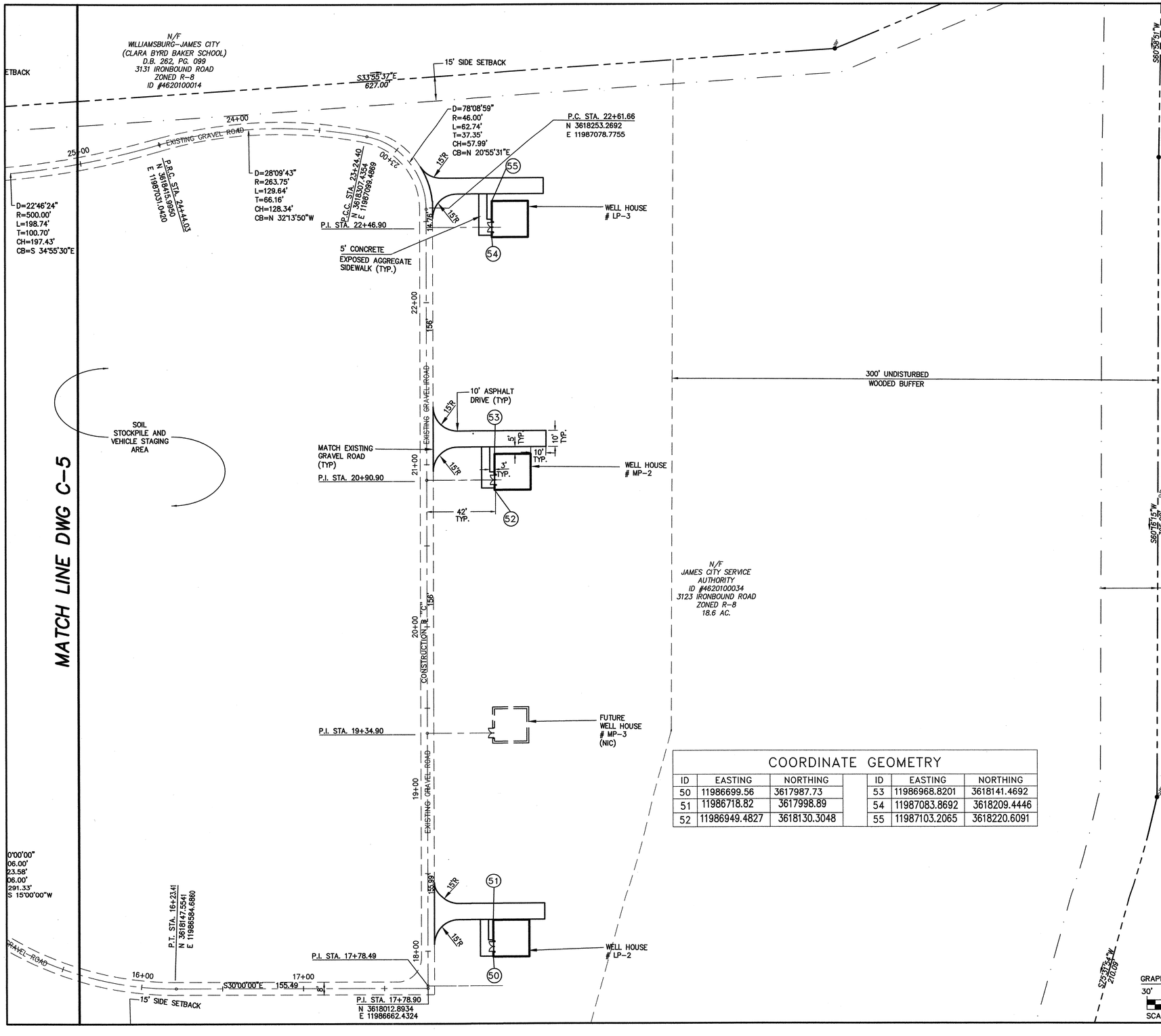
GEOMETRIC PLAN, SIGNING & MARKING

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. **C-5**

SHEET NO. **7 OF 123**

BH PROJECT NO. **75676-00**



COORDINATE GEOMETRY					
ID	EASTING	NORTHING	ID	EASTING	NORTHING
50	11986699.56	3617987.73	53	11986968.8201	3618141.4692
51	11986718.82	3617998.89	54	11987083.8692	3618209.4446
52	11986949.4827	3618130.3048	55	11987103.2065	3618220.6091

NOTE:

1. REFER TO DWG C-7 FOR PAVING REQUIREMENTS.
2. CONTRACTOR TO FIELD VERIFY LAYOUT OF WELL HOUSE'S LP-2, LP-3 AND MP-2 BASED ON INSTALLED LOCATION OF WELLS AND THE WELL HOUSE DIMENSIONING SHOWN ON DWG C-16, C-17 AND A-6. COORDINATES SHOWN ARE PROVIDED FOR BUILDING ORIENTATION.

RECORD DRAWINGS

ENGR/ARCH. TOF
DESIGN BY TOF
DRAWN BY BMB
CHECK BY HG
DATE 01/03

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FIVE FORKS WATER TREATMENT FACILITY

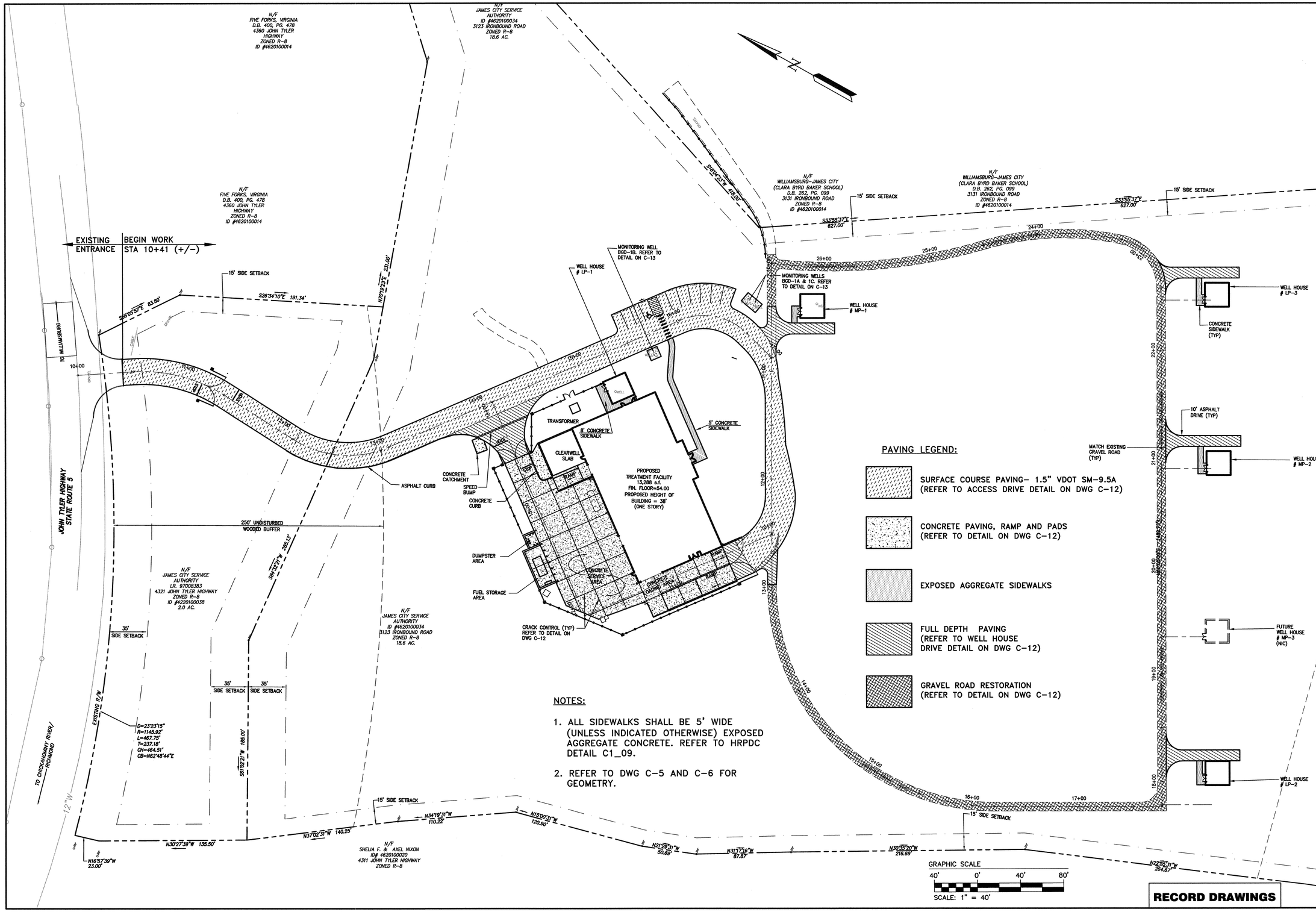
GEOMETRIC PLAN, SIGNING & MARKING

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-6

SHEET NO. 8 OF 123

BH PROJECT NO. 75676-00



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FIVE FORKS WATER TREATMENT FACILITY

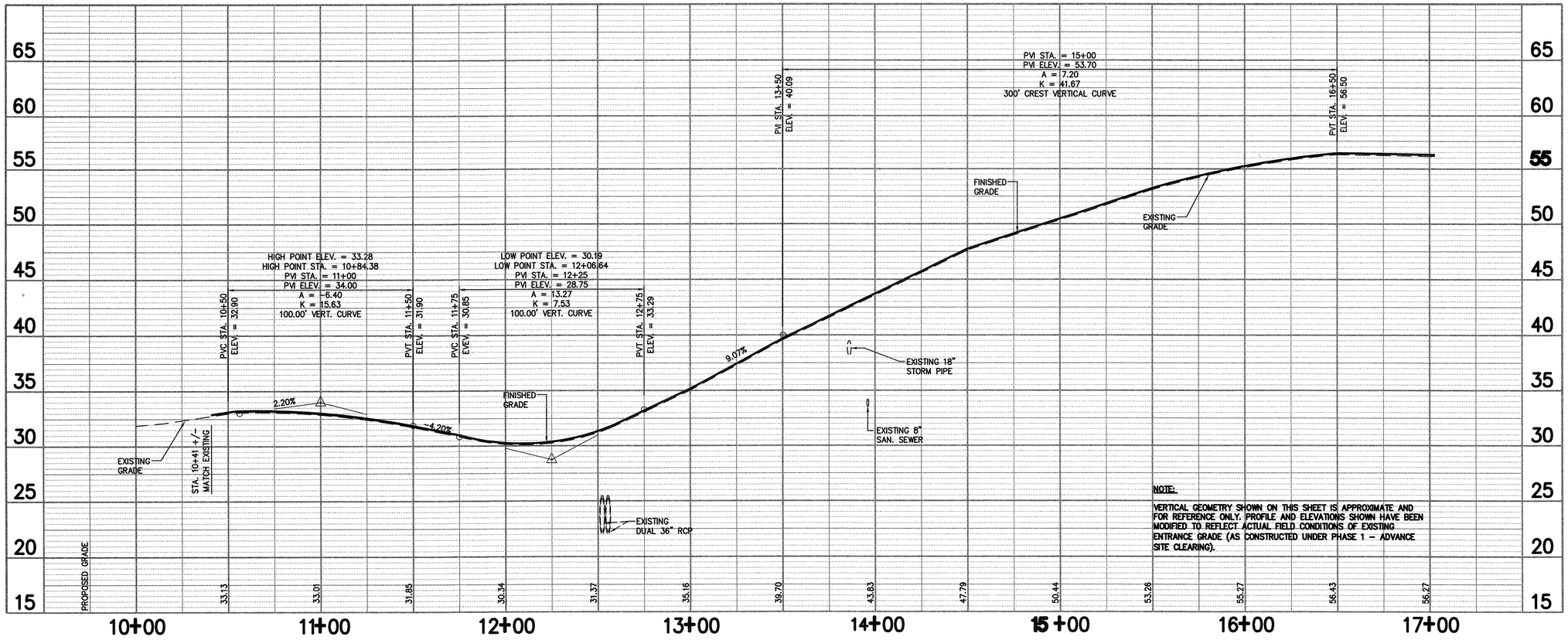
PAVING PLAN

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-7

SHEET NO. 9 OF 123

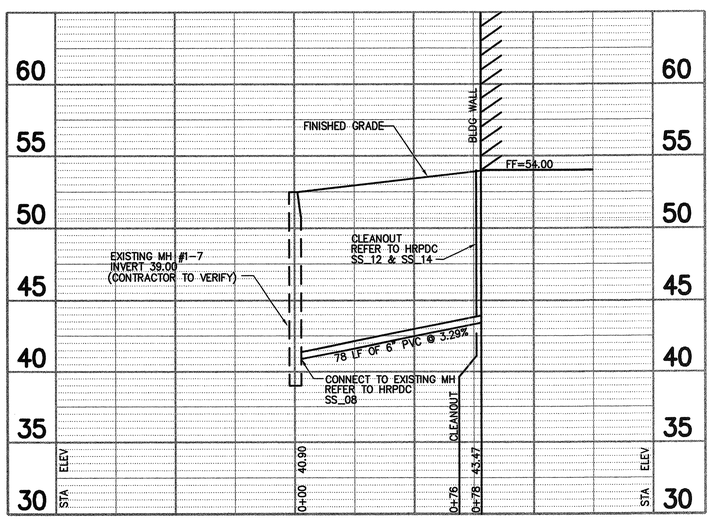
BH PROJECT NO. 75676-00



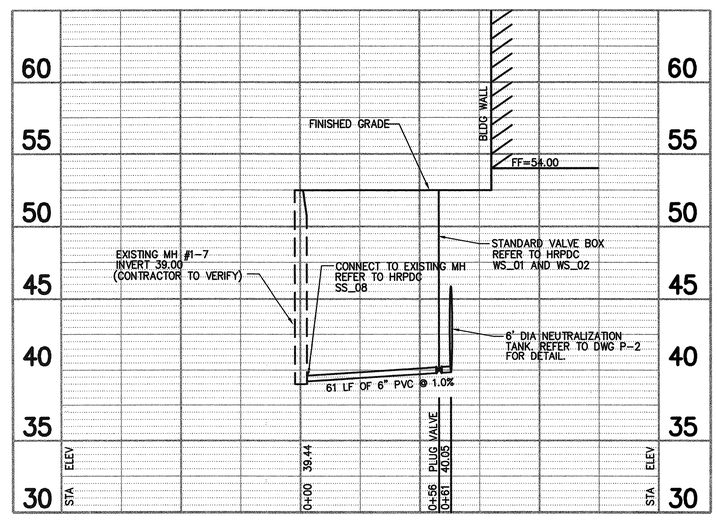
NOTE:

VERTICAL GEOMETRY SHOWN ON THIS SHEET IS APPROXIMATE AND FOR REFERENCE ONLY. PROFILE AND ELEVATIONS SHOWN HAVE BEEN MODIFIED TO REFLECT ACTUAL FIELD CONDITIONS OF EXISTING ENTRANCE GRADE (AS CONSTRUCTED UNDER PHASE 1 – ADVANCE SITE CLEARING).

ACCESS DRIVE PROFILE



6" SANITARY SEWER PROFILE - LINE A



6" SANITARY SEWER PROFILE - LINE B

NOTES:

1. SEWER INSTALLATIONS SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE HAMPTON ROADS REGIONAL STANDARDS, LATEST EDITION.

2. REFER TO DWG C-7 FOR ACCESS DRIVE PAVING REQUIREMENTS.

1"=5'

1"=30'

SCALE IN FEET

RECORD DRAWINGS

ENGR./ARCH. TOF
DESIGN BY TOF
DRAWN BY BMB
CHECK BY HG
DATE 01/03

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FIVE FORKS WATER TREATMENT FACILITY

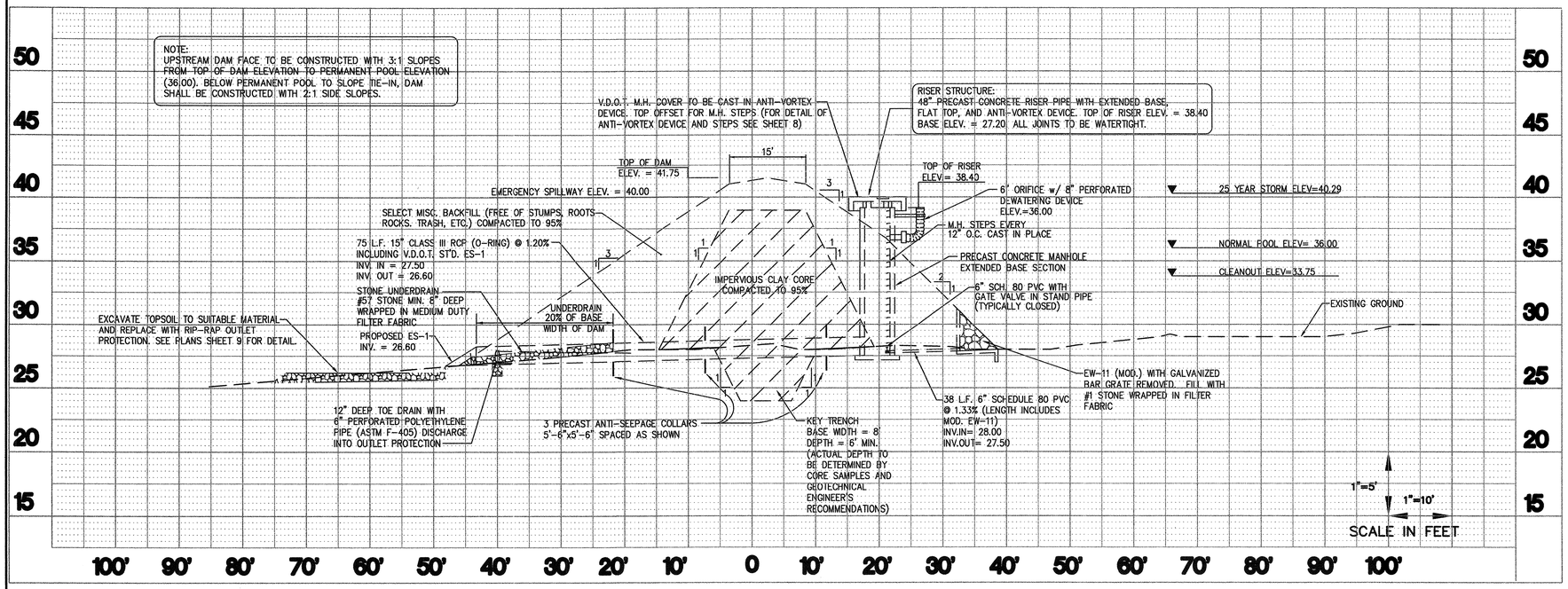
ACCESS ROAD & SEWER PROFILES

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-8

SHEET NO. 10 OF 123

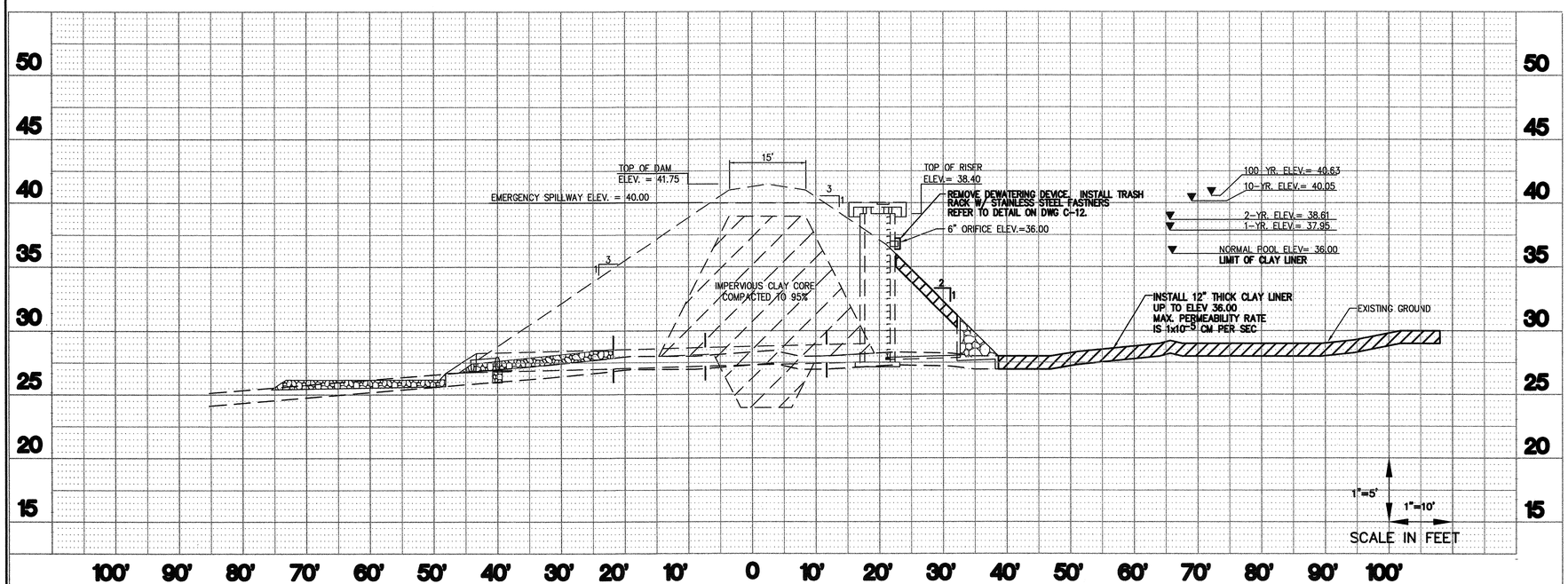
BH PROJECT NO. 75676-00



SECTION A-A EXISTING TEMPORARY SEDIMENT BASIN

(FOR INFORMATIONAL PURPOSES ONLY)

NOTE: CONTRACTOR TO PERFORM WORK SHOWN IN BOLD



SECTION A-A CONVERSION OF SEDIMENT BASIN TO SWM BMP

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

(NIC - FOR INFORMATIONAL PURPOSES ONLY)

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORM WATER BASIN, STORM WATER MANAGEMENT POND, BEST MANAGEMENT PRACTICE, SEDIMENT BASIN AND SEDIMENT TRAP. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.
2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL INSPECTIONS, INCLUDING PREPARATION OF A CONSTRUCTION CERTIFICATION OF THE FACILITY, OF THE REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.
4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. CLAYEY MATERIAL FOR THE CONSTRUCTION OF THE DAM CORE AND CUT-OFF TRENCH SHALL BE OBTAINED OFF-SITE AS THERE IS NO EVIDENCE OF THE SUITABLE CLAYEY MATERIAL ON SITE. SHOULD ADDITIONAL MATERIAL BE REQUIRED BEYOND THE CLAYEY MATERIAL, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON FROM OTHER JAMES CITY COUNTY PROJECTS. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERTY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR FOR RECREATIONAL FIELD CONSTRUCTION.
5. DAM SUBGRADE PREPARATION SHALL CONSIST OF REMOVING ALL TOPSOIL AND ANY OTHER SOFT OR UNSUITABLE MATERIALS FROM THE PROPOSED SUBGRADE LIMITS. SUBGRADE PREPARATION SHALL EXTEND A MINIMUM OF 2 FEET BEYOND TOE OF FILL EMBANKMENTS.
6. EXISTING CREEK FLOW SHALL DIVERTED FROM THE EXCAVATION, BY THE MEANS OF TEMPORARY PIPING OR BYPASS PUMPING. EXCAVATIONS SHALL REMAIN DE-WATERED DURING THE PLACEMENT OF FILL.
7. THE DAMS KEY SHALL PENETRATE SUBGRADE SANDS AND ORGANIC MATERIAL. SOME UNDERCUTTING WILL BE REQUIRED. THE CONTRACTOR SHALL CONSULT HIS GEOTECHNICAL ENGINEER TO IDENTIFY THE EXTENT OF THE UNDERCUTTING FOR THE DAM.
8. THE DAM KEY AND CORE FILL SHALL BE BACKFILLED WITH SOILS CLASSIFIED CL OR CH UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE AT LEAST 60% BY WEIGHT CALY AND SILT, AND BE FREE OF ORGANICS AND DEBRIS. A PLASTICITY INDEX OF 30. LIQUID LIMIT OF 55, AND A PERMEABILITY OF 10^-5 CM/SEC (OR LESS) IS REQUIRE OF THE KEY AND CORE FILL MATERIAL.
9. KEY AND CORE FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698).
10. EMBANKMENT FILL SHALL BE PLACED IN HORIZONTAL LIFTS ON SLOPES NO STEEPER THAN 1 FOOT VERTICAL FOR 4 FOOT HORIZONTAL. COMPACTION SHALL BE ACCOMPLISHED BY PLACING 8-INCH LOOSE LIFTS, AND MECHANICALLY COMPACTED WITH A SHEEPSFOOT ROLLER. HAND TAMPING TO DESIRED COMPACTION SHALL BE USED AROUND CULVERTS AND FOUNDATIONS. SOILS SHOULD BE COMPACTED AT MOISTURE CONTENTS WITHIN 3% ABOVE AND 1% BELOW OPTIMUM MOISTURE CONTENT FOR THE MATERIAL USED. THE NEED OF DRYING SOILS, OR ADDING MOISTURE TO THE SOIL, IN ALL EARTHWORK OPERATIONS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. FILED DENSITY TESTING SHALL BE PERFORMED AT A RATE OF ONE TEST PER 2500 SQUARE FEET PER LIFT OF EMBANKMENT MATERIAL.
11. SHOULDERS OF THE DAM (WHERE THE DAM EMBANKMENT TIES INTO RAVINE SIDE SLOPES) SHALL BE HORIZONTALLY BENCHED TO RECEIVE EMBANKMENT FILL.
12. RECEIVE ULTIMATE SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
13. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (ML, SM, SC, OR CL) CONTAINING AT LEAST 20% FINES SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.
14. THE STORM WATER MANAGEMENT / BEST MANAGEMENT PRACTICE SHOWN ON THESE PLANS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OR RECORD DRAWINGS AND CONSTRUCTION CERTIFICATIONS PRIOR TO RELEASE OF POSTED BONDS OR SURETIES. THE GEOTECHNICAL ENGINEER IS TO ENSURE THAT THEIR INSPECTION OF THE CONSTRUCTION OF THE SWM / BMP IS PERFORMED IN ACCORDANCE TO THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORM WATER MANAGEMENT / BEST MANAGEMENT PRACTICE FACILITY DESIGN GUIDELINES HANDBOOK, LATEST EDITION. THE COST OF PREPARING THE RECORD DRAWING AND CONSTRUCTION CERTIFICATIONS IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
15. THE GENERAL CONTRACTOR SHALL PROVIDE INTERIM CERTIFICATION OF THE TEMPORARY SEDIMENT BASIN IN ACCORDANCE TO THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORM WATER MANAGEMENT / BEST MANAGEMENT PRACTICE FACILITY DESIGN GUIDELINES HANDBOOK, LATEST EDITION.

GENERAL NOTES FOR CONVERSION OF EXISTING SEDIMENT BASIN TO A STORMWATER BMP (THIS CONTRACT)

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NECESSARY TO CONVERT THE EXISTING TEMPORARY SEDIMENT BASIN TO THE FINAL APPROVED STORMWATER BMP. CONTRACTOR WILL BE RESPONSIBLE FOR MAINTENANCE OF SEDIMENT BASIN AND STORMWATER BMP UNTIL ACCEPTED BY THE COUNTY. AN INTERIM CERTIFICATION FOR THE TEMPORARY SEDIMENT BASIN WAS REQUIRED AS PART OF PHASE I -ADVANCED SITE CLEARING (NIC) AS DEFINED ABOVE.

2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. ALL TESTS SHALL BE IN ACCORDANCE WITH ASTM STANDARDS. ALL INSPECTIONS, INCLUDING FINAL CONSTRUCTION CERTIFICATION OF THE FACILITY, SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER. THE COST OF THESE SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

3. CONVERSION OF THE TEMPORARY SEDIMENT BASIN TO THE FINAL STORMWATER BMP FACILITY SHALL NOT OCCUR UNTIL AFTER COMPLETION OF WELL TESTING (NIC) AND FINAL STABILIZATION OF THE SITE. CONVERSION SHALL INVOLVE THE FOLLWOING:
   - CONTRACTOR SHALL DREDGE BASIN TO REMOVE ACCUMULATED SEDIMENT AND PROPERLY DISPOSE OF. INSTALL 12" CLAY LINER AS DEPICTED ON THIS DRAWING. CLAY MATERIAL SHALL CONSIST BE CLASSIFICATION CL OR CH WITH AT LEAST 50% FINER THAN NO. 200 SIEVE AND 1X10 CM PER SECOND MAX PERMEABILITY.
   - REMOVE EXISTING DEWATERING DEVICE ON RISER STRUCTURE AND INSTALL TRASH RACK PER DETAIL ON DWG C-12.
   - IF REQUIRED, REMOVE ANY ACCUMULATED SEDIMENT FROM EXISTING FOREBAY AREAS.
   - STABILIZE ALL DISTURBED AREAS.

4. THE STORMWATER MANAGEMENT/BEST MANAGEMENT PRACTICE SHOWN ON THESE DRAWINGS REQUIRE THE SUBMISSION, REVIEW AND APPROVAL OF RECORD DRAWINGS AND CONSTRUCTION CERTIFICATIONS PRIOR TO RELEASE OF POSTED BONDS OR SURETIES. INSPECTIONS AND CERTIFICATIONS OF THE STORWATER BMP SHALL BE PERFORMED IN ACCORDANCE WITH THE JAMES CITY COUNTY ENVIRONMENTAL DIVISION STORMWATER MANAGEMENT/BEST MANAGEMENT FACILITY DESIGN GUIDELINES HANDBOOK, LATEST EDITION. THE COST OF PREPARING THE RECORD DRAWINGS AND PROVIDING APPROPRIATE CERTIFICATIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.

5. FOR STORMWATER MANAGEMENT/BMP FACILITY MAINTENANCE REQUIREMENTS, REFER TO DWG C-10.

RECORD DRAWINGS

ENGR./ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

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DRAWING SHALL NOT BE SCALED.

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REVISIONS		
NO.	DESCRIPTION	BY	DATE

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FIVE FORKS WATER TREATMENT FACILITY

SWM/BMP FACILITY

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-9

SHEET NO. 11 OF 123

BH PROJECT NO. 75676-00

JAMES CITY COUNTY
EROSION AND SEDIMENT CONTROL NOTES
(REVISED 7-6-01)

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, all 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, 3rd Edition, 1992. The contractor shall be thoroughly familiar with all applicable measures contained therein that may be pertinent to this project, including Minimum Standards 1 through 19. If the approved Erosion and Sediment Control plan is found to be inadequate in the field, the Minimum Standards will apply in addition to the provisions of the approved plan.

2. As a prerequisite approval of an erosion and sediment control plan for land-distributing activities, the name of a Responsible Land-Disturber shall be provided. The Responsible Land-Disturber shall be an individual who holds a valid certificate or competence issued by the Virginia Department of Conservation and is defined as the person in charge of and responsible for carrying out the land-distributing activity. Permits or plans without this information are deemed incomplete and will not be approved until proper notification is received. Also, if the person designated as Responsible Land-Disturber changes between the time of plan approval and the scheduled preconstruction meeting, the Environmental Division shall be informed of the change, in writing, 24-hours in advance of the preconstruction meeting.

3. A preconstruction meeting shall be held on site between the County, the Developer, the Project Engineer, the Responsible Land-Disturber 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 designated Responsible Land-Disturber is required to attend the preconstruction meeting for the project.

4. 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 (Std & Spec 3.02).

5. Sediment basins and traps (Std & Spec 3.13 and 3.14), perimeter dikes (Std & Std 3.09 and 3.12), sediment filter barriers (Std. & and Spec 3.05) and other measures intended to trap sediment on-site must be constructed as a first step in grading and must be made functional prior to any upslope land disturbance taking place. Earthen structures such as dams, dikes and diversions must be seeded and mulched immediately after installation. Periodic inspections of the erosion control measures by the owner or owner's representative shall be made to assess their condition. Any necessary maintenance of the measures shall be accomplished immediately and shall include the repair of measures damaged by any subcontractor including those of the public utility companies.

6. 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) and slope drain (Std. & Spec. 3.15) shall be installed prior to the end of each working day.

7. 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 divisions from the approval plan.

8. The Contractor shall place soil stockpiles at the locations shown on the plan. 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.

9. 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 the same (Std & Spec 3.18). This includes installation of erosion control stone or paved ditches were required. Any drainage outfalls required for a street must be completed before street grading or utility installation begins.

10. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

11. No more than 300 feet of sanitary sewer, storm drain, water 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).

12. If disturbed area stabilization is to be accomplished during the months of December, January or February, stabilization shall consist of mulching (Std & Spec 3.35). Seeding will then take place as soon as the season permits.

13. 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 (Std & Spec 3.32). Irrigation shall be required as necessary to ensure establishment of grass cover.

14. All slopes steeper than 3H:1V shall require the use of erosion control blankets and matting to aid in the establishment of a vegetative cover. Installation shall be in accordance with Std & Spec 3.35, Mulching, Std & Spec 3.36, Soil Stabilization Blankets and Matting and Manufacturers Instructions. No slopes shall be created steeper than 2H:1V.

15. Inlet protection (Std & Spec 3.07 and 3.08) shall be provided for all storm drain and culvert inlets following construction of the same.

16. Temporary liners, such as polyurethane sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.

17. Paved ditches shall be required wherever accelerated erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.

18. Temporary erosion control measures such as silt fence are not to be removed until all disturbed areas are stabilized. Trapped sediment shall be spread, seeded and mulched. After the project and stabilization o is complete, all erosion and sediment control measures shall be removed within 30 days.

19. No sediment trap or sediment basin shall be removed until a) at least 75 percent of the lots within the drainage area to the trap or basin have been sold to a third party (unrelated to the developer) for the construction of homes and/or b) 60 percent of the single family lots within the drainage area to the trap or basin have been completed and the soil stabilized. A bulk sale of the lots to another builder does not satisfy this provision. Sediment traps and sediment basins shall not be removed without the express authorization of the James City County Environmental Division.

20. Record Drawings (As-Builts) and Construction Certifications are both required for newly constructed or modified stormwater management/BMP facilities. Certification activities shall be adequately coordinated and performed before, during and following construction in accordance with the current version of the James City County Environmental Division, Stormwater Management/BMP Facilities, Record Drawing and Construction Certificates, Standard Forms & Instructions.

21. Design and construction of private-type site drainage systems outside VDOT right-of-ways shall be performed in accordance with the current version of the James City County Environmental Division, Stormwater Drainage Conveyance Systems (Non-BMP related), General Design and Construction Guidelines.

EROSION AND SEDIMENT CONTROL NARRATIVE
WATER TREATMENT FACILITY

PROJECT DESCRIPTION

THE PURPOSE OF THE PROJECT IS FOR THE CONSTRUCTION OF THE FIVE FORKS WATER TREATMENT FACILITY. THE SITE IS LOCATED TO THE EAST OF JOHN TYLER MEMORIAL HIGHWAY (ROUTE 5) AND SOUTH OF THE CLARA BYRD BAKER ELEMENTARY SCHOOL (WHICH FRONTS IRONBOUND ROAD).

THIS PROJECT IS BEING DEVELOPED IN TWO PHASES. PHASE 1 (NOT PART OF THIS CONTRACT) INVOLVED ADVANCE SITE CLEARING, ROUGH GRADING, INSTALLATION OF SITE UTILITIES, AN ACCESS DRIVE, SWM FACILITY AND ASSOCIATED EROSION AND SEDIMENT CONTROL MEASURES.

THIS PROJECT, PHASE II, INVOLVES CONSTRUCTION OF THE FIVE FORKS WATER TREATMENT FACILITY, FIVE WELL HOUSES, ASSOCIATED UTILITIES, A 12" CONCENTRATE MAIN, PARKING AREA, LOADING DOCK, FINISHED GRADING, SEEDING AND LANDSCAPING.

EXISTING SITE CONDITIONS (PRIOR TO SITE CLEARING)

THE CENTRAL PORTION OF THE SITE IS SOMEWHAT PLANAR WITH NATURAL THICK BRUSH DEVELOPING IN PREVIOUSLY CLEARED AREAS. THE SOUTHEAST PORTION OF THE SITE IS WOODED WITH INCREASING SLOPES TOWARD A STREAM CHANNEL RUNNING PARALLEL TO THE SOUTHERN PROPERTY BOUNDARY. THE NORTHERN PORTION OF THE SITE IS ALSO WOODED WITH INCREASING SLOPES TOWARD STREAM CHANNELS PARALLEL TO JOHN TYLER MEMORIAL HIGHWAY. ASSOCIATED WITH THIS STREAM CHANNEL ARE NON-RPA WETLANDS.

ADJACENT PROPERTY

IMMEDIATELY ADJACENT TO THE NORTH IS CLARA BYRD BAKER ELEMENTARY SCHOOL YARD AND PARKING LOT. THE YARD COVER IS SATISFACTORILY MAINTAINED GRASS. THIS SITE IS PLANAR, SLOPING TOWARD THE PROPOSED TREATMENT FACILITY SITE. THIS SCHOOL YARD CONTRIBUTES THE SIGNIFICANT PORTION OF THE STORM WATER RUNOFF TO BE TREATED BY THE PROPOSED STORM WATER MANAGEMENT FACILITY / BEST MANAGEMENT FACILITY ASSOCIATED WITH THESE SITE IMPROVEMENTS. JOHN TYLER MEMORIAL HIGHWAY BORDERS THE SITE ON THE WEST, AND RESIDENTIAL DEVELOPMENT TO THE FAR EAST. TO THE SOUTH AND SOUTHEAST, A LARGELY WOOD PARCEL EXISTS.

OFF SITE AREAS

THERE IS NO OFF-SITE LAND DISTURBING REQUIRED UNDER THIS PHASE OF THE PROJECT.

SOILS

A CLASSIFICATION OF THE VARIOUS SOIL TYPES TO BE FOUND ON THIS PROJECT IS SHOWN ON THE ENVIRONMENTAL INVENTORY SHEET OF THESE DOCUMENTS (REFER TO DWG C1). CRITICAL EROSION AREAS, OR HIGHLY ERODIBLE AREAS, HAVE BEEN IDENTIFIED, AS WELL AS AREAS OF 25% OR GREATER SLOPE.

PRACTICES USED IN THESE PLANS:

E & S MEASURES SHOWN ON THESE PLANS WERE INSTALLED UNDER PHASE I – SITE CLEARING. AS PART THIS CONTRACT, IT WILL BE REQUIRED FOR THE CONTRACTOR TO ASSUME RESPONSIBILITY FOR MAINTENANCE AND EVENTUAL REMOVAL OF THESE FACILITIES. EXISTING E & S MEASURES ARE TO BE ADJUSTED AS SHOWN ON THESE PLANS AND AS REQUIRED IN THE FIELD DURING CONSTRUCTION.

THE FOLLOWING EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE UTILIZED, BUT NOT LIMITED TO, DURING CONSTRUCTION:

TREE PROTECTION – TO BE INSTALLED PRIOR TO ANY GRADING AND LAND DISTURBING ACTIVITIES, IN ACCORDANCE TO E AND S SPECIFICATION 3.38 (OR APPROVED EQUAL).

SILT FENCE AND SUPER SILT FENCE– SILT FENCE BARRIERS SHALL BE INSTALLED AT ALL DOWNSTREAM LOCATIONS OF GRADING AND LAND DISTURBING ACTIVITIES. SUPER SILT FENCE IS USUALLY REQUIRED AT THE TOE OF SLOPE OF SIGNIFICANT AREAS OF FILL.

INLET PROTECTION – INLET PROTECTION SHALL BE INSTALLED AT ALL STORM SEWER INLETS

CHECK DAMS – CHECK DAMS SHALL BE PROVIDED IN ALL ROADSIDE DITCHES AT 100-FOOT INTERVALS

PERMANENT STABILIZATION – PERMANENT STABILIZATION OF THE SITE WILL CONSIST OF SEEDING, SODDING AND/OR MULCHING OF DISTURBED AREAS.

PERMANENT SEEDING – TOPSOILING AND PERMANENT SEEDING SHALL BE APPLIED TO ALL DENUDED AREAS AFTER FINAL GRADING HAS OCCURRED, IN ACCORDANCE WITH JAMES CITY COUNTY STANDARD EROSION AND SEDIMENT CONTROL NOTES.

CULVERT INLET PROTECTION – CULVERT INLET PROTECTION SHALL BE INSTALL AS INDICATED ON THE PLANS. CULVERT INLET PROTECTION SHALL BE CONSTRUCTED ROCK CHECK DAMS (IN ACCORDANCE WITH E AND S SPECIFICATION 3.08) TO PREVENT THE TRANSFER OF SEDIMENT BY A CULVERT TO A DOWNSTREAM LOCATION.

ALL EROSION AND SEDIMENT CONTROL MEASURES, WHETHER STRUCTURAL OR NON-STRUCTURAL, SHALL BE MAINTAINED BY THE CONTRACTOR. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE EROSION AND SEDIMENT CONTROL MEASURES ARE FUNCTIONAL UNTIL THE ENTIRE SITE HAS BEEN PERMANENTLY STABILIZED. IN GENERAL, EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER SIGNIFICANT RAINFALL (GREATER THAN 1/2-INCH) FOR PERFORMANCE AND DAMAGE. AREAS OF SEEDING, SODDING OR MULCHING WILL BE CHECKED REGULARLY TO ENSURE ADEQUATE STABILIZATION, OR THAT A GOOD STAND OF GRASS IS MAINTAINED. AREAS SHALL BE RESEEDED, OR MULCHED AS NEEDED. ALL EROSION AND SEDIMENT CONTROL MEASURES INSTALLED SHALL BE MAINTAINED IN STRICT ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

STORMWATER MANAGEMENT/BMP
FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT TWO BMP FACILITY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST.

INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.

2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.

3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.

4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% OF SOIL SURFACES, LIME, FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% BUT LESS THAN 70% OF SOIL SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.

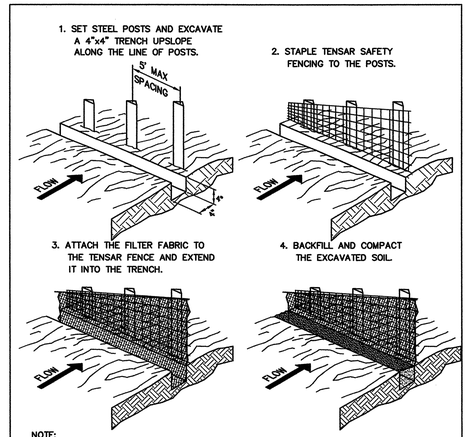
5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.

6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE. STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/ WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.

7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.

8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/ OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/ APPROVAL OF THE COUNTY.

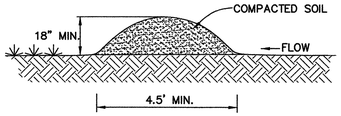


NOTE:

1. METAL POST TO BE MIN. 6' IN LENGTH.
2. FILTER FABRIC TO BE 42" HIGH.
3. SILT FENCE SUPPORT TO CONSIST OF TENSAR DX-2050 SAFETY FENCE, OR EQUIVALENT. MIN. TENSILE STRENGTH: 850 lb/ft (WIDTH) 1050 lb/ft (LENGTH)

(SSF) CONSTRUCTION OF SUPER SILT FENCE (WITH TENSAR SUPPORT)

N.T.S.



(DD) TEMPORARY DIVERSION DIKE

N.T.S.

SOURCE: VA. DSWC
PLATE. 3.09-1

CONSTRUCTION SEQUENCING

1. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING TO BE HELD ON-SITE WITH THE COUNTY AND THE PROJECT ENGINEER BEFORE ANY LAND DISTURBING ACTIVITY BEGINS.

2. EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THESE DRAWINGS WERE INSTALLED AS PART OF THE ADVANCED SITE-CLEARING PHASE. AS PART OF THIS CONTRACT, THE CONTRACTOR WILL BECOME RESPONSIBLE FOR MAINTENANCE, ADJUSTMENTS, AND REMOVAL OF EXISTING MEASURES. THIS WILL INCLUDE CONVERSION OF THE EXISTING TEMPORARY SEDIMENT BASIN INTO A PERMANENT STORMWATER MANAGEMENT FACILITY, AS DEFINED ON DWG C-9, FOR COUNTY APPROVAL.

3. LOCATE STAGING, STORAGE, AND STOCKPILING AREAS AS INDICATED ON THESE DRAWINGS.

4. INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING STONE CONSTRUCTION ENTRANCE, AS SHOWN.

5. PERFORM ROUGH GRADING AROUND BUILDING SITE AND WELLHOUSES. CONTRACTOR SHALL COORDINATE WORK AT WELLHOUSES WITH DRILLING OF WELLS (NOT IN CONTRACT) FOR LP-2, LP-3 AND MP-2, AS REQUIRED.

6. AFTER COUNTY INSPECTOR APPROVES SITE STABILIZATION, BEGIN BUILDING AND WELLHOUSE CONSTRUCTION.

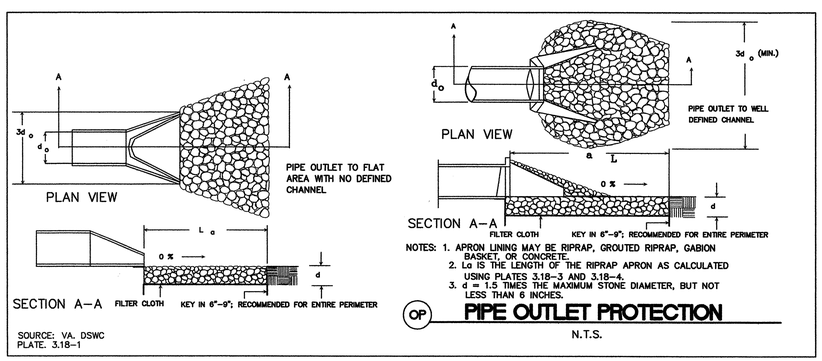
7. INSTALL SITE UTILITIES, CURBING, AND DRAINAGE ITEMS. STABILIZE SERVICE AREA. STABILIZE EMBANKMENT ADJACENT TO LOADING DOCK WITH SOD AS NOTED ON DWG C-2.

8. PERFORM ASPHALT PAVING, MARKING AND INSTALLATION OF SIGNAGE AND SIDEWALKS.

9. PERFORM FINISH GRADING AROUND THE SITE WITH TOPSOIL, PERMANENT SEEDING AND MULCHING IN ACCORDANCE WITH SPECIFICATIONS. INSTALL LANDSCAPING.

10. UPON STABILIZATION OF THE SITE AND ACCEPTANCE BY THE COUNTY INSPECTOR, CONVERT EXISTING TEMPORARY SEDIMENT BASIN INTO A PERMANENT STORMWATER MANAGEMENT FACILITY PER THESE DRAWINGS. CONTRACTOR SHALL FLUSH STORM SEWER SYSTEM PRIOR TO CONVERTING BASIN TO SWM POND. CONTRACTOR SHALL PROPERLY DISPOSE OF DREDGED MATERIAL FROM SEDIMENT BASIN. PREPARE SWM AS-BUILT PLANS AND SUBMIT TO THE COUNTY FOR APPROVAL (REFER TO JCC ENVIRONMENTAL E&S NOTES 19 AND 20, DATED 7/6/01).

11. REMOVE ALL SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.



NOTES: 1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. La IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

SOURCE: VA. DSWC
PLATE. 3.18-1

(OP) PIPE OUTLET PROTECTION

N.T.S.

RECORD DRAWINGS

ENGR./ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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NO.	DESCRIPTION	BY	DATE

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FIVE FORKS WATER TREATMENT FACILITY

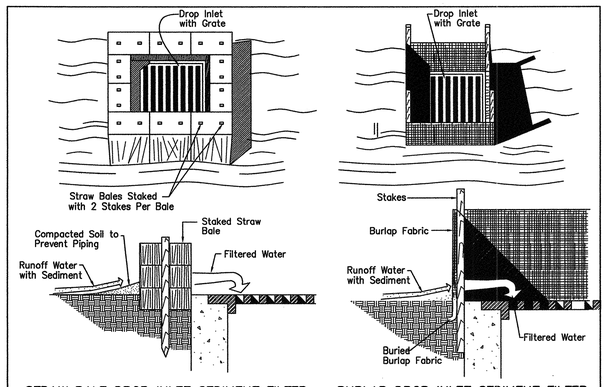
EROSION AND SEDIMENT CONTROL NOTES/DETAILS

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-10

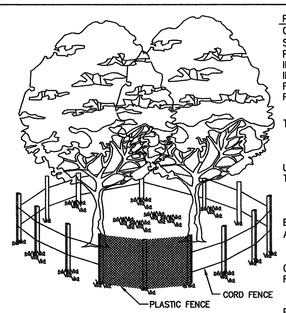
SHEET NO. 12 OF 123

BH PROJECT NO. 75676-00



(IP) INLET PROTECTION

N.T.S.



PLASTIC FENCING–40–INCH HIGH "INTERNATIONAL ORANGE" PLASTIC (POLYETHYLENE) WEB FENCING SECURED TO CONVENTIONAL METAL "T" OR "U" POSTS DRIVEN TO A MINIMUM DEPTH OF 18 INCHES ON 6–FOOT MINIMUM CENTERS SHALL BE INSTALLED AT THE LIMITS OF CLEARING. THE FENCE SHALL HAVE THE FOLLOWING MINIMUM PHYSICAL QUALITIES:

TENSILE YIELD: AVERAGE 2,000 LBS. PER 4–FOOT WIDTH (ASTM D638)

ULTIMATE TENSILE YIELD: AVERAGE 2,900 LBS. PER 4–FOOT WIDTH (ASTM D638)

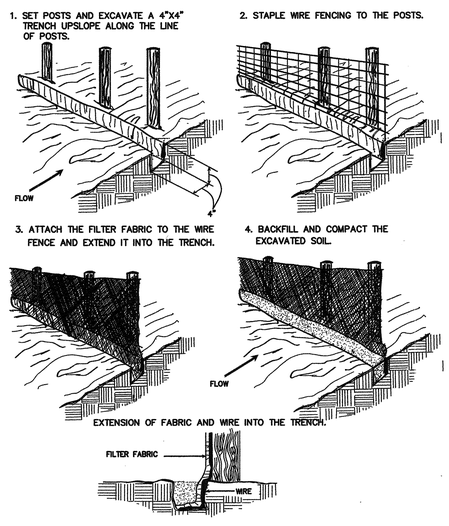
ELONGATION AT BREAK(%): GREATER THAN 15% (ASTM D638)

CHEMICAL RESISTANCE: INERT TO MOST CHEMICALS AND ACIDS

PLACE FENCE 5' OUTSIDE DRIPLINE

(TP) TREE PROTECTION

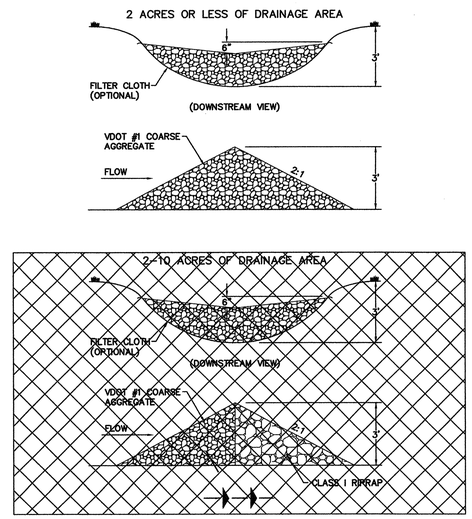
N.T.S.



(SF) CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)

N.T.S.

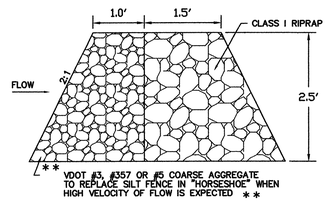
SOURCE: INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD AND WYANT PLATE. 3.05–1



(CD) ROCK CHECK DAM

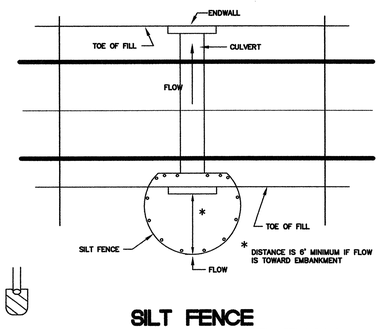
N.T.S.

SOURCE: VA. DSWC PLATE. 3.20–1



OPTIONAL STONE COMBINATION

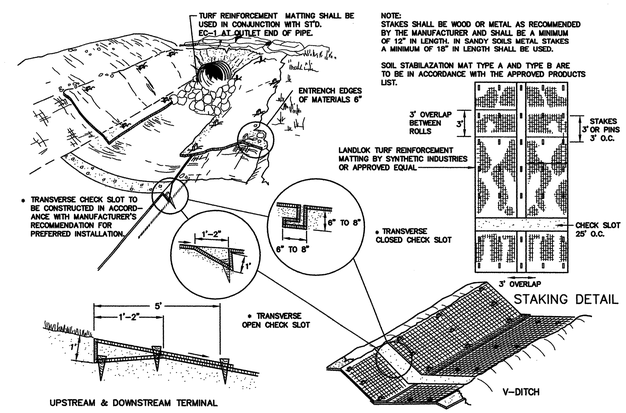
N.T.S.



(CIP) SILT FENCE CULVERT INLET PROTECTION

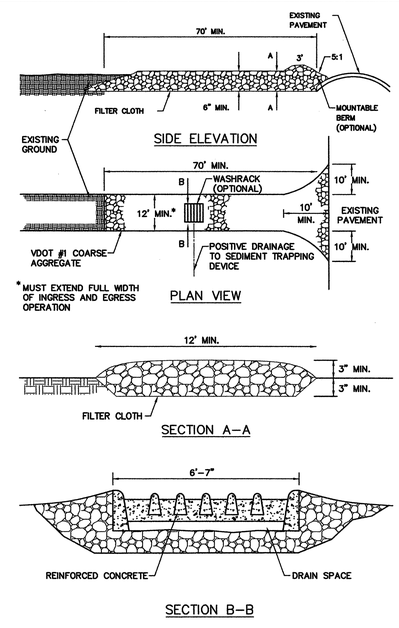
N.T.S.

SOURCE: VA. DSWC PLATE. 3.08–1



(TRM) TURF REINFORCEMENT MATTING INSTALLATION

N.T.S



(CE) STONE CONSTRUCTION ENTRANCE

N.T.S.

SOURCE: VA. DSWC PLATE. 3.02–1

RECORD DRAWINGS

ENGR/ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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FIVE FORKS WATER TREATMENT FACILITY

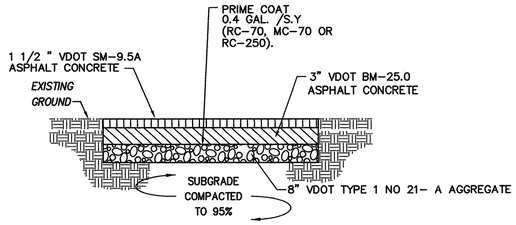
EROSION AND SEDIMENT CONTROL DETAILS

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C - 11

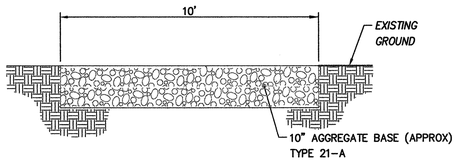
SHEET NO. 13 OF 123

BH PROJECT NO. 75676-00



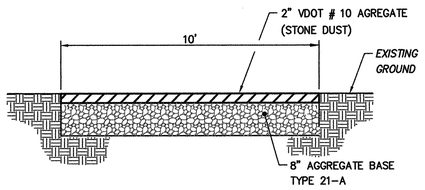
WELL HOUSE DRIVE PAVEMENT SECTION

SCALE: NONE



EXISTING ROAD SECTION

(FOR INFORMATIONAL PURPOSES ONLY)

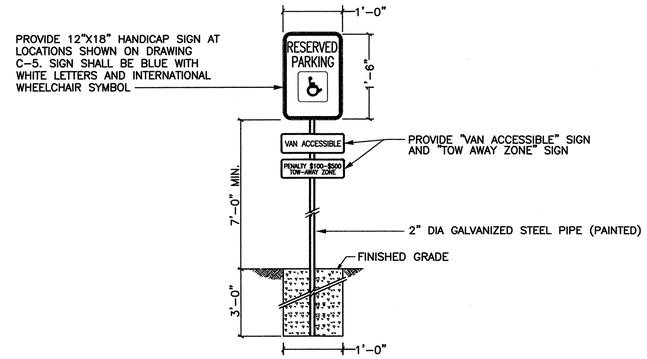


PROPOSED ROAD SECTION

CONTRACTOR SHALL REMOVE 2" OF EXISTING AGGREGATE GRAVEL DRIVE AND REPLACE WITH 2" OF STONE DUST. REFER TO DWG C-7 FOR LIMITS OF RESTORATION.

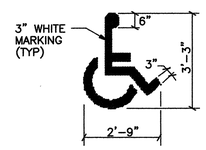
GRAVEL ROAD RESTORATION DETAIL

SCALE: NONE



HANDICAP SPACE SIGNAGE

SCALE: NONE

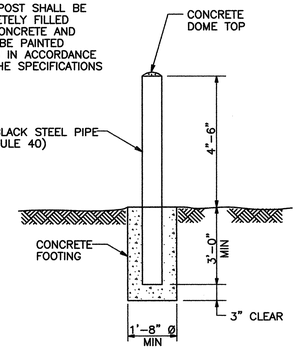


1. MARKING SHALL BE CENTERED IN STALL
2. INSTALL WHEELCHAIR SYMBOL ON 4'X4' BLUE BACKGROUND

HANDICAP STALL MARKING

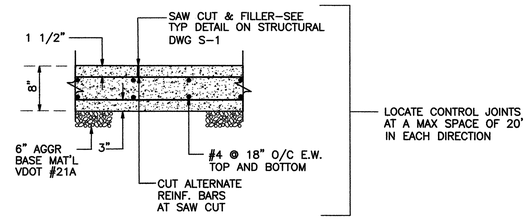
SCALE: NONE

NOTE: POST SHALL BE COMPLETELY FILLED WITH CONCRETE AND SHALL BE PAINTED YELLOW IN ACCORDANCE WITH THE SPECIFICATIONS

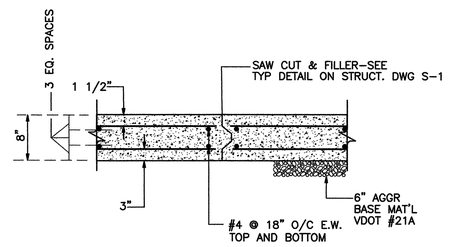


PIPE BOLLARD DETAIL

SCALE: NONE



CRACK CONTROL JOINT



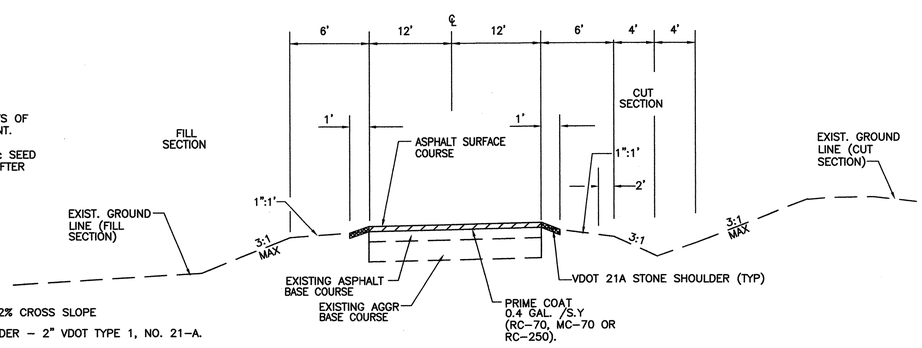
KEYED CONSTRUCTION JOINT

CONCRETE PAVING - SERVICE AREA/LOADING DOCK

SCALE: NONE

NOTES:

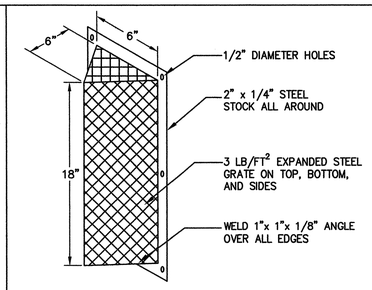
1. REFER TO DWG C-7 FOR LIMITS OF ACCESS DRIVE ASPHALT PLACEMENT.
2. CONTRACTOR SHALL TOPSOIL & SEED SHOULDER AREAS AS REQUIRED AFTER ASPHALT/SHOULDER PLACEMENT.



1. PROVIDE 2 - 12' LANES, 2% CROSS SLOPE
2. PROVIDE 1' GRAVEL SHOULDER - 2" VDOT TYPE 1, NO. 21-A.
3. ASPHALT SURFACE COURSE - 1.5" VDOT SM-9.5A (MIN)
4. EXISTING ASPHALT BASE COURSE - 3" VDOT BM-25.0
5. EXISTING AGGR BASE COURSE - 8" CEMENT TREATED AGGREGATE. CONTRACTOR SHALL CLEAN GRAVEL SURFACE PROIR TO PAVING.

ACCESS DRIVE TYPICAL SECTION

SCALE: NONE

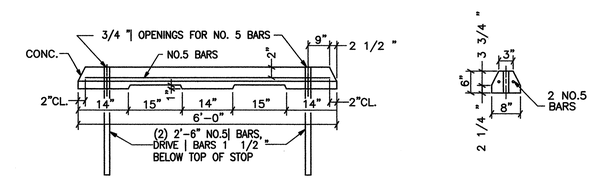


NOTES FOR TRASH RACK

1. TRASH RACK TO BE CENTERED OVER OPENING.
2. STEEL TO CONFORM TO ASTM A-36
3. ALL SURFACES TO BE HOT DIPPED GALVANIZED
4. TRASH RACK SHALL BE FASTENED TO STRUCTURE WITH 1/2" DIA.SS. BOLTS WITH SELF DRILLING CONCRETE ANCHORS (TYP. 6)

TRASH RACK PROTECTION

SCALE: NONE



ELEVATION

SECTION

PRECAST CONCRETE WHEELSTOP

SCALE: NONE

RECORD DRAWINGS

ENGR./ARCH.	DESIGN BY	DRAWN BY	CHECK BY	DATE
TOF	TOF	BMB	HG	01/03

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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REVISIONS

NO.	DESCRIPTION	BY	DATE

BUCHART HORN, INC.
460 McLAWS CIRCLE
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FIVE FORKS WATER TREATMENT FACILITY

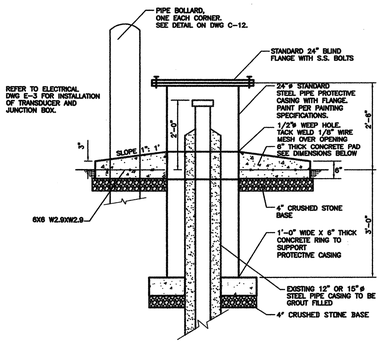
DETAILS

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-12

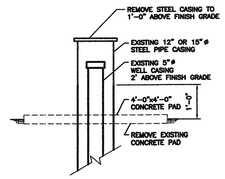
SHEET NO. 14 OF 123

BH PROJECT NO. 75676-00



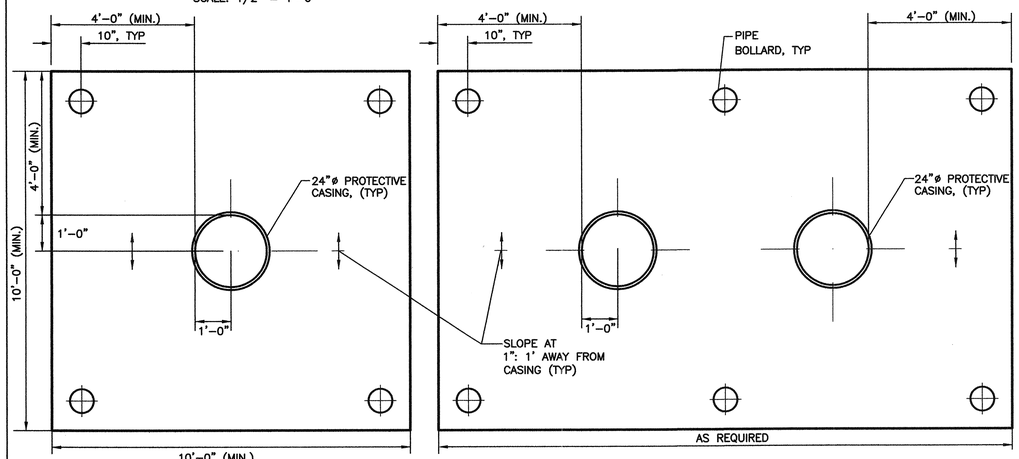
TYPICAL SECTION

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



DEMOLITION DETAIL

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

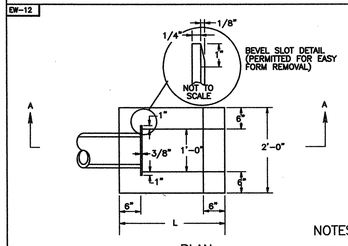


PLAN VIEW

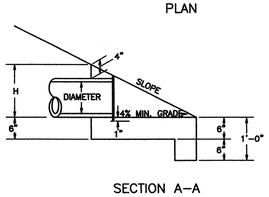
EXISTING MONITORING WELL DETAIL

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

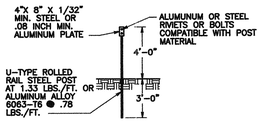
EW-12



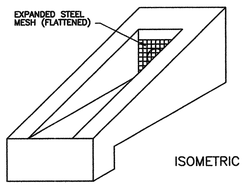
PLAN



SECTION A-A



UNDERDRAIN OUTLET MARKER DETAIL



ISOMETRIC

NOTES:

1. TYPICAL ENDWALL TO BE PLACED AT THE ENDS OF ALL UNDERDRAIN OUTLETS, BARRING LOCATIONS WHERE UNDERDRAIN IS TIED INTO OTHER DRAINAGE STRUCTURES. ENDWALL TO BE INSTALLED PERPENDICULAR TO ROADWAY AND FLUSH WITH THE SLOPE.
2. OUTLET PIPES SHALL BE RIGID NONPERFORATED, SMOOTH-BORE PIPE, MEETING THE REQUIREMENTS OF 70 PSI TESTED ACCORDING TO ASTM 2412.
3. EXPANDED STEEL MESH (FLATTENED) SHALL HAVE OPENINGS OF APPROX. 1/2" X 1" AND WEIGH APPROX. 0.82 LBS/SQ. FT. MESH SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123. THE MESH SHALL EXTEND A MINIMUM OF 1" ABOVE THE O.D. OF THE PIPE, AND IS A BARRIER FOR RODENTS, ETC. THE SLOT FOR THE STEEL MESH IS TO BE CONSTRUCTED SO THAT THE MESH CAN BE REMOVED FOR CLEANOUT PURPOSES.
4. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
5. STEEL POSTS AND PLATES TO BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS. IF PAINTED THE FINAL COAT SHALL BE NO. 13 ALUMINUM PAINT OR NO. 11 WHITE PAINT.
6. MARKER TO BE PLACED AT OUTLET END OF ALL UNDERDRAIN INSTALLATIONS BARRING LOCATIONS WHERE UNDERDRAIN IS TIED INTO OTHER DRAINAGE STRUCTURES.

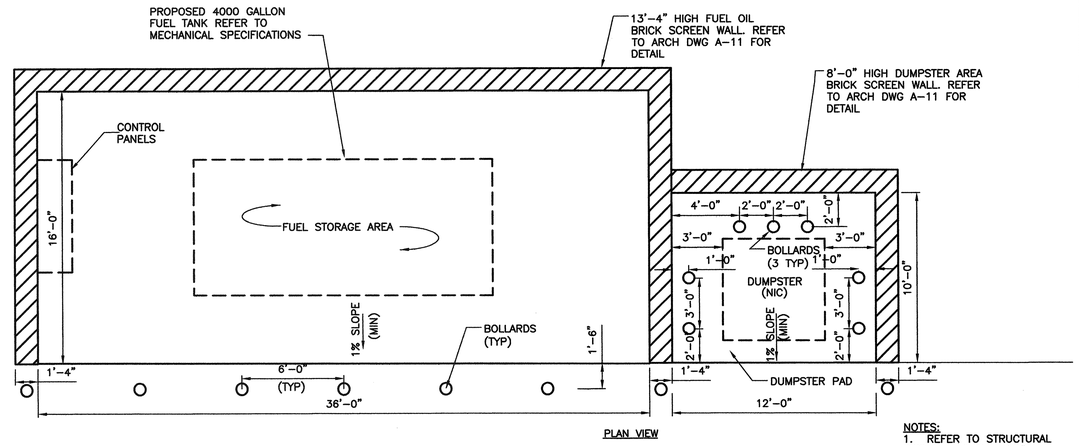
PIPE I.D.	SLOPE	DIMENSIONS L	DIMENSIONS H	CLASS A3 CONCRETE CUBIC YARDS
4"	2:1	2'-5 1/2"	1'-2 3/4"	0.17
4"	4:1	4'-5"	1'-1 1/4"	0.28
6"	2:1	2'-10 1/2"	1'-5 1/4"	0.21
6"	4:1	5'-3"	1'-3 3/4"	0.35

STANDARD ENDWALL FOR PIPE UNDERDRAIN

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 103, 232, 301

101.32



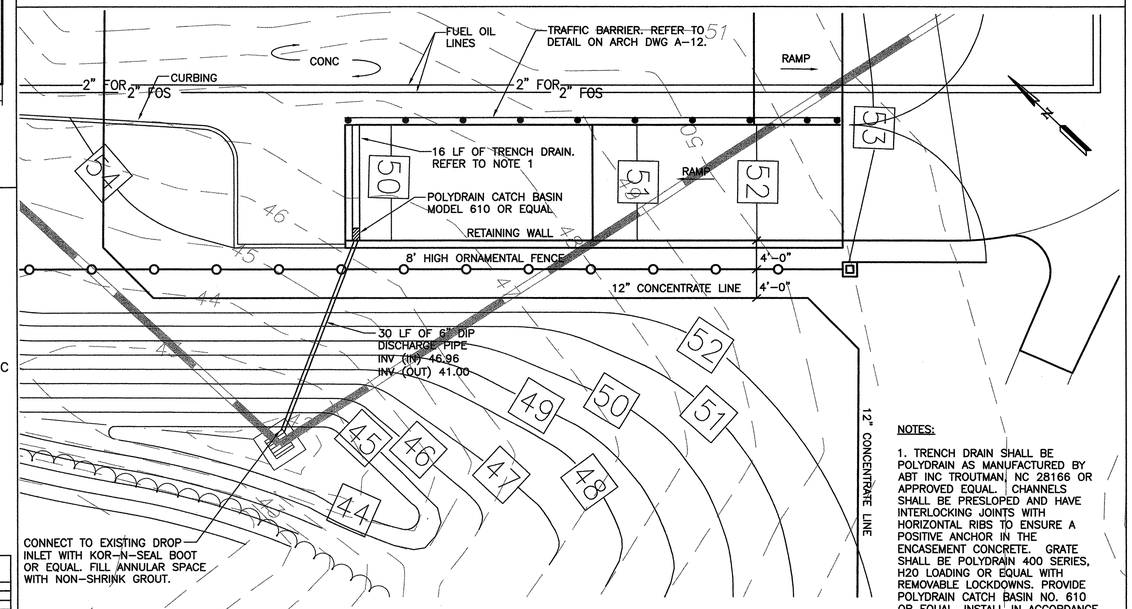
PLAN VIEW

NOTES:

1. REFER TO STRUCTURAL DWG S-3 & S-5 FOR CONCRETE PAD SECTION.
2. REFER TO DWG C-12 FOR BOLLARD DETAIL.

FUEL STORAGE AREA AND DUMPSTER ENCLOSURE DETAIL

SCALE: NONE



NOTES:

1. TRENCH DRAIN SHALL BE POLYDRAIN AS MANUFACTURED BY ABT INC TROUTMAN, NC 28166 OR APPROVED EQUAL. CHANNELS SHALL BE PRESLOPED AND HAVE INTERLOCKING JOINTS WITH HORIZONTAL RIBS TO ENSURE A POSITIVE ANCHOR IN THE ENCASEMENT CONCRETE. GRATE SHALL BE POLYDRAIN 400 SERIES, H20 LOADING OR EQUAL. WITH REMOVABLE LOCKDOWNS. PROVIDE POLYDRAIN CATCH BASIN NO. 610 OR EQUAL. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

LOADING DOCK DETAIL

SCALE: 1"=10'

ENGR./ARCH. TOF
DESIGN BY TOF
DRAWN BY BMB
CHECK BY HG
DATE 01/03

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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REVISIONS		
NO.	DESCRIPTION	BY	DATE

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FIVE FORKS WATER TREATMENT FACILITY

DETAILS

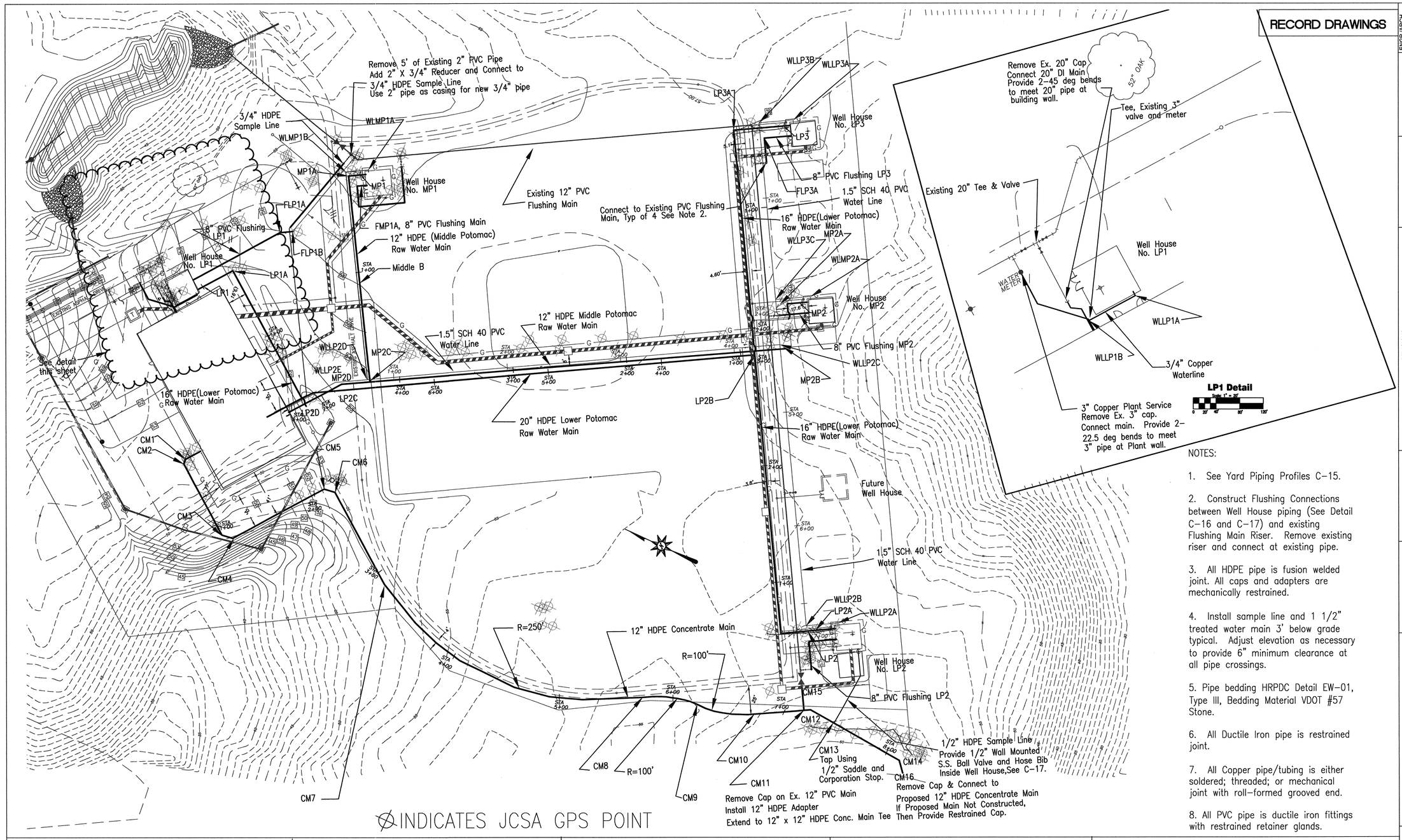
JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. C-13

SHEET NO. 15 OF 123

BH PROJECT NO. 75676-00

RECORD DRAWINGS



INDICATES JCSA GPS POINT

NOTES:

1. See Yard Piping Profiles C-15.

2. Construct Flushing Connections between Well House piping (See Detail C-16 and C-17) and existing Flushing Main Riser. Remove existing riser and connect at existing pipe.

3. All HDPE pipe is fusion welded joint. All caps and adapters are mechanically restrained.

4. Install sample line and 1 1/2" treated water main 3' below grade typical. Adjust elevation as necessary to provide 6" minimum clearance at all pipe crossings.

5. Pipe bedding HRPDC Detail EW-01, Type III, Bedding Material VDOT #57 Stone.

6. All Ductile Iron pipe is restrained joint.

7. All Copper pipe/tubing is either soldered; threaded; or mechanical joint with roll-formed grooved end.

8. All PVC pipe is ductile iron fittings with restrained retainer glands.

MAIN	Control Point		SIZE	N	E
Concentrate Main	CM1	45 Deg Bend	12"	3618577	11986611
Concentrate Main	CM2	45 Deg Bend	12"	3618577	11986607
Concentrate Main	CM3	45 Deg Bend	12"	3618520	11986564
Concentrate Main	CM4	45 Deg Bend	12"	3618510	11986565
Concentrate Main	CM5	45 Deg Bend	12"	3618456	11986639
Concentrate Main	CM6	45 Deg Bend	12"	3618446	11986640
Concentrate Main	CM7	Tangency Point	12"	3618372	11986585
Concentrate Main	CM8	Tangency Point	12"	3618125	11986591
Concentrate Main	CM9	Tangency Point	12"	3618079	11986606
Concentrate Main	CM10	Tangency Point	12"	3618030	11986619
Concentrate Main	CM11	Tee 12" X 12"	12"	3617992	11986640
Concentrate Main	CM12	22.5 & 11.25 Deg Bends	12"	3617987	11986643

MAIN	Control Point		SIZE	N	E
Concentrate Main	CM13	Tee 12" X 1/2"	12"	3617963	11986641
Concentrate Main	CM14	45 Deg Bend	12"	3617898	11986636
Concentrate Main	CM15	Connect to Flushing	12"	3618003	11986659
Concentrate Main	CM16	Remove Cap, Connect To Proposed Concentrate Main	12"	3617890	11986627
Flushing MP1	FMP1A	90 Deg Bend	8"	3618538	11986894
Flushing LP1	FLP1A	22.5 Deg Bend	8"	3618585	11986826
Flushing LP1	FLP1B	45 Deg Bend	8"	3618576	11986832
Flushing LP3	FLP3A	90 Deg Bend	8"	3618235	11987081
Well House No. LP1	LP1	10" X 16" Reducer	16"	3618627	11986755
Well House No. LP1	LP1A	90 Deg Bend	16"	3618608	11986778
Well House No. LP2	LP2	10"X16" Reducer	16"	3617990	11986693

MAIN	Control Point		SIZE	N	E
Well House No. LP2	LP2A	90 Deg Bend	16"	3618009	11986682
Well House No. LP2	LP2B	16 X 16" Tee & 16" X 20" Reducer	16"	3618145	11986915
Well House No. LP2	LP2C	22.5 Deg Bend	20"	3618483	11986721
Well House No. LP2	LP2D	Tee 16" X 20"	20"	3618501	11986698
Well House No. LP3	LP3	10" X 16" Reducer	16"	3618224	11987098
Well House No. LP3	LP3A	90 Deg Bend	16"	3618245	11987086
Well House No. MP1	MP1	8" X 12" Reducer	12"	3618543	11986902
Well House No. MP1	MP1A	90 Deg Bend	12"	3618552	11986897
Well House No. MP2	MP2	8" X 12" Reducer	12"	3618144	11986964

MAIN	Control Point		SIZE	N	E
Well House No. MP2	MP2A	90 Deg Bend	12"	3618161	11986954
Well House No. MP2	MP2B	Tee 12" X 12" & Cap	12"	3618143	11986922
Well House No. MP2	MP2C	Tee 12" X 12"	12"	3618459	11986741
Well House No. MP2	MP2D	22.5 Deg Bend	12"	3618485	11986726
Water Line LP1	WLLP1A	90 Deg Bend	3/4"	3618629	11986746
Water Line LP1	WLLP1B	3/4" Tap & Corp. Stop	3/4"	3618642	11986728
Water Line LP2	WLLP2A	90 Deg Bend	1.5"	3617985	11986701
Water Line LP2	WLLP2B	90 Deg Bend	1.5"	3618009	11986687
Water Line LP2	WLLP2C	Tee 1.5" X 1.5" & Cap	1.5"	3618087	11986821
Water Line LP2	WLLP2D	Tee 1.5" X 1.5"	1.5"	3618146	11986922
Water Line LP2	WLLP2E	Tee 1.5" X 1.5"	1.5"	3618462	11986742
Water Line LP2	WLLP2F	22.5 Deg Bend	1.5"	3618486	11986728

MAIN	Control Point		SIZE	N	E
Water Line LP3	WLLP3A	90 Deg Bend	1.5"	3618219	11987106
Water Line LP3	WLLP3B	90 Deg Bend	1.5"	3618245	11987091
Water Line LP3	WLLP3C	Tee 1.5" X 1.5"	1.5"	3618166	11986957
Water Line MP1	WLMP1A	90 Deg Bend	1.5"	3618538	11986909
Water Line MP1	WLMP1B	90 Deg Bend	1.5"	3618555	11986899
Water Line MP2	WLMP2A	90 Deg Bend	1.5"	3618140	11986972

PIPE	TEST PRESSURE
Raw Water Main	100 PSI
Treated Water Main	150 PSI
Concentrate Main	150 PSI
Flushing Main	150 PSI

Scale: 1" = 40'

0 20' 40' 80' 120'

ENGR/ARCH: ARG
DESIGN BY: ARG
DRAWN BY: ARG
CHECK BY: EPS
DATE: JAN 2003

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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SCALE: 1" = 40'

REVISIONS			
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FIVE FORKS WATER TREATMENT FACILITY

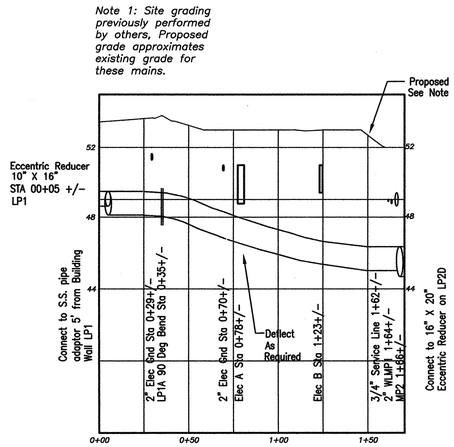
Yard Piping

JCSA JAMES CITY SERVICE AUTHORITY

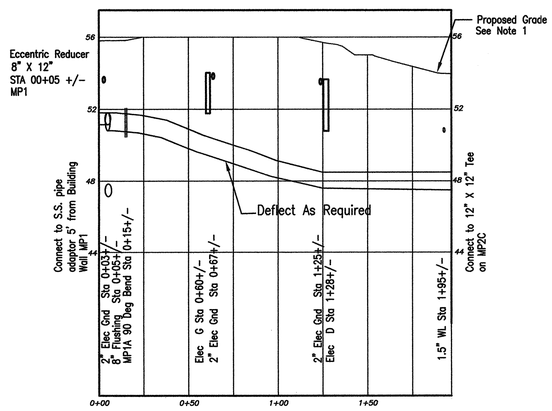
DRAWING NO. C-14

SHEET NO. 16 OF 123

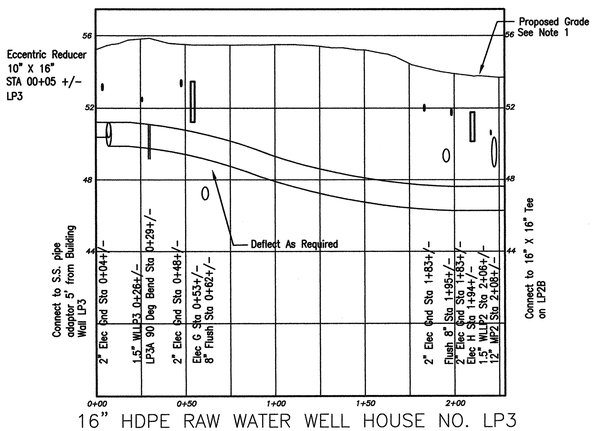
BH PROJECT NO. 75676-00



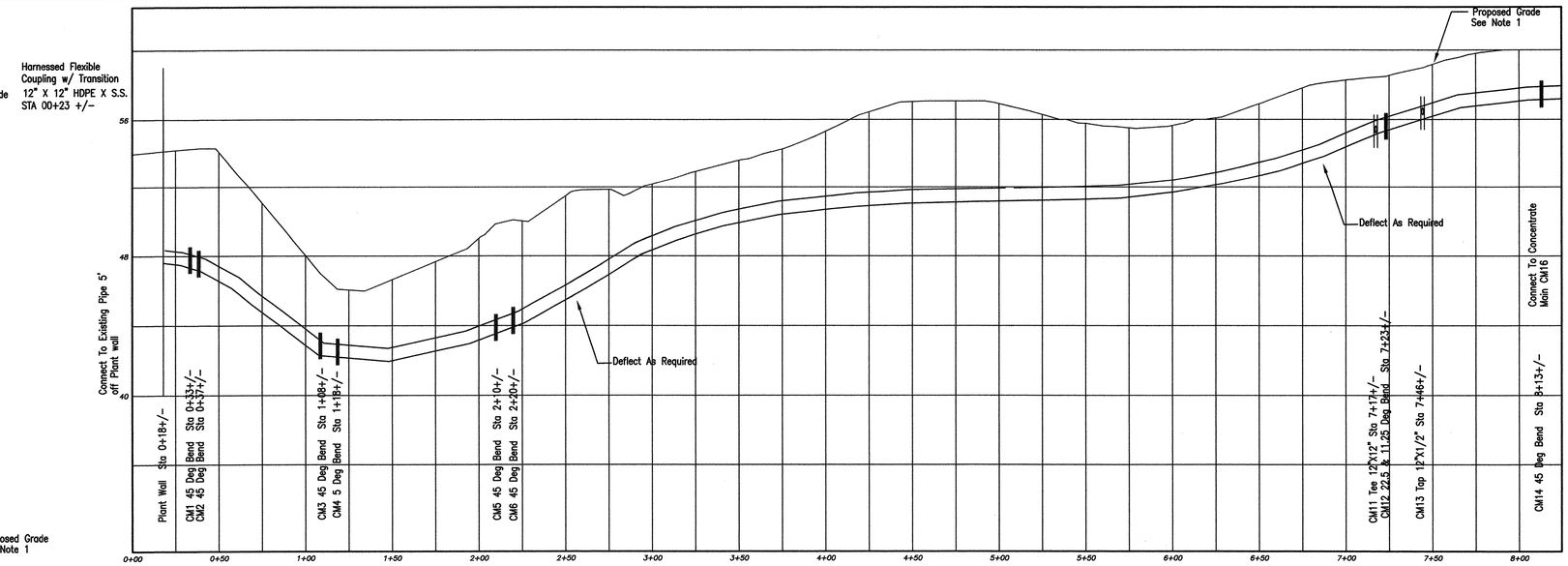
16" HDPE RAW WATER WELL HOUSE NO. LP1



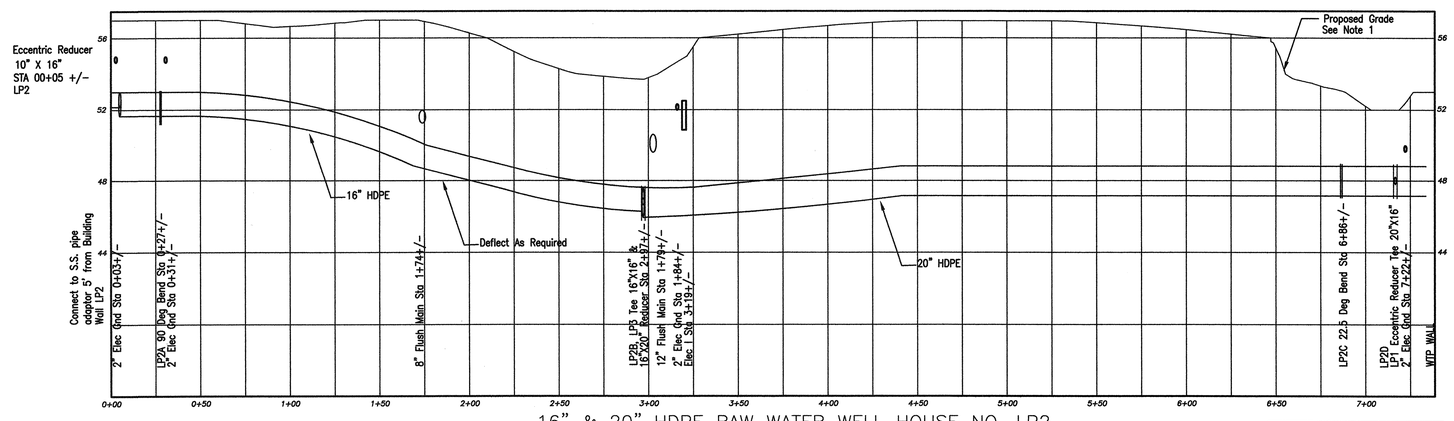
12" HDPE RAW WATER WELL HOUSE NO. MP1



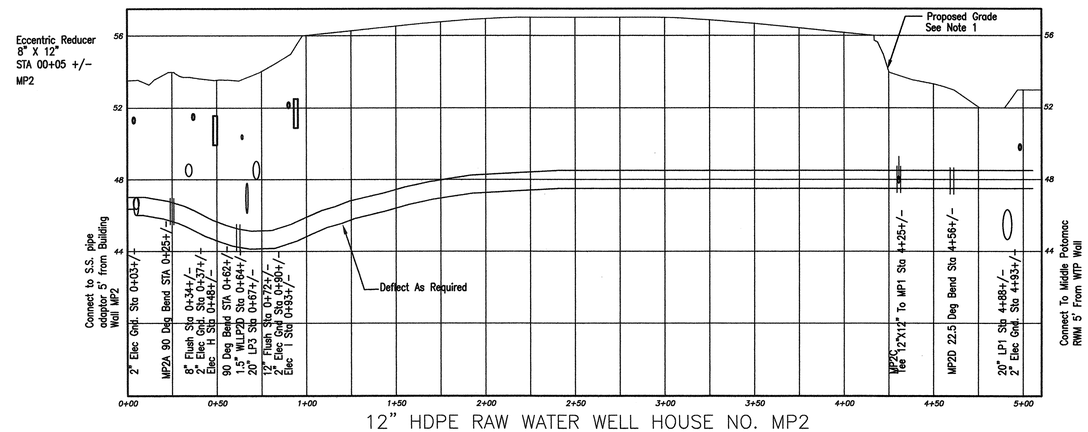
16" HDPE RAW WATER WELL HOUSE NO. LP3



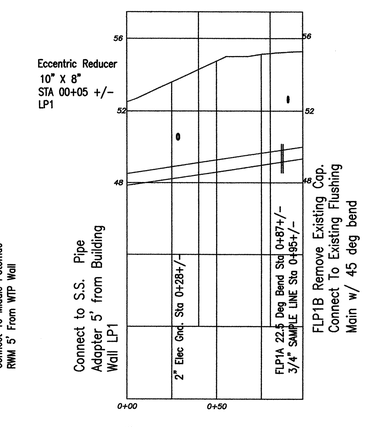
12" HDPE CONCENTRATE MAIN



16" & 20" HDPE RAW WATER WELL HOUSE NO. LP2



12" HDPE RAW WATER WELL HOUSE NO. MP2



8" PVC FLUSHING LP1

RECORD DRAWING

ENGR./ARCH.	DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC. DRAWING SHALL NOT BE SCALED. ©Buchart-Horn, Inc. 2002
ARG	
DESIGN BY ARG	
DRAWN BY ARG	
CHECK BY EPS	
DATE JAN 2003	

SCALE: 1" = 40' H, 1" = 4' V

REVISIONS

NO.	DESCRIPTION	BY	DATE

SEA
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FIVE FORKS WATER TREATMENT FACILITY

Yard Piping Profiles

JCSA JAMES CITY SERVICE AUTHORITY

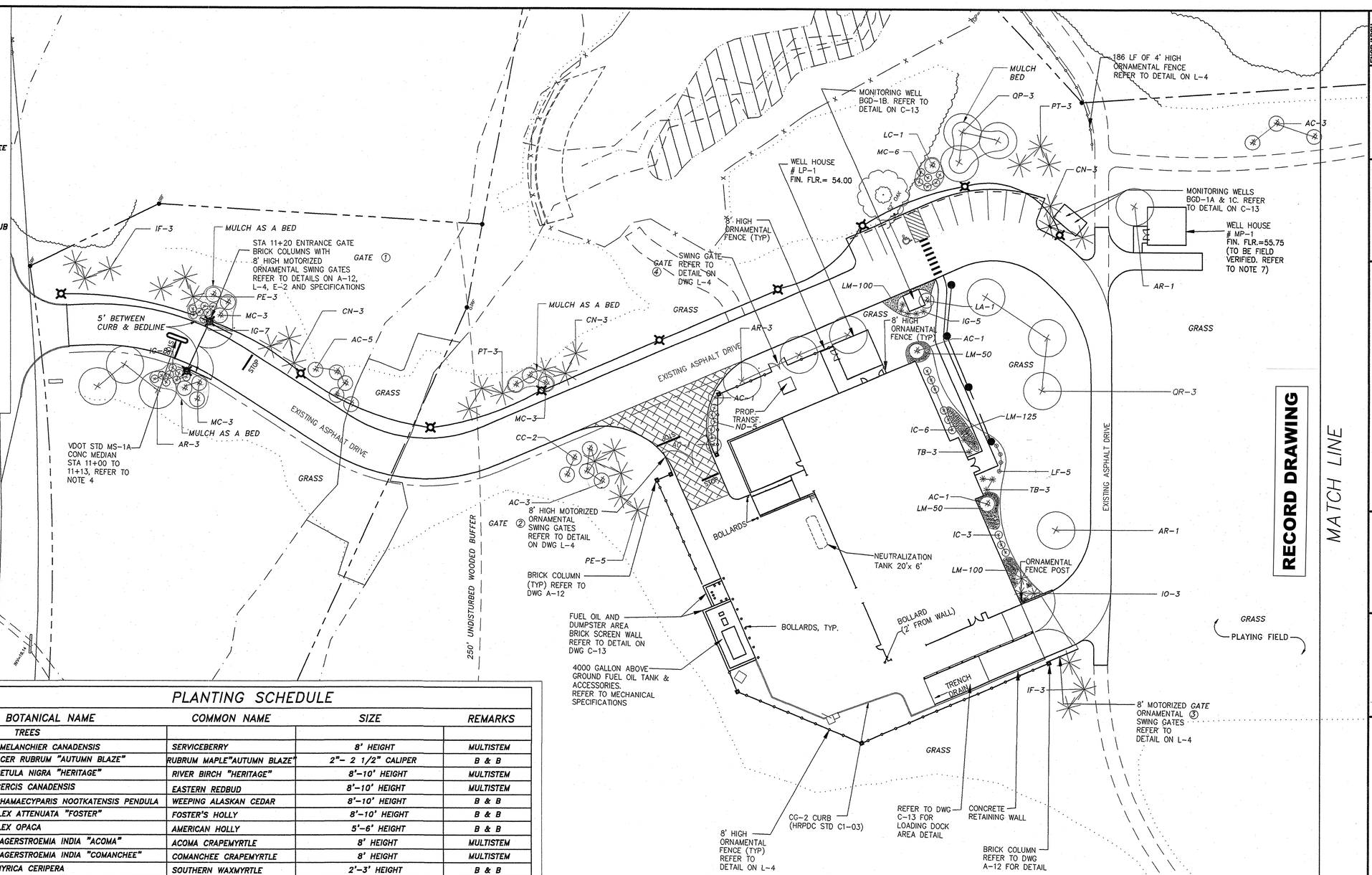
DRAWING NO. C-15

SHEET NO. 17 OF 123

BH PROJECT NO. 75676-00

LEGEND

- DECIDUOUS SHADE TREE
- EVERGREEN TREE
- DECIDUOUS ORNAMENTAL TREE
- NEEDLED EVERGREEN SHRUB
- BROADLEAF EVERGREEN SHRUB
- GROUND COVER
- LIGHTING STANDARD
- EXISTING TREELINE
- NON RPA WETLANDS DELINATION LINE



PLANTING SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
		TREES			
AC	15	AMELANCHIER CANADENSIS	SERVICEBERRY	8' HEIGHT	MULTISTEM
AR	8	ACER RUBRUM "AUTUMN BLAZE"	RUBRUM MAPLE"AUTUMN BLAZE"	2"- 2 1/2" CALIPER	B & B
BN	6	BETULA NIGRA "HERITAGE"	RIVER BIRCH "HERITAGE"	8'-10' HEIGHT	MULTISTEM
CC	2	CERCIS CANADENSIS	EASTERN REDBUD	8'-10' HEIGHT	MULTISTEM
CN	9	CHAMAECYPARIS NOOTKATENSIS PENDULA	WEEPING ALASKAN CEDAR	8'-10' HEIGHT	B & B
IF	7	ILEX ATTENUATA "FOSTER"	FOSTER'S HOLLY	8'-10' HEIGHT	B & B
IO	3	ILEX OPACA	AMERICAN HOLLY	5'-6' HEIGHT	B & B
LA	3	LAGERSTROEMIA INDIA "ACOMA"	ACOMA CRAPEMYRTLE	8' HEIGHT	MULTISTEM
LC	2	LAGERSTROEMIA INDIA "COMANCHEE"	COMANCHEE CRAPEMYRTLE	8' HEIGHT	MULTISTEM
MC	15	MYRICA CERIPERA	SOUTHERN WAXMYRTLE	2'-3' HEIGHT	B & B
PE	9	PINUS ECHINATA	SHORTLEAF PINE	8'-10' HEIGHT	B & B
PT	9	PINUS TAEDA	LOBLOLLY PINE	8'-10' HEIGHT	B & B
QP	3	QUERCUS PHELLOS	WILLOW OAK	2"- 2 1/2" CALIPER	B & B
QR	6	QUERCUS RUBRA	RED OAK	2"- 2 1/2" CALIPER	B & B
		SHRUBS			
IC	9	ILEX CONUTA "CARISSA"	CARISSA HOLLY	18"-24"	CONT
IG	20	ILEX GLABRA	INKBERRY	24"-30"	CONT
LF	5	LEUCOTHOE FONTANESIANA 'RAINBOW'	RAINBOW LEUCOTHOE	18"-24"	CONT
ND	5	NANDINA DOMESTICA	HARBOUR DWARF NANDINA	18"-24"	CONT
TB	6	TAXUS BACCATA REPANDENS	ENGLISH YEW	18"-24"	B & B
		GROUND COVER			
LM	425	LIRIOPE MUSCARI 'VARIEGATA'	VARIEGATED LIRIOPE	2 1/4" PEAT POTS	PLANT 18" O.C.

NOTE: 1. DRIP IRRIGATION SHALL BE INSTALLED IN THE FRONT FOUNDATION PLANTING BEDS ONLY. SEE SPECIFICATIONS FOR DETAILS.

2. TIE DRIP IRRIGATION INTO WATER SUPPLY LINE PROVIDED.

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

RECORD DRAWING

ENGR/ARCH.

DESIGN BY TRK
DRAWN BY TRK
CHECK BY CAS
DATE 01/03

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.

DRAWING SHALL NOT BE SCALED.

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COMMONWEALTH OF VIRGINIA
MARY C. KLINE
02409
CERTIFIED LANDSCAPE ARCHITECT
1-24-03

NO.	DESCRIPTION	BY	DATE

REVISIONS

BUCHART HORN, INC.
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FIVE FORKS WATER TREATMENT FACILITY

LANDSCAPE PLAN

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. L-1

SHEET NO. 20 OF 124

BH PROJECT NO. 75676-00

186 LF OF 4' HIGH ORNAMENTAL FENCE REFER TO DETAIL ON L-4

PT-3

AC-3

CN-3

MONITORING WELLS BGD-1A & 1C. REFER TO DETAIL ON C-13

WELL HOUSE # MP-1 FIN. FLR.=55.75 (TO BE FIELD VERIFIED. REFER TO NOTE 7)

AR-1

GRASS

QR-3

EXISTING ASPHALT DRIVE

LF-5

TB-3

AR-1

ORNAMENTAL FENCE POST

IO-3

GRASS

PLAYING FIELD

IF-3

8' MOTORIZED GATE ORNAMENTAL SWING GATES REFER TO DETAIL ON L-4

UMN DWG DETAIL

MATCH LINE

6"PINE 6"PINE 20"PINE 7"PINE 7"PINE 7"PINE 7"PINE

GRASS

PLAYING FIELD

BN-3

PT-3

WELL HOUSE # LP-3 FIN. FLR.= 55.5 (FIELD VERIFY) (ONE STORY)

LA-2

QR-3

LC-1

GRASS

MC-3

10' ASPHALT DRIVE (TYP)

WELL HOUSE # MP-2 FIN. FLR.= 54.00 (FIELD VERIFY) (ONE STORY)

IF-1

QR-3

300' UNDISTURBED WOODED BUFFER

FUTURE WELL HOUSE # MP-3 (NIC)

GRASS

BN-3

PE-1

WELL HOUSE # LP-2 FIN. FLR.= 57.50 (FIELD VERIFY) (ONE STORY)

GRASS

AC-1

GRAPHIC SCALE

30' 0' 30' 60'

SCALE: 1" = 30'

RECORD DRAWING

ENGR./ARCH.	
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DRAWN BY	TRK
CHECK BY	CAS
DATE	01/03

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COMMONWEALTH OF VIRGINIA MARY C. KLINE 00409 CERTIFIED LANDSCAPE ARCHITECT 11-21-03

REVISIONS		
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FIVE FORKS WATER TREATMENT FACILITY

LANDSCAPE PLAN

JCSA JAMES CITY SERVICE AUTHORITY

DRAWING NO. L-2

SHEET NO. 21 OF 124

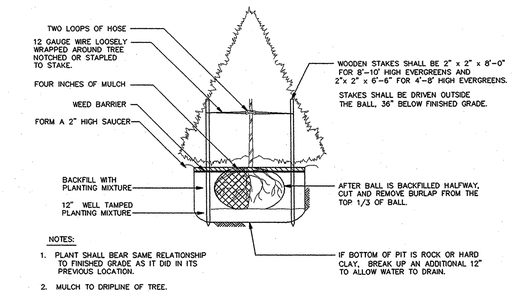
BH PROJECT NO. 75676-00

JAMES CITY COUNTY LANDSCAPE REQUIREMENTS

AREAS			TREES AND SHRUBS		
LANDSCAPE YARD	COUNTY REQ	TOTAL QTY PROVIDED	RATIO	MIN. NUMBER REQUIRED	NEW PLANTINGS PROVIDED
ROUTE 5 BUFFER 250 FT UNDISTURBED	DOES NOT APPLY	DOES NOT APPLY	1 TREE & 3 SHRUBS: 400 SQ FT	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				0 SHRUBS 35% EVERGREEN	0 SHRUBS 35% EVERGREEN
15' SIDE YARD EAST	DOES NOT APPLY	DOES NOT APPLY	1 TREE & 3 SHRUBS: 400 SQ FT	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				0 SHRUBS 35% EVERGREEN	0 SHRUBS 35% EVERGREEN
15' SIDE YARD WEST	DOES NOT APPLY	DOES NOT APPLY	1 TREE & 3 SHRUBS: 400 SQ FT	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				0 SHRUBS 35% EVERGREEN	0 SHRUBS 35% EVERGREEN
300 FT BUFFER UNDISTURBED	DOES NOT APPLY	DOES NOT APPLY	1 TREE & 3 SHRUBS: 400 SQ FT	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	0 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				0 SHRUBS 35% EVERGREEN	0 SHRUBS 35% EVERGREEN
PARKING LOT 2400 SQ. FT. IMPERVIOUS	12 SPACES	12 SPACES	1 TREE & 2 SHRUBS: 5 SPACES	3 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	3 TREES 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				6 SHRUBS 35% EVERGREEN	6 SHRUBS 35% EVERGREEN
10' BLD. PERIMETER TREATMENT FACILITY 550 LF	5500 SF	5500 SF	1 TREE OR 5 SHRUBS: 200 SQ FT	28 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	28 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				140 SHRUBS 35% EVERGREEN	140 SHRUBS 35% EVERGREEN
10' BLD. PERIMETER WELL HOUSE LP#1 80 LF	800 SF	800 SF	1 TREE OR 5 SHRUBS: 200 SQ FT	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				40 SHRUBS 35% EVERGREEN	40 SHRUBS 35% EVERGREEN
10' BLD. PERIMETER WELL HOUSE MP#1 80 LF	800 SF	800 SF	1 TREE OR 5 SHRUBS: 200 SQ FT	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				40 SHRUBS 35% EVERGREEN	40 SHRUBS 35% EVERGREEN
10' BLD. PERIMETER WELL HOUSE LP#2 80 LF	800 SF	800 SF	1 TREE OR 5 SHRUBS: 200 SQ FT	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				40 SHRUBS 35% EVERGREEN	40 SHRUBS 35% EVERGREEN
10' BLD. PERIMETER WELL HOUSE MP#2 80 LF	800 SF	800 SF	1 TREE OR 5 SHRUBS: 200 SQ FT	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				40 SHRUBS 35% EVERGREEN	40 SHRUBS 35% EVERGREEN
10' BLD. PERIMETER WELL HOUSE LP#3 80 LF	800 SF	800 SF	1 TREE OR 5 SHRUBS: 200 SQ FT	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+	8 TREES OR 35% MIN OF 2.5" CALIPER 35% EVERGREEN 40'+ 15-25% ORNAMENTAL 40% SHADE 50'+
				40 SHRUBS 35% EVERGREEN	40 SHRUBS 35% EVERGREEN

SEEDING RESTORATION TABLE

RESTORATION CONDITION	TOPSOIL	LIME*	BASIC FERTILIZER	STARTER FERTILIZER	SEED MIX AND SOWING RATE (% BY WEIGHT)
TEMPORARY COVER	N/A	N/A	N/A	10-10-10 @ 15# PER 1,000 SF	100% ANNUAL RYEGRASS SOW 9# PER 1,000 SF MARCH THRU MAY/ AUG. THRU SEPT.
PERMANENT COVER	YES	100#/ 1,000 SF	0-20-20 50# PER 1,000 SF	12-18-10 @ 18# PER 5,000 SF OR 18-24-10 @ 20# PER 5,000 SF.	50% KENTUCKY BLUEGRASS 30% PENNLAWN RED FESCUE 20% PERENNIAL RYEGRASS SOW #21 PER 1,000 SQ. YDS. MARCH THRU MAY / AUG. THRU SEPT.

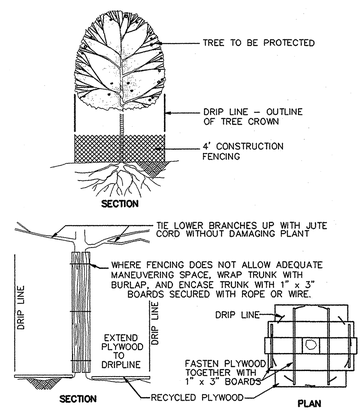


NOTES:

1. PLANT SHALL BEAR SAME RELATIONSHIP TO FINISHED GRADE AS IT DID IN ITS PREVIOUS LOCATION.
2. MULCH TO DRIPLINE OF TREE.

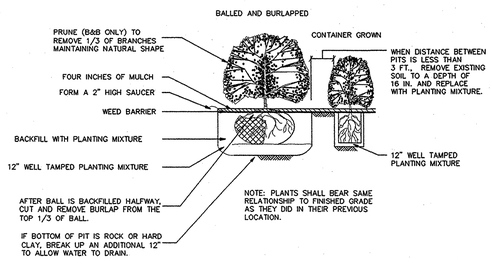
PLANTING AND STAKING METHODS FOR EVERGREEN TREES

SCALE: NONE



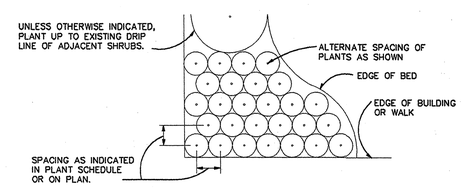
TEMPORARY TREE PROTECTION

SCALE: NONE

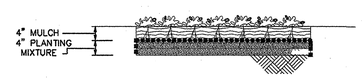


PLANTING METHODS FOR SHRUBS/ PERENNIALS

SCALE: NONE



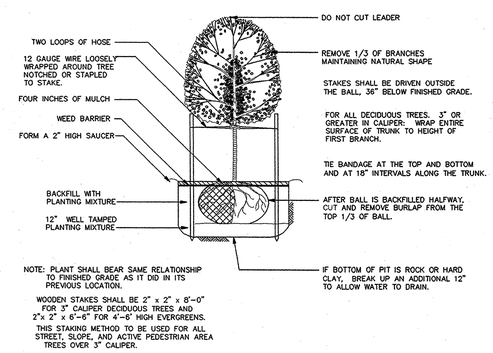
TYPICAL GROUNDCOVER PLANTING PLAN



PLANTING METHODS

PLANTING METHODS FOR GROUNDCOVERS

SCALE: NONE



PLANTING AND STAKING METHODS FOR TREES

SCALE: NONE

RECORD DRAWING

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DESIGN BY TRK

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DATE 01/03

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COMMONWEALTH OF VIRGINIA
MARY C. KLINE
00469
CERTIFIED LANDSCAPE ARCHITECT
1-21-03

REVISIONS			
NO.	DESCRIPTION	BY	DATE

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FIVE FORKS WATER TREATMENT FACILITY

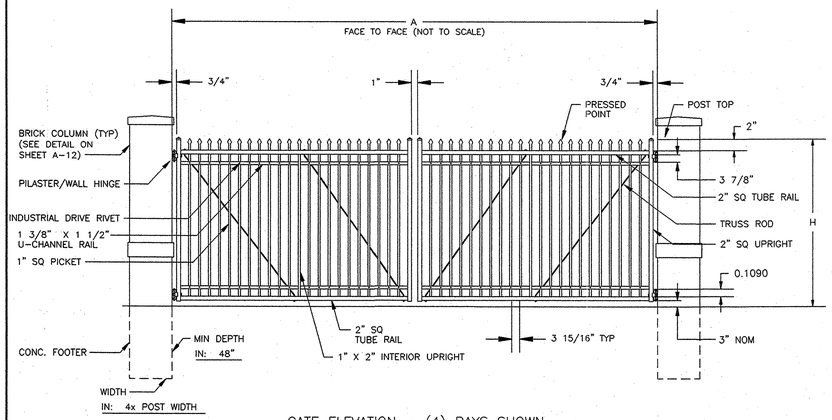
LANDSCAPE DETAILS

JCSA
JAMES CITY SERVICE AUTHORITY

DRAWING NO. L-3

SHEET NO. 22 OF 124

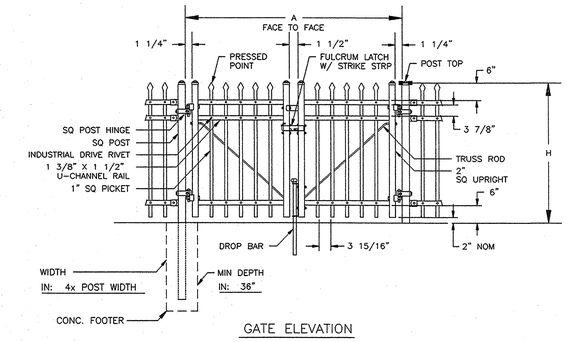
BH PROJECT NO. 75676-00



GATE ELEVATION – (4) BAYS SHOWN

Ⓐ ESTATE STYLE "L" DOUBLE SWING GATE (MOTORIZED GATE)

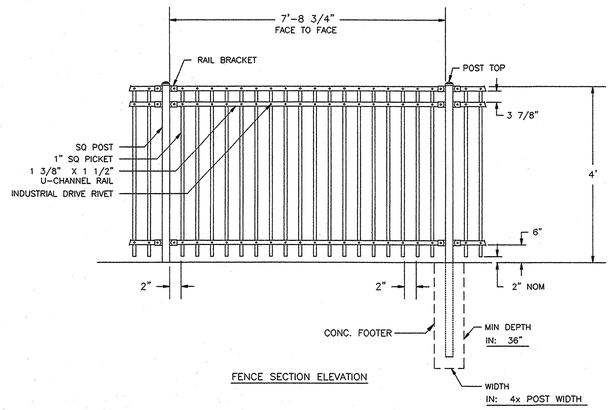
NOT TO SCALE



GATE ELEVATION

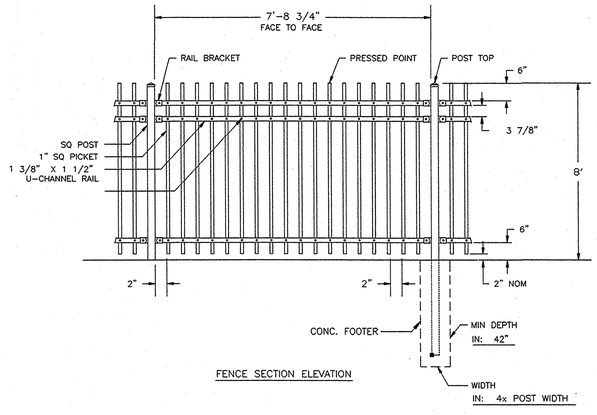
Ⓑ ESTATE STYLE "L" DOUBLE SWING GATE (NON-MOTORIZED GATE)

NOT TO SCALE



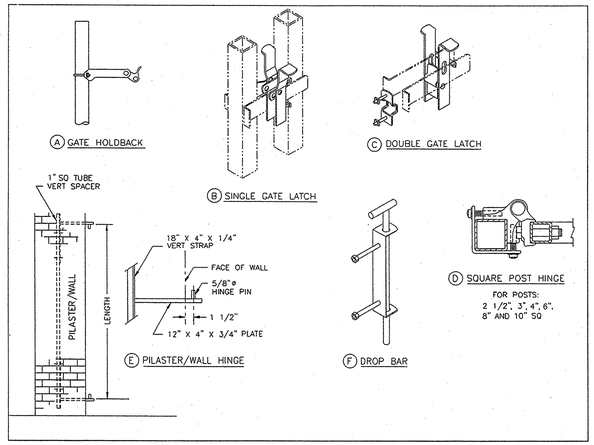
IMPERIAL FENCE – STYLE B

NOT TO SCALE



ESTATE FENCE – STYLE L

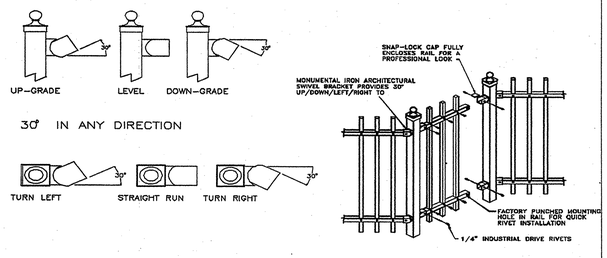
NOT TO SCALE



MONUMENTAL IRON WORKS ARCHITECTURAL SWIVEL BRACKET (Patent) U.S. PATENT #5,547.169

BRACKET TOP

After insertion and riveting of rail a snap-lock cap is inserted into each Bracket, completely concealing all nuts, bolts, and rail ends. Clean in Appearance and the most secure attachments in the industry.



SWIVEL BRACKET

Allows angles of up to 30° in any direction without special Attachments. Bracket held to post with ½" bolt and lock Nut. The bracket is a zinc die cast that will never rust

RAIL LOCK

Rails are inserted into brackets. Rail is held in place by 2 individual Drive rivets (one on each side) that are inserted through factory Punched slotted holes in rail.

GATE SCHEDULE

MOTORIZED GATE	* – FACE TO FACE "A" DIMENSION	"H" DIMENSION	SEE GATE DETAIL
GATE ①	27'	8'	A
GATE ②	30'	8'	A
GATE ③	37'	8'	A
NON-MOTORIZED GATE			
GATE ④	10'	8'	B

NOTES:

1. FIELD VERIFY ALL NOMINAL GATE OPENING SIZES.
2. SEE GATE SPECIFICATIONS FOR OPERATOR TYPE AND ELECTRICAL REQUIREMENTS.
3. SEE LANDSCAPE PLANS FOR GATE LOCATIONS.
4. ALL FENCE DETAILS SHOWN ARE FOR PICTORIAL PURPOSES ONLY.
5. REFER TO FENCE SPECIFICATIONS FOR FENCE CONSTRUCTION DETAILS.
6. SPECIFICATIONS SHOWN CAN ONLY BE CHANGED BY MANUFACTURER.

RECORD DRAWING

ENGR./ARCH.	
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DRAWN BY	TRK
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DATE	01/03

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COMMONWEALTH OF VIRGINIA
MARY C. KLINE
00469
CERTIFIED LANDSCAPE ARCHITECT
12-21-03

REVISIONS			
NO.	DESCRIPTION	BY	DATE

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FIVE FORKS WATER TREATMENT FACILITY

LANDSCAPE DETAILS

JCSA
JAMES CITY SERVICE AUTHORITY

DRAWING NO. L-4

SHEET NO. 23 OF 124

BH PROJECT NO. 75676-00