



ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

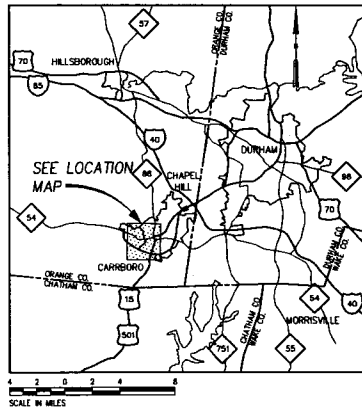
MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

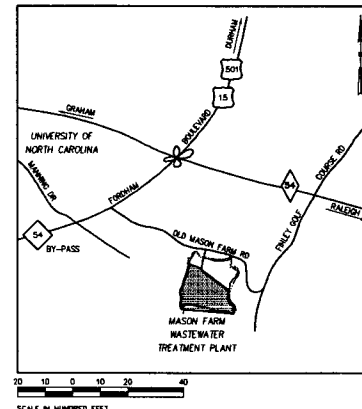
SINGLE PRIME CONTRACT

H&S JOB No.30853-005

JANUARY 2007



VICINITY MAP



LOCATION MAP

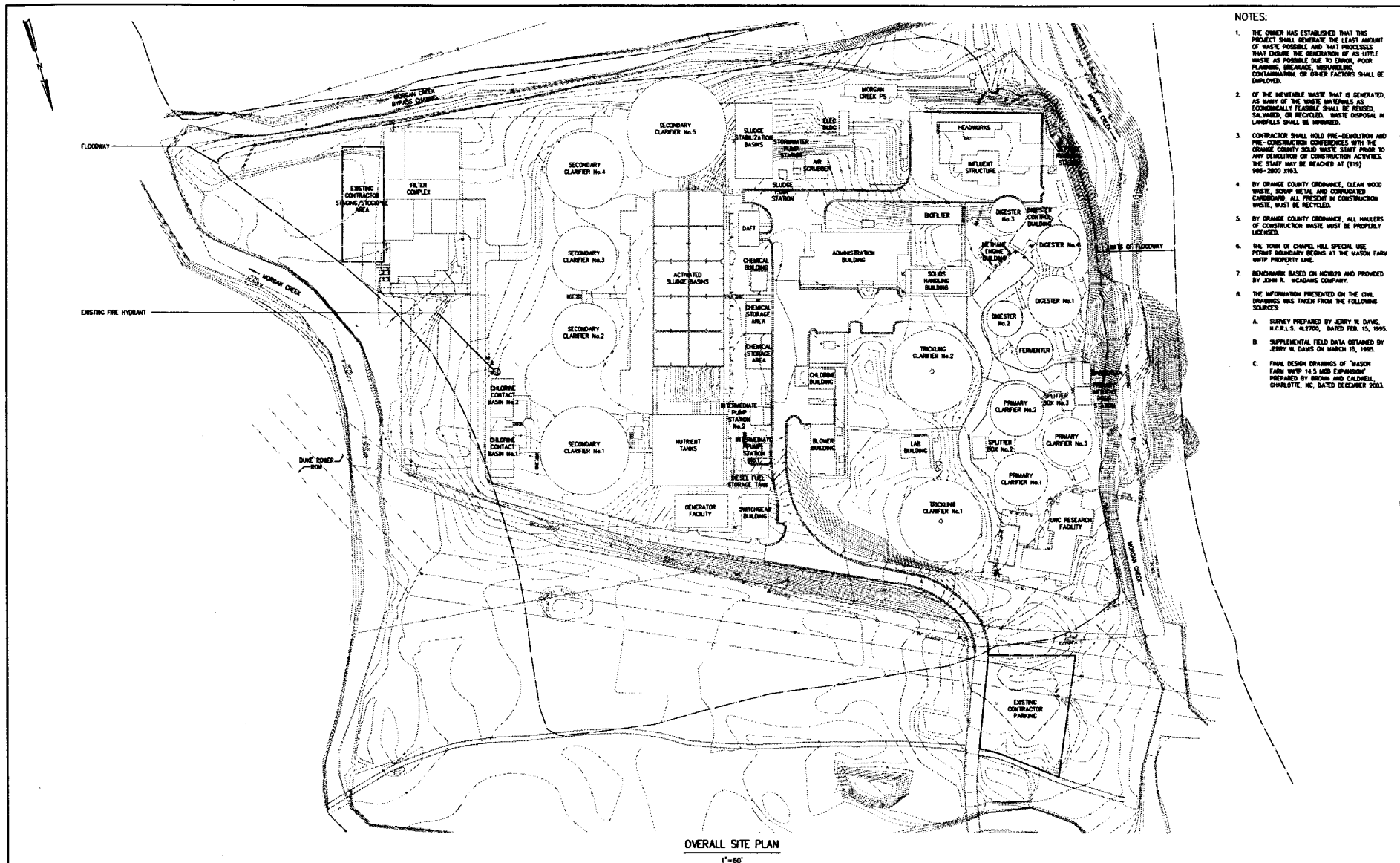


HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

ATTACHMENT 11

07

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION



- NOTES:**
1. THE OWNER HAS ESTABLISHED THAT THIS PROJECT SHALL GENERATE THE LEAST AMOUNT OF WASTE POSSIBLE AND THAT PROCESSES THAT ENSURE THE GENERATION OF AS LITTLE WASTE AS POSSIBLE DUE TO ERROR, POOR PLANNING, MISMANAGEMENT, MISPLANNING, CONTAMINATION, OR OTHER FACTORS SHALL BE EMPLOYED.
 2. OF THE INEVITABLE WASTE THAT IS GENERATED, AS MANY OF THE WASTE MATERIALS AS ECONOMICALLY FEASIBLE SHALL BE REUSED, SALVAGED, OR RECYCLED. WASTE DISPOSAL IN LANDFILLS SHALL BE MINIMIZED.
 3. CONTRACTOR SHALL HOLD PRE-DEMOLITION AND PRE-CONSTRUCTION CONFERENCES WITH THE ORANGE COUNTY SOLID WASTE STAFF PRIOR TO ANY DEMOLITION OF CONSTRUCTION ACTIVITIES. THE STAFF MAY BE REACHED AT (919) 896-2000 (313).
 4. BY ORANGE COUNTY ORDINANCE, CLEAN WOOD WASTE, SCRAP METAL AND CORRUGATED CARBOARD, ALL PRESENT IN CONSTRUCTION WASTE, MUST BE RECYCLED.
 5. BY ORANGE COUNTY ORDINANCE, ALL MATERIALS OF CONSTRUCTION WASTE MUST BE PROPERLY LICENSED.
 6. THE TOWN OF CHAPEL HILL SPECIAL USE PERMIT BOUNDARY BEINGS AT THE MASON FARM WWP PROPERTY LINE.
 7. BENCHMARKS BASED ON NAD83 AND PROVIDED BY JOHN R. MCADAMS COMPANY.
 8. THE INFORMATION PRESENTED ON THE CIVIL DRAWINGS WAS TAKEN FROM THE FOLLOWING SOURCES:
 - A. SURVEY PREPARED BY JERRY N. DAVIS, N.C.E.L.S. #2700, DATED FEB. 15, 1995.
 - B. SUPPLEMENTAL FIELD DATA OBTAINED BY JERRY N. DAVIS ON MARCH 15, 1995.
 - C. FINAL DESIGN DRAWINGS OF "MASON FARM WWP 14.5 MGD EXPANSION" PREPARED BY BROWN AND CALDWELL, CHARLOTTE, NC, DATED DECEMBER 2003.

OVERALL SITE PLAN
1"=50'

DESIGNED	H & S			
DRAWN	TDH			
CHECKED				
PROJ. ENGR.	H & S			
NO.	ISSUED FOR	DATE	BY	APPROVED



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ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

GENERAL
CIVIL
OVERALL EXISTING CONDITIONS SITE PLAN

THE SCALE BAR SHOWN BELOW HEADS UP ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE JUNE 2008
H & S JOB NUMBER 30853-005	CONTRACT NUMBER 1
DRAWING NUMBER C1	H & S PLAT FILE NO.

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

GRASS LINED CHANNEL WITH ROLLED EROSION CONTROL MAT (RECM) TYPICAL OPEN SECTION SEE NOTE 12 ON C10B
0227011

STONE CHECK DAM, TYP 0227023

CLASS A RP-RAP OUTLET PROTECTION 3' X 8' x 1' D 0243300

PROPOSED RECLAIMED WATER PUMPING AND STORAGE FACILITY (200 DRAWING SERIES)

CLASS A RP-RAP OUTLET PROTECTION 3' X 8' x 1' D 0243300

2.5' CURB AND OUTLET, TYP 0242000

ASPHALT PAVEMENT, TYP 0251000

PROMISE CONCRETE TOPPING SLAB, SEE NOTE 1 ON DRAWING C1B

CONSTRUCTION ENTRANCE, TYP 12' X 50' 0257701B

STANDARDIZED OUTLET FOR SALT FENCE, TYP 0227024

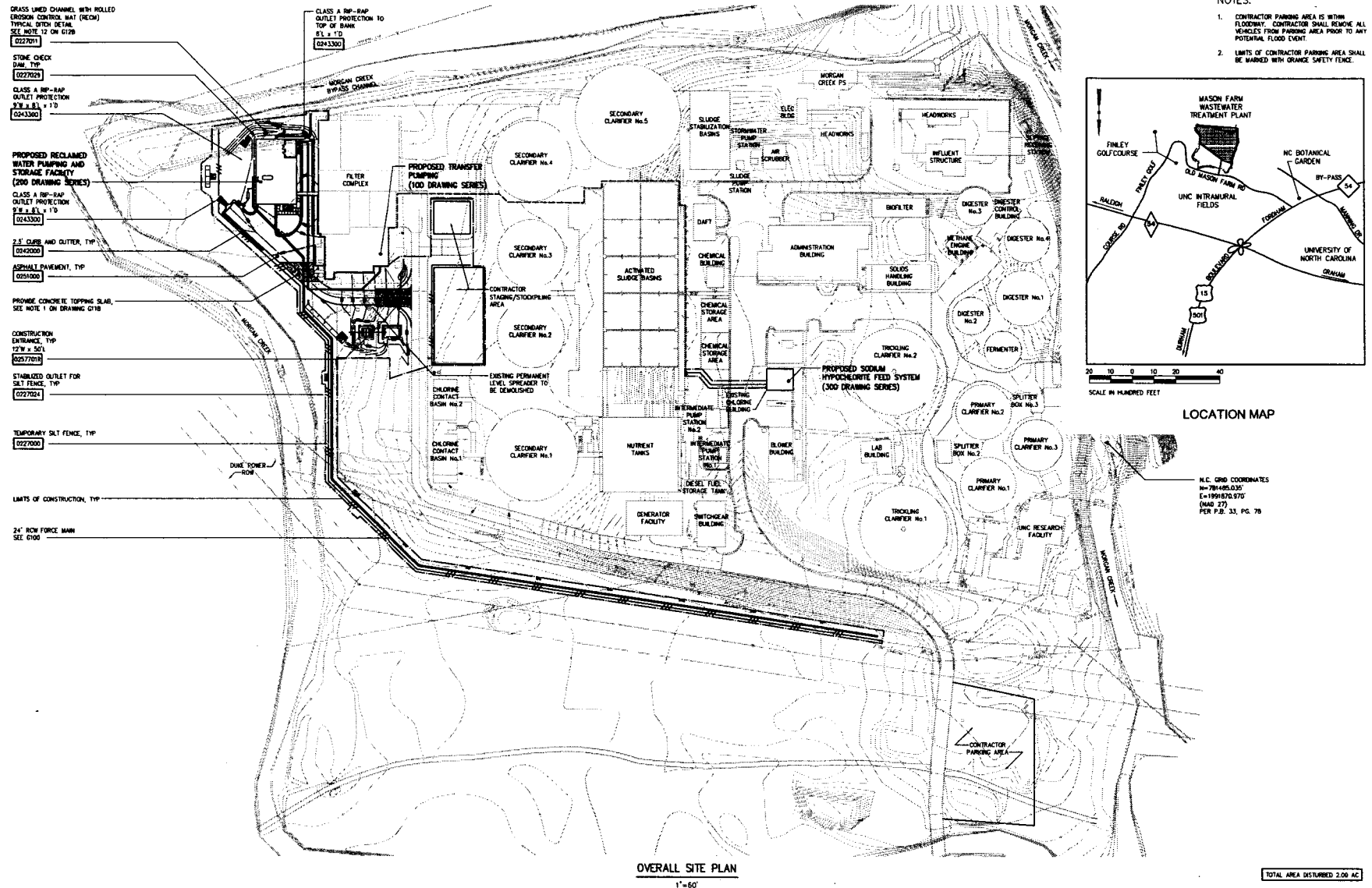
TEMPORARY SALT FENCE, TYP 0227000

LIMITS OF CONSTRUCTION, TYP

24' ROW FORCE MAIN SEE C100

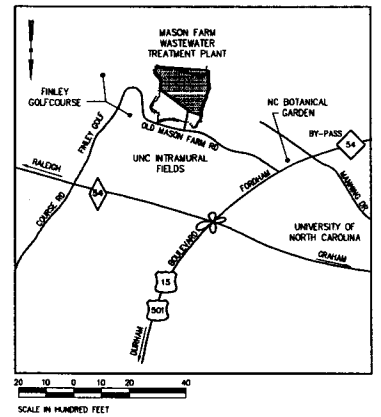
CLASS A RP-RAP OUTLET PROTECTION TO TOP OF BANK 8' L x 1' D 0243300

MORGAN CREEK BYPASS CHANNEL



OVERALL SITE PLAN
1"=50'

- NOTES:
1. CONTRACTOR PARKING AREA IS WITHIN FLOODWAY. CONTRACTOR SHALL REMOVE ALL VEHICLES FROM PARKING AREA PRIOR TO ANY POTENTIAL FLOOD EVENT.
 2. LIMITS OF CONTRACTOR PARKING AREA SHALL BE MARKED WITH ORANGE SAFETY FENCE.



LOCATION MAP

N.C. GRID COORDINATES
N=784850.055
E=199878.970
(MAP 27)
PER P.2-33, PG. 78

TOTAL AREA DISTURBED 2.08 AC

DESIGNED	H & S			
DRAWN	TDH			
CHECKED				
PROJ. ENGR.	H & S			
NO.	ISSUED FOR	DATE	BY	APPROVED



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CARRBORO, NORTH CAROLINA
MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

GENERAL
CIVIL
OVERALL SITE PLAN AND EROSION CONTROL

DATE	JUNE 2006
H & S JOB NUMBER	30853-005
CONTRACT NUMBER	1
DRAWING NUMBER	G10B
H & S PLAT FILE NO.	



FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

NOTES:

1 CONCRETE TOPPING SLAB (6" THICK MINIMUM) SHALL BE ADHERED TO EXISTING STRUCTURE WITH EPOXY BONDING AGENT. REINFORCE TOPPING SLAB WITH #5@12" EACH WAY, CENTERED IN THE SLAB. CONTRACTOR PROTECT ENCLOSURE WHEN DRIVING CONSTRUCTION EQUIPMENT OVER IT.

PROPOSED RECLAIMED WATER PUMPING AND STORAGE FACILITY PFE 276.33 (200 DRAINING SERIES)

ROW BULK FILL ENCLOSURE

BULK ROW FILL HYDRANT, TYP

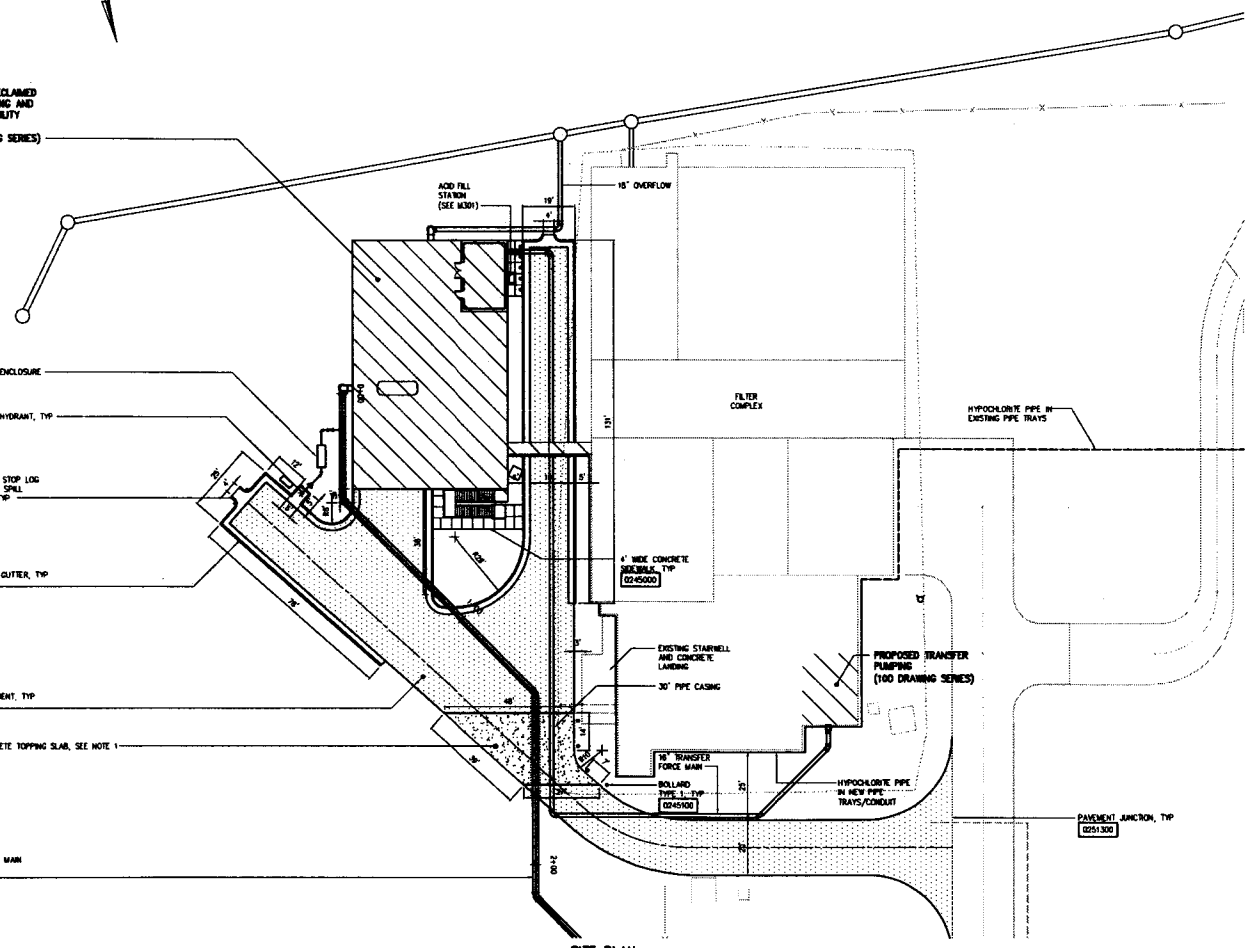
CURB CUT WITH STOP LOG STRUCTURE FOR SPILL CONTAINMENT, TYP

2.5' CURB AND GUTTER, TYP (024200)

ASPHALT PAVEMENT, TYP (025100)

PROMEX CONCRETE TOPPING SLAB, SEE NOTE 1

24" ROW FORCE MAIN CORRIDOR SEE CIV09



SITE PLAN
1" = 20'

STAKE-OUT DATA			
POINT	GRID COORDINATES		DESCRIPTION
	E	N	
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

DESIGNED	H & S			
DRAWN	TDM			
CHECKED				
PROJ. ENGR.	H & S			
NO.	ISSUES FOR	DATE	BY	APPROVED



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CARRBORO, NORTH CAROLINA
MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

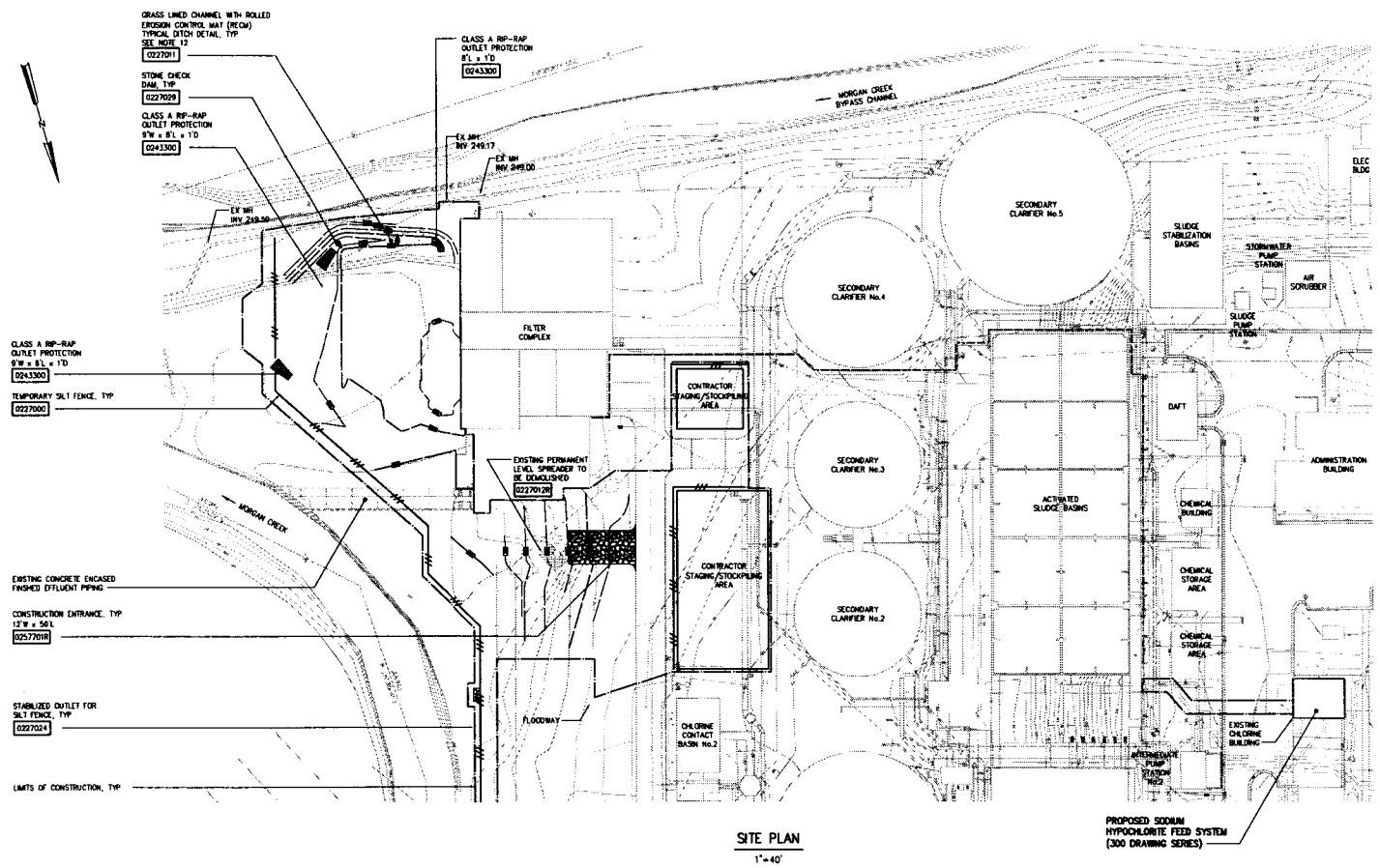
GENERAL
CIVIL
STAKING AND PAVING PLAN

DATE	JUNE 2006
H & S JOB NUMBER	30853-005
CONTRACT NUMBER	
DRAWING NUMBER	G11B
H & S PLAT FILE NO.	

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

NOTES:

- CONTRACTOR SHALL CONTACT NC LAND QUALITY SECTION AT (919) 791-4000 AND TOWN OF CHAPEL HILL DEPARTMENT OF INSPECTION AT LEAST TWO (2) WEEKS PRIOR TO START OF ANY LAND DISTURBING ACTIVITIES TO SCHEDULE PRE-CONSTRUCTION MEETING.
- CONTRACTOR SHALL PROVIDE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE AT LOCATION SHOWN ON DRAWINGS, OR AT OTHER LOCATION AS AGREED UPON WITH OWNER AND ENGINEER. TEMPORARY GRAVEL CONSTRUCTION ENTRANCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION PERIOD.
- CONTRACTOR STAGING/STOCKPILING AND PARKING AREAS TO BE CONFINED TO AREAS SHOWN ON DRAWINGS OR AT OTHER LOCATION AS AGREED UPON BY THE OWNER AND ENGINEER. SEE DRAWING 010 FOR OVERALL SITE PLAN.
- ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BEFORE ANY LAND CLEARING, DEMOLITION, OR CONSTRUCTION ACTIVITIES MAY BEGIN.
- ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT OF 1/2" OR GREATER. MEASURES SHALL BE REPAIRED OR REPLACED AS NECESSARY.
- ALL EROSION CONTROL MEASURES SHALL BE CLEARED OF ACCUMULATED SEDIMENT ONCE THE MEASURE HAS BECOME HALF FULL BY VOLUME.
- SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED MANNER SUCH THAT FURTHER SEDIMENT TRANSPORT DOES NOT OCCUR. DISPOSAL AREA SHALL HAVE ALL NECESSARY LOCAL AND STATE PERMITS.
- TOPSOIL AND ANY EXCESS FOR REUSING FROM EARTHWORK OPERATIONS NECESSARY FOR CONSTRUCTION SHALL BE STOCKPILED CLOSE BY THE PROPOSED CONTRACTOR STAGING/STOCKPILE AREA. EROSION CONTROL MEASURES SHALL BE INSTALLED AS SHOWN ON DRAWING 010 AND 012 AND SHALL BE MAINTAINED AS NECESSARY TO ENSURE PROPER FUNCTION.
- DE-WATERING OF STRUCTURES WITH SEDIMENT-LADEN WATER DIRECTLY TO STREAMS IS PROHIBITED.



SITE PLAN
1" = 40'

TOTAL AREA DISTURBED 2.00 AC

DESIGNED	H & S		
DRAWN	TDM		
CHECKED			
PROD. ENGR.	H & S		
ISSUED FOR	DATE	BY	APPROVED



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CARRBORO, NORTH CAROLINA

MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

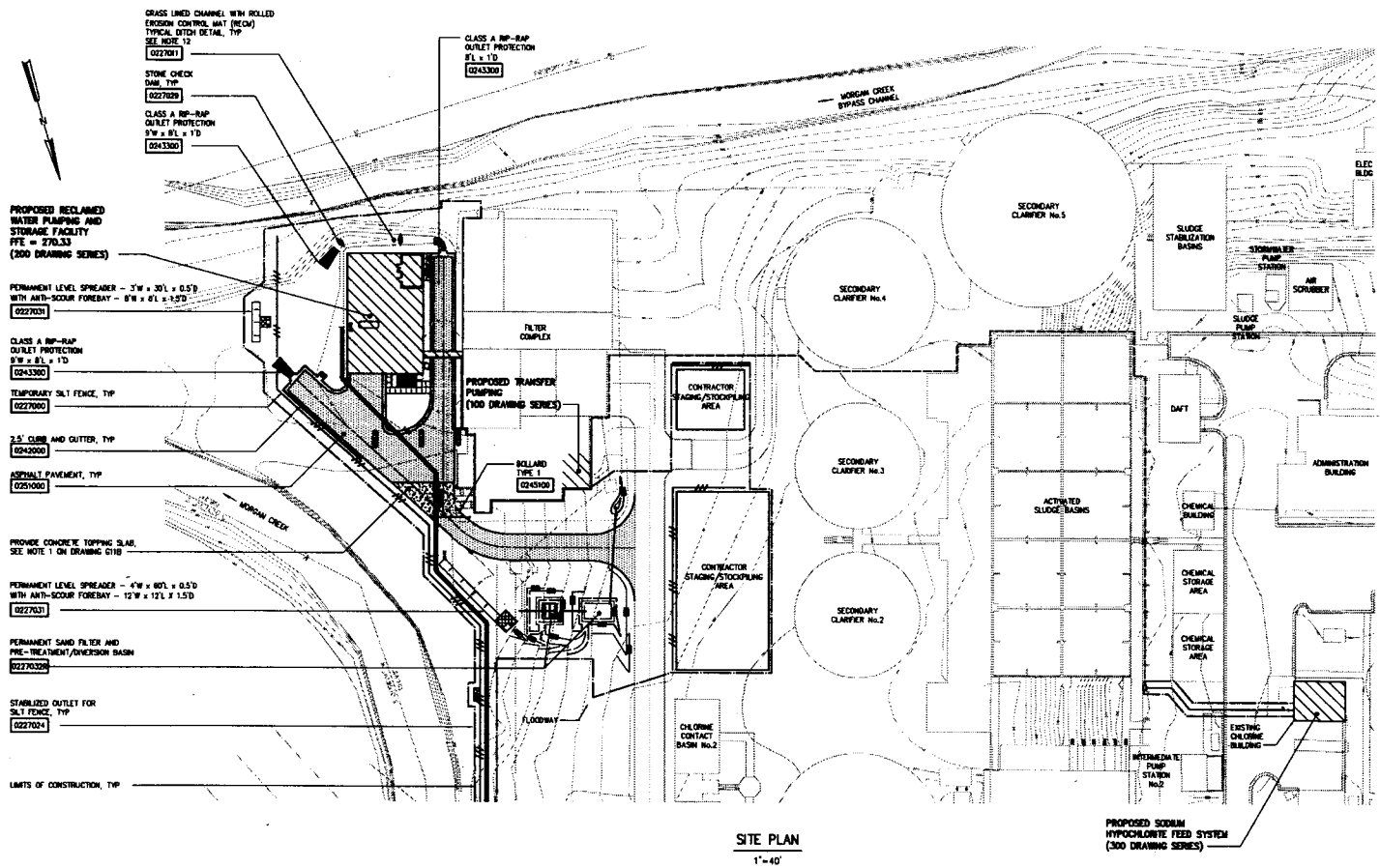
GENERAL
CIVIL
GRADING AND EROSION CONTROL PLAN - PHASE I

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	JUNE 2006
	H & S JOB NUMBER	30853-005
	CONTRACT NUMBER	1
	DRAWING NUMBER	G12B
	H & S PLAT FILE NO.	

41

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

- NOTES:**
1. ALL DISTURBED SLOPES LEFT EXPOSED SHALL WITHIN 21 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY GROUND COVER, DECKS, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.
 2. PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE PLANTED OR OTHERWISE PROVIDED WITHIN 21 CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT ON THAT PORTION OF THE TRACT (DISTURBED AREA) UPON WHICH FURTHER ACTIVE CONSTRUCTION WILL NOT BE TAKEN.
 3. PERMANENT SYNTHETIC RIMP REINFORCEMENT MAT (TWO) SHALL BE INSTALLED IN DRAINAGE CHANNELS AS NOTED ON THE PLANS. BLANKET SHALL PER SPECIFICATION SECTION 02220 - EROSION AND SEDIMENT CONTROL WITH A MINIMUM SHEAR STRESS OF 5 LBS/SF OR HIGHER. BLANKET SHALL BE INSTALLED AS PER SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
 4. ALL EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE. PERMANENT RESTORATION IS ESTABLISHED ON ALL DISTURBED AREAS, AND CONTRACTOR HAS OBTAINED APPROVAL FROM NC LAND QUALITY STABILIZATION AT (918) 701-4300 OF ALL SITE STABILIZATION MEASURES. AREA OF EACH EROSION CONTROL MEASURE SHALL BE RECORDED AND SAVED TO MATCH ORIGINAL CONDITION.
 5. SETTING INFORMATION IS PROVIDED ON DRAWING D4 AND SPECIFICATION 02010 - FINAL GRADING AND LANDSCAPING.
 6. PER BROWN AND CALDWELL REPORT ENTITLED "MASON FARM SWMP 2000 FLOODPLAIN ANALYSIS" THE MIDDLE 100-YEAR FLOOD PLANE ELEVATION IS 381.10 FEET ABOVE SEA LEVEL (MSL+381.10) FOR THIS PROJECT SITE. THEREFORE THE RESOURCE CONSERVATION DISTRICT (RCD) ELEVATION IS 3 FEET HIGHER AT ELEVATION 384.10. BY TOWN OF CHAPEL HILL ORDINANCE THE FINISHED FLOOR ELEVATION (FFE) FOR THIS PROJECT SITE MUST BE 18 INCHES ABOVE THE RCD ELEVATION. FFE FOR THE RECLAIMED WATER STORAGE AND PUMPING FACILITY IS SET AT 270.33 TO COMPLY WITH THIS LOCAL STATUTE.



SITE PLAN
1" = 40'

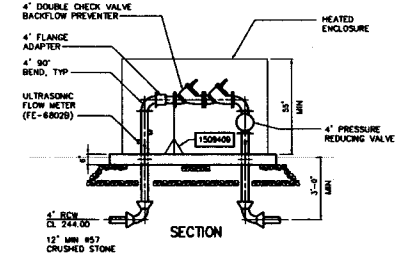
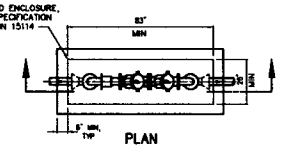
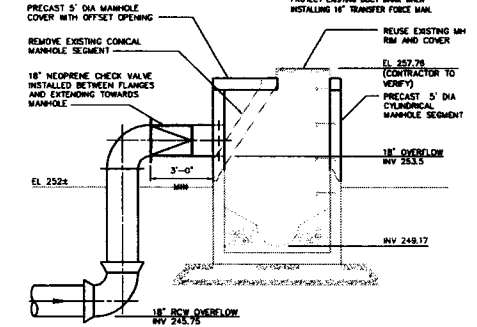
TOTAL AREA DISTURBED 2.00 AC

DESIGNED: H & S				Hazen and Sawyer Environmental Engineers & Scientists 4011 WestChase Blvd., Raleigh, North Carolina 27607	ORANGE WATER AND SEWER AUTHORITY CARRBORO, NORTH CAROLINA MASON FARM WASTEWATER TREATMENT PLANT RECLAIMED WATER PUMPING AND STORAGE FACILITY	GENERAL CIVIL GRADING, STORM DRAINAGE, AND EROSION CONTROL PLAN - PHASE II	DATE: JUNE 2006
DRAWN: TDM							THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.
NO.	ISSUED FOR	DATE	BY	APPROVED			

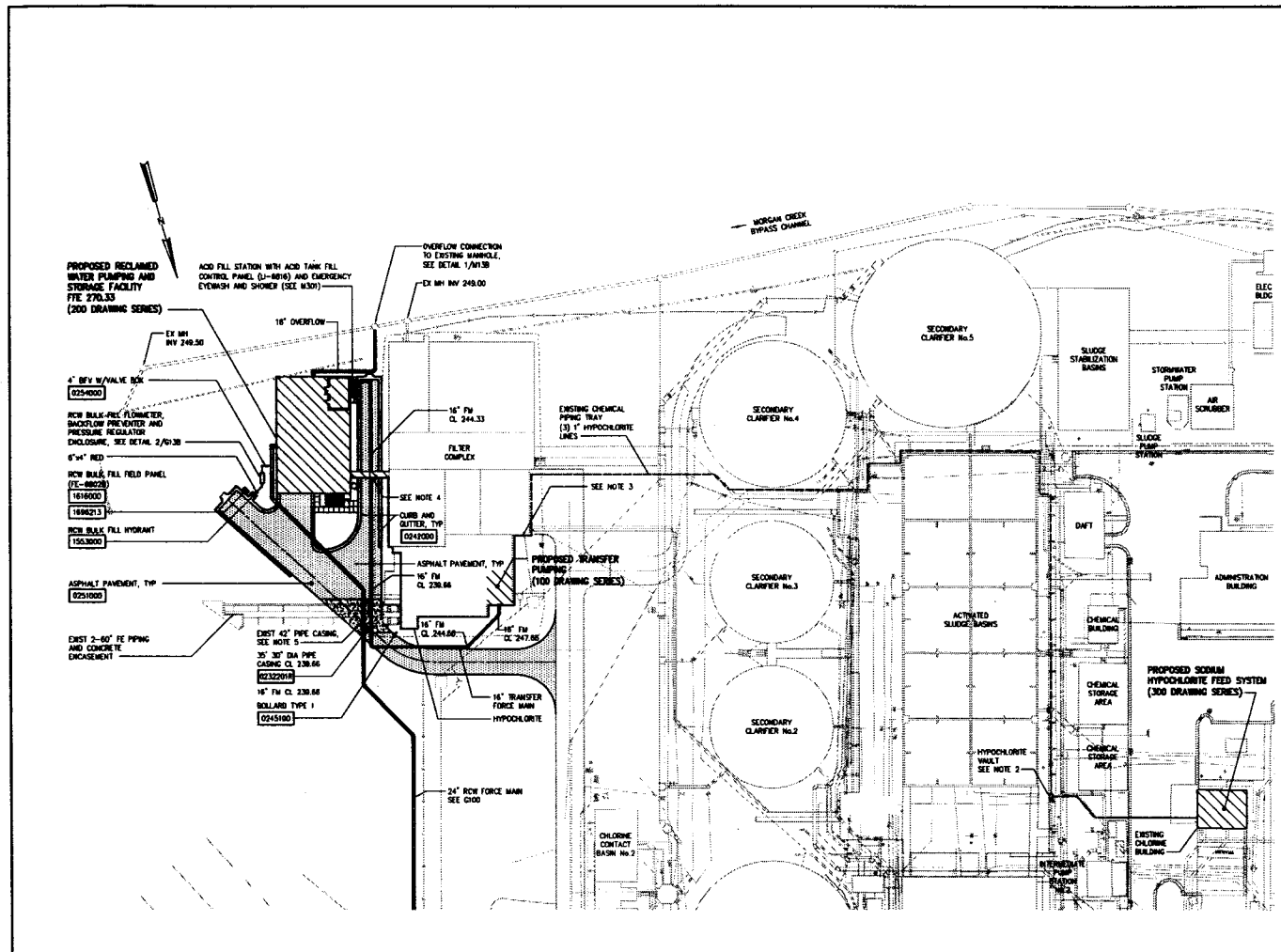
FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

NOTES:

- CONTRACTOR SHALL ROUTE SODIUM HYPOCHLORITE PIPING IN THE EXISTING CHEMICAL TRAYS AS INDICATED.
- CONTRACTOR SHALL INSTALL (3) 4" PVC CONDUITS FROM THE HYPOCHLORITE FEED BUILDING TO THE HYPOCHLORITE VAULT. PVC CONDUIT SHALL BE INSTALLED FROM THE HYPOCHLORITE VAULT TO THE EXISTING CHEMICAL PIPE TRAYS. BURNED PVC TUBING AS SPECIFIED IN SECTION 1509 SHALL BE INSTALLED IN THE CONDUIT. TUBING SHALL TRANSFER TO PVC PIPING IN THE HYPOCHLORITE VAULT.
- END OF EXISTING CHEMICAL PIPING TRAY. BEGIN NEW CHEMICAL PIPING TRAY.
- END OF NEW CHEMICAL PIPING TRAY. ROUTE (3) 1" HYPOCHLORITE LINES ON WALKWAY AS SHOWN ON R201.
- EXISTING 42-INCH CASING IS FILLED WITH SAND. CONTRACTOR SHALL REMOVE SAND BY HAND OR BY FLUCCING. INSTALL 24-INCH PER DETAIL 023200R.
- CONTRACTOR SHALL FIELD LOCATE AND PROTECT EXISTING TRACT BANK WALLS. INSTALLING 14" TRANSFER FORCE MANHOLE.



DETAIL 2
3/8"=1'-0" (213A/B)



SITE PLAN
1"=40'

LEGEND
 — HYPOCHLORITE PIPE IN NEW PIPE TRAYS/CONDUIT (SEE NOTE 2)
 — HYPOCHLORITE PIPE IN EXISTING PIPE TRAYS (SEE NOTE 1)

DESIGNED:	H & S
DRAWN:	YDH
CHECKED:	
PROJ. ENGR.	H & S
ISSUED FOR:	
DATE:	
BY:	
APPROVED:	



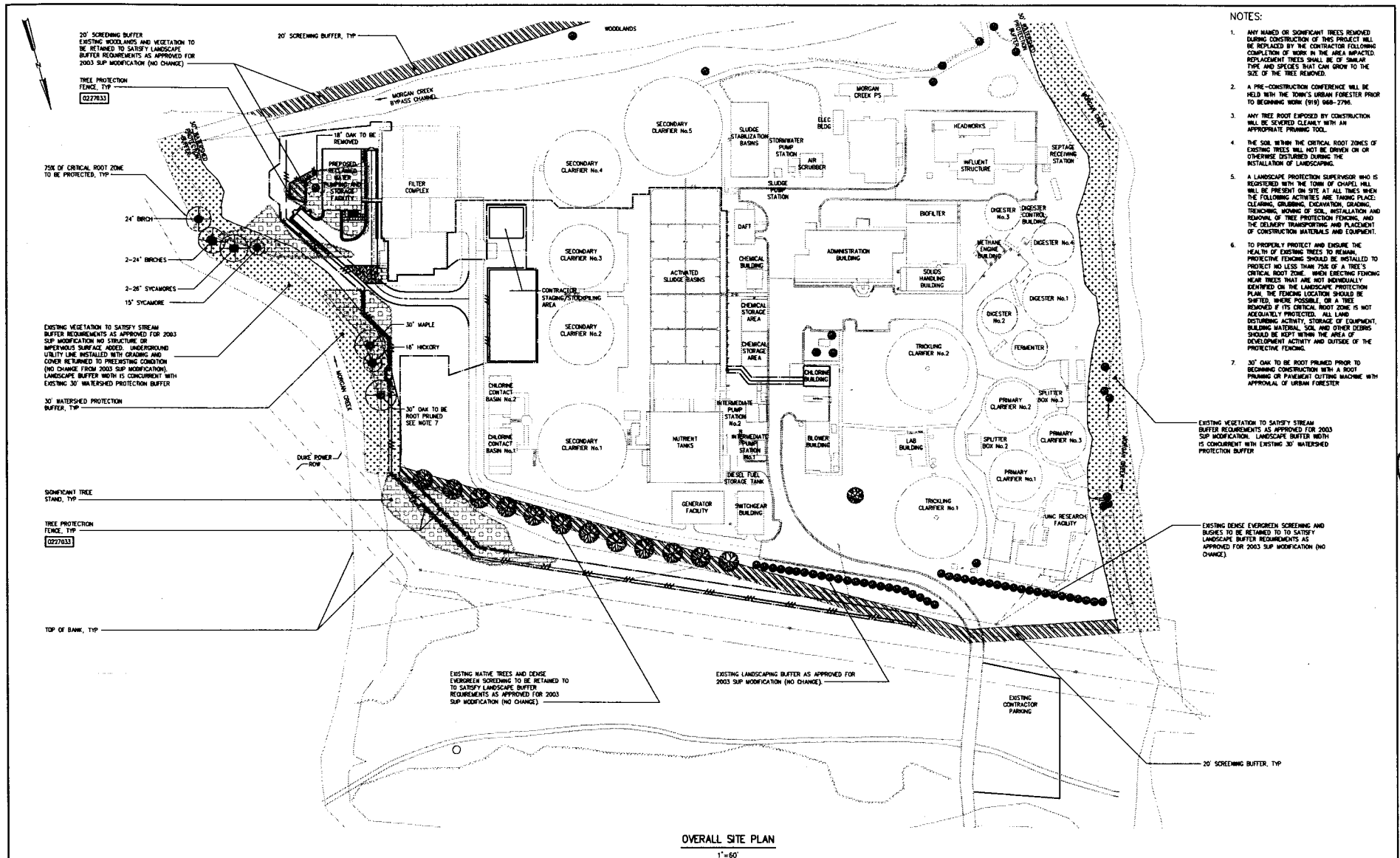
HAZEN AND SAWYER
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ORANGE WATER AND SEWER AUTHORITY
 CARRBORO, NORTH CAROLINA
MASON FARM WASTEWATER TREATMENT PLANT
 RECLAIMED WATER PUMPING AND STORAGE FACILITY

GENERAL
 CIVIL
 YARD PIPING PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE: JUNE 2006
	H & S JOB NUMBER: 30853-005
	CONTRACT NUMBER: 1
	DRAWING NUMBER: C14B
	H&S PLAT FILE NO.

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION



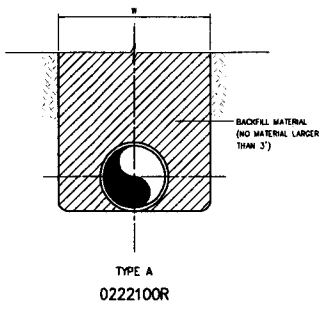
- NOTES:
1. ANY MAJED OR SIGNIFICANT TREES REMOVED DURING CONSTRUCTION OF THIS PROJECT WILL BE REPLACED BY THE CONTRACTOR FOLLOWING COMPLETION OF WORK IN THE AREA IMPACTED. REPLACEMENT TREES SHALL BE OF SIMILAR TYPE AND SPECIES THAT CAN GROW TO THE SIZE OF THE TREE REMOVED.
 2. A PRE-CONSTRUCTION CONFERENCE WILL BE HELD WITH THE TOWN'S URBAN FORESTER PRIOR TO BEGINNING WORK (919) 968-2796.
 3. ANY TREE ROOT EXPOSED BY CONSTRUCTION WILL BE SCORED CLEANLY WITH AN APPROPRIATE PRUNING TOOL.
 4. THE SOIL WITHIN THE CRITICAL ROOT ZONES OF EXISTING TREES WILL NOT BE DRIVEN ON OR OTHERWISE DISTURBED DURING THE INSTALLATION OF LANDSCAPING.
 5. A LANDSCAPE PROTECTION SUPERVISOR WHO IS REGISTERED WITH THE TOWN OF CHARLOTTE WILL BE PRESENT ON SITE AT ALL TIMES WHEN THE FOLLOWING ACTIVITIES ARE TAKING PLACE: CLEARING, GRADING, EXCAVATION, GRADING, TRENCHING, MOVING OF SOIL, INSTALLATION AND REMOVAL OF TREE PROTECTION FENCING, AND THE DELIVERY TRANSPORTING AND PLACEMENT OF CONSTRUCTION MATERIALS AND EQUIPMENT.
 6. TO PROPERLY PROTECT AND ENSURE THE HEALTH OF EXISTING TREES TO REMAIN, PROTECTIVE FENCING SHOULD BE INSTALLED TO PROTECT NO LESS THAN 75% OF A TREE'S CRITICAL ROOT ZONE. WHEN ERECTING FENCING NEAR TREES THAT ARE NOT INDIVIDUALLY IDENTIFIED ON THE LANDSCAPE PROTECTION PLAN, THE FENCING LOCATION SHOULD BE SHIFTED WHERE POSSIBLE, OR A TREE REMOVED IF ITS CRITICAL ROOT ZONE IS NOT ADEQUATELY PROTECTED. ALL LINES DISTURBING MATERIAL, SOIL AND OTHER DEBRIS SHOULD BE KEPT WITHIN THE AREA OF DEVELOPMENT ACTIVITY AND OUTSIDE OF THE PROTECTIVE FENCING.
 7. 30' OAK TO BE ROOT PRUNED PRIOR TO BEGINNING CONSTRUCTION WITH A ROOT PRUNING OR PAVEMENT CUTTING MACHINE WITH APPROVAL OF URBAN FORESTER.

OVERALL SITE PLAN
1"=50'

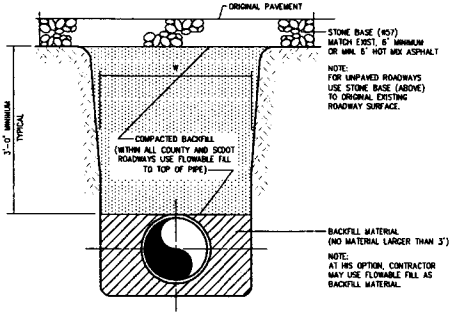
DESIGNED	H & S			Hazen and Sawyer Environmental Engineers & Scientists 4011 WestChase Blvd., Raleigh, North Carolina 27607	ORANGE WATER AND SEWER AUTHORITY CARRBORO, NORTH CAROLINA MASON FARM WASTEWATER TREATMENT PLANT RECLAIMED WATER PUMPING AND STORAGE FACILITY	GENERAL CIVIL LANDSCAPE PROTECTION PLAN	THE SCALE BAR	DATE	JUNE 2006
DRAWN	TDH						SHOWN BELOW	H & S JOB	30853-005
CHECKED							NOT LONG ON	CONTRACT	
PROJ. ENGR.	H & S						DRAWING	NUMBER	L1
NO.	ISSUED FOR	DWG.	BY	APPROVED	H & S PLAT FILE NO.				

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

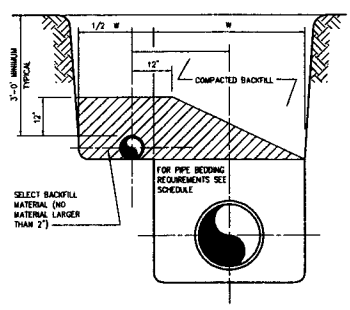
NOTES:
 1 CONCRETE THRUST BLOCKS, ARCHES, ENCASMENTS, FLOWABLE FILL, ETC. SHALL BE FORMED USING PLYWOOD OR SANDBAGS TO PROVIDE R/O'D SHAPE.



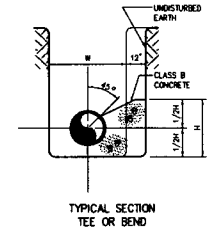
TYPE A
0222100R



ROADWAY
0222109R



PARALLEL PIPES IN TRENCH
0222106

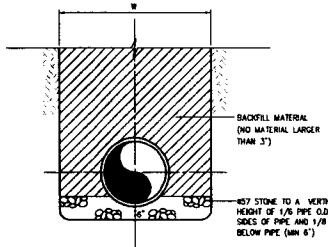


TYPICAL SECTION
TEE OR BEND

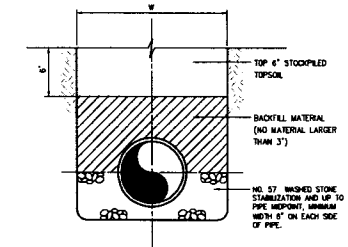
CONCRETE THRUST BLOCKING SHALL BE USED ONLY AS APPROVED BY ENGINEER.

PIPE SIZE (NO. 1)	CONCRETE THRUST BLOCK SCHEDULE					DESIGN PRESSURE (PSI)
	45'	22 1/2'	11 1/4'	5 5/8'	1 1/2'	
8	1.4	1.1	1.1	1.1	1.1	100
10	1.8	1.4	1.4	1.4	1.4	100
12	2.2	1.7	1.7	1.7	1.7	100
14	2.6	2.0	2.0	2.0	2.0	100
16	3.0	2.3	2.3	2.3	2.3	100
18	3.4	2.6	2.6	2.6	2.6	100
20	3.8	2.9	2.9	2.9	2.9	100
22	4.2	3.2	3.2	3.2	3.2	100
24	4.6	3.5	3.5	3.5	3.5	100
26	5.0	3.8	3.8	3.8	3.8	100
28	5.4	4.1	4.1	4.1	4.1	100
30	5.8	4.4	4.4	4.4	4.4	100
32	6.2	4.7	4.7	4.7	4.7	100
34	6.6	5.0	5.0	5.0	5.0	100
36	7.0	5.3	5.3	5.3	5.3	100
38	7.4	5.6	5.6	5.6	5.6	100
40	7.8	5.9	5.9	5.9	5.9	100
42	8.2	6.2	6.2	6.2	6.2	100
44	8.6	6.5	6.5	6.5	6.5	100
46	9.0	6.8	6.8	6.8	6.8	100
48	9.4	7.1	7.1	7.1	7.1	100
50	9.8	7.4	7.4	7.4	7.4	100
52	10.2	7.7	7.7	7.7	7.7	100
54	10.6	8.0	8.0	8.0	8.0	100

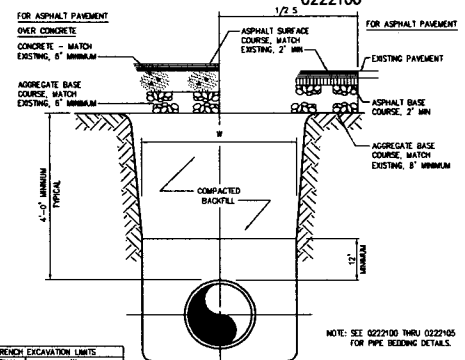
0222114



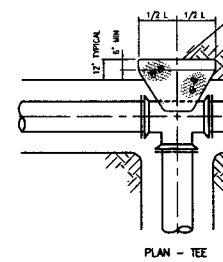
TYPE B
0222103R



TYPE C WETLANDS
(SHADED AREAS ON PLAN DRAWINGS)
0222102R

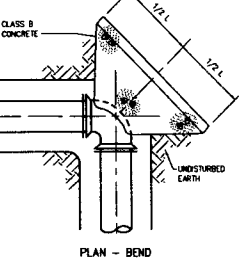


TYPICAL TRENCH
0222107



PLAN - TEE

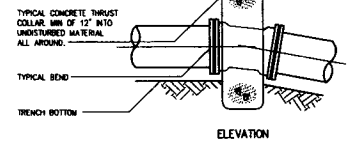
THRUST BLOCKS
(SEE NOTE 1)



PLAN - BEND

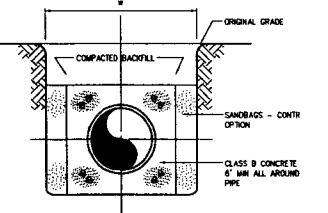
0222108

NOTE: FOR VERTICAL BEND (DOWN) IN EXCESS OF 1 1/4' ANCHORAGE SHALL BE AS RECOMMENDED BY THE ENGINEER.

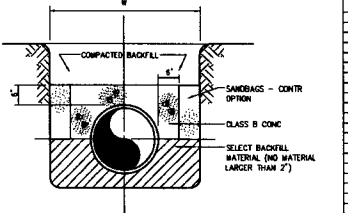


TYPICAL BEND

ELEVATION



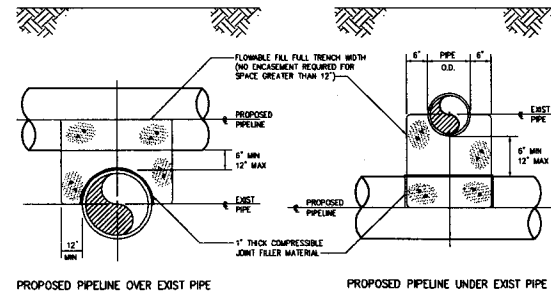
CONCRETE ENCASMENT
(SEE NOTE 1)
0222104



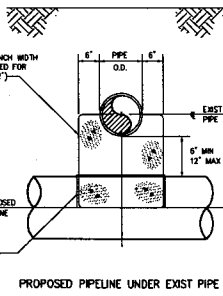
CONCRETE ARCH
0222105

TRENCH EXCAVATION LIMITS	WIDTH OF TRENCH	
	MAX	MINIMUM
INTERIOR DIAMETER OF PIPE		
4"	3'-0"	2'-0"
6"	3'-0"	2'-0"
8"	3'-0"	2'-0"
10"	3'-0"	2'-0"
12"	3'-0"	2'-0"
14"	3'-0"	2'-0"
16"	3'-0"	2'-0"
18"	3'-0"	2'-0"
20"	3'-0"	2'-0"
22"	3'-0"	2'-0"
24"	3'-0"	2'-0"
26"	3'-0"	2'-0"
28"	3'-0"	2'-0"
30"	3'-0"	2'-0"
32"	3'-0"	2'-0"
34"	3'-0"	2'-0"
36"	3'-0"	2'-0"
38"	3'-0"	2'-0"
40"	3'-0"	2'-0"
42"	3'-0"	2'-0"
44"	3'-0"	2'-0"
46"	3'-0"	2'-0"
48"	3'-0"	2'-0"
50"	3'-0"	2'-0"
52"	3'-0"	2'-0"
54"	3'-0"	2'-0"
56"	3'-0"	2'-0"
58"	3'-0"	2'-0"
60"	3'-0"	2'-0"
62"	3'-0"	2'-0"
64"	3'-0"	2'-0"
66"	3'-0"	2'-0"
68"	3'-0"	2'-0"
70"	3'-0"	2'-0"
72"	3'-0"	2'-0"
74"	3'-0"	2'-0"
76"	3'-0"	2'-0"
78"	3'-0"	2'-0"
80"	3'-0"	2'-0"
82"	3'-0"	2'-0"
84"	3'-0"	2'-0"
86"	3'-0"	2'-0"
88"	3'-0"	2'-0"
90"	3'-0"	2'-0"
92"	3'-0"	2'-0"
94"	3'-0"	2'-0"
96"	3'-0"	2'-0"
98"	3'-0"	2'-0"
100"	3'-0"	2'-0"
DEPTH OF MAINLINE PAVEMENT REPLACEMENT WIDTH		
0-3	3'-0"	2'-0"
3-6	3'-0"	2'-0"
6-9	3'-0"	2'-0"
9-12	3'-0"	2'-0"
12-15	3'-0"	2'-0"
15-18	3'-0"	2'-0"
18-21	3'-0"	2'-0"
21-24	3'-0"	2'-0"
24-27	3'-0"	2'-0"
27-30	3'-0"	2'-0"
30-33	3'-0"	2'-0"
33-36	3'-0"	2'-0"
36-39	3'-0"	2'-0"
39-42	3'-0"	2'-0"
42-45	3'-0"	2'-0"
45-48	3'-0"	2'-0"
48-51	3'-0"	2'-0"
51-54	3'-0"	2'-0"
54-57	3'-0"	2'-0"
57-60	3'-0"	2'-0"
60-63	3'-0"	2'-0"
63-66	3'-0"	2'-0"
66-69	3'-0"	2'-0"
69-72	3'-0"	2'-0"
72-75	3'-0"	2'-0"
75-78	3'-0"	2'-0"
78-81	3'-0"	2'-0"
81-84	3'-0"	2'-0"
84-87	3'-0"	2'-0"
87-90	3'-0"	2'-0"
90-93	3'-0"	2'-0"
93-96	3'-0"	2'-0"
96-99	3'-0"	2'-0"
99-102	3'-0"	2'-0"

0222109

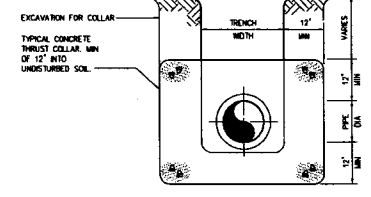


PROPOSED PIPELINE OVER EXIST PIPE



PROPOSED PIPELINE UNDER EXIST PIPE

0222118



THRUST COLLAR

0222111

DESIGNED	H & S
DRAWN	TDM
CHECKED	
PROJ ENGR	H & S
ISSUED FOR	
DATE	
BY	
APPROVED	



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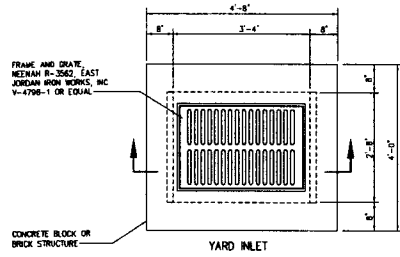
ORANGE WATER AND SEWER AUTHORITY
 CARRBORO, NORTH CAROLINA
 MASON FARM WASTEWATER TREATMENT PLANT
 RECLAIMED WATER PUMPING AND STORAGE FACILITY

MISCELLANEOUS STANDARD DETAILS

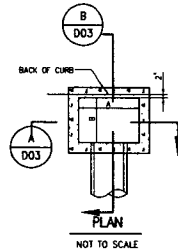
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	JUNE 2006
	H & S JOB NUMBER	30653-005
	CONTRACT NUMBER	
	DRAWING NUMBER	D1
	H & S FILE NO.	

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION

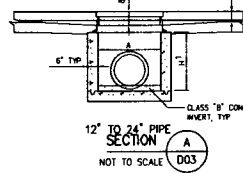
NOTES:



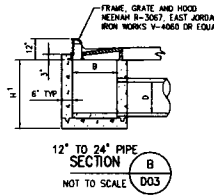
YARD INLET



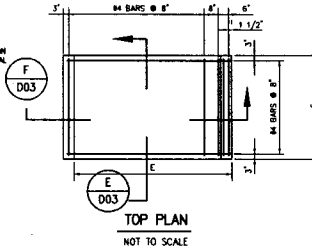
NOT TO SCALE



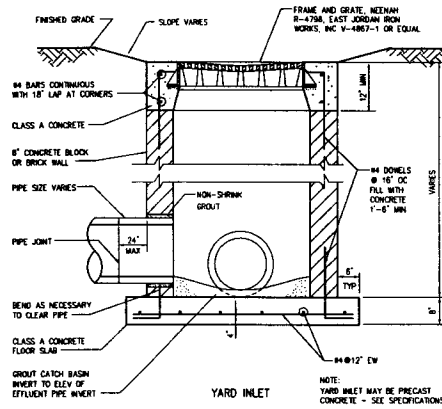
12" TO 24" PIPE SECTION A D03 NOT TO SCALE



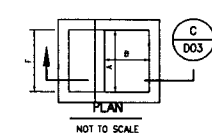
12" TO 24" PIPE SECTION B D03 NOT TO SCALE



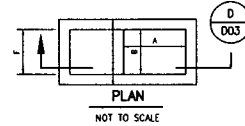
TOP PLAN F D03 NOT TO SCALE



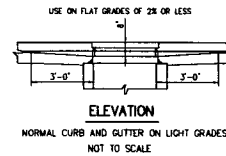
YARD INLET
0243102



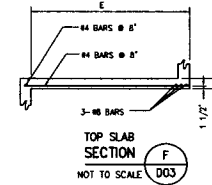
NOT TO SCALE



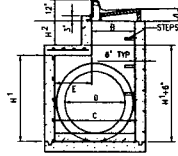
NOT TO SCALE



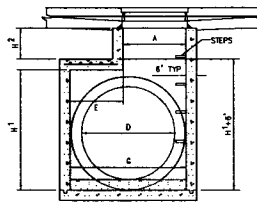
ELEVATION E D03 NOT TO SCALE



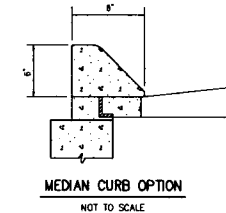
TOP SLAB SECTION F D03 NOT TO SCALE



30" TO 36" PIPE SECTION C D03 NOT TO SCALE



42" TO 54" PIPE SECTION D D03 NOT TO SCALE



MEDIAN CURB OPTION E D03 NOT TO SCALE

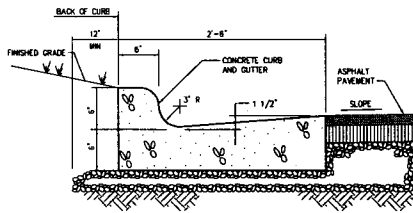
MINIMUM DIMENSIONS FOR CONCRETE CURB INLETS										
PIPE	DIMENSIONS OF BOX AND PIPE					COVER DIMENSIONS				
	SPAN	WIDTH	WIDTH	SPAN	HEIGHT	HEIGHT	MIN	H ²	E	F
12"	3'-0"	2'-2"	—	—	3'-6"	—	—	—	—	—
15"	3'-0"	2'-2"	—	—	3'-6"	—	—	—	—	—
18"	3'-0"	2'-2"	—	—	3'-6"	—	—	—	—	—
24"	3'-0"	2'-2"	—	—	3'-2"	—	—	—	—	—
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-6"	—	—	1'-6"	4'-0"	—
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-1"	—	—	3'-2"	4'-0"	—
42"	3'-0"	2'-2"	—	—	4'-5"	4'-10"	—	1'-11"	3'-2"	—
48"	3'-0"	2'-2"	—	—	5'-0"	5'-4"	—	2'-8"	3'-2"	—
54"	3'-0"	2'-2"	—	—	5'-2"	5'-11"	—	3'-1"	3'-2"	—

CONCRETE CURB INLET NOTES:

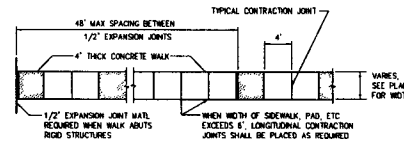
- CLASS "A" CONCRETE TO BE USED THROUGHOUT.
- ALL WALLS SHALL BE REINFORCED WITH #4 BARS @ 12" EACH WAY PLACED AT MID-DEPTH. BARS SHALL BE BENT AT CORNERS WITH STD. 90° HOOKS. BOTTOM SLAB SHALL BE REINFORCED WITH #5 AT 12" EACH WAY AT MID-DEPTH.
- ALL CURB INLETS OVER 3'-6" IN DEPTH TO BE PROVIDED WITH STEPS 14" OC. STEPS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
- FOR 8'-0" IN HEIGHT OR LESS USE #4 WALLS AND BOTTOM SLAB. OVER 8'-0" AND UP TO 15'-0" USE #4 WALLS AND BOTTOM SLAB.

STANDARD CONCRETE CURB INLET
12" THROUGH 54" PIPE

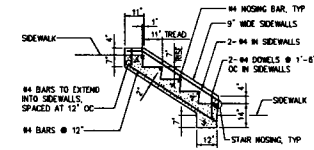
0243104



CURB AND GUTTER
0242000



TYPICAL CONCRETE WALKWAY
0245000



NOTE: YARD STEPS HAVING MORE THAN THREE RISERS SHALL HAVE HANDRAILS IN THE SIDEWALLS. THE WIDTH OF THE YARD STEPS TREAD SHALL BE THE SAME AS THE ADJACENT SIDEWALK. WHERE VERTICAL DIFFERENCE BETWEEN SIDEWALK ELEVATIONS IS GREATER THAN 12'-0", AN INTERMEDIATE LANDING IS REQUIRED. SEE DETAIL.

CONCRETE YARD STEPS
0245001

DESIGNED	H & S
DRAWN	TDH
CHECKED	
PROJ. ENGR.	H & S
NO.	
ISSUED FOR	
DATE	
BY	
APPROVED	



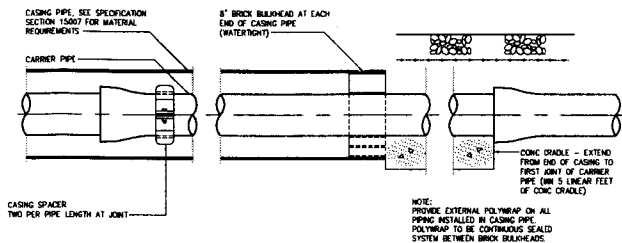
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestClass Blvd., Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA

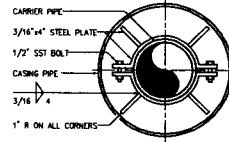
MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

MISCELLANEOUS STANDARD DETAILS

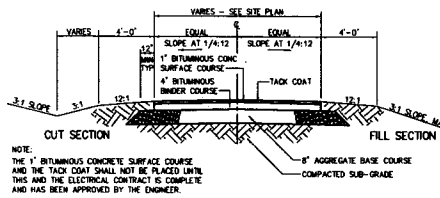
DATE	JUNE 2006
H & S JOB NUMBER	30853-005
CONTRACT NUMBER	
DRAWING NUMBER	D2
H & S FILE NO.	



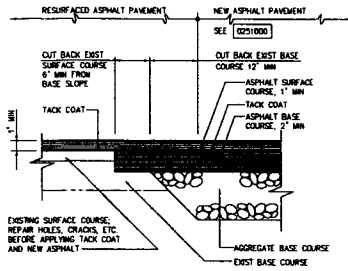
TYPICAL CASING FOR JACK AND BORE
0232201R
0232201R



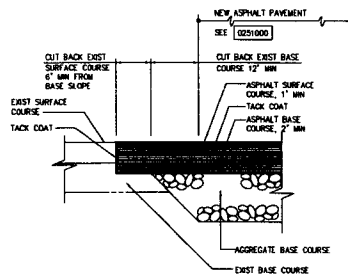
CASING SPACER
0232200R



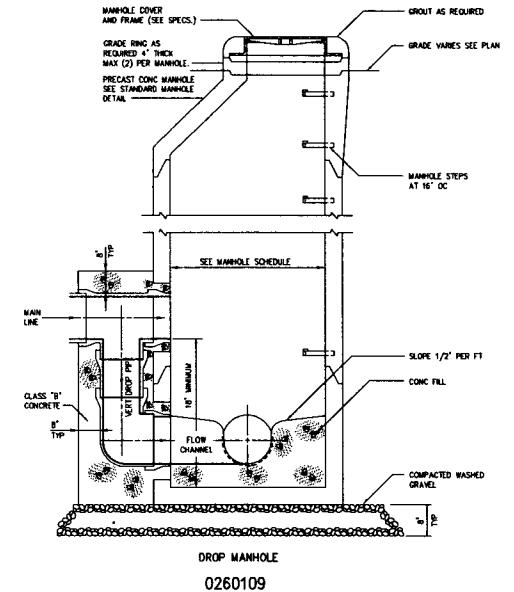
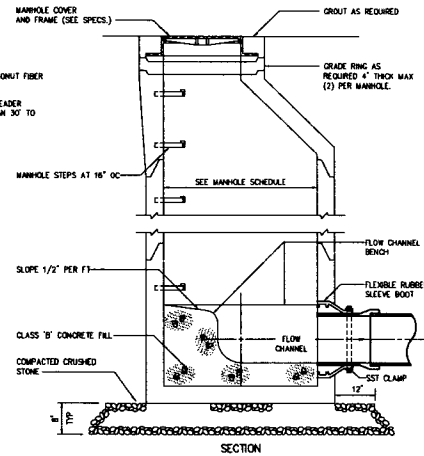
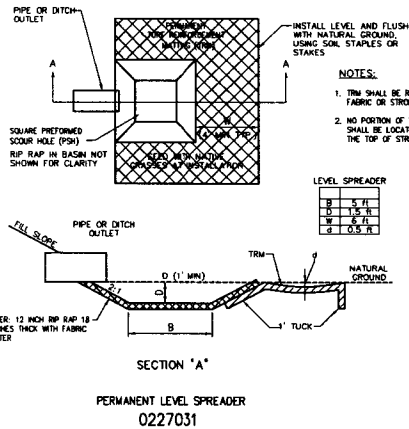
TYPICAL PAVEMENT SECTION
0251000R



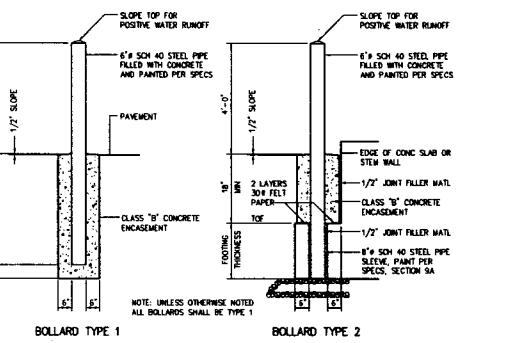
TYPICAL PAVEMENT JUNCTION WITH RESURFACING OF EXISTING PAVEMENT
0251300



TYPICAL PAVEMENT JUNCTION
0251301



NOTES:



0245100

DESIGNED	H & S
DRAWN	THM
CHECKED	
PROJ ENGR	H & S
NO.	
ISSUED FOR	
DATE	
BY	
APPROVED	



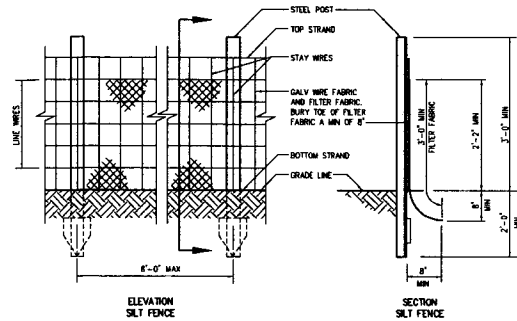
Hazen and Sawyer
Environmental Engineers & Scientists
4011 WestChase Blvd., Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA
MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING	DATE	JUNE 2006
	H & S JOB NUMBER	30853-005
	CONTRACT NUMBER	1
	DRAWING NUMBER	D3
	H & S PLAT FILE NO.	

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION



ELEVATION
SILT FENCE

SECTION
SILT FENCE

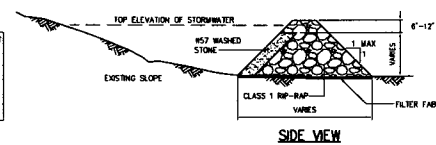
- NOTE:
- EXTRA STRENGTH FILTER FABRIC (AS APPROVED BY ENGINEER) WITH 8'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
 - FILTER FABRIC SHALL BE WIRED DIRECTLY TO POST.

0227000

DESIGN OF SPILLWAYS

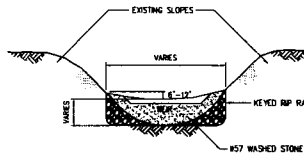
DRAINAGE AREA (ACRES)	WEIR LENGTH (FT)
1	8.0
2	8.0
3	8.0
4	10.0
5	12.0

T-DIMENSIONS SHOWN ARE MINIMUM



SIDE VIEW

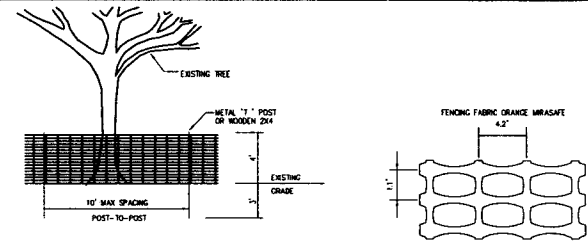
NOTES:
HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
KEY RIP RAP INTO THE DAM FOR STABILIZATION.



FRONT VIEW

STEP SEQUENCE

CHECK DAM
0227029



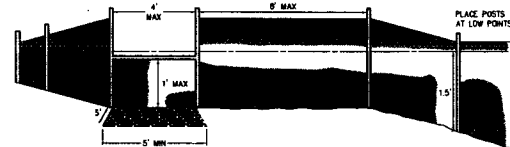
- PLACE CONTINUOUS RUN OF FENCE MATERIAL ON BOTH SIDES OF IMMEDIATE WORK ZONE IN WOODED AREAS AS SHOWN ON THE PLANS. DO NOT ATTACH FENCE MATERIAL TO TREES.
- THE PROTECTION FENCING FABRIC TO BE PLACED AT THE GRIP LINE OF THE TREES THAT ARE TO BE PROTECTED.
- 'MIRASME' HIGH STRENGTH POLYMER GEOTEXTILE FABRIC BY TC MIRAFL PENDERGRASS, GEORGIA.
- ONE SIDE PER 75' OF TREE PROTECTION FENCING SHALL BEAD. THESE PROTECTION AREAS DO NOT ENTER AREA/PADA PROTECCION DE LOS ARBOLES/PROHIBIDO ENTRAR

TC MIRAFL MIRASAFE OR AN APPROVED EQUAL - STABLE TO VERTICAL 2:1 OR TO METAL 1\"/>

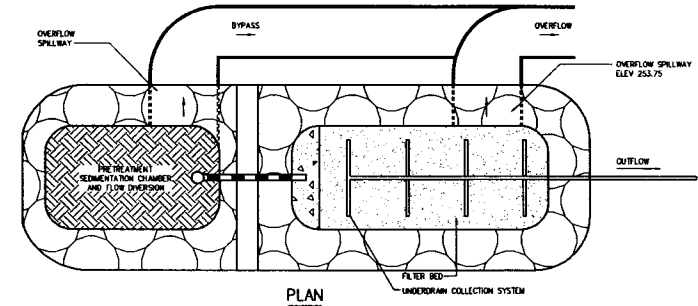
SEEDING SCHEDULE

PERMANENT SEEDING (POUNDS/ACRE)	
RATE	PLANTING SEASON
FESCUE/PORE LESPEDEZA/ALGONQUINES	8/15/23 - 9/1 - 8/13 4000
FESCUE/PORE LESPEDEZA/RYEBIRD RYE	8/15/23/24 - 9/1 - 4/20 4000
FESCUE/PORE LESPEDEZA/RYEBIRD RYE	8/15 - 10/25 4000
STRAW MULCH 4000	
ANNUAL FERTILIZER 200 OF SAME AS TOPDRESSING	
TEMPORARY SEEDING (POUNDS/ACRE)	
RATE	PLANTING SEASON
PVC (GRASS/PORE LESPEDEZA)	1/1 - 8/1 2000
TEMPORARY STRAW MULCH	4000
TEMPORARY FERTILIZER	200
TEMPORARY FERTILIZER	4000
TEMPORARY FERTILIZER	2000
TEMPORARY FERTILIZER	750
TEMPORARY FERTILIZER	4000
TEMPORARY FERTILIZER	2000
TEMPORARY FERTILIZER	750
TEMPORARY FERTILIZER	4000

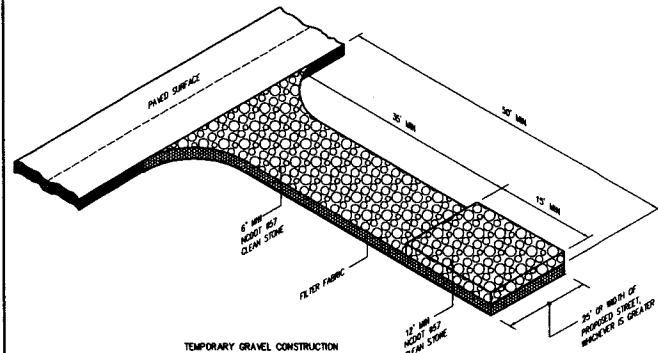
HYDROSEED ON ALL 2:1 (HW) SLOPES.
NOTE: TEMPORARY STABILIZATION (MULCHING ONLY) WHEN SEEDING WILL NOT HAVE A SUITABLE GROWING SEASON MAY BE ACCOMPLISHED WITH STRAW OR HAY - 2.5 TONS/ACRE WOOD WASTE, BARK, SAWDUST - 2' TO 3' DEEP (APPROX. 6-9 TONS/ACRE)



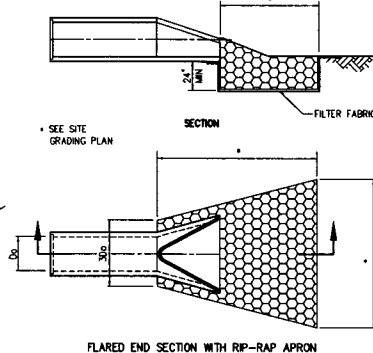
STABILIZED OUTLET FOR SILT FENCE
0227024



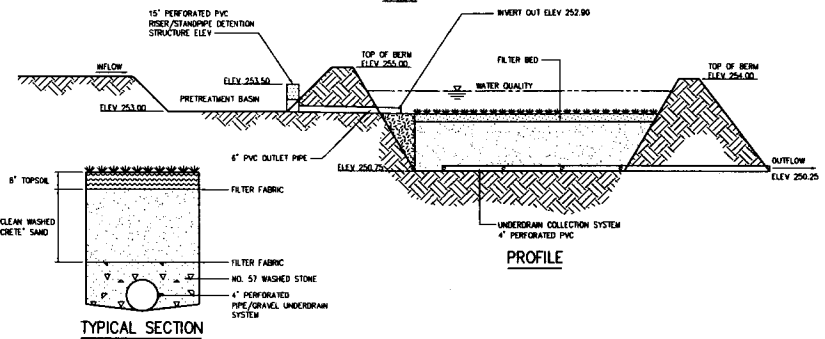
PLAN



TEMPORARY GRAVEL CONSTRUCTION
ENTRANCE / EXIT
0257701R



FLARED END SECTION WITH RIP-RAP APRON
0243300



PROFILE

WATER QUALITY SAND FILTER
0227032R

NO.	ISSUED FOR	DATE	BY	APPROVED

DESIGNED H & S
DRAWN TDH
CHECKED
PROJ. ENGR. H & S



Hazen and Sawyer
Environmental Engineers & Scientists
4811 WestChase Blvd., Raleigh, North Carolina 27607

ORANGE WATER AND SEWER AUTHORITY
CARRBORO, NORTH CAROLINA
MASON FARM WASTEWATER TREATMENT PLANT
RECLAIMED WATER PUMPING AND STORAGE FACILITY

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	JUNE 2006
H & S JOB NUMBER	30853-005	
CONTRACT NUMBER	1	
DRAWING NUMBER	D4	
H & S PLAT FILE NO.		

51

FINAL DESIGN - NOT RELEASED FOR CONSTRUCTION