

# TOWN OF SMITHFIELD, RHODE ISLAND WASTEWATER TREATMENT PLANT TERTIARY TREATMENT UPGRADE

## ORDER OF APPROVAL SUBMITTAL JANUARY, 2011

Dennis Finlay, Town Manager

Kevin Cleary, PE, LSIT, Town Engineer

DEM FILE COPY  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED Jan 22 2011 FILE # 11-012  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Charles H. Haber*

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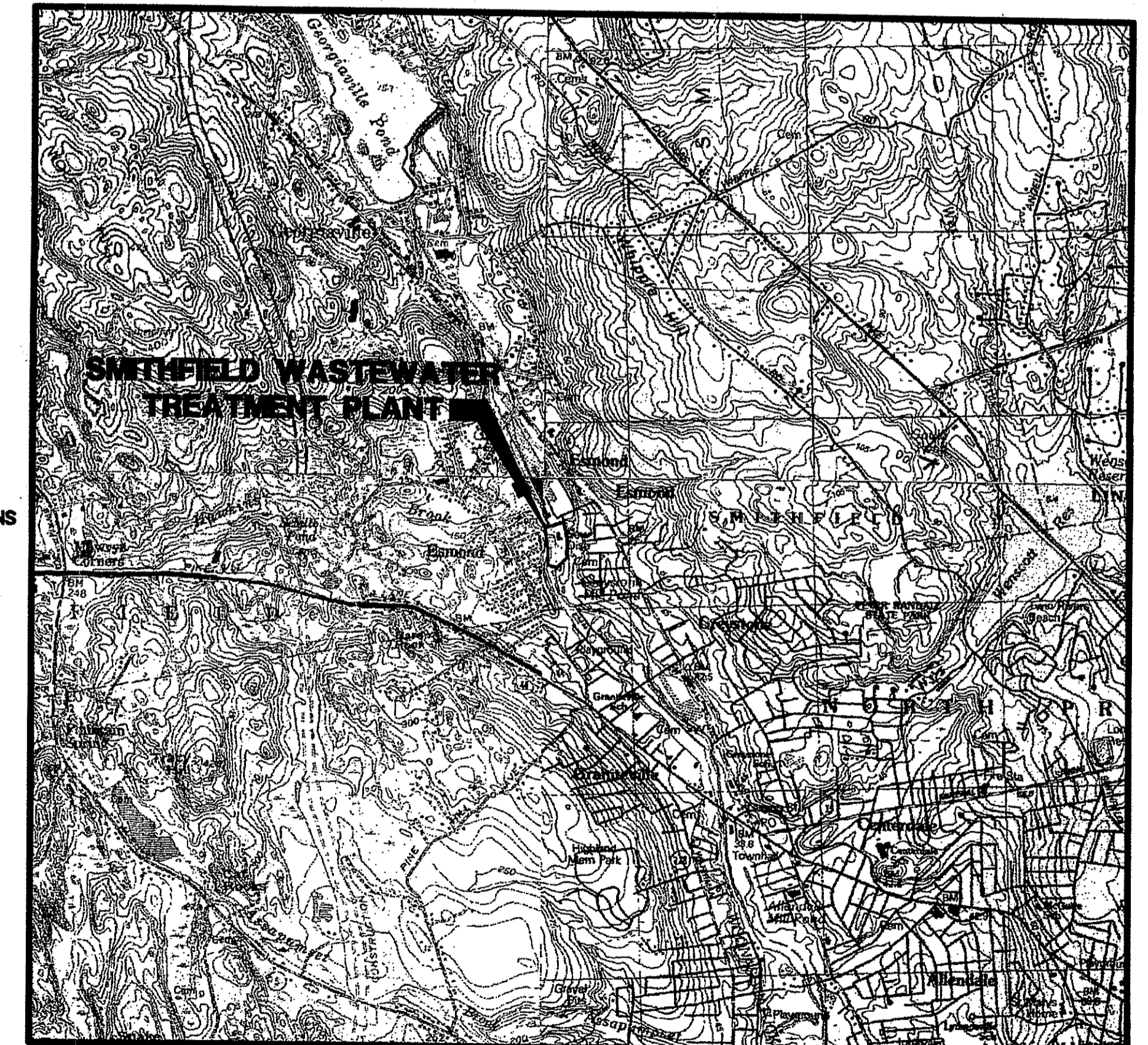
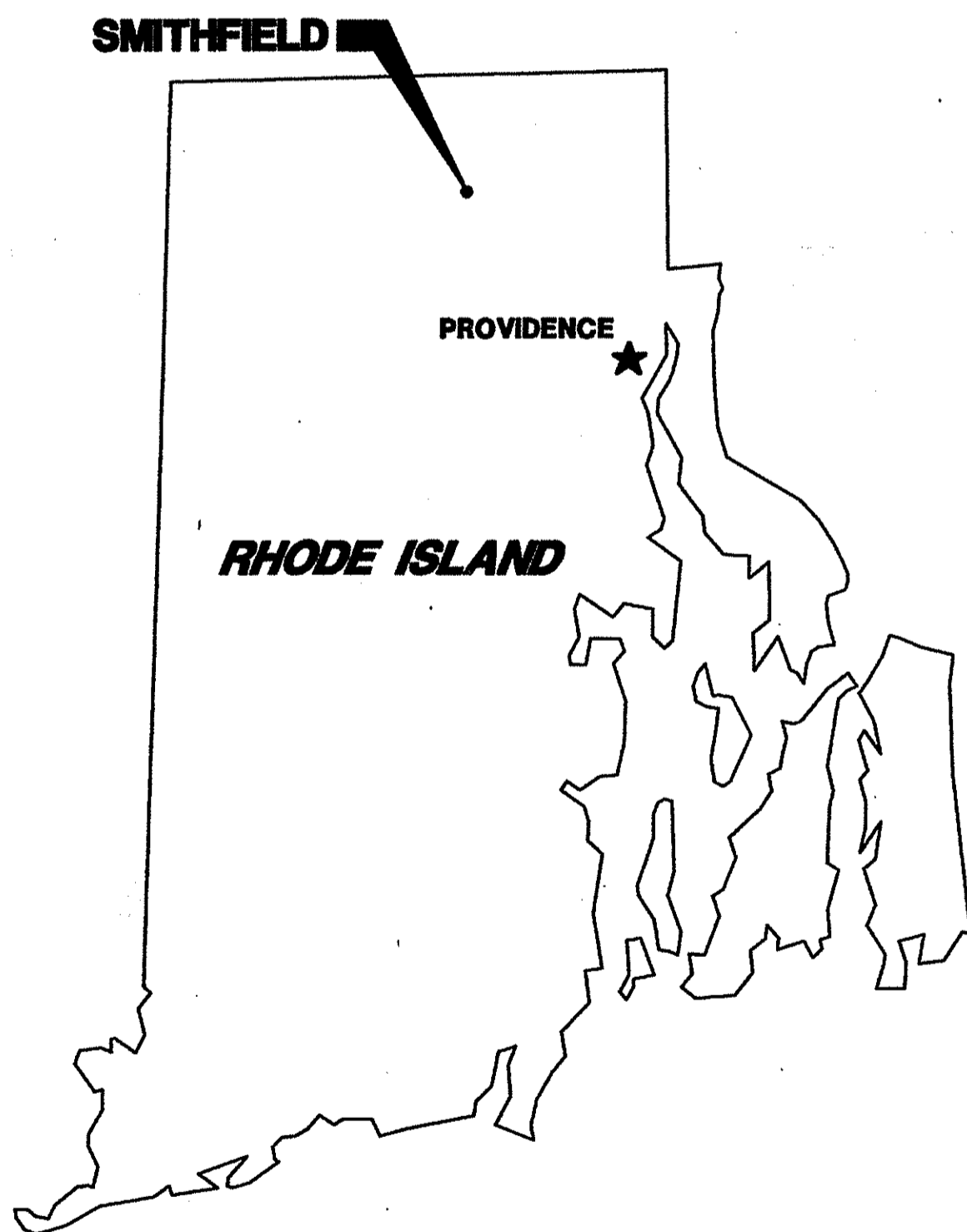
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SCALE: 1"=2,000'

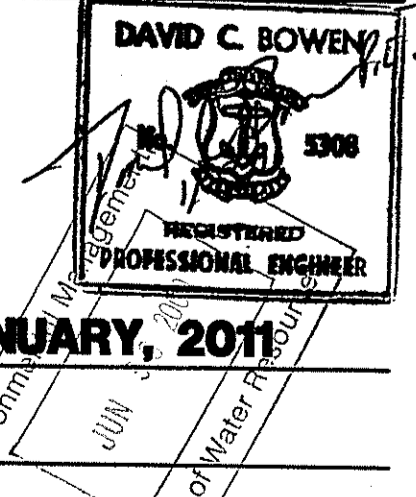
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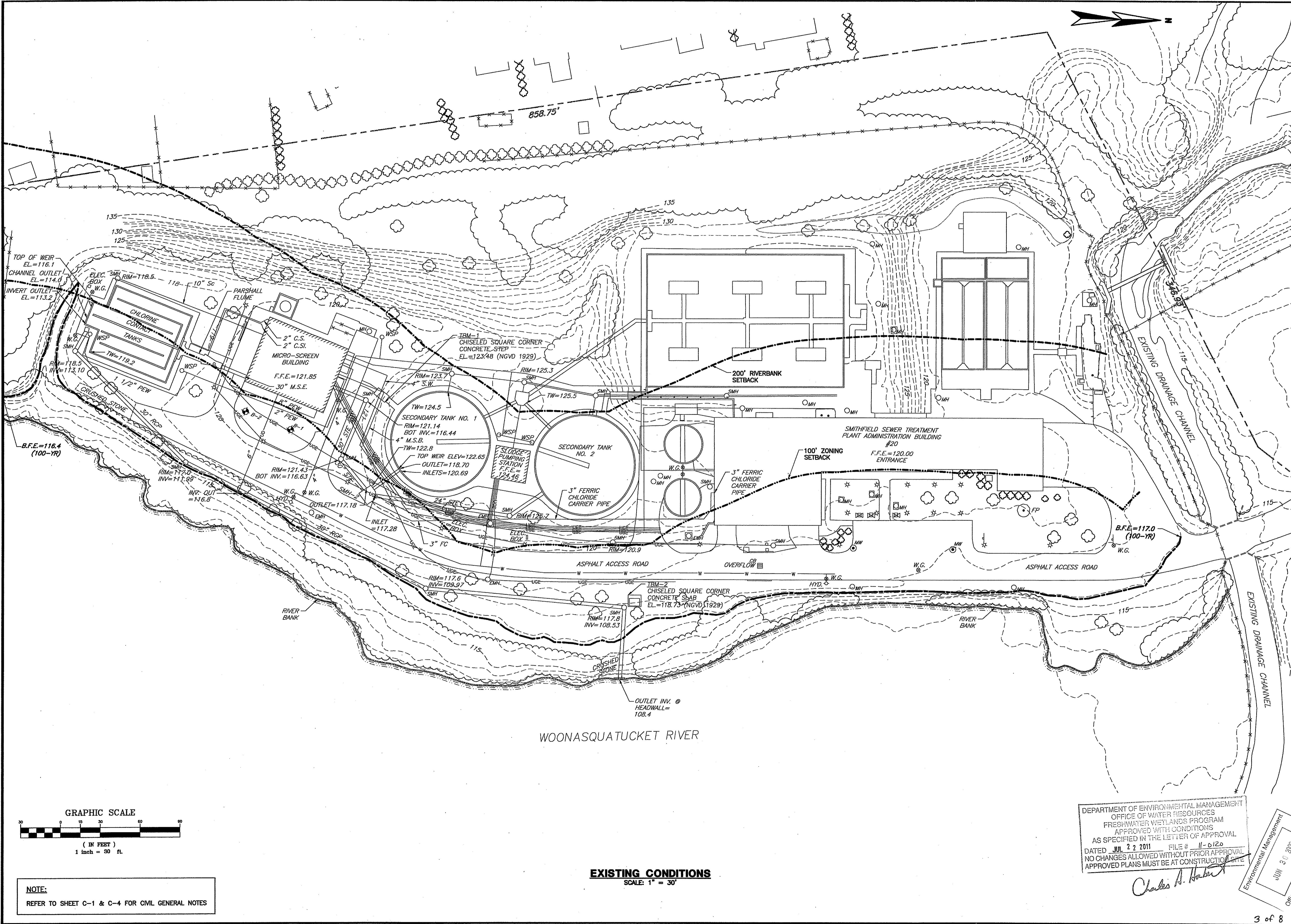
FOR REVIEW JANUARY, 2011  
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WP PROJECT NO. 12050C





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G:\DWG\12050-SMITHFIELD-RV\12050C-FD\CAD\12050C002-EXISTING-CONDITIONS.DWG | EXISTING CONDITIONS PLAN | 1:1 | 1/11/2011 11:30:04 AM | R/B



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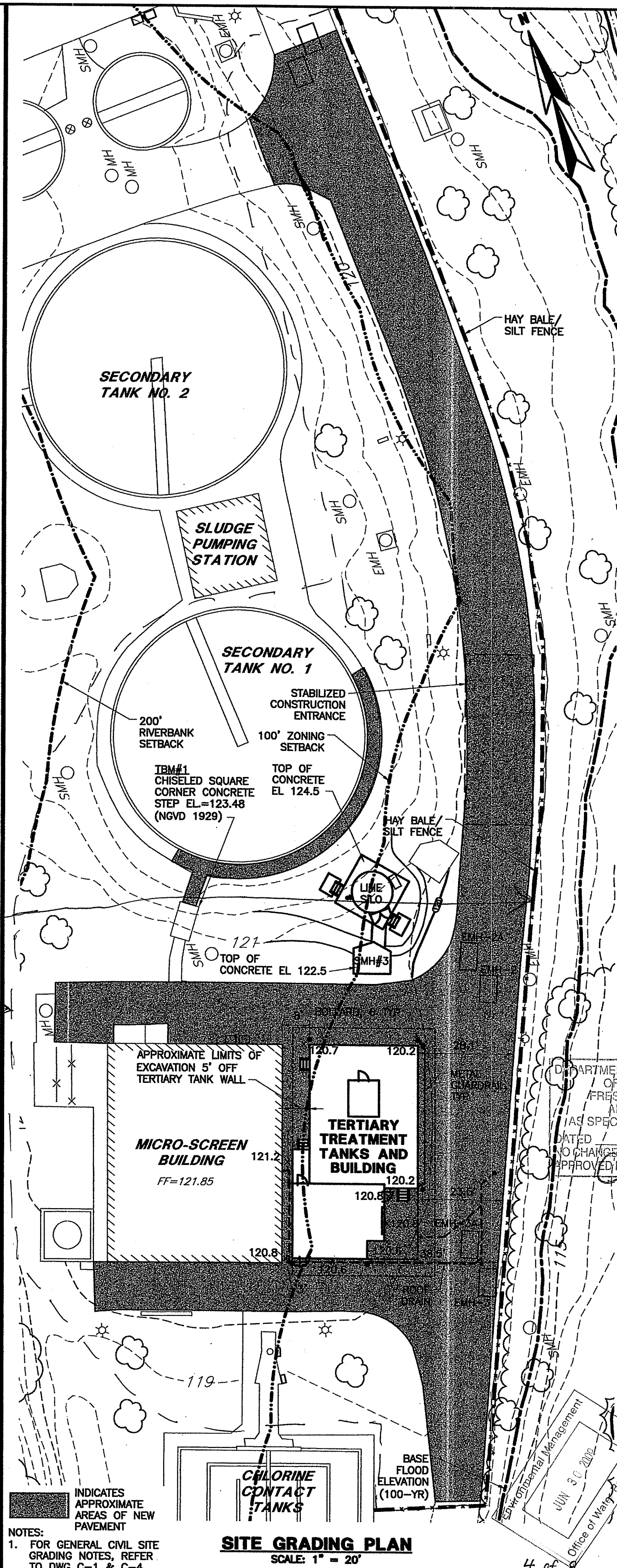
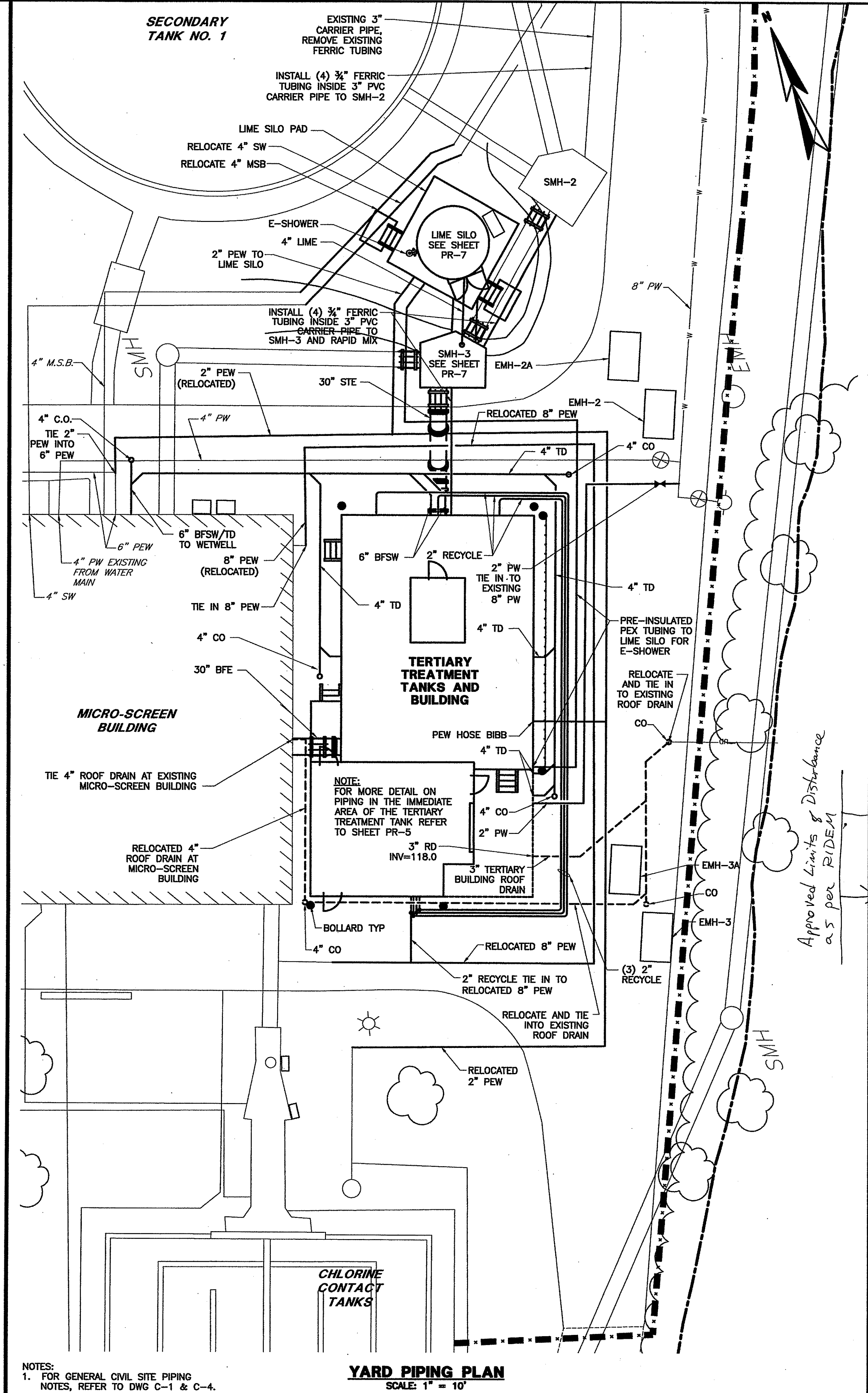
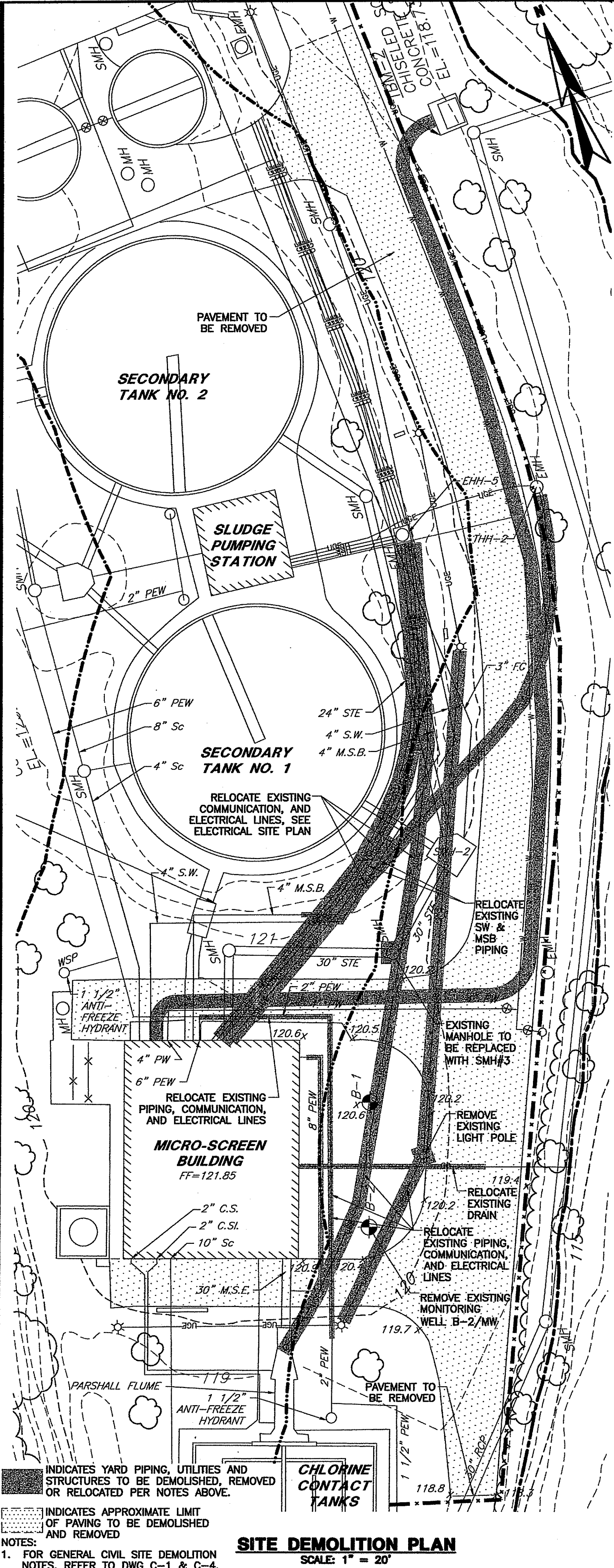
**DAVID C. BOWEN**  
 508  
 PROFESSIONAL ENGINEER

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TOWN OF SMITHFIELD, RI  
 WASTEWATER TREATMENT PLANT  
 TERTIARY TREATMENT UPGRADE  
 EXISTING CONDITIONS PLAN  
 DRAWING  
 C-2

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
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*Charles A. Harker*  
 Environmental Management  
 JUN 30 2011  
 Office of Water Resources



SUBMISSIONS/REVISIONS		APPROVAL DATE
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DATE	DATE	DATE
PROJECT NO. 120500C	SCALE AS NOTED	

DAVID C. BOVEN  
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WASTEWATER TREATMENT PLANT  
TERTIARY TREATMENT UPGRADE

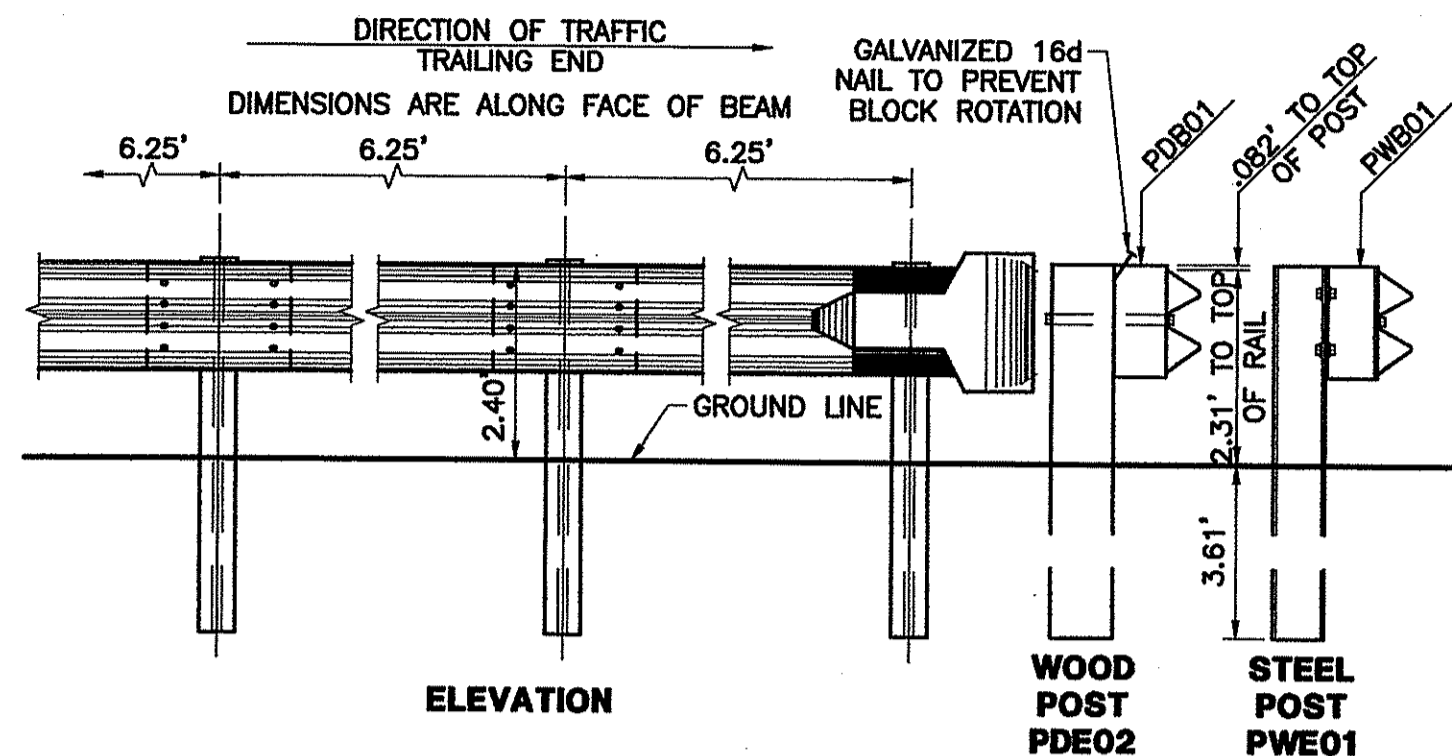
SITE MODIFICATION PLANS  
DEMOLITION, YARD PIPING, AND GRADING

DRAWING  
C-3

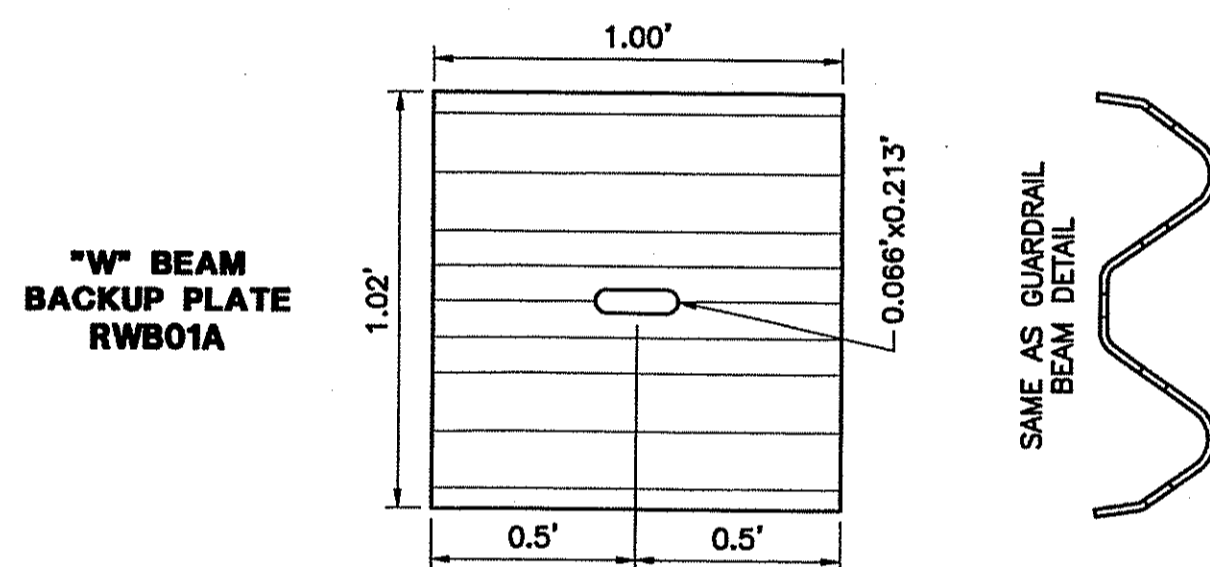
GENERAL NOTES CONTINUED FROM SHEET C-1

SITE PIPING NOTES

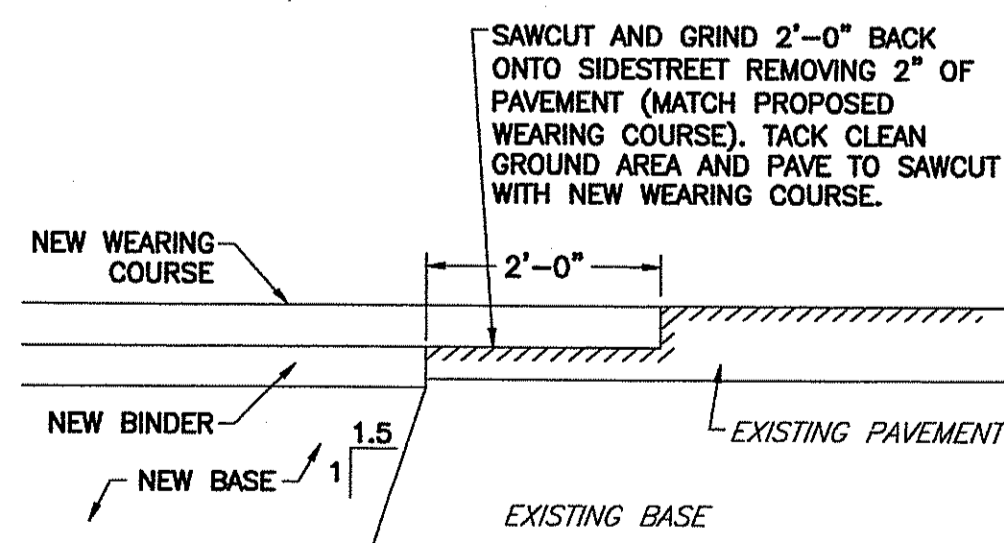
1. PIPING LEGEND AND PROCESS FLOW DIAGRAM ARE ON DRAWINGS PR-1 AND PR-2 RESPECTIVELY. THE PROCESS PIPING SCHEDULE AND ADDITIONAL PIPING NOTES ARE LOCATED IN SPECIFICATION SECTION 15050.
2. ALL PIPE LINES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS IN PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS (RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY). SEE CIVIL DRAWINGS FOR THRUST BLOCK DETAILS. PROVIDE ALL BENDS (HORIZONTAL AND VERTICAL) AS REQUIRED TO MEET THE GRADES AND ALIGNMENT INDICATED ON THE DRAWINGS.
3. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND SIZE OF EXISTING PIPING AND UTILITIES IN THE FIELD BY TEST PIT EXCAVATION PRIOR TO COMMENCING INSTALLATION OF ANY OF THE NEW PIPING IN AFFECTED AREA. WHERE NEW PIPE CONNECTS TO EXISTING PIPING OR STRUCTURAL PENETRATION, CONTRACTOR SHALL VERIFY ELEVATION BY TEST PIT, AS REQUIRED, PRIOR TO INSTALLATION OF ANY OF THE ASSOCIATED/AFFECTED NEW PIPING. IDENTIFIED CONFLICTS WITH EXISTING PIPING AND UTILITIES WILL BE REVIEWED WITH THE ENGINEER PRIOR TO COMMENCING INSTALLATION. THE HORIZONTAL ALIGNMENT OF NEW PIPING MAY BE ADJUSTED IN THE FIELD SUBJECT TO PRIOR REVIEW AND ACCEPTANCE OF THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY LAYOUT OF ALL PROPOSED WORK AS SHOWN ON THE DRAWINGS AND REPORT ANY LAYOUT DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
4. ALL PIPING (EXCLUDING BUILDING DRAINS) AND ALL PRESSURIZED PIPES (I.E. PLANT WATER, CITY WATER, SOLUTION LINES, HEAT, ETC.) INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE. SEE STRUCTURAL DRAWING FOR DETAILS.
5. ALL BURIED CONNECTIONS TO STRUCTURES SHALL HAVE SLEEVE TYPE FLEXIBLE CONNECTIONS APPROXIMATELY 4 FEET FROM THE STRUCTURES. ALL SLEEVE TYPE COUPLINGS ON PRESSURE LINES SHALL BE RESTRAINED (SOLID SLEEVE). REFER TO SPECIFICATION SECTION 15088.
6. PROVIDE CAST OR DUCTILE IRON WALL CASTINGS, OR GALVANIZED STEEL PIPE SLEEVES, FOR ALL PIPE PENETRATIONS MADE THROUGH CONCRETE FOUNDATIONS, WALLS AND SLABS. ALL WALL SLEEVES AND WALL CASTINGS SHALL HAVE WATERSTOPS. SEE PROCESS, MECHANICAL AND STRUCTURAL DRAWINGS FOR LOCATIONS OF PENETRATIONS. NEW PENETRATIONS THROUGH EXISTING STRUCTURE WALLS SHALL BE BY CORING MACHINE AND "LINK-SEAL" TYPE SEALS, UNLESS OTHERWISE INDICATED. OPENINGS TO BE COMPATIBLE SIZES.
7. TRENCH INSULATION SHALL BE USED WHERE SHOWN ON PLANS AND WHERE DEPTH OF COVER IS LESS THAN MINIMUM FOR STORM, SEWER, AND WATER MAINS ONLY. REFER TO CIVIL DETAIL DRAWING FOR TRENCH INSTALLATION DETAIL.
8. ALL MANHOLES AND DRAIN MANHOLES ARE 4 FEET IN DIAMETER UNLESS OTHERWISE NOTED. THE TOP OF MANHOLE FRAMES SHALL BE SET FLUSH WITH FINISHED GRADE, UNLESS OTHERWISE NOTED ON DRAWINGS. PIPES WITHIN VALVE PITS (MANHOLES) SHALL BE SUPPORTED 12 INCHES ABOVE BOTTOM OF MANHOLE ON ADJUSTABLE PIPE SADDLE SUPPORTS, IN ACCORDANCE WITH SPECIFICATION SECTION 15094, UNLESS OTHERWISE INDICATED.
9. REFER TO SPECIFICATION SECTION 02200 FOR PIPE AND STRUCTURE BEDDING AND BACKFILL REQUIREMENTS.
10. COMPACTION TESTS WILL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION SECTION 02200. ANY SETTLEMENT OCCURRING WITHIN ONE YEAR OF FINAL COMPLETION OF THE WORK SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
11. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
12. REFER TO SECTION 01050 OF THE SPECIFICATIONS FOR INFORMATION REGARDING COORDINATION WITH OTHERS, INCLUDING RESPONSIBILITIES AND RELATED COSTS.
13. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE AS REQUIRED TO COMPLETE THE CONNECTION. CONTRACTOR SHALL VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION.
14. ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE UNLESS OTHERWISE NOTED ON THE CIVIL DEMOLITION PLAN.
15. CONTRACTOR SHALL RE-SHAPE INVERTS AS REQUIRED WHEN CONNECTING INTO EXISTING MANHOLES.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL DEMOLITION MATERIALS IN ACCORDANCE WITH SPECIFICATION SECTION 02050.
17. WHERE POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER OR SLUDGE LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER OR SLUDGE LINE SHALL BE MAINTAINED, IF POSSIBLE. WHERE A WATER LINE CROSSES UNDER A WASTEWATER OR SLUDGE LINE, A FULL LENGTH OF PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE.
18. ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO ANY TRENCH EXCAVATION SHALL BE PROTECTED AND FIRMLY SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. DAMAGE TO ANY SUCH STRUCTURES CAUSED BY OR RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE OWNER.
19. ELECTRICAL CONDUIT RUNS ARE INDICATED ON THE ELECTRICAL DRAWINGS.
20. WHENEVER PROPOSED STRUCTURES ARE LOCATED PARTLY WITHIN A PAVED AREA AND PARTLY IN A NON-PAVED AREA, A BITUMINOUS CONCRETE PAVED APRON 2- FEET WIDE SHALL BE SUPPLIED AROUND THE PROPOSED COVER. PAVEMENT SHALL SLOPE AWAY FROM THE COVER.
21. ALL PIPING ENCASED IN CONCRETE SHALL HAVE PUSH-ON JOINTS AT ALL STRUCTURAL EXPANSION JOINTS.
22. PROVIDE EXPANSION JOINTS WITH CONTROL RODS FOR ALL EXPOSED PIPING CROSSING STRUCTURAL EXPANSION JOINTS.
23. MINIMUM COVER OVER PIPES AND/OR DUCTS SHALL BE AS FOLLOWS: WATER 5'-0" SEWER 4'-6", DRAIN 4'-0", GAS 3'-6", ELECTRIC 2'-6". ANY PIPE AND/OR DUCT WITH LESS THAN 2'-0" OF COVER SHALL HAVE AN ADDITIONAL 6" OF CONCRETE ENCASEMENT ON THE UPPER PORTION.
24. HEAT TRACE ALL NEW SMALL DIAMETER PROCESS LINES WHERE EXPOSED AND TO 5'-0" BELOW FINISHED GRADE (TYPICAL, PLANT WATER AND CHEMICAL FEED PIPING). ALL HEAT TRACED PIPING SYSTEMS SHALL BE COVERED WITH 1" FIBERGLASS INSULATION (MIN.) AND ALUMINUM INSULATION COVER.



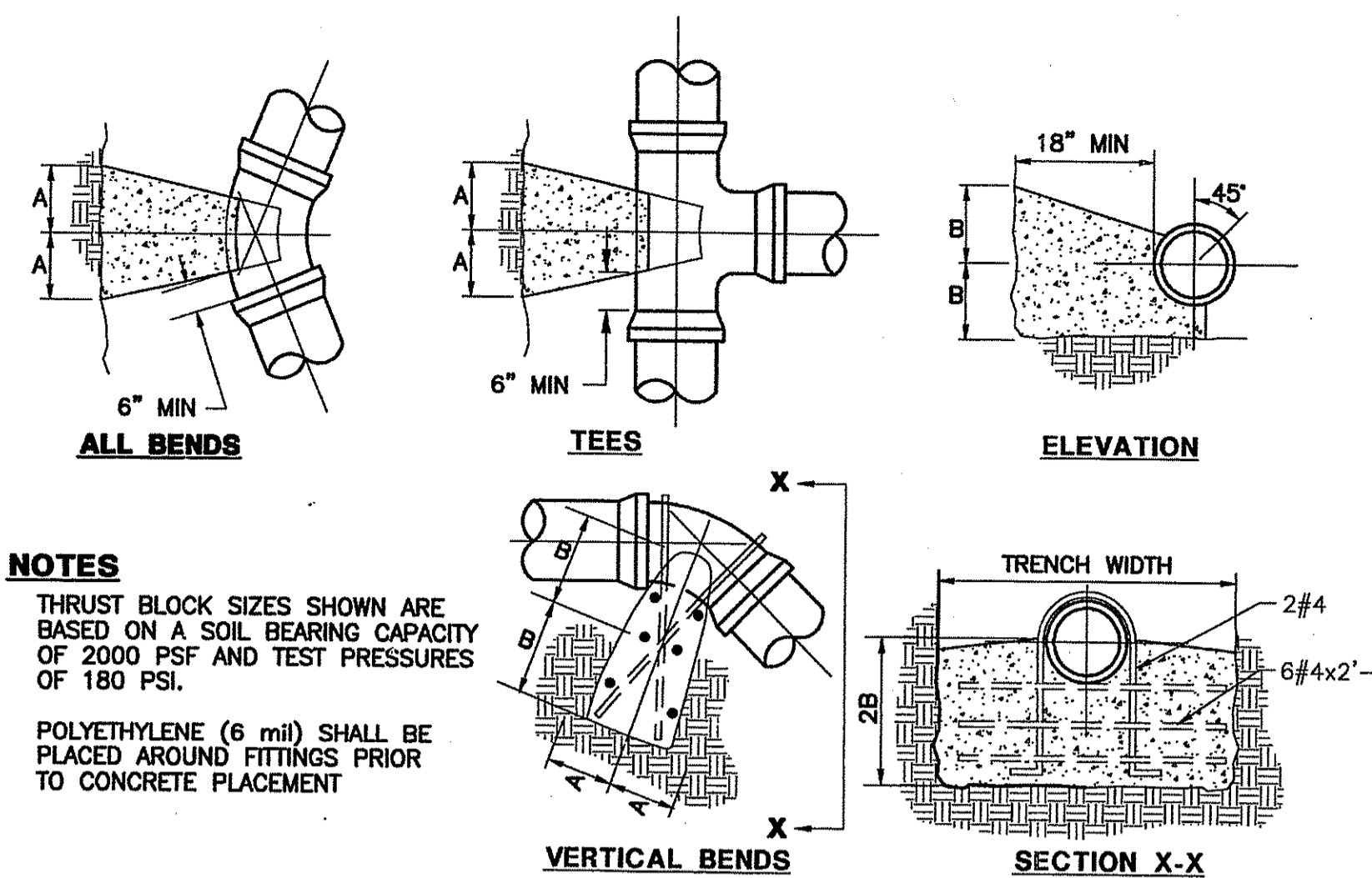
- NOTES:**
1. INTERMEDIATE POST SPACING SHALL BE 6.25' UNLESS OTHERWISE SHOWN.
  2. WOOD POSTS FOR GUARDRAIL SHALL BE 6x8 AND OFFSET BLOCKS SHALL BE 6x8.
  3. STEEL POSTS AND WOOD OFFSET BRACKETS FOR GUARDRAIL SHALL BE W150x13.5.
  4. STEEL POSTS PUNCHED WITH HOLES IN ADDITION TO THOSE SPECIFIED TO ACCOMMODATE OTHER TYPES OF GUARDRAIL, WILL BE ACCEPTED SUBJECT TO THE APPROVAL OF THE ENGINEER.
  5. "W" BEAM BACKUP PLATES SHALL BE PLACED BEHIND RAIL ELEMENTS AT INTERMEDIATE STEEL POSTS (NON-SPLICE POSTS), FOR THE TYPE 3b ONLY.
  6. BEAM TYPE GUARDRAIL SET ON A RADIUS OF 1.75' OR LESS SHALL BE CIRCULAR GUARDRAIL.
  7. OFFSET BRACKETS SHALL BE INSTALLED ON ALL POSTS.
  8. GUARDRAIL TERMINAL END (RWE03A) TO BE USED ONLY ON TRAILING END OF GUARDRAIL ON DIVIDED HIGHWAY. WASHERS (FWR03) SHALL BE INSTALLED ON THE LAST NINE POSTS.
  9. IDENTIFICATION LETTERS AND NUMBERS ON DRAWINGS REFER TO THE STANDARD DETAIL DRAWINGS SHOWN IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" BY AASHTO-AGC-ARTBA JOINT COMMITTEE.



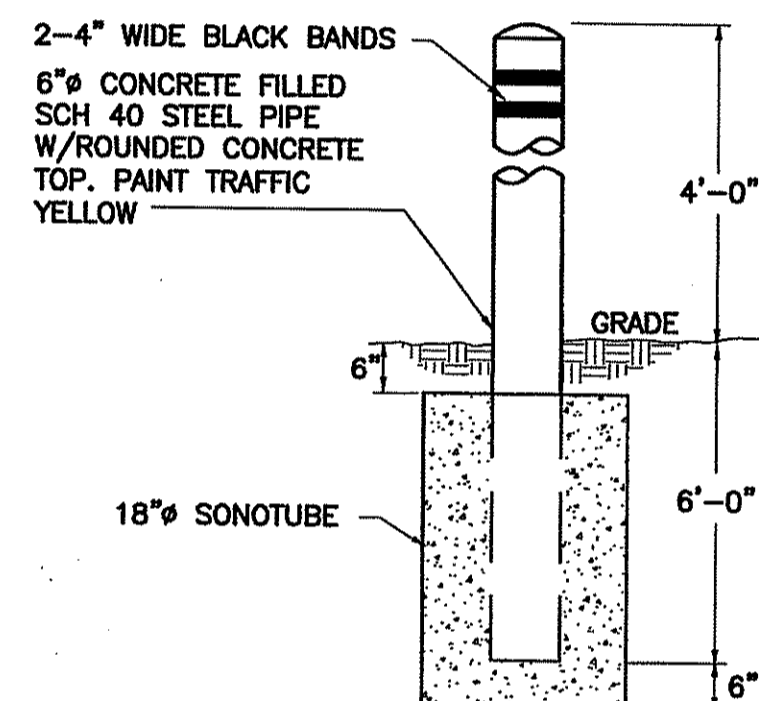
METAL GUARDRAIL DETAIL NTS



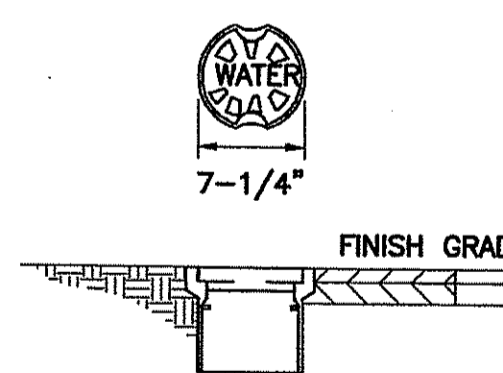
TYPICAL BITUMINOUS SHIPLAP JOINT NTS



THRUST BLOCK DETAIL NTS



BOLLARD NTS



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
1/4" FRESHWATER WETLANDS PROGRAM  
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DATED JUL 22 2011 FILE # 11-0120  
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*Charles A. Hester*



VALVE BOX NTS

Environmental Management  
JUL 31 2011  
Office of Water Resources

DATE	1/11/2011
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PROJECT NO.	120500
SCALE	AS NOTED

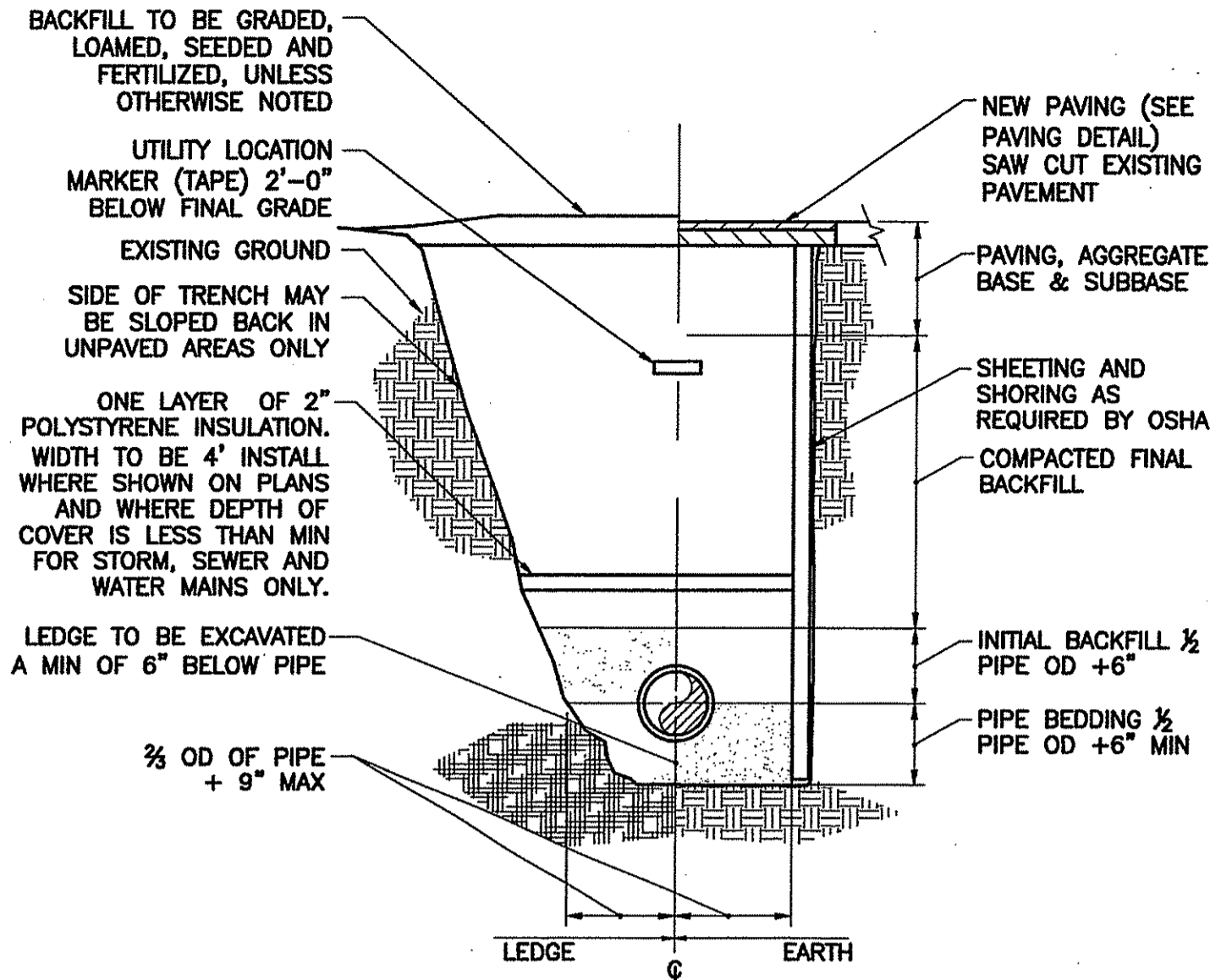
DAVID C. ROYEN  
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WASTEWATER TREATMENT PLANT  
TERTIARY TREATMENT UPGRADE

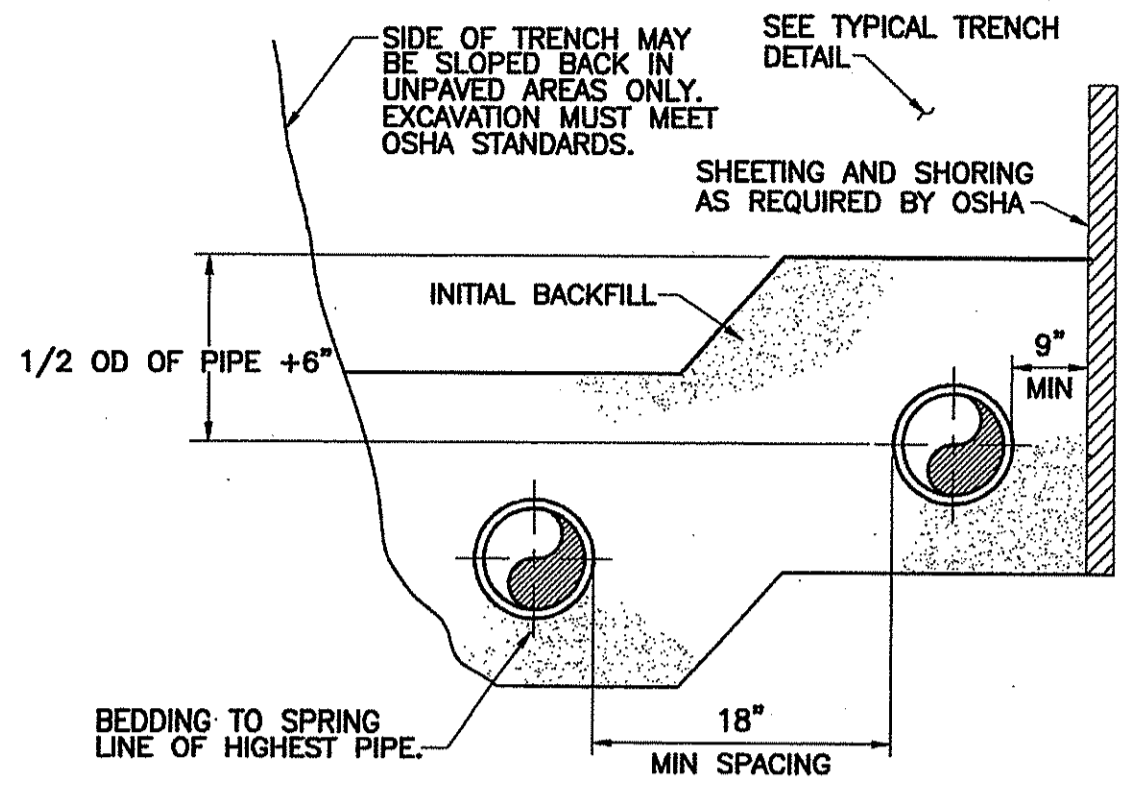
DETAILS 1

DRAWING  
C-4



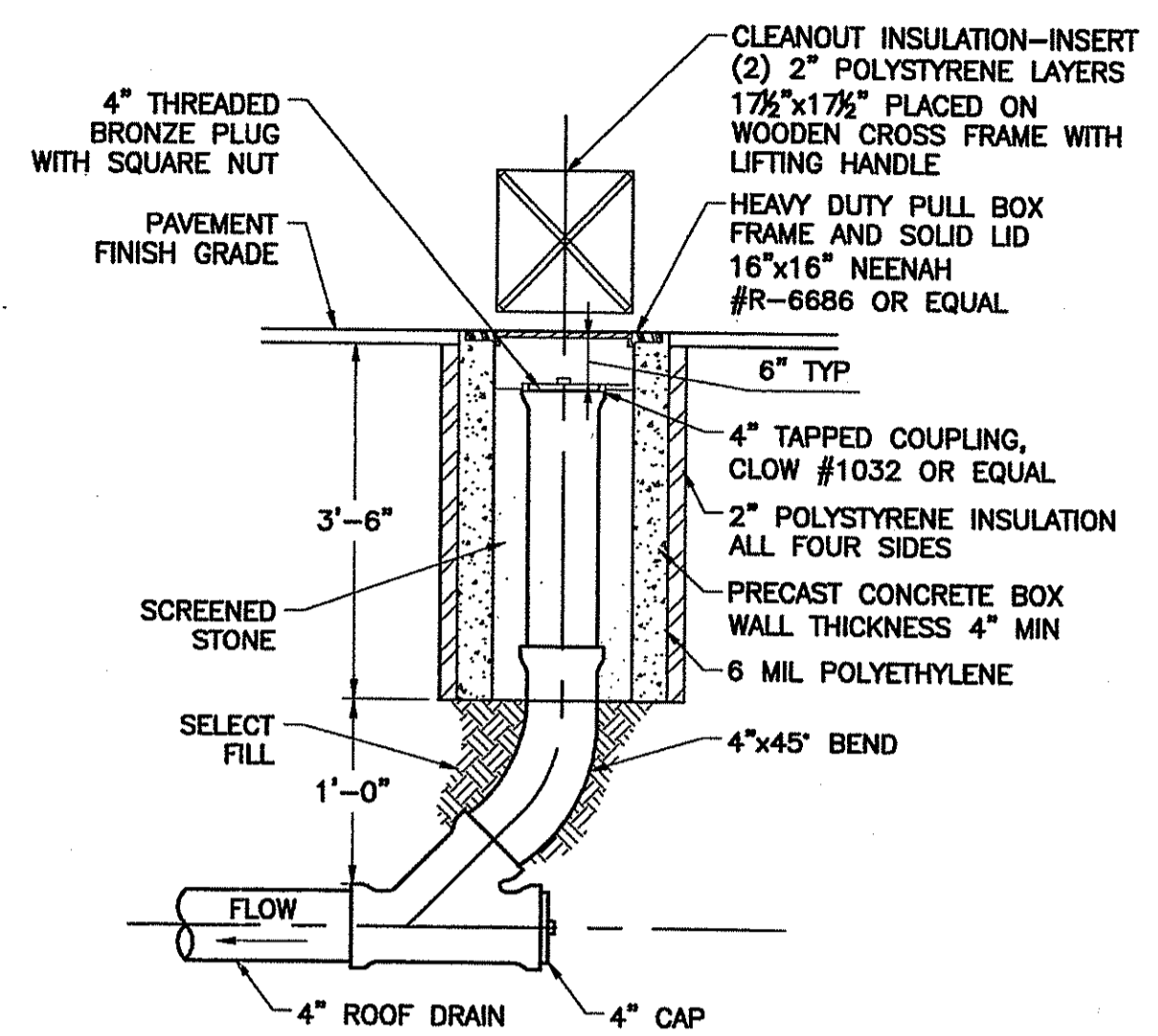
- NOTES:**
1. ALL EXCAVATION MUST MEET OSHA STANDARDS.
  2. INSTALL 3 FOOT LONG IMPERVIOUS MATERIAL DAM IN BEDDING/INITIAL BACKFILL MATERIAL EVERY 100' AND WHERE SHOWN ON PLANS TO PREVENT TRENCH GROUNDWATER FROM BEING CHANNLED ALONG BEDDING/INITIAL BACKFILL.
  3. SEE SPECIFICATIONS FOR BEDDING AND BACKFILL REQUIREMENTS.

**TYPICAL PIPE TRENCH**  
NTS

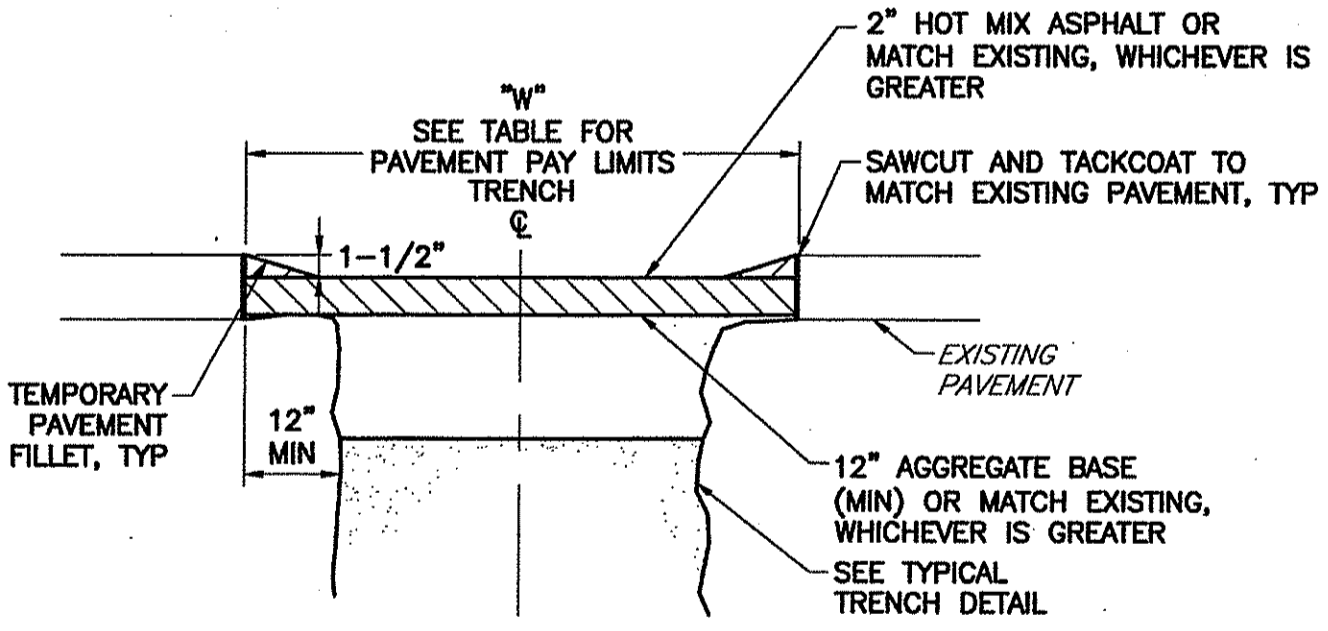


- NOTES:**
1. THIS SECTION IS SHOWN FOR TWO PIPES. IT IS TO BE USED FOR ANY NUMBER OF PIPES.
  2. SEE SPECIFICATIONS FOR BEDDING AND BACKFILL MATERIALS AND COMPACTED BACKFILL REQUIREMENTS.
  3. PIPE SPACING SHOWN IS TYPICAL UNLESS OTHERWISE INDICATED.

**MULTIPLE PIPE TRENCH SECTION**  
NTS



**TYPICAL CLEANOUT**  
NTS

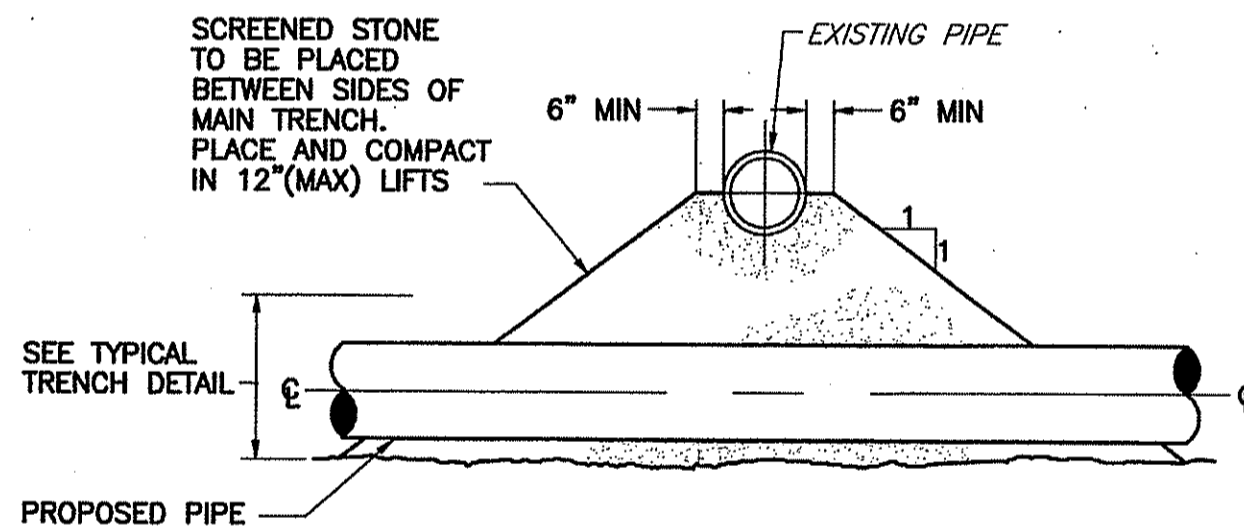


PAVEMENT LIMITS	
PIPE I.D.	"W" (FOR 0' - 10' DEEP)
6" - 15"	7'-0"
16" - 21"	8'-0"

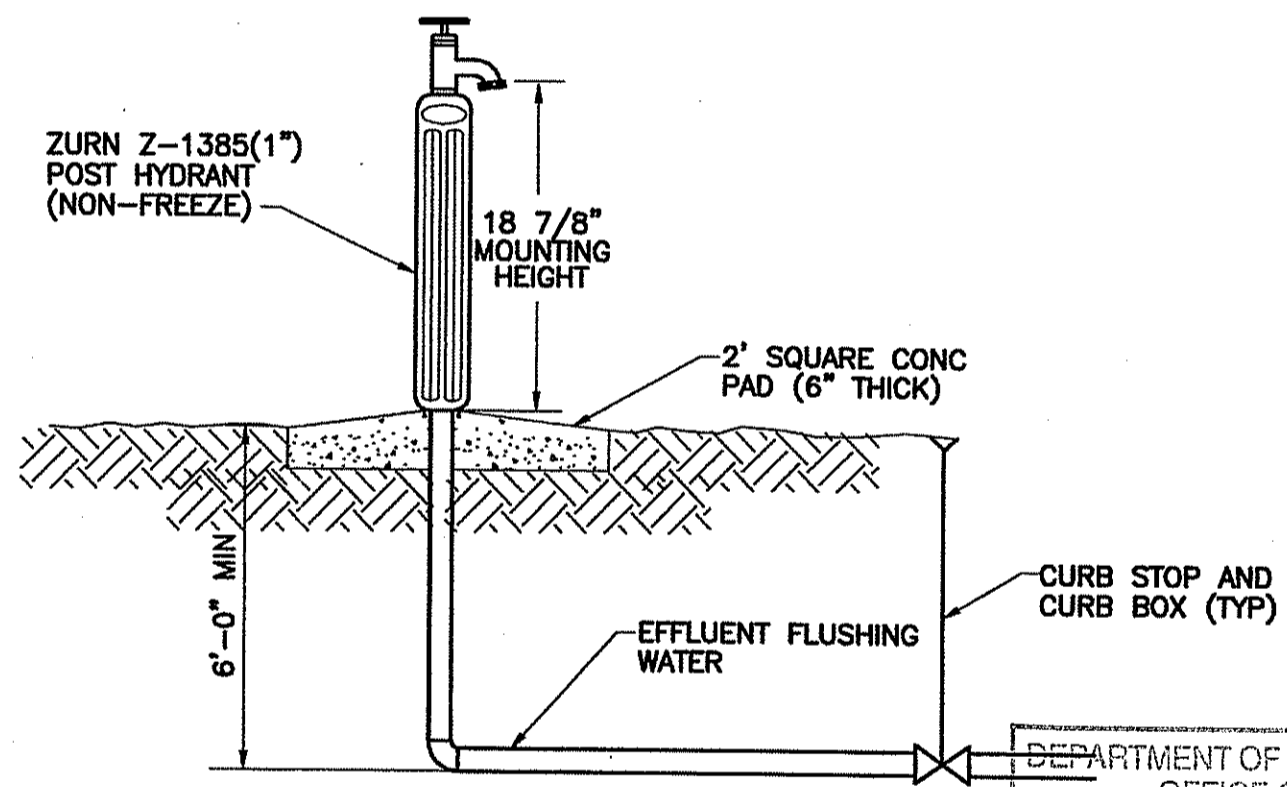
"W" SHALL BE INCREASED BY 1'-0" FOR TRENCHES 10' - 15', AND BY 2'-0" FOR TRENCHES 15' - 20' DEEP.

**INITIAL TRENCH PAVING (WITHOUT OVERLAY)**  
NTS

**NOTE:**  
CONTRACTOR MUST COMPLETELY REMOVE AND DISPOSE OF EXISTING PAVEMENT DURING DEMOLITION STAGE.



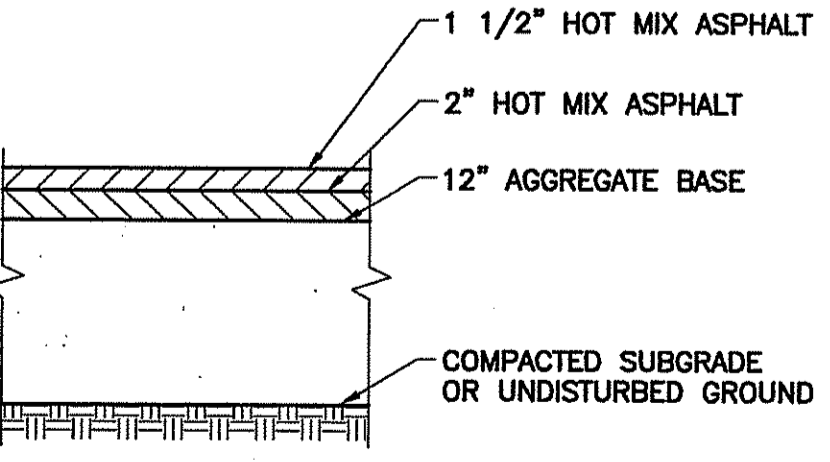
**PIPE CROSSING**  
NTS



- NOTES:**
1. INSULATED AND HEAT TRACED.
  2. HOSE BIBB CONNECTION PROVIDED BY CONTRACTOR SHALL BE CONSISTENT WITH EXISTING PLANT WATER HYDRANTS.

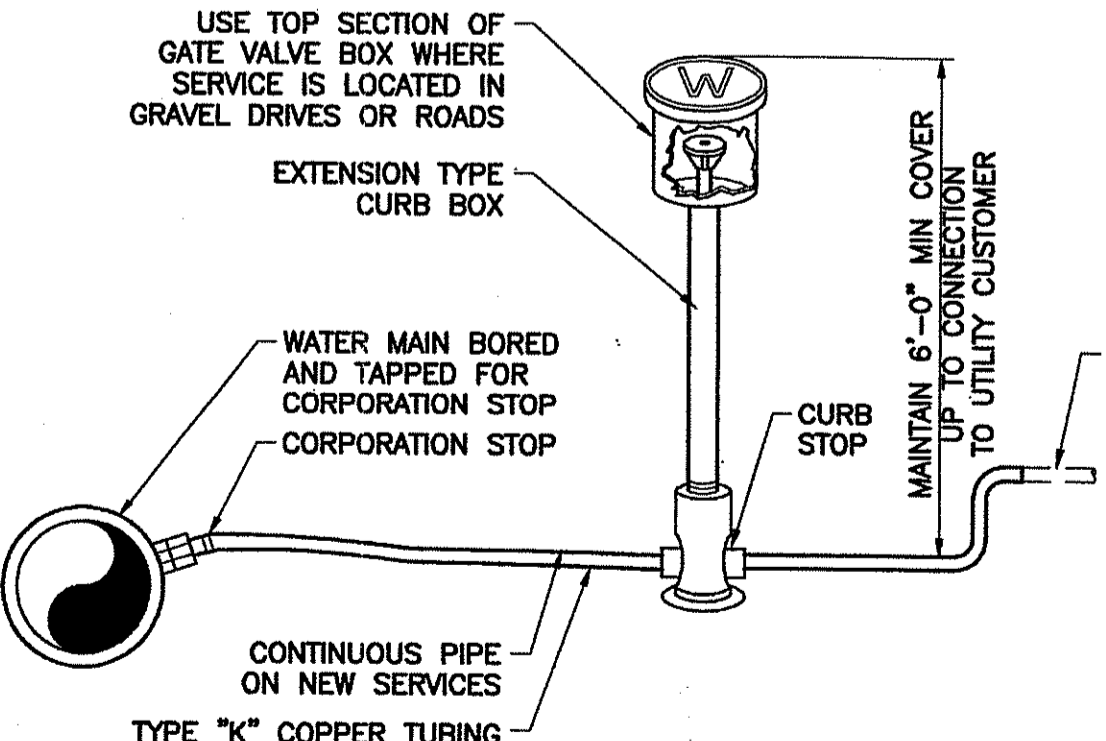
**PLANT WATER HYDRANT**  
NTS

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**TYPICAL PAVEMENT SECTION**  
NTS

- NOTES:**
1. PAVEMENT SECTION ABOVE PUMP ROOM WILL VARY; USE OF FILTER FABRIC AND TACK REQUIRED AT PAVEMENT ABOVE PUMP ROOM.
  2. CONTRACTOR WILL NEED TO EITHER COMPLETELY COLD PLANE AND OVERLAY EXISTING OR REMOVE AND DISPOSE OF PAVEMENT PRIOR TO PLACING FINAL PAVEMENT COURSE. METHOD USED SHALL BE UP TO THE DISCRETION OF THE OWNER.
  3. CONTRACTOR SHALL COMPLETE ALL BASE REPAIRS PRIOR TO FINAL PAVING AS DIRECTED BY THE OWNER.

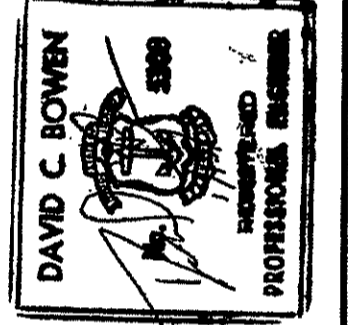


- NOTES:**
1. WATER SERVICE CONNECTIONS TO BE 2" DIAMETER UNLESS OTHERWISE SHOWN ON THE DWGS.
  2. WATER MAINS OR SERVICES WITHIN 5 FEET HORIZONTALLY OR 4 FEET VERTICALLY OF ANY CULVERT OR STORM DRAIN PIPE SHALL HAVE INSULATION.

**WATER SERVICE CONNECTION**  
NTS

*Charles A. Harter*  
Environmental Management  
JUN 30 2010  
Office of Water Resources

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TOWN OF SMITHFIELD, RI  
WASTEWATER TREATMENT PLANT  
TERTIARY TREATMENT UPGRADE

### EROSION AND SEDIMENTATION CONTROL NOTES

THIS PLAN HAS BEEN DEVELOPED AS A STRATEGY TO CONTROL SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROL MATERIALS AND METHODS ARE TO BE PROVIDED IN ACCORDANCE WITH THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, RIDOT STANDARD DETAILS AND DETAILS PROVIDED.

THE PROPOSED LOCATIONS OF SILTATION AND EROSION CONTROL STRUCTURES REQUIRED FOR THE TERTIARY TREATMENT BUILDING ARE SHOWN ON THE GRADING/EROSION CONTROL PLANS. PROVIDE SILT FENCE, STONE CHECK DAMS AND OTHER EROSION CONTROL MEASURES AS REQUIRED TO ADEQUATELY PREVENT SEDIMENT TRANSPORT AS NOTED IN THE BMP.

- FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IN ALL AREAS WITHIN 200 FEET OF RIVERBANK.
- THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE MAINTAINED IN AN UNTREATED OR UNVEGETATED CONDITION FOR THE MINIMUM TIME REQUIRED. IN GENERAL, AREAS TO BE VEGETATED SHALL BE PERMANENTLY STABILIZED WITHIN 15 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL.
- SEDIMENT BARRIERS (SILT FENCE, STONE CHECK DAMS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF UPGRADIENT DRAINAGE AREAS.
- INSTALL SILT FENCE AT TOE OF SLOPES TO FILTER SILT FROM RUNOFF. SEE SILT FENCE DETAIL FOR PROPER INSTALLATION. SILT FENCE WILL REMAIN IN PLACE PER NOTE #5.
- ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED.
- NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2 TO 1) UNLESS STABILIZED WITH PERMANENT EROSION CONTROL MEASURES.
- IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT TO BE COMPLETED 30 DAYS PRIOR TO THE ANTICIPATED DATE OF THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY PERMANENT SEEDING, UNTIL UPGRADIENT AREAS ARE STABILIZED.
- WHEN FEASIBLE, TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINISH GRADED SHALL BE COMPLETED 30 DAYS PRIOR TO THE FIRST KILLING FROST.
- DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO THE SITE AND REGRADED ONTO OPEN AREAS. POST SEEDING SEDIMENT, IF ANY, WILL BE DISPOSED OF IN AN ACCEPTABLE MANNER.
- REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND REVEGETATED AS FOLLOWS:
  - A MINIMUM OF FOUR (4) INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
  - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT DEEMED FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SQ. FT.).
  - FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEED WITH A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEED WITH A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYE GRASS. SEEDING RATE IS 3.0 LBS PER 1000 SQ. FT. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED.
  - HAY MULCH AT THE RATE OF 70-90 LBS PER 1000 SQUARE FEET OR A HYDRO-APPLICATION OF CELLULOSE FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER WILL BE USED ON HAY MULCH FOR WIND CONTROL.
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE WORK AREA IS STABILIZED.
- WETLANDS (EXCEPTING THOSE WHICH ARE TO BE FILLED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS) WILL BE PROTECTED WITH SILT FENCE INSTALLED AT THE EDGE OF THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE.
- IN GENERAL, AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS SHALL HAVE A MAXIMUM PERIOD OF EXPOSURE OF NOT MORE THAN 15 DAYS.
- PERMANENT SEEDING SHALL BE BETWEEN APRIL 1ST THROUGH JUNE 15TH AND AUGUST 15TH THROUGH OCTOBER 15TH

### EROSION CONTROL DURING WINTER CONSTRUCTION

- WINTER CONSTRUCTION PERIOD DEFINED: OCTOBER 15TH THROUGH APRIL 1.
- WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
- EXPOSED AREA SHOULD BE LIMITED TO THAT THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY PRECIPITATION EVENT.
- AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
- BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE-FREEZING TEMPERATURES, THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE 200 - 300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT EXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
- BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST ALL MULCH SHALL BE EITHER WOOD CELLULOSE FIBER OR BE ANCHORED WITH MULCH NETTING OR CHEMICAL TACK.
  - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3%, FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
  - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST, THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
- AFTER NOVEMBER 1ST THE CONTRACTOR SHALL APPLY DORMANT SEEDING OR MULCH AND ANCHORING ON ALL BARE EARTH AT THE END OF EACH WORKING DAY.
- DURING WINTER CONSTRUCTION PERIODS ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

#### MULCH ANCHORING

ANCHOR MULCH WITH: MULCH NETTING (AS PER MANUFACTURER); ASPHALT EMULSION (0.05 GALLONS PER SQ. YD.); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); OR BE WOOD CELLULOSE FIBER (2000 LBS./ACRE). WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

#### ADDITIONAL TEMPORARY SEED MIXTURE (OR PERIODS LESS THAN 12 MONTHS) DATES SEED RATE

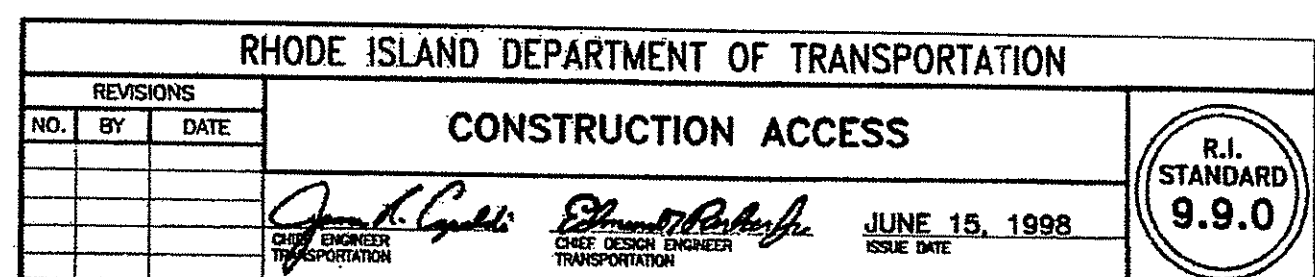
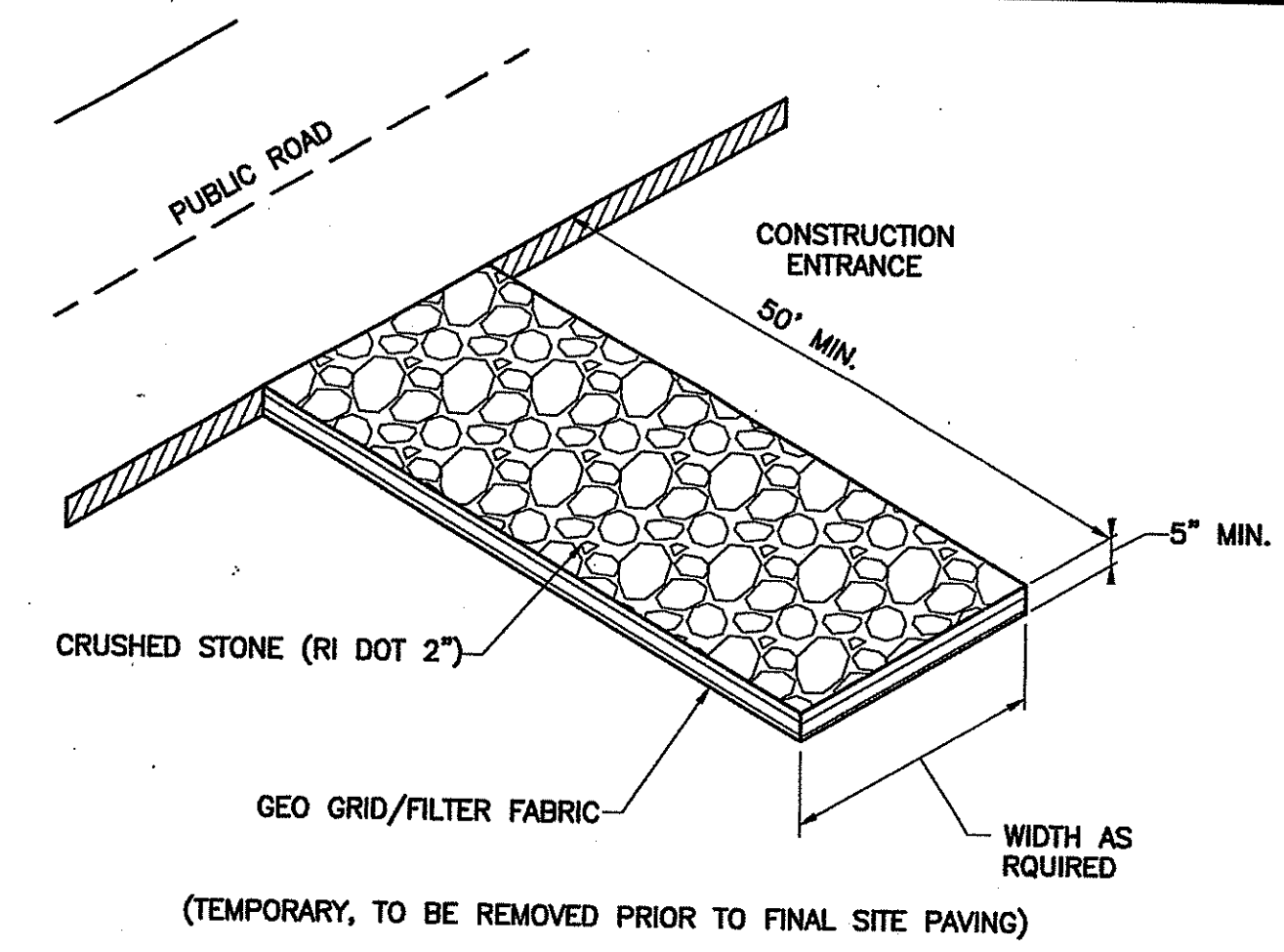
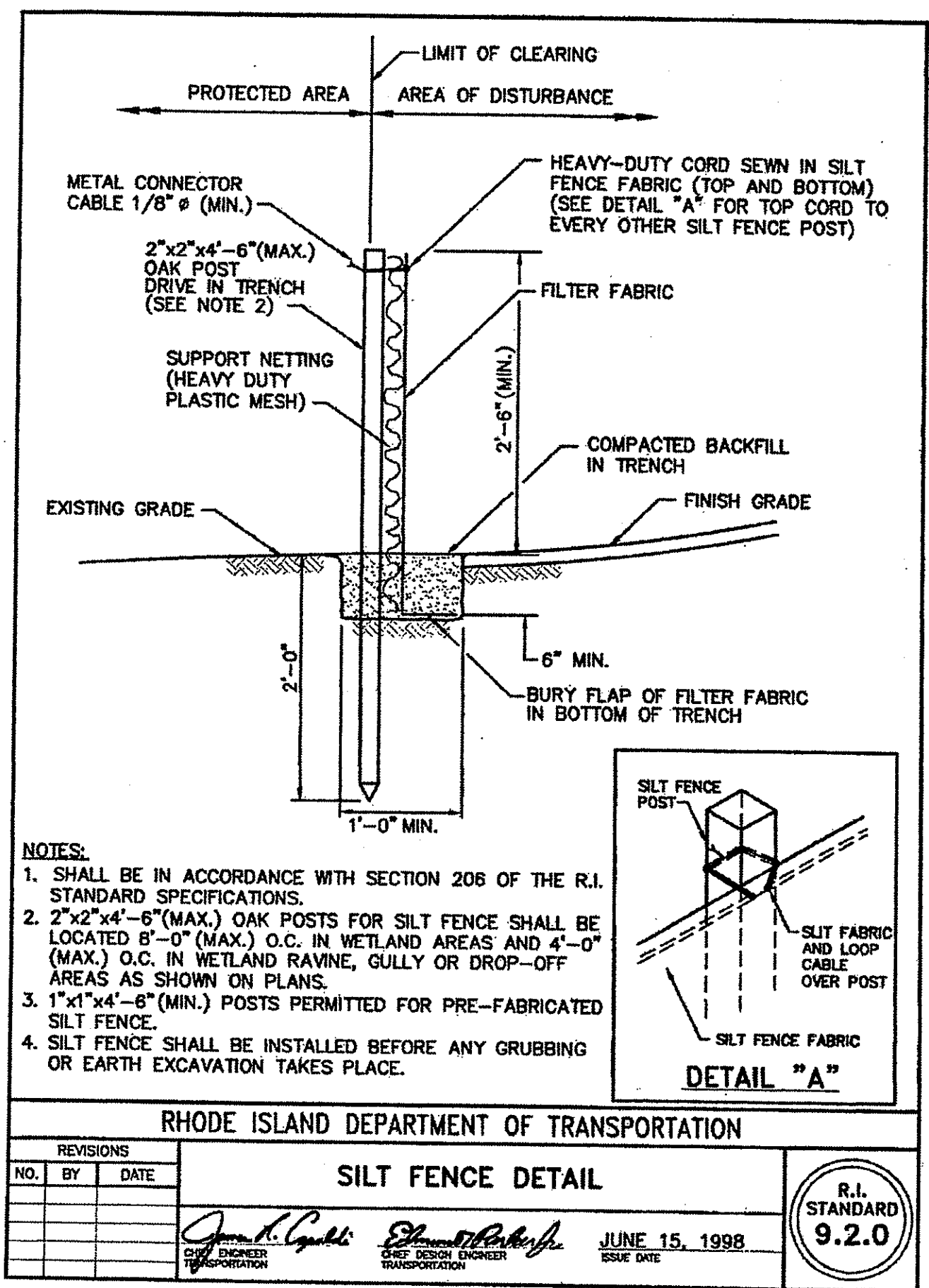
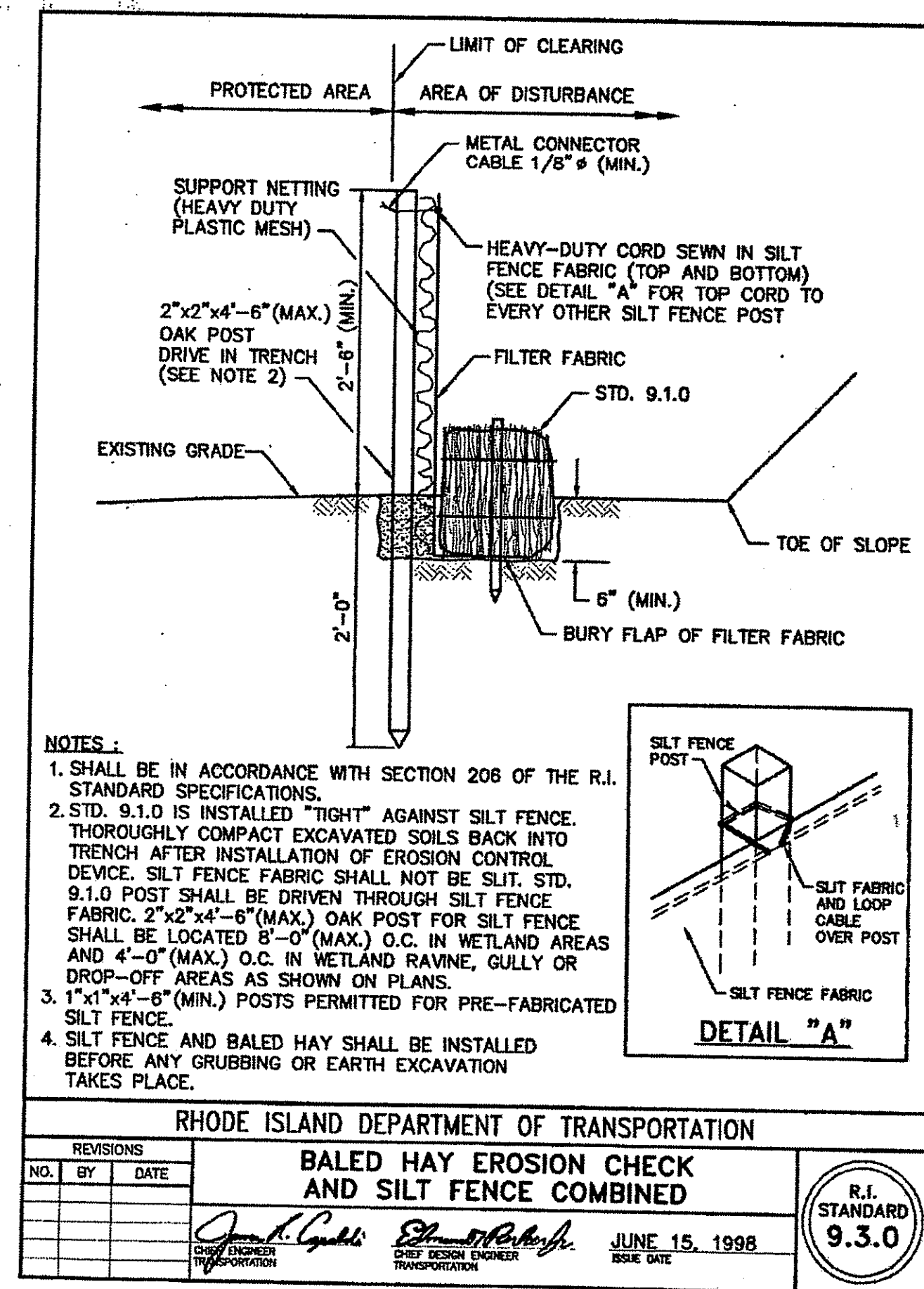
DATES	SEED	RATE
3/1 - 6/15	ANNUAL RYE GRASS OR PERENNIAL RYE GRASS	60 LBS/ACRE
8/15 - 10/1		
8/15 - 10/1	WINTER RYE	100 LBS/ACRE
5/15 - 8/15	MILLET OR SUDAN GRASS	40 LBS/ACRE

\*SEED RATE ONLY

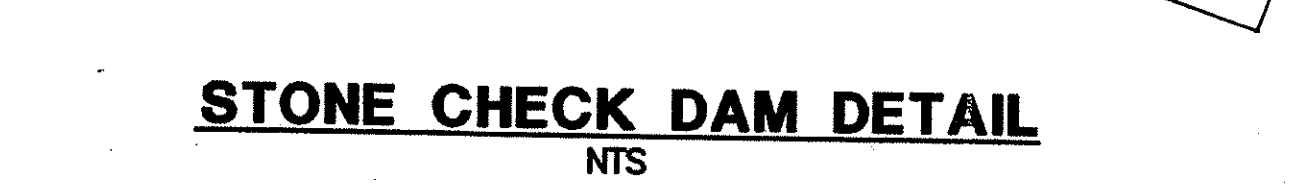
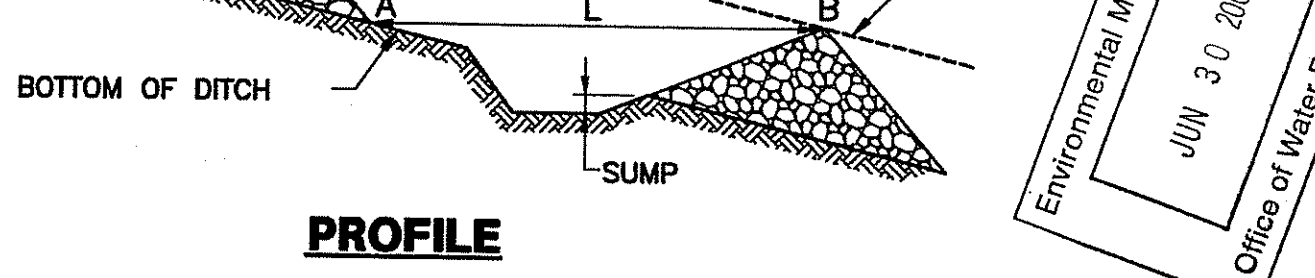
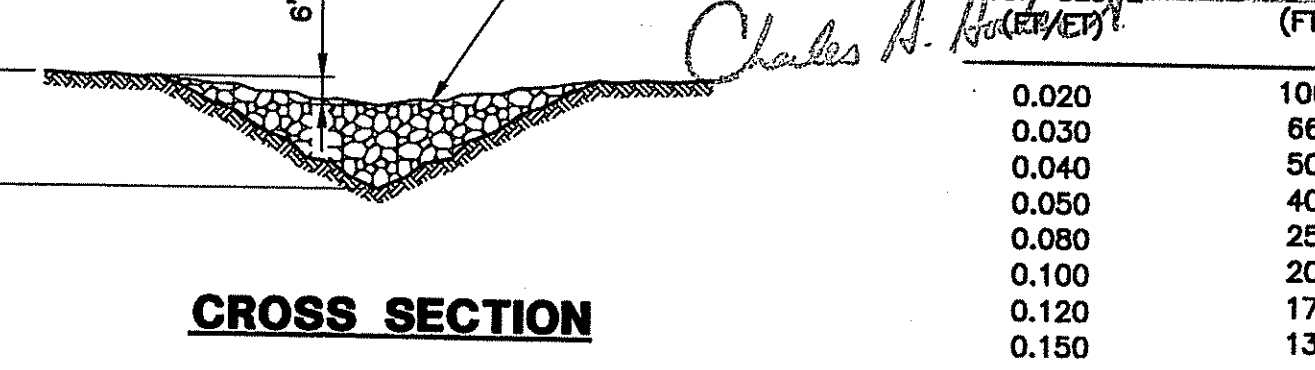
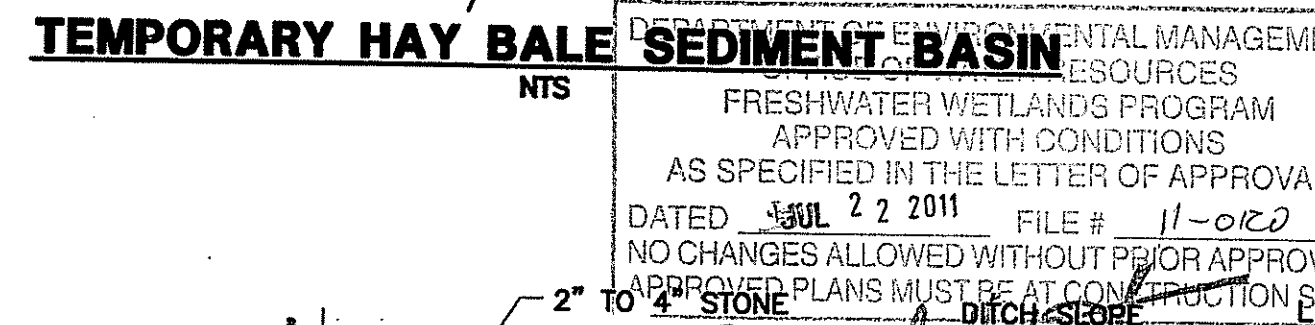
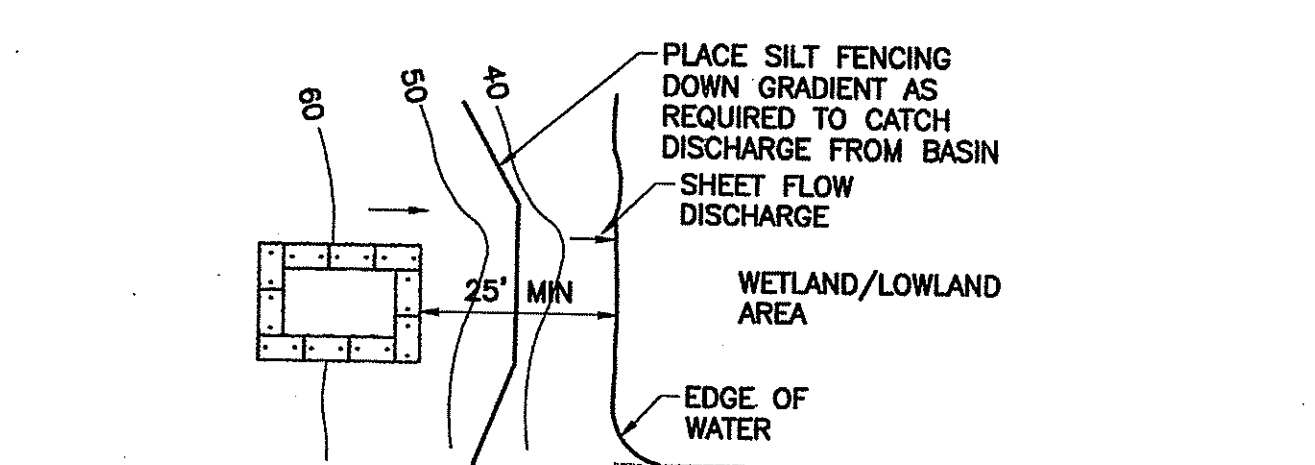
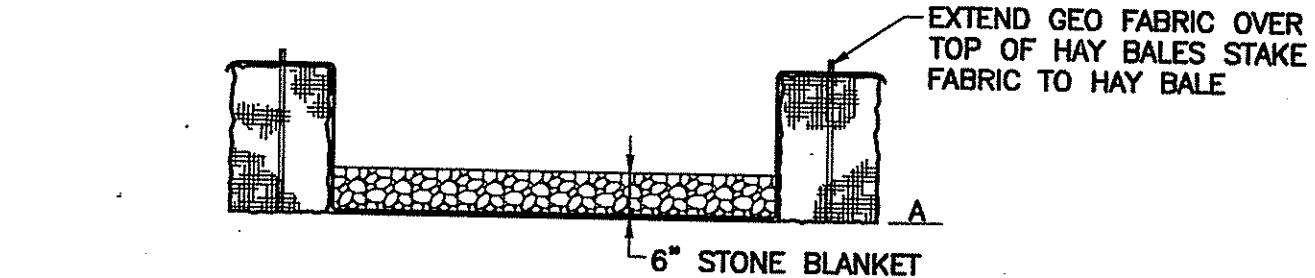
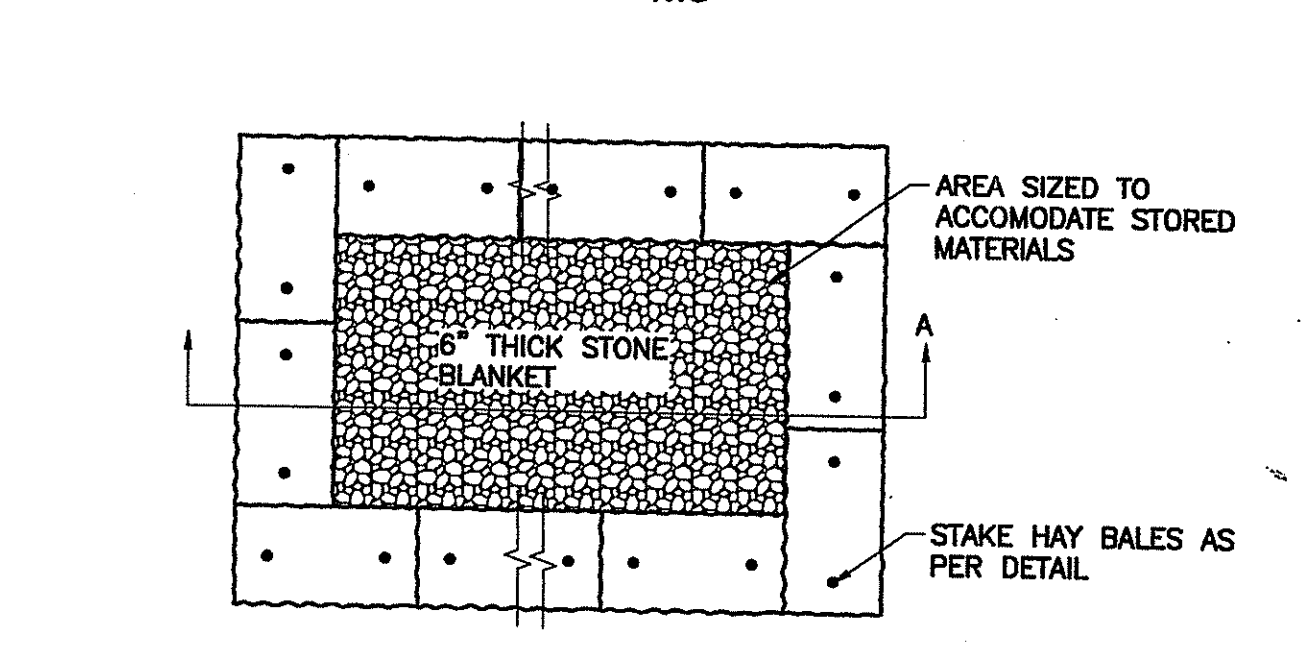
#### MULCH AND MULCH ANCHORING

LOCATION	MULCH	RATE (1000 S.F.)
PROTECTED AREA	STRAW OR HAY *	100 POUNDS
WINDY AREAS	STRAW OR HAY (ANCHORED) *	100 POUNDS
MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES (GREATER THAN 3:1)	JUTE MESH,	AS REQUIRED
	EXCELSIOR MAT OR EQUIV.	AS REQUIRED

\* A HYDRO-APPLICATION OF CELLULOSE FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SHALL BE USED ON HAY MULCH FOR WIND CONTROL.



### STABILIZED CONSTRUCTION ENTRANCE



### STONE CHECK DAM DETAIL

NO. \_\_\_\_\_ DATE \_\_\_\_\_  
 SUBMISSIONS/REVISIONS \_\_\_\_\_  
 ORDER OF APPROVAL FOR REVIEW ONLY - NOT FOR CONSTRUCTION

DAWN R. RYB  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 BOOK NO. \_\_\_\_\_  
 PROJECT NO. 12050C  
 SCALE \_\_\_\_\_

DAVID C. BOWEN  
 REGISTERED PROFESSIONAL ENGINEER

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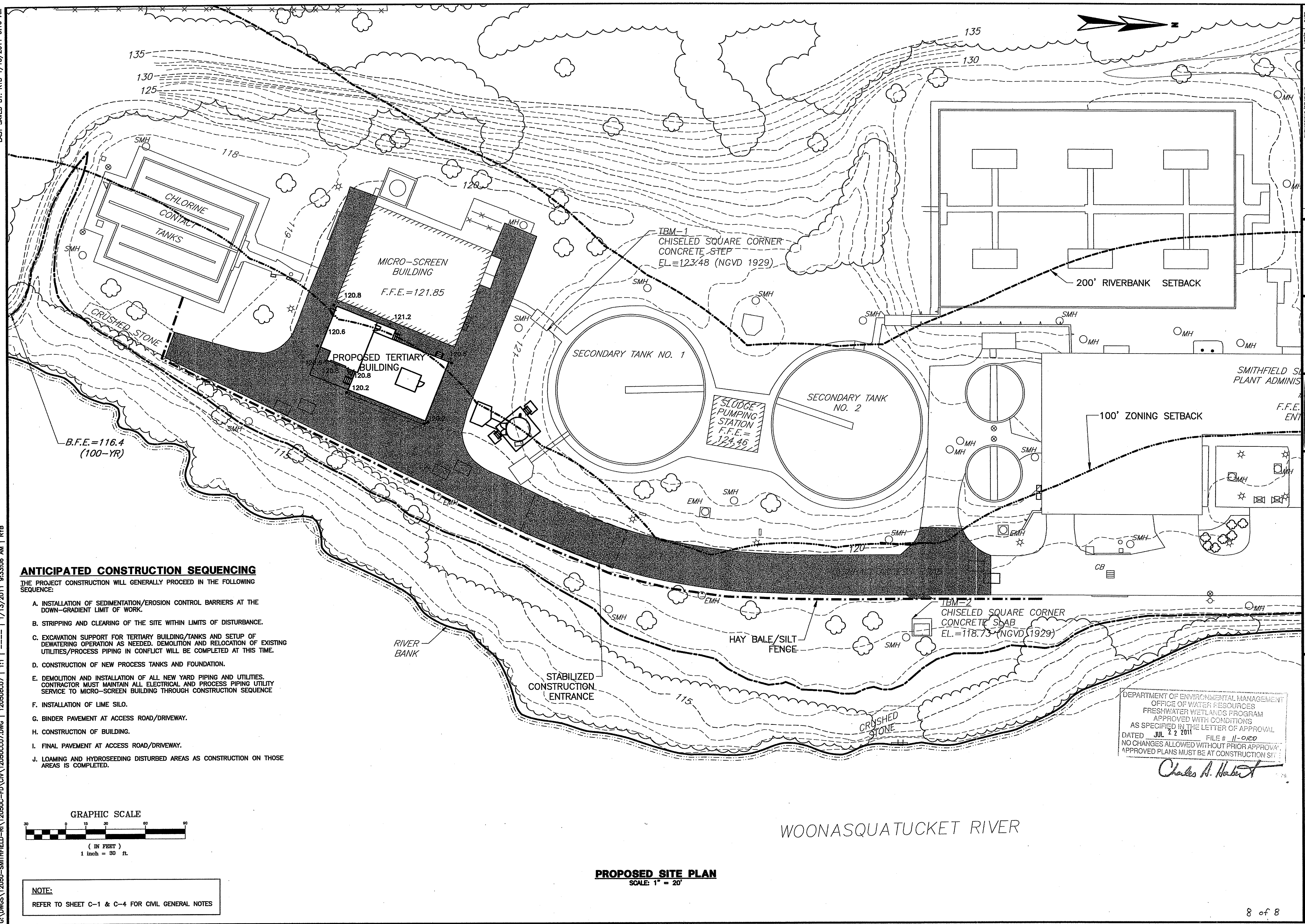
TOWN OF SMITHFIELD, RI  
 WASTEWATER TREATMENT PLANT  
 TERTIARY TREATMENT UPGRADE

EROSION AND SEDIMENTATION CONTROL  
 NOTES AND DETAILS

DRAWING C-6

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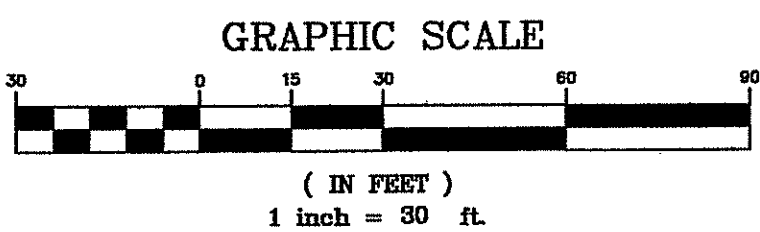
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**ANTICIPATED CONSTRUCTION SEQUENCING**

THE PROJECT CONSTRUCTION WILL GENERALLY PROCEED IN THE FOLLOWING SEQUENCE:

- A. INSTALLATION OF SEDIMENTATION/EROSION CONTROL BARRIERS AT THE DOWN-GRADIENT LIMIT OF WORK.
- B. STRIPPING AND CLEARING OF THE SITE WITHIN LIMITS OF DISTURBANCE.
- C. EXCAVATION SUPPORT FOR TERTIARY BUILDING/TANKS AND SETUP OF DEWATERING OPERATION AS NEEDED. DEMOLITION AND RELOCATION OF EXISTING UTILITIES/PROCESS PIPING IN CONFLICT WILL BE COMPLETED AT THIS TIME.
- D. CONSTRUCTION OF NEW PROCESS TANKS AND FOUNDATION.
- E. DEMOLITION AND INSTALLATION OF ALL NEW YARD PIPING AND UTILITIES. CONTRACTOR MUST MAINTAIN ALL ELECTRICAL AND PROCESS PIPING UTILITY SERVICE TO MICRO-SCREEN BUILDING THROUGH CONSTRUCTION SEQUENCE.
- F. INSTALLATION OF LIME SILO.
- G. BINDER PAVEMENT AT ACCESS ROAD/DRIVEWAY.
- H. CONSTRUCTION OF BUILDING.
- I. FINAL PAVEMENT AT ACCESS ROAD/DRIVEWAY.
- J. LOAMING AND HYDROSEEDING DISTURBED AREAS AS CONSTRUCTION ON THOSE AREAS IS COMPLETED.



**NOTE:**  
REFER TO SHEET C-1 & C-4 FOR CIVIL GENERAL NOTES

**PROPOSED SITE PLAN**  
SCALE: 1" = 20'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED JUL 22 2011 FILE # 11-020  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Herbert*

NO.	SUBMISSION/REVISIONS	APP'D	DATE
1	ISSUED FOR APPROVAL FOR REVIEW ONLY - NOT FOR CONSTRUCTION	DOB	01/11

DRAWN BY	CHECKED BY
DATE	DATE
APPROVED BY	DATE
BOOK NO.	PROJECT NO.
SCALE	AS NOTED

DAVID C. BOWEN  
REGISTERED PROFESSIONAL ENGINEER

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TERTIARY TREATMENT UPGRADE

PERMITTING AND EROSION CONTROL PLAN

DRAWING  
C-7