

**LOCATION MAP**  
NOT TO SCALE

# Arthur Street Cluster Development

## RIDEM FRESHWATER WETLANDS APPLICATION

### 1-17-08 RESUBMISSION

### A.P. 8 LOTS 528-537, 539-549

### ARTHUR STREET

### WEST WARWICK, RHODE ISLAND

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED MAY 15 2008 FILE # 05-0598  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Charles H. Harker*

JAN 18 2008

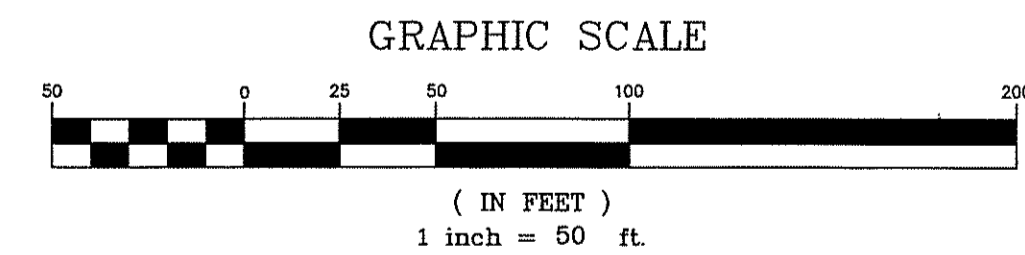
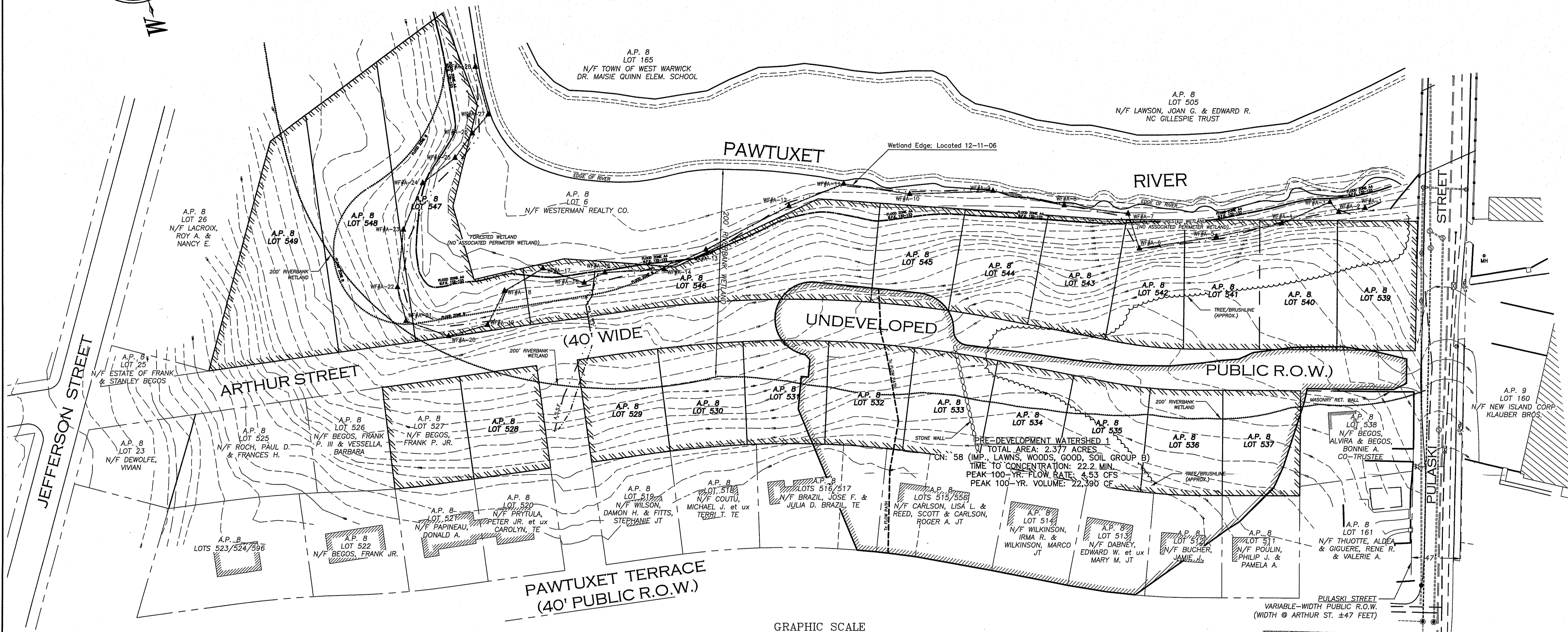
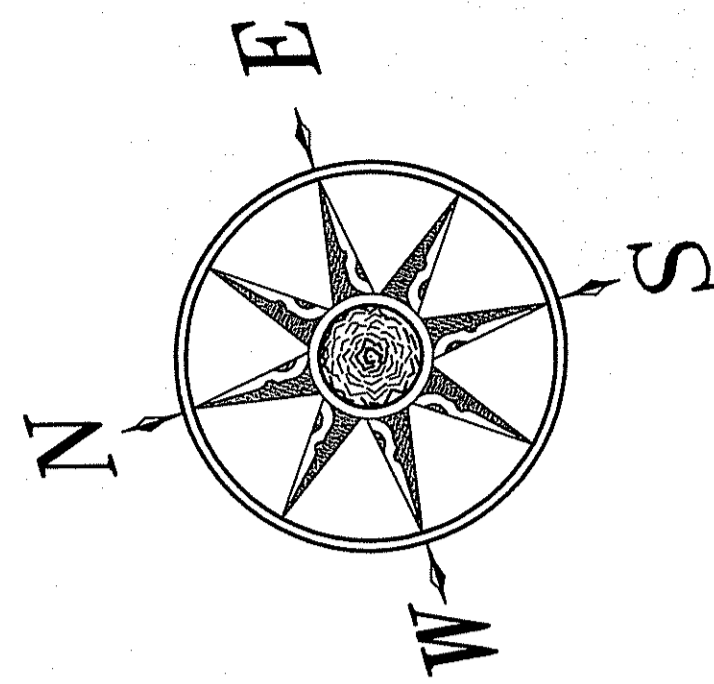
**DRAWING INDEX:**

SHEET NO.	DRAWING
-	COVER SHEET
1	EXISTING CONDITIONS & WATERSHEDS
2	UNSUITABLE LAND AREAS
3	PROPOSED SUBDIVISION OF LAND
4	PROPOSED GRADING & UTILITIES PLAN
4A	POST-DEVELOPMENT WATERSHEDS
5	ROAD & BASIN DETAILS
6	DRAINAGE DETAILS
7	SEWER DETAILS
8	WATER DETAILS
9	EROSION CONTROL DETAILS & NOTES

**OWNER/APPLICANT:**  
SHORELINE PROPERTIES  
612 GREENWICH AVENUE  
WARWICK, RI 02889  
PHONE: (401) 480-2502

**PROJECT ENGINEER:**  
CARRIGAN ENGINEERING, INC.  
CIVIL AND ENVIRONMENTAL ENGINEERING  
140 POINT JUDITH ROAD  
UNIT #3 MARINER SQUARE  
NARRAGANSETT, RI 02882  
PHONE: (401) 789-6865  
FAX: (401) 789-2053

Z:\projects\Drawings-R14\2003\030311\Drawing\Arthur Street Condos V2 - 9-12-07.dwg 9/24/2007 10:39:21 AM EDT



**LEGEND**

INV	INVERT	☐	TELEPHONE BOX
GB	GRANITE BOUND	○	HAND HOLE
PVMT.	PAVEMENT	⊕	GUY WIRE
RCP	REINFORCED CONCRETE PIPE	⊕	TELEPHONE MANHOLE
PVC	POLYVINYL CHLORIDE PIPE	—o/w—	EXISTING OVERHEAD WIRES
W/	WITH	—ugu—	EXISTING UNDERGROUND UTILITIES
CC	CONCRETE CURB	—fm—	EXISTING FORCE MAIN
T.F.	TOP FRAME	—w—	EXISTING WATER LINE
TYP	TYPICAL	—d—	EXISTING STORM DRAINAGE PIPE
+	MORE OR LESS	—t—	EXISTING TELEPHONE LINE
⊕	UTILITY POLE	---	EXISTING CONTOUR
⊙	LIGHT POLE		
⊙	SEWER MANHOLE		
⊙	STORM DRAIN MANHOLE		
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⊙	WATER GATE		
⊙	GAS GATE		
⊙	HYDRANT		

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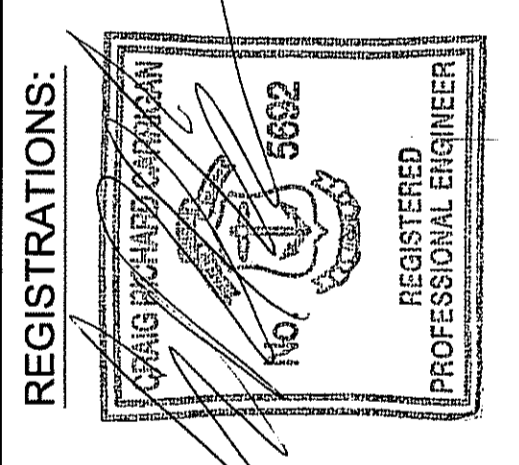
**GENERAL NOTES:**

- TOPOGRAPHIC AND LOCATION INFORMATION FROM AERIAL PHOTOGRAPHY SUPPLEMENTED WITH FIELD LOCATION BY BOYER & ASSOCIATES, INC. DATUM IS MEAN SEA LEVEL.
- WETLAND FLAGGING BY NATURAL RESOURCE SERVICES, INC. LOCATION BY BOYER & ASSOCIATES.
- ZONING:** R-7.5  
 MIN. 2-FAMILY LOT AREA: 10,000 S.F. (5,000 S.F./SINGLE UNIT)  
 FRONT, SIDE & REAR SETBACKS: 20 FT.
- ENTIRE SITE IS UNDERLAIN BY CANTON/CHARLTON (ChD) SOILS, WHICH BELONG TO HYDROLOGIC SOIL GROUP "B."
- SITE FALLS INTO THE FOLLOWING FLOOD ZONES:  
 - ZONE A4 (B.F.E. 132-133 M.S.L.)  
 - ZONE B (PORTION OF NORTH END OF SITE)  
 - ZONE C (REMAINDER OF SITE)  
 ALL PROPOSED AREAS OF DEVELOPMENT FALL WITHIN FLOOD ZONE C;  
 THERE WILL BE NO PROPOSED DEVELOPMENT WITHIN FLOOD ZONE A4 OR B.  
 (SOURCE: F.I.R.M. COMMUNITY PANEL #440007-0002 B, REV. APRIL 15, 1986)

**ARTHUR STREET CLUSTER DEVELOPMENT**  
**EXISTING CONDITIONS**  
 ASSESSOR'S PLAT 8 - VARIOUS LOTS  
 ARTHUR STREET & PULASKI STREET  
 WEST WARWICK, RHODE ISLAND  
 PREPARED FOR: SHORELINE PROPERTIES  
 SCALE: 1"=50' DATE: 09/28/05 SHEET 1 OF 9

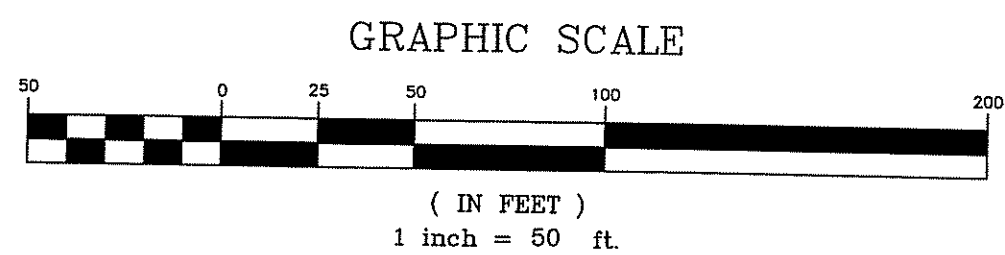
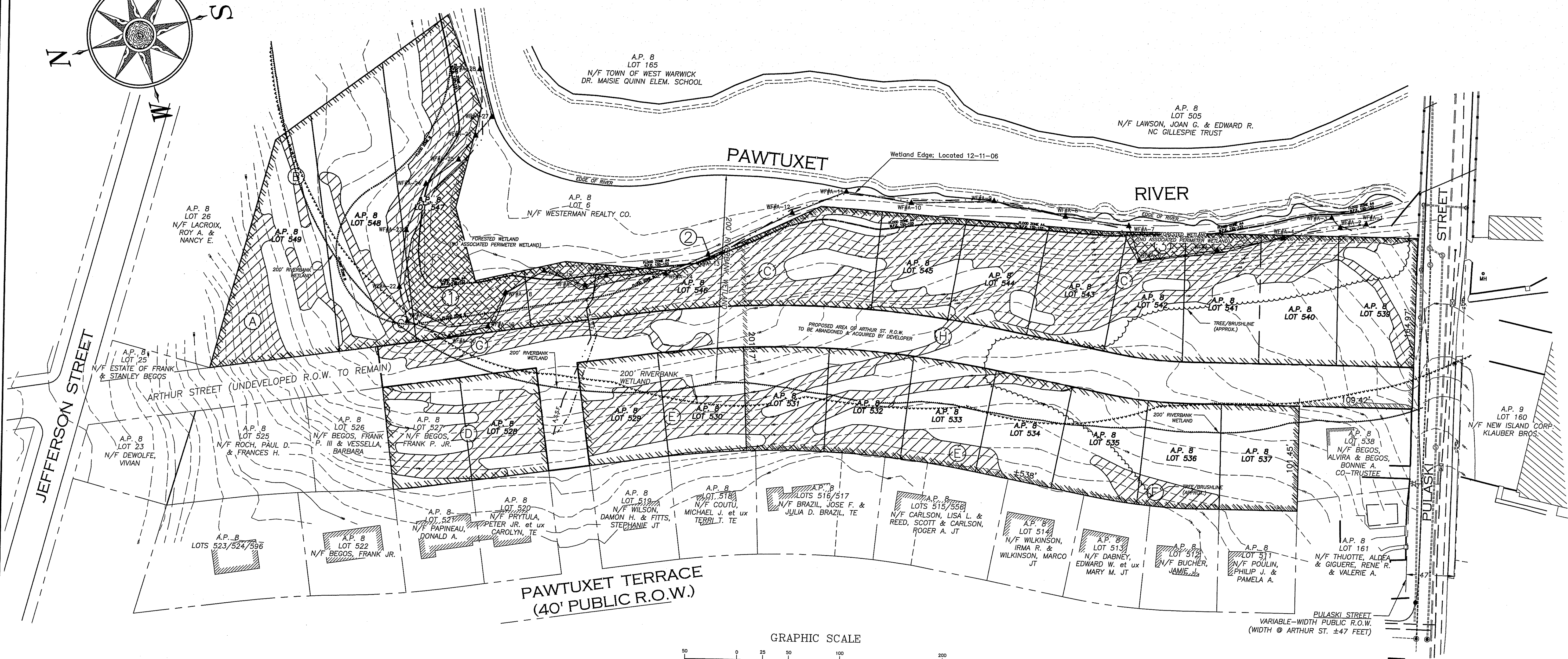
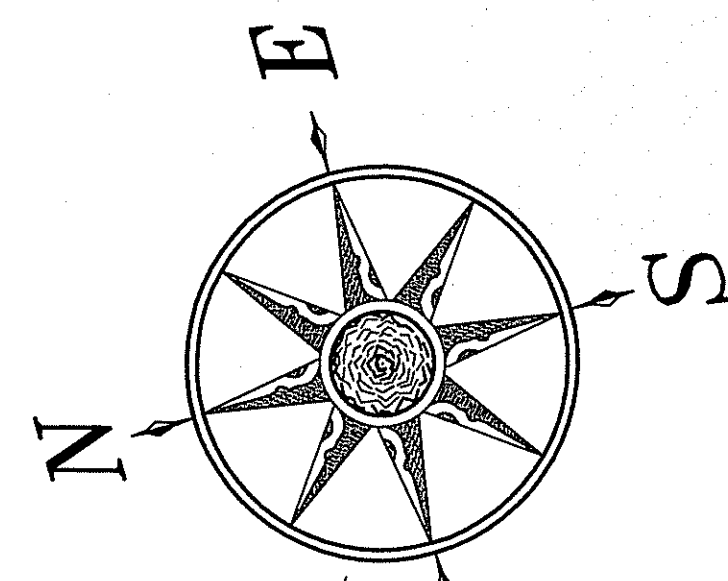
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NO.	DATE	DESCRIPTION	BY
3	9-24-07	DEM CONSENT AGREEMENT	MZ
2	12-20-06	WETLAND/RIVER EDGE MOD.	MZ
1	8-7-06	RIDEM WETLANDS COMMENTS	MZ



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 140 POINT JUDITH ROAD  
 UNIT #3 MARINER SQUARE  
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 PHONE: (401) 789-6865  
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JOB NO. 030311



**LEGEND**

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GB	GRANITE BOUND	○	HAND HOLE
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W/	WITH	ugu	EXISTING UNDERGROUND UTILITIES
CC	CONCRETE CURB	fm	EXISTING FORCE MAIN
T.F.	TOP FRAME	w	EXISTING WATER LINE
TYP	TYPICAL	d	EXISTING STORM DRAINAGE PIPE
+	MORE OR LESS	t	EXISTING TELEPHONE LINE
⊙	UTILITY POLE	---	EXISTING CONTOUR
⊙	LIGHT POLE	---	PERIMETER OF EXISTING LOTS
⊙	SEWER MANHOLE	⊙	UNSUITABLE LAND - EXCESSIVE SLOPES
⊙	STORM DRAIN MANHOLE	⊙	UNSUITABLE LAND - FLAGGED WETLANDS
⊙	CATCH BASIN		
⊙	WATER GATE		
⊙	GAS GATE		
⊙	HYDRANT		

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**UNSUITABLE LAND CALCULATIONS**

**FLAGGED WETLANDS**  
 AREA 1 = 10,183± S.F.  
 AREA 2 = 52± S.F.  
 AREA 3 = 2,697± S.F.  
 SUBTOTAL = 12,932± S.F.

**EXCESSIVE SLOPES (>20%)**  
 AREA A = 5,682± S.F.  
 AREA B = 782± S.F.  
 AREA C = 69,398± S.F.  
 AREA D = 1,589± S.F.  
 AREA E = 19,864± S.F.  
 AREA F = 2,710± S.F.  
 AREA G = 5,843± S.F.  
 AREA H = 582± S.F.  
 SUBTOTAL = 106,450± S.F.

TOTAL AREA UNSUITABLE LAND ZONE = 119,382± S.F.

GROSS AREA = 270,092± S.F.  
 UNSUITABLE AREA = 119,382 S.F.  
 (270,092 - 119,382) = 150,710/5,000 S.F./UNIT = 30.14 UNITS

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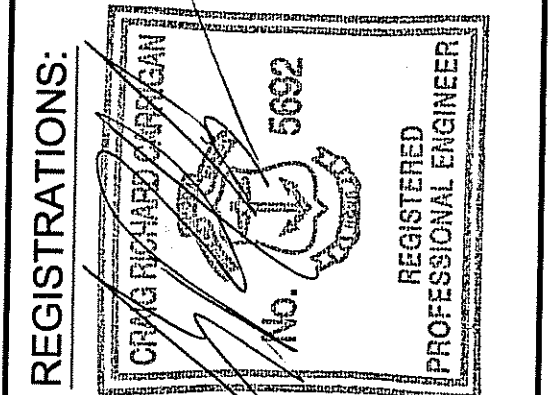
*Charles A. Harte*

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 UNSUITABLE LAND AREAS  
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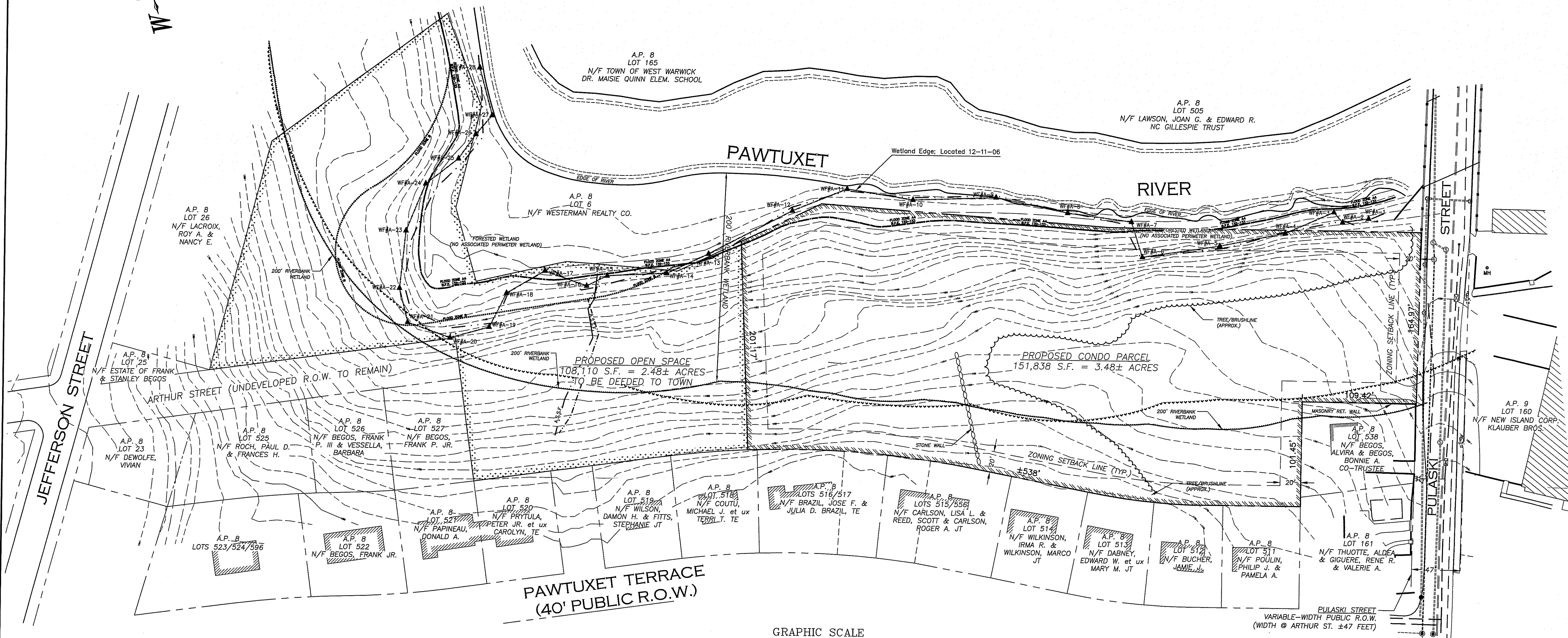
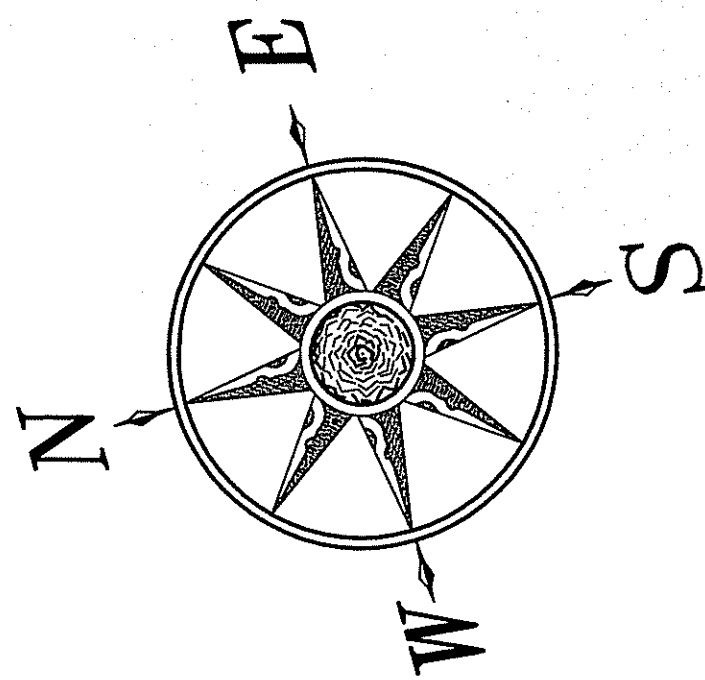
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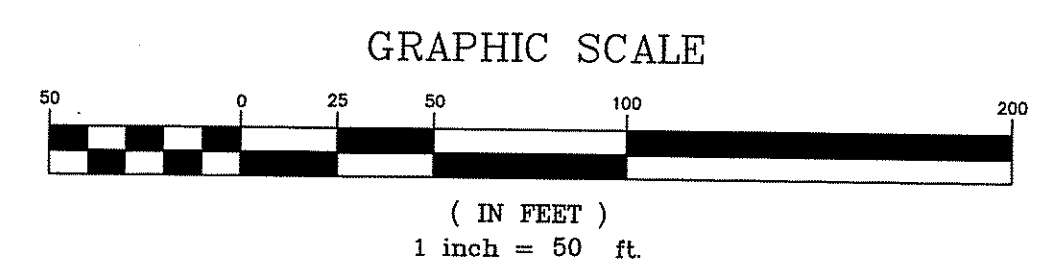
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PROPOSED OPEN SPACE  
108,110 S.F. = 2.48± ACRES  
TO BE DEEDED TO TOWN

PROPOSED CONDO PARCEL  
151,838 S.F. = 3.48± ACRES

PAWTUXET TERRACE  
(40' PUBLIC R.O.W.)



**LEGEND**

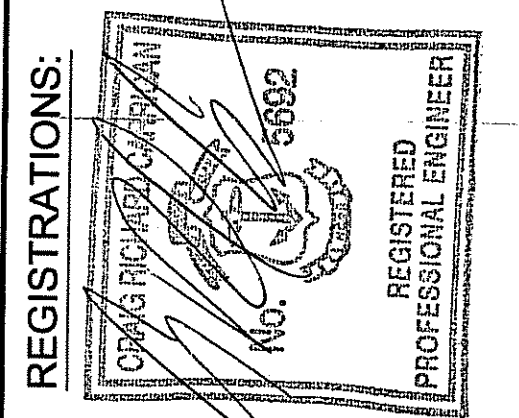
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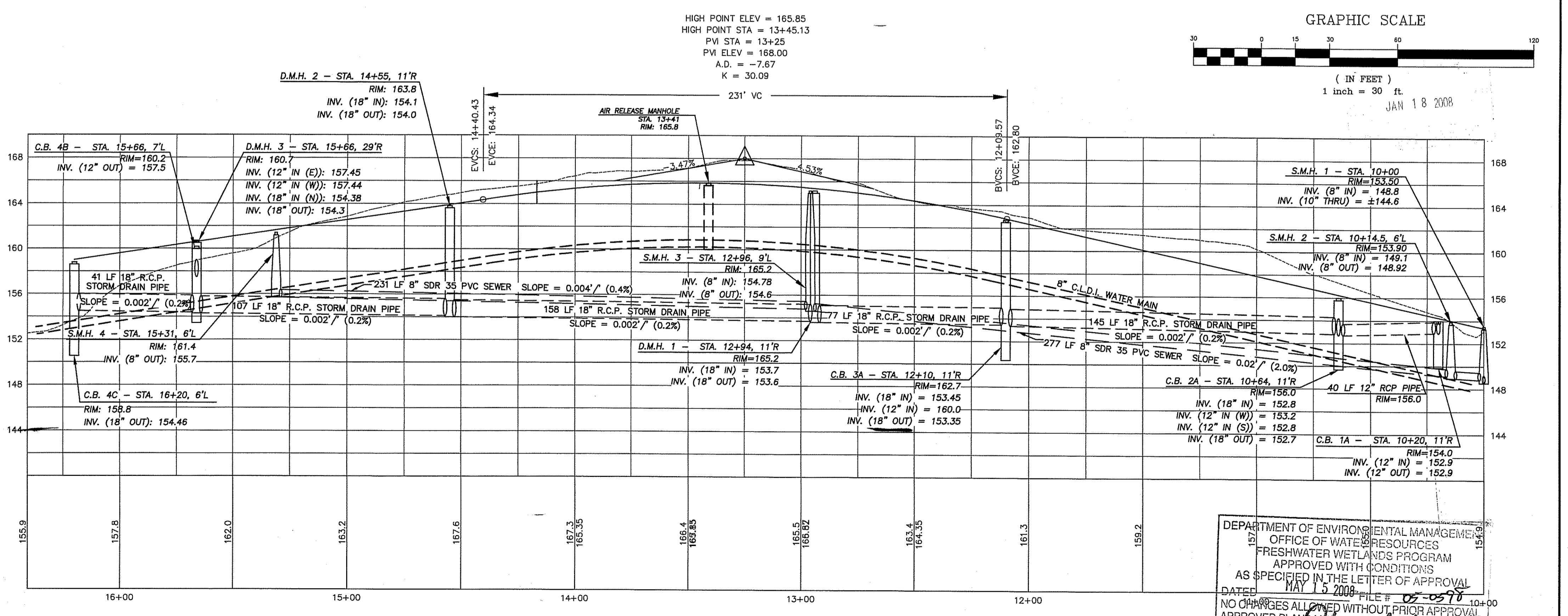
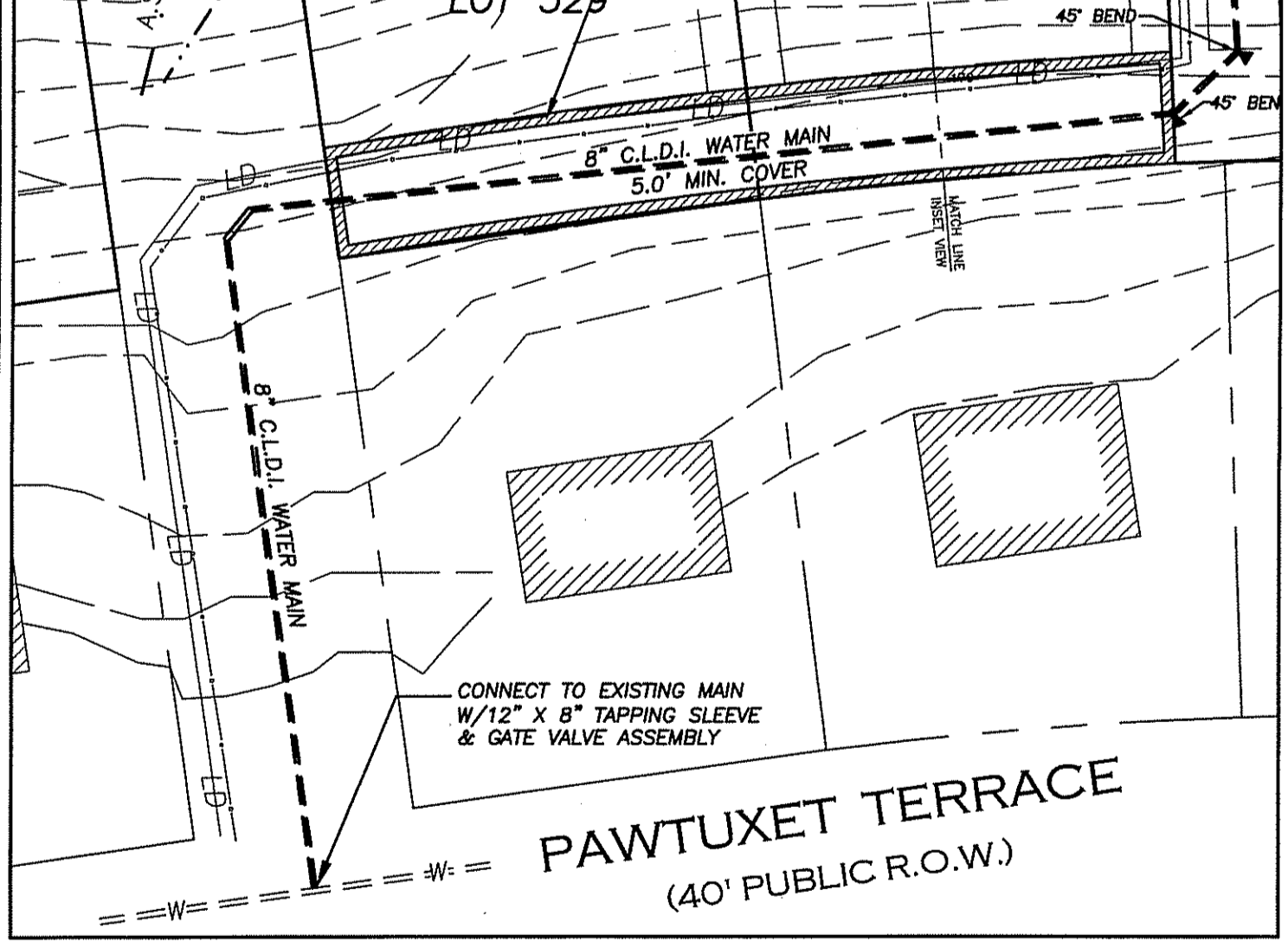
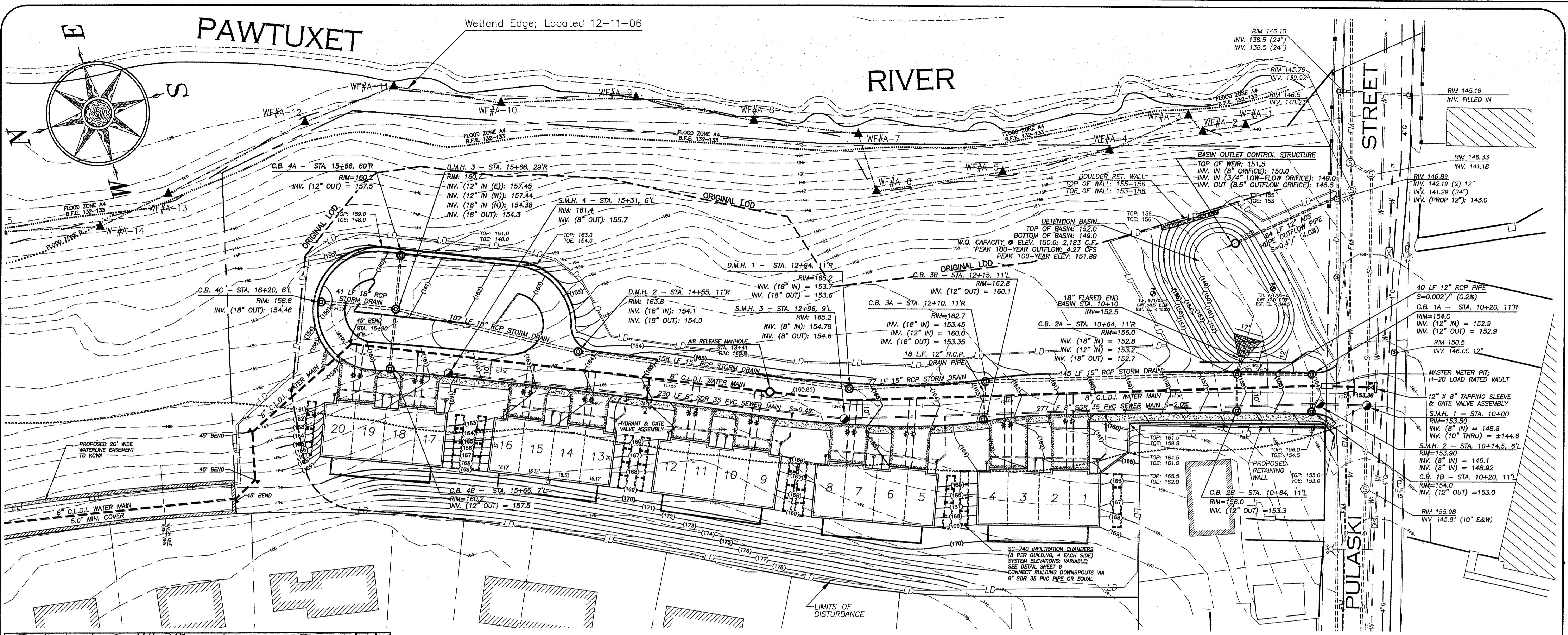
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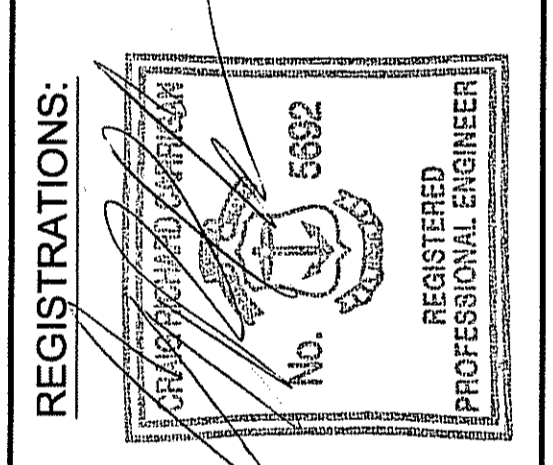


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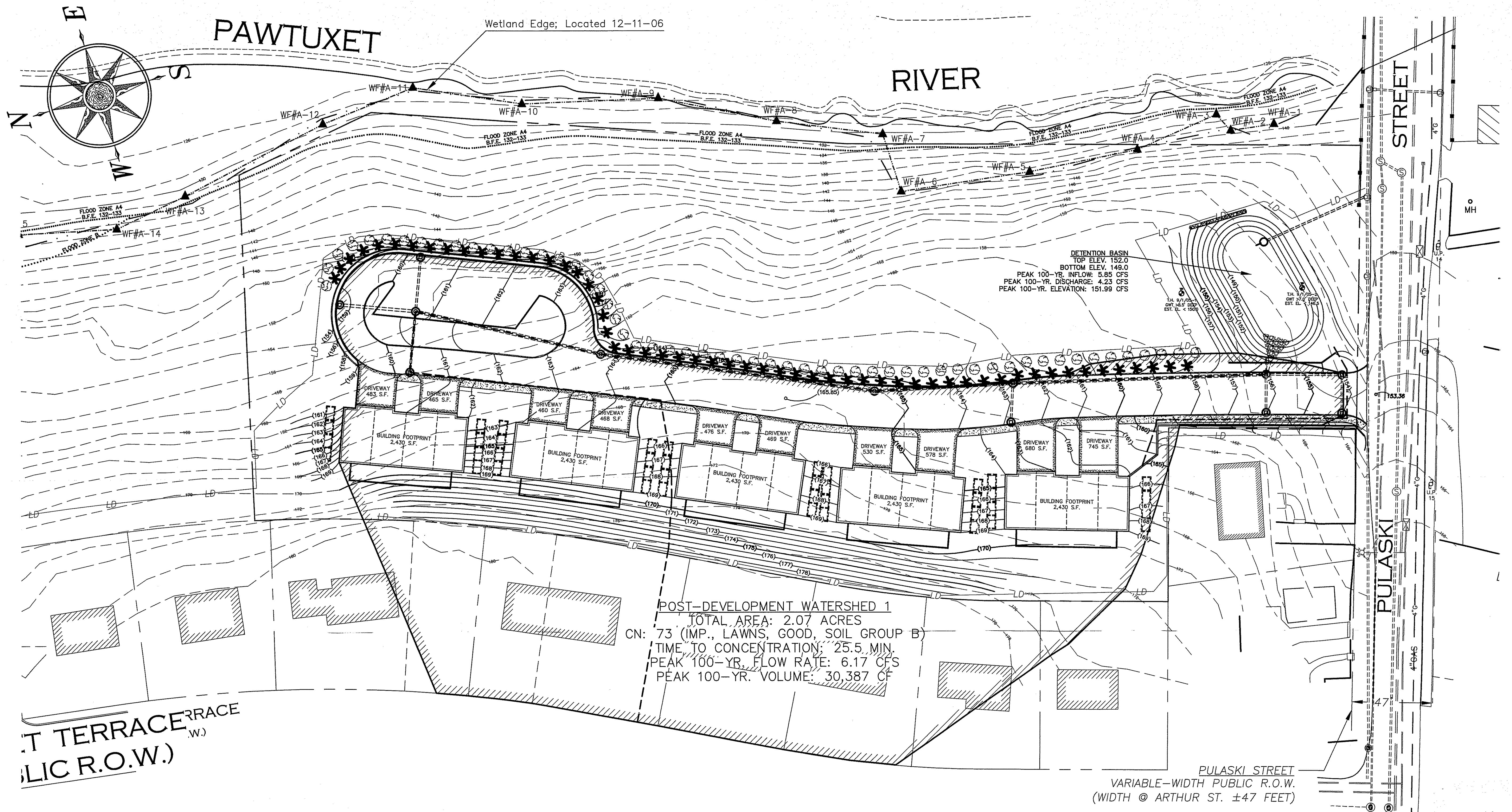
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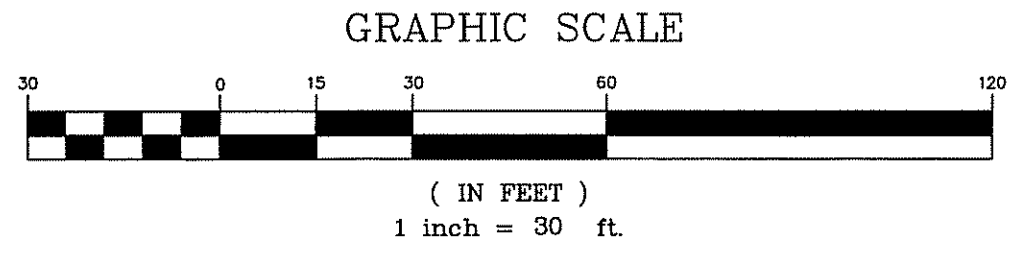


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⊙	UTILITY POLE	—	LIMITS OF DISTURBANCE	
⊙	LIGHT POLE	—	SILT FENCE OR STRAW BALE BARRIER	
⊙	SEWER MANHOLE	—	EXISTING CONTOUR	
⊙	STORM DRAIN MANHOLE	—	UGU	PROPOSED UNDERGROUND UTILITIES
⊙	CATCH BASIN	—	G	PROPOSED GAS LINE
⊙	WATER GATE	—	W	PROPOSED WATER LINE
⊙	GAS GATE	—	D	PROPOSED STORM DRAINAGE PIPE
⊙	HYDRANT	—	50	PROPOSED CONTOUR



**PLANTING LEGEND**

⊙	NORTHERN WHITE CEDAR (THUJA OCCIDENTALIS) - 5-6' HIGH AFTER PLANTING, 10' O.C. (APPROX. 57)
✱	ROSEBAY RHODODENDRON (RHODODENDRON MAXIMUM) - 3-4' HIGH AFTER PLANTING, 10' O.C. (APPROX. 55)

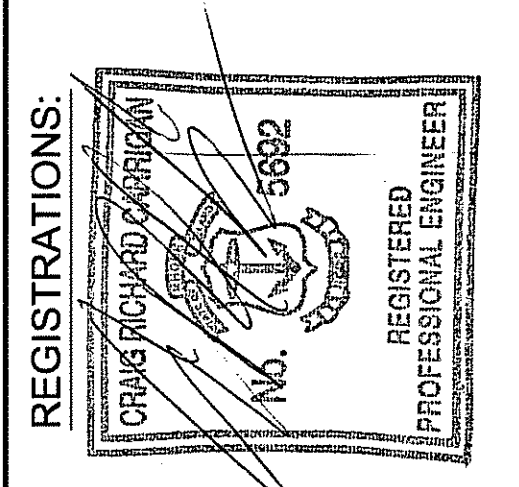
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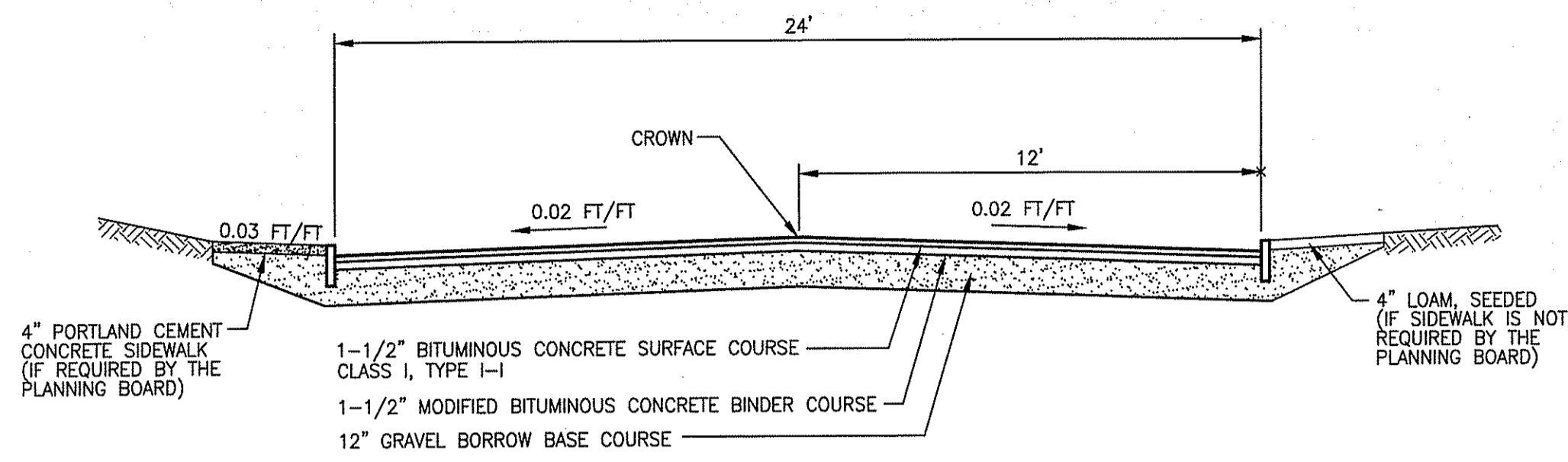
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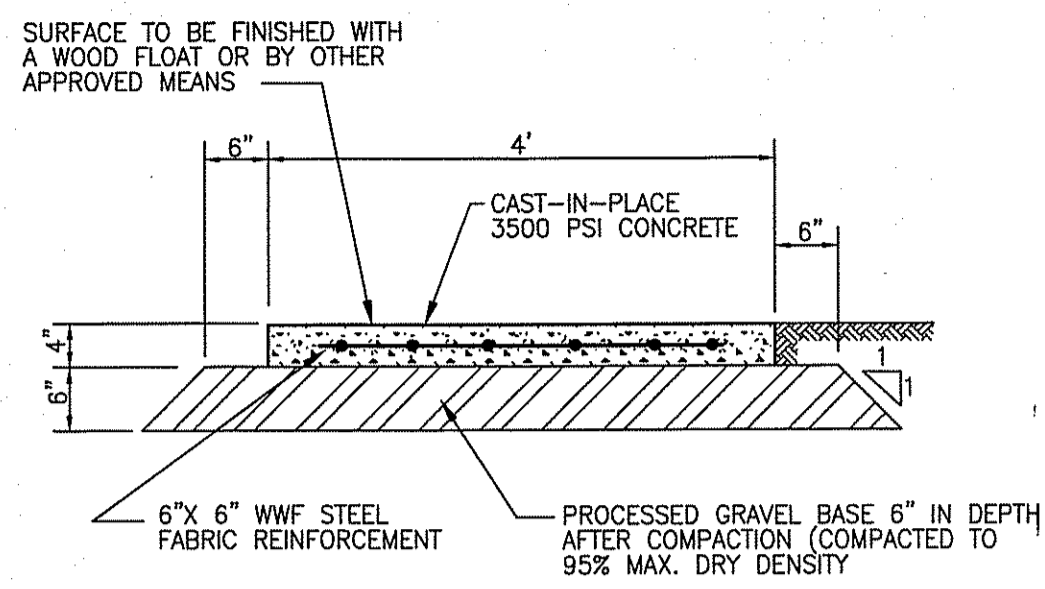


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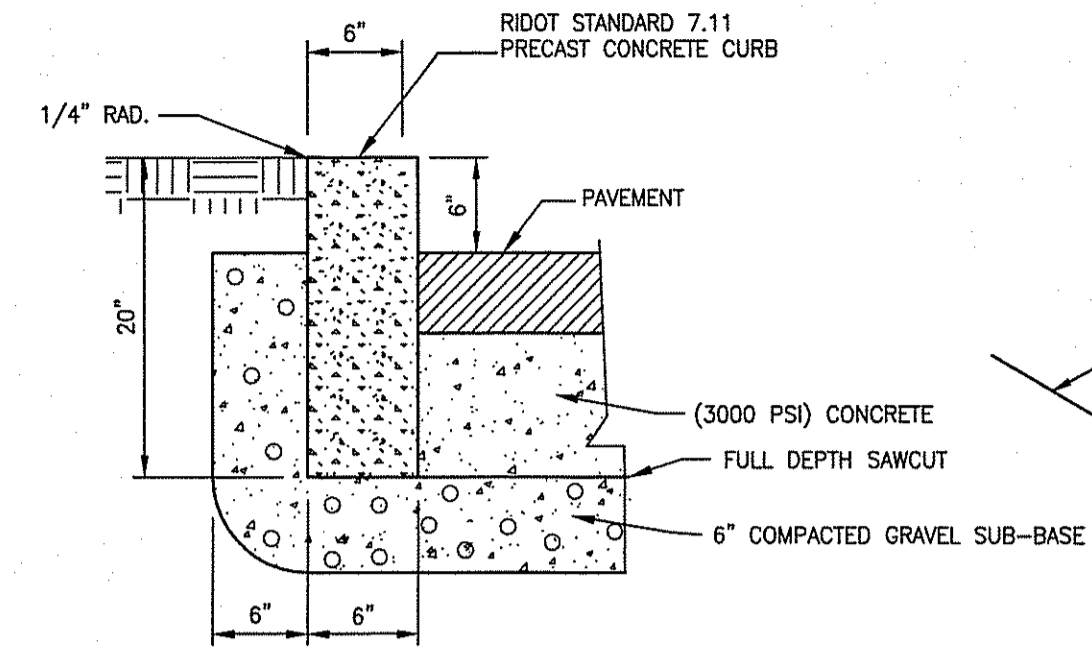
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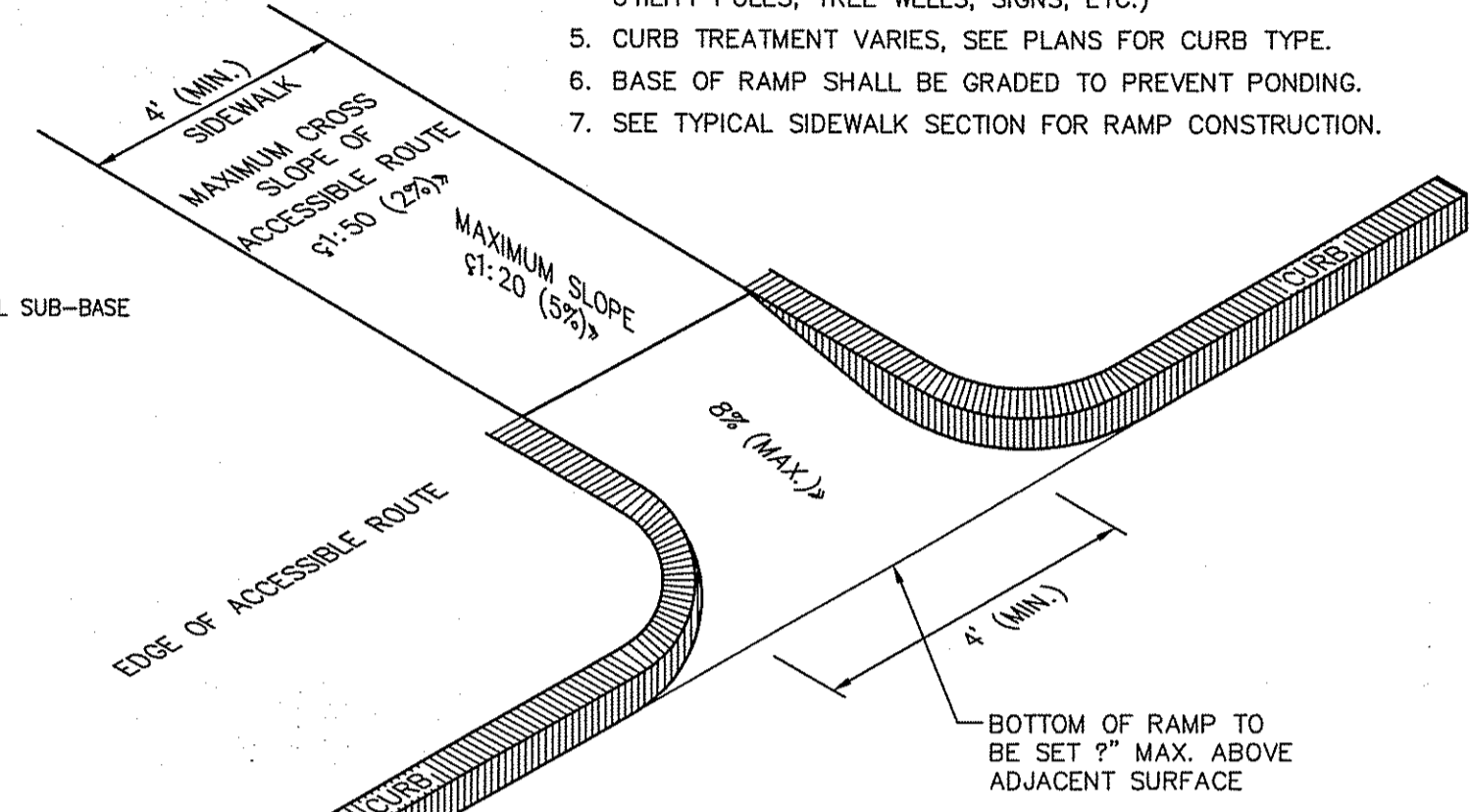
**TYPICAL PRIVATE ROADWAY CROSS-SECTION**  
NOT TO SCALE



**CONCRETE SIDEWALK**  
NOT TO SCALE

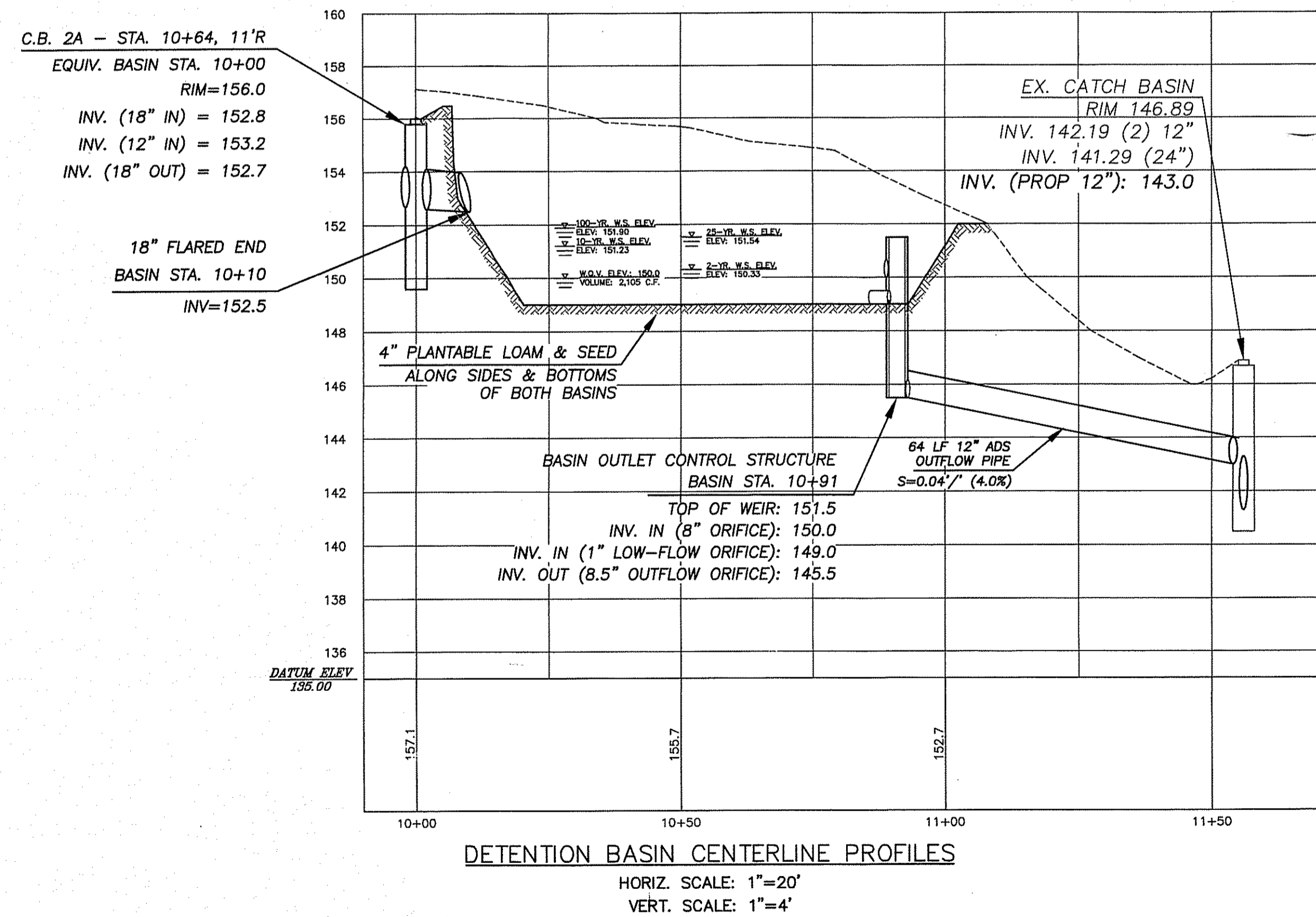


**CONCRETE CURB INSTALL DETAIL**  
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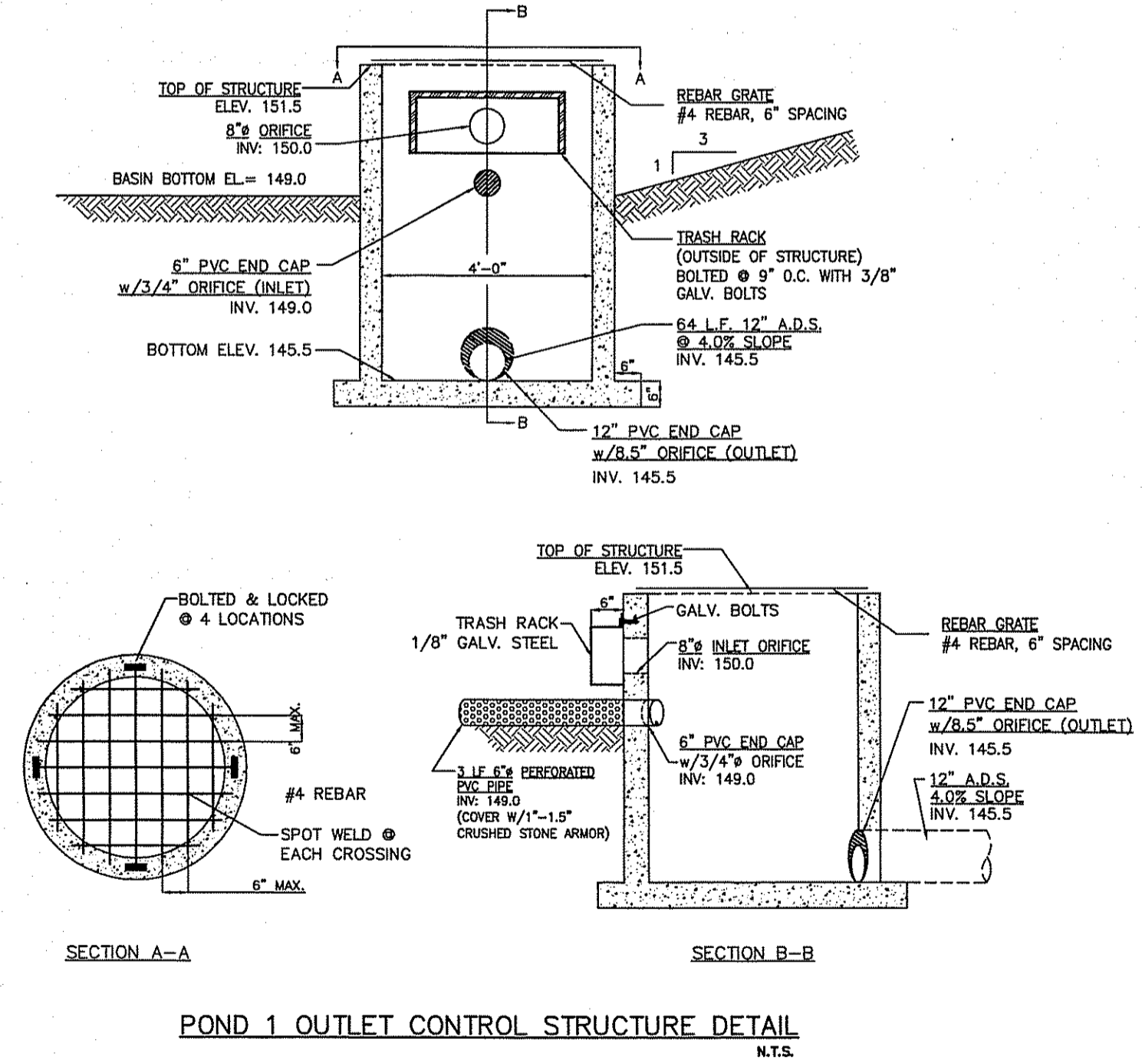


**ADA COMPLIANT ACCESS RAMP**  
NOT TO SCALE

- NOTES:**
1. THE MAXIMUM ALLOWABLE ROUTE (SIDEWALK) AND CURB RAMP CROSS SLOPES SHALL BE 1.5%.
  2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMP SHALL BE 5%.
  3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMP SHALL BE 8%.
  4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.)
  5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
  6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
  7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.



**DETENTION BASIN CENTERLINE PROFILES**  
HORIZ. SCALE: 1"=20'  
VERT. SCALE: 1"=4'



**POND 1 OUTLET CONTROL STRUCTURE DETAIL**  
K.T.S.

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REVISIONS:

NO.	DATE	DESCRIPTION	BY
2	9-24-07	DEM CONSENT AGREEMENT	MZ
1	9-7-06	RIDEM WETLANDS COMMENTS	MZ

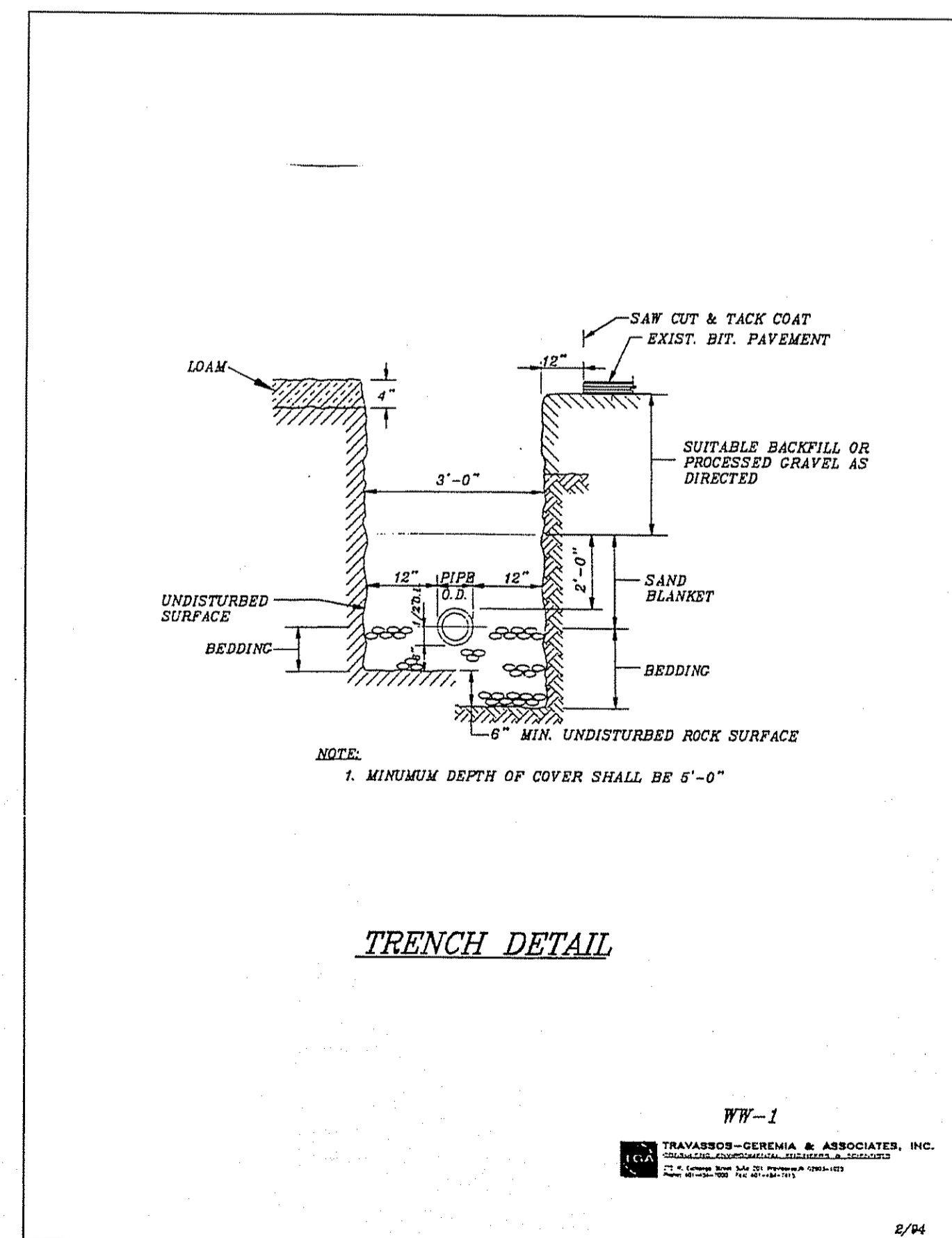
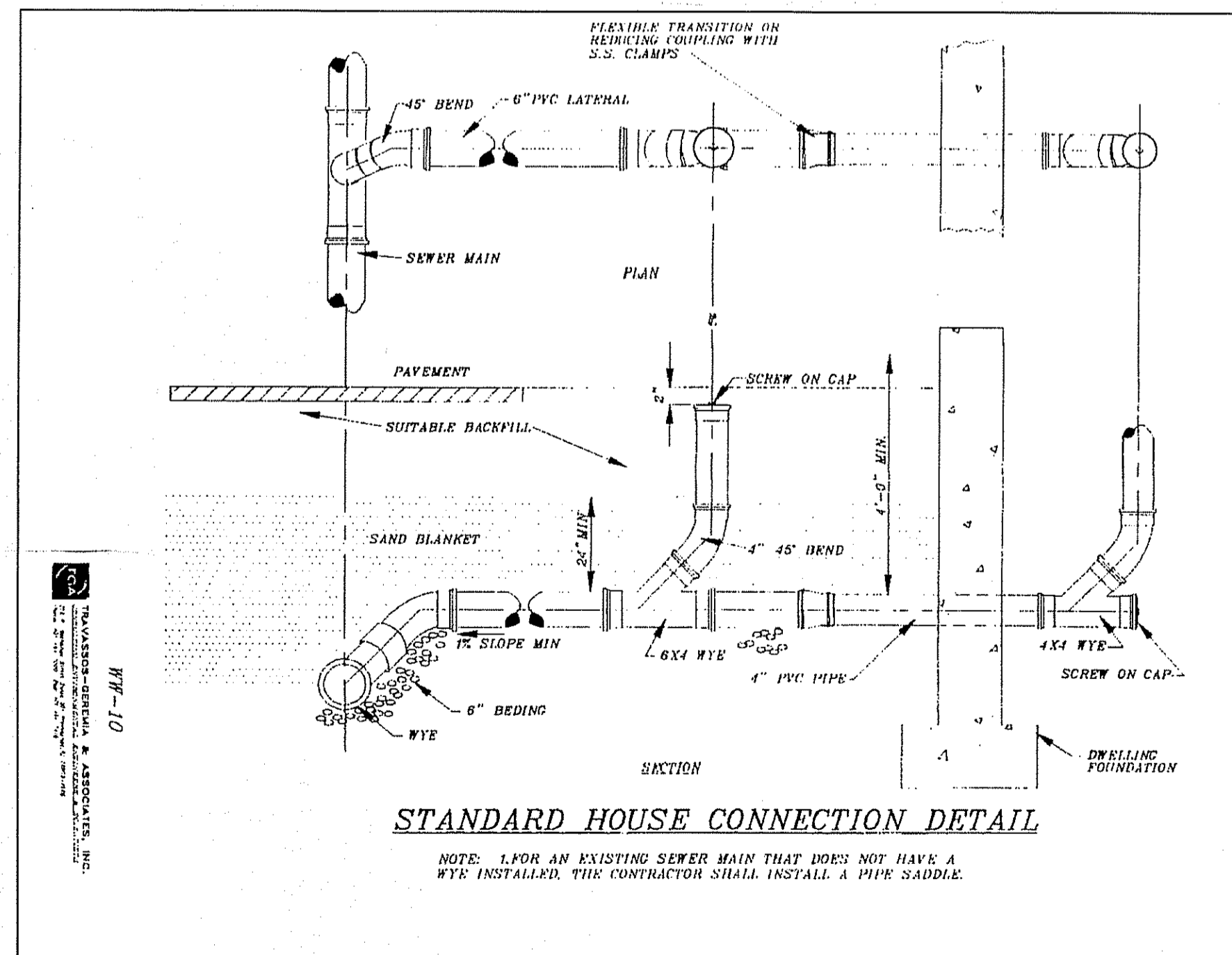
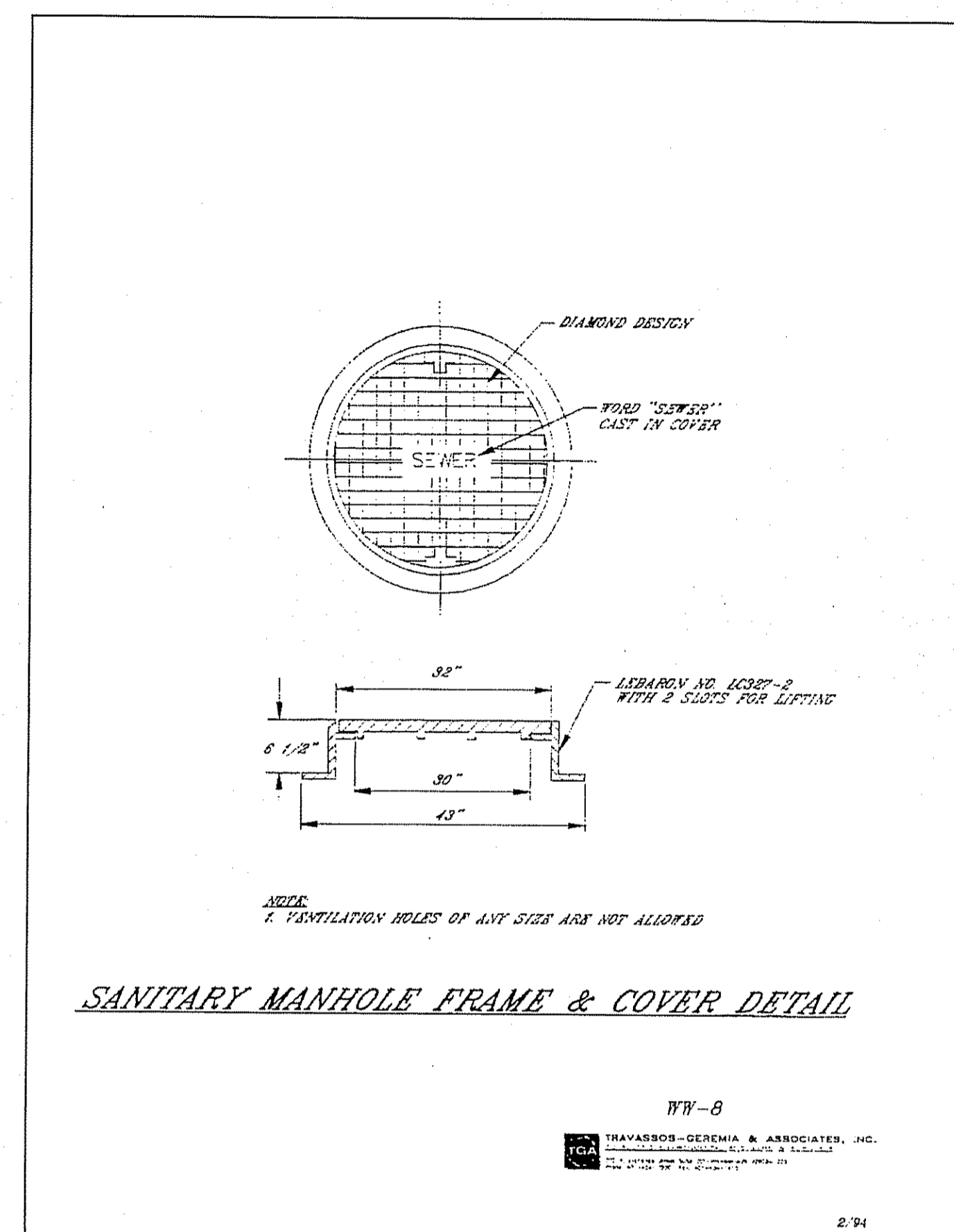
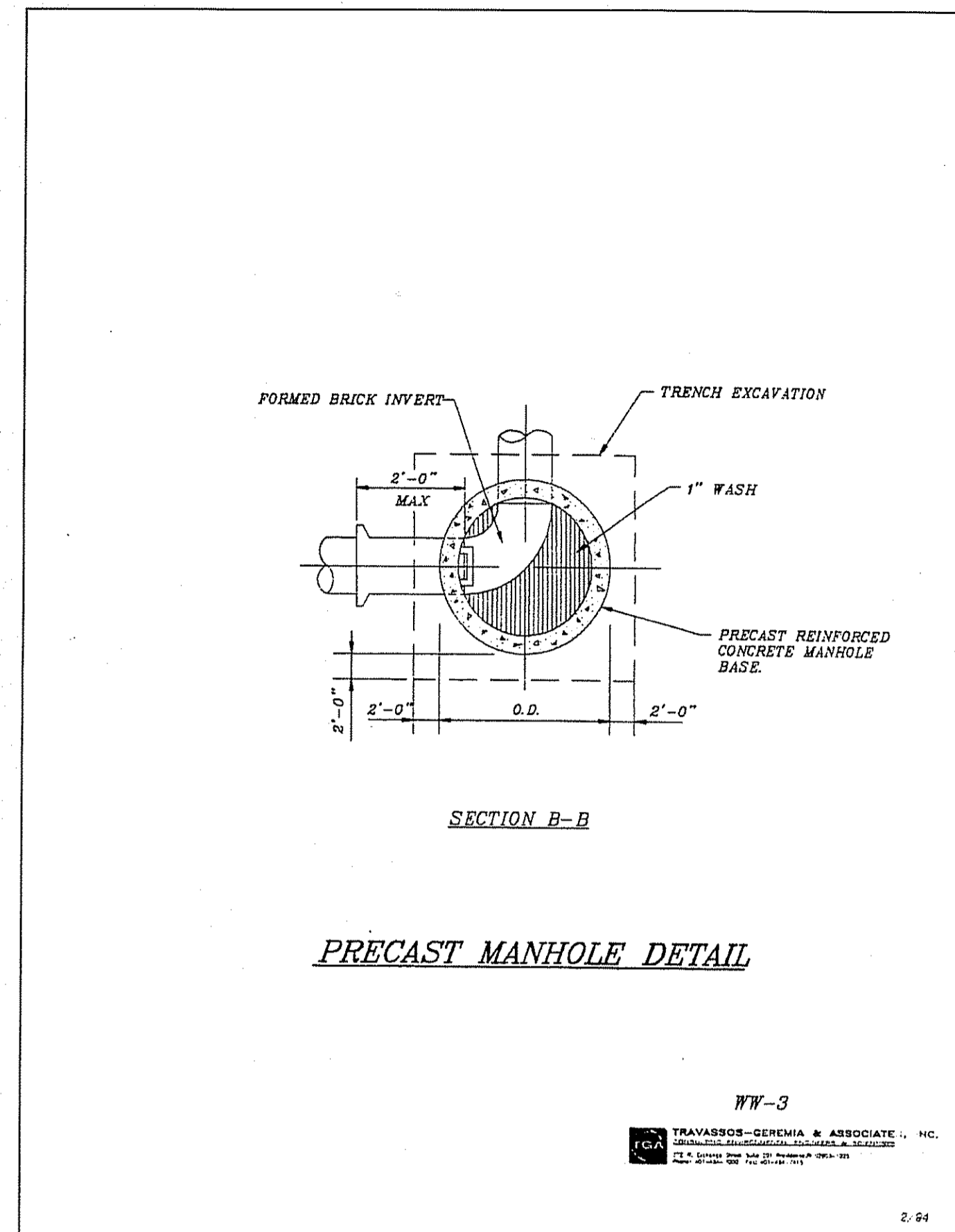
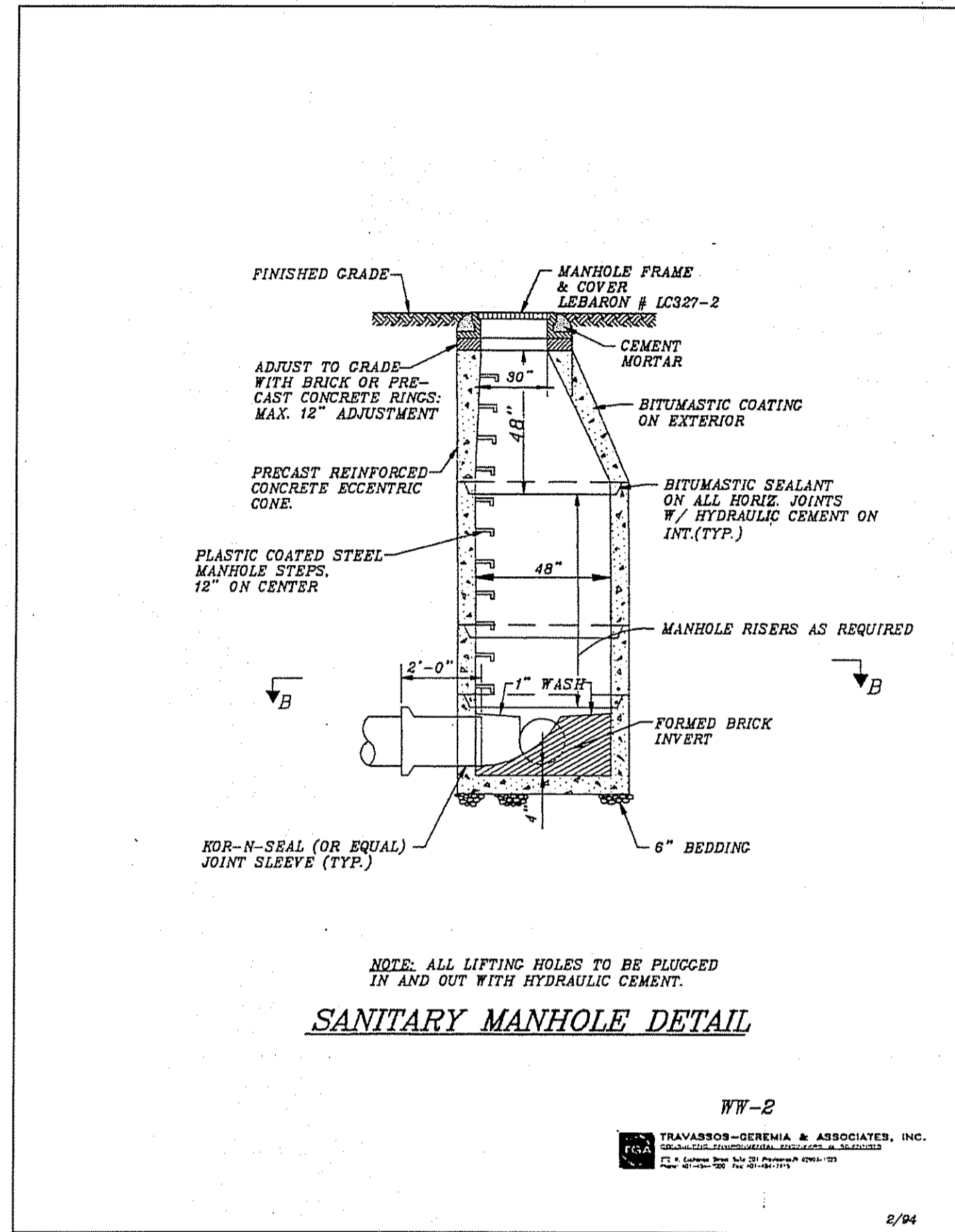
REGISTRATIONS:

*Charles A. Huber*  
No. 3692  
REGISTERED PROFESSIONAL ENGINEER

JOB NO. 030311

**CARRIGAN ENGINEERING, INC.**  
CIVIL AND ENVIRONMENTAL ENGINEERING  
140 POINT JUDITH ROAD  
UNIT #3 MARINER SQUARE  
NARRAGANSETT, RI 02882  
PHONE: (401) 789-6865  
FAX: (401) 789-2053





DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED MAY 3 2008 FILE # 05-0578  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles H. Haber*

**CARRIGAN ENGINEERING, INC.**  
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REGISTRATIONS:

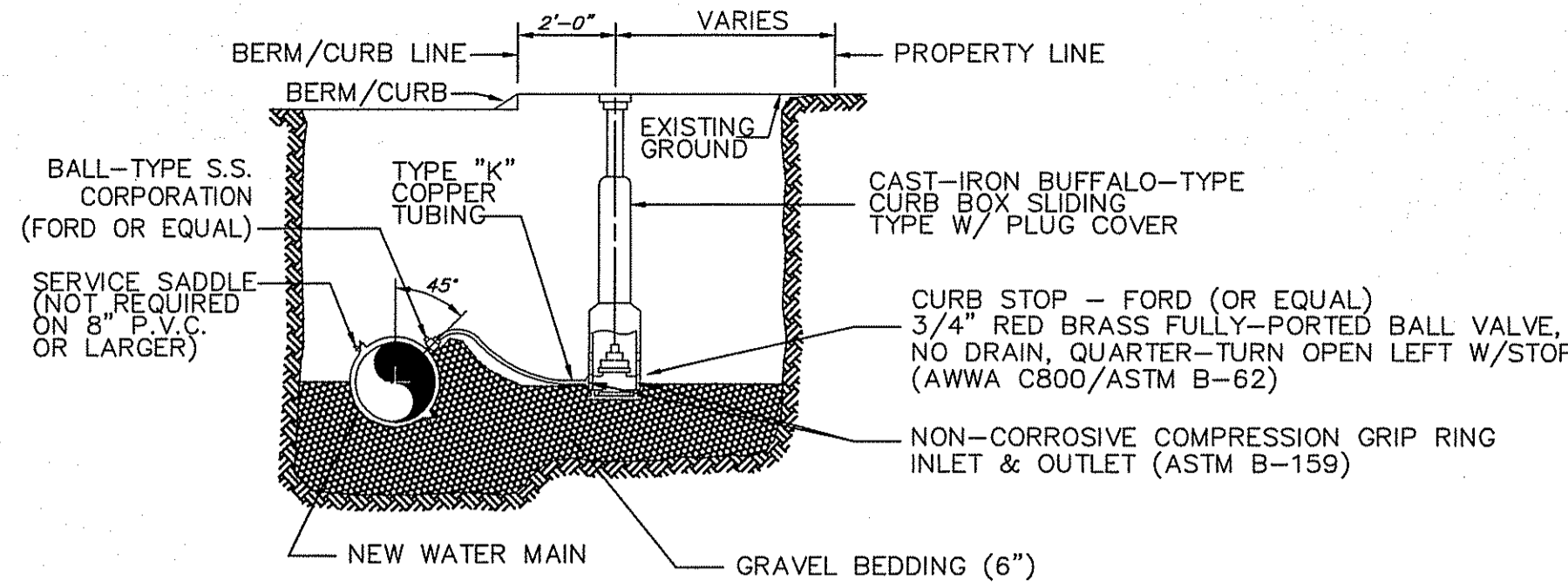
NO.	DATE	DESCRIPTION	BY

**ARTHUR STREET CLUSTER DEVELOPMENT**  
**SANITARY SEWER DETAILS**  
 ASSESSOR'S PLAT 8 - VARIOUS LOTS  
 ARTHUR STREET & PULASKI STREET  
 WEST WARWICK, RHODE ISLAND  
 PREPARED FOR: SHORELINE PROPERTIES  
 SCALE: AS NOTED DATE: 09/28/05 SHEET 7 OF 9

JOB NO. 030311

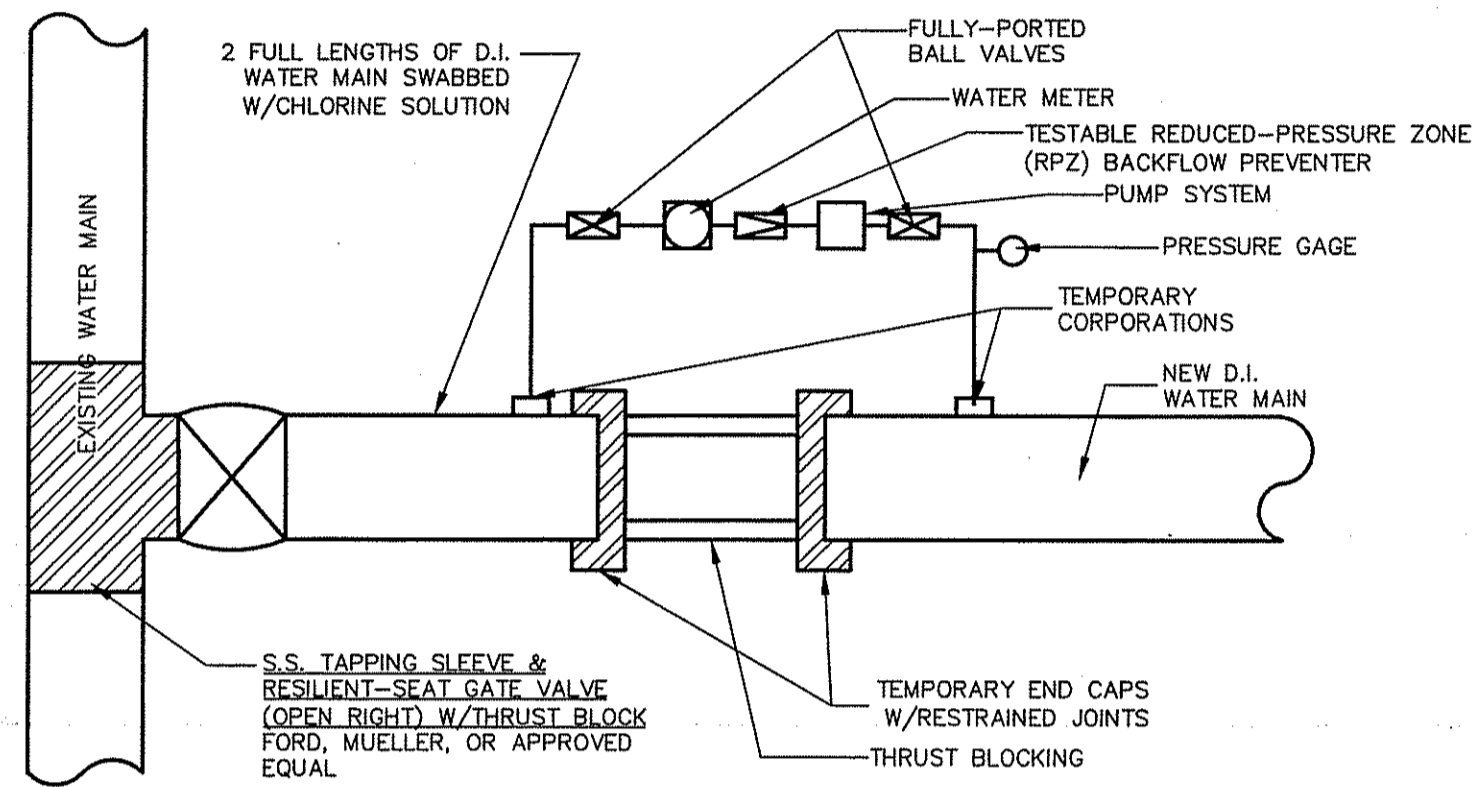
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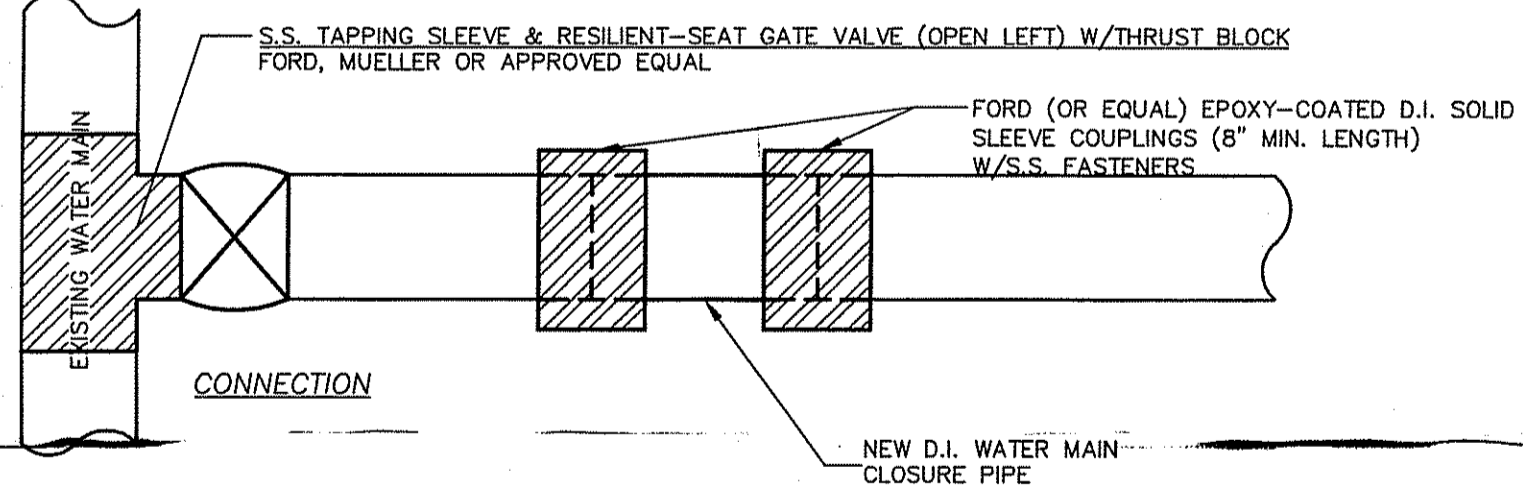
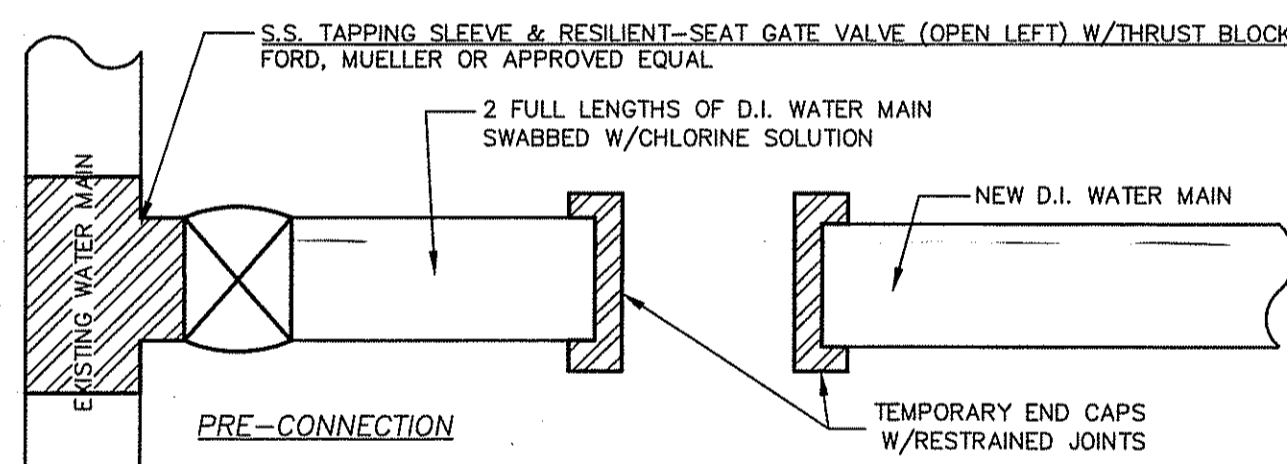


- NOTE:
- 1) SERVICE MATERIALS PER KCWA SPECIFICATION UNLESS CITY OR TOWN CODES REQUIRE SPECIFIC MATERIALS THAT HAVE BEEN APPROVED BY KCWA.
  - 2) EACH SERVICE SHALL HAVE A CURB STOP AND CURB BOX; CURB STOP & BOX SHALL BE INSTALLED 2'-0" BEHIND FACE OF CURB.
  - 3) ALL SERVICES SHALL BE 3/4" DIAMETER.
  - 4) MAGNETIC WARNING TAPE SHALL BE INSTALLED ALONG THE FULL LENGTH OF EACH SERVICE AT A DEPTH NOT TO EXCEED 1.0' BELOW FINISHED GRADE.

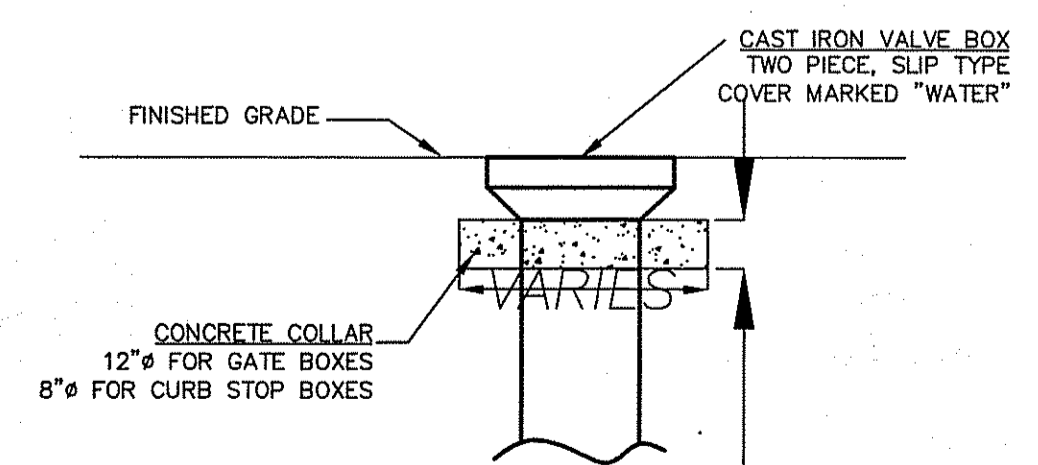
K.C.W.A. RESIDENTIAL SERVICE CONNECTION (<200 FT. TO HOUSE)  
NOT TO SCALE



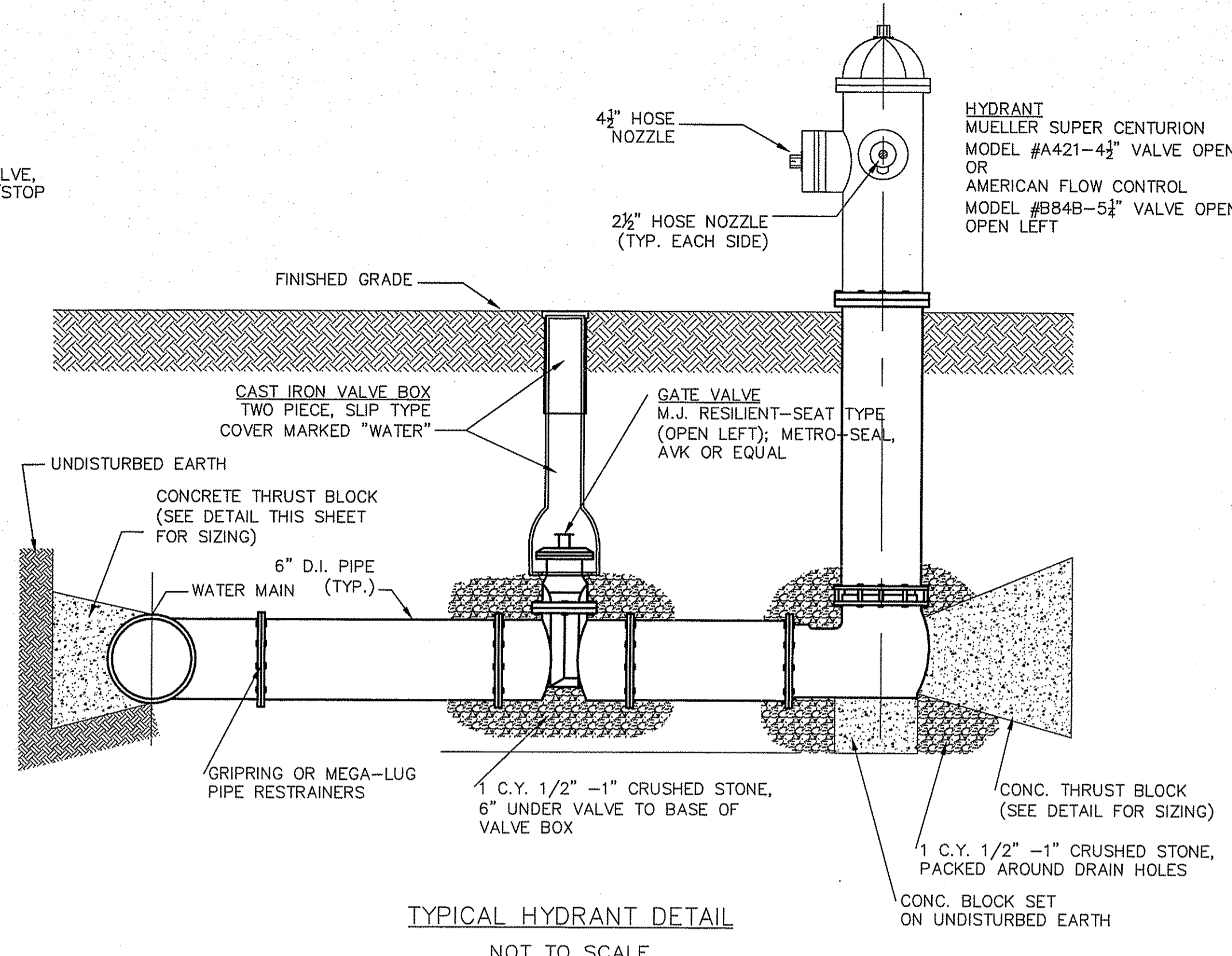
TEMPORARY CONNECTION FOR PRESSURE TESTING & DISINFECTION  
NOT TO SCALE



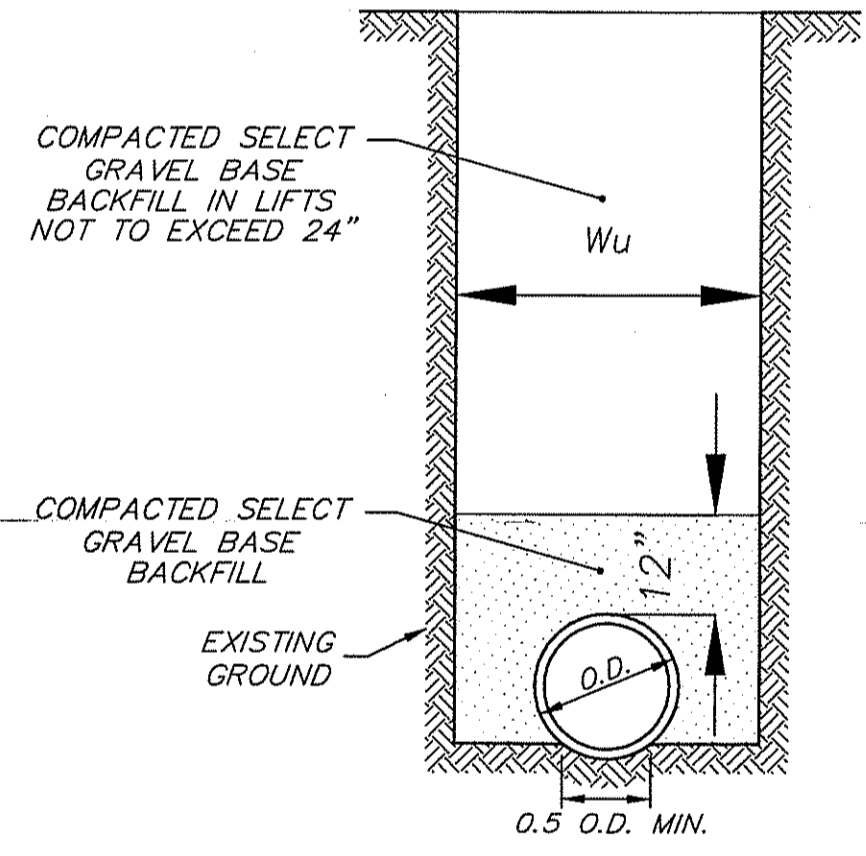
CONNECTION OF NEW WATER MAIN TO EXISTING WATER MAIN  
NOT TO SCALE



GATE AND CURB STOP BOX COLLAR DETAIL  
NOT TO SCALE



TYPICAL HYDRANT DETAIL  
NOT TO SCALE



TRENCH DETAIL  
NOT TO SCALE

PIPE DIAMETER	TRENCH WIDTH (Wu)
4"	2.5'
6"	2.5'
8"	3.0'
10"	3.0'
12"	3.0'

PIPE GREATER THAN 12"  
Wu = DIA. + 2.0'

BACKFILL TO BE OF SUITABLE MATERIAL PROPERLY COMPACTED AND FREE OF OBJECTIONABLE MATERIAL OR ROCKS LARGER THAN 3" WITHIN 1' OF TOP OF PIPE.

WHERE ROCK IS ENCOUNTERED IN BOTTOM OF TRENCH, A MINIMUM OF 4" OF CUSHION MATERIAL SHALL BE PROVIDED BELOW THE PIPE.

BOTTOM OF TRENCH SHALL BE SHAPED ACCURATELY TO FIT THE BOTTOM OF THE PIPE. MINIMUM WIDTH TO BE 1/2 OF THE OUTSIDE DIAMETER OF PIPE.

NOTE: WHERE BELL AND SPIGOT TYPE PIPE IS USED, TRENCH SHALL BE EXCAVATED TO FIT BELL ENDS.

**WATER LINE CLEANING, TESTING AND DISINFECTION PROCEDURE**

PRIOR TO TESTING, THE PIPING SHALL BE THOROUGHLY CLEANED OF ALL DIRT, DUST, OIL, GREASE AND ANY OTHER FOREIGN MATTER. THIS WORK SHALL BE DONE WITH CARE TO AVOID DAMAGE TO LININGS AND COATINGS.

ALL PIPELINES SHALL BE GIVEN COMBINED PRESSURE AND LEAKAGE TESTS IN SECTIONS OF APPROVED LENGTHS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY EQUIPMENT AND LABOR. PIPELINES IN EXCAVATION OR EMBEDDED IN CONCRETE SHALL BE TESTED PRIOR TO BACKFILLING OR PLACING OF CONCRETE. EACH SECTION OF PIPE SHALL BE FILLED WITH WATER OF APPROVED QUALITY AND ALL AIR SHALL BE EXPELLED FOR A PERIOD OF 24 HOURS, PRIOR TO TESTING. WATER PRESSURE OF ACCEPTABLE PIPING SHALL MAINTAIN PRESSURE IN POUNDS PER SQUARE INCH NUMERICALLY EQUAL TO THE PRESSURE RATING OF THE PIPE FOR A PERIOD OF AT LEAST ONE HOUR.

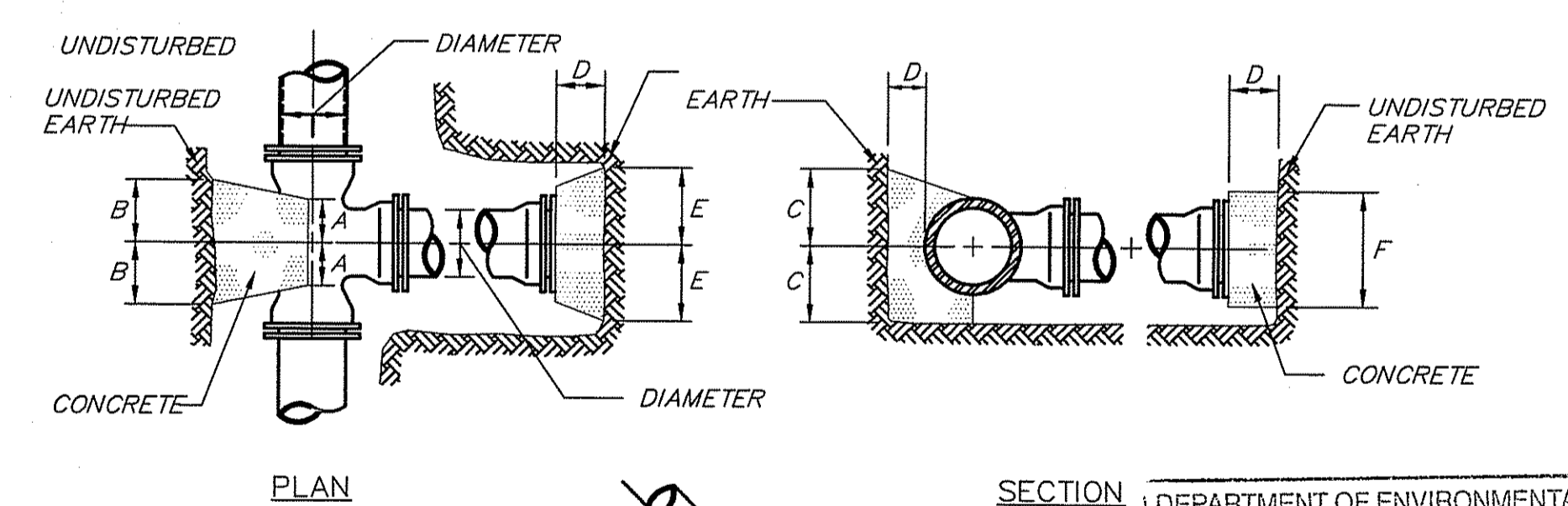
LEAKAGE SHALL NOT EXCEED THE RATE INDICATED IN AWWA SECTION C 600 PER 24 HOURS PER MILE OF PIPELINE IN THE SECTION BEING TESTED MAINTAINING A PRESSURE EQUAL TO THE PRESSURE RATING OF THE PIPE DURING A TWO-HOUR PERIOD. ADDITIONAL TESTS AND REPAIRS SHALL BE MADE UNTIL THE SECTION PASSES THE SPECIFIED TEST.

ALL PIPELINES SHALL BE THOROUGHLY FLUSHED BEFORE INTRODUCTION OF THE CHLORINATING MATERIALS. DISINFECTION SHALL BE PROVIDED BY THE AMERICAN WATER WORKS ASSOCIATION STD. C 601. CHLORINE SHALL BE APPLIED AT A MINIMUM DOSAGE OF 50 PARTS PER MILLION USING GRANULAR OR LIQUID CHLORINE. ALL VALVES BEING DISINFECTED SHALL BE OPENED AND CLOSED SEVERAL TIMES DURING CONTACT PERIOD. SAMPLES SHALL BE TAKEN TO DETERMINE THE EFFECTIVENESS OF TREATMENT. THE PROCESS SHALL BE REPEATED UNTIL SAMPLES MEET LABORATORY STANDARDS.

CONTRACTOR SHALL PROVIDE A DOUBLE CHECK VALVE INSTALLATION IN TEMPORARY PIPING WHICH IS SUPPLYING WATER FROM THE DISTRIBUTION SYSTEM TO THE WATER MAIN BEING TREATED TO PREVENT POSSIBLE BACKFLOW OR SIPHONAGE.

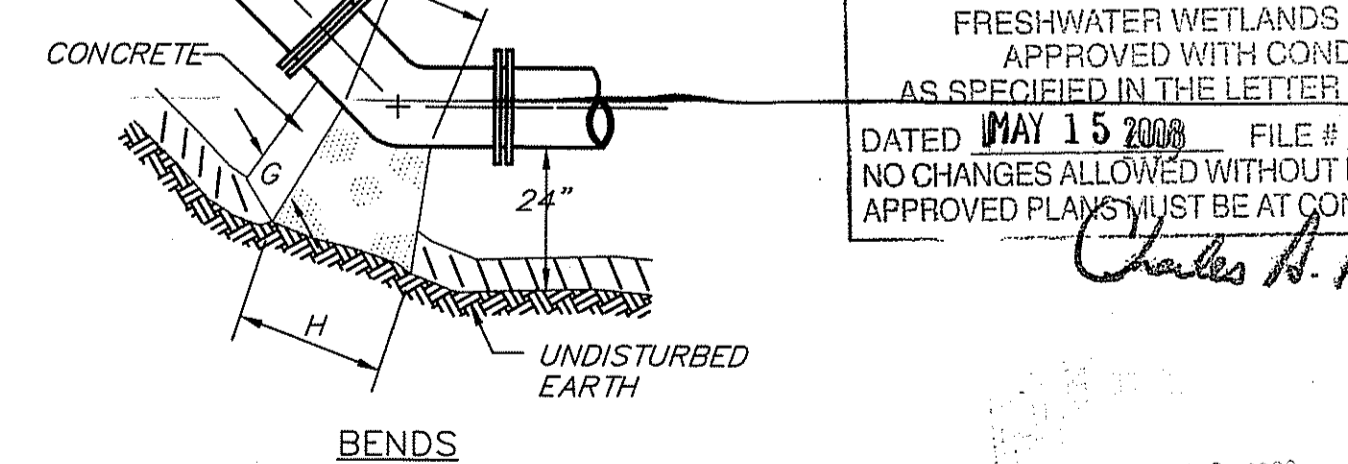
CONTRACTOR SHALL FURNISH TO THE OWNER, MANUFACTURER'S NOTARIZED TEST REPORTS AND METHODS OF TEST TO SHOW COMPLIANCE OF ALL MATERIALS.

- GENERAL WATER SYSTEM NOTES:
- 1) ALL WATER SYSTEM MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE APPLICABLE STANDARDS OF THE KCWA RULES AND REGULATIONS.
  - 2) NO WORK ON THE WATER SYSTEM SHALL BE PERFORMED WITHOUT A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR NOTICE TO THE KCWA.
  - 3) THE KCWA SHALL RESERVE THE RIGHT TO HAVE INSPECTORS PRESENT ON SITE AT ANY AND ALL TIMES THAT WORK ON THE WATER SYSTEM IS IN PROGRESS.
  - 4) ALL RESILIENT-SEAT GATE VALVES (TAPPING SLEEVE, MAIN LINE & HYDRANT) SHALL BE OPEN RIGHT.



PLAN

SECTION



TYPICAL THRUST BLOCK DETAIL  
NOT TO SCALE

SIZE OF BRANCH	A/B	C	D	E	F	G	H	I
6" (HYDRANT)	n/a	n/a	12"	12"	24"	n/a	n/a	n/a
8" (MAIN)	15"	15"	12"	15"	30"	30"	30"	30"

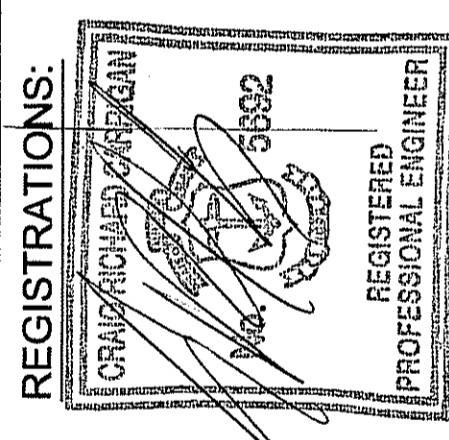
ARTHUR STREET CLUSTER DEVELOPMENT  
WATER DETAILS

ASSESSOR'S PLAT 8 - VARIOUS LOTS  
ARTHUR STREET & PULASKI STREET  
WEST WARWICK, RHODE ISLAND

PREPARED FOR: SHORELINE PROPERTIES  
SCALE: AS NOTED DATE: 09/28/05 SHEET 8 OF 9

REVISIONS:

NO.	DATE	DESCRIPTION	BY



CARRIGAN ENGINEERING, INC.

CIVIL AND ENVIRONMENTAL ENGINEERING

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OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL

DATED MAY 15 2006 FILE # 05-0298  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

JAN 18 2006

Charles A. Harte

**ESTABLISHMENT OF VEGETATIVE COVER**

1. SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON
2. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED OR PROTECTED.
3. THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND'S STANDARD SPECIFICATION, M.20.
4. THE DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	LBS/AC.
CREeping RED FESCUE	75
KENTUCKY BLUE GRASS	15
COLONIAL BENT GRASS	5
PERENNIAL RUE GRASS	5

5. EARLY SPRING OR LATE SUMMER SEEDING IS RECOMMENDED. LIME AND FERTILIZE AS REQUIRED BY SOIL TESTING TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE MIXTURE FOR EACH SEED VARIETY.
6. TEMPORARY TREATMENTS SHALL CONSIST OF HAY, STRAW, OR FIBER MULCH, OR PROTECTIVE COVERS SUCH AS NORTH AMERICAN S150 OR EQUAL. THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 2 TONS/ACRE.
7. ALL HAYBALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
8. ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT, IN STRICT CONFORMANCE WITH THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 202.
9. STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR STABILIZED.
10. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR, AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
11. REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTRACTOR HANDBOOK," PREPARED BY THE USDA SOIL CONSERVATION SERVICE AS A GUIDE.
12. TEMPORARY HAY MULCH TO BE TACKED IN PLACE WITH NYLON MESH NETTING.
13. MAXIMUM UNREINFORCED GRADE SLOPE WITHIN SUBDIVISION TO BE 3:1. ALL SLOPES STEEPER THAN 3:1 TO BE LOAMED, SEEDED AND PROTECTED WITH NORTH AMERICAN GREEN (N.A.G.) S75 EROSION BLANKET INSTALLED ACCORDING TO N.A.G. SPECIFICATIONS.

**MAINTENANCE: SHORT TERM / LONG TERM**

1. ALL DISTURBED SLOPES, EITHER NEWLY CREATED OR CURRENTLY EXPOSED, SHALL BE SEEDED, PROTECTED AND MAINTAINED BY THE CONTRACTOR. THE CONTRACTOR SHALL REGULARLY CHECK ALL SEEDED AREAS TO SEE THAT A GOOD STAND IS MAINTAINED.
2. THE CONTRACTOR MUST REPAIR OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR, AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
3. ALL HAY BALES, TEMPORARY TREATMENTS (HAY, STRAW, ETC.) AND TEMPORARY PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION, AND SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
4. THE CONTRACTOR SHALL MAINTAIN ALL TOP SOIL STOCKPILES AND SEDIMENT BARRIERS THROUGHOUT CONSTRUCTION. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT SPILL OVER THE SEDIMENT BARRIER.
5. THE HAYBALES OR SILT FENCE SHALL BE CHECKED BY THE CONTRACTOR ON A WEEKLY BASIS AND AFTER EACH STORM FOR UNDERMINING OR DETERIORATION. CONTRACTOR SHALL REPAIR OR REPLACE THE HAYBALES AS NEEDED. CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE BALES BECOMES FILLED WITH SEDIMENTS.
6. THE STONE STABILIZATION PAD AT THE SITE ENTRANCE SHALL BE MAINTAINED BY THE CONTRACTOR. THE MAINTENANCE SHALL INCLUDE TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND, OR AS DIRECTED BY THE ENGINEER. ALL SEDIMENTS SPILLED, DROPPED, WASHED OR TACKED ONTO PUBLIC RIGHT OF WAY MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
7. THE CONTRACTOR SHALL INSPECT RIP RAP PADS AFTER EACH STORM AND REPAIR AS NEEDED.
8. THE CONTRACTOR SHALL MAINTAIN THE DRAINAGE SYSTEM THROUGHOUT CONSTRUCTION. THE ACCUMULATED SEDIMENTS IN THE SYSTEM SHALL BE REMOVED BY THE CONTRACTOR AT THE END OF CONSTRUCTION.
9. THE CONDOMINIUM ASSOCIATION (C.A.) IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE OF THE DRAINAGE SYSTEM, DETENTION BASIN, AND VEGETATIVE COVER. THE DRAINAGE SYSTEM SHALL BE CHECKED BY THE C.A. OR THEIR AGENT ON A SEMI-ANNUAL BASIS. ACCUMULATED SEDIMENTS OVER 0.3' MAXIMUM SHALL BE REMOVED AT THAT TIME FROM THE CATCH BASINS AND/OR DETENTION BASIN.
10. THE C.A. SHALL CHECK THE RIP RAP PADS AFTER ALL MAJOR STORMS AND ON A SEMI-ANNUAL BASIS. REPAIRS SHALL BE PERFORMED IMMEDIATELY AS CONDITIONS WARRANT.
11. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR THE MAINTENANCE PROGRAM DURING THE CONSTRUCTION PHASE. THE SUPERINTENDENT SHALL SEE THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
12. AFTER THE FIRST YEAR AND ACCEPTANCE BY THE C.A., THE C.A. SHALL HAVE OVERALL RESPONSIBILITY FOR IMPLEMENTING THE MAINTENANCE PROGRAM DESCRIBED HEREIN (SEE ABOVE AND IN "STRUCTURAL MEASURES LONG-TERM MAINTENANCE" SECTION).

**NONSTRUCTURAL MEASURES**

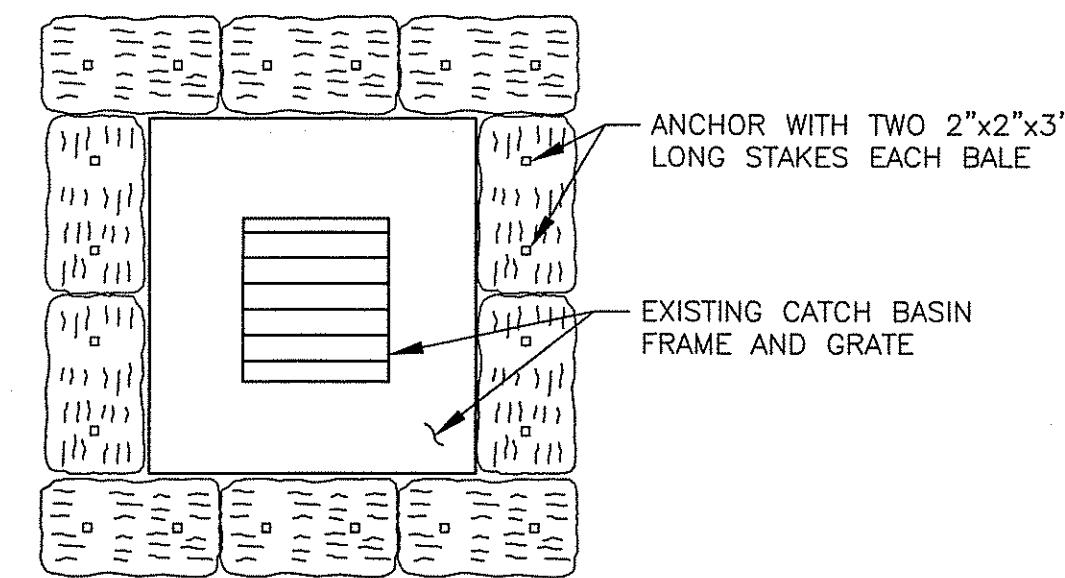
1. CONSTRUCTION TRAFFIC SHALL BE LIMITED TO ACCESS ROADS, DRAINAGE EASEMENTS AND AREAS TO BE GRADED.
2. A STONE STABILIZATION PAD IS LOCATED AT THE SITE ENTRANCE TO REDUCE THE TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAY.
3. THE ENTRANCE SHALL BE MAINTAINED BY THE CONTRACTOR. THE MAINTENANCE SHALL INCLUDE TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND OR AS DIRECTED BY THE ENGINEER. ALL SEDIMENTS SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT OF WAY, MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR
4. TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCK PILE LOCATION SHALL BE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. A SEDIMENT BARRIER SHOULD SURROUND ALL TOPSOIL STOCKPILES.
5. HAY BALES OR SILT FENCE SHALL BE INSTALLED DOWNSTREAM OUTSIDE THE LIMITS OF ANY PROPOSED CONSTRUCTION AS SHOWN ON THE SITE PLANS AND PRIOR TO THE COMMENCEMENT OF THE PROPOSED ALTERATION.
6. HAY BALES SHALL BE MAINTAINED BY THE CONTRACTOR. INSPECTION SHALL BE MADE AFTER EACH STORM EVENT AND REPAIR OR PLACEMENT CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE BALES BECOMES FILLED WITH SEDIMENT.
7. THE HAY BALES OR SILT FENCE SHALL BE CHECKED WEEKLY FOR UNDERMINING OR DETERIORATION BY THE CONTRACTOR.
8. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION OF NON-STRUCTURAL MEASURES AND FOR SEEING THAT APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
9. REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

**SEQUENCE AND STAGING OF LAND DISTURBING ACTIVITIES**

1. SURVEY AND STAKE CENTERLINE OF PROPOSED ROAD(S), CULVERTS AND LIMIT OF SEDIMENTATION BARRIERS.
2. PLACE SEDIMENTATION BARRIERS (HAYBALES OR SILT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS.
3. BEGIN WORK (CLEARING AND GRUBBING, EXCAVATING AND GRADING ETC.) TOPSOIL TO BE STRIPPED AND STOCKPILED IN APPROVED AREAS. THE STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIERS. STOCK PILES ARE TO BE COVERED OR TEMPORARILY SEEDED.
4. INSTALL UNDERGROUND UTILITIES, INCLUDING STORM DRAINAGE. IMMEDIATELY PLACE THE RIP RAP AT THE DRAINAGE DISCHARGE POINTS, AND LOAM AND SEED ALL DISTURBED AREAS WHICH WILL BE GRASSED UPON COMPLETION.
5. BEGIN ROAD PAVING.
6. BEGIN BUILDING LAYOUT, LOT CLEARING AND GRADING.
7. BEGIN LANDSCAPING WHILE BUILDINGS ARE UNDER CONSTRUCTION.
8. FINISH CONDOMINIUMS AND ROAD CONSTRUCTION.
9. FINISH LANDSCAPING AND PERMANENT STABILIZATION.
10. REMOVE ALL TEMPORARY EROSION AND CONTROL MEASURES.
11. CONSTRUCTION TO OCCUR DURING 2008.

**STRUCTURAL MEASURES LONG-TERM MAINTENANCE**

1. A PERMANENT COVER SHALL BE ESTABLISHED IN ACCORDANCE WITH THE VEGETATIVE COVER PROVISIONS. THE SEEDING SHALL EXTEND TO AT LEAST THE DESIGN TOP WIDTH AND INCLUDE ANY OTHER AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. ACTIVITIES SHALL BE CONFINED TO WITHIN THE LIMIT OF WORK AS SHOWN ON THE PLANS.
2. VIGOROUS VEGETATION SHALL BE MAINTAINED BY APPLYING LIME AND FERTILIZER. BARE OR ERODED AREAS SHALL BE IMMEDIATELY REPAIRED AND RESEED BY THE CONTRACTOR.
3. THE CONTRACTOR IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF THE DETENTION BASIN DURING AND FOR UP TO ONE (1) YEAR AFTER COMPLETION OF CONSTRUCTION. THE C.A. SHALL BE RESPONSIBLE THEREAFTER. ANY UNDEVELOPED VEGETATION COVER IN BASIN WITHIN A YEAR OF THE PROJECT COMPLETION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL RESEED ANY UNSTABILIZED AREAS AFTER A FULL GROWING SEASON AT NO ADDITIONAL EXPENSE TO THE OWNER.
4. THE GRASS IN BASIN SHALL BE ALLOWED TO GROW BETWEEN 4"-10".
5. UPON ACCEPTANCE OF THE BASIN BY THE C.A., THE C.A. SHALL INSPECT THE ENTIRE DRAINAGE SYSTEM TWICE YEARLY.
6. WHERE APPLICABLE, RIP-RAP APRONS SHALL BE INSTALLED AT THE OUTLETS OF ALL CULVERTS.
7. RIP-RAP PADS SHALL BE INSPECTED ANNUALLY AND AFTER ANY MAJOR STORMS. IF REPAIRS ARE NEEDED, THEY SHALL BE ACCOMPLISHED IMMEDIATELY.
8. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR IMPLEMENTATION OF STRUCTURAL MEASURES AND FOR SEEING THAT APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
9. REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE, DATED 1989, AS A GUIDE.



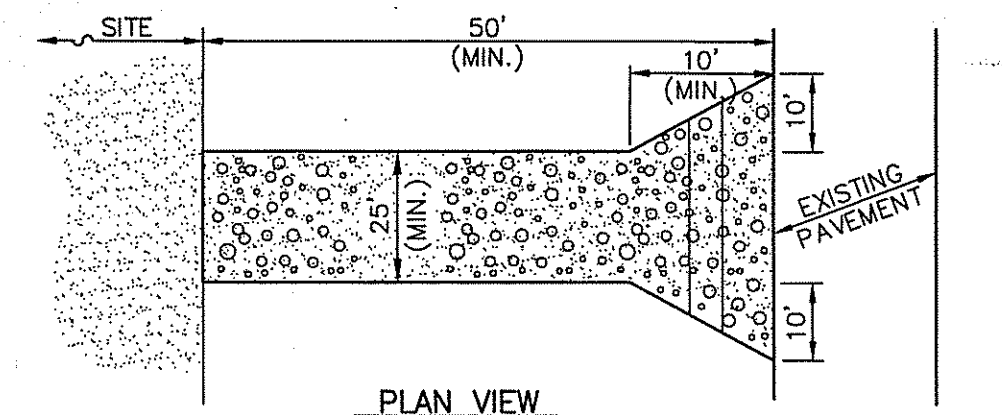
PLAN VIEW

**NOTES:**

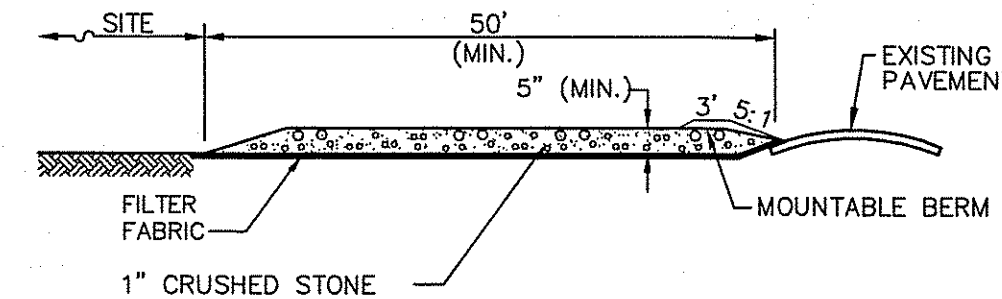
1. ENCLOSE STRUCTURE WITH HAYBALES IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION. MAINTAIN UNTIL PAVING BINDER COURSE IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. IF GRATE IS AGAINST EXISTING CURB THEN HAYBALES ARE TO BE PLACED AROUND THREE SIDES OF GRATE ONLY.
3. WHEN STAKES MUST BE DRIVEN INTO PAVEMENT THE CONTRACTOR SHALL USE REINFORCING STEEL STAKES OR DRILL HOLES.
4. GRATE TO BE PLACED OVER FILTER FABRIC.
5. BALES SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

**CATCH BASIN PROTECTION**

NTS



PLAN VIEW



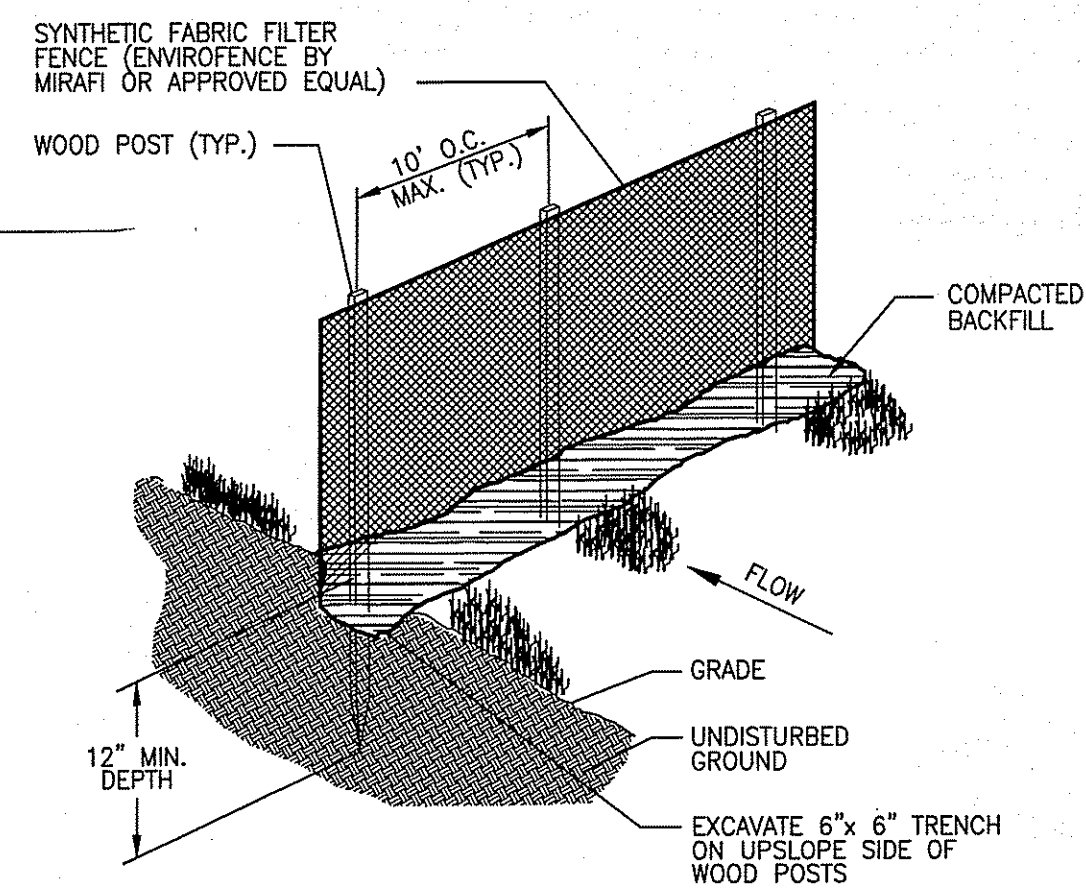
CROSS-SECTION

**TEMPORARY CONSTRUCTION EXIT**

NTS

**NOTES:**

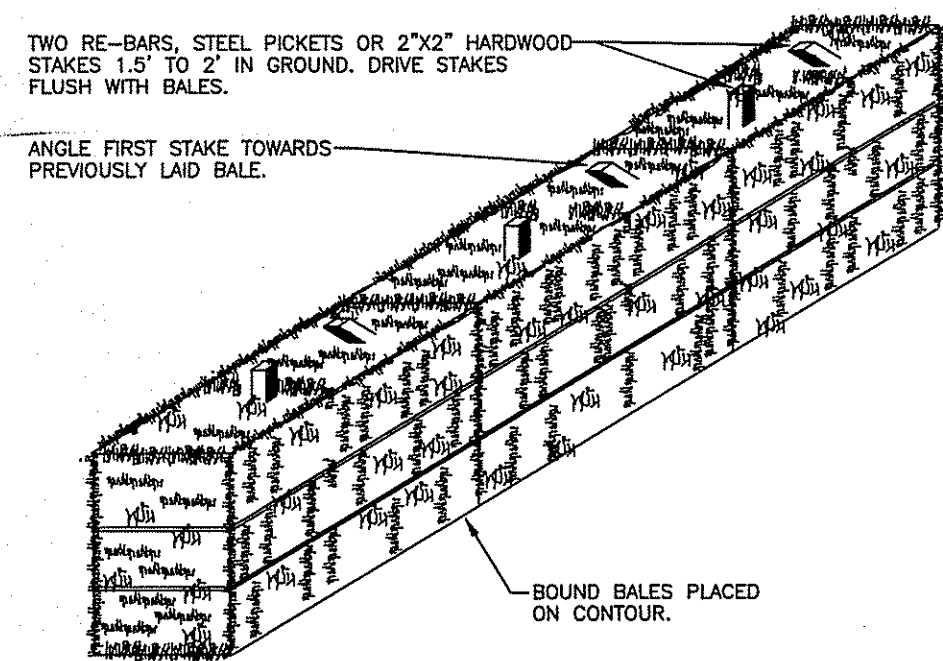
1. ENTRANCE WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.



SILT FENCE DETAIL

N.T.S.

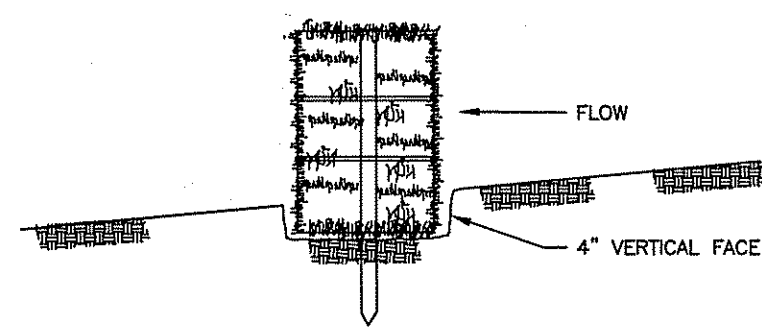
\* DRAINAGE AREA NO MORE THAN 1/4 ACRE PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.



ANCHORING DETAIL

STRAW BALE BARRIER

NTS



BEDDING DETAIL

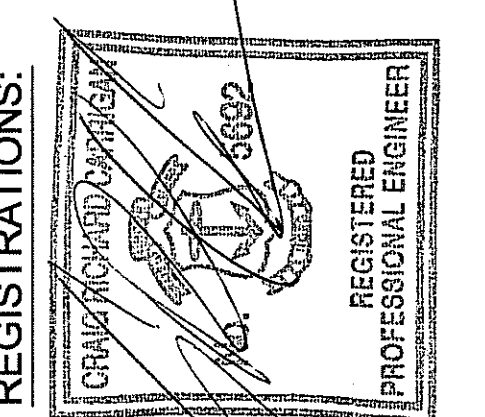
1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN ROW WITH THE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF FOUR (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALES INTO SOLID GROUND. A MIN. OF 1.5' TO 2'. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE TOPS OF THE BALES.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

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**ARTHUR STREET CLUSTER DEVELOPMENT**  
**EROSION CONTROL DETAILS & NOTES**  
 ASSESSOR'S PLAT 8 - VARIOUS LOTS  
 ARTHUR STREET & PULASKI STREET  
 WEST WARWICK, RHODE ISLAND  
 PREPARED FOR: SHORELINE PROPERTIES  
 SCALE: AS NOTED DATE: 09/28/05 SHEET 9 OF 9

REVISIONS:

NO.	DATE	DESCRIPTION	BY
3	9-28-07	DEM CONSENT AGREEMENT	MZ
2	11-6-06	RIDEM WETLANDS COMMENTS	MZ
1	8-7-06	RIDEM WETLANDS COMMENTS	MZ



**CARRIGAN ENGINEERING, INC.**  
 CIVIL AND ENVIRONMENTAL ENGINEERING  
 140 POINT JUDITH ROAD  
 UNIT #3 MARINER SQUARE  
 NARRAGANSETT, RI 02882  
 PHONE: (401) 789-6865  
 FAX: (401) 789-2053

OFFICE OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED MAY 15 2008 FILE # 05-059Y  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
 Charles A. Haber

JAN 18 2008