



CITY OF PORTSMOUTH, NEW HAMPSHIRE

RECORD DRAWINGS

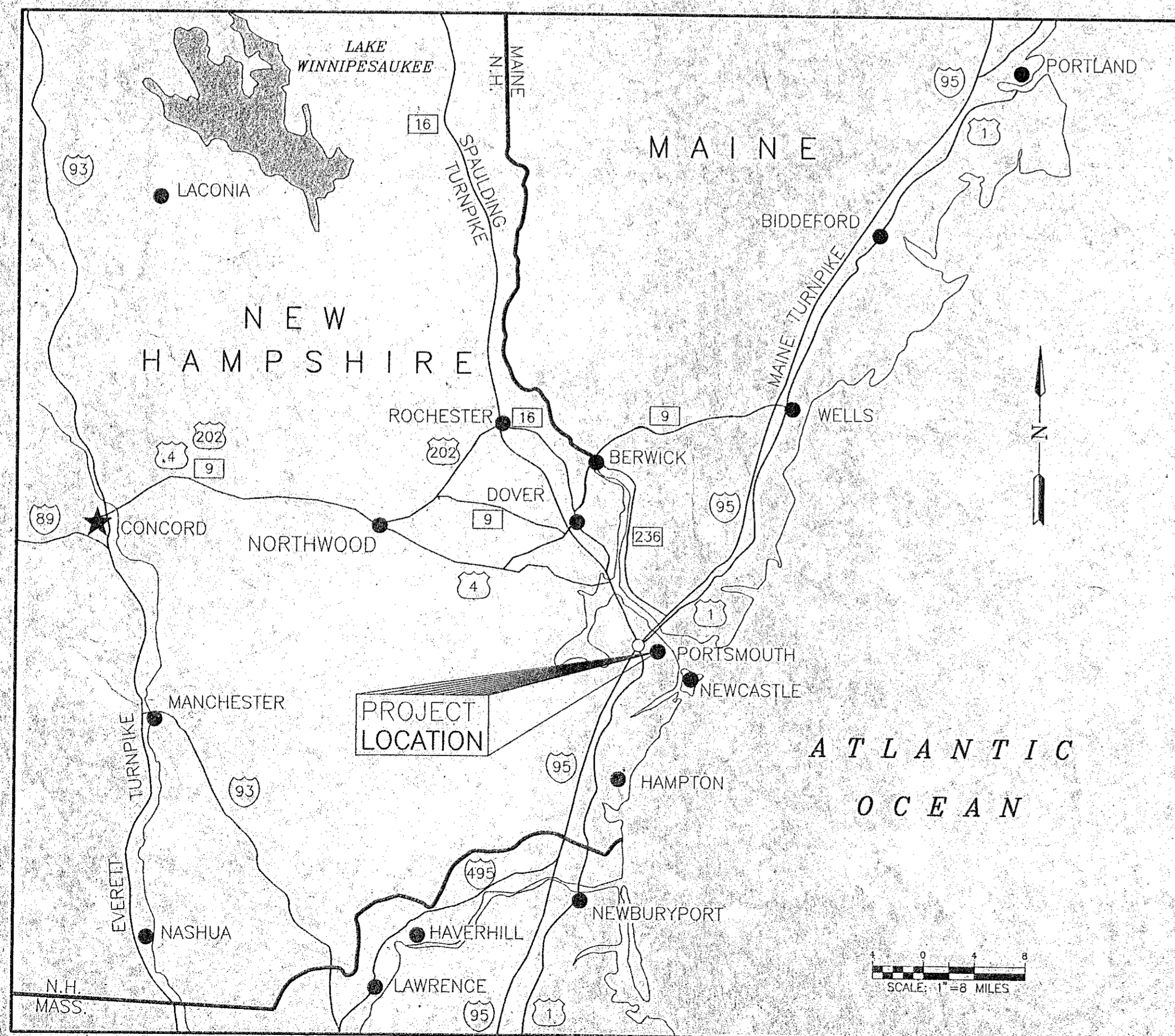
PIERCE ISLAND BRIDGE FORCEMAIN REPLACEMENT

PREPARED BY
UNDERWOOD ENGINEERS, INC.
PORTSMOUTH, NEW HAMPSHIRE

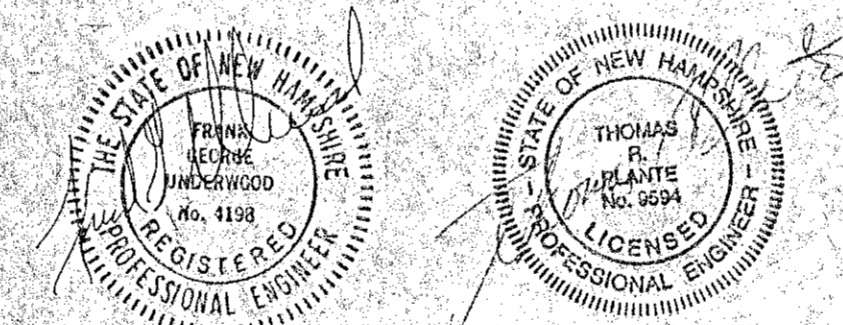
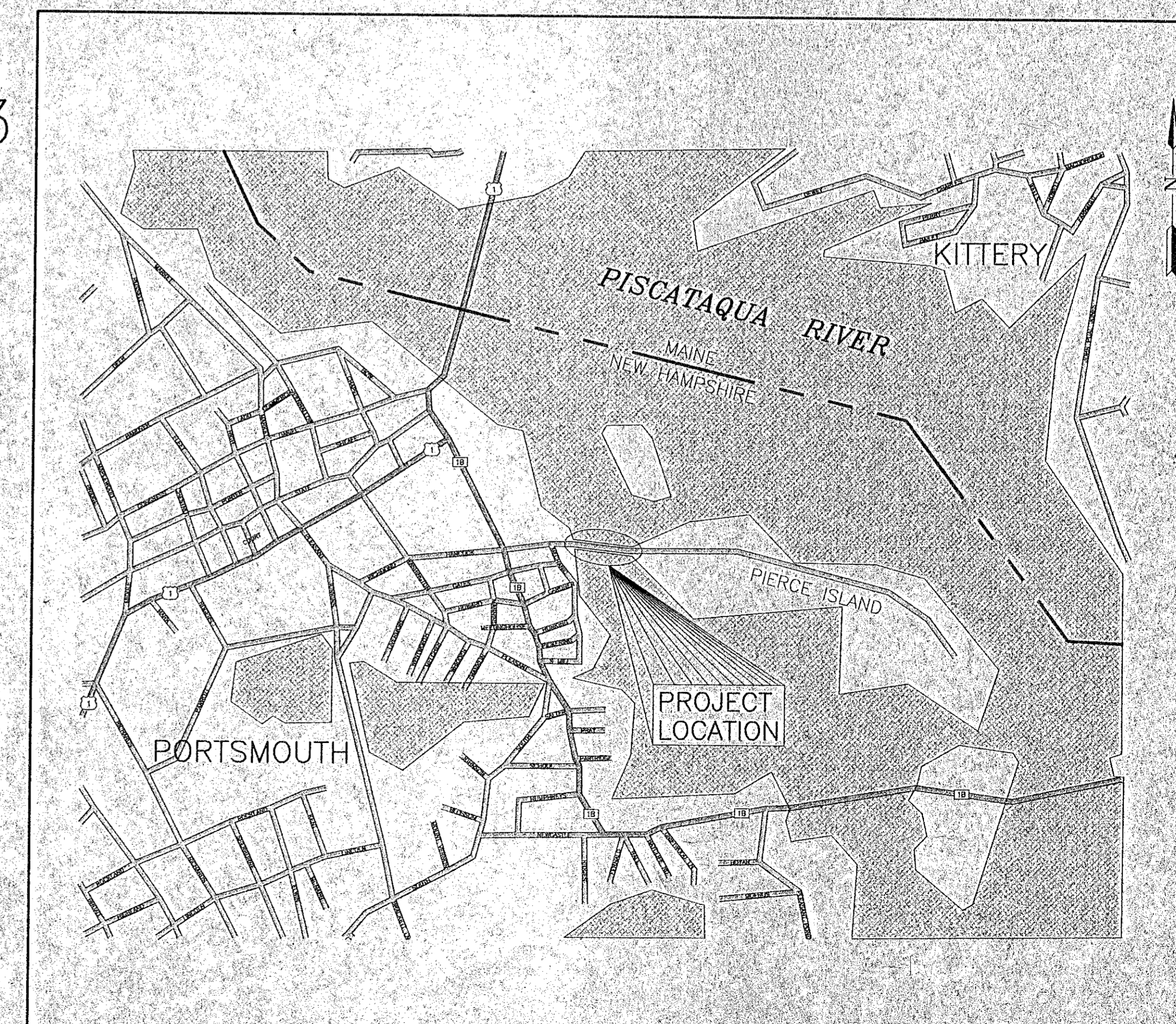
JULY 1998

SRF PROJECT NO. CS-330106-03

LOCATION PLAN

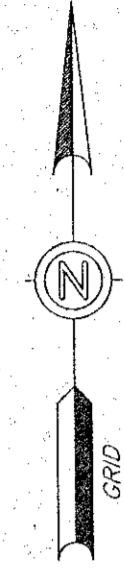


VICINITY MAP



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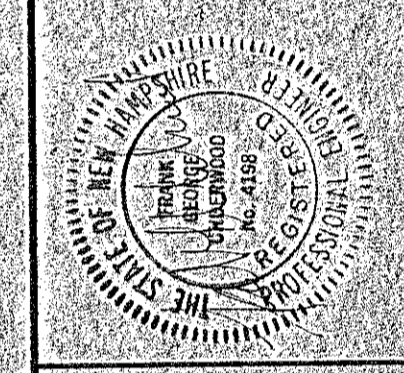
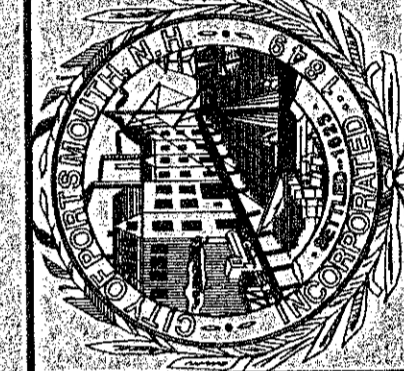
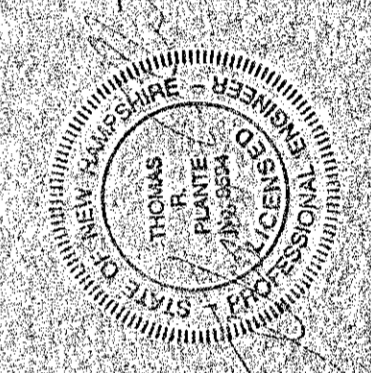
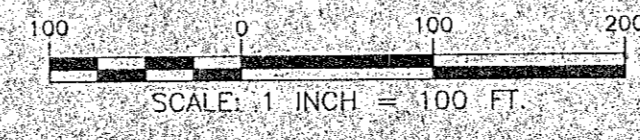
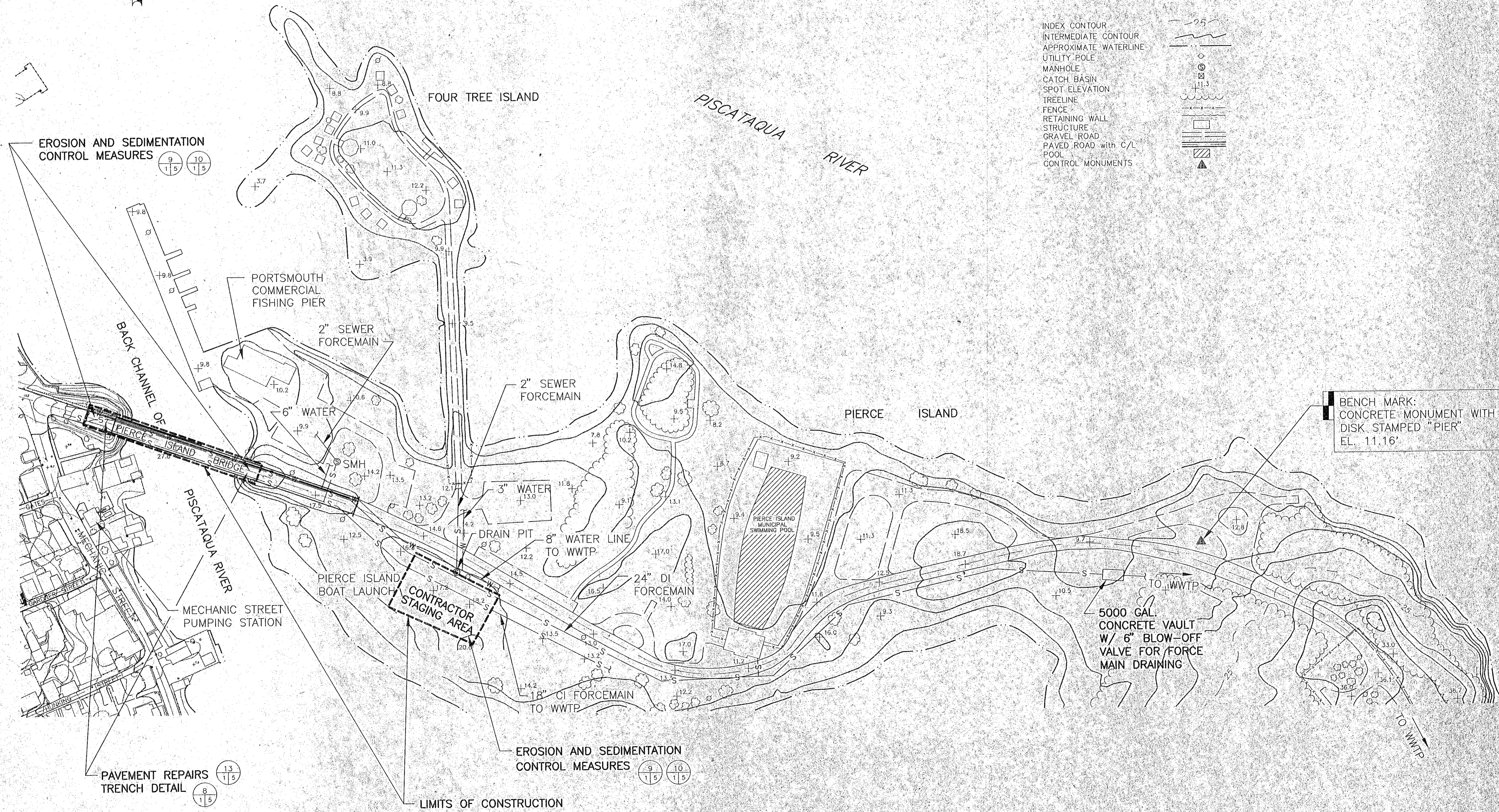
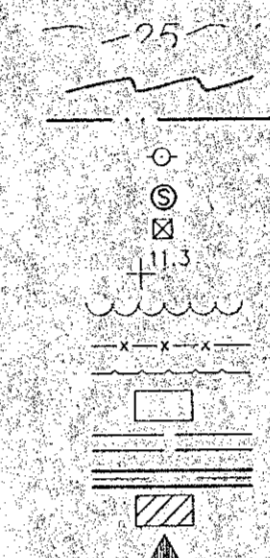


NOTES:

1. PLAN BASED ON PLAN TITLED "TOPOGRAPHIC MAP, CITY OF PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE", SHEET 70, PREPARED BY AERIAL SURVEY & PHOTO, INC., NORRIDGEWOCK, ME., 5/3/94.
2. VERTICAL DATUM IS NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929).
3. LOCATION OF SEWER AND WATER UTILITIES IS APPROXIMATE.
4. DRAINING THE EXISTING SEWER FORCEMAIN SHALL BE PERFORMED BY THE CONTRACTOR THROUGH THE 6 INCH BLOWOFF VALVE LOCATED IN THE 5000 GALLON CONCRETE VAULT. THE SEWAGE SHALL BE PUMPED TO A SEPTAGE TRUCK PROVIDED BY THE CONTRACTOR AND HAILED TO THE WWTP. THE CONTRACTOR SHALL PROVIDE ANY PIPE PLUGS NECESSARY TO PREVENT SEWAGE FROM DISCHARGING IN THE CONSTRUCTION AREA DURING PIPE DEMOLITION OR REPLACEMENT.
5. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH FOR REPLACEMENT OF THE 16 INCH GATE VALVE (WHICH REQUIRES SHUTDOWN OF THE MECHANIC STREET PUMP STATION) AND DISPOSAL OF SEWAGE DRAINED FROM THE FORCE MAIN AT THE WWTP.
6. THE CONTRACTOR SHALL FURNISH AND INSTALL 6-FOOT HIGH CHAIN LINK SECURITY FENCING AND ACCESS GATE AROUND THE STAGING AREA. ALL STOCKPILED MATERIALS SHALL BE STORED WITHIN THE FENCED AREA. THE LIMITATIONS IN STAGING AREA LOCATION SHALL BE DESIGNATED BY THE OWNER.
7. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH FOR PROVIDING TEMPORARY WATER SERVICE ACROSS THE BRIDGE DURING WATER MAIN REPLACEMENT.

LEGEND:

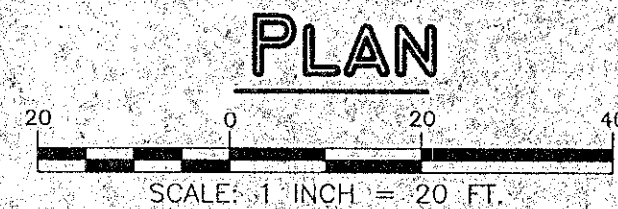
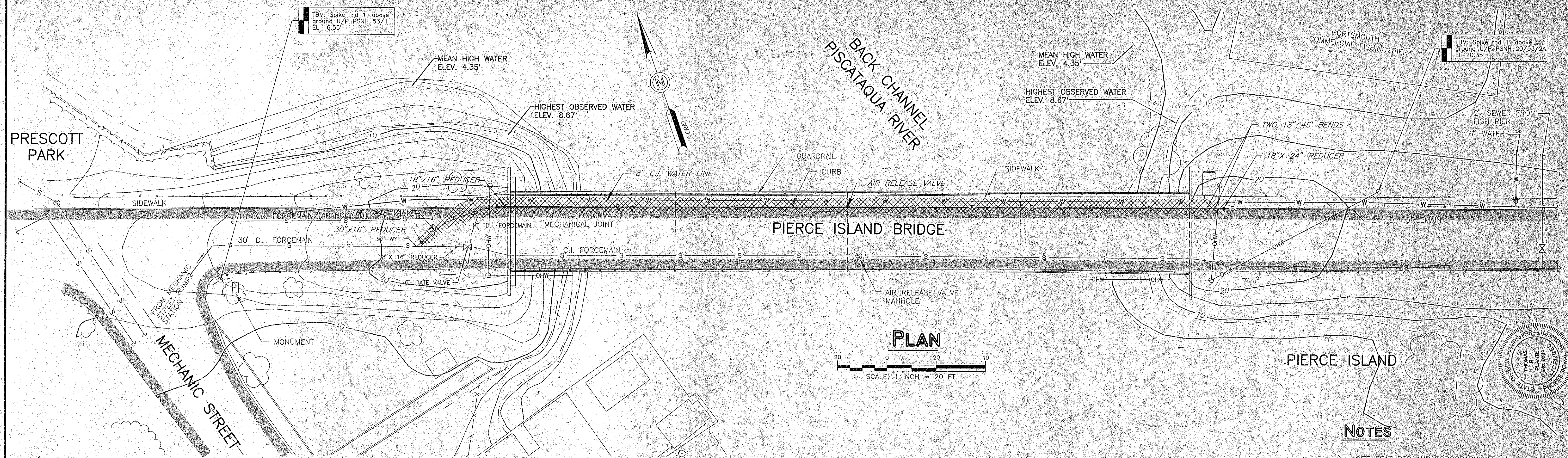
- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- APPROXIMATE WATERLINE
- UTILITY POLE
- MANHOLE
- CATCH BASIN
- SPOT ELEVATION
- TREELINE
- FENCE
- RETAINING WALL
- STRUCTURE
- GRAVEL ROAD
- PAVED ROAD WITH C/L
- POOL
- CONTROL MONUMENTS



**Underwood
Engineers, Inc.**
25 Vaughan Mills, Portsmouth, NH 03801, Tel: 603-426-6192

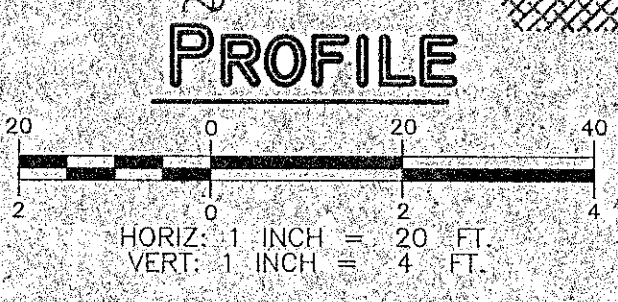
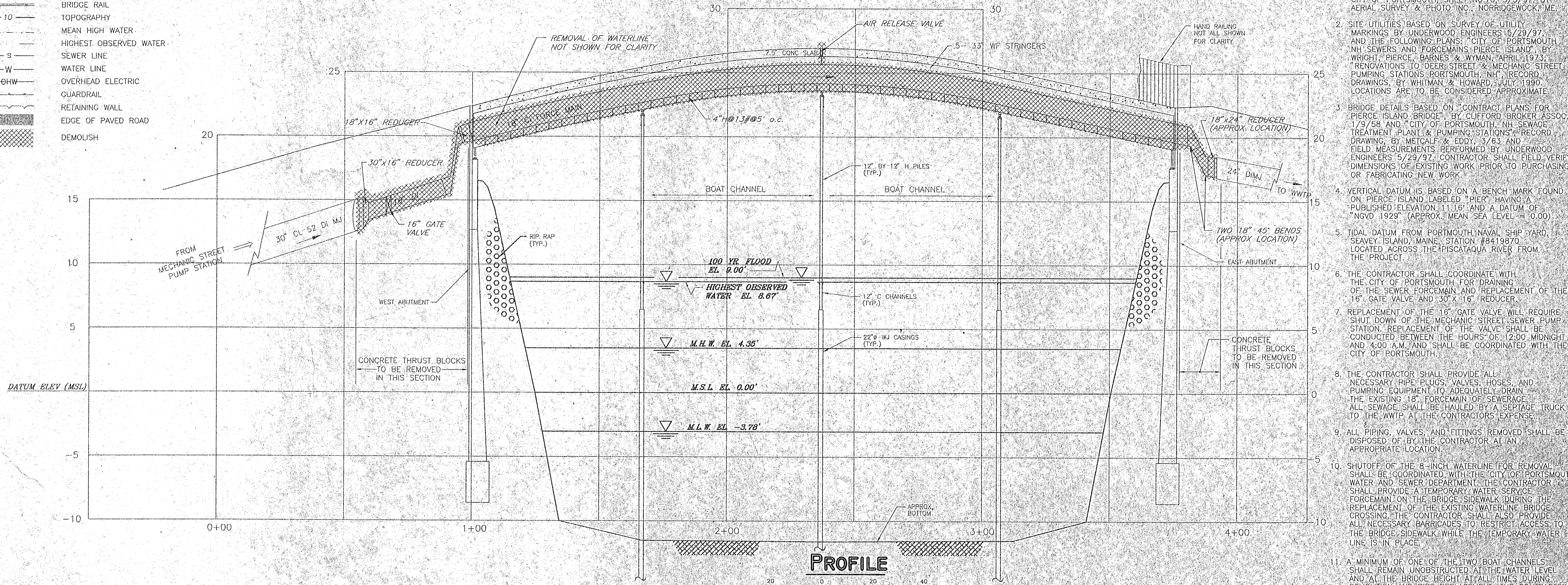
**PIERCE ISLAND BRIDGE
FORCEMAIN REPLACEMENT
AREA PLAN &
GENERAL NOTES**

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LEGEND

— 10 —	BRIDGE RAIL
— 10 —	TOPOGRAPHY
— 10 —	MEAN HIGH WATER
— 10 —	HIGHEST OBSERVED WATER
— S —	SEWER LINE
— W —	WATER LINE
— OHW —	OVERHEAD ELECTRIC
— G —	GUARDRAIL
— R —	RETAINING WALL
— P —	EDGE OF PAVED ROAD
— X —	DEMOLISH



- NOTES**
- SITE FEATURES AND TOPOGRAPHY FROM PLAN ENTITLED "TOPOGRAPHIC MAP" CITY OF PORTSMOUTH, SHEET NO. 70, 5/3/97, BY AERIAL SURVEY & PHOTO, INC., NORRIDGEWOOD, ME.
 - SITE UTILITIES BASED ON SURVEY OF UTILITY MARKINGS BY UNDERWOOD ENGINEERS, 7/29/97, AND THE FOLLOWING PLANS: CITY OF PORTSMOUTH NH SEWERS AND FORCEMAINS PIERCE ISLAND, BY WRIGHT, PIERCE, BARNES & WYMAN, APRIL 1973; RENOVATIONS TO DEER STREET & MECHANIC STREET PUMPING STATIONS, PORTSMOUTH, NH, RECORD DRAWINGS, BY WHITMAN & HOWARD, JULY 1990. LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
 - BRIDGE DETAILS BASED ON "CONTRACT PLANS FOR PIERCE ISLAND BRIDGE" BY CLIFFORD BROTHER ASSOC. 1/9/58 AND "CITY OF PORTSMOUTH, NH SEWAGE TREATMENT PLANT & PUMPING STATIONS" RECORD DRAWING, BY METCALF & EDDY, 3/7/63 AND FIELD MEASUREMENTS PERFORMED BY UNDERWOOD ENGINEERS 5/23/97. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF EXISTING WORK PRIOR TO PURCHASING OR FABRICATING NEW WORK.
 - VERTICAL DATUM IS BASED ON A BENCH MARK FOUND ON PIERCE ISLAND LABELED "PIER" HAVING A PUBLISHED ELEVATION 11.18' AND A DATUM OF "NGVD 1929" (APPROX. MEAN SEA LEVEL = 0.00').
 - TIDAL DATUM FROM PORTSMOUTH NAVAL SHIP YARD, SEAVEY ISLAND, MAINE, STATION #8419870, LOCATED ACROSS THE PISCATAQUA RIVER FROM THE PROJECT.
 - THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH FOR DRAINING OF THE SEWER FORCEMAIN AND REPLACEMENT OF THE 16" GATE VALVE AND 30" x 16" REDUCER.
 - REPLACEMENT OF THE 16" GATE VALVE WILL REQUIRE SHUT DOWN OF THE MECHANIC STREET SEWER PUMP STATION. REPLACEMENT OF THE VALVE SHALL BE CONDUCTED BETWEEN THE HOURS OF 12:00 MIDNIGHT AND 4:00 A.M. AND SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PIPE PLUGS, VALVES, HOSES, AND PUMPING EQUIPMENT TO ADEQUATELY DRAIN THE EXISTING 18" FORCEMAIN OF SEWAGE. ALL SEWAGE SHALL BE HAULED BY A SEPTAGE TRUCK TO THE WWTP AT THE CONTRACTOR'S EXPENSE.
 - ALL PIPING, VALVES, AND FITTINGS REMOVED SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROPRIATE LOCATION.
 - SHUTOFF OF THE 8-INCH WATERLINE FOR REMOVAL SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH WATER AND SEWER DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A TEMPORARY WATER SERVICE FORCEMAIN ON THE BRIDGE SIDEWALK DURING THE REPLACEMENT OF THE EXISTING WATERLINE BRIDGE CROSSING. THE CONTRACTOR SHALL ALSO PROVIDE ALL NECESSARY BARRICADES TO RESTRICT ACCESS TO THE BRIDGE SIDEWALK WHILE THE TEMPORARY WATER LINE IS IN PLACE.
 - A MINIMUM OF ONE OF THE TWO BOAT CHANNELS SHALL REMAIN UNOBSTRUCTED AT THE WATER LEVEL AND AT THE BRIDGE HEIGHT AT ALL TIMES DURING DEMOLITION AND PIPE REPLACEMENT. THE CONTRACTOR SHALL PROVIDE SUITABLE SIGNAGE TO DIRECT BOAT TRAFFIC AWAY FROM OBSTRUCTED CHANNELS AT ALL TIMES. SIGNAGE SHALL COMPLY WITH USCG REQUIREMENTS.
 - AREAS DESIGNATED ON THE PROFILE FOR CONCRETE THRUST BLOCK REMOVAL MAY HAVE CONCRETE ENCASING THE PIPE WHICH MAY REQUIRE REMOVAL BY JACKHAMMERING OR OTHER MEANS.

Underwood Engineers, Inc.
25 Vaughanfield, Portsmouth, NH 03801 Tel. 603-465-6192

PIERCE ISLAND BRIDGE
FORCEMAIN REPLACEMENT

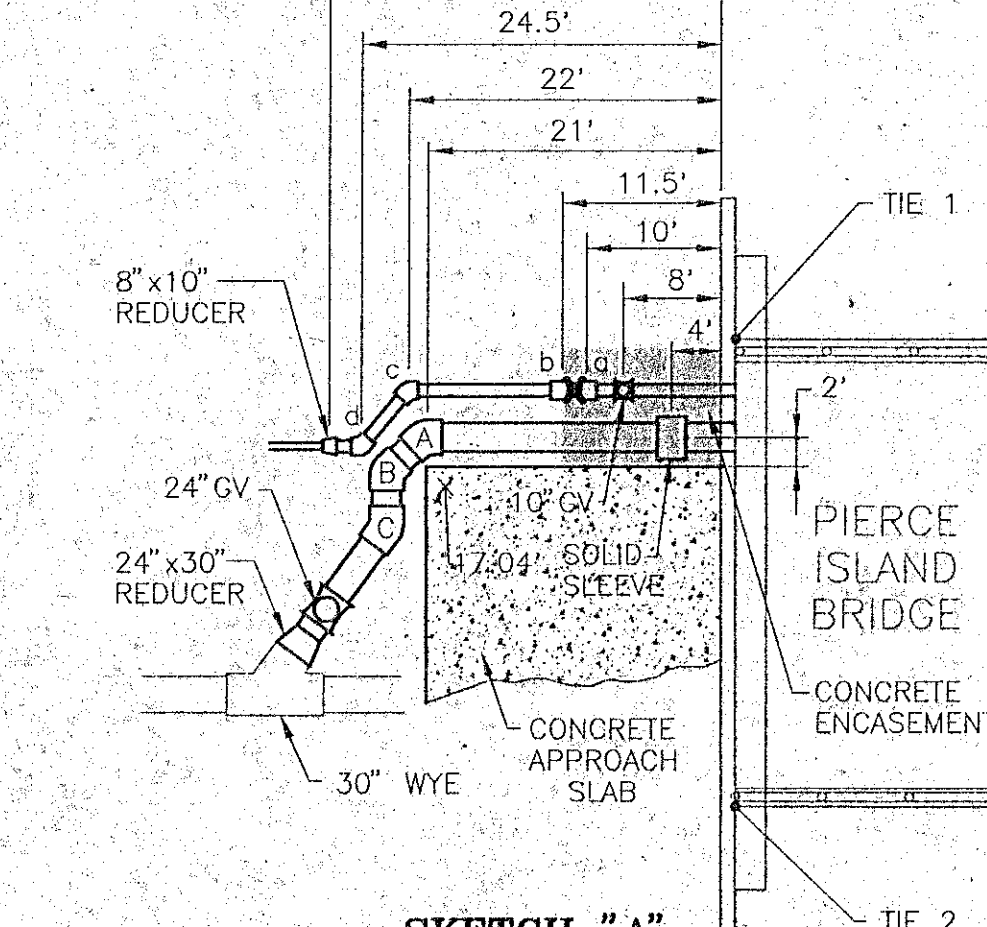
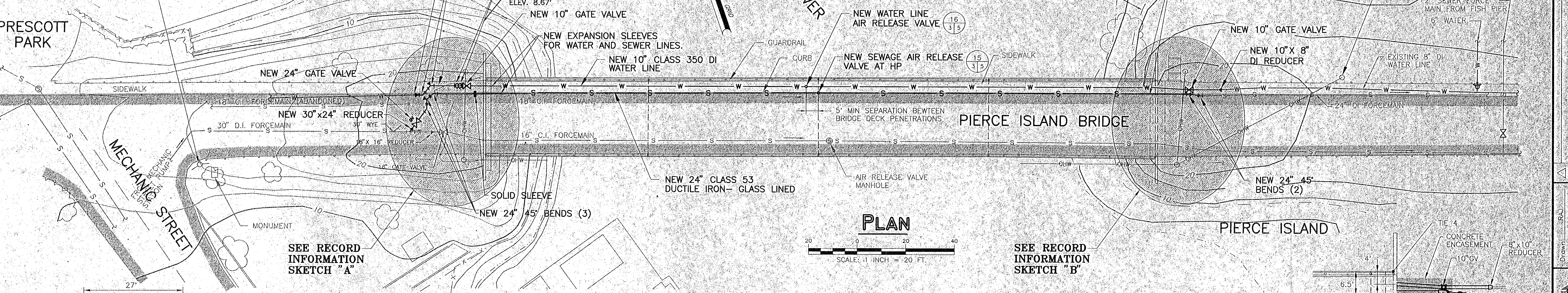
DEMOLITION PLAN & PROFILE

DATE	8/9/97	BY	JUC
DESIGNED	RF	CHECKED	RF
APPROVED	FGJ	CONSTRUCTION	
DATE	8/6/97	PROJECT NO.	747
BOOK NO.	132	RECORD DRAWING	8/27/97
DWG. NO.	747DPPR	REVISIONS	
SCALE	AS SHOWN		

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LEGEND

- BRIDGE RAIL
- TOPOGRAPHY
- MEAN HIGH WATER
- HIGHEST OBSERVED WATER
- SEWER LINE
- WATER LINE
- OVERHEAD ELECTRIC
- GUARDRAIL
- RETAINING WALL
- EDGE OF PAVED ROAD
- NEW SEWER LINE
- NEW WATER LINE

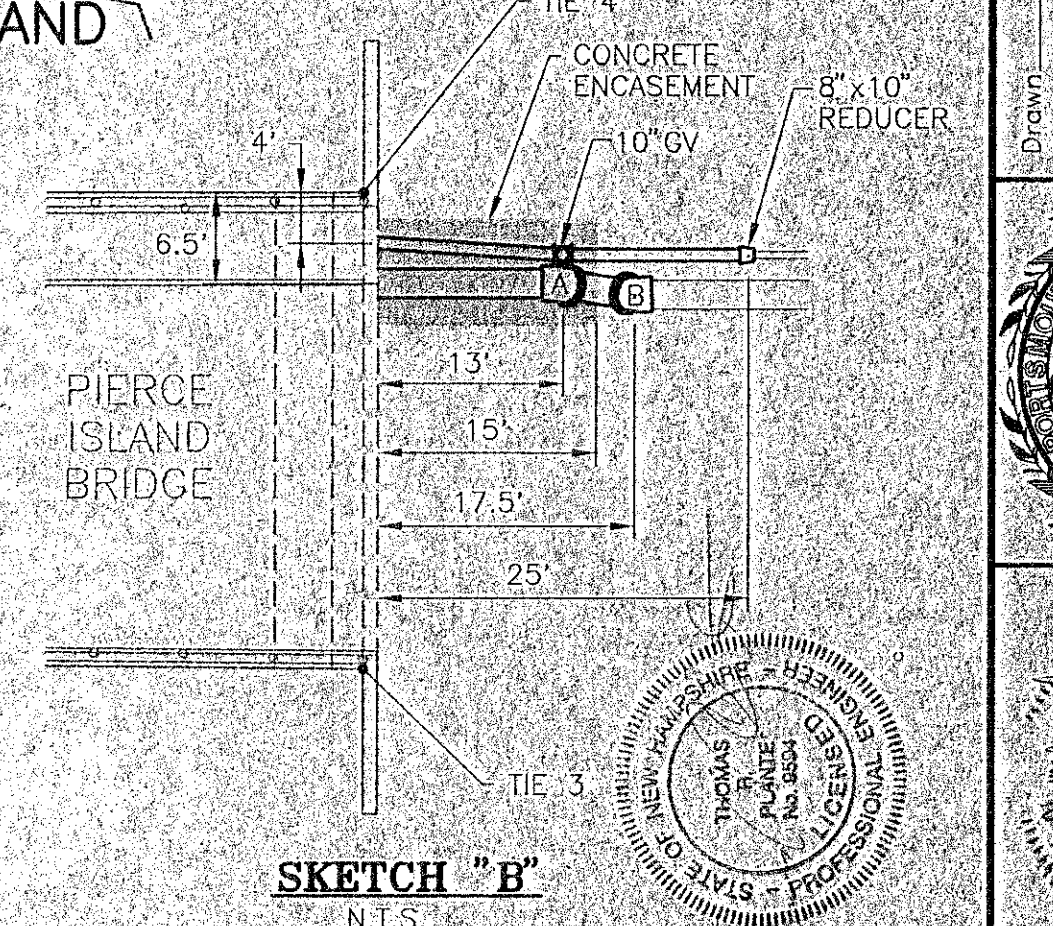


SEWER			
FITTING	TIE 1	TIE 2	ELEVATION
SOLID SLEEVE	8.5'	26.5'	20.47' TOP / 18.38' INV
45" A	22.5'	34'	18.82' TOP / 14.53' INV
45" B	25.5'	33.5'	18.83' TOP / 13.54' INV
45" C	27.5'	31'	15.43' TOP / 13.34' INV
24" GATE VALVE	34'	31.5'	-
24" x 30" REDUCER	37'	32.5'	2.91' INVERT 30"

WATER			
FITTING	TIE 1	TIE 2	ELEVATION
10" GATE VALVE	10'	30'	19.57' TOP / 21.08' OP. NUT
45" a	12'	31'	19.57' TOP
45" b	13.5'	32'	17.08' TOP
45" c	24'	38'	16.31' TOP
45" d	27'	36'	16.2' TOP
8" x 10" REDUCER	29'	38'	-

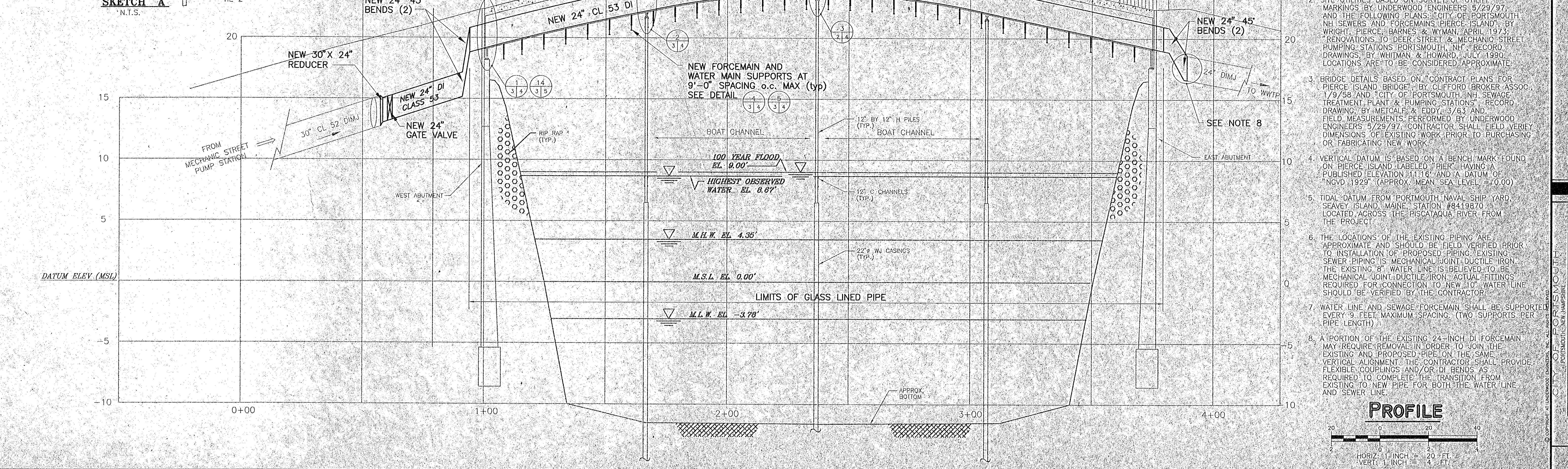
SEWER			
FITTING	TIE 3	TIE 4	ELEVATION
45" A	29.5'	15'	20.31' TOP / 18.22' INV
45" B	32'	20'	17.37' TOP / 15.28' INV

WATER			
FITTING	TIE 3	TIE 4	ELEVATION
10" GATE VALVE	31.5'	14.5'	19.26' TOP / 20.90' OP. NUT
8" x 10" REDUCER	38'	26'	18.62' TOP



NOTES

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- TIDAL DATUM FROM PORTSMOUTH NAVAL SHIP YARD SEAVEY ISLAND, MAINE, STATION #8419870 LOCATED ACROSS THE PISCATAQUA RIVER FROM THE PROJECT.
- THE LOCATIONS OF THE EXISTING PIPING ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED PRIOR TO INSTALLATION OF PROPOSED PIPING. EXISTING SEWER PIPING IS MECHANICAL JOINT DUCTILE IRON. THE EXISTING 8" WATER LINE IS BELIEVED TO BE MECHANICAL JOINT DUCTILE IRON. ACTUAL FITTINGS REQUIRED FOR CONNECTION TO NEW 10" WATER LINE SHOULD BE VERIFIED BY THE CONTRACTOR.
- WATER LINE AND SEWAGE FORCEMAIN SHALL BE SUPPORTED EVERY 9 FEET MAXIMUM SPACING (TWO SUPPORTS PER PIPE LENGTH).
- A PORTION OF THE EXISTING 24-INCH DI FORCEMAIN MAY REQUIRE REMOVAL IN ORDER TO JOIN THE EXISTING AND PROPOSED PIPE ON THE SAME VERTICAL ALIGNMENT. THE CONTRACTOR SHALL PROVIDE FLEXIBLE COUPLINGS AND/OR DI BENDS AS REQUIRED TO COMPLETE THE TRANSITION FROM EXISTING TO NEW PIPE FOR BOTH THE WATER LINE AND SEWER LINE.

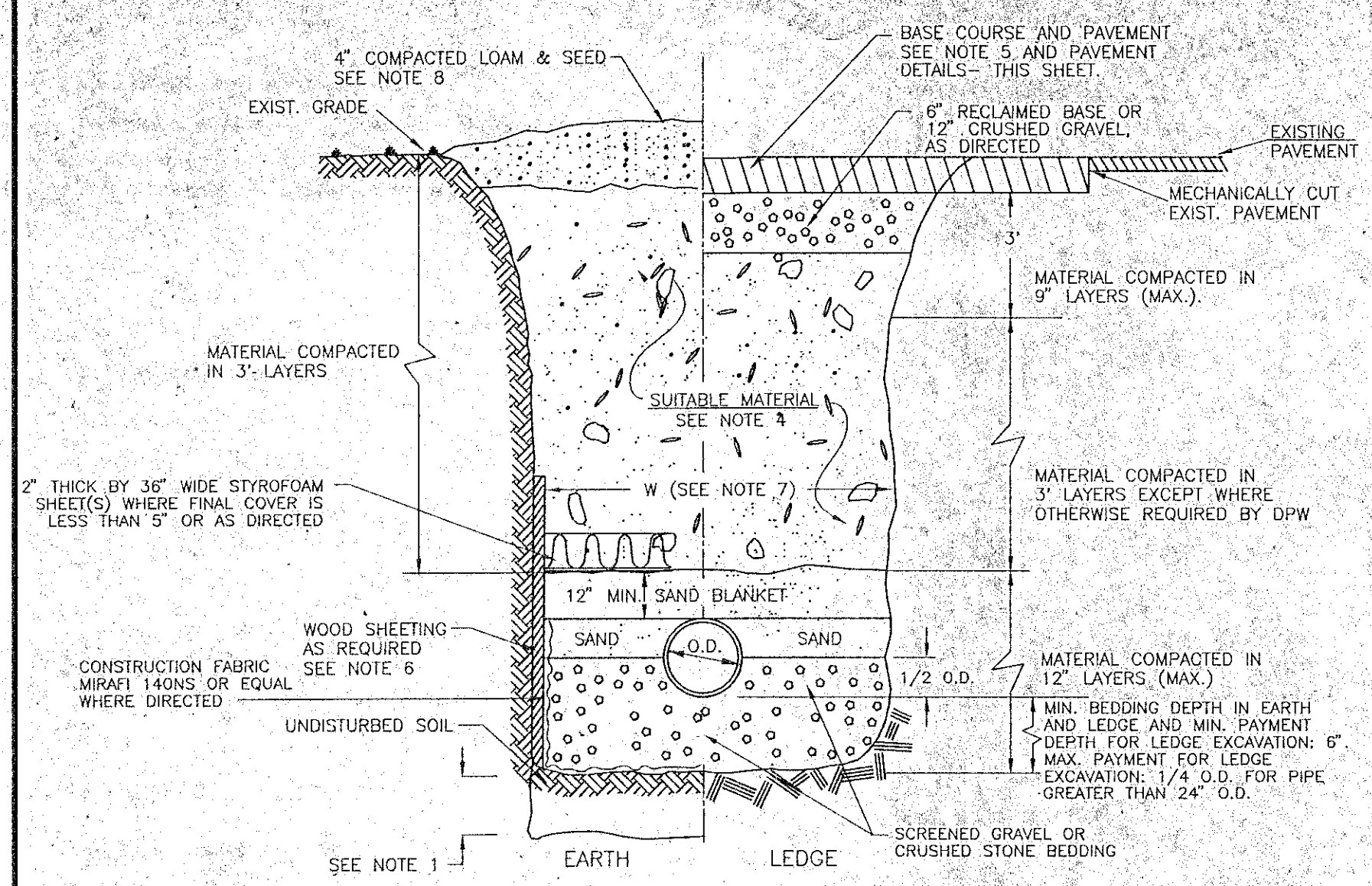


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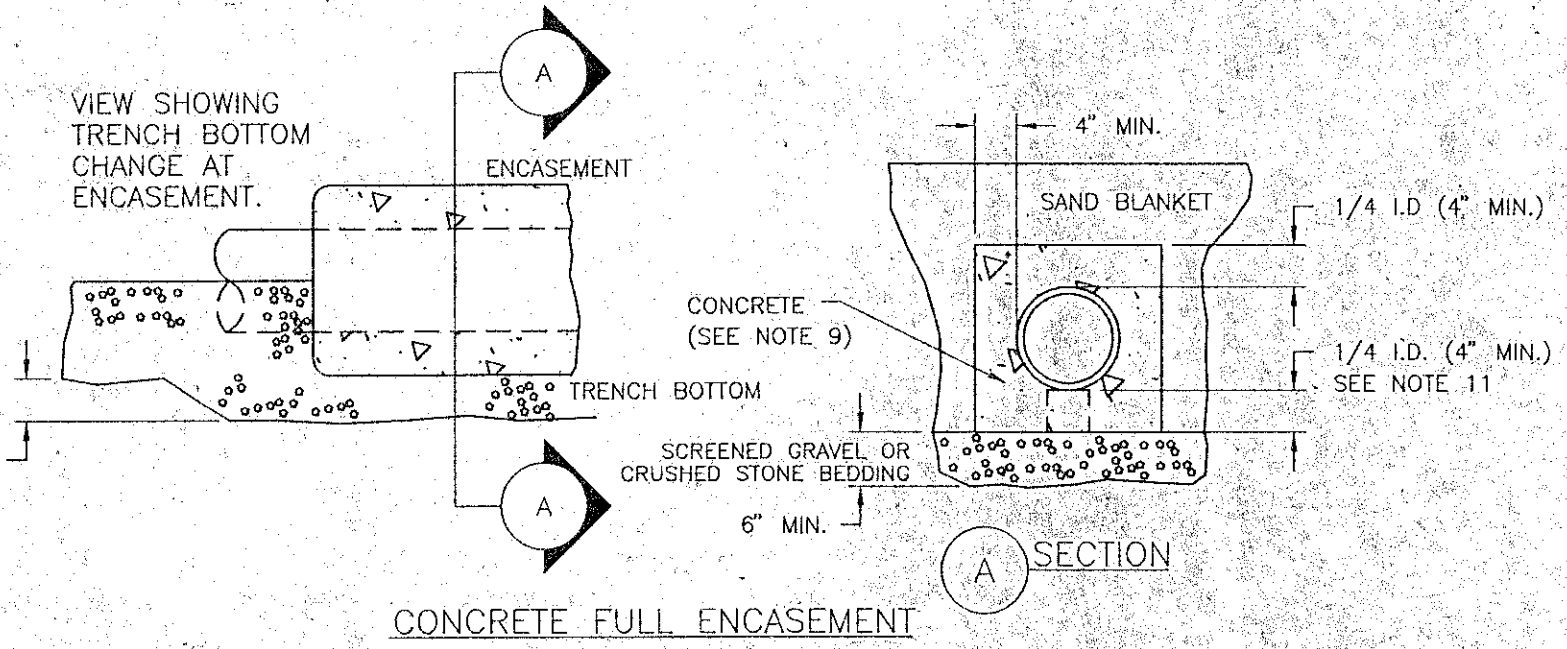
PIERCE ISLAND BRIDGE
FORCEMAIN REPLACEMENT

PLAN & PROFILE

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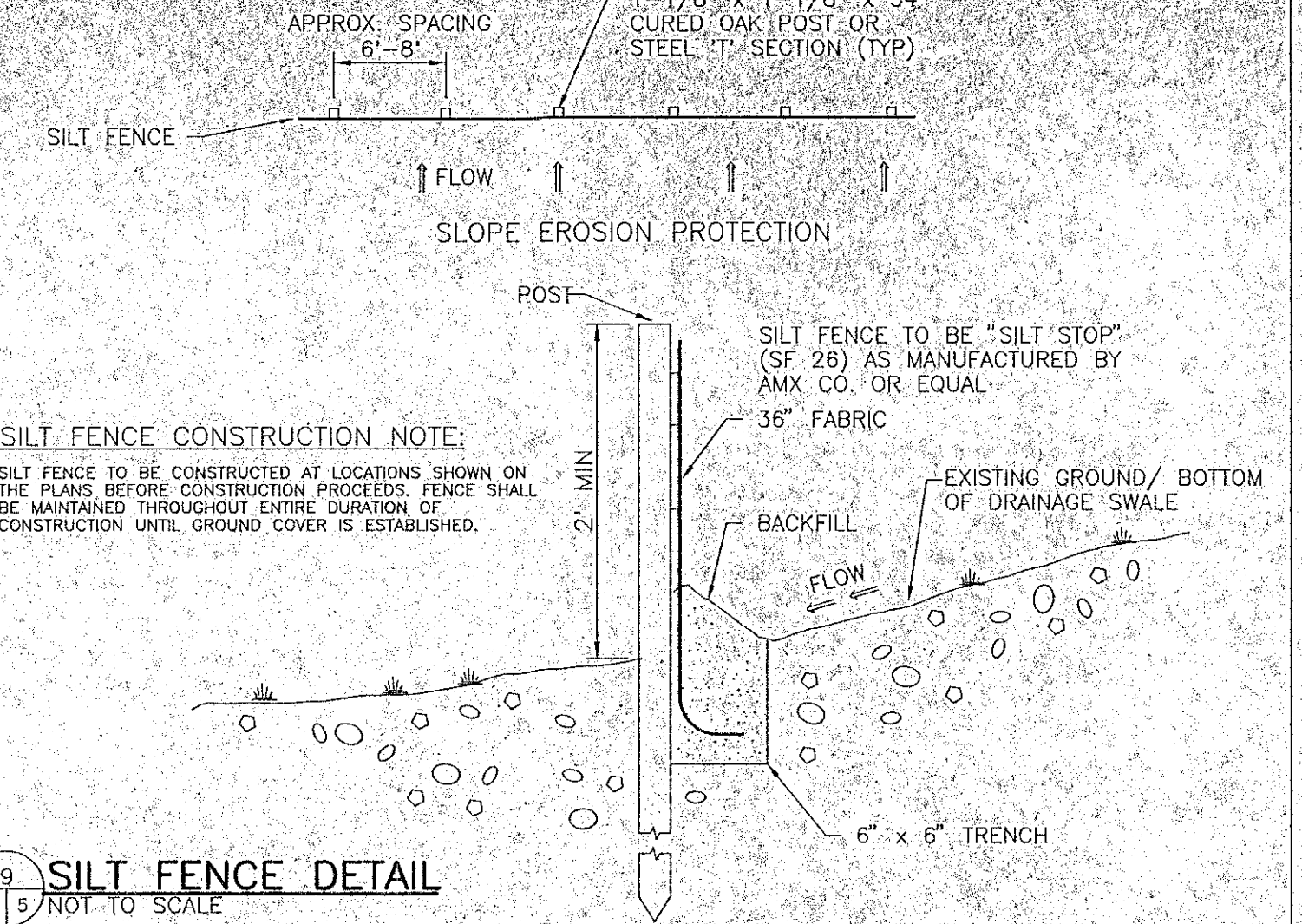
TYPICAL TRENCH DETAIL



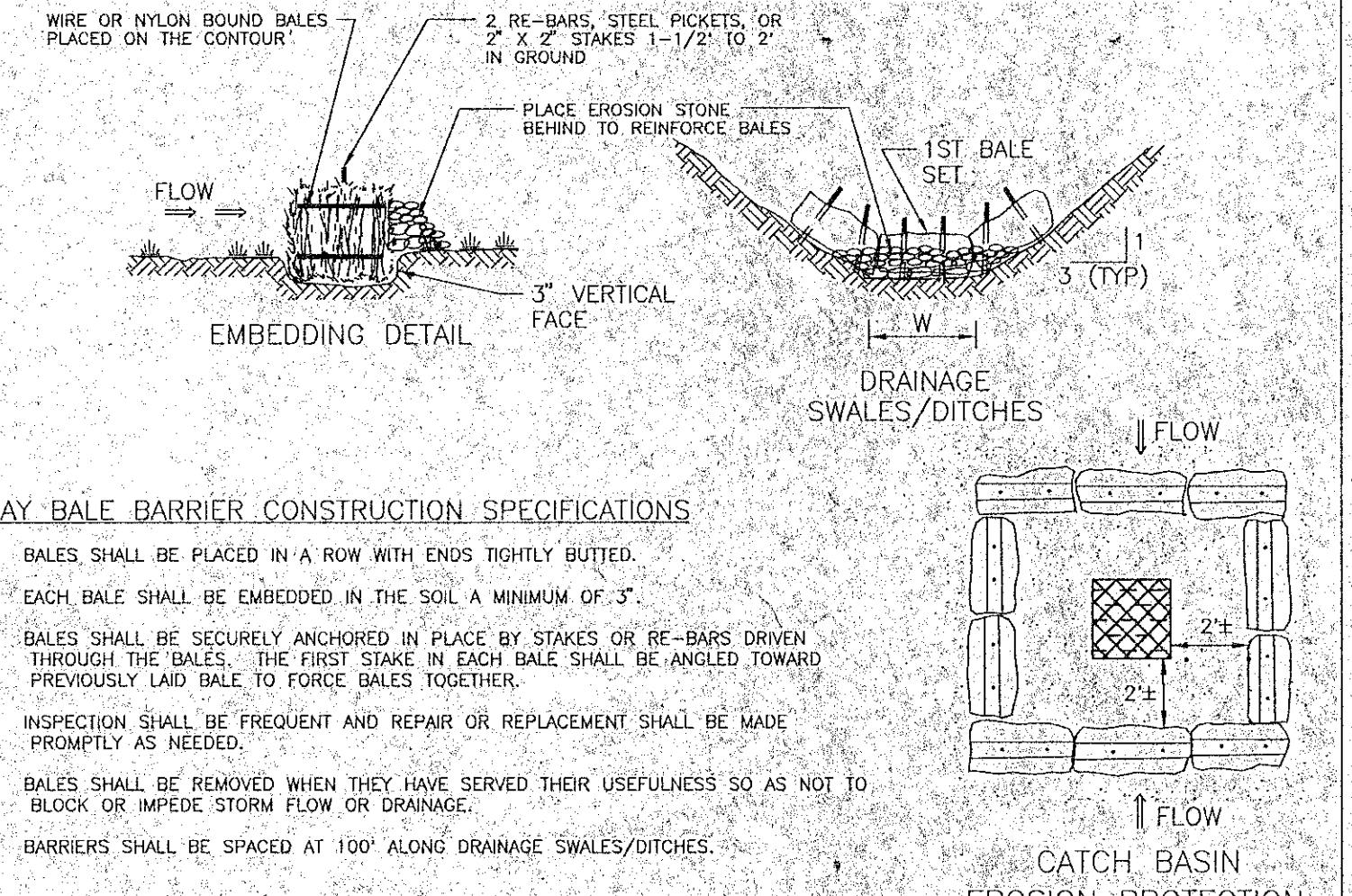
CONCRETE FULL ENCASUREMENT

STANDARD TRENCH NOTES - SEWER

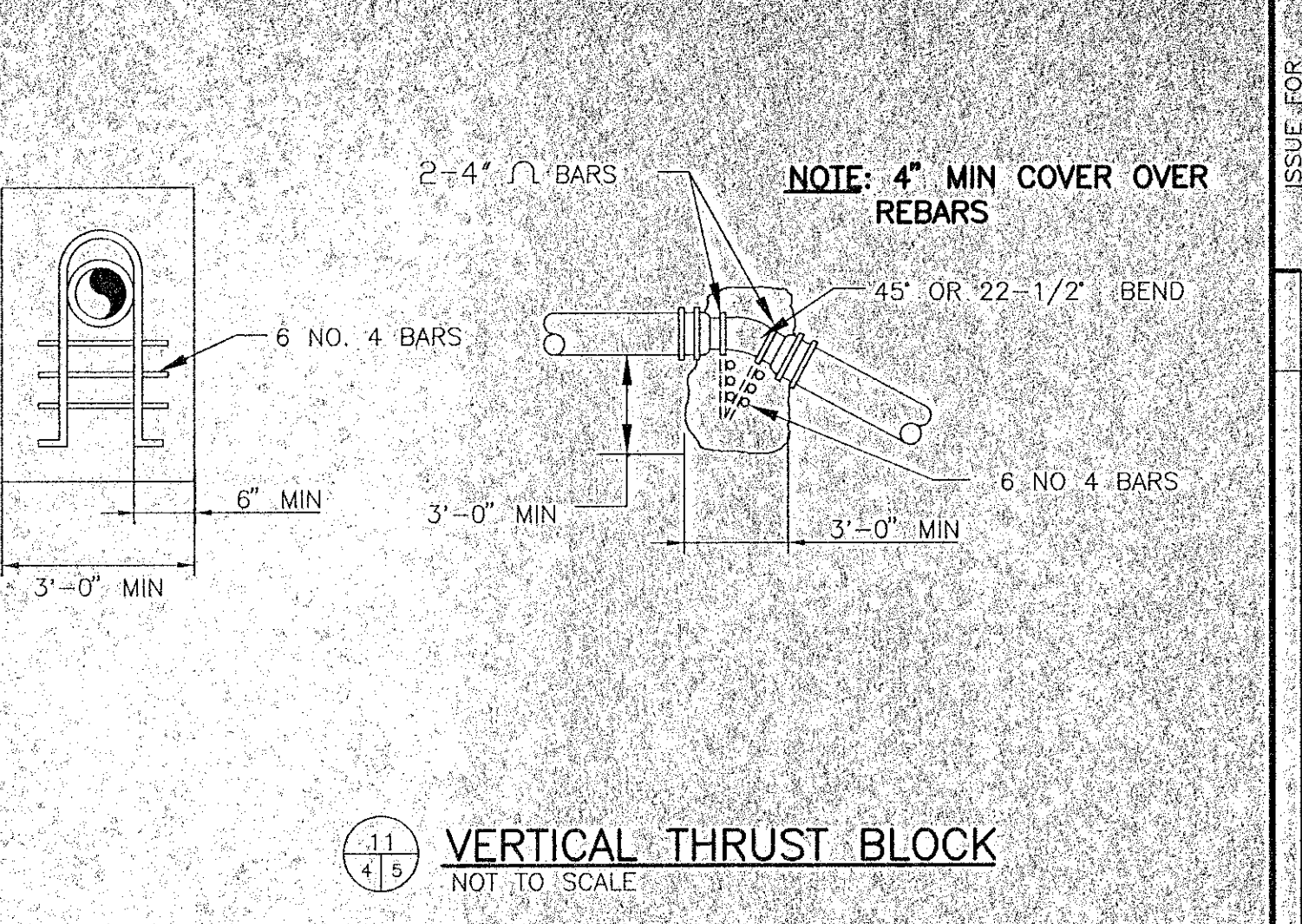
- ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. ALSO SEE NOTE 7.
- BEDDING: SCREENED GRAVEL OR CRUSHED STONE FREE FROM CLAY, LOAM, AND ORGANIC MATTER, AND MEETING ASTM C23. 100% PASSING 1" INCH SCREEN 90 - 100% PASSING 3/4" SCREEN 20 - 50% PASSING 3/8" SCREEN 0 - 10% PASSING #4 SIEVE 0 - 5% PASSING #10 SIEVE WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.
- SAND BLANKET: CLEAN SAND, FREE FROM ORGANIC MATTER, AND GRADED AS FOLLOWS: 90 - 100% PASSING 1/2" SCREEN 0 - 15% PASSING #200 SIEVE BLANKET MAY BE OMITTED FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE IS LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
- SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY. ALL EXCAVATED LEDGE MATERIAL AND ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.
- BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF DIVISIONS 300 AND 400 OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S, LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
- WOOD SHEETING: IF REQUIRED, WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
- W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
- FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDING TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- CONCRETE FOR ENCASUREMENT SHALL CONFORM TO THE SPECIFICATIONS FOR CLASS A (3000 PSI) CONCRETE.
- CONCRETE FULL ENCASUREMENT: IF FULL ENCASUREMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4" I.D. (4" MIN.) (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.



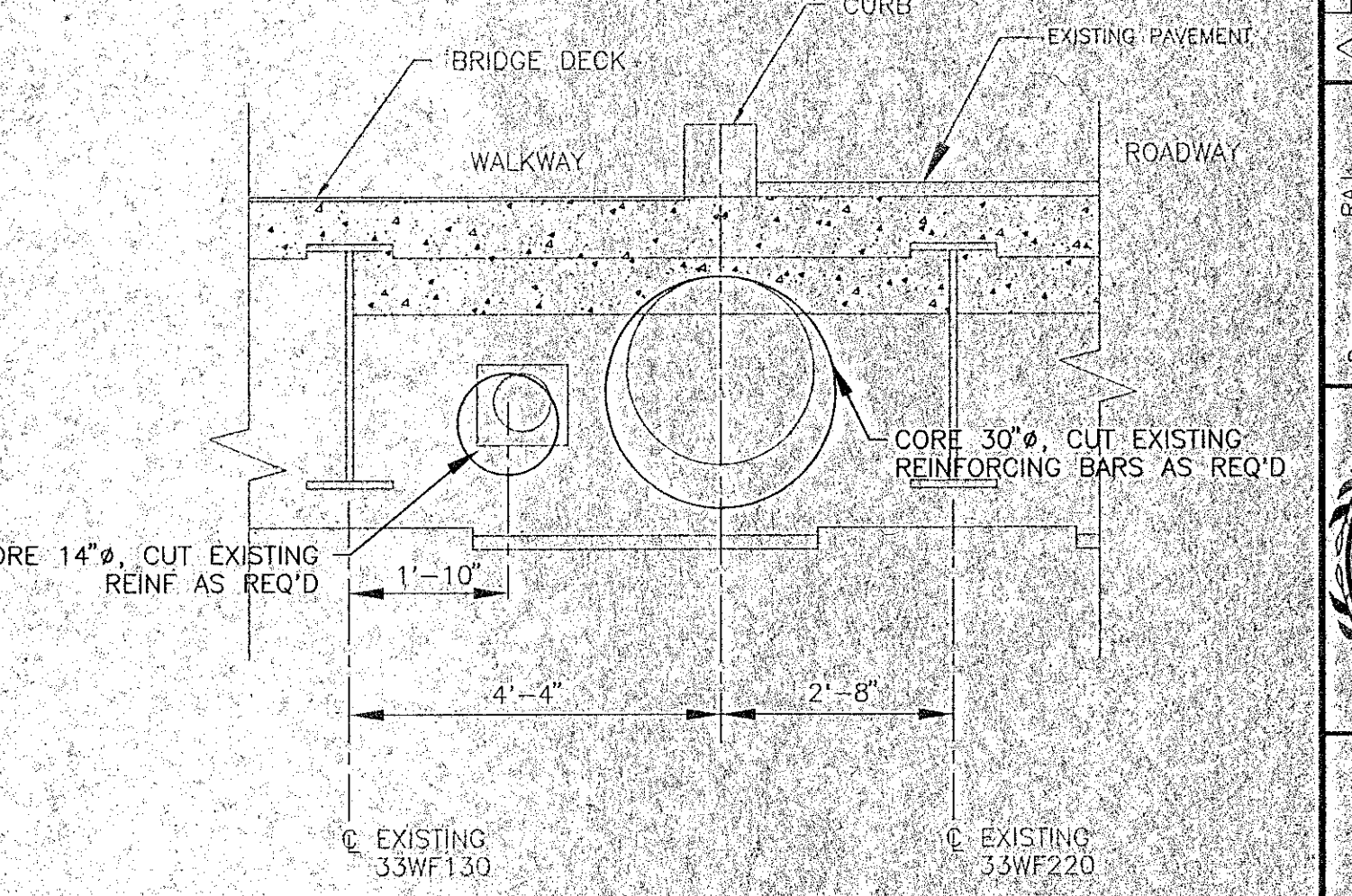
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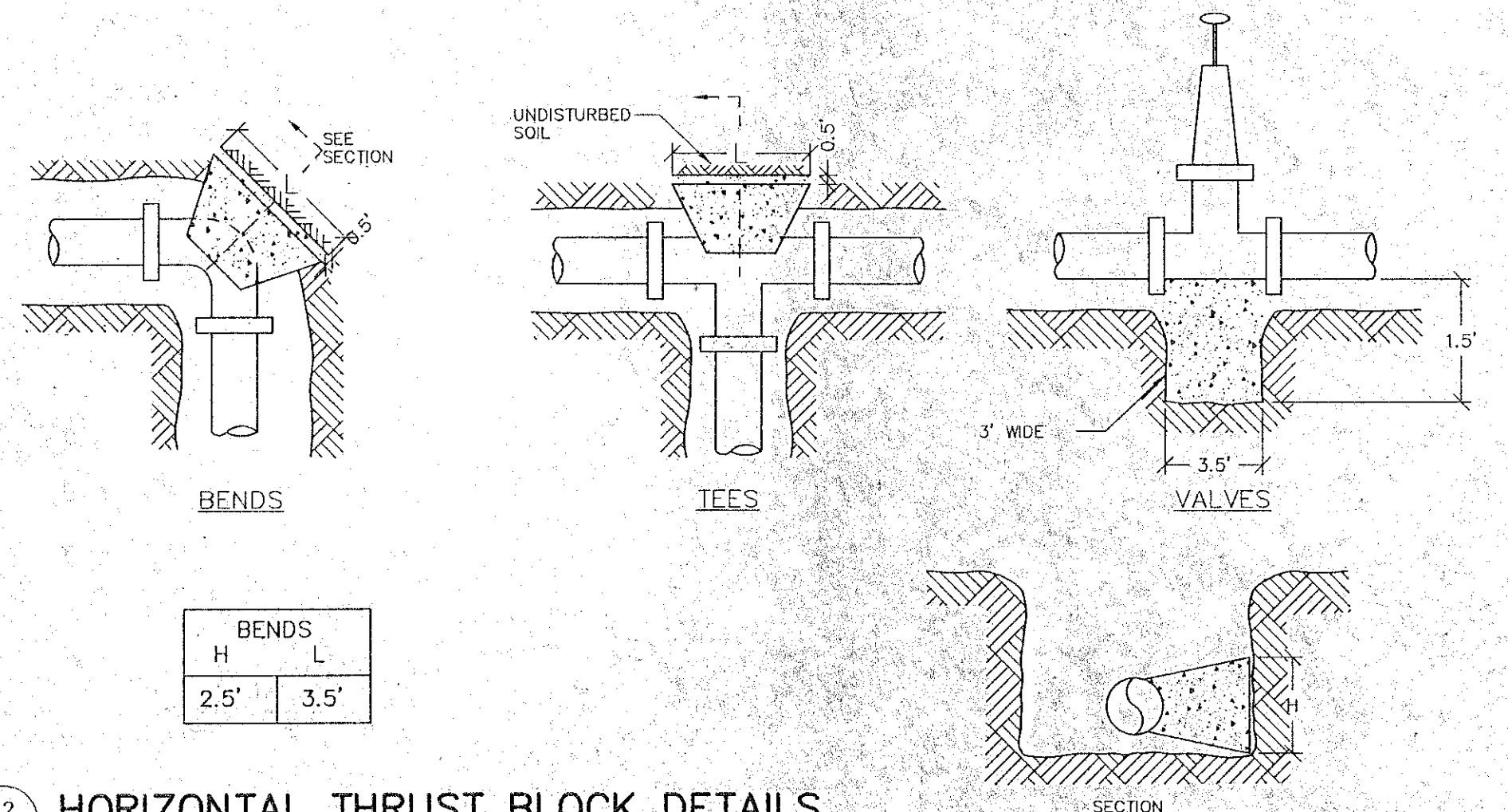
TYPICAL STRAW OR HAY BALE BARRIER NOT TO SCALE



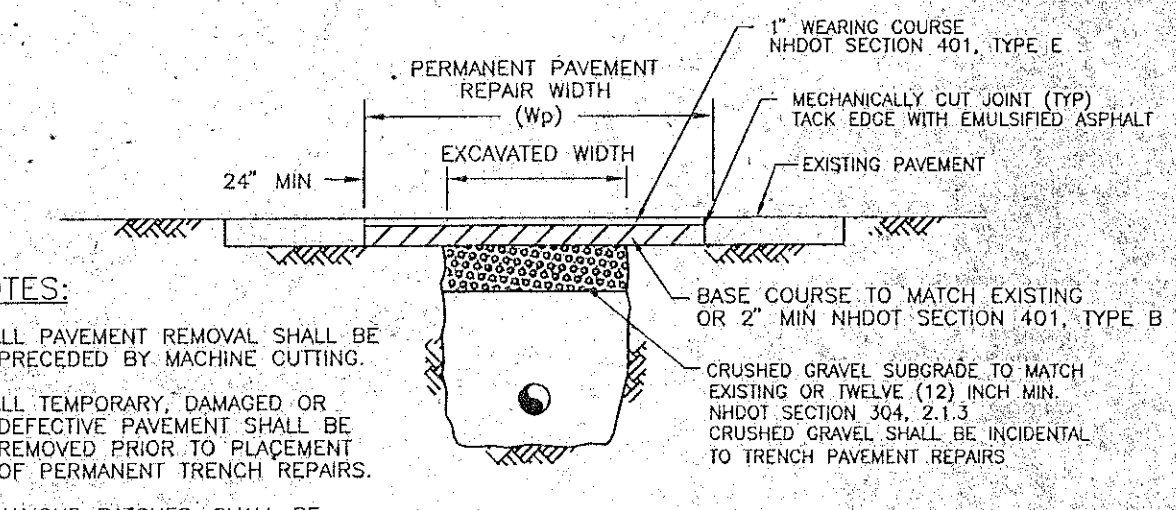
VERTICAL THRUST BLOCK NOT TO SCALE



ELEVATION OF ABUTMENT SCALE 1/2" = 1'-0"



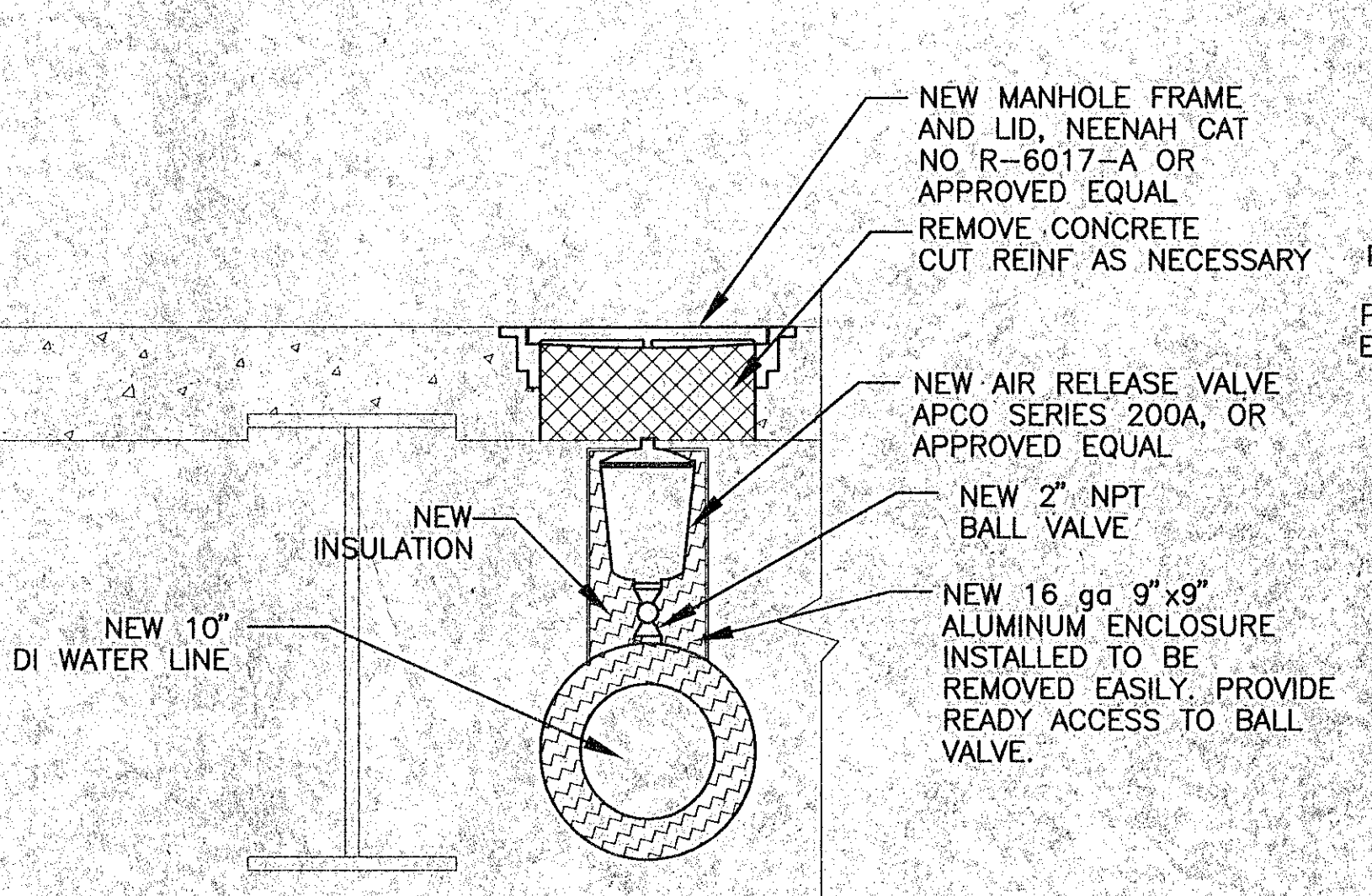
HORIZONTAL THRUST BLOCK DETAILS NOT TO SCALE



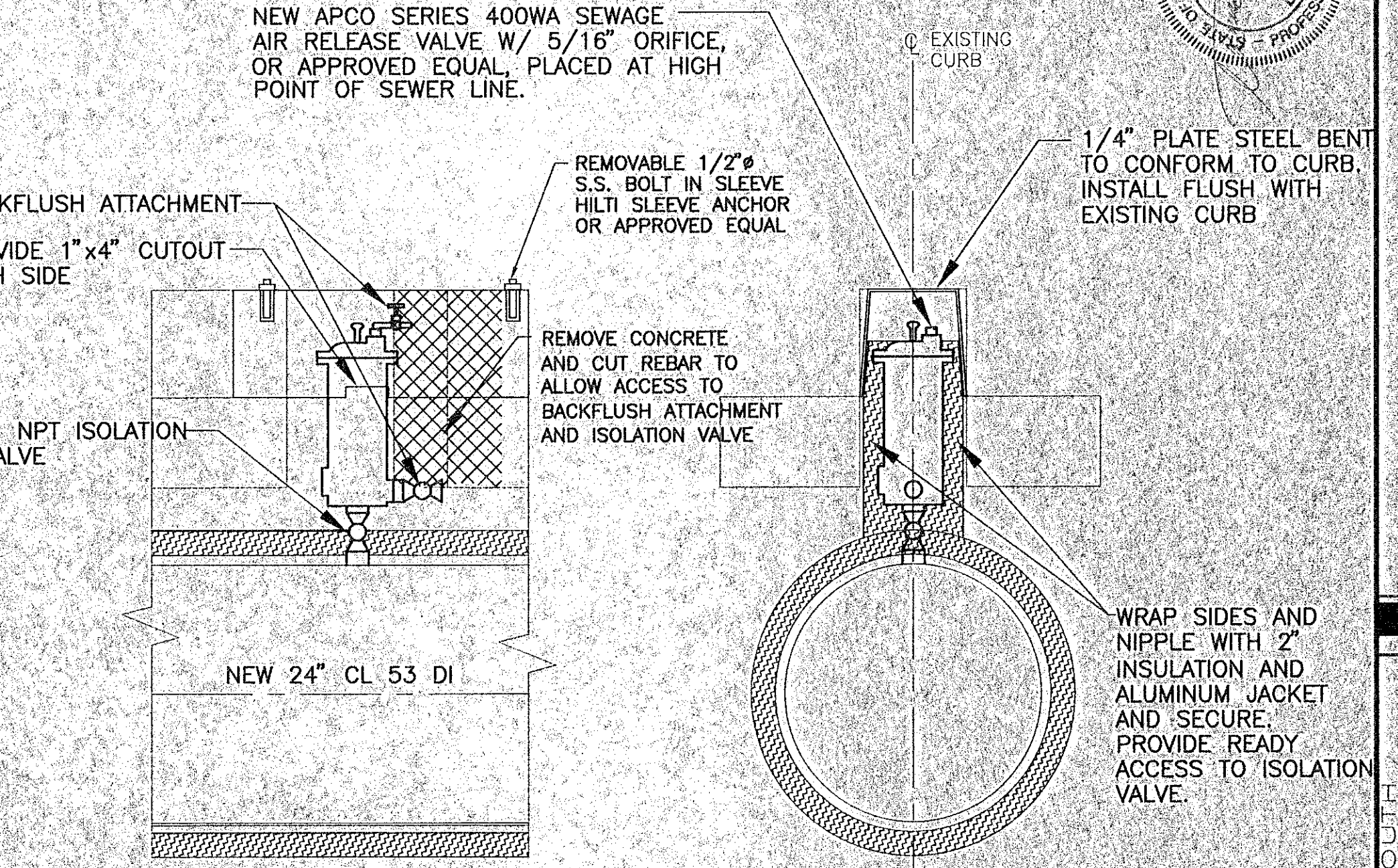
PERMANENT TRENCH PAVEMENT REPAIRS NOT TO SCALE

PIPE I.D.	Wt (INCHES)	Wp (INCHES)	NOTE
8-21 INCHES	72	108	THE DIMENSIONS SHOWN SHALL BE CONSIDERED PAYMENT WIDTHS FOR 0-10' DEEP CONSTRUCTION. W1, W2 AND W3 SHALL BE INCREASED BY 4"-0" FOR TRENCHES 10' TO 15' AND BY 8"-0" FOR TRENCHES 15'-0" TO 20' IN DEPTH.
24-30 INCHES	84	120	
> 30 INCHES	96	132	

MINIMUM TRENCH PAVEMENT WIDTHS



DETAIL OF WATER AIR RELEASE VALVE SCALE 1" = 1'-0"



DETAIL OF SEWAGE AIR RELEASE VALVE SCALE 1" = 1'-0"

Underwood Engineers, Inc. PIERCE ISLAND BRIDGE FORCENAIL REPLACEMENT MISCELLANEOUS

ISSUE FOR APPROVAL: DATE 08/06/99 BY FCU

CONSTRUCTION: DATE 09/16/99 BY FCU

COMMENTS: DATE 08/06/99 BY FCU

PROJECT NO. 7472

BOOK NO. 2061

DRAWING NO. 7472DITL

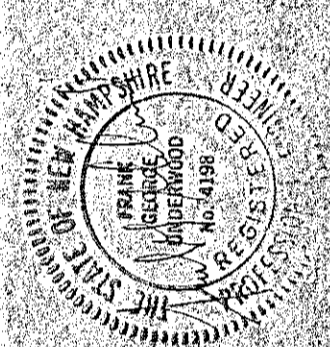
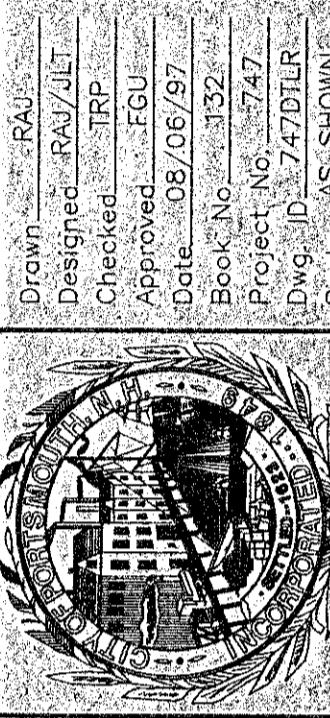
ADDRESS: 1000 STATE ST. PORTSMOUTH, NH 03801

TELEPHONE: 603-431-1111

FAX: 603-431-1112

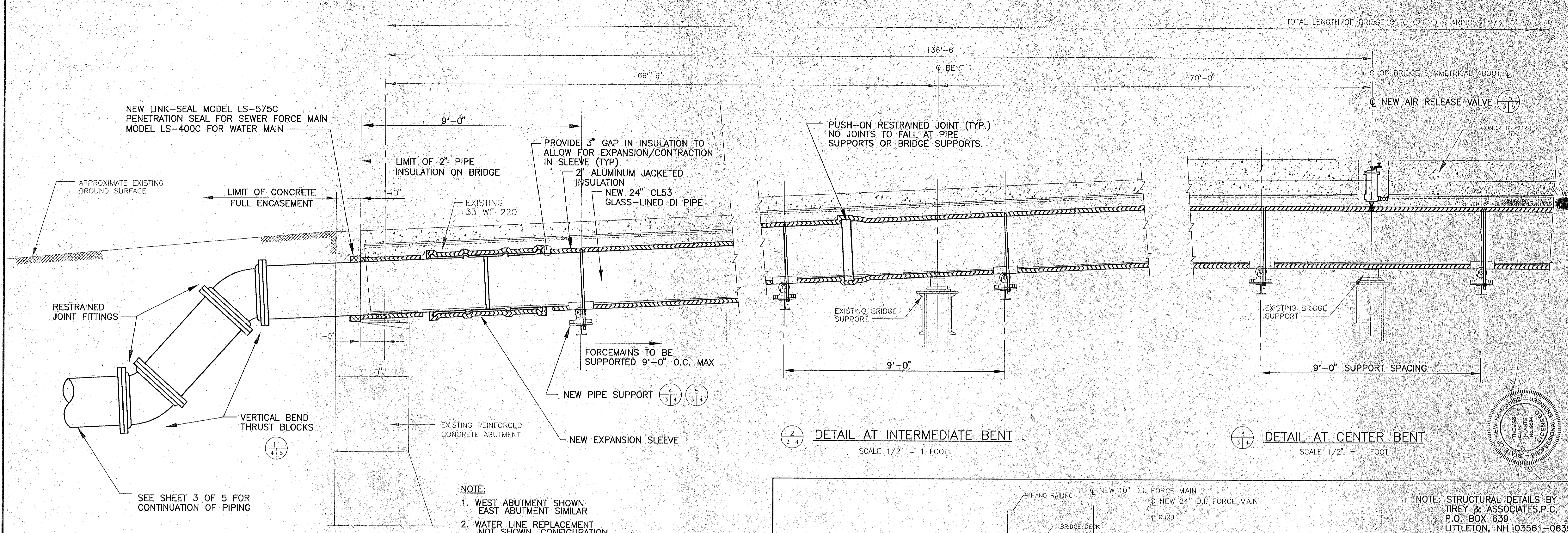
WWW: WWW.UWENGINEERS.COM

ISSUE FOR	APPROVAL
DATE	DATE
DESIGNED	DESIGNED
CHECKED	CHECKED
APPROVED	APPROVED
DATE	DATE
PROJECT NO.	PROJECT NO.
DWG. NO.	DWG. NO.
SCALE	SCALE



Underwood Engineers, Inc.
 PIPE SUPPORT
 PIPE DETAILS

PIERCE ISLAND BRIDGE
 FORCEMAIN REPLACEMENT
 PIPE SUPPORT
 PIPE DETAILS

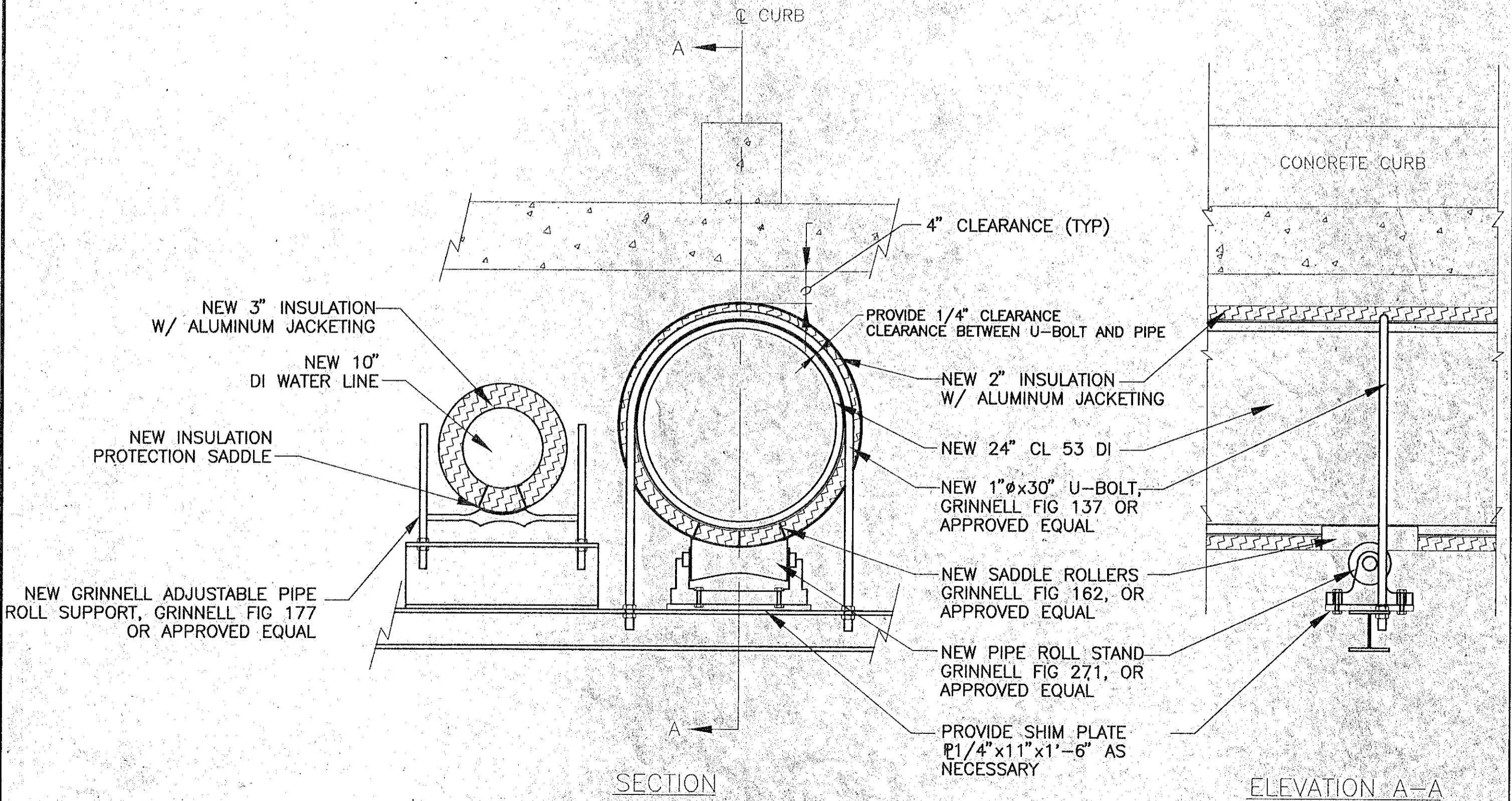


2 **3** **4** **DETAIL AT INTERMEDIATE BENT**
 SCALE 1/2" = 1 FOOT

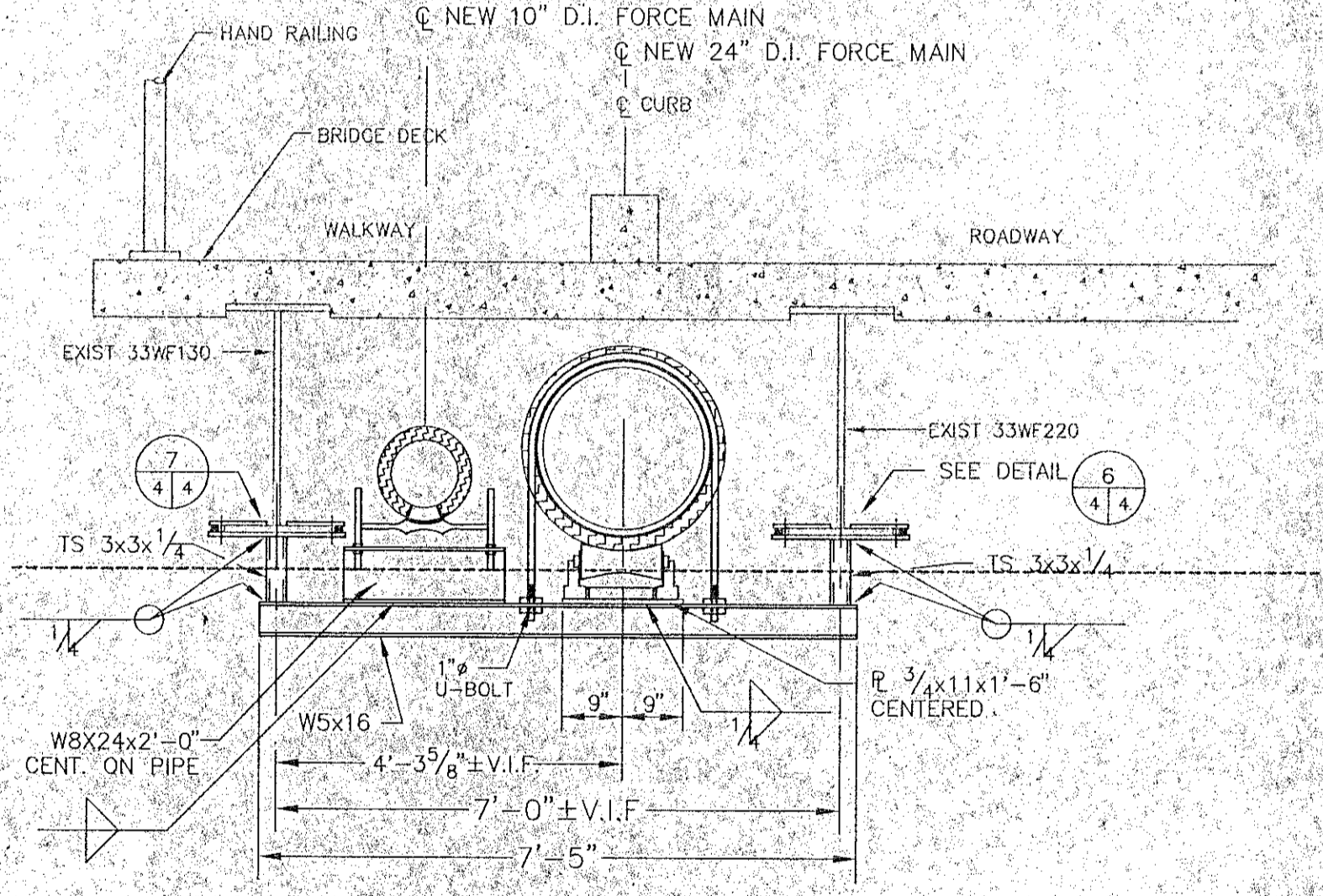
3 **4** **5** **DETAIL AT CENTER BENT**
 SCALE 1/2" = 1 FOOT

NOTE:
 1. WEST ABUTMENT SHOWN
 EAST ABUTMENT SIMILAR
 2. WATER LINE REPLACEMENT
 NOT SHOWN CONFIGURATION
 SIMILAR TO SEWER FORCEMAIN.

1 **3** **4** **DETAIL AT ABUTMENT**
 SCALE 1/2" = 1 FOOT

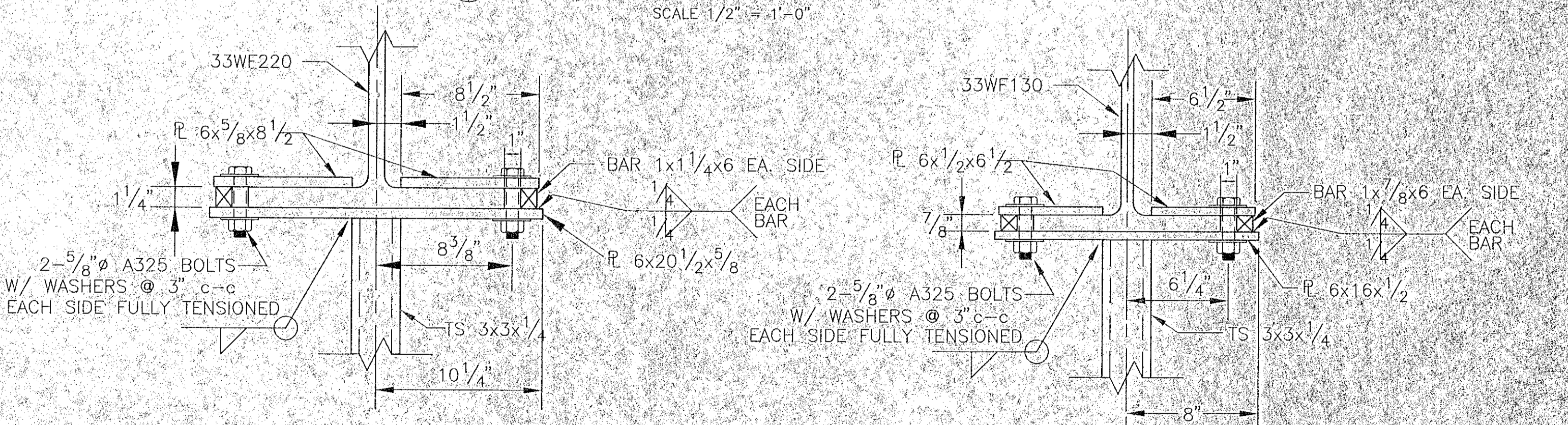


4 **3** **4** **DETAIL OF TYPICAL PIPE SUPPORT**
 SCALE 1" = 1 FOOT



5 **3** **4** **TYPICAL PIPE SUPPORT SECTION**
 SCALE 1/2" = 1'-0"

NOTE: STRUCTURAL DETAILS BY
TIREY & ASSOCIATES, P.C.
 P.O. BOX 639
 LITTLETON, NH 03561-0639
 TEL (603) 444 6211



6 **3** **4** **CONNECTION TO 33WF220**
 SCALE 1 1/2" = 1'-0"

7 **4** **CONNECTION TO 33WF130**
 SCALE 1 1/2" = 1'-0"

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