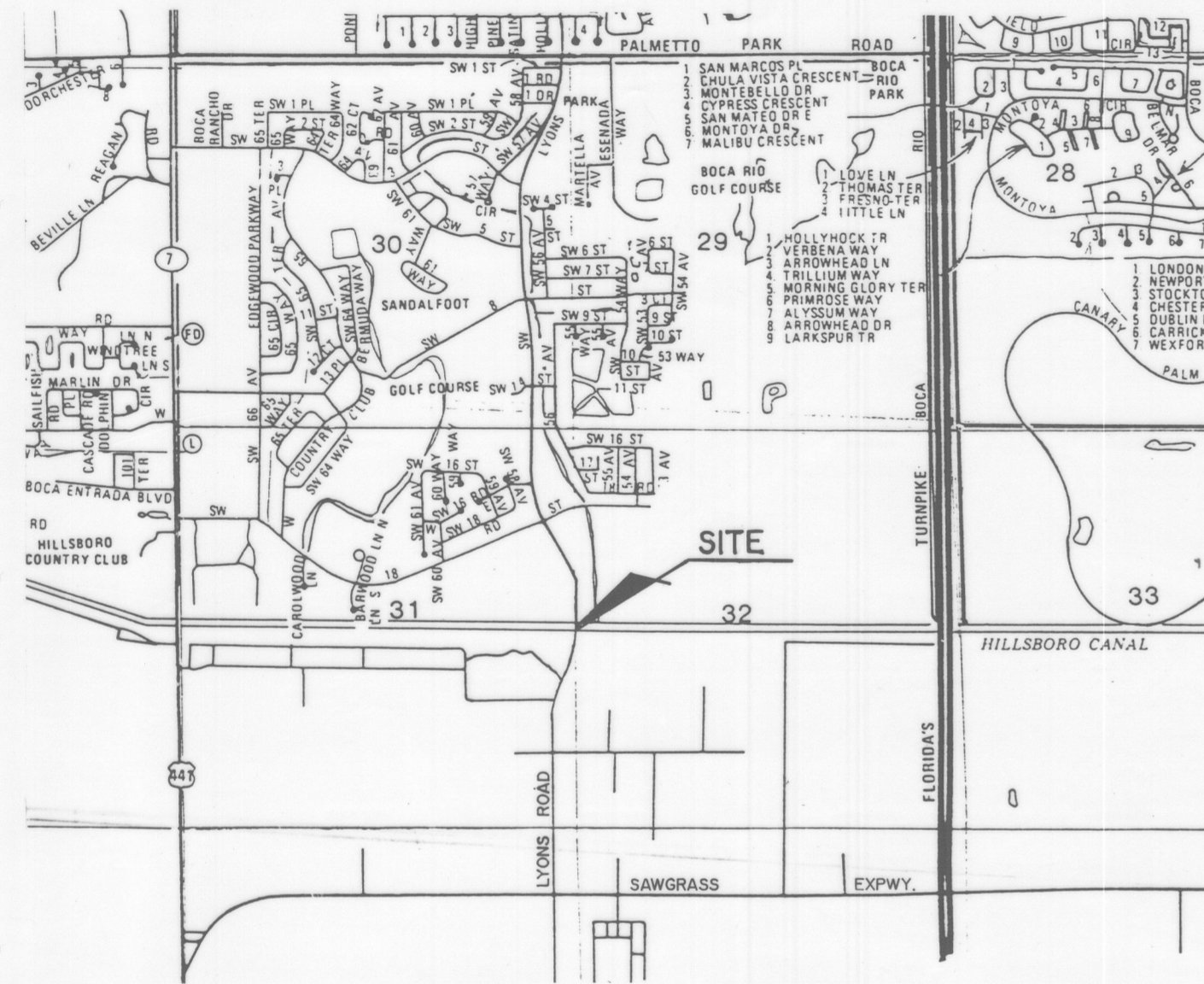


ENGINEERING PLANS FOR

LYONS ROAD

EMERGENCY WATER MAIN INTERCONNECT CITY OF COCONUT CREEK



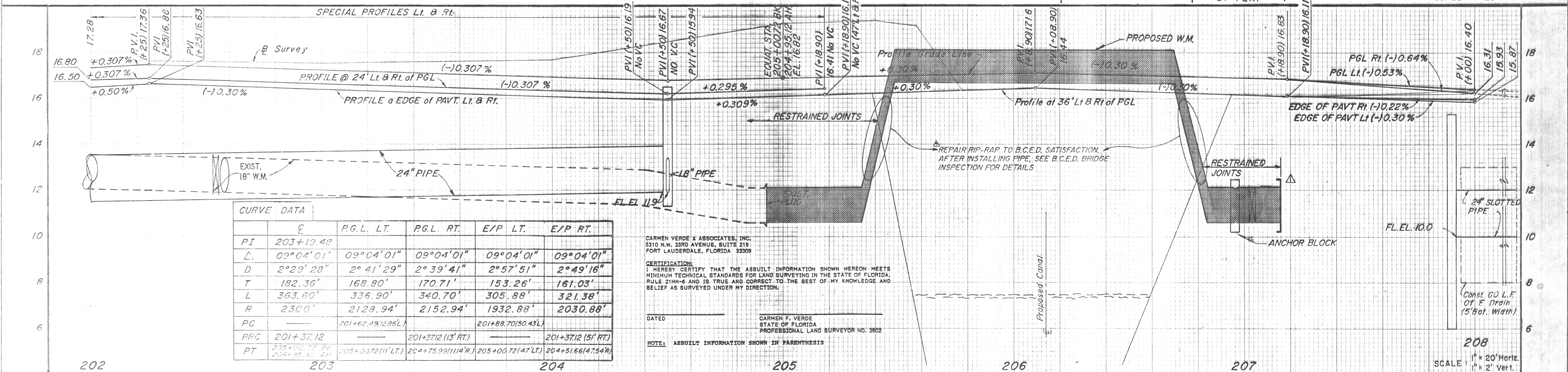
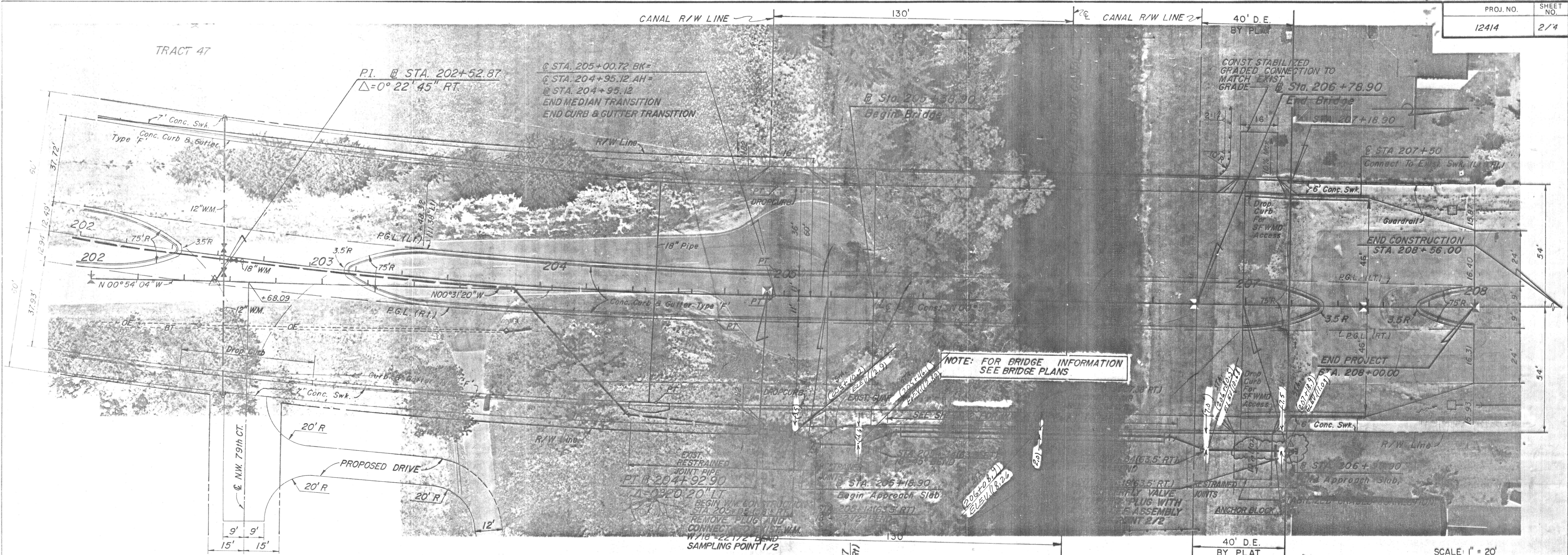
LOCATION MAP
N.T.S.

INDEX	SHEET No.
TITLE SHEET	1
PLAN	2
WATER MAIN DETAILS	3&4

PROJECT NO: 12414.1A

DATE: OCTOBER 1989

Keith and Schnars, P.A. 
ENGINEERS - PLANNERS - SURVEYORS
6500 North Andrews Avenue Ft. Lauderdale, Florida 33309 Tel: 776-1616



CURVE DATA					
PI	Δ	P.G.L. LT.	P.G.L. RT.	E/P LT.	E/P RT.
203+19.48	09°04'01"	09°04'01"	09°04'01"	09°04'01"	09°04'01"
203+19.48	2°29'28"	2°41'29"	2°39'41"	2°57'51"	2°49'16"
203+19.48	182.36'	168.80'	170.71'	153.26'	161.03'
203+19.48	363.60'	336.90'	340.70'	305.88'	321.38'
203+19.48	2300'	2128.94'	2152.94'	1932.88'	2030.88'
PC		201+62.49(12.86L)		201+88.70(50.43L)	
PFC		201+37.12	201+37.12 (13' RT.)		201+37.12 (51' RT.)
PT		205+00.72 BK 204+95.12 AH	204+75.99(114'R)	205+00.72(47'LT)	204+51.66(47.54R)

CARMEN VERDE & ASSOCIATES, INC.
5310 N.W. 33RD AVENUE, SUITE 219
FORT LAUDERDALE, FLORIDA 33309

CERTIFICATION:
I HEREBY CERTIFY THAT THE AS-BUILT INFORMATION SHOWN HEREON MEETS MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA, RULE 21HH-6 AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AS SURVEYED UNDER MY DIRECTION.

DATED: _____
CARMEN F. VERDE
STATE OF FLORIDA
PROFESSIONAL LAND SURVEYOR NO. 3802

NOTE: AS-BUILT INFORMATION SHOWN IN PARENTHESIS

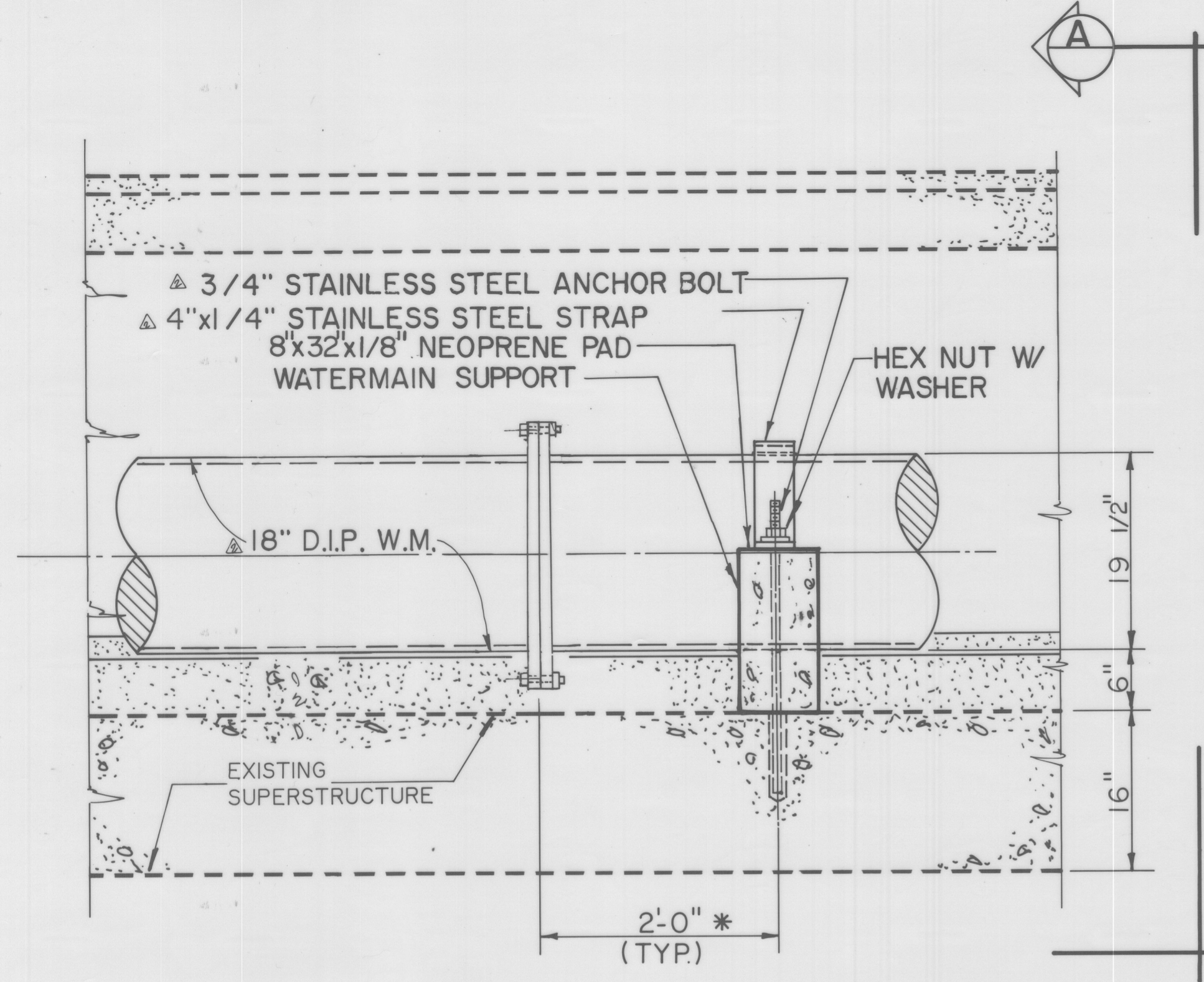
NO.	DATE	BY	DESCRIPTION

KEITH & SCHNARS, P.A.
ENGINEERS - PLANNERS - SURVEYORS

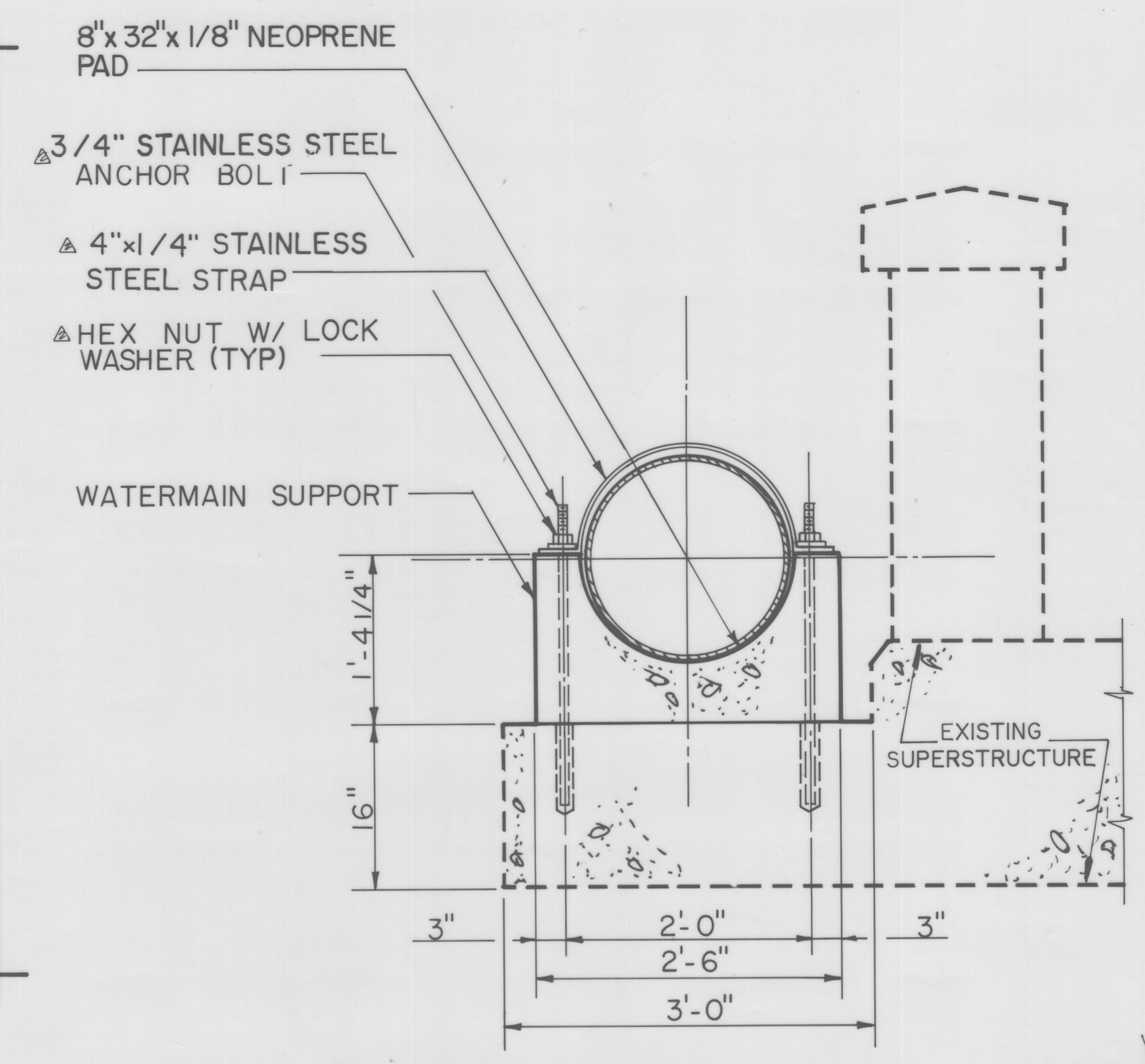
NAME	DATE	NAME	DATE
DESIGNED BY: S.M. KLINE	10/89	DRAWN BY: M.M.	10/89
CHECKED BY: C.O.B.	10/89	CHECKED BY: S.M. KLINE	10/89

APPROVED BY: CHARLES O. BUCKALEW, P.E.
FLORIDA REG. NO. 24842 (FOR THE FIRM)

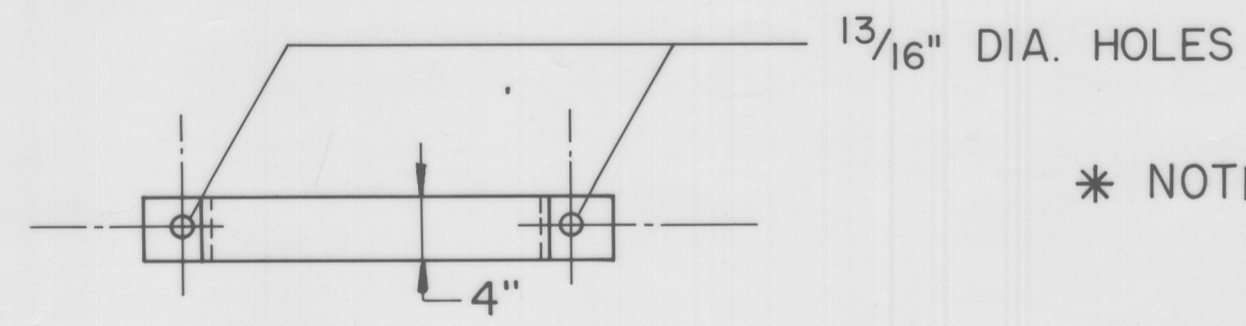
LYONS ROAD WATER MAIN INTERCONNECT PLAN & PROFILE



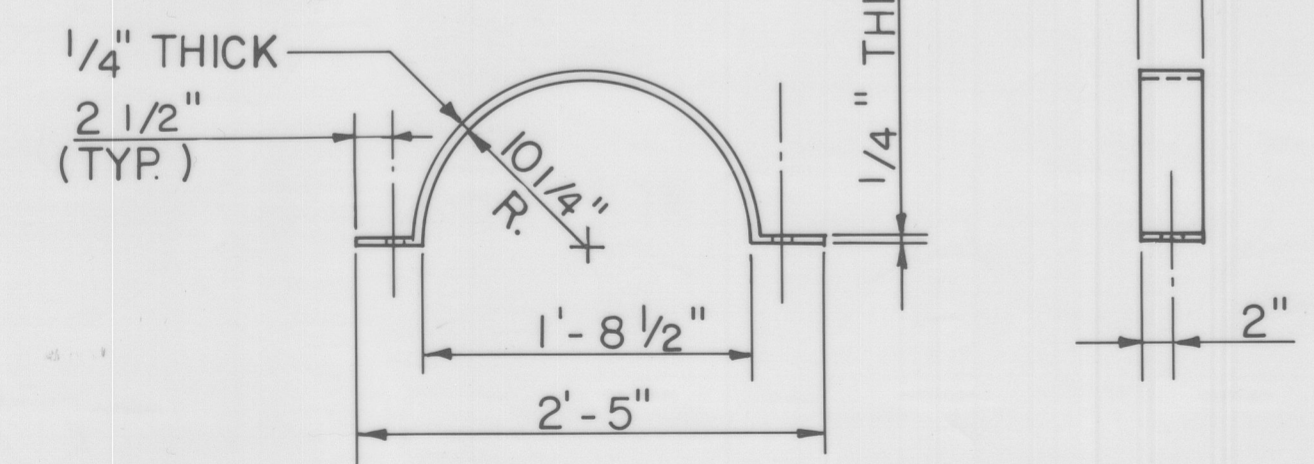
ELEVATION



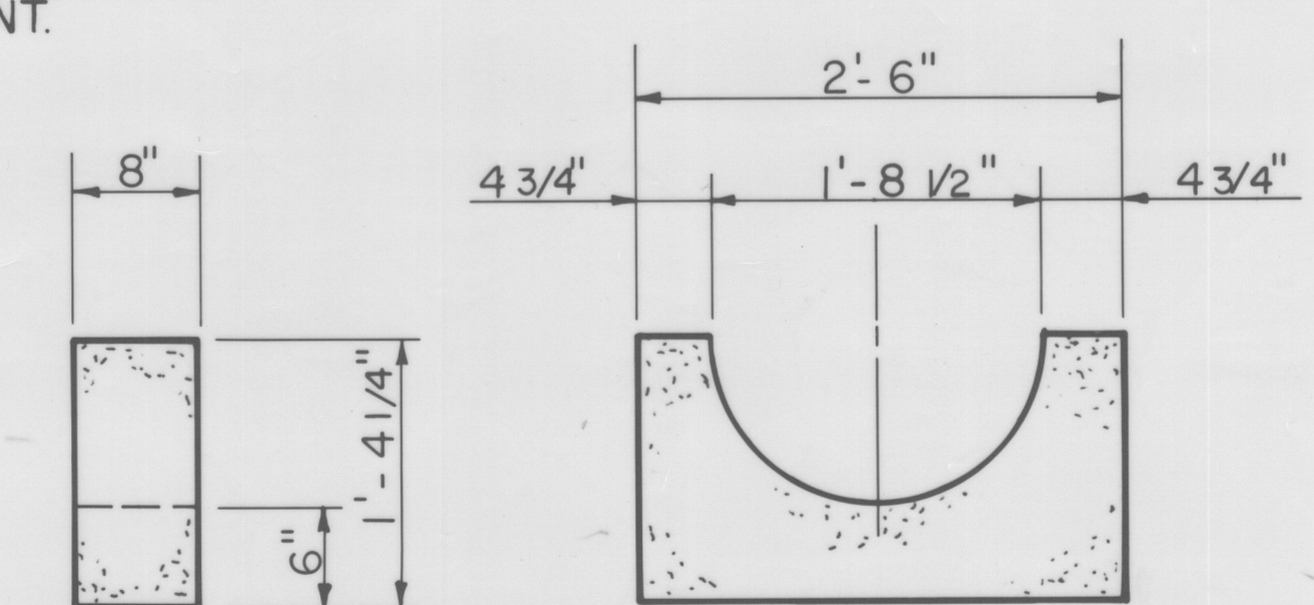
VIEW A



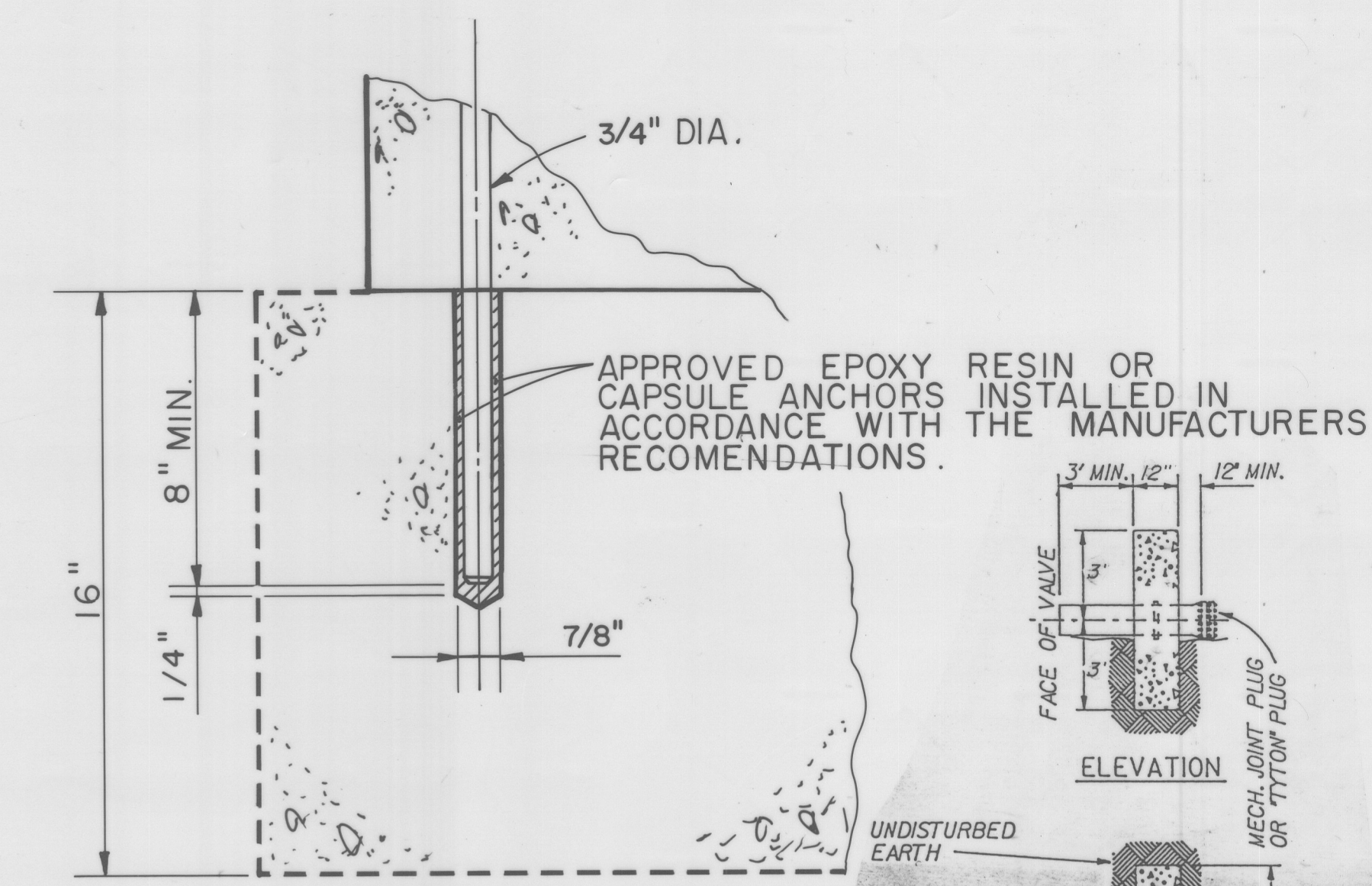
* NOTE: ADJUST LOCATION OF SUPPORT TO AVOID CONFLICT WITH SUPERSTRUCTURE REINFORCEMENT.



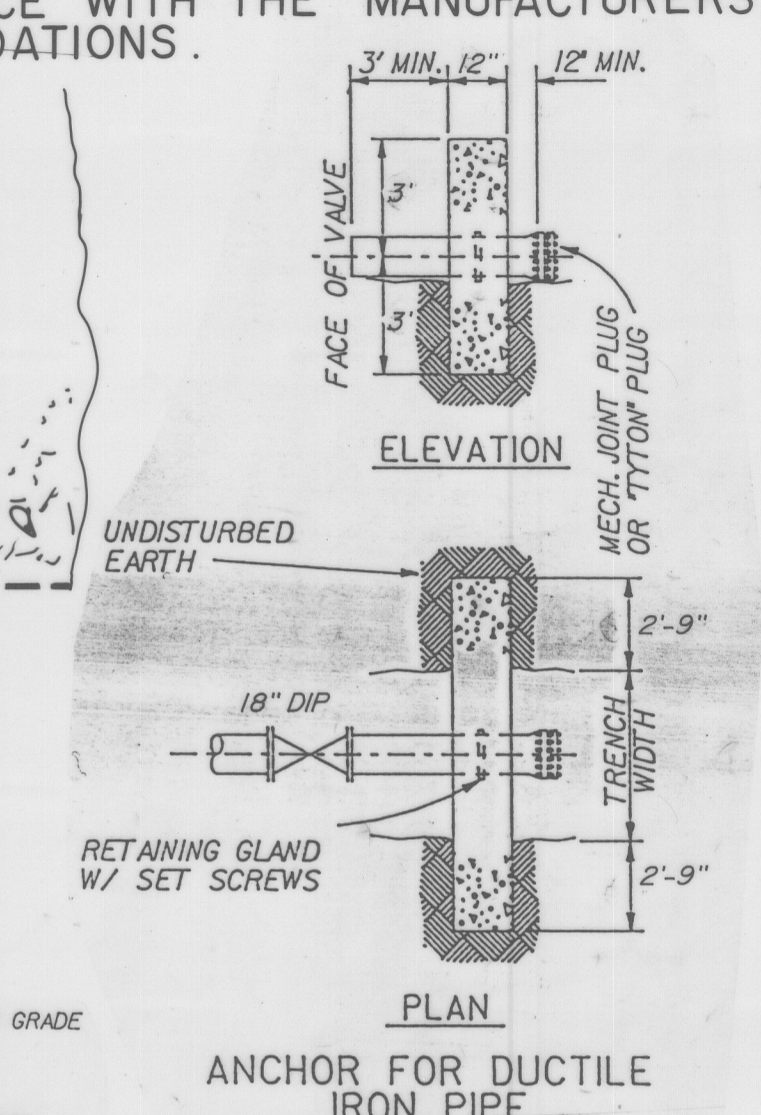
STAINLESS STEEL STRAP DETAIL



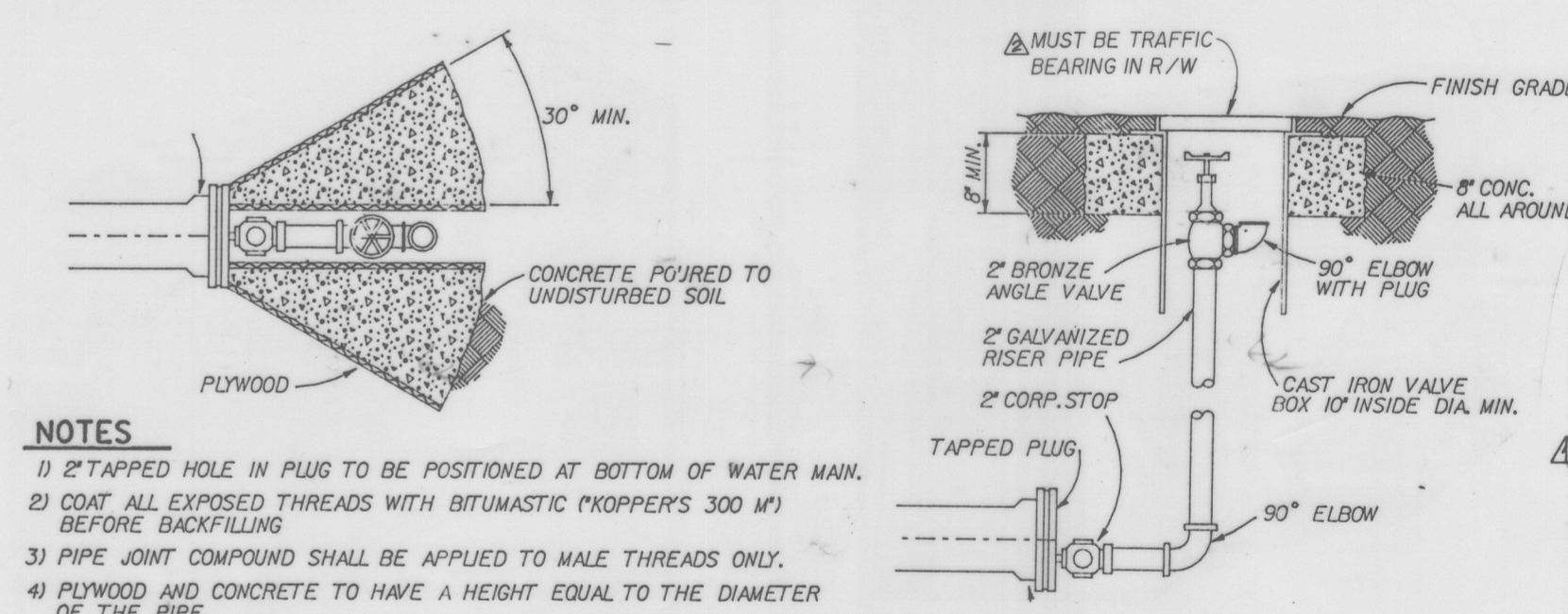
WATERMAIN SUPPORT DETAIL



ANCHORING DETAIL



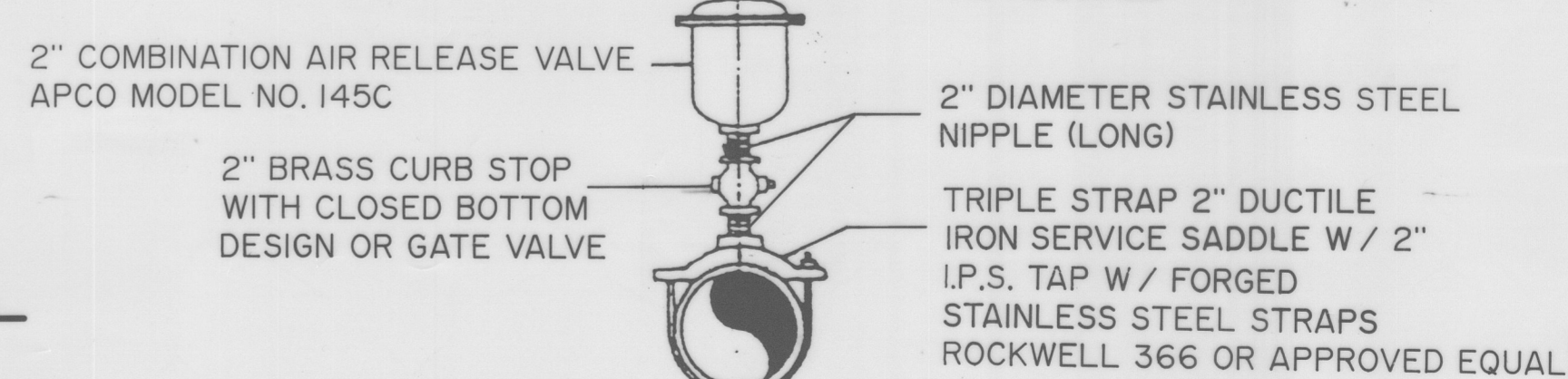
ANCHOR FOR DUCTILE IRON PIPE



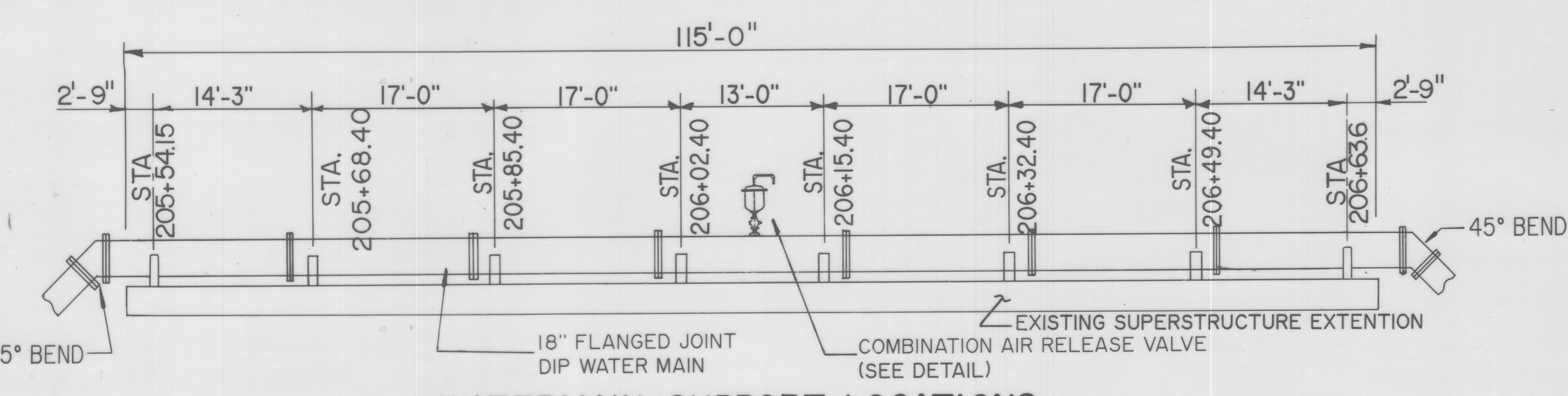
NOTES

- 1) 2" TAPPED HOLE IN PLUG TO BE POSITIONED AT BOTTOM OF WATER MAIN.
- 2) COAT ALL EXPOSED THREADS WITH BITUMASTIC (KOPPER'S 300 M) BEFORE BACKFILLING.
- 3) PIPE JOINT COMPOUND SHALL BE APPLIED TO MALE THREADS ONLY.
- 4) PLYWOOD AND CONCRETE TO HAVE A HEIGHT EQUAL TO THE DIAMETER OF THE PIPE.

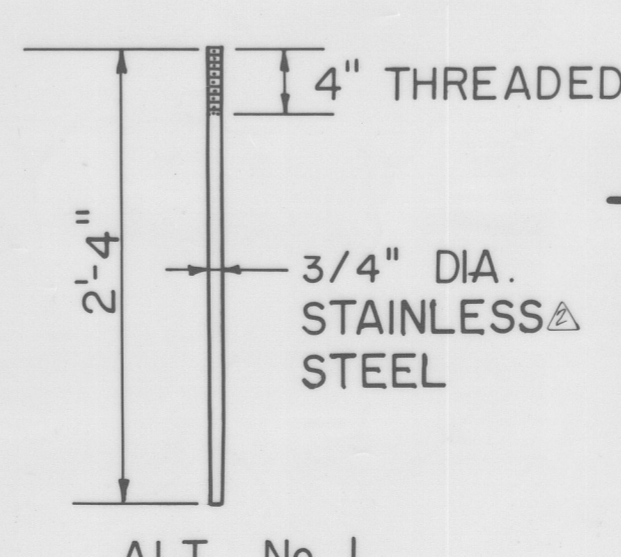
2" TERMINAL BLOWOFF



COMBINATION AIR RELEASE VALVE



WATERMAIN SUPPORT LOCATIONS



BOLT DETAIL

- WATER SYSTEM NOTES**
1. All construction and materials shall be in accordance with B.C.E.D. minimum standards.
 2. DIP water mains shall be a minimum of Class 52, conforming to AWWA/ANSI C-151/ A-21.51-86 standard with a minimum cover of 30". Pipe interior shall have bituminous seal coat over a cement mortar lining conforming to ANSI Standard A-21.4. The exterior shall have a bituminous coating.
 3. Aerial pipe shall be flanged joint ductile iron conforming to ANSI/AWWA C15-88/A215 and ANSI/AWWA C10-87/A210. MINIMUM PRESSURE RATING SHALL BE 250 PSI.
 4. All flanged joints shall be constructed using American Torusall Flanged gaskets, fullface, or approved equal.
 5. Aerial pipe shall be thoroughly cleaned by pickling or sandblasting and then shop primed on the exterior with one coat of Koppers Co. Red Pig Primer and a second coat at least 2.0 mils thick. The exterior shall also be shop painted with two coats of Koppers Co. Rustarmor 500, Eye-Rest Green No. 389 Exterior, or approved equal with each coat having a dry film coat thickness as recommended by the manufacturer.
 6. Restrained joint pipe shall be Lok-Ring as manufactured by American Pipe or approved equal.
 7. Fittings shall be ductile iron meeting AWWA/ANSI C-110/A-21.10-86 standard. Fittings shall be cement mortar lined and seal coated (coal tar enamel, 1 mil thick) per C-104-85/A-21.4 PRESSURE RATING SHALL BE 250 PSI.
 8. Gate valves, 4" or larger, shall meet AWWA C-500-86 standard. Butterfly valves, 16" or larger, shall meet AWWA C-504-87, Class 150B standards.
 9. All trenching, pipe laying, backfilling, pressure testing, and disinfection must comply with AWWA C-600-87 and C-651-86 standards, AND B.C.E.D. MINIMUM STANDARDS.
 10. All pipe, fittings, etc., shall be tested under a constant pressure of 130 psi for 2 hours and shall not exceed the leakage requirements as per AWWA C-600-87 leakage formula:

$$L = \frac{SD\sqrt{P}}{133,200}$$

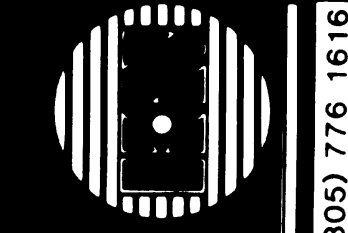
L = Allowable leakage in gallons per hour
P = Average test pressure during the test in psi gauge
S = Length of pipe being tested in feet.
D = Pipe diameter in inches
 11. All connections to existing mains shall be made under the direction of the owners of the utility, AND SHALL BE WITNESSED BY B.C.E.D. REPRESENTATIVE.
 12. Deflect water mains as necessary to avoid any conflicts with other utilities. Allowable deflection shall not exceed AWWA standards.
 13. The entire system shall be flushed and shall be clean prior to disinfection procedures.

KEITH & SCHNARS, P.A.
ENGINEERS PLANNERS SURVEYORS

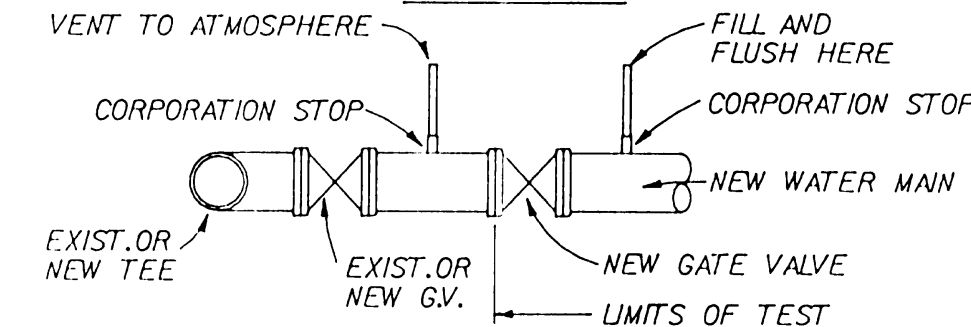
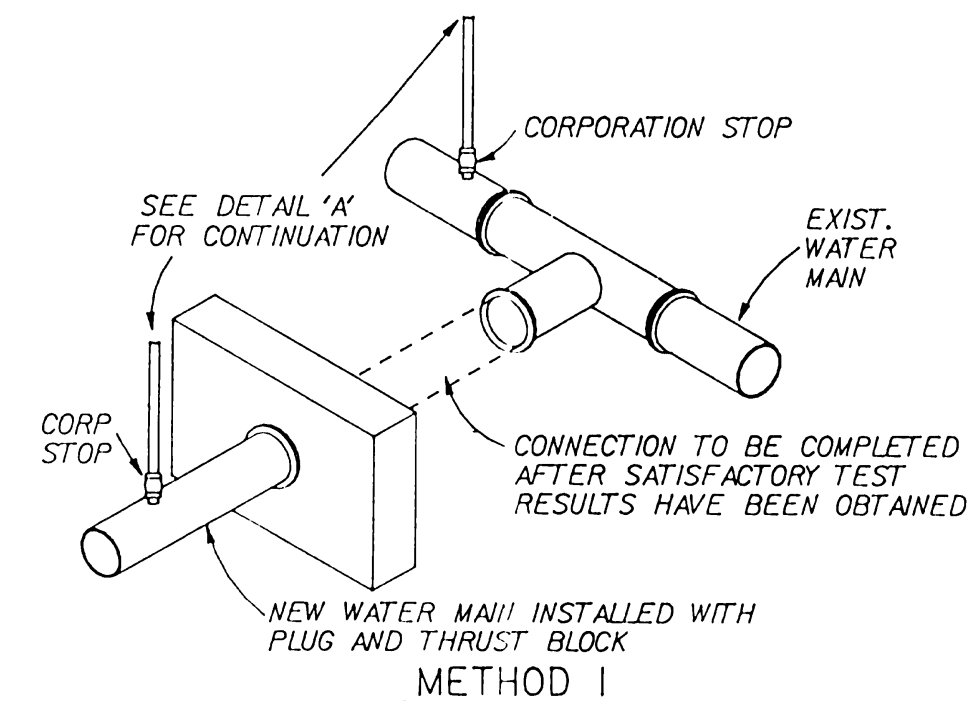
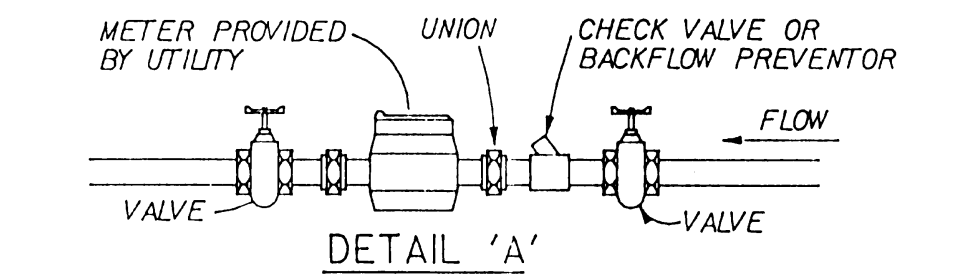
WATERMAIN DETAILS
LYONS ROAD
EMERGENCY WATERMAIN INTERCONNECT

REVISIONS		COUNTY		PROJECT NO.	
Date	Descriptions	BROWARD/PALM BEACH		12414	
11-27-97	Rev. for H.R.S.	Names	Dates	APPROVED BY	
01-21-10	Rev. for B.C.E.D.	Designed by	10/89	CHARLES O. BUCKALEW	
		Checked by	10/89		
		Quantities by			
		Checked by			
		Supervised by	C. O. BUCKALEW	Drawing No. 3 OF 4 Index No.	

12414-3



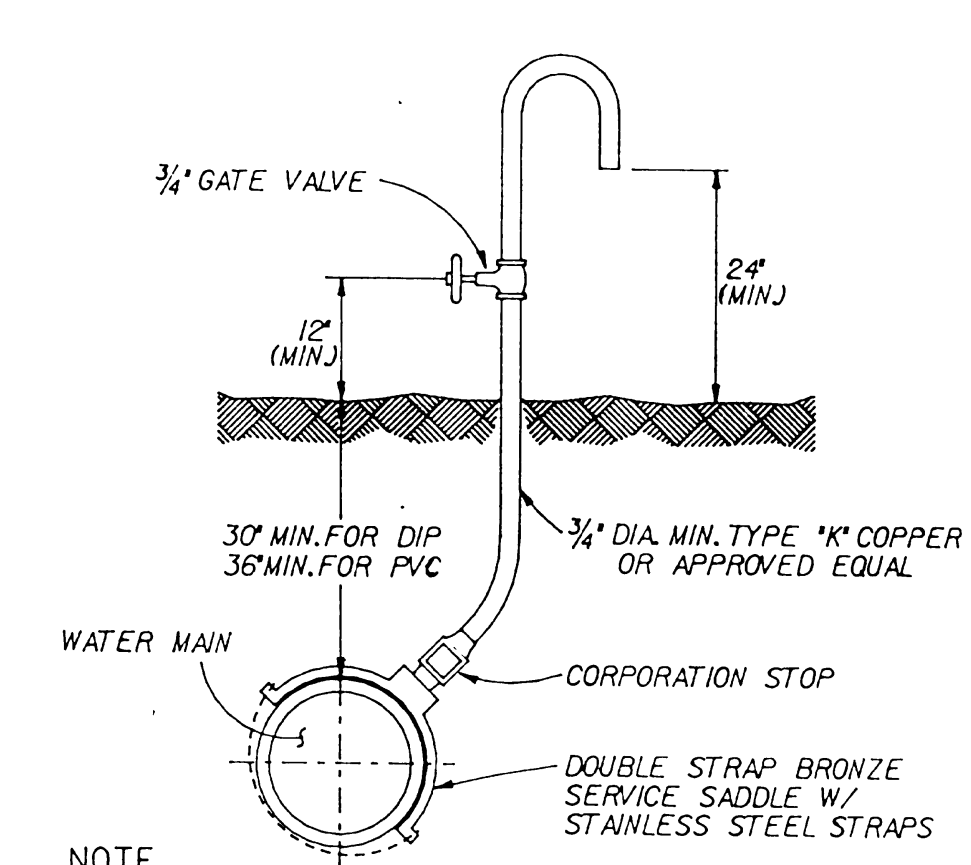
Keith and Schnars, P.A.
 ENGINEERS - PLANNERS - SURVEYORS
 6500 N. Andrews Ave., Ft. Lauderdale, FL 33309-2132 • (305) 776-1616



NOTES

- 1) REMOVE TEMPORARY CONNECTION AT CORPORATION STOP ON EXISTING MAIN AFTER FILLING AND FLUSHING OF NEW MAIN
- 2) DO NOT REMOVE TEMPORARY CONNECTION AT CORPORATION STOP ON NEW MAIN UNTIL ALL TESTING HAS BEEN COMPLETED.

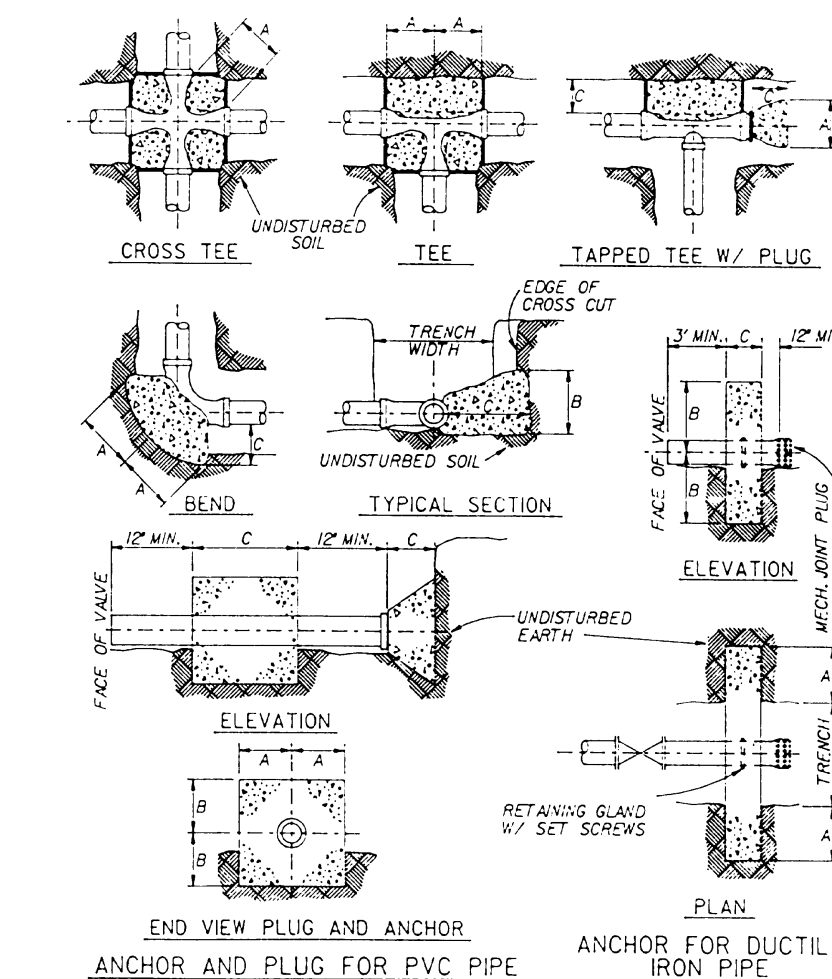
FILLING AND FLUSHING CONNECTION



NOTE

A CORPORATION STOP SHALL BE INSTALLED WITH A PIECE OF 3/4" COPPER TUBING (MIN.) EXTENDING UP OUT OF THE GROUND. THE TUBING SHALL BE BENT SO THAT THE END OF THE TUBING IS LOOKING STRAIGHT DOWN. THE DISTANCE BETWEEN THE END OF THE TUBING AND THE GROUND LINE WILL BE A MINIMUM OF 24" (SEE DETAIL).

△ SAMPLING POINT



SIZE OF PIPE	1"			1 1/2"			2"			3"			4"			6"		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
BENDS 90°	4'-0"	4'-0"	4'-0"	3'-0"	3'-0"	3'-0"	2'-6"	2'-6"	2'-6"	2'-0"	2'-0"	2'-0"	1'-6"	1'-6"	1'-6"	1'-0"	1'-0"	1'-0"
45°	2'-0"	2'-0"	2'-0"	1'-6"	1'-6"	1'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
30°	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
15°	1'-3"	1'-3"	1'-3"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
PVC CAP OR PLUG	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
PVC ANCHOR	2'-0"	2'-0"	2'-0"	1'-6"	1'-6"	1'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
1 1/2" & 1" OR TEE BRANCH SIZE	3'-0"	3'-0"	3'-0"	2'-6"	2'-6"	2'-6"	2'-0"	2'-0"	2'-0"	1'-6"	1'-6"	1'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"

THRUST BLOCK DIMENSIONS

NOTES

- 1) POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL WHERE TRENCH WALL HAS BEEN DISTURBED. EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. JOINTS SHALL BE COVERED WITH CONCRETE.
- 2) ALL CONCRETE FOR THRUST BLOCKS SHALL BE CLASS "1" (2800 PSI MIN).
- 3) PLACE A BOARD IN FRONT OF ALL PLUGS PRIOR TO POURING THRUST BLOCKS.
- 4) COAT ALL TIE RODS AND STRAPS WITH COAL TAR EPOXY, MIN. 1/2" THICK.
- 5) HANDRESSED OR RESTRAINED JOINTS MAY BE SUBSTITUTED FOR THRUST BLOCKS UPON ENGINEER'S APPROVAL OF METHOD.
- 6) BEFORE POURING, PLUGS AND FIRE INDRIFT INLETS SHALL BE WRAPPED WITH VISIBLY AND A BOARD PLACED IN FRONT.
- 7) UNSTABLE MATERIALS FOR VERTICAL BENDS OR OFFSETS, BLOCKING SHALL BE DESIGNED FOR ACTUAL THRUST USING THE FORMULA: $F = W \times L \times D \times \sin \theta$, WHERE: W = 1/2 PAVED WEIGHT IN FEET, A = AREA OF PIPE IN SQ. FT., θ = DEFLECTION ANGLE, AND L = THRUST IN POUNDS.

△ THRUST BLOCK DETAILS

DATE	REVISIONS
11-27-84	△ 100% PER. HRS.

DATE OCTOBER, 1989
 SCALE N.T.S.
 FIELD BK. N/A
 DWNG. BY R.E.B.
 CHECKLD BY C.O.B.

EMERGENCY WATER MAIN INTERCONNECT
WATERMAIN DETAILS

SHEET NO. **4**
 OF **4** SHEETS
 PROJECT NO. **12414 C-4V**