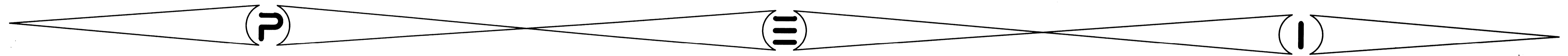


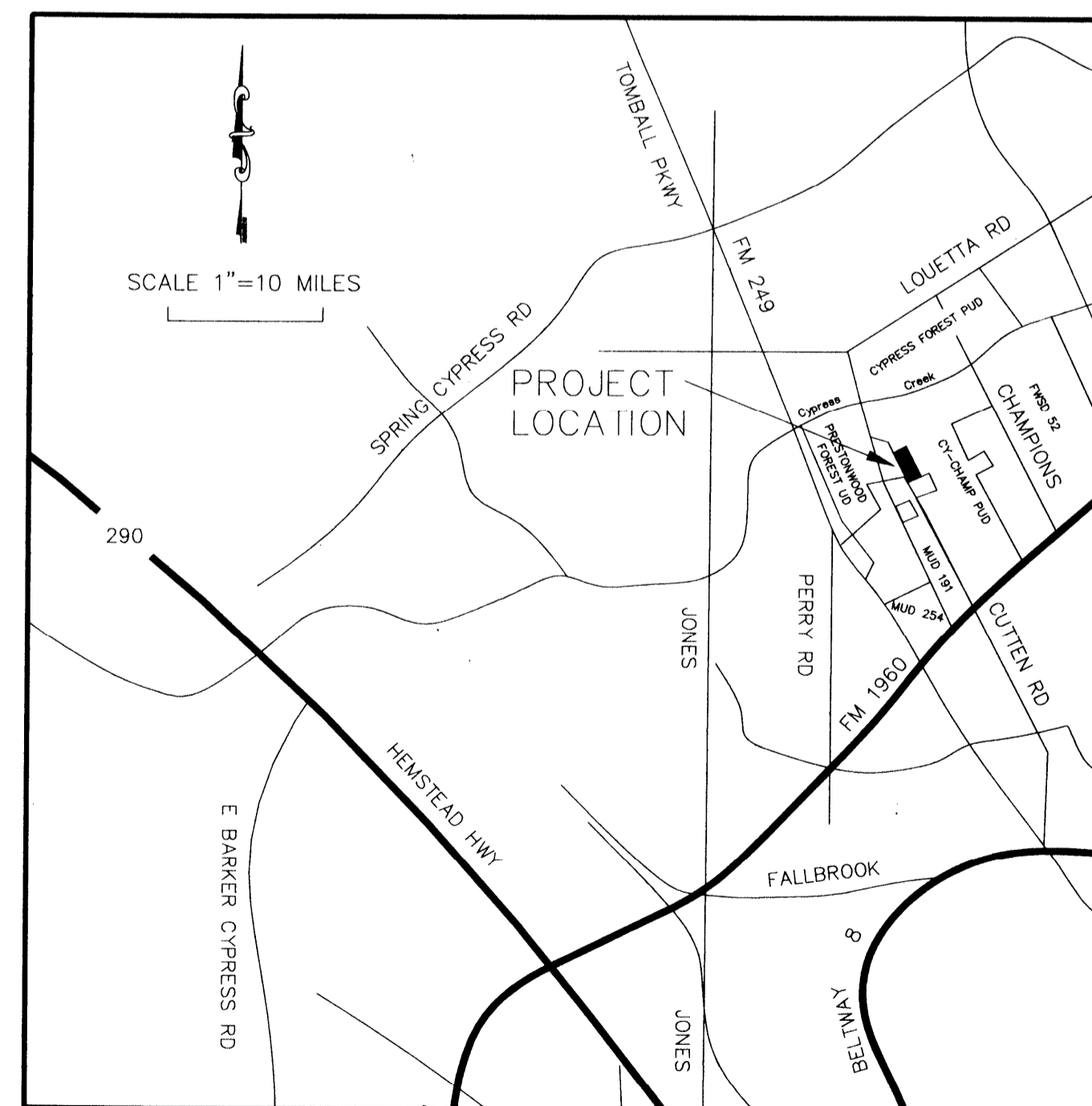
# ESTATES AT CHAMPIONS PARK NORTH



## H.C.M.U.D NO. 191

# SANITARY - STORM - WATER - PAVING

TITLE	SHEET NO.
COVER	1
SANITARY & WATER OVERALL	2
PAVING & DRAINAGE OVERALL	3
GENERAL NOTES	4
PLAN & PROFILE	5-17
POLLUTION PREVENTION LOCATION	18
SANITARY SEWER FLOW AND SHEET FLOW	19
STORM SEWER DETAILS	20
SANITARY SEWER DETAILS	21
WATER DETAILS	22
PAVING DETAILS	23
TRENCH SAFETY SYSTEM	24
POLLUTION DETENTION DETAILS	25
WHEELCHAIR RAMP DETAILS	26
H.C.F.C.D. STANDARD DETAILS	27

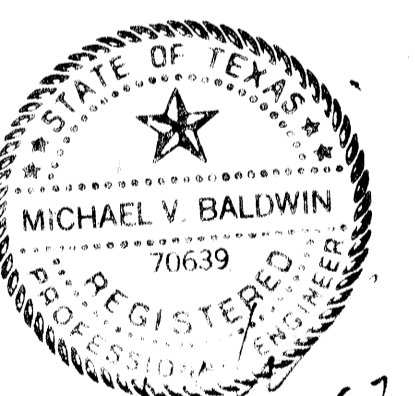


VICINITY MAP  
HARRIS COUNTY, TEXAS  
MAP REFERENCY  
KEY MAP NO. 370A-B  
LAMBERT MAP NO. 4966(639)-B-1

STREET INDEX	SHEET NO.
HARGRAVE RD.	6
CUTTEN ROAD	7-11A
QUAHNA DR.	13
ORIENOCO DRIVE	14
TIERRA COURT	14
RELEX COURT	15
ARON COURT	16
LAVEVA COURT	17

APPROVED  
CITY OF HOUSTON

*Richard C. Scott*  
CITY ENGINEER  
RICHARD C. SCOTT, P.E.



11/17/97

*Jimmie Schindewolf*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING  
JIMMIE SCHINDEWOLF, P.E.

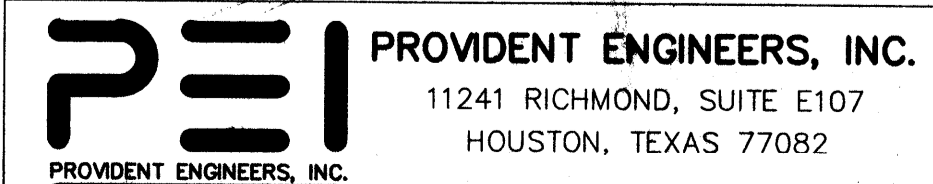
1-16-98  
DATE

CITY DWG. NO.  
SHEET NO. 1 OF 27 SHEETS

"CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, ENGINEERING CONSTRUCTION AND REAL ESTATES GROUP (TELEPHONE NO. 754-0700) 48 HOURS BEFORE STARTING WORK ON THIS PROJECT."

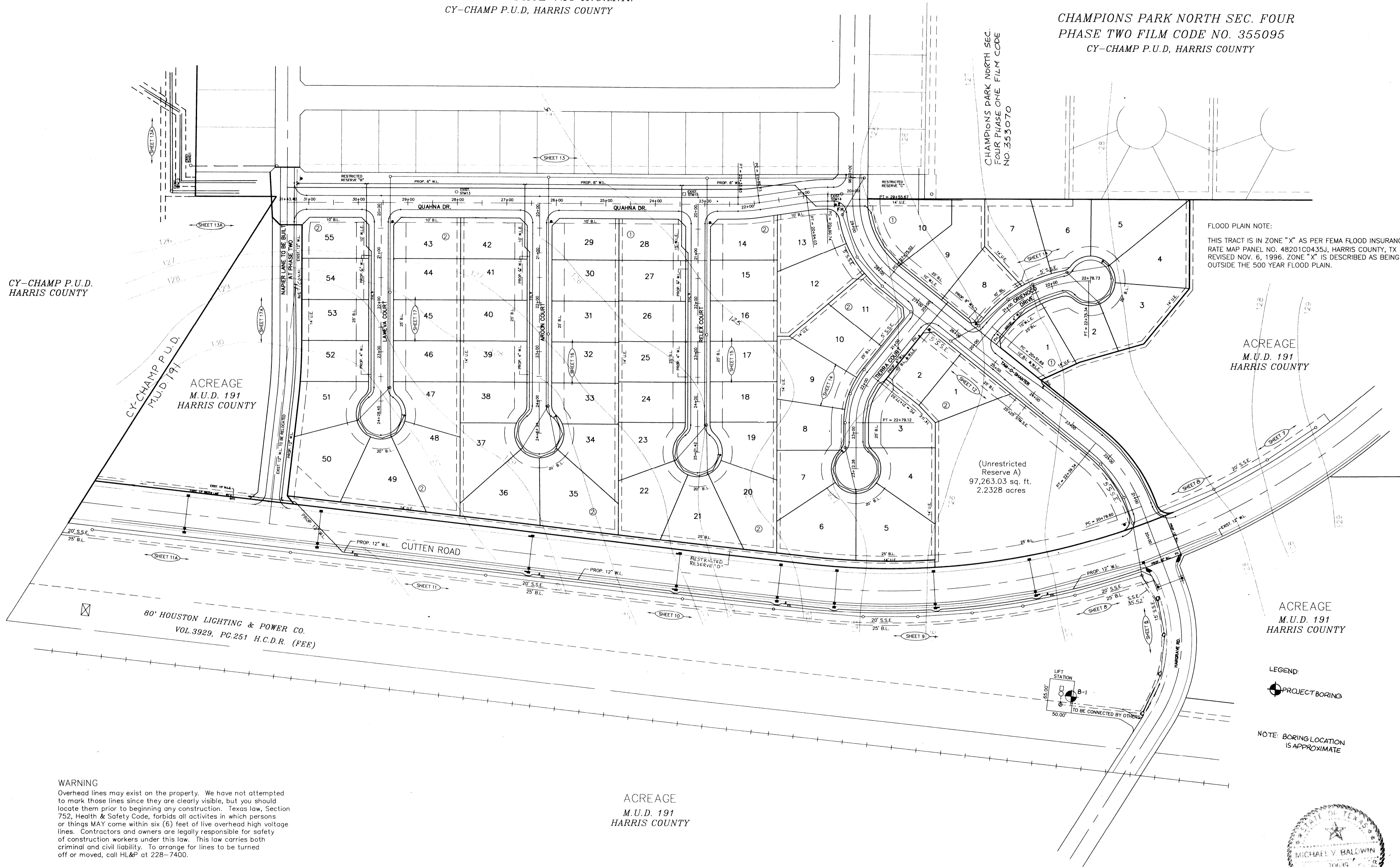
JOB NO. 470-U  
DATE: NOVEMBER 1997

CPC101 NO. 12605  
LOG NO. 97-0581



CHAMPIONS RACQUET CLUB SEC. TWO  
 VOLUME 274 PAGE 129 H.C.M.R.  
 CY-CHAMP P.U.D, HARRIS COUNTY

CHAMPIONS PARK NORTH SEC. FOUR  
 PHASE TWO FILM CODE NO. 355095  
 CY-CHAMP P.U.D, HARRIS COUNTY



FLOOD PLAIN NOTE:  
 THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE RATE MAP PANEL NO. 48201C0435J, HARRIS COUNTY, TX REVISED NOV. 6, 1996. ZONE "X" IS DESCRIBED AS BEING OUTSIDE THE 500 YEAR FLOOD PLAIN.

CY-CHAMP P.U.D.  
 HARRIS COUNTY

ACREAGE  
 M.U.D. 191  
 HARRIS COUNTY

ACREAGE  
 M.U.D. 191  
 HARRIS COUNTY

(Unrestricted Reserve A)  
 97,263.03 sq. ft.  
 2.2328 acres

80' HOUSTON LIGHTING & POWER CO.  
 VOL. 3929, PG. 251 H.C.D.R. (FEE)

ACREAGE  
 M.U.D. 191  
 HARRIS COUNTY

WARNING  
 Overhead lines may exist on the property. We have not attempted to mark those lines since they are clearly visible, but you should locate them prior to beginning any construction. Texas law, Section 752, Health & Safety Code, forbids all activities in which persons or things MAY come within six (6) feet of live overhead high voltage lines. Contractors and owners are legally responsible for safety of construction workers under this law. This law carries both criminal and civil liability. To arrange for lines to be turned off or moved, call HL&P at 228-7400.

NOTE:  
 ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLETS STRUCTURES.

BENCH MARK

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMNET DRIVE AT CENTERLINE QUEENSCUB DRIVE ELEV. = 114.69

- LEGEND
- UNDERGROUND DISTRIBUTION CABLE
  - TERMINAL POLE
  - STREET LIGHT ON STEEL STANDARD
  - UNDERGROUND STREET LIGHT CABLE
  - - - - - Exist. Contours
  - - - - - Exist. Water Line
  - - - - - Exist. Gate Valve & Box
  - - - - - Exist. Flushing Valve
  - - - - - Exist. Plug & Blowoff
  - - - - - Exist. Sanitary Sewer Line & Manhole
  - - - - - Exist. Storm Sewer Line & Manhole
  - - - - - Exist. Inlet
  - ⊕ R1-1 (STOP SIGN)
  - SHEET REFERENCE
  - - - - - PROP. WATER LINE
  - - - - - PROP. GATE VALVE & BOX
  - - - - - PROP. FLUSHING VALVE
  - - - - - PROP. PLUG & BLOWOFF
  - - - - - PROP. SANITARY SEWER LINE & MANHOLE

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC.
SOUTHWESTERN BELL TELEPHONE CO. Valid for One Year Only
HOUSTON LIGHTING & POWER CO. Approval Only for Crossing Underground Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>[Signature]</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12-27-97 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
--------------------------	--------------------

*[Signature]* 1/15/98  
 CITY ENGINEER DATE  
*[Signature]* 1-16-98  
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE

SUBMITTED:	DESIGNED BY:	TIM
SCALE: H: 1" = 100'	DRAWN BY:	TIM
DATE: AUGUST 1997	SHEET NO. 2 OF 27 SHEETS	
SURVEY BY:	CITY DWG. NO.:	
F B NO.:		

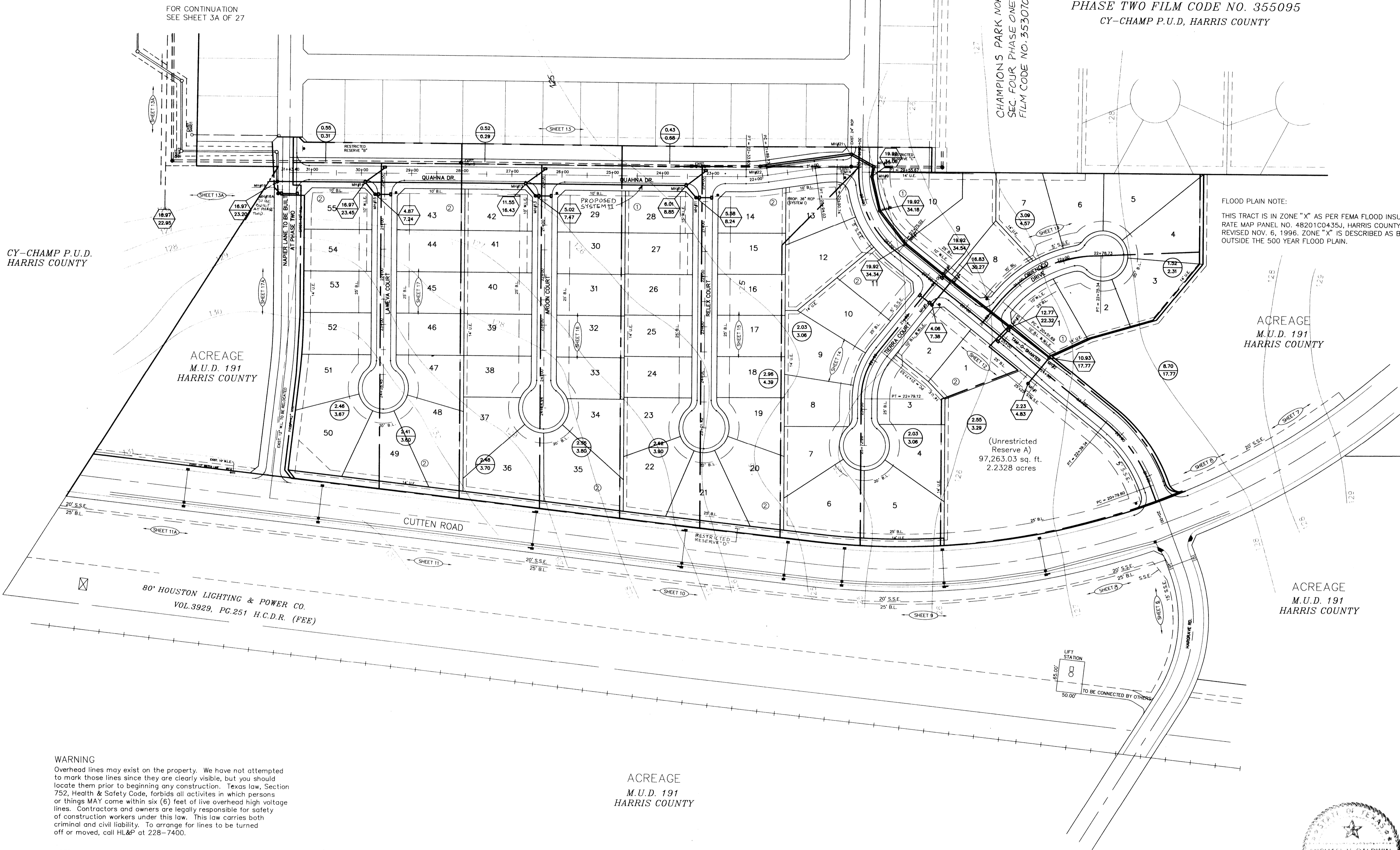


M.U.D. 191  
 SANITARY SEWER AND WATER  
 OVERALL LAYOUT

PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082

CHAMPIONS RACQUET CLUB SEC. TWO  
 VOLUME 274 PAGE 129 H.C.M.R.  
 CY-CHAMP P.U.D., HARRIS COUNTY

CHAMPIONS PARK NORTH SEC. FOUR  
 PHASE TWO FILM CODE NO. 355095  
 CY-CHAMP P.U.D., HARRIS COUNTY



FLOOD PLAIN NOTE:  
 THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE RATE MAP PANEL NO. 48201C0435J, HARRIS COUNTY, TX REVISED NOV. 6, 1996. ZONE "X" IS DESCRIBED AS BEING OUTSIDE THE 500 YEAR FLOOD PLAIN.

**BENCH MARK**

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT USED FOR CUTTEN ROAD.

ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.

TBM #1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSLUB DRIVE ELEV. = 114.69

**LEGEND**

- UNDERGROUND DISTRIBUTION CABLE
- TERMINAL POLE
- STREET LIGHT ON STEEL STANDARD
- UNDERGROUND STREET LIGHT CABLE
- Exist. Contours
- Exist. Water Line
- Exist. Gate Valve & Box
- Exist. Flushing Valve
- Exist. Plug & Blowoff
- Exist. Sanitary Sewer Line & Manhole
- Exist. Storm Sewer Line & Manhole
- Exist. Inlet
- R1-1 (STOP SIGN)
- SHEET REFERENCE
- PROP. STORM SEWER LINE & MANHOLE
- PROP. INLET
- DRAINAGE AREA DIVIDE
- AREA AT INLET IN ACRES
- RUNOFF AT INLET IN C.F.S.
- AREA CONTRIBUTION TO LINE IN ACRES
- RUNOFF CONTRIBUTING TO LINE IN C.F.S.

Rev.	Date	Description	App.

**PRIVATE UTILITY LINES SHOWN**

ENTEX, INC.

SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only

HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground Ductlines Unless Noted. Valid at Time of Review Only.

**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

**SECTION APPROVALS**

<i>[Signature]</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12-22-97 STORM SEWER ENGINEERING	CONSTRUCTION

**OTHER DEPARTMENTS**

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
--------------------------	--------------------

*[Signature]* 11/5/98  
 CITY ENGINEER DATE

*[Signature]* 1-16-98  
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE

SUBMITTED: \_\_\_\_\_ DESIGNED BY: TIM

SCALE: 1" = 100' DRAWN BY: TIM

DATE: AUGUST 1997 SHEET NO. 3 OF 27 SHEETS

SURVEY BY: \_\_\_\_\_ CITY DWG. NO: \_\_\_\_\_

F B NO: \_\_\_\_\_

**M.U.D. 191**

**STORM SEWER OVERALL LAYOUT**

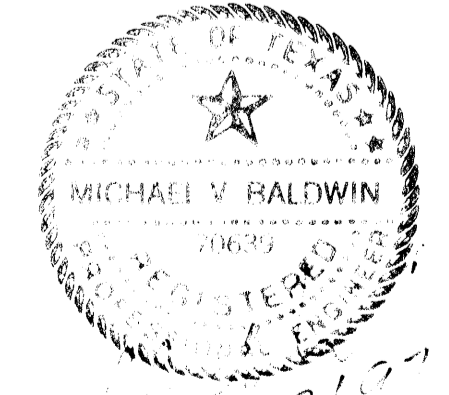
**PEI** PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082

**WARNING**

Overhead lines may exist on the property. We have not attempted to mark those lines since they are clearly visible, but you should locate them prior to beginning any construction. Texas law, Section 752, Health & Safety Code, forbids all activities in which persons or things MAY come within six (6) feet of live overhead high voltage lines. Contractors and owners are legally responsible for safety of construction workers under this law. This law carries both criminal and civil liability. To arrange for lines to be turned off or moved, call HL&P at 228-7400.

**NOTE:**

ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.



CITY OF HOUSTON STORM SEWER CALCULATION FORM

Table with 22 columns: M.H. From, M.H. To, Area, Runoff Coefficient, Intensity, Sum of Intensity, Time of Conc., Reach Length, Diameter, Span, Slope, Manning's n, Design Capacity, Design Velocity, Fall, Manhole Drop, Flowline Elevation, Actual Velocity, Hydraulic Gradient, Change in Head, Elevation of Hyd. Grad. Upstream, Elevation of Hyd. Grad. Downstream, Natural Ground Upstream, Natural Ground Downstream.

Project: ESTATES AT CHAMPIONS PARK NORTH  
Job No.: 470-U  
System: 2YR. STORM PROPOSED SYSTEM II  
By: MVB Date: 8/10/97  
Checked by: MVB Date: 8/10/97

CITY OF HOUSTON STORM SEWER CALCULATION FORM

Table with 22 columns: M.H. From, M.H. To, Area, Runoff Coefficient, Intensity, Sum of Intensity, Time of Conc., Reach Length, Diameter, Span, Slope, Manning's n, Design Capacity, Design Velocity, Fall, Manhole Drop, Flowline Elevation, Actual Velocity, Hydraulic Gradient, Change in Head, Elevation of Hyd. Grad. Upstream, Elevation of Hyd. Grad. Downstream, Natural Ground Upstream, Natural Ground Downstream.

Project: ESTATES AT CHAMPIONS PARK NORTH  
Job No.: 470-U  
System: 2YR. STORM PROPOSED SYSTEM I  
By: MVB Date: 8/10/97  
Checked by: MVB Date: 8/10/97

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER Y1216, 1973 ADJ., ELEV = 125.994  
LEGEND: UNDERGROUND DISTRIBUTION CABLE, EXIST. CONTOURS, EXIST. WATER LINE, EXIST. GATE VALVE & BOX, EXIST. FLUSHING VALVE, EXIST. PLUG & BLOWOFF, EXIST. SANITARY SEWER LINE & MANHOLE, EXIST. STORM SEWER LINE & MANHOLE, EXIST. INLET, RT-1 (STOP SIGN)

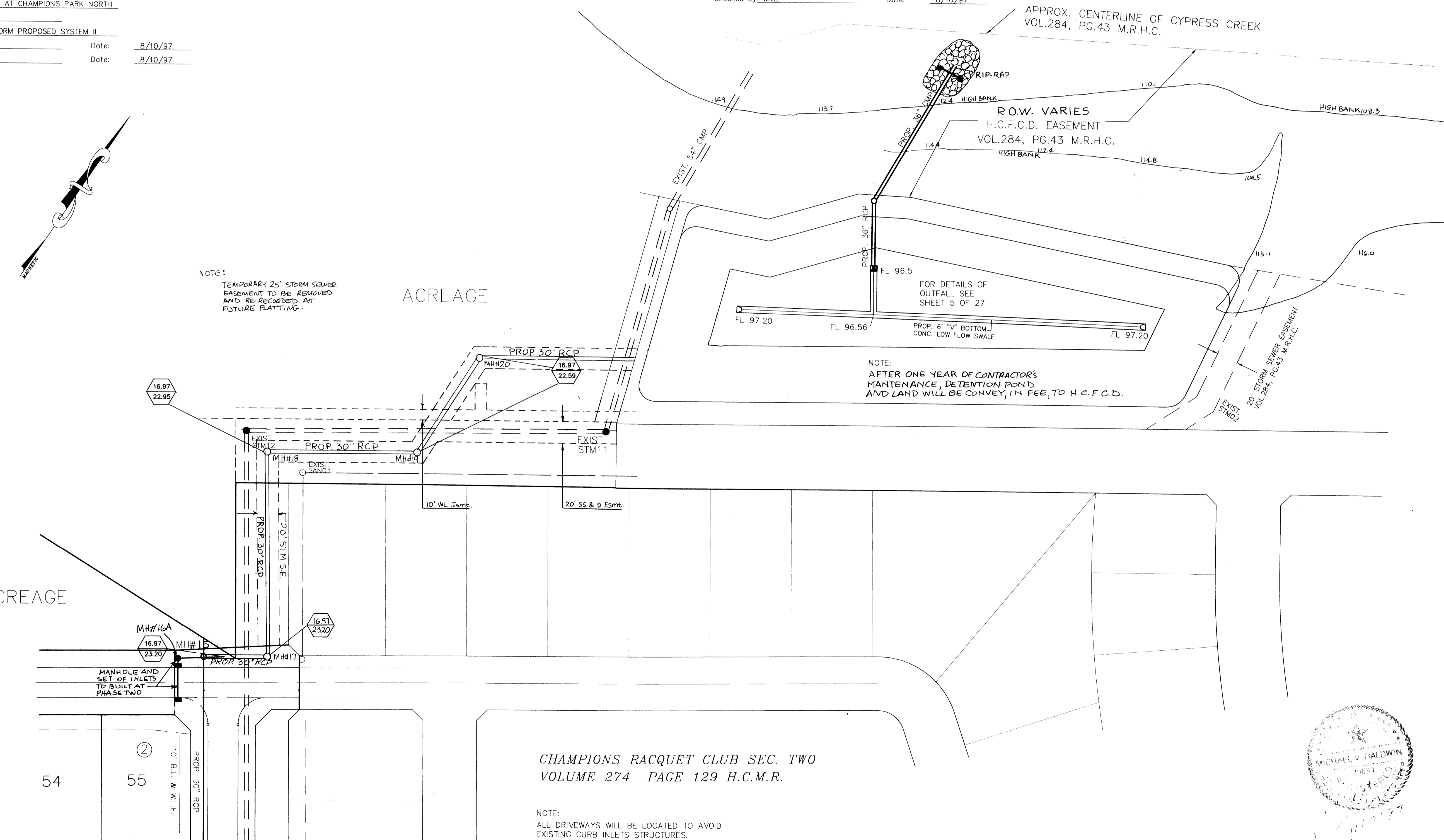


Table with 4 columns: Rev., Date, Description, App.

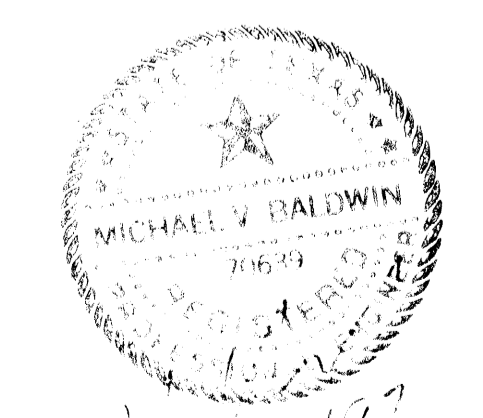
SECTION APPROVALS  
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
WATER ENGINEERING, TRAFFIC AND SIGNAL ENGINEERING, STORM SEWER ENGINEERING, CONSTRUCTION

OTHER DEPARTMENTS  
PLANNING AND DEVELOPMENT, SPONSOR DEPARTMENT  
SUBMITTED: V. 1" = 5', H. 1" = 50'  
SCALE: AUGUST 1997  
DESIGNED BY: TIM  
DRAWN BY: TIM  
SHEET NO. 3A OF 27 SHEETS  
CITY DWG. NO.:

PROVIDENT ENGINEERS, INC.  
11241 RICHMOND, SUITE E107  
HOUSTON, TEXAS 77082

CHAMPIONS RACQUET CLUB SEC. TWO  
VOLUME 274 PAGE 129 H.C.M.R.

NOTE: ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLETS STRUCTURES.



FOR CONTINUATION SEE SHT. 3 OF 27.

CPC101 NO. 12605  
LOG NO. 97-0581

**SANITARY SEWER NOTES:**

- DESIGN AND CONSTRUCTION OF SANITARY SEWER SUBJECT TO DESIGN MANUAL, STANDARD SPECIFICATIONS, AND STANDARD DETAILS PUBLISHED SEPTEMBER 30, 1997. CONTRACTOR SHALL OBTAIN COPY OF SAME & USE IT. OBTAIN FROM MAIN ST. FILE ROOM.
- ALL SANITARY SEWERS SHALL BE INSTALLED BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 02601-02C, 02227-01C, AND 02227-08B AS APPLICABLE.

**GENERAL NOTES - STORM SEWERS**

- STORM SEWERS SHALL BE IN ACCORDANCE WITH THE CITY OF HOUSTON DESIGN MANUAL AND STANDARD CONSTRUCTION DETAILS (SEPTEMBER 30, 1997) AS CURRENTLY AMENDED.
- REINFORCED CONCRETE PIPE (C-76 CLASS III) STORM SEWER SHALL BE INSTALLED BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 02317-04, 02317-05 AND 02317-09 AS APPLICABLE.
- ALL SEWERS CONSTRUCTED INSIDE LOT EASEMENTS SHALL BE R.C.P. TWENTY (20) FOOT WIDE EASEMENTS SHALL BE PROVIDED.
- ALTERNATIVE TO CEMENT-STABILIZED SAND BACKFILL FOR PIPES 54-INCH AND LARGER, FROM 1-FOOT ABOVE THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE. CONTRACTOR MAY BACKFILL WITH SUITABLE MATERIAL, PROVIDED THE BACKFILL MATERIAL IS PLACED IN 8-INCH LIFTS AND MECHANICALLY COMPACTED TO 95% STANDARD PROCTOR DENSITY. TESTS SHALL BE TAKEN AT 100-FOOT INTERVALS ON EACH LIFT. BEDDING AND BACKFILL TO 1-FOOT ABOVE THE TOP OF THE PIPE SHALL BE CEMENT-STABILIZED SAND.
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION, (755-8210), AND WRITTEN NOTIFICATION 48 HOURS IN ADVANCE.
- CONTRACTOR TO OBTAIN ALL CONSTRUCTION PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT."
- ALL STORM SEWER MANHOLE RIMS LOCATED OUTSIDE THE PROPOSED PAVING SHALL BE SET TO PROPOSED FINISH GRADE ELEVATION.
- BEFORE UTILITY CONSTRUCTION BEGINS, ADEQUATE DRAINAGE MUST BE PROVIDED SO THAT NO SHEET FLOW FLOODING OF ROADWAY OR ADJOINING PROPERTIES OCCURS.
- THE CONTRACTOR MAY USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE FINAL DRAFT OF STORMWATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY HARRIS COUNTY/HCFCD, AND THE CITY OF HOUSTON ALL IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.
- CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.

**GENERAL NOTES - WATER**

- ALL WATER LINES TO HAVE A MINIMUM OF FOUR (4) FEET OF COVER TO TOP OF CURB.
- WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD SPECIFICATIONS AND STANDARD CONSTRUCTION DETAILS FOR WASTE WATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING" SEPTEMBER 1996.
- ALL A.C. WATER MAINS USED IN THIS PROJECT RANGING IN SIZE FROM 6 INCHES THRU 16 INCHES SHALL BE AWWA C-400-80 CLASS 200 OR LATEST REVISION WITH MAXIMUM PIPE LENGTH OF 6 FEET 6 INCHES.
- ALL WATER MAINS UNDER STREET PAVEMENT - 4 INCHES THRU 12 INCHES IN DIAMETER, IF NOT SPECIFIED OTHERWISE, SHALL BE AWWA C-900 PVC PIPE.
- ALL FLUSHING VALVES SHALL BE SET THREE (3) FEET BEHIND BACK OF CURB.
- STEEL WATER LINE SECTION TO EXTEND A OF FIVE (5) FEET MINIMUM BEYOND 45° BENDS.
- THE CONTRACTOR MAY USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
- WHENEVER SANITARY SEWERS CROSS UNDER WATER MAINS, A 6" MINIMUM CLEARANCE IS REQUIRED. WHENEVER SANITARY SEWERS CROSS OVER WATER MAINS, A 2' MINIMUM CLEARANCE IS REQUIRED. ONE 18' JOINT OF DUCTILE PIPE SHALL BE INSTALLED IN THE SEWER LINE AND CENTERED AT THE WATER LINE CROSSING.
- DUCTILE IRON PIPE SHALL BE MINIMUM THICKNESS CLASS 50. THE PRESSURE RATING FOR BOTH THE PIPE AND THE JOINTS SHALL BE 150 PSI OR GREATER.
- WHENEVER SANITARY SEWERS CROSS OVER WATER MAINS, AND THE OUT-TO-OUT PIPE CLEARANCE IS LESS THAN 24", A CENTERED 18' JOINT OF DUCTILE IRON PIPE SHALL BE USED.
- WHENEVER WATER MAINS CROSS UNDER SANITARY SEWERS, AND THE MINIMUM PIPE CLEARANCE IS 2' OR GREATER, BUT LESS THAN 9', A CENTERED 20' OF CEMENT STABILIZED SAND BACKFILL (2 SACKS OF CEMENT PER CUBIC YARD OF SAND) STARTING AT A POINT 1/4 OF THE PIPE DIAMETER ABOVE THE BOTTOM OF SANITARY SEWER TO 1-FOOT ABOVE THE TOP OF SANITARY SEWER, OR ONE SANITARY DIAMETER, WHICHEVER IS LARGER. CENTER ONE JOINT OF SANITARY SEWER PIPE ABOUT THE WATER MAIN.
- ALL P.V.C. WATER MAINS SHALL BE F C-900, DR 18, CLASS 150.
- ALL WATER METERS MUST HAVE INDIVIDUAL SERVICE LEADS AS PER CITY OF HOUSTON STANDARDS.

**GENERAL NOTES - PAVING**

- PAVING SHALL BE IN ACCORDANCE WITH HARRIS COUNTY "RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS OR RE-SUBDIVISIONS" AND THE LATEST REVISIONS AND/OR AMENDMENTS OF SAME.
- GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
- ALL RADII AT CURB RETURNS TO BE 25.0' TO BACK OF CURB UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION, (713-755-8210), AND WRITTEN NOTIFICATION 48 HOURS IN ADVANCE.
- STOP SIGN (R1 - 1A) TO BE PLACED AT INTERSECTIONS.
- OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY FOR CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN COUNTY ROAD R.O.W.
- CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT. PRIOR TO STARTING CONSTRUCTION.
- OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR CULVERTS WITHIN COUNTY ROAD RIGHTS OF WAY.

**NOTE:**

FORMAL "NOTIFICATION" APPROVED BY COMMISSIONERS COURT REQUIRED PRIOR TO CONSTRUCTION OF UTILITIES WITHIN HARRIS COUNTY R.O.W. CONTACT HARRIS COUNTY PERMIT OFFICE AT 956-3000. CONSTRUCTION TO BE IN ACCORDANCE WITH SPECIFICATIONS DETAILED IN THE APPLICABLE HARRIS COUNTY COMMISSIONERS COURT ORDER.

**PRIVATE UTILITY COMPANY NOTES**

**Houston Lighting and Power Company**

Overhead lines may exist on the property. We have not attempted to mark those lines since they are clearly visible, but you should locate them prior to beginning any construction. Texas Law, Section 752, Health & Safety Code, forbids all activities in which persons or things MAY come within six (6) feet of live overhead high voltage lines. Contractors and owners are legally responsible for safety of construction workers under this law. This law carries both criminal and civil liability. To arrange for lines to be turned off or moved, call HL&P at 228-7400.

**Entex**

Location of Entex main lines (to include United Gas Transmission, and/or Industrial Gas Supply Corporation where applicable) are shown in an approximate location only. Service lines are usually not shown. The contractor shall contact the Utility Coordinating Committee at 223-4567 or 1-800-669-8344 a minimum of 48 hours prior to construction to have main and service lines field located. The contractor shall determine the exact location before commencing work and agree to be fully responsible for any damages caused by his failure to exactly locate and preserve these underground facilities.

**Southwestern Bell Telephone Company**

The locations of Southwestern Bell Telephone Co. utilities are shown in an approximate way only. The contractor shall determine the exact location before commencing work. He agrees to be fully responsible for any and all damages which might be occasioned by his failure to exactly locate and preserve these underground utilities.



△			
△			
△			
△			

Rev.	Date	Description	App.
<b>PRIVATE UTILITY LINES SHOWN</b>			
ENTEX, INC.			
SOUTHWESTERN BELL TELEPHONE CO. Valid for One Year Only			
HOUSTON LIGHTING & POWER CO. Approval Only for Crossing Underground Ductlines Unless Noted. Valid at Time of Review Only.			

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SECTION APPROVALS	
<i>Michael V. Baldwin</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>John P. ...</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>Christina ...</i> 1/15/98 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS	
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT

<i>Al ...</i> CITY ENGINEER	1/15/98 DATE
<i>Michael V. Baldwin</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	1-16-98 DATE

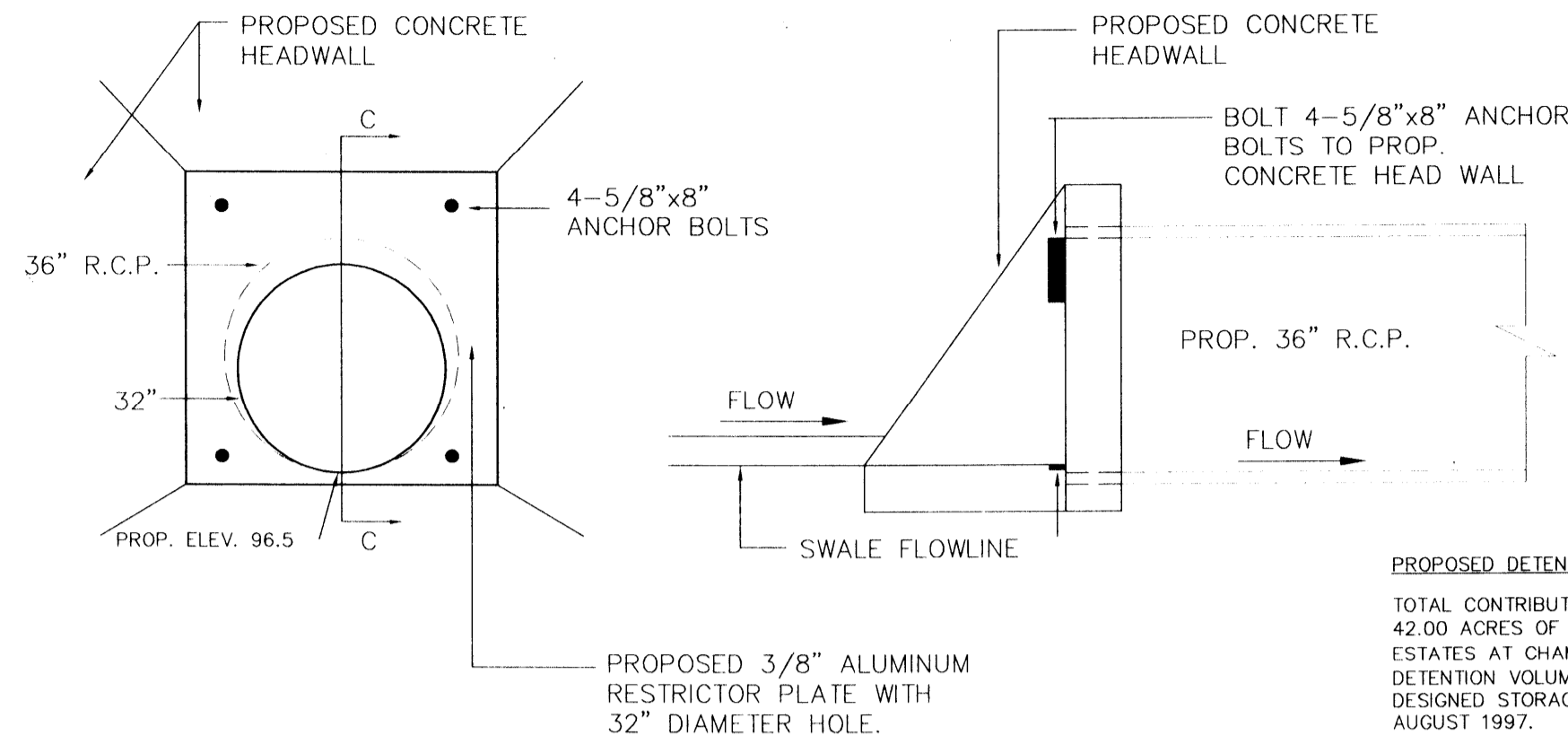
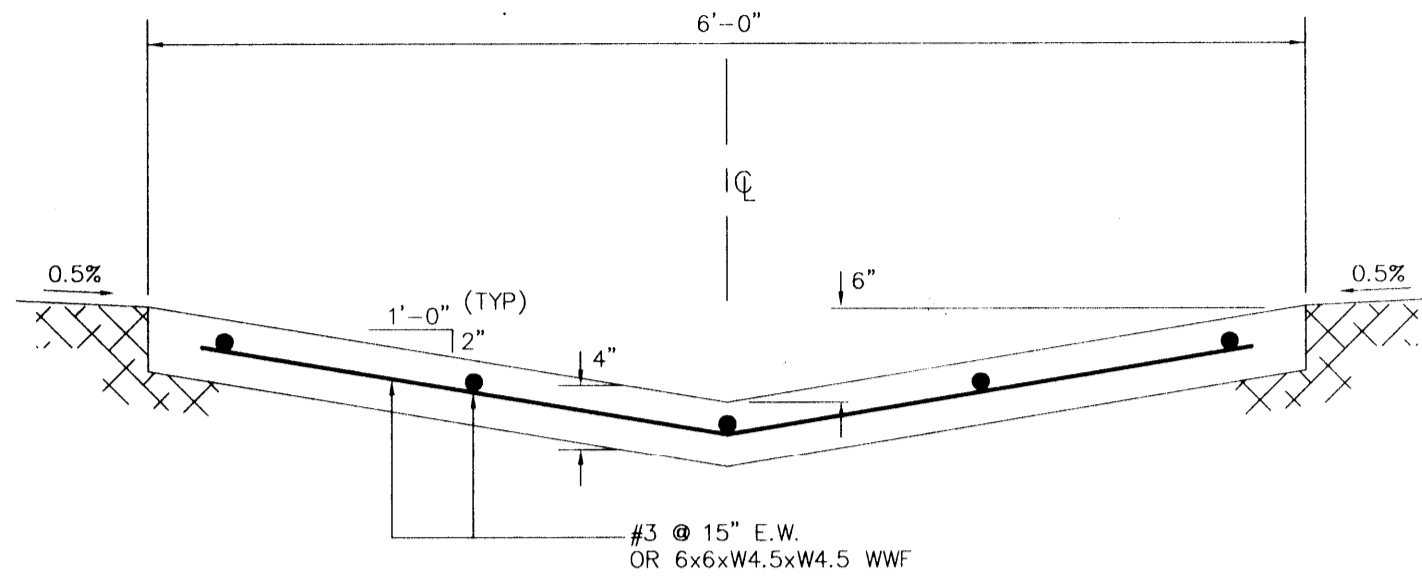
SUBMITTED: _____	DESIGNED BY: TIM
SCALE: 1" = 1'	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 4 OF 27 SHEETS
SURVEY BY: _____	DWG. NO. _____
F B NO: _____	

<b>ESTATES AT CHAMPIONS PARK NORTH</b>	
<b>NOTES</b>	
<b>M.U.D. 191</b>	

**PEI** PROVIDENT ENGINEERS, INC.  
11241 RICHMOND, SUITE E107  
Houston, Texas 77082

NOTE:

100YR WATER SURFACE FOR POND I WAS DETERMINED FROM PEI'S RANCH COUNTRY ESTATES DETENTION SYSTEM DATED JULY 1997.  
 25YR WATER SURFACE FOR POND I WAS DETERMINED FROM PEI'S RANCH COUNTRY ESTATES DETENTION SYSTEM DATED JULY 1997.



OUTFLOW RESTRICTOR PLAN

**PROPOSED DETENTION BASIN SUMMARY**  
 TOTAL CONTRIBUTING ACREAGE SERVED THIS PHASE: 42.00 ACRES OF CREDIT FOR FUTURE DEVELOPMENT WITHIN ESTATES AT CHAMPIONS PARK NORTH  
 DETENTION VOLUME PROVIDED (100 YR. FREQ.): 25.05 ACRE-FOOT  
 DESIGNED STORAGE COEFFICIENT: 0.589 (PER APPROVED REVISED REPORT DATED AUGUST 1997).

**STORAGE VOLUME REQUIRED**  
 25 YEAR: 13.00 AC-FT.  
 100 YEAR: 18.577 AC-FT.

**PROPOSED STORAGE VOLUME**  
 25 YEAR: 13.55  
 100 YEAR: 25.05

**PROPOSED MAXIMUM DESIGN WATER SURFACE ELEVATION**  
 25 YEAR FREQUENCY: EL = 113.42 POND  
 100 YEAR FREQUENCY: EL = 115.94 POND

**PROPOSED MAXIMUM RELEASE RATE**  
 25 YEAR FREQUENCY: Q = 48.90 cfs POND  
 100 YEAR FREQUENCY: Q = 60.02 cfs POND

**MAXIMUM ALLOWABLE RELEASE RATE**  
 25 YEAR FREQUENCY: Q = 52.00 cfs ULTIMATE  
 100 YEAR FREQUENCY: Q = 73.00 cfs ULTIMATE

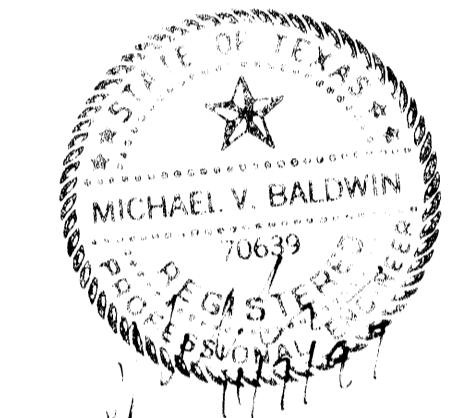
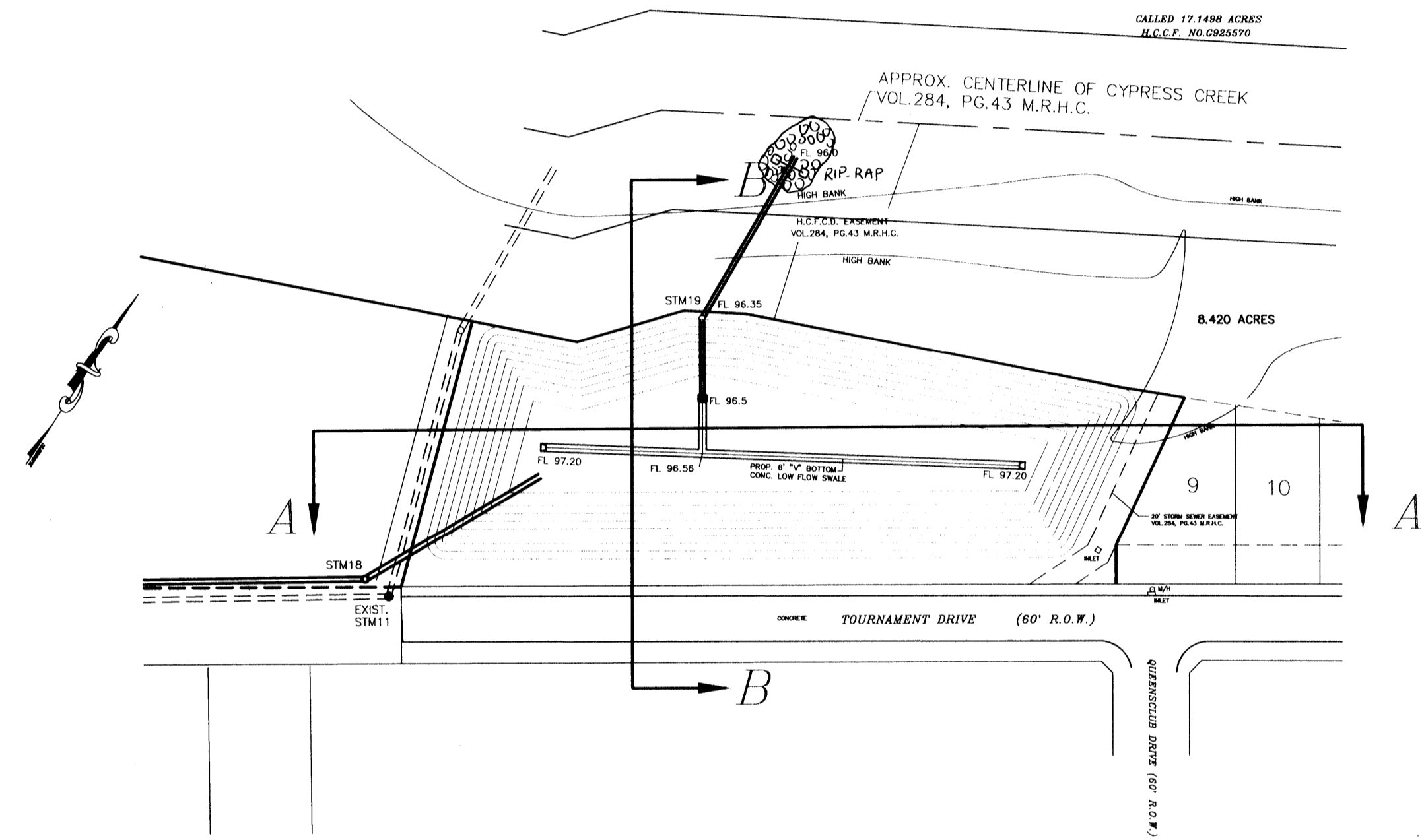
**PROPOSED POND SURFACE**  
 25 YEAR: 113.42 ELEV. PROPOSED  
 100 YEAR: 115.94 ELEV. PROPOSED

**EXISTING K100-00-00 WATER SURFACE ELEVATION**  
 25 YEAR FREQUENCY: EL = 113.50 (FROM INTERPOLATED HCFCD MODEL K100-00-00)  
 100 YEAR FREQUENCY: EL = 116.00 (FROM HCFCD MODEL K100-00-00)

- HARRIS COUNTY FLOOD CONTROL DISTRICT, WATERSHED MANAGEMENT DEPARTMENT, SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION (713/684-4050). A COPY OF THE APPROVED CONSTRUCTION DRAWINGS IS REQUIRED AT THIS TIME.
- ENGINEER SHALL SUBMIT LETTER AND RECORD DRAWINGS TO HARRIS COUNTY FLOOD CONTROL DISTRICT, WATERSHED MANAGEMENT DEPARTMENT, REQUESTING INSPECTION AND ACCEPTANCE OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT OF WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT OF WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING AND RESTORING BACKSLOPE DRAINAGE SYSTEMS.
- ALL DISTURBED AREAS WITHIN THE HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT OF WAY, INCLUDING THE DETENTION BASIN BOTTOM, SHALL BE SEEDED AS PER HARRIS COUNTY FLOOD CONTROL SPECIFICATION PART IV, SECTION 15, ENTITLED "SEEDING".
- BACKFILL TO BE COMPACTED IN NO GREATER THAN 1 FOOT LIFTS TO THE DENSITY OF THE UNDISTURBED ADJACENT SOIL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DRAINAGE STREAM AS NECESSARY TO INSURE NO WATER IN STORM SEWER DURING "DRY" CONDITIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORING CHANNEL TO ORIGINAL CONDITION.
- ALL EXCAVATED MATERIAL IS TO BE REMOVED FROM THE HCFCD RIGHT OF WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN AREA WITHOUT FIRST OBTAINING A FILL PERMIT.
- CONTRACTOR WITH THE ASSISTANCE OF THE ENGINEER IF NECESSARY, SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS.

DETENTION SUMMARY

- Area Served = 42.00 acres
- Detention Storage Rate =  $C_s = 0.589$
- Detention Storage Volume Required = 18.577 acre-feet
- Detention Storage Volume Provided = 25.05 acre-feet
- Maximum Design Water Surface Elevation = 115.94 POND
- Maximum Outflow Rate Allowed = 73 cfs
- Maximum Outflow Rate Provided = 60.02 cfs
- Restrictor Size = 32 inches Pond



Rev.	Date	Description	App.

**PRIVATE UTILITY LINES SHOWN**

ENTEX, INC.  
 SOUTHWESTERN BELL TELEPHONE CO.  
 HOUSTON LIGHTING & POWER CO.

**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

**SECTION APPROVALS**

TRAFFIC AND SIGNAL ENGINEERING  
 STREET & BRIDGE ENGINEERING  
 CONSTRUCTION

**OTHER DEPARTMENTS**

PLANNING AND DEVELOPMENT  
 SPONSOR DEPARTMENT

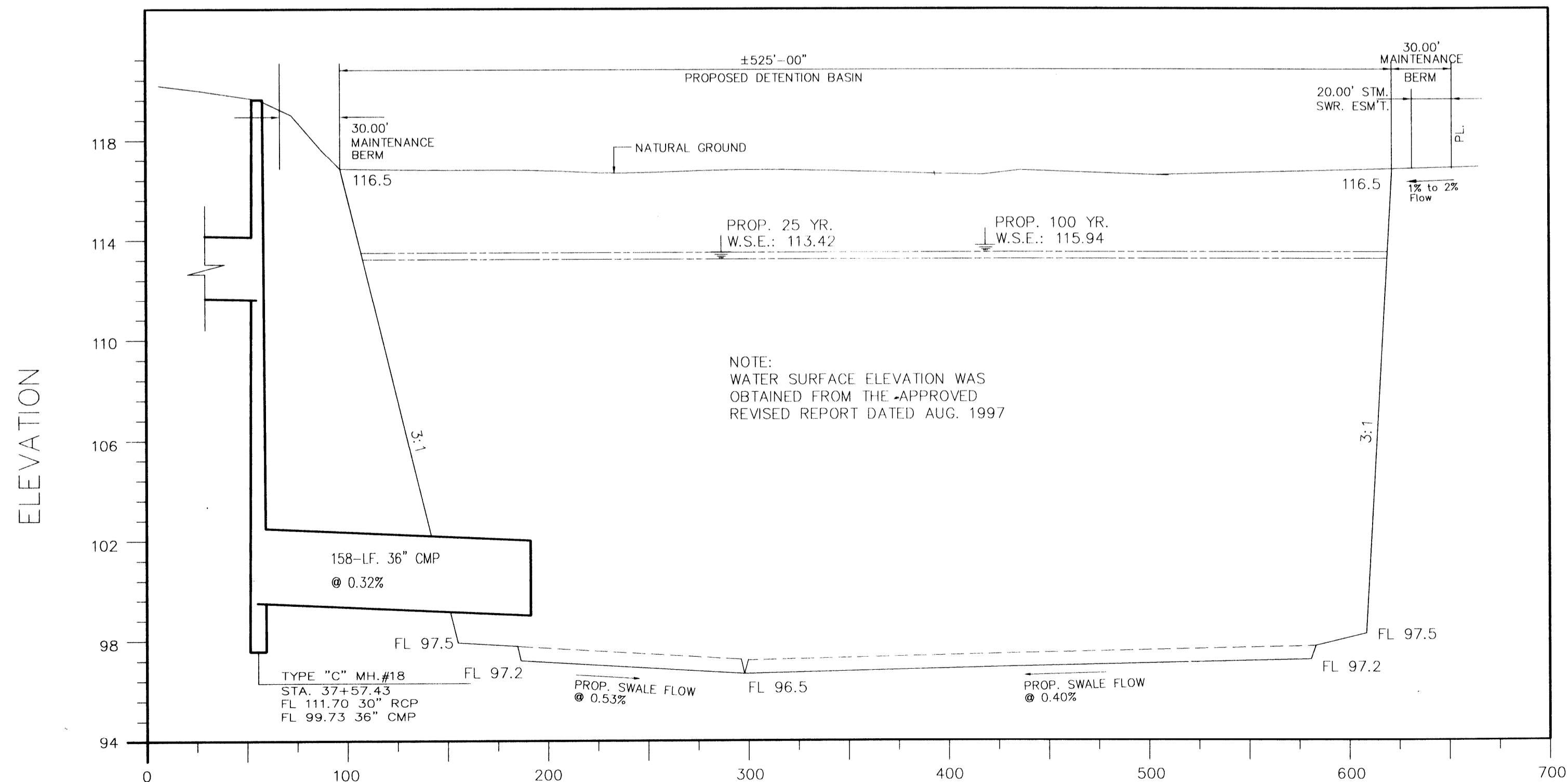
CITY ENGINEER: *[Signature]* 1/15/98  
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING: *[Signature]* 1-16-98

SUBMITTED: \_\_\_\_\_  
 SCALE: 1" = 100'  
 DATE: AUGUST 1997  
 SURVEY BY: \_\_\_\_\_  
 F B NO: \_\_\_\_\_

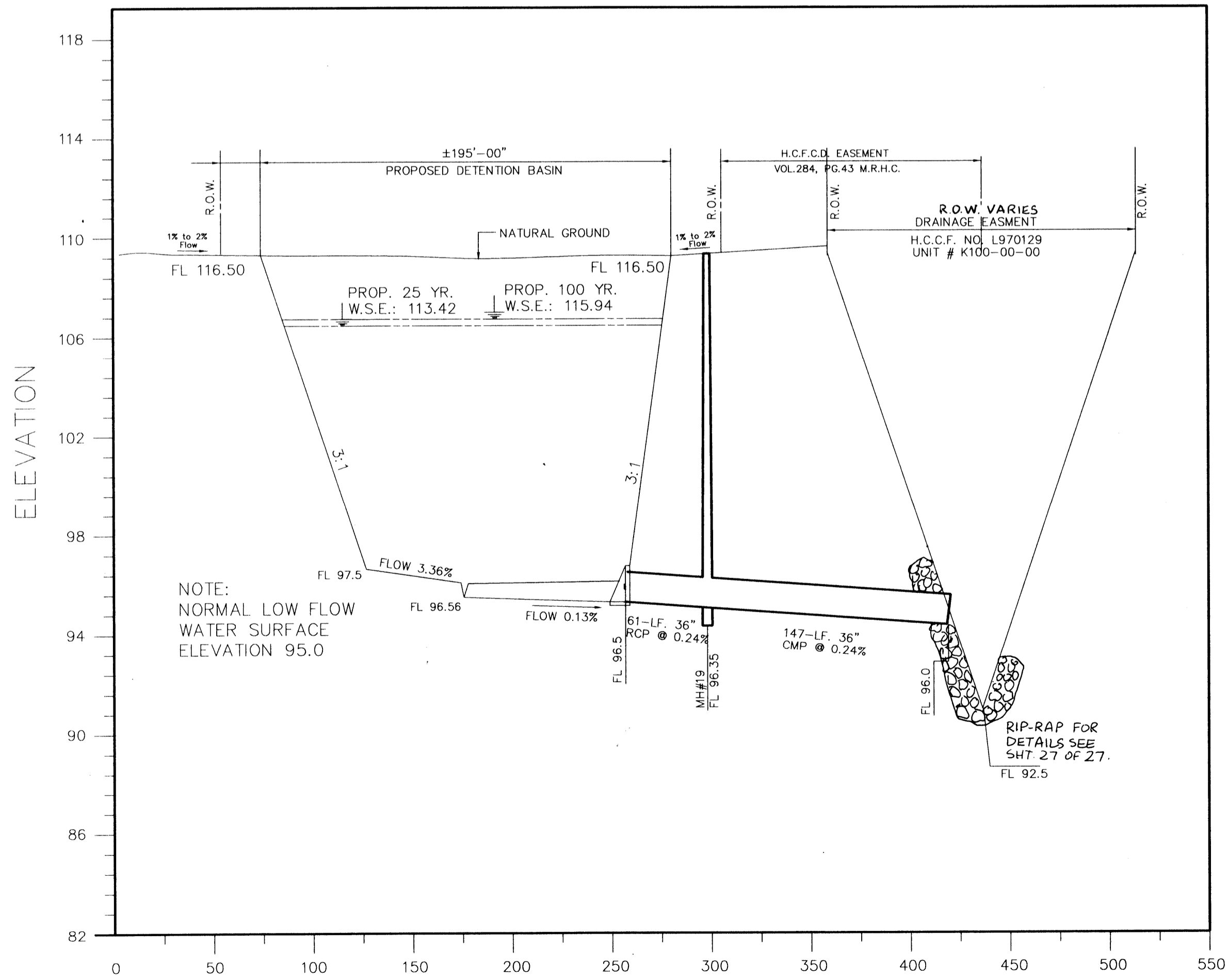
DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 5 OF 27 SHEETS  
 CITY DWG. NO. \_\_\_\_\_

**ESTATES AT CHAMPIONS PARK NORTH**

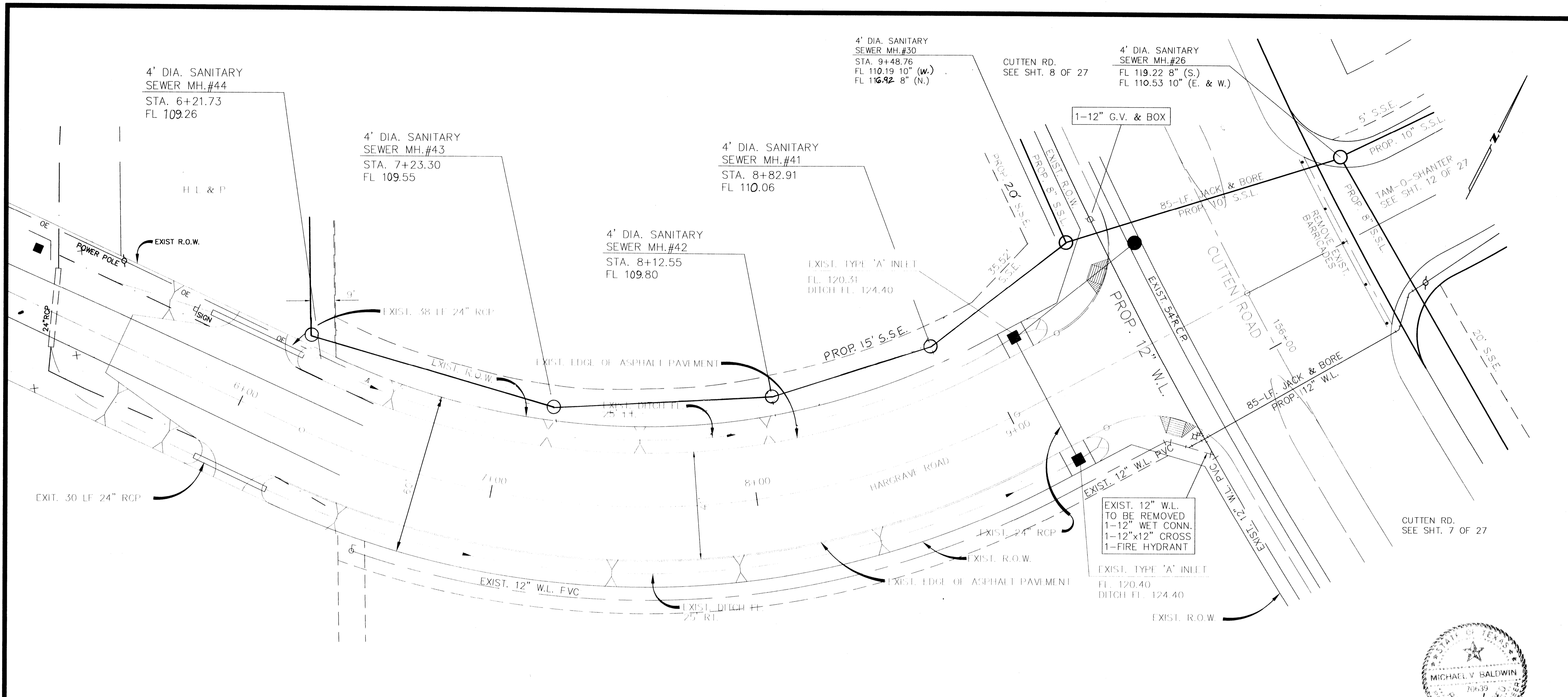
DETENTION POND  
 CROSS SECTION



SECTION A-A  
 SCALE  
 H: 1" = 50' V: 1" = 4'



SECTION B-B  
 SCALE  
 H: 1" = 50' V: 1" = 4'



**BENCH MARK**  
 BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94  
 ADJUSTMENT USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMNET DRIVE AT CENTERLINE QUEENSLUB DRIVE. ELEV. = 114.69

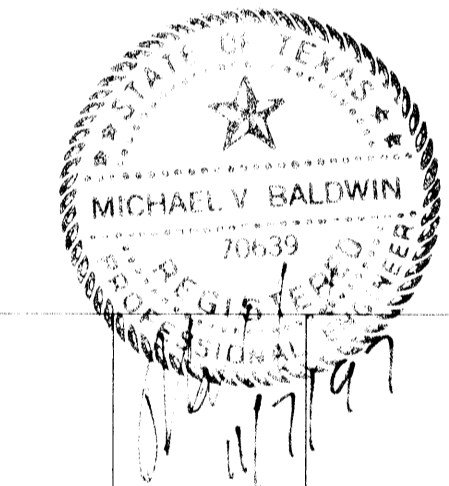
APPROVED: *Sue B. Freeman*  
 Assistant County Engineer  
 7/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.

**PRIVATE UTILITY LINES SHOWN**

- ENTEX, INC.
- SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only
- HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.



**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

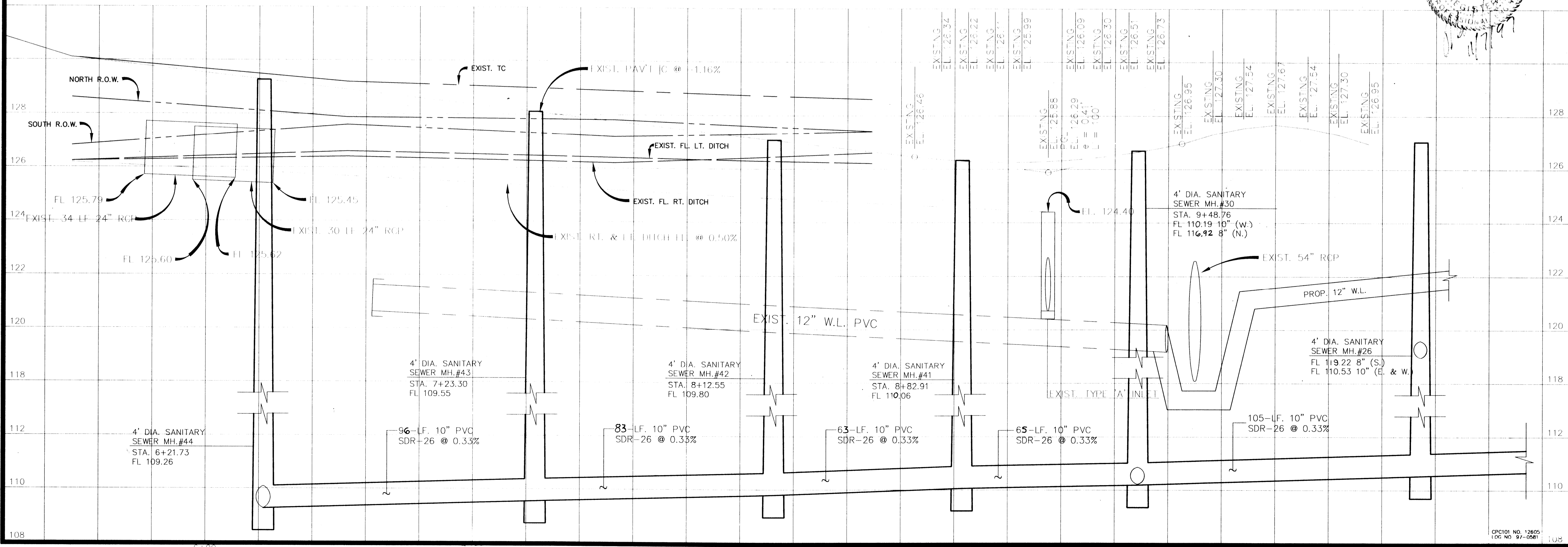
SECTION APPROVALS

<i>[Signature]</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-8-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12-22-97 STORM SEWER ENGINEERING	CONSTRUCTION

**OTHER DEPARTMENTS**

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>[Signature]</i> 1/15/98 CITY ENGINEER	DATE
<i>[Signature]</i> 1-16-98 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

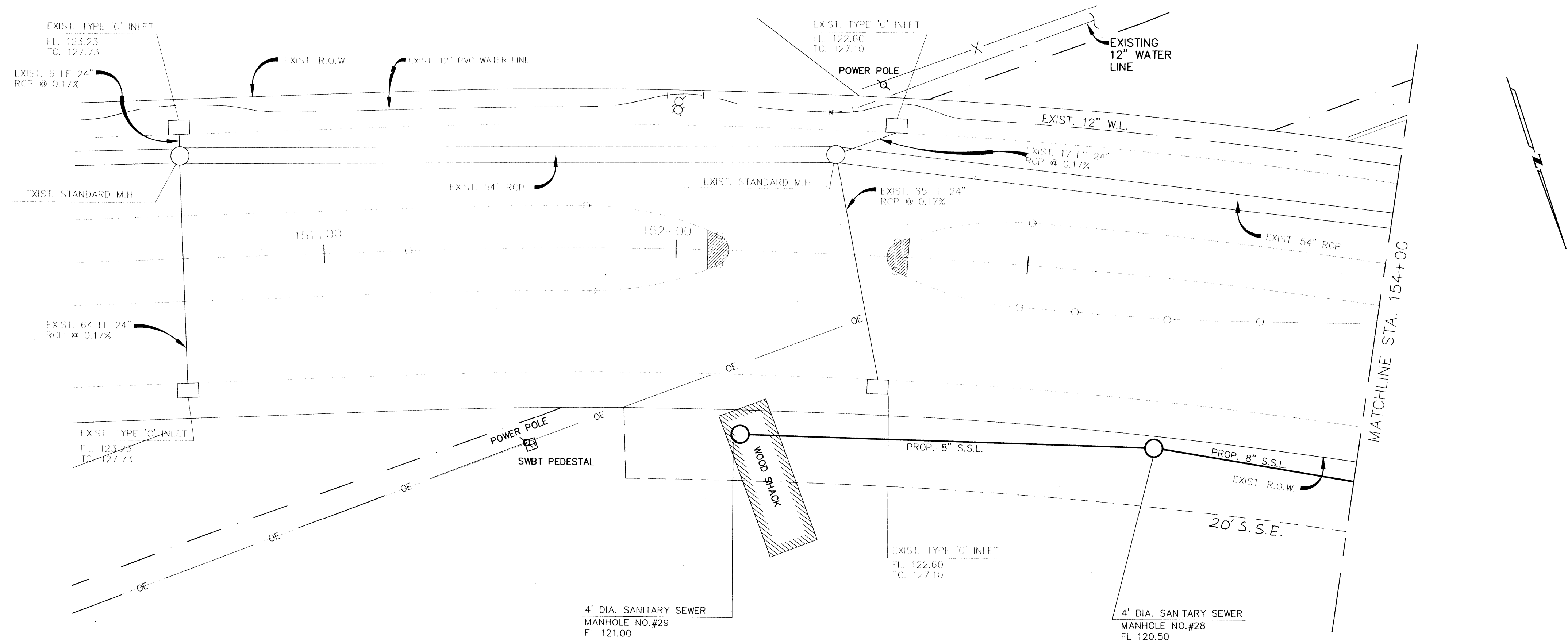
SUBMITTED: _____	DESIGNED BY: TIM
SCALE: V: 1" = 2' H: 1" = 20'	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 6 OF 27 SHEETS
SURVEY BY: _____	CITY DWG. NO.: _____



**M.U.D. 191  
 PLAN & PROFILE**

HARGRAVE RD.





BENCH MARK  
 BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSLUB DRIVE ELEV. = 114.69

APPROVED: *Cochin - Juarez*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
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Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN  
 ENTEX, INC.  
 SOUTHWESTERN BELL TELEPHONE CO.  
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CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS  
*W. M. ...* 12-9-97 WATER ENGINEERING TRAFFIC AND SIGNAL ENGINEERING  
*H. M. ...* 1-9-98 WASTEWATER ENGINEERING STREET & BRIDGE ENGINEERING  
*J. ...* 12-22-97 STORM SEWER ENGINEERING CONSTRUCTION

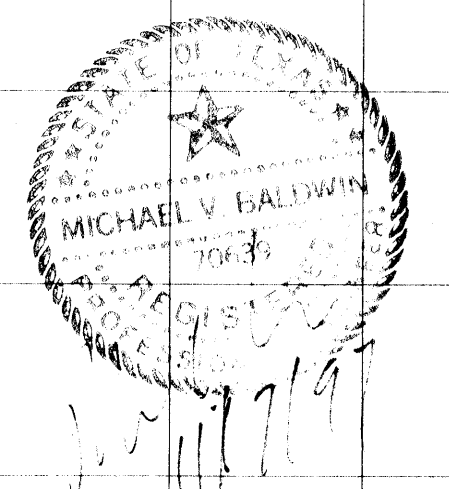
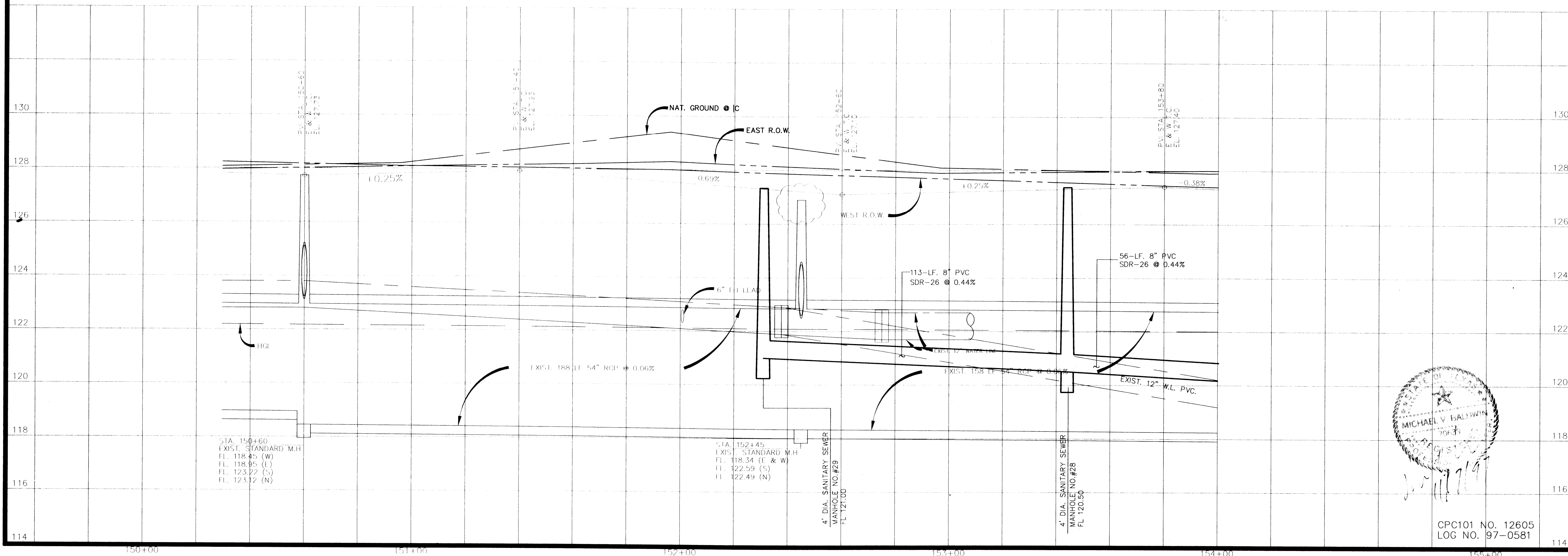
OTHER DEPARTMENTS  
 PLANNING AND DEVELOPMENT SPONSOR DEPARTMENT

*Ali Chan* 1/15/98  
 CITY ENGINEER DATE  
*David ...* 1-16-98  
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE

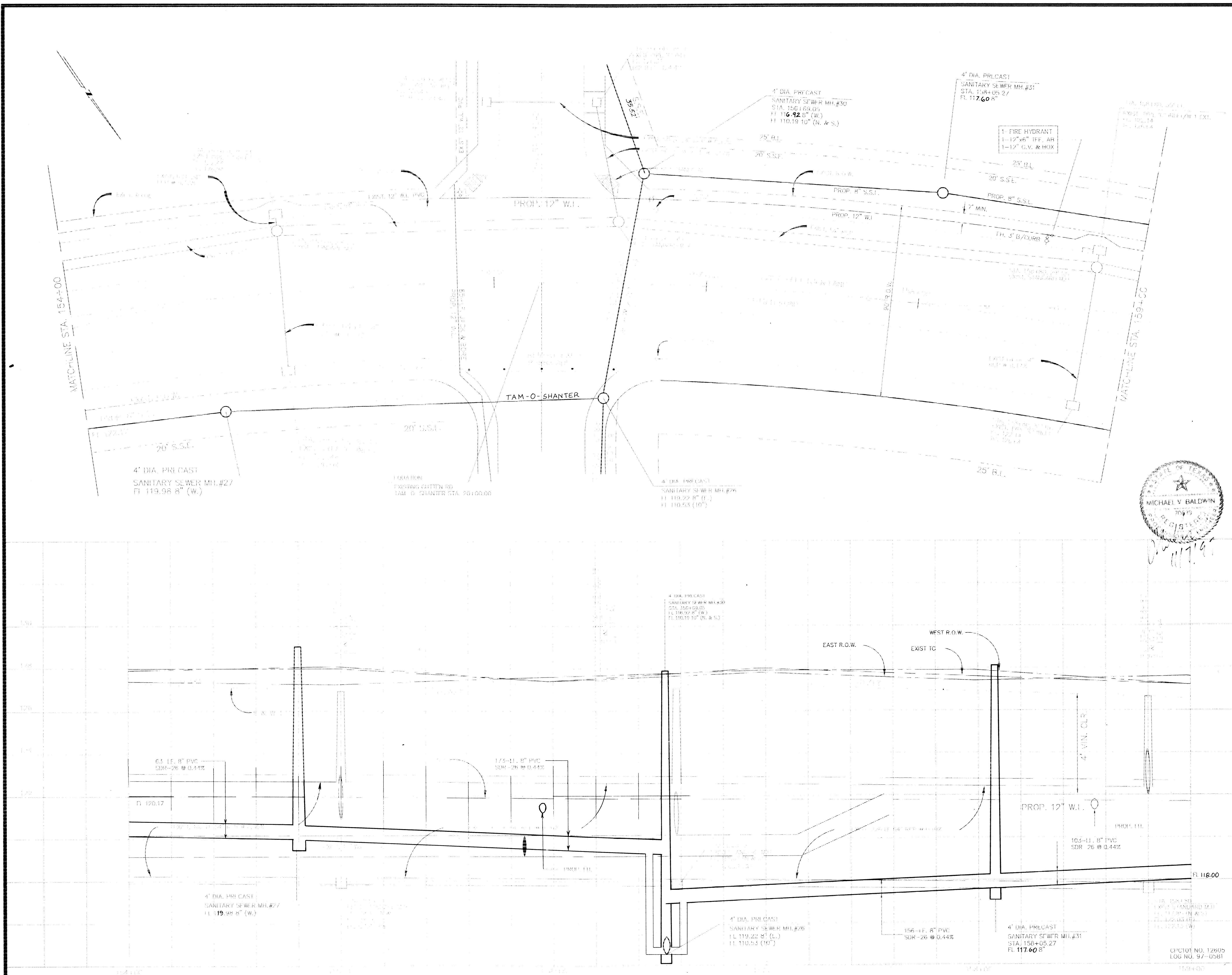
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 SCALE: H. 1" = 20'  
 DATE: AUGUST 1997  
 SURVEY BY: F B NO: DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 7 OF 27 SHEETS  
 CITY DWG. NO:

M.U.D. 191  
 PLAN & PROFILE  
 CUTTEN RD.  
 STA. 150+00 TO 154+00

PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082  
 CPC101 NO. 12605  
 LOG NO. 97-0581



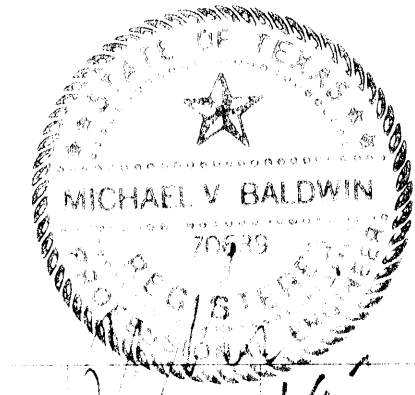




BENCH MARK  
 NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMNET DRIVE AT CENTERLINE QUEENSLUB DRIVE ELEV. = 114.69

APPROVED: *Michael V. Baldwin*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only



Rev	Date	Description	App.

PRIVATE UTILITY LINES SHOWN  
 ENTEK, INC.  
 SOUTHWESTERN BELL TELEPHONE CO  
 Valid for One Year Only  
 HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground  
 Ductlines Unless Noted. Valid at Time of Review Only.

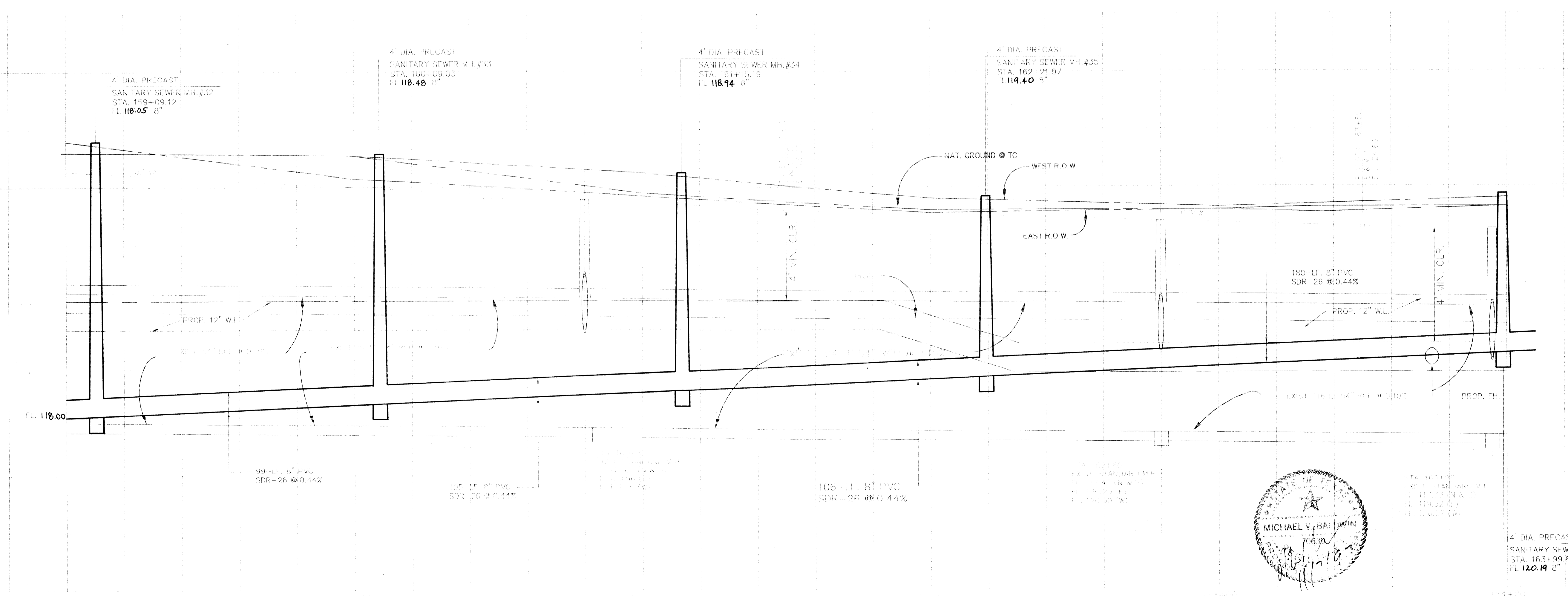
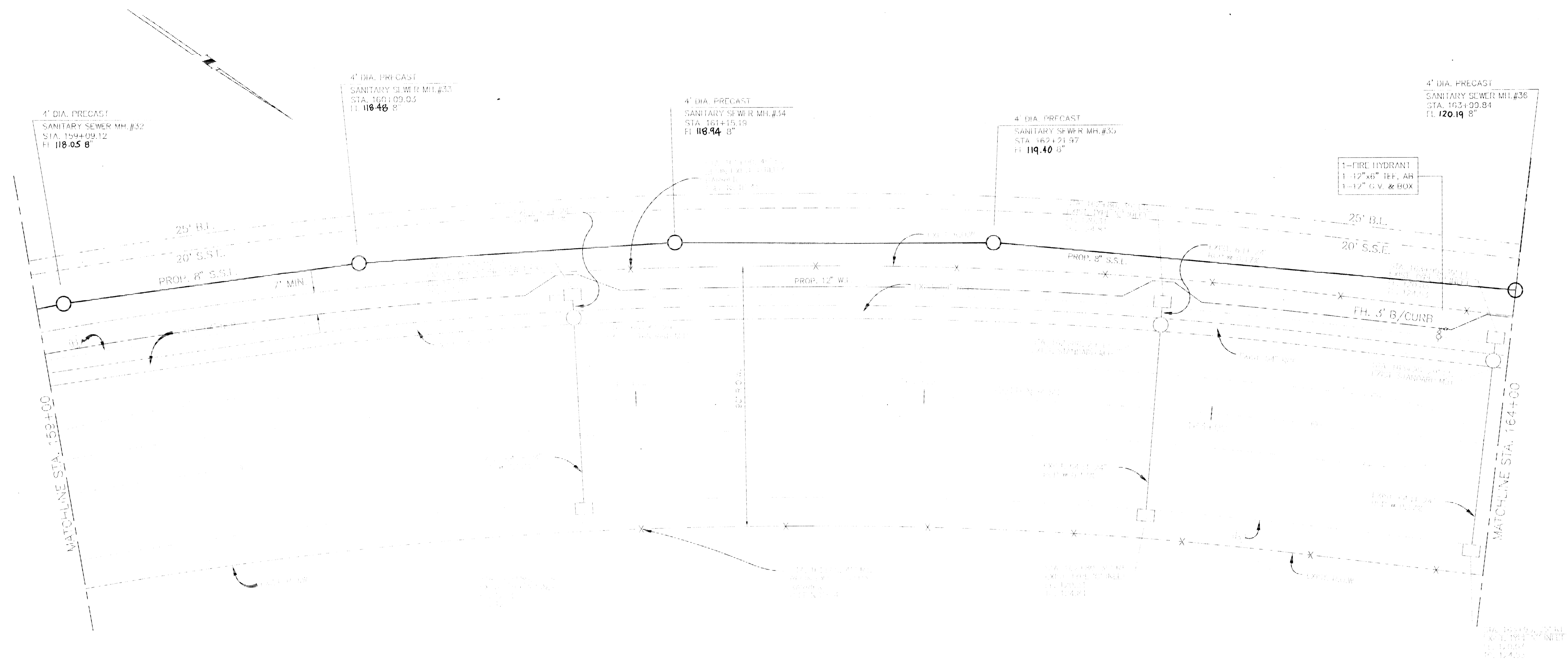
CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP  
 SECTION APPROVALS  
*Steve Nade* 12-9-97  
 WATER ENGINEERING TRAFFIC AND SIGNAL ENGINEERING  
*Tommy* 1-9-98  
 STREET WATER ENGINEERING STREET & BRIDGE ENGINEERING  
*Handling* 12-22-97  
 STORMWATER ENGINEERING CONSTRUCTION

OTHER DEPARTMENTS  
 PLANNING AND DEVELOPMENT SPONSOR DEPARTMENT  
*Oliver* 1/15/98  
 CITY ENGINEER DATE  
*Janis Felberoff* 1-16-98  
 DEPUTY CITY ENGINEER DATE

SUBMITTED: 1" = 2'  
 SCALE: 1" = 20'  
 DATE: AUGUST 1997  
 SURVEY BY: [Blank]  
 DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 8 OF 27 SHEETS  
 CITY DWG. NO.

M.U.D. 191  
 PLAN & PROFILE  
 CUTTEN RD.  
 STA. 154+00 TO 159+00

PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082  
 PROJECT NO. 12605  
 LOG NO. 97-0581



BENCH MARK  
 BENCH MARK, NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., F.I.V. = 125.994  
 Y1216, 1978 ADJ., F.I.V. = 125.406  
 Y1216, 1988 ADJ., F.I.V. = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
 ADJUSTMENT.  
 IBM#1: TOP OF CURB AT CENTERLINE INLET NORTH  
 SIDE OF TOURNAMNET DRIVE AT CENTERLINE  
 QUEENSCUB DRIVE ELEV. = 114.69

APPROVED: *(Signature)*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to  
 Location Only  
 The Above Authorization is Valid for 1 Year  
 Only

Rev	Date	Description	App

PRIVATE UTILITY LINES SHOWN

ENIX, INC.
SOUTHWESTERN BELL TELEPHONE CO Valid for One Year Only
HOUSTON LIGHTING & POWER CO. Approval Only for Crossing Underground Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

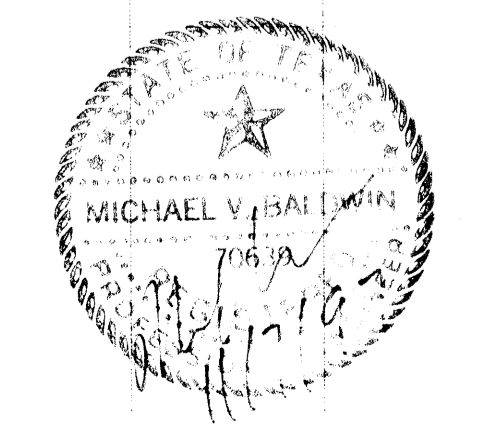
<i>(Signature)</i> 12-4-97 TRAFFIC ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>(Signature)</i> 1-1-98 WASTE WATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>(Signature)</i> 12-22-97 STORM WATER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENT:

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>(Signature)</i> 1/15/98 CITY ENGINEER	DATE
<i>(Signature)</i> CITY ENGINEER	DATE 1-16-98

SUBMITTED: 1/15/98 DESIGNED BY: TIM  
 SCALE: H: 1" = 20' DRAWN BY: TIM  
 DATE: AUGUST 1997 SHEET NO. 9 OF 27 SHEETS  
 SURVEY BY: CITY DWG. NO.

M.U.D. 191  
 PLAN & PROFILE  
 CUTTEN RD.  
 STA. 159+00 TO 164+00



PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082

BENCH MARK

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
Y1216, 1973 ADJ., ELEV = 125.994  
Y1216, 1978 ADJ., ELEV = 125.406  
Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
USED FOR CUTTEN ROAD.

ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
ADJUSTMENT.

TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH  
SIDE OF TOURNAMNET DRIVE AT CENTERLINE  
QUEENSCULUB DRIVE ELEV. = 114.69

APPROVED: *Castie Jaraman*  
Assistant County Engineer  
2/16/98  
Date

Water & Sanitary Sewer Lines Approved as to  
Location Only  
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Only

Rev	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

- ENIX, INC.
- SOUTHWESTERN BELL TELEPHONE CO  
Valid for One Year Only
- HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

TRAFFIC AND SIGNAL ENGINEERING  
*John Kola* 12-9-97  
STREET & BRIDGE ENGINEERING  
*Tom Thomas* 1-9-98  
CONSTRUCTION  
*Steve* 12/22/97

OTHER DEPARTMENT APPROVALS

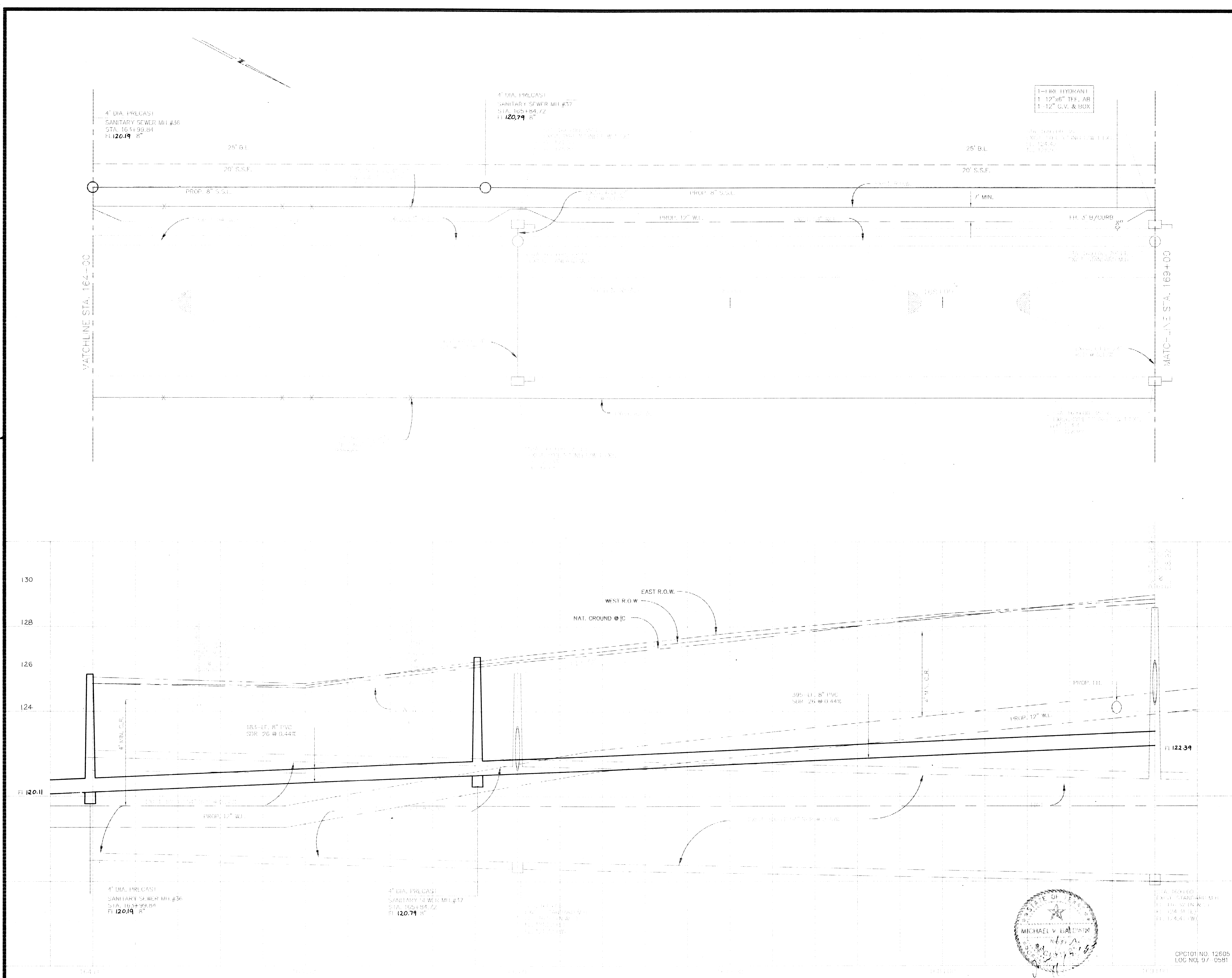
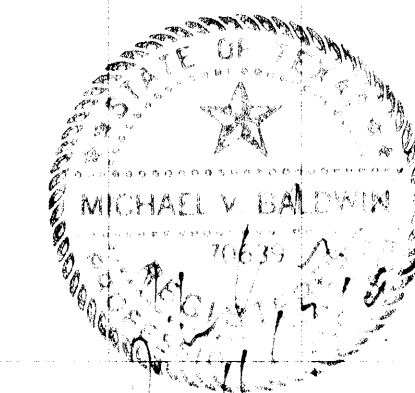
PLANNING AND DEVELOPMENT  
CITY ENGINEER: *Dee C. ...* 1/15/98  
DIRECTION OF PUBLIC WORKS AND ENGINEERING  
DATE: 1-16-98

SUBMITTED BY:	SCALE:	DESIGNED BY:	DATE:
SCALE: 1/8" = 1'-0"	SCALE: 1/8" = 20'	DESIGNED BY: TM	DATE: AUGUST 1997
SURVEY BY:	DATE:	DRAWN BY:	SHEET NO. 10 OF 27 SHEETS
FILE NO.:	DATE:	CITY DWG. NO.:	

M.U.D. 191  
PLAN & PROFILE  
CUTTEN RD.  
STA. 164+00 TO 169+00

PROVIDENT ENGINEERS, INC.  
11241 RICHMOND, SUITE E107  
HOUSTON, TEXAS 77082

CPC101 NO. 12605  
LOG NO. 97-0581



4" DIA. PRECAST  
SANITARY SEWER MH #36  
STA. 164+00.04  
ELEV. 120.19 8"

4" DIA. PRECAST  
SANITARY SEWER MH #37  
STA. 165+74.72  
ELEV. 120.74 8"

1-8" HYDRANT  
1-12" 46" TEE, AB  
1-12" G.V. & BOX

WATCHLINE STA. 164+00

MATCHLINE STA. 169+00

130  
128  
126  
124  
ELEVATION

4" DIA. PRECAST  
SANITARY SEWER MH #36  
STA. 164+00.04  
ELEV. 120.19 8"

4" DIA. PRECAST  
SANITARY SEWER MH #37  
STA. 165+74.72  
ELEV. 120.74 8"

4" DIA. PRECAST  
SANITARY SEWER MH #38  
STA. 169+00.00  
ELEV. 122.39 8"

BENCH MARK

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD.

ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
 ADJUSTMENT.

TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH  
 SIDE OF TOURNAMENT DRIVE AT CENTERLINE  
 QUEENSCUB DRIVE ELEV. = 114.69

APPROVED: \_\_\_\_\_  
 Assistant for County Engineer

Date \_\_\_\_\_

Water & Sanitary Sewer Lines Approved as to  
 Location Only  
 The Above Authorization is Valid for 1 Year  
 Only

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

- ENTEX, INC.
- SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only
- HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS	
<i>[Signature]</i> WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> STORM SEWER ENGINEERING	CONSTRUCTION

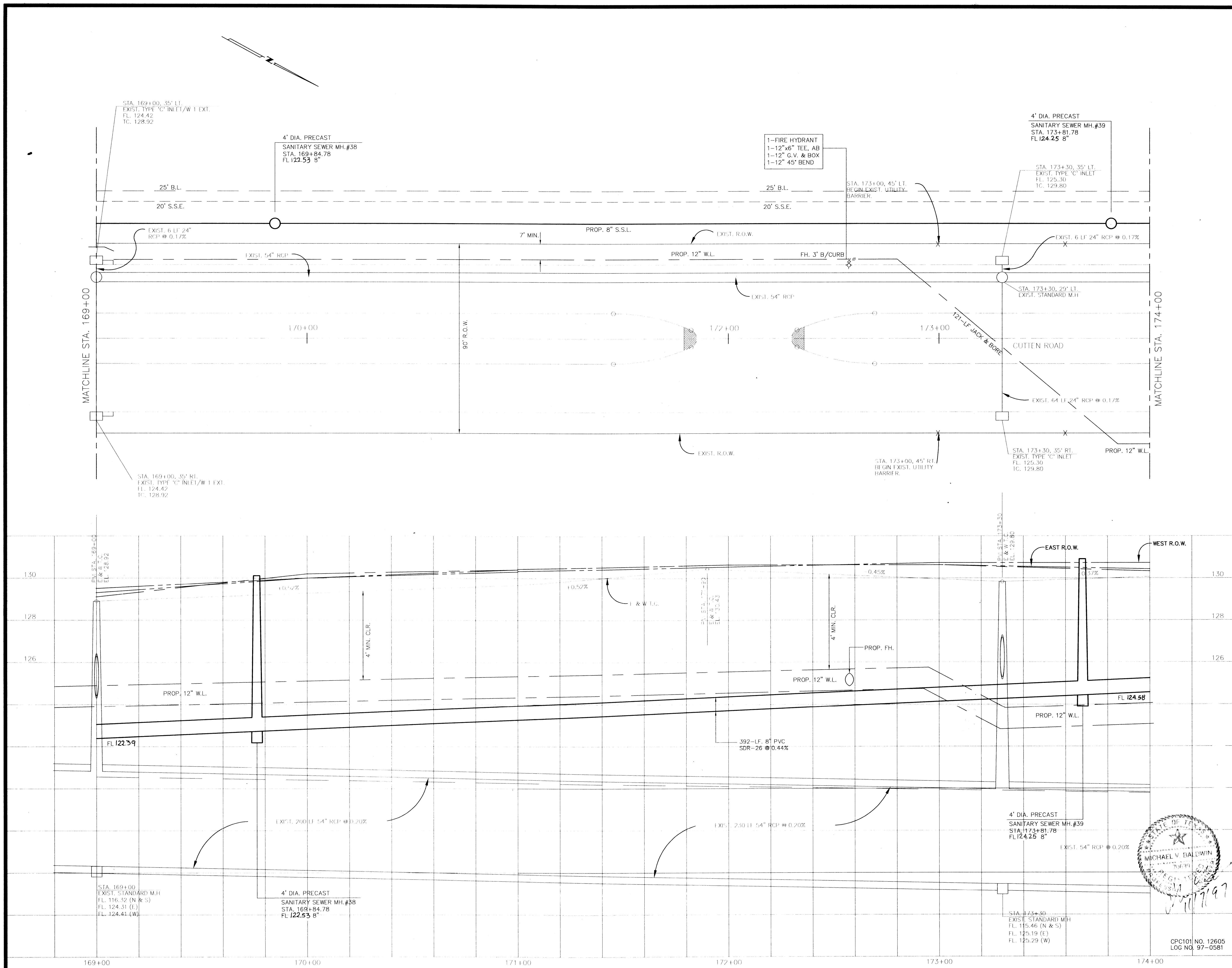
OTHER DEPARTMENTS	
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT

<i>[Signature]</i> CITY ENGINEER	4/15/98 DATE
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	1-16-98 DATE

SUBMITTED: _____	DESIGNED BY: TIM
SCALE: V: 1" = 2' H: 1" = 20'	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 11 OF 27 SHEETS
SURVEY BY: _____	CITY DWG. NO: _____
F B NO: _____	

M.U.D. 191  
 PLAN & PROFILE  
 CUTTEN RD.  
 STA. 169+00 TO 174+00

**PEI** PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082



CPC101 NO. 12605  
 LOG NO. 97-0581

BENCH MARK  
BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
Y1216, 1973 ADJ., ELEV = 125.994  
Y1216, 1978 ADJ., ELEV = 125.406  
Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
USED FOR CUTTEN ROAD.  
ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
ADJUSTMENT.  
TBM #1: TOP OF CURB AT CENTERLINE INLET NORTH  
SIDE OF TOURNAMENT DRIVE AT CENTERLINE  
QUEENSLUB DRIVE ELEV. = 114.69

APPROVED: *Racine Freeman*  
Assistant County Engineer  
2/16/98  
Date

Water & Sanitary Sewer Lines Approved as to  
Location Only  
The Above Authorization is Valid for 1 Year  
Only

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC.  
SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only  
HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
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CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

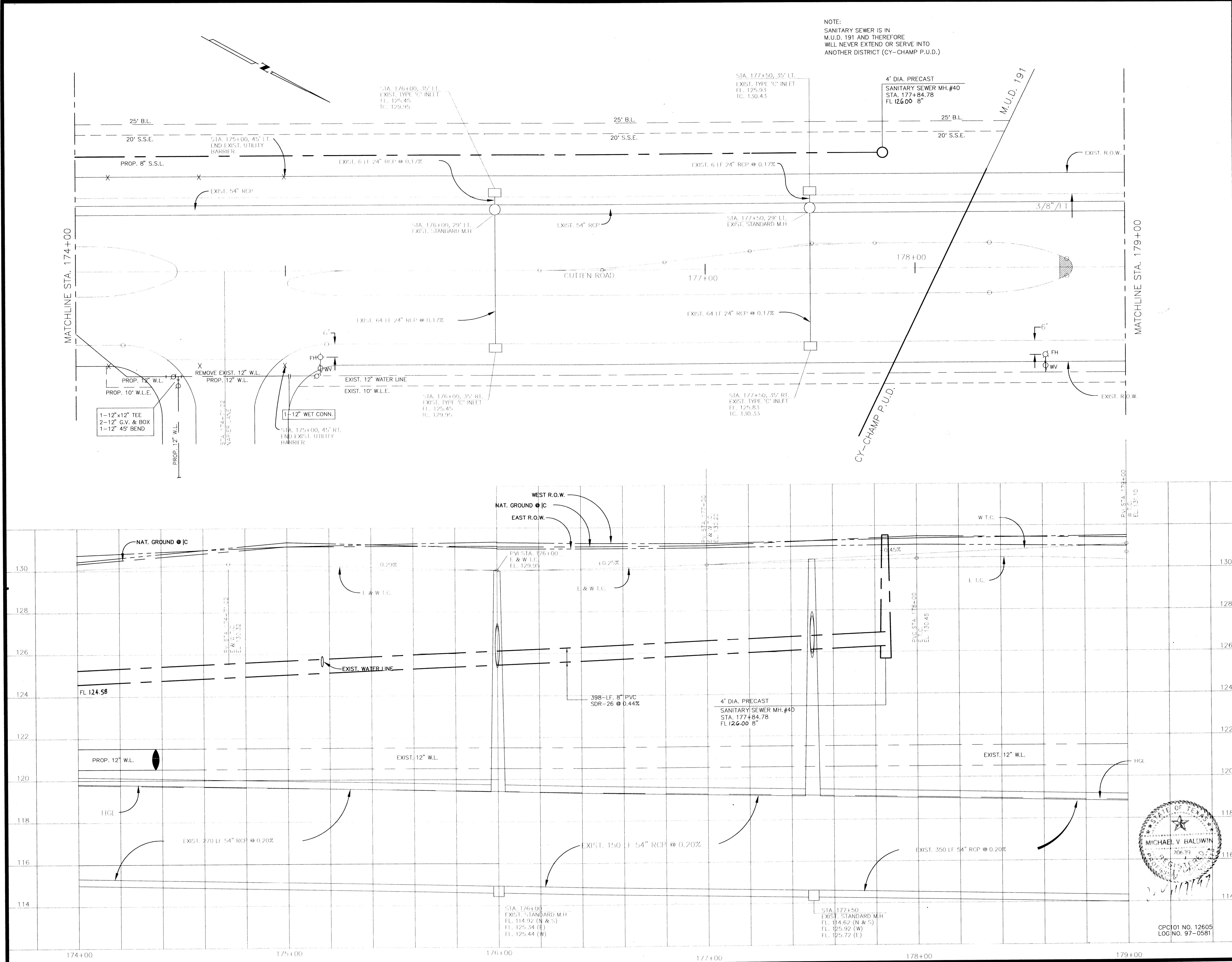
SECTION APPROVALS	
<i>[Signature]</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-9-98 SEWER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12/22/97 STORM SEWER ENGINEERING	CONSTRUCTION

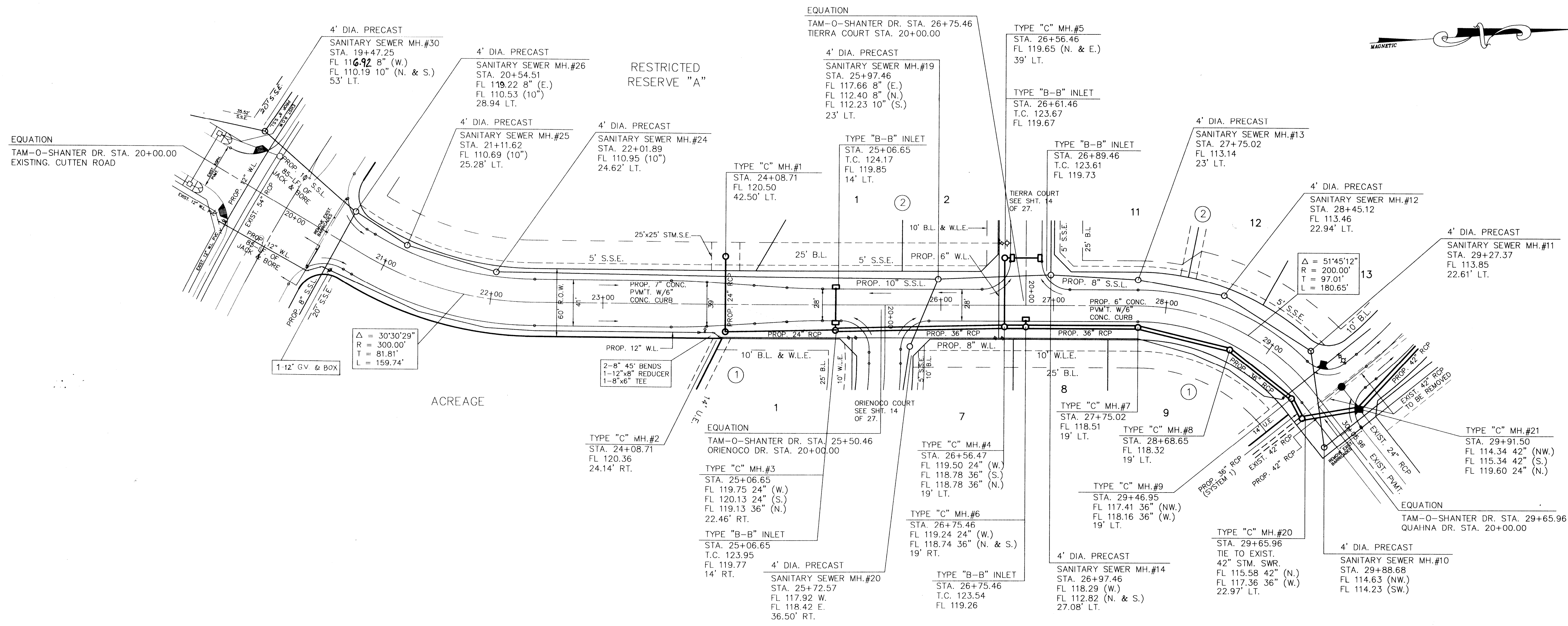
OTHER DEPARTMENTS  
PLANNING AND DEVELOPMENT  
SPONSOR DEPARTMENT

<i>[Signature]</i> 1/15/98 CITY ENGINEER	DATE
<i>[Signature]</i> 1-16-98 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

SUBMITTED: V: 1" = 2'  
SCALE: H: 1" = 20'  
DATE: AUGUST 1997  
DESIGNED BY: TIM  
DRAWN BY: TIM  
SURVEY BY: F B NO:  
SHEET NO. 11A OF 27 SHEETS  
CITY DWG. NO:

M.U.D. 191  
PLAN & PROFILE  
CUTTEN RD.  
STA. 174+00 TO 179+00





**BENCH MARK**

NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 123.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CURVE ROAD.

ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.

TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSLAND DRIVE ELEV. = 114.69

APPROVED: *Archie Johnson*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.

**PRIVATE UTILITY LINES SHOWN**

ENTEX, INC.

SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only

HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground  
 Ductlines Unless Noted. Valid at Time of Review Only.

**CITY OF HOUSTON**  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
SEWER ENGINEERING	STREET & BRIDGE ENGINEERING
STORM SEWER ENGINEERING	CONSTRUCTION

**OTHER DEPARTMENTS**

PLANNING AND DEVELOPMENT

SPONSOR DEPARTMENT

CITY ENGINEER: *Michael V. Ballewin* 1/16/98  
 DATE

DIRECTOR OF PUBLIC WORKS AND ENGINEERING: *Archie Johnson* 1-16-98  
 DATE

SUBMITTED: V: 1" = 5'  
 SCALE: H: 1" = 50'

DATE: AUGUST 1997

F B NO:

DESIGNED BY: TIM

DRAWN BY: TIM

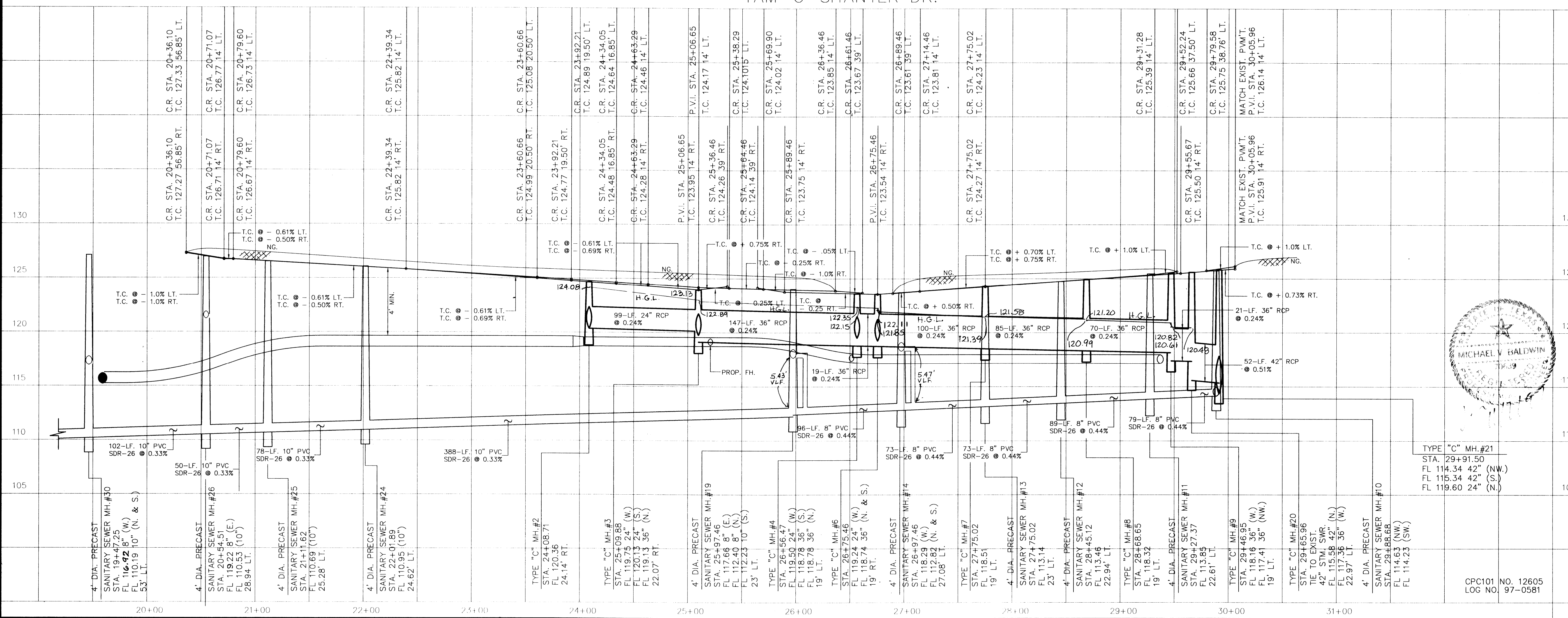
SHEET NO. 12 OF 27 SHEETS

CITY DWG. NO:

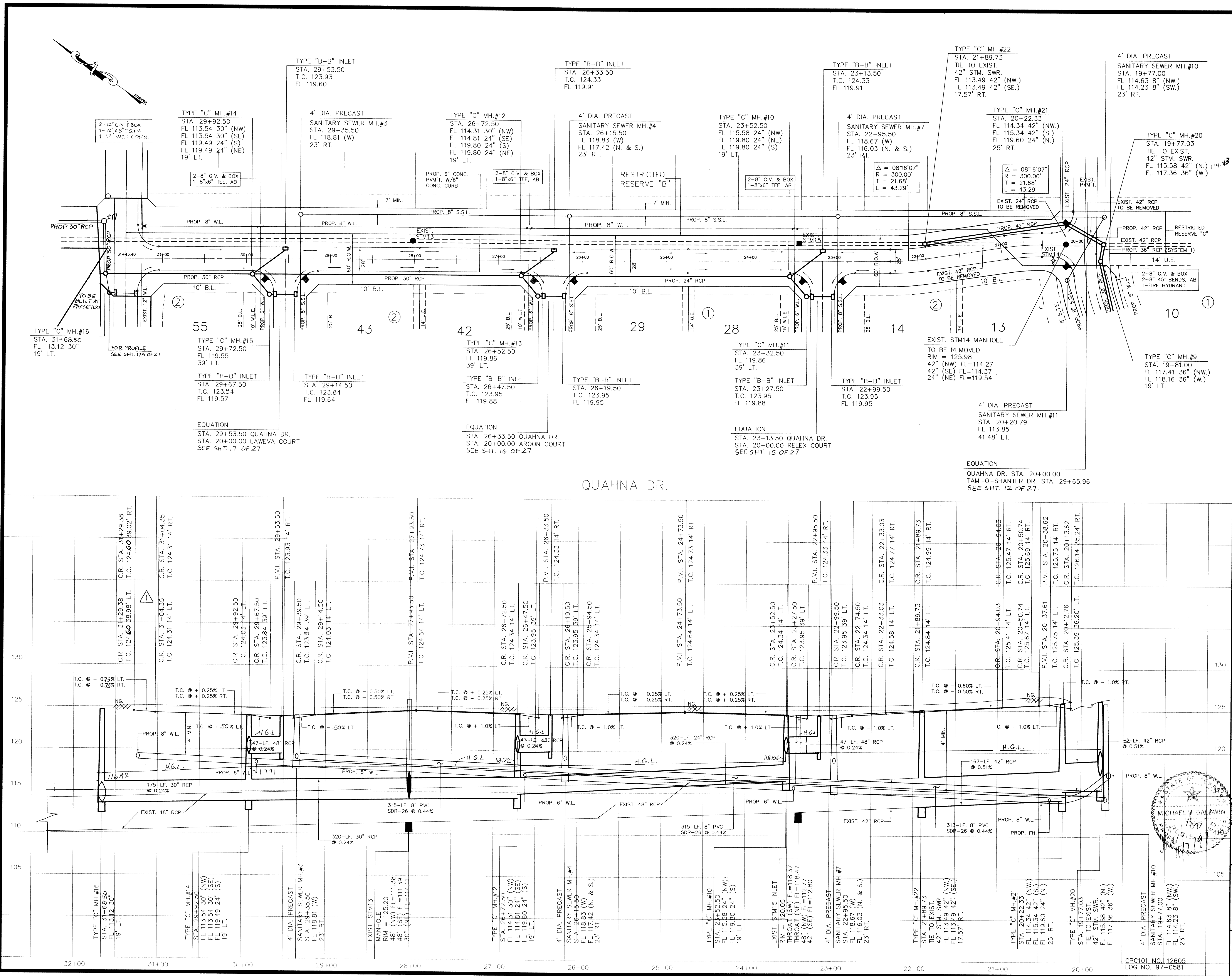
**M.U.D. 191**  
**PLAN & PROFILE**  
**TAM-O-SHANTER DR.**

CPC101 NO. 12605  
 LOC NO. 97-0581

**PROVIDENT ENGINEERS, INC.**  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082



**TAM-O-SHANTER DR.**



BENCH MARK  
 NATIONAL GEODETIC SURVEY MARKER  
 1216, 1973 ADJ., ELEV = 125.994  
 1216, 1978 ADJ., ELEV = 125.406  
 1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTER ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMNET DRIVE AT CENTERLINE QUEENSLUB DRIVE ELEV. = 114.69

APPROVED: *Cecilia Freeman*  
 Assistant County Engineer  
 2/16/98  
 Date  
 Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.
11-5-98		CHANGE TOP OF CURB	

PRIVATE UTILITY LINES SHOWN

- ENTEX, INC.
- SOUTHWESTERN BELL TELEPHONE CO.  
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CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>Michael Y. Ewald</i> CITY ENGINEER	1/16/98 DATE
<i>Michael Y. Ewald</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	1-16-98 DATE
SUBMITTED: V: 1" = 5' H: 1" = 50'	DESIGNED BY: TIM
SCALE: AUGUST 1997	DRAWN BY: TIM
SURVEY BY:	SHEET NO. 15 OF 27 SHEETS
F B NO:	CITY DWG. NO:

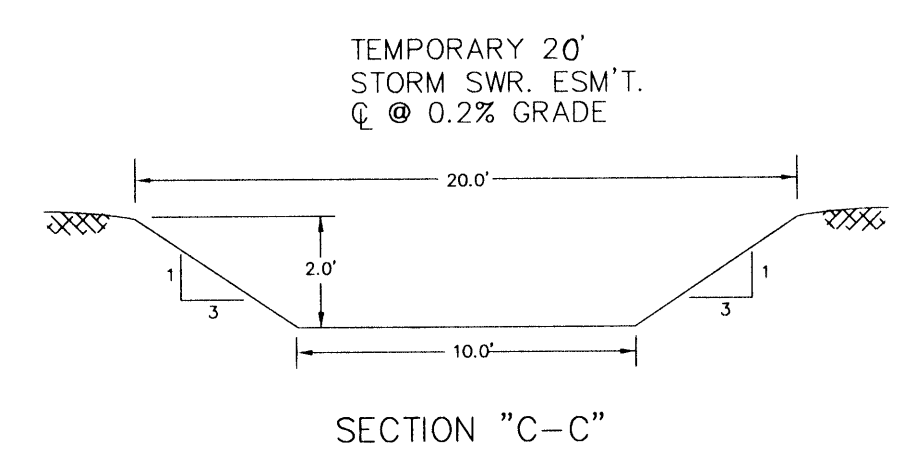
M.U.D. 191  
 PLAN & PROFILE  
 QUAHNA DR.

BENCH MARK

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
 ADJUSTMENT.  
 TEMP: TOP OF CURB AT CENTERLINE INLET NORTH  
 SIDE OF TOURNAMENT DRIVE AT CENTERLINE  
 QUEENSLUB DRIVE ELEV. = 114.69

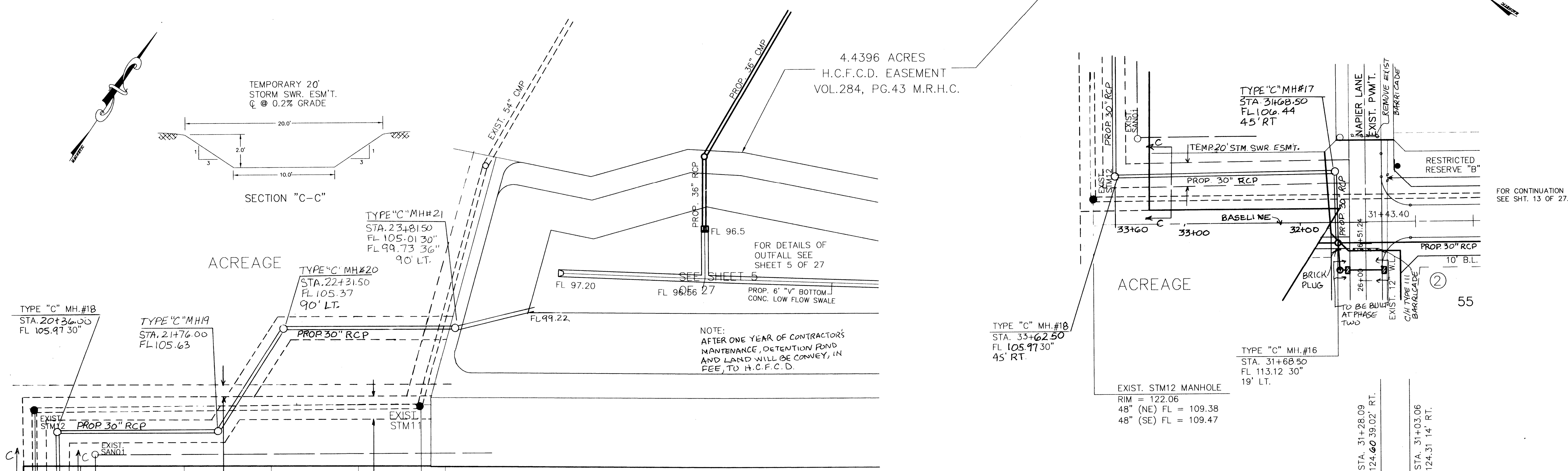
APPROX. CENTERLINE OF CYPRESS CREEK  
 VOL.284, PG.43 M.R.H.C.

4.4396 ACRES  
 H.C.F.C.D. EASEMENT  
 VOL.284, PG.43 M.R.H.C.



ACREAGE

ACREAGE



APPROVED: *Charlie Johnson*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to  
 Location Only  
 The Above Authorization is Valid for 1 Year  
 Only

Rev.	Date	Description	App.
1	11-5-98	CHANGE TOP OF CURB	

PRIVATE UTILITY LINES SHOWN

- ENTEX, INC.
- SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only
- HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
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CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>Michael V. Halpin</i> 12-1-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>John W. ...</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>John W. ...</i> 12-22-97 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT SPONSOR DEPARTMENT

*John W. ...* 1/15/98  
 CITY ENGINEER DATE

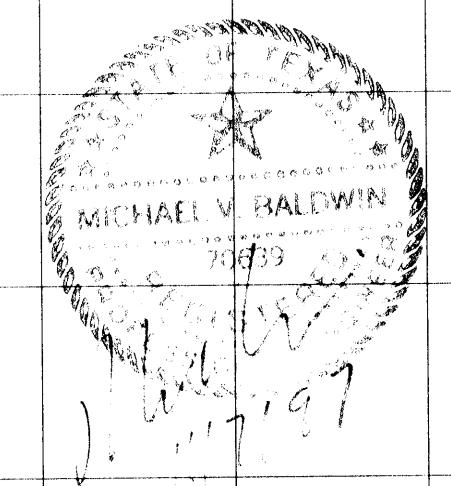
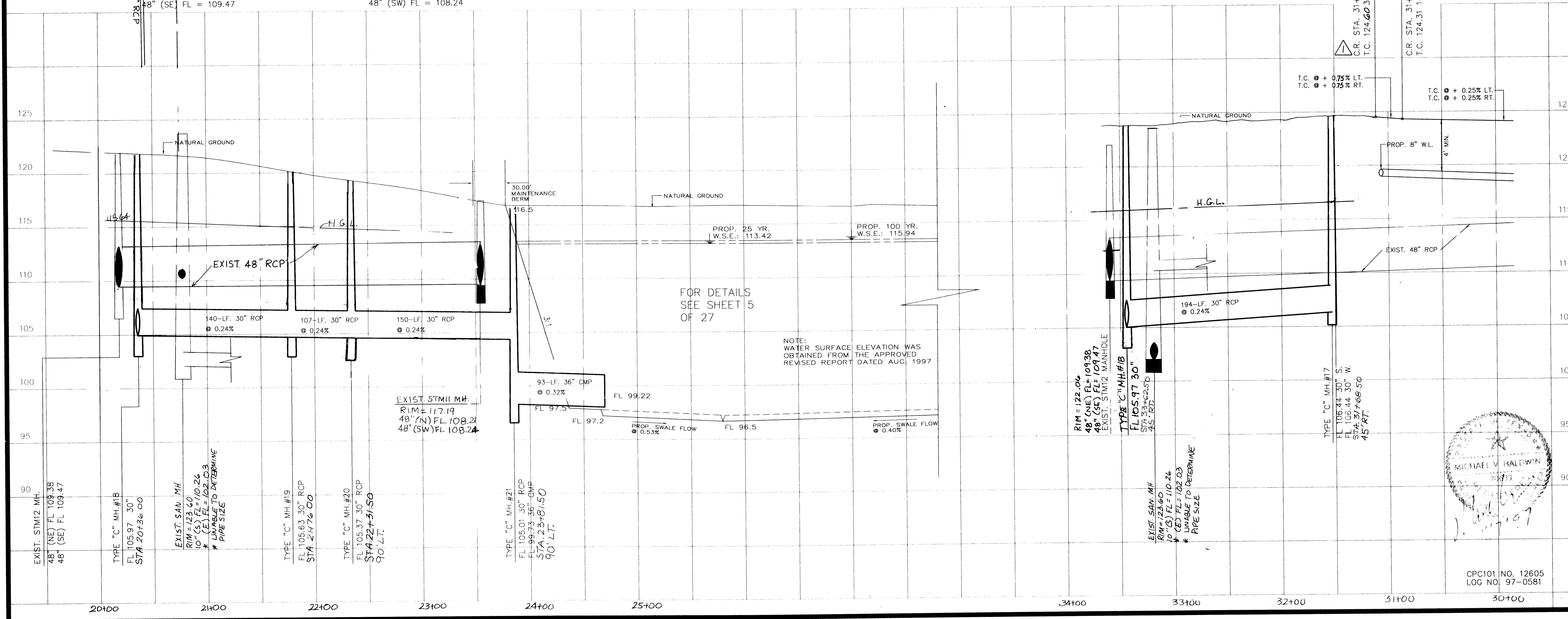
*Michael V. Halpin* 1-16-98  
 DIRECTOR OF PUBLIC WORKS DATE

SUBMITTED: V. 1" = 5'  
 SCALE: H. 1" = 50'  
 DATE: AUGUST 1997  
 SURVEY BY: MICHAEL V. HALPIN  
 F B NO: 78733

DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 13A OF 27 SHEETS  
 CITY DWG. NO.

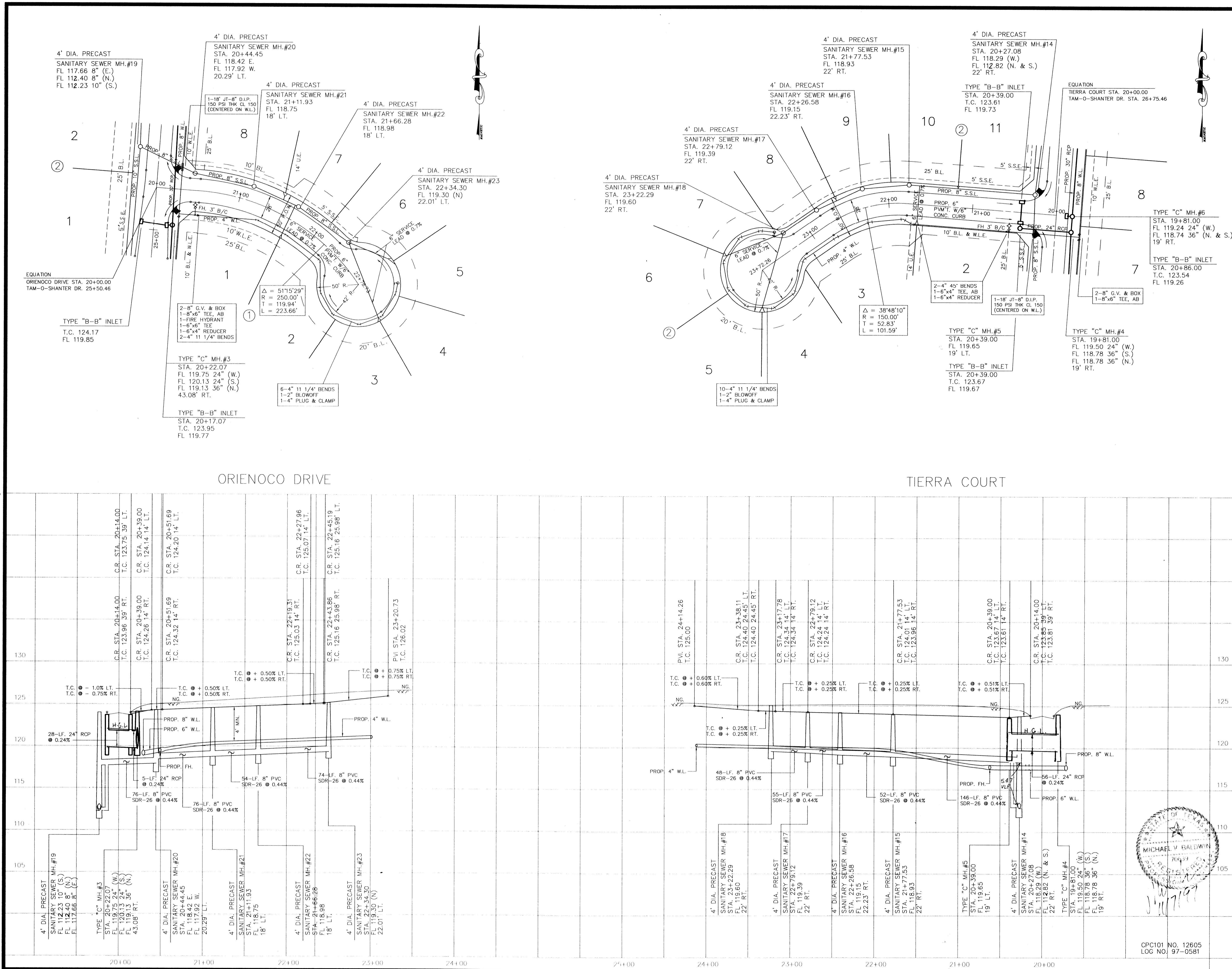
M.U.D. 191  
 PLAN & PROFILE  
 QUAHNA DR. AND OUTFALL

**PEI** PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082



CPC101 NO. 12605  
 LOG NO. 97-0581





BENCH MARK  
 BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 123.994  
 Y1216, 1978 ADJ., ELEV = 123.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD.  
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 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSLUB DRIVE. ELEV. = 114.69

APPROVED: *Carole Franzen*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC.

SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only

HOUSTON LIGHTING & POWER CO.  
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 Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

*Michael J. Baldwin* 12/97  
 WATER ENGINEERING      TRAFFIC AND SIGNAL ENGINEERING

*John J. ...* 1-8-98  
 WASTEWATER ENGINEERING      STREET & BRIDGE ENGINEERING

*...* 12/21/97  
 STORM SEWER ENGINEERING      CONSTRUCTION

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT      SPONSOR DEPARTMENT

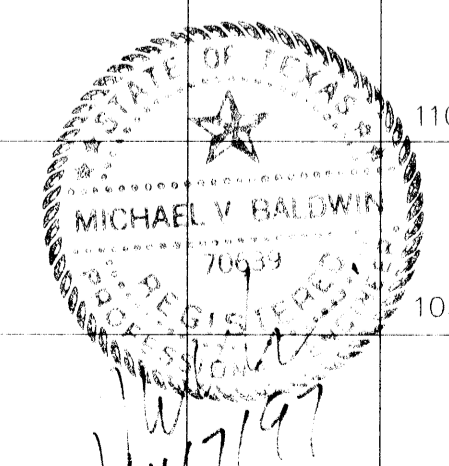
*...* 1/15/98  
 CITY ENGINEER      DATE

*...* 1-16-98  
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING      DATE

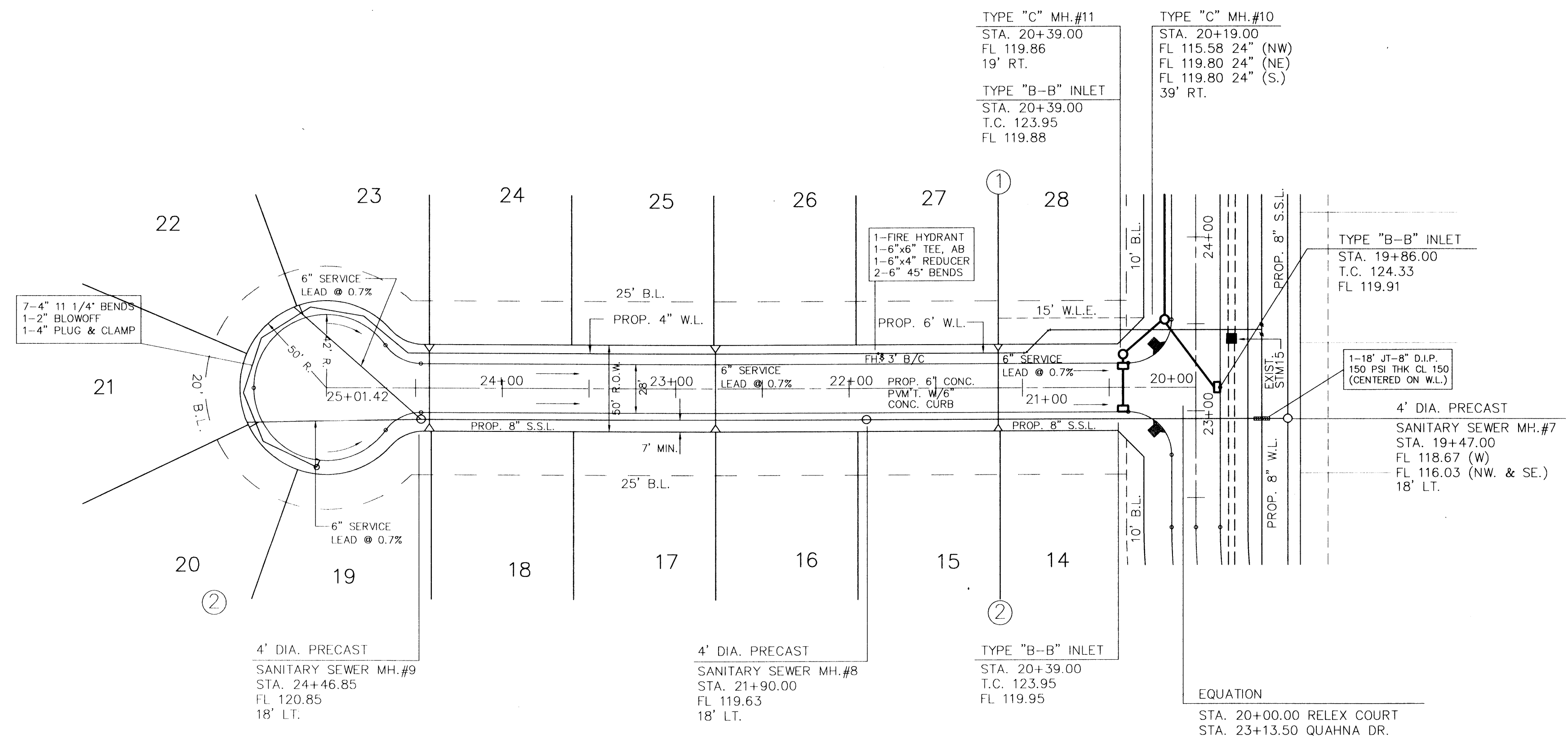
SUBMITTED: v. 1" = 5'  
 SCALE: H. 1" = 50'  
 DATE: AUGUST 1997  
 SURVEY BY:      CITY DWG. NO.

M.U.D. 191  
 PLAN & PROFILE  
 ORIENOCO COURT  
 &  
 TIERRA COURT

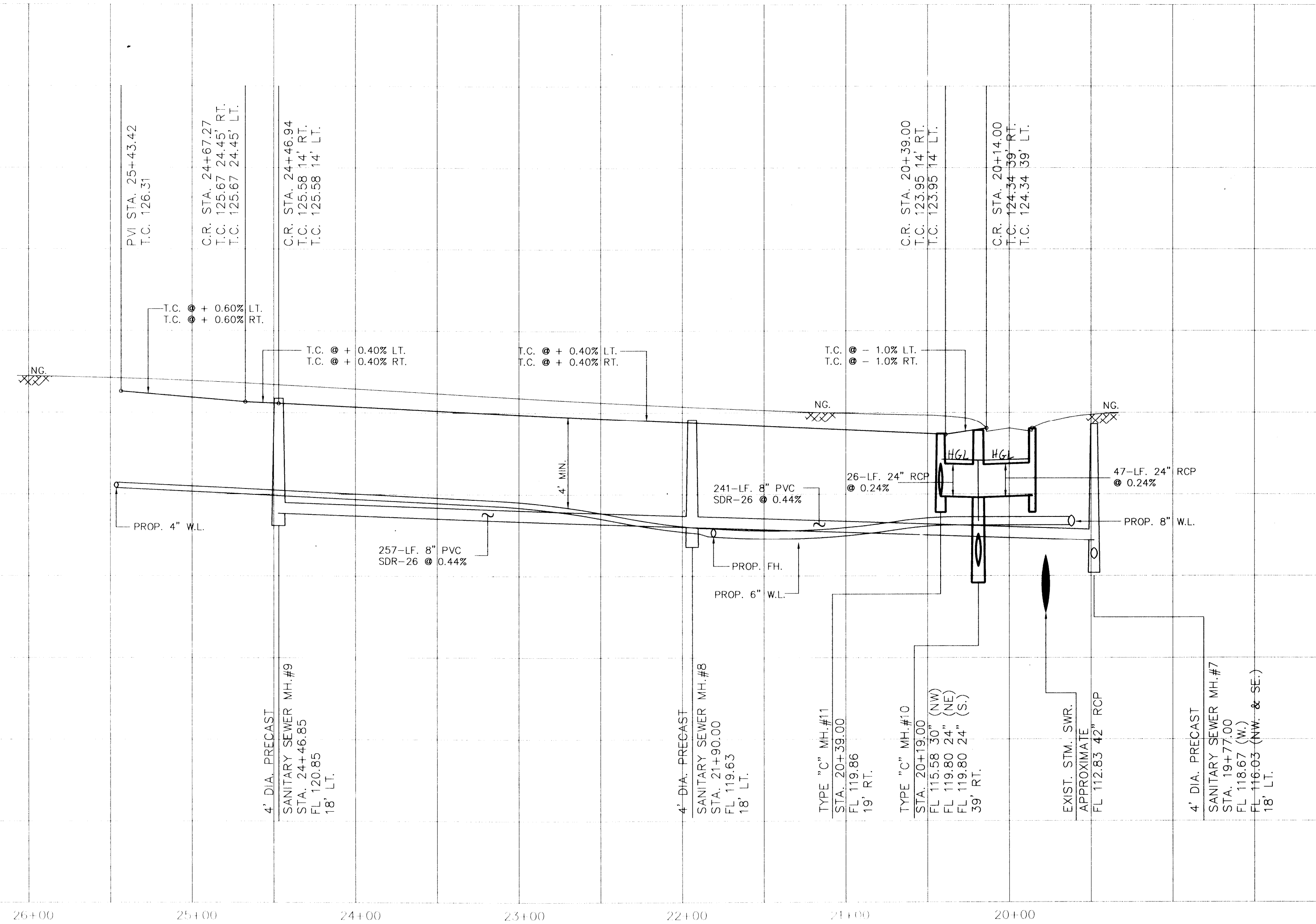
PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082



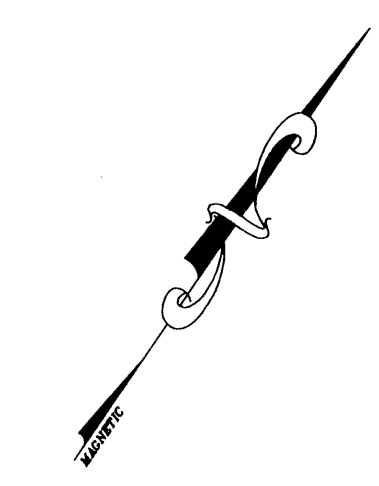
CPC101 NO. 12605  
 LOG NO. 97-0581



RELEX COURT



BENCH MARK  
 BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSLUB DRIVE ELEV. = 114.69



APPROVED: *Carrie Freeman*  
 Assistant County Engineer  
 7/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.

- PRIVATE UTILITY LINES SHOWN
- ENTEX, INC.
  - SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only
  - HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

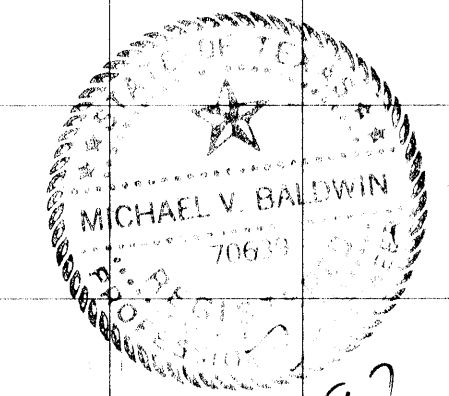
SECTION APPROVALS	
<i>Mike Nade</i> 12-7-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>John Thomas</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>John Thomas</i> 12-22-97 STORM SEWER ENGINEERING	CONSTRUCTION

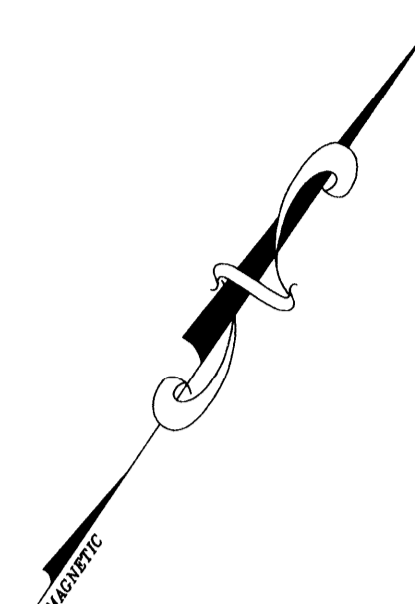
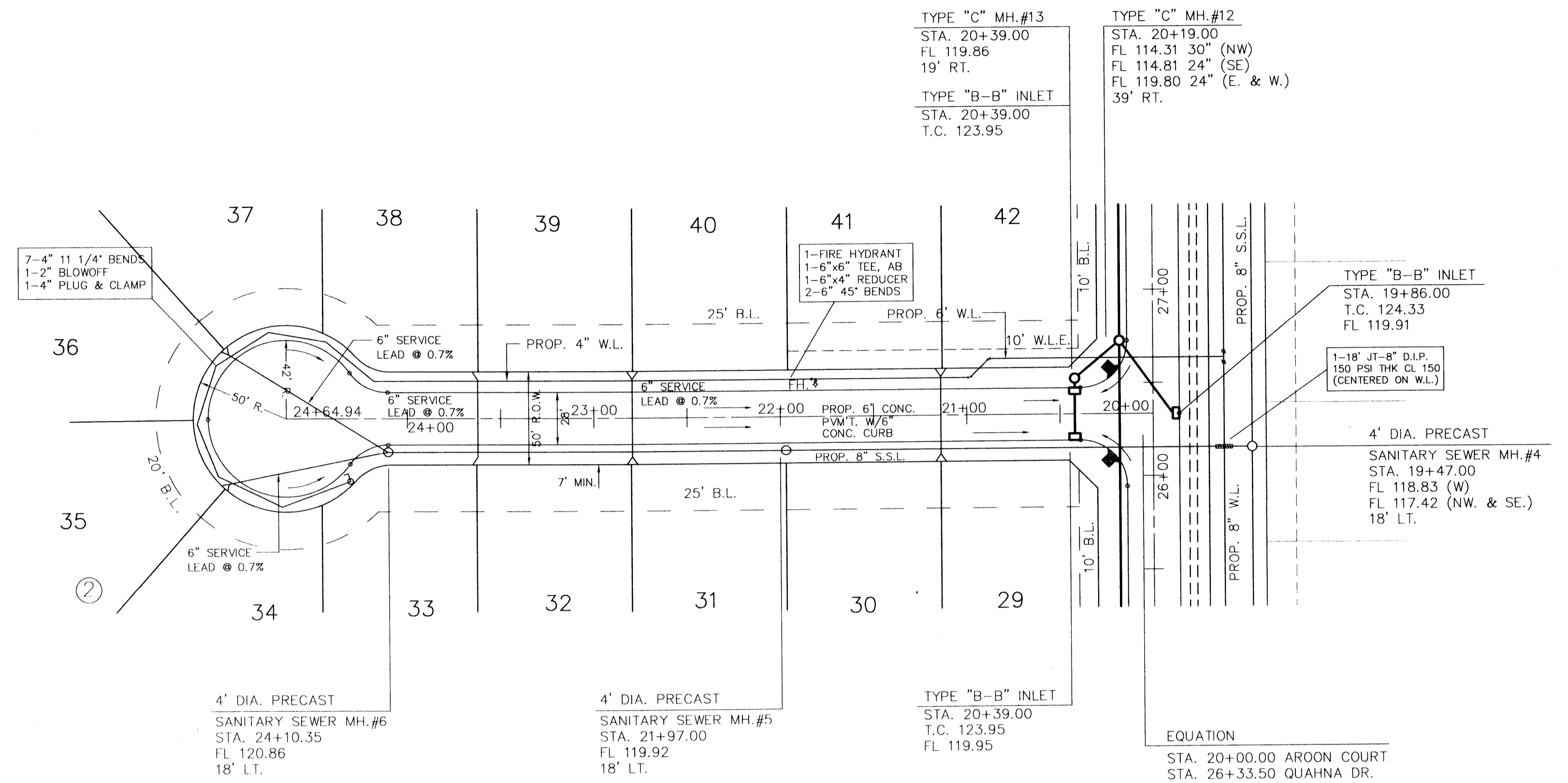
OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>Alta Chiles</i> 1/15/98 CITY ENGINEER	DATE
<i>James Schlander</i> 1-16-98 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

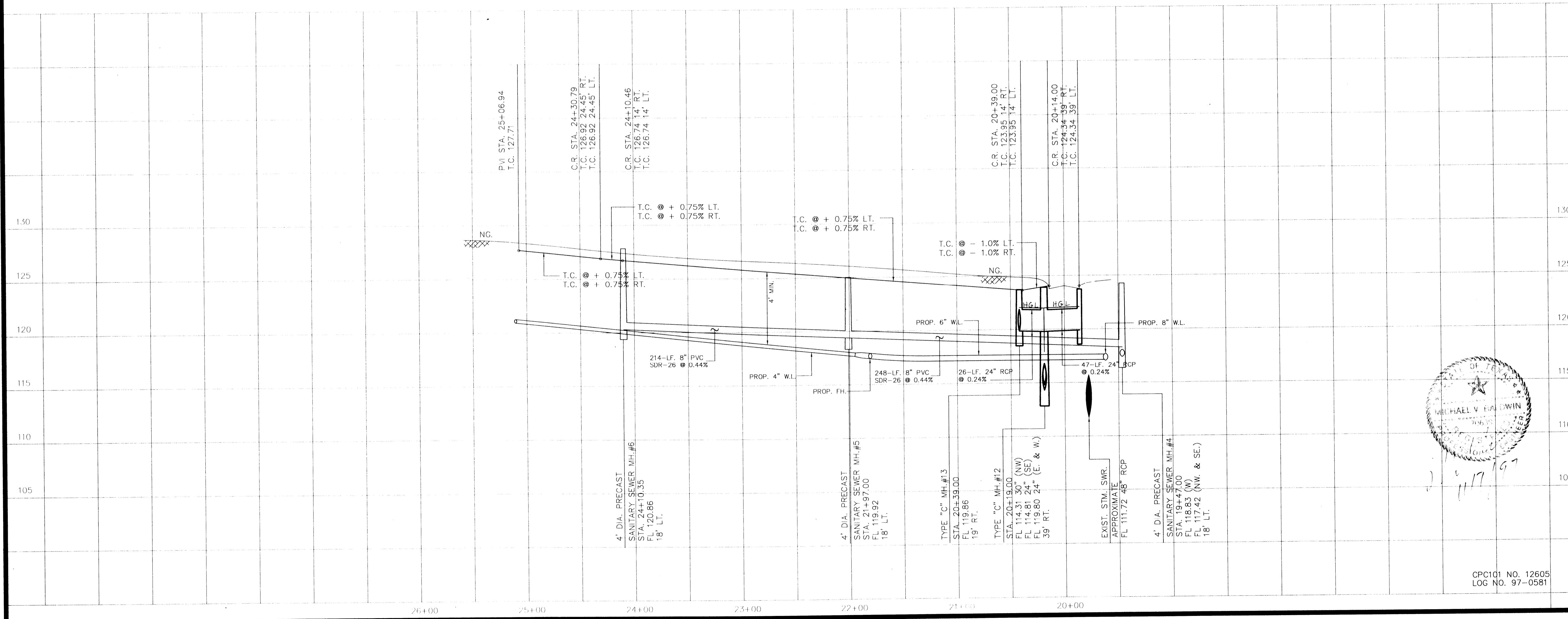
SUBMITTED: _____	DESIGNED BY: TIM
SCALE: V: 1" = 5' H: 1" = 50'	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 15 OF 27 SHEETS
SURVEY BY: _____	CITY DWG. NO: _____
F B NO: _____	

M.U.D. 191  
 PLAN & PROFILE  
 RELEX COURT





ARON COURT



BENCH MARK  
 NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.906  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSLUB DRIVE ELEV. = 114.69

APPROVED: *Cedric Freeman*  
 Assistant County Engineer  
 2/16/98  
 Date

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC.

SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only

HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground  
 Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>[Signature]</i> 12/29/97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1/16/98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12/22/97 STORM SEWER ENGINEERING	CONSTRUCTION

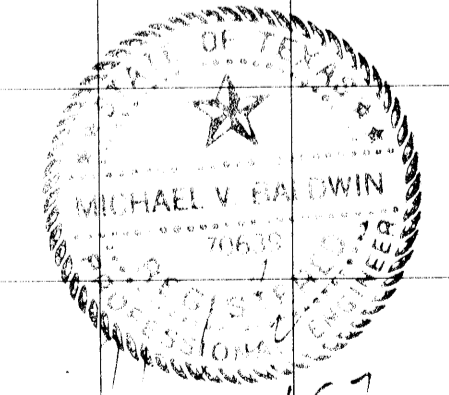
OTHER DEPARTMENTS

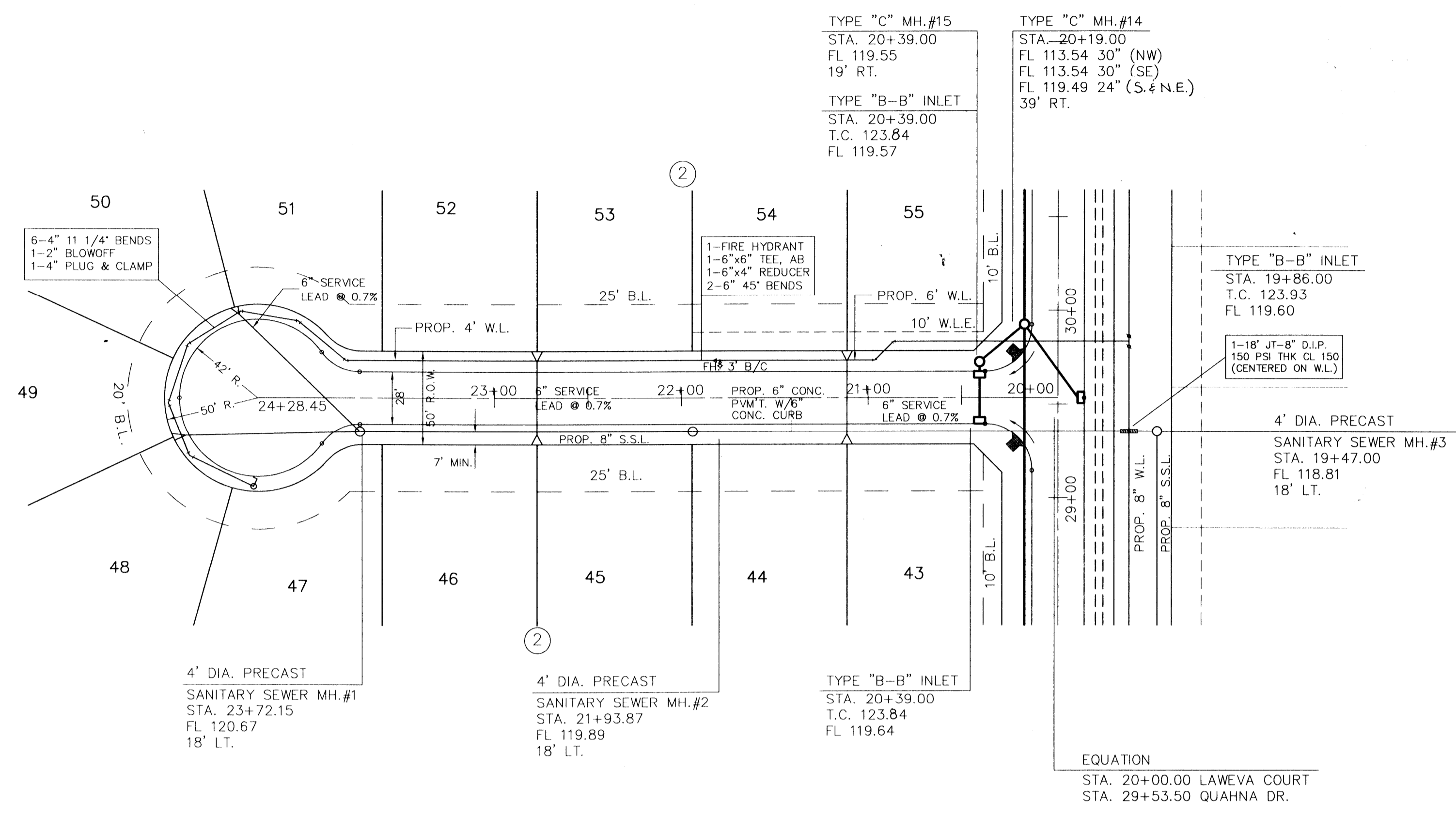
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>[Signature]</i> 1/15/98 CITY ENGINEER	DATE
<i>[Signature]</i> 1/16/98 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

SUBMITTED: V. 1" = 5'  
 SCALE: H. 1" = 50'  
 DATE: AUGUST 1997  
 SURVEY BY:  
 F B NO:

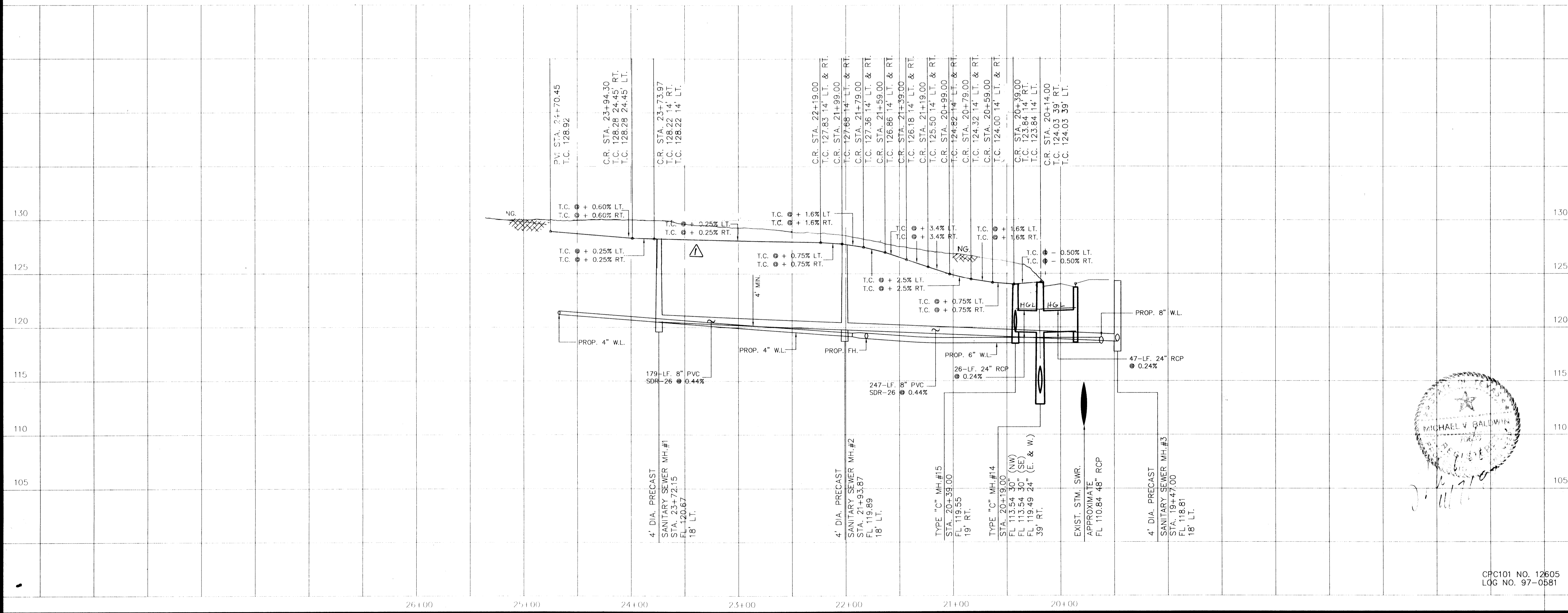
DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 16 OF 27 SHEETS  
 CITY DWG. NO:

M.U.D. 191  
 PLAN & PROFILE  
 ARON COURT





LAWEVA COURT



BENCH MARK

BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
Y1216, 1973 ADJ., ELEV = 125.994  
Y1216, 1978 ADJ., ELEV = 125.406  
Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
USED FOR CUTTEN ROAD.

ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.

TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMENT DRIVE AT CENTERLINE QUEENSCULB DRIVE ELEV. = 114.69

*Carrie Freeman*  
9/11/98

Revision  $\Delta$  only.

APPROVED: *Carrie Freeman*  
Assistant County Engineer  
2/16/98  
Date

Water & Sanitary Sewer Lines Approved as to Location Only  
The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.
$\Delta$			
$\Delta$	9-9-98	RAISED STREET TO MATCH EXIST' GROUND	

PRIVATE UTILITY LINES SHOWN

- ENTEX, INC.
- SOUTHWESTERN BELL TELEPHONE CO.  
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CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>Michael V. Galvin</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>Michael V. Galvin</i> 1-6-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>Michael V. Galvin</i> 2/22/97 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>Michael V. Galvin</i> CITY ENGINEER	<i>Michael V. Galvin</i> DATE
<i>Michael V. Galvin</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	1-16-98 DATE

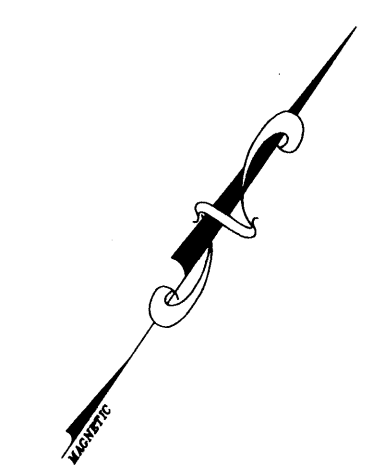
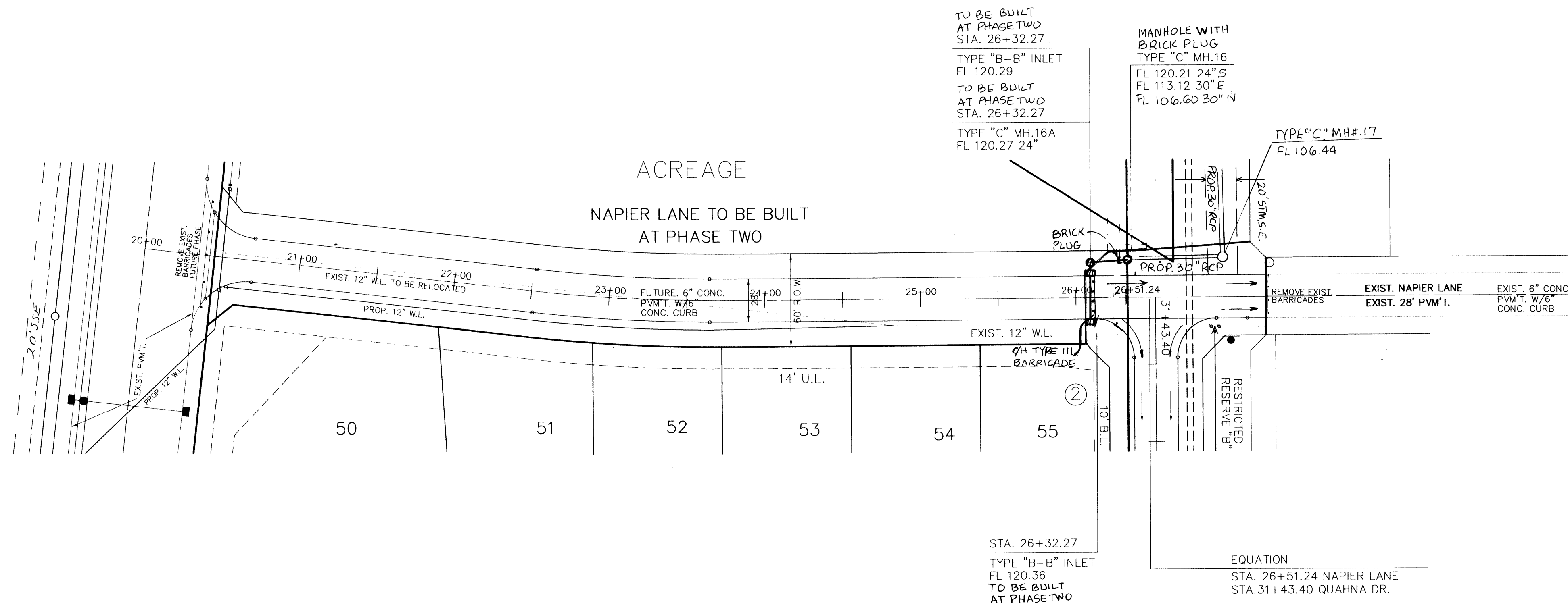
SUBMITTED: _____	V. 1" = 5'	DESIGNED BY: TIM
SCALE: _____	H. 1" = 50'	DRAWN BY: TIM
DATE: AUGUST 1997		SHEET NO. 17 OF 27 SHEETS
SURVEY BY: _____		CITY DWG. NO. _____
F B NO: _____		

M.U.D. 191  
PLAN & PROFILE  
LAWEVA COURT

PROVIDENT ENGINEERS, INC.  
11241 RICHMOND, SUITE E107  
HOUSTON, TEXAS 77082

PEI

CPC101 NO. 12605  
LOG NO. 97-0581



BENCH MARK  
 BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.406  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
 USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH  
 SIDE OF TOURNAMENT DRIVE AT CENTERLINE  
 QUEENSLUB DRIVE ELEV. = 114.69

APPROVED: *Cecilia Freeman*  
 Assistant County Engineer  
 2/16/98  
 Date

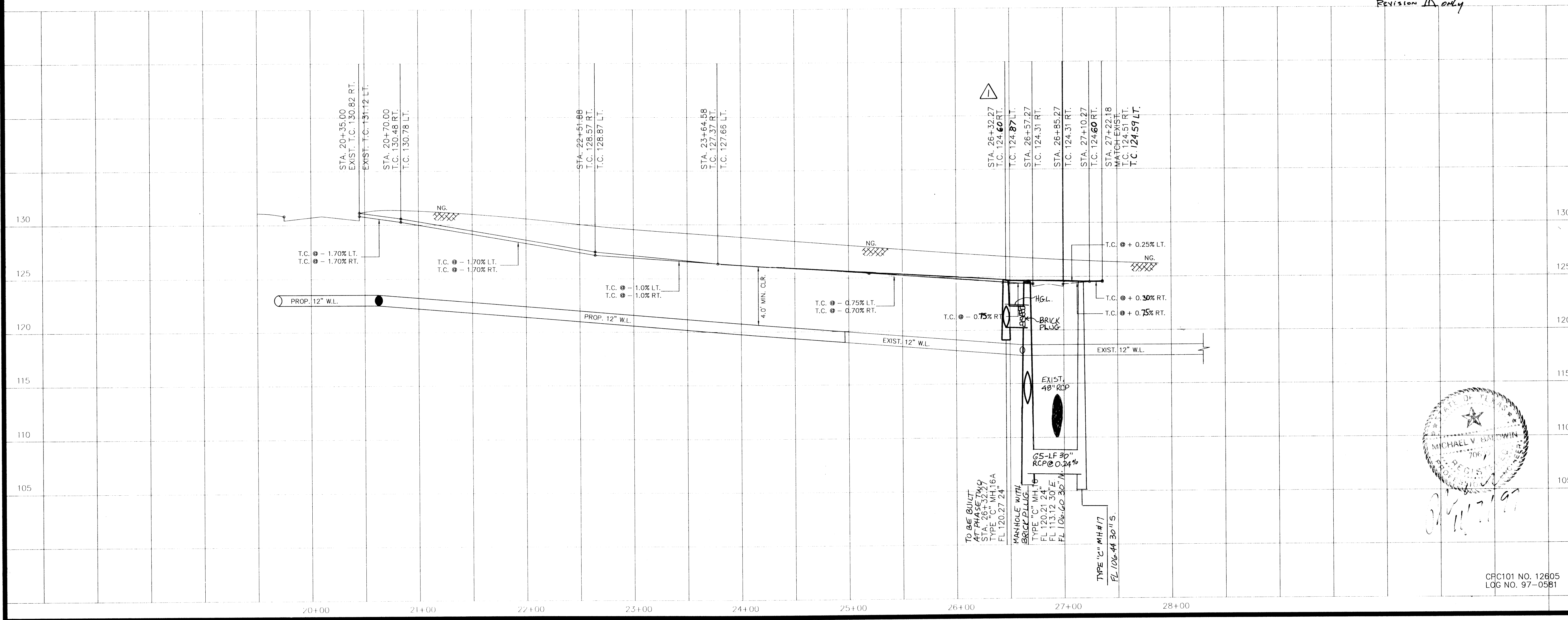
Water & Sanitary Sewer Lines Approved as to  
 Location Only  
 The Above Authorization is Valid for 1 Year  
 Only

for *Y at Centerline*  
 11-11-98

Rev.	Date	Description	App.
△			
△	11-5-98	CHANGE TOP OF CURB	

NAPIER LANE

Revision *A* only



PRIVATE UTILITY LINES SHOWN

ENTEX, INC.
SOUTHWESTERN BELL TELEPHONE CO. Valid for One Year Only
HOUSTON LIGHTING & POWER CO. Approval Only for Crossing Underground Ductlines Unless Noted, Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>Michael V. ...</i> 12-9-97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>John ...</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>John ...</i> 12/21/97 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS

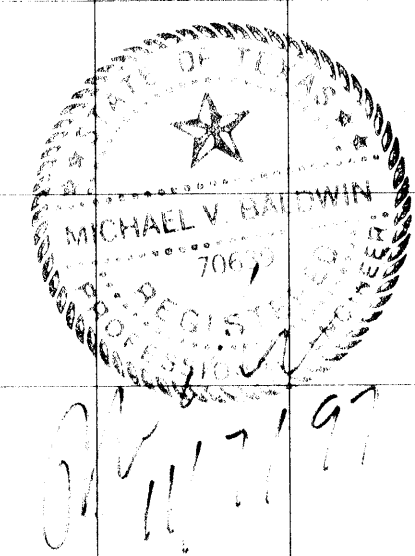
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>John ...</i> 1/16/98 CITY ENGINEER	DATE
<i>John ...</i> 1-16-98 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

SUBMITTED: V: 1" = 5' H: 1" = 50'	DESIGNED BY: TIM
SCALE: AUGUST 1997	DRAWN BY: TIM
DATE: SURVEY BY:	SHEET NO. 17A OF 27 SHEETS
F B NO:	CITY DWG. NO:

M.U.D. 191  
 PLAN & PROFILE  
 NAPIER LANE

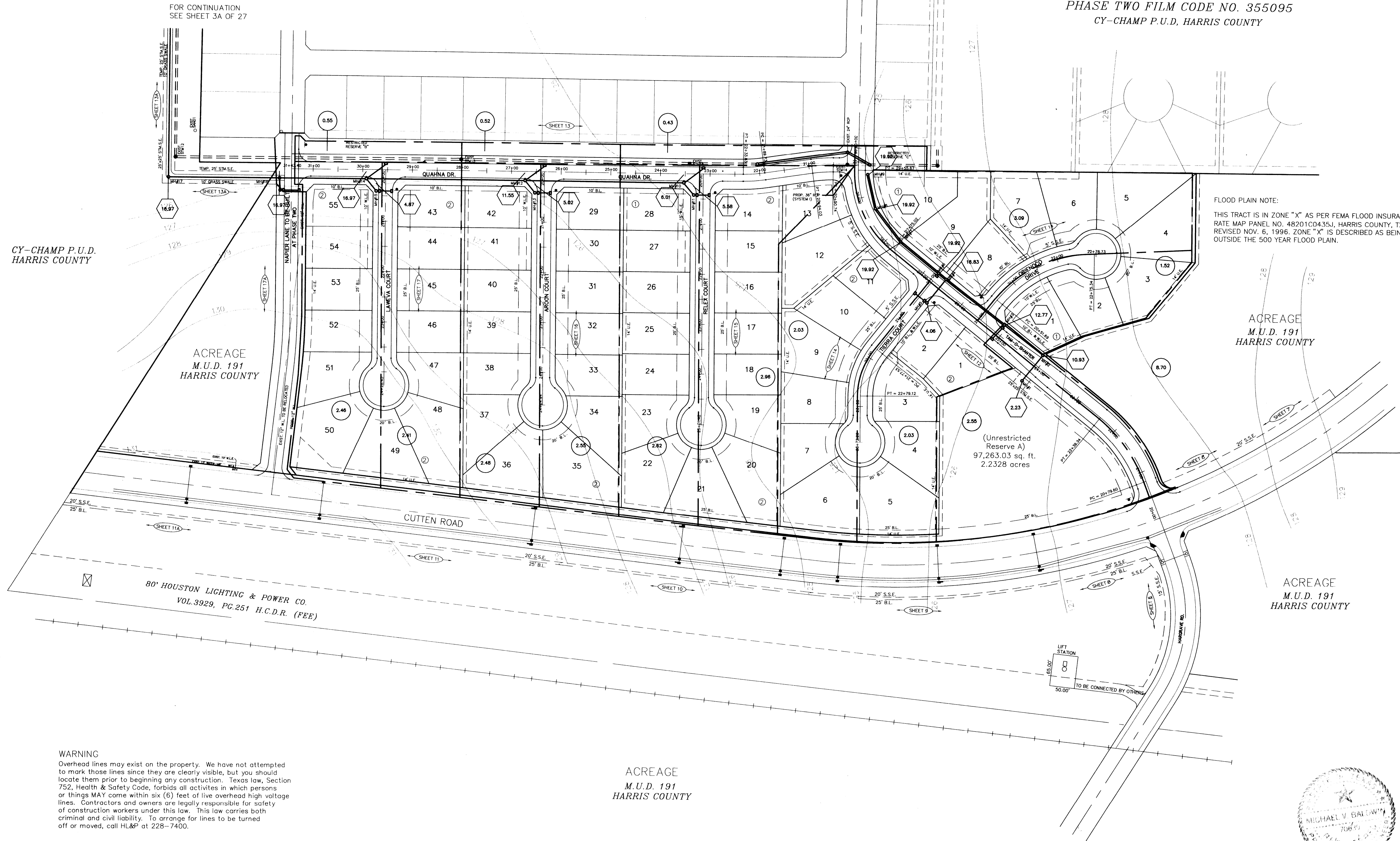
PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082

CRC101 NO. 12605  
 LQC NO. 97-0581



CHAMPIONS RACQUET CLUB SEC. TWO  
VOLUME 274 PAGE 129 H.C.M.R.  
CY-CHAMP P.U.D. HARRIS COUNTY

CHAMPIONS PARK NORTH SEC. FOUR  
PHASE TWO FILM CODE NO. 355095  
CY-CHAMP P.U.D. HARRIS COUNTY



FOR CONTINUATION  
SEE SHEET 3A OF 27

FLOOD PLAIN NOTE:  
THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE  
RATE MAP PANEL NO. 48201C0435J, HARRIS COUNTY, TX  
REVISED NOV. 6, 1996. ZONE "X" IS DESCRIBED AS BEING  
OUTSIDE THE 500 YEAR FLOOD PLAIN.

BENCH MARK  
NATIONAL GEODETIC SURVEY MARKER  
Y1216, 1973 ADJ., ELEV = 125.994  
Y1216, 1978 ADJ., ELEV = 125.406  
Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT  
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ELEVATIONS SHOWN HEREON ARE BASED ON 1973  
ADJUSTMENT.  
TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH  
SIDE OF TOURNAMNET DRIVE AT CENTERLINE  
QUEENSCUB DRIVE ELEV. = 114.69

- LEGEND
- Exist. Contours
  - Exist. Storm Sewer Line & Manhole
  - |--- Exist. Inlet
  - PROP. STORM SEWER LINE & MANHOLE
  - |--- PROP. INLET
  - |--- DRAINAGE AREA DIVIDE
  - 1.31 AREA AT INLET IN ACRES
  - 19.21 AREA CONTRIBUTION TO LINE IN ACRES
  - SCE STABILIZED CONSTRUCTION EXIT w/CONC. TRUCK WASHOUT SITE
  - INLET PROTECTION LOCATION

APPROVED: \_\_\_\_\_  
for County Engineer  
Date \_\_\_\_\_  
Water & Sanitary Sewer Lines Approved as to  
Location Only  
The Above Authorization is Valid for 1 Year  
Only

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC.

SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only

HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

Water Engineering: \_\_\_\_\_  
Traffic and Signal Engineering: \_\_\_\_\_  
Wastewater Engineering: \_\_\_\_\_  
Street & Bridge Engineering: \_\_\_\_\_  
Storm Sewer Engineering: \_\_\_\_\_  
Construction: \_\_\_\_\_

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT: \_\_\_\_\_  
SPONSOR DEPARTMENT: \_\_\_\_\_

CITY ENGINEER: \_\_\_\_\_ DATE: 1/5/98  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING: \_\_\_\_\_ DATE: 1-16-98

SUBMITTED: \_\_\_\_\_ DESIGNED BY: TIM  
SCALE: H: 1" = 100' DRAWN BY: TIM  
DATE: AUGUST 1997 SHEET NO. 18 OF 27 SHEETS  
SURVEY BY: \_\_\_\_\_ CITY DWG. NO.: \_\_\_\_\_  
F B NO.: \_\_\_\_\_

M.U.D. 191  
POLLUTION CONTROL  
OVERALL LAYOUT

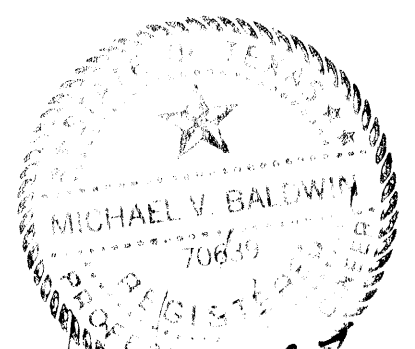
PROVIDENT ENGINEERS, INC.  
11241 RICHMOND, SUITE E107  
HOUSTON, TEXAS 77082

WARNING  
Overhead lines may exist on the property. We have not attempted to mark those lines since they are clearly visible, but you should locate them prior to beginning any construction. Texas law, Section 752, Health & Safety Code, forbids all activities in which persons or things MAY come within six (6) feet of live overhead high voltage lines. Contractors and owners are legally responsible for safety of construction workers under this law. This law carries both criminal and civil liability. To arrange for lines to be turned off or moved, call HL&P at 228-7400.

NOTE:  
ALL DRIVEWAYS WILL BE LOCATED TO AVOID  
EXISTING CURB INLET STRUCTURES.

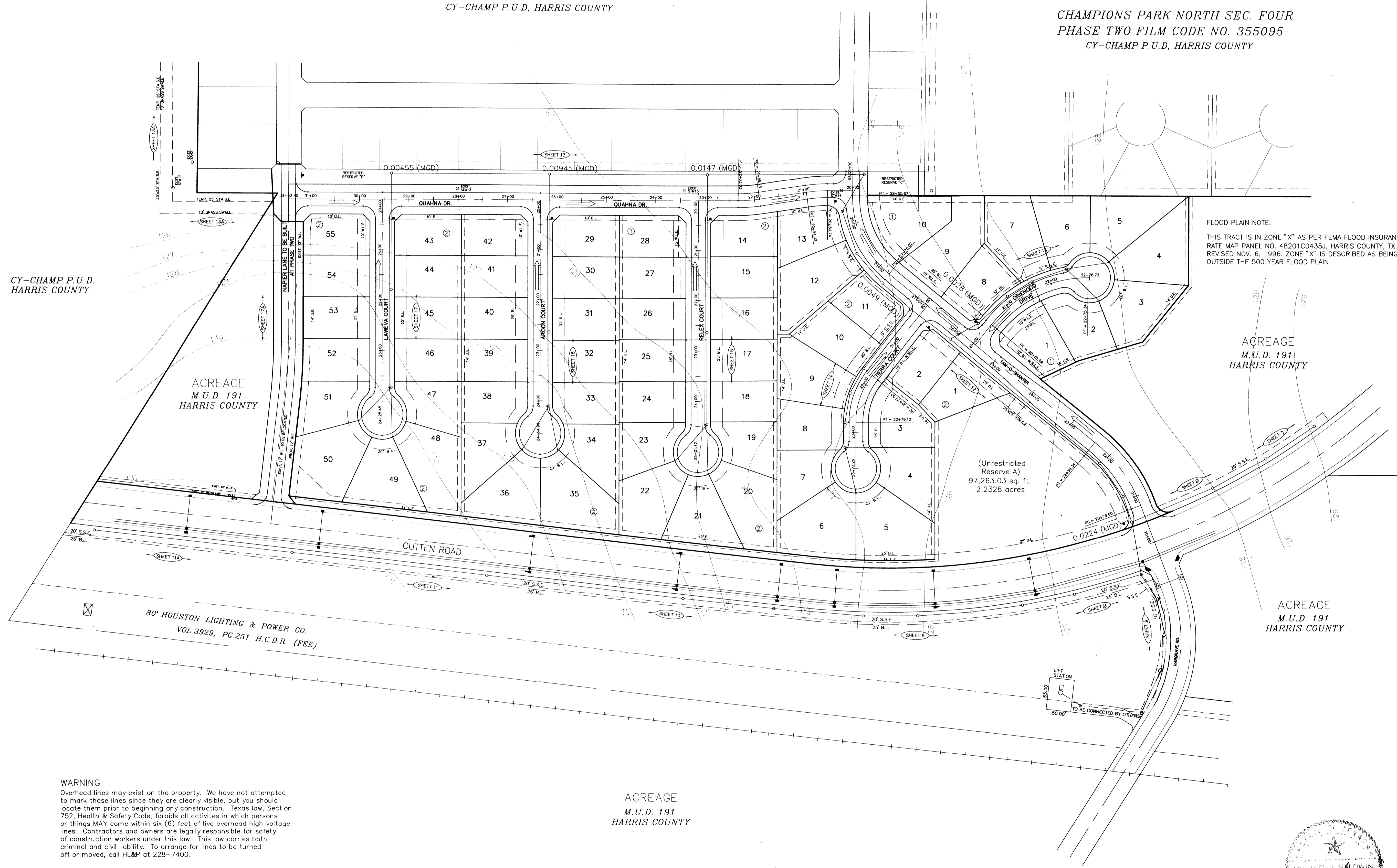
ACREAGE  
M.U.D. 191  
HARRIS COUNTY

ACREAGE  
M.U.D. 191  
HARRIS COUNTY



CHAMPIONS RACQUET CLUB SEC. TWO  
 VOLUME 274 PAGE 129 H.C.M.R.  
 CY-CHAMP P.U.D., HARRIS COUNTY

CHAMPIONS PARK NORTH SEC. FOUR  
 PHASE TWO FILM CODE NO. 355095  
 CY-CHAMP P.U.D., HARRIS COUNTY



FLOOD PLAIN NOTE:  
 THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE RATE MAP PANEL NO. 48201C0435J, HARRIS COUNTY, TX REVISED NOV. 6, 1996. ZONE "X" IS DESCRIBED AS BEING OUTSIDE THE 500 YEAR FLOOD PLAIN.

CY-CHAMP P.U.D.  
 HARRIS COUNTY

ACREAGE  
 M.U.D. 191  
 HARRIS COUNTY

ACREAGE  
 M.U.D. 191  
 HARRIS COUNTY

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NOTE:  
 ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLETS STRUCTURES.

BENCH MARK  
 BENCH MARK: NATIONAL GEODETIC SURVEY MARKER  
 Y1216, 1973 ADJ., ELEV = 125.994  
 Y1216, 1978 ADJ., ELEV = 125.408  
 Y1216, 1988 ADJ., ELEV = 123.94 ADJUSTMENT USED FOR CUTTEN ROAD.  
 ELEVATIONS SHOWN HEREON ARE BASED ON 1973 ADJUSTMENT.  
 TBM#1: TOP OF CURB AT CENTERLINE INLET NORTH SIDE OF TOURNAMNET DRIVE AT CENTERLINE QUEENSCUB DRIVE ELEV. = 114.69

- LEGEND
- UNDERGROUND DISTRIBUTION CABLE
  - TERMINAL POLE
  - STREET LIGHT ON STEEL STANDARD
  - UNDERGROUND STREET LIGHT CABLE
  - Exist. Contours
  - Exist. Water Line
  - Exist. Gate Valve & Box
  - Exist. Flushing Valve
  - Exist. Plug & Blowoff
  - Exist. Sanitary Sewer Line & Manhole
  - Exist. Storm Sewer Line & Manhole
  - Exist. Inlet
  - R1-1 (STOP SIGN)
  - SHEET REFERENCE
  - PROP. SANITARY SEWER LINE & MANHOLE
  - SHEET FLOW

APPROVED: \_\_\_\_\_  
 for County Engineer  
 Date \_\_\_\_\_

Water & Sanitary Sewer Lines Approved as to Location Only  
 The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

- ENTEX, INC.
- SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only
- HOUSTON LIGHTING & POWER CO.  
Approval Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>[Signature]</i> 12/24/97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-9-98 PASTURE ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12/22/97 STORM SEWER ENGINEERING	CONSTRUCTION

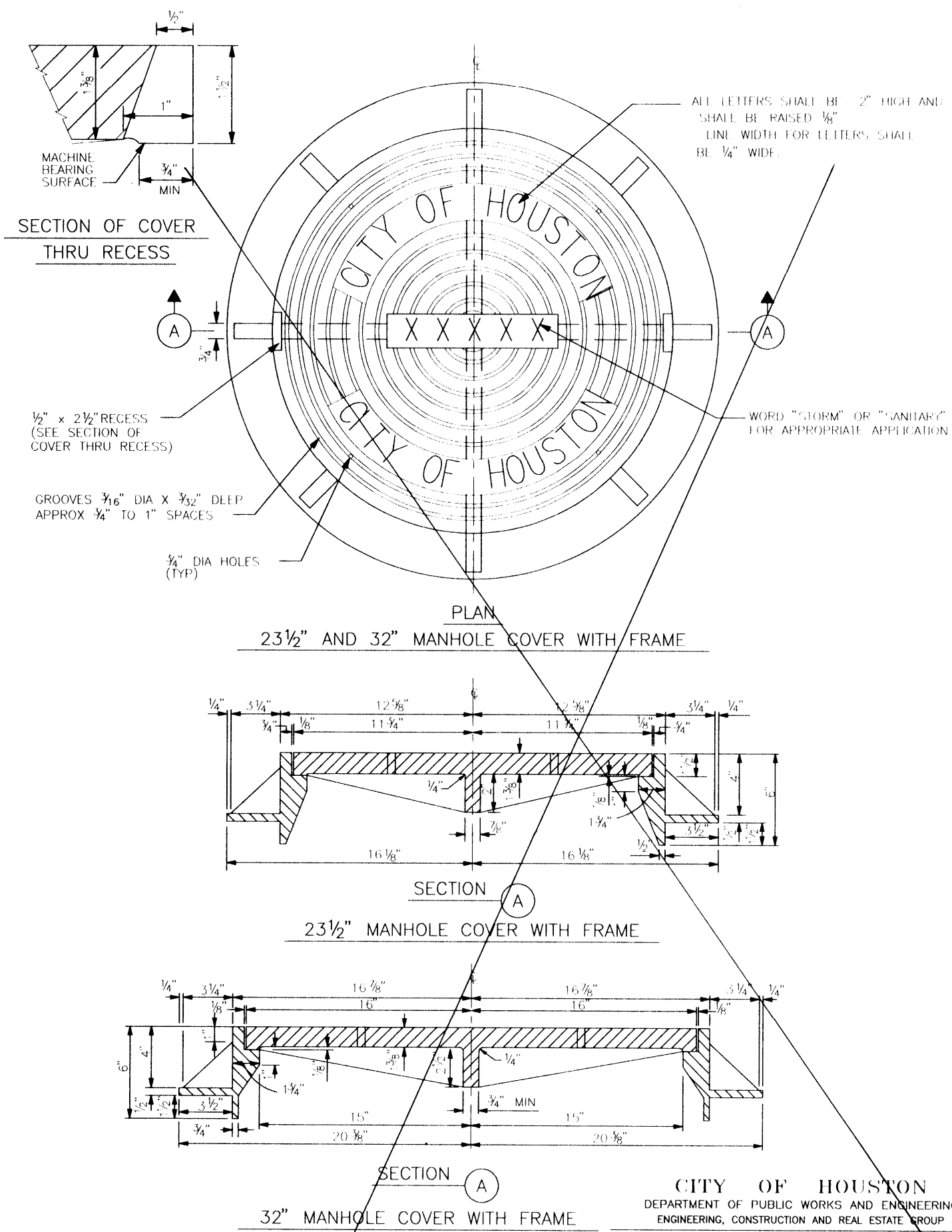
OTHER DEPARTMENTS  
 PLANNING AND DEVELOPMENT      SPONSOR DEPARTMENT

*[Signature]*  
CITY ENGINEER      DATE 1/16/98  
*[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING      DATE 1-16-98

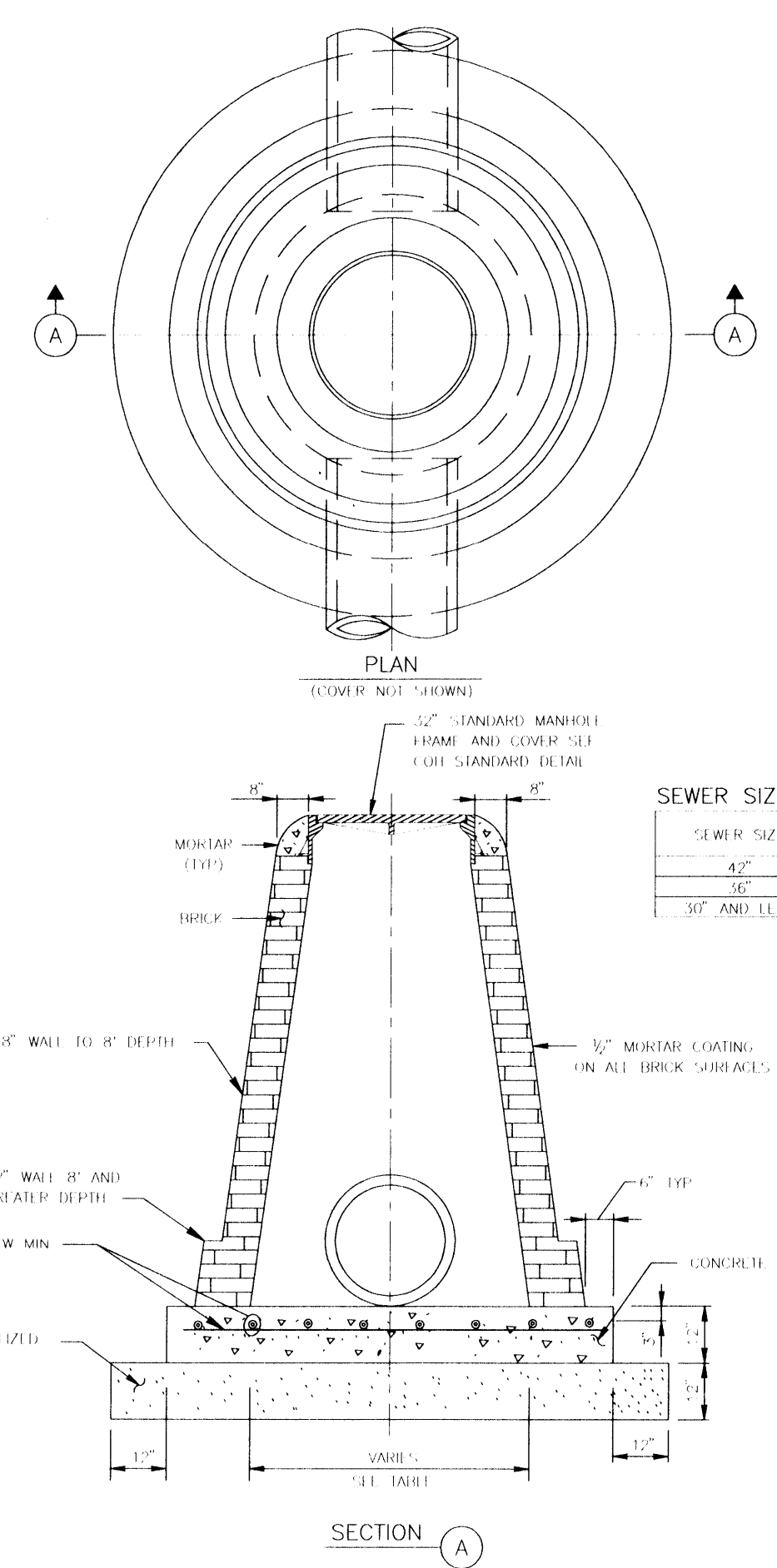
SUBMITTED: \_\_\_\_\_  
 SCALE: H: 1" = 100'  
 DATE: AUGUST 1997  
 SURVEY BY: \_\_\_\_\_  
 F B NO: \_\_\_\_\_  
 DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 19 OF 27 SHEETS  
 CITY DWG. NO: \_\_\_\_\_

M.U.D. 191  
 SANITARY SEWER FLOW AND SHEET FLOW

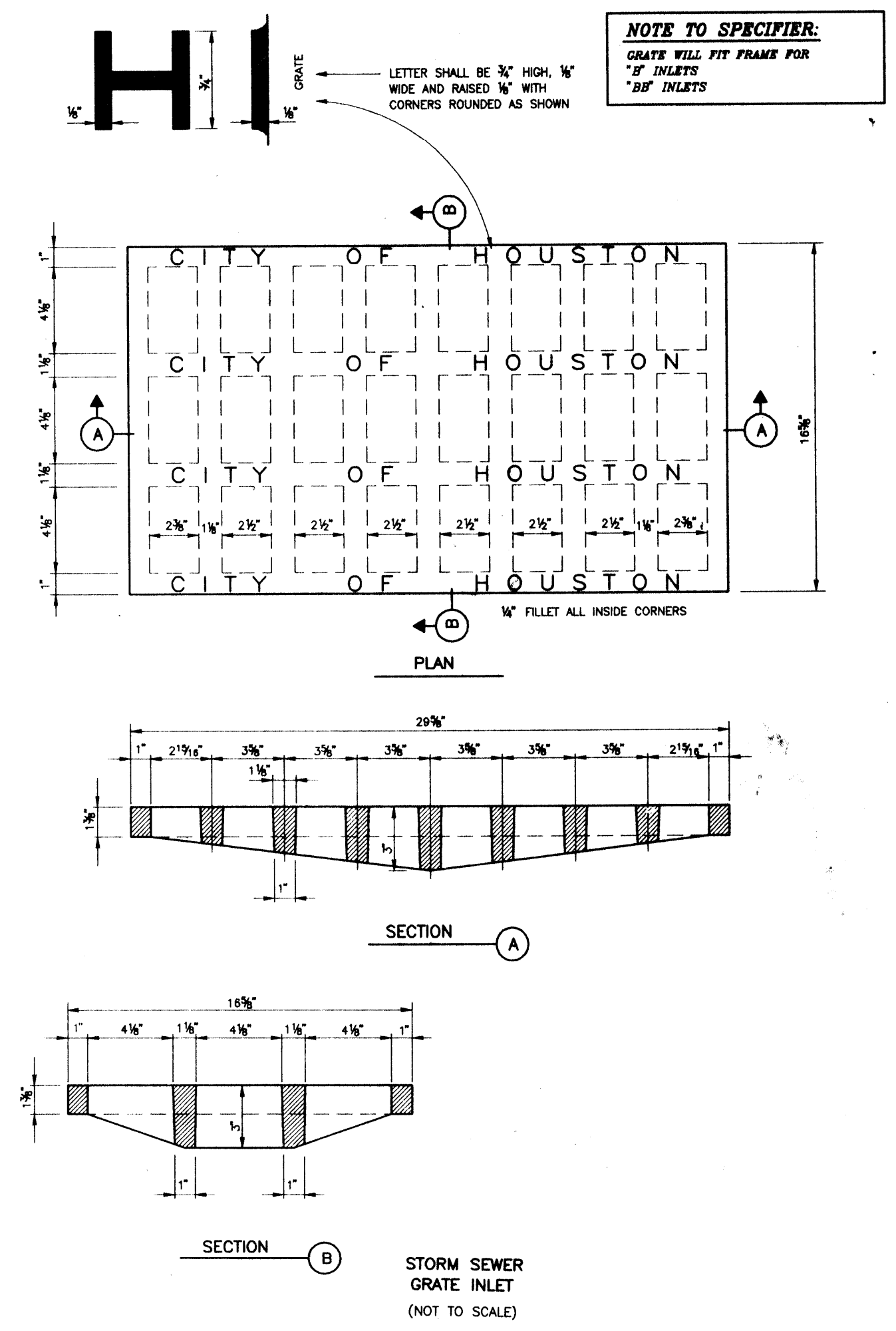
PROVIDENT ENGINEERS, INC.  
 11241 RICHMOND, SUITE E107  
 HOUSTON, TEXAS 77082



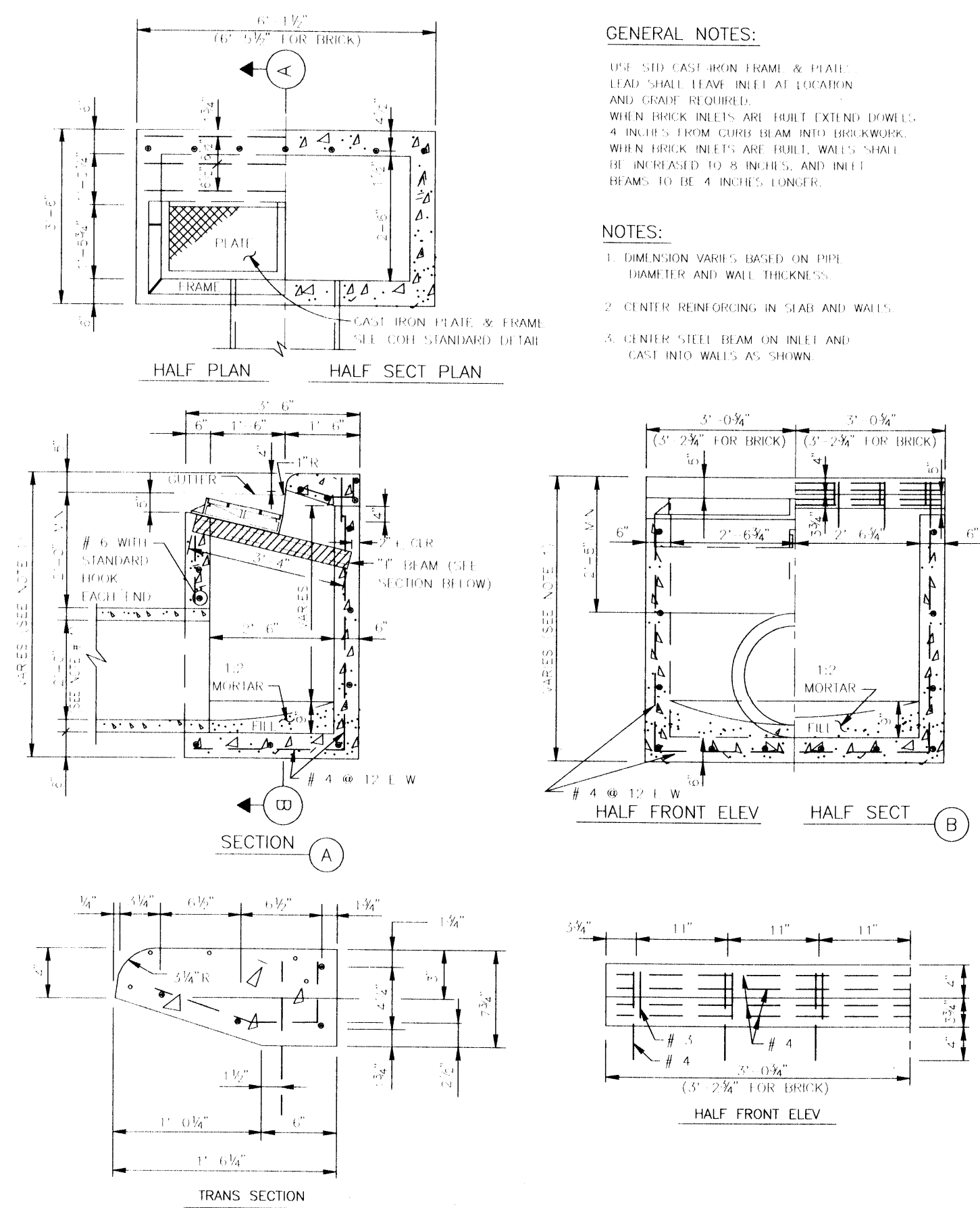
MANHOLE  
FRAME AND COVER  
(NOT TO SCALE)  
02084-01



STORM SEWER  
MANHOLE TYPE "C" FOR 42"  
DIA RCP AND SMALLER  
(NOT TO SCALE)  
02081-03



STORM SEWER  
GRATE INLET  
(NOT TO SCALE)



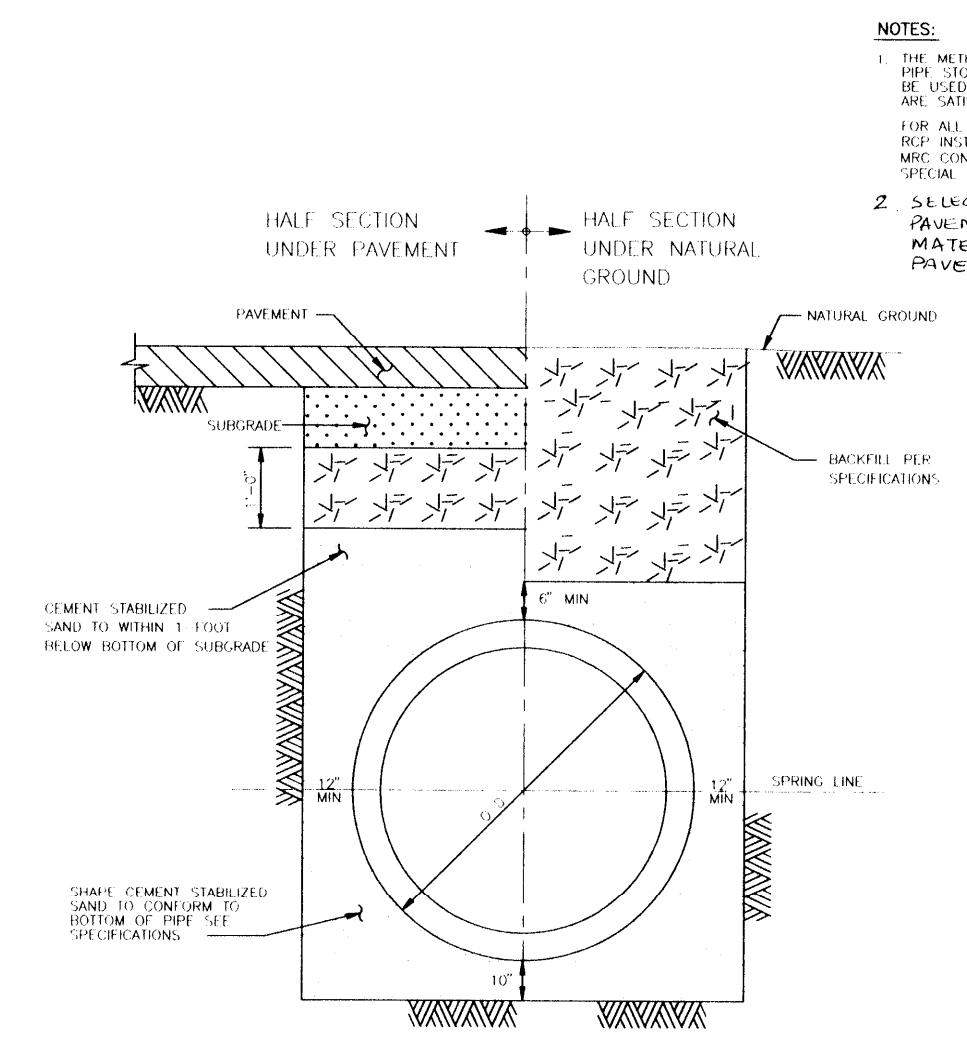
STORM SEWER  
TYPE "BB" INLET  
(NOT TO SCALE)  
02632-04

PRECAST CURB BEAM

CURB BEAM BAR LIST			
NO.	SIZE	LENGTH	REQ.
1	#4	12'-10"	10
2	#4	12'-10"	10
3	#4	12'-10"	10
4	#4	12'-10"	10
5	#4	12'-10"	10

GENERAL NOTES:  
1. USE S10 CAST IRON FRAME & HEAD. LEAD SHALL LEAVE INLET AT LOCATION AND COVER REQUIRED.  
2. WHEN BRICK INLETS ARE BUILT EXISTING WORK, 4 INCHES FROM CURB BEAM INTO BRICKWORK.  
3. WHEN BRICK INLETS ARE BUILT, INLETS SHALL BE REINFORCED TO 8 INCHES, AND INLET BEAMS TO BE 4 INCHES THICKER.

NOTES:  
1. DIMENSION VARIATIONS BASED ON 1989 FRAME AND WALL THICKNESS.  
2. CENTER BEING GROUND IN SEAL AND WALLS.  
3. CENTER STEEL BEAM ON INLET AND CAST INTO WALLS AS SHOWN.



STORM SEWER  
BEDDING AND BACKFILL FOR  
24" TO 36" DIA RCP WHERE  
SATISFACTORY SOIL CONDITIONS EXIST  
(NOT TO SCALE)  
02317-04

CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

<i>[Signature]</i> 12-4-97 TRAFFIC ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 1/15/98 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
--------------------------	--------------------

CITY ENGINEER: *[Signature]* DATE: 1/15/98

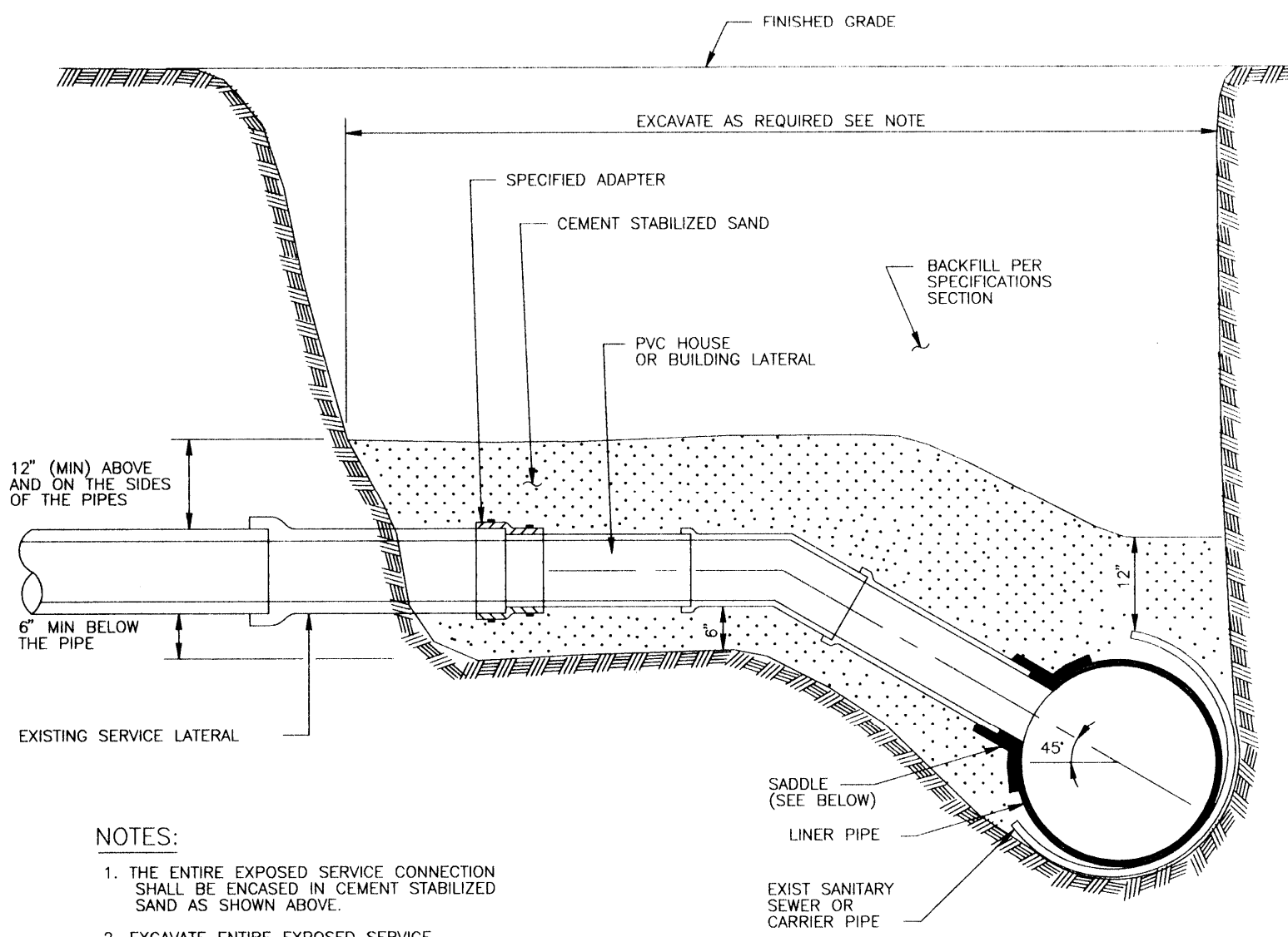
DIRECTOR OF PUBLIC WORKS AND ENGINEERING: *[Signature]* DATE: 1-16-98

SUBMITTED: \_\_\_\_\_ DESIGNED BY: TIM  
SCALE: \_\_\_\_\_ DRAWN BY: TIM  
DATE: AUGUST 1997 SHEET NO. 20 OF 27 SHEETS  
SURVEY BY: \_\_\_\_\_ CITY DWG. NO.: \_\_\_\_\_  
F B NO.: \_\_\_\_\_

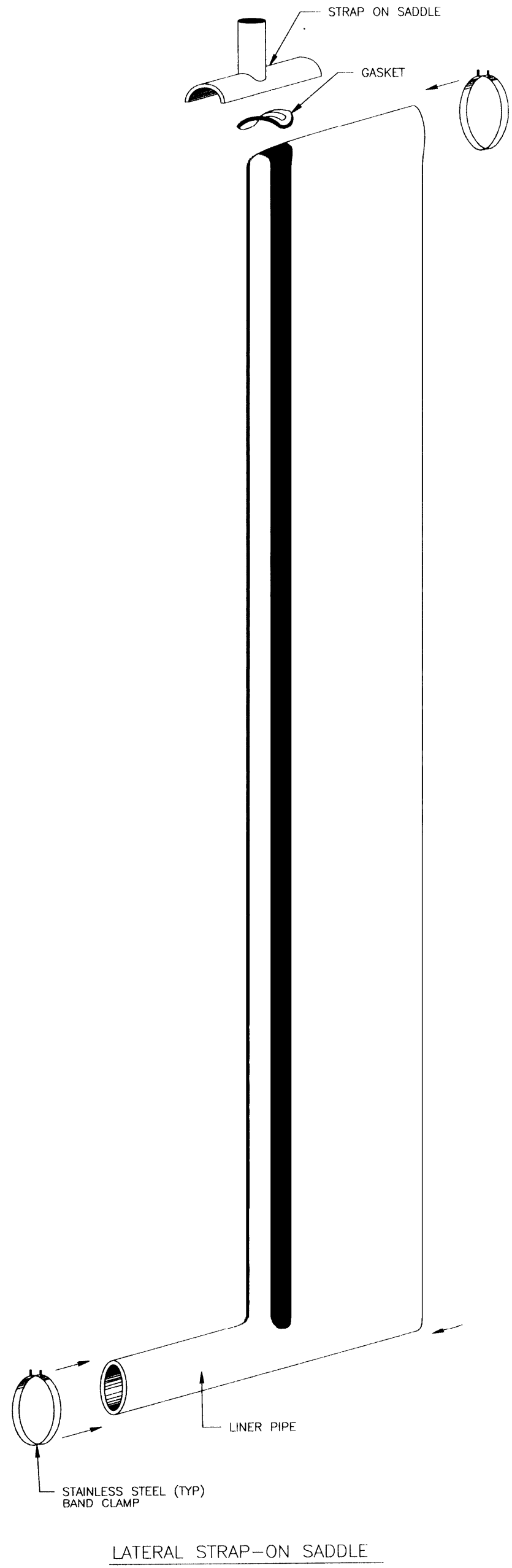
STORM SEWER DETAILS

PROVIDENT ENGINEERS, INC.  
11241 RICHMOND, SUITE E107  
Houston, Texas 77082

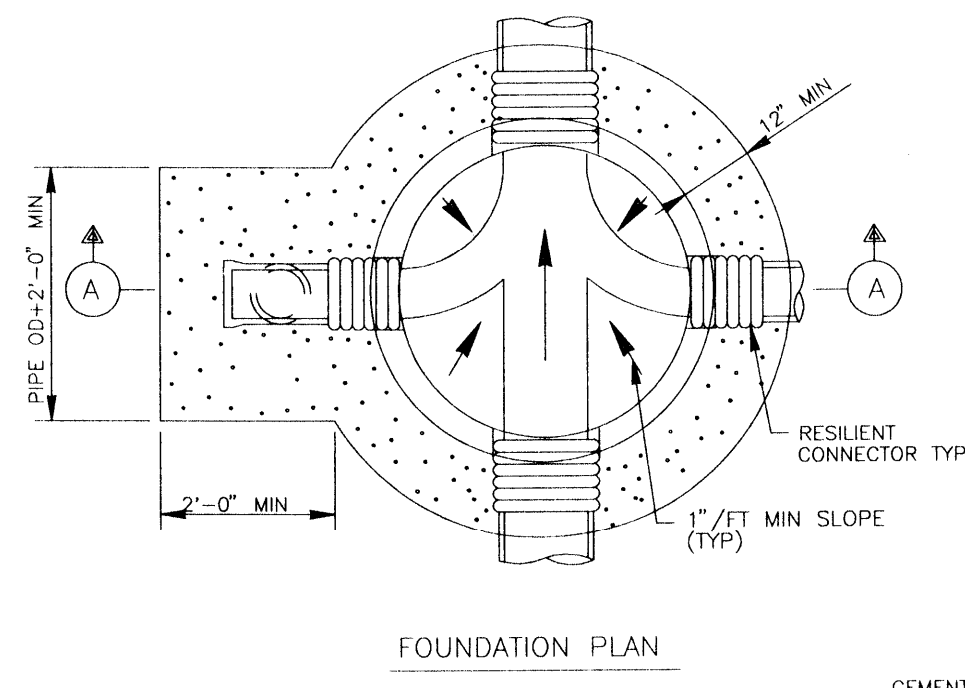




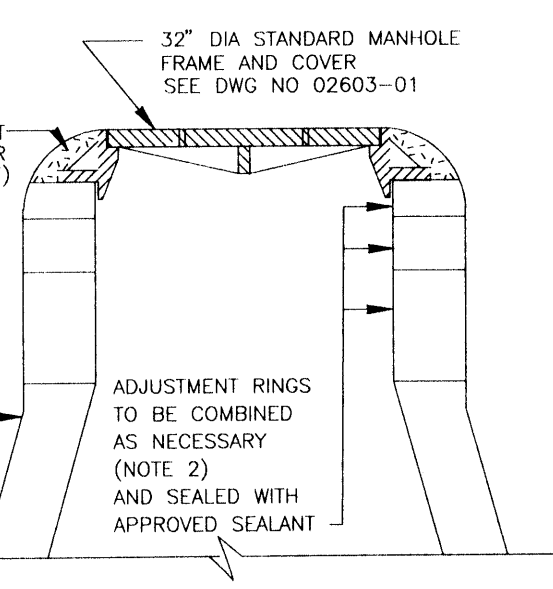
- NOTES:
1. THE ENTIRE EXPOSED SERVICE CONNECTION SHALL BE ENCASED IN CEMENT STABILIZED SAND AS SHOWN ABOVE.
  2. EXCAVATE ENTIRE EXPOSED SERVICE CONNECTION SHALL BE ENCASED IN CEMENT STABILIZED SAND AS SHOWN ABOVE.



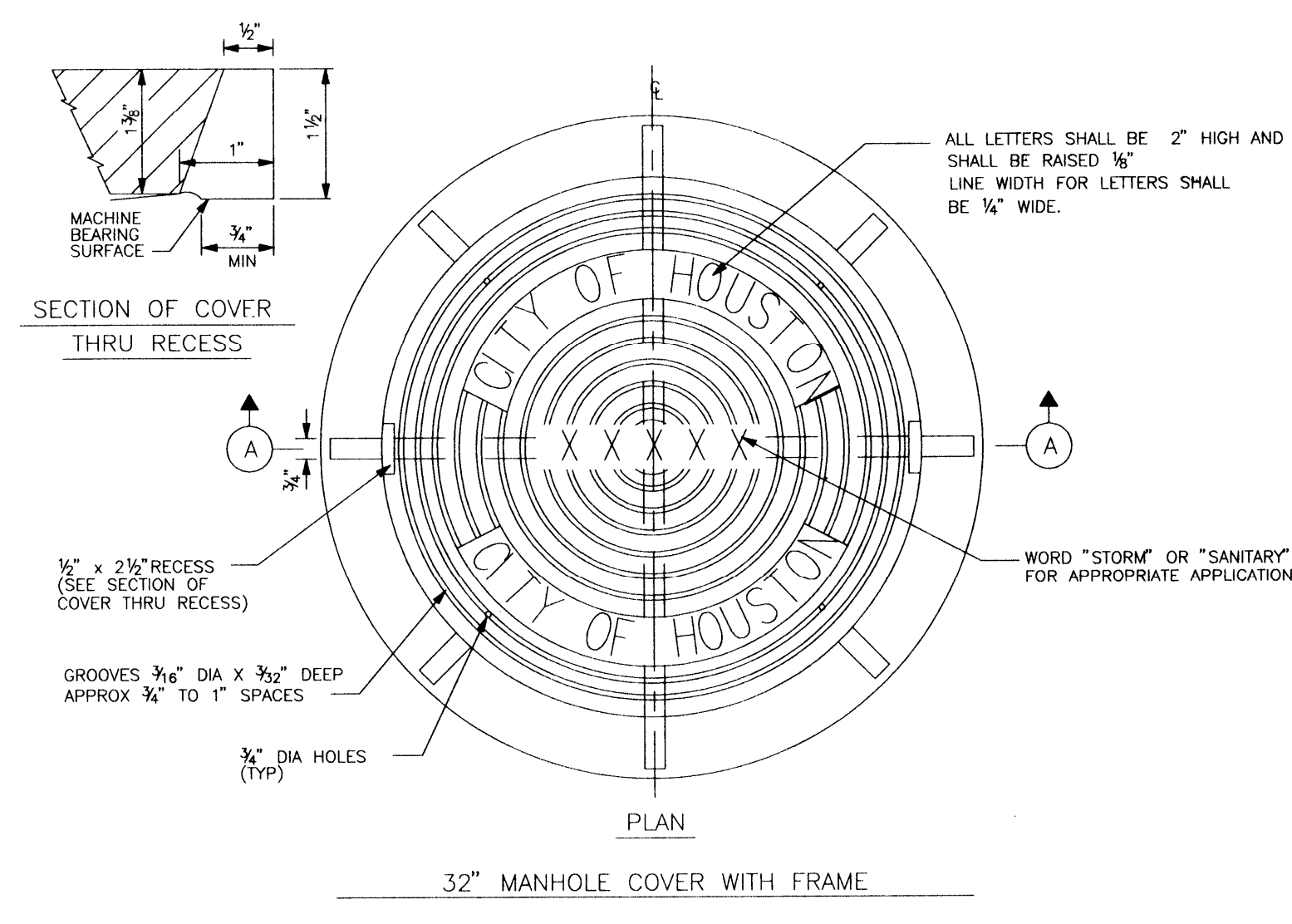
SANITARY SEWER SERVICE RECONNECTION FOR LINER PIPE  
02531-01  
(NOT TO SCALE)



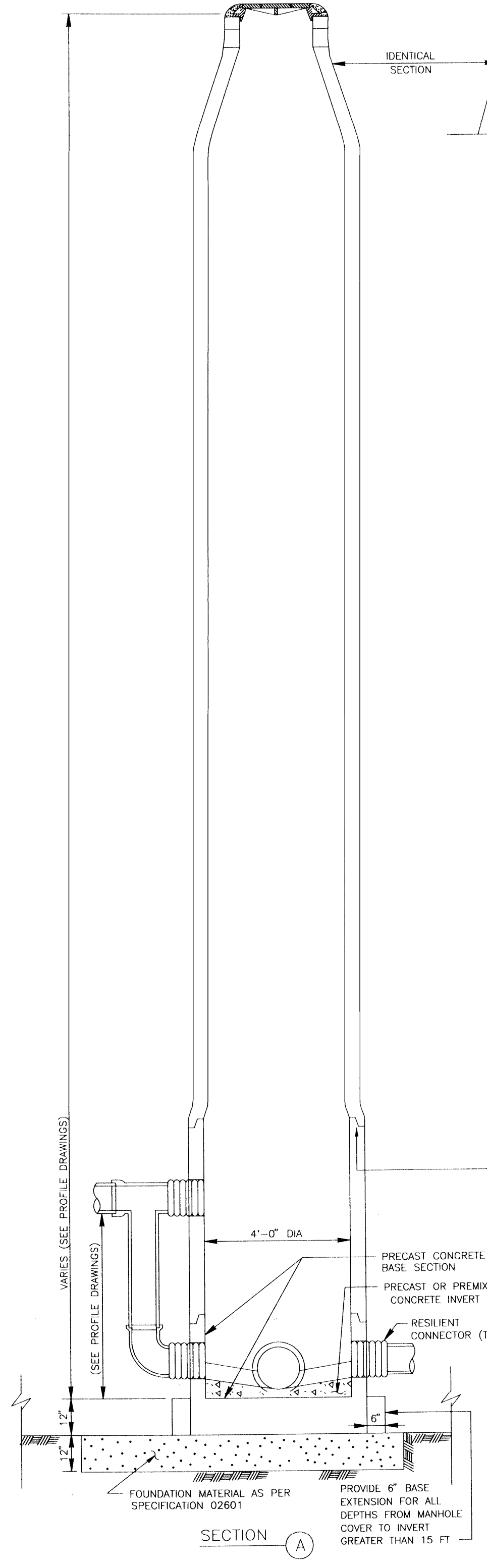
FOUNDATION PLAN



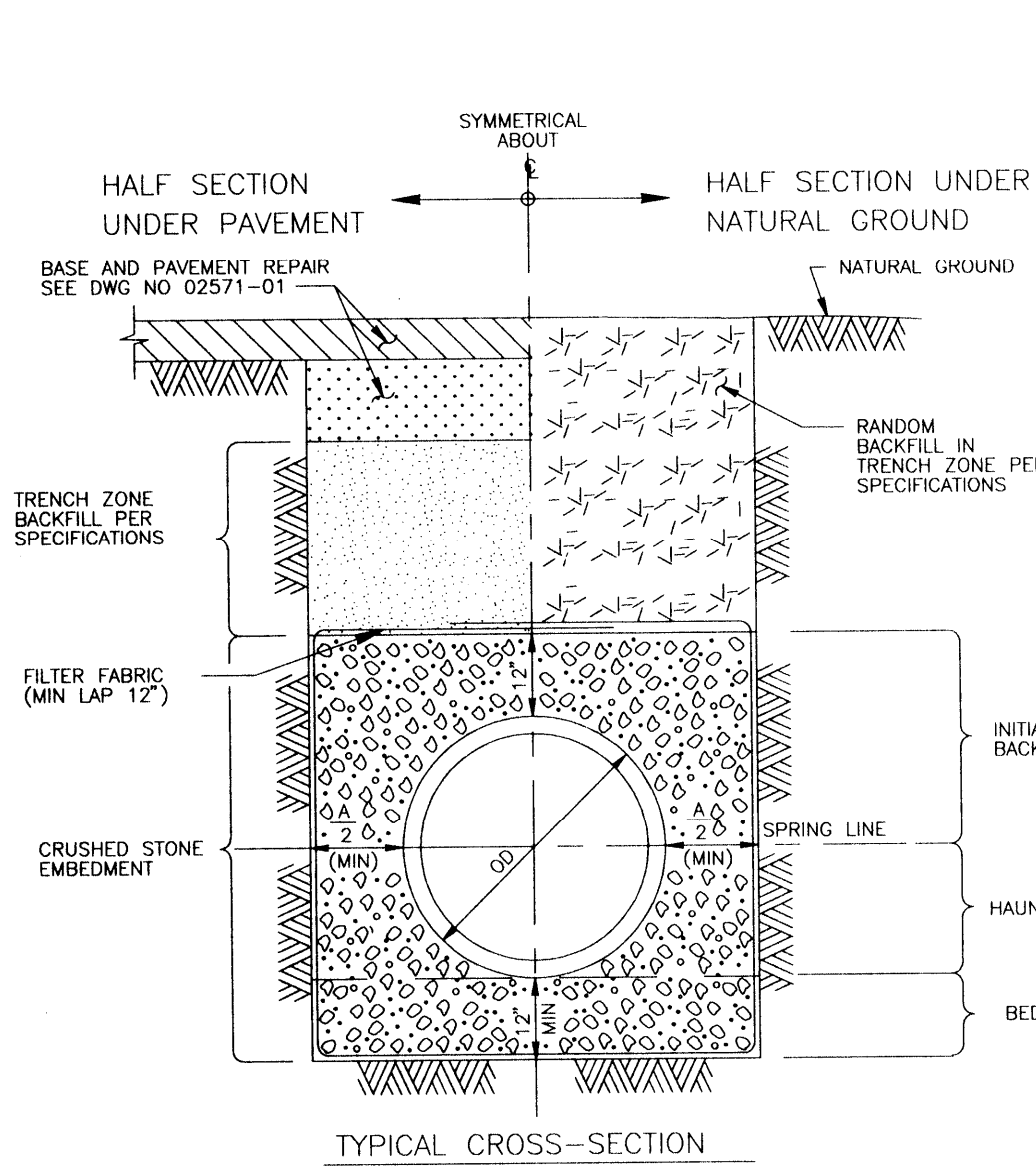
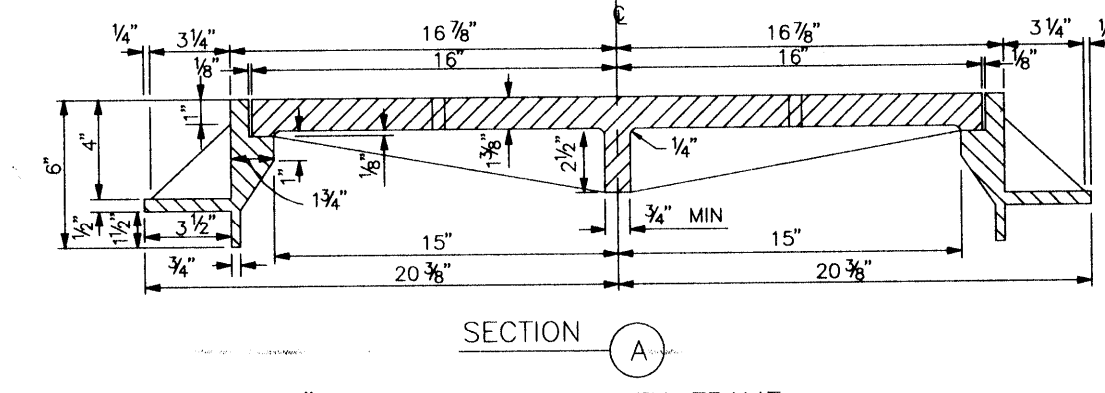
- NOTES:
1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
  2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 12".
  3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12"-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN THICKNESS 5".
  4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
  5. SEAT MANHOLE FRAME IN SEALANT PER SPECIFICATION SECTION 02601.
  6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USED.
  7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
  8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 8 EW.
  9. PROVIDE BACKFILL TO MATCH ADJACENT PIPE TRENCH BACKFILL PER SPECIFICATION SECTION 02261.



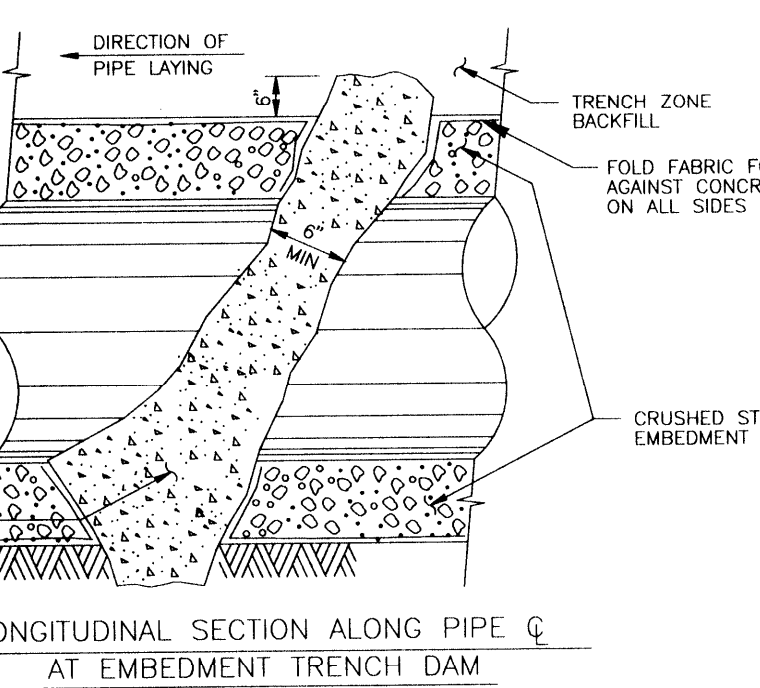
MANHOLE FRAME AND COVER  
(NOT TO SCALE)  
02084-01



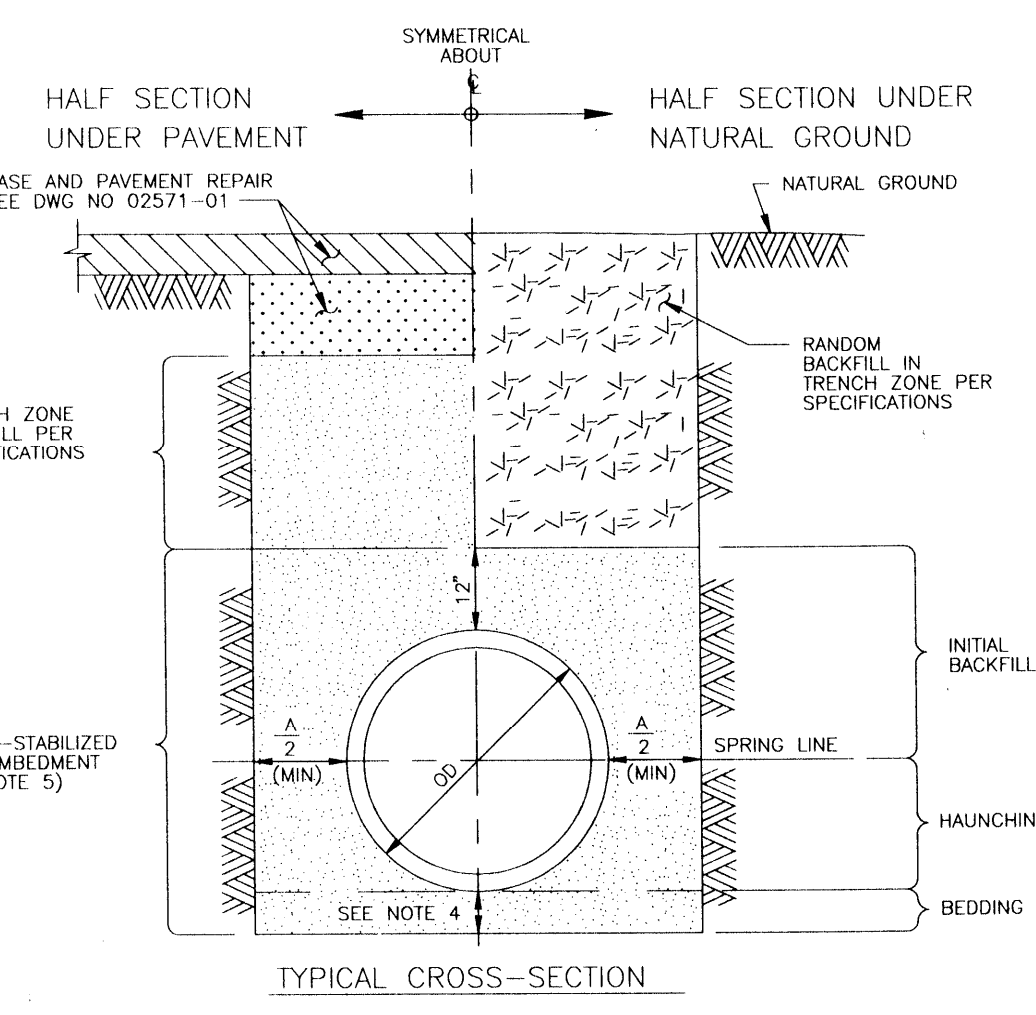
SANITARY SEWER 4"-0" DIA PRECAST CONCRETE MANHOLE  
(NOT TO SCALE)  
02082-02



- NOTES:
1. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "X" FOR THE NOMINAL PIPE SIZE:  
NOMINAL PIPE SIZE: "X"  
LESS THAN 18" 15"  
18" TO 30" 24"  
OVER 30" 36"
  2. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
  3. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
  4. TRENCH DAM SHALL BE PLACED AT LEAST 0.5 FT AWAY FROM ANY PIPELINE STRUCTURE. SEE SECTION 02277 FOR OTHER REQUIREMENTS.

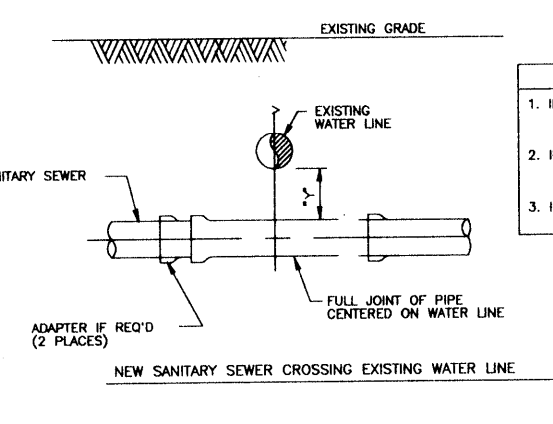


SANITARY SEWER EMBEDMENT AND TRENCH ZONE BACKFILL FOR STANDARD TRENCH  
(NOT TO SCALE)  
02227-01C



- NOTES:
1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS. PRECISE SECTION 02227 FOR REQUIREMENTS IN OTHER CONDITIONS.
  2. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "X" FOR THE NOMINAL PIPE SIZE:  
NOMINAL PIPE SIZE: "X"  
LESS THAN 18" 15"  
18" TO 30" 24"  
OVER 30" 36"
  3. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
  4. MIN BEDDING DEPTH SHALL BE THE GREATER OF 4" OR 8" INCHES.
  5. SPECIFICATIONS MAY ALLOW ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS. SEE SPEC SECTION 02371.

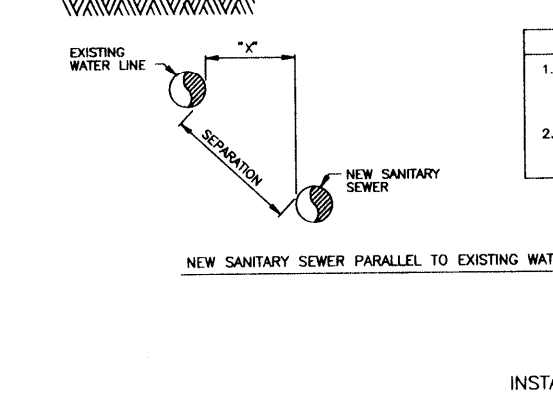
SANITARY SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH  
(NOT TO SCALE)  
02227-08B



- INSTALLATION REQUIREMENTS
1. 6" DIA OR GREATER SHALL BE 12" MIN. 4" DIA SHALL BE 12" MIN. 2" DIA SHALL BE 12" MIN. 1.5" DIA SHALL BE 12" MIN. 1" DIA SHALL BE 12" MIN.
  2. 4" DIA OR GREATER SHALL BE 12" MIN. 3" DIA SHALL BE 12" MIN. 2" DIA SHALL BE 12" MIN. 1.5" DIA SHALL BE 12" MIN. 1" DIA SHALL BE 12" MIN.
  3. 1" DIA OR GREATER SHALL BE 12" MIN. 0.75" DIA SHALL BE 12" MIN. 0.5" DIA SHALL BE 12" MIN. 0.375" DIA SHALL BE 12" MIN.

- NOTES:
1. SANITARY SEWER MUST BE BELOW WATER LINE UNLESS SPECIFIED OTHERWISE IN OTHER NOTES AND UNLESS SPECIFICALLY NOTED OTHERWISE IN OTHER NOTES.
  2. NEW SANITARY SEWER SHALL BE INSTALLED IN TRENCH WITH MINIMUM 12" MIN. COVER.
  3. SANITARY SEWER SHALL BE INSTALLED IN TRENCH WITH MINIMUM 12" MIN. COVER.
  4. SANITARY SEWER SHALL BE INSTALLED IN TRENCH WITH MINIMUM 12" MIN. COVER.
  5. 4" DIA MUST BE GREATER THAN OR EQUAL TO 4" FT.
  6. 6" DIA MUST BE GREATER THAN OR EQUAL TO 6" FT.
  7. 8" DIA MUST BE GREATER THAN OR EQUAL TO 8" FT.
  8. SANITARY SEWER SHALL BE INSTALLED IN TRENCH WITH MINIMUM 12" MIN. COVER.

SEWER LINE CROSSING BELOW WATER LINE WITHIN 2 FT SEPARATION	MINIMUM COVER REQUIRED	ADAPTER REQUIRED
6" TO 12" (DATA D-304A)	12" MIN	NO
15" (DATA D-304A)	18" MIN	NO
18" AND 24"	24" MIN	NO
30" AND 36"	36" MIN	NO
48" AND LARGER	48" MIN	NO
48" AND LARGER	48" MIN	NO



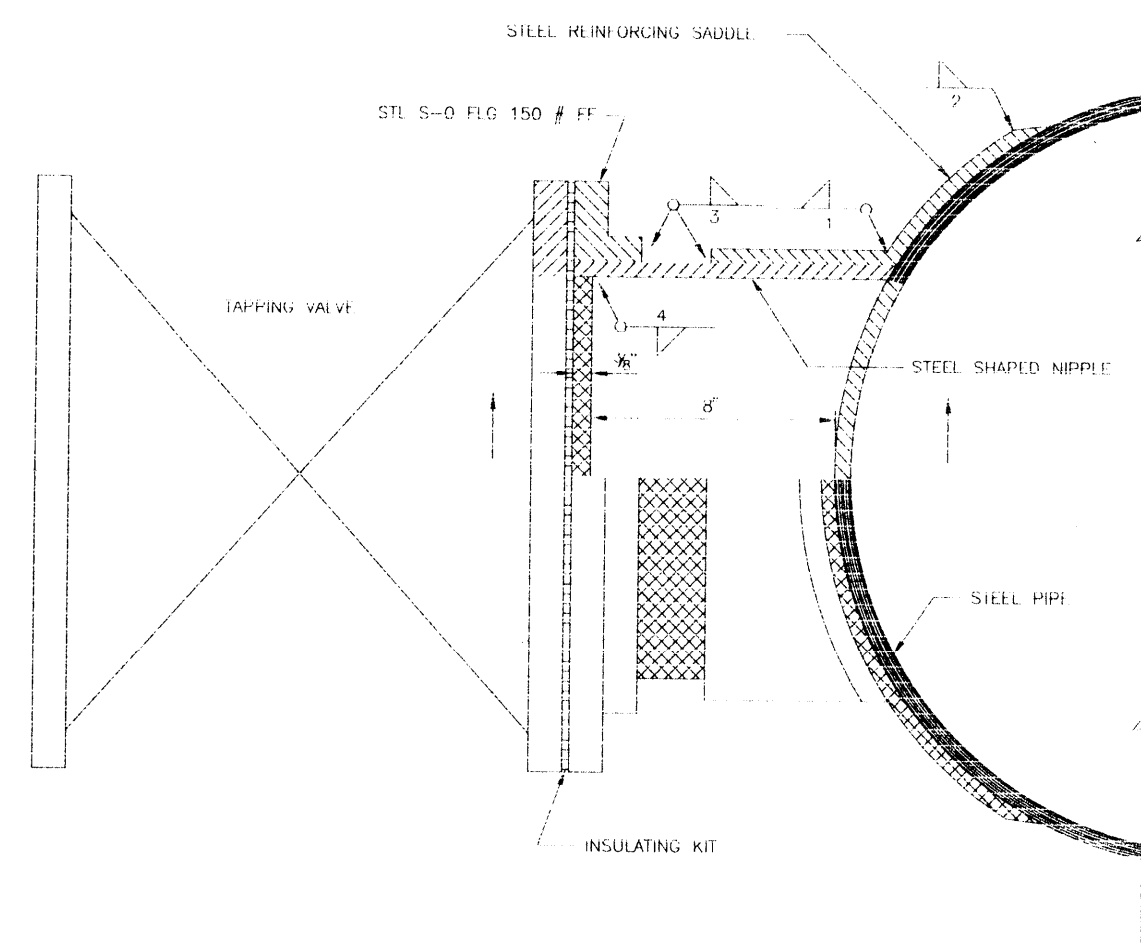
- INSTALLATION REQUIREMENTS
1. 6" DIA OR GREATER SHALL BE 12" MIN. 4" DIA SHALL BE 12" MIN. 2" DIA SHALL BE 12" MIN. 1.5" DIA SHALL BE 12" MIN. 1" DIA SHALL BE 12" MIN.
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  3. 1" DIA OR GREATER SHALL BE 12" MIN. 0.75" DIA SHALL BE 12" MIN. 0.5" DIA SHALL BE 12" MIN. 0.375" DIA SHALL BE 12" MIN.

INSTALLING SANITARY SEWERS CROSSING OR PARALLEL TO WATER LINES  
SANITARY SEWER INSTALLING SANITARY SEWERS CROSSING OR PARALLEL TO WATER LINES  
(NOT TO SCALE)  
02531-07

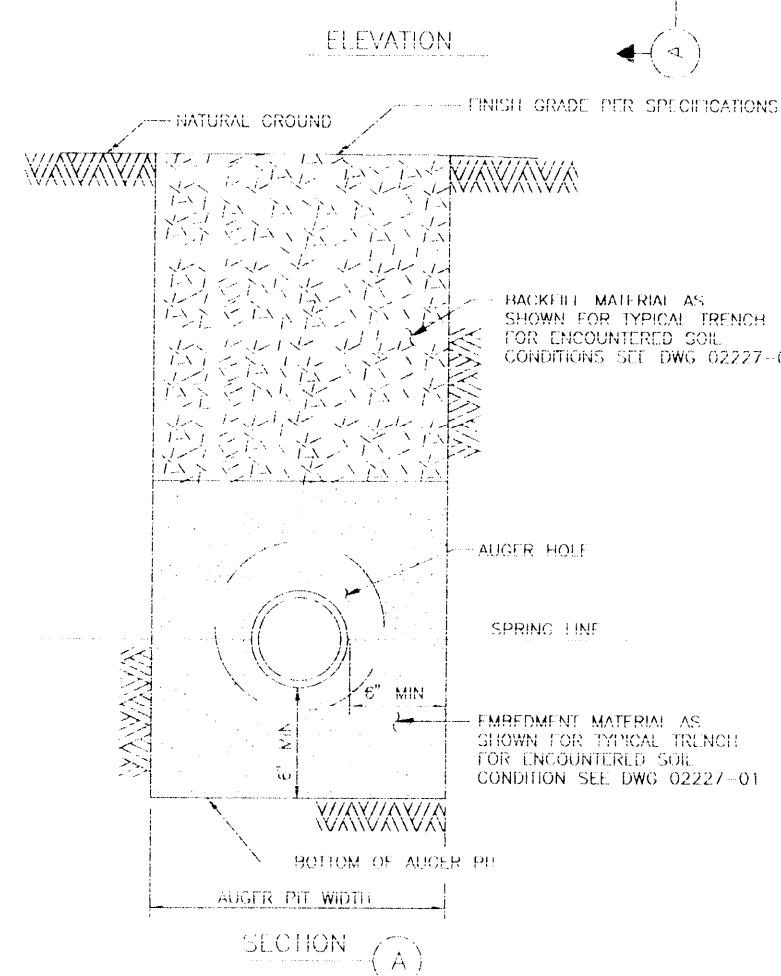
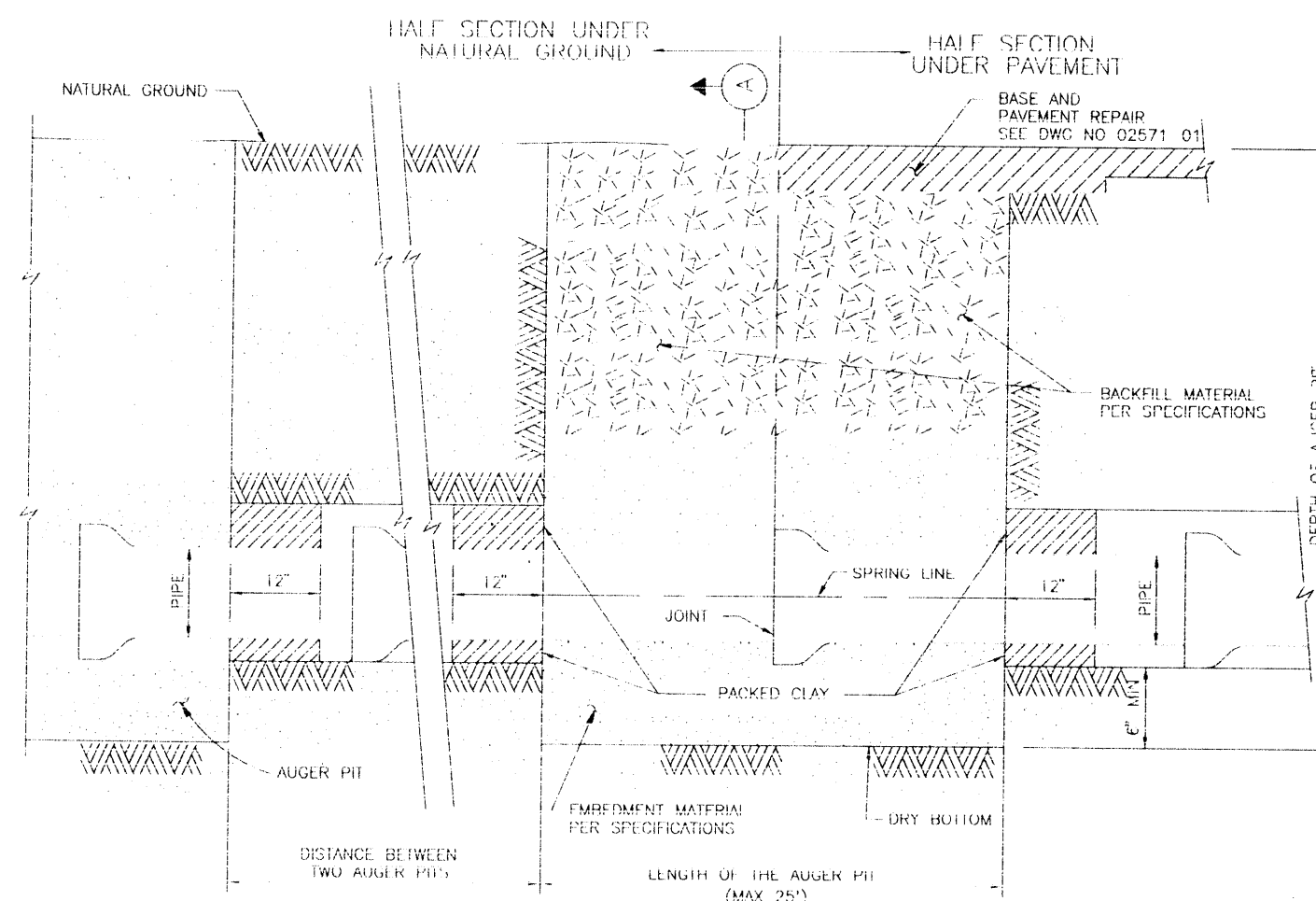
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SECTION APPROVALS	
<i>[Signature]</i> WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> SANITARY ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> STORM SEWER ENGINEERING	CONSTRUCTION
OTHER DEPARTMENTS	
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>[Signature]</i> CITY ENGINEER	DATE: 4/15/98
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS & ENGINEERING	DATE: 1-16-98
SUBMITTED:	DESIGNED BY: TIM
SCALE: N/A	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 21 OF 27 SHEETS
SURVEY BY:	CITY DWG. NO:
F B NO:	

SANITARY SEWER DETAILS

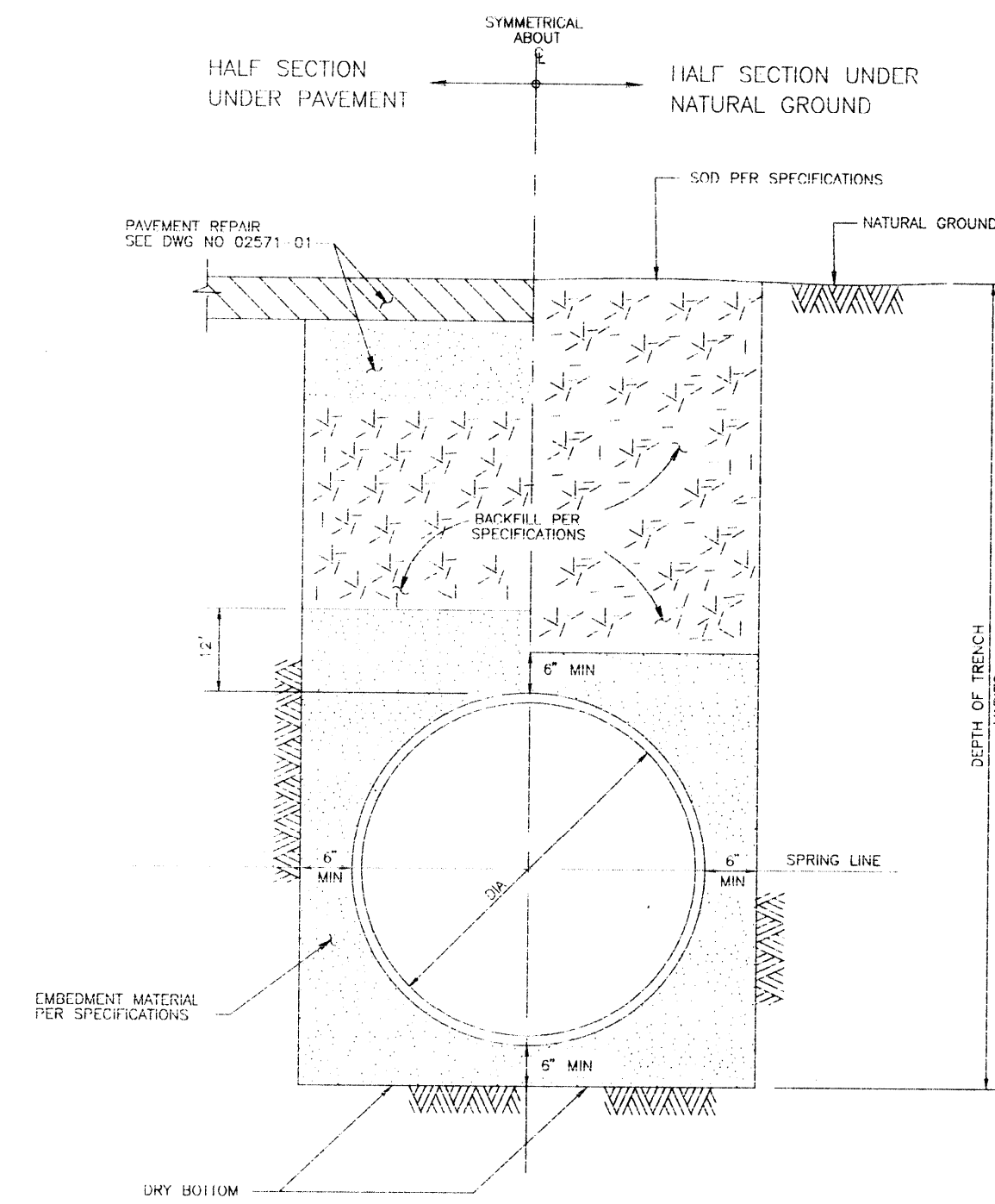
- NOTES:
1. SHAPED NEPPLE SHALL BE SHAPED TO THE AXES OF THE PIPE TO A TOLERANCE OF .010" AND SHALL BE SHAPED TO FIT THE O.D. OF THE STEEL PIPE.
  2. WELDING SEQUENCE SHALL BE AS NOTED IN WELD SYMBOLS.
  3. WELDER SHALL USE CAUTION IN ASSURING THAT 150 # 3/8" FLDS. CORRECTLY LINED UP AND SECURELY TACKED PRIOR TO STARTING WELD.
  4. INSULATING KIT SHALL BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.



STANDARD TAP  
TO  
STILL MAIN  
(NOT TO SCALE)  
02665-04B

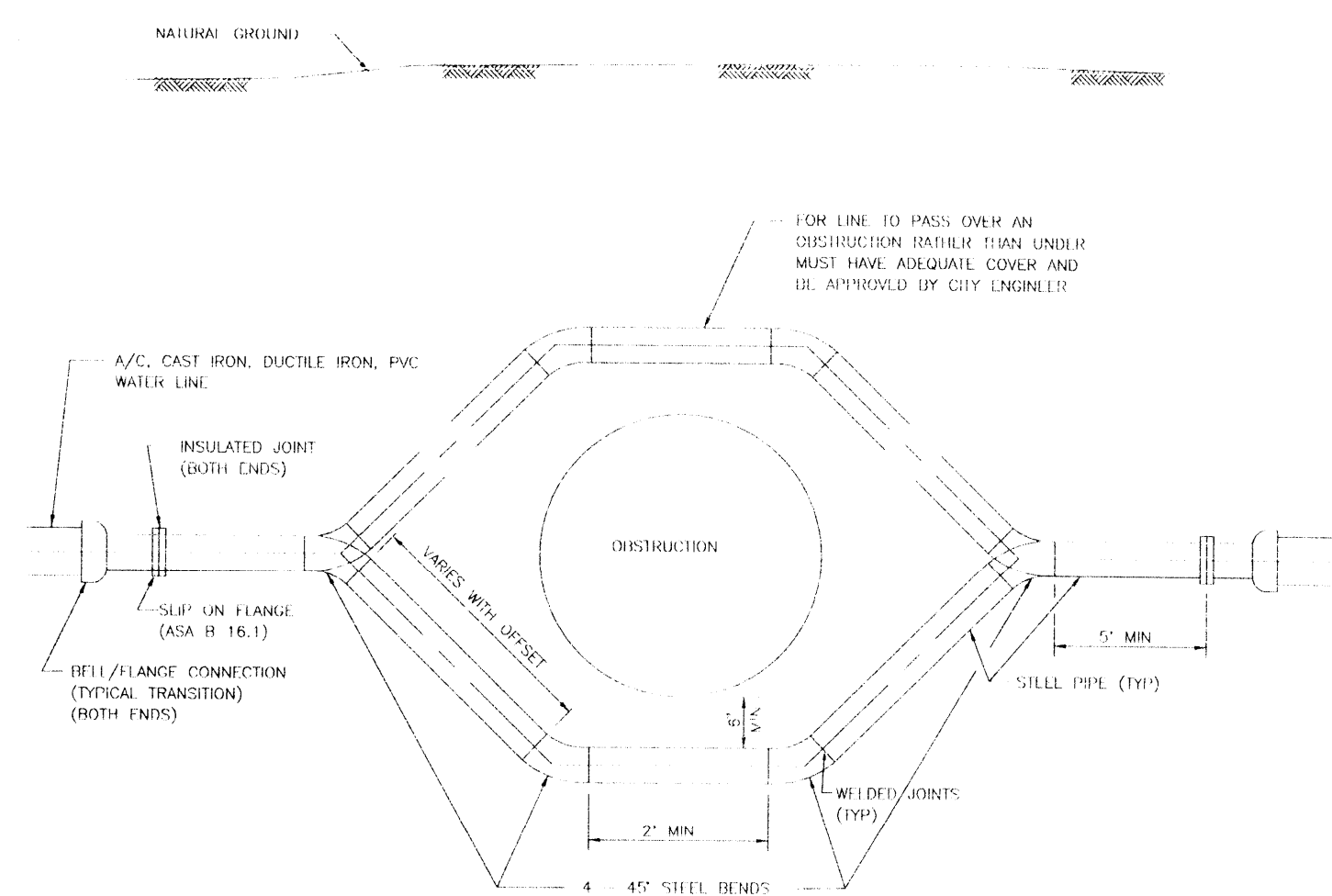


BEDDING AND BACKFILL  
AUGER PIT AND AUGER HOLE  
(NOT TO SCALE)  
02316-01C



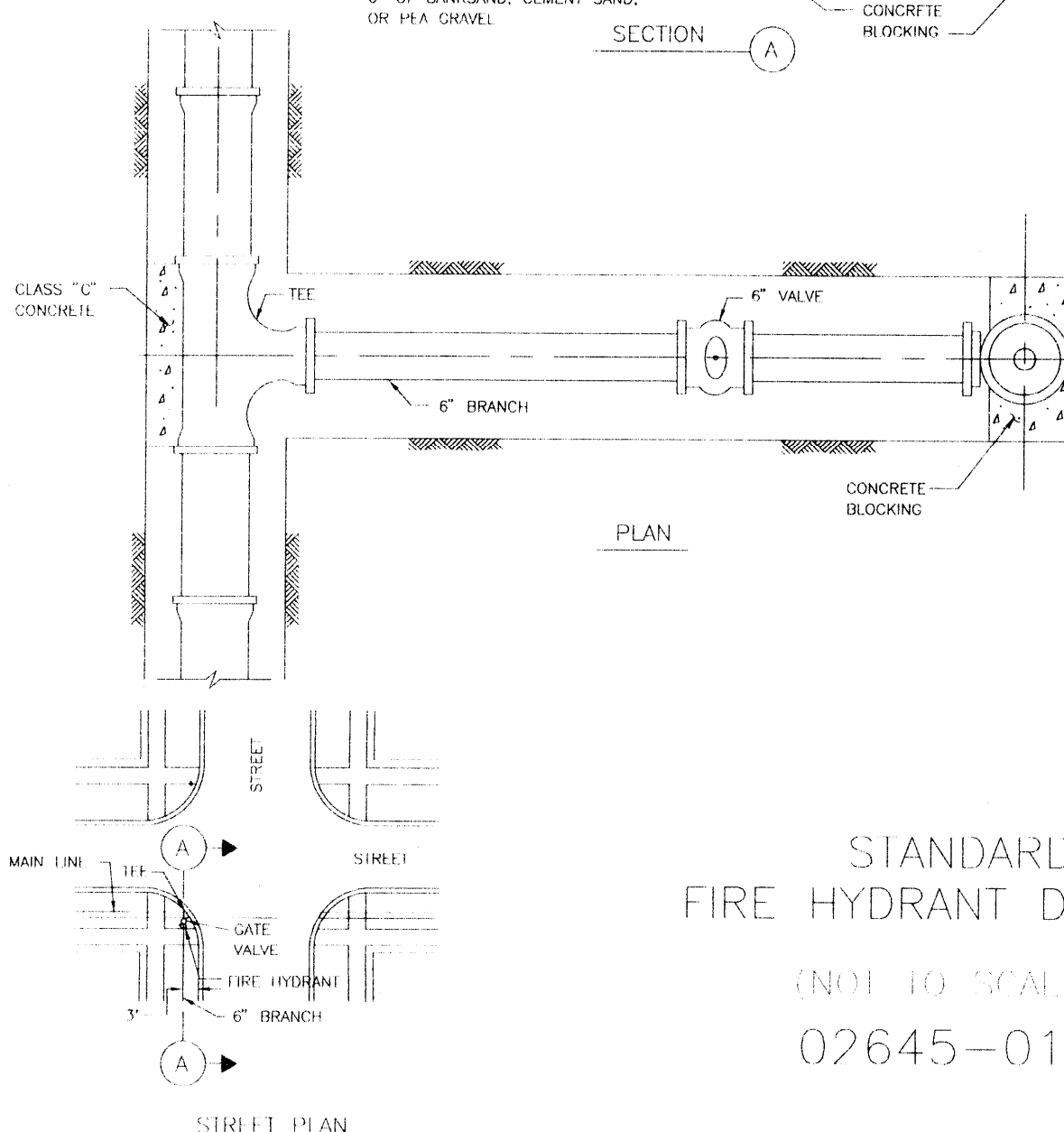
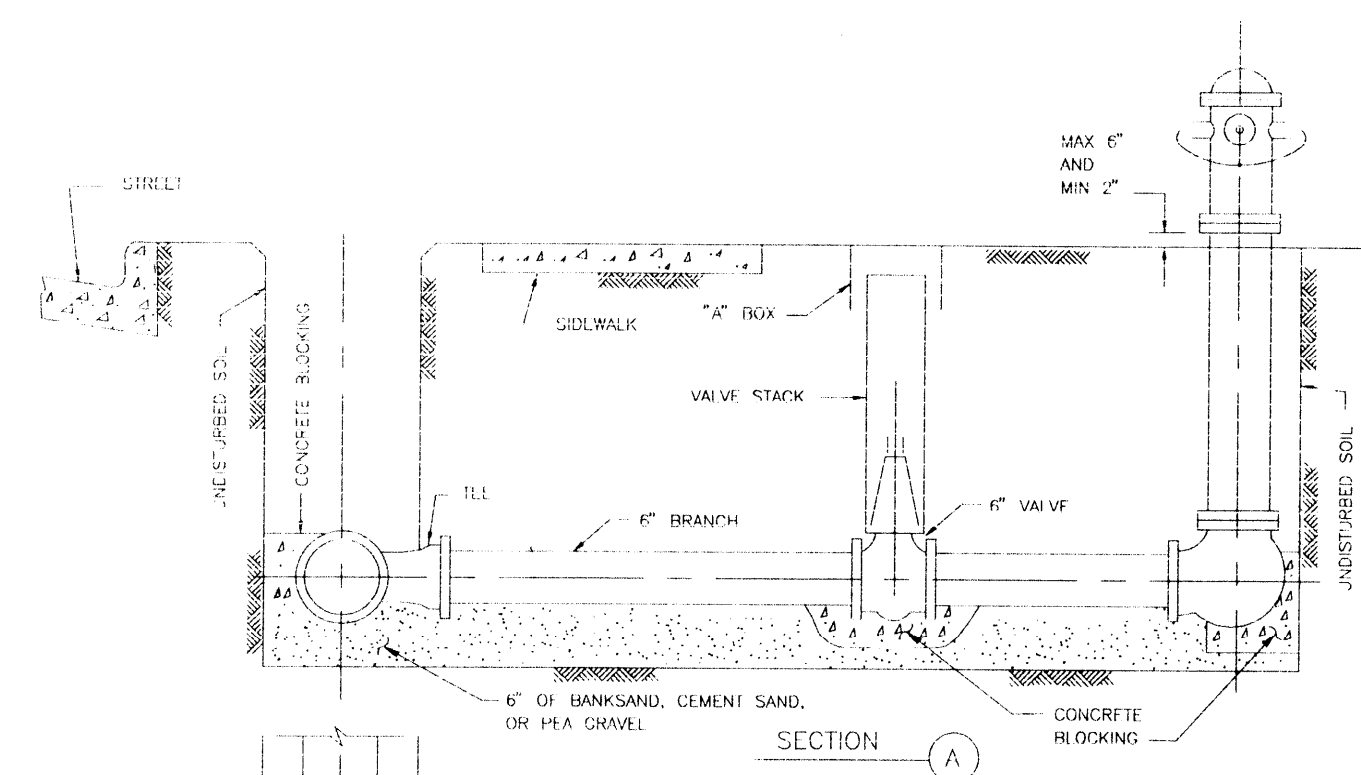
WATER DISTRIBUTION MAIN  
BEDDING AND BACKFILL FOR  
OPEN CUT TRENCHES  
(NOT TO SCALE)  
02664-01C

- NOTE:
1. ALL METHODS AND DIMENSIONS TO BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
  2. RESTRAIN EXISTING PIPING BEYOND STEEL SECTION AS REQUIRED TO PREVENT MOVEMENT.



- TYPICAL STEEL SECTION FITTINGS
- 4 - 6"x45° STEEL BENDS
  - 2 - 6" BELL-FLANGE ADAPTERS
  - 2 - 6" SLIP-ON FLANGES 150 #
  - 2 - 6" INSULATED JOINT KITS

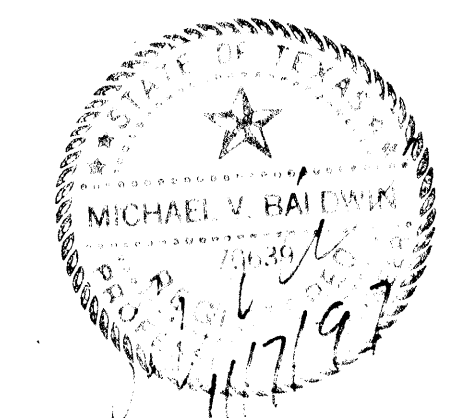
TYPICAL STEEL PIPE OFFSET  
SECTION FOR WATER MAINS  
(NOT TO SCALE)  
02611-02A



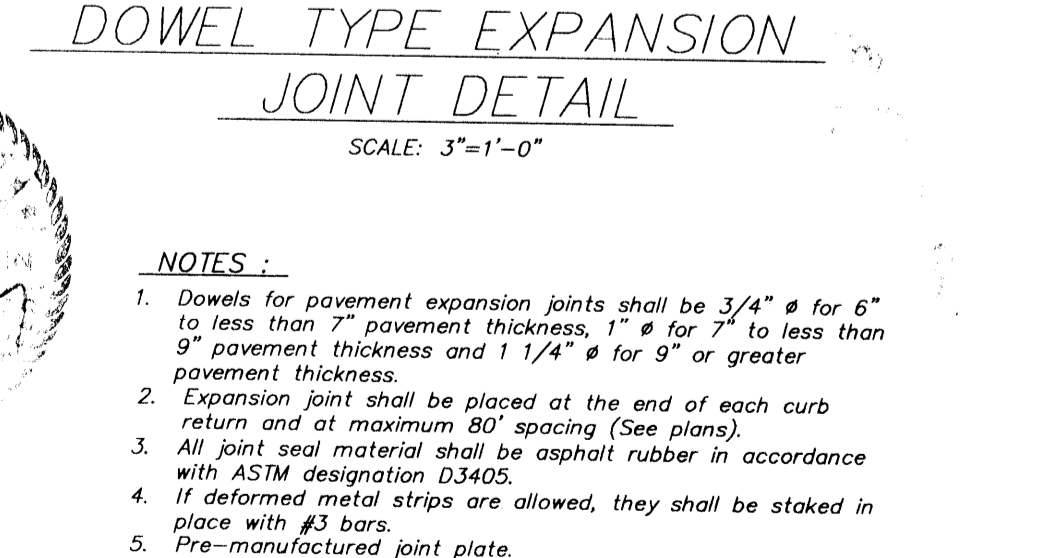
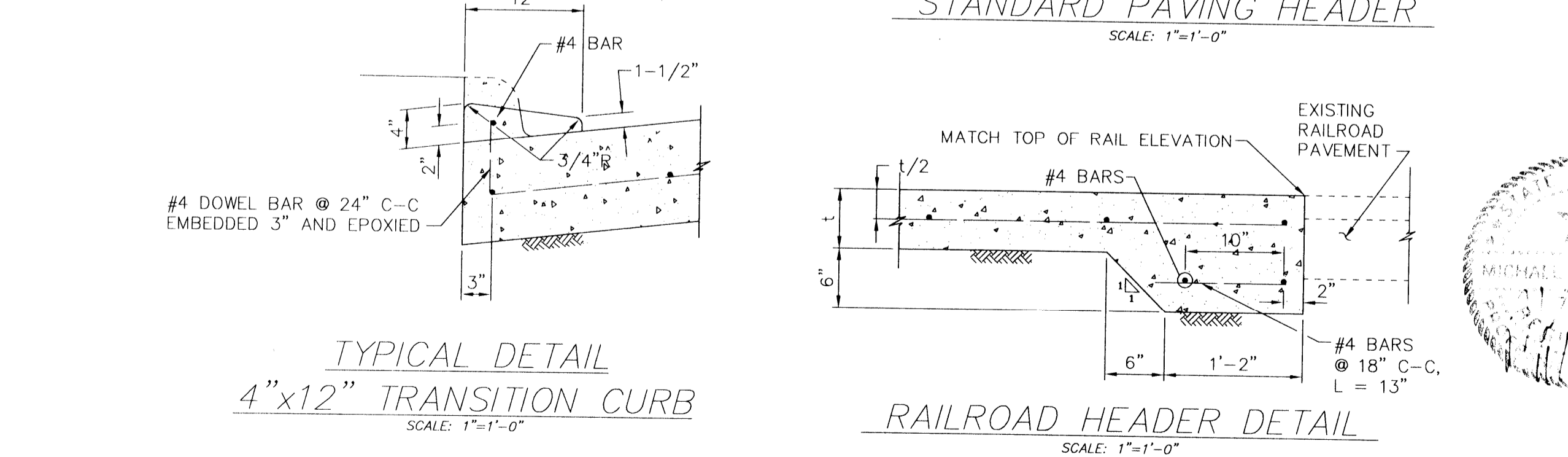
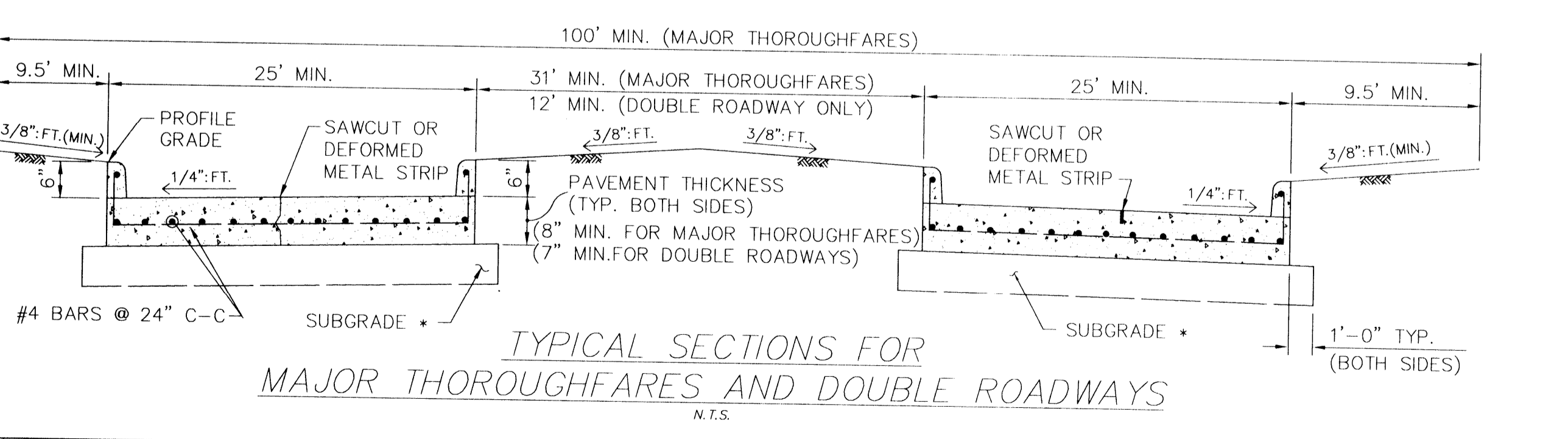
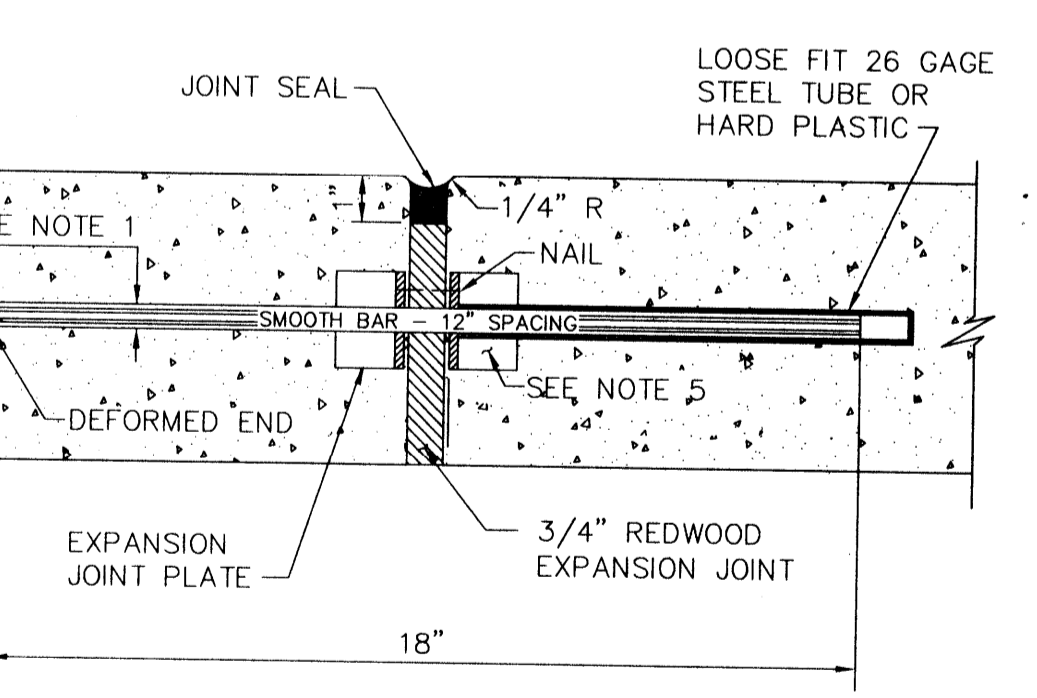
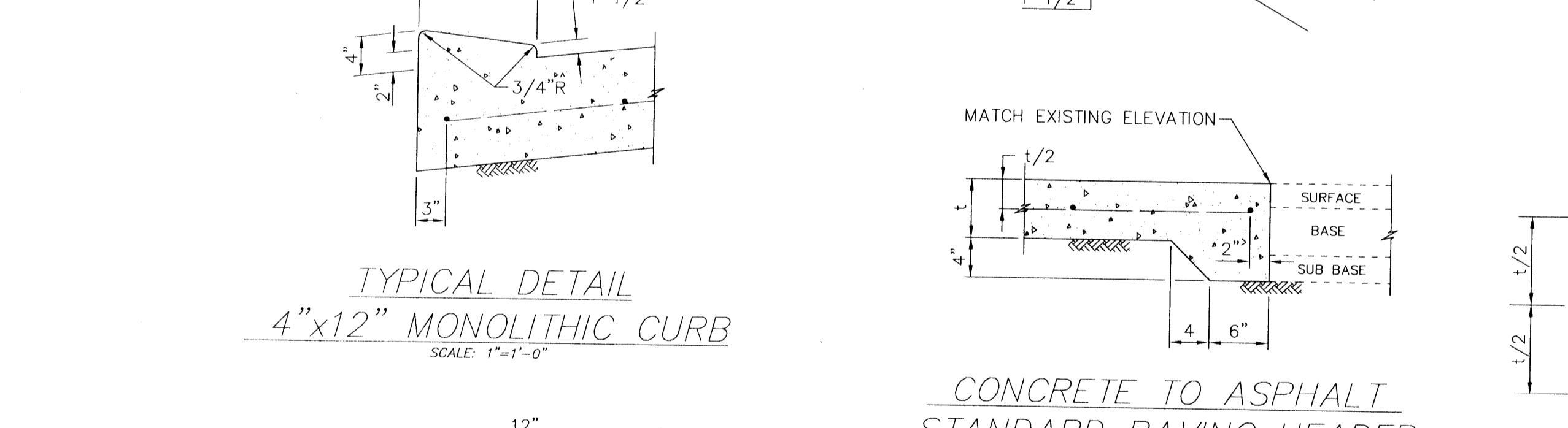
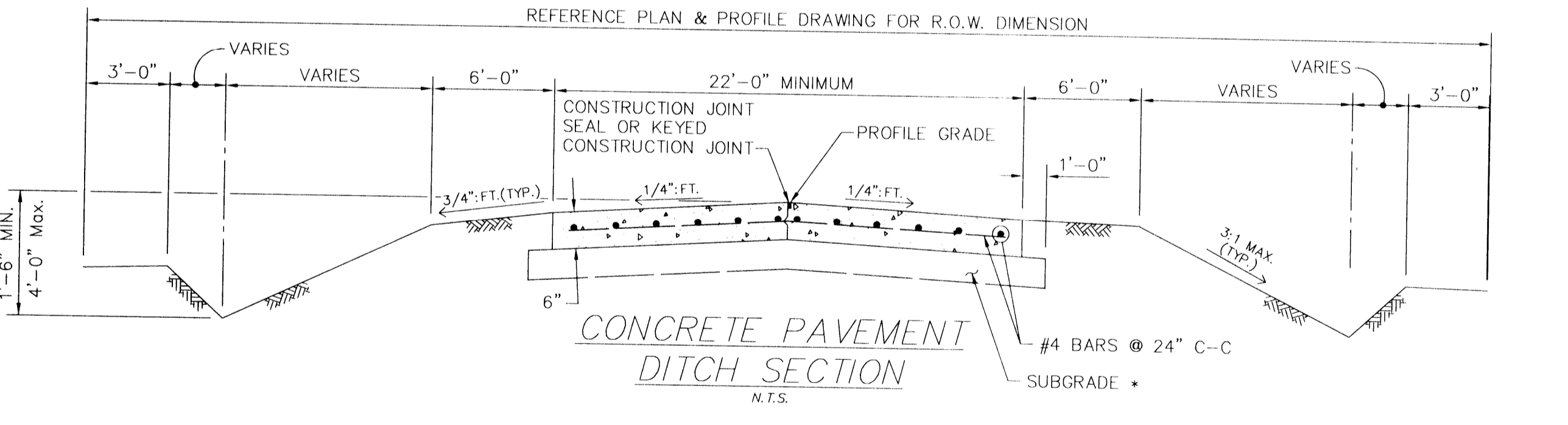
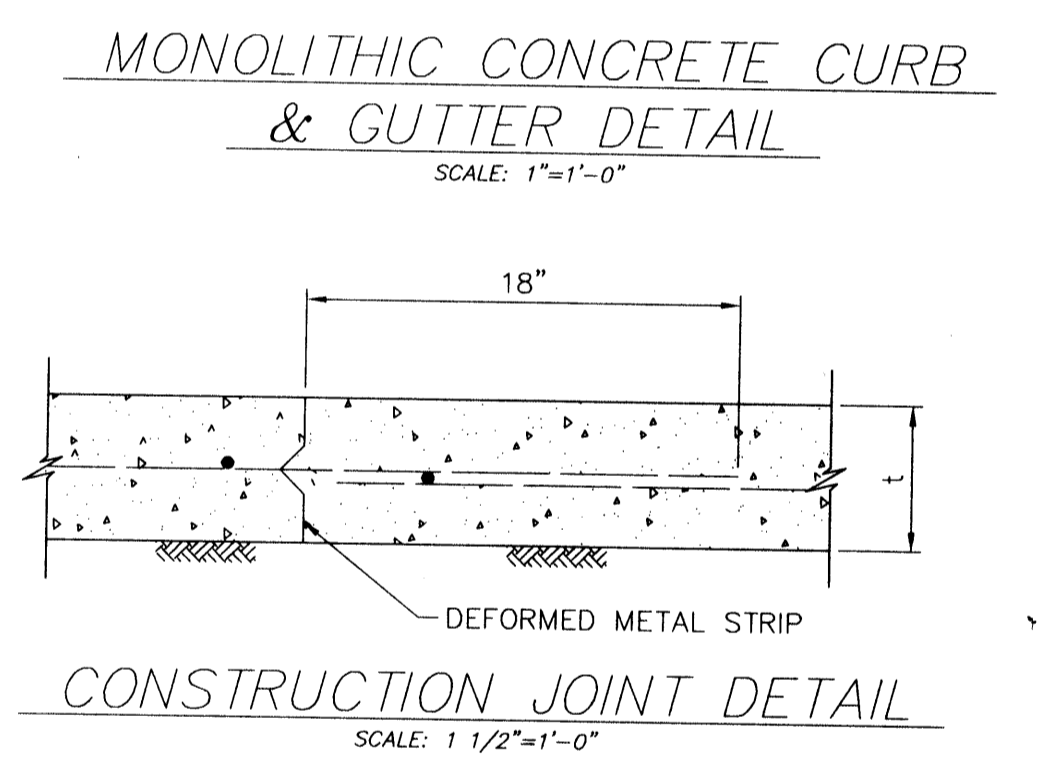
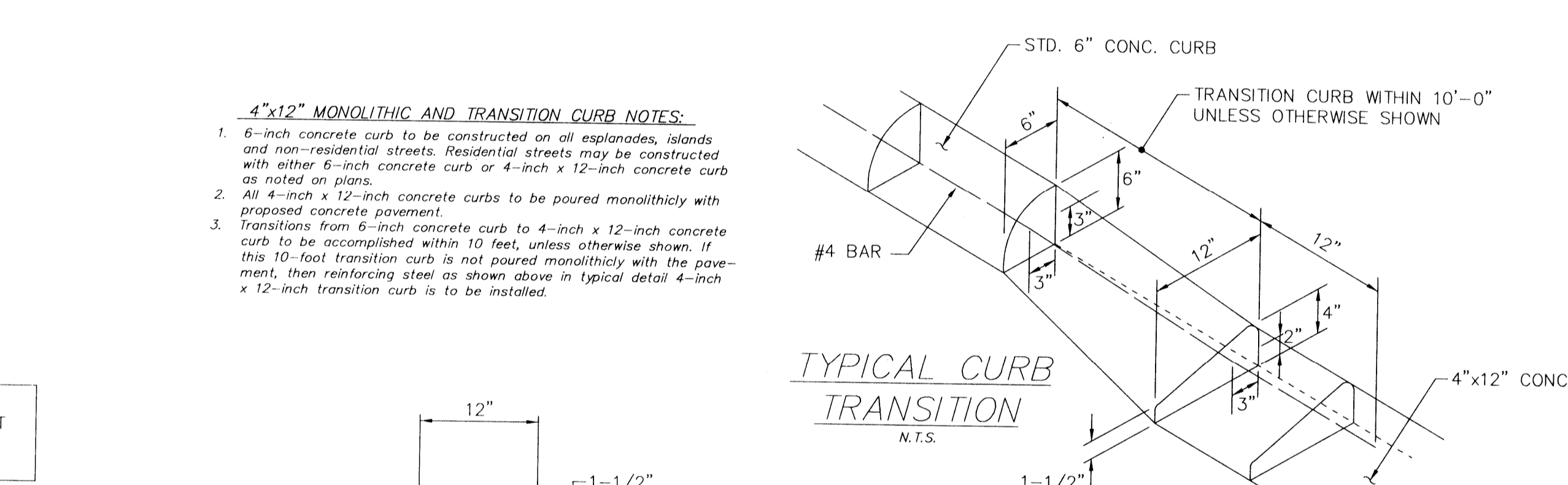
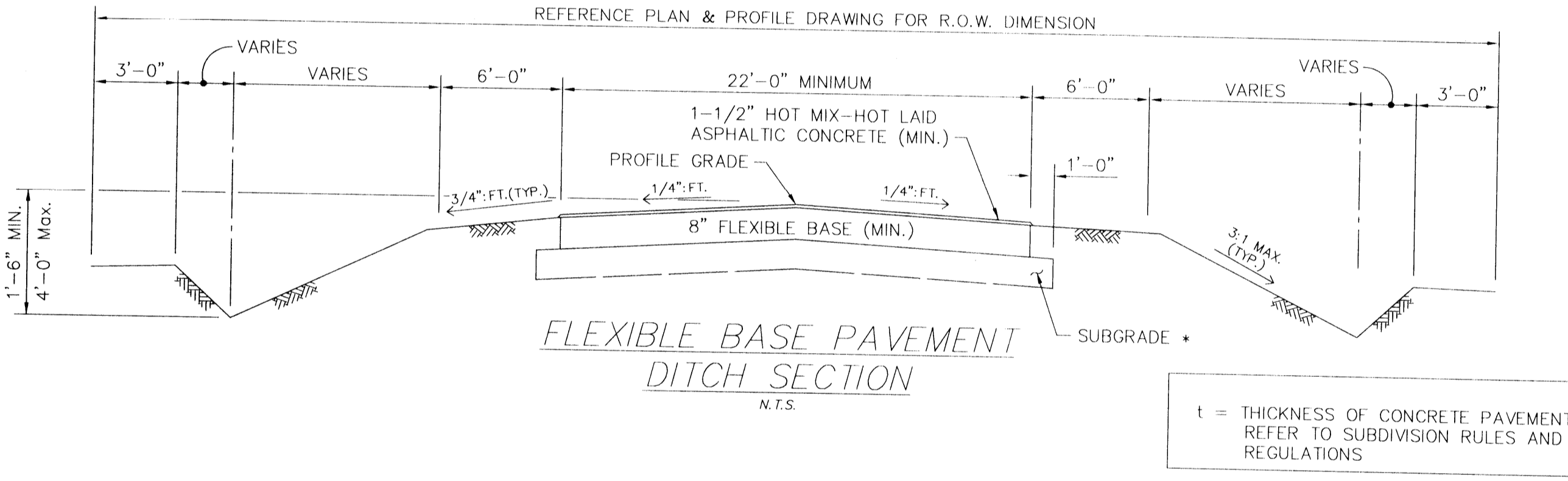
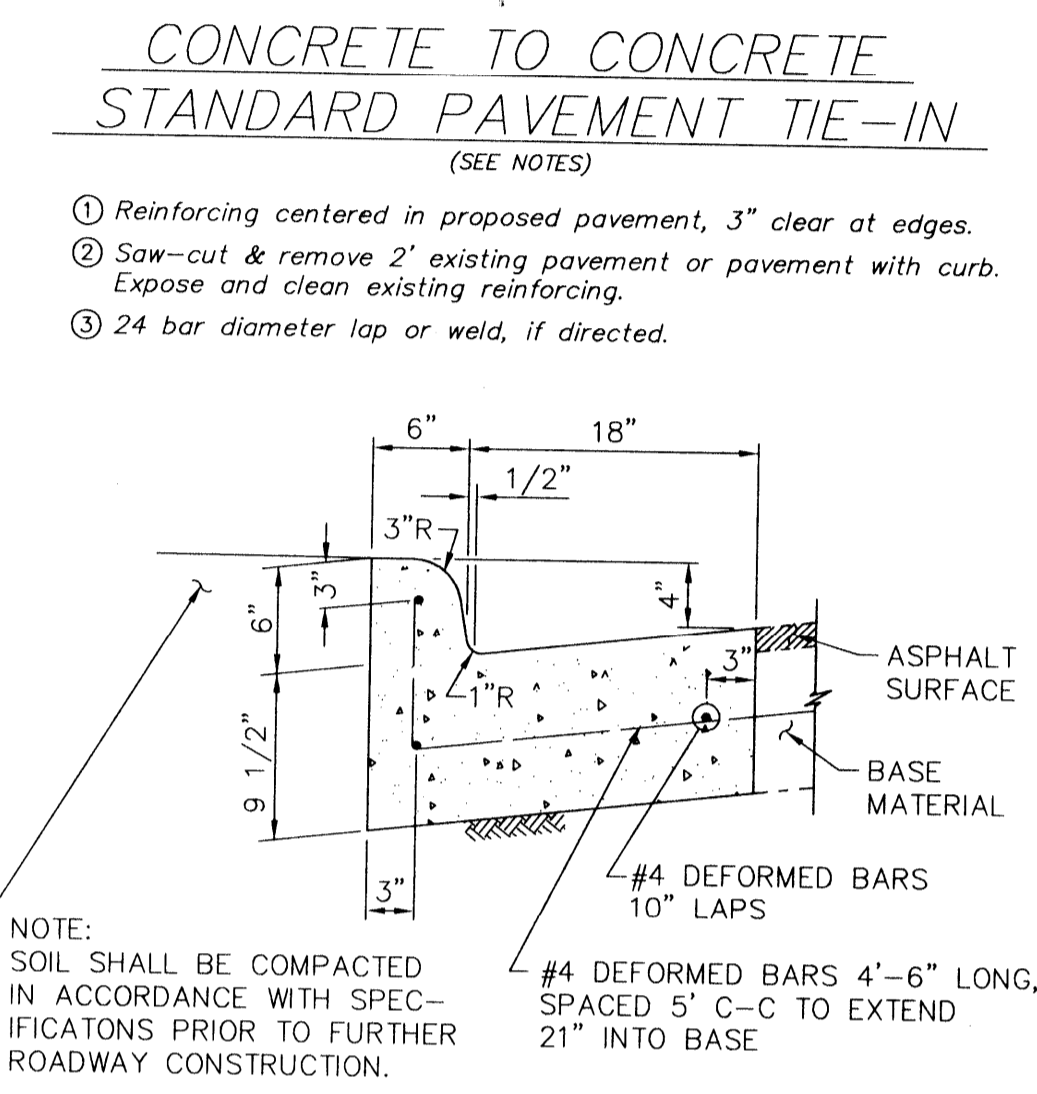
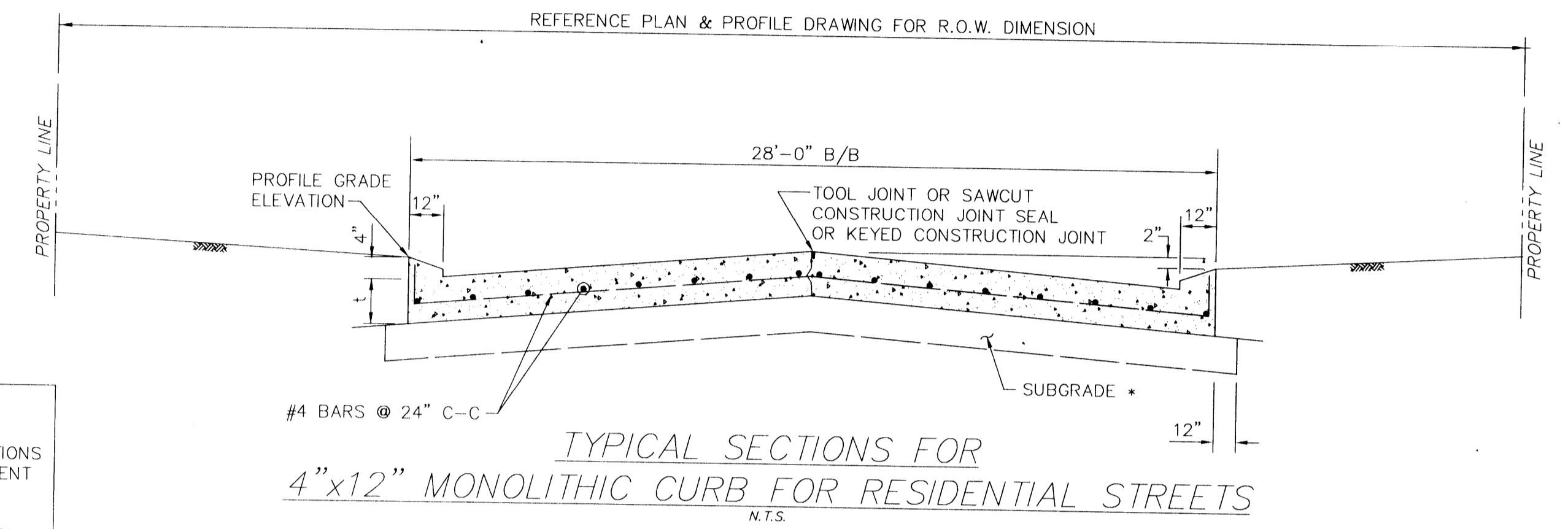
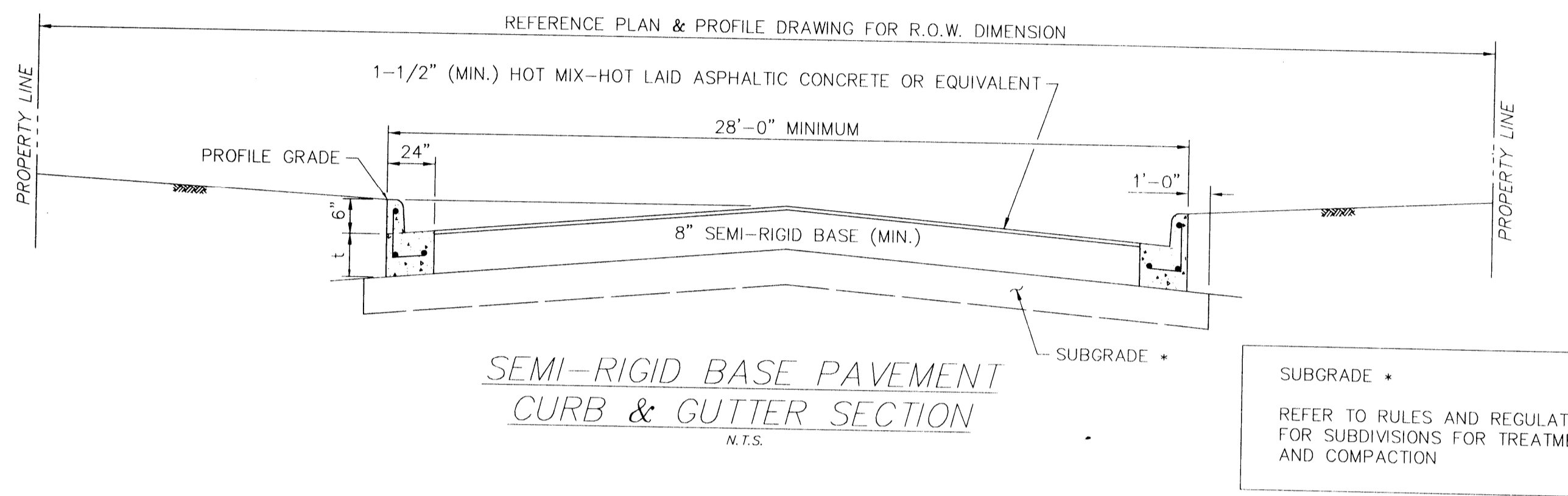
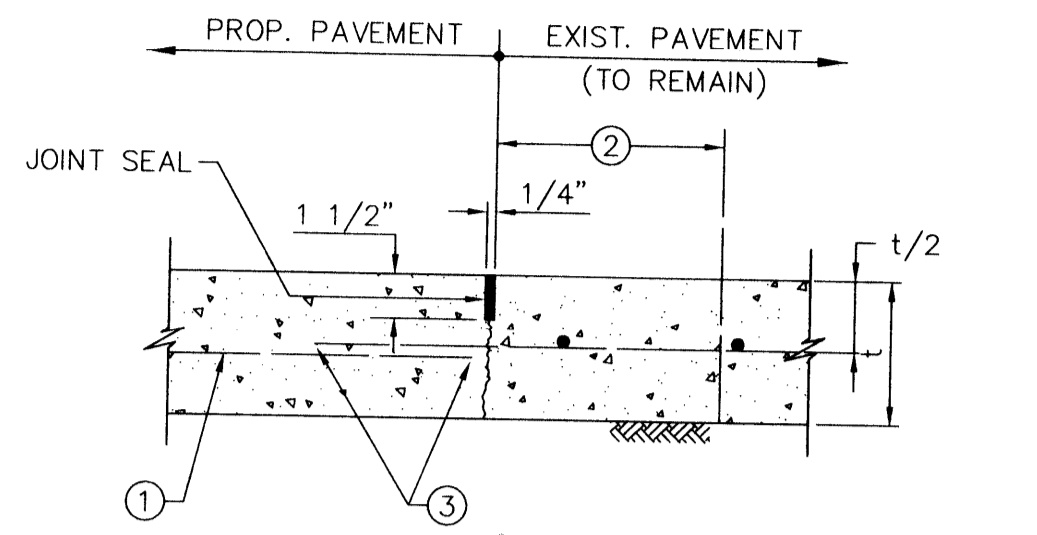
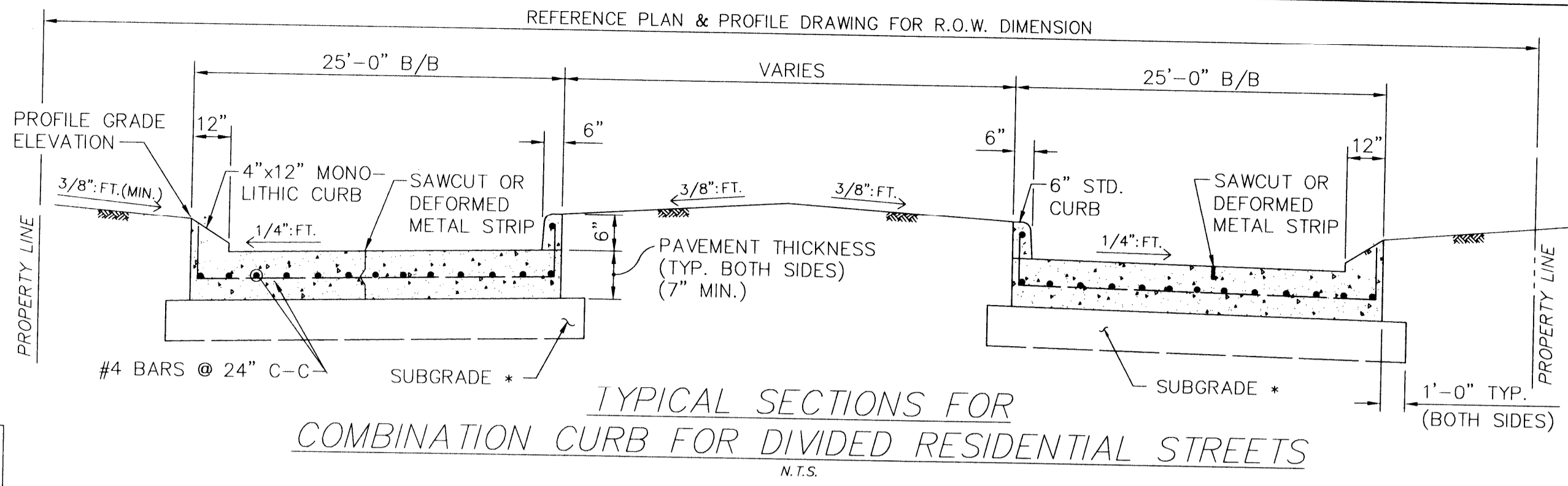
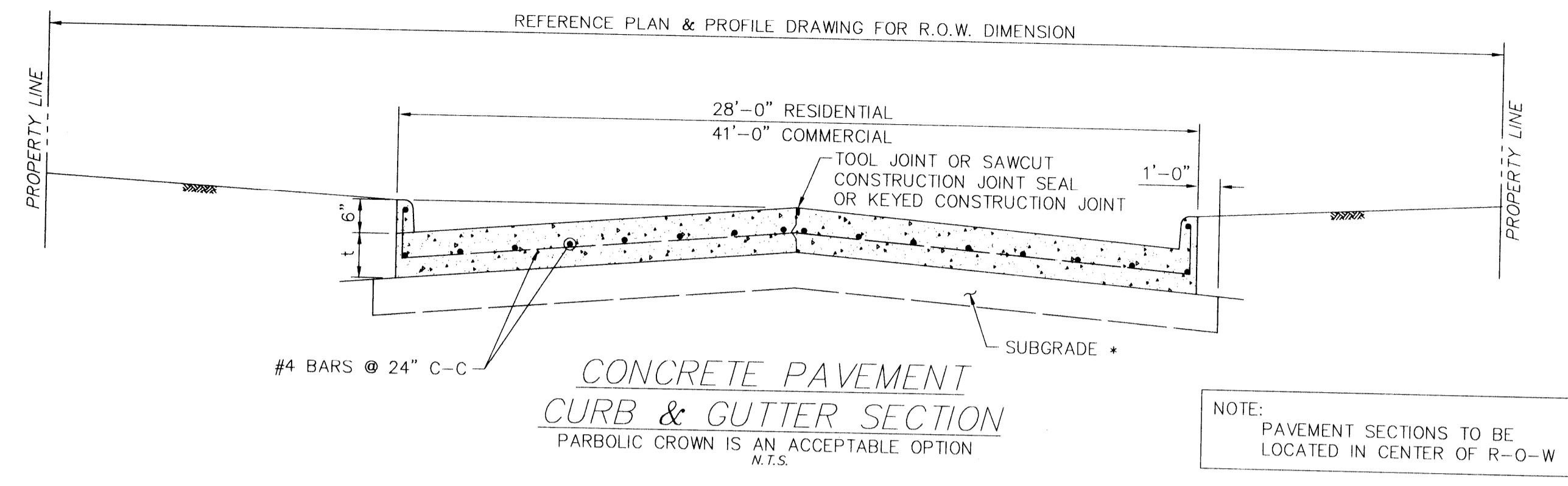
STANDARD  
FIRE HYDRANT DETAIL  
(NOT TO SCALE)  
02645-01B

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SECTION APPROVALS:	
<i>[Signature]</i> 12/9/97 WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>[Signature]</i> 1-9-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>[Signature]</i> 12/22/97 STORM SEWER ENGINEERING	CONSTRUCTION

OTHER DEPARTMENTS:	
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>[Signature]</i> CITY ENGINEER	1/15/98 DATE
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	1-16-98 DATE
SUBMITTED:	DESIGNED BY: IIM
SCALE: N/A	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 22 OF 27 SHEETS
SURVEY BY:	CITY DWG. NO.:
F B NO.:	

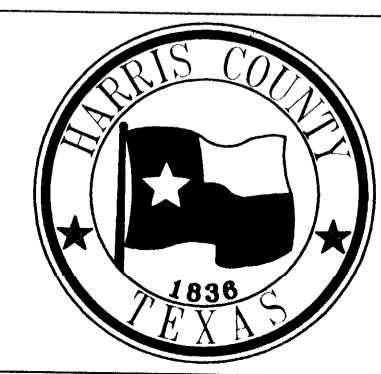


WATER DETAILS

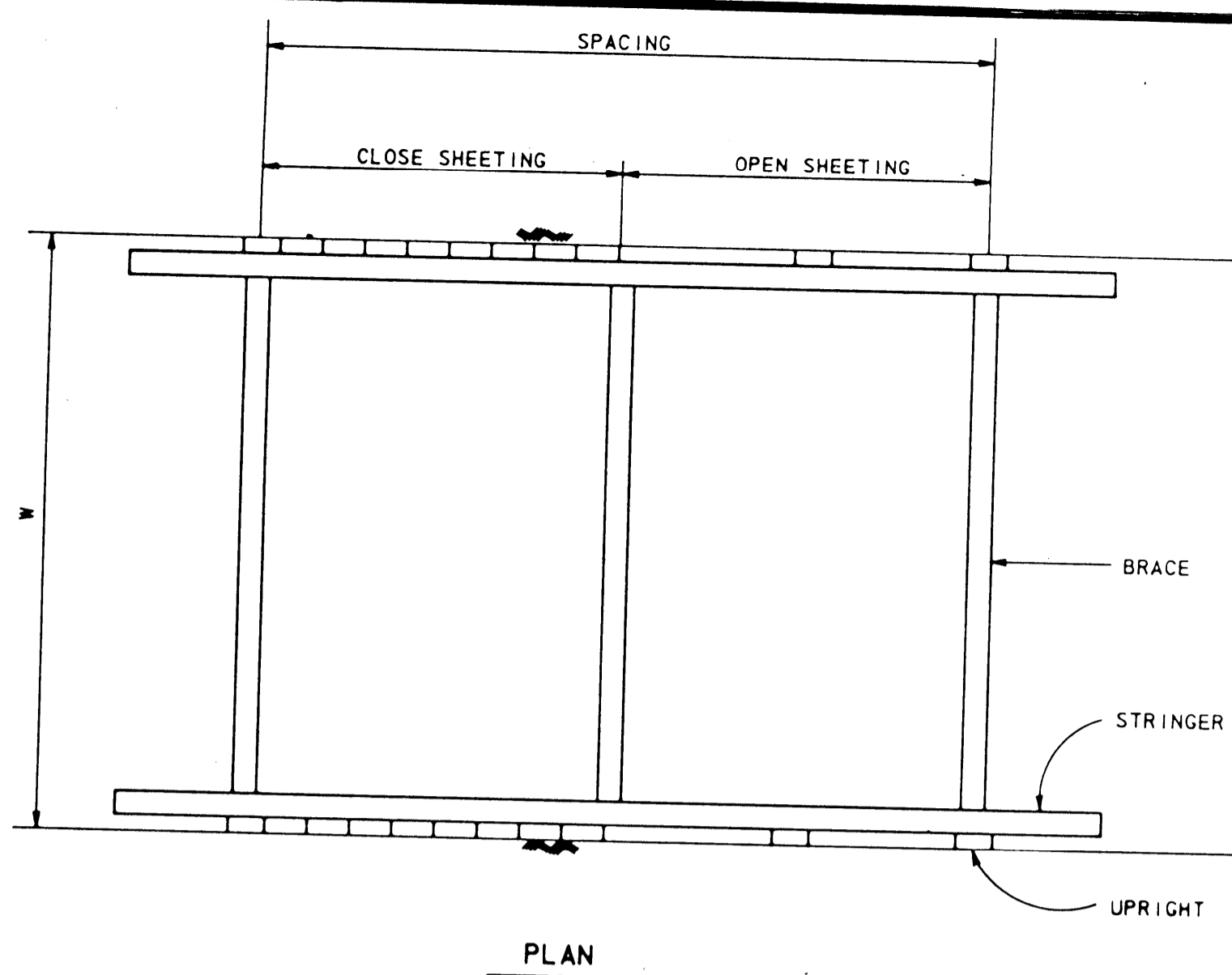


NO.	REVISIONS	DATE	NAME

# HARRIS COUNTY ENGINEERING DEPARTMENT



PROJECT TITLE:	SPRING CREEK OAKS, SECTION SEVEN
DRAWN BY:	L.M.J.
CITY:	SUBDIVISION STANDARD
SCALE:	PAVING 1
DATE:	AS NOTED
APPROVED BY:	



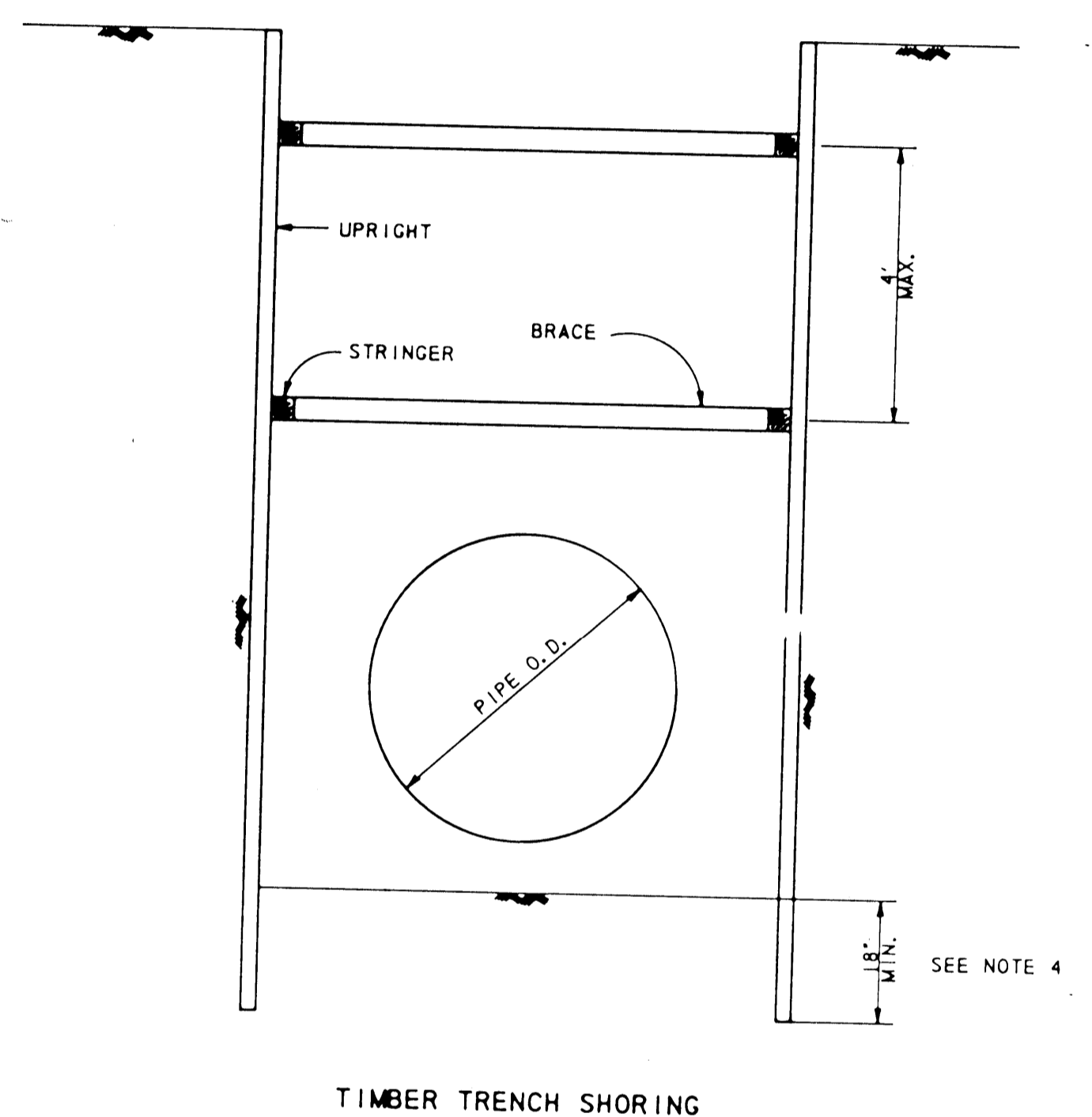
PLAN

DEPTH OF TRENCH	KIND OR CONDITION OF EARTH	TRENCH SHORING - MINIMUM REQUIREMENTS (●●●)										
		SIZE AND SPACING OF MEMBERS										
		UPRIGHTS		STRINGERS		CROSS BRACES <sup>1</sup>						
FEET	TYPE	MINIMUM DIMENSION	MAXIMUM SPACING	MINIMUM DIMENSION	MAXIMUM SPACING	WIDTH OF TRENCH				MAXIMUM SPACING		
		INCHES	FEET	INCHES	FEET	UP TO 3 FEET	3 TO 6 FEET	6 TO 9 FEET	9 TO 12 FEET	12 TO 15 FEET	VERTICAL	HORIZONTAL
5 TO 10	(A) HARD, COMPACT.....	3x4 OR 2x6	6			2x6	4x4	4x6	6x6	6x8	4	6
	(B) LIKELY TO CRACK.....	3x4 OR 2x6	3	4x6	4	2x6	4x4	4x6	6x6	6x8	4	6
	(C) SOFT, SANDY, OR FILLED.....	3x4 OR 2x6	CLOSE SHEETING	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	(D) HYDROSTATIC PRESSURE.....	3x4 OR 2x6	CLOSE SHEETING	6x8	4	4x4	4x6	6x6	6x8	8x8	4	6
10 TO 15	(A) HARD, COMPACT.....	3x4 OR 2x6	4	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	(B) LIKELY TO CRACK.....	3x4 OR 2x6	2	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	(C) SOFT, SANDY, OR FILLED.....	3x4 OR 2x6	CLOSE SHEETING	4x6	4	4x6	6x6	6x8	8x8	8x10	4	6
	(D) HYDROSTATIC PRESSURE.....	3x6	CLOSE SHEETING	8x10	4	4x6	6x6	6x8	8x8	8x10	4	6
15 TO 20	(E) ALL KINDS OR CONDITIONS.....	3x6	CLOSE SHEETING	4x12	4	4x12	6x8	8x8	8x10	10x10	4	6
OVER 20	(E) ALL KINDS OR CONDITIONS.....	3x6	CLOSE SHEETING	6x8	4	4x12	8x8	8x10	10x10	10x12	4	6

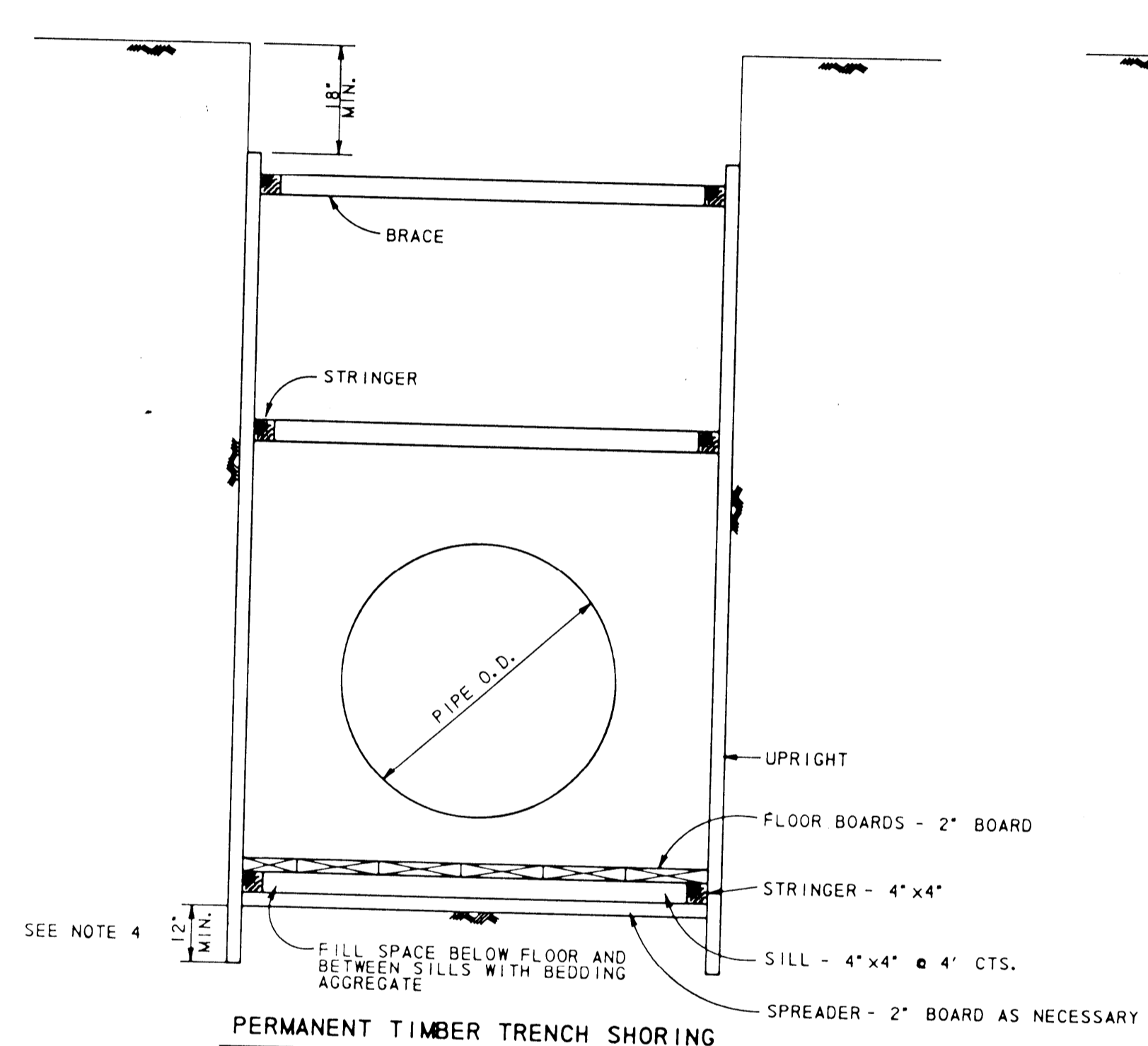
<sup>1</sup> TRENCH JACKS MAY BE USED IN LIEU OF, OR IN COMBINATION WITH, CROSS BRACES. SHORING IS NOT REQUIRED IN SOLID ROCK, HARD SHALE, OR HARD SLATE. WHERE DESIRABLE, STEEL SHEET PILING AND BRACING OF EQUAL STRENGTH MAY BE SUBSTITUTED FOR WOOD.  
 (●) DESIGNATION FOR PROPOSAL (BID) PURPOSES  
 (●●) FROM OSHA SAFETY AND HEALTH REGULATIONS PART 1926, SUBPART P.  
 2. SIZE OF TIMBER MEMBERS ARE ROUGH CUT DIMENSIONS (FULL SIZE)

GENERAL NOTES

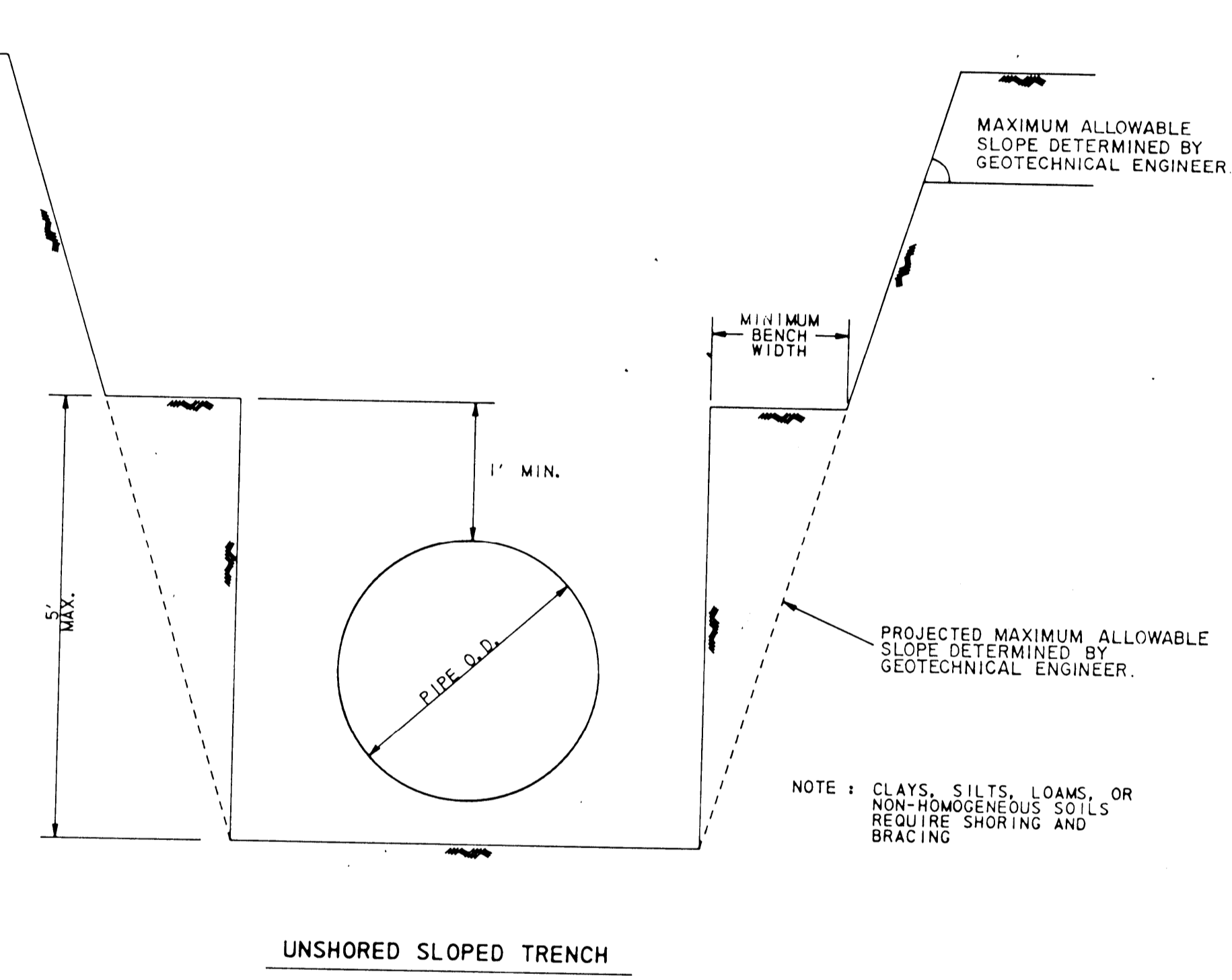
- TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATIONS PART 1926, SUBPART P.
- THE CONTRACTOR MAY ELECT TO USE AN ALTERNATE SYSTEM TO THE TIMBER TRENCH SHORING SHOWN IN THE TABLE. THE ALTERNATE SYSTEM, BE IT A TRENCH BOX, STEEL SHEET PILING, TRENCH JACKS OR A COMBINATION OF THE ABOVE, MUST BE CERTIFIED BY THE CONTRACTOR'S REGISTERED PROFESSIONAL ENGINEER THAT IT PROVIDES EQUAL OR GREATER PROTECTION THAN THE TIMBER TRENCH SHORING SHOWN ON THIS DETAIL SHEET.
- CONTRACTOR SHALL PERFORM DAILY TRENCH SAFETY SYSTEM INSPECTIONS TO INSURE THAT THE SYSTEM MEETS OSHA REQUIREMENTS AND IS APPROPRIATE FOR SPECIFIC SITE CONDITIONS OF THE OPEN TRENCH. INSPECTIONS ARE REQUIRED AFTER RAINSTORMS OR ANY CHANGE IN CONDITIONS THAT MAY INCREASE THE POSSIBILITY OF A CAVE-IN OR SLIDE.
- IN THE EVENT THAT TRENCH UPRIGHTS CAN NOT BE PLACED BELOW TRENCH BOTTOM AS SHOWN ON DETAIL, CONTRACTOR MUST PROVIDE ENGINEER WITH PLANS THAT DEMONSTRATE THAT THE UPRIGHTS WILL BE BRACED AND MAINTAINED IN A VERTICAL POSITION.
- WHERE THE TRENCH SAFETY SYSTEM CROSSES A UTILITY, THE UTILITY LINE MUST BE ADEQUATELY SUPPORTED TO PREVENT ANY DAMAGE. IN ADDITION, IN TRENCHES WITH CLOSED SHEETING, THE UPRIGHTS MUST SURROUND THE UTILITY. OPEN TRENCH SHEETING SPACING MUST BE ADJUSTED AS TO NOT EXCEED THE MAXIMUM ALLOWED SPACING. (NO SEPARATE PAY)
- TRENCH SHALL BE DRAINED AS REQUIRED SO WORK MAY BE ACCOMPLISHED SAFELY AND EFFICIENTLY. IF NECESSARY, INSTALL Dewatering SYSTEM TO PROVIDE A DRY TRENCH BOTTOM. DELIVER DISCHARGE FROM SYSTEM TO NATURAL DRAINAGE CHANNEL OR TO STORM DRAINS.
- IN TRENCHES FOUR FOOT DEEP OR MORE, CONTRACTOR TO PROVIDE ADEQUATE MEANS OF TRENCH EXIT SUCH AS LADDER OR STEPS AND THEY MUST BE LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.
- MEASURE "PERMANENT TIMBER TRENCH SHORING" BY LINEAR FOOT OF TRENCH PROTECTED. PAYMENT IS BY STATED DEPTH OF TRENCH AND EARTH CONDITIONS NOTED IN THE PROPOSAL (BID).
- MEASURE "TRENCH SAFETY SYSTEM" BY LINEAR FOOT OF TRENCH PROTECTED. PAYMENT IS BY STATED DEPTH OF TRENCH AND EARTH CONDITIONS NOTED IN THE PROPOSAL (BID).
- STRINGERS AND BRACES TO BE SECURELY FASTENED.
- ANY PART OF "TRENCH SAFETY SYSTEM" LEFT IN PLACE TO BE REMOVED A MINIMUM OF 18 INCHES BELOW FINISHED GRADE OR NATURAL GROUND, WHICHEVER IS LOWER.
- TRENCH SHORING SYSTEM HAS BEEN DESIGNED WITH NO ALLOWANCE FOR LIVE LOAD SURCHARGE. IF LIVE LOAD SURCHARGE IS ANTICIPATED IT SHALL NOT BE PLACED WITHIN 2 FEET OF EDGE OF TRENCH AND CONTRACTOR'S REGISTERED PROFESSIONAL ENGINEER SHALL DESIGN TRENCH SHORING SYSTEM TO ACCOMMODATE THE ANTICIPATED LIVE LOAD SURCHARGE.
- TIMBER SIZES ARE BASED ON STRESSES OF 1650 PSI FOR EXTREME FIBER IN BENDING AND 1450 PSI FOR COMPRESSION PARALLEL WITH GRAIN.
- EARTH TRENCH CONDITIONS FOR THIS PROJECT ARE ANTICIPATED TO BE AS SHOWN IN THE GEOTECHNICAL REPORT.



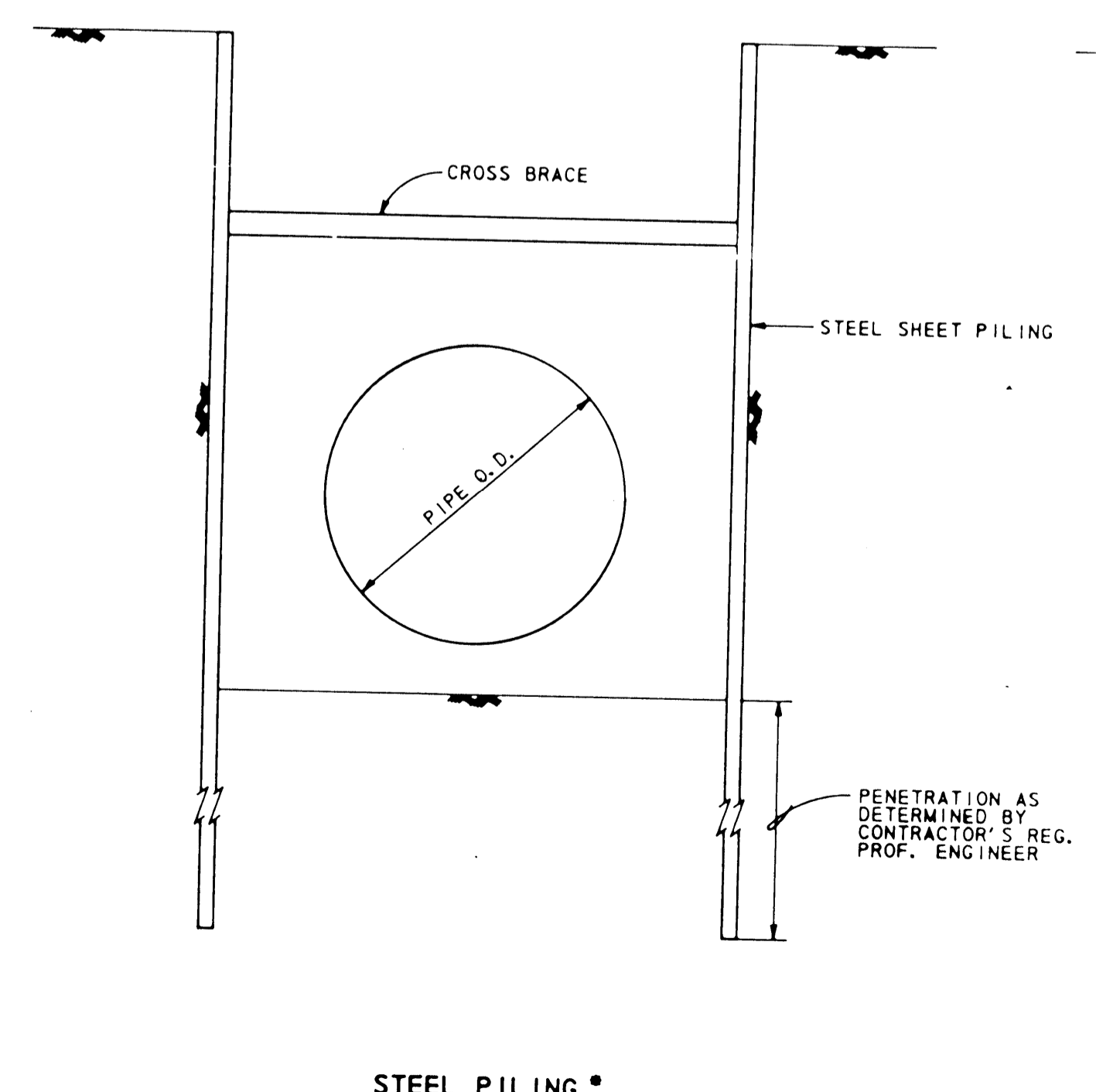
TIMBER TRENCH SHORING



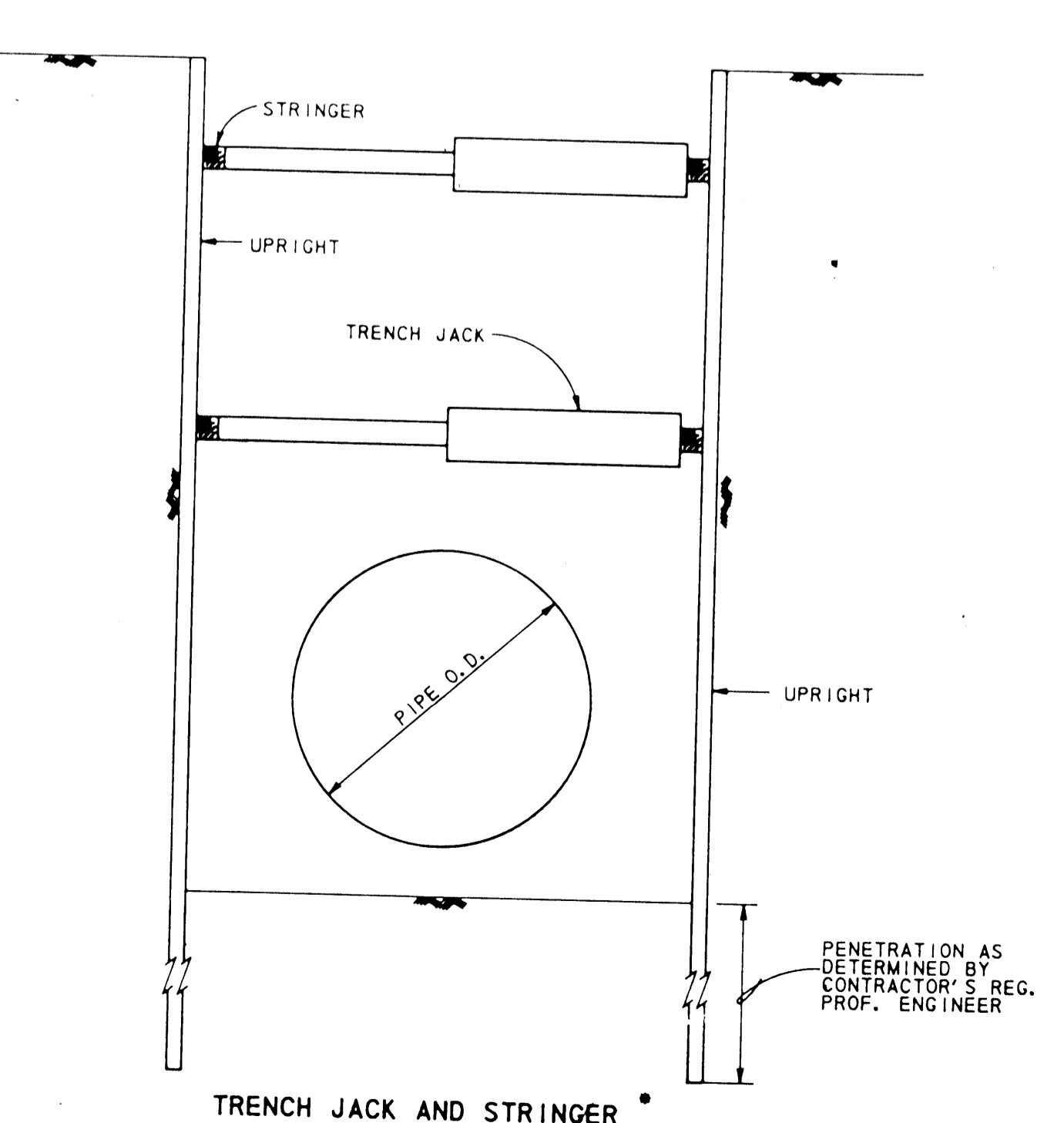
PERMANENT TIMBER TRENCH SHORING



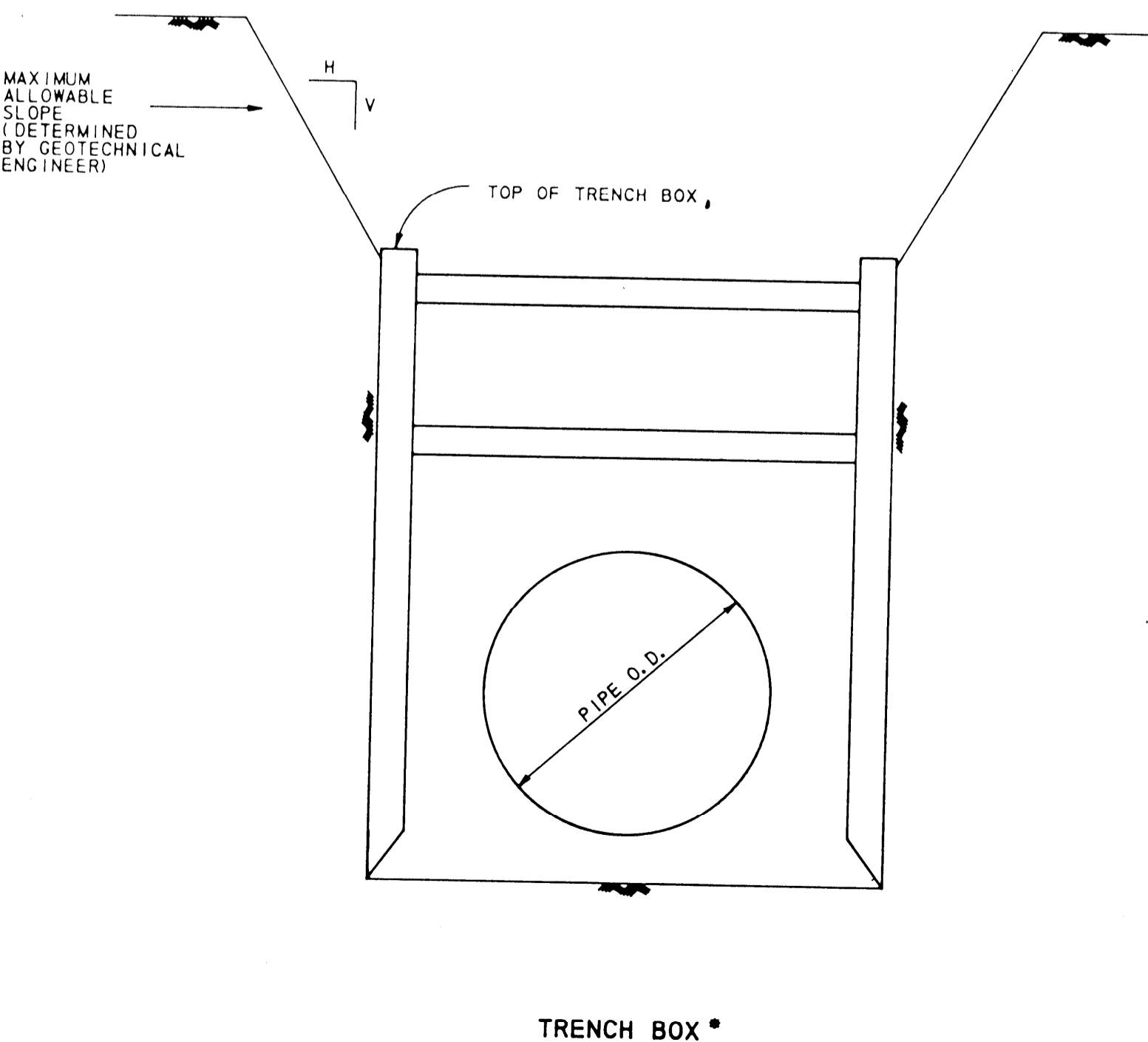
UNSHORED SLOPED TRENCH



STEEL PILING



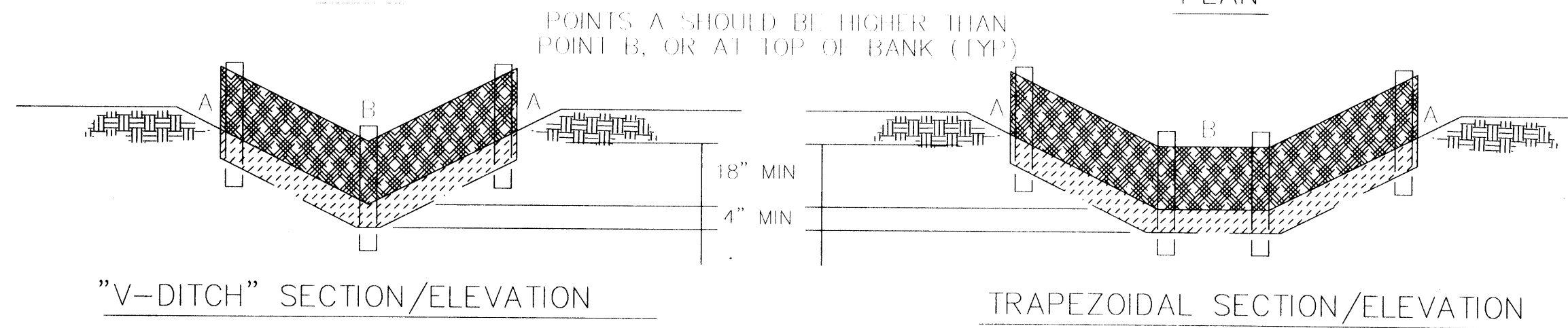
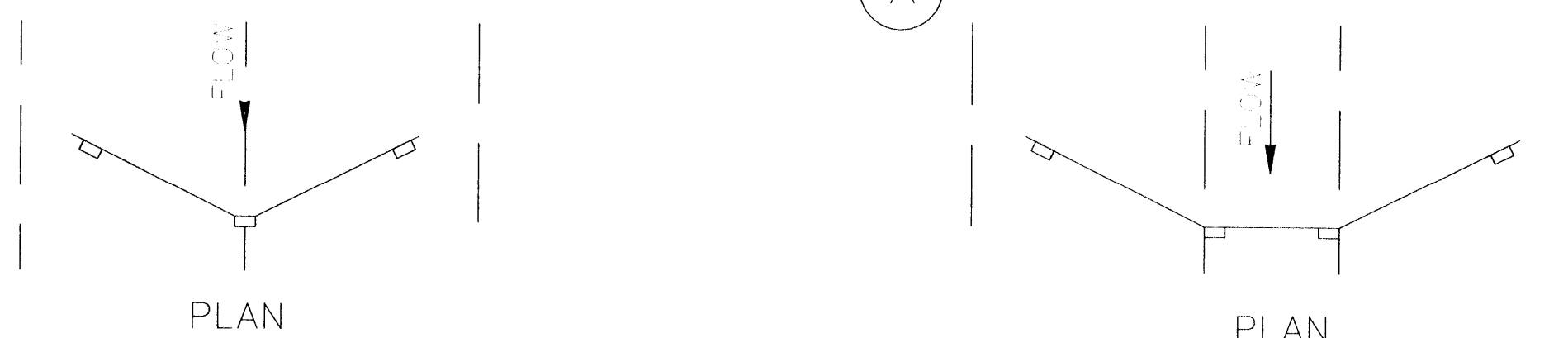
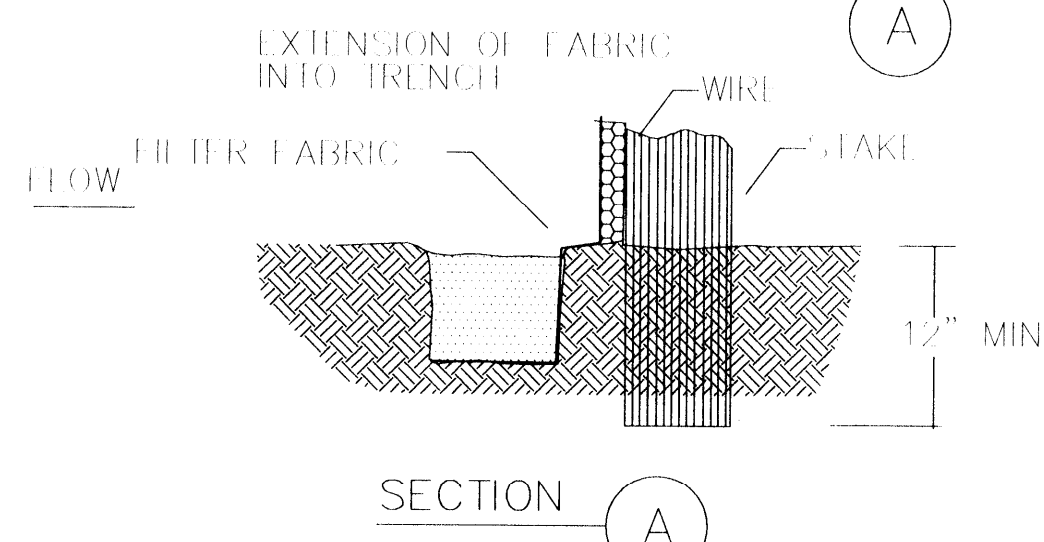
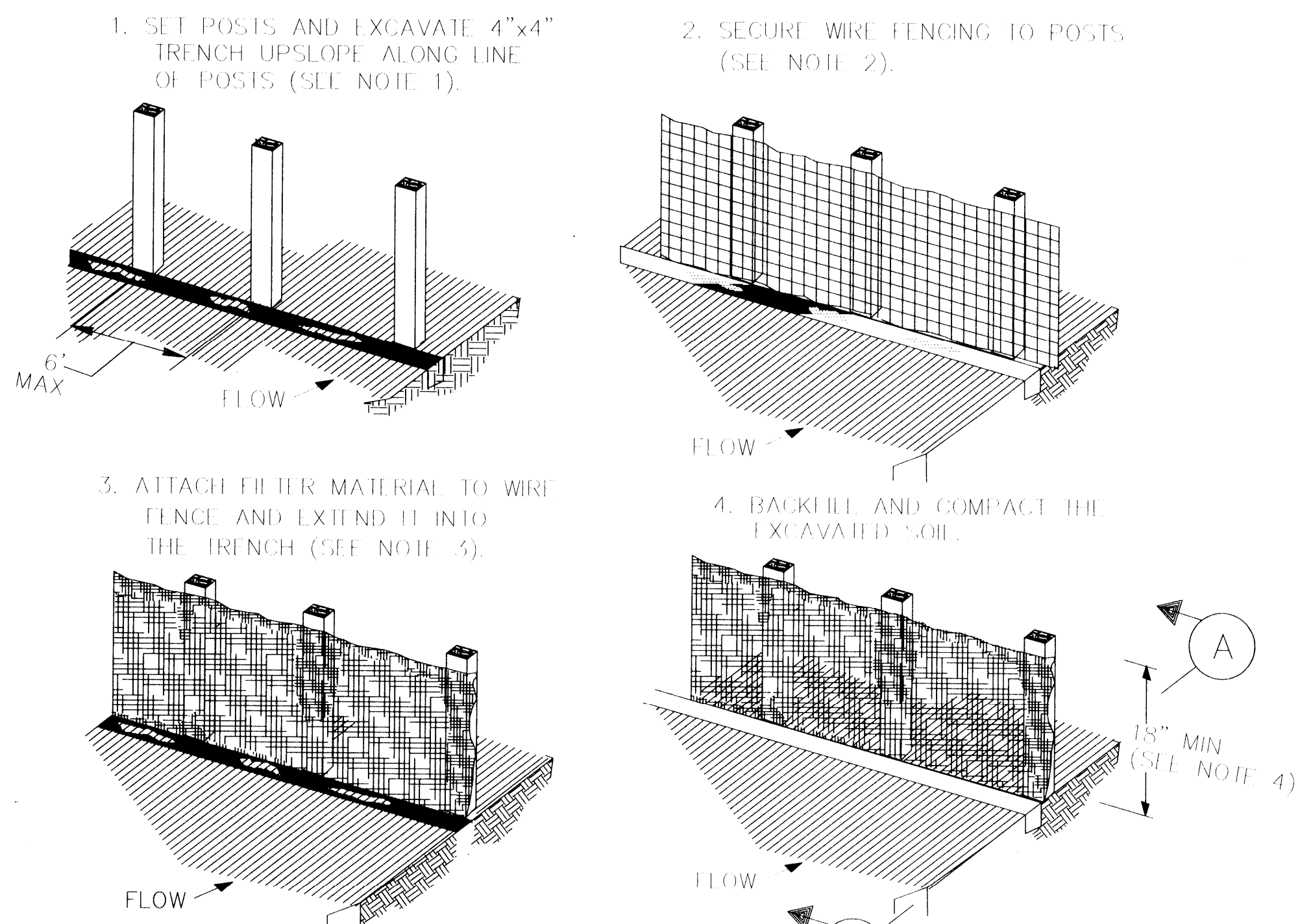
TRENCH JACK AND STRINGER



TRENCH BOX

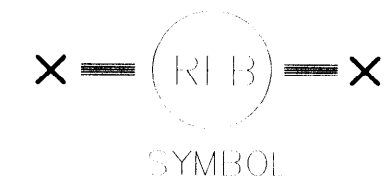
ALTERNATE SYSTEM

Rev.	Date	Description	App.
<b>TRENCH SAFETY SYSTEM</b>			
Design By:	Job No.:	Sheet 24	
Drawn By:	Scale: 1" = 50'	of 27	
Checked By:	Date:		
PROVIDENT ENGINEERS, INC. 11241 RICHMOND, E107 77082 Houston, Texas			

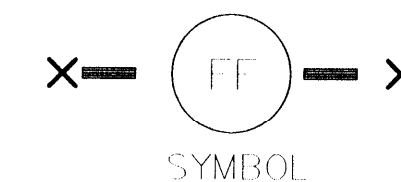
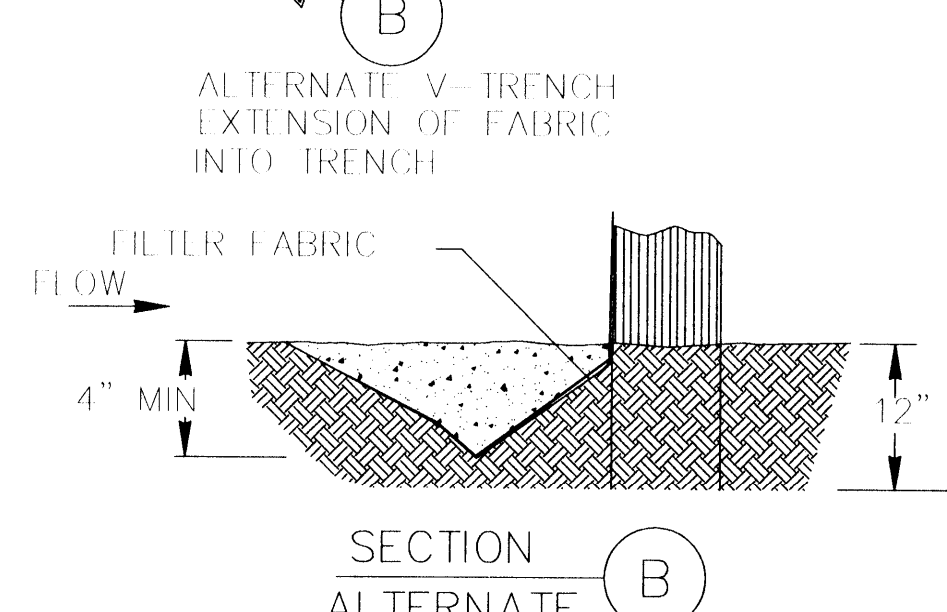
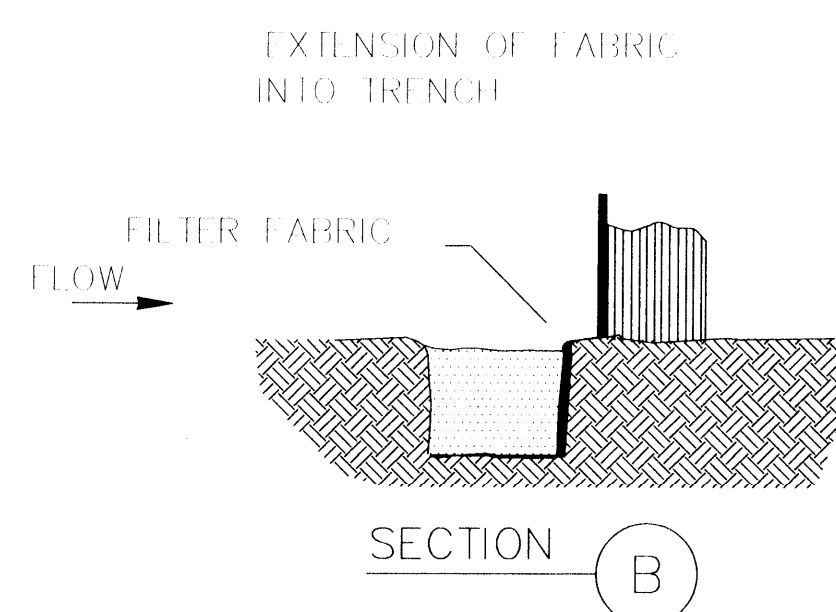
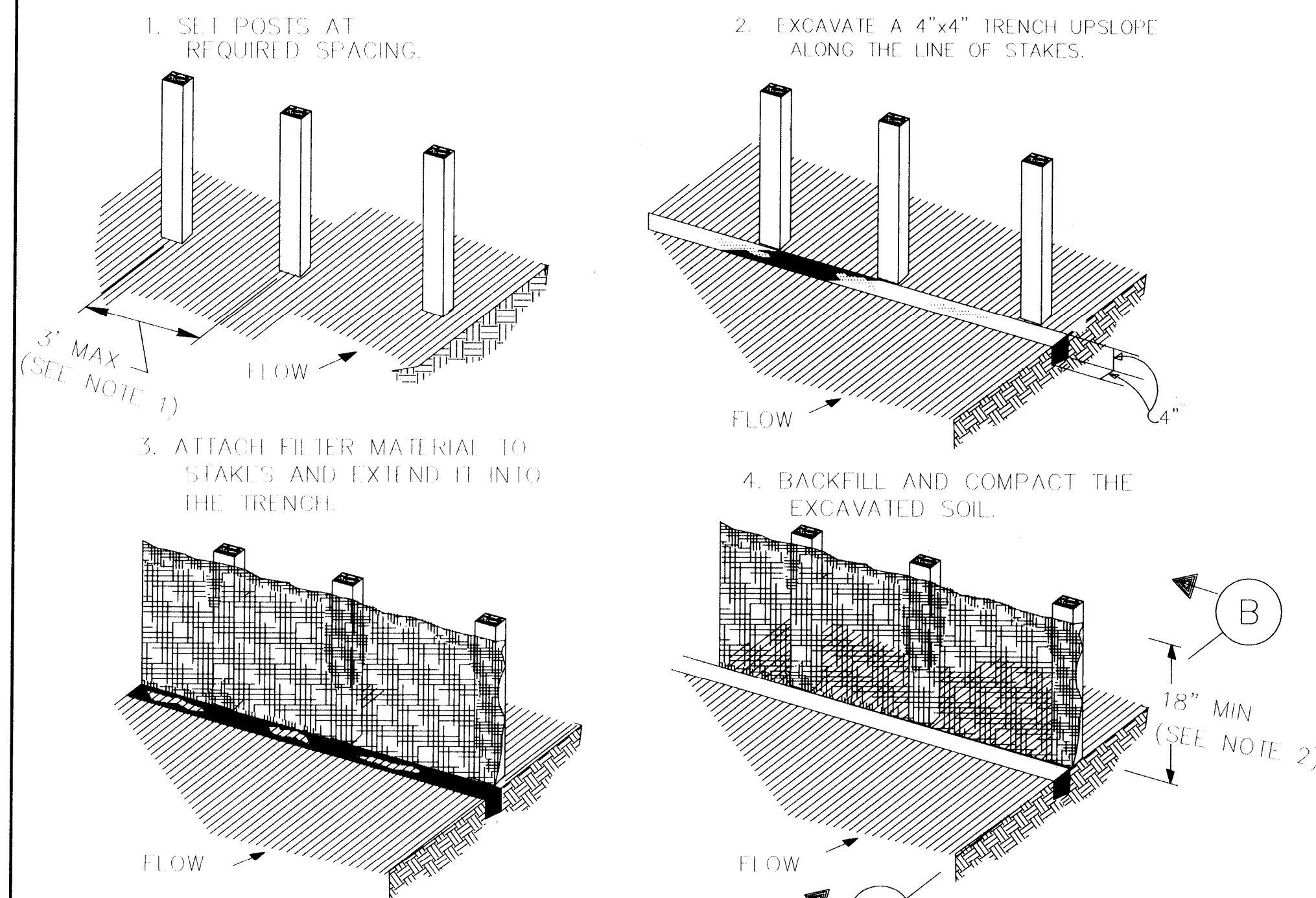


**CONSTRUCTION NOTES:**

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH THE SPACING EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE SECTION 01568 - REINFORCED FILTER FABRIC BARRIER



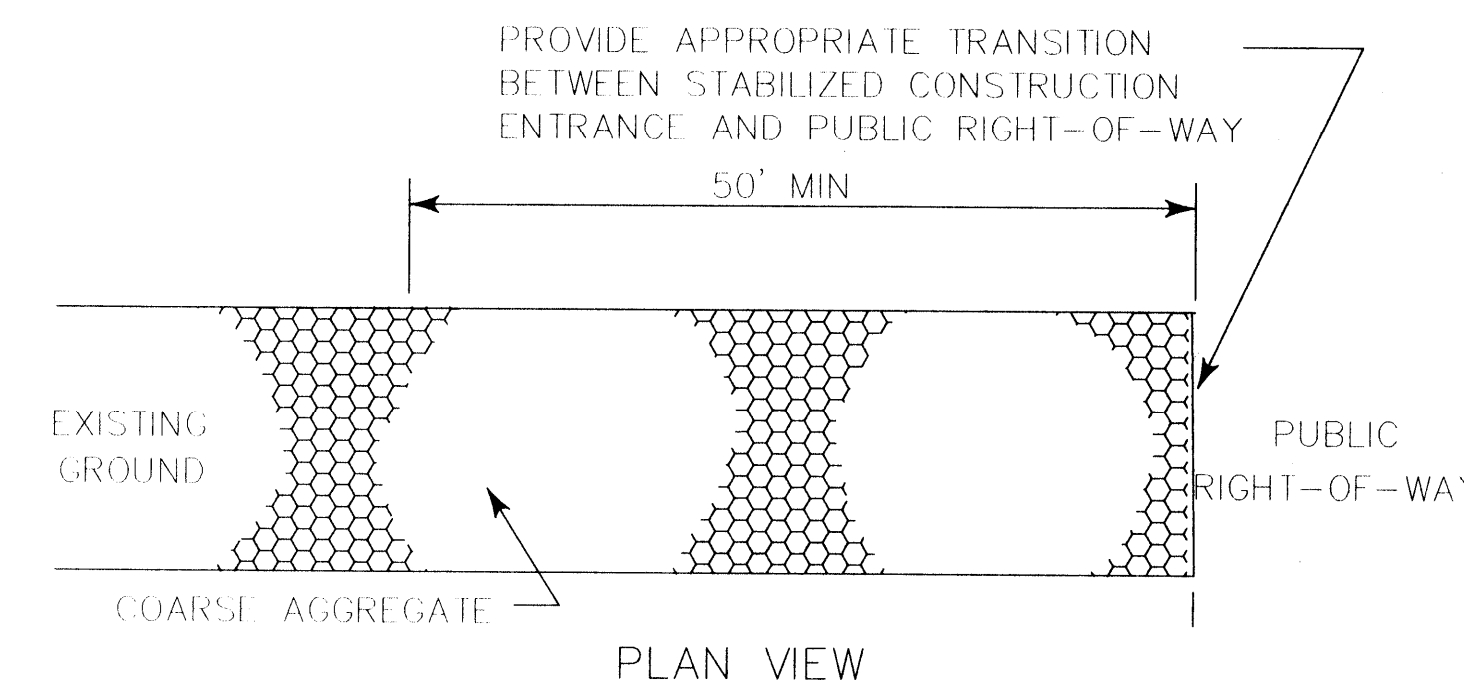
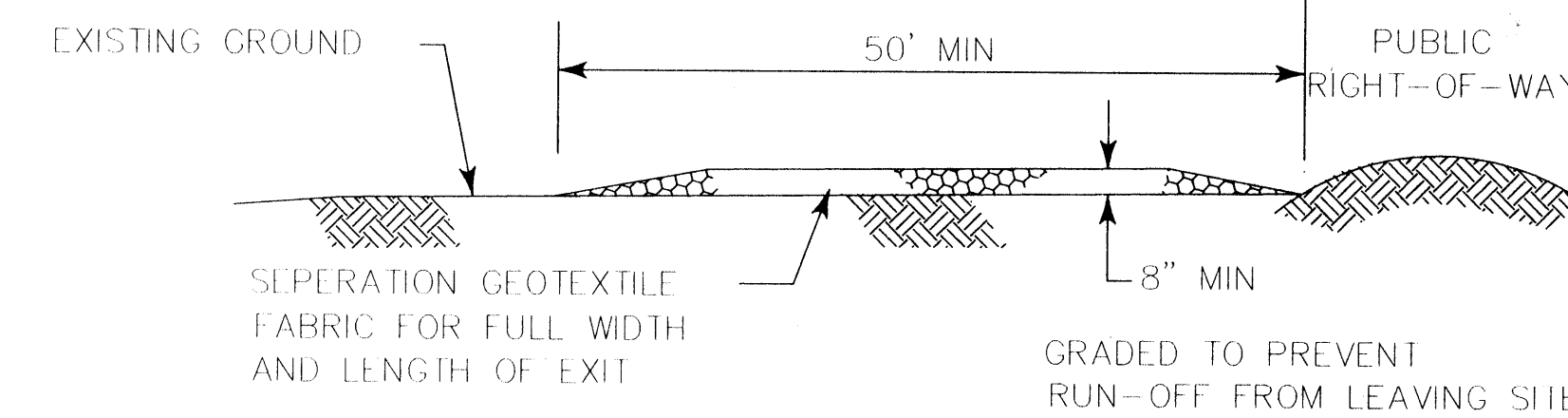
REINFORCED FILTER FABRIC BARRIER



**CONSTRUCTION NOTES:**

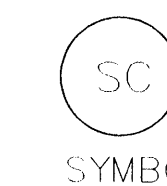
1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE SECTION 01567 - FILTER FABRIC FENCE.

FILTER FABRIC FENCE

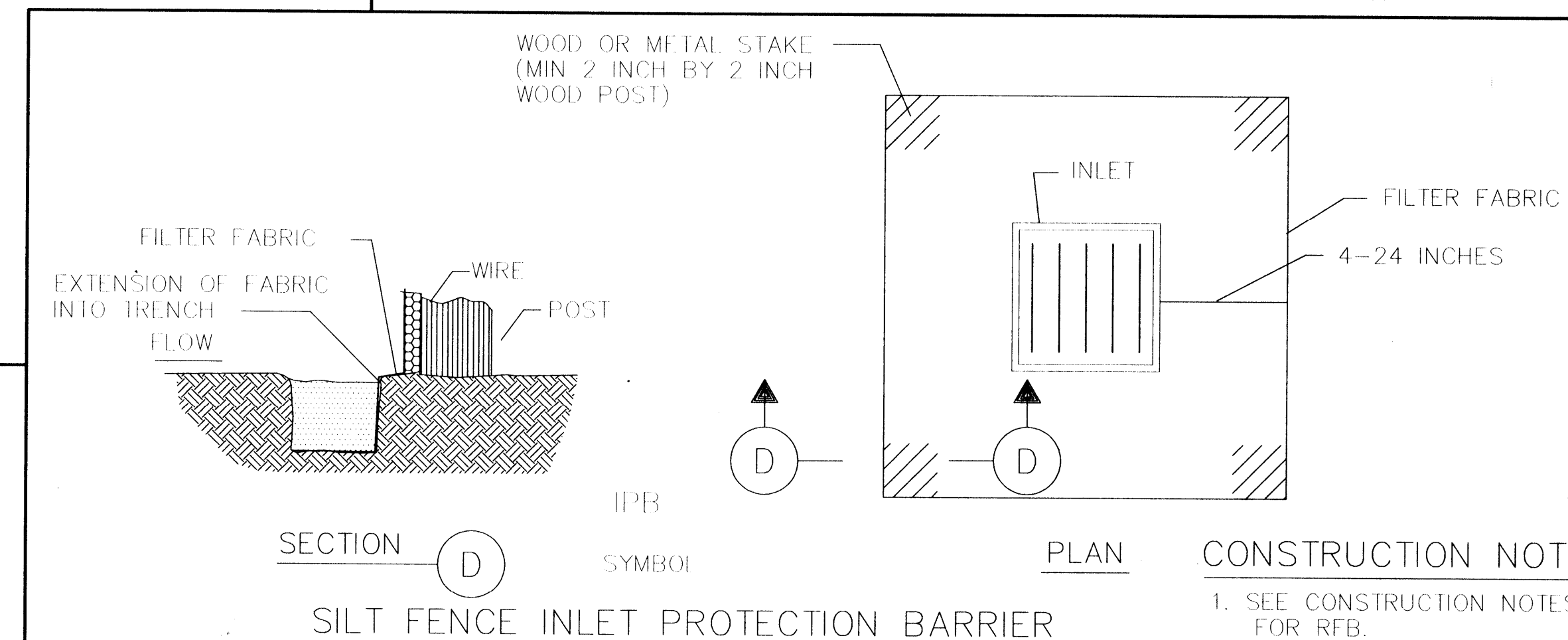


**CONSTRUCTION NOTES:**

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMMODATE A TRUCK WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
6. SEE SECTION 01569 - STABILIZED CONSTRUCTION EXIT.
7. STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.



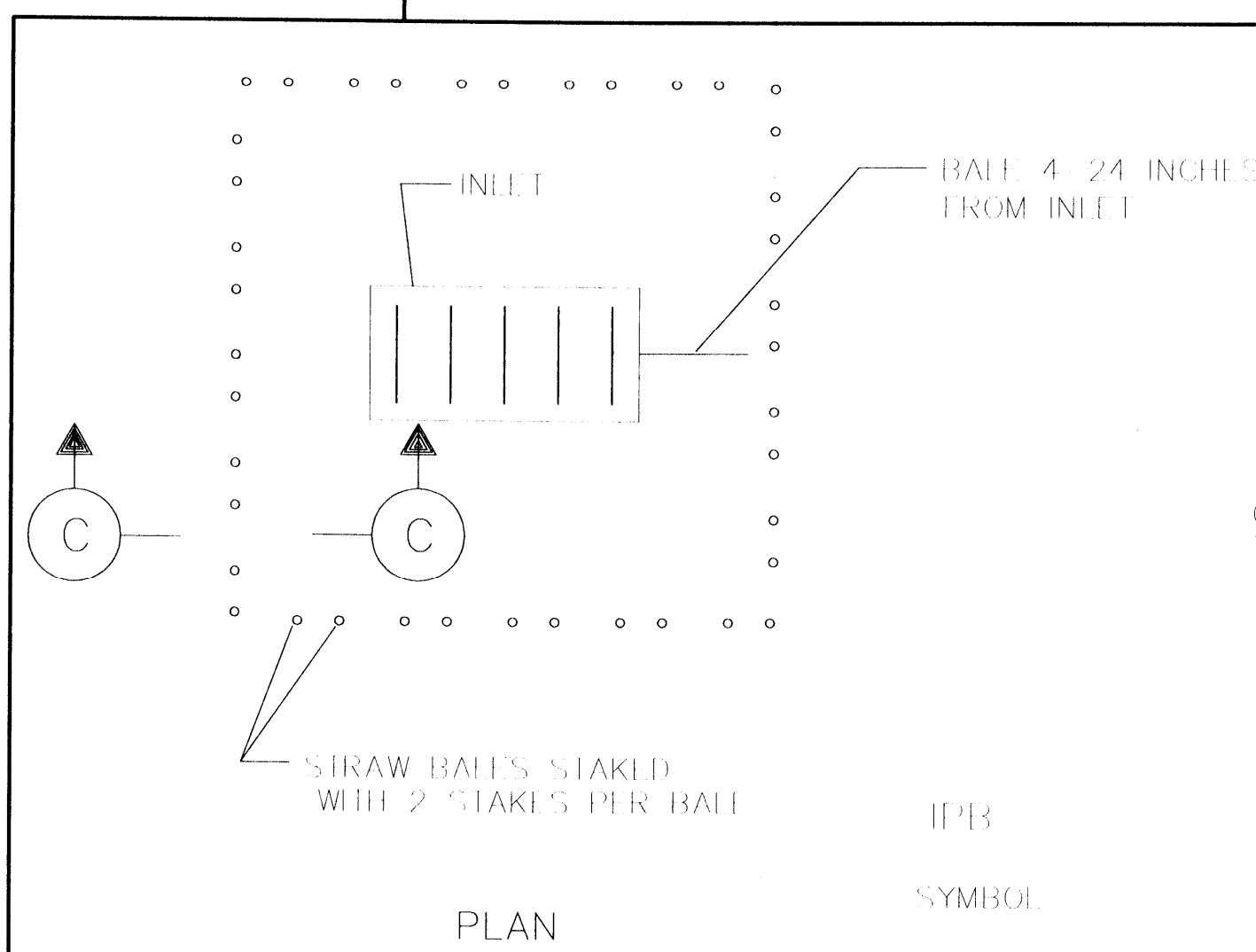
STABILIZED CONSTRUCTION EXIT



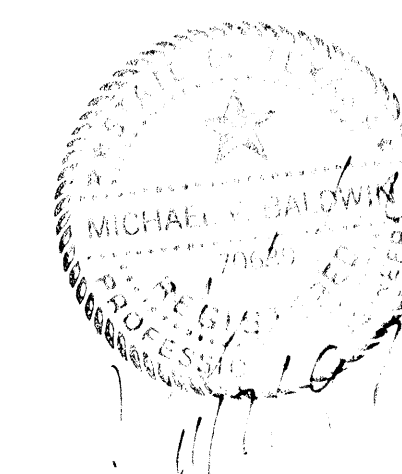
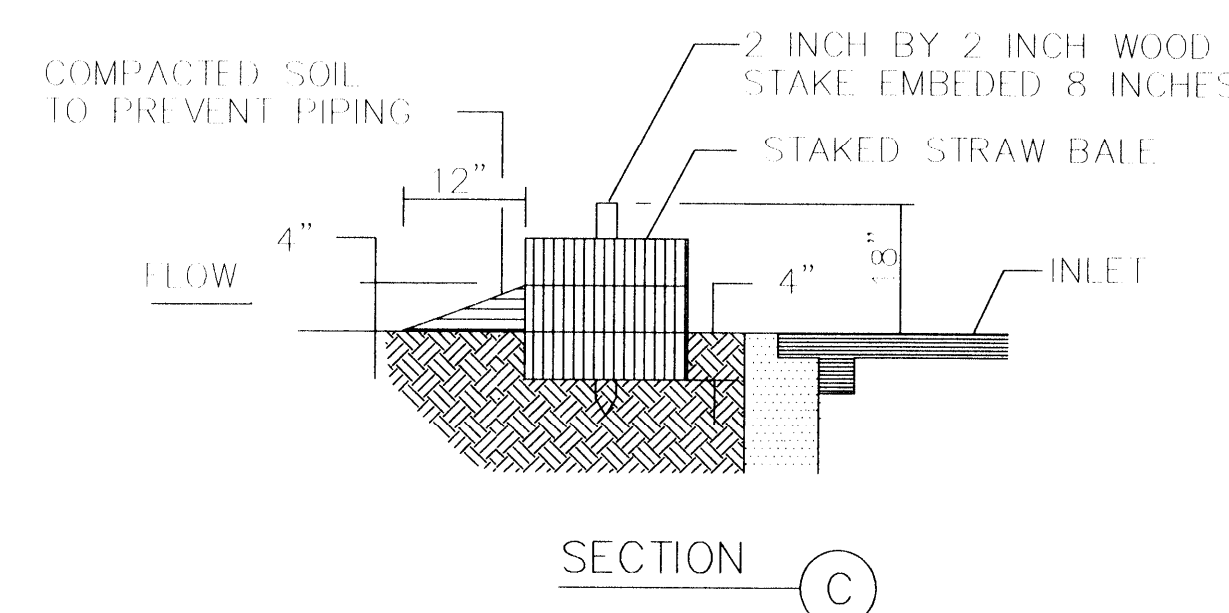
SILT FENCE INLET PROTECTION BARRIER

**CONSTRUCTION NOTE:**

1. SEE CONSTRUCTION NOTES FOR RFB.



STRAW BALE DROP INLET PROTECTION BARRIER



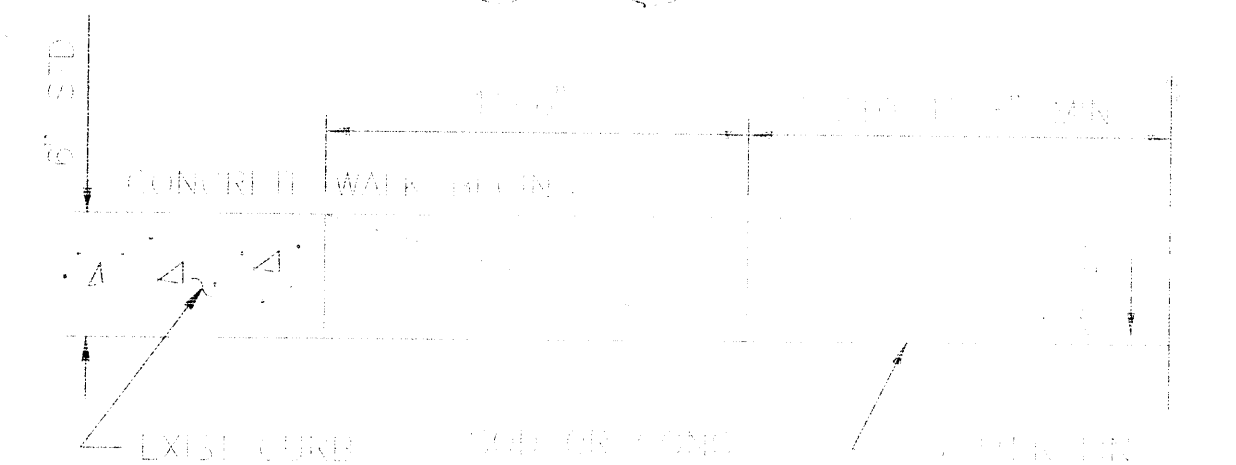
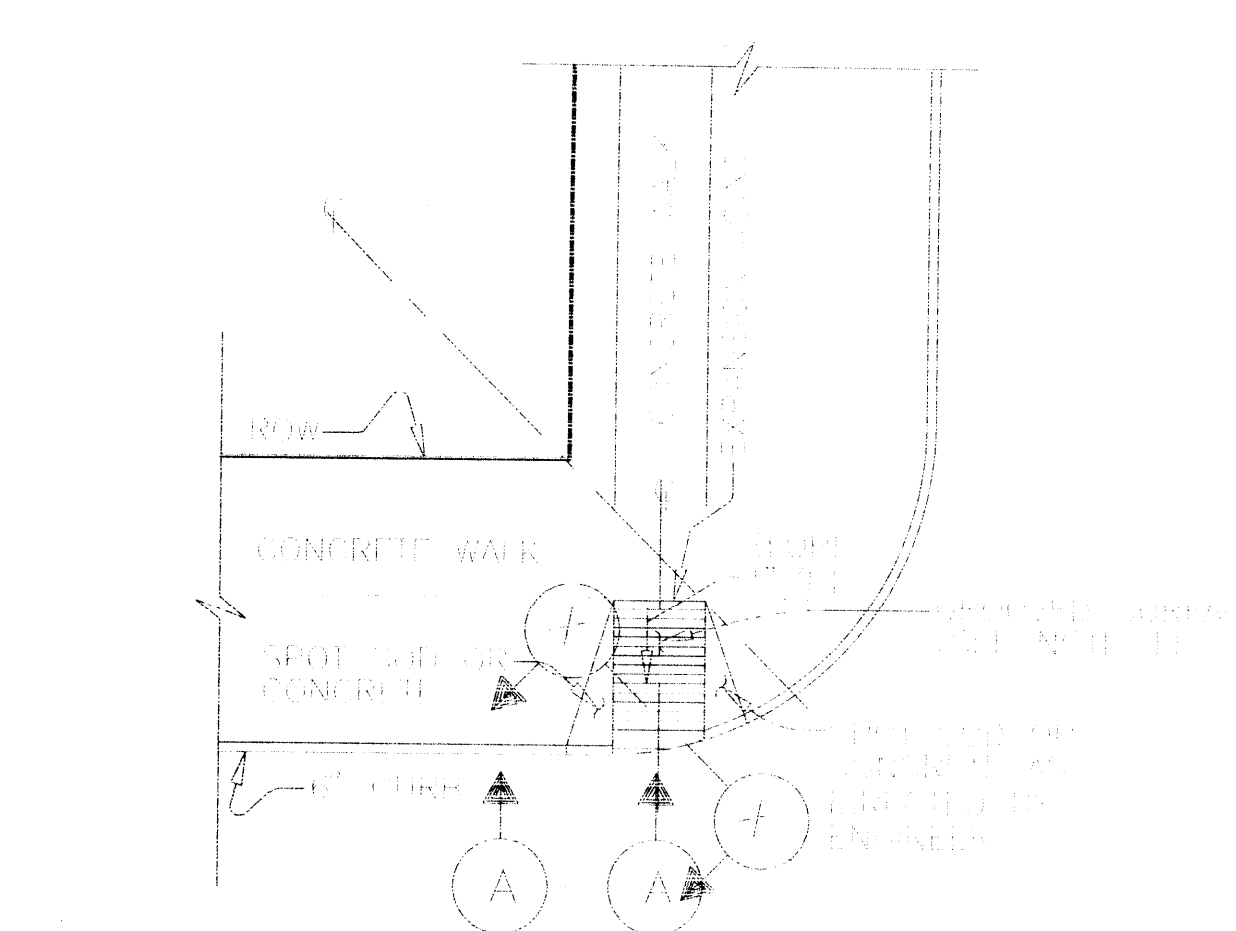
CITY OF HOUSTON  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING  
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

STORM WATER POLLUTION  
PREVENTION PLAN DETAILS

(NOT TO SCALE)

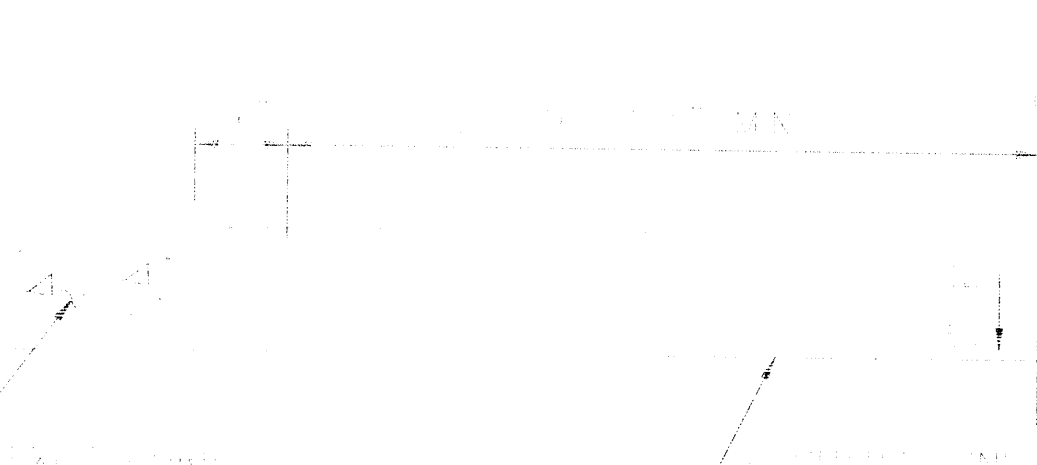
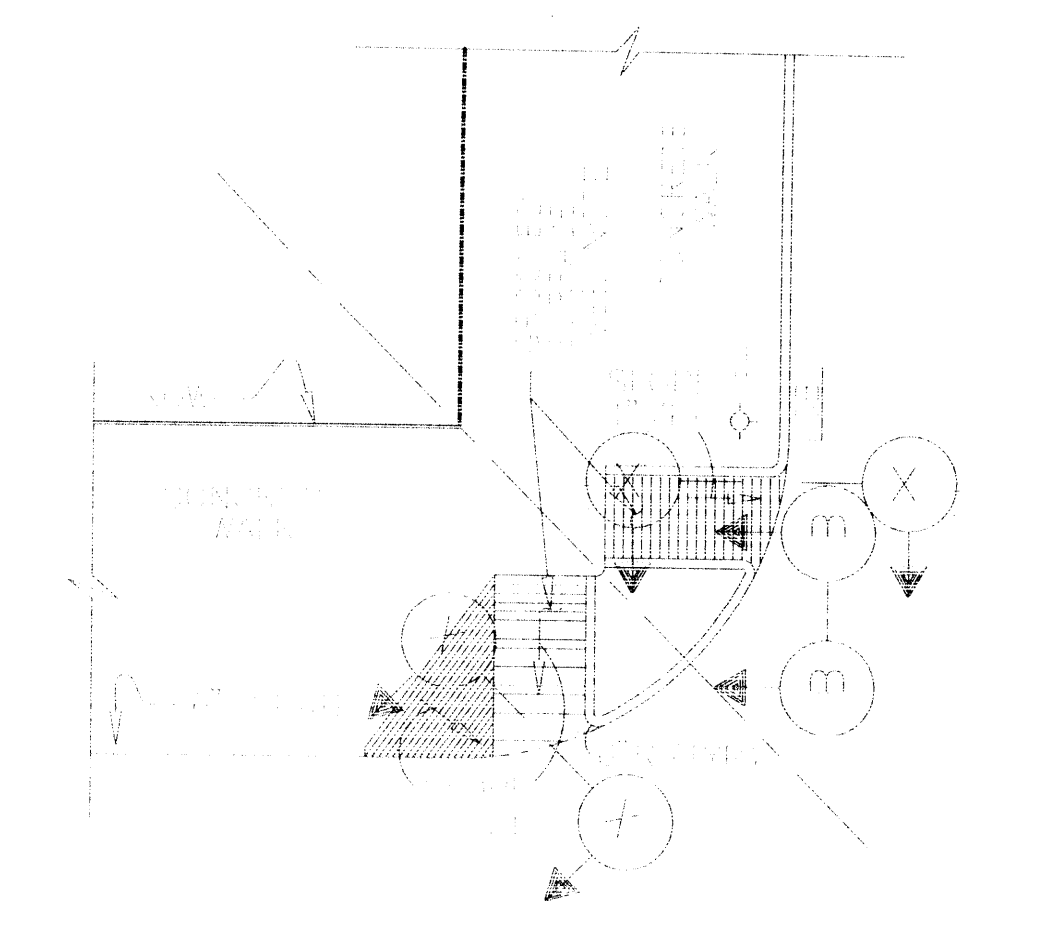
25 OF 27

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-20-95	DWG NO: 01565-01C



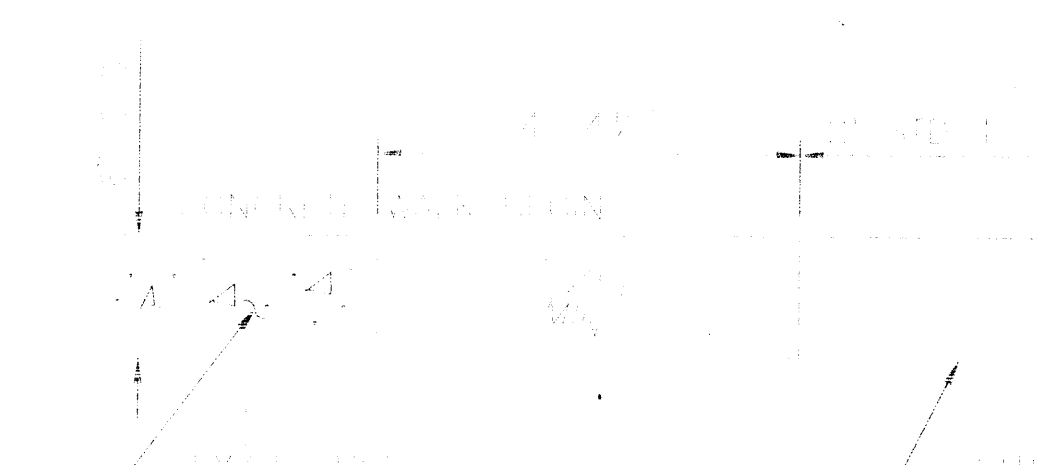
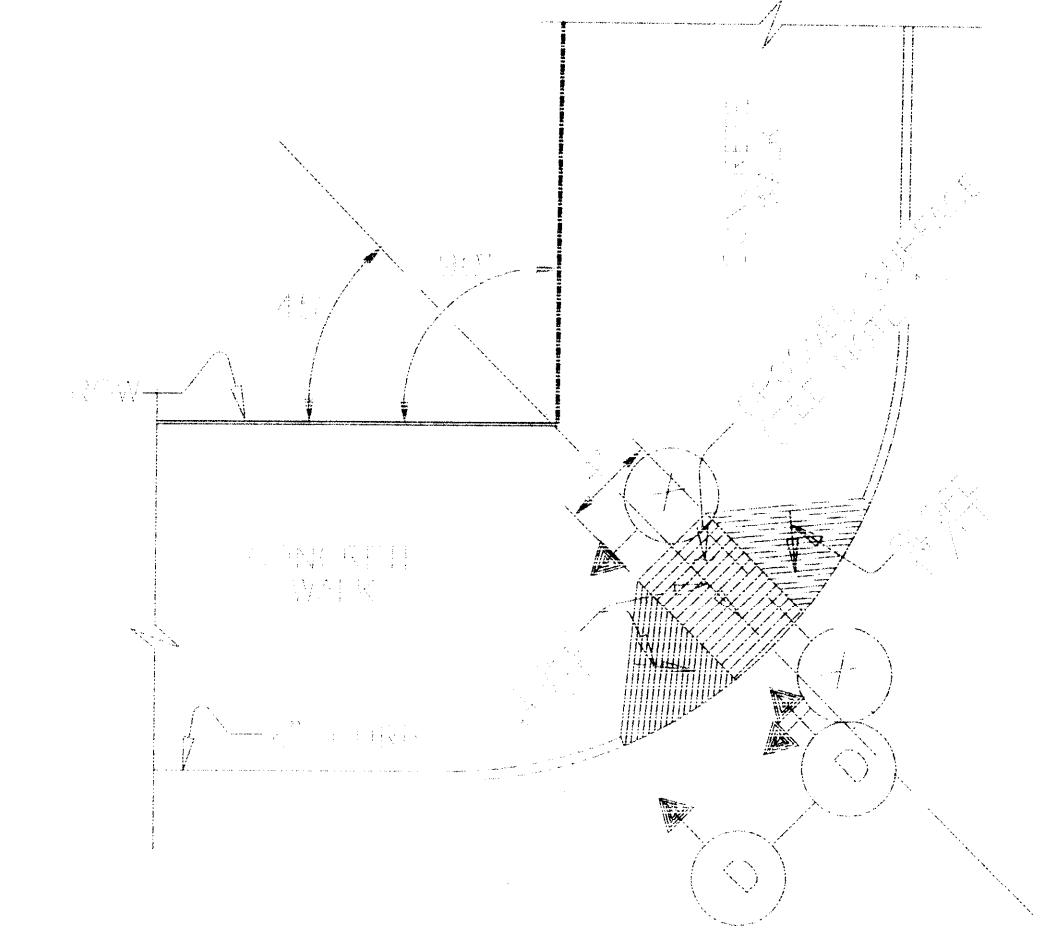
SECTION A

(A) RESIDENTIAL & RURAL CONDITIONS



SECTION B

(B) URBAN AREAS RESTRICTED BY SMALL RADII, E.H., ETC.



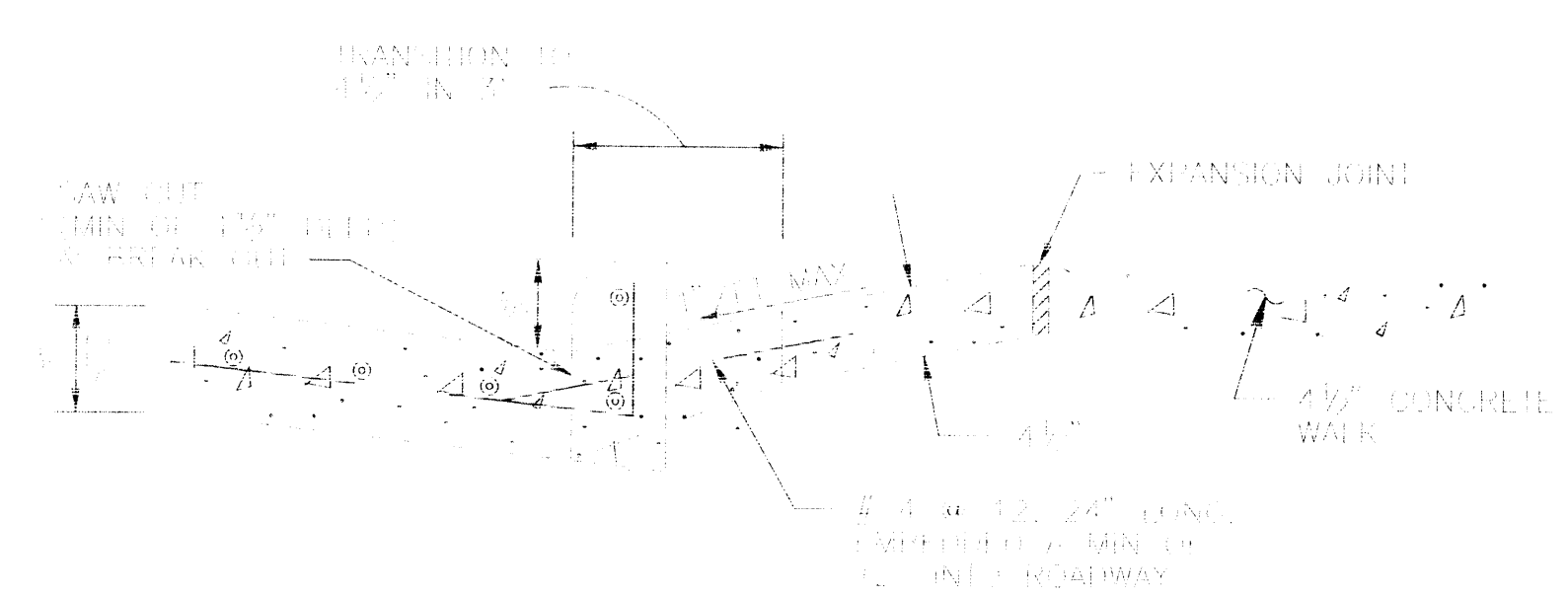
SECTION D

(D) URBAN & METROPOLITAN AREAS WITH LARGE RADII & NO RESTRICTIONS

(C) COMBINATION OF (B) & (D)

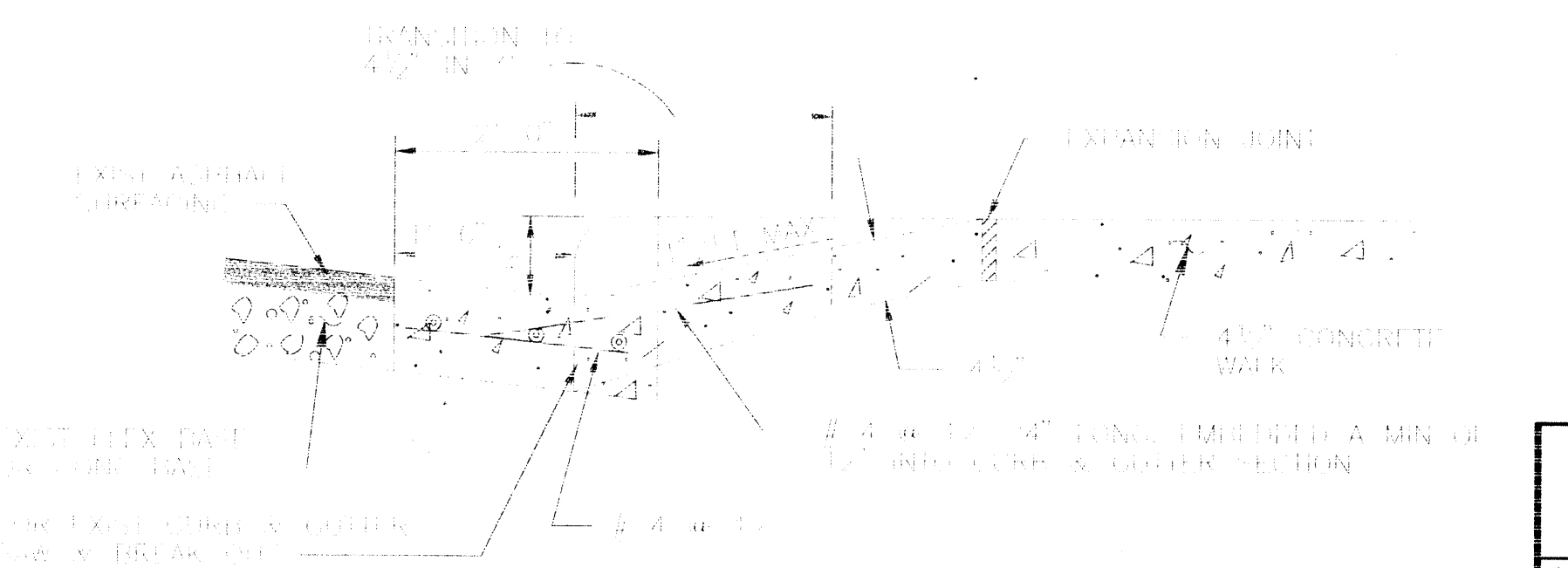
NOTES:

1. THE FINISHED SURFACE OF A WHEELCHAIR RAMP SHALL BE FINISHED LATERALLY WITH A 1/4" WIDE BY 1/4" DEEP DRYMATIC SPACER 24" AND REINFORCED WITH NO FEWER THAN A PROGRAM FINISH TO PREVENT SLIPPING, AND TO DIFFERENTIATE ITS TEXTURE FROM THAT OF STANDARD SIDEWALK.
2. THE LOCATION OF A WHEELCHAIR RAMP MAY BE SHIFTED FROM THE PROPOSED LOCATION ON THE PLANS, BECAUSE OF UNFORSEEN EXISTING CONDITIONS AT THE TIME OF CONSTRUCTION. A CHANGE IN LOCATION WILL BE AS DIRECTED BY THE ENGINEER.
3. THE LOCATION AND AREA OF USES OF THE VARIOUS TYPES OF WHEELCHAIR RAMP SHOWN (A, B, C, OR D) MAY BE LOCATED IN ANY AREA BE UNBUILT, UNFINISHED, ETC. OR AT ANY POINT ON OR OFF THE RAMP, ACCORDING TO TYPE AND LOCATION AS SHOWN ON PLANS OR AS DIRECTED BY ENGINEER.
4. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL AND MEET THE REQUIREMENTS OF ASTM SPECIFICATION A 615, GRADE 60 DEFORMED BARS FOR CONCRETE REINFORCEMENT.
5. MIN. CLEAR WIDTH OF WHEELCHAIR RAMP IS 4' 0".



SECTION X

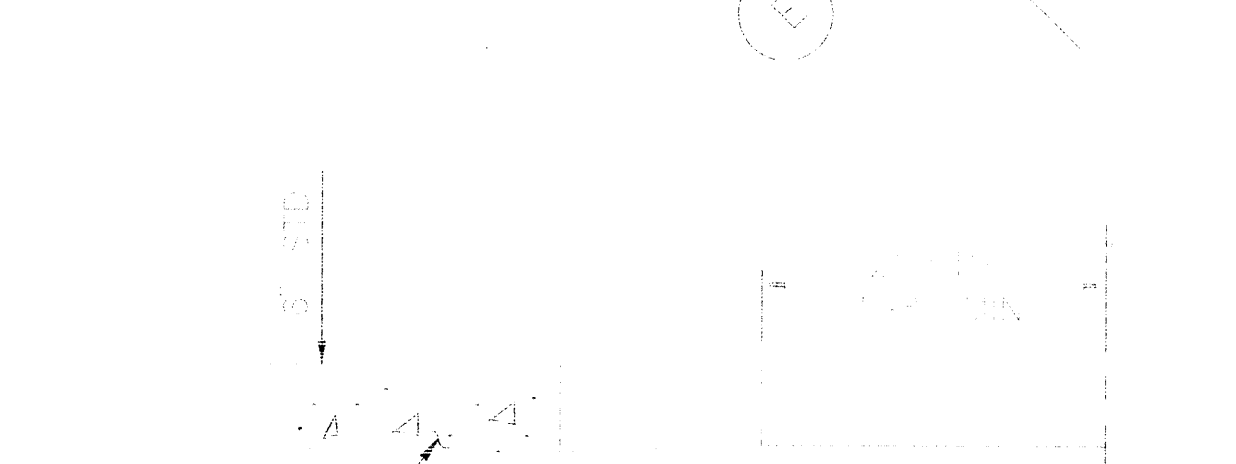
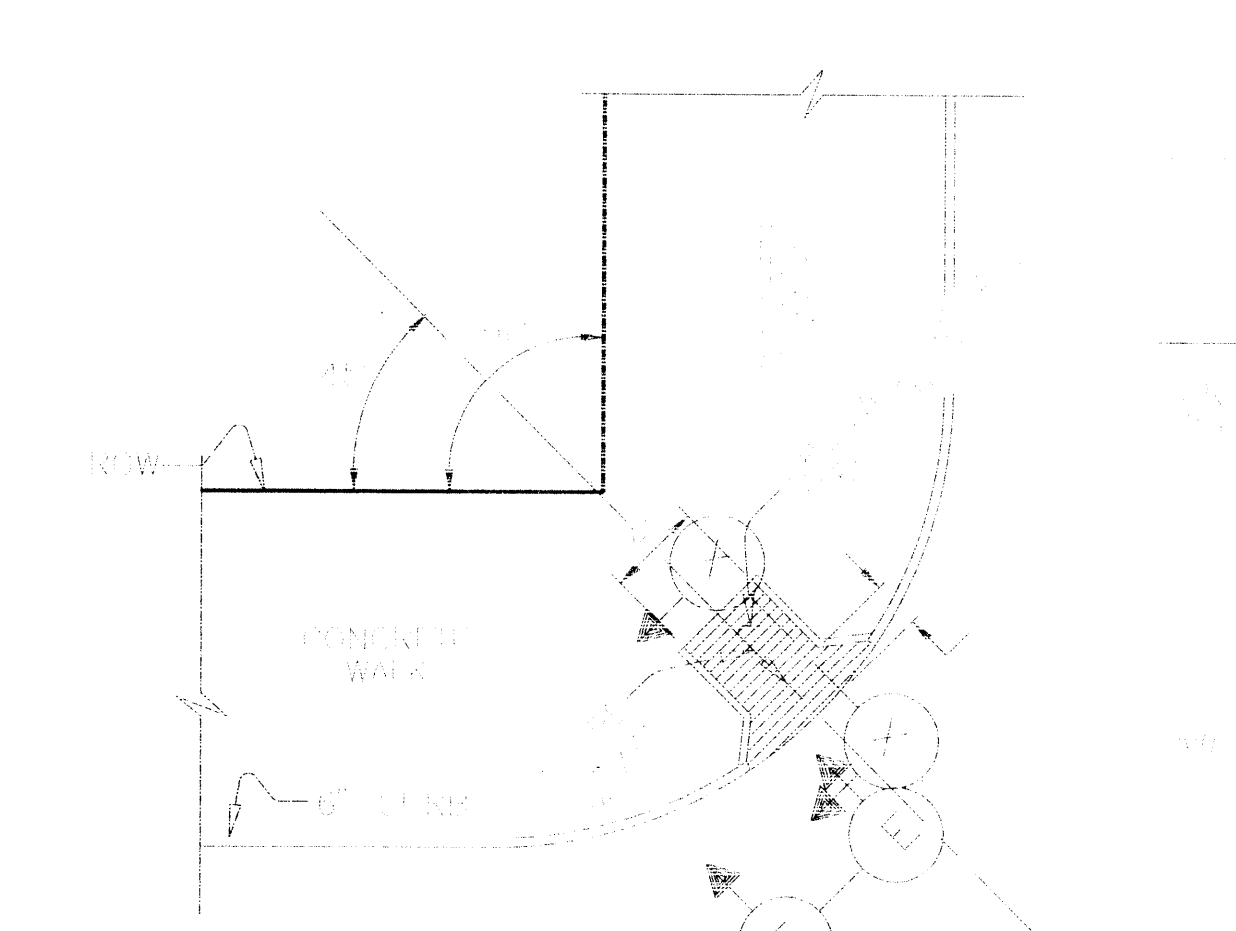
EXISTING CONCRETE PAVEMENT CONSTRUCTION



SECTION X

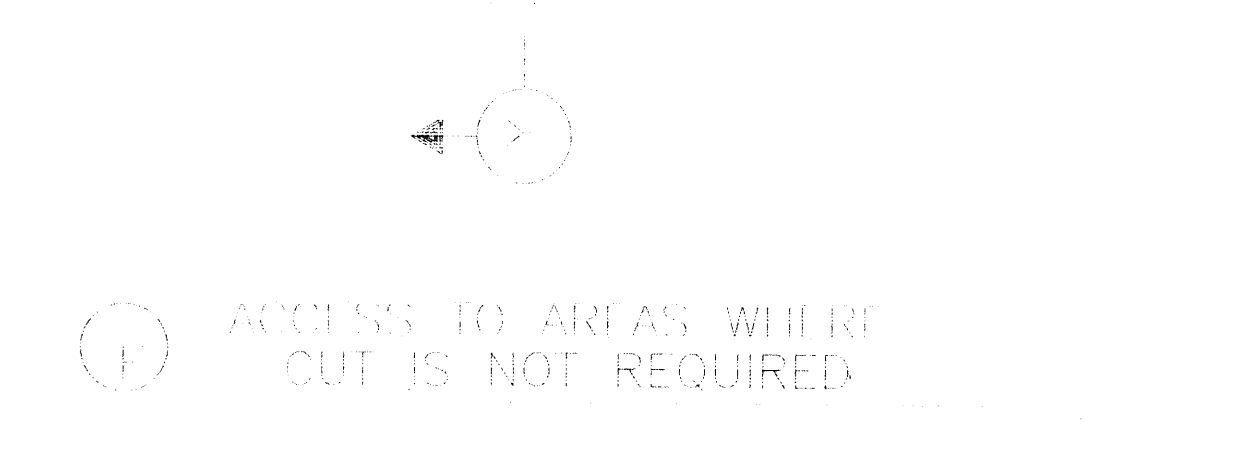
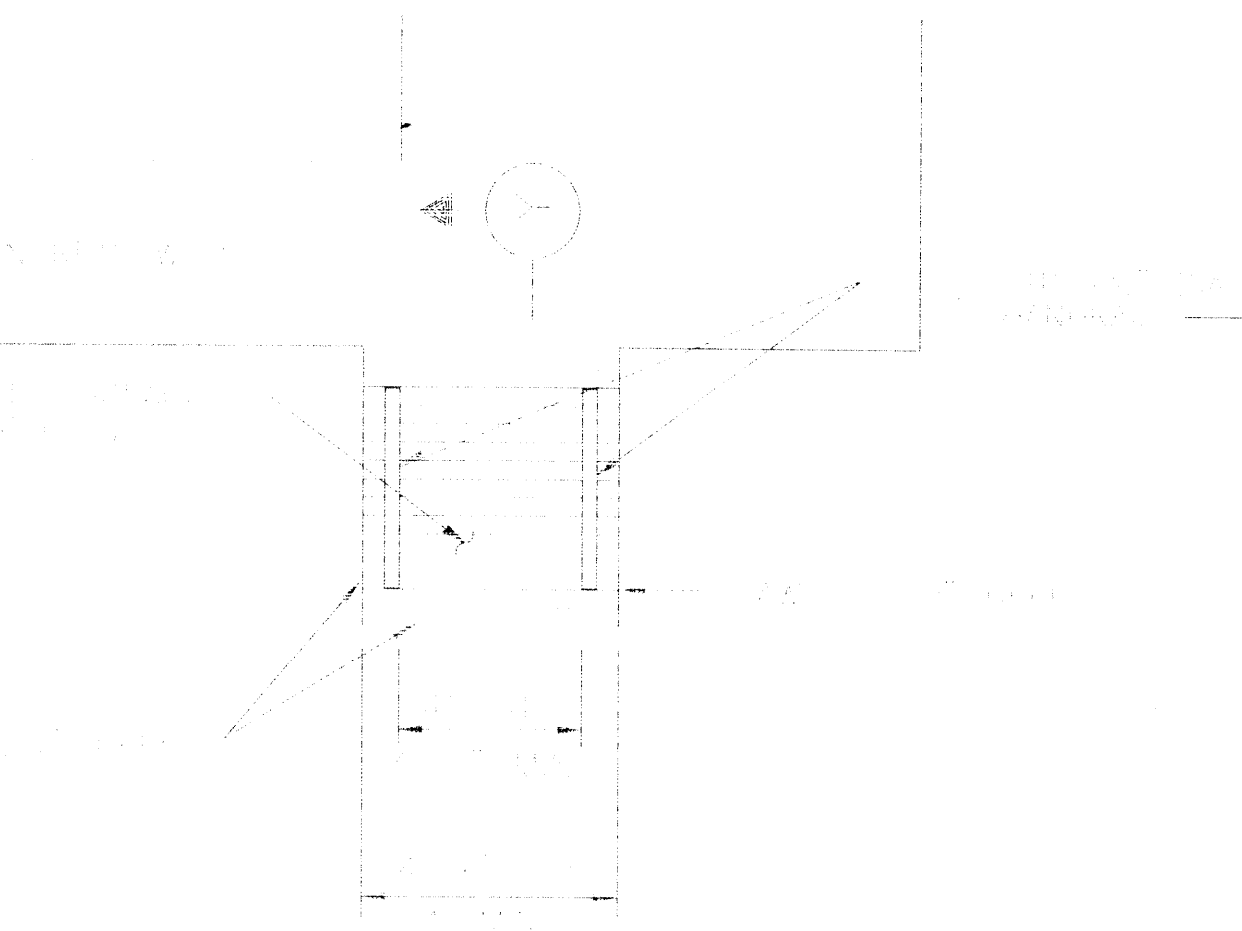
NLW & EXISTING CURB & GUTTER CONSTRUCTION

\* AS DETERMINED BY ENGINEER, SAW CUT IN CURB & GUTTER MAY BE SAW CUT, REMOVED & DETAIL AS SHOWN



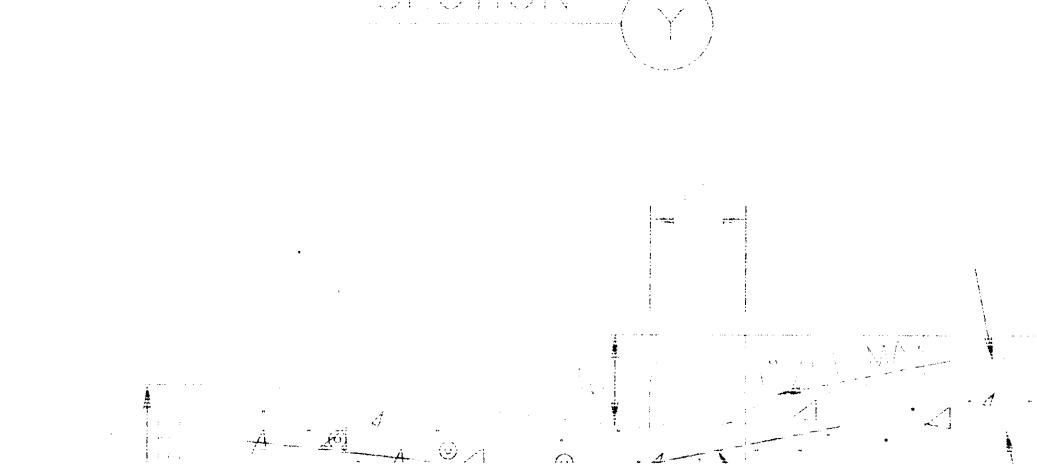
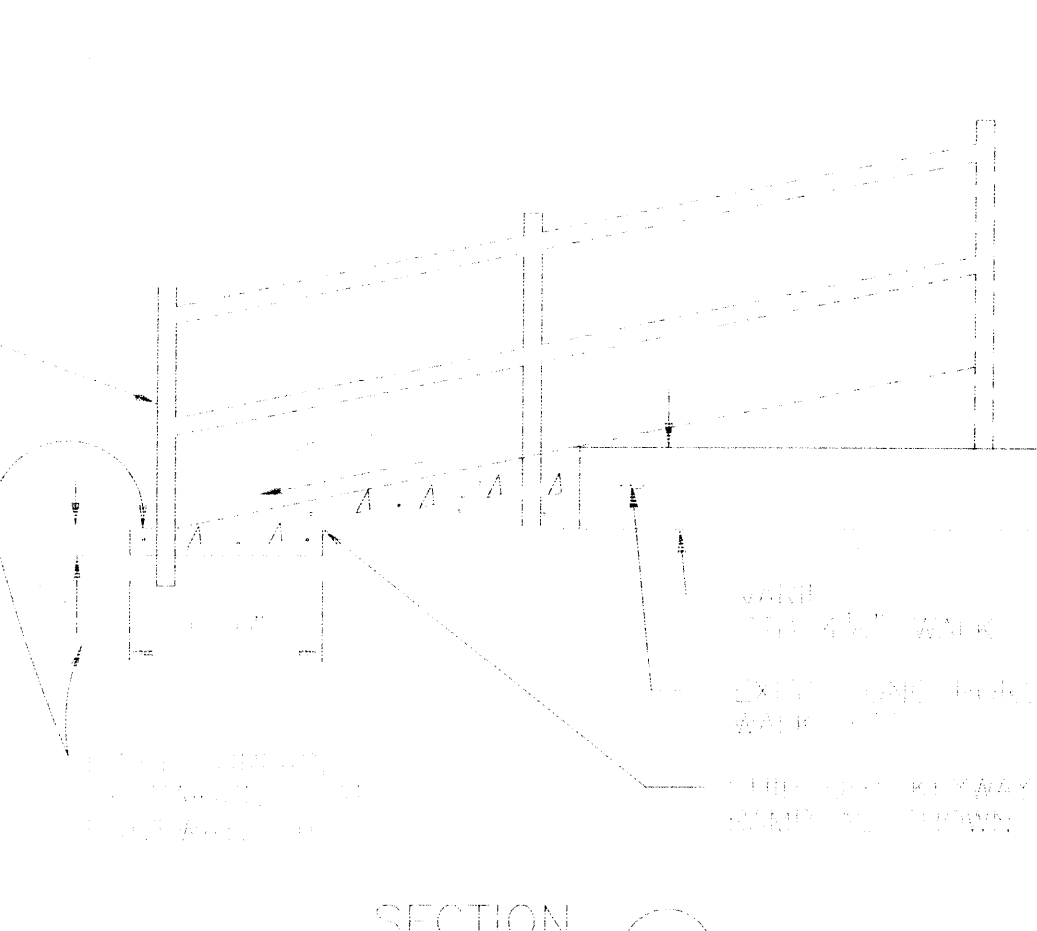
SECTION E

(E) MODIFICATION OF TYPE



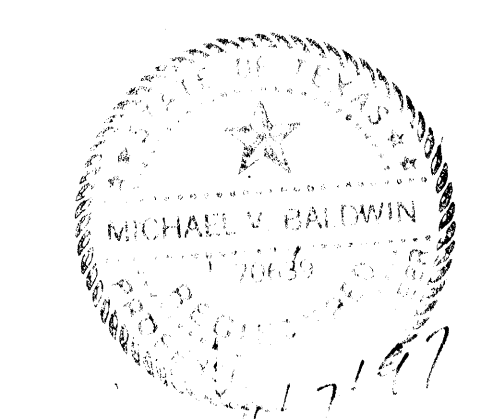
SECTION G

(G) ACCESS TO AREAS WHERE CUT IS NOT REQUIRED



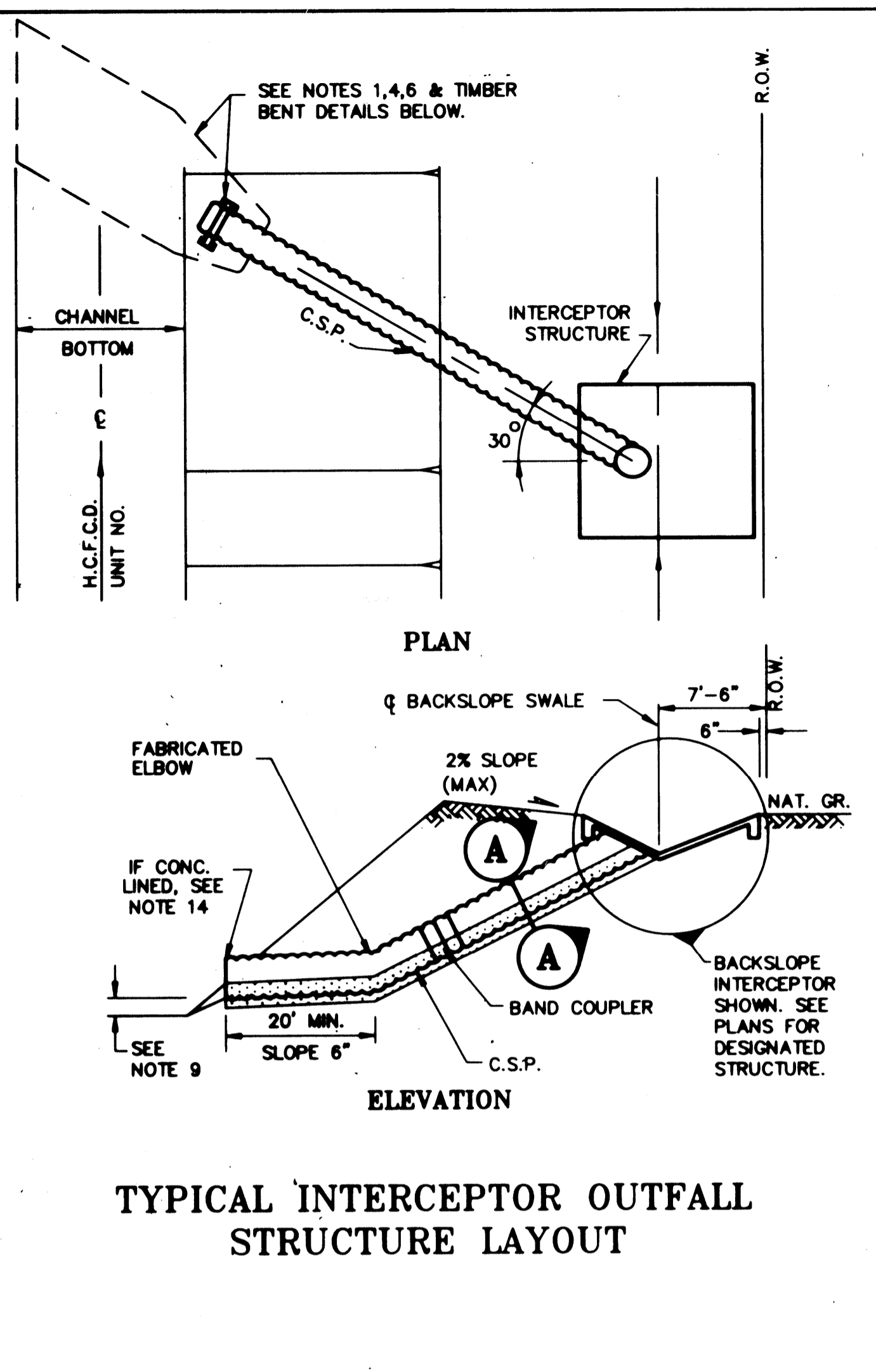
SECTION I

NEW CONCRETE PAVEMENT CONSTRUCTION

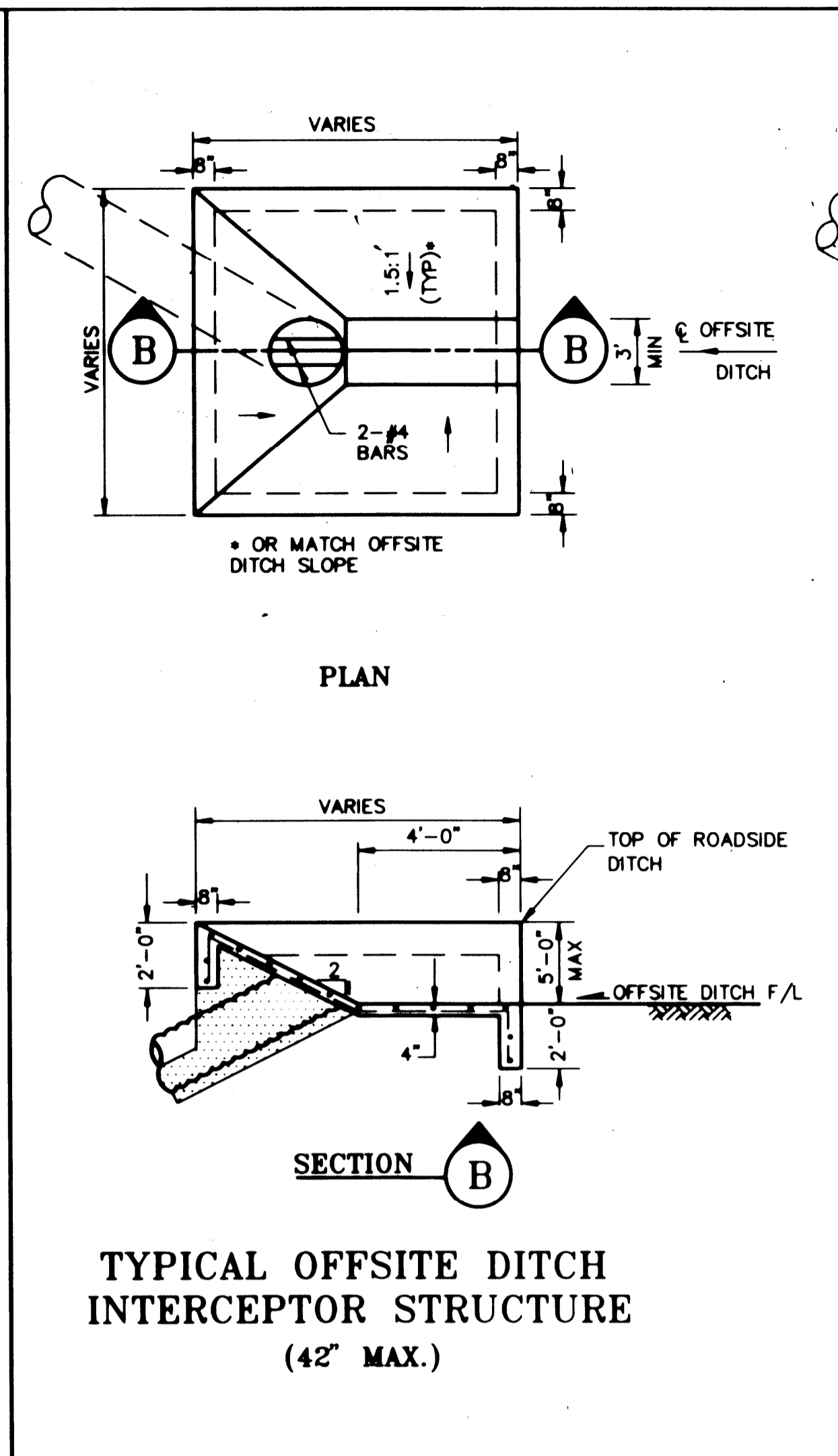


WHEELCHAIR RAMP DETAILS  
DWG. NO. 92-01-01

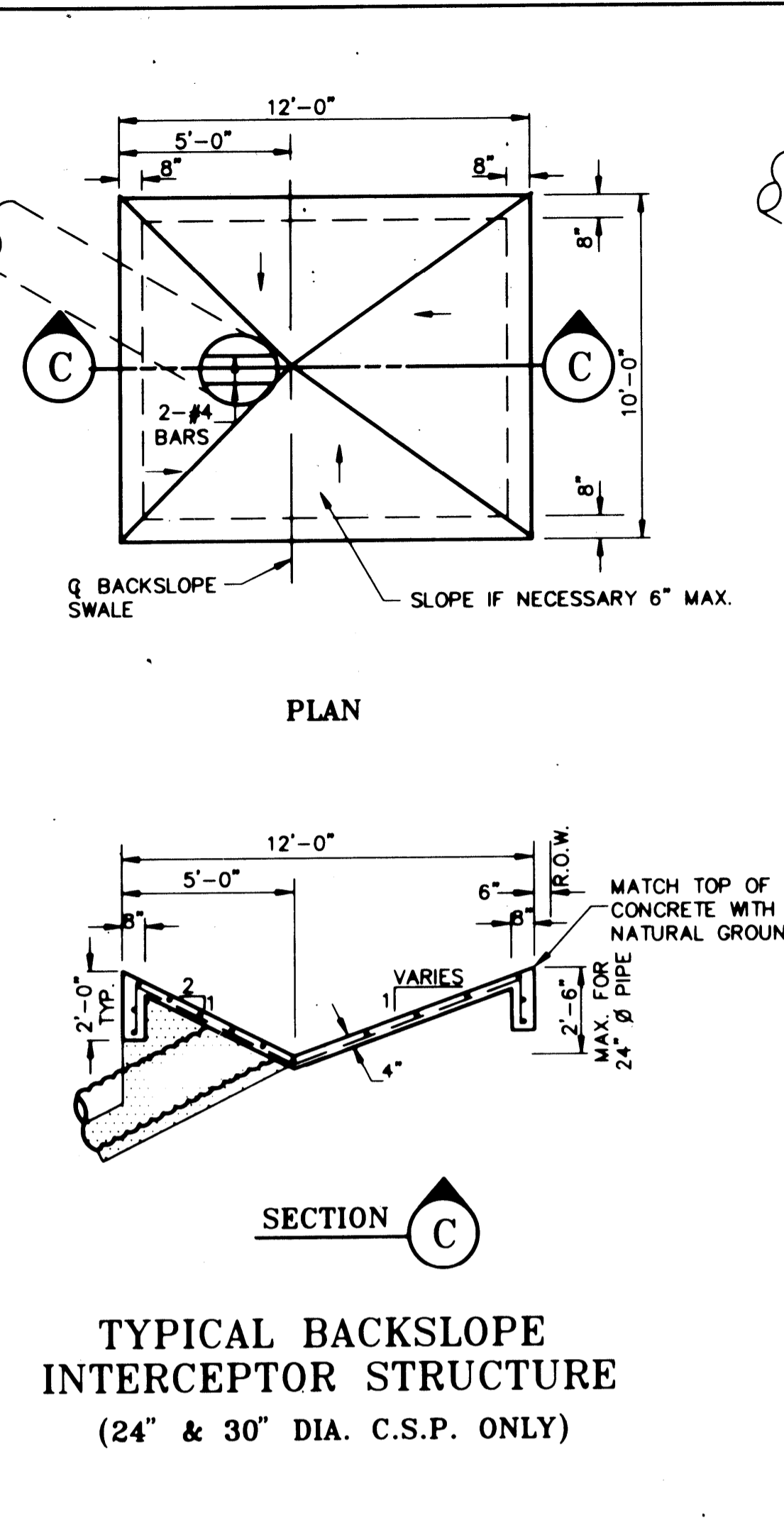
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SECTION APPROVALS	
<i>John V. Latta</i> 12-9-97 TRAFFIC AND SIGNAL ENGINEERING	
<i>John Thomas</i> 1-8-98 WASTEWATER ENGINEERING	STREET & BRIDGE ENGINEERING
<i>Michael V. Baldwin</i> 12/22/97 STORM SEWER ENGINEERING	CONSTRUCTION
OTHER DEPARTMENTS	
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
CITY ENGINEER	DATE
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE
SUBMITTED:	DESIGNED BY: TIM
SCALE: N/A	DRAWN BY: TIM
DATE: AUGUST 1997	SHEET NO. 26 OF 27 SHEETS
SURVEY BY:	CITY DWG. NO.
P. H. NO.:	
WHEELCHAIR RAMP DETAILS	
<b>PROVILUNT ENGINEERS, INC.</b> 11241 RICHMOND, SUITE E107 Houston, Texas 77082	



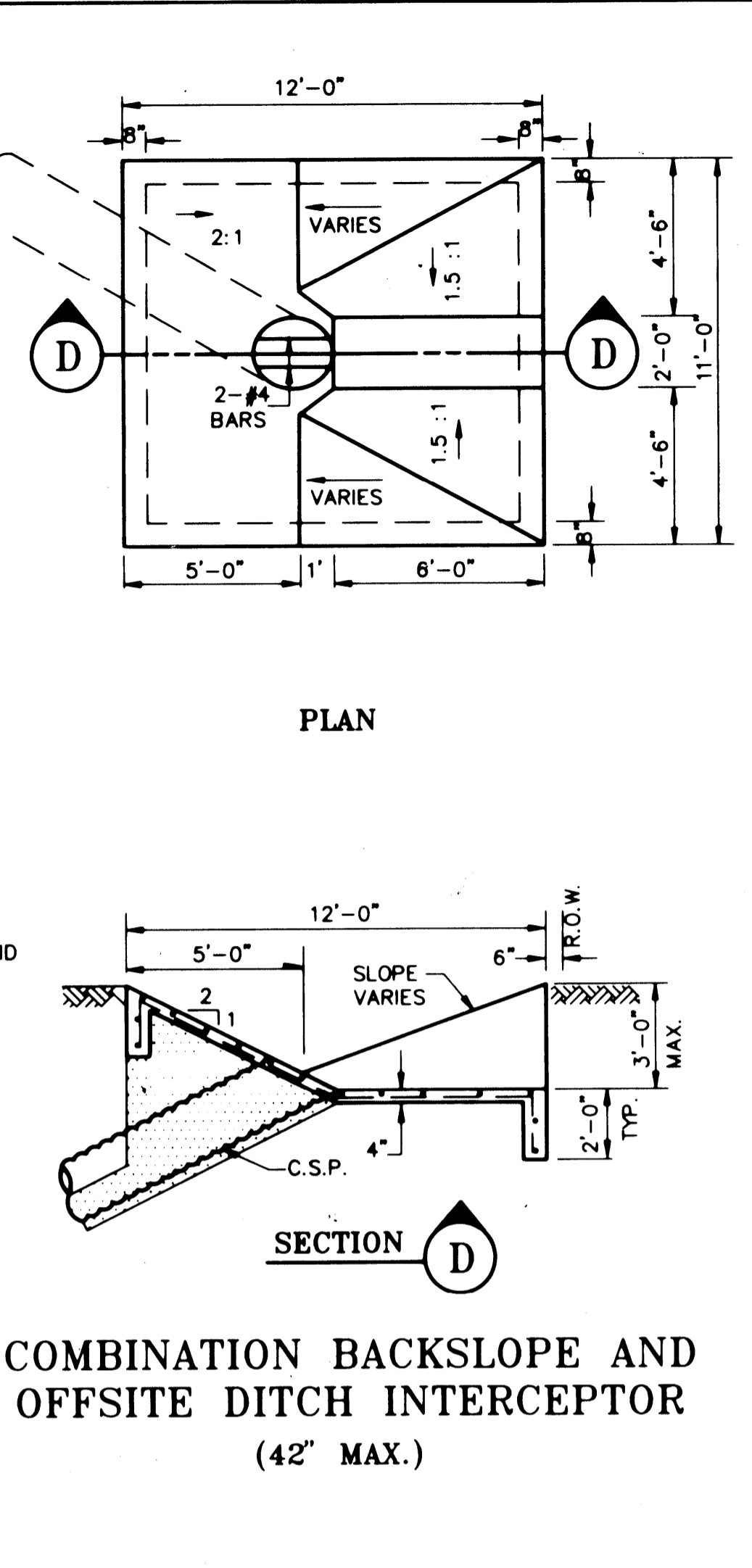
TYPICAL INTERCEPTOR OUTFALL STRUCTURE LAYOUT



TYPICAL OFFSITE DITCH INTERCEPTOR STRUCTURE (42" MAX.)

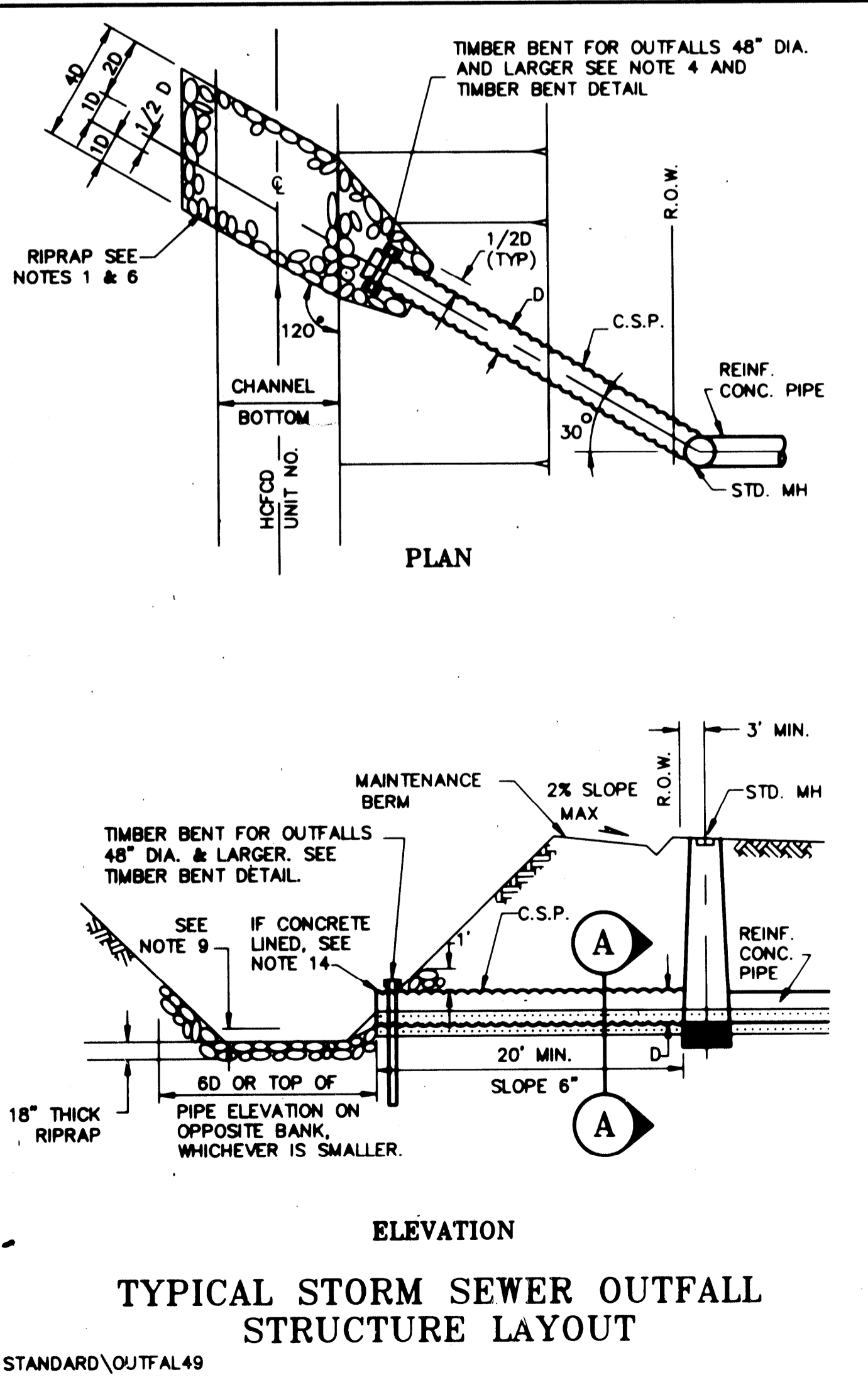


TYPICAL BACKSLOPE INTERCEPTOR STRUCTURE (24" & 30" DIA. C.S.P. ONLY)

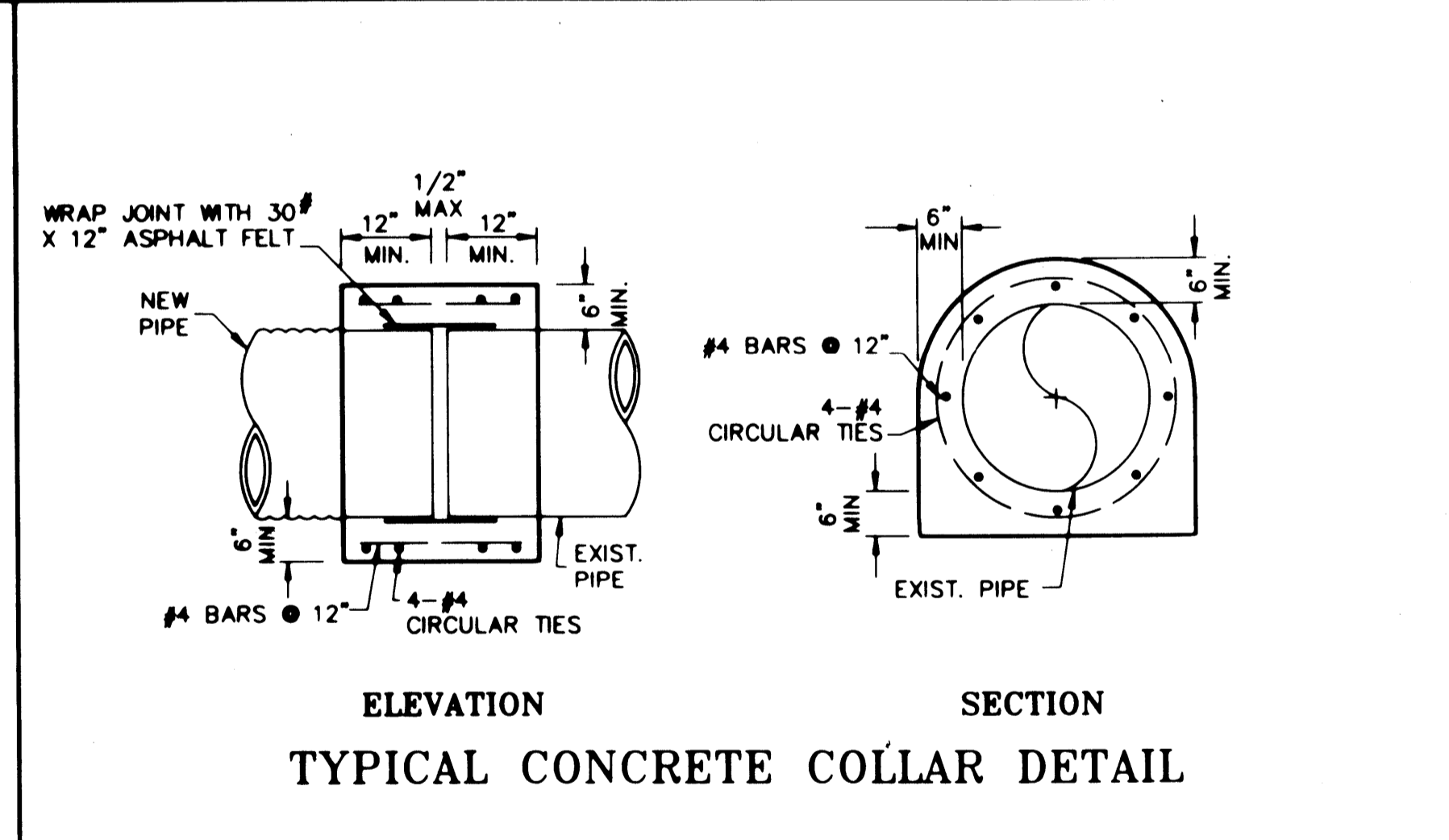


COMBINATION BACKSLOPE AND OFFSITE DITCH INTERCEPTOR (42" MAX.)

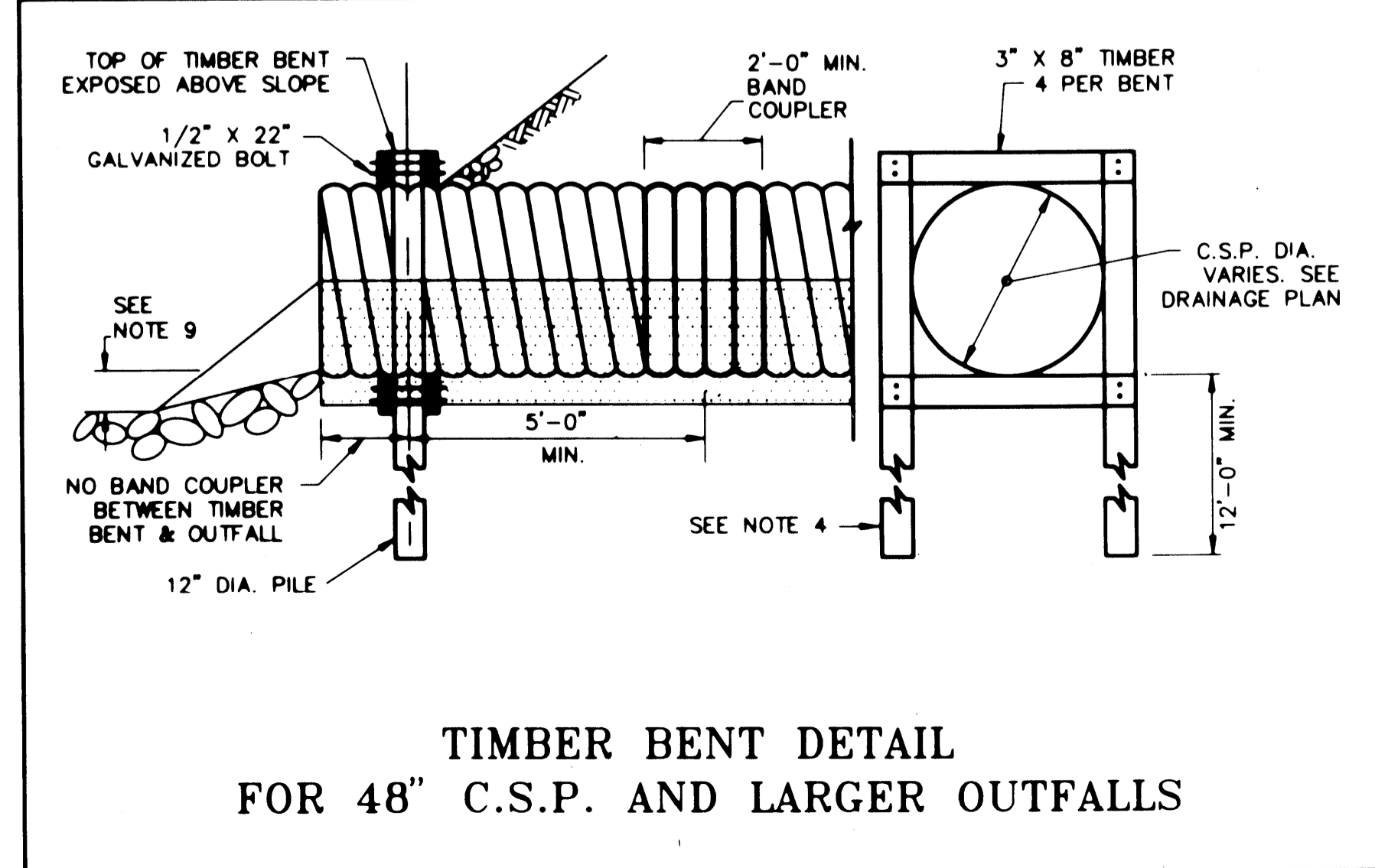
- GENERAL NOTES**
- INTERCEPTOR STRUCTURE OUTFALLS  $\geq$  48" DIAMETER AND ALL STORM SEWER AND TREATMENT PLANT OUTFALLS SHALL BE INSTALLED WITH RIPRAP EROSION PROTECTION, DIMENSIONED AS SHOWN IN "TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT."
  - ALL STORM SEWER AND INTERCEPTOR OUTFALL PIPES WITHIN THE HCFCO RIGHT-OF-WAY SHALL BE CORRUGATED STEEL PIPE (CSP) PER HCFCO SPECIFICATION NO. 02610-CORRUGATED STEEL PIPE.
  - CEMENT STABILIZED SAND SHALL BE PROVIDED AND PLACED IN ACCORDANCE WITH HCFCO SPECIFICATION NO. 02242-CEMENT STABILIZED SAND.
  - TIMBER BENTS SHALL BE IN ACCORDANCE WITH HCFCO SPECIFICATION NO.02365-TIMBER BENTS FOR OUTFALL PIPES.
  - ALL EXCAVATION, FILL AND BACKFILL FOR THE INTERCEPTOR STRUCTURES SHALL BE IN ACCORDANCE WITH HCFCO SPECIFICATION NO. 02221-STRUCTURAL EXCAVATION, FILL AND BACKFILL.
  - RIPRAP SHALL BE IN ACCORDANCE WITH HCFCO SPECIFICATION NO. 02273.
  - ALL CONCRETE SHALL HAVE A MINIMUM 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
  - ALL INTERCEPTOR STRUCTURES SHALL HAVE:
    - 2- FEET DEEP X 8-INCH WIDE TOE ALL AROUND THE STRUCTURE.
    - STEEL REINFORCING- 4 BARS (GRADE 40) AT 12 INCHES C.C., EACH WAY.
  - THE FLOWLINE OF ALL OUTFALL PIPES SHALL BE 1 FOOT ABOVE THE DESIGN CHANNEL FLOWLINE, OR 1 FOOT ABOVE NORMAL WATER SURFACE ELEVATION.
  - SLOPE LAST SEGMENT OF OUTFALL PIPE 6 INCH IN 20 FEET.
  - VOIDS BEYOND THE LIMITS OF THE CONCRETE INTERCEPTOR PAD SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND OR SANDY CLAY MATERIAL COMPACTED TO 95% STANDARD PROCTOR DENSITY.
  - THE INTERCEPTOR STRUCTURES SHOWN CAN BE USED ON PIPE SIZES UP TO AND INCLUDING 42-INCH DIAMETER. LARGER PIPE WILL REQUIRE AN INDIVIDUALLY DESIGNED STRUCTURE.
  - OUTFALL PIPES LARGER THAN 72-INCH DIAMETER SHALL BE INDIVIDUALLY DESIGNED AND DETAILED ON THE PLANS.
  - SEE THE CONCRETE PAVING DETAIL SHEET FOR CSP OUTFALL DETAILS THROUGH CONCRETE PAVING.
  - ROP AND BOX CULVERT OUTFALLS ARE TO BE INDIVIDUALLY DESIGNED AND DETAILED ON THE PLANS.
  - OUTFALL DETAILS SHOWN ARE SUITABLE ON SLOPES UP TO AND INCLUDING 3:1. FLATTER SLOPES WILL REQUIRE AN INDIVIDUALLY DESIGNED STRUCTURE.



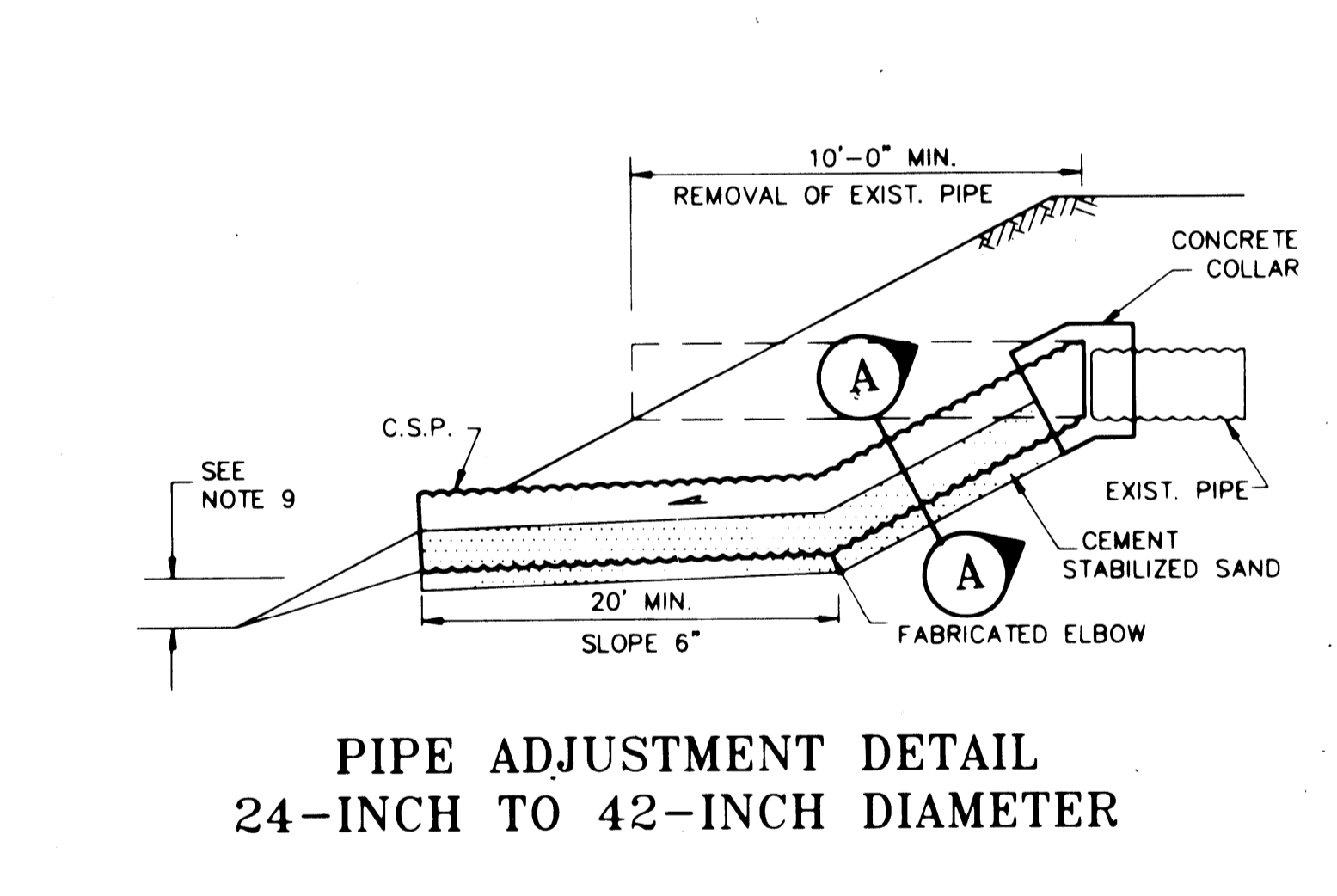
TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT



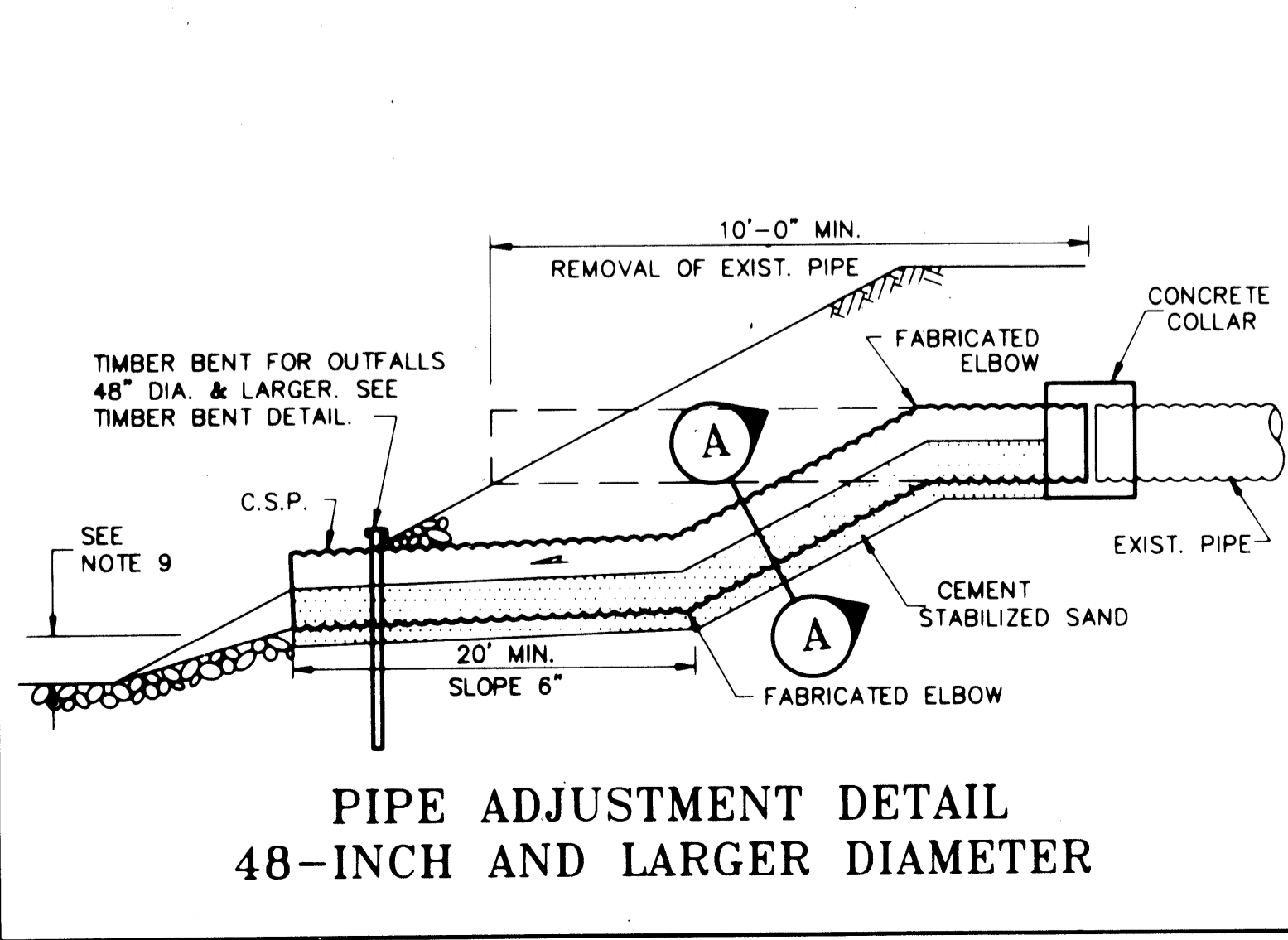
TYPICAL CONCRETE COLLAR DETAIL



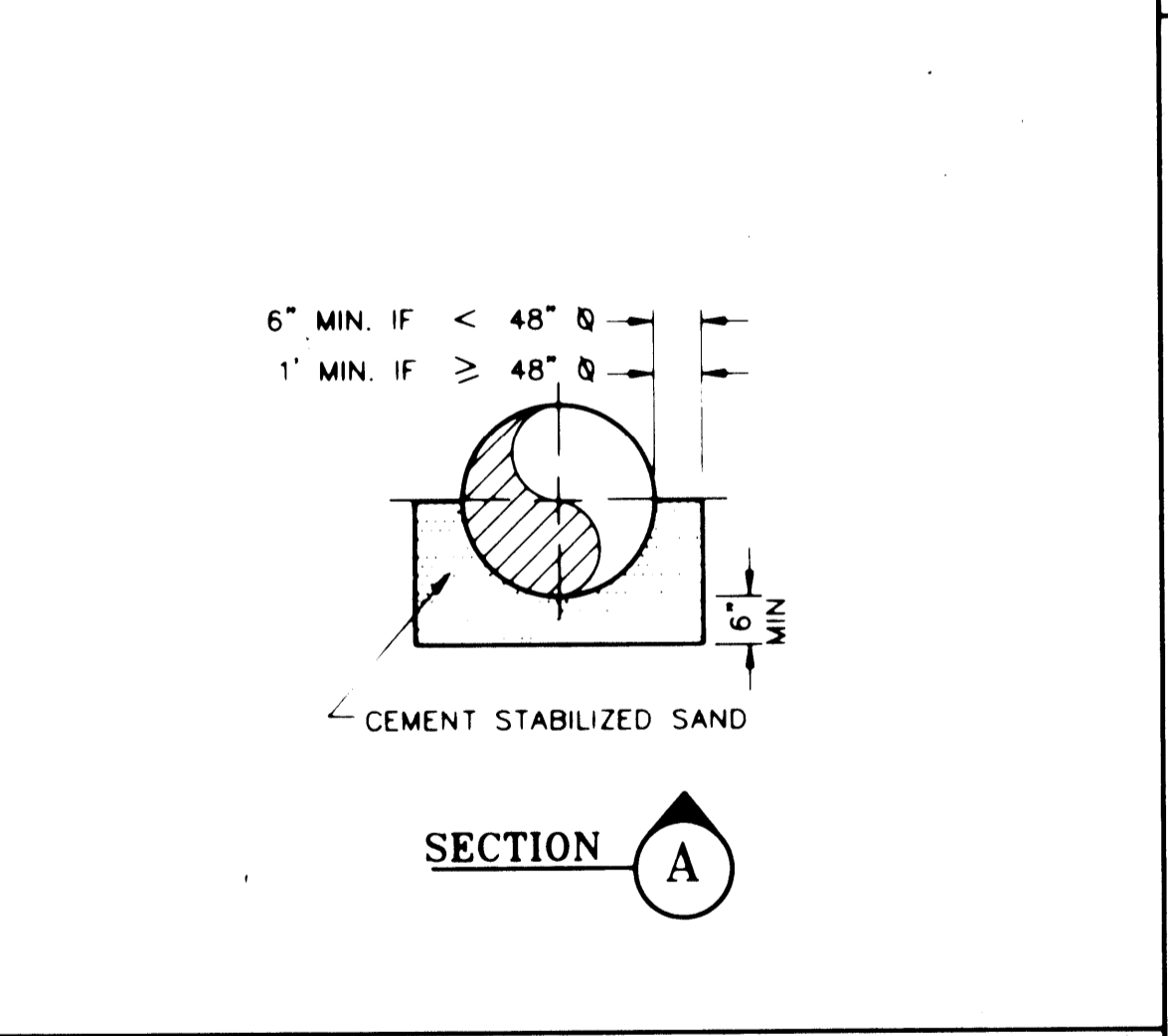
TIMBER BENT DETAIL FOR 48" C.S.P. AND LARGER OUTFALLS



PIPE ADJUSTMENT DETAIL 24-INCH TO 42-INCH DIAMETER



PIPE ADJUSTMENT DETAIL 48-INCH AND LARGER DIAMETER



THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON HCFCO PROJECTS OR PROJECTS TO BE MAINTAINED BY THE HCFCO WHEN COMPLETED BY OTHERS. THE ENGINEER SHOULD CAREFULLY REVIEW THESE DETAILS TO DETERMINE THEIR APPLICABILITY TO A PARTICULAR PROJECT. IF REVISIONS ARE NECESSARY, THEY SHALL BE CLEARLY DELINEATED AND NOTED IN THE REVISION BLOCK IN ACCORDANCE WITH RULE 9.131.138 OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS. AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET INTO HIS WORK MUST SEAL THIS SHEET AND BECOME RESPONSIBLE FOR ITS USE IN THE END PRODUCT.

DATE	8 - 14 - 91
DESCRIPTION	HARRIS COUNTY FLOOD CONTROL DISTRICT
REV	
APPRO	
SHEET NUMBER	27 OF 27