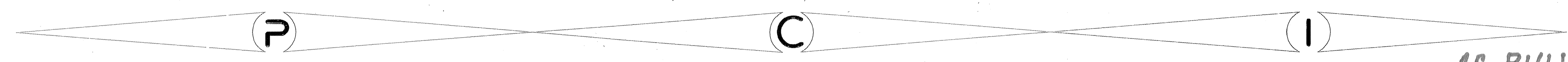
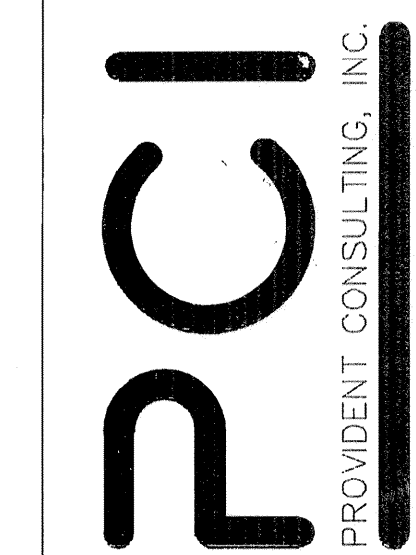


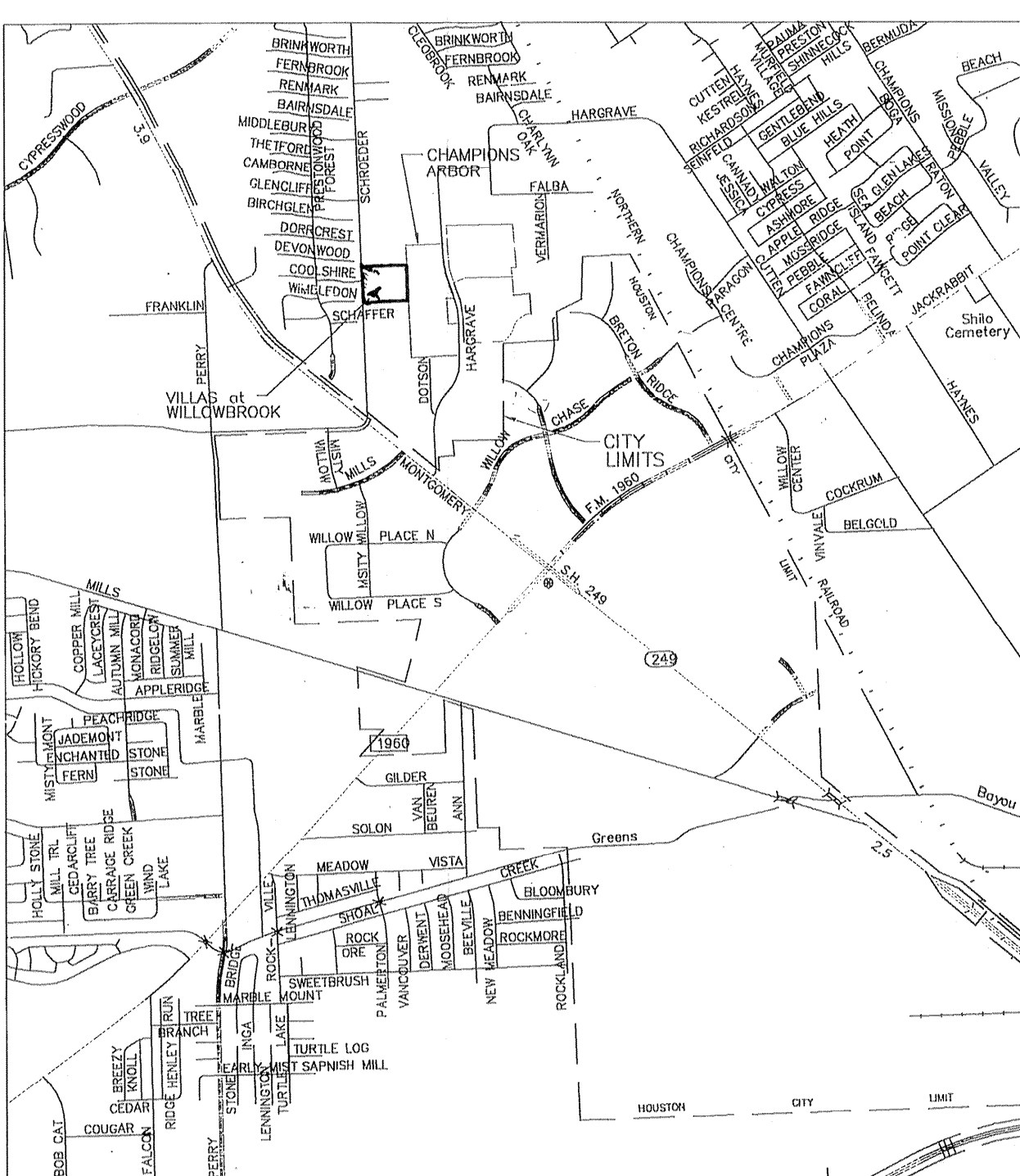
VILLAS at WILLOWBROOK
on behalf of
VILLAS at WILLOWBROOK, L.L.P.
plans of proposed
WATER, SANITARY, STORM SEWER
and PAVING IMPROVEMENTS
to serve
VILLAS at WILLOWBROOK
in
HARRIS COUNTY M.U.D. 191
HARRIS COUNTY, TEXAS

H.C.P.I. R# 207217
RELIANT ID# 19747
SWBTC ID#
C.O.H. LOG# -04-1556
JOB #482 U&P
DATE: JULY 2005

PROVIDENT CONSULTING, INC.
1405 ALLSTON ST.
HOUSTON, TEXAS 77008
(713)802-1019



AS BUILT DRAWINGS
Bobby K. Wilson P.E.



LOCATION MAP
HARRIS COUNTY, TEXAS
MAP REFERENCY
KEY MAP NO. 369 D&H
LAMBERT MAP NO. 4966(639)-B-1

TITLE	DRAWING INDEX	SHEET NO.
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PLAN & PROFILES		8-12
DETENTION POND LAYOUT		13
DETENTION OUTFALL & CONTROL BOX DETAILS		14
WATER DETAILS		15
SANITARY SEWER DETAILS		16
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WHEELCHAIR RAMP & VARIOUS DETAILS		18
STORM WATER QUALITY UNIT DETAILS		19
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STORM SEWER, PUMP STATION ELECTRICAL LAYOUTS		21-23
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VILLA ARBOR DR.		9
WILLOWBROOK VILLA DR.		10
VILLA ARCA ST.		10
VILLA PALMAS ST.		11
VISTA DE ORO ST.		11
VILLA LAGO LANE		12

* EXCEPT FOR STRATFORD WAY, ALL PROPOSED SANITARY SEWER, STORM SEWER, AND WATER LINES, EXCEPT FOR THE FIRE LOOP ARE PRIVATE.

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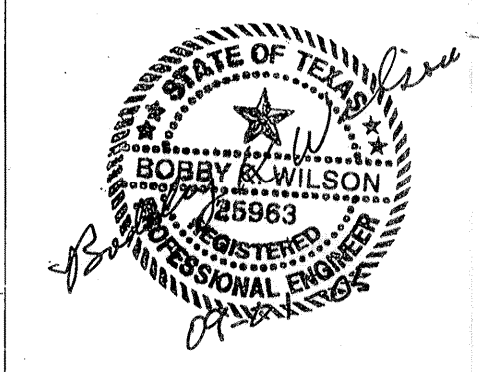
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"STORM WATER QUALITY PRE-INSPECTION REQUIREMENTS": THE PROPERTY OWNER OR THE CONTRACTOR SHALL CONTACT THE HARRIS COUNTY STORM WATER QUALITY PERMITTING SECTION AT 713-956-3000 FOR A PRE-CONSTRUCTION INSPECTION PRIOR TO COMMENCING ANY CLEARING OR CONSTRUCTION ACTIVITIES ON THE SITE.

DEVELOPER:
VILLAS at WILLOWBROOK, L.L.P.
JOB #482-U&P
DATE: JULY 2005



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1405 ALLSTON ST.
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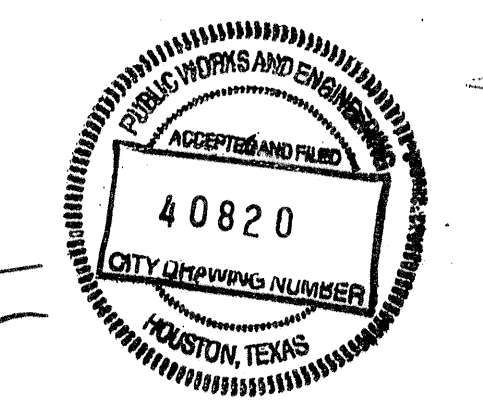


SURVEYED BY: HOVIS SURVEYING CO.
FB NO.

CITY OF HOUSTON
PUBLIC WORKS & ENGINEERING

<i>R.G. Dangle 9/1/05</i> WATER	STORM WATER QUALITY
<i>Wickman 9-1-05</i> WASTEWATER	TRAFFIC AND TRANSPORTATION
<i>Forrester 9/1/05</i> STORM WATER	WATER PRODUCTION
STREET & BRIDGE	

CITY ENGINEER
Richard J. Bullock
DIRECTOR OF PUBLIC WORKS AND ENGINEERING
9/15/05

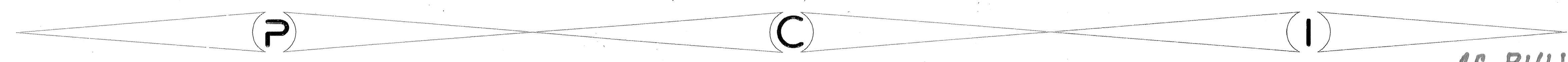
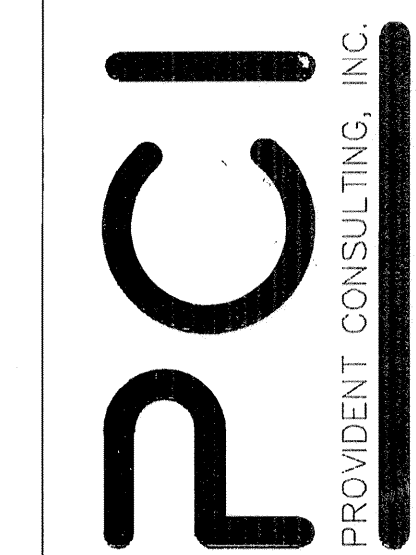


JOB #482 U&P - VILLAS at WILLOWBROOK - UTILITIES, PAVING & DETENTION

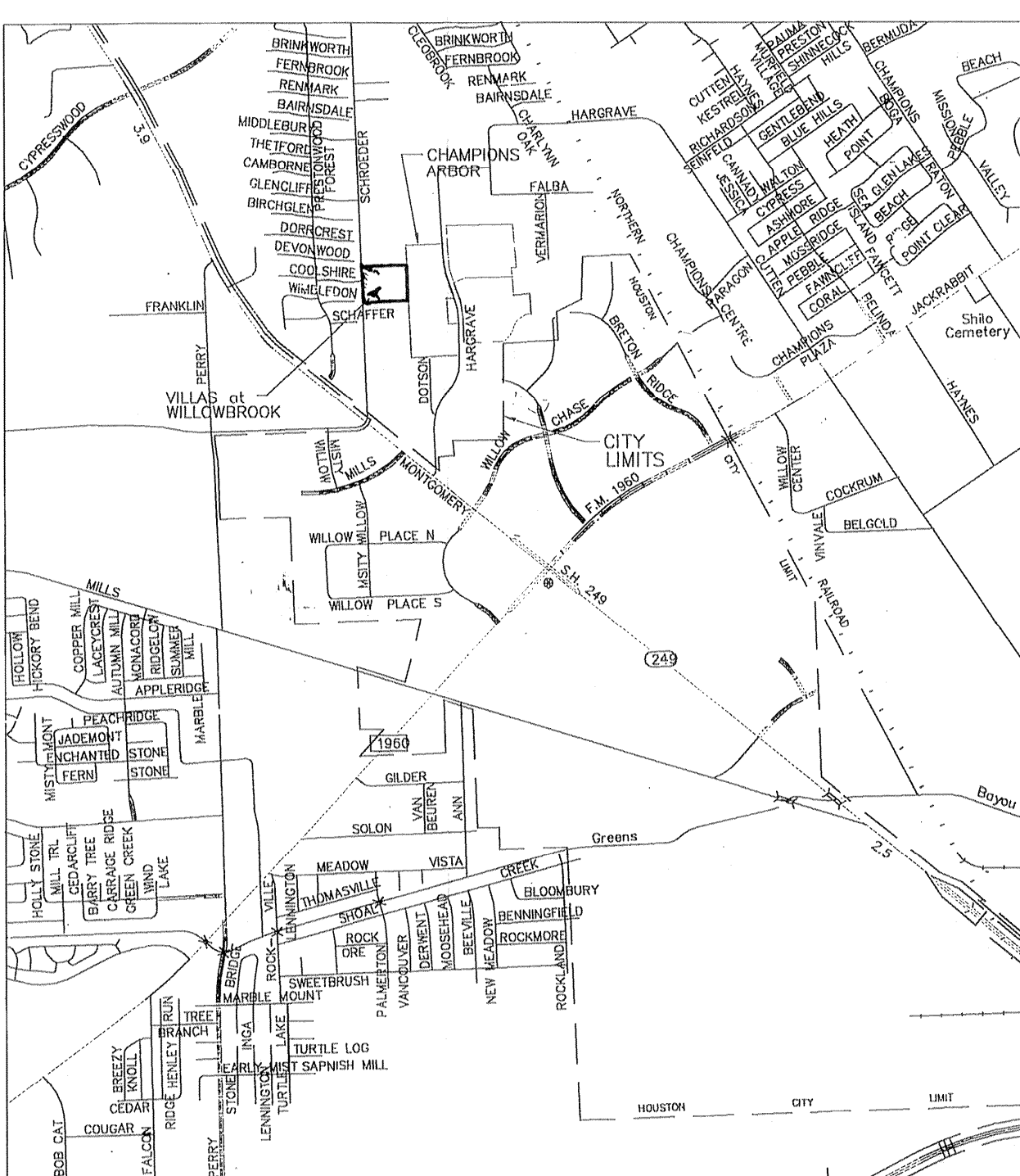
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AS BUILT DRAWINGS
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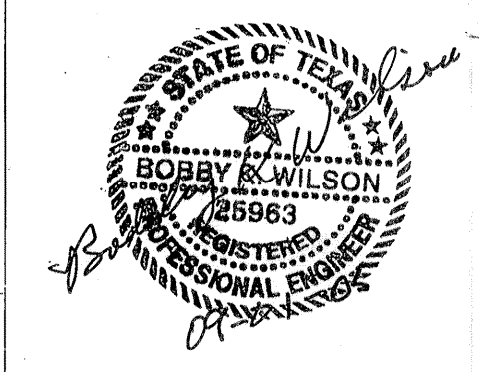
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CITY OF HOUSTON
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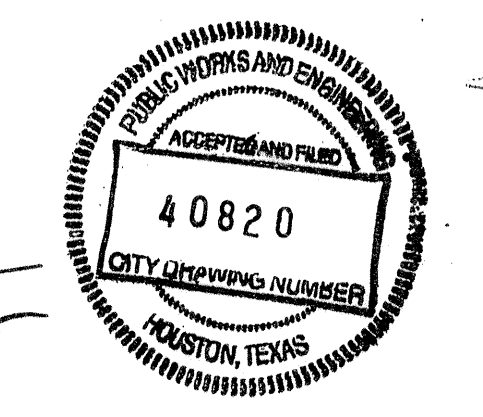
R.G. Dangle 9.1.15
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* STORM WATER
WATER PRODUCTION

STREET & BRIDGE

CITY ENGINEER
Richard J. Bullock
DIRECTOR OF PUBLIC WORKS AND ENGINEERING
9/15/05



JOB #482 U&P - VILLAS at WILLOWBROOK - UTILITIES, PAVING & DETENTION

1. PAVING

I. DESIGN THICKNESS OF PAVING 6" CONCRETE PAVING
 II. STABILIZED SUBGRADE TO A DEPTH OF 6" MIN.
 III. DESIGN STRENGTH OF CONCRETE 3000 psi
 IV. TYPE AND PLACEMENT OF STEEL: AS PER SPECS

NOTES:
 I - IV TO BE COMPLETED ONLY IF PAVING IS TO BE ACCEPTED BY HARRIS COUNTY

DRIVEWAYS

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED: 0
 II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET _____

NOTES:
 I - II TO BE COMPLETED ONLY IF PROJECT ENTAILS CONSTRUCTION OF DRIVEWAYS AT TIME OF DEVELOPMENT

FIRE APPARATUS ACCESS ROAD

REQUIRED AND SHOWN ON SHEET(S) _____
 NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS AND MEDIANS REQUIRE STANDARD 6" CURBING
 II. STANDARD 6" CURBING PROPOSED
 4" x 12" CURBING PROPOSED
 6" OR 4" x 12" ALLOWED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. **MEDIAN CUTS**
 NO MEDIAN CUT OR RELOCATION IS PROPOSED
 MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. **LEFT HAND TURN**
 NO LEFT TURN LANE IS PROPOSED
 LEFT TURN LANE IS SHOWN ON SHEET _____

III. **TRAFFIC CONTROL PLAN**
 NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
 TRAFFIC CONTROL SHOWN ON SHEET _____

IV. **EXISTING TRAFFIC CONTROL**
 DEVICES SHOWN ON PLANS (T.C. BOXES AND LOOPS)

NOTES:
 I - III TO BE COMPLETED FOR ALL PROJECTS

6. STORM WATER QUALITY

I. **CONSTRUCTION PROTECTIVE MEASURES.**
 SWPPP SITE PLAN AND DETAILS ON SHEET(S) 5 & 18

II. **APPLICABILITY FOR PERMANENT FEATURES.**

EXEMPT NEW DEVELOPMENT OF LESS THAN 5 ACRE PARCEL.
 EXEMPT REDEVELOPMENT OF A 5 ACRE OR LARGER PARCEL WHERE TOTAL IMPERVIOUS SURFACE (EXISTING PLUS PROPOSED) IS LESS THAN 1 ACRE.
 EXEMPT "GRAND FATHERED" BY AN EXISTING STORM SEWER LINE.
 "STORM WATER QUALITY MANAGEMENT PLAN" HAS BEEN/WILL BE INCLUDED IN A SEPARATE SUBMITTAL ENTITLED _____
 "STORM WATER QUALITY MANAGEMENT PLAN" INCLUDED. SWQMP SITE PLAN ON SHEET(S) 4

III. **STORM WATER QUALITY FEATURES.**

VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
 POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) 4 & 19
 HYDRODYNAMIC TYPE SEPERATOR MODEL: _____
 OTHER(S): _____

NOTES:
 I - II REQUIRED ON ALL PROJECTS, III IF NOT EXEMPT OR "GRANDFATHERED"

NOTE: IF A MAJOR CATEGORY ON THIS SHEET IS NOT REQUIRED FOR THE PROJECT, "X" THROUGH THAT ENTIRE SECTION. CATEGORY (6) MUST BE COMPLETED.

2. SUBDIVISION DRAINAGE

I. **DRAINAGE SYSTEM TYPE**
 STORM SEWER
 ROADSIDE DITCH

II. **DESIGN METHOD USED**
 CITY OF HOUSTON 2 YR FREQUENCY
 OTHER _____

III. **DRAINAGE SYSTEM OUTFALL**
 TO DETENTION POND
 DETENTION POND MAINTAINED BY Villas at Willowbrook H.O.A.
 TO HCFCD DRAINAGE DITCH UNIT NO. _____
 TO HARRIS COUNTY ROADSIDE DITCH
 ROAD NAME: SCHROEDER RD.

IV. **STORM WATER OUTFALL**
 STATIC W.S.E. @ OUTFALL IS _____
 PROPOSED STORM SEWER IS SUBMERGED.
 CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: 6 (CFS)
 FROM DRAINAGE AREA MAP DATED: 04-21-05
 PREPARED BY: BOBBY K. WILSON, P.E.
 ACTUAL OUTFALL RATE: 2 (CFS)

OTHER: _____

V. **DRAINAGE SYSTEM FLOW RATE**
 FLOW PRIOR TO DETENTION: 42 cfs
 FLOW AFTER DETENTION (IF REQUIRED): 2 cfs

NOTES:
 I - IV REQUIRED ON ALL SUBDIVISION TYPE PROJECTS INCLUDING MANUFACTURED HOME PARKS.

7. FLOOD CONTROL DISTRICT CRITERIA

I. **DETENTION SUMMARY**

STORMWATER DETENTION BASIN ROUTING TABLE

RAINFALL EVENT PROBABILITY	PRE-DEVELOPED PEAK RUNOFF (CFS)	POST-DEVELOPED PEAK RUNOFF (CFS)	DETENTION BASIN PEAK OUTFLOW (CFS)	MAXIMUM WATER SURFACE ELEVATION	PEAK STORAGE VOLUME (AC-FT)	STORAGE RATE (AC-FT PER AC)
10% EXCEEDANCE (10-YEAR)	N/A		2	130	6.5	.76
1% EXCEEDANCE (100-YEAR)	42	2	2	130	6.5	.76

ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS:
 VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = 6.5 AC-FT .75 % OF TOTAL VOLUME
 MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = 3 CFS
 DRAIN TIME FOR BASIN = 28 HOURS BASED ON _____ MAXIMUM HEAD CONDITIONS.

STORMWATER DRAINAGE DESIGN REPORT

PRELIMINARY ENGINEERING REPORT, DETENTION BASIN WITH PUMPED OUTFALL INTO SCHROEDER ROAD SERVING VILLAS AT WILLOWBROOK, IN HARRIS COUNTY

REPORT TITLE _____
 REPORT DATE REV. 04-21-05 ENGINEERING FIRM PROVIDENT CONSULTING, INC.
 DATE OF ACKNOWLEDGEMENT BY HCFCD OR FLOODPLAIN ADMINISTRATOR 05-13-05

STORMWATER DETENTION FOR THE PROPOSED WORK CONTAINED IN THESE PLANS IS PROVIDED BY OTHER PLANS:
 PLAN TITLE _____
 ENGINEERING FIRM _____ DATE SIGNED BY HCFCD _____

II. HCFCD STANDARD NOTES: SEE SHEET 3 OF THESE PLANS.

III. HCFCD STANDARD DETAILS: SEE SHEET 20 OF THESE PLANS.

IV. REFER TO PLAN SHEETS 13 FOR EXISTING AND PROPOSED RIGHT OF WAY DELINEATION AND COMPLETE RECORDING INFORMATION TO INCLUDE CLERK'S FILE NUMBERS, TYPE OF ESTATE (e.g., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

NOTES:
 I. COMPLETE ONLY IF HCFCD OR HARRIS COUNTY IS REQUIRING DETENTION.
 II. COMPLETE ONLY IF PROJECT HAS WITHIN IT OR IS IMMEDIATELY ADJACENT TO AN EXISTING OR PROPOSED HCFCD MAINTAINED CHANNEL OR DETENTION BASIN.
 III. COMPLETE ONLY IF PROJECT INCLUDES NEW OUTFALL, BACKSLOPE INTERCEPTOR OR OTHER RELATED WORK WITHIN AN EXISTING OR PROPOSED HCFCD MAINTAINED CHANNEL OR DETENTION BASIN.
 IV. COMPLETE ONLY IF PROJECT HAS WITHIN OR IMMEDIATELY ADJACENT TO AN EXISTING OR PROPOSED PUBLIC DRAINAGE CHANNEL OR DETENTION BASIN.

3. SITE DRAINAGE
 (OTHER THAN SUBDIVISION TYPE PROJECTS)

I. **PROPOSED DRAINAGE AREA**
 NEW DEVELOPMENT AREA: _____
 RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____

II. **DETENTION VOLUME (DRY BASIN)**
 NEW AREA _____ X 0.65 = _____ ACRE-FEET
 DETENTION REQUIRED _____
 PROPOSED VOLUME = _____ ACRE FEET

III. **OUTFALL**
 OUTFALL TO ROADSIDE DITCH
 STORM SEWER
 OTHER _____
 STATIC W.S.E. @ OUTFALL IS _____
 ROADSIDE DITCH OUTFALL: _____
 ROAD FRONTAGE _____ X 0.0088 = _____ (CFS) ALLOWABLE OUTFALL
 PROPOSED OUTFALL RATE: _____

STORM SEWER OUTFALL
 CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
 FROM DRAINAGE AREA MAP DATED: _____
 PREPARED BY: _____ (CFS)
 ACTUAL OUTFALL RATE: _____ (CFS)

IV. **PUMPED DETENTION FACILITIES**
 VOLUME THAT GRAVITY FLOWS: _____ ACRE FEET
 VOLUME THAT IS PUMPED: _____ ACRE FEET
 ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
 PUMP SPECIFICATIONS AND OPERATING PLAN APPEAR ON SHEET _____

V. **FLOW RESTRICTOR SIZE**
 OUTFALL PIPE SIZE: _____
 RESTRICTOR PIPE SIZE: _____

VI. PROPOSED STORM SEWER IS SUBMERGED.

NOTES:
 I. REQUIRED FOR ALL PROJECTS OTHER THAN SUBDIVISION TYPE PROJECTS. DEVELOPMENT AREA INCLUDES ALL AREA WHERE BUILDING, PAVING OR GRADING WILL OCCUR. AREAS NOT INCLUDED BUT WITHIN THE PROPERTY'S BOUNDARIES MUST BE DELINEATED AS A "NO WORK" AREA ON THE DRAWINGS.
 II. - V. REQUIRED WHEN PROPOSED FACILITY WILL INCREASE THE AMOUNT OF RUNOFF INTO A COUNTY DRAINAGE DITCH, ROADSIDE DITCH OR STORM SEWER. IF ANALYZED AND THE RECEIVING DRAINAGE STRUCTURE HAS CAPACITY IN THE FULLY DEVELOPED CONDITION OF THE AREA IT SERVES, NO DETENTION IS REQUIRED.

8. FLOOD PLAIN STATUS

I. **GENERAL INFORMATION**
 FIRM PANEL(S) FOR PROPERTY: 48201C0340 J
 FIRM PANEL(S) DATE: NOV. 6, 1996
 STATUS OF PROPERTY ON MAP
 LOCATED IN UNSHADED ZONE "X"
 ENTIRELY LOCATED IN SHADED AND UNSHADED ZONE "X"
 LOCATED PARTIALLY IN ZONE "AE" DELINEATE ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT)
 LOCATED ENTIRELY IN ZONE "AE" (INDICATE BASE FLOOD LEVEL ON CONSTRUCTION DRAWINGS)
 OTHER _____
 SITE REMOVED FROM FLOODPLAIN BY LOMA OR LOMR-F CASE NO. _____

FLOOD HAZARD RECOVERY DATA
 FLOOD HAZARD RECOVERY DATA AVAILABLE AND UTILIZED (PROVIDED INFORMATION BASED ON 1973 AND 2001 ADJUSTMENTS).
 FLOOD HAZARD RECOVERY DATA NOT AVAILABLE.

ELEVATION INFORMATION
 BENCHMARK USED
 FEMA RM benchmark
 HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
 OTHER _____

DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT. BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
 Y1216, 1973 ADJ., ELEV = 125.994
 Y1216, 1978 ADJ., ELEV = 125.406
 Y1216, 1988 ADJ., ELEV = 123.94
 ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

II. **FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION**
 PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN ZONE "X" (SHADED OR UNSHADED)
 PROPERTY LIES PARTIALLY BELOW THE BASE FLOOD LEVEL (MUST BE DELINEATED ON TOPOGRAPHIC SURVEY)

III. **FLOODPLAIN STORAGE SUMMARY** (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
 A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
 i.e., BELOW ELEVATION _____ (19 _____ ADJ.) _____ CUBIC YARDS
 B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
 i.e., BELOW ELEVATION _____ (19 _____ ADJ.) _____ CUBIC YARDS

NOTES:
 I. COMPLETE FOR ALL PROJECTS
 II. COMPLETE ONLY IF PROJECT IS ADJACENT TO 100-YEAR FLOOD PLAN

IV. LOMR REQUIRED
 VERIFIED BY: SL

4. WATER AND WASTEWATER

I. **TYPE OF SERVICE PROPOSED**
 MUNICIPALITY: _____
 MUNICIPAL UTILITY DISTRICT: H.C.M.U.D. 191
 OTHER DISTRICT: _____
 PRIVATE WATER AND WASTEWATER SYSTEMS
 PRIVATE WATER SYSTEM AND INDIVIDUAL OSSF
 INDIVIDUAL WATER WELL AND OSSF
 OTHER: _____
 NO UTILITIES ARE PROPOSED

II. **PROOF OF CAPACITY**
 LETTER FROM DISTRICT AUTHORIZING SERVICE AND CONNECTION
 TCEQ APPROVAL FOR WATER SYSTEM AND PERMIT FOR WASTEWATER SYSTEM.
 TCEQ APPROVAL FOR WATER SYSTEM AND OSSF FEASIBILITY REPORT
 OSSF FEASIBILITY REPORT WHICH CONSIDERS INDIVIDUAL WELLS

III. **AMOUNT OF FLOW**
 RESIDENTIAL: 94 LOTS OR UNITS
 COMMERCIAL: _____ AVERAGE DAILY FLOW
 OTHER: _____

NOTES:
 I. COMPLETE FOR ALL PROJECTS
 II. COMPLETE FOR ALL PROJECTS.
 III. COMPLETE ONLY IF TCEQ DISCHARGE PERMIT IS PROPOSED

5. DESCRIPTION OF PROPERTY

I. **LEGAL DESCRIPTION / PLAT NAME:**
VILLAS AT WILLOWBROOK

NEW PLAT LOCATED IN THESE SURVEYS:
JOHN MERRY SURVEY, A-49 and
GILBERT BROOKS SURVEY, A-6
 REPLAT OF RECORDED SUBDIVISION OR RESERVE KNOWN AS _____

II. **ADJACENT ROADS** SOUTH of CYPRESSWOOD RD., EAST of SCHROEDER RD., WEST of HARGRAVE RD., & NORTH of SH 249.

III. **JURISDICTIONS**
 CITY OF HOUSTON
 CITY OF _____
 ETJ, CITY OF CITY of HOUSTON
 UTILITY DISTRICT: HARRIS COUNTY MUD 191
 OTHER: _____

NOTES:
 I. COMPLETE FOR ALL PROJECTS
 II. COMPLETE ONLY IF PROJECT LIES ADJACENT TO A PUBLIC OR PRIVATE ROAD
 III. COMPLETE FOR ALL PROJECTS

HCPID SIGNATURE BLOCK

PROJECT KNOWN AS:
VILLAS at WILLOWBROOK, WATER, SANITARY,
STORM SEWER, & PAVING IMPROVEMENTS in H.C.M.U.D.191
 WAS ACCEPTED BY THE FOLLOWING GROUPS FOR THE PURPOSES LISTED BELOW:

ENGINEERING DIVISION

BY _____ INTERPOSE NO OBJECTION DATE _____
 AS TO PAVING AND/OR DRAINAGE ONLY
 BY Shannon C. Watson DATE 9 Jan 06

BY _____ AS TO LOCATION OF ITEMS IN COUNTY RIGHT OF WAY DATE _____
 AS TO STORM WATER QUALITY
 BY Shannon C. Watson DATE 9 Jan 06

HARRIS COUNTY FLOOD CONTROL DISTRICT

BY _____ INTERPOSE NO OBJECTION DATE _____
 FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY
 BY Pamela B. Sal DATE 11/2/05

BY _____ FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY DATE _____
 APPROVED: _____

BY _____ FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY DATE _____
 APPROVED: _____

ADDITIONAL COMMENTS:
Detention basin not intended to be maintained by HCFCD.

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. THESE SIGNATURES ARE VALID FOR A MAXIMUM OF TWO YEARS.

ENGINEER'S CERTIFICATION

I, BOBBY K. WILSON, P.E., A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

UNLIMITED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 24
BOBBY K. WILSON 10-24-05
 SIGNATURE DATE

REVISIONS

DATE	SHEET	DESCRIPTION	ACKNOWLEDGMENT

VILLAS at WILLOWBROOK, WATER, SANITARY,
 STORM SEWER, & PAVING IMPROVEMENTS in H.C.M.U.D.191

REQUEST NO. 207217 APPLICANT NO. 43458 SHEET NUMBER 2 OF 24

**HARRIS COUNTY
 PUBLIC INFRASTRUCTURE DEPARTMENT
 EXPRESS REVIEW SHEET**

SANITARY SEWER NOTES:

1. WATER LINES, WASTEWATER COLLECTION SYSTEMS, AND DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S "STANDARD CONSTRUCTION SPECIFICATIONS" DATED OCTOBER 2002, AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING" DATED OCTOBER 2002 UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN IS CONSISTENT WITH THE MINIMUM STANDARDS ESTABLISHED IN THE "INFRASTRUCTURE DESIGN MANUAL", DATED OCTOBER 2002. CONTRACTOR SHALL OBTAIN COPY OF SAME AND USE IT. OBTAIN FROM 611 WALKER FILE ROOM.
2. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM SEWERS, DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, WITH NO COST TO THE CITY OF HOUSTON.
3. ALL SANITARY SEWERS SHALL BE INSTALLED BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 02317-01, 02317-02, AND 02317-08 AS APPLICABLE.

GENERAL NOTES - STORM SEWERS

1. STORM SEWERS SHALL BE IN ACCORDANCE WITH THE CITY OF HOUSTON DESIGN MANUAL (OCT. 2002) AND CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS (OCTOBER, 2002) AS CURRENTLY AMENDED.
2. REINFORCED CONCRETE PIPE (C-76 CLASS III) STORM SEWER SHALL BE INSTALLED BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 02317-02, 02317-03, 02317-05 AND 02317-06 AS APPLICABLE.
3. ALL SEWERS CONSTRUCTED INSIDE LOT EASEMENTS SHALL BE R.C.P. TWENTY (20) FOOT WIDE EASEMENTS SHALL BE PROVIDED.
4. 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.
5. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION, (713-316 3565), AND WRITTEN NOTIFICATION 48 HOURS IN ADVANCE.
7. CONTRACTOR TO OBTAIN ALL CONSTRUCTION PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT."
8. ALL STORM SEWER MANHOLE RIMS LOCATED OUTSIDE THE PROPOSED PAVING SHALL BE SET TO PROPOSED FINISH GRADE ELEVATION.
9. BEFORE UTILITY CONSTRUCTION BEGINS, ADEQUATE DRAINAGE MUST BE PROVIDED SO THAT NO SHEET FLOW FLOODING OF ROADWAY OR ADJOINING PROPERTIES OCCURS.
10. THE CONTRACTOR MAY USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
11. 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.
12. 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

1. ALL WATER LINES TO HAVE A MINIMUM OF FOUR (4) FEET OF COVER TO TOP OF CURB.
2. 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" OCTOBER 2002.
3. 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.
4. ALL WATER MAINS UNDER STREET PAVEMENT - 4 INCHES THRU 12 INCHES IN DIAMETER, IF NOT SPECIFIED OTHERWISE, SHALL BE AWWA C-900 PVC PIPE.
3. ALL FLUSHING VALVES SHALL BE SET THREE (3) FEET BEHIND BACK OF CURB.
6. STEEL WATER LINE SECTION TO EXTEND A OF FIVE (5) FEET MINIMUM BEYOND 45' BENDS.
7. THE CONTRACTOR MAY USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
8. WHENEVER SANITARY SEWERS CROSS UNDER WATER MAINS, A 12" 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. REFER TO CITY OF HOUSTON, DESIGN MANUAL, PAGES 7-11 & 7-12 SEE TABLE 7.4 THIS SHEET.
9. 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.
10. 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. REFER TO CITY OF HOUSTON, DESIGN MANUAL, PAGES 7-11 & 7-12 SEE TABLE 7.4 THIS SHEET.
11. 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.
12. ALL P.V.C. WATER MAINS SHALL BE F C-900, DR 18, CLASS 150.
13. ALL WATER METERS MUST HAVE INDIVIDUAL SERVICE LEADS AS PER CITY OF HOUSTON STANDARDS.

CITY OF HOUSTON DESIGN MANUAL
Department of Public Works & Engineering Water Line Design Requirements

Table 7.4 PROTECTION REQUIREMENTS AT WATER LINE - SANITARY SEWER CROSSINGS

PRIMARY CONDITION	PROPOSED WATER EXISTING SANITARY		PROPOSED WATER PROPOSED SANITARY OR EXISTING WATER PROPOSED SANITARY				
	WATER OVER SANITARY	WATER UNDER SANITARY	WATER OVER SANITARY	WATER UNDER SANITARY	WATER OVER SANITARY	WATER UNDER SANITARY	
IF THE CLEARANCE IS	Less than 2'	Greater than or equal to 2' but less than 9'	Less than 2'	Greater than or equal to 2' but less than 9'	Less than 2'	Greater than or equal to 2' but less than 9'	Greater than or equal to 2' but less than 9'
*Protection Requirement	1,2,3	2	6	4	1,3,5	2	1,3,5 5

* PROTECTION REQUIREMENTS FOR SANITARY SEWER CROSSINGS (Unless Variance is Granted by the TCEO) (All clearances shall be measured from outside wall to outside wall)

1. Place one full section of approved restrained joint water line centered at sanitary sewer. Not applicable for existing water.
2. If no evidence of sanitary sewer leakage, place one full section of water line centered over sanitary sewer; if there is evidence of leakage, use note 4 below.
3. One foot minimum clearance.
4. Auger 9 feet minimum each side of sanitary sewer. Place one full section of water line, centered under sanitary sewer. Fill augered hole with bentonite/clay mixture. If sewer line is leaking, sewer line shall be replaced with 150 psi lined ductile iron or PVC pipe with appropriate adapters on all portions of the sanitary sewer within 9 feet of the water line. Provide restrained joints for both water and sanitary sewer lines at each end of proposed pipe section. Water line must pass a pressure and leakage test as specified in City's Standard Specifications. Sewer line shall pass an infiltration, ex-filtration low pressure air test or leakage test as specified in TCEO Chapter 317-2 Design Criteria for Sewage Systems.
5. Place minimum one full section of sanitary sewer, 150 psi lined ductile iron or PVC pipe centered at the water line and provide restrained joints for both water and sanitary sewer lines at each end of proposed pipe section. Use cement-stabilized sand backfill for all portions of the sanitary sewer within 9 feet of the water line, as measured perpendicularly from any point on the water line to the sanitary sewer (minimum 2.5 sacks cement per cubic yard of sand). The cement-stabilized sand bedding shall start at a point 6 inches below the bottom of sanitary sewer to 6 inches above the top of sanitary sewer and one quarter of the pipe diameter or 6 inches, whichever is greater, on the side of the sanitary sewer.
6. Not allowed.

GENERAL NOTES - PAVING

1. 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.
2. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
3. ALL RADII AT CURB RETURNS TO BE 25.0' TO BACK OF CURB UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION, (713-316-3561), AND WRITTEN NOTIFICATION 48 HOURS IN ADVANCE.
5. STOP SIGN (R1 - 1A) TO BE PLACED AT INTERSECTIONS.
6. OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY FOR CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN COUNTY ROAD R.O.W.
7. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT. PRIOR TO STARTING CONSTRUCTION.
8. 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:

"AUTHORIZATION NOTICE ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE ENGINEERING DEPARTMENT PERMIT OFFICE REQUIRED PRIOR TO CONSTRUCTION OF UTILITIES OR LEFT TURN LANES WITHIN HARRIS COUNTY RIGHT-OF-WAY." CONTACT HARRIS COUNTY PERMIT OFFICE (713-956-3000)

PRIVATE UTILITY COMPANY NOTES

Centerpoint Energy, Inc. / Electric Facilities

Overhead lines may exist on the property. We have not attempted to mark these 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 Centerpoint at 228-7400.

Centerpoint Energy, Inc. / Gas Facilities

Location of Centerpoint 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 Company facilities 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.

The contractor shall call 1-800-344-8377 a minimum of 48 hours prior to construction to have underground lines field located.

When excavating within eighteen inches (18") of the indicated location of Southwestern Bell Telephone facilities, all excavations must be accomplished using non-mechanical excavation procedures. When boring the contractor shall expose the Southwestern Bell Telephone facilities.

When Southwestern Bell Telephone facilities are exposed, the contractor should provide support to prevent damage to the conduit ducts or cables. When excavating near telephone poles the contractor shall brace the pole for support.

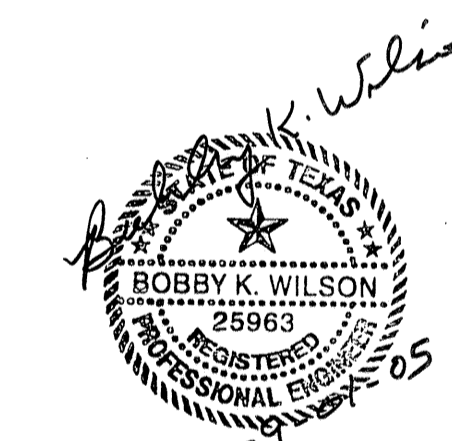
Thank You

STANDARD HCFCD NOTES FOR PLANS

1. Harris County Flood Control District, Construction Department, shall be notified at least 48 hours prior to construction (713-684-4116). A copy of the approved construction drawings is required at this time.
2. Engineer shall submit letter and record drawings to the Harris County Flood Control District, Construction 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.
3. Contractor shall be responsible for protecting, maintaining, and restoring backslope drainage systems.
4. All disturbed areas within the Harris County Flood Control District right-of-way, except the channel bottom, shall be hydro-mulch seeded as per Harris County Flood Control District specification entitled "Turf Establishment" (Dry Application) or approved equal.
5. Backfill to be compacted in no greater than 1 foot lifts to the density of the undisturbed adjacent soil.
6. Contractor shall be responsible for excavating channel flowline to design elevations as shown on plans and downstream as necessary to insure no water in storm sewer during "dry" conditions.
7. Contractor shall be responsible for maintaining flow in channel during construction and restoring channel to original condition.
8. All excavated material is to be removed from the Harris County Flood Control District right-of-way. No fill is to be placed within designated flood plain area without first obtaining a fill permit.
9. Contractor, with the assistance of the Engineer if necessary, shall be responsible for obtaining all applicable City, County, State, and Federal permits.

"STORM WATER QUALITY PRE-CONSTRUCTION INSPECTION REQUIREMENTS":

THE PROPERTY OWNER OR THE CONTRACTOR SHALL CONTACT THE HARRIS COUNTY STORM WATER QUALITY PERMITTING SECTION AT 713-956-3000 FOR A PRE-CONSTRUCTION INSPECTION PRIOR TO COMMENCING ANY CLEARING OR CONSTRUCTION ACTIVITIES ON THE SITE.



PROVIDENT CONSULTING, INC.
1405 ALLSTON ST.
HOUSTON, TEXAS 77008
(713)802-1019

PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX
SBC VALID FOR ONE YEAR APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES
CENTERPOINT ENERGY APPROVED ONLY FOR CROSSING UNDERGROUND FACILITIES UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

VILLAS at WILLOWBROOK
H.C.M.U.D. #191
UTILITIES & PAVING

NOTES

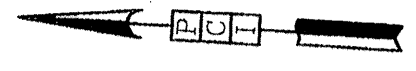
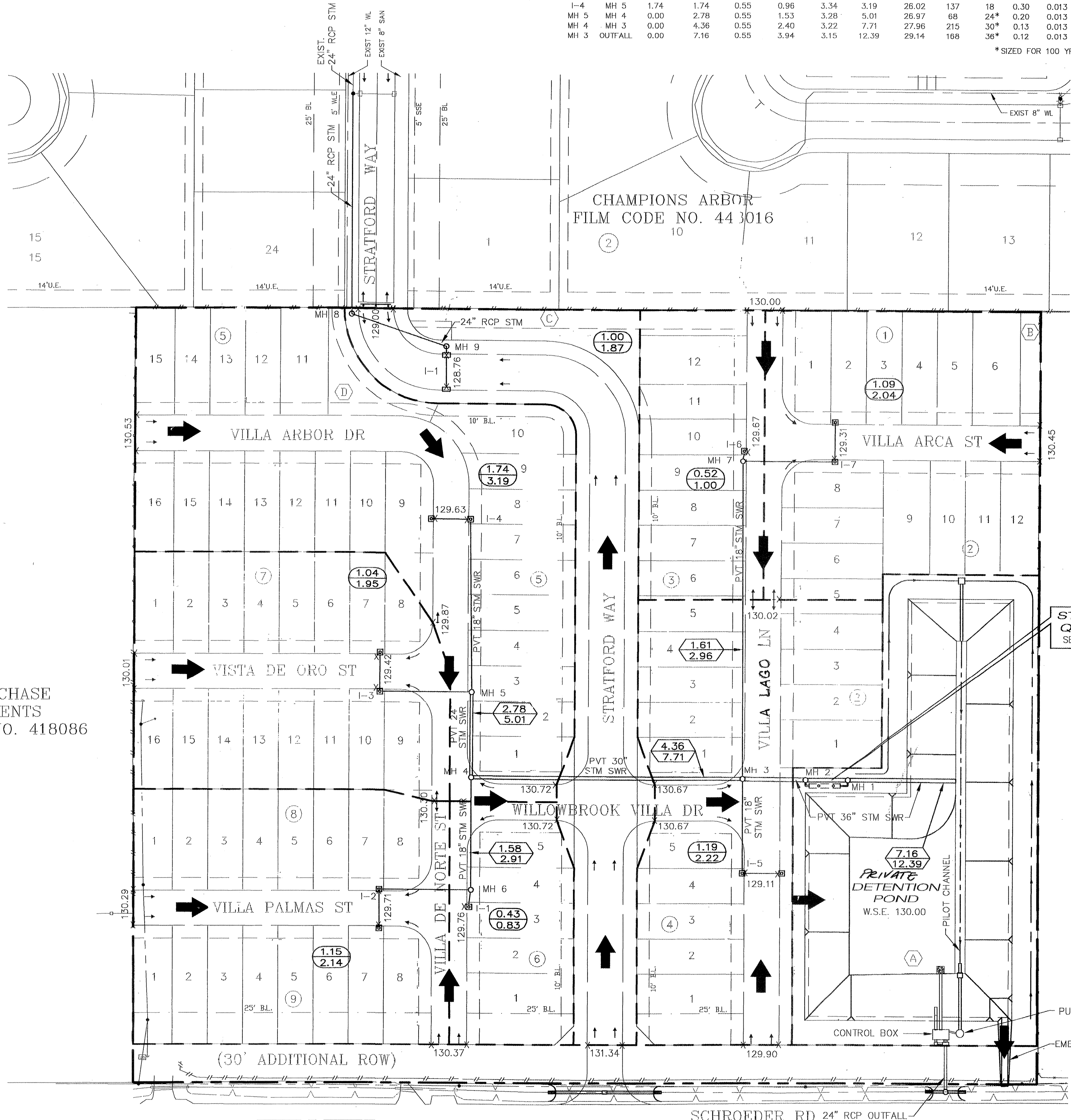
WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWD

FILE NO:
DRAWING SCALE: N/A
VERT: HORZ:
SHEET No: 3 OF 24

STORM SEWER CALCULATIONS
CITY OF HOUSTON 2 YEAR RAINFALL

MH/Inlet From	MH/Inlet To	Drainage Area Ac.	Total Area Ac.	Runoff Coefficient C	C*A	2 year Intensity (in/hr)	Sum of Flows (cfs)	Time of Conc. (minutes)	Reach Length (feet)	Diameter (inches)	Slope %	Manning's n	Design Capacity (cfs)	Design Velocity (fps)	Fall (feet)	Flow Line upstrm (ft)	Flow Line downstrm (ft)	Actual Velocity (fps)	Hydraulic Gradient (%)	Change in Head (ft)	Hydraulic Gradient Upstrm (ft)	Hydraulic Gradient Dnstrm (ft)	Gutter El Upstream (ft)	Natural Ground Upstrm (ft)	Natural Ground Dnstrm (ft)
MH 9	EXIST	1.00	1.00	0.55	0.55	3.41	1.87	25.00	253	24	0.18	0.013	9.6	3.1	0.46	123.71	123.26	2.37	0.01	0.02	125.28	125.26	128.38	131.1	128.0
I-3	MH 5	1.04	1.04	0.55	0.57	3.40	1.95	25.07	73	18	0.30	0.013	5.8	3.3	0.22	122.94	122.72	2.94	0.03	0.03	124.25	124.22	129.04	130.2	130.1
I-2	MH 6	1.15	1.15	0.55	0.63	3.39	2.14	25.25	73	18	0.30	0.013	5.8	3.3	0.22	123.71	123.49	3.02	0.04	0.03	125.02	124.99	129.33	130.5	130.4
MH 6	MH 4	0.43	1.58	0.55	0.87	3.35	2.91	25.84	89	18	0.30	0.013	5.8	3.3	0.27	123.49	123.22	3.27	0.08	0.07	124.79	124.72	129.67	130.4	130.3
I-7	MH 7	1.09	1.09	0.55	0.60	3.40	2.04	25.15	72	18	0.30	0.013	5.8	3.3	0.22	125.11	124.89	2.98	0.04	0.03	126.42	126.39	128.93	125.4	129.9
MH 7	MH 3	0.52	1.61	0.55	0.89	3.35	2.96	25.87	252	18	0.30	0.013	5.8	3.3	0.76	122.98	122.22	3.28	0.08	0.20	123.92	123.72	129.29	129.9	130.9
I-5	MH 3	1.19	1.19	0.55	0.65	3.39	2.22	25.31	75	18	0.30	0.013	5.8	3.3	0.23	123.71	123.48	3.05	0.04	0.03	125.01	124.98	128.73	130.1	130.9
I-4	MH 5	1.74	1.74	0.55	0.96	3.34	3.19	26.02	137	18	0.30	0.013	5.8	3.3	0.41	125.43	125.02	3.34	0.09	0.13	126.65	126.52	129.25	130.1	130.1
MH 5	MH 4	0.00	2.78	0.55	1.53	3.28	5.01	26.97	68	24	0.20	0.013	10.1	3.2	0.14	122.22	122.08	3.21	0.05	0.03	124.12	124.08	129.66	130.1	130.3
MH 4	MH 3	0.00	4.36	0.55	2.40	3.22	7.71	27.96	215	30*	0.13	0.013	14.8	3.0	0.28	120.62	120.34	3.04	0.04	0.08	122.92	122.84	129.86	130.3	130.9
MH 3	OUTFALL	0.00	7.16	0.55	3.94	3.15	12.39	29.14	168	36*	0.12	0.013	23.1	3.3	0.20	119.84	118.65	3.33	0.03	0.06	122.70	121.65	129.04	130.9	129.8

* SIZED FOR 100 YR FLOW



DEPTH OF 100 YEAR FLOODING

MH/INLET NO.	TOP OF CURB	WATER SURFACE ELEV	PONDING DEPTH
I-1	129.76	130.30	6.5"
I-2	129.71	130.30	7.1"
I-3	129.42	129.87	5.4"
I-4	129.63	130.00	4.4"
I-5	129.11	130.00	10.7"
I-6	129.67	130.02	4.2"
I-7	129.31	130.02	8.5"
I-8	128.76	129.00	2.9"

Privately owned utilities within private properties shall be reviewed and released by the County Engineer's Office.

"SWQMP Permit Requirements"

"Upon completion of construction the permanent storm water quality feature will be cleaned of all sediment and debris that may have accumulated. Additionally all disturbed areas related to this project will be completely stabilized. This will be done prior to submitting an "As-Built Certificate" and calling for final inspection. Harris County Engineering will not pass the Final Inspection or issue the Certificate of Compliance until the required final cleanup and stabilization have been completed. The development is not approved for operation until a Certificate of Compliance has been issued."

LEGEND

- 1.00
1.87 DRAINAGE AREA IN ACRES
- 10.00
17.03 AREA CONTRIBUTING TO LINE IN ACRES
- DRAINAGE AREA DIVIDE
- ← DIRECTION OF 100 YEAR EXTREME EVENT
- X 130.00 TOP OF CURB ELEVATION

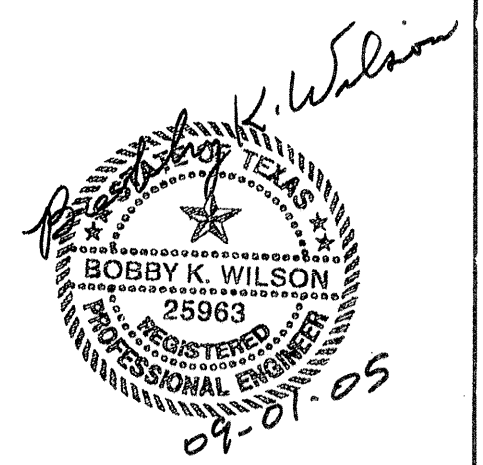
STEEPLECHASE APARTMENTS
FILM CODE NO. 418086

- RESTRICTED RESERVE "A"
COMPENSATING OPEN SPACE AND DETENTION/DRAINAGE
63,962 S.F. - 1.4684 AC.
- RESTRICTED RESERVE "B"
OPEN SPACE
1,448 S.F. - 0.0332 AC.
- RESTRICTED RESERVE "C"
OPEN SPACE
7,412 S.F. - 0.1702 AC.
- RESTRICTED RESERVE "D"
OPEN SPACE
3,065 S.F. - 0.0704 AC.

PRESTONWOOD FOREST SECTION ONE

BENCH MARK
BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
Y1216, 1973 ADJ., ELEV = 125.994
Y1216, 1978 ADJ., ELEV = 125.406
Y1216, 1988 ADJ., ELEV = 123.94
ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

FLOOD PLAIN STATEMENT:
No portion of this tract lies within a "100 year flood hazard area" as designated on The National Flood Insurance Program - Flood Insurance Rate Map issued by the Federal Emergency Management Agency under Community Panel Number 480287 0435 J for Harris County, Texas dated November 6, 1996.



PROVIDENT CONSULTING, INC.
1405 ALLSTON ST.
HOUSTON, TEXAS 77068
(713)802-1019

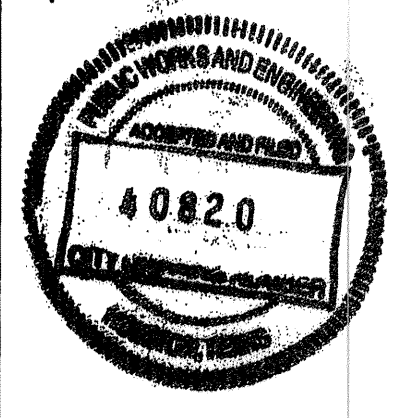
PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX
SBC VALID FOR ONE YEAR
APPROVED ONLY FOR UNDERGROUND FACILITIES
CENTERPOINT ENERGY
APPROVED ONLY FOR CROSSING UNDERGROUND FACILITIES
UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

VILLAS AT WILLOWBROOK
in
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS
DRAINAGE AREA MAP
& STORM WATER
QUALITY PLAN

TRAFFIC
ST. & BRIDGE
STORMWATER
SWQ

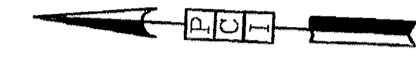
FILE NO:
DRAWING SCALE:
1" = 50'
VERT: HORZ:
SHEET No: 4 OF 24



BENCH MARK

BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
 Y1216, 1973 ADJ., ELEV = 125.994
 Y1216, 1978 ADJ., ELEV = 125.406
 Y1216, 1988 ADJ., ELEV = 123.94
 ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

CHAMPIONS ARBOR
 FILM CODE NO. 448016



Privately owned utilities within private properties shall be reviewed and released by the County Engineer's Office.

LEGEND

- HM HYDROMULCH SEEDING
- SCE STABILIZED CONSTRUCTION EXIT
- FF FILTER FABRIC FENCE
- RFB REINFORCED FILTER FABRIC BARRIER
- IPB INLET PROTECTION BARRIER
- DS DIVERSION SWALE
- CTW CONCRETE TRUCK WASHOUT
- TFA TEMPORARY FUELING AREA
- EXISTING SHEET FLOW

NOTE

Contractor to remove all temporary storm water pollution prevention measures upon completion of project.

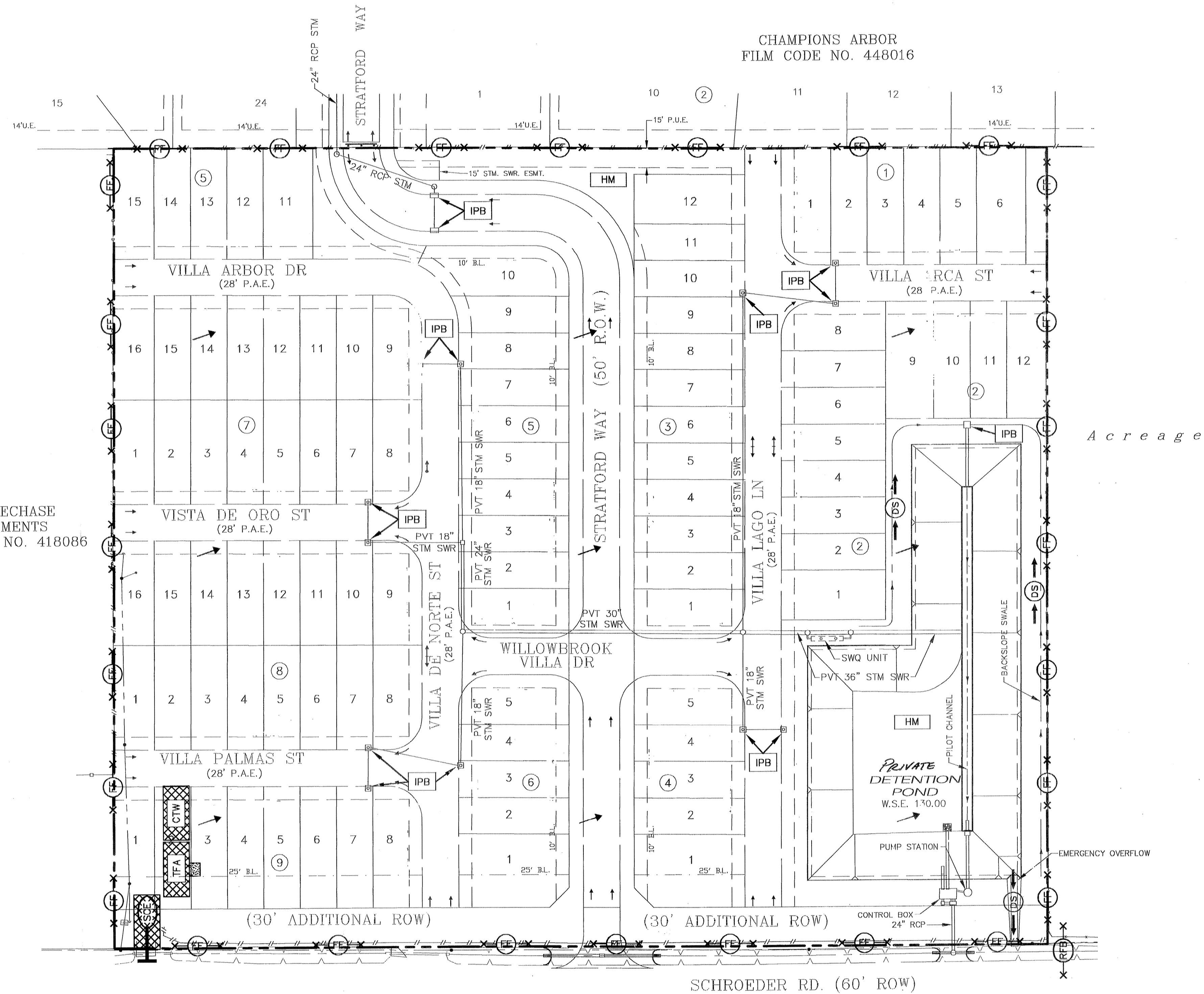
STORM WATER POLLUTION PREVENTION NOTES

The contractor shall be responsible for implementing this Storm Water Pollution Prevention Plan prior to commencing construction activities.

The contractor shall complete and sign the T.C.E.Q. "Construction Site Notice" (Attachment # 2 of TPDES General Permit TXR 150000).

The contractor shall post a signed copy of the "Construction Site Notice" where it is readily available for viewing by the General Public and Local, State and Federal authorities prior to commencing construction activities and shall maintain this notice until completion of the work.

The contractor shall provide a copy of the signed "Construction Site Notice" to the operator of any municipal storm sewer systems receiving storm water discharge from the site at least two days prior to commencement of construction activities.



STEEPLECHASE APARTMENTS
 FILM CODE NO. 418086

PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX
 SBC VALID FOR ONE YEAR
 APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES
 CENTERPOINT ENERGY
 APPROVED ONLY FOR CROSSING UNDERGROUND DUCTLINES
 UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

VILLAS AT WILLOWBROOK
 HARRIS COUNTY MUD 191
 HARRIS COUNTY, TEXAS
STORM WATER POLLUTION PREVENTION PLAN

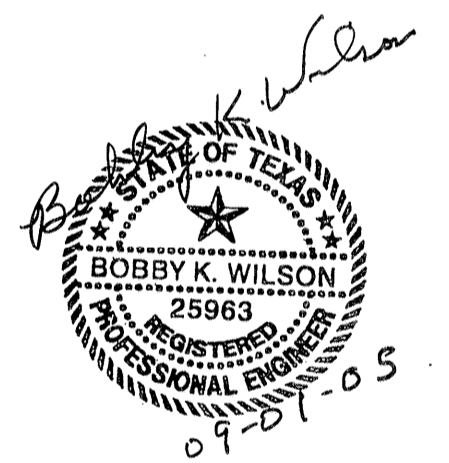
WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWG

FILE NO: _____

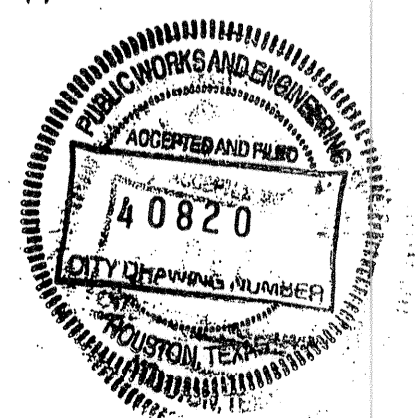
DRAWING SCALE: 1" = 50'

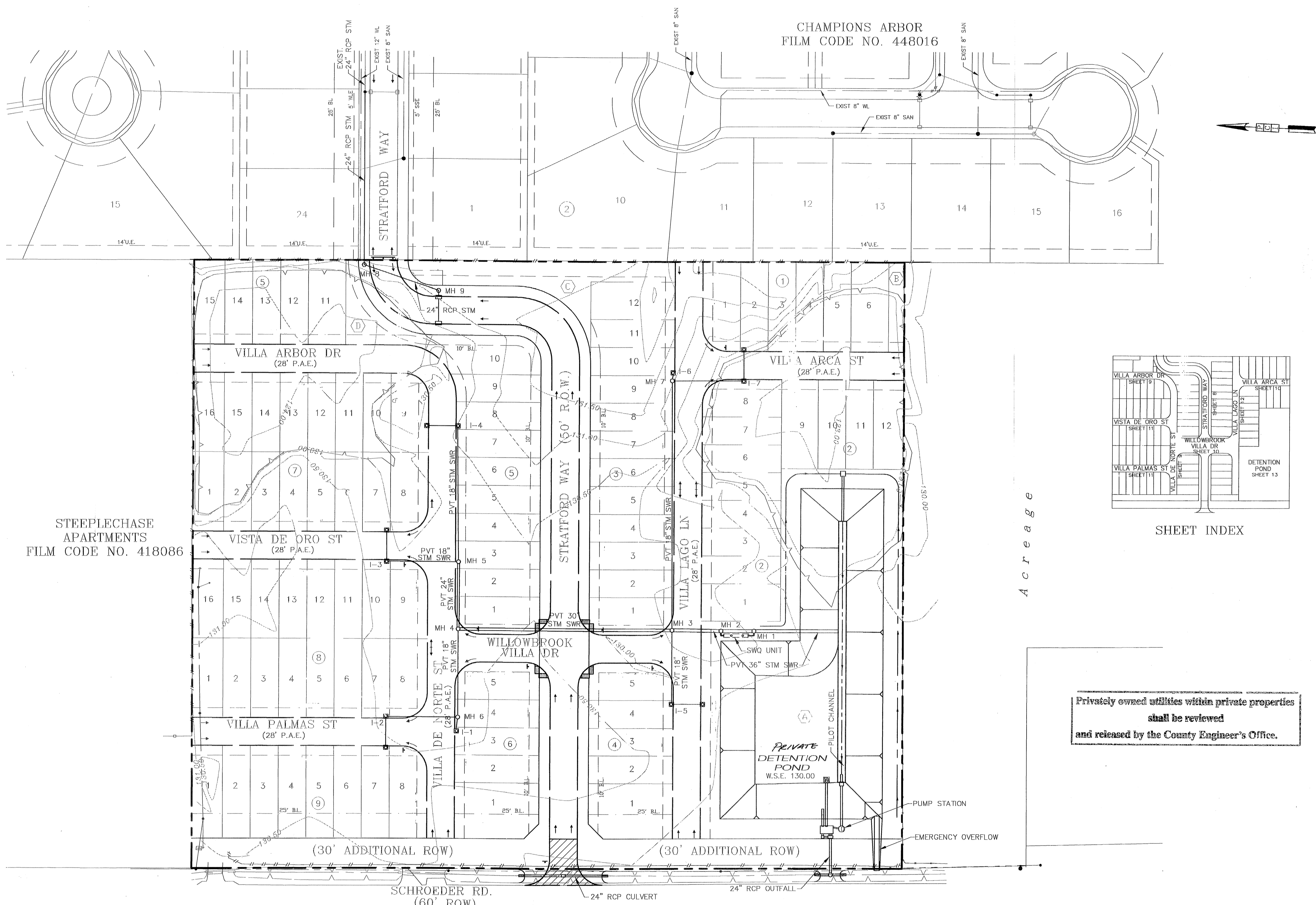
VERT: _____ HORZ: _____

SHEET No: 5 OF 24



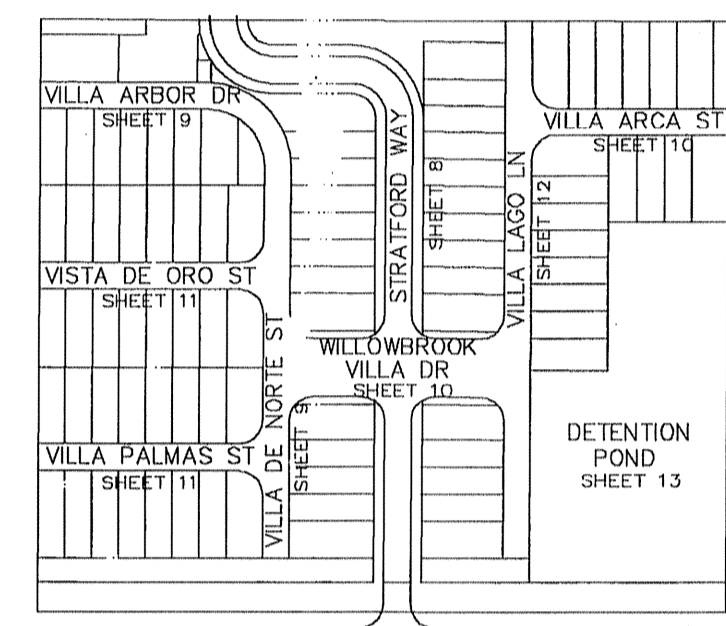
PROVIDENT CONSULTING, INC.
 1405 ALLSTON ST.
 HOUSTON, TEXAS 77008
 (713) 902-1019





STEEPLECHASE APARTMENTS
FILM CODE NO. 418086

CHAMPIONS ARBOR
FILM CODE NO. 448016



SHEET INDEX

A c r e a g e

Privately owned utilities within private properties shall be reviewed and released by the County Engineer's Office.

RESTRICTED RESERVE "A"
COMPENSATING OPEN SPACE
AND DETENTION/DRAINAGE
63,962 S.F. - 1.4664 AC.

RESTRICTED RESERVE "B"
OPEN SPACE
1,448 S.F. - 0.0332 AC.

RESTRICTED RESERVE "C"
OPEN SPACE
7,412 S.F. - 0.1702 AC.

RESTRICTED RESERVE "D"
OPEN SPACE
3,065 S.F. - 0.0704 AC.

BENCH MARK

BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
Y1216, 1973 ADJ., ELEV = 125.994
Y1216, 1978 ADJ., ELEV = 125.406
Y1216, 1988 ADJ., ELEV = 123.94
ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

LEGEND

- STORM SEWER W/ MANHOLE
- TYPE B-B INLETS
- TYPE C INLET
- DIRECTION OF STREET DRAINAGE
- STOP SIGN (R1-1A)
- WHEELCHAIR RAMP

FLOOD PLAIN STATEMENT:
No portion of this tract lies within a "100 year flood hazard area" as designated on The National Flood Insurance Program - Flood Insurance Rate Map issued by the Federal Emergency Management Agency under Community Panel Number 480287 0435 J for Harris County, Texas dated November 6, 1996.

PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEN
SBC VALID FOR ONE YEAR
APPROVED ONLY FOR UNDERGROUND CONCRETE FACILITIES
CENTERPOINT ENERGY
APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES
UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

VILLAS AT WILLOWBROOK
in
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS
**OVERALL LAYOUT
PAVING & DRAINAGE**

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWO

FILE NO:
DRAWING SCALE:
1" = 50'
VERT: HORZ:
SHEET No: 6 OF 24

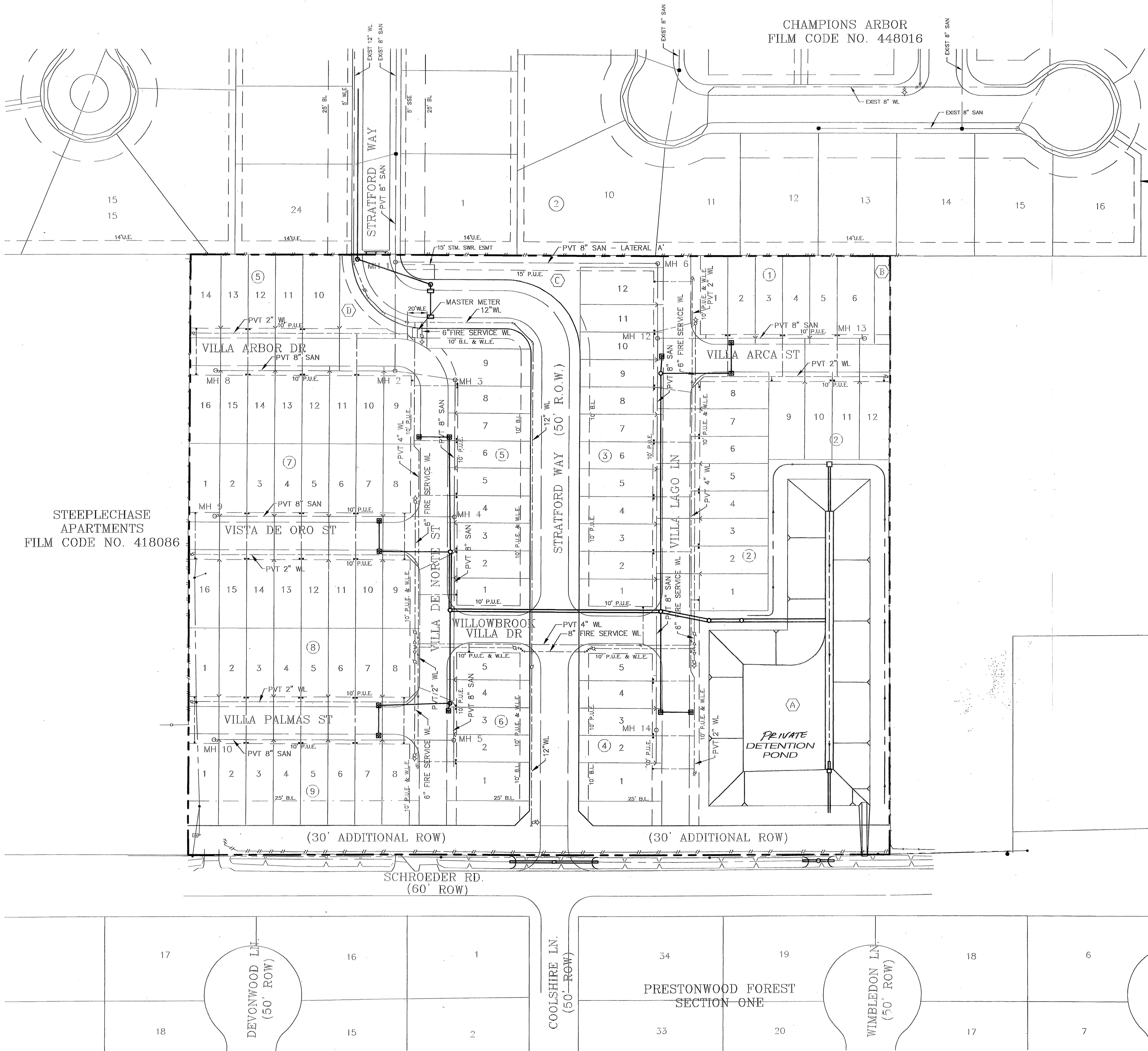
40820
CITY ENGINEER
HARRIS COUNTY, TEXAS

PROVIDENT CONSULTING, INC.
1405 ALLSTON ST.
HOUSTON, TEXAS 77008
(713)802-1019

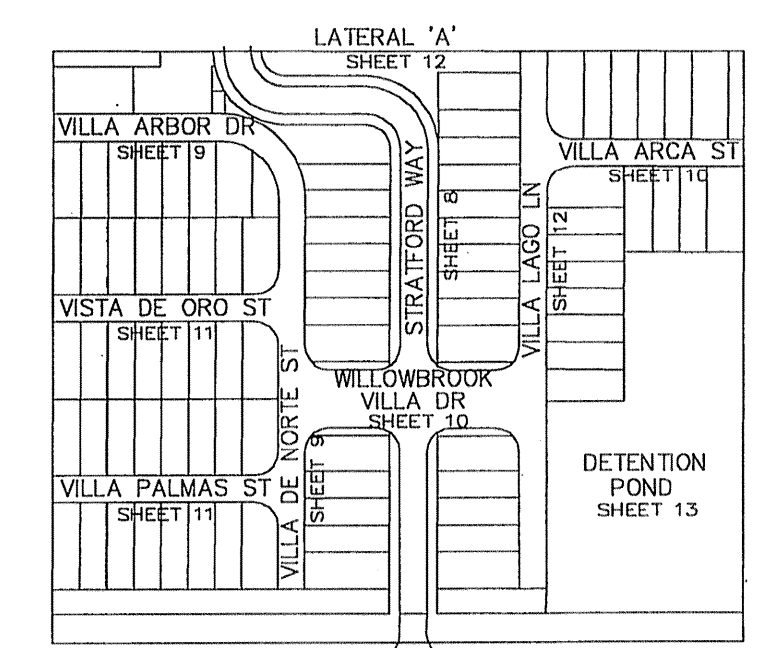
PROVIDENT CONSULTING, INC.

STATE OF TEXAS
BOBBY WILSON
25966
REGISTERED PROFESSIONAL ENGINEER
09-01-05

CHAMPIONS ARBOR
FILM CODE NO. 448016



STEEPLECHASE
APARTMENTS
FILM CODE NO. 418086



SHEET INDEX

BENCH MARK
BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
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Y1216, 1988 ADJ., ELEV = 123.94
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FLOOD PLAIN STATEMENT:
No portion of this tract lies within a "100 year flood hazard area" as designated on The National Flood Insurance Program - Flood Insurance Rate Map issued by the Federal Emergency Management Agency under Community Panel Number 480257 0435 J for Harris County, Texas dated November 6, 1996.

- LEGEND**
- 3" — PROP. SANITARY SWR. W/ MANHOLE
 - 4" — PROP. SANITARY SWR. STACK
 - 6" — PROP. SAN SWR 6" SERVICE W/WYE
 - 8" — PROP. WATER LINE
 - 12" — PROP. FIRE HYDRANT
 - 18" — PROP. GATE VALVE W/ BOX
 - 24" — PROP. WATER LINE REDUCER
 - 30" — PROP. BLOWOFF VALVE
 - 36" — PROP. WL SERVICE METER
 - P.U.E. — PRIVATE UTILITY EASEMENT
 - W.L.E. — WATER LINE EASEMENT

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(713) 802-1019

PCI
PROVIDENT CONSULTING, INC.

PRIVATE UTILITY LINES SHOWN
CENTERPOINT ENERGY, ENTEX
SBC VALID FOR ONE YEAR
APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES
CENTERPOINT ENERGY
APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES
UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

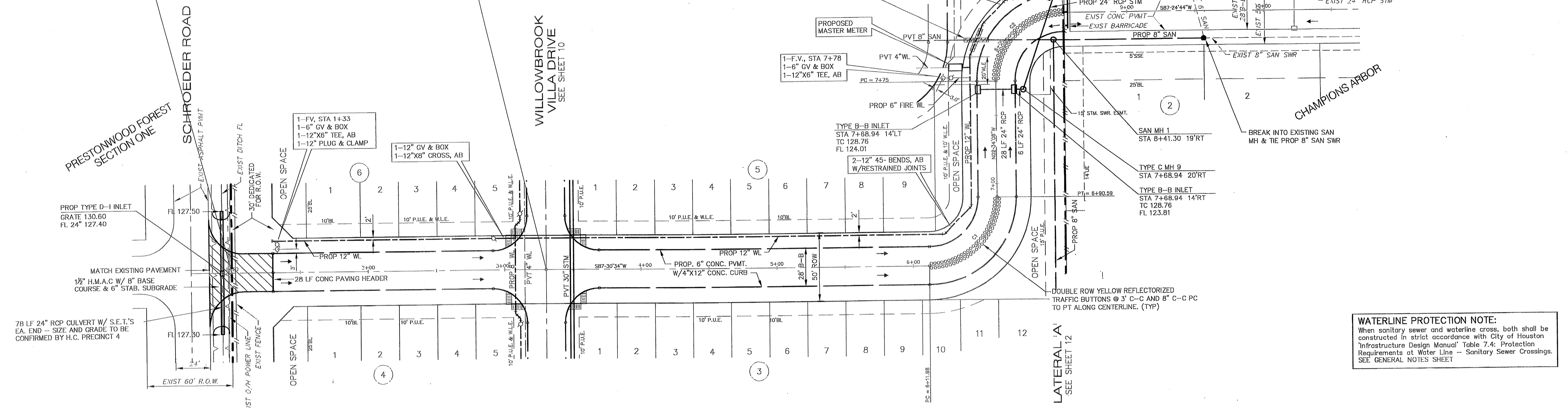
- RESTRICTED RESERVE "A"
COMPENSATING OPEN SPACE
AND DETENTION/DRAINAGE
63,962 S.F. - 1.47 AC.
- RESTRICTED RESERVE "B"
OPEN SPACE
1,446 S.F. - 0.03 AC.
- RESTRICTED RESERVE "C"
OPEN SPACE
6,684 S.F. - 0.15 AC.
- RESTRICTED RESERVE "D"
OPEN SPACE
5,235 S.F. - 0.12 AC.
- RESTRICTED RESERVE "E"
OPEN SPACE
2,013 S.F. - 0.05 AC.
- RESTRICTED RESERVE "F"
OPEN SPACE
2,013 S.F. - 0.05 AC.

VILLAS AT WILLOWBROOK
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS
**OVERALL LAYOUT
SANITARY SEWER &
WATER DISTRIBUTION**

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ
FILE NO:	ACCEPTED AND FILED	
DRAWING SCALE:	40820	
1" = 50'	CITY OFFERING NUMBER	
VERT:	HORZ:	HOUSTON, TEXAS
SHEET No: 7 OF 24		

STA 1+00.00 STRATFORD WAY
ORIGINAL R.O.W. LINE

STA 3+30.45 STRATFORD WAY
STA 3+24.00 WILLOWBROOK VILLA



WATERLINE PROTECTION NOTE:
When sanitary sewer and waterline cross, both shall be constructed in strict accordance with City of Houston Infrastructure Design Manual Table 7.4: Protection Requirements at Water Line - Sanitary Sewer Crossings. SEE GENERAL NOTES SHEET

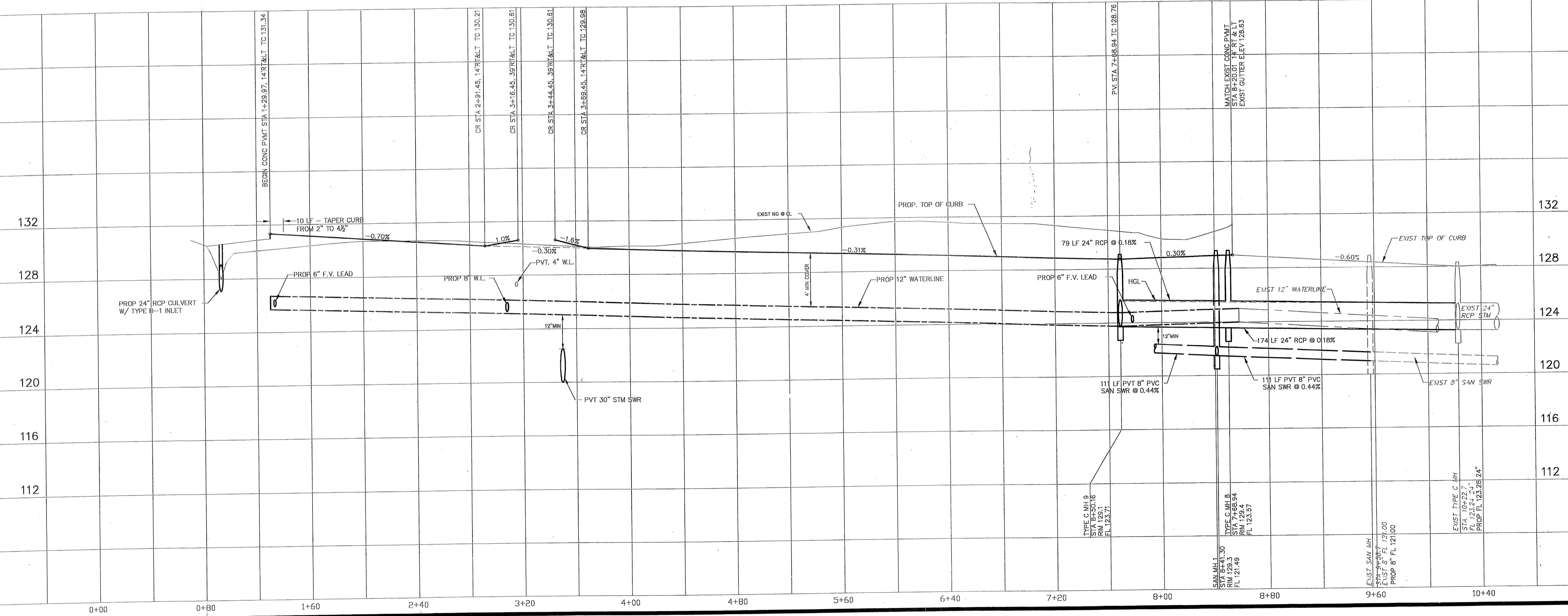
CURVE	LENGTH	RADIUS	TANGENT CHORD	CHD BEARING	DELTA
C1	78.61'	50.00'	50.07'	N42-28'13"E	90-04'43"
C2	78.54'	50.00'	50.07'	S42-25'51"W	90-00'00"

BENCH MARK
BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
Y1216, 1973 ADJ., ELEV = 125.994
Y1216, 1978 ADJ., ELEV = 125.406
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CROSSING NOTE
When sanitary sewer and waterline cross, both shall be constructed in strict accordance with City of Houston Infrastructure Design Manual Table 7.4: Protection Requirements at Water Line - Sanitary Sewer Crossings. SEE SHEET 12.

FILL NOTE
Fill to be placed in maximum 8" lifts to 95% Standard Proctor Density \pm 2% optimum moisture. Existing swales and ponds to shall be cleaned and mucked free from vegetation prior to placement of fill material.

STRATFORD WAY



PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX

SBC VALID FOR ONE YEAR
APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES

CENTERPOINT ENERGY
APPROVED ONLY FOR CROSSING UNDERGROUND FACILITIES
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VILLAS AT WILLOWBROOK
IN
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS

PLAN & PROFILE
STRATFORD WAY

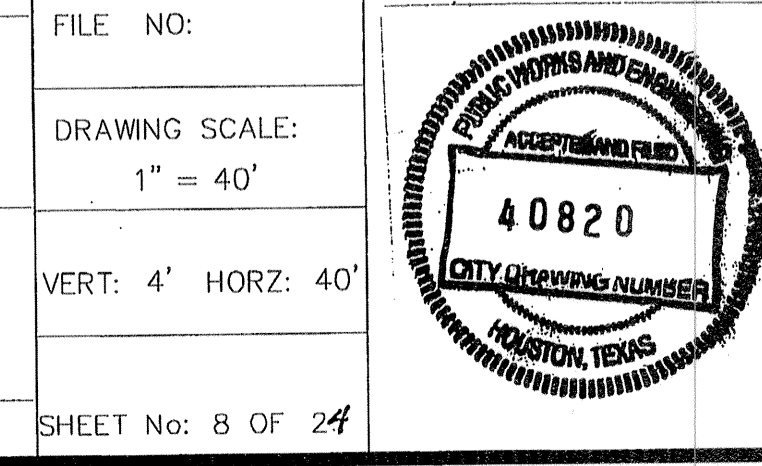
WATER: *[Signature]* 9/1/15
TRAFFIC: *[Signature]* 9-1-05
ST. & BRIDGE: *[Signature]* 9/1/15
STORMWATER: *[Signature]* 9/1/15
SWQ: *[Signature]* 9/1/15

FILE NO:

DRAWING SCALE:
1" = 40'

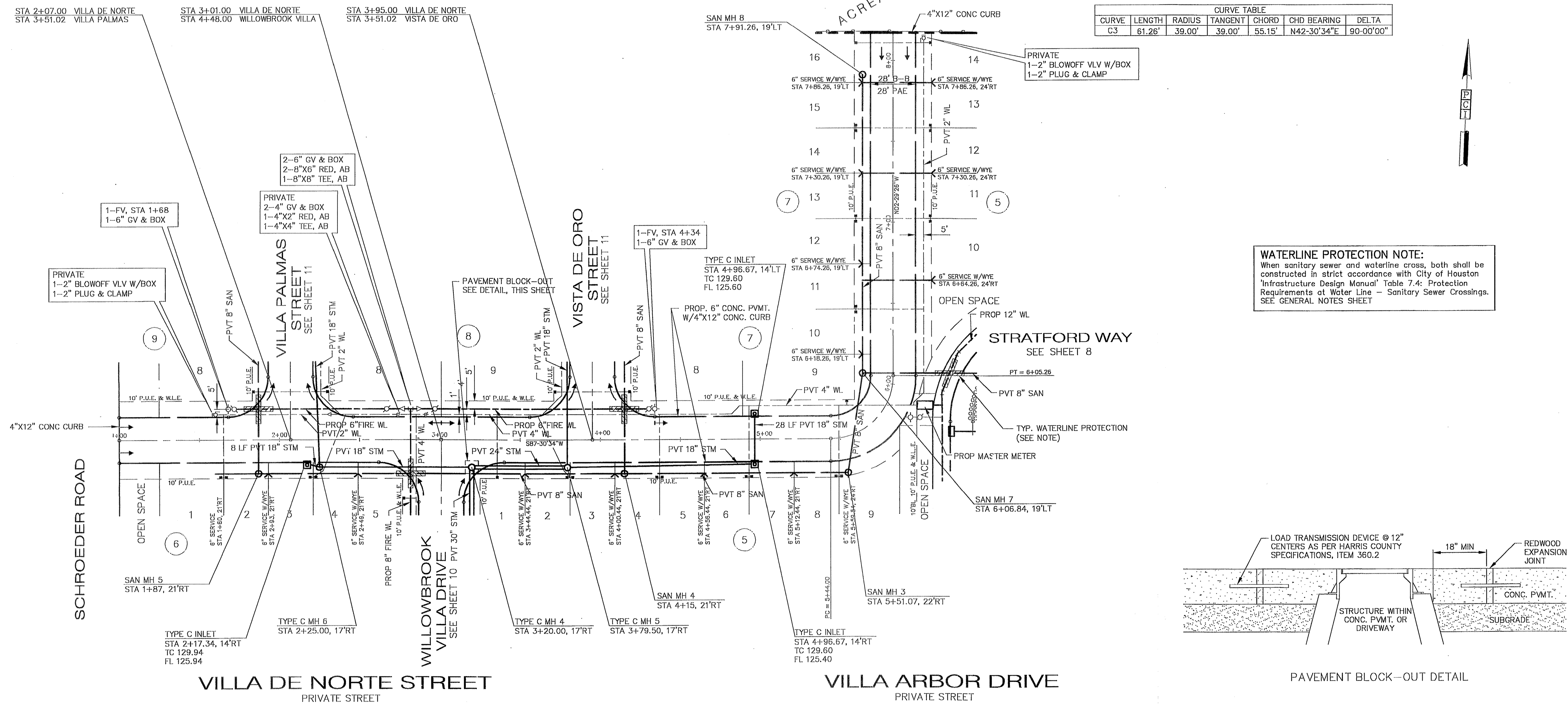
VERT: 4' HORZ: 40'

SHEET No: 8 OF 24



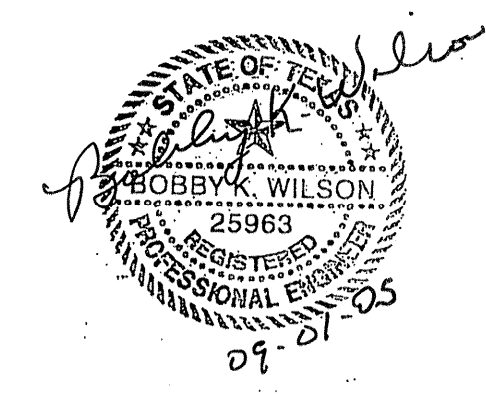
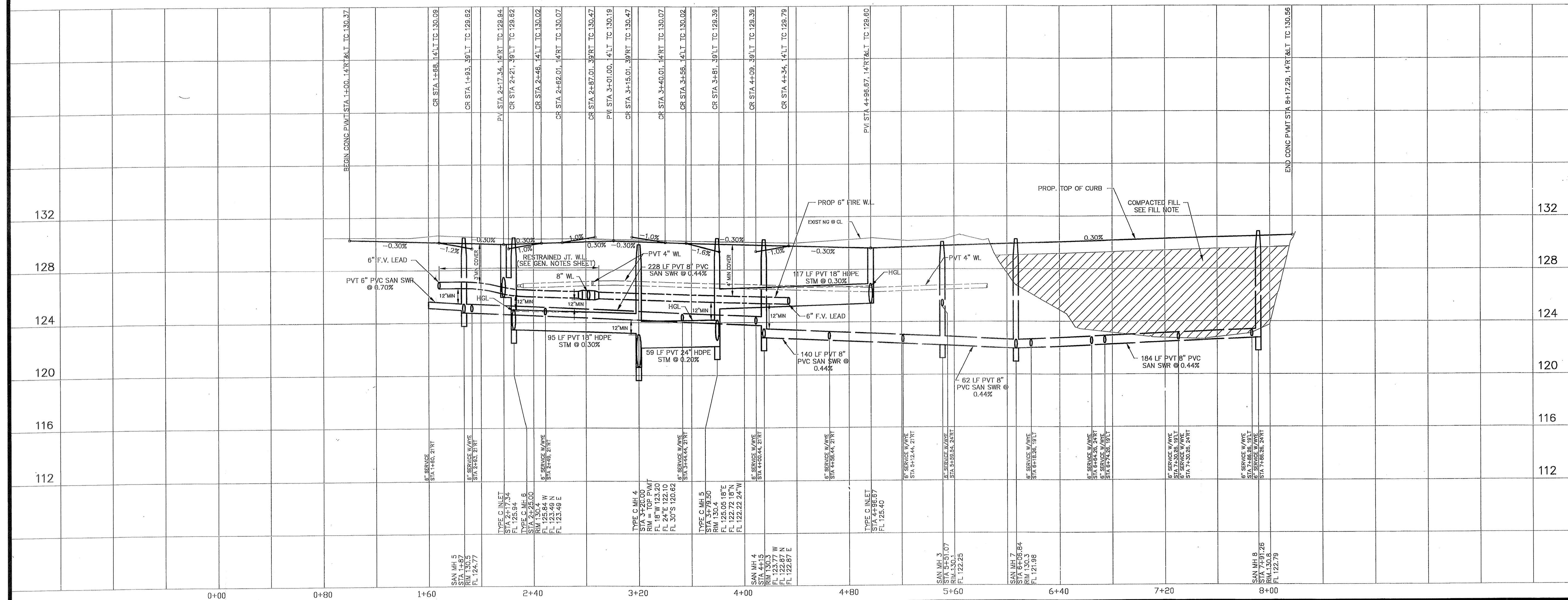
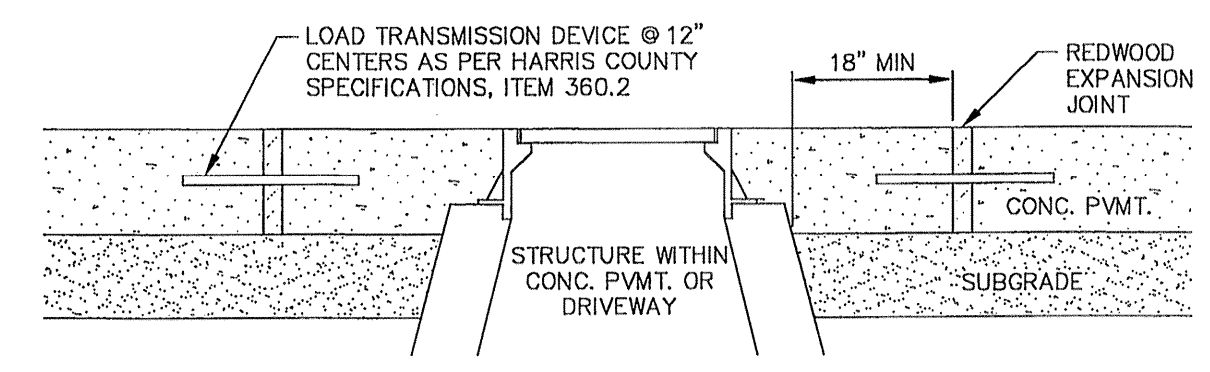
PROVIDENT CONSULTING, INC.
1405 ALLSTON ST.
HOUSTON, TEXAS 77008
(713) 802-1019





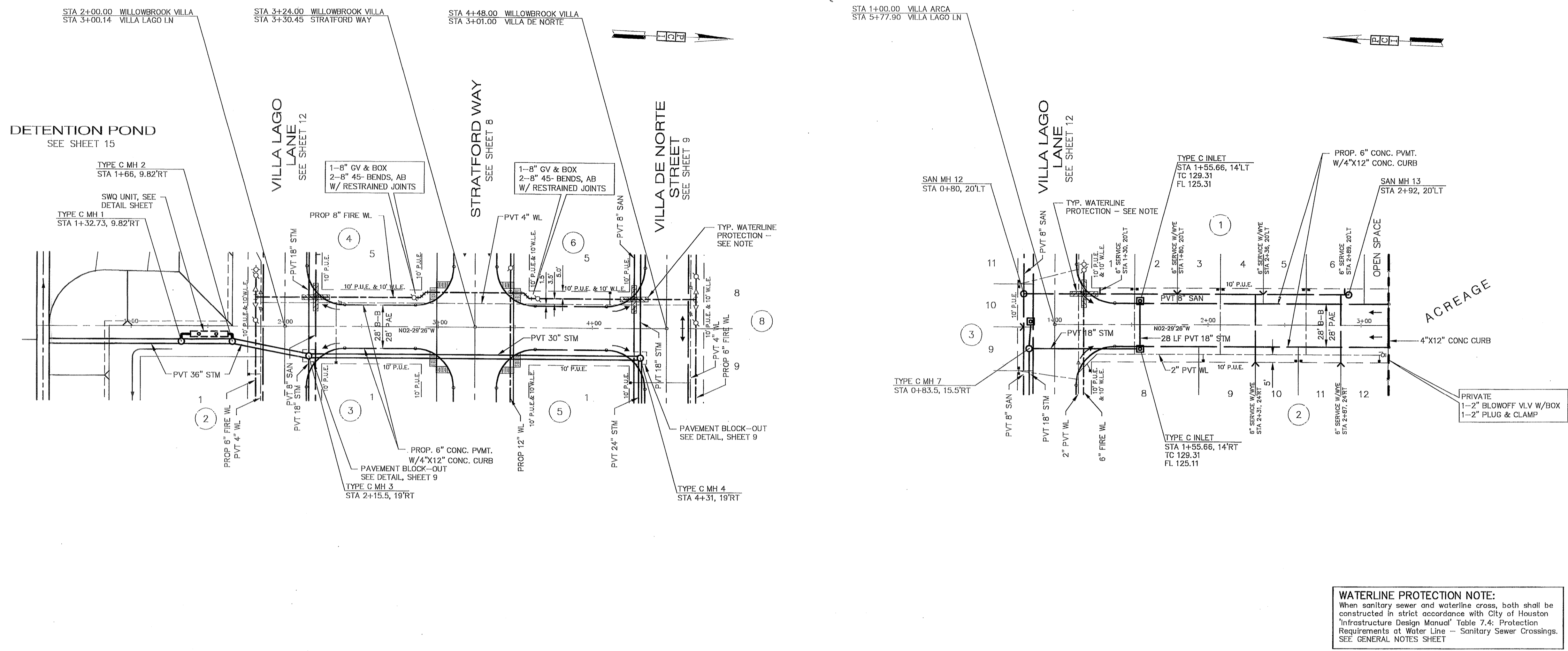
BENCH MARK
BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
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PCI
PROVIDENT CONSULTING, INC.



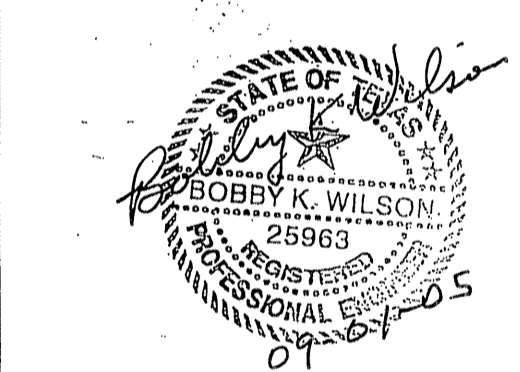
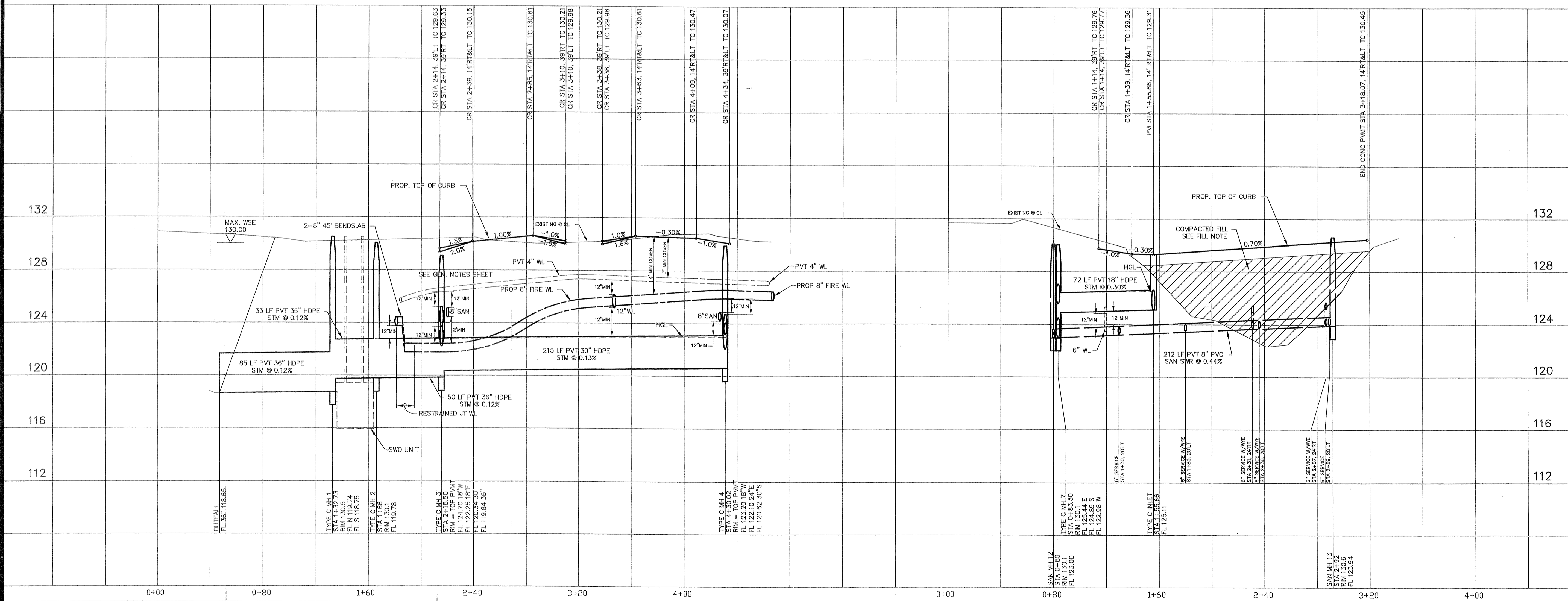
BENCH MARK
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WILLOWBROOK VILLA DRIVE
 PRIVATE STREET

VILLA ARCA STREET
 PRIVATE STREET

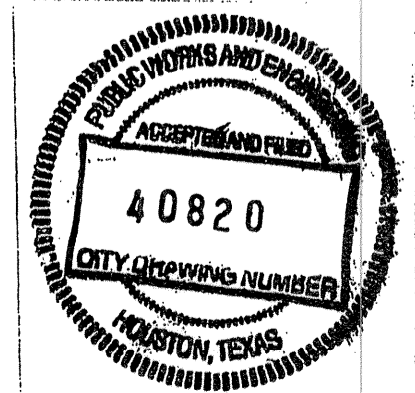


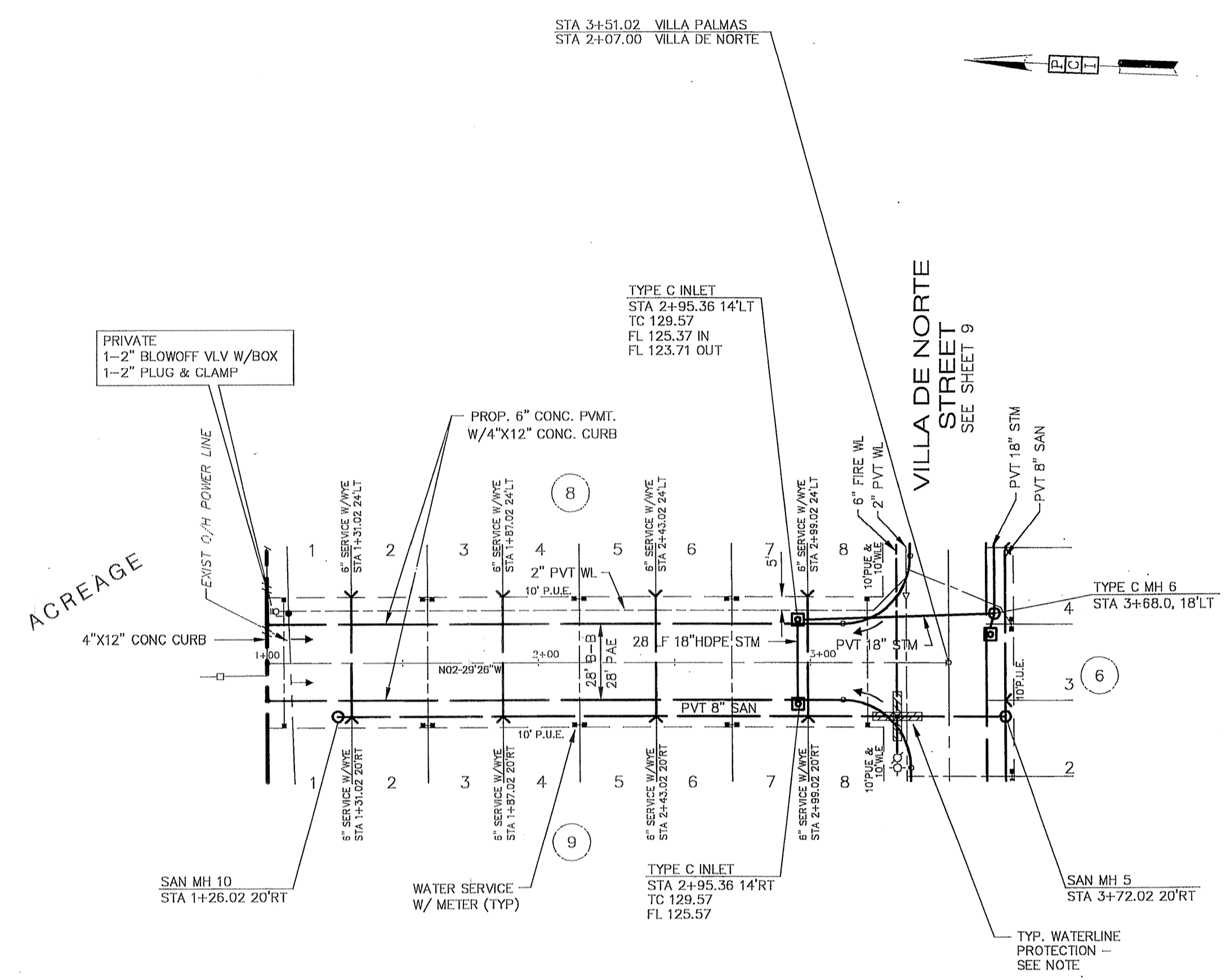
PROVIDENT CONSULTING, INC.
 1405 ALLSTON ST.
 HOUSTON, TEXAS 77008
 (713)802-1019

PRIVATE UTILITY LINES SHOWN
 CENTERPOINT ENERGY, ENTEX
 SBC VALID FOR ONE YEAR
 APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES
 CENTERPOINT ENERGY
 APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES
 UNLESS NOTED VARIOUS AT TIME OF REVIEW ONLY

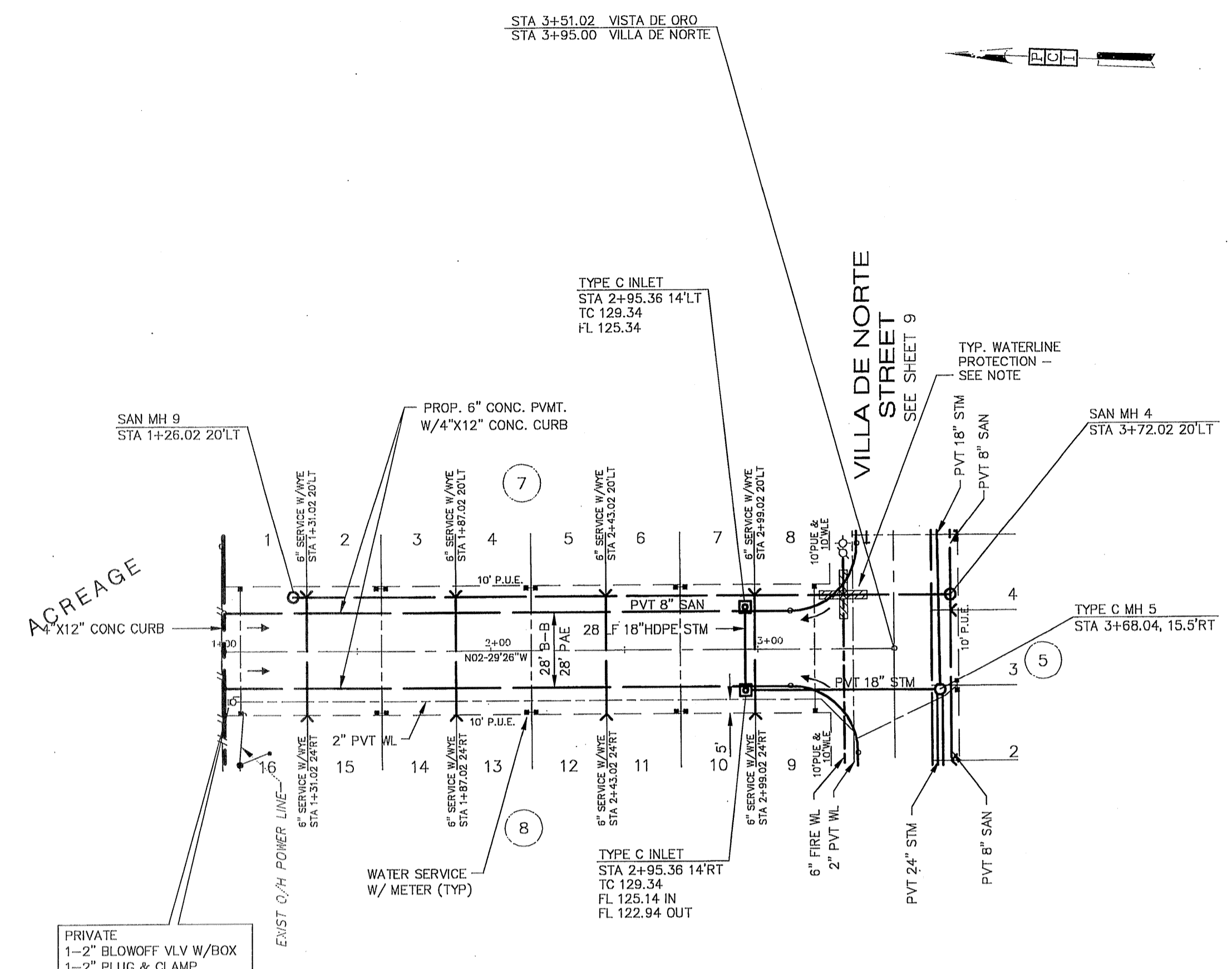
WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ

FILE NO:
 DRAWING SCALE:
 1" = 40'
 VERT: 4' HORZ: 40'
 SHEET No: 10 OF 24





VILLA PALMAS STREET
PRIVATE STREET

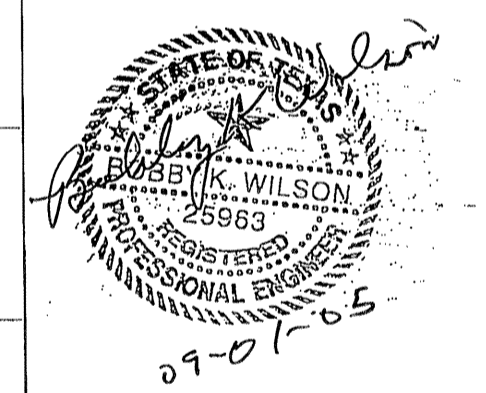
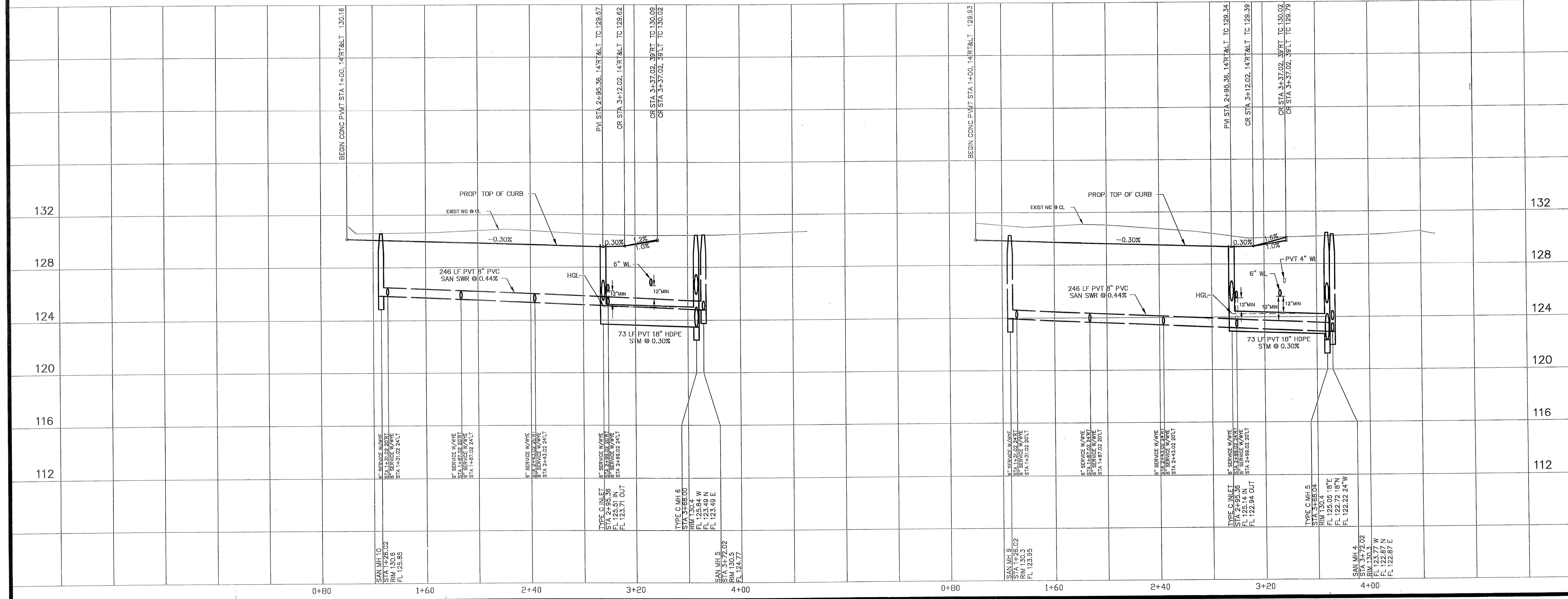


VISTA DE ORO STREET
PRIVATE STREET

BENCH MARK
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HOUSTON, TEXAS 77008
(713)802-1019



PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX

SBC VALID FOR ONE YEAR
APPROVED ONLY FOR UNDERGROUND FACILITIES

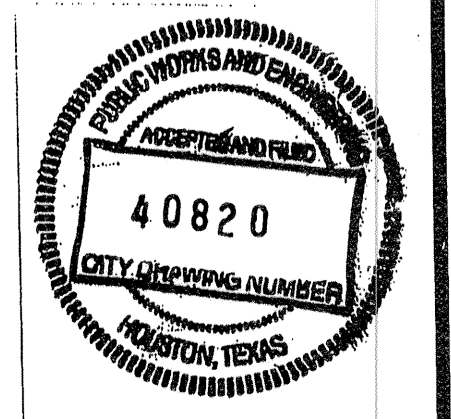
CENTERPOINT ENERGY
APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES
UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

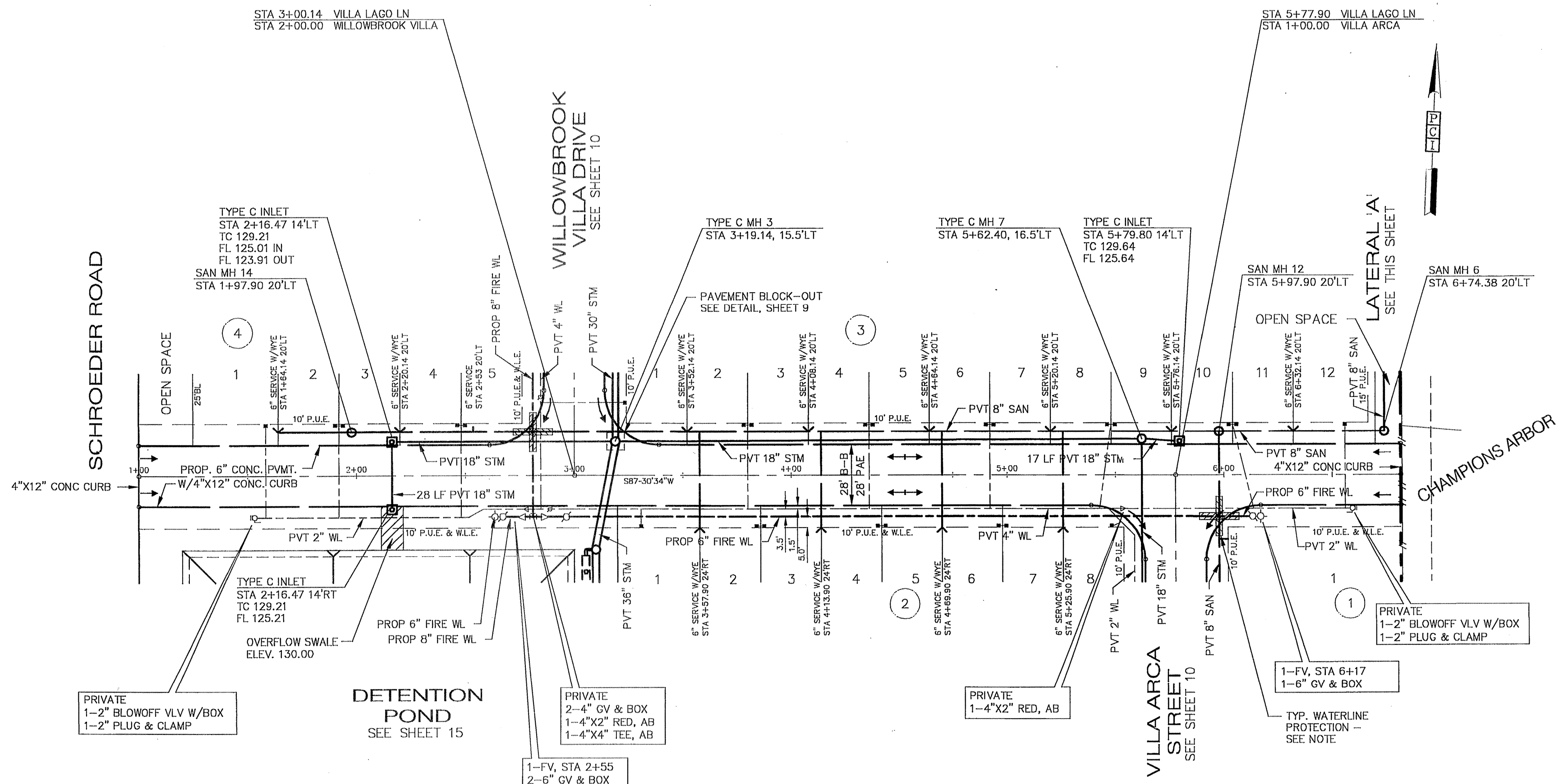
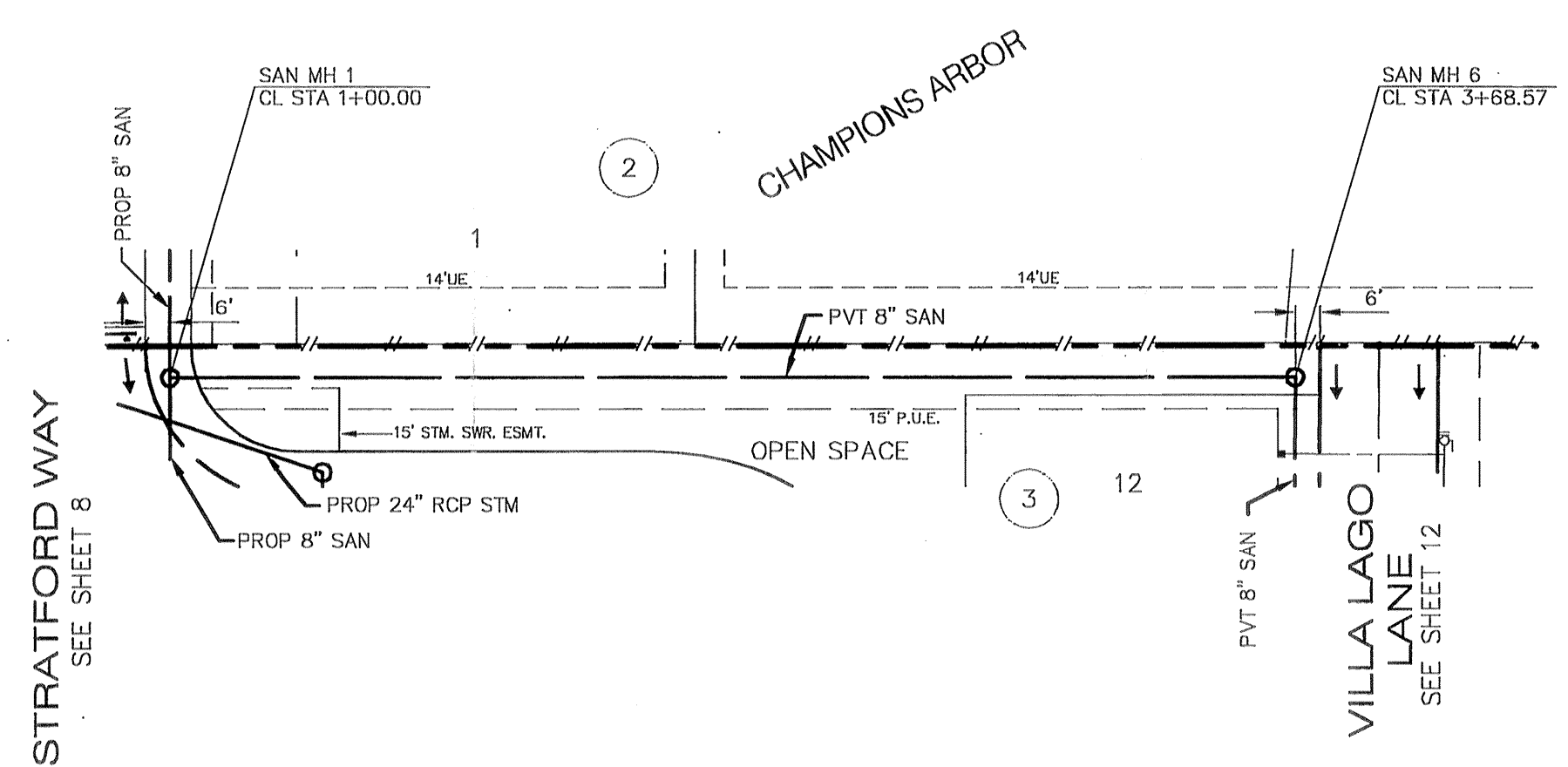
VILLAS AT WILLOWBROOK
in
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS

PLAN & PROFILE
VILLA PALMAS STREET
PLAN & PROFILE
VISTA DE ORO STREET

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWG

FILE NO:
DRAWING SCALE:
1" = 40'
VERT: 4' HORIZ: 40'
SHEET No: 11 OF 24





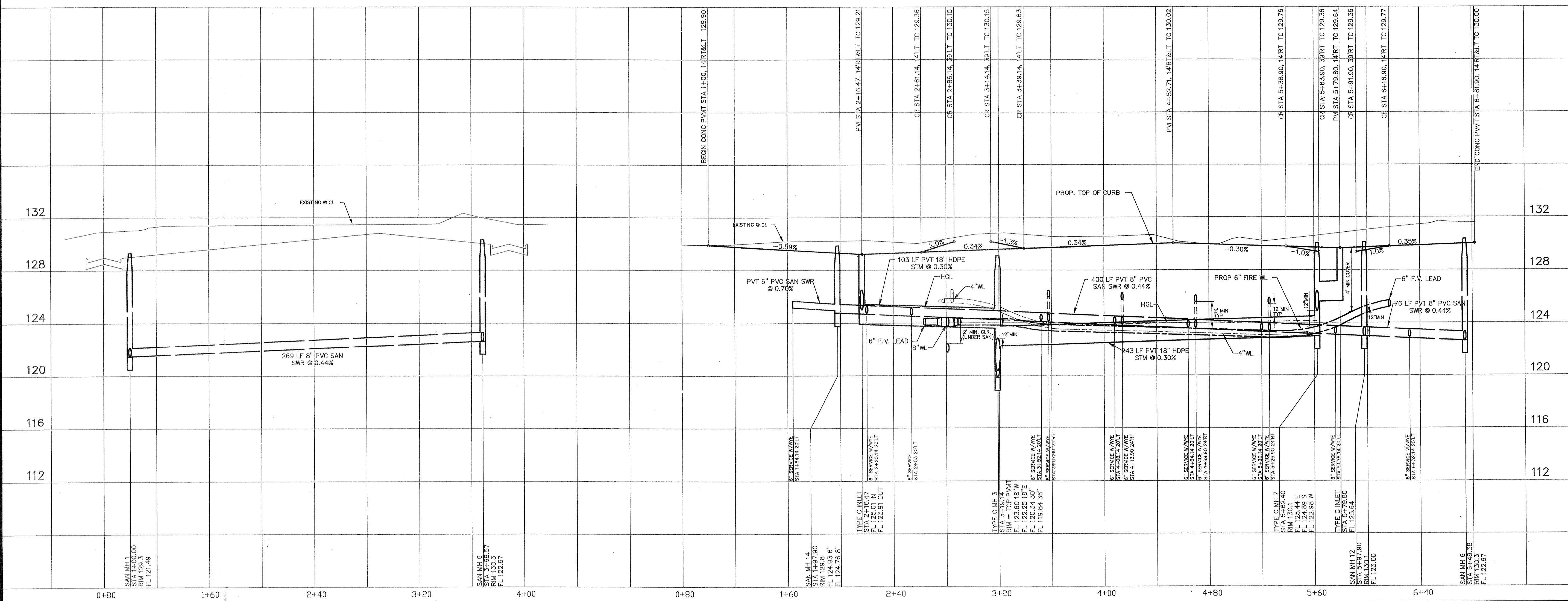
WATERLINE PROTECTION NOTE:
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LATERAL 'A'

VILLA LAGO LANE
 PRIVATE STREET



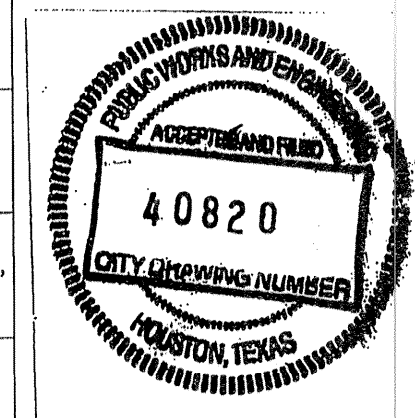
PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX
 SBC VALID FOR ONE YEAR
 APPROVED ONLY FOR UNDERGROUND COORD FACILITIES
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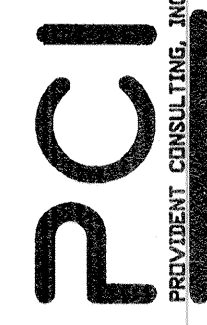
VILLAS AT WILLOWBROOK
 in
 HARRIS COUNTY MUD 191
 HARRIS COUNTY, TEXAS
 PLAN & PROFILE
VILLA LAGO LANE
 LATERAL 'A'

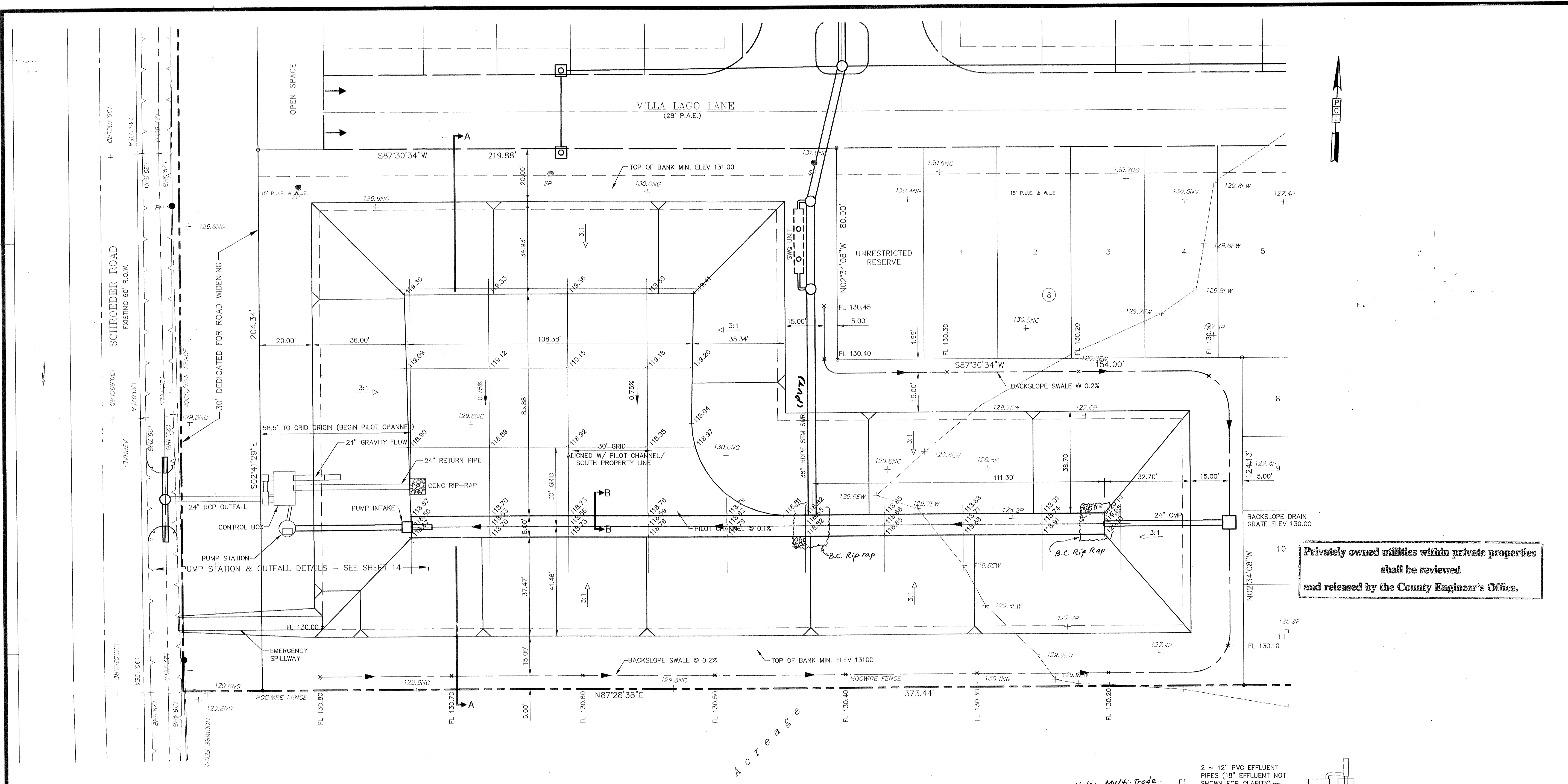
WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ

FILE NO:
 DRAWING SCALE:
 1" = 40'
 VERT: 4' HORIZ: 40'
 SHEET No: 12 OF 24



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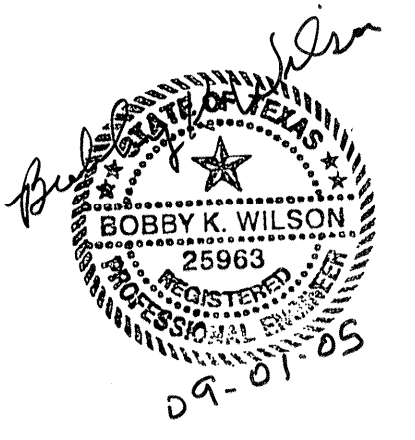




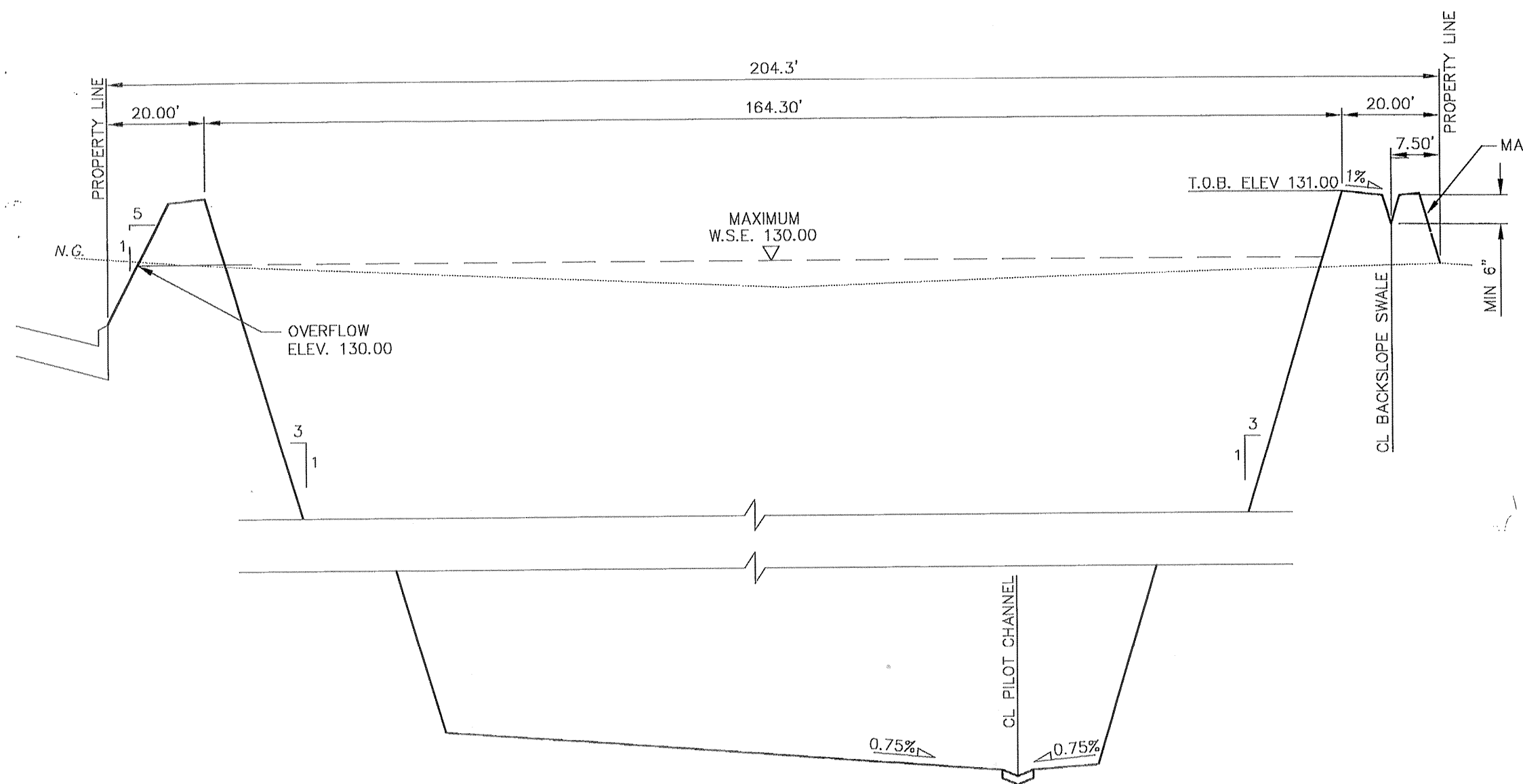
BENCH MARK
 BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
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Privately owned utilities within private properties shall be reviewed and released by the County Engineer's Office.



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PCI
 PROVIDENT CONSULTING, INC.



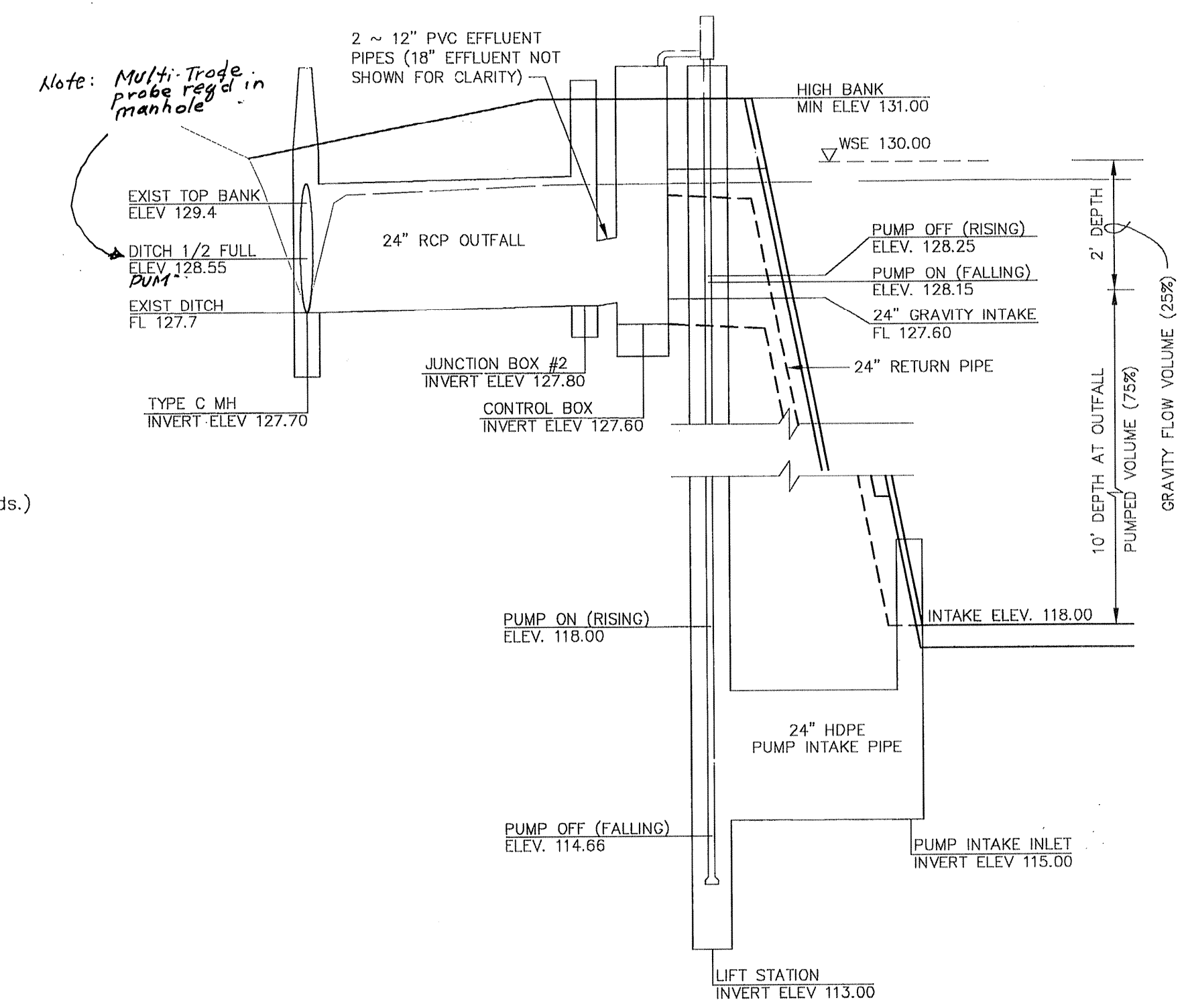
SECTION A-A
 1" = 20' (HOR)
 1" = 2' (VER)

DETENTION POND NOTES

1. Detention facility shown is a private facility and shall be operated and maintained by Owner/HOME OWNER'S ASSOCIATION.
2. Detention Pond Site to be Hydromulch Seeded.
3. THE CITY OF HOUSTON IS NOT RESPONSIBLE TO MAINTAIN THE DETENTION POND/PONDS AND ITS FACILITIES.

DETENTION SUMMARY

1. Area Served = 8.54 acres
 10.08 ac. (plat area) - 1.46 ac. (dedicated for Schroeder & Stratford Rds.)
2. Detention Storage Rate = $C_s = .75$ acre-feet/acre (Required)
 Pumped detention, no hydraulic calculations done.
3. Detention Storage Volume Required = 6.40 acre-feet
4. Detention Storage Volume Provided = 6.40 acre-feet
 Volume to be pumped = 4.80 ac-ft (75%)
 Gravity flow volume = 1.60 ac-ft (25%)
5. Maximum Design Water Surface Elevation = 130.00 feet
6. Overflow Elevation = 130.00 ft.
7. Allowable Detention Peak Discharge Rate = 5.74 cfs
 717 LF Road frontage X .008 cfs/ft
8. Actual Detention Peak Discharge Rate = 2.0 cfs
 Roadside ditch has limited capacity.



DETENTION OUTFALL SCHEMATIC
 1" = 20' (HOR)
 1" = 2' (VER)

PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX
 SBC VALID FOR ONE YEAR
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 CENTERPOINT ENERGY
 APPROVED ONLY FOR CROSSING UNDERGROUND DUCTLINES
 UNLESS NOTED VALID AT THE OF REVIEW ONLY.

VILLAS AT WILLOWBROCK
 HARRIS COUNTY MUD 191
 HARRIS COUNTY, TEXAS

DETENTION POND

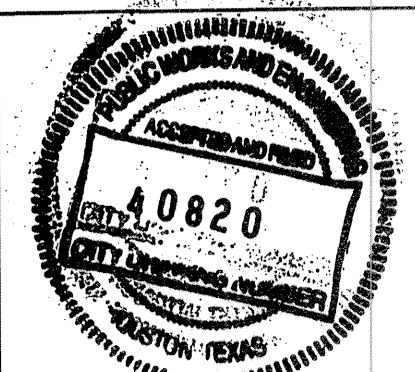
WATER	WATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWG

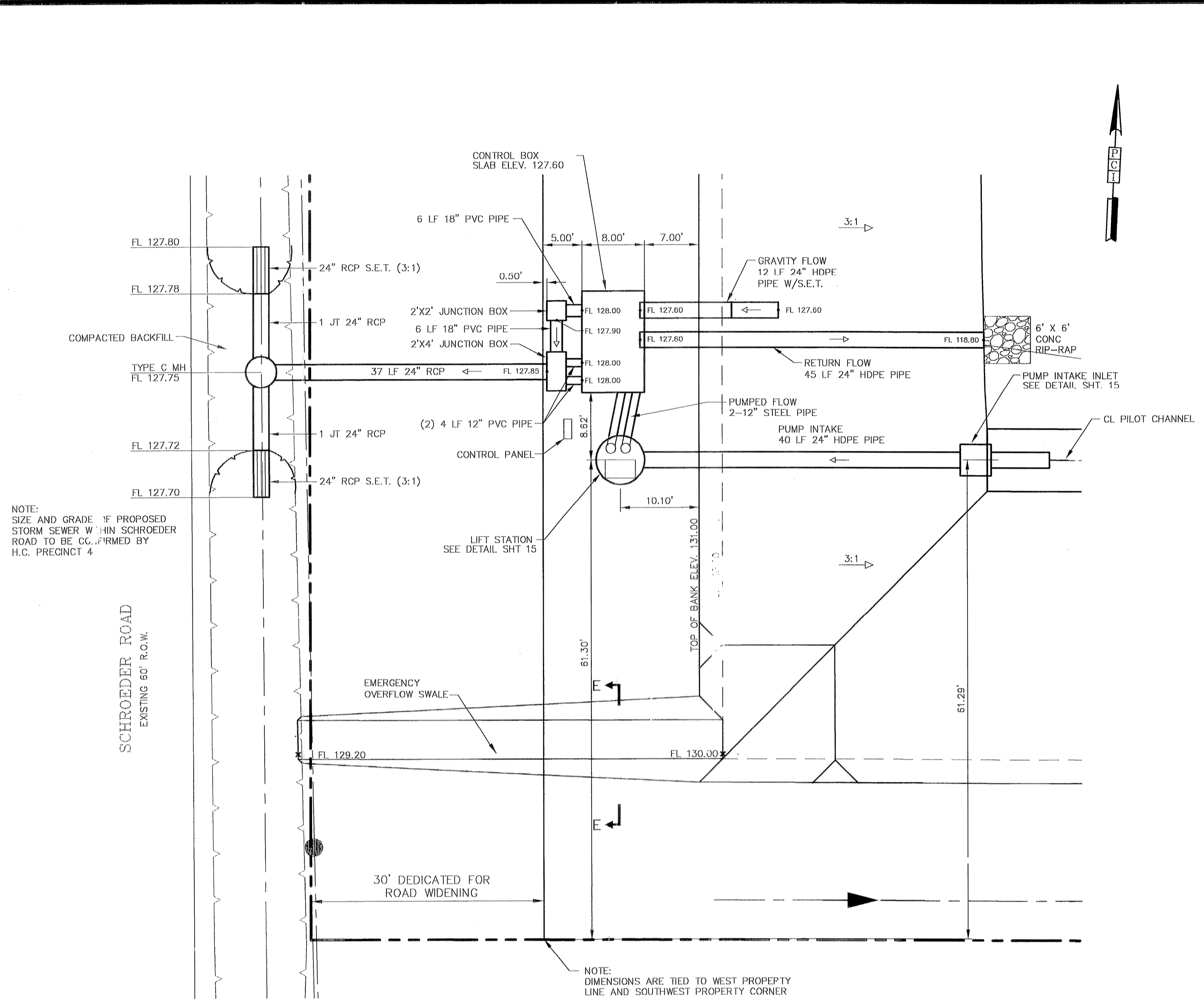
FILE NO: FACILITIES

DRAWING SCALE:
 1" = 20'

VERT: HORZ:

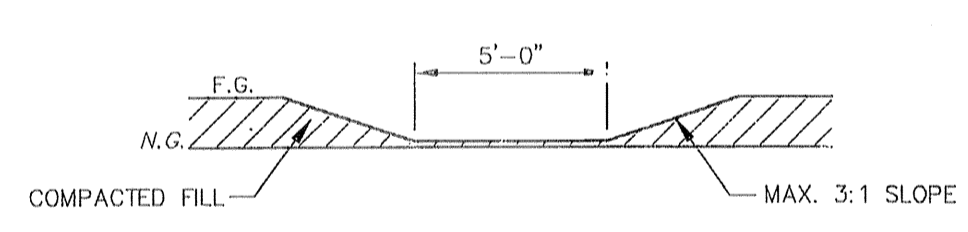
SHEET No: 13 OF 24



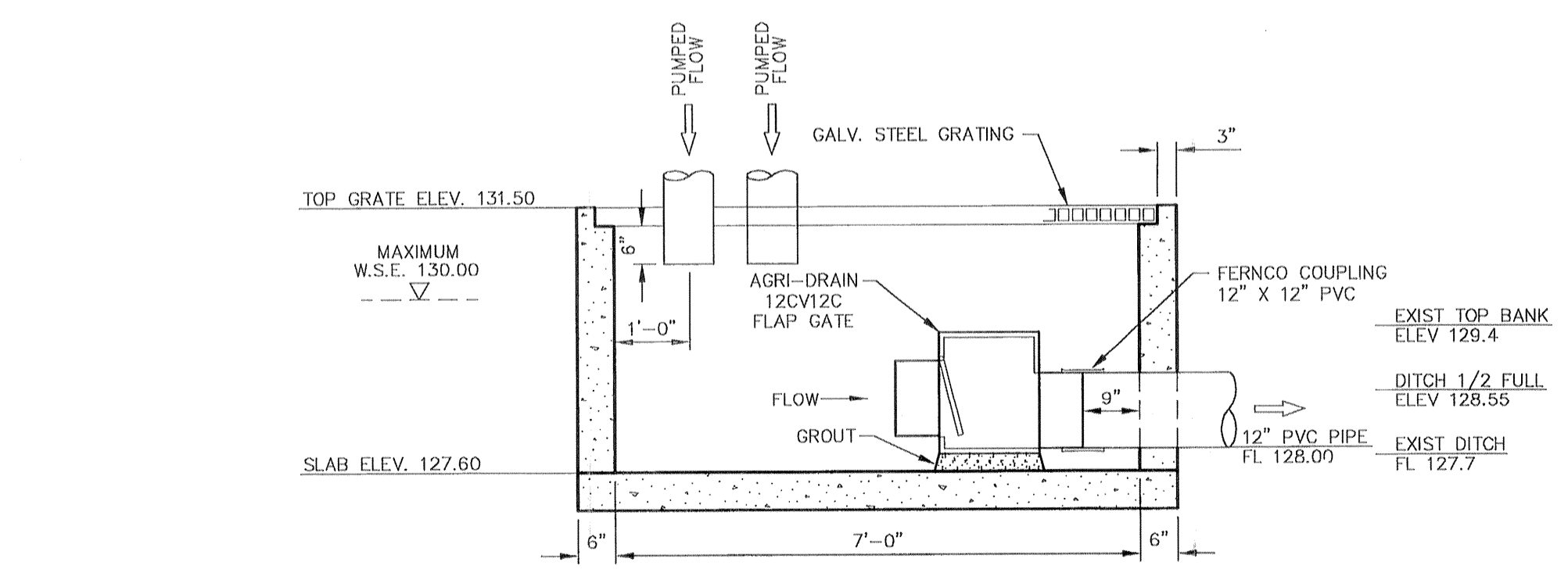


NOTE:
SIZE AND GRADE OF PROPOSED
STORM SEWER WITHIN SCHROEDER
ROAD TO BE CONFIRMED BY
H.C. PRECINCT 4

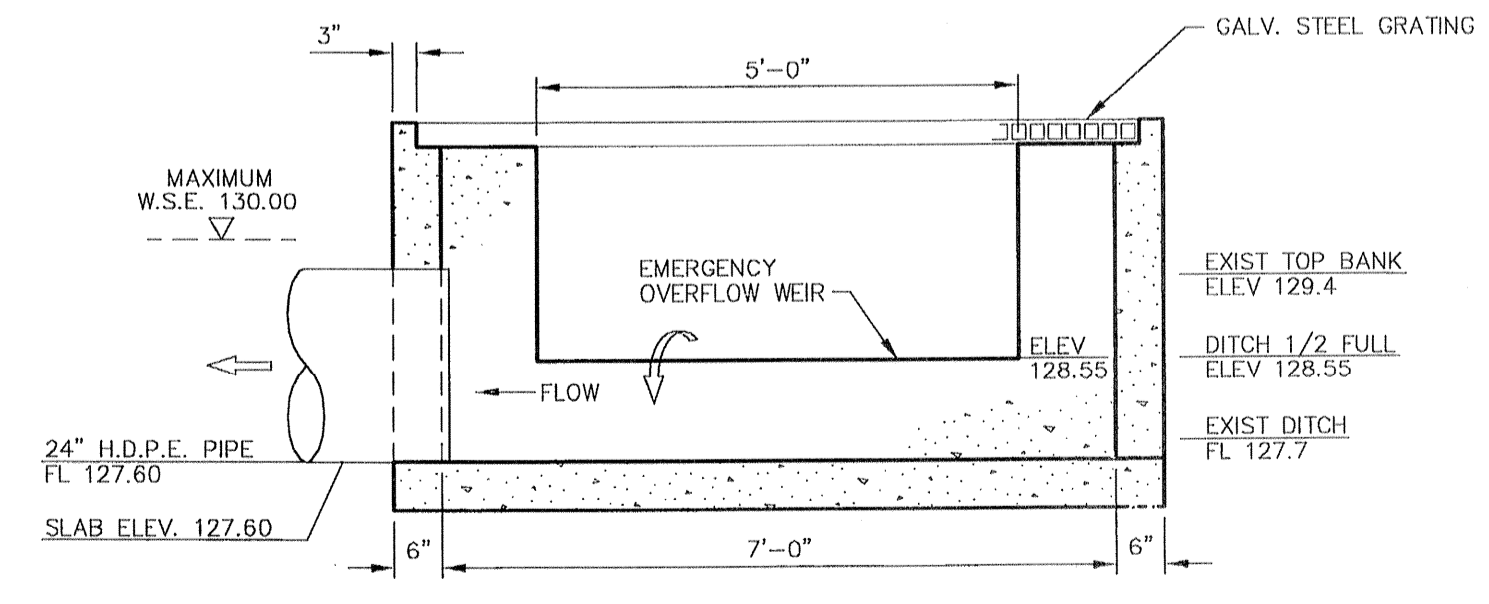
DETENTION OUTFALL
1" = 10'



SECTION E-E
OVERFLOW SWALE
1" = 5'

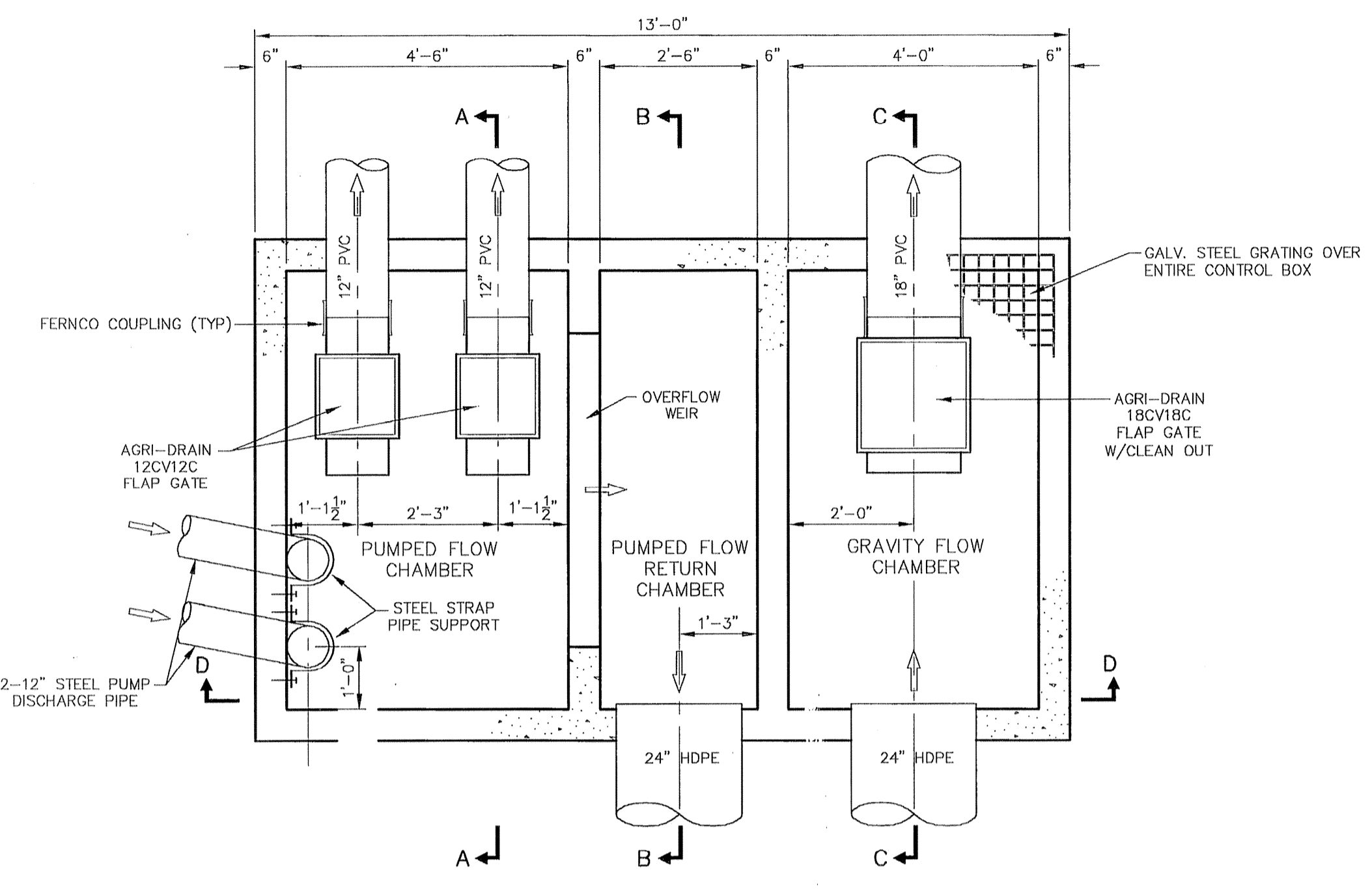


SECTION A-A
PUMPED FLOW CHAMBER
1" = 2'



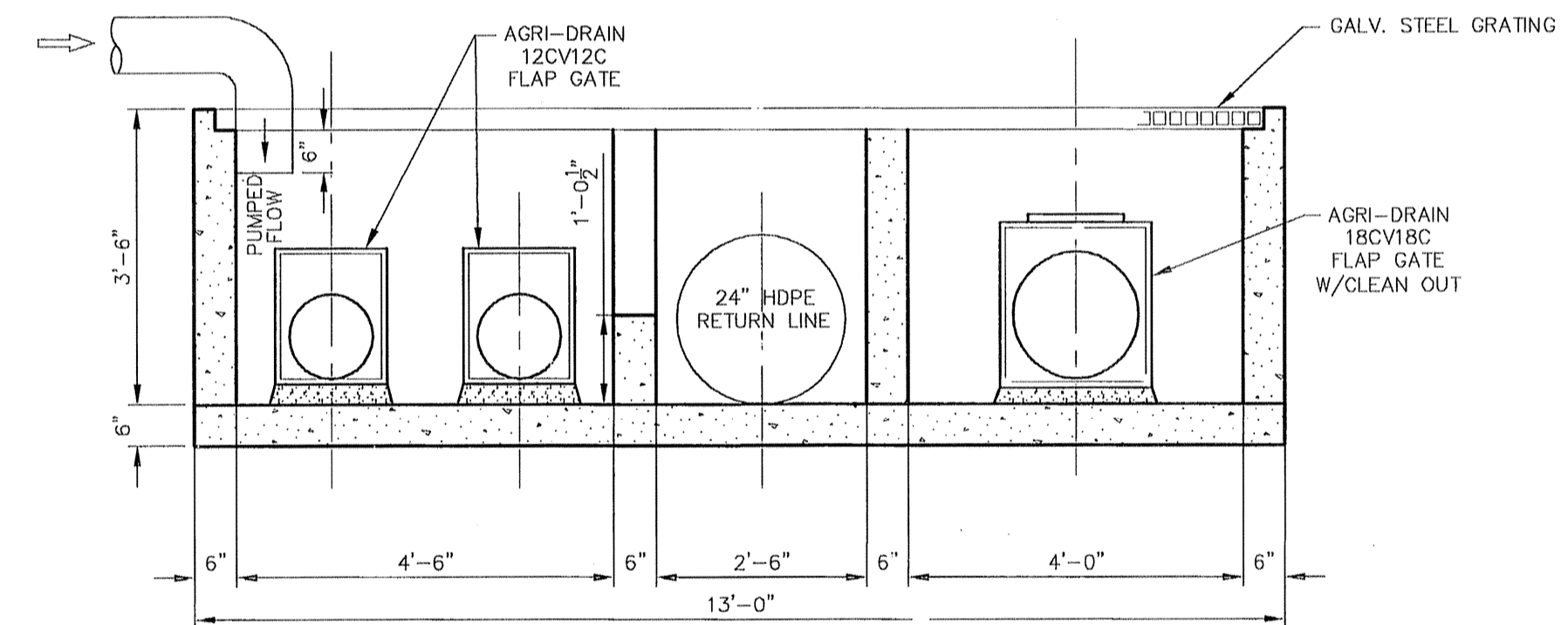
SECTION B-B
PUMPED FLOW RETURN CHAMBER
1" = 2'

DEPTH OF FLOW OVER WEIR:
FOR Q = 1.0 CFS; D = 0.2 FT
FOR Q = 3.15 CFS; D = 0.4 FT

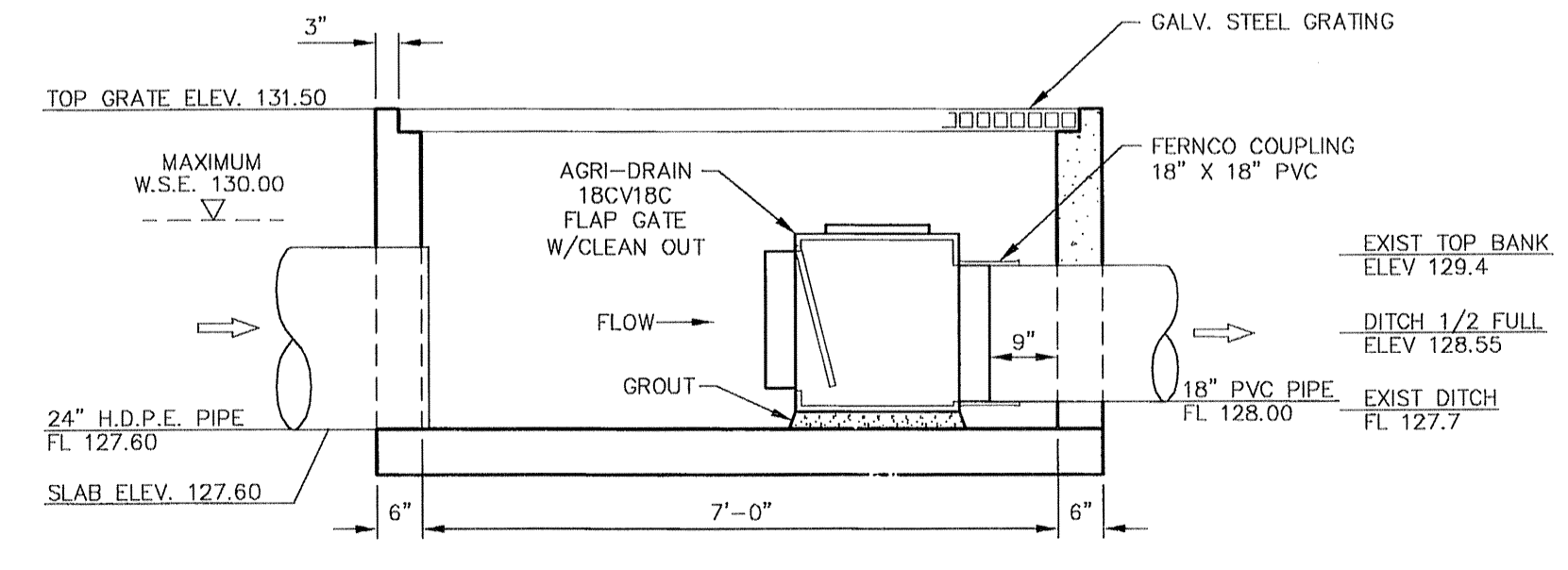


CONTROL BOX
PLAN VIEW
1" = 2'

AGRI-DRAIN PRODUCTS ARE
AVAILABLE AT:
AGRI-DRAIN CORPORATION
1462 340TH ST.
P.O. BOX 458
ADAIR, IOWA 50002
WWW.AGRIDRAIN.COM



SECTION D-D
1" = 2'



SECTION C-C
GRAVITY FLOW CHAMBER
1" = 2'

BENCH MARK

BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
Y1216, 1973 ADJ., ELEV = 125.994
Y1216, 1978 ADJ., ELEV = 125.406
Y1216, 1988 ADJ., ELEV = 123.94
ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

FLOOD PLAIN STATEMENT:
No portion of this tract lies within a "100 year flood hazard area" as designated on The National Flood Insurance Program - Flood Insurance Rate Map issued by the Federal Emergency Management Agency under Community Panel Number 480287 0435 J for Harris County, Texas dated November 6, 1996.

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HOUSTON, TEXAS 77008
(713)802-1019

BOBBY K. WILSON
REGISTERED PROFESSIONAL ENGINEER
09-01-05

PCI
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PRIVATE UTILITY LINES SHOWN

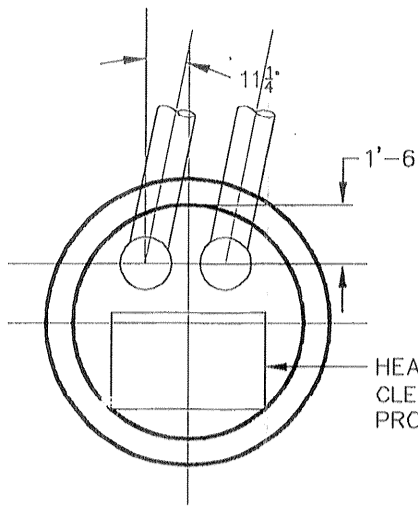
CENTERPOINT ENERGY, ENTEX
SBC VALID FOR ONE YEAR
APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES

CENTERPOINT ENERGY
APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES
UNLESS NOTED VALID AT TIME OF REVIEW ONLY

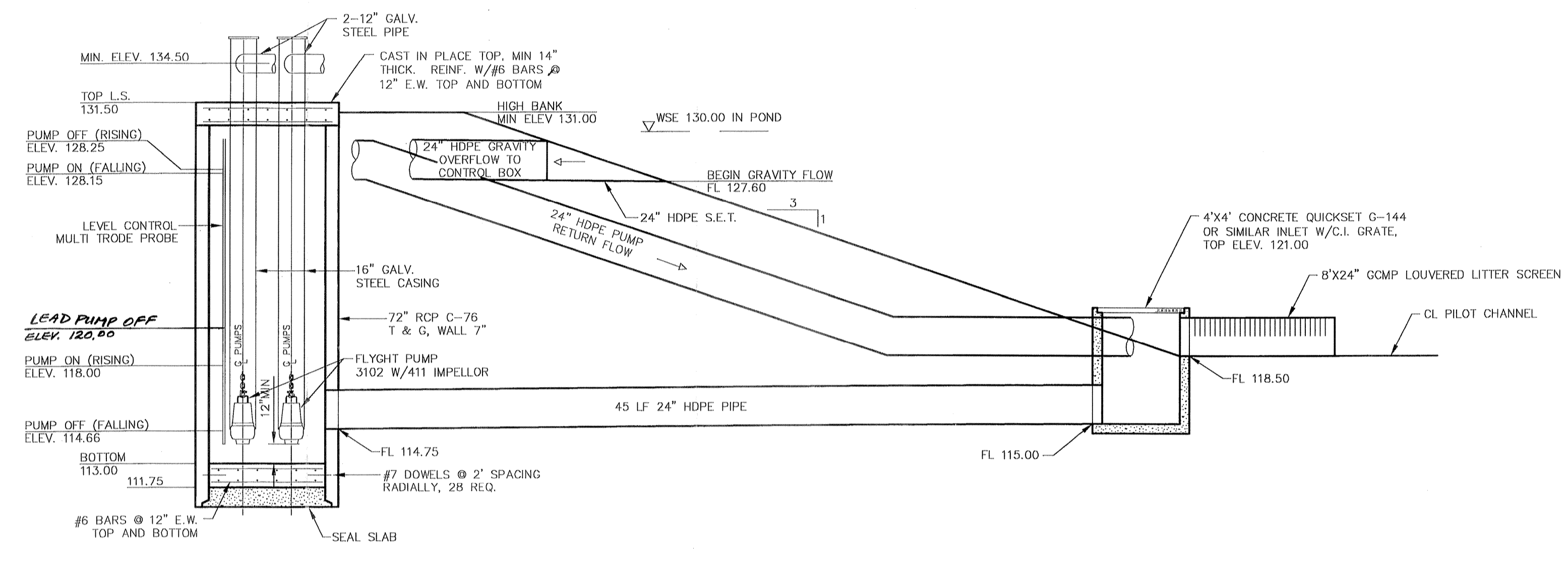
VILLAS AT WILLOWBROOK
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS

DETENTION OUTFALL
AND
CONTROL BOX

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORAGE	SWQ
FILE NO:	FACILITIES	
DRAWING SCALE: AS SHOWN	40820	
VERT:	HORZ:	
SHEET No: 14 OF 24		



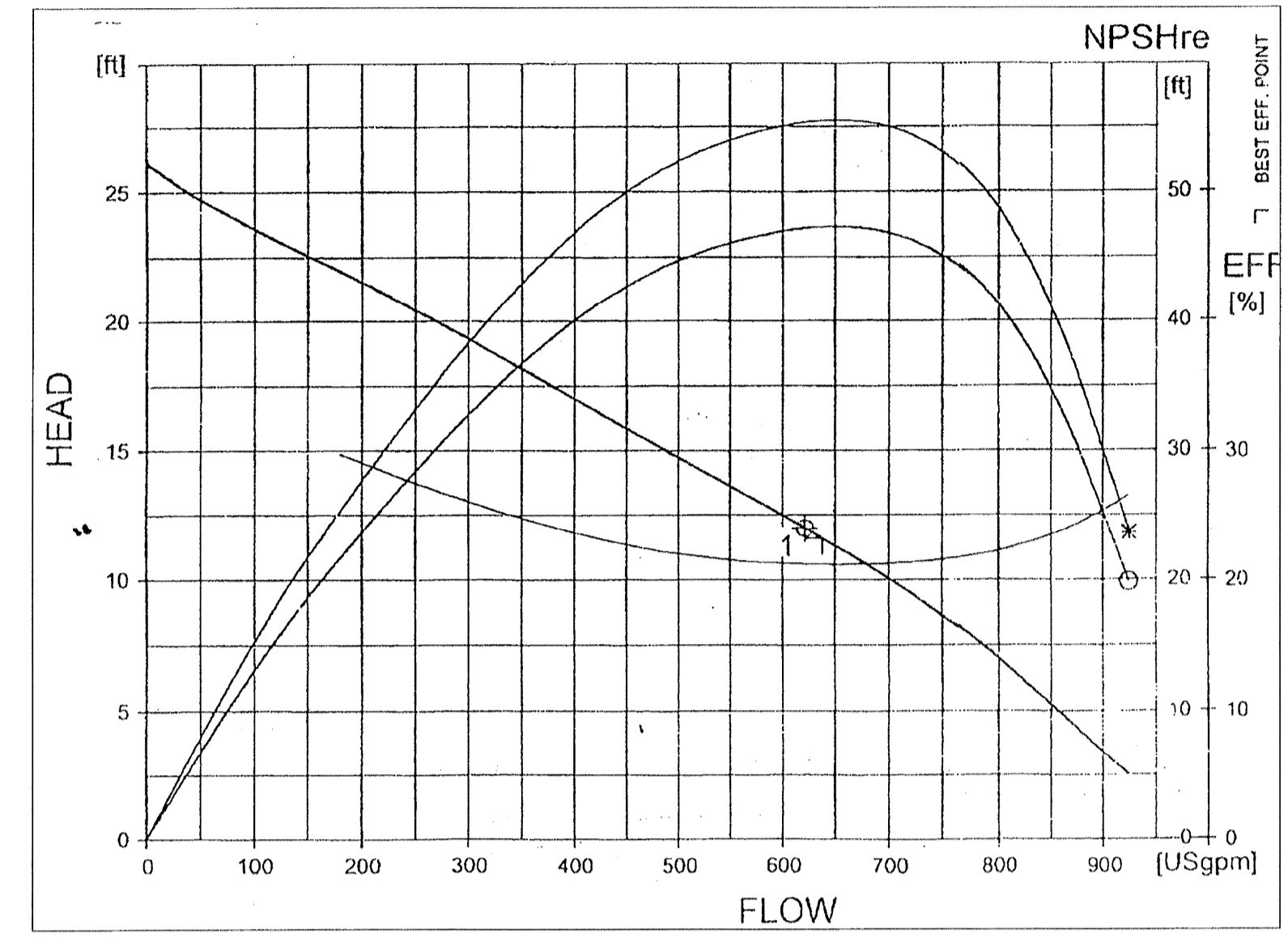
HEAVY DUTY ACCESS COVER:
CLEAR OPENING 2'-6" X 4'-0"
PROVIDE SAFETY NET SYSTEM



MAX. HEAD = 19.84'
MIN. HEAD = 6.35'

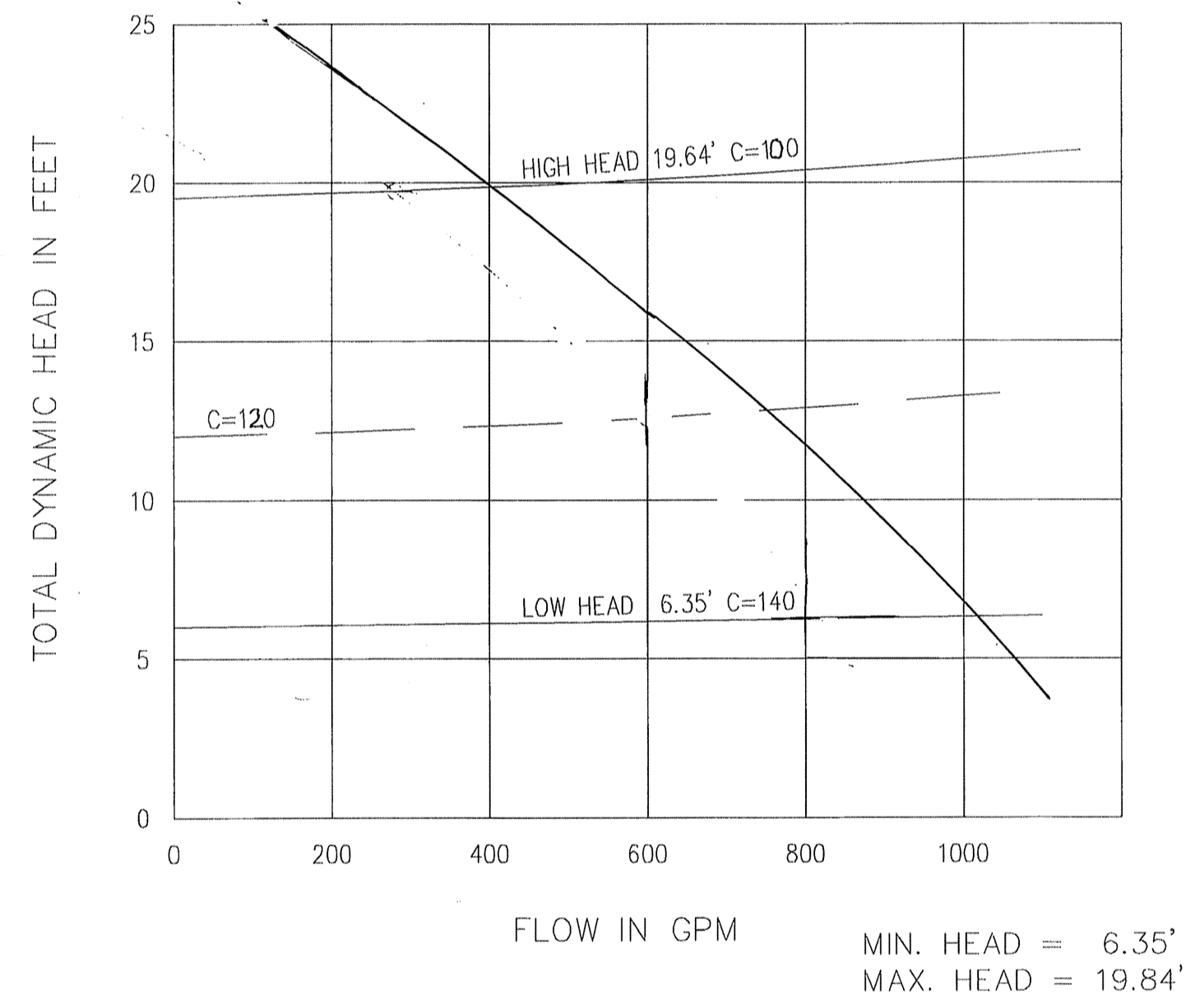
LIFT STATION CROSS SECTION
1" = 5'

PERFORMANCE CURVE



THIS CURVE IS BASED ON FLYGT 3102 PUMP W/411 IMPELLER @ 1745 RPM, PUMPS WITH SIMILAR CHARACTERISTICS MAY BE CONSIDERED. THIS PUMP USES A SHP 460V 3 PHASE MOTOR.

SYSTEM CURVE



STATION OPERATION TABLES

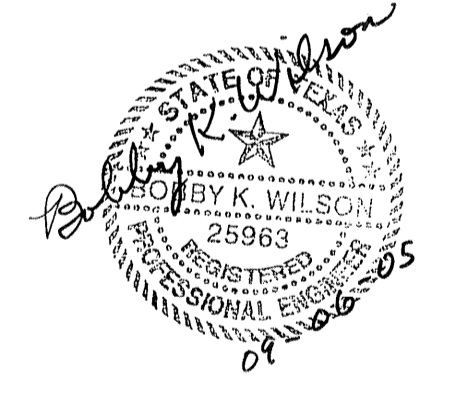
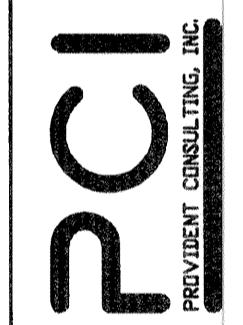
VILLAS AT WILLOWBROOK STORM WATER LIFT STATION			
RISING LEVEL CYCLE			
WATER LEVEL ELEVATION	ACTION		PUMP OPERATION
118.00	PUMP ON	LEAD PUMP ON	PUMP ON
120.00	LAG PUMP ON		PUMP ON
128.25	PUMP OFF	BOTH PUMPS OFF	PUMP OFF

FALLING LEVEL CYCLE			
WATER LEVEL ELEVATION	ACTION		PUMP OPERATION
114.66	LEAD PUMP OFF		PUMP OFF
119.50	LAG PUMP OFF		PUMP ON
128.15	BOTH PUMPS ON		PUMP OFF

NOTE: AN ADDITIONAL LEVEL CONTROL IS INSTALLED AT THE OUTFALL MANHOLE TO SHUT PUMPS OFF IF THE ROADSIDE DITCH OUTFALL IS MORE THAN 1/2 FULL, (EL. 128.80)

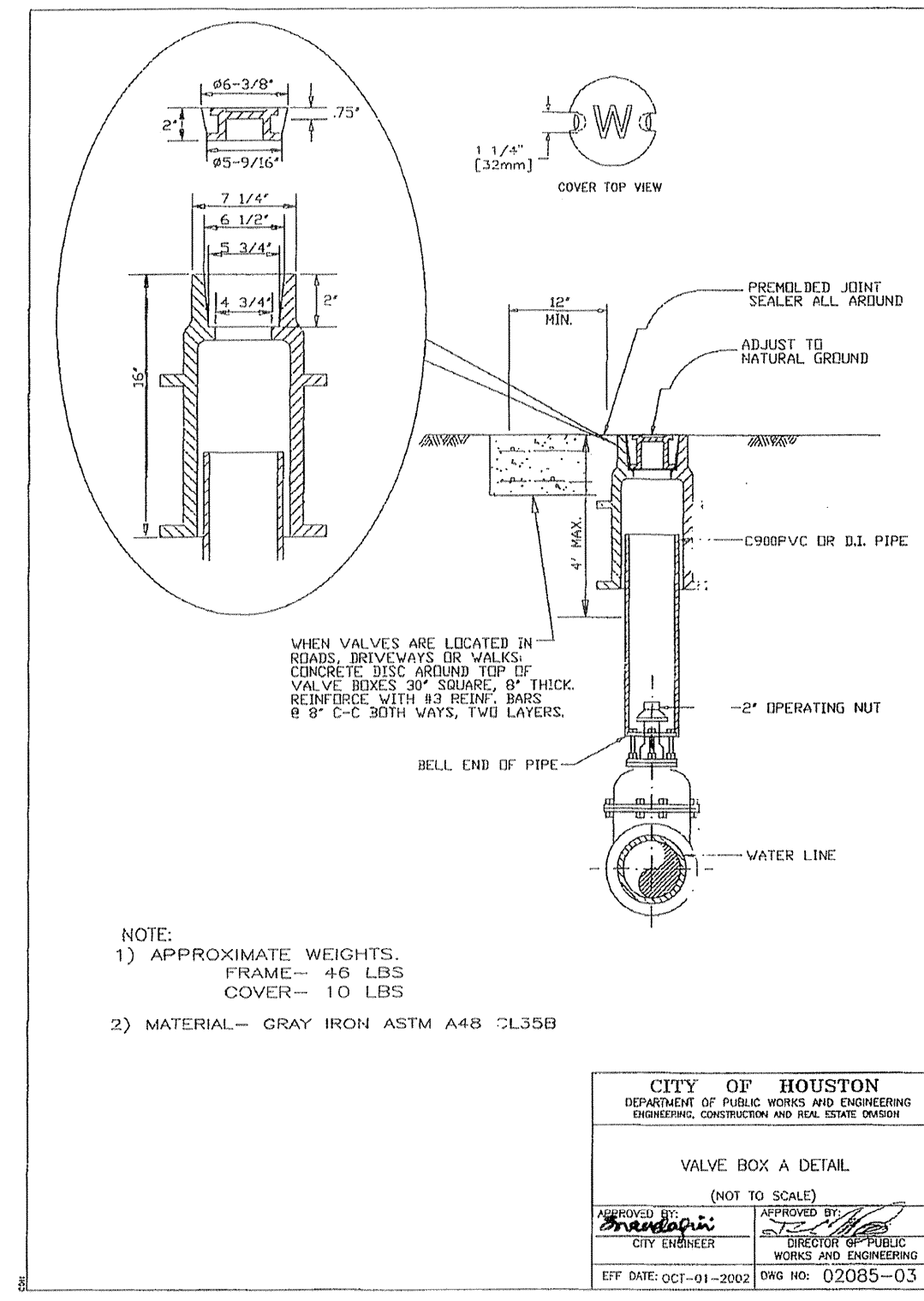
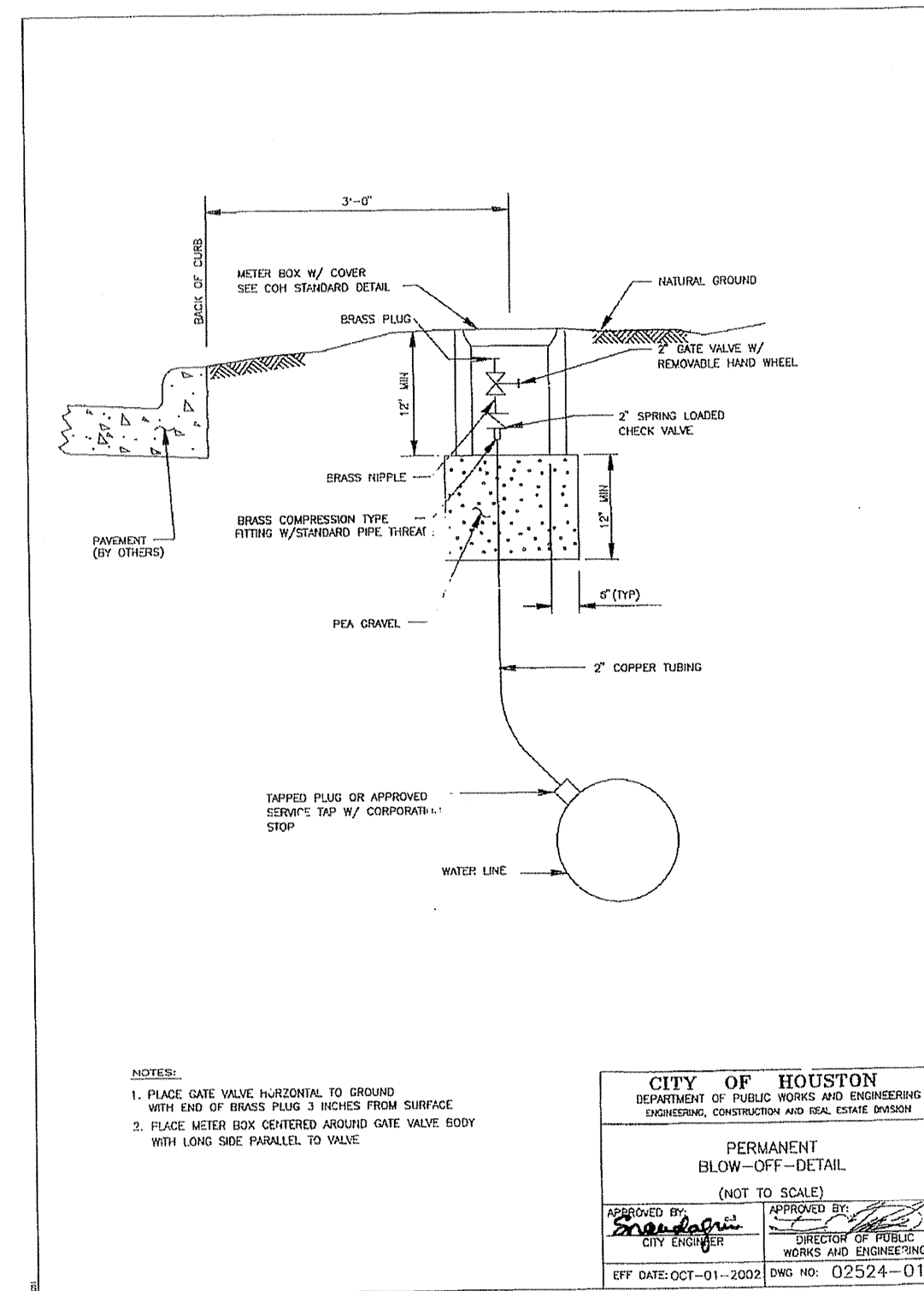
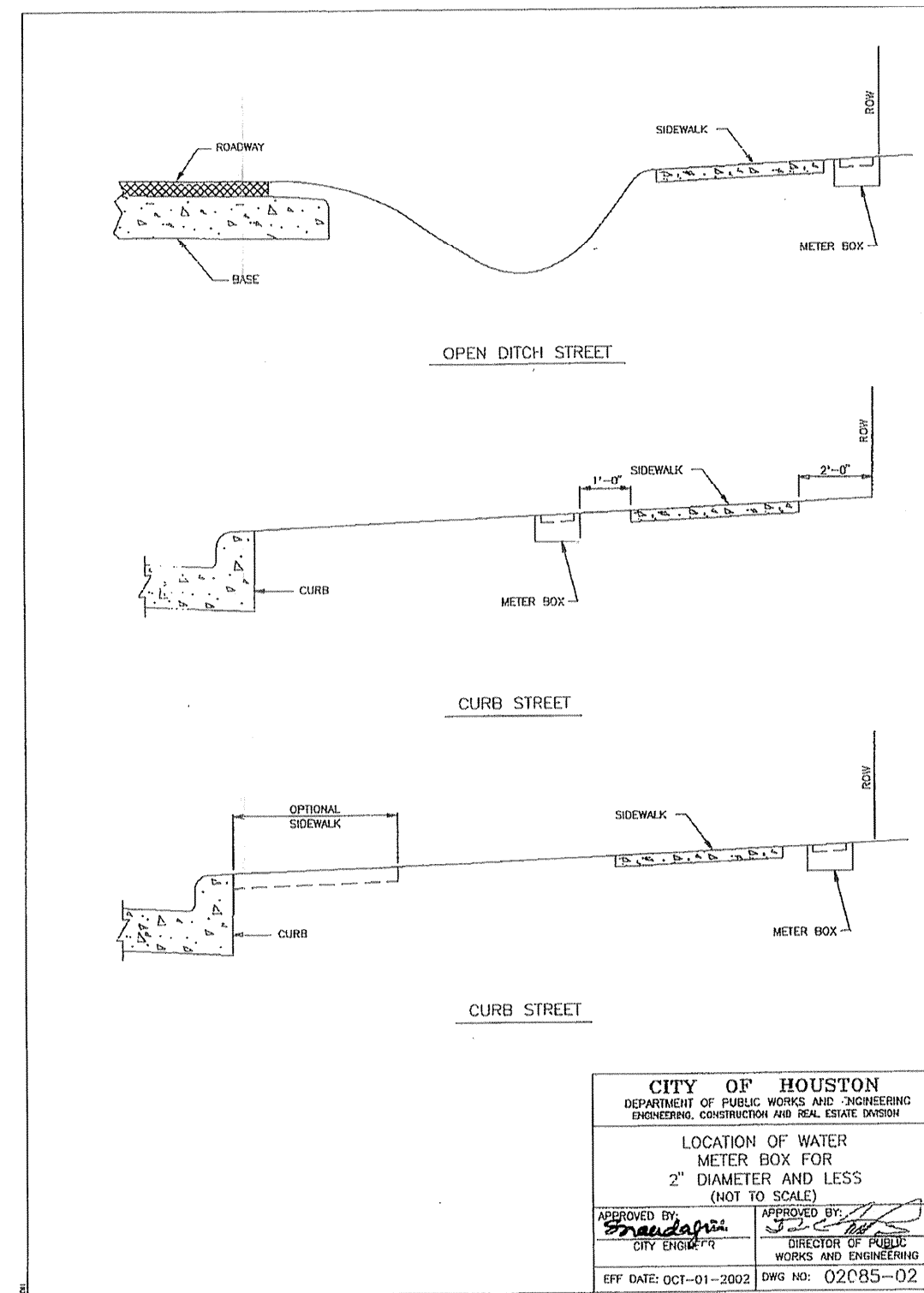
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BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
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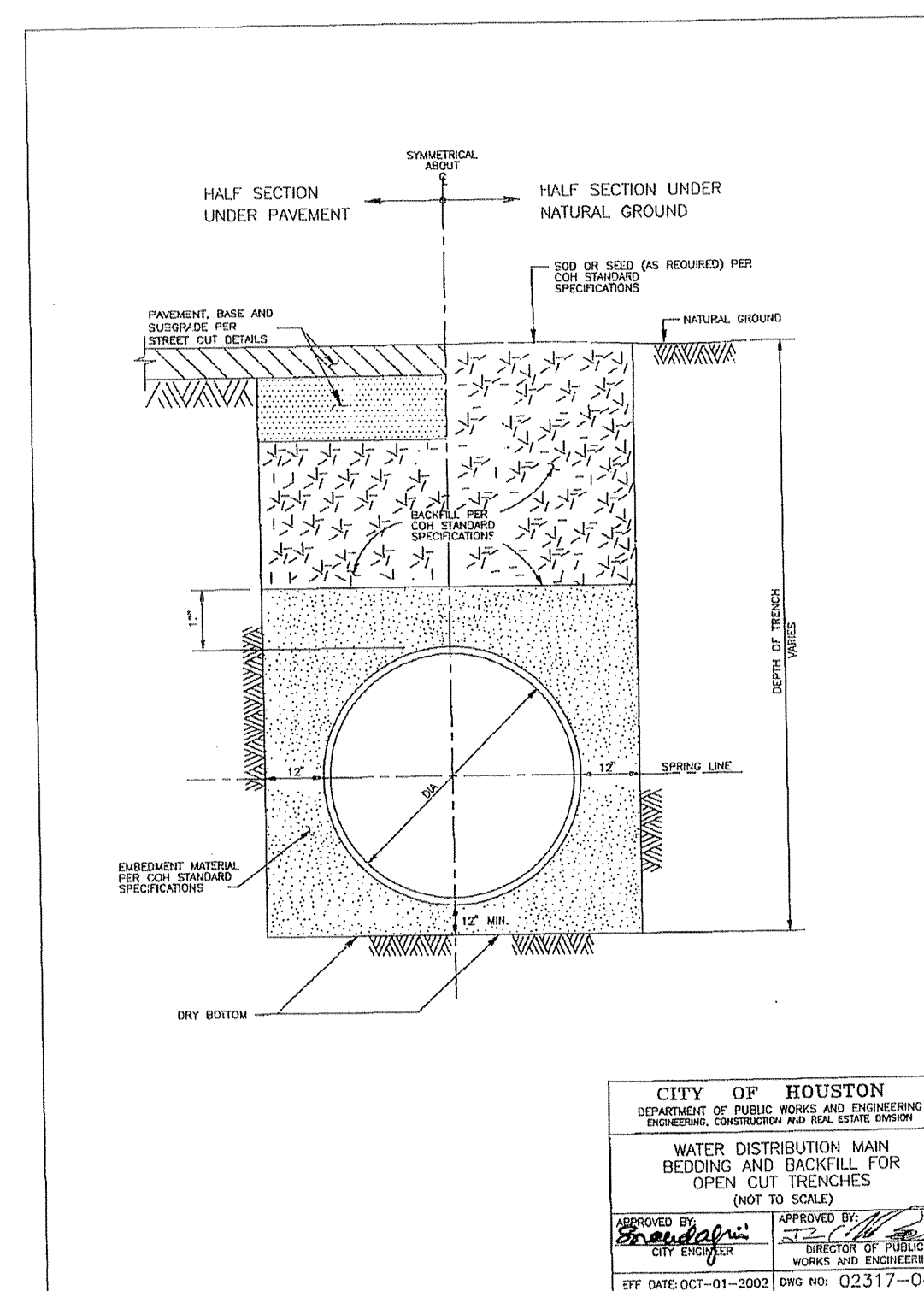
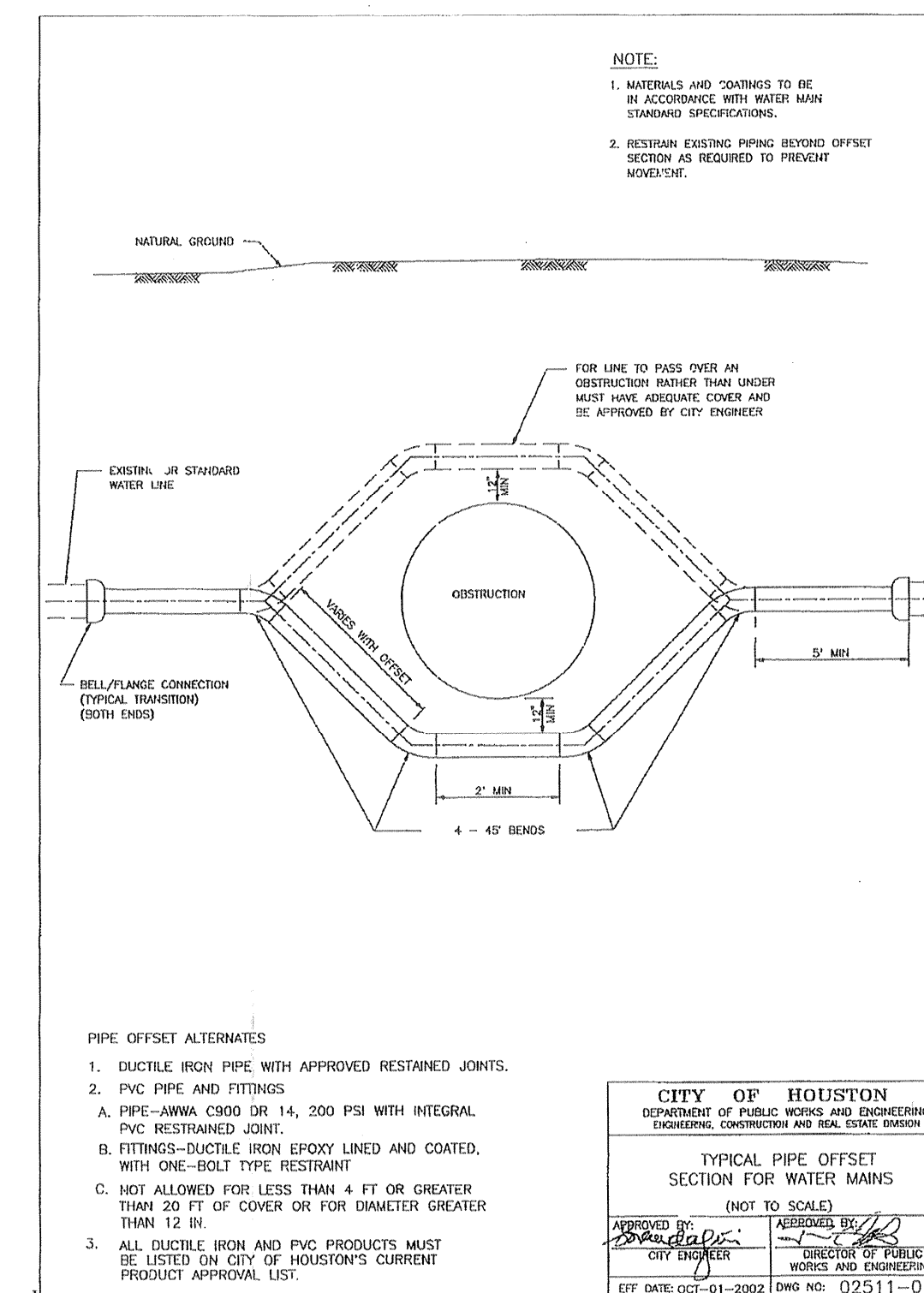
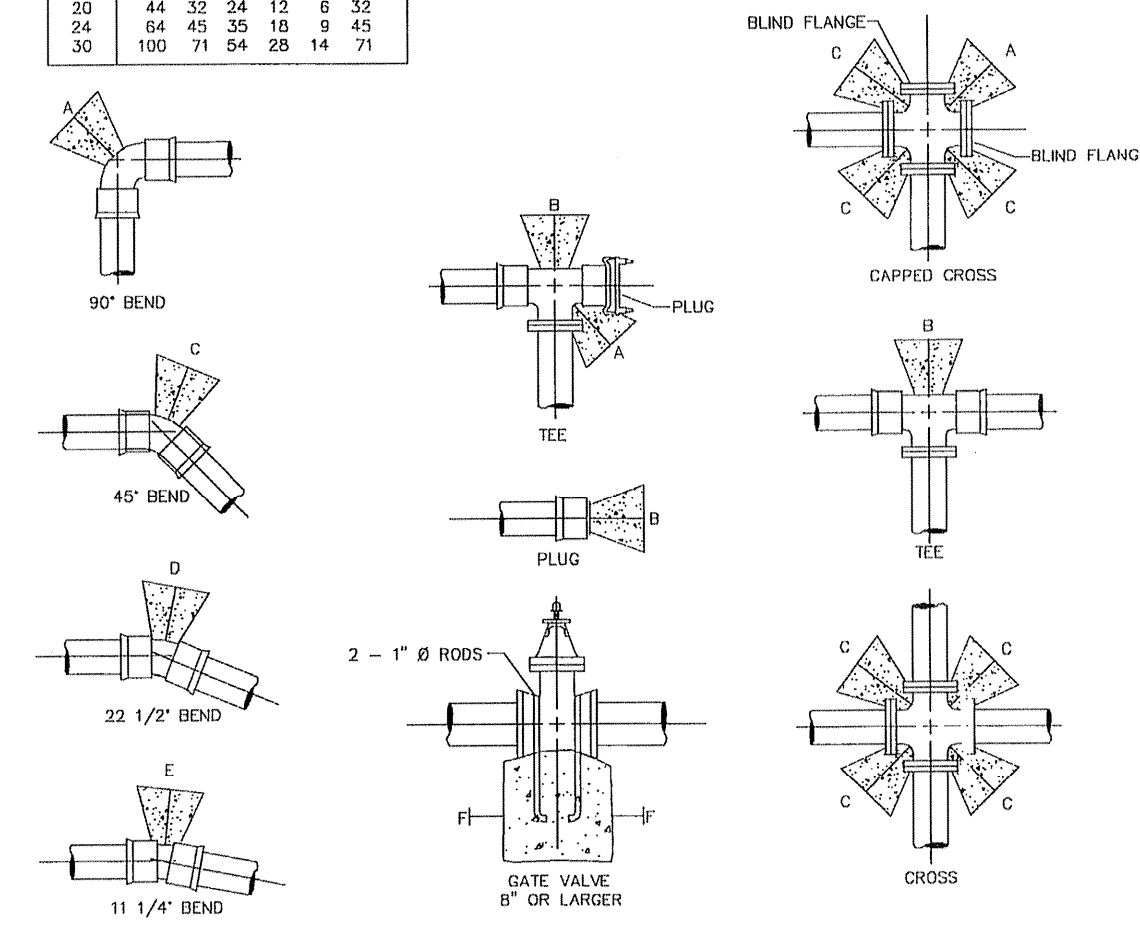
VILLAS AT WILLOWBROOK
IN
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS
LIFT STATION AND
PUMP DETAILS

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ
FILE NO:	FACILITIES	
DRAWING SCALE: AS SHOWN	40820	
VERT: HORZ:	HOUSTON, TEXAS	
SHEET No: 15 OF 24		



PIPE SIZE (IN.)	MINIMUM BEARING AREA AGAINST UNDISTURBED SOIL (SQ. FT.)					
	A	B	C	D	E	F
4	2	2	1	1	1	2
6	4	3	3	1	1	3
8	6	4	2	1	1	5
10	12	8	6	3	2	8
12	18	12	8	4	2	12
14	22	15	12	6	3	15
16	28	20	16	8	4	20
18	36	25	20	10	5	25
20	44	32	24	12	6	32
24	64	45	35	18	9	45
30	100	71	54	28	14	71

- NOTES:**
- THRUST IS BASED ON A WORKING PRESSURE OF 150 P.S.I.
 - BEARING AREA IS BASED ON A SAFE SOIL BEARING LOAD OF 1000 P.S.F.
 - BLOCKING SHALL BEAR AGAINST FITTINGS ONLY AND SHALL BE CLEAR OF THE JOINT.



PIPE TAPPING SCHEDULE

WATER MAIN TYPE AND DIAMETER	SERVICE SIZE			
	3/4"	1"	1 1/2"	2"
6" CAST IRON OR DUCTILE IRON	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
4" ASBESTOS (EXISTING) CEMENT	WBS	WBS	DSS, WBS	DSS, WBS
4" PVC (AWWA C900)	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
6" AND 8" CAST IRON OR DUCTILE IRON	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
6" AND 8" ASBESTOS (EXISTING) CEMENT	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
6" AND 8" CAST IRON OR DUCTILE IRON	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
6" AND 8" PVC (AWWA C900)	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
12" CAST IRON OR DUCTILE IRON	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
12" ASBESTOS (EXISTING) CEMENT	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
12" PVC (AWWA C900)	DSS, WBS	DSS, WBS	DSS, WBS	DSS, WBS
16" AND UP CAST IRON OR DUCTILE IRON	DWSS	DWSS	DWSS	DWSS
16" AND UP ASBESTOS (EXISTING) CEMENT	DWSS	DWSS	DWSS	DWSS
16" AND UP PVC (AWWA C900)	DWSS	DWSS	DWSS	DWSS

DSS - DUAL STRAP SADDLES
WBS - WIDE BAND STRAP SADDLES
DWSS - DUAL WIDE BAND STRAP SADDLES

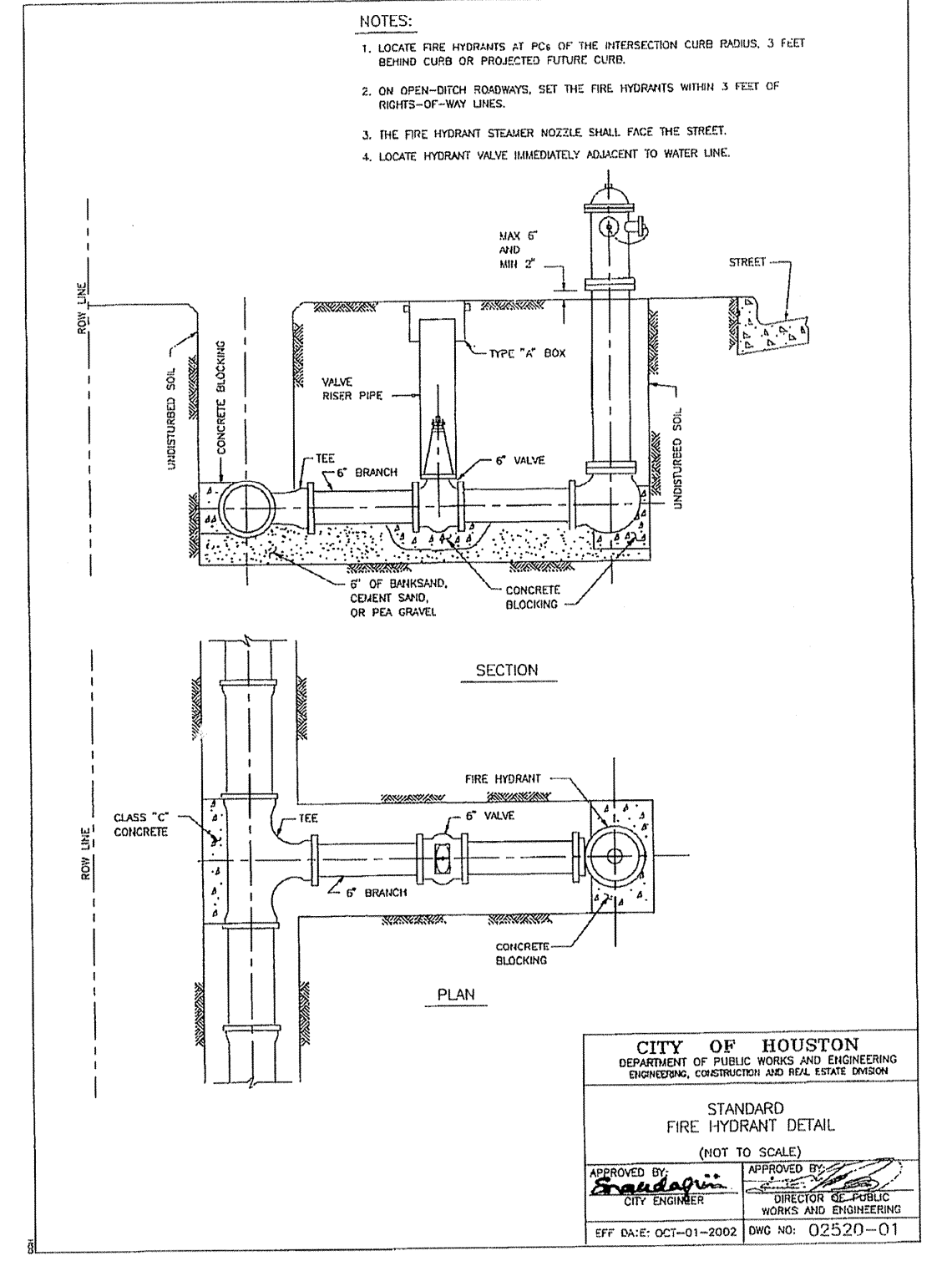
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SERVICE TAPS (NOT TO SCALE)

APPROVED BY: [Signature]
CITY ENGINEER

APPROVED BY: [Signature]
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-01-2002 DWG NO: 02512-02



VILLAS AT WILLOWBROOK

WATER DETAILS

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ

FILE NO: _____

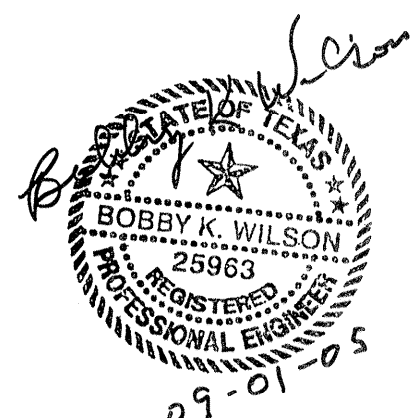
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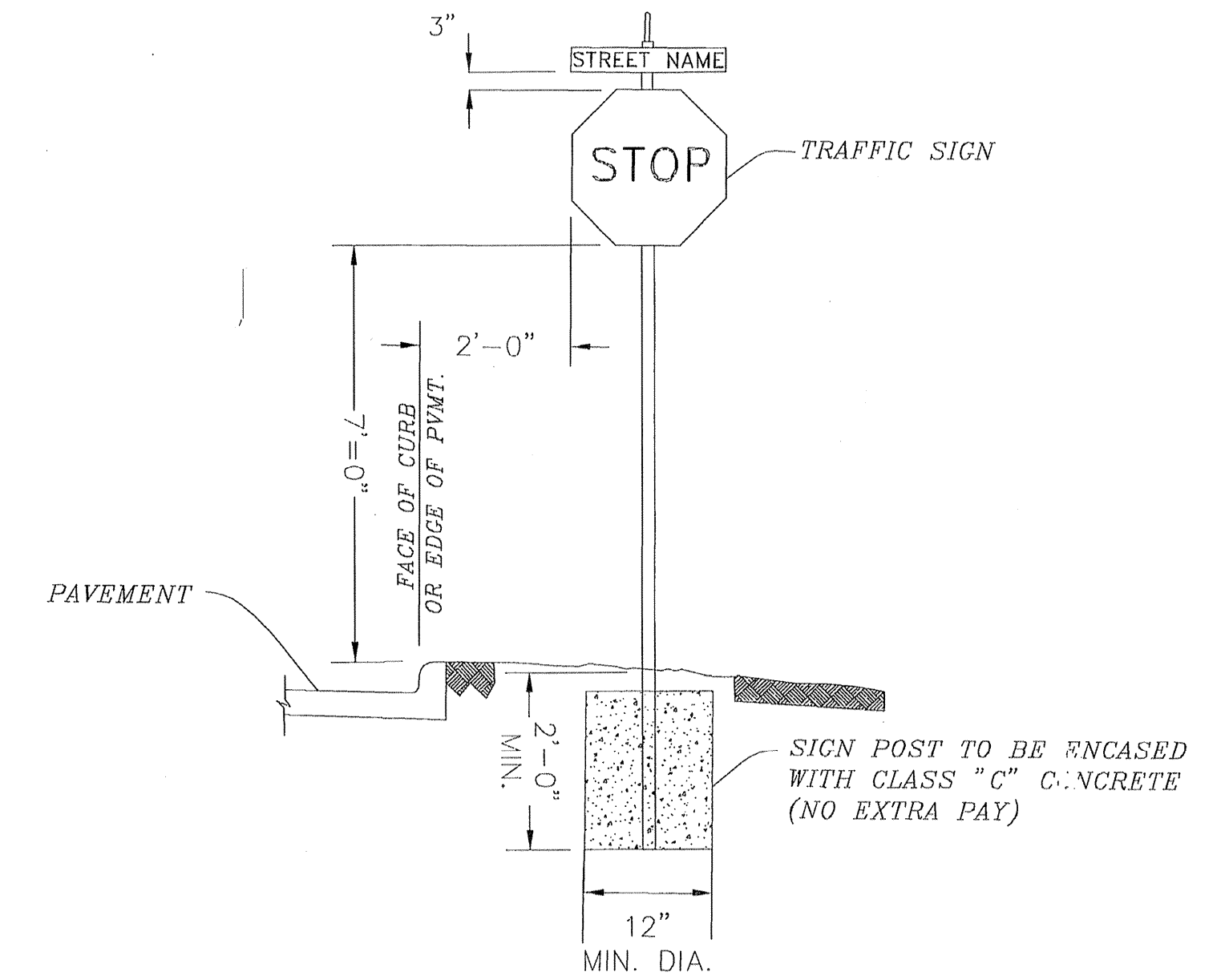
SCALE: NONE

SHEET No: 16 OF 24

40820
CITY OF HOUSTON
ENGINEERING

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 HOUSTON, TEXAS 77008
 (713)802-1019
PCI
 PROVIDENT CONSULTING, INC.

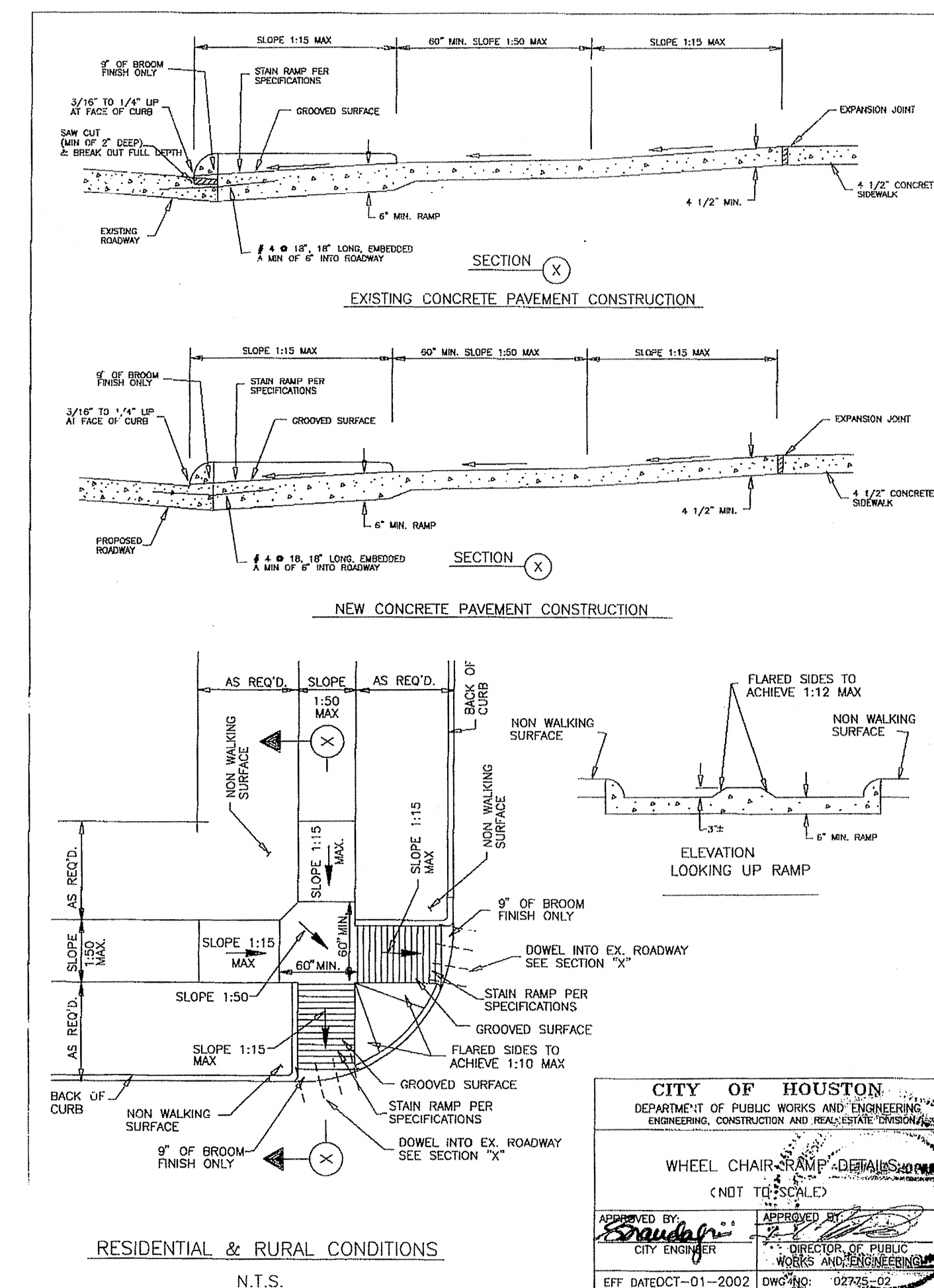




TYPICAL SIGN MOUNT DETAIL
SCALE: N.T.S.

NOTES:

1. ALL STOP SIGNS TO BE SIZED AND PLACED AS SHOWN ON PLANS.
2. STREET NAME SIGNS TO BE INSTALLED AT INTERSECTION OF ALL STREETS.



RESIDENTIAL & RURAL CONDITIONS
N.T.S.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND RECONSTRUCTION DIVISION

WHEEL CHAIR RAMP DETAILS
(NOT TO SCALE)

APPROVED BY: [Signature]
CITY ENGINEER

APPROVED BY: [Signature]
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF. DATE: 01-2002 DWG. NO. 02745-02

HARRIS COUNTY MUD 191
VILLAS at WILLOWBROOK

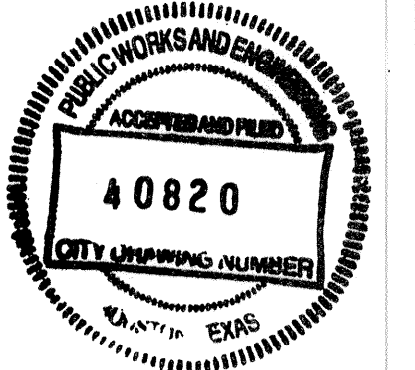
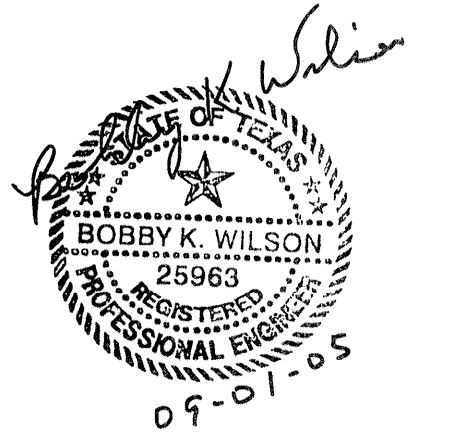
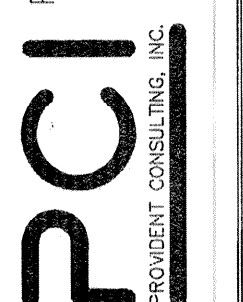
UTILITIES
WHEELCHAIR RAMP &
VARIOUS DETAILS

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWD

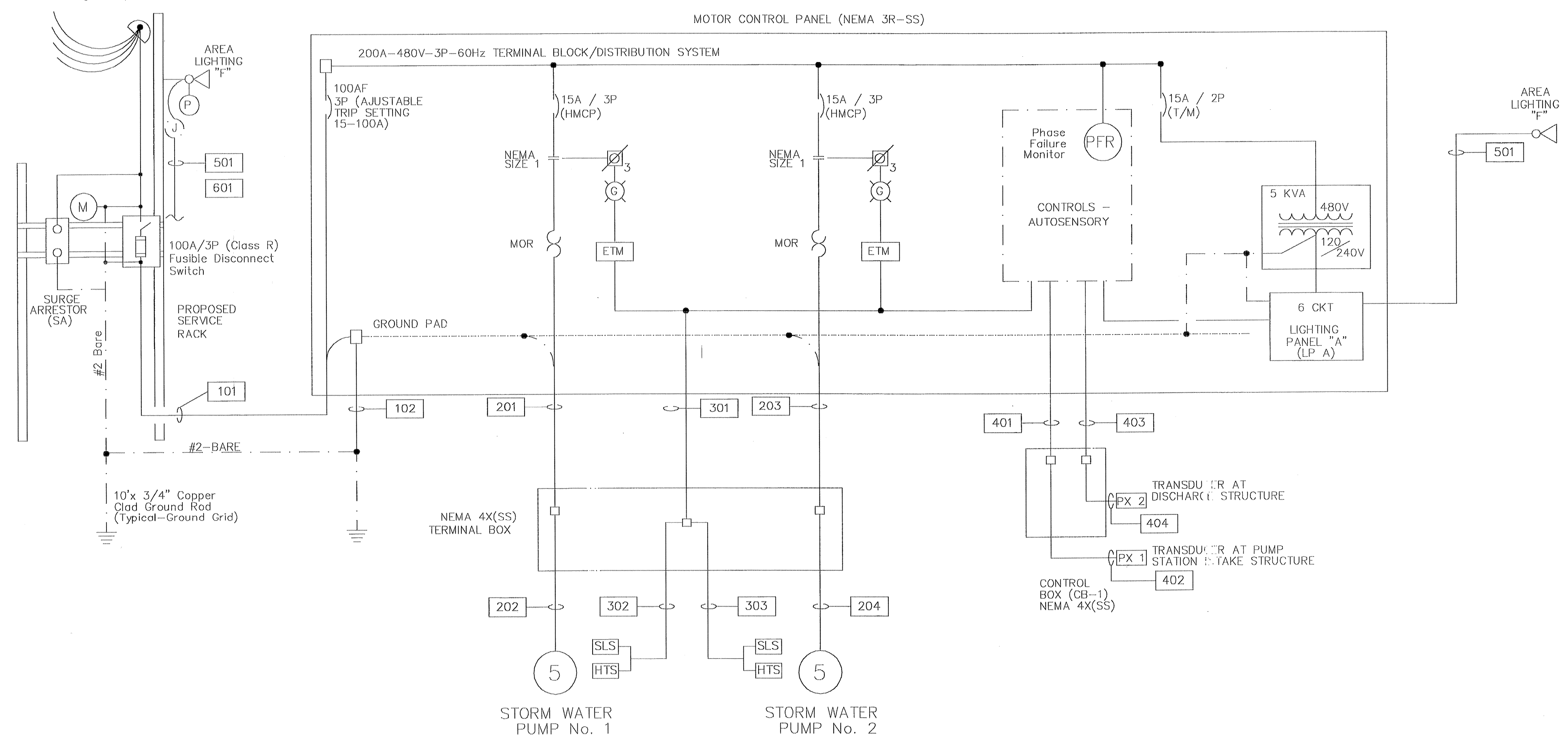
FILE NO:
DRAWING SCALE:
N/A
VERT: HORZ:

SHEET No: 19 OF 24

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HOUSTON, TEXAS 77008
(713)802-1019



Set Service Entrance per Utility Requirements



MOTOR CONTROL CENTER ONE-LINE DIAGRAM

LOAD ANALYSIS		
ITEM	HP OR KVA	FLA
1) STM WATER PUMP No. 1	5	8
2) STM WATER PUMP No. 2	5	8
3) LIGHTING	5	10
25% LGT. MTR.		2
TOTAL		28

CONDUIT/CONDUCTOR SCHEDULE				
MARK	TO	FROM	CONDUIT	CONDUCTOR
101	MOTOR CONTROL PANEL	SERVICE RACK	1 1/2"	3-6 & #8 (G)
102	MOTOR CONTROL PANEL	GROUND GRID	1"	#2 (G)
201	TERMINAL BOX	MOTOR CONTROL PANEL	1"	3-#12 & #12 (G)
202	STORM WATER PUMP No. 1	TERMINAL BOX	1 1/2" (FLEX.) or MFG. CABLE AS REQ'D	
203	TERMINAL BOX	MOTOR CONTROL PANEL	1 1/2" (FLEX.) or MFG. CABLE	3-#12 & #12 (G)
204	STORM WATER PUMP No. 2	TERMINAL BOX	1 1/2" (FLEX.) or MFG. CABLE AS REQ'D	
301	TERMINAL BOX	MOTOR CONTROL PANEL	3/4"	#12 & #14 AS REQD.
302	STORM WATER PUMP No. 1	TERMINAL BOX	1" (FLEX.) or AS REQ'D	MFG. CABLE
303	STORM WATER PUMP No. 2	TERMINAL BOX	1" (FLEX.) or AS REQ'D	MFG. CABLE
401	CONTROL BOX	MOTOR CONTROL PANEL	3/4"	2-#16 w/ SHIELD
402	PRESSURE XDUCER No. 1	CONTROL BOX	3/4" (FLEX.) or AS REQ'D	MFG. CABLE
403	CONTROL BOX	MOTOR CONTROL PANEL	3/4"	2-#16 w/ SHIELD
404	PRESSURE XDUCER No. 1	CONTROL BOX	3/4" (FLEX.) or AS REQ'D	MFG. CABLE
501	AREA LIGHT - SERVICE RACK	LIGHTING PANEL "A"	3/4"	2-#12 & #12 (G)
601	MOTOR CONTROL PANEL	SERVICE RACK	3/4"	TELEPHONE

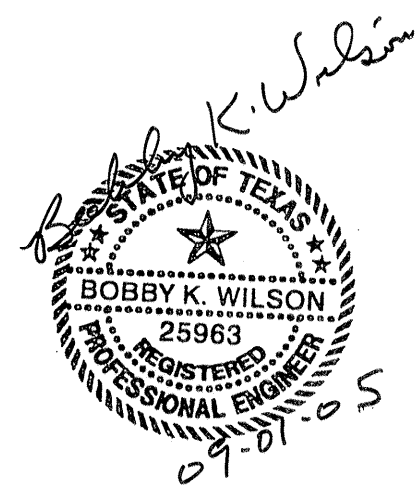
Notes:

- All Components to be General Electric Eaton/Cutler Hammer, or Allen Bradley.
- All wire to be THHN (CU), Minimum #12
- All Breakers to have a minimum interrupting capacity of 22KA
- Conduit to be Rigid Galv. Steel Above Grade, PVC Below Encased in Red Concrete w/ Warning Tape Above, PVC in Chlorine Bldg.
- Chlorine & Process Water Piping to be Schedule 80 PVC w/ High Density Polyurethane Foam, Aluminum Jacketed, Insulation Above Grade.

Electrical Legend

- Circuit Breaker - HMCP (Motor Circuit Protector-65 kA IC) T/M (Thermal Magnetic - 22ka I.C. - Min.)
- Contact
- Motor Starter w/ Solid State (MOR) Overload Protection (MOR-S, Franklin Electric Subtotal)
- Three Phase Motor (Horsepower as Shown)
- Pilot Light (Color as Shown)
- Position Selector Switch (Number & Function as Shown)
- Potential Transformer
- Phase Failure Relay SLD-440-ALE
- Elapsed Time Meter, Simpson (0-99,999)
- Seal Leak Sensor (used with MINI-CAS)
- High Temperature Sensor (used with MINI-CAS)
- Surge Arrester - Innovative Technologies Model Protector FTX-150 (120V-1P & 480V-3P)
- Fuse and Block (Fast Acting - Drive Mfg. Recommended)
- Float Switch
- Limit Switch

BENCH MARK
 BENCHMARK: NATIONAL GEODETIC SURVEY MARKER
 Y1216, 1973 ADJ., ELEV = 125.994
 Y1216, 1978 ADJ., ELEV = 125.406
 Y1216, 1988 ADJ., ELEV = 123.94
 ELEVATIONS ARE BASED ON 1973 ADJUSTMENT



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PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX

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 APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES

CENTERPOINT ENERGY
 APPROVED ONLY FOR CROSSING UNDERGROUND FACILITIES
 UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

VILLAS AT W. LOWBROOK
 HARRIS COUNTY MUD 191
 HARRIS COUNTY, TEXAS

ELECTRICAL ONE-LINE DIAGRAM

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWG

FILE NO:

DRAWING SCALE:
AS SHOWN

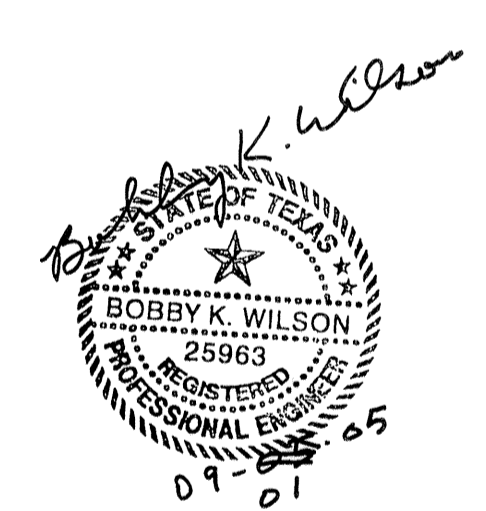
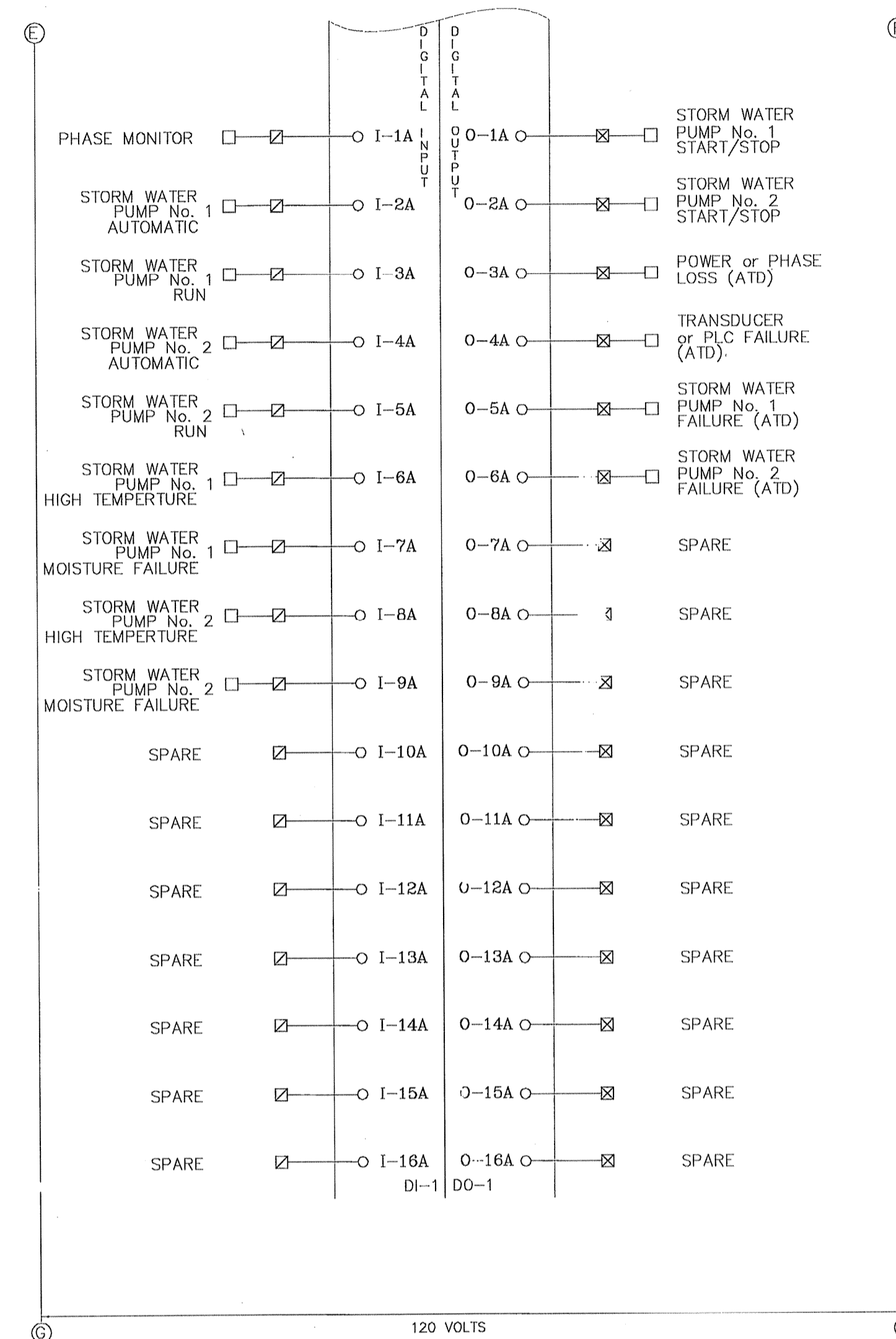
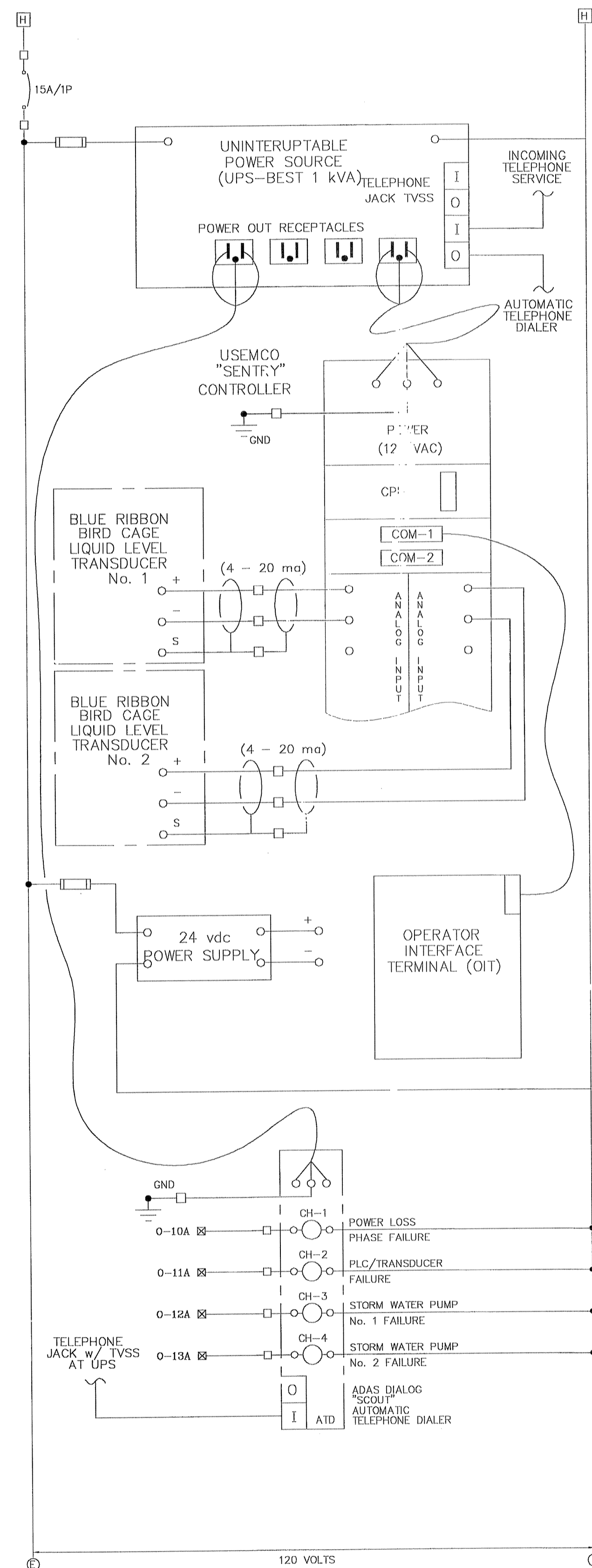
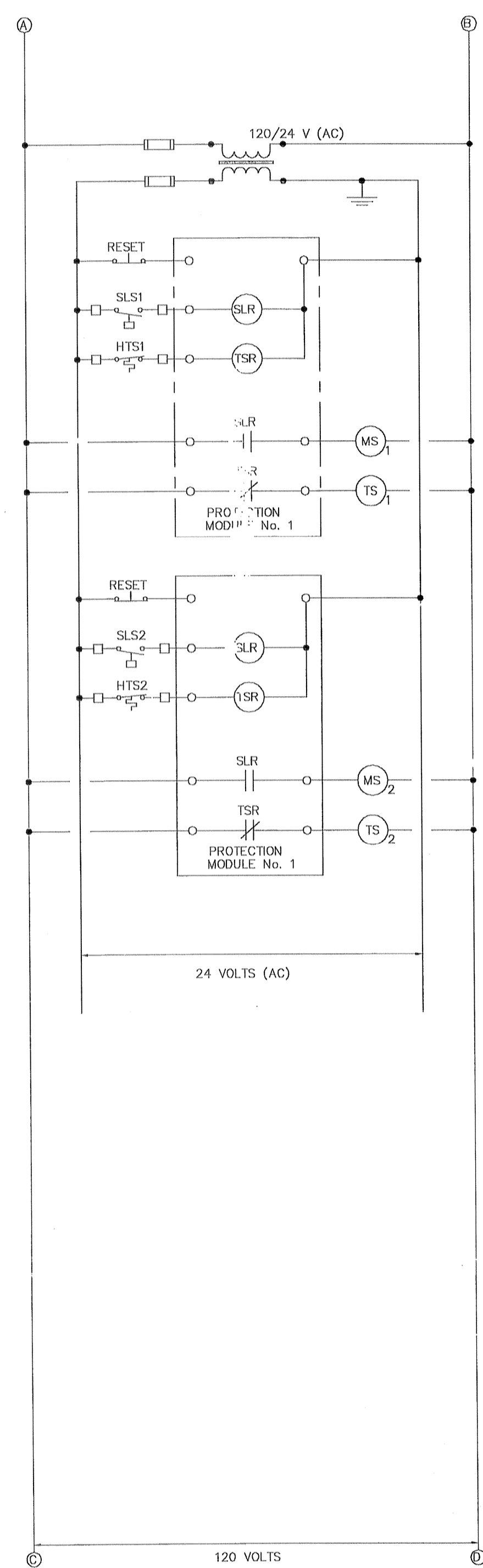
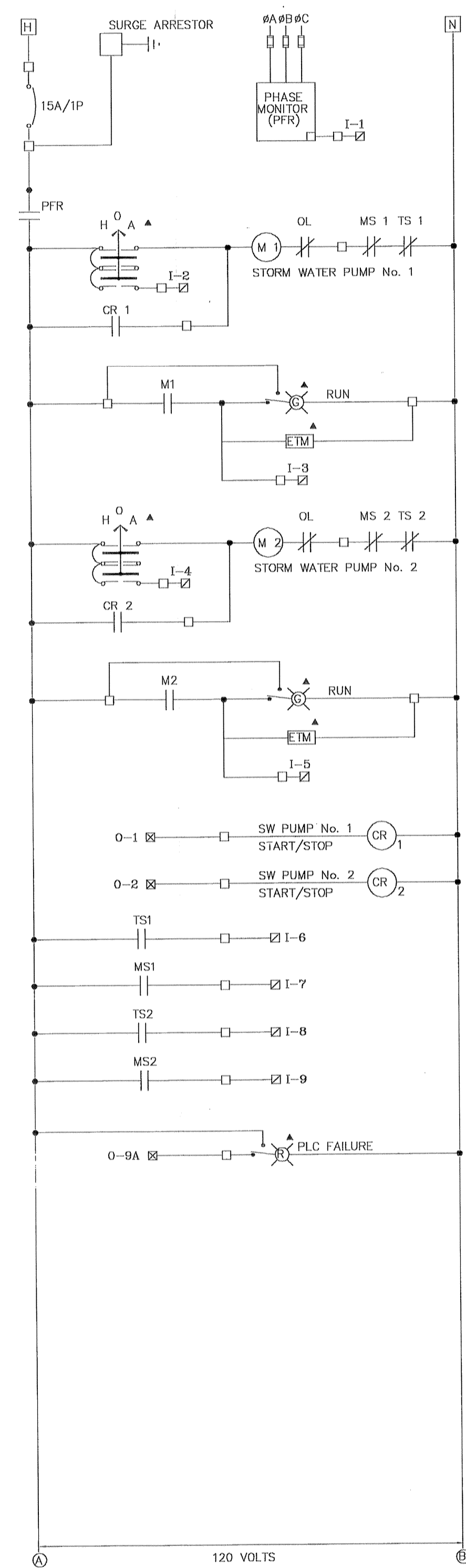
VERT: HORZ:

SHEET No: 21 OF 24

40820
 CITY OF HOUSTON
 HOUSTON, TEXAS

BENCH MARK

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PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX
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 APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES
 CENTERPOINT ENERGY
 APPROVED ONLY FOR DESIGNING UNDERGROUND FACILITIES
 UNLESS NOTED W/VALE AT TIME OF REVIEW ONLY.

VILLAS AT WILLOWBROOK
 in
 HARRIS COUNTY MUD 191
 HARRIS COUNTY, TEXAS

CONTROL SCHEMATICS

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ

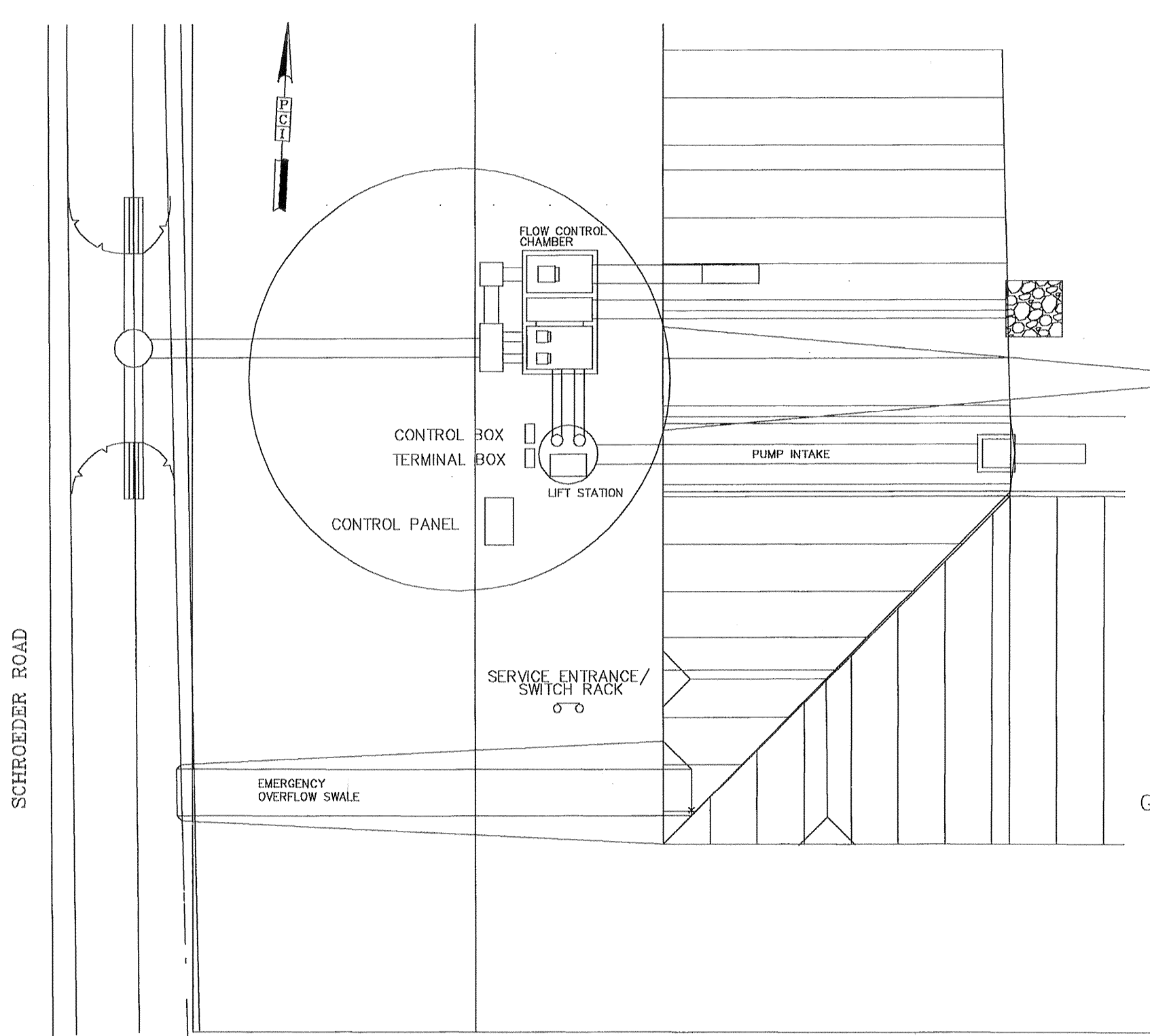
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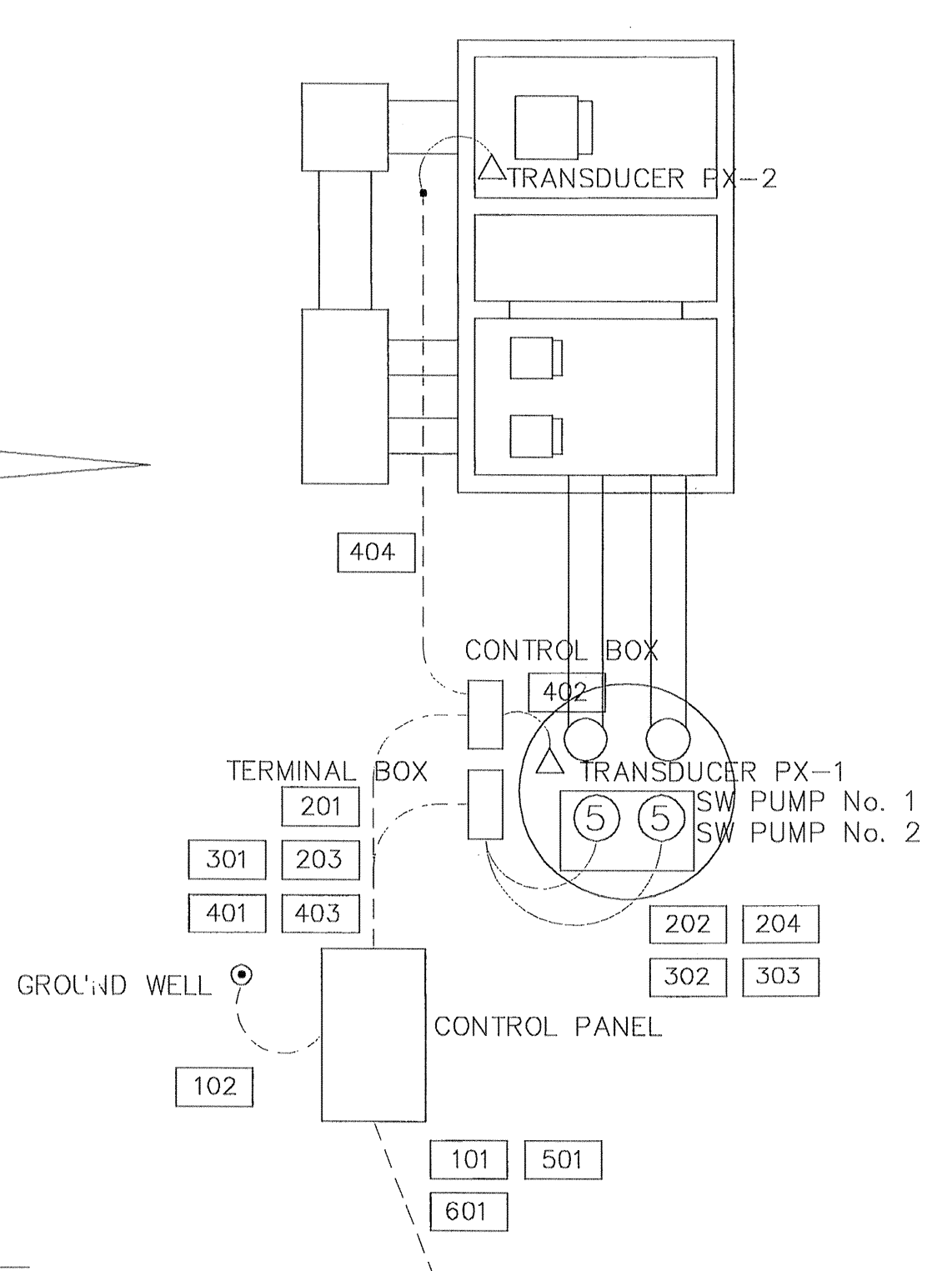
VERT: HORZ:

SHEET No: 22 OF 24

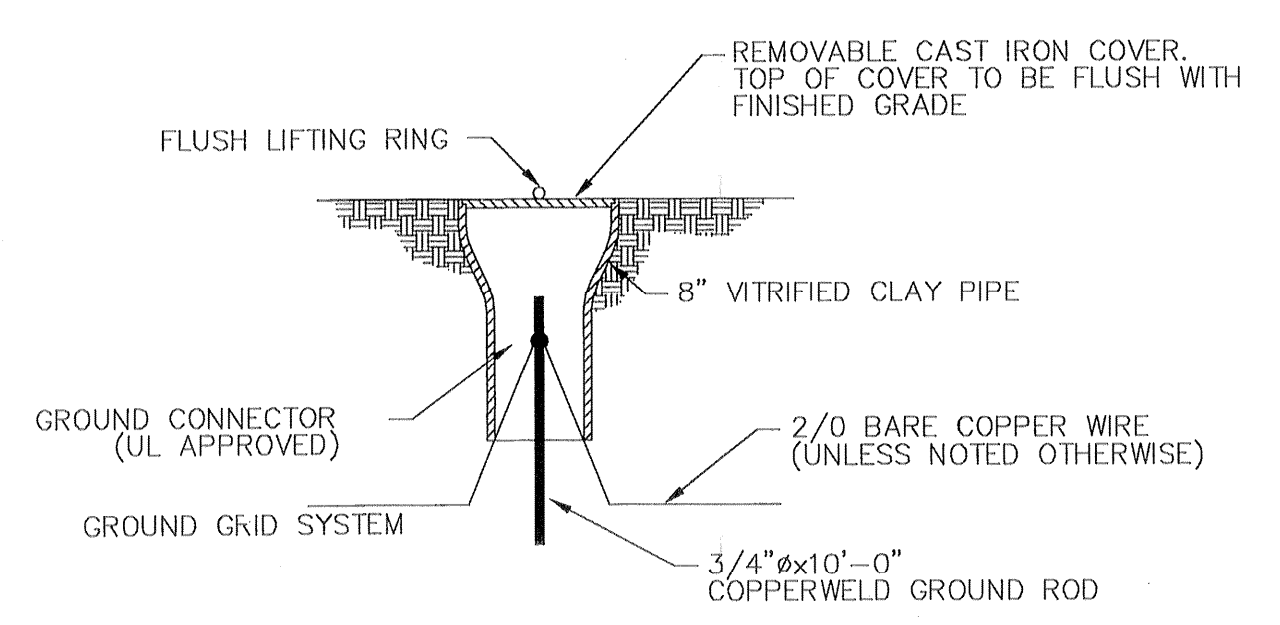
40820
 CITY OF HOUSTON
 HOUSTON, TEXAS



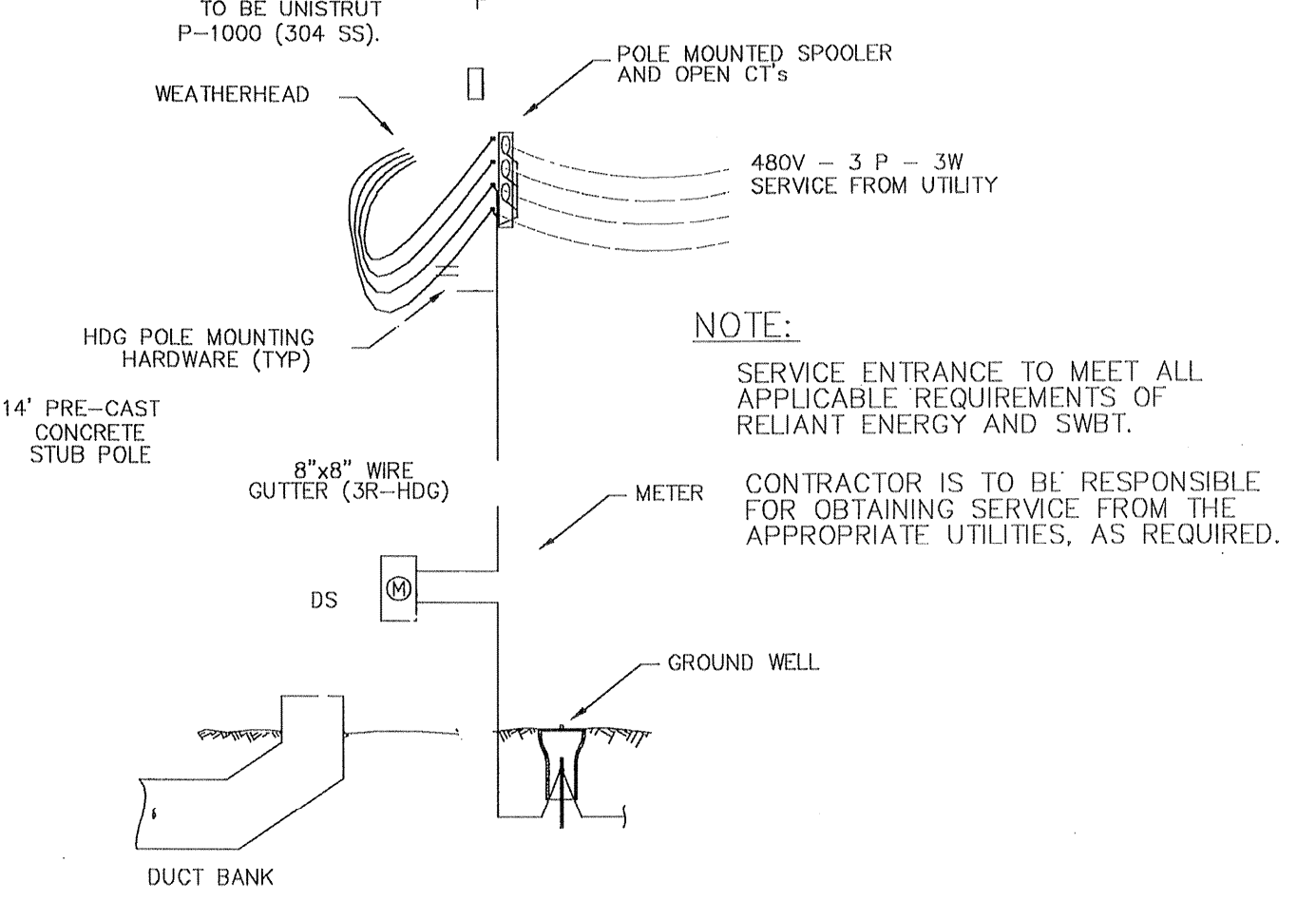
ELECTRICAL PLAN



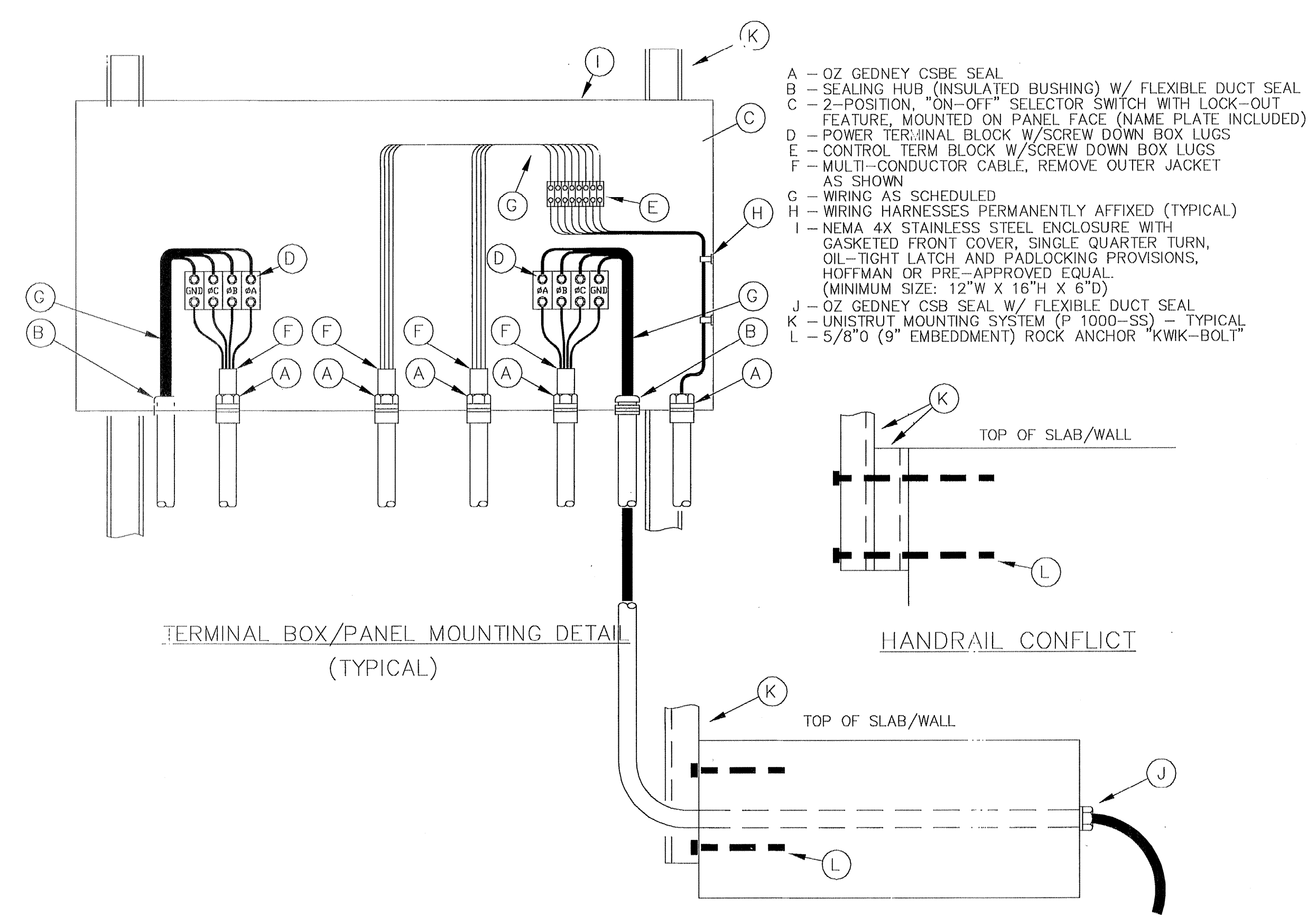
CONTROL CABINET ENCLOSURE & FOUNDATION



GROUND WELL DETAIL (TYPICAL)



SERVICE ENTRANCE/SWITCH RACK

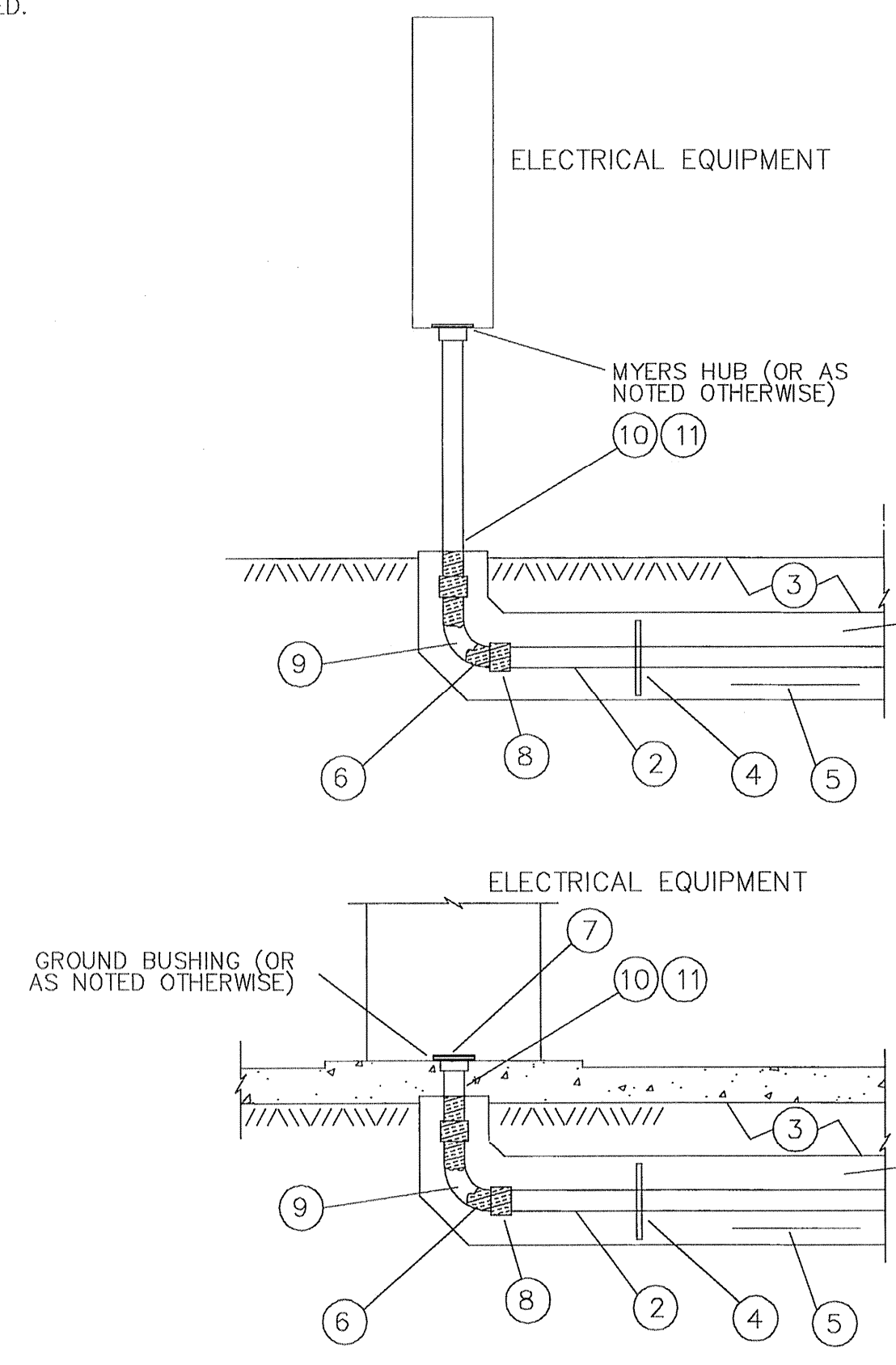


TERMINAL BOX/PANEL MOUNTING DETAIL (TYPICAL)

HANDRAIL CONFLICT

FIXTURE SCHEDULE			
MARK	LAMPS	TYPE	DESCRIPTION (MFG)
F	1	HPS	HUBBELL FLOODLIGHT (250W) w/ MOGUL BASE, TRUNNION YOKE, POLE MOUNTING BASE, & HARDWARE, POLYCARBONATE LENS (MHS025C5268LL)

FIXTURE IS TO BE OPERATED BY PHOTO CELL.



ELECTRICAL EQUIPMENT

ELECTRICAL EQUIPMENT

- UNDERGROUND CONDUIT SHALL BE ENCASED IN AN ENVELOPE OF CONCRETE COLORED RED.
- SEE DESIGN DRAWINGS FOR NUMBER AND SIZE OF CONDUITS. TYPE OF UNDERGROUND CONDUIT IS TO BE AS SPECIFIED ON THE DRAWINGS/SPECIFICATIONS.
- CONDUIT SPACING, CONCRETE COVER, AND DEPTH OF TRENCH ARE TO BE PER THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE. PROVIDE WARNING TAPE 12" ABOVE CONCRETE ENVELOPE.
- PROVIDE PLASTIC COMPOSITION CONDUIT SPACERS AT 10'-0" O.C. OR A MINIMUM OF ONE SUPPORT PER UNIT.
- PROVIDE ONE #3 BAR - CONTINUOUS PER VERTICAL ROW OF CONDUIT PLACED IN THE BOTTOM OF THE CONCRETE ENVELOPE. PROVIDE ADDITIONAL OR ALTERNATE REINFORCING AS NOTED ON THE DRAWINGS. PROVIDE #3 TIES AT 48" O.C. OR AS NOTED OTHERWISE.
- RIGID STEEL ELBOWS, COUPLINGS AND NIPPLES IN THE RISER SHALL BE PROTECTED WITH FACTORY APPLIED PVC COATING OR TAPED WITH TWO LAYERS, HALF-LAPPED SCOTCH NO. 88 TAPE.
- PROTECT EXPOSED CONDUIT ENDS DURING CONSTRUCTION WITH PIPE OR PLUG CAPS. FUTURE AND SPACE CONDUIT ENDS SHALL HAVE PIPE PLUGS OR CAPS.
- PROVIDE AN ADAPTER FROM PVC TO METALIC CONDUIT.
- ELBOWS SHALL BE LONG RADIUS, RIGID GALVANIZED STEEL (RGS) WITH A MINIMUM BEND RADIUS OF 10 TIMES THE CONDUIT DIAMETER.
- PROVIDE RGS CONDUIT RISERS OR AS NOTED OTHERWISE.
- ON ALL TERMINATED UNDERGROUND RISERS PROVIDE A 3 TO 5 FOOT NIPPLE TO ELIMINATE EXTRANEUS CONCRETE FROM THE DUCT. PRIOR TO THE CONCRETE TAKING A SET, REMOVE THE NIPPLE AND CAP OR PLUG THE RISER.

EQUIPMENT CONNECTION & EMBEDDED CONDUIT DETAIL (TYPICAL)

BENCH MARK
 BENCHMARK NATIONAL GEODETIC SURVEY MARKER
 Y1216, 1973 ADJ. ELEV = 125.994
 Y1216, 1978 ADJ. ELEV = 125.406
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 (713)802-1019

REGISTERED PROFESSIONAL ENGINEER
 STATE OF TEXAS
 NO. 25963
 EXPIRES 09-01-05

PRIVATE UTILITY LINES SHOWN

CENTERPOINT ENERGY, ENTEX

SBC VALID FOR ONE YEAR
 APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES

CENTERPOINT ENERGY
 APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES
 UNLESS NOTED VALID AT TIME OF REVIEW ONLY.

VILLAS AT WILLOWBROOK
 HARRIS COUNTY MUD 191
 HARRIS COUNTY, TEXAS

ELECTRICAL PLAN AND DETAILS

WATER: [Signature]
 STORMWATER: [Signature]
 TRAFFIC: [Signature]
 SWD: [Signature]

FILE NO:

DRAWING SCALE:
 AS SHOWN

VERT: HORZ:

SHEET No: 23 OF 24

40820
 HOUSTON, TEXAS

GENERAL NOTES FOR STRUCTURES

CONCRETE

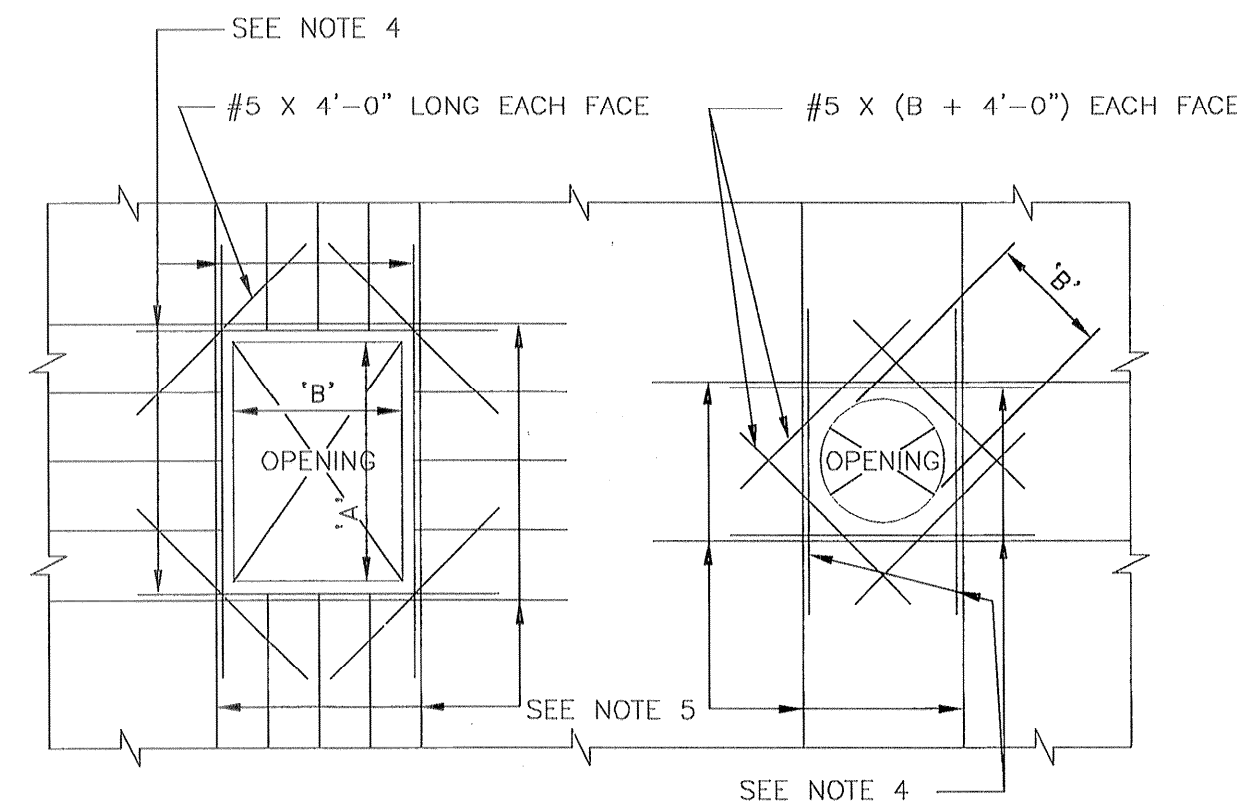
- DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350)
- ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60. ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
- ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
- HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7 Ld, UNLESS OTHERWISE NOTED.
- WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.
- UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:
 - STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS --- 4000 PSI
 - SLABS ON GRADE --- 4000 PSI
 - LEAN CONCRETE CLASS B --- 1500 PSI
 - GROUT FILL CLASS H --- 3000 PSI
- UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
 - SLABS
 - TOP AND BOTTOM OF FORMED SLABS --- 2"
 - TOP OF WALK AND DRIVEWAY SLABS --- 2"
 - SURFACES IN CONTACT WITH LIQUID --- 2"
 - BOTTOM OF SLABS ON FILL OR SOIL --- 3"
 - FOOTINGS:
 - TOP AND SIDES --- 2 1/2"
 - BOTTOM --- 3"
 - WALLS:
 - LESS THAN 12" THICK --- 1 1/2"
 - 12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH --- 2"
 - 12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH --- 2 1/2"
 - BEAMS AND GIRDERS:
 - COVER AT TOP, BOTTOM OR SIDES OF LONGITUDINAL REINF --- 2"
 - COLUMNS:
 - COVER FOR VERTICAL BARS --- 2"
- HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.
- ANY STOP IN FRAMED CONCRETE WORK MUST BE MADE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPROVED KEYWAY. REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.
- USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS OTHERWISE NOTED ON DRAWINGS.
- CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.
- ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.
- ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
- REFER TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION

STRUCTURAL STEEL

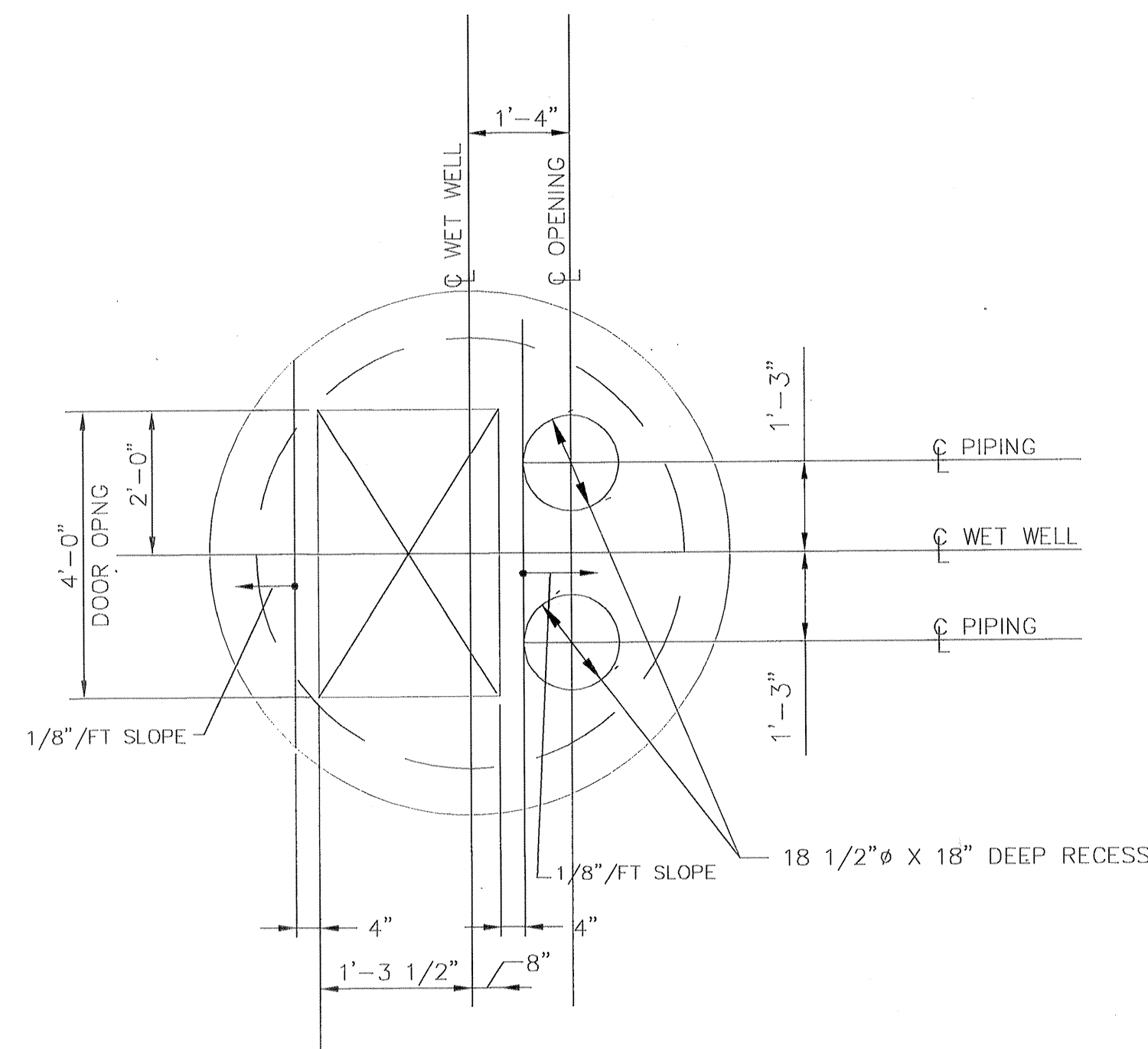
- STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.
- ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.
- ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER ASTM A-325 BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED. ALL CONNECTIONS SHALL BE CAPABLE OF SUPPORTING ONE HALF THE MAXIMUM ALLOWABLE UNIFORM LOAD FOR INDICATED BEAM SIZE AND SPAN IN AISC MANUAL OF STEEL CONSTRUCTION, EXCEPT AS OTHERWISE NOTED.
- FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.
- ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 E70 XX ELECTRODE.
- ANCHOR BOLTS AND MISC EMBEDDED STEEL --- ASTM A36. ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE --- 316 SS.
- ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

FOUNDATIONS

- ALLOWABLE SOIL BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.
- ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.
- ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.
- BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.



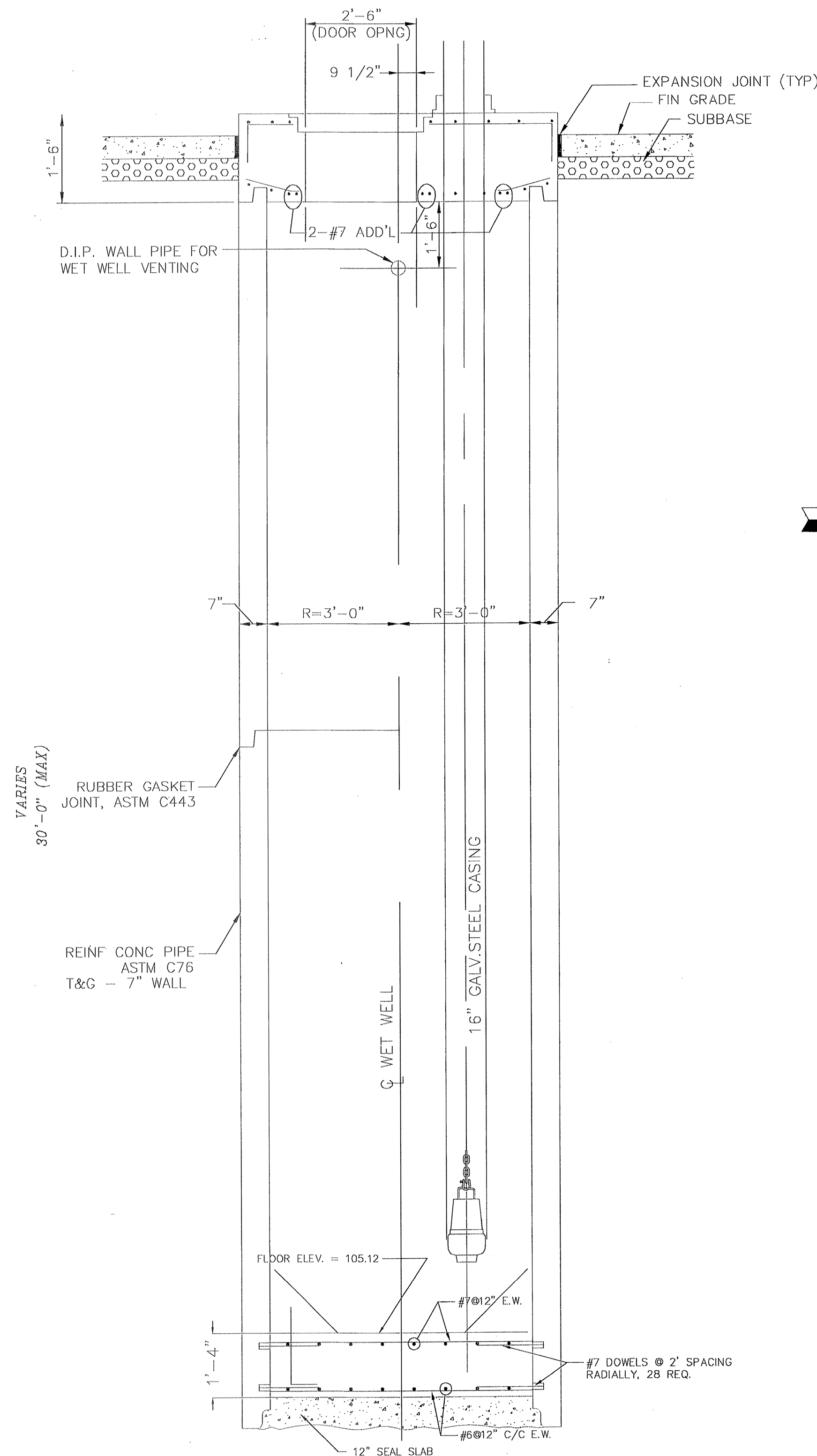
ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS



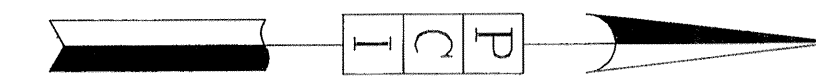
PLAN VIEW @ GRADE

NOTES:

- CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS ACCORDING TO THE SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
- SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.



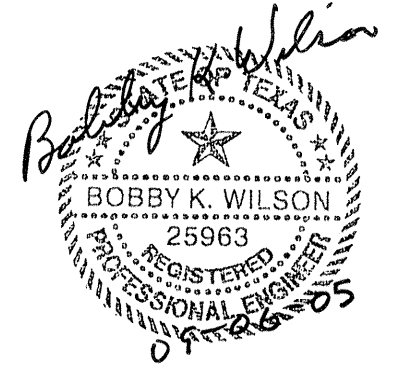
PRECAST CAST-IN PLACE
CAISSON CONSTRUCTION OF WET WELL



BENCHMARK

BENCHMARK NATIONAL GEODETIC SURVEY MARKER
Y1216, 1973 ADJ., ELEV = 125.994
Y1216, 1978 ADJ., ELEV = 125.406
Y1216, 1988 ADJ., ELEV = 123.94
ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

PROVIDENT CONSULTING, INC.
1405 ALLSTON ST.
HOUSTON, TEXAS 77008
(713)602-1019



VILLAS AT WILLOWBROOK
in
HARRIS COUNTY MUD 191
HARRIS COUNTY, TEXAS
STRUCTURAL DETAILS
AND
NOTES

WATER	WASTEWATER	TRAFFIC
ST. & BRIDGE	STORMWATER	SWQ
FILE NO:	FACILITIES	
DRAWING SCALE: AS SHOWN		
VERT: HORZ:		
SHEET No: 24 OF 24		