COUNTY OF SAN JOAQUIN

DEPARTMENT OF PUBLIC WORKS
P.O. BOX 1810-1810 E. HAZELTON AVENUE
STOCKTON, CALIFORNIA 95201
(209) 468-3000
FAX # (209) 468-9324

Permit No: **PS-1700184**
Date Issued: 04/26/2017
Start Date: 04/27/2017
Exp. Date: 08/31/2017
Project No: PWP791701
Quad:

ENCROACHMENT PERMIT

To: DCT ARBOR
12 CORPORATE PLAZA, STE150
NEWPORT BEACH, CA 92660

RIDER # 1
Date 5/2/17

Encroachment Type:

Trench	Bell Hole	Road Widening	

Location:
Arbor Ave and MacArthur Dr Tracy

In compliance with your request of **01/26/2017** , permission is hereby granted to do work in County right-of-way as shown on attached application and subject to all the terms, conditions and restrictions written below or printed as general or special provisions on any part of this form. See reverse side and attached sheet, if any.

Trench excavations for service connections will not be permitted within ten feet (10') of pavement centerline unless otherwise approved by the Director. Surface of trench patches shall match in kind and be smooth and even with that of abutting surface. Special attention shall be given to depth of utilities through roadside area in anticipation of future drainage facilities, road profile and/or frontage development. All underground utility facilities are to be established and accurately dimensioned on sketches from surveyed centerline of road right of way, or from right of way (border) lines.

Permittee shall call the Department of Public Works, Field Engineering Division (Permit Inspections) at (209)953-7421 at least forty-eight hours prior to beginning any work within the County right of way. All work performed under this permit shall conform to the rules and regulations pertaining to safety established by the California Division of Industrial Safety and Cal-OSHA.

The jobsite shall be kept in a safe condition at all times by the daily removal of any excess dirt or debris which might be a hazard to either pedestrian or automobile traffic. All necessary traffic convenience and warning devices and personnel shall be provided, placed and maintained by and at the sole expense of the Permittee in accordance with the latest edition of the CALTRANS Manual of Traffic Control.

After completion of the work permitted herein, all debris, lumber, barricades, or any excess material shall be removed and the jobsite left in a neat workmanlike manner. Immediately following completion of construction permitted herein, Permittee shall fill out and mail notice of completion (see attached post card) provided by Grantor.

Special Comments:

Traffic Control Per MUTCD.
See attached Special Conditions.

FORMS: SS/WW, R-29

Est. Permit Fee: $16,100.00

KRIS BALAJI, Director
Department of Public Works

By: _____
Permit Section

WHITE	-Permittee
GOLDENROD	-PWD Central File
YELLOW	-Field Inspection
PINK	-Permit Section

CITY OF TRACY DETAILS

FRAME COVER & ADJUSTMENTS	DETAIL	114
CURBS	DETAIL	120
SIDEWALK WITH PLANTING STRIP	DETAIL	126
EXPANSION JOINTS	DETAIL	128
CURB RAMPS	DETAIL	130 (CASE C&E)
STREET LIGHT	DETAIL	140
MANHOLE	DETAIL	301
DROP INLET	DETAIL	302
INLET MANHOLE BASE	DETAIL	303
FIRE HYDRANT	DETAIL	401
VALVE, BOX & RISER	DETAIL	402
1-1/2" & 2" WATER SERVICE	DETAIL	404
COMBINATION AIR & VACUUM RELEASE VALVE ASSEMBLY & BLOWOFF	DETAIL	411
FIRE DEPARTMENT CONNECTION BACKFLOW PREVENTOR	DETAIL	412
BACKFLOW PREVENTION DEVICE	DETAIL	420
THRUST BLOCK	DETAIL	423
TRENCHING AND RESURFACING	DETAIL	501
UTILITY CROSSINGS	DETAIL	562

LEGEND

PROPOSED	EXISTING	
		PROPERTY LINE
		LOT LINE
		MONUMENT/MONUMENT LINE
		BLOCK/RETAINING WALL
		FENCE LINE
		EDGE OF PAVEMENT
		ASPHALT BERM
		CONCRETE CURB
		CONCRETE CURB & GUTTER
		SIDEWALK
		STREET LIGHT CONDUIT
		SPOT ELEVATION
		CONTOUR LINE
		SANITARY SEWER-MANHOLE & CLEANOUT
		STORM DRAIN-MANHOLE & CATCH BASIN
		TELEPHONE LINE
		WATER LINE & VALVE
☼	☼	ELECTROLIER. SEE ELECTROLIER SITE PLAN FOR SIZE AND NUMBER OF ARMS
		UTILITY BOX
		POWER POLE/JOINT POLE
		TRAFFIC SIGN
		TREE
		SANDSTONE ROCK IN MON WELL
A.B.		CLASS II AGGREGATE BASE
A.C.		ASPHALT
A.S.		CLASS II AGGREGATE SUB-BASE
AP		ANGLE POINT
BC		BEGINNING OF CURVE
B.O.V.		BLOW OFF VALVE
BW		BACK OF WALK
CB		CATCH BASIN
CMP		CORRUGATED METAL PIPE
COTG		CLEAN OUT TO GRADE
DI		DRAINAGE INLET
E		EAST
EC		END OF CURVE
EP		EDGE OF PAVEMENT
EX.		EXISTING
FC		FACE OF CURB
FES		FLARED END SECTION
FH		FIRE HYDRANT
FL		FLOW LINE
FND		FOUND
FO		FIBER OPTIC LINE
FW		FACE OF WALL
GB		GRADE BREAK
HDWL		HEADWALL
IE		INVERT ELEVATION
IRR		IRRIGATION LINE
JP		JOINT POWER POLE
M-M		MONUMENT TO MONUMENT
MIN.		MINIMUM
MON		MONUMENT
N		NORTH
PFB		PAVEMENT AT FACE OF BERM
P.R.D.		PESCADERO RECLAMATION DISTRICT
PRV		PRESSURE REDUCING VALVE
PV		PAVEMENT
PVMT		PAVEMENT
RCP		REINFORCED CONCRETE PIPE
RGRCP		RUBBER GASKETED REINFORCED CONCRETE PIPE
RE		RIM ELEVATION
ROW		RIGHT OF WAY
S		SOUTH
SDMH		STORM DRAIN MANHOLE
SSMH		SANITARY SEWER MANHOLE
TB		TELEPHONE BOX
TC		TOP OF CURB
TOP		TOP OF SLOPE / INSIDE TOP OF PIPE (CROWN)
W		WEST
WM		WATER METER
WV		WATER VALVE

	2" MIN AC OVERLAY	2" GRIND AND OVERLAY. PROVIDE OVERLAY WITH REINFORCEMENT FABRIC PER CITY STANDARD
	T.I.=9	0.46' AC OVER 1.75' CLASS II AB ON 95% R.C. SUBGRADE

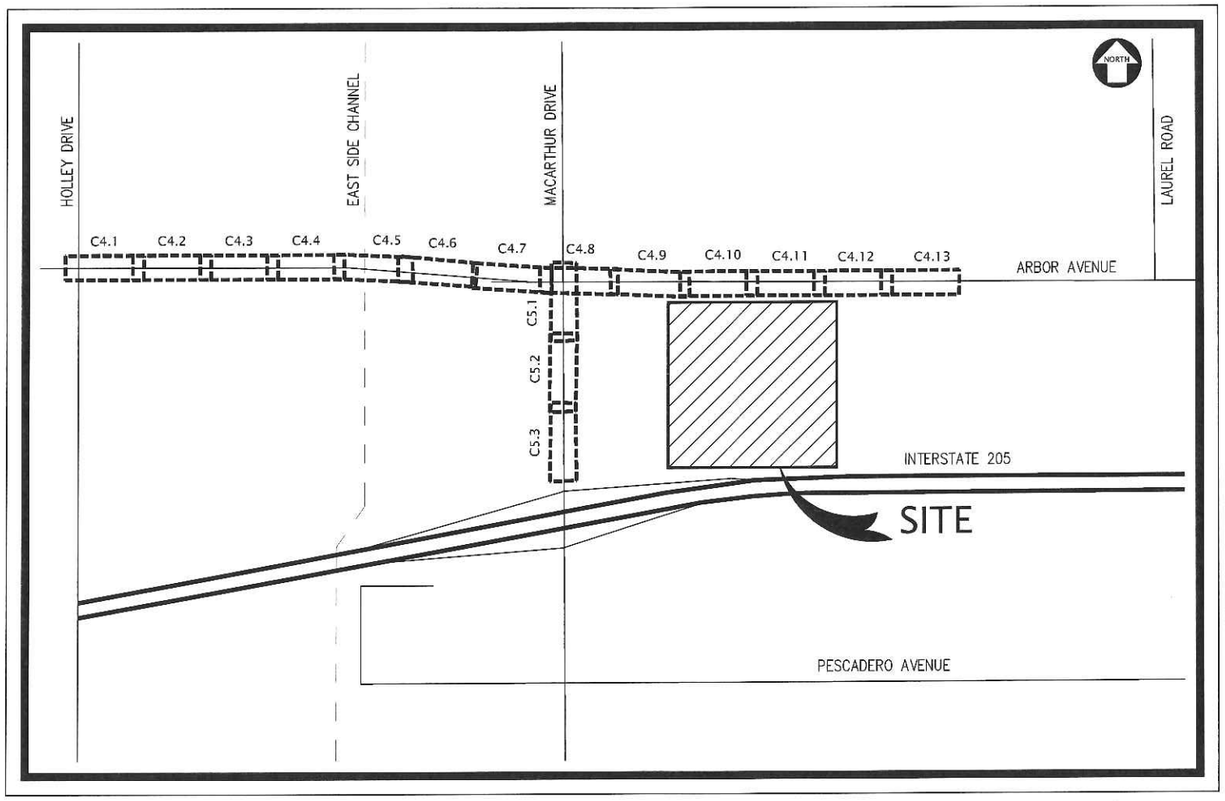
STREET IMPROVEMENT PLANS

FOR

ARBOR AVENUE

TRACY, CALIFORNIA

WDID #5S39C375721



VICINITY MAP

N.T.S.

COUNTY OF SAN JOAQUIN
DEPARTMENT OF PUBLIC WORKS
APPROVED AS "ENCROACHMENT PERMIT PLAN SET"
APPROVED FOR WORK WITHIN COUNTY RIGHT-OF-WAY
ACCEPTED: Mike Cheney 4/27/17
RCE NO: C55407 EXP. DATE: 12/31/18
ENCROACHMENT PERMIT NO: 1 DATE ISSUED: 4/27/17 BY: JN
PS-1700184

BASIS OF BEARINGS

THE CALCULATED BEARING OF SOUTH 00°35'00" EAST, TAKEN BETWEEN GPS CONTROL POINT "2010" AND GPS CONTROL POINT "2014", AS SHOWN ON THAT CERTAIN RECORD OF SURVEY FILED FOR RECORD ON JUNE 26, 2007, IN BOOK 36 OF SURVEYS, AT PAGE 118, OFFICIAL RECORDS OF SAN JOAQUIN COUNTY WAS TAKEN A THE BASIS FOR ALL BEARINGS SHOWN HEREON

BENCHMARK

CITY OF TRACY BENCHMARK NUMBER 2015 PER RECORD OF SURVEY OF THE GEODETIC CONTROL NETWORK, RECORDED JUNE 26, 2007 IN BOOK 36 OF SURVEYS AT PAGE 118. FOUND 2" CITY OF TRACY BENCHMARK DISK STAMPED "2015" 0.9 MILES EAST OF MACARTHUR DRIVE ON THE NORTHERLY CURB OF PESCADERO AVENUE. ELEVATION = 26.83' (CITY OF TRACY NAVD 1988 DATUM).

SCHEDULE OF DRAWINGS:

NOTE:
PLANS HAVE BEEN REVIEWED FOR CONFORMANCE WITH THE GEOTECHNICAL REPORT.

GEOTECHNICAL ENGINEERS
(FOR CONFORMANCE WITH THE GEOTECHNICAL REPORT)
BY: _____ DATE: / /

APPROVED: CITY OF TRACY FIRE DEPARTMENT
(FOR FIRE SERVICE, FIRE HYDRANT LOCATION AND SPACING)
BY: _____ DATE: _____

811
Know what's below.
Call before you dig.

NOTICE TO CONTRACTORS

CONTRACTOR TO NOTIFY USA (UNDERGROUND SERVICE ALERT) AT 811 A MINIMUM OF 48 HOURS BEFORE BEGINNING UNDERGROUND WORK FOR VERIFICATION OF THE LOCATION OF UNDERGROUND UTILITIES

Z:\2013\A13669\A13669-2 IMP.dwg 4-18-17 08:19:00 AM jaimby

CITY OF TRACY STANDARD NOTES:

1. ALL WORK SHALL CONFORM TO THE CITY OF TRACY SPECIFICATIONS AND STANDARD PLANS. THE WORK IS SUBJECT TO THE INSPECTION AND APPROVAL OF THE CITY ENGINEER, AND THE ENGINEERING DIVISION INSPECTORS. CONTACT ENGINEERING DIVISION CONSTRUCTION MANAGEMENT AT (209)-831-4600, TWO WORKING DAYS (48 HOURS) PRIOR TO THE START OF ANY WORK TO ARRANGE FOR INSPECTION.
2. THESE PLANS HAVE BEEN CHECKED BY THE CITY OF TRACY FOR CONFORMANCE WITH THE CITY'S MINIMUM STANDARDS, BUT SUCH CHECKING BY THE CITY DOES NOT RELIEVE THE DEVELOPER FROM ITS RESPONSIBILITY TO FIND AND CORRECT ERRORS, OMISSIONS OR MAKE CHANGES REQUIRED BY CONDITIONS DISCOVERED IN THE FIELD DURING THE COURSE OF CONSTRUCTION. ANY REQUEST BY THE DEVELOPER TO CHANGE THESE PLANS SHALL BE SUBMITTED IN WRITING TO THE CITY ENGINEER.
3. REFER TO THE FINAL MAP OF THIS TRACT FOR PROPERTY LINE DATA.
4. ALL REVISIONS TO THIS PLAN MUST BE REVIEWED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION AND SHALL BE ACCURATELY SHOWN ON REVISED PLANS STAMPED AND SIGNED BY THE CITY ENGINEER PRIOR TO THE INSTALLATION OF THE IMPROVEMENTS.
5. ALL CONSTRUCTION STAKING FOR CURB, GUTTER, SIDEWALK, SANITARY SEWERS, STORM DRAINS, WATER LINES, FIRE HYDRANTS, AND ELECTROLIERS, ETC., SHALL BE DONE BY A REGISTERED CIVIL ENGINEER OR LICENSED LAND SURVEYOR.
6. THE EXISTING UTILITIES ARE PLOTTED FROM AVAILABLE RECORDS. THE DEVLOPER SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT THESE UTILITIES. THE DEVELOPER SHALL PERFORM NO EXCAVATION UNTIL ALL UTILITY AGENCIES AND THE CITY OF TRACY HAVE BEEN NOTIFIED AND HAVE BEEN GIVEN THE OPPORTUNITY TO MARK THEIR FACILITIES IN THE FIELD. NOTIFY UNDERGROUND SERVICE ALERT AT (800) 227-2600 AT LEAST TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION.
7. HOUSE SERVICES, FIRE HYDRANT LATERALS, GAS AND TELEPHONE LINES, AND ALL OTHER UNDERGROUND UTILITIES SHALL BE INSTALLED PRIOR TO CURB, GUTTER, AND SIDEWALK CONSTRUCTION AND STREET PAVING.
8. SURVEY MONUMENTS SHALL BE FURNISHED AND INSTALLED BY THE DEVELOPER AT LOCATIONS SHOWN. SUBMIT A LETTER OF CERTIFICATION FROM THE LICENSED LAND SURVEYOR CERTIFYING THAT ALL MONUMENTS ARE CENTERLINE MONUMENTS AND ARE INSTALLED AND TAGGED IN ACCORDANCE WITHT THE APROVED FINAL MAP PRIOR TO TRACT ACCEPTANCE.
9. ALL LINES ABANDONED DURING CONSTRUCTION SHALL BE REMOVED.
10. ALL SANITARY SEWER MAINS SHALL BE TELEVISION INSPECTED (TAPES SHALL BE GIVEN TO THE CITY OF TRACY), FLUSHED WITH AN APPROVED SEWER BALL AND PASS A LEAKAGE TEST IN CONFORMANCE WITH CITY OF TRACY STANDARD SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE CITY. ALL TESTING SHALL BE PERFORMED AFTER THE COMPACTION OF STREET BASE ROCK AND PRIOR TO PAVING.
11. ALL WATER LINES SHALL BE PRESSURE-TESTED, DISINFECTED, FLUSHED, AND TESTED FOR BACTERIA IN CONFORMANCE WITH THE CITY OF TRACY DESIGN STANDARDS AND STANDARD SPECIFICATIONS PRIOR TO FINAL ACCEPTANCE BY THE CITY.
12. TESTING
    - (A) ALL INDEPENDENT LABORATORY INSPECTION CALLED FOR BY THE CITY ENGINEER WILL BE PAID FOR BY THE DEVELOPER.
    - (B) ROADWAY SUB-BASE, BASE AND TRENCH BACKFILL COMPACTION TESTING SHALL BE PERFORMED BY A SOILS LAB CONTRACTING WITH THE CITY OF TRACY.
    - (C) TESTS FOR R-VALUES ARE REQUIRED PRIOR TO THE INSTALLATION OF BASE ROCK.
    - (D) A MINIMUM OF 48 HOURS NOTICE IS REQUIRED TO SCHEDULE ALL SOILS TESTING SERVICES.
13. STREET SIGNS SHALL BE INSTALLED AT ALL INTERSECTIONS PER CITY DESIGN STANDARDS AND STANDARD SPECIFICATIONS.
14. TRAFFIC SIGNS SHALL BE INSTALLED IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND MUTCD CALIFORNIA SUPPLEMENTAL AT LOCATIONS SPECIFIED BY CITY DESIGN STANDARDS AND STANDARD SPECIFICATIONS.
15. STREET STRIPING SHALL INCLUDE STOP BARS, CENTERLINE STRIPING OR MARKERS, CROSSWALKS AND ALL OTHER MARKINGS REQUIRED BY THE CITY DESIGN STANDARDS AND STANDARD SPECIFICATIONS. STRIPING SHALL BE DONE WITH THERMOPLASTIC AND REFLECTIVE MARKERS. STRIPING ON MAJOR ROADS SHALL BE CAT-TRACKED AND APPROVED PRIOR TO FINAL INSTALLATION.
16. ALL TRENCHES SHALL BE BACK-FILLED IN ACCORDANCE WITH CITY DESIGN STANDARDS AND STANDARD SPECIFICATIONS. COMPACTION SHALL BE ACHIEVED BY MECHANICAL MEANS. NO FLOODING, PONDING OR JETTING SHALL BE PERMITTED.
17. WHEN WIDENING THE PAVEMENT ON AN EXISTING ROAD, THE EXISTING PAVEMENT SHALL BE CUT TO A NEAT LINE AND REMOVED BACK TO AN EXISTING ADEQUATE STRUCTURAL SECTION, OR TO THE ORIGINAL ROAD SECTION. AN EXPLORATORY TRENCH, OR POT HOLING, MAY BE REQUIRED TO DETERMINE THE LIMITS OF PAVEMENT REMOVAL.
18. EXISTING CURB AND SIDEWALK WITHIN THE PROJECT LIMITS THAT ARE DAMAGED OR DISPLACED, EVEN THOUGH THEY WERE NOT TO BE REMOVED, SHALL BE REPAIRED OR REPLACED PER CITY STANDARD PLANS EVEN IF DAMAGE OR DISPLACEMENT OCCURRED PRIOR TO ANY WORK PERFORMED BY THE DEVELOPER.
19. AT THE INTERSECTION OF TWO STREETS, THE FULL STRUCTURAL SECTION OF THE MOST PROMINENT STREET SHALL BE CONTINUED THROUGH THE INTERSECTION.
20. THE THICKNESS OF SUB-BASE, BASE AND SURFACING SHALL BE DETERMINED BY THE CITY ENGINEER BASED ON TRAFFIC INDEX AND SOIL TEST FOR "R" VALUE TAKEN AFTER ROUGH GRADING AT THE LEVEL OF THE STREET SUB-GRADE.
21. ASBESTOS CEMENT PIPE (ACP) OR FITTINGS SHALL NOT BE USED WITHIN THE CITY OF TRACY.
22. ALL STREET MONUMENTS, LOT CORNER, AND OTHER PERMANENT PIPE OR MONUMENTS DISTURBED DURING THE PROCESS OF CONSTRUCTION SHALL BE REPLACED BEFORE ACCEPTANCE OF IMPROVEMENTS BY THE CITY OF TRACY.
23. THE DEVELOPER SHALL CONTROL DUST AT ALL TIMES DURING CONSTRUCTION AS REQUIRED BY THE CITY OF TRACY.
24. PRIOR TO TRENCHING FOR ANY SEWER, WATER, OR STORM DRAIN PIPE, THE DEVELOPER SHALL VERIFY, IN THE FIELD, THE SIZE AND LOCATION OF THE EXISTING PIPE AT THE POINT OF CONNECTION. ANY DEVIATION FROM THE PLANS SHALL BE RESOLVED BY THE DESIGN ENGINEER PRIOR TO TRENCHING.
25. MANHOLES, VALVES, CLEANOUTS, ETC., SHALL BE BROUGHT TO FINISH GRADE BY THE DEVELOPER AFTER THE FINAL PAVING
    COURSE IS PLACED.
26. THE INSTALLATION OF EROSION CONTROL FACILITIES SHALL BE COMPLETED PRIOR TO OCTOBER 15 AND SHALL BE MAINTAINED DAILY UNTIL APRIL 15. THESE FACILITIES SHALL CONTROL AND CONTAIN EROSION-CAUSED SILT DEPOSITS AND PROVIDE FOR SAFE DISCHARGE OF SILT-FREE STORM WATER INTO EXISTING STORM DRAIN FACILITIES. DESIGN OF THESE FACILITIES MUST BE UPDATED EACH YEAR PRIOR TO SEPTEMBER 30 AND SHALL BE APPROVED BY THE CITY ENGINEER.
27. IF, DURING CONSTRUCTION, ARCHAEOLOGICAL REMAINS ARE ENCOUNTERED, CONSTRUCTION IN THE VICINITY SHALL BE HALTED, AN ARCHAEOLOGIST CONSULTED, AND THE CITY COMMUNITY DEVELOPMENT DEPARTMENT NOTIFIED. IF, IN THE OPINION OF THE ARCHAEOLOGIST, THE REMAINS ARE SIGNIFICANT, MEASURES AS MY BE REQUIRED BY THE COMMUNITY DEVELOPMENT DIRECTORS, SHALL BE TAKEN TO PROTECT THEM.
28. WORK SHALL BE RESTRICTED TO WEEKDAYS BETWEEN 7:30AM AND 7:00PM AND WEEKENDS BETWEEN 9:00AM AND 5:00PM. WORK WHICH REQUIRES ANY TRAFFIC LANE CLOSURES OR RESTRICTION OF THE TRAVELED WAY SHALL BE LIMITED TO 9:00AM TO 3:30PM IN THE COMMUTE DIRECTION AND 8:00 AM TO 4:30 PM IN THE NON-COMMUTE DIRECTION. COMMUTE DIRECTIONS SHALL BE AS DETERMINED BY THE CITY ENGINEER.
29. THE OVERTIME COST FOR INSPECTING WORK REQUIRING CITY INSPECTION, PERFORMED BEFORE 8:00AM AND 5:00PM, SHALL BE PAID BY THE DEVELOPER BEFORE THE WORK IS AUTHORIZED.
30. CONSTRUCTIONS EQUIPMENT WHICH OPERATES AT A NOISE LEVEL IN EXCESS OF 85 DECIBELS (MEASURED ON THE A-WEIGHTED SCALE DEFINED IN ANSI S-1.4) AT A DISTANCE OF 100 FEET FROM THE EQUIPMENT IS PROHIBITED.
31. THE DEVELOPER SHALL KEEP EXCAVATIONS FREE FROM WATER DURING CONSTRUCTION. THE STATIC WATER LEVEL SHALL BE DRAWN DOWN A MINIMUM OF 2 FEET BELOW BOTTOM OF EXCAVATIONS TO MAINTAIN UNDISTURBED STATE OF NATURAL SOILS AND ALLOW PLACEMENT OF ANY FILL TO SPECIFIED DENSITY. DISPOSAL OF WATER SHALL NOT DAMAGE PROPERTY OR CREATE A PUBLIC NUISANCE.
32. DISPOSAL OF WATER INTO THE CITY SANITARY SEWER SYSTEM IS STRICTLY PROHIBITED. DISPOSAL OF WATER IN TO EXISTING STORM DRAIN SYSTEM MUST BE APPROVED IN WRITING BY THE CITY ENGINEER.
33. DEVELOPER SHALL MAINTAIN ALL STREETS, SIDEWALKS, AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION THROUGHOUT THE COURSE OF CONSTRUCTION. ALL SPILLS OF SOIL, ROCK, CONSTRUCTION DEBRIS, ETC., SHALL BE REMOVED IMMEDIATELY FROM PUBLICLY OWNED PROPERTY. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC, SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION. THE DEVELOPER SHALL PROVIDE FOR SAFE, UNOBSTRUCTED ACCESS TO PRIVATE PROPERTY ADJACENT TO WORK THROUGHOUT THE PERIOD OF CONSTRUCTION.

GENERAL NOTES:

1. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH RECOMMENDATIONS IN THE GEOTECHNICAL AND FOUNDATION INVESTIGATION PREPARED FOR THIS SITE BY ENGEO, DATED JULY 8, 2014, FILE NO. 11243.000.000 AND PER THE PAVEMENT RECOMMENDATIONS MEMORANDUM PROVIDED BY ENGEO, DATED FEBRUARY 16, 2016.
2. BENCHMARK:
   CITY OF TRACY BENCHMARK NUMBER 2015 PER RECORD OF SURVEY OF THE GEODETIC CONTROL NETWORK, RECORDED JUNE 26, 2007 IN BOOK 36 OF SURVEYS AT PAGE 118. FOUND 2" CITY OF TRACY BENCHMARK DISK STAMPED "2015" 0.9 MILES EAST OF MACARTHUR DRIVE ON THE NORTHERLY CURB OF PESCADERO AVENUE.
   ELEVATION = 26.83'.
   (CITY OF TRACY NAVD 1988 DATUM)
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY'S PUBLIC WORKS DEPARTMENT AT (209) 831-6460 AND REQUEST A PRE CONSTRUCTION CONFERENCE.
4. ALL REVISIONS TO THIS PLAN MUST BE REVIEWED BY THE DEVELOPMENT AND ENGINEERING SERVICE DEPT. PRIOR TO CONSTRUCTION AND SHALL BE ACCURATELY SHOWN ON REVISED PLANS SIGNED BY THE CITY ENGINEER.
5. ALL STREET IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THE CURRENT CITY ORDINANCE CODE, STATE STANDARD SPECIFICATIONS, AND CITY OR COUNTY STANDARD PLANS. THE IMPROVEMENTS ARE SUBJECT TO INSPECTION AND APPROVAL OF THE DEVELOPMENT AND ENGINEERING SERVICE DEPARTMENT. CONTACT PUBLIC WORKS CONSTRUCTION INSPECTION AT 209-831-4600 AT LEAST TWO WORKING DAYS PRIOR TO THE START OF ANY WORK TO ARRANGE FOR INSPECTION.
6. NOTIFY UNDERGROUND SERVICE ALERT 800-227-2600 AT LEAST TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION. THE USA AUTHORIZATION NUMBER SHALL BE KEPT AT THE JOB SITE.
7. THE CONTRACTOR IS REQUIRED BY STATE LAW TO ACTIVELY RESEARCH WORK AREA PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REFERENCE MONUMENTS AND REPLACE THOSE DAMAGED OR REMOVED DURING CONSTRUCTION.
8. SHOULD IT APPEAR THAT THE WORK TO BE DONE, OR ANY MATTER RELATIVE THERETO IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT ENGINEER FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
9. NO TREES SHALL BE REMOVED UNLESS THEY ARE SHOWN AND NOTED TO BE REMOVED ON THE IMPROVEMENT PLANS. ALL TREES CONFLICTING WITH GRADING, UTILITIES, OR OTHER IMPROVEMENTS, OR OVERHANGING THE SIDEWALK OR PAVEMENT SO AS TO FORM A NUISANCE OR HAZARD, SHALL BE TRIMMED AND PROPERLY GRADED AND SEALED. THE DRIP LINE OF TREES TO BE SAVED WILL BE FENCED, AND NO GRADING SHALL TAKE PLACE WITHIN THIS FENCED AREA.
10. THE THICKNESS OF SUBBASE, BASE, AND SURFACING SHALL BE BASED ON TRAFFIC INDEX AND SOIL TEST FOR "R" VALUE = 5.
11. ALL LINES ABANDONED DURING CONSTRUCTION SHALL BE REMOVED (UNLESS OTHERWISE NOTED AND APPROVED BY CITY OF TRACY INSPECTOR).
12. CONTRACTOR SHALL CONTROL DUST AT ALL TIMES DURING CONSTRUCTION AS REQUIRED BY CITY OF TRACY.
13. MANHOLES, VALVES,CLEANOUTS ETC. SHALL BE BROUGHT TO FINISH GRADE PER TRACY STD. 114 AFTER THE FINAL PAVING COURSE IS PLACED. PER TRACY STD. 301, MANHOLES SHALL HAVE GRADE RINGS OF 18" MIN TO 24" MAXIMUM.
14. RECORDING EXISTING CONDITIONS - EXISTING CONDITIONS THROUGHOUT THE PROJECT SITE THAT ARE LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY OR CITY MAINTAINED EASEMENTS SHALL BE PHOTOGRAPHED AND VIDEOTAPED BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION. RECORDING SHALL INCLUDE AND SHOW EVERY DETAIL OF EXISTING IMPROVEMENTS, INCLUDING THE CURRENT CONDITION OF THE CURB, GUTTER, SIDEWALK, SIGNS, LANDSCAPING, STREETLIGHTS, STRUCTURES NEAR THE PROJECT INCLUDING THE FACE OF BUILDINGS, CANOPIES, SHADES, FENCES, AND ANY OTHER FEATURES WITHIN THE LIMITS OF WORK. PHOTOS AND VIDEOTAPE SHALL BE DELIVERED TO THE ENGINEER.
15. PRIOR TO CONSTRUCTION ACTIVITY AND WITHIN 30 DAYS OF PROJECT AWARD, ALL SURVEY MONUMENTS THAT MAY POTENTIALLY BE DISTURBED DURING CONSTRUCTION, MUST BE LOCATED AND REFERENCED BY A LICENSED LAND SURVEYOR AND A CORNER RECORD OR RECORD OF SURVEY MUST BE FILED WITH THE COUNTY SURVEYOR. ANY SURVEY MONUMENTS DISTURBED DURING THE COURSE OF CONSTRUCTION MUST BE REESTABLISHED BY A LICENSED LAND SURVEYOR, A NEW MONUMENT SET, AND ANOTHER CORNER RECORD OR RECORD OF SURVEY FILED WITH THE COUNTY SURVEYOR (LAND SURVEYORS' ACT SECTION 8771). CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT AND RECORDING OF SURVEY MONUMENTS DISTURBED DURING CONSTRUCTION IN ACCORDANCE WITH CITY OF TRACY OR SAN JUAQUIN COUNTY STANDARD PLANS AND SPECIFICATIONS, WHICHEVER IS APPLICABLE.

EROSION & SEDIMENT CONTROL MEASURES

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE EFFECTIVE FOR THE DURATION OF CONSTRUCTION.
2. AFTER THE UNDERGROUND STORM DRAIN SYSTEM IS INSTALLED, THE CATCH BASINS WILL BE INSTALLED (AS SOON AS PRACTICAL) AND ROCK BARRIER BAGS WILL BE PLACED AROUND THOSE CATCH BASINS AS SHOWN ON THIS PLAN UNTIL THIS SITE IS PAVED.
3. SHOULD THE ON-SITE STORM DRAINS NOT BE INSTALLED COMPLETELY BY OCTOBER 15, THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SEDIMENT BASINS AT THE EXISTING STORM PIPES STUBBED TO THE SITE.
4. PERSON RESPONSIBLE FOR IMPLEMENTATION OF EROSION AND SEDIMENTATION PLAN.

   JEREMY KEARNS
   UNITED CONSTRUCTION COMPANY
   5012 LUCE AVENUE, SUITE 102
   McCLELLAN, CA 95652
   MAIN: 949-422-1180

5. THE CONTRACTOR SHALL PLACE 3"-6" COARSE AGGREGATE AS A GRAVEL ROADWAY (12" MIN. THICK FOR THE FULL WIDTH AND 50 FEET LONG) AT EACH D/W ENTRANCE TO SITE. ANY MUD THAT IS TRACKED ONTO PUBLIC STREETS SHALL BE REMOVED THAT SAME DAY AND AS REQUIRED BY THE CITY OF TRACY.
6. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED AND CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE QSP.
7. ALL PAVED AREAS SHALL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE SHALL BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUN-OFF TO ANY STORM DRAINAGE SYSTEM.
8. THIS PLAN COVERS ONLY THE FIRST WINTER FOLLOWING GRADING. PLANS ARE TO BE RESUBMITTED FOR CITY APPROVAL PRIOR TO THE SEPTEMBER FIRST OF EACH SUBSEQUENT YEAR UNTIL THE SITE IMPROVEMENTS ARE ACCEPTED BY THE CITY.
9. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED AT THE END OF EACH WORKING DAY DURING THE RAINY SEASON.
10. SEDIMENT BASINS SHALL BE CLEANED OUT WHENEVER SEDIMENT REACHES THE SEDIMENT CLEANOUT LEVEL INDICATED ON THE PLANS.
11. BORROW AREAS AND TEMPORARY STOCKPILES SHALL BE PROTECTED WITH APPROPRIATE EROSION CONTROL MEASURES TO THE SATISFACTION OF THE CITY ENGINEER.
12. ALL CUT AND FILL SLOPES ARE TO BE PROTECTED TO PREVENT OVERBANK FLOW.
13. INLETS WHICH ARE NOT USED IN CONJUNCTION WITH ROCK BARRIER BAGS OR SEDIMENT BASINS SHOULD BE COVERED, OR OTHERWISE ADJUSTED TO PREVENT INFLOW, UNLESS THE AREA DRAINED IS UNDISTURBED OR STABILIZED.
14. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO ANTICIPATED FIELD CONDITIONS. VARIATIONS MAY BE MADE TO THE PLAN IN THE FIELD SUBJECT TO THE APPROVAL OF THE ENGINEER.
15. DETAILS FOR THE CONSTRUCTION OF FACILITIES ARE SHOWN ON THESE PLANS.
16. MASS GRADED AREAS SHALL HAVE A SOIL BINDER APPLIED UPON COMPLETION OF GRADING AS SPECIFIED IN THE SWPPP.
17. A SWPPP HAS BEEN PREPARED SPECIFICALLY FOR THIS PROJECT. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING SWPPP INCLUDING QSP SERVICES.
18. CONTRACTOR SHALL HYDROSEED ALL DISTURBED AREAS NOT RECEIVING FINAL LANDSCAPING WITH A NATIVE NON-IRRIGATED MIX. USE VALLEY HABITAT - TRACY MIX BY PACIFIC COAST SEED.

CITY OF TRACY UTILITY NOTES:

1. ALL WATER VALVES 12" AND LARGER SHALL BE BUTTERFLY VALVES PER STD PLAN NO. 402
2. DOUBLE POLY WRAP ALL DUCTILE IRON PIPE FITTINGS AND VALVES PER CITY STANDARDS, PER CITY STANDARD SPECIFICATION 207.04, POLYWRAP SHALL BE 8 MIL. THICK AND SHALL BE SECURED WITH 10 MIL CHRISTY TAPE.
3. MANHOLES OUTSIDE PAVED AREAS SHALL HAVE BOLT DOWN LIDS AND CONCRETE COLLARS.
4. HYDROSTATIC WATER PRESSURE AND BACTERIA TESTS ON CONSTRUCTED WATER MAINS MUST BE PERFORMED, PER THE CITY OF TRACY STANDARD SPECIFICATION 306.15, IN THE PRESENCE OF THE CITY ENGINEERING INSPECTOR, AND MUST PASS THE TEST PRIOR TO CONNECTING TO THE CITY'S EXISTING WATER DISTRIBUTION SYSTEM.
5. ALL PIPE SHALL CONFORM TO THE PROVISIONS IN SECTION 207 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC) AS MODIFIED BY THE CITY OF TRACY STANDARD SPECIFICATIONS. WHENEVER A CONFLICT EXISTS BETWEEN THE SSPWC AND THE CITY STANDARD SPECIFICATIONS, THE CITY STANDARD SPECIFICATIONS SHALL GOVERN.
6. SANITARY SEWER PIPE: SANITARY SEWER PIPE SHALL BE EITHER VITRIFIED CLAN PIPE (VCP), OR DUCTILE IRON PIPE (DIP) AND SHALL CONFORM TO SECTION 207-8 "VITRIFIED CLAY PIPE" AND SECTION 207-9.2 "DUCTILE IRON PIPE FOR WATER AND OTHER LIQUIDS" OF SSPWC RESPECTIVELY OR SDR 26 PVC WITH APPROVAL OF THE CITY ENGINEER.
7. SANITARY SEWER PIPE SHALL BE TESTED PER THE CITY OF TRACY STANDARD SPECIFICATION 306.15.
8. STORM DRAIN PIPE: STORM DRAIN PIPE SHALL BE REINFORCED CONCRETE PIPE (RCP) CONFORMING TO SECTION 207-2 "REINFORCED CONCRETE PIPE" OF SSPWC.
9. WATER PIPE: ALL WATER MAINS SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE AND SHALL CONFORM TO SECTION 207-9.2 "DUCTILE IRON PIPE FOR WATER AND OTHER LIQUIDS" AS MODIFIED BELOW:

   ALL PIPE FOR WATER MAINS SHALL BE DUCTILE IRON PIPE, THICKNESS CLASS 51 FOR 4" AND CLASS 50 FOR ALL OTHER SIZES, CEMENT MORTAR LINED, AND SHALL CONFORM TO THE PROVISIONS OF AWWA C151 AND C104 AND SHALL HAVE "TYTON" TYPE JOINTS. STANDARD BITUMINOUS COATING SHALL BE APPLIED TO OUTSIDE OF PIPE BY MANUFACTURER.

   UNLESS OTHERWISE SPECIFIED, FITTINGS FOR DUCTILE IRON PIPE SHALL BE CLASS 250 FOR 3-INCH SIZE AND LARGER, MECHANICAL JOINTS CONFORMING TO THE REQUIREMENTS OF AWWA C110. FITTINGS SHALL BE CEMENT MORTAR LINED IN ACCORDANCE WITH AWWA C104. THE OUTSIDE OF THE FITTINGS SHALL BE BITUMINOUS COATED. NUTS AND BOLTS SHALL CONFORM TO THE PROVISIONS OF ANSI SPECIFICATIONS B18.2. FITTINGS FOR 2-INCH DIAMETER AND SMALLER SHALL BE OF BRASS CONSTRUCTION.

   ALL BURIED FERROUS METAL SHALL BE PROTECTED FROM CORROSION, INCLUDING BUT NOT LIMITED TO VALVES, FITTINGS, PIPE, FLEXIBLE COUPLINGS AND HYDRANT PIPING WITH POLYWRAP IN ACCORDANCE WITH AWWA C105. POLYETHYLENE PROTECTIVE WRAPPING (POLYWRAP) SHALL BE 8 MIL. THICK SHEETS CUT FROM TUBES SUPPLIED BY U.S. PIPE AND FOUNDRY COMPANY OR APPROVED EQUAL. THE EDGES SHALL BE SECURED WITH 8 MIL. THICK 1-INCH WIDE SCOTCHWRAP AS MANUFACTURED BY MINNESOTA MINING AND MANUFACTURING CO., OR APPROVED EQUAL.
10. EXISTING MANHOLE RIMS ARE TO BE ADJUSTED, PER STANDARD PLAN 114. LIMITS THE USE OF GRADE RINGS TO 18" MINIMUM AND 24' MAXIMUM.
11. SANITARY SEWER MANHOLES SHALL BE T-LOCK LINED OR EPOXY LINED.

GENERAL WATER NOTES:

1. ALL WATER LINES SHALL BE PRESSURE-TESTED, FLUSHED, AND TESTED FOR BACTERIA IN CONFORMANCE WITH THE CITY OF TRACY SPECIFICATIONS PRIOR TO FINAL ACCEPTANCE BY THE CITY.
2. ALL VALVES, TEES AND CROSSES TO BE FLANGED TO THE RESPECTIVE FITTINGS. WATER VALVES TO BE RESILIENT SEAT ONLY.
3. MECHANICALLY RESTRAINED JOINTS OR THRUST BLOCKS ARE REQUIRED AT ALL BENDS AND FITTINGS. LIMITS OF MECHANICALLY RESTRAINED JOINTS SHALL BE AS SPECIFIED IN DETAIL 3 ON SHEET C3.5. THRUST BLOCKS FOR WATER MAIN SIZES UP TO 12" SHALL BE PER CITY OF TRACY STANDARD PLAN 423. FOR WATER MAIN SIZES GREATER THAN 12", CONTRACTOR SHALL SUBMIT THRUST BLOCK DESIGN DETAILS FOR THE VARIOUS CONDITIONS, PREPARED AND CERTIFIED BY A REGISTERED CIVIL OR STRUCTURAL ENGINEER, FOR REVIEW BY THE ENGINEER.
4. WATER VALVES ON EXISTING SYSTEM SHALL BE OPERATED BY CITY PERSONNEL ONLY.
5. CONTRACTOR SHALL PROVIDE MINIMUM 12-INCH VERTICAL SEPARATION BETWEEN NEW WATER LINE AND OTHER UNDERGROUND UTILITIES. CONTRACTOR SHALL MAINTAIN HORIZONTAL AND VERTICAL CLEARANCES PER STATE HEALTH DEPARTMENT REGULATIONS, AND CITY STANDARDS 506, 560, 562, AND 563.

   A. SECTION #'S ARE CITY OF TRACY STANDARD SPECIFICATION SECTIONS:

      1. PROTECTION AND PRESERVATION OF PROPERTIES - 102.10
      2. RESTORATION OF ADJACENT AND EXISTING IMPROVEMENTS - 102.10
      3. ACCESS TO ADJACENT PROPERTIES - 102.13
      4. PUBLIC CONVENIENCE AND TRAFFIC CONTROL - 102.14
      5. TRENCH SAFETY - 102.15
6. ALL VALVES SHALL BE THE SAME SIZE AS THE ATTACHED PIPING.
7. ALL TIE-INS AND SERVICE CONNECTIONS TO EXISTING CITY WATER MAIN SHALL BE MADE BY THE CONTRACTOR AFTER BACTERIA TESTS HAVE POSTED. A REPRESENTATIVE FROM THE CITY WATER DEPARTMENT SHALL BE PRESENT TO INSPECT ALL WORK.

PESCADERO IRRIGATION NOTES:

1. ALL WORK RELATED TO IRRIGATION INFRASTRUCTURE SHALL BE PER THE PESCADERO IRRIGATION DISTRICT STANDARDS AND SPECIFICATIONS.
2. FINAL APPROVAL OF ALL IRRIGATION INFRASTRUCTURE SHALL BE GRANTED BY THE PESCADERO IRRIGATION DISTRICT.
3. ALL IRRIGATION LINES SHALL BE RGRCP: ASTM C-361 RUBBER GASKETED REINFORCED CONCRETE PIPE.

BORE & JACK NOTES:

1. CASING TO BE SMOOTH STEEL PER SCHEDULE SHOWN IN DETAIL 3 SHEET C3.7. CONTRACTOR SHALL VERIFY THE INNER DIAMETER OF THE CASING IS 4" GREATER THAN OUTER DIAMETER OF CARRIER PIPE ASSEMBLY.
2. ANY VOIDS CREATED BY BORING, JACK OR TUNNELING SHALL BE FILLED BY PRESSURE CEMENT GROUTING.
3. WATER CARRIER PIPE SHALL BE DUCTILE IRON PIPE PER CITY OF TRACY STANDARD SPECIFICATIONS.
4. CARRIER PIPE SHALL BE SUPPORTED BY POLYETHYLENE CASING INSULATORS SPACED AT MANUFACTURES RECOMMENDATIONS.
5. ALL PIPE WITHIN THE CASING SHALL HAVE RESTRAINED JOINTS.
6. SEAL EACH END OF CASING WITH CASING END SEAL.
7. CARRIER PIPE SHALL BE HYDROSTATIC WATER PRESSURE TESTED PRIOR TO SEALING OF CASING.
8. ALL WORK IN THE CITY OF TRACY RIGHT OF WAY SHALL COMPLY WITH CITY OF TRACY STANDARDS AND SPECIFICATIONS.
9. CONTRACTOR SHALL CONTACT THE CITY OF TRACY AT LEAST TEN (10) DAYS IN ADVANCE OF THE BORE AND JACK WORK.
10. SEPARATE TRAFFIC CONTROL PLAN REQUIRED FOR BORE AND JACK OPERATION.

SAN JOAQUIN COUNTY GENERAL NOTES:

1. AN ENCROACHMENT PERMIT FROM SAN JOAQUIN COUNTY IS REQUIRED FOR ALL WORK WITHIN THE COUNTY'S RIGHT-OF-WAY.
2. WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SAN JOAQUIN COUNTY IMPROVEMENT STANDARDS AND THE CALTRANS STANDARD SPECIFICATIONS. ANY PROPOSED MODIFICATIONS TO THE PLANS SHALL BE APPROVED BY THE COUNTY PRIOR TO PERFORMING THE WORK.
3. THE CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS FOR ALL SIGNING, DETOURS, AND ANY LANE CLOSURE IMPACTING COUNTY RIGHT-OF-WAY. TRAFFIC CONTROL PLANS SHALL BE SUBMITTED FOR APPROVAL TWO WEEKS PRIOR TO THE CLOSURE DATE.
4. TRAFFIC CONTROLS FOR ALL ROADS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. DURING WORKING HOURS, TWO-WAY TRAFFIC CONTROL SHALL BE MAINTAINED WITH ONE LANE OPEN AND APPROPRIATE FLAGGERS. TRAFFIC CONTROL DELAYS SHALL NOT EXCEED 15 MINUTES. TWO WAY TRAFFIC SHALL BE MAINTAINED DURING NON-WORKING HOURS WITH EXCAVATED AREAS BACKFILLED OR PLATED.
5. ACCESS TO ALL PROPERTIES SHALL BE MAINTAINED AT ALL TIMES EXCEPT WHEN WORK IS OCCURRING AT THE ACCESS POINT. MINIMAL DELAYS WILL BE ALLOWED TO PROVIDE ACCESS WITHIN THE WORK ZONE AREA. DRIVEWAY ACCESS SHALL BE FULLY RESTORED AT THE END OF EACH WORKDAY. DRIVEWAYS DISTURBED BY THE CONTRACTOR SHALL BE REPLACED WITH IN-KIND OR BETTER MATERIALS.
6. RESIDENTS AND BUSINESSES SHALL BE NOTIFIED IN WRITING, AS APPROVED BY THE COUNTY, 48 HOURS IN ADVANCE OF ANY IMPACTS TO THEIR ACCESS.
7. ANY AREAS WHERE PARKING IS TO BE RESTRICTED SHALL HAVE SIGNS NOTING THE RESTRICTIONS IN PLACE AT LEAST 48 HOURS IN ADVANCE.
8. ALL DESTROYED OR OBLITERATED PAVEMENT MARKINGS MUST BE REPLACED IN KIND BY THE PERMITTEE. TYPICAL PAVEMENT MARKINGS INCLUDE BUT NOT LIMITED TO LANE LINES, CENTERLINES, STOP AND STOP AHEAD LEGENDS, LIMIT LINES, RAISED PAVEMENT MARKERS AND MISCELLANEOUS DELINEATORS.
9. ALL STANDARD ROADWAY STRIPING AND SIGNAGE SHALL BE CLEARLY VISIBLE, MAINTAINED AND RESTORED THROUGHOUT THE CONSTRUCTION ZONE DURING AND AFTER THE PROJECT.
10. IN ADDITION TO STANDARD DUST CONTROL MEASURES, STREETS SHALL BE MAINTAINED IN A CLEAN CONDITION, FREE OF DIRT, MUD AND DEBRIS DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PROVIDE DAILY, OR AS NEEDED, STREET SWEEPING USING A MODERN MECHANICAL OR VACUUM-ASSISTED STREET SWEEPER.
11. THE CONTRACTOR SHALL NOT CONDUCT CONSTRUCTION OPERATIONS IN RAIN OR HEAVY FOG CONDITIONS.
12. THE CONTRACTOR WILL BE RESPONSIBLE FOR SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT WITH A MINIMUM 24 HOUR NOTICE TO THE COUNTY. ALL TESTING MUST CONFORM TO THE STANDARD SPECIFICATIONS.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF SURVEY MONUMENTS LOCATED WITHIN THE WORK AREA. PRIOR TO THE START OF CONSTRUCTION, SURVEY MONUMENTS THAT POTENTIALLY MAY BE DISTURBED SHALL BE LOCATED AND REFERENCED BY A LICENSED LAND SURVEYOR, AND A CORNER RECORD FILED WITH THE COUNTY SURVEYOR. ANY SURVEY MONUMENTS DISTURBED DURING THE COURSE OF CONSTRUCTION SHALL BE REESTABLISHED BY A LICENSED LAND SURVEYOR AND ANOTHER CORNER RECORD FILED WITH THE COUNTY SURVEYOR. (LAND SURVEYORS' ACT SECTION 8771)
14. ALL PAVING WORK MUST CONFORM TO THE CALTRANS STANDARD SPECIFICATIONS SECTION 39. HOT MIX ASPHALT (HMA) SHALL BE TYPE A. ASPHALT BINDER USED IN HMA MUST BE PG 64-10 AND AGGREGATE MUST COMPLY WITH THE ½-INCH HMA TYPE A GRADATION TABLE. ASPHALT PLACEMENT SHALL CONFORM TO THE FOLLOWING SCHEDULE:

Total Thickness	No. of	Top Layer Thickness (foot)		Next Lower Layer Thickness (foot)		All Other Lower Layer Thickness (foot)	
Shown on Plans[a]	Layers	Min.	Max.	Min.	Max.	Min.	Max.
0.20 - foot or less	1	–	–	–	–	–	–
0.25 foot	2	0.12	0.13	0.12	0.13	–	–
0.30 - 0.45 foot	2	0.15	0.20	0.15	0.25	–	–
0.46 - foot or more	b	0.15	0.20	0.15	0.25	0.15	0.4

a When Geosynthetic Pavement Interlayer (Paving Fabric), mat or grid is shown to be placed between layers of HMA, the thickness of HMA above the Geosynthetic Pavement Interlayer (Paving Fabric) must be considered to be the "Total Thickness Shown on Plans" for the purpose of spreading and compacting the HMA above the Geosynthetic Pavement Interlayer (Paving Fabric). The minimum lift thickness of HMA over Geosynthetic Pavement Interlayer (Paving Fabric), mat or grid must be 0.12 foot.

b. At least 2 layers must be placed if total thickness is 0.45 - foot. At least 3 layers must be placed if total thickness is more than 0.45 - foot and less than 0.90 - foot. At least 4 layers must be placed if total thickness is 0.90 - foot or more. For Miscellaneous Areas or Pavement Repair, at least 2 layers must be placed if total thickness is 0.50 foot

15. AGGREGATE BASE AND SHOULDERS MUST BE CLASS 2 MEETING THE ¾" MAXIMUM AGGREGATE GRADING. COMPACT EACH LAYER TO AT LEAST 95 PERCENT RELATIVE COMPACTION.

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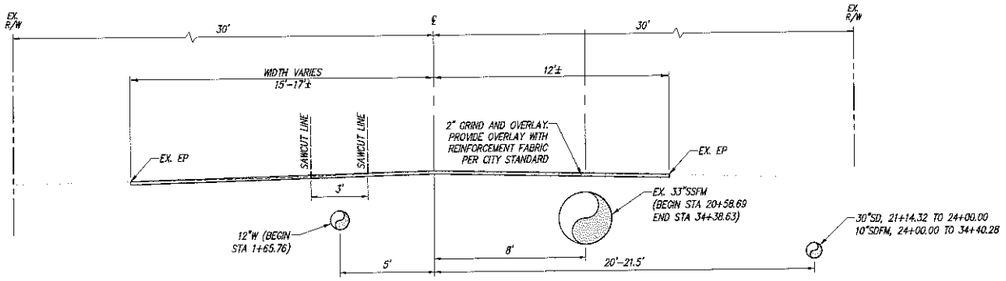
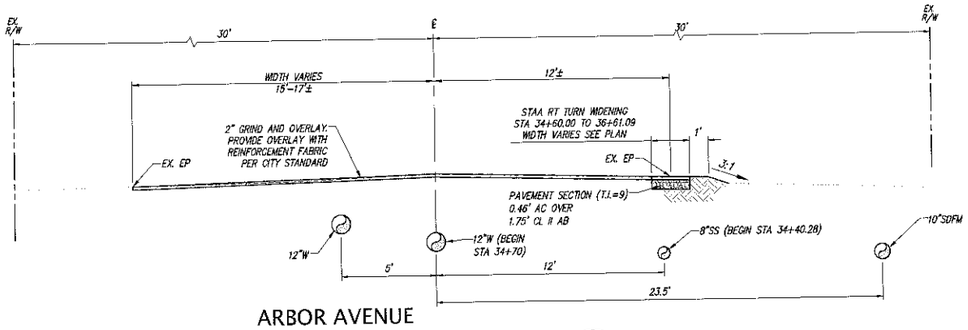


ARBOR AVENUE
STA: 1+00 TO STA: 34+40.28

NOT TO SCALE

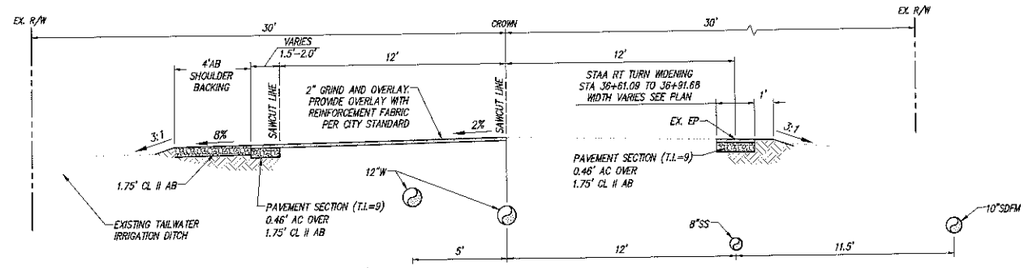
A



ARBOR AVENUE
STA: 34+40.28 TO STA: 36+61.09

NOT TO SCALE

B



ARBOR AVENUE
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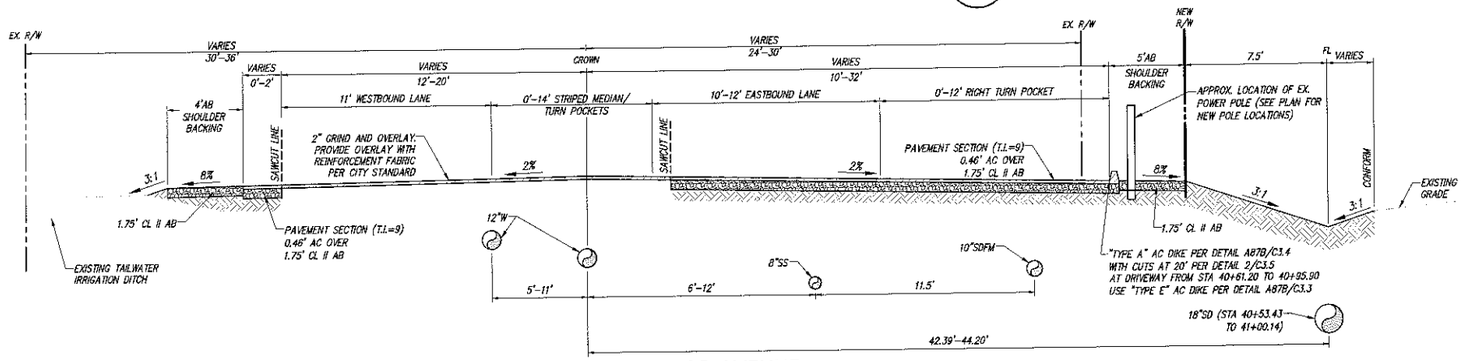
NOT TO SCALE

C



ARBOR AVENUE
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NOT TO SCALE

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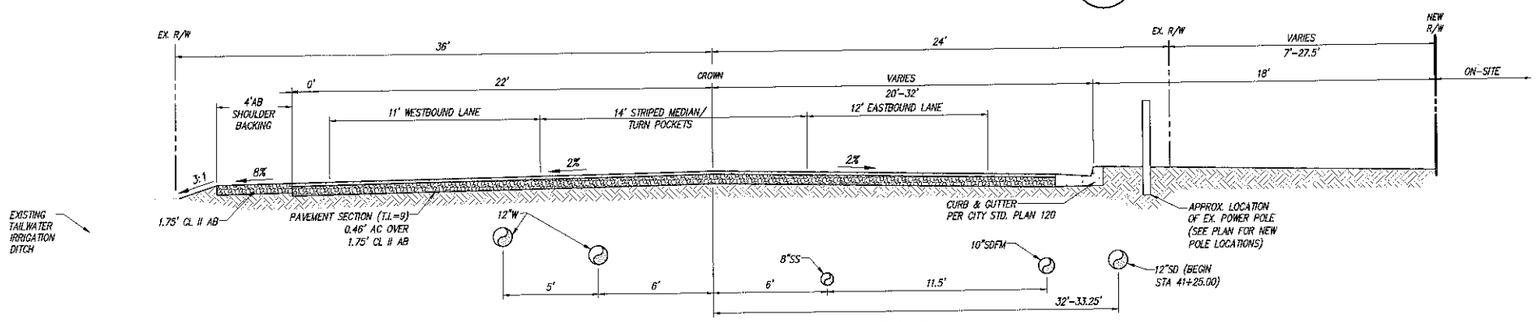

ARBOR AVENUE
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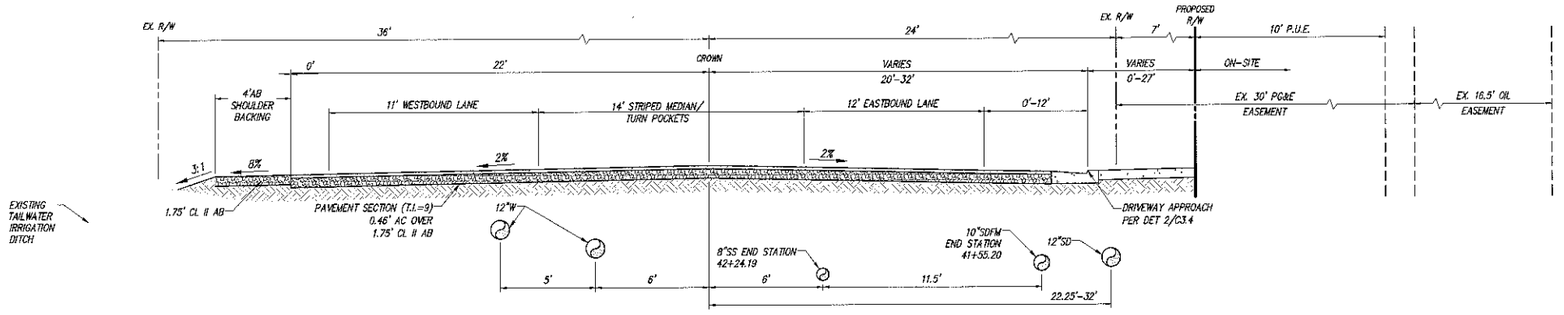

ARBOR AVENUE
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NOT TO SCALE

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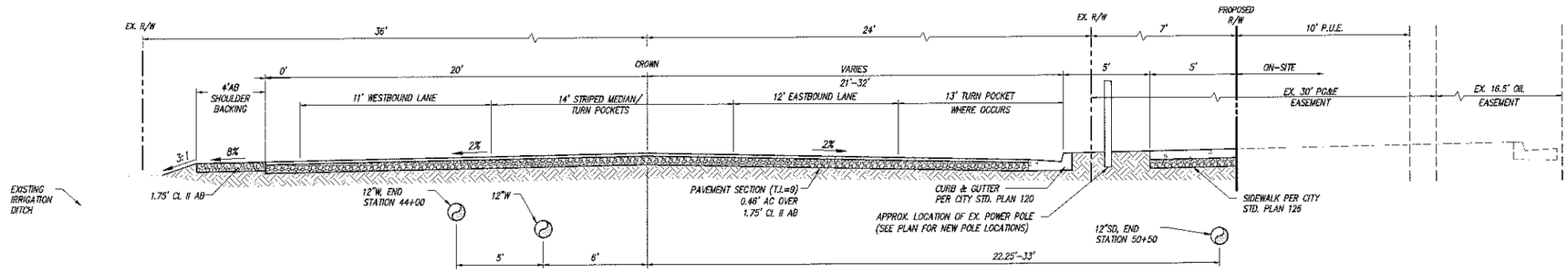

ARBOR AVENUE
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NOT TO SCALE

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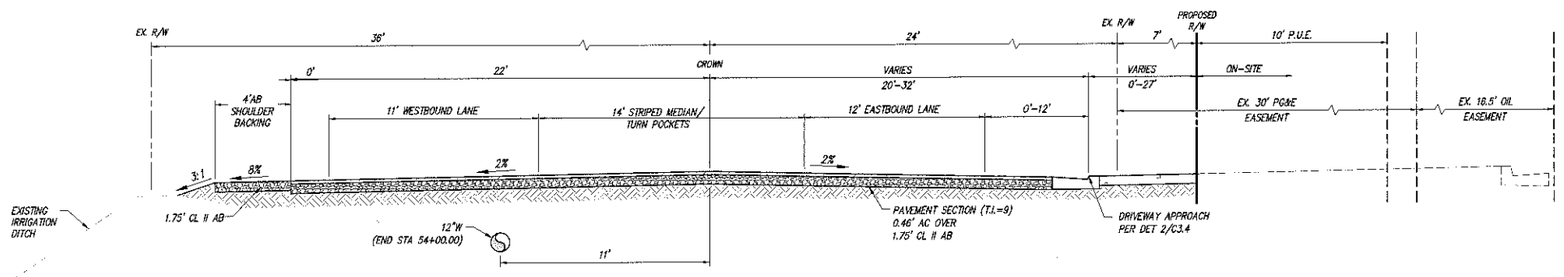

ARBOR AVENUE
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NOT TO SCALE

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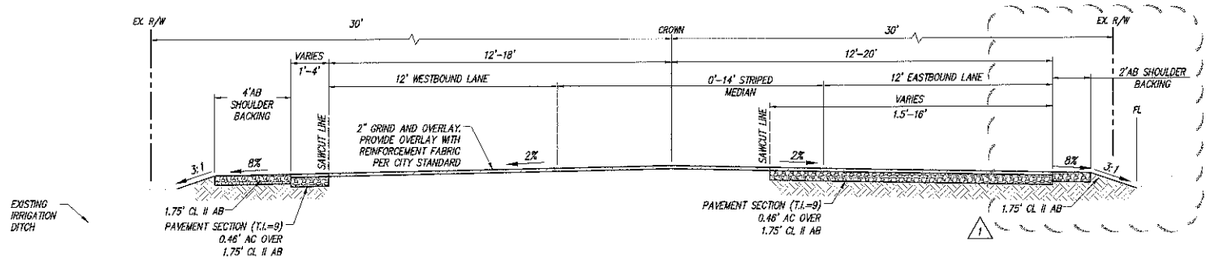

ARBOR AVENUE
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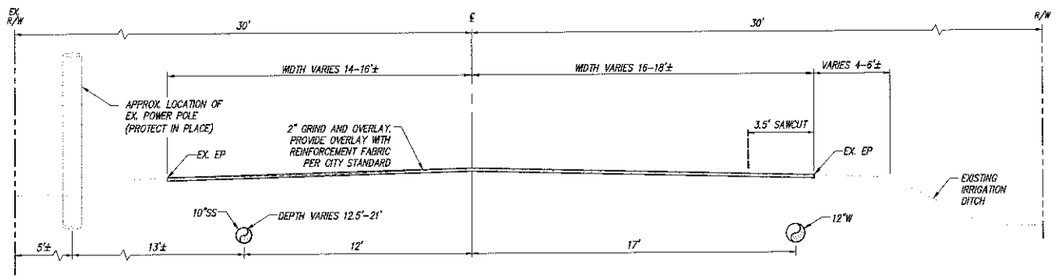
NOT TO SCALE

I



MAC ARTHUR AVENUE
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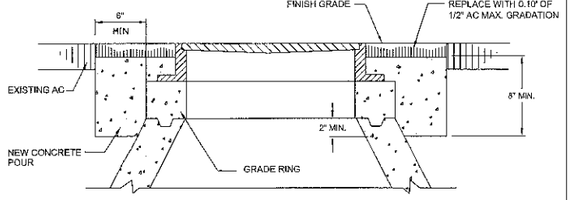
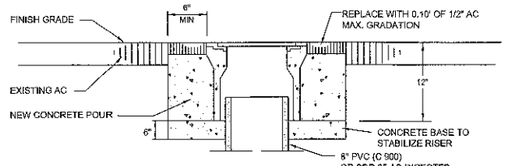
NOT TO SCALE

J



MANHOLE
N.T.S.



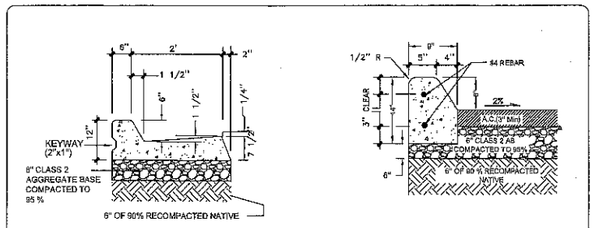
WATER VALVE
N.T.S.

NOTES:

1. THIS DETAIL SHALL BE USED WHERE FRAMES AND COVERS ARE BEING ADJUSTED TO GRADE.
2. CONCRETE SHALL BE FIVE SACK CLASS "B", 2500 PSI AT 28 DAYS; 4" MAX. SLUMP: 3/4" MAXIMUM AGGREGATE SIZE.
3. ALL CONCRETE SHALL BE POURED AGAINST NEAT EXCAVATION. DISTURBED SOIL OR A.B. SHALL BE COMPACTED TO 95%.
4. ASPHALT SHALL MATCH FINISH GRADE OF ADJACENT PAVEMENT TO WITHIN ± 1/8".

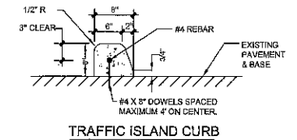
CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 114
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**FRAME & COVER ADJUSTMENTS**
	Rev:	Rev:	
	Rev:	Rev:	

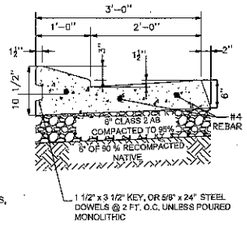


VERTICAL CURB AND GUTTER
N.T.S.

MEDIAN ISLAND CURB
N.T.S.



TRAFFIC ISLAND CURB
N.T.S.



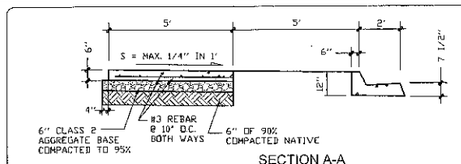
ROLL TYPE CURB & GUTTER
N.T.S.

NOTES:

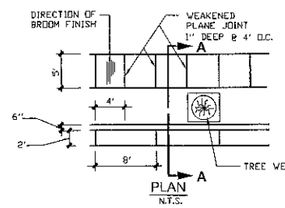
1. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 8 FOOT INTERVALS. JOINTS TO BE SCORED TO MINIMUM ONE INCH DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED AT MAX. 200 FOOT INTERVALS, AT EACH SIDE OF STRUCTURES AND AT ENDS OF CURB RETURNS. EXPANSION JOINTS SHALL NOT BE CONSTRUCTED WITHIN 20 FEET OF AN ISLAND NOSE. THE JOINTS SHALL BE FILLED WITH 1/4" PRE MOLDED FILLER CONFORMING TO CALTRANS SPECIFICATIONS 51-1.1 2C (ASTM 1751)
3. CONCRETE SHALL HAVE A LIGHT BROOM FINISH AND AN IMPERVIOUS MEMBRANE OR SPRAY CURING COMPOUND APPLIED AT 1 GAL./150 SQ. FT. CURING COMPOUND SHALL BE WHITE PIGMENTED, TYPE 2, CONFORMING TO ASTM C309, CLASS B. APPLY IMMEDIATELY AFTER MOISTURE SHEEN DISAPPEARS.
4. IMPRESS 2" HIGH LETTERS "S" OR "W", ¼" DEEP INTO THE FACE OF CURB TO IDENTIFY SERVICE LOCATIONS.

CITY OF TRACY

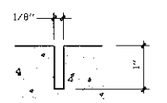
TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 120
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**CURBS**
	Rev:	Rev:	
	Rev:	Rev:	



SECTION A-A
N.T.S.



PLAN
N.T.S.



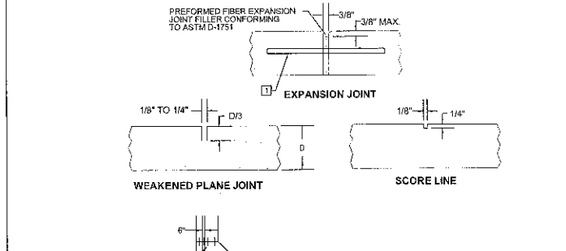
WEAKENED PLANE JOINT
N.T.S.

NOTES:

1. TOP 6" OF NATIVE SUBGRADE SHALL BE COMPACTED TO 90% OR MOISTENED IF UNDISTURBED. SUBGRADE COMPACTION SHALL BE APPROVED BY THE CITY ENGINEER.
2. ALL EXPOSED CORNERS SHALL HAVE A 1/2" RADIUS.
3. CONCRETE SHALL BE FIVE SACK CLASS "B", 2500 PSI AT 28 DAYS: 3/4" MAXIMUM AGGREGATE SIZE, 4" MAXIMUM SLUMP AT TIME OF PLACEMENT WITH 1/2 LB. LAMPBLACK PER YARD.
4. EXPANSION JOINTS SHALL BE SHAPED TO FIT CONCRETE AND PLACED AT ALL RETURNS, AROUND FIXED OBJECTS SUCH AS HYDRANTS, POLES, AND DROP INLETS, AT MAXIMUM 200' INTERVALS. THE JOINTS SHALL BE FILLED WITH 1/4" PRE MOLDED FILLER CONFORMING TO CALTRANS SPECIFICATIONS 51-1.12C (ASTM 1751).
5. THE TOP SURFACE AND FACE OF CONCRETE IMPROVEMENTS SHALL BE TRUE, STRAIGHT AND FREE OF BLEMISHES OR IRREGULARITIES. THE SURFACE MUST NOT VARY MORE THAN 1/4" FROM A 10' STRAIGHT EDGE PLACED ON ITS SURFACE. THE WIDTH MUST BE UNIFORM.
7. CONCRETE SHALL HAVE A LIGHT BROOM FINISH AND AN IMPERVIOUS MEMBRANE OR SPRAY CURING COMPOUND APPLIED AT 1 GAL./150 SQ.FT. CURING COMPOUND SHALL BE WHITE PIGMENTED, TYPE 2, CONFORMING TO ASTM C309, CLASS B. APPLY IMMEDIATELY AFTER MOISTURE SHEEN DISAPPEARS.
8. ELEVATION DIFFERENTIAL BETWEEN SIDEWALK AND TREE WELL FINISHED GRADE SHALL NOT EXCEED 4 INCHES.
9. SIDEWALK SHALL HAVE 2% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE.

CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 126
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**SIDEWALK WITH PLANTING STRIP**
	Rev:	Rev:	
	Rev:	Rev:	



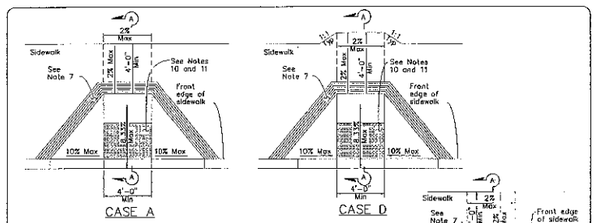
SECTION AA

NOTES:

1. SIDEWALKS GREATER THAN 5 FEET SHALL REQUIRE PRIOR APPROVAL OF A SCORE PATTERN DESIGN.
2. EXPANSION JOINTS SHALL BE SHAPED TO FIT CONCRETE AND PLACED AT ALL RETURNS, AROUND FIXED OBJECTS SUCH AS HYDRANTS, POLES AND DROP INLETS, AND AT MAXIMUM 200' INTERVALS. THE JOINTS SHALL BE FILLED WITH 1/4" PRE MOLDED FILLER CONFORMING TO CALTRANS SPECIFICATIONS 51-1.12C (ASTM 1751).

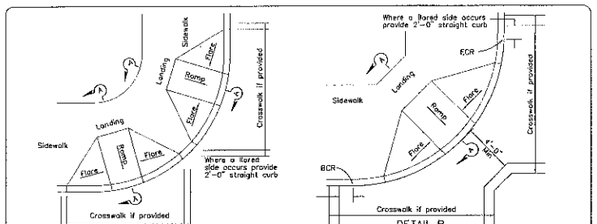
CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 128
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**EXPANSION JOINTS, WEAKENED PLANE JOINTS AND SCORE LINES**
	Rev:	Rev:	
	Rev:	Rev:	



CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 130 SHEET 1 OF 3
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**CURB RAMPS**
	Rev:	Rev:	
	Rev:	Rev:	

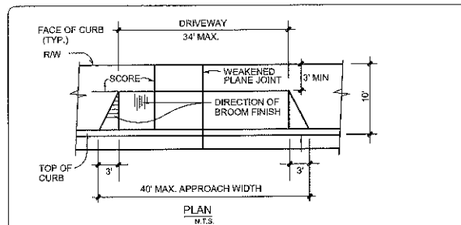


NOTES:

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The core of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-0" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or D or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-0".
6. Side slope of ramp flares vary uniformly from a maximum of 10% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. The curb ramp shall be outlined, as shown, with a 1'-0" wide border with ¼" grooves approximately ¾" on center. See grooving detail. Entire grooved border to the curb ramp shall be maximum 2% slope.
8. Transitions from ramps and landing to walks, gutters or streets shall be flush and free of abrupt changes.
9. Maximum slopes of adjoining gutters, the road surface immediately adjacent to the curb ramp or accessible route shall not exceed 5 percent within 4'-0" of the bottom of the curb ramp.
10. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Special Provisions.
11. The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
12. Sidewalk and ramp thickness, "T", shall be 36" minimum.
13. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
14. For retrofit conditions, removal and replacement of curb apron will be at the Contractor's option, unless otherwise shown on project plans.
15. Finished Plaster area surface shall be not extend any lower than 4" from the top of the retaining curb.

CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 130 SHEET 2 OF 3
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**CURB RAMP NOTES & DETAILS**
	Rev:	Rev:	
	Rev:	Rev:	

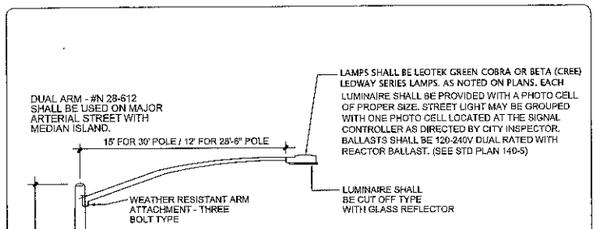


NOTES:

1. COMMERCIAL DRIVEWAY APPROACH SHALL NOT EXCEED 34'
2. TOP 6" OF NATIVE SUBGRADE SHALL BE COMPACTED TO 90% OR MOISTENED IF UNDISTURBED. SUBGRADE COMPACTION SHALL BE APPROVED BY THE CITY ENGINEER.
3. CONCRETE SHALL BE FIVE SACK CLASS "B", 2500 PSI AT 28 DAYS: 3/4" MAXIMUM AGGREGATE SIZE, 4" MAXIMUM SLUMP AT TIME OF PLACEMENT WITH 1/2 LB LAMPBLACK PER YARD.
4. SIDEWALK, GUTTERS, ISLANDS AND DRIVEWAY SHALL HAVE SURFACE FREE OF BLEMISHES OR IRREGULARITIES. THE SURFACE SHALL NOT VARY MORE THAN 1/4" (S.P.126) FROM A 10' STRAIGHT EDGE EXCEPT AT GRADE CHANGES.
5. ALL EXPOSED CORNERS SHALL HAVE A 1/2" RADIUS.
6. CONCRETE SHALL HAVE A LIGHT BROOM FINISH AND AN IMPERVIOUS MEMBRANE OR SPRAY CURING COMPOUND APPLIED AT 1 GAL./150 SQ.FT. CURING COMPOUND SHALL BE WHITE PIGMENTED, TYPE 2, CONFORMING TO ASTM C309, CLASS B. APPLY IMMEDIATELY AFTER MOISTURE SHEEN DISAPPEARS.
7. WEAKENED PLANE JOINT SPACING NOT TO EXCEED 8'.
8. IN EXISTING STREETS, ASPHALT SHALL BE SAW CUT ALONG LIMITS APROVED BY THE INSPECTOR, 12" MINIMUM FROM LIP OF GUTTER. REPLACE AC WITH 3" AC OVER 12" AB.

CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 133
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**COMMERCIAL DRIVEWAY APPROACH**
	Rev:	Rev:	
	Rev:	Rev:	



STANDARD

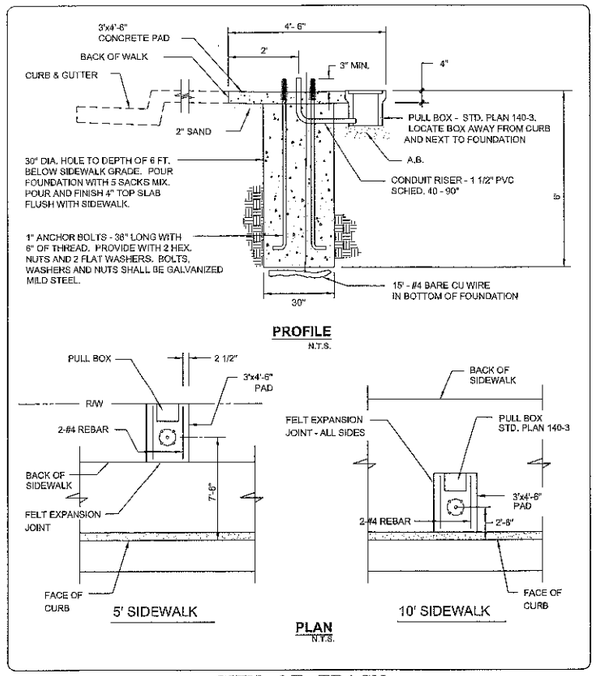
BASE AND GROUND
N.T.S.

NOTES:

1. FOR COMPLETE INSTALLATION SEE STANDARD PLANS 140-1 TO 140-5.
2. USE GROUND CONSISTING OF 15' #4 BARE COPPER WIRE IN BOTTOM OF FOUNDATION, AND ATTACHED TO POLE BY APPROVED METHOD.
3. FULL BASE COVER SHALL BE PROVIDED AND SHALL COVER BASE OF POLE COMPLETELY AND REST FIRMLY ON CONCRETE PAD.
4. LUMINAIRES SHALL BE CUTOFF TYPE.
5. ANCHOR BOLTS SHALL BE 1" DIA x 36" LONG WITH 4" LONG BOLTS SHALL BE GALVANIZED AND PROVIDED WITH 2 NUTS AND 2 WASHERS.

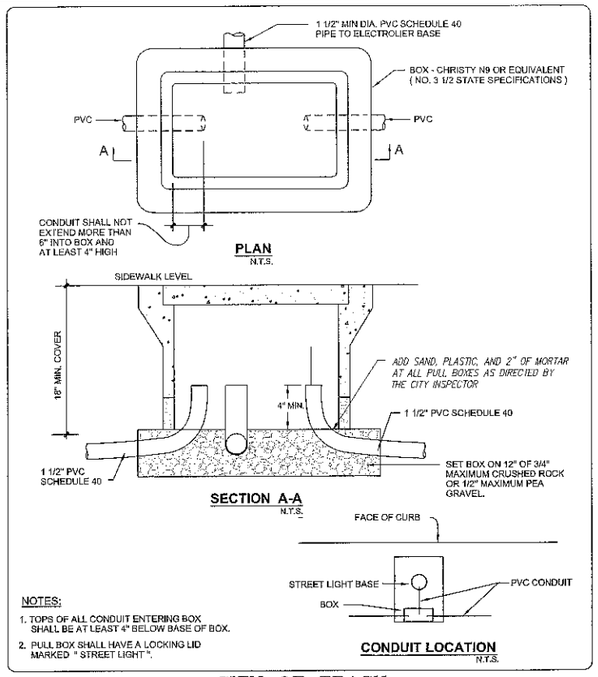
CITY OF TRACY

TRACY — Think Inside the Triangle™	REVIEWED BY: KThanno		STANDARD PLAN No. 140 SHEET 1 OF 5
	CITY ENGINEER RCE 37186		
	Res No. 2008-255	DATE:	**STREET LIGHT**
	Rev:	Rev:	
	Rev:	Rev:	



CITY OF TRACY

TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 140	SHEET 2 OF 5
	CITY ENGINEER RCE 37186		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	STREET LIGHT POLE FOUNDATION	



NOTES:

1. TOPS OF ALL CONDUIT ENTERING BOX SHALL BE AT LEAST 4" BELOW BASE OF BOX.
2. PULL BOX SHALL HAVE A LOCKING LID MARKED " STREET LIGHT ".

CITY OF TRACY

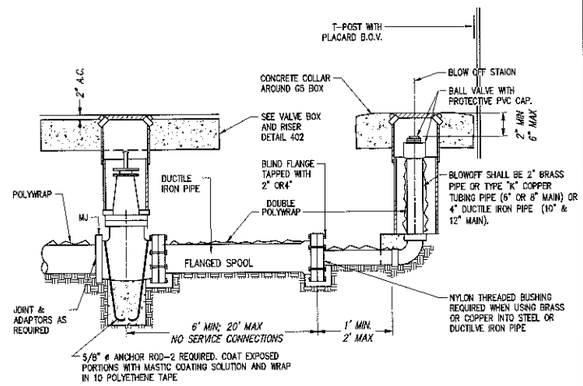
TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 140	SHEET 3 OF 5
	CITY ENGINEER RCE 37186		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	STREET LIGHT PULL BOX	

NOTES:

1. STREET LIGHT STANDARDS SHALL BE PLACED AT ALL INTERSECTIONS, THE ENDS OF CUL-DE-SACS AND COURTS 100 FEET OR MORE IN DEPTH, AND EVENLY SPACED, DEPENDING ON BLOCK LENGTHS, 250 FEET MAXIMUM BETWEEN LIGHTS STAGGERED FROM ONE SIDE TO THE OTHER. LIGHTS ON MINOR ARTERIAL STREETS SHALL BE SPACED A MAXIMUM OF 170' (SEE NOTE #16). MAJOR ARTERIAL STREETS SHALL HAVE DOUBLE ARM STREET LIGHT, MAXIMUM SPACING 170' (SEE NOTE #16). LIGHTS WITHIN MEDIAN ISLAND SHALL BE AT LEAST 20' FROM THE ISLAND NOSE.
2. WIRING SHALL BE UNDERGROUND IN 1-1/2" MIN. UL APPROVED SCHEDULE 40, HEAVY WALL RIGID PVC CONDUIT. (SPECIAL CONDITIONS MAY REQUIRE INCREASE OF CONDUIT SIZE AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.) ALL CONDUCTORS SHALL BE COPPER.
3. CONDUIT SYSTEM SHALL BE COMPLETE FROM THE STREET LIGHT TO THE PG&E SOURCE.
4. INSTALL A CONCRETE PULL BOX AT EACH ELECTROLIER PER CITY OF TRACY STANDARDS. MINIMUM SIZE NO. 3-1/2, LID MARKING - "STREET LIGHT" (LOCKING LID).
5. SEE CITY OF TRACY STANDARD DRAWINGS 140 SHEETS 1-5 FOR ADDITIONAL DETAILS.
6. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTIONS 86-1, 86-2, AND 86-8 OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS.
7. WATERPROOF FUSED SPLICE CONNECTORS WITH PROPER 10 AMP FUSE SHALL BE INSTALLED IN EACH PULL BOX ADJACENT TO A LIGHT STANDARD.
8. WIRE IN POLE FROM LUMINAIRE TO PULL BOX AT BASE OF POLE SHALL BE #10 COPPER SERVING A SINGLE LUMINAIRE (INSULATION RATING SHALL BE THHN/THW 600V RATED).
9. WIRE IN UNDERGROUND CONDUIT SHALL BE #8 COPPER STRANDED WIRE (INSULATION RATING SHALL BE THHN/THW 600V RATED). INCLUDE COATED #8 AWG RUN CONTINUOUSLY IN ALL CIRCUITS.
10. THE OWNER OR CONTRACTOR OF ANY LIGHTING PROJECT IS REQUIRED TO PAY PG&E COMPANY THE CONNECTION FEE BEFORE ACCEPTANCE BY THE CITY.
11. ALL ELECTROLIERS SHALL BE GROUNDED AS SHOWN ON STANDARD PLANS.
12. ALL CONDUIT ENDS IN PULL BOXES OR STANDARDS SHALL BE SECURELY PACKED WITH AN APPROVED SEALANT AFTER WIRE IS PULLED.
13. ALL SPLICES IN CONDUCTORS SHALL BE MADE WITH APPROVED WIRE CONNECTOR AND MADE WATER PROOF BY APPROVED METHOD. SEE CALTRANS STANDARD PLAN 86-13A.
14. ALL CONDUIT SHALL BE A MINIMUM OF 3' BELOW THE FLOWLINE OF GUTTER EXCEPT WHEN UNDER THE SIDEWALK. CONDUIT SHALL BE A MINIMUM OF 18" DEEP.
15. THE DEVELOPER OF SUBDIVISIONS SHALL BE REQUIRED TO PROVIDE THE CITY WITH ONE ELECTROLIER FOR EACH TWENTY (20) ELECTROLIERS (OR FRACTION THEREOF) OF EACH SIZE INVOLVED IN THE TRACT LIGHTING. THE ELECTROLIERS SHALL BE IDENTICAL TO THOSE INSTALLED IN THE SUBDIVISION. THIS REQUIREMENT WILL BE WAIVED IF THE TOTAL NUMBER OF ELECTROLIERS INSTALLED IN THE TRACT IS LESS THAN FIVE (5). THE ELECTROLIERS FURNISHED TO THE CITY SHALL BE COMPLETE, INCLUDING POLE, MAST ARM, LUMINAIRE AND ADEQUATE WIRE TO COMPLETE THE SPLICE IN THE PULL BOX ADJACENT TO THE POLE BASE AND SHALL BE DELIVERED TO THE CITY AT BOYD SERVICE CENTER.
16. THE SERVICE POINT AND ALL CONDUIT SHALL BE INSTALLED WITHIN CITY RIGHT-OF-WAY.
17. ANY DEVIATIONS OR SPECIAL PROVISIONS OF THESE STANDARDS WILL REQUIRE PRIOR APPROVAL BY CITY ENGINEER.

CITY OF TRACY

TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 140	SHEET 4 OF 5
	CITY ENGINEER RCE 37186		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	STREET LIGHT NOTES	

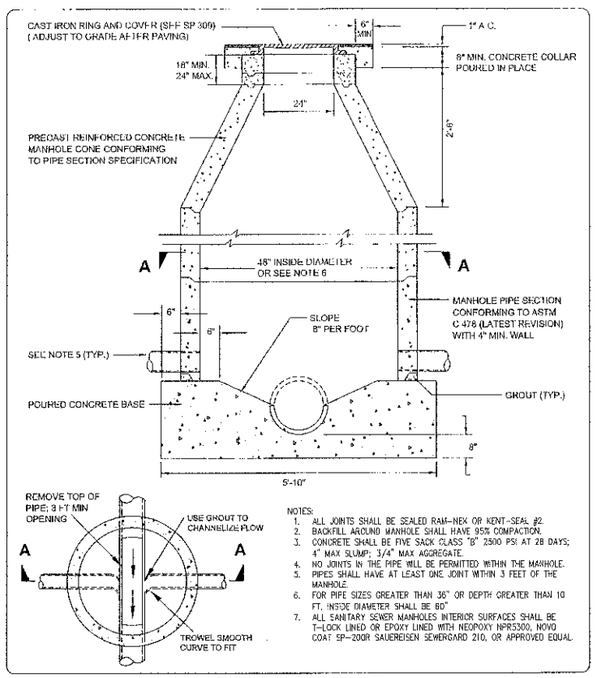


BLOW OFF FOR FUTURE EXTENSION WITH VALVE – IN UNPAVED AREAS

CITY OF TRACY STD. DTL. 409 (MODIFIED)

NOT TO SCALE

1

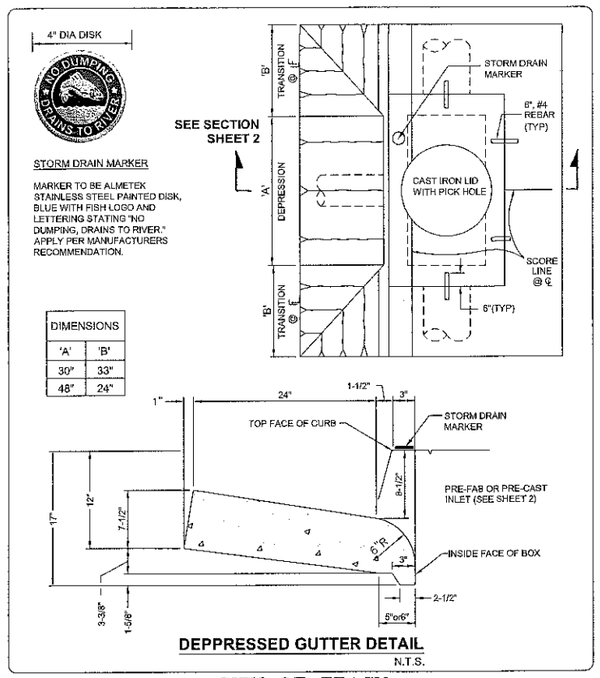


NOTES:

1. ALL JOINTS SHALL BE SEALED RAM-NEK OR KENT-SEAL #2.
2. BACKFILL AROUND MANHOLE SHALL HAVE 95% COMPACTION.
3. CONCRETE SHALL BE FIVE SACK CLASS "B" 2500 PSI AT 28 DAYS; 4" MAX SLUMP; 1/4" MAX AGGREGATE.
4. NO JOINTS IN THE PIPE WILL BE PERMITTED WITHIN THE MANHOLE.
5. PIPES SHALL HAVE AT LEAST ONE JOINT WITHIN 3 FEET OF THE MANHOLE.
6. FOR PIPE SIZES GREATER THAN 36" OR DEPTH GREATER THAN 10 FT, INSIDE DIAMETER SHALL BE 60"
7. ALL SANITARY SEWER MANHOLES INTERIOR SURFACES SHALL BE T-LOCK LINED OR EPOXY LINED WITH NEOPOXY NPR5300, NOVO COAT SP-200R SAUEREISEN SEWERGARD 210, OR APPROVED EQUAL.

CITY OF TRACY

TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 301	
	CITY ENGINEER RCE		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	MANHOLE	

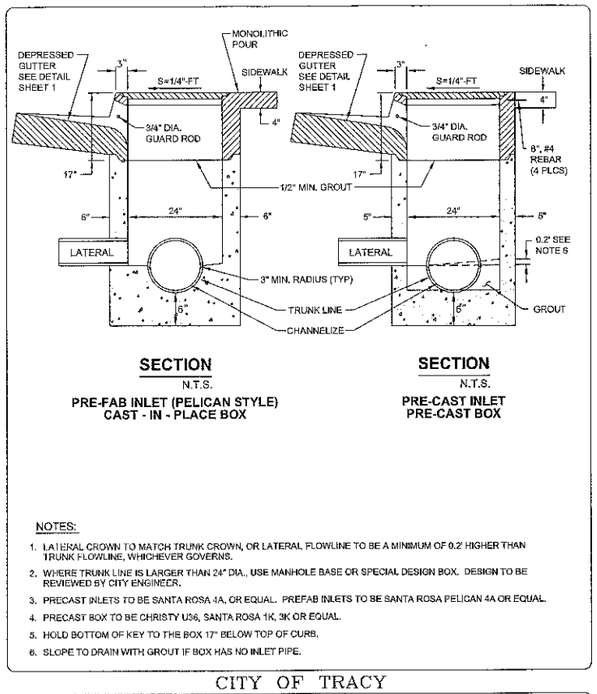


DEPPRESSED GUTTER DETAIL

N.T.S.

CITY OF TRACY

TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 302	SHEET 1 OF 2
	CITY ENGINEER RCE 37186		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	DROP INLET	

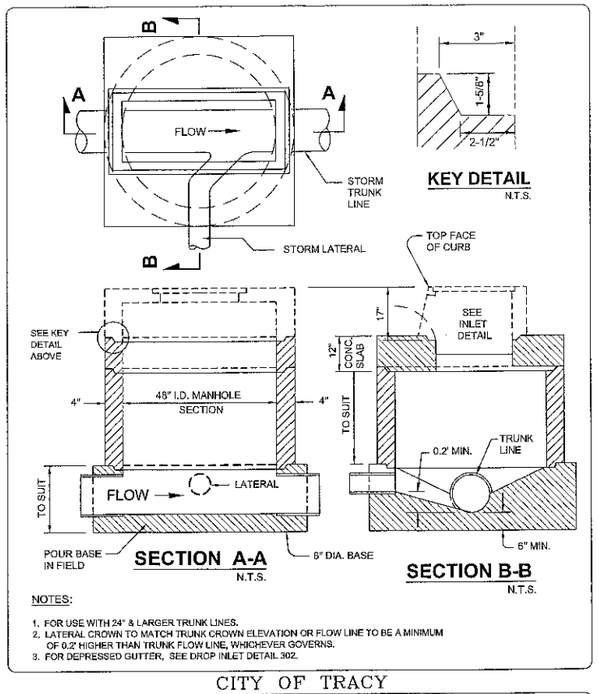


NOTES:

1. LATERAL CROWN TO MATCH TRUNK CROWN, OR LATERAL FLOWLINE TO BE A MINIMUM OF 0.2' HIGHER THAN TRUNK FLOWLINE, WHICHEVER GOVERNS.
2. WHERE TRUNK LINE IS LARGER THAN 24" DIA., USE MANHOLE BASE OR SPECIAL DESIGN BOX. DESIGN TO BE REVIEWED BY CITY ENGINEER.
3. PRECAST INLETS TO BE SANTA ROSA 4A, OR EQUAL. PREFAB INLETS TO BE SANTA ROSA PELICAN 4A OR EQUAL.
4. PRECAST BOX TO BE CHRISTY U36, SANTA ROSA 1K, 3K OR EQUAL.
5. HOLD BOTTOM OF KEY TO THE BOX 17" BELOW TOP OF CURB.
6. SLOPE TO DRAIN WITH GROUT IF BOX HAS NO INLET PIPE.

CITY OF TRACY

TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 302	SHEET 2 OF 2
	CITY ENGINEER RCE 37186		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	DROP INLET	

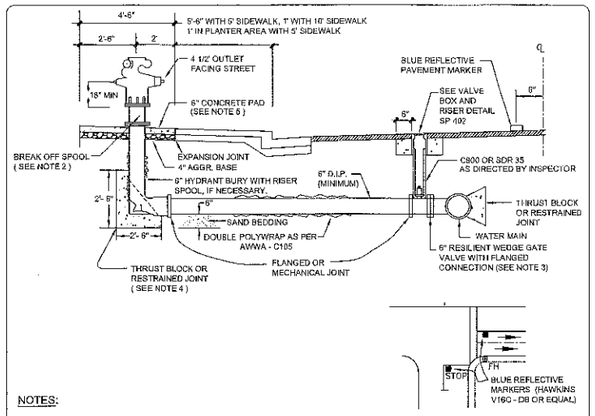


NOTES:

1. FOR USE WITH 24" & LARGER TRUNK LINES.
2. LATERAL CROWN TO MATCH TRUNK CROWN ELEVATION OR FLOW LINE TO BE A MINIMUM OF 0.2' HIGHER THAN TRUNK FLOW LINE, WHICHEVER GOVERNS.
3. FOR DEPRESSED GUTTER, SEE DROP INLET DETAIL 302.

CITY OF TRACY

TRACY Think Inside the Triangle	REVIEWED BY: [signature]	STANDARD PLAN No. 303	
	CITY ENGINEER RCE 37186		
	Res No. 2008-255 DATE:		
	Rev: Rev:		
	Rev: Rev:	INLET MANHOLE BASE	



BLUE REFLECTIVE MARKER:
BLUE MARKERS SHALL BE PLACED ON THE LEFT HAND SIDE OF TRAVEL LANE ADJACENT TO THE FIRE HYDRANT TO THE CENTER OF STREET.

MARKER LOCATION

NOTES:

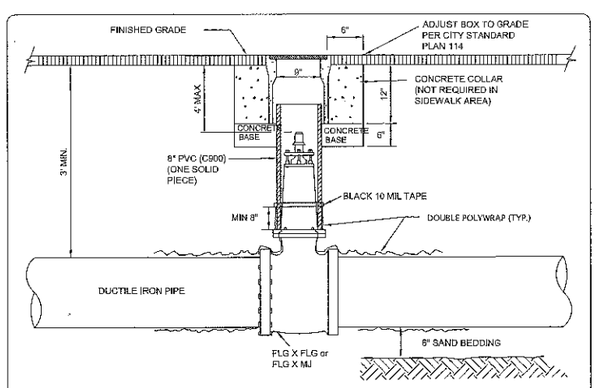
1. HYDRANT SHALL HAVE 1, 4½" UPPER OUTLET AND 1, 2½" OUTLET, JONES 4040. HYDRANTS AND ALL EXPOSED PARTS SHALL BE PAINTED ONE COAT PRIMER AND TWO FINISHING COATS OF BENJAMIN MOORE SAFETY YELLOW OR FULLER O'BRIEN HIGHWAY YELLOW.
2. BREAK OFF SPOOL 8" IN LENGTH SHALL BE INSTALLED 2" ABOVE CONCRETE SLAB. THE BOLTS ATTACHING HYDRANT TO BURY AND SPOOL SHALL BE OF THE BREAK-OFF TYPE, HEX HEAD, GALVANIZED OR STAINLESS STEEL. NUTS SHALL BE DOWN.
3. VALVE SHALL BE PLACED ADJACENT TO THE MAIN AS A RESILIENT WEDGE GATE VALVE. TOTALLY ENCAPSULATED, FACTORY EPOXY LINED & COATED.
4. THRUST BLOCK SHALL BE INSPECTED AND APPROVED AT THE TIME OF CONSTRUCTION PER CITY STANDARD PLAN 423.
5. CONCRETE PAD SHALL BE 4'-6"X6". SLOPE SHALL BE 1/4" IN 1' TO CURB. CONCRETE SHALL BE CLASS "B" 2500 PSI ; 4" MAXIMUM SLUMP ; 3/4" MAXIMUM AGGREGATE WITH 1/2 LB. LAMPBLACK PER CUBIC YARD. PAD SHALL BE FINISHED TO THE SPECIFICATIONS OF THE SIDEWALK.
6. HYDROSTATIC TESTING IS REQUIRED FOR RUNS IN EXCESS OF ONE PIPE LENGTH.
7. HYDRANTS SHALL BE PLACED AT PROPERTY LINE EXTENSION, AT END OF CURB RETURN, 3 FT. FROM DRIVEWAYS, AND NEAR STREET LIGHTS, OR AS SHOWN ON PLANS. APPROVED BY CITY ENGINEER.
8. HYDRANT BODIES ARE TO BE LINED WITH FACTORY TWO PART EPOXY.
9. FOR DEVELOPMENT PROJECTS DESIGN ENGINEER SHALL PROVIDE CALCULATIONS TO PROVIDE ADEQUATE FLOW. FIRE HYDRANT LATERAL SIZE MAY BE INCREASED BASED ON FIRE FLOW CALCULATIONS.

APPROVED BY:

FIRE CHIEF

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 401
	CITY ENGINEER	RCE 37186	
	Res No. 2008-255	DATE:	FIRE HYDRANT
	Rev:	Rev:	
	Rev:	Rev:	

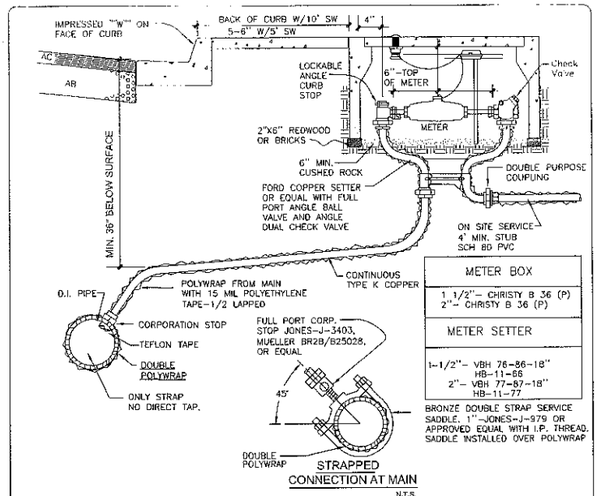


NOTES :

1. VALVES SHALL BE ONE OF THE FOLLOWING :
   A) BUTTERFLY VALVES : 12" AND LARGER AS SHOWN ON APPROVED MATERIALS LIST SHALL BE USED. APPROVED LIST INCLUDE: ("GROUNDHOG"), ("AMERICAN"), MUELLER, B.I.F., KENNEDY, DRESSER.
   B) GATE VALVES: 10" AND SMALLER AS SHOWN ON LIST OF APPROVED MATERIALS. APPROVED LIST INCLUDES: MUELLER RESILIENT SEAT, CLOW R/W, KENNDEY, AMERICAN-80 "CRS".
2. OPERATING NUTS SHALL BE RAISED TO WITHIN 4' OF FINISHED STREET GRADE WITH REQUIRED EXTENSIONS BEING PROVIDED BY VALVE MANUFACTURER.
3. POLYWRAP ALL PIPES AND VALVES.
4. VALVES SHALL BE TESTED BY MANUFACTURER AS FOLLOWS: 8" - 12", 175 PSI; 14" AND LARGER, 150 PSI. IN ADDITION, HYDROSTATIC TESTS AGAINST FULLY CLOSED VALVE VANES SHALL BE DONE AS FOLLOWS: 8" - 12", 350 PSI; 14" AND LARGER, 300 PSI.
5. VALVE BOX: BROOKS 3-RT OR CHRISTY G5 WITH G5C LID.

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 402
	CITY ENGINEER	RCE 37186	
	Res No. 2008-255	DATE:	VALVE, BOX & RISER
	Rev:	Rev:	
	Rev:	Rev:	



METER BOX
1 1/2"– CHRISTY B 36 (P) 2"– CHRISTY B 36 (P)
METER SETTER
1-1/2"– VBH 76-86-18" HB-11-86 2"– VBH 77-87-18" HB-11-77

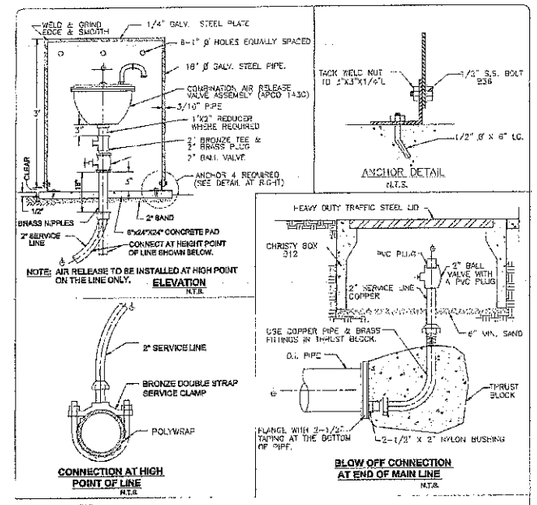
BRONZE DOUBLE STRAP SERVICE SADDLE, 1"–JONES-J-979 OR APPROVED EQUAL WITH I.P. THREAD. SADDLE INSTALLED OVER POLYWRAP

NOTES:

1. Meter shall be sensus touch read (TR/PL) with touch read pad installed with radio read meter transceiver unit (M x U model 505). One transceiver unit shall be with each meter and read in cubic feet. Meter shall be minimum size as specified by the City Engineer and shall be set with rubber gaskets. Meter shall be furnished and set by contractor with the M x U model 505 radio read unit to be given to the City to be installed by the City at a later date.
2. Meter box shall be designed and set to accommodate sensus touch read pit lid probe meter reading system in addition to sensus radio read meter reading system.
3. No galvanized pipe shall be used.
4. Compact around the meter to 95%. Onsite plumber shall not remove meter box to connect the pipe.
5. All underground copper water lines within the city right-of-way shall be a single continuous piece polywrapped to City of Tracy Standards.
6. No landscape irrigation lines shall be allowed between the meter box & the sidewalk.
7. Unused existing services shall be abandoned by potholing, cutting out and removing the corporation stop and saddle at the main and installing a full circle 316 stainless steel repair clamp with 316 accessories over the hole.

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 404
	CITY ENGINEER	RCE 37186	
	Res No. 2008-255	DATE:	1-1/2" & 2" WATER SERVICE
	Rev:	Rev:	
	Rev:	Rev:	

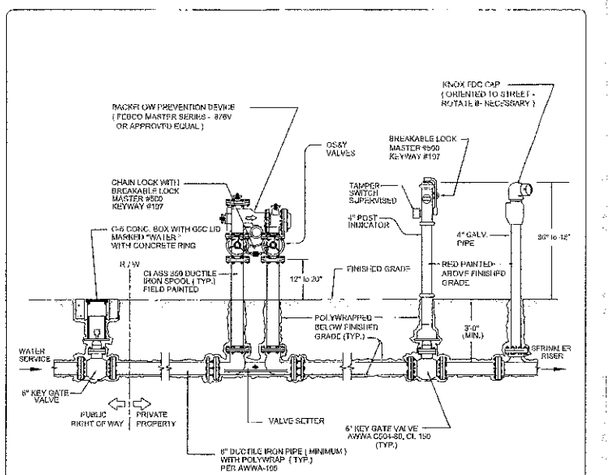


NOTES:

1. ASSEMBLIES INSTALLED AT EASEMENTS, ROADS AND STREETS WITHOUT CURBS SHALL BE PROTECTED WITH GUARD POST.
2. POST CONSISTS OF 6' LENGTH OF 4" PIPE FILLED WITH GROUT AND SET 2' BE GRADE IN 18" O.D. CONC. BASE POSITION POSTS 2' IN FRONT OF AND 2.5' EACH SIDE OF ASSEMBLIES. CROWN CONC. BASE AT TOP TO SHED WATER.
3. NO GALVANIZED STEEL PIPE SHALL BE USED.

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 411
	CITY ENGINEER	RCE 37186	
	Res No. 97-231	DATE: July 15, 1997	COMBINATION AIR & VACCUM RELEASE VALVE ASSEMBLY & BLOWOFF
	Rev:	Rev:	
	Rev:	Rev:	

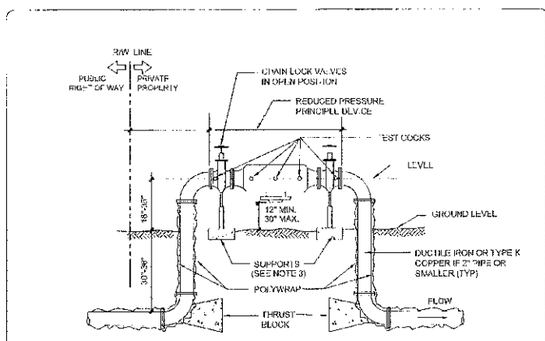


NOTES:

1. A LISTED BACKFLOW PREVENTION DEVICE IS REQUIRED TO BE INSTALLED ON ALL FIRE SPRINKLER SUPPLY LINES.
2. A POST INDICATOR VALVE MAY NOT BE REQUIRED IF THE PROXIMITY OF THE BACKFLOW PREVENTOR TO BUILDING IS ACCEPTABLE TO FIRE DEPARTMENT.
3. BACKFLOW PREVENTION DEVICE SHALL BE LOCATED IN THE PRIVATE PROPERTY.
4. DESIGN ENGINEER SHALL CALCULATE AND DETERMINE THE SIZE OF THE IRON PIPE. MINIMUM 6" DIAMETER PIPE IS REQUIRED.

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 412
	CITY ENGINEER		
	Res No. 2008-255		FIRE DEPARTMENT CONNECTION/ BACKFLOW PREVENTOR
	REVIEWED BY:	Rev:	
	Prevention Chief		



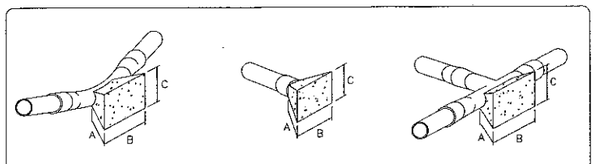
REDUCED PRESSURE ASSEMBLY
N.T.S.

NOTES:

1. BACKFLOW PREVENTION DEVICE SHALL BE LOCATED ON PRIVATE PROPERTY IN A LOCATION APPROVED BY THE CITY PRIOR TO INSTALLATION.
2. BACKFLOW PREVENTION DEVICE SHALL CONSIST OF REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE AS REQUIRED BY TITLE 17 OF FOUNDATION (OR CROSS CONNECTION U.S.C. AND AS SHOWN ON APPROVED LIST ON FILE WITH PUBLIC WORKS. SIZE AND MODEL OF BACKFLOW DEVICE TO BE DETERMINED FOR EACH INSTALLATION DEPENDING UPON ALLOWABLE HEAD LOSS . WHERE BACKFLOW PREVENTION DEVICE IS INSTALLED IN COMBINATION WITH FIRE AND DOMESTIC SERVICE, IT SHALL BE APPROVED BY FIRE CHIEF.
3. BARRIER POST SHALL BE LOCATED TO PROTECT PIPING AND VAULTS. CURB AND PARKING BARRIERS CAN BE CONSIDERED AS PROTECTION IF EFFECTIVELY LOCATED.
4. BACKFLOW PREVENTION DEVICE 3" OR LARGER SHALL BE SUPPORTED . USE GRINNELL FIG. 264 , WITH 4" THICK , 12" SQUARE CONCRETE FOOTING
5. WATER SUPPLY - NO CONNECTIONS OR TEES WILL BE ALLOWED BETWEEN METER AND DEVICE .
6. TEST COCKS SHALL BE MUELLER H-11007 OR AS FURNISHED WITH THE BACKFLOW PREVENTION DEVICE.
7. DEVICE SHALL BE ACCESSIBLE FOR TESTING AND MAINTENANCE .
8. CERTIFICATION REQUIRED PRIOR TO ACCEPTANCE .
9. NO GALVANIZED PIPE.

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 420
	CITY ENGINEER	RCE 37186	
	Res No. 2008-255	DATE:	BACKFLOW PREVENTION DEVICE
	Rev:	Rev:	
	Rev:	Rev:	



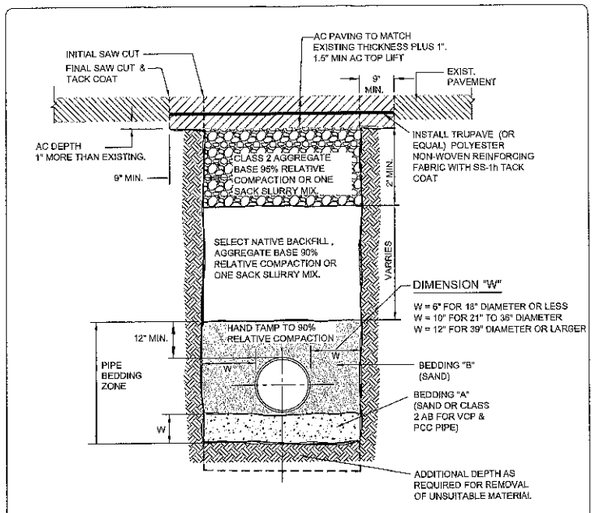
THRUST BLOCK AREA REQUIRED ALLOWABLE SOIL BEARING VALUE - 2500 POUNDS PER SQUARE FOOT												
FITTINGS	8" LINE			8" LINE			10" LINE			12" LINE		
	A	B	C	A	B	C	A	B	C	A	B	C
22 1/2° BEND	1'	1'-6"	1'-6"	1'	2'	2'	1'	3'	2'	1'-6"	3'	3'
45° BEND	1'	2'	2'	1'-6"	3'	2'-6"	1'-6"	3'-6"	3'	2'	4'	4'
90° BEND	1'-6"	3'	3'	1'-6"	4'	3'	2'	5'	4'	2'	7'	4'
DEAD END	1'	2'-6"	2'	1'-6"	3'	3'	2'	4'	3'-6"	2'	5'	4'
TEE	1'	2'-6"	2'	1'-6"	3'	3'	2'	4'	3'-6"	2'	5'	4'

NOTES:

1. CONCRETE SHALL BE CLASS B, 2500 PSI MINIMUM AT 28 DAYS.
2. THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED SOIL.
3. MINIMUM BEARING AREAS ARE SHOWN IN THE ABOVE TABLE.
4. THRUST BLOCKS WILL BE WEDGE-SHAPED AND SHALL NOT OVERLAP BELL ON FITTINGS OR INTERFERE WITH BOLTS ON FLANGE.

CITY OF TRACY

TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 423
	CITY ENGINEER	RCE 37186	
	Res No. 2008-255	DATE:	THRUST BLOCK
	Rev:	Rev:	
	Rev:	Rev:	



TYPE I
N.T.S.

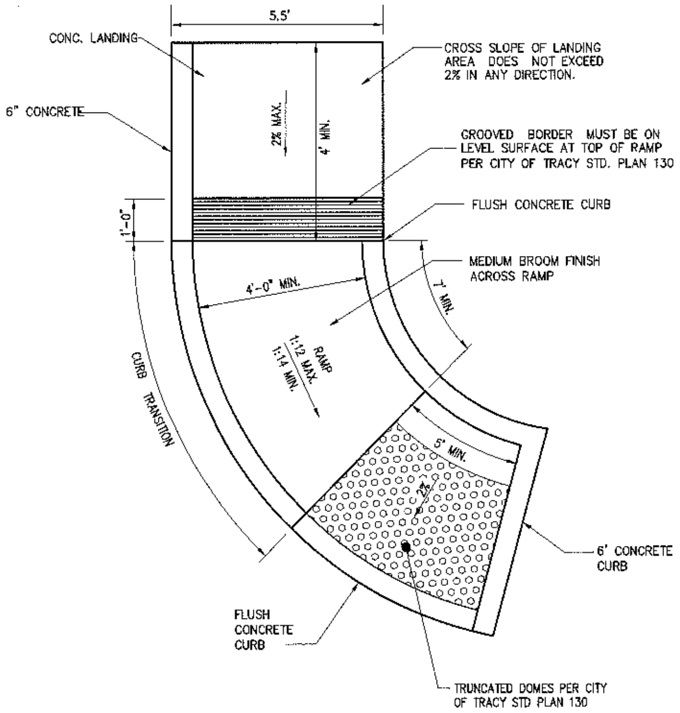
EXISTING STREET AREAS
TRENCH BACKFILL AND RESURFACING DETAIL

NOTE:

1. SEE NOTES ON SHEET 3

CITY OF TRACY

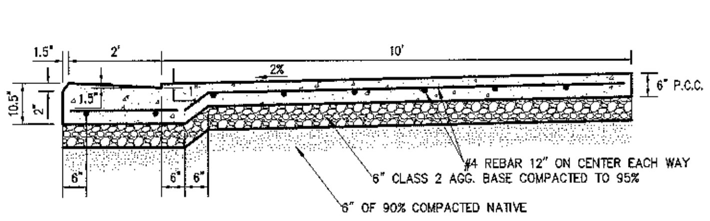
TRACY Think Inside the Triangle™	REVIEWED BY:		STANDARD PLAN No. 501 SHEET 1 OF 3
	CITY ENGINEER	RCE 37186	
	Res No. 2008-255	DATE:	TRENCHING & RESURFACING
	Rev:	Rev:	
	Rev:	Rev:	



ACCESSIBLE ACCESS RAMP

NOT TO SCALE

(1)



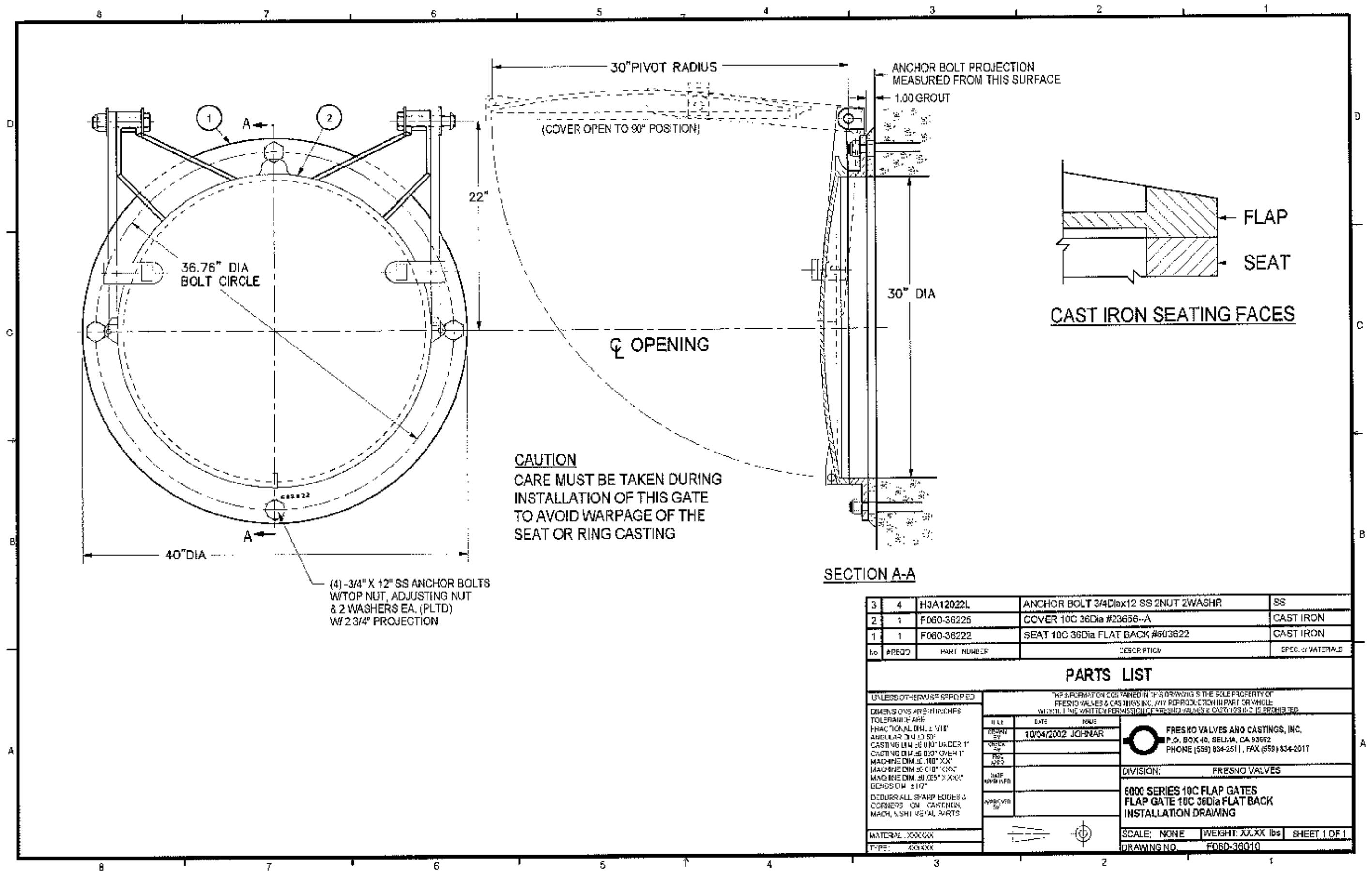
NOTES:

1. CONCRETE SHALL BE FIVE SACK CLASS "B" 2500 PSI AT 28 DAYS, 4" MAX SLUMP, 3/4" MAX AGGREGATE SIZE, 1/2 lB. LAMPBACK PER YARD.
2. SIDEWALK, GUTTERS, ISLANDS AND DRIVEWAY SHALL HAVE SURFACE FREE OF BLEMISHES. THE SURFACE SHALL NOT VARY MORE THAN 1/4" (S.P. 126) FROM A 10' STRAIGHT EDGE EXCEPT AT GRADE CHANGE.
3. ALL EXPOSED CORNERS SHALL HAVE A 1/2" RADIUS.
4. CONCRETE SHALL HAVE A LIGHT BROOM FINISH AND AN IMPERVIOUS MEMBRANE OR SPRAY CURE. 1 GAL./150 S.F. PIGMENTED CURING COMP. ASTM C309 TYPE Z, CLASS A OR B. APPLY IMMEDIATELY AFTER MOISTURE SHEEN DISAPPEARS.
5. WEAKENED PLANE JOINT SPACING NOT TO EXCEED 8'.
6. MOIST UNDISTURBED NATIVE SUBGRADE MAY BE APPROVED BY CITY ENGINEER.
7. EXPANSION JOINTS SHALL BE FILLED WITH 1/4" THICK PREMOLDED FILLER CONFORMING TO CALTRANS SPECIFICATION 51-1.12 (ASTM D1751).

DRIVEWAY SECTION

N.T.S.

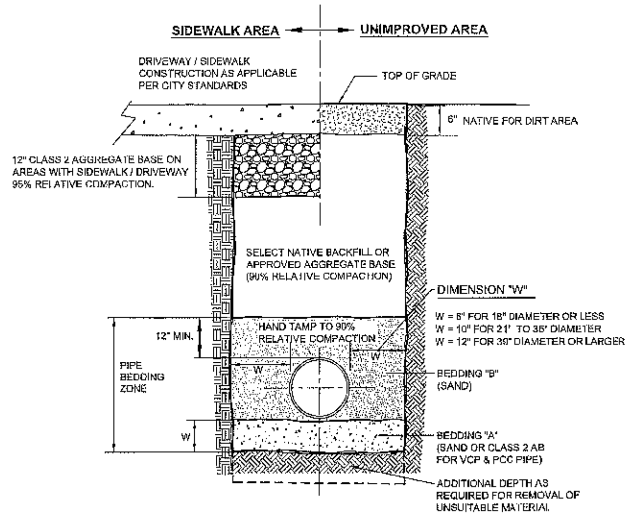
(2)



ONE WAY FLAP GATE

NOT TO SCALE

(3)



TYPE 2

N.T.S.

SIDEWALK OR UNIMPROVED AREAS TRENCH BACKFILL DETAIL

NOTES:

1. SEE NOTES ON SHEET 3

CITY OF TRACY

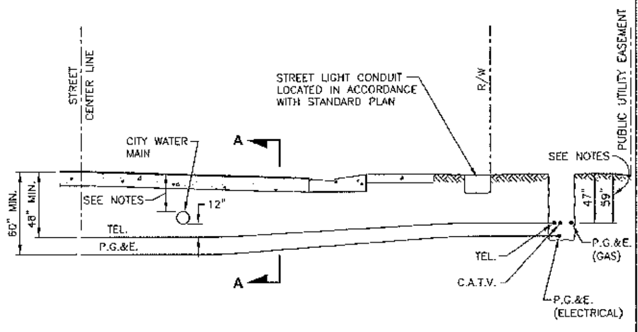
TRACY	REVIEWED BY: [signature]		STANDARD PLAN No. 501	SHEET 2 OF 3
	CITY ENGINEER	RCE 37186	TRENCHING & RESURFACING	
	Res No. 2008-255	DATE:		
	Rev:	Rev:		
	Rev:	Rev:		

NOTES:

1. UNSUITABLE SUB GRADE MATERIAL SHALL BE EXCAVATED AND STABILIZED WITH #3 ROCK (PER ASTM C-33 OR APPROVED EQUAL) OR ONE SACK CEMENT SLURRY AS APPROVED BY THE CITY ENGINEER.
2. BEDDING "A" SHALL BE COMPOSED OF SAND (SAND EQUIVALENT NOT LESS THAN 30). FOR CLAY AND CONCRETE PIPE, CLASS 2 AGGREGATE BASE PER CITY STANDARD SPECIFICATIONS MAY BE USED.
3. BEDDING "B" SHALL BE COMPOSED OF SAND (SAND EQUIVALENT NOT LESS THAN 30).
4. SELECT NATIVE BACKFILL MATERIAL - MATERIAL FROM EXCAVATION, FREE FROM STONES, LUMPS EXCEEDING 3" IN GREATEST DIMENSION. VEGETABLE MATTER, CLAY, OR UNSATISFACTORY MATERIAL.
5. ALL TRENCHES SHALL BE SHORED OR PROTECTED IN ACCORDANCE WITH "OSHA" AND OTHER STATE AND FEDERAL SAFETY CODES, REGULATIONS AND ORDINANCES.
6. PLACEMENT OF BACKFILL SHALL BE IN 12" LIFTS EVENLY PLACED AND MECHANICALLY COMPACTED TO THE RELATIVE DENSITY SPECIFIED. COMPACTION TESTS SHALL BE REQUIRED AT THE DISCRETION OF THE CITY ENGINEER. ALL COST RELATED TO THESE TESTS SHALL BE BORNE BY OWNER/CONTRACTOR/UTILITY COMPANY WHEN SUCH TESTS ARE REQUIRED. IF RESULTS OF THESE TESTS DO NOT MEET THE SPECIFIED REQUIREMENTS, BACKFILL SHALL BE EXCAVATED, REPLACED, COMPACTED AND RETESTED. IN CASE OF ONE SACK SLURRY MIX, NO COMPACTION TEST WILL BE REQUIRED. COMPACTION BY JETTING WITHIN THE PIPE BEDDING ZONE MAY BE ALLOWED BY SPECIAL PERMISSION OF THE CITY ENGINEER.
7. INITIAL CUT IN STREET PAVEMENT SHALL BE EQUAL TO THE WIDTH OF THE TRENCH WITH THE OPTION OF BEING JACK HAMMERED OR SAW CUT.
8. FINAL CUT IN STREET PAVEMENT SHALL BE 18" WIDER THAN THE TRENCH WIDTH (9" ON EACH SIDE) AS SHOWN IN THE DETAIL AND SHALL BE MADE BY AN ASPHALT GRINDER OR SAW CUTTING ONLY.
9. ALL TRENCHES SHALL BE BACKFILLED AND TEMPORARILY PAVED OR STEEL PLATED AT THE END OF EACH WORKING DAY.
10. TEMPORARY BITUMINOUS SURFACING (CUTBACK) SHALL BE PLACED AND COMPACTED IMMEDIATELY ABOVE THE TRENCH FOLLOWING BACKFILL COMPACTION AND APPROVAL OF THE CITY ENGINEER. MINIMUM DEPTH OF CUTBACK SHALL BE 2" OR AS SPECIFIED BY THE CITY ENGINEER. CUTBACKS SHALL BE MAINTAINED IN A CONDITION SATISFACTORY TO THE CITY ENGINEER UP UNTIL THE TIME OF FINAL PAVING.
11. FINAL PAVING ABOVE TRENCH SECTION SHALL BE PLACED WITHIN 14 DAYS OF ITS BACKFILL AND COMPACTION. EXTENSION MAY BE GRANTED BY THE CITY ENGINEER DUE TO WEATHER CONDITIONS. DEPTH OF FINAL PAVING SHALL BE 1" GREATER THAN EXISTING PAVEMENT. IN THE EVENT PERMANENT PAVING IS NOT COMPLETED WITHIN 14 DAYS, THE CITY WILL CONSIDER THIS AS INCOMPLETE WORK AND WILL TAKE THE ACTION NECESSARY, IN ACCORDANCE WITH PREVAILING CITY ORDINANCES AND POLICIES.
12. TEMPORARY CUTBACK SHALL BE REMOVED PRIOR TO THE PLACEMENT OF FINAL PAVING. FINAL PAVING SHALL BE PLACED ON UNDISTURBED, PREVIOUSLY INSPECTED AND COMPACTED AGGREGATE BASE OR ONE SACK SLURRY MIX. RECOMPACTION SHALL BE REQUIRED FOR ANY DISTURBED BASE OR SURFACE.
13. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH CITY OF TRACY STANDARD SPECIFICATIONS.
14. FOR A PARALLEL TRENCH LONGER THAN ONE HALF THE LENGTH OF A BLOCK, A SLURRY SEAL SHALL BE REQUIRED ON THE ENTIRE HALF WIDTH OF THE STREET, ON THE TRENCH SIDE, OVER THE ENTIRE LENGTH OF THE BLOCK OR AS DIRECTED BY THE CITY ENGINEER.
15. PROPER TRAFFIC CONTROL AND COVERING OF TRENCHES SHALL BE MAINTAINED IN ACCORDANCE WITH PREVAILING SAFETY AND TRAFFIC CONTROL STANDARDS FOR WORK IN CONSTRUCTION AREAS.
16. NO TRENCH SHALL BE OPENED IN ANY STREET FOR THE PURPOSE OF LAYING PIPES OR CONDUITS MORE THAN SIX HUNDRED (600) FEET AT A TIME.
17. TRENCHING SHALL NOT BE ALLOWED ON ANY STREET WHICH HAS BEEN RECONSTRUCTED OR REPAVED WITHIN THE PAST THREE YEARS NOR ON ANY SLURRY SEALED STREET FOR A PERIOD OF EIGHTEEN (18) MONTHS.
18. 48 HOURS ADVANCE NOTICE SHALL BE REQUIRED FOR ALL CITY INSPECTIONS. CALL THE CITY OF TRACY CONSTRUCTION MANAGEMENT DIVISION AT (209) 831-4600.

CITY OF TRACY

TRACY	REVIEWED BY: [signature]		STANDARD PLAN No. 501	SHEET 3 OF 3
	CITY ENGINEER	RCE 37186	TRENCHING & RESURFACING	
	Res No. 2008-255	DATE:		
	Rev:	Rev:		
	Rev:	Rev:		



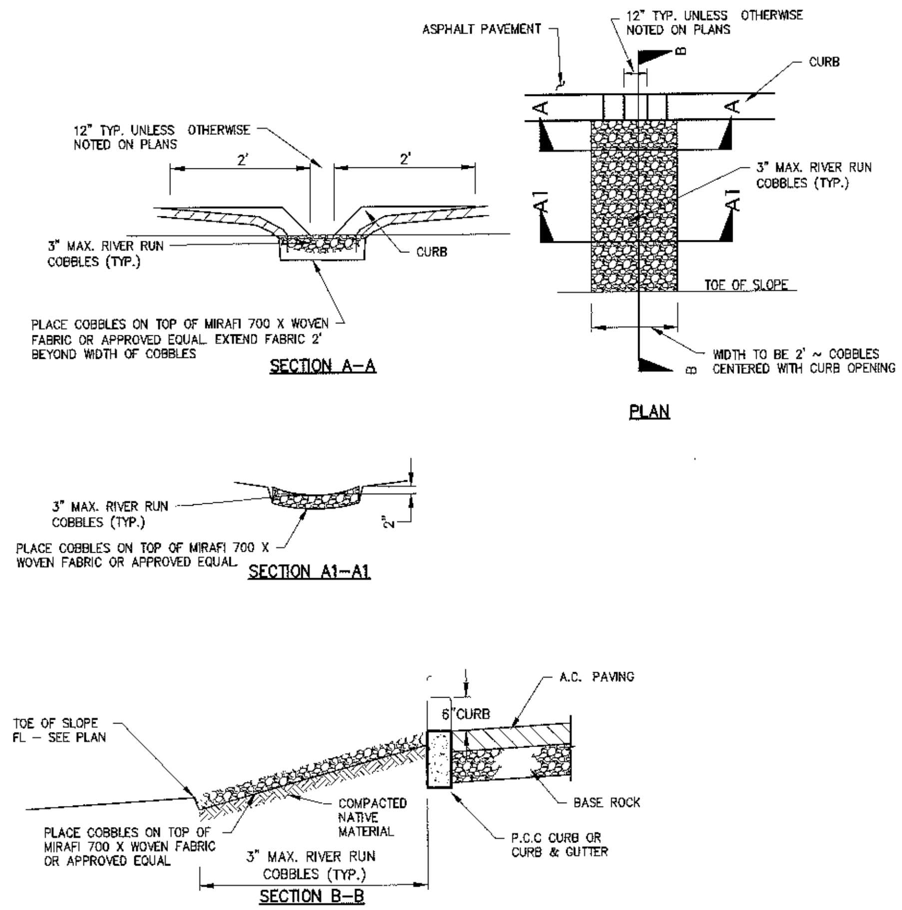
TYPICAL SECTION

NOTES:

1. SEE CITY STANDARD PLAN SP 561 FOR "UTILITY CROSSING TRENCH SECTION"
2. FOR INDUSTRIAL STREET SECTIONS, DEPTH OF SERVICES AT PROPERTY LINE SHALL BE DETERMINED BY INDIVIDUAL SEWER AND STORM DRAIN DESIGN.
3. THE MINIMUM COVER FOR CITY WATER MAINS UP TO AND INCLUDING 10" SHALL BE 36". FOR MAINS LARGER THAN 10", THE MINIMUM COVER SHALL BE 48".

CITY OF TRACY

TRACY	REVIEWED BY: [signature]		STANDARD PLAN No. 562	
	CITY ENGINEER	RCE 37186	UTILITY CROSSINGS	
	Res No. 2008-255	DATE:		
	Rev:	Rev:		
	Rev:	Rev:		



SPILLWAY DETAIL

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(4)

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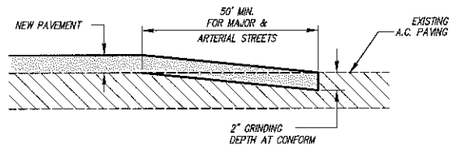

SURFACE TRANSITION

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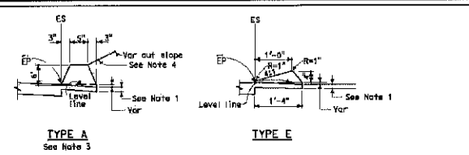
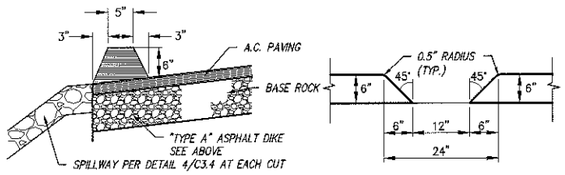
1



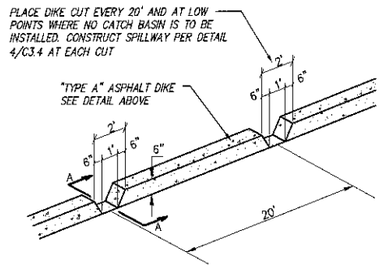
NOTES:

1. For AC shoulders only, extend top layer of AC placed on the shoulder under dike with no joint at the ES.
2. Case B applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
3. Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
4. Fill and compact with excavated material to top of dike.
5. Use Type F dike, where dike is required with guard railing installations. See Standard Plan A77C4 for dike positioning details.



SECTION A–A
N. T. S.

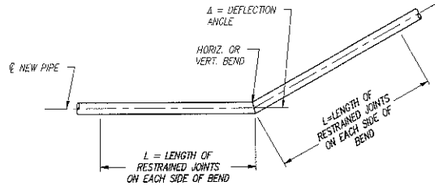
24" WIDE NOTCH
N. T. S.



NOTCHED ASPHALT DIKE

NOT TO SCALE

2



DEGREES	RESTRAINED JOINT LENGTH (FT)						
	8"	12"	14"	16"	18"	20"	24"
0–8	–	–	–	–	–	–	–
8–34	18	30	32	33	34	36	40
34–56	36	60	63	66	69	72	80
56–90	54	90	95	99	104	108	120

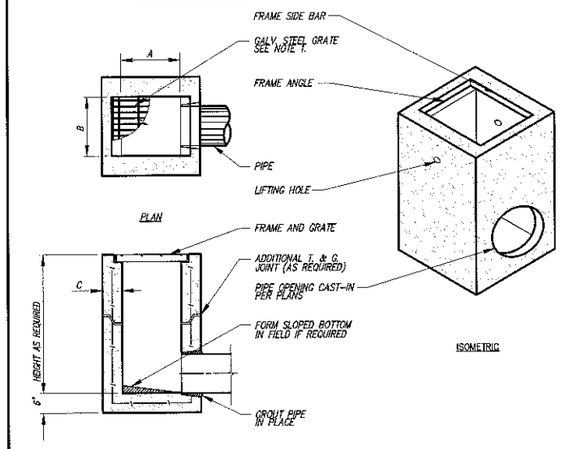
NOTES:

1. RESTRAINED JOINT LENGTHS AT ENDS OF PIPELINES AND ON BOTH SIDES OF ALL BURIED VALVES SHALL BE THE SAME AS FOR 90° ELLS.
2. RESTRAINED JOINT LENGTHS IN ALL DIRECTIONS AT TEES AND CROSSES SHALL BE THE SAME AS FOR 90° ELLS.
3. THESE ARE MINIMUM LENGTHS OF RESTRAINED JOINTS AT ALL BENDS, VALVES AND FITTINGS. LONGER LENGTHS MAY BE SHOWN ON THE PROFILES, THE CONTRACTOR MAY USE LONGER LENGTHS OF RESTRAINED JOINTS.
4. RESTRAINED JOINTS SHALL BE DESIGNED FOR 250 PSI STATIC PRESSURE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF RESTRAINED JOINT DESIGN.
5. RESTRAIN ENTIRE LENGTH OF FIRE HYDRANT LATERALS.

RESTRAINED JOINTS AT HORIZONTAL & VERTICAL PIPE BENDS AND OTHER FITTINGS

NOT TO SCALE

3



TYPICAL SECTION

NOTES :

1. FRAMES AND GRATES SHALL BE RATED FOR H20 TRAFFIC LOADING AND SHALL HAVE A LOCKING DEVICE. ALL GRATES ARE BICYCLE PROOF. OPTIONAL GRATE LOCKING DEVICE AVAILABLE ON REQUEST SEE DRAWING "LOCK" ON PAGE 1–7 OF THE CENTRAL PRECAST CATALOG. CLOSED–MESH GRATES OR CAST IRON FRAME AND GRATES ARE AVAILABLE ON REQUEST.
2. FOR SURFACE AND DISCHARGE OPTIONS AVAILABLE SEE DRAWING NO. "D"–52 PAGE 1–8 AND "E"–00 PAGE 1–5 OF THE CENTRAL PRECAST CATALOG.
3. FRAMES AND GRATES DETAILS SEE PAGES 1–8, 1–9 AND 1–10 OF THE CENTRAL PRECAST CATALOG.
4. WALL THICKNESSES ON ALL D.I.S. CAN BE CHANGED UPON REQUEST. I.E. 18" WIDE D.I.'S REPLACE THE OLD 16" WIDE BOX BK & 1K.

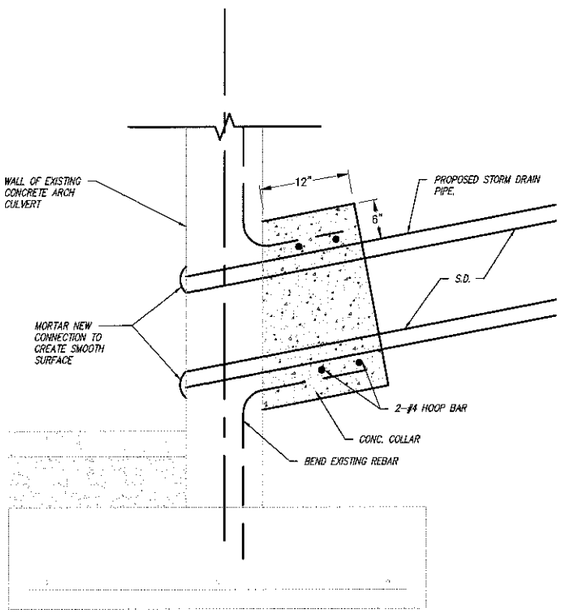
DROP INLET TABLE

MODEL No.	CPC MODEL NAME	A		B		C	
		IN	MM	IN	MM	IN	MM
CP1212	EK	12	300	12	300	4	100
CP1818	CK	18	450	18	450	5	125
CP1824	1K*	18	450	24	600	5	125
CP2424	2K	24	600	24	600	5	125
CP2430	3K	24	600	30	750	5	125
CP3030	5K	30	750	30	750	6	150
CP2436	1L	24	600	36	900	6	150
CP3636	1M	36	900	36	900	6	150
CP2448	3L	24	600	48	1200	6	150
CP3648	3M	36	900	48	1200	6	150
CP4848	1R	48	1200	48	1200	12	300
CP6060	1R	60	1600	60	1600	12	300

DROP INLET
US CONCRETE PRECAST GROUP

N.T.S.

4



CONCRETE COLLAR

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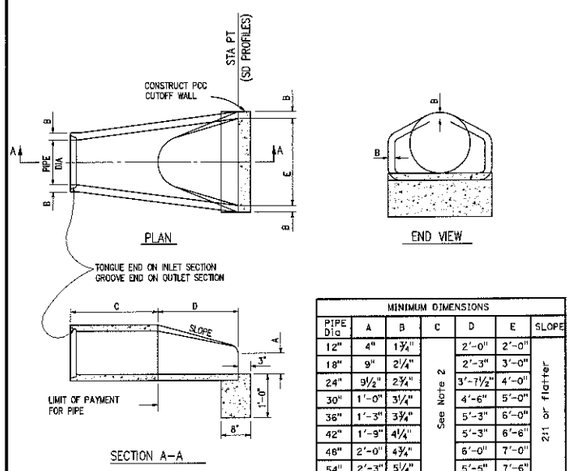
5



MINIMUM DIMENSIONS						
PIPE Dia	A	B	C	D	E	SLOPE
12"	4"	1¾"	See Note 2	2'-0"	2'-0"	21 or flatter
18"	9"	2¼"		2'-3"	3'-0"	
24"	9½"	2¾"		3'-1½"	4'-0"	
30"	1'-0"	3¼"		4'-6"	5'-0"	
36"	1'-3"	3¾"		5'-3"	6'-0"	
42"	1'-9"	4¼"		5'-3"	6'-6"	
48"	2'-0"	4¾"		6'-0"	7'-0"	
54"	2'-3"	5¼"		5'-5"	7'-6"	

PRECAST CONCRETE FLARED END SECTION TYPE A

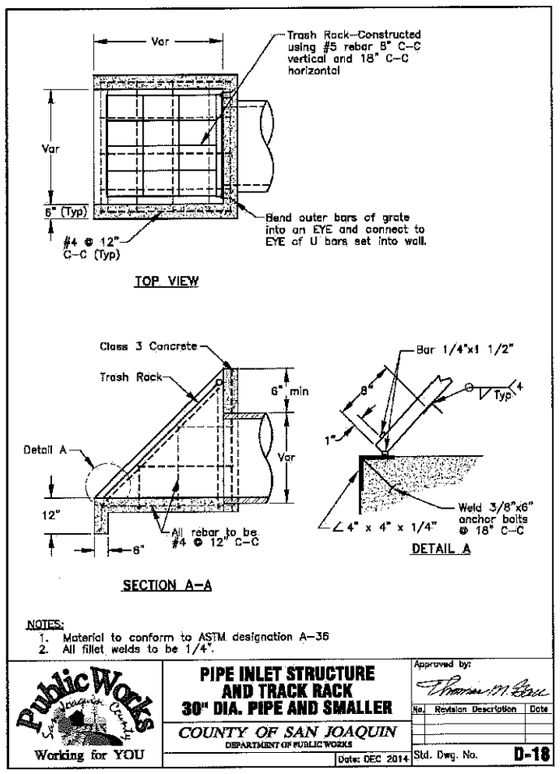
NOTES:

1. CONTRACTOR HAS THE OPTION OF USING EITHER TYPE A OR B PRECAST CONCRETE FLARED END SECTION.
2. "C" DIMENSION VARIES BY MANUFACTURER AND WILL BE PAID FOR AS CONCRETE PIPE.

CONCRETE FLARED END SECTIONS

NOT TO SCALE

6



NOTES:

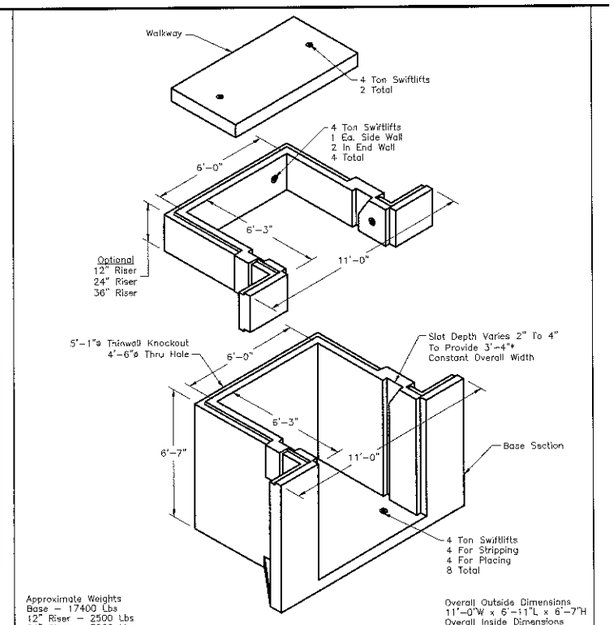
1. Material to conform to ASTM designation A–36
2. All fillet welds to be 1/4".

Public Works Working for YOU	PIPE INLET STRUCTURE AND TRACK RACK 30" DIA. PIPE AND SMALLER	Approved by:
	COUNTY OF SAN JOAQUIN DEPARTMENT OF PUBLIC WORKS	No. Revision Description Date
	Date: DEC 2014	Std. Dwg. No. D-18

HEADWALL

NOT TO SCALE

7



Approximate Weights
Base – 17400 Lbs
12" Riser – 2500 Lbs
24" Riser – 5000 Lbs
36" Riser – 7500 Lbs

Overall Outside Dimensions
11'–0"W x 6'–11"L x 6'–7"H
Overall Inside Dimensions
6'–0"W x 6'–3"L x 6'–0"H

Oldcastle Precast UTILITY VAULT Division Southern California Fontana, San Diego, Santa Paula Phone: 800-626-3680 Fax: 909-428-3737	IID 6636WS	6'-0" x 6'-3" x 6'-0" Water Structure Imperial Irrigation District
	FILE NAME: 07QUEE6636WSID.DWG	
	ISSUE DATE August 2001	
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HEADWALL

NOT TO SCALE

8

CONSTRUCTION NOTES

1. THE SIGNATURE OF THE PESCADERO RECLAMATION DISTRICT 2058 (THE DISTRICT) ON DRAWING CONSTITUTES THE DISTRICT'S APPROVAL OF THE SAME AS TO THE ENGINEERING ASPECTS THEREOF ONLY AND DOES NOT AUTHORIZE, EXPRESSLY, OR IMPLICITLY THE CONSTRUCTION OF ANY ASPECT HEREOF OR THE INTERFERENCE WITH ANY PROPERTY, TO CONVERT, OR THEREOF OF THE DISTRICT. NO SUCH CONSTRUCTION OR INTERFERENCE SHALL OCCUR UNTIL THE DISTRICT HAS OBTAINED, BY SEPARATE AGREEMENT SUCH AGREEMENTS AS THE DISTRICT DEEMS NECESSARY FOR THE PROTECTION OF ITS FACILITIES.
2. ALL CONSTRUCTION WITHIN THE DISTRICT RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH THE APPROVED DRAWINGS AND THE CURRENT EDITION OF THE DISTRICTS STANDARDS AND/OR STANDARD SPECIFICATIONS OF OTHER GOVERNING AGENCIES, AS APPLICABLE.
3. CONSTRUCTION WITHIN THE DISTRICT RIGHT OF WAY WILL NOT BE ALLOWED DURING THE IRRIGATION SEASON (TYPICALLY MARCH 1 TO OCTOBER 31).
4. CONTRACTOR SHALL PROVIDE AN ALTERNATE STORM WATER BYPASS DURING CONSTRUCTION UNLESS DIRECTED OTHERWISE BY THE DISTRICT ENGINEER.
5. WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THE ONLY MATERIAL AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.
6. THE DISTRICT STANDARD DETAILS MAY REQUIRE MODIFICATIONS BASED ON SITE SPECIFIC FIELD CONDITIONS. SUCH MODIFICATIONS SHALL BE REVIEWED AND APPROVED IN WRITING BY THE DISTRICT ENGINEER PRIOR TO CONSTRUCTION.
7. CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
8. CAL-OSHA SAFETY REQUIREMENTS SHALL BE IN EFFECT DURING ALL CONSTRUCTION. SPECIAL SAFETY PRECAUTIONS SHALL BE TAKEN WHEN WORKING IN THE VICINITY OF GAS, OIL, OR ELECTRICAL LINES.
9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH CALIFORNIA GOVERNMENT CODE 4216, AS APPLICABLE. TO OBTAIN A DIG ALERT IDENTIFICATION NUMBER, CALL 811 AT LEAST 2 WORKING DAYS BEFORE DIGGING UNDERGROUND.
10. THE DISTRICT WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USED OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE OBTAINED IN WRITING FROM THE DISTRICT ENGINEER, AND MUST BE APPROVED BY THE PREPARER OF THE PLANS.
11. CONTRACTOR SHALL BE REQUIRED TO HAVE A PRE-CONSTRCUTION CONFERENCE WITH THE DISTRICT ENGINEER AND DISTRICT GENERAL MANAGER, PRIOR TO STARTING ANY WORK WITHIN THE DISTRICT RIGHT OF WAY.
12. BACKFILL AND SUBGRADES SHALL BE COMPACTED TO A MINIMUM 90% RELATIVE COMPACTION PER ASTM D-1557 WITHIN THE DISTRICT RIGHT OF WAY, UNLESS DIRECTED OTHERWISE BY THE DISTRICT ENGINEER.
13. A SET OF APPROVED PLANS SHALL BE ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL EXERCISE DUE CAUTION IN PROTECTING EXISTING FACILITIES. THE CONTRACTOR SHALL GIVE PARTICULAR CARE TO PROTECTING EXISTING PIPELINES DURING CONSTRUCTION. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCH MARKS, REFERENCE POINTS AND STAKES, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT AND/OR ERRORS CAUSED BY THEIR UNNECESSARY LOSS OR DISTURBANCE. ANY DAMAGES TO DISTRICT FACILITIES DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED IN A MANNER APPROVED BY THE DISTRICT ENGINEER AT THE SOLE COST OF THE CONTRACTOR.
15. ANY WORK WITHIN THE DISTRICT RIGHT OF WAY SHALL NOT BE DEEMED COMPLETE UNTIL THE DISTRICT ENGINEER HAS BEEN PROVIDED WITH A SET OF RECORD DRAWINGS IN AUTOCAD 2007 AND HARDCOPY FORMATS.
16. CONTACT THE DISTRICT AT LEAST TWO (2) WORKING DAYS PRIOR TO ANY CONSTRUCTION AND/OR NECESSARY INSPECTIONS. WORK WITHIN THE DISTRICT RIGHT OF WAY SHALL PROCEED IN A CONTINUOUS MANNER ONCE STARTED. THE DISTRICT SHALL BE NOTIFIED OF ANY WORK STOPPAGES. WHENEVER WORK IS TO RESTART, THE DISTRICT SHALL REQUIRE AN ADDITIONAL TWO (2) WORKING DAYS PRIOR TO ALL CONSTRUCTION SCHEDULED ON A HOLIDAY OR WEEKEND. PESCADERO RECLAMATION DISTRICT 2058 PHONE NUMBER: (209) 835-5893

PESCADERO RECLAMATION DISTRICT 2058			GENERAL NOTES (1)	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 0-02
REVISIONS:	SECTION:	DRAWING NAME: 0-02.DWG		

CONSTRUCTION NOTES

17. UNLESS OTHERWISE STATED, ALL STATIONS INDICATED ON THE PLANS ARE IN REFERENCE TO THE CENTERLINE OF THE PROPOSED STRUCTURE.
18. THE DISTRICT SHALL AT ALL TIMES HAVE ACCESS TO THE WORK WHEREVER IT IS IN PREPARATION AND PROGRESS.
19. IT IS INTENDED THAT THESE PLANS AND SPECIFICATIONS REQUIRE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE DISTRICT IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES, WHICH MAY EXIST IN THE PLANS OR SPECIFICATIONS. THE DISTRICT'S INTERPRETATION OR CORRECTION THEREOF SHALL BE CONCLUSIVE. THE DISTRICT WILL HAVE AUTHORITY TO REJECT WORK WHICH DOES NOT CONFORM TO THE PLANS AND SPECIFICATIONS.
20. THE CONTRACTOR SHALL NOT LEAVE "IN USE" DISTRICT PROJECTS INCOMPLETE FOR MORE THAN TWO (2) WEEKS. WHEN CONDITIONS REQUIRE, AND DETERMINED SOLELY BY THE DISTRICT, THE CONTRACTOR SHALL PROVIDE A TEMPORARY DIVERSION DITCH TO PROVIDE FOR IRRIGATION WATER DELIVERY OR STORM WATER REMOVAL.
21. ASTM C-361 CLASS 3 RUBBER GASKETED REINFORCED CONCRETE PIPE (RGRCP) WITH APPROPRIATE WALL THICKNESS FOR THE PRESSURE AND TRAFFIC LOADS REQUIRED FOR DISTRICT PIPELINES. CONTRACTOR SHALL SUBMIT FACTORY TEST DATA TO THE DISTRICT ENGINEER, VERIFYING THAT PIPE JOINTS CONFORM TO NO LEAKAGE AT HYDROSTATIC PRESSURES UP TO TWENTY-FIVE (25) FEET. FIELD TESTS, IF REQUIRED, SHALL BE PREFORMED IN THE FREESNCE OF THE DISTRICT ENGINEER.
22. POLYVINYL CHLORIDE (PVC) PIPE SHALL BE 100 PSI PIP WITHIN LIMITS OF THE DISTRICT RIGHT OF WAY, OR AS DIRECTED BY THE DISTRICT ENGINSER.
23. 30 INCHES MINIMUM COVER SHALL BE PROVIDED OVER ALL PIPELINES.

PESCADERO RECLAMATION DISTRICT 2058			GENERAL NOTES (2)	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 0-02
REVISIONS:	SECTION:	DRAWING NAME: 0-02.DWG		

1. ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY EXISTING ENCROACHMENTS OR PROPOSED IMPROVEMENTS WITHIN THE CURRENT OR REQUESTED DISTRICT EASEMENT.
2. THE DISTRICT MAY REQUIRE THAT IT'S EASEMENTS, RIGHTS OF WAY, AND FEE TITLE PROPERTY BE FENCED TO THE DISTRICT STANDARDS. THE NEED FOR FENCING WILL BE EVALUATED ON A CASE BY CASE BASIS. THE COST OF FENCING SHALL BE BORNE BY THE DEVELOPER/LANDOWNER.
3. ACCESS GATES AND FENCING THAT CROSSES THE DISTRICT EASEMENT THAT DOES NOT IMPACT DISTRICT OPERATIONS AND MAINTENANCE AND ARE NOT BURDENSOME ON THE DISTRICT MAY BE PERMITTED UNDER AN ENCROACHMENT AGREEMENT UPON APPROVAL BY THE DISTRICT.
4. EXISTING DISTRICT FACILITIES WITHIN A PUBLIC ROAD RIGHT OF WAY SHALL BE RELOCATED INTO A RIGHT OF WAY EASEMENT DEDICATED SOLELY TO THE DISTRICT AT THE COST OF THE DEVELOPER.
5. STANDARD EASEMENT WIDTHS FOR DISTRICT FACILITIES SHALL BE:

MAIN CANALS	100 FEET	CENTERED ON CANAL
CANALS/DRAINS	60 FEET	CENTERED ON CANAL/DRAIN
PIPELINES	30 FEET	CENTERED ON PIPELINE
PIPELINES ADJACENT TO ROADWAYS	20 FEET	
PIPELINES ADJACENT TO P.U.E.	15 FEET	
PUMP SITES	40 FEET	SQUARE CENTERED ON PUMP

6. STANDARD ROADWAY WIDTHS SHALL BE 16 FEET MINIMUM.
7. EASEMENT WIDTHS FOR JOINT PROJECTS SHALL MEET THE ABOVE MINIMUM EASEMENT WIDTHS PULSE ANY ADDITIONAL EASEMENT WIDTH THAT MAY BE REQUIRED BASED ON SPECIFIC PROJECT USES OR AS APPROVED BY THE DISTRICT.
8. IF AN EXISTING DISTRICT FACILITY IS NOT CENTERED ON THE PROPERTY BOUNDARY BETWEEN TWO (2) PROPERTIES, THE DISTRICT MAY REQUIRE AN EASEMENT WIDTH BASED ON THE DISTANCE TO THE CENTERLINE OF THE DISTRICT FACILITY.

PESCADERO RECLAMATION DISTRICT 2058			EASEMENTS AND ENCROACHMENTS	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 0-03
REVISIONS:	SECTION:	DRAWING NAME: 0-03.DWG		

CAST-IN-PLACE NOTES

1. UNLESS DIRECTED OTHERWISE BY DISTRICT ENGINEER, MINIMUM CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 3,000 PSI. CEMENT SHALL BE ASTM TYPE II PORTLAND CEMENT AND BE FREE OF LUMPS AND PARTIALLY SET MASSES, AND PROPORTIONED TO INCLUDE NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE AND HAVE A MAXIMUM WATER - CEMENT RATIO OF 0.60. WATER SHALL BE FREE FROM ACID, ALKALI, OILS OR ORGANIC MATTER. AGGREGATE SHALL BE CLEAN, HARD, STRONG AND DURABLE, AND FREE FROM DIRT AND OTHER SUBSTANCES DELETERIOUS TO CONCRETE. THE FINE AND COARSE AGGREGATES SHALL BE A WELL GRADED MIX APPROVED BY DISTRICT ENGINEER. THE MAXIMUM SIZE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-33.
2. CONSISTENCY OF THE CONCRETE SHALL ALLOW IT TO BE WORKED INTO PLACE WITHOUT SEGREGATION. SLUMP SHALL BE 4 INCHES MAXIMUM. FORMS SHALL BE BRACED AND/OR TIED TOGETHER SO AS TO MAINTAIN POSITION AND SHAPE AND BE SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OF MORTAR.
3. ALL VERTICAL CONCRETE SUBGRADES SHALL BE POURED AGAINST FORMS IN ALL CASES. CONCRETE SHALL NOT BE DROPPED MORE THAN 5 FEET VERTICALLY UNLESS SUITABLE EQUIPMENT IS USED TO PREVENT SEGREGATION AND SHALL BE VIBRATED IN 18 INCH, HORIZONTAL LIFTS. CONCRETE SHALL NOT BE MOVED DISTANCES OVER 5 FEET HORIZONTALLY USING A VIBRATOR. CONSOLIDATION OF CONCRETE SHALL BE ACCOMPLISHED BY MEANS OF INTERNAL TYPE MECHANICAL VIBRATORS, OR AS PRE-APPROVED BY DISTRICT ENGINEER EQUIVALENT METHOD.
4. CONSTRUCTION JOINTS SHALL BE PLACED AS SHOWN ON THE PLANS OR AS PRE-APPROVED BY DISTRICT ENGINEER ONLY. ENTIRE SURFACE UNDER WALL TO BE ROUGHENED WHILE WET, TO ¼ INCH MINIMUM AMPLITUDE/DEPTH. JOINTS SHALL BE THOROUGHLY CLEANED AND ALL LAITANCE REMOVED BEFORE THE PLACEMENT OF NEW CONCRETE
5. ALL CAST-IN-PLACE CONCRETE STRUCTURE SHALL BE FORMED INSIDE AND OUT AND CONCRETE VIBRATED SUFFICIENTLY TO PROVIDE FOR SMOOTH SURFACED WALLS/FLOORS WITHOUT VOIDS AND HONEYCOMBS.
6. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH STRUCTURAL DETAILS AND NOTES.
7. GUIDELINES FOR CONCRETING IN HOT AND COLD WEATHER AS SET FORTH IN NRCS CONSTRUCTION SPECIFICATION 901 SHALL BE FOLLOWED.
8. ALL SLABS SHALL BE SLOPED TO ALLOW DRAINAGE OF RUNOFF WATER TO PREVENT PONDING.
9. CONCRETE SHALL BE PREVENTED FROM PREMATURE DRYING FOR A CURING PERIOD OF AT LEAST SEVEN DAYS AFTER IT IS PLACED. EXPOSED SURFACES SHALL BE KEPT CONTINUOUSLY MOIST FOR THE ENTIRE PERIOD IN LIEU OF WATER CURING, THE CONCRETE SHALL BE PROTECTED BY SPRAYING WITH A CURING COMPOUND PRE-APPROVED BY DISTRICT ENGINEER. ALL SURFACES SHALL BE KEPT MOIST UNTIL THE COMPOUND IS APPLIED.

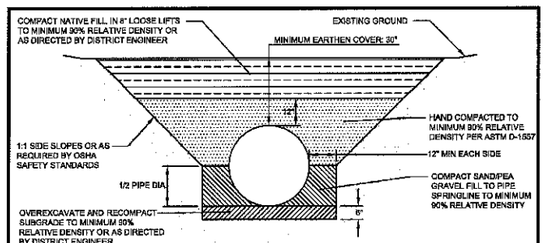
REINFORCING STEEL NOTES

1. ALL REBAR SHALL BE GRADE 60.
2. SPLICES AND HOOKS MADE IN REINFORCING STEEL SHALL BE STAGGERED AND LAPPED IN ACCORDANCE WITH DISTRICT DETAIL 1-02: STEEL REINFORCING.
3. SLAB REINFORCING IS TO BE LOCATED IN THE CENTER OF THE SLAB, UNLESS NOTED OTHERWISE.
4. ALL BARS SHALL BE FREE OF EXCESSIVE RUST, MUD, OIL , AND GREARE.

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO COMMENCING WORK OR FABRICATION. IF ANY CONDITIONS EXIST NOT AS SHOWN ON THE DRAWINGS DISTRICT ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
2. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER SCALED DRAWINGS. CONTRACTOR SHALL VERIFY DIMENSIONS AND MEASUREMENTS AT SITE.
3. ALL WORK SHALL BE PERFORMED USING MATERIALS AND METHODS IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE INTERNATIONAL BUILDING CODE (IBC) 2009 EDITION, 2007 CALIFORNIA BUILDING CODE (CBC), LOCAL CODES AND ORDINANCES. REPORT ALL DISCREPANCIES TO DISTRICT ENGINEER IMMEDIATELY.
4. ANY CHANGES TO THE APPROVED SET OF PLANS WITHOUT NOTIFYING DISTRICT ENGINEER PRIOR TO SUCH CHANGES ABSOLVES SAID ENGINEER FROM ANY AND ALL RESPONSIBILITY WITH RESPECT TO THE LIABILITY DAMAGES OR EXTRA WORK RESULTING FROM SAID CHANGES.
5. BUILDING PERMITS, IF REQUIRED, MUST BE OBTAINED BEFORE STARTING CONSTRUCTION.
6. ALL STRUCTURE SUBGRADES AND STEEL REINFORCEMENT SHALL BE INSPECTED AND APPROVED BY DISTRICT ENGINEER PRIOR TO CONCRETE PLACEMENT OR BACKFILL. BACKFILL SHALL NOT OCCUR UNTIL 7 DAYS AFTER CONCRETE PLACEMENT.

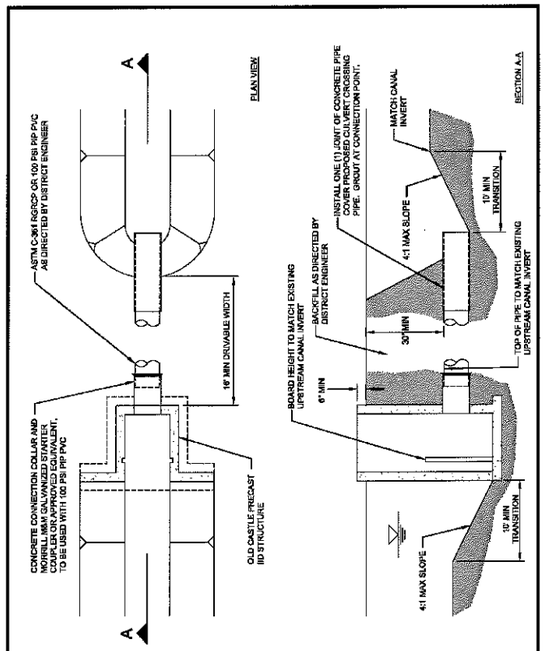
PESCADERO RECLAMATION DISTRICT 2058			CONCRETE NOTES	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 1-01
REVISIONS:	SECTION:	DRAWING NAME: 1-01.DWG		



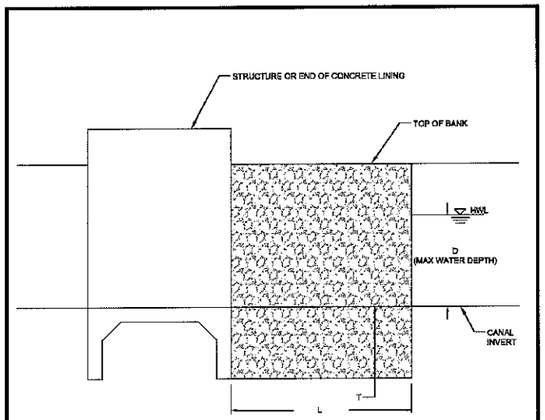
CONSTRUCTION NOTES:

1. BACKFILL AND SUBGRADES SHALL BE COMPACTED TO MINIMUM 90% RELATIVE DENSITY PER ASTM D-1557 AND SHALL BE MANUALLY COMPACTED A MINIMUM DEPTH OF 12 INCHES OVER TOP OF PIPE OR AS DIRECTED BY DISTRICT ENGINEER. THE MAXIMUM LAYER THICKNESS SHALL BE 8 INCHES BEFORE COMPACTION.
2. BACKFILL SHALL BE SELECT NATIVE MATERIAL, CONTAIN NO MATERIAL OVER 3 INCHES IN DIAMETER OR LENGTH, AND SHALL BE COMPACTED AGAINST UNDISTURBED EARTH. FILL MATERIAL SHALL CONTAIN NO SOD, BRUSH, ROOTS, OR OTHER ORGANIC OR OTHERWISE UNSUITABLE MATERIAL.
3. PIPELINE SHALL BE INSTALLED ACCORDING TO MANUFACTURED INSTRUCTIONS AND SPECIFICATIONS. MINIMUM DEPTH OF COVER SHALL BE 30 INCHES OR AS DIRECTED BY THE DISTRICT ENGINEER.
4. COMPACTION TESTS SHALL BE AT THE LANDOWNER OR DEVELOPER EXPENSE. ANY RETESTS SHALL BE PAID BY THE CONTRACTOR. FREQUENCY AND LOCATION OF THE TESTS SHALL BE AS DIRECTED BY DISTRICT ENGINEER.
5. DEWATERING DUE TO HIGH GROUNDWATER OR CANAL SEEPAGE MAY BE REQUIRED. DEWATERING METHODS SHALL BE PRE-APPROVED BY DISTRICT ENGINEER PRIOR TO COMMENCEMENT OF DEWATERING.
6. TRENCH WIDTHS SHALL BE AS SHOWN UNLESS THE PIPELINE SIZE IS 4 INCHES OR SMALLER, WHERE THE TRENCH SHALL HAVE A 12 INCH MINIMUM WIDTH.
7. BEDDING, IF REQUIRED, SHALL BE MINIMUM 4 INCHES AS DIRECTED BY DISTRICT ENGINEER. BEDDING SHALL CONFORM TO THE SPECIFICATIONS BELOW. SOIL TYPES SHALL BE AS DETERMINED BY DISTRICT ENGINEER.
   - A. ON SANDY SOIL (BEDDING AND HAUNCHING): NATIVE MATERIAL, IF SUITABLE OR SAND AS DIRECTED BY DISTRICT ENGINEER
   - B. ON CLAY SOIL (BEDDING & HAUNCHING): SAND OR APPROVED NATIVE MATERIAL AS PRE-APPROVED BY DISTRICT ENGINEER SHALL BE PLACED IN 6 INCH LIFTS
8. WATER PACKING OR JETTING SHALL ONLY BE USED ON SOILS PRE-APPROVED BY DISTRICT ENGINEER. WHEN WATER PACKING OR JETTING IS USED, THE AMOUNT OF WATER SHALL BE CONTROLLED TO INSURE THAT POOLING OF EXCESS WATER DOES NOT OCCUR. THE WETTED FILL MUST BE ALLOWED TO REACH OPTIMUM MOISTURE AND THEN MECHANICALLY COMPACTED TO MEET MINIMUM 90% RELATIVE DENSITY PER ASTM D-1557 BEFORE ADDITIONAL BACKFILLING IS DONE. CARE MUST BE EXERCISED TO PREVENT PIPE FLOTATION DURING WATER PACKING OR JETTING. MEASURE MUST BE PRE-APPROVED BY DISTRICT ENGINEER. THIS ITEM DOES NOT APPLY TO PVC OR HDPE PIPELINES.

PESCADERO RECLAMATION DISTRICT 2058			TYPICAL PIPE TRENCH	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 1-20
REVISIONS:	SECTION:	DRAWING NAME: 1-20.DWG		



PESCADERO RECLAMATION DISTRICT 2058			DRIVEWAY CROSSING	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 2-08
REVISIONS:	SECTION:	DRAWING NAME: 2-08.DWG		



CONSTRUCTION NOTES

1. RIP RAP TRANSITION SHALL BE CONSTRUCTED UPSTREAM AND DOWN STREAM OF STRUCTURE AND CONCRETE LINING TRANSITIONS IN EARTHEN CANALS, AS WELL AS AREAS DISTURBED DURING CONSTRUCTION, OR AS DIRECTED BY DISTRICT ENGINEER.
2. RIP RAP GRADATION SHALL BE 12 INCH TO 18 INCH ANGULAR ROCK.
3. RIP RAP THICKNESS "T" SHALL BE 1.5 x MAX STONE SIZE.
4. RIP RAP TRANSITION LENGTH "L" SHALL BE 4 x MAX WATER DEPTH (5 FEET MINIMUM), OR AS DIRECTED BY DISTRICT ENGINEER.
5. TOP OF RIP RAP SLOPE PROTECTION SHALL BE PLACED AT LEAST 12 INCHES ABOVE HIGH WATER LEVEL.

PESCADERO RECLAMATION DISTRICT 2058			RIP RAP SLOP PROTECTION	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 2-09
REVISIONS:	SECTION:	DRAWING NAME: 2-09.DWG		

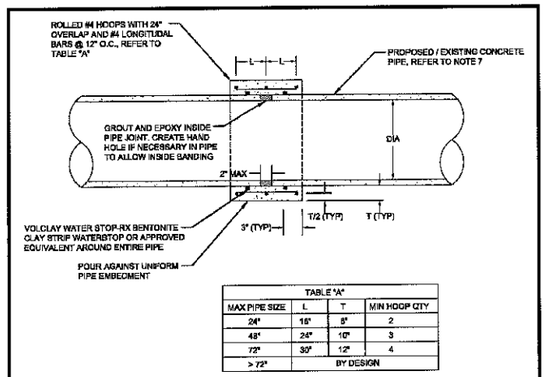


TABLE "A"			
MAX PIPE SIZE	L	T	MIN HOOP QTY
24"	15"	5"	2
48"	24"	10"	3
72"	30"	12"	4
> 72"	BY DESIGN		

CONSTRUCTION NOTES

1. FOR COLLARS WITH PIPELINE DIAMETERS THAT DIFFER IN EXCESS OF 3 INCHES, A MANHOLE OR OTHER TRANSITION STRUCTURE IS REQUIRED, AS DIRECTED BY DISTRICT ENGINEER.
2. MINIMUM CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 3,000 PSI, AND SHALL CONFORM TO DISTRICT DETAIL 1-01 CONCRETE NOTES.
3. FORMS USED TO POUR CONCRETE COLLAR SHALL BE REMOVED PRIOR TO BACKFILL.
4. DIAMETER OF ROLLED HOOPS SHALL BE: PIPE DIA + (2 x WALL THICKNESS) + T.
5. CONCRETE SHALL BE VIBRATED AROUND PIPE JOINT DURING PLACEMENT.
6. JOINT SHALL BE WATER TIGHT.
7. CONCRETE PIPE SHALL BE CLEANED AND TREATED WITH PRE-APPROVED BY DISTRICT ENGINEER CONCRETE BONDING AGENT PRIOR TO CONCRETE PLACEMENT.
8. THIS STANDARD ONLY APPLIES TO CONCRETE PIPES BEING CONNECTED WITH A CONCRETE COLLAR THAT ARE LEVEL OR AT SAME SLOPE. IT SHALL NOT APPLY TO PIPES WITH DEFLECTIONS AT THE CONNECTION POINT.
9. IF REMOVAL OF AN EXISTING STRUCTURE OR PIPE IS SPECIFIED, REMOVAL SHALL BE ACCOMPLISHED BY SAWCUTTING, OR OTHER PRE-APPROVED METHOD, WITH DISTRICT ENGINEER ON SITE DURING SAWCUTTING.
10. PREPARE SURFACE OF EXISTING PIPES BY WIRE BRUSHING, WATER BLASTING OR SAND BLASTING.

PESCADERO RECLAMATION DISTRICT 2058			REINFORCED CONCRETE COLLAR (RCP TO RCP)	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 5-04
REVISIONS:	SECTION:	DRAWING NAME: 5-04.DWG		

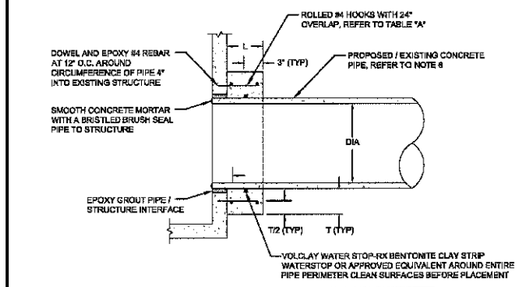
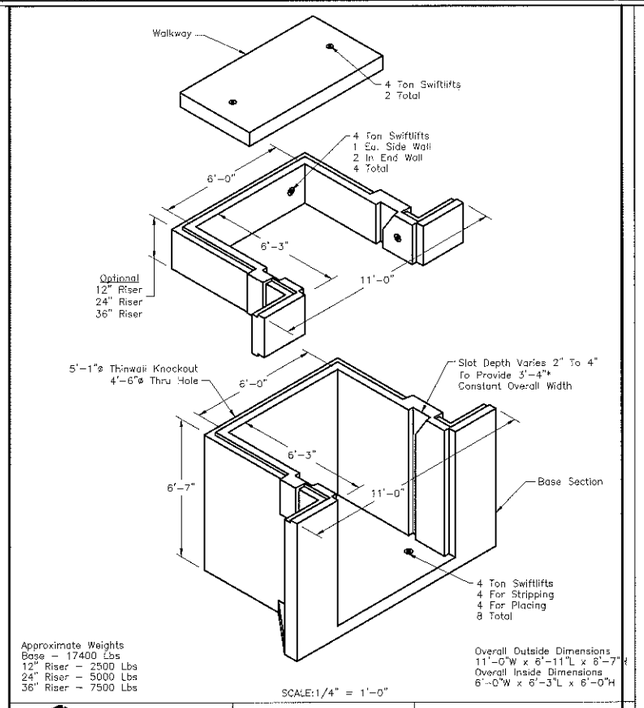


TABLE "A"			
MAX PIPE SIZE	L	T	MIN HOOP QTY
24"	15"	8"	2
48"	24"	10"	3
72"	30"	12"	4
> 72"	BY DESIGN		

CONSTRUCTION NOTES

1. MINIMUM CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 3,000 PSI, AND SHALL CONFORM TO DISTRICT DETAIL 1-01 CONCRETE NOTES.
2. FORMS USED TO POUR CONCRETE COLLAR SHALL BE REMOVED PRIOR TO BACKFILL.
3. DIAMETER OF ROLLED HOOPS SHALL BE: PIPE DIA + (2 x WALL THICKNESS) + T.
4. CONCRETE SHALL BE VIBRATED AROUND PIPE JOINTS DURING PLACEMENT.
5. JOINT SHALL BE WATER TIGHT.
6. CONCRETE PIPE SHALL BE CLEANED AND TREATED WITH PRE-APPROVED BY DISTRICT ENGINEER CONCRETE BONDING AGENT PRIOR TO CONCRETE PLACEMENT.
7. THIS STANDARD ONLY APPLIES TO CONCRETE PIPS BEING CONNECTED WITH A CONCRETE COLLAR THAT ARE LEVEL OR AT THE SAME SLOPE. IT SHALL NOT APPLY TO PIPES WITH DEFLECTIONS AT THE CONNECTION POINT.
8. IF REMOVAL OF AN EXISTING STRUCTURE OR PIPE IS SPECIFIED, REMOVAL SHALL BE ACCOMPLISHED BY SAWCUTTING, OR OTHER PRE-APPOVED METHOD, WITH THE ENGINEER ON SITE DURING SAWCUTTING.
9. PREPARE SURFACE OF EXISTING PIPES BY WIRE BRUSHING, WATER BLASTING, OR SAND BLASTING.

PESCADERO RECLAMATION DISTRICT 2058			REINFORCED CONCRETE COLLAR (RCP TO STRUCTURE)	
DRAWN BY:	DATE:	SCALE: NTS	ADOPTED BY THE DISTRICT:	DRAWING NO. 5-05
REVISIONS:	SECTION:	DRAWING NAME: 5-06.DWG		



Oldcastle Precast
UTILITY VAULT Division
Southern California
Fontana, San Diego, Santa Paula
Phone: 800-626-3860 Fax: 909-428-3737

IID 6636WS
FILE NAME: O7OUEE6636WSID.DWG
ISSUE DATE: August 2001
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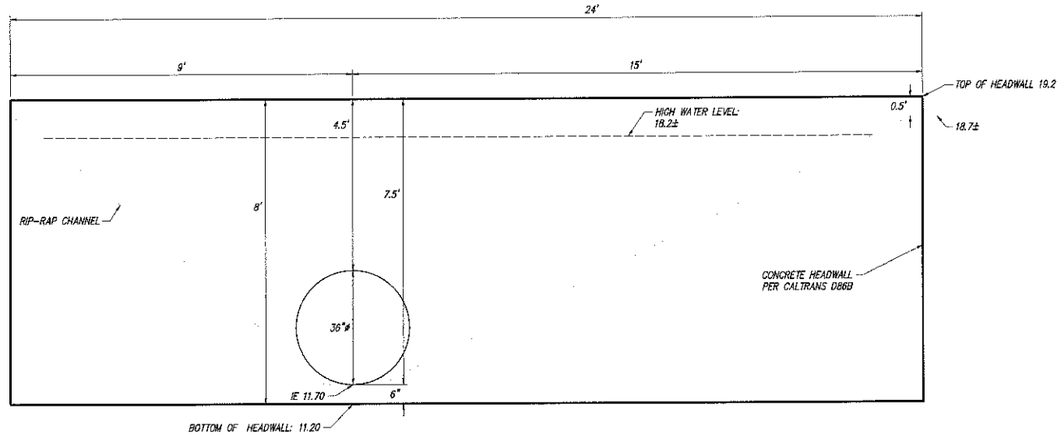
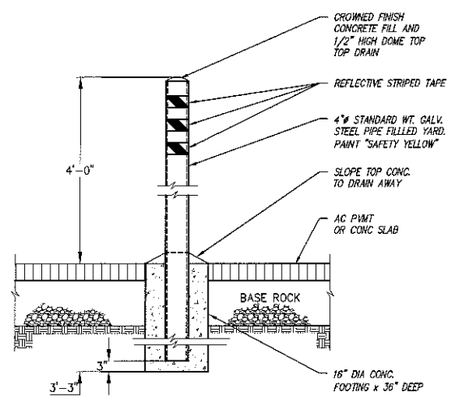
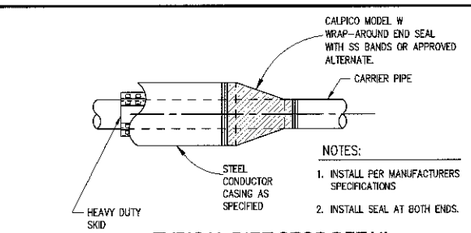
6'-0" x 6'-3" x 6'-0"
Water Structure
Imperial Irrigation District



ARBOR WEST HEADWALL DETAIL
NOT TO SCALE
1A



PIPE BOLLARD DETAIL
NOT TO SCALE
2



TYPICAL DIRT STOP DETAIL
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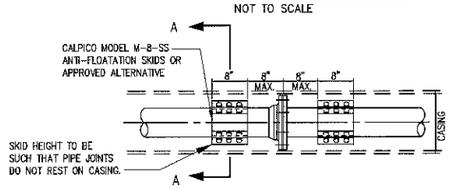
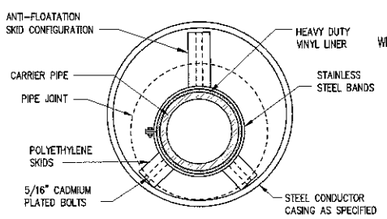


TYPICAL PIPE JOINT AND INSULATOR
NOT TO SCALE

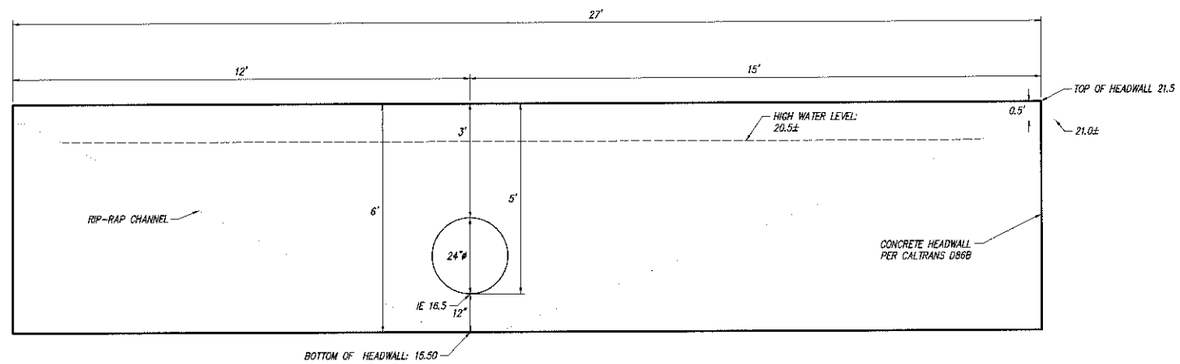


WELDED STEEL CASING REQUIREMENTS

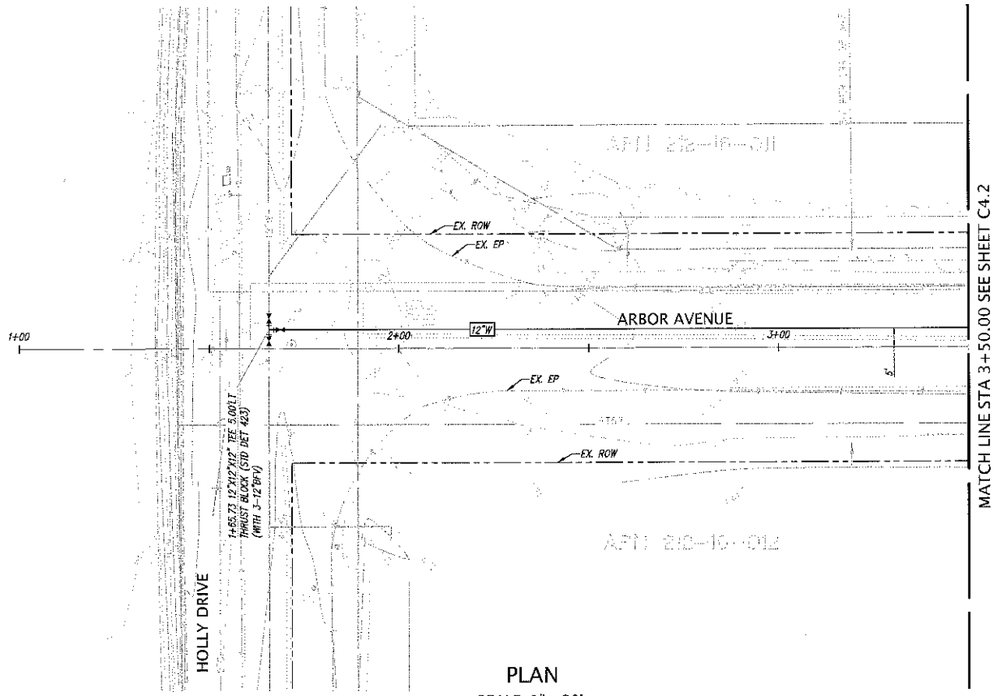
PIPE SIZE	12"
REQUIRED CASING SIZE	24"
MINIMUM WALL THICKNESS	0.375"
MINIMUM YIELD STRENGTH	35,000 PSI

SECTION "A-A"
NOT TO SCALE

UTILITY ENCASEMENT DETAIL
NOT TO SCALE
3

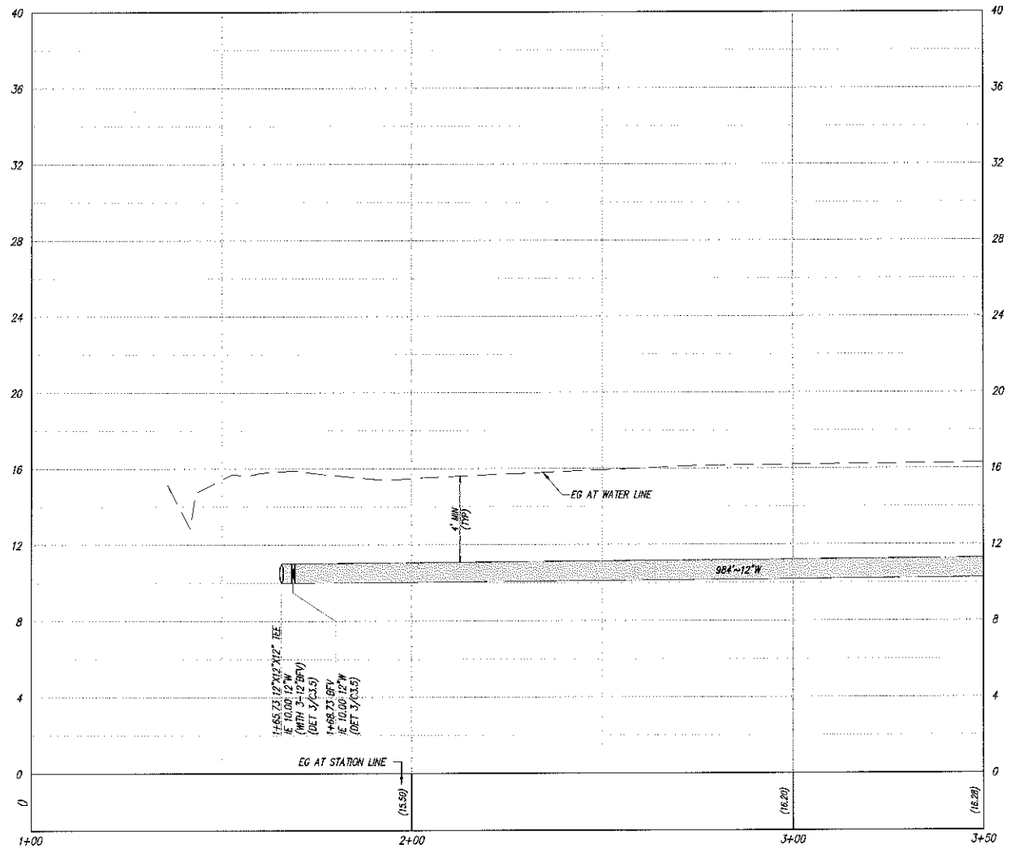


ARBOR EAST HEADWALL DETAIL
NOT TO SCALE
1B



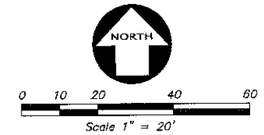
PLAN

SCALE: 1"= 20'

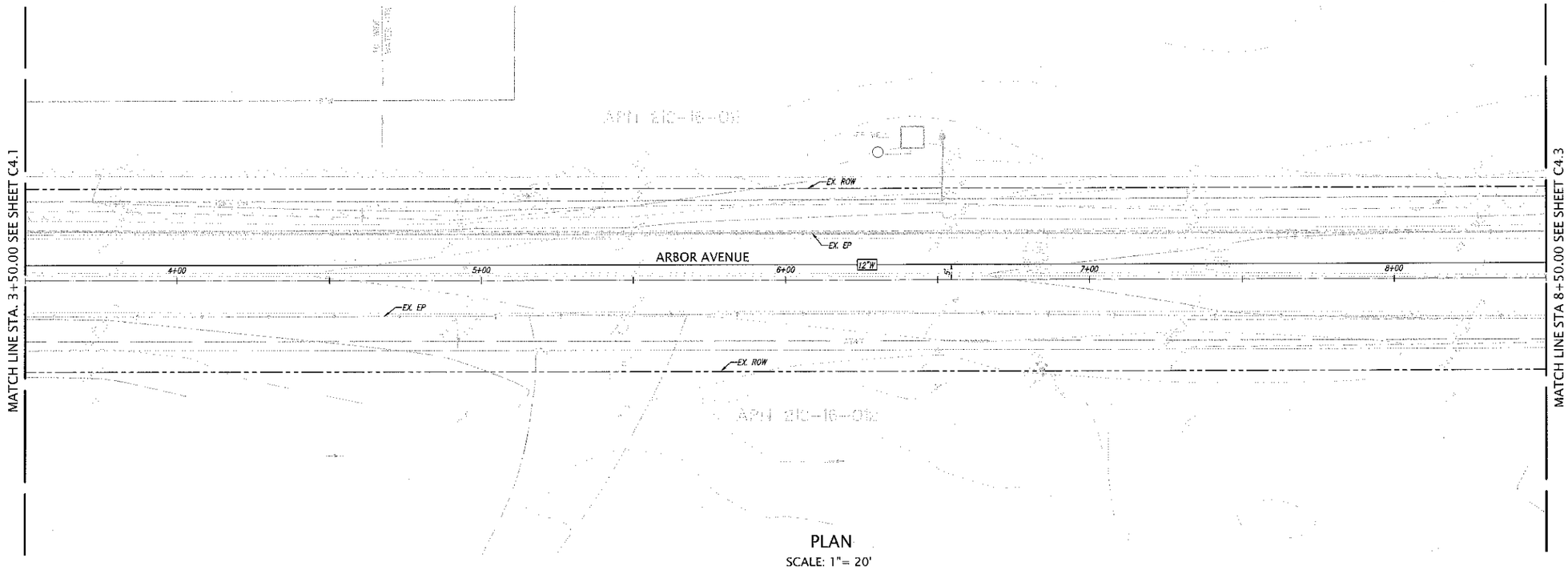


PROFILE

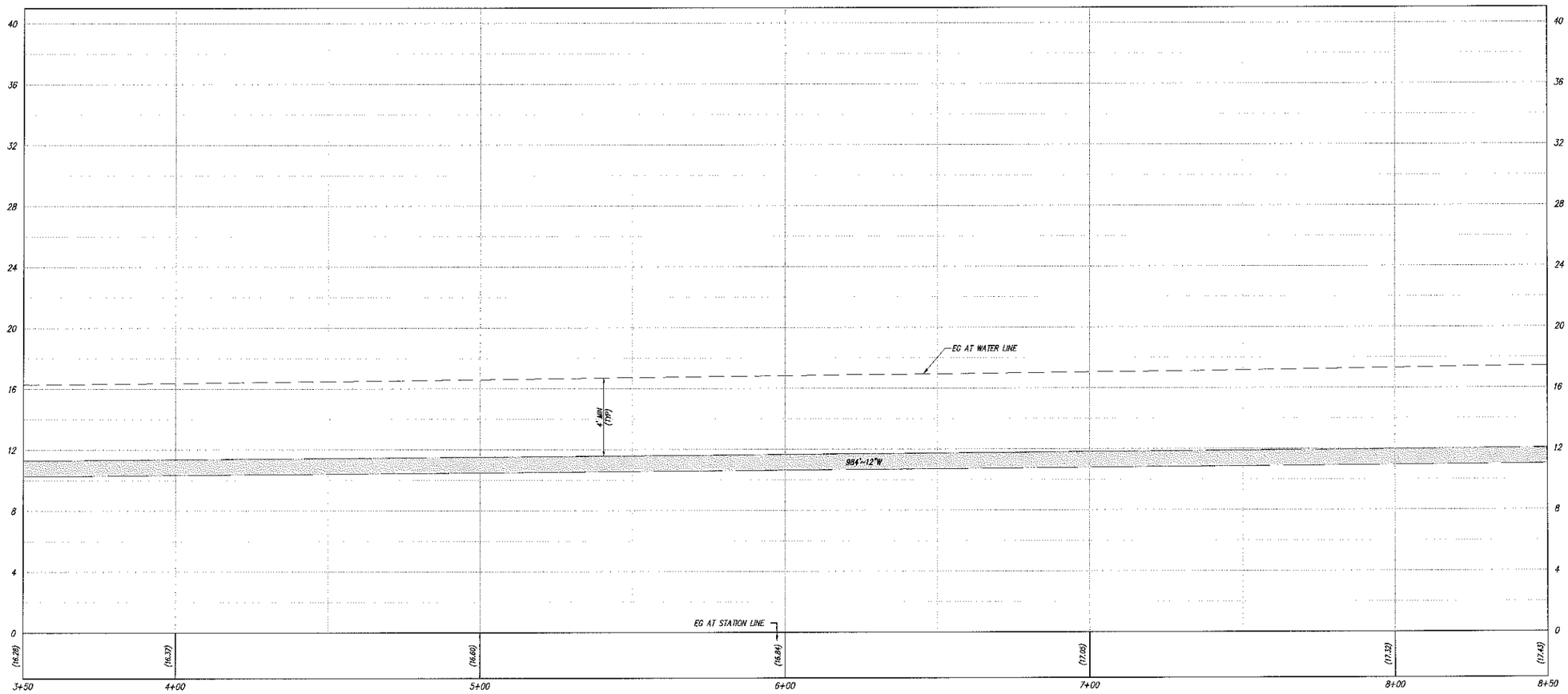
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'



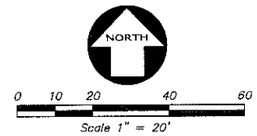
NOTE:
BUTTERFLY VALVE OPERATOR SHALL BE TOWARD NEAREST PROPERTY LINE. (DESIGN STD 6.08A)

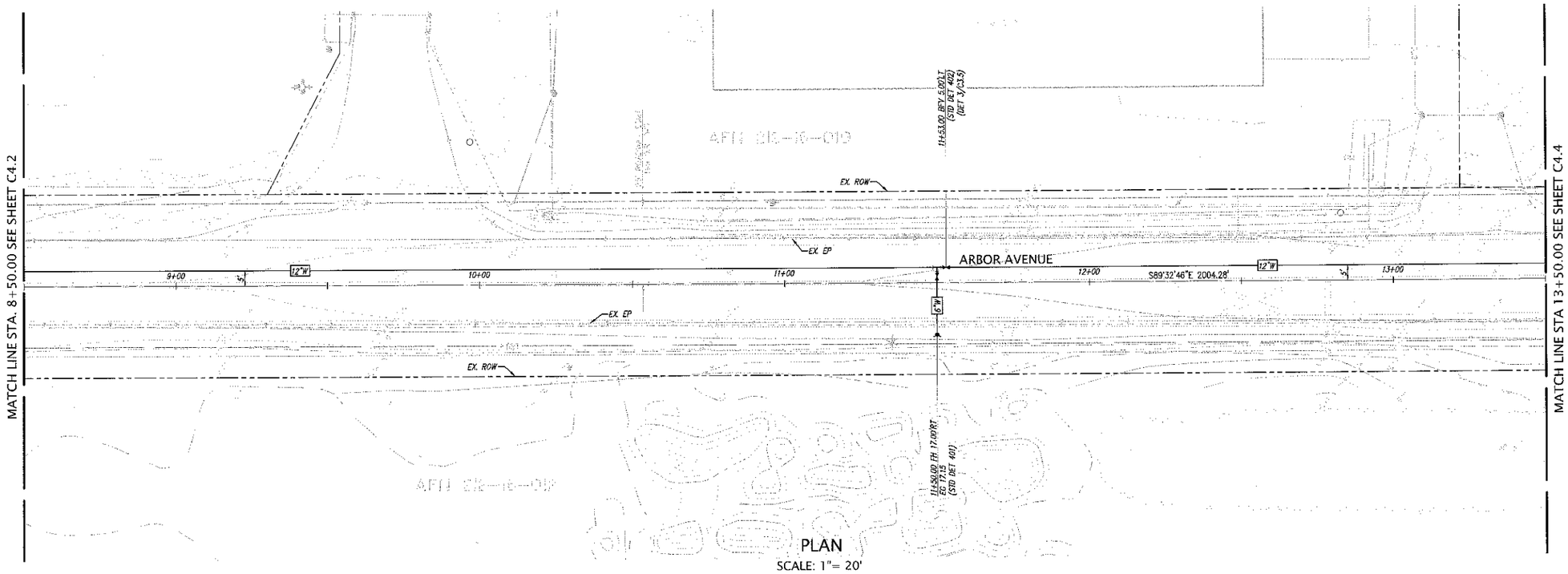


PLAN
SCALE: 1"= 20'

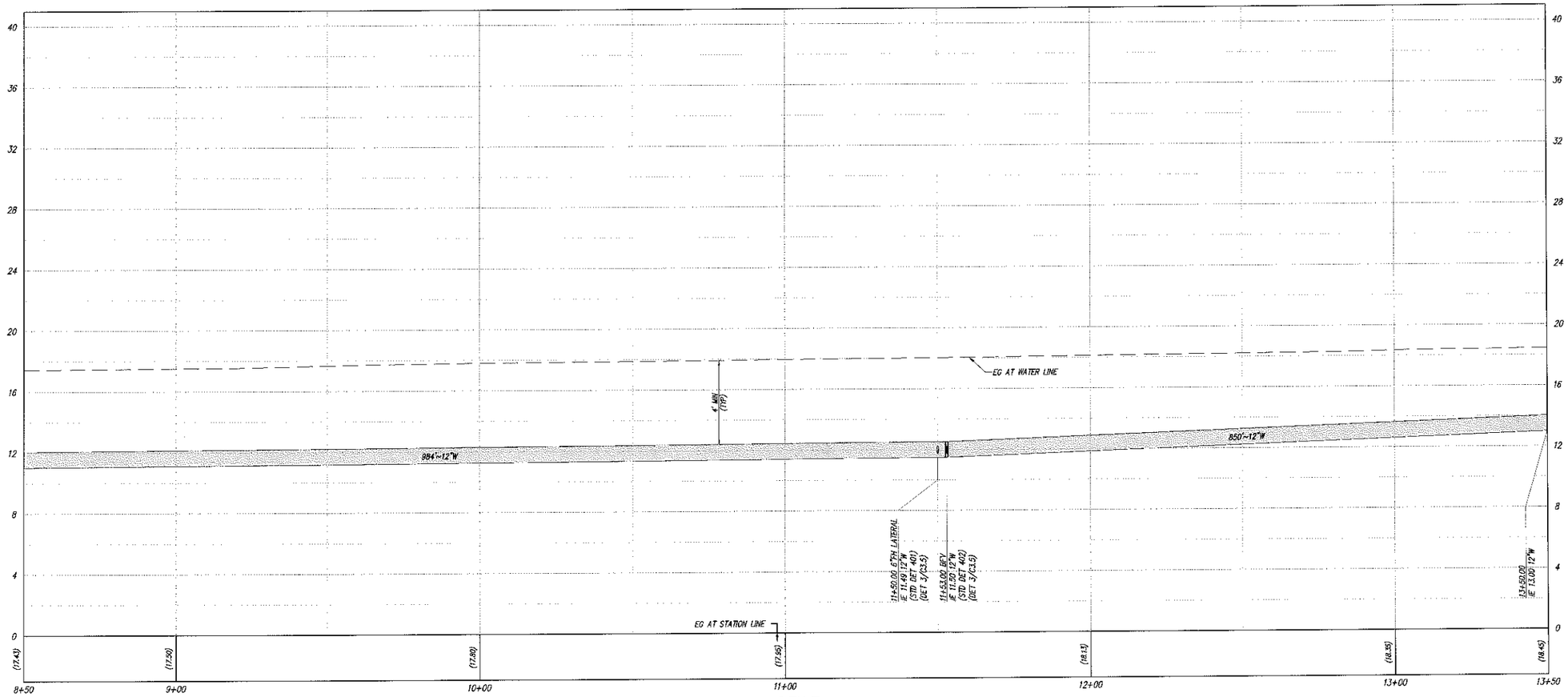


PROFILE
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

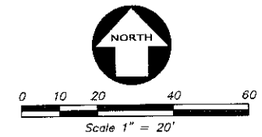




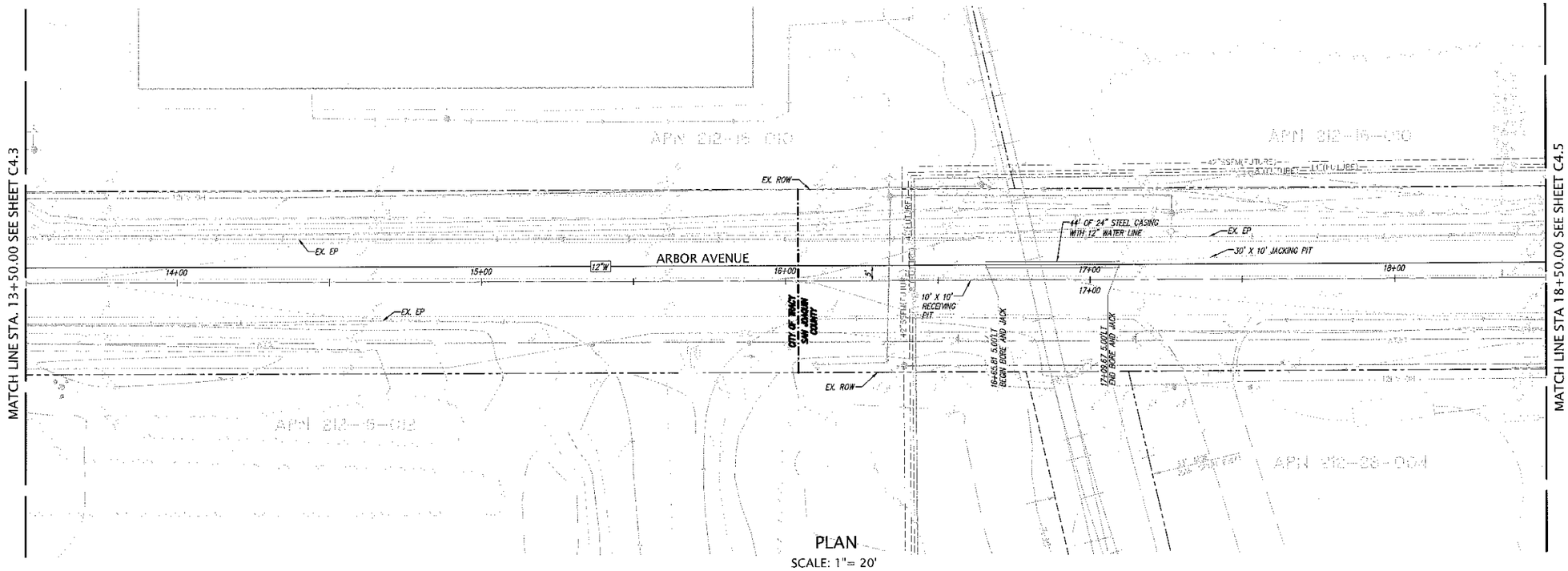
PLAN
SCALE: 1"= 20'



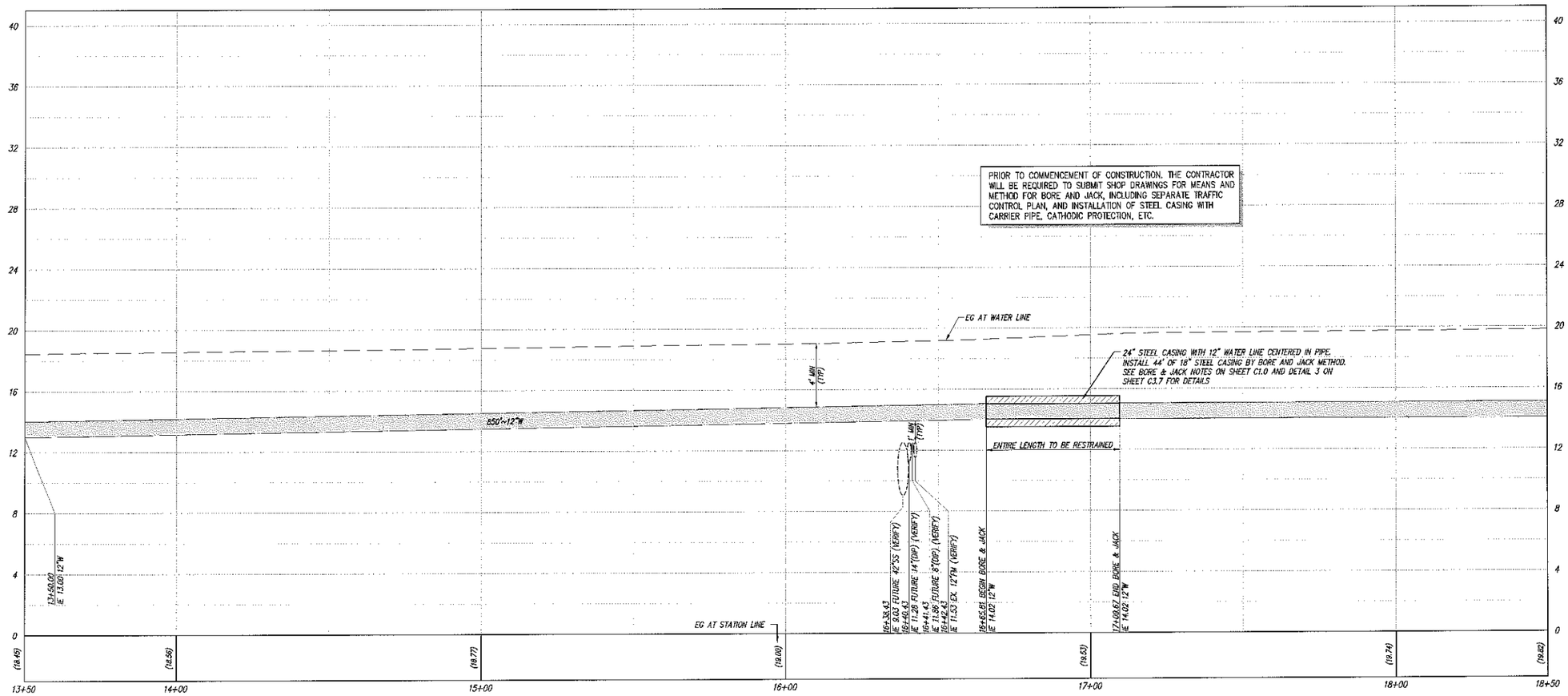
PROFILE
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'



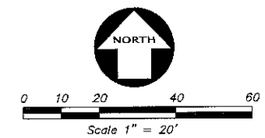
NOTE:
BUTTERFLY VALVE OPERATOR SHALL BE TOWARD NEAREST PROPERTY LINE. (DESIGN STD 6.08A)



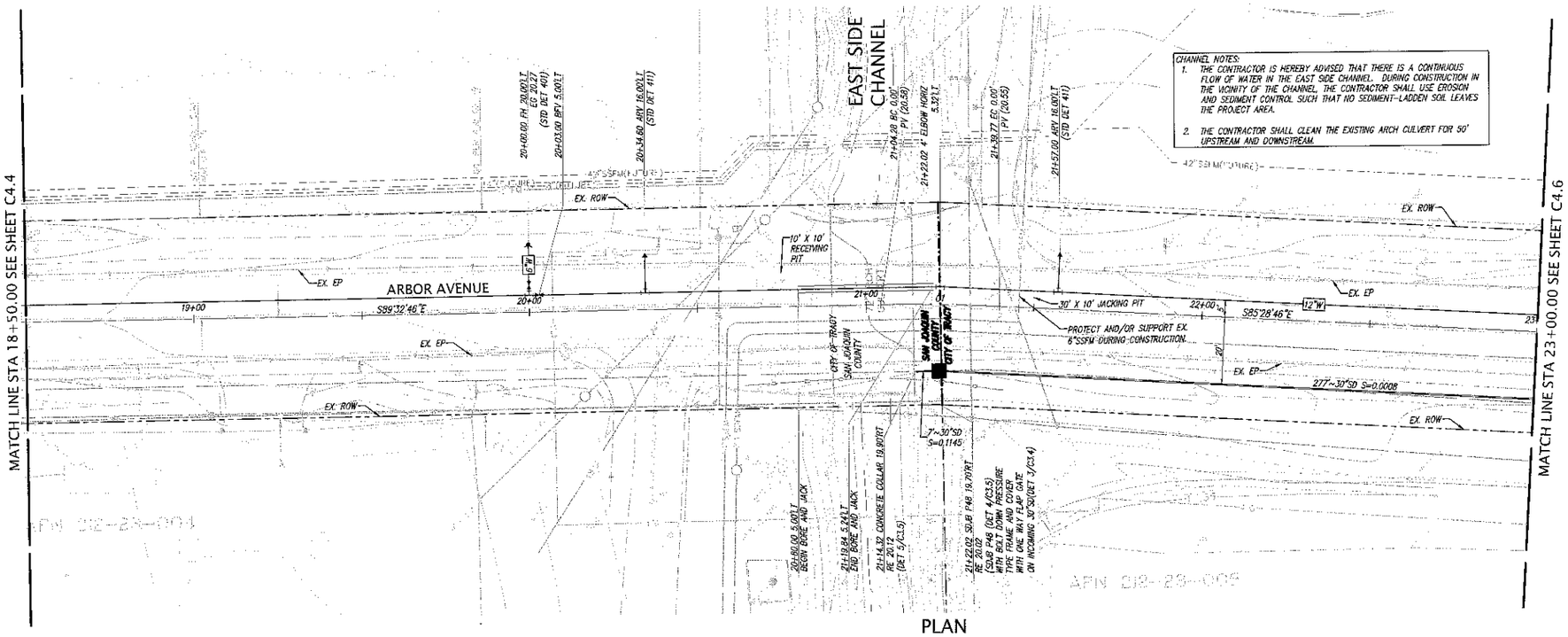
PLAN
SCALE: 1"= 20'



PROFILE
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

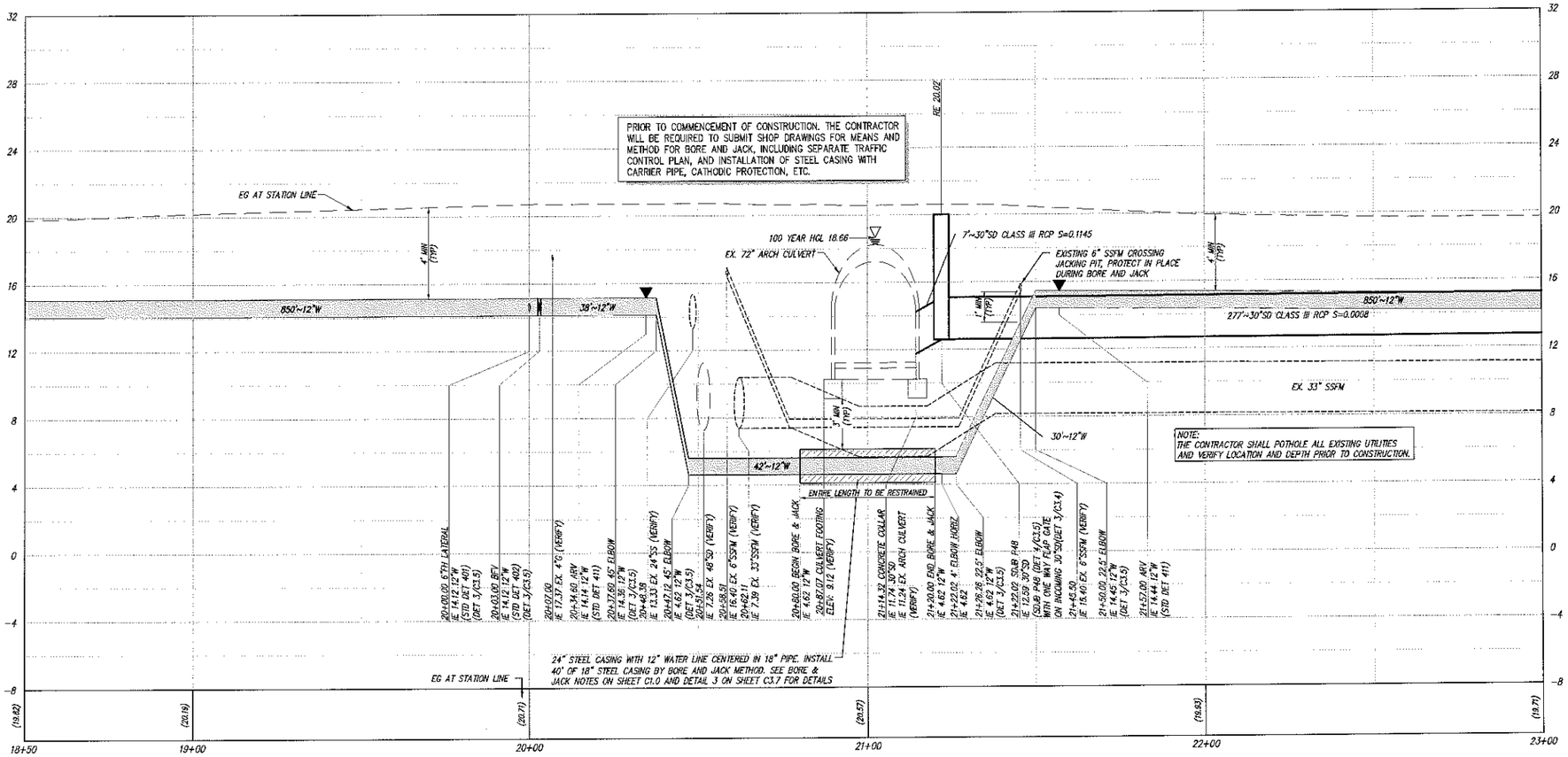


NOTE:
BUTTERFLY VALVE OPERATOR SHALL BE TOWARD NEAREST PROPERTY LINE. (DESIGN STD 6.08A)



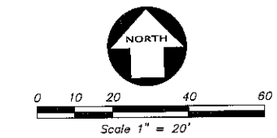
PLAN

SCALE: 1"= 20'



PROFILE

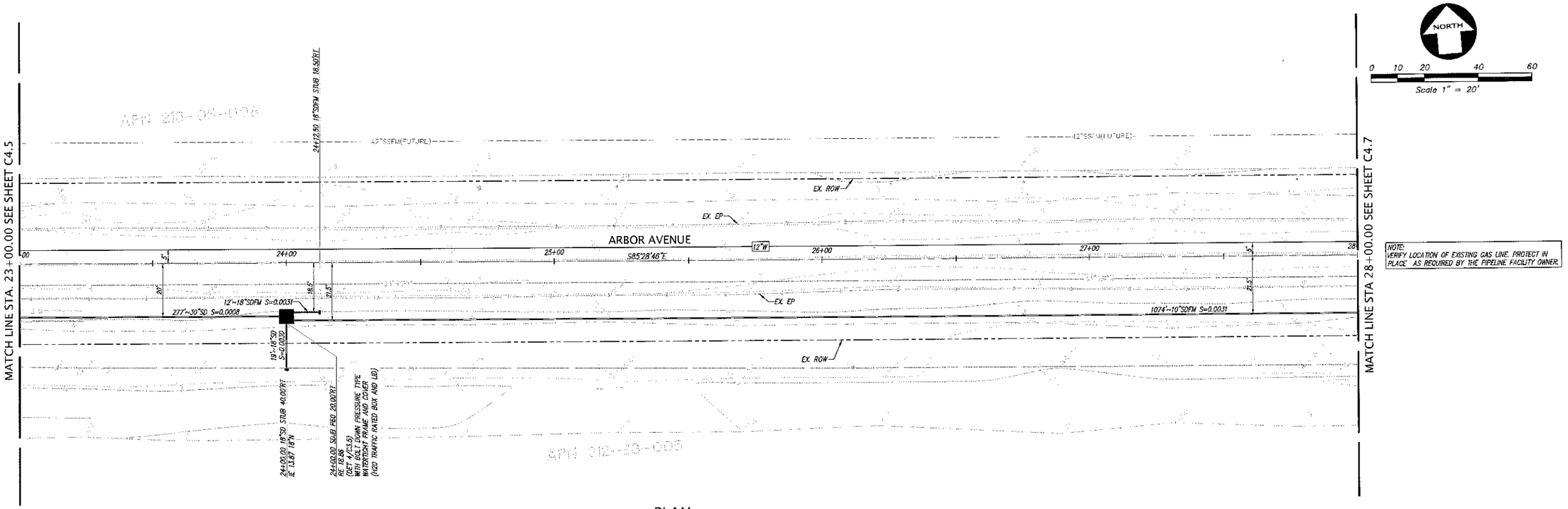
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'



NOTE:
BUTTERFLY VALVE OPERATOR SHALL BE TOWARD NEAREST PROPERTY LINE. (DESIGN STD 6.08A)

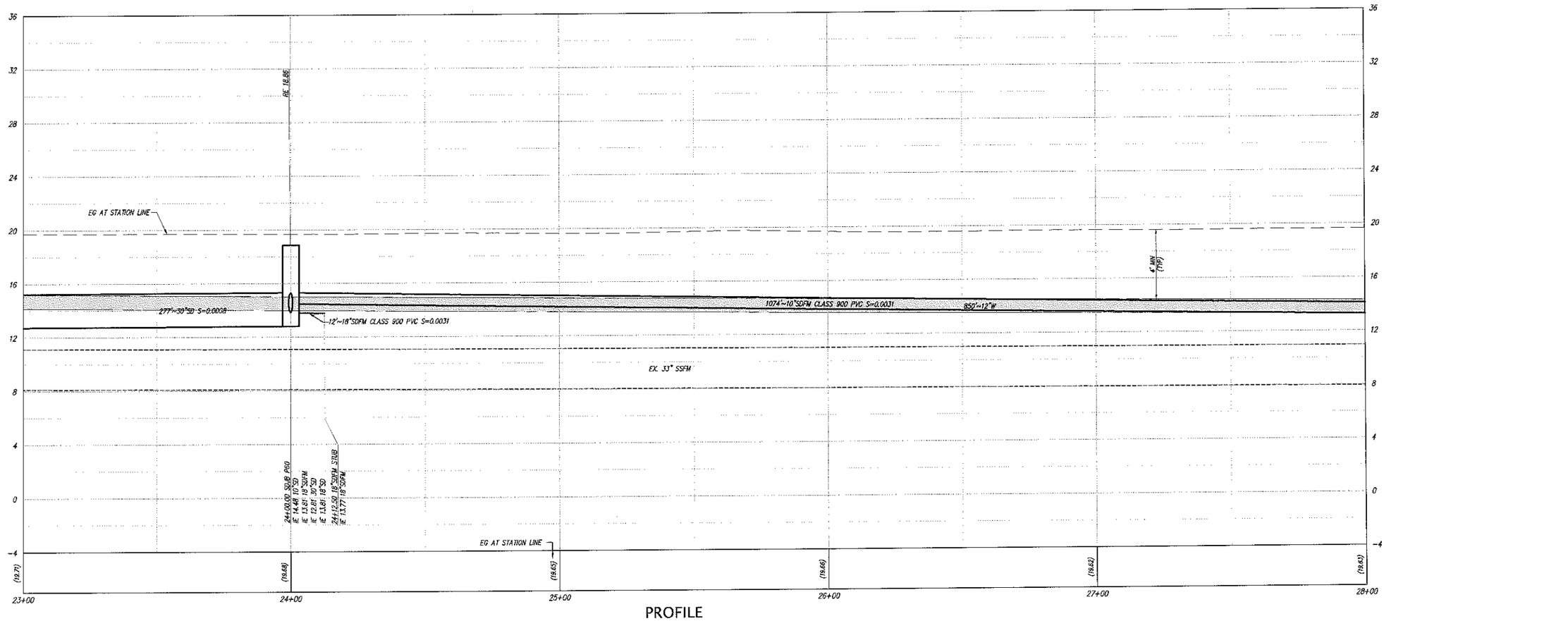
NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY THE PIPELINE FACILITY OWNER.

CURVE TABLE				
	RADIUS	DELTA	LENGTH	
C1	500.00	004° 04' 00.00"	35.49	STA. LINE



PLAN

SCALE: 1"= 20'



PROFILE

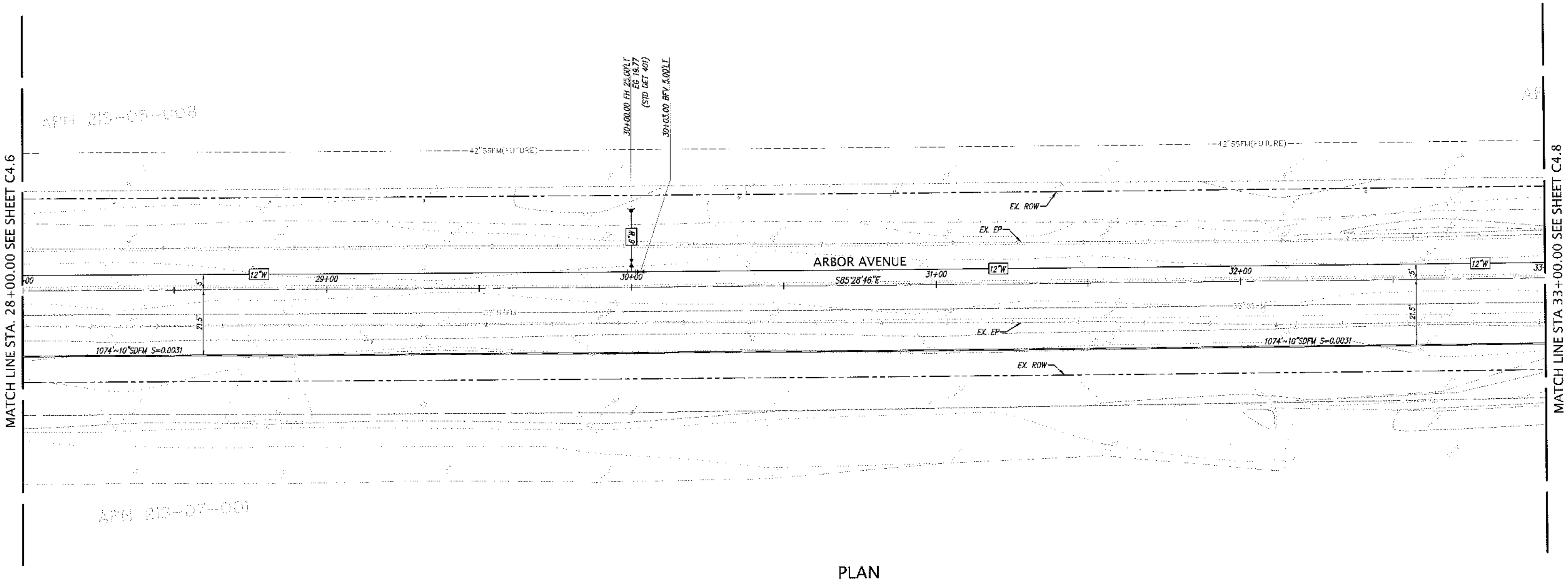
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

NORTH

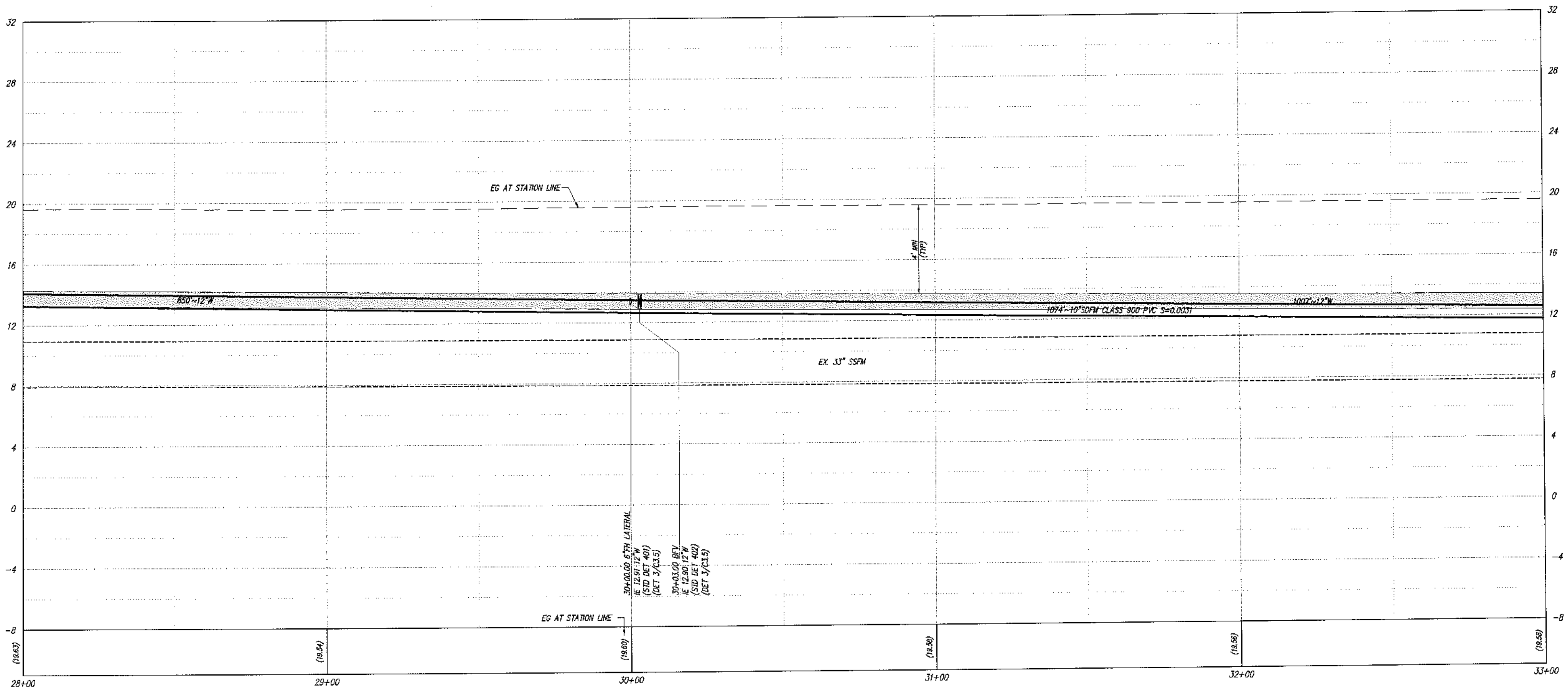
0 10 20 40 60
Scale 1" = 20'

NOTE:
BUTTERFLY VALVE OPERATOR SHALL BE TOWARD NEAREST PROPERTY LINE. (DESIGN STD 6.08A)

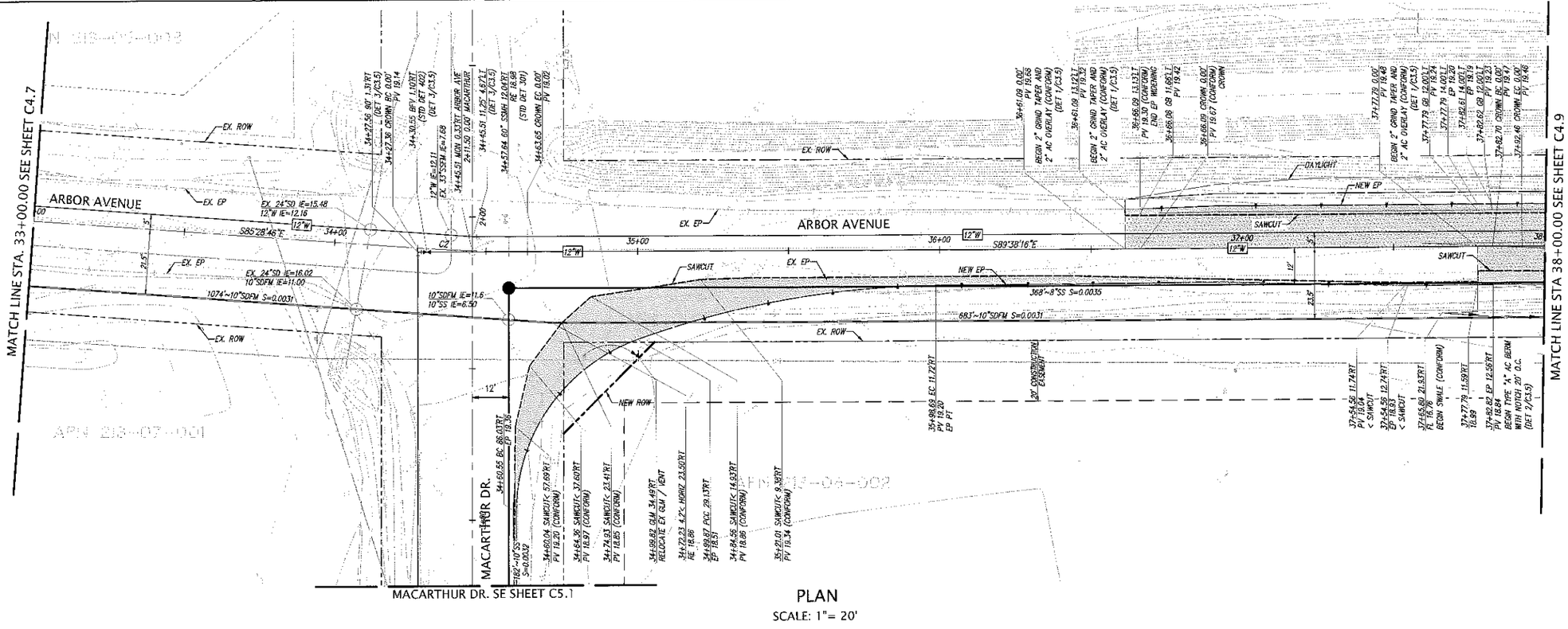
NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY THE PIPELINE FACILITY OWNER.



PLAN
SCALE: 1"= 20'



PROFILE
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'



PLAN

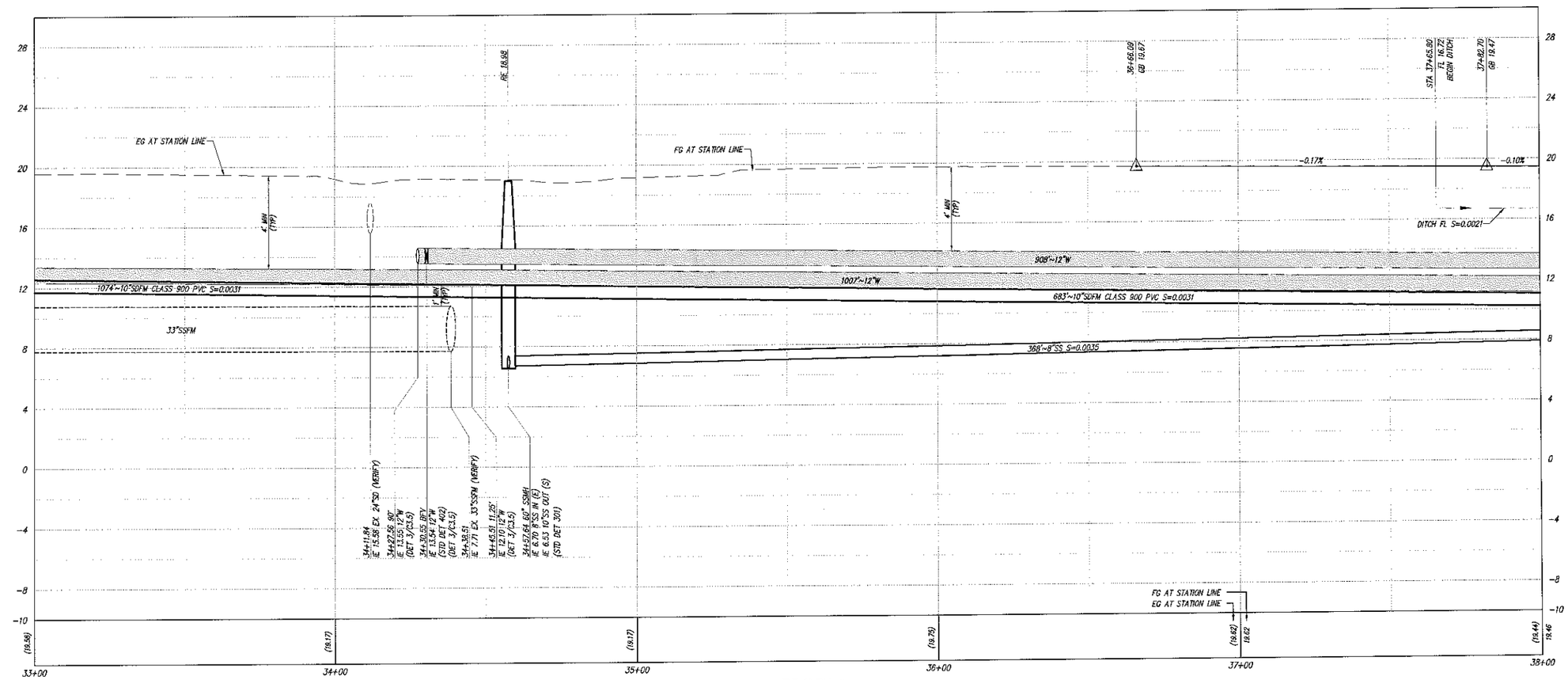
SCALE: 1"= 20'

LEGEND

- GRIND AND MIN. 2" OVERLAY
- AUTO PAVEMENT: 0.46' AC OVER 1.75' CLASS II AB
- EDGE OF PAVEMENT
- SAWCUT

NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY THE PIPELINE FACILITY OWNER.

CURVE TABLE				
	RADIUS	DELTA	LENGTH	
C2	500.00	004° 09' 30.00"	36.29	CL

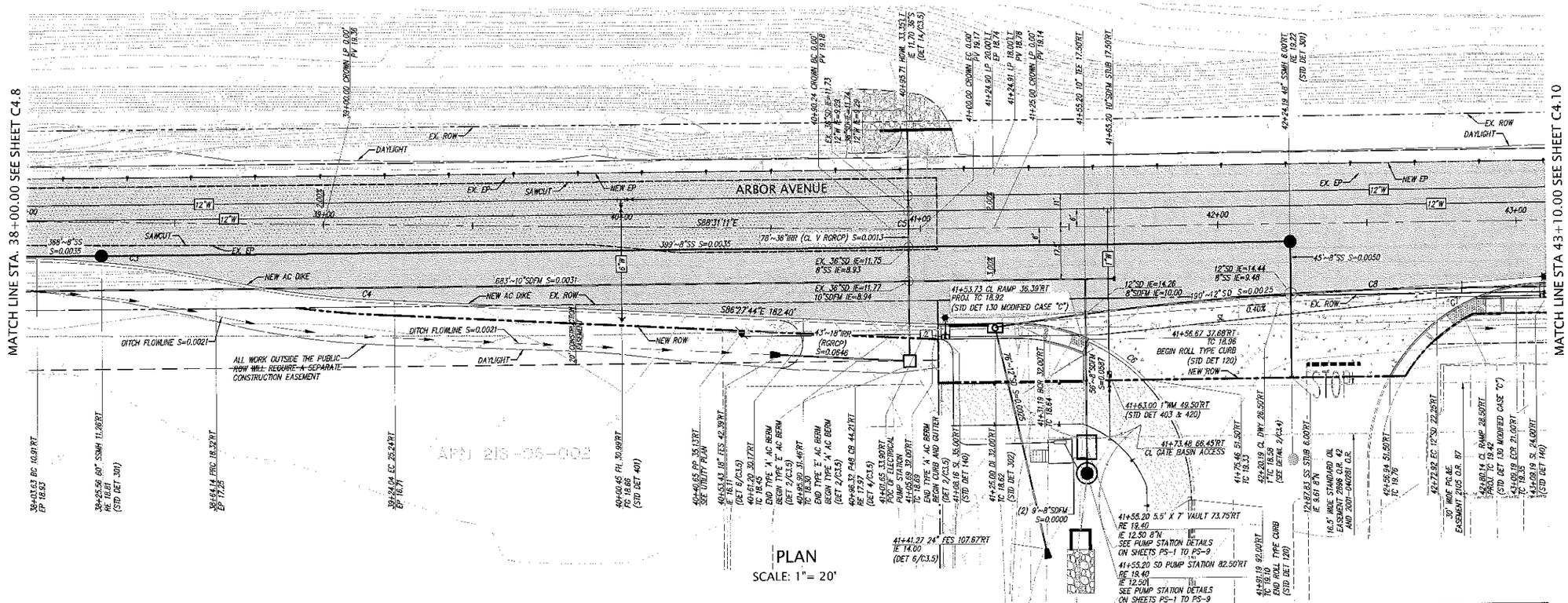


PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

GROUND WATER NOTES:

1. A TRENCH STABILIZATION (SAFETY) PLAN, AS REQUIRED BY SECTION 102.15 OF CITY OF TRACY STANDARD SPECIFICATIONS, SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION. TRENCH STABILIZATION SHALL CONFORM TO OHSA REQUIREMENTS AND BE DESIGNED BY A LICENSED CONTRACTOR WITH DEEP TRENCHING EXPERIENCE.
2. A DE-WATERING PLAN SHALL BE PREPARED BY A DE-WATERING CONTRACTOR, AND INCLUDE A SERIES OF SUMPS TO TEMPORARILY DE-WATER THE TRENCH. DE-WATERING PLAN SHALL BE SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION.
3. TRENCH BACKFILL SHALL BE PER THE CITY OF TRACY STANDARD PLAN 501 IN A DE-WATERED CONDITION.
4. TRENCH METHOD, PIPE MATERIAL SELECTION, BEDDING AND BACKFILL SHALL BE PER THE MANUFACTURES REQUIREMENTS AND THE CITY OF TRACY STANDARDS, AND SAFETY REQUIREMENTS PER CITY OF TRACY STANDARD SPECIFICATION 102.15.

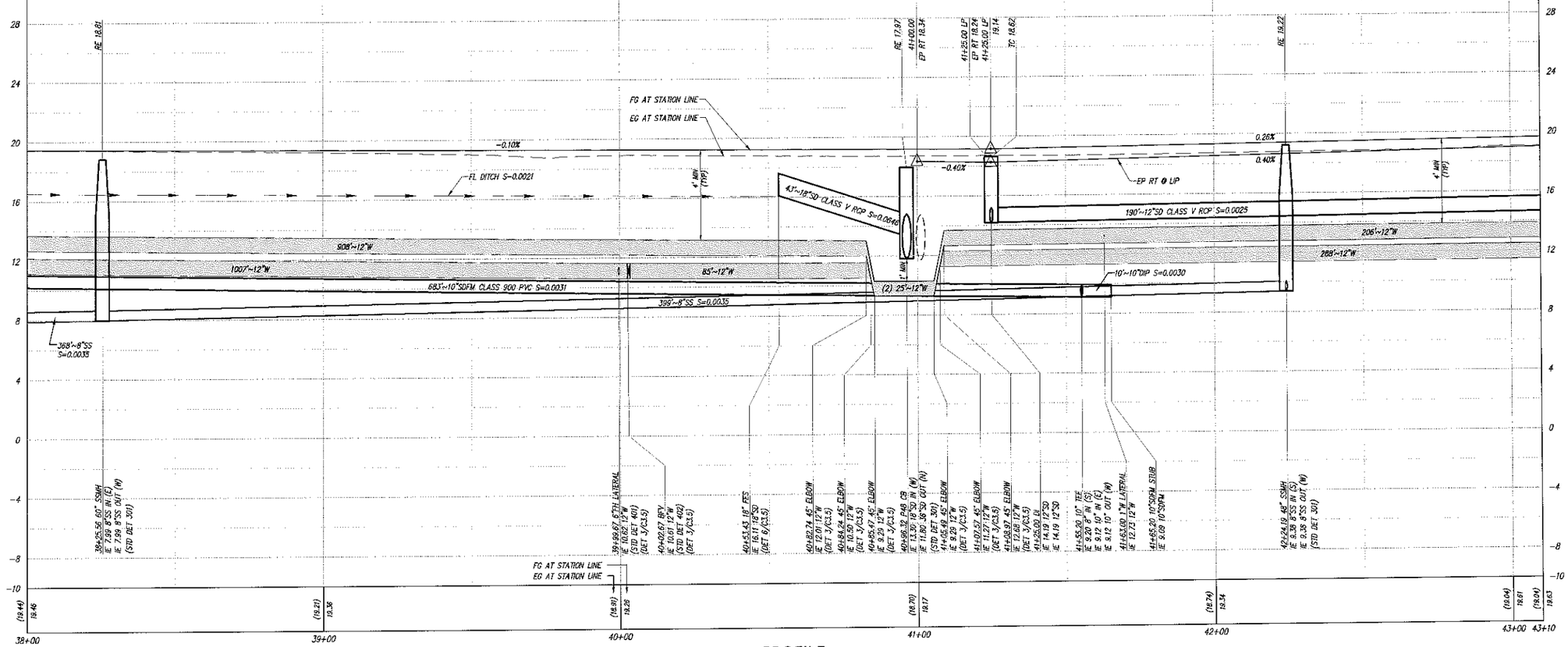


LEGEND

- GRIND AND MIN. 2" OVERLAY
- AUTO PAVEMENT: 0.46' AC OVER 1.75' CLASS II AB
- EDGE OF PAVEMENT
- SAWCUT

NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY THE PIPE LINE FACILITY OWNER.

CURVE TABLE				
	RADIUS	DELTA	LENGTH	
C3	358.31'	9°45'36"	61.04'	AC DIKE
C4	304.96'	11°20'50"	60.40'	AC DIKE
C5	500.00'	1°07'05"	9.76'	CL
C6	60.00'	47°32'45"	49.79'	TC
C7	60.00'	60°32'59"	63.41'	TC
C8	1001.29'	8°29'43"	148.46'	SD



PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

GROUND WATER NOTES:

1. A TRENCH STABILIZATION (SAFETY) PLAN, AS REQUIRED BY SECTION 102.15 OF CITY OF TRACY STANDARD SPECIFICATIONS, SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION. TRENCH STABILIZATION SHALL CONFORM TO OHSA REQUIREMENTS AND BE DESIGNED BY A LICENSED CONTRACTOR WITH DEEP TRENCHING EXPERIENCE.
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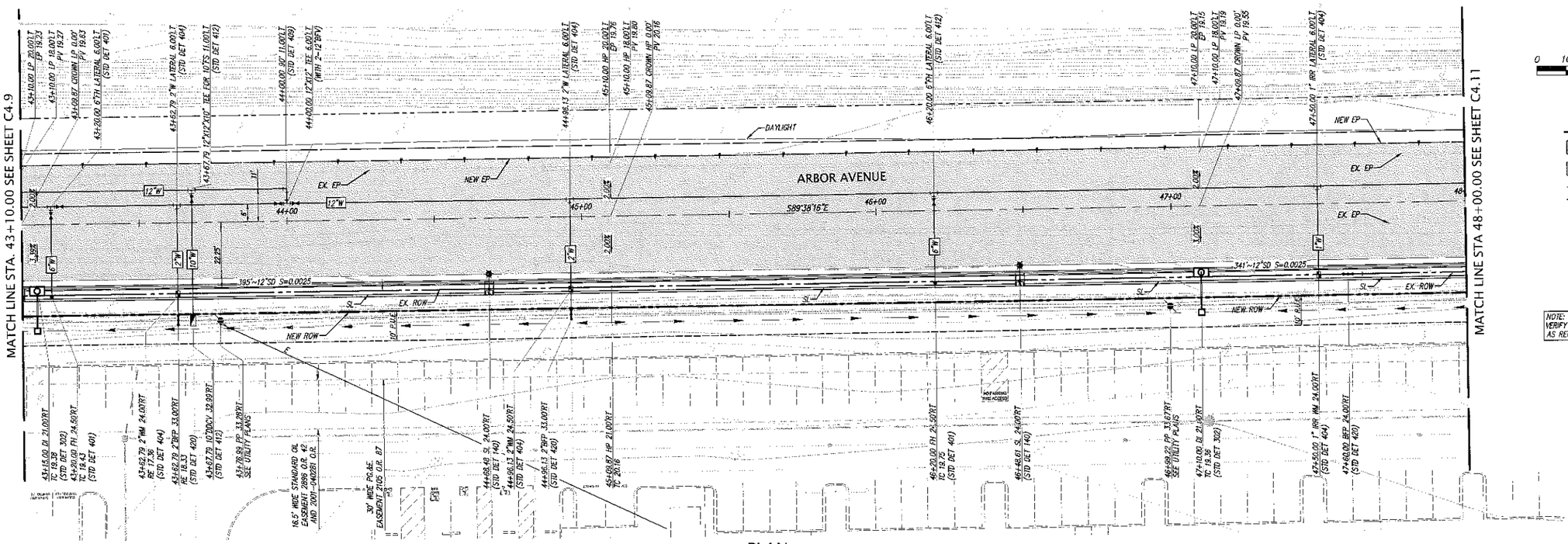
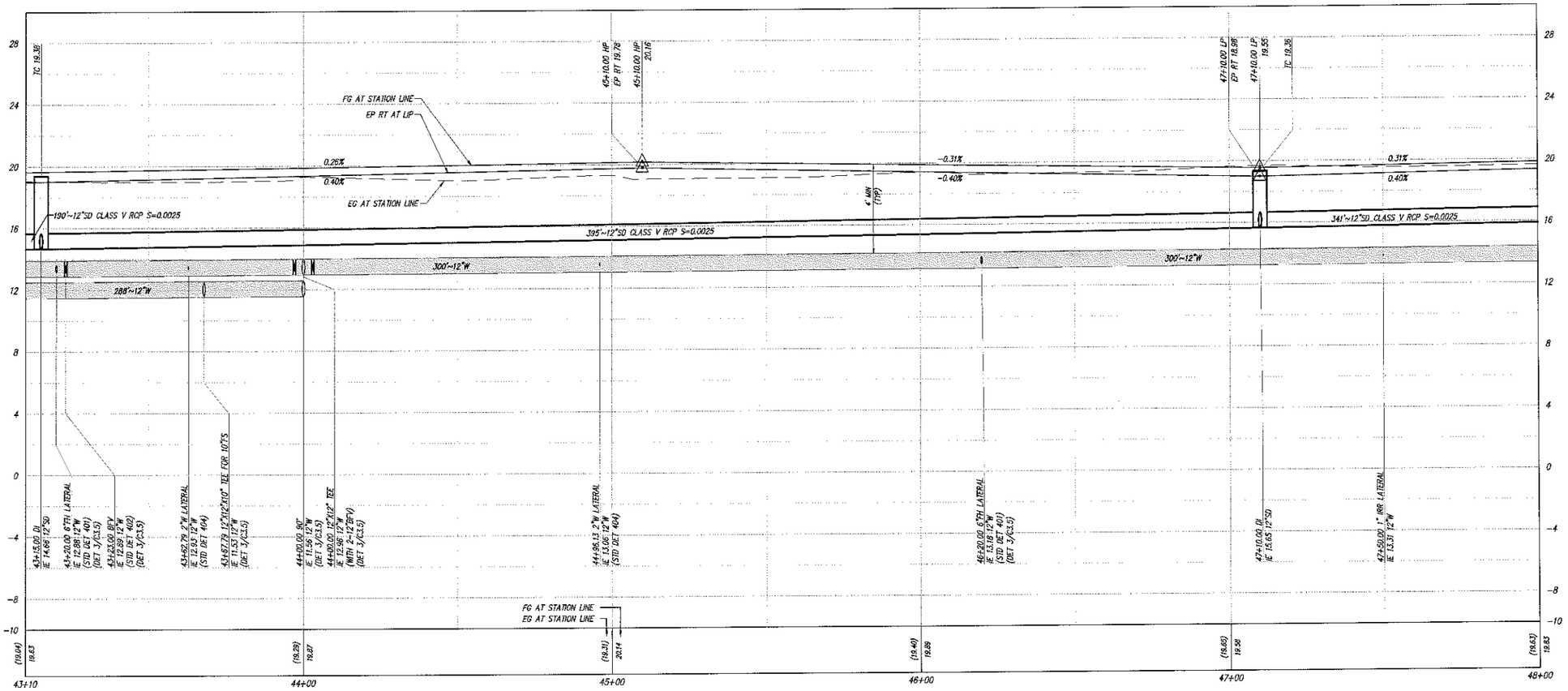


PLAN

SCALE: 1"= 20'

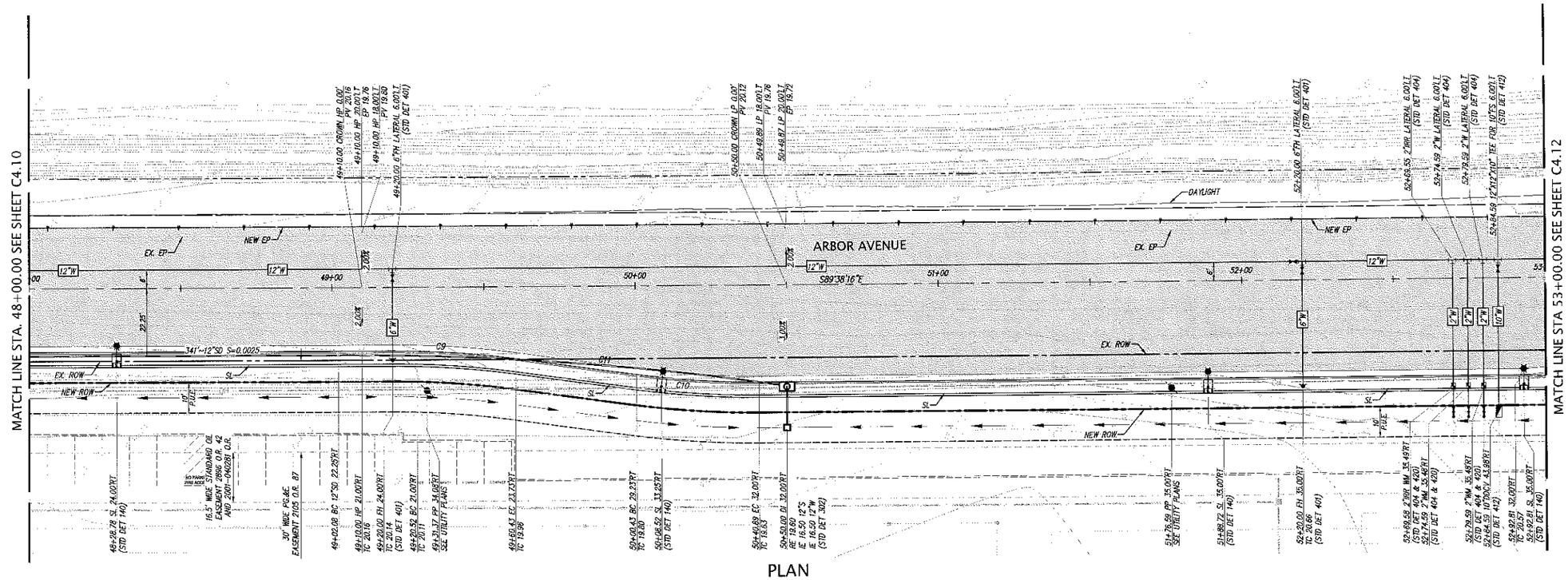


PROFILE

HORIZONTAL SCALE: 1"= 20'

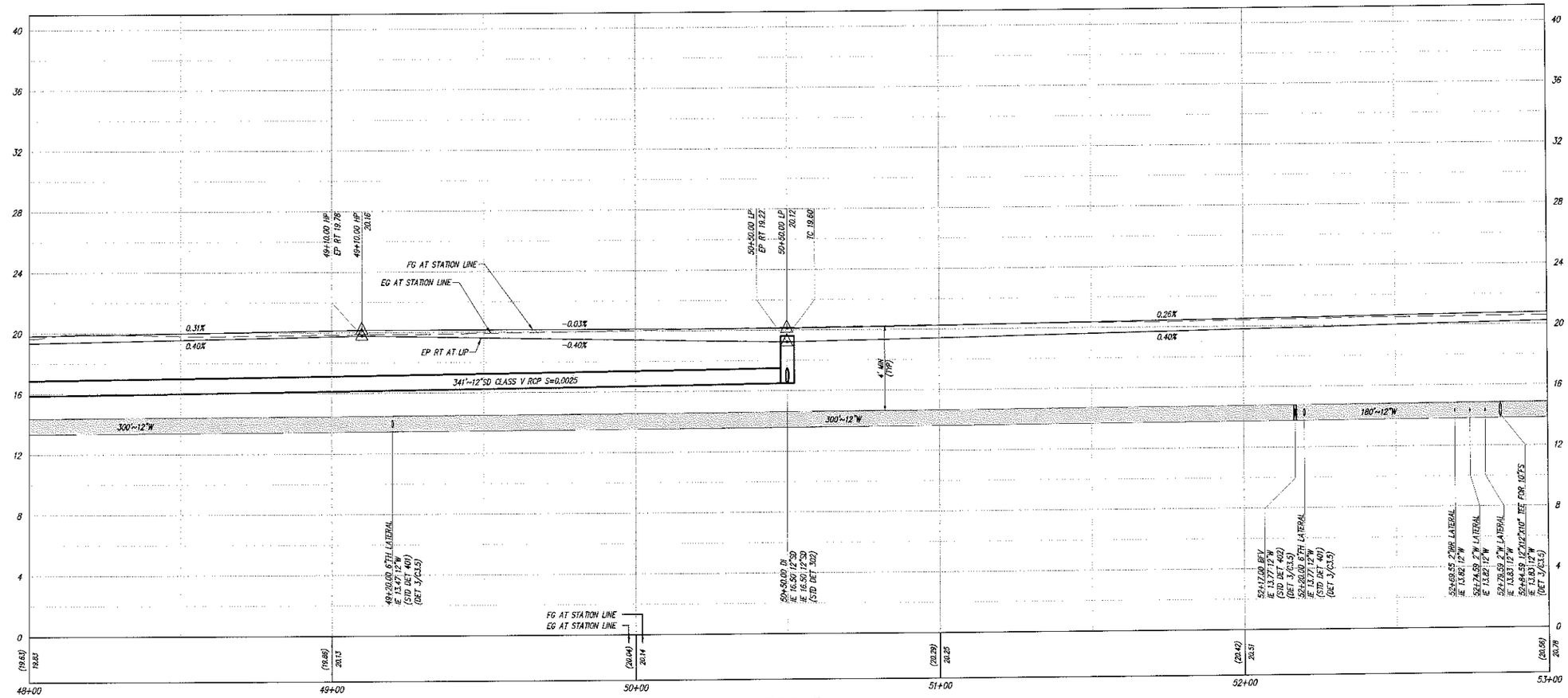
VERTICAL SCALE: 1"= 4'

Z:\2013\A13669\A13669-2 IMP.dwg 4-18-17 09:26:00 AM jaumby



PLAN

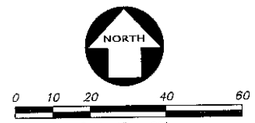
SCALE: 1"= 20'



PROFILE

HORIZONTAL SCALE: 1"= 20'

VERTICAL SCALE: 1"= 4'

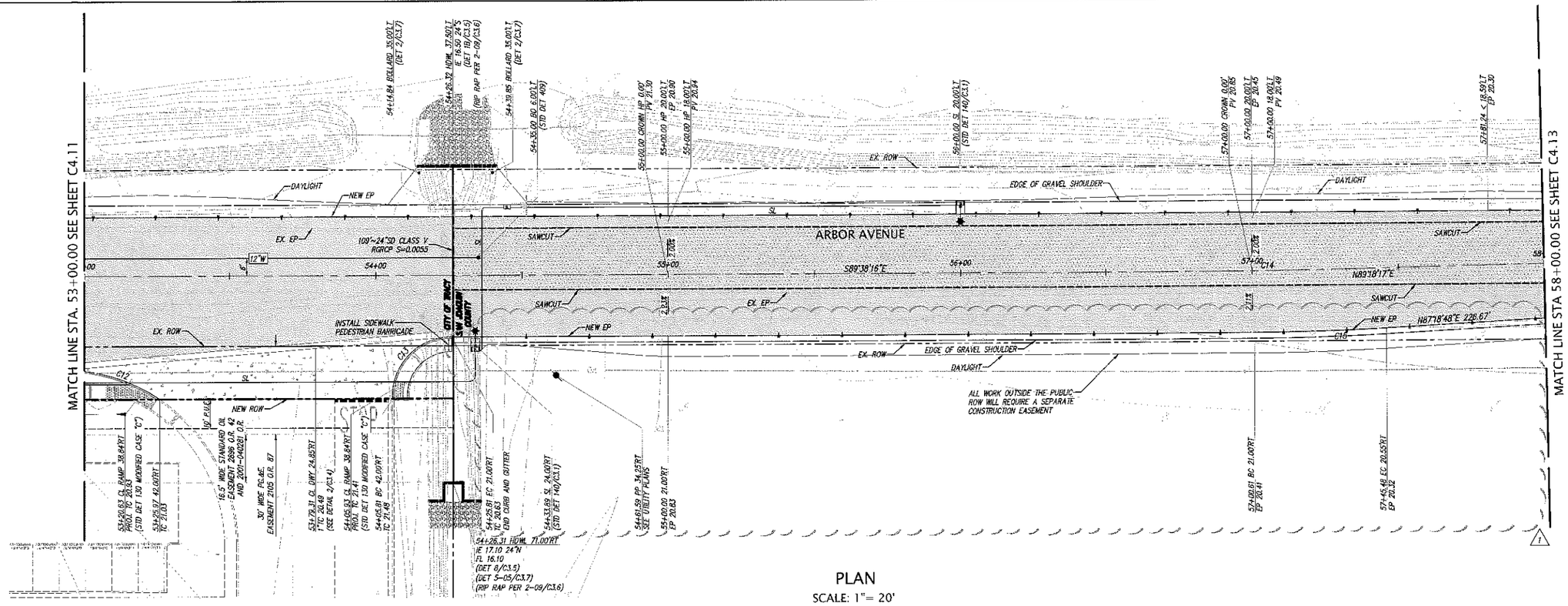


LEGEND

- GRIND AND MIN. 2" OVERLAY
- AUTO PAVEMENT: 0.46' AC OVER 1.75' CLASS II AB
- EDGE OF PAVEMENT
- SAWCUT

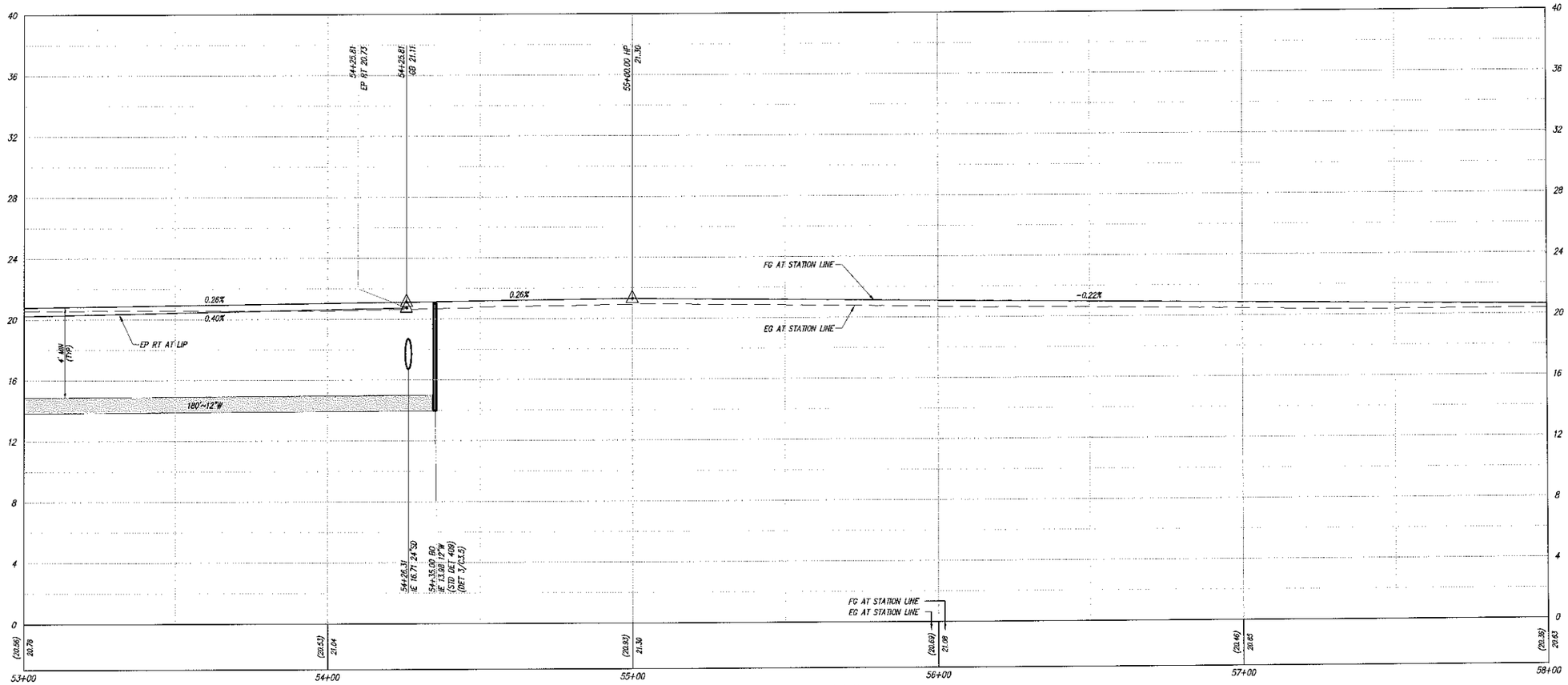
NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY THE PIPELINE FACILITY OWNER.

CURVE TABLE				
	RADIUS	DELTA	LENGTH	
C9	293.03'	7°49'45"	40.04'	TC
C10	297.00'	7°49'45"	40.59'	TC
C11	1000.00'	8°30'22"	148.46'	SD



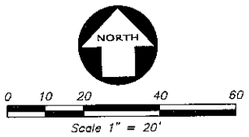
PLAN

SCALE: 1"= 20'



PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

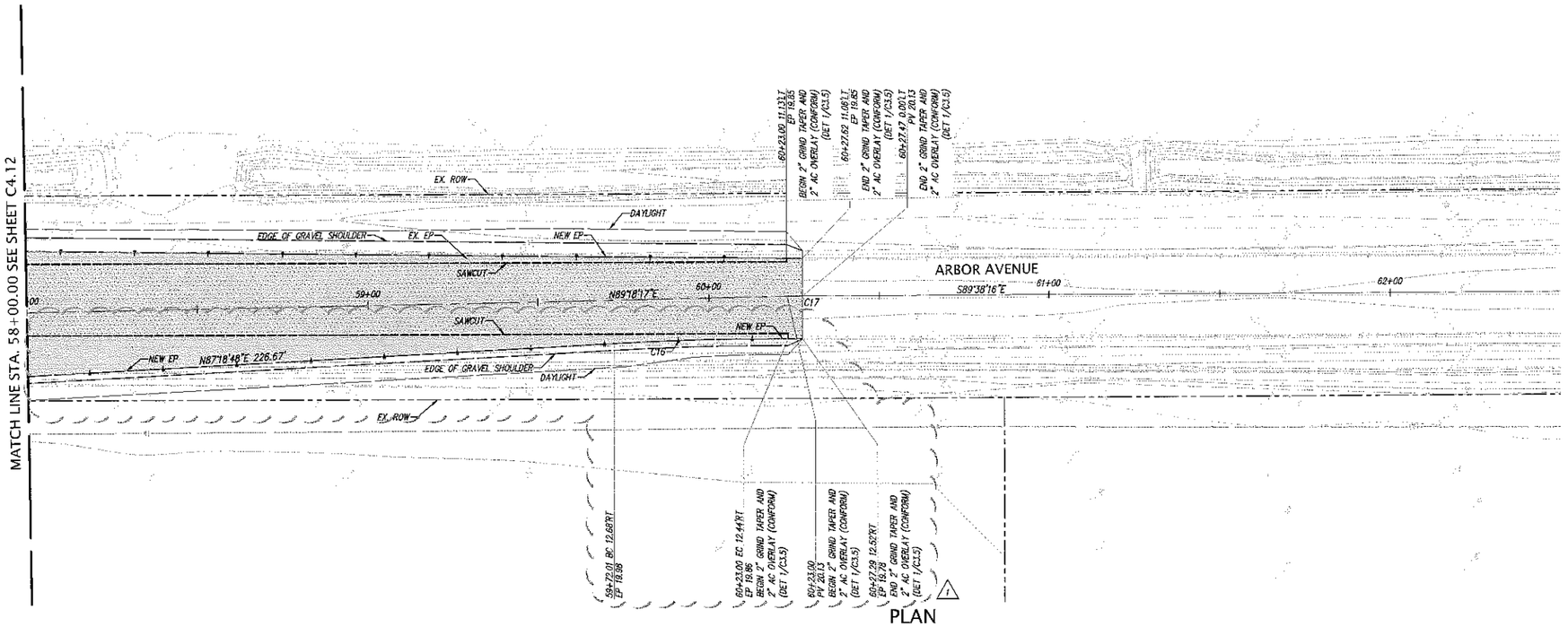


LEGEND

- GRIND AND MIN. 2" OVERLAY
- AUTO PAVEMENT: 0.46' AC OVER 1.75' CLASS II AB
- EDGE OF PAVEMENT
- SAWCUT

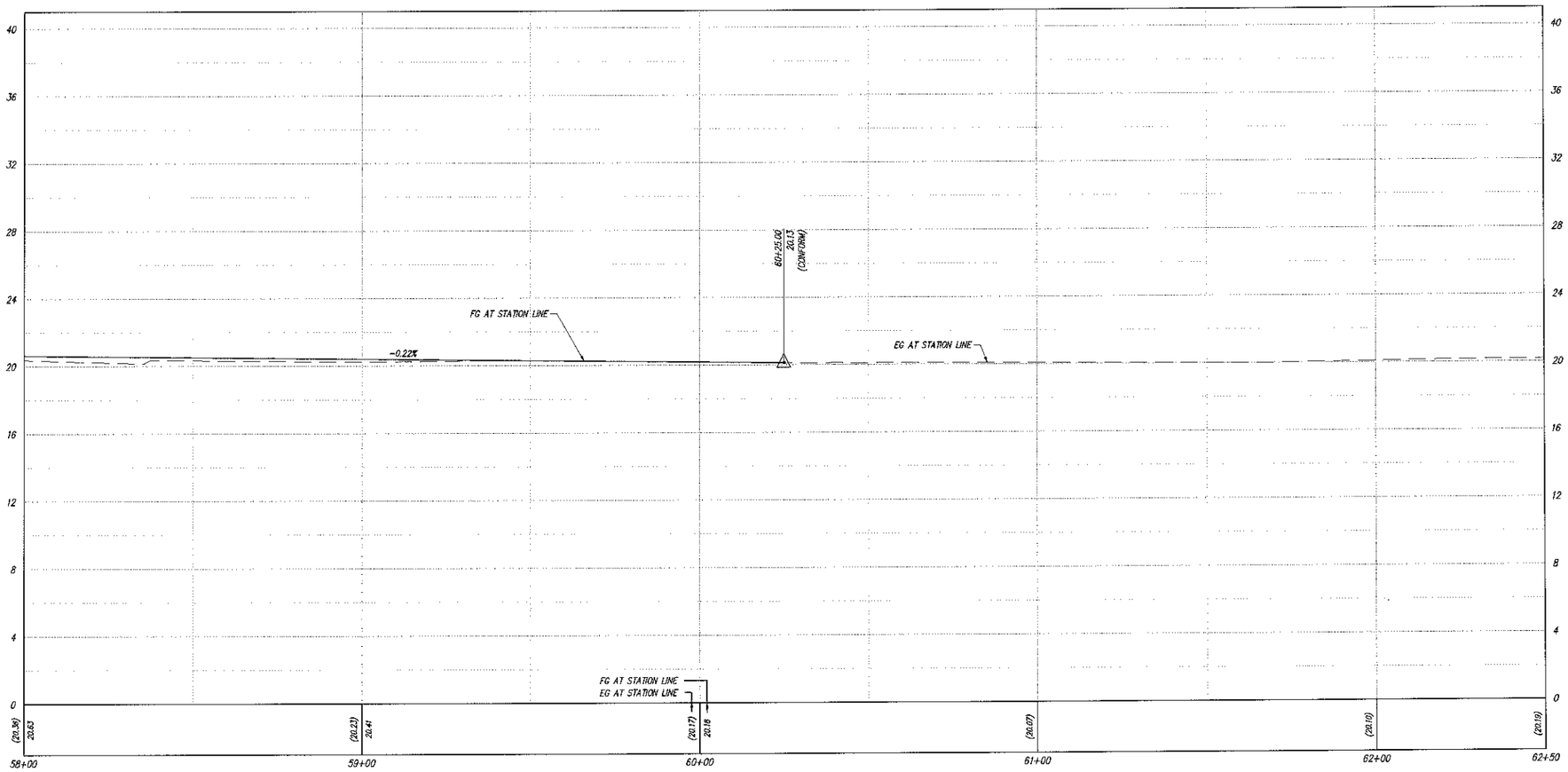
NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY PG&E.

CURVE TABLE				
	RADIUS	DELTA	LENGTH	
C12	60.00'	33°33'26"	35.14'	TC
C13	20.00'	89°59'43"	31.41'	TC
C14	500.00'	1°03'27"	9.23'	CL
C15	850.00'	3°02'56"	45.23'	AC DIKE



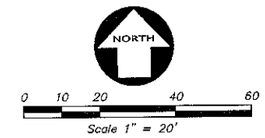
PLAN

SCALE: 1"= 20'



PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'

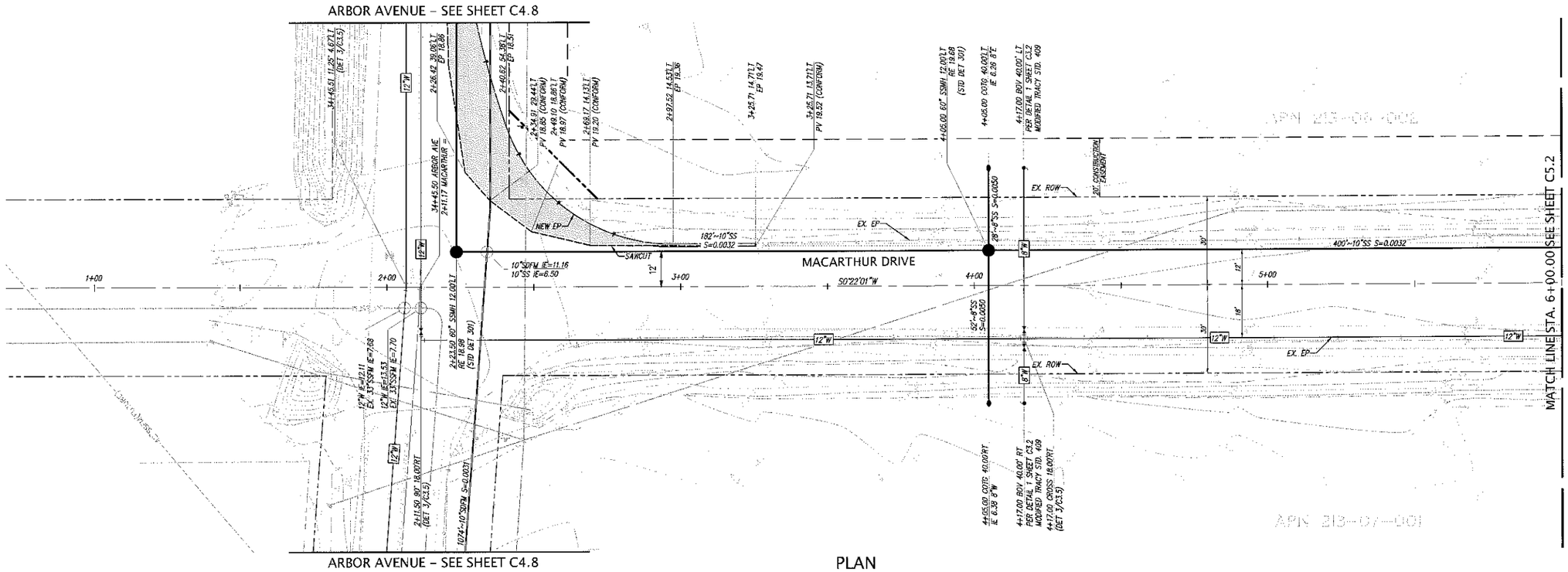


LEGEND

- GRIND AND MIN. 2" OVERLAY
- AUTO PAVEMENT: 0.46' AC OVER 1.75' CLASS II AB
- EDGE OF PAVEMENT
- SAWCUT

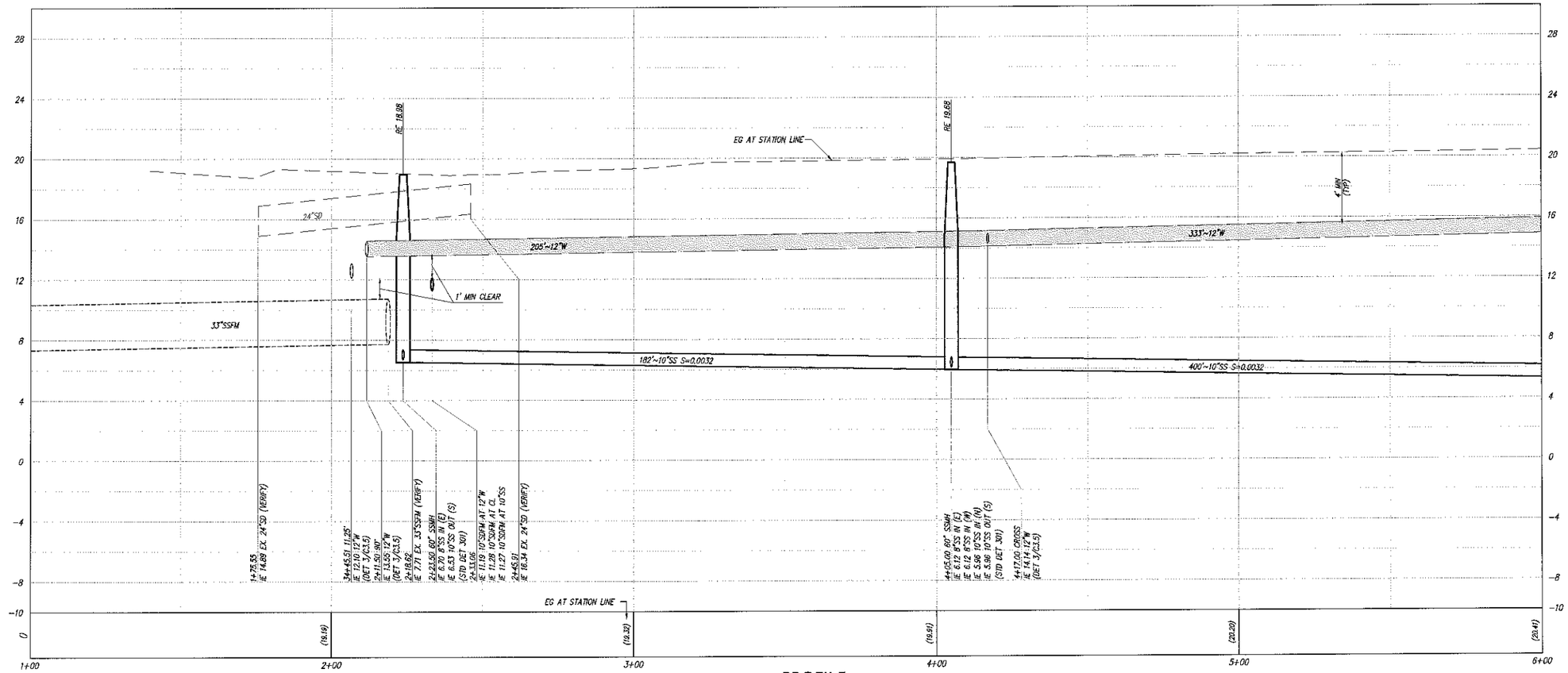
NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY THE PIPELINE FACILITY OWNER.

CURVE TABLE				
	RADIUS	DELTA	LENGTH	
C16	850.00'	3°26'17"	51.00'	AC DIKE
C17	500.00'	1°03'27"	9.23'	CL



PLAN

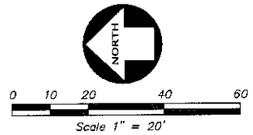
SCALE: 1"= 20'



PROFILE

HORIZONTAL SCALE: 1"= 20'

VERTICAL SCALE: 1"= 4'



LEGEND

- GRIND AND MIN. 2" OVERLAY
- AUTO PAVEMENT: 0.46' AC OVER 1.75' CLASS II AB
- EDGE OF PAVEMENT
- SAWCUT

NOTE:
VERIFY LOCATION OF EXISTING GAS LINE. PROTECT IN PLACE AS REQUIRED BY PG&E.

NOTE:
LINE SEWER PIPE AND WATER PROOF SSMH'S PER CALTRANS STANDARD SPEC 54 "WATER PROOFING"

GROUND WATER NOTES:

1. A TRENCH STABILIZATION (SAFETY) PLAN, AS REQUIRED BY SECTION 102.15 OF CITY OF TRACY STANDARD SPECIFICATIONS, SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION. TRENCH STABILIZATION SHALL CONFORM TO OHSA REQUIREMENTS AND BE DESIGNED BY A LICENSED CONTRACTOR WITH DEEP TRENCHING EXPERIENCE.
2. A DE-WATERING PLAN SHALL BE PREPARED BY A DE-WATERING CONTRACTOR, AND INCLUDE A SERIES OF SUMPS TO TEMPORARILY DE-WATER THE TRENCH. DE-WATERING PLAN SHALL BE SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION.
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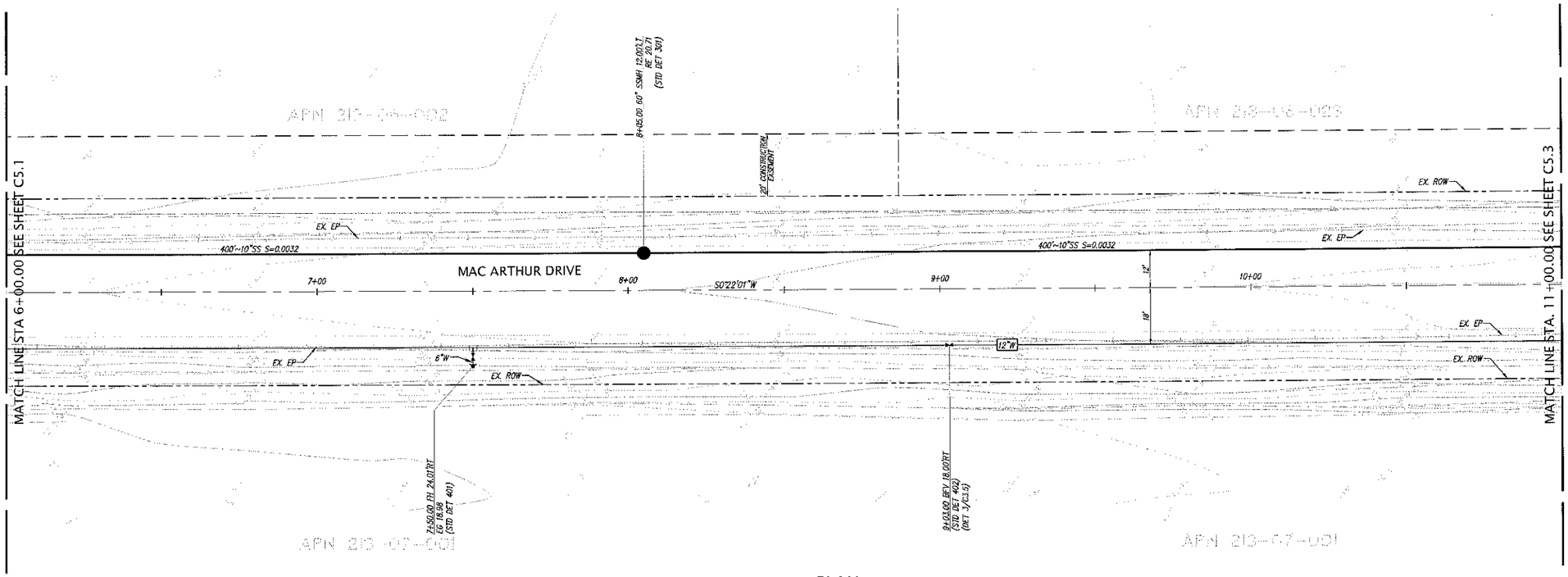
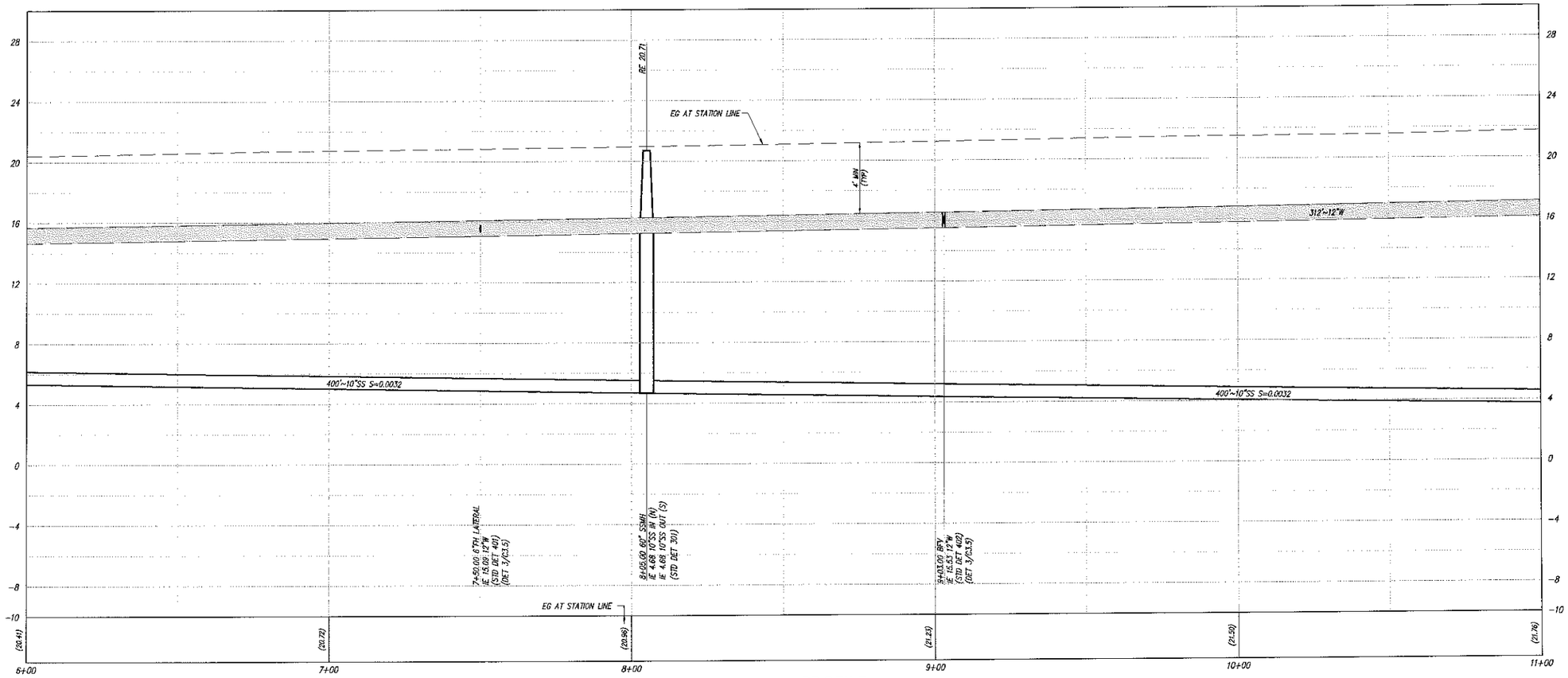
4. TRENCH METHOD, PIPE MATERIAL SELECTION, BEDDING AND BACKFILL SHALL BE PER THE MANUFACTURES REQUIREMENTS AND THE CITY OF TRACY STANDARDS, AND SAFETY REQUIREMENTS PER CITY OF TRACY STANDARD SPECIFICATION 102.15.



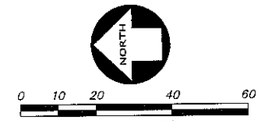
PLAN

SCALE: 1"= 20'



PROFILE

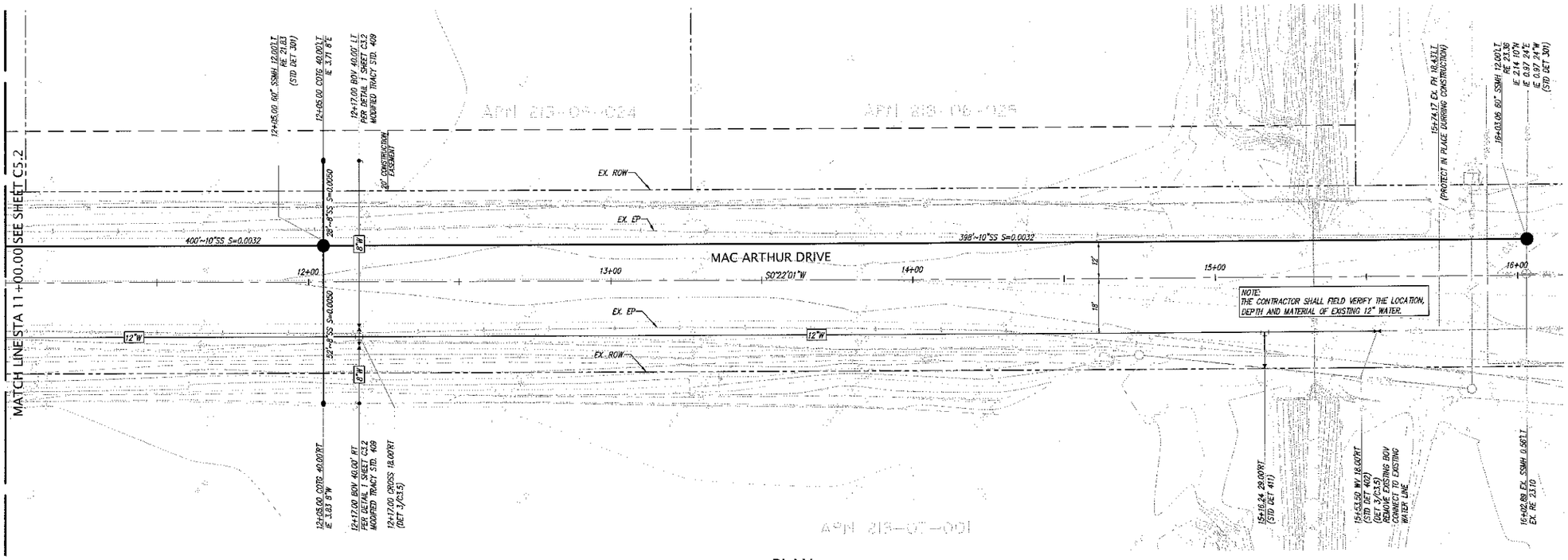
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'



NOTE:
LINE SEWER PIPE AND WATER PROOF SSMH'S PER CALTRANS STANDARD SPEC 54 "WATER PROOFING"

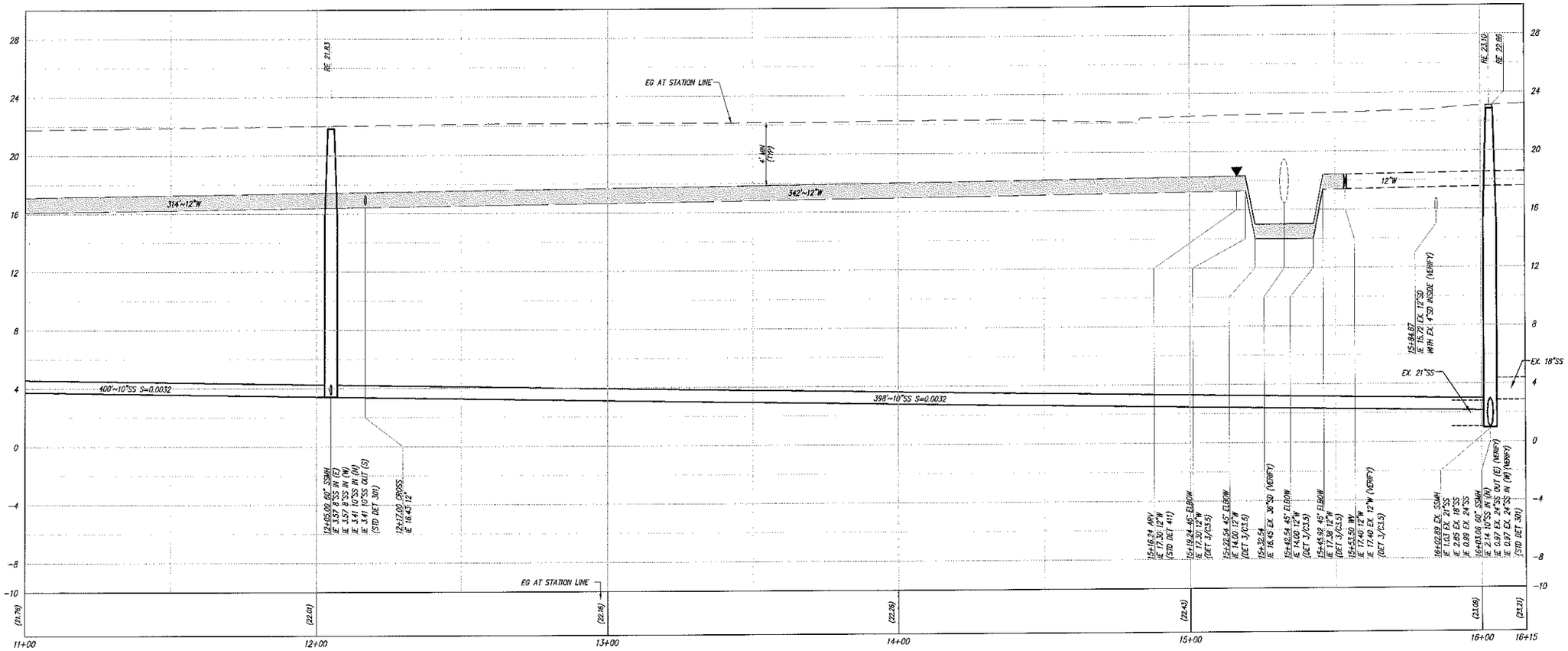
GROUND WATER NOTES:

1. A TRENCH STABILIZATION (SAFETY) PLAN, AS REQUIRED BY SECTION 102.15 OF CITY OF TRACY STANDARD SPECIFICATIONS, SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION. TRENCH STABILIZATION SHALL CONFORM TO OHSA REQUIREMENTS AND BE DESIGNED BY A LICENSED CONTRACTOR WITH DEEP TRENCHING EXPERIENCE.
2. A DE-WATERING PLAN SHALL BE PREPARED BY A DE-WATERING CONTRACTOR, AND INCLUDE A SERIES OF SUMPS TO TEMPORARILY DE-WATER THE TRENCH. DE-WATERING PLAN SHALL BE SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION.
3. TRENCH BACKFILL SHALL BE PER THE CITY OF TRACY STANDARD PLAN 501 IN A DE-WATERED CONDITION.
4. TRENCH METHOD, PIPE MATERIAL SELECTION, BEDDING AND BACKFILL SHALL BE PER THE MANUFACTURES REQUIREMENTS AND THE CITY OF TRACY STANDARDS, AND SAFETY REQUIREMENTS PER CITY OF TRACY STANDARD SPECIFICATION 102.15.



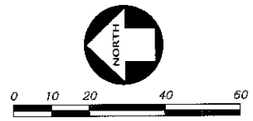
PLAN

SCALE: 1"= 20'



PROFILE

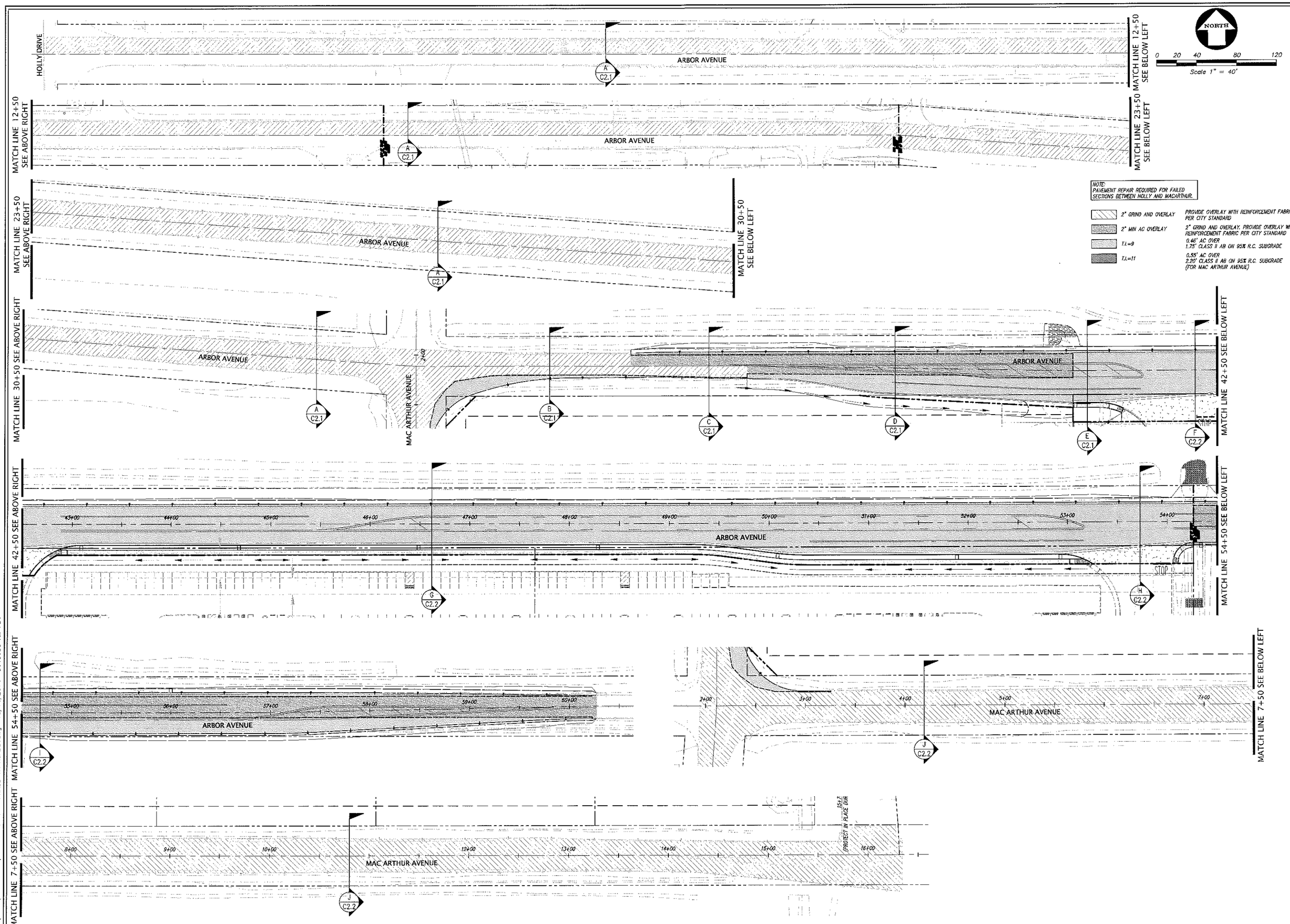
HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 4'



NOTE:
LINE SEWER PIPE AND WATER PROOF SSMH'S PER CALTRANS STANDARD SPEC 54 "WATER PROOFING"

GROUND WATER NOTES:

1. A TRENCH STABILIZATION (SAFETY) PLAN, AS REQUIRED BY SECTION 102.15 OF CITY OF TRACY STANDARD SPECIFICATIONS, SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION. TRENCH STABILIZATION SHALL CONFORM TO OHSA REQUIREMENTS AND BE DESIGNED BY A LICENSED CONTRACTOR WITH DEEP TRENCHING EXPERIENCE.
2. A DE-WATERING PLAN SHALL BE PREPARED BY A DE-WATERING CONTRACTOR, AND INCLUDE A SERIES OF SUMPS TO TEMPORARILY DE-WATER THE TRENCH. DE-WATERING PLAN SHALL BE SUBMITTED TO THE CITY OF TRACY FOR APPROVAL PRIOR TO CONSTRUCTION.
3. TRENCH BACKFILL SHALL BE PER THE CITY OF TRACY STANDARD PLAN 501 IN A DE-WATERED CONDITION.
4. TRENCH METHOD, PIPE MATERIAL SELECTION, BEDDING AND BACKFILL SHALL BE PER THE MANUFACTURES REQUIREMENTS AND THE CITY OF TRACY STANDARDS, AND SAFETY REQUIREMENTS PER CITY OF TRACY STANDARD SPECIFICATION 102.15.



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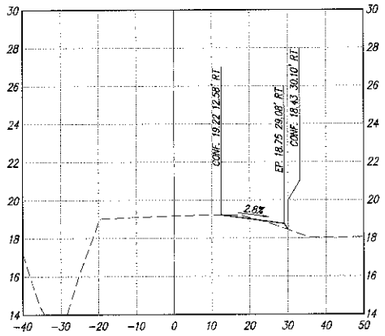

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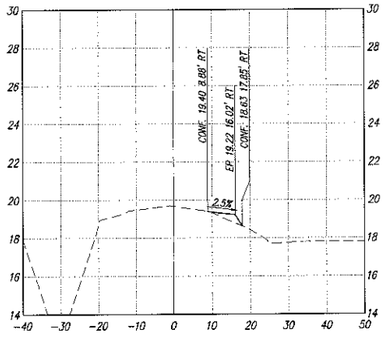

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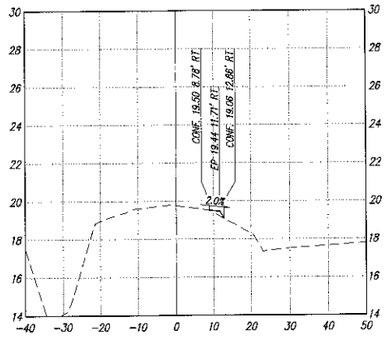

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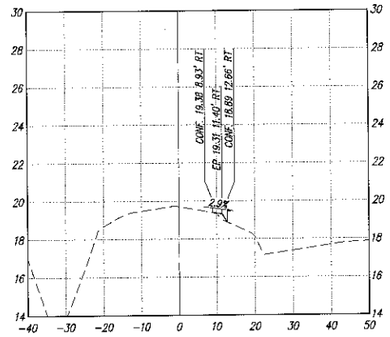

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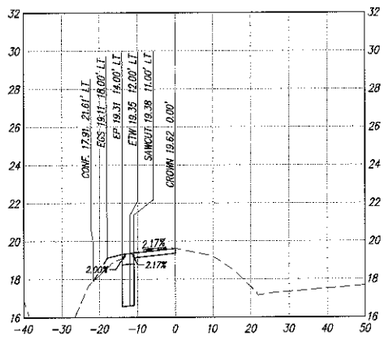

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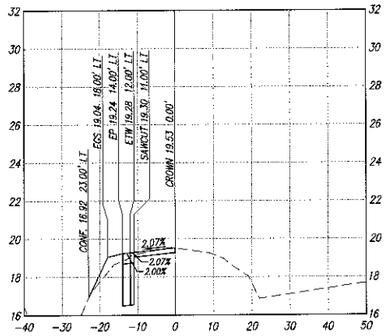

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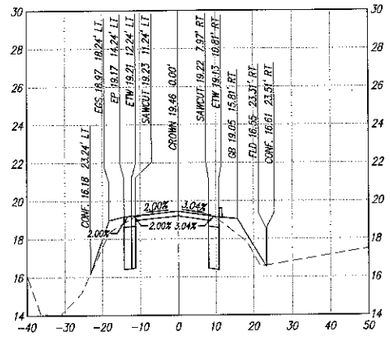

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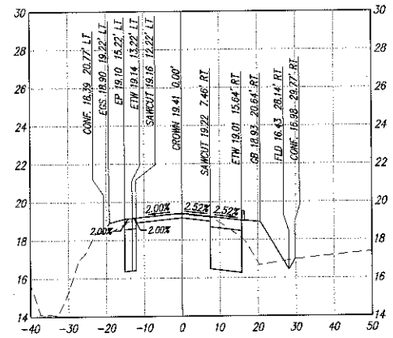


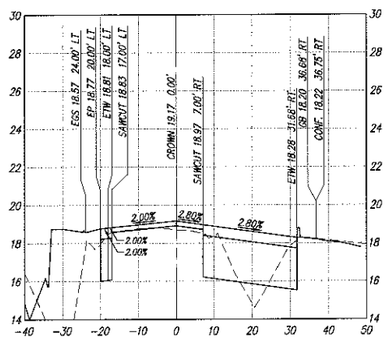
39+00

39+50

40+00

40+50

41+00



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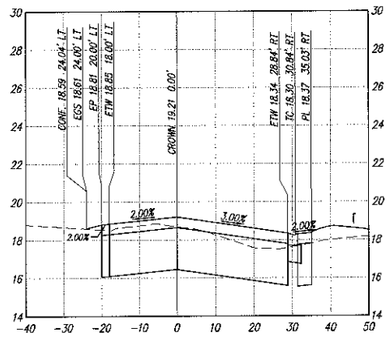

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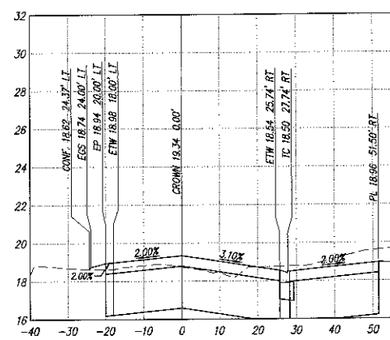

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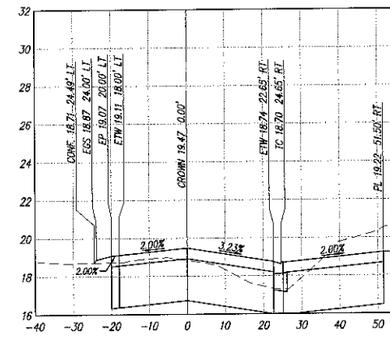
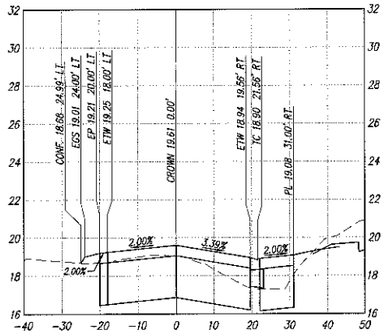


ARBOR AVENUE CROSS SECTIONS

SCALE: 1"= 20' HORIZ.
1"= 4' VERT.

43+00



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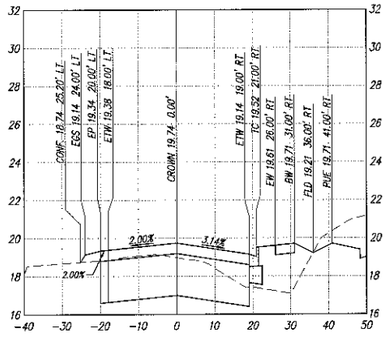

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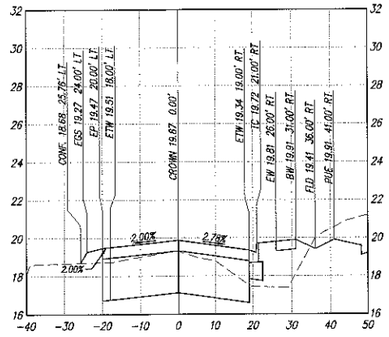

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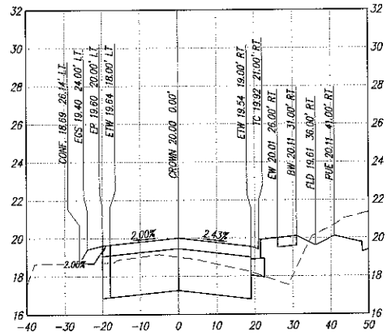

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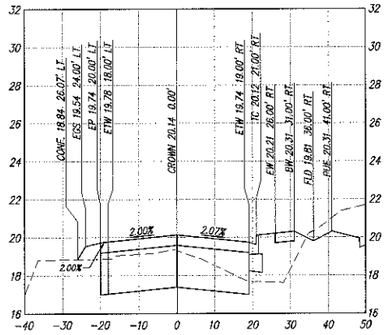

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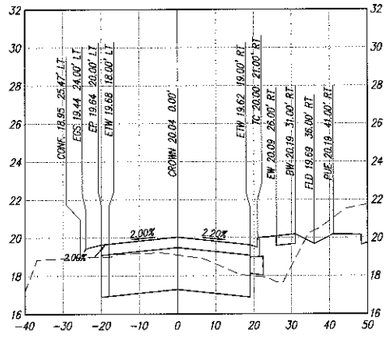

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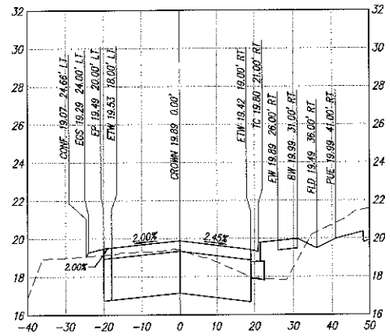

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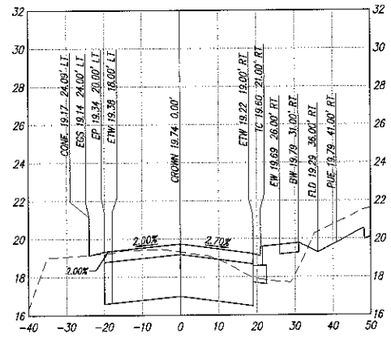

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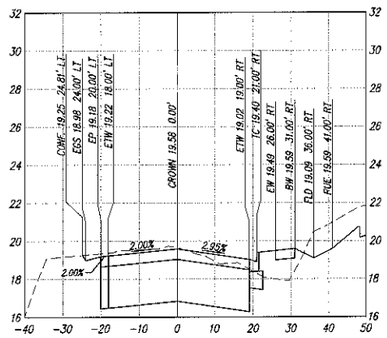

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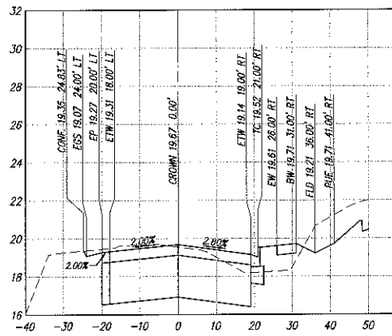

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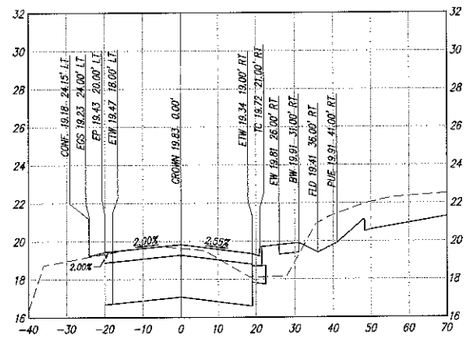

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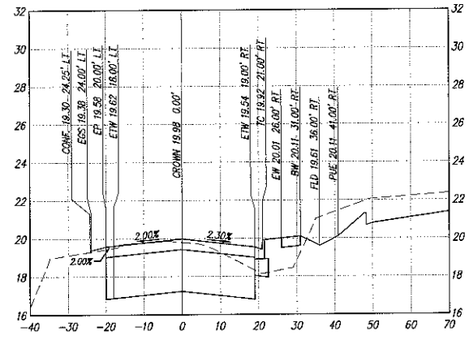

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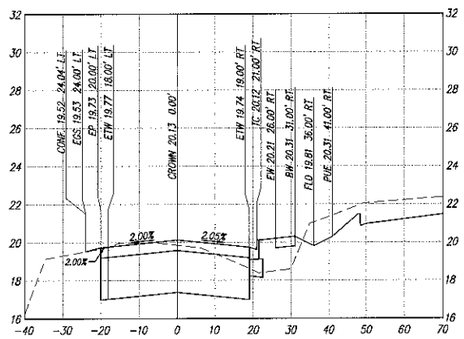

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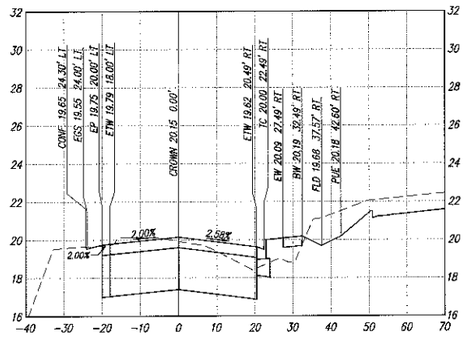

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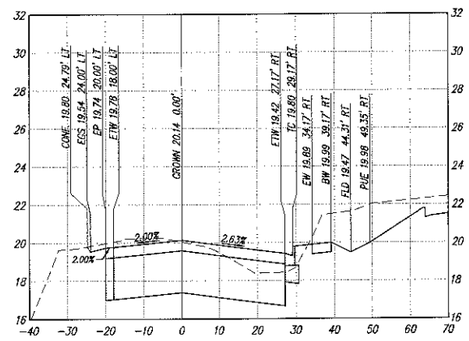

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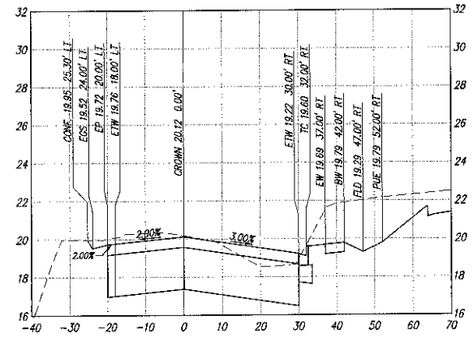
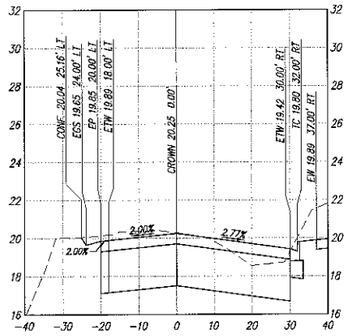


ARBOR AVENUE CROSS SECTIONS

SCALE: 1"= 20' HORIZ.
1"= 4' VERT.

51+00



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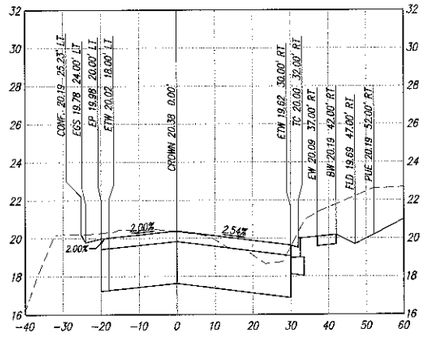

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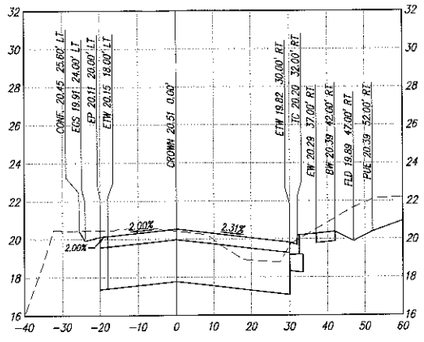

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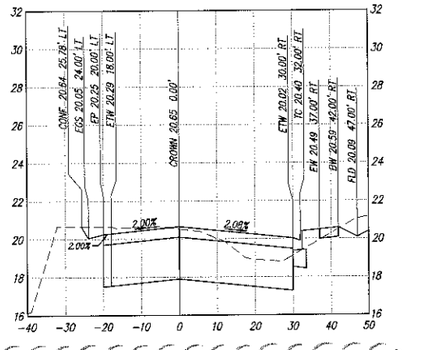

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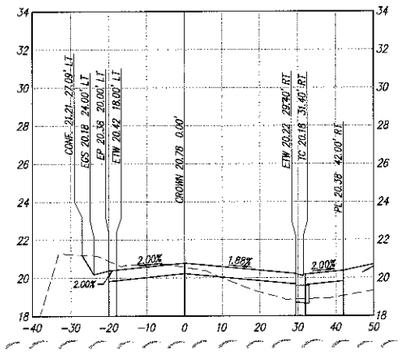

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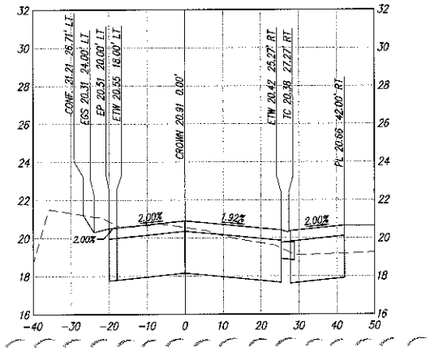

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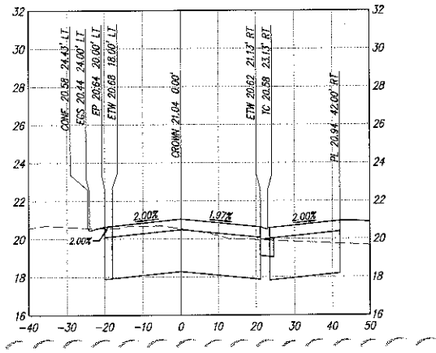

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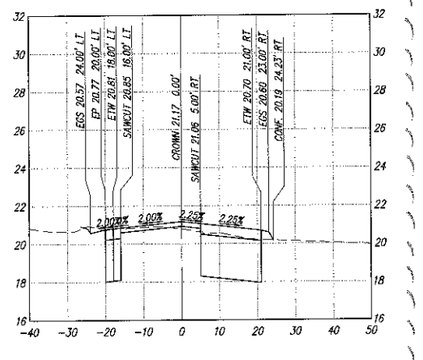

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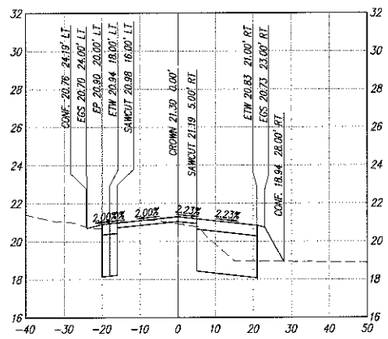

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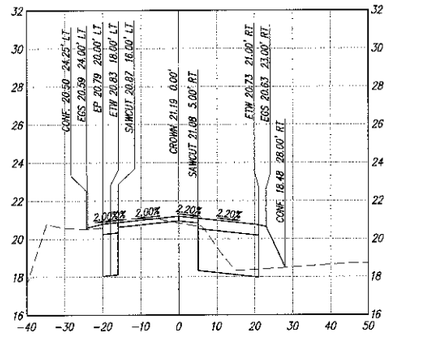

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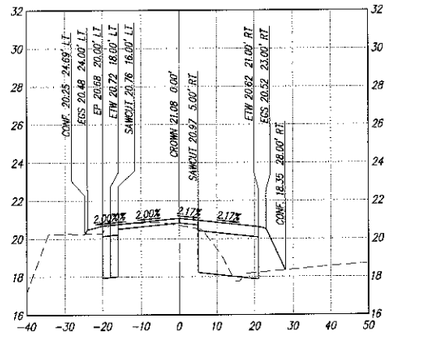

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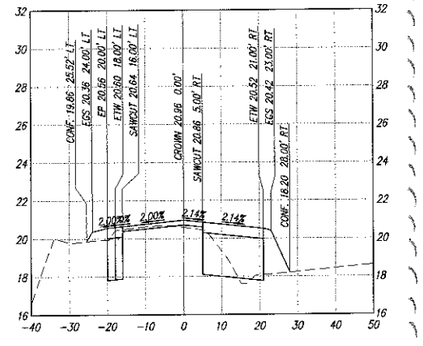

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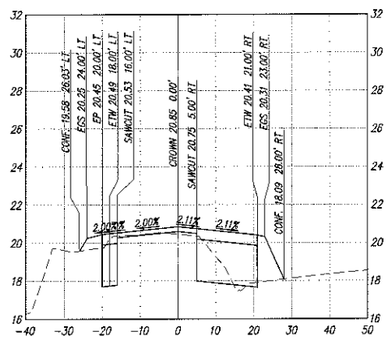

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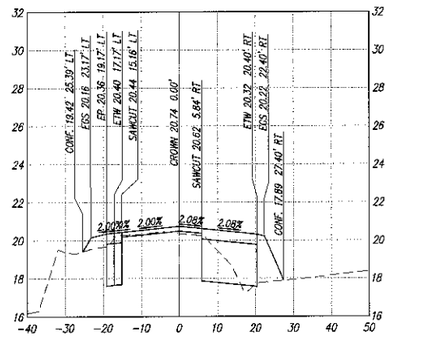

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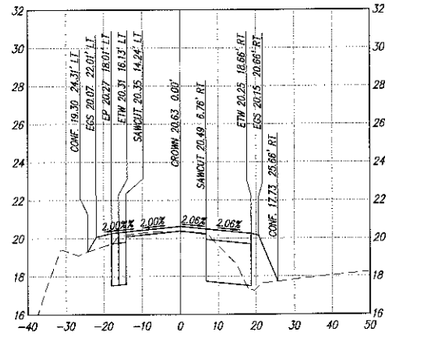

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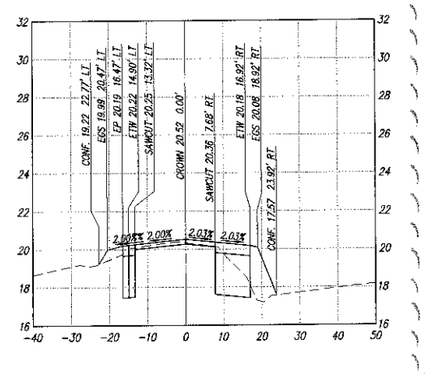

ARBOR AVENUE CROSS SECTIONS

SCALE: 1"= 20' HORIZ.
1"= 4' VERT.

1

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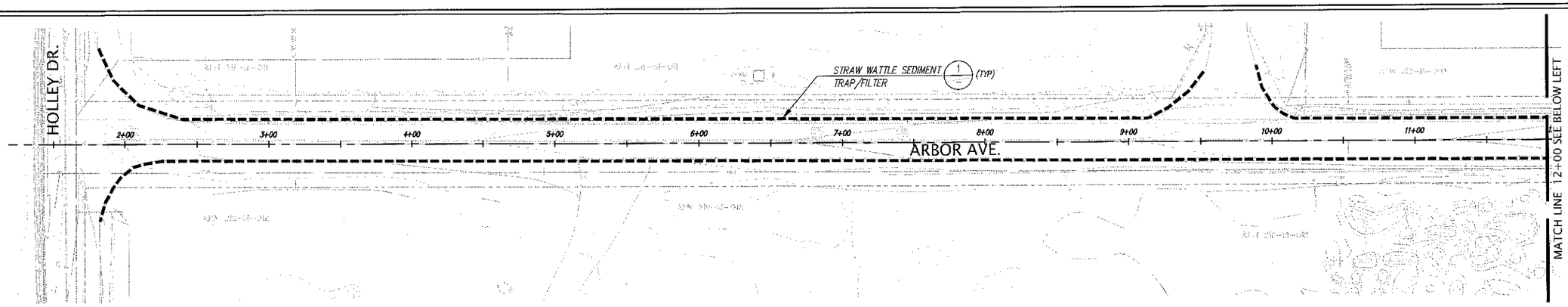
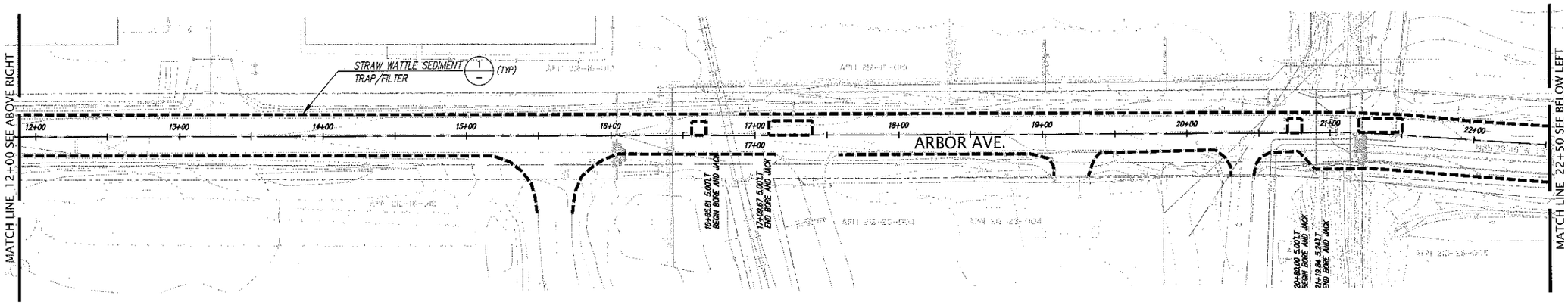
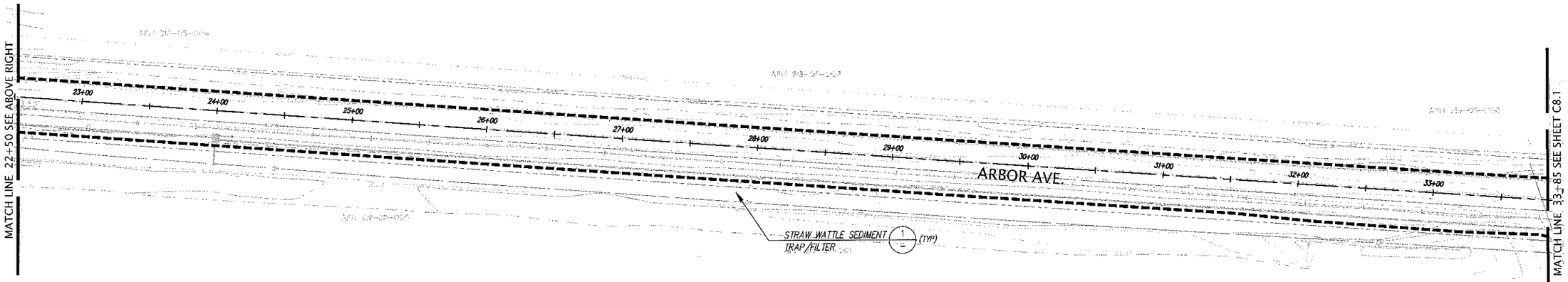
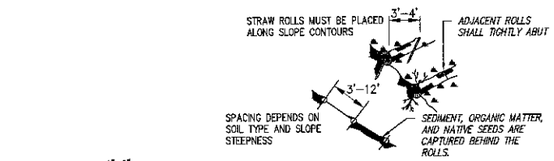
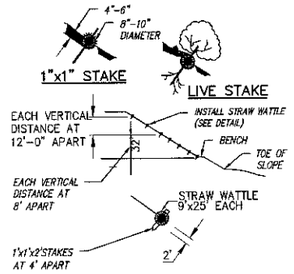




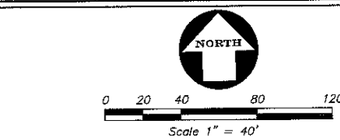


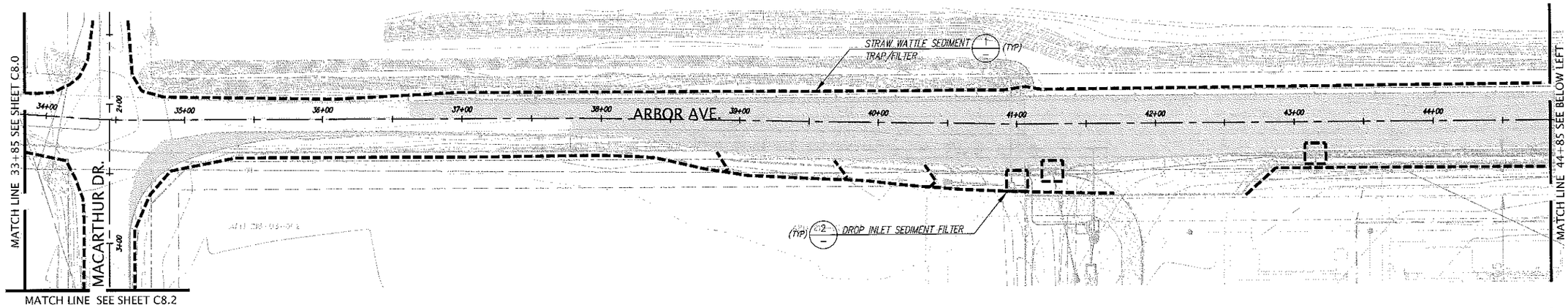


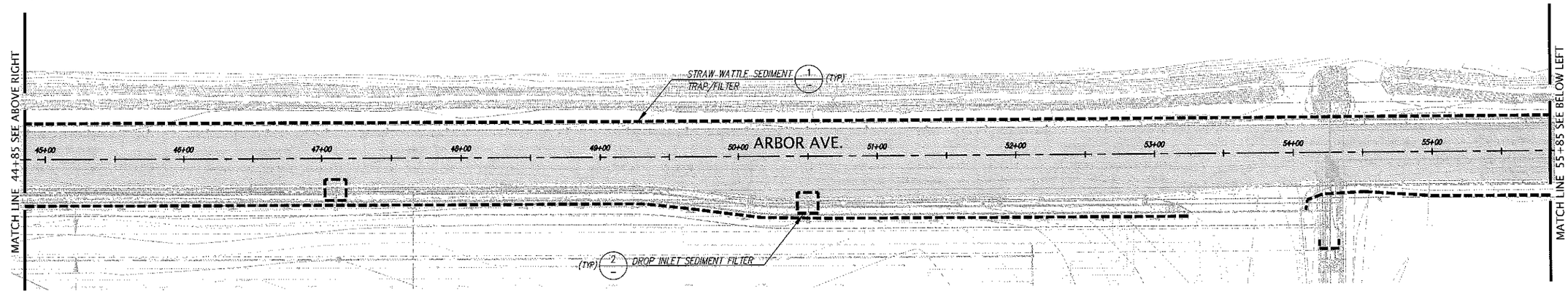


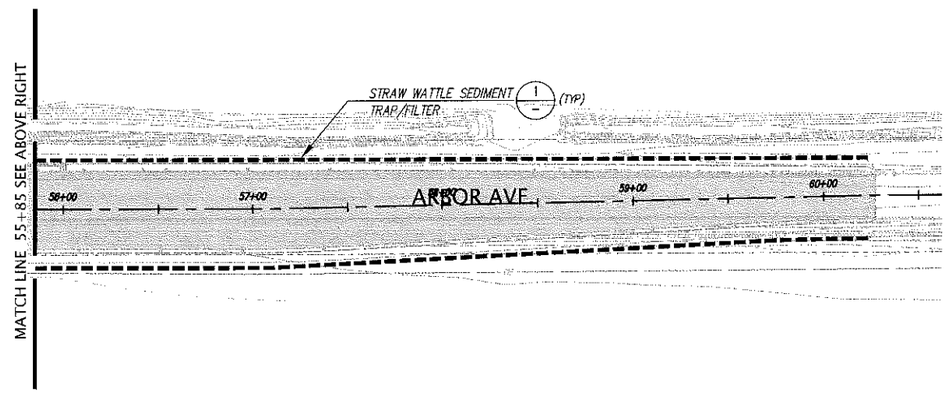
NOTE:
1. STRAW ROLLS ARE TUBES MADE FROM STRAW BOUND W/BIO-DEGRADABLE NETTING THEY ARE APPROX. 8" DIA AND 20-30 FT LONG.
2. STRAW ROLLS TRAP SEDIMENT AND REDUCE SHEET AND RILL EROSION BY REDUCING SLOPE GRADIENT, INCREASING INFILTRATION RATES AND BY PRODUCING A FAVORABLE ENVIRONMENT FOR PLANT ESTABLISHMENT.
3. STRAW ROLLS INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE WATTLE IN A TRENCH 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND WATTLE.

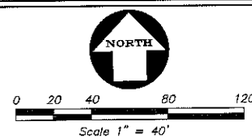
STRAW WATTLE
NOT TO SCALE
1





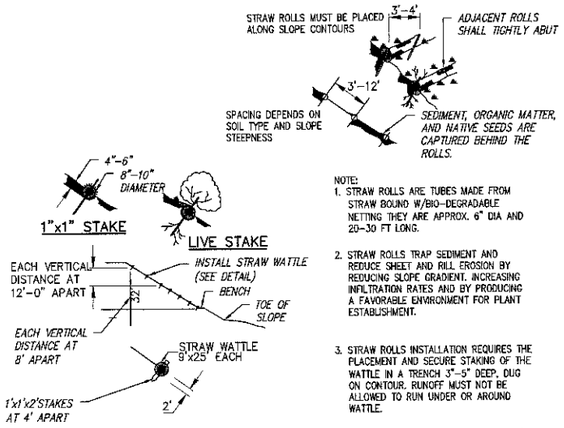






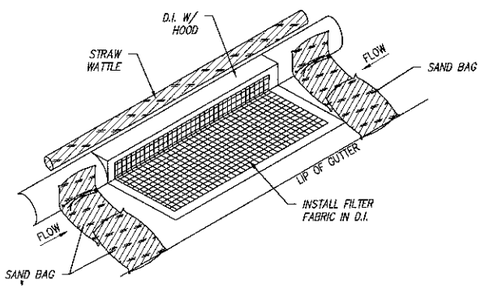
LEGEND

- STRAW WATTLE SEDIMENT TRAP/FILTER (1)
- DROP INLET SEDIMENT FILTER (2)

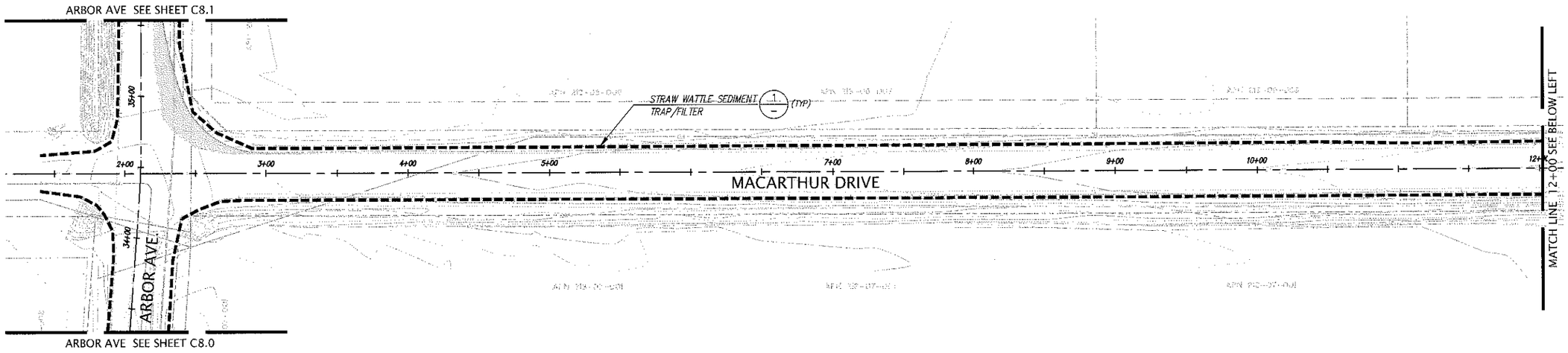


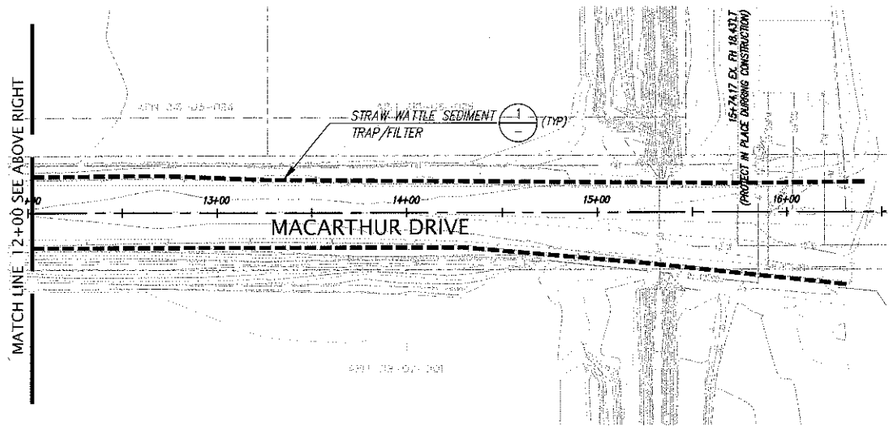
NOTE:
1. STRAW ROLLS ARE TUBES MADE FROM STRAW BOUND W/BIO-DEGRADABLE NETTING THEY ARE APPROX. 6" DIA AND 20-30 FT LONG.
2. STRAW ROLLS TRAP SEDIMENT AND REDUCE SHEET AND RILL EROSION BY REDUCING SLOPE GRADIENT, INCREASING INFILTRATION RATES AND BY PRODUCING A FAVORABLE ENVIRONMENT FOR PLANT ESTABLISHMENT.
3. STRAW ROLLS INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE WATTLE IN A TRENCH 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND WATTLE.

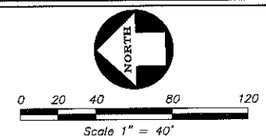
STRAW WATTLE
NOT TO SCALE
1



EXISTING CURB INLET FILTER DETAIL
NOT TO SCALE
2

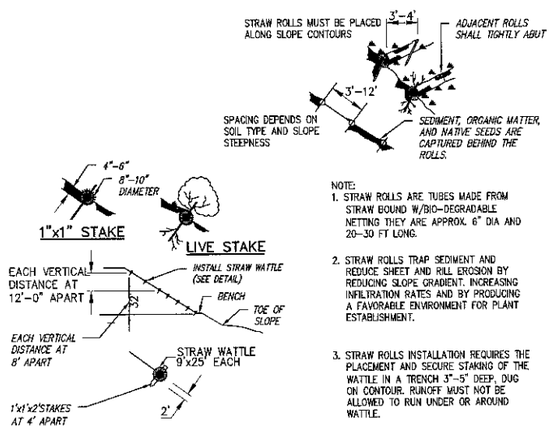






LEGEND

STRAW WATTLE SEDIMENT TRAP/FILTER 1



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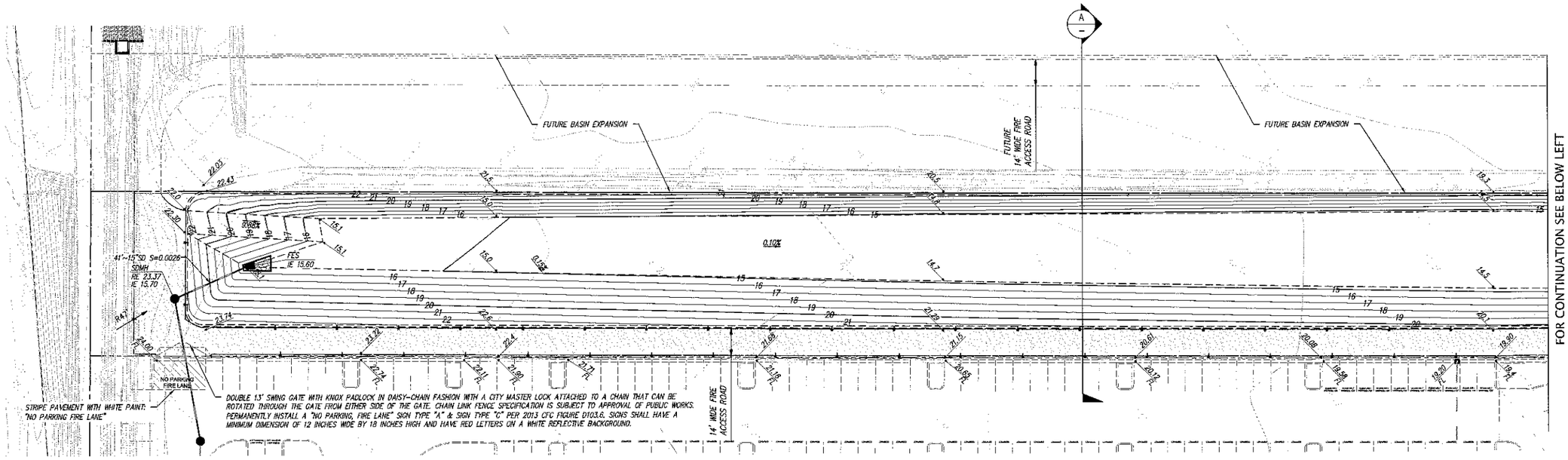
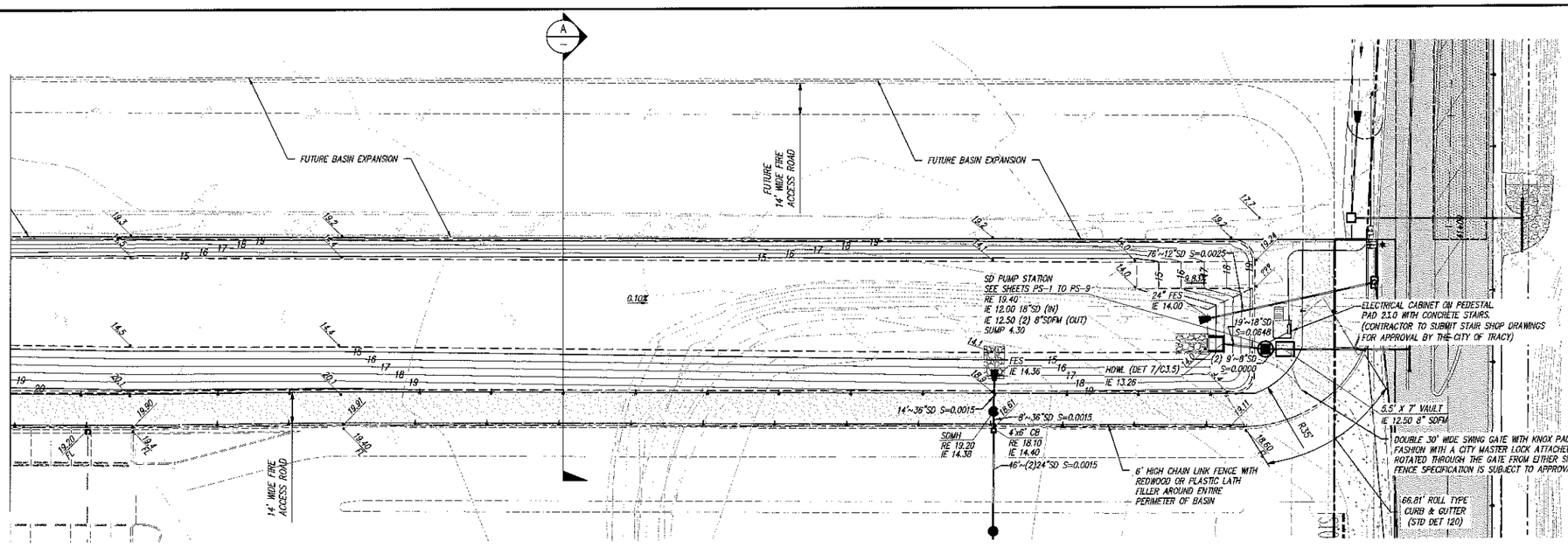
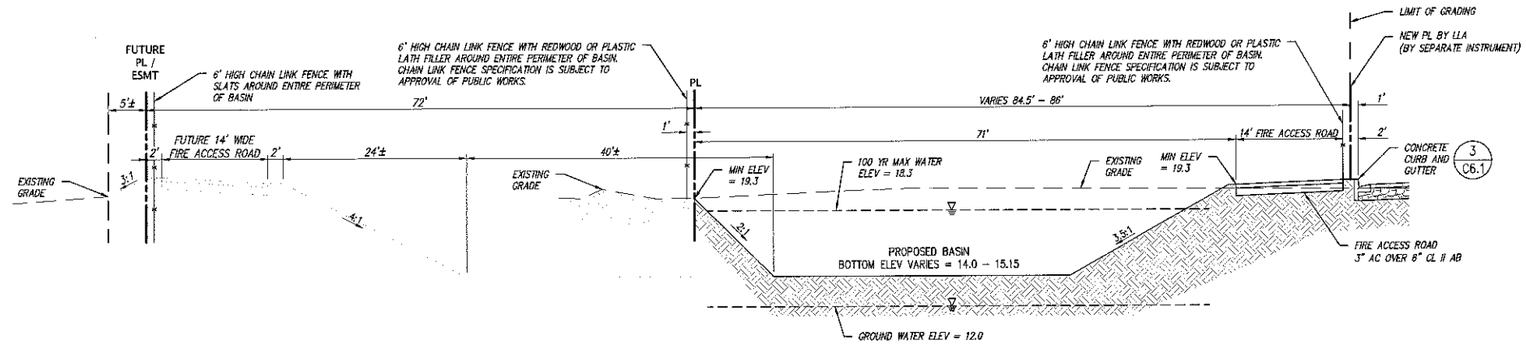
STRAW WATTLE 1
NOT TO SCALE

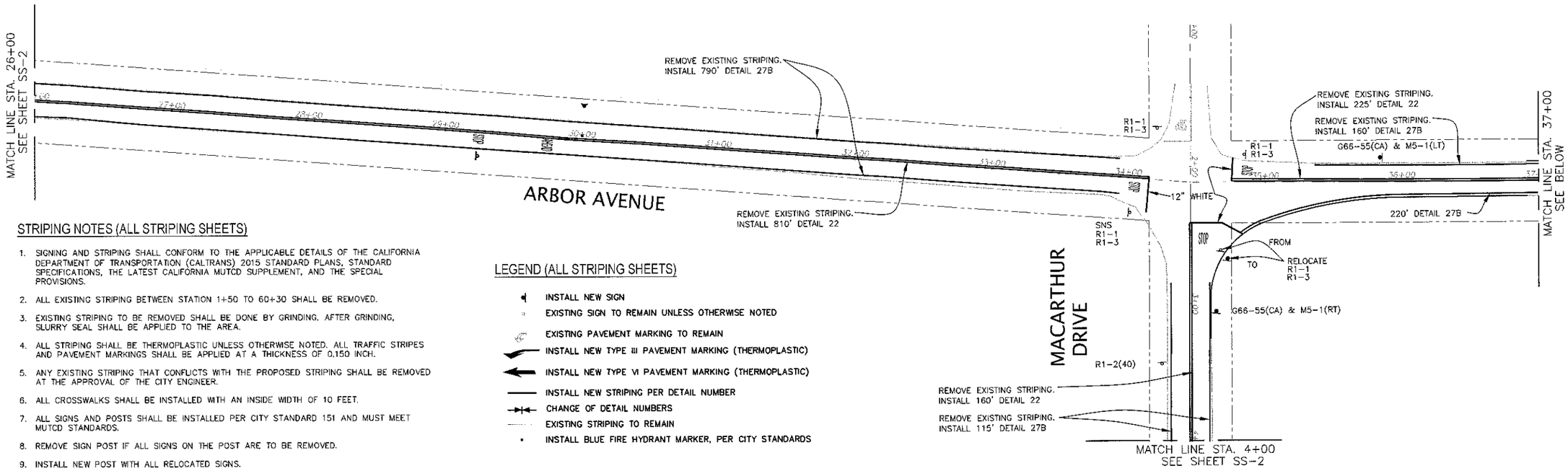






BASIN SECTION

SCALE: 1"= 10' HORIZ.
1"= 5' VERT.



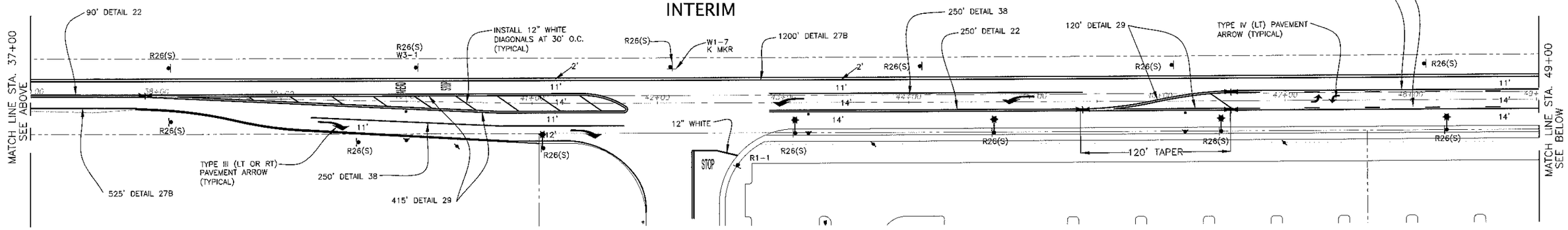
STRIPING NOTES (ALL STRIPING SHEETS)

1. SIGNING AND STRIPING SHALL CONFORM TO THE APPLICABLE DETAILS OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) 2015 STANDARD PLANS, STANDARD SPECIFICATIONS, THE LATEST CALIFORNIA MUTCD SUPPLEMENT, AND THE SPECIAL PROVISIONS.
2. ALL EXISTING STRIPING BETWEEN STATION 1+50 TO 60+30 SHALL BE REMOVED.
3. EXISTING STRIPING TO BE REMOVED SHALL BE DONE BY GRINDING. AFTER GRINDING, SLURRY SEAL SHALL BE APPLIED TO THE AREA.
4. ALL STRIPING SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED. ALL TRAFFIC STRIPES AND PAVEMENT MARKINGS SHALL BE APPLIED AT A THICKNESS OF 0.150 INCH.
5. ANY EXISTING STRIPING THAT CONFLICTS WITH THE PROPOSED STRIPING SHALL BE REMOVED AT THE APPROVAL OF THE CITY ENGINEER.
6. ALL CROSSWALKS SHALL BE INSTALLED WITH AN INSIDE WIDTH OF 10 FEET.
7. ALL SIGNS AND POSTS SHALL BE INSTALLED PER CITY STANDARD 151 AND MUST MEET MUTCD STANDARDS.
8. REMOVE SIGN POST IF ALL SIGNS ON THE POST ARE TO BE REMOVED.
9. INSTALL NEW POST WITH ALL RELOCATED SIGNS.
10. INSTALL REFLECTIVE BLUE MARKERS AT EVERY FIRE HYDRANT.

LEGEND (ALL STRIPING SHEETS)

- INSTALL NEW SIGN
- EXISTING SIGN TO REMAIN UNLESS OTHERWISE NOTED
- EXISTING PAVEMENT MARKING TO REMAIN
- INSTALL NEW TYPE III PAVEMENT MARKING (THERMOPLASTIC)
- INSTALL NEW TYPE VI PAVEMENT MARKING (THERMOPLASTIC)
- INSTALL NEW STRIPING PER DETAIL NUMBER
- CHANGE OF DETAIL NUMBERS
- EXISTING STRIPING TO REMAIN
- INSTALL BLUE FIRE HYDRANT MARKER, PER CITY STANDARDS

ARBOR AVENUE
INTERIM



ARBOR AVENUE
INTERIM

CITY OF TRACY

REVISIONS

DESIGNED BY:

ARBOR AVENUE

12" WHITE

R1-1

W3-1

STOP

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

REMOVE EXISTING STRIPING.
INSTALL 1160' DETAIL 22

REMOVE EXISTING STRIPING.
INSTALL 1100' DETAIL 27B

MATCH LINE STA. 13+50
SEE BELOW

ARBOR AVENUE

MATCH LINE STA. 13+50
SEE ABOVE

14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26

ARBOR AVENUE

REMOVE EXISTING STRIPING.
INSTALL 1250' DETAIL 22

REMOVE EXISTING STRIPING.
INSTALL 1250' DETAIL 27B

MATCH LINE STA. 26+00
SEE SHEET SS-1

MACARTHUR DRIVE

MATCH LINE STA. 4+00
SEE SHEET SS-1

W3-1

STOP

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00

REMOVE EXISTING STRIPING.
INSTALL 1200' DETAIL 27B

REMOVE EXISTING STRIPING.
INSTALL 1200' DETAIL 22

REPLACE G66-56 & M4-6
WITH G66-55(CA) & M6-3

CONFORM TO EXISTING
STRIPING

NORTH

40 0 20 40 80

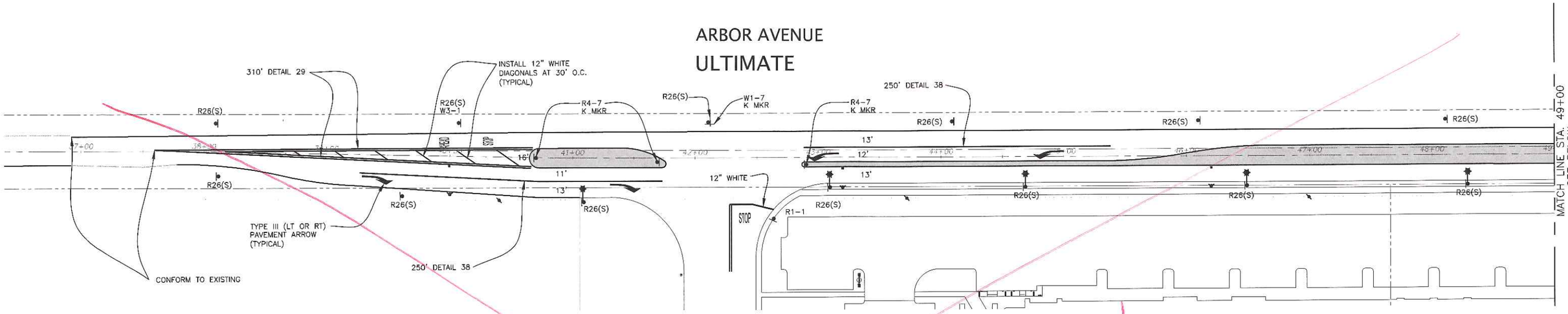
GRAPHIC SCALE 1" = 40'

CITY OF TRACY

REVISIONS

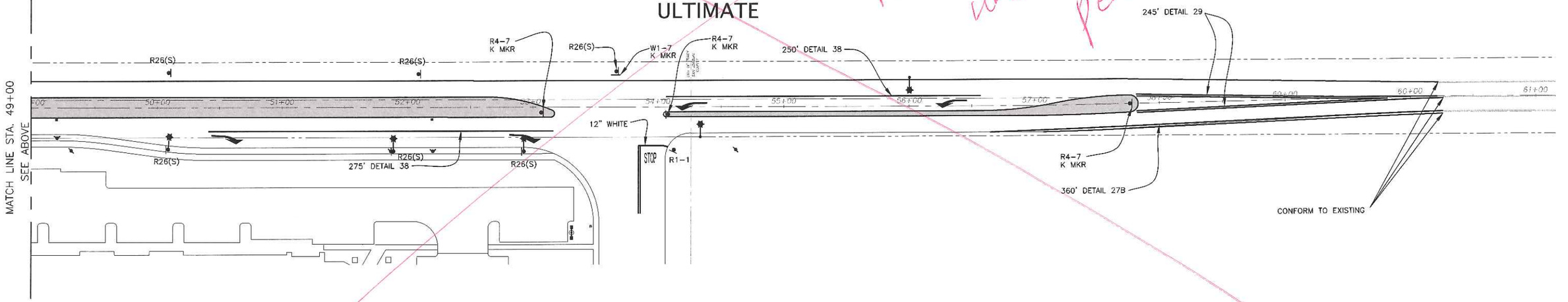
DESIGNED BY:

ARBOR AVENUE
ULTIMATE



not performed under this permit.

ARBOR AVENUE
ULTIMATE



LEGEND (ALL STRIPING SHEETS)

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- INSTALL NEW STRIPING PER DETAIL NUMBER
- CHANGE OF DETAIL NUMBERS
- EXISTING STRIPING TO REMAIN
- INSTALL BLUE FIRE HYDRANT MARKER, PER CITY STANDARDS

NORTH

40 0 20 40 80
GRAPHIC SCALE 1" = 40'

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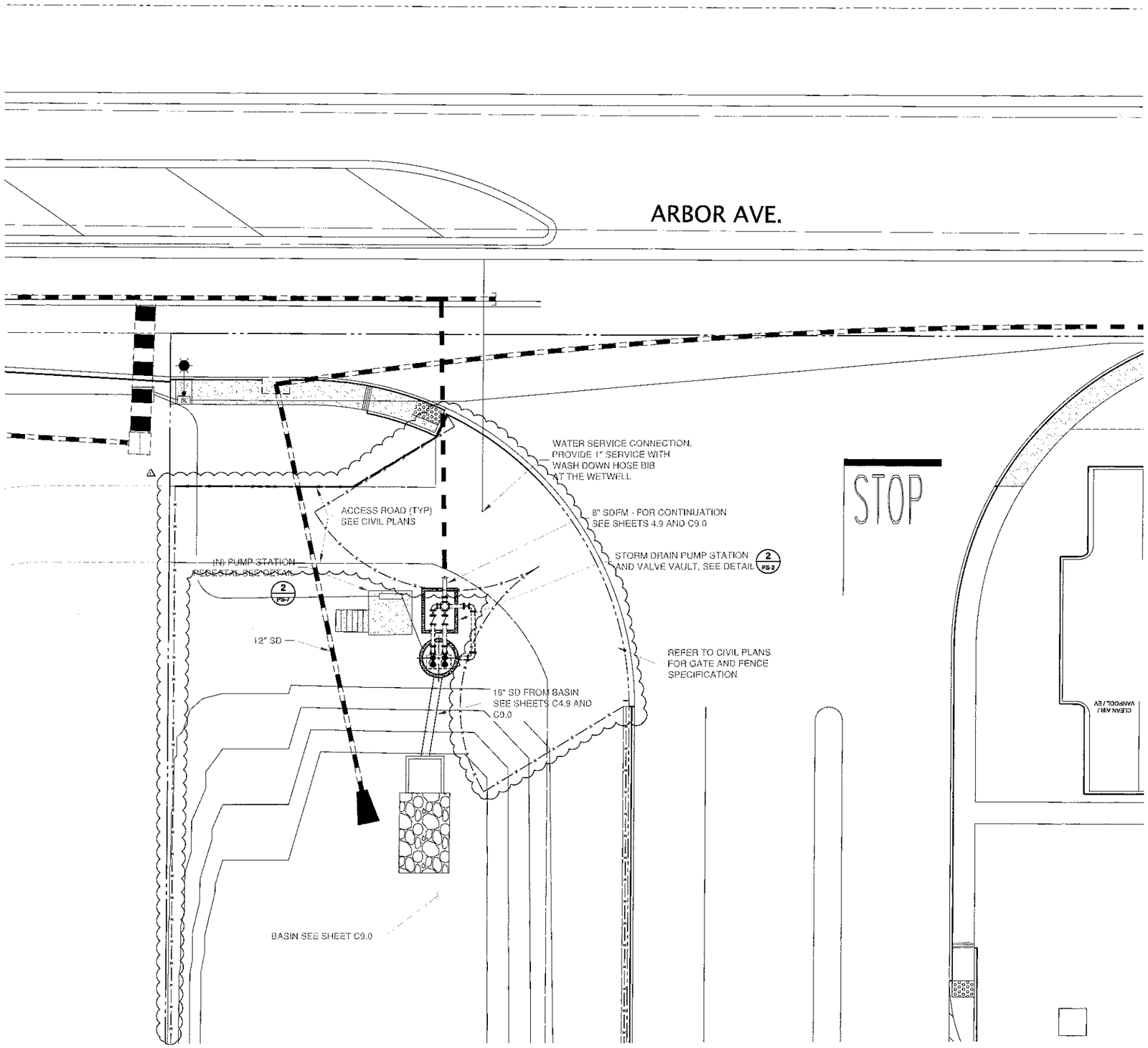
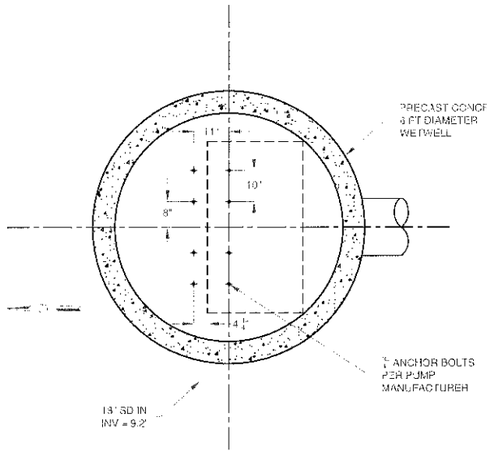
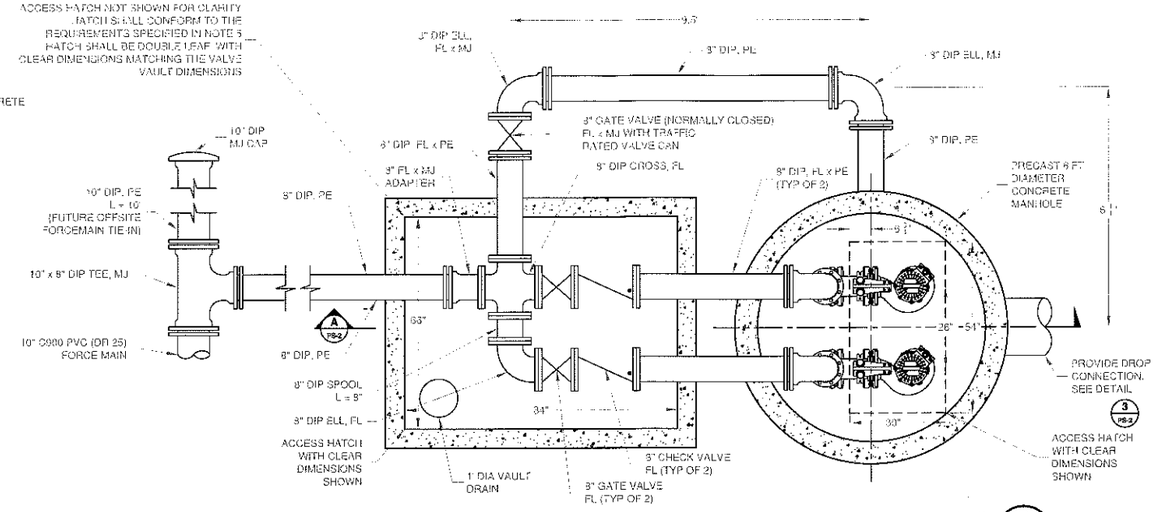
CITY OF TRACY
REVISIONS
DESIGNED BY:



PLAN
SCALE: 1" = 10'



PUMP MOUNTING DETAIL 1 PS-2
NTS



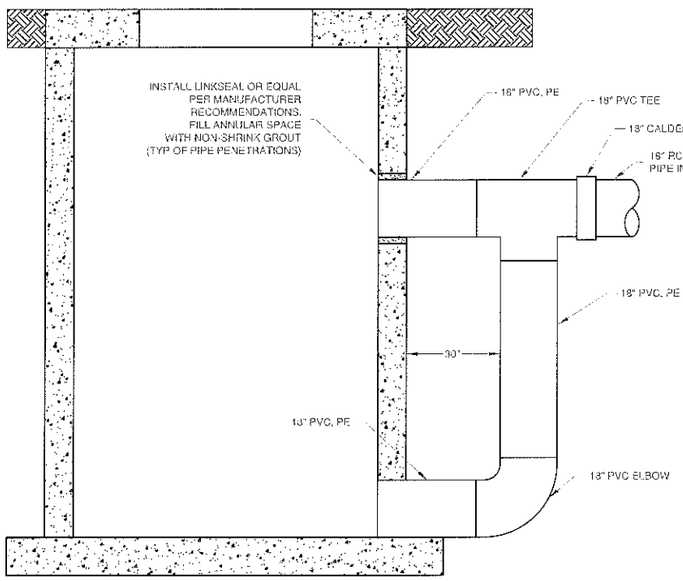
PUMP STATION PLAN DETAIL 2 PS-2
NTS

PUMP STATION NOTES

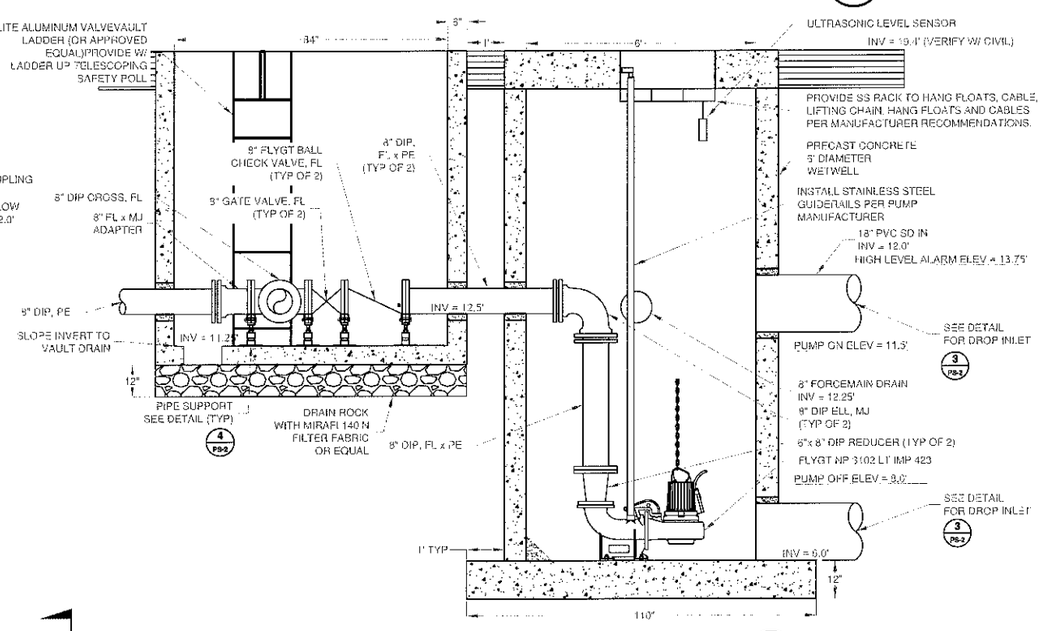
1. STORM DRAIN PUMP STATION WETWELL TO BE 6' ID PRECAST MANHOLE WITH FLAT SLAB TOP AND INTEGRAL BASE SECTION. PRECAST COLD JOINTS SHALL BE SEALED WITH RAM-NEK GASKET MATERIAL. STRUCTURE SHALL BE RATED FOR H20 LOADING AND PROJECT SOIL/GROUNDWATER CONDITIONS.
2. INTERIOR OF WETWELL SHALL BE COATED WITH RAVEN 405 EPOXY LINER
3. SUBMERSIBLE STORM DRAIN PUMP SHALL BE: FLYGT N 3102 LT WITH 423 IMPELLER (QTY: 2), RATING POINT 330 GPM @ 21' FT TDH, 5 HP 3-PHASE MOTOR, 6" NOMINAL DISCHARGE. PUMPS SHALL BE EXPLOSION PROOF RATED, SUITABLE FOR CL1 / DIV 1 HAZARDOUS LOCATIONS. CONTRACTOR SHALL VERIFY SITE ELECTRICAL SERVICE VOLTAGE. PUMP SHALL BE OPERATED IN DUPLEX CONFIGURATION.
   3.1. PUMP START SPEED SHALL BE 95%
   3.2. PUMP FULL SPEED ELEV = 12.5 FT.
   3.3. PUMP MOTOR SHALL BE RATED FOR USE WITH VFD
4. AN ULTRASONIC LEVEL SENSOR IS REQUIRED TO CONTROL THE PUMP OPERATION. THE "LEAD PUMP ON" ELEVATION SHALL BE 11.5 FT, THE "HIGH LEVEL ALARM" ELEVATION SHALL BE 13.75 FT, THE "PUMP OFF" ELEVATION SHALL BE 9.0 FT. THE PUMP CONTROLS SHOULD BE CONFIGURED TO ALTERNATE THE LEAD PUMP AT EACH PUMP START
5. PUMP WETWELL ACCESS HATCH AND VALVE VAULT ACCESS HATCH TO BE STEEL DIRECT TRAFFIC RATED ACCESS HATCH WITH ANGLE FRAME. ACCESS HATCHES TO BE SUPPLIED WITH HOLD OPEN ARM CAPABLE OF LOCKING HATCH IN THE 90 DEGREE OPEN POSITION, RECESSED LIFT HANDLE, HEAVY DUTY PINTLE SPRING FOR EASE OF OPERATION WHEN OPENING, AND HINGED SAFETY GRATE TO AID IN FALL PREVENTION AND UNAUTHORIZED ENTRY. DESIGN OF ACCESS HATCH TO CONFORM TO OSHA STANDARD 1910.23. ALL HARDWARE SHALL BE TYPE 316 STAINLESS STEEL. HATCH SHALL BE RATED FOR MINIMUM AASHTO H20-44 LOADING AND BE APPROVED BY MANUFACTURER FOR TRAFFIC CONDITIONS ANTICIPATED IN THE FIELD.
6. ALL PUMP ACCESSORY HARDWARE INCLUDING ANCHOR BOLTS, LIFTING CHAIN, GUIDE RAILS AND BRACKETS SHALL BE TYPE 316 STAINLESS STEEL
7. ALL BOLTS, NUTS, AND WASHERS USED FOR CONNECTING VALVES, FITTINGS, PUMPS AND OTHER APPURTENANCES SHALL BE STAINLESS STEEL TYPE 316. ALL NUTS SHALL BE PROVIDED WITH XYLAN FLUOROPOLYMER COATING, TRIPAC 2000 OR EQUAL.
8. DUCTILE IRON PIPE SHALL MEET OR EXCEED REQUIREMENTS PER AWWA C151 STANDARDS. ALL BURIED DUCTILE IRON PIPE AND FITTINGS SHALL BE PROTECTED FROM CORROSION WITH POLYWRAP IN ACCORDANCE WITH AWWA C105 ⚠
9. CHECK VALVES TO BE FLYGT BALL CHECK VALVE OF SIZE AND CONNECTION TYPE SHOWN
10. GATE VALVES TO BE RESILIENT WEDGE TYPE. CLOW VALVE COMPANY F 6102 / F-6106 OR EQUAL, CAST IRON BODY WITH FL x MJ or FL x FL ENDS, 2-INCH SQUARE OPERATOR NUT FOR BURIED SERVICE.
11. SD PIPES AND MANHOLE ELEVATIONS BASED ON SITE CIVIL DRAWINGS DATED JANUARY 2016.

FORCEMAIN NOTES

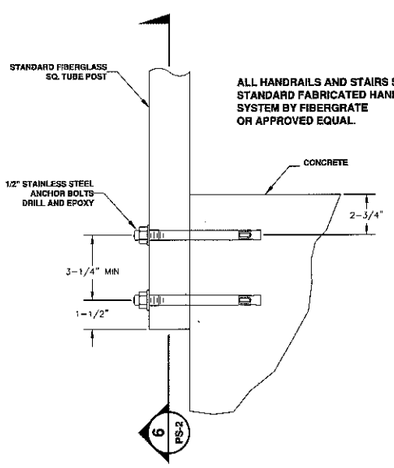
1. FORCEMAINS TO BE CONSTRUCTED WITHOUT ANY INTERMEDIATE HIGH POINTS IN THE PIPE TO AVOID USE OF AIR RELEASE VALVES.
2. DUCTILE IRON PIPE SHALL MEET OR EXCEED REQUIREMENTS PER AWWA C151 STANDARDS. ALL BURIED DUCTILE IRON PIPE AND FITTINGS SHALL BE PROTECTED FROM CORROSION WITH POLYWRAP IN ACCORDANCE WITH AWWA C105 ⚠
3. PVC PRESSURE PIPE SHALL MEET OR EXCEED REQUIREMENTS PER AWWA C900 STANDARDS
4. PVC GRAVITY PIPE SHALL MEET OR EXCEED REQUIREMENTS PER ASTM F679 STANDARDS
5. ALL JOINTS SHALL BE MECHANICALLY RESTRAINED BY USE OF FLANGES, MEGALUGS, BELL RESTRAINTS OR LOCKING GASKETS, 20 FEET ON EITHER SIDE OF A FITTING OR VALVE



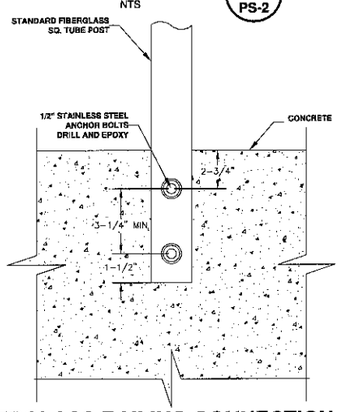
DROP CONNECETION DETAIL 3 PS-2
NTS



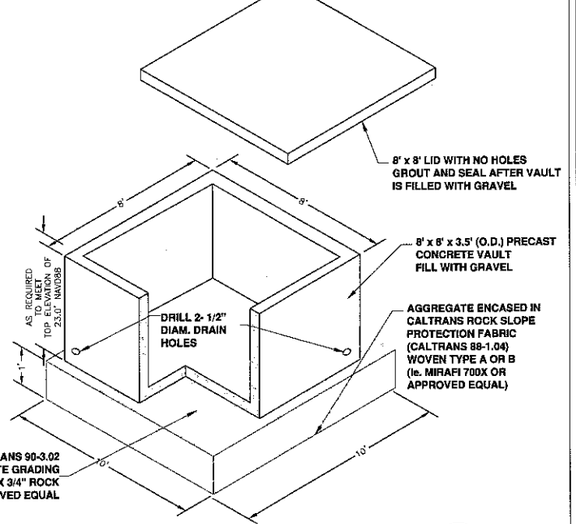
PUMP STATIONS SECTION A PS-2
NTS



FIBERGLASS RAILING CONNECTION 5 PS-2
NO SCALE

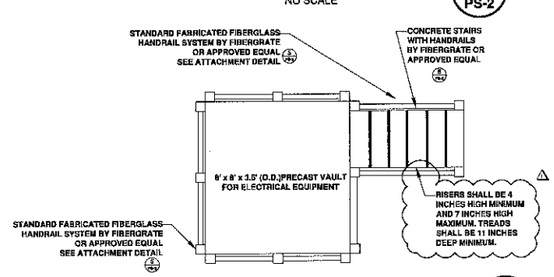


FIBERGLASS RAILING CONNECTION 6 PS-2
NO SCALE



ELECTRICAL PEDESTAL DETAIL 7 PS-2
NO SCALE

PIPE SUPPORT DETAIL 4 PS-2
NO SCALE



ELECTRICAL PEDESTAL LAYOUT DETAIL 8 PS-2
NO SCALE

ELECTRICAL SPECIFICATIONS

1. ALL WORK AND MATERIALS SHALL BE IN COMPLETE ACCORDANCE WITH THE 2013 CALIFORNIA ELECTRICAL CODE (C.E.C.) THE LATEST EDITION OF CAL/OSHA, AND ALL APPLICABLE LOCAL RULES AND REGULATIONS.

1.1 FURNISH LABOR AND MATERIALS AND INSTALL ELECTRICAL WORK COMPLETE AS SHOWN ON THE DRAWINGS. WORK SHALL INCLUDE ALL MATERIALS ON THE PLANS AND THAT WHICH IS NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION OF THE ELECTRICAL SYSTEMS SHOWN OR DESCRIBED HEREIN.

1.2 DO ALL CUTTING, PATCHING, REPAIRING NECESSARY FOR THE PROPER INSTALLATION OF WORK AND REPAIR ANY DAMAGE DONE, COORDINATING THIS WORK WITH THAT OF OTHER CRAFTS.

1.3 CONTRACTOR SHALL BE HELD TO HAVE EXAMINED THE SITE AND COMPARED IT WITH THE SPECIFICATIONS AND PLANS AND TO HAVE SATISFIED HIMSELF AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. HE SHALL BE HELD RESPONSIBLE FOR KNOWLEDGE OF ALL EXISTING CONDITIONS WHETHER OR NOT ACCURATELY DESCRIBED. NO SUBSEQUENT ALLOWANCE SHALL BE MADE FOR ANY EXTRA EXPENSE DUE TO FAILURE TO MAKE SUCH EXAMINATION.

2. ALL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALL MATERIALS SHALL BE NEW AND U.L. LISTED.

3. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY FACILITIES FOR TEMPORARY CONSTRUCTION POWER. ENERGY COSTS SHALL BE PAID BY OWNER.

4. PAY ALL INSPECTION AND OTHER APPLICABLE FEES; PROCURE ALL LICENSES AND PERMITS NECESSARY TO THE PROSECUTION AND COMPLETION OF ELECTRICAL WORK.

5. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS INSTALLED UNDER THIS CONTRACT FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE BY OWNER. CONTRACTOR IS NOT REQUIRED TO GUARANTEE LAMPS AFTER ACCEPTANCE.

6. VERIFY EXISTING CONDITIONS IN FIELD AND MAKE ADJUSTMENTS AS REQUIRED TO SUIT SUCH CONDITIONS.

7. ALL WORK REQUIRING INTERRUPTION OF EXISTING CIRCUITS, USE OF OWNER'S FACILITIES, OR DISRUPTION OR INTERRUPTION OF ONGOING OWNER ACTIVITIES SHALL BE COORDINATED WITH THE OWNER.

8. AS-BUILTS: SUBMIT TO THE OWNER ONE (1) MARKED UP PRINT OF "AS-BUILT" CONDITIONS OF ALL WORK UNDER THIS SECTION.

9. SAFETY PRECAUTIONS: PROVIDE AND MAINTAIN THROUGHOUT THE WORK ADEQUATE SAFEGUARDS INCLUDING BARRIERS, WARNING SIGNS, ENCLOSURES AND LIGHTS, TO PREVENT ACCIDENTAL INJURY TO PERSON OR DAMAGE TO PROPERTY.

10. PROTECTION: PROTECT ALL WORK, MATERIALS AND EQUIPMENT FROM DAMAGE FROM ANY CAUSE WHATSOEVER AND PROVIDE ADEQUATE AND PROPER STORAGE FACILITIES DURING THE PROGRESS OF THE WORK. PROVIDE FOR THE SAFETY AND GOOD CONDITION OF ALL WORK UNTIL FINAL ACCEPTANCE OF WORK BY THE OWNER, AND REPLACE ALL DAMAGED OR DEFECTIVE WORK, MATERIALS, AND EQUIPMENT BEFORE REQUESTING FINAL ACCEPTANCE.

11. DRAWINGS: THE GENERAL ARRANGEMENT OF OUTLETS, AND EQUIPMENT, AS SHOWN ON THE PLANS, IS DIAGRAMMATIC AND APPROXIMATELY CORRECT AS TO THE LOCATIONS, WHERE MINOR CHANGES ARE REQUIRED BECAUSE OF STRUCTURAL CONDITIONS OR FOR THE CONVENIENCE OF THE OWNER, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL EXPENSE TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURATE LOCATIONS OF ALL OUTLETS, ETC., WITH RESPECT TO THE WORK OF OTHERS. NO EXTRAS WILL BE ALLOWED ON ACCOUNT OF MOVING WORK UNDER THIS SECTION TO AVOID INTERFERENCE WITH WORK OF OTHER CONTRACTORS.

12. SUBMITTALS: CONTRACTOR SHALL SUBMIT A COMPLETE LIST OF ALL PROPOSED MATERIALS AND EQUIPMENT WITHIN 15 DAYS OF AWARD OF CONTRACT. CONTRACTOR SHALL MAKE NO SUBSTITUTIONS OF MATERIALS OR EQUIPMENT WITHOUT WRITTEN APPROVAL OF THE OWNER. ALL DIMENSIONAL OR ELECTRICAL CHANGES, OR CHANGES TO OTHER WORK WHICH ARE REQUIRED BY, OR ARE A RESULT OF, AN ACCEPTABLE ELECTRICAL SUBSTITUTION SHALL BE THE SOLE AND COMPLETE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR AND SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.

13. INSPECTION: ALL WORK AND MATERIALS COVERED BY THIS SPECIFICATION SHALL BE SUBJECT TO INSPECTION AT ANY AND ALL TIMES BY REPRESENTATIVES OF THE OWNER. WORK SHALL NOT BE CLOSED IN OR COVERED BEFORE INSPECTION AND APPROVAL BY THE OWNER OR HIS REPRESENTATIVE. ANY MATERIAL FOUND NOT CONFORMING WITH THESE SPECIFICATIONS SHALL, WITHIN 3 DAYS AFTER BEING NOTIFIED BY THE OWNER, BE REMOVED FROM PREMISES; IF SAID MATERIAL HAS BEEN INSTALLED, ENTIRE EXPENSE OF REMOVING AND REPLACING SAME, INCLUDING ANY CUTTING AND PATCHING THAT MAY BE NECESSARY, SHALL BE BORNE BY THIS CONTRACTOR.

14. TESTS: UPON COMPLETION OF WORK AND ADJUSTMENT OF ALL EQUIPMENT, ALL SYSTEMS SHALL BE TESTED UNDER THE DIRECTION OF THE OWNER TO DEMONSTRATE THAT ALL EQUIPMENT FUNCTIONS ELECTRICALLY IN THE MANNER REQUIRED. ALL SYSTEMS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS AND SHALL BE FREE FROM MECHANICAL AND ELECTRICAL DEFECTS. ALL CIRCUITS SHALL BE TESTED FOR PROPER NEUTRAL CONNECTIONS. CONTRACTOR SHALL REMOVE AND REPLACE ALL DEFECTIVE WORKMANSHIP AND/OR MATERIALS AT NO EXPENSE TO OWNER.

15. CLEANUP: AT COMPLETION OF WORK, THIS CONTRACTOR SHALL CLEAN UP AND REMOVE ALL DEBRIS AND MATERIALS NOT INSTALLED IN WORK, LEAVING PREMISES CLEAN.

16. CONDUCTORS:

16.1 CONDUCTORS SHALL BE INSULATED COPPER, NO. 12 AWG MINIMUM SIZE, THHN/THWN, SOLID OR STRANDED (EXCEPT FOR LOW VOLTAGE WIRING AND WHERE SPECIFICALLY NOTED OTHERWISE ON THE PLAN).

16.2 ALL CONDUCTORS NO. 6 AND LARGER SHALL BE STRANDED.

16.3 WIRE COLOR CODE SHALL BE AS FOLLOWS:

	120/240V
A PHASE -	BLACK
B PHASE -	ORANGE (STRINGER LEG)
C PHASE -	BLUE
NEUTRAL -	WHITE
GROUND -	GREEN

16.4 FOR CONDUCTORS NO. 6 AND LARGER, INSULATION COLOR MAY BE BLACK WITH TAPE BANDS (COLORED PER ABOVE) LOCATED AT EACH END OF THE CONDUCTOR RUN AND AT ALL OTHER LOCATIONS REQUIRED BY THE C.E.C.

16.5 ALL CONDUCTORS SHALL BE RUN IN APPROVED RACEWAY U.O.N.

16.6 CONDUCTOR SPLICES:
JOIN THE CONDUCTORS SECURELY, BOTH MECHANICALLY AND ELECTRICALLY USING SCREW-ON TYPE CONNECTORS FOR WIRE SIZES #4AWG AND SMALLER. THE PREFERRED PRODUCT IS WIRE-NUT® "TWIST-ON CONNECTOR BY IDEAL.

USE HIGH COMPRESSION BARREL SPLICES FOR CONDUCTORS LARGER THAN #4AWG. THE PREFERRED BARREL SPLICE IS BURNDY HYLUG™ SPLICE. THE SPLICED AREA SHALL BE COVERED TO PROVIDE EQUAL OR GREATER INSULATION THAN THAT OF THE ADJOINING CONDUCTORS. INSULATION OVER THE ORIGINAL INSULATION SHALL EXTEND 3 TO 5 OVERALL DIAMETERS OF THE INSULATED WIRE. THE PREFERRED INSULATION PRODUCT IS COLD SHRINK™ BY 3-M COMPANY

17. CONDUIT AND RACEWAYS:

17.1 ALL CONDUITS SHALL BE U.L. LISTED AND BEAR THE LABEL OF THE NATIONAL BOARD OF FIRE UNDERWRITERS.

17.2 RIGID NONMETALLIC CONDUIT: SCHEDULE 40 PVC PLASTIC FOR UNDERGROUND OR UNDER SLAB INSTALLATIONS, RATED 90 DEGREES C. WITH GLUE-ON PVC COUPLINGS AND FACTORY MADE ELBOWS AND SWEEPS; CARLON "PLUS 40".

17.3 RIGID STEEL CONDUIT (GRS): HOT-DIPPED GALVANIZED WITH THREADED ONE-PIECE COUPLINGS AND FACTORY MADE ELBOWS. NIPPLES THROUGH 12" IN LENGTH SHALL BE FACTORY MADE. CONNECTORS THREADED TYPE WITH BONDING LOCKNUT, INSULATED THROAT AND NEOPRENE O-RING. PROVIDE GRS FOR OUTDOOR INSTALLATIONS EXPOSED TO WEATHER.

17.4 GENERAL PURPOSE AIREWAYS AND AUXILIARY GUTTERS: GALVANIZED SHEET STEEL WITH SCREW COVERS AND ANSI-49 GRAY EPOXY PAINT FINISH OVER A CORROSION RESISTANT PHOSPHATE PRIMER. NEMA-1 FOR INDOOR USE, NEMA-3R (RAINTIGHT) FOR OUTDOOR USE.

17.5 NO ELECTRICAL CONDUITS SHALL BE COVERED BEFORE INSPECTION AND APPROVAL BY THE OWNER. CONTRACTOR SHALL NOTIFY OWNER THAT CONDUITS ARE READY FOR INSPECTION PRIOR TO INSTALLATION OF CONDUCTORS.

17.6 CONDUITS SHALL BE INSTALLED IN A RIGID AND SATISFACTORY MANNER WITH SUPPORT SPACED NOT MORE THAN 8 FEET APART U.O.N. CONDUITS SHALL BE INSTALLED TO OUTLET BOXES WITH LOCKNUTS AND BY BUSHING OR OTHER APPROVED DEVICES. CONDUITS SHALL BE JOINED BY APPROVED CONDUIT COUPLINGS AND SHALL HAVE ENDS BUTTED IN ALL CASES WHERE COUPLINGS ARE USED. CONDUITS SHALL BE TIGHTLY CORKED AND OTHERWISE WELL PROTECTED DURING CONSTRUCTION AND BLOWN OUT AND SWABBED BEFORE WIRES ARE PULLED. REAM ALL CONDUITS ENDS AFTER CUTTING. BENDS SHALL BE MADE WITH STANDARD CONDUIT ELBOWS OR CONDUIT BENT TO NOT LESS THAN SAME RADIUS. ALL BENDS SHALL BE FREE FROM DENTS OR FLATTENING.

17.7 PVC CONDUITS: MAKE COUPLINGS AND CONNECTORS WATERTIGHT IN ALL RUNS, UTILIZE SOLVENT CEMENT OF TYPE APPROVED BY CONDUIT MANUFACTURER. PROVIDE ADAPTERS AND LOCKNUTS WHERE CONDUIT IS ATTACHED TO METAL BOXES AND PANELS.

18. COORDINATE PLANNED ROUTES WITH WORK OF OTHER TRADES, INCLUDING MECHANICAL, PLUMBING AND FIRE SPRINKLER.

19. LIGHTING FIXTURES: LIGHT FIXTURES SHALL BE FURNISHED AND INSTALLED COMPLETE WITH LAMPS, BALLASTS, ETC., AND READY FOR SERVICE IN ACCORDANCE WITH THE DRAWINGS. TYPES SHALL BE AS SHOWN ON THE DRAWINGS. FIXTURE SUPPORTS SHALL BE OF DESIGN TO RESIST EARTHQUAKE FORCES OF SEISMIC ZONE 4.

20. GROUNDING: ALL DEVICES, FIXTURES, RACEWAY, EQUIPMENT ETC. SHALL BE GROUNDED VIA A GROUNDING CONDUCTOR RUN THROUGH THE RACEWAY OR CABLE. WIRING DEVICES SHALL BE GROUNDED THROUGH A COPPER WIRE, SIZED TO COMPLY WITH CODES. A GROUNDING CONDUCTOR SIZED TO COMPLY WITH CODES SHALL BE INSTALLED IN ALL CONDUITS AND CABLES.

21. GROUND RODS: COPPER OR COPPER-CLAD STEEL, MINIMUM 3/4" DIAMETER. PROVIDE MINIMUM 8 FOOT LONG RODS WHERE DIRECT BURIED (NON-ACCESSIBLE) AND MINIMUM 10 FOOT LONG RODS WHERE INSTALLED IN GROUND WELLS OR OTHER ACCESSIBLE LOCATIONS.

22. IDENTIFICATION OF SWITCHES AND APPARATUS:
ALL PANELBOARDS, CONTROL DEVICES, DISCONNECT SWITCHES, FEEDER BREAKERS AND MAIN BREAKER ON ELECTRIC SWITCHBOARDS, AND ALL OTHER APPARATUS USED FOR CONTROL OR OPERATION OF CIRCUITS, APPLIANCES AND EQUIPMENT, SHALL BE IDENTIFIED WITH ENGRAVED LAMICOID NAMEPLATES SECURELY FASTENED IN PLACE WITH CADMIUM PLATED SELF-TAPPING SCREWS. NAMEPLATE 1/4" LETTERING (BLACK LETTERS-WHITE FIELD).

23. ULTRASONIC LEVEL TRANSDUCER: RANGE OF 1' TO 30'; 4-20 MA OUTPUT; COMPATIBLE WITH CONTROLLER; FIELD VERIFY CABLE LENGTH PRIOR TO ORDERING; AS MANUFACTURED BY SIEMENS OR APPROVED EQUAL; PROVIDE SUBMITTAL FOR REVIEW.

24. PUMP CONTROL PANEL SPECIFICATION

25. GENERAL REQUIREMENTS:

26. PUMP CONTROL PANEL SHALL BE AN INTEGRATED SYSTEM CONSISTING OF THE MAIN BREAKER, CIRCUIT BREAKERS, MOTOR STARTERS WITH CONTROLS, PLC PROGRAMMABLE PUMP CONTROLLER, POWER SUPPLIES, BATTERY BACK UP, RELAYS, TELEMETRY EQUIPMENT AND OTHER AUTOMATIC CONTROLS AND DEVICES. THE PLC-PUMP CONTROLLER AND INSTRUMENTATION SHALL BE FURNISHED AS AN INTEGRAL PART OF THE CONTROL PANEL BY THE CONTROL PANEL MANUFACTURER/INTEGRATOR. THERE SHALL BE A DOCUMENTED FACTORY TEST AT THE MANUFACTURER/INTEGRATOR FACILITY PRIOR TO SHIPMENT. A FACTORY WITNESS TEST IS AN OPTION OF THE OWNER AND ENGINEER. THE MANUFACTURER/INTEGRATOR MUST BE CSIA CERTIFIED WITH CURRENT CERTIFICATION. THE INTEGRATED CONTROL SYSTEM SHALL BE SUPPLIED BY TESCO CONTROLS, INC., SACRAMENTO, CA.

27. ENCLOSURE:

27.1 FURNISH AND INSTALL ALL EQUIPMENT AS SHOWN ON DRAWINGS IN A NON-PROFILE WEATHERPROOF NEMA TYPE 3R LOW-PROFILE PUMP CONTROL PEDESTAL (AS SPECIFIED OR SHOWN), WITH DEAD FRONT INTERIOR AND HINGED GASKET EXTERIOR DOORS. OUTER ENCLOSURE SHALL BE CONSTRUCTED OF 12 GAUGE PRE-GALVANIZED STEEL. CABINET SHALL BE OF ALL WELDED CONSTRUCTION WITH WELDING MATERIALS SPECIFICALLY DESIGNED FOR THE MATERIAL USED. ALL FASTENERS, HINGES, LATCHES, AND HARDWARE SHALL BE OF STAINLESS STEEL. THERE SHALL BE NO EXPOSED NUTS, BOLTS, SCREWS, RIVETS, OR OTHER FASTENERS ON THE EXTERIOR. DOORS SHALL BE EQUIPPED WITH 3-POINT LATCHING MECHANISM, ROLLER BEARING LATCHES AND HASPS FOR OWNER PADLOCKS. DOORS SHALL BE HINGED ON THE SAME SIDE AND SHALL OPEN TO GREATER THAN 90 DEGREES. ALL DEAD FRONT LATCHES ARE 1/4 TURN ADJUSTABLE. CONCRETE BASE WITH ANCHOR BOLTS TO MEET APPLICABLE SEISMIC REQUIREMENTS SHALL BE PROVIDED. THE LOW-PROFILE UTILITY METERED PEDESTAL SHALL BE A TESCO 24-218-ARC WITH AN ARC-FLASH RATING OF HRC 0 OR 1 ON ALL COMPARTMENTS DOWNSTREAM FROM THE SERVICE DISCONNECT.

27.2 ENCLOSURE FINISH SHALL BE DRY POWDER, ELECTROSTATICALLY APPLIED AND BAKED ON. INTERIOR DOORS SHALL BE WHITE IN COLOR; EXTERIOR COLOR SHALL BE AS SPECIFIED ON DRAWINGS. THE PAINTING PROCESS SHALL INCLUDE A MINIMUM FIVE STAGES OF METAL PREPARATION AS FOLLOWS: 1) ALKALINE CLEANER, 2) CLEAR WATER RINSE, 3) IRON PHOSPHATE APPLICATION, 4) CLEAR WATER RINSE, AND 5) INHIBITIVE RINSE TO SEAL PHOSPHATE SURFACES.

27.3 THIS PANEL SHALL HOUSE THE MAIN CIRCUIT BREAKER, AND GENERATOR RECEPTACLE CIRCUIT BREAKER WITH APPROVED MECHANICAL INTERLOCK TO PREVENT BOTH BREAKERS FROM BEING CLOSED CONCURRENTLY. THE MAIN CIRCUIT BREAKER, GENERATOR CIRCUIT BREAKER, AND ALL WIRING SHALL BE LOCATED BEHIND THE INTERIOR DEAD FRONT DOOR OR PANEL. INTERLOCKS AND CIRCUIT BREAKER OPERATION SHALL BE POSSIBLE WITHOUT OPENING THE DEAD FRONT DOOR OR REMOVING THE PANEL. THE ENCLOSURE SHALL BE COMPARTMENTALIZED SUCH THAT THE CONTROLS AND POWER SECTIONS ARE ISOLATED FROM EACH OTHER. THE COMPARTMENTS CONTAINING THE PROGRAMMABLE PUMP CONTROLLER AND POWER SECTIONS SHALL BE SEPARATED BY BARRIERS BEHIND THE INNER DEAD FRONT DOOR.

27.4 ALL BUSSING AND WIRE SHALL BE COPPER. ALL WIRE SHALL BE STRANDED AND LABELED WITH HEAT SHRINK PLASTIC WIRE MARKERS. ALL CIRCUIT BREAKERS AND DEAD FRONT MOUNTED DEVICES (LIGHTS AND SWITCHES) SHALL BE EQUIPPED WITH ENGRAVED NAMEPLATES. PROVIDE FLUORESCENT PANEL LIGHT, DOOR SWITCH, GFCI RECEPTACLE, PER PUMP FAIL RELAY, ENCLOSURE STRIP HEATER WITH HEAT SHIELD AND THERMOSTAT. (IF REQUIRED) THERMOSTATICALLY CONTROLLED HEATING AND FAN SYSTEMS SHALL BE PROVIDED TO MAINTAIN SUITABLE CLIMATE CONDITIONS WITHIN THE CONTROL PANEL. PROVIDE ALUMINUM SUNSHIELDS IN CONJUNCTION WITH THERMOSTATICALLY CONTROLLED FANS SHALL BE FACTORY INSTALLED ON THE TOP AND BACK OF THE MOTOR CONTROL PANEL. SUNSHIELDS WILL INCLUDE PROTECTIVE COVERING ON THE EDGES AND BE PAINTED TO MATCH THE EXTERIOR PANEL COLOR.

28. SERVICE ENTRANCE:

28.1 THE ELECTRIC SERVICE METER COMPARTMENT SHALL BE ARRANGED AS SHOWN ON THE PLANS TO MEET THE ELECTRIC UTILITY COMPANY AND USERC REQUIREMENTS. PROVIDE SEPARATE ISOLATED NEUTRAL AND GROUND BUS. PROVIDE GUARD OVER POWER COMPANY WATT-HOUR METER WITH HINGED ACCESS COVER THAT HAS A HASP FOR UTILITY COMPANY PADLOCK. PROVIDE WIRE AND LUGS FOR SERVICE ENTRANCE AS REQUIRED BY LOCAL SERVING UTILITY COMPANY. THE UTILITY PULL AND TERMINATION SECTION AND THE UTILITY METERING COMPARTMENTS SHALL BE ACCESSIBLE ONLY BY THE UTILITY COMPANY. A SUITABLE LIGHTNING/SURGE ARRESTOR SHALL BE PROVIDED TO PROTECT THE PANEL EQUIPMENT FROM LIGHTNING AND UTILITY POWER SURGES. PROVIDE A METER BASE, TEST PERCH WITH TEST BY-PASS AND OTHER MATERIALS, AS REQUIRED BY THE LOCAL SERVING UTILITY WHICH WILL PROVIDE SERVICE TO THE FACILITY, FOR INSTALLATION OF METERING EQUIPMENT AND ATTACHMENT OF SERVICE CONDUCTORS.

28.2 THE CONTROL PANEL MANUFACTURER IS RESPONSIBLE TO MEET THE REQUIREMENTS OF THE LOCAL SERVING UTILITY. WRITTEN APPROVAL AND AUTHORIZATION FROM THE LOCAL SERVING UTILITY MUST BE PROVIDED AS PART OF THE CONTROL PANEL SUBMITTAL PACKAGE.

29. CIRCUIT BREAKERS:

29.1 ALL CIRCUIT BREAKERS SHALL HAVE INTERRUPTING CAPACITIES AT MINIMUM 10,000 AMPERES.

29.2 CIRCUIT BREAKERS SHALL BE OF THE INDICATING TYPE, PROVIDING OPERATING HANDLE ON, OFF AND TRIPPED POSITIONS. CIRCUIT BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK, WITH A THERMAL-MAGNETIC ACTION, EXCEPT WHEN PROTECTING MOTOR FEEDERS WHERE MOTOR CIRCUIT PROTECTOR (MCP) BREAKERS COULD BE UTILIZED. ALL MULTIPLE-POLE CIRCUIT BREAKERS SHALL BE DESIGNED SO THAT AN OVERLOAD ON ONE POLE AUTOMATICALLY CAUSES ALL POLES TO OPEN. CIRCUIT BREAKERS SHALL MEET THE REQUIREMENTS OF UL AND NEMA STANDARDS. BREAKERS SHALL BE EATON/CUTLER-HAMMER, OR EQUAL.

ELECTRICAL SPECIFICATION CONTINUED ON SHEET E1.1 (PG-4)

SYMBOLS AND ABBREVIATIONS

SYMBOLS & ABBREVIATIONS SHOWN ARE FOR GENERAL USE
DISREGARD THOSE WHICH DO NOT APPEAR ON THE PLANS

MISCELLANEOUS

- MOTOR CONNECTION
- DISCONNECT SWITCH-NONFUSED U.O.N.
- MAGNETIC MOTOR STARTER
- COMBINATION MAG STARTER & FUSED DISCONNECT SWITCH
- GROUND ROD-DIRECT BURIED
- GROUND ROD WITH ACCESSIBLE BOX
- FEEDER TAG
- SHEET NOTE TAG
- TRANSFORMER PAD MOUNT OR DRY TYPE
- SWITCH-GEAR OR MCC
- PANELBOARD - FLUSH MOUNTED
- PANELBOARD - SURFACE MOUNTED
- SPECIAL PURPOSE EQUIP., DEVICE, PANEL OR TERMINAL CABINET (T.A., LIGHTING CONTROL, ETC.) EQUIPMENT PARAMETERS INDICATED ON PLANS
- CONCRETE PULLBOX SIZE INDICATED ON PLANS
- INDICATES MOUNTING HEIGHT TO CENTER OF DEVICE OR EQUIP. ABOVE FINISHED FLOOR.

CONDUIT/WIRING

- CONCEALED IN WALLS OR CEILING OR EXPOSED WHEN SPECIFICALLY NOTED
- UNDER FLOOR SLABS OR UNDERGROUND
- HOMERUN TO PANEL, TERMINAL OR EQUIPMENT INDICATED
- CONDUIT STUB-OUT

ABBREVIATIONS

A.F.G.	ABOVE FINISHED GRADE
ARCH.	ARCHITECT
B.C.	BARE COPPER
C.	CONDUIT
CKT	CIRCUIT
C.O.	CONDUIT ONLY
CONC.	CONCRETE
CONTR.	CONTRACTOR
DISC.	DISCONNECT
(E)	EXISTING
ELEC.	ELECTRICAL
EM	EMERGENCY
(F)	FUTURE
F.A.	FIRE ALARM
G. GND.	GROUND (TERC)
GFI	GROUND FAULT INTERRUPT
HOA	HAND-OFF-AUTOMATIC SWITCH
ISO GND.	ISOLATED GND.
MECH.	MECHANICAL
MCP	MOTOR CIRCUIT PROTECTOR
(N)	NEW
N.I.C.	NOT IN CONTRACT
NL	NIGHT LIGHT
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED EQUIPMENT
P.L.	PHASE
P.O.C.	POINT OF CONNECTION
P/O	PART OF
SW.	SWITCH
SHED	SHUTTER BOARD
T. TELE.	TELEPHONE
TERM.	TERMINAL
TSP.	TWISTED SHIELDED PAIR
TV	TELEVISION
UG	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
XFMR	TRANSFORMER

ELECTRICAL SPECIFICATIONS

30. GROUNDING SYSTEM:

30.1 THE SWITCHBOARD GROUND BUS AND INCOMING NEUTRAL SERVICE CONDUCTOR SHALL BE CONNECTED TO A "ROD" TYPE "GROUND". THE GROUND ROD SHALL EXTEND UP INTO PEDESTAL FOR VISIBLE CONNECTION WITH AN APPROVED "EXOTHERMIC WELD". GROUNDING AND BONDING WIRES SHALL BE INSTALLED IN ALL CONDUIT RUNS AND CONNECTED TO GROUND BUS AND ALL EQUIPMENT.

(a) THERMITE WELDING MATERIALS SHALL BE OF SIZE AND TYPE RECOMMENDED BY THE MANUFACTURER FOR THE INTENDED USE. MATERIALS SHALL BE BURNDY, CADWELD, MANUFACTURED BY ERICO PRODUCTS, INC., OR EQUAL.

(b) GROUNDING CONDUCTOR - ALL GROUNDING CONDUCTORS SHALL BE SIZED AS SHOWN ON PLANS OR IN ACCORDANCE WITH NEC TABLE, WHICHEVER IS LARGER.

(c) GROUND BUS - A GROUND BUS SHALL BE PROVIDED IN THE SERVICE EQUIPMENT AND SHALL EXTEND THE ENTIRE LENGTH OF THE PEDESTAL INTERIOR. IT SHALL BE CONNECTED TO THE GROUNDING ELECTRODE SYSTEM BY EXOTHERMIC WELDED STRANDED COPPER GROUNDING CONDUCTORS. SCREW TYPE LUGS SHALL BE PROVIDED FOR CONNECTION OF EQUIPMENT GROUNDING CONDUCTORS.

31. INTERIOR PANEL LIGHTING

31.1 INTERIOR PANEL LIGHTING SHALL BE FURNISHED FOR EACH PANEL SECTION, AS A MINIMUM. THE INTERIOR PANEL LIGHTING SHALL BE A LED STRIP TYPE FIXTURE WITH WARM WHITE LIGHT OUTPUT. A LENS OR GUARD SHALL BE FURNISHED AND INSTALLED OVER THE FIXTURE.

32. MOTOR CONTROLS, GENERAL:

32.1 PROVIDE EACH MOTOR WITH SUITABLE MOTOR CONTROLS AND DEVICES THAT WILL PERFORM THE FUNCTIONS AS SPECIFIED FOR THE RESPECTIVE MOTORS. MOTOR CONTROLS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF NEMA ICS, ANSI C81, IEEE, NEC, AND UL. HORSEPOWER RATINGS ARE AS SHOWN ON THE PLANS. THIS INFORMATION IS FOR GUIDANCE ONLY AND DOES NOT LIMIT THE EQUIPMENT SIZE. WHEN MOTORS FURNISHED DIFFER FROM THE EXPECTED RATINGS INDICATED, MAKE THE NECESSARY ADJUSTMENTS TO WIRING, CONDUIT, DISCONNECT DEVICES, MOTOR STARTERS, BRANCH CIRCUIT PROTECTION, AND OTHER AFFECTED MATERIAL OR EQUIPMENT TO ACCOMMODATE THE MOTORS ACTUALLY INSTALLED, AT NO ADDITIONAL COST TO THE OWNER.

32.2 EACH MOTOR CONTROL SYSTEM SHALL BE EQUIPPED WITH A HAND-OFF-AUTO (HOA) CONTROL SWITCH, INDICATING LIGHTS, ELAPSED TIME METER AND MOTOR STARTER.

a. CONTROL SWITCHES AND INDICATING LIGHTS SHALL BE U.L. LISTED OIL-TIGHT DEVICES RATED HEAVY DUTY. PROVIDE ALLEN BRADLEY, EATON/CUTLER HAMMER OR EQUAL.

b. ELAPSED TIME METERS SHALL BE NON-RESETTABLE WITH 0.0 TO 99,999.9 READOUT. PROVIDE REMINGTON, KOHOGAMA, OR EQUAL.

c. THE MOTOR STARTER/CONTROLLER IS V/A A VARIABLE FREQUENCY DRIVE (VFD); SEE SINGLE LINE DIAGRAM FOR EXACT REQUIREMENTS.

33. NAMEPLATES:

33.1 NAMEPLATES SHALL BE BLACK PHENOLIC WITH WHITE LETTERING. NAMEPLATES SHALL BE MOUNTED WITH STAINLESS STEEL SCREWS. GLUE TYPE WILL NOT BE ACCEPTABLE.

34. INDICATING LIGHTS:

34.1 FURNISH AND INSTALL PUSH-TO-TEST LED LIGHTS TO INDICATE STATUS AND ALARM CONDITIONS LOCALLY AS SHOWN ON THE PLANS. INDICATING LIGHTS SHALL BE U.L. LISTED, OIL-TIGHT DEVICES RATED HEAVY DUTY. PROVIDE ALLEN BRADLEY, EATON/CUTLER HAMMER OR EQUAL. ENGRAVED ROUNDEL PHENOLIC NAMEPLATES SHALL INDICATE SPECIFIC FUNCTION.

35. PUSH-BUTTONS AND SELECTOR SWITCHES

35.1 PUSH-BUTTONS, AND SELECTOR SWITCHES, SHALL BE U.L. LISTED, OIL-TIGHT DEVICES RATED HEAVY DUTY. PROVIDE ALLEN BRADLEY, EATON/CUTLER HAMMER OR EQUAL. ENGRAVED ROUNDEL PHENOLIC NAMEPLATES SHALL INDICATE SPECIFIC FUNCTION.

36. RECEPTACLES, DUPLEX:

36 RECEPTACLES SHALL BE OF SPECIFICATION GRADE AND OF NEMA CONFIGURATION AND RATED 2 POLE, 3 WIRE GROUNDING, 20 AMPERES, 125 VOLTS. CONTACT ARRANGEMENT SHALL BE SUCH THAT CONTACT IS MADE ON TWO SIDES OF EACH INSERTED BLADE. BASES SHALL BE OF IVORY PHENOLIC COMPOSITION. WIRE TERMINALS SHALL BE SUITABLE FOR #10 AWG WIRE AND SHALL BE SCREW TYPE. RECEPTACLES SHALL BE UL LISTED. THE RECEPTACLES SHALL HAVE CORROSION RESISTANT CONDUCTING PARTS OF NICKEL-PLATED BRASS AND OTHER METAL PARTS OF STAINLESS STEEL. ALL EXTERNAL AND DEAD FRONT RECEPTACLES SHALL BE INSTALLED ON GROUND FAULT INTERRUPTER CIRCUITS "GFCI".

37. RELAYS, CONTROL:

37.1 CONTROL RELAYS SHALL BE POTTER AND BRUMFIELD, IDEC OR EQUAL. TWO FORM-C CONTACTS RATED AT 10AMP MINIMUM SHALL BE PROVIDED ON EACH RELAY. PROVIDE RELAY WITH ENERGIZED NEON LAMP INSIDE RELAY CASE.

38. RELAYS, POWER FAIL:

38. THE POWER MONITOR SHALL CONTINUOUSLY MONITOR THE THREE PHASES FOR POWER LOSS, LOW VOLTAGE, PHASE LOSS, PHASE REVERSAL AND HAVE AUTOMATIC RESET. THE POWER FAIL MONITOR SHALL HAVE A DROP-OUT VOLTAGE ADJUSTMENT AND A CONTROL AND AUTOMATIC CONTACTS FAILURE INDICATING LED. POWER FAIL RELAY SHALL INCLUDE AUXILIARY RELAY CONTACTS FOR CONTROL AND ALARMING. PROVIDE DIVERSIFIED SLP SERIES OR EQUAL.

39. TERMINAL AND DISTRIBUTION BLOCKS:

39.1 TERMINAL BLOCKS SHALL BE FURNISHED AND INSTALLED IN THE CONTROL PANEL. TERMINAL BLOCKS SHALL BE RATED AT 600V MINIMUM, DIN RAIL MOUNTED, NICKEL PLATED CORROSION RESISTANT. ALL WIRES MUST BE TERMINATED ON A TERMINAL BLOCK WITH NO MORE THAN TWO CONDUCTORS PER TERMINAL. NO BUTT SPLICES OR WIRE NUTS ALLOWED WITHIN THE CONTROL PANEL. TERMINAL BLOCKS SHALL BE ALLEN BRADLEY, CONNECTRON OR EQUAL.

39.2 POWER DISTRIBUTION BLOCKS SHALL BE FURNISHED AND INSTALLED IN THE CONTROL PANEL AS REQUIRED FOR DISTRIBUTION OF THE THREE-PHASE POWER. DISTRIBUTION BLOCKS SHALL BE MARATHON, ILSCO OR EQUAL.

40. TESCO L3000 PROGRAMMABLE CONTROLLER SPECIFICATION

41. GENERAL REQUIREMENTS:

THE PROGRAMMABLE CONTROLLER SHALL HAVE ALL THE CHARACTERISTICS AND FEATURES LISTED HEREIN. THE USE OF ANY THIRD PARTY HARDWARE OR SOFTWARE ADD-ON PRODUCTS TO MEET THIS SPECIFICATION IS NOT ACCEPTABLE. THE CONTROLLER SHALL BE A L3000 PROGRAMMABLE CONTROLLER FROM TESCO CONTROLS, INCORPORATED, SACRAMENTO, CA

42. MANUFACTURER:

THE PROGRAMMABLE CONTROLLER SHALL BE PROCURED FROM A MANUFACTURER THAT HAS AT LEAST 20 YEARS' EXPERIENCE MANUFACTURING ITS OWN PROGRAMMABLE CONTROLLERS DESIGNED SPECIFICALLY FOR THE WATER AND WASTE WATER INDUSTRY. THE PROGRAMMABLE CONTROLLER ITSELF AND SUPPORT FOR THE CONTROLLER SHALL BE AVAILABLE DIRECTLY FROM THE MANUFACTURER. PROGRAMMING SERVICES SHALL BE AVAILABLE DIRECT FROM THE MANUFACTURER AS A NORMAL PRACTICE.

43. WARRANTY:

THE PROGRAMMABLE CONTROLLER MANUFACTURER SHALL PROVIDE A 5 YEAR WARRANTY WITH THE UNIT. A 10 YEAR WARRANTY SHALL BE AVAILABLE AT ADDITIONAL COST. THE REPLACEMENT CONTROLLER SHALL BE AVAILABLE WITHIN 24 HOURS, INSTALLED AND RUNNING AT THE STATION, WITHOUT REQUIRING THAT THE ORIGINAL UNIT FIRST BE REMOVED AND RETURNED TO THE FACTORY

44. TELEPHONE SUPPORT:

THE PROGRAMMABLE CONTROLLER MANUFACTURER SHALL PROVIDE TELEPHONE SUPPORT FOR QUESTIONS RELATED TO ANY ASPECT OF THE CONTROLLER, INCLUDING GENERAL USE, APPLICATION-SPECIFIC ISSUES, PROGRAMMING, AND USE OF THE PROGRAMMING SOFTWARE. THIS SUPPORT SHALL BE AVAILABLE DIRECTLY FROM THE MANUFACTURER AT NO EXTRA CHARGE WITH THE PURCHASE OF A CONTROLLER.

45 CONSTRUCTION:

THE PROGRAMMABLE CONTROLLER SHOULD BE CONSTRUCTED USING A CARD CAGE ARCHITECTURE INCORPORATING A 96 PIN 3U DIN VME STANDARD BACKPLANE INTERCONNECTION. THE PRINTED CIRCUIT CARDS SHALL BE DESIGNED TO SLIDE INTO THE CARD RACK AND INTERCONNECT WITH THE VME BACKPLANE. A HIGH DENSITY I/O CARD WITH A MIX OF I/O TYPES AS WELL AS AN I/O CARD FOR EACH INDIVIDUAL I/O TYPE SHALL BE AVAILABLE. THE SYSTEM SHALL OPERATE WITH A MINIMUM OF 2 CARDS AND SHALL BE EASILY EXPANDABLE TO 20 CARDS. ALL FIELD WIRING TO THE I/O CARDS SHALL BE DONE AT EXTERNALLY MOUNTED TERMINAL BLOCKS WITH RIBBON CABLE INTERCONNECTS TO THE RELATIVE I/O CARD.

46 OPERATING CONDITIONS:

THE PROGRAMMABLE CONTROLLER SHALL OPERATE CORRECTLY UNDER AN AMBIENT TEMPERATURE RANGE OF -40 TO +200 DEGREES F WITHOUT REQUIRING FORCED AIR OR OTHER SPECIAL COOLING MEASURES. COATINGS ON CONNECTORS, COMPONENT LEADS, AND OTHER MATERIALS USED IN THE CONSTRUCTION OF THE PROGRAMMABLE CONTROLLER SHALL BE SUBSTANTIALLY RESISTANT TO ATMOSPHERES CONTAINING SIGNIFICANT AMOUNTS OF HYDROGEN SULFIDE GAS AND CHLORINE GAS.

47. OTHER:

THE PROGRAMMABLE CONTROLLER SHALL HAVE A LOW-POWER SHUT-DOWN MODE SUITABLE FOR USE IN SOLAR OR OTHER SITES WHERE POWER CONSUMPTION IS CRITICAL. THE PROGRAMMABLE CONTROLLER SHALL BE PROVIDED WITH A COMPLETE OPERATIONS AND MAINTENANCE MANUAL. AT MINIMUM, EACH PROGRAMMABLE CONTROLLER SHALL BE SUBJECTED BY THE MANUFACTURER TO A 5 DAY BURN-IN PROCEDURE AT 165 DEGREES F.

48 CARD ARCHITECTURE
PROCESSOR CARD:

THE PROGRAMMABLE CONTROLLER SHALL BE MICROCONTROLLER-BASED, USING A MICROCONTROLLER THAT, AT MINIMUM, SUPPORTS THE FOLLOWING:

a. 1GHZ CLOCK RATE
b. 512MBYTES RAM
c. 64GBYTES SECURE DIGITAL FLASH
d. WATCHDOG TIMER
e. 4 CONFIGURABLE TIMERS WITH INTERRUPT CAPABILITY
g. 5 SERIAL PORTS WITH SEPARATE BAUD RATE GENERATORS
h. 1 10/100MBS ETHERNET PORT
i. 4 USB 2.0 PORTS (1 INTERNAL)
j. 1 HDMI VIDEO PORT
k. WRITE-PROTECT ENABLE/DISABLE

THE PROGRAMMABLE CONTROLLER SHALL USE A REAL-TIME, PREEMPTIVE, MULTITASKING OPERATING SYSTEM, CONTAINED IN FLASH MEMORY. THE FLASH MEMORY SHALL ALSO CONTAIN ALL FIRMWARE THAT IS NOT SPECIFIC TO A PARTICULAR JOB OR APPLICATION, SUCH AS OPERATOR INTERFACE AND COMMUNICATIONS FIRMWARE. UP TO FOUR ADDITIONAL COMMUNICATION PORTS SHALL BE AVAILABLE FOR TELEMETRY OPERATIONS.

49. INPUT/OUTPUT CHARACTERISTICS:

THE PROGRAMMABLE CONTROLLER SHALL PROVIDE BUILT-IN DIGITAL FILTERING OF ANALOG INPUTS. THE FILTER CONSTANTS SHALL BE ADJUSTABLE FROM THE KEYBOARD AND THROUGH THE COMMUNICATIONS PORTS.

50. FIELD WIRING TERMINAL BLOCKS:

THE TERMINAL BLOCKS SHALL SUPPORT THE FOLLOWING LISTED CHARACTERISTICS:

- PULL-APART TWO PIECE WIRING BLOCKS FOR FAST AND EASY WIRING/RE-WIRING
- SEPARATE WIRING BLOCKS FOR EACH I/O TYPE AND EACH WIRE POINT FULLY LABELED
- VERSATILE INTERNAL OR EXTERNAL ANALOG POWER SOURCE
- DIGITAL OUTPUTS HAVE LED "ON" INDICATORS AND SOCKETED 10A RELAYS
- ENTIRE TERMINAL BLOCK SHALL SNAP ON/OFF STANDARD TRACK MOUNT
- ONBOARD PASSIVE CIRCUIT PROTECTION TO PROTECT PROGRAMMABLE CONTROLLER SHALL BE AVAILABLE WITH A BUILT-IN ISOLATED CURRENT LOOP POWER SUPPLY, POWERED FROM THE 12V DC MAIN POWER. THE CURRENT LOOP POWER SUPPLY SHALL BE CAPABLE OF PRODUCING AT LEAST 24V DC AND 16" MA.
- THREE LEVELS OF LIGHTNING/SURGE PROTECTION

51 POWER SUPPLY:

THE PROGRAMMABLE CONTROLLER SHALL BE POWERED BY A 12V/5V DC POWER SUPPLY, WITH AN ALLOWED OPERATING RANGE OF AT LEAST +/- 10%. A 12V BATTERY BACKUP OF THE 12V DC SHALL BE AVAILABLE SUCH THAT THE 5V DC IS ALSO MAINTAINED BY THE 12V BATTERY.

52 OPERATOR INTERFACE:

THE PROGRAMMABLE CONTROLLLER SHALL BE AVAILABLE WITH AN OPERATOR INTERFACE THAT IS AN INTEGRAL PART OF THE UNIT. THE SAME OPERATOR INTERFACE SHALL BE REMOTELY MOUNTABLE.

53. KEYBOARD:

THE PROGRAMMABLE CONTROLLER SHALL BE AVAILABLE WITH EITHER A MINIMAL KEYBOARD, CONTAINING NO MORE THAN 4 KEYS, OR A FULL KEYBOARD WITH KEYS FOR DIRECT ACCESS TO FUNCTIONS. THE KEYBOARD CONSTRUCTION SHALL BE SEALED MEMBRANE TYPE, USING A STAINLESS STEEL BACKING PLATE, AND SHALL BE IMPERVIOUS TO WASH-DOWN ENVIRONMENTS AND ATMOSPHERES CONTAINING HYDROGEN SULFIDE AND CHLORINE GASES. THE KEYS SHALL PROVIDE TACTILE FEEDBACK. BOTH KEYBOARD OPTIONS SHALL PROVIDE A MENU-BASED OPERATOR INTERFACE, ALLOWING THE OPERATOR TO PERFORM AT LEAST THESE FUNCTIONS, WITHOUT PROCESS INTERRUPTION:

a. EXAMINE AND CHANGE SETPOINTS
b. EXAMINE ANALOG INPUT AND OUTPUT REGISTERS
c. EXAMINE AND CHANGE TIMERS AND COUNTERS
d. EXAMINE AND CHANGE ANALOG INPUT FILTER CONSTANTS
e. CALIBRATE ANALOG INPUTS AND OUTPUTS
f. FORCE DIGITAL OUTPUTS ON AND OFF
g. OVERRIDE ANALOG INPUTS AND OUTPUTS
h. EXAMINE CONTROL PROGRAM

54. LED CHARACTER DISPLAY:

THE PROGRAMMABLE CONTROLLER SHALL BE AVAILABLE WITH AN ALPHANUMERIC LED DISPLAY CAPABLE OF DISPLAYING AT LEAST 8 CHARACTERS AT A TIME USING AT LEAST 16 SEGMENTS PER CHARACTER. THE LED CHARACTER DISPLAY SHALL BE USED FOR SHOWING THE VALUES OF REGISTERS, INPUTS, OUTPUTS AND OTHER DATA.

55 LED ANNUNCIATORS:

THE PROGRAMMABLE CONTROLLER SHALL BE AVAILABLE WITH AT LEAST 360 INDIVIDUAL LEDS ARRANGED IN COLUMNS, WHICH SHALL BE USABLE TO DISPLAY THE ON/OFF STATE OF DIGITAL INPUTS AND OUTPUTS (PHYSICAL OR INTERNAL). THE LED'S SHALL ALSO BE USABLE FOR BAR GRAPH DISPLAYS.

56. MODE LEDS:

THE PROGRAMMABLE CONTROLLER SHALL BE EQUIPPED WITH AT LEAST THE FOLLOWING MODE DISPLAY LEDS:

SBY LIGHTED WHEN IN STANDBY MODE
CMD LIGHTED WHEN IN COMMAND MODE
RUN LIGHTED WHEN IN RUN MODE
MEM LIGHTED WHEN WR RE-PROTECTED MEMORY IS OPEN
CAL LIGHTED WHEN IN CALIBRATION MODE
XMT LIGHTED WHEN A MESSAGE IS BEING TRANSMITTED VIA A COMMUNICATIONS PORT
RCV LIGHTED WHEN A MESSAGE IS RECEIVED VIA A COMMUNICATIONS PORT
ERR LIGHTED WHEN A AN ERROR CONDITION IS DETECTED BY THE CONTROLLER

THE XMT/RCV LED'S SHALL BE CONFIGURABLE TO SELECTIVELY SHOW ACTIVITY ON ANY COMBINATION OF THE COMMUNICATIONS PORTS.

57. BAR GRAPH DISPLAYS:

THE PROGRAMMABLE CONTROLLER SHALL HAVE THE ABILITY TO DISPLAY AT LEAST 4 BAR GRAPHS ON THE LED ANNUNCIATORS. THE BAR GRAPHS SHALL BE INDIVIDUALLY CONFIGURABLE IF THE VALUE BEING MONITORED BY THE BAR GRAPH SHOULD GO BEYOND THE DEFINED ENDPOINTS (UNDER RANGE OR OVER RANGE), THE LED AT THAT END OF THE BAR GRAPH SHALL FLASH TO INDICATE THE CONDITION.

58. OPERATING MODES:

THE PROGRAMMABLE CONTROLLER SHALL HAVE TWO BASIC MODES OF OPERATION AS DESCRIBED BELOW:

58.1 RUN:

ACTIVELY CONTROLLING, RUNNING APPLICATION SPECIFIC CONTROL PROGRAM
SENSING INPUT SIGNALS
GENERATING OUTPUTS UNDER PROGRAM CONTROL
PEER-TO-PEER MESSAGE INITIATION IS ENABLED
POLLING IS ENABLED

58.2 STANDBY:

NOT ACTIVELY CONTROLLING
CONTINUES TO SENSE INPUT SIGNALS
ANALOG OUTPUTS HELD AT CURRENT LEVEL OR SET TO ZERO
DIGITAL OUTPUTS GO TO OFF STATE
INITIATION OF PEER-TO-PEER MESSAGES IS DISABLED
POLLING IS DISABLED

59. PROGRAMMING:

59.1 LANGUAGE:

THE PROGRAMMABLE CONTROLLER SHALL BE PROGRAMMABLE USING THE ABILITY TO EXECUTE A HIGHER-LEVEL BASIC-LIKE PROGRAMMING LANGUAGE WHICH IS NATIVE TO THE CONTROLLER.

60. REGISTERS:

THE PROGRAMMABLE CONTROLLER SHALL HAVE AT LEAST THE FOLLOWING PREFORMATTED REGISTER TYPES ARRANGED IN A GLOBAL SYSTEM DATABASE, WITH THE QUANTITY OF EACH REGISTER TYPE SELECTABLE TO AT LEAST THE NUMBERS GIVEN:

a. SETPOINT (FOR STORING CONSTANTS, AT LEAST 1000)
b. ANALOG INPUT (PHYSICAL OR INTERNAL, AT LEAST 1000 TOTAL)
c. ANALOG OUTPUT (PHYSICAL OR INTERNAL, AT LEAST 1000 TOTAL)
d. DIGITAL INPUT (PHYSICAL OR INTERNAL, AT LEAST 1000 TOTAL)
e. DIGITAL OUTPUT (PHYSICAL, AT LEAST 128)
f. INDEX (FOR INDIRECTION AND GENERAL PURPOSE USE, AT LEAST 1000)
g. TIMER/COUNTER (AT LEAST 1000 TOTAL)
h. SECONDS TIMER (TIMES IN SECONDS WITH 10 MS OR BETTER RESOLUTION, UP TO 497 DAYS)
i. HOURS TIMER (TIMES IN HOURS WITH 2 SECOND OR BETTER RESOLUTION, UP TO 272 YEARS)
j. HMS TIMER (HOURS, MINUTES, SECONDS FORMAT, WITH 0.5 SECOND OR BETTER RESOLUTION, UPTO 68 YEARS)
k. EVENT COUNTER (INTEGER VALUE REGISTER SUPPORTING INCREMENT/DECREMENT, RANGE 0 - 4,294,967,295)

THE PROGRAMMABLE CONTROLLER SHALL SUPPORT A PULSE COUNTING FREQUENCY OF AT LEAST 1 KHZ ON A SINGLE INPUT

61 PID FUNCTION:

THE PROGRAMMABLE CONTROLLER SHALL PROVIDE BUILT-IN PID (PROPORTIONAL/INTEGRAL/DERIVATIVE) CONTROL WITHOUT REQUIRING ANY PROCEDURAL PROGRAMMING OR SUBROUTINE WRITING. THE PROGRAMMABLE CONTROLLER SHALL SUPPORT THE ABILITY TO SIMULTANEOUSLY EXECUTE AT LEAST 16 INDEPENDENT PID CONTROL LOOPS.

62. CONFIGURATION:

THE PROGRAMMABLE CONTROLLER SHALL BE CONFIGURABLE VIA A CONFIGURATION TABLE, WHICH SHALL BE CHANGEABLE BOTH BY DOWNLOADING THROUGH A COMMUNICATION PORT AND THROUGH THE FULL AND LIMITED KEYBOARDS. THE CONFIGURATION TABLE SHALL ALLOW THE OPERATOR TO CHANGE VIRTUALLY ALL SIGNIFICANT OPERATING PARAMETERS OF THE SYSTEM.

ELECTRICAL SPECIFICATION CONTINUED ON SHEET E1.2 (PS-5)

ELECTRICAL SPECIFICATIONS

2 APR 24

63. COMMUNICATIONS:

THE PROGRAMMABLE CONTROLLER SHALL INCLUDE AN INTEGRATED WEB SERVER FOR SECURED REMOTE CUSTOMIZED VISUALIZATION OF PROCESS DATA INCLUDING A WEB SERVER DISABLE FEATURE IF NOT DESIRED. THE PROGRAMMABLE CONTROLLER SHALL HAVE THE ABILITY TO SIMULTANEOUSLY SUPPORT AT LEAST 3 SERIAL COMMUNICATION PORTS, 1 ETHERNET/IEEE 802.3 RJ45 PORT AND 3 USB 2.0 PORTS. ANY OF THESE PORTS SHALL BE USABLE FOR BOTH COMMUNICATIONS OF TELEMETRY DATA AND CONTROL, PROGRAM/CONFIGURATION, UPLOADS/DOWNLOADS, AND SHALL SUPPORT BAUD RATES OF 230,400 BPS OR HIGHER. THE PORTS SHALL BE CONFIGURABLE TO SUPPORT THE FOLLOWING MEDIA:

FULL HANDSHAKE RS-232 (AT LEAST 3 PORTS MUST BE CONFIGURABLE THIS WAY)

IN ADDITION TO THE THREE (3) RS232 SERIAL PORTS THE PROGRAMMABLE CONTROLLER SHALL HAVE ONE (1) ETHERNET PORT, FOR A TOTAL OF FOUR (4) COMMUNICATIONS CHANNELS ALL FOUR (4) COMMUNICATIONS CHANNELS SHALL HAVE THE CAPABILITIES OF INDEPENDENT OPERATION. EACH CHANNEL SHALL HAVE THE FOLLOWING CAPABILITIES:

POLL/RESPONSE
QUIESCENT (UNSOLICITED)
MASTER POLLING
MESSAGE STORE AND FORWARD
AUTOMATIC PORT ESCALATION WITH RECOVERY
MESSAGE RETRIES
COMMUNICATION STATISTICS AND DIAGNOSTICS

THE PROGRAMMABLE CONTROLLER DESIGN SHALL INCORPORATE ETHERNET DESIGN USING 100BASE-T INTERFACE AND TCP/IP INDUSTRY STANDARD NETWORK PROTOCOL WITH THE FOLLOWING FEATURES:

REDUNDANT HOT STANDBY ETHERNET (PRIMARY NETWORK AND SECONDARY FAIL OVER COMMUNICATIONS)
STANDARD 100BASET INTERFACE (100MBPS DATA TRANSMISSION, OVER TWISTED-PAIR CABLE WITH RJ45 CONNECTORS)
COMPLIES TO IEEE 802.3 SPECIFICATIONS (LOCAL AREA NETWORKS OR WIDE AREA NETWORKS)
SEPARATE LED LINE STATUS INDICATORS (EACH PORT TO CONFIRM FRAME TRANSMIT, RECEIVE, LINK, COLLISION, AND INTERFERENCE)
INDIVIDUAL IP CONFIGURATION (MULTI NETWORK CONFIGURATIONS)
BUILT-IN PING RESPONSE (TEST CONNECTIVITY AND VERIFICATION OF IP ADDRESS)
MULTI PROTOCOL SUPPORT (MODBUS TCP/MODBUS SERIAL, DATA EXPRESS, DATA EXPRESS PLUS)
TELEMETRY MESSAGE ROUTING (COMMUNICATE ACROSS ALL CHANNELS, I.E. RS232 TO ETHERNET AND ETHERNET TO RS232)

64. PROTOCOLS

THE PROGRAMMABLE CONTROLLER SHALL IMPLEMENT THE ETHERNET/IEEE 802.3 PROTOCOL. WHEN THE PROGRAMMABLE CONTROLLER WISHES TO TRANSMIT, IT WILL CHECK FOR ACTIVITY ON THE LAN. WHEN THE LAN BECOMES SILENT FOR A SPECIFIED PERIOD, THE PROGRAMMABLE CONTROLLER WILL BEGIN TRANSMISSION. DURING TRANSMISSION, THE PROGRAMMABLE CONTROLLER WILL CONTINUALLY CHECK FOR A COLLISION ON THE LAN. IF A COLLISION IS DETECTED, THE PROGRAMMABLE CONTROLLER WILL CEASE TRANSMISSION. THE PROGRAMMABLE CONTROLLER WILL THEN WAIT A RANDOM PERIOD OF TIME BEFORE ATTEMPTING TO TRANSMIT AGAIN.

THE PROGRAMMABLE CONTROLLER SHALL SUPPORT SERIAL COMMUNICATIONS USING AT LEAST 3 DIFFERENT PROTOCOLS. THE DE FACTO STANDARD MODBUS PROTOCOL SHALL BE SUPPORTED. THESE PROTOCOLS SHALL BE ABLE TO CO-EXIST SIMULTANEOUSLY ON THE SAME PORT. THE PROGRAMMABLE CONTROLLER SHALL SUPPORT POLL/RESPONSE, POLLING MASTER, QUIESCENT, REPORT-BY-EXCEPTION AND MESSAGE ROUTING COMMUNICATIONS, AS DESCRIBED IN THE FOLLOWING SECTIONS. ANY OF THESE COMMUNICATIONS MODES SHALL BE USABLE ALONE OR SIMULTANEOUSLY IN ANY COMBINATION.

65. POLLED SLAVE COMMUNICATIONS:
THE PROGRAMMABLE CONTROLLER SHALL RESPOND AS A SLAVE UNIT IN RESPONSE TO POLLING MESSAGES FROM A MASTER SCADA SYSTEM OR OTHER UNIT. IN THIS MODE THE PROGRAMMABLE CONTROLLER SHALL ONLY RESPOND TO REQUESTS FOR DATA AND NOT INITIATE MESSAGES ON ITS OWN.

66. POLLING MASTER COMMUNICATIONS:
THE PROGRAMMABLE CONTROLLER SHALL INITIATE POLLS AS A MASTER UNIT AND WAIT FOR THE RESPONSE FROM THE SLAVE DEVICE.

67. QUIESCENT COMMUNICATIONS:
USING QUIESCENT (PEER-TO-PEER) COMMUNICATIONS, THE PROGRAMMABLE CONTROLLER SHALL PROVIDE THE ABILITY TO INITIATE MESSAGES TRANSMITTING REGISTER VALUES UNDER OPERATOR DEFINABLE CONDITIONS.

68. REPORT BY EXCEPTION COMMUNICATIONS:
THE PROGRAMMABLE CONTROLLER SHALL SUPPORT A MEANS OF REPORT-BY-EXCEPTION COMMUNICATIONS, WHERE ONLY THOSE REGISTERS OF INTEREST THAT HAVE CHANGED SINCE THE LAST REPORTING ARE TRANSMITTED.

69. MESSAGE ROUTING:
THE PROGRAMMABLE CONTROLLER SHALL PROVIDE THE ABILITY TO ROUTE RECEIVED MESSAGES THAT ARE DESTINED FOR ANOTHER UNIT. THE ROUTED MESSAGE CAN BE RECEIVED AND SENT IN ANY COMBINATION OF COMMUNICATION PORTS AND PHYSICAL MEDIA.

70. FAILURE RECOVERY:
THE PROGRAMMABLE CONTROLLER SHALL HAVE THE ABILITY TO SWITCH TO ALTERNATE COMMUNICATIONS PATHS IN THE EVENT OF FAILURE OF THE PRIMARY PATH. THERE SHALL BE NO PRACTICAL LIMIT ON THE NUMBER OF DIFFERENT PATHS THAT THE PROGRAMMABLE CONTROLLER MAY TRY IN ORDER TO DELIVER THE INFORMATION.

71. REDUNDANT MESSAGE ELIMINATION:
THE PROGRAMMABLE CONTROLLER SHALL AUTOMATICALLY PROVIDE REDUNDANT MESSAGE ELIMINATION WHEN PEER-TO-PEER AND POLLED COMMUNICATIONS ARE USED IN COMBINATION.

72. OTHER:
THE PROGRAMMABLE CONTROLLER SHALL PROVIDE A MEANS OF ENABLING/DISABLING QUIESCENT/POLLING MASTER MESSAGE INITIATION FROM THE KEYBOARD.

73. ENGINEERING UNIT REPRESENTATION:
THE PROGRAMMABLE CONTROLLER SHALL HAVE THE CAPABILITY TO REPRESENT ALL ANALOG INPUT AND ANALOG OUTPUT VALUES DIRECTLY IN ENGINEERING UNITS. ENGINEERING UNITS ARE DEFINED TO BE "REAL WORLD" IEEE 754 STANDARD FLOATING POINT NUMBERS CORRESPONDING TO PHYSICAL MEASUREMENTS, SUCH AS LEVEL, PRESSURE, DEPTH AND FLOW. TELEMETRY COMMUNICATIONS SHALL USE ENGINEERING UNIT REPRESENTATION IN ALL MESSAGES.

74. CALIBRATION AND MULTIPOINT CALIBRATION:
A SIMPLE MENU-DRIVEN PROCEDURE SHALL BE PROVIDED THAT ALLOWS THE OPERATOR TO CALIBRATE AN ANALOG INPUT OR OUTPUT TO AN ENGINEERING UNIT MEASUREMENT SCALE. THIS PROCEDURE SHALL BE USABLE FROM BOTH THE FULL AND MINIMAL KEYBOARDS. THE CALIBRATION INFORMATION SHALL BE UPLOADABLE AND DOWNLOADABLE VIA A COMMUNICATION PORT.

75. SINGLE AND MULTI-POINT "TEST" OVERRIDE:

THE PROGRAMMABLE CONTROLLER SHALL PROVIDE THE ABILITY TO OVERRIDE I/O AND REGISTER VALUES FOR TEST AND OTHER PURPOSES. WHEN IN OVERRIDE, THE OPERATOR SHALL BE ABLE TO CONTROL THE REGISTER (SET ANY VALUE OR ON/OFF STATE) INDEPENDENT OF THE CONTROL PROGRAM OR PHYSICAL INPUT. THE VALUE SEEN BY THE CONTROL PROGRAM SHALL BE THE OVERRIDE VALUE. THE OPERATOR SHALL ALSO BE ABLE TO RELEASE ALL OVERRIDE POINTS AT ONCE. WHEN ANY REGISTER IS IN OVERRIDE, THERE SHALL BE A VISIBLE INDICATION TO THE OPERATOR, REGARDLESS OF WHAT MODE THE PROGRAMMABLE CONTROLLER IS IN.

76. ALARMS:
THE PROGRAMMABLE CONTROLLER SHALL PROVIDE ALARM FLAGS TO BE USED TO INDICATE APPLICATION-SPECIFIC ALARM CONDITIONS. THE PROGRAMMABLE CONTROLLER SHALL PROVIDE A COMMON ALARM DIGITAL OUTPUT, THAT CAN BE CONFIGURED TO BE ANY DIGITAL OUTPUT AND CAN BE DISPLAYED ANYWHERE ON THE LED ANNUNCIATORS.

77. FAULT TOLERANCE AND RELIABILITY FEATURES:

77.1 EVENT LOGGING:
THE PROGRAMMABLE CONTROLLER SHALL PROVIDE A MECHANISM THAT REPORTS AND LOGS UNUSUAL EVENTS AND ITEMS OF INTEREST. THE PROGRAMMABLE CONTROLLER SHALL ALSO SUPPORT VIEWING OF THE RAM EVENT LOG DATA BY TRANSMISSION VIA THE SERIAL PORT.

77.2 FAULT RELAY:
THE PROGRAMMABLE CONTROLLER SHALL CONTAIN A NORMALLY CLOSED FAULT RELAY THAT UNDER NORMAL OPERATION SHALL BE ENERGIZED BY THE PROGRAMMABLE CONTROLLER TO INDICATE A NON-FAULT STATE. THE FAULT RELAY SHALL GO TO A FAULT CONDITION (NON-ENERGIZED) UNDER THE FOLLOWING CIRCUMSTANCES.
- 12 V DC POWER FAILURE
- MEMORY ERROR OR OTHER INTERNAL OPERATING ERROR

77.3 POWER UP SELF TEST:
THE PROGRAMMABLE CONTROLLER SHALL PERFORM A BRIEF SELF TEST UPON APPLICATION OF POWER, INCLUDING:
- ROM CHECKSUM
- RAM WRITE-PROTECTION CIRCUIT CHECK
- WRITE-PROTECTED RAM CRC CHECK

77.4 ON GOING SELF TEST:
DURING NORMAL OPERATION (RUN OR STANDBY MODES) THE PROGRAMMABLE CONTROLLER SHALL RUN AN ONGOING SELF TEST PROCESS. THE FREQUENCY WITH WHICH THE ONGOING SELF TEST PERFORMS THESE CHECKS SHALL BE CONFIGURABLE BY THE OPERATOR.

77.5 DIAGNOSTIC FUNCTIONS:
THE PROGRAMMABLE CONTROLLER SHALL HAVE THE CAPABILITY TO PERFORM SELF-TEST DIAGNOSTIC FUNCTIONS UNDER OPERATOR CONTROL TO VERIFY THE INTEGRITY OF THE RAM AND ROM INSIDE THE UNIT.

77.6 ACTIVITY MONITORING:
THE PROGRAMMABLE CONTROLLER SHALL PROVIDE A MECHANISM FOR SELECTIVELY VIEWING ACTIVITY OF CERTAIN INTEGRAL SUBSYSTEMS. TEXT MESSAGES INDICATING ACTIVITY SHALL BE DIRECTABLE UNDER OPERATOR CONTROL TO THE LED OR A COMMUNICATION PORT.

77.7 POWER FAIL/BROWNOUT DETECTOR:
THE PROGRAMMABLE CONTROLLER SHALL HAVE AN INTEGRAL HARDWARE DEVICE THAT DETECTS A BROWNOUT OR IMMINENT POWER FAIL CONDITION. UPON DETECTION OF THE 12V DC POWER SUPPLY VOLTAGE DROPPING BELOW AN ADJUSTABLE THRESHOLD, THIS DEVICE SHALL GENERATE AN IMMEDIATE INTERRUPT SIGNAL TO THE MICROCONTROLLER.

77.8 WATCHDOG TIMER:
THE PROGRAMMABLE CONTROLLER SHALL CONTAIN A HARDWARE WATCHDOG TIMER CIRCUIT THAT WILL RESET THE MICROCONTROLLER WITHIN 1 SECOND OF DETECTING A FIRMWARE FAILURE.

79. SECURITY:
THE PROGRAMMABLE CONTROLLER SHALL BE CAPABLE OF BEING CONFIGURED TO REQUIRE PASSWORD ENTRY BEFORE ACCESS TO FUNCTIONS THAT WOULD CHANGE THE CONTROL CHARACTERISTICS OR BASIC OPERATING MODE (RUN/STANDBY) OF THE PROGRAMMABLE CONTROLLER. MULTIPLE PASSWORDS SHALL BE SUPPORTED, WITH AT LEAST 100 ALLOWED. IF THE OPERATOR DOES NOT OPERATE THE KEYBOARD WITHIN A SELECTABLE TIME PERIOD, THE PROGRAMMABLE CONTROLLER SHALL LOG HIM OUT AUTOMATICALLY.
THE PROGRAMMABLE CONTROLLER SHALL ALSO SUPPORT UPLOADING AND DOWNLOADING OF PASSWORD CONFIGURATION INFORMATION VIA THE COMMUNICATIONS PORTS.

80 DATA ARCHIVING:
THE PROGRAMMABLE CONTROLLER SHALL PROVIDE A MEANS OF ARCHIVING I/O AND REGISTER VALUES INTO STORAGE ARRAYS. THE PROGRAMMABLE CONTROLLER SHALL ALSO PROVIDE DIRECT READ ACCESS THROUGH ANY COMMUNICATIONS PORT TO THE CONTENTS OF EACH DATA ARCHIVE. EACH SAMPLE SHALL CONSIST OF A DATE AND TIME STAMP AND THE REGISTER VALUE. THE PROGRAMMABLE CONTROLLER SHALL ALSO PROVIDE FUNCTIONS AVAILABLE THROUGH THE COMMUNICATIONS PORT THAT ALLOW AN EXTERNAL SCADA OR OTHER SYSTEM TO RESET SPECIFIC ARCHIVES AND OBTAIN OTHER NECESSARY INFORMATION ABOUT THE DATA ARCHIVES IN USE.

81. REMOTE CONTROL:
THE PROGRAMMABLE CONTROLLER SHALL HAVE THE ABILITY TO REMOTELY CONTROL OTHER CONTROLLERS OF THE SAME MAKE USING ANY OF THE COMMUNICATION PORTS. THE OPERATOR SHALL BE ABLE TO PERFORM AT LEAST THE FOLLOWING FUNCTIONS ON THE REMOTE UNIT BY USING THE LOCAL KEYBOARD:
- EXAMINE AND CHANGE SETPOINTS
- EXAMINE ANALOG INPUT AND OUTPUT REGISTERS
- EXAMINE AND CHANGE TIMERS AND COUNTERS
- FORCE DIGITAL OUTPUTS ON AND OFF
- OVERRIDE ANALOG INPUTS AND OUTPUTS
- CHANGE OPERATING MODE BETWEEN RUN AND STANDBY

82. PROGRAMMING SOFTWARE:

82.1 GENERAL:
A FREE COPY OF THE NECESSARY PROGRAMMING SOFTWARE SHALL BE PROVIDED WITH EACH PROGRAMMABLE CONTROLLER PURCHASED. THE SOFTWARE SHALL BE PRODUCED, PROVIDED AND SUPPORTED DIRECTLY BY THE PROGRAMMABLE CONTROLLER MANUFACTURER. NO THIRD PARTY TOOLS ARE ACCEPTABLE.

82.2 QUICKLOAD SOFTWARE:
A FAST AND EASY TO USE SOFTWARE PROGRAM SHALL BE AVAILABLE FREE OF CHARGE TO UPLOAD AND DOWNLOAD FROM A LAPTOP COMPUTER TO THE CONTROLLER ALL CALIBRATION POINTS, SETPOINTS AND CONTROL PROGRAMMING. A COMPLETE USER'S MANUAL SHALL BE PROVIDED WHICH DESCRIBES THE USE OF ALL PROGRAMMING SOFTWARE.

82.3 OPC COMMUNICATIONS SERVER SOFTWARE:
OPC (OLE FOR PROCESS CONTROL) COMMUNICATIONS SERVER PROGRAM SHALL BE AVAILABLE TO POLL THE PROGRAMMABLE CONTROLLER AND SERVE REAL-TIME DATA VALUES TO ANY OPC COMPLIANT CLIENT, SUCH AS SPREADSHEETS, DATABASES AND SCADA SYSTEMS. THIS SOFTWARE SHALL OPERATE ON A COMPUTER AND SHALL POLL THE CONTROLLER THROUGH ANY MAINTENANCE PORT TO GATHER REAL-TIME DATA OF ANY TYPE AND NUMBER. ALSO, THE PROGRAM SHALL OPERATE REMOTELY TO POLL FOR ANY REAL-TIME DATA IN THE CONTROLLER. THE PROGRAM SHALL HAVE THE ABILITY TO OPERATE IN A MULTIPOINT CONTROLLER ENVIRONMENT, UP TO 100 CONTROLLERS, WITH FULL HARDWARE HANDSHAKING TO THE COMMUNICATIONS MEDIA. THE PROGRAM SHALL HAVE THE ABILITY TO DISPLAY ALL TELEMETRY MESSAGE TRANSACTIONS FOR THE COMMUNICATIONS PORT AND SHALL UTILIZE PROTOCOL DISCIPLINES SUCH AS RETRIES, COMM. FAILURES AND AUTOMATIC COMM. RECOVERY METHODS.

THE PROGRAM SHALL HAVE THE ABILITY TO DISPLAY ALL TELEMETRY MESSAGE TRANSACTIONS FOR THE COMMUNICATIONS PORT AND SHALL UTILIZE PROTOCOL DISCIPLINES SUCH AS RETRIES, COMM. FAILURES AND AUTOMATIC COMM. RECOVERY METHODS.

83. RADIO & ANTENNA SYSTEM SPECIFICATION:

84. RADIO & ANTENNA SYSTEM:

85. COMMUNICATIONS SYSTEM:

86. RADIO SYSTEM:

86. THE RADIO SHALL BE FURNISHED AT THE REMOTE RTU SITE AND CONNECTED TO THE RTU COMMUNICATIONS OUTPUT PORT. THE SCADA AND RTU RADIO SYSTEM WILL OPERATE ON 902 TO 928 MHZ BANDS. THE RADIO SHALL MEET ALL OF FCC REQUIREMENTS AND SHALL BE CAPABLE OF TRANSMITTING DATA UP TO 1MBPS.

86.2 THE R.F. EQUIPMENT FURNISHED UNDER THESE SPECIFICATIONS SHALL MEET OR EXCEED ALL CURRENT FCC REQUIREMENTS FOR POINT-TO-MULTI POINT RADIO SYSTEMS.

86.3 THE R.F. TRANSMITTER SHALL BE DIRECTLY FREQUENCY MODULATED BY A BUILT-IN DIGITAL MODEM FROM THE DIGITAL DATA STREAM FURNISHED BY THE PROGRAMMABLE CONTROLLER. THE R.F. RECEIVER SHALL PROVIDE A DIGITAL DATA STREAM TO THE PROGRAMMABLE CONTROLLER.

86.4 THE RADIO ASSEMBLY SHALL CONSIST OF A NON-PROTECTED TRANSMITTER, RECEIVER, POWER SUPPLY AND DIGITAL MODEM CAPABLE OF OPERATING IN THE 902 TO 928 MHZ BAND. THE ASSEMBLY SHALL BE CAPABLE OF TRANSMITTING AND RECEIVING DIGITAL DATA AT A RATE OF UP TO 1MBPS. THE UNIT SHALL ALSO MEET THE FOLLOWING REQUIREMENTS:

86.5 R.F. ASSEMBLY SHALL BE CAPABLE OF OPERATION AT FULL PERFORMANCE SPECIFICATIONS BETWEEN -30 AND +60 DEGREES CENTIGRADE IN TH A RELATIVE HUMIDITY OF 95% MEASURED AT +40 DEGREES CENTIGRADE.

86.6 R.F. ASSEMBLY SHALL OPERATE FROM A D.C. POWER SYSTEM FURNISHED AND INSTALLED AS A PART OF THE OVERALL INSTALLATION. BATTERY TAPPING OF 24 VOLT POWER SYSTEMS TO OBTAIN 12 VOLTS WILL NOT BE PERMITTED.

86.7 R.F. ASSEMBLY SHALL BE ENCLOSED IN A STURDY METAL HOUSING SUITABLE FOR MOUNTING ON THE BACK PLATE OF THE REMOTE TELEMETRY UNIT ENCLOSURE WITH STAINLESS STEEL HARDWARE IN SUCH A MANNER AS TO PERMIT EASY REMOVAL OF THE RADIO ASSEMBLY FOR SERVICE AND/OR REPLACEMENT.

86.8 DIAGNOSTICS: THE RADIO SHALL BE ASSEMBLED WITH THE DIAGNOSTICS. THIS ENABLES THE USER TO TEST SYSTEM FEATURES AS ALARM REPORTING, POWER OUTPUT, SIGNAL STRENGTH, DEVIATION, FREQUENCY AND VOLTAGE MEASUREMENTS.

86.9 MANUFACTURER: THE RADIO EQUIPMENT SHALL BE THE GE MDS NET II, NO EQUAL.

87. ANTENNA SYSTEM:

87.1 THE ANTENNA SYSTEM SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS. THE ANTENNA SHALL BE A HEAVY DUTY YAGI-TYPE MEETING THE FOLLOWING MINIMUM SPECIFICATIONS:
FREQUENCY RANGE 902 TO 928 MHZ
FORWARD GAIN 10DB
FRONT-TO-BACK RATIO 20DB
IMPEDANCE 50 OHMS
HORIZONTAL BEAM WIDTH 48 DEGREES (HALF POWER POINT)
MAX. INPUT POWER 100 WATTS
WIND RATING 150 MPH SURVIVAL
LIGHTING PROTECTION DIRECT GROUND
INPUT CONNECTOR TYPE "N", FEMALE

87.2 MOUNTING BRACKETS: SHALL BE STEEL AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. ANTENNA SHALL BE MOUNTED SO THAT THE METAL ANTENNA SUPPORT POLE EXTENDS OVER THE TOP OF THE ANTENNA BY A MINIMUM OF SIX INCHES (6").

87.3 TRANSMISSION LINES: SHALL BE ANDREW CORPORATION HELIAX TYPE LDF4-50A 1/2" DIAMETER FOAM DIELECTRIC COAXIAL CABLE OR APPROVED EQUAL. THE COAXIAL CABLE SHALL BE ENCASED IN A BLACK POLYETHYLENE OUTER JACKET. CONNECTION SHALL BE TYPE "N" MALE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT LENGTH OF TRANSMISSION LINE REQUIRED AT THE SITE. THE UPPER END OF THE TRANSMISSION LINE SHALL BE CONNECTED DIRECTLY TO THE ANTENNA BY A TYPE "N" MALE CONNECTOR WITHOUT THE USE OF A "PIGTAIL". THE LOWER END OF THE TRANSMISSION LINE SHALL BE CONNECTED TO THE RADIO EQUIPMENT BY A "PIGTAIL" OF THE APPROPRIATE LENGTH.

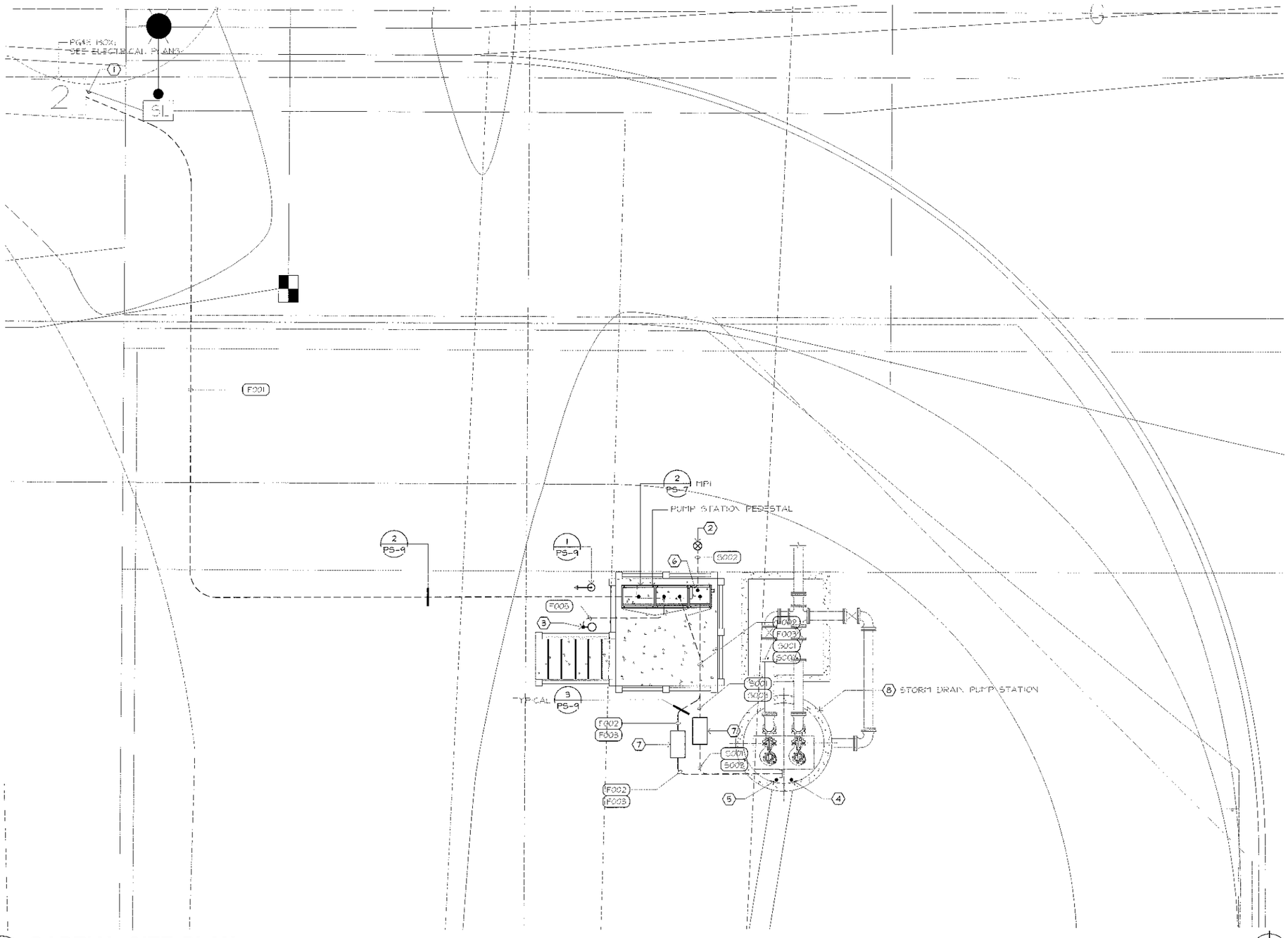
87.4 ALL TRANSMISSION LINES SHALL BE GROUNDED AT BOTH THE UPPER AND LOWER ENDS. GROUNDING SHALL BE ACCOMPLISHED THROUGH THE USE OF ANDREW CORPORATION "TYPE 224094" GROUNDING KITS OR APPROVED EQUAL. GROUNDING OF THE UPPER END OF TRANSMISSION LINES SHALL BE MADE JUST ABOVE THE POINT WHERE THE TRANSMISSION LINE ENTERS THE ALUMINUM CONDUIT. THE ACTUAL GROUNDING SHALL BE MADE TO THE #6 GROUND WIRE AS SHOWN ON THE DRAWINGS. AFTER THE GROUNDING KIT IS INSTALLED ON THE TRANSMISSION LINE THE TRANSMISSION LINE JACKET SHALL BE RESEALED USING A TWO-PART TAPE SYSTEM. EACH LAYER OF TAPE SHALL BE SEALED BY COATING WITH SCOTCHKOTE OR APPROVED EQUAL. GROUNDING OF THE LOWER END OF ALL TRANSMISSION LINES SHALL BE ACCOMPLISHED WITHIN THE ENCLOSURE. ACTUAL GROUNDING SHALL BE DONE AT A COMMON GROUND PROVIDED WITHIN THE ENCLOSURE.

88. BATTERY BACK UP:

88.1 THE BATTERY BACK UP SYSTEM SHALL POWER THE CONTROLLER, RADIO AND I/O SYSTEM FOR A MINIMUM OF 4 HOURS. BATTERIES SHALL BE SEALED GEL-CELL TYPE LEAD ACID WITH CHARGER.

SHEET NOTES

1. APPROXIMATE POLE SOURCE; COORDINATE WITH SITE ELECTRICAL PLANS & PG&E FOR EXACT SERVICE LOCATION.
2. SCADA ANTENNA POLE; COORDINATE WITH CITY FOR EXACT MOUNTING LOCATION. SEE DETAIL 3/PS-8.
3. PUMP STATION YARD LIGHT; COORDINATE WITH CITY FOR EXACT MOUNTING LOCATION; SEE DETAIL 2/PS-8.
4. ULTRASONIC TRANSDUCER MOUNTED WITHIN WET WELL PER EQUIPMENT MANUFACTURE MOUNTING REQUIREMENTS; MOUNT DEVICE FOR CLEAR LINE OF SITE TO BOTTOM OF WET WELL AND WITHIN 24" FROM TOP OF WET WELL. MOUNT DEVICE TO STAINLESS STEEL STRUT SECURED TO WET WELL WALL; COORDINATE WITH CIVIL PLANS FOR CONTROL LEVELS AND CALIBRATE CONTROL SYSTEM ACCORDINGLY; SEE DETAIL 1/PS-8. PROVIDE TRANSDUCER COMPLETE WITH CABLE.
5. PROVIDE & INSTALL TWO FLOAT SWITCHES; SEE DETAIL 1/PS-8 FOR REQUIREMENTS.
6. BOND GROUND CONDUCTOR TO PEDESTAL BUS BAR.
7. CONCRETE PULLBOX; 3' X 24" I.D., SEE DETAIL 4/PS-9.
8. WET WELL IS A HAZARDOUS (CLASSIFIED) LOCATION; CLASS I, DIVISION 2; ELECTRICAL INSTALLATION SHALL COMPLY ACCORDINGLY.



1 **PARTIAL SITE PLAN**
1/4"=1'-0"

4' 2' 0 4' 8'
1/4"=1'-0"

NORTH

E2.0

GENERAL SINGLE LINE NOTES

A. ALL ELECTRICAL SHOWN IS NEW, U.O.N.

B. ALL CIRCUIT BREAKERS ARE AS NOTED, U.O.N.

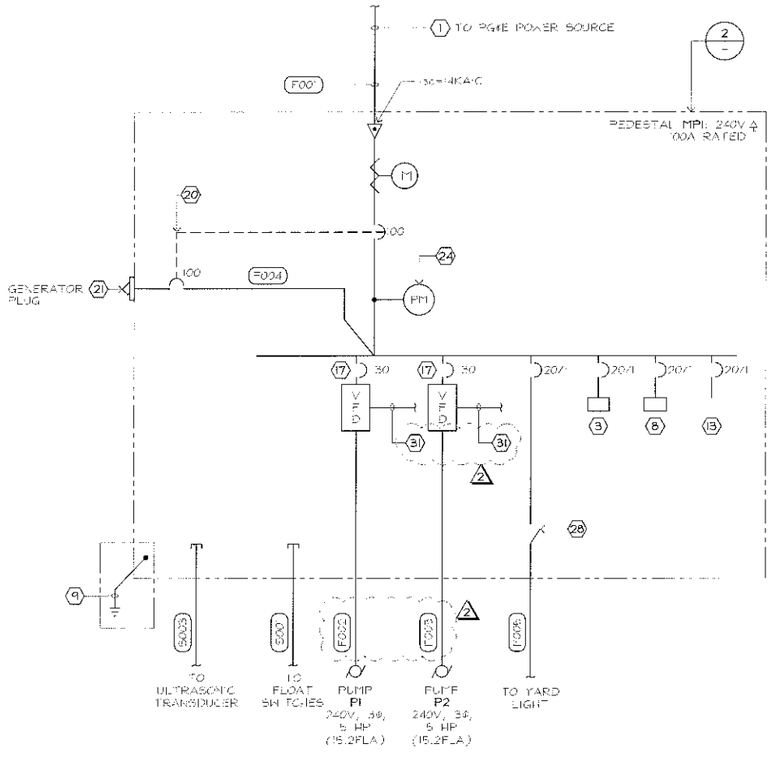
C. VOLTAGE DESIGNATIONS (U.O.N.)
- 240-1 = 120V/240V-1PH-3 WIRE
- 480-1 = 480V-1PH-2 WIRE
- 208Y = 208/120V-3PH-4 WIRE
- 240 ϕ = 120/240V-3PH-4 WIRE
- 480Y = 480V/277V-3PH-4 WIRE
- 480 Δ = 480V-3PH-3 WIRE

D. "KA" AT CIRCUIT BREAKERS DENOTES MINIMUM REQUIRED INTERRUPTING CAPACITY IN AMPS (x 1000).

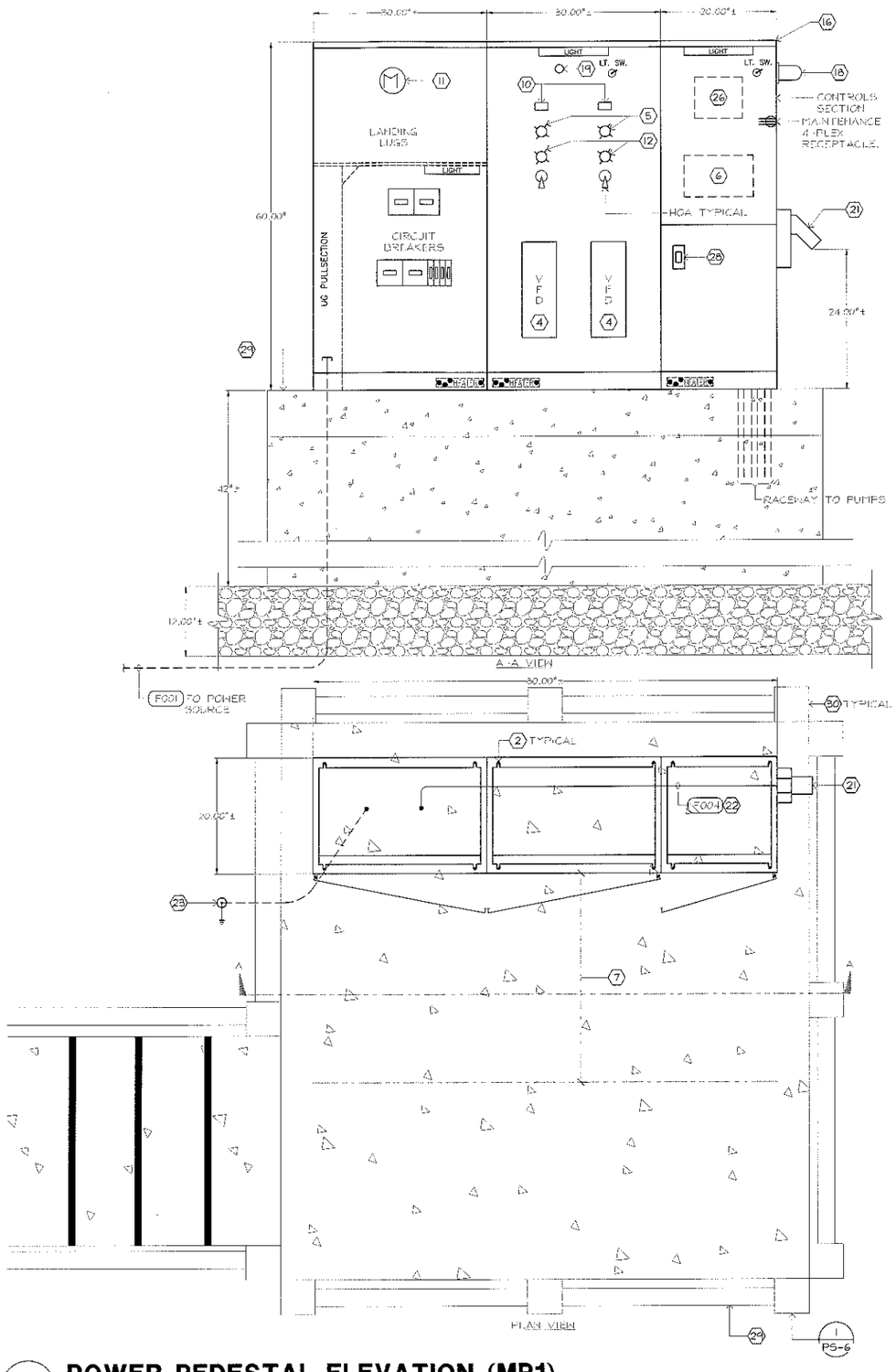
E. SPD AT BREAKER DENOTES: PROVIDE MOUNTING SPACE & HARDWARE FOR FUTURE 3-POLE BREAKER OF RATINGS INDICATED

FEEDER SCHEDULE

FDR No.	CONDUIT AND CONDUCTORS	REMARK
F001	3"C.,(2)	PG&E SECONDARY
F002	1½"C., 3#10, 1#10 GND.	15
F003	1½"C., 3#10, 1#10 GND.	15
F004	1½"C., 4#12, 1#12 GND.	
F005	¾"C., 2#12, 1#12 GND.	
S001	2"C.	14
S002	2"C.	25
S003	1"C.	27



1 **SINGLE LINE DIAGRAM**
NO SCALE



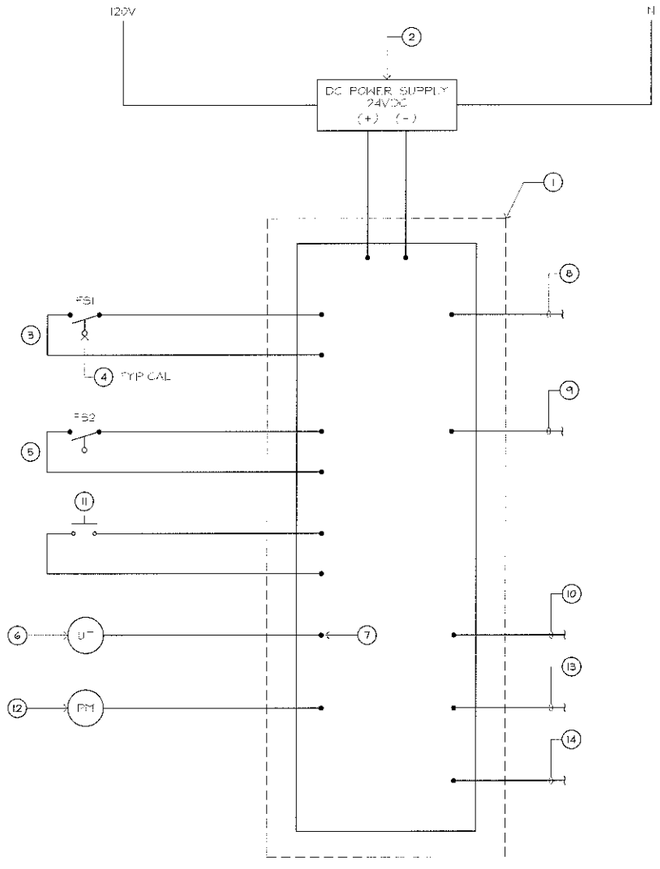
2 **POWER PEDESTAL ELEVATION (MP1)**
NO SCALE

SHEET NOTES

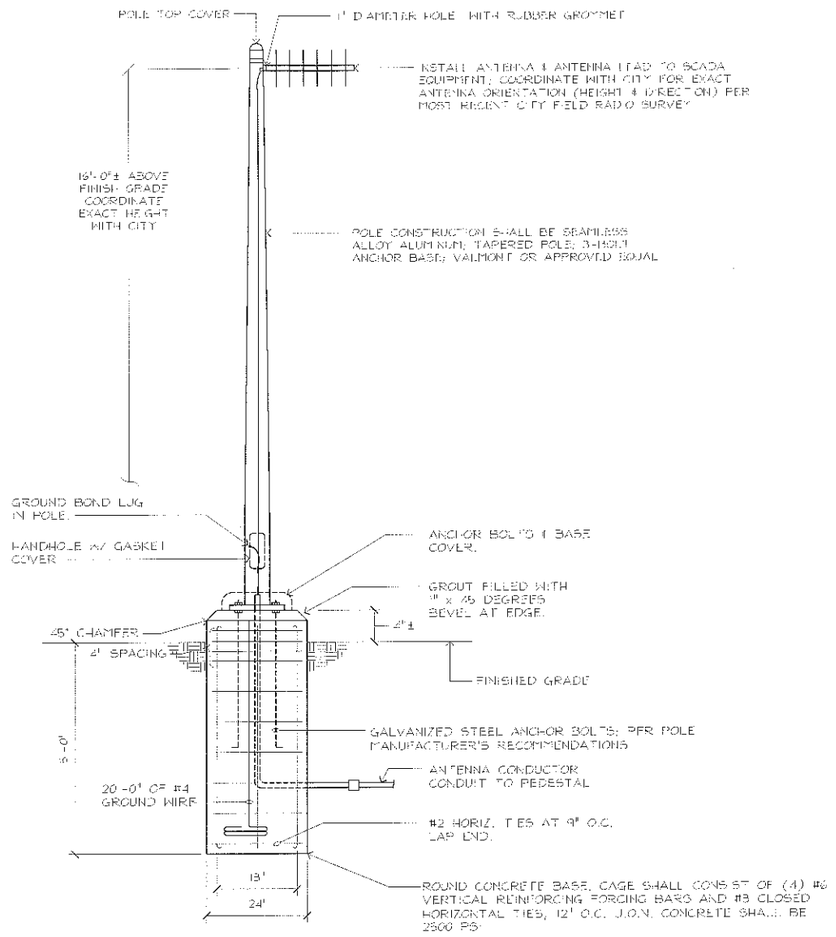
1. COORDINATE EXACT POWER SOURCE LOCATION PRIOR TO TRENCHING; OWNER SHALL COMPLETE PG&E NEW SERVICE APPLICATION; SEE DETAIL 1/PS-6.
2. BOLT TO PAD USING MINIMUM 1/2" DIAMETER BOLT AND PER EQUIPMENT MANUFACTURER'S REQUIREMENTS. EPOXY ANCHOR BOLT OR EQUAL INTO CONCRETE; COORDINATE WORK WITH CIVIL PLANS.
3. CONTROL POWER; SEE DETAIL 1/PS-8.
4. VFD MOUNTED IN PEDESTAL AS INDICATED; AS MANUFACTURED BY "EATON" 9VX SERIES OR APPROVED EQUAL; 240V, 3Ø, 5 HP; NEMA 4 ENCLOSURE FOR MOUNTING INSIDE PEDESTAL; A PANUMERIC KEYPAD.
5. "PUMP RUNNING" LIGHT; GREEN LED LIGHT SOURCE; CONTROLLED VIA VFD PROGRAMMABLE RELAY CLOSES WHEN VFD OPERATES; LABEL "PUMP RUNNING".
6. PUMP CONTROLS; SEE DETAIL 1/PS-8.
7. MAINTAIN MINIMUM 36" CLEAR SPACE IN FRONT OF MP1.
8. PEDESTAL LOADS (LIGHTS, HEATERS, RECEPTACLES, ETC.).
9. 3/4" C., #6 B.C. SERVICE GROUND BOND NEUTRAL TO SERVICE GROUND; SEE DETAIL 2/PS-7.
10. PUMP ELAPSED TIME METER; SEE ELECTRICAL SPECIFICATION
11. PEDESTAL UTILITY SERVICE ENTRANCE AND ALL UTILITY METERING FACILITIES SHALL CONFORM TO ELSBERG STANDARDS AND BE PG&E APPROVED; SEE ELECTRICAL SPECIFICATION.
12. VFD FAIL LIGHT; RED LED LIGHT SOURCE, CONTROLLED VIA VFD PROGRAMMABLE RELAY CLOSED WHEN VFD GOES INTO ALARM"; LABEL "PUMP OVERLOAD"
13. 2 SPARE CIRCUIT BREAKERS; SIZE AS INDICATED.
14. CONDUIT FOR FLOAT SWITCH CABLES; CONTRACTOR SHALL DETERMINE FLOAT SWITCH CABLE LENGTH AS REQUIRED BY FIELD CONDITIONS AND INSTALL.
15. PUMP VFD SHIELDED CABLES PROVIDED AS PART OF PUMP; COORDINATE LENGTH WITH PUMP VENDOR; MAXIMUM FEED LENGTH IS 230'; BELDEN 29903 OR AS RECOMMENDED BY PUMP VENDOR.
16. PUMP CONTROL PEDESTAL MP1 SHOWN WITH EXTERIOR DOORS OPENED; SEE ELECTRICAL SPECIFICATION. PROVIDE A SUBMITTAL FOR APPROVAL OF THE COMPLETE INTEGRATED PEDESTAL PRIOR TO PURCHASE; SEE DETAIL 1/PS-7.
17. PROVIDE INVERSE TIME CIRCUIT BREAKER WITH LOCK-OFF DEVICE.
18. HIGH WATER SIGNAL LIGHT; RED LED; 120V; DAYLIGHT VISIBLE FROM 100' MINIMUM; SEE 1/PS-8 FOR CONTROLS.
19. SIGNAL LIGHT RESET PUSHBUTTON.
20. INTERLOCKED CIRCUIT BREAKERS MANUAL LOAD TRANSFER; CIRCUIT BREAKERS SHALL BE PERMANENTLY INTERLOCKED SO THAT ONLY ONE CIRCUIT BREAKER MAY BE CLOSED SIMULTANEOUSLY; SEE ELECTRICAL SPECIFICATION.
21. GENERATOR RECEPTACLE MOUNTED ON EXTERIOR OF PEDESTAL; PROVIDE WITH ANGLE ADAPTER; 240V, 3Ø, 100A RATED; RUSSELL-STOLL "MAXGARD" OR APPROVED EQUAL; PROVIDE MATCHING RUSSELL STOLL PLUG FOR INSTALLATION ON OWNER'S GENERATOR CABLE; PROVIDE EQUIPMENT SUBMITTAL PRIOR TO PURCHASE.
22. ROUTE FEEDER WITHIN PEDESTAL NEAR BOTTOM OF ENCLOSURE TO GENERATOR INTERLOCKED CIRCUIT BREAKER; SEE DETAIL 1/PS-7.
23. SERVICE GROUND ROD; DRIVEN ROD WITH MINIMUM 96" EARTH CONTACT; SEE DETAIL 1/PS-9.
24. POWER MONITOR; SEE ELECTRICAL SPECIFICATION.
25. ANTENNA CABLE AND #6 B.C. GROUND CONDUCTOR.
26. SCADA RADIO; SEE ELECTRICAL SPECIFICATION.
27. CONDUIT FOR LEVEL TRANSDUCER CABLE LENGTH AS REQUIRED BY FIELD CONDITIONS; INSTALL TRANSDUCER CABLE.
28. YARD LIGHT SWITCH; 120V; SEE DETAIL 1/PS-7.
29. CONCRETE PEDESTAL BUILT UNDER CIVIL PLANS; PRIOR TO BEGINNING CONSTRUCTION COORDINATE CIVIL PLANS WITH EXACT MP1 DIMENSIONS; ADJUST CONCRETE PEDESTAL TO ACCOMMODATE MP1 DIMENSIONS.
30. SAFETY RAILING AROUND CONCRETE PEDESTAL; RAILING NOT SHOWN IN ELEVATION FOR CLARITY.
31. MOTOR CONTROLS; SEE DETAIL 1/PS-8.

◯ DETAIL NOTES:

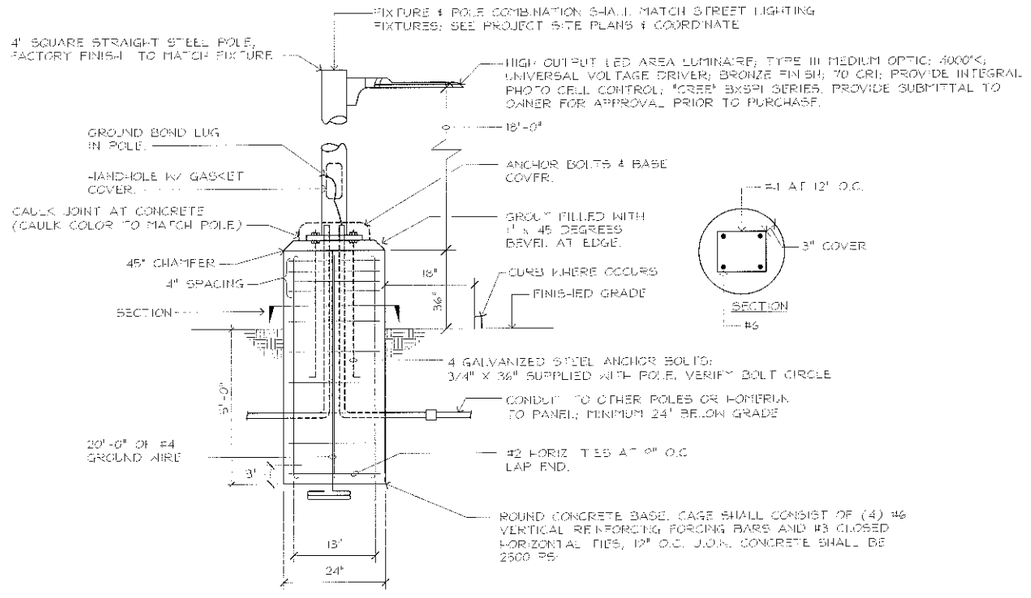
1. TESCO L8000; SEE ELECTRICAL SPECIFICATION.
2. 24VDC POWER SUPPLY WITH THE FOLLOWING ATTRIBUTES:
   - DIN RAIL MOUNTED.
   - 120V AC INPUT VOLTAGE.
   - 120VI, 24VDC (ADJUSTABLE 23.5-28.5VDC).
   - ± 2% VOLTAGE TOLERANCE.
   - ± 0.5% LINE REGULATION.
   - ± 0.5% LOAD REGULATION.
   - -10°C ~ +60°C WORKING TEMPERATURE.
   - SOLA HEAVY DUTY INDUSTRIAL POWER SUPPLY OR EQUAL.
3. NORMALLY OPENED FLOAT SWITCH TO ALLOW PUMP STARTING.
4. FLOAT SWITCH; MECHANICAL "PILT SWITCH; #16 AWG 2 CONDUCTOR SJOW CORD; N.O. CONTACTS RATED AT 15 AMPS, 120V; TETHER FOR WIDE RANGE MOVEMENT; PROVIDED WITH INTRINSICALLY SAFE INTERFACE DEVICE, SEE CIVIL PLANS FOR PUMP LEVELS.
5. NORMALLY OPENED FLOAT SWITCH; -HIGH WATER ALARM.
6. ULTRASONIC TRANSDUCER, SEE ELECTRICAL SPECIFICATION.
7. LIQUID LEVEL SET AS FOLLOWS:
   - LEVEL 1 SIGNALS LEAD PUMP START.
   - LEVEL 2 SIGNAL ALARM LIGHT.
   - LEVEL 3 SIGNALS PUMP STOP.
   - LEVEL 4 SIGNAL LEAD PUMP TO INCREASE SPEED.
   - SEE C.V.I. PLANS FOR LIQUID LEVELS AND COORDINATE.
8. DIGITAL OUTPUT TO ACTIVATE ALARM LIGHT AND TO SIGNAL SCADA TO SEND ALARM MESSAGE.
9. AT LIQUID LEVEL 1 DIGITAL OUTPUT TO START LEAD PUMP; SIGNALS VFD TO RAMP UP TO 60% SPEED.
10. ANALOG OUTPUT TO TRACK LIQUID LEVEL AND VARY PUMP SPEED PROPORTIONALLY BETWEEN 60% AND 100% SPEED.
11. MOMENTARY CONTACT PUSH BUTTON MOUNTED ON POWER PEDESTAL INTERIOR DOOR; DIGITAL INPUT TO RESET ALARM LIGHT.
12. POWER MONITOR.
13. ALARM SIGNAL TO SCADA UPON POWER FAULT.
14. ALARM SIGNAL TO SCADA UPON CONTROL SYSTEM FAULT.



1 SCHEMATIC CONTROL DIAGRAM
NO SCALE



3 SCADA ANTENNA
NO SCALE



2 FIXTURE MOUNTING DETAIL
NO SCALE

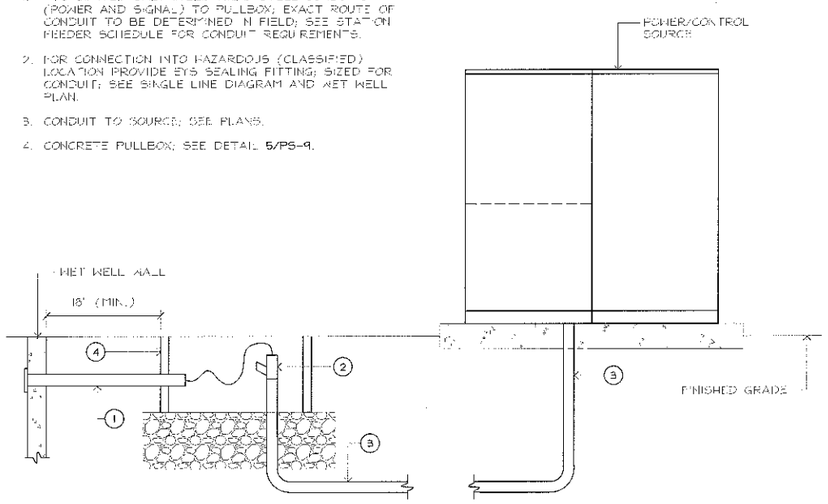
CONTROL DIAGRAM SYMBOLS

- FIELD WIRING
- WIRING INSIDE PSB
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- TIMED CONTACT NORMALLY CLOSED TIMED OPEN
- TIMED CONTACT NORMALLY OPEN TIMED CLOSED
- TIMED CONTACT NORMALLY CLOSED TIMED CLOSED
- TIMED CONTACT NORMALLY OPEN TIMED OPEN
- (XX) RELAY; "XX" IS RELAY IDENTIFIER.
- A SELECTOR SWITCH; 'LETTER' INDICATES CONTACT SELECTION.
- (X) PILOT LIGHT; "X" INDICATES LENS COLOR; R=RED, G=GREEN, A=AMBER.
- (X) PILOT LIGHT WITH PUSH-TO-TEST; "X" INDICATES LENS COLOR; R=RED, G=GREEN, A=AMBER.
- MOMENTARY CONTACT NORMALLY CLOSED
- MOMENTARY CONTACT NORMALLY OPEN

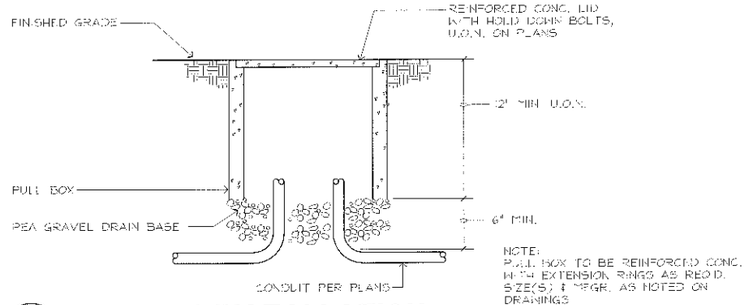
HOA	HAND-OFF-AUTOMATIC SWITCH
PLC	PROGRAMMABLE LOGIC CONTROL
HP	HIGH PRESSURE.

◯ DETAIL NOTES:

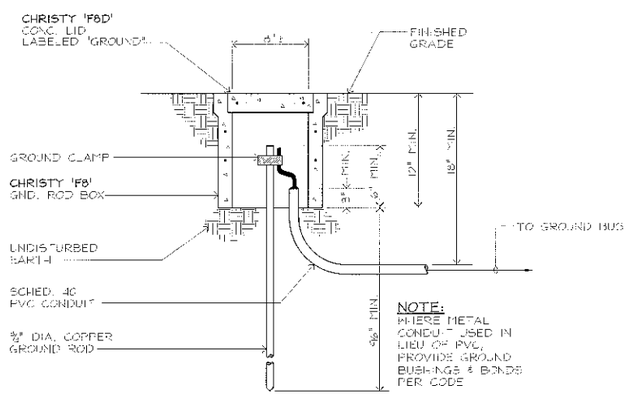
1. PVC COATED GALVANIZED RIGID STEEL CONDUITS (POWER AND SIGNAL) TO PULLBOX; EXACT ROUTE OF CONDUIT TO BE DETERMINED IN FIELD; SEE STATION FEEDER SCHEDULE FOR CONDUIT REQUIREMENTS.
2. FOR CONNECTION INTO HAZARDOUS (CLASSIFIED) LOCATION PROVIDE EYS SEALING FITTING; SIZED FOR CONDUIT; SEE SINGLE LINE DIAGRAM AND WET WELL PLAN.
3. CONDUIT TO SOURCE; SEE PLANS.
4. CONCRETE PULLBOX; SEE DETAIL 5/PS-9.



4 PULLBOX CONNECTION DETAIL
NO SCALE

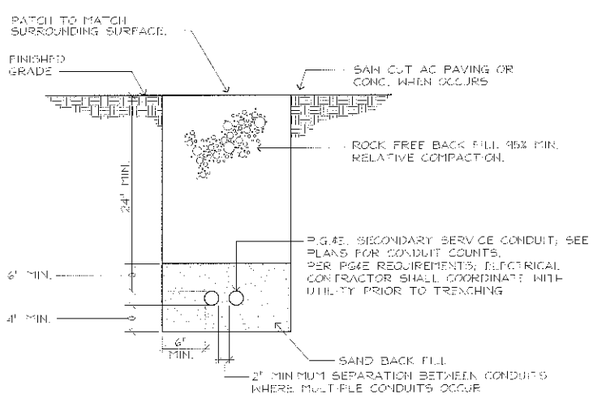


5 PULLBOX INSTALLATION
NO SCALE



1 GROUND ROD & WELL
NO SCALE

D203c



2 UTILITY SECONDARY TRENCH SECTION
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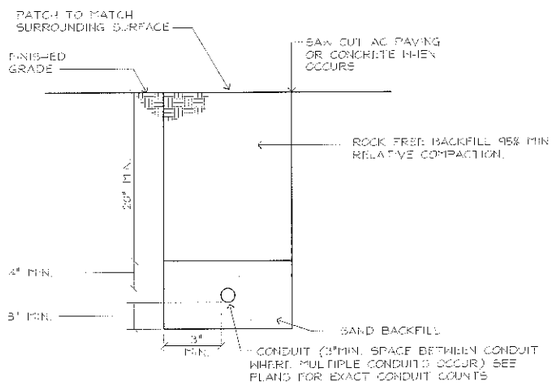
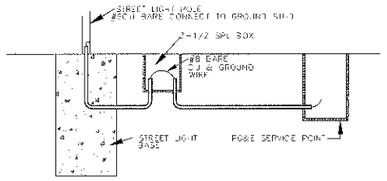
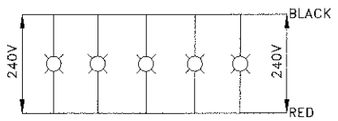


3 TRENCH SECTION
NO SCALE

PENNINO MANAGEMENT GROUP
1420 S. MILLS ST. SUITE E
LODI, CA 95242
PHIL PENNINO
209-370-1908 - ppennino@penninogroup.com



GROUNDING DETAIL
TYPICAL



WIRING DIAGRAMS

WORK RESPONSIBILITY
STREET LIGHTING SYSTEM

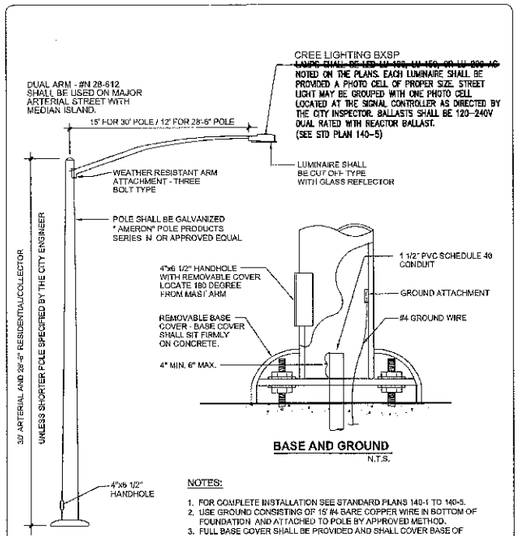
	PG&E	ELECTRIC CONTRACTOR
WIRE: SUPPLY & INSTALL		●
CONDUIT SUPPLY & INSTALL		●
BASES: SUPPLY & INSTALL		●
LUMINAIRES: SUPPLY & INSTALL		●
SPLICE BOX: SUPPLY & INSTALL		●

PG&E RATE SCHEDULE: ____
INSTALL IN JOINT TRENCH: ✓
INSTALL IN SEPARATE TRENCH: ____

THESE PLANS WERE PREPARED IN CONJUNCTION WITH THE FOLLOWING PLANS:

	DATE RECEIVED	DATE APPROVED
CIVIL IMPROVEMENT PLANS/GRADING PLANS.	06-16-2015	PRELIM.
LANDSCAPE ARCHITECTURAL PLANS	N/A	N/A
SERVICE POINTS	07-07-2015	PRELIM.
STREET LIGHT LOCATIONS BY: RGA DESIGN	11-18-2015	PRELIM.

RGA Design is not responsible for any subsequent changes or revisions.



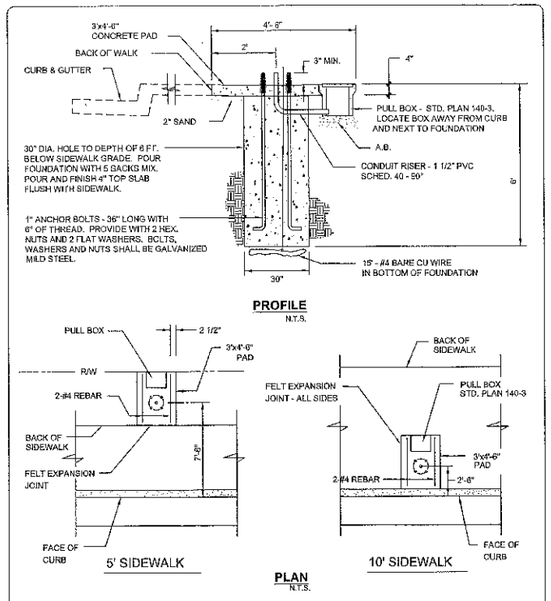
BASE AND GROUND
N.T.S.

STANDARD

NOTES:
1. FOR COMPLETE INSTALLATION SEE STANDARD PLANS 140-1 TO 140-5.
2. USE GROUND CONSISTING OF 15' #4 BARE COPPER WIRE IN BOTTOM OF FOUNDATION AND ATTACHED TO POLE BY APPROVED METHOD.
3. FULL BASE COVER SHALL BE PROVIDED AND SHALL COVER BASE OF POLE COMPLETELY AND REST FIRMLY ON CONCRETE PAD.
4. LUMINAIRES SHALL BE CUTOFF TYPE.
5. ANCHOR BOLTS SHALL BE 1" DIA x 36" LONG WITH 4" LONG BOLTS SHALL BE GALVANIZED AND PROVIDED WITH 2 NUTS AND 2 WASHERS.

CITY OF TRACY

REVIEWED BY:		STANDARD PLAN No. 140	SHEET 1 OF 5
CITY ENGINEER	RCE 37186		
Res No. 2008-255	DATE:	MODIFIED STREET LIGHT	
Rev:	Rev:		
Rev:	Rev:		



PROFILE
N.T.S.

PLAN
N.T.S.

CITY OF TRACY

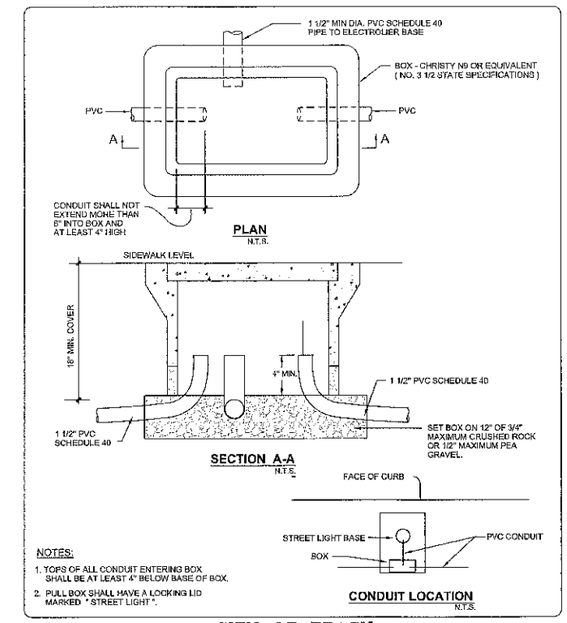
REVIEWED BY:		STANDARD PLAN No. 140	SHEET 2 OF 5
CITY ENGINEER	RCE 37186		
Res No. 2008-255	DATE:	STREET LIGHT POLE FOUNDATION	
Rev:	Rev:		
Rev:	Rev:		

NOTES:

1. STREET LIGHT STANDARDS SHALL BE PLACED AT ALL INTERSECTIONS, THE ENDS OF CUL-DE-SACS AND COURTS 100 FEET OR MORE IN DEPTH, AND EVENLY SPACED, DEPENDING ON BLOCK LENGTHS, 250 FEET MAXIMUM BETWEEN LIGHTS STAGGERED FROM ONE SIDE TO THE OTHER. LIGHTS ON MINOR ARTERIAL STREETS SHALL BE SPACED A MAXIMUM OF 170' (SEE NOTE #16). MAJOR ARTERIAL STREETS SHALL HAVE DOUBLE ARM STREET LIGHT, MAXIMUM SPACING 176' (SEE NOTE #16). LIGHTS WITHIN MEDIAN ISLAND SHALL BE AT LEAST 20' FROM THE ISLAND NOSE.
2. WIRING SHALL BE UNDERGROUND IN 1-1/2" MIN. UL APPROVED SCHEDULE 40, HEAVY WALL RIGID PVC CONDUIT. (SPECIAL CONDITIONS MAY REQUIRE INCREASE OF CONDUIT SIZE AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.) ALL CONDUCTORS SHALL BE COPPER.
3. CONDUIT SYSTEM SHALL BE COMPLETE FROM THE STREET LIGHT TO THE PG&E SOURCE.
4. INSTALL A CONCRETE PULL BOX AT EACH ELECTROLIER PER CITY OF TRACY STANDARDS. MINIMUM SIZE NO. 3-1/2, LID MARKING - "STREET LIGHT" (LOCKING LID).
5. SEE CITY OF TRACY STANDARD DRAWINGS 140 SHEETS 1-5 FOR ADDITIONAL DETAILS.
6. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTIONS 99-1, 86-2, AND 86-8 OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS.
7. WATERPROOF FUSED SPLICE CONNECTORS WITH PROPER 10 AMP FUSE SHALL BE INSTALLED IN EACH PULL BOX ADJACENT TO A LIGHT STANDARD.
8. WIRE IN POLE FROM LUMINAIRE TO PULL BOX AT BASE OF POLE SHALL BE #10 COPPER SERVING A SINGLE LUMINAIRE (INSULATION RATING SHALL BE THHN/THW 600V RATED).
9. WIRE IN UNDERGROUND CONDUIT SHALL BE #8 COPPER STRANDED WIRE (INSULATION RATING SHALL BE THHN/THW 600V RATED). INCLUDE COATED #8 AWG RUN CONTINUOUSLY IN ALL CIRCUITS.
10. THE OWNER OR CONTRACTOR OF ANY LIGHTING PROJECT IS REQUIRED TO PAY PG&E COMPANY THE CONNECTION FEE BEFORE ACCEPTANCE BY THE CITY.
11. ALL ELECTROLIERS SHALL BE GROUNDED AS SHOWN ON STANDARD PLANS.
12. ALL CONDUIT ENDS IN PULL BOXES OR STANDARDS SHALL BE SECURELY PACKED WITH AN APPROVED SEALANT AFTER WIRE IS PULLED.
13. ALL SPLICES IN CONDUCTORS SHALL BE MADE WITH APPROVED WIRE CONNECTOR AND MADE WATER PROOF BY APPROVED METHOD. SEE CALTRANS STANDARD PLAN ES-13A.
14. ALL CONDUIT SHALL BE A MINIMUM OF 3' BELOW THE FLOWLINE OF GUTTER EXCEPT WHEN UNDER THE SIDEWALK. CONDUIT SHALL BE A MINIMUM OF 18" DEEP.
15. THE DEVELOPER OF SUBDIVISIONS SHALL BE REQUIRED TO PROVIDE THE CITY WITH ONE ELECTROLIER FOR EACH TWENTY (20) ELECTROLIERS (OR FRACTION THEREOF) OF EACH SIZE INVOLVED IN THE TRACT LIGHTING. THE ELECTROLIERS SHALL BE IDENTICAL TO THOSE INSTALLED IN THE SUBDIVISION. THIS REQUIREMENT WILL BE WAIVED IF THE TOTAL NUMBER OF ELECTROLIERS INSTALLED IN THE TRACT IS LESS THAN FIVE (5). THE ELECTROLIERS FURNISHED TO THE CITY SHALL BE COMPLETE, INCLUDING POLE, MAST ARM, LUMINAIRE AND ADEQUATE WIRE TO COMPLETE THE SPLICE IN THE PULL BOX ADJACENT TO THE POLE BASE AND SHALL BE DELIVERED TO THE CITY AT BOYD SERVICE CENTER.
16. THE SERVICE POINT AND ALL CONDUIT SHALL BE INSTALLED WITHIN CITY RIGHT-OF-WAY.
17. ANY DEVIATIONS OR SPECIAL PROVISIONS OF THESE STANDARDS WILL REQUIRE PRIOR APPROVAL BY CITY ENGINEER.

CITY OF TRACY

REVIEWED BY:		STANDARD PLAN No. 140	SHEET 4 OF 5
CITY ENGINEER	RCE 37186		
Res No. 2008-255	DATE:	STREET LIGHT NOTES	
Rev:	Rev:		
Rev:	Rev:		



PLAN
N.T.S.

SECTION A-A
N.T.S.

CONDUIT LOCATION
N.T.S.

NOTES:
1. TOPS OF ALL CONDUIT ENTERING BOX SHALL BE AT LEAST 4" BELOW BASE OF BOX.
2. PULL BOX SHALL HAVE A LOCKING LID MARKED " STREET LIGHT ".

CITY OF TRACY

REVIEWED BY:		STANDARD PLAN No. 140	SHEET 3 OF 5
CITY ENGINEER	RCE 37186		
Res No. 2008-255	DATE:	STREET LIGHT PULL BOX	
Rev:	Rev:		
Rev:	Rev:		

NOTES: (CONT.)

18. ALL BALLASTS SHALL BE REACTOR (120 VOLT, 150 WATT; 120 VOLT, 100 WATT; 120V/240 VOLT, 200 WATT) AND SHALL BE FIELD IDENTIFIABLE. BALLASTS SHALL BE ON A REMOVABLE POWER DOOR.

19. GENERAL NOTE OF LUMINAIRES:

STREET TYPE	VOLTAGE	MASTER ARM LENGTH	POLE HEIGHT	ARM RISE	SIZE
ARTERIAL	120/240	15'	30'	+4'-9"	200 WATT
COLLECTOR AND INDUSTRIAL	120	12'	28'-6"	+4'-3"	150 WATT
RESIDENTIAL	120	12'	28'-6"	+4'-3"	100 WATT

20. LAMP BULBS SHALL HAVE OPERATING LIFE OF 3 YEARS OR A MINIMUM OF 13,140 HOURS.

21. A STRIP OF YELLOW, SELF-ADHESIVE REFLECTIVE TAPE, 4" WIDE, IS TO BE INSTALLED AROUND THE PERIMETER OF EACH POLE AT 7 FEET ABOVE SIDEWALK GRADE.

22. ALL WORK SHALL COMPLY WITH LATEST REVISION OF NATIONAL ELECTRIC CODE STANDARDS.

CITY OF TRACY

REVIEWED BY:		STANDARD PLAN No. 140	SHEET 5 OF 5
CITY ENGINEER	RCE 37186		
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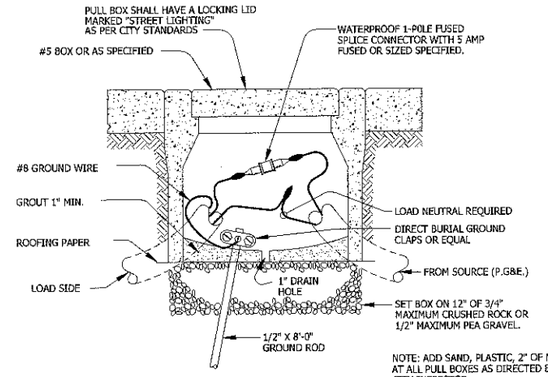
Rev:	Rev:		
Rev:	Rev:		



120 VOLT 2 WIRES. #8 MIN. PLUS GROUND SIZE CONDUCTORS U.O.N.

NOTE: ADD SAND, PLASTIC, 2" OF MORTAR AT ALL PULL BOXES AS DIRECTED BY THE CITY INSPECTOR

SERVICE BOX AT EACH PG&E POINT OF CONNECTION
120 VOLT CONNECTION

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RGA Design LLC
UTILITY CONSULTANTS & ENGINEERS - STREETLIGHT DESIGN
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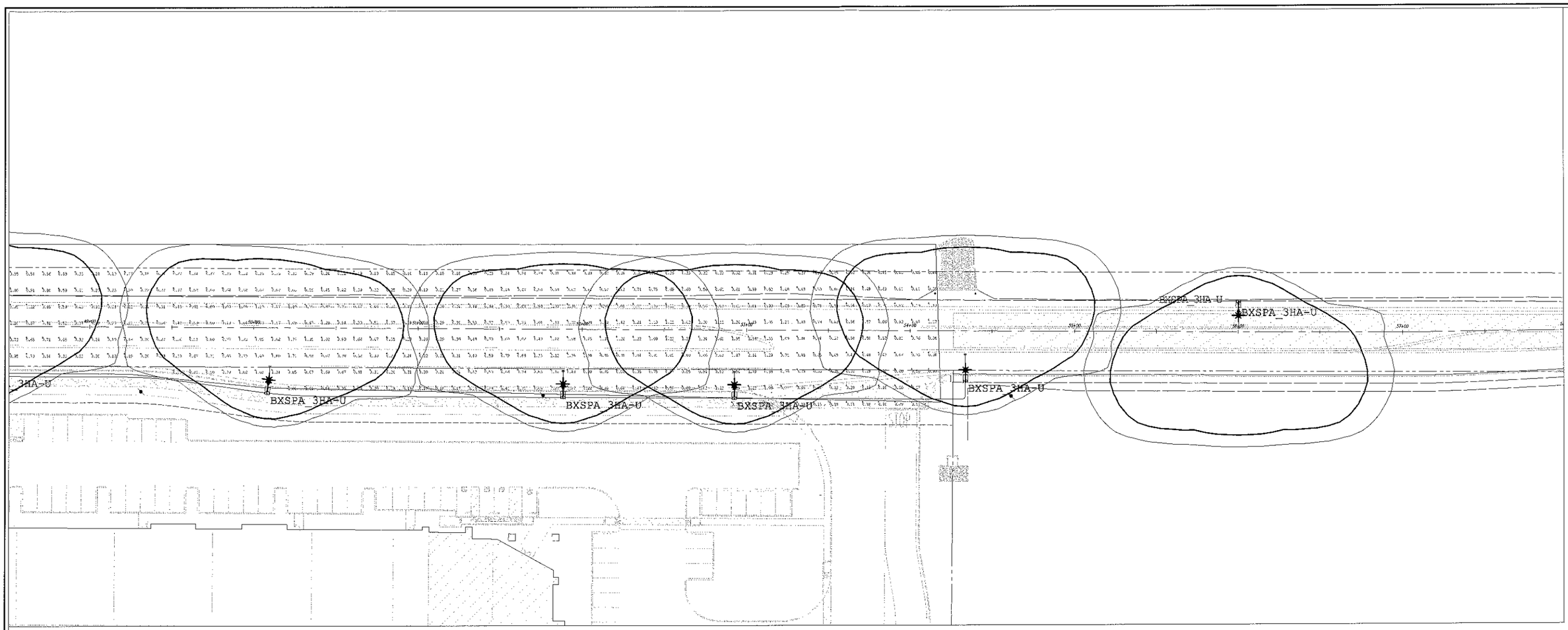
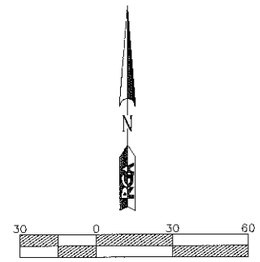


Luminaire Schedule LED										
Project: ARBOR AVE. - TRACY										
Symbol	Qty	Label	Arrangement	Lum. Watts	Lum. Lumens	LLF	LLD	LDD	BF	Description
✶	1	C	SINGLE	101	9600	0.900	0.900	1.000	1.000	CREE LIGHTING BXSP-B-HT-3ME-B-40K-UL @ 34.25' + 15' ARM

Calculation Summary							
Project: ARBOR AVE. - TRACY							
Description	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ARBOR AVE	Illuminance	Fc	0.65	2.14	0.10	6.50	21.40



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