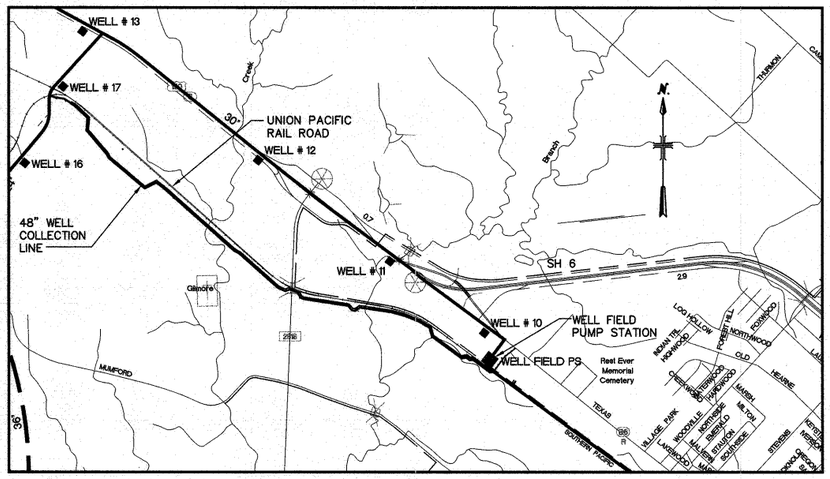
CITY OF BRYAN

WATER PRODUCTION SYSTEM EXPANSION

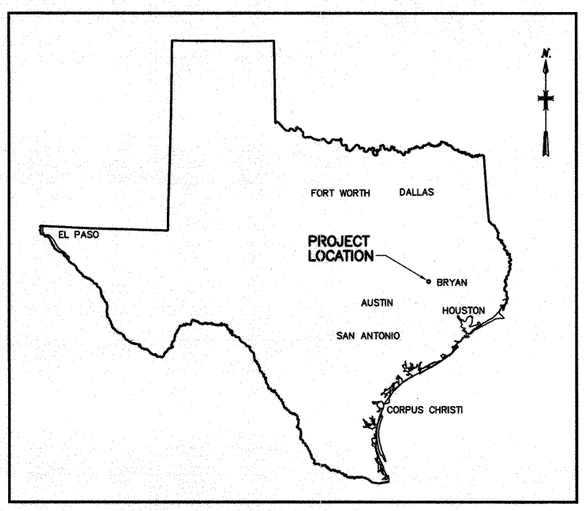
CONTRACT NO. 2 - 48" WELL COLLECTION LINE

NOVEMEBER 2002



LOCATION MAP

1" = 2000'



VICINITY MAP

NOT TO SCALE

JAY DON WATSON – MAYOR

CITY COUNCIL

JOE MARIN
RUSSELL BRADLEY
MIKE BEAL
PAUL MADISON
ERNIE WENTRCEK
MITCH MOREHEAD

MARY KAYE MOORE – CITY MANAGER
HUGH WALKER – DEPUTY CITY MANAGER
LINDA HUFF – CITY ENGINEER
LAWRENCE CARTER – WATER SERVICE DEPARTMENT MANAGER
GLENN JONES – PROJECT MANAGER

ROBERT J. WARREN
53791
REGISTERED
PROFESSIONAL ENGINEER
11/15/02

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10	PLAN AND PROFILE STA. 84+00 TO STA. 98+00
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MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS & CONSULTANTS

User: martinez Spec: PIRNIE STANDARD File: I:\ACAD\PROJ\3319009\DESIGN\1002DWGS REV\3319B001.DWG Scale: 1:1 Date: 11/13/2002 Time: 16:17 Layout: Layout1

BASIS OF BEARINGS:

NORTH ORIENTATION IS BASED ON THE CITY OF BRYAN CONTROL MONUMENTATION PROJECT DATED AUGUST 1997 (HORIZONTAL POINTS SHOWN IN NAD 27 AND VERTICAL SHOWN IN NGVD 1929). SPECIFICALLY THE TWO CONTROL POINTS USED ARE:

GPS-2 – DISK IN CONCRETE MONUMENT
NAD 27 N: 406798.911
E: 3228920.359
GPS ELEVATION: 339.46

GPS-3 – DISK IN CONCRETE MONUMENT
NAD 27 N: 404939.044
E: 3232245.204
GPS ELEVATION: 316.91

GENERAL NOTES:

1. PROVIDE EROSION CONTROL AND SEDIMENTATION CONTROL PER SPECIFICATION 02370 AND SHEET 23.
2. CAUTION : WATER SUPPLY WHICH FEEDS COLLECTION LINE IS APPROXIMATELY 120 DEGREES FAHRENHEIT.
3. ALL EXISTING DRIVEWAYS, LANDSCAPING, OR DRAINAGE FACILITIES DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REMOVED AND RESTORED WITH MATERIALS EQUAL TO OR BETTER AND SHALL BE AT CONTRACTOR'S EXPENSE.
4. PROVIDE HYDROMULCH SEEDING FOR ALL DISTURBED AREAS PER SPECIFICATION D2932.
5. LOCATIONS OF EXISTING WATERLINES WASTEWATER LINES, FIBER OPTIC, GAS, AND OTHER BURIED UTILITIES ARE SHOWN AS APPROXIMATE. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD IN ADVANCE OF FABRICATING NEW PIPING. NOTIFY UTILITY OWNER AND FIELD LOCATE BURIED UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO ALLOW FOR RESOLUTION OF CONFLICT, IF NECESSARY.
6. UNLESS OTHER WISE NOTED, ALL ABOVE GROUND PIPING SHALL BE FLANGED AND BURIED PIPING SHALL BE MJ OR PUSH-ON.
7. A MINIMUM OF TWO WORKING DAYS IN ADVANCE OF EXCAVATING IN THE AREA OF EXISTING UTILITIES, WHETHER FOR DETERMINING EXACT LOCATION OF THE UTILITY OR FOR PIPE INSTALLATION, THE CONTRACTOR SHALL CONTACT THE OWNER OF THE UTILITY IN ACCORDANCE WITH THE UTILITY INSTALLATION NOTIFICATION POLICY IN THE SPECIFICATIONS. THE FOLLOWING ARE CONTACT NUMBERS FOR KNOWN UTILITIES THAT MAY BE AFFECTED BY THIS PROJECT. THIS IS NOT AN ALL-INCLUSIVE LIST AND THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE OWNER OF ALL UTILITIES ENCOUNTERED.

   TXU/LONE STAR GAS: 1-214-741-1671

   CITGO: 1-800-4675689

   ECI FIBER OPTIC: 1-800-267-7028

   G.T.E/VERIZON: 1-800-344-8377
8. PRIOR TO SUBMITTING THE FIRST PERIODIC PAYMENT APPLICATION, THE CONTRACTOR SHALL EXCAVATE THE AREA OF EACH UTILITY TO DETERMINE THE EXACT LOCATION AND DEPTH, UNLESS SPECIFICALLY STATED OTHERWISE.
9. FITTINGS ARE CALLED OUT FOR CONTRACTORS BENEFIT. PIPE DEFLECTIONS GREATER THAN 10° SHALL BE MADE WITH FITTING, REGARDLESS OF WHETHER THEY ARE SPECIFICALLY CALLED FOR OR NOT.
10. ALL FINISHED GRADE CONTOURS SHALL BE AS CLOSE TO NATURAL GRADE AS POSSIBLE.
11. OWNER HAS OBTAINED PERMITS FOR RAILROAD AND RAILROAD SPUR CROSSING.
12. ALL TREES AND WOODY VEGETATION WITHIN EASEMENT SHALL BE REMOVED. ALL TREES OUTSIDE OF EASEMENT BOUNDARIES SHALL BE PROTECTED FROM DAMAGE. CONTRACTOR SHALL BE LIABLE FOR REPARATION FOR ANY SUCH DAMAGE.
13. TREES AND OTHER REMOVED VEGETATION SHALL BE REMOVED FROM THE CONSTRUCTION SITE. BURNING ON SITE IS STRICTLY PROHIBITED.
14. CONTRACTOR IS FULLY RESPONSIBLE FOR ALL ACTIONS OF MATERIAL SUPPLIERS OR SUBCONTRACTORS WHILE ON JOB SITE. AS SUCH, CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO ENSURE THAT ALL VEHICLES, EQUIPMENT, AND PERSONNEL REMAIN WITHIN EASEMENT BOUNDARIES AT ALL TIMES.
15. CONTRACTOR WILL CLEARLY MARK EASEMENT BOUNDARIES AS WORK PROGRESSES AND WILL MAINTAIN MARKING UNTIL ALL WORK IN A GIVEN AREA IS COMPLETE. CONTRACTOR WILL REMOVE ALL MARKING MATERIAL UPON DIRECTION OF THE ENGINEER. PAYMENT FOR EASEMENT MARKING SHALL BE INCIDENTAL TO MOBILIZATION.

Joint Restraining Lengths (ft)	
Station	
From	To
2+03.68	2+36.32
4+34.52	4+99.48
7+93.68	8+26.32
12+11.63	13+39.07
15+38.47	16+65.91
24+03.23	25+71.91
36+89.77	38+82.17
40+68.05	42+05.49
66+18.68	68+25.32
81+41.52	84+39.72
84+45.28	89+88.32
101+12.28	106+24.72
124+37.28	127+98.72
136+36.28	141+13.86
145+41.86	148+50
151+40.59	155+26

NOTES:
PLEASE NOTE THAT THE JOINT RESTRAINING LENGTHS SHOWN ABOVE ARE MINIMUM DISTANCES OF PIPE TO BE RESTRAINED. JOINTS SHALL BE RESTRAINED TO MINIMUM LENGTH OR TO THE NEXT JOINT, WHICHEVER IS GREATEST.

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AR	AIR RELEASE
ARV	AIR RELEASE VALVE
ALT	ALTERNATE
&	AND
APPROX	APPROXIMATE
AS	ASPHALTIC CONCRETE
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
@	AT
AWWA	AMERICAN WATER WORKS ASSOCIATION
B/M	BENCH MARK
BF	BLIND FLANGE
BTM OR BOTT	BOTTOM
BFV	BUTTERFLY VALVE
CML	CEMENT MORTAR LINED
℄	CENTERLINE
CKV	CHECK VALVE
CO	CLEANOUT
CL OR CLR	CLEAR
CONC	CONCRETE
CCP	CONCRETE CYLINDER PIPE
CORP	CORPORATION
CPLG	COUPLING
CJ	CONSTRUCTION JOINT
CONT	CONTINUATION, CONTINUOUS
C	CURVE
DEPT	DEPARTMENT
DET	DETAIL
DIA OR ø	DIAMETER
DIM	DIMENSION
DN	DOWN
DWLS	DOWELS
DWGS	DRAWINGS
DI OR DIP	DUCTILE IRON PIPE
E OR EXIST.	EXISTING
EA	EACH
EW	EACH WAY
EF	EACH FACE
ECC	ECCENTRIC
ELEC	ELECTRIC
EL OR ELEV	ELEVATION
ENG'R	ENGINEER
EQ	EQUAL
ESM'T.	EASEMENT
EXPAN	EXPANSION
EJ	EXPANSION JOINT
FLG	FLANGE
FLG'D	FLANGED
FLEX	FLEXIBLE
FT	FOOT OR FEET
GAL OR GALV	GALVANIZED
GV	GATE VALVE
HG	HIGH
HP	HIGH POINT
HORIZ	HORIZONTAL
HB	HOSE BIBB
ID	INSIDE DIAMETER
INV	INVERT
JT	JOINT

ABBREVIATION	DESCRIPTION
L	LENGTH
LF	LINEAR FEET
LG	LONG
LB	POUND
LR	LONG RADIUS
MH	MANHOLE
MFR	MANUFACTURER
MAX	MAXIMUM
MECH	MECHANICAL
MJ	MECHANICAL JOINT
M OR MIN	MINIMUM
MISC	MISCELLANEOUS
NPT	NATIONAL PIPE THREAD
NC	NORMALLY CLOSED
N	NORTH
NG	NATURAL GROUND
NO. OR #	NUMBER
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OPNG	OPENING
OD	OUTSIDE DIAMETER
OHE	OVERHEAD ELECTRIC
PVM'T OR PAV'T	PAVEMENT
PE	PLAIN END
±	PLUS OR MINUS
PT OR PNT	POINT
PC	POINT OF CURVE
PI	POINT OF INTERSECTION
PSI	POUNDS PER SQUARE INCH
PCCP	PRECAST CONCRETE CYLINDER PIPE (PORTLAND CEMENT CONCRETE PAVEMENT)
PRES.	PRESSURE
PSI	PRESSURE INDICATOR
PSF	POUND PER SQUARE FOOT
PL OR ℄	PROPERTY LINE
R	RADIUS
RED OR RED'R	REDUCER
RED'G	REDUCING
REINF	REINFORCE
RCP	REINFORCED CONCRETE PIPE
REQD	REQUIRED
ROW OR R/W	RIGHT-OF-WAY
SCH	SCHEDULE
SHT	SHEET
SG	SIGHT GLASS
SIM	SIMILAR
SL	SLOPE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STA	STATION
STL	STEEL
STR	STRAIGHT
T OR TEL	TELEPHONE
TEMP	TEMPORARY OR TEMPERATURE
THD	THREADED
THK	THICK
TOC	TOP OF CONCRETE
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
WS	WATER STOP
WD	WIDE
W/	WITH
W/O	WITHOUT

CIVIL SYMBOLS

EXISTING FEATURES LEGEND

- EFH — FIRE HYDRANT
- WV — WATER VALVE
- W — WATER LINE
- W-ABAN — WATER (ABANDONED)
- SD-ABAN — STORM DRAIN (ABANDONED)
- SD — STORM DRAIN
- ST — STORM SEWER LINE
- ST MH — STORM SEWER MANHOLE
- SFM — SEWER FORCE MAIN
- SS — SANITARY SEWER LINE
- SS MH — SANITARY SEWER MANHOLE
- G — GAS
- GAS — GAS VALVE
- UT — UNDERGROUND TELEPHONE
- T — OVERHEAD TELEPHONE
- PP — POWER POLE
- PP — LIGHT
- PP — GUY WIRE
- TRAFFIC LIGHT
- E — OVERHEAD ELECT.
- UE — UNDERGROUND ELECTRIC
- FO — FIBER OPTICS LINE
- SW — SALTWATER PIPELINE
- TB — TELEPHONE BOX
- E MH — ELECTRIC MANHOLE
- x100.60 — SPOT ELEVATION
- 100 — CONTOUR
- BARBED WIRE FENCE
- WOOD FENCE (& FENCE CORNER)
- CHAIN LINK FENCE
- EOP — EDGE OF PAVEMNT
- EDGE OF DIRT ROAD/DRIVEWAY
- SIDEWALK
- CURB/GUTTER
- CURB INLET
- TC= 100.52 / G= 100.02 — TOP OF CURB ELEV. / GUTTER ELEV.
- RAILROAD
- SIGN
- TREES
- TREE
- GRAVEL DRIVEWAY
- CONCRETE DRIVEWAY
- DIRT DRIVEWAY
- BM-# — BENCH MARK LOCATION AND BENCH MARK NUMBER DESIGNATION
- B-# — BORING LOCATION AND BORING NUMBER DESIGNATION
- PT-# — PERCULATION TEST LOCATION AND TEST NUMBER DESIGNATION
- RIGHT-OF-WAY/ ℄

VALVE SYMBOLS

- OR — BUTTERFLY VALVE (BFV)
- CHECK VALVE (CKV)
- GATE VALVE (GV)

FITTING SYMBOLS

- FLEXIBLE COUPLING
- FLANGED COUPLING ADAPTER
- HARNESSED FLANGED OR FLEXIBLE COUPLING ADAPTER
- BLIND FLANGE (BF)
- PLUG
- REDUCER
- HOSE/COUPLING CONNECTION
- UNION
- FITTING WITH FLANGED JOINT ENDS
- FITTING WITH MECHANICAL JOINT ENDS OR PUSH-ON JOINT ENDS
- FITTING WITH WELDED JOINT ENDS OR REINFORCED CONCRETE PIPE
- MECHANICAL COUPLING
- TO DRAIN

NOTE: SINGLE LINE PIPE SHOWN DOES NOT DEPICT FITTING TYPES. SEE SPECIFICATIONS FOR MATERIALS AND FITTINGS TO BE USED.

MISCELLANEOUS SYMBOLS

SECTION OR DETAIL* NUMBER (CONSECUTIVELY NUMBERED ON SHEET DETAIL IS LOCATED)

SHEET ON WHICH SECTION OR DETAIL* IS FIRST CUT

SHEET ON WHICH SECTION OR DETAIL* IS LOCATED

DIMENSIONS:
(*) DENOTES DIMENSIONS TO BE DETERMINED BY MANUFACTURER
(* *) DENOTES DIMENSIONS TO BE DETERMINED IN FIELD

* WHEN PERTAINING TO DETAILS, CIRCLE IS REPLACED WITH A SQUARE

SECTION AND DETAIL KEY

MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS
AS SHOWN

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DATE NOBMEBER 2002
SHEET 2 OF 23
CAD REF. NO. 3319B002

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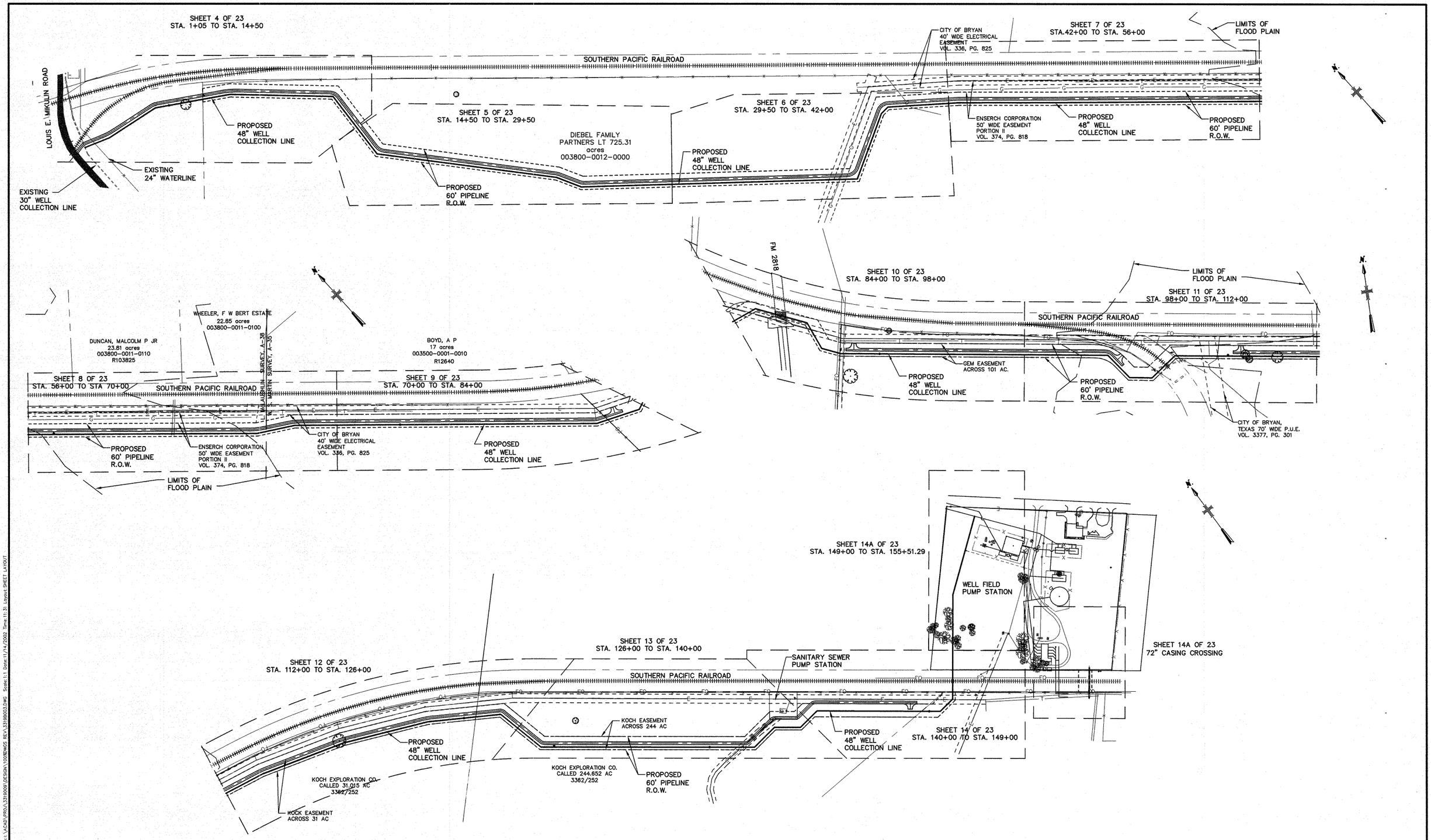

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ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

SHEET LAYOUT MAP

SCALE: 1" = 200'

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DATE NOVEMBER 2002

SHEET 3 OF 23

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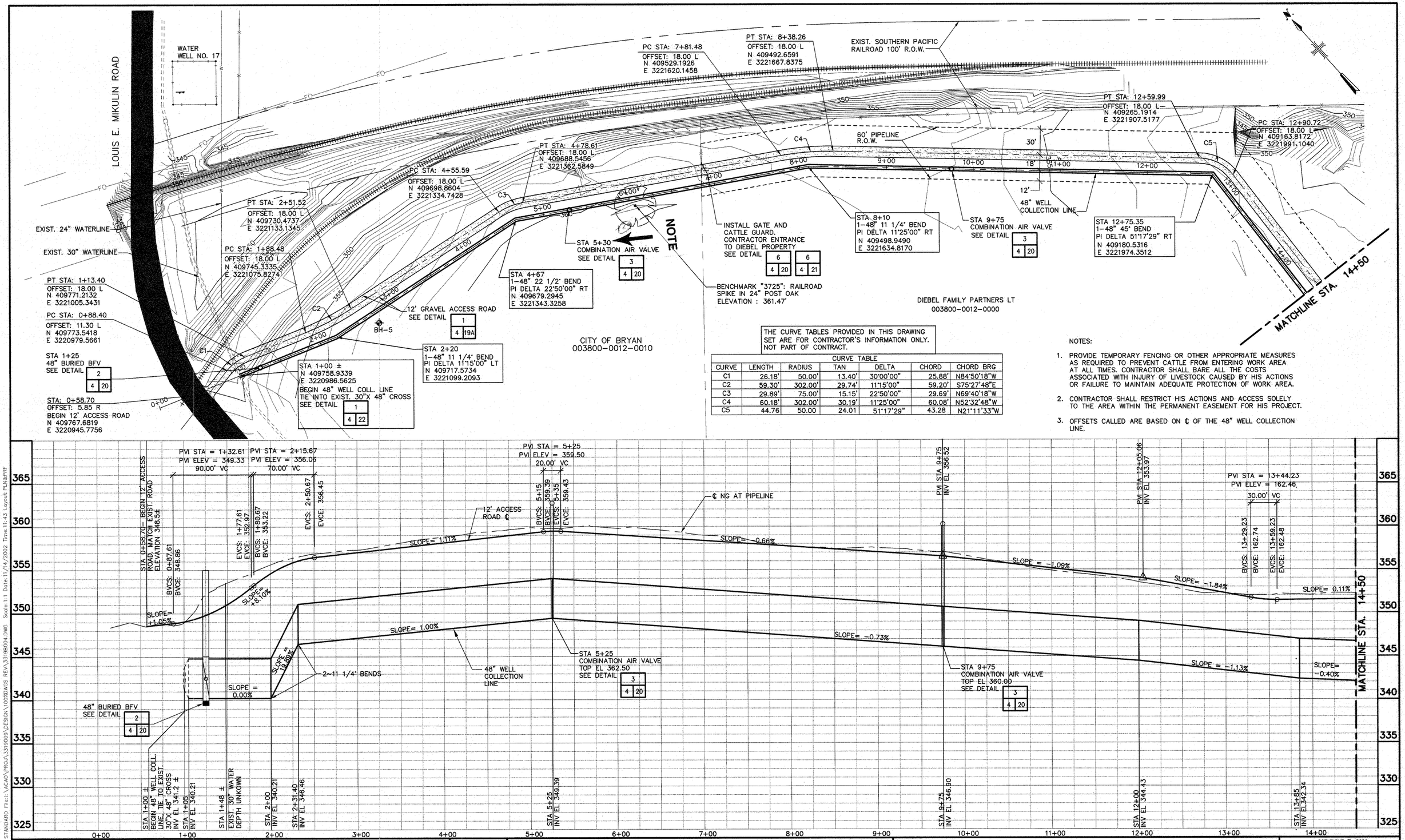
User:mcrimes Spec:PIRNIE STANDARD File:\\ACAD\PROJ\3319000\DESIGN\100EWGS REV\3319B003.DWG Scale:1:1 Date:11/14/2002 Time:11:31 Layout:SHEET LAYOUT



THE CURVE TABLES PROVIDED IN THIS DRAWING SET ARE FOR CONTRACTOR'S INFORMATION ONLY. NOT PART OF CONTRACT.

CURVE TABLE

CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C1	26.18'	50.00'	13.40'	30°00'00"	25.88'	N84°50'18"W
C2	59.30'	302.00'	29.74'	11°15'00"	59.20'	S75°27'48"E
C3	29.89'	75.00'	15.15'	22°50'00"	29.69'	N69°40'18"W
C4	60.18'	302.00'	30.19'	11°25'00"	60.08'	N52°32'48"W
C5	44.76	50.00	24.01	51°17'29"	43.28	N21°11'33"W

NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.

MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS

NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA 1+05 TO STA 14+50
SCALE: HOR. 1"=50', VERT. 1"=5'

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SHEET 4 OF 23
CAD REF. NO. 3319B004

User: martinez Spec: PIRNIE STANDARD File: I:\CAD\PROJ\3319005\DESIGN\10292\WCS REV\3319B004.DWG Scale: 1:1 Date: 11/14/2002 Time: 11:43 Layout: PLN&PRF

NOTES:

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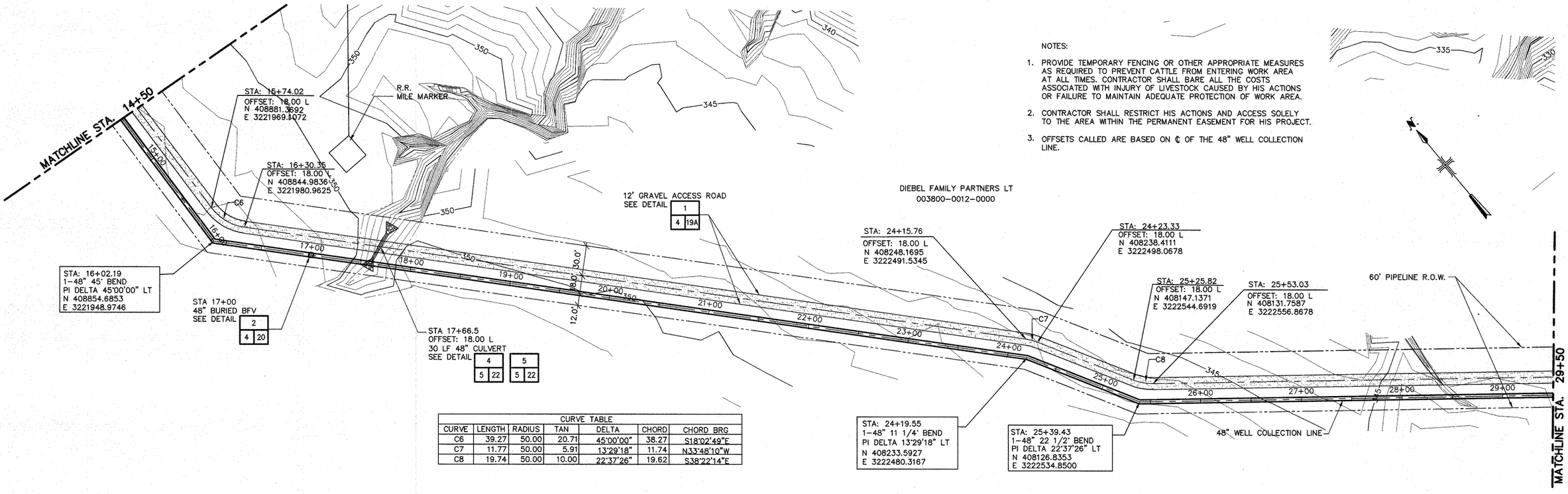
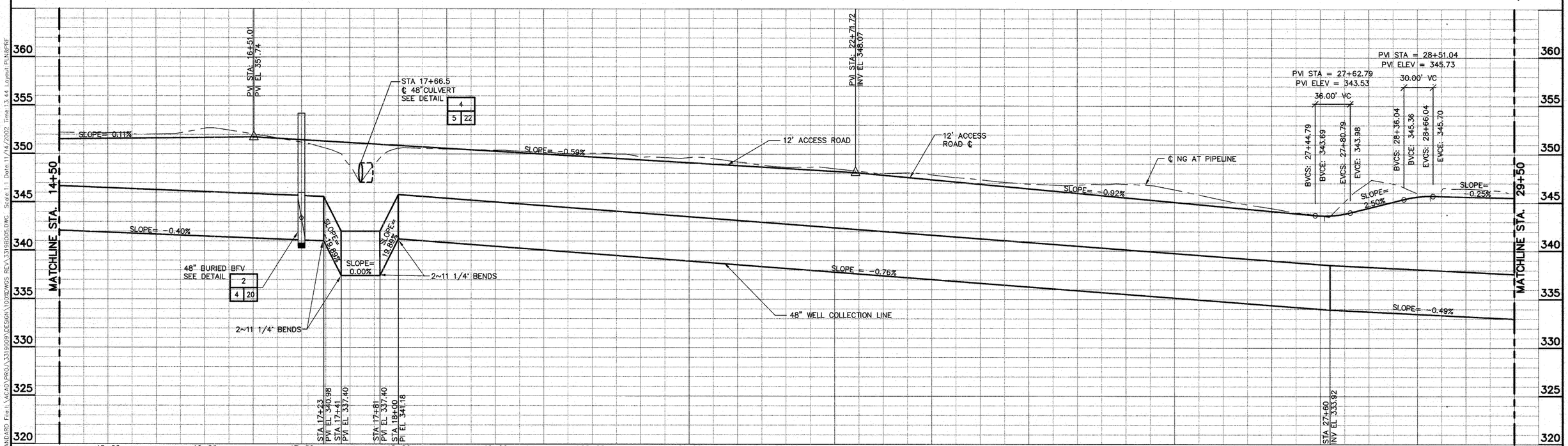


CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C6	39.27	50.00	20.71	45°00'00"	38.27	S18°02'49"E
C7	11.77	50.00	5.91	13°29'18"	11.74	N33°48'10"W
C8	19.74	50.00	10.00	22°37'26"	19.62	S38°22'14"E



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53791
REGISTERED PROFESSIONAL ENGINEER

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NO.	BY	DATE	REMARKS

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CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 14+50 TO STA. 29+50

SCALE: HOR. 1"=50' VERT. 1"=5'

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SHEET 5 OF 23

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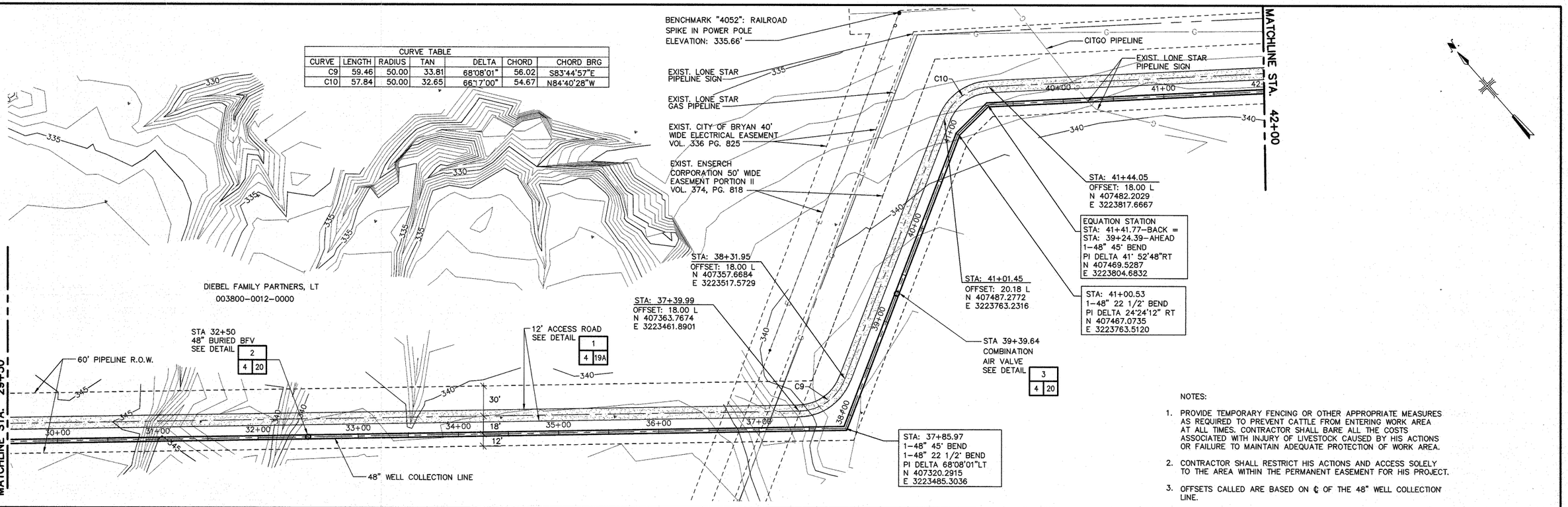
CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C9	59.46	50.00	33.81	68°08'01"	56.02	S83°44'57"E
C10	57.84	50.00	32.65	66°17'00"	54.67	N84°40'28"W



NOTES:

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2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
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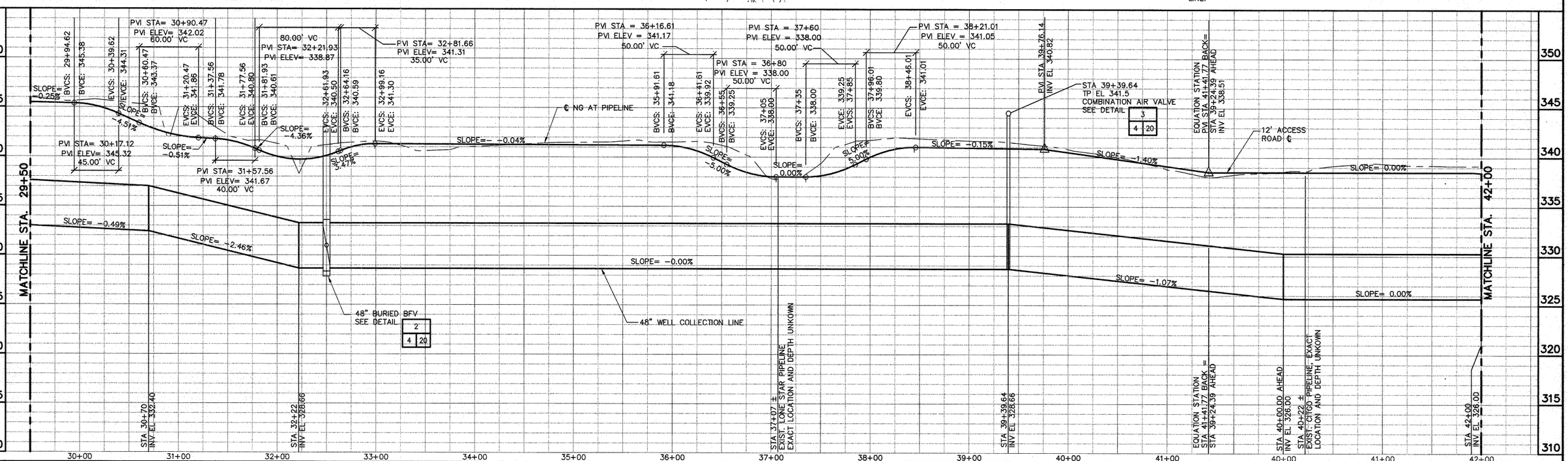

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CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA 29+50 BCK TO STA 42+00 AHD
SCALE: HOR. 1"=50', VERT. 1"=5'

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SHEET 6 OF 23
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User: martinez Spec: PIRNIE STANDARD File: \ACAD\PROJ\3319000\DESIGN\1002SWCS REV\3319B006.DWG Scale: 1:1 Date: 11/14/2002 Time: 14:15 Layout: PLN&PRF

NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
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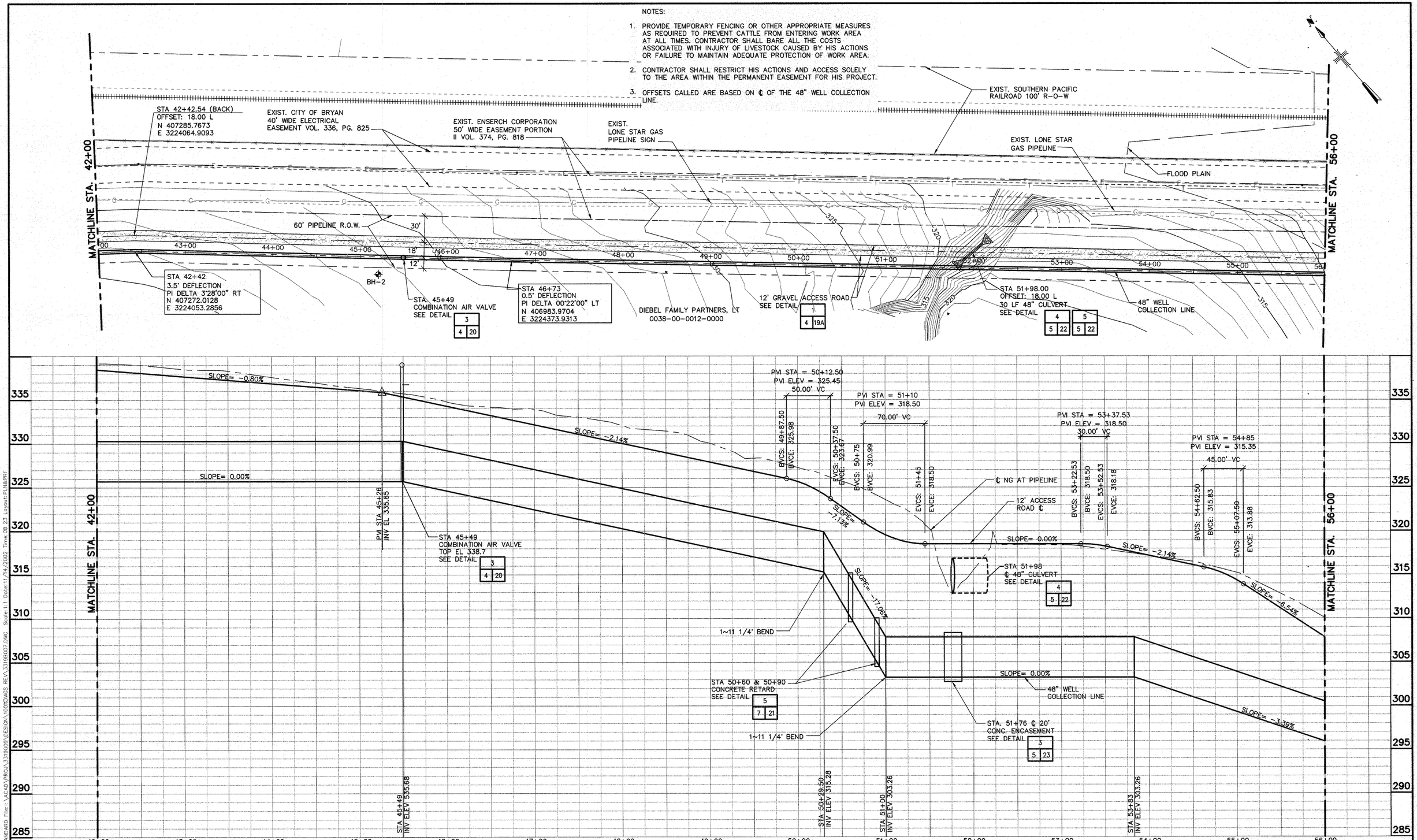

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REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 42+00 TO STA. 56+00
SCALE: HOR. 1"=50' VERT. 1"=5'

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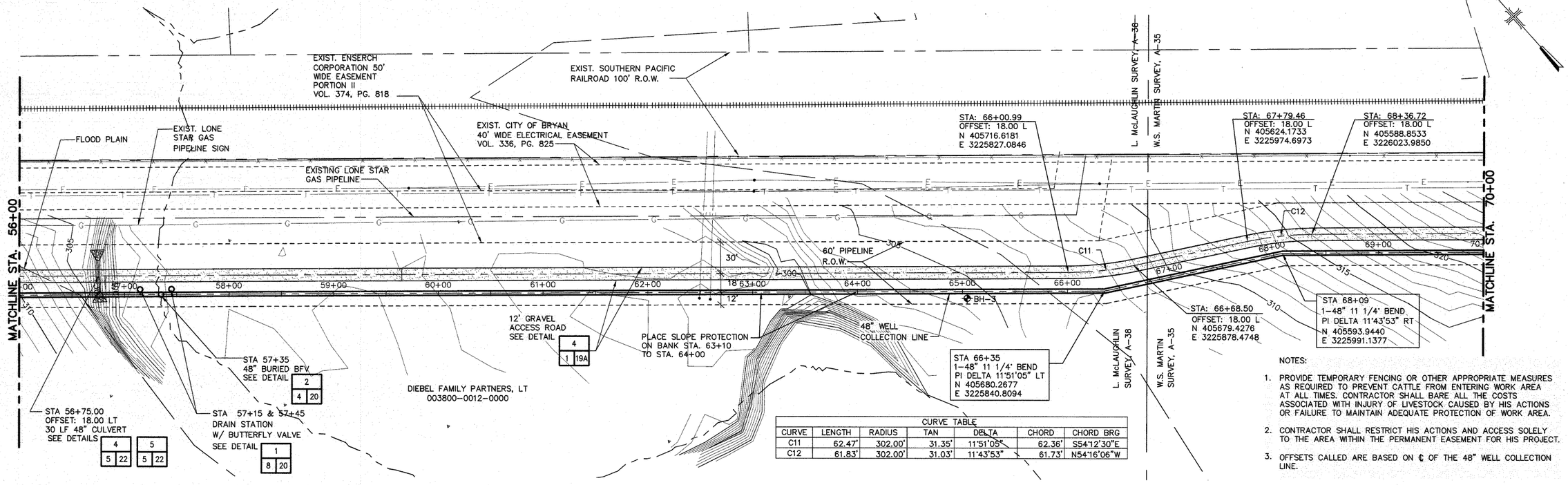
DATE NOVEMBER 2002

SHEET 7 OF 23

CAD REF. NO. 3319007

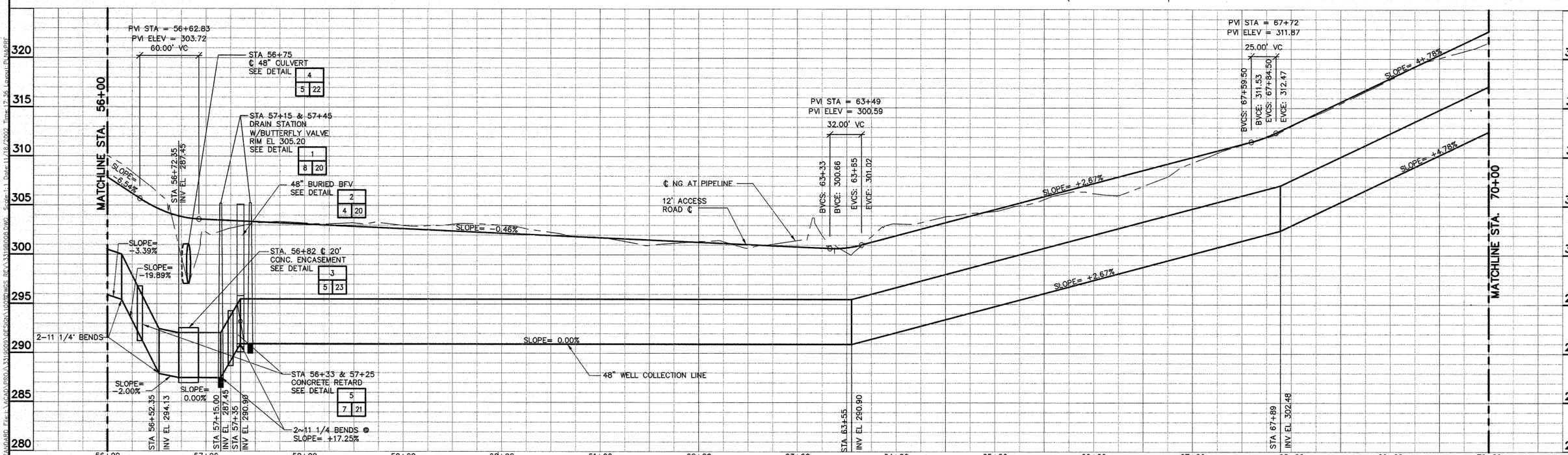
User:martinez Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\10095WGS REV\3319B007.DWG Scale:1:1 Date:11/14/2002 Time:08:23 Layout:PLN&PRF



CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C11	62.47'	302.00'	31.35'	11°51'05"	62.36'	S54°12'30"E
C12	61.83'	302.00'	31.03'	11°43'53"	61.73'	N54°16'06"W

NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.



MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER TEXAS

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA 56+00 TO STA 70+00
SCALE: HOR. 1"=50', VERT. 1"=5'

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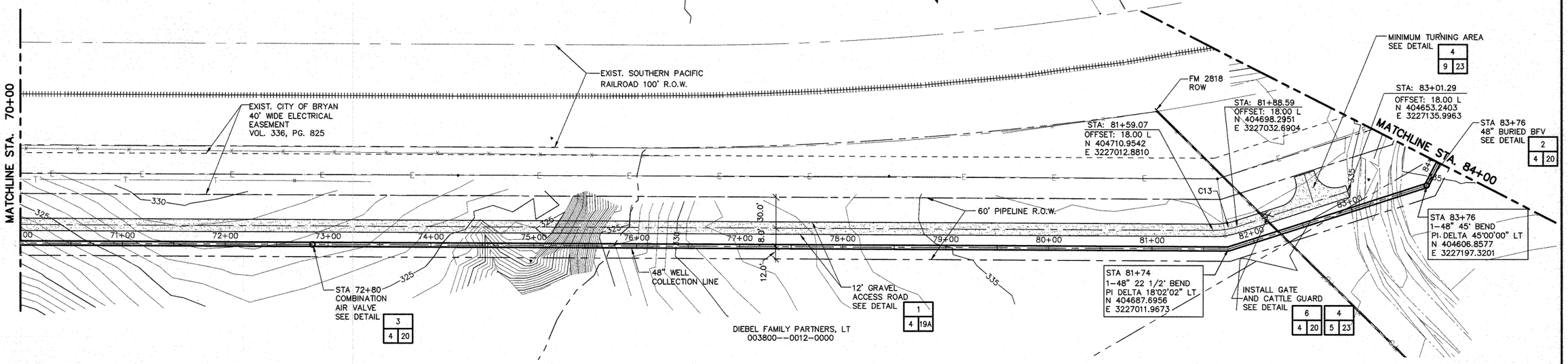
DATE NOVEMBER 2002
SHEET 8 OF 23
CAD REF. NO. 3319B008

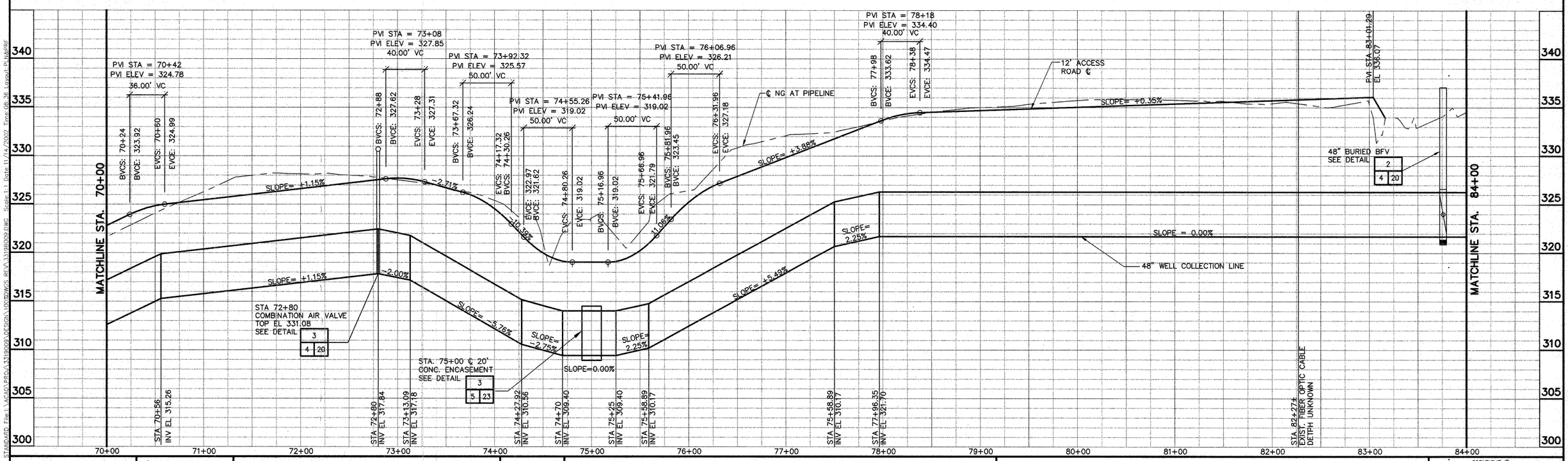
User name: Sean PIRNIE STANDARD File: \\ACAD\PROJ\3319B008\DESIGN\3319BWS_PLA.DWG Scale: 1:1 Date: 11/18/2002 Time: 17:36 Layout: PLAN&PRF

NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.

CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C13	23.61'	75.00'	11.90'	18°02'02"	23.51'	S57°25'11"E





MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA 70+00 TO STA 84+00

SCALE: HOR. 1"=50', VERT. 1"=5'

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DATE NOVEMBER 2002

SHEET 9 OF 23

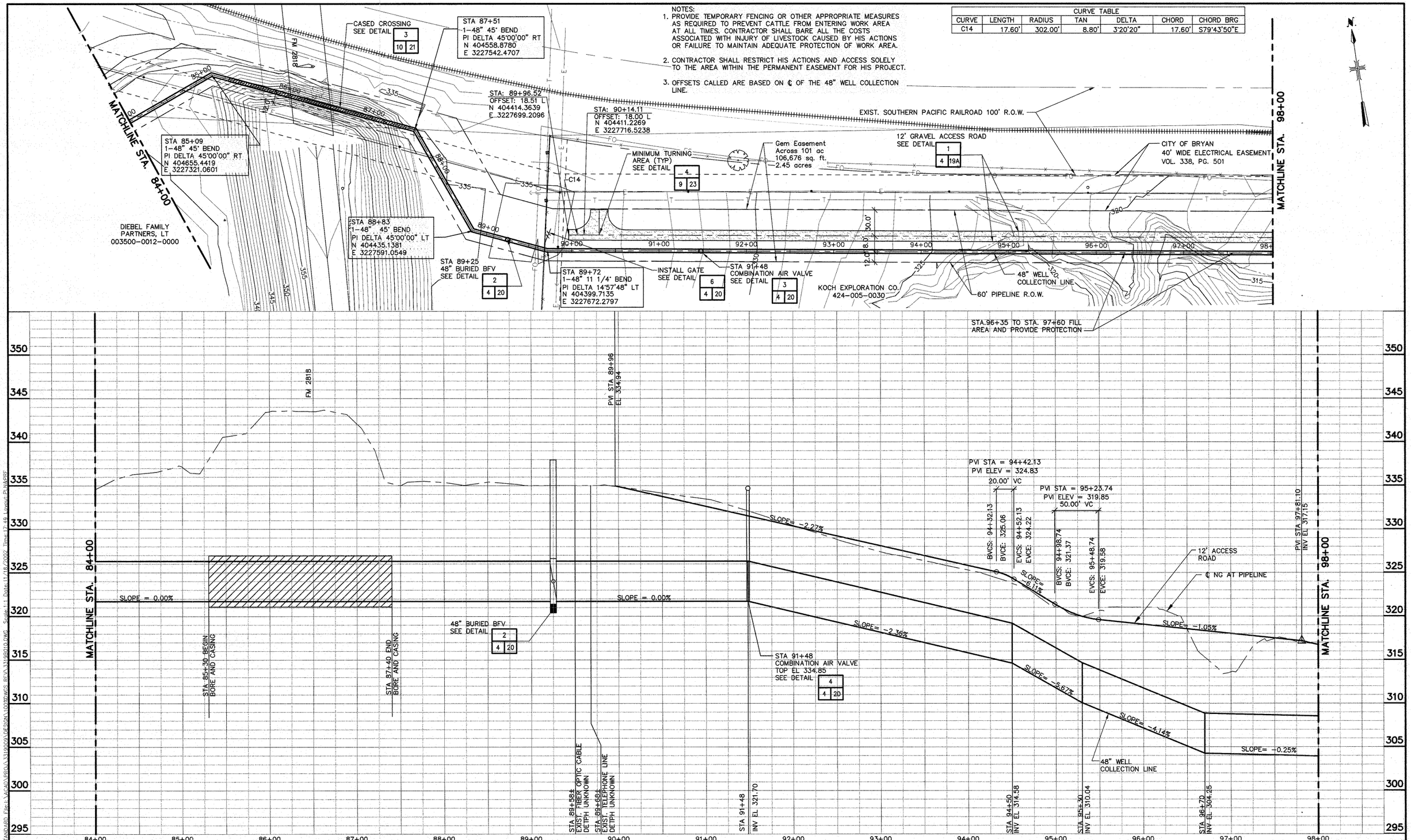
CAD REF. NO. 3319B009

User name: Jesse PIRNIE STANDARD File: \\CADD\PROJ\3319B009\DESIGN\DGNS\WCS REV\3319B009.DWG Scale:1:1 Date:11/14/2002 Time:08:36 Layout:PLNPRF

NOTES:
1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.

CURVE TABLE

CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C14	17.60'	302.00'	8.80'	3°20'20"	17.60'	S79°43'50"E



MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 84+00 TO STA. 98+00

SCALE: HOR. 1"=50' VERT. 1"=5'

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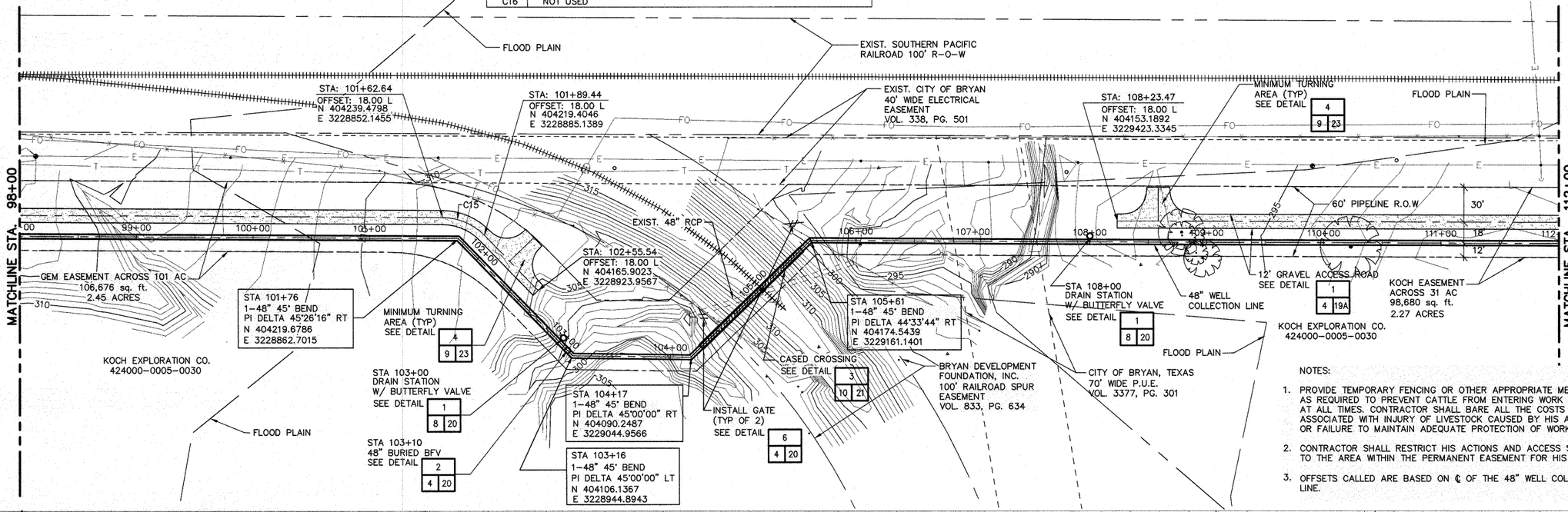
DATE NOVEMBER 2002

SHEET 10 OF 23

CAD REF. NO. 3319B010

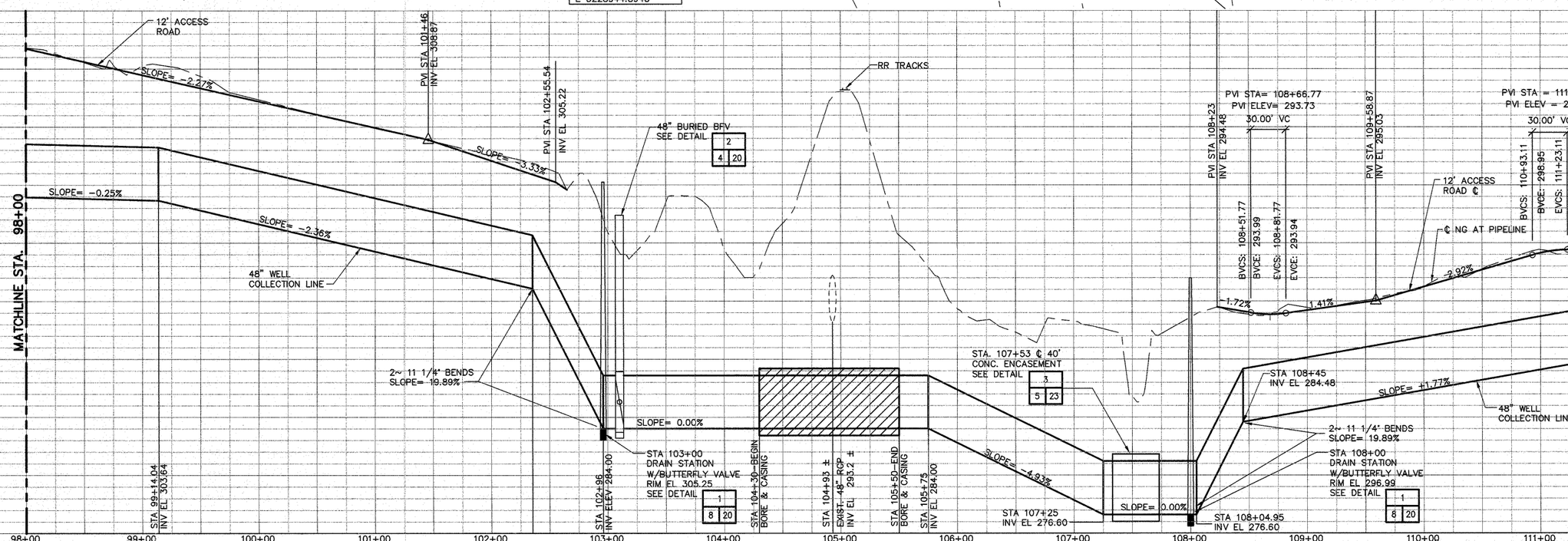
User:rodriguez Spec:PIRNIE-STANDARD Plot:\\MGA01\PGA\3319B010\DESIGN\VORDWGS BY:A 3319B010.DWG Scale:1:1 Date:11/18/2002 Time:17:49 Layout:PI NARR

CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C15	39.65	50.00	20.93	45°26'16"	38.62	N58°40'52"W
C16	NOT USED					



NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.



MALCOLM PIRNIE

ROBERT J. WARREN
53791
REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 98+00 TO STA. 112+00

SCALE: HOR. 1"=50' VERT. 1"=5'

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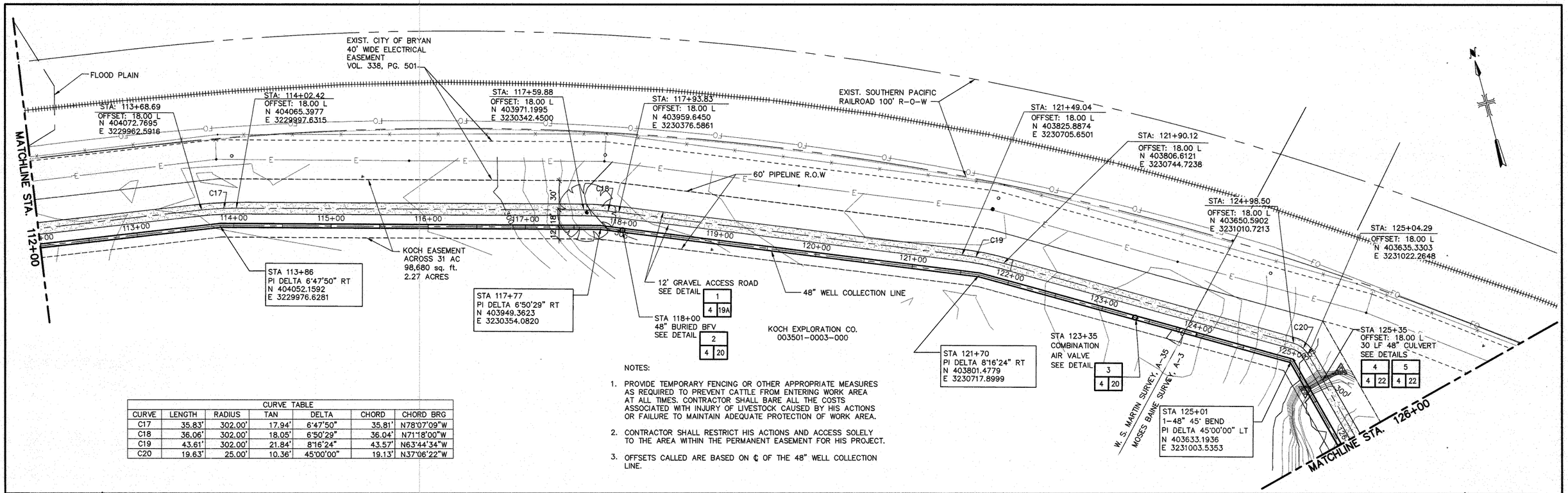
DATE NOVEMBER 2002

SHEET 11 OF 23

CAD REF. NO. 3319B011

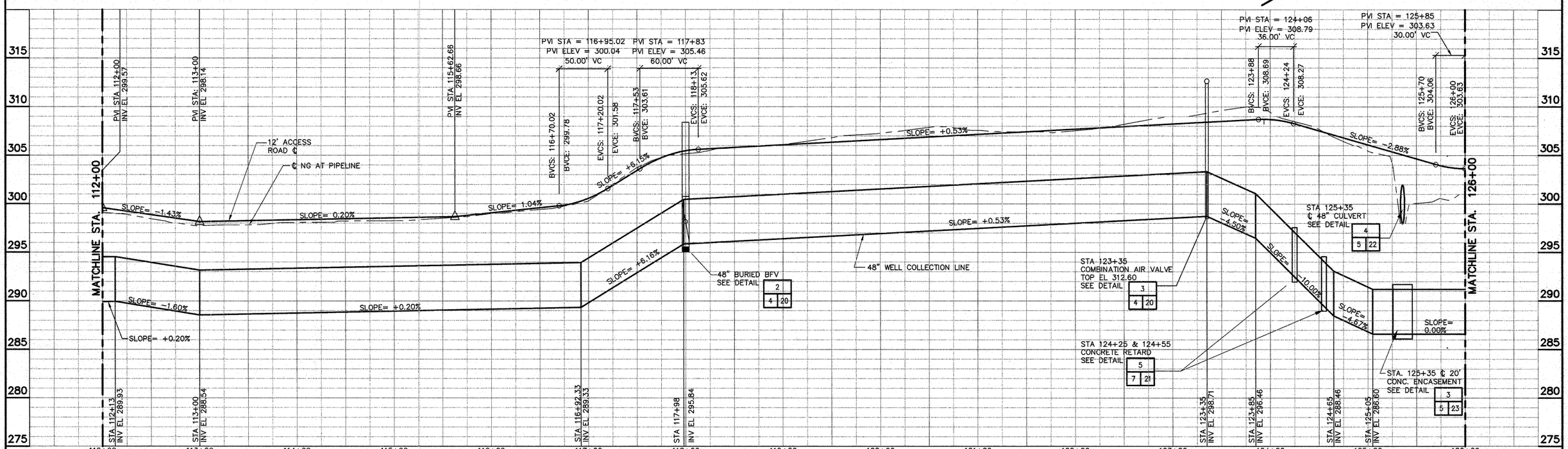
User:marlinez Spec:PIRNIE STANDARD File:\ACAD\PROJ\3319009\DESIGN\1002DWGS REV\3319B011.DWG Scale:1:1 Date:11/14/2002 Time:09:13 Layout:PLN&PRF



CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C17	35.83'	302.00'	17.94'	6°47'50"	35.81'	N78°07'09"W
C18	36.06'	302.00'	18.05'	6°50'29"	36.04'	N71°18'00"W
C19	43.61'	302.00'	21.84'	8°16'24"	43.57'	N63°44'34"W
C20	19.63'	25.00'	10.36'	45°00'00"	19.13'	N37°06'22"W

NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.



MALCOLM PIRNIE

ROBERT J. WARREN
REGISTERED PROFESSIONAL ENGINEER
53791
ARIZONA
11/14/02

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 112+00 TO STA. 126+00

SCALE: HOR. 1"=50', VERT. 1"=5'

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DATE NOVEMBER 2002

SHEET 12 OF 23

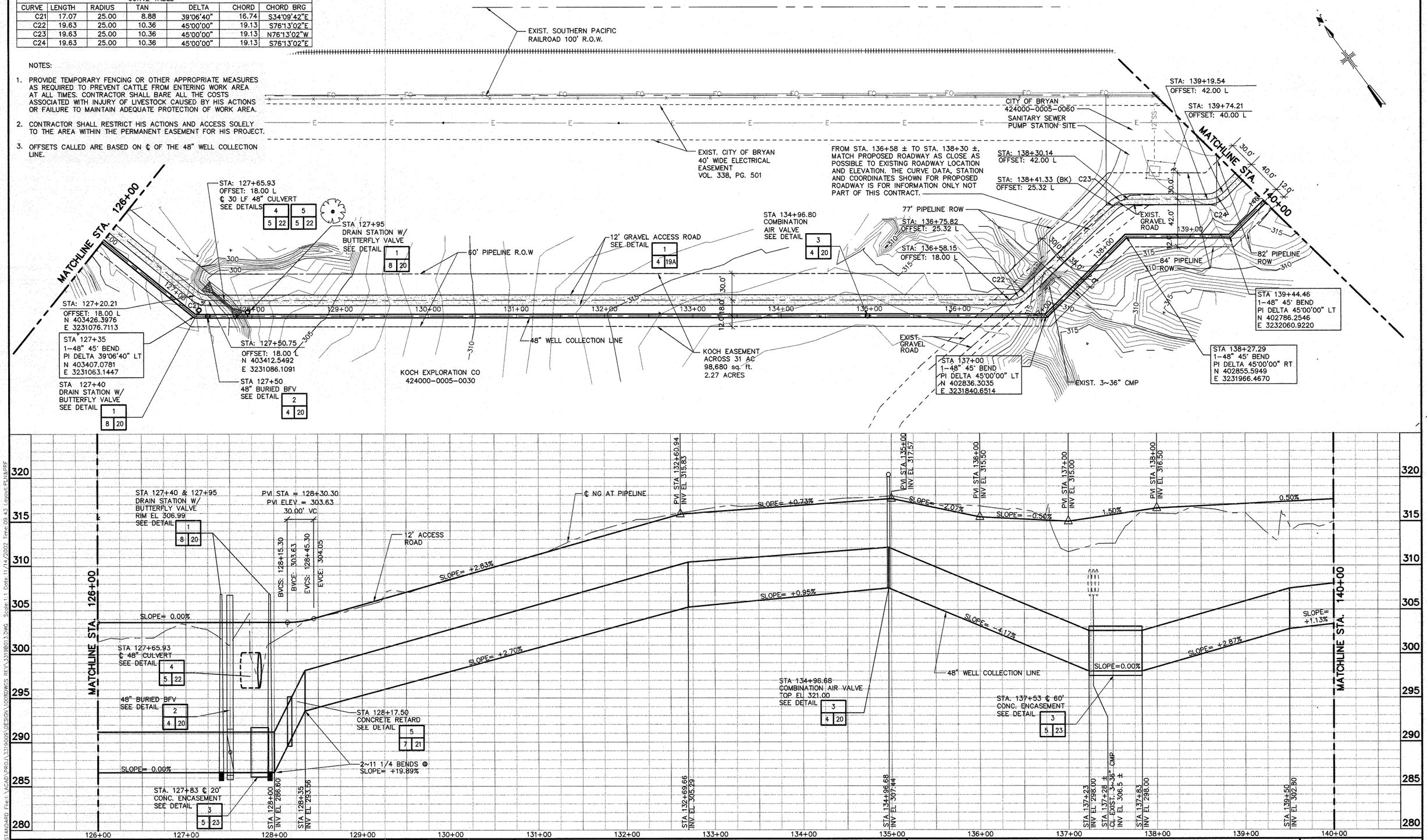
CAD REF. NO. 3319B012

User: martinez Spec: PIRNIE STANDARD File I: \JCAD\PROJ\3319009\DESIGN\100B2WCS RCV\3319B012.DWG Scale:1:1 Date:11/14/2002 Time:09:33 Layout:PLN&PRF

CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C21	17.07	25.00	8.88	39°06'40"	16.74	S34°09'42"E
C22	19.63	25.00	10.36	45°00'00"	19.13	S76°13'02"E
C23	19.63	25.00	10.36	45°00'00"	19.13	N76°13'02"W
C24	19.63	25.00	10.36	45°00'00"	19.13	S76°13'02"E

NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.



MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 126+00 TO STA. 140+00

SCALE: HOR. 1"=50', VERT. 1"=5'

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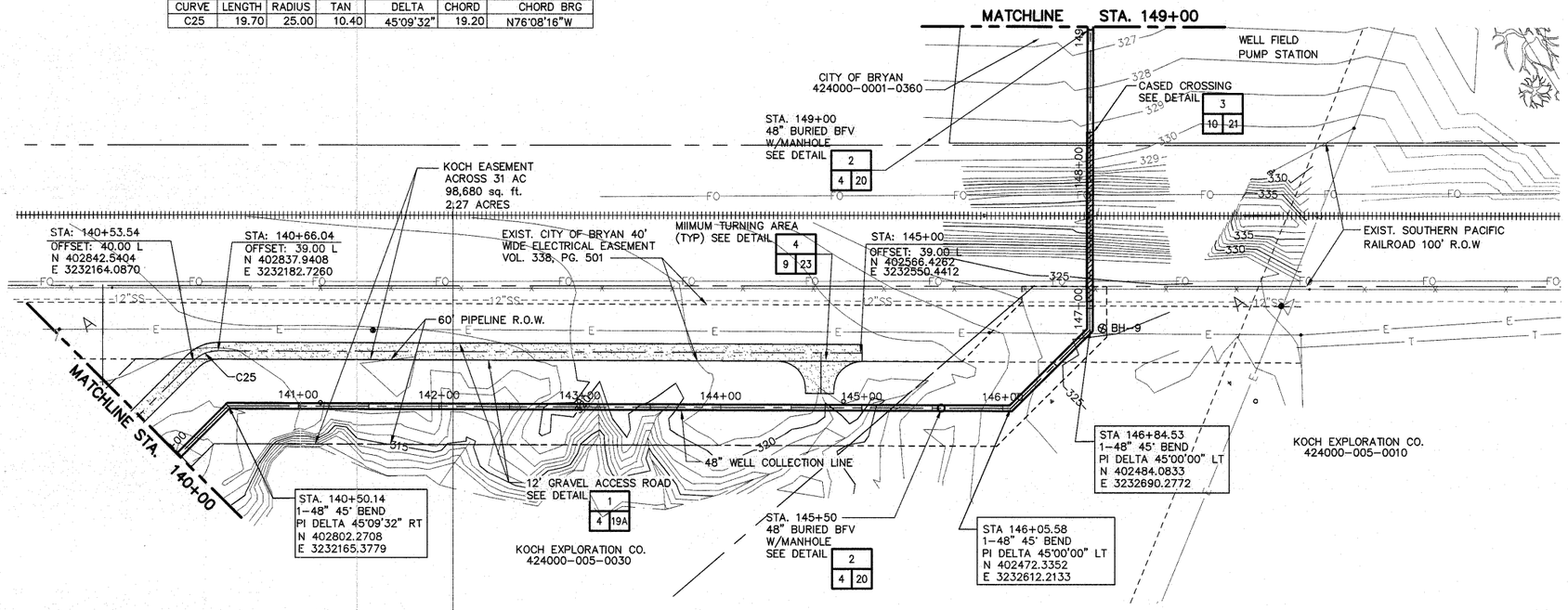
DATE NOVEMBER 2002

SHEET 13 OF 23

CAD REF. NO. 3319B013

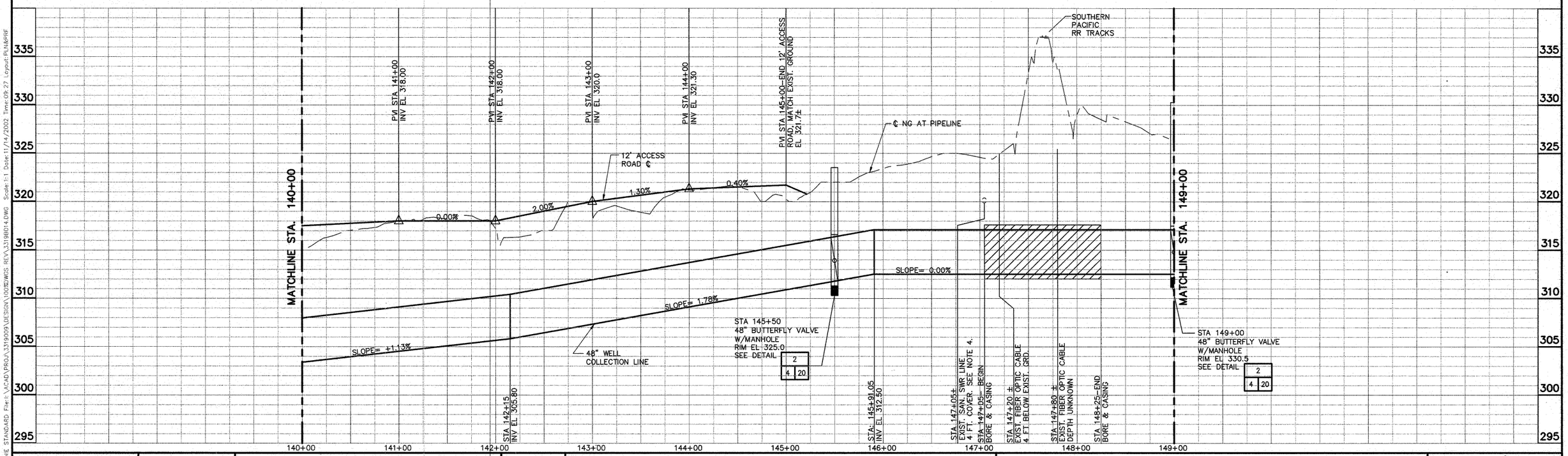
User: mcalvarez Spec: PIRNIE STANDARD File: I:\CAD\PROJ\3319B009\DESIGN\10\PDWGS REV\3319B013.DWG Scale: 1:1 Date: 11/14/2002 Time: 09:43 Layout: PLU8-PRF

CURVE TABLE						
CURVE	LENGTH	RADIUS	TAN	DELTA	CHORD	CHORD BRG
C25	19.70	25.00	10.40	45°09'32"	19.20	N76°08'16"W



NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. OFFSETS CALLED ARE BASED ON ℄ OF THE 48" WELL COLLECTION LINE.
4. EXCAVATE EXIST. 10" DI SANITARY SEWER A MINIMUM OF 15FT. ± EITHER SIDE OF THE NEW 48" LINE AT POINT OF CROSSING. REINSTALL SEWER LINE IN 18" STEEL CASING CENTERED OVER 48" LINE. CASING INSTALLATION SHALL BE AS SHOWN ON DETAIL 3, SHEET 21.



MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER CIVIL

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD RGM

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

PLAN AND PROFILE
STA. 140+00 TO STA. 149+00

SCALE: HOR. 1"=50', VERT. 1"=5'

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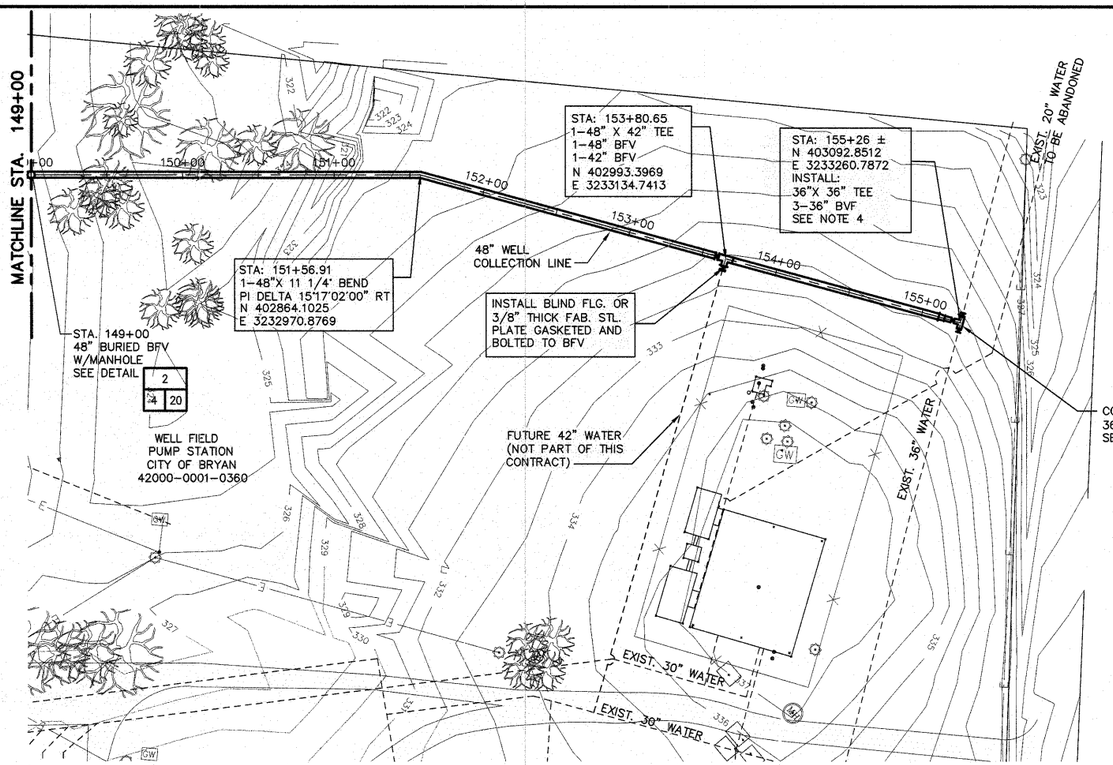
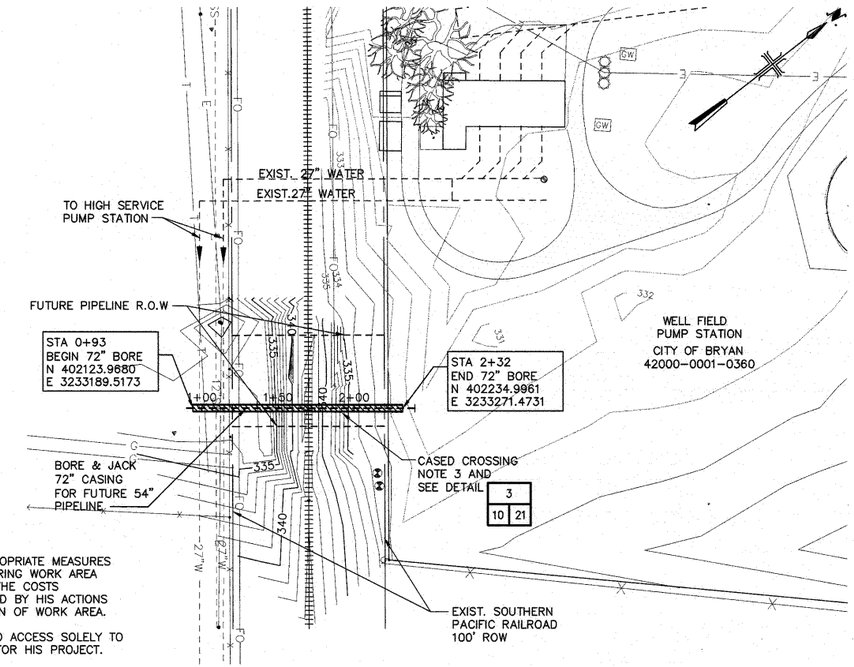
DATE NOVEMBER 2002

SHEET 14 OF 23

CAD REF. NO. 3319B014

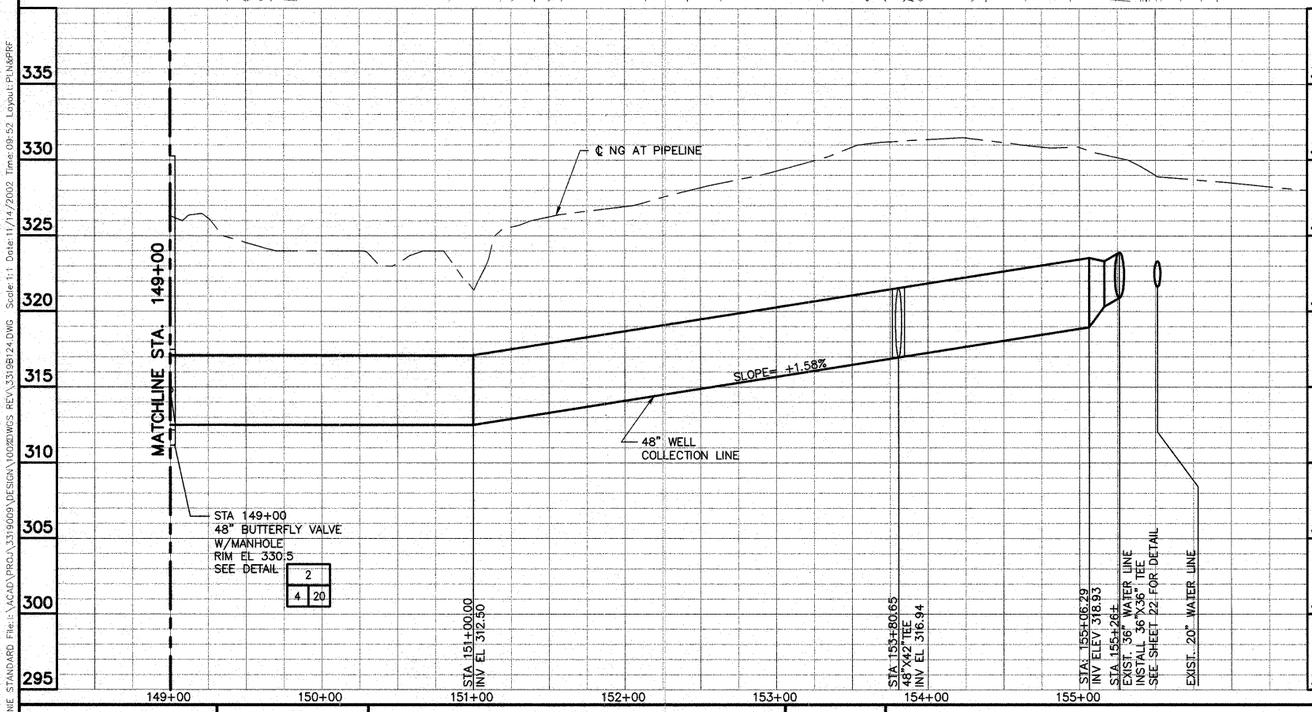
User:martinez Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\100%\WGS REV\3319B014.DWG Scale:1:1 Date:11/14/2002 Time:09:27 Layout:PLN&PRF

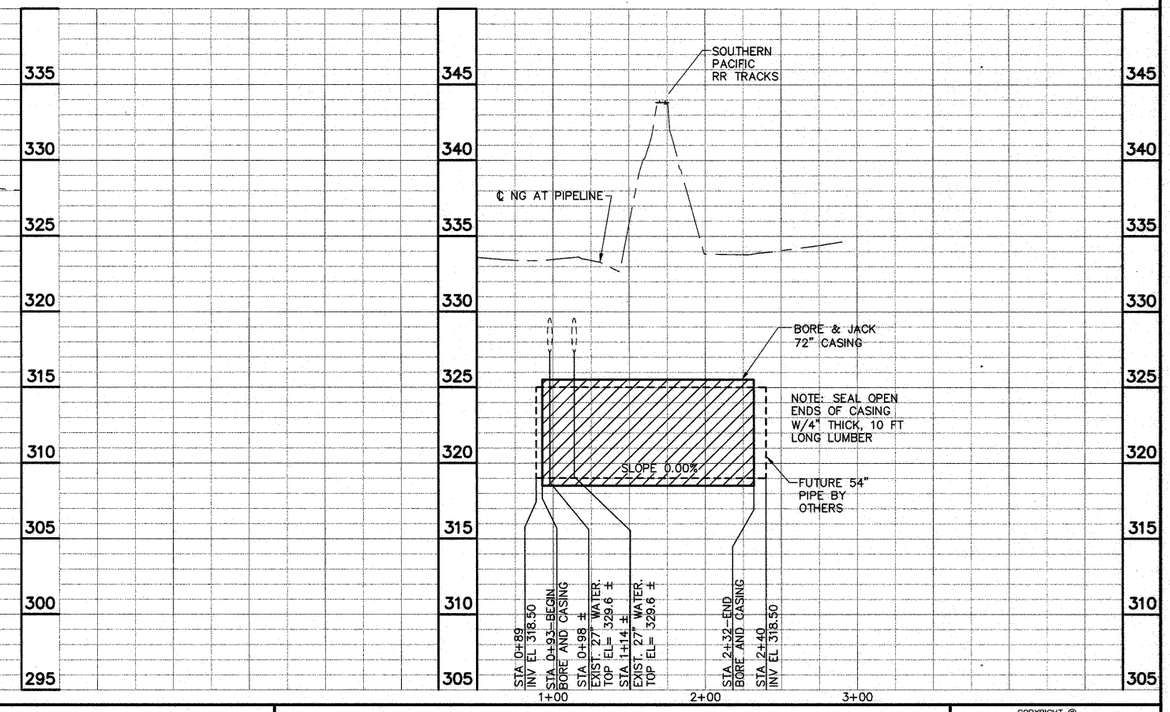




NOTES:

1. PROVIDE TEMPORARY FENCING OR OTHER APPROPRIATE MEASURES AS REQUIRED TO PREVENT CATTLE FROM ENTERING WORK AREA AT ALL TIMES. CONTRACTOR SHALL BARE ALL THE COSTS ASSOCIATED WITH INJURY OF LIVESTOCK CAUSED BY HIS ACTIONS OR FAILURE TO MAINTAIN ADEQUATE PROTECTION OF WORK AREA.
2. CONTRACTOR SHALL RESTRICT HIS ACTIONS AND ACCESS SOLELY TO THE AREA WITHIN THE PERMANENT EASEMENT FOR HIS PROJECT.
3. 72" CASING SHALL BE INSTALLED IN THIS CONTRACT. 54" PIPE WILL BE INSTALLED BY OTHERS.
4. CONTRACTOR SHALL LOCATE EXISTING RAW WATER LINES TO DETERMINE CONNECTION ELEVATION.





MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

48" WELL COLLECTION LINE PLAN & PROFILE
STA. 149+00 TO STA. 155+26± &
72" CASING CROSSING
SCALE: HOR. 1"=50', VERT. 1"=5'

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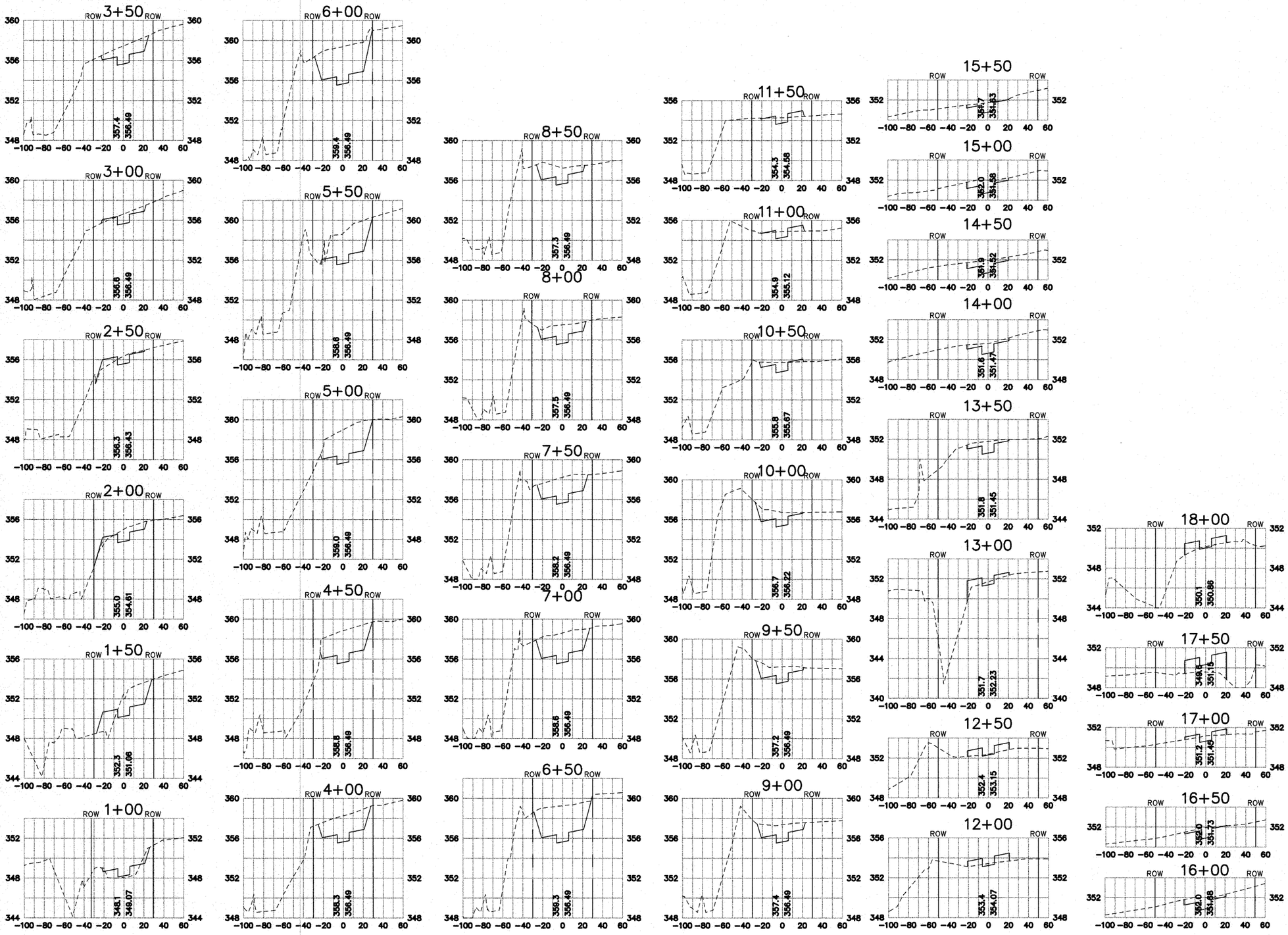
DATE NOVEMBER 2002
SHEET 14A OF 23
CAD REF. NO. 3319B024

User:martinez Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\100%2WCS REV\3319B124.DWG Scale:1:1 Date:11/14/2002 Time:09:52 Layout:PLN&PRF



User: martinez Spec: PIRNIE STANDARD File: I:\ACAD\PROJ\3319009\DESIGN\100%\WGS REV\3319B115.DWG Scale: 1:1 Date: 11/14/2002 Time: 10:32 Layout: XSECT-1

MALCOLM PIRNIE

PROFESSIONAL ENGINEER
ROBERT J. WARREN
53791
REGISTERED
PROFESSIONAL ENGINEER
11/13/02

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

12' ACCESS ROAD
CROSS-SECTIONS
STA. 1+00 TO STA. 18+00
SCALE: HORIZ 1" = 50', VERT 1" = 5'

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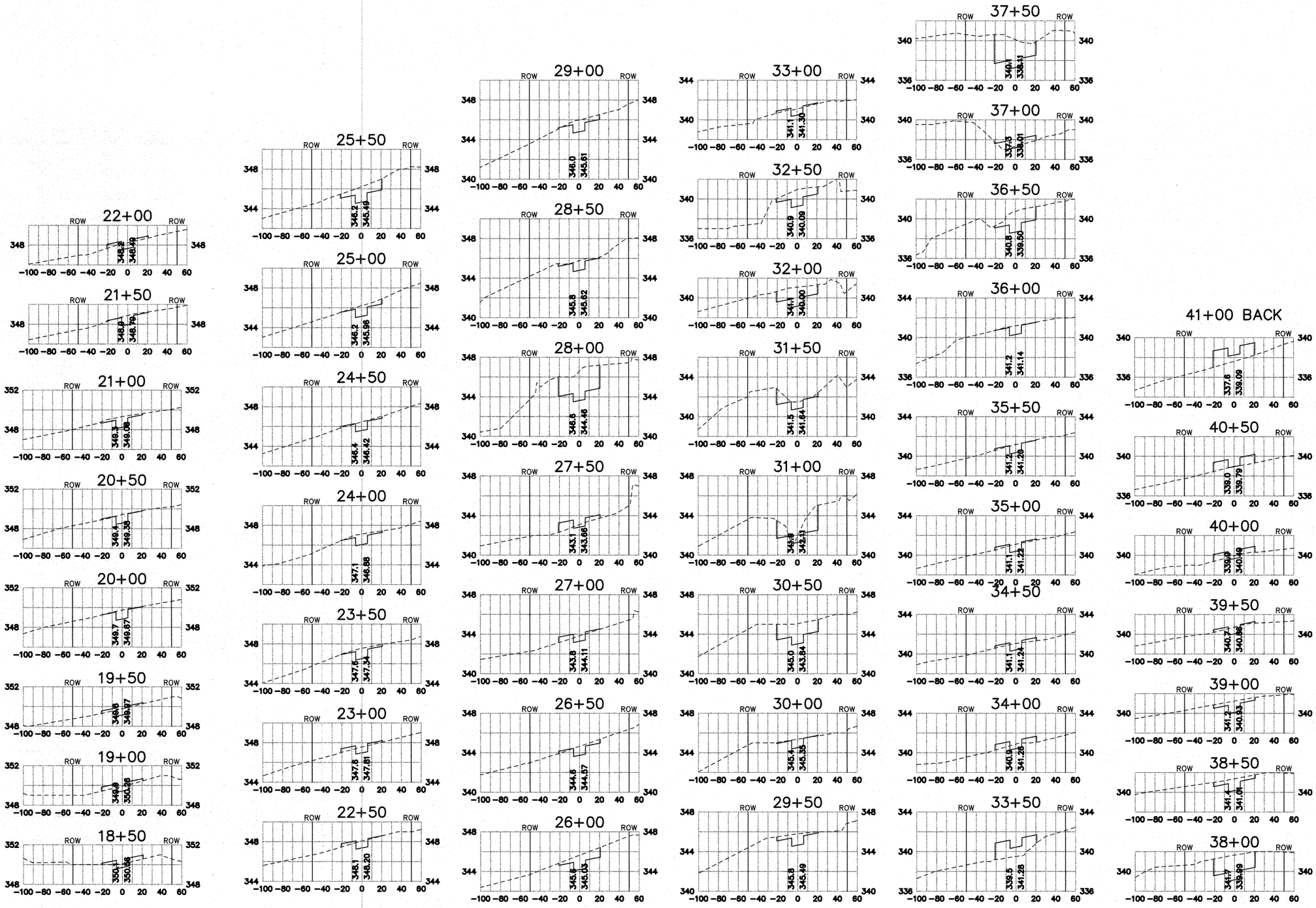
DATE NOVEMBER 2002
SHEET 15 OF 23
CAD REF. NO. 3319B115



MALCOLM PIRNIE

ROBERT J. WARREN
53791
REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

12' ACCESS ROAD
CROSS-SECTIONS
STA. 18+50 TO STA. 41+00 BACK
SCALE: HORIZ 1"= 50', VERT 1" = 5'

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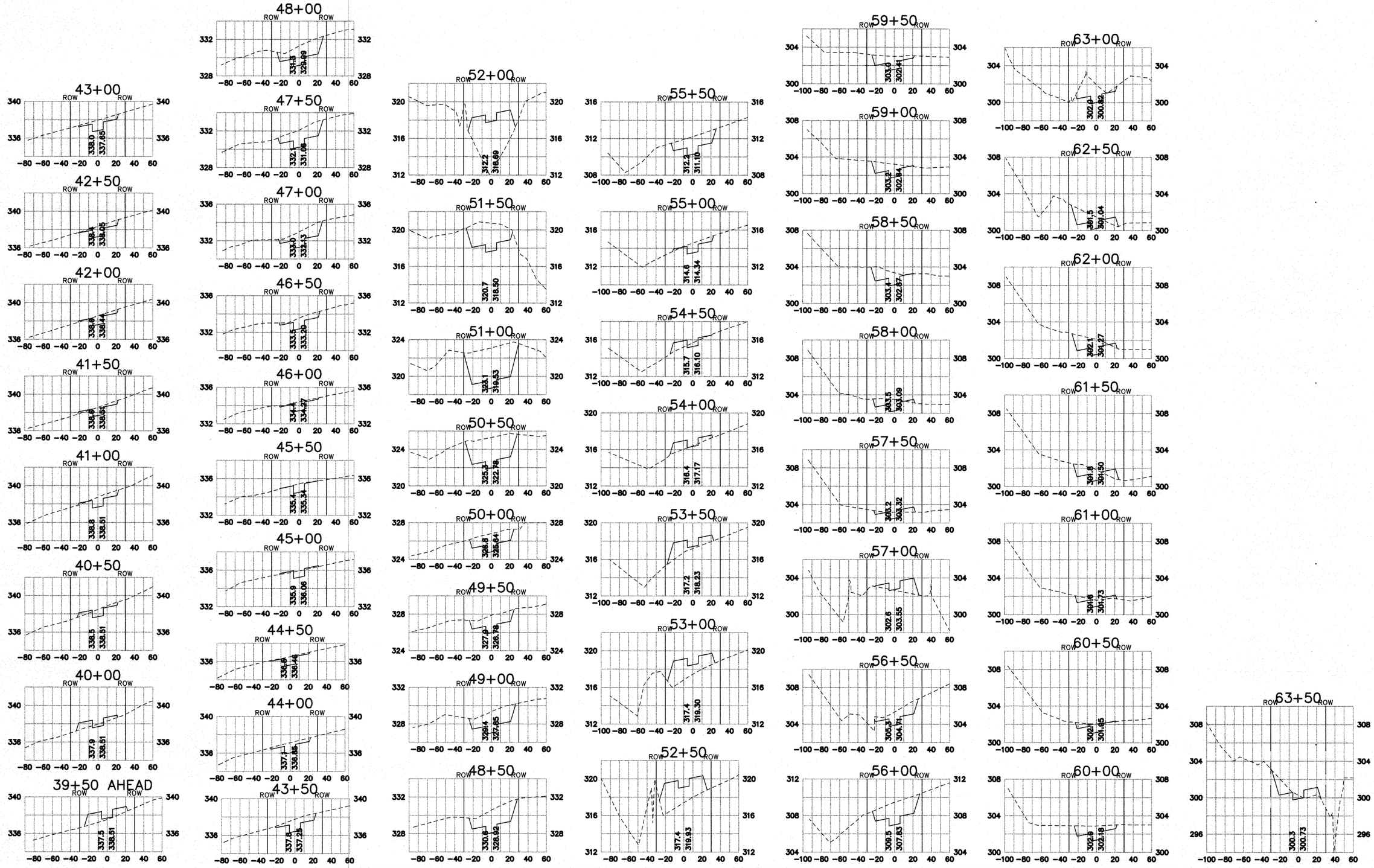
DATE NOVEMBER 2002
SHEET 16 OF 23
CAD REF. NO. 3319B116

User:martinez Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\10080WCS REV\3319B116.DWG Scale:1:1 Date:11/14/2002 Time:10:44 Layout:XSECT-2



MALCOLM PIRNIE

STATE OF TEXAS
ROBERT J. WARREN
53791
REGISTERED
PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES J.I.
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

12' ACCESS ROAD
CROSS-SECTIONS
STA. 39+00 AHEAD TO STA. 63+50
SCALE: HORIZ 1" = 50', VERT 1" = 5'

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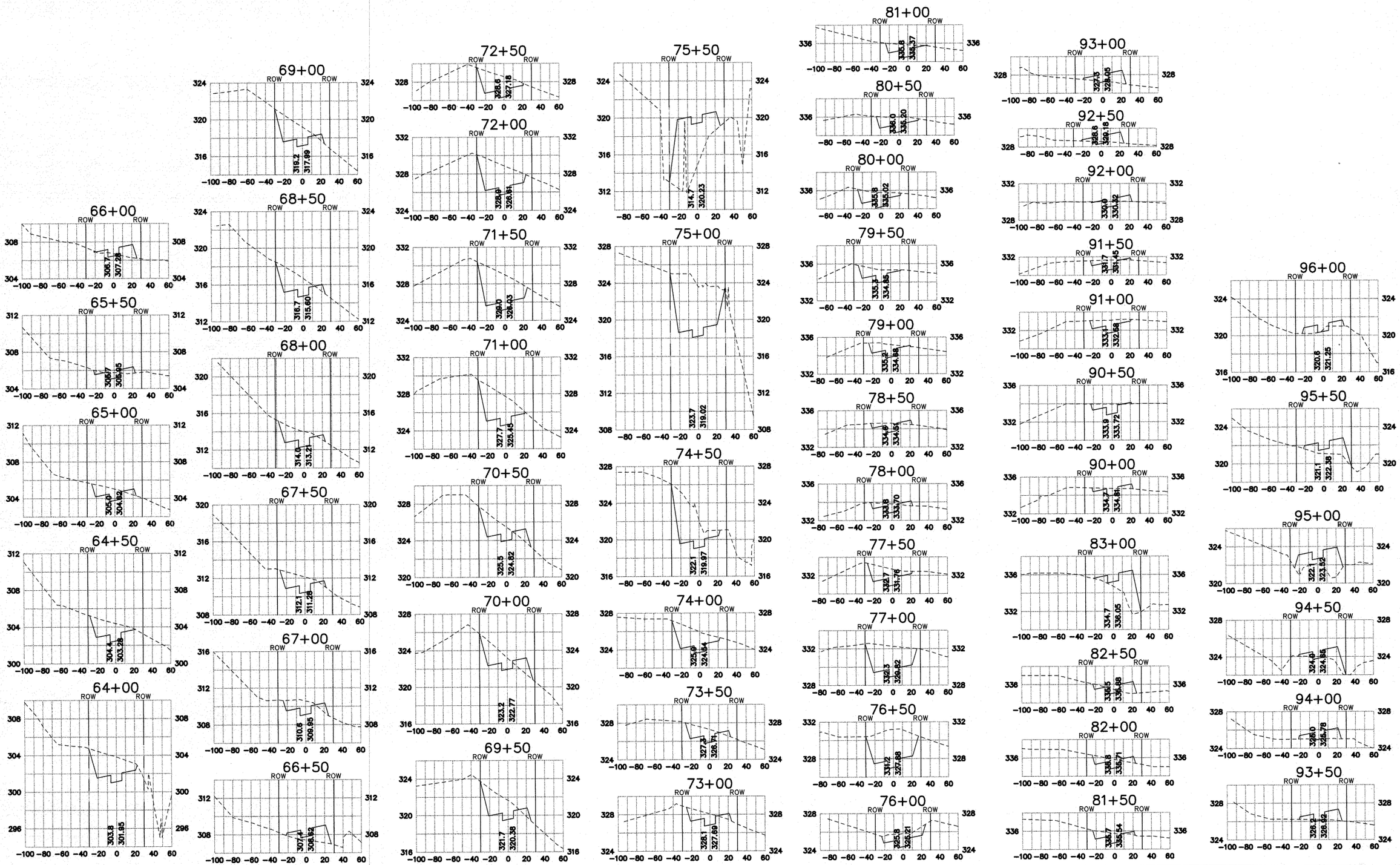
DATE NOVEMBER 2002
SHEET 17 OF 23
CAD REF. NO. 3319B117

User:martinez Spec:PIRNIE STANDARD File:\\ACAD\PROJ\3319\000\DESIGN\1008WGS REV\3319B117.DWG Scale:1:1 Date:11/14/2002 Time:10:59 Layout:XSECT-3



MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

12' ACCESS ROAD
CROSS-SECTIONS
STA. 64+00 TO STA. 96+00
SCALE: HORIZ 1" = 50', VERT 1" = 5'

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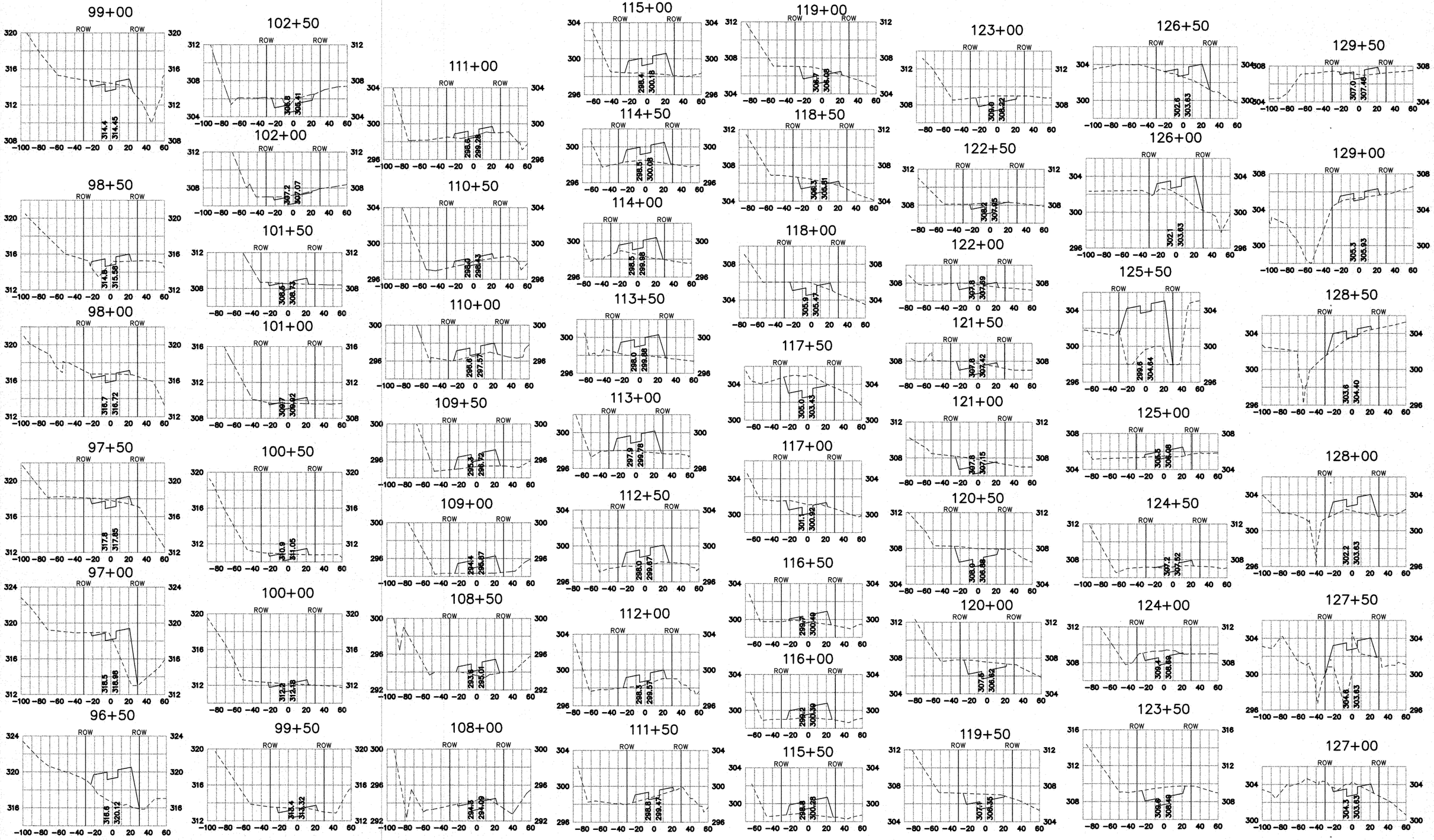
DATE NOVEMBER 2002

SHEET 18 OF 23

CAD REF. NO. 3319B118

User: martinez Spec: PIRNIE STANDARD File: I:\ACAD\PROJ\3319009\DESIGN\100%\WCS REV\3319B118.DWG Scale: 1:1 Date: 11/14/2002 Time: 11:02 Layout: XSECT-4



MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER 11/18/02

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

12' ACCESS ROAD
CROSS-SECTIONS
STA. 96+50 TO STA. 129+50
SCALE: HORIZ 1" = 50', VERT 1" = 5'

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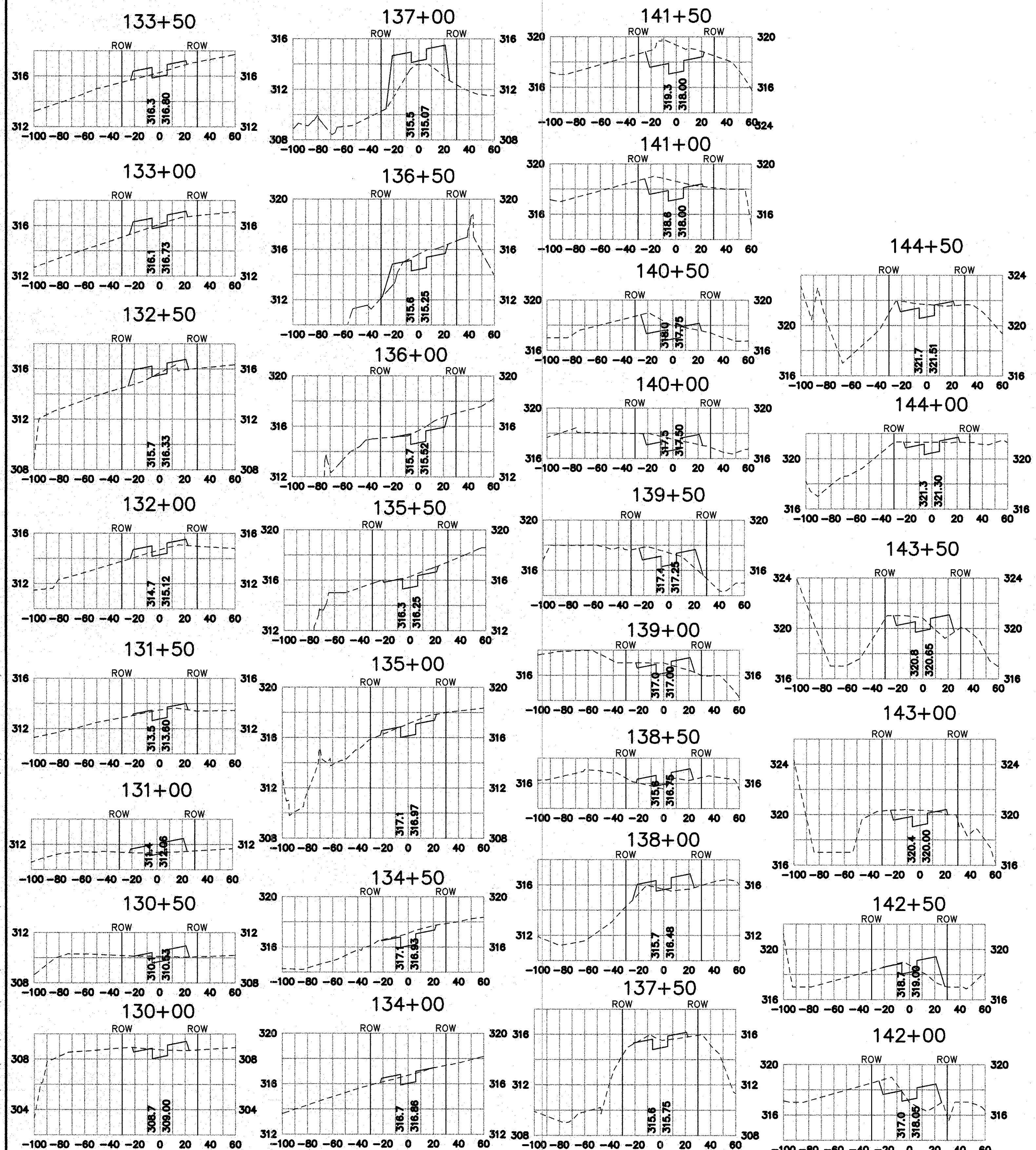
DATE NOVEMBER 2002
SHEET 19 OF 23
CAD REF. NO. 3319B119

User:martinez Spec:PIRNIE, STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\100%DWGS REV\3319B119.DWG Scale:1:1 Date:11/18/2002 Time:17:31 Layout:XSECT-5

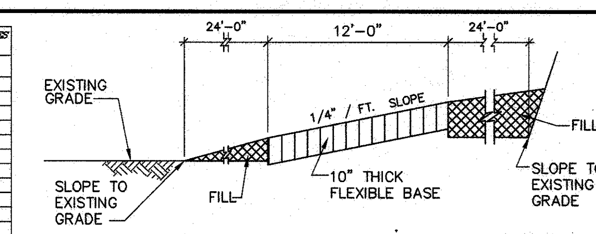


STATION	AREAS Square Feet CUT	AREAS Square Feet FILL	VOLUMES Cubic Yards CUT	VOLUMES Cubic Yards FILL	CUMULATIVE VOLUMES Cubic Yards CUT	CUMULATIVE VOLUMES Cubic Yards FILL
1+00	0.00	84.66				
1+50	3.21	75.05	2.98	147.88	2.98	147.88
2+00	4.30	24.99	6.96	92.63	9.93	240.51
2+50	8.79	12.61	12.18	33.10	22.11	273.61
3+00	17.92	2.54	24.74	14.03	46.85	287.64
3+50	53.58	0.00	66.21	2.35	113.05	289.99
4+00	94.43	0.00	137.04	0.00	250.10	289.99
4+50	120.55	0.00	199.05	0.00	449.15	289.99
5+00	126.31	0.00	218.46	0.00	667.61	289.99
5+50	116.93	0.55	225.22	0.51	892.84	290.50
6+00	156.45	0.00	253.13	0.51	1145.97	291.00
6+50	148.85	0.10	282.69	0.09	1428.66	291.10
7+00	112.26	0.00	241.77	0.09	1670.43	291.19
7+50	88.12	0.00	185.54	0.00	1855.97	291.19
8+00	54.81	0.00	132.35	0.00	1988.32	291.19
8+50	55.57	0.00	103.10	0.00	2091.42	291.19
9+00	52.05	0.00	99.64	0.00	2191.06	291.19
9+50	47.06	0.00	91.77	0.00	2282.83	291.19
10+00	39.24	0.00	79.91	0.00	2362.74	291.19
10+50	17.09	2.11	52.15	1.96	2414.89	293.15
11+00	7.19	8.48	22.47	9.81	2437.36	302.95
11+50	6.68	8.71	12.84	15.92	2450.20	318.87
			0.00	0.00	2450.20	318.87

STATION	AREAS Square Feet CUT	AREAS Square Feet FILL	VOLUMES Cubic Yards CUT	VOLUMES Cubic Yards FILL	CUMULATIVE VOLUMES Cubic Yards CUT	CUMULATIVE VOLUMES Cubic Yards FILL
12+00	2.30	19.78				
12+50	0.95	20.40	3.01	37.20	3.01	37.20
13+00	3.72	18.48	4.30	38.16	7.31	75.37
13+50	24.54	0.00	26.17	17.12	33.48	92.48
14+00	20.53	0.00	41.73	0.00	75.20	92.48
14+50	28.67	0.00	45.55	0.00	120.76	92.48
15+00	28.08	0.00	52.55	0.00	173.30	92.48
15+50	15.28	0.00	40.15	0.00	213.45	92.48
16+00	25.05	0.00	37.34	0.00	250.79	92.48
16+50	16.35	0.04	36.59	0.04	287.38	92.52
17+00	6.31	11.50	20.98	10.68	308.36	103.20
17+50	0.00	60.29	5.84	66.47	314.20	169.68
18+00	1.53	24.05	1.42	78.10	315.62	247.77
18+50	4.27	10.87	5.37	32.33	320.99	280.11
19+00	5.86	10.02	9.38	19.34	330.37	299.45
19+50	7.50	5.83	12.37	14.67	342.75	314.12
20+00	12.19	0.03	18.23	5.43	360.97	319.54
20+50	10.71	0.77	21.21	0.74	382.18	320.28
21+00	18.67	0.00	27.21	0.71	409.39	320.99
21+50	13.04	0.22	29.37	0.20	438.76	321.19
22+00	6.96	8.16	18.52	7.76	457.28	328.95
22+50	8.37	4.49	14.19	11.71	471.47	340.66
23+00	6.98	7.63	14.21	11.22	485.68	351.88
23+50	16.84	0.00	22.06	7.07	507.73	358.95
24+00	17.34	0.04	31.65	0.04	539.39	358.99
24+50	12.43	1.47	26.59	1.88	565.98	360.87
25+00	20.07	0.01	30.09	1.37	596.06	362.24
25+50	40.44	0.00	56.03	0.01	652.09	362.25
26+00	35.55	0.00	70.36	0.00	722.45	362.25
26+50	14.88	1.89	46.69	1.75	769.15	364.00
27+00	6.56	8.68	19.85	9.79	789.00	373.79
27+50	3.09	18.44	8.93	25.11	797.92	398.90
28+00	98.59	0.00	94.14	17.07	892.07	415.98
28+50	15.13	0.00	105.30	0.00	997.36	415.98
29+00	23.09	0.26	35.39	0.24	1032.76	416.21
29+50	22.01	0.00	41.76	0.24	1074.52	416.45
30+00	11.31	0.43	30.86	0.40	1105.37	416.85
30+50	64.18	0.00	69.90	0.40	1175.27	417.24
31+00	51.87	1.51	107.45	1.40	1282.72	418.64
31+50	21.75	0.37	68.17	1.74	1350.89	420.38
32+00	54.46	0.00	70.56	0.34	1421.45	420.73
32+50	39.65	0.00	87.13	0.00	1508.58	420.73
33+00	7.66	4.38	43.81	4.05	1552.39	424.78
33+50	0.00	57.10	7.10	56.93	1559.49	481.71
34+00	5.41	15.29	5.01	67.03	1564.50	548.74
34+50	7.75	7.23	12.19	20.85	1576.69	569.59
35+00	8.57	4.88	15.11	11.21	1591.80	580.80
35+50	10.33	1.59	17.50	5.99	1609.30	586.79
36+00	11.65	0.02	20.35	1.49	1629.64	588.28
36+50	53.12	0.00	59.97	0.02	1689.61	588.30
37+00	1.70	16.66	50.76	15.43	1740.37	603.73
37+50	95.38	0.00	89.89	15.43	1830.26	619.16
38+00	79.26	0.00	156.41	0.00	1986.67	619.16
38+50	25.43	0.00	96.93	0.00	2083.60	619.16
39+00	23.10	0.00	44.93	0.00	2128.54	619.16
39+50	8.27	4.86	29.05	4.50	2157.59	623.65
40+00	3.26	17.86	10.68	21.03	2168.27	644.69
40+50	0.21	26.15	3.22	40.75	2171.49	685.44
41+00(AHD)	0.00	51.63	0.20	72.02	2171.68	757.46
			0.00	0.00	2171.68	757.46

STATION	AREAS Square Feet CUT	AREAS Square Feet FILL	VOLUMES Cubic Yards CUT	VOLUMES Cubic Yards FILL	CUMULATIVE VOLUMES Cubic Yards CUT	CUMULATIVE VOLUMES Cubic Yards FILL
39+50(BCK)	0.00	32.33				
40+00	3.35	16.86	3.10	45.55	3.10	45.55
40+50	13.10	4.95	15.23	20.19	18.33	65.74
41+00	20.78	1.05	31.37	5.56	49.70	71.29
41+50	15.09	1.94	33.21	2.77	82.91	74.06
42+00	16.25	0.87	29.02	2.60	111.93	76.67
42+50	23.52	0.00	36.82	0.81	148.75	77.47
43+00	23.54	0.00	43.58	0.00	192.33	77.47
43+50	31.02	0.00	50.52	0.00	242.85	77.47
44+00	22.27	0.00	49.34	0.00	292.18	77.47
44+50	13.96	0.00	33.54	0.00	325.72	77.47
45+00	8.30	3.70	20.61	3.43	346.33	80.90
45+50	12.23	0.10	19.01	3.52	365.34	84.42
46+00	15.44	0.00	25.62	0.09	390.96	84.52
46+50	25.73	0.00	38.12	0.00	429.08	84.52
47+00	50.82	0.00	70.88	0.00	499.95	84.52
47+50	61.43	0.00	103.93	0.00	603.89	84.52
48+00	69.83	0.00	121.53	0.00	725.42	84.52
48+50	88.38	0.00	146.49	0.00	871.91	84.52
49+00	79.03	0.00	155.01	0.00	1026.92	84.52
49+50	55.80	0.00	124.84	0.00	1151.76	84.52
50+00	62.65	0.00	109.67	0.00	1261.43	84.52
50+50	135.91	0.00	183.85	0.00	1445.28	84.52
51+00	193.55	0.00	305.05	0.00	1750.33	84.52
51+50	109.52	0.00	280.61	0.00	2030.94	84.52
52+00	0.00	201.77	101.40	186.83	2132.35	271.34
52+50	0.00	112.22	0.00	290.73	2132.35	562.08
53+00	0.00	82.20	0.00	180.02	2132.35	742.10
53+50	0.00	44.35	0.00	117.18	2132.35	859.27
54+00	0.89	24.21	0.82	63.48	2133.17	922.75
54+50	5.05	14.91	5.50	36.22	2138.66	958.97
55+00	20.39	1.01	23.55	14.74	2162.22	973.71
55+50	61.38	0.00	75.71	0.94	2237.93	974.65
56+00	84.90	0.00	135.45	0.00	2373.38	974.65
56+50	44.20	0.00	119.54	0.00	2492.92	974.65
57+00	0.32	33.55	41.22	31.07	2534.14	1005.72
57+50	11.07	6.70	10.54	37.27	2544.68	1042.99
58+00	27.84	2.06	36.03	8.11	2580.71	1051.10
58+50	38.52	0.14	61.45	2.04	2642.16	1053.14
59+00	36.57	0.22	69.53	0.33	2711.69	1053.47
59+50	38.71	0.00	69.70	0.20	2781.39	1053.67
60+00	43.16	0.00	75.81	0.00	2857.20	1053.67
60+50	18.46	0.24	57.06	0.23	2914.26	1053.90
61+00	15.70	4.07	31.63	4.00	2945.89	1057.89
61+50	32.49	10.76	44.62	13.74	2990.52	1071.63
62+00	47.64	2.14	74.19	11.95	3064.71	1083.58
62+50	41.10	8.46	82.17	9.82	3146.88	1093.40
63+00	54.63	0.04	88.65	7.87	3235.52	1101.28
63+50	25.83	14.32	74.50	13.29	3310.02	1114.57
64+00	100.87	0.00	117.31	13.26	3427.34	1127.82
64+50	63.66	0.00	152.34	0.00	3579.68	1127.82
65+00	33.07	5.16	89.57	4.78	3669.24	1132.61
65+50	10.05	9.30	39.93	13.39	3709.17	1146.00
66+00	3.15	23.82	12.23	30.66	3721.40	1176.66
66+50	0.00	46.07	2.90	66.85	3724.30	1243.52
67+00	36.05	7.66	33.38	49.76	3757.68	1293.27
67+50	51.46	2.35	81.03	9.27	3838.71	1302.54
68+00	51.86	2.82	98.45	4.47	3937.16	1307.02
68+50	71.71	4.54	118.24	6.37	4055.39	1313.39
69+00	75.76	3.97	136.54	7.88	4191.94	1321.27
69+50	77.10	6.68	141.54	9.86	4333.48	1331.12
70+00	57.05	21.60	124.21	26.18	4457.69	1357.31
70+50	57.93	13.94	106.47	32.90	4564.16	1390.21
71+00	120.72	0.00	165.42	12.90	4729.58	1403.11
71+50	155.07	0.00	255.36	0.00	4984.94	1403.11
72+00	122.32	0.00	256.83	0.00	5241.77	1403.11
72+50	78.65	0.00	186.08	0.00	5427.85	1403.11
73+00	33.23	5.41	103.59	5.01	5531.43	1408.12
73+50	39.65	3.63	67.49	8.38	5598.92	1416.50
74+00	83.45	0.00	113.98	3.36	5712.91	1419.86
74+50	144.37	0.00	210.95	0.00	5923.85	1419.86
75+00	273.21	0.00	386.65	0.00	6310.50	1419.86
75+50	0.00	235.73	252.97	218.27	6563.47	1638.13
76+00	40.96	0.00	37.93	218.27	6601.40	1856.39
76+50	162.63	0.00	188.51	0.00	6789.91	1856.39
77+00	132.44	0.00	273.21	0.00	7063.11	1856.39
77+50	56.31	0.00	174.76	0.00	7237.88	1856.39
78+00	18.85	4.97	69.59	4.60	7307.47	1860.99
78+50	17.32	4.21	33.49	8.50	7340.96	1869.49
79+00	33.78	0.38	47.32	4.25	7388.28	1873.74
79+50	36.97	0.00	65.52	0.35	7453.79	1874.10
80+00	46.39	0.00	77.19	0.00	7530.98	1874.10
80+50	44.08	0.00	83.77	0.00	7614.75	1874.10
81+00	31.82	0.06	70.28	0.05	7685.04	1874.15
81+50	23.39	2.52	51.13	2.38	7736.16	1876.53
82+00	22.52	6.97	38.12	10.73	7774.29	1887.26
82+50	8.99	18.43	29.18	23.52	7803.46	1910.78
83+00	0.00	80.04	8.32	91.17	7811.79	2001.95
			0.00	0.00	7811.79	2001.95

STATION	AREAS Square Feet CUT	AREAS Square Feet FILL	VOLUMES Cubic Yards CUT	VOLUMES Cubic Yards FILL	CUMULATIVE VOLUMES Cubic Yards CUT	CUMULATIVE VOLUMES Cubic Yards FILL
90+00	12.86	5.97				
90+50	21.02	0.89	31.37	6.36	31.37	6.36
91+00	33.93	0.00	50.88	0.83	82.26	7.18
91+50	19.68	1.10	49.64	1.01	131.90	8.20
92+00	6.89	9.72	24.60	10.01	156.50	18.21
92+50	2.63	21.25	8.81	28.68	165.31	46.89
93+00	1.07	26.36	3.42	44.09	168.74	90.98
93+50	1.35	24.67	2.24	47.26	170.98	138.23
94+00	0.93	25.32	2.11	46.29	173.09	184.52
94+50	2.32	33.97	3.01	54.90	176.10	239.42
95+00	0.00	87.11	2.15	112.11	178.25	351.54
95+50	0.00	50.92	0.00	127.80	178.25	479.34
96+00	2.63	20.70	2.44	66.31	180.68	545.65
96+50	0.00	150.52	2.44	158.54	183.12	704.19
97+00	8.74	87.34	8.10	220.24	191.22	924.43
97+50	16.36	9.76	23.24	89.91	214.46	1014.34
98+00	15.00	4.40	29.03	13.12	243.49	1027.45
98+50	1.67	33.40	15.43	35.00	258.92	1062.45
99+00	16.23	10.21	16.57	40.38	275.49	1102.83
99+50	18.07	4.23	31.76	13.37	307.25	1116.20
100+00	15.19	5.71	30.80	9.21	338.04	1125.40
100+50	10.12	8.31	23.44	12.98	361.48	1138.38
101+00	7.88	9.16	16.67	16.17	378.15	1154.55
101+50	10.31	8.09	16.84	15.97	394.99	1170.52
102+00	16.60	0.00	26.49	6.37	421.49	1176.89
102+50	36.07	0.00	48.77	0.00	470.26	1176.89
			0.00	0.00	470.26	1176.89



TYPICAL ACCESS ROAD CROSS SECTION
N.T.S.

1
4 | 19A

STATION	AREAS Square Feet CUT	AREAS Square Feet FILL	VOLUMES Cubic Yards CUT	VOLUMES Cubic Yards FILL	CUMULATIVE VOLUMES Cubic Yards CUT	CUMULATIVE VOLUMES Cubic Yards FILL
108+00	16.15	2.22				
108+50	0.00	48.45	14.95	46.92	14.95	46.92
109+00	0.00	60.34	0.00	100.73	14.95	147.65
109+50	0.00	60.66	0.00	112.03	14.95	259.69
110+00	0.00	35.51	0.00	89.04	14.95	348.73
110+50	4.52	16.65	4.18	48.29	19.13	397.02
111+00	2.42	18.34	6.42	32.40	25.55	429.42
111+50	2.47	19.52	4.52	35.06	30.08	464.48
112+00	0.00	41.67	2.28	56.66	32.36	521.15
112+50	0.00	71.74	0.00	105.01	32.36	626.16
113+00	0.00	80.20	0.00	140.68	32.36	766.84
113+50	0.00	81.55	0.00	149.77	32.36	916.61
114+00	0.00	61.57	0.00	130.04	32.36	1046.66
114+50	0.00	72.79	0.00	124.41	32.36	1171.06
115+00	0.00	78.28	0.00	139.88	32.36	1310.94
115+50	0.00	63.54	0.00	131.31	32.36	1442.26
116+00	0.00	49.65	0.00	104.80	32.36	1547.06
116+50	1.07	26.83	0.99	70.82	33.35	1617.88
117+00	26.20	1.99	25.25	26.69	58.60	1644.57
117+50	72.40	0.00	91.30	1.84	149.90	1646.41
118+00	28.45	6.07	95.24	5.46	245.14	1651.87
118+50	32.88	2.74	56.79	8.16	301.93	1660.03
119+00	39.57	1.63	67.09	4.05	369.01	1664.08
119+50	42.28	0.00	75.79	1.51	444.80	1665.59
120+00	53.47	0.00	88.66	0.00	533.46	1665.59
120+50	62.88	0.00	107.73	0.00	641.19	1665.59
121+00	41.54	0.20	96.68	0.19	737.88	1665.78
121+50	28.20	3.17	64.57	3.12	802.45	1668.90
122+00	21.15	4.98	46.78	7.12	849.23	1676.02
122+50	22.97	0.12	40.85	4.73	890.08	1680.75
123+00	43.00	0.00	61.09	0.12	951.17	1680.87
123+50	58.10	0.00	93.62	0.00	1044.78	1680.87
124+00	35.94	0.22	87.08	0.21	1131.86	1681.07
124+50	6.33	9.49	39.14	9.00	1171.00	1690.07
125+00	2.92	21.29	8.57	28.50	1179.57	1718.57
125+50	0.00	270.48	2.70	270.15	1182.27	1988.72
126+00	0.00	76.54	0.00	321.31	1182.27	2310.03
126+50	0.27	44.24	0.25	111.83	1182.52	2421.87
127+00	21.08	6.36	19.76	46.85	1202.29	2468.72
127+50	5.85	136.54	24.94	132.31	1227.22	2601.03
128+00	0.00	66.87	5.42	188.34	1232.64	2789.37
128+50	0.66	34.37	0.61	93.75	1233.26	2883.11
129+00	2.58	20.20	3.00	50.53	1236.26	2933.64
129+50	6.23	11.65	8.16	29.49	1244.41	2963.13
130+00	9.27	9.48	14.36	19.56	1258.77	2982.69
130+50	4.95	14.01	13.17	21.75	1271.94	3004.45
131+00	1.72	22.37	6.17	33.69	1278.11	3038.14
131+50	8.61	5.91	9.56	26.18	1287.67	3064.32
132+00	4.78	15.29	12.39	19.63	1300.06	3083.95
132+50	2.08	27.28	6.35	39.42	1306.41	3123.37
133+00	2.66	20.59	4.39	44.33	1310.79	3167.69
133+50	3.91	15.53	6.08	33.45	1316.88	3201.14
134+00	7.77	5.31	10.81	19.30	1327.69	3220.44
134+50	18.55	0.00	24.37	4.92	1352.06	3225.36
135+00	17.72	2.47	33.59	2.28	1385.64	3227.64
135+50	15.87	0.38	31.11	2.64	1416.75	3230.28
136+00	22.43	0.69	35.47	0.99	1452.22	3231.27
136+50	24.35	14.02	43.31	13.62	1495.53	3244.89
137+00	7.19	247.65	29.20	242.29	1524.73	3487.17
137+50	11.31	5.50	17.13	234.40	1541.86	3721.57
138+00	1.04	27.85	11.44	30.88	1553.30	3752.45
138+50	0.18	23.07	1.10	39.69	1554.40	3792.14
139+00	13.43	12.08	12.60	32.54	1567.01	3824.68
139+50	24.88	15.75	25.94	43.27	1592.95	3867.95
140+00	20.82	8.73	42.32	22.67	1635.27	3890.62
140+50	34.93	4.59	70.33	4.26	1705.59	3894.88
141+00	38.98	0.67	68.44	4.87	1774.03	3899.76
141+50	65.25	0.00	96.51	0.62	1870.54	3900.38
142+00	16.71	33.93	75.88	31.42	1946.42	3931.80
142+50	7.30	27.37	22.23	56.76	1968.65	3988.56
143+00	25.89	1.59	30.73	26.82	1999.39	4015.38
143+50	20.29	22.61	42.76	22.41	2042.14	4037.78
144+00	15.03	4.12	32.70	24.75	2074.84	4062.54
144+50	21.72	3.26	34.03	6.84	2108.87	4069.37
			0.00	0.00	2108.87	4069.37

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DWN JRM
CKD RJW

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

12' ACCESS ROAD CROSS-SECTIONS STA. 130+00 TO STA. 144+50

SCALE: HORIZ 1" = 50', VERT 1" = 5'

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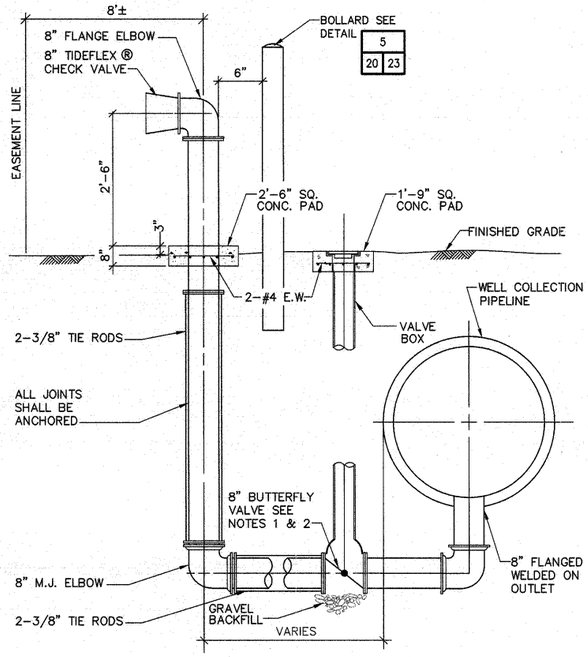
DATE NOVEMBER 2002

SHEET 19A OF 23

CAD REF. NO. 3319B125

User:martinez Spec:PIRNIE STANDARD File:\ACAD\PROJ\3319009\DESIGN\100%DWGS REV\3319B125.DWG Scale:1:1 Date:11/14/2002 Time:11:14 Layout:XSECT-5

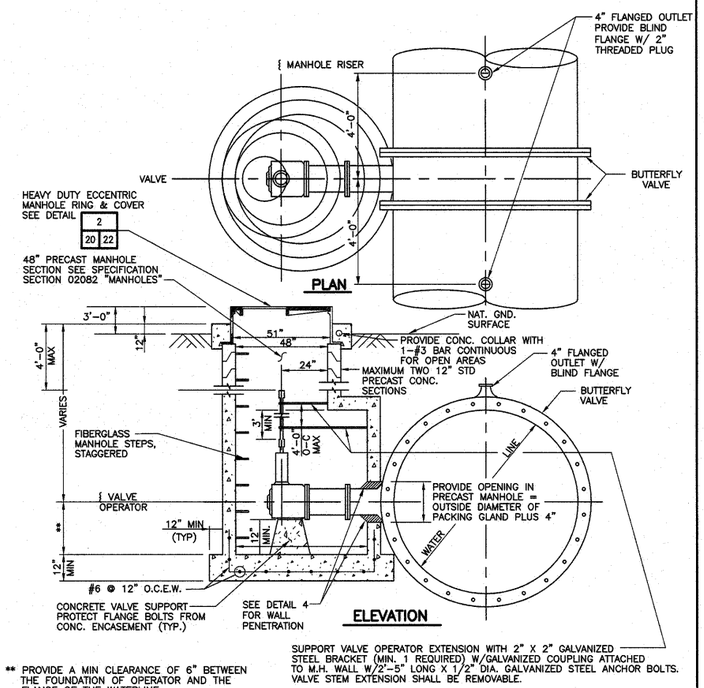


NOTES:

1. PROVIDE STEM EXTENSION W/STEM GUIDES AND 2" OP. NUT WITHIN 12" OF FINISHED GROUND.
2. RESTRAINED JOINT PIPE MAY BE USED IN LIEU OF TIE-RODS.
3. DOWNSTREAM CHANNEL. ROUTE UNDER ROAD IF ROAD IS DOWNSTREAM OF PIPE.

DRAIN STATION 1 (8 20)

SCALE: NTS



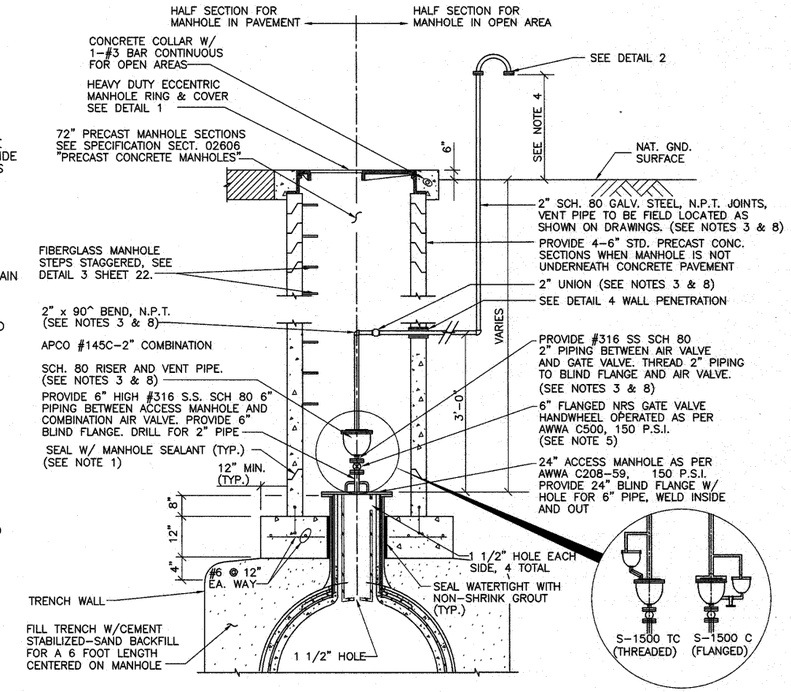
** PROVIDE A MIN CLEARANCE OF 6" BETWEEN THE FOUNDATION OF OPERATOR AND THE FLANGE OF THE WATERLINE.

BUTTERFLY VALVE IN MANHOLE 2 (4 20)

SCALE: NTS

NOTES

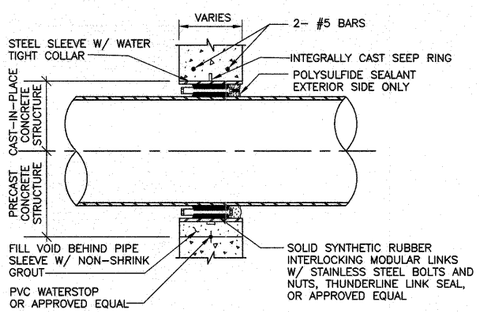
1. PROVIDE RAMNEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. FOR MANHOLES DEEPER THAN 20 FEET, SAFETY CLIMBING RAIL MUST BE PROVIDED (SAF-T-CLIMB OR APPROVED EQUAL).
3. IF 3" AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS THEN PROVIDE APCO # 147C OR 1503C AIR VALVE. AS INDICATED ON THE PLAN AND PROFILE SHEETS. ALL OTHER PIPING AND APPURTENANCES SHOWN TO BE 2" DIAMETER SHALL BE 3" IN DIAMETER, AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
4. VERIFY THAT LOCATION OF SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.
5. WHEN ONLY ACCESS MANHOLE IS CALLED OUT ON PLAN AND PROFILE, DELETE REQUIREMENTS FOR AIR VALVE, VENT PIPING, AND BOLLARDS. PROVIDE 6" FLANGED GATE VALVE; HANDWHEEL OPERATED W/BLIND FLANGE.
6. REFER TO PLAN AND PROFILE SHEETS FOR TYPES AND LOCATIONS OF COMBINATION AIR VALVES.
7. NOT USED
8. IF 4" COMBINATION AIR VALVE IS CALLED FOR ON THE PLAN AND PROFILE SHEETS, THEN PROVIDE AN APCO #1504C. ALL OTHER PIPING AND APPURTENANCES SHOWN TO BE 2" DIAMETER SHALL BE 4" IN DIAMETER, AND SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
9. PROVIDE AN APPROVED PETROLEUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.



COMBINATION VACUUM RELIEF/AIR RELEASE VALVE ASSEMBLY IN SERVICE MANHOLE 3 (4 20)

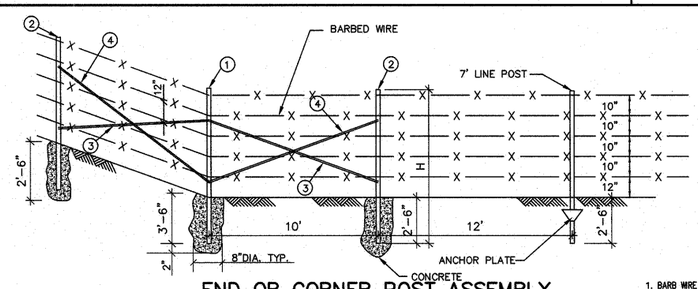
SCALE: NTS

(FOR WATER LINES LARGER THAN 30-INCHES IN DIAMETER)



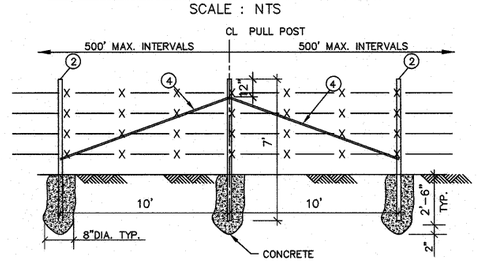
WALL PENETRATION 4 (20 20)

SCALE: NTS



END OR CORNER POST ASSEMBLY

SCALE : NTS

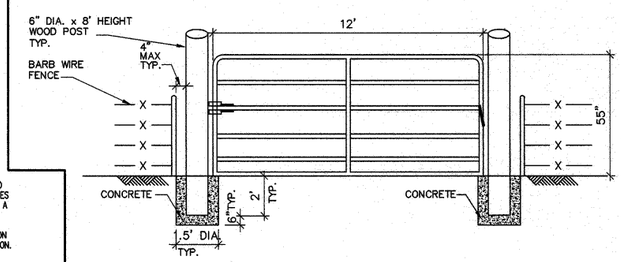


BARBED WIRE FENCE 5 (- 20)

SCALE: NTS

1. ROUND GALVANIZED POST, 2.875" O.D.
2. ROUND GALVANIZED POST, 2.375" O.D.
3. ROUND GALVANIZED BRACE, 1.660" O.D.
4. 3/8" TENSION TOD WITH TENSION ADJUSTMENT

1. BARB WIRE SHALL BE 4-POINT ROUND BARBS, SPACED APPROXIMATELY 5 INCHES APART, AND WOUND ON TWO STRANDS OF WIRE. WIRE SIZE SHALL BE No. 12 1/2 GAGE WIRE STRANDS AND No. 14-GAGE BARBS. BARGED WIRE SHALL CONFORM TO ASTM A121, CLASS 1.
2. LINE POSTS SHALL BE 1 3/8"X 1 3/8" X 1/8" TEE SHAPED STEEL POSTS, AND SHALL BE PROVIDED WITH A TAPERED ANCHOR PLATE SECURELY ATTACHED THERETO AT APPROXIMATELY 22 TO 26 INCHES FROM THE BOTTOM OF THE POST, UNLESS OTHERWISE SPECIFIED. THE ANCHOR PLATE SHALL HAVE A MINIMUM AREA OF 20 SQUARE INCHES AND SHALL BE CUT FROM NOT LESS THAN 8 GAGE METAL.
3. FENCING MATERIAL FOR THE END, CORNER, AND PULL POST ASSEMBLIES SHALL CONFORM TO SECTION 206-6 OF THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
4. LINE POSTS SHALL BE DRIVEN INTO THE GROUND. END, CORNER AND PULL POST ASSEMBLIES FOR PERMANENT FENCE ONLY, SHALL BE SET IN CONCRETE AND CURED FOR 7 DAYS BEFORE ERECTING BARBED WIRE STANDS.
5. BARED WIRE SHALL BE ERECTED IN THE FOLLOWING ORDER: TOP STRAND FIRST, BOTTOM STRAND SECOND; REMAINING STRANDS THIRD.
6. WIRE USED TO FASTEN BARBED WIRE TO POSTS SHALL BE GALVANIZED AND 11 GAGE OR HEAVIER. CLIPS AND HOG RINGS SHALL BE 9 GAGE OR HEAVIER.
7. END OF CORNER POST ASSEMBLY SHALL BE INSTALLED WHERE A CHANGE IN FENCE DIRECTION IS GREATER THAN 15°
8. LINE POSTS ON CURVES SHALL BE VERTICAL AFTER BARED WIRE STRANDS ARE ERECTED AND DRAWN TAUT. SPACING OF LINE POST SHALL BE ADJUSTED IN THE FIELD TO SUIT SOIL CONDITIONS AND CURVATURE OF THE FENCE. SPACING SHALL BE UNIFORM ON CURVES. MINIMUM SPACING SHALL BE 8 FEET AND MAXIMUM SPACING SHALL BE 12 FEET.
9. SPLICES FOR BARED WIRE SHALL BE DOUBLE WESTERN UNION.



LIVESTOCK GATE 6 (4 20)

SCALE: NTS

NOTE:

1. GALVANIZED 1 5/8" TUBE GATE AT STA. 100+55. LENGTH = 12', HEIGHT = 55" FARMASTER OR APPROVED EQUIVALENT. INSTALL GATE TO 6" DIAMETER WOOD POST PER MANUFACTURER'S SPECIFICATIONS.
2. INSTALL SURE-LATCH LIVESTOCK GATE LATCH OR APPROVED EQUIVALENT.

MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

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CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

MISCELLANEOUS DETAILS
SHEET 1
AS SHOWN

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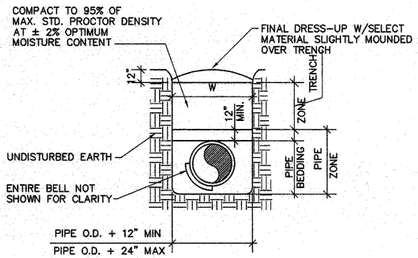
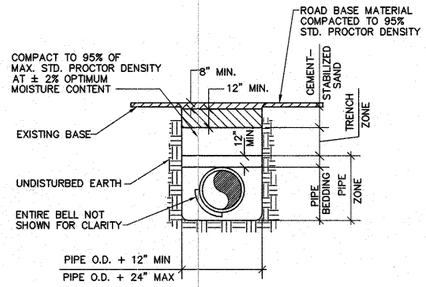
DATE NOVEMBER 2002
SHEET 20 OF 23
CAD REF. NO. 3319B120

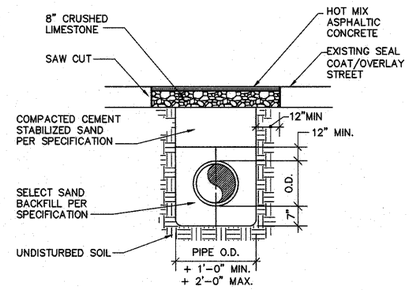
User:martinez Spec:PIRNIE STANDARD File:\ACAD\PROJ\3319009\DESIGN\10052DWGS REV\3319B120.DWG Scale:1:1 Date:11/14/2002 Time:11:18 Layout:Layout1



TYPICAL BACKFILL FOR UNPAVED AREAS



TYPICAL BACKFILL FOR UNPAVED DRIVEWAYS

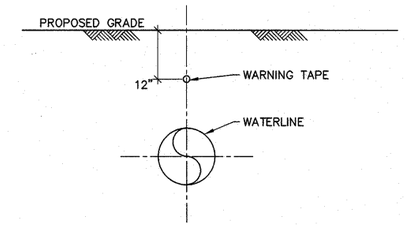


TYPICAL BACKFILL FOR PAVED AREA

PIPE BEDDING AND BACKFILL

SCALE: NTS

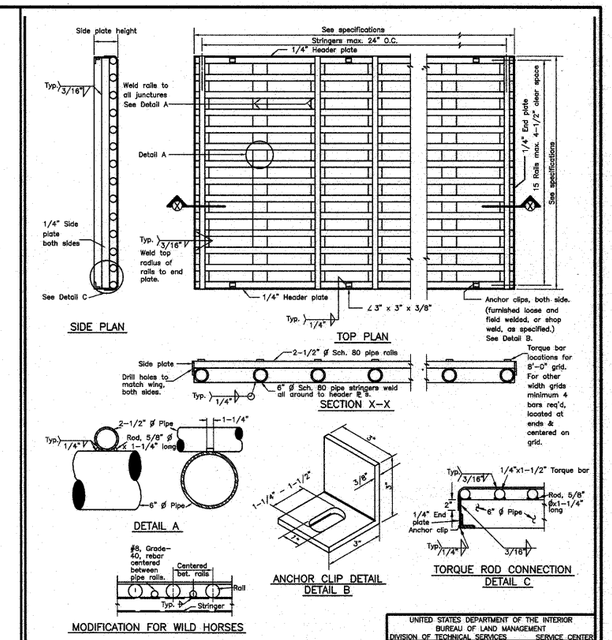
1 | 4 | 21



WARNING TAPE INSTALLATION

SCALE: NTS

2 | 4 | 21



NOTES:

1. Design loading of grid conforms to AASHTO H-20-44.
2. Provide 4-11/2"x1/4" torque bars, full length, spaced as shown, and welded with 3/16" fillet welds to top of rails as required on Work Data Sheet. See Detail C.
3. End plat flush with, and welded to, rails.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF TECHNICAL SERVICES SERVICE CENTER

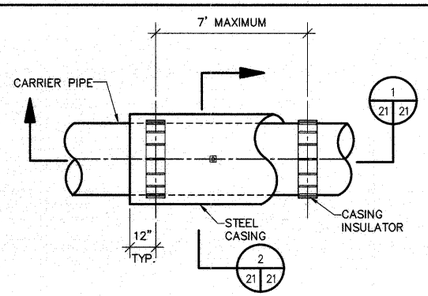
STEEL PIPE CATTLE GUARD GRID

DESIGNED by others
REVIEWED
APPROVED
DRAWN
SCALE NONE
DATE AUGUST 14, 1990
SHEET OF
DRAWING NO. 02881-2

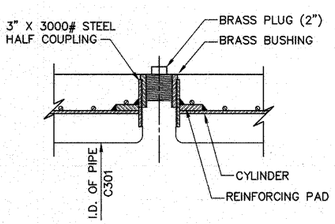
CATTLE GUARD DETAIL

SCALE: NTS

6 | 4 | 21



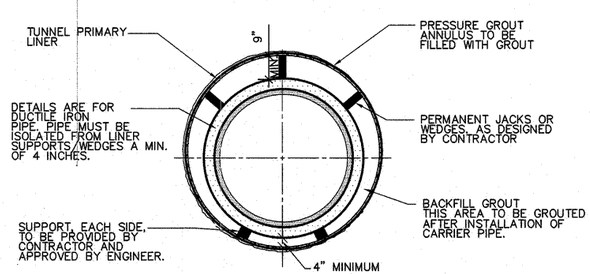
PLAN VIEW



INSPECTION AND
GROUT HOLE SECTION 1 | 21 | 21

NOTES:

1. INSPECTION AND GROUT HOLES FOR CONTACT GROUTING OF THE STEEL CASING TO HAVE A LONGITUDINAL SPACING NO GREATER THAN 10 FEET AND ALTERNATE 15 DEGREES LEFT AND RIGHT OF CASING CENTERLINE.
2. CARRIER PIPE SHALL BE GROUTED INTO THE STEEL CASING USING THE INSPECTION AND GROUT HOLES AS SHOWN OR AN APPROVED METHOD. THE INSPECTION AND GROUT HOLES SHALL HAVE A LONGITUDINAL SPACING NO GREATER THAN 10 FEET AND THE BOTTOM TWO SHALL ALTERNATE 45 DEGREES LEFT AND RIGHT OF THE CASING CENTERLINE AS SHOWN.
3. STEEL CASING SHALL BE 60" DIAMETER FOR 48" CARIIER PIPE AND 72" DIAMETER FOR 54" PIPE. CASING SHALL BE MINIMUM 3/4" THICKNESS.
4. CASING SHALL BE 20 FT. LONG.

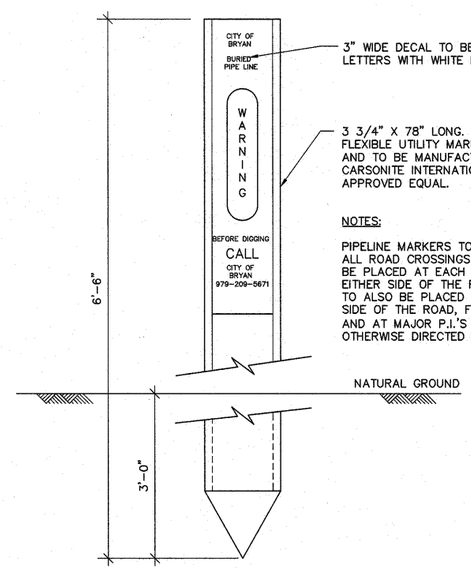


SECTION 2 | 21 | 21

ENCASEMENT DETAIL WITH SPACERS

SCALE: NTS

3 | 10 | 21



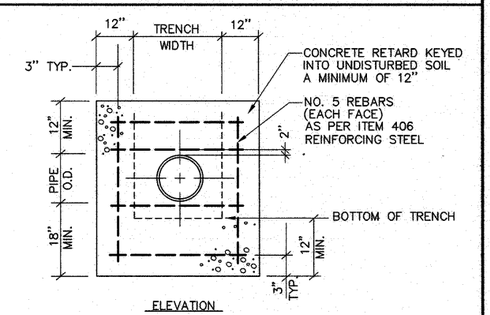
NOTES:

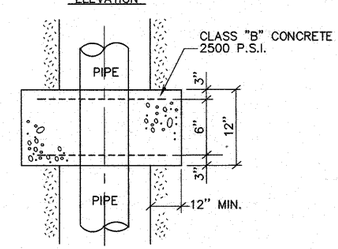
PIPELINE MARKERS TO BE LOCATED AT ALL ROAD CROSSINGS. ONE MARKER TO BE PLACED AT EACH R.O.W. LINE, ON EITHER SIDE OF THE ROAD. MARKERS TO ALSO BE PLACED 100 FT. EITHER SIDE OF THE ROAD, FENCE CROSSINGS, AND AT MAJOR P.I.'S UNLESS OTHERWISE DIRECTED BY OWNER.

PIPELINE MARKER

SCALE: NTS

4 | 4 | 21





CONCRETE RETARD

SCALE: NTS

5 | 7 | 21

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48" WELL COLLECTION LINE
CONTRACT NO. 2

MISCELLANEOUS DETAILS
SHEET 2
AS SHOWN

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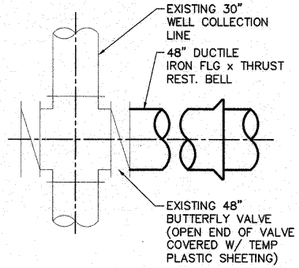
CAD REF. NO. 3319B121

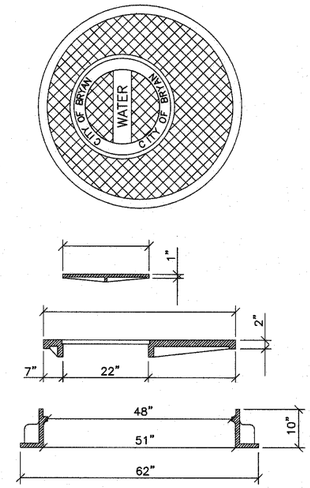
User:martinez Spec:PIRNIE STANDARD File:\ACAD\PROJ\3319009\DESIGN\100%DWGS REV\3319B121.DWG Scale:1:1 Date:11/14/2002 Time:11:25 Layout:Layout1



CONNECTION DETAIL FOR EXISTING 30" WELL COLLECTION LINE, STA 1+00

1 / 4 22

SCALE: NTS

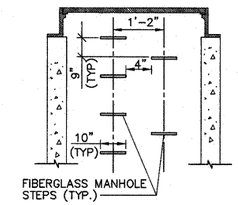


ECCENTRIC MANHOLE ACCESS LID

HEAVY DUTY MANHOLE RING AND COVER

2 / 20 22

SCALE: NTS



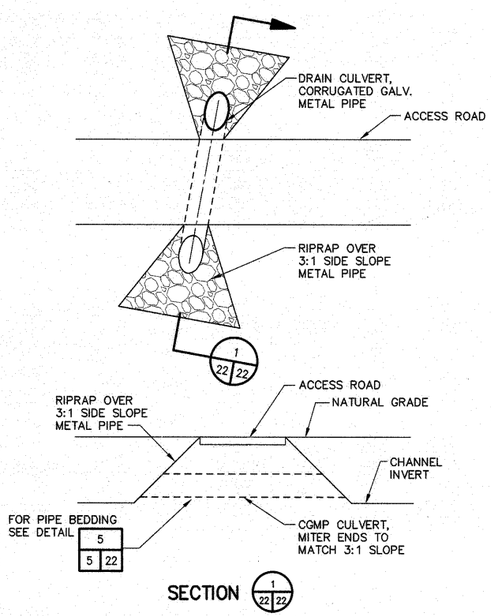
NOTES – MANHOLE STEPS:

1. PROVIDE MODEL PSI-PF STEPS AS MANUFACTURED BY M.A. INDUSTRIES INC. OR APPROVED EQUAL.
2. BOTTOM MANHOLE STEP SHALL BE NO HIGHER THAN 12" ABOVE MANHOLE INVERT.

MANHOLE STEP DETAIL

3 / 4 22

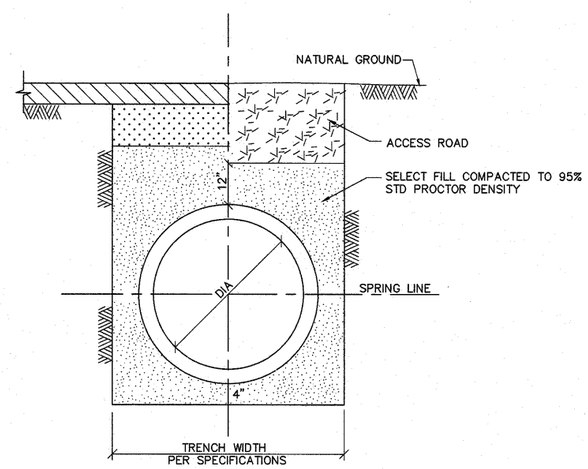
SCALE: NTS



CULVERT INSTALLATION

4 / 5 22

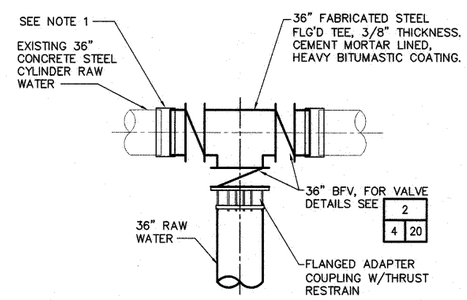
SCALE: NTS



STORM SEWER BEDDING AND BACKFILL FOR 24" TO 48" DIA.

5 / 5 22

SCALE: NTS



NOTE:

1. EXPOSE EXISTING WATERLINES, REMOVE CONCRETE COATING, CUT PIPING AND WELD 36" STEEL TEE W/ BUTT STRAPS. SEE SPECIFICATIONS ON REQUIREMENTS W/ OWNERS OPERATIONS. CONNECTION MUST BE PERFORMED BETWEEN JAN. 1, 2003 AND FEB. 15, 2003.

CONNECTION TO EXISTING 36" RAW WATER LINE

6 / 14A 22

SCALE: NTS

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CKD JAC

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48" WELL COLLECTION LINE
CONTRACT NO. 2

MISCELLANEOUS DETAILS
SHEET 3
AS SHOWN

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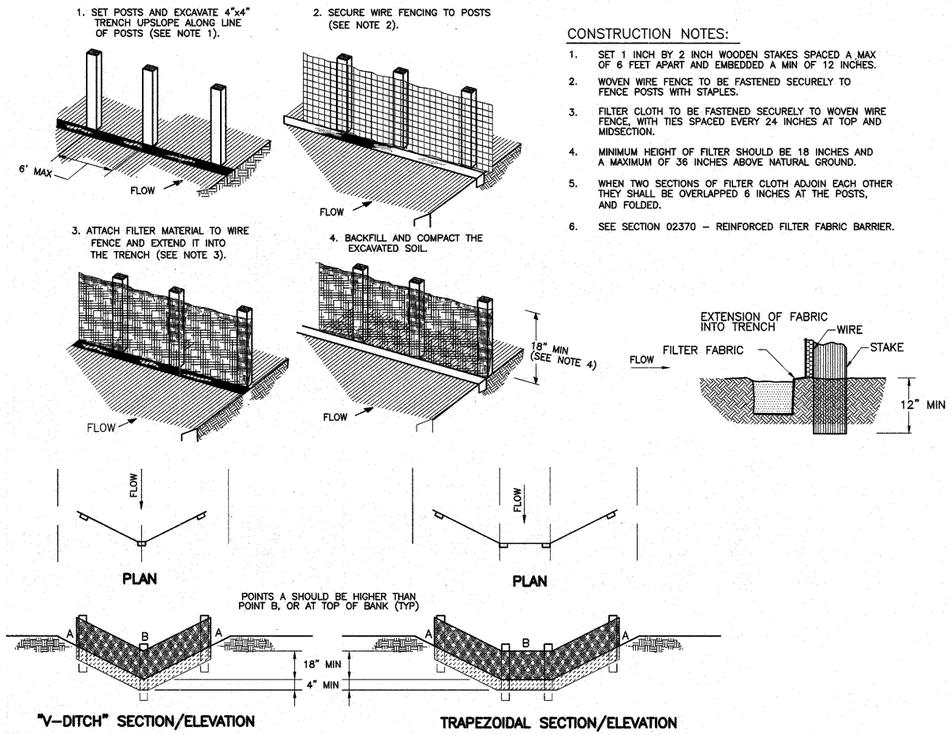
DATE NOVEMBER 2002

SHEET 22 OF 23

CAD REF. NO. 3319B122

User:martinez Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\1092DWGS REV\3319B122.DWG Scale:1:1 Date:11/14/2002 Time:11:23 Layout:Layout1



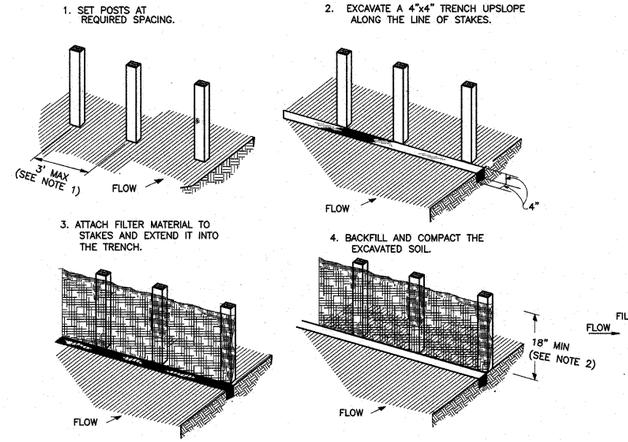
CONSTRUCTION NOTES:

1. SET 1 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE SECTION 02370 – REINFORCED FILTER FABRIC BARRIER.

REINFORCED FILTER FABRIC BARRIER

SCALE: NTS

1 – 23



CONSTRUCTION NOTES:

1. 1 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE SECTION 02370 – FILTER FABRIC FENCE.

FILTER FABRIC FENCE

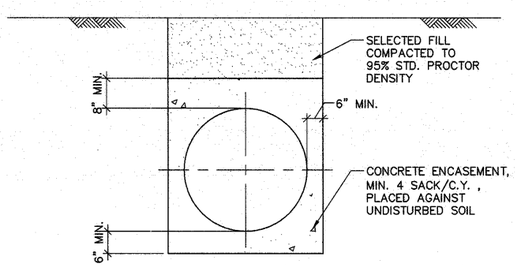
SCALE: NTS

2 – 23

STORMWATER POLLUTION PREVENTION PLAN

A. GENERAL NOTES

1. LOCATE MATERIAL STORAGE AREAS AWAY FROM STORMWATER CONVEYANCE SYSTEMS. PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER POTENTIALLY TOXIC MATERIALS. STORAGE AND LAYDOWN AREAS TO BE DESIGNATED BY OWNER, UNLESS NOTED OTHERWISE.
2. SUBMIT POLLUTION PREVENTION PLAN FOR ENGINEER REVIEW PRIOR TO COMMENCING WORK. OBTAIN ANY REQUIRED PERMITS FOR STORMWATER POLLUTION CONTROL.
3. DURING CONSTRUCTION, THE STORMWATER RUNOFF FROM ALL DISTURBED AREAS TO BE FILTERED BY SILT FENCES AND ROCK BERMS. THESE TEMPORARY EROSION AND SEDIMENTATION CONTROLS TO REMAIN IN PLACE UNTIL THE DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS TO BE INSPECTED PERIODICALLY FOR DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES AND FOLLOWING EVERY RAINFALL. DAMAGED OR OBSTRUCTED CONTROLS TO BE REPAIRED/REPLACED AS NECESSARY TO MAINTAIN THEIR PROPER OPERATION.
4. EROSION AND SEDIMENTATION CONTROLS SHOWN REPRESENT MINIMUM REQUIRED. LOCATIONS SHOWN ARE APPROXIMATE. INSTALL CONTROLS AS NECESSARY TO PREVENT STORMWATER POLLUTION DUE TO CONSTRUCTION, AT NO ADDED COST TO OWNER.
5. PRIOR TO CITY ACCEPTANCE OF IMPROVEMENTS, ALL GRADED AND DISTURBED AREAS ARE TO BE REVEGETATED IN ACCORDANCE WITH SPECIFICATIONS. SEE DWG 2 GENERAL NOTE 4.
6. INSTALL AND MAINTAIN GEOTEXTILE FABRIC BARRIER AROUND STORM SEWER LEADS AND INLETS TO PREVENT SILT AND OTHER MATERIAL FROM ENTERING THE STORM SEWER COLLECTION SYSTEM, WHERE APPLICABLE.



CONCRETE ENCASEMENT

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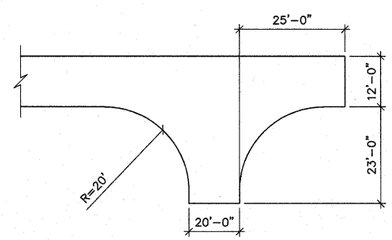
3 – 5 – 23



MINIMUM TURNING AREA

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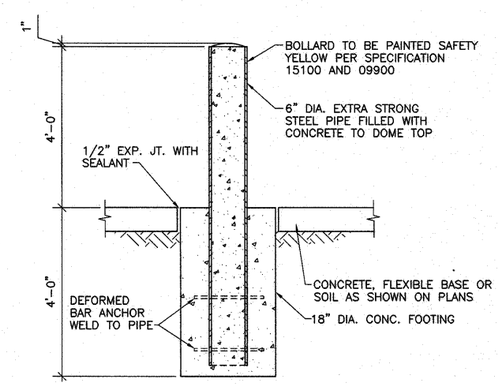
4 – 9 – 23



BOLLARD DETAIL STANDARD

SCALE: NTS

5 – 20 – 23

MALCOLM PIRNIE

ROBERT J. WARREN 53791 REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
NO.	BY	DATE	REMARKS

DES JJI
DWN JRM
CKD JAC

CITY OF BRYAN
48" WELL COLLECTION LINE
CONTRACT NO. 2

MISCELLANEOUS DETAILS
SHEET 4
AS SHOWN

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DATE NOVEMBER 2002
SHEET 23 OF 23
CAD REF. NO. 3319B123

User:martinez Spec:PIRNIE STANDARD File:I:\ACAD\PROJ\3319009\DESIGN\1602SDWGS REV\3319B123.DWG Scale:1:1 Date:11/14/2002 Time:11:27 Layout:Layout1