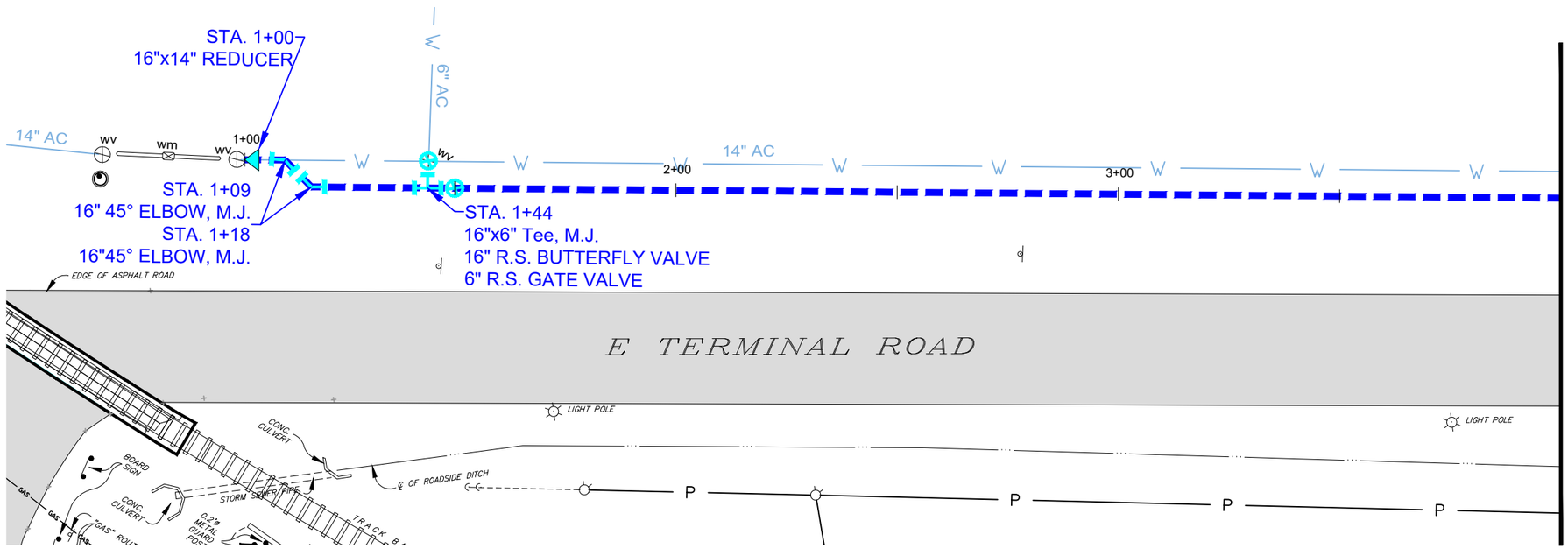
2020 BND WATER LINES REPLACEMENTS

VICINITY MAP - NOT TO SCALE

INDEX

DATE	REVISION
6/22/2020	ISSUED FOR BIDS
6/29/2020	REVISED
7/2/2020	ADDENDUM #1
7/10/2020	ADDENDUM #2

PORT OF BROWNSVILLE
the port that *works*

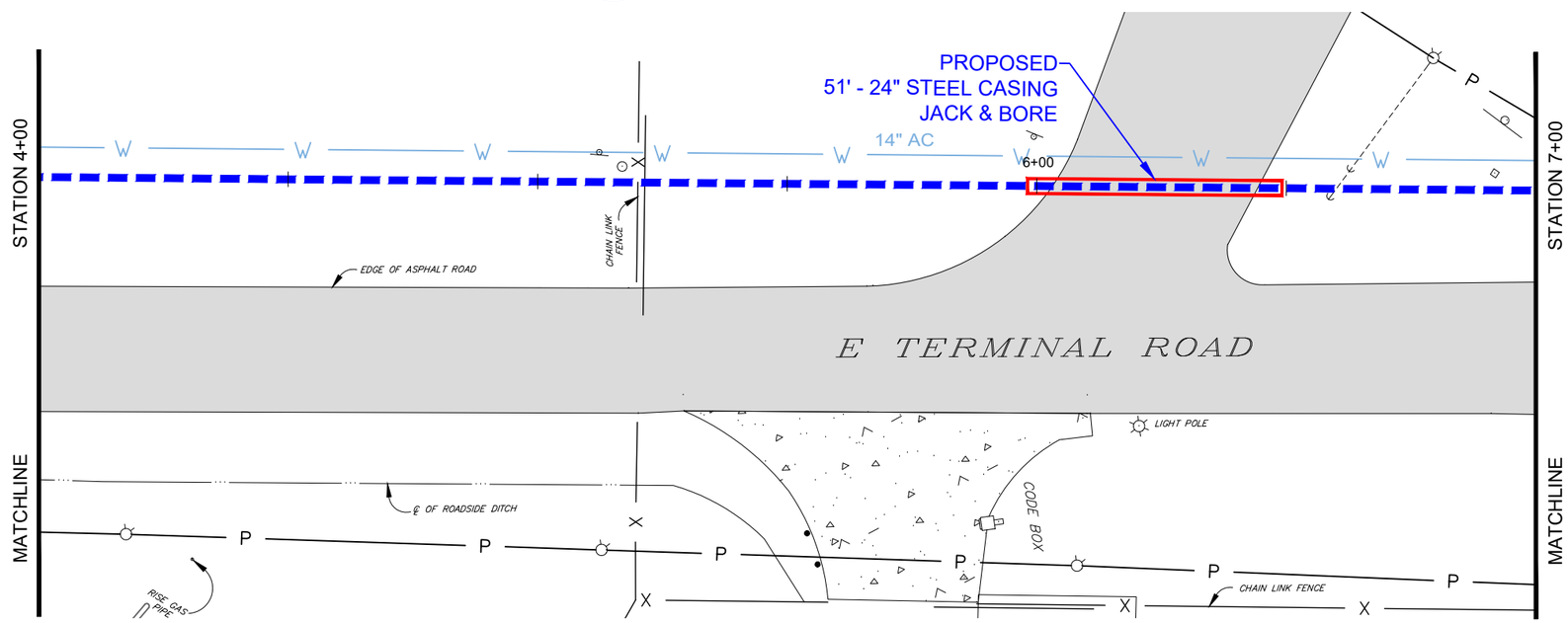


NOTES:

1. BEFORE CONSTRUCTION CALL DIGTESS (1-800-344-8311), A NON-PROFIT UTILITY SPOTTING ORGANIZATION.

2. VERIFY EXISTING WATER LINES PRIOR TO ORDERING FITTINGS.

3. ALL FITTING SHALL BE MECHANICAL JOINT UNLESS SPECIFIED IN WRITING BY THE ENGINEER.



GRAPHIC SCALE

60 30 0 30

IN FEET

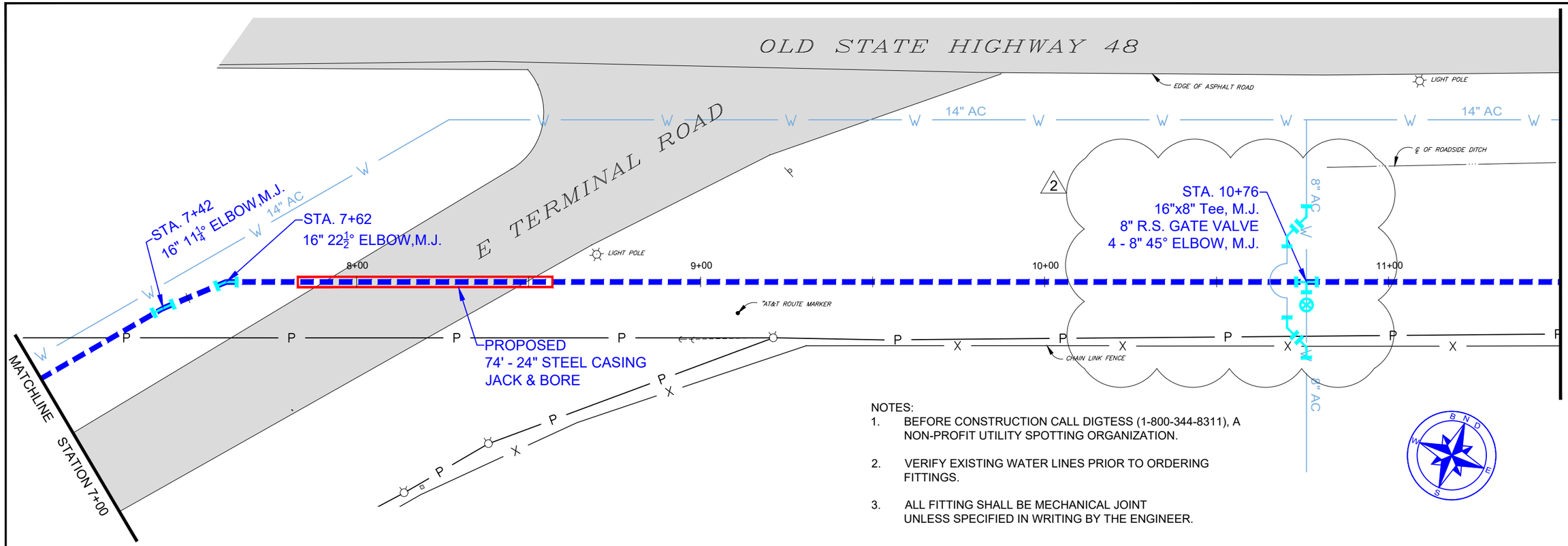
PORT OF BROWNSVILLE
the port that works

PROPOSED
16" WATERLINE
STA. 1+00 - 7+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY: P.E.	APPROVED BY:		
DATE DRAWN: June 2020	REVISION DATE:		
CHECKED BY: A. CHAVEZ II	DWG. NO.		
SCALE: AS SHOWN	FILE NAME: C:\MY DRAWINGS\62\water\2020WATERLINESREPLACEMENT\116in-OldSH48.dwg		

BROWNSVILLE NAVIGATION DISTRICT
ENGINEERING DEPARTMENT
BROWNSVILLE, TEXAS 78521
PHONE (956) 831-4592 1-800-378-5395
FAX (956) 831-6153
EMAIL achavez@portofbrownsville.com



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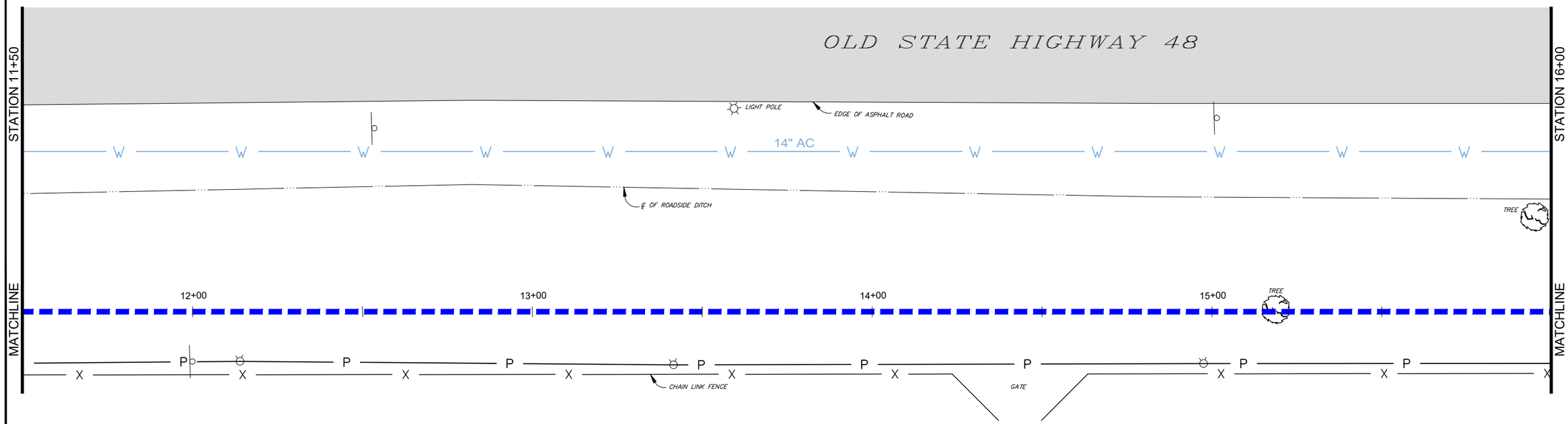

	REVISION
2	ADDENDUM #2

GRAPHIC SCALE
60 30 0 30
IN FEET

BROWNSVILLE NAVIGATION DISTRICT
ENGINEERING DEPARTMENT
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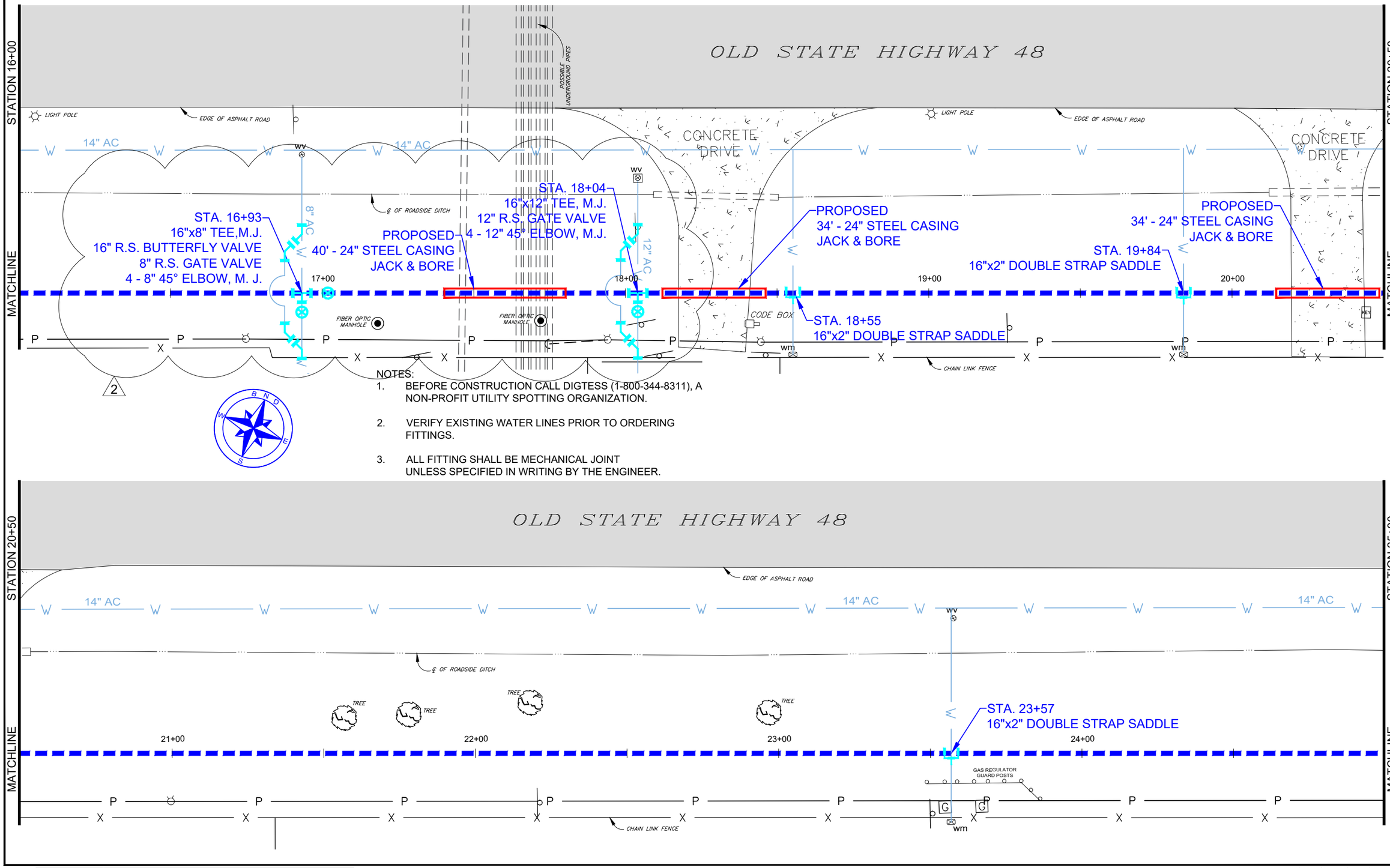
PORT OF BROWNSVILLE
the port that *works*

PROPOSED
16" WATERLINE
STA. 7+00 - 16+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
APPROVED BY :
DATE DRAWN : June 2020
REVISION DATE :
CHECKED BY : A. CHAVEZ II
DWG. NO.
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\92\water\2020WATERLINESREPLACEMENT\16in-OldSH48.dwg

SHEET 3 OF 14



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	REVISION
2	ADDENDUM #2

GRAPHIC SCALE

60 30 0 30

IN FEET

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PORT OF BROWNSVILLE
the port that *works*

PROPOSED
16" WATERLINE
STA. 16+00 - 25+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
DATE DRAWN :
CHECKED BY : A. CHAVEZ II
APPROVED BY :
REVISION DATE :
DWG. NO.
SCALE : AS SHOWN
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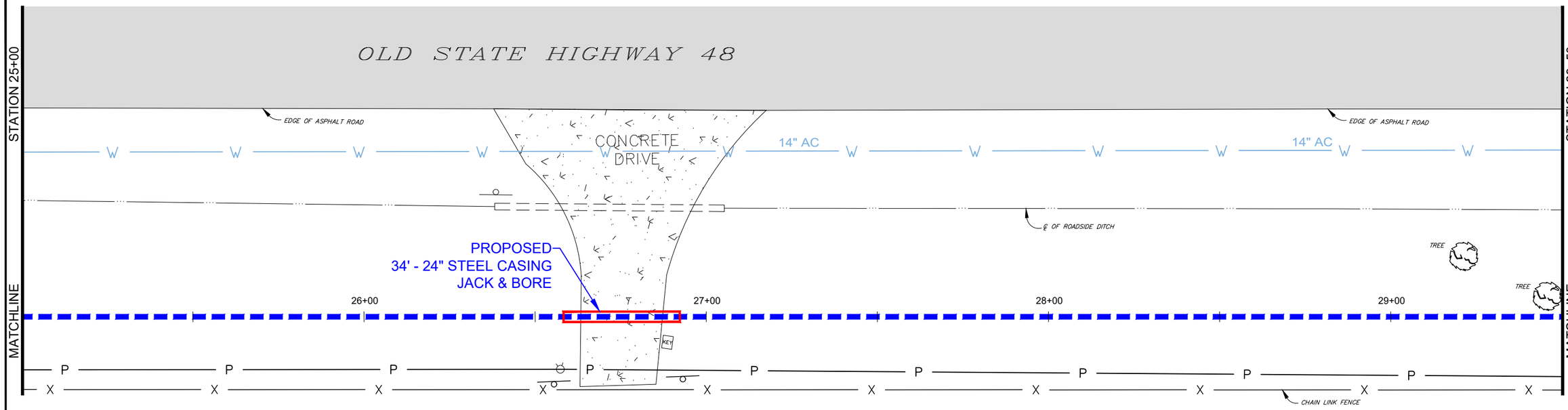
SHEET
4
OF 14



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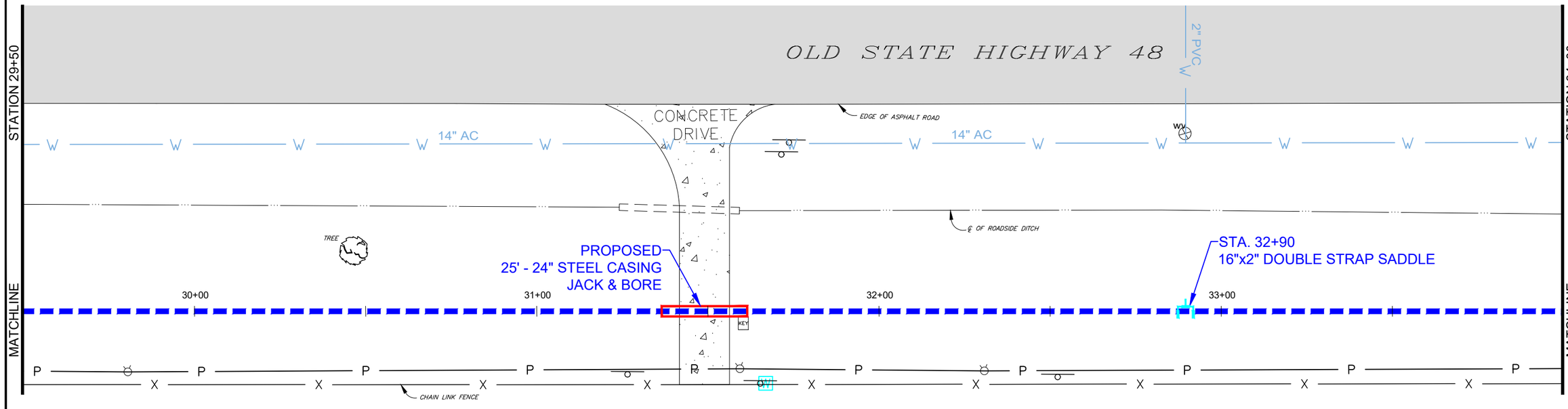

GRAPHIC SCALE

60 30 0 30

IN FEET

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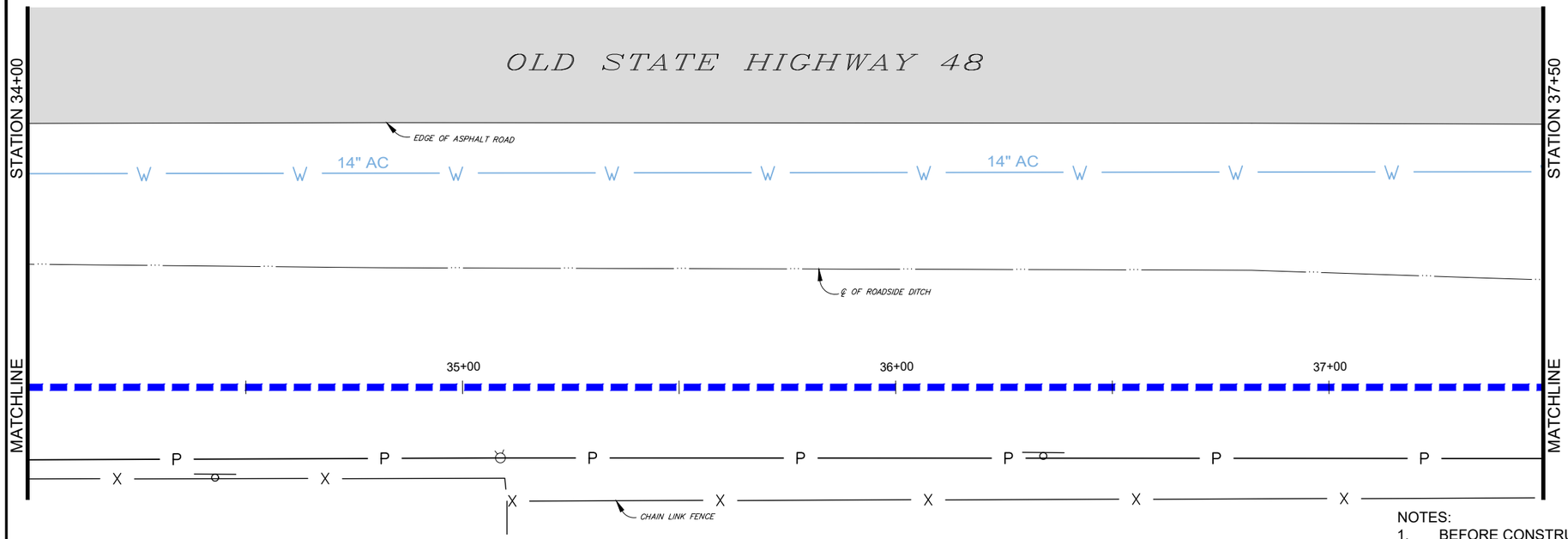
PORT OF BROWNSVILLE
the port that *works*

PROPOSED
16" WATERLINE
STA. 25+00 - 34+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
DATE DRAWN : June 2020
CHECKED BY : A. CHAVEZ II
APPROVED BY :
REVISION DATE :
DWG. NO.
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\62water\2020WATERLINES\REPLACEMENT\16in-OldSH48.dwg

SHEET
5
OF 14



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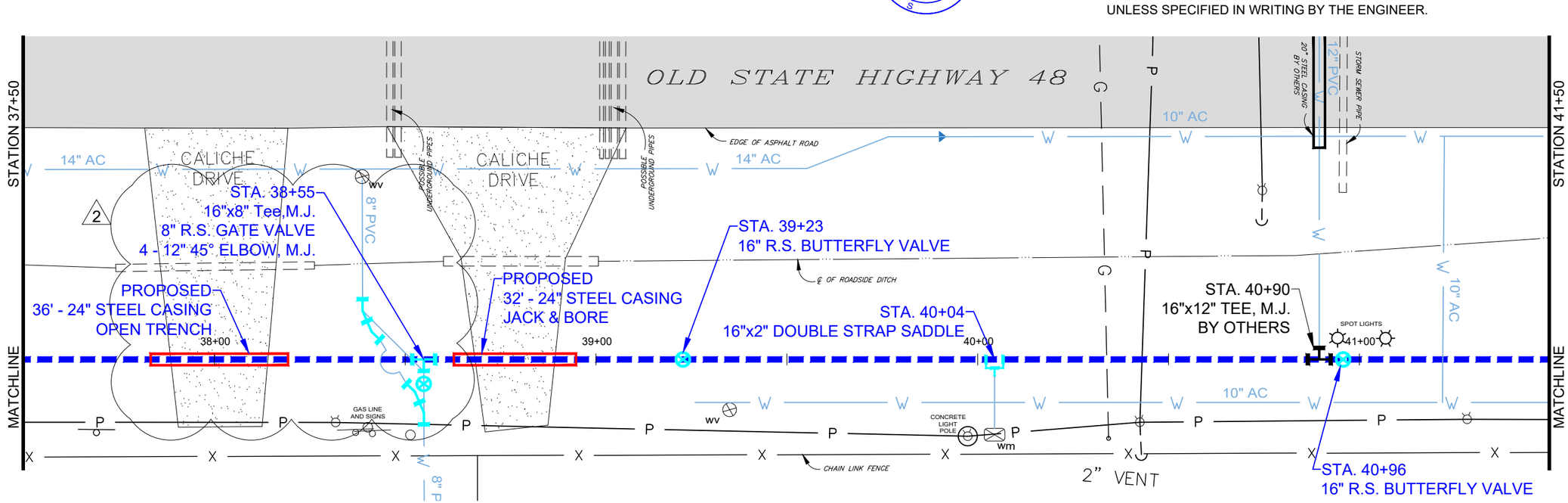

	REVISION
2	ADDENDUM #2

GRAPHIC SCALE

60 30 0 30

IN FEET

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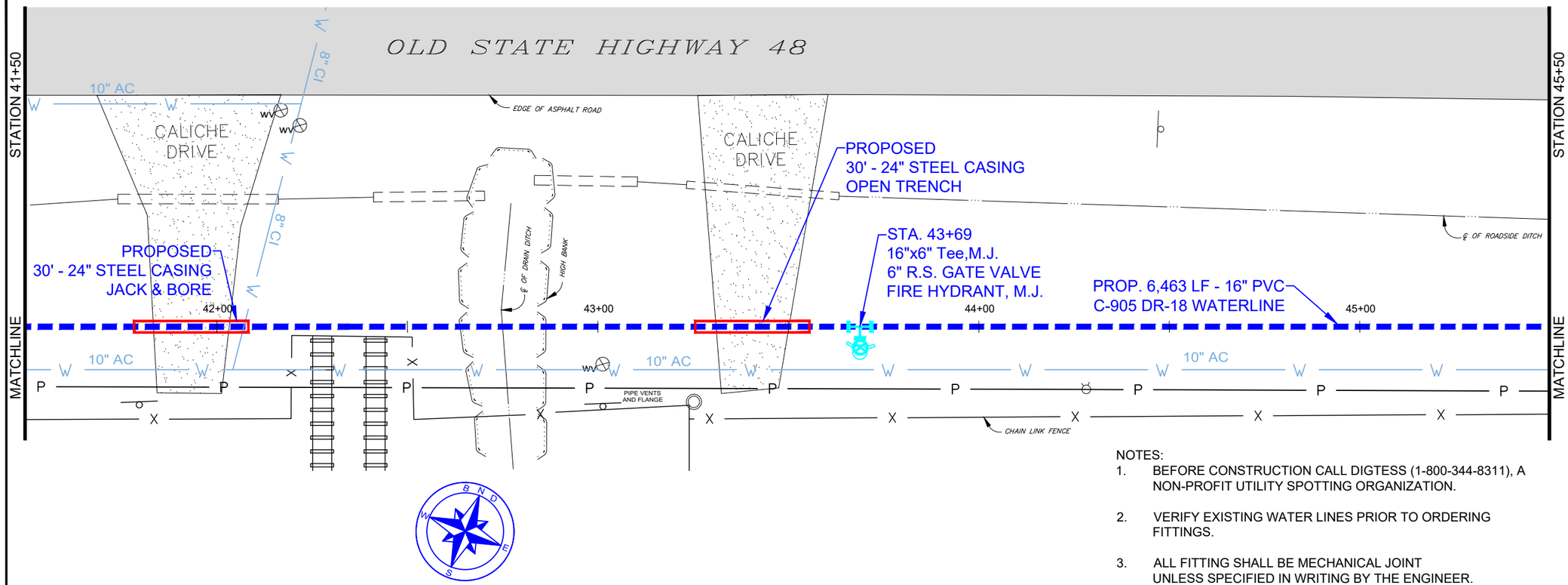
PORT OF BROWNSVILLE
the port that works

PROPOSED
16" WATERLINE
STA. 34+00 - 41+50

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
DATE DRAWN : June 2020
CHECKED BY : A. CHAVEZ II
APPROVED BY :
REVISION DATE :
DWG. NO.
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\92water\2020WATERLINESREPLACEMENT\11bn-OldSH48.dwg

SHEET 6 OF 14



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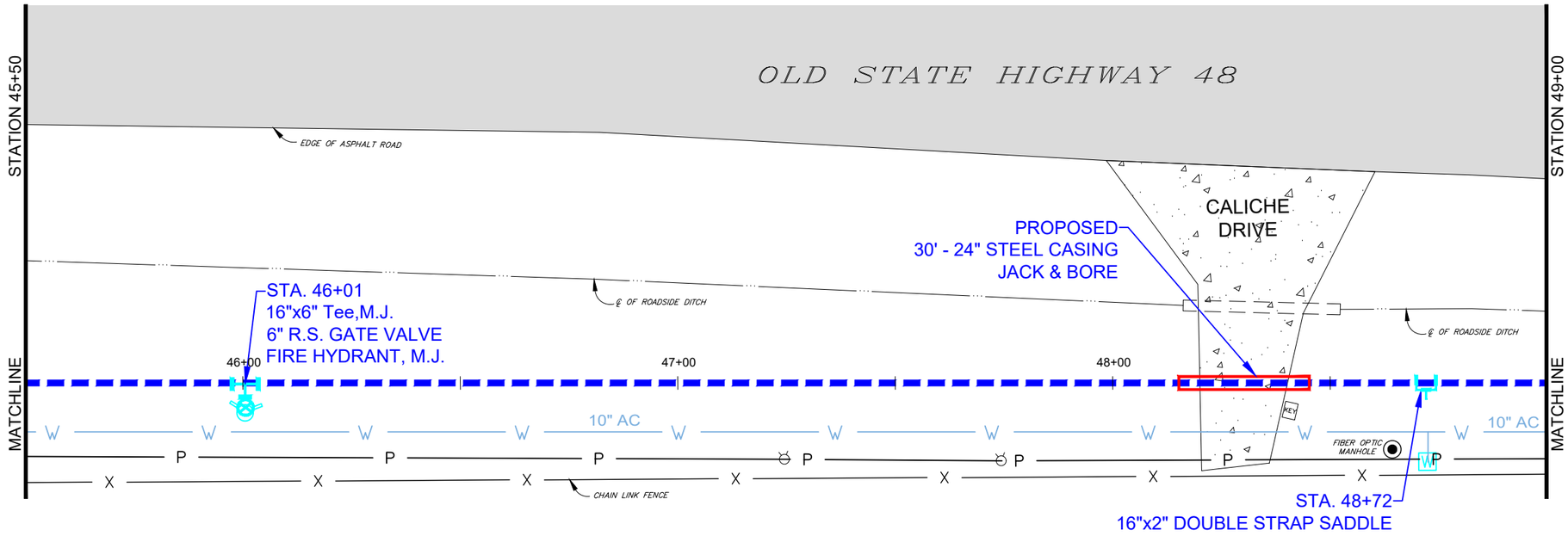

GRAPHIC SCALE

60 30 0 30

IN FEET

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PORT OF BROWNSVILLE
the port that *works*

PROPOSED
16" WATERLINE
STA. 41+50 - 49+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
APPROVED BY :
DATE DRAWN : June 2020
REVISION DATE :
CHECKED BY : A. CHAVEZ II
DWG. NO.
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\92water\2020WATERLINESREPLACEMENT\11bn-OldSH48.dwg

SHEET 7 OF 14

STA. 49+27
12" M.J. PLUG

PROP. 111 LF - 12" PVC
C-900 DR-18 WATERLINE

PROPOSED
66' - 20" STEEL CASING
JACK & BORE

STA. 49+27
16"x12" Tee,M.J.
12" R.S. GATE VALVE

PROPOSED
24' - 24" STEEL CASING
JACK & BORE

ANCHOR DRIVE

STA. 51+19
16"x2" DOUBLE STRAP SADDLE

PROPOSED
50' - 24" STEEL CASING
JACK & BORE

DENOTE UNDERGROUND PIPES

CONCRETE DRIVE

PROPOSED
70' - 24" STEEL CASING
JACK & BORE

STA. 52+60
16"x6" Tee,M.J.
6" R.S. GATE VALVE
6" M.J. COUPLING

OLD STATE HIGHWAY 48

EDGE OF ASPHALT ROAD

℄ OF ROADSIDE DITCH

CHAIN LINK FENCE

FH

wm

10" AC

STATION 49+00

STATION 53+50

MATCHLINE

50+00 51+00 52+00 53+00

NOTES:

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CALLAWAY DRIVE

STA. 54+72
16"x6" Tee,M.J.
6" R.S. GATE VALVE
6" M.J. COUPLING

STA. 55+81
16"x6" Tee,M.J.
6" R.S. GATE VALVE
6" M.J. COUPLING

PROP. 6,463 LF - 16" PVC
C-905 DR-18 WATERLINE

PROPOSED
50' - 24" STEEL CASING
JACK & BORE

GATE SENSOR

STATION 57+00

STATION 58+00

54+00 55+00 56+00 57+00

GRAPHIC SCALE
60 30 0 30
IN FEET

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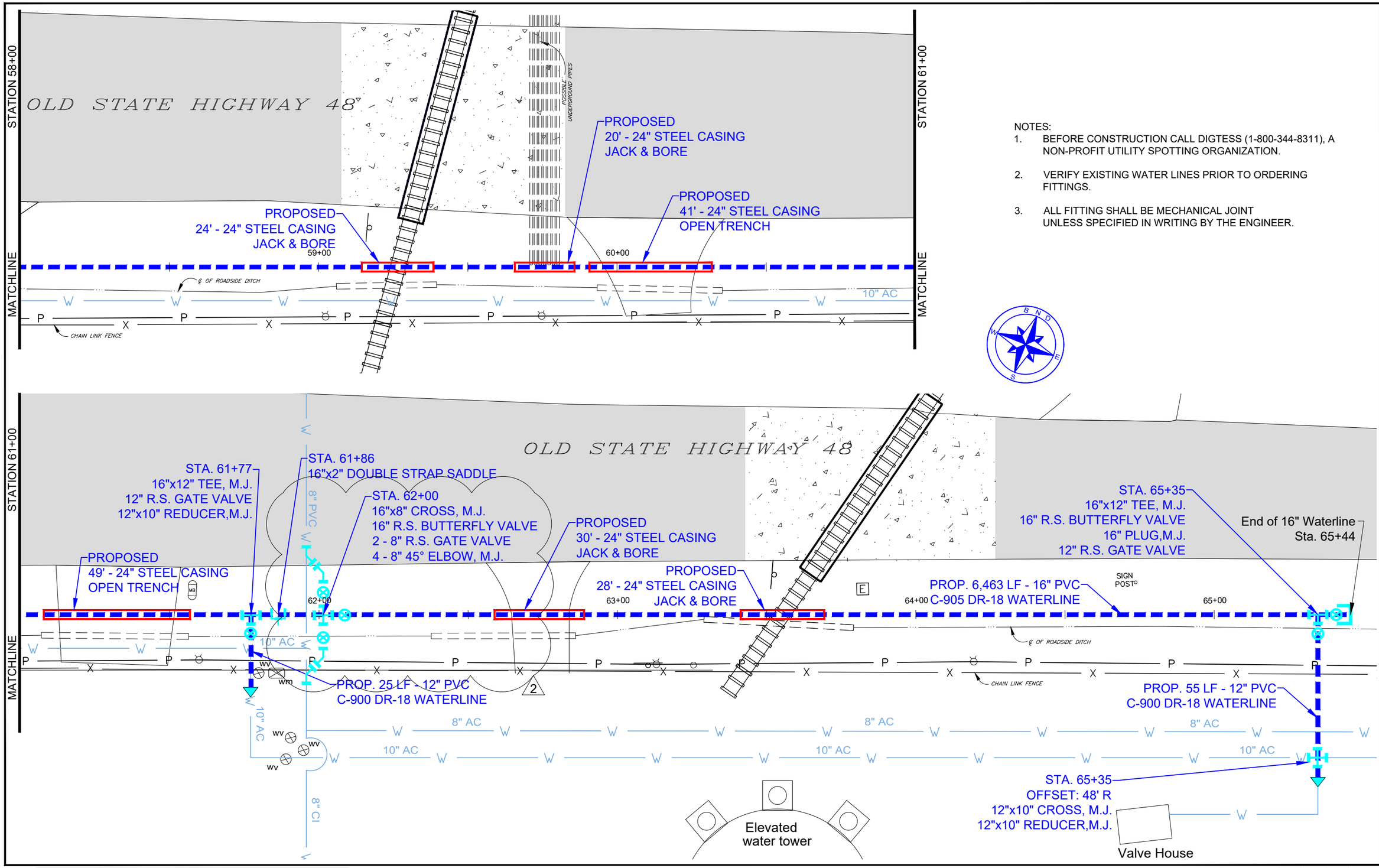
PORT OF BROWNSVILLE
the port that works

PROPOSED
16" WATERLINE
STA. 49+00 - 58+00

2020 BND WATER LINES REPLACEMENT

APPROVED BY:
REVISION DATE:
DWG. NO.
DRAWN BY: P.E.
DATE DRAWN: June 2020
CHECKED BY: A. CHAVEZ II
SCALE: AS SHOWN
FILE NAME: C:\MY DRAWINGS\62w\water\2020WATERLINESREPLACEMENT\16in-OldSH48.dwg

SHEET
8
OF 14



NOTES:

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	REVISION
2	ADDENDUM #2

GRAPHIC SCALE

60 30 0 30

IN FEET

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ENGINEERING DEPARTMENT
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PHONE (956) 831-4592 1-800-378-5395
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EMAIL achavez@portofbrownsville.com

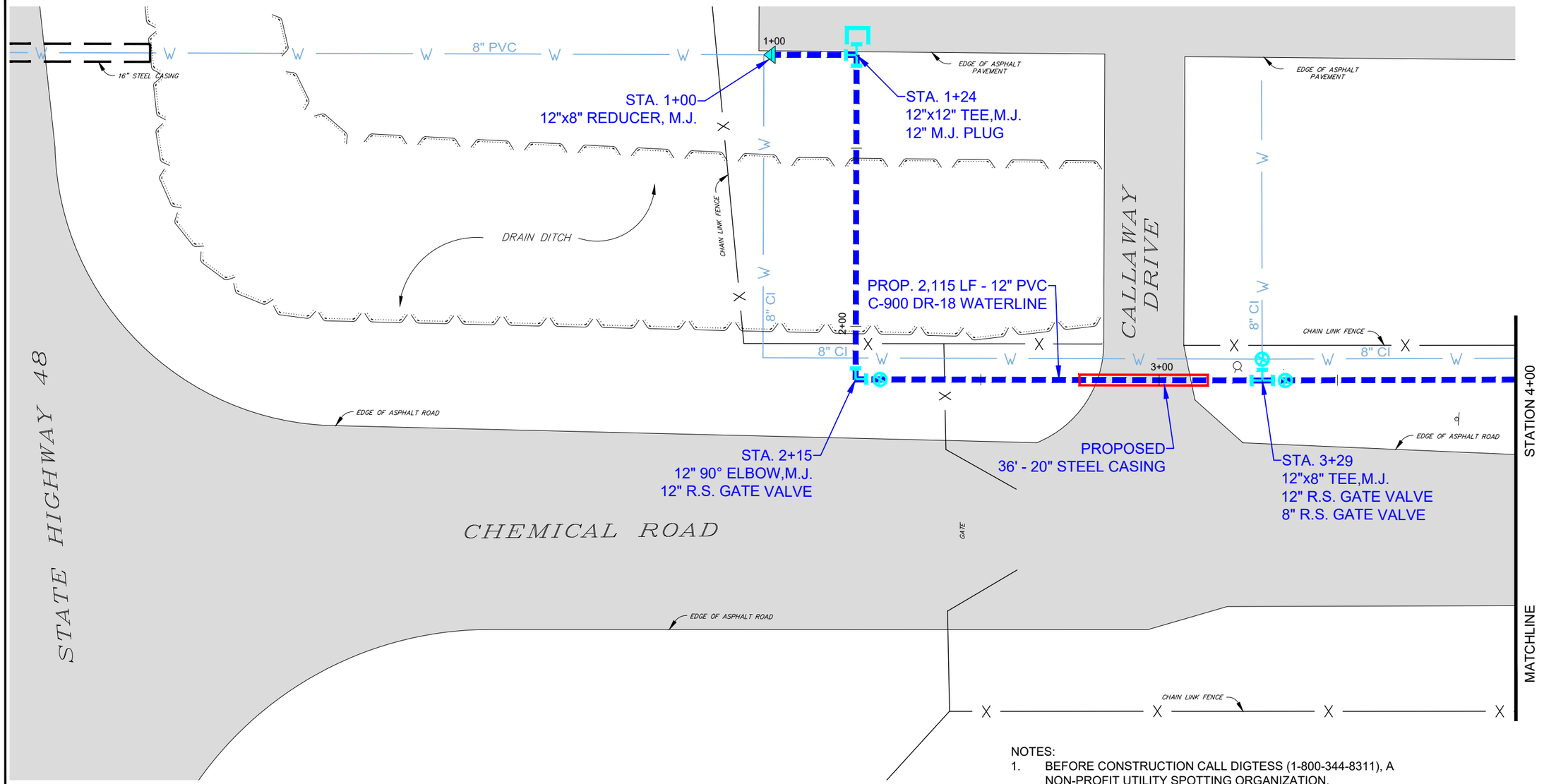
PORT OF BROWNSVILLE
the port that works

PROPOSED
16" WATERLINE
STA. 58+00 - 65+44

2020 BND WATER LINES REPLACEMENT

APPROVED BY :
REVISION DATE :
DRAWN BY : P.E.
DWG. NO.
DATE DRAWN : June 2020
CHECKED BY : A. CHAVEZ II
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\92\water\2020WATERLINESREPLACEMENT\116in-OldSH48.dwg

SHEET
9
OF 14



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GRAPHIC SCALE

60 30 0 30

IN FEET

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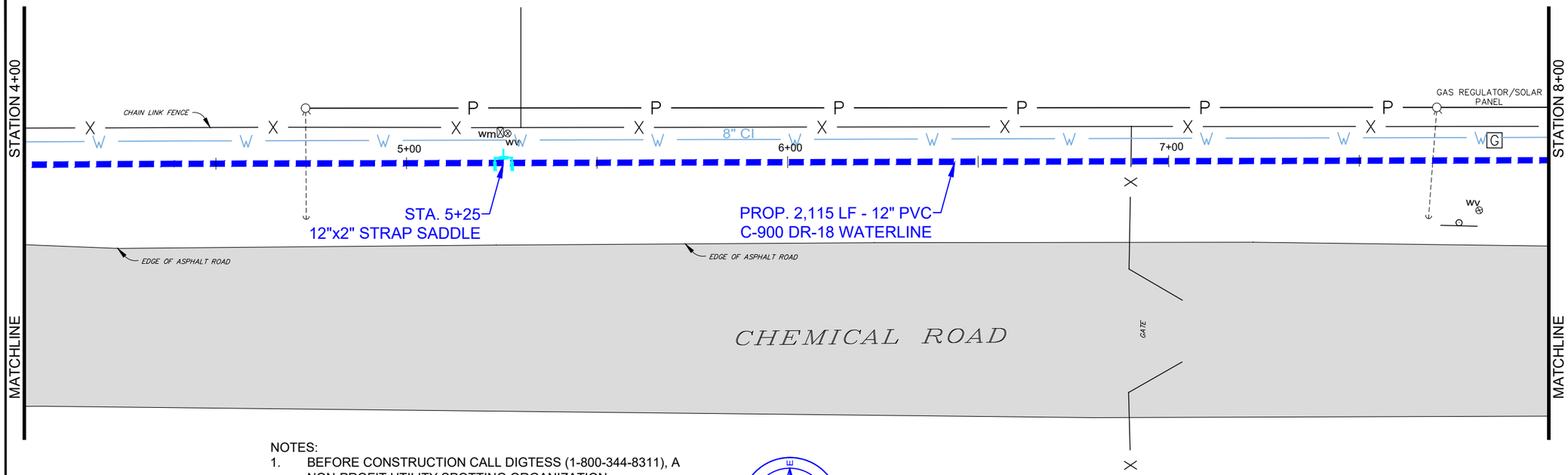
PORT OF BROWNSVILLE
the port that *works*

PROPOSED
12" WATERLINE
STA. 1+00 - 4+00

2020 BND WATER
LINES REPLACEMENT

DRAWN BY: P.E.
DATE DRAWN: June 2020
CHECKED BY: A. CHAVEZ II
SCALE: AS SHOWN
APPROVED BY:
REVISION DATE:
DWG. NO.
FILE NAME: C:\MY DRAWINGS\62water\2020WATERLINESREPLACEMENT\112in-Chemical.dwg

SHEET
10
OF 14



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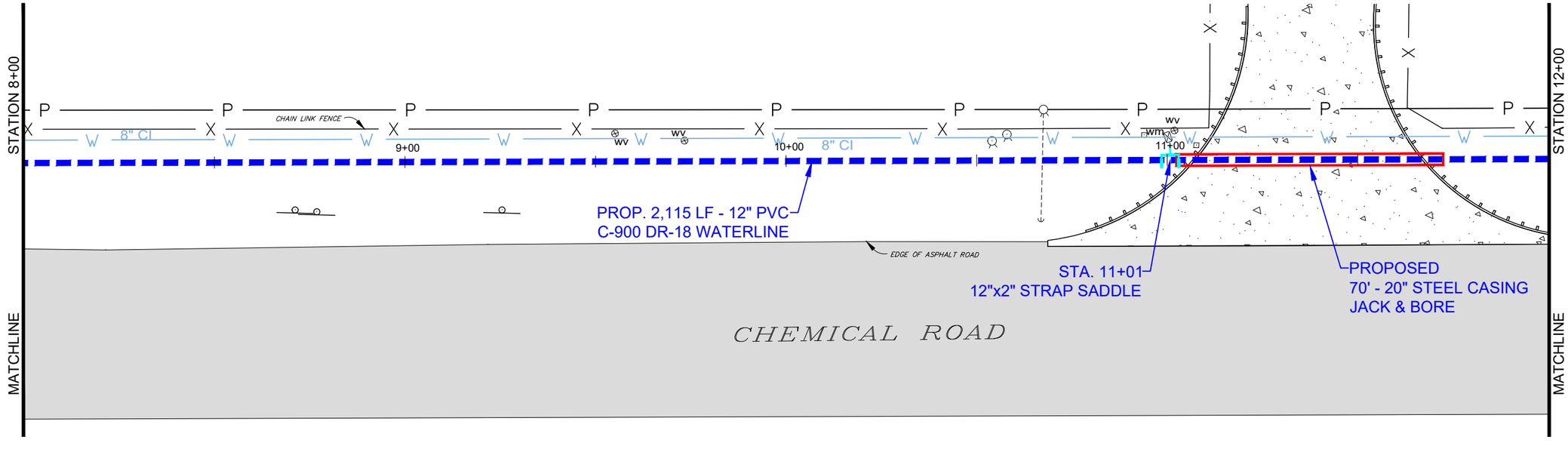

GRAPHIC SCALE

60 30 0 30

IN FEET

PORT OF BROWNSVILLE
the port that *works*

PROPOSED
12" WATERLINE
STA. 4+00 - 12+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
DATE DRAWN : June 2020
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APPROVED BY :
REVISION DATE :
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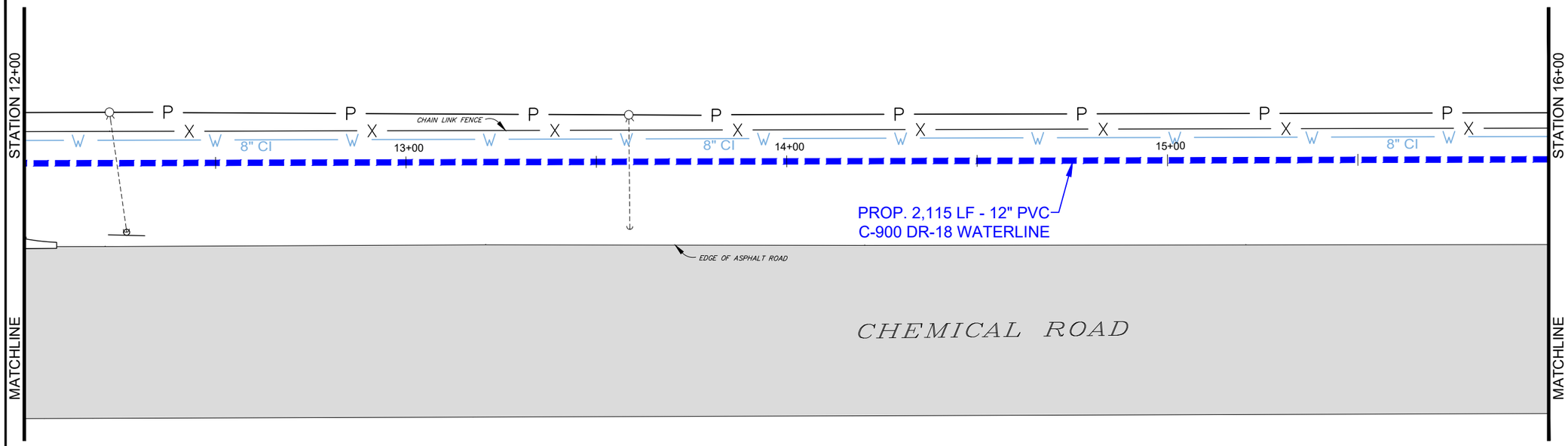

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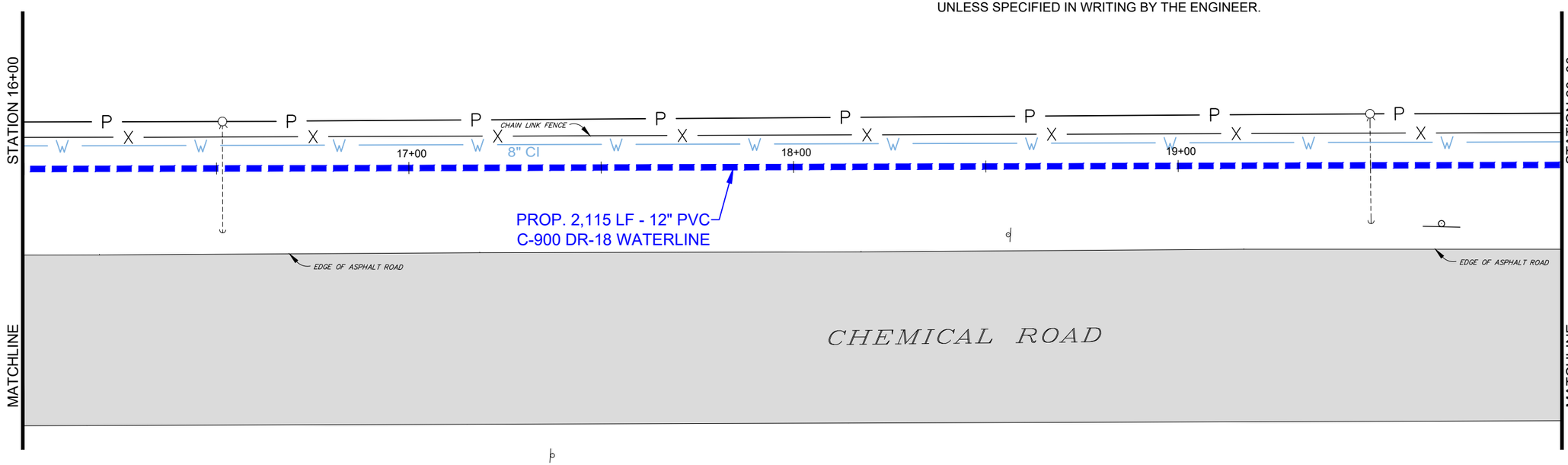

GRAPHIC SCALE

60 30 0 30

IN FEET

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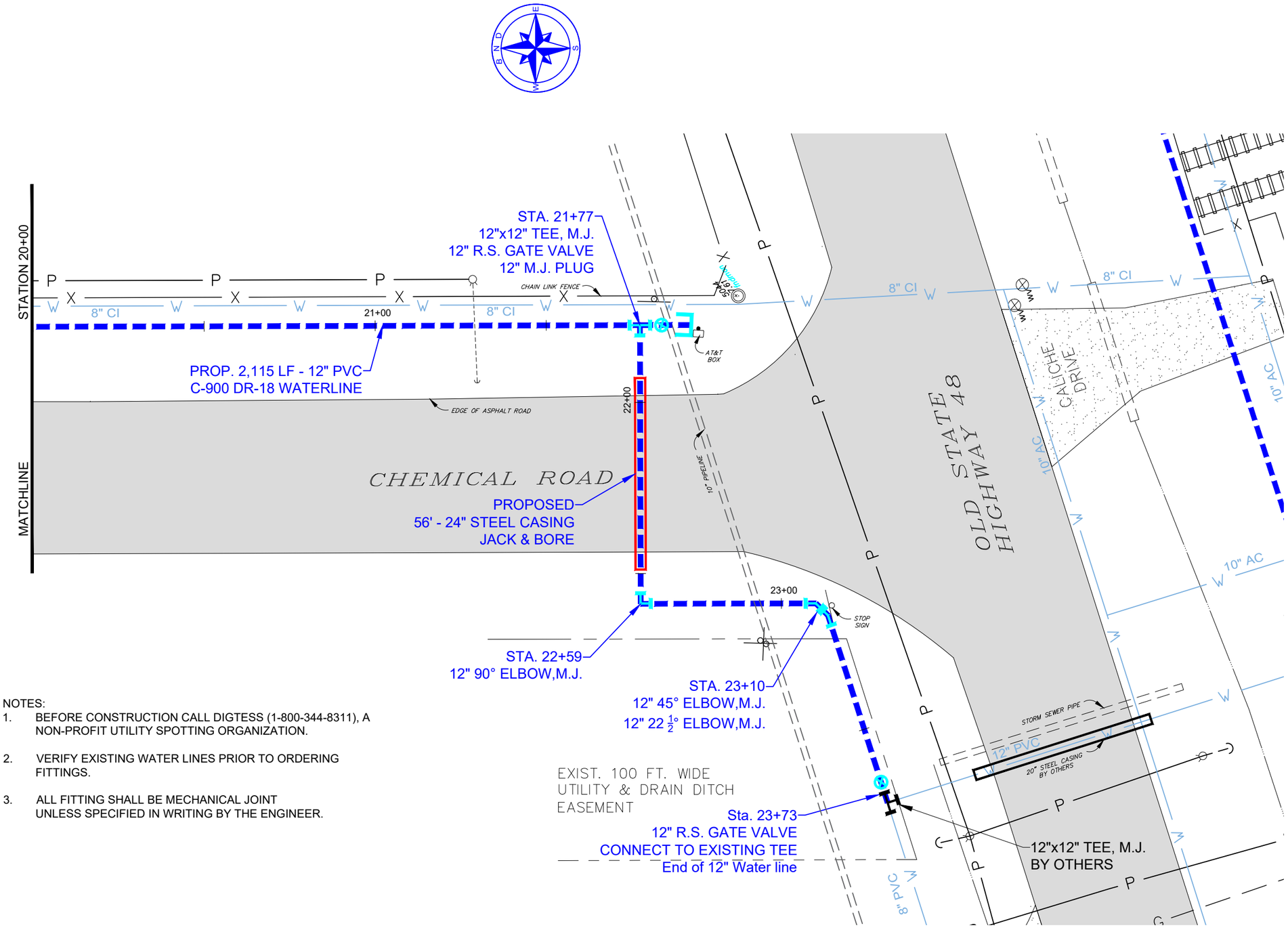
PORT OF BROWNSVILLE
the port that *works*

PROPOSED
12" WATERLINE
STA. 12+00 - 20+00

2020 BND WATER LINES REPLACEMENT

DRAWN BY : P.E.
DATE DRAWN : June 2020
CHECKED BY : A. CHAVEZ II
APPROVED BY :
REVISION DATE :
DWG. NO.
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\62water\2020WATERLINESREPLACEMENT\12in-Chemical.dwg

SHEET
12
OF 14



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GRAPHIC SCALE
60 30 0 30
IN FEET

PORT OF BROWNSVILLE
the port that works

PROPOSED
12" WATERLINE
STA. 21+50 - 23+13

2020 BND WATER LINES REPLACEMENT

APPROVED BY :
REVISION DATE :
DRAWN BY : P.E.
DATE DRAWN : June 2020
DWG. NO.
CHECKED BY : A. CHAVEZ II
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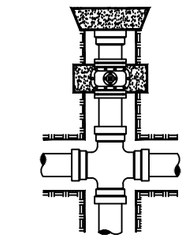
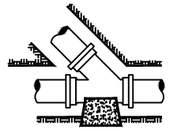
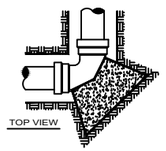
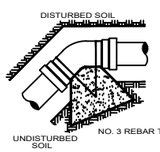

TOP VIEW

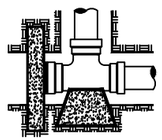

TOP VIEW


TOP VIEW

TOP VIEW



VERTICAL VIEW


TOP VIEW

THRUST BLOCK DETAILS
NOT TO SCALE

ALL MJ FITTINGS WILL REQUIRE RESTRAINERS (MEGA LUGS) WITH THRUST BLOCKS

NOTES ON THRUST BLOCKING

1. ALL BLOCKING SHALL BE AGAINST UNDISTURBED HAND DUG SOIL AND SHALL BE CONCRETE HAVING A MINIMUM 28 DAY STRENGTH OF 2000 LBS. PER SQUARE INCH

2. THRUST CALCULATIONS TO BE BASED ON THRUST DUE TO WATER PRESSURE AT 100% OF TEST PRESSURE. THRUST = 2 AP SIN 1/2 Ø WHERE A = AREA OF PIPE, P = WATER PRESSURE, Ø = DEFLECTION ANGLE.

3. VERTICAL UPLIFT BLOCKS SHALL BE DESIGNED ON THE BASIS OF 150 LBS. PER CU. FT. FOR CONCRETE AND SOIL AT 120 LBS. PER CU. FT. OVER THE AREAOF BLOCK.

4. VERTICAL DOWN THRUST BLOCKS SHALL BE DESIGNED ON THE BASIS OF 2000 LBS. PER SQ. FT. ALLOWABLE SOIL BEARING PRESSURE. DIMENSION MAY BE DECREASED WITH APPROVAL OF THE ENGINEER IF MEASURED SOIL CONDITIONS PERMIT. IN POOR SOIL CONDITIONS, BLOCK DIMEMSIONS SHALL BE INCREASED IN PROPORTION TO ALLOWABLE BEARING VALUE.

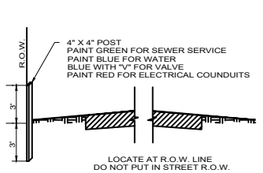
5. THRUST BLOCKS ON HORIZONTAL BENDS, TEES, CROSSES, AND REDUCERS SHALL BE SIZED BASED ON 24000 LBS. PER SQ. FT. OF BLOCKING SURFACE AREA IN CONTACT WITH UNDISTURBED SOIL, BLOCK DIMENSIONS MAY BE DECREASED WITH APPROVAL OF THE ENGINEER IF MEASURED SOIL CONDITIONS PERMIT. IN POOR SOIL CONDITIONS, BLOCK DIMENSIONS SHALL BE INCREASED IN PROPOERTION TO THE ALLOWABLE BEARING VALUE.

6. ALL BLOCKING SHALL HAVE A MINUMUM SOIL COVER OF 1 FT.

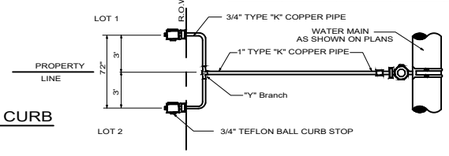
7. ADDITIONAL REINFORCING MAY BE REQUIRED FOR HORIZONTAL BLOCKING TO HANDLE UNUSUAL SHEAR LOADING CONDITIONS.

GENERAL DATA FOR BLOCKING STANDARD FITTING

PIPE SIZE	THRUST IN TONS EXERTED AT PLUGS, TEES AND BENDS FOR EACH 100 LBS. PER SQ. IN. OF TEST PRESSURE					
	PLUG	TEE	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
4"	0.63	0.63	0.89	0.48	0.25	0.12
6"	1.40	1.40	2.00	1.08	0.55	0.28
8"	2.50	2.50	3.55	1.92	0.98	0.49
10"	3.93	3.93	5.55	3.00	1.53	0.77
12"	5.65	5.65	8.00	4.33	2.21	1.11
14"	7.70	7.70	10.88	5.89	3.00	1.51
16"	10.05	10.05	14.21	7.69	3.85	1.97
18"	12.70	12.70	17.99	9.74	4.96	2.49
20"	15.71	15.71	22.22	12.02	6.13	3.08
24"	22.67	22.67	32.00	17.31	8.83	4.43
27"	28.63	28.63	40.48	21.91	11.17	5.61
30"	35.35	35.35	50.00	27.08	13.79	6.93
36"	50.90	50.90	72.98	38.95	19.89	9.98
42"	69.27	69.27	97.97	53.02	27.03	13.58
48"	90.48	90.48	127.96	69.25	35.30	17.74
54"	114.51	114.51	161.94	87.64	44.68	22.45

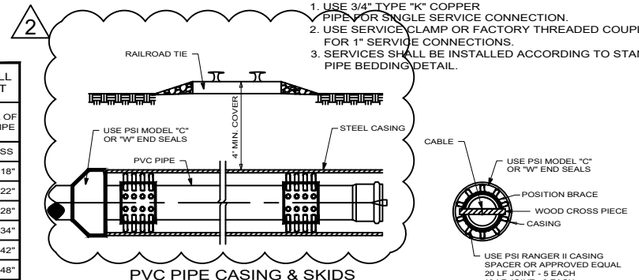


SERVICE MARKING FOR NO CURB
NOT TO SCALE



TYPICAL DOUBLE SERVICE CONNECTION
NOT TO SCALE

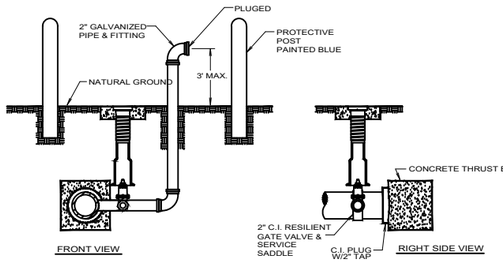
NOTE:
1. USE 3/4" TYPE "K" COPPER PIPE FOR SINGLE SERVICE CONNECTION.
2. USE SERVICE CLAMP OR FACTORY THREADED COUPLING FOR 1" SERVICE CONNECTIONS.
3. SERVICES SHALL BE INSTALLED ACCORDING TO STANDARD PIPE BEDDING DETAIL.



PVC PIPE CASING & SKIDS
NOT TO SCALE

NOMINAL PIPE SIZE	CASING SIZE	NO. OF SKIDS
6"	12"	4
8"	16"	4
12"	20"	4
16"	24"	5

STEEL CASING WALL THICKNESS CHART	
MINIMUM THICKNESS	DIAMETER OF CASING PIPE
1/4"	12" OR LESS
5/16"	OVER 12"-18"
3/8"	OVER 18"-22"
7/16"	OVER 22"-28"
1/2"	OVER 28"-34"
9/16"	OVER 34"-42"
5/8"	OVER 42"-48"
OVER 48" MUST BE APPROVED BY B.P.U.B. NOTE: THIS CHART IS ONLY FOR SMOOTH STEEL CASING PIPES WITH MINIMUM YIELD STRENGTH OF 35,000 PSI	

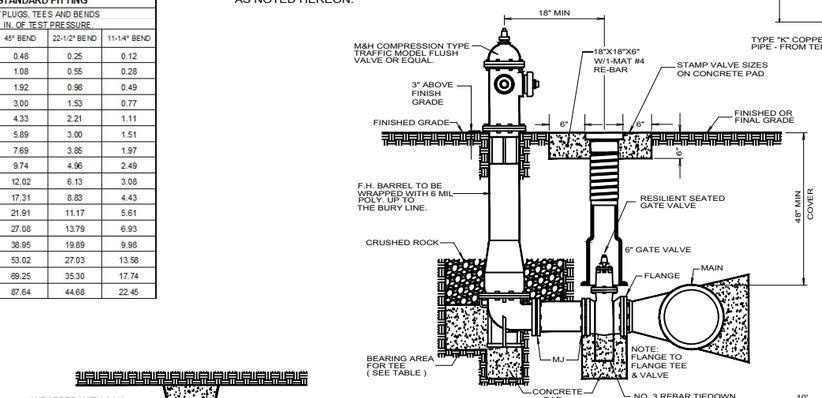


TEMP: DEAD END BLOWOFF
NOT TO SCALE

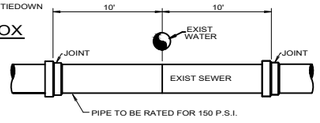
NOTE

1. A BLOWOFF TAP, AS SHOWN ON THE DETAIL HEREON SHALL BE PROVIDED AT ALL DEAD ENDS FOR RELEASING TRAPPED AIR TO AID IN FLUSHING, AND FOR SAMPLING FOR TESTING.

2. CONCRETE THRUST BLOCKS SHALL BE REQUIRED AT PLUGS, AS WELL AS AT ALL OTHER LOCATIONS AS NOTED HEREON.

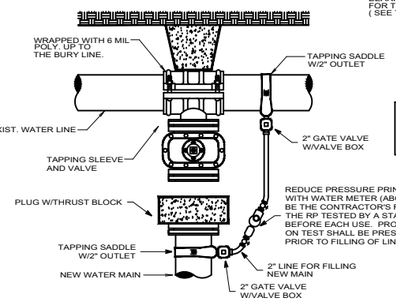


FIRE HYDRANT
NOT TO SCALE



VALVE & BOX

NOTE:
16" DR-18 PIPE AT 16" BUTTERFLY VALVES MUST BE BEVELED TO ALLOW THE VALVE TO OPEN AND CLOSE PROPERLY.

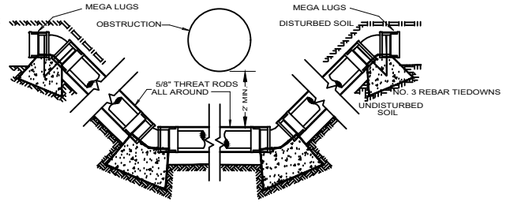


METHOD FOR FILLING AND FLUSHING NEW WATER LINES
NOT TO SCALE

NOTE:

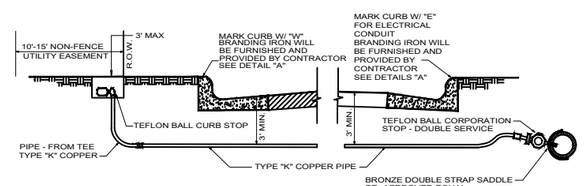
WATER USAGE FOR ALL INITIAL TESTING WILL NOT BE BILLED TO THE CONTRACTOR. ANY RE-TESTING NEEDED WILL BE THE RESPONSIBILITY OF THE CONTRACTOR INCLUDING PAYMENT OF ADDITIONAL WATER NEEDED. CONTRACTOR WILL BE ALLOWED TO FLUSH THE WATERLINE INITIALLY FOR A MAXIMUM OF 12-24 HRS. OR AS DETERMINED BY THE ENGINEER. IF FLUSHING IS DETERMINED TO BE LONGER, THE ENGINEER WILL BE REQUIRED TO SUPPLY THE PROPER DOCUMENTATION AND CALCULATIONS TO SUPPORT SUCH FINDINGS.

AMOUNT OF FLOW TO BE USED FOR FLUSHING WILL BE MONITORED AND REGULATED BY THE BPUB INSPECTORS. CONTRACTOR WILL NOT BE ALLOWED TO TIE-IN TO EXISTING WATER LINE UNTIL ALL TEST ON NEW LINES HAVE BEEN COMPLETED AND APPROVED.



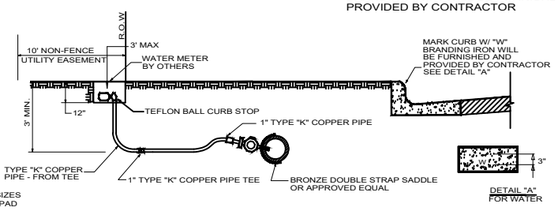
ADJUSTMENTS
NOT TO SCALE

SPECIAL CONDITION LINE ADJUSTMENTS
5/8" GALV. ALL THREAT RODS WITH EYELET BOLTS FOR ASSEMBLY WITH THRUST BLOCKS



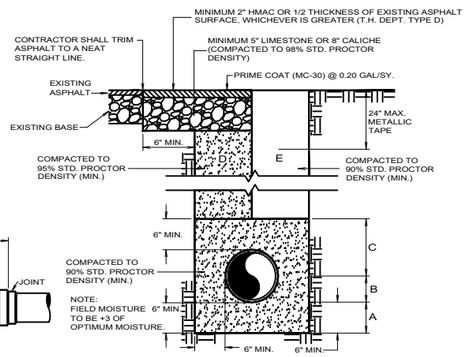
TYPICAL LONG SERVICE
NOT TO SCALE

NOTE:
1. USE 3/4" TYPE "K" COPPER PIPE FOR SINGLE SERVICE CONNECTION
2. 36" MIN. COVER FOR 3/4" THRU 2" SERVICES
3. MARK CURB W/"V" AT WATER VALVE LOCATIONS, BRANDING IRON WILL BE FURNISHED AND PROVIDED BY CONTRACTOR



TYPICAL SHORT SERVICE
NOT TO SCALE

NOTE:
1. USE 3/4" TYPE "K" COPPER PIPE FOR SINGLE SERVICE CONNECTION



TYPICAL PIPE BEDDING AND TRENCH BACKFILL DETAIL
NOT TO SCALE

A SAND BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE (MIN. THICKNESS = 6").

B SAND BACKFILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE (4" LIFTS, HAND TAMPED).

C SAND BACKFILL PLACED FROM SPRING LINE OF PIPE TO 6" ABOVE TOP OF PIPE (6" LIFTS, HAND TAMPED).

D SAND BACKFILL, CLASS "A" (6" LIFTS, MECHANICAL COMPACTION).

E EARTH BACKFILL, CLASS "B" (12" LIFTS, MECHANICAL COMPACTION).

FOUNDATION PREPARATION (WELLPOINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.

BACKFILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO 95% STD. PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL NOT EXCEED 6". STRUCTURE BACKFILL MATERIAL SHALL BE SAND, APPROVED SITE SOIL, OR OTHER APPROVED SUBSTITUTE.

	REVISION
2	ADDENDUM #2

BROWNSVILLE NAVIGATION DISTRICT
ENGINEERING DEPARTMENT
BROWNSVILLE, TEXAS 78521
PHONE (956) 831-4592 1-800-378-5395
FAX (956) 831-6153
EMAIL achavez@portofbrownsville.com

PORT OF BROWNSVILLE
the port that works

WATERLINE INSTALLATION DETAILS

2020 BND WATER LINES REPLACEMENT

DRAWN BY: P.E.
APPROVED BY:
DATE DRAWN: June 2020
REVISION DATE:
CHECKED BY: A CHAVEZ II
DWG. NO.
SCALE: AS SHOWN
FILE NAME: C:\MY DRAWINGS\02water\2020WATERLINESREPLACEMENT\WaterDetails.dwg

SHEET 14 OF 14