CITY OF TURLOCK
CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS
AT W. MAIN ST. & S. TEGNER RD.
CML-5165 (081)

LEGEND

	BENCHMARK
	EX. MONUMENT WELL
	EX. MONUMENTS
	EX. SET MONUMENT
101.97 C	EX. CONCRETE ELEVATION
101.39 FL	EX. FLOWLINE OF CURB ELEVATION
101.39 BSW	EX. BACK OF SIDEWALK ELEVATION
101.14 P	EX. PAVEMENT ELEVATION
101.5	EX. GROUND ELEVATION
	PROPERTY LINE
	CENTERLINE
	EX. FENCE
8" SS	EX. SANITARY SEWER PIPELINE
36" IRR	EX. IRRIGATION PIPELINE
18" SD	EX. STORM DRAIN PIPELINE
12" W	EX. WATER PIPELINE
SSMH	EX. SANITARY SEWER MANHOLE
SDMH	EX. STORM DRAIN MANHOLE
	EX. WATER VALVE
	EX. WATER WELL
	EX. NON-POTABLE WATER VALVE
MH	EX. MANHOLE
TMH	EX. TELEPHONE MANHOLE
PMH	EX. PRESSURE MANHOLE
SSCO	EX. SANITARY SEWER CLEAN OUT
FH	EX. FIRE HYDRANT
GV	EX. GAS VALVE
	EX. CATCH BASIN
	EX. DRAIN INLET
HW	EX. TRAFFIC SIGNAL HAND WELL
	EX. TRAFFIC SIGNAL LOOP DETECTOR
GP	EX. BOLLARD
	EX. LIGHT
	EX. STREET LIGHT
	EX. SIGN
PP	EX. POWER POLE
TP	EX. TELEPHONE POLE
JP	EX. JOINT UTILITY POLE
GP	EX. GUY POLE
SP	EX. UTILITY SERVICE POLE
	EX. TREE
C	EX. CABLE CHRISTY BOX
E	EX. ELECTRICAL CHRISTY BOX
F	EX. FIRE ALARM CHRISTY BOX
G	EX. GAS CHRISTY BOX
I	EX. IRRIGATION CHRISTY BOX
L	EX. STREET LIGHT CHRISTY BOX
M	EX. COMMUNICATION CHRISTY BOX
R	EX. TRAFFIC CHRISTY BOX
S	EX. IRRIGATION CONTROL VALVE BOX
T	EX. TELEPHONE CHRISTY BOX
U	EX. UTILITY CHRISTY BOX
W	EX. WATER CHRISTY BOX
42"IRR	PROP. IRRIGATION PIPELINE
	PROP. HOT MIX ASPHALT
	PROP. CONCRETE

ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
AP	ANGLE POINT
APN	ASSESSORS PARCEL NUMBER
AV	AIR VENT
BC	BEGINNING OF CURVE
BO	BLOWOFF
BSW	BACK OF SIDEWALK
C	CONCRETE
CB	CATCH BASIN
CL	CENTERLINE
CY	CUBIC YARD
DI	DROP INLET
EC	END OF CURVE
EP	EDGE OF PAVEMENT
EX	EXISTING
FH	FIRE HYDRANT
FL	FLOWLINE
FM	FORCE MAIN
GB	GRADE BREAK
GP	GUY POLE
HMA	HOT MIX ASPHALT
HP	HIGH POINT
HW	HANDWELL
IDP	IRRIGATION DISTRIBUTION BOX
INV	INVERT
IRR	IRRIGATION
ISP	IRRIGATION STAND PIPE
IV	IRRIGATION VALVE
JP	JOINT UTILITY POLE
L	LENGTH
LF	LINEAR FOOT
LP	LOW POINT
MB	MAILBOX
NPW	NON-POTABLE WATER
OC	ON CENTER
P	PAVEMENT
PCC	POINT OF COMPOUND CURVE
PL	PROPERTY LINE
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PROP	PROPOSED
R	RADIUS
RHMA	RUBBERIZED HOT MIX ASPHALT
ROW	RIGHT OF WAY
RW	RAW WATER
S	SLOPE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SF	SQUARE FEET
SMMH	SANITARY SEWER MANHOLE
SP	SERVICE POLE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEANOUT
TC	TOP OF CURB
TMH	TELEPHONE MANHOLE
TP	TELEPHONE POLE
TYP	TYPICAL
UG	UNDERGROUND
UP	UTILITY POLE
W	POTABLE WATER

VICINITY MAP

SHEET INDEX

CONTACTS

CITY OF TURLOCK, MUNICIPAL SERVICES DEPARTMENT
(209) 668-5520 ENGINEERING DIVISION

CITY OF TURLOCK, MUNICIPAL SERVICES DEPARTMENT
(209) 668-5590 FOR SEWER, STORM AND WATER LINES

TURLOCK IRRIGATION DISTRICT (ELECTRICAL)
(209) 883-8419 ED JEFFERS

TURLOCK IRRIGATION DISTRICT (IRRIGATION)
(209) 883-8367 TODD TROGLIN

CHARTER COMMUNICATIONS
(209) 633-3033 ABRAHAM ZAMORA

PACIFIC GAS & ELECTRIC (GAS)
(209) 561-6070 TRENT MILLSAP

AT&T
(209) 507-1689 JIM JELLEY

FIRE DEPARTMENT (NON-EMERGENCY)
(209) 668-5580

POLICE DEPARTMENT (NON-EMERGENCY)
(209) 668-1200

AMBULANCE
(209) 632-2271

TURLOCK SCAVENGER
(209) 668-7274

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NOTE:
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WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. MORRIS
No. 55910
CIVIL
STATE OF CALIFORNIA

CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

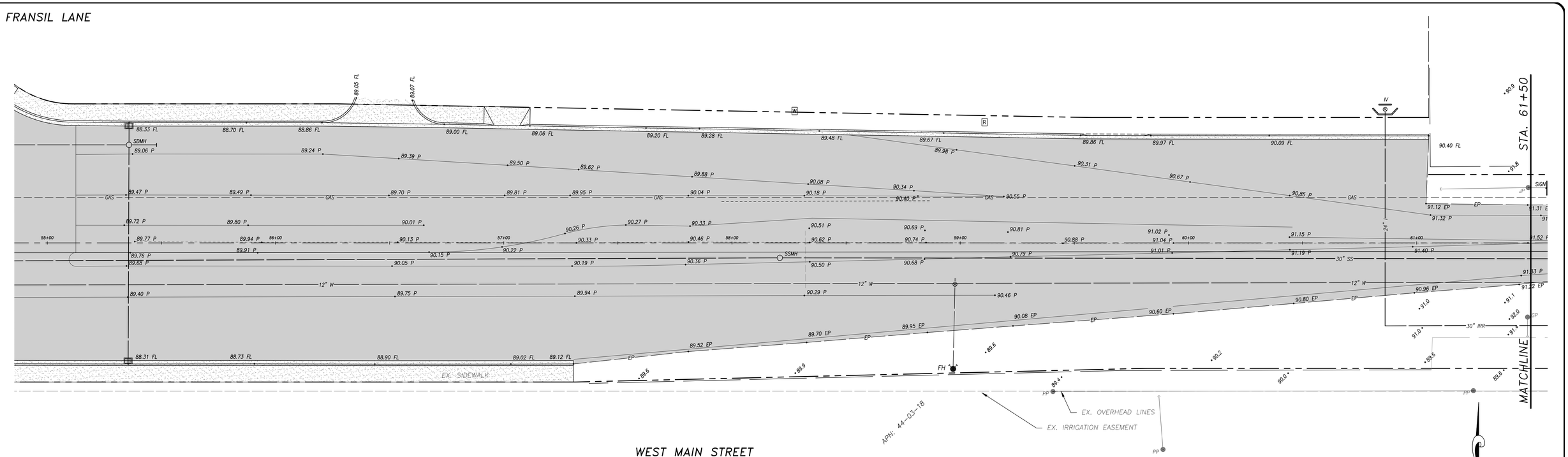
SHEET INDEX, LEGEND & VICINITY MAP

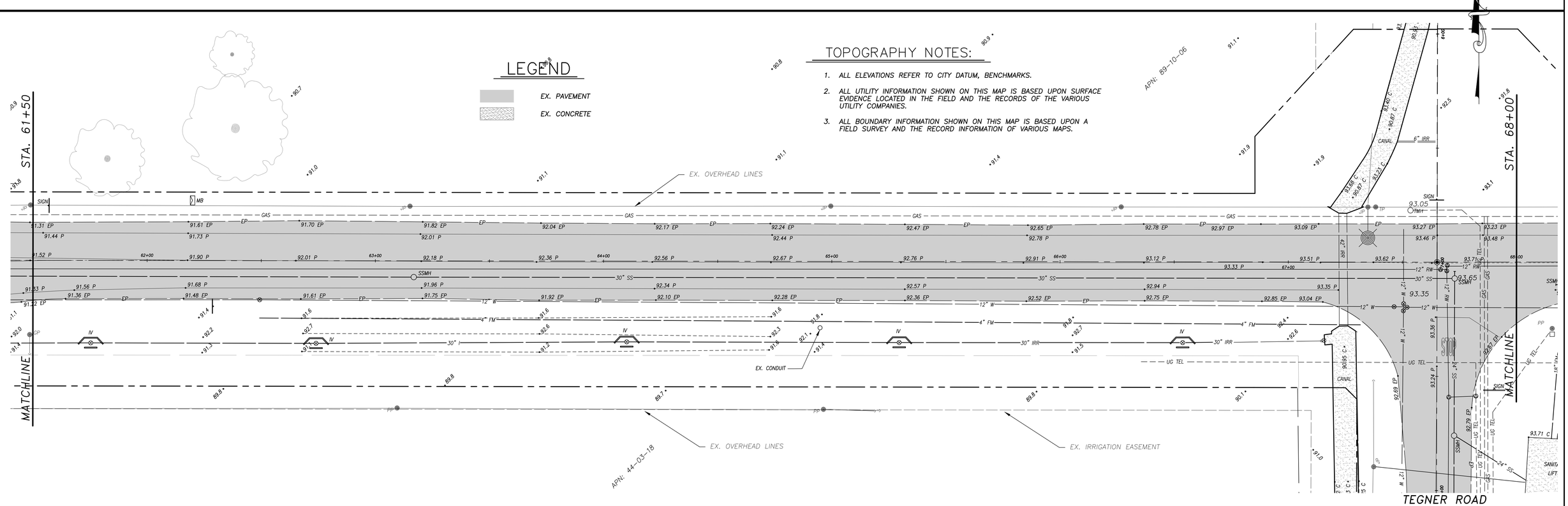
CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 3/4" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	NONE
	14-44 BASE.dwg

SHEET 1 OF 22





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TOPOGRAPHY SURVEY

W. MAIN STREET ~ STA. 55+00 TO STA. 68+00

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

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0 1/4" 3/4" 1" 1/2"
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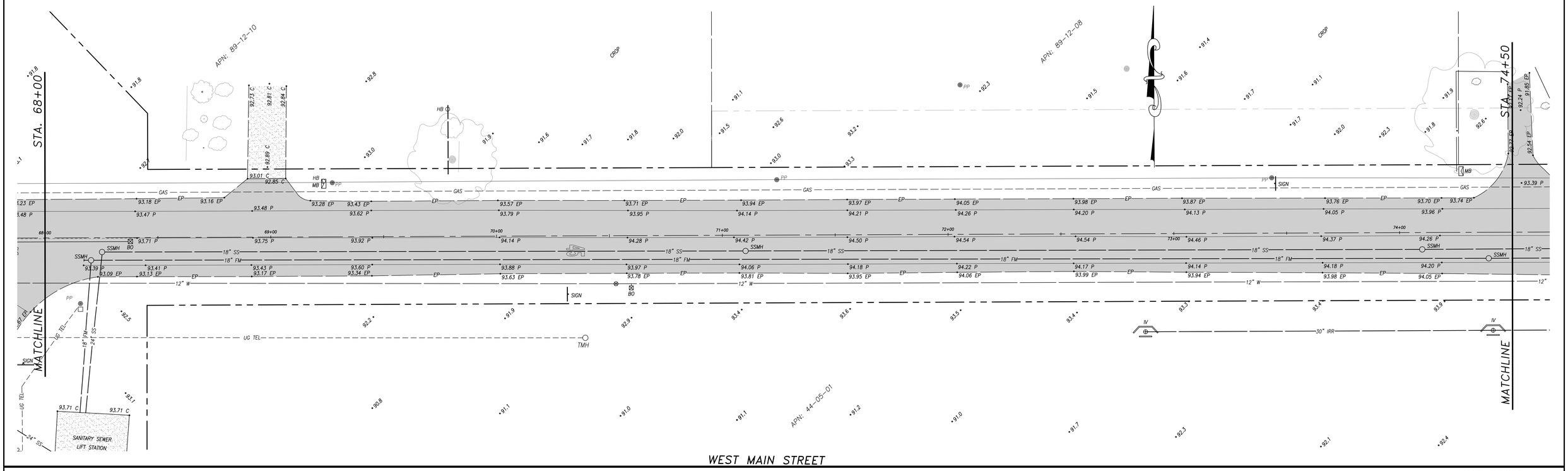
DATE:	JULY 2, 2024
SCALE:	1" = 20'
	14-44 BASE.dwg

SHEET 2 OF 22



LEGEND

- EX. PAVEMENT
- EX. CONCRETE

TOPOGRAPHY NOTES:

1. ALL ELEVATIONS REFER TO CITY DATUM.
2. ALL UTILITY INFORMATION SHOWN ON THIS MAP IS BASED UPON SURFACE EVIDENCE LOCATED IN THE FIELD AND THE RECORDS OF THE VARIOUS UTILITY COMPANIES.
3. ALL BOUNDARY INFORMATION SHOWN ON THIS MAP IS BASED UPON A FIELD SURVEY AND THE RECORD INFORMATION OF VARIOUS MAPS.

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TOPOGRAPHY SURVEY

W. MAIN STREET ~ STA. 68+00 TO STA. 81+00

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W. MAIN STREET AND S. TEGNER ROAD

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0 — 1/4" — 3/4" — 1" — 1/2"
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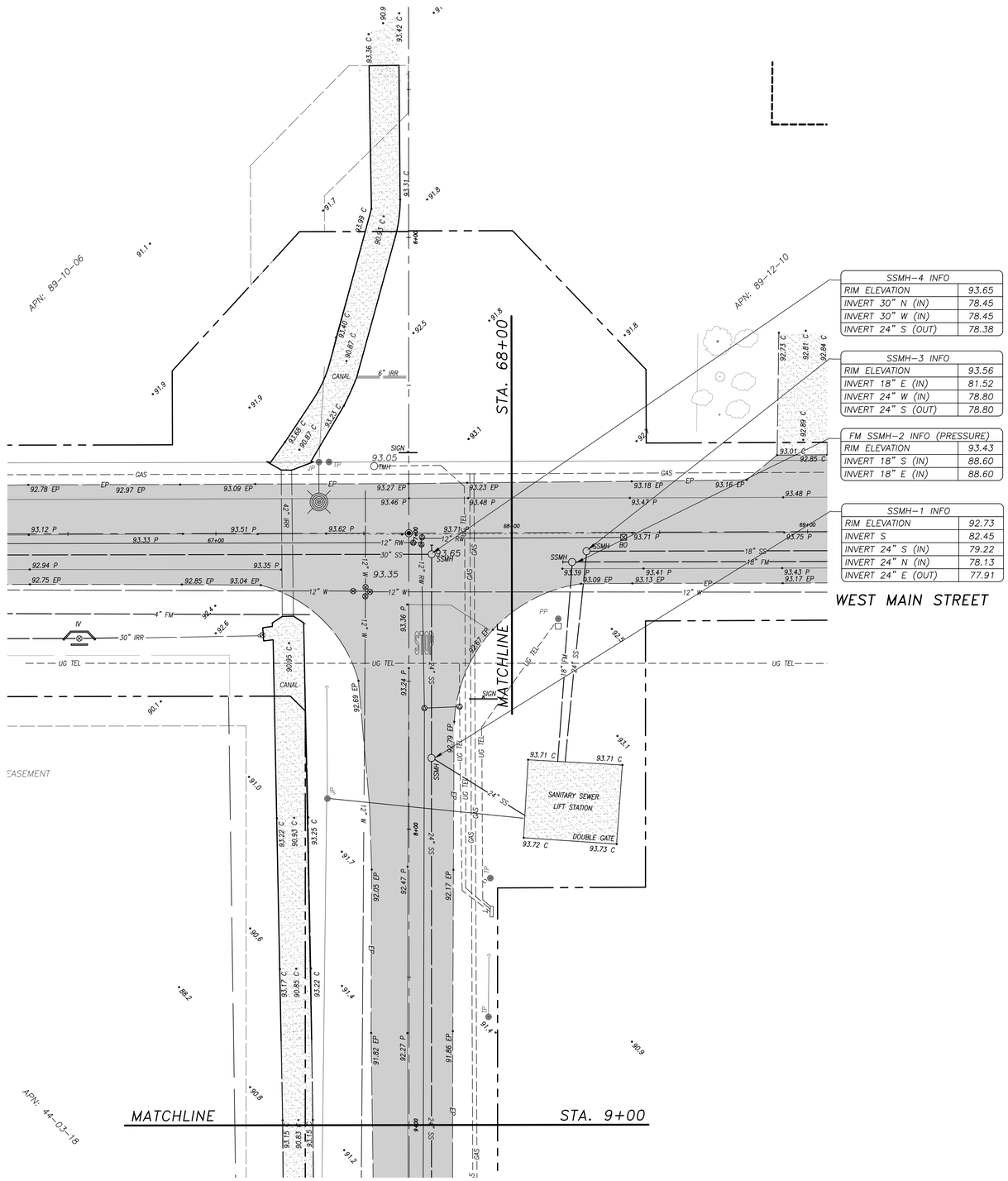
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	1" = 20'
	14-44 BASE.dwg

SHEET 3 OF 22

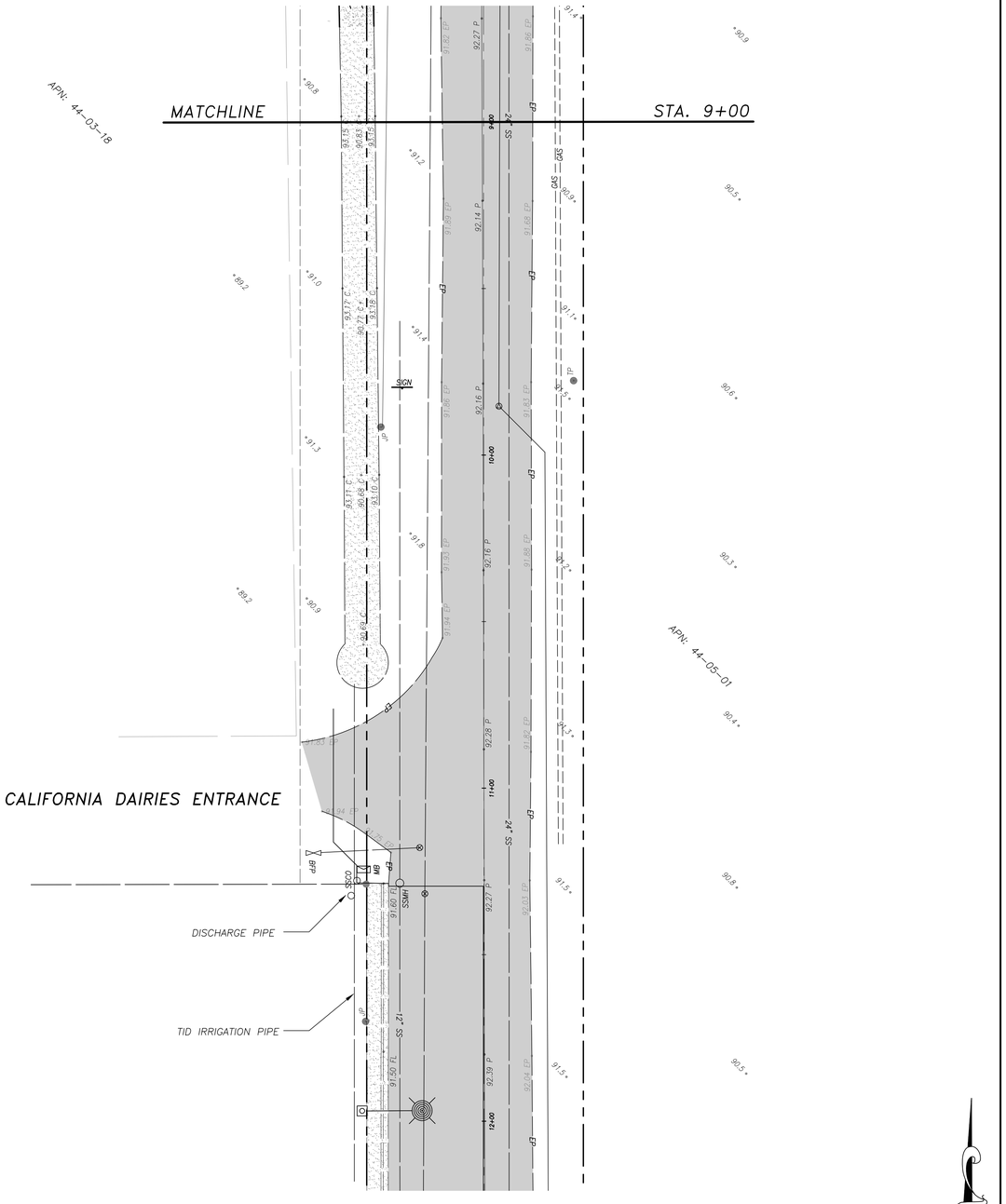


SSMH-4 INFO	
RIM ELEVATION	93.65
INVERT 30" N (IN)	78.45
INVERT 30" W (IN)	78.45
INVERT 24" S (OUT)	78.38

SSMH-3 INFO	
RIM ELEVATION	93.56
INVERT 18" E (IN)	81.52
INVERT 24" W (IN)	78.80
INVERT 24" S (OUT)	78.80

FM SSMH-2 INFO (PRESSURE)	
RIM ELEVATION	93.43
INVERT 18" S (IN)	88.60
INVERT 18" E (IN)	88.60

SSMH-1 INFO	
RIM ELEVATION	92.73
INVERT S	82.45
INVERT 24" S (IN)	79.22
INVERT 24" N (IN)	78.13
INVERT 24" E (OUT)	77.91



LEGEND

- EX. PAVEMENT
- EX. CONCRETE

TOPOGRAPHY NOTES:

1. ALL ELEVATIONS REFER TO NAVD 88 DATUM, BENCHMARKS: AS SHOWN
2. ALL UTILITY INFORMATION SHOWN ON THIS MAP IS BASED UPON SURFACE EVIDENCE LOCATED IN THE FIELD AND THE RECORDS OF THE VARIOUS UTILITY COMPANIES.
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CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

TOPOGRAPHY SURVEY

S. TEGNER ROAD ~ BEGIN TO STA. 12+00

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INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

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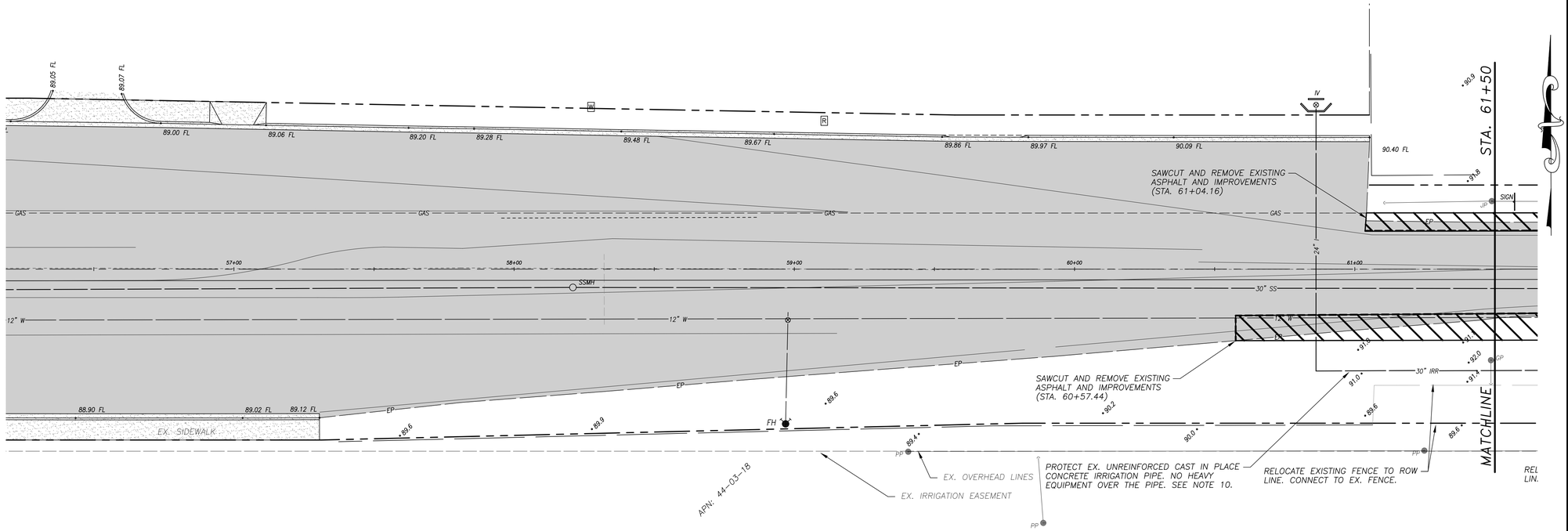
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	1" = 20'
	14-44 BASE.dwg

SHEET 4 OF 22

NOTES:

1) CONTRACTOR SHALL REMOVE ALL STRIPING, PAVEMENT LEGENDS, AND PAVEMENT MARKERS IN CONFLICT WITH IMPROVEMENTS.
2) CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL MATERIALS.
3) CONTRACTOR SHALL PROTECT AND PRESERVE ALL MONUMENTS AND EXISTING UTILITIES, UNLESS NOTED OTHERWISE.
4) CONTRACTOR SHALL REMOVE ALL COLD MIX ASPHALT AND FILL VOIDS WITH HMA PRIOR TO PAVING.
5) CONTRACTOR SHALL PROTECT AND PRESERVE ALL IMPROVEMENTS ON PRIVATE PROPERTY, UNLESS NOTED OTHERWISE.
6) CONTRACTOR SHALL REPAIR ALL TRENCHES INCLUDING CONDUITS PER CITY TRENCH ERRATA STANDARDS.
7) CONTRACTOR SHALL COORDINATE ACCESS FOR RESIDENTS TO THEIR PROPERTY DURING CONSTRUCTION.
8) CONTRACTOR SHALL RELOCATE FENCE PRIOR TO PERFORMING ADDITIONAL ITEMS OF WORK TO ENSURE BUSINESS HAS SECURE PERIMETER AT ALL TIMES.
9) CONTRACTOR SHALL NOT DRIVE HEAVY EQUIPMENT OVER TID IRRIGATION PIPE. ANY IRRIGATION PIPE DAMAGED BY CONTRACTOR'S EQUIPMENT SHALL BE IMMEDIATELY REPLACED AT THE CONTRACTOR'S EXPENSE.
10) CONTRACTOR SHALL POTHOLE EX. UTILITIES AT ALL PROPOSED UTILITY CROSSINGS AND UNDER AREAS TO BE EXCAVATED PRIOR TO CONSTRUCTION TO VERIFY LOCATION AND DEPTH OF EX. UTILITIES. CONTRACTOR SHALL PROVIDE A COPY OF POTHOLING DATA TO THE CITY FOR REVIEW.
11) ALL AREAS TO BE BACKFILLED AND COMPACTED TO 95%.



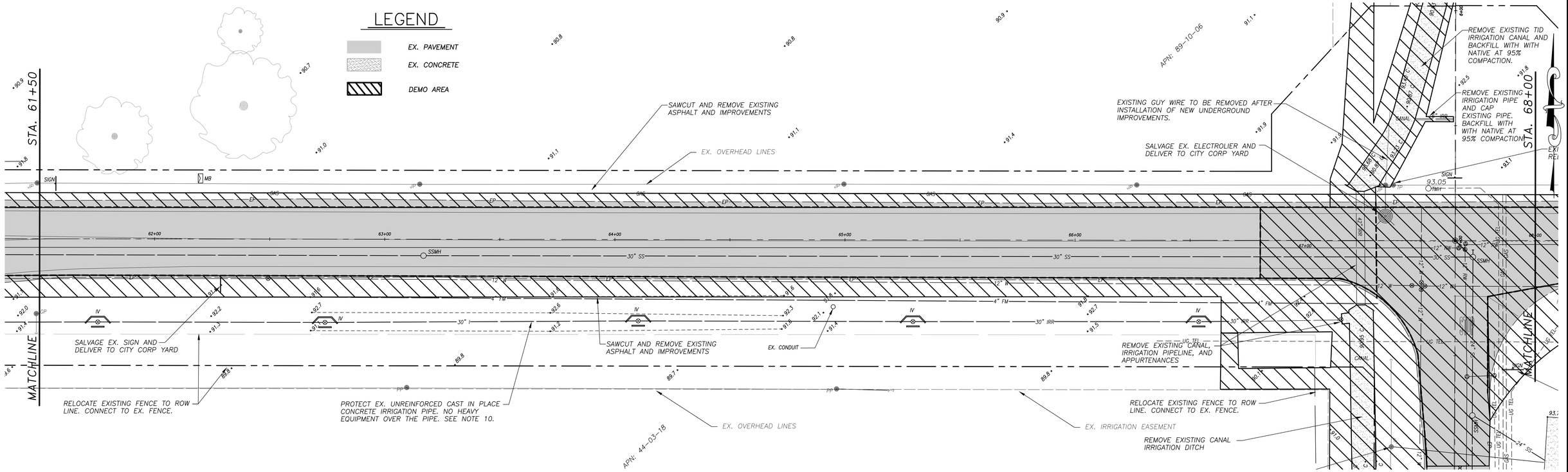
WEST MAIN STREET

LEGEND

EX. PAVEMENT

EX. CONCRETE

DEMO AREA



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DEMOLITION PLAN

W. MAIN STREET ~ STA 55+00 TO STA. 68+00

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W. MAIN STREET AND S. TEGNER ROAD

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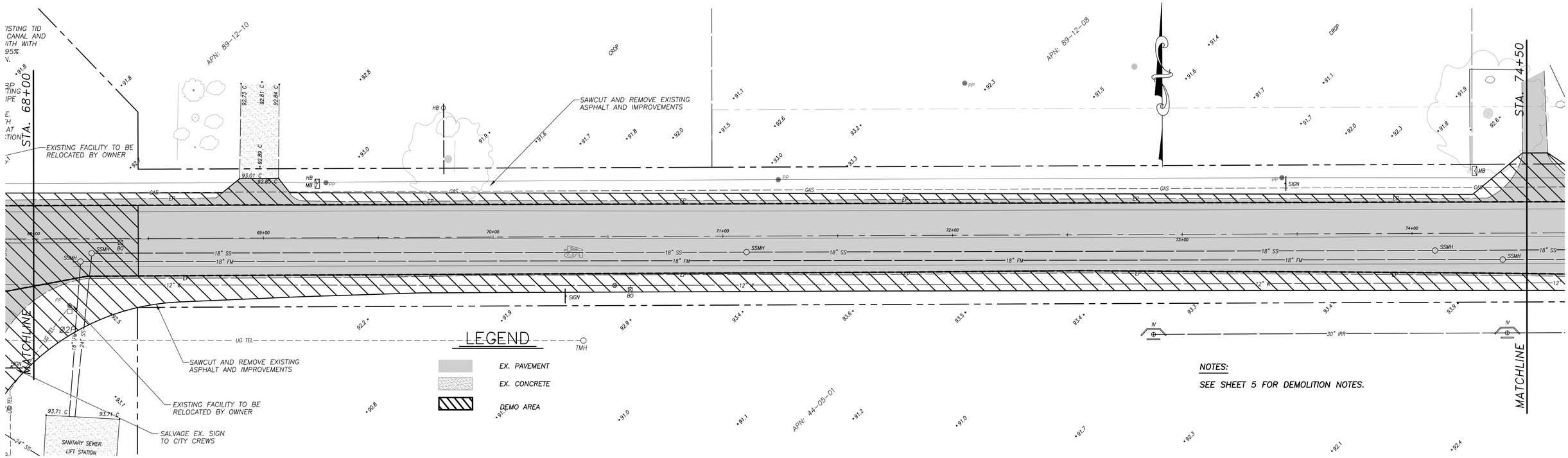
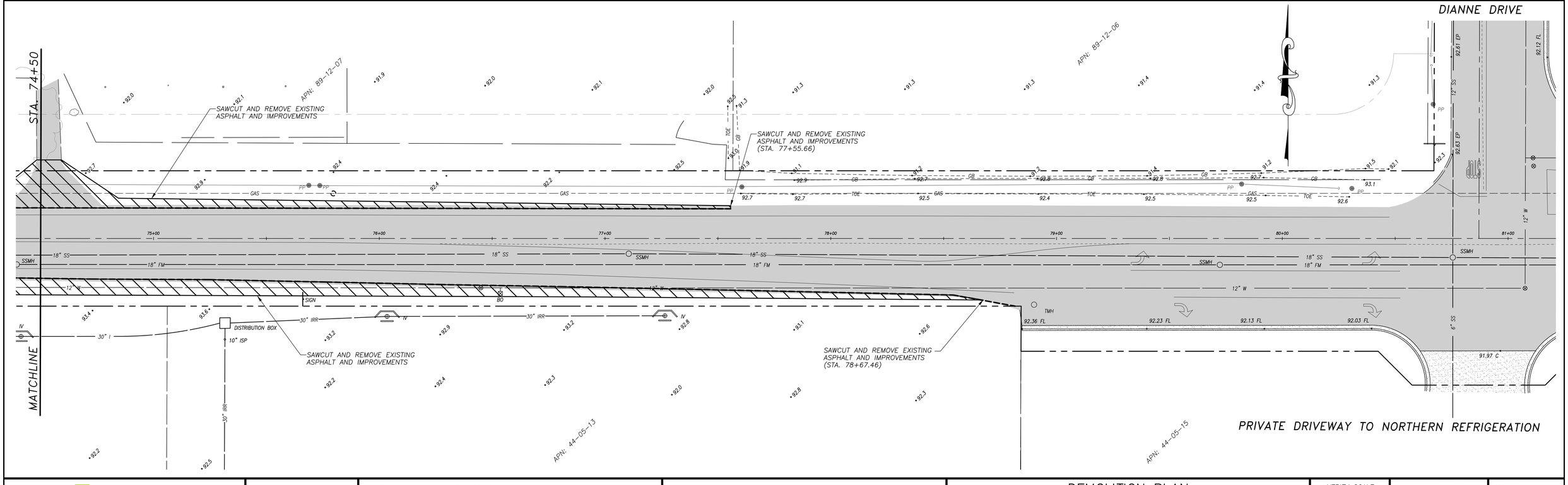
SHEET 5 OF 22





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DEMOLITION PLAN

W. MAIN STREET ~ STA. 68+00 TO STA. 81+00

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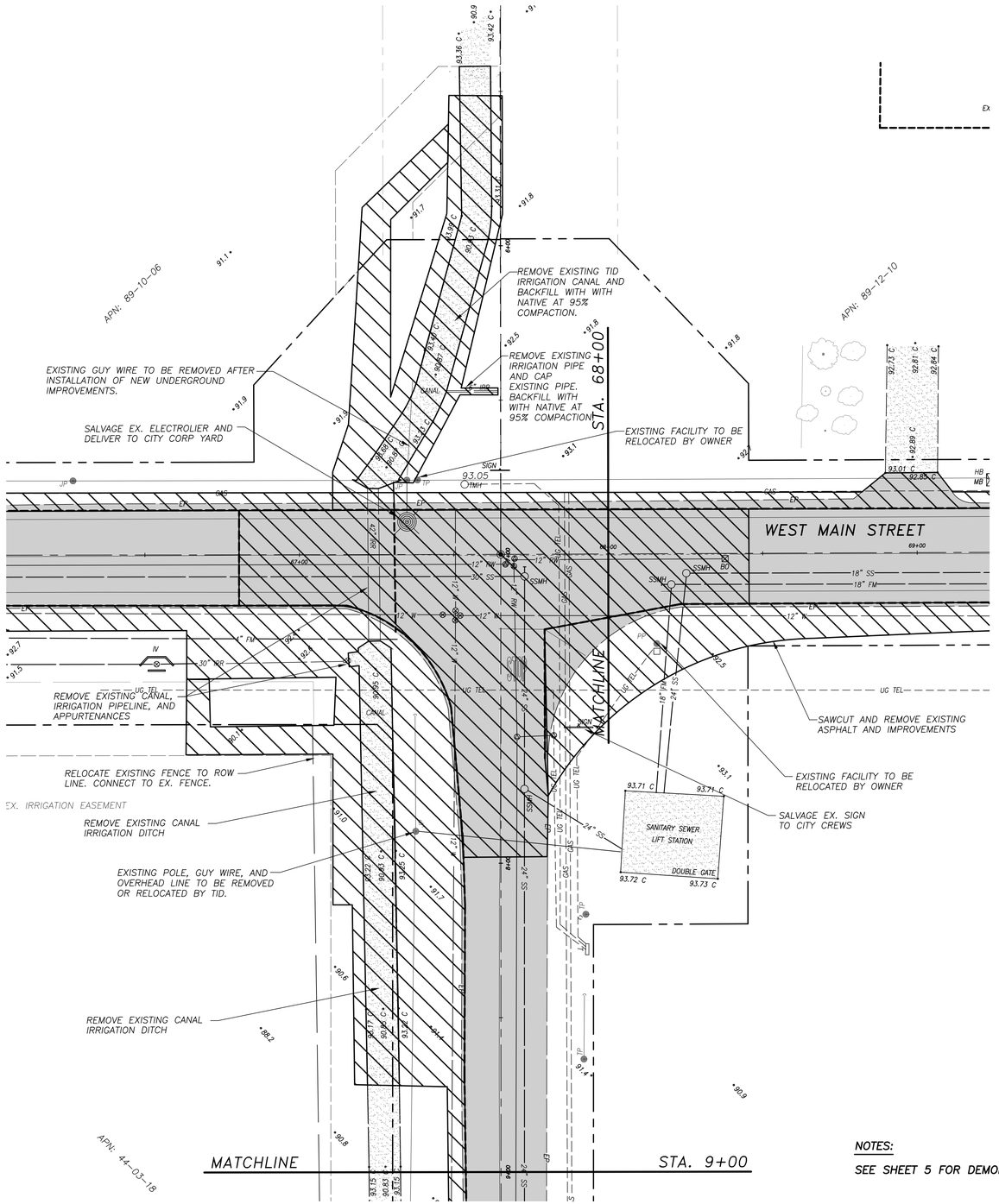

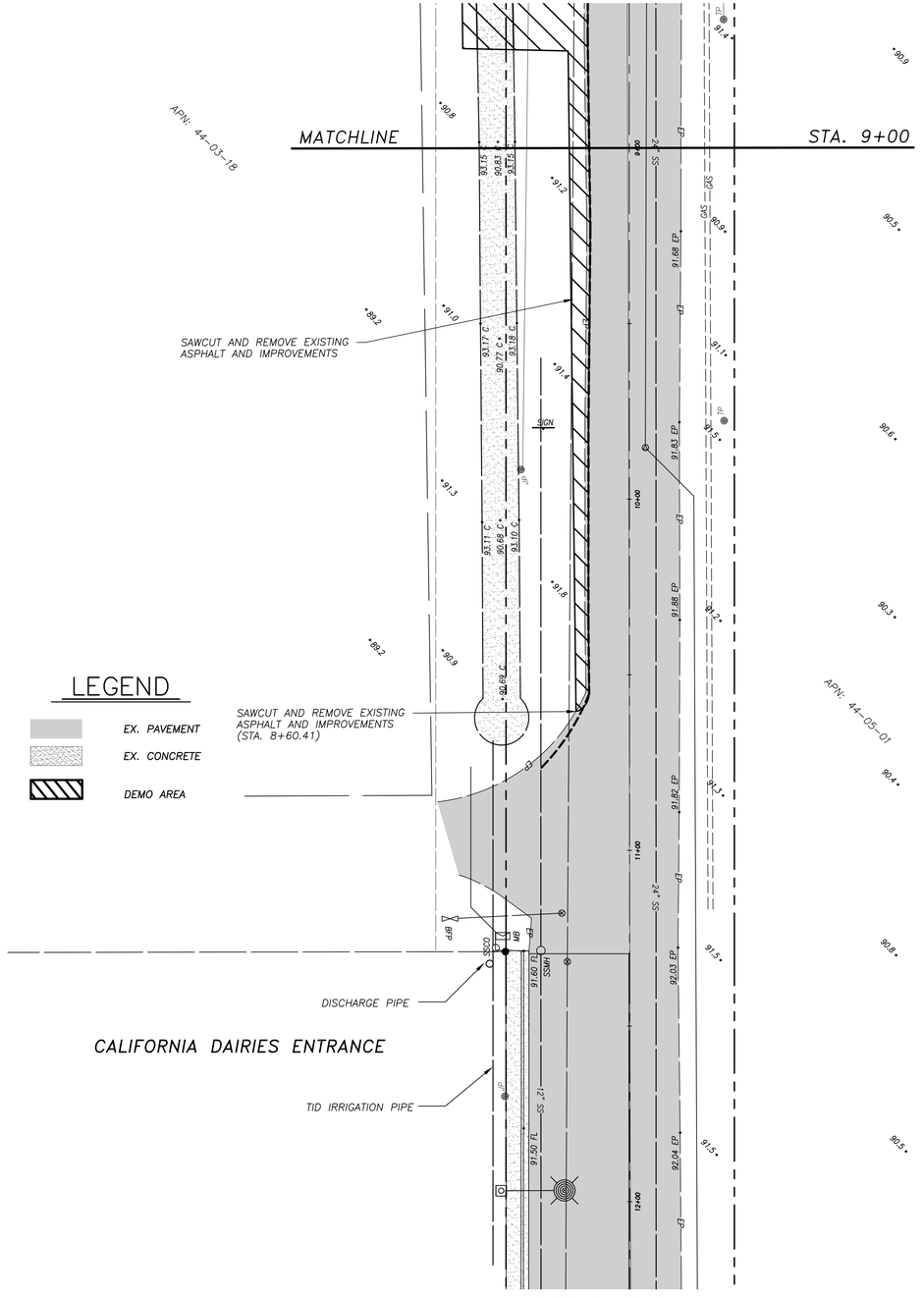

NOTES:

SEE SHEET 5 FOR DEMOLITION NOTES.

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DEMOLITION PLAN

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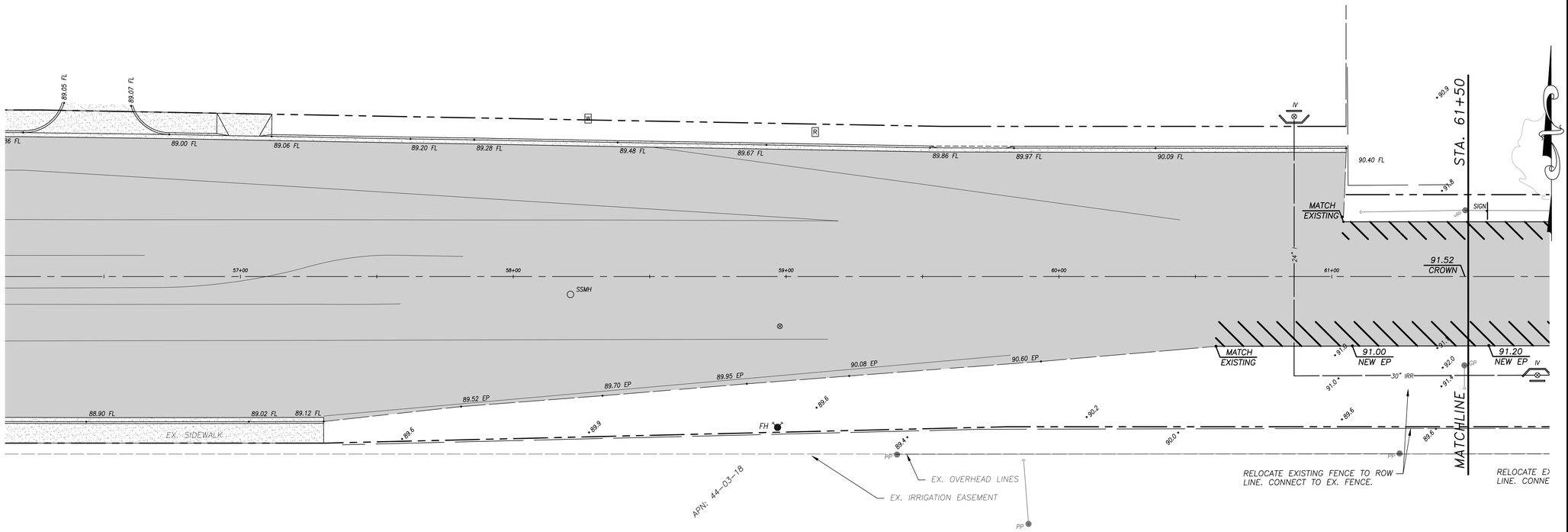
SHEET 7 OF 22

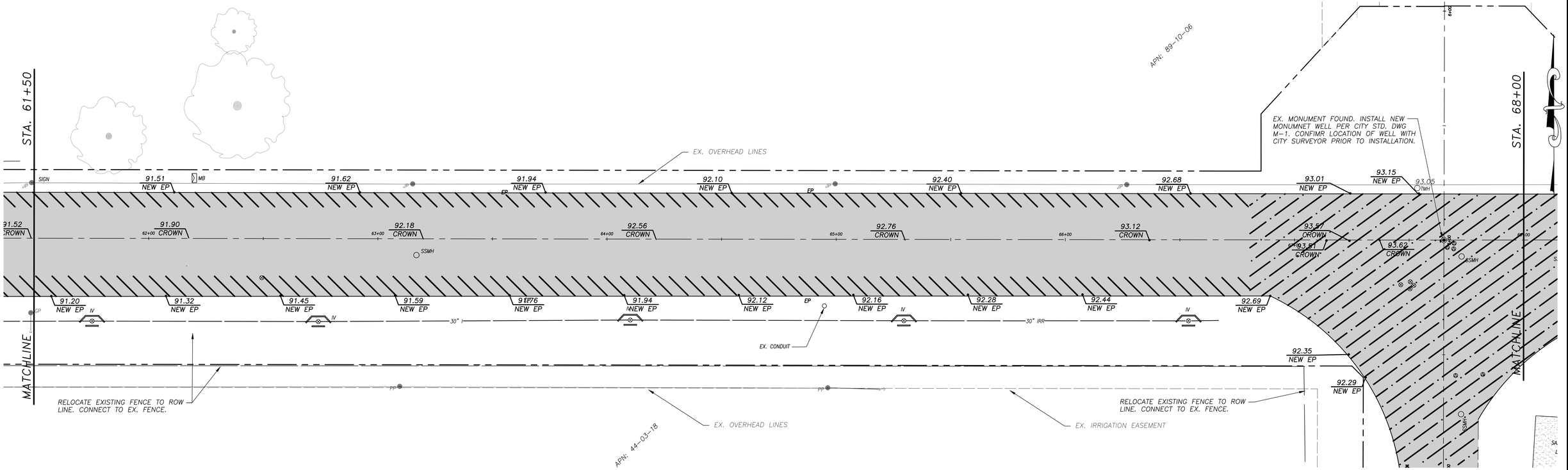
NOTES:

1) PLACE TEMPORARY STRIPING AFTER PAVING OPERATIONS CONSISTING OF STOP BARS, LANE LINES, CENTERLINES, AND CROSSWALK CONFORMING TO THE STRIPING PLANS.
2) FINAL STRIPING SHALL BE PLACE SEVEN (7) CALENDAR DAYS AFTER LAST PAVING DAY.
3) CONTRACTOR SHALL CAT TRACK STRIPING THREE (3) CALENDAR DAYS AFTER LAST PAVING DAY.
4) CONTRACTOR SHALL ADJUST ALL BOXES OR VALVE COVERS TO FINISH GRADE. CONTRACTOR SHALL REPLACE ANY BOX OR COVER DAMAGED DURING CONSTRUCTION OR ADJUSTMENT AT THEIR EXPENSE. CONTRACTOR SHALL ENSURE FRAMES AND COVERS ARE STORED TOGETHER TO PREVENT MIXING AND MATCHING OF UNLIKE FRAMES AND COVERS. FRAMES AND COVERS SHALL BE ADJUSTED PER CITY STANDARD DRAWINGS. TEMPORARY AC SHALL BE PLACED AT THE END OF THE DAY.
5) CONTRACTOR SHALL RELOCATE FENCE PRIOR TO STARTING ANY WORK. EX. BUSINESS SHALL REMAIN SECURE DURING CONSTRUCTION.
6) CONTRACTOR SHALL TRENCH REPAIR UTILITIES PER CITY TRENCH ERRATA STANDARDS.
7) CONTRACTOR SHALL INSTALL SHOULD BACKING PER DETAIL.

LEGEND

- PAVEMENT
- EX. CONCRETE
- 6" HMA OVER 6" AB
- 6" HMA OVER 8" AB
- 6" HMA OVER 10" AB





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GRADING PLAN

W. MAIN STREET ~ STA. 55+00 TO STA. 68+00

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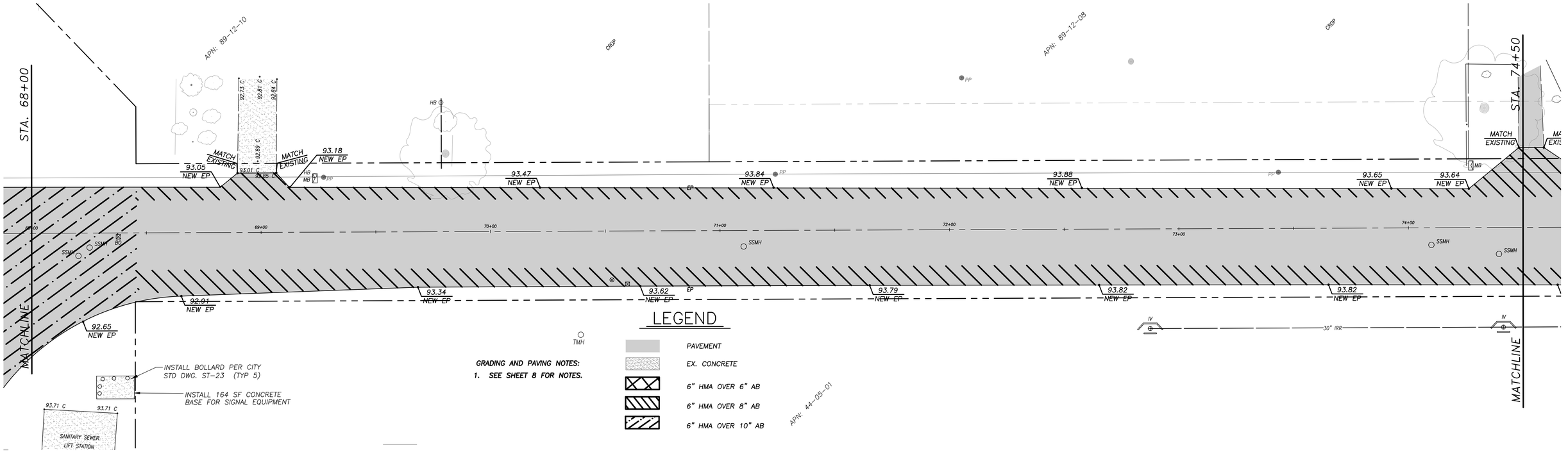
SHEET 8 OF 22



USA NORTH 811
Call 811 Before You Dig
WWW.USANORTH811.ORG

NOTE:
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WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. MORRIS
No. 55910
CIVIL
STATE OF CALIFORNIA

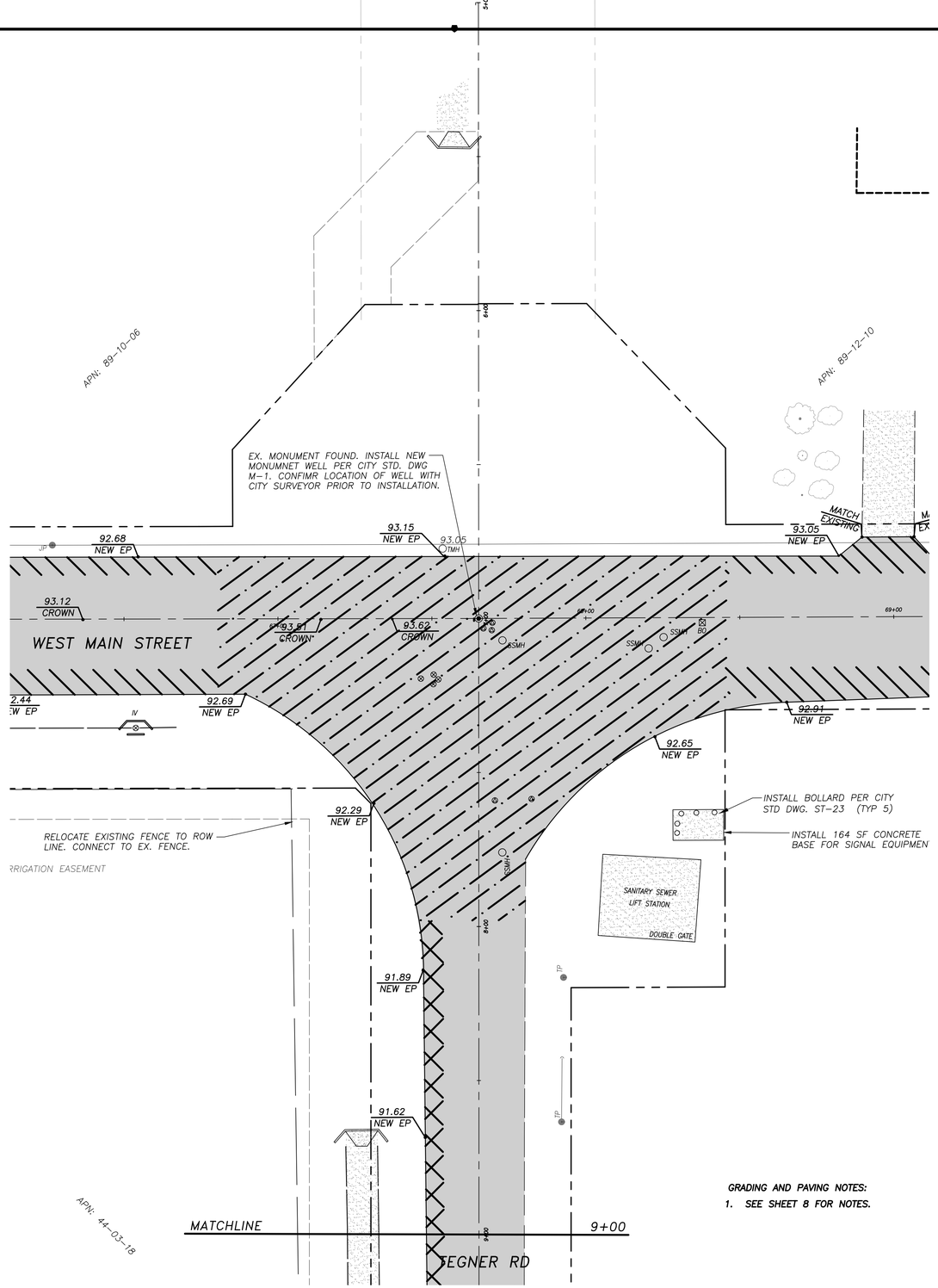
CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

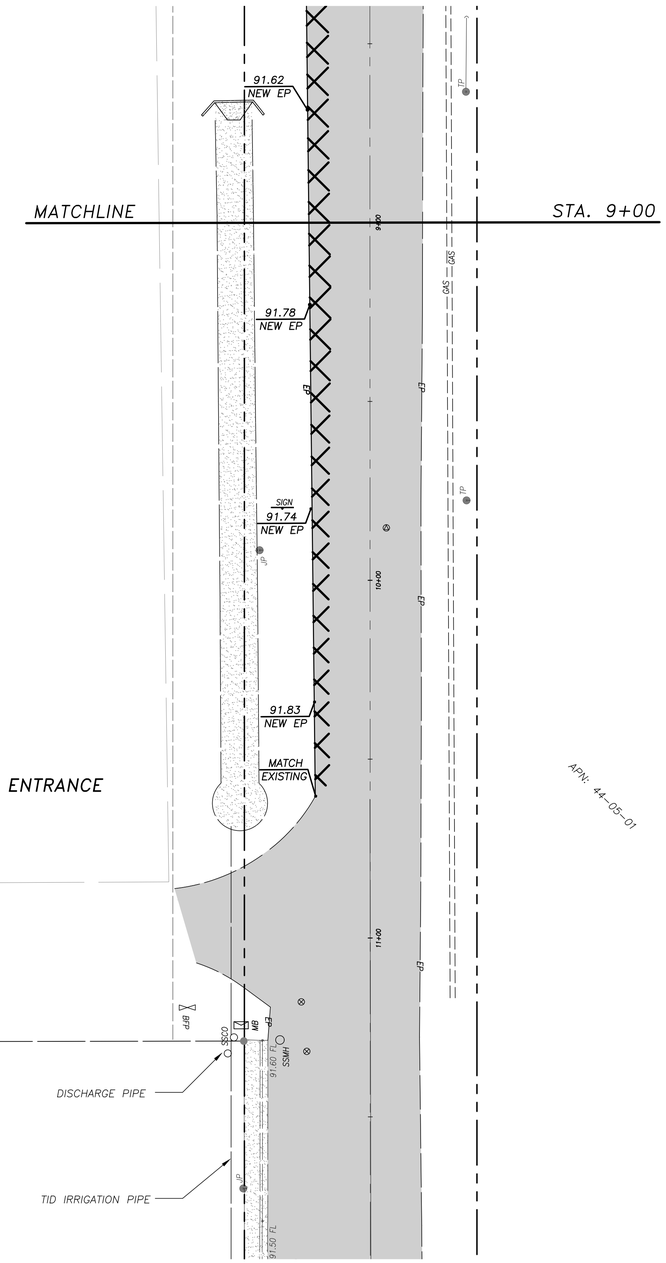
GRADING PLAN
W. MAIN STREET ~ STA. 68+00 TO STA. 81+00
CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 3/4" 1" 1/2"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	1" = 20'
	14-44 BASE.dwg

SHEET 9 OF 22





LEGEND

- PAVEMENT
- EX. CONCRETE
- 6" HMA OVER 6" AB
- 6" HMA OVER 8" AB
- 6" HMA OVER 10" AB

GRADING AND PAVING NOTES:

1. **SEE SHEET 8 FOR NOTES.**

USA NORTH 811 Call 811 Before You Dig WWW.USANORTH811.ORG

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MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
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GRADING PLAN

S. TEGNER ROAD ~ BEGIN TO STA. 15+00

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
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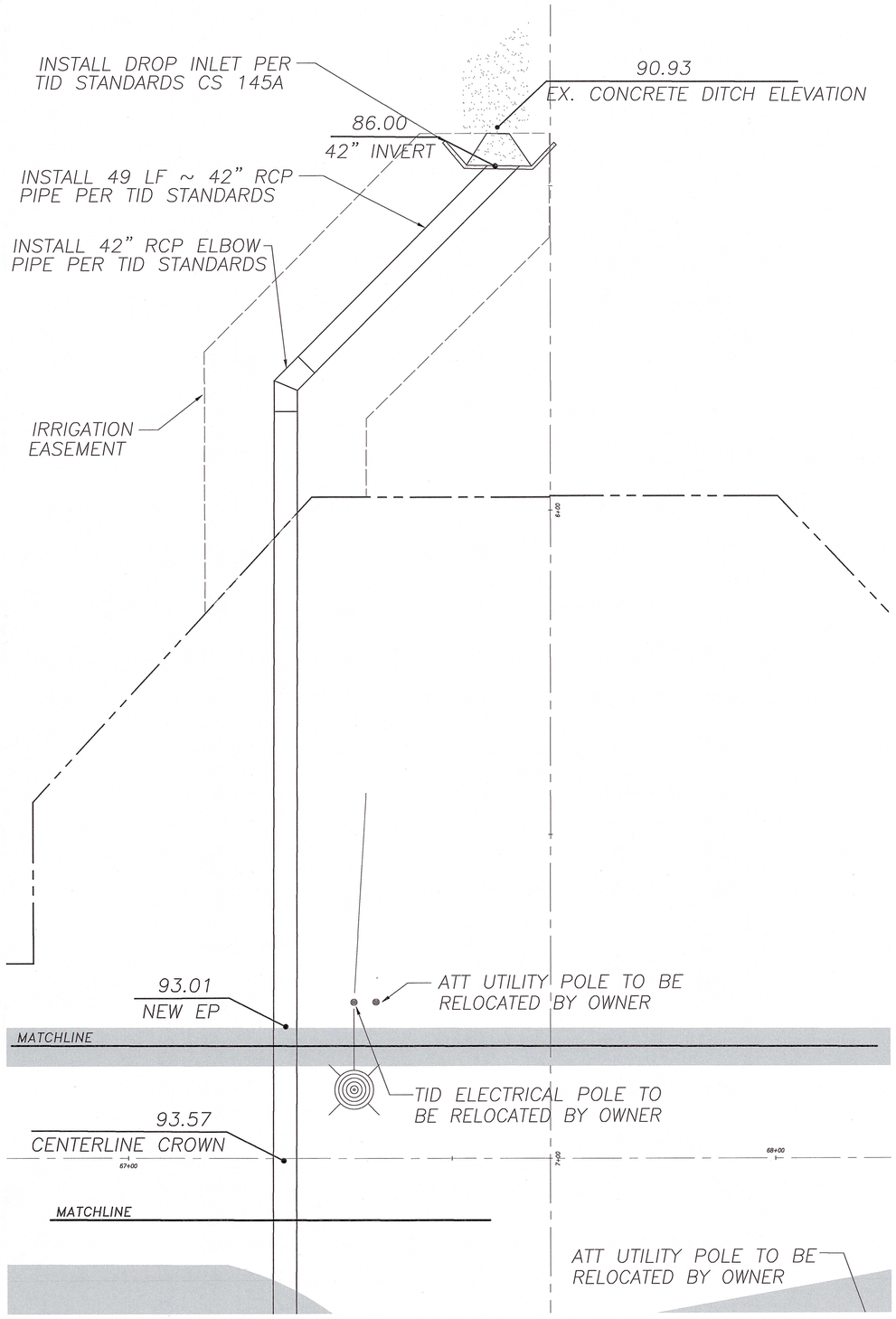
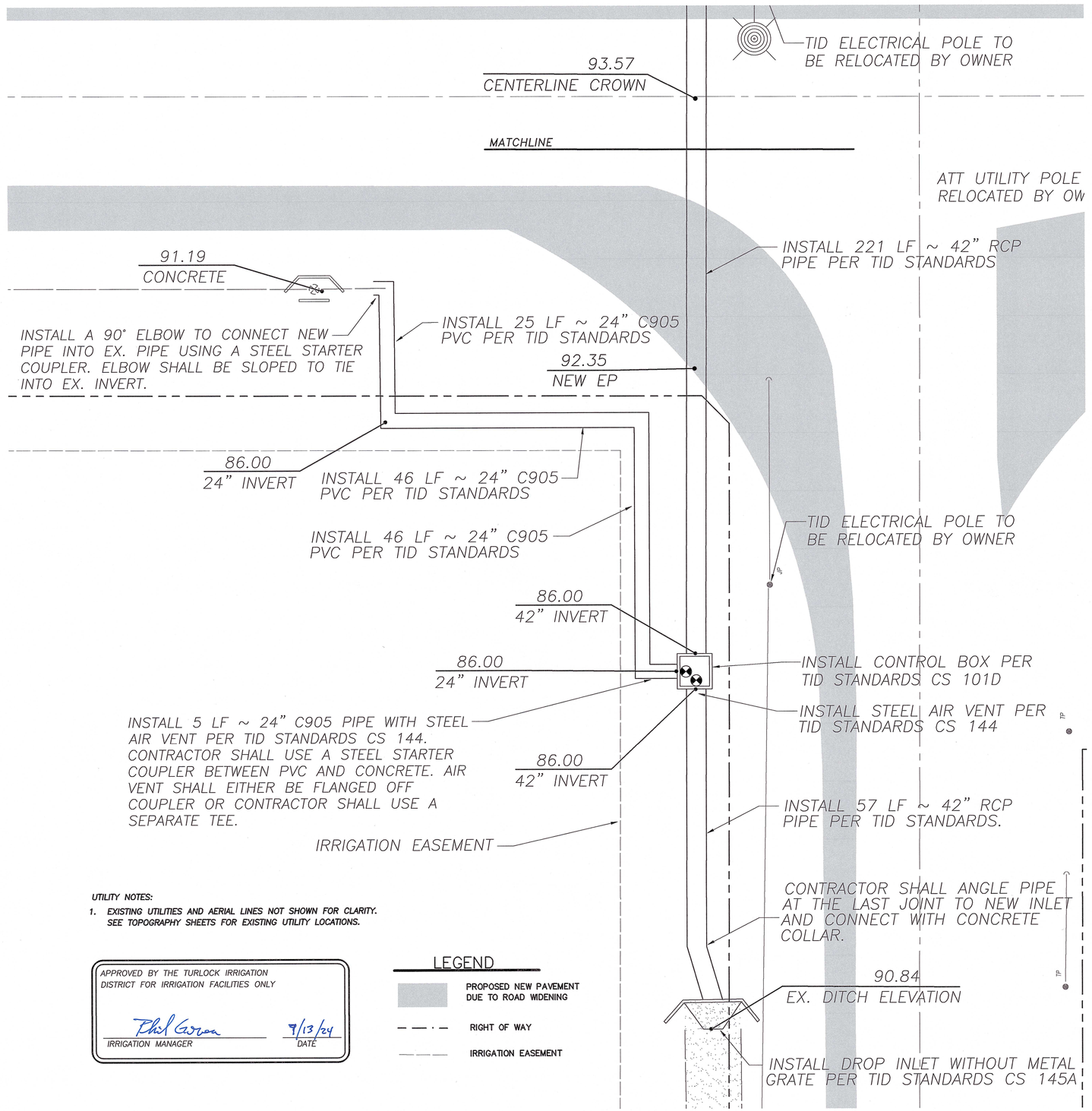
SCALE:	1" = 20'
	14-44 BASE.dwg

SHEET 10 OF 22





UTILITY NOTES:

1. *EXISTING UTILITIES AND AERIAL LINES NOT SHOWN FOR CLARITY. SEE TOPOGRAPHY SHEETS FOR EXISTING UTILITY LOCATIONS.*

APPROVED BY THE TURLOCK IRRIGATION DISTRICT FOR IRRIGATION FACILITIES ONLY

Phil Govea — IRRIGATION MANAGER — 9/13/24 DATE

LEGEND

- PROPOSED NEW PAVEMENT DUE TO ROAD WIDENING
- RIGHT OF WAY
- IRRIGATION EASEMENT

USA NORTH 811 Call 811 Before You Dig WWW.USANORTH811.ORG

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CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
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TID UTILITY PLAN

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

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SHEET 11 OF 22

1. At least 30 calendar days prior to the commencement of any work to remove existing irrigation facilities or to construct new irrigation facilities, the developer shall sign the irrigation improvements agreement with Turlock Irrigation District (TID) and provide the two required improvement securities and the required public liability and property damage insurance coverage.
2. Developments adjoining TID canals shall construct a solid masonry or concrete wall, a minimum of six feet in height, next to the TID right-of-way as per TID Construction Standard CS 166.
3. Lots adjoining irrigated ground must be graded so that the backs of lot and house pad elevations are at least 6 inches higher than the adjoining irrigated ground.
4. Contractor shall verify pipe sizes and inverts prior to construction of irrigation facilities.
5. Contractor must furnish a detailed construction and inspection schedule for TID written approval prior to excavation or construction within district rights-of-way or easements. Irrigation service must be maintained during the irrigation season, which is generally between March 1 through October 31, but can vary.
6. TID reserves the right to construct all structures within developments. If TID constructs the structures, the developer shall provide a deposit to the TID for the estimated construction costs. The pipeline contractor shall leave an open space of 6 feet minimum and 8 feet maximum at each structure location. The opening shall be formed and finished or sawn; construction of the opening by impact methods is not allowed.
7. All construction of TID irrigation facilities shall be done in accordance with the California Building Code, other recognized national standards, and TID standards and specifications. TID standards and specifications shall govern in the event of a discrepancy.
8. All irrigation structure boxes shall be formed inside and out and concrete vibrated sufficiently to provide for smooth surface walls without voids and honeycombs. Waterstop (Waterstop RX or approved equal) shall be used at all cold joints and shall be installed in accordance with the instructions recommended by the manufacturer.
9. Concrete shall be 3,000 psi or stronger at 28 days. Upon request by TID, concrete compressive tests on irrigation facility construction will be done by contractor at contractor's expense. It is the contractor's responsibility to deliver concrete samples to the concrete lab and send the results to TID.
10. All earthwork for irrigation facilities shall achieve a minimum relative compaction of 90% in rural areas and 95% in developed areas, according to ASTM D-1557. City, County and State compaction standards may, in some cases, supercede the above standards. Upon request by TID, test results verifying this shall be furnished to the TID by any contractor engaged in this work for the TID.

TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

CONSTRUCTION AND DEVELOPMENT STANDARD SPECIFICATIONS

WO and C&M AGM — Keith Cargill

REV	DESCRIPTION	INIT	CHK	RV'D	APP	APP	DATE
C	REV NOTE 2, 8, 7, 11, & 15, ADD 18			AWV			7/10
B	COMBINED CS 050A & CS 075			MLC			4/87
A	ELIMINATE ALTERNATE DETAIL	RV				BDH	

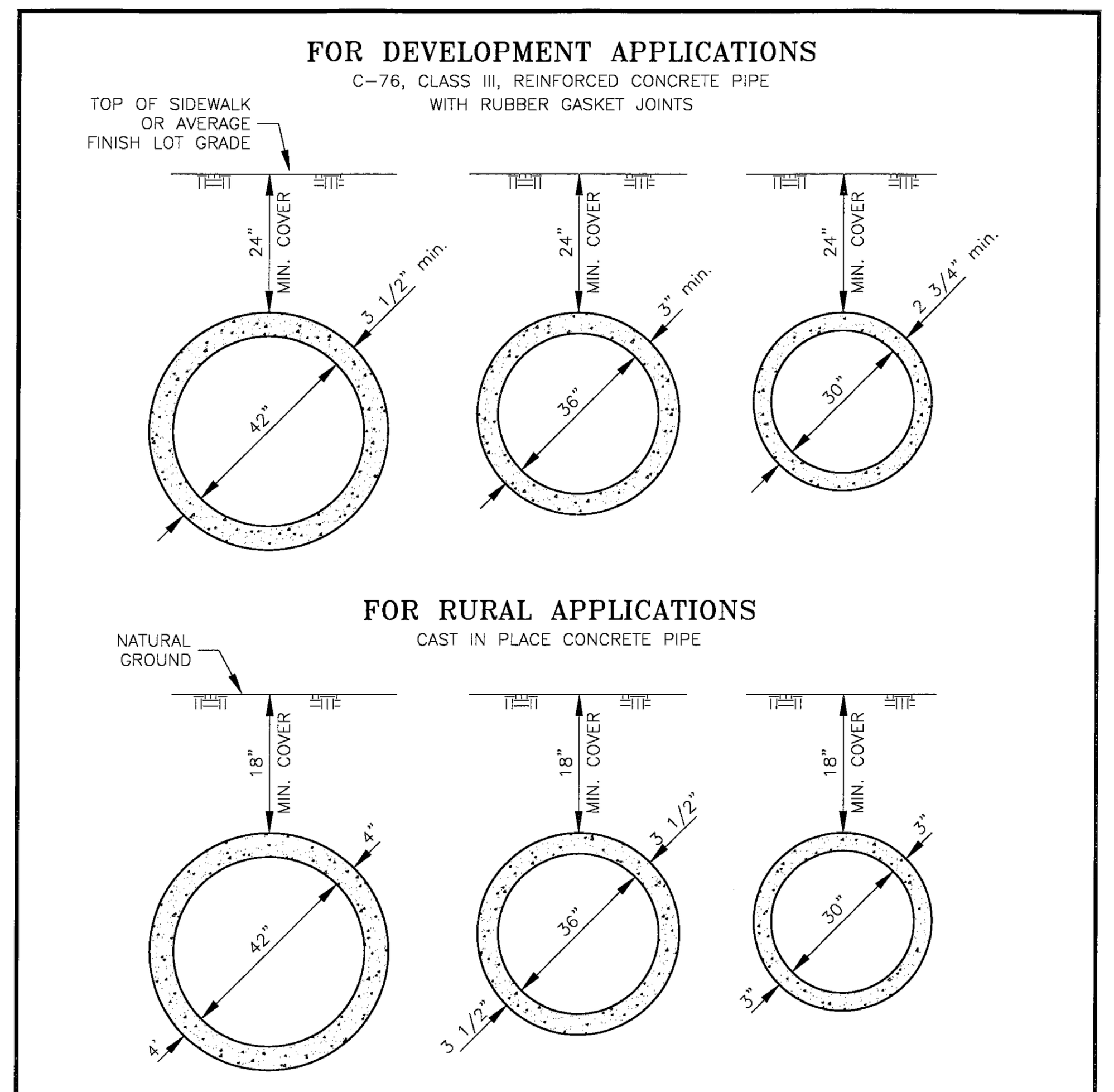
SHEET 1 OF 2 — CS 050C — PAGE

11. Prior to working on TID facilities, contractors are responsible for contacting Underground Service Alert for utility locations at 800-227-2600.
12. Inspections must be requested two working days in advance. The TID's inspector shall inspect all work phases on irrigation facilities for conformance to approved engineering plans and TID specifications. Reinforcing shall not be encased in concrete without prior TID inspection and approval. Likewise, concrete structures and pipelines shall not be covered with earth prior to TID inspection and approval.
13. Control structures and access manholes shall be constructed adjacent to public rights-of-way. If no public access is available, an access easement from a public right-of-way, a minimum of 12 feet in width, shall be provided to all control structures and access manholes. Access easements to control structures shall be free of encroachments, accommodate vehicle access, and must have an all weather surface.
14. Fences within irrigation easements must be constructed to allow access to irrigation facilities, as directed by TID.
15. All irrigation facilities shall pass the pressure test described in Caltrans Standard Specification 65-1.08. Upon request by the TID, the test will be performed by contractor at contractor's expense. The tested head shall be the maximum operational pressure of the line which will be supplied by the TID. The testing shall be observed and certified by a licensed Civil Engineer.
16. Irrigation facilities which are determined, by TID, as no longer needed shall be removed prior to development.
17. All pipeline installations shall include a #12 THHN coated solid tracer wire (TID Stock No. E-5625-0) on pipe. Tracer wire to be placed on top side of pipe and attached using 2" 10 mil poly tape or acceptable alternative.
18. Used materials, rejects, misfits or seconds are not acceptable for use on irrigation facilities.

TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

CONSTRUCTION AND DEVELOPMENT STANDARD SPECIFICATIONS

SHEET 2 OF 2 — CS 050C — PAGE



NOTES

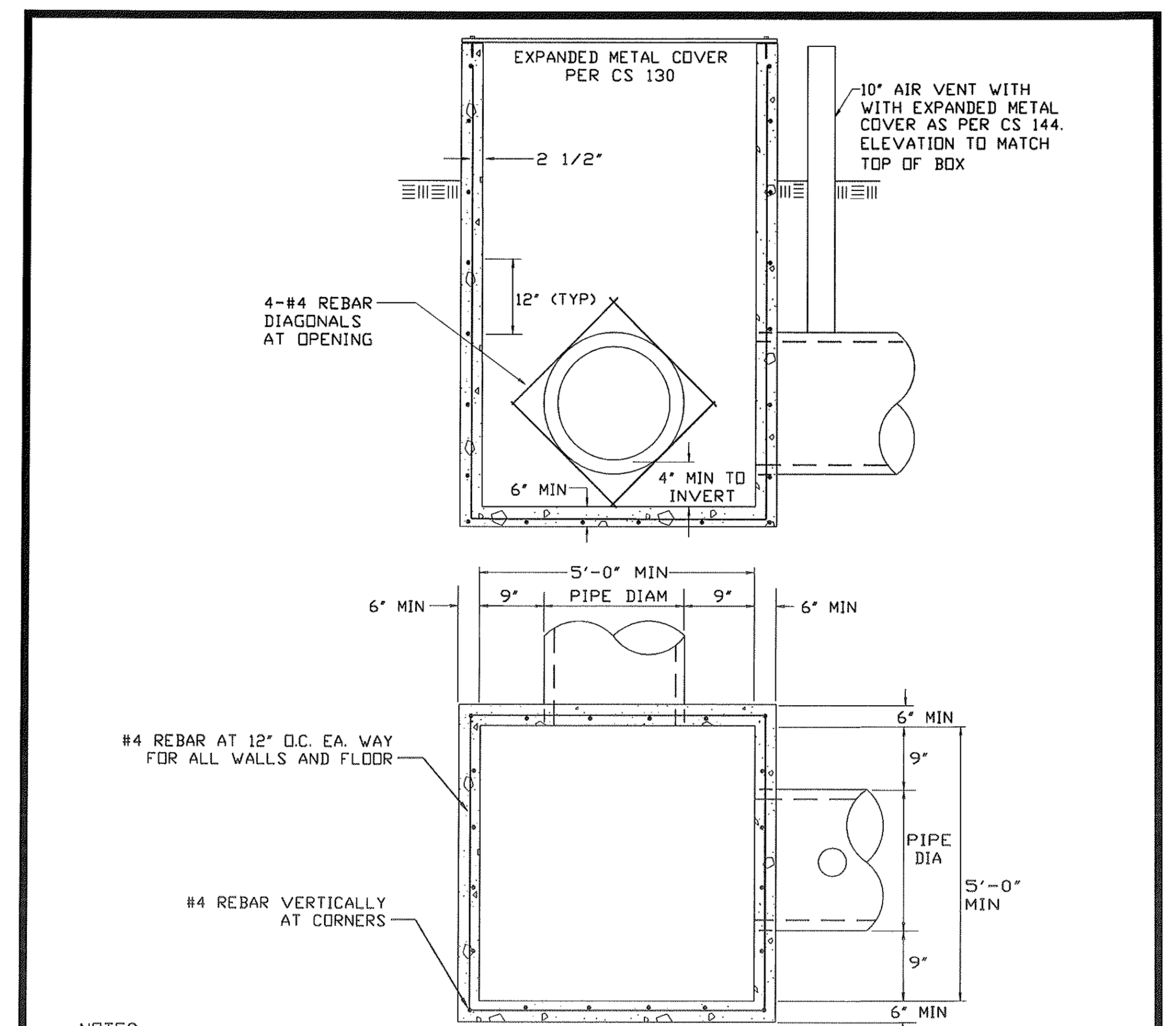
- SUBDIVISION INSTALLATIONS TO INCLUDE A #12 THHN COATED SOLID TRACER WIRE ON PIPE (T.I.D. STOCK NO. E-5625-0). TRACER WIRE TO BE PLACED ON TOP SIDE OF PIPE AND ATTACHED USING 2" 10 MIL POLY TAPE.

TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

CONCRETE PIPE DETAIL

REV	DESCRIPTION	INIT	CHK	RV'D	APP	APP	DATE
C	STDS. COM. APPROVAL	BB	R.R.		JB	CDB	5-11-99
C	CHNGED STK. # OF TRACER WIRE				JB	BLL	5-11-99
B	COMBINED DEVELOP. & TID STD.				JB	BLL	1/99
A	COMBINED RURAL AND SUBDIVISION APPLICATIONS	BB			JB	BLL	8/97
--	INNITIAL ISSUE	JAS	BDH			BDH	07/24/85

SHEET 1 OF 1 — CS 100C — PAGE



NOTES

1. CENTER BOX ON PIPELINES.
2. TOP OF BOX ELEVATION SHALL BE 2 FEET ABOVE HYDRAULIC GRADE LINE AS DETERMINED BY TID ENGINEERING.
3. WALLS MUST BE FORMED INSIDE AND OUT.
4. "WATERSTOP RX" OR APPROVED EQUAL SHALL BE USED AT ALL COLD JOINTS.
5. ALL GATES TO BE "WATERMAN C-10" OF NEW MANUFACTURE AND INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS. SEE PLANS FOR LOCATION AND SIZE.

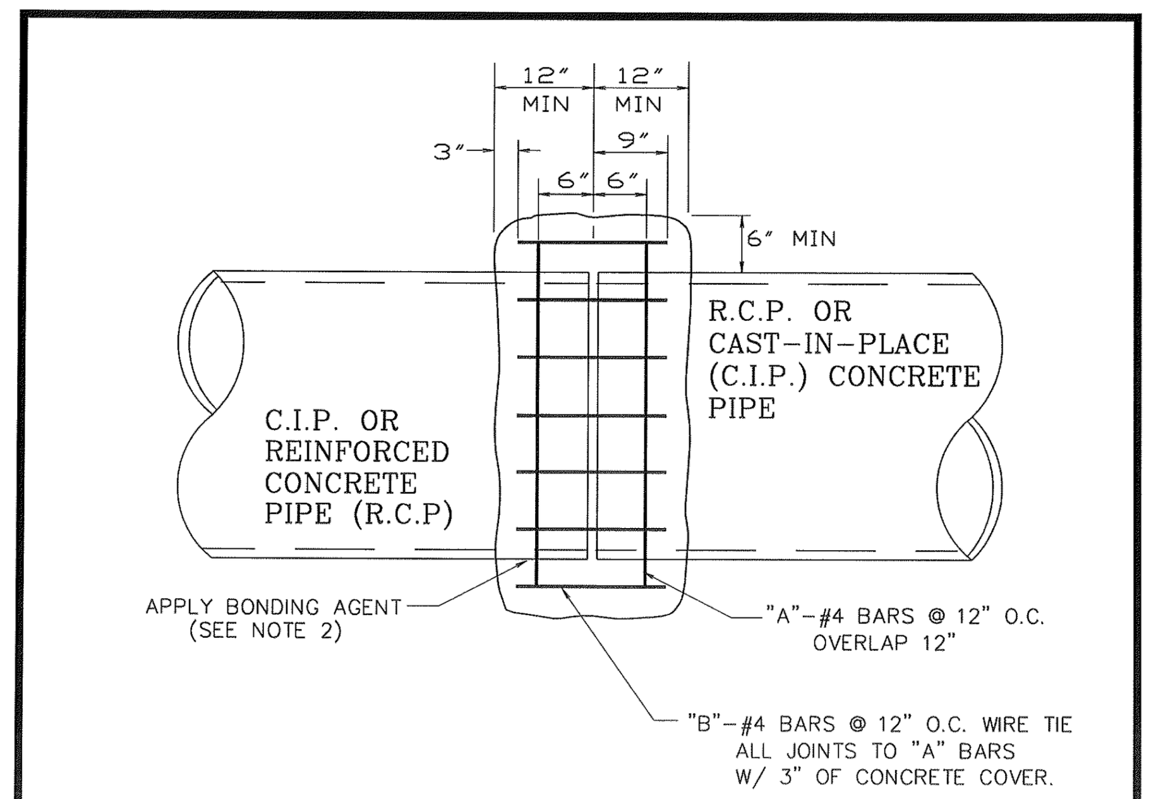
TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

TYPICAL CONTROL BOX

WO and C&M AGM — Keith Cargill

REV	DESCRIPTION	INIT	CHK	RV'D	APP	APP	DATE
D	REV NOTE 2, 4, & 5, 6" WALLS			AWV			7/10
C	COMBINE CS101 & SS107						6/01
B	EXP. METAL COVER		RV		BDH		12/87
A	MIN. BOX DIMENSION		RV		BDH		4/87
--	INITIAL ISSUE	SEB					12/86

SHEET 1 OF 1 — CS 101D — PAGE



NOTES:

1. IF PIPE JOINT INVOLVES A BEND OR TURN USE A COLLAR WIDTH OF 36" AND A MIN. OF 3 "A" BARS.
2. CLEAN THE PIPE SURFACE THOROUGHLY AND APPLY AN APPROVED BONDING AGENT TO THE PIPES PRIOR TO POURING THE COLLAR.
3. DRYPACK AND BAND INTERIOR PIPE JOINT.

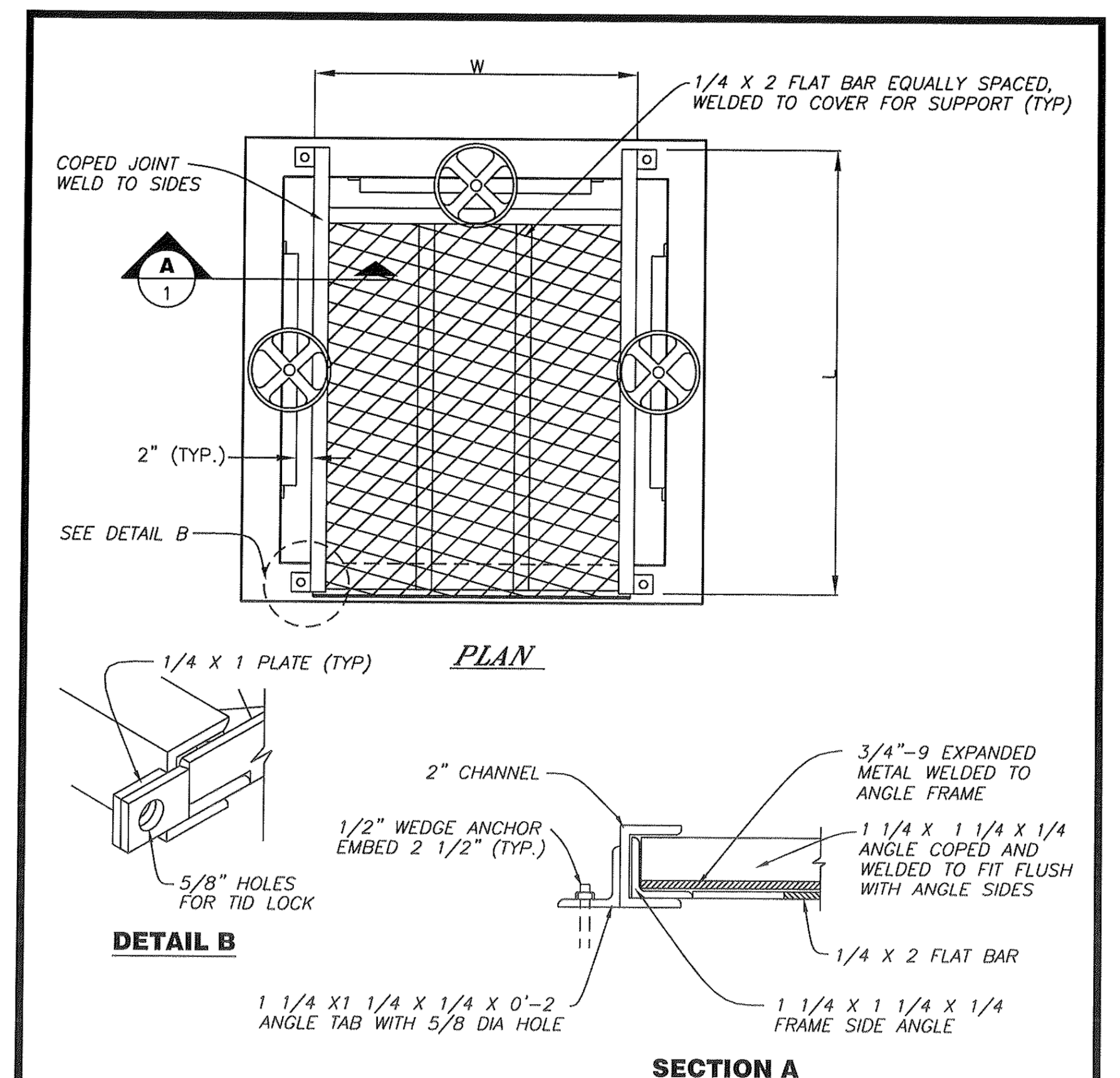
TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

CONCRETE COLLAR FOR IRRIGATION PIPELINES

B — WO and C&M AGM — Keith Cargill

REV	DESCRIPTION	INIT	CHK	RV'D	APP	APP	DATE
B	GENERAL REVISION			AWV			7/10
A	WIRE TIE JOINTS	ABO					

SHEET 1 OF 1 — CS 102B — PAGE



NOTES:

1. *DIMENSIONS L & W TO COVER OPENING WILL BE DETERMINED BY SIZE OF BOX AND NUMBER OF GATES.*
2. *WELD ANGLE TO ALL SIDES OF EXPANDED METAL.*
3. *WELD 1 1/4 X 1 1/4 X 1/4 X 0'-2 ANGLE TO ENDS OF CHANNEL TO SECURE GUIDES TO CONTROL BOX.*
4. *ALL HARDWARE TO BE PAINTED W/RED OXIDE PRIMER.*

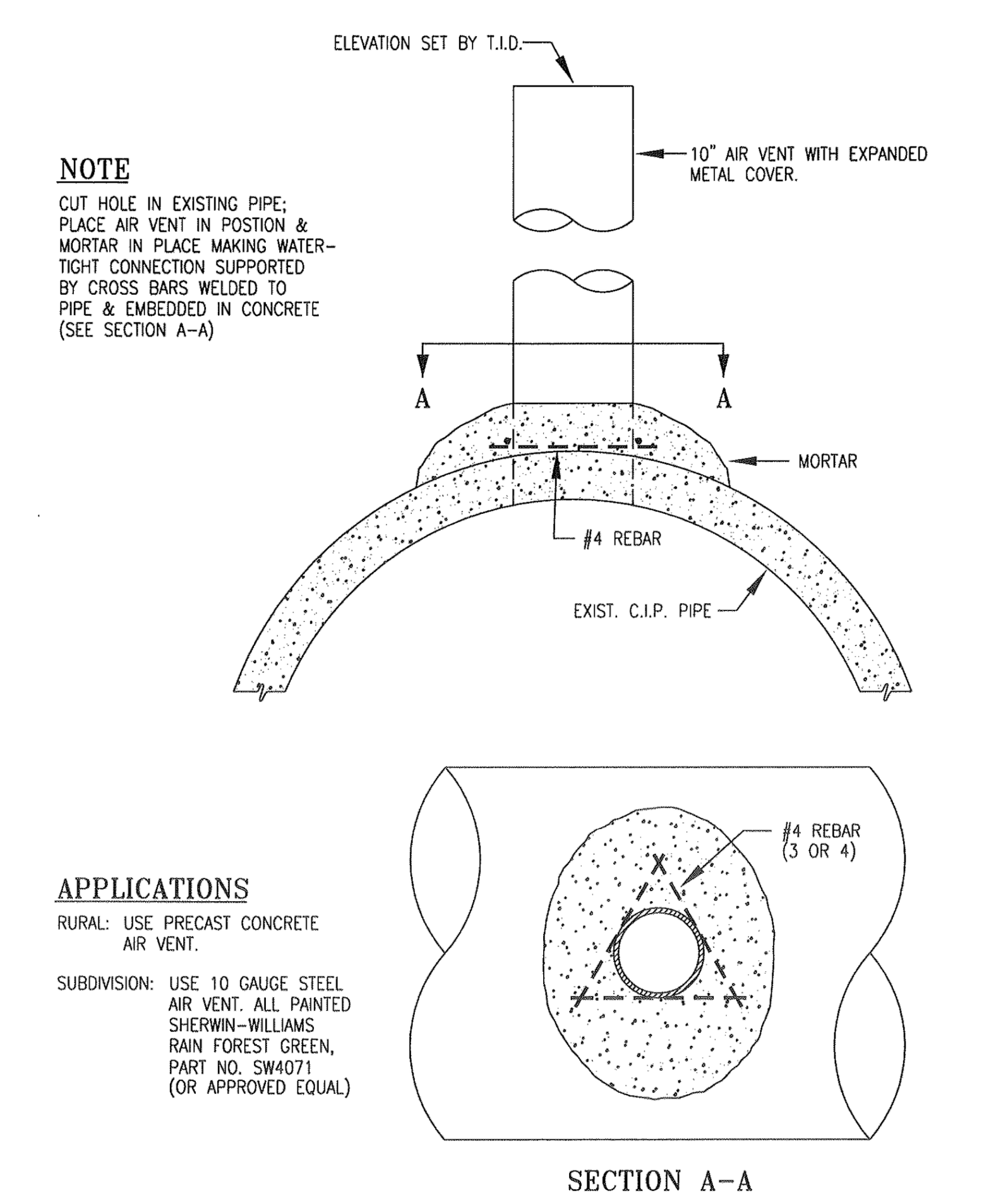
TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

EXPANDED METAL COVER FOR CONTROL BOX

WO and C&M AGM — Keith Cargill

REV	DESCRIPTION	INIT	CHK	RV'D	RV'D	APP	DATE
--	RE-ISSUE	AWV					7/10

SHEET 1 OF 2 — CS 130C — PAGE



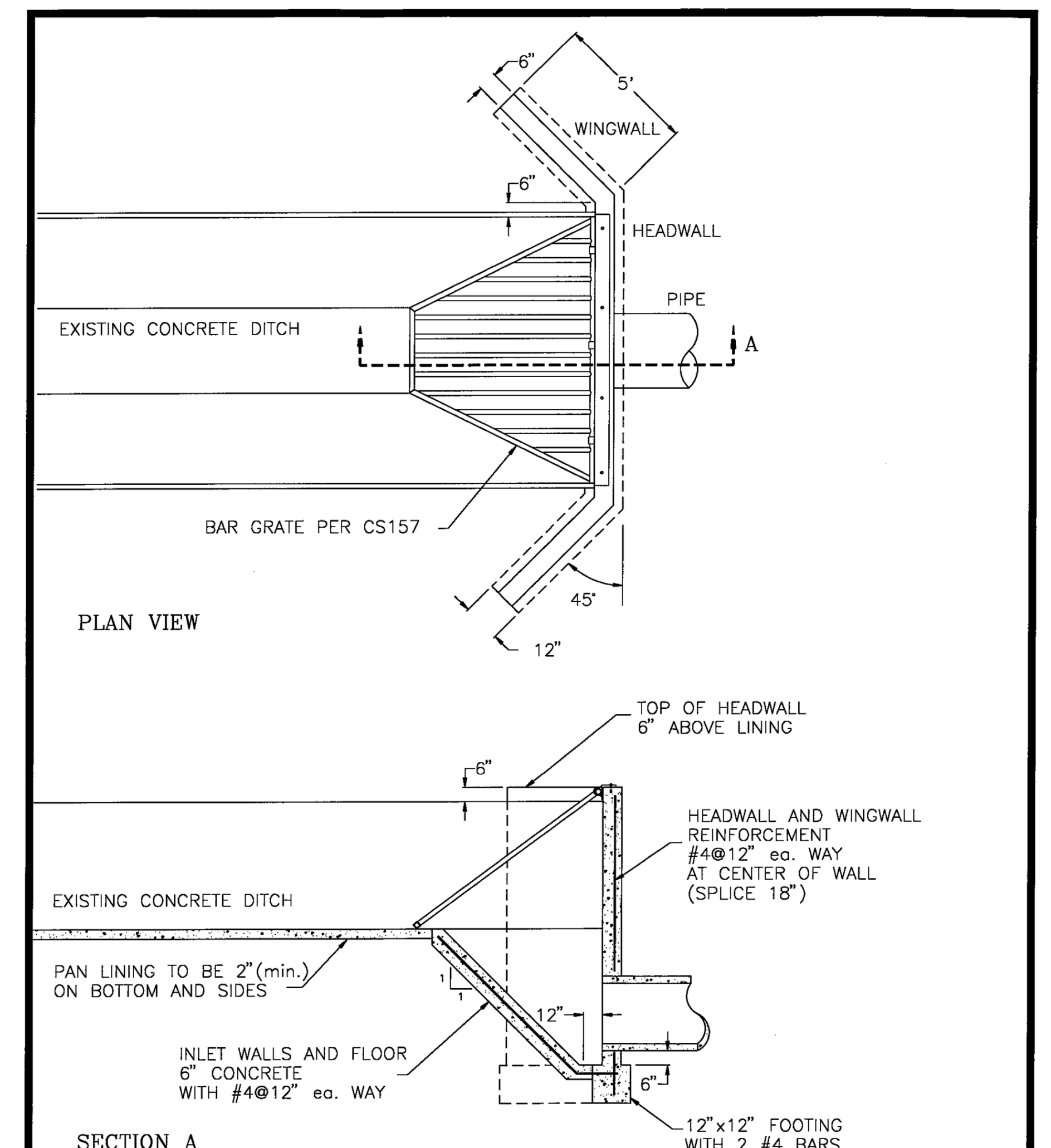
TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

AIR VENT INSTALLATION

WO and C&M AGM — Keith Cargill

REV	DESCRIPTION	INIT	CHK	RV'D	APP	APP	DATE
B	CHANGE PAINT SPEC			AWV			7/10
A	RENUMBER-WAS SS102, ADD APPLICATION NOTE						
--	INITIAL ISSUE	JAS	BDH		REW	BDH	07/24/85

SHEET 1 OF 1 — CS 144B — PAGE



TURLOCK IRRIGATION DISTRICT — IRRIGATION CONSTRUCTION STANDARDS

DROP INLET

REV	DESCRIPTION	INIT	CHK	RV'D	APP	APP	DATE
A	STDS. COM. APPROVAL	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
A	REVISED BAR GRATE RENUMBERED FROM SS108	BB			[illegible]	BZZ	8-19-97
--	INITIAL ISSUE	JAS	BDH			BDH	4/22/87

SHEET 1 OF 1 — CS 145 A — PAGE

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WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

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CITY OF TURLOCK
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156 S. BROADWAY, STE 150
(209) 668-5520

TID CONSTRUCTION DETAILS

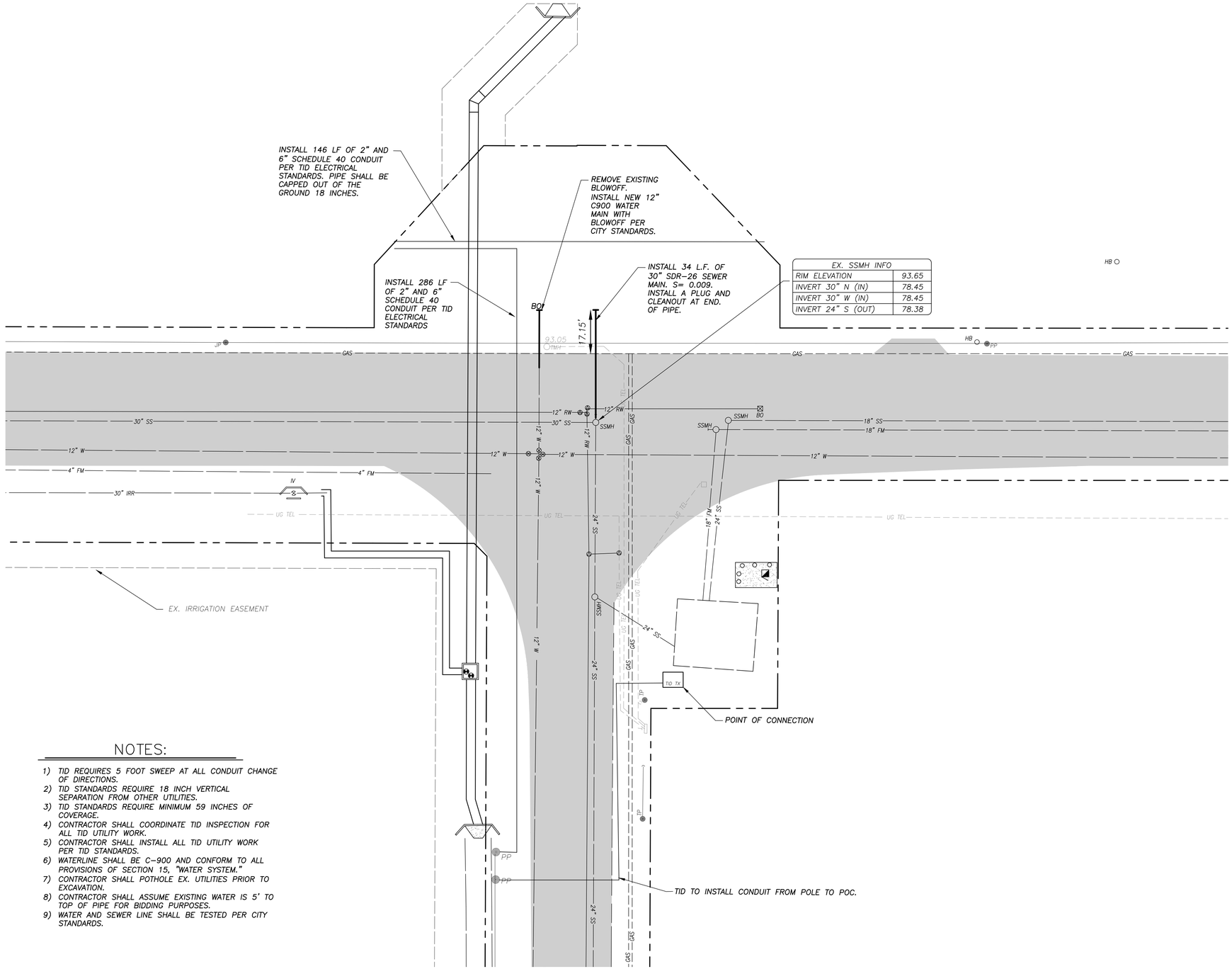
CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE — BAR IS 1" ON ORIGINAL DRAWING — 0, 1/4", 1/2", 3/4", 1" — IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	
	14-44 BASE.dwg

LEGEND

- PAVEMENT
- RIGHT OF WAY
- TID EASEMENT



NOTES:

1) TID REQUIRES 5 FOOT SWEEP AT ALL CONDUIT CHANGE OF DIRECTIONS.
2) TID STANDARDS REQUIRE 18 INCH VERTICAL SEPARATION FROM OTHER UTILITIES.
3) TID STANDARDS REQUIRE MINIMUM 59 INCHES OF COVERAGE.
4) CONTRACTOR SHALL COORDINATE TID INSPECTION FOR ALL TID UTILITY WORK.
5) CONTRACTOR SHALL INSTALL ALL TID UTILITY WORK PER TID STANDARDS.
6) WATERLINE SHALL BE C-900 AND CONFORM TO ALL PROVISIONS OF SECTION 15, "WATER SYSTEM."
7) CONTRACTOR SHALL POTHOLE EX. UTILITIES PRIOR TO EXCAVATION.
8) CONTRACTOR SHALL ASSUME EXISTING WATER IS 5' TO TOP OF PIPE FOR BIDDING PURPOSES.
9) WATER AND SEWER LINE SHALL BE TESTED PER CITY STANDARDS.

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UTILITY PLAN

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SCALE:	1" = 30'
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SHEET 13 OF 22

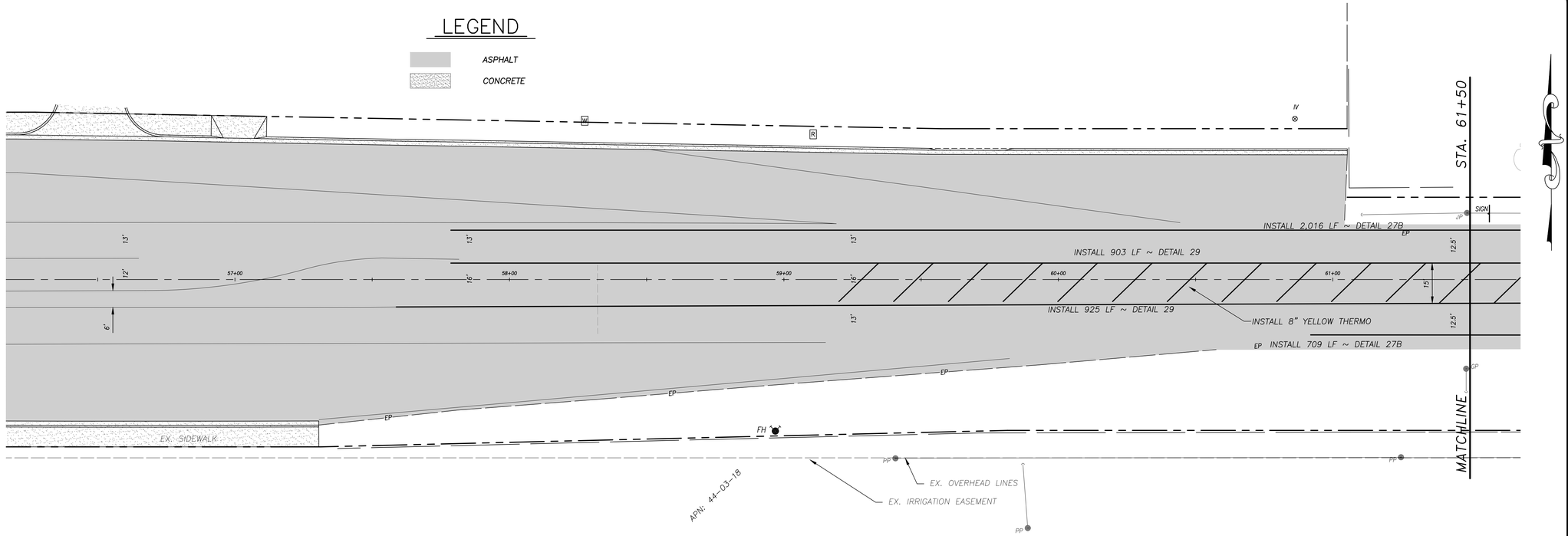
LEGEND

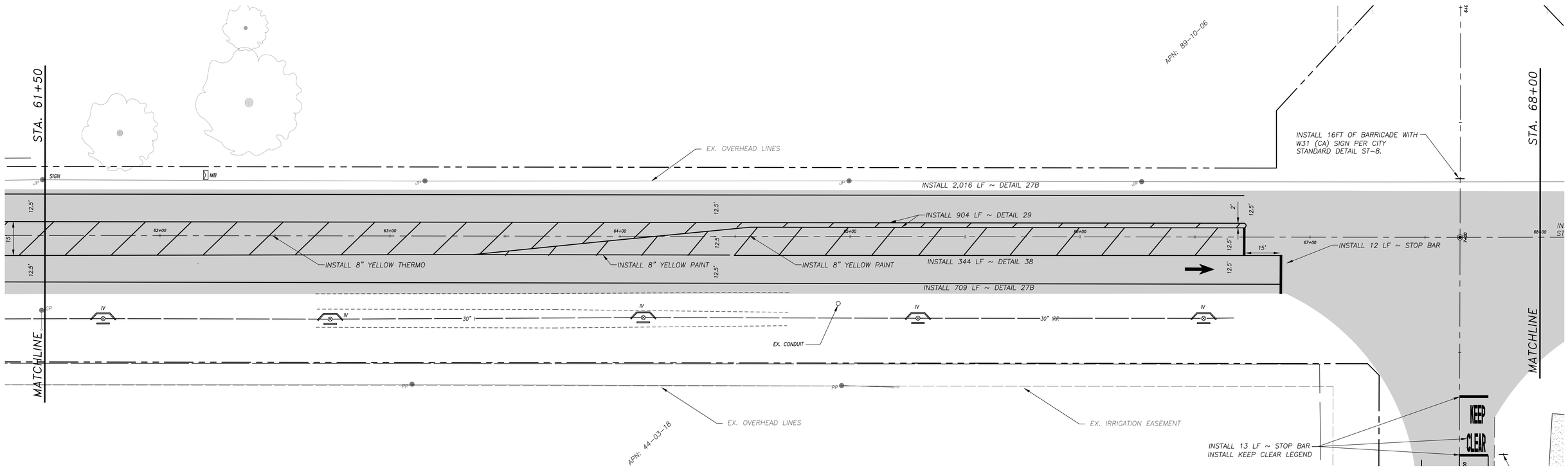
ASPHALT

CONCRETE

NOTES:

1) CONTRACTOR SHALL REPLACE ALL REGULATORY AND WARNING SIGNS WITH HIGH INTENSITY PRISMATIC GRADE SIGNS AS SHOWN ON THE PLANS. ALL NEW SIGNS SHALL BE SAME DIMENSION OR SMALLEST LEGAL SIZE, WHICHEVER IS LARGER. USE EX. POST IF APPLICABLE.
2) ALL PAVEMENT MARKINGS AND STRIPING SHALL BE THERMOPLASTIC UNLESS NOTED OTHERWISE.
3) PAVEMENT MARKERS SHALL BE PLASTIC. CERAMIC MARKERS WILL NOT BE ALLOWED.
4) PLACE TEMPORARY STRIPING AFTER PAVING OPERATIONS CONSISTING OF STOP BARS, LANE LINES, CENTERLINES, AND CROSSWALK CONFORMING TO THE STRIPING PLANS.
5) FINAL STRIPING SHALL BE PLACE SEVEN (7) CALENDAR DAYS AFTER LAST PAVING DAY.
6) CONTRACTOR SHALL CAT TRACK STRIPING THREE (3) CALENDAR DAYS AFTER LAST PAVING DAY.





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STRIPING AND SIGN PLAN

W. MAIN STREET ~ STA. 55+00 TO STA. 68+00

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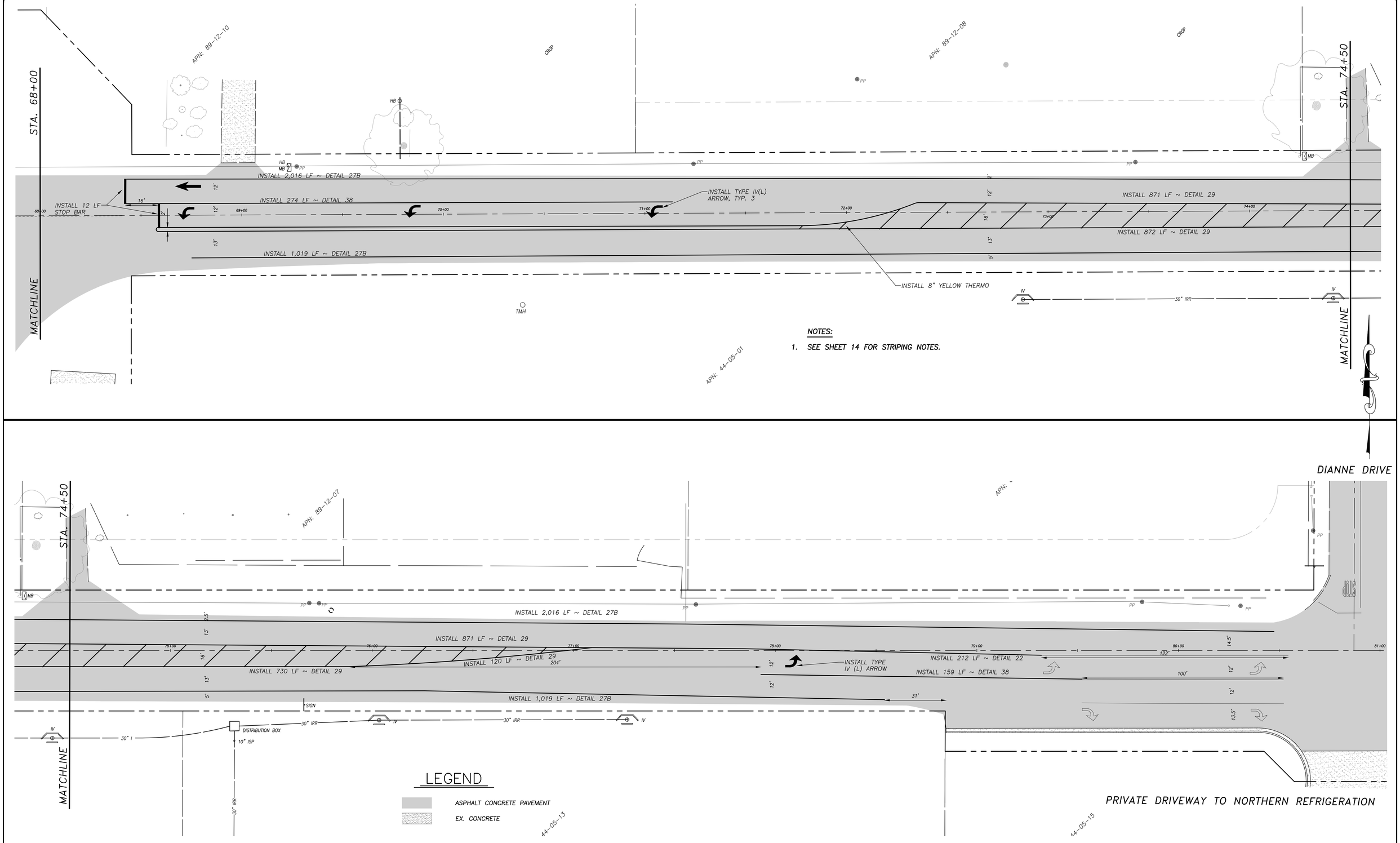
SHEET 14 OF 22



NOTES:

1. SEE SHEET 14 FOR STRIPING NOTES.

LEGEND

- ASPHALT CONCRETE PAVEMENT
- EX. CONCRETE

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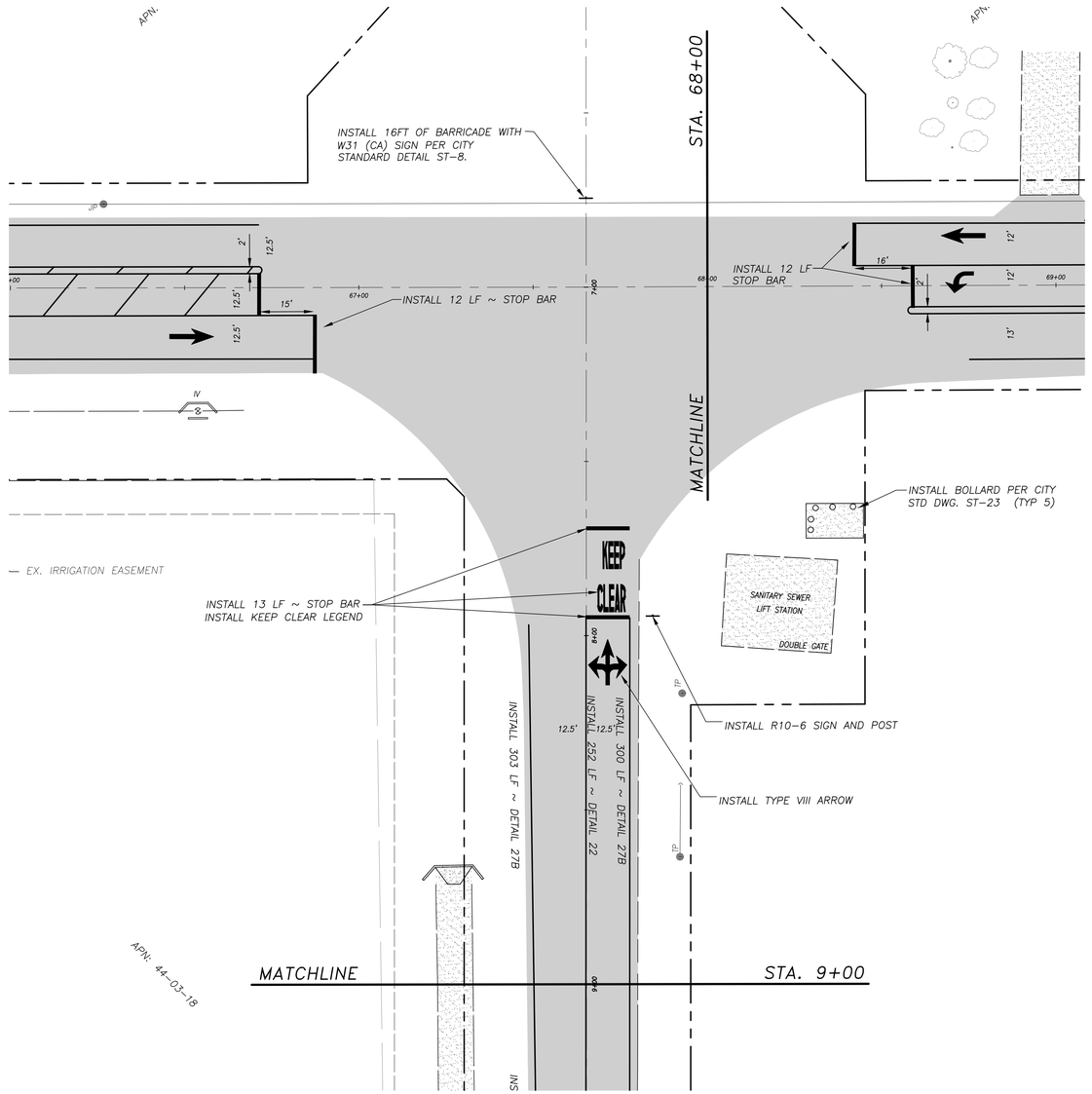
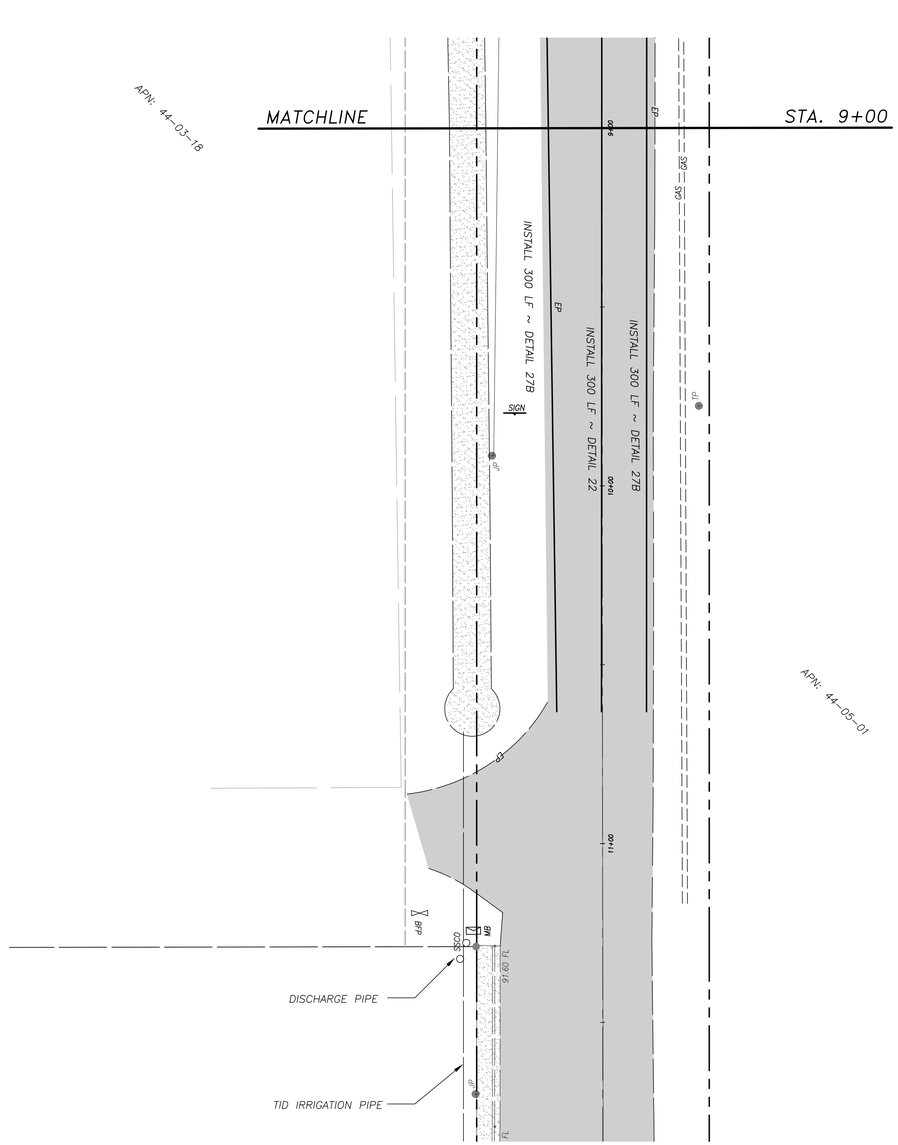
	14-44 BASE.dwg

SHEET 15 OF 22





NOTES:

1. SEE SHEET 14 FOR STRIPING NOTES.

LEGEND

- PAVEMENT
- EX. CONCRETE

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WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER WILLIAM D. MORRIS No. 55910 CIVIL STATE OF CALIFORNIA

CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

STRIPING AND SIGN PLAN

S. TEGNER ROAD ~ BEGIN TO STA. 11+50

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

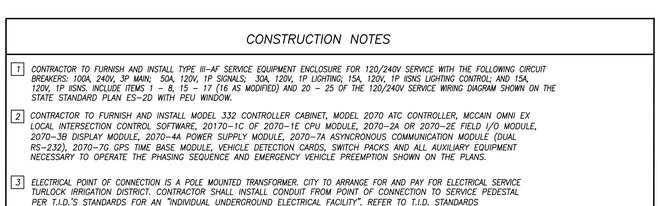
VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 1/2" 3/4" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	1" = 20'
	14-44 BASE.dwg

SHEET 16 OF 22

CONSTRUCTION NOTES

1. CONTRACTOR TO FURNISH AND INSTALL TYPE III-AF SERVICE EQUIPMENT ENCLOSURE FOR 120/240V SERVICE WITH THE FOLLOWING CIRCUIT BREAKERS: 100A, 240V, 3P MAIN; 50A, 120V, 1P SIGNALS; 30A, 120V, 1P LIGHTING; 15A, 120V, 1P IISNS LIGHTING CONTROL; AND 15A, 120V, 1P IISNS. INCLUDE ITEMS 1 – 8, 15 – 17 (16 AS MODIFIED) AND 20 – 25 OF THE 120/240V SERVICE WIRING DIAGRAM SHOWN ON THE STATE STANDARD PLAN ES-2D WITH PEU WINDOW.
2. CONTRACTOR TO FURNISH AND INSTALL MODEL 332 CONTROLLER CABINET, MODEL 2070 ATC CONTROLLER, MCCAIN OMNI EX LOCAL INTERSECTION CONTROL SOFTWARE, 2070-1C OF 2070-1E CPU MODULE, 2070-2A OR 2070-2E FIELD I/O MODULE, 2070-3B DISPLAY MODULE, 2070-4A POWER SUPPLY MODULE, 2070-7A ASYNCRONOUS COMMUNICATION MODULE (DUAL RS-232), 2070-7G GPS TIME BASE MODULE, VEHICLE DETECTION CARDS, SWITCH PACKS AND ALL AUXILIARY EQUIPMENT NECESSARY TO OPERATE THE PHASING SEQUENCE AND EMERGENCY VEHICLE PREEMPTION SHOWN ON THE PLANS.
3. ELECTRICAL POINT OF CONNECTION IS A POLE MOUNTED TRANSFORMER. CITY TO ARRANGE FOR AND PAY FOR ELECTRICAL SERVICE TURLOCK IRRIGATION DISTRICT. CONTRACTOR SHALL INSTALL CONDUIT FROM POINT OF CONNECTION TO SERVICE PEDESTAL PER T.I.D.'S STANDARDS FOR AN "INDIVIDUAL UNDERGROUND ELECTRICAL FACILITY". REFER TO T.I.D. STANDARDS AVAILABLE ONLINE AT: WWW.TID.ORG/POWER/ENGINEERING-CONSTRUCTION
4. CONTRACTOR SHALL INSTALL ALL WIRES FOR FUTURE PEDESTRIAN PUSH BUTTONS AND COUNTDOWN HEADS. NO PUSH BUTTONS OR COUNTDOWN HEADS WILL BE INSTALLED WITH THIS PROJECT.
5. CONTRACTOR SHALL INSTALL ALL WIRES FOR FUTURE SIGNAL HEADS. THESE SIGNAL HEADS WILL NOT BE INSTALLED WITH THIS PROJECT.

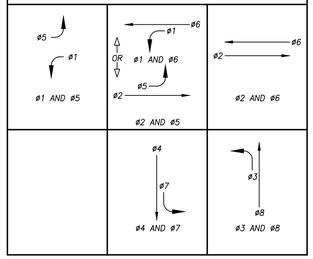


CONDUIT TRENCH DETAIL (ROAD) NO SCALE

CONDUIT TRENCH DETAIL (SHOULDER) NO SCALE

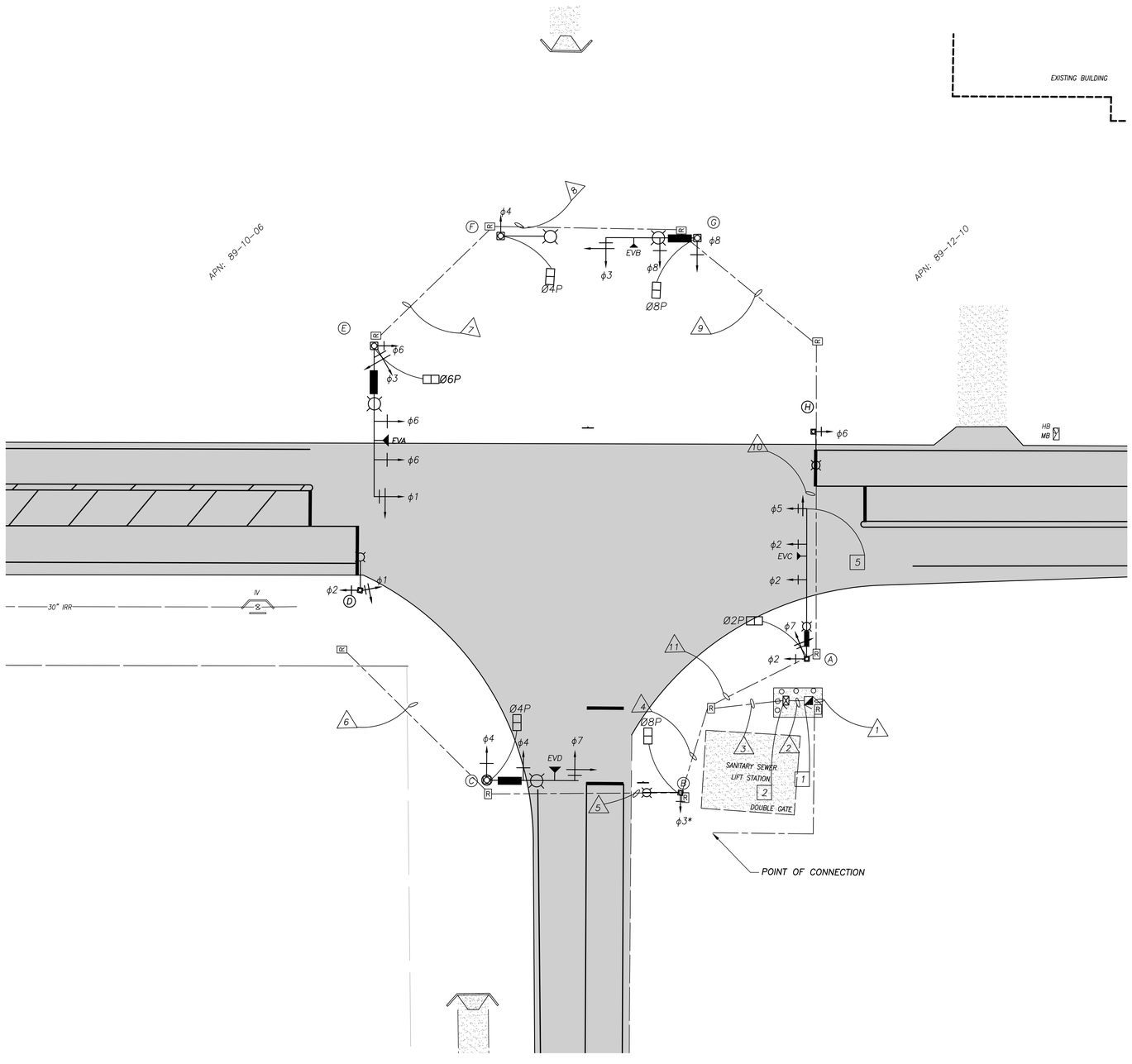
EMERGENCY VEHICLE PREEMPTION
EV(A) = PHASE 2
EV(B) = PHASE 8
EV(C) = PHASE 6
EV(D) = PHASE 4
FLASHING OPERATION: ALL RED

PHASE DIAGRAM



GENERAL NOTES

- THIS PLAN IS SCHEMATIC FOR ELECTRICAL WORK ONLY.
- CITY STAFF SHALL COORDINATE WITH THE TURLOCK IRRIGATION DISTRICT FOR REMOVAL OF AERIAL UTILITIES ON UTILITY POLES IN CONFLICT WITH PROPOSED WORK. CONTRACTOR SHALL CONFIRM HEIGHT OF OVERHEAD ELECTRICAL WIRE OF RELOCATED FACILITIES AND ADJUST THE LENGTH OF SIGNAL POLE ALTERNATIVE SECTION TO PROVIDED A MINIMUM 6' CLEARANCE FROM POWER LINES TO LUMINAIRE AND/OR SIGNAL MAST ARM PER CPUC GENERAL ORDER 95.
- ALL WORK SHALL CONFORM TO THE CURRENT EDITION OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND PLANS.
- EXISTING FACILITIES SHOWN ARE FROM EXISTING FACILITIES LOCATED IN THE FIELD OR FROM RECORD DATA. CONTRACTOR SHALL CONTACT U.S.A. TO DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND FACILITIES AND SHALL PROVIDE PROTECTION PRIOR TO AND DURING ALL TRENCHING, JACKING OR BORING OPERATIONS.
- ALL VEHICLE SIGNAL HEADS SHALL BE 12 INCH INDICATIONS WITH TUNNEL VISORS AND BACK PLATES WITH REFLECTIVE YELLOW BORDERS.
- ALL TRAFFIC SIGNAL PULL BOXES SIZE SHALL BE NO. 6 UNLESS OTHERWISE NOTED ON THE PLANS.
- TRAFFIC SIGNAL BOXES ADJACENT TO STANDARDS SHALL BE PLACED WITH A 3 FOOT CLEARANCE FROM SIDE OF FOUNDATION
- TRAFFIC SIGNAL BOXES INSTALLED IN THE ROADWAY OR SHOULDER SHELL BE INSTALLED AS PER CALTRANS DRAWING ES-8B, "ELECTRICAL SYSTEMS (TRAFFIC PULL BOX)"
- ALL CONDUIT SHALL BE A MINIMUM OF 24 INCHES BELOW TOP OF ASPHALT, CONCRETE, OR NATIVE SURFACES.
- ALL SIGNAL FACES AND PEDESTRIAN SIGNAL FACES SHALL BE L.E.D.
- HIGHWAY SAFETY LIGHTING SHALL HAVE IV PHOTOELECTRIC CONTROL.
- IISNS SHALL BE TITLE CASE. HIGHWAY GOTHIC D FONT. UPPERCASE LETTER SHALL BE 12" IN HEIGHT. LOWERCASE LETTER SHALL BE 9" IN HEIGHT. BACKGROUND SHALL BE BLUE.
- MODEL 332 FOUNDATION DETAIL SH ES-3C SHALL BE MODIFIED TO PROVIDE A 24" WIDE RAISED SIDEWALK AREA ON BOTH SIDES OF THE 332 CABINET.



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WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER WILLIAM D. MORRIS No. 55910 CIVIL STATE OF CALIFORNIA

CITY OF TURLOCK INC. 1908
CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

TRAFFIC SIGNAL PLAN

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
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SHEET 17 OF 22

SECTION 11 SIGNALS, LIGHTING & ELECTRICAL SYSTEMS

TRAFFIC SIGNAL, LIGHTING, AND SIGN ILLUMINATION SHALL CONFORM TO THE PROVISIONS IN SECTION 86, "SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS", OF THE CALTRANS PLANS AND SPECIFICATIONS, EXCEPT AS AMENDED BY THIS PROJECT'S SPECIFICATIONS.

TRAFFIC SIGNAL INSTALLATION AND REMOVAL OF EXISTING ELECTRICAL EQUIPMENT, STREET LIGHT POLES AND STANDARDS WORK SHALL BE PERFORMED AT THE FOLLOWING LOCATIONS: INTERSECTION OF MONTE VISTA AVENUE AND FOSBERG ROAD.

11.01 COST BREAK-DOWN

SUBMIT A COST BREAK-DOWN FOR THE SIGNALS, LIGHTING, AND ELECTRICAL SYSTEMS BID ITEMS. THE BREAK-DOWN SHALL INCLUDE THE FOLLOWING BID ITEM SUB-PARTS: FOUNDATIONS, STANDARDS AND POLES, CONDUIT, PULL BOXES, CONDUCTORS AND CABLES, SERVICE EQUIPMENT, SIGNAL HEADS, PEDESTRIAN HEADS, PEDESTRIAN PUSH BUTTONS, LOOP DETECTORS, LUMINAIRES.

THE COST BREAKDOWN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL WITHIN 15 DAYS AFTER THE CONTRACT HAS BEEN APPROVED. BEFORE ANY PARTIAL PAYMENT FOR THE ITEMS OF ELECTRICAL WORK WILL BE MADE, THE ENGINEER SHALL APPROVE THE COST BREAKDOWN, IN WRITING.

11.02 STANDARDS, STEEL PEDESTALS AND POSTS

WHERE THE PLANS REFER TO THE SIDE TENON DETAIL AT THE END OF THE SIGNAL MAST ARM, THE APPLICABLE TIP TENON DETAIL MAY BE SUBSTITUTED.

THE SIGN MOUNTING HARDWARE SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE PLANS. HANDHOLES FOR SIGNAL STANDARDS SHALL BE LOCATED 90 DEGREES CLOCKWISE FROM THE TRAFFIC SIGNAL MAST ARM.

TYPE 1 STANDARDS SHALL BE ASSEMBLED AND SET WITH THE HANDHOLE ON THE DOWNSTREAM SIDE OF THE POLE IN RELATION TO TRAFFIC, OR AS SHOWN ON THE PLANS.

11.03 CONDUIT

CONDUIT TO BE INSTALLED UNDERGROUND SHALL BE TYPE 3 UNLESS OTHERWISE SPECIFIED. DETECTOR TERMINATION CONDUITS SHALL BE TYPE 3.

THE CONDUIT IN A FOUNDATION AND BETWEEN A FOUNDATION AND THE NEAREST PULL BOX SHALL BE TYPE 1.

WHEN TYPE 3 CONDUIT IS PLACED IN A TRENCH (NOT IN PAVEMENT OR UNDER PORTLAND CEMENT CONCRETE SIDEWALK), AFTER THE BEDDING MATERIAL IS PLACED AND THE CONDUIT IS INSTALLED, THE TRENCH SHALL BE BACKFILLED WITH COMMERCIAL QUALITY CONCRETE, CONTAINING NOT LESS THAN 420 LB OF PORTLAND CEMENT PER CUBIC YARD, TO NOT LESS THAN 4 INCHES ABOVE THE CONDUIT BEFORE ADDITIONAL BACKFILL MATERIAL IS PLACED.

CONDUIT RUNS SHOWN ON THE PLANS TO BE LOCATED BEHIND CURBS, MAY BE INSTALLED IN THE STREET, WITHIN 3 FEET OF AND PARALLEL WITH THE FACE OF THE CURB, BY THE "TRENCHING IN PAVEMENT METHOD" IN CONFORMANCE WITH THE CALTRANS STANDARD SPECIFICATIONS. PULL BOXES SHALL BE LOCATED BEHIND THE CURB OR AT THE LOCATIONS SHOWN ON THE PLANS.

AFTER CONDUCTORS HAVE BEEN INSTALLED, THE ENDS OF CONDUITS TERMINATING IN PULL BOXES, SERVICE EQUIPMENT ENCLOSURES, AND CONTROLLER CABINETS SHALL BE SEALED WITH AN APPROVED TYPE OF SEALING COMPOUND.

AT OTHER LOCATIONS WHERE CONDUIT IS REQUIRED TO BE INSTALLED UNDER PAVEMENT AND IF A DELAY TO VEHICLES WILL NOT EXCEED 5 MINUTES, CONDUIT MAY BE INSTALLED BY THE "TRENCHING IN PAVEMENT METHOD." ALL CONDUITS INSTALLED IN THE STREET AREAS SHALL BE INSTALLED AT A MINIMUM 24 INCH DEPTH FROM THE SURFACE OF THE FINISHED STREET TO THE TOP OF THE CONDUIT.

11.04 PULL BOXES

GROUT SHALL BE PLACED IN THE BOTTOM OF PULL BOXES.

11.05 CONDUCTORS AND WIRING

SPLICES SHALL BE INSULATED BY METHOD "B" OR, AT THE CONTRACTOR'S OPTION, SPLICES OF CONDUCTORS SHALL BE INSULATED WITH HEAT-SHRINK TUBING OF THE APPROPRIATE SIZE AFTER THOROUGHLY PAINTING THE SPLICED CONDUCTORS WITH ELECTRICAL INSULATING COATING.

TESTING

THE CONTRACTOR SHALL PERFORM A HIGH-VOLTAGE SERIES LIGHTING TEST CONSISTING OF THE OPEN CIRCUIT VOLTAGE OF THE CONNECTED CONSTANT CURRENT TRANSFORMER BETWEEN CONDUCTORS AND GROUND.

THE HIGH-VOLTAGE TEST SHALL NOT BE PERFORMED ON EXISTING CIRCUITS OR EQUIPMENT. NON-TESTING OF EXISTING CIRCUITS AND EQUIPMENT SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR MALFUNCTIONING OF EXISTING LIGHTING CIRCUITS DUE TO THE CONTRACTOR MAKING SPLICES IN OR CONNECTING TO THE CIRCUITS AND SUCH MALFUNCTIONS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

11.06 ELECTRICAL SERVICE

CONTINUOUS WELDING OF EXTERIOR SEAMS IN SERVICE EQUIPMENT ENCLOSURES IS NOT REQUIRED.

TYPE III SERVICE EQUIPMENT ENCLOSURES SHALL BE THE ALUMINUM TYPE.

CIRCUIT BREAKERS SHALL BE THE CABLE-IN/CABLE-OUT TYPE, MOUNTED ON NON-ENERGIZED CLIPS. ALL CIRCUIT BREAKERS SHALL BE MOUNTED VERTICALLY WITH THE UP POSITION OF THE HANDLE BEING THE "ON" POSITION.

SERVICE SHALL BE PROVIDED WITH UP TO 2 MAIN CIRCUIT BREAKERS, WHICH SHALL DISCONNECT UNGROUNDED SERVICE ENTRANCE CONDUCTORS. WHERE THE "MAIN" CIRCUIT BREAKER CONSISTS OF 2 CIRCUIT BREAKERS AS SHOWN ON THE PLANS OR REQUIRED IN THE SPECIAL PROVISIONS, EACH OF THE CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING CAPACITY OF 10,000 AMPS, RMS.

CIRCUIT BREAKERS USED AS SERVICE DISCONNECT EQUIPMENT SHALL HAVE A MINIMUM INTERRUPTING CAPACITY OF 42,000 AMPS, RMS, FOR 120/240 V(AC) SERVICES AND 30,000 AMPS, RMS, FOR 480 V(AC) SERVICES.

CITY SHALL ARRANGE FOR SINGLE PHASE ELCTRICAL SERVICE THROUGH THE TURLOCK IRRIGATION DISTRICT AS SHOWN ON THE PLANS. CITY SHALL PAY ALL T.I.D. FEES DIRECTLY. CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL ALL CONDUIT AND CONDUCTOR FROM THE TRANSFORMER TO THE SERVICE PANEL PER T.I.D. STANDARDS.

11.07 MODEL 2070 CONTROLLER ASSEMBLY

THE MODEL 2070 CONTROLLER ASSEMBLIES SHALL INCLUDE MODEL 2070 ATC CONTROLLER, MCCAIN OMNI EX LOCAL INTERSECTION CONTROL SOFTWARE, 2070-1C OR 2070-1E CPU MODULE, 2070-2A OR 2070-2E FIELD I/O MODULE, 2070-3B DISPLAY MODULE, 2070-4A POWER SUPPLY MODULE, 2070-7A ASYNCRONOUS COMMUNICATION MODULE (DUAL RS-232), 2070-7G GPS TIME BASE MODULE, VEHICLE DETECTION CARDS, SWITCH PACKS AND ALL AUXILIARY EQUIPMENT NECESSARY TO OPERATE THE PHASING SEQUENCE AND EMERGENCY VEHICLE PREEMPTION SHOWN ON THE PLANS.

THE TYPE 332 CABINET SHALL HAVE A CONTROLLER CABINET DRAWER INCLUDED TO HOLD PLANS, MAINTENANCE LOGS AND TIMING SHEETS. THE CONTROLLER SHALL ALSO INCLUDE A CABINET LIGHT AS REQUIRED WITHIN THE CALTRANS STANDARD SPECIFICATIONS. THE LIGHT SHALL AUTOMATICALLY TURN ON AND REMAIN ON ANYTIME ONE OF THE CABINET DOORS IS OPENED.

THE TESTING OF THE CONTROLLER AND CABINET SHALL BE PERFORMED BY A TESTING LABORATORY AND CERTIFIED TO MEET THE SPECIFICATIONS AND REQUIREMENTS OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION. THE TESTING COSTS AND TRANSPORTATION OF THE CONTROLLER AND CABINET TO THE TESTING LABORATORY SHALL BE AT THE CONTRACTOR'S EXPENSE AND SHALL BE INCLUDED IN THE LUMP SUM PRICE PAID FOR THE TRAFFIC SIGNAL AS SET FORTH IN THE PROPOSAL.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS TO HAVE A SIGNAL TECHNICIAN, QUALIFIED TO WORK ON THE CONTROLLER UNIT AND EMPLOYED BY THE CONTROLLER UNIT MANUFACTURER OR HIS REPRESENTATIVE, PRESENT AT THE TIME THE EQUIPMENT IS TURNED ON.

THE TYPE 332 TRAFFIC SIGNAL CABINETS SHALL BE PRE-WIRED WITH "GREEN SENSOR" HARNESS FOR "OPTICOM" PREEMPTION.

11.08 NUMBERING ELECTRICAL EQUIPMENT

THE CONTRACTOR SHALL PLACE TURLOCK IRRIGATION DISTRICT NUMBER LABELS ON ELECTRICAL EQUIPMENT. THE TURLOCK IRRIGATION DISTRICT WILL SUPPLY THE NUMBERS FOR THE CONTRACTOR'S INSTALLATION.

11.09 VEHICLE SIGNAL FACES AND SIGNAL HEADS

ALL RED, AMBER AND GREEN LIGHTS (BALL OR ARROW) SHALL BE 12 INCH IN SIZE AND SHALL UTILIZE LIGHT EMITTING DIODE SIGNAL MODULES. EACH LIGHT EMITTING DIODE SIGNAL MODULE SHALL CONSIST OF AN ASSEMBLY THAT UTILIZES LIGHT EMITTING DIODES AS THE LIGHT SOURCE. EACH LIGHT EMITTING DIODE SIGNAL MODULE SHALL BE DESIGNED TO BE INSTALLED IN THE DOOR FRAME OF A STANDARD TRAFFIC SIGNAL HOUSING. THE CONTRACTOR SHALL FURNISH ALL LED LAMPS.

11.10 PEDESTRIAN SIGNALS

PEDESTRIAN SIGNALS SHALL BE TYPE A BLACK IN COLOR. INTERNATIONAL SYMBOL INDICATIONS SHALL BE PROVIDED. THE PEDESTRIAN SIGNAL INDICATIONS SHALL HAVE LED'S SIGNAL MODULES THAT MEET CALTRANS SPECIFICATIONS "COUNTDOWN TYPE" WITH "FULL FIGURE DISPLAY".

THE FOLLOWING TYPE OF SCREEN SHALL BE PROVIDED:
A 1 1/2-INCH DEEP EGGCRATE-TYPE SCREEN EITHER OF 0.020-INCH MAXIMUM THICKNESS 3003 H14 ALUMINUM ALLOY OR OF 0.030-INCH NOMINAL THICKNESS POLYCARBONATE. THE ASSEMBLY SHALL BE MOUNTED IN A FRAME CONSTRUCTED OF 0.040-INCH MINIMUM THICKNESS ALUMINUM ALLOY OR POLYCARBONATE BLACK IN COLOR.

THE EGGCRATE-TYPE SCREEN SHALL BE INSTALLED PARALLEL TO THE FACE OF THE MESSAGE PLATE AND SHALL BE HELD IN PLACE BY THE USE OF STAINLESS STEEL SCREWS.

THE HOOD DESCRIBED IN SECTION 86-4.05C, "VISORS", OF THE STATE STANDARD SPECIFICATIONS IS NOT REQUIRED.

THE SCREEN AND FRAME SHALL BE ANODIZED FLAT BLACK OR MAY BE FINISHED WITH FLAT BLACK ENAMEL AS SPECIFIED IN SECTION 91-4.01, "ENAMEL: TRAFFIC SIGNAL LUSTERLESS BLACK", CONTRACTOR'S EXPENSE.

ALTERNATE METHODS MAY BE SUBSTITUTED FOR THE ABOVE SCREENING PROVIDING THE RESULTS ARE EQUAL TO OR SUPERIOR TO THOSE OBTAINED WITH THE ABOVE-SPECIFIED SCREEN AS DETERMINED BY THE CITY ENGINEER.

11.11 PEDESTRIAN PUSHBUTTONS

PEDESTRIAN PUSHBUTTONS SHALL MEET MUTCD REQUIREMENTS FOR ACCESSIBLE PEDESTRIAN SIGNALS (APS). CONTRACTOR SHALL PROVDE THE APS WHERE THE MUTCD LANGUAGE IS SUCH THAT A FEATURE "SHALL" BE REQUIRED. THE PUSH BUTTON SIGN SHALL BE PORCELAIN ENAMELED METAL. THE PUSH BUTTON SHALL INCLUDE A R10-3e SIGN IMMEDIATELY ABOVE THE BUTTON.

POLE-SUPPORTED PEDESTRIAN TRAFFIC CONTROL BUTTONS SHALL BE IDENTIFIED WITH COLOR CODING CONSISTING OF A TEXTURED HORIZONTAL YELLOW BAND 2" IN WIDTH ENCIRCLING THE POLE, AND A 1" WIDE DARK BORDER BAND ABOVE AND BELOW THE YELLOW BAND. COLOR CODING SHOULD BE PLACED IMMEDIATELY ABOVE THE CONTROL BUTTON. CONTROL BUTTONS SHALL BE LOCATED NO HIGHER THAN 48" ABOVE THE SURFACE ADJACENT TO THE POLE.

11.12 EMERGENCY VEHICLE DETECTOR SYSTEM

TRAFFIC SIGNAL SHALL HAVE AN EMERGENCY VEHICLE DETECTOR SYSTEM THAT SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS AND THESE SPECIAL PROVISIONS.

GENERAL

EACH EMERGENCY VEHICLE DETECTOR SYSTEM SHALL CONSIST OF AN OPTICAL EMITTER ASSEMBLY OR ASSEMBLIES LOCATED ON THE APPROPRIATE VEHICLE AND AN OPTICAL DETECTOR/DISCRIMINATOR ASSEMBLY OR ASSEMBLIES LOCATED AT THE TRAFFIC SIGNAL.

EMITTER ASSEMBLIES ARE NOT REQUIRED FOR THIS PROJECT EXCEPT UNITS FOR TESTING PURPOSES TO DEMONSTRATE THAT THE SYSTEMS PERFORM AS SPECIFIED. TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER AS DESCRIBED BELOW UNDER "SYSTEM OPERATION" DURING THE SIGNAL TEST PERIOD. THE ENGINEER SHALL BE GIVEN A MINIMUM OF 2 WORKING DAYS NOTICE PRIOR TO PERFORMING THE TESTS.

EACH SYSTEM SHALL PERMIT DETECTION OF 2 CLASSES OF AUTHORIZED VEHICLES. CLASS I (MASS TRANSIT) VEHICLES SHALL BE DETECTED AT RANGES OF UP TO 900 FEET FROM THE OPTICAL DETECTOR. CLASS II (EMERGENCY) VEHICLES SHALL BE DETECTED AT RANGES UP TO 1800 FEET FROM THE OPTICAL DETECTOR.

CLASS I SIGNALS (THOSE EMITTED BY CLASS I VEHICLES) SHALL BE DISTINGUISHED FROM CLASS II SIGNALS (THOSE EMITTED BY CLASS II VEHICLES) ON THE BASIS OF THE MODULATION FREQUENCY OF THE LIGHT FROM THE RESPECTIVE EMITTER. THE MODULATION FREQUENCY FOR CLASS I SIGNAL EMITTERS SHALL BE 9.639 HZ € 0.110 HZ. THE MODULATION FREQUENCY FOR CLASS II SIGNAL EMITTERS SHALL BE 14.035 HZ € 0.250 HZ.

A SYSTEM SHALL ESTABLISH A PRIORITY OF CLASS II VEHICLE SIGNALS OVER CLASS I VEHICLE SIGNALS AND SHALL CONFORM TO THE REQUIREMENTS IN SECTION 25352 OF THE CALIFORNIA VEHICLE CODE.

OPTICAL DETECTION/DISCRIMINATOR ASSEMBLY

GENERAL

EACH OPTICAL DETECTION/DISCRIMINATOR ASSEMBLY SHALL CONSIST OF ONE OR MORE OPTICAL DETECTORS, CONNECTING CABLE AND A DISCRIMINATOR MODULE.

EACH ASSEMBLY, WHEN USED WITH STANDARD EMITTERS, SHALL HAVE A RANGE OF AT LEAST 990 FEET FOR CLASS I SIGNALS AND 1800 FEET FOR CLASS II SIGNALS. STANDARD EMITTERS FOR BOTH CLASSES OF SIGNALS SHALL BE AVAILABLE FROM THE MANUFACTURER OF THE SYSTEM. RANGE MEASUREMENTS SHALL BE TAKEN WITH ALL RANGE ADJUSTMENTS ON THE DISCRIMINATOR MODULE SET TO "MAXIMUM".

OPTICAL DETECTOR

EACH OPTICAL DETECTOR SHALL BE A WATERPROOF UNIT CAPABLE OF RECEIVING OPTICAL ENERGY FROM TWO SEPARATELY AMIABLE DIRECTIONS. THE HORIZONTAL ANGLE BETWEEN THE 2 DIRECTIONS SHALL BE VARIABLE FROM 180 DEGREES TO 5 DEGREES.

THE RECEPTION ANGLE FOR EACH PHOTOCELL ASSEMBLY SHALL BE A MAXIMUM OF 8 DEGREES IN ALL DIRECTIONS ABOUT THE AIMING AXIS OF THE ASSEMBLY. MEASUREMENTS OF RECEPTION ANGLE WILL BE TAKEN AT A RANGE OF 990 FEET FOR A TYPE I EMITTER AND AT A RANGE OF 1800 FEET FOR A TYPE II EMITTER.

INTERNAL CIRCUITRY SHALL BE SOLID STATE AND THE ASSOCIATED DISCRIMINATOR MODULE SHALL PROVIDE ELECTRICAL POWER.

EACH OPTICAL DETECTOR SHALL BE CONTAINED IN A HOUSING, WHICH SHALL INCLUDE 2 ROTATABLE PHOTOCELL ASSEMBLIES, AN ELECTRONIC ASSEMBLY AND A BASE. THE BASE SHALL HAVE AN OPENING TO PERMIT MOUNTING ON A MAST ARM OR A VERTICAL PIPE NIPPLE, OR SUSPENSION FROM A SPAN WIRE. THE MOUNTING OPENING SHALL HAVE FEMALE THREADS FOR ONE INCH CONDUIT. A CABLE ENTRANCE SHALL BE PROVIDED WHICH SHALL HAVE MALE THREADS AND GASKETING TO PERMIT A WATERPROOF CABLE CONNECTION. EACH DETECTOR SHALL HAVE MASS OF LESS THAN 2.4 LBS AND SHALL PRESENT A MAXIMUM WIND LOAD AREA OF 36 INCHES SQUARED. THE HOUSING SHALL BE PROVIDED WITH WEEP HOLES TO PERMIT DRAINAGE OF CONDENSED MOISTURE.

EACH OPTICAL DETECTOR SHALL BE INSTALLED, WIRED AND AIMED AS SPECIFIED BY THE MANUFACTURER.

CABLE

OPTICAL DETECTOR CABLE (EV-C) SHALL MEET THE REQUIREMENTS OF IPCEA-S-61-402/NEMA WC 5, SECTION 7.4, 600V (AC) CONTROL CABLE, 75 C, TYPE B, AND THE FOLLOWING:

A. THE CABLE SHALL CONTAIN 3 CONDUCTORS, EACH OF WHICH SHALL BE NO. 20 (7 X 28) STRANDED, TINNED COPPER WITH LOW-DENSITY POLYETHYLENE INSULATION. MINIMUM AVERAGE INSULATION THICKNESS SHALL BE 0.63 MM. INSULATION OF INDIVIDUAL CONDUCTORS SHALL BE COLOR-CODED: 1-YELLOW, 1-BLUE, AND 1-ORANGE.

B. THE SHIELD SHALL BE EITHER TINNED COPPER BRAID OR ALUMINIZED POLYESTER FILM WITH A NOMINAL 20 PERCENT OVERLAP. WHERE FILM IS USED, A NO. 20 (7 X 28) STRANDED, TINNED, BARE DRAIN WIRE SHALL BE PLACED BETWEEN THE INSULATED CONDUCTORS AND THE SHIELD AND IN CONTACT WITH THE CONDUCTIVE SURFACE OF THE SHIELD.

C. THE JACKET SHALL BE BLACK POLYVINYL CHLORIDE WITH MINIMUM RATINGS OF 600 V (AC) AND 80 C AND A MINIMUM AVERAGE THICKNESS OF 1.1 MM. THE JACKET SHALL BE MARKED AS REQUIRED BY IPCEA/NEMA.

D. THE FINISHED OUTSIDE DIAMETER OF THE CABLE SHALL NOT EXCEED 8.9 MM.

E. THE CAPACITANCE, AS MEASURED BETWEEN ANY CONDUCTOR AND THE OTHER CONDUCTORS AND THE SHIELD, SHALL NOT EXCEED 157 PF PER METER AT 1000 HZ.

F. THE CABLE RUN BETWEEN EACH DETECTOR AND THE CONTROLLER CABINET SHALL BE CONTINUOUS WITHOUT SPLICES OR SHALL BE SPLICED ONLY AS DIRECTED BY THE DETECTOR MANUFACTURER.

DISCRIMINATOR MODULE

EACH DISCRIMINATOR MODULE SHALL BE DESIGNED TO BE COMPATIBLE AND USABLE WITH A MODEL 170 CONTROLLER UNIT AND TO BE MOUNTED IN THE INPUT FILE OF A MODEL 332 OR MODEL 336 CONTROLLER CABINET, AND SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER I OF THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, "TRAFFIC SIGNAL CONTROL EQUIPMENT SPECIFICATIONS",

EACH DISCRIMINATOR MODULE SHALL BE CAPABLE OF OPERATING TWO CHANNELS, EACH OF WHICH SHALL PROVIDE AN INDEPENDENT OUTPUT FOR EACH SEPARATE INPUT.

EACH DISCRIMINATOR MODULE, WHEN USED WITH ITS ASSOCIATED DETECTORS, SHALL PERFORM THE FOLLOWING:

A. RECEIVE CLASS I SIGNALS AT A RANGE OF UP TO 900 FEET AND CLASS II SIGNALS AT A RANGE OF UP TO 1800 FEET.

B. DECODE THE SIGNALS, ON THE BASIS OF FREQUENCY, AT 9.639 HZ € 0.119 HZ FOR CLASS I SIGNALS AND 14.035 HZ € 0.255 HZ FOR CLASS II SIGNALS.

C. ESTABLISH THE VALIDITY OF RECEIVED SIGNALS ON THE BASIS OF FREQUENCY AND LENGTH OF TIME RECEIVED. A SIGNAL SHALL BE CONSIDERED VALID ONLY WHEN RECEIVED FOR MORE THAN 0.50-SECOND. NO COMBINATION OF CLASS I SIGNALS SHALL BE RECOGNIZED AS A CLASS II SIGNAL REGARDLESS OF THE NUMBER OF SIGNALS BEING RECEIVED, UP TO A MAXIMUM OF 10 SIGNALS. ONCE A VALID SIGNAL HAS BEEN RECOGNIZED, THE EFFECT SHALL BE HELD BY THE MODULE IN THE EVENT OF TEMPORARY LOSS OF THE SIGNAL FOR A PERIOD ADJUSTABLE FROM 4.5 SECONDS TO 11 SECONDS IN AT LEAST 2 STEPS AT 5 SECONDS € 0.5 SECOND AND 10 SECONDS € 0.5 SECOND.

D. PROVIDE AN OUTPUT FOR EACH CHANNEL THAT WILL RESULT IN A "LOW" OR GROUNDED CONDITION OF THE APPROPRIATE INPUT OF A MODEL 2070 CONTROLLER UNIT. FOR CLASS I SIGNAL THE OUTPUT SHALL BE A 6.25 HZ € 0.1 PERCENT, RECTANGULAR WAVEFORM WITH A 50 PERCENT DUTY CYCLE. FOR CLASS II SIGNALS THE OUTPUT SHALL BE STEADY.

EACH DISCRIMINATOR MODULE SHALL RECEIVE ELECTRIC POWER FROM THE CONTROLLER CABINET AT EITHER 24 V (DC) OR 120 V (AC).

EACH CHANNEL TOGETHER WITH THE CHANNEL'S ASSOCIATED DETECTORS SHALL DRAW NOT MORE THAN 100 MA AT 24 V (DC) OR MORE THAN 100 MA AT 120 V (AC). ELECTRIC POWER, ONE DETECTOR INPUT FOR EACH CHANNEL AND ONE OUTPUT FOR EACH CHANNEL SHALL TERMINATE AT THE PRINTED CIRCUIT BOARD EDGE CONNECTOR PINS LISTED BELOW:

BOARD EDGE CONNECTOR PIN ASSIGNMENT

A	DC GROUND		
B	+24V (DC)	P	(NC)
C	(NC)		
D	DETECTOR INPUT, CHANNEL A	R	(NC)
E	+24V (DC) TO DETECTORS	S	(NC)
F	CHANNEL A OUTPUT (C)	T	(NC)
		U	(NC)
H	CHANNEL A OUTPUT (E)	V	(NC)
J	DETECTOR INPUT, CHANNEL B	W	CHANNEL B OUTPUT (C)
K	DC GROUND TO DETECTORS	X	CHANNEL B OUTPUT (E)
L	CHASSIS GROUND	Y	(NC)
M	AC-	Z	(NC)
N	AC+		

(C) COLLECTOR, SLOTTED FOR KEYING
(E) EMITTER, SLOTTED FOR KEYING
(NC) NOT CONNECTED, CANNOT BE USED BY MANUFACTURER FOR ANY PURPOSE.

TWO AUXILIARY INPUTS FOR EACH CHANNEL SHALL ENTER EACH MODULE THROUGH THE FRONT PANEL CONNECTOR. PIN ASSIGNMENT FOR THE CONNECTOR SHALL BE AS FOLLOWS:

A. AUXILIARY DETECTOR 1 INPUT, CHANNEL A
B. AUXILIARY DETECTOR 2 INPUT, CHANNEL A
C. AUXILIARY DETECTOR 1 INPUT, CHANNEL B
D. AUXILIARY DETECTOR 2 INPUT, CHANNEL B

EACH CHANNEL OUTPUT SHALL BE AN OPTICALLY ISOLATED NPN OPEN COLLECTOR TRANSISTOR CAPABLE OF SINKING 50 MA AT 30 V (AC) AND SHALL BE COMPATIBLE WITH THE MODEL 2070 CONTROLLER UNIT INPUTS.

EACH DISCRIMINATOR MODULE SHALL BE PROVIDED WITH MEANS OF PREVENTING TRANSIENTS RECEIVED BY THE DETECTOR FROM AFFECTING THE MODEL 2070 CONTROLLER ASSEMBLY.

EACH DISCRIMINATOR MODULE SHALL HAVE A SINGLE CONNECTOR BOARD AND SHALL OCCUPY ONE SLOT WIDTH OF THE INPUT FILE. THE FRONT PANEL OF EACH MODULE SHALL HAVE A HANDLE TO FACILITATE WITHDRAWAL AND THE FOLLOWING CONTROLS AND INDICATORS FOR EACH CHANNEL:

A. THREE SEPARATE RANGE ADJUSTMENTS EACH FOR BOTH CLASS I AND CLASS II SIGNALS.

B. A 3-POSITION, CENTER-OFF, MOMENTARY CONTACT SWITCH, ONE POSITION (DOWN) LABELED FOR TEST OPERATION OF CLASS I SIGNALS, AND ONE POSITION (UP) LABELED FOR TEST OPERATION OF CLASS II SIGNALS.

C. A "SIGNAL" INDICATION AND A "CALL" INDICATION EACH FOR CLASS I AND FOR CLASS II SIGNALS. THE "SIGNAL" INDICATION DENOTES THAT A SIGNAL ABOVE THE THRESHOLD LEVEL HAS BEEN RECEIVED. A "CALL" INDICATION DENOTES THAT A STEADY, VALIDLY CODED SIGNAL HAS BEEN RECEIVED. THESE 2 INDICATIONS MAY BE ACCOMPLISHED WITH A SINGLE INDICATION LAMP; "SIGNAL" BEING DENOTED BY A FLASHING INDICATION AND "CALL" WITH A STEADY INDICATION.

IN ADDITION, THE FRONT PANEL SHALL BE PROVIDED WITH A SINGLE CIRCULAR, BAYONET-CAPTURED, MULTI-PIN CONNECTOR FOR 2 AUXILIARY DETECTOR INPUTS FOR EACH CHANNEL. CONNECTOR SHALL BE A MECHANICAL CONFIGURATION CONFORMING TO THE REQUIREMENTS IN MILITARY SPECIFICATION MIL-C-26482 WITH 10-4 INSERT ARRANGEMENT, SUCH AS BURNDY TRIM TRIO BANTAMATE SERIES,

A. WALL MOUNTING RECEPTACLE, G0B10-4PNE WITH SM20M-1S6 GOLD PLATED PINS.

B. PLUG, G6L10-4SNE WITH SC20M-1S6 GOLD PLATED SOCKETS, CABLE CLAMP AND STRAIN RELIEF THAT SHALL PROVIDE FOR A RIGHT ANGLE TURN WITHIN 65 MM MAXIMUM FROM THE FRONT PANEL SURFACE OF THE DISCRIMINATOR MODULE.

CABINET WIRING

THE MODEL 332 CABINET HAS PROVISIONS FOR CONNECTIONS BETWEEN THE OPTICAL DETECTORS, THE DISCRIMINATOR MODULE AND THE MODEL 2070 CONTROLLER UNIT.

WIRING FOR A MODEL 332 CABINET SHALL CONFORM TO THE FOLLOWING:

A. SLOTS 12 AND 13 OF INPUT FILE "J" HAVE EACH BEEN WIRED TO ACCEPT A 2-CHANNEL MODULE.

B. FIELD WIRING FOR THE PRIMARY DETECTORS, EXCEPT 24-V (DC) POWER, SHALL TERMINATE ON EITHER TERMINAL BOARD TB-9 IN THE CONTROLLER CABINET OR ON THE REAR OF INPUT FILE "J," DEPENDING ON CABINET CONFIGURATION. WHERE TB-9 IS USED, POSITION ASSIGNMENTS SHALL BE AS FOLLOWS:

POSITION	ASSIGNMENT
4	CHANNEL A DETECTOR INPUT, 1ST MODULE (SLOT J-12)
5	CHANNEL B DETECTOR INPUT, 1ST MODULE (SLOT J-12)
7	CHANNEL A DETECTOR INPUT, 2ND MODULE (SLOT J-13)
8	CHANNEL B DETECTOR INPUT, 2ND MODULE (SLOT J-13)

THE 24V (DC) CABINET POWER WILL BE AVAILABLE AT POSITION 1 OF TERMINAL BOARD TB-1 IN THE CONTROLLER CABINET.

FIELD WIRING FOR THE AUXILIARY DETECTORS SHALL TERMINATE ON TERMINAL BOARD TB-O IN THE CONTROLLER CABINET. POSITION ASSIGNMENTS ARE AS FOLLOWS:

FOR MODULE 1 (J-12)

POSITION	ASSIGNMENT
1	+24V (DC) FROM (J-12E)
2	DETECTOR GROUND FROM (J-12K)
3	CHANNEL A AUXILIARY DETECTOR INPUT 1
4	CHANNEL A AUXILIARY DETECTOR INPUT 2
5	CHANNEL B AUXILIARY DETECTOR INPUT 1
6	CHANNEL B AUXILIARY DETECTOR INPUT 2

FOR MODULE 2 (J-13)

POSITION	ASSIGNMENT
7	+24V (DC) FROM (J-13E)
8	DETECTOR GROUND FROM (J-13K)
9	CHANNEL A AUXILIARY DETECTOR INPUT 1
10	CHANNEL A AUXILIARY DETECTOR INPUT 2
11	CHANNEL B AUXILIARY DETECTOR INPUT 1
12	CHANNEL B AUXILIARY DETECTOR INPUT 2

SYSTEM OPERATION

THE CONTRACTOR SHALL DEMONSTRATE THAT THE COMPONENTS OF EACH SYSTEM ARE COMPATIBLE AND WILL PERFORM SATISFACTORILY AS A SYSTEM. SATISFACTORY PERFORMANCE SHALL BE DETERMINED USING THE FOLLOWING TEST PROCEDURE DURING THE FUNCTIONAL TEST PERIOD:

A. EACH SYSTEM TO BE USED FOR TESTING SHALL CONSIST OF AN OPTICAL EMITTER ASSEMBLY, AN OPTICAL DETECTOR, AN OPTICAL DETECTOR CABLE AND A DISCRIMINATOR MODULE.

B. THE DISCRIMINATOR MODULES SHALL BE INSTALLED IN THE PROPER INPUT FILE SLOT OF THE MODEL 2070 CONTROLLER ASSEMBLY.

C. TWO TESTS SHALL BE CONDUCTED; ONE USING A CLASS I SIGNAL EMITTER AND A DISTANCE OF 900 FEET BETWEEN THE EMITTER AND THE DETECTOR, THE OTHER USING A CLASS II SIGNAL EMITTER AND A DISTANCE OF 1800 FEET BETWEEN THE EMITTER AND THE DETECTOR. RANGE ADJUSTMENTS ON THE MODULE SHALL BE SET TO "MAXIMUM" FOR EACH TEST.

D. EACH TEST SHALL BE CONDUCTED FOR A PERIOD OF ONE HOUR, DURING WHICH, THE EMITTER SHALL BE OPERATED FOR 30 CYCLES, EACH CONSISTING OF A ONE-MINUTE "ON" INTERVAL AND A ONE-MINUTE "OFF" INTERVAL. DURING THE TOTAL TEST PERIOD THE EMITTER SIGNAL SHALL CAUSE THE PROPER RESPONSE FROM THE MODEL 2070 CONTROLLER UNIT DURING EACH "ON" INTERVAL AND THERE SHALL BE NO IMPROPER OPERATION OF EITHER THE MODEL 2070 CONTROLLER UNIT OR THE MONITOR DURING EACH "OFF" INTERVAL.

11.13 UNINTERRUPTED POWER SUPPLY:

THE CONTRACTOR SHALL INSTALL AN UNINTERRUPTED POWER SUPPLY UNIT CAPABLE OF SUPPLYING ELECTRICAL POWER FOR A FULLY EQUIPPED EIGHT PHASE TYPE 332 CABINET CONTROLLED WITH A TYPE 2070 TRAFFIC SIGNAL CONTROLLER. STANDARD RUN TIME SHALL BE 3 HOURS WITH ALL LED SIGNAL INDICATIONS. THE COMPONENTS SHALL BE WIRED AND CONFORM TO NEMA, NEC AND UL STANDARDS. THE UNIT SHALL BE EQUAL TO A TESCO 22 BBS 1400XL-6 OR AN APPROVED EQUAL. THE UNIT SHALL BE ELECTRICAL SERVICE MOUNTED ENCLOSURE. THE CONTRACTOR SHALL ENSURE THAT THE MOUNTING OF THIS UNIT TO THE ELECTRICAL SERVICE CABINET WILL NOT LIMIT THE WARRANTY OF ANY EQUIPMENT SUPPLIED WITH THIS PROJECT.

11.14 LUMINAIRES

LUMINAIRES SHALL EACH HAVE THE FOLLOWING FEATURES:

INTERSECTION SAFETY LIGHTING MOUNTED TO TRAFFIC SIGNAL POLES:

- HIGH-FLUX WHITE LED PRODUCING A MINIMUM OF 90% OF INITIAL INTENSITY OVER 75,000 HOURS OF LIFE PER IES TM-21. LEDS TESTING PER IES LM-80.
- 120V - 277V.
- UTILITY WATTAGE LABEL AND RUBBER WILDLIFE GUARD OPTIONS INCLUDED.
- 4000K COLOR TEMPERATURE
- TYPE 2 MEDIUM DISTRIBUTION, FULLY SEALED WITH IP66 RATING
- 2-HOUR BURN IN FACTORY TEST
- FACTORY SET "1A" DRIVE CURRENT CODE
- ONE PIECE DIE CAST ALUMINUM HOUSING WITH UNIVERSAL TWO-BOLT SLIP FITTER TO MOUNT TO 1-1/4" TO 2" DIAMETER MAST ARM
- LEVELING ADJUSTMENT FROM +/- 5 DEGREES
- RATED LIFE OF ELECTRICAL COMPONENTS IS 100,000 HOURS.
- FADE RESISTANT POLYESTER POWDER COAT FINISH WITH 3 MIL THICKNESS. FINISH TESTED TO WITHSTAND 5,000 HOURS SALT SPRAY PER ASTM B117.
- UL LISTED FOR USE IN WET LOCATIONS IN THE USA.
- 10 YEAR WARRANTY
- VANDAL RESISTANCE OF HOUSING AND OPTICS RATED TO IK10
- MINIMUM DELIVERED LUMENS = 11,720 Lm, WITH EFFICACY (Lm/W) MINIMUM = 116
- PHOTO CELL SHALL BE INT-MATELC4536 305V PHOTO CONTROL

11.15 INTERNALLY ILLUMINATED STREET NAME SIGNS

1.0 ENCLOSURE

- THE SIGN SHALL BE CONSTRUCTED OF 0.125" THICK TYPE 5052-832 GRADE ALUMINUM, WITH A TIG-WELDED FRAME FOR MAXIMUM DURABILITY OF THE SIGN ENCLOSURE.
- THE SIGN'S VIEWABLE OPENING SHALL BE AVAILABLE IN 15", 18", AND 24" INCH SPANS (HEIGHTS).
- THE SIGN'S VIEWABLE OPENING SHALL BE AVAILABLE IN 48", 72", 96", AND 120" INCH LENGTHS, AS MEASURED BY THE VIEWABLE OPENING OF THE SIGN.
- THE SIGN ENCLOSURE SHALL BE NO MORE THAN 3.50" INCHES THICK, REGARDLESS OF WHETHER IT IS A SINGLE-FACED SIGN OR A DOUBLE-FACED SIGN.
- THE SIGN SHALL BE DESIGNED IN SUCH A WAY AS TO MAKE IT POSSIBLE TO CONVERT THE SIGN FROM A SINGLE-SIDED SIGN TO A DOUBLE-SIDED SIGN (OR THE REVERSE), WITH ONLY A CHANGE IN THE FACE PLATES/BACK PLATES OF THE SIGN. THE ENCLOSURE MUST NOT CHANGE DIMENSIONS WITH THIS CONVERSION FROM A SINGLE-SIDED SIGN TO A DOUBLE-SIDED SIGN (OR THE REVERSE).
- THE SIGN SHALL WEIGH NO MORE THAN 5 LBS. PER SQUARE FOOT.
- THE SIGN SHALL UTILIZE A CONTINUOUS STAINLESS STEEL HINGE ON THE BOTTOM OF THE ENCLOSURE FOR A 180 - DEGREE SWING-DOWN DOOR OPERATION. THE SIGN SHALL ALSO BE FABRICATED IN A WAY TO ENSURE THAT NO COMPONENTS FALL OUT WHILE A TECHNICIAN IS OPENING OR WORKING INSIDE THE SIGN ENCLOSURE. BECAUSE ADHESIVE TAPE AND SILICONE ARE NOT ACCEPTABLE ALTERNATIVES FOR FASTENING THE SIGN FACE TO THE DOOR OF THE ENCLOSURE WHEN OPENED, RIGID ALUMINUM BRACKET HARDWARE WILL BE UTILIZED TO KEEP THE SIGN FACE IN THE DOOR.
- THE SIGN MUST BE DESIGNED FOR DEPENDABLE WEATHER - RESISTANT OPERATION WITHOUT THE USE OF SILICONE TO SEAL THE ENCLOSURE.
- THE SIGN SHALL UTILIZE A UL-LISTED NEOPRENE GASKET BETWEEN THE DOOR FRAME AND THE SIGN FACE ACRYLIC ON THE DOOR OF THE ENCLOSURE. POLYVINYL CHRLORIDE / ACRYLONITRILE BUTADINE RUBBER / CHRLOROPRENE (NEOPRENE ®) GASKET SHALL BE UL 94 LISTED, OUTDOOR OZONE POLYMER NEPORENE GASKET THAT CONFORMS TO ASTM 1056 FOR COMPRESSION RESISTANCE OF 4-6 PSI AT 25% COMPRESSION, ASTM 1667 FOR WATER ABSORPTION THAT DOES NOT EXCEED 0.L LBS/FT2, CONFORMITY WITH ASTM-412 FOR A TENSILE STRENGTH MINIMUM OF 50 PSI. THE NEOPRENE GASKET SHALL BE APPLIED TO THE DOOR FRAME, AND WILL NOT BE APPLIED TO THE SIGN FACE ACRYLIC.
- THE SIGN SHALL ALLOW FOR POWER CONNECTION TO EITHER END OF THE SIGN VIA PRE-FABRICATED "KNOCKOUT."
- THE SIGN FACE ENCLOSURE SHALL BE DESIGNED AS TO ALLOW COMPLETE REPLACEMENT OF THE SIGN FACE WITH COMMON TOOLS (8/32" NUT DRIVER).
- THE COMPLETED SIGN ASSEMBLY, INCLUDING THE SIGN PANELS AND SIGN MOUNTING HARDWARE, SHALL BE DESIGNED AND CONSTRUCTED TO WITHSTAND SUSTAINED WINDS OF 110 MPH, AND GUSTS OF 150 MPH, WITHOUT DAMAGE TO THE SIGN'S EXTERIOR OR ANY OF ITS INTERNAL COMPONENTS AS DETERMINED BY AN INDEPENDENT TESTING LABORATORY.
- MOUNTING HARDWARE WILL BE SECURELY AFFIXED TO THE TOP AND BOTTOM OF THE ENCLOSURE FOR A SECURE FIT ON THE ENCLOSURE, AND THE MOUNTING BRACKET HARDWARE SHALL EXTEND NO MORE THAN 3/16" ABOVE THE TOP PLANE OF THE SIGN AND SHALL NOT EXTEND MORE THAN 3/16" BELOW THE BOTTOM PLANE OF THE SIGN, RESPECTIVELY. THE SIGN HARDWARE SHALL NOT BE CONSPICUOUS AS VIEWED FROM THE FRONT OF THE SIGN ENCLOSURE. THE SIGN MUST BE SUPPLIED WITH RIGID BACK BRACE MOUNTING BRACKETS ON TWO POSITIONS ON THE BACK OF THE SIGN. THE RIGID BACK BRACE MOUNTING BRACKETS WILL BE POWDER-COAT PAINTED TO AN EXACT MATCH OF THE SIGN EXTRUSIONS, AND SHALL BE IN ACCORDANCE WITH MILITARY STANDARD MIL-C-24712.
- THE SIGN WILL HAVE NO HOLES DRILLED THOUGH THE ENCLOSURE'S BACK PLATE FOR USE IN A RIGID MOUNT MAST ARM CONFIGURATION.
- ALL OF THE SIGN'S WEIGHT WILL BE SUPPORTED BY A BRACKET WHICH SECURELY GRASPS BOTH THE TOP AND BOTTOM RIGID ALUMINUM EXTRUSIONS. SIGN BRACKETS, AS PROVIDED BY THE MANUFACTURER, WILL BE DESIGNED AS TO ALLOW ADEQUATE VERTICAL TRAVEL FOR ADJUSTABLE INSTALLATION ON BOTH STRAIGHT AND CURVILINEAR MAST ARMS.
- THE SIGN'S EXTERIOR SURFACES SHALL BE POWDER - COAT PAINTED IN ACCORDANCE WITH MILITARY STANDARD MIL-C-24712. FINISH WILL MEET THE REQUIREMENTS OF ASTM 03359, ASTM 03363, AND ASTM 0552 FOR MAXIMUM DURABILITY AND COLOR RETENTION OVER THE LIFE OF THE SIGN. THE SIGN SHALL NOT BE WET-PAINTED ON ANY PORTION OF THE SIGN. ALL EXTERNAL OPTIONS THAT ACCOMPANY THE SIGN, TO INCLUDE THE EXTERNAL JUNCTION BOX, SHALL ALSO BE POWDER-COATED TO THE SAME STANDARDS.
- THE SIGN SHALL UTILIZE A UL-LISTED NEOPRENE GASKET BETWEEN THE DOOR FRAME AND THE SIGN FACE ACRYLIC ON THE DOOR OF THE ENCLOSURE. POLYVINYL CHRLORIDE / ACRYLONITRILE BUTADINE RUBBER / CHRLOROPRENE (NEOPRENE ®) GASKET SHALL BE UL 94 LISTED, OUTDOOR OZONE POLYMER NEPORENE GASKET THAT CONFORMS TO ASTM 1056 FOR COMPRESSION RESISTANCE OF 4-6 PSI AT 25% COMPRESSION, ASTM 1667 FOR WATER ABSORPTION THAT DOES NOT EXCEED 0.L LBS/FT2, CONFORMITY WITH ASTM-412 FOR A TENSILE STRENGTH MINIMUM OF 50 PSI., AND SHALL BE A MINIMUM THICKNESS OF ONE - HALF INCH BEFORE INSTALLATION AND COMPRESSION ON A CLEAN, DE-GREASED SURFACE.
- THE SIGN SHALL COME FROM THE MANUFACTURER WITH ONE EYE BOLT MOUNTED SECURELY IN THE TOP RIGHT END AND ONE EYE BOLT MOUNTED SECURELY IN THE TOP LEFT END OF THE SIGN, NO MORE THAN 3.25" FROM THE SIGN'S END, FOR THE ATTACHMENT OF SAFETY CABLES UPON INSTALLATION.
- THE SIGN AND POWER SUPPLY SHOULD BE ABLE TO WITHSTAND AND OPERATE AT TEMPERATURE EXTREMES OF -22 DEG F TO +140 DEG F.

2.0 LED LIGHT SOURCE & LUMINANCE

- THE INTERNALLY-ILLUMINATED SIGN'S LEDS SHALL HAVE A LIFE SPAN OF 60,000 HOURS BEFORE LIGHT OUTPUT DEGRADES TO JUST 70% OF ITS INITIAL BRIGHTNESS.
- THE SIGN SHALL BE LISTED AND APPROVED TO UL 48 STANDARDS BY A NATIONALLY RECOGNIZED TESTING LABORATORY. THE OUTSIDE OF THE SIGN SHALL BE MARKED WITH A CERTIFICATION MARK FOR ELECTRIC SIGNS UL 48.
- THE SIGN SHALL HAVE LIGHT OUTPUT RATING OF 750-780 LUX ACROSS THE ENTIRE SIGN FACE, AS MEASURED BY A LIGHT METER AT 50 DIFFERENT POINTS ACROSS THE ENTIRE SIGN FACE.
- SIGN PANEL LEDS SHALL BE WIRED TO ENSURE THAT A FAILURE OF ONE LED DOES NOT AFFECT THE SIGN'S LUX OUTPUT BY MORE THAN 10% LUX OVER THE AFFECTED AREA.
- SIGN'S LED PANELS WILL HAVE ONE (1) PRESS CONNECTION TERMINAL ON EACH END OF THE REPLACEABLE LED PANEL SO THAT ONLY COMMON HAND TOOLS ARE REQUIRED FOR THE WIRING REPLACEMENT OF SAID LED PANEL.
- THE SIGN ENCLOSURE SHALL BE DESIGNED AS TO ALLOW COMPLETE REPLACEMENT OF THE HEAT SYNC LED PANELS WITH COMMON TOOLS (PHILLIPS HEAD SCREWDRIVER) IF NECESSARY.
- THREADED STANDOFFS, MOUNTED TO THE INTERIOR OF THE SIGN, SHALL BE MOUNTED 1/4" AWAY FROM ANY EXTERIOR SURFACE TO ALLOW FOR MINIMAL HEAT TRANSFER AND DAMAGE TO THE LED PANEL FROM SUNLIGHT HEATING THE OUTSIDE OF THE ENCLOSURE, MAXIMIZING THE LIFE OF THE LEDS.

3.0 LED SINGLE OUTPUT SWITCHING POWER SUPPLY

- LED SINGLE OUTPUT SWITCHING POWER SUPPLY SHALL BE A FULLY-ENCAPSULATED, CONSTANT CURRENT DESIGN BUILT TO WITHSTAND 300VAC SURGE INPUT FOR 5 SECONDS, WITH INHERENT SHORT CIRCUIT/OVER CURRENT/OVER VOLTAGE PROTECTION. THE POWER SUPPLY SHALL BE A UL 1310 CLASS 2 POWER UNIT, AND WILL BE HOUSED IN A FULLY ISOLATED PLASTIC CASE TO PREVENT WATER INTRUSION.
- THE SIGN'S LED SINGLE OUTPUT SWITCHING POWER SUPPLY SHALL BE RATED FOR A 1750 MA (MILLI AMPS) RATED CURRENT, A DC VOLTAGE RANGE OF 9-34V, A POWER RATING OF 59.5W, A VOLTAGE TOLERANCE 0+/- 5.0% AN AC CURRENT OF 0.7A/230VAC, AND VOLTAGE RANGE OF 127-370VDC WITH 87% OPERATING EFFICIENCY RATING, PLUS A WORKING TEMPERATURE OF-30 TO +70 DEGREES CELSIUS
- SAFETY STANDARDS SHALL MEET THE FOLLOWING CRITERIA: UL1310 CLASS 2, CAN/CSA C22.2 NO. 223-M91 (FOR LPC-60-1750 ONLY), IP67 APPROVED; DESIGN REFER TO TUV EN60950-1, EN61347-2-13.

4.0 ENERGY REQUIREMENTS

THE AVERAGE POWER CONSUMPTION OF THE SIGN SHALL NOT EXCEED:

6FT = 32 WATTS
8FT = 48 WATTS
10FT = 55 WATTS

5.0 SIGN FACE AND MATERIAL

- SIGN FACES SHALL BE DESIGNED USING ONLY CURRENT MUTCD APPROVED FONTS AND FONT SIZES, IN ADDITION TO THE REQUESTING AGENCY'S OWN PREFERENCES AND SPECIFICATIONS.
- THE SIGN SHALL HAVE A 3MM OR 4MM ACRYLIC FRONT PANEL THAT IS UV, WEATHER, ABRASION AND IMPACT RESISTANT. THE FRONT PANEL SHALL BE REPLACEABLE SO THAT MAINTAINING AGENCIES HAVE THE OPTION TO SUPPLY THEIR OWN SHEETING AND 3M 1170 SERIES ELECTROCUT™ FILM FOR THE SIGN FACES.
- THE SIGN SHALL UTILIZE 3M'S 1170 SERIES ELECTROCUT™ FILM FOR THE SIGN LEGEND AND SIGN BACKGROUND.
- 3M 4090 SERIES ASTM TYPE IX DIAMOND GRADE™ SHEETING SHALL BE UTILIZED, WHEN SPECIFIED, TO MEET MINIMUM LEVELS OF THE RETRO-REFLECTIVITY OF THE SIGN FACE, AS RECOMMENDED BY THE MUTCD, IF THE SIGN'S LED'S SHOULD FAIL.
- THE LIGHT TRANSMISSION FACTOR OF THE SIGN PANEL MUST PROVIDE A LETTER TO BACKGROUND RATIO OF A MINIMUM OF 4:1.
- THE SIGN SHALL UTILIZE IMPACT RESISTANT, MATCH-GRADE COMPONENT ACRYLICS (IN BOTH 3MM AND 4MM VARIANTS) WITH THE ABOVE-SPECIFIED 3M ELECTROCUT™ TO PREVENT OUT-GASSING, BUBBLING, PEELING, AND CRACKING OF THE SIGN FACE FILM, ENSURING SIGN FACE DURABILITY OVER THE LIFE OF THE SIGN.

6.0 MANUFACTURER'S WARRANTY

THE SIGN WILL CARRY A 5-YEAR MANUFACTURER'S WARRANTY ON THE SIGN ENCLOSURE AND ALL OF ITS INTERNAL COMPONENTS.

11.16 PHOTOELECTRIC CONTROLS

CONTACTORS SHALL BE THE MECHANICAL ARMATURE MERCURY TYPE. MODEL NO. ELC4536 BY INTERMATIC, OR APPROVED EQUAL.

11.17 REMOVING, REINSTALLING, OR SALVAGING EQUIPMENT

SALVAGED ELECTRICAL MATERIALS SHALL BE HAULED TO THE CITY OF TURLOCK AT 901 S. WALNUT ROAD.

THE CONTRACTOR SHALL PROVIDE THE EQUIPMENT, AS NECESSARY, TO SAFELY REMOVE ALL DESIGNATED FLASHING BEACONS, STREET LIGHT POLES, ARMS, STANDARDS AND UNLOAD AND STOCKPILE THE MATERIAL. A MINIMUM OF 2 WORKING DAYS' NOTICE SHALL BE GIVEN PRIOR TO DELIVERY.

11.18 CAMERA DETECTORS

CONTRACTOR SHALL FURNISH AND INSTALL VIDEO/RADAR CAMERA DETECTION. ONE CAMERA PER DIRECTION OF TRAVEL. CAMERA SHALL DETECT STOP BAR AND ADVANCED VEHICLE DETECTION APPROXIMATELY 350 FEET IN EACH DIRECTION.

CONDUIT AND CONDUCTOR SCHEDULE

STD	PHASES AND CABLE TYPES			1	2	3	4	5	6	7	8	9	10	11
	16 COND.	9 COND.	3 COND.	CONDUIT RUN										
	11 - #14 1 - #12	8 - #14 1 - #12	3 - #14 (PPB)	QTY 1 2 IN.	QTY 2 4 IN.	QTY 2 6 IN.	QTY 2 4 IN.	QTY 1 3 IN.	QTY 1 1 IN.	QTY 1 3 IN.	QTY 1 3 IN.	QTY 1 6 IN.	QTY 1 6 IN.	QTY 2 6 IN.
A	φ2, φ2, φ5	φ2, φ7			1/1/0	1/1/0								1/1/0
B		φ3			0/1/0	0/1/0	0/1/0							
C	φ4, φ4, φ7				1/0/0	1/0/0	1/0/0	1/0/0						
D		φ1, φ2			0/1/0	0/1/0	0/1/0	0/1/0	0/1/0					
E	φ1, φ6, φ6,	φ3, φ6			1/1/0	1/1/0				1/1/0	1/1/0	1/1/0	1/1/0	1/1/0
F		φ4			0/1/0	0/1/0					0/1/0	0/1/0	0/1/0	0/1/0
G	φ3, φ3, φ8				1/0/0	1/0/0						1/0/0	1/0/0	1/0/0
H		φ6			0/1/0	0/1/0							0/1/0	0/1/0
TOTAL					4/6/0	4/6/0	1/2/0	1/1/0	0/1/0	1/1/0	1/2/0	2/2/0	2/3/0	3/4/0
1/0 TRIPLEX	SERVICE			1										
#4 AWG	SIGNALS				2									
#8 AWG	LIGHTING					8	3	2	1	1	2	3	4	5
#10 AWG	IISNS					4	1	1		1	1	2	2	3
EMERGENCY VEHICLE PREEMPTIVE CABLE	EVA					1		1				1	1	1
	EVB					1		1					1	1
	EVC					1								1
	EVD					1	1	1						
	TOTAL EV CABLE			0	0	4	1	3	0	0	1	2	2	3
DETECTOR LEAD IN CABLE (DLC)	φ2 DETECTORS					6	6							6
	φ4 DETECTORS													
	φ6 DETECTORS					6	6						6	6
	φ8 DETECTORS													
	φ1 DETECTORS					6	6						6	6
	φ3 DETECTORS					6	6							
	φ5 DETECTORS					6	6	6	6					
	φ7 DETECTORS													
	TOTAL DLCs			0	0	30	30	6	6	0	0	0	12	18

NOTES:
CONDUIT RUN NO. 1 AND CONDUCTOR TO BE INSTALLED AS AN INDIVIDUAL UNDERGROUND ELECTRIC FACILITY. CONTRACTOR TO FURNISH ALL MATERIAL AND INSTALL PER TURLOCK IRRIGATION DISTRICT (T.I.D.) STANDARDS. THE DEVELOPER INFORMATION BOOK CONTAINING THE STANDARDS CAN BE FOUND ONLINE AT HTTP://WWW.TID.ORG/POWER/ENGINEERING-CONSTRUCTION

POLE & EQUIPMENT SCHEDULE

LOCATION	POLE TYPE	MAST ARM		SIGNAL MOUNTING			PPB		6' OR 8' TYPE A 120V IISNS	EV. SYS.	120 VAC LUMINAIRE (INDUCTION)	REMARKS / FUTURE SIDEWALK ELEVATION
		SIGNAL	LUMINAIRE	VEHICLE	MAST ARM	PEDESTRIAN	φ	ARROW	LEGEND			
A	29-5-100	50'	15'	SV-2-TA	26 MAS 38 MAS 50 MAS				S. TEGNER RD.	EVC	LED, SEE SPECS	1 93.30
B	15TS	--	12'	SV-1-T	--				--	--	LED, SEE SPECS	1 92.59
C	19-2-100	30'	12'	SV-1-T	11 MAS 30 MAS				W. MAIN ST.	EVD	LED, SEE SPECS	1 92.59
D	15TS	-	12'	SV-2-TA	-				--	--	LED, SEE SPECS	1 N/A
E	29-5-100	50'	15'	SV-2-TA	24 MAS 37 MAS 50 MAS				S. TEGNER RD.	EVA	LED, SEE SPECS	1 92.81
F	15TS	-	12'	SV-2-TA	-				-		LED, SEE SPECS	1 92.81
G	19-2-100	30'	12'	SV-1-T	12 MAS 30 MAS				W. MAIN ST.	EVB	LED, SEE SPECS	1 93.19
H	15TS	-	12'	SV-1-T	-				-	-	LED, SEE SPECS	1 N/A

USA NORTH 811 Call 811 Before You Dig WWW.USANORTH811.ORG

NOTE:
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WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

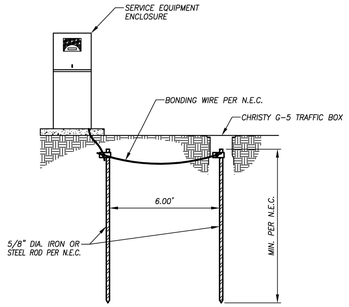
REGISTERED PROFESSIONAL ENGINEER WILLIAM D. MORRIS No. 55910 CIVIL STATE OF CALIFORNIA

CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

TRAFFIC SIGNAL SPECIFICATIONS, GENERAL AND CONSTRUCTION NOTES
CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 3/4" 1" 1/2"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

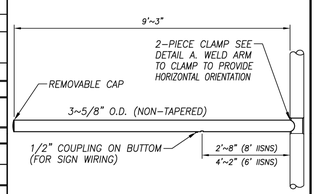
DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	N/A
	14-44 BASE.dwg



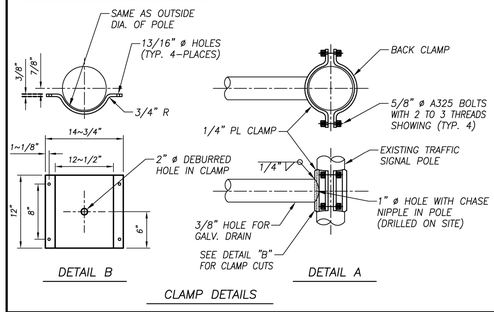
GROUNDING ELECTRODE SYSTEM

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. E-15
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		

GENERAL NOTES	
MATERIAL SPECIFICATIONS	
SHAFT	STEEL OF 48,000 PSI MINIMUM YIELD AFTER FABRICATION
CLAMP PLATE	ASTM A-572 GR 50 STEEL
MANUFACTURING PROCESSES	
LONGITUDINAL WELDS	ALL WELDS SHALL CONFORM TO AWS D 1.1 WELD SPECIFICATION
FINISH COATING	
STRUCTURE	HOT DIP GALVANIZED PER ASTM A-123
HARDWARE	HOT DIP GALVANIZED PER ASTM A-153
DESIGN CRITERIA	
STRUCTURE, HARDWARE AND WELDING	IN ACCORDANCE WITH THE "SPECIFICATIONS FOR STRUCTURAL SUPPORTS OF HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS". AASHTO 1994



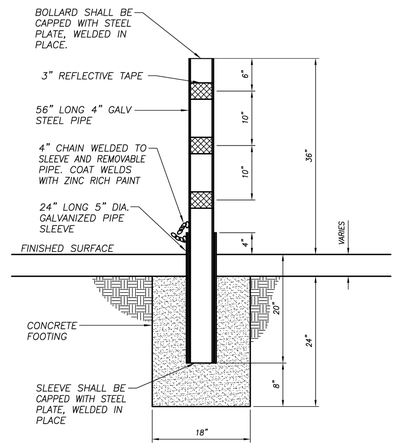
I.I.S.N.S. SUPPORT ARM



CLAMP DETAILS

I.I.S.N.S. SUPPORT ARM MOUNTING

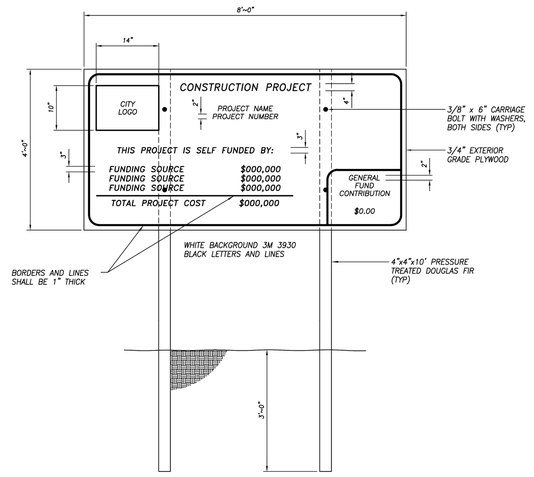
DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. E-10
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



SEE DRAWING ST-31 FOR BOLLARD NOTES

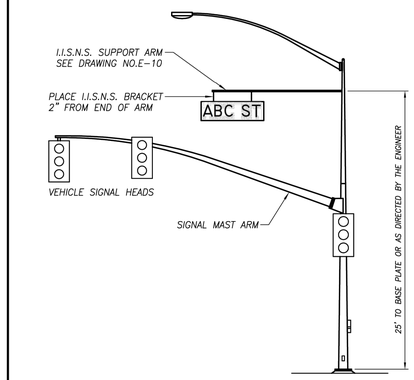
REMOVABLE BOLLARD DETAIL

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. ST-23
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



TEMPORARY CONSTRUCTION SIGN

NOT TO SCALE

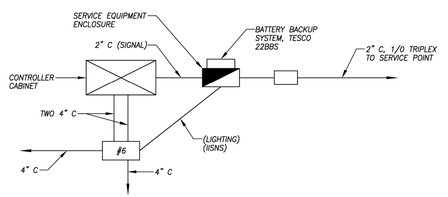


NOTES:

1. INTERNALLY ILLUMINATED STREET NAME SIGN (I.I.S.N.S.) ARM SHALL ALIGN WITH THE MAST ARM
2. FOR SUPPORT ARM DESIGN SEE DRAWING NO. E-10
3. INSTALL SAFETY CABLE FROM I.I.S.N.S. TO SUPPORT ARM

I.I.S.N.S. SUPPORT ARM

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. E-9
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		

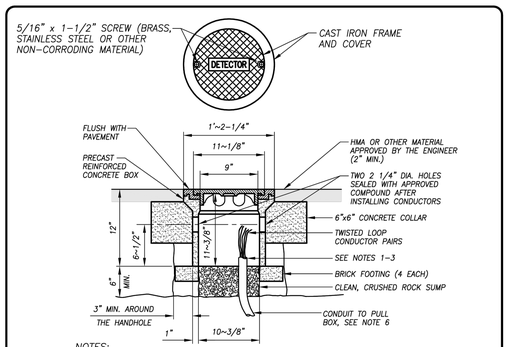


NOTES:

1. SIZES OF CONDUITS LISTED ARE MINIMUMS ONLY. LARGER CONDUITS SHALL BE USED IF FILL IS GREATER THAN 26%

TRAFFIC SIGNAL SERVICE DIAGRAM

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. E-14
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		

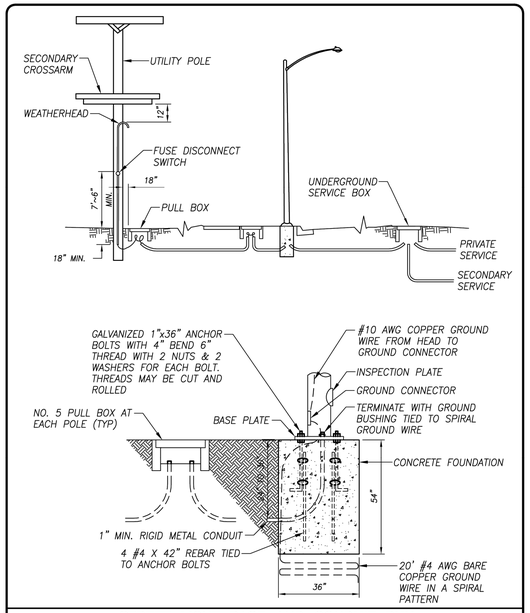


NOTES:

1. BUSHING SHALL BE USED AT END OF CONDUIT
2. TAPE DETECTOR CONDUCTORS OR CABLES 3" EACH SIDE OF BUSHINGS
3. INSTALL DUCT SEAL COMPOUND TO EACH END OF TERMINATION CONDUIT BEFORE INSTALLING SEALANT
4. ROUND ALL SHARP EDGES WHERE DETECTOR CONDUCTORS OR CABLES HAVE TO PASS
5. END OF CONDUIT SHALL BE 3-1/8" BELOW ROADWAY SURFACE
6. CONDUIT SIZE SHALL BE 2" MINIMUM
7. SPLICE DETECTOR CONDUCTORS OR CABLES TO LEAD-IN-CABLE AT PULL BOX, RUN TO CONTROLLER CABINET
8. LOCATION OF DETECTOR HANDHOLE ON LANE LINE UNLESS OTHERWISE NOTED
9. CONDUIT SHALL HAVE 24" COVER

DETECTOR HANDHOLE DETAIL

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. E-12
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



STREET LIGHT BASE AND CONDUIT RUN

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. E-3
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		

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WILLIAM D. MORRIS, RCE, PLS
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CITY OF TURLOCK
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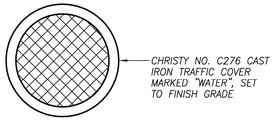
CONSTRUCTION DETAILS

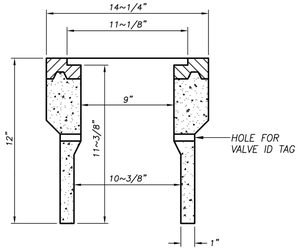
CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 3/4" 1" 1/2"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	N/A
	14-44 BASE.dwg

SHEET 20 OF 22





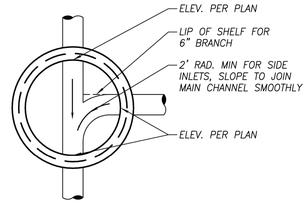
CHRISTY NO. G-5 BODY

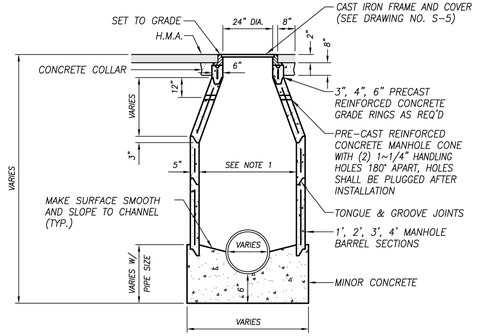
WATER VALVE BOX

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. W-6
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		

NOTES:

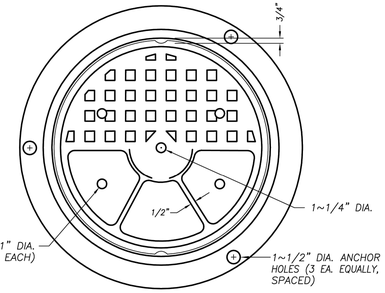
1. MANHOLE DIAMETER SHALL BE 48" WHEN SERVING PIPES 24" IN DIAMETER OR SMALLER. MANHOLE DIAMETER SHALL BE 60" WHEN SERVING PIPES LARGER THAN 24" IN DIAMETER
2. SEE STANDARD DWG. S-4 FOR DROP MANHOLE DETAIL
3. THE DEPTH OF CHANNELS FLOWING INTO THE MAIN LINE SHALL BE NO DEEPER THAN HALF IT'S PIPE DIAMETER
4. ALL JOINTS SHALL BE SET WITH RAMNEK, OR APPROVED EQUAL, AND GROUTED

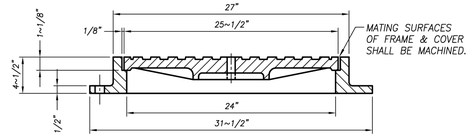




STANDARD MANHOLE

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. S-3
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		





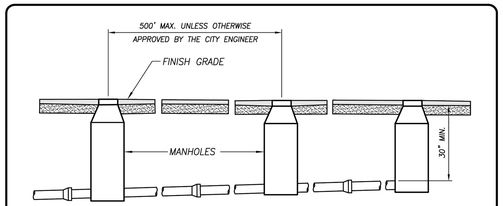
SECTION A-A

NOTES:

1. CAST IRON SHALL HAVE A TENSILE STRENGTH OF 38,000 PSI.
2. FRAME SHALL BE SET TO FINISH GRADE
3. SOUTH BAY FOUNDRY FRAME AND LID NO. 624/106 OR APPROVED EQUAL FOR SANITARY SEWER.
4. SOUTH BAY FOUNDRY FRAME AND LID NO. 624 OR APPROVED EQUAL FOR STORM DRAIN.
5. WEIGHT OF LID SHALL BE 100 POUNDS MINIMUM.

MANHOLE FRAME AND COVER

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. S-5
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



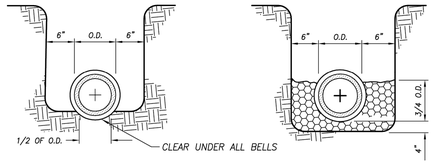
PIPE SIZE	MIN. SLOPE
8" DIA.	0.0024
10" DIA.	0.0018
12" DIA.	0.0015
15" DIA.	0.0011
18" DIA.	0.0009
>18" DIA.	PROVIDE CALCS

NOTES:

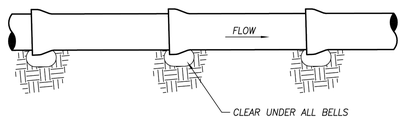
1. MINIMUM COVER SHALL BE 30 INCHES.
2. MANHOLES SHALL BE INSTALLED AT THE END OF ALL LINES, WHERE SEWERS INTERSECT, AT CHANGES IN LINE SIZE OR MATERIAL AND AT SERVICE CONNECTIONS LARGER THAN 4" IN DIAMETER.
3. ALL SERVICE CONNECTIONS TO SEWERS SHALL BE MADE AT WYES.
4. THE ENGINEERING DIVISION SHALL BE SUPPLIED WITH AN "AS-BUILT" PLAN SHOWING LOCATION OF ALL LATERALS AND INVERT ELEVATIONS.
5. A MANHOLE SHALL BE INSTALLED AT ALL CONNECTIONS TO A TRUNK LINE.

SANITARY SEWER DATA

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. S-1
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



STANDARD TRENCH (TYP.) IMPROVED BEDDING

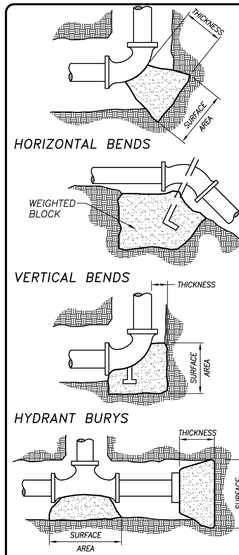


NOTES:

1. WHEN BASE OF TRENCH IS HARD PAN, CONTRACTOR SHALL OVER-EXCAVATE 4" MIN. AND PLACE IMPORT OR SELECT NATIVE MATERIAL PRIOR TO INSTALLING PIPE
2. BACKFILL SETTLING AND COMPACTION SHALL NOT BE ACHIEVED BY MEANS OF "JETTING" OR PONDING.

SEWER LINE DETAIL

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. S-2
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



THRUST BLOCK SIZE

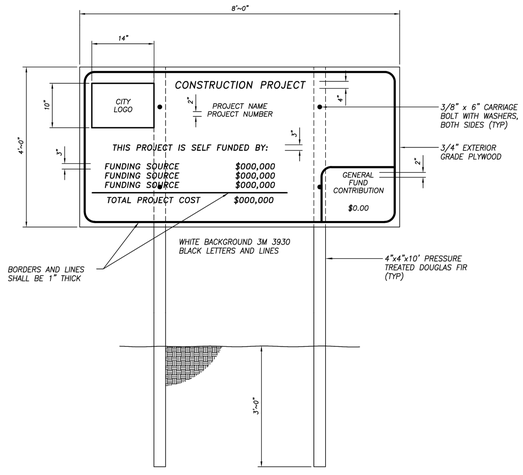
PIPE DIAMETER (INCHES)	HORIZONTAL BEND SURFACE AREA (S.F.)	HORIZONTAL BEND THICKNESS (INCHES)	WEIGHT AT VERTICAL BENDS (LBS.)
22° BENDS			
6 OR LESS	2	8	1,700
8	3	12	3,000
10	3.5	12	4,600
12	4	14	6,600
14	5	18	9,000
16	6	18	11,800
45° BENDS			
6 OR LESS	4	12	3,200
8	5	14	5,800
10	6	18	9,000
12	7	18	13,000
14	8	24	17,000
16	11.5	24	23,200
90° BENDS			
6 OR LESS	6	12	6,000
8	8	15	10,700
10	10	18	16,700
12	12	18	24,000
14	18	24	32,600
16	21	24	42,700
TEES & DEAD-ENDS			
6 OR LESS	3	12	——
8	4	15	——
10	6	18	——
12	8.5	18	——
14	11.5	24	——
16	16	24	——

NOTES:

- ALL MECHANICAL FITTINGS AND VALVES SHALL BE WRAPPED IN PLASTIC AND PROTECTED FROM CONCRETE.
- THE CITY ENGINEER WILL CONSIDER REDUCTION OF THRUST BLOCK SURFACE AREA UPON SUBMITTAL OF APPROVED SOIL RESISTANT TEST RESULTS GREATER THAN 2,000 LBS/SQ. FT.
- IF LINES CONFLICT WITH CONC. KICKER, THEN GRIP RINGS ONLY SHALL BE USED. IN OTHER SITUATIONS, GRIP RINGS MAY BE UTILIZED AT THE DISCRETION OF THE CITY ENGINEER.

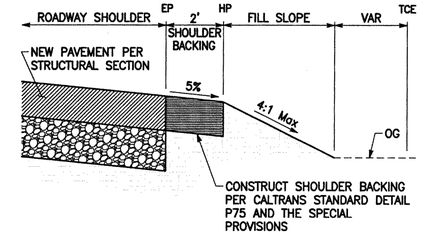
THRUST BLOCKS

DRAWN BY: JSH	CITY OF TURLOCK		DRAWING NO. W-4
CHECK BY: NBB	APPROVED BY:		COUNCIL APPROVAL DEC, 2015
SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694		



TEMPORARY CONSTRUCTION SIGN

NOT TO SCALE



SHOULDER BACKING DETAIL

NO SCALE

NOTES:

1. SHOULDER BACKING MUST BE PLACED TO SLOPE AWAY FROM ROADWAY.

USA NORTH 811 Call 811 Before You Dig WWW.USANORTH811.ORG

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10/9/2024
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CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

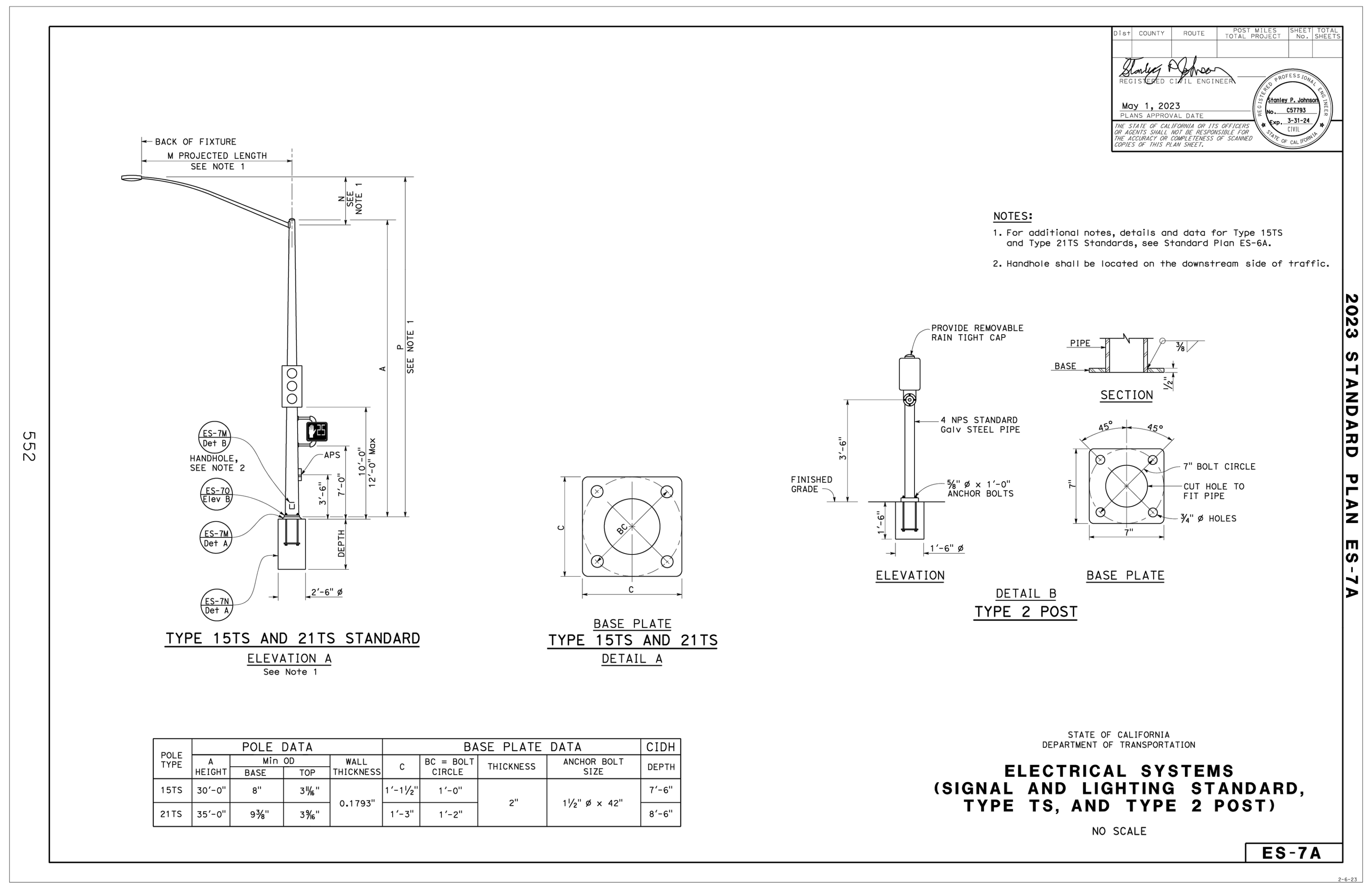
CONSTRUCTION DETAILS

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 3/4" 1" 1/2"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	SCALE
	14-44 BASE.dwg

SHEET 21 OF 22



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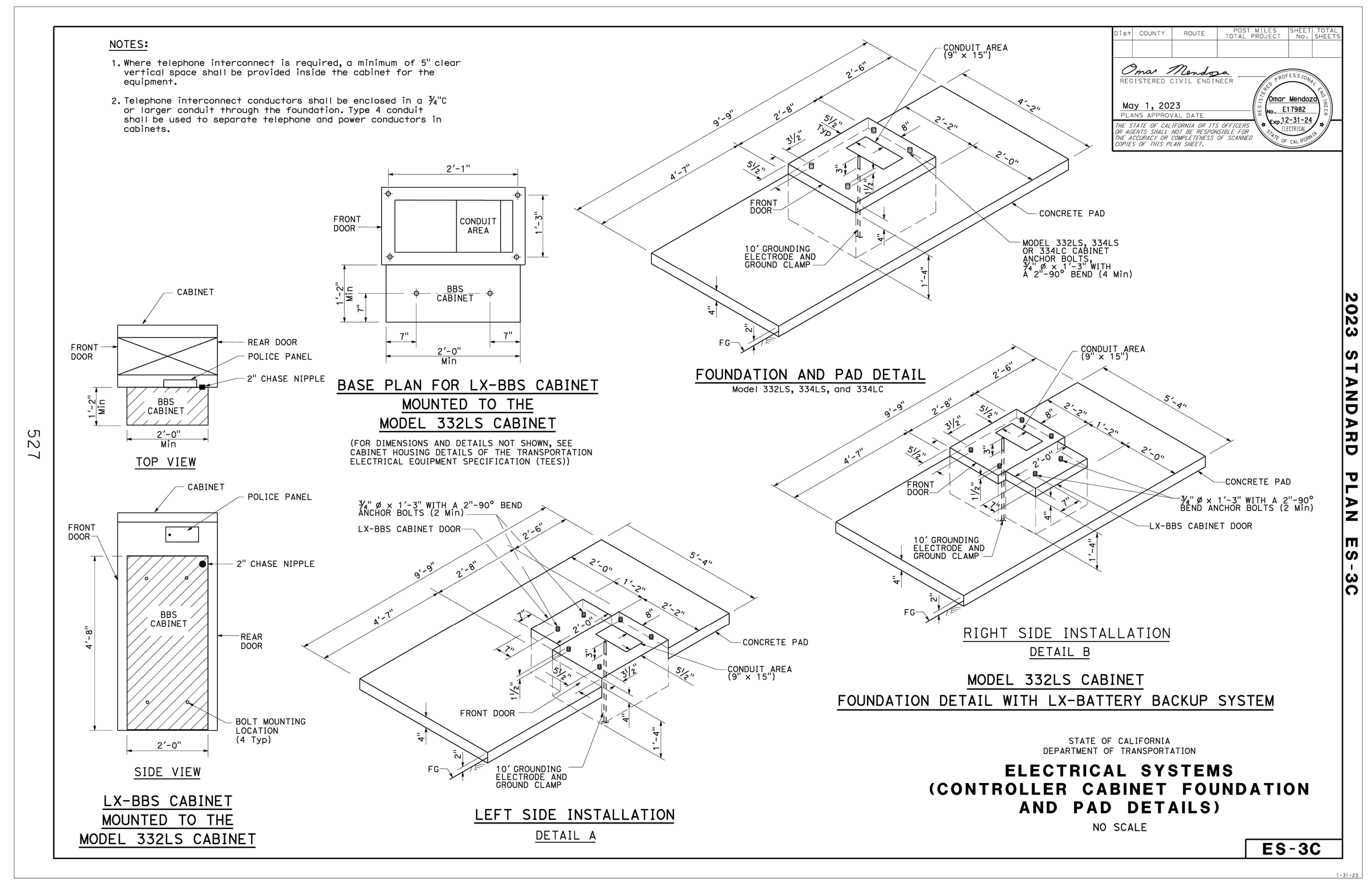

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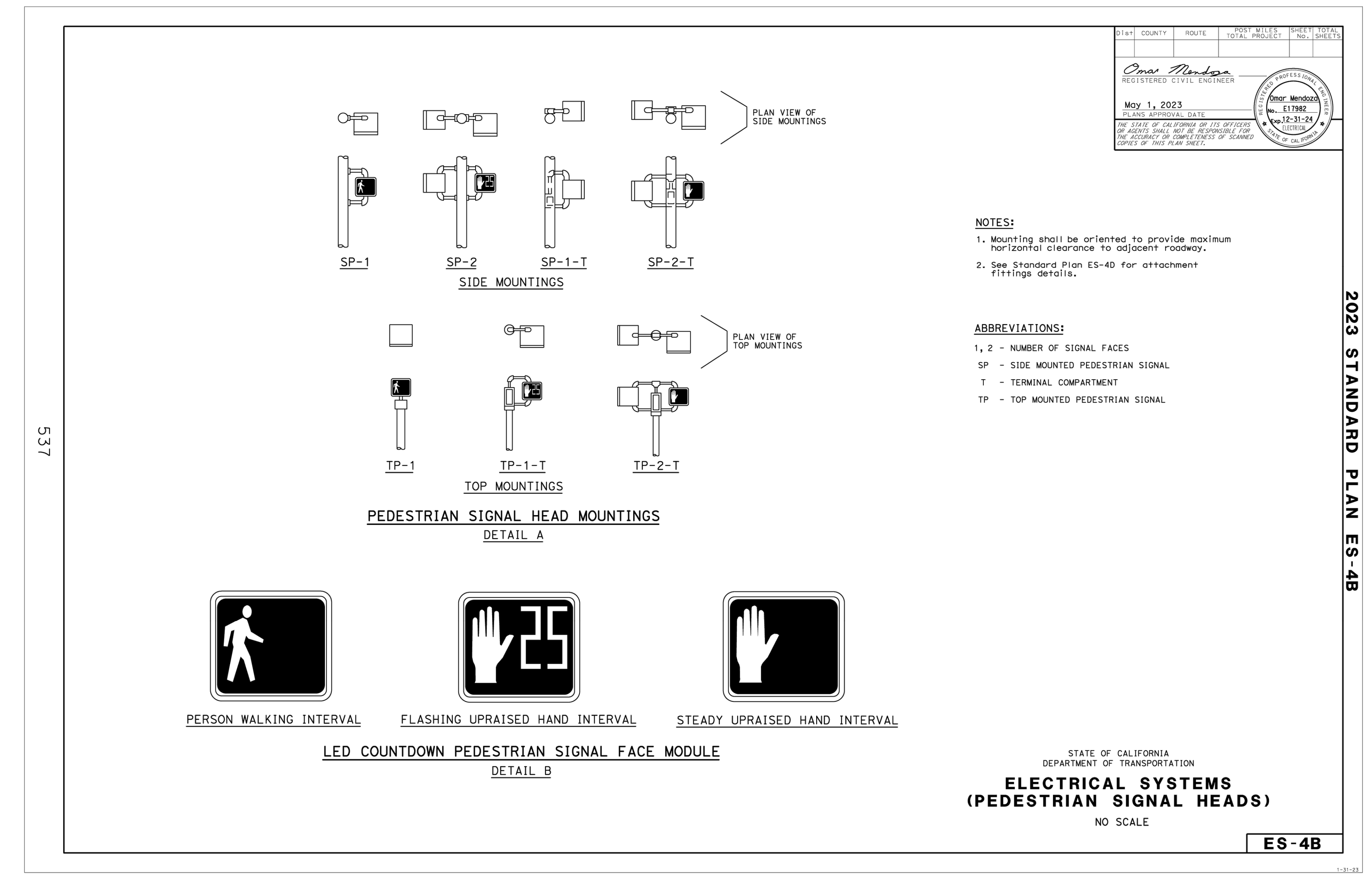

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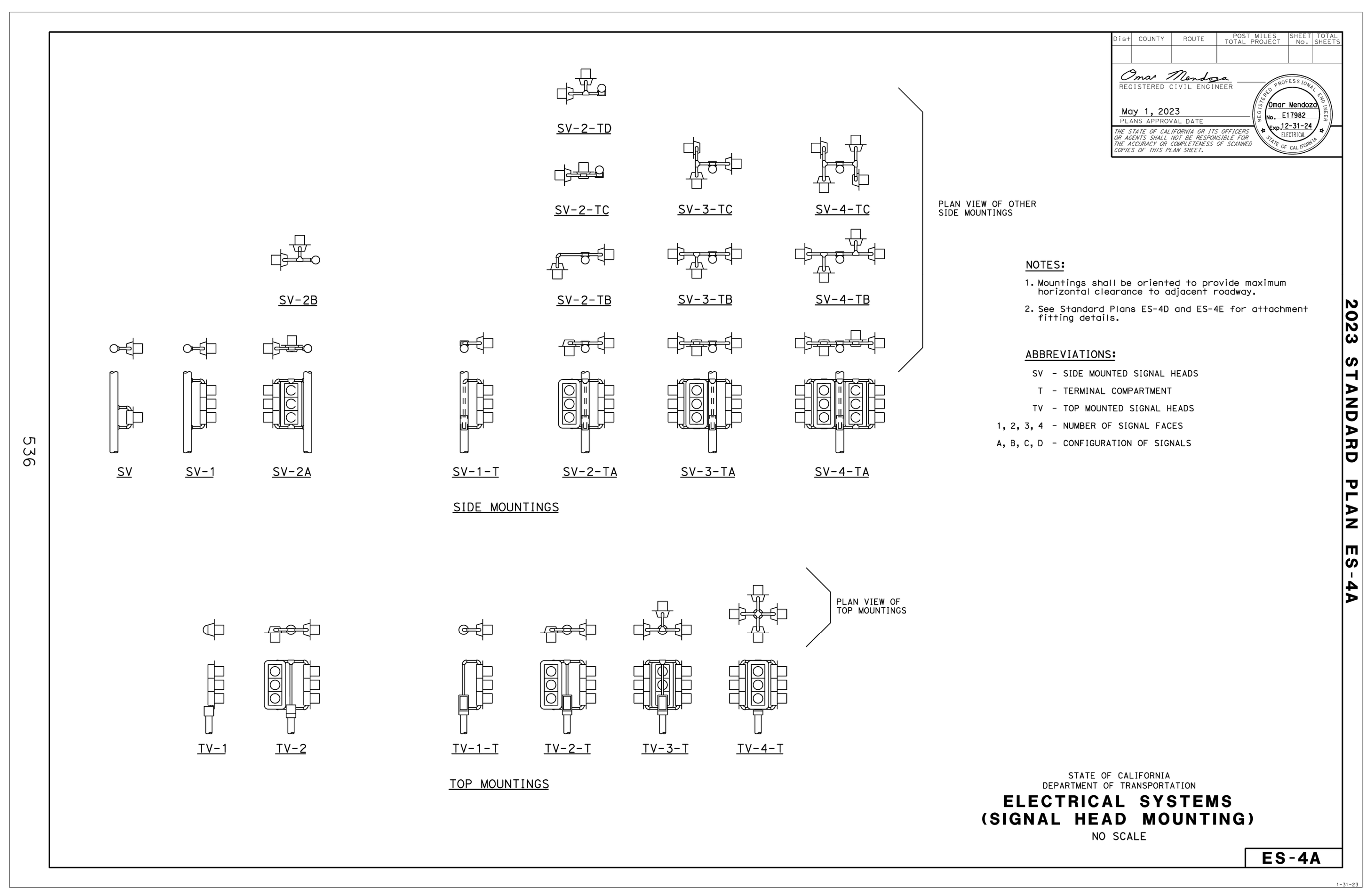

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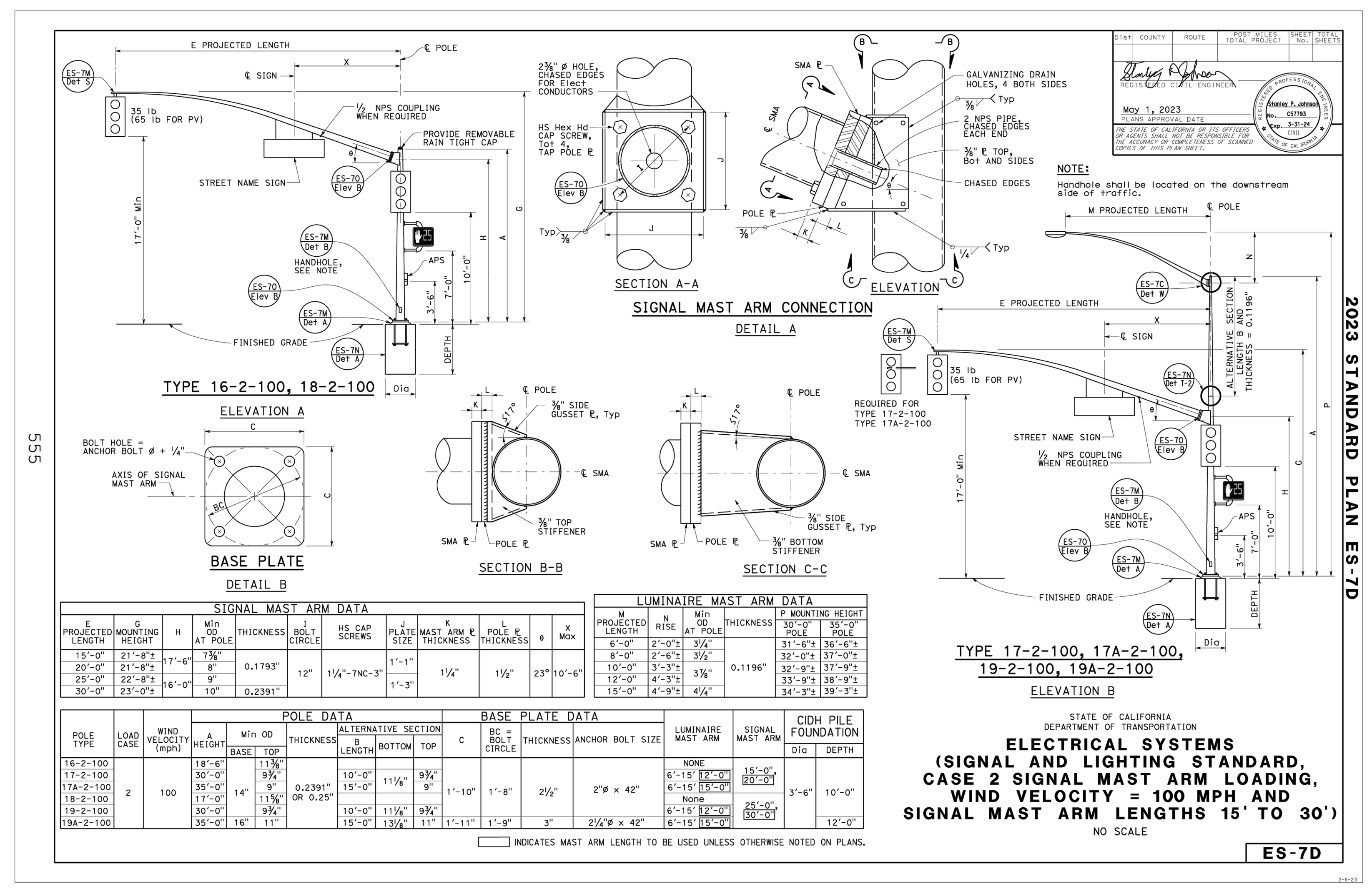

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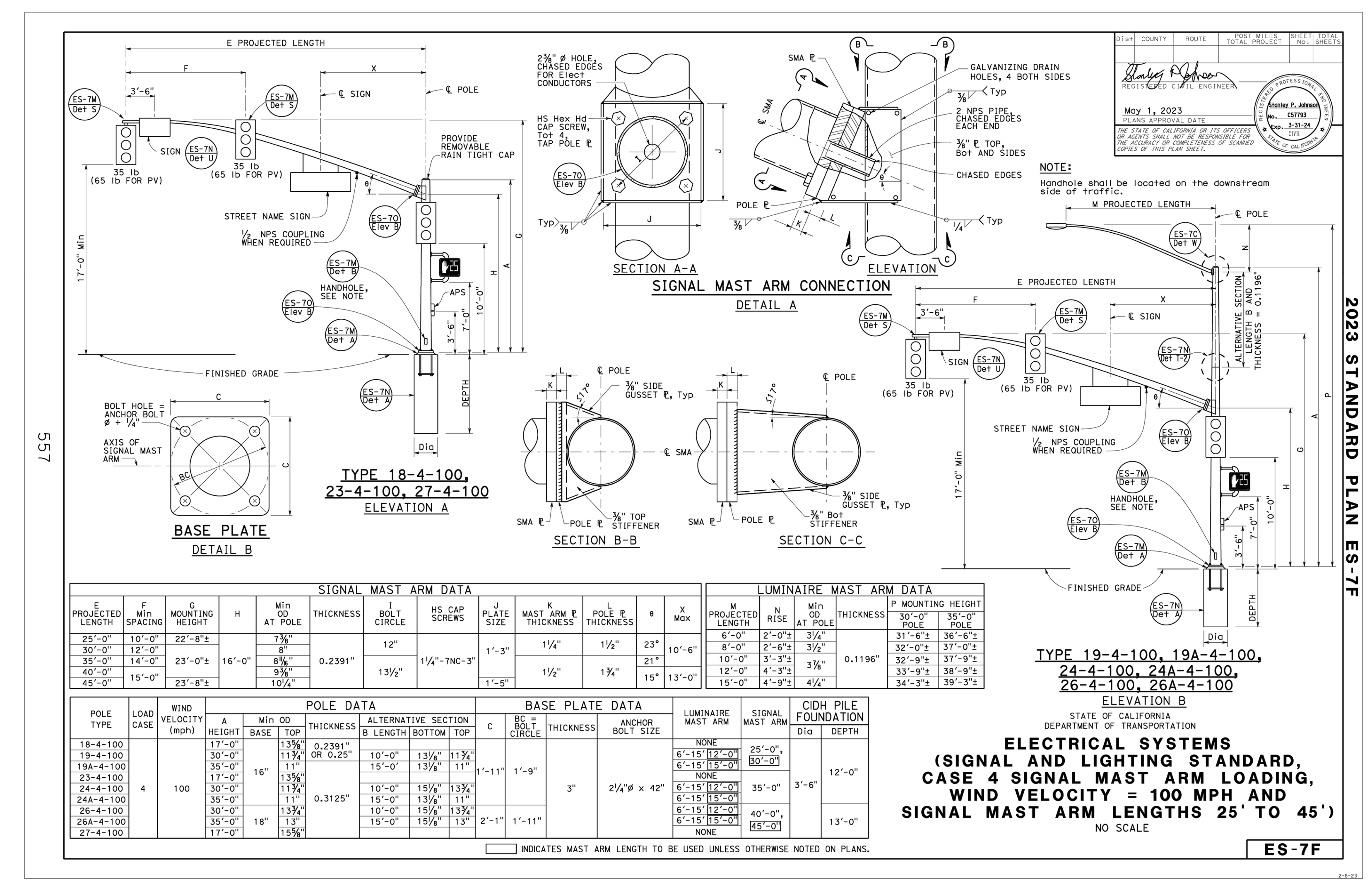

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USA NORTH 811
Call 811 Before You Dig
WWW.USANORTH811.ORG

NOTE:
ALL REFERENCES AND WRITTEN DIMENSIONS SHALL SUPERCEDE ALL SCALED DISTANCES AND SHALL BE VERIFIED IN THE FIELD. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

WILLIAM D. MORRIS, RCE, PLS
CITY ENGINEER

10/9/2024
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. MORRIS
No. 55910
CIVIL
STATE OF CALIFORNIA

CITY OF TURLOCK
MUNICIPAL SERVICES DEPT.
ENGINEERING DIVISION
156 S. BROADWAY, STE 150
(209) 668-5520

TRAFFIC SIGNAL DETAILS

CAPITAL PROJECT NO. 14-44
INTERSECTION IMPROVEMENTS AT
W. MAIN STREET AND S. TEGNER ROAD

VERIFY SCALE
BAR IS 1" ON ORIGINAL DRAWING
0 1/4" 3/4" 1"
1/2"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DRAWN BY:	RJ
REV. BY:	SF
CH. BY:	WM
DATE:	JULY 2, 2024
SCALE:	SCALE
14-44 BASE.dwg	

SHEET
22
OF 22