

<b>DRAWING NUMBER</b>	<b>TITLE</b>
7-4C-01	SIGNATURE BLOCKS (11/07)
7-4C-02	SEWER PIPE BEDDING AND INITIAL BACKFILL (11/07)
7-4C-03	MAXIMUM TRENCH WIDTH FOR EXTRA STRENGTH VITRIFIED CLAY PIPE (11/07)
7-4C-04	MANHOLE LOCATION RESTRICTION (11/07)
7-4C-10	MANHOLE CONNECTION TO EX. 6" COLLECTOR (11/07)
7-4C-11	SEWER SERVICE REPLACEMENT (11/07)
7-4C-12	UTILITY CROSSING (11/07)
7-4C-13A	SEWER SERVICES (11/07)
7-4C-13B	ALTERNATE ABS SEWER SERVICE WYE CONNECTION TOP VIEW (11/07)
7-4C-14A	VCP, ABS CLEANOUT TO GRADE (11/07)
7-4C-14B	MODIFIED VCP OR ABS CLEANOUT TO GRADE (11/07)
7-4C-15A	ABS/PVC BACKWATER VALVE TO GRADE (11/07)
7-4C-15B	ABS/PVC BACKWATER VALVE TO GRADE – MULTI-STORY STRUCTURE (11/07)
7-4C-16A	FLUSHER BRANCH FOR PIPE DIAMETERS 8" AND LESS (11/07)
7-4C-16B	FLUSHER BRANCH FOR PIPE DIAMETERS GREATER THAN 8" (11/07)
7-4C-20	CONDUCTOR CASING DETAIL (11/07)
7-4C-21	CATHODIC PROTECTION - STEEL CASING (11/07)
7-4C-30	STANDARD PRECAST 48" SEWER MANHOLES (11/07)
7-4C-31	STANDARD PRECAST 60" & 72" SEWER MANHOLES (11/07)
7-4C-40	4-WAY MANHOLE BASE (11/07)
7-4C-41	90° MANHOLE BASE CAMERA CHANNEL DETAIL (11/07)
7-4C-42	MANHOLE BASE GROUTING UNUSED CHANNEL AT 90° DETAIL (11/07)
7-4C-43	MANHOLE BASE GROUTING UNUSED CHANNEL AT 180° DETAIL (11/07)
7-4C-50	STANDARD PRECAST 48" MANHOLE FLAT SLAB TOP DETAIL (11/07)
7-4C-51	STANDARD PRECAST 60" AND 72" SLAB TOP DETAIL (11/07)
7-4C-52	INSIDE GRAVITY DROP CONNECTIONS (11/07)
7-4C-53	STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS (11/07)
7-4C-70	STANDARD FLUSHER BRANCH FRAME AND COVER (11/07)
7-4C-71	FLAT SLAB TOP FRAME & COVER (11/07)
7-4C-72	GREY IRON STANDARD 24" MANHOLE FRAME & COVER (11/07)
7-4C-73	GREY IRON STANDARD 36" MANHOLE FRAME & COVER (11/07)

<b>DRAWING NUMBER</b>	<b>TITLE</b>
7-4C-74	DUCTILE IRON STANDARD 24" MANHOLE FRAME & COVER (11/07)
7-4C-75	DUCTILE IRON STANDARD 32" MANHOLE FRAME & COVER (11/07)
7-4C-80	TRENCH DAM DETAIL (11/07)
7-4C-81	SAMPLING VAULT (11/07)
7-4C-82	FLOW MEASURING MANHOLE (11/07)
7-4C-84	PACKAGED FLOW MEASURING VAULT (11/07)
7-5C-30	CATHODIC PROTECTION – DUCTILE IRON PIPE (11/07)
7-5C-40	THRUST BLOCK DETAILS (11/07)
7-5C-50	FORCE MAIN TIE-IN AT MANHOLE (11/07)
7-5C-51	FORCE MAIN TIE-IN DROP CONNECTIONS (11/07)
7-5C-70	STANDARD 60" AIR RELEASE VALVE SEWER MANHOLE (11/07)
7-5C-80	PIPE LOCATOR RIBBON AND LOCATOR BALL INSTALLATION (11/07)
7-6C-10	PUMP STATION SITE LAYOUT (11/07)
7-6C-11	PUMP STATION SITE LAYOUT CORNER LOT (11/07)
7-6C-12	COMMERCIAL DRIVEWAY (11/07)
7-6C-13	SIDEWALK RAMP DETAIL (11/07)
7-6C-14	TURN-AROUND & HAMMER-HEAD FOR ACCESS ROADS (11/07)
7-6C-20	CIRCULAR WETWELL (11/07)
7-6C-50	CANOPY SCHEMATIC (11/07)
7-6C-60	REDUCER PRESSURE PRINCIPAL ASSEMBLY (11/07)
7-6C-90	REMOVABLE BOLLARD DETAIL (11/07)
7-6E-10	ELECTRICAL PANEL LAYOUT (11/07)
7-6E-11	ELECTRICAL DETAIL #5 (11/07)
7-6E-12	JB MOUNTING DETAIL (11/07)
7-6E-13	CONDUIT RISER FROM GROUND & DUCT BANK SECTION (11/07)
7-6E-14	GROUNDING DETAILS (11/07)
7-6E-15	POLE BASE DETAIL WITH ANTENNA (11/07)
7-6E-20	SINGLE LINE DIAGRAM SMALL PUMP STATION (11/07)
7-6E-21	SINGLE LINE DIAGRAM MEDIUM PUMP STATION (11/07)
7-6E-22	SINGLE LINE DIAGRAM LARGE PUMP STATION (11/07)
7-6E-30	PUMP CONTROLS SMALL PUMP STATION (11/07)
7-6E-31	PUMP CONTROLS MEDIUM AND LARGE PUMP STATION (11/07)
7-6I-30	P&ID (11/07)
7-6I-31	BUBBLER PANEL SCHEMATIC (11/07)
7-6I-32	BUBBLER TUBE JUNCTION BOX & CAPTIVE AIR TUBE MOUNTING DETAILS (11/07)
7-6I-33	TYPICAL RTU LAYOUT DETAIL (11/07)
7-6I-34	TYPICAL RTU ELEVATION VIEW (11/07)

<b>DRAWING NUMBER</b>	<b>TITLE</b>
7-6I-35	TYPICAL DETAILS, BILL OF MATERIALS & NAME PLATE SCHEDULE (11/07)
7-6I-36	TYPICAL DIAGRAM CONTROL POWER DISTRIBUTION (11/07)
7-6I-37	TYPICAL RTU PLC LAYOUT (11/07)
7-6I-38	TYPICAL UPPER BOARD WIRING DIAGRAM (POWER CONNECTIONS) (11/07)
7-6I-39	TYPICAL LOWER BOARD WIRING DIAGRAM (DI 0-7) (11/07)
7-6I-40	TYPICAL LOWER BOARD WIRING DIAGRAM (DI 16-23) (11/07)
7-6I-41	TYPICAL LOWER BOARD WIRING DIAGRAM (DI 24-36) (11/07)
7-6I-42	TYPICAL LOWER BOARD WIRING DIAGRAM (AI) (11/07)
7-6I-43	TYPICAL LOWER BOARD WIRING DIAGRAM (DO 0-7) (11/07)
7-6I-44	TYPICAL RS 482 UPPER BOARD WIRING DIAGRAM (11/07)
7-6M-20	CIRCULAR WET WELL (11/07)
7-6M-30	VALVE VAULT (11/07)
7-6M-40	BYPASS VAULT (11/07)
7-6M-50	ODOR CONTROL PAD (11/07)





**SACRAMENTO COUNTY SANITATION DISTRICT No.1**

<b>O.K. TO SUBMIT FOR MANHOLE NUMBERING</b>	
_____	_____
<b>SEWER INSPECTOR</b>	<b>DATE</b>

FOR COLLECTOR PLANS IN UNINCORPORATED COUNTY

**SACRAMENTO COUNTY SANITATION DISTRICT No.1**

_____	
<b>PLAN CHECKER</b>	<b>DATE</b>
<b>O.K. TO SUBMIT FOR MANHOLE NUMBERING</b>	
_____	_____
<b>SEWER INSPECTOR</b>	<b>DATE</b>

FOR ALL TRUNK AND COLLECTOR PLANS IN ANY CITY JURISDICTION

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

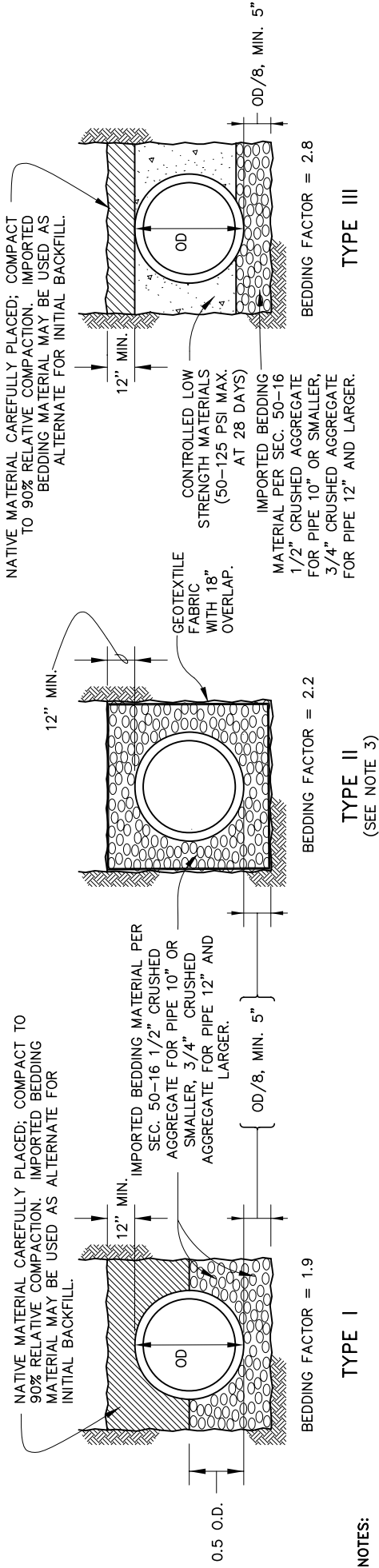
**SIGNATURE  
BLOCKS**

*Mary K Snyder*  
\_\_\_\_\_  
DIRECTOR

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-01**

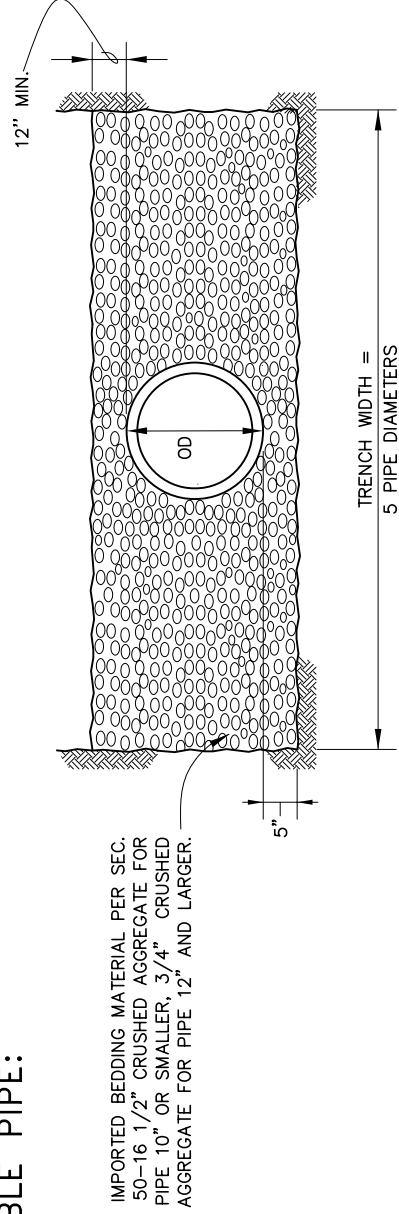
## FOR RIGID & SEMI-RIGID PIPE:



### NOTES:

1. SEE SECTIONS 19-2.02 AND 19-2.02A FOR INITIAL BACKFILL.
2. BEDDING FACTORS ARE PER NCPI.
3. IN AREAS WHERE TRENCHES ARE LOCATED IN FINE TO MEDIUM SANDS OR THERE IS PRESENCE OF GROUND WATER GEOTEXTILE FABRIC SHALL BE USED.
4. TYPE III BEDDING IS ONLY FOR VITRIFIED CLAY PIPE.

## FOR FLEXIBLE PIPE:



### NOTES:

1. PLACE AND WORK BY HAND TO ENSURE ALL EXCAVATED VOIDS AND HAUNCH AREAS ARE FILLED. INSTALL IN 6-INCH MAXIMUM LAYERS. WORK IN BY HAND TO PROVIDE UNIFORM SUPPORT.
2. IN AREAS WHERE TRENCHES ARE LOCATED IN FINE TO MEDIUM SANDS OR THERE IS PRESENCE OF GROUND WATER GEOTEXTILE FABRIC SHALL BE USED.

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

## SEWER PIPE BEDDING & INITIAL BACKFILL

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

*Mary K Snyder*  
DIRECTOR

7-4C-02

DEPTH OF COVER (FEET)

BEDDING

SIZE

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
8"																
TYPE I																
TYPE II																
TYPE III																

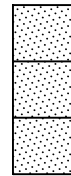
TYPE I																
TYPE II																
TYPE III																

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
10"																
TYPE I																
TYPE II																
TYPE III																

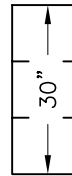
TYPE I																
TYPE II																
TYPE III																

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
12"																
TYPE I																
TYPE II																
TYPE III																

TYPE I																
TYPE II																
TYPE III																



NO LIMIT ON TRENCH WIDTH



MAXIMUM TRENCH WIDTH MEASURED AT THE TOP OF THE PIPE.

ASSUMPTIONS:

- $K_u' = 0.11$
- 130 PCF
- SF = 1.25 MIN.
- GREENBROOK HIGH STRENGTH PIPE
- HS 20 LIVE LOAD, WITH 1.5 IP

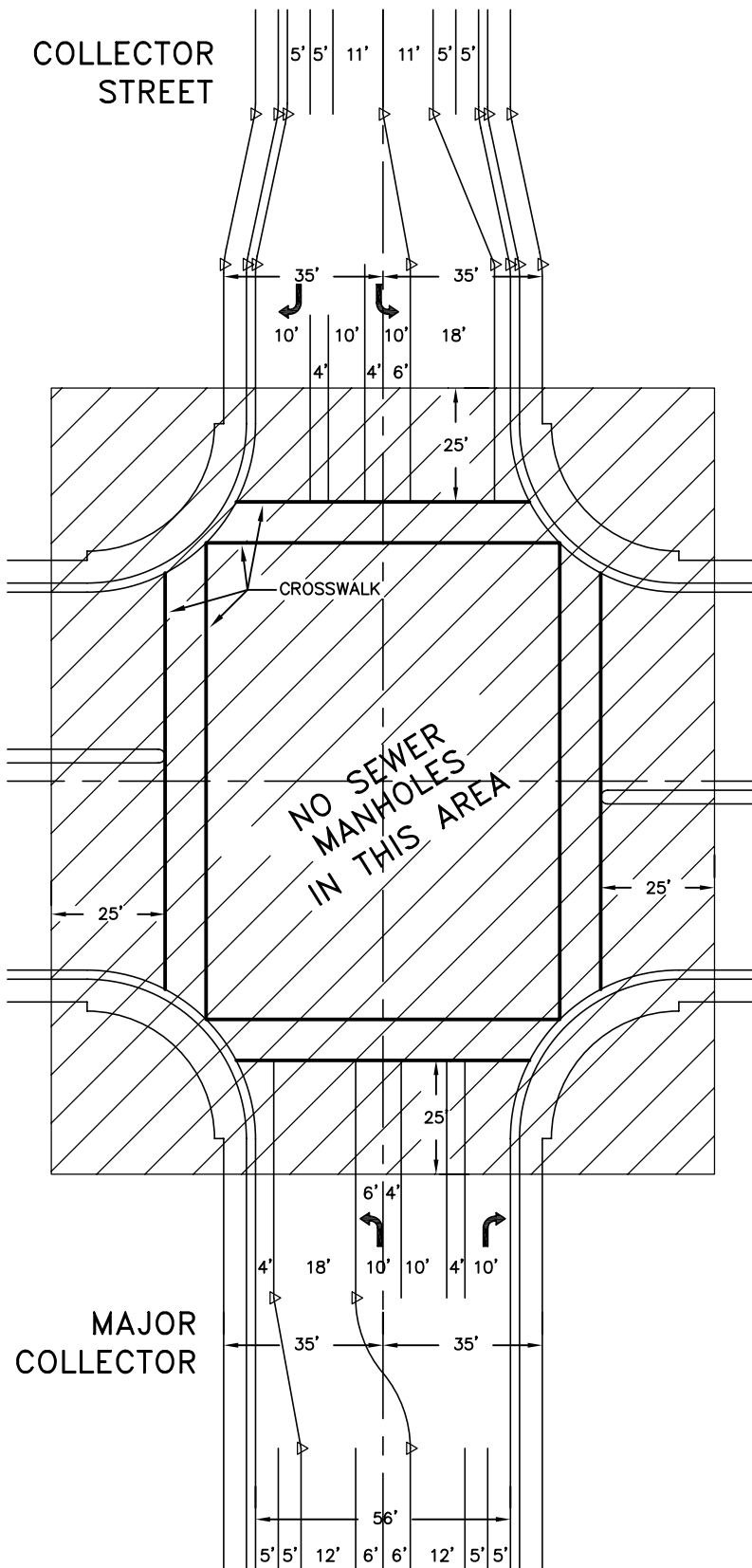
BEDDING FACTORS:

- Type I = 1.9
- Type II = 2.2
- Type III = 2.8

**NOTE:** FOR INSTALLATION OF VCP HAVING DEPTHS OF BURY GREATER THAN 20' OR FOR USE OF TRENCH WIDTHS GREATER THAN SHOWN HEREIN, A CURRENT SITE SPECIFIC SOILS REPORT IS REQUIRED.

SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY
<b>MAXIMUM TRENCH WIDTH                  FOR HIGH STRENGTH                  VITRIFIED CLAY PIPE</b>
DRAWN BY: RAS SCALE: NONE DATE: 11/07
<b>7-4C-03</b>

*Mary K Snyder*  
DIRECTOR



THOROUGHFARE  
OR ARTERIAL

MAJOR  
COLLECTOR

**NOTE**

SEWER MANHOLES SHALL NOT BE LOCATED WITHIN 25 FEET OF ANY INTERSECTION WHERE EITHER STREET IS GREATER THAN RESIDENTIAL (TYP 50' MAX RIGHT-OF-WAY OR 36' MAX PAVEMENT WIDTH).

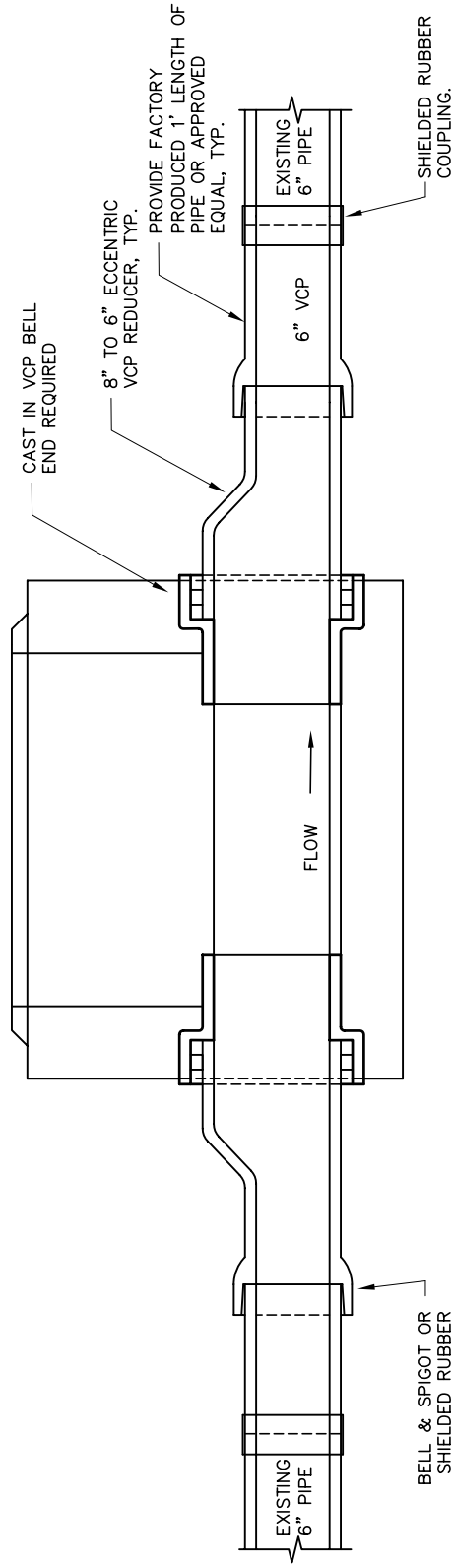
*Mary K Snyder*  
DIRECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**MANHOLE LOCATION  
RESTRICTION**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-04**



2 WAY 8" BASE WITH VCP BELLS  
TO EX. 6" COLLECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

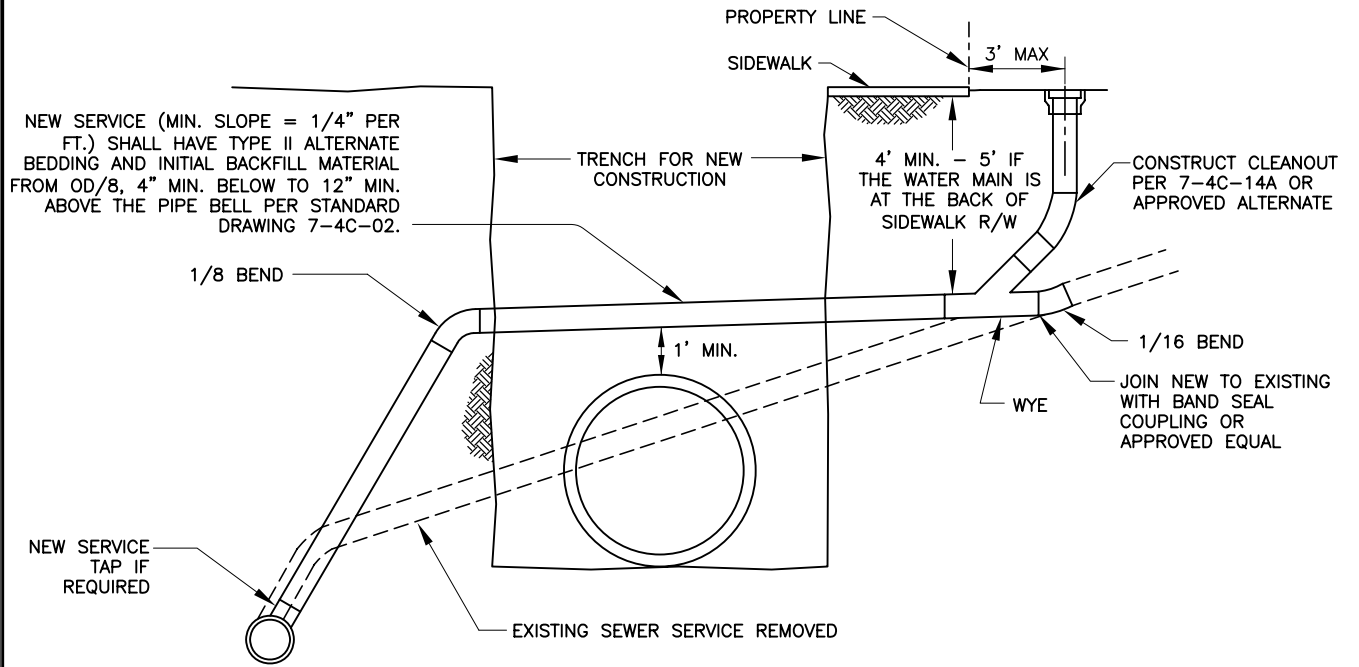
**MANHOLE CONNECTION  
TO EX. 6" COLLECTOR**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

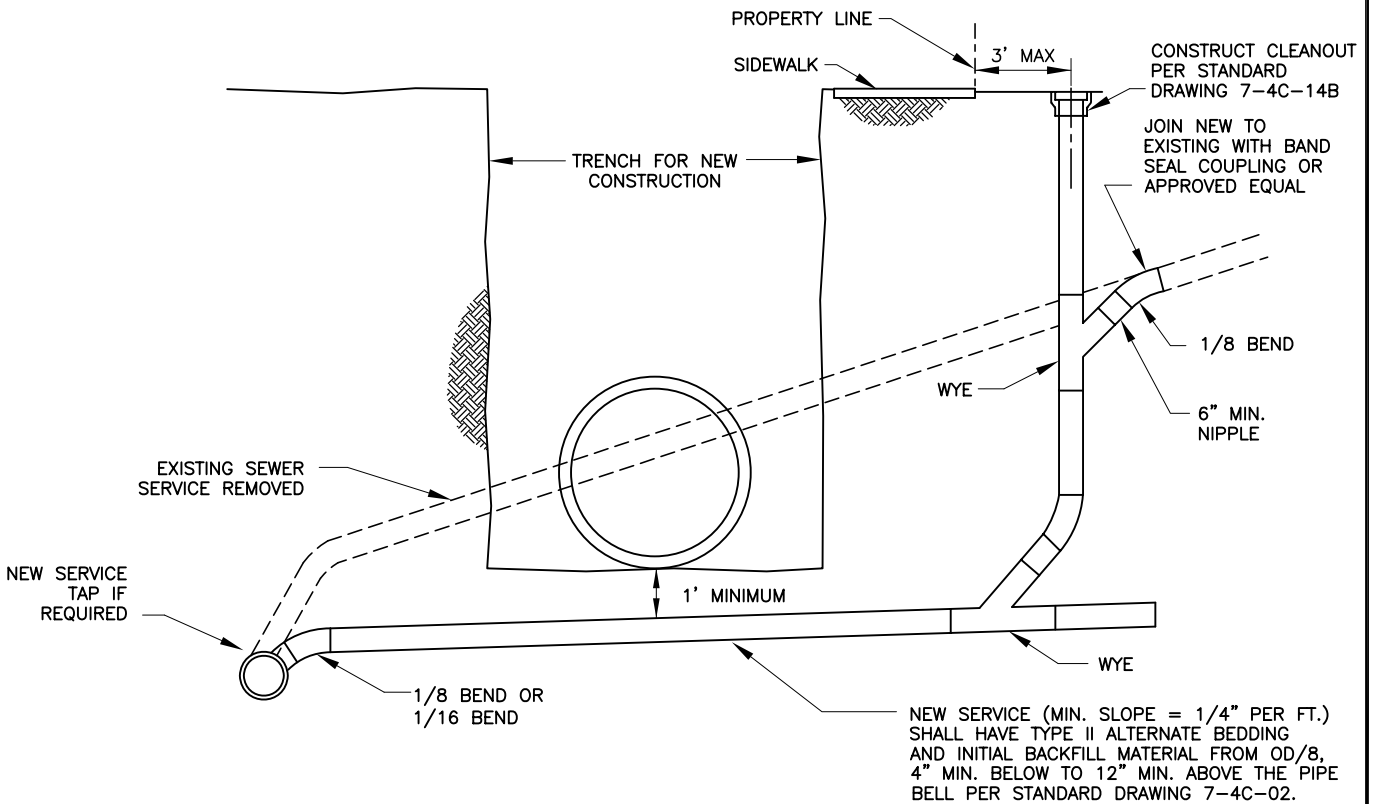
DIRECTOR

*Mary K Snyder*

**7-4C-10**



**EXISTING SEWER SERVICE RELOCATION OPTION OVER NEW CONSTRUCTION**



**EXISTING SEWER SERVICE RELOCATION OPTION UNDER NEW CONSTRUCTION**

**NOTE:**

IF NEITHER OF THESE OPTIONS IS AVAILABLE, THE ELEVATION OF THE NEW FACILITY WILL NEED TO BE ADJUSTED TO ACCOMMODATE ONE OF THESE OPTIONS.

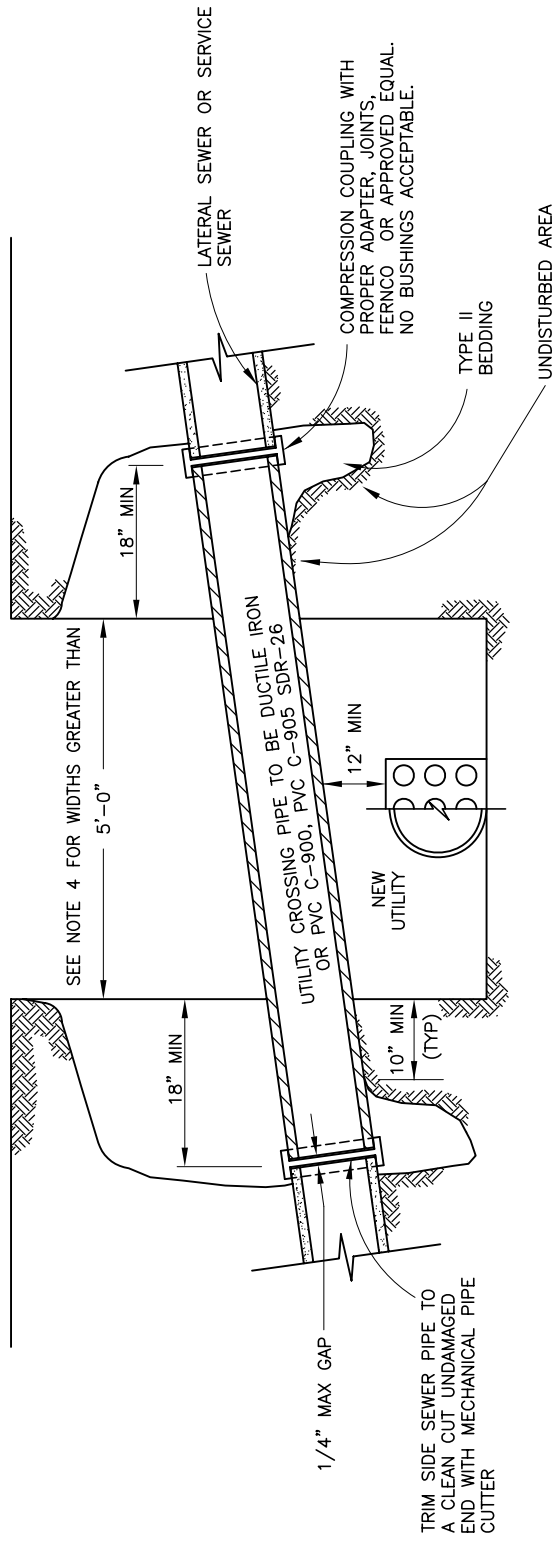
*Mary K Snyder*  
DIRECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**SEWER SERVICE  
REPLACEMENT**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-11**



**NOTES:**

1. ALL LINES ARE TO BE PROTECTED IN PLACE. THIS DETAIL SHALL APPLY WHENEVER THE MAIN COLLECTOR OR LATERAL SEWER SERVICE IS CUT OR DAMAGED WHEN NEW CONSTRUCTION PASSES BENEATH THESE LINES, AND MAY ONLY BE USED WHEN DIRECTED TO DO SO BY THE CSD-1 DISTRICT ENGINEER.
2. INSIDE DIAMETER OF UTILITY CROSSING PIPE TO BE THE SAME AS THE PIPE TO WHICH IT CONNECTS.
3. ALTERATION OF SEWER GRADES WILL BE PERMITTED ONLY AFTER WRITTEN PERMISSION HAS BEEN RECEIVED FROM CSD-1.
4. WHENEVER THE SPAN, WHETHER CAUSED BY TRENCH WIDTH OR CROSSING ANGLE OF THE UTILITY CROSSING PIPE EXCEEDS 5'-0", PLACE TYPE II BEDDING TO 12" ABOVE THE NEW UTILITY AND 18" EACH SIDE OF ITS CENTER LINE.
5. ANY NEW UTILITY WITH 1 FOOT OR LESS CLEARANCE SHALL PLACE A COMPRESSIBLE MATERIAL (STYROFOAM OR EQUIVALENT) BETWEEN THE LINES.
6. UTILITY CROSSING PIPE TO HAVE THE SAME SLOPE AS ADJACENT PIPELINES.

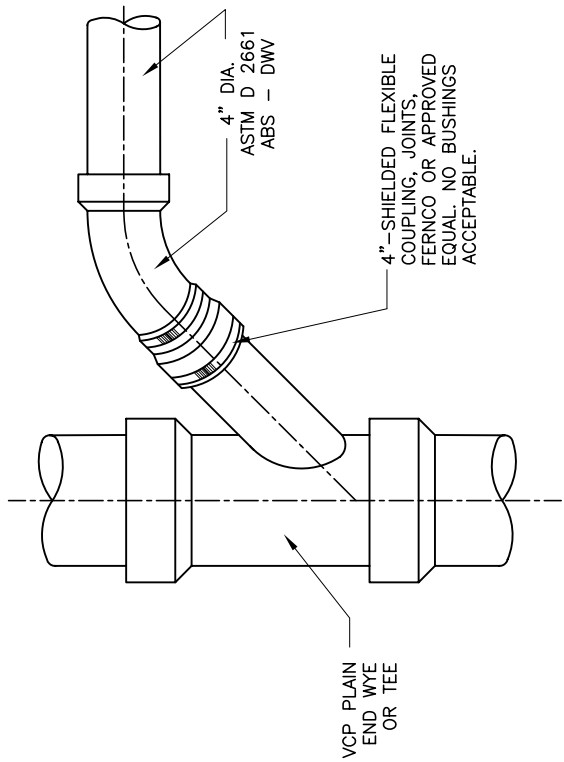
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**UTILITY CROSSING**

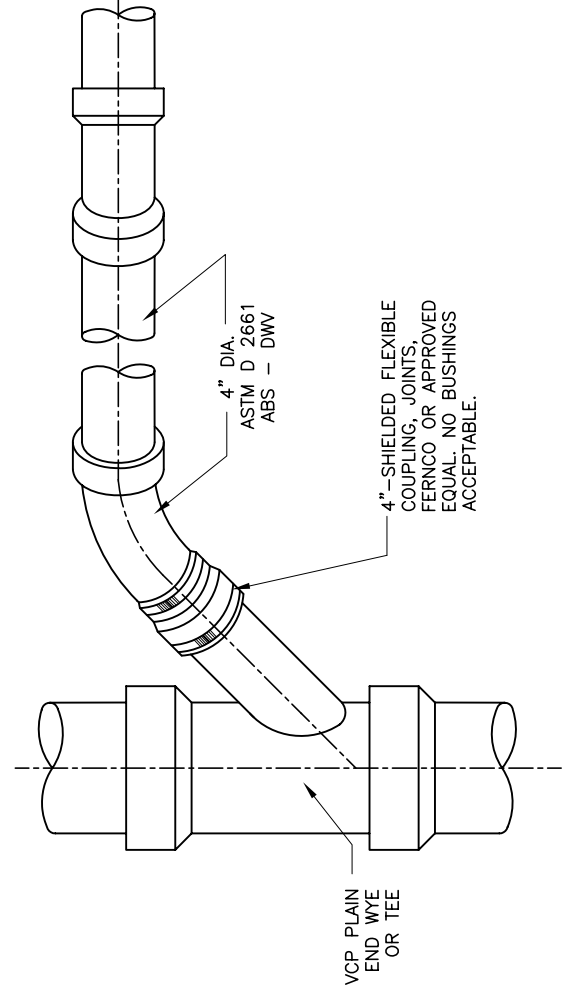
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

*Mary K. Snyder*  
DIRECTOR

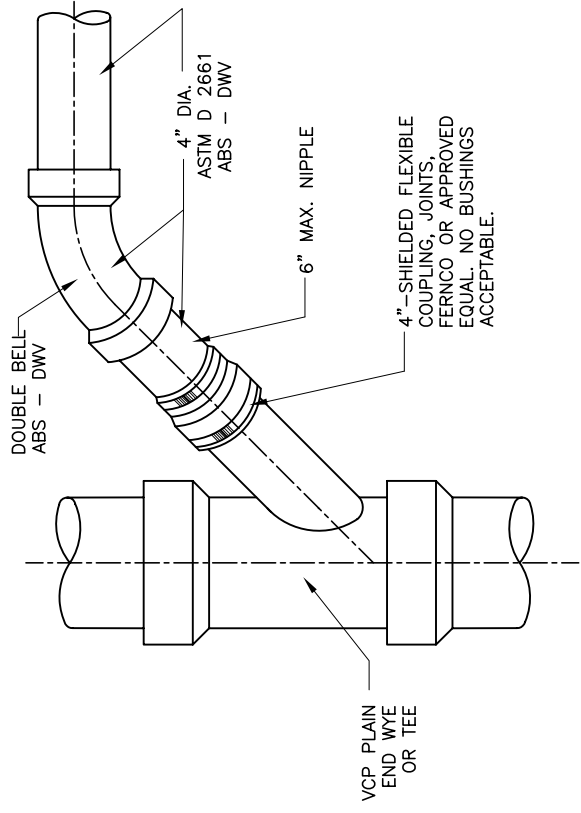
**7-4C-12**



TYPE "A" SERVICE



TYPE "B" SERVICE

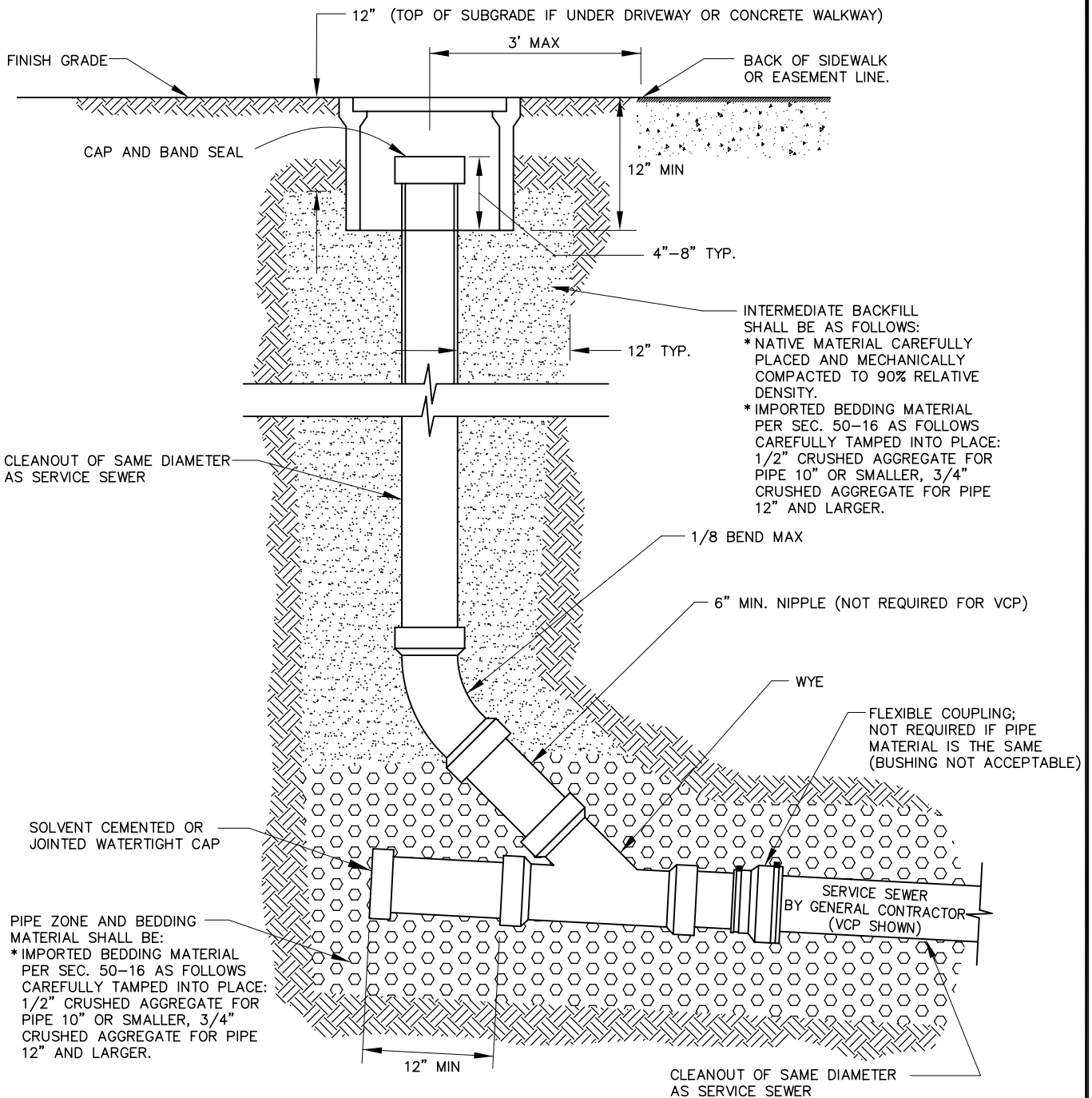


"OPTIONAL" SERVICE CONNECTION (TYPE B)

*Mary C. Snyder*  
DIRECTOR

SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY	
ALTERNATE ABS SEWER SERVICE WYE CONNECTION TOP VIEW	
DRAWN BY: RAS SCALE: NONE DATE: 11/07	7-4C-13B



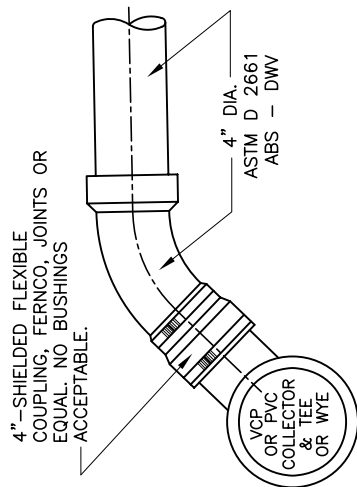
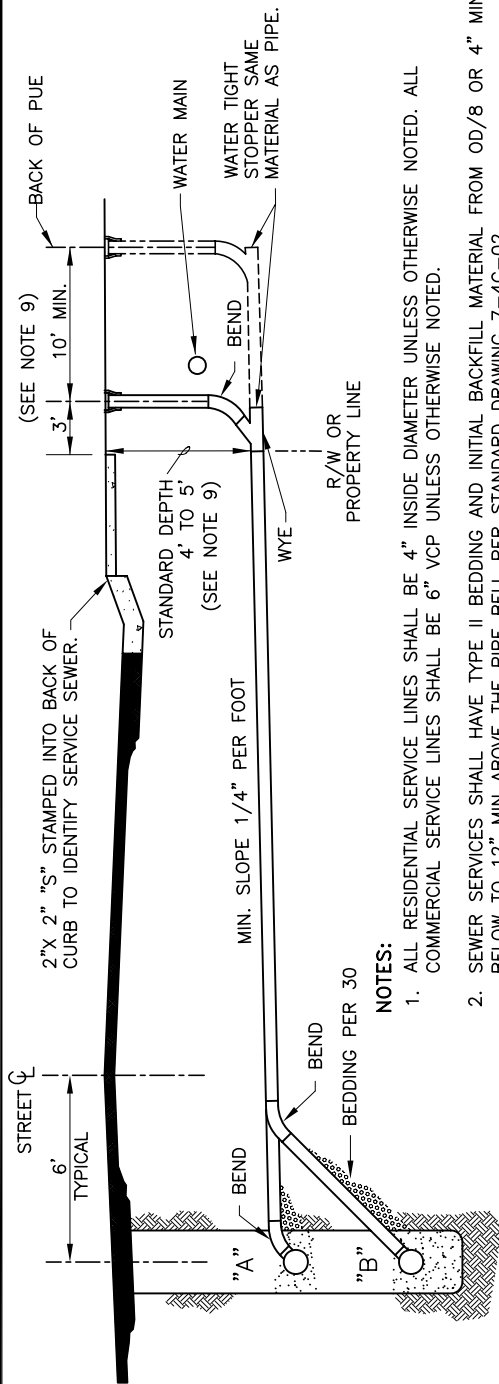


- NOTES:**
- CLEANOUT TO GRADE TO BE PVC OR ABS (ASTM D2661) WITH SOLVENT WELD JOINTS.
  - FOR 4" SERVICES IN NON-TRAVEL WAYS, INSTALL ROUND NON-TRAFFIC TYPE CONCRETE OR PVC VALVE BOX AND COVER MARKED "SEWER". BOX INSIDE DIAMETER TO BE A MINIMUM OF 7" AND A MAXIMUM OF 10".
  - FOR SERVICES 4" AND 6" OR LARGER IN CONCRETE OR TRAVEL WAYS, INSTALL ROUND CONCRETE TRAFFIC TYPE VALVE BOX WITH CAST IRON COVER. COVER TO BE MARKED "SEWER".
  - IF A WATER MAIN IS TO BE INSTALLED AT THE BACK OF SIDEWALK, EXTEND SERVICE TO THE BACK OF THE 12.5' P.U.E. BACK OF SIDEWALK; CLEANOUT TO GRADE TO REMAIN 1' TO 3' FROM BACK OF SIDEWALK AND A SECOND CLEANOUT TO BE INSTALLED ON THE END OF THE EXTENSION 12.5' BACK OF SIDEWALK. SEE STANDARD DRAWING 7-4C-13A.
  - VCP SHALL BE BELL & SPIGOT WITH POLYURETHANE JOINT.

PLACE A MINIMUM OF 12" OF BACKFILL ALL AROUND THE OUTSIDE DIAMETER OF THE RISER AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY. BACKFILL MATERIAL SHALL BE USED TO 12" FROM GRADE OR TO TOP OF SUBGRADE IF UNDER CONCRETE.

*Mary K Snyder*  
DIRECTOR

<b>SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY</b>	
<b>VCP, ABS CLEANOUT TO GRADE</b>	
DRAWN BY: RAS SCALE: NONE DATE: 11/07	<b>7-4C-14A</b>

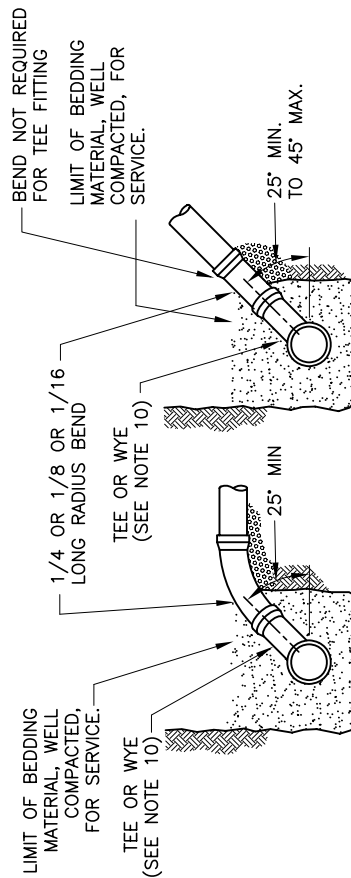


**ELEVATIONS**

**ALTERNATE RESIDENTIAL  
ABS SERVICE SEWER  
CONNECTION TO VCP  
OR PVC-SDR-26  
SEE ALSO STANDARD DRAWING 34**

**NOTES:**

1. ALL RESIDENTIAL SERVICE LINES SHALL BE 4" INSIDE DIAMETER UNLESS OTHERWISE NOTED. ALL COMMERCIAL SERVICE LINES SHALL BE 6" VCP UNLESS OTHERWISE NOTED.
2. SEWER SERVICES SHALL HAVE TYPE II BEDDING AND INITIAL BACKFILL MATERIAL FROM OD/8 OR 4" MIN BELOW TO 12" MIN ABOVE THE PIPE BELL PER STANDARD DRAWING 7-4C-02.
3. CONTRACTOR SHALL USE THE MOST APPROPRIATE TYPE CONNECTION (A OR B) FOR THE PARTICULAR SITUATION.
4. THE STANDARD SEWER SERVICE HAS 4' TO 5' OF COVER AT BACK OF SIDEWALK. THE STANDARD COVER MAY NEED TO BE DEEPER SHOULD OTHER UTILITIES BE LOCATED IN ADJACENT AREAS, SEE STANDARD DRAWING 4C-11. SEE NOTE 9 BELOW.
5. WHEN THE COLLECTOR SEWER DEPTH IS SUCH THAT MINIMUM COVER AT PROPERTY LINE CANNOT BE MET, THE MINIMUM SLOPE OF 1/4" PER FOOT SHALL GOVERN THE COVER.
6. MINIMUM SPECIFIED COVER AT THE PROPERTY LINE SHALL BE MEASURED FROM EXISTING GROUND SURFACE OR EDGE OF ADJACENT ROADWAY, WHICHEVER IS LOWER.
7. A SPECIFIC ELEVATION AT THE PROPERTY LINE, WHEN SHOWN ON THE PLANS OR DESIGNATED BY THE ENGINEER, SHALL GOVERN.
8. ALL BENDS SHALL BE 25' MIN. TO 45' MAX.
9. MINIMUM DEPTH OF COVER TO BE INCREASED TO 5'-6" TO WHERE WATER MAIN IS TO BE INSTALLED AT THE BACK OF SIDEWALK. THE SERVICE IS TO BE EXTENDED TO THE BACK OF THE 12.5' PUE; CLEANOUT TO GRADE TO REMAIN 2" BACK OF SIDEWALK AND A SECOND CLEANOUT TO BE INSTALLED ON END OF THE EXTENSION.
10. ON ANY COLLECTOR, (WHETHER IT WILL BE EXTENDED IN THE FUTURE OR NOT) STARTING AT THE MOST UPSTREAM END, FACTORY TYPE "Y" CONNECTIONS TO THE COLLECTOR SHALL BE USED FOR THE FIRST 20 OR EQUIVALENT ESDS.
11. VCP SHALL BE BELL & SPIGOT WITH POLYURETHANE JOINTS.



**TYPE A      TYPE B**  
**CONNECTION DETAILS**

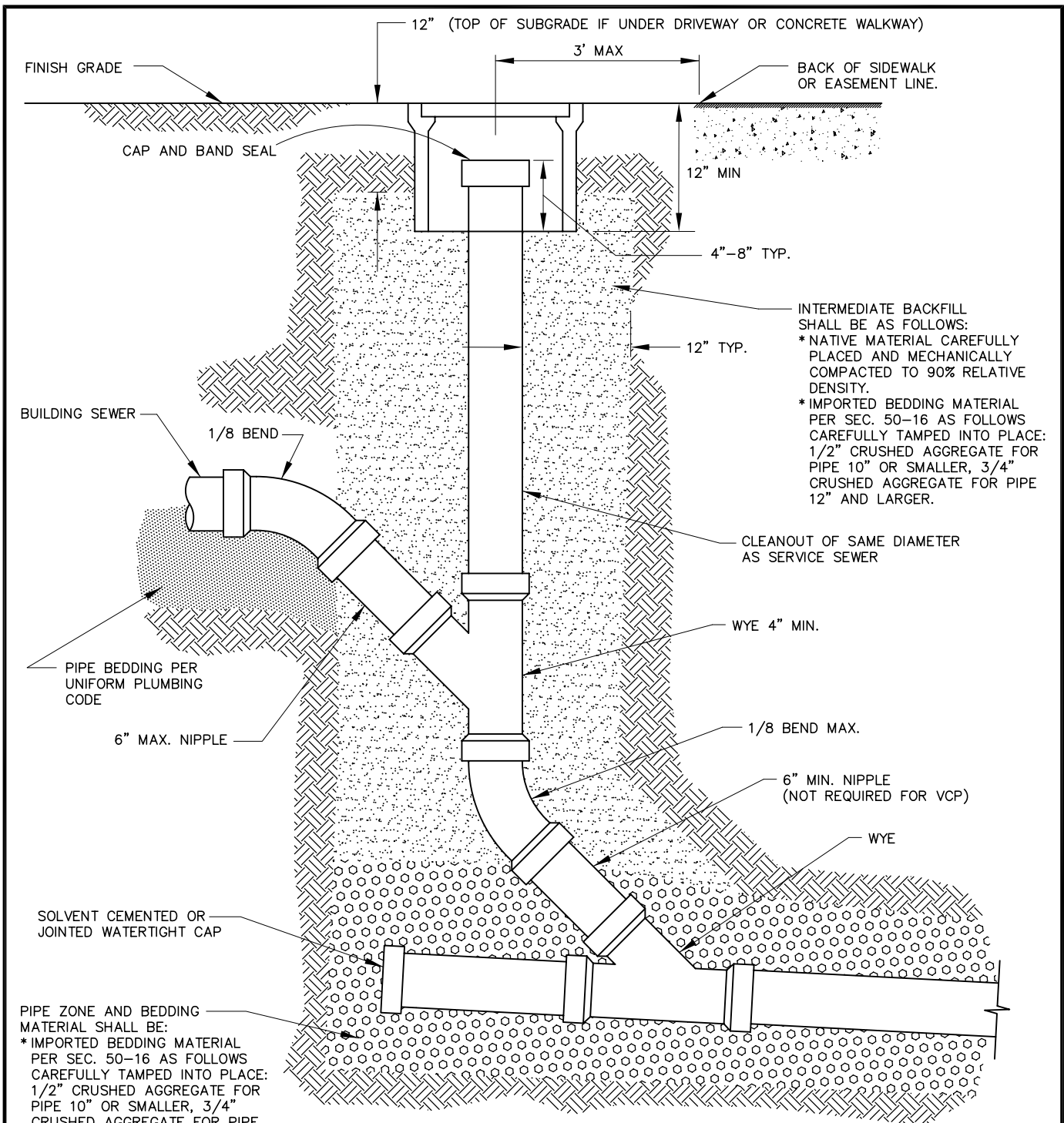
*Mary H Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**SERVICE  
SEWERS**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-13A**



INTERMEDIATE BACKFILL SHALL BE AS FOLLOWS:  
 \* NATIVE MATERIAL CAREFULLY PLACED AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY.  
 \* IMPORTED BEDDING MATERIAL PER SEC. 50-16 AS FOLLOWS CAREFULLY TAMPED INTO PLACE: 1/2" CRUSHED AGGREGATE FOR PIPE 10" OR SMALLER, 3/4" CRUSHED AGGREGATE FOR PIPE 12" AND LARGER.

PIPE ZONE AND BEDDING MATERIAL SHALL BE:  
 \* IMPORTED BEDDING MATERIAL PER SEC. 50-16 AS FOLLOWS CAREFULLY TAMPED INTO PLACE: 1/2" CRUSHED AGGREGATE FOR PIPE 10" OR SMALLER, 3/4" CRUSHED AGGREGATE FOR PIPE 12" AND LARGER.

PLACE A MINIMUM OF 12" OF BACKFILL ALL AROUND THE OUTSIDE DIAMETER OF THE RISER AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY. BACKFILL MATERIAL SHALL BE USED TO 12" FROM GRADE OR TO TOP OF SUBGRADE IF UNDER CONCRETE.

*Mary K Snyder*  
 DIRECTOR

**SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY**

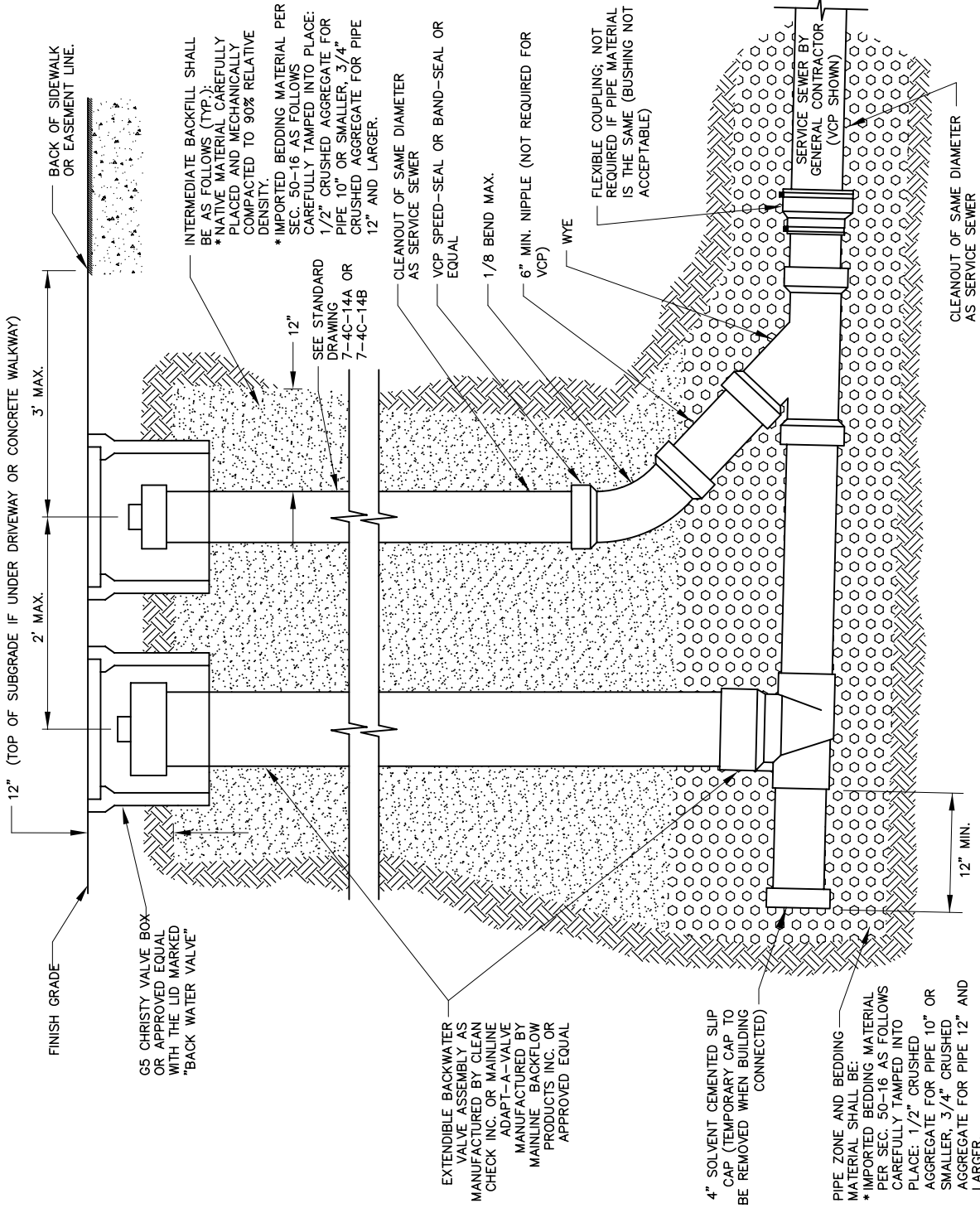
**MODIFIED VCP or ABS CLEANOUT TO GRADE**  
 BUILDING SEWER CONNECTED TO RISER  
 (Not applicable when the water main is located behind the sidewalk.)

DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

**7-4C-14B**

**NOTES:**

- CLEANOUT TO GRADE TO BE PLASTIC OR ABS (ASTM D2661) WITH SOLVENT WELD JOINTS.
- FOR 4" SERVICES IN NON-TRAFFIC WAYS, INSTALL ROUND NON-TRAFFIC TYPE CONCRETE OR PVC VALVE BOX AND COVER MARKED "SEWER". BOX INSIDE DIAMETER TO BE A MINIMUM OF 7" AND A MAXIMUM OF 10".
- FOR SERVICES 4" AND 6" OR LARGER IN CONCRETE OR TRAFFIC WAYS, INSTALL ROUND CONCRETE TRAFFIC TYPE VALVE BOX WITH CAST IRON COVER. COVER TO BE MARKED "SEWER".
- IF A WATER MAIN IS TO BE INSTALLED AT THE BACK OF SIDEWALK, CLEANOUT AND BACKWATER VALVE TO BE INSTALLED AS NEAR AS POSSIBLE TO THE BACK OF SIDEWALK. EXTEND THE SEWER SERVICE TO THE BACK OF THE P.U.E. (10' MIN) AND INSTALL A SECOND CLEANOUT TO GRADE.
- MAINTENANCE OF THE BACKWATER VALVE TO BE PERFORMED BY THE PROPERTY OWNER OR OCCUPANT PER THE MANUFACTURER'S RECOMMENDATIONS. NEVER ROD THROUGH THE BACKWATER VALVE SEAT AREA. REMOVE THE VALVE ASSEMBLY BEFORE JETTING OR HYDRO CLEANING.
- ANY MODIFICATION OR RELOCATION OF THE BACKWATER VALVE TO BE DONE PER THE MANUFACTURER'S RECOMMENDATIONS. A PLUMBING PERMIT AND INSPECTION IS REQUIRED BY BUILDING INSPECTION DIVISION. RELOCATION CLOSER TO THE STRUCTURE WILL REQUIRE INSTALLATION OF ONE-WAY CLEANOUTS ON EACH SIDE OF THE BACKWATER VALVE, EACH HEADED AWAY FROM THE VALVE SEAT AREA.



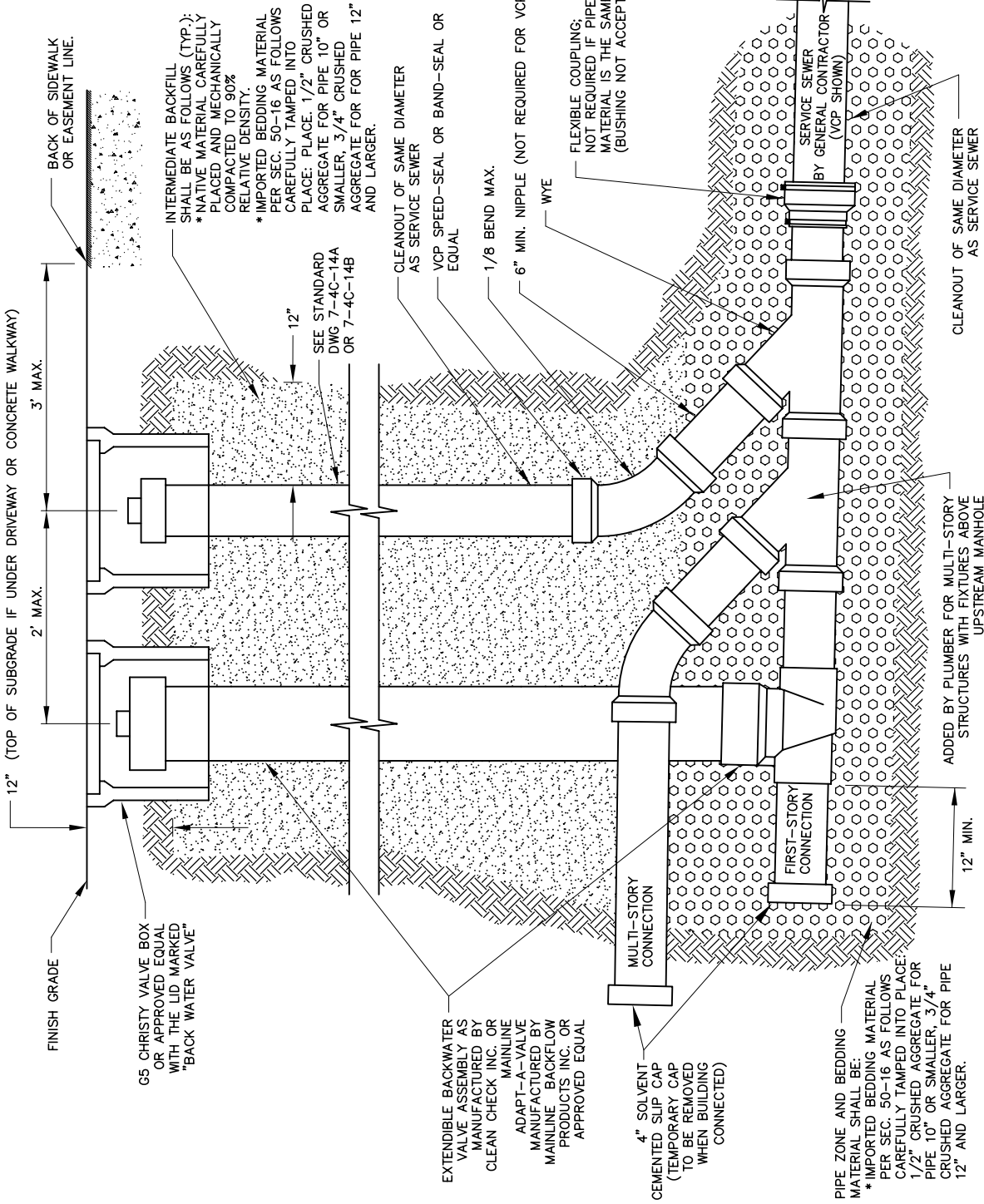
PLACE A MINIMUM OF 12" OF BACKFILL ALL AROUND THE OUTSIDE DIAMETER OF THE RISER AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY. BACKFILL MATERIAL SHALL BE UNDER 12" FROM GRADE OR TO TOP OF SUBGRADE IF UNDER CONCRETE.

SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY	
<b>ABS / PVC BACKWATER VALVE TO GRADE</b>	
DRAWN BY: RAS SCALE: NONE DATE: 11/07	<b>7-4C-15A</b>

*Mary G. Snyder*  
DIRECTOR

**NOTES:**

- CLEANOUT TO GRADE TO BE PLASTIC DWV TYPE PVC (ASTM D2665) OR ABS (ASTM D2661) WITH SOLVENT WELD JOINTS.
- FOR 4" SERVICES IN NON-TRAVEL WAYS, INSTALL ROUND NON-TRAFFIC TYPE CONCRETE OR PVC VALVE BOX AND COVER MARKED "SEWER". BOX INSIDE DIAMETER TO BE A MINIMUM OF 7" AND A MAXIMUM OF 10".
- FOR SERVICES 4" AND 6" OR LARGER IN CONCRETE OR TRAVEL WAYS, INSTALL ROUND CONCRETE TRAFFIC TYPE VALVE BOX WITH CAST IRON COVER. COVER TO BE MARKED "SEWER".
- IF A WATER MAIN IS TO BE INSTALLED AT THE BACK OF SIDEWALK, CLEANOUT AND BACKWATER VALVE TO BE INSTALLED AS NEAR AS POSSIBLE TO THE BACK OF SIDEWALK. EXTEND THE SEWER SERVICE TO THE BACK OF THE P.U.E. (10' MIN) AND INSTALL A SECOND CLEANOUT TO GRADE.
- MAINTENANCE OF THE BACKWATER VALVE TO BE PERFORMED BY THE PROPERTY OWNER OR OCCUPANT PER THE MANUFACTURER'S RECOMMENDATIONS. NEVER ROD THROUGH THE BACKWATER VALVE SEAT AREA. REMOVE THE VALVE ASSEMBLY BEFORE JETTING OR HYDRO CLEANING.
- ANY MODIFICATION OR RELOCATION OF THE BACKWATER VALVE TO BE DONE PER THE MANUFACTURER'S RECOMMENDATIONS. A PLUMBING PERMIT AND INSPECTION IS REQUIRED BY BUILDING INSPECTION DIVISION. RELOCATION CLOSER TO THE STRUCTURE WILL REQUIRE INSTALLATION OF ONE-WAY CLEANOUTS ON EACH SIDE OF THE BACKWATER VALVE, EACH HEADED AWAY FROM THE VALVE SEAT AREA.



PLACE A MINIMUM OF 12" OF BACKFILL ALL AROUND THE OUTSIDE DIAMETER OF THE RISER AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY. BACKFILL MATERIAL SHALL BE USED TO 12" FROM GRADE OR TO TOP OF SUBGRADE IF UNDER CONCRETE.

BACK OF SIDEWALK OR EASEMENT LINE.

3' MAX.

2' MAX.

12" (TOP OF SUBGRADE IF UNDER DRIVEWAY OR CONCRETE WALKWAY)

65 CHRISTY VALVE BOX OR APPROVED EQUAL WITH THE LID MARKED "BACK WATER VALVE"

INTERMEDIATE BACKFILL SHALL BE AS FOLLOWS (TYP.):

- \* NATIVE MATERIAL CAREFULLY PLACED AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY.
- \* IMPORTED BEDDING MATERIAL PER SEC. 50-16 AS FOLLOWS CAREFULLY TAMPED INTO PLACE.
- PLACE 1/2" CRUSHED AGGREGATE FOR PIPE 10" OR SMALLER, 3/4" CRUSHED AGGREGATE FOR PIPE 12" AND LARGER.

SEE STANDARD DWG. 7-4C-14A OR 7-4C-14B

12"

EXTENSIBLE BACKWATER VALVE ASSEMBLY AS MANUFACTURED BY CLEAN CHECK INC. OR ADAPT-A-VALVE MANUFACTURED BY MAINLINE BACKFLOW PRODUCTS INC. OR APPROVED EQUAL

4" SOLVENT CEMENTED SLIP CAP (TEMPORARY CAP TO BE REMOVED WHEN BUILDING CONNECTED)

MULTI-STORY CONNECTION

FIRST-STORY CONNECTION

12" MIN.

ADDED BY PLUMBER FOR MULTI-STORY STRUCTURES WITH FIXTURES ABOVE UPSTREAM MANHOLE

PIPE ZONE AND BEDDING MATERIAL SHALL BE:

- \* IMPORTED BEDDING MATERIAL PER SEC. 50-16 AS FOLLOWS CAREFULLY TAMPED INTO PLACE.
- 1/2" CRUSHED AGGREGATE FOR PIPE 10" OR SMALLER, 3/4" CRUSHED AGGREGATE FOR PIPE 12" AND LARGER.

CLEANOUT OF SAME DIAMETER AS SERVICE SEWER

6" MIN. NIPPLE (NOT REQUIRED FOR VCP)

1/8" BEND MAX.

VCP SPEED-SEAL OR BAND-SEAL OR EQUAL

CLEANOUT OF SAME DIAMETER AS SERVICE SEWER

WYE

FLEXIBLE COUPLING; NOT REQUIRED IF PIPE MATERIAL IS THE SAME (BUSHING NOT ACCEPTABLE)

SERVICE SEWER BY GENERAL CONTRACTOR (VCP SHOWN)

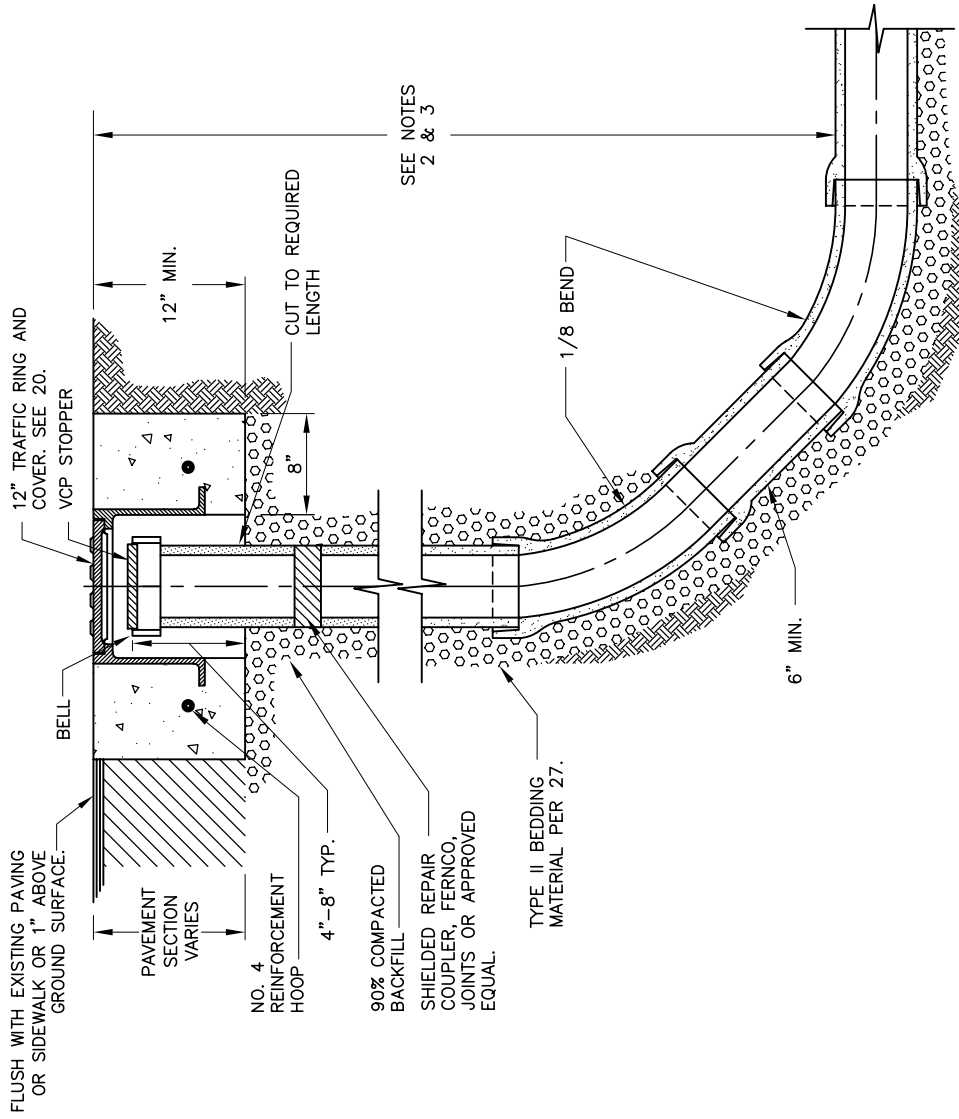
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**ABS / PVC BACKWATER  
VALVE TO GRADE -  
MULTI-STORY STRUCTURE**

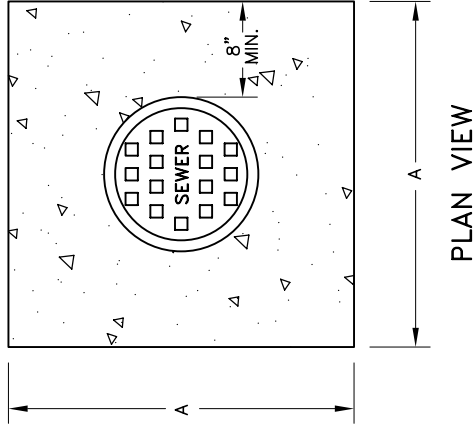
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

*Mary C. Snyder*  
DIRECTOR

**7-4C-15B**



PROFILE



**NOTES:**

1. ALL PIPE FITTINGS SHALL BE THE SAME SIZE AND MATERIAL AS THE HORIZONTAL PIPE TO WHICH THEY CONNECT. JOINT SHALL BE AS SPECIFIED FOR THE TYPE OF PIPE USED.
2. 48" TOP OF PIPE TO FINISH GRADE IN NON-TRAVEL ROADS.
3. 48" TOP OF PIPE TO SUB GRADE IN TRAVEL ROADS.

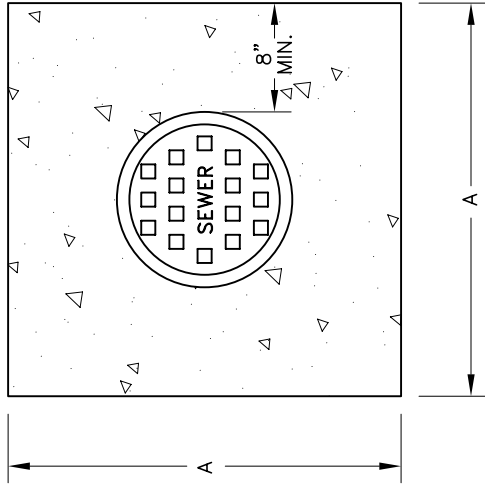
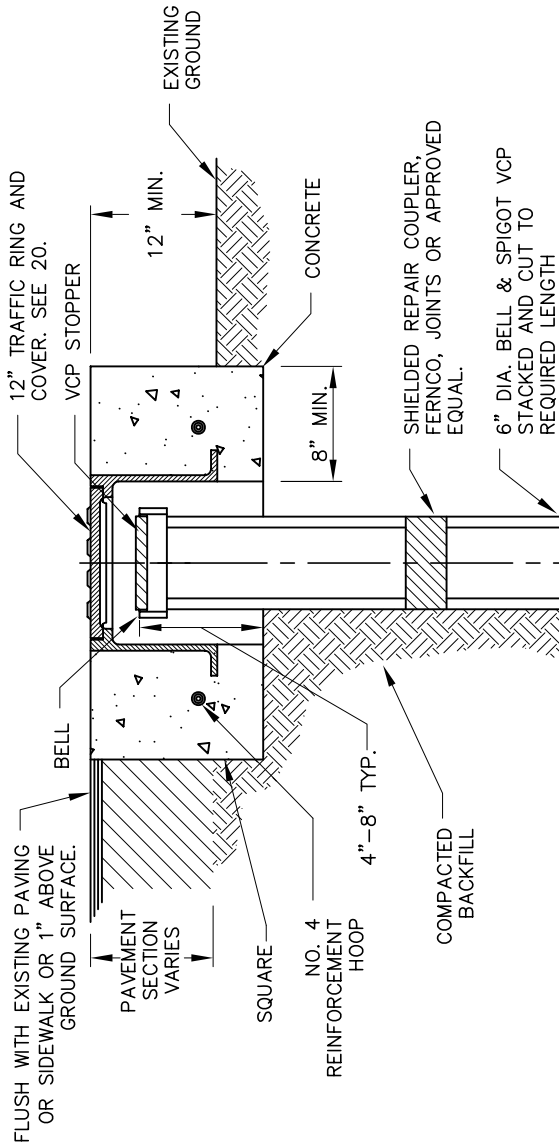
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**FLUSHER BRANCH  
FOR PIPE DIAMETERS  
8" AND LESS**

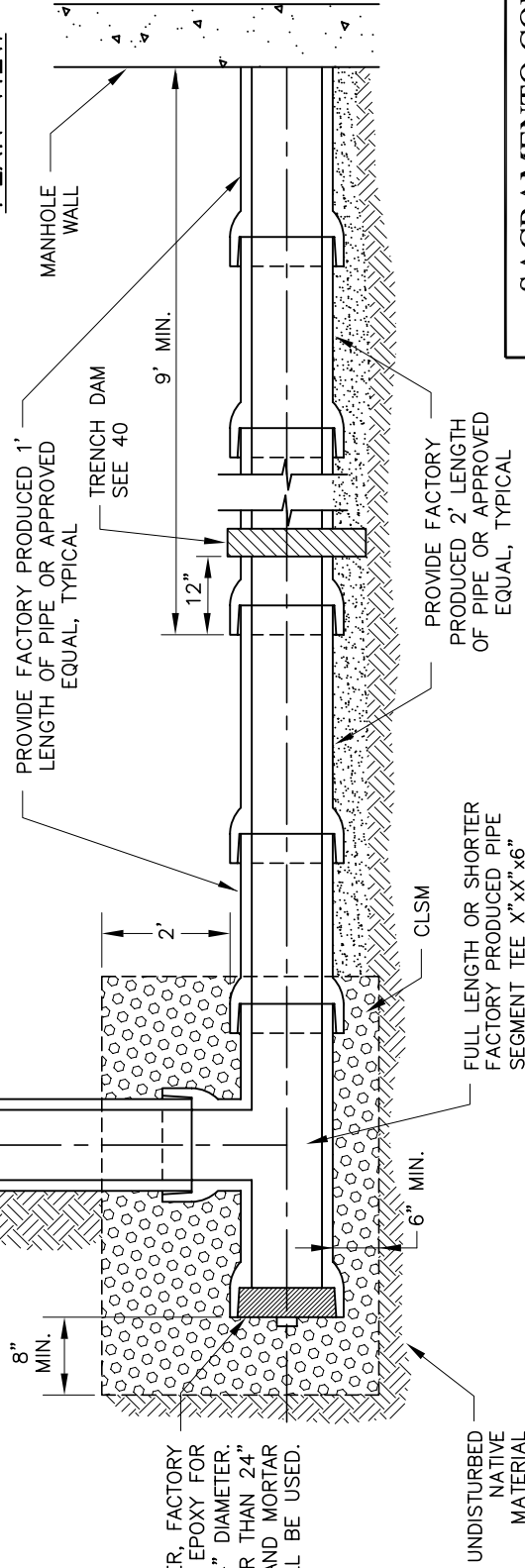
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-16A**

*Mary H Snyder*  
DIRECTOR



PLAN VIEW



VCP STOPPER, FACTORY SEALED WITH EPOXY FOR PIPES 10" TO 24" DIAMETER. FOR PIPES LARGER THAN 24" DIAMETER BRICK AND MORTAR PLUG SHALL BE USED.

NOTES:

1. EPOXY SHALL BE WYN-STK ES6323 OR APPROVED EQUAL.
2. CLSM SHALL HAVE A MAXIMUM COMPRESSIVE STRENGTH OF NOT MORE THAN 125 PSI 28 DAY STRENGTH.

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

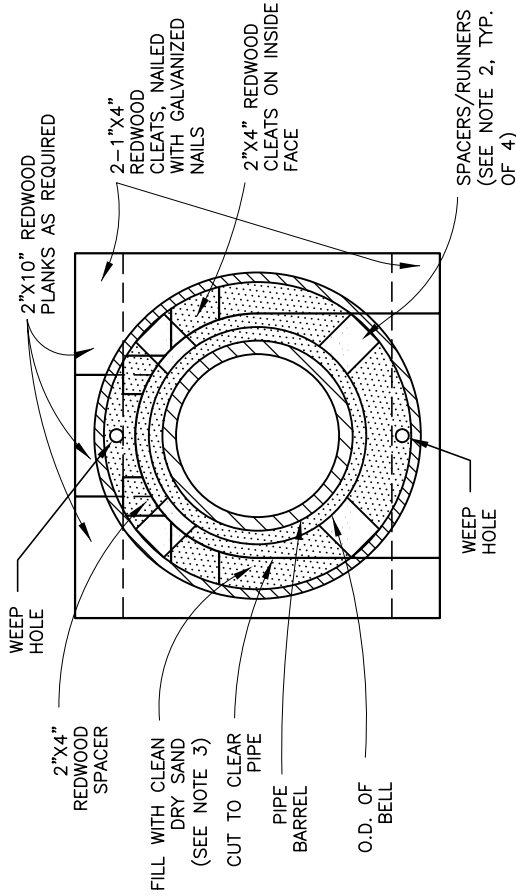
**FLUSHER BRANCH  
FOR PIPE DIAMETERS  
GREATER THAN 8"**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

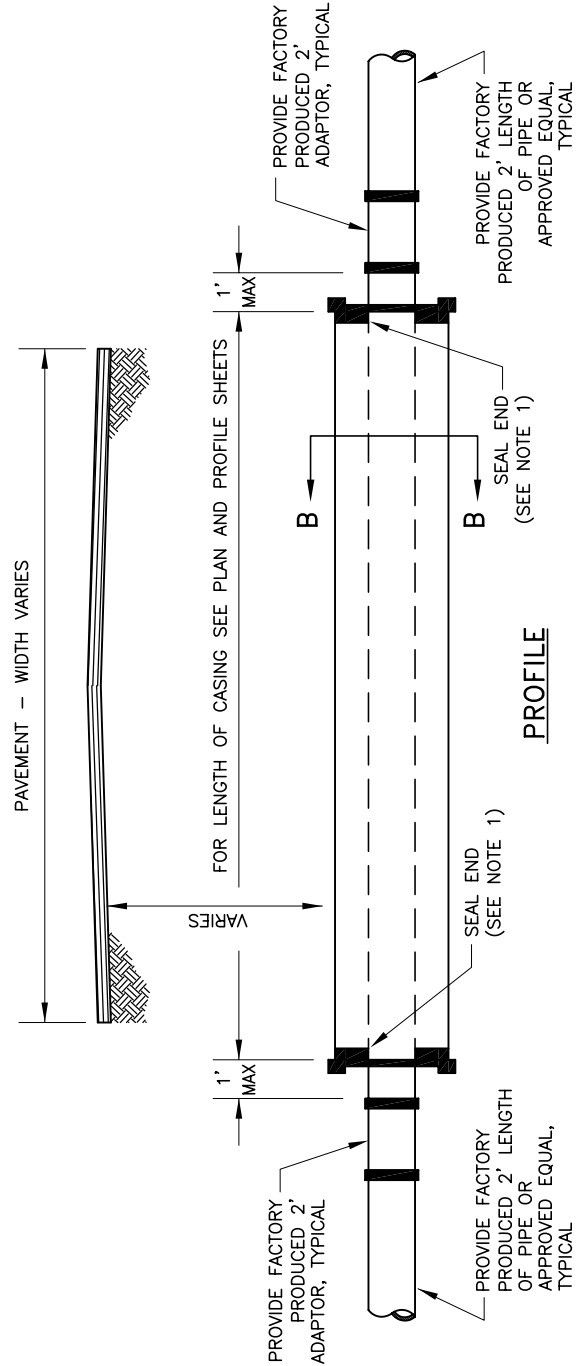
*Mary J. Snyder*  
DIRECTOR

**7-4C-16B**

- NOTE:**
1. IN LIEU OF 3-2" REDWOOD PLANKS, BRICK AND MORTAR WITH A 1" DIAMETER WEEP HOLE AT CROWN AND INVERT MAY BE USED.
  2. MANUFACTURED POLYURETHANE SPACERS/RUNNERS OR APPROVED EQUAL SHALL BE USED. MANUFACTURED POLYURETHANE SPACERS/RUNNERS OR APPROVED EQUAL SHALL BE INSTALLED PER MANUFACTURERS REQUIREMENTS.
  3. SAND SHOULD MEET ASTM D448 TABLE 1 - SIZE 89.
  4. CASING, SEE SPECIFICATIONS SECTION 37.
  5. CENTER CARRIER PIPE IN CASING.



**SECTION B-B**



*Mary C. Snyder*  
DIRECTOR

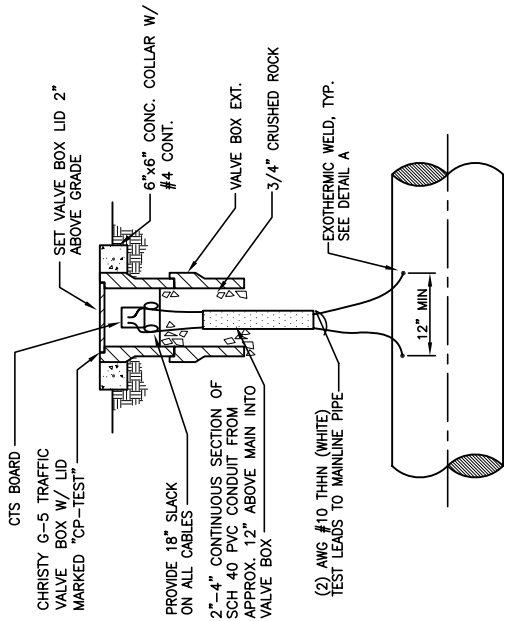
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**CONDUCTOR  
CASING DETAIL**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-20**

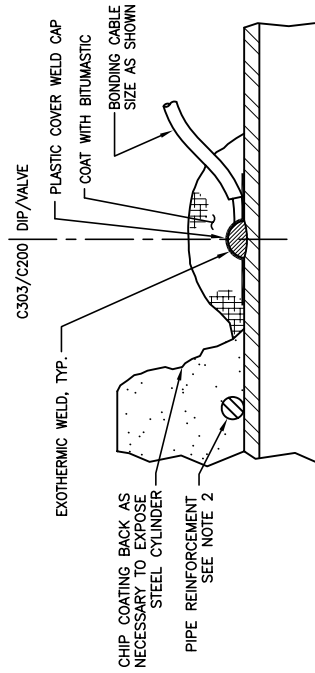




- NOTES:
1. PROVIDE CORROSION MONITORING SCHEDULE.
  2. INSTALL TEST LEADS ON SPIGOT END OF PIPE.
  3. WELD LEADS TO STEEL JOINT RING.

**CORROSION TEST STATION (CTS)**

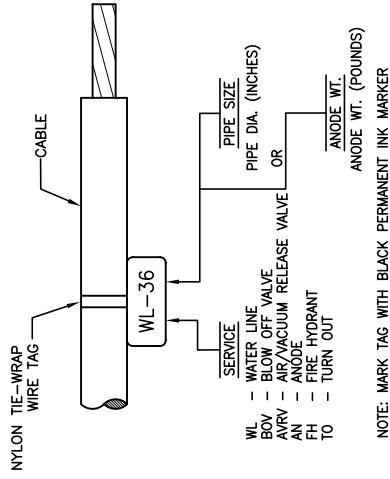
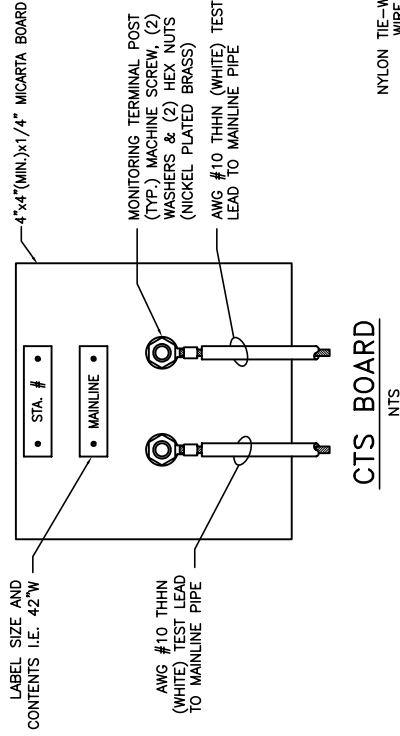
NTS



- NOTES:
1. EXOTHERMIC WELDS SHALL NOT BE WELDED TO STEEL CYLINDERS OF THICKNESS 10 GA. OR LESS WITHOUT APPROVAL OF THE ENGINEER.
  2. PIPE REINFORCEMENT BARS MAY BE PUSHED APART AS NECESSARY TO INSTALL EXOTHERMIC WELD. DO NOT CUT REINFORCEMENT BARS WITHOUT APPROVAL OF THE ENGINEER. IF REINFORCEMENT BARS ARE CUT, TACK WELD ALL CUT ENDS TO STEEL CYLINDER.
  3. COAT ALL EXPOSED STEEL WITH BITUMASTIC AFTER EXOTHERMIC WELD.
  4. WHERE INSTALLING EXOTHERMIC WELD ON EPOXY COATED STEEL, GRIND EPOXY COATING TO EXPOSE STEEL, COMPLETE WELD AND APPLY EPOXY TOUCH-UP TO EXPOSED STEEL.

**DETAIL A**  
**EXOTHERMIC WELD**

NTS



**CABLE ID TAG**

NTS

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

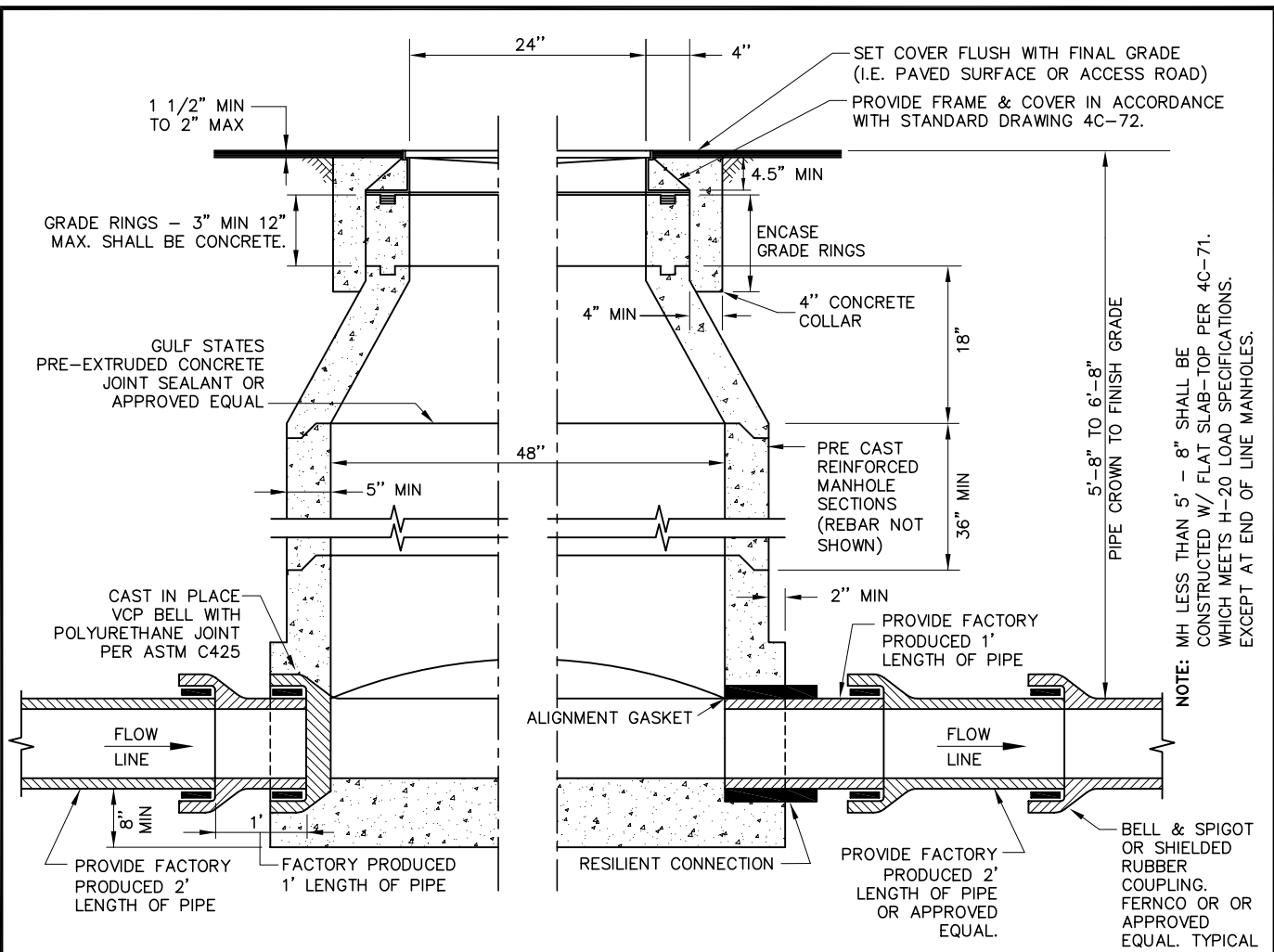
CATHODIC PROTECTION -  
STEEL CASING

DRAWN BY: GT  
SCALE: NONE  
DATE: 11/07

DIRECTOR

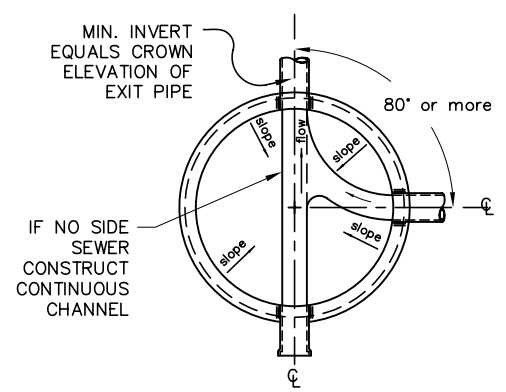
*Mary H Snyder*

7-4C-21



**NOTES:**

1. CLASS A CONCRETE SHALL BE USED FOR MANHOLE BASES.
2. PIPE SHALL STOP AT INSIDE FACE OF MANHOLE.
3. POURED IN PLACE MANHOLES SHALL NOT BE ALLOWED UNLESS APPROVED BY THE DIRECTOR, PRIOR TO CONSTRUCTION.
4. JOINTS FOR THE BARREL SECTION SHALL BE TONGUE AND GROOVE OR LAP JOINT, ALL LIFTING HOLES SHALL BE SEALED WITH NON METALLIC NON-SHRINK GROUT.
5. ALL MANHOLE BASES SHALL BE PRECAST BASES AND SHALL BE PLACED ON 10" MIN. OF CRUSHED ROCK PLACED OVER UNDISTURBED MATERIAL. CONNECTION OF THE PIPE TO THE MANHOLE SHALL USE A CAST IN PLACE VCP BELL WITH POLYURETHANE JOINT PER ASTM C425 OR A RESILIENT CONNECTOR CONFORMING TO ASTM STANDARD C923 SUCH AS KOR-N-SEAL 306 SERIES OR APPROVED EQUAL. ALL MANHOLE BASES TO INCLUDE AN ANTI-FLOATATION RING PER STANDARD DRAWING 4C-40.
6. ANY SERVICE SEWER ENTERING A MANHOLE SHALL BE INSTALLED WITH THE INVERT ELEVATION OF THE SERVICE PIPE MATCHING THE CROWN ELEVATION OF THE EXIT SEWER EXCEPT WHEN AN INTERNAL DROP CONNECTION IS USED. FOR MANHOLES AT THE END OF A CUL-DE-SAC OR END OF LINE WITH NO EXTENSION THE INVERT OF ANY SERVICE STUBS SHALL BE A MINIMUM OF ONE INCH ABOVE THE INVERT OF THE EXIT PIPE WITH AN INDIVIDUAL SMOOTH TRANSITION CHANNEL. SEE SECTION 39-2.01 OF THE SPECIFICATIONS.
7. BEDDING FOR PRE CAST MANHOLE SHALL BE SELECT IMPORTED MATERIAL 3/4" CRUSHED ROCK.
8. ECCENTRIC CONES ARE NOT ALLOWED UNLESS APPROVED BY THE DIRECTOR, PRIOR TO CONSTRUCTION.
9. FOR ASPHALTIC CONCRETE OVERLAYS ONLY, MANHOLES WITH DEPTHS OF 8' AND GREATER (MEASURED FROM THE FLOW LINE TO THE TOP OF CASING) THE MAXIMUM THROAT DEPTH IS 24 INCHES.
10. CUL-DE-SAC MANHOLES OR END OF LINE MANHOLES WITH A DEPTH OF 6'-8" OR LESS SHALL USE 18" CONES.
11. ANY COLLECTOR ENTERING A MANHOLE WITH LESS THAN 80' TO THE EXIT FLOW DIRECTION SHALL BE INSTALLED WITH THE INVERT ELEVATION OF THE ENTERING COLLECTOR MATCHING THE CROWN ELEVATION OF THE EXIT PIPE.
12. PIPE SHALL BE PLACED WITH THE BELLS UPSTREAM.
13. ALL SEWER MANHOLE AND APPURTENANCES SHALL HAVE 24 HOUR ALL WEATHER ACCESS. (I.E. PAVED SURFACE OR ACCESS ROAD).



**PLAN VIEW OF 48" MANHOLE SHOWING INTERSECTING SEWERS**

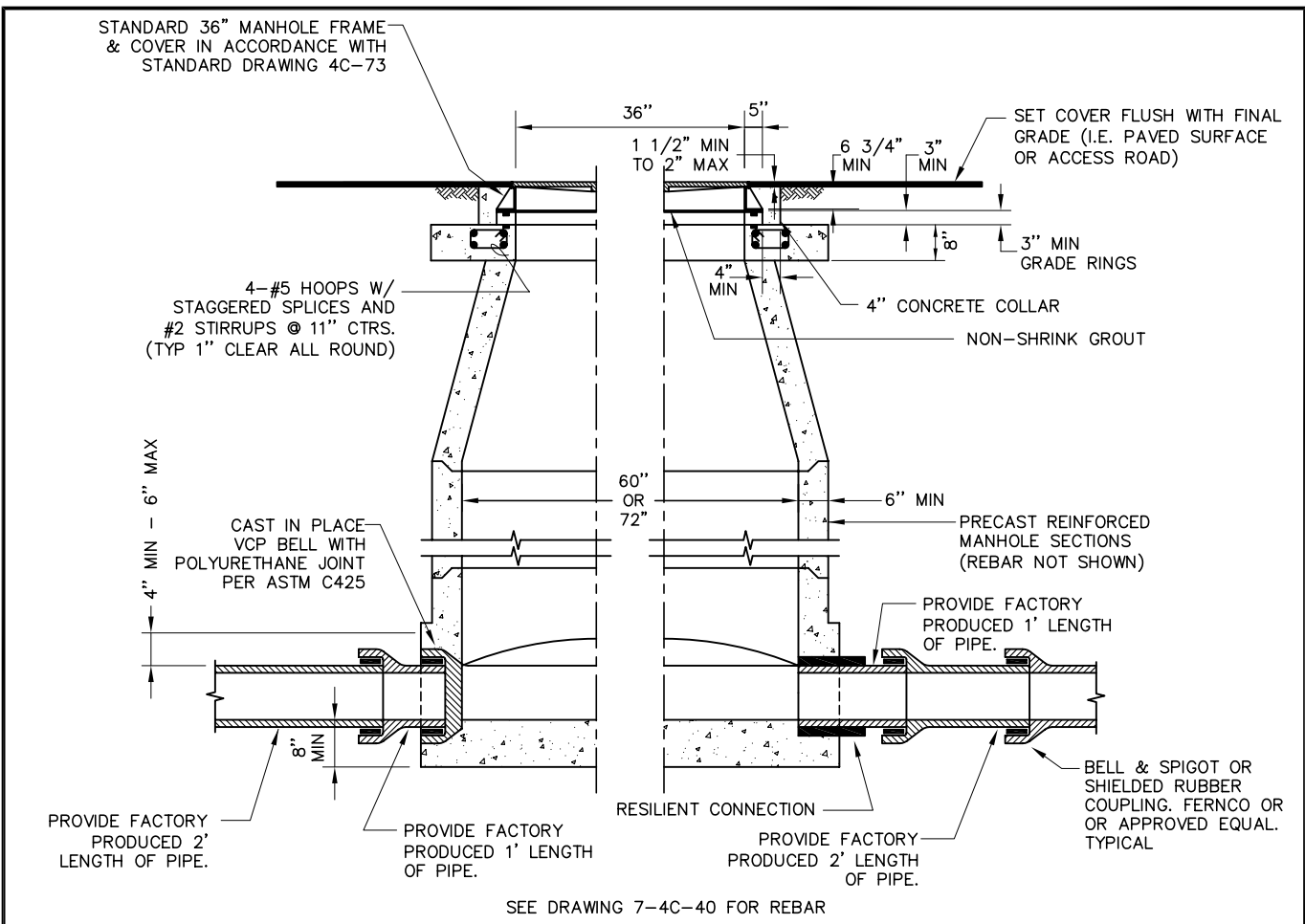
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY**

**STANDARD PRECAST 48" SEWER MANHOLES**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-30**



**NOTES:**

1. CLASS A CONCRETE SHALL BE USED FOR MANHOLE BASES.
2. PIPE SHALL STOP AT INSIDE FACE OF MANHOLE.
3. POURED IN PLACE MANHOLES SHALL NOT BE ALLOWED UNLESS APPROVED BY THE DISTRICT ENGINEER, PRIOR TO CONSTRUCTION.
4. JOINTS FOR THE BARREL SECTION SHALL BE TONGUE AND GROOVE OR LAP JOINT, ALL LIFTING HOLES SHALL BE SEALED WITH NON METALLIC NON-SHRINK GROUT.
5. ALL MANHOLE BASES SHALL BE PRECAST BASES AND SHALL BE PLACED ON 10" MIN. OF CRUSHED ROCK PLACED OVER UNDISTURBED MATERIAL. CONNECTION OF THE PIPE TO THE MANHOLE SHALL USE A CAST IN PLACE VCP BELL WITH POLYURETHANE JOINT PER ASTM STANDARD C425 OR A RESILIENT CONNECTOR CONFORMING TO ASTM STANDARD C923 SUCH AS KOR-N-SEAL 306 SERIES OR APPROVED EQUAL. ALL MANHOLE BASES TO INCLUDE AN ANTI-FLOATATION RING PER STANDARD DRAWING 7-4C-40.
6. ANY SERVICE SEWER ENTERING A MANHOLE SHALL BE INSTALLED WITH THE INVERT ELEVATION OF THE SERVICE PIPE MATCHING THE CROWN ELEVATION OF THE EXIT SEWER EXCEPT WHEN AN INTERNAL DROP CONNECTION IS USED. FOR MANHOLES AT THE END OF A CUL-DE-SAC OR END OF LINE WITH NO EXTENSION THE INVERT OF ANY SERVICE STUBS SHALL BE A MINIMUM OF ONE INCH ABOVE THE INVERT OF THE EXIT PIPE WITH AN INDIVIDUAL SMOOTH TRANSITION CHANNEL. SEE SECTION 39-2.01 OF THE SPECIFICATIONS.
7. BEDDING FOR PRE CAST MANHOLE SHALL BE SELECT IMPORTED MATERIAL 3/4" CRUSHED ROCK.
8. ECCENTRIC CONES ARE NOT ALLOWED UNLESS APPROVED BY THE DIRECTOR, PRIOR TO CONSTRUCTION.
9. FOR ASPHALTIC CONCRETE OVERLAYS ONLY, MANHOLES WITH DEPTHS OF 8' AND GREATER (MEASURED FROM THE FLOW LINE TO THE TOP OF CASING) THE MAXIMUM THROAT DEPTH IS 24 INCHES.
10. CUL-DE-SAC MANHOLES OR END OF LINE MANHOLES WITH A DEPTH OF 6'-11" OR LESS SHALL USE 18" CONES.
11. ANY COLLECTOR ENTERING A MANHOLE SHALL BE INSTALLED WITH THE INVERT ELEVATION OF THE ENTERING COLLECTOR MATCHING THE CROWN ELEVATION OF THE EXIT PIPE.
12. PIPE SHALL BE PLACED WITH THE BELLS UPSTREAM.
13. THE MINIMUM DISTANCE BETWEEN SIDE PENETRATIONS IS 1/2 OF THE SMALLEST PIPE OUTSIDE DIAMETER. THE MAXIMUM OUTSIDE DIAMETER OF ANY PENETRATION IS EQUAL TO 0.707 x THE MANHOLE INSIDE DIAMETER.
14. ALL SEWER MANHOLES AND APPURTENANCES SHALL HAVE 24 HOUR ALL WEATHER ACCESS (I.E. PAVED SURFACE OR ACCESS ROAD).

*Mary K Snyder*  
 DIRECTOR

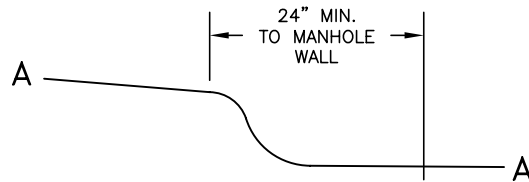
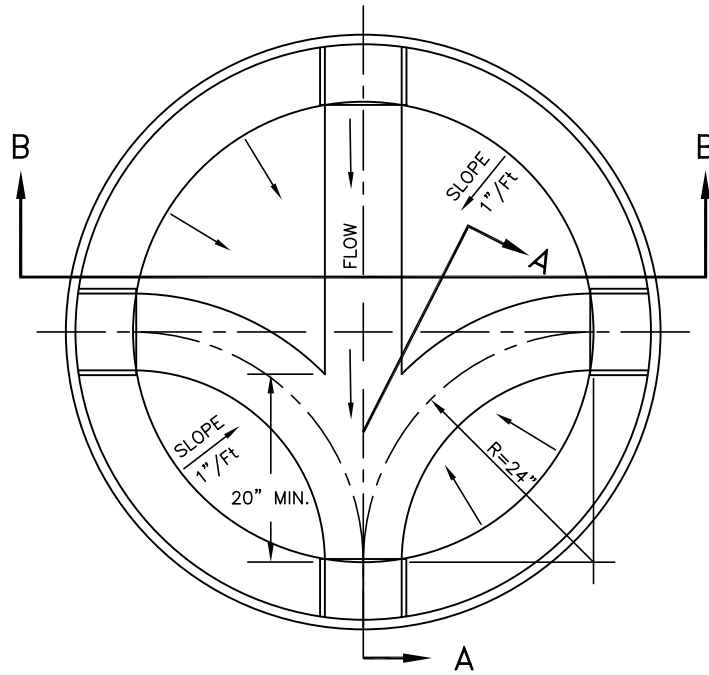
**SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY**

**STANDARD PRECAST 60"  
 & 72" SEWER MANHOLES**

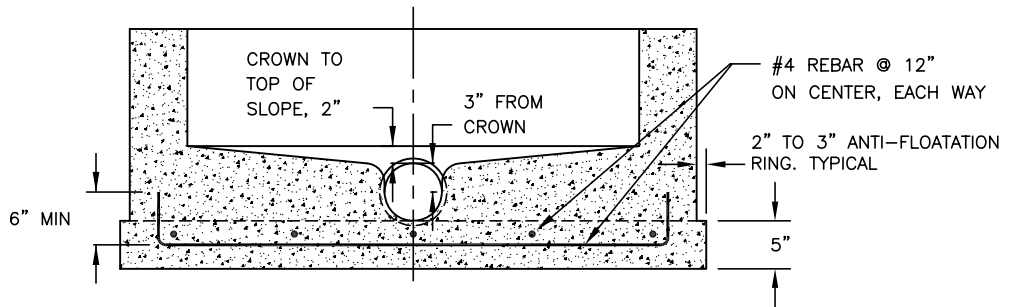
DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

**7-4C-31**

CAMERA CHANNEL REQUIRED FOR ALL 8" AND 10" LINES



SECTION A-A



SECTION B-B

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

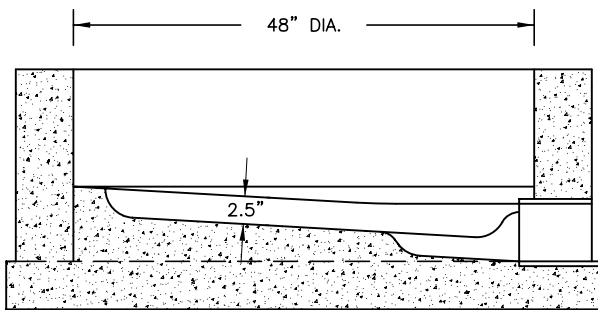
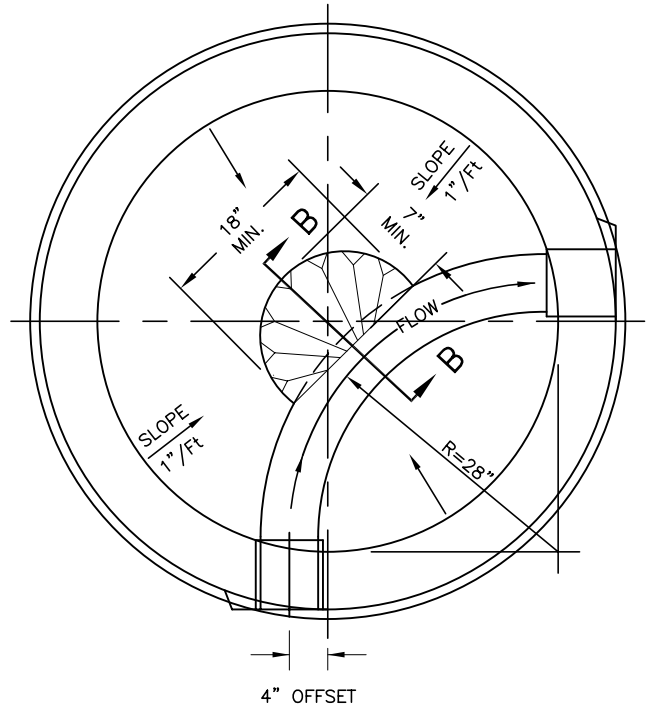
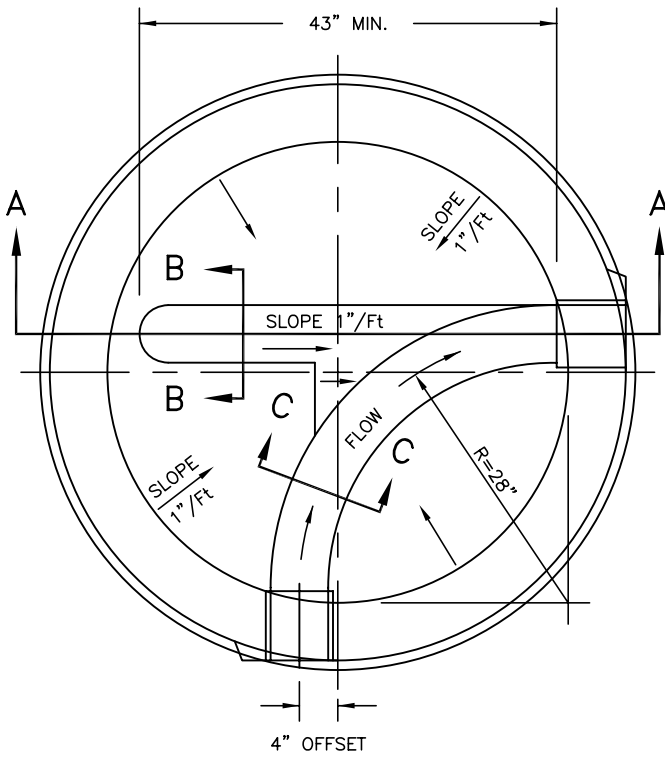
4-WAY MANHOLE BASE

*Mary K Snyder*  
DIRECTOR

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

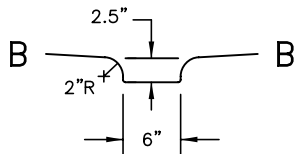
7-4C-40

CAMERA CHANNEL REQUIRED FOR ALL 8" AND 10" LINES

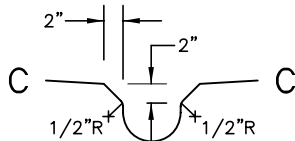


SECTION A-A

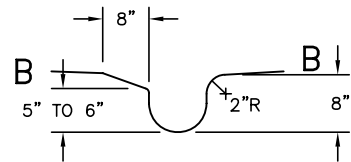
FOR 8" LINE ONLY



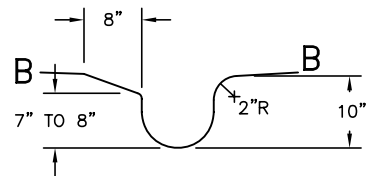
OR



REBAR PATTERN PER 4, SECTION B-B



SECTION B-B  
FOR 8" PIPE BASES



SECTION B-B  
FOR 10" PIPE BASES

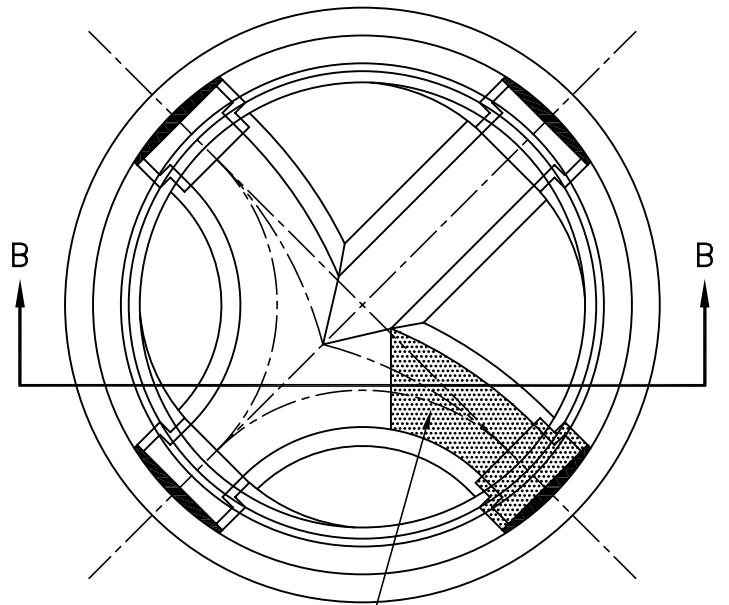
*Mary K Snyder*  
DIRECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

90° MANHOLE BASE  
CAMERA CHANNEL  
DETAIL

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

7-4C-41



PORT AND CHANNEL GROUTED IN  
(@90° AND/OR 270°) TYP.

**NOTES:**

SURFACE PREPARATION

1. COMPLETELY ROUGH THE ENTIRE CHANNEL AREA TO BE GROUTED WITH NONMECHANICAL DEVICE SUCH AS A WIRE / STEEL BRUSH.
2. CHANNEL SURFACE SHALL BE CLEANED OF ALL LOOSE OR FOREIGN MATERIAL THAT WOULD IN ANY WAY PREVENT BOND BETWEEN THE MORTAR AND THE CONCRETE SURFACES.
3. CHANNEL SURFACE SHALL BE FLUSHED OUT WITH WATER AND ALLOWED TO DRY TO A SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACING THE BONDING AGENT.
4. INSTALL T-CONE PIPE PLUG (ETCO OR EQUAL) INTO CHANNEL OPENING TO BE GROUTED.

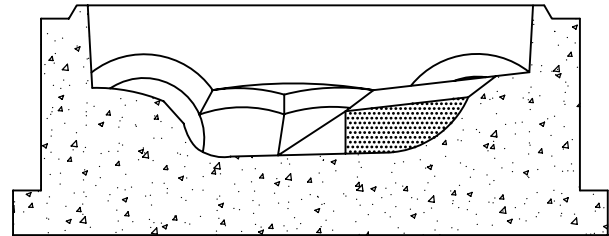
GROUT PLACEMENT

90 DEGREE CHANNEL

5. A BONDING AGENT (LATEX ACRYLIC BONDCRETE TYPE LL ASTM C-1059 OR EQUIVALENT) SHALL BE BRUSHED ONTO THE SURFACE OF THE CHANNEL TO BE GROUTED. THE GROUTING MATERIAL SHALL BE PLACED IMMEDIATELY THERE AFTER THE AGENT IS BRUSHED ON.
6. THE NON SHRINK GROUT SHALL FILL THE CHANNEL TO TOP OF SHELF AREA, AND BE TIGHTLY PACKED.
7. GROUTING OF CHANNEL MUST BE COMPLETED PRIOR TO THE TELEVISION INSPECTION PROCESS.

NON-SHRINK GROUT MATERIAL

8. NON-SHRINK GROUT SHALL BE A PREPACKAGED, INORGANIC, NON-GAS-LIBERATING, NON-METALLIC, CEMENT-BASED GROUT REQUIRING ONLY THE ADDITION OF WATER.
9. NON-SHRINK GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2000 PSI AND SHALL HAVE NO SHRINKAGE AND A MAXIMUM 4.0 EXPANSION IN THE PLASTIC STATE WHEN TESTED IN ACCORDANCE WITH ASTM C 827; AND SHALL HAVE NO SHRINKAGE AND A MAXIMUM OF 0.2-PERCENT EXPANSION IN THE HARDENED STATE WHEN TESTED IN ACCORDANCE WITH CRD C621.



SECTION B-B

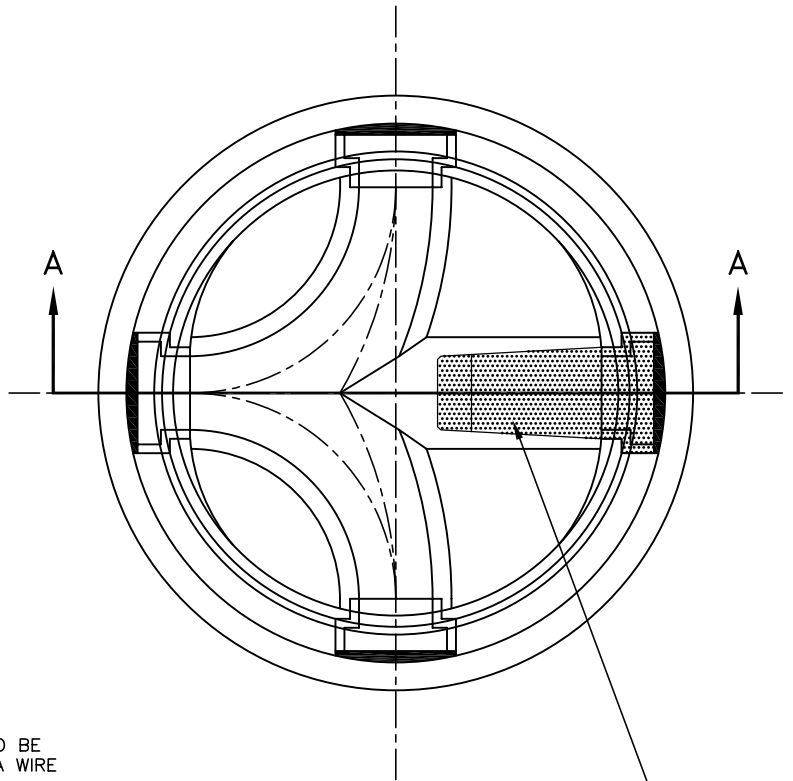
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**MANHOLE BASE  
GROUTING UNUSED CHANNEL  
AT 90° DETAIL**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-42**

*Mary K Snyder*  
DIRECTOR



PORT (180°) AND CHANNEL  
 FILLED IN TO MAKE CAMERA CHANNEL  
 (SLOPE OF 1/2" PER FOOT)

**NOTES:**

SURFACE PREPARATION

1. COMPLETELY ROUGH THE ENTIRE CHANNEL AREA TO BE GROUTED WITH NONMECHANICAL DEVICE SUCH AS A WIRE / STEEL BRUSH.
2. CHANNEL SURFACE SHALL BE CLEANED OF ALL LOOSE OR FOREIGN MATERIAL THAT WOULD IN ANY WAY PREVENT BOND BETWEEN THE MORTAR AND THE CONCRETE SURFACES.
3. CHANNEL SURFACE SHALL BE FLUSHED OUT WITH WATER AND ALLOWED TO DRY TO A SURFACE DRY CONDITION IMMEDIATELY PRIOR TO PLACING THE BONDING AGENT.
4. INSTALL T-CONE PIPE PLUG (ETCO OR EQUAL) INTO CHANNEL OPENING TO BE GROUTED.

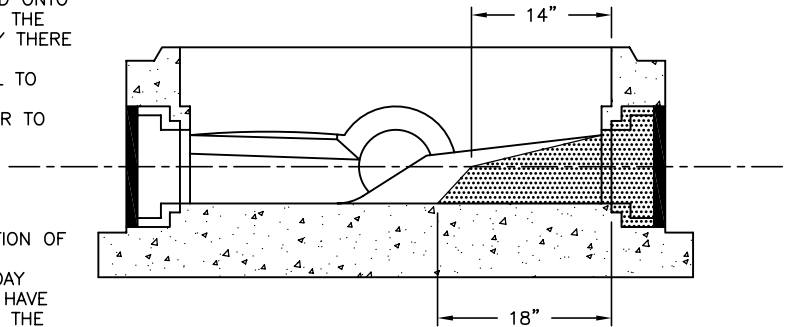
GROUT PLACEMENT

180° DEGREE CHANNEL

5. A BONDING AGENT (LATEX ACRYLIC BONDCRETE TYPE LL ASTM C-1059 OR EQUIVALENT) SHALL BE BRUSHED ONTO THE SURFACE OF THE CHANNEL TO BE GROUTED. THE GROUTING MATERIAL SHALL BE PLACED IMMEDIATELY THERE AFTER THE AGENT IS BRUSHED ON.
6. THE NON SHRINK GROUT SHALL FILL THE CHANNEL TO TOP OF SHELF AREA, AND BE TIGHTLY PACKED.
7. GROUTING OF CHANNEL MUST BE COMPLETED PRIOR TO THE TELEVISION INSPECTION PROCESS.

NON-SHRINK GROUT MATERIAL

8. NON-SHRINK GROUT SHALL BE A PREPACKAGED, INORGANIC, NON-GAS-LIBERATING, NON-METALLIC, CEMENT-BASED GROUT REQUIRING ONLY THE ADDITION OF WATER.
9. NON-SHRINK GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2000 PSI AND SHALL HAVE NO SHRINKAGE AND A MAXIMUM 4.0 EXPANSION IN THE PLASTIC STATE WHEN TESTED IN ACCORDANCE WITH ASTM C 827; AND SHALL HAVE NO SHRINKAGE AND A MAXIMUM OF 0.2-PERCENT EXPANSION IN THE HARDENED STATE WHEN TESTED IN ACCORDANCE WITH CRD C621.



**SECTION A-A**

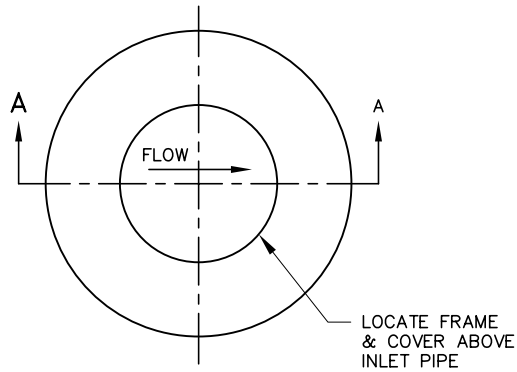
SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY

**MANHOLE BASE  
 GROUTING UNUSED CHANNEL  
 AT 180° DETAIL**

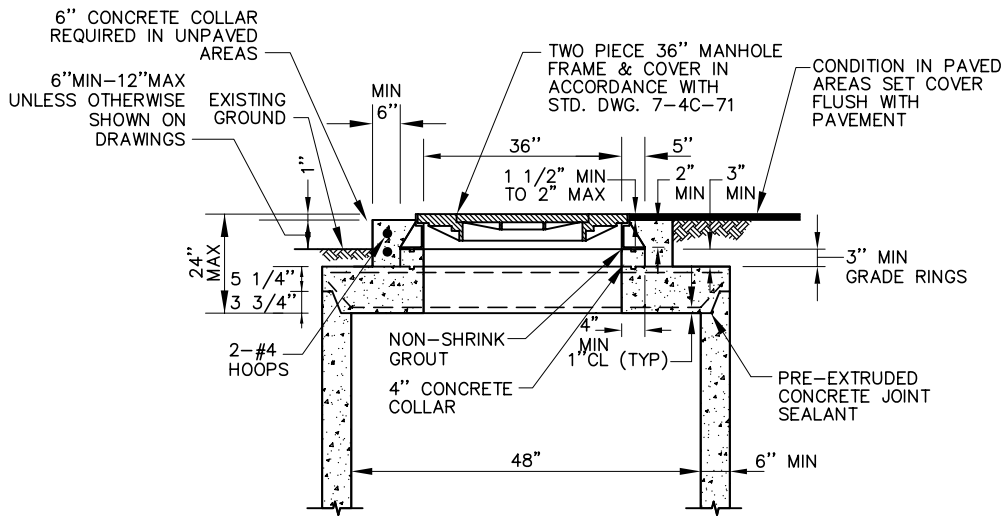
DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

**7-4C-43**

*Mary K Snyder*  
 DIRECTOR



PLAN



SECTION A-A

**NOTES:**

1. JOINTS FOR THE BARREL SECTION SHALL BE TONGUE AND GROOVE OR LAP JOINT. ALL JOINTS MUST BE SEALED WITH GULF STATES PRE-EXTRUDED CONCRETE JOINT SEALANT OR APPROVED EQUAL.
2. FOR ASPHALTIC CONCRETE OVERLAYS ONLY, MANHOLES WITH DEPTHS OF 8' AND GREATER (MEASURED FROM THE FLOW LINE TO THE TOP OF CASING) THE MAXIMUM THROAT DEPTH IS 24 INCHES.
3. ALL MANHOLE SECTIONS TO BE FITTED WITH EXTERNAL LIFTING PINS, NO THROUGH PENETRATION HOLES ALLOWED.

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

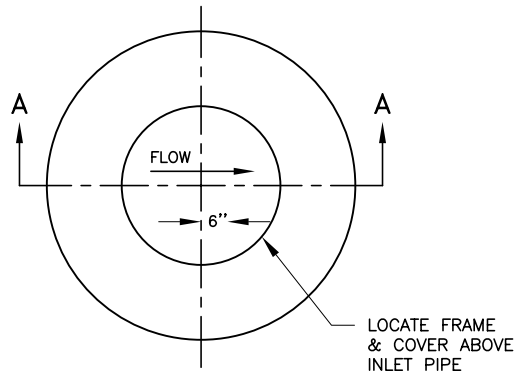
**STANDARD PRECAST  
48" MANHOLE FLAT SLAB  
TOP DETAIL**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

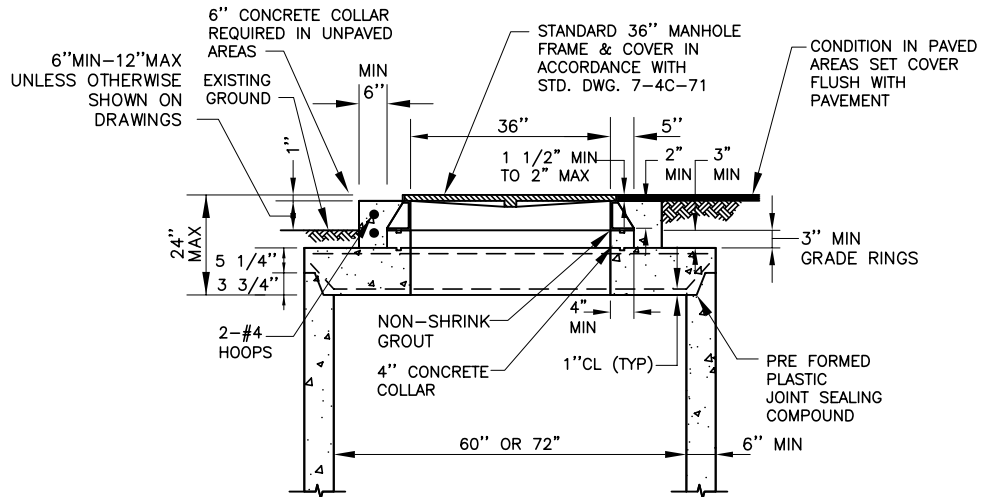
**7-4C-50**

*Mary K Snyder*  
DIRECTOR





PLAN



SECTION A-A

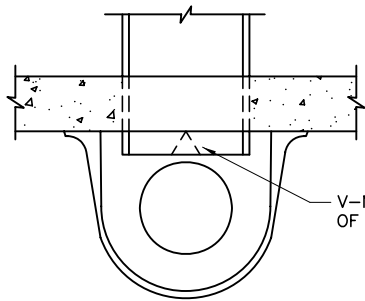
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**STANDARD  
PRECAST 60" AND 72"  
SLAB TOP DETAILS**

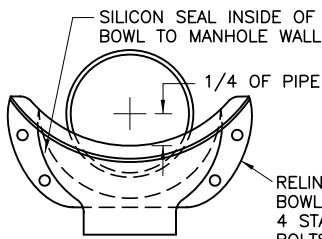
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-51**

*Mary K Snyder*  
DIRECTOR



**DROP BOWL  
MOUNTING POSITION  
TOP VIEW**

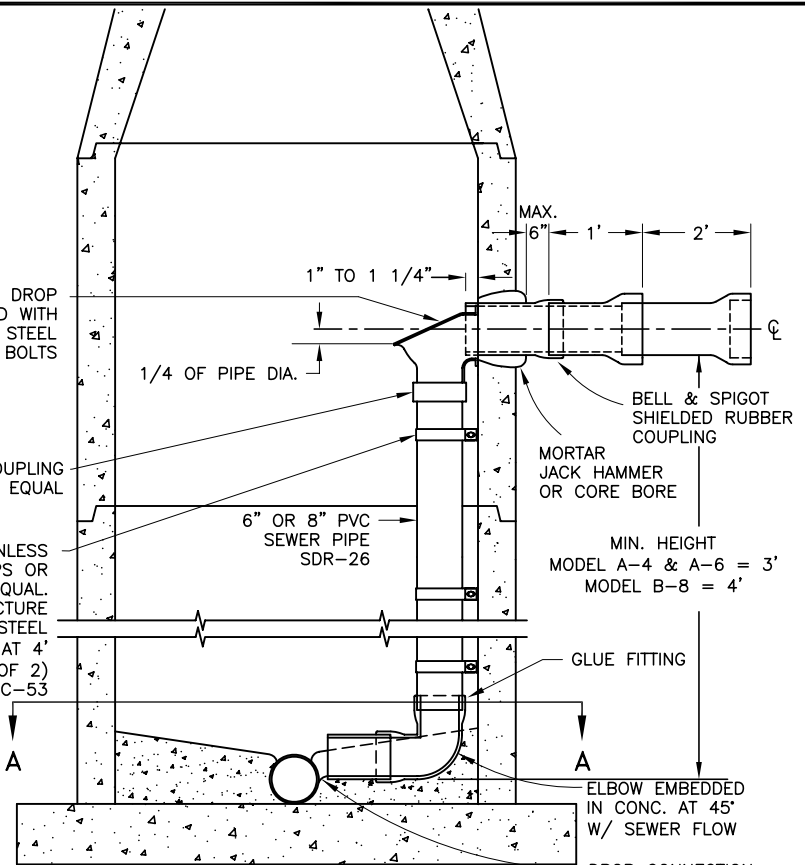


**DROP BOWL  
MOUNTING POSITION  
FRONT VIEW**

RELINER® INSIDE DROP BOWL SECURED WITH 4 STAINLESS STEEL BOLTS

CI/PVC CAULDER COUPLING OR APPROVED EQUAL

RELINER® STAINLESS STEEL STRAPS OR APPROVED EQUAL. SECURE TO STRUCTURE BOLTS. STRAP AT 4' INTERVALS (MIN. OF 2) SEE 7-4C-53



MIN. HEIGHT  
MODEL A-4 & A-6 = 3'  
MODEL B-8 = 4'

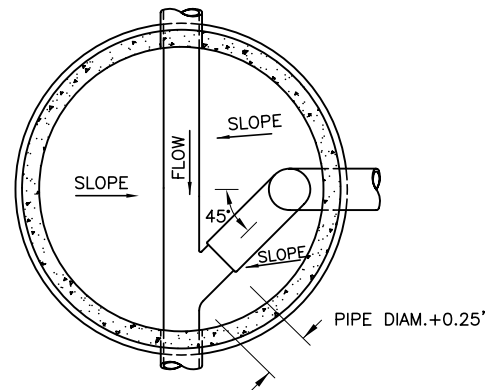
GLUE FITTING

ELBOW EMBEDDED IN CONC. AT 45° W/ SEWER FLOW

DROP CONNECTION PIPE INVERT SHALL MATCH THE SPRING- LINE OF THE EXIT PIPE.

**NOTES:**

1. CREATING A HOLE IN THE MANHOLE WALL SHALL BE BY CORE BORE OR BY JACK HAMMER REQUIRING THE OUTSIDE DIAMETER BE PRE DRILLED NO MORE THAN 1" APART AT LEAST TO SPRING LINE OF NEW PIPE LOCATION, THEN ABOUT 2" APART ON THE TOP. EITHER METHOD MUST INSURE MANHOLE INTEGRITY. SEAL BOTH INSIDE AND OUTSIDE WITH MORTAR.
2. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL AS PRODUCED BY:  
RELINER-DURAN, INC.  
53 MT. ARCHER RD,  
LYME, CT 06371  
(860)434-0277 FAX: (860)434-3195 OR APPROVED EQUAL.
3. DROP BOWL MODEL "A-4" SHALL BE USED FOR ALL LINES UP THROUGH FULL 6" INLETS. DROP BOWL MODEL "A-6" SHALL BE USED FOR ALL 8" INLETS. DROP BOWLS MODEL "B-8" SHALL BE USED FOR ALL 10" INLETS. LINES LARGER THAN 10" SHALL BE AS DIRECTED BY THE DIRECTOR.
4. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS OR APPROVED EQUAL (SEE STD. DWG. 7-4C-53).
5. ATTACH THE DROP BOWL & EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH STAINLESS STEEL 3/8" X 3 3/4" RAMSET/RED HEAD BOLTS. PRE-ROTO DRILL AND SET BOLTS IN PLACE WITH EPOXY PASTE. EPOXY SHALL MEET THE FOLLOWING REQUIREMENTS:
  - A. EPOXY PASTE SHALL BE A TWO COMPONENT, 100% SOLID SYSTEM. EPOXY SHALL BE SIKADUR 31 HI-MOD GEL BY SIKA CORPORATION (PHONE 592/941-0231) OR EQUAL.
  - B. THE EPOXY PASTE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI IN 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM D695 AT 73 DEGREES.
  - C. THE EPOXY PASTE SHALL DEVELOP A MINIMUM TENSILE STRENGTH OF 3,000 PSI IN 14 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM D638.
  - D. THE EPOXY PASTE SHALL DEVELOP A MINIMUM BOND STRENGTH OF 2,000 PSI IN 2 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C882 (HARDENED CONCRETE TO HARDENED CONCRETE).
  - E. MANUFACTURER'S INSTRUCTIONS SHALL BE PRINTED ON EACH CONTAINER IN WHICH THE MATERIALS ARE PACKAGED.



**SECTION A-A  
PLAN**

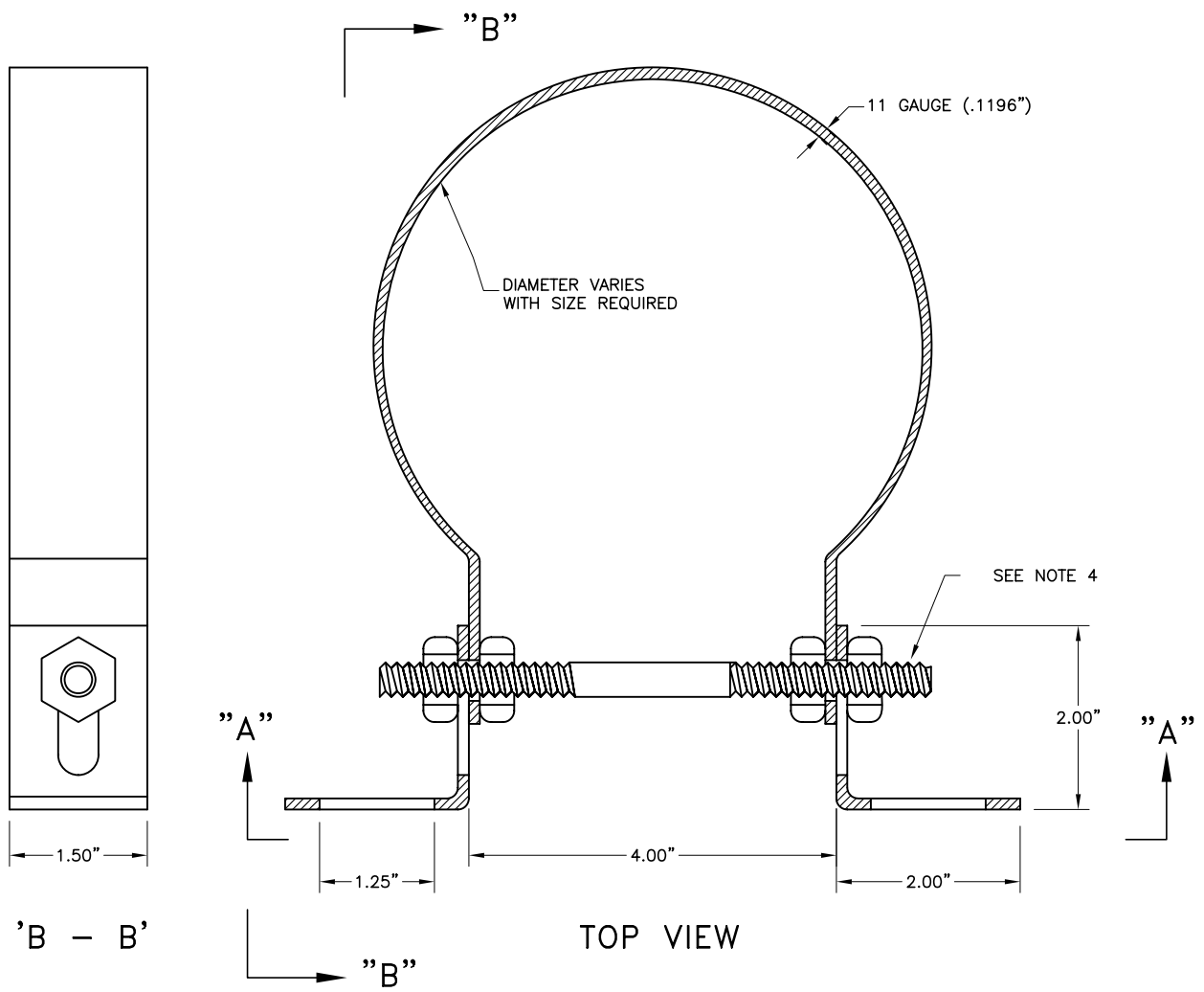
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**INSIDE GRAVITY  
DROP CONNECTIONS**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

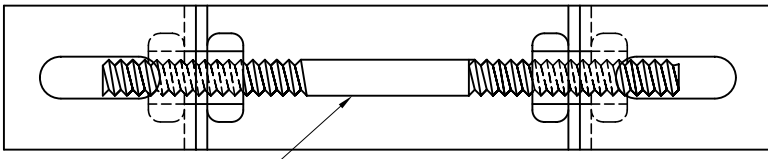
**7-4C-52**

*Manly K Snyder*  
DIRECTOR



'B - B'

TOP VIEW



3/8" DIAMETER STAINLESS STEEL PINCH BOLT

'A - A'

STAINLESS STEEL ADJUSTABLE CLAMPING BRACKET AS MANUFACTURED BY:  
 RELINER-DURAN, INC.  
 53 MT. ARCHER ROAD  
 LYME, CT. 06371  
 (860)434-0277 FAX:(860)434-3195  
 OR APPROVED EQUAL.

**SPECIFICATIONS:**

1. CLAMP AND BRACKETS IS TYPE 304 STAINLESS STEEL, 11 GAUGE (.1196").
2. 3/8"  $\phi$  PINCH BOLT AND NUTS IS TYPE 18-8 STAINLESS STEEL.
3. STANDARD SIZES TO FIT 6", 8" & 10" PVC SEWER PIPE SDR-26 AND 4" ABS.
4. LIBERALLY COAT ALL THREADS WITH ANTI-SEIZE.

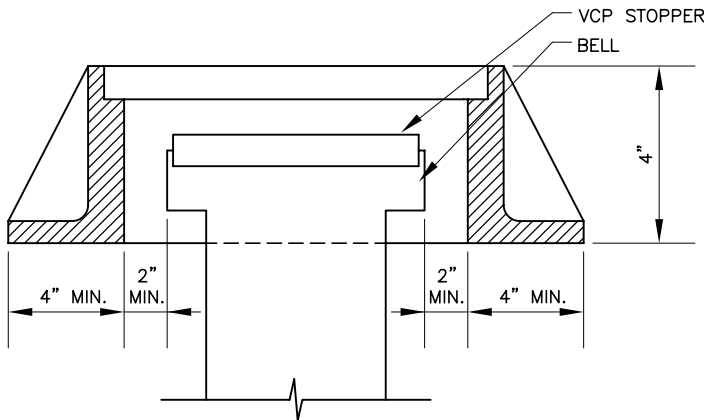
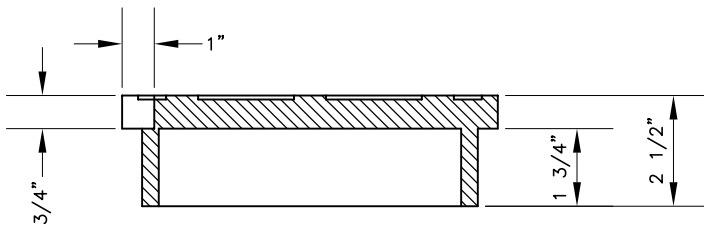
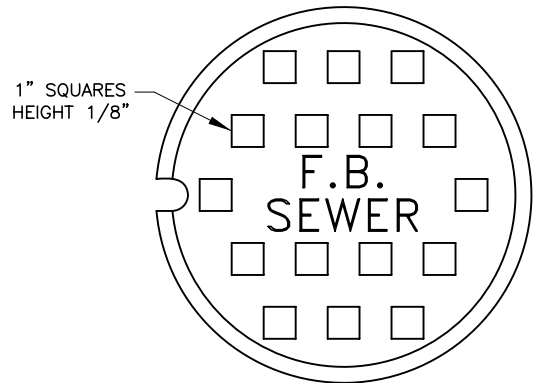
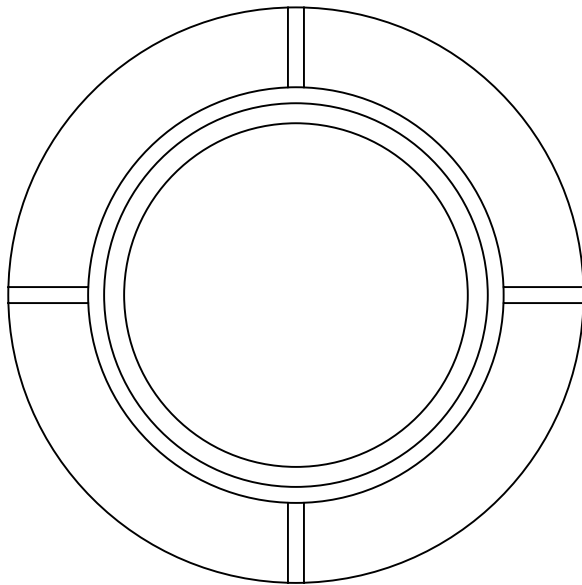
*Mary K Snyder*  
 DIRECTOR

SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY

**STAINLESS STEEL  
 ADJUSTABLE  
 CLAMPING BRACKETS**

DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

**7-4C-53**



**NOTES:**

1. ALL MATERIALS USED IN MANUFACTURING SHALL CONFORM TO ASTM 48, CLASS 35B.
2. CASTINGS SHALL BE DIPPED IN BLACK, BITUMINOUS PAINT.
3. FRAME AND COVER MEETS H-20 WHEEL LOADING.
4. LID SHALL READ "F.B. SEWER".

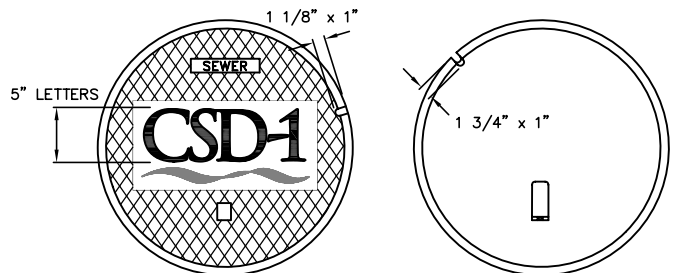
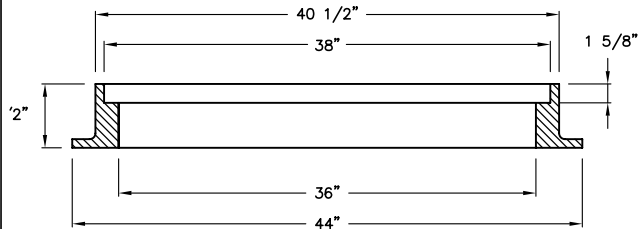
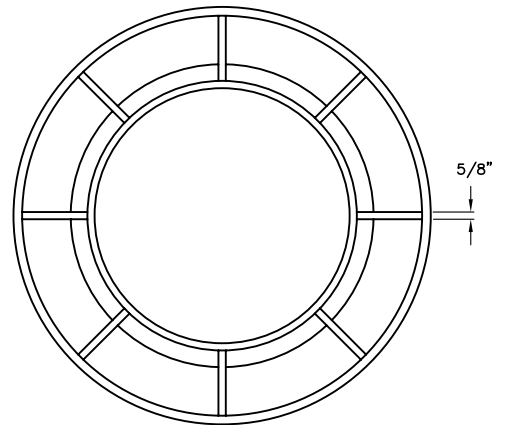
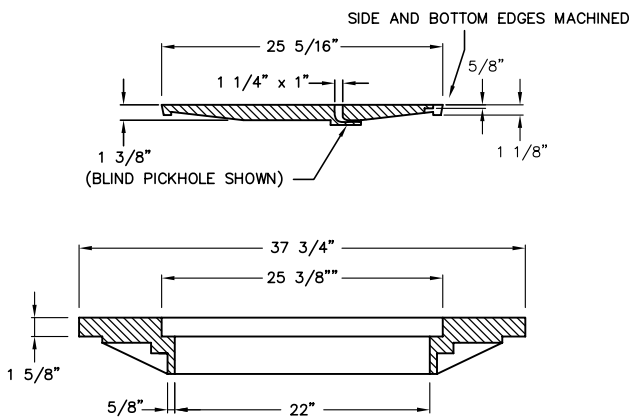
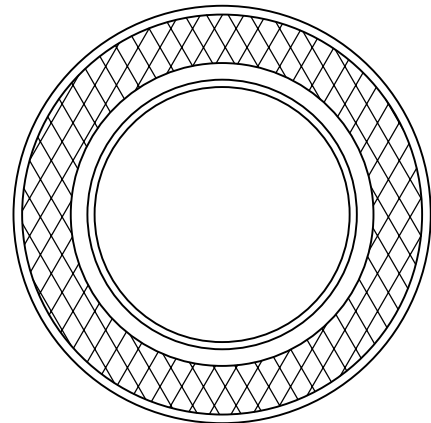
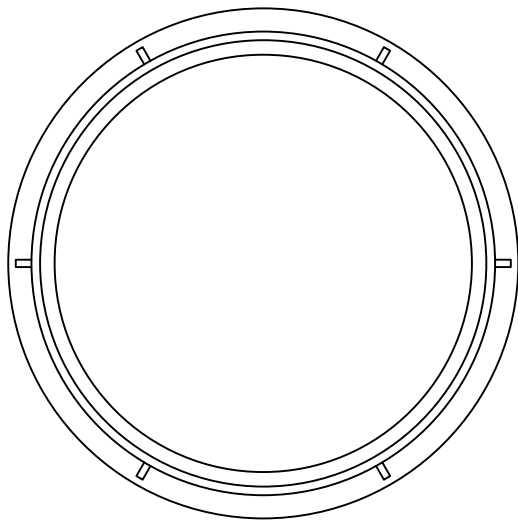
*Mary K Snyder*  
 DIRECTOR

SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY

**STANDARD  
 FLUSHER BRANCH  
 FRAME AND COVER**

DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

**7-4C-70**



**NOTES:**

1. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B.
2. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
3. MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES NOT TO EXCEED 1/64" TOLERANCE.
4. FRAME AND COVER SHALL HAVE A COATING OF BITUMINOUS MATERIAL.

*Mary K Snyder*  
DIRECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**FLAT SLAB  
TOP FRAME & COVER**

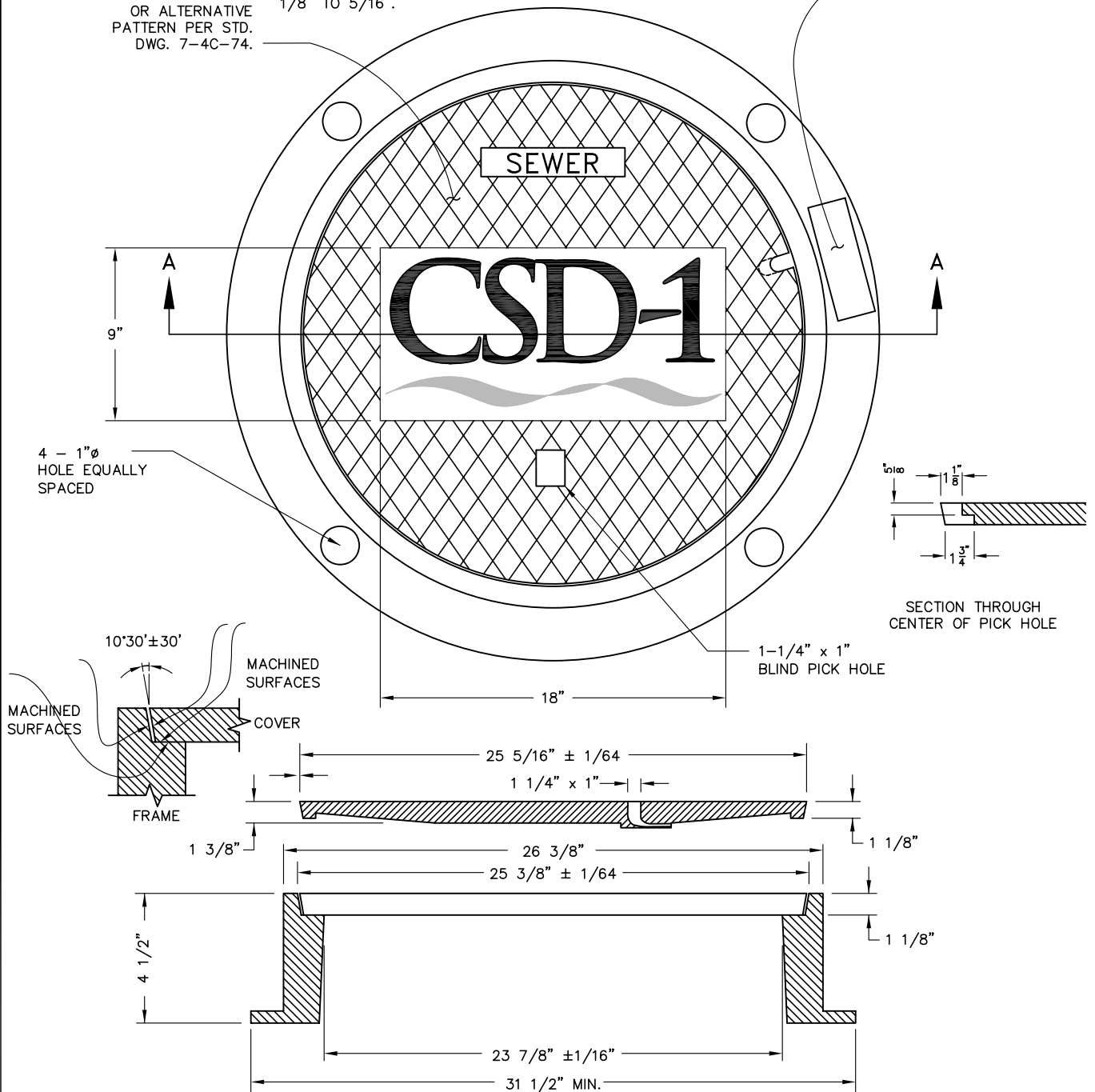
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-71**

SUPPLIERS TO SUBMIT SAMPLE FOR APPROVAL. LETTERS AND RIBBON TO BE SHARP AND CLEAR AND BE THE SAME ELEVATION AS THE CROSS-HATCHED SURFACE AREA WITH THE BACKGROUND RECESSED 1/8" TO 5/16".

ASTM GRID PATTERN OR ALTERNATIVE PATTERN PER STD. DWG. 7-4C-74.

MANUFACTURER



**SECTION A-A**

**NOTES:**

1. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B
2. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS. WEIGHT AND LOAD SPECIFICATIONS TO BE SUBMITTED BY MANUFACTURER.
3. MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES NOT TO EXCEED 1/64" TOLERANCE.
4. FRAME AND COVER SHALL HAVE A COATING OF BITUMINOUS MATERIAL.
5. EQUIVALENT DUCTILE IRON FRAME AND COVERS MAY BE USED. SEE STD. DWG. 7-4C-74.
6. LOCKING COVER TYPE FRAME AND COVERS SHALL BE USED IN EASEMENT AREAS UNLESS OTHERWISE APPROVED.
7. THE OPENING, WITHOUT BEING EXCESSIVELY LARGE, MUST BE OF SUFFICIENT SIZE AS TO READILY ALLOW A 1/4" O.D. FLEX-TUBE TO PASS THROUGH THE LID.

ITEM      APPROX. WT. (LBS)

COVER	130 ± 5
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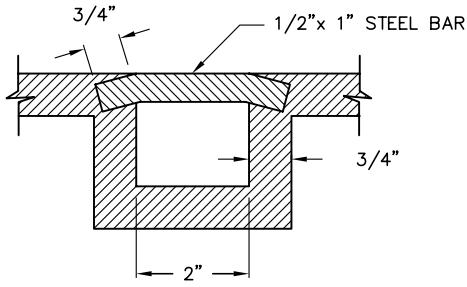
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**GREY IRON  
STANDARD 24" MANHOLE  
FRAME & COVER**

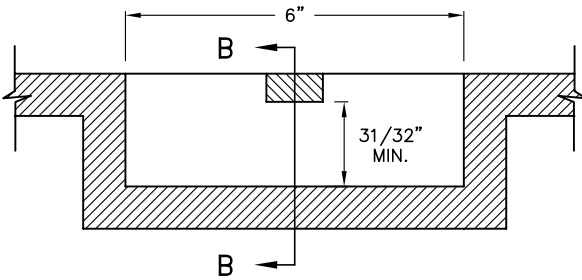
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-72**

*Manya K Snyder*  
DIRECTOR

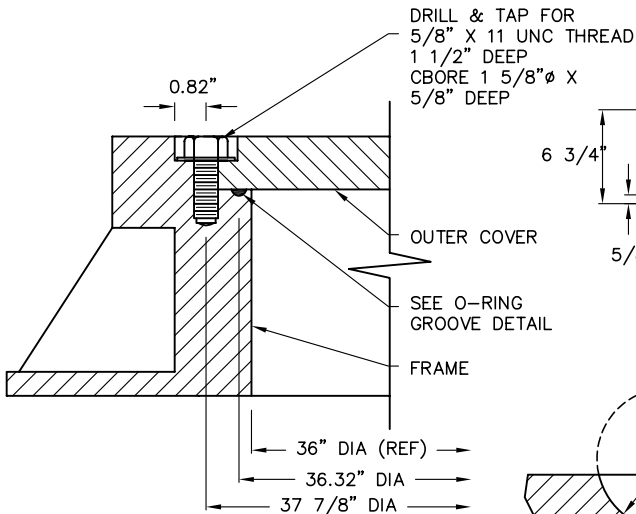
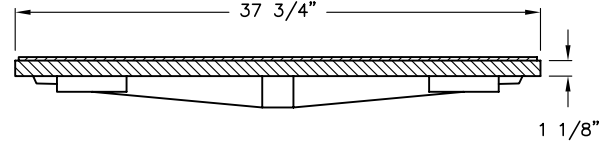
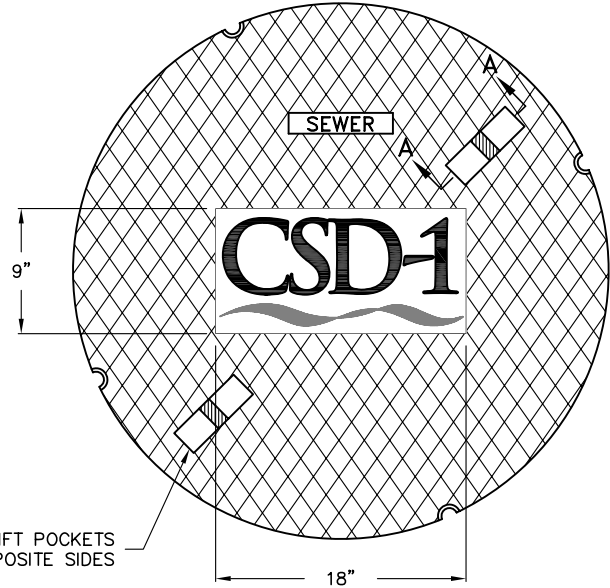


SECTION B-B

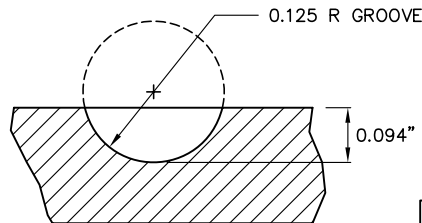
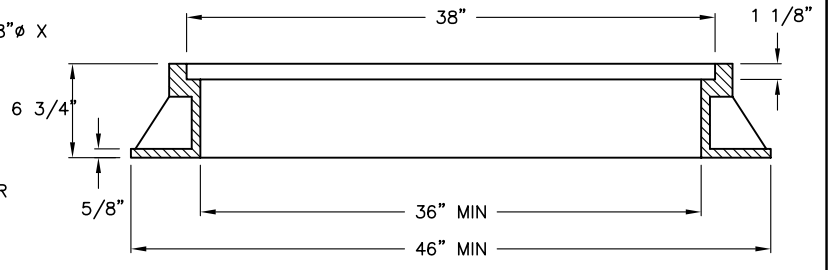


SECTION A-A

SUPPLIERS TO SUBMIT SAMPLE FOR APPROVAL. LETTERS AND RIBBON TO BE SHARP AND CLEAR AND BE THE SAME ELEVATION AS THE CROSS-HATCHED SURFACE AREA WITH THE BACKGROUND RECESSED 1/8" TO 5/16".



BOLT DOWN COVER DETAIL



O-RING GROOVE DETAIL

ITEM	APPROX. WT. (LBS)
FRAME	310 ± 5%
COVER	310 ± 5%

NOTES:

- ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B.
- FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
- MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES NOT TO EXCEED 1/64" TOLERANCE.
- FRAME AND COVER SHALL HAVE A COATING OF BITUMINOUS MATERIAL.
- EQUIVALENT DUCTILE IRON FRAME AND COVERS MAY BE USED ONLY WHEN SPECIFIED.
- 5/8" x 11 UNC THREAD, 304 STAINLESS STEEL SOCKET HEAD CAP SCREW AND 1 1/2" O.D. X 1 1/16" I.D. X 0.078 THICK 304 STAINLESS STEEL WASHER OR APPROVED EQUAL.
- 1/4" NEOPRENE O-RING GASKET SHALL BE GLUED INTO MACHINED GROOVE. GLUE SHALL MEET THE REQUIREMENTS OF MIL-M-81288 (AMEND. 1)
- LIBERALLY COAT ALL THREADS WITH ANTI-SIEZE.

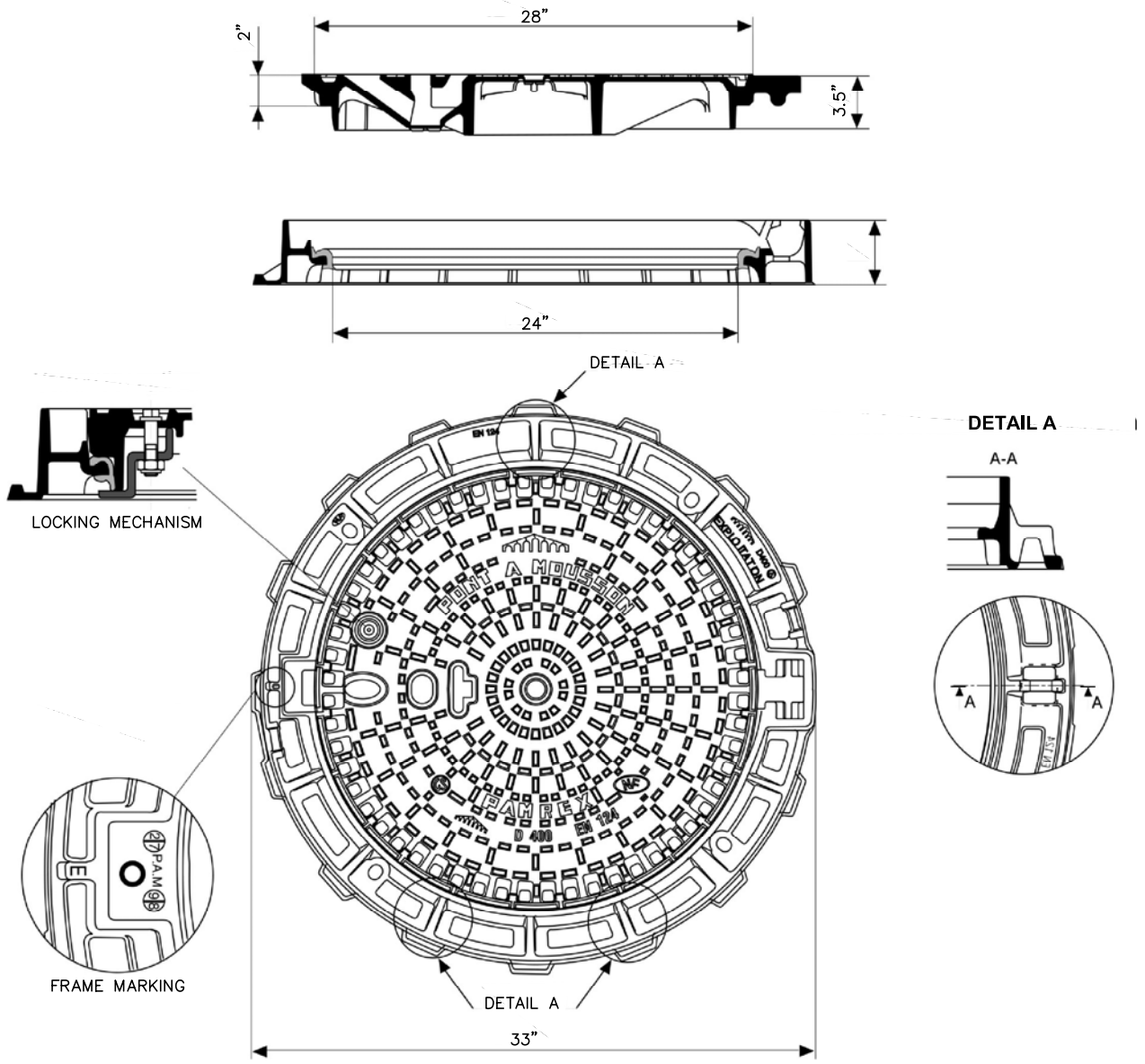
*Mary K Snyder*  
DIRECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**GREY IRON  
STANDARD 36"  
MANHOLE FRAME & COVER**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-73**



**DUCTILE IRON CASTINGS:**

1. MANHOLE FRAME AND COVER SHALL BE MANUFACTURED USING SPHEROIDAL OR NODULAR GRAPHITE IRON (DUCTILE IRON) COMPLYING WITH THE REQUIREMENTS SPECIFIED IN ASTM A536-80.
2. ALL CASTINGS SHALL MEET OR EXCEED THE H-20 LOAD REQUIREMENT.
3. ALL CASTINGS WILL BE SUPPLIED WITH A COATING OF BITUMINOUS MATERIAL AND BE FREE FROM CRACKS, HOLES, FOREIGN INCLUSIONS, SCALE, LUMPS, BLISTERS, SANDHOLES, AND OTHER INJURIOUS DEFECTS.
4. THE FRAME SHALL HAVE A MINIMUM OF FOUR BOLT HOLES TO ANCHOR TO THE MANHOLE CASTING.
5. THE FRAME SHALL BE DESIGNED TO ACCEPT LEVELING INSERTS THAT WILL ALLOW RAISING OF THE COVER WITHOUT EXCAVATION. THE LEVELING INSERTS SHALL BE LOCKED INTO PLACE USING CADMIUM-PLATED STEEL BOLTS.
6. AN ANTI-THEFT LOCKING KEY SHALL BE INSTALLED. THE BOLT SHALL BE STAINLESS STEEL WITH A PENTAGON HEAD DESIGN MEASURING 7/8" POINT TO FLAT.
7. THE FRAME AND COVER SHALL BE PAMREX 600 24 INCH AS MANUFACTURED BY TITUS INDUSTRIAL GROUP 877-582-9899 WWW.NEVERLEEK.COM OR APPROVED EQUAL.

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

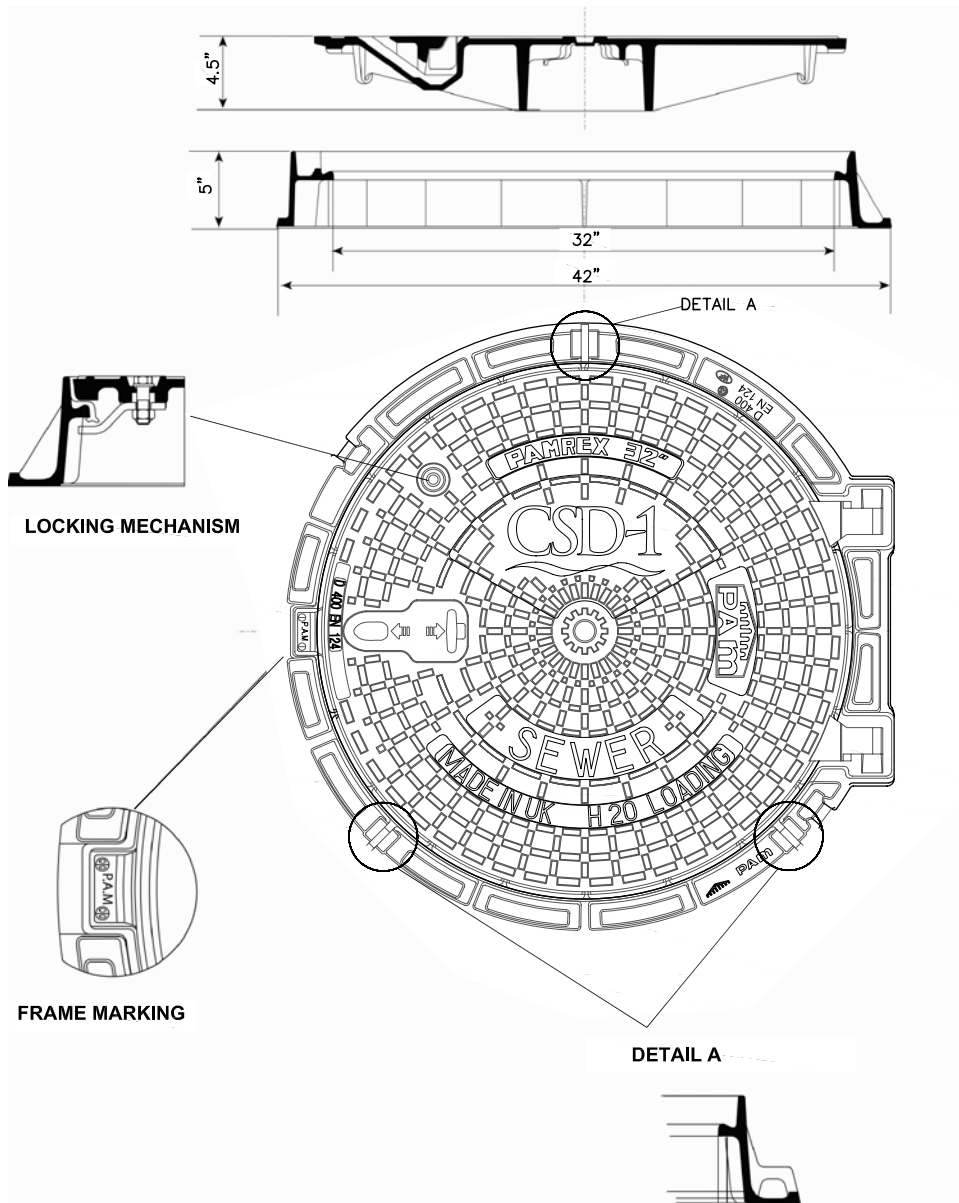
**DUCTILE IRON 24"  
MANHOLE FRAME & COVER**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-74**

*Mary K Snyder*  
DIRECTOR





**DUCTILE IRON CASTINGS:**

1. MANHOLE FRAME AND COVER SHALL BE MANUFACTURED USING SPHEROIDAL OR NODULAR GRAPHITE IRON (DUCTILE IRON) COMPLYING WITH THE REQUIREMENTS SPECIFIED IN ASTM A536-80.
2. ALL CASTINGS SHALL MEET OR EXCEED THE H-20 LOAD REQUIREMENT.
3. ALL CASTINGS WILL BE SUPPLIED WITH A COATING OF BITUMINOUS MATERIAL AND BE FREE FROM CRACKS, HOLES, FOREIGN INCLUSIONS, SCALE, LUMPS, BLISTERS, SANDHOLES, AND OTHER INJURIOUS DEFECTS.
4. AN ANTI-THEFT LOCKING KEY SHALL BE INSTALLED. THE BOLTS SHALL BE STAINLESS STEEL WITH A PENTAGON HEAD DESIGN MEASURING 7/8" POINT TO FLAT.
5. THE FRAME AND COVER SHALL BE PAMREX 600 24 INCH AS MANUFACTURED BY TITUS INDUSTRIAL GROUP 877-582-9899 WWW.NEVERLEEK.COM OR APPROVED EQUAL.

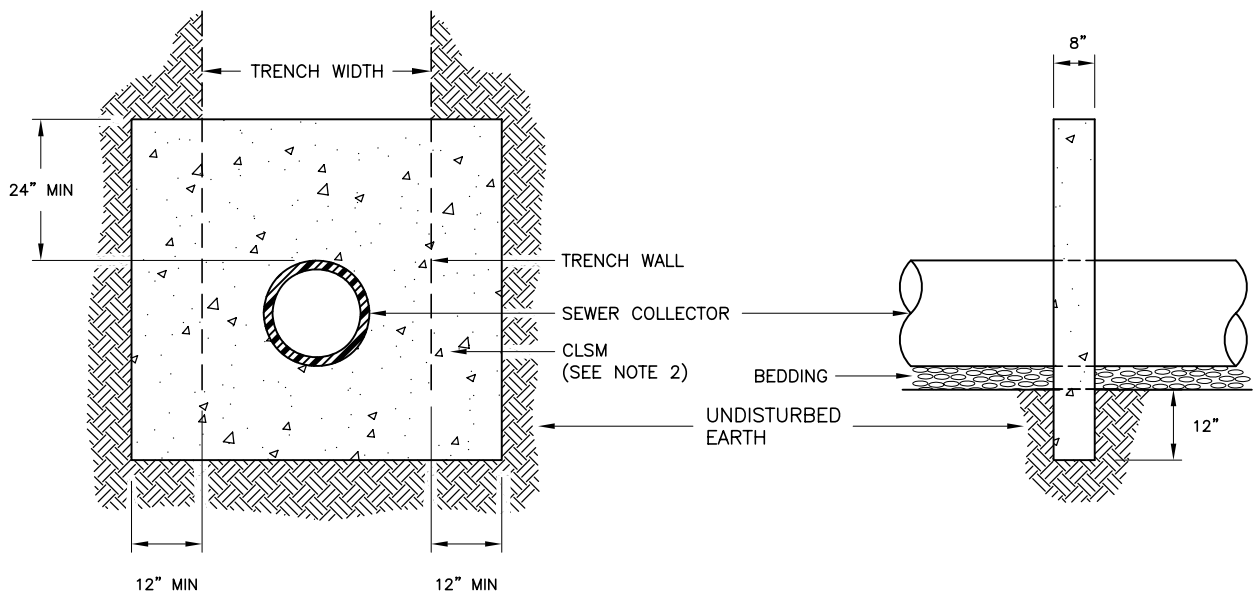
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**DUCTILE IRON 32"  
MANHOLE FRAME & COVER**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-75**

*Mary K Snyder*  
DIRECTOR



**NOTES:**

1. TOP OF DAM TO EXTEND INTO INTERMEDIATE BACKFILL 12" MINIMUM OR TOP OF GROUND WATER HGL, WHICHEVER IS LESS.
2. CONTROLLED LOW STRENGTH MATERIALS (CLSM) (50-125 psi. MAX. AT 28 DAYS)

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**TRENCH DAM  
DETAIL**

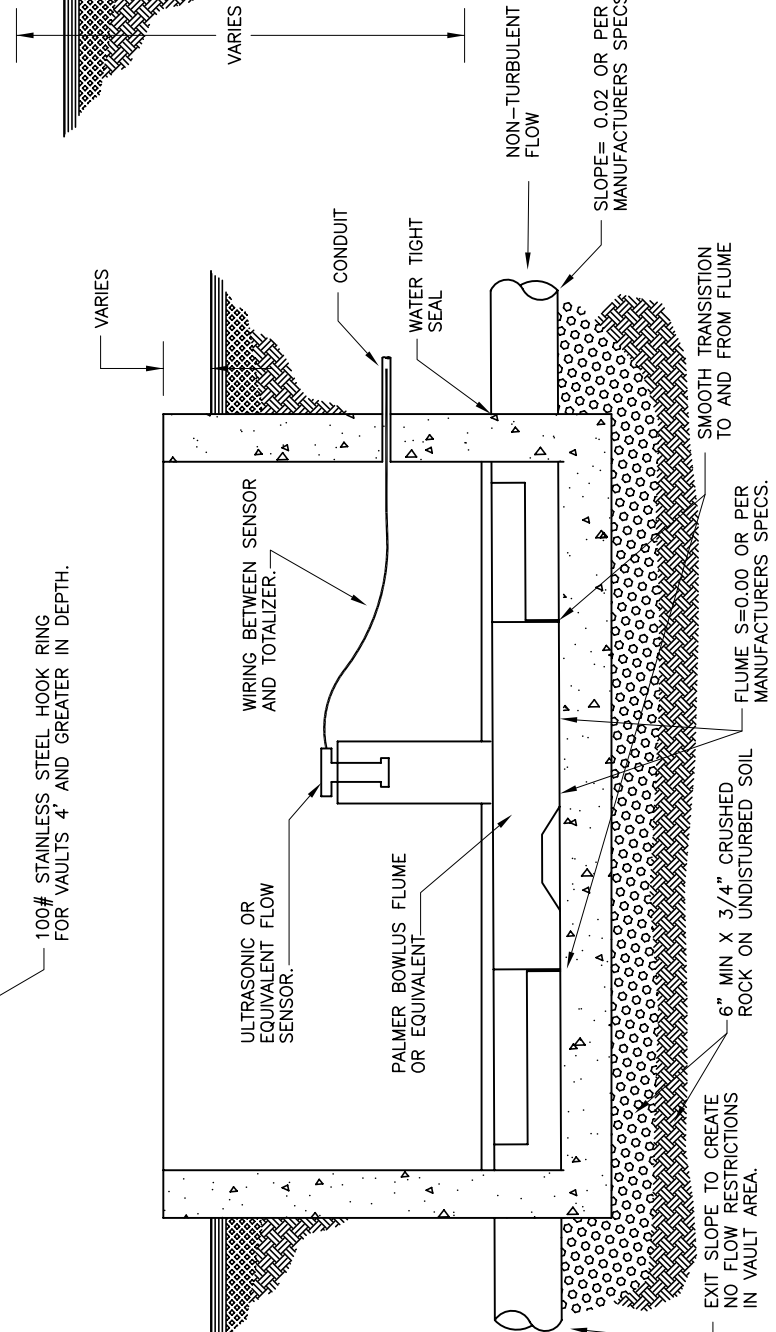
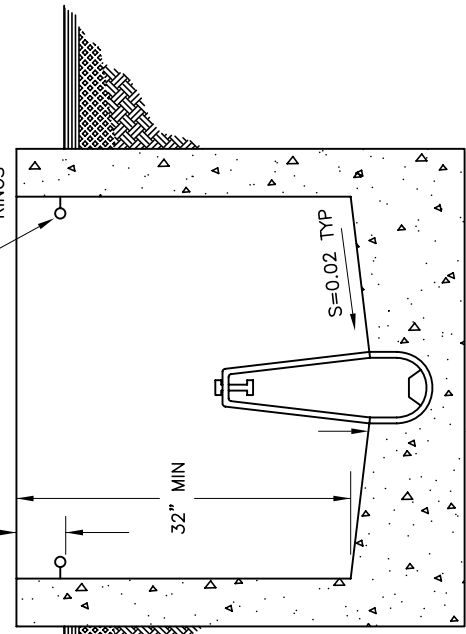
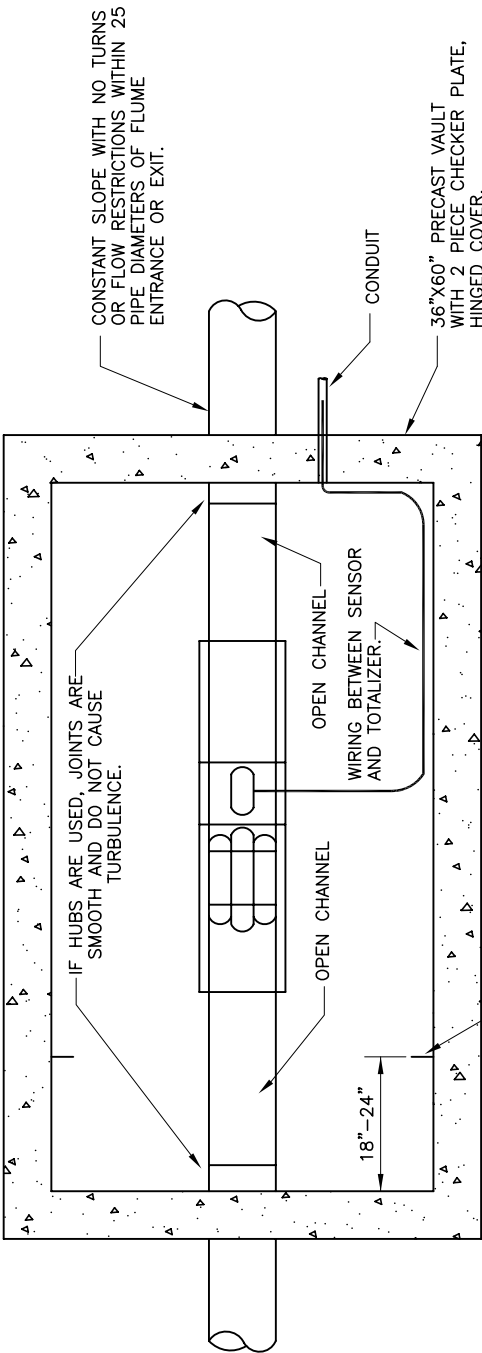
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-80**

*Mary K Snyder*  
DIRECTOR

**NOTES:**

1. LOCATE VAULT AS CLOSE AS PRACTICAL TO THE SOURCE STRUCTURE. IF LOCATED IN A PARKING LOT, THE VAULT IS TO BE PROTECTED FROM TRAFFIC WITH STEEL POSTS OR INSTALLED FLUSH WITH TRAFFIC RATED H-20 OR BETTER LID MARKED "NO PARKING".
2. VAULT SIZE TO BE INCREASED FOR 10" AND ABOVE PIPES.
3. IF FLOW PACED SAMPLING, A CABLE FOR DISTRICT USE (TO ALSO DO FLOW PACED SAMPLING) SHALL BE PROVIDED. CONNECTORS SHOULD BE PROTECTED FROM ENVIRONMENT IF NECESSARY (CAPS FOR PREVENTING CORROSION).
4. INSTALLATION INSPECTION SHALL BE PERFORMED BY WATER QUALITY INDUSTRIAL WASTE SECTION.



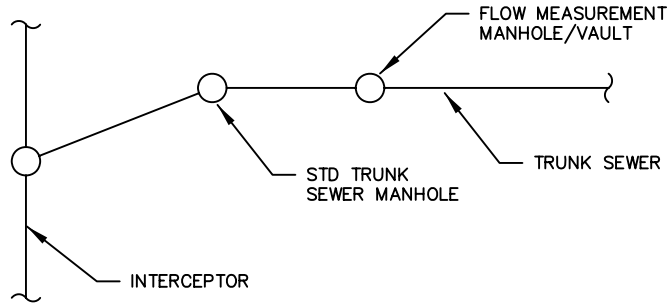
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**SAMPLING VAULT**

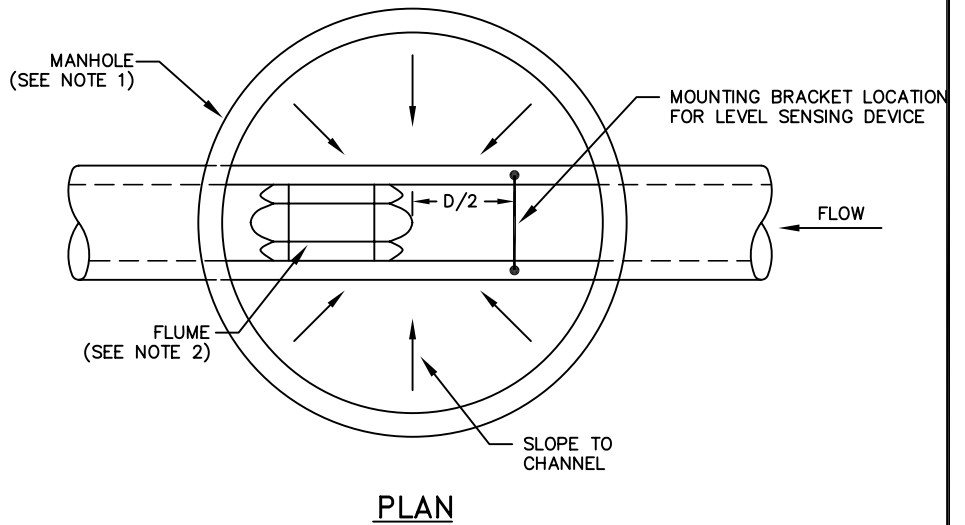
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-81**

*Mary J. Snyder*  
DIRECTOR



**SCHEMATIC – FLOW MEASUREMENT MANHOLE/VAULT LOCATION**



**FLUME SELECTION TABLE**

FLUME SIZE (INCHES)	MAX. HEAD (FT.)	MAX. FLOW (MGD)
12	0.70	1.08
15	0.90	1.99
18	1.05	2.98
21	1.25	4.55
24	1.40	6.12
27	1.60	8.46
30	1.75	10.70

NOTES:

1. MANHOLE SHALL BE 60 INCH DIAMETER FOR FLUME SIZE RANGE FROM 12 INCH THROUGH 21 INCH. MANHOLE SHALL BE 72 INCH DIAMETER FOR FLUME SIZE RANGE FROM 24 INCH THROUGH 30 INCH.
2. FLUME SHALL BE PERMANENT TYPE PALMER-BOWLUS FLUME BY BY PLASTI-FAB, OR EQUAL.
3. A FIBERGLASS PACKAGED METERING MANHOLE AS MANUFACTURED BY PLASTI-FAB, OR EQUAL, IS AN ACCEPTABLE ALTERNATIVE TO REINFORCED CONCRETE MANHOLE.
4. A PACKAGED FLOW MEASURING VAULT SHALL BE USED (FIG. T-2G) WHEN THE COMBINATION OF HEAD/FLOW CANNOT BE ACCOMMODATED.

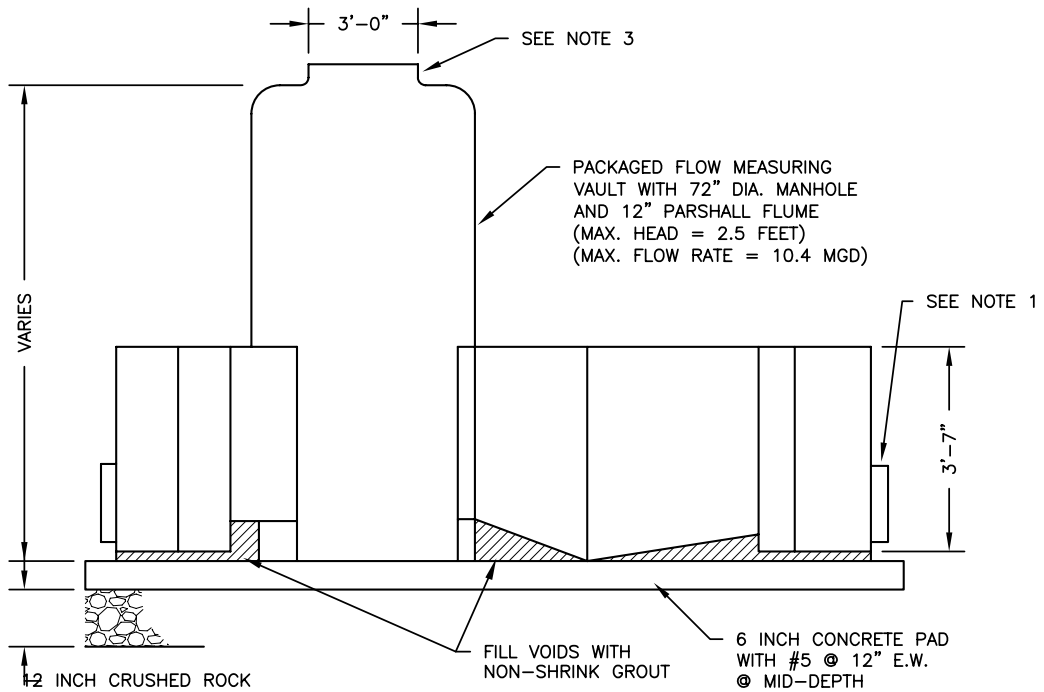
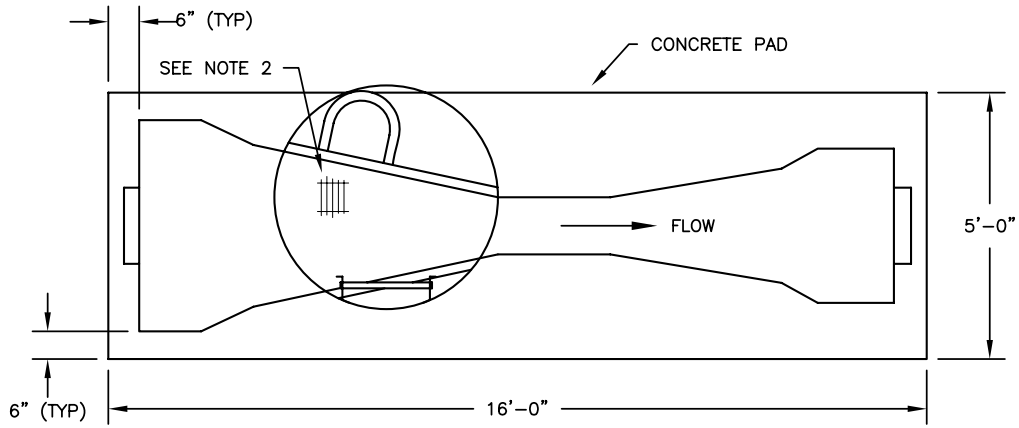
*Mary K Snyder*  
DIRECTOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**FLOW MEASURING  
MANHOLE**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-4C-82**



NOTES:

1. INLET AND OUTLET SIZE SHALL MATCH CONNECTING PIPE INSIDE DIAMETER.
2. PROVIDE FIBERGLASS GRATING OVER FLUME.
3. PACKAGED FLOW METERING STRUCTURE SHALL BE AS FABRICATED BY PLASTI-FAB, OR EQUAL.

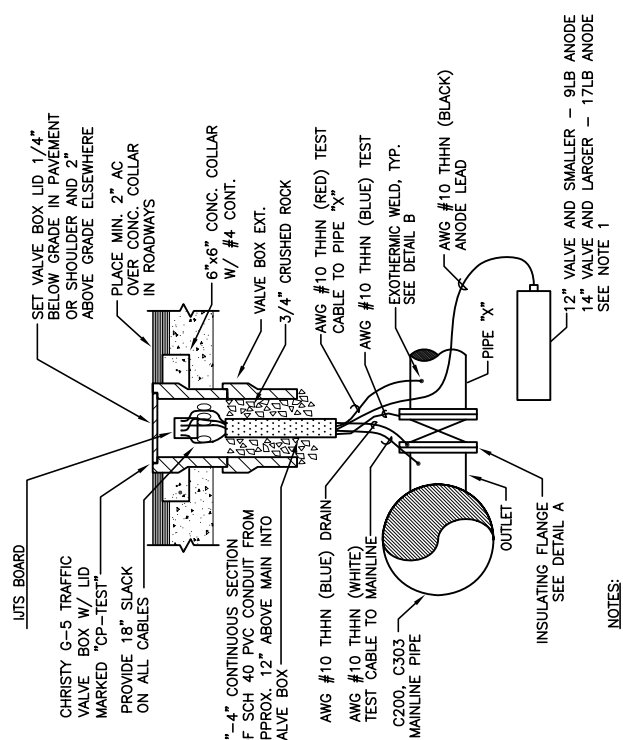
*Mary K Snyder*  
 DIRECTOR

SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY

**PACKAGED FLOW  
 MEASURING VAULT**

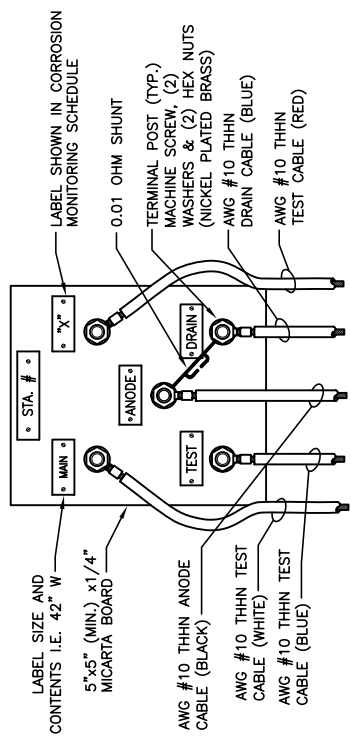
DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

**7-4C-84**

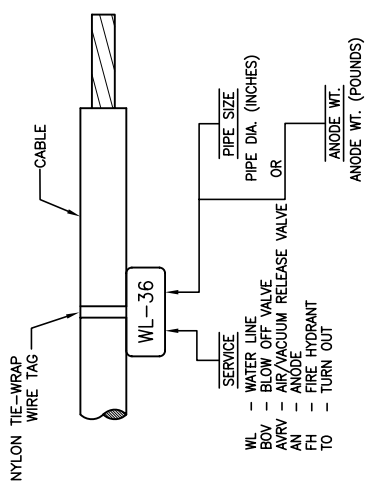


- NOTES:**
1. INSTALL ANODE ADJACENT TO VALVE, A MINIMUM OF 5' AWAY, AT OR BELOW INVERT OF PIPELINE.
  2. PROVIDE CORROSION MONITORING SCHEDULE.
  3. PCWA STD. DETAIL SA026 DOES NOT APPLY.

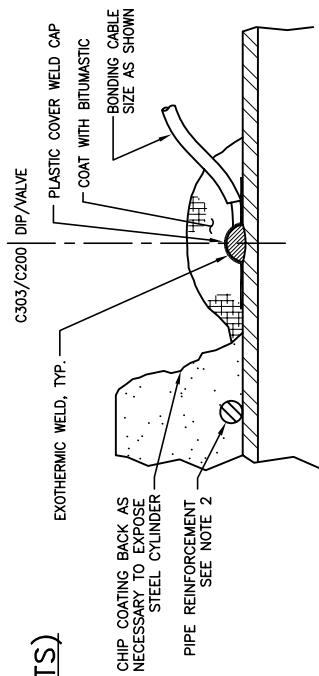
**INSULATING JOINT TEST STATION (IJTS)**  
NTS



**IJTS BOARD**  
NTS

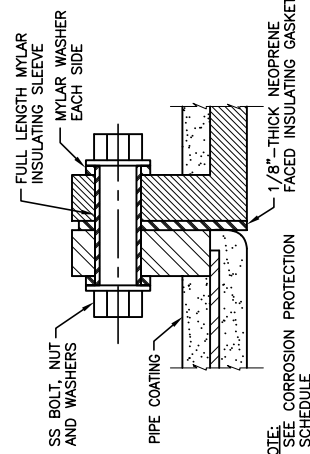


**CABLE ID TAG**  
NTS



- NOTES:**
1. EXOTHERMIC WELDS SHALL NOT BE WELDED TO STEEL CYLINDERS OF THICKNESS 10 GA. OR LESS WITHOUT APPROVAL OF THE ENGINEER.
  2. PIPE REINFORCEMENT BARS MAY BE PUSHED APART AS NECESSARY TO INSTALL EXOTHERMIC WELD. DO NOT CUT REINFORCEMENT BARS WITHOUT APPROVAL OF THE ENGINEER. IF REINFORCEMENT BARS ARE CUT, TACK WELD ALL CUT ENDS TO STEEL CYLINDER.
  3. COAT ALL EXPOSED STEEL WITH BITUMASTIC AFTER EXOTHERMIC WELD.
  4. WHERE INSTALLING EXOTHERMIC WELD ON EPOXY COATED STEEL, GRIND EPOXY COATING TO EXPOSE STEEL, COMPLETE WELD AND APPLY EPOXY TOUCH-UP TO EXPOSED STEEL.

**DETAIL B**  
**EXOTHERMIC WELD**  
NTS



- NOTES:**
1. SEE CORROSION PROTECTION SCHEDULE

**DETAIL A**  
**INSULATING FLANGE**  
NTS

*Mary H Snyder*  
DIRECTOR

REQUIRED BEARING AREA - TOTAL SQUARE FEET							
TYPE OF FITTING	90° BEND	45° BEND	11 1/4" OR 22 1/2" BEND	TEE OR DEAD END	TEE W/PLUG	CROSS W/PLUG	CROSS W/PLUGS
TYPICAL INSTALLATION SIZE OF PIPE	4"	2	1	1	2	2	2
	6"	4	2	1	3	4	4
	8"	7	4	2	5	7	7
	10"	12	6	3	8	12	12
	12"	16	10	5	12	16	16

THRUST BLOCK DETAILS

NOT TO SCALE

NOTES:

- THRUST BLOCKS TO BE CONSTRUCTED OF CLASS "B" CONCRETE.
- AREAS GIVEN ARE FOR CLASS 150 PIPE AT TEST PRESSURE OF 150 P.S.I. IN SOIL WITH MINIMUM 2,000 P.S.F. BEARING CAPACITY. INSTALLATIONS USING DIFFERENT PIPE, TEST PRESSURES, AND/OR SOIL TYPES SHOULD ADJUST AREAS ACCORDINGLY.
- BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL.
- JOINTS AND FACE OF PLUGS TO BE KEPT CLEAR OF CONCRETE.
- THRUST BLOCKS ARE REQUIRED AT EVERY ANGLE, TEE, AND CROSS ON PIPELINES 8" AND SMALLER.

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

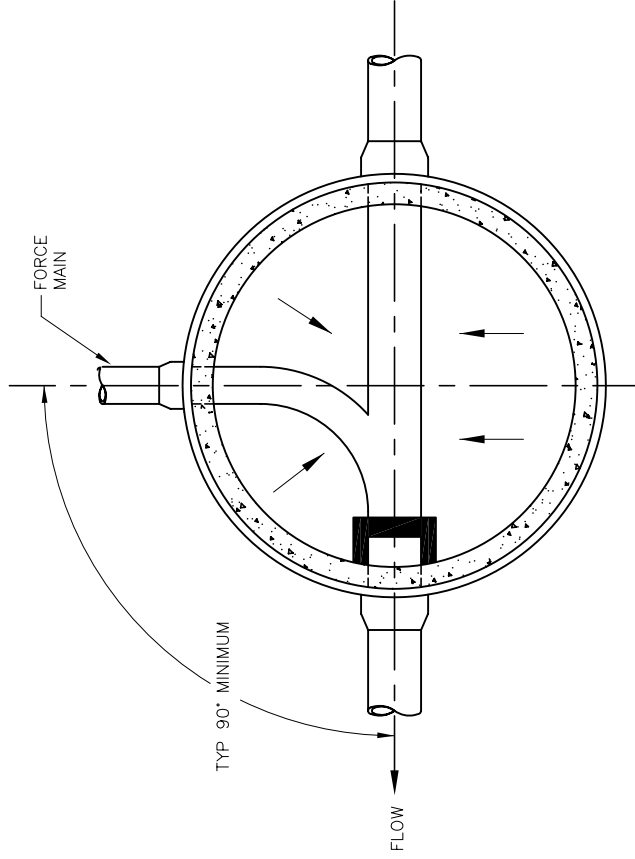
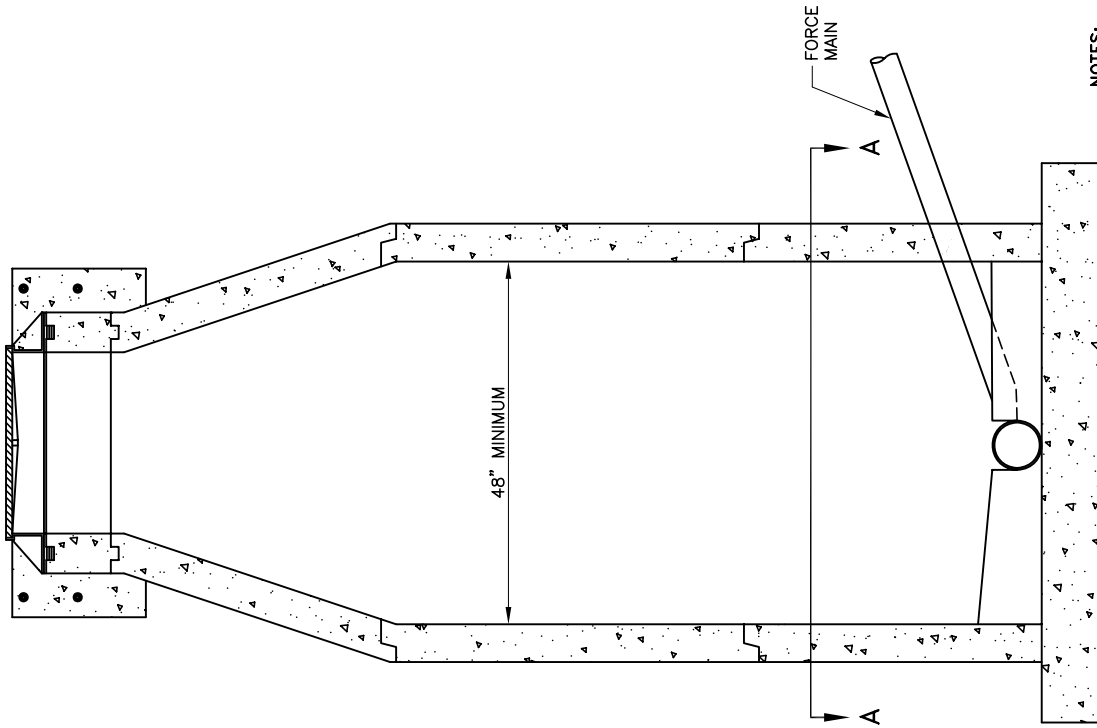
**THRUST BLOCK  
DETAILS**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

DIRECTOR

*Mary K Snyder*

**7-5C-40**



SECTION A-A  
PLAN VIEW OF INVERT

NOTES:

1. COAT INTERIOR OF RECEIVING AND NEXT DOWNSTREAM MANHOLES WITH RAVEN EPOXY 405 PROTECTIVE LINER AT A MINIMUM OF 120 MILS THICKNESS OR APPROVED EQUAL.
2. INVERT ELEVATION OF FORCEMAIN SHALL MATCH THE SPRING LINE ELEVATION OF GRAVITY PIPE.

*Mary C. Snyder*  
DIRECTOR

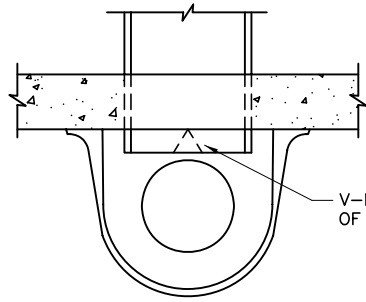
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

FORCE MAIN TIE-IN  
AT MANHOLE

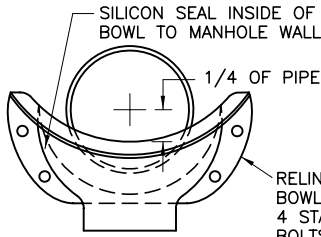
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

7-5C-50





**DROP BOWL  
MOUNTING POSITION  
TOP VIEW**

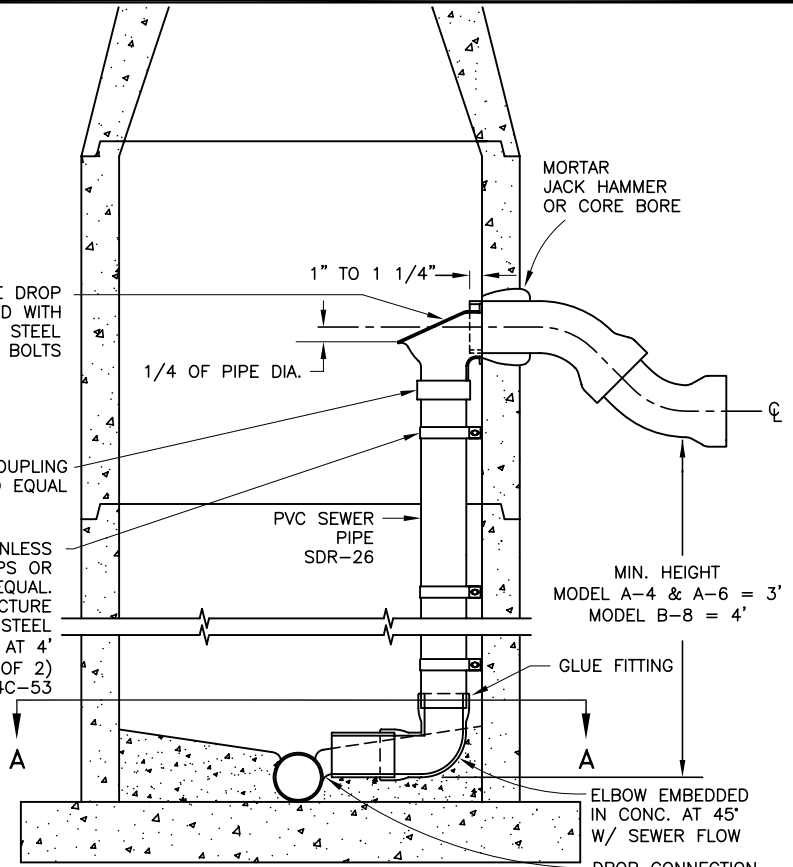


**DROP BOWL  
MOUNTING POSITION  
FRONT VIEW**

RELINER® INSIDE DROP BOWL SECURED WITH 4 STAINLESS STEEL BOLTS

CI/PVC CAULDER COUPLING OR APPROVED EQUAL

RELINER® STAINLESS STEEL STRAPS OR APPROVED EQUAL. SECURE TO STRUCTURE BOLTS. STRAP AT 4' INTERVALS (MIN. OF 2) SEE 7-4C-53



MORTAR JACK HAMMER OR CORE BORE

1" TO 1 1/4"

1/4 OF PIPE DIA.

PVC SEWER PIPE SDR-26

MIN. HEIGHT MODEL A-4 & A-6 = 3' MODEL B-8 = 4'

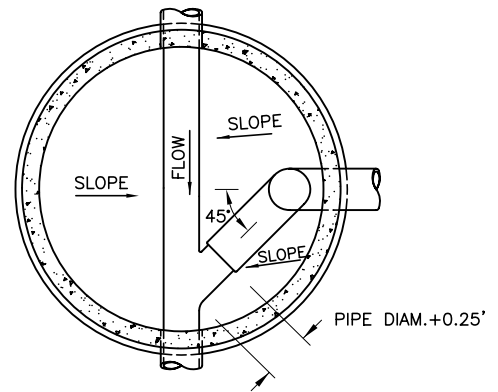
GLUE FITTING

ELBOW EMBEDDED IN CONC. AT 45° W/ SEWER FLOW

DROP CONNECTION PIPE INVERT SHALL MATCH THE SPRING- LINE OF THE EXIT PIPE.

**NOTES:**

1. CREATING A HOLE IN THE MANHOLE WALL SHALL BE BY CORE BORE OR BY JACK HAMMER REQUIRING THE OUTSIDE DIAMETER BE PRE DRILLED NO MORE THAN 1" APART AT LEAST TO SPRING LINE OF NEW PIPE LOCATION, THEN ABOUT 2" APART ON THE TOP. EITHER METHOD MUST INSURE MANHOLE INTEGRITY. SEAL BOTH INSIDE AND OUTSIDE WITH MORTAR.
2. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL AS PRODUCED BY:  
RELINER-DURAN, INC.  
53 MT. ARCHER RD,  
LYME, CT 06371  
(860)434-0277 FAX: (860)434-3195 OR APPROVED EQUAL.
3. DROP BOWL MODEL "A-4" SHALL BE USED FOR ALL LINES UP THROUGH FULL 6" INLETS. DROP BOWL MODEL "A-6" SHALL BE USED FOR ALL 8" INLETS. DROP BOWLS MODEL "B-8" SHALL BE USED FOR ALL 10" INLETS. LINES LARGER THAN 10" SHALL BE AS DIRECTED BY THE DIRECTOR.
4. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS OR APPROVED EQUAL (SEE STD. DWG. 4C-53).
6. ATTACH THE DROP BOWL & EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH STAINLESS STEEL 3/8" X 3 3/4" RAMSET/RED HEAD BOLTS. PRE-ROTO DRILL AND SET BOLTS IN PLACE WITH EPOXY PASTE. EPOXY SHALL MEET THE FOLLOWING REQUIREMENTS:
  - A. EPOXY PASTE SHALL BE A TWO COMPONENT, 100% SOLID SYSTEM. EPOXY SHALL BE SIKADUR 31 HI-MOD GEL BY SIKA CORPORATION (PHONE 592/941-0231) OR EQUAL.
  - B. THE EPOXY PASTE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI IN 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM D695 AT 73 DEGREES.
  - C. THE EPOXY PASTE SHALL DEVELOP A MINIMUM TENSILE STRENGTH OF 3,000 PSI IN 14 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM D638.
  - D. THE EPOXY PASTE SHALL DEVELOP A MINIMUM BOND STRENGTH OF 2,000 PSI IN 2 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C882 (HARDENED CONCRETE TO HARDENED CONCRETE).
  - E. MANUFACTURER'S INSTRUCTIONS SHALL BE PRINTED ON EACH CONTAINER IN WHICH THE MATERIALS ARE PACKAGED.



**SECTION A-A  
PLAN**

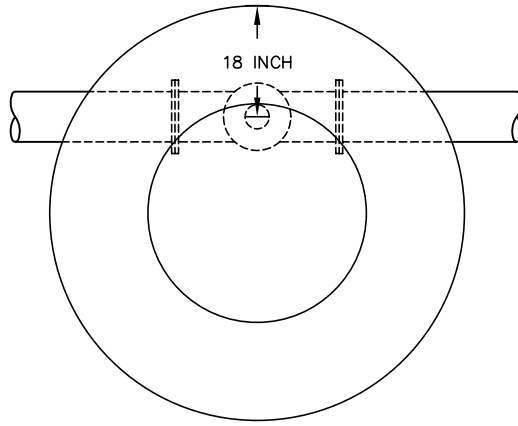
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**FORCE MAIN TIE-IN  
DROP CONNECTIONS**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

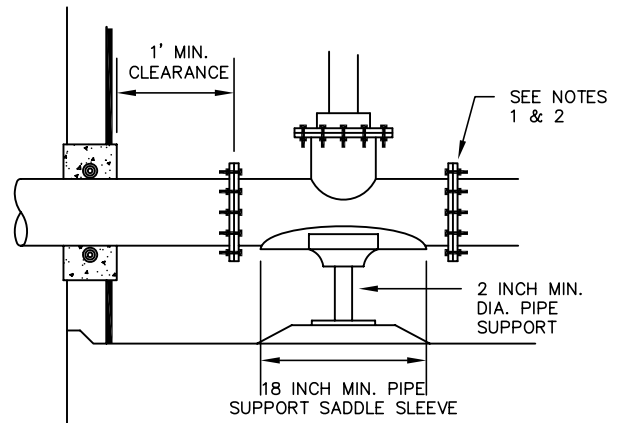
**7-5C-51**

*Mary K Snyder*  
DIRECTOR



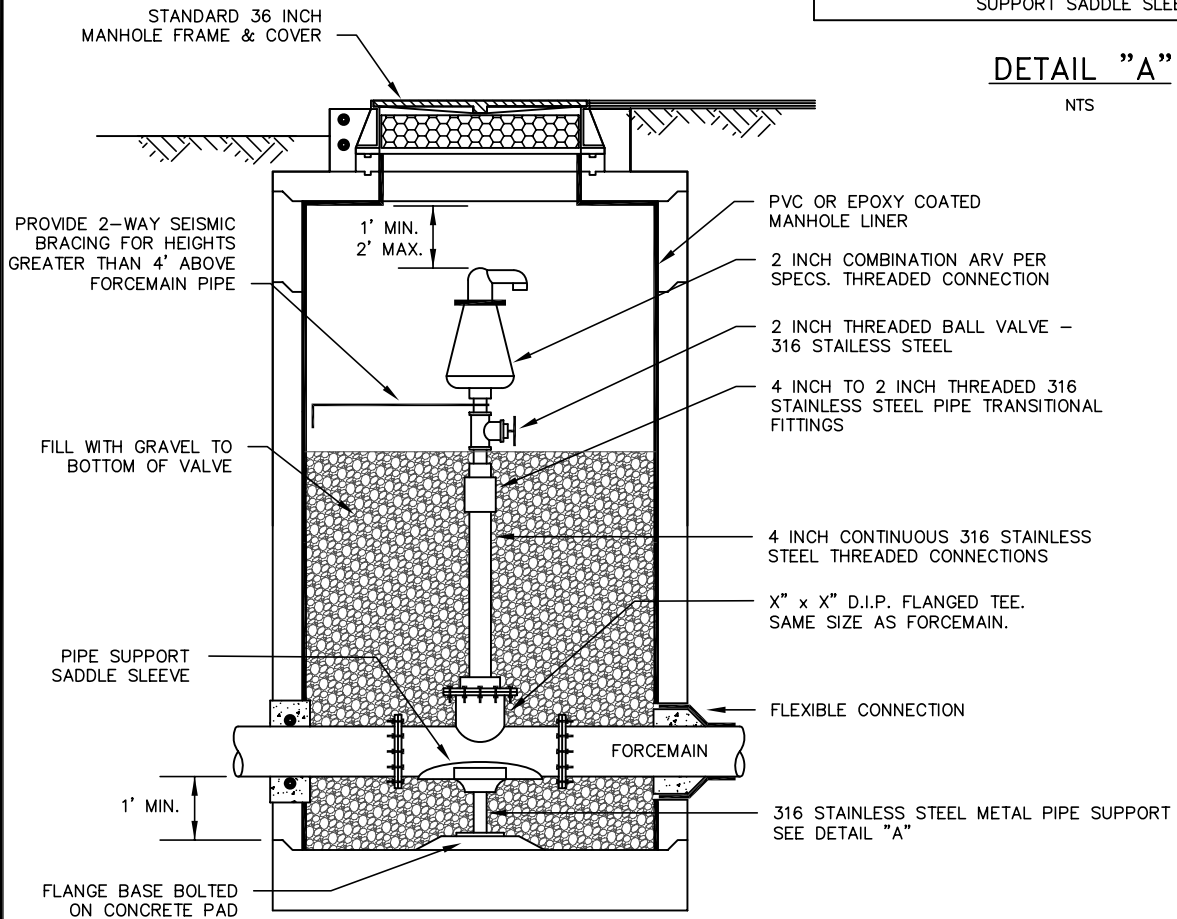
**MANHOLE PLAN VIEW**

SEE NOTE 4



**DETAIL "A"**

NTS



**MANHOLE SECTION**

NTS

*Manly K Snyder*  
DIRECTOR

**NOTES:**

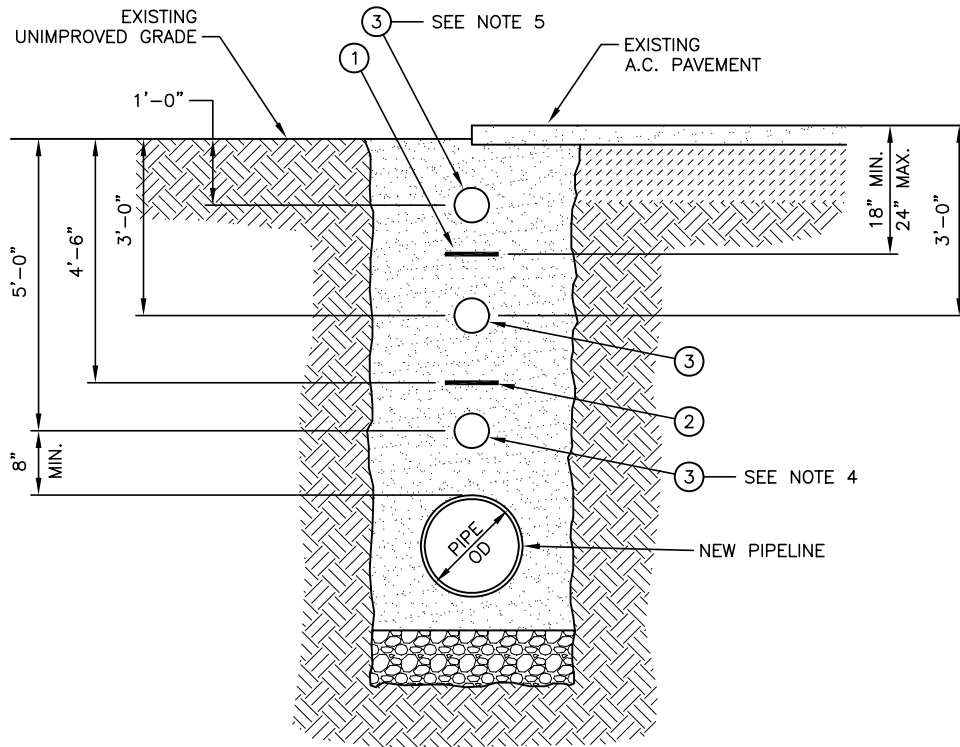
1. ALL HARDWARE AND FASTENERS SHALL BE 316 STAINLESS STEEL.
2. FLANGE CONNECTIONS SHALL USE NEOPRENE GASKETS BETWEEN FLANGES WITH STAINLESS STEEL WASHERS ON THE OUTSIDE.
3. PIPE PENETRATIONS THROUGH MANHOLE SHALL INCLUDE RESILIENT CONNECTORS.
4. FORCEMAIN OFFSET, NOT CENTERED, IN MANHOLE.

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**STANDARD 60"  
AIR RELEASE VALVE  
SEWER MANHOLE**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-5C-70**



- ① PIPE LOCATOR RIBBON - 3" WIDTH
- ② PIPE LOCATOR RIBBON - 3" WIDTH  
(INSTALLED WHEN COVER OF NEW PIPELINE IS 7'-0" OR GREATER)
- ③ LOCATOR BALL - SEE NOTES

**NOTES:**

1. CENTER PIPE LOCATOR RIBBON IN TRENCH AND PLACE OVER ENTIRE LENGTH OF ALL PIPE TYPES, MATERIALS, SIZES, AND LOCATIONS OF FORCE MAINS.
2. INSTALL LOCATOR BALLS AT THE BEGINNING AND START OF ALL: VERTICAL AND HORIZONTAL BENDS (INCLUDING DEFLECTED SECTIONS), WATER CROSSINGS, AND TRENCHING SECTIONS.
3. INSTALL LOCATOR BALLS A MINIMUM OF EVERY 350 FEET.
4. IF A.C. PAVEMENT EXISTS INSTALL LOCATOR BALL AT 3'-0" (TYP.).
5. IF A CUT TO FINISHED GRADE IS ANTICIPATED, INSTALL LOCATOR BALLS AT BOTH 3'-0" AND 5'-0" (TYP.).
6. IF A FILL TO FINISHED GRADE IS ANTICIPATED, INSTALL LOCATOR BALLS AT BOTH 1'-0" AND 3'-0" (TYP.).

*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

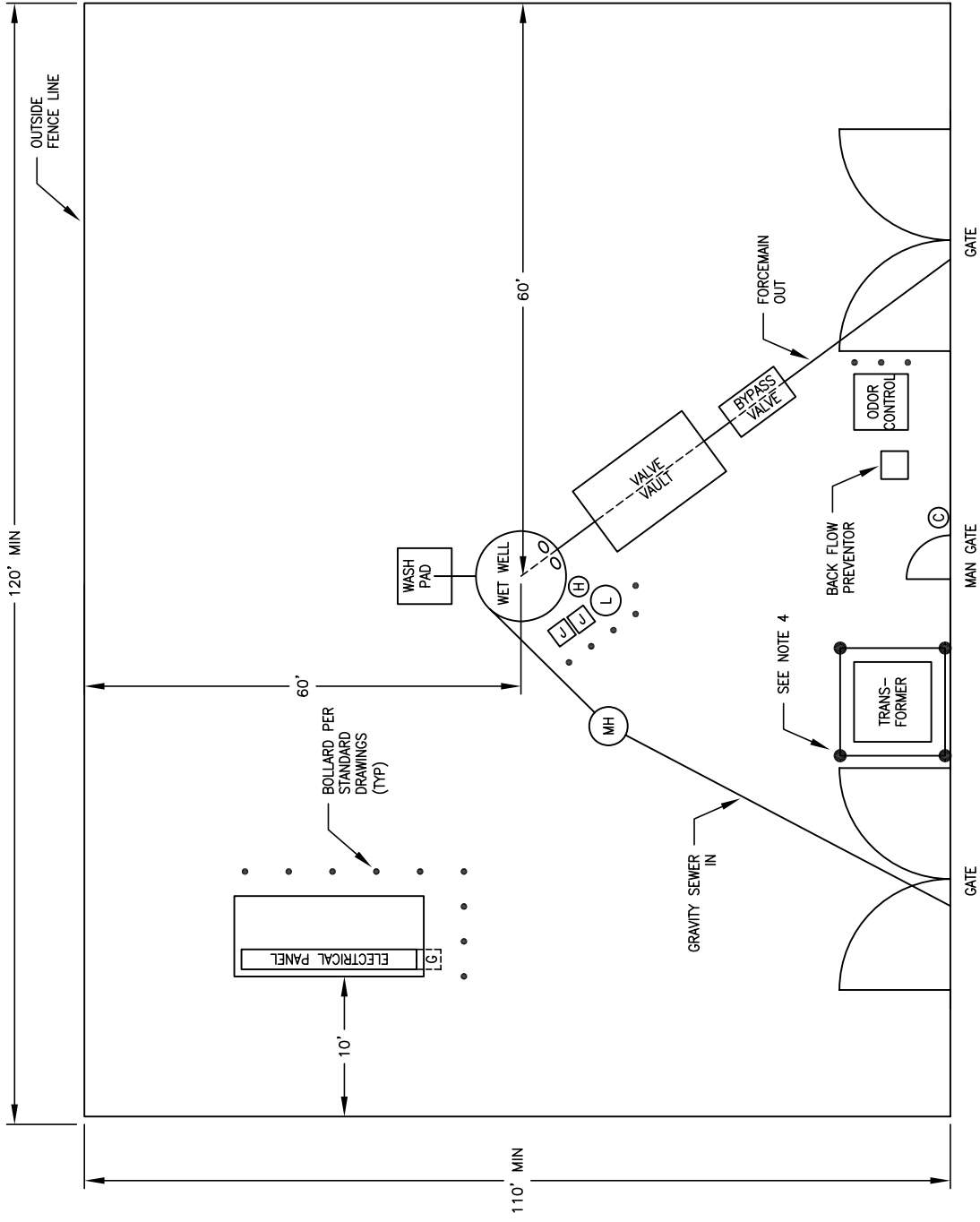
**PIPE LOCATOR RIBBON  
AND LOCATOR BALL  
INSTALLATION**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-5C-80**

- LEGEND:**
- MH - MANHOLE
  - L - LIGHTS
  - J - JUNCTION BOX
  - H - HOSE BIB
  - C - CHEMICAL HOOK-UP
  - G - GENERATOR HOOK-UP

- NOTE**
1. 5' SEPERATION FROM WET WELL TO VALVE VAULT TO BYPASS VAULT.
  2. MIN 3' CLEARANCE IN FRONT OF JUNCTION BOX.
  3. TRANSFORMER BOLLARDS PER SMUD DRAWINGS.
  4. NO EQUIPMENT SHALL BE INSTALLED WITHIN 10' FEET OF FENCE LINE.



**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**PUMP STATION  
SITE LAYOUT**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-6C-10**

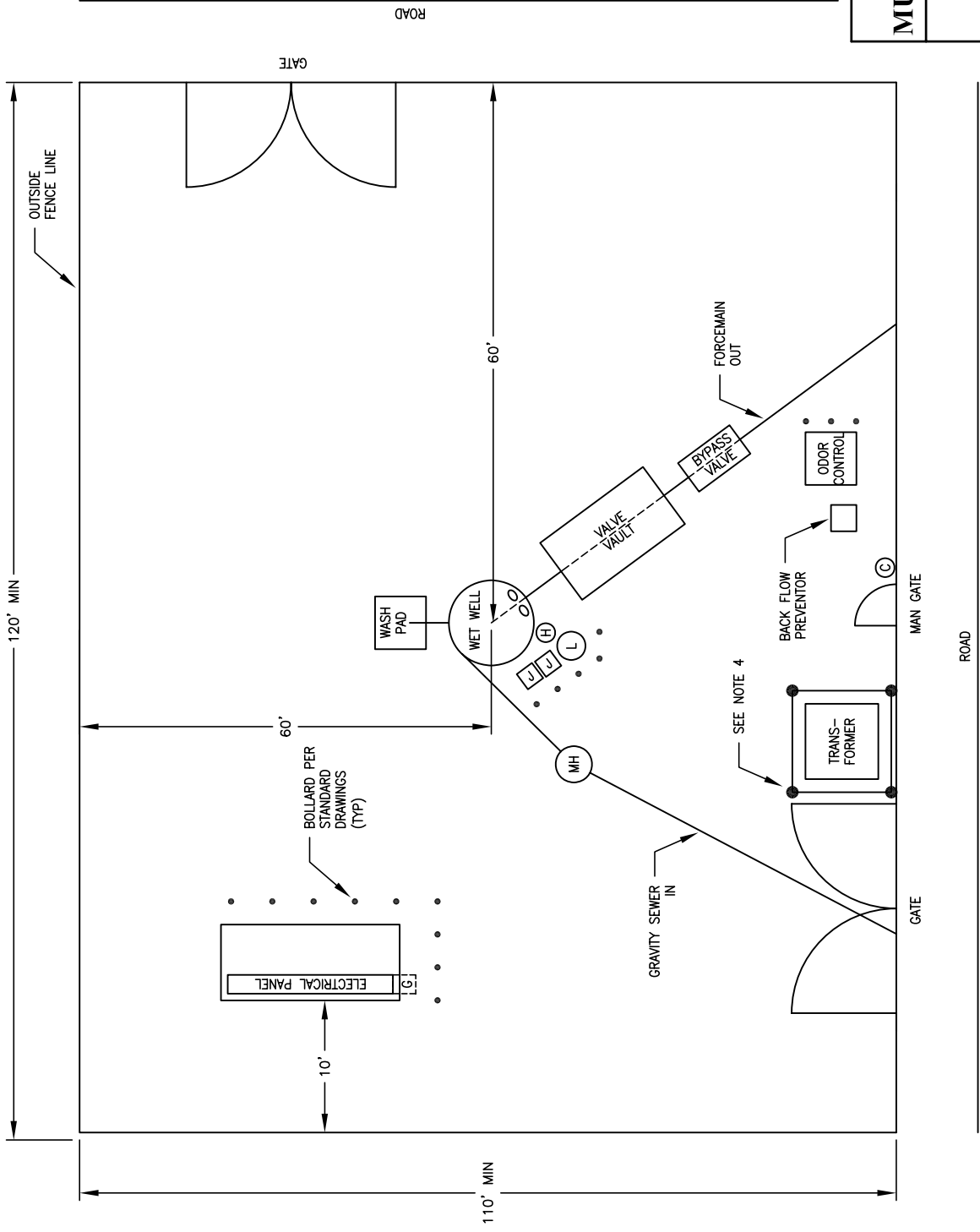
*Mary H Snyder*  
DIRECTOR

**LEGEND:**

- MH - MANHOLE
- L - LIGHTS
- J - JUNCTION BOX
- H - HOSE BIB
- C - CHEMICAL HOOK-UP
- G - GENERATOR HOOK-UP

**NOTE:**

1. 5' SEPERATION FROM WET WELL TO VALVE VAULT TO BYPASS VAULT.
2. MIN 3' CLEARANCE IN FRONT OF JUNCTION BOX.
3. TRANSFORMER BOLLARDS PER SMUD DRAWINGS.
4. NO EQUIPMENT SHALL BE INSTALLED WITHIN 10 FEET OF FENCE LINE.



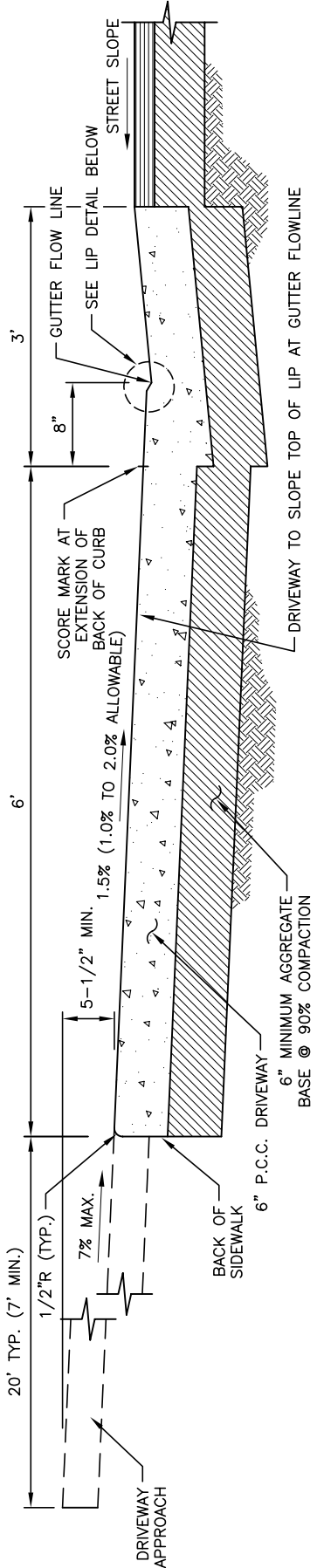
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**PUMP STATION  
SITE LAYOUT  
CORNER LOT**

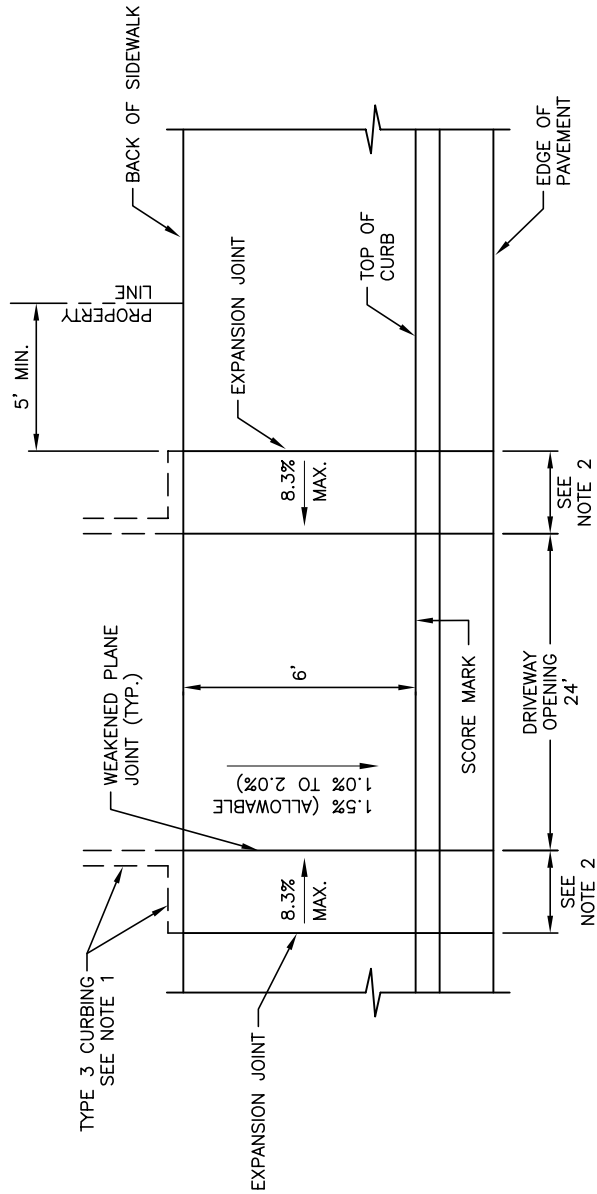
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

*Mary H Snyder*  
DIRECTOR

**7-6C-11**



**TYPICAL DRIVEWAY SECTION**



*Mary C. Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

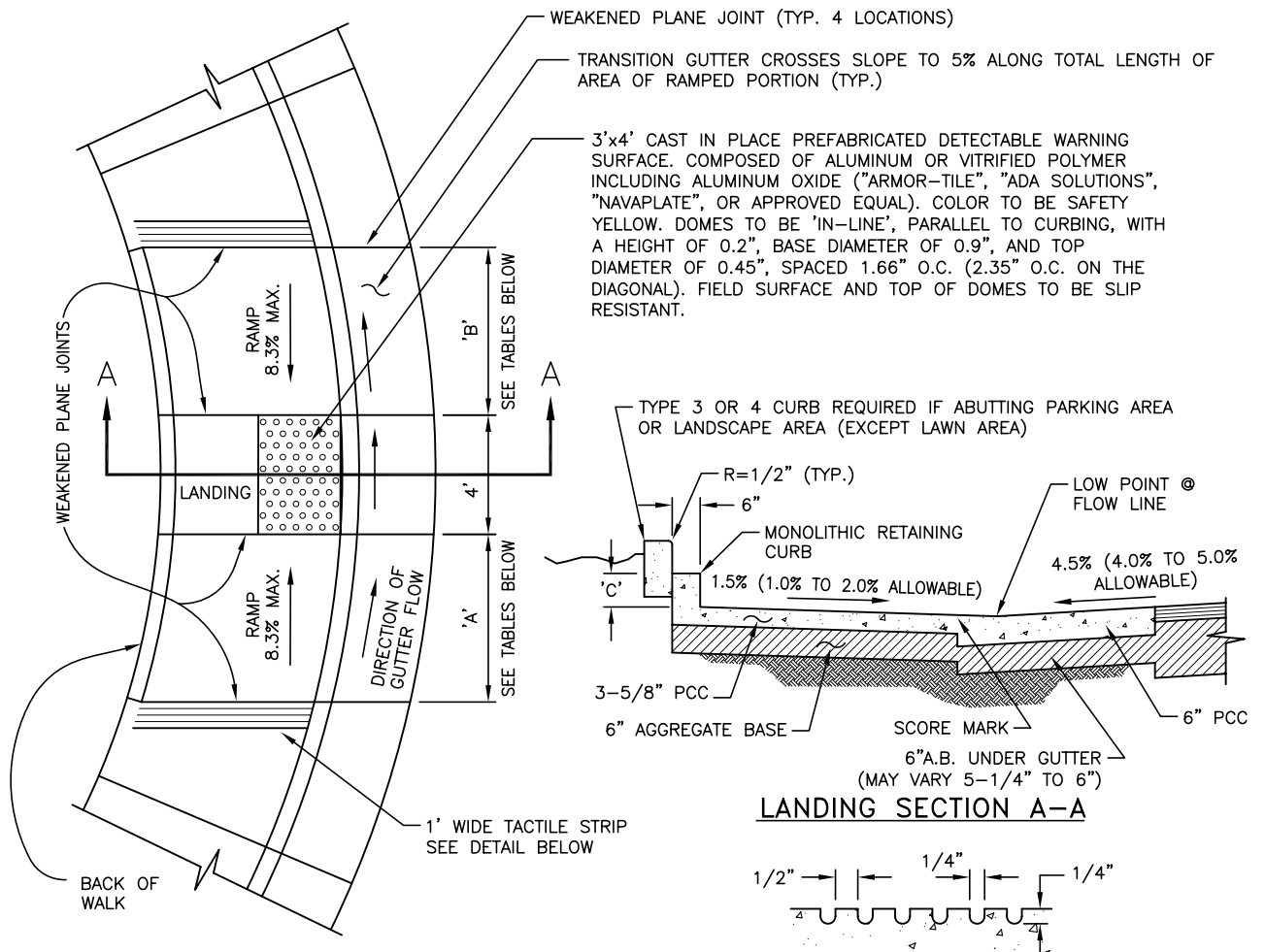
**COMMERCIAL  
DRIVEWAY**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6C-12**

**NOTES:**

- TYPE 3 CURBING ON SITE SHALL EXTEND TO WHERE THE DRIVEWAY APPROACH IS A MINIMUM OF FOUR INCHES ABOVE THE BACK OF SIDEWALK ELEVATION AT DRIVEWAY.
- SEE SIDEWALK RAMPS DETAIL DRAWING 7-6C-13 FOR APPROX. LENGTH OF INCLINED PORTION OF DRIVEWAY.



**RAMP PLAN**

**TACTILE STRIP GROOVE DETAIL**

TYPE 2 CURB	APPROX. RAMP LENGTH	
	"A"	"B"
0.5% TO 1.0%	7'-6"	6'-0"
> 1.0% TO 1.5%	8'-0"	6'-0"
> 1.5% TO 1.8%	8'-6"	5'-6"
> 1.8% TO 2.1%	9'-0"	5'-6"
> 2.1% TO 2.4%	9'-6"	5'-0"
> 2.4% TO 3.0%	10'-0"	5'-0"
> 3.0%	SEE NOTE 4	

TYPE 1A CURB	APPROX. RAMP LENGTH	
	"A"	"B"
0.5% TO 1.0%	4'-6"	4'-0"
> 1.0% TO 1.7%	5'-0"	3'-6"
> 1.7% TO 2.2%	5'-6"	3'-6"
> 2.2% TO 2.7%	6'-0"	3'-0"
> 2.7% TO 3.1%	6'-6"	3'-0"
> 3.1% TO 3.4%	7'-0"	3'-0"
> 3.4% TO 3.7%	7'-6"	3'-0"
> 3.7% TO 3.9%	8'-0"	3'-0"
> 3.9% TO 4.3%	9'-0"	3'-0"
> 4.3% TO 5.0%	10'-0"	2'-6"
> 5.0%	SEE NOTE 4	

CURB TYPE	TYPE 1/1A	TYPE 2
* DIM 'C'	3-5/8"	6"

\* OR AS NEEDED TO MATCH EXISTING ON SITE IMPROVEMENTS, 8" MAX.

**NOTES:**

- DIMENSION 'A' IS THE LENGTH OF THE INCLINED PORTION OF THE RAMP THAT SLOPES IN THE SAME DIRECTION AS THE FLOW OF THE GUTTER.
- DIMENSION 'B' IS THE LENGTH OF THE INCLINED PORTION OF THE RAMP THAT SLOPES IN THE OPPOSITE DIRECTION AS THE FLOW OF THE GUTTER.
- RAMPS SHALL HAVE A HEAVY BROOM FINISH TRANSVERSE TO THEIR SLOPE.
- REQUIRES SPECIAL DESIGN APPROVAL BY THE CHIEF OF THE DEPARTMENT OF TRANSPORTATION.
- NO PULL BOX, UTILITY BOX, UTILITY POLE, TRAFFIC SIGNAL POLE, MANHOLE, OR SIMILAR APPURTENANCE SHALL BE LOCATED WITHIN SIDEWALK RAMP AREA.
- SEE NOTE 6 SACRAMENTO COUNTY STANDARD DRAWING 4-24 FOR RAMPS WITH 6' WIDE RAMP PANS.

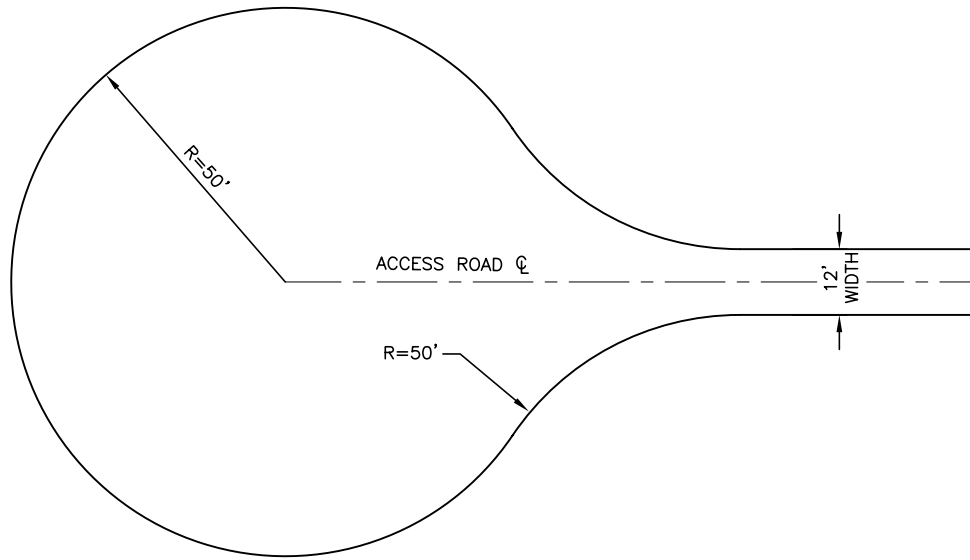
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

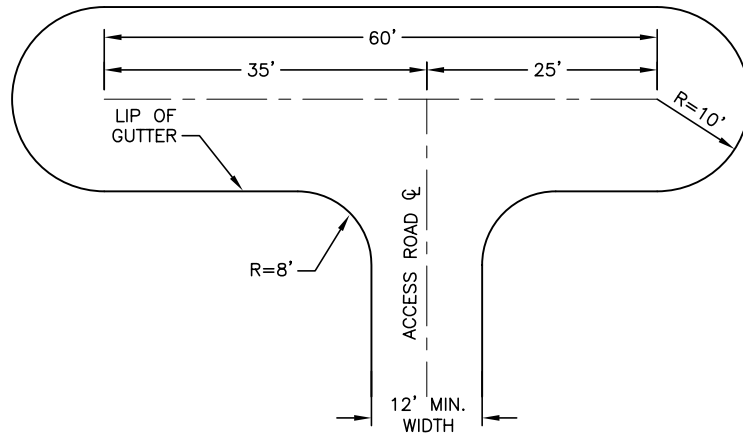
**SIDEWALK RAMP  
DETAIL**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6C-13**



TURN-AROUND



HAMMER-HEAD

*Mary K Snyder*  
DIRECTOR

**NOTE:**

STREET SECTION:  
EITHER 2" AC OVER 4" OF AB  
OR 12" OF AB OVER GEOFABRIC

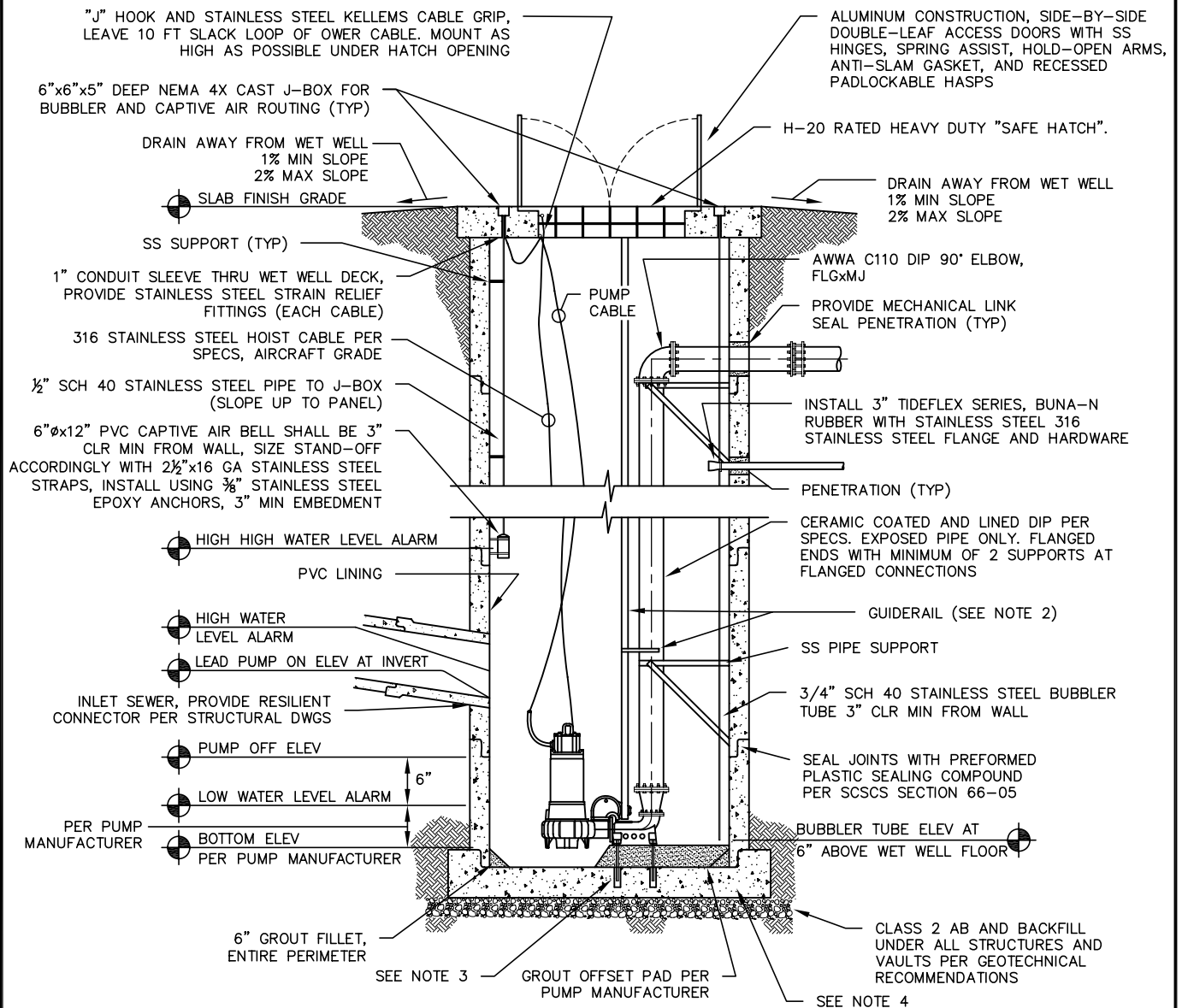
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**TURN-AROUND  
& HAMMER-HEAD  
FOR ACCESS ROADS**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6C-14**





**SECTION A-A**

**NOTES:**

1. GUIDERAIL SHALL BE MADE OF 316 STAINLESS STEEL AND SHALL BE SIZED PER PUMP MANUFACTURER WITH INTERMEDIATE SUPPORT.
2. MIN OPENING HATCH SHALL NOT INTERFERE WITH PUMP REMOVAL AND MAINTENANCE OPERATIONS.
3. PAD, STAINLESS STEEL ANCHOR BOLT ASSEMBLY, AND LOCATION SHALL BE DESIGNED PER MANUFACTURER REQUIREMENTS.
4. THICKNESS OF WET WELL FLOOR SHALL BE PER STRUCTURAL ENGINEER RECOMMENDATIONS.

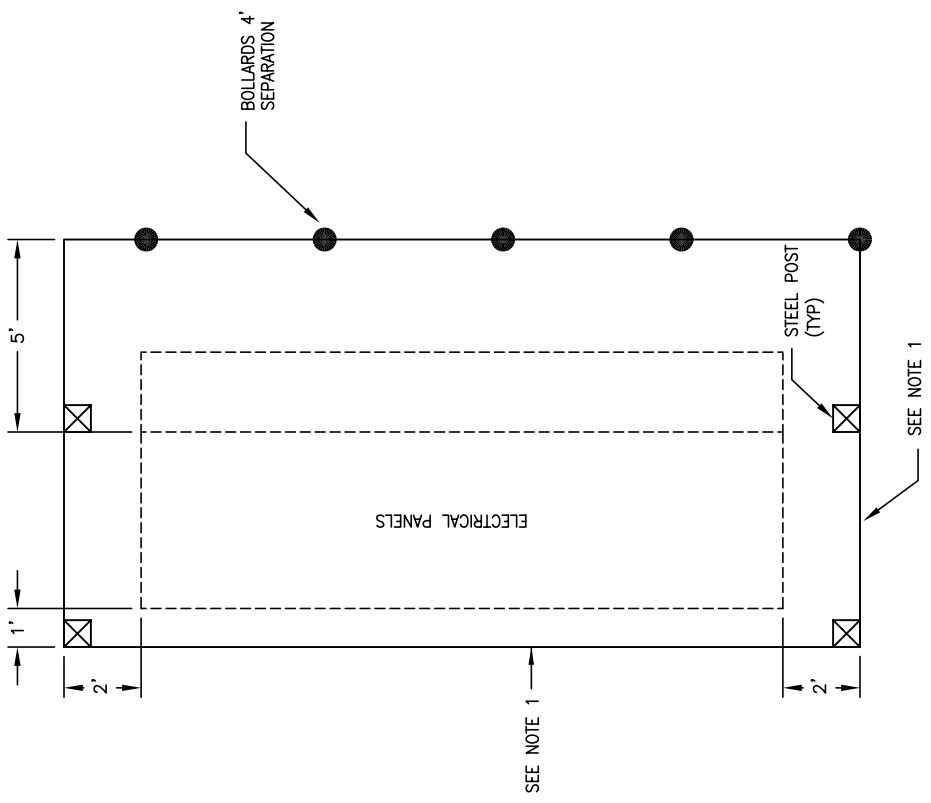
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

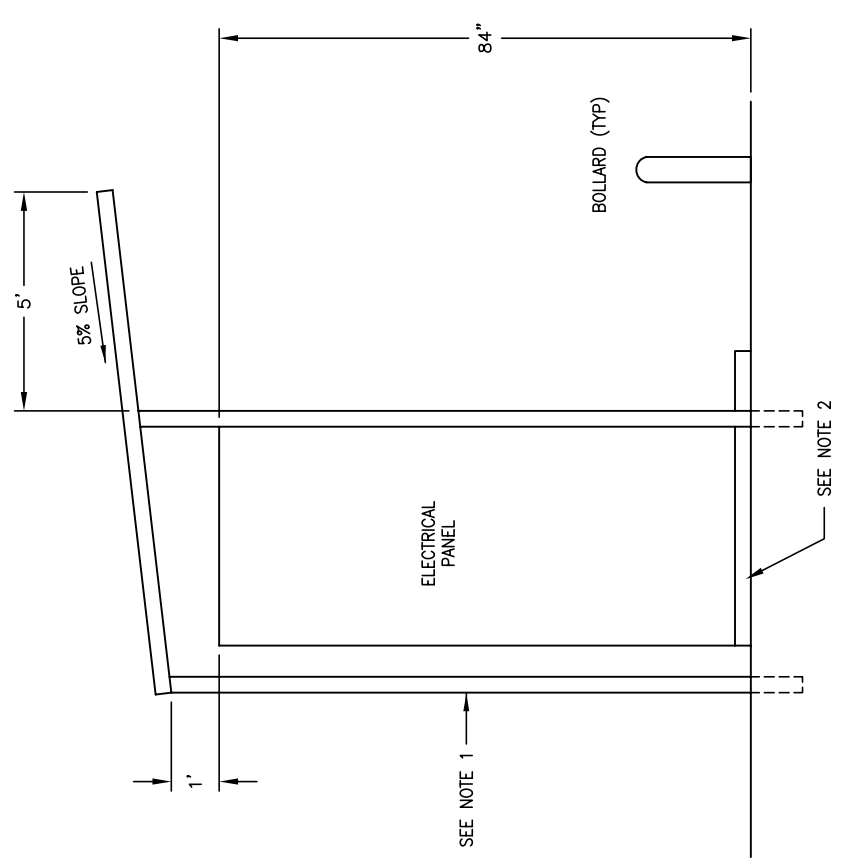
**CIRCULAR  
WET WELL**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-6C-20**



TOP VIEW  
NTS

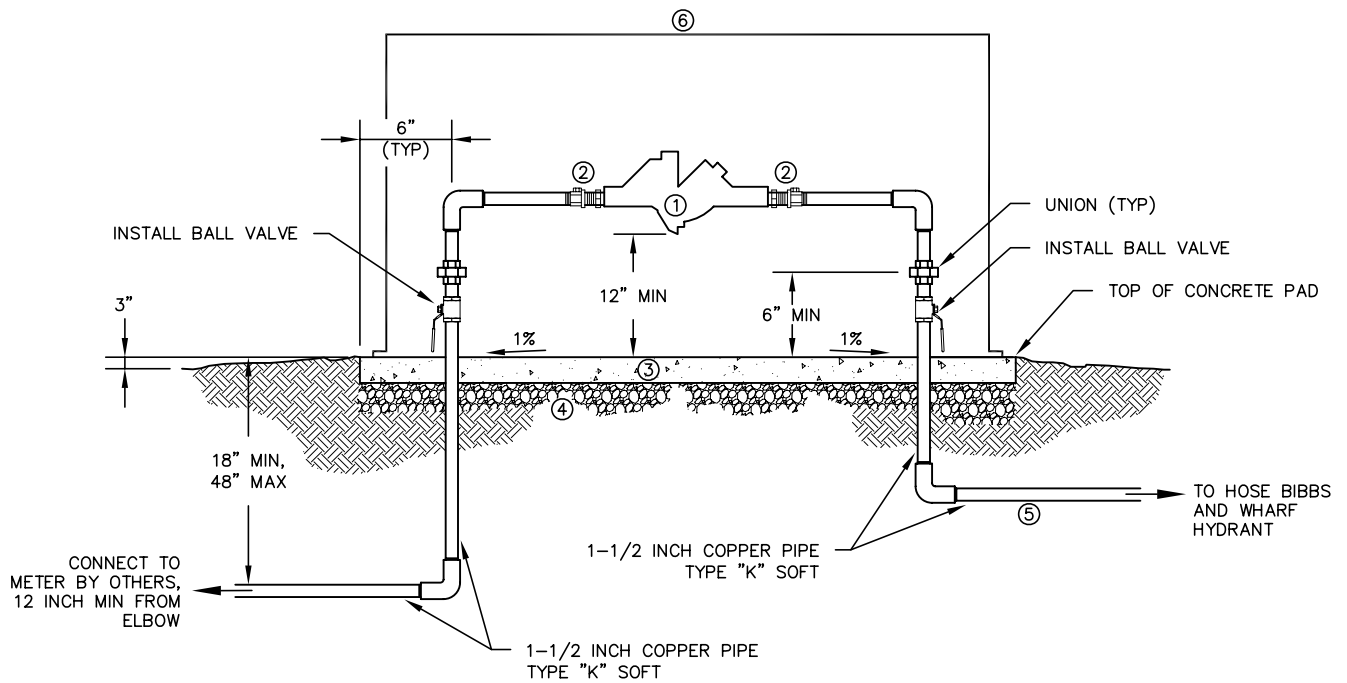


SIDE VIEW  
NTS

**NOTES:**

1. ATTACH SUNSHIELD TO CANOPY POSTS ON SOUTH AND WEST SIDES.
2. CONCRETE PAD EXTENDED 4 INCHES ABOVE SURROUNDING GRADE. TO BE DESIGNED BY ENGINEER.
3. CANOPY SHALL BE DESIGNED BY REGISTERED ENGINEER.

<b>SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY</b>	
<b>CANOPY SCHEMATIC</b>	
<p><i>Mary K Snyder</i> DIRECTOR</p>	<p><b>7-6C-50</b></p>
<p>DRAWN BY: PL SCALE: NONE DATE: 11/07</p>	



### REDUCER PRESSURE PRINCIPAL ASSEMBLY

#### KEY LEGEND

- ① REDUCED PRESSURE BACKFLOW PREVENTER.
- ② BRONZE BODY, RESILIENT SEATED BALL VALVE MINIMUM WORKING PRESSURE OF 175 PSI.
- ③ 3" SLAB, CONSTRUCT PER ENCLOSURE REQUIREMENTS.
- ④ 1/2" OR 3/4" CRUSHED ROCK, 4" MINIMUM THICKNESS, COMPACTED TO 95% RELATIVE DENSITY.
- ⑤ COPPER PIPE OR APPROVED EQUAL.
- ⑥ MODEL HB2 INSULATED LOK BOX AS MANUFACTURED BY HOT BOX, 250 LANE AVENUE NORTH, JACKSONVILLE, FLORIDA 32254. ANCHOR TO PAD USING MANUFACTURER BRACKETS. PROVIDE PADLOCK.

#### NOTES:

- 1. REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE LISTED ON THE STATE OF CALIFORNIA'S DEPT OF HEALTH SERVICES MOST RECENT LIST OF APPROVED REDUCED PRESSURE BACKFLOW PREVENTERS.
- 2. ALL SERVICE PIPING SHALL BE TYPE K COPPER WHERE BURIED, GALVANIZED SCH 40 STEEL ABOVE GROUND.
- 3. ALL BURIED PIPES SHALL BE WRAPPED WITH 6 MIL POLYETHYLENE ENCASEMENT OR 10 MIL POLYETHYLENE TAPE.

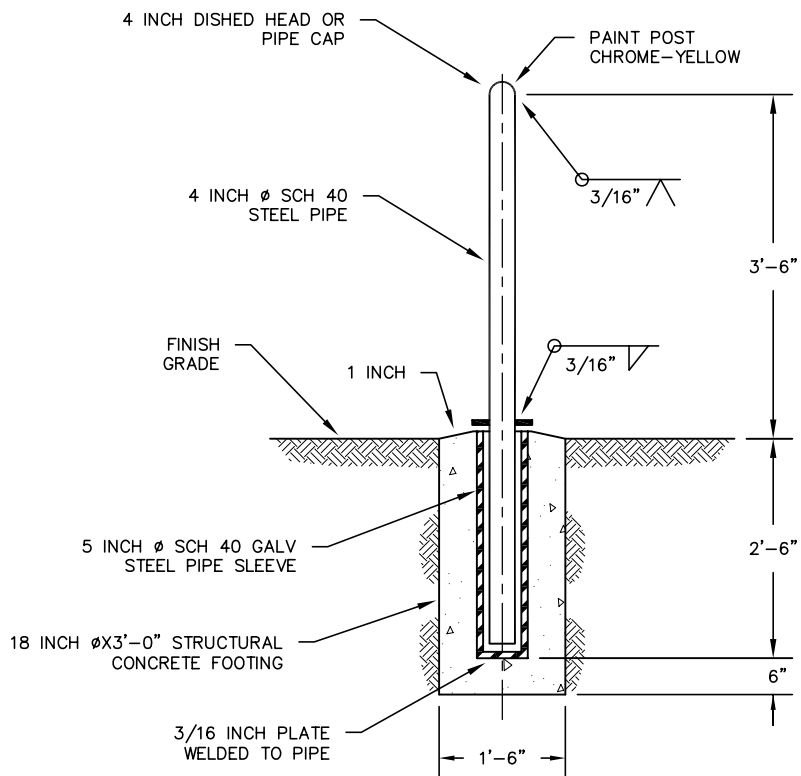
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**REDUCER PRESSURE  
PRINCIPAL ASSEMBLY**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6C-60**



REMOVABLE BOLLARD DETAIL

**NOTE:**

SEE SCS CS DWG L-22 FOR ADDITIONAL DETAILS NOT SHOWN.

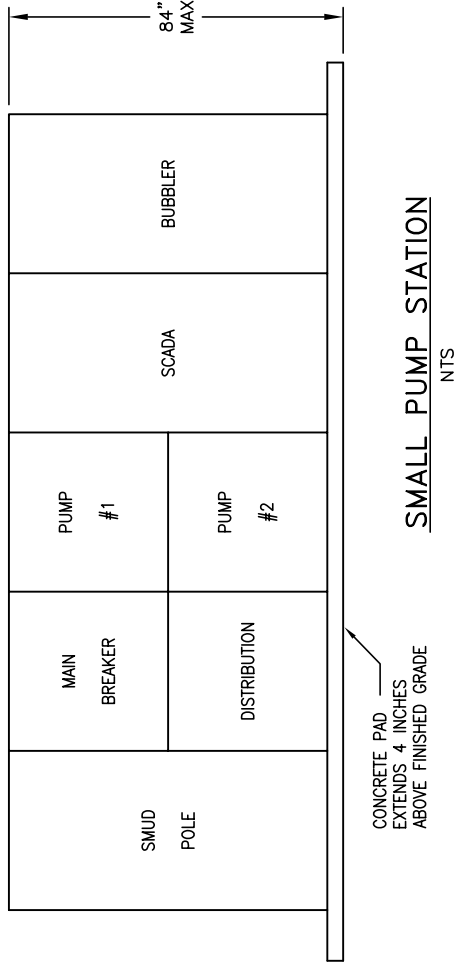
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**REMOVABLE BOLLARD  
DETAIL**

*Mary K Snyder*  
DIRECTOR

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6C-90**



**SMALL PUMP STATION**  
NTS

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

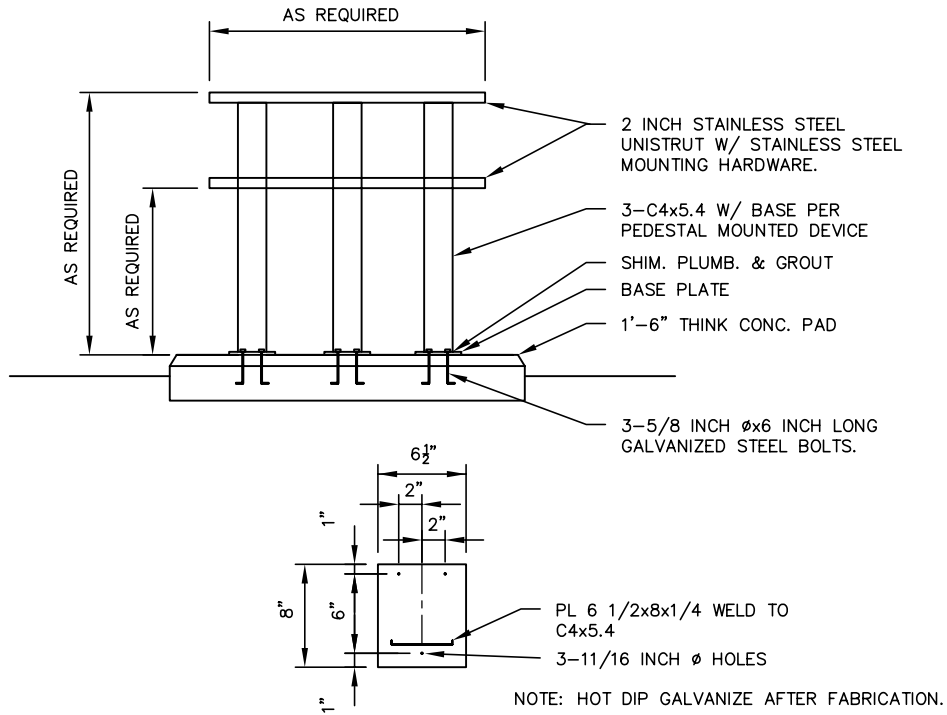
**ELECTRICAL PANEL  
LAYOUT**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

DIRECTOR

*Mary K Snyder*

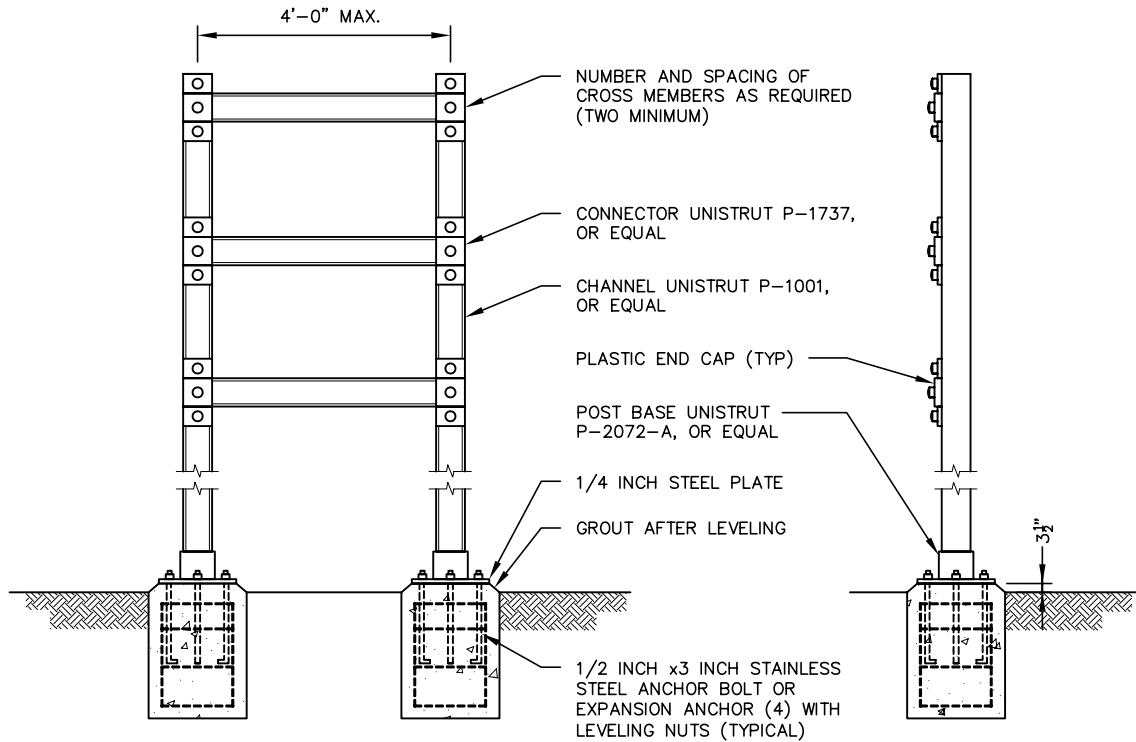
**7-6E-10**



**LARGE PEDESTAL MOUNTING  
DETAIL**



SCALE: NONE



**NOTES:**

1. INSTRUMENT RACK CHANNELS AND FITTINGS SHALL BE 316 STAINLESS STEEL.
2. HEIGHT AS REQUIRED SO MOUNTED INSTRUMENTS OR EQUIPMENT SHALL BE 60 INCHES TO TOP OF ENCLOSURE.



**INSTRUMENT MOUNTING RACK**

SCALE: NONE

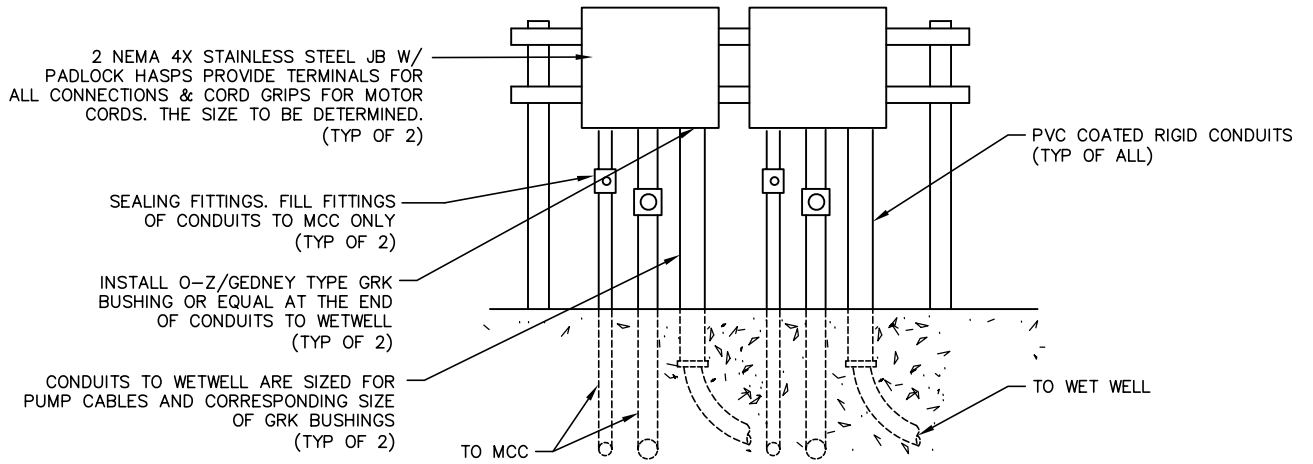
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**ELECTRICAL  
DETAIL #5**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-6E-11**



**MOTOR JB MOUNTING DETAIL**

NO SCALE

**NOTES:**

1. GROUND JB DOORS AND BOXES TO BE GROUND GRID.

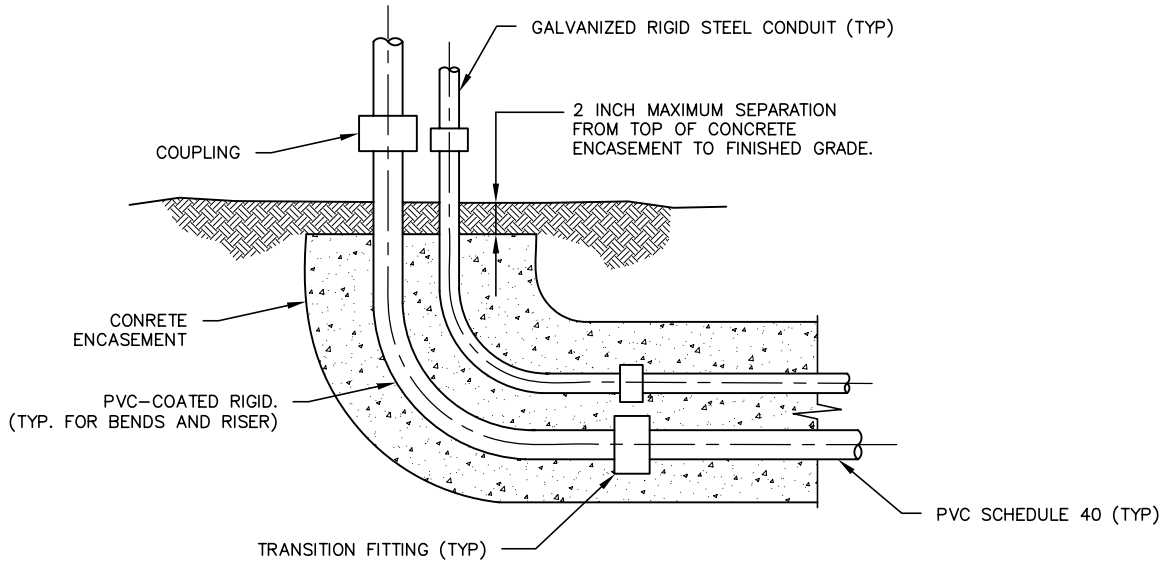
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**JB MOUNTING  
DETAIL**

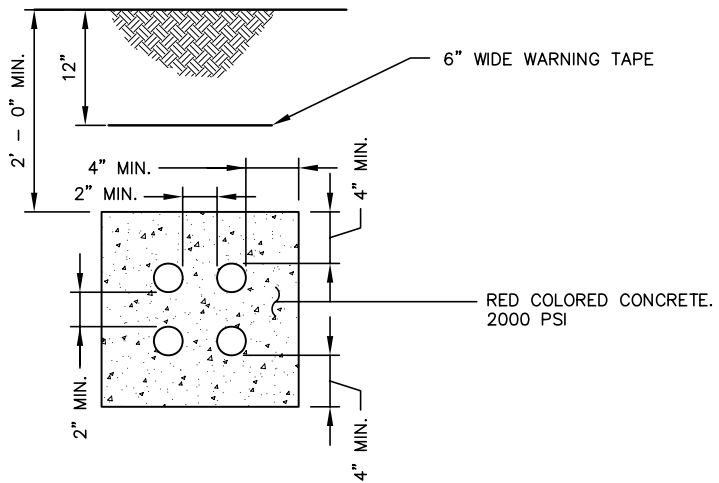
*Manly K Snyder*  
DIRECTOR

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6E-12**



**A** CONDUIT RISER FROM GROUND  
 - SCALE: NONE



**B** DUCT BANK SECTION  
 - SCALE: NONE

*Manly K Snyder*  
 DIRECTOR

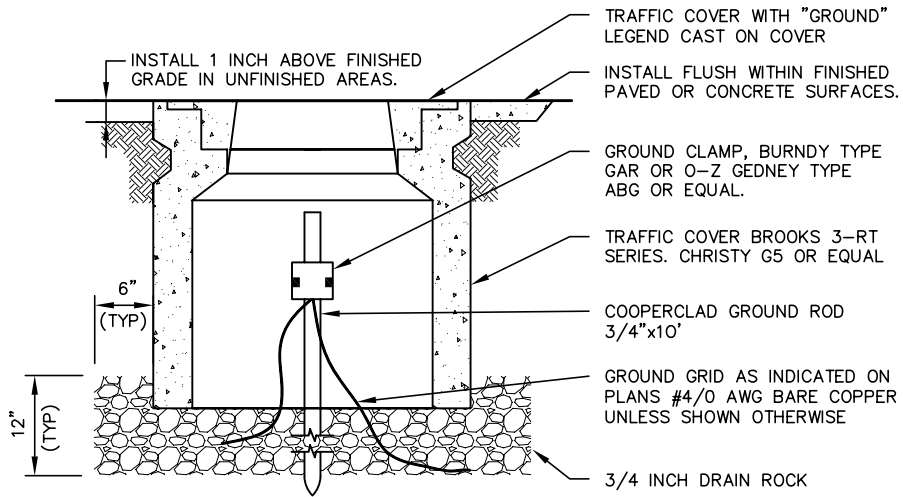
**SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY**

**CONDUIT RISER FROM  
 GROUND & DUCT BANK  
 SECTION**

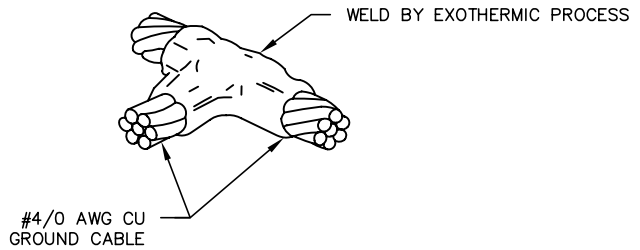
DRAWN BY: PL  
 SCALE: NONE  
 DATE: 11/07

**7-6E-13**

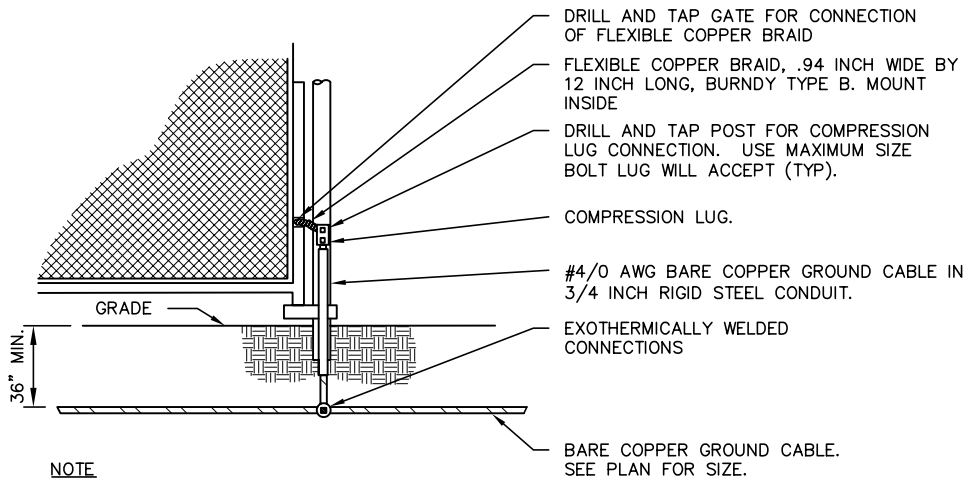




**A** GROUND WELL  
 - SCALE: NONE



**B** GROUND GRID TEE CONNECTION DETAIL  
 - SCALE: NONE



**NOTE**  
 GROUND EACH CORNER POST, GATE, GATE SUPPORT POST AND EVERY OTHER FENCE POST.

**C** FENCE GROUNDING  
 - SCALE: NONE

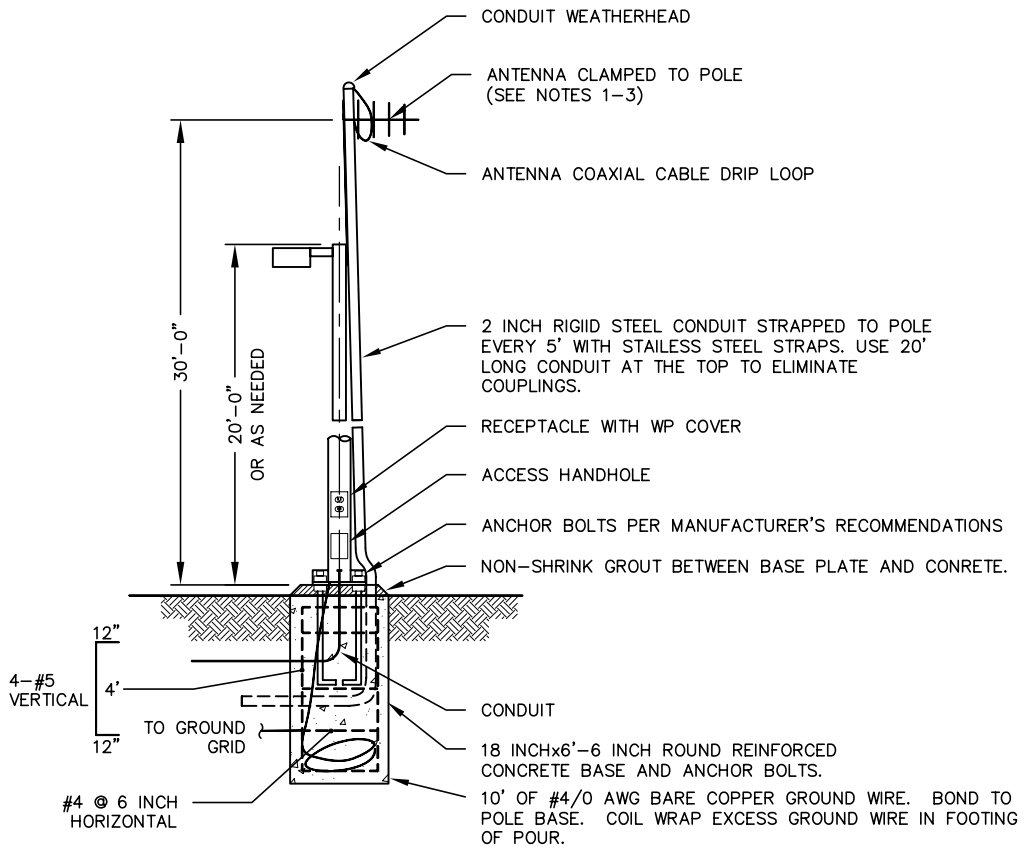
**SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY**

**GROUNDING  
 DETAILS**

*Mary K Snyder*  
 DIRECTOR

DRAWN BY: PL  
 SCALE: NONE  
 DATE: 11/07

**7-6E-14**



POLE BASE DETAIL W/ ANTENNA

SCALE: NONE

NOTES:

1. ANTENNA SHALL BE ANTENEX OR APPROVED EQUAL. PART NUMBER: TRAB 806/17103P.
2. MOUNTING BRACKET SHALL BE LARSEN OR APPROVED EQUAL PART NUMBER: FB3 BRACKET.
3. LIGHTING ARRESTER SHALL BE ALTELICON OR APPROVED EQUAL PART NUMBER: AL-NFNFB.

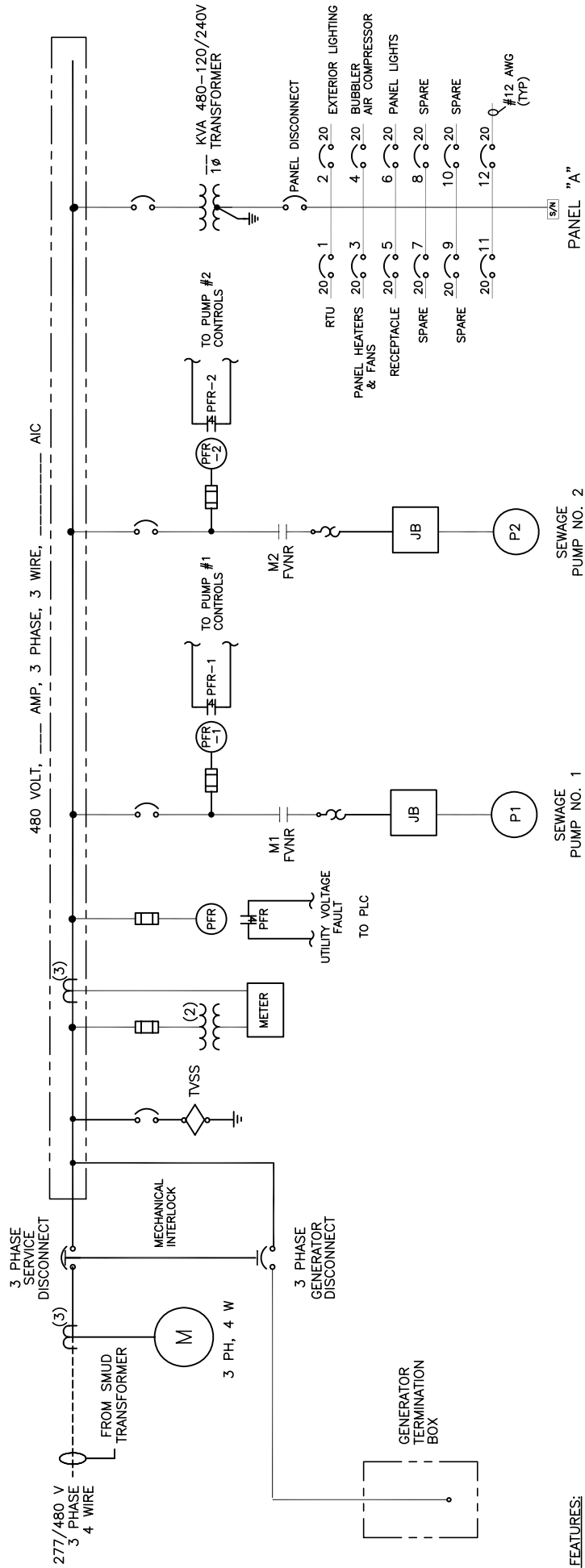
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**POLE BASE DETAIL  
WITH ANTENNA**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-6E-15**



**FEATURES:**

1. FULL CAPACITY LANDING LUGS FOR PORTABLE GEN. IN A NEW NEMA 3R ENCL.

**SINGLE LINE DIAGRAM**

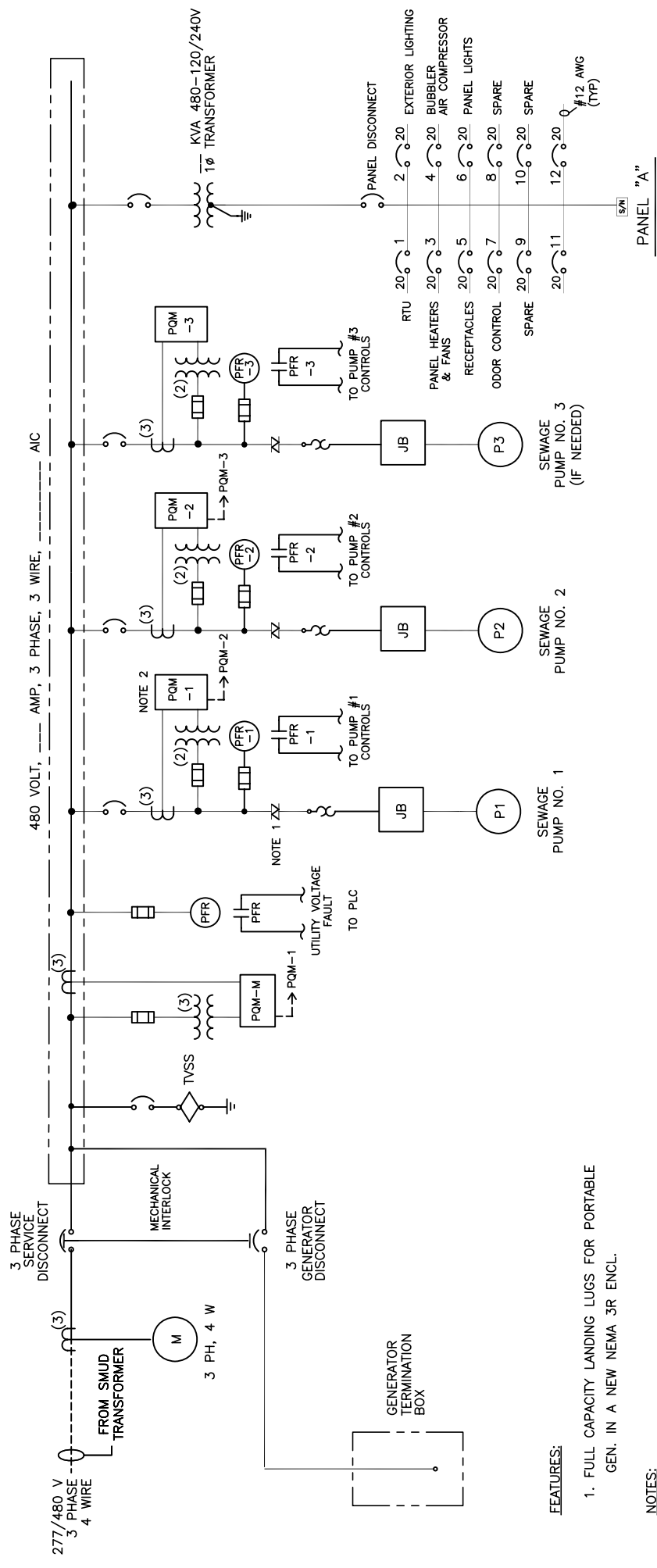
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**SINGLE LINE DIAGRAM  
SMALL PUMP STATION**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6E-20**

*Mary C. Snyder*  
DIRECTOR

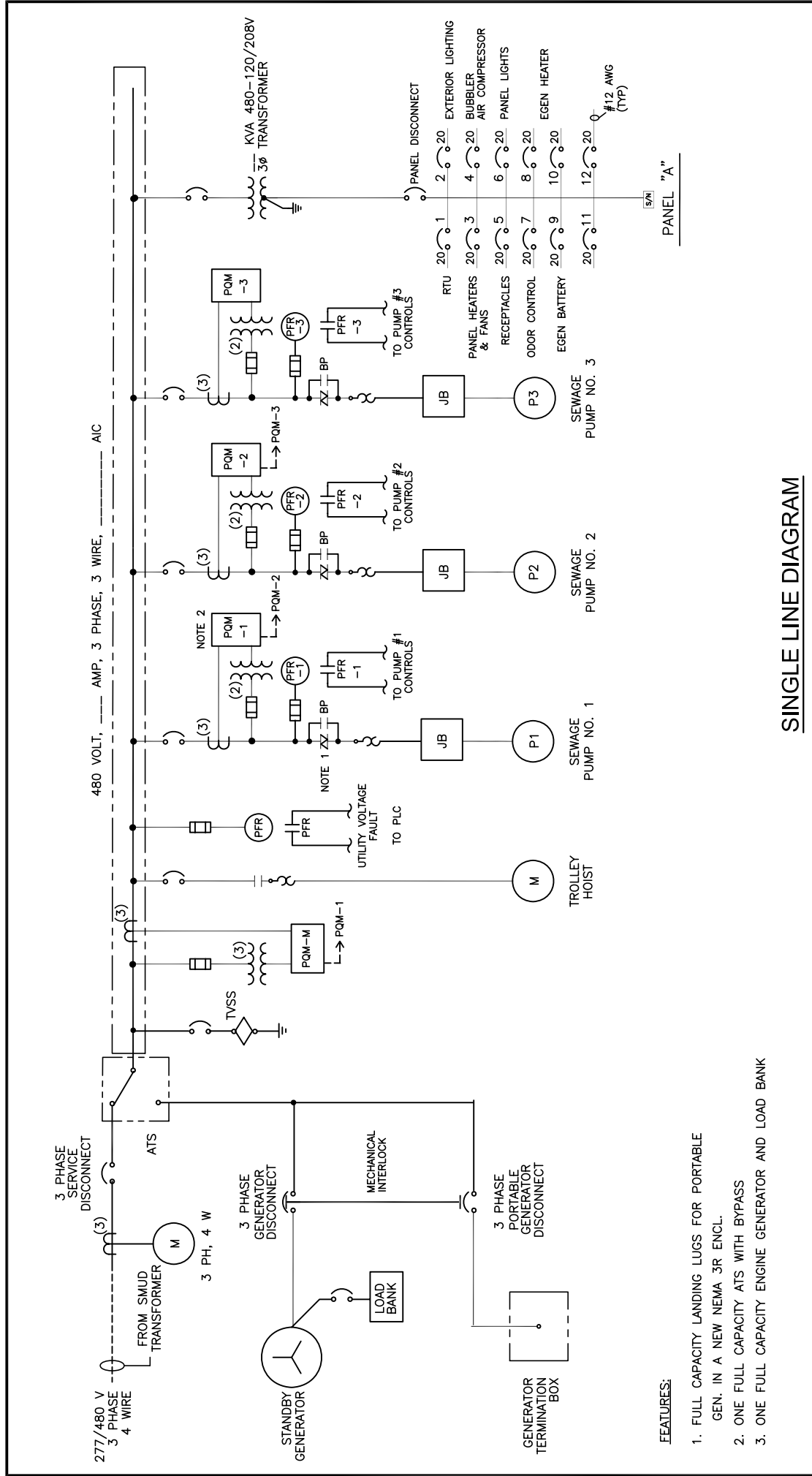


**SINGLE LINE DIAGRAM**

- FEATURES:**
1. FULL CAPACITY LANDING LUGS FOR PORTABLE GEN. IN A NEW NEMA 3R ENCL.

- NOTES:**
1. PROVIDE FVNR STARTER FOR MOTORS UNDER 30 HP
  2. PROVIDE A PGM FOR EACH PUMP OVER 50 HP IN TRIPLEX STATIONS

*Mary K Snyder*  
DIRECTOR



**SINGLE LINE DIAGRAM**

**FEATURES:**

1. FULL CAPACITY LANDING LUGS FOR PORTABLE GEN. IN A NEW NEMA 3R ENCL.
2. ONE FULL CAPACITY ATS WITH BYPASS
3. ONE FULL CAPACITY ENGINE GENERATOR AND LOAD BANK

**NOTES:**

1. NUMBER OF PUMPS: AS NEEDED.

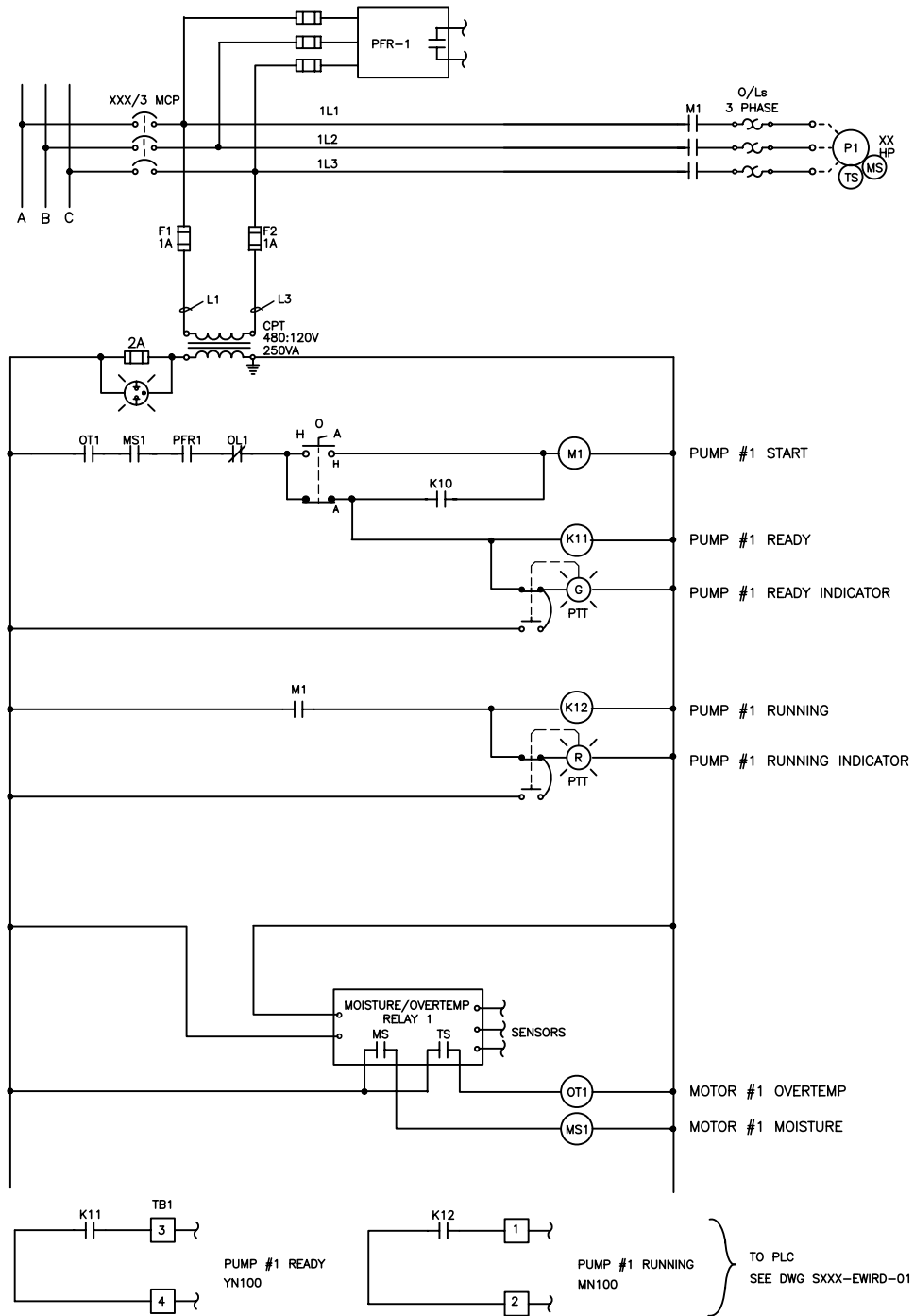
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**SINGLE LINE DIAGRAM  
LARGE PUMP STATION**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

*Mary Ch Snyder*  
DIRECTOR

**7-6E-22**



**PUMP P1 WIRING DIAGRAM**

**NOTES:**

1. PUMP START/STOP COMMAND FROM INTERPOSING RELAY AT RTU PANEL
2. NUMBERING CONVENTION IS TYPICAL.  
 USE K10, K11, K12, PFR-1, PQM-1, AND ETC. FOR PUMP 1.  
 USE K20, K21, K22, PFR-2, PQM-2, AND ETC. FOR PUMP 2.

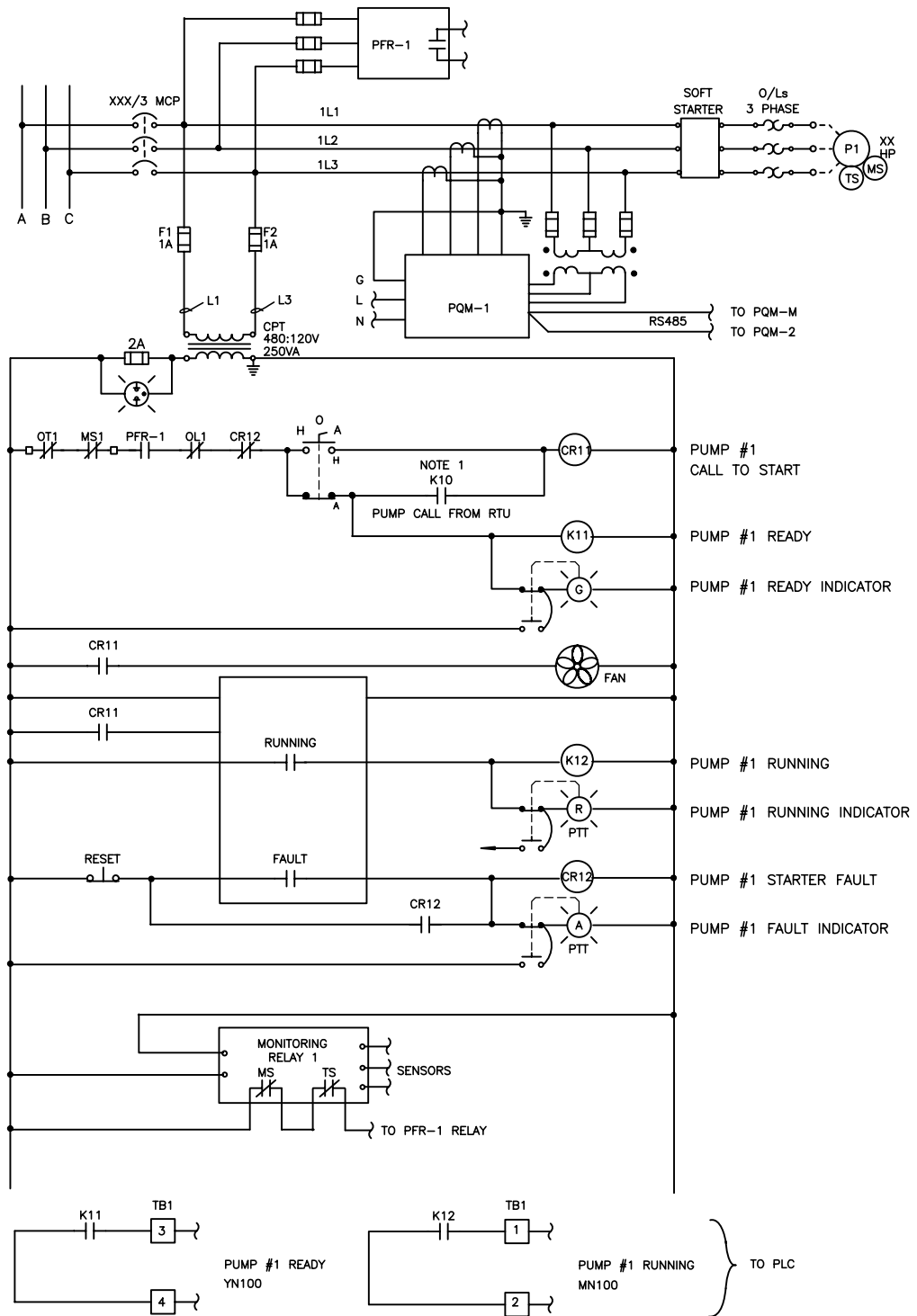
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**PUMP  
CONTROLS  
SMALL PUMP STATION**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6E-30**

*Mary K Snyder*  
DIRECTOR



### PUMP P1 WIRING DIAGRAM

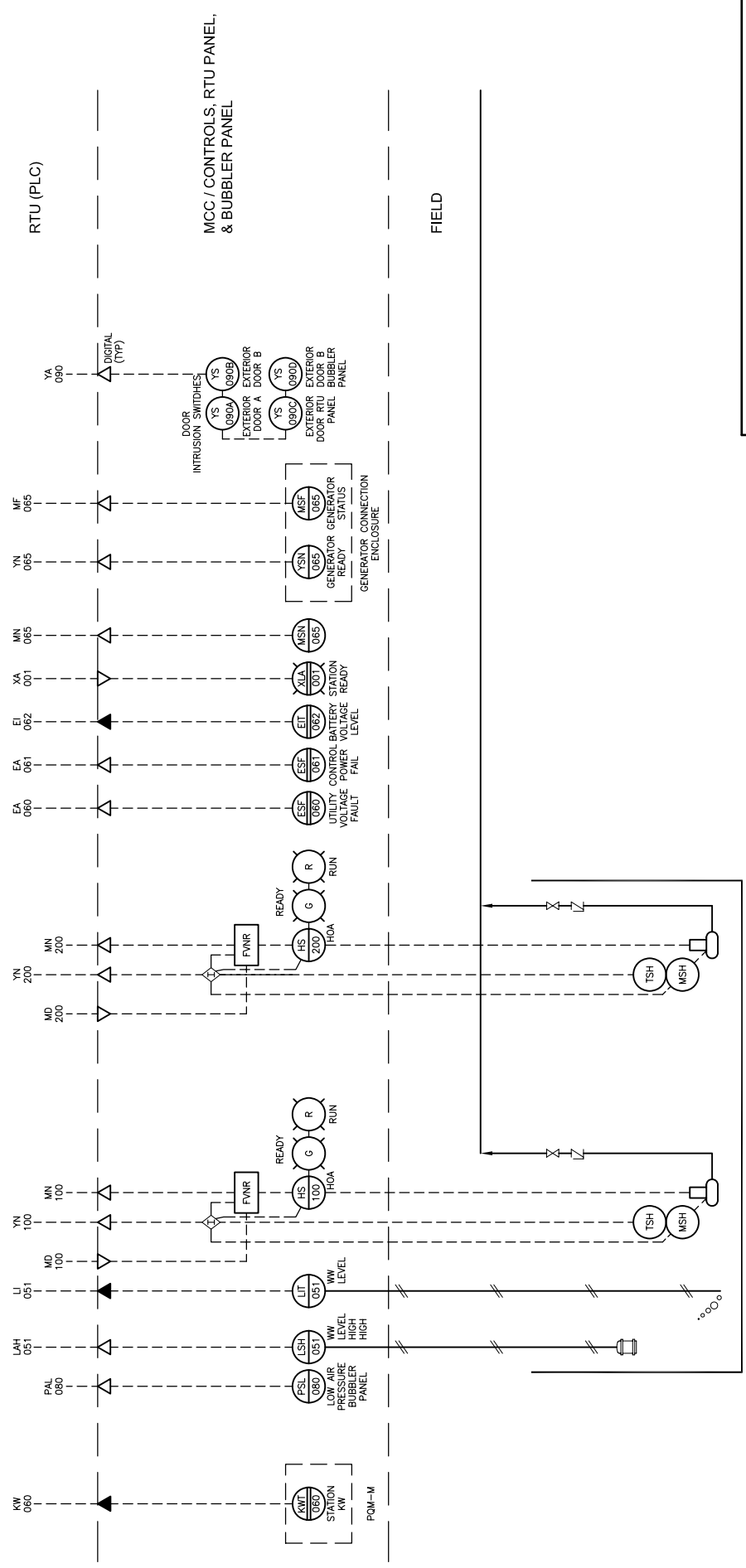
**NOTES:**

1. PUMP START/STOP COMMAND FROM INTERPOSING RELAY AT RTU PANEL
2. NUMBERING CONVENTION IS TYPICAL.  
 USE CR-11, CR-12, K10, K11, K12, PFR-1, PQM-1, AND ETC. FOR PUMP 1.  
 USE CR-21, CR-22, K20, K21, K22, PFR-2, PQM-2, AND ETC. FOR PUMP 2.

<b>SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY</b>	
<b>PUMP CONTROLS LARGE AND MEDIUM PUMP STATIONS</b>	
DRAWN BY: RAS SCALE: NONE DATE: 11/07	<b>7-6E-31</b>

*Mary K Snyder*  
DIRECTOR

RADIO COMMUNICATION TO  
SCADA MASTER STATION



**PROCESS & INSTRUMENTATION DIAGRAM**

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

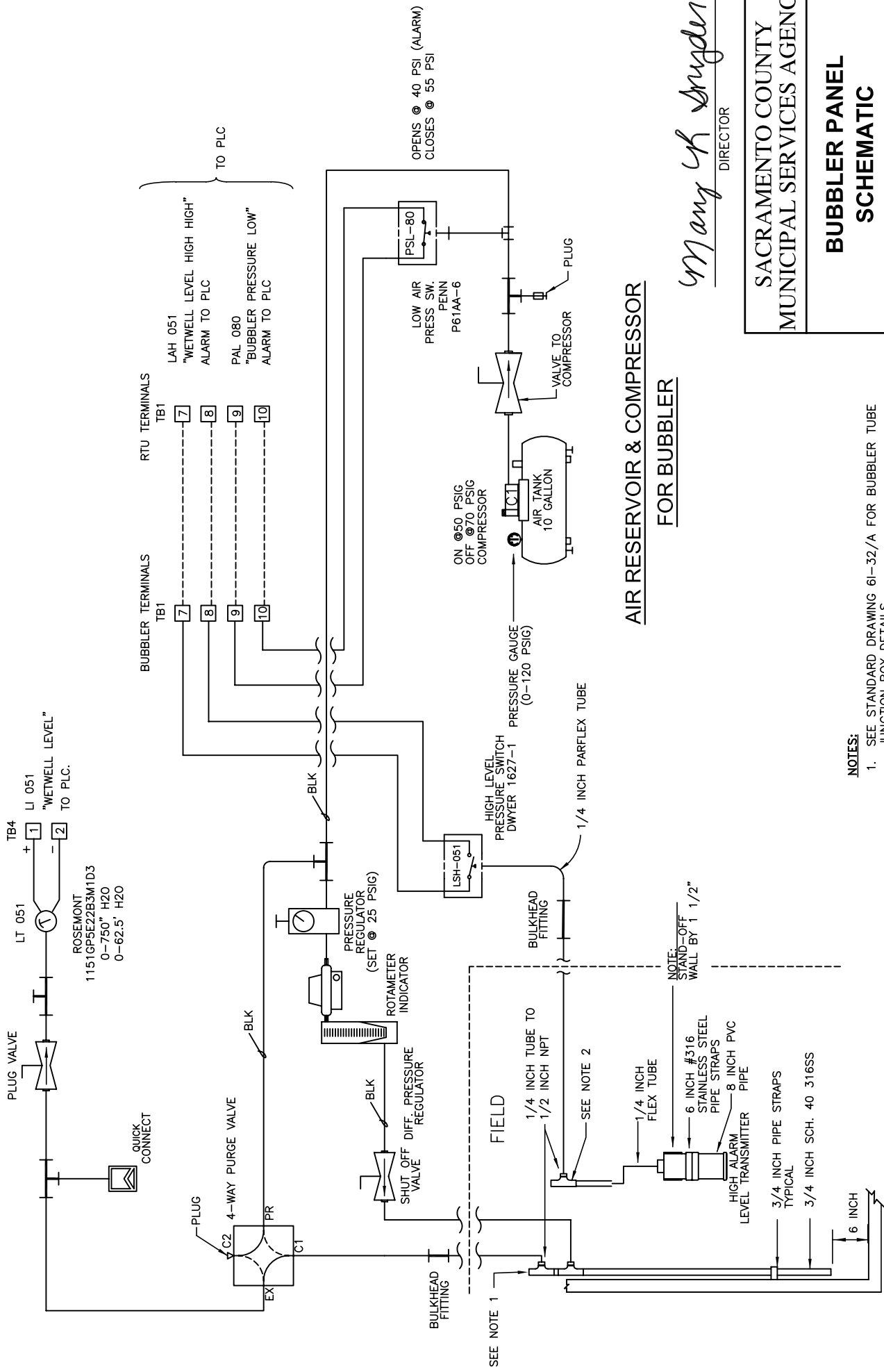
**P & ID**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-61-30**

*Mary H Snyder*  
DIRECTOR





**AIR RESERVOIR & COMPRESSOR FOR BUBBLER**

*Mary J. Snyder*  
DIRECTOR

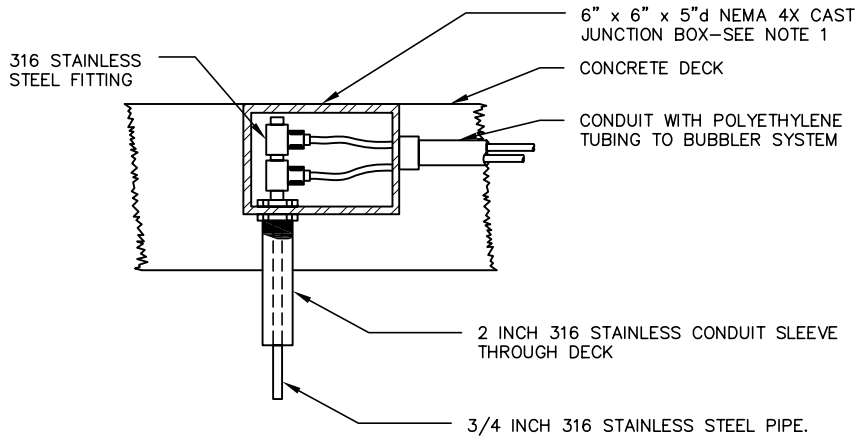
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**BUBBLER PANEL SCHEMATIC**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**LIQUID LEVEL CONTROL**

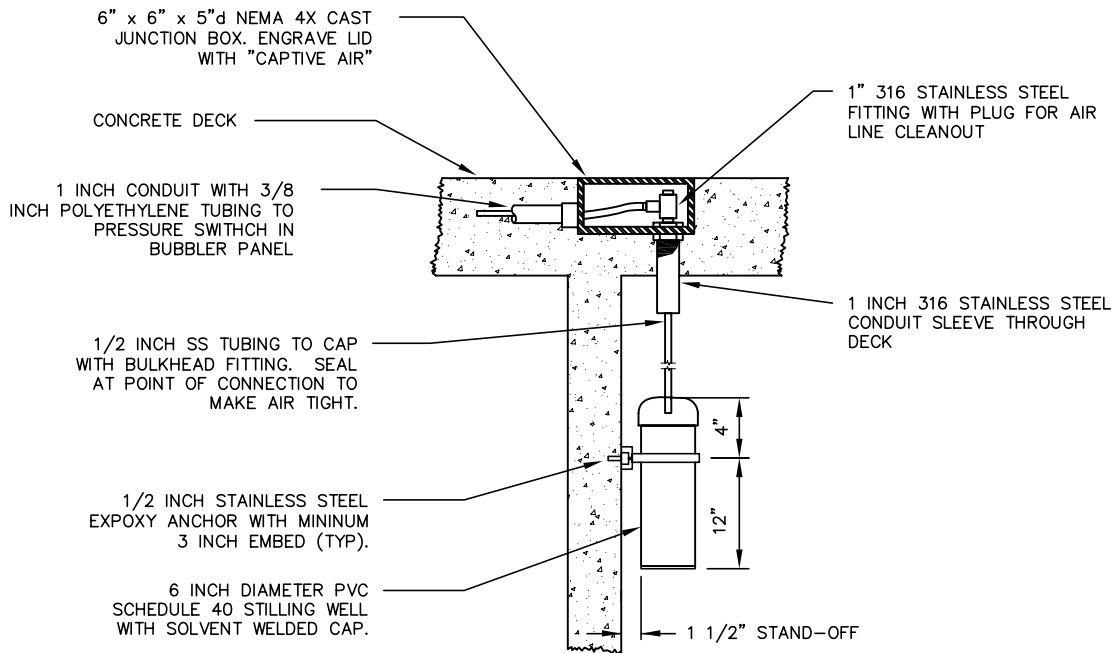
- NOTES:**
- SEE STANDARD DRAWING 61-32/A FOR BUBBLER TUBE JUNCTION BOX DETAILS.
  - SEE STANDARD DRAWING 61-32/B FOR CAPTIVE AIR TUBE MOUNTING DETAILS.



**NOTE**

1. EMBED J-BOX IN CONCRETE DECK ADJACENT TO WALL OF SUMP BELOW AND MOUNT DIP TUBE TO THE WALL WITH CLAMPS. NO BENDS OR ELBOWS ARE PERMITTED IN THE DIP TUBE IN ORDER TO ALLOW RODDING OF THE TUBE DURING CLEAN-OUT. ENGRAVE LID WITH "BUBBLER TUBE".

**A** BUBBLER TUBE JUNCTION BOX  
SCALE: NONE



**B** CAPTIVE AIR TUBE MOUNTING DETAIL  
SCALE: NONE

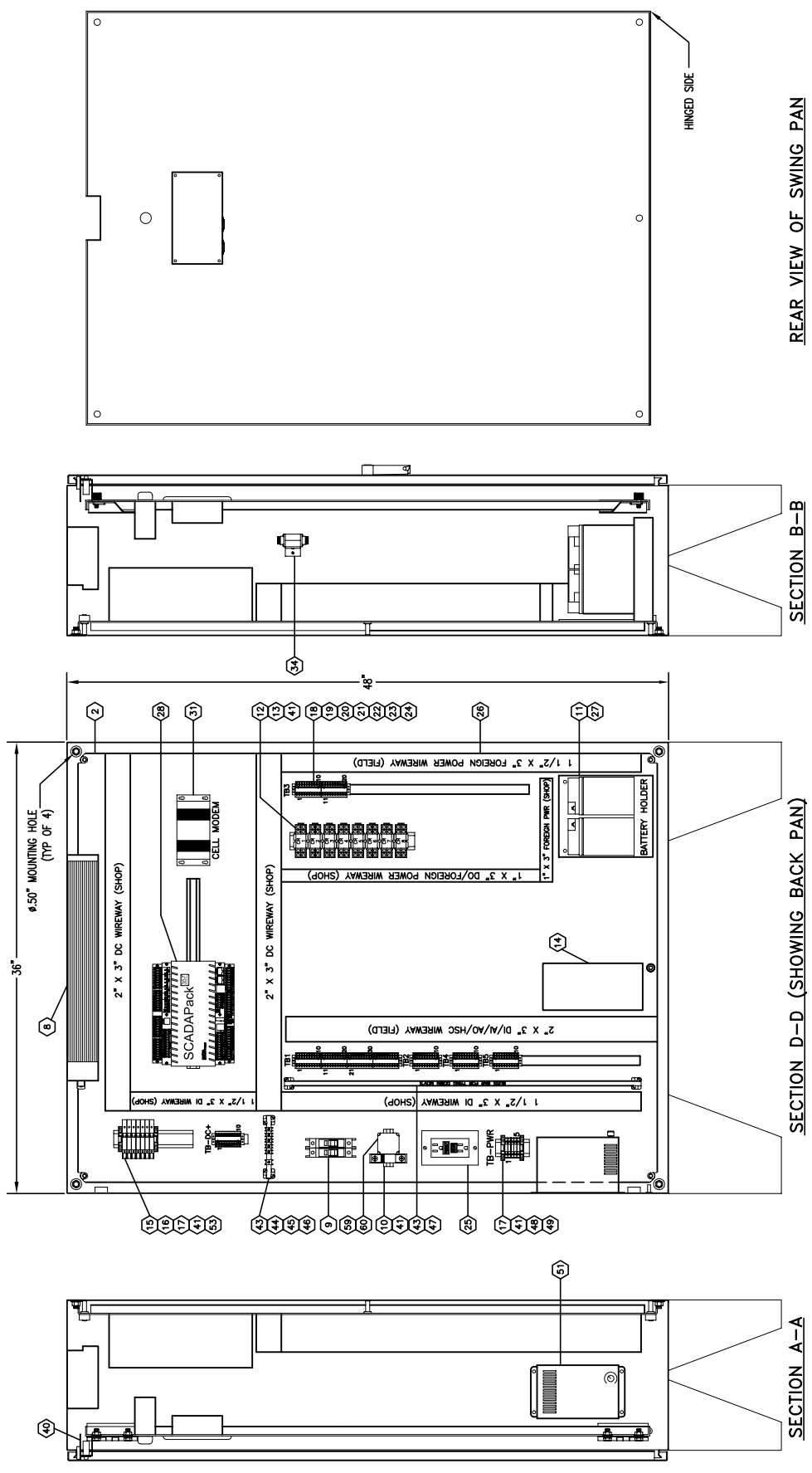
*Manly K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY**

**BUBBLER TUBE JUNCTION BOX & CAPTIVE AIR TUBE MOUNTING DETAILS**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-61-32**



**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

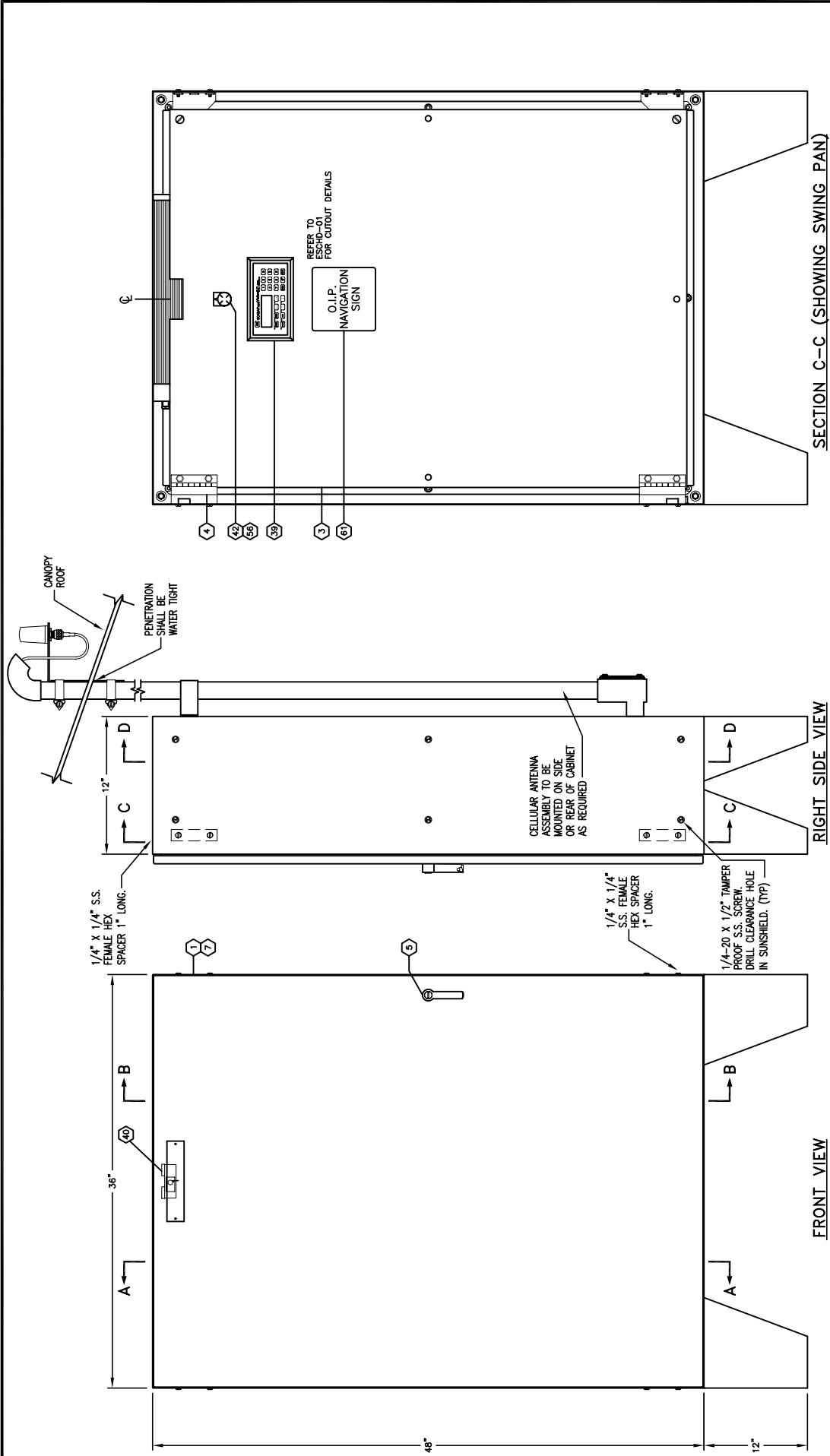
**TYPICAL  
RTU LAYOUT DETAIL**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-61-33**

**NOTE:**  
SEE BILL OF MATERIALS SHEET FOR NUMBERED ITEMS.

*Mary K Snyder*  
DIRECTOR



SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

**TYPICAL  
RTU ELEVATION VIEW**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

*Mary K Snyder*  
DIRECTOR

**NOTE:**  
SEE BILL OF MATERIALS SHEET FOR NUMBERED ITEMS.

**BILL OF MATERIALS**

ITEM	QTY	DESCRIPTION	MFR	PART NO.
1	1	ENCLOSURE, 48" X 36" X 12"	HOFFMAN	C-SD483612
2	1	BACK PAN, 48 13/64" X 34 13/64"	HOFFMAN	C-P4836
3	1	SWING PAN, 45" X 33"	HOFFMAN	A-48P36
4	1	NEVA SWING OUT PANEL KIT	HOFFMAN	A-NADPK
5	1	PADLOCK HANDLE	HOFFMAN	C-WHPTD
6	A/R	14 GA. STEEL SUNSHIELD	SPECIAL	-----
7	2	STAINLESS STEEL HINGE PIN	HOFFMAN	64232-002
8	1	FLOURESCENT LIGHT	HOFFMAN	A-LF16M18
9	2	CIRCUIT BREAKER, 15 AMP	WESTINGHOUSE	QC1015
10	1	SURGE PROTECTOR	ENTRELEC	025 004.14
11	2	BATTERY	GNB	SP12M17F2
12	16	2PDT RELAY, 24VDC	IDEC	RH2B-UL-24VDC
13	16	RELAY BASE	IDEC	SR2B-05
14	1	POWER SUPPLY, 24VDC	TECHNOLOGY DYNAMICS	TOP-24-17 LVBD
15	7	FUSE BLOCK	ALLEN BRADLEY	1492-H6
16	1	FUSE BLOCK END SECTION	ALLEN BRADLEY	1492-N37
17	4	END ANCHOR	ALLEN BRADLEY	1492-EA35
18	8	PLUG IN, PRE-HANGING (PLUG), 10 TERMINALS PER PLUG	PHOENIX	1757083
19	40	CODING PROFILE (PLUG KEY), AVERAGE OF 5 PER PLUG	PHOENIX	1734634
20	40	CODING ELEMENT (HEADER KEY), AVERAGE OF 5 PER HEADER	PHOENIX	1734401
21	A/R	RAIL, NS15 (PERFORATED)	PHOENIX	1401682
22	10	END BRACKET	PHOENIX	1401637
23	8	PLUG-IN CONNECTION (HEADER), 10 TERMINALS PER HEADER	PHOENIX	1765030
24	A/R	DECADE MARKER CARDS (25 DECADES PER CARD)	PHOENIX	1401213
25	1	GFI RECEPTACLE W/PLATE & BOX	HUBBELL	GF52520A
26	A/R	WIREWAY	PANDUIT	TYPE "E"
27	1	BATTERY HOLDER	SPECIAL	-----
28	1	SCADPACK 357	CONTROL MICROSYSTEMS	P357
29	1	VISION 50	CONTROL MICROSYSTEMS	297305
30	2	DC INPUT MODULE	CONTROL MICROSYSTEMS	297237
31	2	AIRLINK RAVEN-X	AIRLINK	HSDPA
32	1	ANTENNA TRI-BAND	ANTENEX	TRAB 200 / 171.0 3P
33	5	ANTENNA BRACKET	LARSEN	FBS BRACKET
34	1	SURGE ARRESTOR	ALTELECON	AL-INFRFB-2

**BILL OF MATERIALS**

ITEM	QTY	DESCRIPTION	MFR	PART NO.
35				
36				
37				
38				
39				
40	1	INTRUSION SWITCH	HOFFMAN	A-LFSWD
41	A/R	DIN RAIL	IBOCO	OMEGA 3A
42	1	PILOT LIGHT FOR STATION READY	ALLEN BRADLEY	800EP-PK03G
43	A/R	BUSS BAR (TYPE NLS-CU 3/10)	PHOENIX	0402174
44	A/R	SUPPORT BLOCK (TYPE AB/SS)	PHOENIX	0404428
45	A/R	CONNECTING TERMINAL BLOCK (TYPE AK4)	PHOENIX	0404017
46	1	CONNECTING TERMINAL BLOCK (TYPE AK16)	PHOENIX	0404033
47	A/R	MOV'S (SERIES 10, TYPE D)	PANASONIC	ERZ-Y10-D70
48	5	TERMINAL BLOCK	ALLEN BRADLEY	1492-W4
49	1	END SECTION	ALLEN BRADLEY	1492-EB3
50				
51	1	ELECTRIC HEATER	HOFFMAN	D-AH4001B
52				
53	7	TIME DELAY FUSE (7 AMP)	BUSS	MDL-7
54				
55				
56	1	30 X 40 mm LEGEND PLATE	ALLEN BRADLEY	800E-34BE100
57	1	MOUNTING FOOT KIT	HOFFMAN	C-MFSS
58				
59	1	RELAY	OMRON	MK2PL-5 OR ESUBT.
60	1	RELAY BASE	IDEC	SR2P-05
61	1	O.I.P. NAVIGATION SIGN	SPECIAL	-----

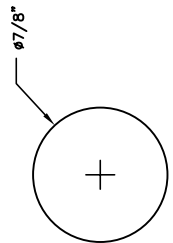
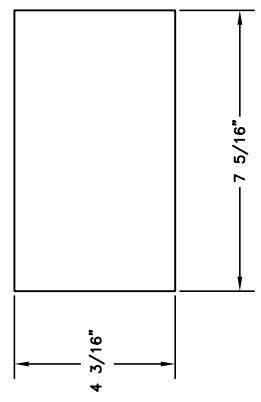
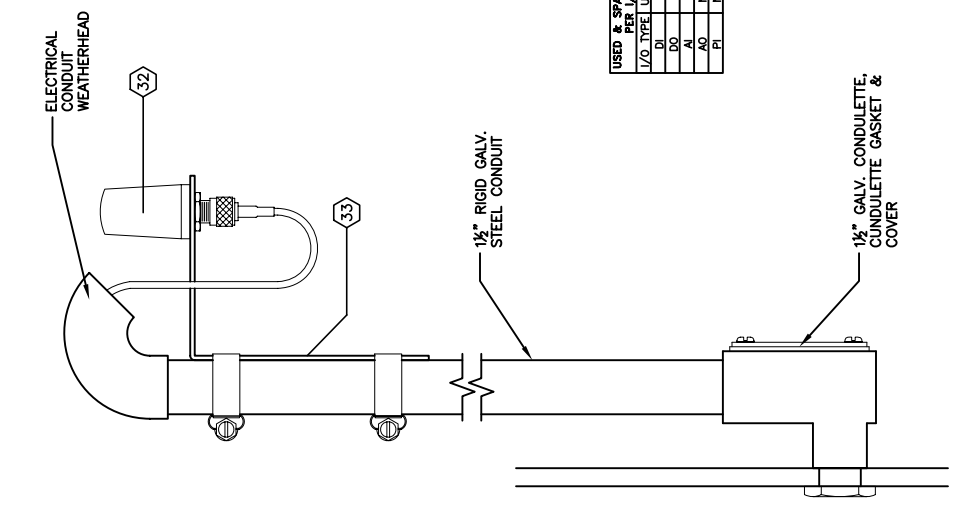
**NAMEPLATE SCHEDULE**

NO.	QTY	1ST LINE INSCRIPTION	2ND LINE INSCRIPTION	TYPE	LETTER SIZE	SIZE
1	1	RTU SITE XXXX	SITE NAME	ALUMINUM	1/2"	1 1/2" X 7"

**LEGEND PLATE SCHEDULE**

LTR.	QTY	1ST LINE INSCRIPTION	2ND LINE INSCRIPTION
A	1	STATION READY	

NOTE:  
NAMEPLATE SHALL BE MOUNTED WITH 4-40 STAINLESS STEEL SCREWS.



**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**TYPICAL DETAILS,  
BILL OF MATERIALS &  
NAMEPLATE SCHEDULE**

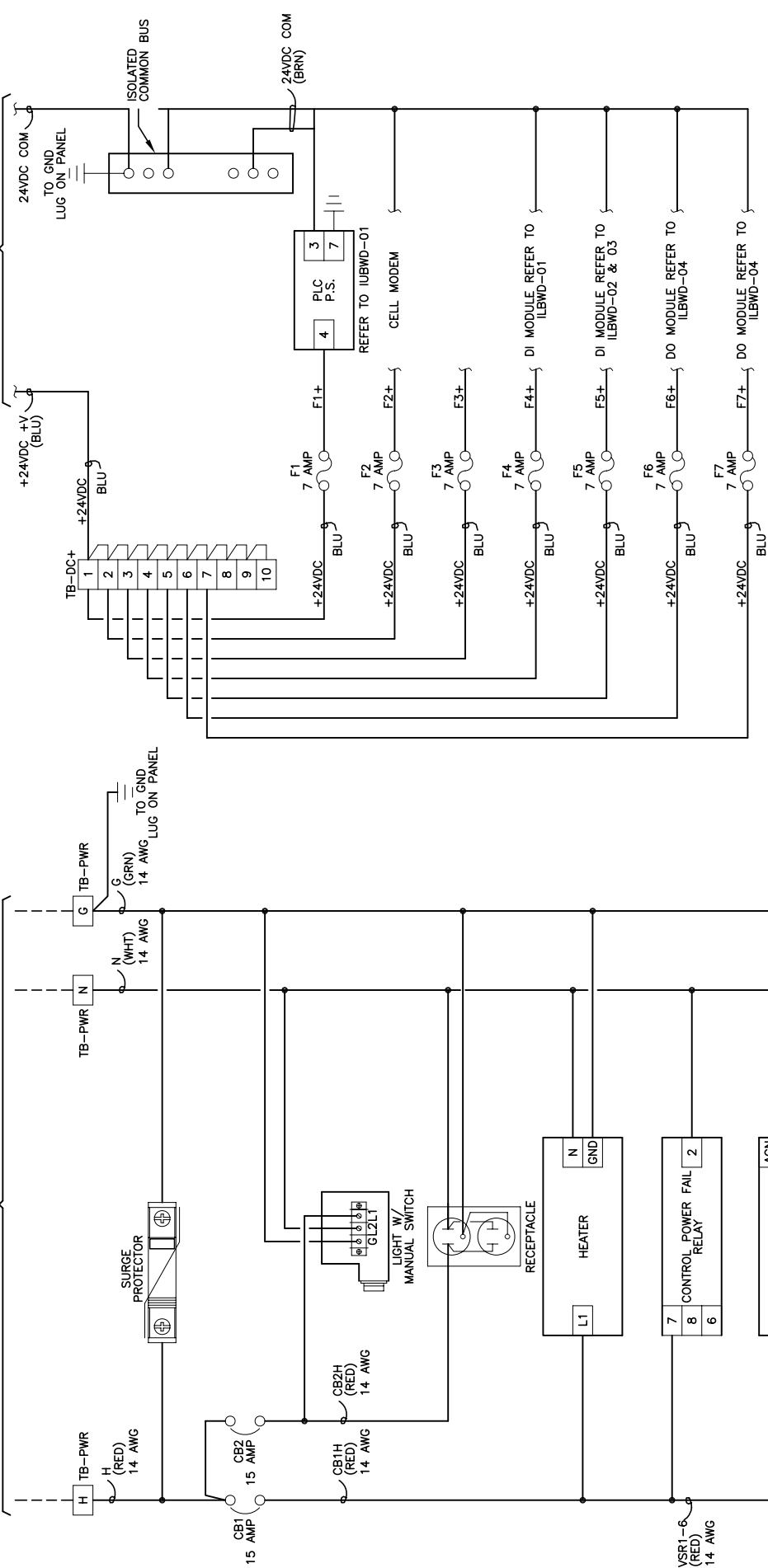
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-6I-35**

*Mary K. Snyder*  
DIRECTOR

REFER TO ECOND-02

CONTINUED FROM BELOW LEFT



- AC CIRCUITS**
- RED - 120VAC SUPPLY
  - WHT - NEUTRAL
  - GRN - GROUND
  - RED - CONTROL
  - YEL - FOREIGN POWER
- DC CIRCUITS**
- BLU - +24VDC
  - BRN - 24VDC COM
  - TWISTED PAIR (BLK/WHT) - ANALOG
  - BELDEN SHIELDED PAIR (BLK/CLR) - LEVEL TRANSMITTER
- WIRE SIZE**
- ALL WIRE SHALL BE #16 AWG UNLESS OTHERWISE NOTED.

*Mary C Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

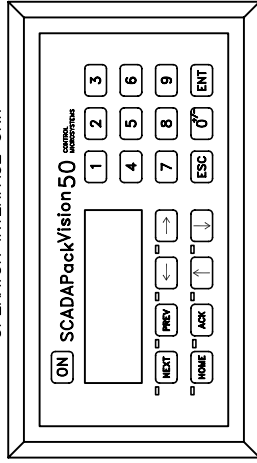
**TYPICAL DIAGRAM  
CONTROL POWER  
DISTRIBUTION**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

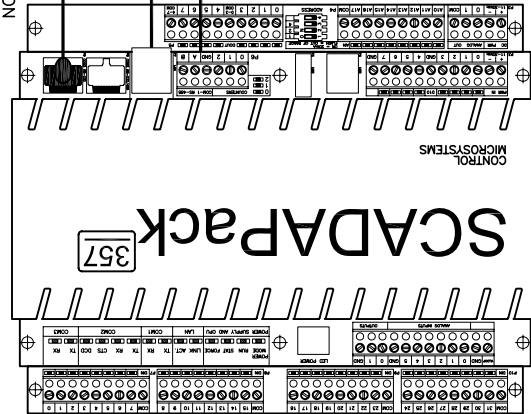
**7-61-36**

CONTINUED ABOVE RIGHT

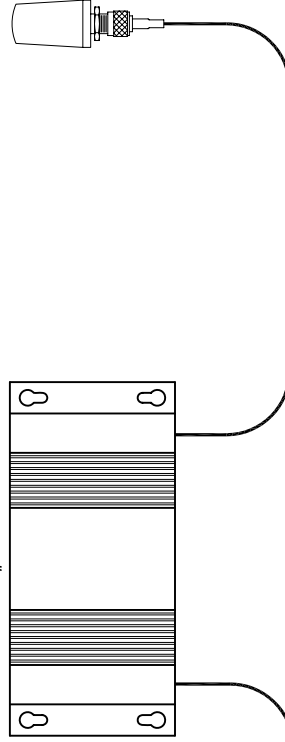
CONTROL MICROSYSTEMS  
SCADAPACK VISION 50  
OPERATOR INTERFACE UNIT



NOTE:  
P6 REMOVED FROM LOWER  
BOARD FOR CLARIFICATION



AIRLINK CELLULAR MODEM  
MODEL # NSPDA



POWER  
MONITOR

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

TYPICAL  
RTU PLC  
LAYOUT

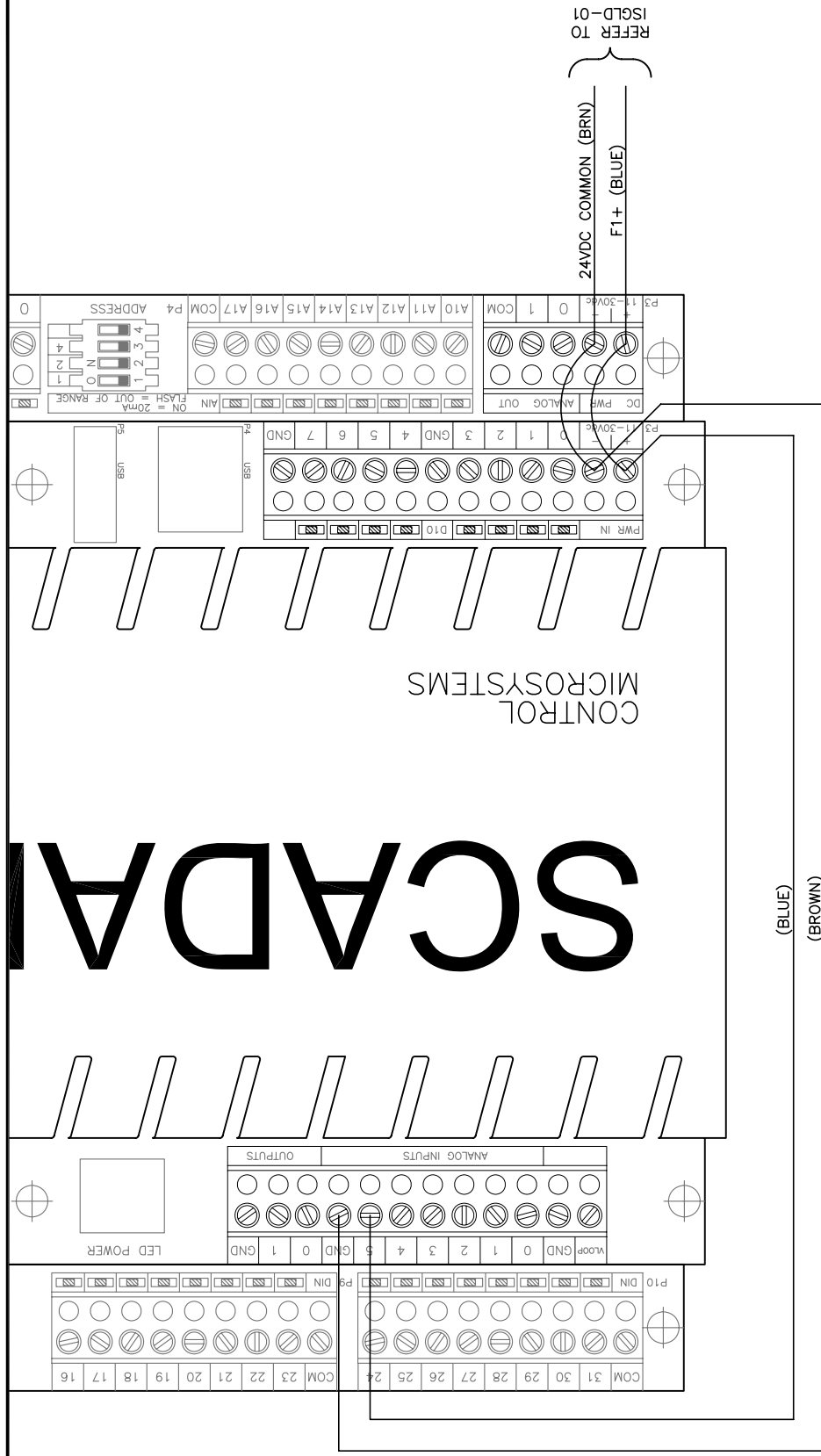
*Mary H Snyder*  
DIRECTOR

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

7-61-37

# SCADA

CONTROL  
MICROSYSTEMS



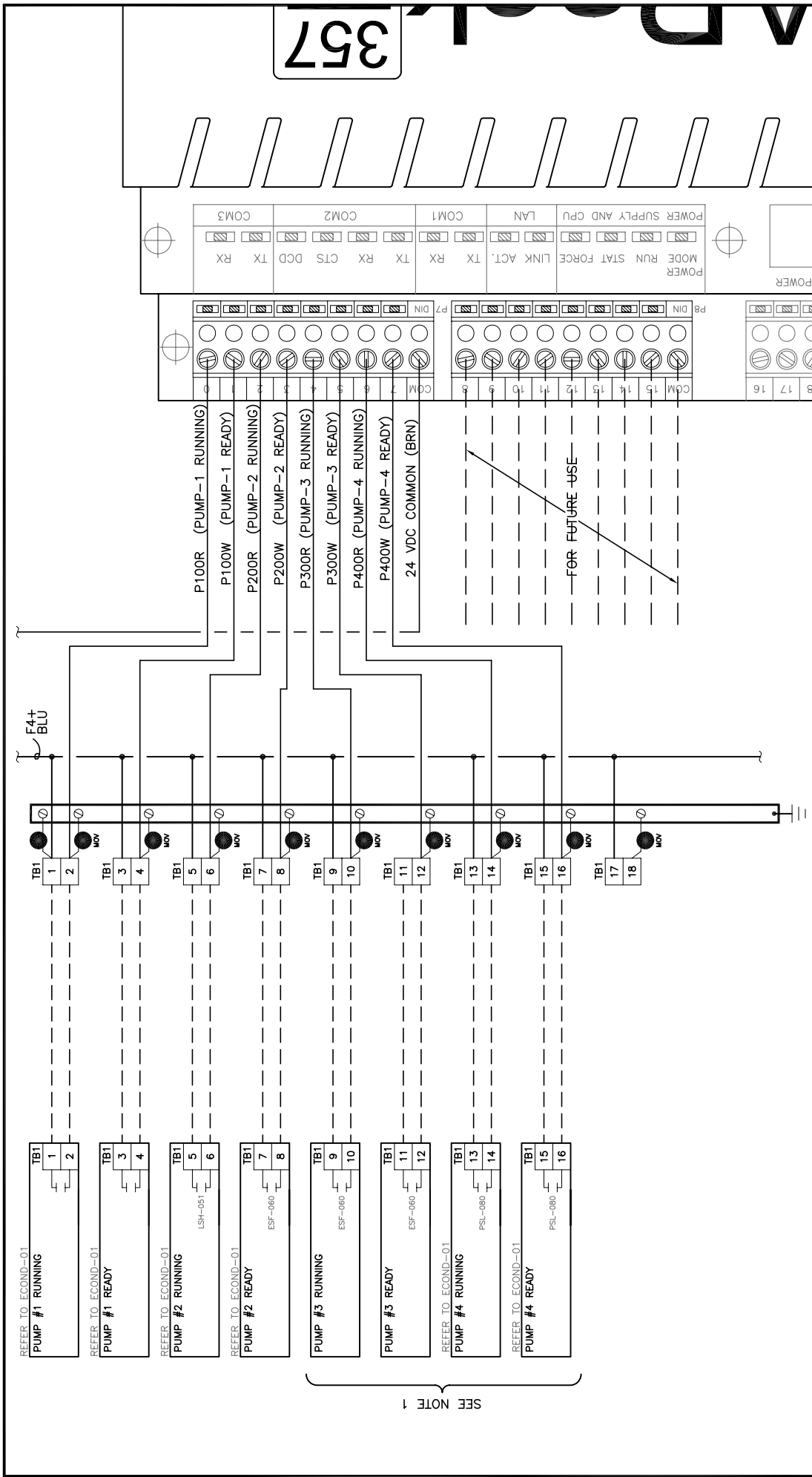
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY  
TYPICAL UPPER BOARD  
WIRING DIAGRAM  
(POWER CONNECTIONS)

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-61-38**

*Mary G. Snyder*  
DIRECTOR





357

SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY  
**TYPICAL**  
**LOWER BOARD**  
**WIRING DIAGRAM (DI 0-7)**

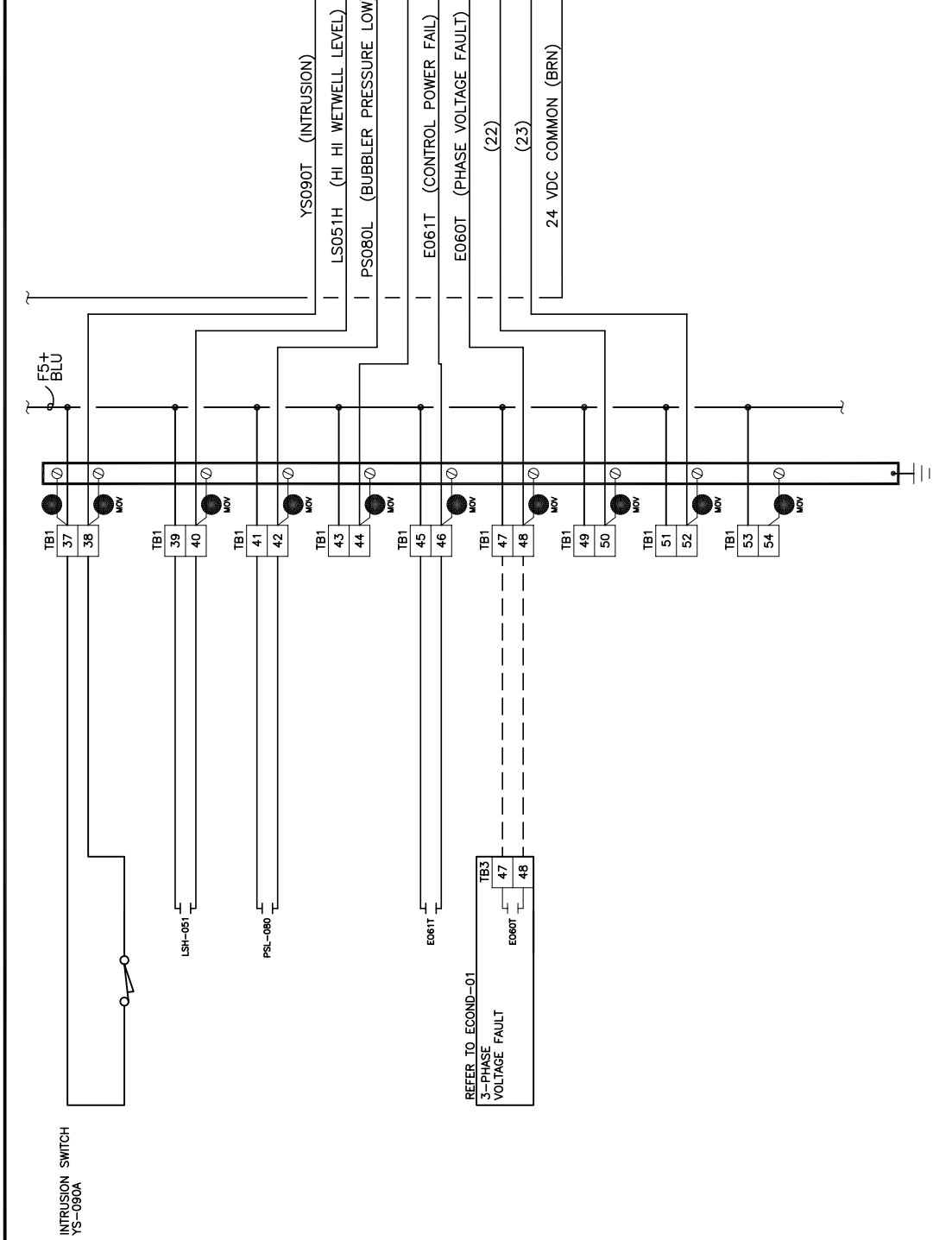
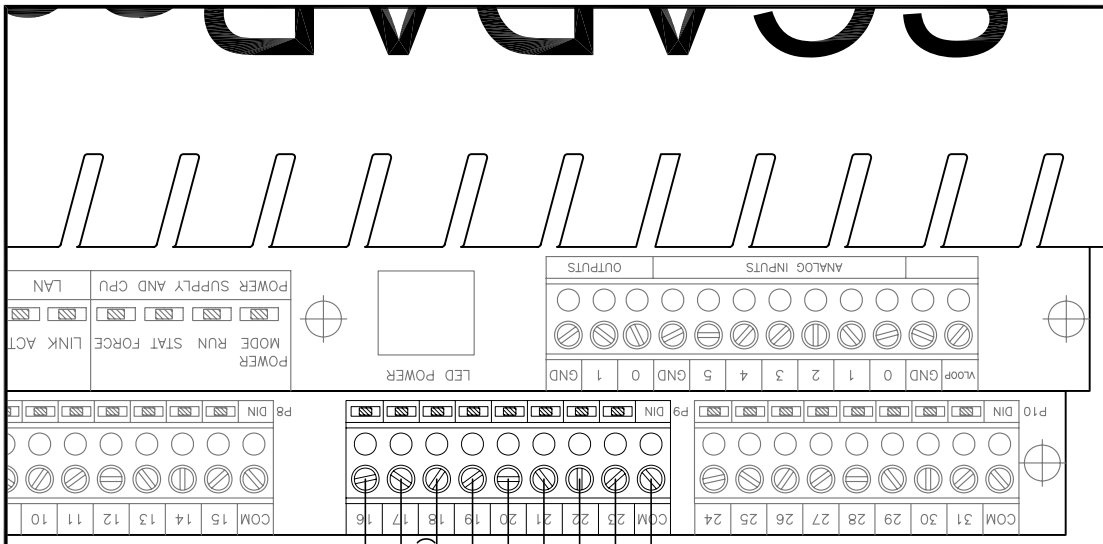
*Mary H Snyder*  
DIRECTOR

7-61-39

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

NOTES:  
1. NUMBER OF PUMPS: AS NEEDED

SEE NOTE 1



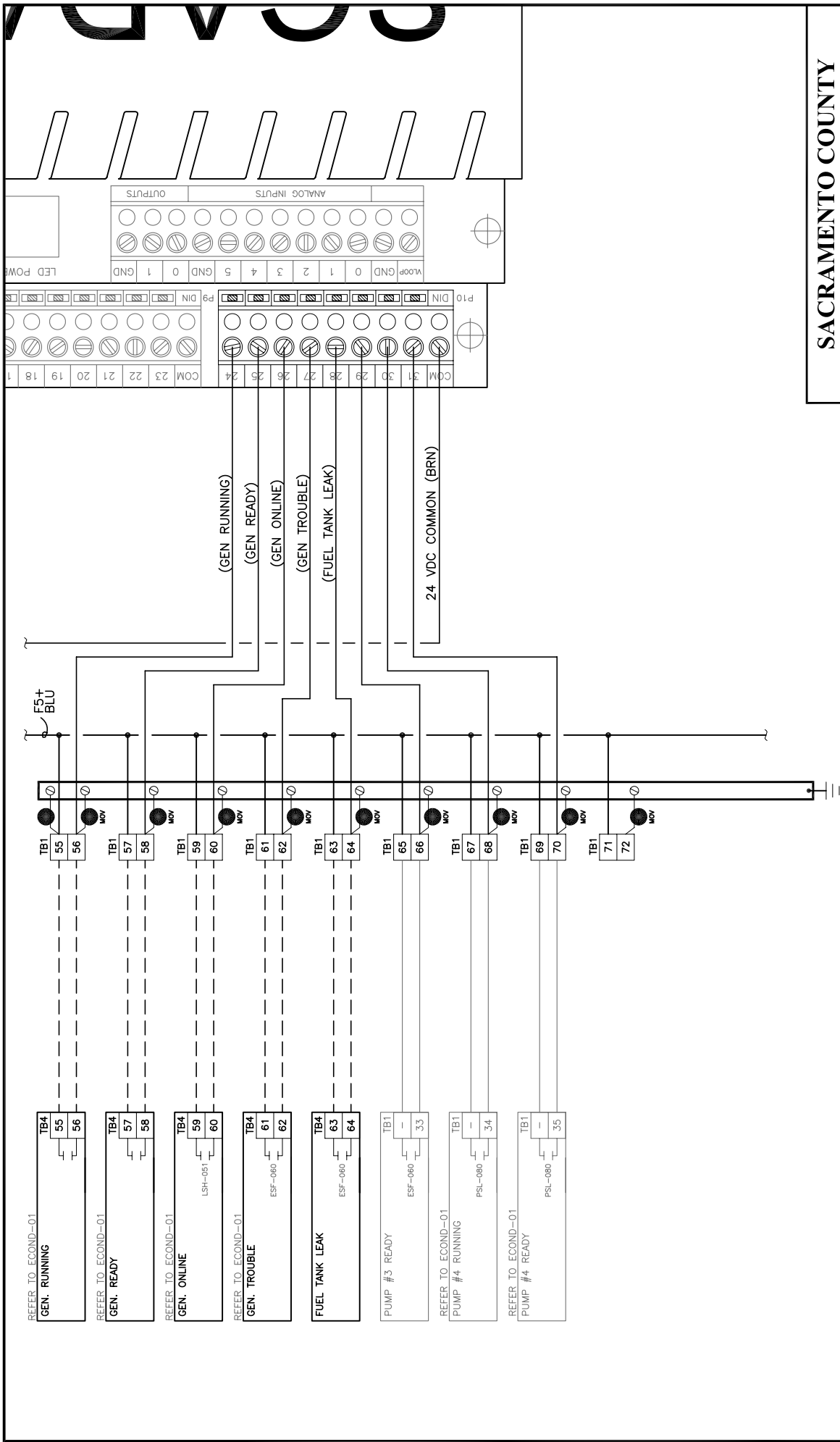
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**TYPICAL  
LOWER BOARD  
WIRING DIAGRAM (DI 16-23)**

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-61-40**

*Mary K Snyder*  
DIRECTOR



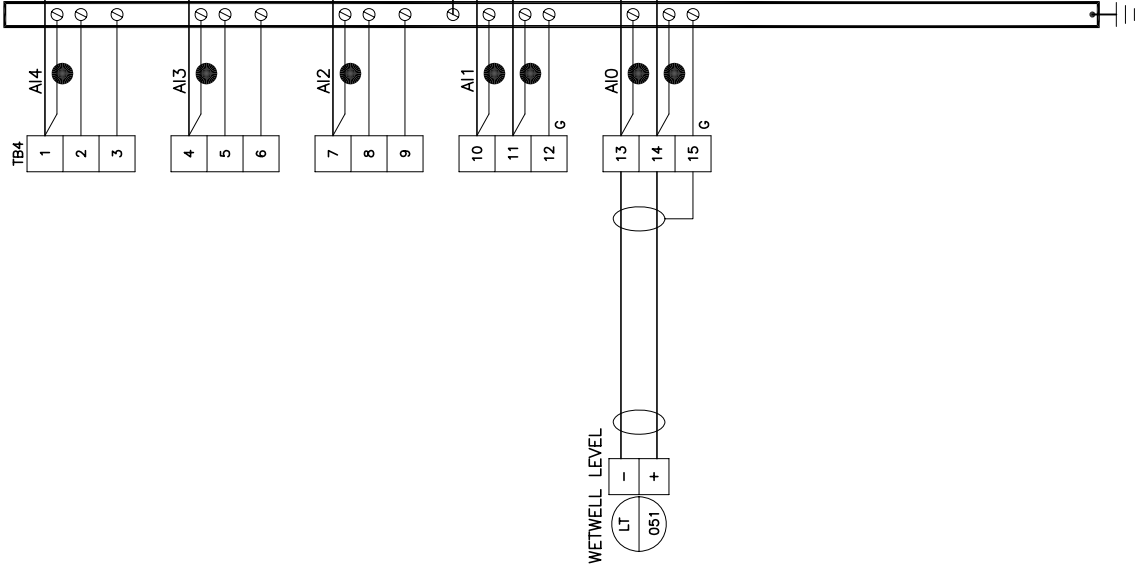
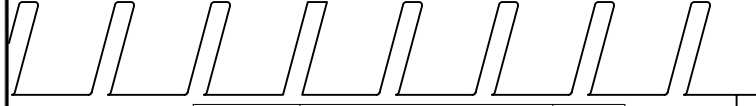
**SACRAMENTO COUNTY**  
**MUNICIPAL SERVICES AGENCY**  
**TYPICAL**  
**LOWER BOARD**  
**WIRING DIAGRAM (DI 24-36)**

DRAWN BY: RAS  
 SCALE: NONE  
 DATE: 11/07

*Mary K Snyder*  
 DIRECTOR

**7-61-41**

# SCADA



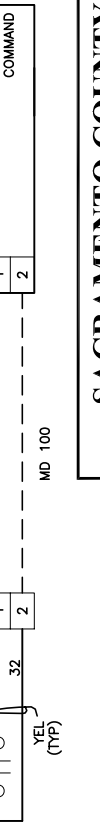
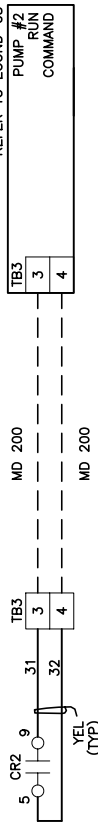
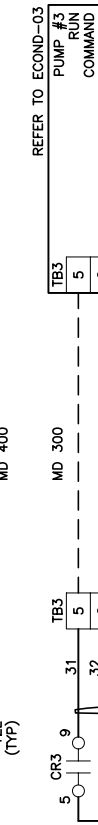
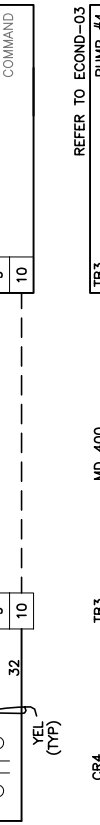
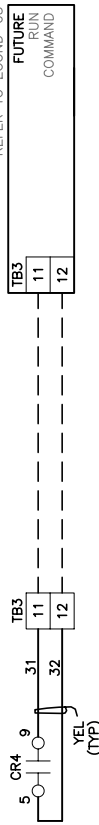
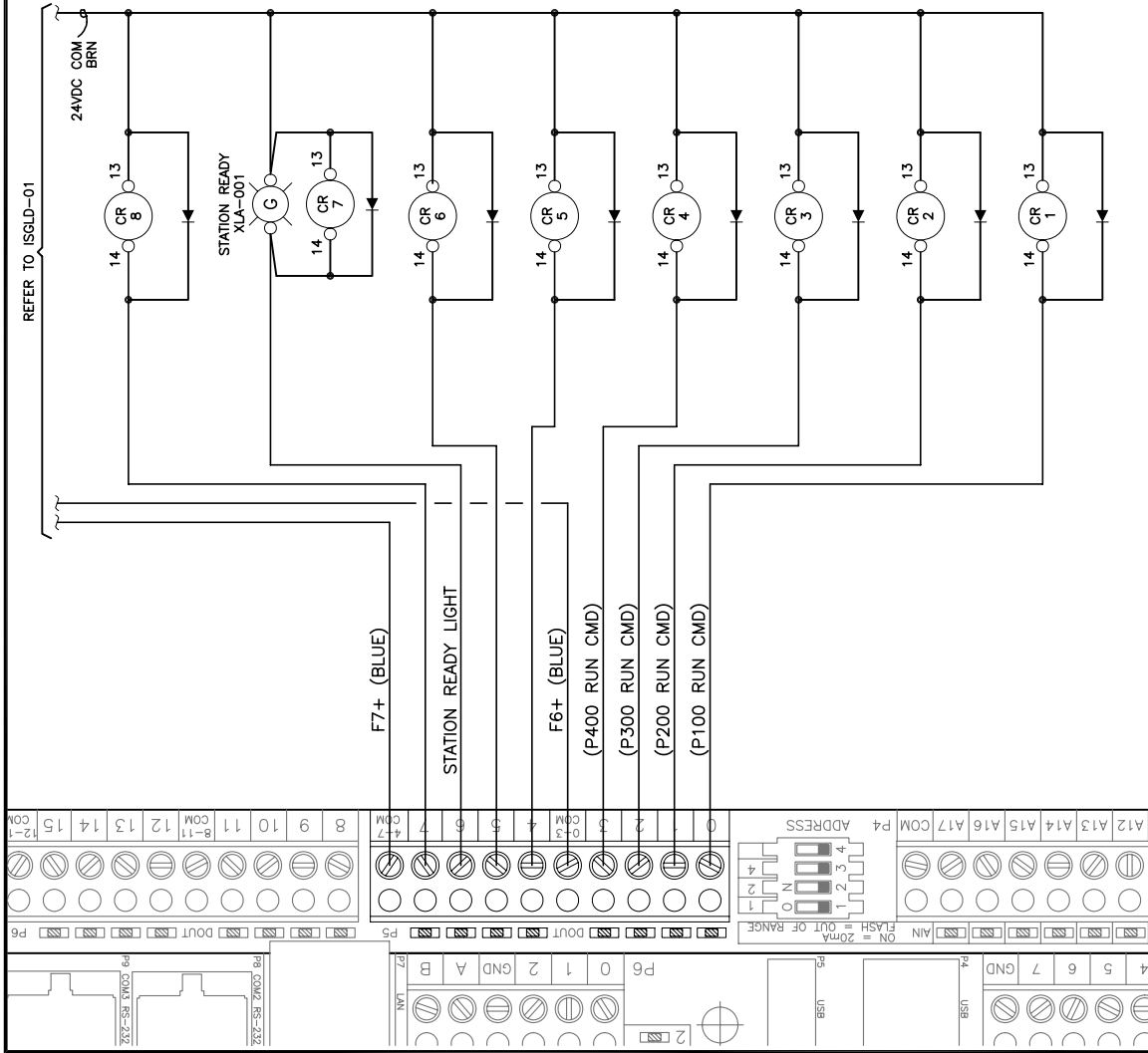
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

TYPICAL  
LOWER BOARD  
WIRING DIAGRAM (AI)

DRAWN BY: RAS  
SCALE: NONE  
DATE: 10/07

7-61-42

*Mary K Snyder*  
DIRECTOR



SEE NOTE 1

- NOTES:**
1. NUMBER OF PUMPS: AS NEEDED

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**TYPICAL  
LOWER BOARD  
WIRING DIAGRAM (DO 0-7)**

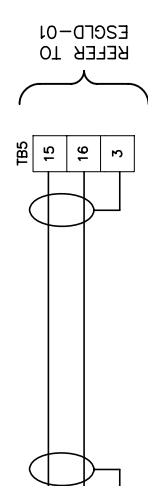
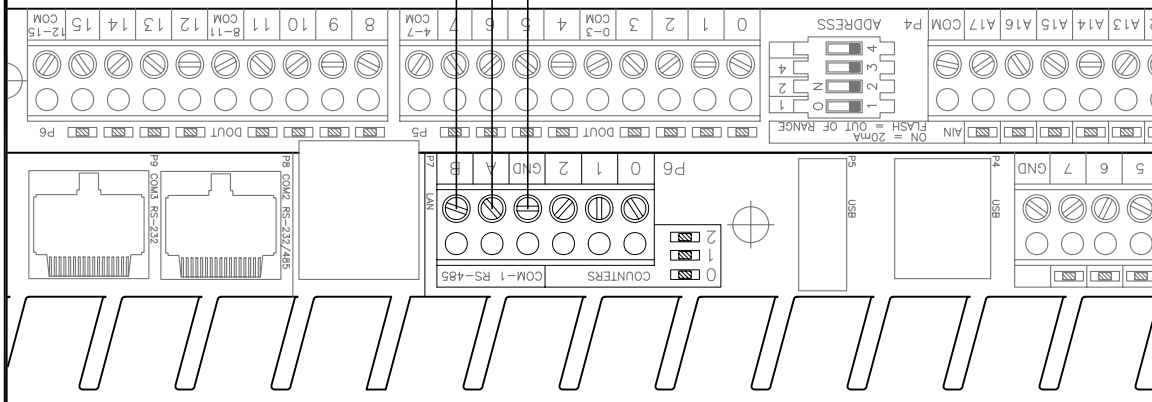
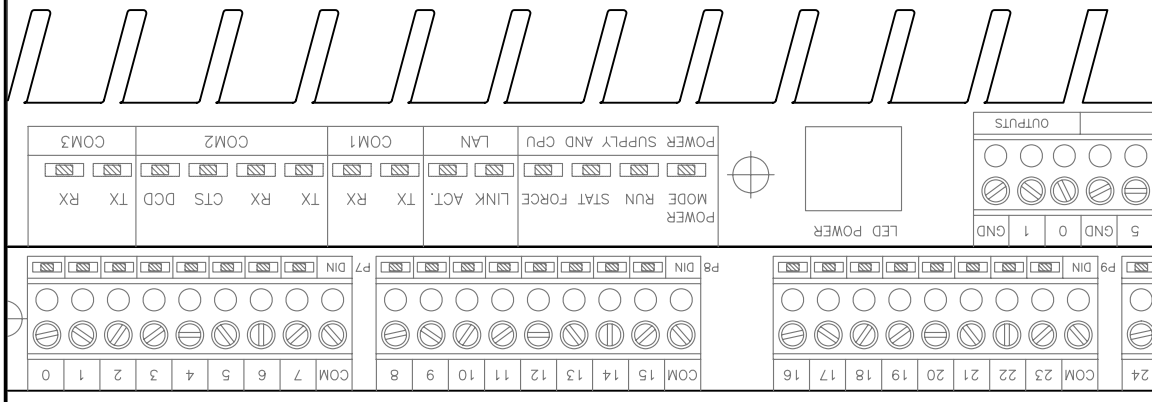
DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

**7-61-43**

*Mary C. Snyder*  
DIRECTOR

# ADAPack

357



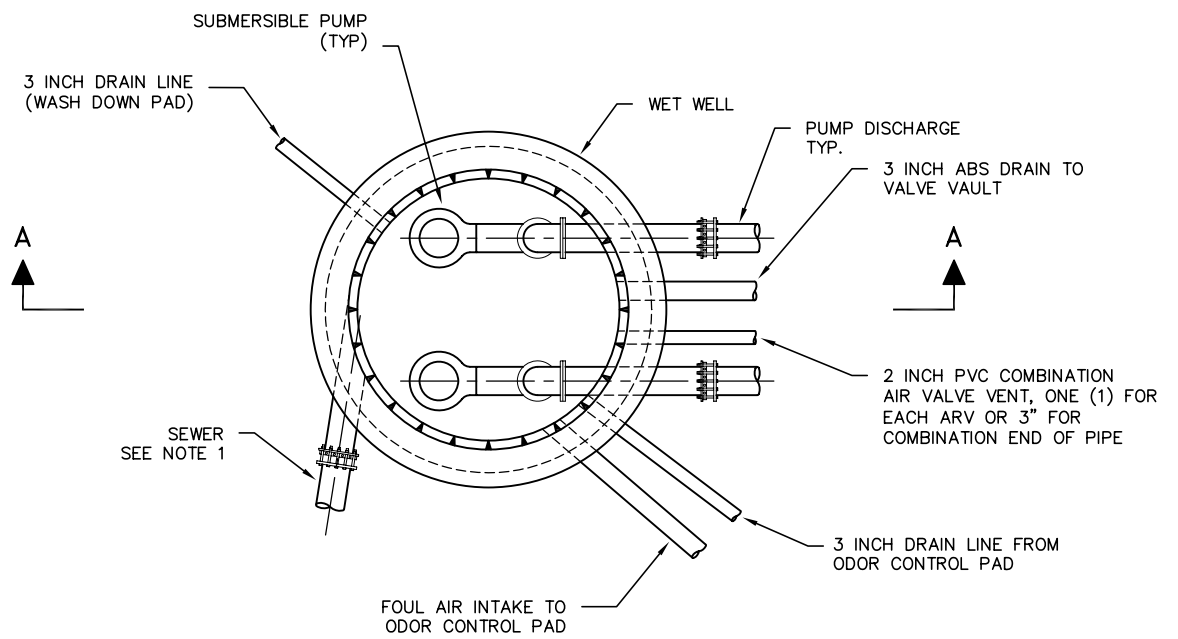
SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY

TYPICAL RS 482  
UPPER BOARD  
WIRING DIAGRAM

DRAWN BY: RAS  
SCALE: NONE  
DATE: 11/07

7-61-44

*Mary C Snyder*  
DIRECTOR



⌀ WET WELL  
PLAN VIEW

NOTES:

1. PLACE INLET SEWER PIPE SO THAT PIPE IS TANGENTIAL TO WET WELL WALL.

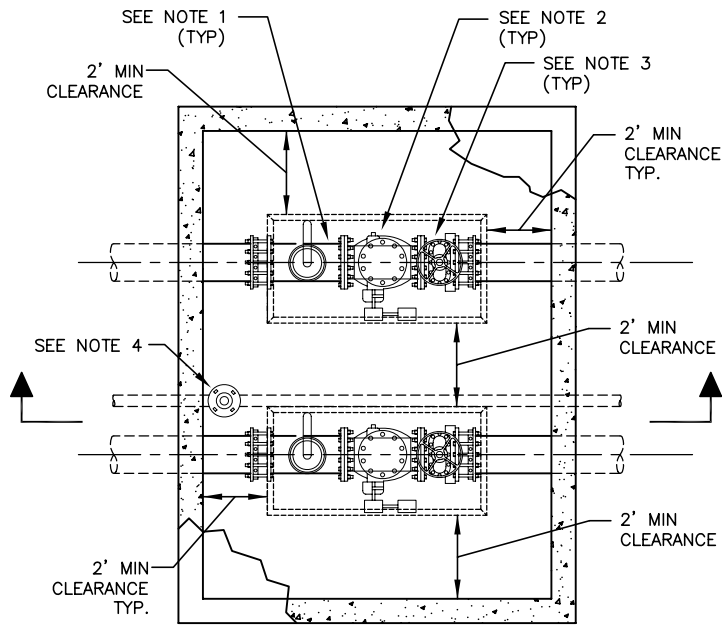
*Manly K Snyder*  
 DIRECTOR

**SACRAMENTO COUNTY  
 MUNICIPAL SERVICES AGENCY**

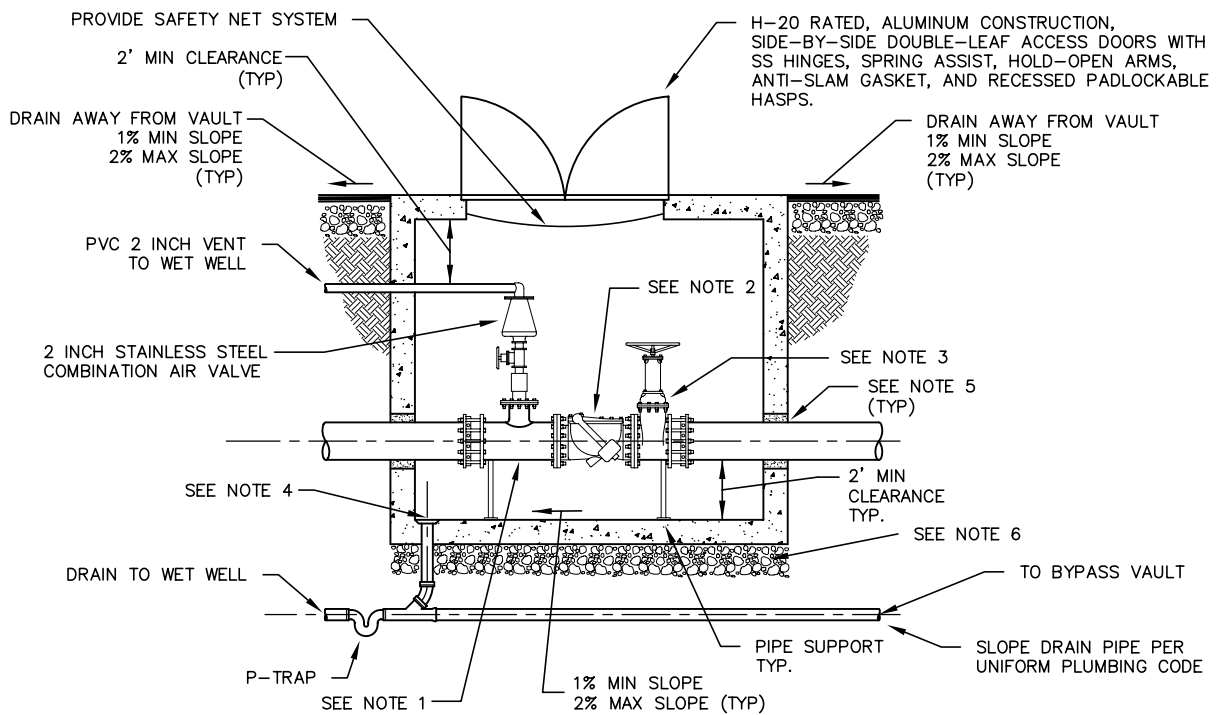
**CIRCULAR  
 WET WELL**

DRAWN BY: PL  
 SCALE: NONE  
 DATE: 08/07

**7-6M-20**



**PLAN VIEW**



**SECTION**

**NOTES:**

1. AWWA C110 REDUCING TEE, FLGxFLGxFLG
2. AWWA C508 FLGxFLG SWING CHECK VALVE WITH LEVER AND COUNTERWEIGHT
3. AWWA C500 FLGxFLG DOUBLE DISC GATE VALVE WITH NRS AND HANDWHEEL
4. 3 INCH  $\phi$  ABS DRAIN, LENGTH AS REQUIRED
5. PIPE PENETRATIONS SHALL BE BORED OR BLOCKED OUT AND SEALED WITH LINK-SEAL OR APPROVED EQUAL. OPENINGS SHALL BE ADDITIONALLY REINFORCED PER STRUCTURAL DRAWINGS.
6. AB THICKNESS SHALL BE PER GEOTECHNICAL RECOMMENDATION.

*Mary K Snyder*  
DIRECTOR

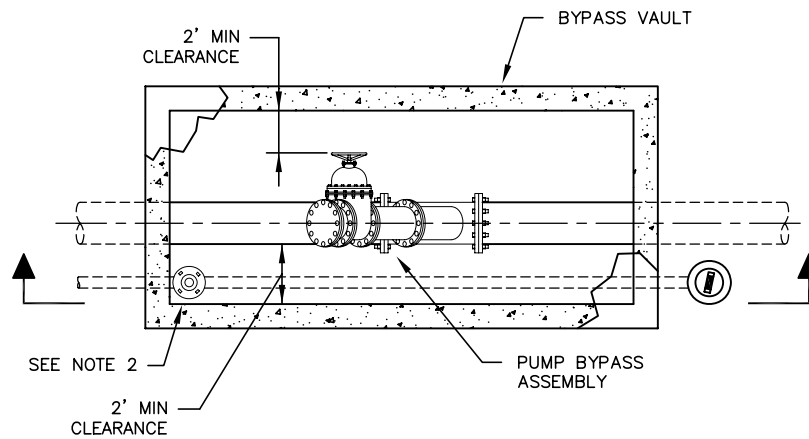
**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**VALVE  
VAULT**

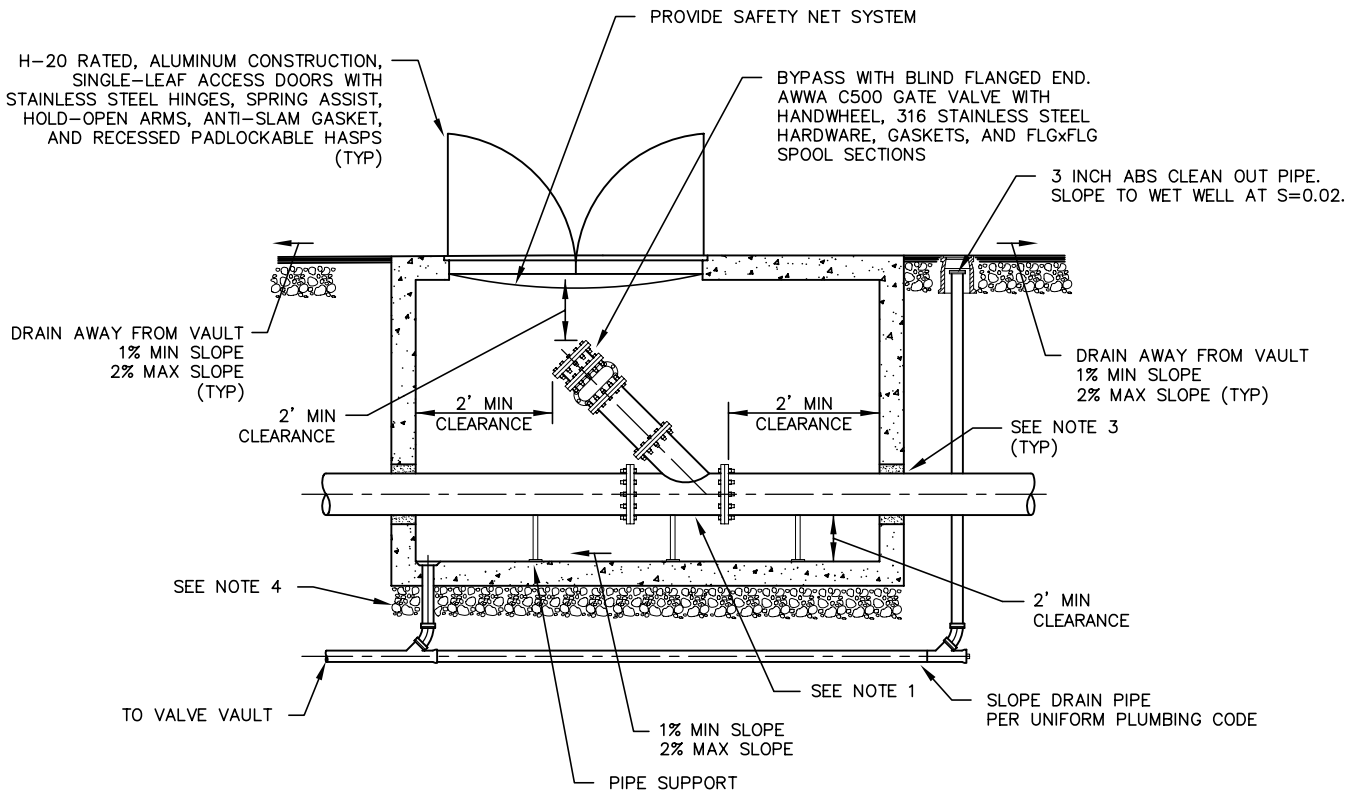
DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-6M-30**





**PLAN VIEW**



**SECTION**

**NOTES:**

1. AWWA C110 REDUCING WYE, FLGxFLGxFLG
2. 3 INCH  $\phi$  ABS DRAIN, LENGTH AS REQUIRED
3. NOTED PIPE PENETRATIONS SHALL BE BORED OR BLOCKED OUT AND SEALED WITH LINK SEAL OR APPROVED EQUAL. OPENINGS SHALL BE ADDITIONALLY REINFORCED PER STRUCTURAL DRAWINGS
4. AB THICKNESS SHALL BE PER GEOTECHNICAL RECOMMENDATION.

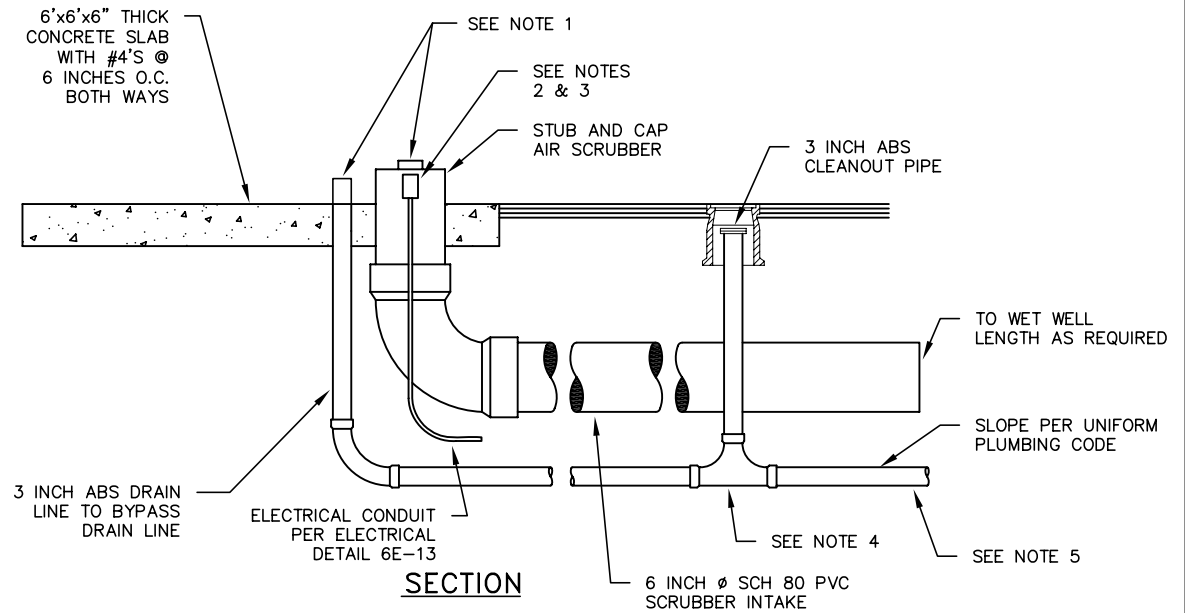
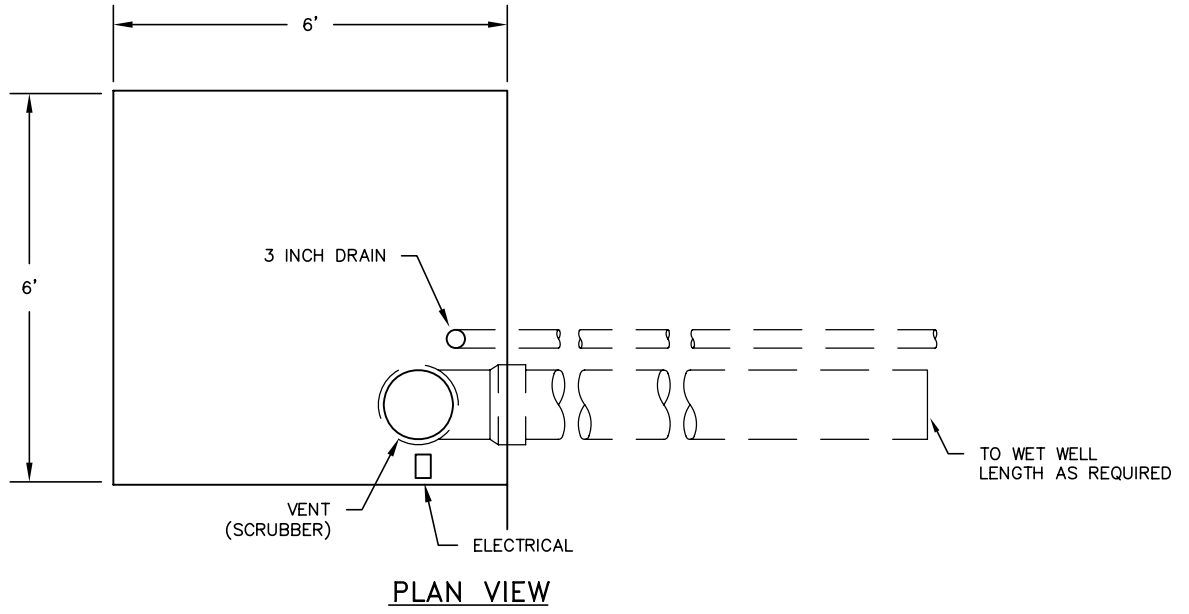
*Mary K Snyder*  
DIRECTOR

**SACRAMENTO COUNTY  
MUNICIPAL SERVICES AGENCY**

**BYPASS  
VAULT**

DRAWN BY: PL  
SCALE: NONE  
DATE: 11/07

**7-6M-40**



**NOTES:**

1. STUB 6 INCH ABOVE FINAL GRADE.
2. STUB ELECTRICAL CONDUIT 1' ABOVE PAD.
3. PROVIDE PULL ROPE IN CONDUIT.
4. CLEANOUT TEE, TWO WAY ABS HUB.
5. CONNECT TO BYPASS DRAIN LINE.

*Mary K Snyder*  
 DIRECTOR

<b>SACRAMENTO COUNTY MUNICIPAL SERVICES AGENCY</b>	
<b>ODOR CONTROL PAD</b>	
DRAWN BY: PL SCALE: NONE DATE: 11/07	<b>7-6M-50</b>