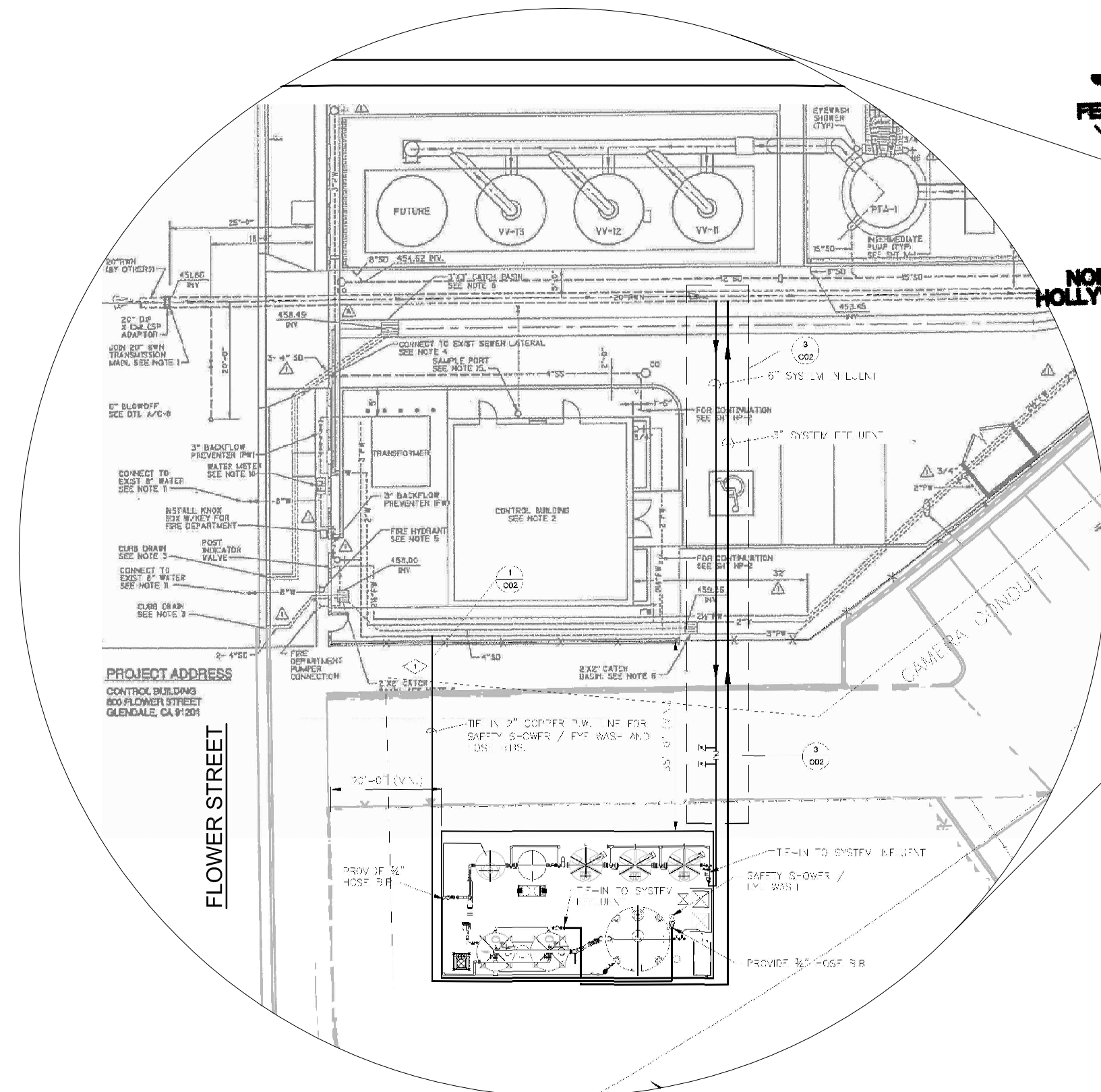


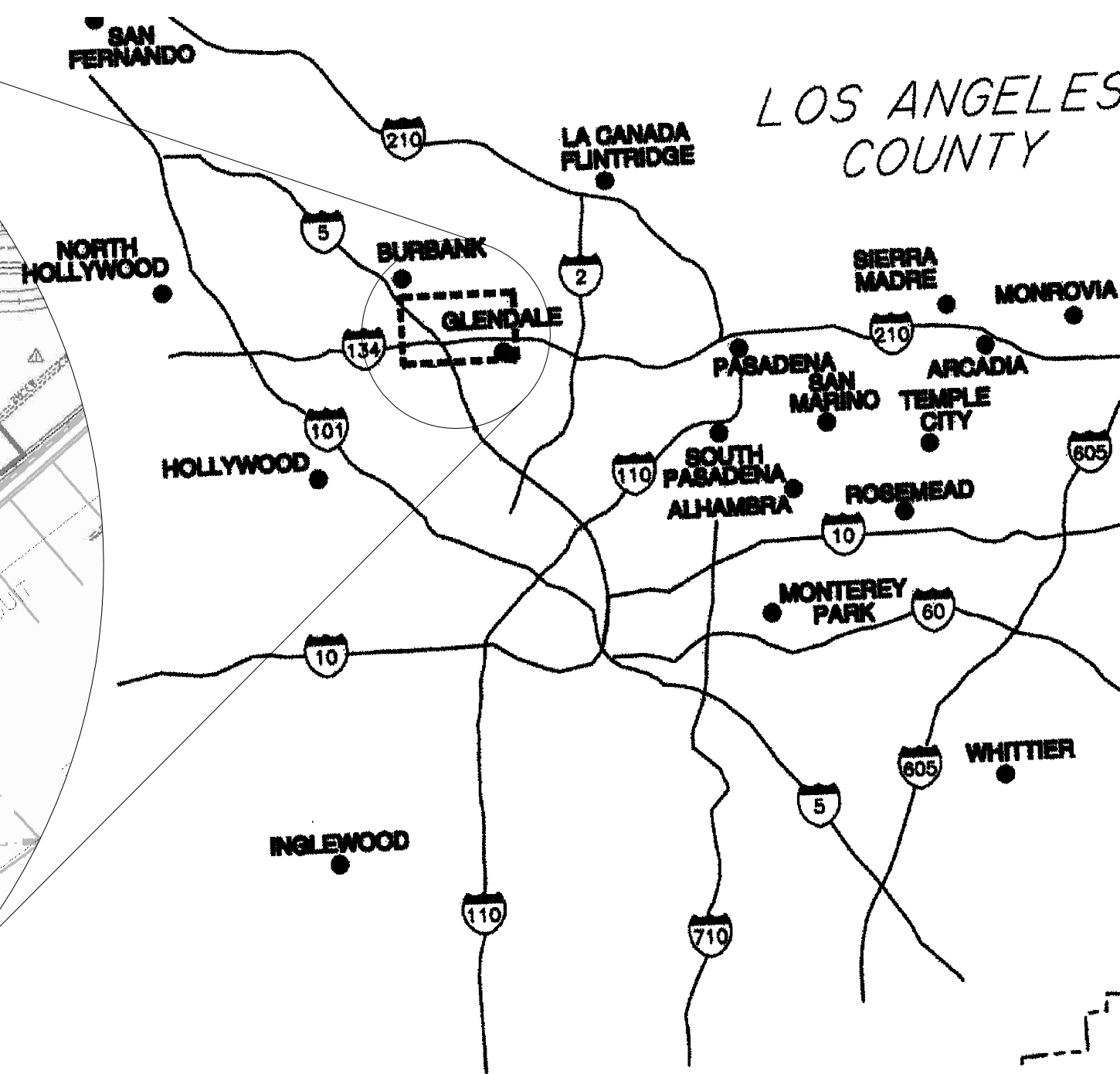
TEMPORARY REDUCTION COAGULATION FILTRATION (RCF) - CHROMIUM REMOVAL DEMONSTRATION FACILITY

"A Feature of the U.S. Environmental Protection
Agency's Glendale Operable Unit"

FINAL 100% DESIGN
LOCATED AT 800 FLOWER STREET
GLENDALE, CALIFORNIA
MAY 2009



LOCATION MAP



DWG NO.	SHT. NO.	DESCRIPTION
G-01	1	GENERAL LOCATION MAP AND INDEX
G-02	2	LEGENDS, SYMBOLS AND ABBREVIATIONS
G-03	3	THRUST BLOCK DETAILS
C-01	4	CIVIL SITE PLAN AND DETAILS
C-02	5	CIVIL DETAILS
C-03	6	GENERAL ARRANGEMENT PLAN
S-01	7	STRUCTURAL CHEMICAL CONTAINMENT AREA - FOUNDATION PLAN
S-02	8	CHEMICAL CONTAINMENT AREA - TYPICAL STRUCTURAL DETAILS AND NOTES
S-03	9	CHEMICAL CONTAINMENT AREA - TYPICAL STRUCTURAL DETAILS
E-01	10	ELECTRICAL LECTRICAL SITE PLAN AND DETAILS
E-02	11	SINGLE LINE DIAGRAM
E-03	12	CONTROL BUILDING POWER PLAN
		MANUFACTURER DRAWINGS (BOUND SEPARATELY)

DATE: DEC 2009
REVISED TO CONFORM TO
CONSTRUCTION RECORDS
PROVIDED BY CONTRACTOR
BY: _____
AECOM

Plotted By: mittelsteadtk
 Plot File Date Created: Dec/22/2009 9:23 AM
 Layout - Sheet Name: 22X34
 Filename: L:\WORK\PROJECTS\106560\GRA\RCF\GLENDALE_RCF_COVER.DWG



DESIGNED BY:
AECOM
300 OCEANGATE SUITE 700
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PROJECT MANAGER: ERIC LANG

REVISIONS				
DATE	NO.	DESCRIPTION	BY	CH'K APP.

DES: AMG
DWN: DMA/KAM CH'K:
APPROVED: _____
PETER KAVOUNAS
ASSISTANT GENERAL MANAGER
OF GWP - WATER SERVICES
GLENN O. STEIGER
GENERAL MANAGER OF GLENDALE
WATER & POWER
DATE:

LOCATION MAP and INDEX	
CITY OF GLENDALE WATER AND POWER CALIFORNIA	SHEET 1 OF 12 SHEETS PLAN NO. G-01

INSTRUMENT TERMINOLOGY

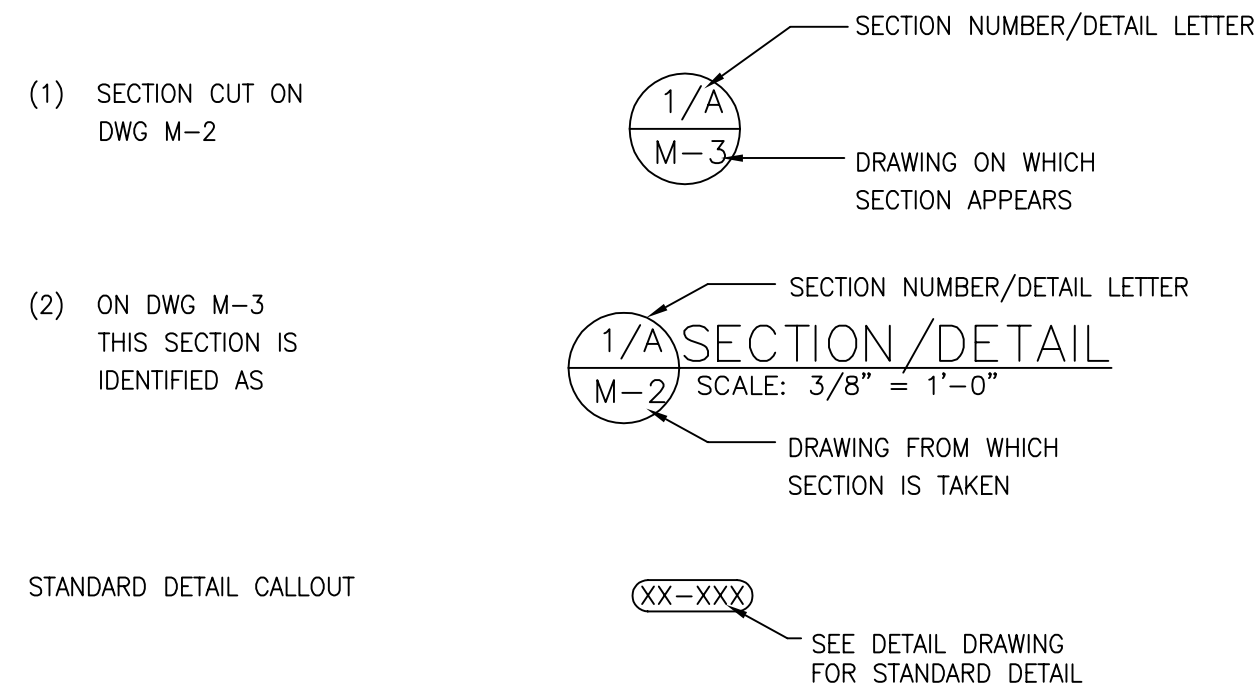
TAG LETTER	FIRST LETTER - PROCESS VARIABLE	MODIFIER OR SECOND LETTER - READING OR FUNCTION	THIRD OR FOURTH LETTER - FUNCTION
A	ANALYSIS	ALARM	ALARM
B	BURNER FLAME	-	-
C	-	CONTROLLING/ CONTROLLER	CONTROLLER/ CLOSED
D	-	DIFFERENTIAL	-
E	VOLTAGE	ELEMENT	ELEMENT
F	FLOW RATE	RATIO (FRACTION)	-
G	-	GLASS (GAUGE)	GLASS (GAUGE)
H	MANUAL (HAND)	HAND	HIGH
I	CURRENT	INDICATING / INDICATOR	INDICATOR
J	POWER	SCAN	-
K	TIME	TIME RATE OF CHANGE	-
L	LEVEL	LIGHT	LOW
M	MOISTURE (HUMIDITY)	MOMENTARY	MEDIUM / MIDDLE
N	-	-	-
O	-	ORIFICE	OPEN
P	PRESSURE	POINT (TEST) CONNECTION	-
Q	QUANTITY	TOTALIZE / INTEGRATE	-
R	RADIATION	RECORDING / RECORDER	RECORDER
S	SPEED / FREQUENCY	SWITCH	SWITCH
T	TEMPERATURE	TRANSMITTER	TRANSMITTER
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION
V	MECHANICAL ANALYSIS	VALVE	VALVE
W	WEIGHT / FORCE	WELL	-
X	-	-	-
Y	EVENT	COMPUTE / CONVERT	RELAY
Z	POSITION	DRIVE	-

INSTRUMENT OR FUNCTION SYMBOLS

	DISCRETE INSTRUMENTS	PROGRAMMABLE LOGIC CONTROL	SHARED DISPLAY SHARED CONTROL
FIELD MOUNTED			
PRIMARY (PANEL) LOCATION			
AUXILIARY LOCATION			
BEHIND PANEL			

	INSTRUMENT TAG LEADER		PILOT LIGHT
	SUPPLEMENTARY INSTRUMENT TAG LETTER		INTERLOCK
	INSTRUMENT TAG NUMBER		

SECTION AND DETAILS IDENTIFICATION SYSTEM



BENCHMARK INFORMATION

- NOTES:
- OTHER THAN THOSE SHOWN, SYMBOLS EMPLOYED ON MECHANICAL DRAWINGS ARE AS SET FORTH IN ANSI Z32.2.3, ANSI Z32.2.4, AND ANSI Y32.11.
 - SYMBOLS FOR UNITS OF WEIGHT, LENGTH, TIME, ENERGY AND QUANTITY ARE AS SET FORTH IN ANSI Y10.19, UNLESS NOTED OTHERWISE. ALL UNITS ARE BASED UPON ENGLISH SYSTEM OF MEASUREMENT.

PFD/PID PIPELINE TERMINOLOGY

NOMINAL PIPE SIZE, INCHES
COMMODITY
3" - TW

BWR	BACKWASH RETURN	PW	PLANT WATER
BWS	BACKWASH SUPPLY	RC	REACTOR CARBON
CA	COMPRESSED AIR	RF	RESIN FILL
EFF	EFFLUENT	RO	RESIN OUT
FC	FLUSH CONNECTION	RW	RAW WATER
GAC	GRANULAR ACTIVATED CARBON	SC	SPENT CARBON
INF	INFLUENT	SP	SAMPLE PORT
IX	ION EXCHANGE	TW	TREATED WATER
PSE	PRESSURE SAFETY ELEMENT	V	VENT

PFD/PID ACTUATORS

	PNEUMATIC ACTUATOR & POSITIONER
	SOLENOID ACTUATOR
	PNEUMATIC ACTUATOR
	MOTORIZED ACTUATOR
	PRESSURE CONTROL ACTUATOR
	BACK PRESSURE ACTUATOR

CIVIL LEGEND

	PROPOSED WATER PIPELINE
	GATE VALVE
	PROPOSED EASEMENT
	CONSTRUCTION LIMIT
	CHANGE IN PIPE MATERIAL
	EXIST OVERHEAD ELECTRIC
	EXIST UNDERGROUND ELECTRIC
	EXIST STORM DRAIN
	EXIST WATER
	EXIST ABANDONED WATER LINE
	EXIST TELEPHONE/COMMUNICATIONS LINE
	EXIST GAS LINE
	EXIST TV/CABLE
	EXIST ROW/PROPERTY LINE
	APPROXIMATE BORING LOCATION
	HORIZONTAL CONTROL POINT
	PROPOSED CONTOUR LINE
	EXISTING CONTOUR LINE
	EXISTING MANHOLE
	EXIST UTILITY POLE
	EXISTING FACILITIES
	FUTURE FACILITIES
	PIPING, EQUIPMENT, ETC. TO BE REMOVED OR DEMOLISHED
	CONCRETE
	NATIVE SOIL
	EASEMENT

PFD/PID EQUIP TAG LEADERS

A	AGITATOR		NEEDLE VALVE
B	BLOWER		PRESSURE RELIEF VALVE
BF	BUTTERFLY VALVE		
BV	BALL VALVE		
CV	CHECK VALVE		
COM	COMPRESSOR		PRESSURE/VACUUM RELIEF VALVE
D	DRYER		
E	HEATER/ HEAT EXCHANGER		
F	FILTER/ STRAINER		
GC	CARBON BED		
HV	HAND VALVE		
IC	ISEP CELLS		
IV	ISEP VALVE		
IT	ISEP TURNABLE		CAMLOCK FITTING
IX	ION EXCHANGE		
MX	STATIC MIXER		
P	PUMP		EXPANSION JOINT
PR	PRESSURE RELIEF		
PV	PRESSURE VESSEL		HOSE
R	REACTOR		
RV	ROOF VENTILATOR		QUICK DISCONNECT
TK	TANK		
WS	WATER SOFTENER		

	PUMP
	BASKET STRAINER (MEDIA TRAP)
	STATIC MIXER
	MAGNETIC FLOWMETER
	DIAPHRAGM
	SOLUTION DIFFUSER
	POWER INDICATION
	FLOW METER (MPELLER)
	ROTAMETER
	FLOW METER

GENERAL ABBREVIATIONS

ABBREV	DESCRIPTION	ABBREV	DESCRIPTION	ABBREV	DESCRIPTION
ABAND'D	ABANDONED	EJ	EXPANSION JOINT	OC	ON CENTER
AB	ANCHOR BOLT	EL	ELEVATION	OCL	OPEN-CLOSE
ABBR	ABBREVIATIONS	ELB	ELBOW	OD	OUTSIDE DIAMETER
ABC	AGGREGATE BASE COURSE	ELEC	ELECTRIC (AV)	OH	OVERHANG
AC	ASPHALTIC CONCRETE	ENGR	ENGINEER	OHE	OVERHEAD ELECTRIC
ACP	ASBESTOS CEMENT PIPE	EOP	EDGE OF PAVEMENT	OPNG	OPENING
ACS	CARBONIC ACID SOLUTION	EQ	EQUAL	PDI	PRESSURE DIFFERENTIAL INDICATOR
ADJ	ADJUSTABLE	E/P	EDGE OF PIPE	PDSH	PRESSURE DIFFERENTIAL SWITCH HIGH
AF	ANALYTICAL FILTER	ESMT	ESMT	PE	PLAIN END
ALUM	ALUMINUM	E/W	EAST/WEST	PI	PRESSURE INDICATOR OR POINT OF INTERSECTION
APPROX	APPROXIMATE	EW	EACH WAY	PIT	PRESSURE INDICATOR TRANSMITTER
ARV	AIR RELEASE VALVE	EX, EXIST	EXISTING	PL	PROPERTY LINE OR PLATE
AUTO	AUTOMATIC	EXP	EXPANSION	PNL	PANEL
AUX	AUXILIARY	FBR	FLUIDIZED BED REACTOR	PRD	PRESSURE RUPTURE DISC
AVE	AVENUE	FC	FLUSH CONNECTION	PRV	PRESSURE REDUCING VALVE
AVG	AVERAGE	FCA	FLANGE COUPLING ADAPTER	PSH	PRESSURE SWITCH HIGH
AVRV	COMBINATION AIR AND VACUUM RELEASE VALVE	FCO	FLOOR CLEAN OUT	PSI	POUND PER SQUARE INCH
AT	AT	FD	FLOOR DRAIN	PSL	PRESSURE SWITCH LOW
@	BEGIN CURVE	FDN	FOUNDATION	PVC	POLYVINYL CHLORIDE
BC	BEGIN CURVE	FG	FINISH GRADE	PVT	PAVEMENT
BCV	BALL CHECK VALVE	FH	FIRE HYDRANT	R	RIGHT/RADIUS
BF	BLIND FLANGE	FI	FLOW INDICATOR	RC	REACTOR/RAW CARBON
BFP	BACK FLOW PREVENTER	FIG	FIGURE	RCP	REINFORCED CONCRETE PIPE
BLDG	BUILDING	FIT	FLOW INDICATOR TOTALIZER/FLOW INDICATOR TRANSMITTER	RED	REDUCER
BLK	BLOCK	FF	FINISH FLOOR	REF	REFERENCE
BM	BENCH MARK OR BEAM	FLX	FLEXIBLE	REINF	REINFORCEMENT
BO	BLOW OFF ASSEMBLY	FLG	FLANGE, FLANGED	REQ	REQUIRED
BOD	BIOCHEMICAL OXYGEN DEMAND	FLM	FLANGE ADAPTER	REV	REVISION OR REVERSE ACTING
BRG	BEARING	FLN	FLOW LINE	RF	RESIN FILL
BRKR	BREAKER	FMH	FLEXIBLE METAL HOSE	RO	RESIN OUT
BWR	BACKWASH RETURN	FO	FIBER OPTIC	RPMP	REINFORCED PLASTIC MORTAR PIPE
BWS	BACKWASH SUPPLY	FPM	FEET PER MINUTE	RT	RIGHT-OF-WAY
BV	BUTTERFLY VALVE	FPS	FEET PER SECOND	R/W	RAW WATER
CA	CONCRETE ANCHOR/COMPRESSED AIR CATCH BASIN	FT	FEET	S	SOUTH
CB	CATCH BASIN	GA	GAGE OR GAUGE	SC	SPENT CARBON
CF	CUBIC FEET PER HOUR	GALV	GALVANIZED(D)	SCH/SCHED	SCHEDULE
CFM	CUBIC FEET PER MINUTE	GB	GRADE BREAK	SD	STORM DRAIN
CFS	CUBIC FEET PER SECOND	GCD	GAS, CARBON DIOXIDE	SHT	SHEET
CHKD PL	CHECKERED PLATE	GV	GATE VALVE	SP	SAMPLE PORT
CI	CAST IRON	H	HEIGHT	SPEC	SPECIFICATION
CIP	CAST IRON PIPE	HB	HOSE BIB	SQ	SQUARE
CJ	CONSTRUCTION JOINT	HORIZ	HORIZONTAL	SR	SPENT RESIN VACUUM
CL	CENTER LINE, CLASS	HP	HIGH POINT	SRVC	SERVICE
CLR	CLEAR OR CLEARANCE	ID	INSIDE DIAMETER	SS	SANITARY SEWER
CML&C	CEMENT MORTAR LINED AND COATED	IE	INVERT ELEVATION	SST	STAINLESS STEEL
CMLCSP	CEMENT LINED CARBON STEEL PIPE	IN OR "	INCH	STA	STATION
CMP	CORRUGATED METAL PIPE	INF	INFLUENT	STD	STANDARD
CMU	CONCRETE MASONRY UNIT	INV	INVERT	STL	STRUCTURAL
CO	CLEANOUT	IP	IRON PIPE	STR	STEEL
COMPR	COMPRESSOR	IRRIGATION	IRRIGATION	SYMM	SYMMETRICAL
CONC	CONCRETE	IX	ION EXCHANGE	T/TEL	TELEPHONE SERVICE OR TELEPHONE
CONN	CONNECTION	JT	JOINT	T&B	TOP & BOTTOM
CONT	CONTINUE	LP	LOW POINT	TC	TOP OR CONCRETE OR CURB
COORD	COORDINATE	LT	LEFT	TEMP	TEMPERATURE
CPLG	COUPLING	M	METER	TFR	TRANSFORMER
CTF	CUT TO FIT	MATL	MATERIAL	THK	THICK
CUP	COPPER PIPE	MAX	MAXIMUM	THRU	THROUGH
DET	DETAIL	MCC	MOTOR CONTROL CENTER	TW	TREATED WATER
DI	DUCTILE IRON	MFR	MANUFACTURER	TYP	TYPICAL
DI OR Ø	DIAMETER	MGD	MILLION GALLONS PER DAY	UNON	UNLESS OTHERWISE NOTED
DIM	DIMENSION	MH	MANHOLE	V	VENT
DIP	DUCTILE IRON PIPE	MIN	MINIMUM	VAR	VARIES
DIST	DISTRIBUTION	MISC	MISCELLANEOUS	VCP	VITRIFIED CLAY PIPE
DMPR	DAMPER	MW	MOTIVE WATER	VLV	VALVE
DN	DOWN	N	NORTH	VERT	VERTICAL
DWG	DRAWING	NA	NOT APPLICABLE	WM	WATER METER
E	EACH	NO OR #	NUMBER	W	WEST
EA	EAST OR BURIED ELECTRICAL	NPT	NATIONAL PIPE THREAD	W/O	WITHOUT
EC	END CURVE	NTS	NOT TO SCALE	WS	WELDED STEEL
ECC	ECCENTRIC			WSP	WELDED STEEL PIPE
EF	EACH FACE			WTR	WATER
EFF	EFFLUENT			WWF	WELDED WIRE FABRIC

MECHANICAL AND PID LEGEND

	EQUIPMENT IDENTIFICATION
	VALVE IDENTIFICATION

* INDICATES EQUIPMENT FURNISHED BY OTHERS.

PIPING, VALVES AND APPURTENANCES

DOUBLE LINE	SINGLE LINE
	ABOVE GROUND PIPING
	BELOW GROUND PIPING
	BUTTERFLY VALVE
	CHECK VALVE
	BALL VALVE
	GATE VALVE
	GLOBE VALVE
	STRAINER
	PRESSURE REGULATING
	BALL CHECK
	BUTTERFLY VALVE
	REDUCER
	AIR RELEASE
	SAMPLE TAP

PFD/PID LINE LEGEND

	MAIN FLOW
	EXISTING FLOW
	UTILITY FLOW
	INSTRUMENT AIR
	CAPILLARY TUBING
	ELECTRICAL
	SOFTWARE

DATE: DEC 2009
REVISED TO CONFORM TO CONSTRUCTION RECORDS PROVIDED BY CONTRACTOR
BY: _____



VERIFY SCALE IF PLAN SHEET IS REDUCED

DATE: DEC 2009	CHK	EDL	DRN	CHK
DESCRIPTION				
1	RECORD DRAWING			
EL	REV			

AECOM

300 OCEANGATE SUITE 700
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WWW.AECOM.COM

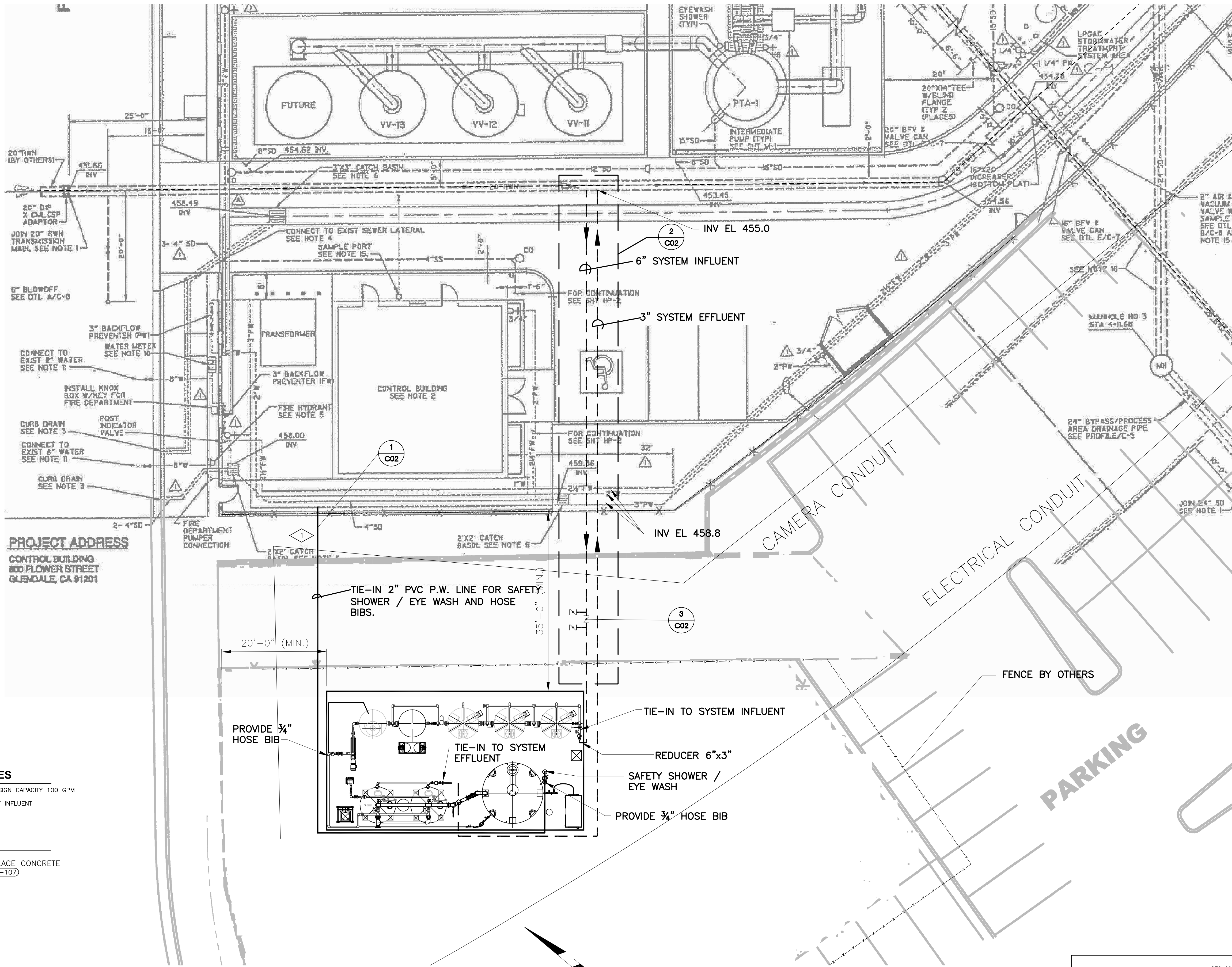
CITY OF GLENDALE
RCF DEMONSTRATION WTP - 100% DESIGN
GLENDALE, CALIFORNIA

LEGENDS, SYMBOLS, AND ABBREVIATIONS

PROJECT START DATE (M/Y)	05/2009
PROJECT NO.	106560
FILENAME	G-01.dwg
SHEET NO.	2
DRAWING NO.	G-02

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- GENERAL NOTES**
- TREATMENT SYSTEM DESIGN CAPACITY 100 GPM
 - BACKWASH FROM PLANT INFLUENT

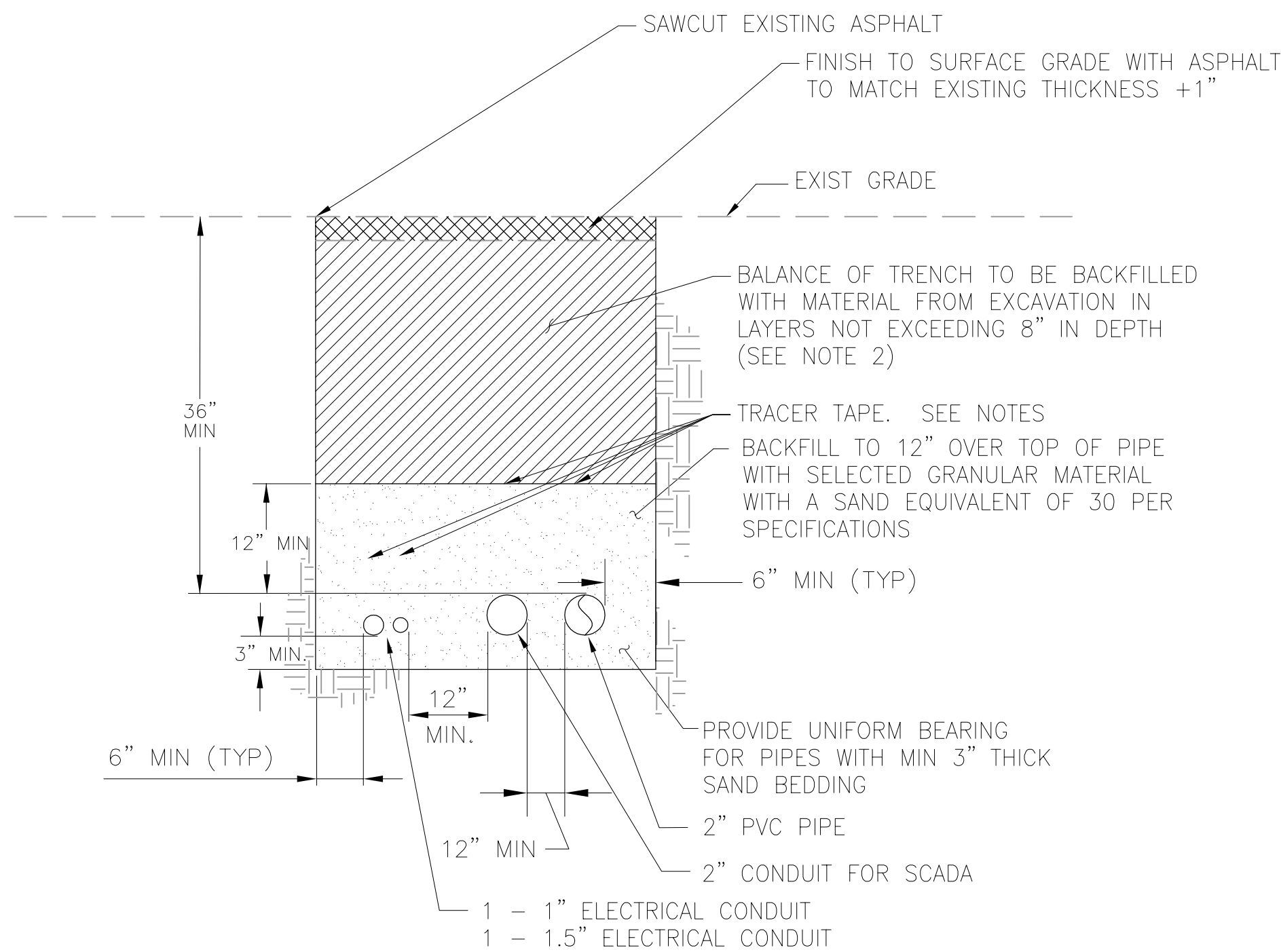
- PLAN NOTES**
- REMOVE AND REPLACE CONCRETE SIDEWALK SEE (02-107)

CIVIL SITE PLAN

0' 10' 20'

DATE: DEC 2009
 REVISED TO CONFORM TO
 CONSTRUCTION RECORDS
 PROVIDED BY CONTRACTOR
 BY: _____
AECOM

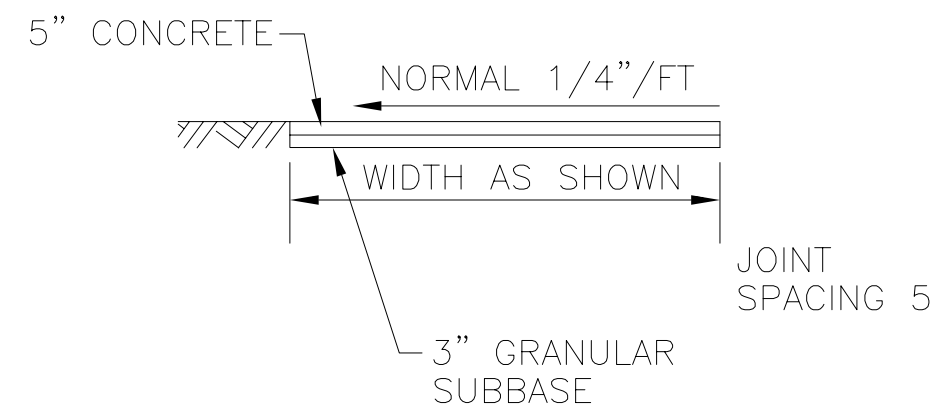
<p>AECOM</p> <p>300 OCEANGATE SUITE 700 LONG BEACH, CA 90805 T: 562.981.2000 F: 562.495.9257 WWW.AECOM.COM</p>		<p>DRN BY: _____</p> <p>WRI: _____</p> <p>DES BY: _____</p> <p>EL: _____</p> <p>CHK BY: _____</p> <p>APP BY: _____</p>	<p>DESCRIPTION</p> <p>1 RECORD DRAWING</p>	<p>REV</p>	<p>APP: 1</p>	<p>DATE (M/D/Y)</p> <p>DEC 2009</p>
		<p>DRN: _____</p> <p>WRI: _____</p> <p>DES: _____</p> <p>EL: _____</p> <p>CHK: _____</p> <p>APP: _____</p>	<p>DESCRIPTION</p>	<p>REV</p>	<p>APP: _____</p>	<p>DATE (M/D/Y)</p> <p>DEC 2009</p>
<p>CITY OF GLENDALE</p> <p>RCF DEMONSTRATION WTP - 100% DESIGN</p> <p>GLENDALE, CALIFORNIA</p>						
<p>SITE PLAN AND DETAILS</p>						
<p>PROJECT START DATE (M/Y) 05/2009</p> <p>PROJECT NO. 106560</p> <p>FILENAME RCF-C01.dwg</p> <p>SHEET NO. 4</p> <p>DRAWING NO. C-01</p>						



NOTES:

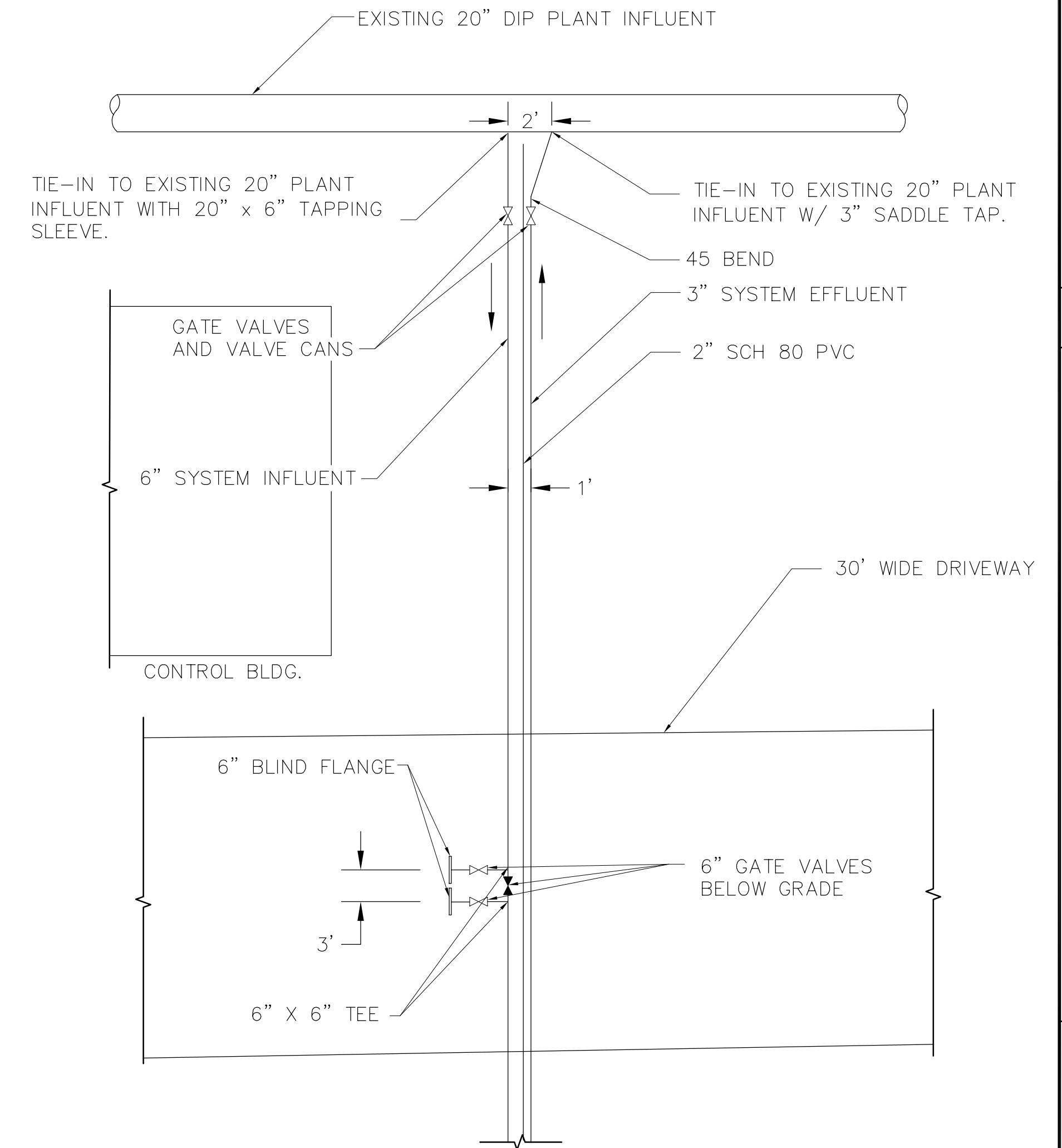
1. WIDTH OF TRENCH:
 MIN = PIPE OD + 12"
 MAX = PIPE OD + 16"
2. COMPACT EXCAVATED AREAS IN 8" LIFTS TO A MINIMUM OF 90% COMPACTION. PER ASTM D1557, SEE SPECIFICATIONS.
3. SEE 02-107 FOR SIDEWALK DETAIL.

1 TIE-IN P.W. TRENCH DETAIL
 SCALE: NONE



CONCRETE SIDEWALK DETAIL 02-107

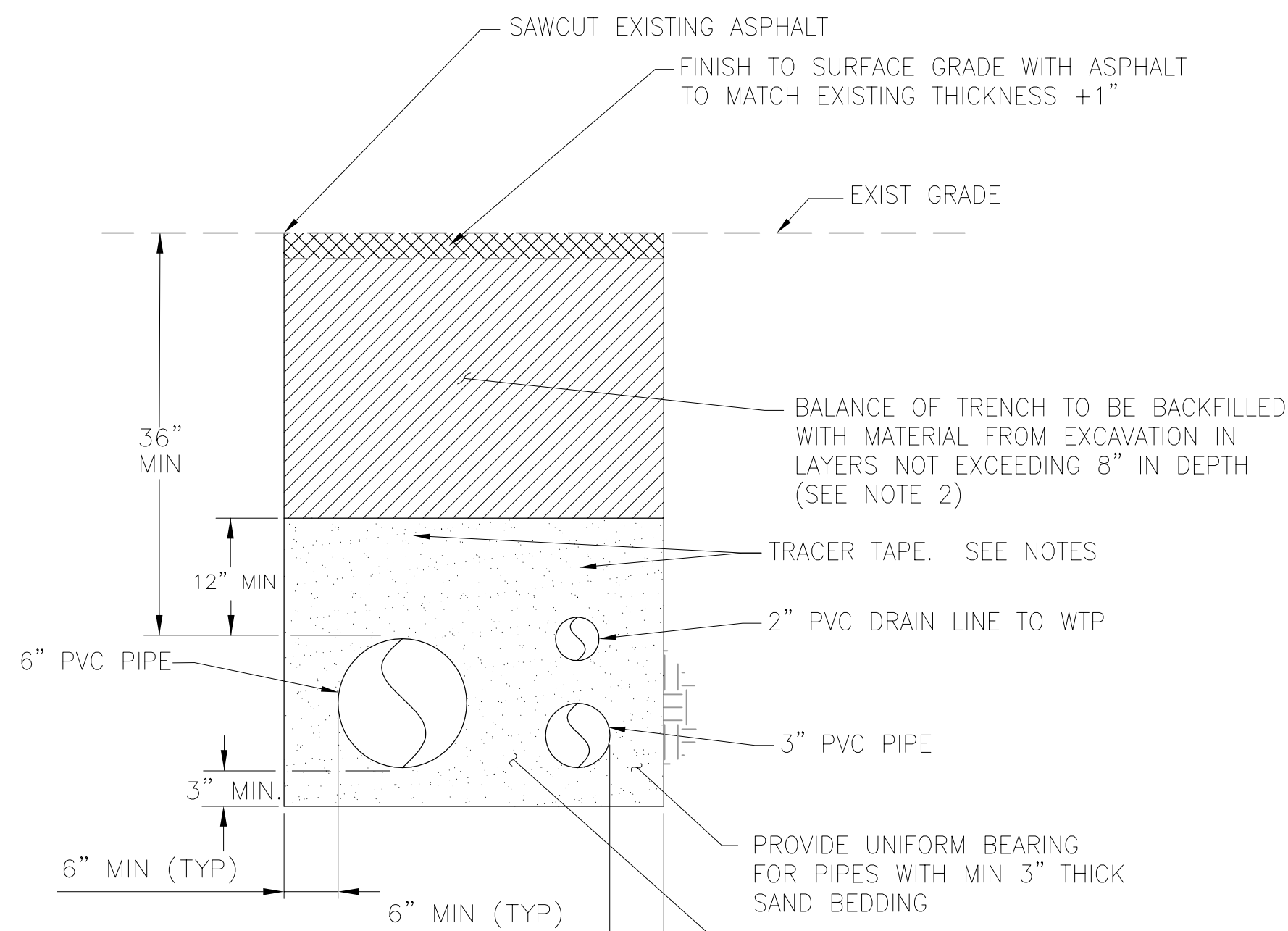
NTS



3 TIE-IN DETAIL
 SCALE: 1" = 10'-0"

NOTES:

1. UNLESS OTHERWISE INDICATED, ALL PIPING SHALL BE SCHEDULE 80 PVC.
2. FOR RESPONSIBILITY OF FURNISHING EQUIPMENT, SEE MANUFACTURER P & ID DRAWINGS (BOUND SEPARATELY).
3. SUBCONTRACTOR SHALL INSTALL LONG RADIUS ELBOWS ON ELECTRICAL CONDUIT RUNS, UNLESS NOTED OTHERWISE.
4. SUBCONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
5. SUBCONTRACTOR SHALL PROVIDE VALVE CANS AND EXTENSIONS FOR ALL BURIED VALVES PER CITY OF GLENDALE.
6. WARNING TAPE 12-INCH WIDE METAL STRIP COATED WITH CORROSION MOISTURE AND ABRASION RESISTANT NYLON TRACER TAPE BY ALARMALINE, PRESCAPOLYMERS, OR EQUAL. INSTALLED 12-INCHES ABOVE THE TOP OF THE PIPE OR CONDUIT.



NOTES:

1. WIDTH OF TRENCH:
 MIN = PIPE OD + 12"
 MAX = PIPE OD + 16"
2. COMPACT EXCAVATED AREAS IN 8" LIFTS TO A MINIMUM OF 90% COMPACTION.

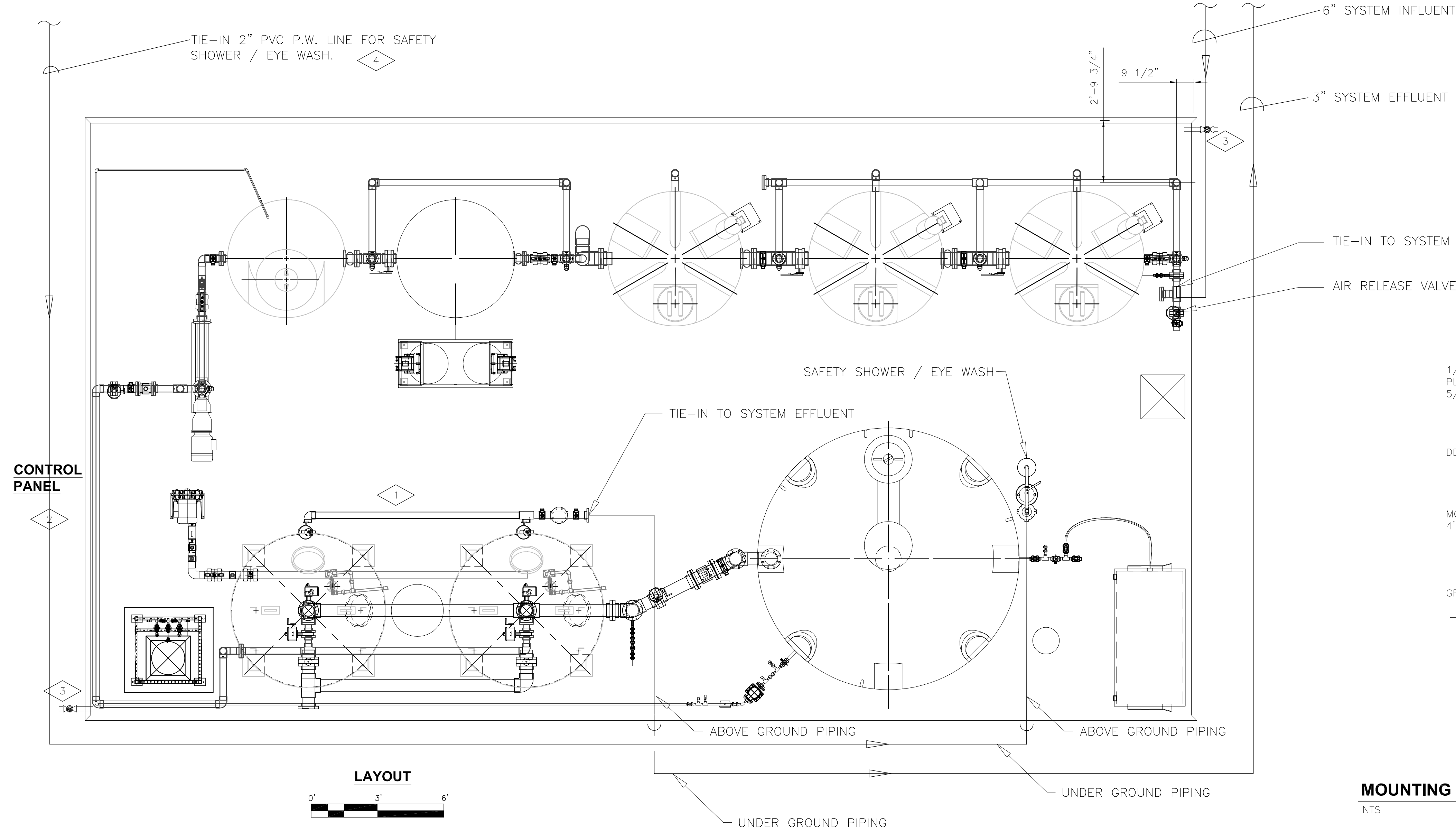
2 TIE-IN INFLUENT TRENCH DETAIL
 SCALE: NONE

DATE: DEC 2009
 REVISED TO CONFORM TO CONSTRUCTION RECORDS PROVIDED BY CONTRACTOR
 BY: _____
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VERIFY SCALE IF PLAN SHEET IS REDUCED		DATE	CHK	EDL	DRN
DRN	EL	1	RECORD DRAWING	DESCRIPTION	
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DES BY:	EL				
CHK BY:	EL				
WRI					
AECOM					
300 OCEANGATE SUITE 700 LONG BEACH CA 90805 T: 562.981.2000 F: 562.495.9257 WWW.AECOM.COM					
CIVIL DETAILS					
CITY OF GLENDALE RCF DEMONSTRATION WTP- 100% DESIGN GLENDALE, CALIFORNIA					
PROJECT START DATE (M/Y)					
05/2009					
PROJECT NO.					
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FILENAME					
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SHEET NO.					
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DRAWING NO.					
C-02					

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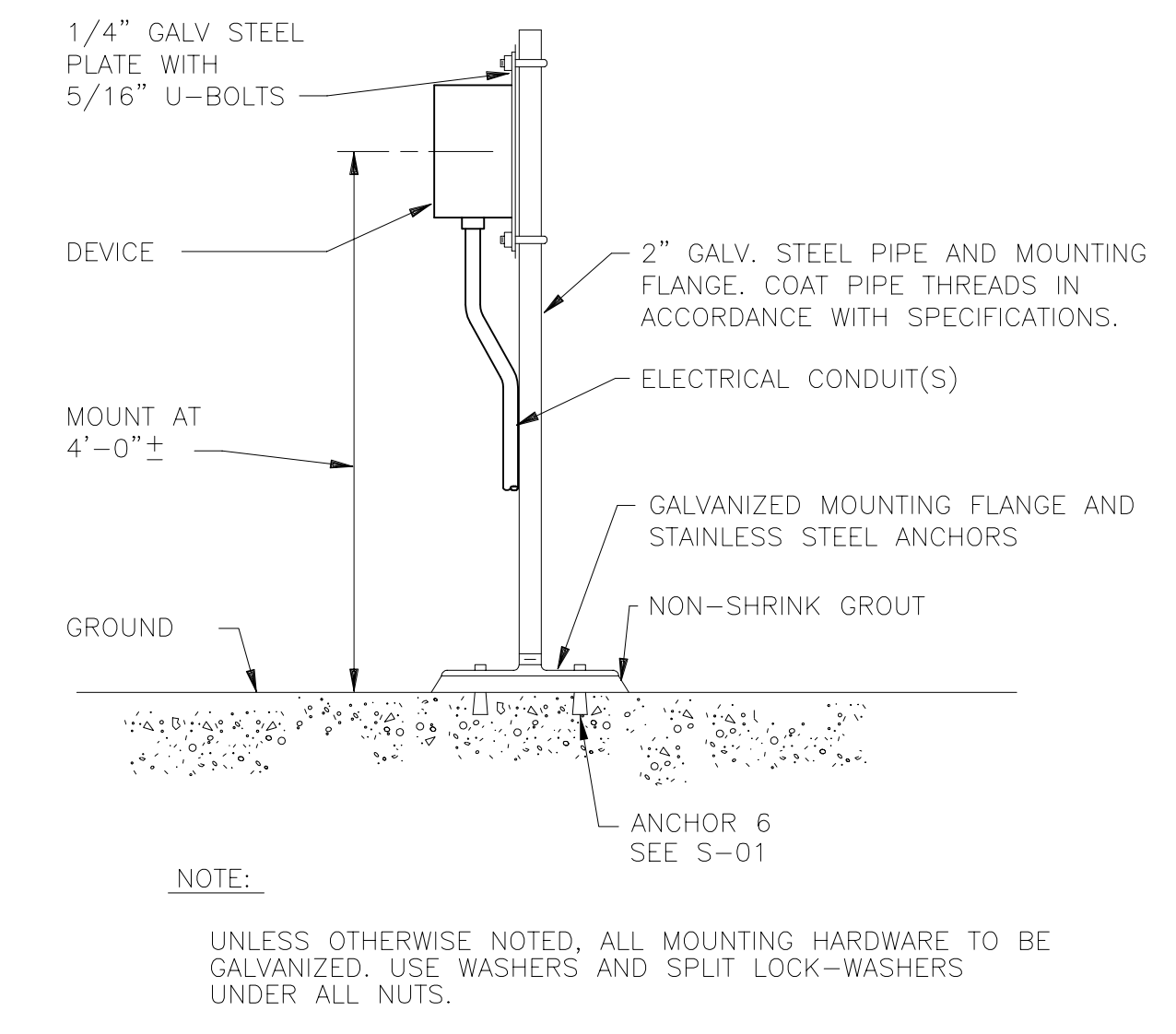


GENERAL NOTES

- PIPE SUPPORTS NOT SHOWN.
- MOUNT PRESSURE GAUGES PROVIDED BY LAYNE AND NOTED IN LAYNE DRAWINGS PER **06-852**
- AIR LINES AND CHEMICAL FEED LINES NOT SHOWN. ROUTE PER MANUFACTURER'S PIPING AND INSTRUMENTATION DIAGRAM

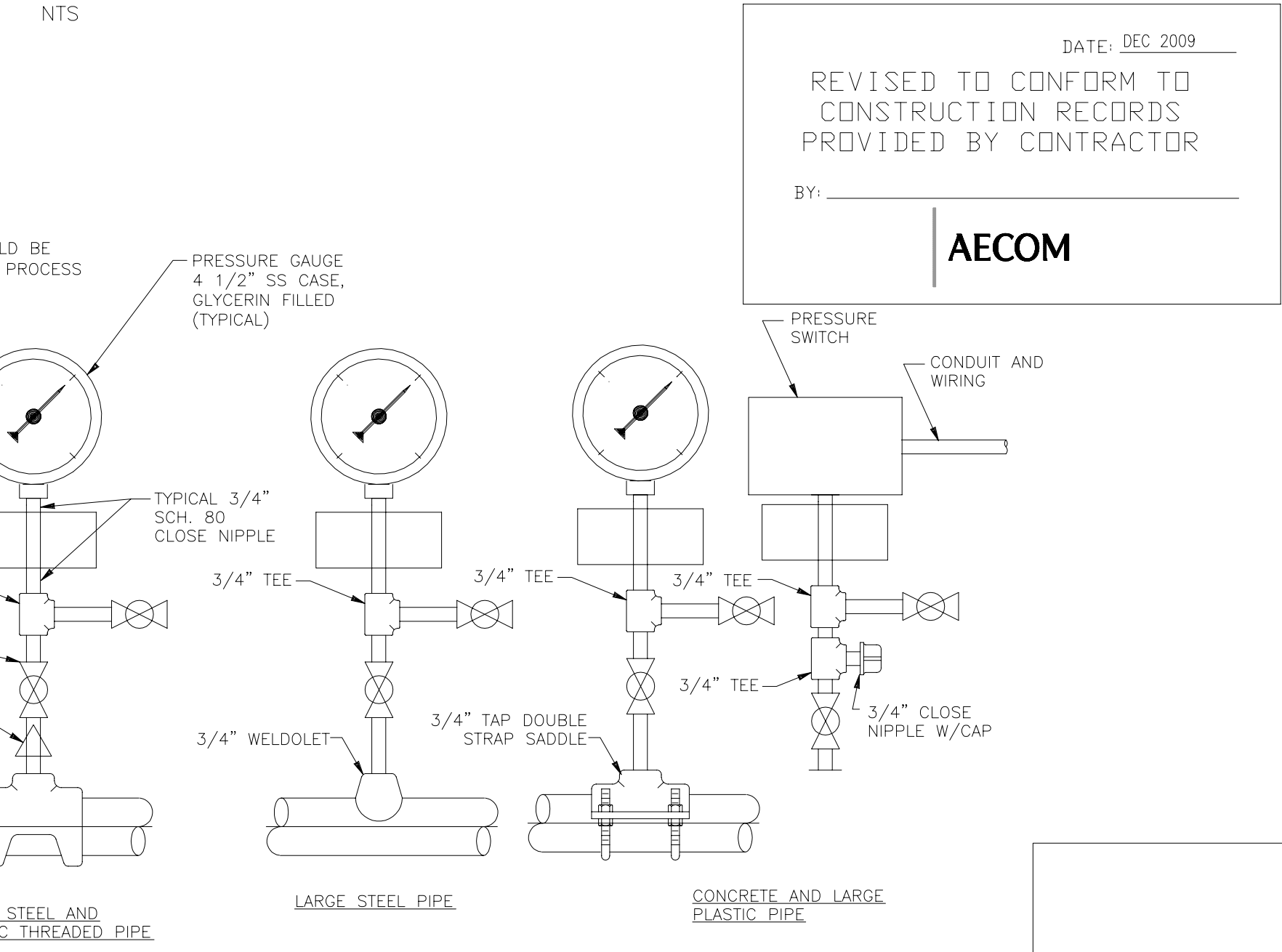
PLAN NOTES

- MOUNT TURBIDIMETERS PER **06-514** ON STAND PER **06-752**
- CONNECT ALL CONTROL WIRING TO CONTROL PANEL. SEE ITEMS ON PIPING AND INSTRUMENTATION DIAGRAM.
- 2" BALL VALVE AT BOTTOM OF CONTAINMENT.
- BELOW GROUND PIPE IS SCH 80 PVC, ABOVE GROUND PIPE IS GALVANIZED SCH 40.



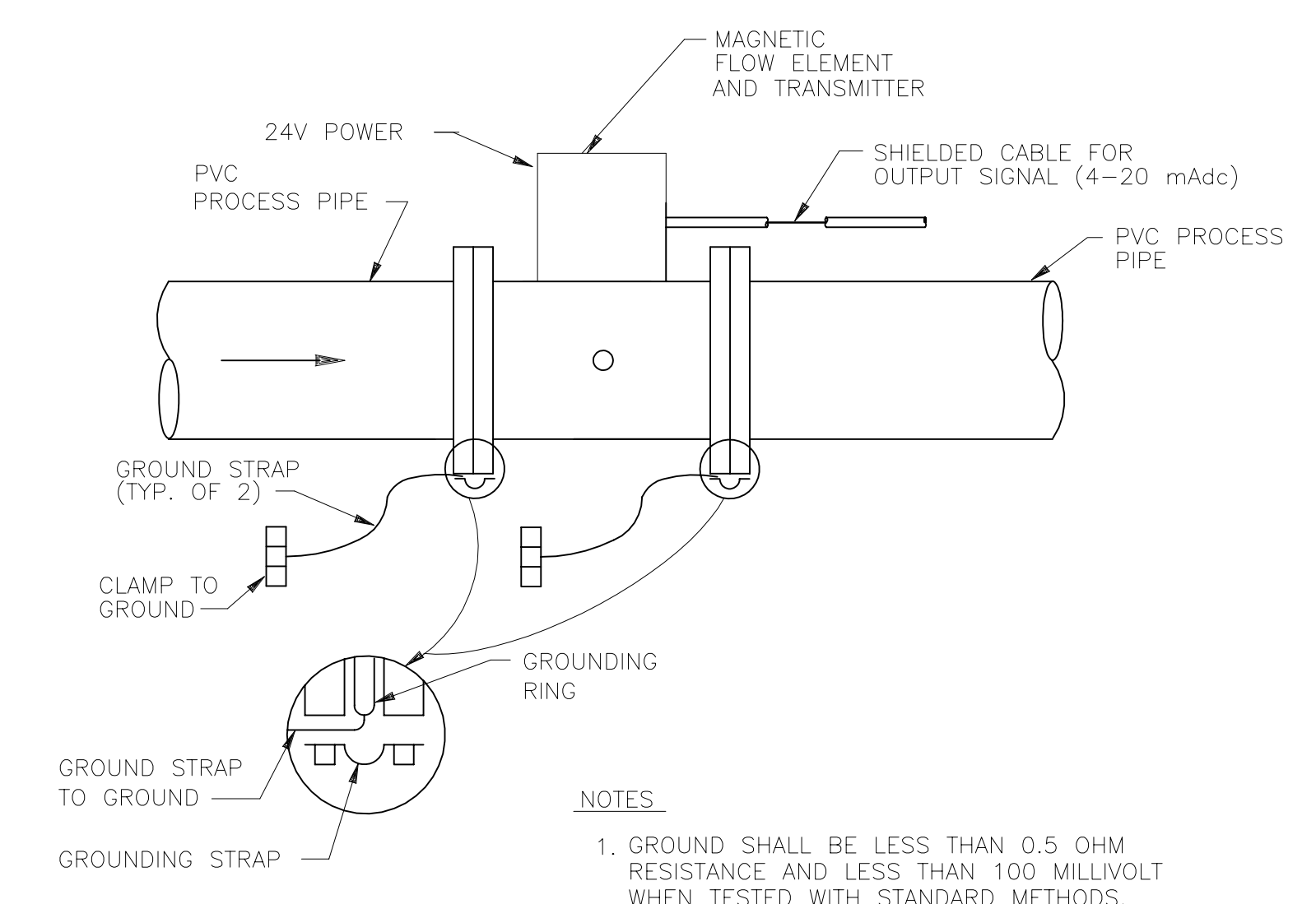
MOUNTING - DEVICE, PEDESTAL

06-752



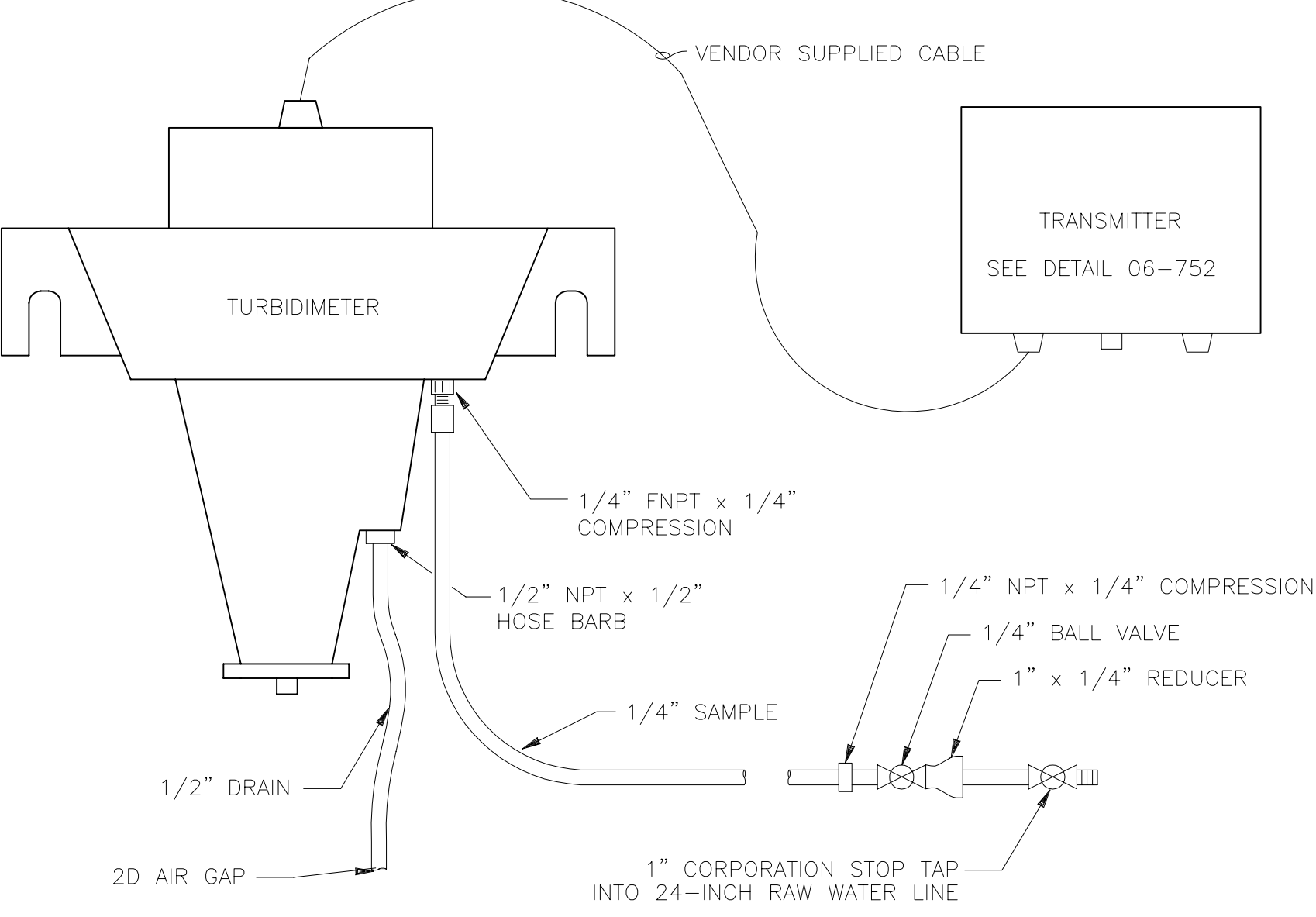
PRESSURE - SWITCH OR GAUGE, PIPE MOUNTED, WITH OR WITHOUT DIAPHRAGM

06-852



FLOW - MAGNETIC, FLANGED

06-600

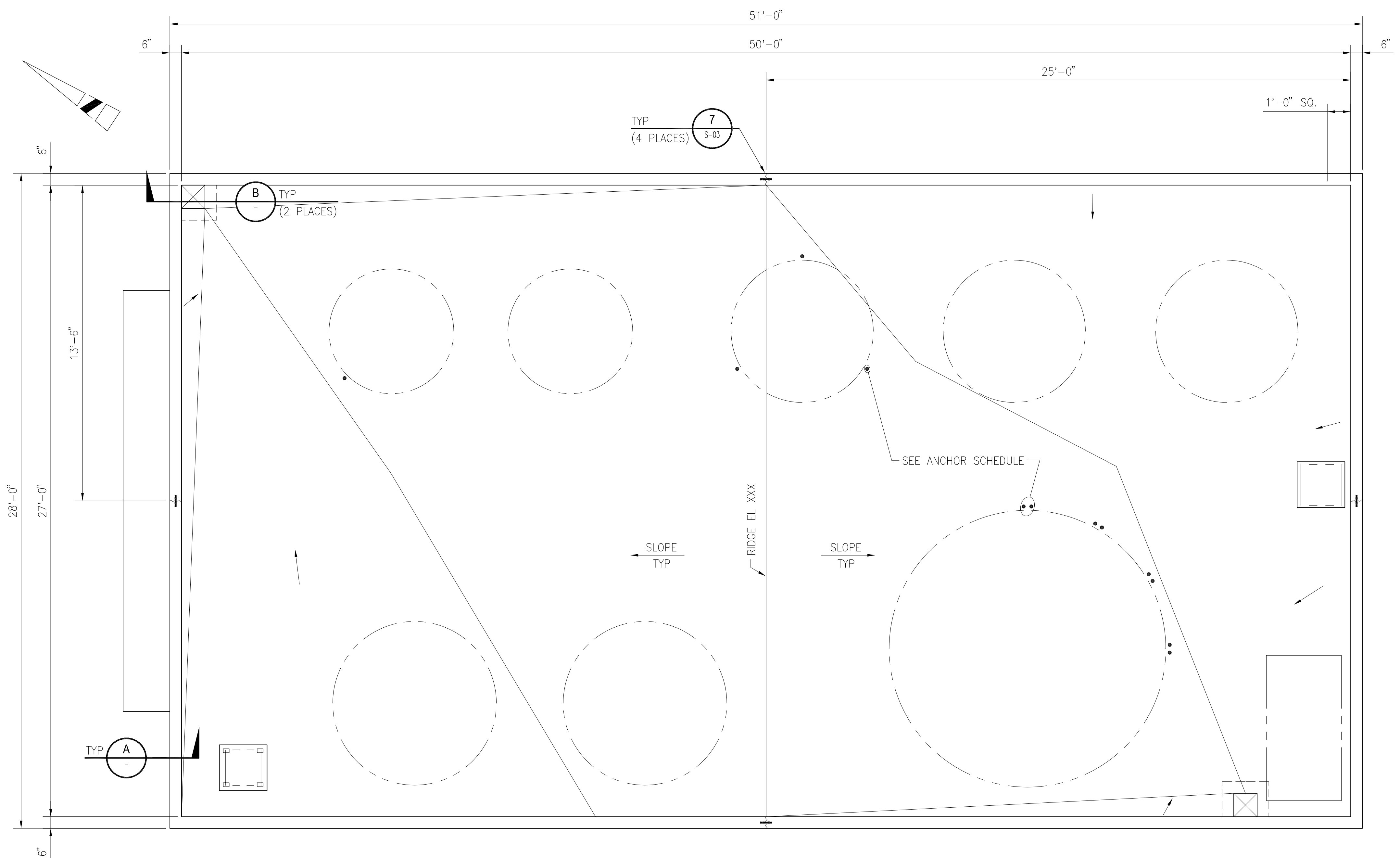


ANALYTICAL-TURBIDITY, SAMPLING, WALL

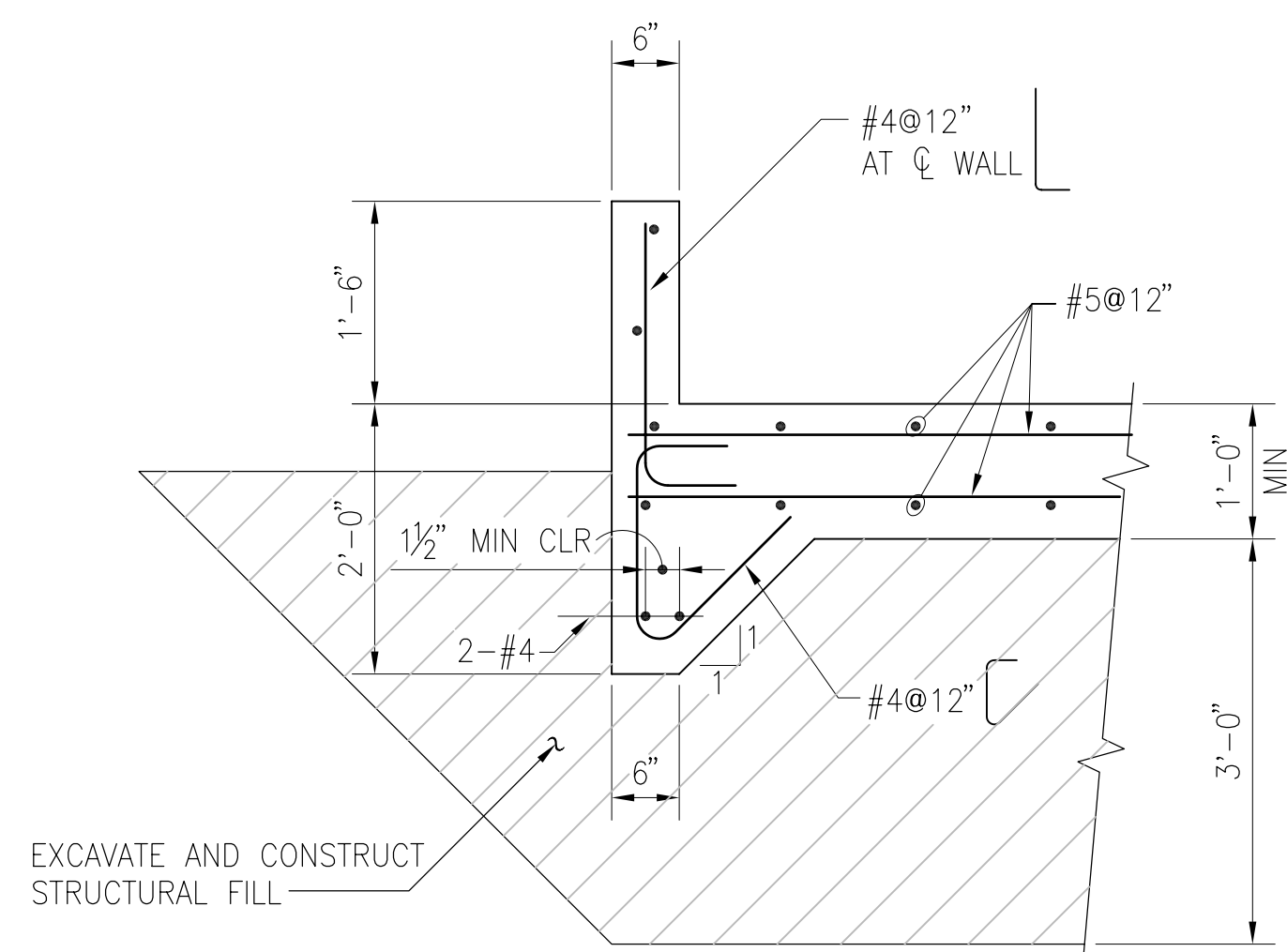
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<p>AECOM</p> <p>300 OCEANGATE SUITE 700 LONG BEACH, CA 90805 T: 562.981.2000 F: 562.495.9257 WWW.AECOM.COM</p>										
<p>CITY OF GLENDALE RCF DEMONSTRATION WTP - 100% DESIGN GLENDALE, CALIFORNIA</p> <p>GENERAL ARRANGEMENT PLAN</p>										
PROJECT START DATE (M/Y)										
05/2009										
PROJECT NO.										
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FILENAME										
RCF-C03.dwg										
SHEET NO.										
6										
DRAWING NO.										
C-03										

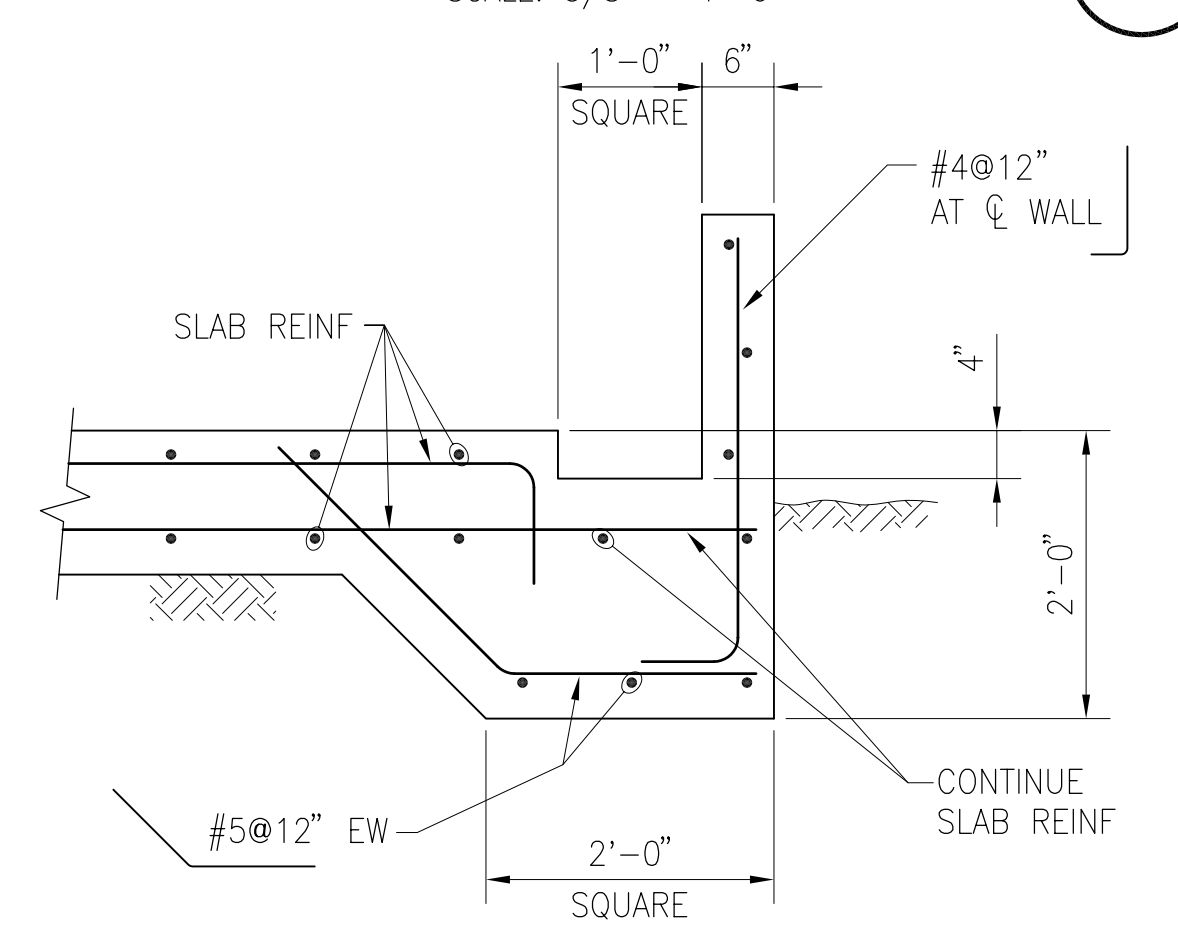
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 Filename: L:\WORK\PROJECTS\106560\GRA\RCF\RECORD_DRAWING-STRUCTURAL\RCF-S01.DWG



FOUNDATION PLAN (1)
 SCALE: 3/8" = 1'-0"



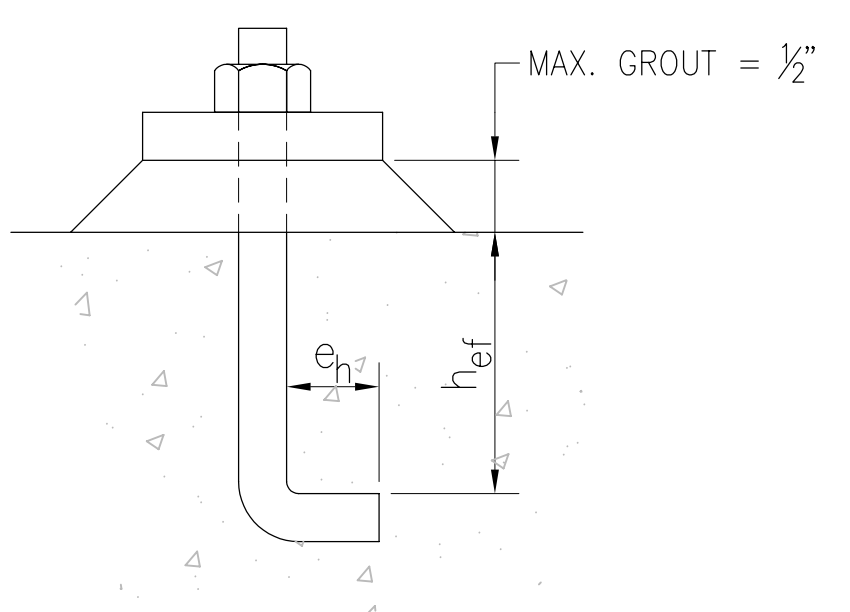
SECTION A
 SCALE: 3/4" = 1'-0"



SECTION B
 SCALE: 3/4" = 1'-0"

ANCHOR SCHEDULE					
ITEM *	QUAN.	SPCG. (MIN.)	DIA.	h _{ef}	e _h
1	4/LEG	9"	1"	8"	4"
2	2/LEG	3"	3/4"	8"	2 1/2"
6	3	-	5/8"	8"	2"
7	3 EA.	-	5/8"	9"	2"
8	3	-	5/8"	8"	2"

* SEE DWG. C-03 & M-01 FOR ITEM #'s.
 NOTE: FOR ITEMS NOT LISTED, FURNISH & INSTALL ANCHORS PER MANUFACTURER'S RECOMMENDATIONS.



DATE: DEC 2009
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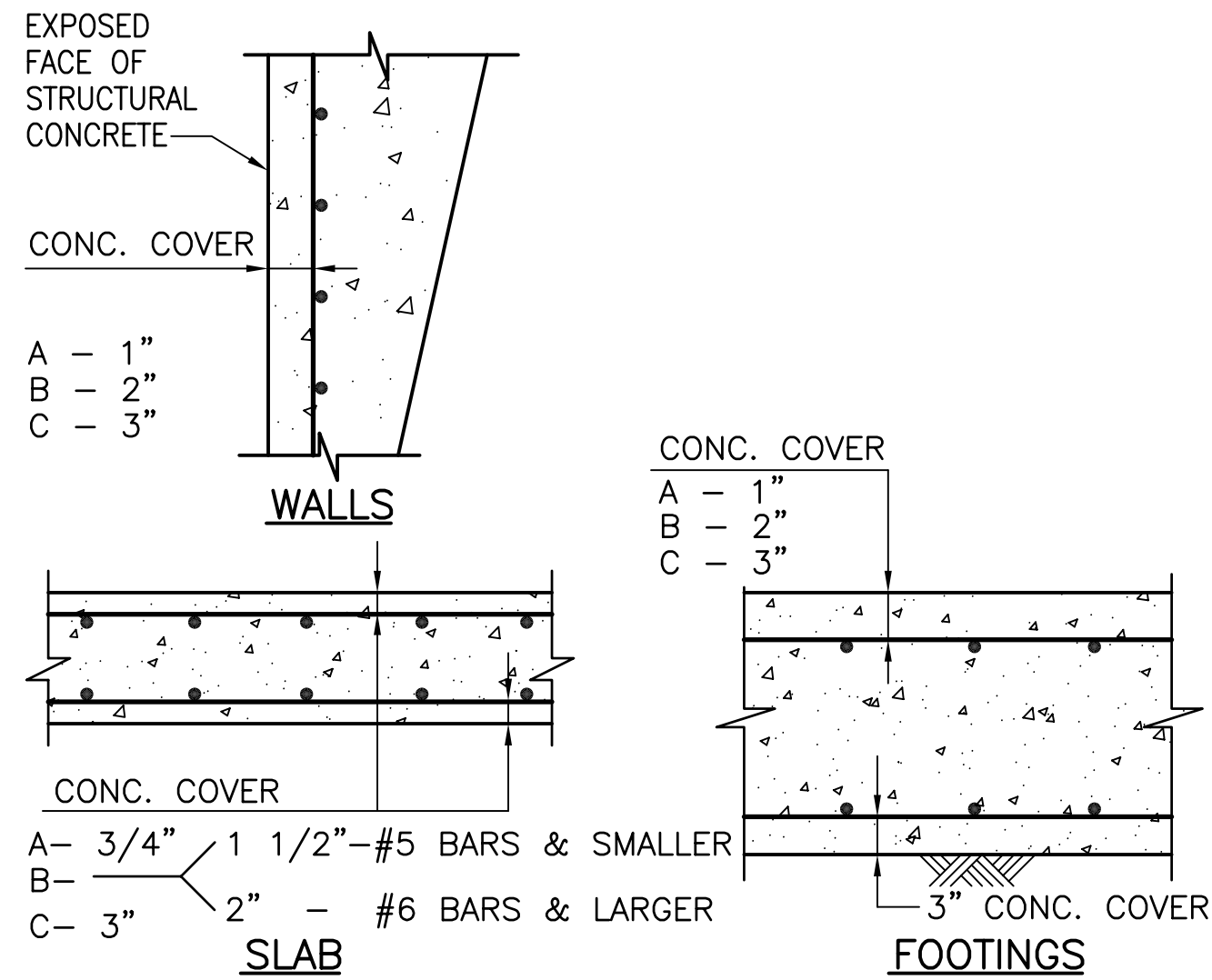
DRN BY:	DES BY:	CHK BY:	APP BY:	REV	DESCRIPTION
DD	CJU			1	RECORD DRAWING

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CITY OF GLENDALE
RCF DEMONSTRATION WTP - 100% DESIGN
GLENDALE, CALIFORNIA
 CHEMICAL CONTAINMENT AREA
 FOUNDATION PLAN

PROJECT START DATE (M/Y)	05/2009
PROJECT NO.	106560
FILENAME	RCF-S01.dwg
SHEET NO.	7
DRAWING NO.	S-01

VERIFIED SCALE IF PLAN SHEET IS REDUCED
 1"=1'-0" 1/4"=1'-0" 1/8"=1'-0"



- COVER**
- A. NO EXPOSURE TO GROUND, WEATHER, OR WATER AFTER FORM REMOVAL.*
 - B. EXPOSURE TO GROUND, WEATHER, OR WATER AFTER FORM REMOVAL.
 - C. CONCRETE PLACED AGAINST SOIL.

CONCRETE COVER OVER REINFORCING STEEL

1

BAR SIZE	90° HOOKS "X"	BAR SIZE	90° HOOKS "X"
#3	6"	#8	16"
#4	8"	#9	19"
#5	10"	#10	22"
#6	12"	#11	24"
#7	14"		

NOTE:
UNLESS NOTED OTHERWISE ON DRAWINGS ALL LENGTHS OF BAR HOOKS IN FOOTINGS, COLUMNS, WALLS AND SLABS SHALL BE GIVEN IN TABLE.

HOOK LENGTH "X" IS STANDARD 90° BAR HOOK LENGTH.

STANDARD 90° BAR HOOK

NOT TO SCALE

2

UNLESS OTHERWISE SHOWN, CONCRETE WALLS & SLABS SHALL BE REINFORCED AS FOLLOWS:

#4 @ 12 E.W. CENTER OF 6" SECTIONS; #5 @ 12 E.W. CENTER OF 8" SECTION; #4 @ 12 E.W.E.F. OF 10" SECTION; #5 @ 12 E.W.E.F. OF 12" SECTION; SINGLE MAT REINFORCING SHALL BE CENTER OF SECTION UNLESS SHOWN OTHERWISE.

UNLESS NOTED OTHERWISE ALL WALL REINFORCING BARS SHALL BE CONT AROUND CORNERS & THROUGH COLUMNS OR PILASTERS. ALL REINFORCEMENT LAPS, UNLESS NOTED OTHERWISE, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

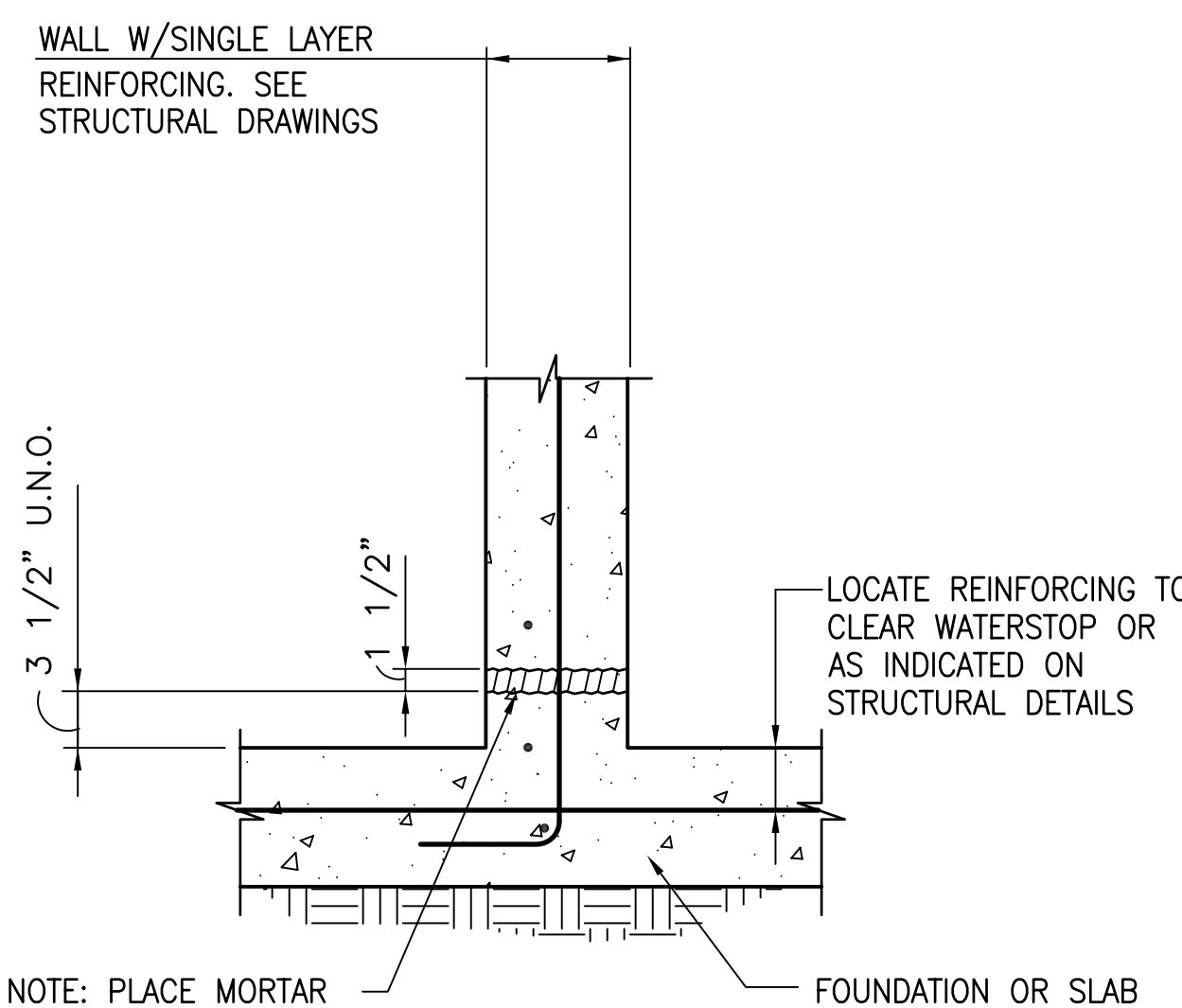
LAP SPLICE LENGTH (INCHES) $f'_c = 4000$ PSI (MULTIPLY BY 1.15 FOR $f'_c = 3000$ PSI)

COVER	BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11
3/4"	* TOP BARS	24	36	48	78	96	117	190	165	
	OTHER BARS	19	28	37	60	74	90	108	127	
1"	* TOP BARS	20	29	40	64	80	98	119	141	
	OTHER BARS	16	22	31	50	62	76	92	108	
1.5"	* TOP BARS	20	24	29	48	60	74	91	109	
	OTHER BARS	16	19	22	37	47	57	70	84	
2" OR GREATER	* TOP BARS	20	24	29	42	48	60	74	89	
	OTHER BARS	16	19	22	33	37	46	57	68	

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BARS IN ANY SINGLE POUR.

REINFORCEMENT DETAILS

3



NOTE: PLACE MORTAR BED IMMEDIATELY PRIOR TO PLACEMENT OF WALL CONCRETE

SECTION
SINGLE LAYER REINF.

CONSTRUCTION JOINT WALL TO FOUNDATION

6

NOTES

- GENERAL**
1. VERIFY ALL DIMENSIONS BEFORE STARTING WORK AND IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
 2. NOTES AND DETAILS ON THE DRAWINGS TAKE PRECEDENCE OVER THE STRUCTURAL NOTES AND TYPICAL DETAILS SHOWN ON THE TYPICAL DETAIL SHEETS.
 3. USE TYPICAL DETAILS AT ALL LOCATIONS THAT ARE CONFIGURED SIMILAR TO THE TYPICAL DETAILS UNLESS NOTED OTHERWISE.
 4. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, CONSTRUCTION DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.
 5. STRUCTURES FOR THIS PROJECT MAY NOT BE CAPABLE OF SUPPORTING OR RESISTING LOADS APPLIED TO THEM PRIOR TO COMPLETION OF CONSTRUCTION. BRACE AND SUPPORT THE STRUCTURES AS REQUIRED UNTIL CONSTRUCTION IS COMPLETE AND MATERIALS HAVE ATTAINED THE SPECIFIED STRENGTHS.

REINFORCED CONCRETE

1. CONCRETE STRENGTHS:
REINFORCED CONCRETE $f'_c=4000$ PSI (28 DAYS)
CEMENT: ASTM C 150 TYPE II/V.
AGGREGATE: ASTM C 33
WATERSTOP: POLYVINYL CHLORIDE (PVC)
2. REINFORCING STEEL: ASTM A 615 OR A 706 GRADE 60 DEFORMED. USE A 706 REINFORCING WHERE WELDING IS NOTED IN THE DRAWINGS.
3. UNLESS OTHERWISE DETAILED, PROVIDE 3/8-INCH DIAMETER SPACER BARS OR TIES AT 24 INCHES ON CENTER TO KEEP REINFORCING IN PLACE.
4. AT LOCATIONS OF INTERFERING REINFORCING LAYERS, OFFSET LAYERS BY ONE BAR DIAMETER TOWARD MID-DEPTH OF THE SECTION AS REQUIRED FOR PLACEMENT. REINFORCING MAY BE SPRUNG AT INTERFERENCE LOCATIONS AS PERMITTED BY THE OWNER. INCREASE THE CONCRETE THICKNESS BY LOWERING THE SUBGRADE AS REQUIRED TO MAINTAIN THE SPECIFIED MINIMUM CONCRETE COVERS.
5. DO NOT PLACE ANY PIPES, CONDUITS, OR DUCTS IN CONCRETE UNLESS SPECIFICALLY DETAILED.
6. ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION MAY BE ADDED IF PERMITTED BY THE OWNER.
7. STAGGER LAP SPLICES IN ADJACENT BARS BY ONE LAP LENGTH.
10. REINFORCING SHOWN CONTINUOUS MAY BE LAPPED DUE TO CONSIDERATIONS OF MAXIMUM AVAILABLE BAR LENGTHS AS PERMITTED BY THE ENGINEER. SUBMIT A PROPOSED LAYOUT OF LAP LOCATIONS TO THE OWNER FOR REVIEW. BAR COUPLERS MAY BE USED AS AN ALTERNATIVE TO LAPPING. DO NOT WELD REINFORCING UNLESS IT IS NOTED ON THE DRAWINGS. CONTINUOUS BARS MAY BE USED AS AN ALTERNATIVE TO LAPPING.
11. FOOTING AND WALL INTERSECTIONS: UNLESS NOTED OTHERWISE, EXTEND HORIZONTAL REINFORCING TO THE EXTENT POSSIBLE (2" CLEAR) AND TERMINATE WITH ACI STANDARD 90-DEGREE HOOKS.
12. SECURE ITEMS TO BE EMBEDDED IN CONCRETE IN PLACE PRIOR TO PLACING CONCRETE.

SPECIAL INSPECTION

THE OWNER WILL PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH THE CALIFORNIA BUILDING CODE SECTION 1704 WHERE NOTED IN THE DRAWINGS AND FOR THE FOLLOWING:

CONTINUOUS INSPECTION:

- EARTHWORK-
SOIL MATERIALS, COMPACTION, LIFT THICKNESS
- CONCRETE-
SAMPLING, SLUMP TESTS, TEMPERATURE PLACEMENT

PERIODIC INSPECTION:

- EARTHWORK-
VERIFY EARTH SUBGRADE, BEARING CAPACITY
EXCAVATION TO PROPER DEPTH
- CONCRETE-
REINFORCING TYPE, SIZE & SPACING
VERIFY DESIGN MIX
FORMWORK & CURING
REVIEW SUBMITTALS

DATE: DEC 2009
REVISED TO CONFORM TO CONSTRUCTION RECORDS PROVIDED BY CONTRACTOR

BY: _____
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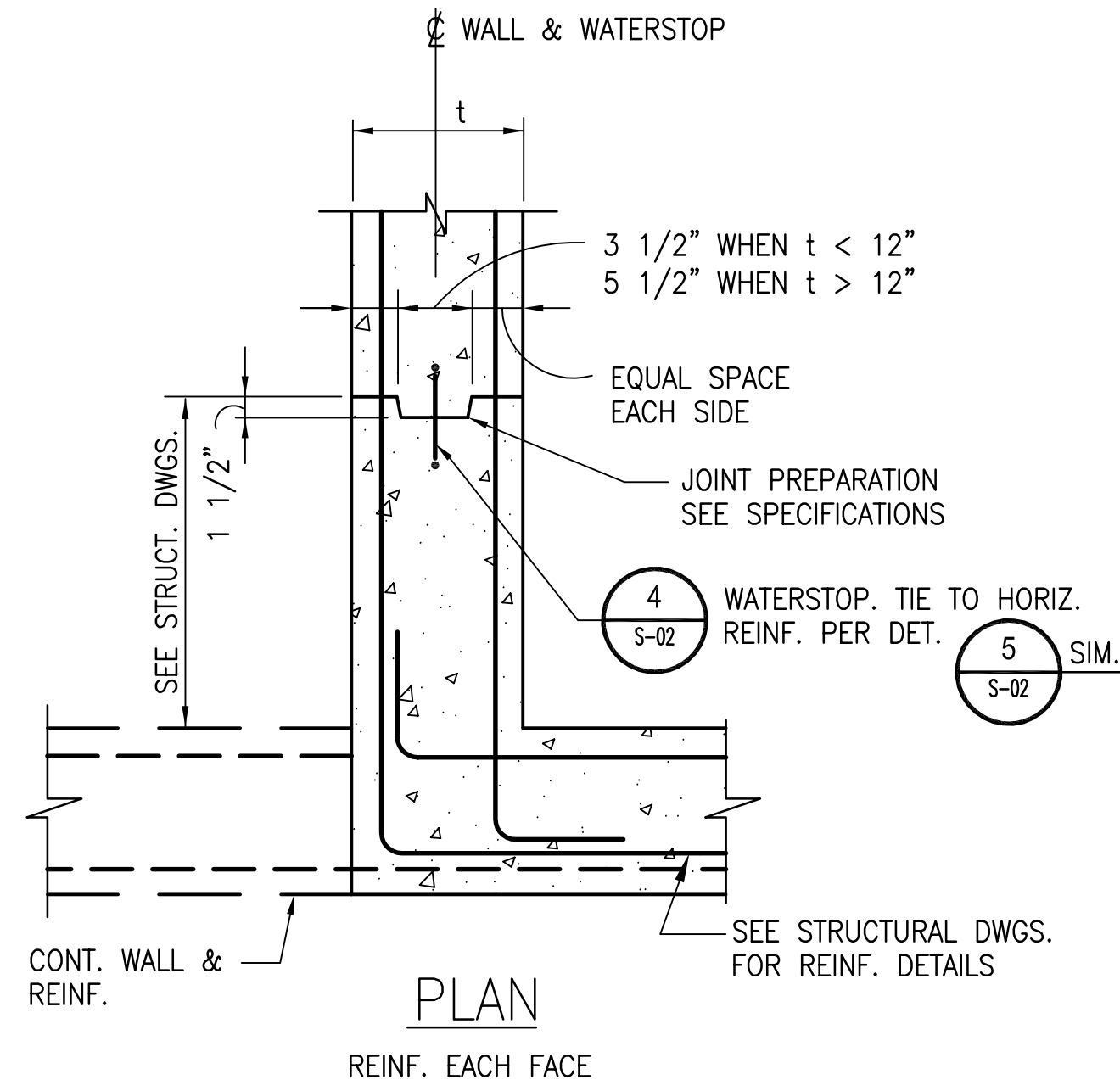
NO.	DATE	BY	DESCRIPTION
1	DEC 2009	KAM EDL	RECORD DRAWING

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CITY OF GLENDALE
RCF DEMONSTRATION WTP - 100% DESIGN
GLENDALE, CALIFORNIA
CHEMICAL CONTAINMENT AREA
TYPICAL STRUCTURAL DETAILS AND NOTES

PROJECT START DATE (M/Y)	05/2009
PROJECT NO.	106560
FILENAME	RCF-S02.dwg
SHEET NO.	8
DRAWING NO.	S-02

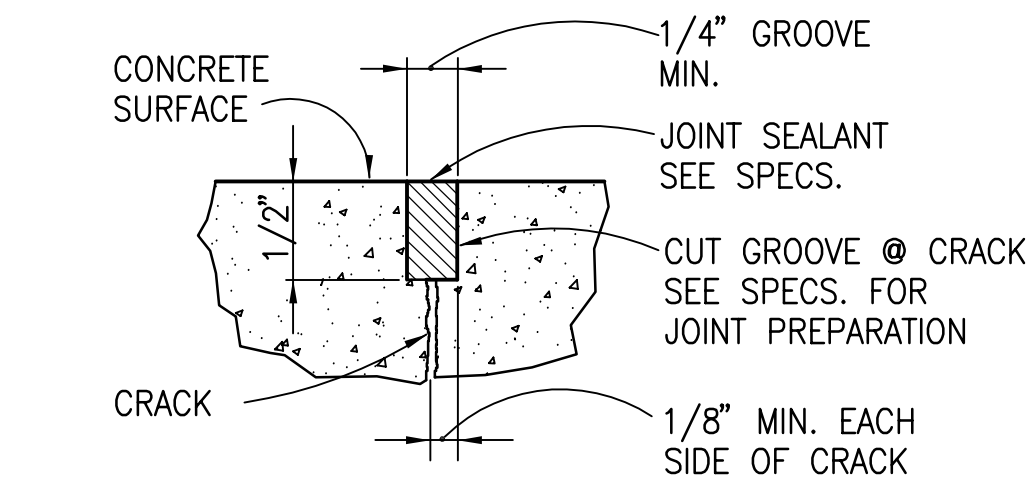
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 Filename: L:\WORK\PROJECTS\106560\GRA\RCF\STRUCTURAL\RECORD.DRAWING\RCF-S03.DWG



CONSTRUCTION JOINT - WALL TO WALL

SCALE: NONE

7



NOTES:
 PRIOR TO LEAK-TESTING:
 1. CRACKS IN THE STRUCTURE SHALL BE REPAIRED IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS.
 2. NO REPAIRS ARE REQUIRED FOR CRACKS LESS THAN 0.01 INCH IN WIDTH ON SURFACES THAT WILL BE CRYSTALLINE WATERPROOFED.
 3. NO REPAIRS ARE REQUIRED FOR CRACKS LESS THAN 0.004 INCH IN WIDTH.

AFTER LEAK-TESTING:
 REPAIR ALL LEAKING CRACKS PER THE SPECIFICATIONS.

ALTERNATE REPAIRS:

1. SUBMIT FOR REVIEW BY THE ENGINEER.

CONCRETE CRACK REPAIR

SCALE: NOT TO SCALE

8

TANK / EQUIPMENT PAD NOTES

1. THE MINIMUM PAD SIZE SHALL BE AS INDICATED OR SHOWN ON THE DRAWINGS OR AS DETERMINED BY THE EQUIPMENT MANUFACTURER, WHICHEVER IS GREATER.
2. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER. HOLD CONCRETE ANCHOR BOLTS IN POSITION WITH A TEMPLATE WHILE PAD IS BEING PLACED.
3. USE PIPE SLEEVES TO PROVIDE THE ANCHOR BOLT A MINIMUM MOVEMENT OF 1/2" IN ALL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
4. PIPE SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN THE ANCHOR BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS NOTED OTHERWISE.

TANK / EQUIPMENT PAD NOTES

9

DATE: DEC 2009
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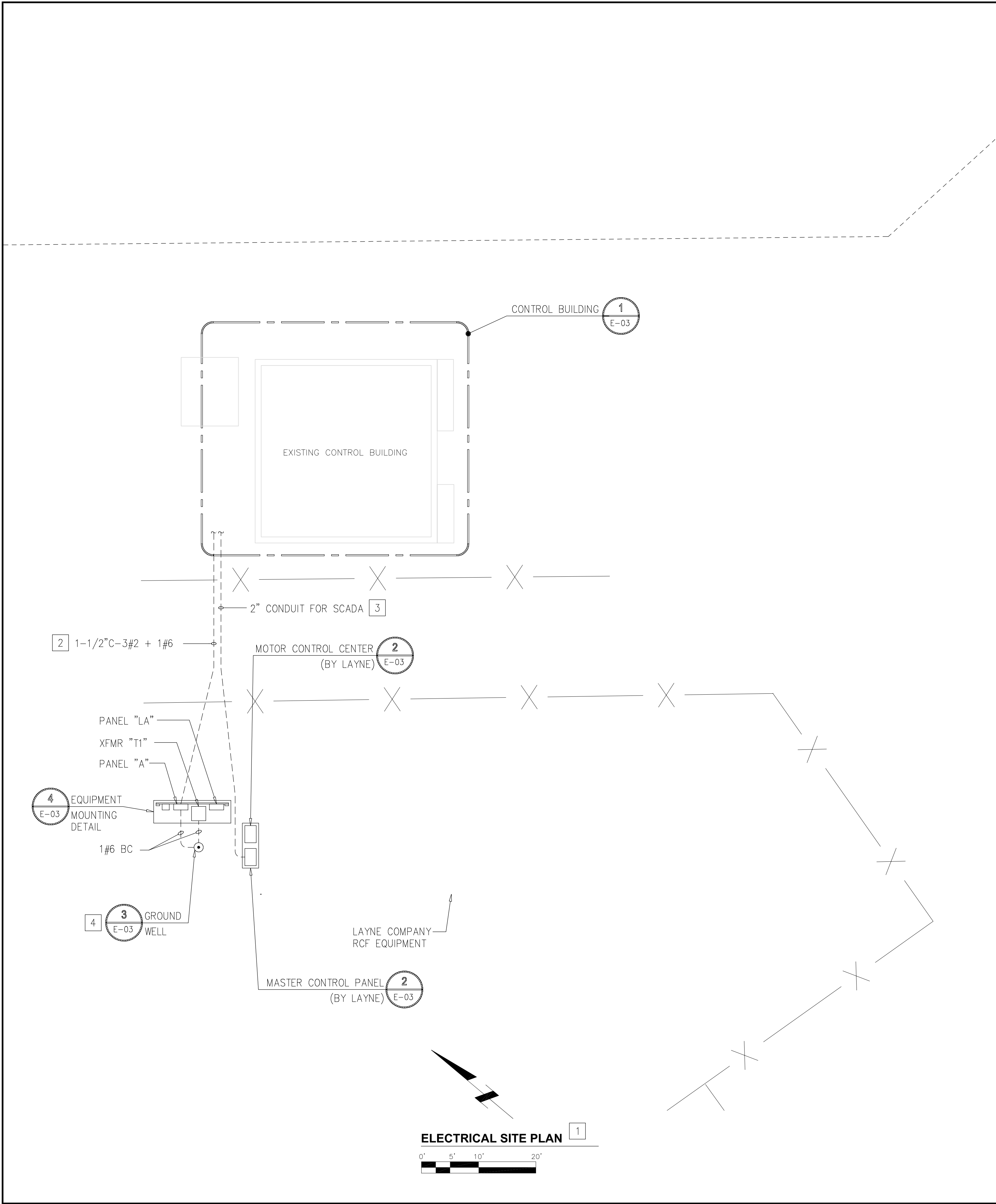
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CITY OF GLENDALE
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GLENDALE, CALIFORNIA
 CHEMICAL CONTAINMENT AREA
 TYPICAL STRUCTURAL DETAILS

PROJECT START DATE (M/Y)	05/2009
PROJECT NO.	106560
FILENAME	RCF-S03.dwg
SHEET NO.	9
DRAWING NO.	S-03

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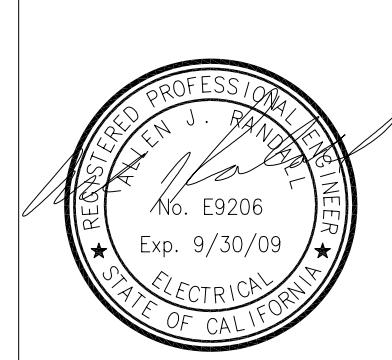
ELECTRICAL SITE PLAN 1
 0' 5' 10' 20'

LEGEND		ABBREVIATIONS	
---	CONDUIT, UNDERGROUND	A	AMPERES
(M)	UTILITY METER	BC	BARE COPPER
(CB)	CIRCUIT BREAKER	C	CONDUIT
(400A 3P)	CIRCUIT BREAKER 3P - THREE POLE	CB	CIRCUIT BREAKER
(MOTOR)	MOTOR	DIA	DIAMETER
(W)	TRANSFORMER	DISC	DISCONNECT
(DISCONNECT)	DISCONNECT	GND	GROUND
(GND)	GROUND	HP	HORSEPOWER
(X)	SEE NOTE SPECIFIED	MCP	MOTOR CONTROL CENTER
		P	POLE
		UON	UNLESS OTHERWISE NOTED
		V	VOLT
		VFD	VARIABLE FREQUENCY DRIVE
		W	WIRE
		XFMR	TRANSFORMER
		Ø	PHASE

- GENERAL NOTES:**
- 1 PROVIDE CONDUIT AND WIRES FROM FIELD MOUNTED INSTRUMENTS TO THE LAYNE COMPANY PLC. REFER TO LAYNE COMPANY DRAWINGS AND CIVIL DRAWINGS FOR LOCATION OF INSTRUMENTATION EQUIPMENT.
 - 2 COORDINATE POINT-OF-CONNECTION WITH THE LAYNE COMPANY.
 - 3 CONDUIT FOR SCADA, MAINTAIN 12" SEPARATION FROM THE POWER CONDUIT.
 - 4 PROVIDE 1#6 BC FROM GROUND ROD TO EXISTING MAIN SERVICE GROUND ROD.

- SPECIFICATIONS:**
1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE STATE OF CALIFORNIA ELECTRICAL SAFETY ORDER, THE NATIONAL ELECTRICAL CODE, AND ALL AUTHORITIES HAVING JURISDICTION.
 2. ALL MATERIAL SHALL BE NEW, UL LISTED AND APPROVED.
 3. ALL EXTERIOR INSTALLATIONS SHALL BE WEATHERPROOF.
 4. CONDUIT SHALL BE GALVANIZED RIGID STEEL CONFORMING TO ANSI C80.1 AND UL 6 FOR EXPOSED CONDUIT AND PVC SCHEDULE 40 CONFORMING TO NEMA TC-2 AND UL 651 FOR UNDERGROUND INSTALLATIONS.
 5. ALL CONDUIT SHALL BE INSTALLED AT 30" BELOW FINISHED GRADE AND TO BE PROVIDED WITH THE PROPER BEND AND SWEEP RADII REQUIRED FOR THE PROPER INSTALLATION OF CABLE.
 6. WIRE SHALL BE 600-VOLT THWN-2 STRANDED COPPER.
 7. TRANSFORMERS SHALL BE DRY-TYPE AND CONFORM TO ANSI C89.2, NEMA TR-27, NEMA ST-20 AND UL LISTED. PROVIDE NEMA 3R ENCLOSURE.
 8. TEST THE COMPLETE SYSTEM FOR PROPER OPERATION. MAKE NECESSARY CORRECTIONS AND LEAVE SYSTEM READY FOR OPERATION.

DATE: DEC 2009
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CITY OF GLENDALE RCF DEMONSTRATION WTP- 100% DESIGN GLENDALE, CALIFORNIA		ELECTRICAL SITE PLAN AND DETAILS	
PROJECT START DATE (M/Y)	05/2009	PROJECT NO.	106560
FILENAME	RCF-E01.dwg	SHEET NO.	
DRAWING NO.	E-01		

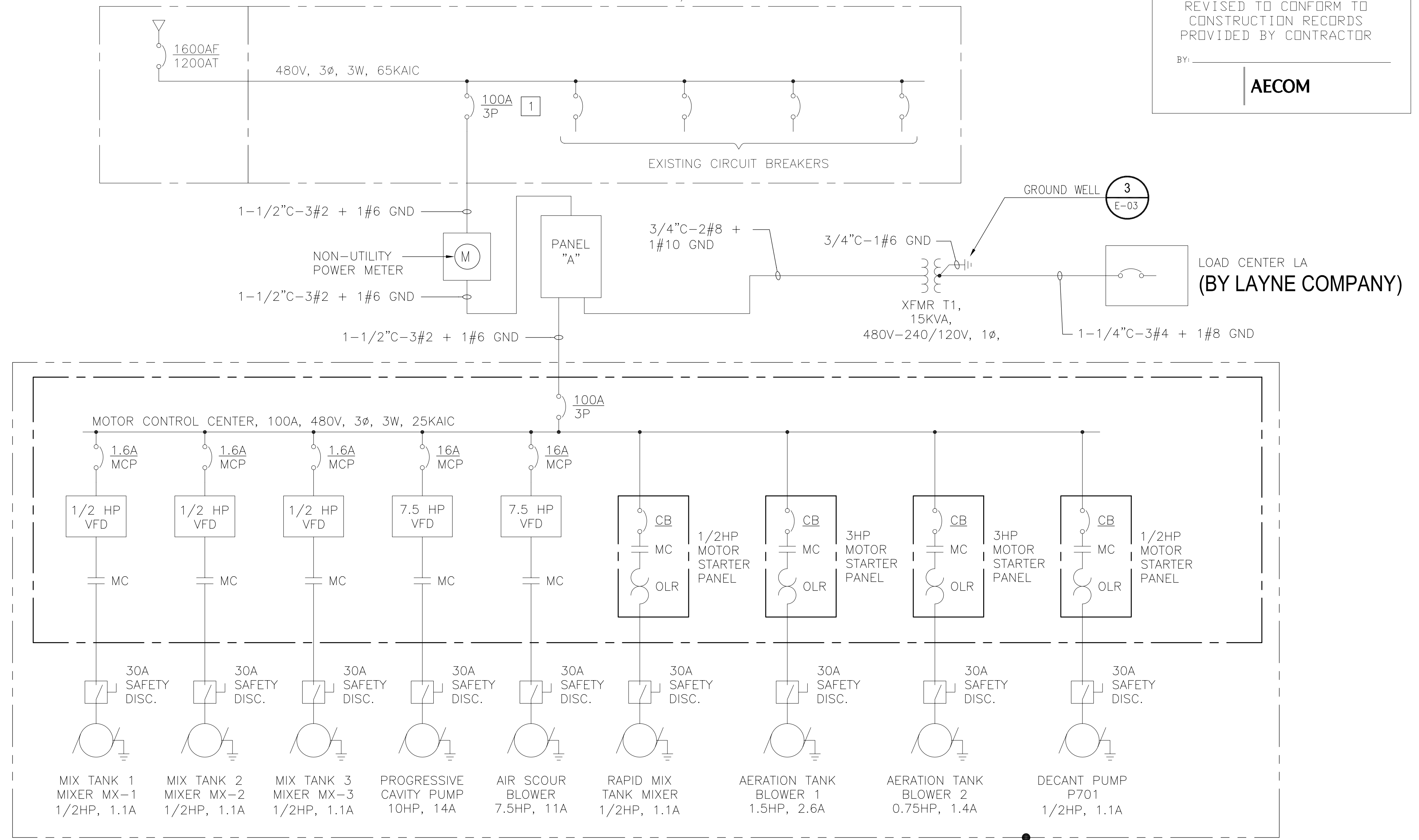
480V MOTOR CONTROL CENTER			
CIRCUIT DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
MIX TANK 1 MIXER		0.5	1.1
MIX TANK 2 MIXER		0.5	1.1
MIX TANK 3 MIXER		0.5	1.1
PROGRESSIVE CAVITY PUMP		10	14
AIR SCOUR BLOWER		7.5	11
RAPID MIX TANK MIXER		0.5	1.1
AERATION TANK BLOWER 1		1.5	2.6
AERATION TANK BLOWER 2		0.75	1.4
DECANT PUMP		0.5	1.1
SUB TOTAL:			34.5
+ 25% OF LARGEST MOTOR:			3.5
TOTAL AMPS @ 480V/3-PHASE:			38

EXISTING MAIN SWITCHBOARD LOAD CALCULATIONS	
PEAK DEMAND	400 KVA
NEW ADDED LOAD	54.8 KVA
TOTAL REVISED LOAD:	454.8 KVA = 547 AMPS @ 480V, 3φ

NOTES:

- 1 USE EXISTING SPACE AND PROVIDE NEW CIRCUIT BREAKER.

EXISTING CUTLER-HAMMER MAIN SWITCHBOARD EXISTING CUTLER-HAMMER MOTOR CONTROL CENTER, FREEDOM SERIES 2100



SINGLE LINE DIAGRAM 1
E-01

BY LAYNE COMPANY
(CONDUIT / WIRING TO EACH DEVICE PROVIDED BY CONTRACTOR)

DATE: DEC 2009
REVISED TO CONFORM TO CONSTRUCTION RECORDS PROVIDED BY CONTRACTOR
BY: **AECOM**

NAMEPLATE		LOAD CENTER (LA)		MTG.		SURFACE		MAIN		70A/2P																	
BUS: AMPS		100A		VOLTS:		120/240V, 1PH, 3W, 22KAIC																					
	WATTAGE		OUTLETS			22,000 AICS 20A-1P UON			OUTLETS			WATTAGE															
	A	B	LTG	REC	MISC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
PLC SYSTEM	360					1	15	15	2																		
MOTOR CONTROLS		180				3	15	15	4																		
POLYMER INJECTION SYSTEM 2	300					5	15	15	6																		
TRANSFER PUMP		1440				7	15	15	8																		
VESSEL 1 ON/OFF VALVES	1000					9	15	15	10																		
CONTROL VALVES		852				11	15	15	12																		
COMMON VALVES	720					13	15	15	14																		
MCR, HEATER, FAN, & RECEPTACLE		360				15	15	15	16																		
SPACE						17	15	15	18																		
SPACE						19	15	15	20																		
TOTAL LOAD	2380	2832																									
9.3 KW + LCL		0.36 KW =		9.66 KW AT		240 VOLTS		1PH =		40 AMPS																	

NAMEPLATE		A		MTG.		SURFACE		MAIN		100A/3P																	
BUS: AMPS		100A		VOLTS:		480V, 3PH, 3W, 65KAIC																					
	WATTAGE		OUTLETS			22,000 AICS 20A-1P UON			OUTLETS			WATTAGE															
	A	B	LTG	REC	MISC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
MCC	13280					1	100	40	2																		
		13280																									
TOTAL LOAD	13280	13280	13280																								
49.5 KW + LCL		0 KW =		49.5 KW AT		480 VOLTS		1PH =		60 AMPS																	



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GLENDALE, CALIFORNIA**

SINGLE LINE DIAGRAM

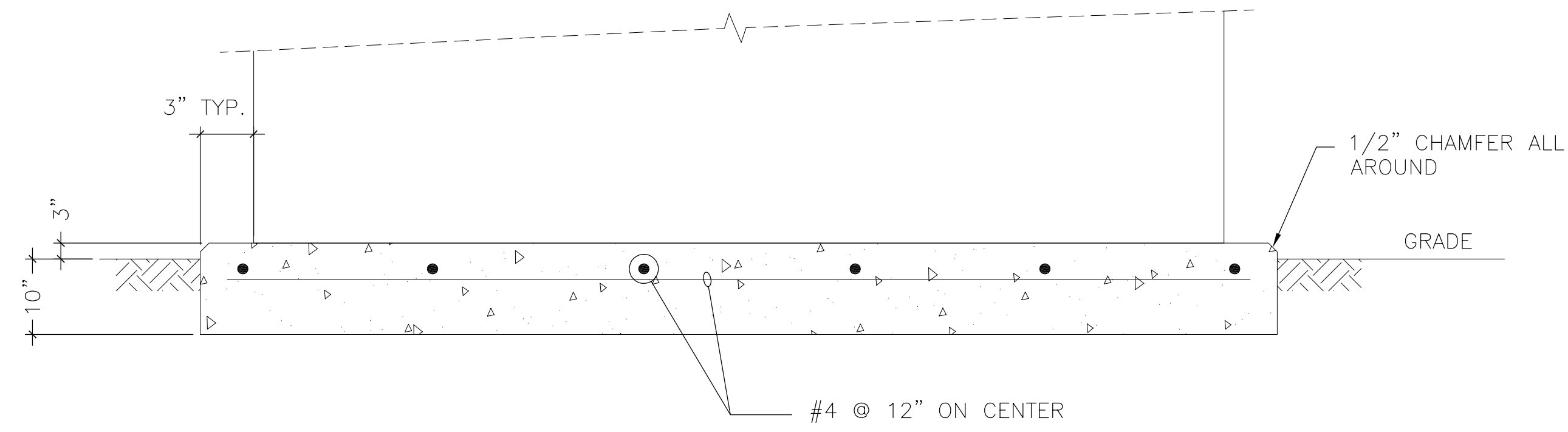
PROJECT START DATE (M/Y)	05/2009
PROJECT NO.	106560
FILENAME	RCF-E02.dwg
SHEET NO.	
DRAWING NO.	E-02

DRAWN BY: DD
DES BY: CU
CHK BY: CU
APP BY: 1
RECORD DRAWING
DESCRIPTION
REV

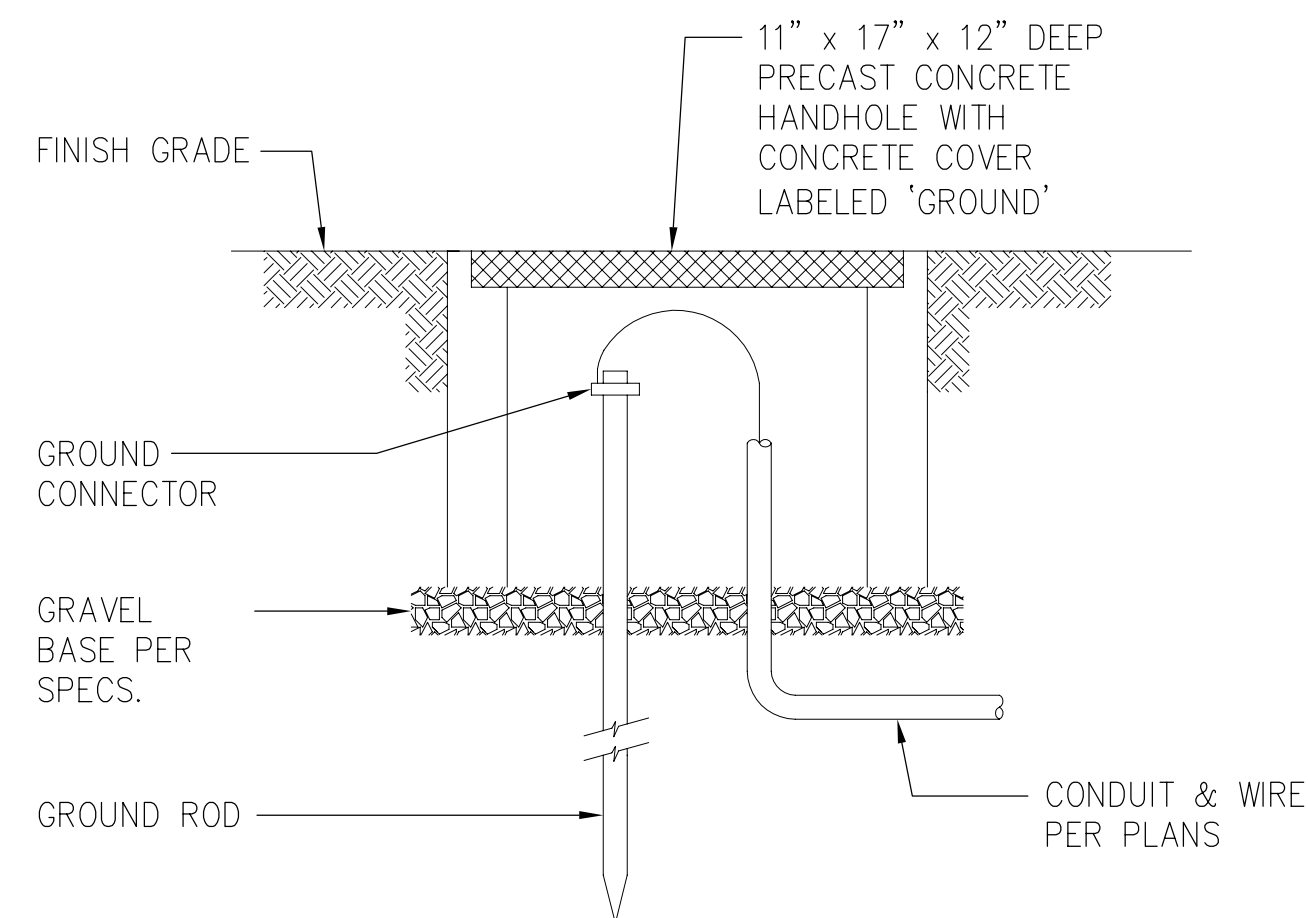
DD CU DD CU DD CU
DEC 2009
DATE (MDY)

VERIFY SCALE IF PLAN SHEET IS REDUCED
1"=1'-0"

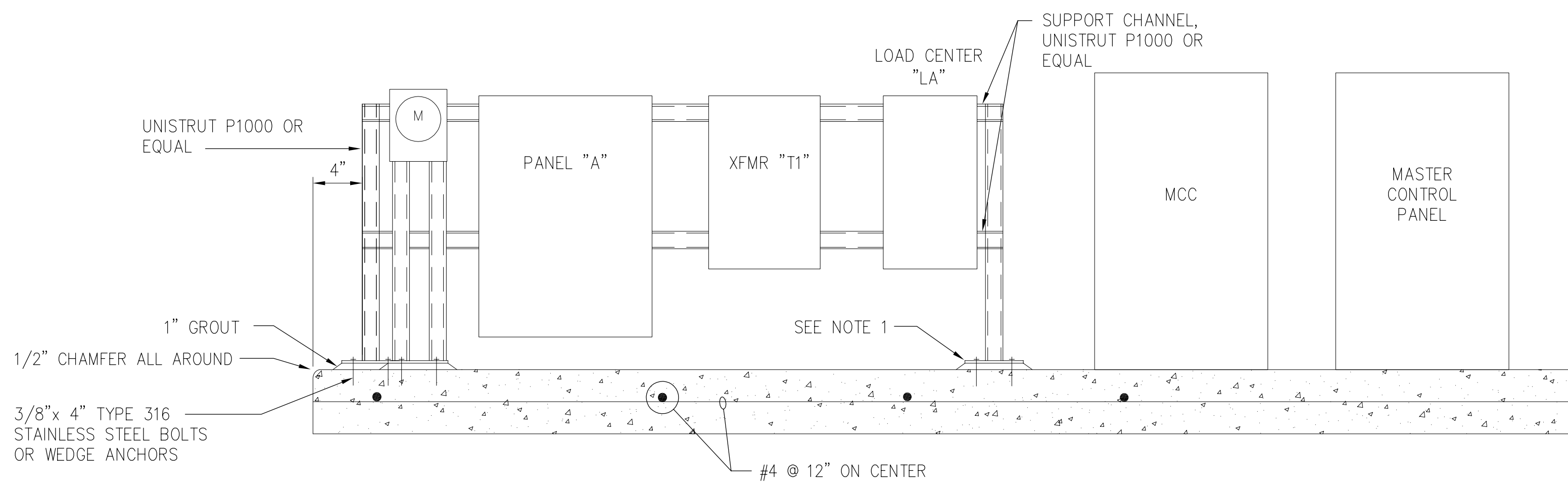
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MCC & MCP PAD 2



GROUND WELL DETAIL 3

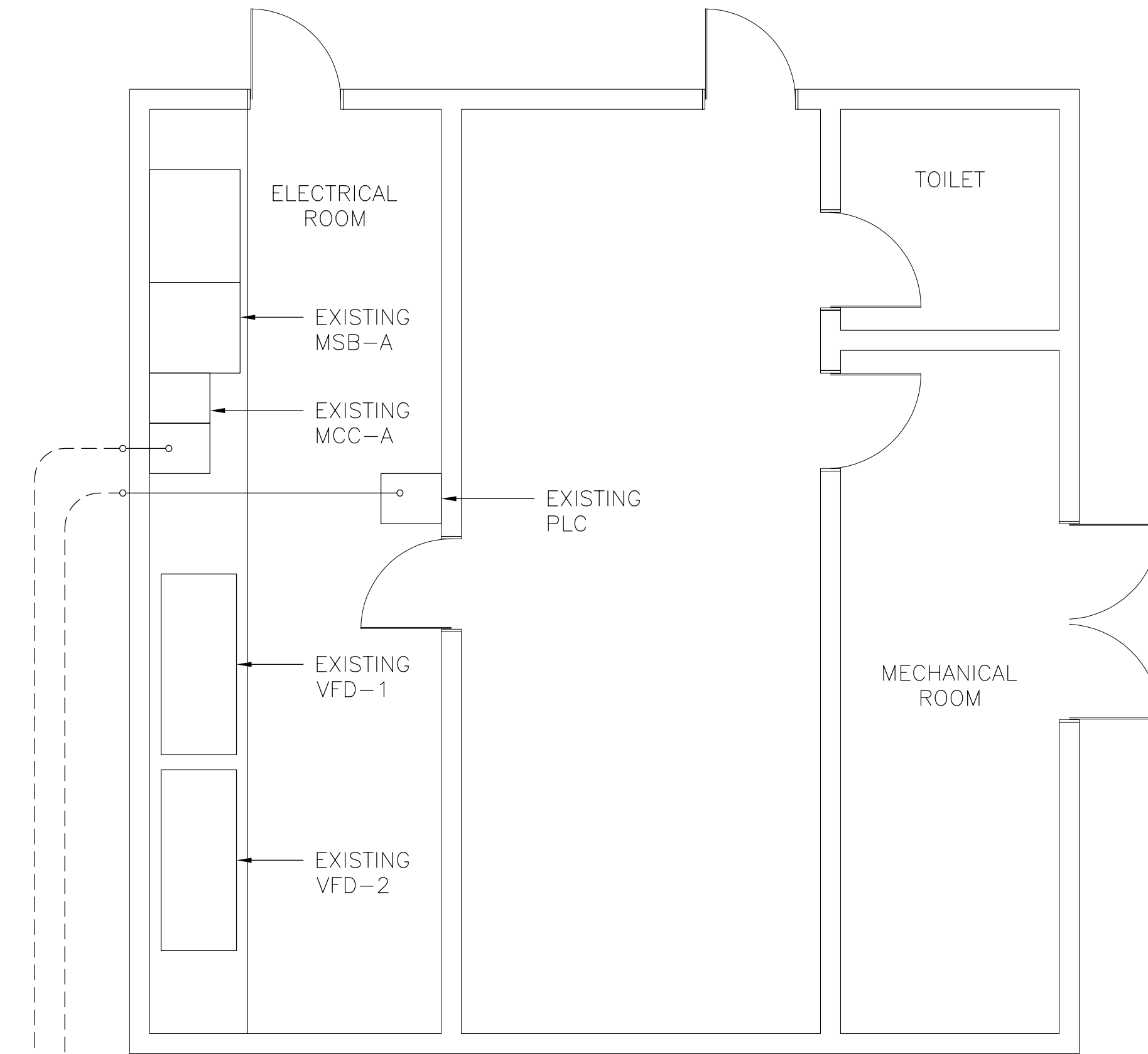


NOTE:

1. COATING SYSTEM: APPLY THREE OR MORE COATS OF AMERON 400, TNEMEC 100, ICI DEVOE BAR-RUST 233H, SHERWIN-WILLIAMS MACROPOXY B58-600, OR EQUAL; 30 MILS TOTAL. MAXIMUM THICKNESS OF AN INDIVIDUAL COATING SHALL NOT EXCEED THE MANUFACTURER'S RECOMMENDATION.

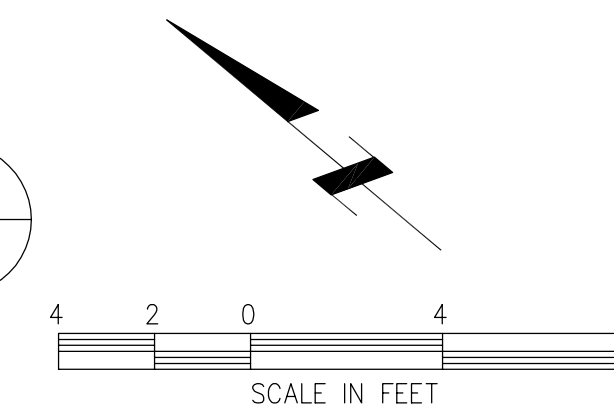
EQUIPMENT MOUNTING DETAIL 4

NOT TO SCALE



- 2" CONDUIT TO EQUIPMENT FOR SCADA (SEE E-01 FOR CONTINUATION) 1
- 1-1/2" C-3#1 + 1#6 TO 480V SKID MOUNTED PANEL (SEE E-01 FOR CONTINUATION) 1

EXISTING CONTROL BLD'G 1



NOTES:

- 1 WATER SEAL ALL PENETRATIONS ENTERING BUILDING.

DRN BY:	DES BY:	CHK BY:	APP BY:	DESCRIPTION	REV	DRN	CHK	DATE (MDY)
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CITY OF GLENDALE	
RCF DEMONSTRATION WTP - 100% DESIGN	
GLENDALE, CALIFORNIA	
CONTROL BUILDING POWER PLAN	
PROJECT START DATE (M/Y)	05/2009
PROJECT NO.	106560
FILENAME	RCF-E03.dwg
SHEET NO.	12
DRAWING NO.	E-03

Plotted By: mittelsteadtk
 Plot File Date Created: Dec/22/2009 9:13 AM
 Layout-Sheet Name: RCF_E-03
 Filename: L:\WORK\PROJECTS\106560\GRA\RCF\RECORD_DRAWING-ELECTRICAL\RCF-E03.DWG