

CITY OF HUNTINGTON BEACH

UTILITIES OPERATIONS YARD GENERATOR UPGRADE

AT 19051 HUNTINGTON STREET

NOTICE TO CONTRACTORS:

CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER OF RECORD HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER OF RECORD.

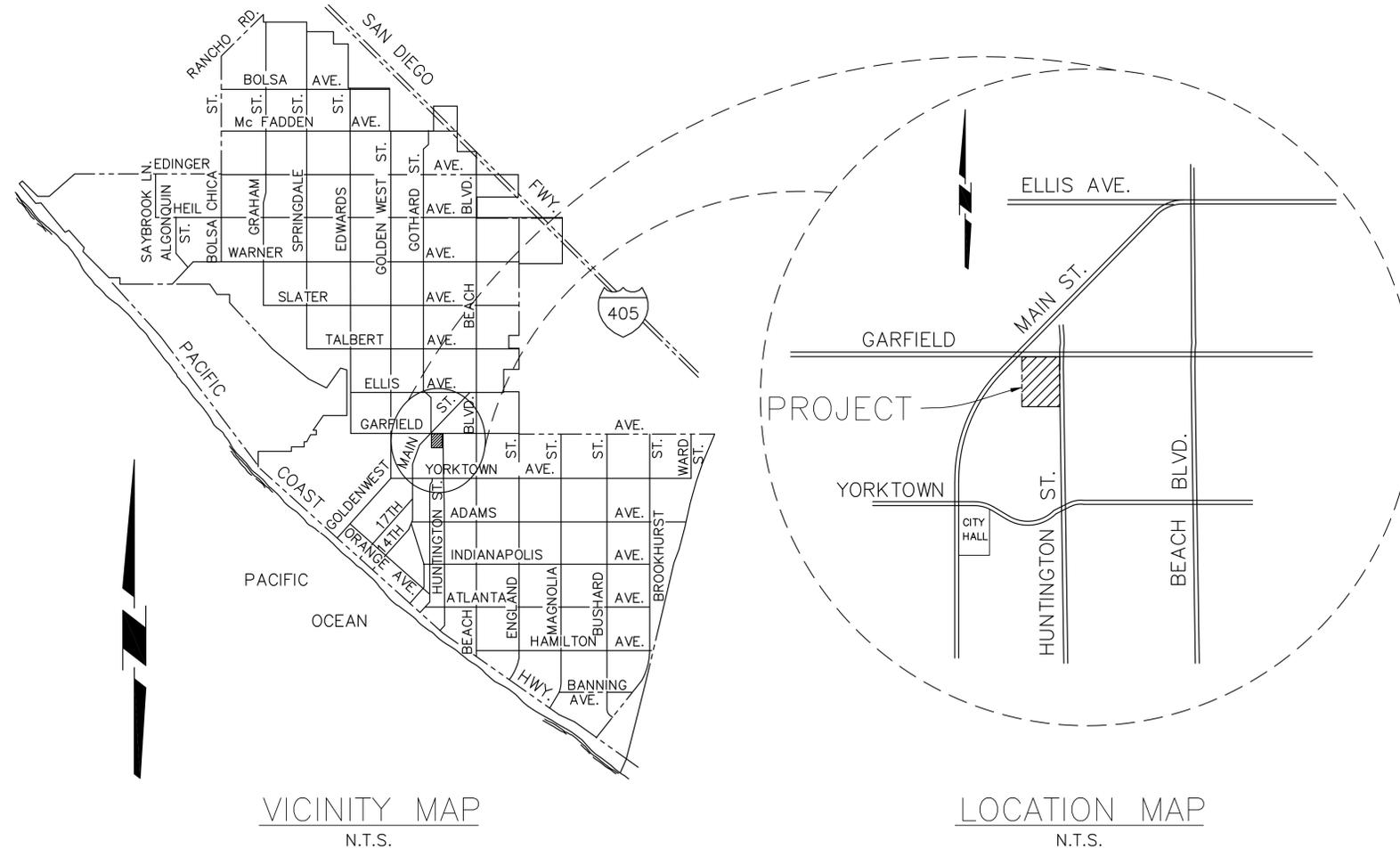
EXISTING FACILITIES AND UTILITIES ARE SHOWN FROM INFORMATION PROVIDED BY THE CITY. THE ENGINEER MAKES NO GUARANTEE THAT THE FACILITIES AND UTILITIES SHOWN COMPRISE ALL SUCH FACILITIES AND UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER FURTHER DOES NOT WARRANT THE FACILITIES AND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.

ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK SHOWN ON OR RELATED TO THESE PLANS SHALL CONDUCT THEIR OPERATIONS SO THAT ALL EMPLOYEES ARE PROVIDED A SAFE PLACE TO WORK AND THE PUBLIC IS PROTECTED. ALL CONTRACTORS AND SUBCONTRACTORS SHALL COMPLY WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATIONS" OF THE U.S. DEPARTMENT OF LABOR, AND THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS' "CONSTRUCTION SAFETY ORDERS".

THE ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE IN ANY WAY FOR THE CONTRACTORS' AND SUBCONTRACTORS' COMPLIANCE WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATIONS" OF THE U.S. DEPARTMENT OF LABOR OR WITH THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS' "CONSTRUCTION SAFETY ORDERS".

UNAUTHORIZED CHANGES AND USES:

THE ENGINEER OF RECORD FOR THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE ENGINEER OF RECORD FOR THESE PLANS.



PROJECT DESCRIPTION:

THE SCOPE OF WORK FOR THIS PROJECT CONSISTS OF DEMOLITION AND REPLACEMENT OF AN EXISTING EMERGENCY GENERATOR WITH A NEW DUAL FUEL NATURAL GAS/PROPANE EMERGENCY GENERATOR AND ANCILLARY EQUIPMENT. THE NEW GENERATOR SHALL BE INSTALLED INSIDE THE EXISTING RESERVOIR HILL PUMP STATION AND WILL REQUIRE MECHANICAL, ELECTRICAL AND STRUCTURAL MODIFICATIONS TO THE EXISTING FACILITY IN ADDITION TO INSTALLATION OF NEW EQUIPMENT. ALL WORK SHALL BE PERFORMED IN A MANNER WHICH MAINTAINS THE FUNCTIONALITY OF ALL EXISTING MECHANICAL, ELECTRICAL AND STRUCTURAL SYSTEMS WITHIN THE PUMP STATION.

THIS PROJECT SHALL COMPLY WITH TITLE 24 AND THE 2007 CALIFORNIA BUILDING CODE (CBC), CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), CALIFORNIA ELECTRICAL CODE (CEC), AND CALIFORNIA ENERGY CODE (CEC).

THIS PROJECT SHALL COMPLY WITH HUNTINGTON BEACH FIRE CODE (HBFC) CHAPTER 14, FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION.

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY EXISTING ITEMS WITHIN OR ADJACENT TO THE LIMITS OF WORK. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. IMPROVEMENTS DAMAGED BY CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED TO CONDITIONS EXISTING PRIOR TO DAMAGE TO THE OWNER'S SATISFACTION.
2. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR SAFETY AND SECURITY RELATED TO CONSTRUCTION ACTIVITIES DURING THE CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTY. SEE NOTICE TO CONTRACTORS ON THIS SHEET.
3. NOT ALL PIPE FITTINGS OR APPURTENANCES MAY BE CALLED OUT OR SHOWN BUT ARE REQUIRED TO BE PROVIDED BY THE CONTRACTOR TO PROVIDE A COMPLETE PIPING SYSTEM.
4. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THESE DRAWINGS.
5. UTILIZE DIELECTRIC COUPLINGS AND SIMILAR INSULATION BETWEEN DISSIMILAR METALS, INCLUDING BETWEEN STEEL, STAINLESS STEEL AND COPPER.
6. UNLESS NOTED OTHERWISE, ALL WORK SHOWN IN THESE DOCUMENTS IS NEW AND TO BE PERFORMED UNDER THIS CONTRACT.
7. THE CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND SHALL TAKE PRECAUTIONARY MEASURES NECESSARY TO PROTECT UTILITY LINES WHETHER SHOWN OR NOT THAT MAY CONCERN CONSTRUCTION ACTIVITIES. SEE NOTICE TO CONTRACTORS ON THIS SHEET.
8. PIPES SHALL SLOPE UNIFORMLY BETWEEN INVERT ELEVATIONS NOTED AND SHALL BE CONNECTED TO PROVIDE A COMPLETE, SMOOTH FLOW PATH. CONTRACTOR SHALL NOTIFY ENGINEER IF UNIFORM SLOPE CANNOT BE PROVIDED.
9. UNLESS OTHERWISE INDICATED, ALL WORK SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK), 2006 EDITION. PARTICULAR ATTENTION IS DIRECTED TO SECTION 2 OF PART 1, SCOPE AND CONTROL OF WORK, OF THE "GREENBOOK".

VICINITY MAP
N.T.S.

LOCATION MAP
N.T.S.

SHEET INDEX

NO.	SHEET NO.	DESCRIPTION	NO.	SHEET NO.	DESCRIPTION
1	T-1	TITLE SHEET	11	M-1	MECHANICAL ROOF PLAN
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3	DS-1	STRUCTURAL DEMOLITION AT FLOOR AND ROOF LEVELS	13	M-3	COOLING SYSTEM
4	GS-1	GENERAL STRUCTURAL REQUIREMENTS	14	GE-1	ELECTRICAL NOTES, SYMBOLS & ABBREVIATIONS
5	GS-2	TYPICAL STRUCTURAL DETAILS	15	GE-2	ELECTRICAL DETAILS
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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

Underground Service Alert

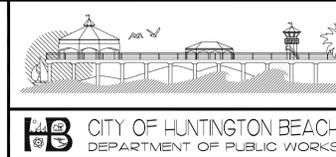
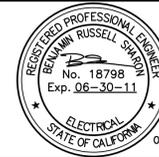
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1-800-422-4133

TWO WORKING DAYS BEFORE YOU DIG

REVISIONS						
REV.	DATE	BY	DESCRIPTION	APP'VD	REV.	DATE



DRAWN BY:
DESIGNED BY:
CHECKED BY:



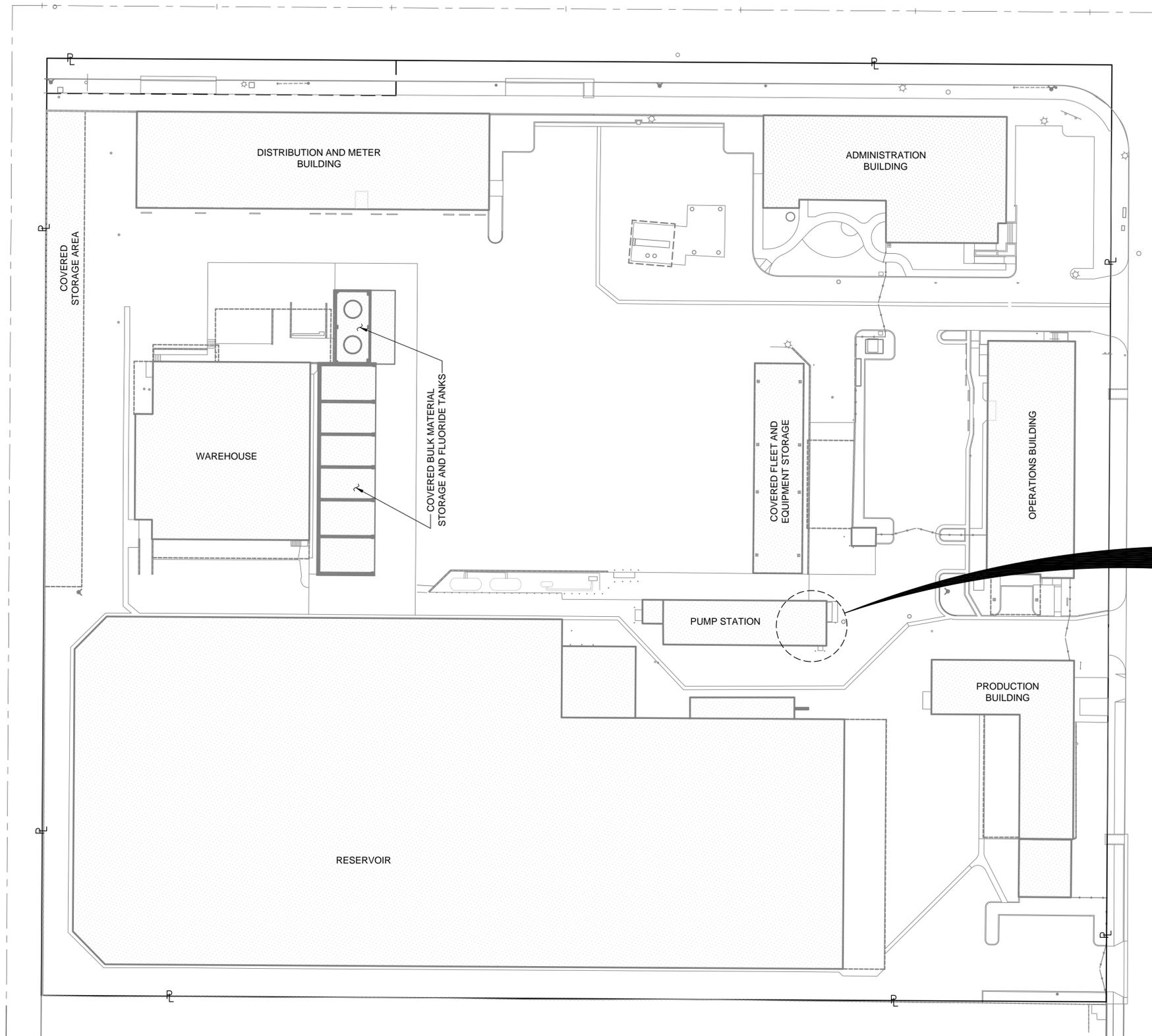
CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

TITLE SHEET

UTILITIES OPERATIONS YARD GENERATOR UPGRADE AT 19051 HUNTINGTON STREET

DWG NO.
1
OF
20
T-1

GARFIELD AVENUE



PROJECT LOCATION

HUNTINGTON STREET

UTILITIES OPERATIONS YARD GENERATOR UPGRADE AT 19051 HUNTINGTON STREET

PLAN OF UTILITIES OPERATIONS YARD
SCALE: NONE



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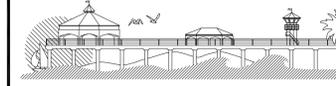
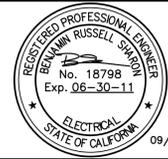
TWO WORKING DAYS BEFORE YOU DIG

REVISIONS

REV.	DATE	BY	DESCRIPTION	APP'VD	REV.	DATE	BY	DESCRIPTION	APP'VD



DRAWN BY: DSS 06/10
DESIGNED BY: RLB 09/10
CHECKED BY: RLB 09/10



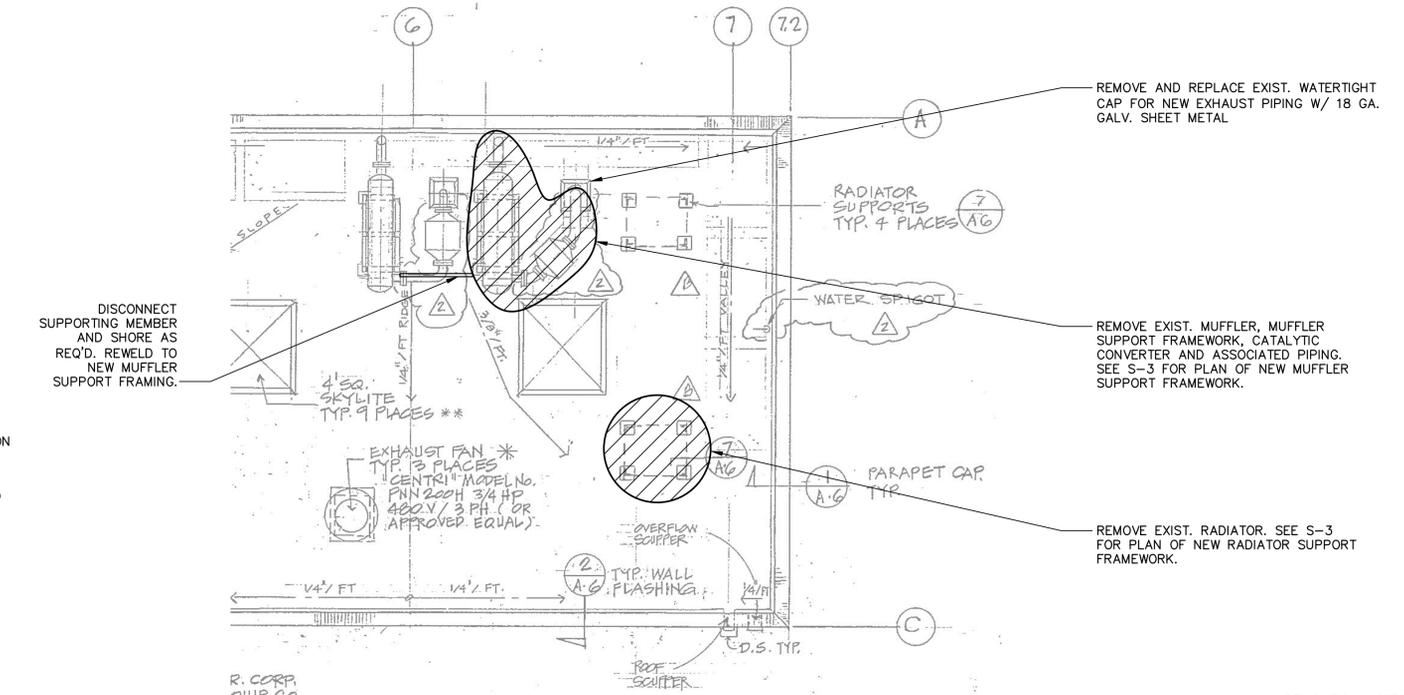
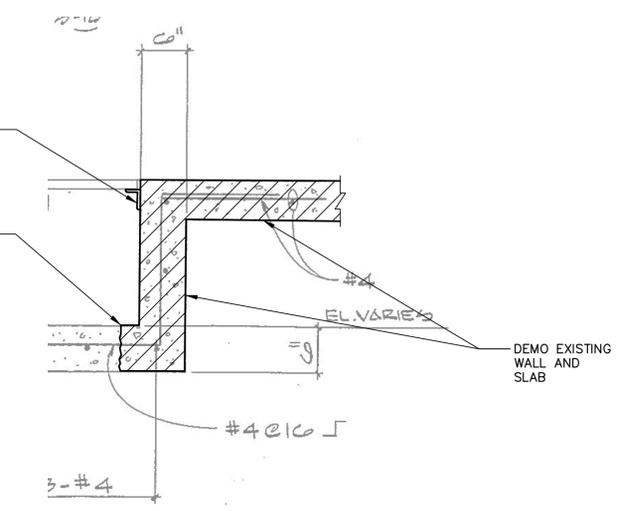
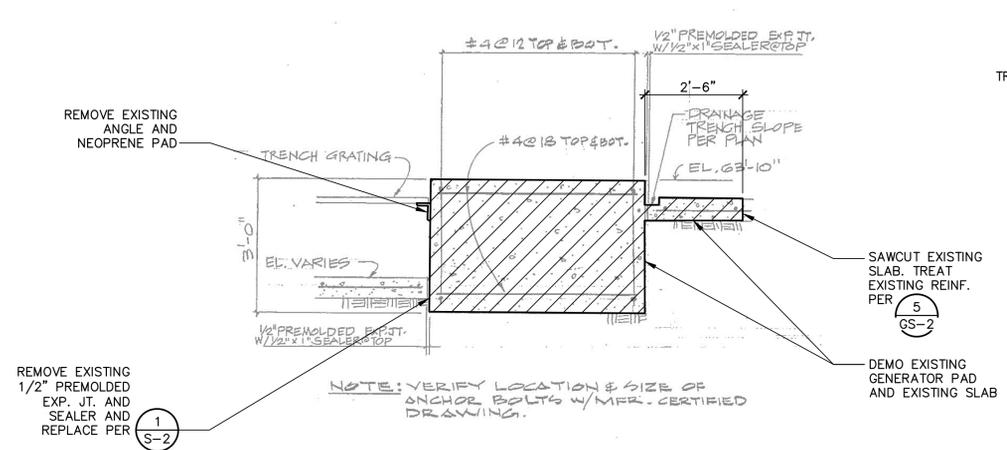
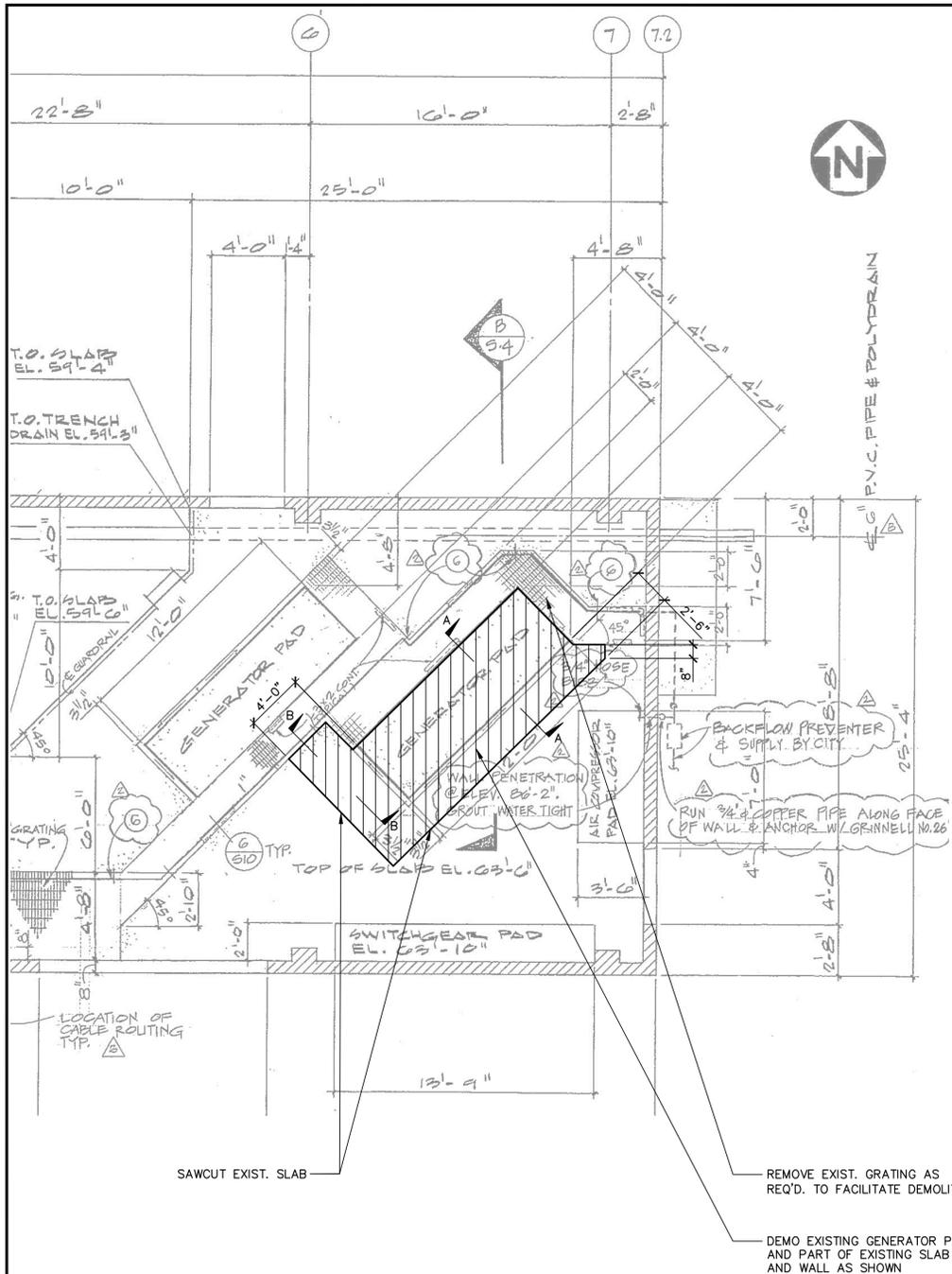
CITY OF HUNTINGTON BEACH
DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

SITE PLAN

DWG NO.
2
OF
20
T-2

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 9/29/2010 5:38 PM Ben Swann
 P:\HUNTB - City of Huntington Beach\HUNTB\09.024 Utilities Yard Generator\Drawings\General\T-2.dwg



- DEMOLITION NOTES**
- SEE MECHANICAL/ELECTRICAL PLANS.
 - REMOVE ALL MECHANICAL/ELECTRICAL EQUIPMENT, PIPING, ELECTRICAL LINES, ETC., AS INDICATED PRIOR TO STRUCTURAL DEMOLITION. SALVAGE ANY EQUIPMENT AS DIRECTED BY THE OWNER AND RELOCATE ON THE PREMISES OF THE UTILITIES OPERATIONS YARD.
 - ALL EQUIPMENT THAT IS NOT SALVAGED SHALL BE DISPOSED OF BY THE CONTRACTOR.
 - THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL CONCRETE, REBAR, PIPING, ELECTRICAL CONDUIT/WIRING, ETC., SHOWN TO BE DEMOLISHED.

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

EXISTING PARTIAL FLOOR PLAN
SCALE: NONE

EXISTING PARTIAL ROOF PLAN
SCALE: NONE

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TWO WORKING DAYS BEFORE YOU DIG

REVISIONS					
REV.	DATE	BY	DESCRIPTION	APP'VD	APP'VD

BRADY
3710 Ruffin Road, San Diego, California 92123
tel: 658-496-0500 fax: 658-496-0505

DRAWN BY: DSS 09/10
DESIGNED BY: RLB 09/10
CHECKED BY: RLB 09/10

PROFESSIONAL ENGINEER
R. L. BIGGERS
No. 1825
Exp. 8-30-11
STRUCTURAL
STATE OF CALIFORNIA

09/29/10

CITY OF HUNTINGTON BEACH
DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

STRUCTURAL DEMOLITION AT FLOOR AND ROOF LEVELS

DWG NO. 3 OF 20
DS-1

ABBREVIATIONS	
A.B.	ANCHOR BOLT
⊕	AT
ADD'L.	ADDITIONAL
ADJ.	ADJACENT
ALT.	ALTERNATE
APPROX.	APPROXIMATE
ARCH'L.	ARCHITECTURAL
BEL.	BELOW
B.F.	BRACED FRAME
BLD'G.	BUILDING
BM.	BEAM
B.O.F.	BOTTOM OF FOOTING
B.O.S.	BOTTOM OF STEEL
BOT.	BOTTOM
B.U.	BACK UP
C	CAMBER
C.J.P.	CONSTRUCTION JOINT
C.J.P.	COMPLETE JOINT PENETRATION
CL.	CENTER LINE
CLR.	CLEAR
CMU	CONCRETE MASONRY UNIT(S)
COL.	COLUMN(S)
CONC.	CONCRETE
CONN.	CONNECTION
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
D.B.	DRAG BEAM (COLLECTOR)
DBL.	DOUBLE
DIA.	DIAMETER
DIM.	DIMENSION
DIST.	DISTANCE
DO	DITTO
DWG.	DRAWING
DWL.	DOWEL
EA.	EACH
E.F.	EACH FACE
E.J.	EXPANSION JOINT
EL.	ELEVATION
ELEV.	ELEVATION
EMBED.	EMBEDMENT
EQ.	EQUAL
E.S.	EACH SIDE
E.W.	EACH WAY
EXIST.	EXISTING
EXP.	EXPANSION
F.F.	FINISH FLOOR
F.G.	FINISH GRADE
FLG.	FLANGE
FLR.	FLOOR
F.O.C.	FACE OF CONCRETE
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STEEL
FRM'G.	FRAMING
FRP	FIBER REINFORCED PLASTIC
F.S.	FAR SIDE
FT.	FOOT- FEET
FTG.	FOOTING
GA.	GAUGE
GALV.	GALVANIZED
GR.	GRADE
HK.	HOOK
HORIZ.	HORIZONTAL
HT.	HEIGHT
I.D.	INSIDE DIAMETER
INT.	INTERIOR
JT.	JOINT
LB	POUND
LLV	LONG LEG VERTICAL
LONG.	LONGITUDINAL
MAX.	MAXIMUM
MECH'L.	MECHANICAL
MFR.	MANUFACTURER
MIN.	MINIMUM
M.O.	MASONRY OPENING
NO.	NUMBER
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
o.c.	ON CENTER
O.H.	OPPOSITE HAND
OPN'G.	OPENING
PL.	PLATE
PERP.	PERPENDICULAR
P.J.P.	PARTIAL JOINT PENETRATION
R.	RADIUS
REIN.	REINFORCED, REINFORCING
REQ'D.	REQUIRED
SCHED.	SCHEDULE
SHT.	SHEET
SIM.	SIMILAR
S.M.S.	SHEET METAL SCREW
SPC'G.	SPACING
SPEC.	SPECIFICATION(S)
SQ.	SQUARE
S.S.	STAINLESS STEEL
STD.	STANDARD
STIFF.	STIFFENER
STRUC'L.	STRUCTURAL
SYMM.	SYMMETRICAL
T&B	TOP & BOTTOM
THR'D.	THREADED
T.O.C.	TOP OF CONCRETE
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
W/	WITH
WSHR.	WASHER
±	PLUS OR MINUS

GENERAL STRUCTURAL NOTES	
GENERAL	
1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.	
2. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE ERECTION SHORING AND BRACING AS REQUIRED FOR STABILITY OF ALL STRUCTURES AND EMBANKMENTS DURING ALL PHASES OF CONSTRUCTION.	
3. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.	
4. BEFORE COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES AND SHALL NOT PERFORM ANY WORK THAT WILL DAMAGE OR INTERFERE WITH THEIR SERVICE.	
5. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT ALL EXISTING FACILITIES AND UTILITIES AND SHALL NOT PERFORM ANY WORK THAT WILL DAMAGE OR INTERFERE WITH THEIR SERVICE.	
6. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT ALL EXISTING FACILITIES AND UTILITIES AND SHALL NOT PERFORM ANY WORK THAT WILL DAMAGE OR INTERFERE WITH THEIR SERVICE.	
7. DURING THE ENTIRE CONSTRUCTION PERIOD, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN CONDITIONS AT THE JOB SITE SO AS TO MEET IN ALL RESPECTS ALL APPLICABLE SAFETY LAWS, RULES, ORDINANCES AND REGULATIONS. THIS PROVISION SHALL APPLY TO ALL PERSONNEL EMPLOYED OR SUPERVISED BY THE CONTRACTOR AT THE JOB SITE.	
8. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE 2007 EDITION OF THE CALIFORNIA BUILDING CODE.	
REINFORCED CONCRETE	
1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 PSI. CEMENT SHALL CONFORM TO ASTM C150, TYPE II. MAXIMUM WATER-CEMENT RATIO SHALL BE 0.50. MAXIMUM SLUMP PER ASTM C143 SHALL BE 5" EXCEPT A MAXIMUM SLUMP OF 8" IS PERMITTED AFTER INTRODUCTION OF AN APPROVED "SUPERPLASTICIZER".	
2. CEMENT SHALL BE BLENDED WITH ASTM C618 CLASS F FLYASH WHICH SHALL NOT EXCEED 25 PERCENT BY WEIGHT OF THE TOTAL CEMENTITIOUS MATERIAL.	
3. THE MINIMUM AMOUNT OF CEMENTITIOUS MATERIALS PER CUBIC YARD OF CONCRETE SHALL BE 627 POUNDS.	
4. MAXIMUM AGGREGATE SIZE SHALL BE 1".	
5. WEIGHT OF FINE AGGREGATE SHALL NOT EXCEED 42% OF TOTAL WEIGHT OF FINE AND COARSE AGGREGATES COMBINED.	
6. ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS AND INSERTS SHALL BE WELL-SECURED IN POSITION PRIOR TO PLACING CONCRETE.	
7. PROVIDE A 3/4" CHAMFER ON ALL EXPOSED CORNERS UNLESS OTHERWISE NOTED.	
8. ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED AND CLEANED BEFORE PLACING NEW CONCRETE. ALL LAITANCE SHALL BE REMOVED AND THE EXISTING SURFACE WETTED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE. STANDING WATER SHALL BE REMOVED.	
9. ALL CONSTRUCTION JOINTS IN CONCRETE SHALL HAVE A 1/4" MINIMUM AMPLITUDE ROUGHNESS. SANDBLAST AND CLEAN BEFORE PLACING NEW CONCRETE.	
10. CURING OF CONCRETE SHALL BE ACCOMPLISHED BY LEAVING FORMS IN PLACE A MINIMUM OF 7 DAYS. THE CONCRETE SHALL REMAIN WET DURING THIS PERIOD. THIS MAY BE ACCOMPLISHED BY LOOSENING THE FORM TIES (NO SOONER THAN THREE DAYS) AND ALLOWING WATER TO RUN DOWN THE INSIDE OF THE FORMS. AFTER REMOVAL OF FORMS, SURFACES SHALL BE CURED AN ADDITIONAL 7 DAYS IN ACCORDANCE WITH SECTION 201-4 OF THE "GREENBOOK".	
REINFORCED STEEL	
1. BAR REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60 FOR ALL BARS EXCEPT FOR WELDED BARS WHICH SHALL CONFORM TO ASTM A706.	
2. MINIMUM BAR LAP SPLICE LENGTHS SHALL BE 48 BAR DIAMETERS UNLESS OTHERWISE INDICATED. BASE LAP SPLICE LENGTH ON SMALLER BAR DIAMETER.	
3. ALL LAP SPLICES SHALL BE CONTACT LAP SPLICES.	
4. WALL DOWELS SHALL MATCH VERTICAL WALL REINFORCING IN SIZE AND SPACING UNLESS OTHERWISE INDICATED.	
5. MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE ON THE DRAWINGS: CONCRETE CAST AGAINST EARTH - 3" ALL OTHER - 2"	
6. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITION OF ACI 315, DETAILS AND DETAILING OF CONCRETE REINFORCEMENT, UNLESS OTHERWISE INDICATED.	
STRUCTURAL STEEL	
1. EXCEPT AS OTHERWISE INDICATED, ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS AND CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES AS CONTAINED IN THE THIRTEENTH EDITION OF THE STEEL CONSTRUCTION MANUAL.	
2. CHANNELS, ANGLES, RODS, PLATES AND BARS SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE NOTED.	
3. BOLTS SHALL CONFORM TO ASTM A325N UNLESS OTHERWISE NOTED ON THE DRAWINGS. WASHERS SHALL CONFORM TO ASTM F436. NUTS SHALL CONFORM TO ASTM A563. BOLTS SHALL BE PRETENSIONED UNLESS OTHERWISE NOTED.	
4. UNLESS INDICATED OTHERWISE, ALL ANCHOR RODS SHALL CONFORM TO ASTM F1554 GRADE 36	
5. ANCHOR BOLTS SHALL BE HEADED ANCHOR BOLTS CONFORMING TO ASTM F1554, GRADE 36, UNLESS OTHERWISE NOTED ON THE DRAWINGS.	
6. BOLT HOLES SHALL BE 1/16" OVERSIZE UNLESS OTHERWISE NOTED.	
7. BURNING OF HOLES FOR BOLTS SHALL NOT BE PERMITTED.	
8. WELDING SHALL BE DONE BY A.W.S. QUALIFIED WELDERS IN CONFORMANCE WITH A.W.S. D1.1 USING E70 ELECTRODES UNLESS OTHERWISE INDICATED.	
9. ALL STEEL SHALL BE GALVANIZED AS FOLLOWS UNLESS OTHERWISE NOTED: a. STEEL SECTIONS, PLATES, AND BARS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN CONFORMANCE WITH ASTM A123. b. STEEL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED IN CONFORMANCE WITH ASTM A153. c. GALVANIZED COATINGS DAMAGED BY TRANSPORTING, HANDLING, CUTTING, BOLTING OR WELDING SHALL BE REPAIRED USING ASTM A780 ZINC-RICH PAINT FOR GALVANIZING.	
10. WELDED STUDS SHALL CONFORM TO ASTM A108, TYPE B, AND SHALL BE WELDED IN CONFORMANCE WITH THE LATEST EDITION OF ANS/AWS D1.1.	
ADHESIVE ANCHORS	
1. ANCHORS, EPOXY ADHESIVE, AND INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF DETAILS 9, 10 AND 11 ON SHEET GS-2.	

SPECIAL INSPECTION / STRUCTURAL OBSERVATION		
STATEMENT OF SPECIAL INSPECTIONS REQUIRED INSPECTIONS AND VERIFICATIONS		
TYPE OF WORK	INSPECTION TYPE	REFERENCED STANDARD
1. CONCRETE CONSTRUCTION Design Strength $f_c = 4,000$ psi		
a. Inspect formwork for shape, location and dimensions of concrete members	Periodic	ACI 318: 6.1.1
b. Verify use of required design mix	Periodic	ACI 318: Chap. 4, 5.2 - 5.4
c. Inspect reinforcing steel and placement	Periodic	ACI 318: 3.5, 7.1 - 7.7
d. Inspect bolts installed in concrete	Continuous	CBC 1911.5
e. Inspect concrete placement	Continuous	ACI 318: 5.9, 5.10
f. Obtain specimens for strength tests, perform slump and air content tests and determine temperature	Continuous	ASTM C172, ASTM C31, ACI 318: 5.6, 5.8
g. Inspect maintenance of specified curing temperature and techniques	Periodic	ACI 318: 5.11 - 5.13
2. ADHESIVE ANCHORS		
a. Anchorage of threaded rods in concrete	Periodic	ICC ESR-3013
b. Anchorage of threaded rods in masonry	Periodic	ICC ESR-1967

STRUCTURAL OBSERVATION REQUIREMENTS

THE OWNER SHALL EMPLOY THE ENGINEER RESPONSIBLE FOR THE STRUCTURAL DESIGN, OR ANOTHER ENGINEER DESIGNATED BY THE ENGINEER RESPONSIBLE FOR THE STRUCTURAL DESIGN, TO PERFORM STRUCTURAL OBSERVATION AS DEFINED IN SECTION 1702 OF THE 2007 CALIFORNIA BUILDING CODE. OBSERVED DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER'S REPRESENTATIVE, SPECIAL INSPECTOR, CONTRACTOR, AND THE BUILDING OFFICIAL. THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFYING ANY REPORTED DEFICIENCIES THAT, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

STRUCTURAL OBSERVATION SHALL BE PERFORMED AT THE FOLLOWING STAGES OF CONSTRUCTION:

1. CONCRETE: PRIOR TO PLACEMENT OF STRUCTURAL CONCRETE FOR ALL WALLS, FOOTINGS AND SLABS. ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS AND OTHER INSERTS SHALL BE SECURED IN PLACE PRIOR TO STRUCTURAL OBSERVATION.
2. STEEL FRAMING: ALL STRUCTURAL STEEL FRAMING SHALL BE IN PLACE EXCEPT THAT WHICH IMPAIRS THE OBSERVATION OF ANY STRUCTURAL FRAMING. ANY NON-STRUCTURAL ITEMS THAT MAY IMPAIR THE OBSERVATION OF STRUCTURAL FRAMING SHALL NOT BE INSTALLED PRIOR TO STRUCTURAL OBSERVATION.

DESIGN CRITERIA

DESIGN CRITERIA

GOVERNING CODES:

1. 2007 CALIFORNIA BUILDING CODE (CBC)
2. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE/SEI 7-05), CHAPTER 13
3. DESIGN ROOF LIVE LOAD = 20 PSF (REDUCIBLE)

EARTHQUAKE DESIGN:

$I = I_p = 1.5$
 $S_s = 1.699$
 $S_1 = 0.642$
 SITE CLASS D
 $S_{DS} = 1.133$
 $S_{D1} = 0.428$
 $\alpha_p = 1.0$
 $R_p = 2.5$
 SEISMIC DESIGN CATEGORY D
 ANALYSIS BY EQUIVALENT LATERAL FORCE PROCEDURE

Underground Service Alert
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 1-800-422-4133
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REV.	DATE	BY	DESCRIPTION	APP'VD	

BRADY
 3710 Ruffin Road, San Diego, California 92123
 Tel: 619/446-0000 Fax: 619/446-0000

DRAWN BY: DSS 09/10
 DESIGNED BY: RLB 09/10
 CHECKED BY: RLB 09/10

REGISTERED PROFESSIONAL ENGINEER
 R. L. BIGGERS
 No. 1825
 Exp. 8-30-11
 STRUCTURAL
 STATE OF CALIFORNIA
 09/29/10

CITY OF HUNTINGTON BEACH
 DEPARTMENT OF PUBLIC WORKS

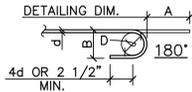
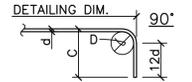
CITY OF HUNTINGTON BEACH
 UTILITIES OPERATIONS YARD
 GENERATOR UPGRADE
 GENERAL STRUCTURAL REQUIREMENTS
 DWG NO. 4 OF 20
 GS-1

UTILITIES OPERATIONS YARD GENERATOR UPGRADE AT 19051 HUNTINGTON STREET

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 9/29/2010 5:39 PM Ben Sharon
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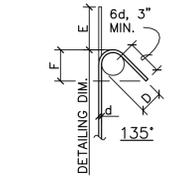
DIMENSION TABLE FOR 90° AND 180° HOOKS

BAR SIZE	A	B	C	D
#3	5	3	6	2 1/4
#4	6	4	8	3
#5	7	5	10	3 3/4
#6	8	6	12	4 1/2
#7	10	7	14	5 1/4
#8	11	8	16	6
#9	15	11 3/4	19	9 1/2
#10	17	13 1/4	22	10 3/4
#11	19	14 3/4	24	12

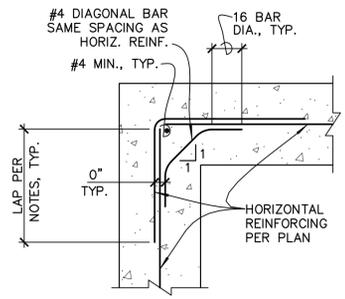


DIMENSION TABLE FOR 135° HOOKS

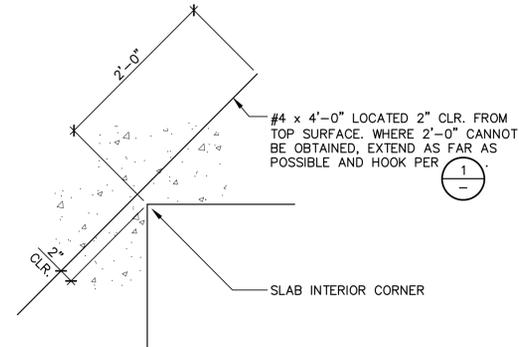
BAR SIZE	D	E	F
#3	1 1/2	4 1/4	2 1/2
#4	2	4 1/2	3
#5	2 1/2	5 1/2	3 3/4
#6	4 1/2	8	4 1/2



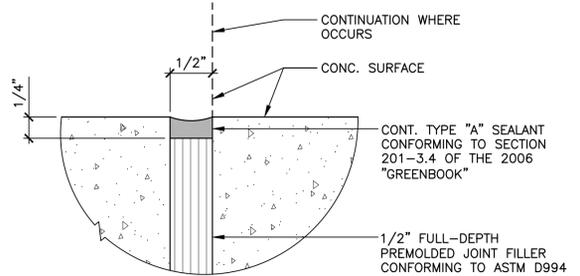
NOTE: UNLESS OTHERWISE NOTED, THESE DIMENSIONS SHALL BE USED FOR ALL INDICATED HOOKS



- NOTES:
- VERTICAL WALL BARS NOT SHOWN FOR CLARITY.
 - FOR STANDARD HOOK DIMENSIONS, SEE (1).
 - SEE REINFORCING STEEL NOTE 2 ON GS-1 FOR LAP SPLICE LENGTHS.



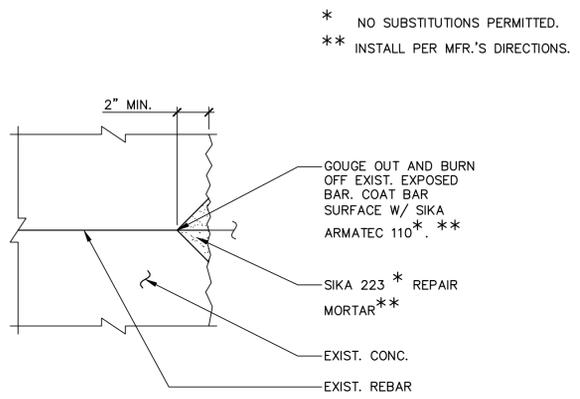
3 TYPICAL SLAB INTERIOR CORNER REINFORCING
SCALE: NONE



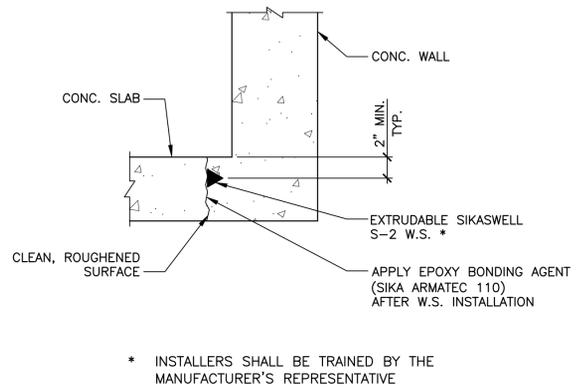
4 TYPICAL EXPANSION JOINT/SEALANT DETAIL
SCALE: NONE

1 TYPICAL HOOKS FOR REINFORCING BARS
SCALE: NONE

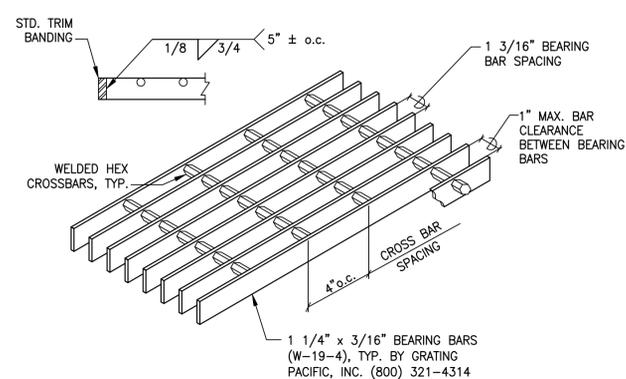
2 TYPICAL REINFORCING AT CORNERS OF CONCRETE WALLS
SCALE: NONE



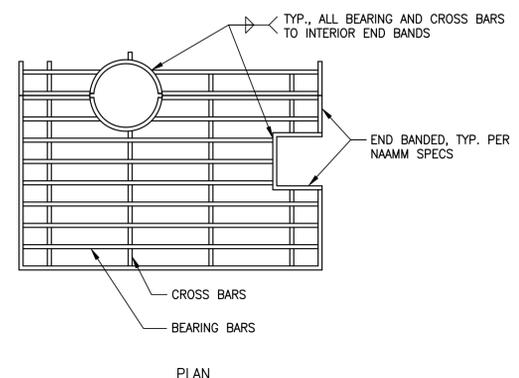
5 TYPICAL REBAR REPAIR DETAIL
SCALE: NONE



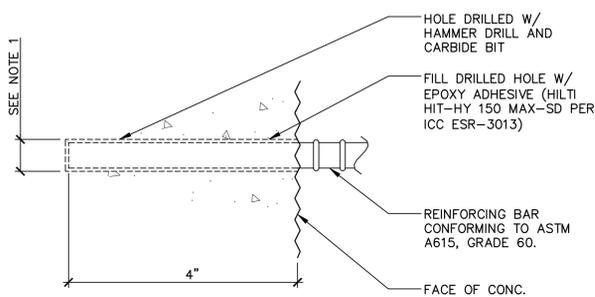
6 TYPICAL EXTRUDABLE WATERSTOP DETAIL
SCALE: NONE



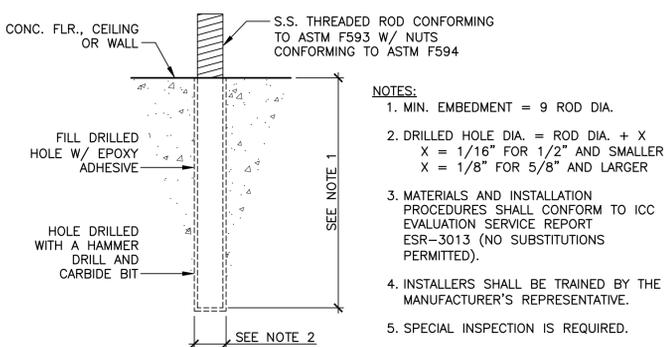
7 TYPICAL GRATING REQUIREMENTS DETAIL
SCALE: NONE



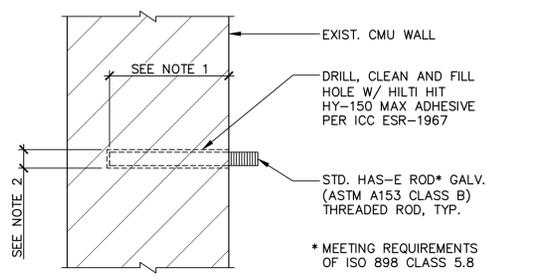
8 TYPICAL GRATING REQUIREMENTS DETAIL
SCALE: NONE



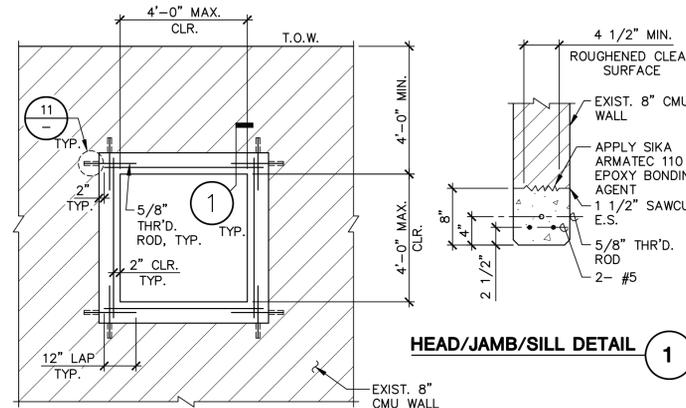
9 TYPICAL REBAR ADHESIVE ANCHORAGE DETAIL
SCALE: NONE



10 TYPICAL THREADED ROD ADHESIVE ANCHOR DETAIL
SCALE: NONE



11 TYPICAL THREADED ROD ADHESIVE ANCHOR DETAIL FOR CMU
SCALE: NONE



12 TYPICAL ADDED OPENING IN EXISTING CMU WALL
SCALE: NONE

- NOTES:
- DRILLED HOLE DIA. = BAR DIA. + 1/8"
 - MATERIALS AND INSTALLATION PROCEDURES SHALL CONFORM TO ICC EVALUATION SERVICE REPORT ICC-ER-3013 (NO SUBSTITUTION PERMITTED).
 - INSTALLERS SHALL BE TRAINED BY THE MANUFACTURER'S REPRESENTATIVE.
 - SPECIAL INSPECTION IS REQUIRED.

- NOTES:
- MIN. EMBEDMENT = 9 ROD DIA.
 - DRILLED HOLE DIA. = ROD DIA. + X
X = 1/16" FOR 1/2" AND SMALLER
X = 1/8" FOR 5/8" AND LARGER
 - MATERIALS AND INSTALLATION PROCEDURES SHALL CONFORM TO ICC EVALUATION SERVICE REPORT ESR-3013 (NO SUBSTITUTIONS PERMITTED).
 - INSTALLERS SHALL BE TRAINED BY THE MANUFACTURER'S REPRESENTATIVE.
 - SPECIAL INSPECTION IS REQUIRED.

- NOTES:
- EMBEDMENT = 9 ROD DIA.
 - DRILLED HOLE DIA. = ROD DIA. + X
X = 1/16" FOR 1/2" AND SMALLER
X = 1/8" FOR 5/8" AND LARGER
 - MATERIALS AND INSTALLATION PROCEDURES SHALL CONFORM TO ICC EVALUATION SERVICE REPORT ESR-1967 (NO SUBSTITUTIONS PERMITTED).
 - INSTALLERS SHALL BE TRAINED BY THE MANUFACTURER'S REPRESENTATIVE.
 - SPECIAL INSPECTION IS REQUIRED.
 - DRILLED HOLES MUST BE LOCATED 1" MIN. CLEAR OF MASONRY HEAD JOINTS.

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tel: 858/496-0500 fax: 858/496-0505

PROFESSIONAL ENGINEER
R. L. BIGGERS
No. 1825
Exp. 6-30-11
STRUCTURAL
STATE OF CALIFORNIA

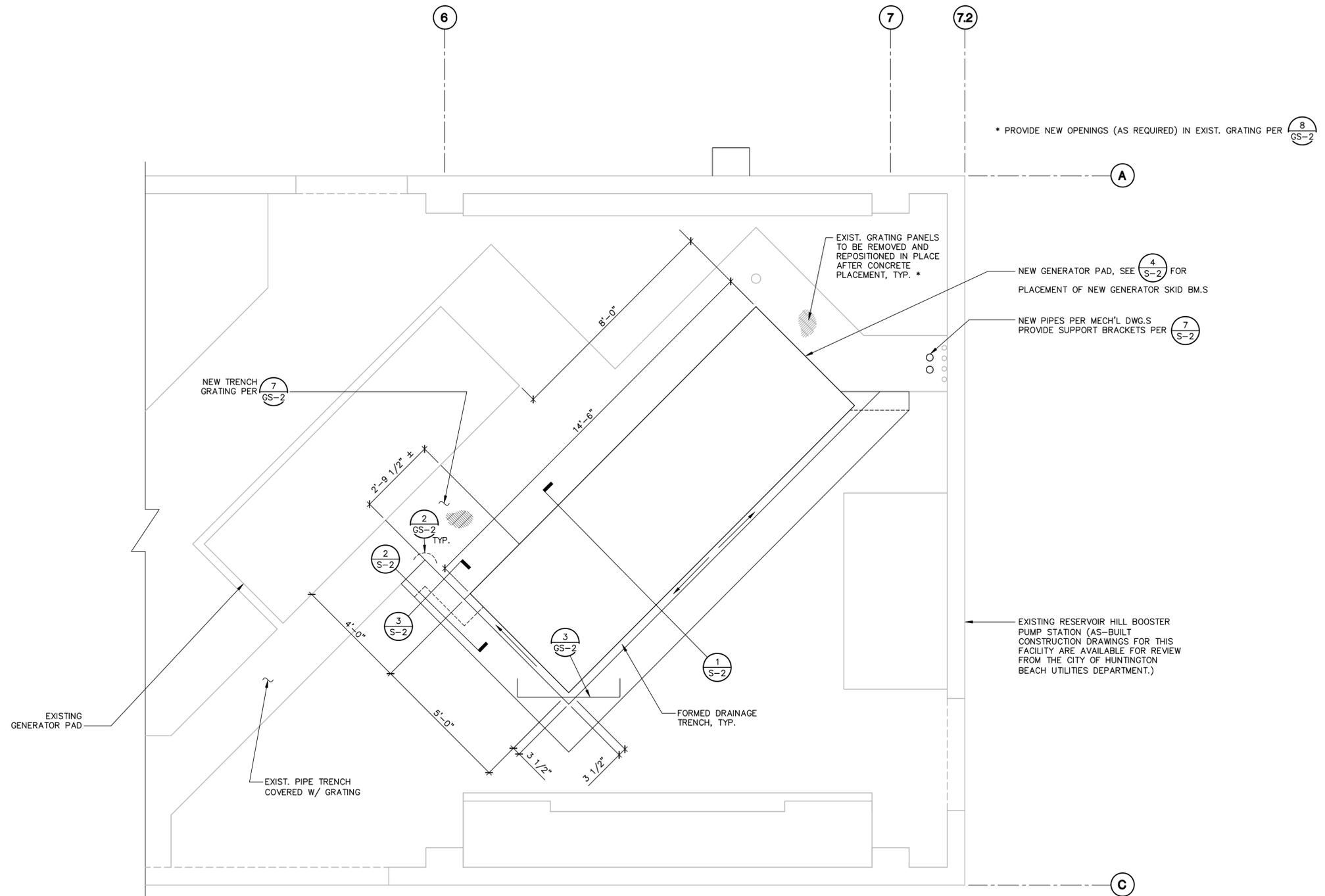
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DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE
TYPICAL STRUCTURAL DETAILS

UTILITIES OPERATIONS YARD GENERATOR UPGRADE AT 19051 HUNTINGTON STREET

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DWG NO. 5 OF 20
GS-2



PUMP STATION PARTIAL FLOOR PLAN
SCALE: 1/2" = 1'-0"



VERIFY SCALE
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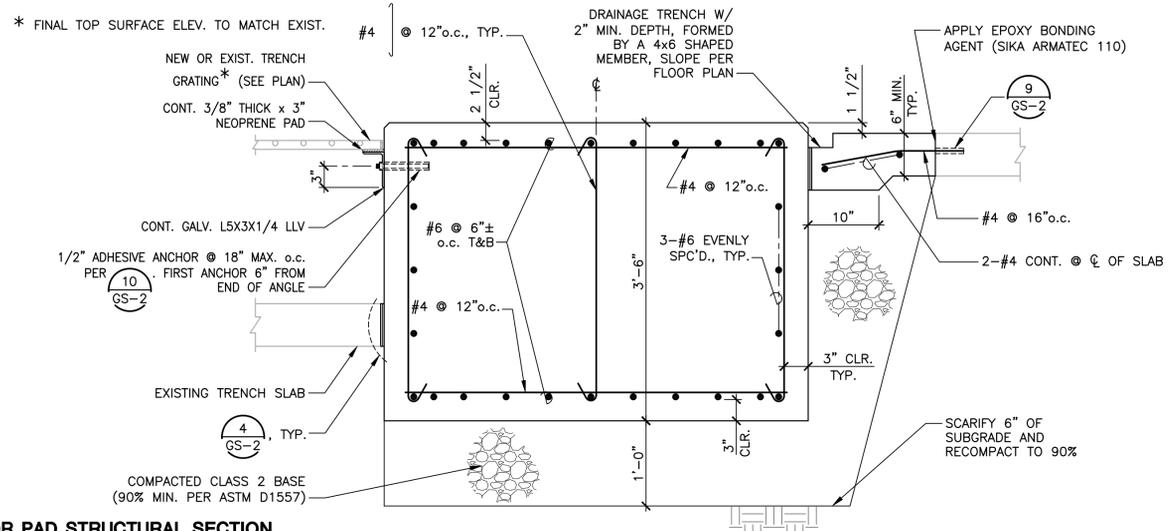
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DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

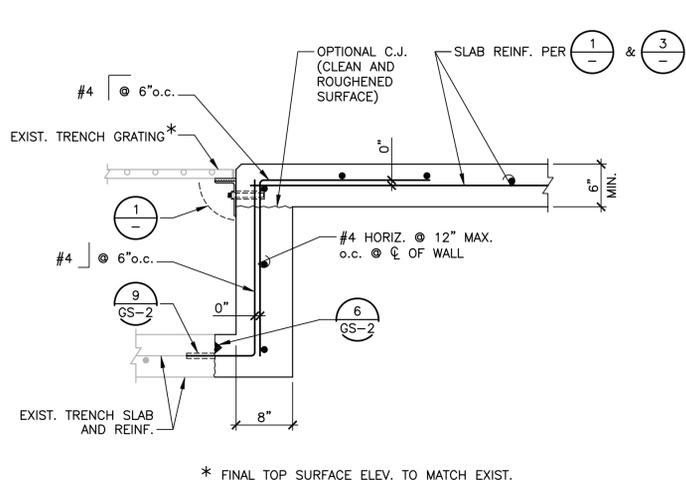
PUMP STATION PARTIAL FLOOR PLAN

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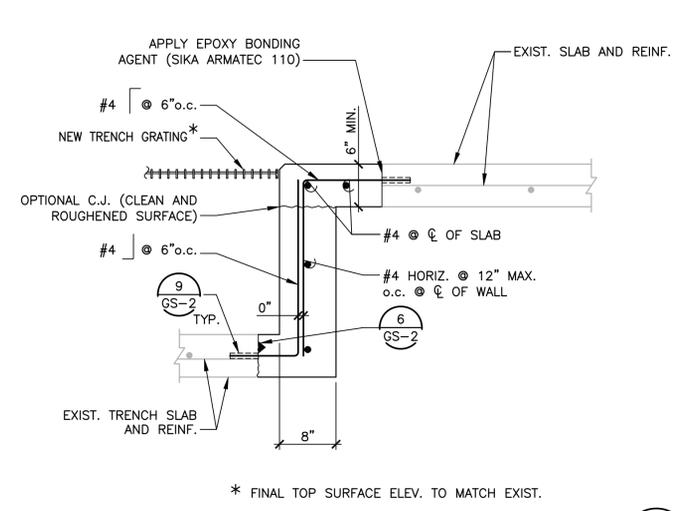
GENERATOR PAD STRUCTURAL SECTION
SCALE: NONE

1
S-2



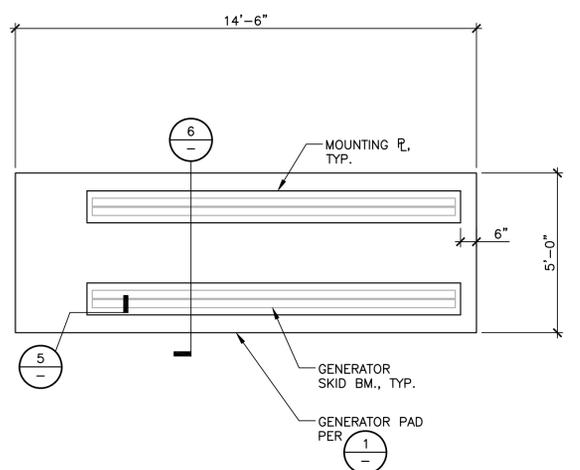
TRENCH WALL DETAIL
SCALE: NONE

2
S-2



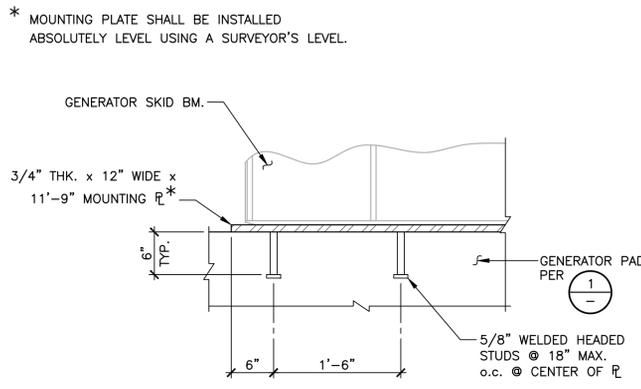
TRENCH WALL DETAIL
SCALE: NONE

3
S-2



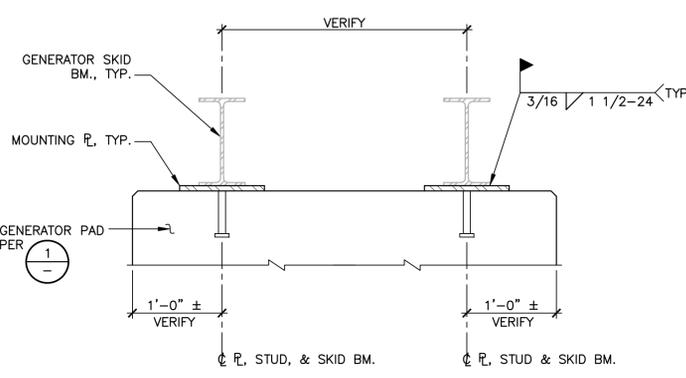
GENERATOR POSITION PLAN
SCALE: NONE

4
S-2



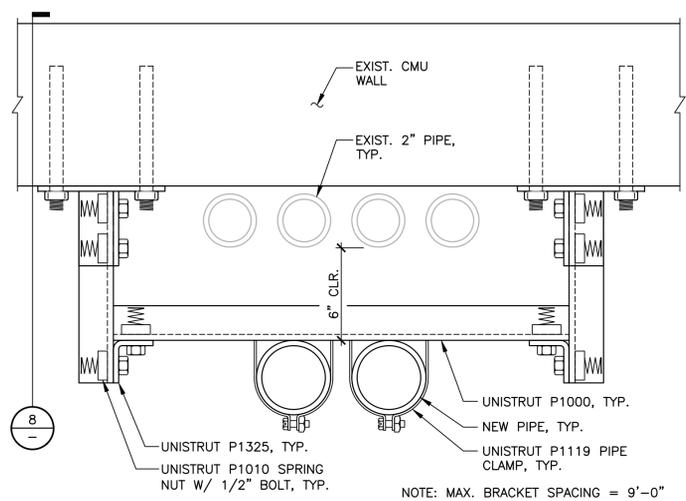
GENERATOR PAD DETAIL
SCALE: NONE

5
S-2



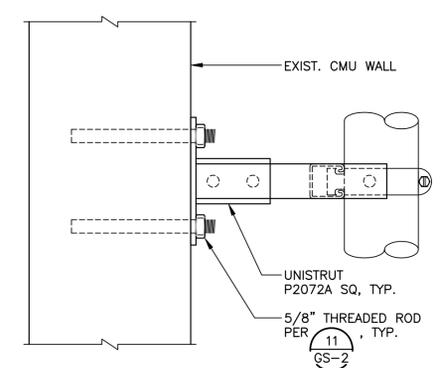
GENERATOR PAD DETAIL
SCALE: NONE

6
S-2



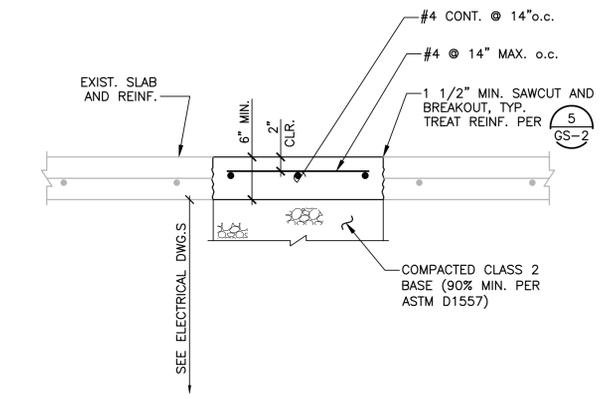
TYPICAL PIPE SUPPORT BRACKET DETAIL
SCALE: NONE

7
S-2



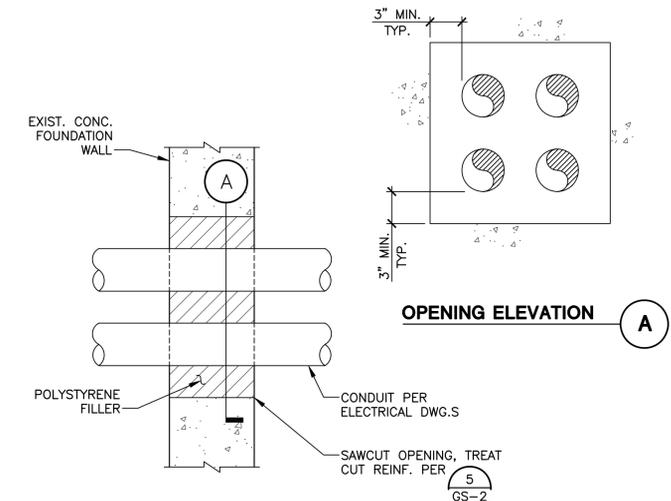
PIPE SUPPORT BRACKET DETAIL
SCALE: NONE

8
S-2



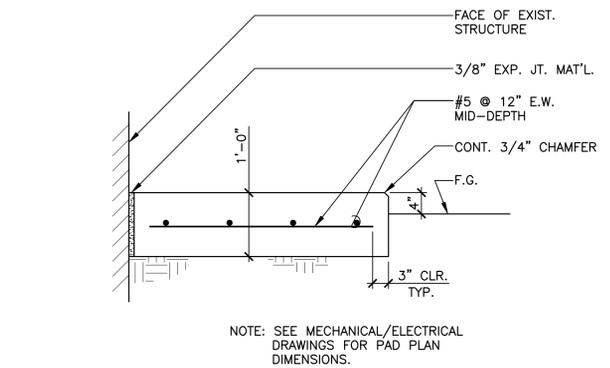
TYPICAL CONDUIT TRENCH REPAIR DETAIL
SCALE: NONE

9
S-2



TYPICAL CONDUIT OPENING IN FOUNDATION WALL
SCALE: NONE

10
S-2



TYPICAL EQUIPMENT PAD DETAIL
SCALE: NONE

11
S-2

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PROFESSIONAL ENGINEER
R. L. BIGGERS
No. 1825
Exp. 8-30-11
STATE OF CALIFORNIA

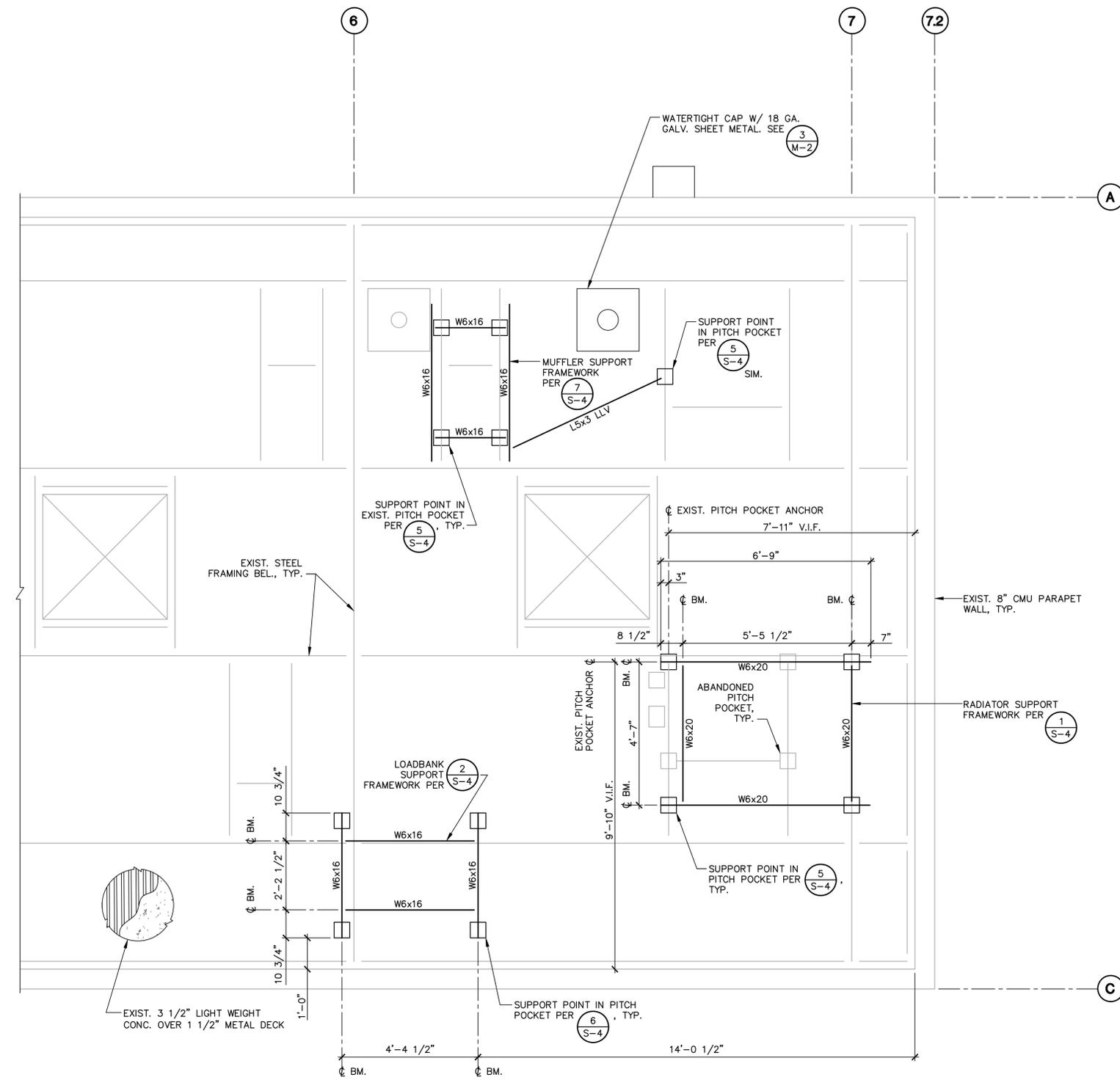
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CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

STRUCTURAL DETAILS

DWG NO. 7 OF 20
S-2



ROOF EQUIPMENT SUPPORTS PLAN
SCALE: 1/2" = 1'-0"



NOTES:
1. ALL NEW AND ABANDONED PITCH POCKETS SHALL BE MADE WATERTIGHT. SEE DETAILS (5 S-4), (6 S-4) AND (8 S-4).

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R. L. BRIGGS
No. 1825
Exp. 8-30-11
STATE OF CALIFORNIA

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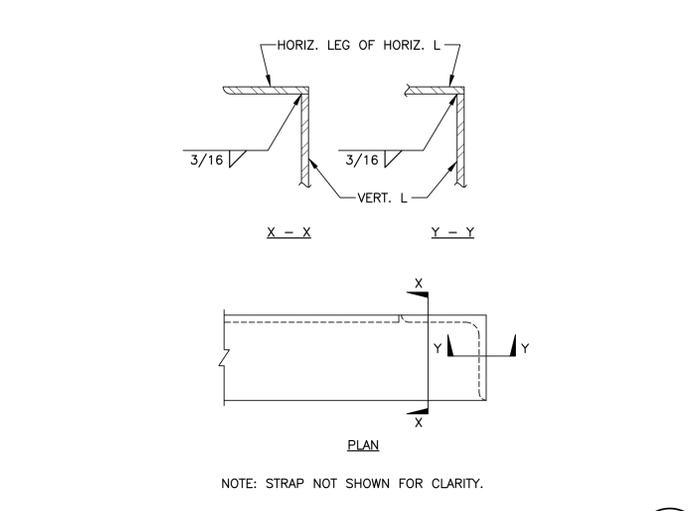
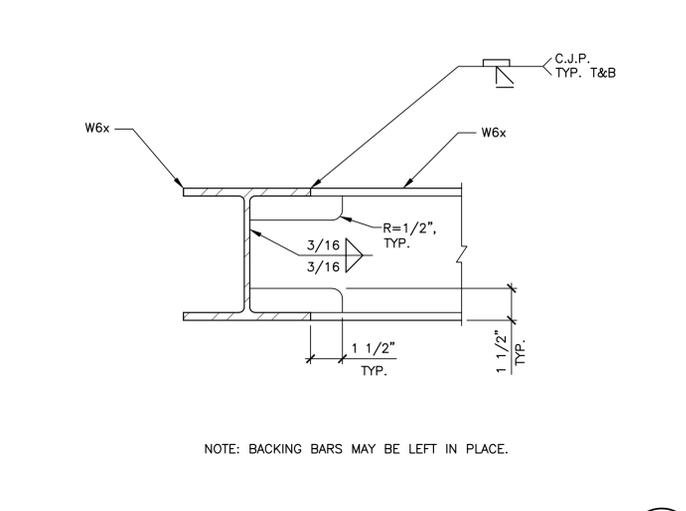
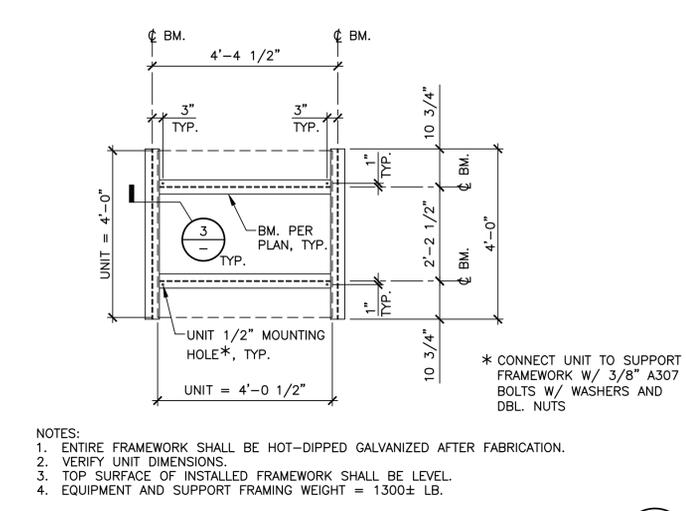
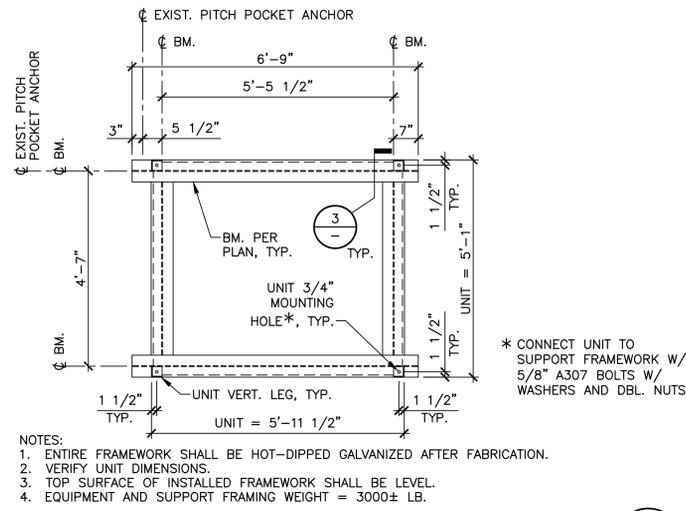
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CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

ROOF EQUIPMENT SUPPORTS PLAN

DWG NO.
8
OF
20
S-3

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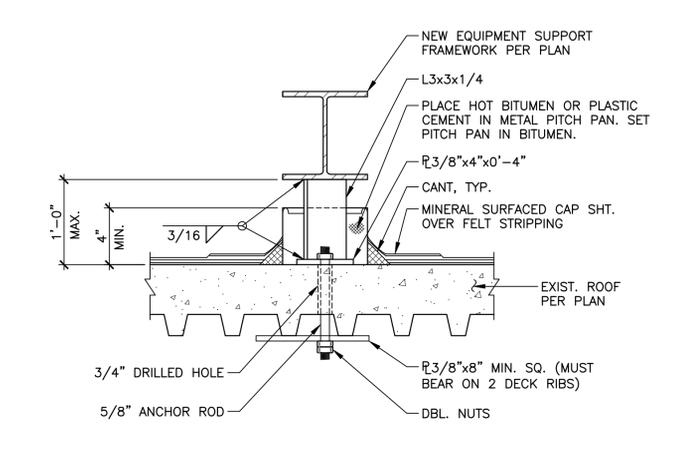
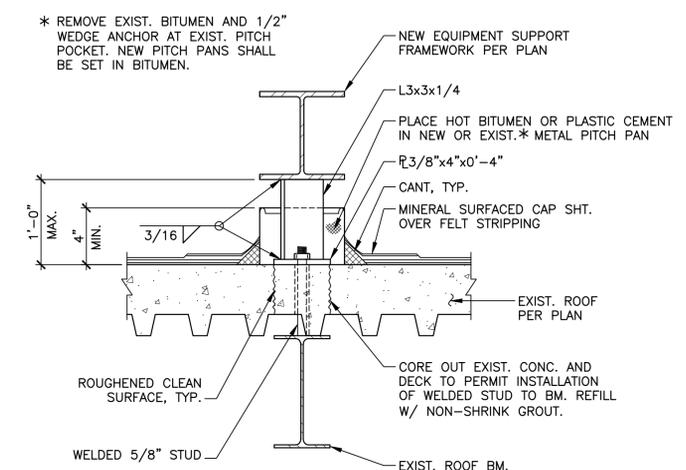


1 RADIATOR SUPPORT FRAMEWORK PLAN
SCALE: NONE

2 LOADBANK SUPPORT FRAMEWORK PLAN
SCALE: NONE

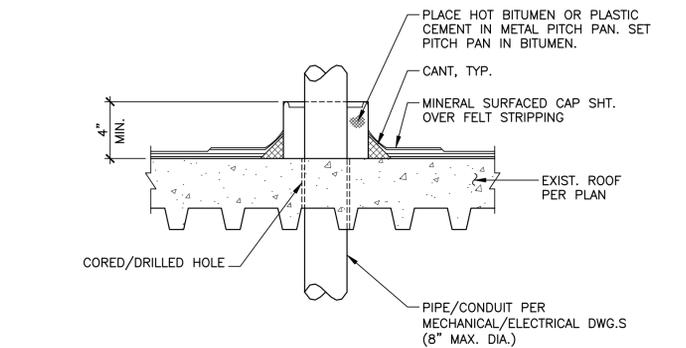
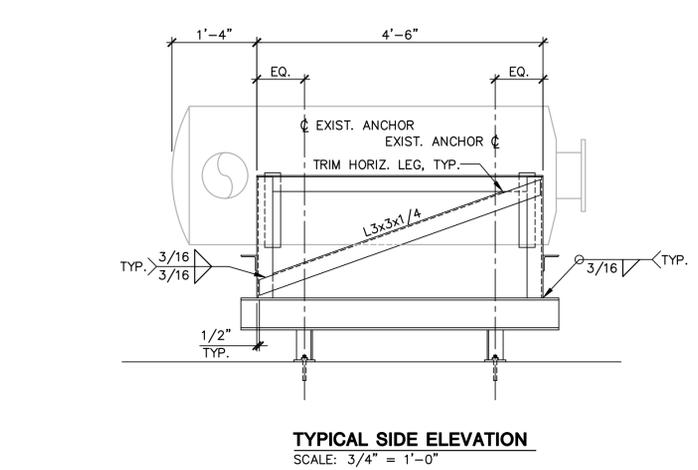
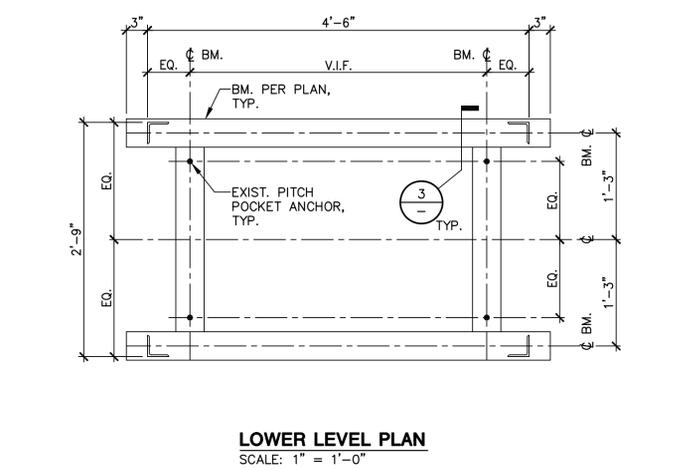
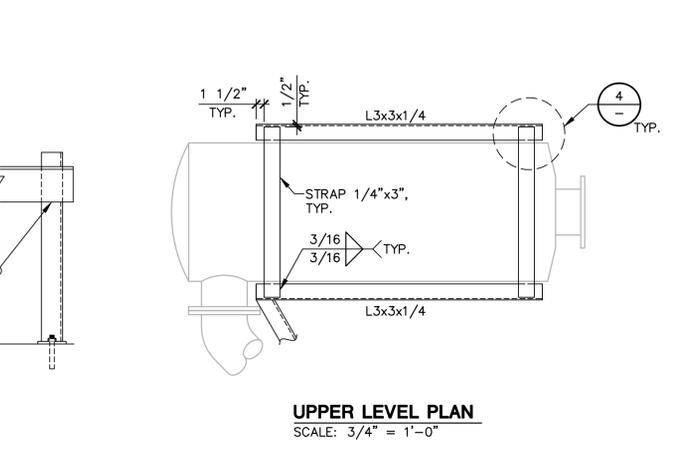
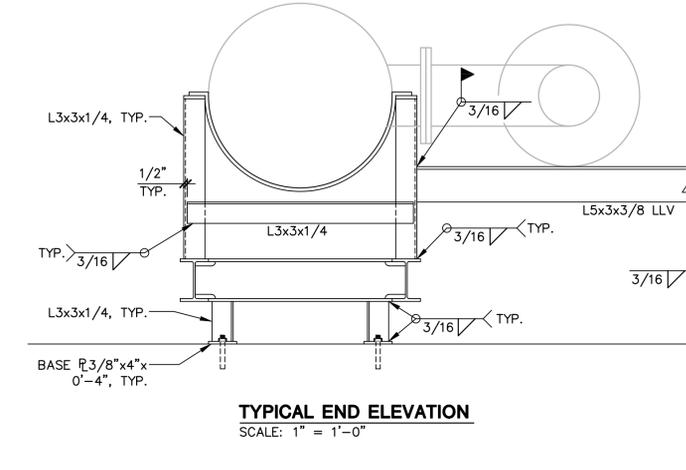
3 TYPICAL FRAMEWORK BEAM CONNECTION DETAIL
SCALE: NONE

4 TYPICAL ANGLE CONNECTION DETAIL
SCALE: NONE



5 TYPICAL PITCH POCKET SUPPORT DETAIL
SCALE: NONE

6 TYPICAL PITCH POCKET SUPPORT DETAIL
SCALE: NONE



8 TYPICAL PIPE/CONDUIT PITCH POCKET DETAIL
SCALE: NONE

7 TYPICAL END ELEVATION
SCALE: 1" = 1'-0"

9 LOWER LEVEL PLAN
SCALE: 1" = 1'-0"

10 TYPICAL SIDE ELEVATION
SCALE: 3/4" = 1'-0"

- NOTES:
 1. ENTIRE FRAMEWORK SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
 2. VERIFY UNIT DIMENSIONS.
 3. TOP SURFACE OF INSTALLED FRAMEWORK SHALL BE LEVEL.
 4. EQUIPMENT AND SUPPORT FRAMING WEIGHT = 800± LB

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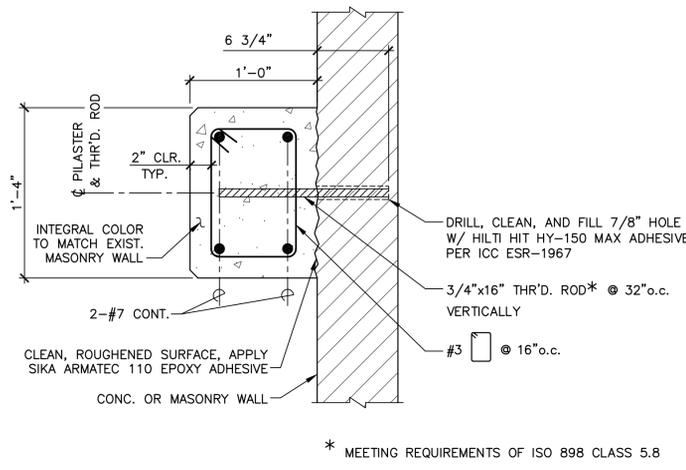
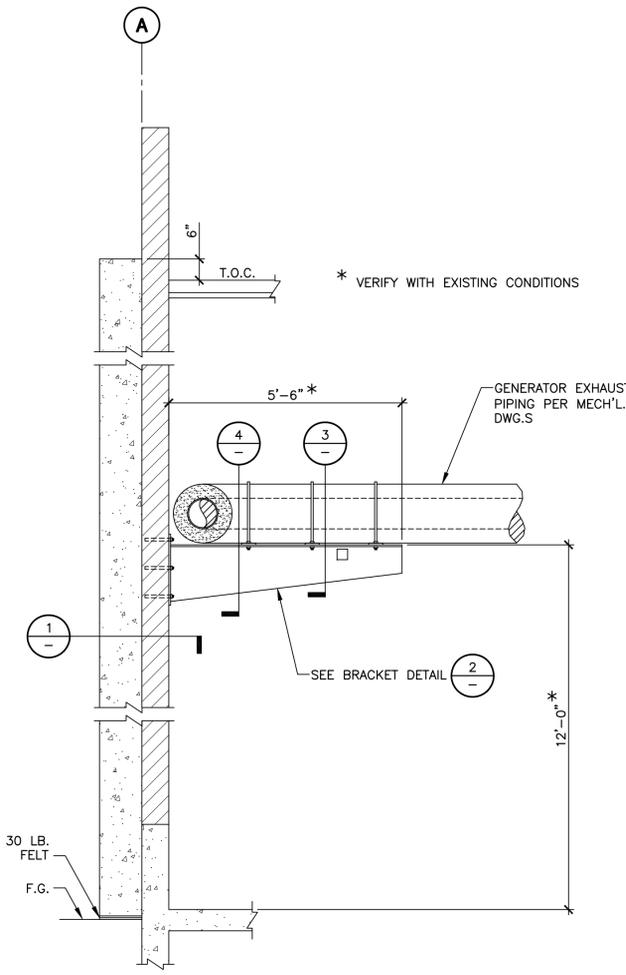
REGISTERED PROFESSIONAL ENGINEER
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 Exp. 6-30-11
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 09/29/10

CITY OF HUNTINGTON BEACH
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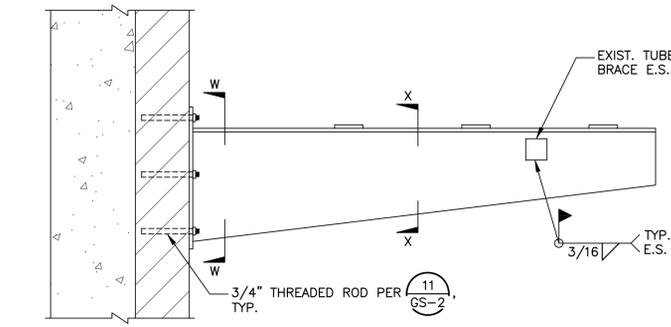
CITY OF HUNTINGTON BEACH
 UTILITIES OPERATIONS YARD
 GENERATOR UPGRADE

ROOF EQUIPMENT SUPPORTS STRUCTURAL DETAILS

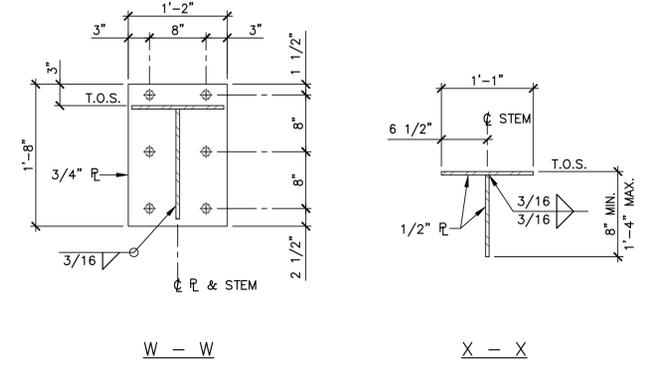
DWG NO. 9 OF 20
 S-4



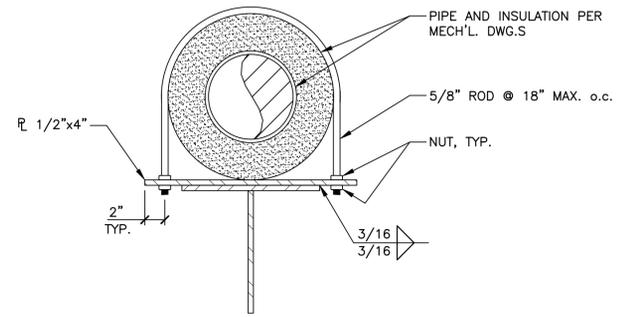
CONCRETE PILASTER DETAIL
SCALE: 1 1/2" = 1'-0"



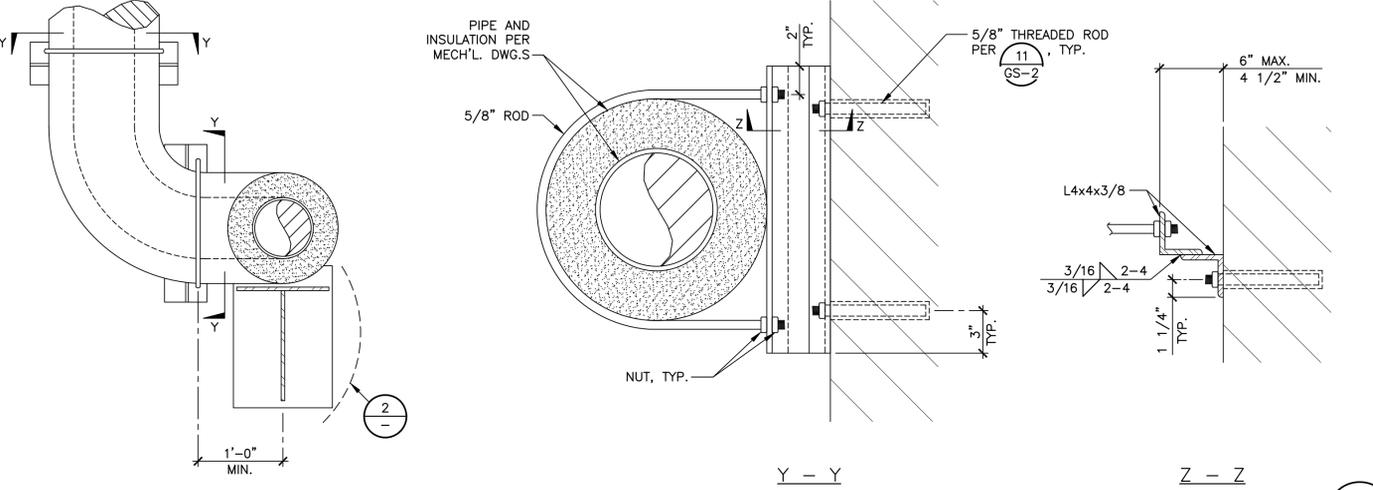
BRACKET DETAIL
SCALE: 1" = 1'-0"



2
S-5



PIPE CONNECTION TO BRACKET DETAIL
SCALE: NONE



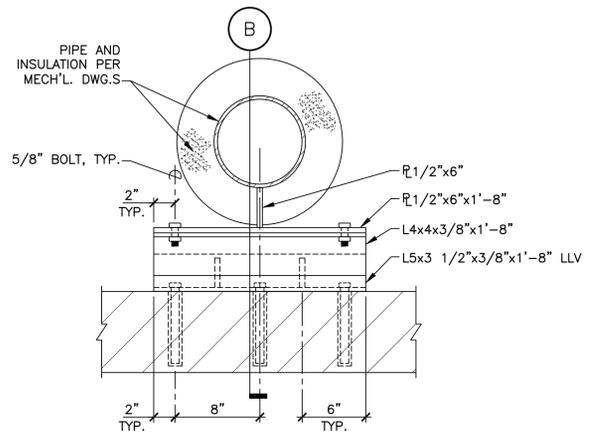
4
S-5

GENERATOR EXHAUST PIPING SUPPORT SECTION
SCALE: NONE

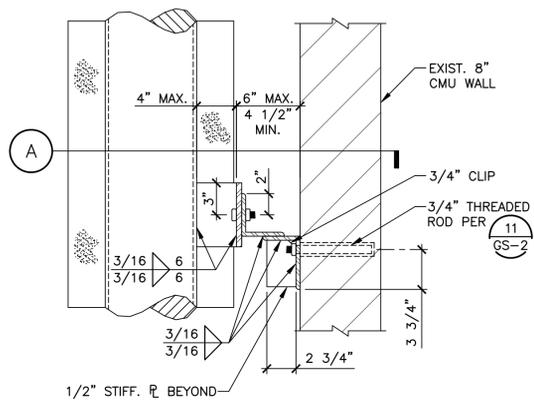
A
S-5

3
S-5

PIPE CONNECTION TO WALL DETAIL
SCALE: NONE



PIPE SUPPORT AT WALL DETAILS
SCALE: NONE



SECTION B

5
S-5

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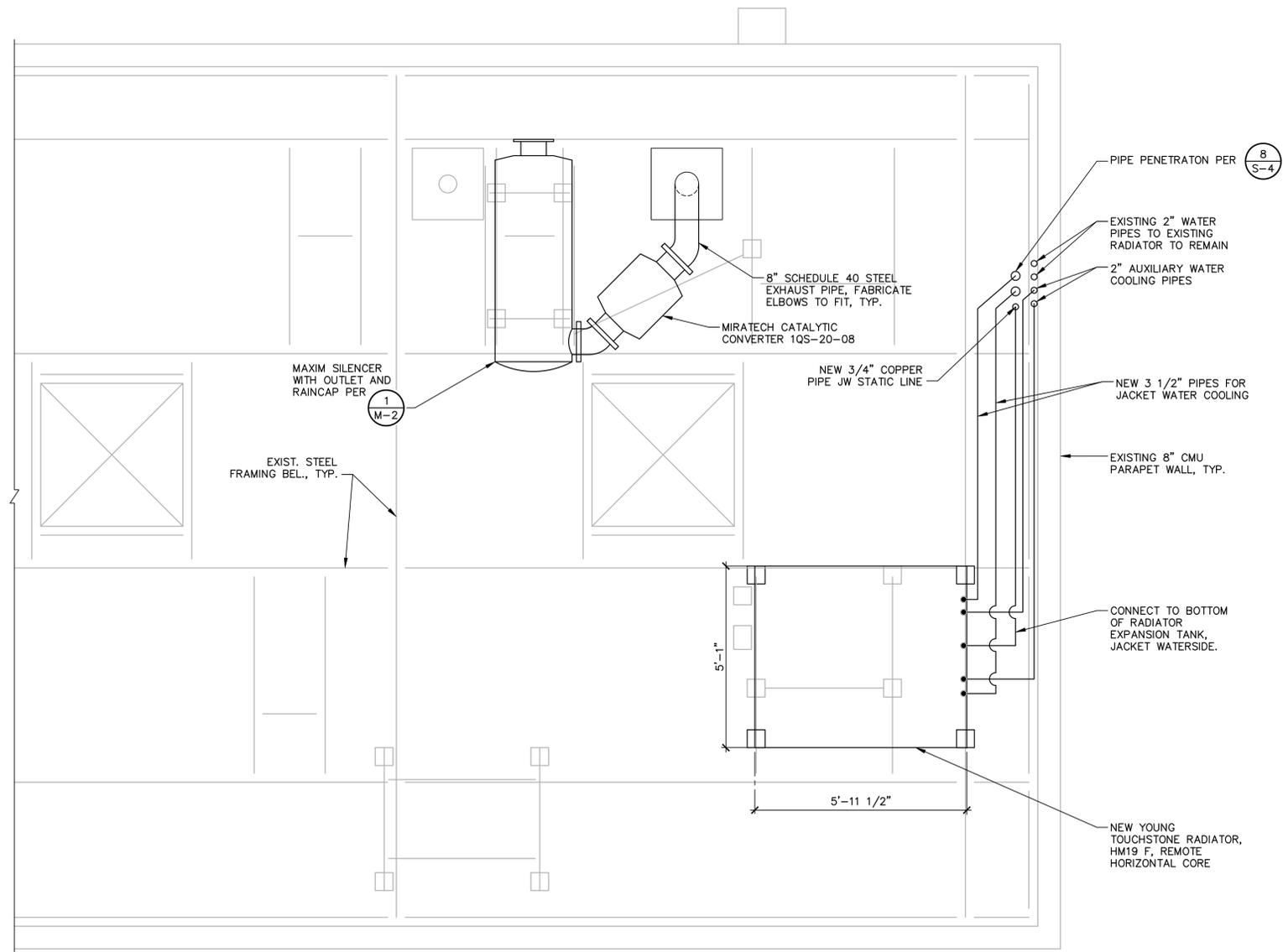
REGISTERED PROFESSIONAL ENGINEER
R. L. BIGGERS
No. 1825
Exp. 6-30-11
STATE OF CALIFORNIA
09/29/10

CITY OF HUNTINGTON BEACH
DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE
EXHAUST PIPING SUPPORT STRUCTURAL DETAILS

DWG NO.
10
OF
20
S-5

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P:\NUMBER - City of Huntington Beach\Utilities Yard Generator\Drawings\Structure\5-5.dwg



PUMP STATION MECHANICAL ROOF PLAN

SCALE: 1/2" = 1'-0"



NOTES:
1. HOSE BIB NOT SHOWN. PROTECT IN EXISTING LOCATION.

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
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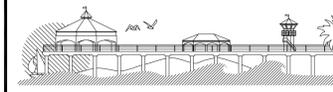
BRADY

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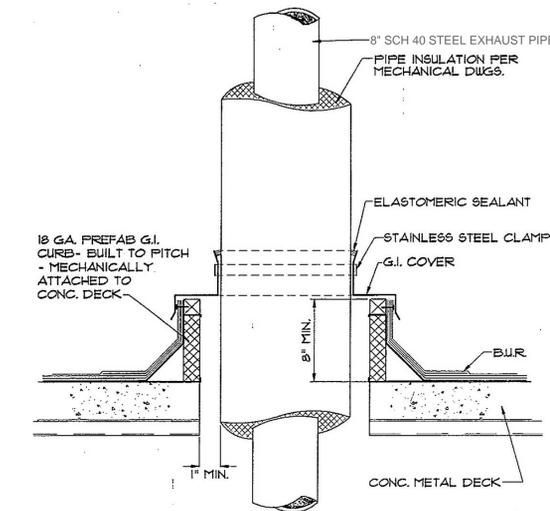
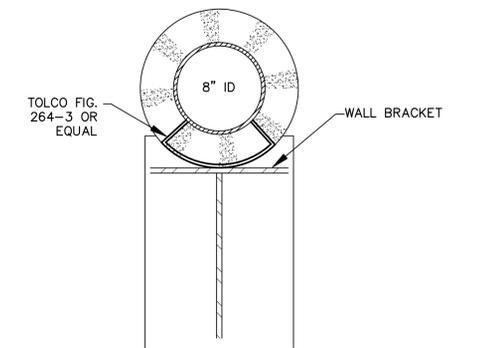
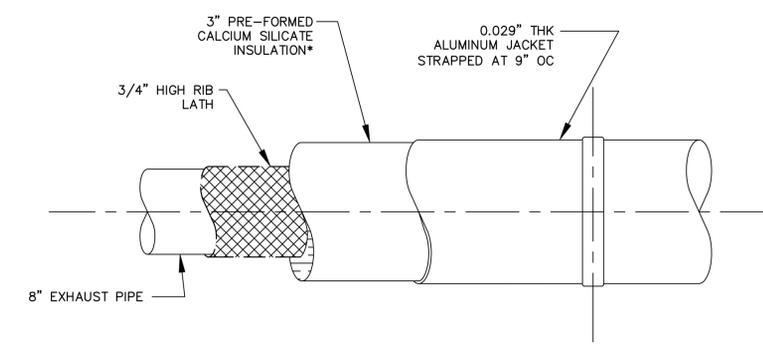
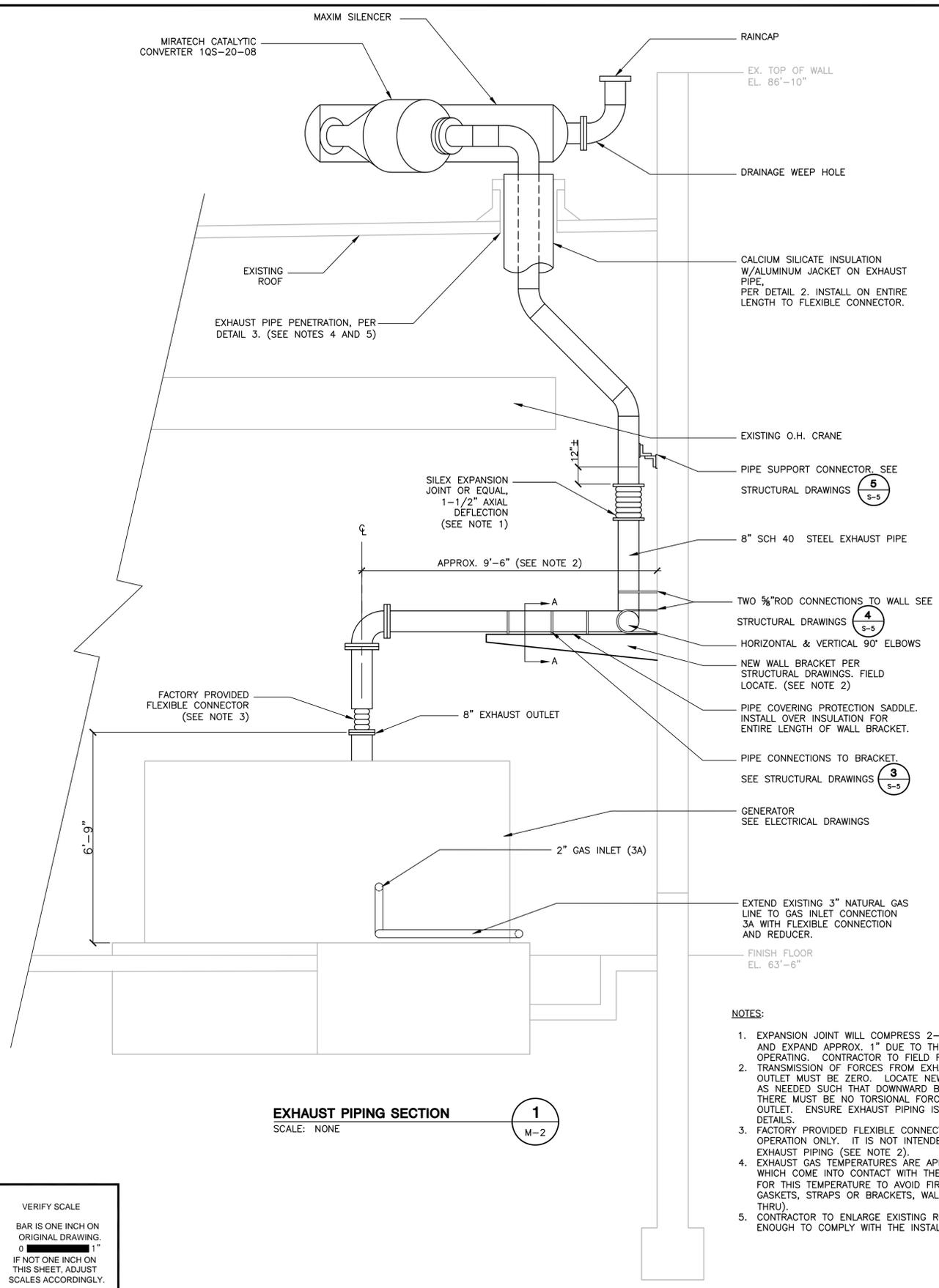
CITY OF HUNTINGTON BEACH
DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

MECHANICAL ROOF PLAN

DWG NO.
11
OF
20

M-1



- NOTES:**
1. EXPANSION JOINT WILL COMPRESS 2-3" DUE TO GRAVITY LOAD OF PIPE WEIGHT AND EXPAND APPROX. 1" DUE TO THERMAL EXPANSION WHEN GENERATOR IS OPERATING. CONTRACTOR TO FIELD FIT PIPE TO ACCOUNT FOR THESE EFFECTS.
 2. TRANSMISSION OF FORCES FROM EXHAUST PIPING TO THE ENGINE EXHAUST OUTLET MUST BE ZERO. LOCATE NEW WALL BRACKET AND ADJUST PIPING LENGTH AS NEEDED SUCH THAT DOWNWARD BRANCH IS DIRECTLY ABOVE OUTLET FLANGE. THERE MUST BE NO TORSIONAL FORCES OR DOWNWARD LOADS ON ENGINE OUTLET. ENSURE EXHAUST PIPING IS ANCHORED ACCORDING TO STRUCTURAL DETAILS.
 3. FACTORY PROVIDED FLEXIBLE CONNECTION IS FOR ENGINE VIBRATION DURING OPERATION ONLY. IT IS NOT INTENDED TO ACCOUNT FOR MISALIGNMENT OF EXHAUST PIPING (SEE NOTE 2).
 4. EXHAUST GAS TEMPERATURES ARE APPROXIMATELY 1100 DEGREES F. ANY ITEMS WHICH COME INTO CONTACT WITH THE HOT EXHAUST PIPING MUST BE SUITABLE FOR THIS TEMPERATURE TO AVOID FIRE AND PERSONAL INJURY HAZARDS (I.E. GASKETS, STRAPS OR BRACKETS, WALL OR ROOF MATERIALS WHERE PIPE PASSES THRU).
 5. CONTRACTOR TO ENLARGE EXISTING ROOF OPENING IF OPENING IS NOT LARGE ENOUGH TO COMPLY WITH THE INSTALLATION SHOWN PER DETAIL 3.

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STATE OF CALIFORNIA
9/29/10

CITY OF HUNTINGTON BEACH
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CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

EXHAUST PIPING

DWG NO. 12 OF 20
M-2

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SUBMITTAL/APPROVAL DRAWING - PAGE 4 OF 4

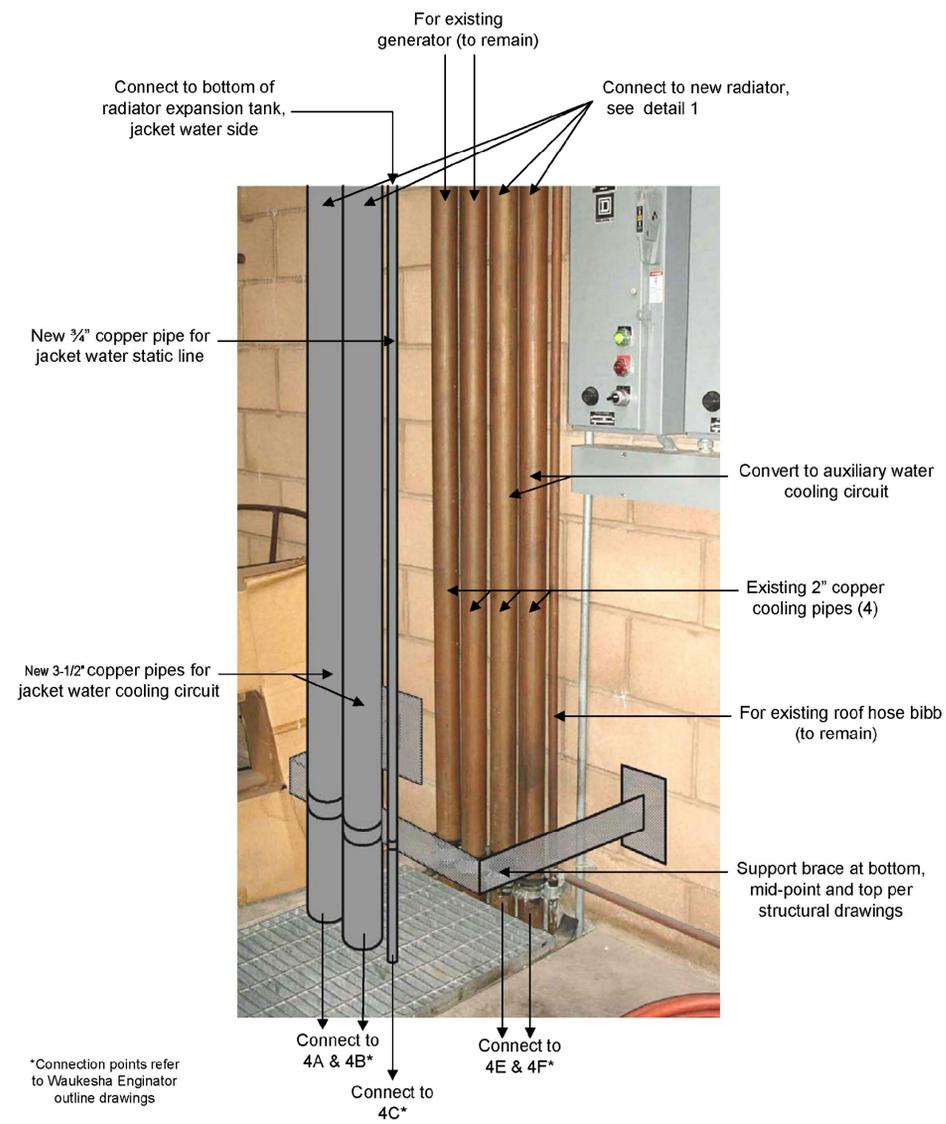
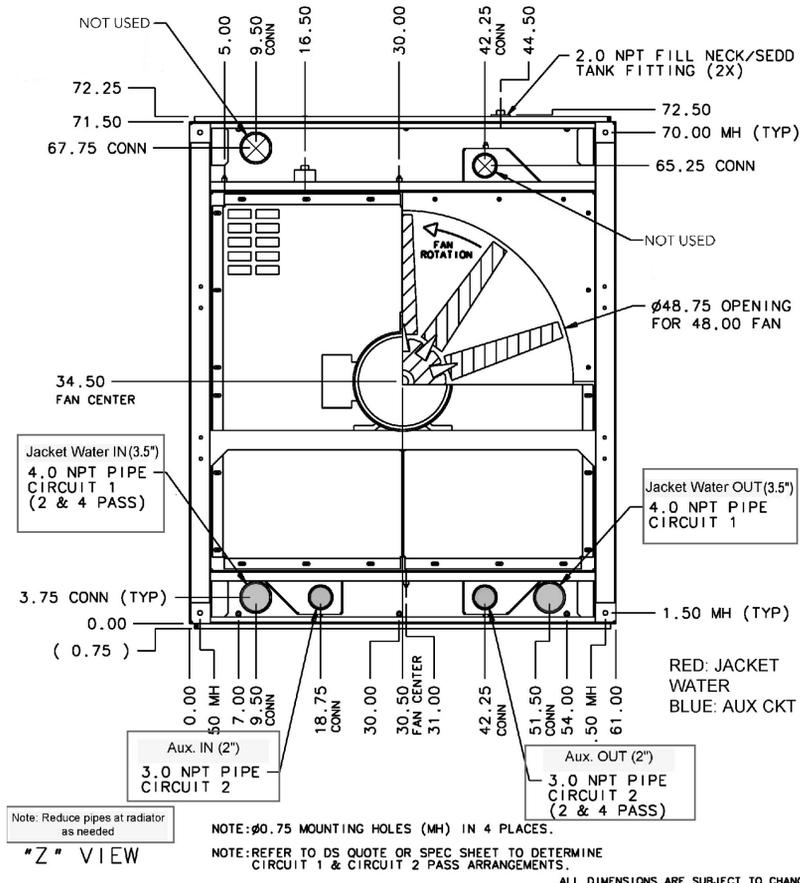


Illustration of Cooling Line Retrofit



RADIATOR CONNECTION DETAIL 1
M-3

- NOTES:
1. INSTALL VENT LINES FROM JACKET WATER (4D) AND AUXILIARY WATER (4G) AIR BLEED CONNECTION TO THE RADIATOR EXPANSION TANK. THE VENT LINES SHOULD BE 1/2" DIAMETER WITH A 1/4" ORIFICE.
 2. WAUKESHA RECOMMENDED PRESSURE CAP SETTING FOR JACKET WATER TEMPERATURES UP TO 210 DEGREES F ON THE RADIATOR EXPANSION TANK IS 7 PSIG (REF. S 6699-7).
 3. COOLANT MIX MUST BE SPECIFIED WHEN SIZING THE RADIATOR - 30% EG FOR JW
 4. INSTALL FLEXIBLE CONNECTIONS AT ALL ENGINE INLETS AND OUTLETS (PROVIDED BY THE ENGINE GENERATOR SUPPLIER).
 5. INSTALL ISOLATION VALVES AT THE INLET, OUTLET, VENT LINES, AND STATIC LINE CONNECTIONS TO THE ENGINE.

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CITY OF HUNTINGTON BEACH
DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE

COOLING SYSTEM

DWG NO.
13
OF
20
M-3

ABBREVIATIONS

GENERAL NOTES

GENERATOR NOTES

SYMBOLS

ABBREVIATION	MEANING
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ATS	AUTOMATIC TRANSFER SWITCH
BKBD	BACKBOARD
CB	CIRCUIT BREAKER
CEC	CALIFORNIA ELECTRICAL CODE
CIR	CIRCUIT
C.O.	CONDUIT ONLY
CNTL	CONTROL
CPB	COMMUNICATIONS PULLBOX
CTC	COMMUNICATIONS TERMINAL CABINET
CU	COPPER
DP	DISTRIBUTION PANELBOARD
E	EMERGENCY LIGHTING FIXTURE
EG	EQUIPMENT GROUND
EIA/TIA	ELECTRICAL INDUSTRY ASSOCIATION / TELECOMMUNICATION INDUSTRY ASSOCIATION
EPB	ELECTRICAL PULLBOX
EXIST	EXISTING
FACP	FIRE ALARM CONTROL PANEL
GSB	GENERATOR SWITCHBOARD
IDF	INTERMEDIATE DISTRIBUTION FRAME
KAIC	1000 AMPS INTERRUPTING CAPACITY
KVA	KILOVOLT-AMPS
MDF	MAIN DISTRIBUTION FRAME
MFR	MANUFACTURER
MSB	MAIN SWITCHBOARD
NAC	NOTIFICATION APPLIANCE CIRCUIT
NTS	NOT TO SCALE
OC	ON CENTER
PBX	PRIVATE BRANCH EXCHANGE (PHONE SWITCH)
PNL	PANEL
RTU	REMOTE TERMINAL UNIT
S.I.	SQUARE INCHES
SCCR	SHORT CIRCUIT CURRENT RATING
SWBD	SWITCHBOARD
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UTP	UNSHIELDED TWISTED PAIR
XFMR	TRANSFORMER
+48"	MOUNTING HEIGHT ABOVE FINISHED FLOOR (TO CENTER OF DEVICE)

- GENERAL NOTES**
- ALL WIRING ON THIS PROJECT SHALL BE COPPER/FIBER AND SHALL BE INSTALLED IN CONDUIT, SURFACE RACEWAY OR CABLE TRAY.
 - ELECTRICAL DEVICE DIMENSIONS ARE TO CENTER OF DEVICE UNLESS OTHERWISE NOTED.
 - ALL COLD WATER PIPE GROUND CONNECTIONS SHALL BE MADE WITHIN 5 FT. OF COLD WATER PIPE ENTRANCE INTO THE BUILDING. SEE CEC 250.52.
 - VERIFY ALL EXISTING CONDITIONS AND ASSUME THE RESPONSIBILITY OF FITTINGS, EQUIPMENT, RACEWAYS, ETC. IN THE EXISTING SPACE ALLOWED. ALL NEW INSTALLATIONS SHALL BE AT NEAT RIGHT ANGLES.
 - ALL WORK SHALL BE IN COMPLIANCE WITH NFPA 70-2005 WITH CALIFORNIA AMENDMENTS (2007 CEC) AND WHERE APPLICABLE AS AMENDED BY LOCAL ORDINANCES AND CODES OF GOVERNING MUNICIPALITIES.
 - ALL ELECTRICAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED CONTRACT DRAWINGS.
 - CAREFULLY EXAMINE ALL CONTRACT DRAWINGS AND BE RESPONSIBLE FOR THE PROPER FITTING OF MATERIALS AND EQUIPMENT AT EACH LOCATION AS INDICATED WITHOUT SUBSTANTIAL ALTERATION. IN AS MUCH AS THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED. FURNISHING FITTINGS REQUIRED TO MEET SUCH CONDITIONS SHALL BE AT NO COST TO THE OWNER.
 - CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL TO BEAMS AND WALLS.
 - ALL CIRCUIT PROTECTIVE DEVICES SHALL HAVE THE REQUIRED RATINGS AND INTERRUPTING CAPACITY EQUAL TO OR GREATER THAN THE AVAILABLE SHORT CIRCUIT CURRENT AT ITS SUPPLY TERMINAL.
 - ALL BUILDING WIRING SHALL BE COPPER, TYPE THWN UNLESS OTHERWISE NOTED, REGARDLESS OF APPLICATION. CONDUCTORS LARGER THAN #4 AWG SHALL BE TYPE XHHW-2. NO ALUMINUM WIRING SHALL BE USED.
 - FIELD VERIFY EXISTING CONDITIONS AND ADVISE ENGINEER OF ANY DISCREPANCIES OR DEVIATIONS BETWEEN PLANS AND ACTUAL CONDITIONS PRIOR TO PROCEEDING WITH CONSTRUCTION OR DEMOLITION WORK.
 - ALL EQUIPMENT AND MATERIALS REMOVED BY THE CONTRACTOR SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR.
 - ALL ELECTRICAL EQUIPMENT SHALL BE APPROPRIATELY LABELED WITH DESCRIPTIVE TAGS TO PROVIDE EASY IDENTIFICATION FOR OPERATIONS & MAINTENANCE PERSONNEL. TAGS AND NAMING CONVENTIONS SHALL MATCH THOSE FOUND FOR EXISTING EQUIPMENT WITHIN EACH AREA OF WORK.

- GENSET INSTALLATION & OPERATIONAL REQUIREMENTS:**
- GENSET SHALL BE CAPABLE OF STARTING MANUALLY OR AUTOMATICALLY AND SHALL BE PROTECTED AGAINST ALL OPERATING CONDITIONS WHICH MAY CAUSE DAMAGE TO GENSET COMPONENTS OR SYSTEMS.
 - GENSET SHALL BE STARTED, MONITORED AND CONTROLLED BY A GENSET CONTROL PANEL PROVIDED BY THE CONTRACTOR. CONTROL PANEL SHALL CONSIST OF A DIGITAL CONTROLLER (PROVIDED BY OWNER) AND GOVERNOR (PROVIDED BY OWNER) INSTALLED AND WIRED IN A WALL-MOUNT NEMA 12 ENCLOSURE.
 - GENSET STATUS AND USER-ADJUSTABLE CONTROL FUNCTIONS SHALL BE VIEWABLE AND ACCESSIBLE FROM A GRAPHICAL USER INTERFACE MOUNTED ON THE ENCLOSURE DOOR.
 - THE GENSET CONTROLLER SHALL MONITOR THE STATUS OF THE UTILITY POWER SOURCE VIA A DIGITAL SIGNAL FROM THE AUTOMATIC TRANSFER SWITCH LOCATED IN THE MAIN SWITCHBOARD. WHEN A UTILITY POWER FAILURE OCCURS, THE GENSET CONTROLLER SHALL START THE GENERATOR AFTER A PROGRAMMABLE TIME DELAY. UPON RETURN OF UTILITY POWER, GENSET SHALL AUTOMATICALLY STOP.
 - THE GENSET CONTROLLER SHALL MONITOR THE FOLLOWING PARAMETERS AT A MINIMUM:
 - UTILITY SOURCE STATUS (AVAILABLE/UNAVAILABLE)
 - GENSET STATUS (RUNNING/OFF)
 - CONTROL STATUS (MANUAL/OFF/AUTO)
 - GENSET CIRCUIT BREAKER STATUS (OPEN/CLOSED)
 - OUTPUT VOLTAGE MAGNITUDE (VOLTS)
 - OUTPUT VOLTAGE FREQUENCY (HERTZ)
 - OUTPUT CURRENT MAGNITUDE (AMPERES)
 - OUTPUT REAL POWER (KILOWATTS)
 - OUTPUT REACTIVE POWER (KILOVAR)
 - OUTPUT APPARENT POWER (KILOVOLT-AMPERES)
 - OUTPUT POWER FACTOR
 - ENGINE SPEED (RPM)
 - ENGINE COOLANT LEVEL (HIGH/LOW)
 - ENGINE OIL LEVEL (HIGH/LOW)
 - EXHAUST AIR FLOW (CUBIC FEET PER MINUTE)
 - FUEL PRESSURE (HIGH/LOW)
 - FUEL SUPPLY TYPE (NATURAL GAS/ PROPANE)
 - ENGINE FAULTS (AS REQUIRED/RECOMMENDED BY MANUFACTURER).
- ANY RELAYS, CURRENT TRANSFORMERS, VOLTAGE TRANSFORMERS OR POWER METERS REQUIRED TO ESTABLISH THESE INTERFACE SIGNALS SHALL BE PROVIDED AND INSTALLED PER CEC REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
- THE GENSET CONTROLLER SHALL SUPPORT DUAL FUEL OPERATION BY MONITORING THE FUEL SUPPLY STATUS (NATURAL GAS OR PROPANE) AND AUTOMATICALLY ADJUSTING ENGINE TIMING AS DESCRIBED BY THE ENGINE MANUFACTURER. EXISTING FUEL SUPPLY STATUS MONITORING POINTS SHALL BE INTERFACED TO THE NEW GENSET CONTROLLER.
 - DURING PROPANE FUEL OPERATION, THE GENSET SHALL BE DERATED TO 260KW. THE CONTRACTOR SHALL CONSULT WITH THE ENGINE MANUFACTURER AS REQUIRED TO ESTABLISH PROPANE OPERATIONAL LIMITATIONS AND PROGRAM THE GENSET CONTROLLER TO AUTOMATICALLY CHANGE SETPOINTS AS REQUIRED DURING PROPANE OPERATION.
 - THE GENSET CONTROLLER SHALL INTERFACE TO THE CITY'S SCADA SYSTEM AND SHALL BE FURNISHED WITH ALL AVAILABLE COMMUNICATIONS OPTIONS (MODBUS, ETHERNET, CAN BUS, ETC.).
 - AT A MINIMUM, THE GENSET CONTROLLER SHALL PROVIDE ANALOG AND DIGITAL INPUT/OUTPUT (I/O) POINTS TO THE CITY'S SCADA SYSTEM TO MATCH EXISTING I/O POINTS PROVIDED BY THE EXISTING GENSET CONTROLLER, BY MURPHY CONTROLS. ADDITIONAL I/O POINTS SHALL BE PROVIDED AS REQUESTED BY THE CITY.
 - A 200kW RESISTIVE LOAD BANK SHALL BE PROVIDED FOR TESTING OF THE GENERATOR AND FOR SUPPLEMENTAL LOADING.
 - THE 200kW LOAD BANK SHALL BE CONTROLLED BY A SEPARATE DEDICATED DIGITAL CONTROLLER AND SHALL BE PROGRAMMED BY THE CONTRACTOR TO ENSURE MINIMUM GENERATOR LOAD (AS RECOMMENDED BY THE GENERATOR MANUFACTURER) IS MAINTAINED AT ALL TIMES.
 - LOAD BANK CONTROLLER SHALL ALLOW FOR AUTOMATIC AND MANUAL LOAD BANK CONTROL AND SHALL INTERFACE TO THE GENSET CONTROL PANEL AS REQUIRED FOR AUTOMATIC LOADING/UNLOADING.
 - LOAD BANK CONTROL SHALL BE WALL MOUNTED IN A NEMA 12 ENCLOSURE AND PROVIDE A GRAPHICAL USER INTERFACE FOR OPERATORS.
 - ALL GENERATOR FAULTS SHALL BE READILY DISPLAYED ON THE OPERATOR INTERFACE TO ASSIST OPERATORS IN TROUBLESHOOTING.
 - ALL PROPRIETARY SOFTWARE REQUIRED TO PROGRAM THE GENSET CONTROLLER, GOVERNOR OR LOAD BANK CONTROLLER SHALL BE PROVIDED TO THE CITY AT COMPLETION OF THE PROJECT.

COMMON SYMBOLS:

- * INDICATES OWNER FURNISHED ITEMS
- (15) FAN (15 HORSEPOWER)
- W.P. 800/3 NEW 600V DISCONNECT W.P. = WEATHERPROOF, NEMA 4X 800 = AMPERE RATING 3 = 3 POLE
- EXISTING DISCONNECT
- EXISTING EQUIPMENT
- EXISTING EQUIPMENT - REMOVE
- NEW EQUIPMENT
- EXISTING RACEWAY
- (L) EXISTING RACEWAY CALLOUT (SEE SCHEDULE)
- [P1] NEW RACEWAY CALLOUT (SEE SCHEDULE)

SINGLE LINE DIAGRAM:

- DUAL FUEL GAS ENGINE GENERATOR
- 800AF/700AT THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER 800AF = FRAME SIZE 700AT = TRIP SETTING
- GROUND CONNECTION - PER CEC REQUIREMENTS
- [C1] RACEWAY/DUCTBANK CALLOUT (SEE RACEWAY SCHEDULE)
- CONNECTION
- NO CONNECTION

DEMOLITION:

- EXISTING RACEWAY - REMOVE/MODIFY AS REQUIRED
- EXISTING RACEWAY - PORTION PRESERVED FOR RE-USE

POWER & SIGNAL PLAN:

- EXISTING/RE-ROUTED RACEWAY
- NEW RACEWAY

CONTROL SCHEMATICS:

- 60A HEAVY DUTY DISCONNECT - ONE POLE SHOWN
- M NEMA RATED CONTACTOR - ONE POLE SHOWN
- OL OVERLOAD RELAY - ONE POLE SHOWN
- FUSE
- RELAY CONTACT - NORMALLY CLOSED
- RELAY CONTACT - NORMALLY OPEN
- TERMINAL BLOCK
- M CONTACTOR COIL
- ON PILOT LIGHT G = GREEN
- CONTROL POWER TRANSFORMER (VOLTAGE AS INDICATED) 208:120V

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 BENJAMIN RUSSELL SHIMPO
 No. 18798
 Exp. 06-30-11
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 STATE OF CALIFORNIA
 9/29/10

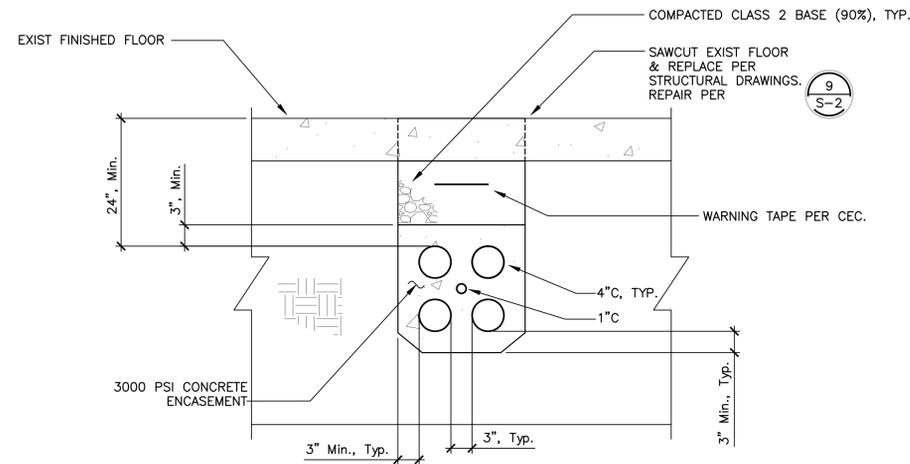
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CITY OF HUNTINGTON BEACH
 UTILITIES OPERATIONS YARD
 GENERATOR UPGRADE

ELECTRICAL NOTES, SYMBOLS & ABBREVIATIONS

UTILITIES OPERATIONS YARD GENERATOR UPGRADE AT 19051 HUNTINGTON STREET

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 P:\HNTBE - City of Huntington Beach\HNTBE-009-024 Utilities Yard Generator Drawings\Electrical\GE-1 SYMBOLS-ABBREVIATIONS.dwg



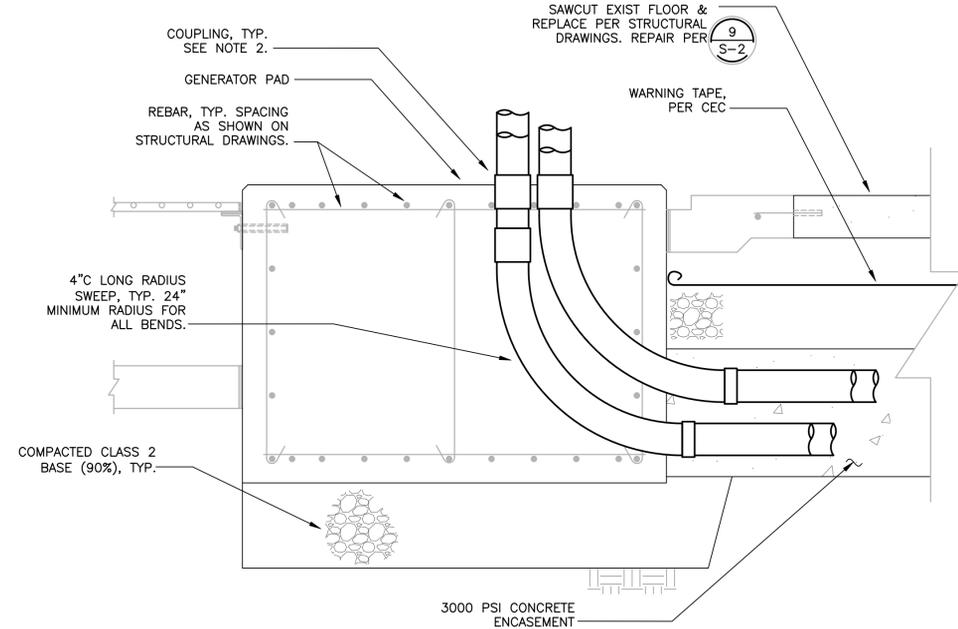
NOTES:

1. SAWCUT EXISTING CONCRETE FLOOR AND EXCAVATE CONDUIT TRENCH AS REQUIRED TO MAINTAIN THE CLEARANCES SHOWN. REFER TO STRUCTURAL DETAIL 9/S-2 FOR TRENCH REPAIR. FINISH TO MATCH EXISTING FLOOR SURFACE.
2. INSTALL SCHEDULE 40 PVC CONDUIT AS INDICATED ON THE PLANS AND ENCASE IN CONCRETE AS SHOWN.
3. INSTALL CONDUIT WITH UL LISTED CONDUIT SPACERS PLACED EVERY 5' TO MAINTAIN 3" SPACING BETWEEN ALL CONDUITS.

TYPICAL DUCTBANK

SCALE: NONE

1
GE-2



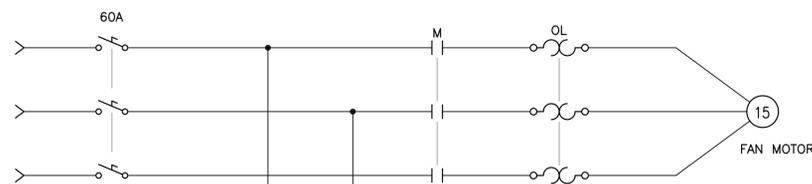
NOTES:

1. ONLY 4" CONDUITS SHOWN FOR CLARITY. SMALLER CONDUITS SHALL BE INSTALLED IN A SIMILAR FASHION. REFER TO ELECTRICAL PLAN SHEETS FOR SIZE AND NUMBER OF CONDUITS REQUIRED AT EACH LOCATION.
2. MAINTAIN A MINIMUM CLEARANCE OF 3" BETWEEN CONDUITS/COUPLINGS TO ENSURE SUFFICIENT PENETRATION OF CONCRETE DURING POUR. COORDINATE ALL WORK WITH OTHER DISCIPLINES AND REFER TO STRUCTURAL DRAWINGS FOR REBAR SPACING REQUIREMENTS.
3. CONDUIT STUB UP LOCATIONS SHOWN ARE APPROXIMATE. VERIFY THE LOCATION OF JUNCTION BOX(ES), CIRCUIT BREAKERS AND OTHER ELECTRICAL EQUIPMENT ON THE GENERATOR SKID PRIOR TO INSTALLATION OF CONDUITS TO ENSURE PROPER CONDUIT PLACEMENT.

TYPICAL GENERATOR PAD CONDUIT RISERS

SCALE: NONE

2
GE-2



NOTES:

1. OVERLOAD RELAY SHALL BE RESET MANUALLY WITH PUSHBUTTON MOUNTED ON ENCLOSURE DOOR.

TYPICAL RADIATOR FAN STARTER

SCALE: NONE

3
GE-2

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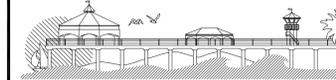
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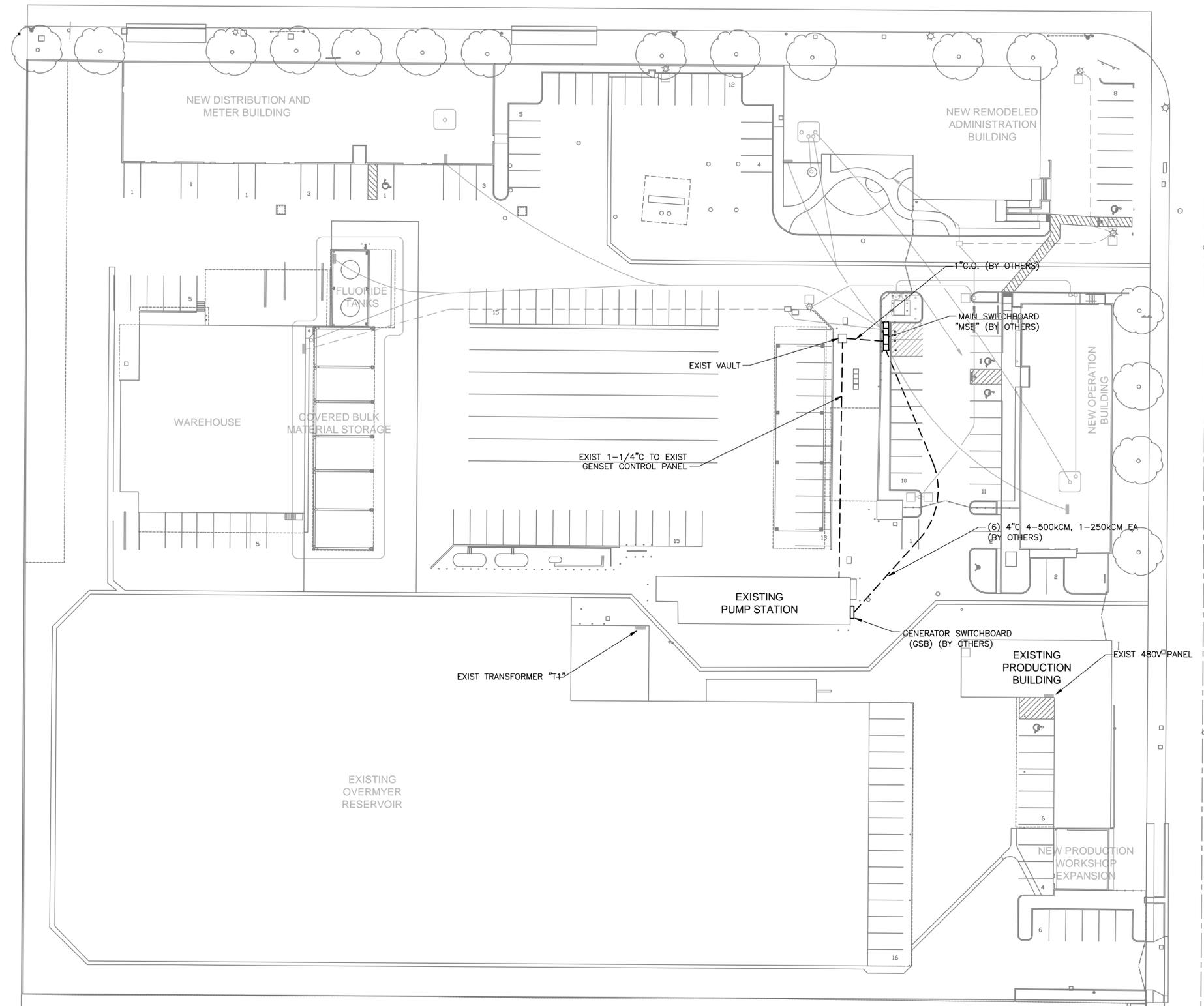
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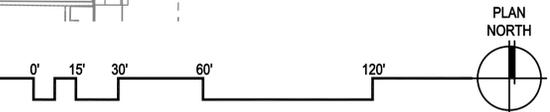
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UTILITIES OPERATIONS YARD GENERATOR UPGRADE AT 19051 HUNTINGTON STREET



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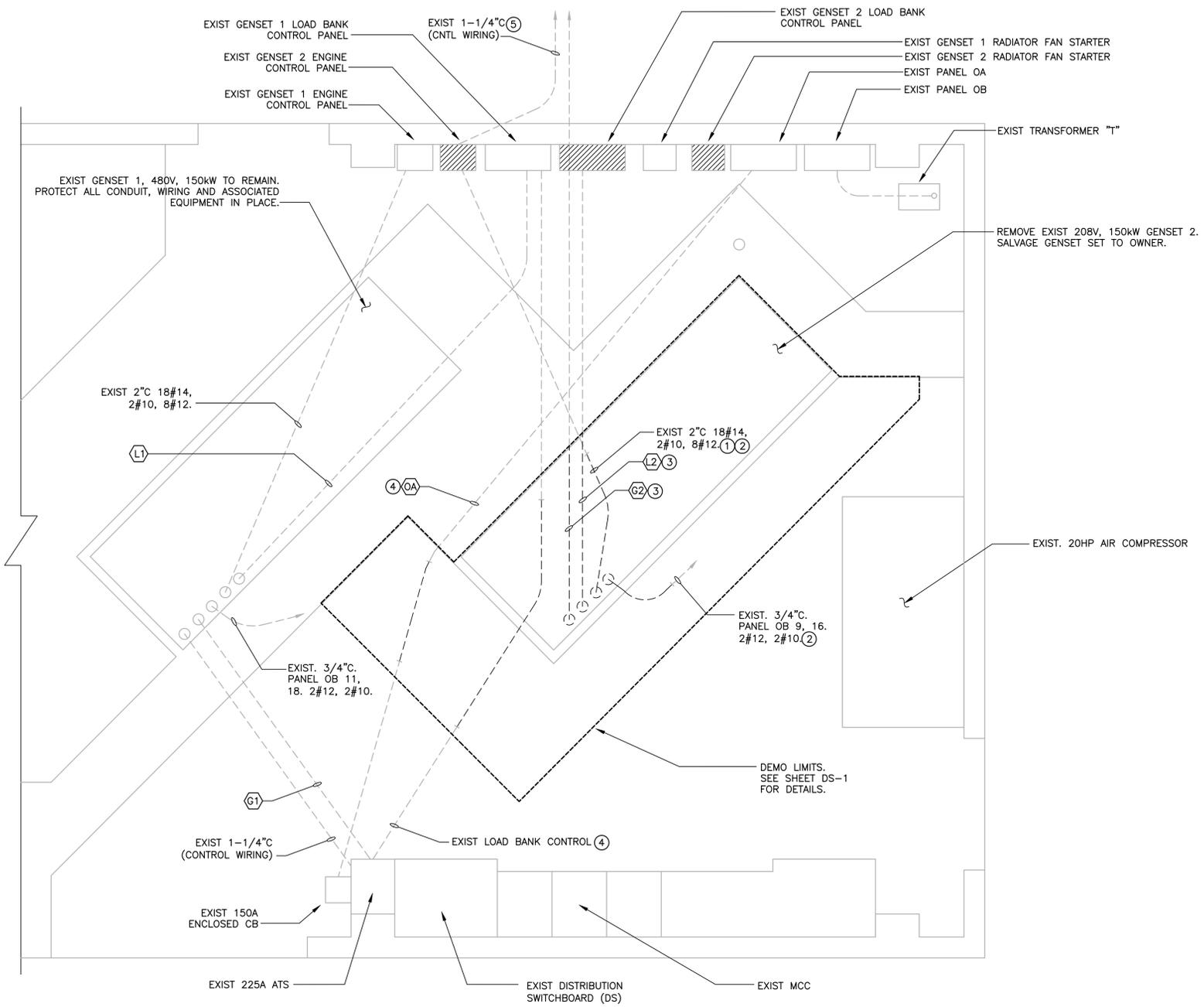
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 STATE OF CALIFORNIA
 09/29/10

CITY OF HUNTINGTON BEACH
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CITY OF HUNTINGTON BEACH
 UTILITIES OPERATIONS YARD
 GENERATOR UPGRADE
 ELECTRICAL SITE PLAN

DWG NO.
 16
 OF
 20
 E-1



PUMP STATION ELECTRICAL DEMO PLAN
SCALE: 1/2" = 1'-0"



GENERAL NOTES:

1. LOCATION OF EXISTING ELECTRICAL INFRASTRUCTURE SHOWN IS BASED ON CITY SUPPLIED AS-BUILT DRAWINGS. CONTRACTOR SHALL DETERMINE EXACT LOCATIONS IN THE FIELD.
2. ANY ADDITIONAL WORK REQUIRED DUE TO DEVIATIONS FROM LOCATIONS OR QUANTITIES OF EXISTING ITEMS DETAILED ON THE PLANS AND THOSE ENCOUNTERED IN THE FIELD SHALL BE PERFORMED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.

KEYED NOTES:

- ① REMOVE EXISTING CONDUCTORS AND PROTECT CONDUIT IN PLACE FOR RE-USE.
- ② IF REQUIRED TO ACCOMMODATE INSTALLATION OF NEW GENSET 2 FOUNDATION DEMOLISH CONDUIT WITHIN LIMITS SHOWN. REFER TO STRUCTURAL DRAWINGS FOR DETAILS. CONDUIT TO BE RE-USED SHALL BE PROTECTED IN PLACE WHEREVER POSSIBLE.
- ③ DEMOLISH EXIST CONDUIT AND WIRING TO THE LIMITS SHOWN. CAP CONDUIT PRIOR TO PLACING BACKFILL OR COVERING WITH NEW CONCRETE.
- ④ PROTECT CONDUIT & CONDUCTORS IN PLACE IF POSSIBLE. IF REQUIRED, DEMOLISH CONDUIT WITHIN LIMITS SHOWN AND RE-ROUTE AS REQUIRED TO ACCOMMODATE THE INSTALLATION OF NEW GENSET 2 FOUNDATION. IF CONDUIT DEMOLITION IS REQUIRED, REPLACE ALL WIRING TO MATCH EXISTING.
- ⑤ RE-USE EXISTING CONDUIT FOR ATS STARTING OF GENSET.

EXISTING RACEWAY SCHEDULE			
FEEDER CALLOUT	VOLTS/PHASES	FEEDER DETAILS	
		CONDUCTORS	CONDUIT
MCC	480V-3Φ	4#500MCM, 1#1/0	4"
OA	277/480V-3Φ	4#1/0	2"
BC	480V-3Φ	3#12	3/4"
AC	480V-3Φ	3#4	1-1/4"
CW	480V-3Φ	-	2"
E1,N1,G1	277/480V-3Φ	4#4/0, 1#4	3"
L1	480V-3Φ	3#1/0	2"
T	480V-3Φ	3#4	1-1/4"
OB	120/208-3Φ	4#500MCM, 1#1/0	2"
E2,N2,G2	120/208V-3Φ	4#500MCM, 1#1/0	4"
L2	208V-3Φ	3#350MCM	4"

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REV.	DATE	BY	DESCRIPTION	APP'VD	APP'VD

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3710 Ruffin Road, San Diego, California 92123
tel: 658/496-0500 fax: 658/496-0505

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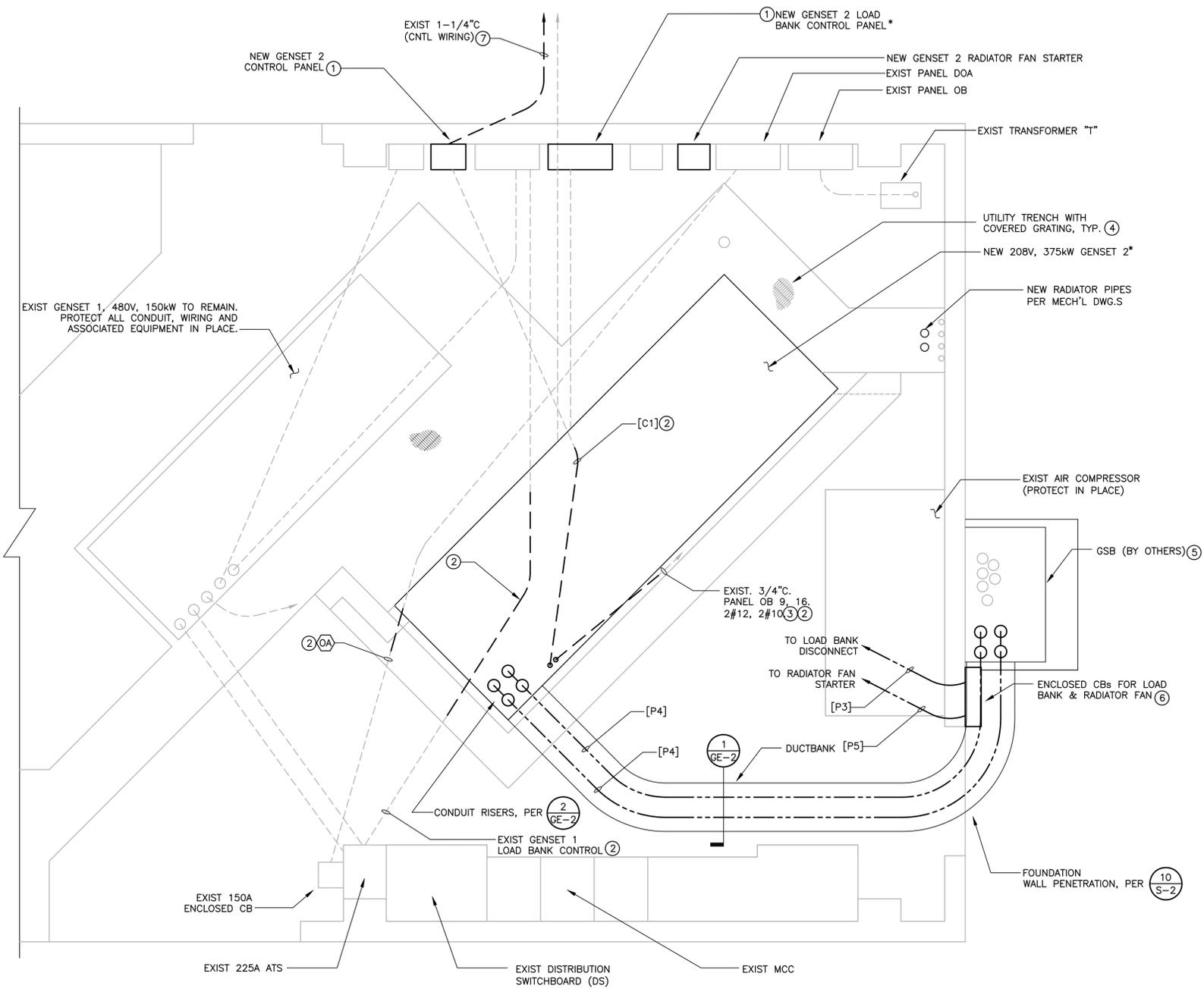
REGISTERED PROFESSIONAL ENGINEER
RUSSELL SHAW
No. 18798
Exp. 06-30-11
ELECTRICAL
STATE OF CALIFORNIA
09/29/10

CITY OF HUNTINGTON BEACH
DEPARTMENT OF PUBLIC WORKS

CITY OF HUNTINGTON BEACH
UTILITIES OPERATIONS YARD
GENERATOR UPGRADE
ELECTRICAL DEMO PLAN

DWG NO.
18
OF
20
E-3

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- GENERAL NOTES:**
1. ALL EXPOSED OR SURFACE MOUNT CONDUIT SHALL BE GALVANIZED RIGID STEEL.
 2. ALL UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC.
- KEYED NOTES:**
- 1 SEE SHEET GE-1 FOR DETAILS.
 - 2 IF MODIFICATIONS ARE REQUIRED DURING DEMO, RE-INSTALL CONDUIT AND REPLACE CONDUCTORS TO MATCH PRE-CONSTRUCTION CONDITIONS.
 - 3 UTILIZE EXISTING CONDUIT IF POSSIBLE AND MODIFY AS NECESSARY TO ESTABLISH 120V POWER FOR NEW GENSET IMMERSION HEATER AND BATTERY CHARGER. INSTALL NEW CONDUCTORS FOR GENSET BATTERY CHARGER AND IMMERSION HEATER. CONDUCTORS SHALL BE SIZED AND PROTECTED AGAINST OVERCURRENT PER CODE.
 - 4 UTILIZE TRENCH FOR NEW CONDUIT RUNS IF REQUIRED. MAINTAIN ACCESS TO EXISTING AND NEW PIPING AND/OR CONDUIT WITHIN THE TRENCH AT ALL TIMES.
 - 5 MAKE REQUIRED BUS CONNECTIONS TO GSB. ENSURE GENSET PHASE SEQUENCE MATCHES UTILITY PHASE SEQUENCE TO PROVIDE PROPER ROTATION OF MOTORIZED EQUIPMENT DURING GENSET OPERATION. COORDINATE WITH CURRENT UTILITIES YARD PROJECT ELECTRICAL CONTRACTOR FOR POSITIONING & INSTALLATION OF GSB.
 - 6 CONTRACTOR SHALL DETERMINE APPROPRIATE MOUNTING LOCATION FOR LOAD BANK & RADIATOR FAN CBs.
 - 7 INSTALL NEW ATS CONTROL WIRING IN EXISTING CONDUIT AS REQUIRED.

PUMP STATION POWER & SIGNAL PLAN
SCALE: 1/2" = 1'-0"



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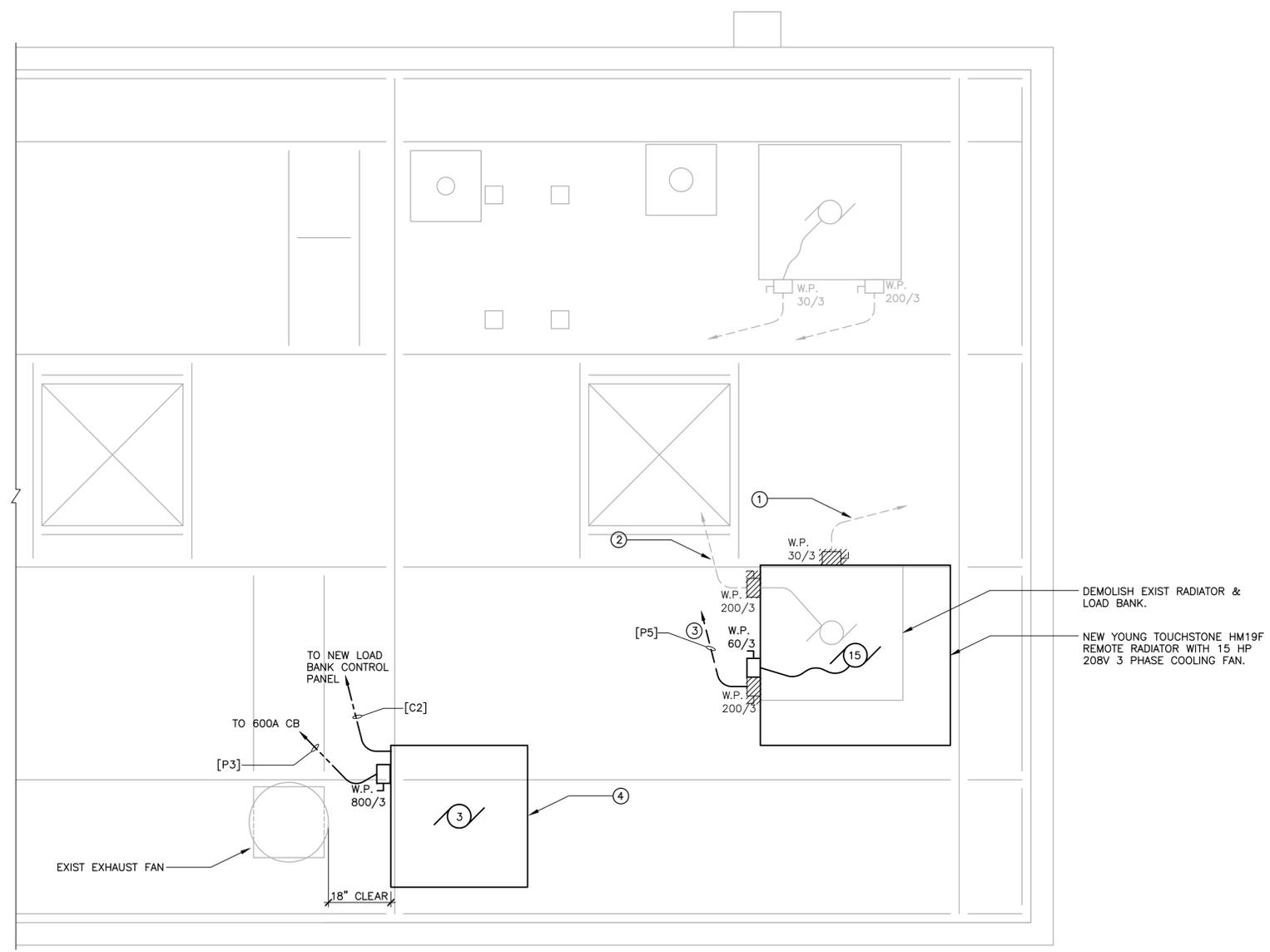
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UTILITIES OPERATIONS YARD
GENERATOR UPGRADE
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GENERAL NOTES:

- WHERE NEW ROOF PENETRATIONS ARE REQUIRED FOR CONDUIT RUNS TO ROOF, PENETRATIONS SHALL BE MADE PER 

KEYED NOTES:

- EXIST 3/4" C WITH RADIATOR EXHAUST FAN FEEDERS FROM EXISTING FAN STARTER. REMOVE CONDUIT AND CONDUCTORS AND CAP AND SEAL CONDUIT FLUSH WITH ROOF TO MAINTAIN WEATHERPROOF INSTALLATION.
- EXIST 2" C WITH FEEDERS FROM EXISTING LOAD BANK CONTROL PANEL. REMOVE CONDUIT AND CONDUCTORS AND CAP AND SEAL CONDUIT FLUSH WITH ROOF TO MAINTAIN WEATHERPROOF INSTALLATION.
- EXIST 2" C WITH FEEDERS FROM EXISTING LOAD BANK CONTROL PANEL. REMOVE CONDUCTORS, RE-ROUTE CONDUIT TO NEW RADIATOR EXHAUST FAN STARTER AND INSTALL CONDUCTORS PER RACEWAY SCHEDULE [P5].
- NEW 200kW LOADBANK, LOADTEC OSM1-0300.1-208V33-0600-10. WITH INTEGRAL FAN. COOLING AIR INTAKE SHALL FACE WEST. PROVIDE EXHAUST LOUVER TO DIRECT EXHAUST AIR UPWARDS AWAY FROM ROOF AND NEARBY EQUIPMENT.

PUMP STATION ELECTRICAL ROOF PLAN
SCALE: 1/2" = 1'-0"



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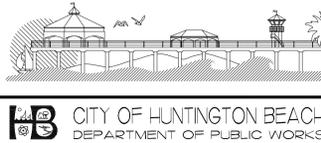
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UTILITIES OPERATIONS YARD
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