EXHIBIT F

REFERENCE MATERIAL

The documents provided may contain errors, omissions, or may be out of date.

1. Maintenance Building
    a. 1998 Maintenance Building Original SD223A Select Drawings
    b. 2018 Maintenance Building Evaluation and Conceptual Design TM Excerpts
    c. 2021 Maintenance Building Photos
2. Maintenance Canopy
    a. 1984 Maintenance Canopy Original SD156 Select Drawings
    b. 1998 Maintenance Canopy Retrofit SD223A Drawing
    c. 2008 Maintenance Canopy Structural Review Excerpts
    d. 2021 Maintenance Canopy Photos
3. Fueling Station
    a. 2003 Fueling Station equipment SD279
4. Evaluation Criteria
    a. 2021 Evaluation Criteria and Seismic Hazard Information

Maintenance Building

PLOT SCALE: 1" = 1"

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO.1
OAKLAND, CALIFORNIA

WASTE WATER TREATMENT PLANT
SPECIFICATION SD 223-A
MAINTENANCE FACILITY UPGRADE AND SEISMIC IMPROVEMENTS

2020 Wake Avenue, Oakland, California

February 13, 1998

Architect

THE RATCLIFF ARCHITECTS
5856 Doyle Street
Emeryville, CA 94608
(510) 652-1972

Structural Engineer

DASSE DESIGN, INC.
33 New Montgomery, Suite 850
San Francisco, CA 94105
(415) 243-9165

Mechanical Engineer

GAYNER ENGINEERS
1133 Post Street
San Francisco, CA 94109
(415) 474-9500

Electrical Engineer

MTH Engineers
3350 Scott Boulevard, Building 11
Santa Clara, CA 95054
(408) 986-8585

Civil Engineer

SANDIS HUMBER JONES
605 Castro Street
Mountain View, CA 94041
(415) 969-6900

DRAWING INDEX

DRAWING INDEX

IF SHEET IS LESS THAN 30" X 42"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

CODE SUMMARY

BUILDING CODES:	1994 UBC and 1995 Calif. Building Code UPC, UMC, NEC, UFC
CONSTRUCTION TYPE:	TYPE V-N (MIN. REQ'D. BY AREA BLDG TO BE NON-COMBUSTIBLE CONSTR PER EBMUD REQ.) SEPARATION ON (4) SIDES
OCCUPANCY GROUPS:	B: OFFICE
	S1: MODERATE-HAZARD STORAGE
	F2: LOW-HAZARD INDUSTRIAL
	A3: ASSEMBLY
	H4: WELDING SHOP
BUILDING AREA:	
Office Area:	4,397 S.F.
Storage Area:	5,009 S.F.
Industrial Area:	11,318 S.F.
Assembly Area:	1,672 S.F.
Hazardous Area:	361 S.F.

NOTE: Building Areas are approximate. See Drawings for actual areas.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223-A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

The Ratcliff Ararchitects

NO.	DATE	REVISION		BY	REC.	APP.
4	10DEC2012	IN SERVICE 10JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
3	7/09/98	PLAN CHECK COMMENTS		VH		
1	3/31/98	PLAN CHECK AND ADDENDUM NO. 1		VH		

DESIGNED BY
DESIGN CHECKED BY
DRAWN BY
SR. PROJ. ENGR.
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.O

EBMUD

PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

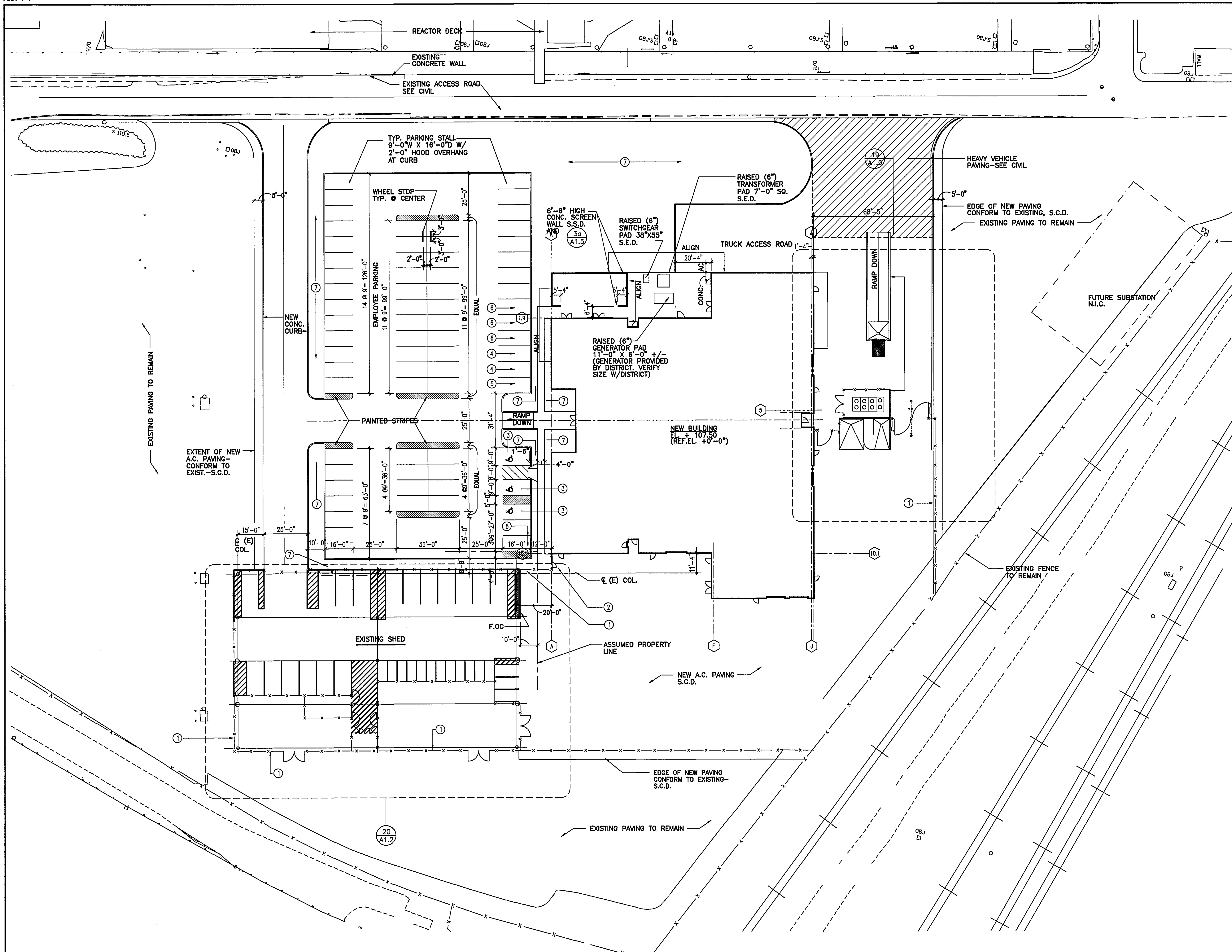
COVER SHEET

FACILITY
SCALE
DATE 13 FEB. 1998

DRAWING No. T-1
SHEET OF
SPECIFICATION NO.

USER:
DATE:
FILE:
P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\a02t1 7-9-98 3:19:35 pmPST

PLOT 1=1



PARKING SUMMARY

67 FULL SIZE SPACES
2 HANDICAP SPACES
1 HC VAN SPACE

70 SPACES

KEY NOTES

1. 6'-0"H CHAIN LINK FENCE W/ 3 STRANDS BARBED WIRE ABOVE – SEE 8/A1.5
2. 3'-0" X 6'-0" CHAINLINK GATE
3. A.C. PARKING (ONE TO BE VAN ACCESSIBLE) –PROVIDE SIGNAGE AS REQ'D. BY CODE
4. PAVEMENT SIGNAGE TO READ: 'DISTRICT VEHICLES ONLY'
5. PAVEMENT SIGNAGE TO READ: 'PLANT MAINTENANCE SUPERINTENDENT'
6. PAVEMENT SIGNAGE TO READ: 'VISITOR'
7. 6" MIN. TOPSOIL GRADED AS REQUIRED, S.C.D.

IF SHEET IS LESS THAN 30" X 42" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223 – A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

N

0 10 20 40
GRAPHIC SCALE IN FEET

The Ratcliff Architects

NO.	DATE	REVISION		BY	REC.	APP.
2	10DEC2012	IN SERVICE 16JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
1	3/31/98	PLAN CHECK AND ADDENDUM NO. 1		VH		

DESIGNED BY DW
DESIGN CHECKED BY SH
DRAWN BY GS, DS
SR. PROJ. ENGR. VH
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.0

EBMUD

PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

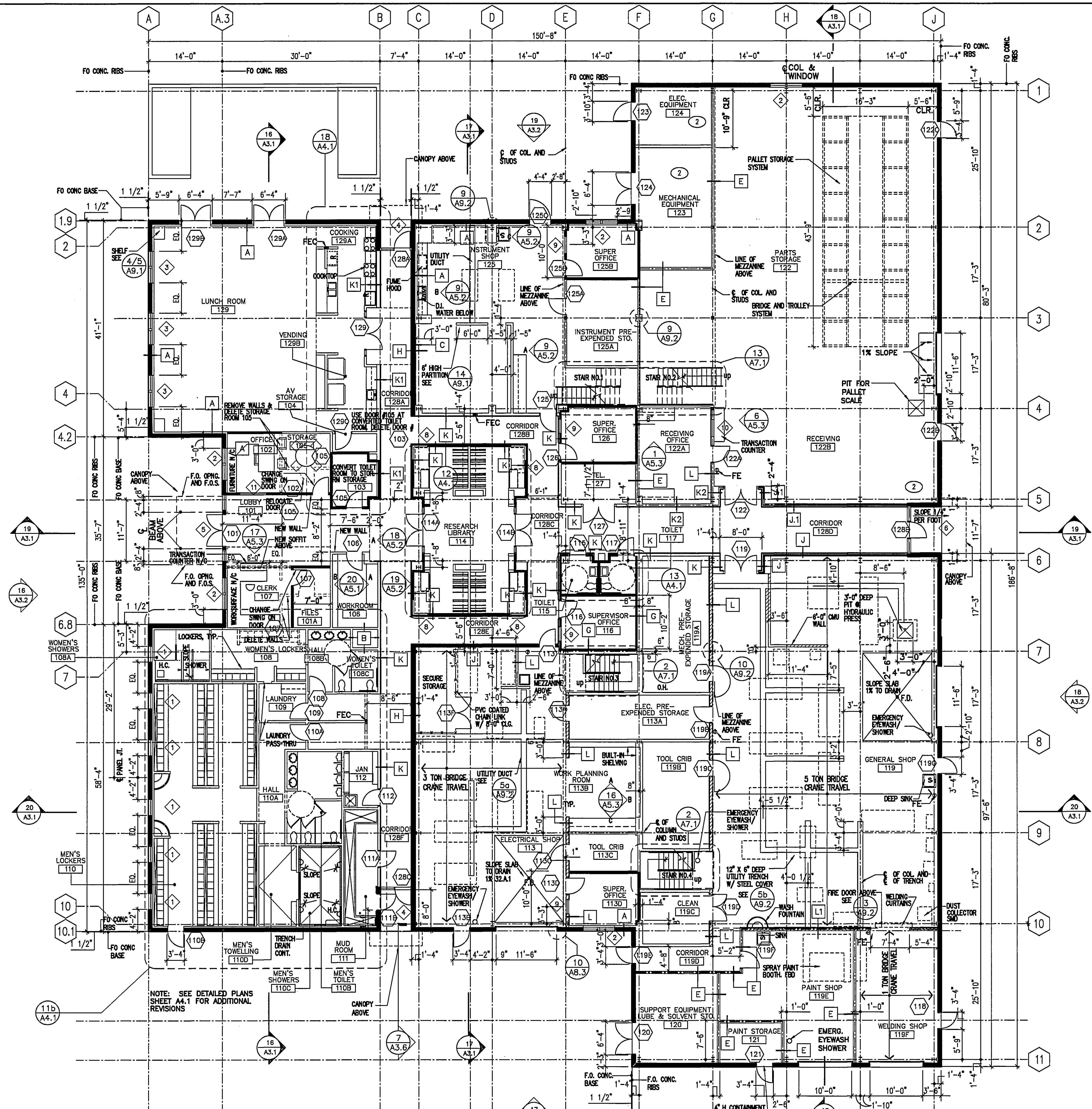
SITE PLAN

FACILITY
SCALE 1" = 20'-0"
DATE 13 FEB. 1998

DRAWING No. A1.1
SHEET OF
SPECIFICATION NO.

P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\a02a11 4-8-98 9:54:48 amPST

PLOT 1=8'



20 GROUND FLOOR PLAN
1/8" = 1'-0"

SHEET NOTES

1. PARTITION TYPE "F" IS TYPICAL – SEE A2.5 FOR ADDITIONAL WALL TYPES. PARTITION TYPES ARE NOTED ON PLANS AND CONTINUE UNTIL A DIRECTION CHANGE OCCURS IN THE WALL, U.O.N. WHERE TWO PARTITION TYPES ARE KEYED TO THE SAME PARTITION, TRANSITION OCCURS AT INTERSECTING PARTITION.
2. SEE DRAWINGS OF OTHER DISCIPLINES FOR REQUIREMENTS IN THESE SPACES. (ie. DRAINS, HOUSKEEPING PADS, ETC.)
3. DASHED OBJECTS ON THIS DRAWING INDICATE EQUIPMENT LOCATIONS. SEE A11.0 THRU A11.3 FOR ADDITIONAL INFORMATION.

WALL LEGEND:

= CONC. WALL SSD

= CMU WALL SSD

= 1 HOUR RATED PARTITION

= SOUND INSULATED PARTITION

IF SHEET IS LESS THAN 30" X 42" IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223 – A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

N
0 4 8 16
GRAPHIC SCALE IN FEET

The Ratcliff Architects

NO.	DATE	REVISION		BY	REC.	APP.
2	10DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
1	3/31/98	PLAN CHECK AND ADDENDUM NO.1		VH		

DESIGNED BY
DESIGN CHECKED BY
DRAWN BY
SR. PROJ. ENGR.
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.0

EBMUD

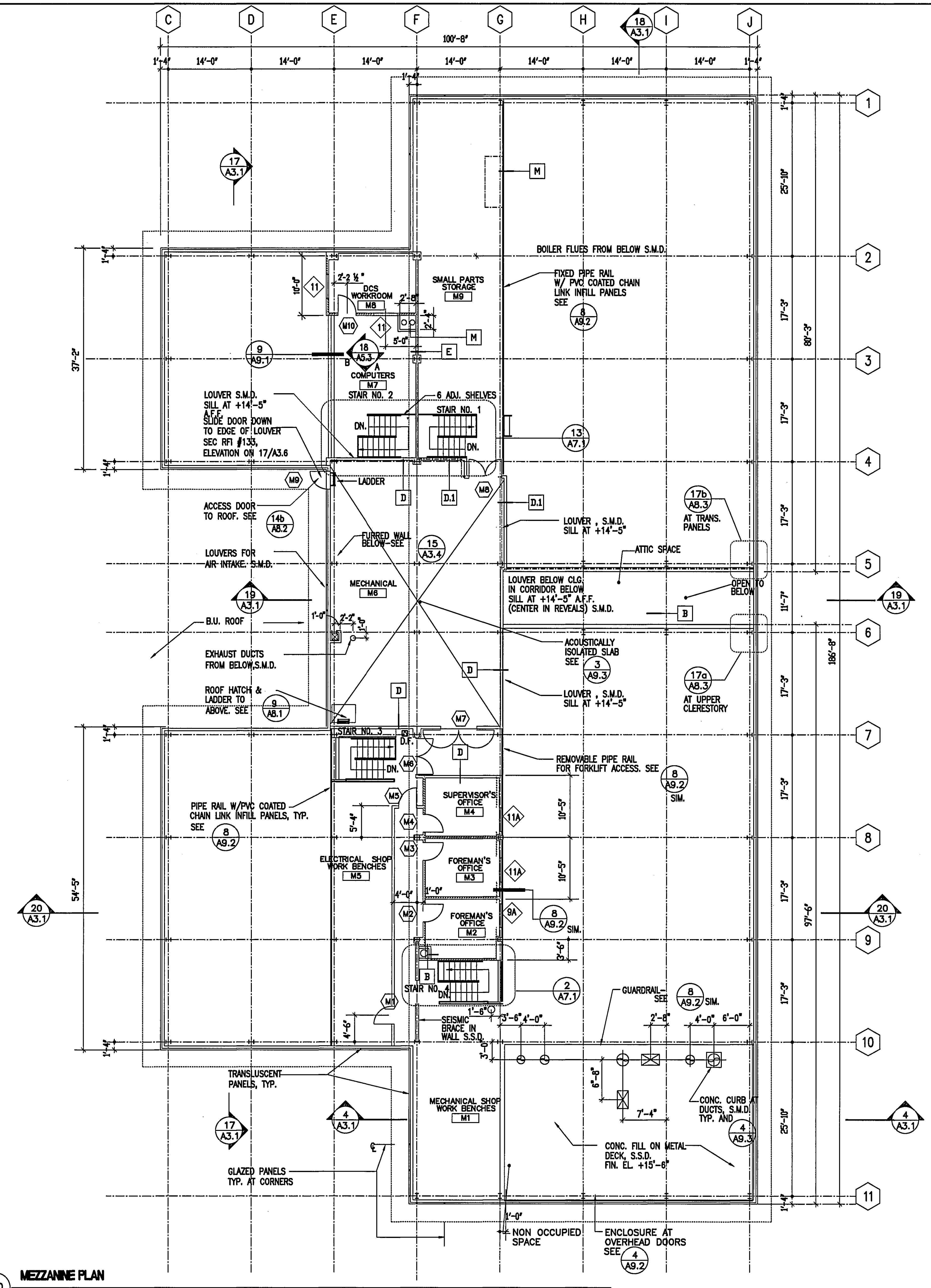
PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

GROUND FLOOR PLAN

FACILITY
SCALE 1/8" = 1'-0"
DATE 13 FEB. 1998
DRAWING No. A2.1
SHEET OF
SPECIFICATION NO.

P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\A02A21 4-8-98 10:17:47 amPST

PLOT 1=8'



20 MEZZANINE PLAN

SHEET NOTES

1. PARTITION TYPE "F" IS TYPICAL - SEE A2.5 FOR ADDITIONAL WALL TYPES. PARTITION TYPES ARE NOTED ON PLANS AND CONTINUE UNTIL A DIRECTION CHANGE OCCURS IN THE WALL, U.O.N. WHERE TWO PARTITION TYPES ARE KEYED TO THE SAME PARTITION, TRANSITION OCCURS AT INTERSECTING PARTITION.
2. SEE DRAWINGS OF OTHER DISCIPLINES FOR REQUIREMENTS IN THESE SPACES. (ie. DRAINS, HOUSKEEPING PADS, ETC.)

WALL LEGEND:

= CONC. WALL SSD

= CMU WALL SSD

= 1 HOUR RATED PARTITION

= SOUND INSULATED PARTITION

IF SHEET IS LESS THAN 30" X 42" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223 - A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

GRAPHIC SCALE IN FEET

The Ratcliff Architects

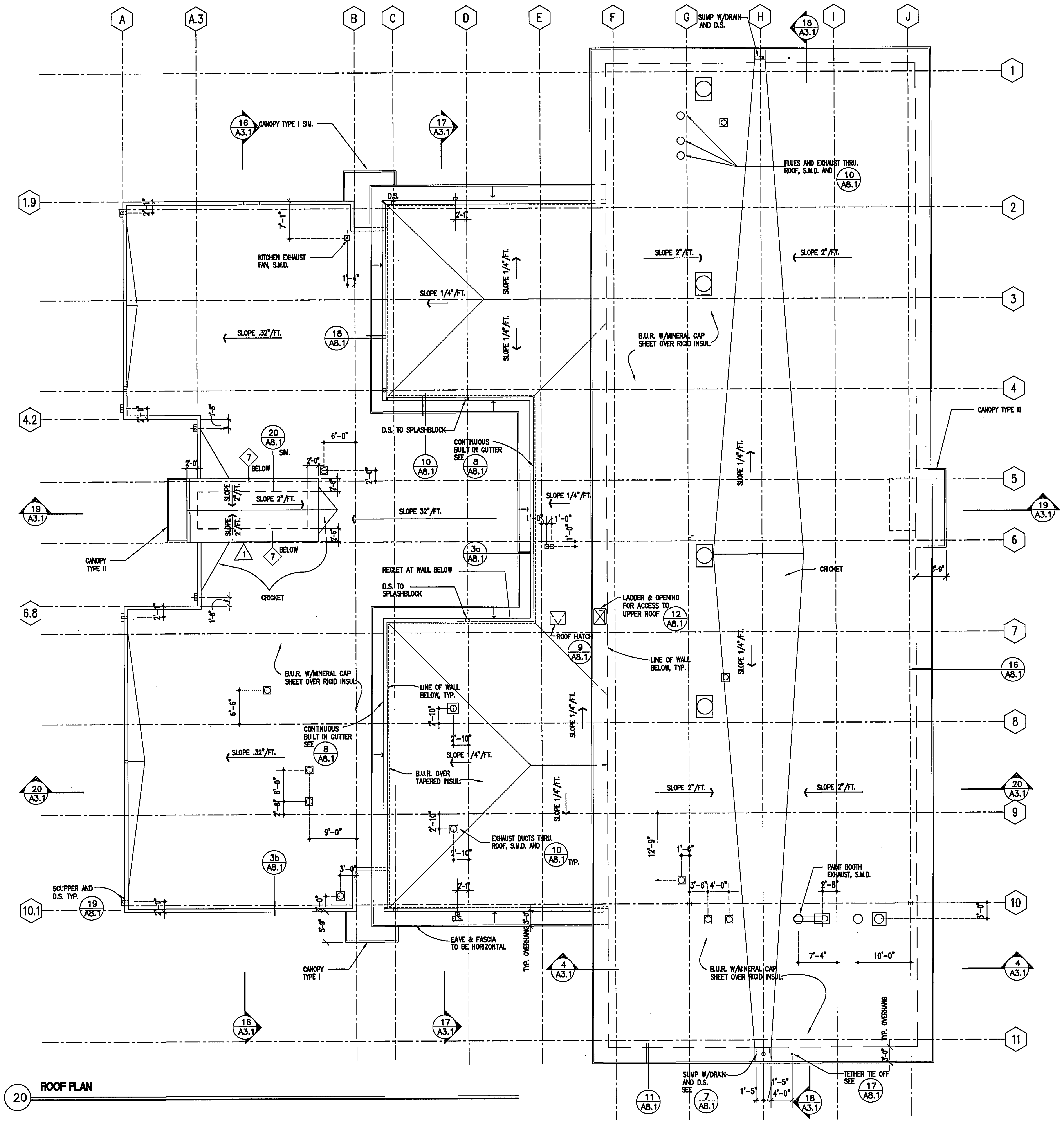
NO.	DATE	REVISION	BY	REC.	APP.
2	18DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING SD223A			JLW
1	3/31/98	PLAN CHECK AND ADDENDUM NO. 1			

MEZZANINE PLAN

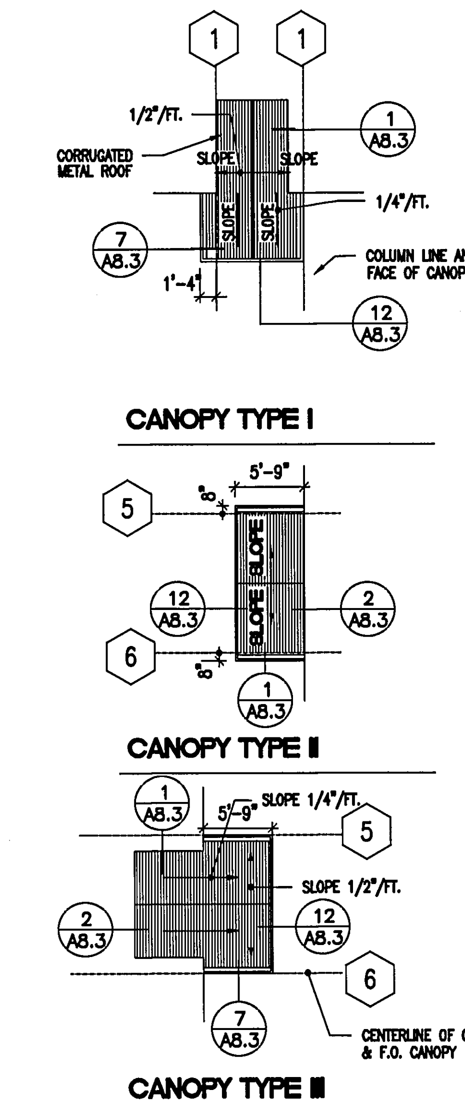
FACILITY		DRAWING No.
SCALE	1/8" = 1'-0"	A2.2
DATE	13 FEB. 1998	SHEET OF
		SPECIFICATION NO.

P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\a02a22 4-8-98 10:27:30 amPST

PLOT 1=8'



SHEET NOTES - ROOF PLAN



IF SHEET IS LESS THAN 30" X 42"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223 – A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

ROOF PLAN

N

0 4 8 16
GRAPHIC SCALE IN FEET

The Ratcliff Architects

NO.	DATE	REVISION	BY	REC.	APP.
	10DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING INSP. PYL SD223A			JLW
2	4/14/98				
1	3/31/98				

DESIGNED BY
DESIGN CHECKED BY
DRAWN BY
SR. PROJ. ENGR. VH
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.

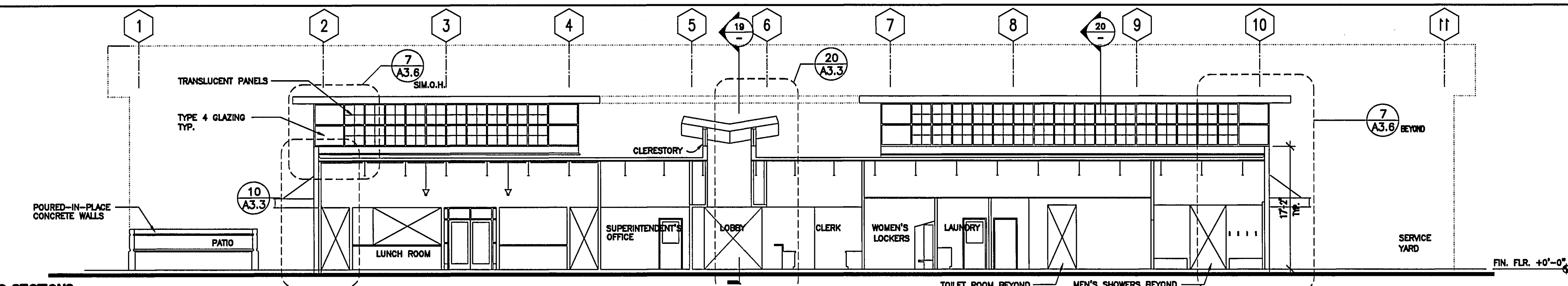
EBMUD

PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

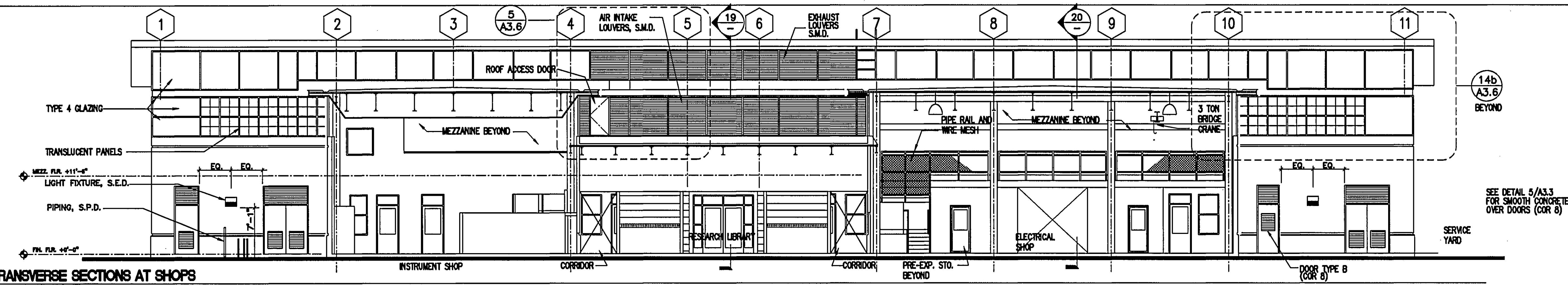
FACILITY
SCALE 1/8" = 1'-0"
DATE 13 FEB. 1998
DRAWING No. A2.3
SHEET OF
SPECIFICATION NO.

P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\a02a23 4-14-98 1:49:47 pmPST

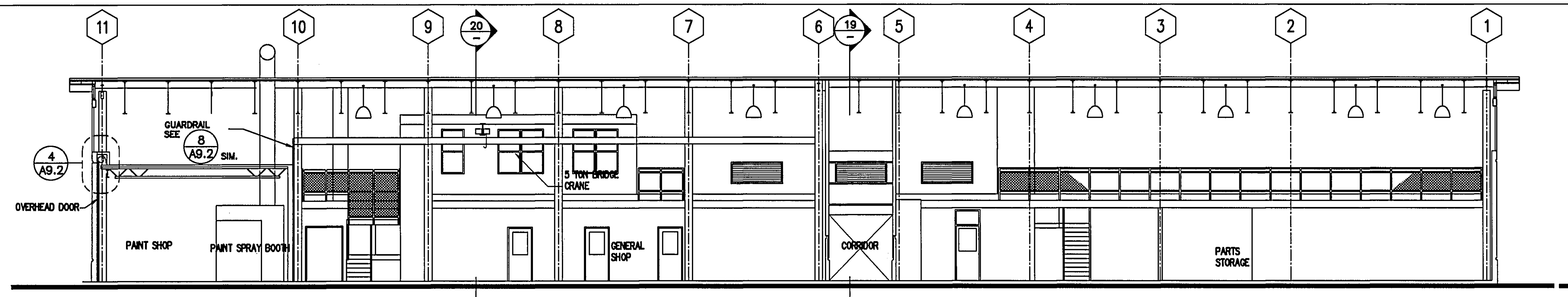
PLOT 1=8'



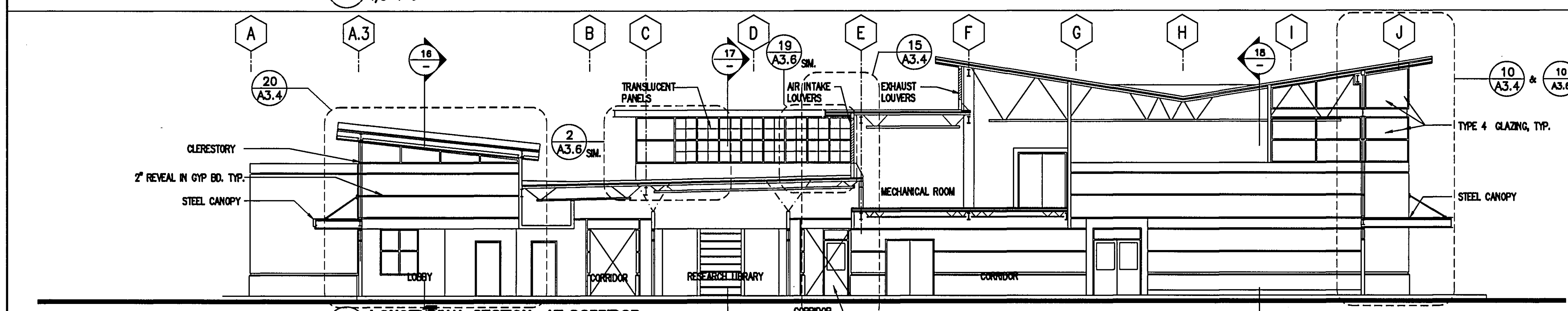
16 BUILDING SECTIONS
1/8"=1'-0"



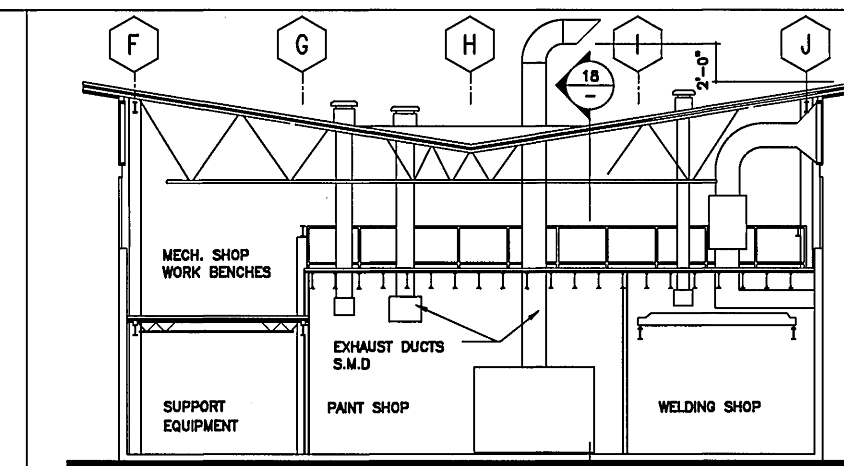
17 TRANSVERSE SECTIONS AT SHOPS
1/8"=1'-0"



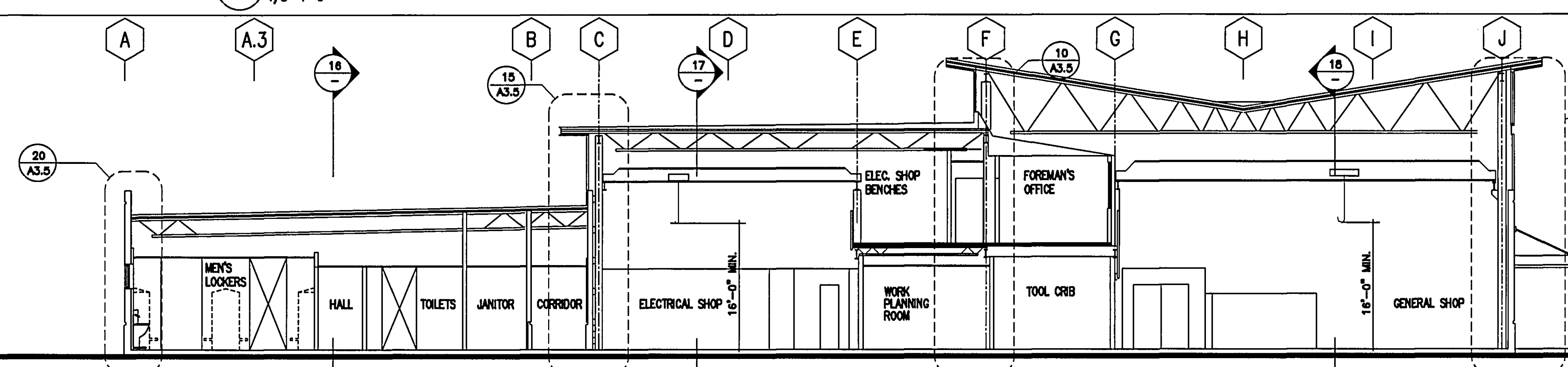
18 TRANSVERSE SECTION AT GENERAL SHOP AND PARTS STORAGE
1/8"=1'-0"



19 LONGITUDINAL SECTION AT CORRIDOR
1/8"=1'-0"



4 SECTION AT WELDING + PAINT SHOPS



20 LONGITUDINAL SECTION AT SHOPS
1/8"=1'-0"

SHEET NOTES

1. SEE DETAILED ELEVATIONS SHT. A3.6 FOR CLERESTORY DELINEATION
2. SEE 5/A3.3 FOR TYPICAL PANEL REVEALS
3. DUCTWORK SHOWN IS FOR CLARITY OF INTENT. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DUCTWORK AND NOTES. SEE REFLECTED CEILING PLANS FOR LOCATION CRITERIA FOR DUCTS AND DIFFUSERS.

IF SHEET IS LESS THAN 30" X 42"
IT IS A REDUCED PRINT
SCALE REDUCED ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223 – A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

BUILDING SECTIONS

0 4 8 16
GRAPHIC SCALE IN FEET

The Ratcliff Architects

NO.	DATE	REVISION		BY	REC.	APP.
2	18DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
1	3/31/98	PLAN CHECK AND ADDENDUM NO. 1		GS		

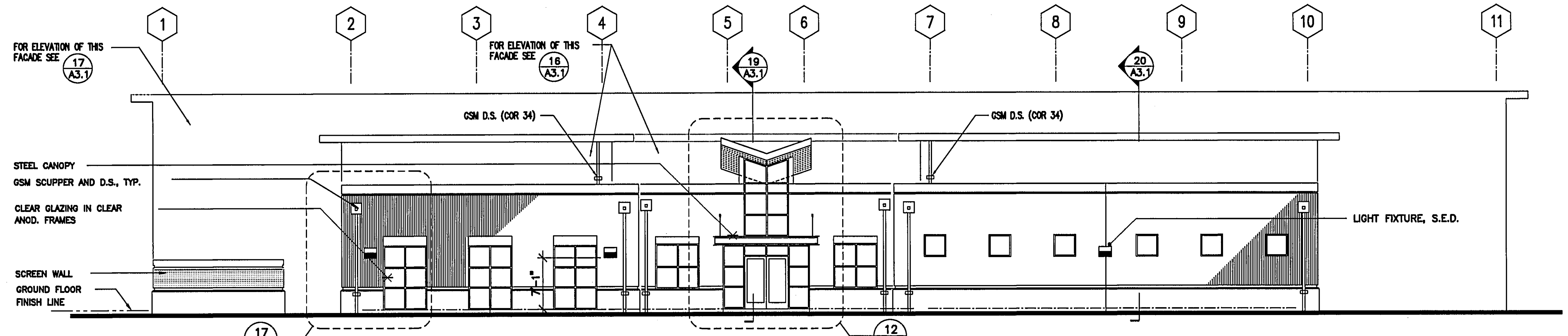
DESIGNED BY DW
DESIGN CHECKED BY BN
DRAWN BY AV, GS
SR. PROJ. ENGR. VH
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.0

EBMUD
PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

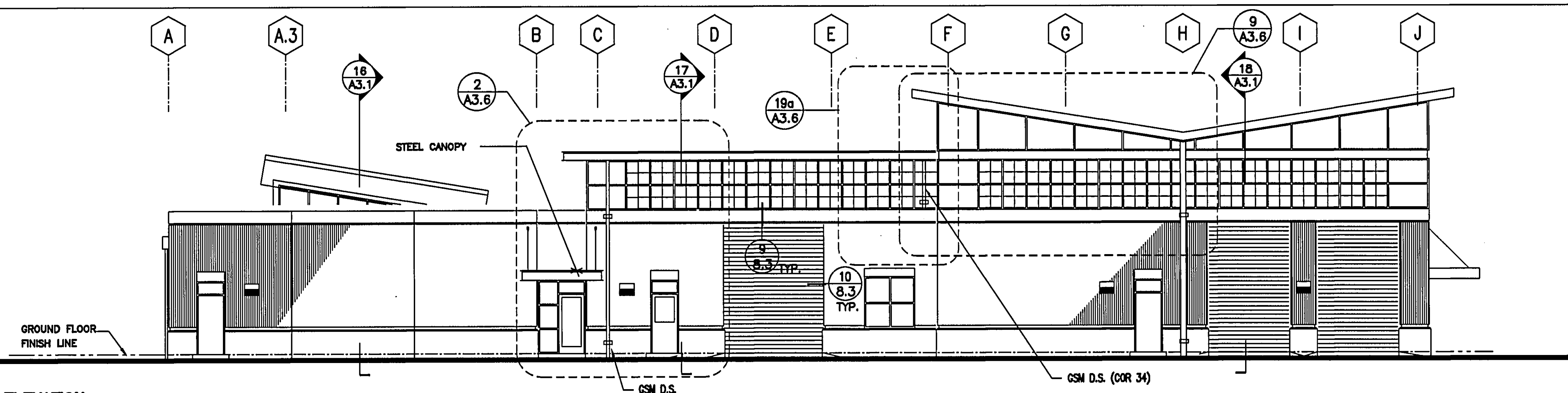
FACILITY
SCALE 1/8" = 1'-0"
DATE 13 FEB. 1998
DRAWING No. A3.1
SHEET OF
SPECIFICATION NO.

P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\a02a31 4-8-98 12:29:55 pmPST

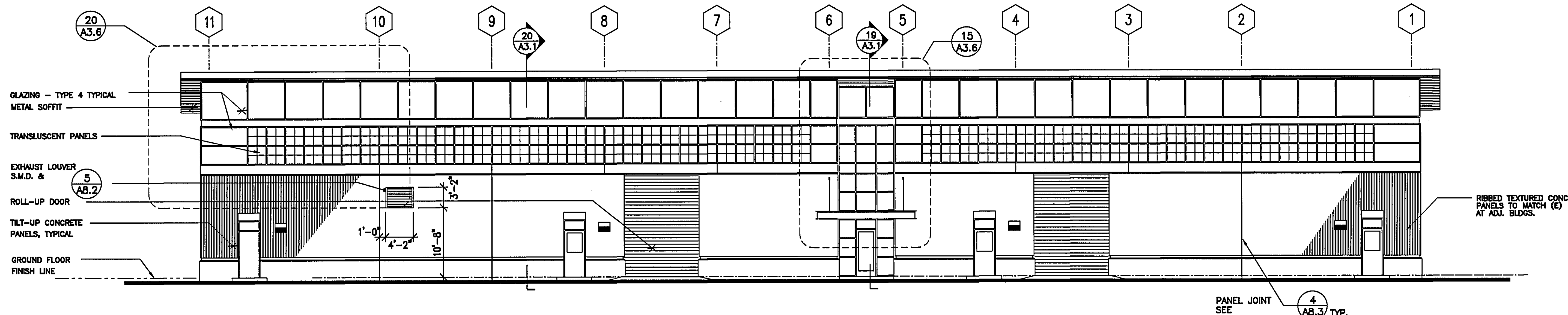
PLOT 1=8'



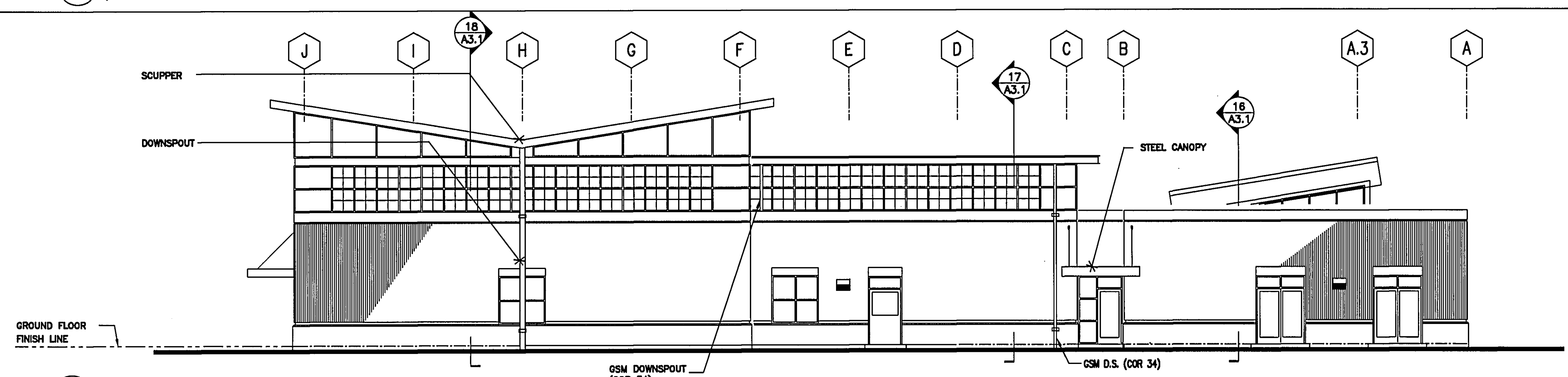
16 **WEST ELEVATION**
1/8"=1'-0"



17 **SOUTH ELEVATION**
1/8"=1'-0"



18 **EAST ELEVATION**
1/8"=1'-0"



19 **NORTH ELEVATION**
1/8"=1'-0"

NOTE:
FINISH COLOR FOR ALL STEEL CHANNELS SHALL MATCH "DEX-O-TEX 211 GREEN.

FINISH COLOR FOR ALL EXTERIOR HOLLOW METAL DOORS AND OVERHEAD ROLLUP DOORS SHALL BE "SHERWIN WILLIAMS" 2086 "GATE WAY GRAY".

FINISH OF HIGH ROOF FASCIA SHALL BE "WHITE" TO MATCH KALWALL.

FINISH OF METAL SOFFIT SHALL BE "SNOW DRAFT WHITE".

FINISH OF CANOPY SOFFIT LIGHT FIXTURES SHALL BE WHITE.

SHEET NOTES

1. SEE DETAILED ELEVATIONS SHT. A3.6 FOR CLERESTORY DELINEATION
2. SEE 5/A3.3 FOR TYPICAL PANEL REVEALS

IF SHEET IS LESS THAN 30" X 42" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223 – A
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

0 4 8 16
GRAPHIC SCALE IN FEET

The Ratcliff Architects

NO.	DATE	REVISION		BY	REC.	APP.
△	10DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
1	3/31/98	PLAN CHECK AND ADDENDUM NO. 1		GS		

DESIGNED BY DW
DESIGN CHECKED BY BN
DRAWN BY AV,VH
SR. PROJ. ENGR. VH
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.0

EBMUD

PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

EXTERIOR ELEVATIONS

FACILITY
SCALE 1/8" = 1'-0"
DATE 13 FEB.1998
DRAWING No. A3.2
SHEET OF
SPECIFICATION NO.

USER: DATE: FILE:
P:\EBMUD\EBMUD MFU 96007.02\CAD\CnstDocs\a02a32 4-8-98 1:05:50 pmPST

GENERAL NOTES

I. GENERAL

A. SEE DRAWINGS OTHER THAN STRUCTURAL FOR: KINDS OF FLOOR FINISH AND THEIR LOCATION, FOR DEPRESSIONS IN FLOOR SLABS, FOR OPENINGS IN WALLS AND FLOORS REQUIRED BY ARCHITECTURAL AND MECHANICAL FEATURES, FOR ROADWAY PAVING, WALKS, RAMPS, STAIRS, CURBS, ETC.

B. HOLES AND OPENINGS THROUGH WALLS AND FLOORS FOR DUCTS, PIPING AND VENTILATION SHALL BE CO-ORDINATED BY THE CONTRACTOR WHO SHALL VERIFY SIZES AND LOCATION OF SUCH HOLES OR OPENINGS WITH THE MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS AND THEIR SUB-CONTRACTORS.

C. NO PIPES OR DUCTS SHALL BE EMBEDDED IN SLABS UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE ENGINEER.

D. DRAWINGS AND SPECIFICATIONS REPRESENT FINISHED STRUCTURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO SHORING AND TEMPORARY BRACING. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO INSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE AND ADJACENT TO THE SITE. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT, ENGINEER OR CONSTRUCTION MANAGER SHALL NOT RELIEVE THE CONTRACTOR OF SUCH RESPONSIBILITY.

E. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT JOB SITE BEFORE COMMENCING WORK AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT.

F. OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND RESOLVED BEFORE PROCEEDING WITH THE WORK.

G. DO NOT USE SCALED DIMENSIONS; USE WRITTEN DIMENSIONS. WHERE NO DIMENSION IS PROVIDED, CONSULT THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.

H. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR CALLED FOR ON THE DRAWINGS OR SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS FOR SIMILAR CONDITIONS THAT ARE CALLED FOR OR SHOWN.

II. DESIGN BASIS

A. APPLICABLE CODES: UNIFORM BUILDING CODE (UBC), 1994 EDITION. ENGINEERING STANDARD PRACTICE (ESP) EMUD STANDARDS, JULY 1994

B. VERTICAL LIVE LOADS:

1. ROOF:	20 PSF
2. MEZZANINE:	125 PSF (NON-REDUCIBLE)
3. GROUND FLOOR:	
STORAGE	250 PSF (NON-REDUCIBLE)
SHOP	125 PSF (NON-REDUCIBLE)
GENERAL	100 PSF (NON-REDUCIBLE)

C. LATERAL LOADS:

1. DESIGN WIND PRESSURE: p = Ce Cq qs I; WIND SPEED = 80 MPH
   I = 1.0, Cq = 1.3, qs = 16.4, EXPOSURE D

Height	Ce	p
0 -15 ft	1.39	30.0 psf
16-20 ft	1.45	31.0 psf
21-25 ft	1.50	32.0 psf
26-30 ft	1.54	33.0 psf

2. CODE SEISMIC:
   EBMUD STANDARDS (ESP) V = (ZCN) I W/Rw
   Z = 0.4, N = 1.5, S = 1.5, I = 1.0, C = 2.75, W = WEIGHT, Rw = 6

D. SOILS: GEOTECHNICAL INVESTIGATION REPORT, DATED DECEMBER 1995, BY EBMUD ENGINEERING SERVICES DIVISION, UPDATED OCTOBER 3, 1997

III. MATERIALS

A. CONCRETE

1. REINFORCING STEEL:
   a. BARS: ASTM A615, GRADE 60.
   b. WELDED WIRE FABRIC: ASTM 185.
   b. WELDED BARS: ASTM 706, GRADE 60.
   c. ALL CONCRETE SHALL BE REINFORCED UNLESS SPECIFICALLY MARKED NOT REINFORCED.

2. CONCRETE CLASSES: SEE SPECIFICATIONS FOR REQUIREMENTS.

CLASS	USE	WEIGHT	STRENGTH
A	GRADE BEAMS & PILE CAPS	145 psf	4000 psi
B	STRUCTURAL SLABS-ON-GRADE	145 psf	4000 psi
C	CONCRETE FILL ON METAL DECKING	110 psf	4000 psi
D	SITE STRUCTURES & WALLS	145 psf	4000 psi
E	PRECAST PILES	145 psf	5000 psi

USE ASTM C150 TYPE II CEMENT FOR ALL CONCRETE CLASSES

3. MINIMUM CONCRETE COVER FOR REINFORCING STEEL:

a. SURFACES PLACED AGAINST EARTH	3"
b. FORMED SURFACES BELOW GRADE	2"
c. SURFACES EXPOSED TO WEATHER	2"
d. EXTERIOR WALL AT EXTERIOR FACE	1.5"
e. SLABS NOT EXPOSED TO WEATHER	1"

B. CONCRETE MASONRY

1. 8" CMU UNITS: TYPE 1 f'm = 1500 PSI, ASTM C90 GRADE "N" OPEN ENDED BOND BEAM UNITS ONLY EXCEPT AT END AND CORNER UNITS.
2. MORTAR: f'm = 2500 PSI TYPE "M"
3. GROUT: f'c = 2500 PSI
4. ALL MASONRY UNITS SHALL BE FULLY GROUTED.
5. SPECIAL INSPECTION IS REQUIRED PER UBC SEC. 1701.5 ITEM 7 AND SEC. 2105.
6. ALL MASONRY SHALL BE RUNNING BOND U.O.N.
7. ALL CMU WALLS SHALL HAVE #5 @ 16" O.C. HORIZONTAL AND #5 @16" O.C. VERTICAL MINIMUM REINFORCING. TYPICAL UNLESS OTHERWISE NOTED ON CONSTRUCTION DOCUMENTS.
8. MAXIMUM 6'-0" GROUT LIFTS WITH MINIMUM CLEANOUT. REQUIREMENTS PER UBC SEC. 2104.6.
9. ALL INSERTS AND ANCHOR BOLTS SHALL BE IN PLACE AT TIME OF GROUT PLACEMENT.
10. ALL ANCHOR BOLTS SHALL BE GROUTED IN PLACE WITH AT LEAST ONE (1") OF GROUT BETWEEN THE BOLT AND THE MASONRY.
11. DOWELS: ALL VERTICAL WALL REINFORCING SHALL HAVE DOWELS EQUAL IN SIZE TO TYPICAL VERTICAL REINFORCING EMBEDED INTO FOOTING.

C. EPOXY : BY ANCHOR-IT CORP. OR AN EQUALLY APPROVED PRODUCT.

D. STEEL

1. STRUCTURAL STEEL SHAPES: ASTM A572, (Fy=50ksi)
2. PLATES: A36 (Fy=36ksi)
3. TUBES: ASTM A500, GRADE B.
4. PIPES: ASTM A53, GRADE B.
5. BARS: ASTM 572
6. MACHINE BOLTS: ASTM A325.
7. HIGH STRENGTH BOLTS: ASTM A325SC.
8. STEEL DECK: ASTM A446, GRADE A.
9. WELDING ELECTRODES: E-70.
10. ANCHOR BOLTS: ASTM A307
11. HIGH STRENGTH ANCHOR BOLTS: ASTM A449.
12. WELDED STUDS: FLUX FILLED HEADED ANCHOR STUDS TYPE H4L OR S3L BY NELSON OR EQUAL.
13. ALL ANCHOR BOLTS SHALL BE GROUTED IN PLACE WITH AT LEAST ONE (1") OF GROUT BETWEEN THE BOLT AND THE MASONRY.
14. STEEL JOISTS: PER STEEL JOIST INSTITUTE SPECIFICAION
15. STEEL EXPOSED TO WEATHER: HOT DIP GALVANIZE

IV. QUALITY CONTROL

A. THE FOLLOWING WORK REQUIRES TESTS AND/OR INSPECTIONS. FOR SPECIFIC REQUIREMENTS SEE SPECIFICATION. INSPECTIONS SHALL BE MADE IN ACCORDANCE WITH CURRENT UBC BY A CERTIFIED SPECIAL INSPECTOR RETAINED BY THE OWNER.

1. PILE DRIVING
2. FOUNDATION EXCAVATION
3. SOIL COMPACTION
4. REINFORCING STEEL AND ANCHOR BOLT PLACEMENT
5. CONCRETE PLACEMENT
6. EXPANSION BOLTS
7. MASONRY
8. EPOXY SET THREADED RODS AND DOWELS
9. WELDING: REBAR, STRUCTURAL STEEL, METAL DECK, WELDED STUDS
10. HIGH STRENGTH BOLTS AND HIGH STRENGTH ANCHOR BOLTS.
11. NON-SHRINK GROUT

B A PARTIAL LISTING OF REQUIRED STRUCTURAL SUBMITTALS FOLLOWS. CONSULT THE SPECIFICATION FOR A COMPLETE LISTING OF THE SUBMITTAL REQUIREMENTS.

1. PILE DESIGN & SHOP DRAWINGS
2. CONCRETE MIX DESIGNS
3. CONSTRUCTION JOINT & CONTROL JOINT LAYOUT
4. REINFORCING STEEL SHOP DRAWINGS
5. PREFABRICATED STAIR SHOP DRAWINGS WITH CALCULATIONS
6. STRUCTURAL STEEL SHOP DRAWINGS
7. MANUFACTURER'S DATA FOR INSERTS, GROUTS & EPOXIES
8. PREFABRICATED TRUSS SHOP DRAWINGS & CALCULATIONS

ABBREVIATIONS

&	AND
@	AT
A.B.	ANCHOR BOLT
ARCH.	ARCHITECTURAL
BLDG.	BUILDING
BM.	BEAM
BOT.	BOTTOM
B.O.F.	BOTTOM OF FOOTING
℄	CENTER LINE
C.B.	COLUMN BASE
C.C.	CENTER TO CENTER
C.J.	CONSTRUCTION JOINT
CLR.	CLEAR
CMU.	CONCRETE MASONRY UNIT
COL.	COLUMN
CONN.	CONNECTION
CONT.	CONTINUOUS
C.P.	COMPLETE PENETRATION
CTR	CENTER
DET.	DETAIL
⌀	DIAMETER
DWG	DRAWING
(E)	EXISTING
E-W	PROJECT EAST-WEST
EA.	EACH
E.F.	EACH FACE
EL. OR ELEV.	ELEVATION
ELECT.	ELECTRICAL
E.W.	EACH WAY
EXT.	EXTERIOR
FDN	FOUNDATION
FIN.	FINISH
FL. OR FLR	FLOOR
F.O.C.	FACE OF CONCRETE
FRM'G	FRAMING
FTG	FOOTING
GA.	GAUGE
GALV.	GALVANIZED
G.B.	GRADE BEAM
HORIZ.	HORIZONTAL
HSB	HIGH STRENGTH BOLT
HSAB	HIGH STRENGTH ANCHOR BOLT
HT	HEIGHT
I.F.	INSIDE FACE
INT.	INTERIOR
JT	JOINT
LLH (LLV)	LONG LEG HORIZONTAL (OR VERTICAL)
LT	LIGHT
LT. WT.	LIGHT WEIGHT
M.B.	UNFINISHED MACHINE BOLTS
MAX.	MAXIMUM
MECH.	MECHANICAL
MFR	MANUFACTURER
MTL	METAL
MIN.	MINIMUM
MISC.	MISCELLANEOUS
N-S	PROJECT NORTH-SOUTH
N.I.C.	NOT IN CONTRACT
NOM.	NOMINAL
NTS	NOT TO SCALE
O.C.	ON CENTER
O.D. (I.D.)	OUTSIDE (INSIDE) DIAMETER
O.F.	OUTSIDE FACE
OPG.	OPENING
OPP.	OPPOSITE
O.H.	OPPOSITE HAND
PL.	PLATE
P.P.	PARTIAL PENETRATION
PT	POINT
PTN	PARTITION
REF.	REFERENCE
REINF.	REINFORCEMENT
REQ.	REQUIRED
S.A.D.	SEE ARCHITECTURAL DRAWINGS
SCHED.	SCHEDULE
SECT.	SECTION
SHT	SHEET
SIM.	SIMILAR
S.J.	SEISMIC JOINT
S.M.D.	SEE MECHANICAL DRAWINGS
SPA	SPACE
SPEC.	SPECIFICATION
SQ.	SQUARE
STAGG.	STAGGERED
STD	STANDARD
STL	STEEL
STRUCT.	STRUCTURAL
SYM.	SYMMETRICAL
T&B	TOP AND BOTTOM
THD.	THREADED
T.O.C.	TOP OF CONCRETE
T.O.G.B.	TOP OF GRADE BEAM
T.O.S.O.G.	TOP OF SLAB-ON-GRADE
T.O.S.	TOP OF STEEL
T.O.S.J.	TOP OF STEEL JOISTS
T.W.	TOP OF WALL
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
VERT.	VERTICAL
W/	WITH
W/O	WITHOUT
W.J.	WALL JOINT
W.P.	WORK POINT
WT.	WEIGHT

SYMBOLS

SYMBOL	DESCRIPTION	REF. DETAILS
	METAL DECKING	3/S7.1
	CHANGE IN FINISH FLOOR ELEVATION	S.A.D.
s——s	BREAK IN GRADE BEAM ELEVATION	16/S5.1
	SLOPED OR DEPRESSED SLAB	14/S5.1
	DECKING SPAN DIRECTION	SEE SHT. S7.1
B	TILT UP PANEL ELEMENT	SEE SHT. S3.1-S3.4
BF	BRACED FRAME	SEE SHT. S7.3
(3)	SHEAR STUDS	SEE SHT. S7.1
PX.XX	PILE AND CAP P2.80 (NUMBER OF PILES; MINIMUM DESIGN PILE LENGTH)	SEE SHT. S5.2
*	INDICATOR PILE	SEE SPECS
C1	EXTRA SLAB REINFORCING DIRECTION	3/S5.3
GB-X	GRADE BEAM	19/S5.2
WF1 TS4	DENOTES COLUMN TYPE	9/S7.4
	CONCRETE FILL OVER METAL DECKING	3/S7.1
A	PANEL HOLD-DOWN EMBED	7/S5.2

DRAWING INDEX

STRUCTURAL

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2185 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

N
0 4 8 16
GRAPHIC SCALE IN FEET

DASSE DESIGN INC.
STRUCTURAL ENGINEERS

The Ratcliff Architects

NO.	DATE	REVISION		BY	REC.	APP.
2	10DEC2012	IN SERVICE 10JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
1	3/20/98	EMUD/PLAN CHECK COMMENT		JGW		

DESIGNED BY
DESIGN CHECKED BY
DRAWN BY
SR. PROJ. ENGR.
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.C

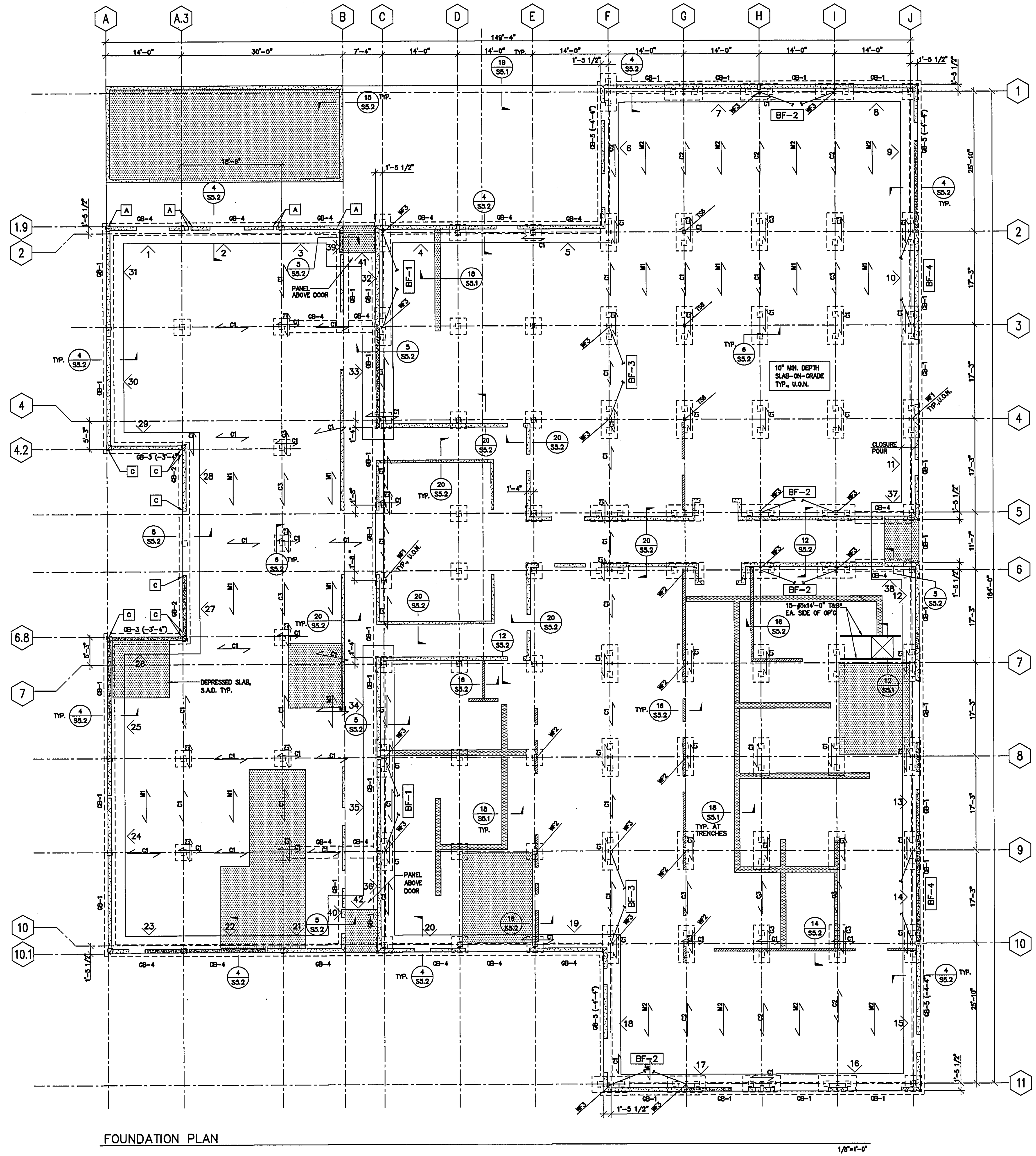
EBMUD
PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

GENERAL NOTES, ABBREVATIONS SYMBOLS, DRAWING INDEX

FACILITY
SCALE
DATE 23 MAR. 1998

DRAWING No. S1.1
SHEET OF

SPECIFICATION NO.



FOUNDATION PLAN

1/8"=1'-0"

NOTES: BARS SHOULD BE SPACED APPROXIMATELY THREE BAR DIAMETERA APART OR 2" ABOUT 2" O.C. (SEE 2/55.1) THE TOPS BARS SHALL MAINTAIN 1" CLEAR FROM THE TOP OF THE SLAB AND THE BUTTON BARS SHALL MAINTAIN 1" CLEAR FROM THE BOTTON OF THE SLAB (SEE 4/55.3)

FOUNDATION NOTES

1. SEE GENERAL NOTES ON SHEET S1.1.
2. FOUNDATION PLAN IS TAKEN ABOVE SLAB-ON-GRADE. NOMINAL TOP OF SLAB ELEVATION IS +0'-0". RELATIVE SLAB ELEVATIONS WITH RESPECT TO SLAB REFERENCE ELEVATION ARE SHOWN THUS: -0'-2".
3. ELEVATIONS OF THE BOTTOM OF THE GRADE BEAMS WITH RESPECT TO SLAB REFERENCE ELEVATIONS ARE -3'-10", U.O.N. ON PLAN THUS: (-4'-4").
4. ELEVATIONS OF BOTTOM OF PILE CAPS WITH RESPECT TO SLAB REFERENCE ELEVATIONS ARE -4'-4" U.O.N. ON PLAN THUS: (-4'-0").
5. PILE LENGTHS AND CAPACITIES HAVE BEEN ESTABLISHED BASED ON THE GEOTECHNICAL REPORT BY EBMUD ENGINEERING SERVICES DIVISION, DATED DECEMBER 1995, UPDATED OCTOBER 3, 1997. AS EXCAVATION AND PILE DRIVING PROGRESSES, CONDITIONS MAY DEVELOP REQUIRING CHANGES IN THE PILE LENGTHS AND/OR DRIVING CRITERIA. SUCH CHANGES SHALL BE MADE ONLY AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

   PILES SHALL BE DRIVEN TO BE CAPABLE OF SUPPORTING:

DEAD + LIVE	=	130K (DOWN)
DEAD + LIVE + SEISMIC	=	170K (DOWN)
DEAD + SEISMIC	=	30K (UP)

   ALL PILE LOCATIONS SHALL BE PREDRILLED (10" DIA.) TO ELEVATION -5'-0". INDICATOR PILES SHALL BE DRIVEN AS SPECIFIED IN THE GEOTECHNICAL REPORT. THE GEOTECHNICAL ENGINEER SHALL OBSERVE ALL INDICATOR PILE AND PRODUCTION PILE DRIVING. DO NOT CAST PILES FOR PRODUCTION DRIVING UNTIL INDICATOR PILE PROGRAM IS COMPLETE.
6. EXCAVATIONS SHALL BE MADE AS NEAR AS POSSIBLE TO THE NEAT LINES REQUIRED BY THE SIZE AND SHAPE OF THE STRUCTURE. NO MATERIAL IS TO BE EXCAVATED UNNECESSARILY.
7. ALL FOUNDATION EXCAVATIONS MUST BE REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
8. VERIFY LOCATION OF UNDERGROUND UTILITIES BEFORE EXCAVATION. NOTIFY ARCHITECT PRIOR TO EXCAVATION IN THE EVENT SUCH UTILITIES ARE ENCOUNTERED.
9. FOR DRAINAGE DETAILS, SUMPS, PITS, DAMPROOFING, TRENCHES, CURBS, EXTERIOR WALKS, UTILITIES, EQUIPMENT DETAILS, STEPS, SLOPES, ETC., SEE DRAWINGS OTHER THAN STRUCTURAL.
10. SLAB CONSTRUCTION AND CONTROL JOINT LOCATIONS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO PLACING ANY CONCRETE.

PRECAST PILE NOTES

1. SEE GENERAL NOTES ON SHEET S1.1.
2. PILE DESIGN FABRICATION AND INSTALLATION IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. PILE DESIGN SHALL BE DONE BY A CALIFORNIA REGISTERED STRUCTURAL ENGINEER, EMPLOYED BY THE CONTRACTOR, FOR THE FOLLOWING MINIMUM FORCE CRITERIA ACTING OVER THE FULL PILE LENGTH:
   - A. UNFACTORED DEAD AND LIVE LOAD COMPRESSION OF 150 KIPS.
   - B. UNFACTORED DEAD, LIVE, AND SEISMIC LOAD COMPRESSION OF 200 KIPS.
   - C. UNFACTORED DEAD AND SEISMIC TENSION LOAD OF 50 KIPS.
   - D. ALL LIFTING, DRIVING AND OTHER FABRICATION AND INSTALLATION FORCES.
4. SEE SPECIFICATIONS AND GEOTECHNICAL REPORT FOR COMPLETE INFORMATION.
5. CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE DASSE DESIGN INC., CALCULATIONS AND DESIGN DRAWINGS DEMONSTRATING COMPLIANCE WITH THE AFOREMENTIONED PROVISIONS. DESIGN DRAWINGS SHALL BE SIGNED BY CONTRACTOR'S STRUCTURAL ENGINEER. SUBMIT PILE CALCULATIONS AND DRAWINGS TO THE BUILDING DEPARTMENT.
6. PILE DRILLING SHALL BE EVALUATED AND APPROVED BY GEOTECHNICAL ENGINEER.
7. ALL PILES SHALL BE DRIVEN TO A TIP ELEVATION OF 40'-0" (SD-1 PLANT VERTICAL DATUM) UNLESS OTHERWISE DETERMINED BY THE GEOTECHNICAL ENGINEER.
8. TYPICAL PILE CUT-OFF ELEVATIONS BELOW SLAB-ON-GRADE ARE NOTED BELOW, U.O.N. ON PLAN:
   - AT PILE CAPS = -4'-1"
   - AT GRADE BEAMS = -3'-7"

SLAB REINFORCING NOTES

1. FOR TYPICAL BUILDING SLAB-ON-GRADE REINFORCING, SEE 4/S5.3.
2. EXTRA REINFORCING IS MARKED THUS: C1 ARROWS INDICATE DIRECTION OF REINFORCEMENT. SEE SLAB REINFORCING SCHEDULE, DETAIL 3/S5.3.
3. FOR SLAB REINFORCING CUT OFF LENGTHS AND SPLICES, SEE DETAILS 9/S5.3 AND 10/S5.3.
4. EXTRA TOP AND BOTTOM REINFORCING AT COLUMN AND MIDDLE STRIPS SHALL BE SPACED EQUALLY WITH TYPICAL CONTINUOUS REINFORCING.
5. SEE 8/S5.3 FOR ADDITIONAL SLAB REINFORCING AT CORNERS OF SLAB.

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2185 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

FOUNDATION PLAN

FACILITY	DRAWING No. S2.1
SCALE AS NOTED	
DATE 23 MAR. 1998	SHEET OF

SPECIFICATION NO.

N — 0 4 8 16 GRAPHIC SCALE IN FEET

DASSE DESIGN INC. STRUCTURAL ENGINEERS

The Ratcliff Architects

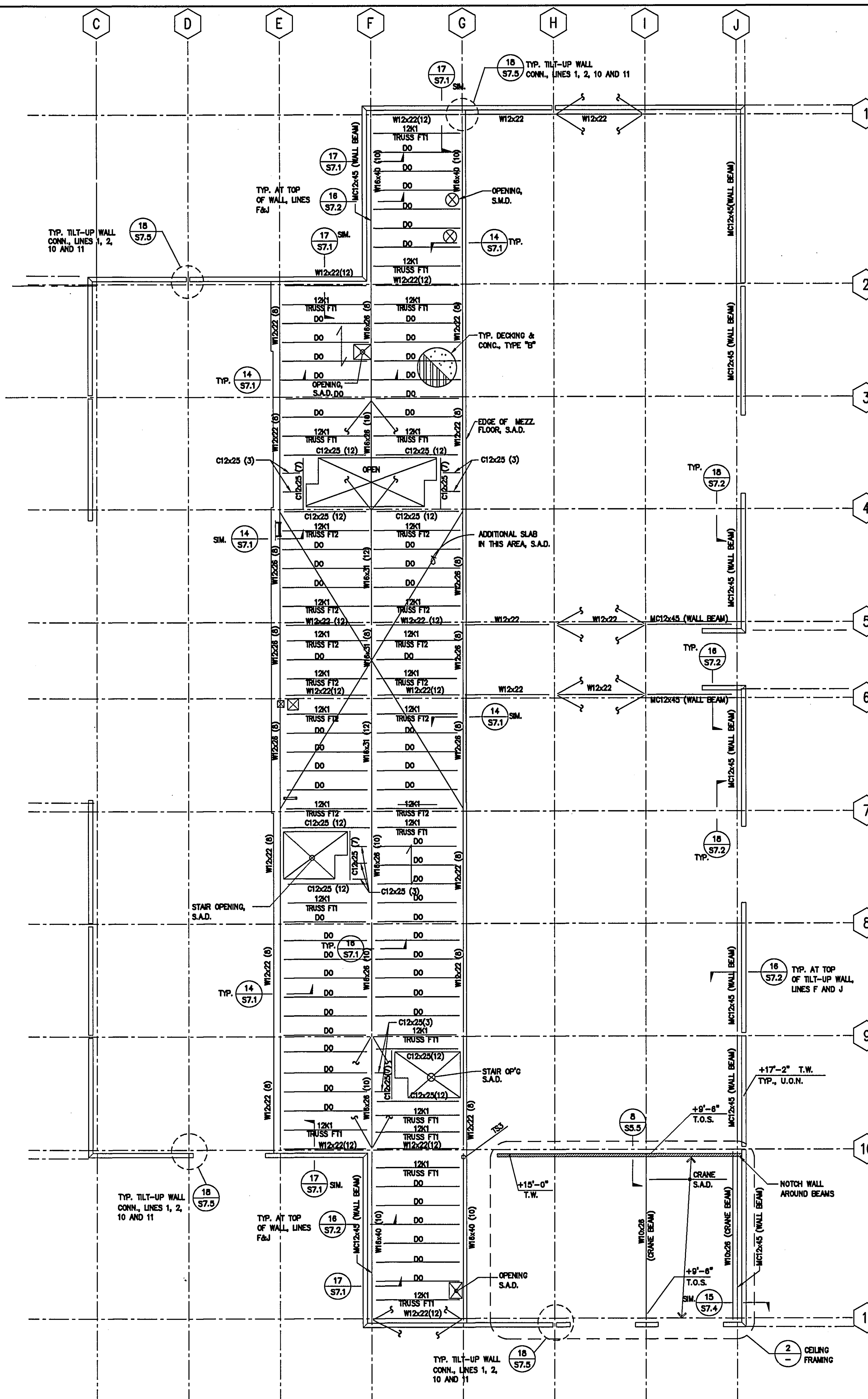
NO.	DATE	REVISION		BY	REC.	APP.
2	10DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW
1	3/20/98	EBMUD/PLAN CHECK COMMENT		JCW		

DESIGNED BY	JCW
DESIGN CHECKED BY	JCW
DRAWN BY	CMY/MTC
SR. PROJ. ENGR.	JCW
APPROVED	
PRINCIPAL-IN-CHARGE, R.P.E. NO.C	

EBMUD

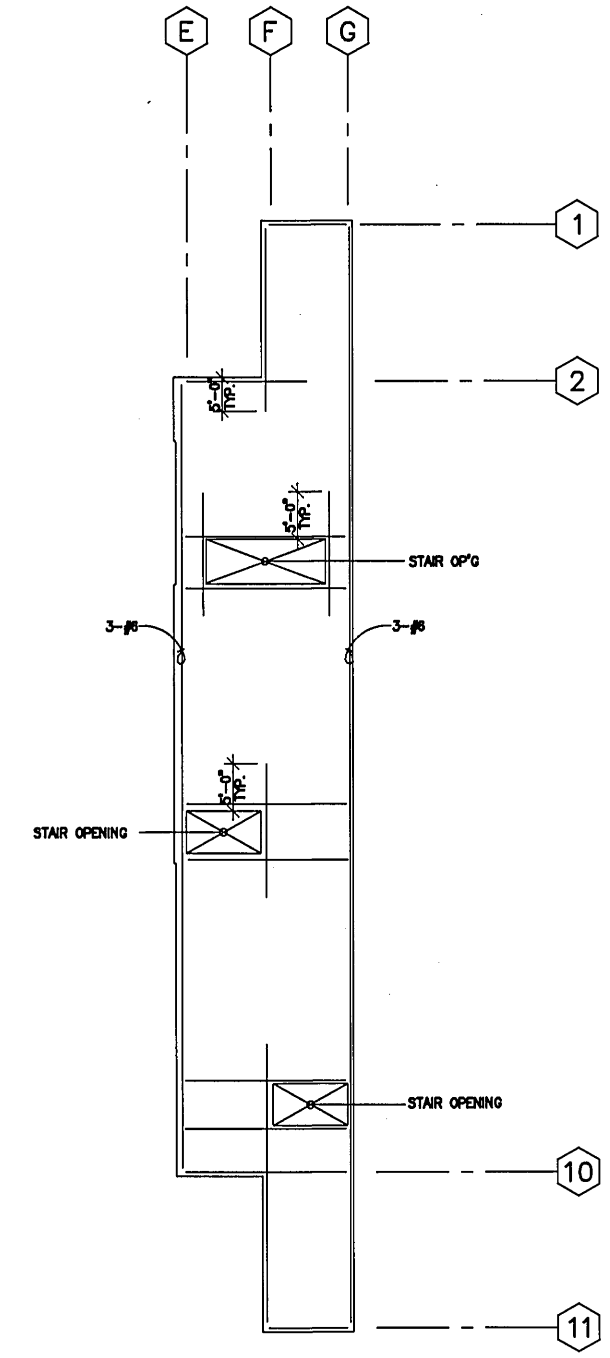
PROJECT MGR. R.P.E. No.

PROJECT SUPERVISOR R.P.E. No.



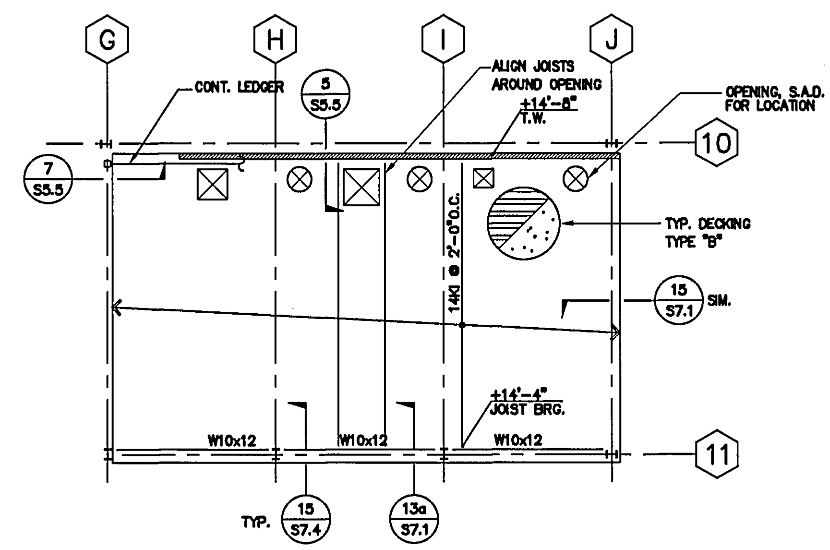
MEZZANINE FLOOR PLAN

1/8"=1'-0"



NOTES:
1. ALL REINF. BARS SHOWN ARE 2-#5, U.O.N.
2. ALL BARS SHALL BE LOCATED IN THE MIDDLE OF THE SLAB.

1/– MEZZANINE FLOOR–ADDED REINFORCING PLAN — N.T.S.



2/– CEILING FRAMING AT WELDING AND PAINT SHOPS — 1/8"=1'-0"

MEZZANINE FRAMING NOTES

1. SEE GENERAL NOTES AND TYPICAL DETAILS ON SHEET S1.1, S7.1 AND S7.2.
2. ELEVATION TO TOP OF CONCRETE (T.O.C.) IS GIVEN WITH RESPECT TO NOMINAL FIRST FLOOR ELEVATION +0'-0" AND SHOWN THUS: +11'-6".
3. THE TOPS OF THE STEEL JOISTS OCCUR BELOW THE TYPICAL TOP OF CONCRETE DECK. THE TOPS OF STEEL BEAMS OCCUR IMMEDIATELY BELOW THE STEEL JOISTS, UNLESS OTHERWISE NOTED. ELEVATIONS TO TOP OF STEEL (T.O.S.), WHERE GIVEN, ARE WITH RESPECT TO NOMINAL FIRST FLOOR ELEVATION +0'-0" AND SHOWN THUS: T.O.S. EL. +10'-11", U.O.N..
4. STEEL DECK DIRECTION IS DENOTED THUS: ⟷ AND IS PERPENDICULAR TO SUPPORTING FRAMING MEMBERS. SEE DETAIL 3/S7.1 FOR DECK PROPERTIES AND WELDING.
5. STEEL JOISTS SHALL BE EQUALLY SPACED IN BAYS U.O.N.
6. SEE DRAWINGS OTHER THAN STRUCTURAL FOR DEPRESSIONS, CURBS, MECHANICAL, ELECTRICAL, AND SHAFT OPENINGS, ETC.
7. MARKS (12) ETC. DENOTE NUMBER OF SHEAR STUDS AT TOP FLANGE OF THE STEEL BEAM OR GIRDER. SEE NOTES AND DETAILS SHEET S7.1.
8. MARKS "FT1" ETC. INDICATE STEEL BAR JOISTS. SEE JOIST SCHEDULE ON SHEET S7.2.
9. FOR ADDITIONAL REINFORCING BARS (CHORD BARS) AT SLAB, SEE DETAIL 1/S2.2.
10. FOR STEEL JOIST NOTES AND LOADING CRITERIA, SEE 4/S7.2.
11. MARKS "DO" APPLY TO BEAM/JOIST SIZES, ELEVATIONS AND CONNECTIONS, U.O.N.

REGISTERED PROFESSIONAL ENGINEER — JOSEPH R. SUTTON — NO. 2185 — Exp. 12-31-01 — STRUCTURAL — STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

MEZZANINE FRAMING PLAN

N — 0 4 8 16 GRAPHIC SCALE IN FEET

DASSE DESIGN INC. STRUCTURAL ENGINEERS

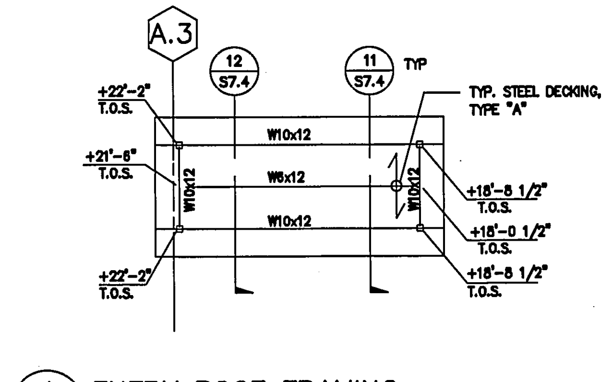
The Ratcliff Architects

NO.	DATE	REVISION			BY	REC.	APP.
2	10DEC2012	IN SERVICE 10JUL2000 RECORD DRAWING	INSP. PYL	SD223A			JLW
1	3/20/98	EBMUD/PLAN CHECK COMMENT			JGW		

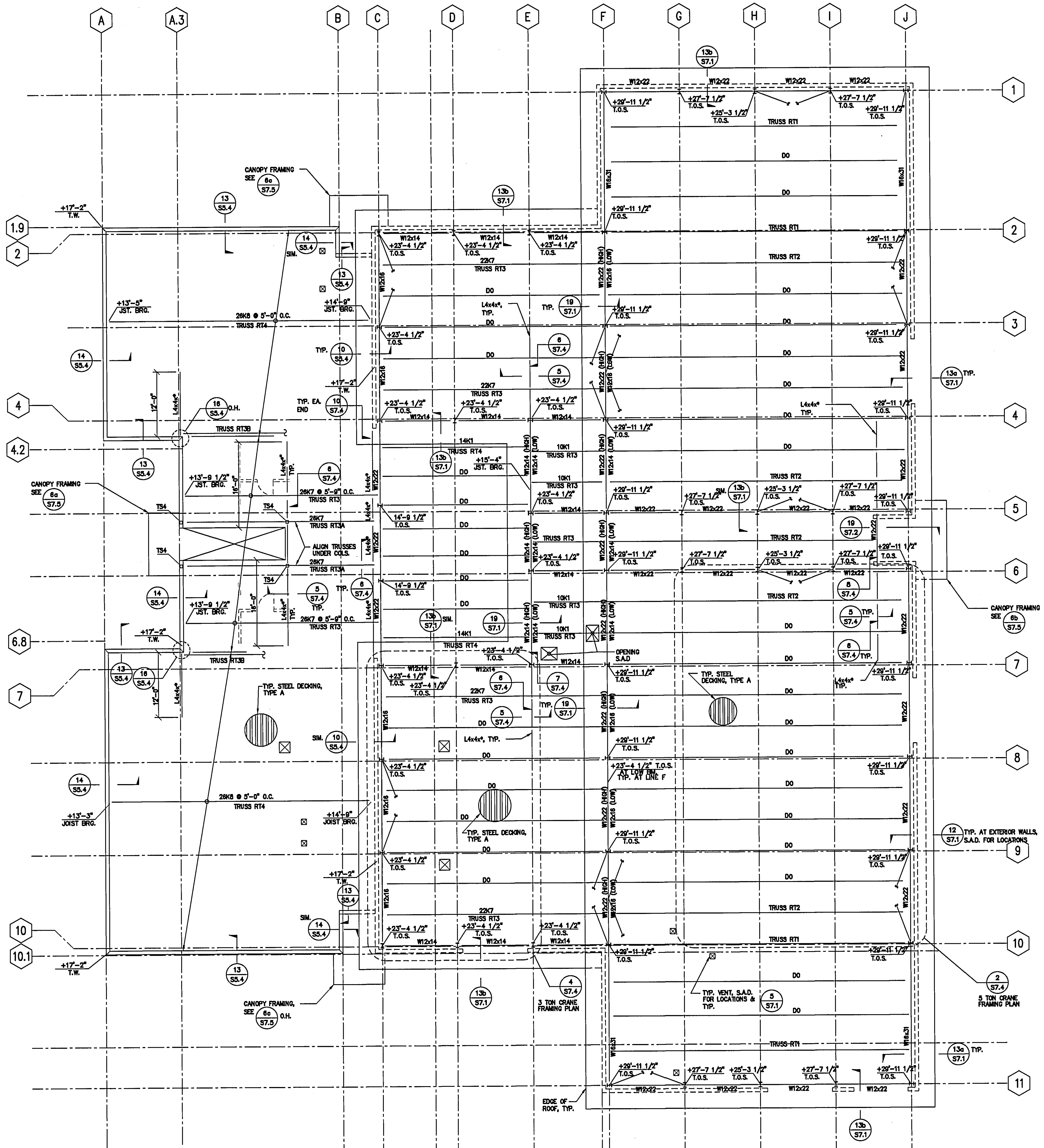
DESIGNED BY	JGV
DESIGN CHECKED BY	JGV
DRAWN BY	MTC
SR. PROJ. ENGR.	JGV
APPROVED	
PRINCIPAL-IN-CHARGE, R.P.E. NO.C	

EBMUD — PROJECT MGR. R.P.E. No. — PROJECT SUPERVISOR R.P.E. No.

FACILITY
SCALE AS NOTED
DATE 23 MAR. 1998
DRAWING No. S2.2
SHEET OF
SPECIFICATION NO.



1 ENTRY ROOF FRAMING



ROOF FRAMING PLAN

1/8"=1'-0"

ROOF FRAMING NOTES

1. SEE GENERAL NOTES ON SHEET S1.1.
2. NOMINAL ROOF LINE VARIES.
3. ELEVATIONS OF TOPS OF STEEL BEAMS VARY AND ARE SHOWN THUS: +29'-2" ETC. ON PLAN. ELEVATIONS SO SHOWN ARE GIVEN WITH REFERENCE TO NOMINAL FIRST FLOOR SLAB.
4. ALL STEEL BEAMS FRAME FLUSH TOP UNLESS OTHERWISE NOTED.
5. MARKS "RT1" ETC. INDICATE STEEL TRUSSES. SEE TRUSS SCHEDULE ON SHEET S7.2.
6. ALL STRUCTURAL STEEL FRAMING SHALL HAVE FIREPROOFING. SEE SPECIFICATIONS.
7. FOR ROOF DRAINS, OPENINGS, CURBS, ETC., SEE DRAWINGS OTHER THAN STRUCTURAL.
8. FOR STEEL JOIST NOTES AND LOADING CRITERIA, SEE 4/S7.2.
9. MARKS "DO" APPLY TO BEAM/JOIST SIZES, ELEVATIONS AND CONNECTIONS, U.O.N.
10. JOISTS SHALL BE EQUALLY SPACED IN BAYS, U.O.N.

0 4 8 16
GRAPHIC SCALE IN FEET

DASSE DESIGN INC.
STRUCTURAL ENGINEERS

The Ratcliff Architects

NO.	DATE	REVISION	BY	REC.	APP.
4	10DEC2012	IN SERVICE 18JUL2000 RECORD DRAWING INSP. FYL SD223A			JLW
3	11/18/98	ARCH. CHANGES	JCW		

DESIGNED BY	JCW
DESIGN CHECKED BY	JCW
DRAWN BY	STV
SR. PROJ. ENGR.	JCW
APPROVED	
PRINCIPAL-IN-CHARGE, R.P.E. NO.C	

EBMUD
PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2185 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

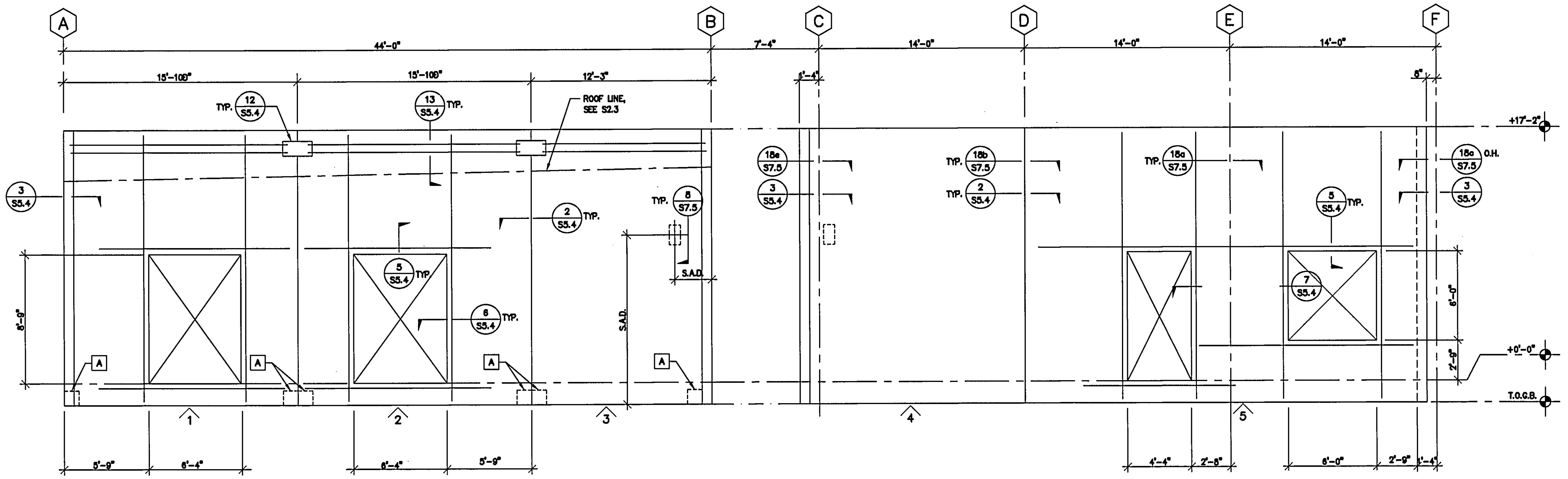
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

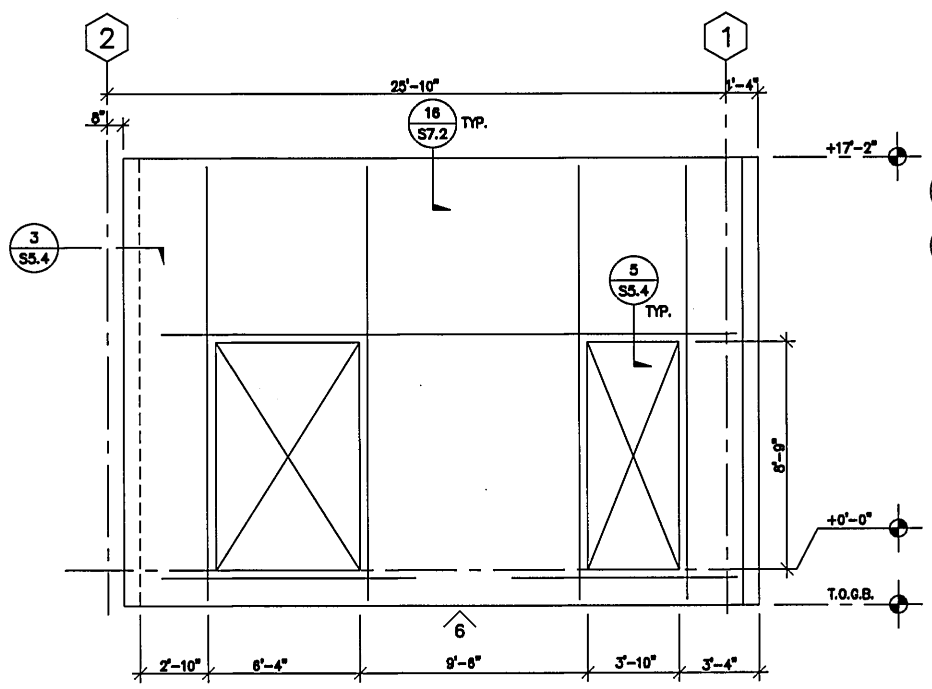
ROOF FRAMING PLAN

FACILITY	DRAWING No. S2.3
SCALE AS NOTED	
DATE 23 MAR. 1998	SHEET OF

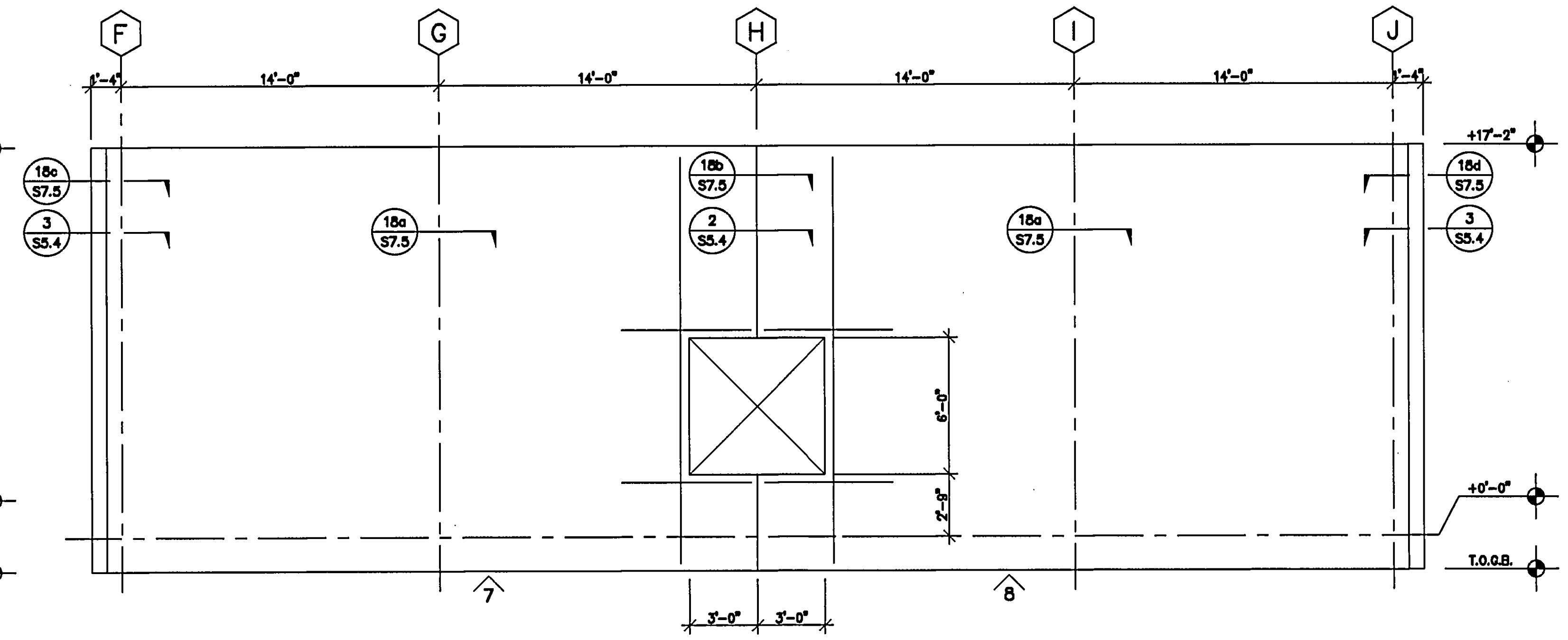
SPECIFICATION NO.



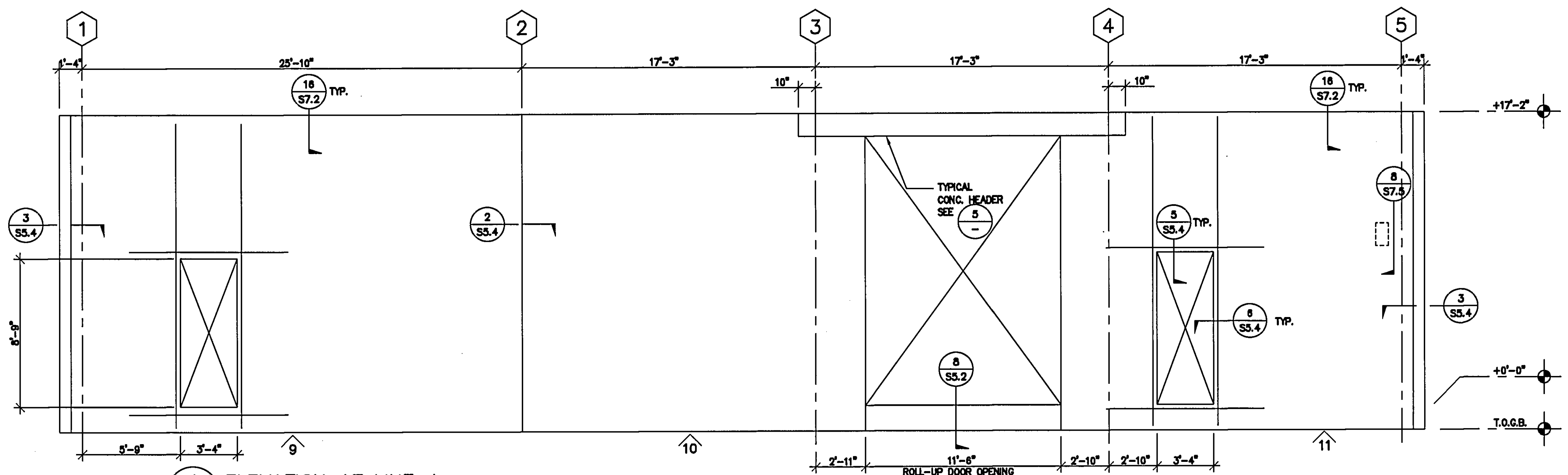
1 ELEVATION AT LINE 1.9
1/4"=1'-0"



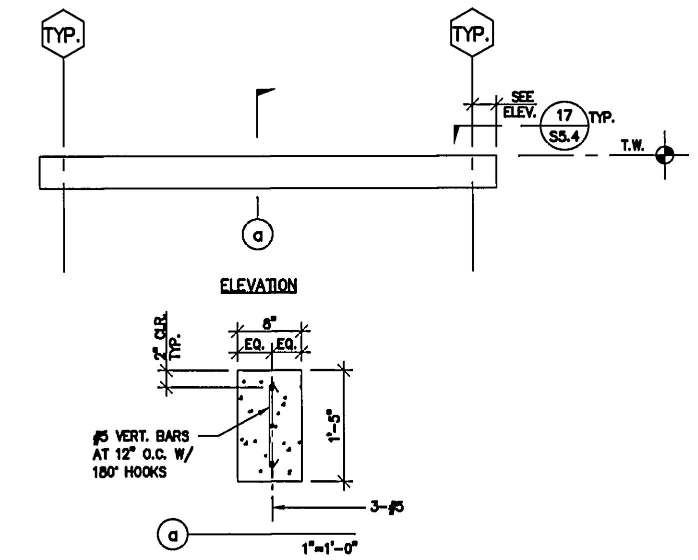
2 ELEVATION AT LINE F
1/4"=1'-0"



3 ELEVATION AT LINE 1
1/4"=1'-0"



4 ELEVATION AT LINE J
1/4"=1'-0"



5 TYPICAL CONCRETE HEADER OVER ROLL-UP DOOR
1/4"=1'-0"

PRECAST PANEL NOTES

1. SEE GENERAL NOTES ON SHEET S1.1.
2. X DENOTES PANEL DESIGNATION "X"; SEE FOUNDATION PLANS FOR PANEL LOCATION.
3. ALL REINFORCEMENT SHOWN IN PANEL ELEVATIONS IS IN ADDITION TO TYPICAL PANEL REINFORCEMENT, USE 2- #5, U.O.N.
4. ALL PANELS ARE VIEWED FROM INSIDE OF BUILDING, PANELS ARE CAST OUTSIDE FACE DOWN.
5. ALL VERTICAL PANEL EDGES SHALL HAVE 2 - #5 TRIM BARS PER DETAIL 2/S5.4, U.O.N.
6. PROVIDE (1) #5 X 5'-0" DIAGONAL REINFORCING BARS AT ALL CORNERS OF ALL OPENINGS PER DETAIL 4/S5.4.
7. PROVIDE PANEL CHORD BARS PER DETAIL 12/S5.4. DO NOT CONNECT PANELS AT CHORD CONNECTIONS UNTIL 28 DAYS AFTER CONCRETE IS CAST.
8. SEE DETAIL 4/S5.2. FOR TYPICAL PANEL DOWELS.
9. SEE DETAIL 1/S5.4 FOR TYPICAL PANEL REINFORCEMENT PLACEMENT.
10. SEE ROOF FRAMING PLAN FOR ROOF FRAMING TO PRECAST PANEL CONNECTION DETAILS.
11. PANEL DIMENSIONS ON ELEVATIONS ARE NOMINAL. PROVIDE 3/4" GAP BETWEEN ADJACENT PANELS UNLESS OTHERWISE NOTED.
12. ARCHITECTURAL FEATURES SUCH AS REVEALS, SCUPPERS, AND MECHANICAL FEATURES, SUCH AS EXHAUST DUCTS, ETC. ARE NOT SHOWN ON STRUCTURAL ELEVATIONS, REFER TO OTHER DRAWINGS FOR COMPLETE INFORMATION.
13. IN ADDITION TO REINFORCEMENT SHOWN AND NOTED, THE CONTRACTOR SHALL PROVIDE ADDITIONAL REINFORCEMENT, ANCHORAGES, INSERTS, LIFTING DEVICES AND ALL OTHER MATERIALS NECESSARY FOR PANEL ERECTION.
14. DESIGN CALCULATIONS FOR PANEL ERECTION SHALL BE PREPARED BY A LICENSED CALIFORNIA STRUCTURAL ENGINEER AND SUBMITTED TO THE DISTRICT FOR REVIEW PRIOR TO PANEL FABRICATION. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF WALL PANELS FOR ERECTION.
15. SUBMIT SHOP DRAWINGS AND CALCULATIONS TO THE DISTRICT FOR REVIEW PRIOR TO PANEL FABRICATION. SHOP DRAWINGS SHALL SHOW PENETRATION REQUIREMENTS OF ALL TRADES, ALL REINFORCING, ANCHORAGES, INSERTS, LIFTING DEVICES AND ALL OTHER FEATURES NECESSARY FOR ERECTION. ALL SHOP DRAWINGS AND CALCULATIONS SHALL BE STAMPED AND SIGNED BY THE ENGINEER.
16. SIZES AND LOCATIONS OF WALL OPENINGS AND PENETRATIONS ARE PROVIDED ON THE STRUCTURAL DRAWINGS FOR INFORMATION ONLY AND ARE NOT COMPLETE AS TO SIZE, NUMBER AND LOCATION. THE CONTRACTOR SHALL COORDINATE THE OPENINGS AND PENETRATIONS REQUIRED OF ALL TRADES AND SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL,MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS.
17. THE CONTRACTOR SHALL PROVIDE BRACES AND CONNECTIONS TO SAFELY SUPPORT THE PANELS UNTIL THE STRUCTURE, INCLUDING THE ROOF DIAPHRAGM, IS ADEQUATELY SELF SUPPORTED FOR ALL LOADINGS.
18. AVOID PLACEMENT OF PANEL POURS OVER CONTROL JOINTS AND COLUMN BLOCKOUTS.
19. ALL EMBEDS, PLATES, TUBES, ETC. WHICH WILL BE EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.
20. BOND BREAKING AGENT SHALL BE "BURKE SUPER BOND BREAKER" OR EQUAL PRODUCT SUBSTITUTED PER SPEC SECTION 01340. BOND BREAKER SHALL NOT RESTRICT THE PLACEMENT OF FINISH MATERIALS OR PAINT ON TREATED SURFACES.
21. FILL IN ALL PITS, HOLES AND POCKETS WITH GROUT AND RUN SMOOTH WITH BURLAP TO REMOVE ALL FINS AND RIDGES.
22. USE PLASTIC TIPPED CHAIRS FOR SUPPORT OF REINFORCING.
23. "A" INDICATES PANEL HOLD-DOWN, SEE 7/S5.2.

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2188 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

PANEL ELEVATIONS

0 4 8 16 GRAPHIC SCALE IN FEET

DASSE DESIGN INC. STRUCTURAL ENGINEERS

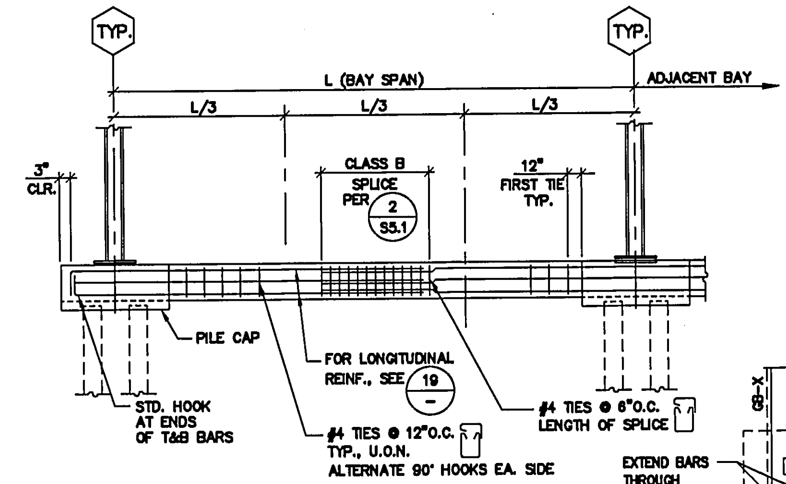
The Ratcliff Architects

NO.	DATE	REVISION		BY	REC.	APP.
1	1ØDEC2Ø12	IN SERVICE 18JUL2000 RECORD DRAWING INSP. PYL	SD223A			JLW

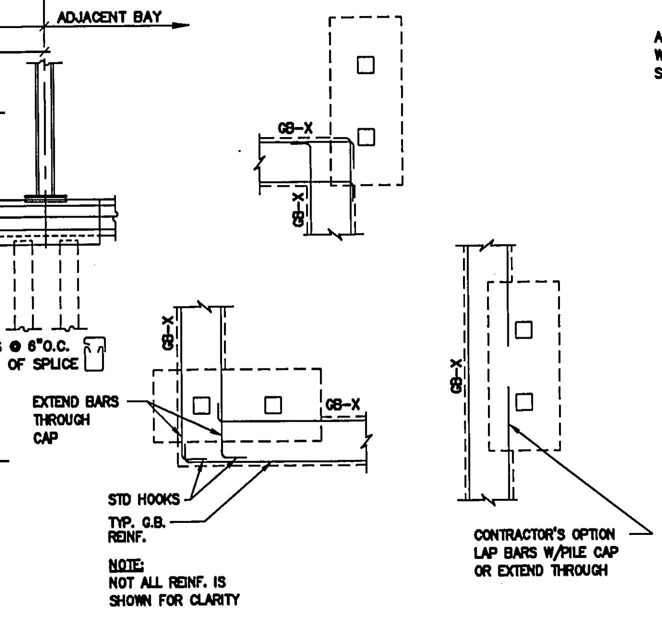
DESIGNED BY JOW
DESIGN CHECKED BY JOW
DRAWN BY MTC
SR. PROJ. ENGR. JOW
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.C

EBMUD
PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

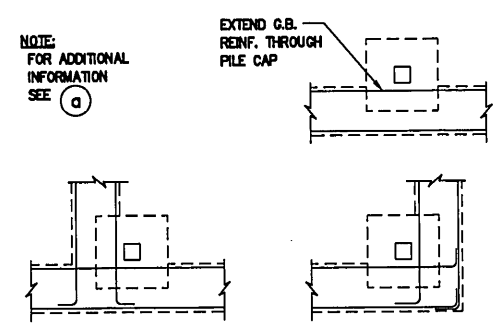
FACILITY
SCALE AS NOTED
DATE 23 MAR. 1998
DRAWING No. S3.1
SHEET OF
SPECIFICATION NO.



13 GRADE BEAM TIES AND REINFORCING SPLICE

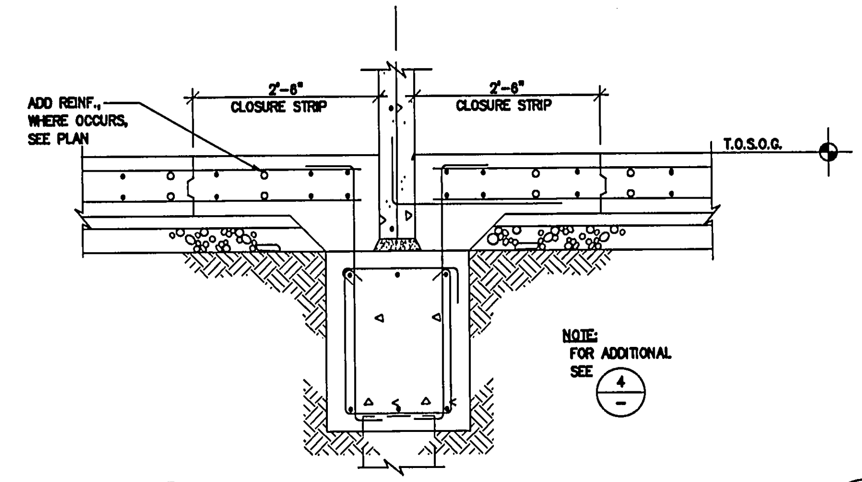


a P2 PILE CAP CONFIGURATION PLAN

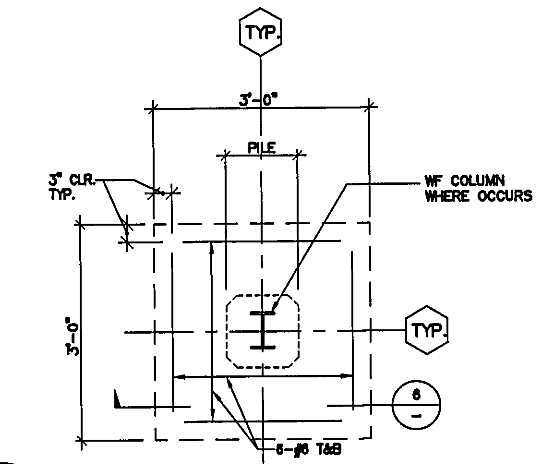


b P1 PILE CAP CONFIGURATION PLAN

10 GRADE BEAM REINFORCEMENT CONFIGURATION AT PILE CAPS

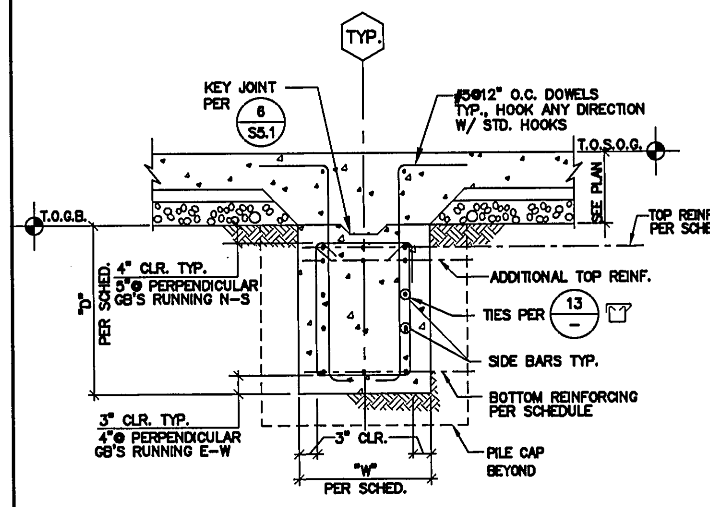


5 TYPICAL INTERIOR PANEL FOOTING



1 P1.XX PILE CAP PLAN

MARK	W	D	TOP BARS	BOTTOM BARS	SIDE BARS	TIES
GB-1	24"	30"	6-#6	6-#8	3-#6	SEE 13/–
GB-2	24"	30"	6-#6	4-#6	3-#6	SEE 13/–
GB-3	24"	24"	4-#6	4-#6	2-#5	SEE 13/–
GB-4	24"	30"	5-#6	5-#6	3-#6	SEE 13/–
GB-5	24"	36"	4-#6	6-#9	4-#6	SEE 13/–

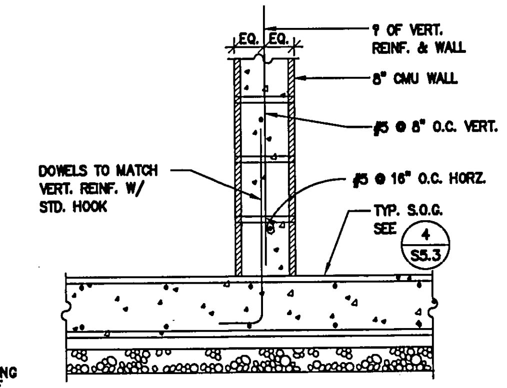


TYPICAL GRADE BEAM

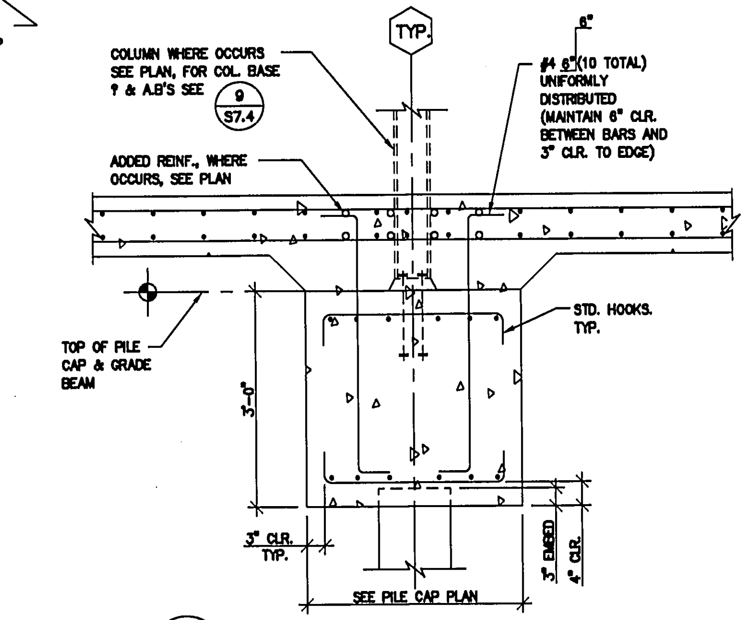
NOTES:

1. FOR DETAIL AT INTERSECTION OF GRADE BEAM AND PILE CAPS SEE DETAIL 10/S5.2.
2. WHERE GRADE BEAMS TERMINATE AT PILE CAPS EXTEND LONGITUDINAL GRADE BEAM REINFORCING 6'-0" MIN. INTO PILE CAP. SEE DETAIL 13 /S5.2.
3. LOCATE CENTER LINE OF SPLICE OF LONGITUDINAL GRADE BEAM REINFORCING AT MIDDLE THIRD OF SPAN. SEE DETAIL 13/S5.2.
4. SET TOP OF GRADE BEAMS EQUAL TOP OF PILE CAP ELEVATION. SLOPE GRADE BEAMS WHERE TOP OF ADJACENT PILE CAPS ARE AT DIFFIRENT ELEVATIONS. SEE DETAILS 15/S5.1 AND 16/S5.1.
5. SLAB REINFORCEMENT NOT SHOWN FOR CLARITY.

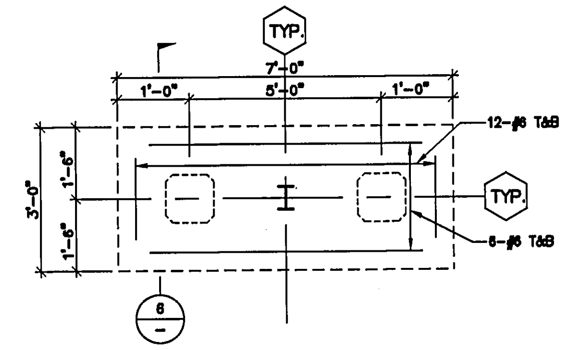
19 GRADE BEAM SCHEDULE



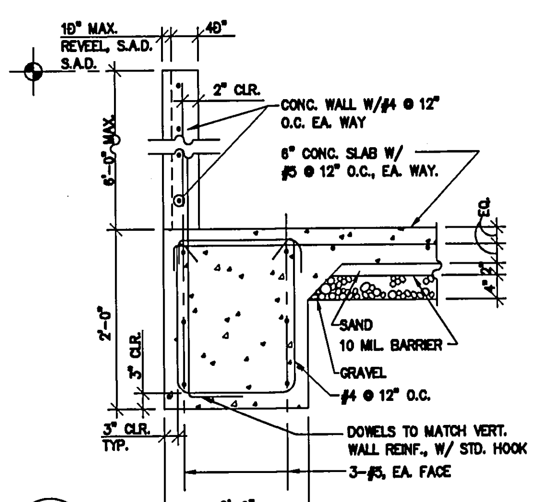
14



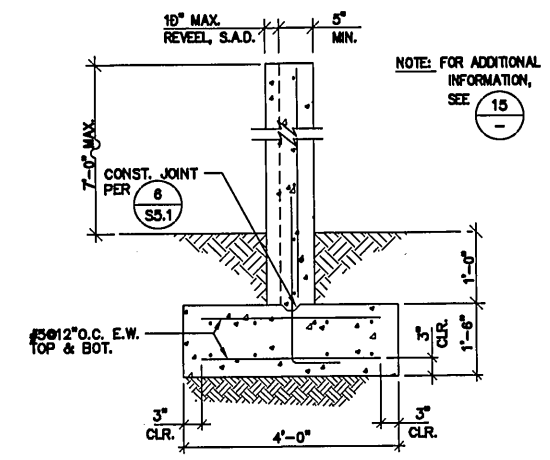
6 SECTION AT PILE CAP



2 P2.XX PILE CAP PLAN

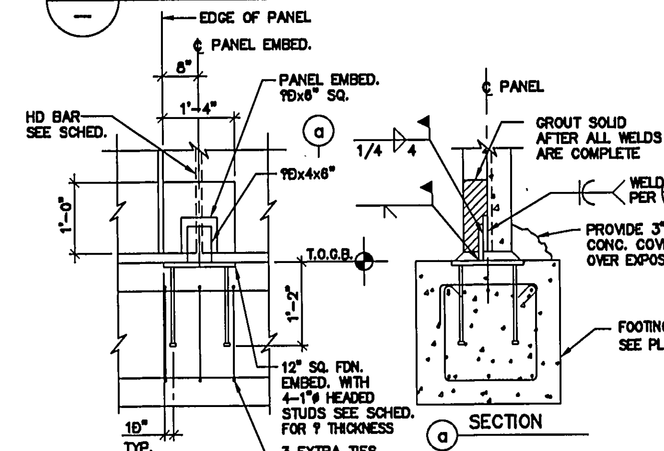


15



11 SITE WALL FOOTING S.A.D. FOR LOCATION

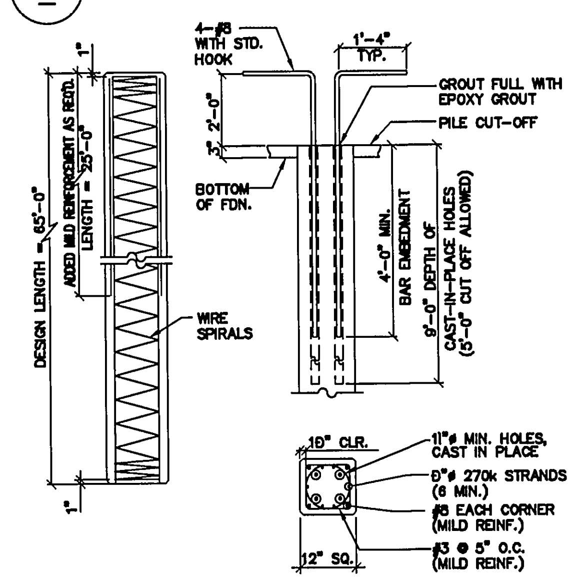
3/4"=1'-0"



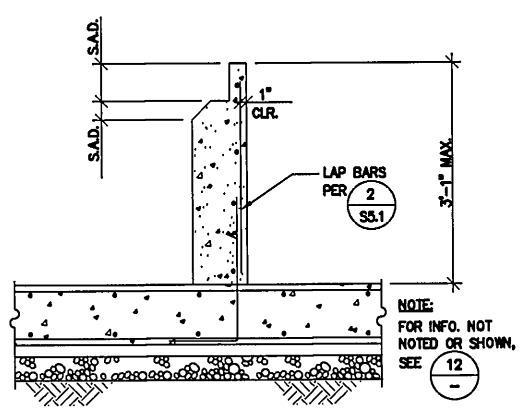
TYPE	HD BAR	EMBED. ℄ THICKNESS
A	#6	1"
B	#7	1 1/4"
C	#8	1 3/8"

7 PANEL HOLD-DOWN DETAIL

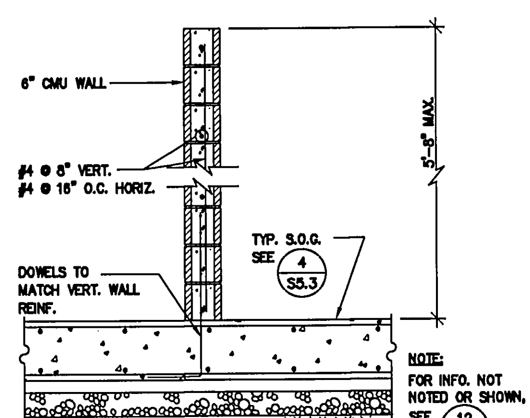
3/4"=1'-0"



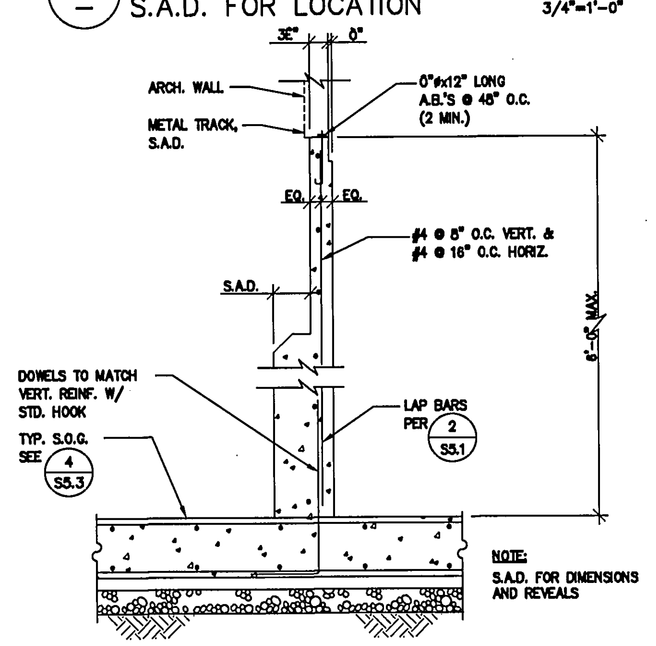
3 PRECAST PRESTRESSED PILE



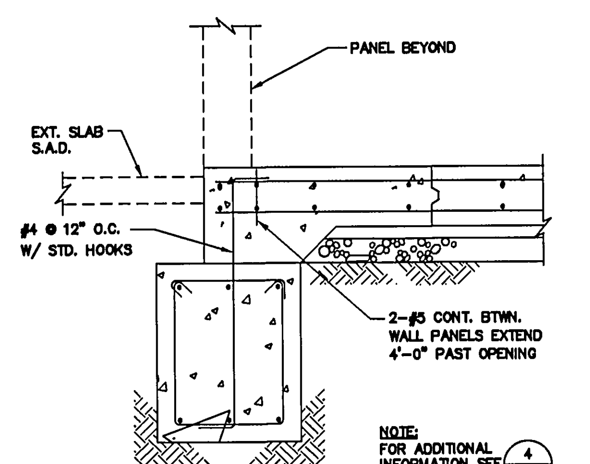
20



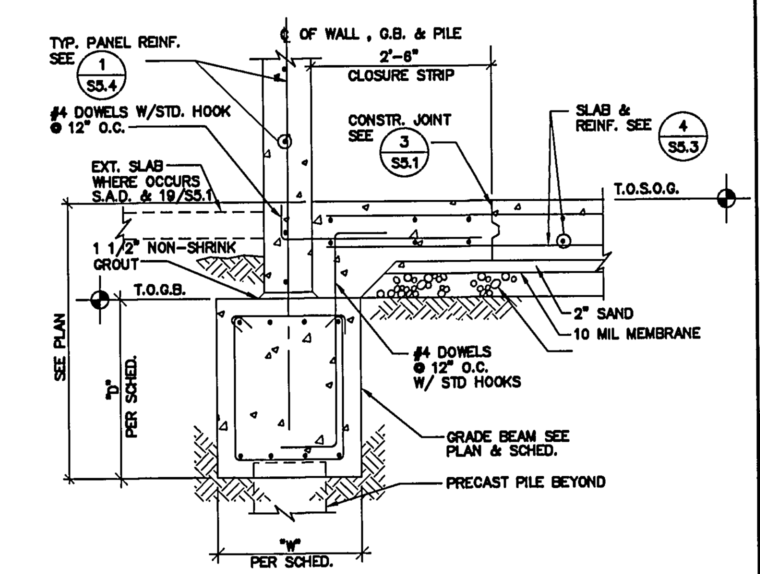
16



12



8 FOOTING AT PANEL OPENING



4 TYPICAL EXTERIOR PANEL FOOTING

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2185 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

FOOTING DETAILS

FACILITY	DRAWING No. S5.2
SCALE NONE	
DATE 23 MAR. 1998	SHEET OF

SPECIFICATION NO.

N — 0 4 8 16 GRAPHIC SCALE IN FEET

DASSE DESIGN INC. STRUCTURAL ENGINEERS

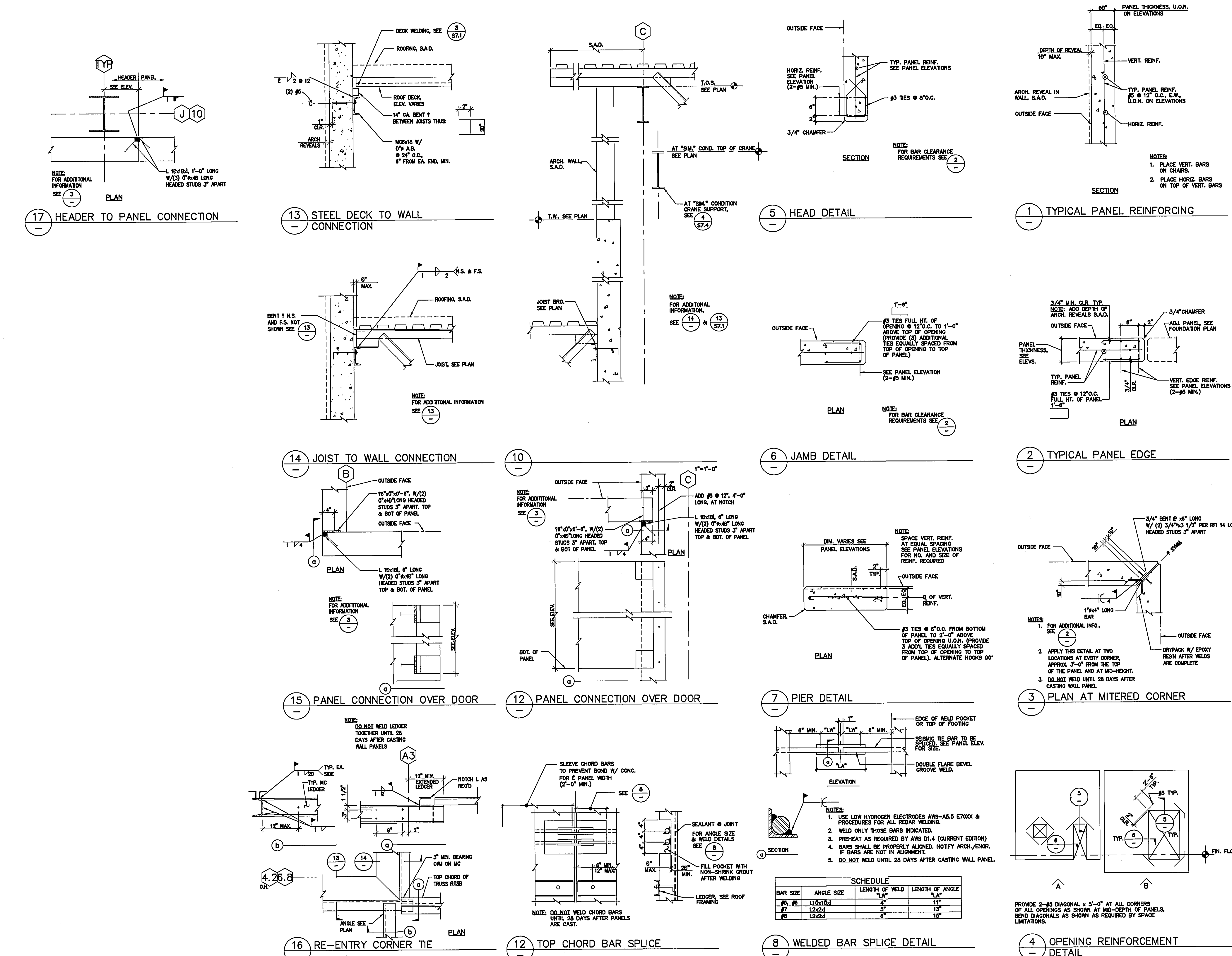
The Ratcliff Architects

NO.	DATE	REVISION	BY	REC.	APR.
2	18DEC2012	IN SERVICE RECORD DRAWING SD223A			JLW
1	3/20/98	EBMUD/PLAN CHECK COMMENT	JCW		

DESIGNED BY JJW
DESIGN CHECKED BY JJW
DRAWN BY MTO
SR. PROJ. ENGR.
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.

PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.
EBMUD

XREF: 61631-TB1.DWG



SCHEDULE			
BAR SIZE	ANGLE SIZE	LENGTH OF WELD "LW"	LENGTH OF ANGLE "LA"
#5, #6	L10x10xl	4"	11"
#7	L2x2xl	5"	13"
#8	L2x2xl	6"	15"

8 WELDED BAR SPLICE DETAIL

GRAPHIC SCALE IN FEET

DASSE DESIGN INC. STRUCTURAL ENGINEERS

The Ratcliff Architects

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2185 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

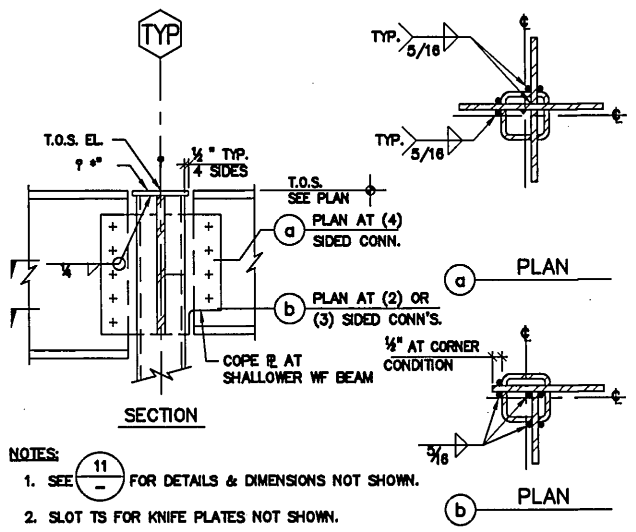
IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

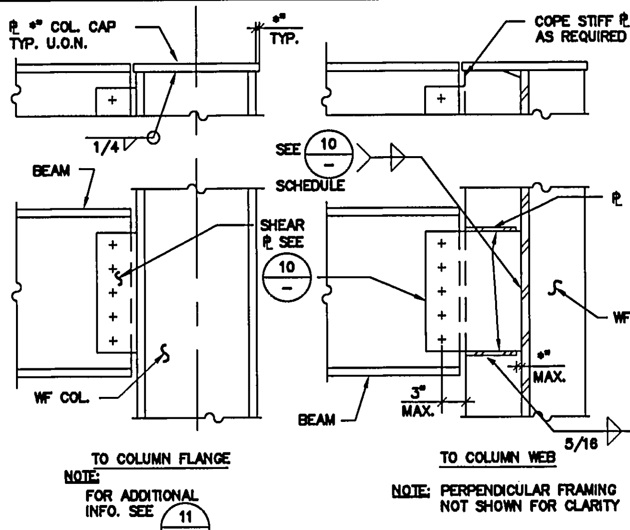
MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

WALL DETAILS

FACILITY
SCALE NONE
DATE 23 MAR. 1998
DRAWING No. S5.4
SHEET OF
SPECIFICATION NO.



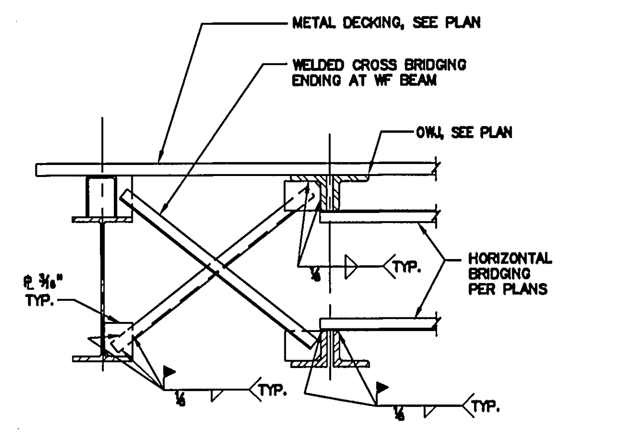
17 BEAM TO TS COLUMN CONNECTION



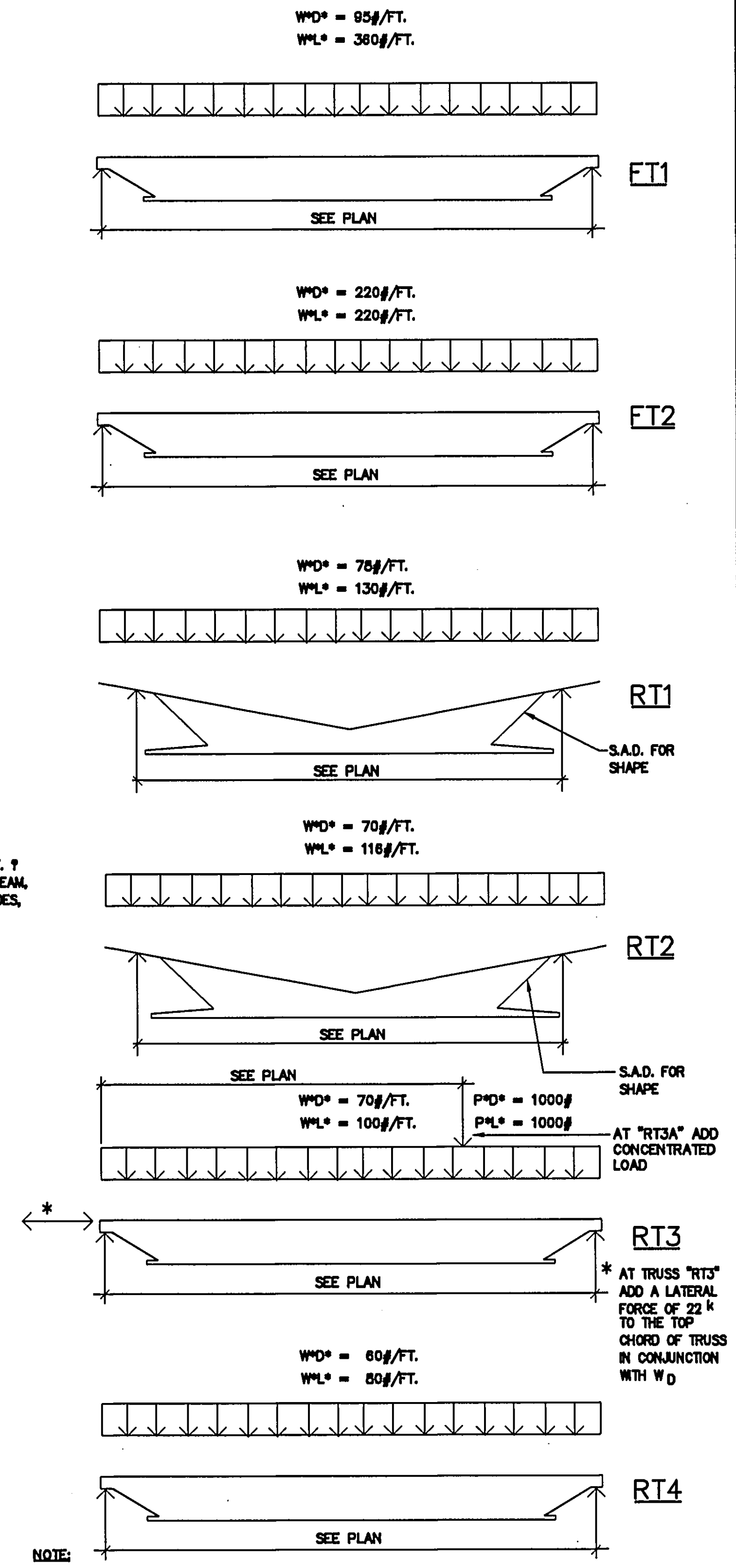
13 BEAM TO COLUMN CONNECTION

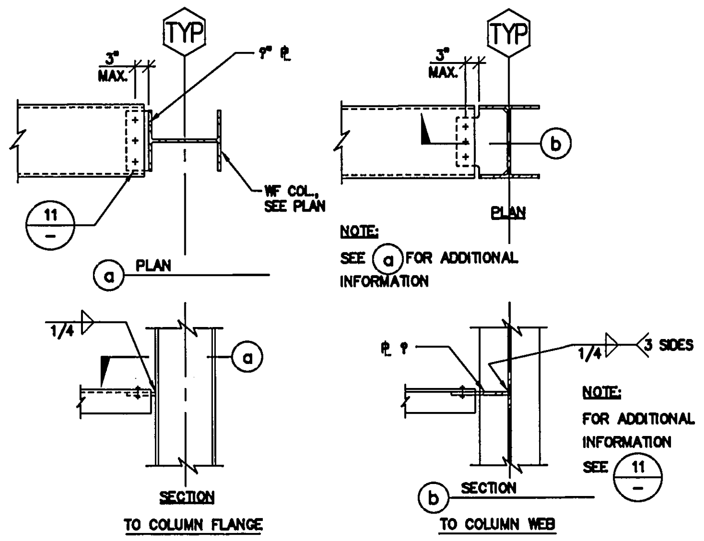
1. SEE GENERAL NOTES ON SHEET S1.1.
2. UNLESS OTHERWISE NOTED:
   A. ALL PLATES ARE 3/8".
   B. ALL BOLTS ARE 7/8"ø A325SC U.O.N.
   C. ALL BUTT OR GROOVE WELDS ARE COMPLETE PENETRATION WELDS.
3. EACH COMPLETE PENETRATION WELD SHALL BE INSPECTED BY TESTING, SEE SPECIFICATIONS.
4. WELDING DETAILS SHALL COMPLY WITH THE "CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY, LATEST ISSUE. FOR FURTHER WELDING REQUIREMENTS, SEE SPECIFICATIONS.
5. SCHEDULE WELDING AND BOLT TIGHTENING SEQUENCE TO MINIMIZE LOCKED UP STRESSES.
6. ERECTION CLIPS, BRACING, ETC. AS REQUIRED BY CONTRACTOR ARE NOT SHOWN.
7. UTILIZE TYPICAL CONNECTIONS IN SKEWED CONFIGURATIONS AS REQUIRED U.O.N.
8. THE DETAILS ON THIS SHEET SHOW STRUCTURAL FEATURES ONLY. FOR DETAILS AND DIMENSIONS NOT SHOWN, REFER TO DRAWINGS OTHER THAN STRUCTURAL.

9 STRUCTURAL STEEL NOTES



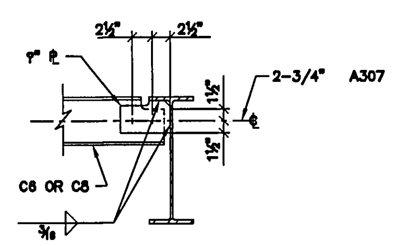
5 OWJ BRIDGING CONNECTION





18 FLAT CHANNEL TO WF COLUMN

3/4"=1'-0"



14 CHANNEL CONNECTION AT WF BEAM

DEPTH OR SIZE OF BEAM	NO. OF BOLTS (2) ø"ø A325SC U.O.N.	SHEAR PLATE	WELD (1) SIZE
6",8",10", C8, MC8	2 (3)	¼"	¼"
12",14", C12, MC12	3	⅜"	5/16"
16"	4	⅜"	5/16"
18"	5	⅜"	5/16"
21"	6	⅜"	5/16"

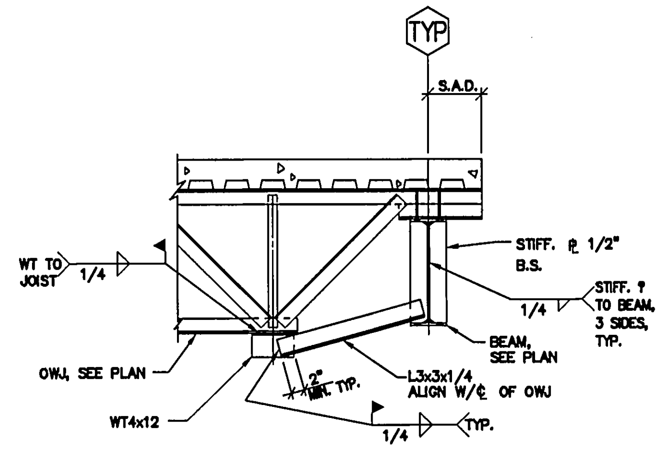
NOTES:

(1) USE COMPLETE PENETRATION WELDS AT ALL SKEWED CONNECTIONS WHERE AISC PRE-QUALIFIED FILLET WELDS ARE NOT POSSIBLE

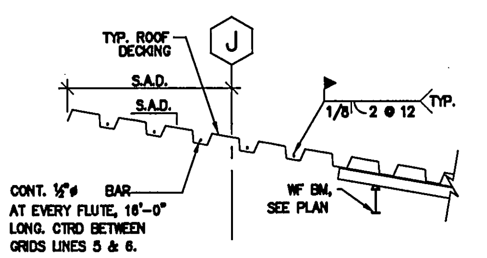
(2) USE 1"ø A325SC BOLT WHERE DENOTED ON FRAMING PLANS THUS: (1)

(3) USE 3/4"ø A325SC BOLT AT WF6x BEAMS

10 BEAM CONNECTION SCHEDULE

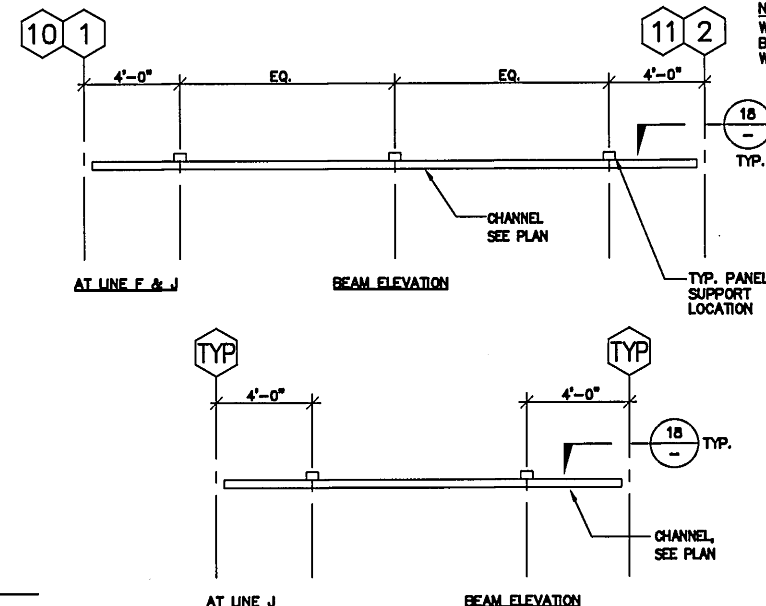


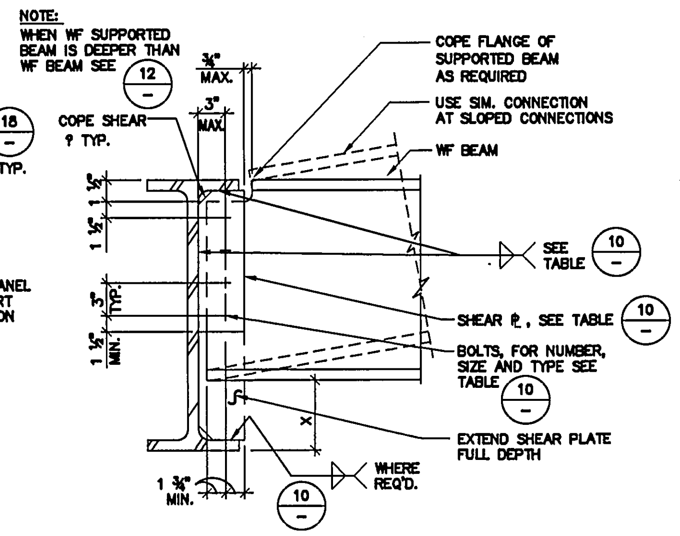
6 BEAM BRACE TO JOIST



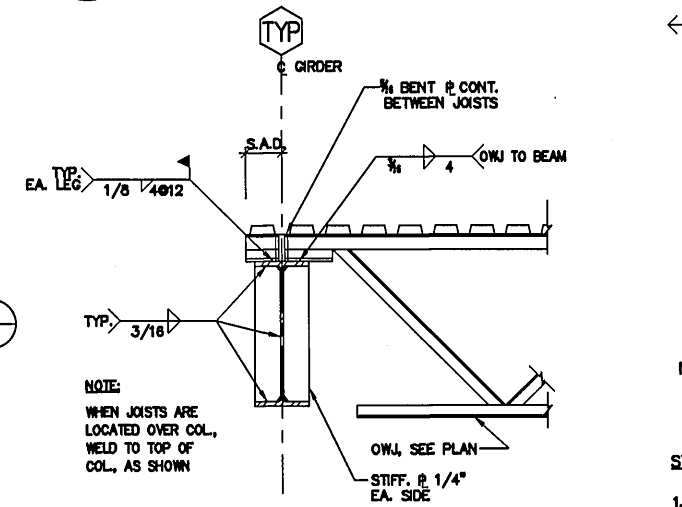
19

3/4"=1'-0"

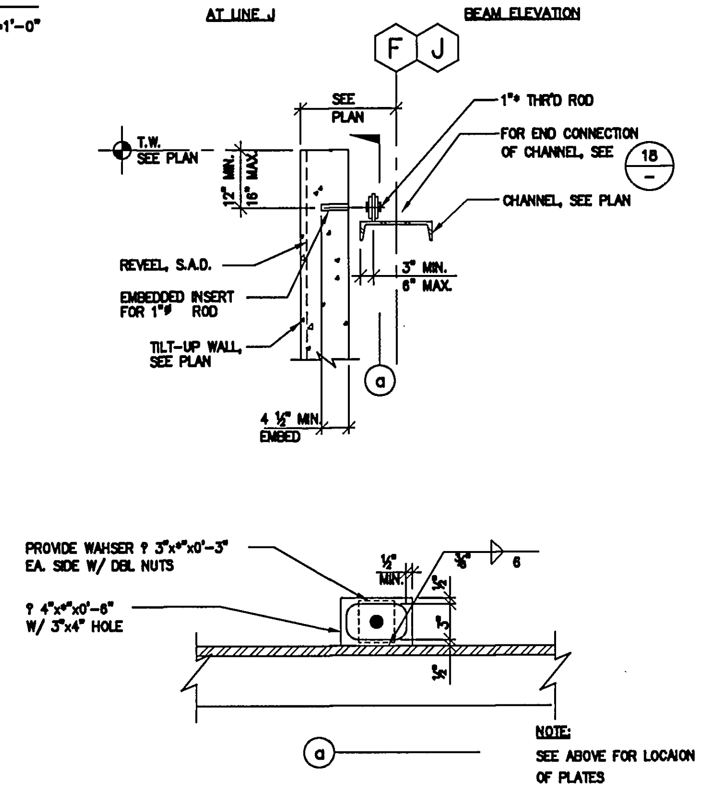




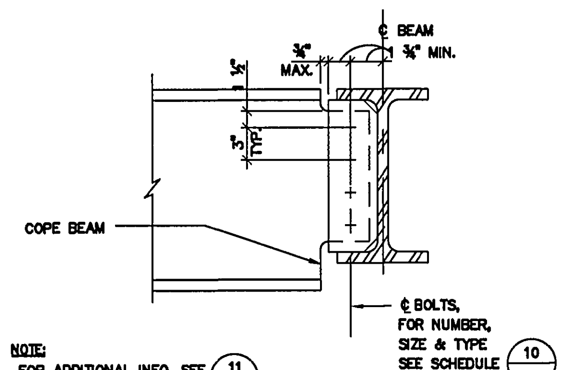
11 BEAM TO BEAM CONNECTION



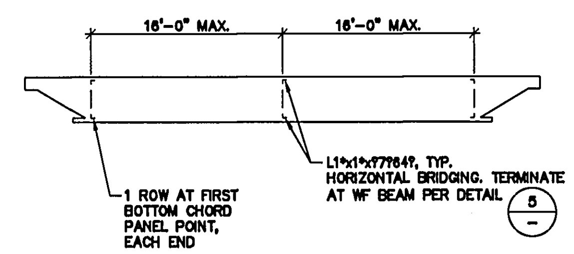
7 JOIST TO WF BEAM CONNECTION AT FLOOR



16



12 BEAM TO SHALLOWER BEAM CONNECTION



8 FLOOR JOIST BRIDGING

NOTE:
1. DEAD LOADS SHOWN DO NOT INCLUDE SELF WEIGHT OF JOISTS
2. LIVE LOADS SHOWN HAVE BEEN REDUCED PER U.B.C.

STEEL JOIST NOTES

1. SEE GENERAL NOTES ON SHEET S1.1.
2. STEEL JOISTS SHALL BE MANUFACTURED USING HOT ROLLED STEEL SECTIONS HAVING A MINIMUM YIELD STRENGTH OF 50,000 PSI.
3. STEEL JOISTS (JOISTS, JOIST HEADERS, JOIST GIRDERS, U.O.N.) SHALL BE AS MANUFACTURED BY VULCRAFT DIVISION OF NUCOR CORPORATION FOR BOTH LOAD CARRYING AND DEFLECTION RATING. ANY SUBSTITUTION MUST BE APPROVED BY THE STRUCTURAL ENGINEER.
4. STEEL JOISTS AND THEIR CONNECTIONS SHALL BE DESIGNED BY A CALIFORNIA LICENSED CIVIL ENGINEER IN ACCORDANCE WITH THE CRITERIA PROVIDED ON THESE DRAWINGS AND THE "RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS" AND UBC CHAPTER 22, DIVISION III. SEE ABOVE FOR DESIGN LOADS.
5. STEEL JOIST DEFLECTIONS SHALL BE LIMITED TO THE FOLLOWING (WHERE "L" IS THE CLEARSPAN OF THE JOIST):
   A. LIVE LOAD PLUS 20 PSF (PARTITION) < L/360
   B. TOTAL LOAD DEFLECTION < L/240
6. CAMBER OF JOISTS IS PERMITTED UNLESS NOTED OTHERWISE IN THESE CONSTRUCTION DOCUMENTS. WHERE MANUFACTURER ELECTS TO USE CAMBER, JOISTS SHALL BE CAMBERED FOR DEFLECTION DUE TO JOIST SELF-WEIGHT PLUS WEIGHT OF SUPPORTED STEEL DECK AND CONCRETE FILL ONLY.
7. JOIST MANUFACTURER SHALL SUBMIT VIBRATION CALCULATIONS FOR REVIEW BY THE STRUCTURAL ENGINEER. JOIST VIBRATIONS SHALL BE LIMITED TO THE RANGE OF "SLIGHTLY PERCEPTIBLE" OR BETTER AS DEFINED IN THE MODIFIED REIHER-MEISTER SCALE.
8. JOIST MANUFACTURER TO PROVIDE CONTINUOUS HORIZONTAL BRIDGING, AT TOP CHORD AND BOTTOM CHORD AS REQUIRED TO ADEQUATELY BRACE THE JOIST AGAINST HORIZONTAL MOVEMENT (MIN. OF TWO ROWS TOP AND BOTTOM).
9. WHERE NECESSARY, STEEL JOIST DESIGN SHALL BE COORDINATED WITH STAIR MANUFACTURER, WINDOW WALL MANUFACTURER AND SKYLIGHT MANUFACTURER.
10. DETAILED DRAWINGS OF ALL STEEL JOIST CONNECTION CONDITIONS, INCLUDING ACCESSORIES, REQURED FOR COMPLETE INSTALLATION OF THE WORK, SHALL BE PREPARED.
11. STEEL JOISTS SHALL BE DESIGNED FOR THE LOADING INDICATED ABOVE AND FOR LOADINGS FROM MECHANICAL EQUIPMENT AS NOTED ON THE PLANS, S.A.D. & S.M.D.
12. JOIST MANUFACTURER SHALL SUBMIT CALCULATIONS, DESIGN DRAWINGS AND MATERIAL SPECIFICATIONS, SIGNED BY MANUFACTURER'S CIVIL ENGINEER, FOR REVIEW BY THE STRUCTURAL ENGINEER (AND THE OFFICE OF REGULATION SERVICES).
13. DO NOT FIELD CUT, DRILL OR ALTER STEEL JOISTS.

4 STEEL JOIST NOTES AND LOADING CRITERIA

GRAPHIC SCALE IN FEET

DASSE DESIGN INC. STRUCTURAL ENGINEERS

The Ratcliff Architects

1 | 18DEC2012 | IN SERVICE | RECORD DRAWING | SD223A | JLW

NO. | DATE | REVISION | BY | REC. | APP.

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2185 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

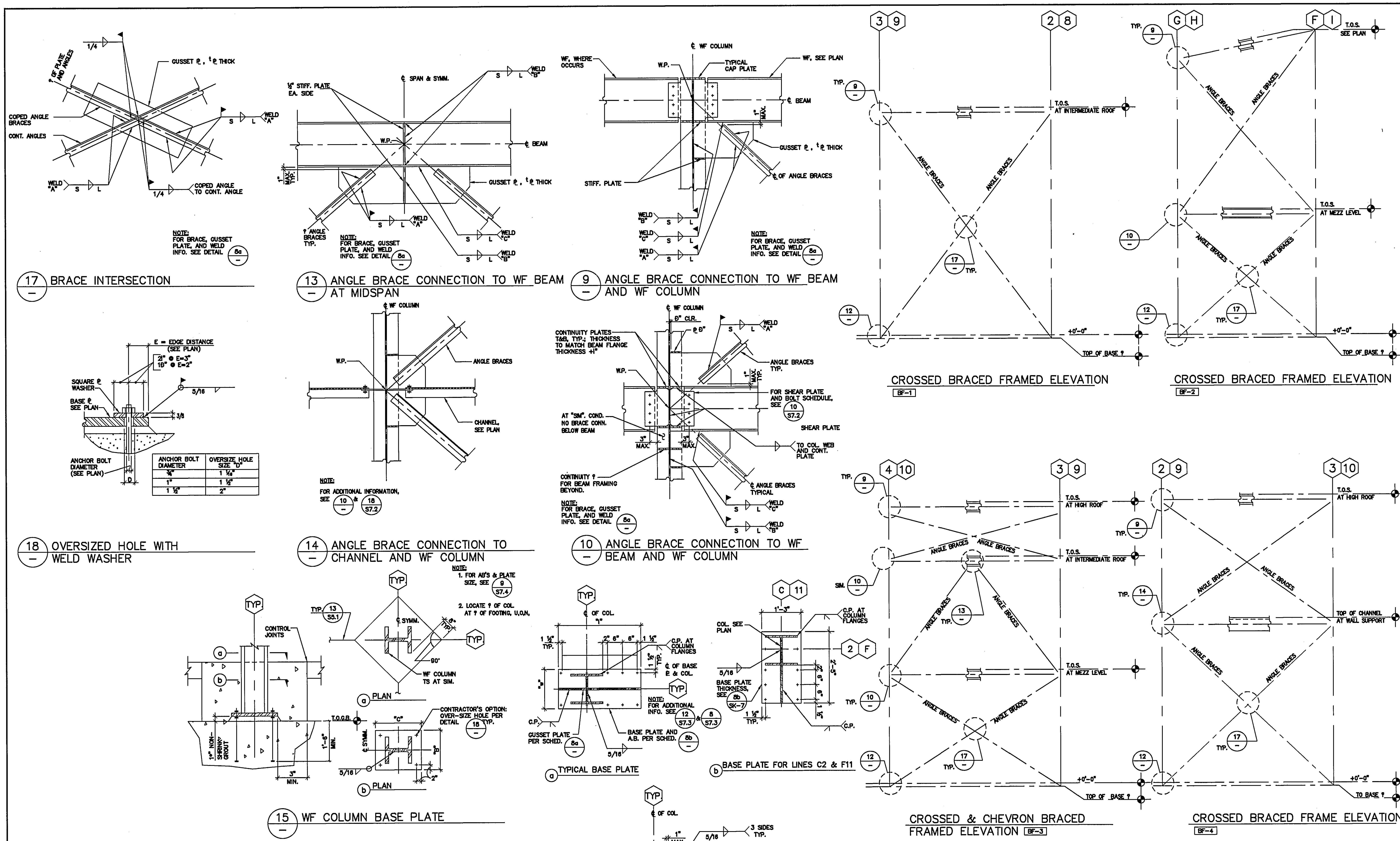
IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

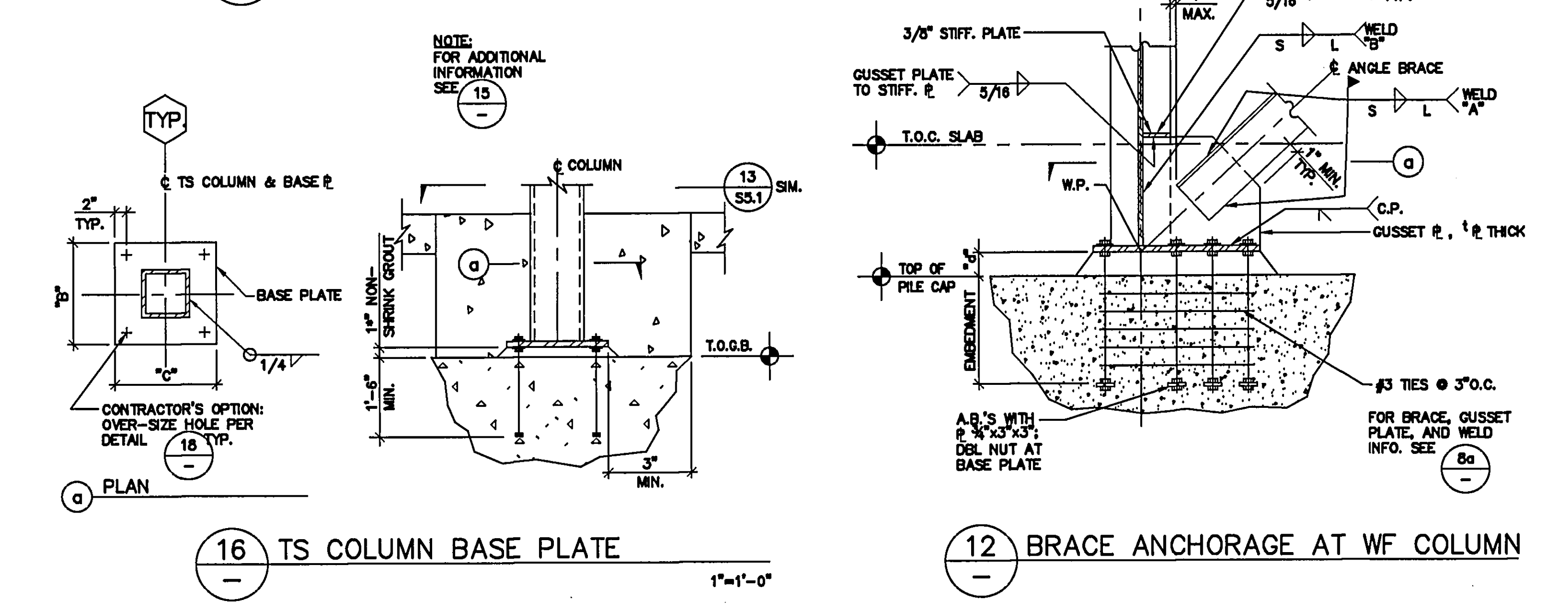
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

TYPICAL STEEL DETAILS

FACILITY
SCALE NONE
DATE 23 MAR. 1998
DRAWING No. S7.2
SHEET OF
SPECIFICATION NO.





BRACED FRAME	BRACE TYPE	GUSSET PLATE THICKNESS, "tℙ"	WELD "A" S	WELD "A" L	WELD "B" S	WELD "B" L	WELD "C" S	WELD "C" L
BF-1	⅃L 4x4x3/8	½"	¼"	4"	¼"	6"	¼"	6"
BF-2	⅃L 4x4x3/8	½"	¼"	6"	¼"	9"	¼"	9"
BF-3	⅃L 4x4x3/8	½"	¼"	6"	¼"	9"	¼"	9"
BF-4	⅃L 4x4x3/8	½"	¼"	4"	¼"	6"	¼"	6"

NOTE:
1. WELD LENGTHS NOTED IN SCHEDULE ARE MINIMUM LENGTHS TO BE WELDED ON BOTH SIDES OF GUSSET PLATE.

(a)

FOOTING MARK	BASE PLATE THICKNESS	BASE PLATE "l"	BASE PLATE "w"	ANCHOR BOLTS SIZE	ANCHOR BOLTS EMBEDMENT	ANCHOR BOLTS NUMBER	NON-SHRINK GROUT ("d")
BF-1	½"	30½"	15"	¾" ø	18"	8"	1 ½"
BF-2	1 ½"	30½"	15"	¾" ø	18"	8"	1 ½"
BF-3	1"	30½"	15"	¾" ø	18"	8"	1 ½"
BF-4	1"	30½"	15"	¾" ø	18"	8"	1 ½"

NOTE:
1. SIZES AND LENGTHS NOTED IN SCHEDULE ARE MINIMUM REQUIRED.
2. "W" MAY VARY, SEE DETAIL.

(b)

8 BRACED FRAME SCHEDULE

N.T.S.

REGISTERED PROFESSIONAL ENGINEER JOSEPH R. SUTTON NO. 2165 Exp. 12-31-01 STRUCTURAL STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

BRACED FRAME DETAILS

FACILITY
SCALE NONE
DATE 23 MAR. 1998
DRAWING No. S7.3
SHEET OF
SPECIFICATION NO.

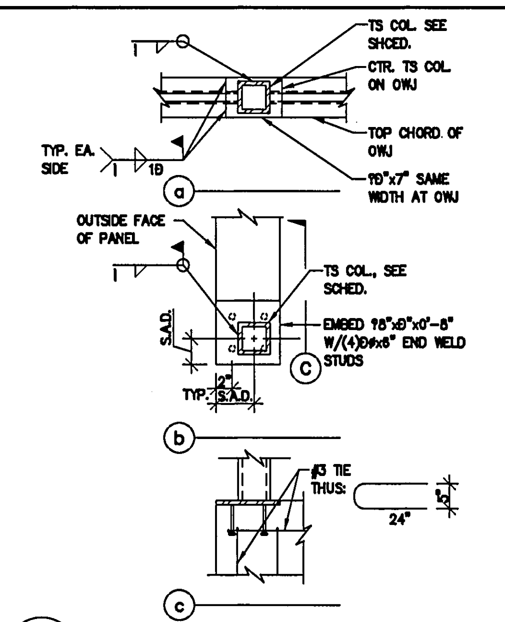
GRAPHIC SCALE IN FEET 0 4 8 16

DASSE DESIGN INC. STRUCTURAL ENGINEERS

The Ratcliff Architects

NO.	DATE	REVISION	BY	REC.	APP.
	18DEC2012	RECORD DRAWING	SD223A	JLW	
1	3/23/98	PLAN CHECK ADDENDUM NO. 1			

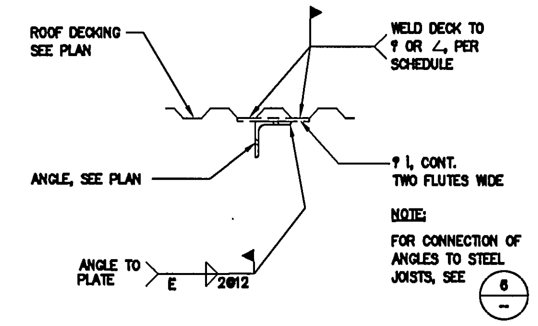
FILE: F:\96165\Struct\96165S73.DWG 02/06/98 at 21:06



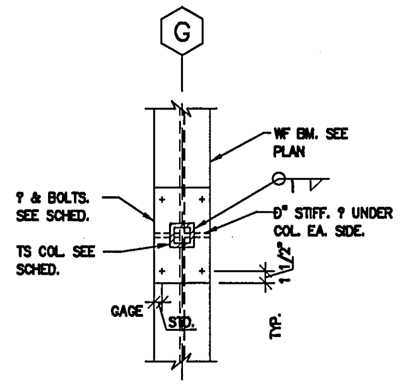
13 TS COLUMN AT OWJ AND AND TILT UP PANEL

COLUMN SCHEDULE				
MARK	COLUMN SIZE	BASE ? B x t x C	ANCHOR BOLTS (A307 U.O.N.)	BASE PLATE DETAIL
WF1	W12x58	? 1'-6"x0"x1'-8"	(4) 0"ø	15/S7.3
WF2	W12x50	? 1'-4"x0"x1'-8"	(4) 0"ø	15/S7.3
WF3	W12x58	SEE DETAIL	SEE DETAIL	12/S7.3
TS6	TS6x6xl	? 1'-2"x0"x1'-2"	(4) 0"ø	16/S7.3
TS4	TS4x4xl	SEE DETAIL	SEE DETAIL	13/–
TS3	TS3x3xl	? 7"x0"x1'-0"	(4) 0"ø	14/–

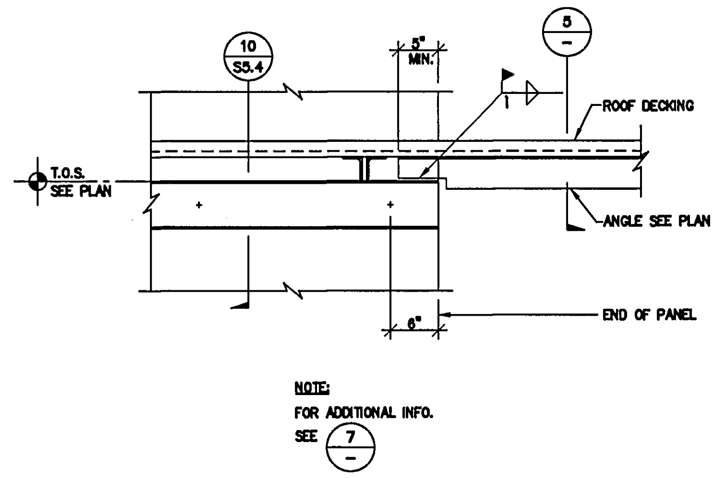
9 COLUMN SCHEDULE



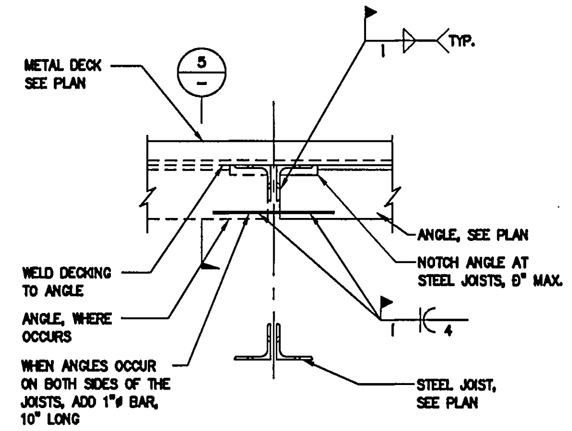
5



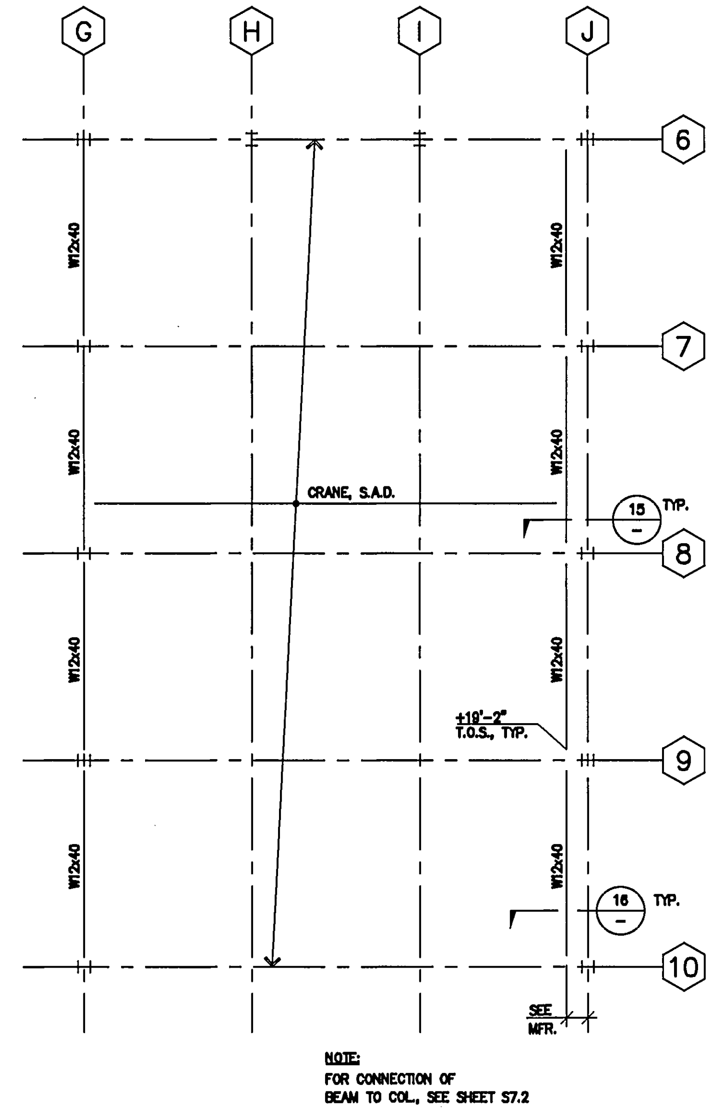
14 TS COLUMN BASE CONNECTION AT WF BEAM



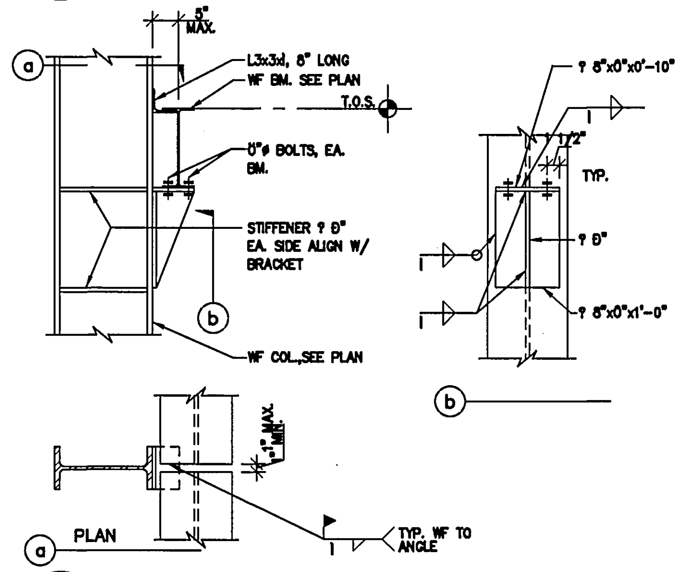
10



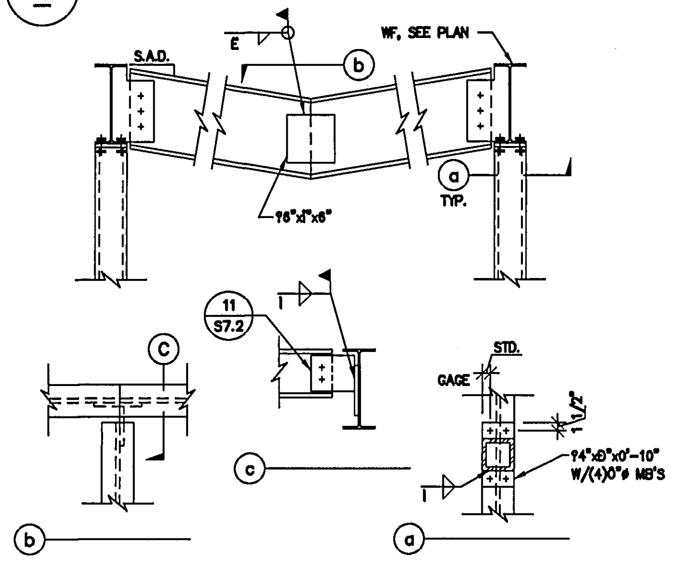
6



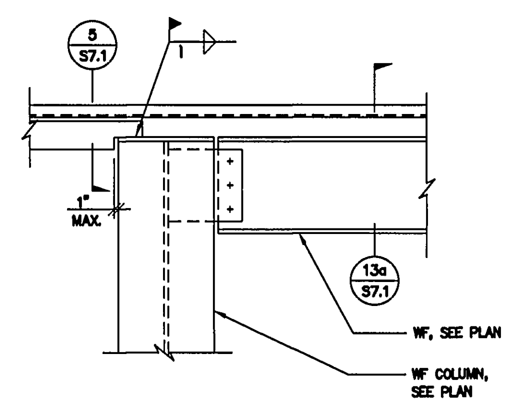
2 5 TON CRANE FRAMING PLAN



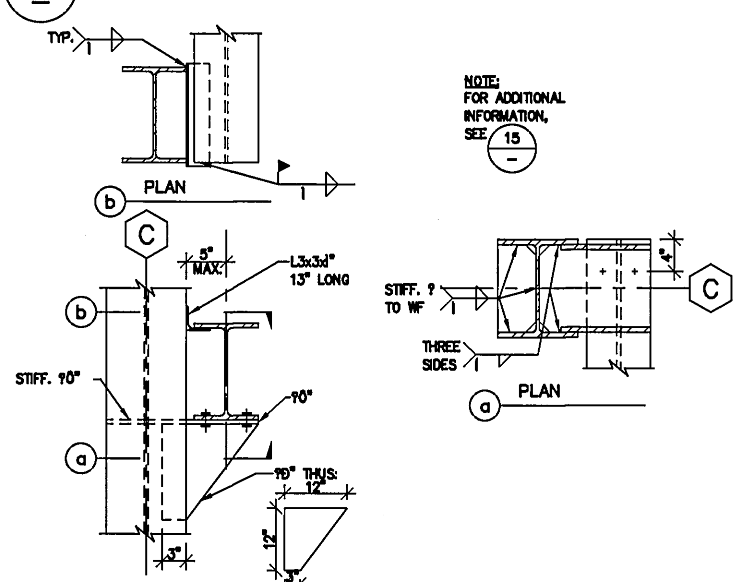
15 OFFSET WF SUPPORT



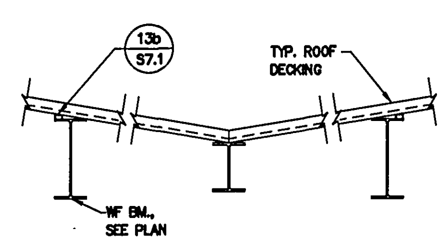
11



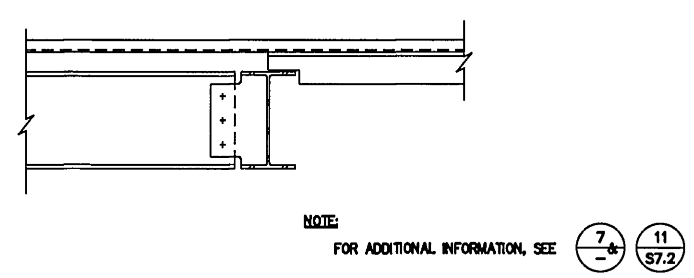
7



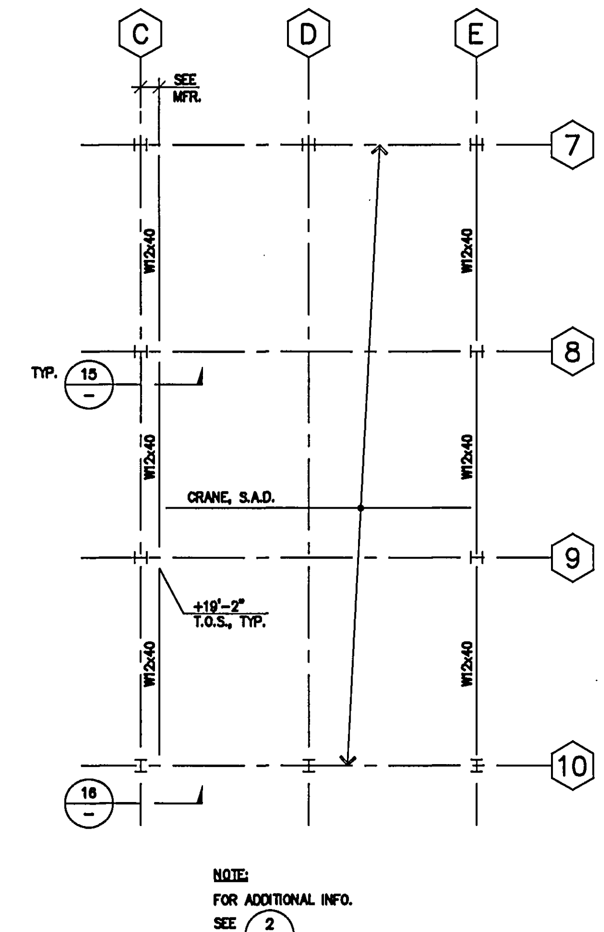
16 OFFSET WF SUPPORT



12



8



4 3 TON CRANE FRAMING PLAN

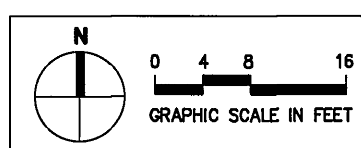
100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

TYPICAL STEEL DETAIL



DASSE DESIGN INC. STRUCTURAL ENGINEERS

The Ratcliff Architects

NO.	DATE	REVISION	BY	REC.	APP.
	18DEC2012	RECORD DRAWING			JLW
	3/20/98	EBMUD/PLAN CHECK COMMENT	JGW		

DESIGNED BY JGW
DESIGN CHECKED BY JGW
DRAWN BY MTO
SR. PROJ. ENGR. JGW
APPROVED
PRINCIPAL-IN-CHARGE, R.P.E. NO.C

EBMUD

PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

FACILITY
SCALE NONE
DATE 23 MAR. 1998
DRAWING No. S7.4
SHEET OF
SPECIFICATION NO.

FILE: F:\96B163\Struct\96163S74.DWG 02/08/98 at 21:49
XREF: ..\61651-TB1.DWG

3.6 Maintenance Center (F4)

3.6.1 Description

The Maintenance Center was design in 1998 as part of project SD223A. The building was designed in accordance with the 1994 Uniform Building Code for Life Safety performance, the minimum building code requirement for all buildings. The Maintenance Center is a highly irregular one-story building with a low, intermediate, and high-roof portion. The building also has a mezzanine level which extends partially into the high and intermediate roof portions. Although each roof portion has a metal deck diaphragm, the mezzanine level has a concrete-filled metal deck. The high and intermediate-roof portions consist of steel braced frames and precast concrete wall cladding, while the low-roof portion consists of precast concrete shear walls. The entire structure is supported by cast-in-place concrete pile caps with precast concrete piles.

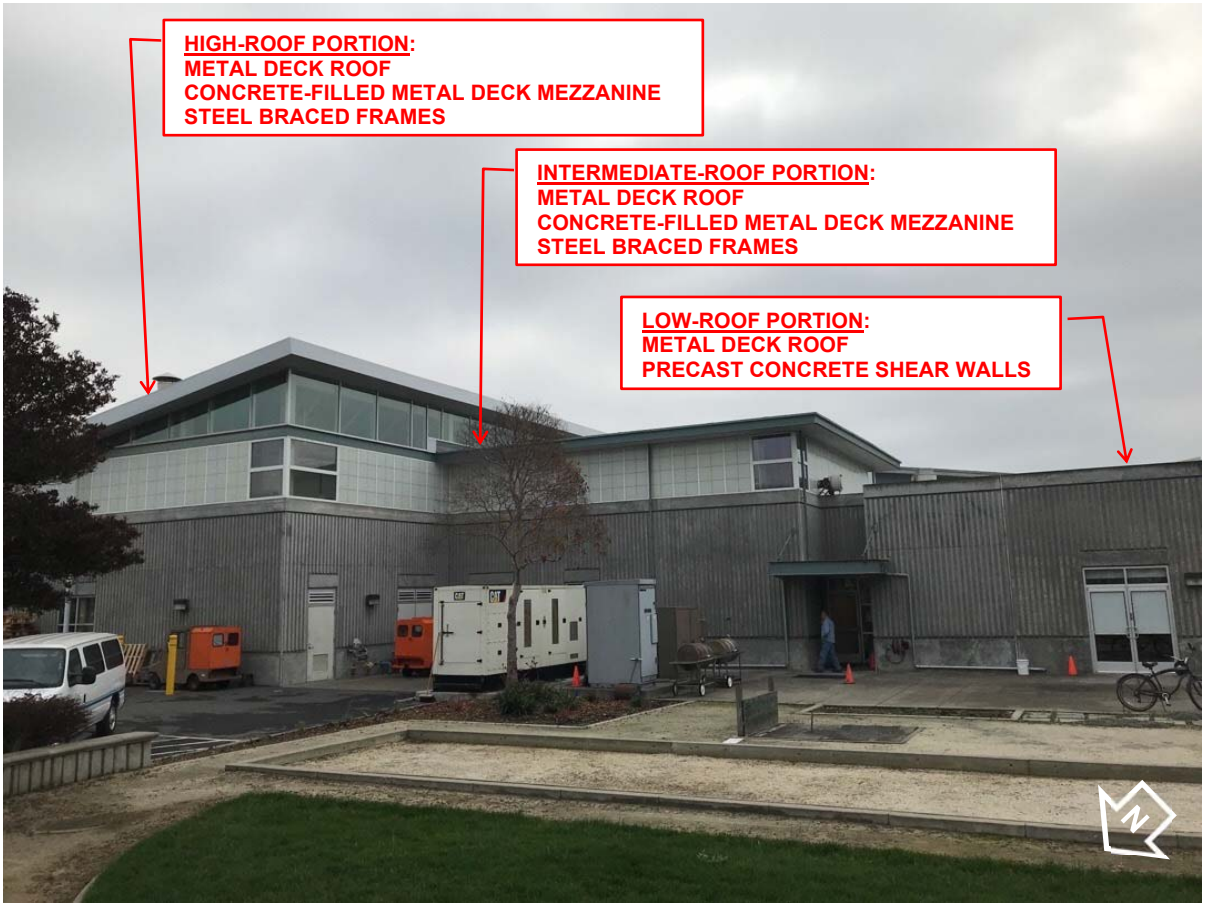


Figure 3.6-1: Maintenance Center

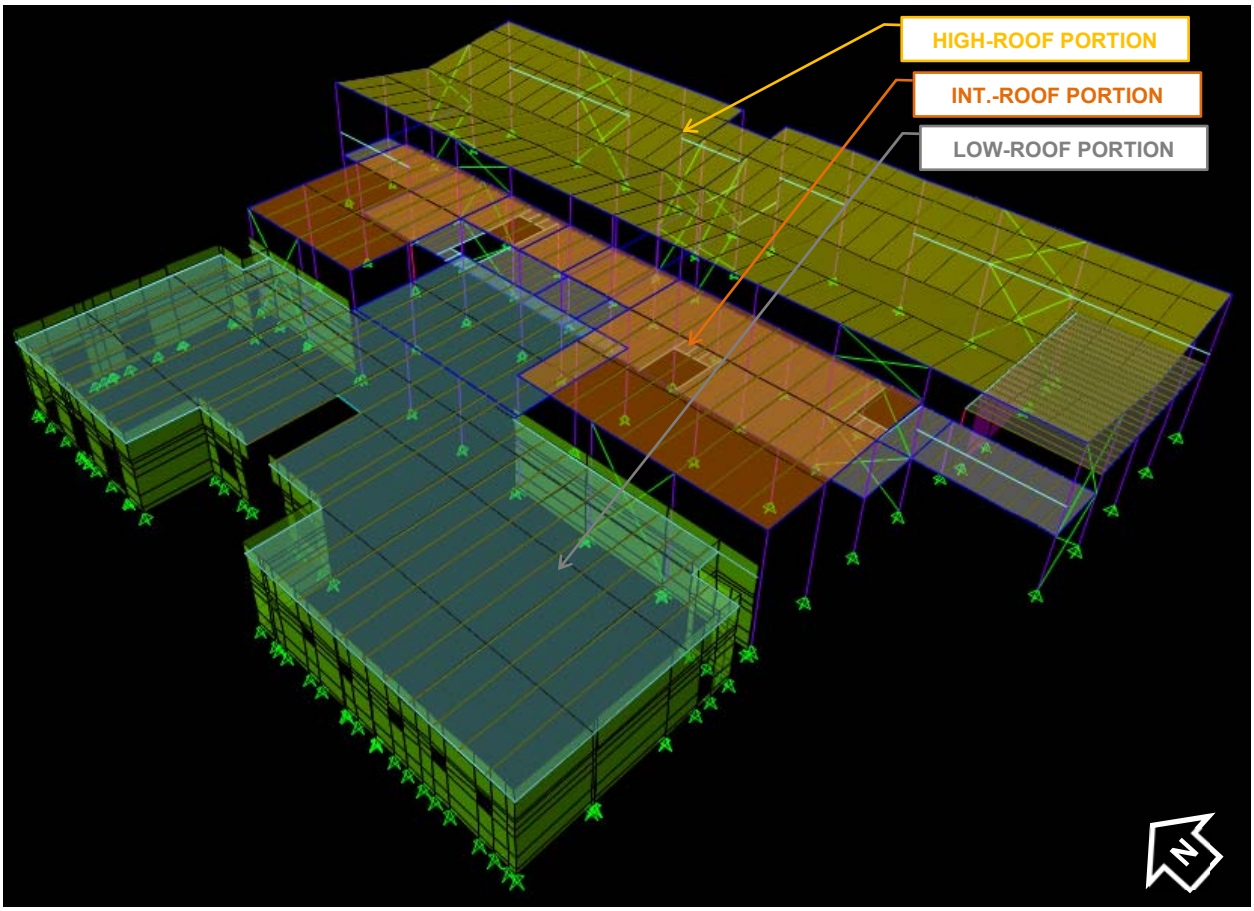


Figure 3.6-2: Maintenance Center Analysis Model of Existing Building

3.6.2 Seismic Deficiencies & Proposed Retrofit Measures

The following table summarizes the ASCE 41 Tier 3 seismic deficiencies identified and the corresponding retrofit measures proposed for the Maintenance Center.

Low-Roof Portion

Table 3.6-1: Seismic Deficiencies and Proposed Retrofit Measures (Low-Roof Portion)

TIER 3 SEISMIC DEFICIENCIES	PROPOSED SEISMIC RETROFIT MEASURES
Precast Concrete Walls (Out-of-Plane) The precast concrete wall panels lack cross ties in the north-south direction, and they are not adequately anchored to the existing steel joists and metal deck roof diaphragm in the east-west direction.	Add steel cross-ties in the north-south direction. Strengthen the connection between the existing steel joists and the precast concrete walls.
Re-entrant Corners The metal deck roof diaphragm has several re-entrant corners with inadequate ties and connections.	Strengthen the existing re-entrant corner ties and connections.
Steel Truss Collectors The existing steel trusses and connections appear to lack adequate strength to serve as collectors.	Strengthen the existing steel truss top chords and their connections to the precast concrete shear walls.
Precast Concrete Walls (In-Plane) The precast concrete shear wall panels are not interconnected and they are not adequately connected to the existing concrete foundation.	Connect the existing precast concrete panels together with steel plates. Strengthen the connection between the existing precast concrete panels and the existing concrete grade beams with new concrete beams.
~~**Precast Concrete Piles**~~ ~~The structure's 12" square precast concrete piles are partially embedded in liquefiable soil. The piles are close to meeting the acceptance criteria for combined axial loads and flexure.~~	~~Improving the existing soil using jet grouting is proposed as a potential strengthening measure to provide improved soil lateral resistance around the perimeter of the building.~~
Seismic Gaps The low-roof framing and metal deck are connected directly to the intermediate roof steel columns without a seismic gap to allow for the two different lateral systems to behave independently.	Add steel beams and columns below the low-roof portion which encroaches into the intermediate-roof portion. Cut back the low-roof metal deck and beams so that the two structures are no longer tied together.

Intermediate-Roof and High-Roof Portion

Table 3.6-2: Seismic Deficiencies and Proposed Retrofit Measures

TIER 3 SEISMIC DEFICIENCIES	PROPOSED SEISMIC RETROFIT MEASURES
Precast Concrete Wall Panels The precast concrete wall panels are not adequately anchored for out-of-plane loading.	Strengthen the existing steel channel beams along the east side of the building. Provide additional epoxy anchors.
Metal Deck Diaphragm The existing metal deck roof diaphragm does not have adequate shear strength.	Provide additional lines of braced frames in order to reduce the diaphragm demands.
Concrete-Filled Metal Deck Diaphragm The concrete-filled metal deck diaphragm at the mezzanine level does not have adequate shear strength.	Provide additional lines of braced frames in order to reduce the diaphragm demands. Replace the existing steel trusses along the new braced frame lines with steel wide flange beams with welded shear studs.
Steel Braced Frame & Collector Beams The steel braced frame and collector beams and their connections do not have adequate strength.	Strengthen the existing steel beams with welded steel plates. Strengthen the existing steel beam connections.
Steel Braces & Connections The steel braces and their connections do not have adequate strength.	Replace the existing steel braces and gusset connections with new Buckling Restrained Braces (BRB's) and gusset connections. Provide additional braced frames.
Steel Braced Frame Columns Some steel braced frame columns do not have adequate compression strength.	Strengthen the existing columns with welded steel plates. Provide additional braced frames.
Steel Braced Frame Column Anchorage The braced frame column anchors do not have adequate strength for combined shear and tension.	Strengthen the existing anchorage. Provide additional braced frames.
Steel Braced Frame Stability The steel braced frames along gridlines 5 and 6 are not braced out-of-plane.	Brace the braced frames to the mezzanine diaphragm with horizontal steel braces.
Steel Gravity Columns The steel gravity columns along gridline F, which support the high and intermediate roof, do not have adequate strength to accommodate the differential diaphragm displacements between the high-roof and intermediate-roof.	Provide additional lines of braced frames in the east-west direction. Add new braces from the intermediate-roof to the high-roof at gridlines 5 and 6.
Welding & Paint Shop Mezzanine The CMU walls along the north side of the shops are not adequately anchored for out-of-plane loads to the steel joists and concrete-filled deck. The concrete-filled deck above the shops does not have an adequate load path to the braced frames.	Strengthen the connection between the existing steel joists and the CMU walls. Provide additional braced frames, and add new beams and braces to collect and transfer loads from the concrete-filled deck to the braced frames.
Precast Concrete Piles See related discussion for the Low-Roof portion in Table 3.6-1.	See related discussion for the Low-Roof portion in Table 3.6-1.
Seismic Gaps See related discussion for the Low-Roof portion in Table 3.6-1.	See related discussion for the Low-Roof portion in Table 3.6-1.

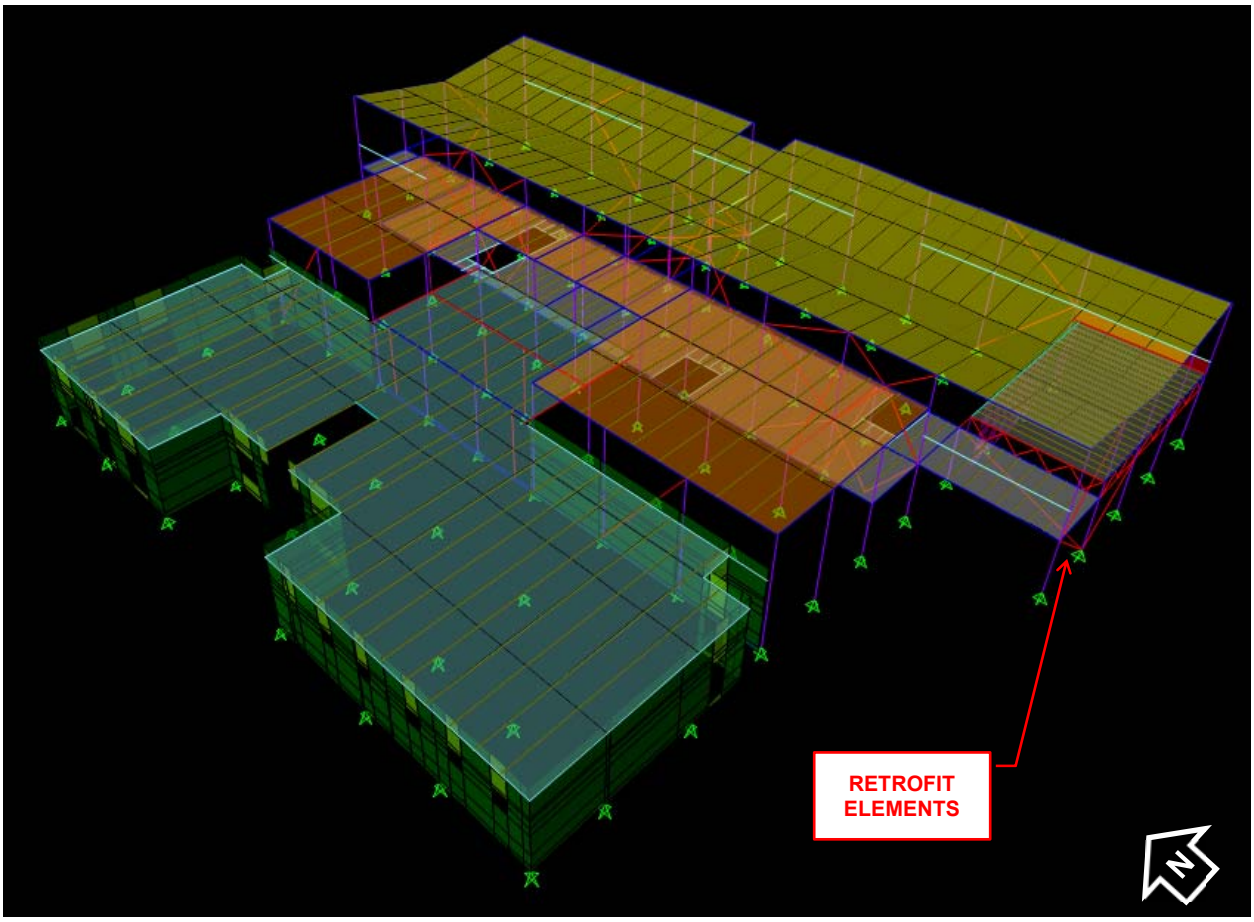
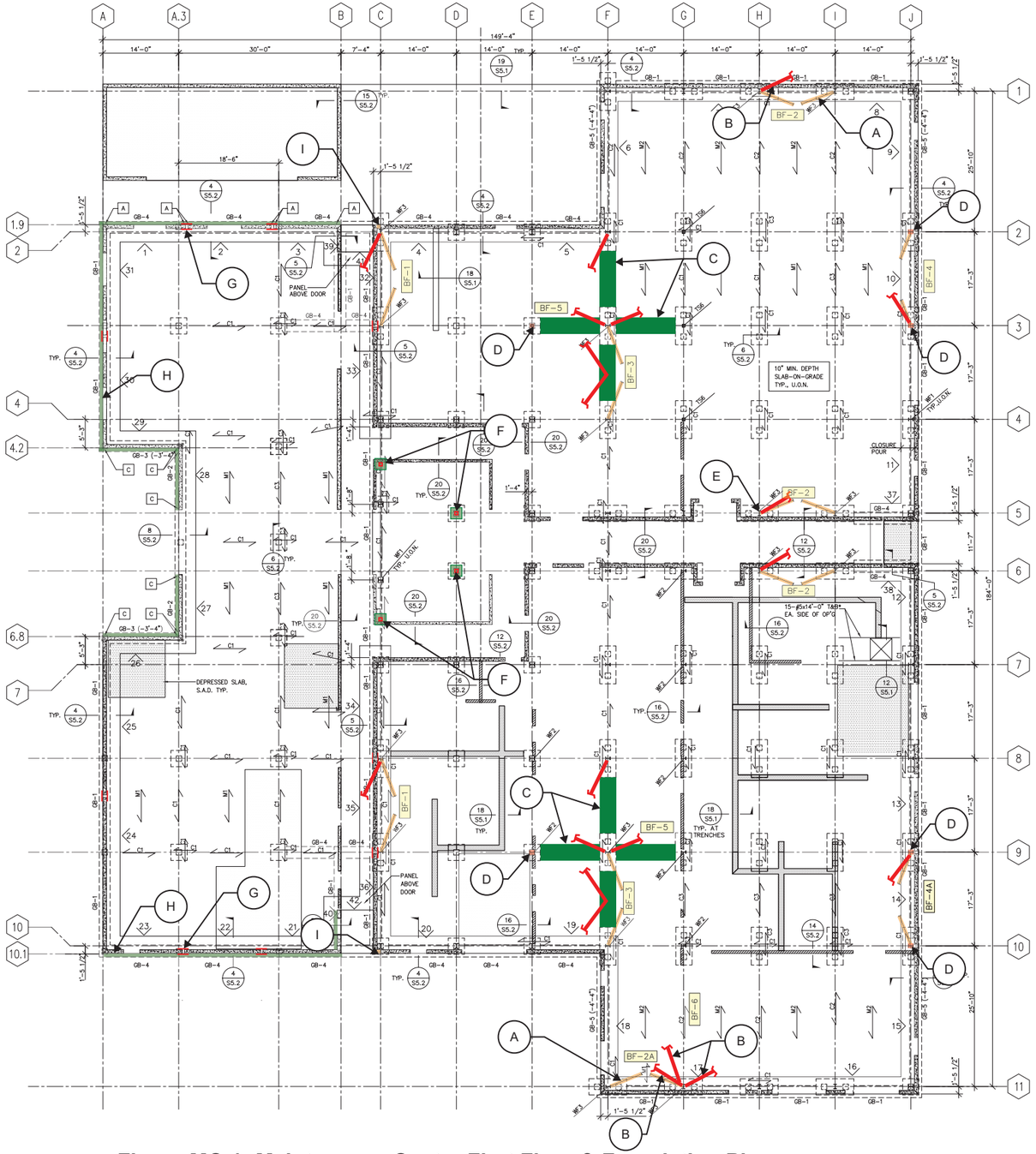


Figure 3.6-3: Maintenance Center Analysis Model of Retrofitted Building

KEY NOTES:

A) REMOVE ALL (E) STEEL BRACES AND GUSSET PLATES.
B) ADD BUCKLING RESTRAINED BRACES (BRB) & GUSSET PLATES, TYP. SEE FIGURES MC-4 & MC-5 FOR BRACED FRAME ELEVATIONS.
C) ADD 30"x30" CONCRETE GRADE BEAM BETWEEN (E) PILE CAPS. PROVIDE EPOXY DOWELS INTO (E) SLAB ON GRADE @ 12" O.C. ON EACH SIDE OF GRADE BEAM.
D) STRENGTHEN (E) STEEL COLUMN W/ WELDED STEEL PLATES.
E) STRENGTHEN ALL BRACED FRAME COLUMN BASE ANCHORAGE CONNECTIONS.
F) ADD HSS6x6 STEEL COLUMN & 18"x3'-0"SQ. FOOTING TO SUPPORT LOW ROOF FRAMING.
G) STRENGTHEN (E) PRECAST WALL JOINTS @ ALL WALLS SUPPORTING LOW ROOF (9 LOCATIONS). PROVIDE STEEL PLATES ON EACH SIDE OF PRECAST WALL W/ THRU-BOLTS @ 24" O.C.
H) STRENGTHEN (E) PRECAST CONC. WALL BASE CONNECTION W/ 8"x24" CONCRETE CURB W/ EPOXY DOWELS INTO TOP OF (E) CONC. GRADE BEAM FACE OF (E) PRECAST CONC. WALL, TYP. SEE DETAIL 3/T-1 (SIM).
I) SAWCUT VERTICAL SLOT IN (E) PRECAST WALL & FILL W/ COMPRESSIBLE MATERIAL.



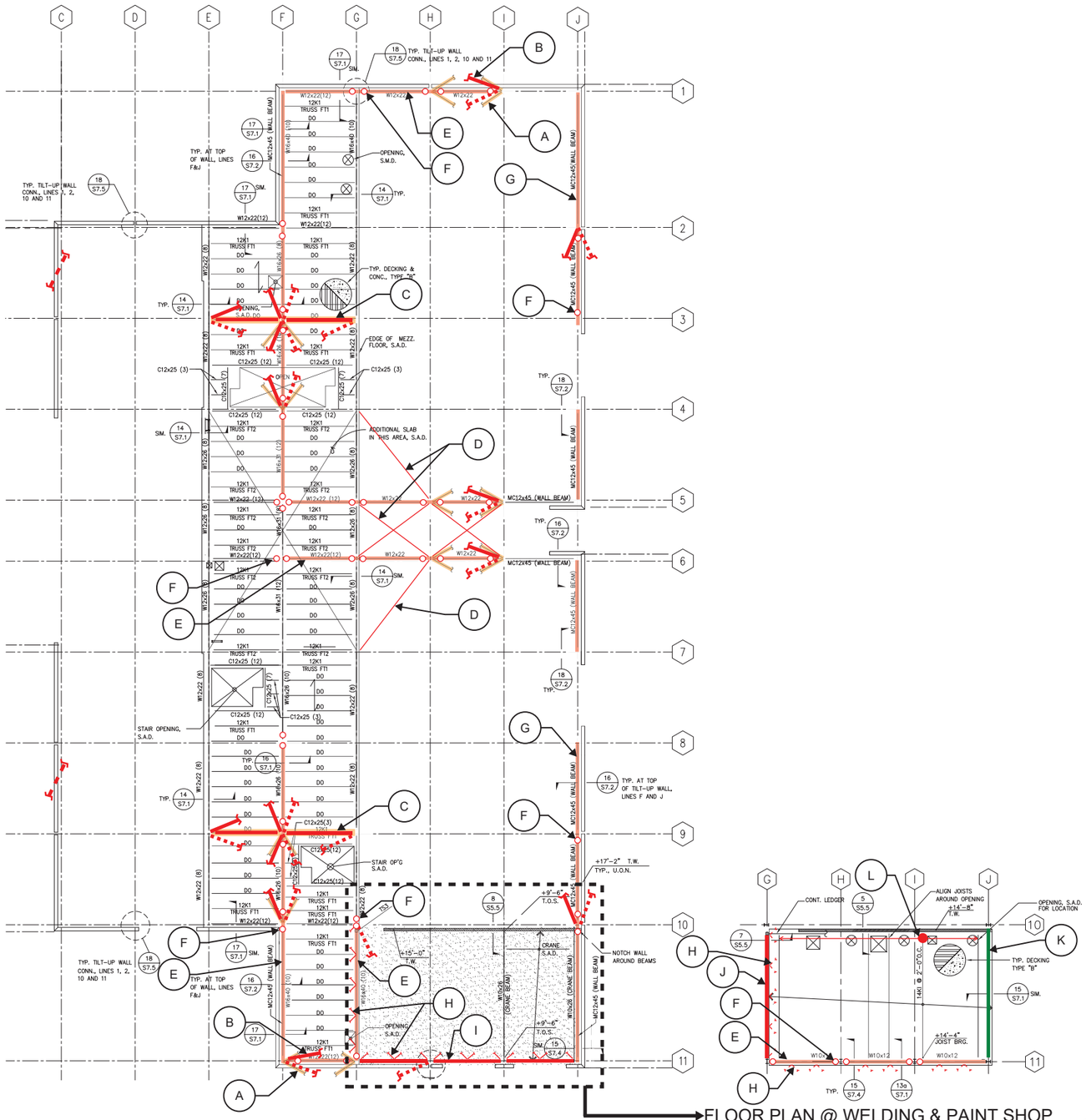
LEGEND
- DEMO EXISTING ELEMENT
- NEW CONCRETE ELEMENT
- NEW STEEL ELEMENT
- NEW FRP ELEMENT

SEE DETAIL "X" ON FIGURE MC-"Y"

Figure MC-1: Maintenance Center First Floor & Foundation Plan

KEY NOTES:

A) REMOVE ALL (E) STEEL BRACES AND GUSSET PLATES.
B) ADD BRB & GUSSET PLATES, TYP. SEE FIGURES MC-4 & MC-5 FOR BRACED FRAME ELEVATIONS.
C) SHORE (E) MEZZANINE DECK, DEMO (E) STEEL TRUSS, & ADD (N) W12x STEEL BEAMS. ADD WELDED SHEAR STUDS TO TOP BEAM FLANGE @ 12" O.C.
D) ADD ROUND HSS5x HORIZONTAL DIAGONAL BRACING.
E) STRENGTHEN (E) STEEL BEAMS W/ WELDED STEEL PLATES, TYP.
F) STRENGTHEN (E) STEEL BEAM CONNECTIONS, TYP.
G) STRENGTHEN (E) STEEL CHANNELS W/ WELDED STEEL PLATES & ADD OUT-OF-PLANE WALL EPOXY WALL ANCHORS @ 24" O.C., TYP.
H) ADD ROUND HSS5x DIAGONAL BRACING, TYP.
I) ADD W12x STEEL BEAMS ALIGNED W/ MEZZANINE LEVEL.
J) ADD W12x STEEL BEAM BELOW (E) WELDING & PAINT SHOP CONCRETE-FILLED FLOOR DECK. ADD WELDED SHEAR STUDS TO TOP BEAM FLANGE @ 12" O.C.
K) ADD 12"x30" CONCRETE BEAM ALONG TOPSIDE OF (E) WELDING & PAINT SHOP FLOOR DECK. CONNECT CONCRETE BEAM TO BOTTOM OF (E) STEEL CHANNEL W/ SHEAR STUDS @ 12" O.C., TO TOP OF (E) FLOOR DECK W/ (2) EPOXY DOWELS W/ 3" EMBED @ 6" O.C., AND TO (E) STEEL COLUMN @ GRIDLINE J-10 W/ (4) WELDED LONGITUDINAL REINFORCING BARS.
L) STRENGTHEN (E) STEEL JOIST CONNECTIONS TO (E) CMU WALL, TYP.



LEGEND
- DEMO EXISTING ELEMENT
- NEW CONCRETE ELEMENT
- NEW STEEL ELEMENT
- NEW FRP ELEMENT

X / Y — SEE DETAIL "X" ON FIGURE MC-"Y"

Figure MC-2: Maintenance Center Mezzanine Plan

KEY NOTES:

A) REMOVE ALL (E) STEEL BRACES AND GUSSET PLATES.
B) ADD BRB & GUSSET PLATES, TYP. SEE FIGURES MC-4 & MC-5 FOR BRACED FRAME ELEVATIONS.
C) ADD ROUND HSS5x DIAGONAL BRACES FROM INTERMEDIATE TO HIGH ROOF.
D) STRENGTHEN (E) STEEL TRUSS TOP CHORD & CONNECTIONS.
E) STRENGTHEN (E) STEEL BEAMS W/ WELDED STEEL PLATES, TYP.
F) STRENGTHEN (E) STEEL BEAM CONNECTIONS, TYP.
G) STEEL COLUMNS (BELOW). SEE FIGURE MC-1.
H) ADD W24x STEEL BEAMS TO SUPPORT LOW ROOF FRAMING.
I) DETACH AND CUT BACK (E) W12x BEAM FROM (E) COLUMN SUPPORTING INTERMEDIATE ROOF.
J) DETACH AND CUT BACK (E) TRUSSES FROM (E) W12x BEAMS.
K) CUT BACK (E) METAL DECK & SUPPORT GLAZING FROM INTERMEDIATE ROOF FRAMING.
L) STRENGTHEN (E) STEEL JOIST CONNECTIONS TO PRECAST CONC. WALLS, TYP.
M) ADD L4x4 CROSS-TIES W/ SHEET METAL SCREWS TO UNDERSIDE OF (E) METAL DECK @ 6" O.C., TYP.
N) STRENGTHEN (E) L4x4 RE-ENTRANT CORNER TIES & CONNECTIONS, TYP.
O) ADD STEEL C8x STRUT.

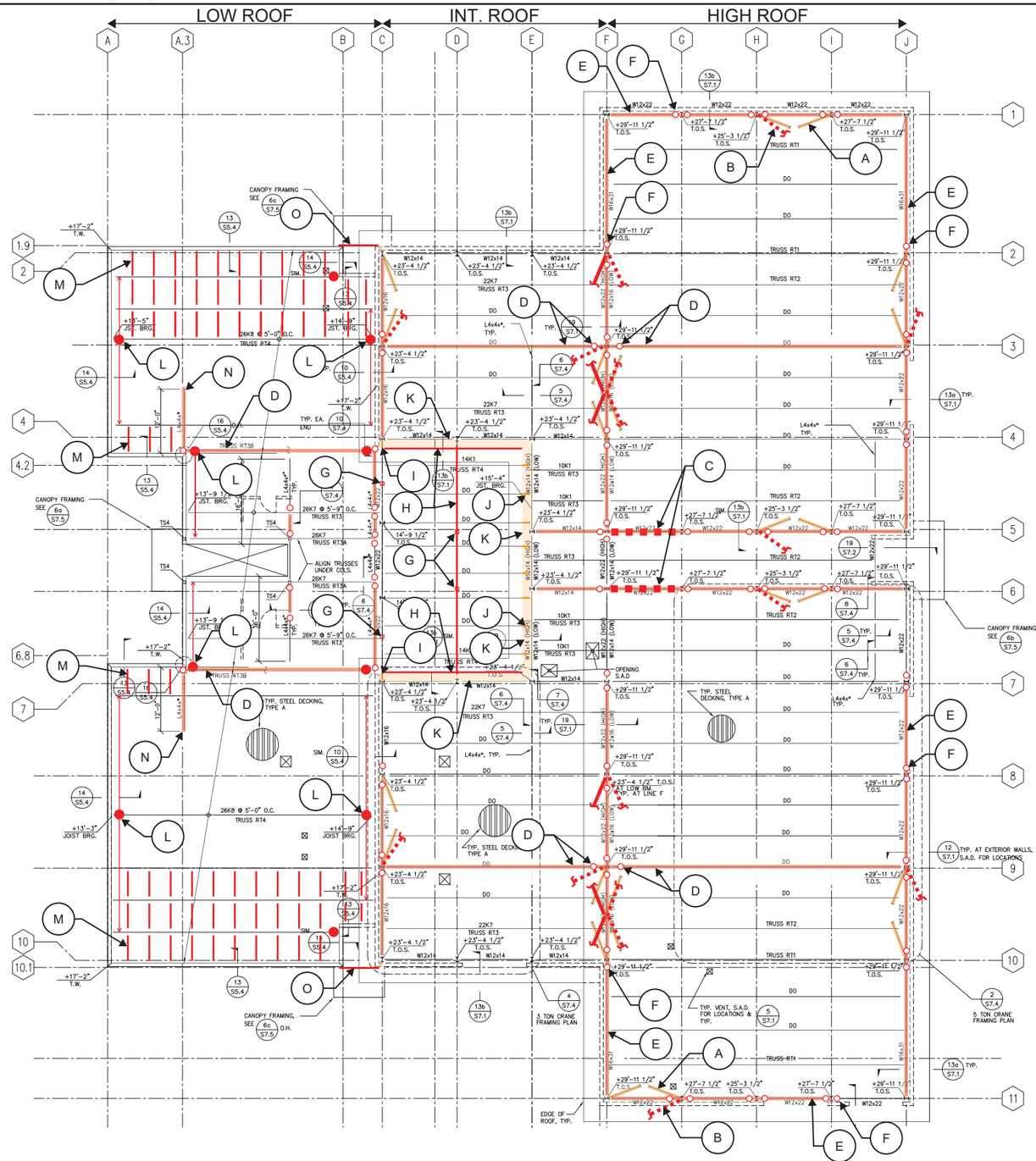


Figure MC-3: Maintenance Center Roof Plan

LEGEND
- DEMO EXISTING ELEMENT
- NEW CONCRETE ELEMENT
- NEW STEEL ELEMENT
- NEW FRP ELEMENT

SEE DETAIL "X" ON FIGURE MC-"Y"

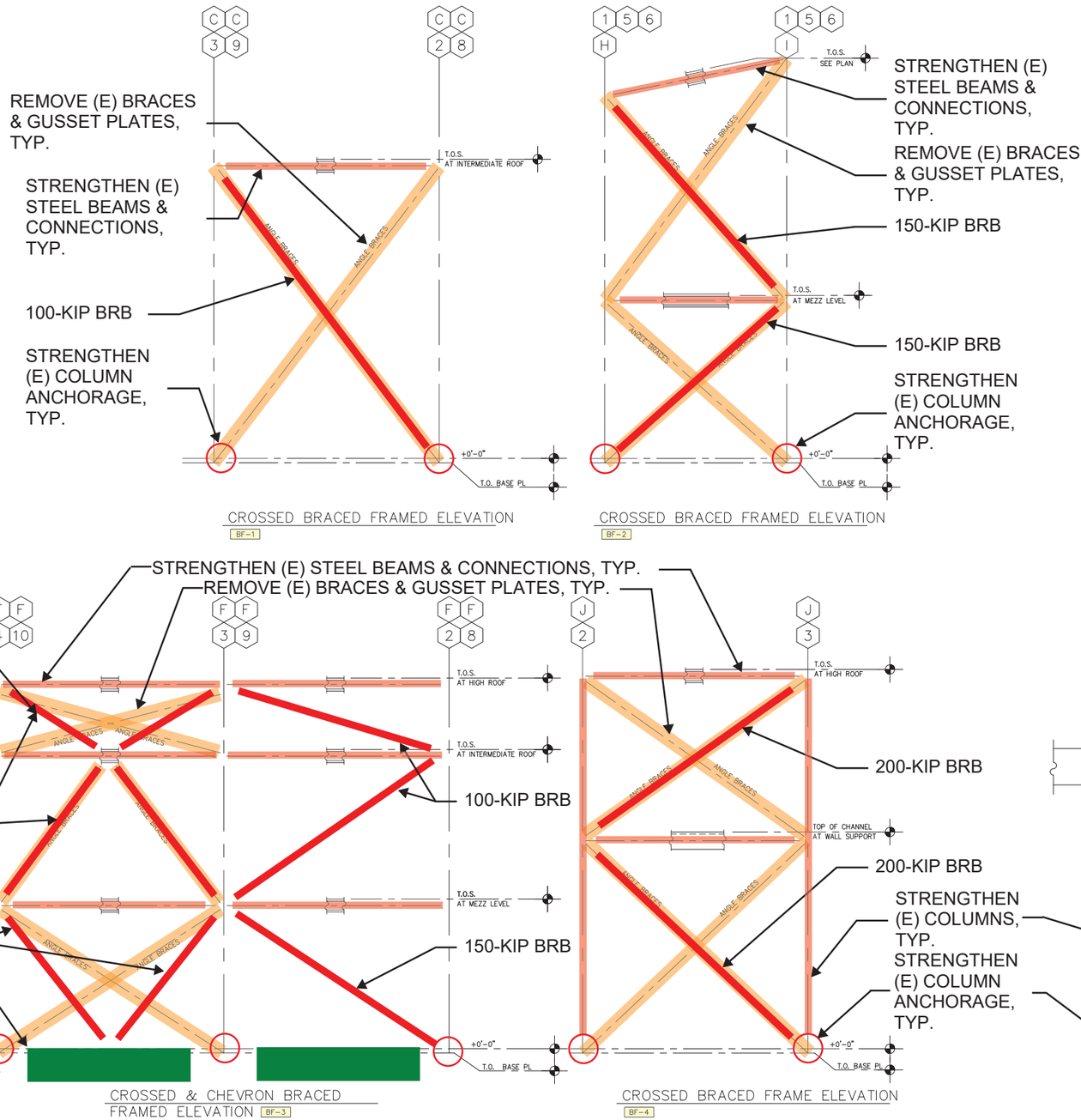


Figure MC-4: Maintenance Center Braced Frame Elevations

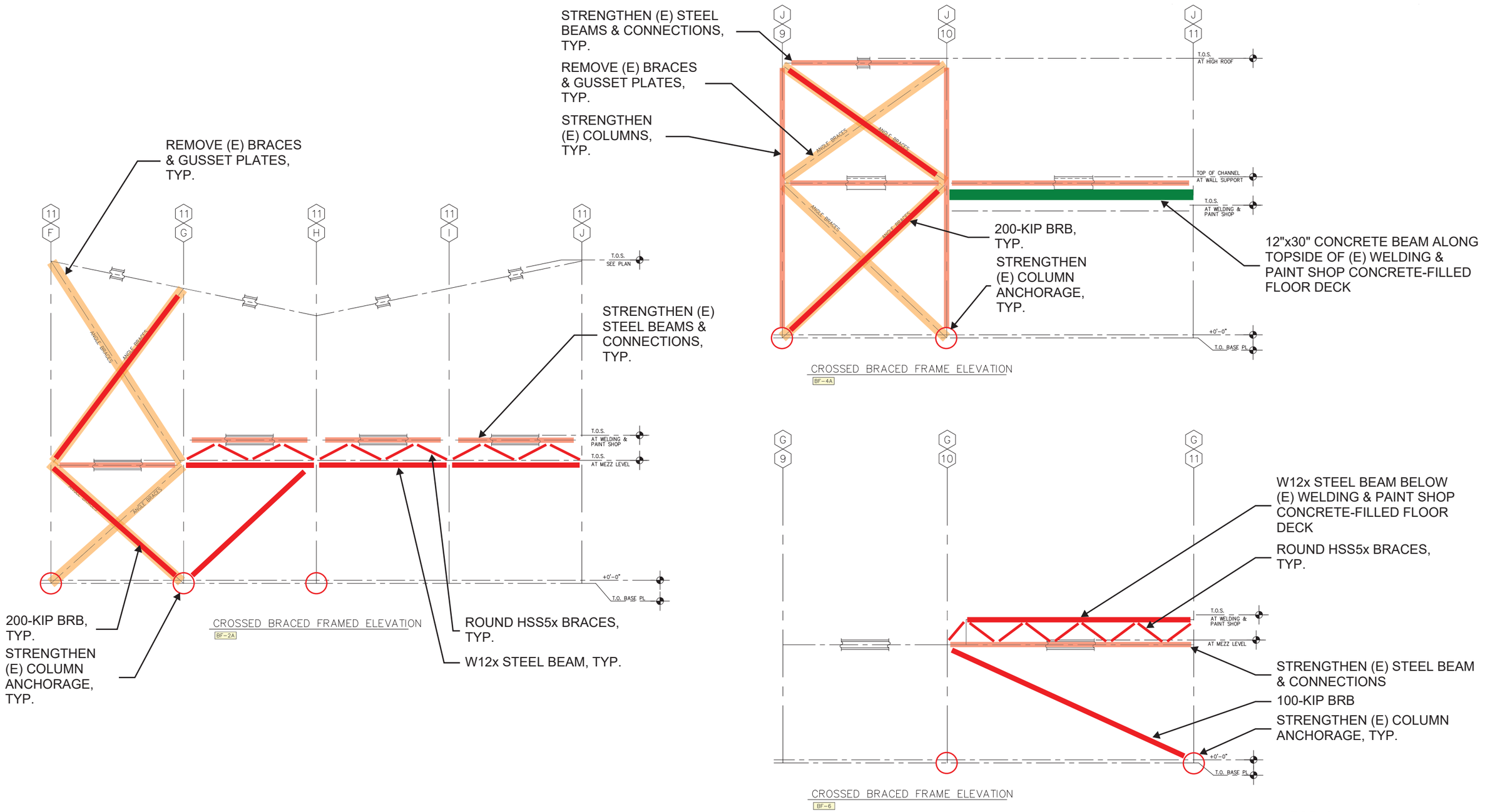
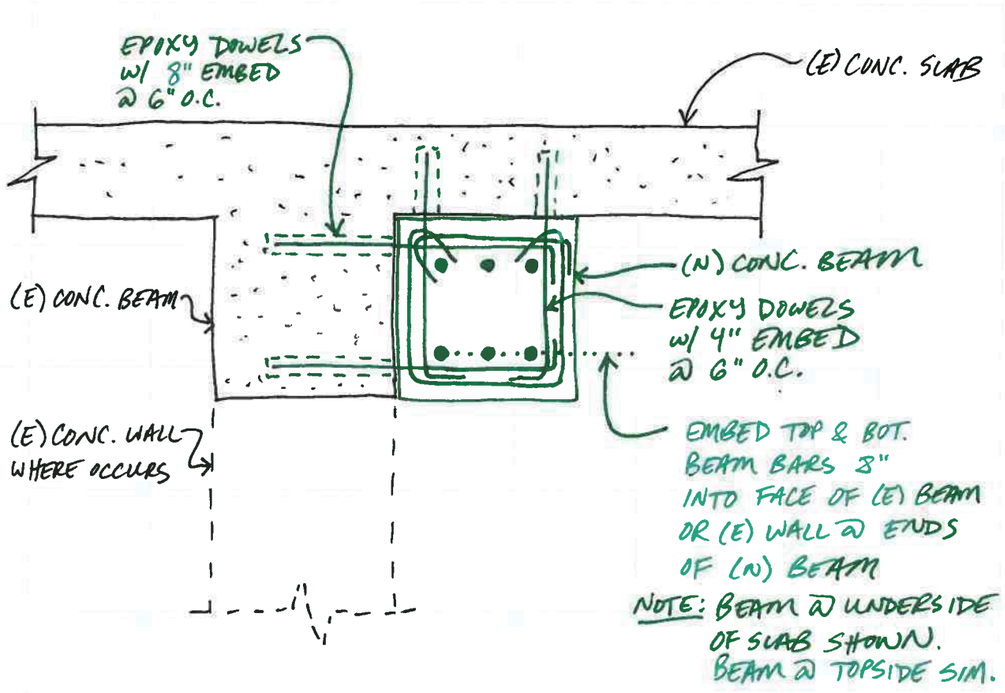


Figure MC-5: Maintenance Center Braced Frame Elevations @ Welding & Paint Shop



3 TYPICAL CONCRETE BEAM

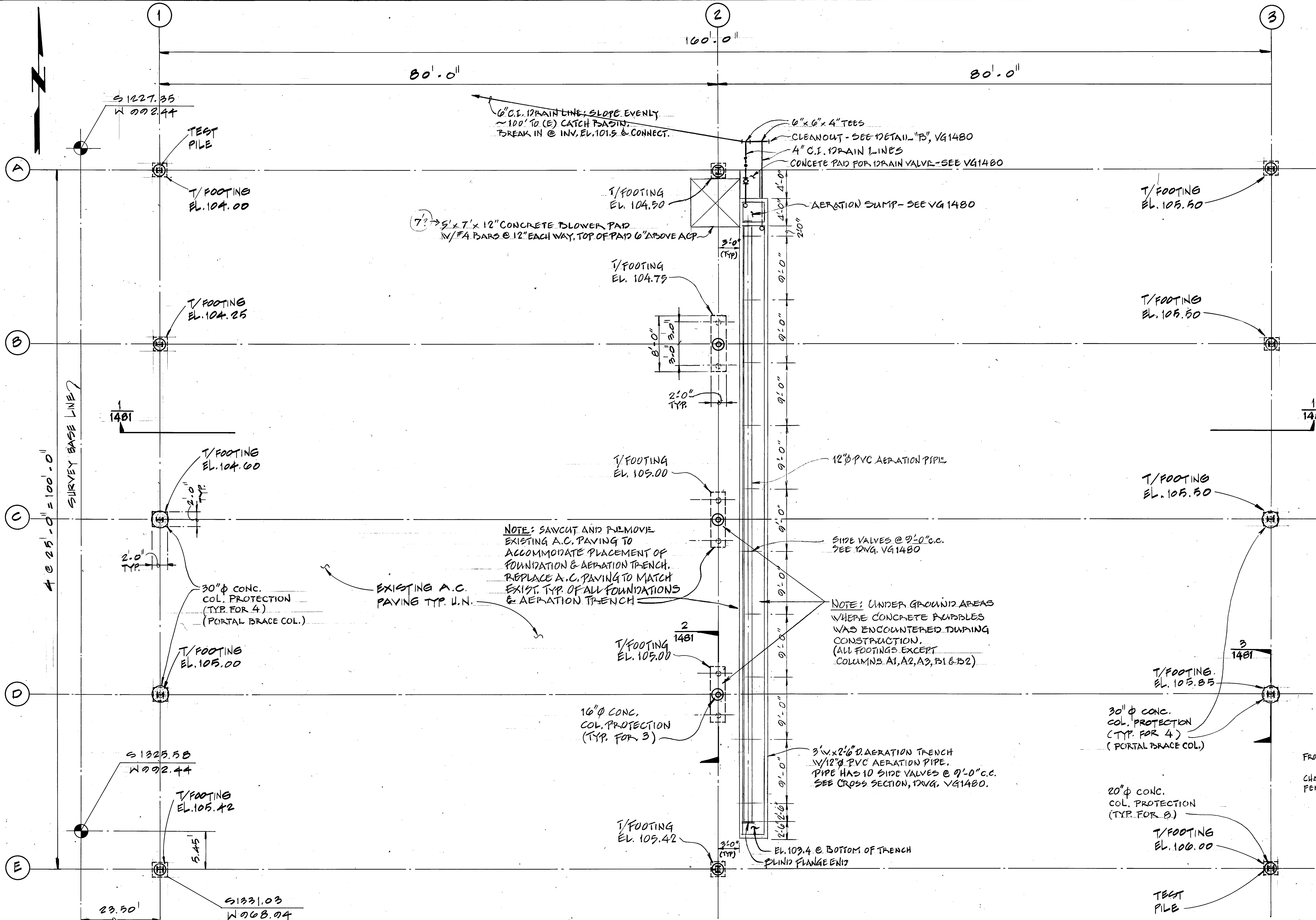
Figure T-1: Typical Detail


HYSTER


FIRE
EXTINGUISHER


FIRE
EXTINGUISHER
TRASH

Maintenance Canopy

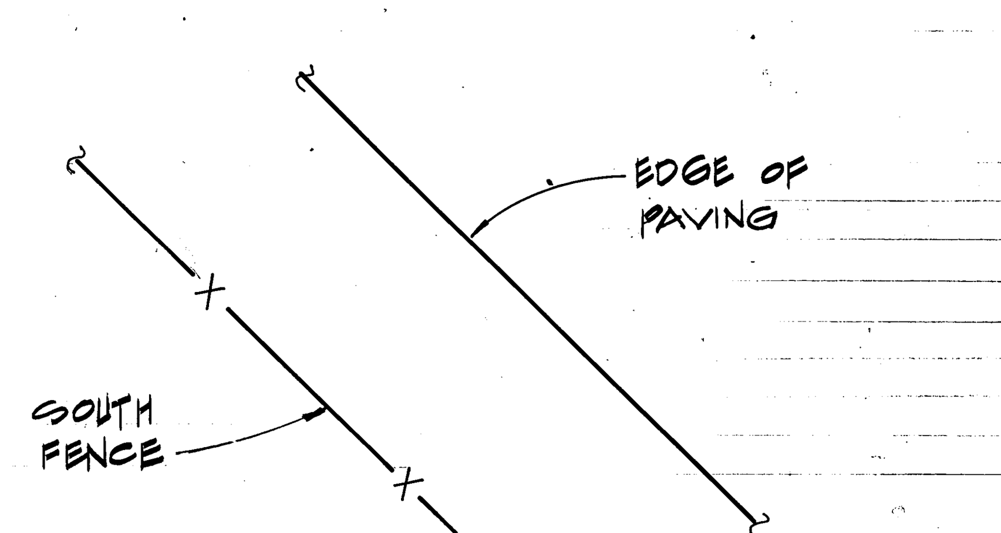


FOUNDATION PLAN

1/8" = 1'-0"

NOTES:

1. ⊕ = FLD. CONTROL PTS., 1"x2" STAKE W/COORDS. NOTED.
2. ELEVATION BENCH MARK IS LOCATED AT THE OXYGEN PRODUCTION PLANT, A CUT □ ABOUT 3' SOUTH OF THE DOOR @ THE SW CORNER OF THE OXYGEN PRODUCTION BUILDING (APPROX. W550, S920) ELEVATION = 13.09 MEAN SEA LEVEL + 100.00 = 113.09 PLANT DATUM.
3. UN = UNLESS NOTED OTHERWISE.



GENERAL NOTES

1.0 GENERAL

1.1 SCOPE. THESE NOTES COVER THE DESIGN, FABRICATION, AND ERECTION OF THE METAL BUILDING ILLUSTRATED ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DESIGN, FABRICATE, AND ERECT THE METAL BUILDING, COMPLETE AND READY FOR USE, IN ACCORDANCE WITH THE SPECIFICATIONS AND THESE GENERAL NOTES. IN THE CASE OF CONFLICT BETWEEN APPLICABLE CODES, THE SPECIFICATIONS AND THESE GENERAL NOTES, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

1.2 CODES AND STANDARDS. ALL DESIGN, FABRICATION, AND ERECTION SHALL MEET THE REQUIREMENTS OF THE 1982 EDITION OF THE UNIFORM BUILDING CODE (UBC), THE AISI REQUIREMENTS FOR LIGHT GAUGE COLD-FORMED STRUCTURAL MEMBERS, THE AISC MANUAL, AND THE RECOMMENDED DESIGN PRACTICES MANUAL OF THE METAL BUILDING MANUFACTURER'S ASSOCIATION.

1.2.1 THE PREFABRICATED METAL BUILDING SHALL BE PROVIDED WHERE INDICATED AND SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER WHO IS REGULARLY ENGAGED IN THE MANUFACTURE OF PREFABRICATED METAL BUILDINGS. THE BUILDING SHALL HAVE CLEAR SPANS AS INDICATED ON THE DRAWINGS AND SHALL BE OF THE RIGID FRAME TYPE. BRACING SHALL NOT BE USED BETWEEN COLUMNS IN EITHER DIRECTION.

1.2.2 THE CONTRACTOR SHALL SUBMIT CALCULATIONS FOR ALL ELEMENTS OF THE PREFABRICATED METAL BUILDING FOR THE ENGINEER'S REVIEW. CALCULATIONS SHALL BE EXECUTED BY A CALIFORNIA PROFESSIONAL ENGINEER WITH THE AUTHORITY TO USE THE TITLE STRUCTURAL ENGINEER. THE DESIGN SHALL MEET THE FOLLOWING LOAD CRITERIA (REFER UBC-1982):

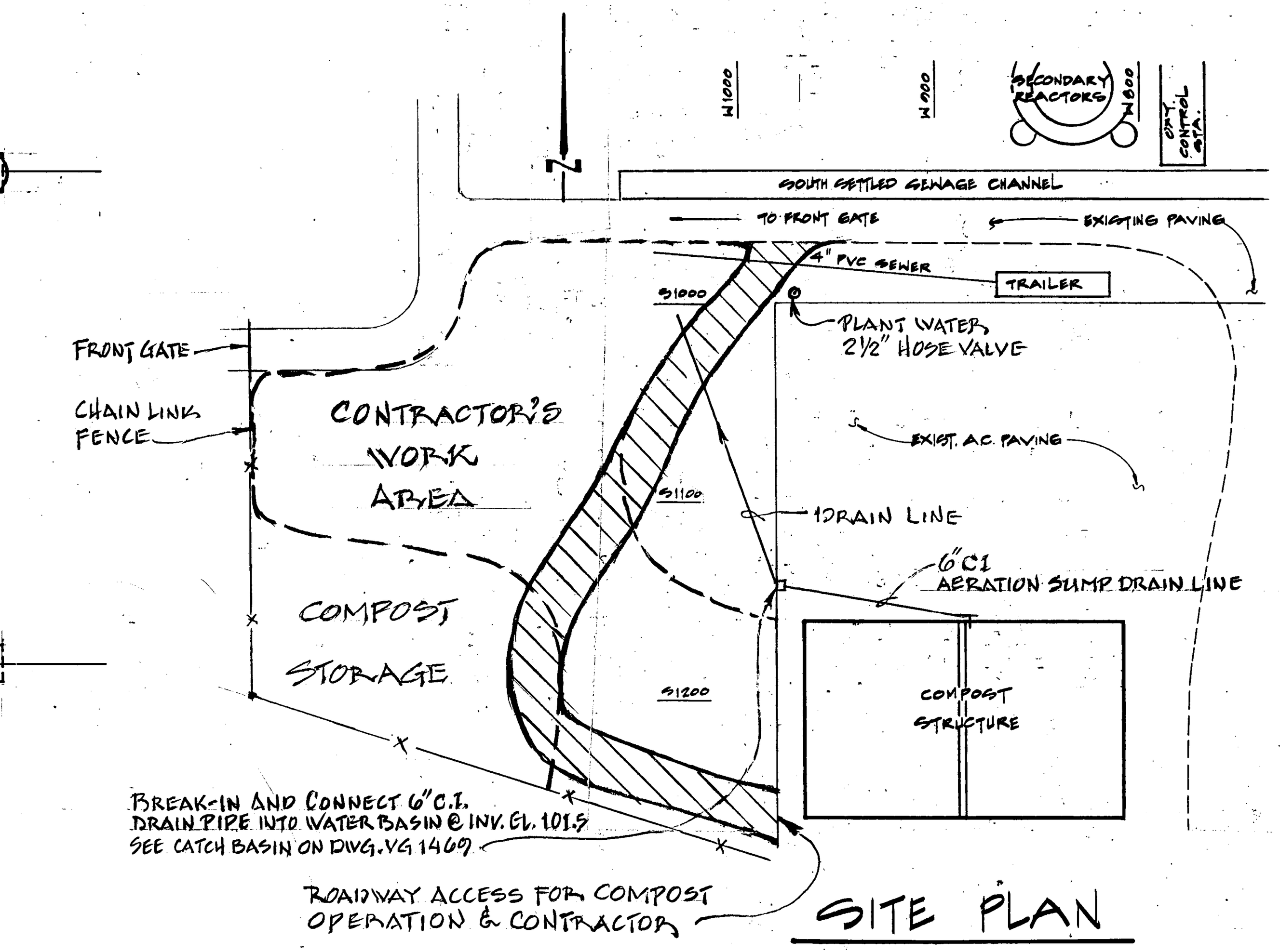
ROOF LOADS:
- DEAD LOADS - AS CALCULATED
- LIVE LOADS - 20 PSF WITH REDUCTIONS FOR TRIBUTARY AREA

WIND FORCES:
- BASIC WIND SPEED - 70 MPH
- EXPOSURE - C
- UPLIFT IN ACCORDANCE WITH TABLE NO. 23-H
- IMPORTANCE FACTOR - 1.0

LATERAL FORCES:
- SEISMIC ZONE - 4
- WIND FORCES AS HEREINBEFORE STATED
- IMPORTANCE FACTOR - 1.0

DUCTILE MOMENT-RESISTING FRAME - K = 0.67 OR MOMENT-RESISTING FRAME - K = 1.0

(CONTINUED ON SHT. VG1479)



SITE PLAN

NO SCALE

REGISTERED PROFESSIONAL ENGINEER — FREDERICK SENA — 1632 — STRUCTURAL — STATE OF CALIFORNIA

NO.	DATE	REVISION	BY	APP.
1	JAN '85	AS-BUILT	XV	

Black & Veatch Consulting Engineers, Walnut Creek, California

DESIGN BY F. SENA
DESIGN CHECK BY F. SENA
DRAWN BY W. K. LUK / XV
SR. PROJ. ENGR.
APPROVED Frederick Sena — PRINCIPAL-IN-CHARGE RPE NO. S1632

PROJECT ENGRG.
MGR. SUPPORT SVCS.
MANAGER WASTEWATER DEPT.

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

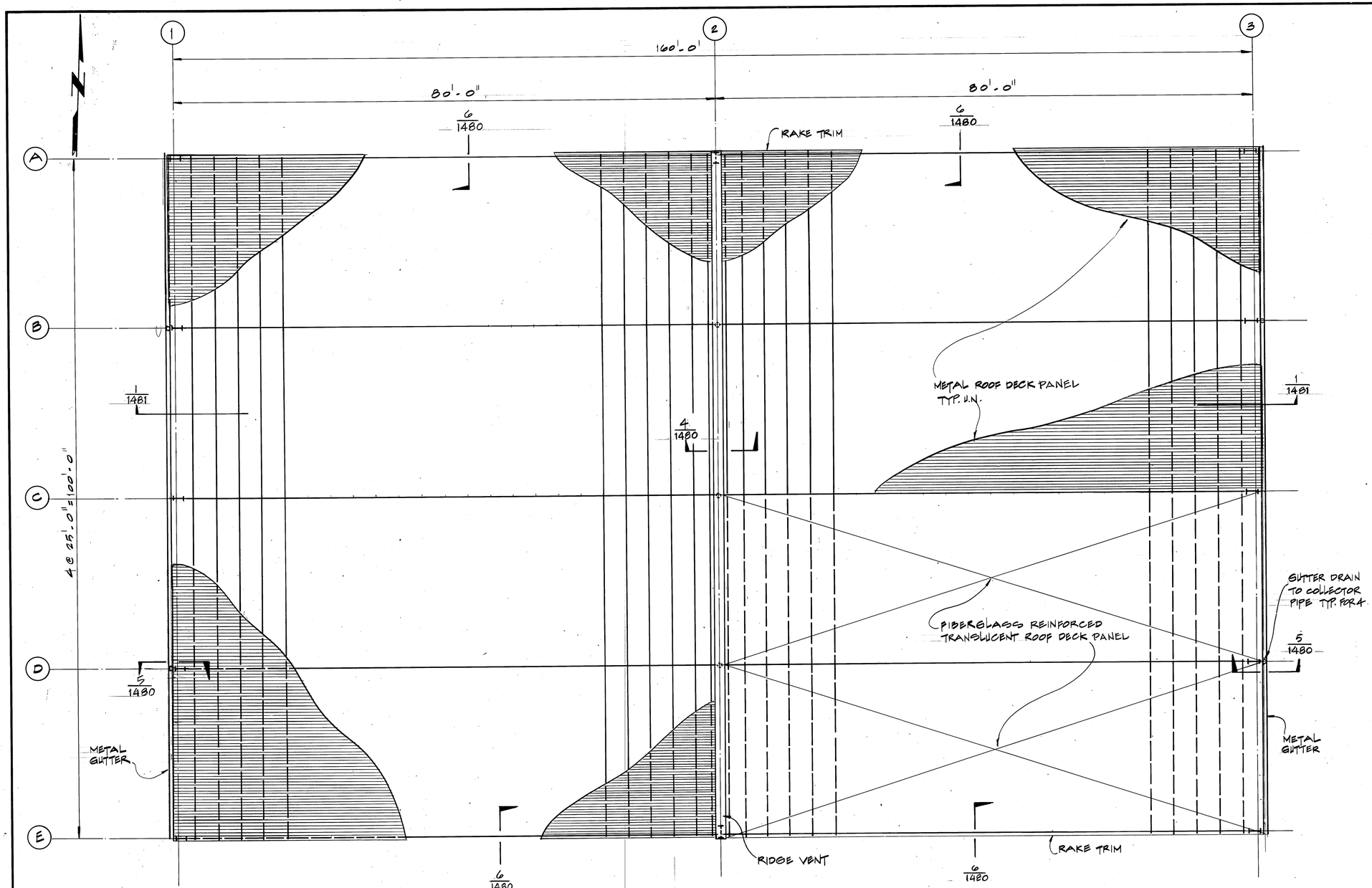
COMPOST DRYING FACILITY

FOUNDATION PLAN, SITE PLAN & GENERAL NOTES

STRUCTURE OR ZONE DESIGNATION
SCALE AS SHOWN
DATE 5-23-84

VG 1478

E-206 • 3/82



ROOF FRAMING PLAN

1/8" = 1'-0"

(CONTINUED FROM SHT. VG1478)

1.3 SAFETY. JOBSITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. SITE REVIEW OF THE CONSTRUCTION BY THE ENGINEER IS TO DETERMINE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS ONLY.

1.4 SHOP DRAWINGS. COMPLETE DETAILS OF ALL COMPONENTS OF PREFABRICATED METAL BUILDING SHALL BE SUBMITTED PRIOR TO CONSTRUCTION FOR REVIEW BY THE ENGINEER. EACH PART SHALL BE LEGIBLY MARKED TO CORRESPOND TO ERECTION DRAWINGS. ONCE REVIEWED AND APPROVED, NO CHANGES OR DEVIATIONS FROM THE SHOP DRAWINGS WILL BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

2.0 MATERIALS.

2.1 STEEL FRAMEWORK. STEEL FRAMEWORK SHALL BE IN ACCORDANCE WITH THE AISC STEEL CONSTRUCTION MANUAL. STEEL FRAMING LESS THAN 3/16-INCH THICK SHALL MEET THE REQUIREMENTS OF THE AISI LIGHT GAUGE STEEL DESIGN SPECIFICATION.

2.2 SIDING AND ROOFING. SIDING AND ROOFING PANELS SHALL, AS FAR AS PRACTICAL, BE ONE TYPE AND USED THROUGHOUT THE PROJECT. THE MINIMUM THICKNESS OF STEEL SHALL BE 24 GAUGE.

2.3 FASTENERS. FASTENERS FOR ATTACHMENT OF PANELS TO STRUCTURAL SUPPORTS SHALL BE SELF-TAPPING STAINLESS STEEL SHEET METAL SCREWS. ALL FASTENERS SHALL HAVE POLYMERIZED CHLOROPRENE WASHERS.

2.4 SHEET METAL ACCESSORIES. SHEET METAL ACCESSORIES INCLUDING GUTTERS, DOWNSPOUTS, VENTILATORS, AND TRIM SHALL BE ZINC-COATED SHEET STEEL WITH FACTORY APPLIED PAINT FINISH.

2.4.1 GUTTERS AND DOWNSPOUTS SHALL BE SIZED TO ACCOMODATE A RAINFALL OF 0.5 in./hr. GUTTERS SHALL BE FORMED IN SECTIONS NOT LESS THAN 8 FEET AND SHALL BE SUPPORTED AT NOT MORE THAN 36 INCHES ON CENTER. DOWNSPOUTS SHALL BE PROVIDED IN APPROXIMATELY 10-FOOT LENGTHS AND SHALL BE SUPPORTED AT A MAXIMUM SPACING OF 60 INCHES ON CENTER.

2.4.2 CONTINUOUS GRAVITY (RIDGE) ROOF VENTILATORS SHALL BE FABRICATED FROM ZINC-COATED STEEL NOT LESS THAN 26 GAUGE IN THICKNESS. VENTILATORS SHALL BE PROVIDED COMPLETE WITH EXTERIOR WINDBAND, INTEGRAL RAIN CONE, BRACES, CHAIN OPERATED DAMPERS, AND BIRD SCREENING. THROAT SIZE (VENT OPENING) SHALL BE NOT LESS THAN 9 INCHES.

2.4.3 CLOSURE STRIPS SHALL BE FORMED OF COMPRESSED RUBBER OR OTHER MATERIAL THAT IS STANDARD WITH THE MANUFACTURER. CLOSURE STRIPS SHALL NOT ABSORB WATER AND SHALL MATCH THE CONFIGURATIONS OF THE ROOFING AND SIDING PANELS.

2.4.4 ALL SIDE AND END LAPS SHALL BE SEALED WITH TYPE II, CLASS B RIBBON FORM SEALANT CONFORMING TO FED. SPEC. TT-C-1796. MINIMUM WIDTH OF RIBBON SHALL BE 3/32 x 1/2 INCH.

2.5 PAINT. PRIOR TO FABRICATION THE ENGINEER SHALL NOTIFY THE CONTRACTOR OF THE COLOR OF SIDING AND ROOFING PANELS. ENGINEER WILL CHOOSE COLOR FROM THE STANDARD LIST OF COLORS OFFERED BY THE METAL BUILDING MANUFACTURER. STRUCTURAL STEEL SHALL BE PRIMED ONLY.

3.0 ERECTION.

3.1 GENERAL. CONCRETE FOUNDATIONS SHALL BE LEVEL AND TRUE, AND SHALL BE INSPECTED AND APPROVED BEFORE THE STRUCTURAL STEEL WORK IS STARTED. ANCHOR BOLTS SHALL BE INSTALLED WHILE THE CONCRETE WORK IS IN PROGRESS; TEMPLATES OR OTHER GAUGING DEVICES SHALL BE USED TO ASSURE ACCURATE SPACING OF THE ANCHOR BOLTS. COLUMNS, RIGID FRAMES, AND WALLS OF SELF-FRAMING BUILDINGS SHALL BE PLUMBED IN BOTH DIRECTIONS, GUYED AND STAYED, AND ALL FRAMING ELEMENTS SHALL BE ACCURATELY SPACED TO ASSURE THE PROPER FITTING OF PREFABRICATED WALL AND ROOF COVERINGS.

3.2 RIGID FRAMES AND COLUMN BASES. RIGID FRAMES AND COLUMN BASES SHALL BE SET ACCURATELY, USING A NONSHRINKING GROUTING MORTAR TO OBTAIN UNIFORM BEARING ON THE CONCRETE AND TO MAINTAIN A LEVEL BASE LINE ELEVATION. ANCHORS AND ANCHOR BOLTS FOR SECURING RIGID FRAMES, COLUMNS, OR SILL MEMBERS TO FOUNDATIONS SHALL BE STEEL, UNPAINTED, SET ACCURATELY TO TEMPLATES, AND OF PROPER SIZE TO ADEQUATELY RESIST ALL APPLICABLE DESIGN LOADS AT THE BASE.

3.3 WALL CONSTRUCTION. ALL SHEETS OR PANELS SHALL BE APPLIED WITH THE CORRUGATIONS IN A VERTICAL POSITION. SHEETS OR PANELS SHALL BE SUPPLIED IN THE LONGEST OBTAINABLE LENGTHS. ALL SIDE AND END LAPS SHALL BE SEALED WITH THE JOINT SEALING MATERIAL SPECIFIED HEREIN. ALL WALLS SHALL BE FLASHED AND/OR SEALED AT THE TOP.

3.4 ROOF CONSTRUCTION. ALL ROOFING PANELS SHALL BE APPLIED WITH CORRUGATIONS PARALLEL TO THE SLOPE OF THE ROOF. THE ROOFING PANELS SHALL BE APPLIED IN THE LONGEST LENGTHS OBTAINABLE WITH END LAPS OCCURRING ONLY AT STRUCTURAL MEMBERS. ALL SIDE AND END LAPS SHALL BE SEALED AS WELL AS THE ROOF VENT, EAVES, AND RAKES.

REGISTERED PROFESSIONAL ENGINEER FREDERICK SENA 21632 STRUCTURAL STATE OF CALIFORNIA

NO.	DATE	REVISION	BY	APP.
1	7/85	AS-BUILT	XV	

Black & Veatch
Consulting Engineers
Walnut Creek, California

DESIGN BY	F. SENA
DESIGN CHECK BY	F. SENA
DRAWN BY	W.K. LUK
SR. PROJ. ENGR.	
APPROVED PRINCIPAL-IN-CHARGE	RPE NO. 21632
PROJECT ENGRG.	
MGR. SUPPORT SVCS.	
MANAGER WASTEWATER DEPT.	

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

COMPOST DRYING FACILITY

ROOF FRAMING PLAN & GENERAL NOTES

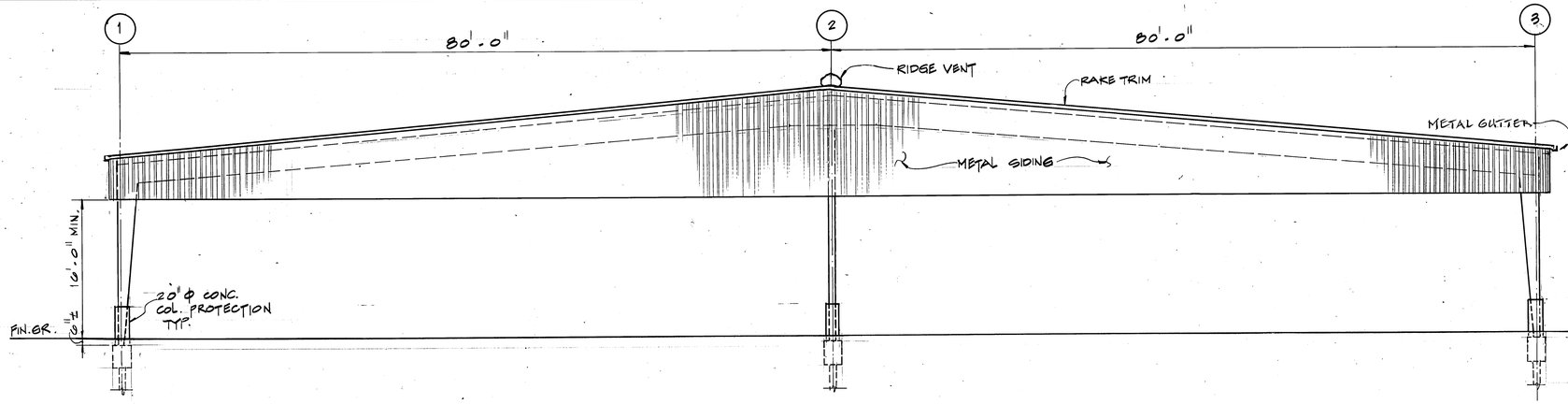
STRUCTURE OR ZONE DESIGNATION

SCALE AS SHOWN

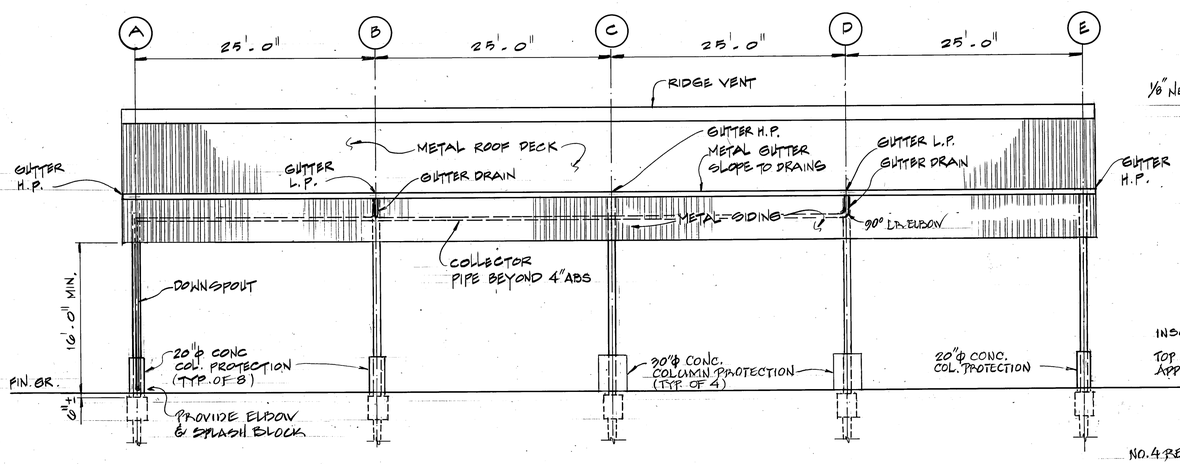
DATE 5-23-84

VG 1479

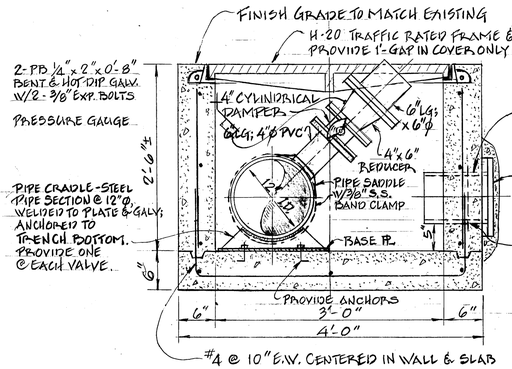
E-206 • 3/82



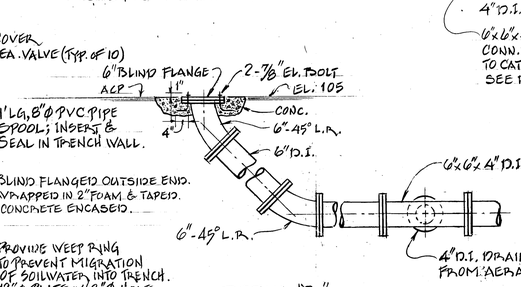
SOUTH ELEVATION
1/8" = 1'-0"



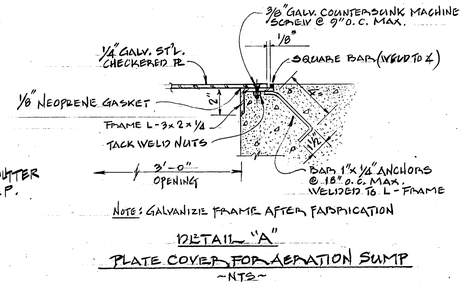
WEST ELEVATION (SHOWN)
EAST ELEVATION (SIMILAR)
1/8" = 1'-0"



AERATION TRENCH CROSS SECTION
Scale; 1" = 1'-0"

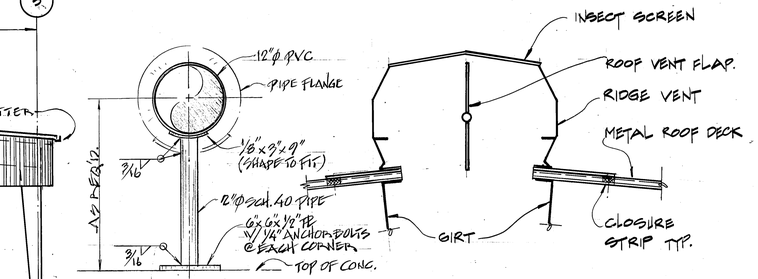


DETAIL "B"
CLEANOUT FOR DRAIN LINE
Scale; 1/2" = 1'-0"



NOTE: GALVANIZE FRAME AFTER FABRICATION

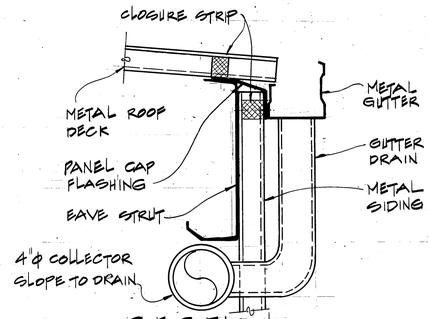
DETAIL "A"
PLATE COVER FOR AERATION SUMP
~NTS~



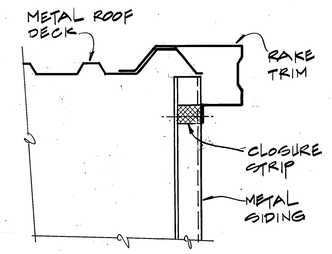
PIPE SUPPORT
(TYP. OF 4)

NOTES:
1. ALL MAT'LS TO BE STEEL GALV. AFTER FABRICATION.
2. WHERE GROUT PAD IS REQ'D. TO PLUMB PEDESTAL, MIN. PAD THICKNESS SHALL BE 1/2".

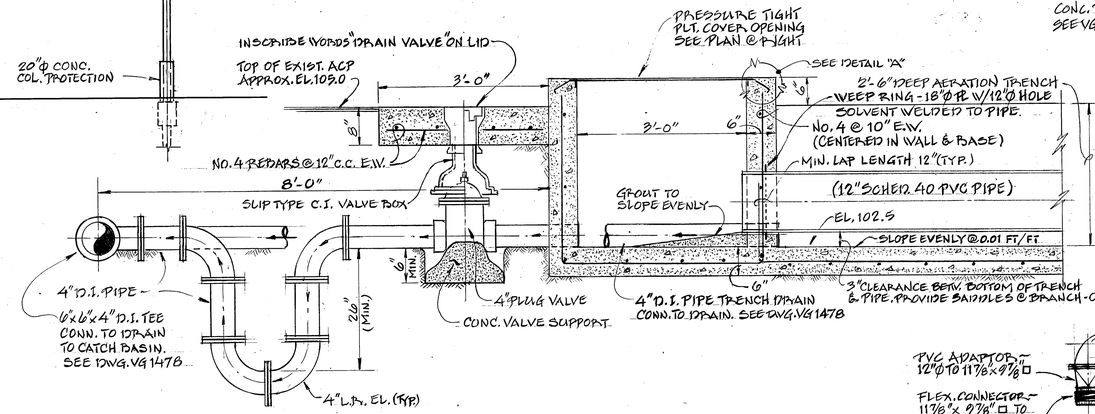
SECTION 4
1" = 1'-0"



SECTION 5
3" = 1'-0"

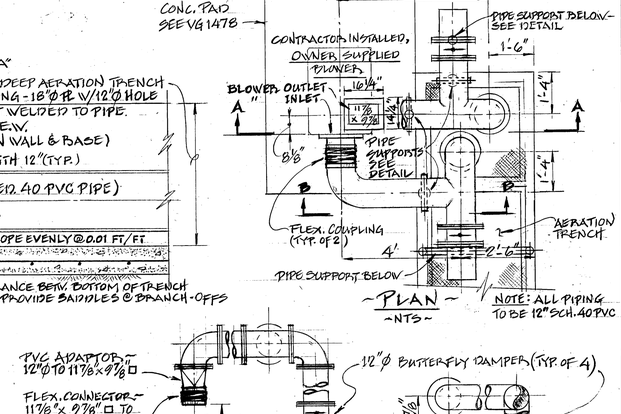


SECTION 6
3" = 1'-0"



SECTION OF AERATION TRENCH, SUMP & DRAINAGE LINE
Scale: 3/4" = 1'-0"

NOTES:
1. BURIED VALVE SHALL BE PROVIDED W/ EXTENSION STEM OPERATOR, W/ 2" SQ. AWWA NUT WITHIN 36" OF VALVE BOX COVER. NUT SHALL INDICATE THE DIRECTION OF ROTATION TO OPEN VALVE.
2. COAT BURIED PIPE & VALVE BOX PER SPECIFICATIONS.
3. VALVE BOX SHALL BE CLEANED OF ALL DEBRIS & SOIL.
4. D.I. = DUCTILE IRON, C.I. = CAST IRON



REGISTERED PROFESSIONAL ENGINEER FREDERICK SENA No. 4632 STRUCTURAL STATE OF CALIFORNIA

NO.	DATE	REVISION	BY	APP.
1	7/85	AS-BUILT		

Black & Veatch
Consulting Engineers
Walnut Creek, California

DESIGN BY	F. SENA
DESIGN CHECK BY	F. SENA
DRAWN BY	W. K. LUK
SR. PROJ. ENGR.	
APPROVED PRINCIPAL-IN-CHARGE	Frederick Sena RPE No. 51632
PROJECT ENGRG.	T. D. Schroeder
MGR. SUPPORT SVCS.	D. M. Dennis
MANAGER, WASTEWATER DEPT.	Walter J. Bishop

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

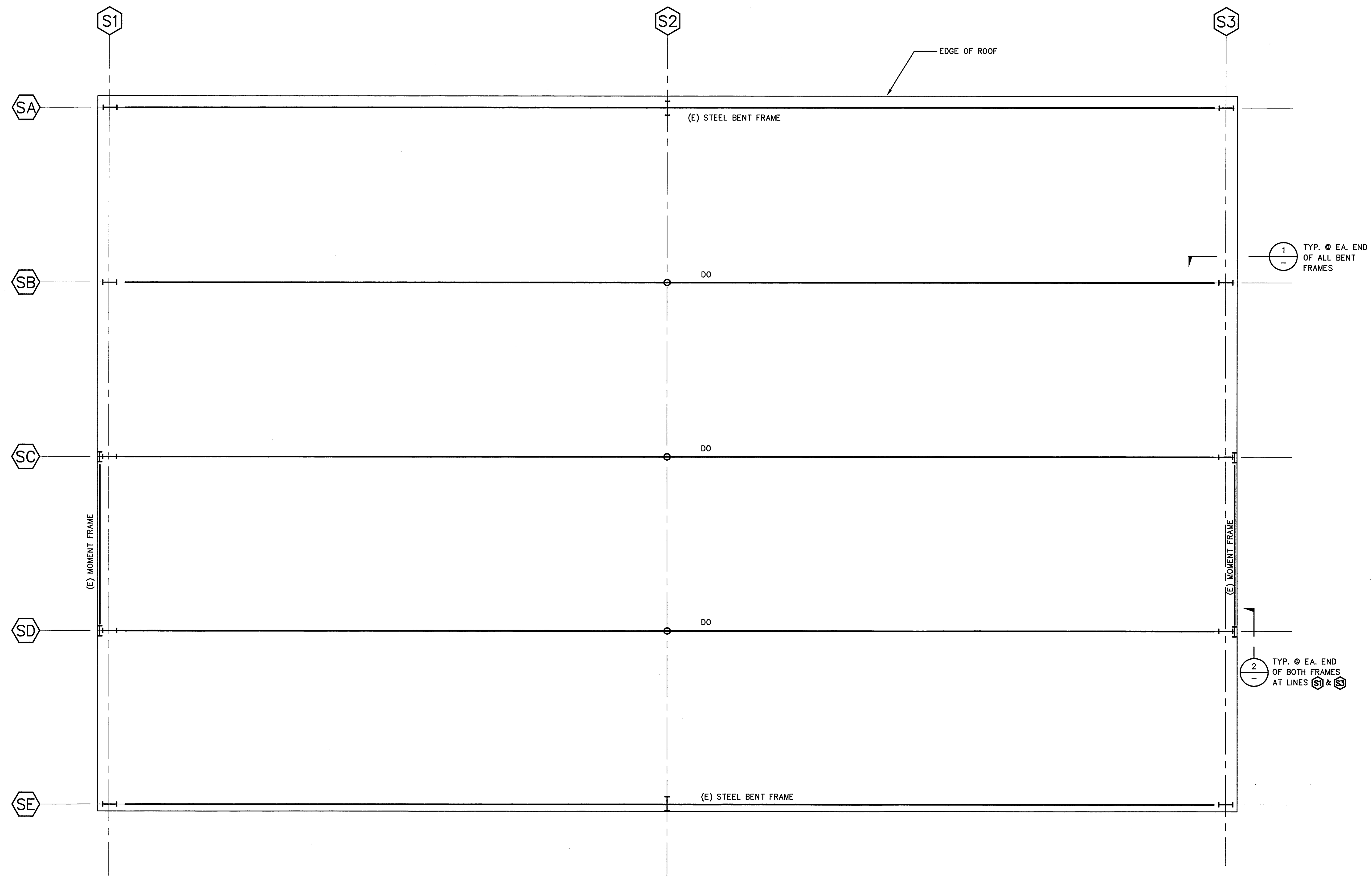
COMPOST DRYING FACILITY
ELEVATIONS & SECTIONS

STRUCTURE OR ZONE DESIGNATION	
SCALE	AS SHOWN
DATE	5-23-84

VG 1480

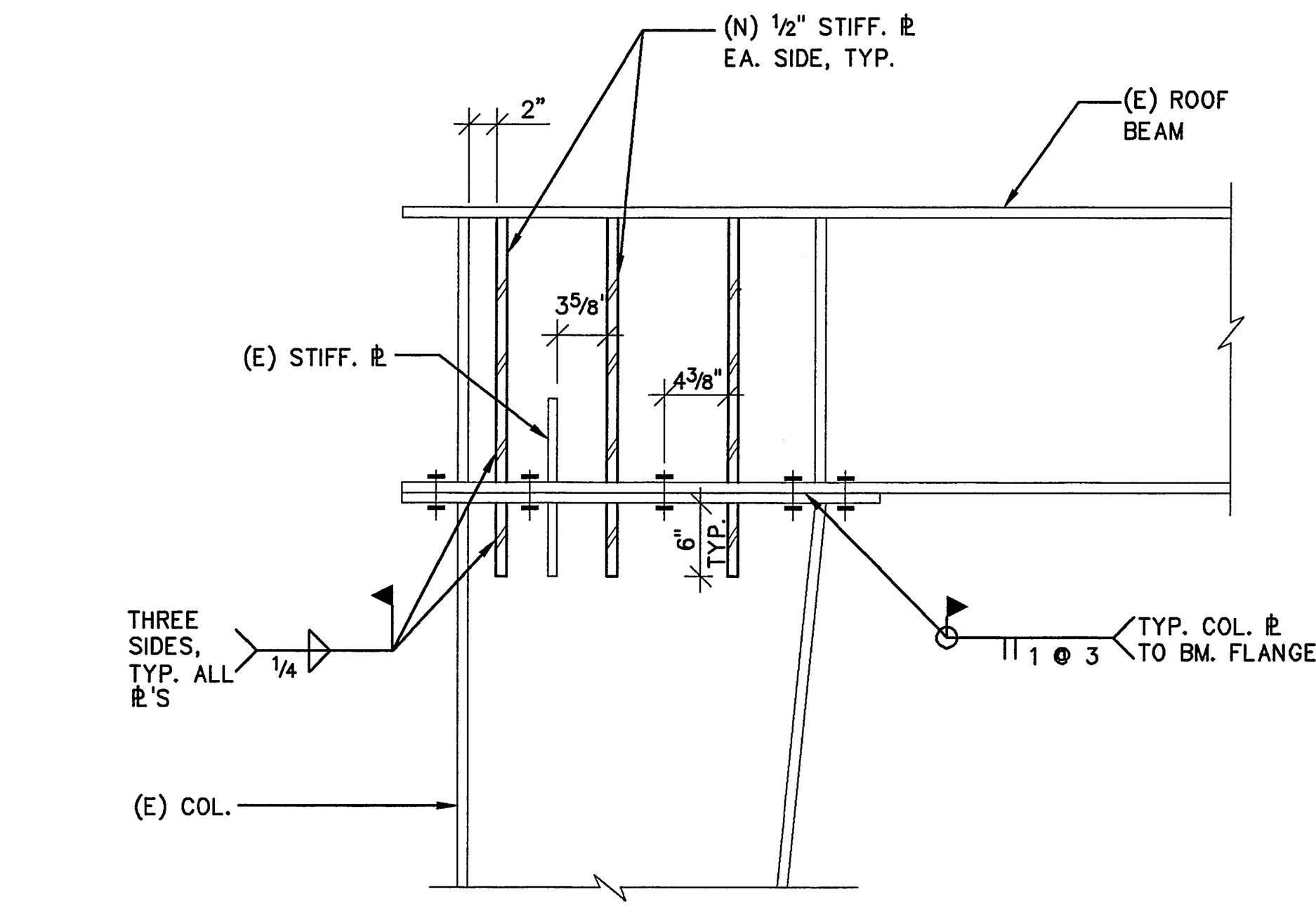
E-206 • 3/82

NO.	DATE	REVISION	BY	APP.
1	JAN'85	AS-BUILT		

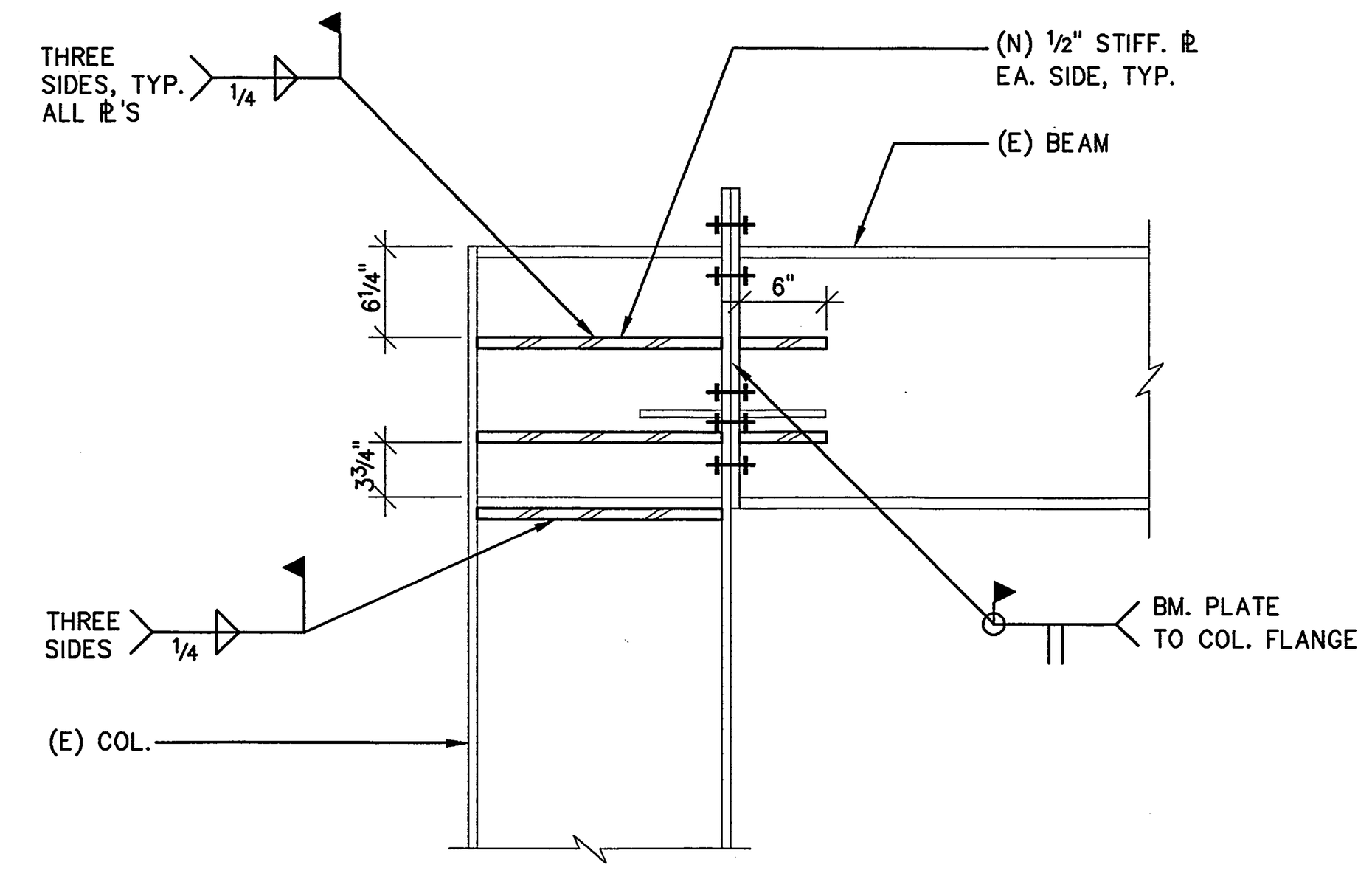


EXISTING ROOF PLAN

1/8"=1'-0"



1 CONNECTION STEFFENING AT EXISTING BENT FRAMES



2 CONNECTION STEFFENING AT EXISTING MOMENT FRAME

ROOF FRAMING NOTES

1. SEE GENERAL NOTES ON SHEET S1.1.
2. EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM EXISTING CONSTRUCTION DOCUMENTS AND SITE INVESTIGATION. THE CONTRACTOR SHALL VERIFY ALL EXISTING JOB CONDITIONS, REVIEW ALL DRAWINGS AND VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ALL DISCREPANCIES AND EXCEPTIONS BEFORE PROCEEDING WITH THE WORK.
3. THE REMOVAL, CUTTING, DRILLING, ETC. OF EXISTING WORK SHALL BE PERFORMED WITH GREAT CARE AND SMALL TOOLS IN ORDER NOT TO JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BUILDING. IF STRUCTURAL MEMBERS OR MECHANICAL, ELECTRICAL, OR ARCHITECTURAL FEATURES NOT INDICATED FOR REMOVAL INTERFERE WITH THE NEW WORK, THE ARCHITECT SHALL BE IMMEDIATELY NOTIFIED AND PRIOR APPROVAL SHALL BE OBTAINED BEFORE REMOVAL OF MEMBERS.
4. THE CONTRACTOR SHALL SAFELY SHORE EXISTING CONSTRUCTION WHEREVER EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF THE NEW WORK. ALL SHORING METHODS AND SEQUENCING OF DEMOLITION SHALL BE SPECIFIED BY A LICENSED STRUCTURAL ENGINEER TO BE RETAINED BY THE CONTRACTOR. SEE SPECIFICATIONS FOR DETAILED REQUIREMENTS.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES BEFORE BEGINNING WORK. SPECIAL CARE SHALL BE TAKEN TO PROTECT UTILITIES THAT ARE TO REMAIN IN SERVICE DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL PROMPTLY REPAIR DAMAGE CAUSED DURING OPERATIONS WITH SIMILAR MATERIALS AND WORKMANSHIP.

JOSEPH R. SUMMERS — REGISTERED PROFESSIONAL ENGINEER — No. 2185 — Exp. 12-31-01 — STRUCTURAL — STATE OF CALIFORNIA

100% SUBMITTAL

IF THIS SHEET IS LESS THA 30" X 42", IT IS A REDUCED PRINT SCALE ACCORDINGLY

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT No. 1
OAKLAND, CALIFORNIA

MAINTENANCE FACILITY SD 223
WASTE WATER TREATMENT PLANT
TRA PROJECT NO. 96007.02

N
0 4 8 16
GRAPHIC SCALE IN FEET

DASSE DESIGN INC.
STRUCTURAL ENGINEERS
33 New Montgomery St., Suite 850
San Francisco CA 94105
415/243-8400 – Fax 415/243-9165

The Ratcliff Architects
5856 DOYLE STREET
EMERYVILLE, CA. 94608
(510) 652-1972

NO.	DATE	REVISION	BY	REC.	APP.
1	3/20/98	EBMUD/PLAN CHECK COMMENT	JGW		

DESIGNED BY	JGW
DESIGN CHECKED BY	JGW
DRAWN BY	DMY/MTC
SR. PROJ. ENGR.	JGW
APPROVED	
PRINCIPAL-IN-CHARGE, R.P.E. NO.C	

EBMUD
PROJECT MGR. R.P.E. No.
PROJECT SUPERVISOR R.P.E. No.

ROOF FRAMING PLAN/DETAILS EXISTING SHED

FACILITY
SCALE SEE PLAN
DATE 23 MAR. 1998
DRAWING No. S2.5 1
SHEET OF
SPECIFICATION NO.

FILE: F:\969165X2\Struct\96165S21.dwg.DWG 02/09/98 at 15:23
XREF: 61651-tb1.dwg

Old Compost Storage Facility / Maintenance Shed

Year Built: 1985

Build Code Designed: 1982 UBC

Build Code Used for Evaluation: 2007 CBC and ASCE 7-05

Description: The building is a pre-engineered, steel building. It is a one-story, open frame canopy structure having approximate dimensions of 160 feet long, 100 feet wide and 25 feet high. The total area of this building is about 16,000 square feet.

The lateral-loads of the building are resisted by rigid frames that are spaced at 25 and 80 feet apart in the north-south and east-west directions, respectively.

The roof is a braced frame structure consisting of rigid frame beams, struts, purlins and bracings. The roof is covered by metal deck that may not be considered as part of lateral-load-resisting system.

The steel columns are supported on pile cap that are founded on 16-ton timber piles.

See Figures B-1 to B-3 (attached).

Findings

Both wind and seismic loads required by the current CBC are significantly higher than that used in the original design. This is due to new force equations, increases in values of several design parameters, and more stringent combined load effects. The new design loads have caused a 50 to 75 percent increase of forces in the framing joints, columns, anchors, and connections of building attachments. The following structural elements are found to be deficient under the Code prescribed loads.

1. Joints in the rigid frames are overstressed under the Code prescribed loads.
2. Inadequate lateral resisting system in north-south direction.
3. Column base anchors do not have adequate shear and pull-out strengths due to insufficient connection with pile caps.
4. Roof tension rods appear to be inadequate to transfer loads to rigid frames.
5. Metal siding connections appear inadequate to withstand the code prescribed loads.

Recommended Retrofit Elements

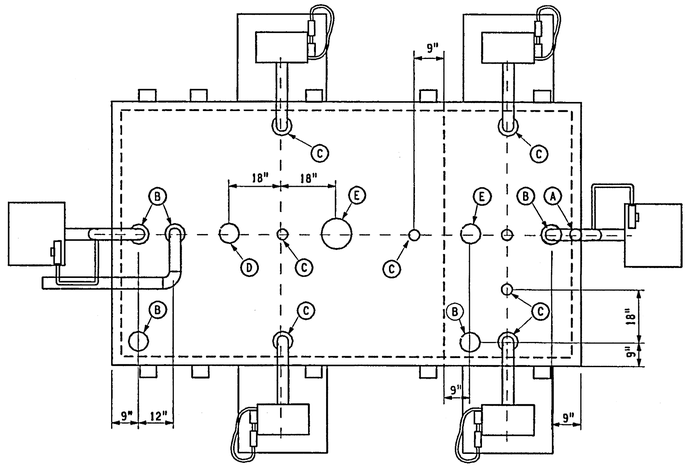
1. Stiffen moment joints with knee bracings
2. Install a rigid frame or add bracings in existing framing in N-S direction along the center frame of building.
3. Install additional column base anchors by modifying existing base plate and connections.
4. Replace roof tension rods with larger rods and strengthen rod / frame connections.
5. Upgrade metal siding connection with additional metal fasteners and, if necessary, additional struts.


2H0120

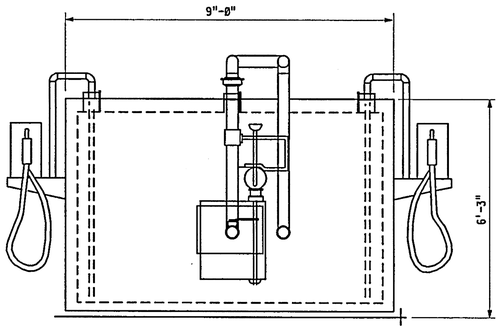
Fueling Station

SCHEDULE OF OPENINGS				
MARK	REQ'D	SIZE	TYPE	REMARKS
A	1	2"	MNPT	MONITOR
B	5	4"	MNPT	
C	7	2"	MNPT	
D	2	6"	MNPT	PRI. E-VENT
E	1	8"	MNPT	SEC. E-VENT

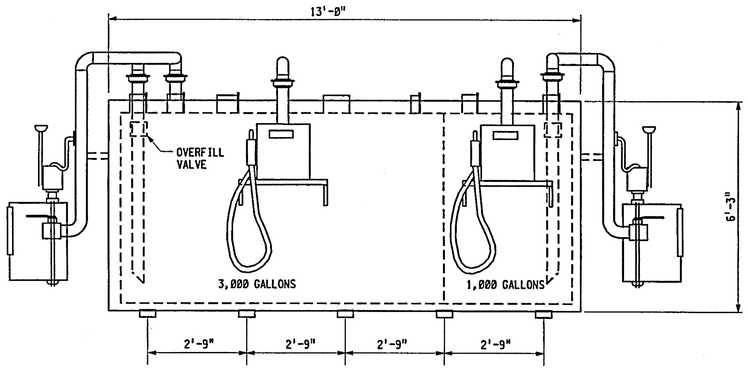
ESTIMATED TANK WEIGHT: 15,000 LBS



TOP VIEW

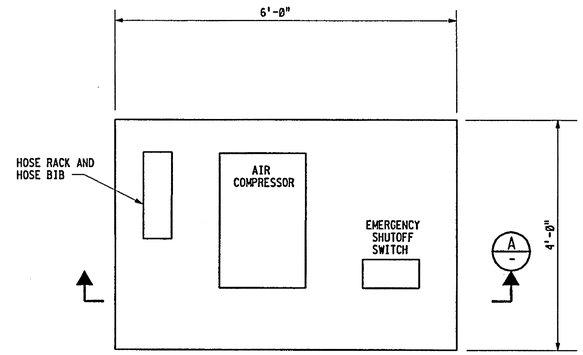


END VIEW

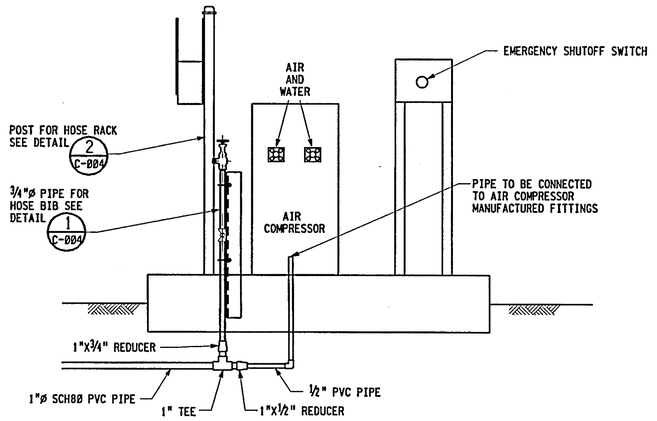


SIDE VIEW

FUEL TANK DETAIL 1/C-004



PLAN



SECTION A/-

EQUIPMENT PAD DETAIL 2/C-004
3/4"=1'-0"

NOTES

1. CONTRACTOR TO FURNISH AND INSTALL 4000 GALLON DUAL COMPARTMENT, DOUBLE WALLED FIRE RATED TANK AS DESCRIBED IN SPECIFICATIONS SECTION 11110. ALL APPURTENANCES, INCLUDING BUT NOT LIMITED TO, VAPOR RECOVERY SYSTEM, FILL PORTS, DISPENSING PUMPS, SHALL BE PURCHASED AND INSTALLED AS A COMPLETE PACKAGE.
2. CONTRACTOR TO SIBMIT STRUCTUAL CALCULATIONS FOR SEISMIC ANCHORAGE OF THE FUEL TANK IN ACCORDANCE WITH SPECIFICATIONS SECTION 01415.
3. INNER AND OUTER TANKS SHALL BE CONSTRUCTED PER UL-42. TANKS SHALL BEAR UL 2085 LABEL FOR "INSULATED SECONDARY CONTAINMENT ABOVE GROUND TANK FOR FLAMMABLE LIQUIDS".

3/15/04
REGISTERED PROFESSIONAL ENGINEER
PAM HOPKINS
No. C42277
Exp. 03/31/04
CIVIL
STATE OF CALIFORNIA

USER: ashas
DATE: 07-MAR-2004 11:25
FILE: J:\CADD\wrf\sd279\279m002_r0a

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGN	DESIGN BY: A. SIDHU	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT No. 1 OAKLAND, CALIFORNIA
	DRAWN BY: R. EBY	
REVIEW	DESIGN CHECKED BY: R.P.E. No C 24496 T.N. CHEN	MAIN WASTEWATER TREATMENT PLANT FUELING FACILITY RELOCATION MECHANICAL FUEL TANK AND PIPING
	CONSTRUCTABILITY CHECKED BY: D. SPOTTS	
	ELECTRICAL CHECKED BY: R.P.E. No.	
	PROJECT ENGINEER R.P.E. No. A. SIDHU	
	PROJECT MANAGER R.P.E. No. C 42277 P. HOPKINS	
	RECOMMENDED: SR. ENGINEER R.P.E. No. C 24496 T.N. CHEN	FACILITY: WWTP SCALE: DATE: OCTOBER 2003 DRAWING No. SD279-M-002 SHEET 8 OF 18

2021 Criteria and

Seismic Hazard Information

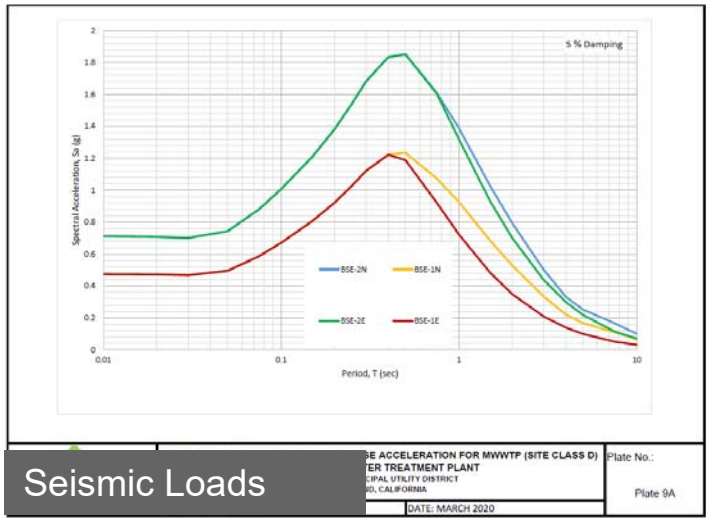
Evaluation Criteria

- **Evaluation Standards:** ASCE 41-17, ACI 350.3-06, ASCE 7-16, CBC

ASCE 41-17 Earthquake Levels for Existing Structures

ASCE 41-17 Designation	Probability of Exceedance (p/e)	Equivalent Return Period (Years)
BSE-2E	5% p/e in 50 years	975
BSE-1E	20% p/e in 50 years	225

- **Seismic Hazard Information:** 2020 Geotechnical Investigation Findings



Seismic Loads

Liquefaction