

CITY OF SANTA ANA

BUILDING PERMIT WORKSHEET

PLEASE PRINT

1/14/09:forms/Bldg.App.Worksheet

PROJECT ADDRESS: 1702 E. FAIRHAVEN		SUITE:	SAPIN # 10171102	
USE OF BUILDING:	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER
NATURE OF WORK: NEW ADD ALTER/T.I. DEMO REROOF REPAIR SIGN MISC				MASTER ID#
NEW/ADDITION/ALTERATION:				
1ST FL.. _____ SF	BASEMENT: YES/NO _____ SF	NO. OF STORIES: _____		
2ND FL.. _____ SF	PATIO/ENCL. PATIO: _____ SF	BLDG. HEIGHT: _____		
TOTAL OF OTHER FLS: _____ SF	RES. REMODEL: _____ SF	PROPOSED USE: _____		
GARAGE/CARPORT: _____ SF	ALTER/T.I.: _____ SF			
JOB DESCRIPTION (non-residential projects see reverse side of this application): <u>ADD EXTERIOR EMERGENCY EGRESS DOOR & STAIRWAY FROM SECOND FLOOR; STAIR FOR CONVENIENCE ONLY, NOT REQUIRED BY CODE, NO ADDITIONAL S.F., NO OTHER IMPROVEMENTS</u>				
BUILDING OWNER'S NAME: FAIRHAVEN MEMORIAL PARK,			PHONE NO: 714-922-2920	
ADDRESS: 1702 E. FAIRHAVEN		CITY: SANTA ANA	STATE: CA	ZIP: 92705
TENANT'S NAME (Comm/Ind):			PHONE NO:	
CONTRACTOR'S NAME:		STATE CONTR. #:	LICENSE CLASS:	PHONE NO:
ADDRESS:		CITY:	STATE:	ZIP:
WORKERS COMP. POLICY#:	EXP. DATE:	INSURANCE COMPANY:	SANTA ANA BUS. LIC. #:	
ARCHITECT/ENGINEER: ANDERSON & ASSOCIATES		STATE LICENSE #: C-25199	PHONE NO: 714-632-9055	
ADDRESS: 1211 N. TUSTIN AVE		CITY: ANAHEIM	STATE: CA	ZIP: 92807
CONTACT NAME: MIKE PADIAN			PHONE NO: 949-370-9778	
E-MAIL ADDRESS: PADIANTEAM@AOL.COM			FAX NO:	

OFFICE USE ONLY: ACC OR SPC (CIRCLE ONE) C HRS PER 2.500 BLDG. FEE \$ _____

OCC. GROUP: _____ RECEIPT #: _____ P/C FEE PD \$ 102.00

TYPE OF CONSTR: _____ VALUATION: \$ 2,000 SUBMITTAL DATE: 4-7-11

FIRE SPKR: YES / NO AC: YES / NO FLOOD ZONE: _____ PROCESSED Bar

RES. DEV. FEE: YES / NO PRIOR DWELLING UNIT: YES / NO COMMENTS: _____

PLANNING OK TO CHECK & DATE _____ BLDG. DEPT. APPROVAL & DATE _____

PLNG CONDITIONS: _____

PLEASE CHECK ALL THAT APPLY TO YOUR PROJECT

JOB DESCRIPTION CHECKLIST:

- | | |
|---|---|
| <input type="checkbox"/> Additional square footage | <input type="checkbox"/> Partition walls |
| <input type="checkbox"/> Awnings | <input type="checkbox"/> Rated corridors |
| <input type="checkbox"/> Canopy | <input type="checkbox"/> Rated shafts |
| <input type="checkbox"/> Ceiling work | <input type="checkbox"/> Roof mounted equipment |
| <input type="checkbox"/> Change of occupancy (use) | <input type="checkbox"/> Security bars |
| <input type="checkbox"/> Disabled accessible (H/C) restrooms | <input type="checkbox"/> Screening for equipment |
| <input type="checkbox"/> Dust collector | <input type="checkbox"/> Skylights |
| <input type="checkbox"/> Elevator shaft | <input checked="" type="checkbox"/> Stairs |
| <input checked="" type="checkbox"/> Exterior doors or windows | <input type="checkbox"/> Storefront/facade improvements |
| <input type="checkbox"/> Equipment pads | <input type="checkbox"/> Storage racks or shelving over 5'-9" |
| <input type="checkbox"/> Interior demo | <input type="checkbox"/> Walk-in coolers |
| <input type="checkbox"/> Kitchen equipment | |

ITEMS REQUIRING SEPARATE BUILDING PERMIT APPLICATIONS:

- Block wall
- Card readers
- Complete demo
- Fence
- Fire signaling system
- Fire sprinklers
- Flagpole
- Lawn sprinkler system
- Light Standards
- Parking lot repaving
- Parking lot restriping
- Pedestrian protection
- Pool/Spa
- Signs
- Spray booth
- Temporary power pole
- Trash enclosure



September 15, 2011

Mr. Fred Heidari, Deputy Building Official
City of Santa Ana Planning & Building Agency (M-190)
20 Civic Center Plaza
Santa Ana, CA 92702

RE: Request for Extension
Plan Check No. 10171102

Address: 1702 E. Fairhaven
Submittal Date: 04/07/2011
Current Expiration Date: 10/04/2011

RECEIVED
SEP 26 2011
City of Santa Ana

Dear Mr. Heidari

On behalf of Fairhaven Memorial Park, and as a follow-up to your correspondence of September 1, 2011 (copy attached), the purpose of this letter is to request an extension of the plan check period for the above subject project for 180 days. By my calculations, the revised deadline to pull a building permit would be March 30, 2012.

The reason for the delay in pulling the permit has been the inability to find a reasonable proposal for the construction. Fairhaven has put the project out to bid several times, and believes it now has an acceptable bidder. Fairhaven is currently reviewing this contractor's background and credentials, and while they are confident that the contract will be awarded shortly, having the full extension of 180 days will provide adequate time for another round of bidding if necessary.

If you have any questions about this issue, please contact me at 949-370-9778, or the owner, Mr. Leo O'Connor, at 714-633-1442.

Respectfully,

Mike Padian
Padian Team Consulting, Inc.

CC: Leo O'Connor, Fairhaven Memorial

*OK
Accepted
Fred H.
New Extension Expires
ON 4-2-12*

MAYOR
Miguel A. Pulido
MAYOR PRO TEM
Claudia C. Alvarez
COUNCILMEMBERS
P. David Benavides
Carlos Bustamante
Michele Martinez
Vincent F. Sarmiento
Sal Tinajero



CITY MANAGER
David N. Ream
CITY ATTORNEY
Joseph W. Fletcher
CLERK OF THE COUNCIL
Maria D. Huizar

CITY OF SANTA ANA

PLANNING & BUILDING AGENCY
20 Civic Center Plaza • P.O. Box 1988
Santa Ana, California 92702
www.santa-ana.org

September 01, 2011

Mike Padian

14 Crucillo

Rancho Santa Margarita, CA 92688

dear Plan Check Contact:

plan check no: 10171102
address of job site: 1702 E Fairhaven Ave
date of submittal: 04/07/2011
expiration date: 10/04/2011

The subject plan(s) and related paperwork have been on file over 145 days since the date of submittal. In accordance with the 2007 California Building Code (CBC), Appendix Chapter 1, Section 105.3.2, as amended by Santa Ana Municipal Code Section 8-43, the plan check(s) will be expiring.

The Building Official may extend the plan check(s) for a period not exceeding 180 days. If you would like to extend your plan check(s), please send your request to:

Mr. Fred Heidari, Deputy Building Official
City of Santa Ana Planning & Building Agency (M-19)
20 Civic Center Plaza
Santa Ana, CA 92702

If you submitted electrical, plumbing and mechanical plans on the same date, they will also expire.

If you do not want to extend your plan check, the plans and and/or paperwork may be discarded by:
11/03/2011

Should you desire to resubmit your expired plan(s), you may do so upon payment of new plan check fees. A new plan check number will be assigned. New submittal of plan(s) must comply with all applicable regulations effective at the time of the new submittal.

If you have any questions, please call a Permit Technician at (714) 647-5800, Monday through Friday between the hours of 8 a.m. and 4 p.m.

Sincerely,


Patricia Link
Permit Supervisor

9/12

**CITY OF SANTA ANA
PLAN CHECK - CHECKLIST**

JOB ADDRESS: 1702 E Fairhaven
 TRACKING #: 10171102 DATE: 4-7-11

FOR PLANCHECK STATUS CALL (714) 647-5800

PLEASE INITIAL EACH ITEM BELOW

- MP 1. I agree to pay a plancheck fee established for this project with the understanding that this payment is not a guarantee that a permit will be issued and that this fee is not refundable once a plancheck has commenced.
- MP 2. I understand that I may request an "Accelerated Plancheck" at an additional cost to me. This plancheck will be performed by an in-house plan checker with the intention of reducing plancheck time for the Building & Safety Division.
- MP 3. I understand that the project valuation (from which plancheck and permit fees are calculated) will be reviewed during the plancheck process and that said valuation shall be adjusted up or down in accordance with established fee computation regulations.
- N/A 4. I understand that I shall submit separate plans, applications and plancheck fees for the following when plan check is required:

a. Electrical Plans - 2 complete sets	c. Mechanical Plans - 2 complete sets
b. Plumbing Plans - 3 complete sets	d. Grading Plans - 3 complete sets
- N/A 5. I understand that I shall visit the Public Works Department to verify whether a field inspection of the property is required. I understand that prior to the issuance of the Building permit I am required to obtain Public Works Agency approval if my project valuation exceeds \$30,000 or has added plumbing fixtures, or added bedrooms, or exceeds 500 sq.ft.

AGREED TO BY APPLICANT OR AGENT

Applicant's Signature Michael Padian
 Print Name MICHAEL PADIAN Address 14 CRUCIULO, RSM, CA
 Telephone Number 949-370-9778 Fax _____

FOR OFFICE USE ONLY: "Checklist of items discussed" APPROVALS & FEES REQUIRED: Y/N

- | | | |
|--|---|---|
| 1. <input checked="" type="checkbox"/> Planning Department | 7. <input checked="" type="checkbox"/> Title 24 (Energy) | 14. <input type="checkbox"/> Constr. Act. Req. |
| 2. <input type="checkbox"/> Public Works Agency <u>NO</u> | 8. <input checked="" type="checkbox"/> Title 24 (Disabled Access) | 15. <input type="checkbox"/> Res. Dev. Fees <u>NO</u> |
| 3. <input checked="" type="checkbox"/> Fire Department | 9. <input type="checkbox"/> Roof Mounted Equip. <u>NO</u> | 16. <input type="checkbox"/> SMIP |
| 4. <input checked="" type="checkbox"/> Police Department | 10. <input type="checkbox"/> List of Subcontr. | 17. <input type="checkbox"/> Microfilming |
| 5. <input type="checkbox"/> School District <u>NO</u> | 11. <input type="checkbox"/> Bldg. Pmt. Info. | 18. <input type="checkbox"/> Const. Debris Recyc. |
| 6. <input type="checkbox"/> Health Department <u>NO</u> | 12. <input type="checkbox"/> Summary of Appr. Req. | 19. <input type="checkbox"/> FCWP Surcharge <u>NO</u> |
| | 13. <input type="checkbox"/> FY Information | 20. <input type="checkbox"/> LOA/Owner-Builder Ver. |

PERMIT TECHNICIAN Bulman

STRUCTURAL CALCULATIONS

Exterior Stair

PROJECT:

Fairhaven Memorial Park & Mortuary
1702 East Fairhaven, Santa Ana
CA 92705

Prepared For

Anderson Associates
1211 N. Tustin Avenue
Anaheim, CA 92807

R E C E I V E D

APR 07 2011

City of Santa Ana

Prepared By

A. N. Wong
WA Consulting Engineers



Ariv Wong
3/28/11

Project No.: AA 011-0014
Date: March 15, 2011

WA

Consulting Engineers

180 S. Prospect Ave., Suite 110
Tustin, CA 92780
(714) 838-9898 ph.
(714) 838-9899 fx.

Project	Fairhaven	Prepared sb	Date	3/14/2011
Subject		By:		
Job No.	011-0024	Checked	By:	
		Sheet No.	1	Rev. No.

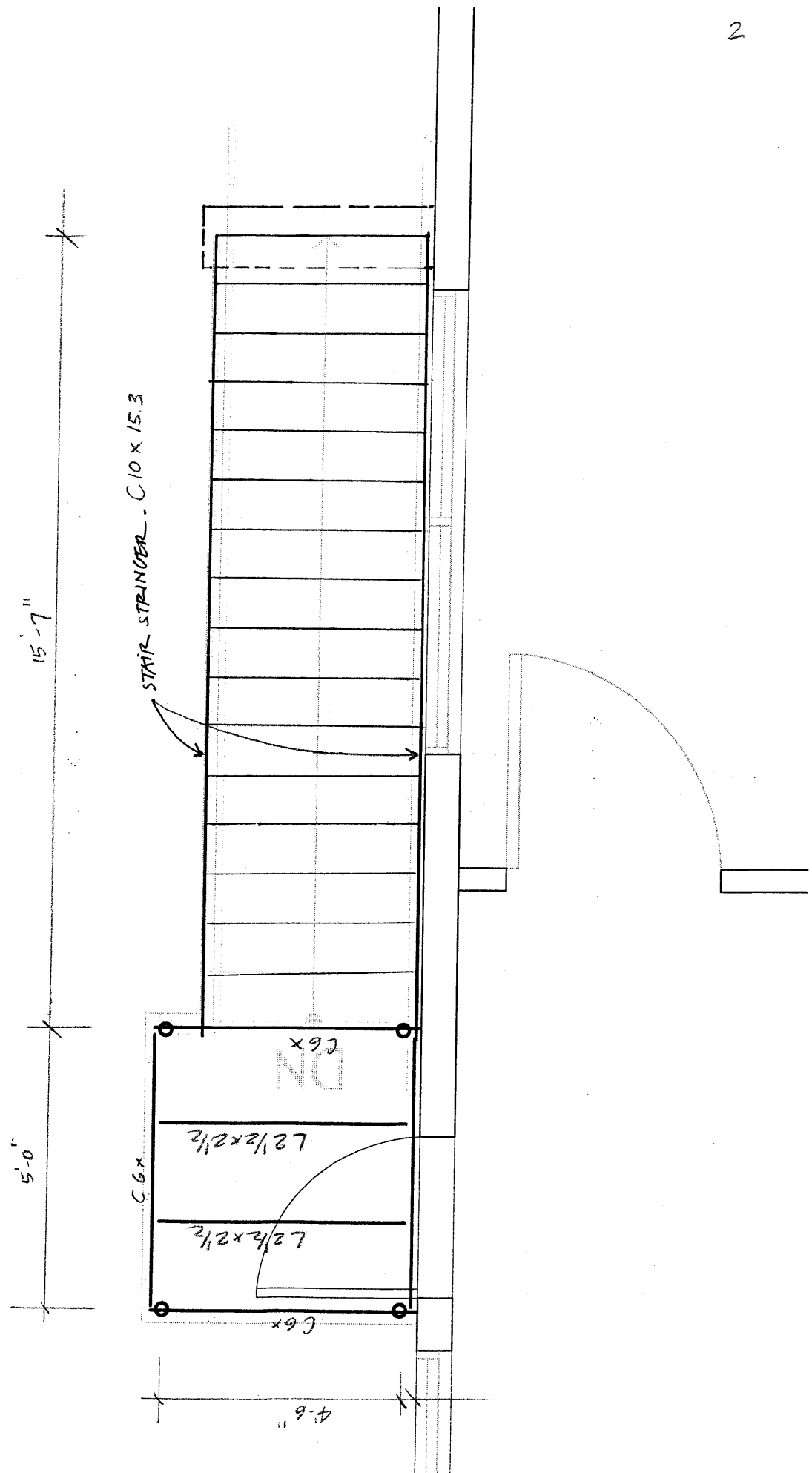
Stair Loads

Dead Load:

1.5" concrete fill	18.0 psf	
steel pan	3.0 psf	
Stringer C Channel	10.5 psf	
Guardrail, wiremesh etc	3.0 psf	
Total Dead Loads =	34.5 psf	Use = 35.0 psf

Live Load:

Stair Live Loads 100.0 psf



15'-7"

5'-0"

STAIR STRINGER - C10 x 15.3

C6x

L2 1/2 x 2 1/2

L2 1/2 x 2 1/2

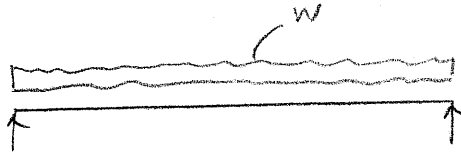
C6x

C6x

4'-6"

DN

STAIR STRINGER



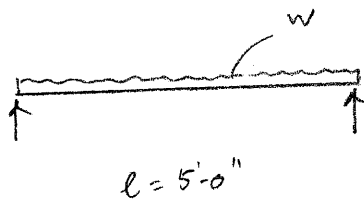
$$l = 15'-7''$$

$$W_{DL} = \frac{4'}{2} \times 35 \text{ psf} = 70 \text{ lbs/ft}$$

$$W_{LL} = \frac{4'}{2} \times 100 \text{ psf} = 200 \text{ lbs/ft}$$

∴ Use C10x15.3

L 2 1/2 x 2 1/2 at landing.



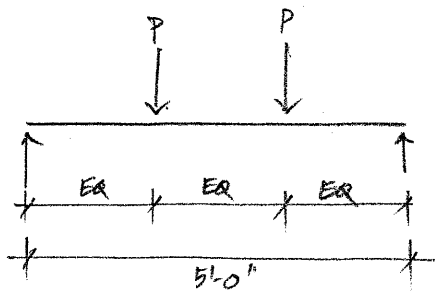
$$l = 5'-0''$$

$$W_{DL} = \frac{5'}{3} \times 35 \text{ psf} = 59 \text{ psf}$$

$$W_{LL} = \frac{5'}{3} \times 100 \text{ psf} = 167 \text{ psf}$$

∴ Use L 2 1/2 x 2 1/2 x 1/4

C6x8.2, Longside.

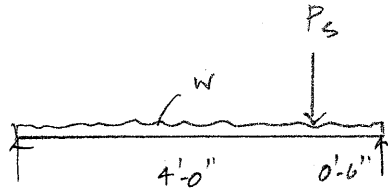


$$P_{DL} = 1.67' \times 5' \times 0.5 \times 35 \text{ psf} = 146 \text{ lbs}$$

$$P_{LL} = 1.67' \times 5' \times 0.5 \times 100 \text{ psf} = 418 \text{ lbs}$$

∴ Use C6x8.2.

C6x8.2 at stringer



$l = 4'-6"$

$w_{DL} = \frac{1.67}{2} \times 35 \text{ psf} = 29 \text{ pcf}$

$w_{LL} = \frac{1.67}{2} \times 100 \text{ psf} = 84 \text{ pcf}$

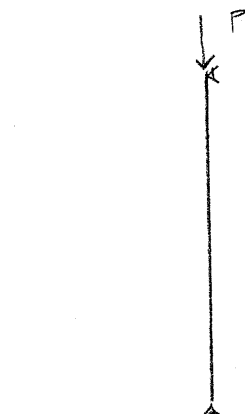
$P_{\text{STRINGER DL}} = 546 \text{ lbs.}$

$LL = 1560 \text{ lbs}$

ALL STAIR STRINGER

∴ use C6x8.2

Pipe Column



$h = 9'-6"$

LANDING

STRINGER

$P_{DL} = \left(\frac{5}{2} \times \frac{4.5}{2} \times 35 \text{ psf} \right) + (546 \text{ lbs}) = 743 \text{ lbs}$

$P_{LL} = \left(\frac{5}{2} \times \frac{4.5}{2} \times 100 \text{ psf} \right) + (1560 \text{ lbs}) = 2123 \text{ lbs}$

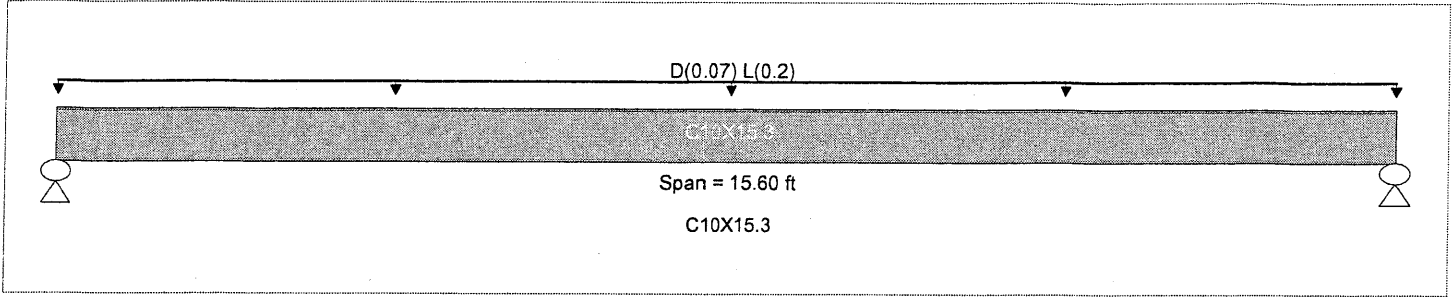
∴ use 3" φ STD PIPE

Steel Beam File: J:\2011 PROJECTS\WAAA 011.0024 Fair Haven\Calculation\stair stringer.ec6
 Lic. #: KW-06006227 ENERCALC, INC. 1983-2011, Ver. 6.2.00, N:12783 Licensee :

Description : Stair Stringer C10x15.3

Material Properties Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-05

Analysis Method : Allowable Stress Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending
 Load Combination 2006 IBC & ASCE 7-05
 Fy : Steel Yield : 36.0 ksi
 E : Modulus : 29,000.0 ksi



Applied Loads Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.070, L = 0.20 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY Design OK

Maximum Bending Stress Ratio =	0.666 : 1	Maximum Shear Stress Ratio =	0.068 : 1
Section used for this span	C10X15.3	Section used for this span	C10X15.3
Mu : Applied	8.213 k-ft	Vu : Applied	2.106 k
Mn / Omega : Allowable	12.340 k-ft	Vn/Omega : Allowable	31.042 k
Load Combination	+D+L+H	Load Combination	+D+L+H
Location of maximum on span	7.800ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward L+Lr+S Deflection	0.138 in Ratio = 1360		
Max Upward L+Lr+S Deflection	0.000 in Ratio = 0 <360		
Max Downward Total Deflection	0.186 in Ratio = 1007		
Max Upward Total Deflection	0.000 in Ratio = 0 <240		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega	
Overall MAXimum Envelope															
+D	Dsgn. L = 15.60 ft	1	0.666	0.068	8.21		8.21	20.61	12.34	1.14	1.00	2.11	51.84	31.04	
+D+L	Dsgn. L = 15.60 ft	1	0.173	0.018	2.13		2.13	20.61	12.34	1.14	1.00	0.55	51.84	31.04	
+D+L+H	Dsgn. L = 15.60 ft	1	0.666	0.068	8.21		8.21	20.61	12.34	1.14	1.00	2.11	51.84	31.04	

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.1858	7.878		0.0000	0.000

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.0482	7.878	0.0000	0.000
L Only	1	0.1376	7.878	0.0000	0.000
D+L	1	0.1858	7.878	0.0000	0.000

Vertical Reactions - Unfactored

Load Combination	Support 1	Support 2
Overall MAXimum	2.106	2.106
D Only	0.546	0.546
L Only	1.560	1.560
D+L	2.106	2.106

Support notation : Far left is #1 Values in KIPS

Wong & Associates
 Consulting Engineers, Inc.
 180 S. Prospect Ave. Suite 110
 Tustin, CA 92780

Title : Fair Haven
 Dsgnr: sb
 Project Desc.:

Job # 011-0024

Project Notes :

6

Printed: 15 MAR 2011, 1:53PM

Steel Beam

File: J:\2011 PROJECTS\A\A\A 011.0024 Fair Haven\Calculation\stair stringer.ec6
 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

Lic. # : KW-06006227

Licensee :

Description : Stair Stringer C10x15.3

Steel Section Properties : C10X15.3

Depth	=	10.000 in	I xx	=	67.30 in ⁴	J	=	0.209 in ⁴
Web Thick	=	0.240 in	S xx	=	13.50 in ³	Cw	=	45.50 in ⁶
Flange Width	=	2.600 in	R xx	=	3.870 in	Ro	=	4.190 in
Flange Thick	=	0.436 in	Zx	=	15.900 in ³	H	=	0.884 in
Area	=	4.480 in ²	I yy	=	2.270 in ⁴			
Weight	=	15.300 plf	S yy	=	1.150 in ³	Wno	=	7.480 in ²
Kdesign	=	1.000 in	R yy	=	0.711 in	Sw	=	2.550 in ⁴
			Zy	=	2.340 in ³	Qf	=	5.030 in ³
rts	=	0.869 in				Qw	=	8.030 in ³
Ycg	=	5.000 in				Wn2	=	4.380
Xcg	=	0.634 in				Sw2	=	1.680
Xp	=	0.224 in				Sw3	=	0.840
Eo	=	0.796 in						

Steel Beam

File: J:\2011 PROJECTS\AAIAA-011-0024 Fair Haven\Calculation\stair stringer.ec6
 ENERCALC, INC. 1983-2011, Ver. 6 2.00, N:12783

Lic. #: KW-06006227

Licensee :

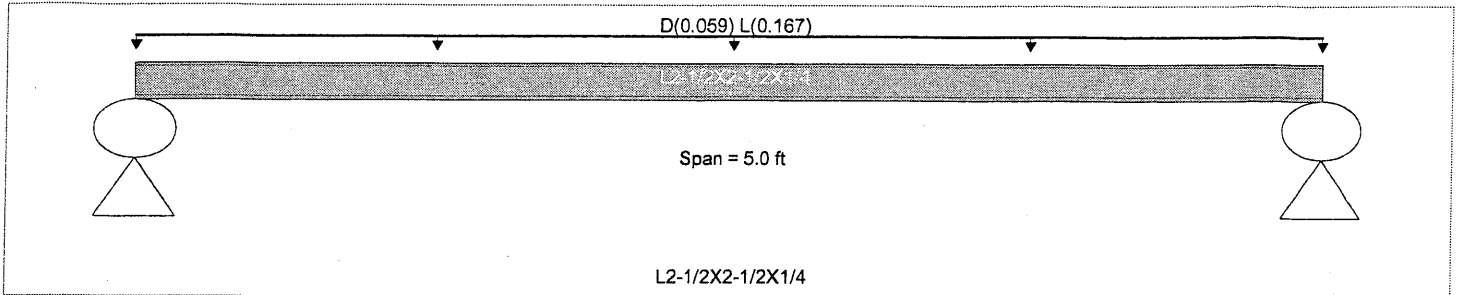
Description : L 2 1/2 x 2 1/2 x 1/4

Material Properties

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-05

Analysis Method : Allowable Stress Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending
 Load Combination 2006 IBC & ASCE 7-05

Fy : Steel Yield : 36.0 ksi
 E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0590, L = 0.1670 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.847 : 1	Maximum Shear Stress Ratio =	0.070 : 1
Section used for this span	L2-1/2X2-1/2X1/4	Section used for this span	L2-1/2X2-1/2X1/4
Mu : Applied	0.706 k-ft	Vu : Applied	0.5650 k
Mn / Omega : Allowable	0.834 k-ft	Vn/Omega : Allowable	8.084 k
Load Combination	+D+L+H	Load Combination	+D+L+H
Location of maximum on span	2.500ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward L+Lr+S Deflection	0.118 in Ratio = 508		
Max Upward L+Lr+S Deflection	0.000 in Ratio = 0 <360		
Max Downward Total Deflection	0.160 in Ratio = 375		
Max Upward Total Deflection	0.000 in Ratio = 0 <240		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega	
Overall MAXimum Envelope															
+D	Dsgn. L = 5.00 ft	1	0.847	0.070	0.71		0.71	1.39	0.83	1.14	1.00	0.57	13.50	8.08	
+D+L+H	Dsgn. L = 5.00 ft	1	0.221	0.018	0.18		0.18	1.39	0.83	1.14	1.00	0.15	13.50	8.08	
	Dsgn. L = 5.00 ft	1	0.847	0.070	0.71		0.71	1.39	0.83	1.14	1.00	0.57	13.50	8.08	

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.1596	2.525		0.0000	0.000

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.0417	2.525	0.0000	0.000
L Only	1	0.1180	2.525	0.0000	0.000
D+L	1	0.1596	2.525	0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.565	0.565
D Only	0.148	0.148
L Only	0.418	0.418
D+L	0.565	0.565

Wong & Associates
 Consulting Engineers, Inc.
 180 S. Prospect Ave. Suite 110
 Tustin, CA 92780

Title : Fair Haven
 Dsgnr: sb
 Project Desc.:
 Project Notes :

Job # 011-0024
 8

Printed: 15 MAR 2011, 1:58PM

Steel Beam File: J:\2011 PROJECTS\AAWA 011.0024 Fair Haven\Calculation\stair stringer.ec6
 Lic. #: KW-06006227 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783 Licensee :

Description : L 2 1/2 x2 1/2 x 1/4

Steel Section Properties : L2-1/2X2-1/2X1/4

Depth	=	2.500 in	I _{xx}	=	0.69 in ⁴	J	=	0.026 in ⁴
			S _{xx}	=	0.39 in ³	C _w	=	0.01 in ⁶
Leg Width	=	2.500 in	R _{xx}	=	0.764 in	Ro	=	1.360 in
Thickness	=	0.250 in	Z _x	=	0.695 in ³			
Area	=	1.190 in ²	I _{yy}	=	0.692 in ⁴			
Weight	=	4.100 plf	S _{yy}	=	0.387 in ³			
K _{design}	=	0.500 in	R _{yy}	=	0.764 in			
Y _{cg}	=	0.711 in	Q _s	=	1.000			
			I _z	=	0.275 in ⁴			
Y _p	=	0.237 in	S _z	=	0.156 in ³			
			R _z	=	0.482 in			
E _o	=	0.237 in	Tan _α	=	1.00 deg			

Steel Beam

File: J:\2011 PROJECTS\AA\AA 011.0024 Fair Haven\Calculation\stair_stringer.ec6
 ENERCALC, INC. 1983-2011, Ver. 6.2.00, N:12783

Lic. #: KW-06006227

Licensee:

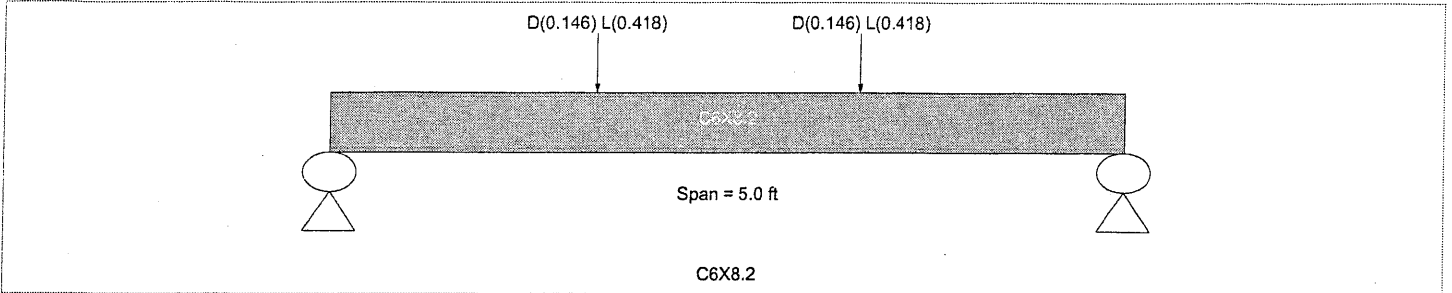
Description: C 6 x 8.2 @ 3 sides, long side

Material Properties

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-05

Analysis Method: Allowable Stress Design
 Beam Bracing: Completely Unbraced
 Bending Axis: Major Axis Bending
 Load Combination: 2006 IBC & ASCE 7-05

Fy: Steel Yield: 36.0 ksi
 E: Modulus: 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load(s) for Span Number 1
 Point Load: D = 0.1460, L = 0.4180 k @ 1.670 ft
 Point Load: D = 0.1460, L = 0.4180 k @ 3.330 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.105 : 1	Maximum Shear Stress Ratio =	0.036 : 1
Section used for this span	C6X8.2	Section used for this span	C6X8.2
Mu : Applied	0.942 k-ft	Vu : Applied	0.5640 k
Mn / Omega : Allowable	8.973 k-ft	Vn/Omega : Allowable	15.521 k
Load Combination	+D+L+H	Load Combination	+D+L+H
Location of maximum on span	2.500 ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward L+Lr+S Deflection	0.009 in Ratio = 7048		
Max Upward L+Lr+S Deflection	0.000 in Ratio = 0 <360		
Max Downward Total Deflection	0.011 in Ratio = 5223		
Max Upward Total Deflection	0.000 in Ratio = 0 <240		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Overall MAXimum Envelope														
Dsgn. L = 5.00 ft		1	0.105	0.036	0.94		0.94	14.99	8.97	1.14	1.00	0.56	25.92	15.52
+D														
Dsgn. L = 5.00 ft		1	0.027	0.009	0.24		0.24	14.99	8.97	1.14	1.00	0.15	25.92	15.52
+D+L+H														
Dsgn. L = 5.00 ft		1	0.105	0.036	0.94		0.94	14.99	8.97	1.14	1.00	0.56	25.92	15.52

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.0115	2.525		0.0000	0.000

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.0030	2.525	0.0000	0.000
L Only	1	0.0085	2.525	0.0000	0.000
D+L	1	0.0115	2.525	0.0000	0.000

Vertical Reactions - Unfactored

Support notation: Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.564	0.564
D Only	0.146	0.146
L Only	0.418	0.418
D+L	0.564	0.564

Wong & Associates
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Title : Fair Haven
 Dsgnr: sb
 Project Desc.:

Job # 011-0024

Project Notes :

10

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Steel Beam

File: J:\2011 PROJECTS\IAA\AA 011.0024 Fair Haven\Calculation\stair stringer.ec6
 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

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Description : C 6 x 8.2 @ 3 sides, long side

Steel Section Properties : C6X8.2

Depth	=	6.000 in	I xx	=	13.10 in ⁴	J	=	0.074 in ⁴
Web Thick	=	0.200 in	S xx	=	4.35 in ³	Cw	=	4.70 in ⁶
Flange Width	=	1.920 in	R xx	=	2.340 in	Ro	=	2.650 in
Flange Thick	=	0.343 in	Zx	=	5.160 in ³	H	=	0.824 in
Area	=	2.390 in ²	I yy	=	0.687 in ⁴			
Weight	=	8.200 plf	S yy	=	0.488 in ³	Wno	=	3.170 in ²
Kdesign	=	0.813 in	R yy	=	0.536 in	Sw	=	0.610 in ⁴
			Zy	=	0.987 in ³	Qf	=	1.720 in ³
rts	=	0.643 in				Qw	=	2.620 in ³
Ycg	=	3.000 in				Wn2	=	1.980
Xcg	=	0.512 in				Sw2	=	0.370
Xp	=	0.199 in				Sw3	=	0.190
Eo	=	0.599 in						

Steel Beam

File: J:\2011 PROJECTS\AAIAA 011.0024\Fair Haven\Calculation\stair stringer.ec6
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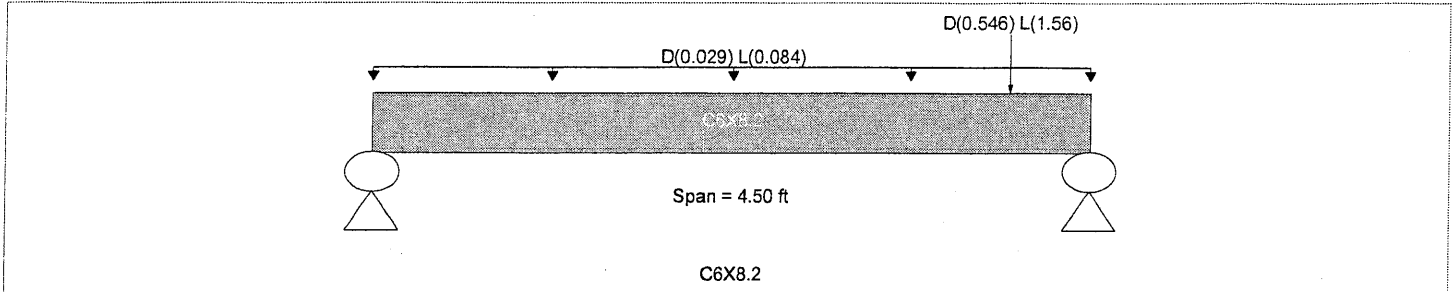
Description : C 6 x 8.2 @ Stringer

Material Properties

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-05

Analysis Method : Allowable Stress Design
 Beam Bracing : Completely Unbraced
 Bending Axis : Major Axis Bending
 Load Combination 2006 IBC & ASCE 7-05

Fy : Steel Yield : 36.0 ksi
 E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0290, L = 0.0840 k/ft, Tributary Width = 1.0 ft
 Point Load : D = 0.5460, L = 1.560 k @ 4.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.113 : 1	Maximum Shear Stress Ratio =	0.137 : 1
Section used for this span	C6X8.2	Section used for this span	C6X8.2
Mu : Applied	1.048 k-ft	Vu : Applied	2.126 k
Mn / Omega : Allowable	9.269 k-ft	Vn/Omega : Allowable	15.521 k
Load Combination	+D+L+H	Load Combination	+D+L+H
Location of maximum on span	3.983ft	Location of maximum on span	4.500 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward L+Lr+S Deflection	0.007 in Ratio = 8214		
Max Upward L+Lr+S Deflection	0.000 in Ratio = 0 <360		
Max Downward Total Deflection	0.009 in Ratio = 6091		
Max Upward Total Deflection	0.000 in Ratio = 0 <240		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values				
			M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega	
Overall MAXimum Envelope															
+D	Dsgn. L = 4.50 ft	1	0.113	0.137	1.05		1.05	15.48	9.27	1.27	1.00	2.13	25.92	15.52	
+D	Dsgn. L = 4.50 ft	1	0.029	0.035	0.27		0.27	15.48	9.27	1.27	1.00	0.55	25.92	15.52	
+D+L+H	Dsgn. L = 4.50 ft	1	0.113	0.137	1.05		1.05	15.48	9.27	1.27	1.00	2.13	25.92	15.52	

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L	1	0.0089	2.475		0.0000	0.000

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Span	Max. Downward Defl	Location in Span	Max. Upward Defl	Location in Span
D Only	1	0.0023	2.475	0.0000	0.000
L Only	1	0.0066	2.475	0.0000	0.000
D+L	1	0.0089	2.475	0.0000	0.000

Vertical Reactions - Unfactored

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.488	2.126
D Only	0.126	0.551
L Only	0.362	1.576
D+L	0.488	2.126

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Title : Fair Haven
 Dsgnr: sb
 Project Desc.:

Job # 011-0024

Project Notes :

12

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Steel Beam

File: J:\2011 PROJECTS\AA\AA 011.0024 Fair Haven\Calculation\stair stringer.ec6
 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

Lic. #: KW-06006227

Licensee :

Description : C 6 x 8.2 @ 3 sides

Steel Section Properties : C6X8.2

Depth	=	6.000 in	I xx	=	13.10 in ⁴	J	=	0.074 in ⁴
Web Thick	=	0.200 in	S xx	=	4.35 in ³	Cw	=	4.70 in ⁶
Flange Width	=	1.920 in	R xx	=	2.340 in	Ro	=	2.650 in
Flange Thick	=	0.343 in	Zx	=	5.160 in ³	H	=	0.824 in
Area	=	2.390 in ²	I yy	=	0.687 in ⁴			
Weight	=	8.200 plf	S yy	=	0.488 in ³	Wno	=	3.170 in ²
Kdesign	=	0.813 in	R yy	=	0.536 in	Sw	=	0.610 in ⁴
			Zy	=	0.987 in ³	Qf	=	1.720 in ³
rts	=	0.643 in				Qw	=	2.620 in ³
Ycg	=	3.000 in				Wn2	=	1.980
Xcg	=	0.512 in				Sw2	=	0.370
Xp	=	0.199 in				Sw3	=	0.190
Eo	=	0.599 in						

Steel Column

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 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

Lic. #: KW-06006227

Licensee :

Description : 3" dia Std. Pipe Column

General Information

Calculations per AISC 360-05, IBC 2009, CBC 2010, ASCE 7-05

Steel Section Name : **Pipe3 Std**
 Analysis Method : 2006 IBC & ASCE 7-05
 Steel Stress Grade
 Fy : Steel Yield 35.0 ksi
 E : Elastic Bending Modulus 29,000.0 ksi
 Load Combination : Allowable Stress

Overall Column Height 9.50 ft
 Top & Bottom Fixity Top & Bottom Pinned

Brace condition for deflection (buckling) along columns :
 X-X (width) axis : Unbraced Length for X-X Axis buckling = 9.5 ft, K = 1.0
 Y-Y (depth) axis : Unbraced Length for Y-Y Axis buckling = 9.5 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 72.010 lbs * Dead Load Factor
 AXIAL LOADS . . .
 Axial Load at 9.50 ft, D = 0.7430, L = 2.123 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1095 : 1**
 Load Combination +D+L+H
 Location of max. above base 0.0 ft
 At maximum location values are . . .
 Pu : Axial 2.938 k
 Pn / Omega : Allowable 26.828 k
 Mu-x : Applied 0.0 k-ft
 Mn-x / Omega : Allowable 3.825 k-ft
 Mu-y : Applied 0.0 k-ft
 Mn-y / Omega : Allowable 3.825 k-ft

PASS Maximum Shear Stress Ratio = **0.0 : 1**
 Load Combination
 Location of max. above base 0.0 ft
 At maximum location values are . . .
 Vu : Applied 0.0 k
 Vn / Omega : Allowable 0.0 k

Maximum SERVICE Load Reactions . .

Top along X-X 0.0 k
 Bottom along X-X 0.0 k
 Top along Y-Y 0.0 k
 Bottom along Y-Y 0.0 k

Maximum SERVICE Load Deflections . . .

Along Y-Y 0.0 in at 0.0 ft above base
 for load combination :
 Along X-X 0.0 in at 0.0 ft above base
 for load combination :

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio	Status	Location

Maximum Reactions - Unfactored

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction
	@ Base	@ Top	@ Base	@ Top	@ Base

Maximum Deflections for Load Combinations - Unfactored Loads

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
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Steel Section Properties : Pipe3 Std

Steel Column

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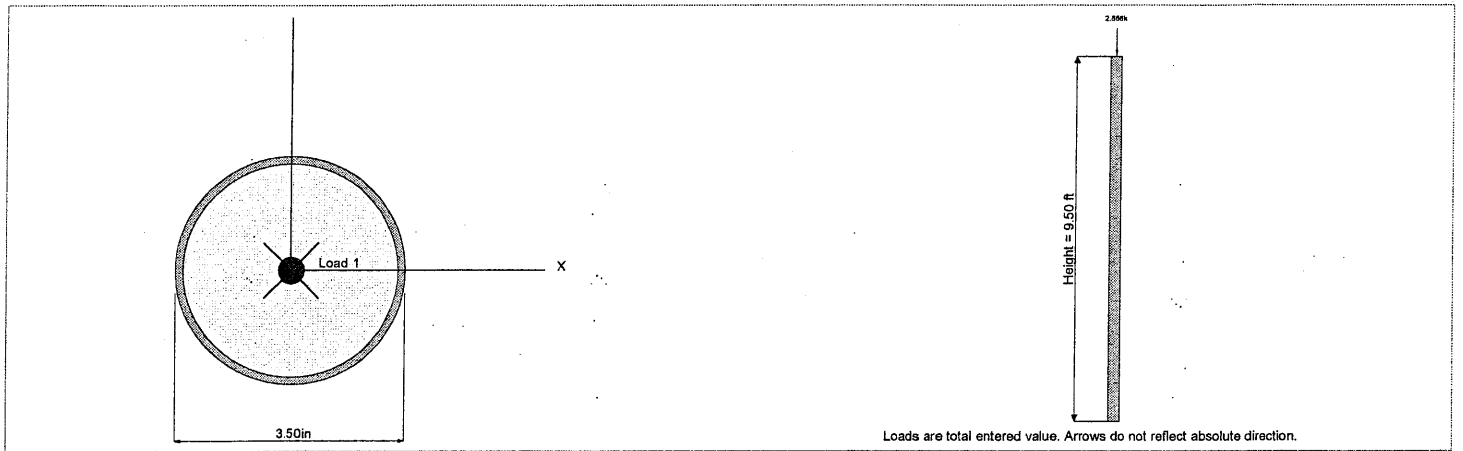
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Description : 3" dia Std. Pipe Column

Steel Section Properties :		Pipe3 Std			
Depth	=	3.500 in	I xx = 2.85 in ⁴	J =	5.690 in ⁴
Web Thick	=	0.000 in	S xx = 1.63 in ³		
Flange Width	=	3.500 in	R xx = 1.170 in		
Flange Thick	=	0.216 in			
Area	=	2.080 in ²	I yy = 2.850 in ⁴		
Weight	=	7.580 plf	S yy = 1.630 in ³		
			R yy = 1.170 in		

Ycg = 0.000 in



FOOTING AT STRINGER

$$P_{DL} = \frac{15.6'}{2} \times 4' \times 35 \text{ psf} = 1092 \text{ lbs}$$

$$P_{LL} = \frac{15.6'}{2} \times 4' \times 100 \text{ psf} = \underline{3120 \text{ lbs}}$$

$$DL + LL = 4212 \text{ lbs}$$

ASSUME ALLOWABLE SOIL PRESSURE = 1500 psf

$$A_{req'd} = \frac{4212 \text{ lbs}}{1500 \text{ lbs/ft}^2} = 2.81 \text{ sqft}$$

Use 1'-4" x 5'-0", Area = 1.33 x 5' = 6.65 sqft > 2.81 sqft

OK

FOOTING AT PIPE COLUMN

$$P_{DL} = 743 \text{ lbs}$$

$$P_{LL} = 2123 \text{ lbs}$$

Use 2'-0" x 2'-0" x 12" thick w/ 2-#4 EA. WAY.

General Footing

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Licensee :

Description : Pad Footing at Pipe Column

General Information

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05

Material Properties

f_c : Concrete 28 day strength	=	2.50 ksi
f_y : Rebar Yield	=	60.0 ksi
E_c : Concrete Elastic Modulus	=	2,850.0 ksi
Concrete Density	=	145.0 pcf
ϕ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140
Min Allow % Temp Reinf.	=	0.0
Min. Overturning Safety Factor	=	1.50 : 1
Min. Sliding Safety Factor	=	1.50 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears :	:	Yes
Include Pedestal Weight as DL	:	No

Increases based on footing Depth

Footing base depth below soil surface	=	ft
Allowable pressure increase per foot of dept=	=	ksf
when footing base is below	=	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dept=	=	ksf
when maximum length or width is greater+	=	ft

Dimensions

Width along X-X Axis	=	2.0 ft
Length along Z-Z Axis	=	2.0 ft
Footing Thicknes	=	12.0 in

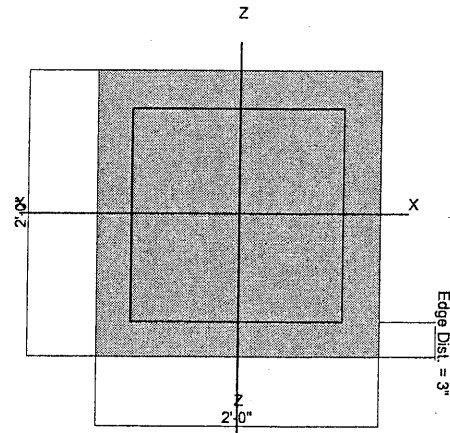
Load location offset from footing center...

ex : Along X-X Axis	=	0 in
ez : Along Z-Z Axis	=	0 in

Pedestal dimensions...

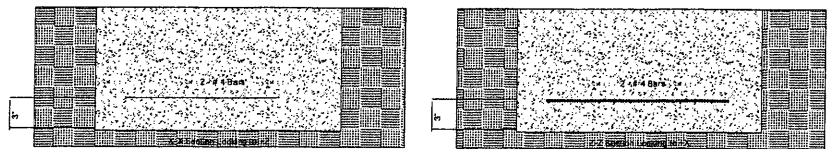
px : Along X-X Axis	=	in
pz : Along Z-Z Axis	=	in
Height	=	in

Rebar Centerline to Edge of Concrete..
 at Bottom of footing = 3.0 in



Reinforcing

Bars along X-X Axis	=	2.0
Number of Bars	=	# 4
Reinforcing Bar Size	=	# 4
Bars along Z-Z Axis	=	2.0
Number of Bars	=	# 4
Reinforcing Bar Size	=	# 4



Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	=	n/a
# Bars required within zone	=	n/a
# Bars required on each side of zone	=	n/a

Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	0.7430		2.123			k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k

General Footing

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 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

Lic. #: KW-06006227

Licensee :

Description : Pad Footing at Pipe Column

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.5743	Soil Bearing	0.8615 ksf	1.50 ksf	+D+L+H
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.06794	Z Flexure (+X)	0.5360 k-ft	7.888 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.06794	Z Flexure (-X)	0.5360 k-ft	7.888 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.06794	X Flexure (+Z)	0.5360 k-ft	7.888 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.06794	X Flexure (-Z)	0.5360 k-ft	7.888 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.03177	1-way Shear (+X)	2.382 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.03177	1-way Shear (-X)	2.382 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.03177	1-way Shear (+Z)	2.382 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.03177	1-way Shear (-Z)	2.382 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.07505	2-way Punching	11.257 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xeccc	Zeccc	Actual Soil Bearing Stress				Actual / Allowable Ratio
				+Z	+Z	-X	-X	
X-X, +D	1.50	n/a	0.0	0.3308	0.3308	n/a	n/a	0.221
X-X, +D+L+H	1.50	n/a	0.0	0.8615	0.8615	n/a	n/a	0.574
Z-Z, +D	1.50	0.0	n/a	n/a	n/a	0.3308	0.3308	0.221
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	0.8615	0.8615	0.574

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

Sliding Stability

All units k

Force Application Axis

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.13	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.40D	0.13	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	0.536	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	0.536	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+1.60L+0.50S+1.60H	0.536	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+1.60L+0.50S+1.60H	0.536	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+1.60Lr+0.50L	0.2441	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+1.60Lr+0.50L	0.2441	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50L+1.60S	0.2441	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50L+1.60S	0.2441	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.2441	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.2441	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.2441	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.2441	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50L+0.20S+E	0.2441	+Z	Bottom	0.15	Bendina	0.2	7.888	OK
X-X, +1.20D+0.50L+0.20S+E	0.2441	-Z	Bottom	0.15	Bendina	0.2	7.888	OK
Z-Z, +1.40D	0.13	-X	Bottom	0.15	Bendina	0.2	7.888	OK
Z-Z, +1.40D	0.13	+X	Bottom	0.15	Bendina	0.2	7.888	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	0.536	-X	Bottom	0.15	Bendina	0.2	7.888	OK
Z-Z, +1.20D+0.50Lr+1.60L+1.60H	0.536	+X	Bottom	0.15	Bendina	0.2	7.888	OK
Z-Z, +1.20D+1.60L+0.50S+1.60H	0.536	-X	Bottom	0.15	Bendina	0.2	7.888	OK

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Title : Fair Haven
Dsgnr: sb
Project Desc.:

Job # 011-0024

Project Notes :

13

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General Footing

File: J:\2011 PROJECTS\AAA\011.0024 Fair Haven\Calculation\stair stringer.ec6
ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

Lic. #: KW-06006227

Licensee :

Description : Pad Footing at Pipe Column

Z-Z. +1.20D+1.60L+0.50S+1.60H	0.536	+X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.2441	-X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.2441	+X	Bottom	0.15	Bending	0.2	7.888	OK

General Footing

File: J:\2011 PROJECTS\A\A\A\011.0024 Fair Haven\Calculation\stair stringer.ec6
 ENERCALC, INC. 1983-2011, Ver: 6.2.00, N:12783

Lic. #: KW-06006227

Licensee :

Description : Pad Footing at Pipe Column

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z, +1.20D+0.50L+1.60S	0.2441	-X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50L+1.60S	0.2441	+X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50Lr+0.50L+1.60W	0.2441	-X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50Lr+0.50L+1.60W	0.2441	+X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50L+0.50S+1.60W	0.2441	-X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50L+0.50S+1.60W	0.2441	+X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50L+0.20S+E	0.2441	-X	Bottom	0.15	Bending	0.2	7.888	OK
Z-Z, +1.20D+0.50L+0.20S+E	0.2441	+X	Bottom	0.15	Bending	0.2	7.888	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.5779 psi	0.5779 psi	0.5779 psi	0.5779 psi	0.5779 psi	75 psi	0.007705	OK
+1.20D+0.50Lr+1.60L+1.60H	2.382 psi	2.382 psi	2.382 psi	2.382 psi	2.382 psi	75 psi	0.03177	OK
+1.20D+1.60L+0.50S+1.60H	2.382 psi	2.382 psi	2.382 psi	2.382 psi	2.382 psi	75 psi	0.03177	OK
+1.20D+1.60Lr+0.50L	1.085 psi	1.085 psi	1.085 psi	1.085 psi	1.085 psi	75 psi	0.01447	OK
+1.20D+0.50L+1.60S	1.085 psi	1.085 psi	1.085 psi	1.085 psi	1.085 psi	75 psi	0.01447	OK
+1.20D+0.50Lr+0.50L+1.60W	1.085 psi	1.085 psi	1.085 psi	1.085 psi	1.085 psi	75 psi	0.01447	OK
+1.20D+0.50L+0.50S+1.60W	1.085 psi	1.085 psi	1.085 psi	1.085 psi	1.085 psi	75 psi	0.01447	OK
+1.20D+0.50L+0.20S+E	1.085 psi	1.085 psi	1.085 psi	1.085 psi	1.085 psi	75 psi	0.01447	OK

All units k

Punching Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	2.73 psi	150psi	0.0182	OK
+1.20D+0.50Lr+1.60L+1.60H	11.257 psi	150psi	0.07505	OK
+1.20D+1.60L+0.50S+1.60H	11.257 psi	150psi	0.07505	OK
+1.20D+1.60Lr+0.50L	5.127 psi	150psi	0.03418	OK
+1.20D+0.50L+1.60S	5.127 psi	150psi	0.03418	OK
+1.20D+0.50Lr+0.50L+1.60W	5.127 psi	150psi	0.03418	OK
+1.20D+0.50L+0.50S+1.60W	5.127 psi	150psi	0.03418	OK
+1.20D+0.50L+0.20S+E	5.127 psi	150psi	0.03418	OK

seismic design parameter

Fair Haven
Tue Mar 15 11:04:53 PDT 2011

Conterminous 48 States
2009 International Building Code
Latitude = 33.77278
Longitude = -117.84231
Spectral Response Accelerations Ss and S1
Ss and S1 = Mapped Spectral Acceleration Values
Site Class B - Fa = 1.0 ,Fv = 1.0
Data are based on a 0.01 deg grid spacing

Period	Sa
(sec)	(g)
0.2	1.387 (Ss, Site Class B)
1.0	0.499 (S1, Site Class B)

Conterminous 48 States
2009 International Building Code
Latitude = 33.77278
Longitude = -117.84231
Spectral Response Accelerations SMs and SM1
SMs = Fa x Ss and SM1 = Fv x S1
Site Class D - Fa = 1.0 ,Fv = 1.501

Period	Sa
(sec)	(g)
0.2	1.387 (SMs, Site Class D)
1.0	0.749 (SM1, Site Class D)

Conterminous 48 States
2009 International Building Code
Latitude = 33.77278
Longitude = -117.84231
Design Spectral Response Accelerations SDs and SD1
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class D - Fa = 1.0 ,Fv = 1.501

Period	Sa
(sec)	(g)
0.2	0.925 (SDs, Site Class D)
1.0	0.499 (SD1, Site Class D)

WA Consulting Engineers 180 S. Prospect Ave., #110 Tustin, CA 92780 (714) 838-9898 ph. (714) 838-9899 fx.	Project	Fair Haven	Prepared By:	sb	Date	3/15/2011
	Subject	LATERAL ANALYSIS	Checked By:			
	Job No.	011-0024	Sheet No.	21	Rev. No.	

LATERAL ANALYSIS

CODE: ASCE 7-05

IMPORTANCE FACTOR	I =	1.0	
SOIL PROFILE TYPE	Site Class	D	
MCE AT SHORT PERIOD 0.2s	S _s =	1.387	
MCE AT PERIOD OF 1.0s	S ₁ =	0.499	
SITE COEFFICIENT AT 0.2s	F _a =	1.000	
SITE COEFFICIENT AT 1.0s	F _v =	1.501	
ADJUSTED MCE SPECTRAL RESPONSE ACCELERATION AT 0.2s	S _{MS} =	1.387	
ADJUSTED MCE SPECTRAL RESPONSE ACCELERATION AT 1.0s	S _{M1} =	0.749	
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS AT 0.2s	S _{DS} =	0.925	
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS AT 1.0s	S _{D1} =	0.499	
BUILDING HEIGHT	h _n =	12.00 ft	
SEISMIC PERIOD COEFFICIENT	C _t =	0.020	
SEISMIC DESIGN CATEGORY		D	
T _L	x =	0.75	
T = C _t * h _n ^x	=	8	
	=	0.129 sec	EQ 12.8-7

DESIGN BASE SHEAR

STRUCTURAL SYSTEM FACTOR R = 3.00 All other Steel Resisting System Table 15.4-2

W = TOTAL SEISMIC WEIGHT

$$C_s = S_{DS} / (R / I) = 0.308 \quad \text{EQ 12.8-2}$$

$$C_{smax} = S_{D1} / T / (R / I) = 1.291 \quad T \leq T_L \quad \text{EQ 12.8-3}$$

$$C_{smin} = 0.01$$

$$V = C_s * W = 0.308 W \quad \text{EQ 12.8-1}$$

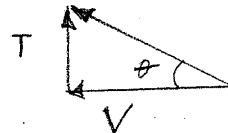
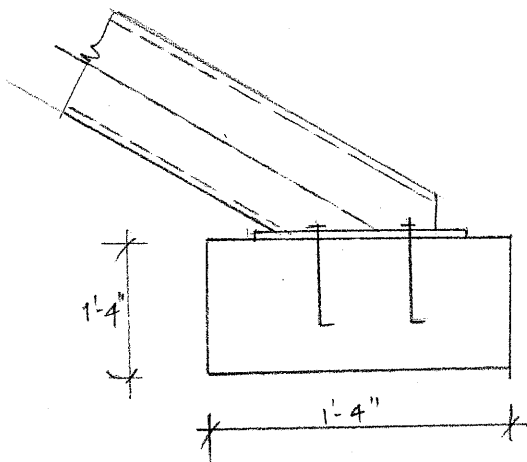
$$V = 0.308 W \quad \text{AT STRENGTH LEVEL}$$

$$V = 0.308 * 0.7 = 0.216 W \quad \text{AT WORKING STRESS LEVEL}$$

DEAD LOAD OF THE STAIR

- LANDING = $4.5' \times 5' \times 35 \text{ psf} = 788 \text{ lbs}$
 - STAIR = $4' \times 15.6' \times 35 \text{ psf} = 2184 \text{ lbs}$
DL = 2972 lbs

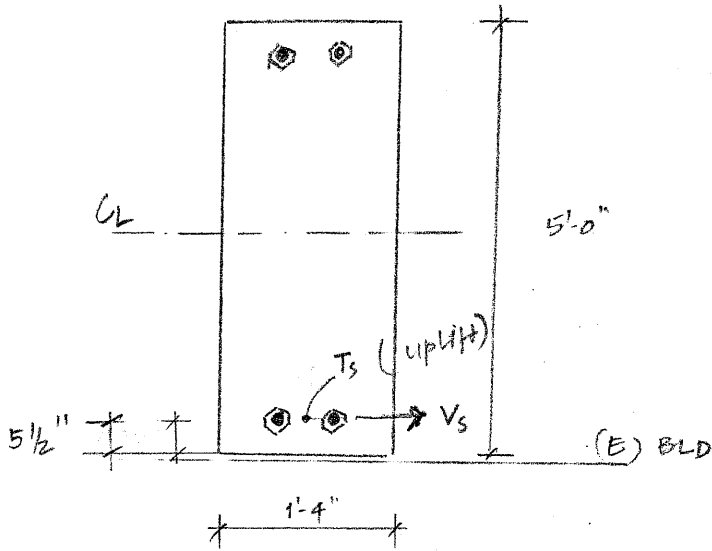
LATERAL SEISMIC DEAD LOAD IS TRANSFERRED TO THE FOOTING



$\tan \theta = \frac{6.6}{10} = 0.66$
 $\theta = 33.42^\circ$

$V_s = 0.308 \times W$
 $V_s = 0.308 \times 2972 \text{ lbs} = 915 \text{ lbs}$ (STRENGTH LEVEL)
 $V_s = 0.7 \times 0.308 \times 2972 \text{ lbs} = 641 \text{ lbs}$ (ASD)
 $T_s = V_s \times \tan \theta = 915 \times 0.66 = 604 \text{ lbs}$ (STRENGTH LEVEL)
 $T_s = 0.7 \times 915 \times 0.66 = 423 \text{ lbs}$ (ASD)

ANCHOR BOLT DESIGN



LATERAL LOAD AT EA. STRINGER

$$V_s = \frac{1}{2} \times 915 \text{ lbs} = 458 \text{ lbs}$$

$$T_s = \frac{1}{2} \times 604 \text{ lbs} = 302 \text{ lbs}$$

STRENGTH LEVEL

∴ Use $\frac{5}{8}$ " ϕ ANCHOR BOLT F1554 A36

Anchor Calculations

24

Anchor Selector (Version 4.3.0.0)

Job Name : Fair Haven

Date/Time : 3/15/2011 5:42:57 PM

1) Input

Calculation Method : ACI 318 Appendix D For Cracked Concrete

Calculation Type : Analysis

a) Layout

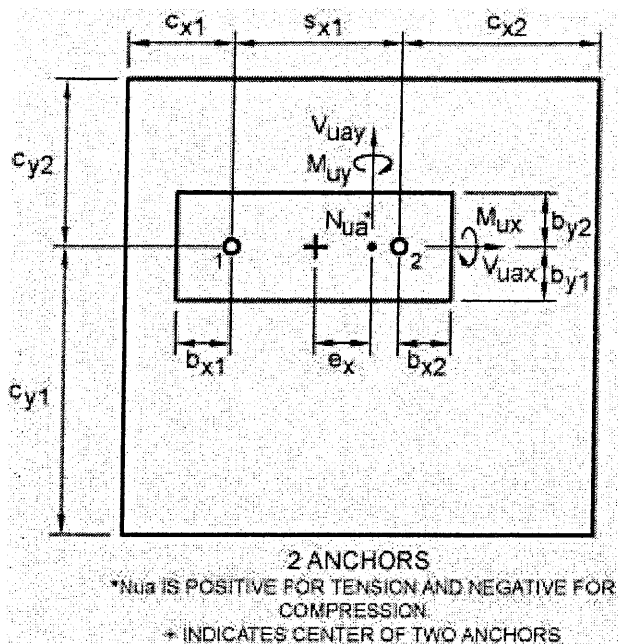
Anchor : 5/8" L-Bolt

Number of Anchors : 2

Steel Grade: F1554 GR. 36

Embedment Depth : 9 in

Built-up Grout Pads : No



Anchor Layout Dimensions :

c_{x1} : 5 in

c_{x2} : 5 in

c_{y1} : 24 in

c_{y2} : 5.5 in

b_{x1} : 1.5 in

b_{x2} : 1.5 in

b_{y1} : 1.5 in

b_{y2} : 1.5 in

s_{x1} : 6 in

b) Base Material

Concrete : Normal weight

f'_c : 2500.0 psi

Cracked Concrete : Yes

$\Psi_{c,v} : 1.00$ 25

Condition : B tension and shear

$\phi F_p : 1381.3$ psi

Thickness, h : 16 in

Supplementary edge reinforcement : No

c) Factored Loads

Load factor source : ACI 318 Section 9.2

$N_{ua} : 302$ lb

$V_{uax} : 458$ lb

$V_{uay} : 0$ lb

$M_{ux} : 0$ lb*ft

$M_{uy} : 0$ lb*ft

$e_x : 0$ in

$e_y : 0$ in

Moderate/high seismic risk or intermediate/high design category : Yes

Apply entire shear load at front row for breakout : No

d) Anchor Parameters

Anchor Model = LB62 $d_o = 0.625$ in

Category = N/A $h_{ef} = 8.375$ in

$h_{min} = 9.75$ in $c_{ac} = 12.5625$ in

$c_{min} = 3.75$ in $s_{min} = 3.75$ in

Ductile = Yes

2) Tension Force on Each Individual Anchor

Anchor #1 $N_{ua1} = 151.00$ lb

Anchor #2 $N_{ua2} = 151.00$ lb

Sum of Anchor Tension $\Sigma N_{ua} = 302.00$ lb

$a_x = 0.00$ in

$a_y = 0.00$ in

$e'_{Nx} = 0.00$ in

$e'_{Ny} = 0.00$ in

3) Shear Force on Each Individual Anchor

Resultant shear forces in each anchor:

Anchor #1 $V_{ua1} = 229.00$ lb ($V_{ua1x} = 229.00$ lb , $V_{ua1y} = 0.00$ lb)

Anchor #2 $V_{ua2} = 229.00$ lb ($V_{ua2x} = 229.00$ lb , $V_{ua2y} = 0.00$ lb)

Sum of Anchor Shear $\Sigma V_{uax} = 458.00$ lb, $\Sigma V_{uay} = 0.00$ lb

$e'_{Vx} = 0.00$ in

$e'_{Vy} = 0.00$ in

4) Steel Strength of Anchor in Tension [Sec. D.5.1]

$$N_{sa} = nA_{se}f_{uta} \text{ [Eq. D-3]}$$

Number of anchors acting in tension, $n = 2$

$$N_{sa} = 13100 \text{ lb (for each individual anchor)}$$

$$\phi = 0.75 \text{ [D.4.4]}$$

$$\phi N_{sa} = 9825.00 \text{ lb (for each individual anchor)}$$

5) Concrete Breakout Strength of Anchor Group in Tension [Sec. D.5.2]

$$N_{cbg} = A_{Nc}/A_{Nco} \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ [Eq. D-5]}$$

Number of influencing edges = 3

$$h_{ef} \text{ (adjusted for edges per D.5.2.3)} = 3.667 \text{ in}$$

$$A_{Nco} = 121.00 \text{ in}^2 \text{ [Eq. D-6]}$$

$$A_{Nc} = 176.00 \text{ in}^2$$

$$\Psi_{ec,Nx} = 1.0000 \text{ [Eq. D-9]}$$

$$\Psi_{ec,Ny} = 1.0000 \text{ [Eq. D-9]}$$

$$\Psi_{ec,N} = 1.0000 \text{ (Combination of x-axis \& y-axis eccentricity factors.)}$$

$$\Psi_{ed,N} = 0.9727 \text{ [Eq. D-10 or D-11]}$$

Note: Cracking shall be controlled per D.5.2.6

$$\Psi_{c,N} = 1.0000 \text{ [Sec. D.5.2.6]}$$

$$\Psi_{cp,N} = 1.0000 \text{ [Eq. D-12 or D-13]}$$

$$N_b = k_c \sqrt{f'_c} h_{ef}^{1.5} = 8425.36 \text{ lb [Eq. D-7]}$$

$$k_c = 24 \text{ [Sec. D.5.2.6]}$$

$$N_{cbg} = 11920.84 \text{ lb [Eq. D-5]}$$

$$\phi = 0.70 \text{ [D.4.4]}$$

$$\phi_{seis} = 0.75$$

$$\phi N_{cbg} = 6258.44 \text{ lb (for the anchor group)}$$

6) Pullout Strength of Anchor in Tension [Sec. D.5.3]

$$N_p = 0.9f'_c e_h d_o \text{ [Eq. D-16]}$$

$$e_h = 3d_o = 1.8750 \text{ in}$$

$$N_{pn} = \Psi_{c,p} N_p \text{ [Eq. D-14]}$$

$$\Psi_{c,p} = 1.0 \text{ [D.5.3.6]}$$

$$N_{pn} = 2636.72 \text{ lb}$$

$$\phi = 0.70 \text{ [D.4.4]}$$

$$\phi_{seis} = 0.75$$

$$\phi N_{pn} = \phi N_{eq} = 1384.28 \text{ lb (for each individual anchor)}$$

7) Side Face Blowout of Anchor in Tension [Sec. D.5.4]

Concrete side face blowout strength is only calculated for headed anchors in tension close to an edge, $c_{a1} < 0.4h_{ef}$. Not applicable in this case.

8) Steel Strength of Anchor in Shear [Sec D.6.1]

$$V_{eq} = 7865.00 \text{ lb (for each individual anchor)}$$

$$\phi = 0.65 \text{ [D.4.4]}$$

$$\phi V_{eq} = 5112.25 \text{ lb (for each individual anchor)}$$

9) Concrete Breakout Strength of Anchor Group in Shear [Sec D.6.2]

Case 1: Anchor(s) closest to edge checked against sum of anchor shear loads at the edge
In x-direction...

$$V_{cbx} = A_{vcx}/A_{vcox} \Psi_{ed,V} \Psi_{c,V} V_{bx} \text{ [Eq. D-21]}$$

$$c_{a1} = 5.00 \text{ in}$$

$$A_{vcx} = 97.50 \text{ in}^2$$

$$A_{vcox} = 112.50 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{ed,V} = 0.9200 \text{ [Eq. D-27 or D-28]}$$

$$\Psi_{c,V} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{bx} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f'_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{bx} = 4689.01 \text{ lb}$$

$$V_{cbx} = 3738.70 \text{ lb [Eq. D-22]}$$

$$\phi = 0.70$$

$$\phi_{seis} = 0.75$$

$$\phi V_{cbx} = 1962.82 \text{ lb (for a single anchor)}$$

In y-direction...

$$V_{cbgy} = A_{vcy}/A_{vcoy} \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} V_{by} \text{ [Eq. D-22]}$$

$$c_{a1} = 5.50 \text{ in}$$

$$A_{vcy} = 132.00 \text{ in}^2$$

$$A_{vcoy} = 136.13 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{ec,V} = 1.0000 \text{ [Eq. D-26]}$$

$$\Psi_{ed,V} = 0.8818 \text{ [Eq. D-27 or D-28]}$$

$$\Psi_{c,V} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{by} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f'_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{by} = 5409.66 \text{ lb}$$

$$V_{cbgy} = 4625.78 \text{ lb [Eq. D-22]}$$

$$\phi = 0.70$$

$$\phi_{seis} = 0.75$$

$$\phi V_{cbgy} = 2428.54 \text{ lb (for the anchor group)}$$

$$\phi V_{cby} = 1214.27 \text{ lb (for a single anchor - divided } \phi V_{cbgy} \text{ by 2)}$$

Case 2: Anchor(s) furthest from edge checked against total shear load
In x-direction...

$$V_{cbx} = A_{vcx}/A_{vcox} \Psi_{ed,V} \Psi_{c,V} V_{bx} \text{ [Eq. D-21]}$$

$$c_{a1} = 11.00 \text{ in}$$

$$A_{vcx} = 352.00 \text{ in}^2$$

$$A_{vcox} = 544.50 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{ed,V} = 0.8000 \text{ [Eq. D-27 or D-28]}$$

$$\Psi_{c,V} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{bx} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f'_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{bx} = 15300.83 \text{ lb}$$

$$V_{cbx} = 7913.16 \text{ lb [Eq. D-22]}$$

$$\phi = 0.70$$

$$\phi_{seis} = 0.75$$

$$\phi V_{cbx} = 4154.41 \text{ lb (for a single anchor)}$$

In y-direction...

$$V_{cbgy} = A_{vcy}/A_{vcoy} \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} V_{by} \text{ [Eq. D-22]}$$

$$c_{a1} = 5.50 \text{ in}$$

$$A_{vcy} = 132.00 \text{ in}^2$$

$$A_{vcoy} = 136.13 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{ec,V} = 1.0000 \text{ [Eq. D-26]}$$

$$\Psi_{ed,V} = 0.8818 \text{ [Eq. D-27 or D-28]}$$

$$\Psi_{c,V} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{by} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f'_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{by} = 5409.66 \text{ lb}$$

$$V_{cbgy} = 4625.78 \text{ lb [Eq. D-22]}$$

$$\phi = 0.70$$

$$\phi_{seis} = 0.75$$

$$\phi V_{cbgy} = 2428.54 \text{ lb (for the entire anchor group)}$$

Case 3: Anchor(s) closest to edge checked for parallel to edge condition

Check anchors at c_{x1} edge

$$V_{cbx} = A_{vcx}/A_{vcox} \Psi_{ed,V} \Psi_{c,V} V_{bx} \text{ [Eq. D-21]}$$

$$c_{a1} = 5.00 \text{ in}$$

$$A_{vcx} = 97.50 \text{ in}^2$$

$$A_{vcox} = 112.50 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{ed,V} = 1.0000 \text{ [Sec. D.6.2.1(c)]}$$

$$\Psi_{c,V} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{bx} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f'_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{bx} = 4689.01 \text{ lb}$$

$$V_{cbx} = 4063.81 \text{ lb [Eq. D-22]}$$

$$V_{cby} = 2 * V_{cbx} \text{ [Sec. D.6.2.1(c)]}$$

$$V_{cby} = 8127.62 \text{ lb}$$

$$\phi = 0.70$$

$$\phi_{seis} = 0.75$$

$$\phi V_{cby} = 4267.00 \text{ lb (for a single anchor)}$$

Check anchors at c_{y1} edge

$$V_{cbgy} = A_{vcy}/A_{vcoy} \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} V_{by} \text{ [Eq. D-22]}$$

$$c_{a1} = 10.67 \text{ in (adjusted for edges per D.6.2.4)}$$

$$A_{vcy} = 256.00 \text{ in}^2$$

$$A_{vcoy} = 512.00 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{ec,V} = 1.0000 \text{ [Eq. D-26]}$$

$$\Psi_{ed,V} = 1.0000 \text{ [Sec. D.6.2.1(c)]}$$

$$\Psi_{c,V} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{by} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f'_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{by} = 14610.64 \text{ lb}$$

$$V_{cbgy} = 7305.32 \text{ lb [Eq. D-22]}$$

$$V_{cbgx} = 2 * V_{cbgy} \text{ [Sec. D.6.2.1(c)]}$$

$$V_{cbgx} = 14610.64 \text{ lb}$$

$$\phi = 0.70$$

$$\phi_{\text{seis}} = 0.75$$

$$\phi V_{\text{cbgx}} = 7670.58 \text{ lb (for the anchor group)}$$

Check anchors at c_{x2} edge

$$V_{\text{cbx}} = A_{\text{vcx}}/A_{\text{vcox}} \Psi_{\text{ed,V}} \Psi_{\text{c,V}} V_{\text{bx}} \text{ [Eq. D-21]}$$

$$c_{a1} = 5.00 \text{ in}$$

$$A_{\text{vcx}} = 97.50 \text{ in}^2$$

$$A_{\text{vcox}} = 112.50 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{\text{ed,V}} = 1.0000 \text{ [Eq. D-27 or D-28] [Sec. D.6.2.1(c)]}$$

$$\Psi_{\text{c,V}} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{\text{bx}} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{\text{bx}} = 4689.01 \text{ lb}$$

$$V_{\text{cbx}} = 4063.81 \text{ lb [Eq. D-22]}$$

$$V_{\text{cby}} = 2 * V_{\text{cbx}} \text{ [Sec. D.6.2.1(c)]}$$

$$V_{\text{cby}} = 8127.62 \text{ lb}$$

$$\phi = 0.70$$

$$\phi_{\text{seis}} = 0.75$$

$$\phi V_{\text{cby}} = 4267.00 \text{ lb (for a single anchor)}$$

Check anchors at c_{y2} edge

$$V_{\text{cbgy}} = A_{\text{vcy}}/A_{\text{vcoy}} \Psi_{\text{ec,V}} \Psi_{\text{ed,V}} \Psi_{\text{c,V}} V_{\text{by}} \text{ [Eq. D-22]}$$

$$c_{a1} = 5.50 \text{ in}$$

$$A_{\text{vcy}} = 132.00 \text{ in}^2$$

$$A_{\text{vcoy}} = 136.13 \text{ in}^2 \text{ [Eq. D-23]}$$

$$\Psi_{\text{ec,V}} = 1.0000 \text{ [Eq. D-26]}$$

$$\Psi_{\text{ed,V}} = 1.0000 \text{ [Sec. D.6.2.1(c)]}$$

$$\Psi_{\text{c,V}} = 1.0000 \text{ [Sec. D.6.2.7]}$$

$$V_{\text{by}} = 7(l_e/d_o)^{0.2} \sqrt{d_o} \sqrt{f_c(c_{a1})^{1.5}} \text{ [Eq. D-24]}$$

$$l_e = 5.00 \text{ in}$$

$$V_{\text{by}} = 5409.66 \text{ lb}$$

$$V_{\text{cbgy}} = 5245.73 \text{ lb [Eq. D-22]}$$

$$V_{\text{cbgx}} = 2 * V_{\text{cbgy}} \text{ [Sec. D.6.2.1(c)]}$$

$$V_{\text{cbgx}} = 10491.46 \text{ lb}$$

$$\phi = 0.70$$

$$\phi_{\text{seis}} = 0.75$$

$$\phi V_{\text{cbgx}} = 5508.02 \text{ lb (for the anchor group)}$$

10) Concrete Pryout Strength of Anchor Group in Shear [Sec. D.6.3]

$$V_{\text{cpg}} = k_{\text{cp}} N_{\text{cbg}} \text{ [Eq. D-30]}$$

$$k_{\text{cp}} = 2 \text{ [Sec. D.6.3.1]}$$

$$e'_{Vx} = 0.00 \text{ in (Applied shear load eccentricity relative to anchor group c.g.)}$$

$$e'_{Vy} = 0.00 \text{ in (Applied shear load eccentricity relative to anchor group c.g.)}$$

$$\Psi_{\text{ec},N_x} = 1.0000 \text{ [Eq. D-9] (Calculated using applied shear load eccentricity)}$$

$$\Psi_{\text{ec},N_y} = 1.0000 \text{ [Eq. D-9] (Calculated using applied shear load eccentricity)}$$

$$\Psi_{\text{ec},N'} = 1.0000 \text{ (Combination of x-axis \& y-axis eccentricity factors)}$$

$$N_{\text{cbg}} = (A_{Nca}/A_{Nc})(\Psi_{\text{ec},N'}/\Psi_{\text{ec},N})N_{\text{cbg}}$$

$$N_{\text{cbg}} = 11920.84 \text{ lb (from Section (5) of calculations)}$$

$$A_{Nc} = 176.00 \text{ in}^2 \text{ (from Section (5) of calculations)}$$

$$A_{Nca} = 176.00 \text{ in}^2 \text{ (considering all anchors)}$$

$$\Psi_{\text{ec},N} = 1.0000 \text{ (from Section(5) of calculations)}$$

$$N_{\text{cbg}} = 11920.84 \text{ lb (considering all anchors)}$$

$$V_{\text{cpg}} = 23841.68 \text{ lb}$$

$$\phi = 0.70 \text{ [D.4.4]}$$

$$\phi_{\text{seis}} = 0.75$$

$$\phi V_{\text{cpg}} = 12516.88 \text{ lb (for the anchor group)}$$

11) Check Demand/Capacity Ratios [Sec. D.7]

Tension

- Steel : 0.0154

- Breakout : 0.0483

- Pullout : 0.1091

- Sideface Blowout : N/A

Shear

- Steel : 0.0448

- Breakout (case 1) : 0.1167

- Breakout (case 2) : 0.1102

- Breakout (case 3) : 0.0832

- Pryout : 0.0366

$$V.\text{Max}(0.12) \leq 0.2 \text{ and } T.\text{Max}(0.11) \leq 1.0 \text{ [Sec D.7.1]}$$

Interaction check: PASS

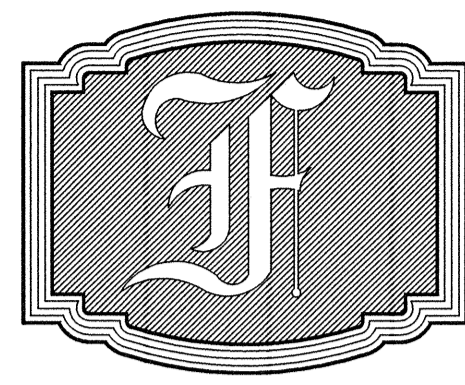
Use 5/8" diameter F1554 GR. 36 L-Bolt anchor(s) with 9 in. embedment

BRITTLE FAILURE GOVERNS: Governing anchor failure mode is brittle failure. Per 2006 IBC Section 1908.1.16, anchors shall be governed by a ductile steel element in structures

assigned to Seismic Design Category C, D, E, or F. Alternatively the minimum design strength of the anchor(s) shall be at least 2.5 times the factored forces or the anchor attachment to the structure shall undergo ductile yielding at a load level less than the design strength of the anchor(s). Designer must exercise own judgement to determine if this design is suitable.

ABBREVIATIONS:

A	AT AIR CONDITIONING ADJ. ADJUSTABLE AFF. ABOVE FINISH FLOOR AHU. AIR HANDLING UNIT ALUM. ALUMINUM APPROX. APPROXIMATE ARCH. ARCHITECT ARCHIT. ARCHITECTURE ARCHIT. ARCHITECTURAL	M	MACH. MACHINE MAINT. MAINTENANCE MAX. MAXIMUM MECH. MECHANICAL MED. MEDIUM MFG. MANUFACTURING MFR. MANUFACTURER MID. MIDDLE MIN. MINIMUM MISC. MISCELLANEOUS MNT. MOUNTED MOUNT. MOUNTING MTL. METAL MULL. MULLION
B	BLDG. BUILDING BLK. BLOCK BLKG. BLOCKING BRD. BOARD	N	NEW N/A NOT APPLICABLE N.F.P.A. NATIONAL FIRE PROTECTION ASSOCIATION
C	CAB. CABINET CL. CENTER LINE CLG. CEILING CLR. CLEAR CMU. CONCRETE MASONRY UNIT COL. COLUMN CONC. CONCRETE CONT. CONTINUOUS CPT. CARPET CT. CERAMIC TILE	O	ON CENTER OFNG. OPENING OPF. OPPOSITE OD. OVERFLOW DRAIN
D	DBL. DOUBLE DEPT. DEPARTMENT DET. DETAIL DF. DRINKING FOUNTAIN DIAG. DIAGONAL DIM. DIMENSION DN. DOWN DR. DOOR DUG. DRAWING DUR. DRAWER	P	P.C.F. POUNDS PER CUBIC FOOT PH. PANIC HARDWARE PL. PLASTIC LAMINATE PLAS. FLASTER FNL. FINL. PROJ. PROJECT PROJ. PROJECTION P.S.I. POUNDS PER SQUARE INCH
E	EA. EACH ELEC. ELECTRICAL ELEV. ELEVATION EQ. EQUAL EQUIP. EQUIPMENT (E) EXISTING	Q	QTY. QUANTITY
F	FAB. FABRICATE FF. FINISH FLOOR FIN. FINISH FIXT. FIXTURE F.F. FACE OF FURRING F.O.C. FACE OF COLUMN F.O.C. FACE OF CONCRETE F.O.W. FACE OF WALL FTG. FOOTING FUR. FURRING	R	RISER RADIUS RD. ROOF DRAIN REF. REFERENCE REFR. REFRIGERATED REFR. REFRIGERATION REG. REGISTER REQ. REQUIRED REV. REVISION RF. ROOFING RM. ROOM R.O. ROUGH OPENING (R) RELOCATED
G	GA. GAUGE G.C. GENERAL CONTRACTOR GYP. BOARD	S	SERV. SERVICE SHUR. SHOWER SIM. SIMILAR SFFC. SPECIFICATIONS SQFT. SQUARE FOOTAGE ST. STREET S.T.C. SOUND TRANSMISSION CLASS
H	HOE. HOSE BIBB HT. HEIGHT HM. HOLLOW METAL HVAC. HEATING, VENTILATION, & AIR CONDITIONING HW. HOT WATER	T	STD. STANDARD STL. STEEL STOR. STORAGE SUSP. SUSPENDED
I	I.B.C. INTERNATIONAL BUILDING CODE INSUL. INSULATION INSTL. INSTALL	U	T. TREAD TEL. TELEPHONE TEMP. TEMPERATURE TEMP. TEMPERED T.I. TENANT IMPROVEMENT TYP. TYPICAL
J	J.B. JUNCTION BOX JST. JOIST	V	UNIFORM BUILDING CODE UNDERWRITERS LABORATORY UNLESS OTHERWISE NOTED
K	KIT. KITCHEN	W	VCT. VINYL COMPOSITION TILE VERT. VERTICAL VEST. VESTIBULE VENT. VENTILATION
L	LAM. LAMINATE LAM. LAMINATED LAV. LAVATORY LBY. POUND(S)	WITH	W. WITH W.C. WATER CLOSET W.H. WATER HEATER



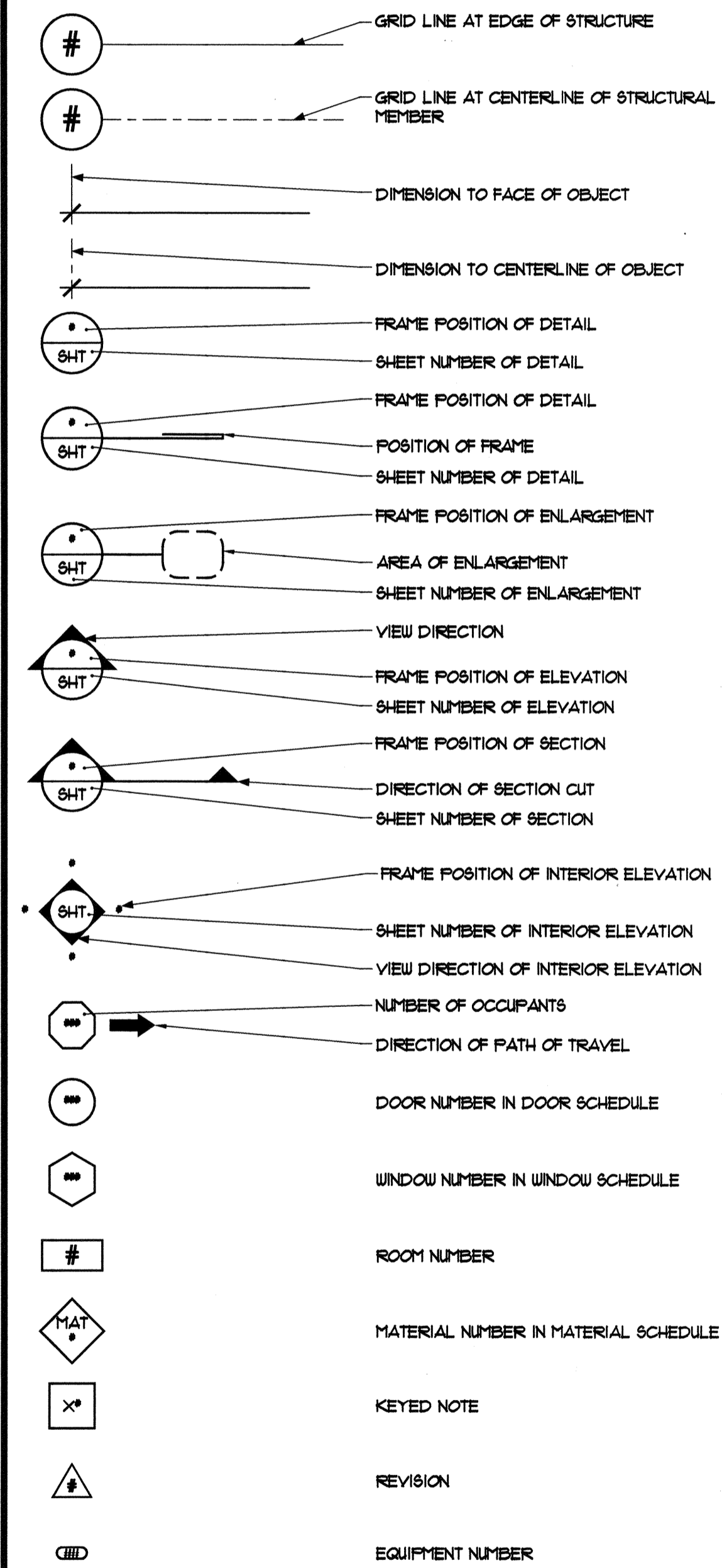
FAIRHAVEN

MEMORIAL PARK & MORTUARY

1702 EAST FAIRHAVEN SANTA ANA, CALIFORNIA 92705

PROJECT TITLE : CONSTRUCTION OF NEW STAIR FOR ADDITIONAL EGRESS FROM BACK OF SECOND FLOOR.

DRAWING SYMBOLS:



SPECIAL INSPECTIONS:

ALL INSPECTIONS SHALL BE PER 2010 C.B.C. SECTIONS 1101 & 1104. SPECIAL INSPECTION IS REQUIRED FOR ALL EPOXY ANCHORS.

CODE ANALYSIS:

- CODES: 2010 CALIFORNIA BUILDING CODE
2010 CALIFORNIA PLUMBING CODE
2010 CALIFORNIA MECHANICAL CODE
2010 CALIFORNIA ELECTRICAL CODE
2010 CALIFORNIA FIRE CODE
2010 CALIFORNIA ENERGY EFFICIENCY STANDARDS FOR NON-RESIDENTIAL AS ADOPTED BY THE CITY CODE

CONSTRUCTION TYPE: V-N
OCCUPANCIES: B

VICINITY MAPS:



ARCHITECTURAL STRUCTURAL ACCEPTED FOR CONSTRUCTION

SEPARATE PERMITS ARE REQUIRED FOR ELECTRICAL, PLUMBING & MECHANICAL PLANS. This set of plans and specifications must be left on the job at all times and it is intended to make no change or alterations on same without written permission from the City of Santa Ana.

The acceptance of this plan and specifications SHALL NOT be held to permit not be an approval of the provisions of ANY City Ordinance or State Law.

Accepted By: *[Signature]* Date: 4/13/11
CITY OF SANTA ANA
Date Issued: 4/13/11

PROJECT TEAM:
ARCHITECT: ANDERSON ASSOCIATES
MARCO FERNANDEZ, ARCHITECT
DAVE MCCLANAHAN, VP.
1211 N. TUSTIN AVE.
ANAHEIM, CA 92807
(714) 632-9055

STRUCTURAL: WONG AND ASSOCIATES
180 S. PROSPECT AVE., SUITE 110
TUSTIN, CA 92780
ATTN: ARVY WONG
714-838-3828

SHEET INDEX:
ARCHITECTURAL:
A-10 COVER SHEET
A-11 GENERAL NOTES
A-12 GENERAL INFORMATION/EXECUTION NOTES
A-31 SITE PLAN
A-51 FLOOR PLAN
A-71 ENLARGED STAIR PLAN SECTION AND DETAILS

PROJECT DATA:

JOB ADDRESS: 1102 EAST FAIRHAVEN
SANTA ANA, CA 92705

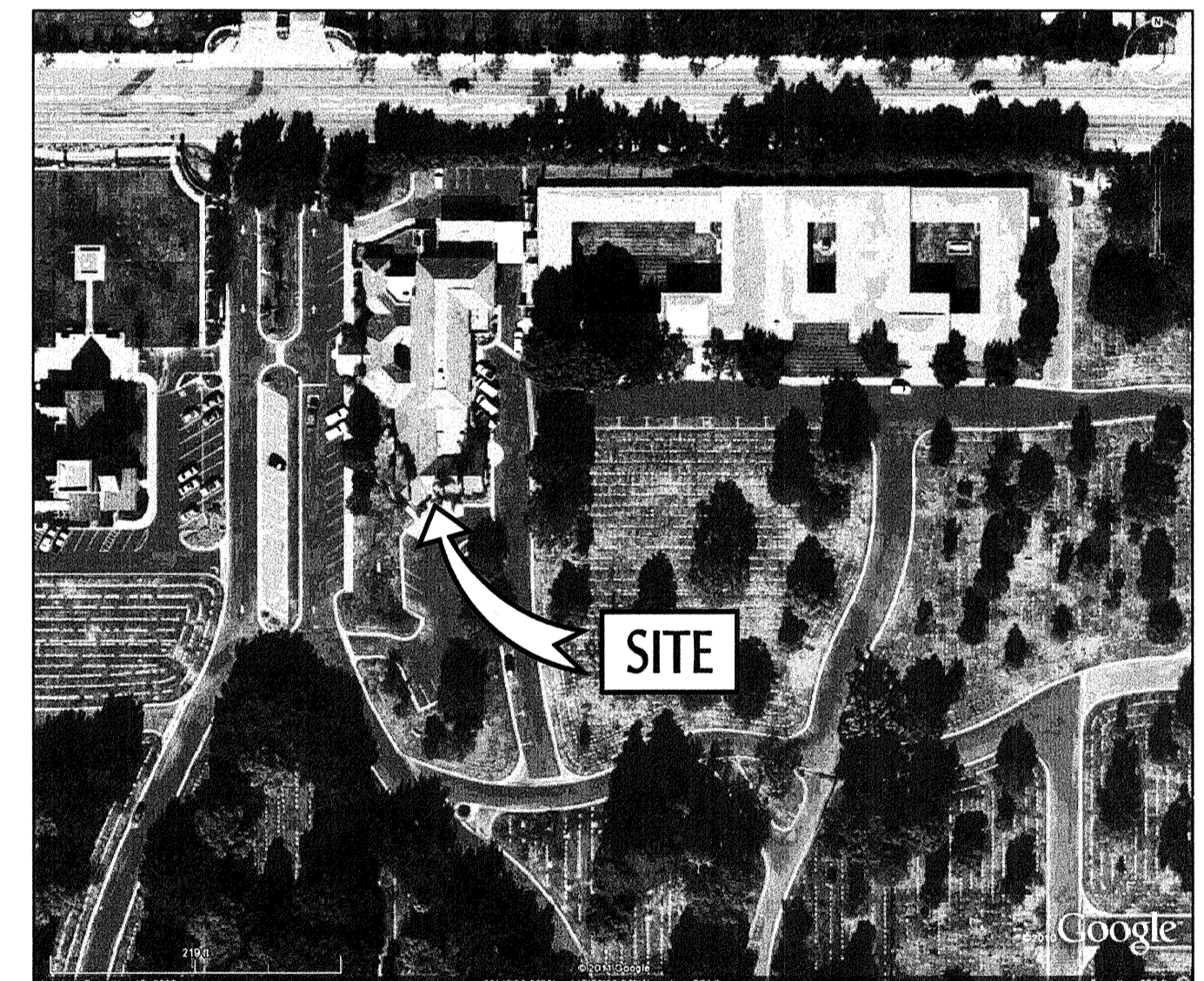
OWNER: 1102 EAST FAIRHAVEN
SANTA ANA, CA 92705

PROJECT DESCRIPTION:
CONSTRUCTION OF NEW STAIRS FROM SECOND FLOOR FOR EASY EGRESS. INSTALL A NEW DOOR AT TOP OF STAIRS TO EXIT SECOND FLOOR. THIS STAIRS ARE BEING BUILT FOR CONVENIENCE, THEY ARE NOT THE RESULT OF ADDED SQUARE FOOTAGE OR INTERIOR REMODEL, AND THEY ARE NOT REQUIRED BY CODE.

APPROVED PLANS
SHALL BE ON JOB SITE AT ALL TIMES

APPROVED
DATE: 4/7/11
SANTA ANA POLICE DEPT.

"Police Department" Final Inspection Required 647-5840



APPROVED PLANNING DIVISION

MASTER I.D. 2011-95816
G.P. O.S. Zone A-1
PLANNER: *[Signature]* DATE 4/7/11
TRANSFERRED BY: DATE
PLANNING INSPECTION REQUIRED:
ROUGH FINAL NONE X

RECEIVED
APR 07 2011
City of Santa Ana

ANDERSON ASSOCIATES
1211 N. TUSTIN AVENUE
ANAHEIM, CA 92807
PHONE (714) 632-9055
FAX (714) 632-9015

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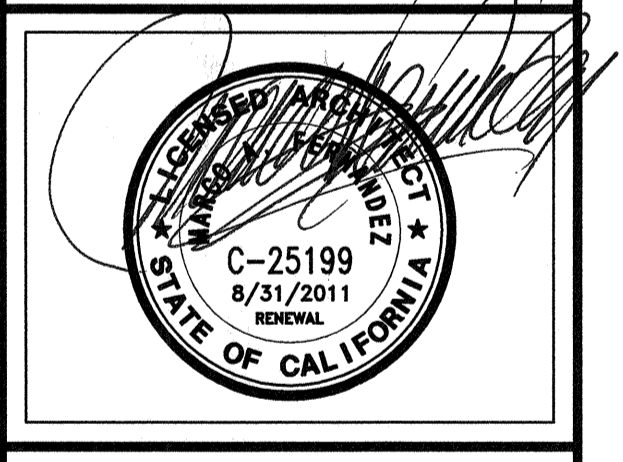
FAIRHAVEN
MEMORIAL PARK & MORTUARY
1702 EAST FAIRHAVEN SANTA ANA, CALIFORNIA 92705

CLIENT: *[Signature]*

APPROVED
DATE: 4/7/11
SANTA ANA POLICE DEPT.

"Police Department" Final Inspection Required 647-5840

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APR 07 2011
City of Santa Ana



REV.	DATE	ISSUED FOR
4/6/2011		BUILDING DEPT. SUBMITTING

BOLD-FACE REVISIONS APPLY TO THIS SHEET

ANDERSON ASSOCIATES

1211 North Tustin Avenue . Anaheim, California 92807 . Ph: (714) 632-9055 . Fax: (714) 632-9015

Facilities Planning . Architecture . Interior Design . Industrial Engineering

RETAIN PLANS FOR FUTURE REVISIONS SUBJECT TO ITEMS CHECKED AND CONDITIONS BELOW:

INTERIOR TI ONLY
 NO EXTERIOR ALTERATIONS
 ALL MATERIALS TO MATCH EXISTING
 SCREENS OR REBAR (IF ANY)
 SUBMIT LANDSCAPE PLANS

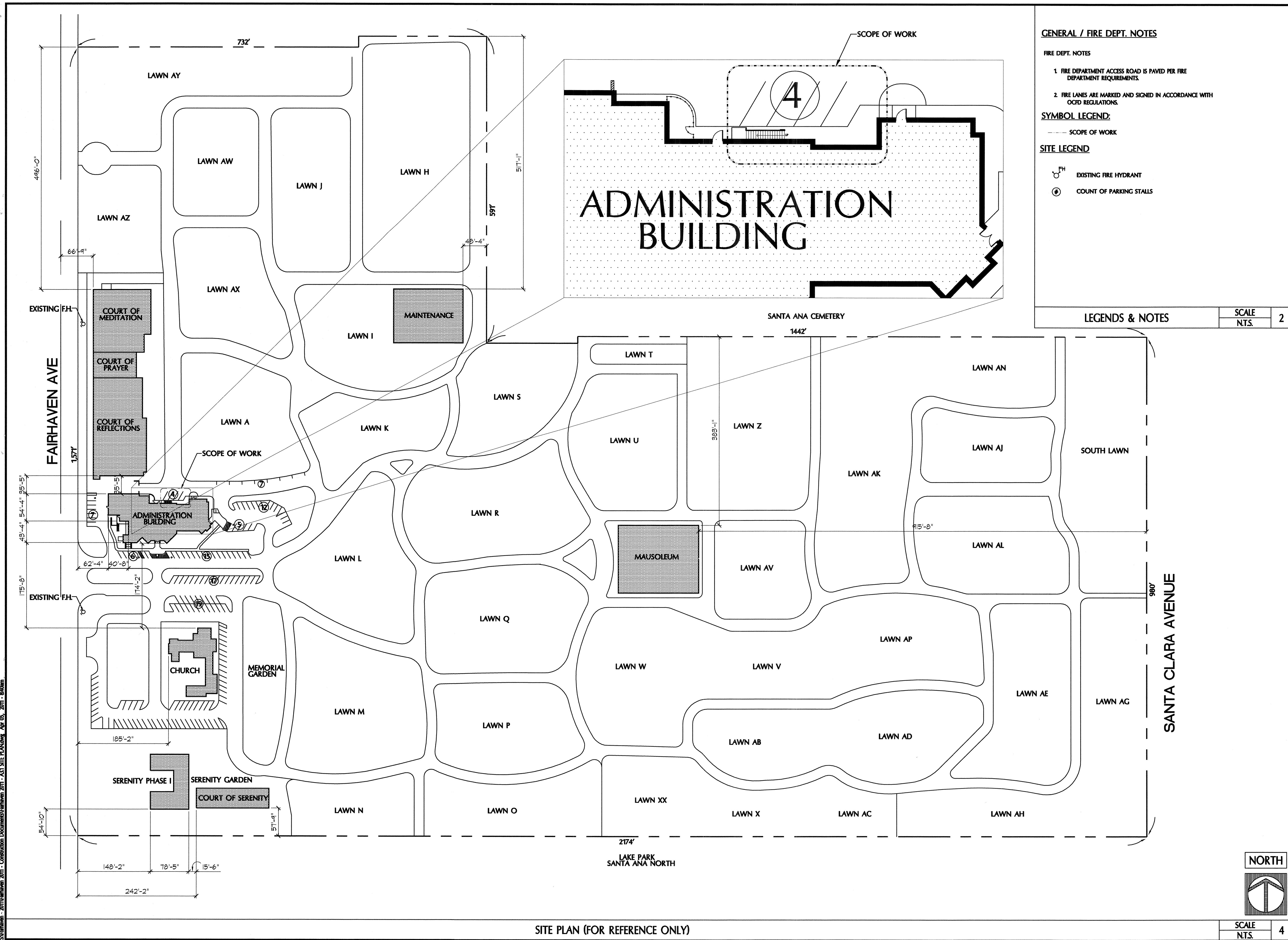
CONDITIONS:
400 emergency stair case at rear of Bldg

AA

DATE: 00/00/00 SCALE: AS NOTED
DRAWN BY: CHECKED BY: DM
JOB NO.:
SHEET TITLE: COVER SHEET
SHEET NUMBER: A-10

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10171102 SPC



GENERAL / FIRE DEPT. NOTES

- FIRE DEPT. NOTES**
1. FIRE DEPARTMENT ACCESS ROAD IS PAVED PER FIRE DEPARTMENT REQUIREMENTS.
 2. FIRE LANES ARE MARKED AND SIGNED IN ACCORDANCE WITH OCFD REGULATIONS.

SYMBOL LEGEND:

- SCOPE OF WORK
- FH EXISTING FIRE HYDRANT
- ⊙ COUNT OF PARKING STALLS

SITE LEGEND

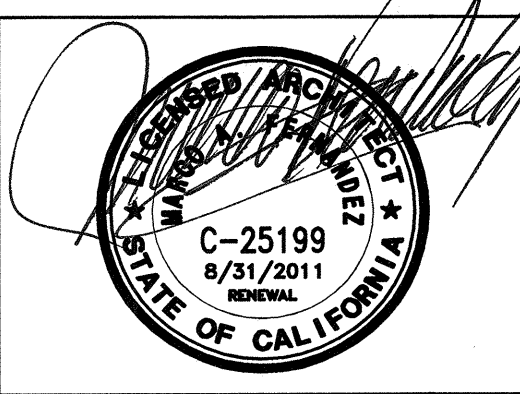
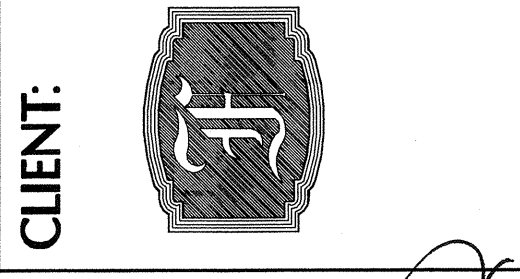
LEGENDS & NOTES

SCALE	2
N.T.S.	

ANDERSON ASSOCIATES
 1211 N. TUSTIN AVENUE
 ANAHEIM, CA 92807
 PHONE (714) 632-9055
 FAX (714) 632-9015

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FAIRHAVEN
 MEMORIAL PARK & MORTUARY
 1702 EAST FAIRHAVEN SANTA ANA, CALIFORNIA 92705



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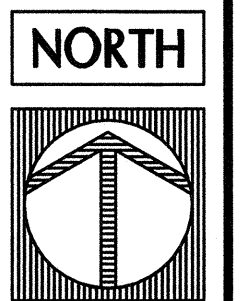
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 DRAWN BY: CHECKED BY: DM

JOB NO.
 SHEET TITLE
EXISTING SITE PLAN

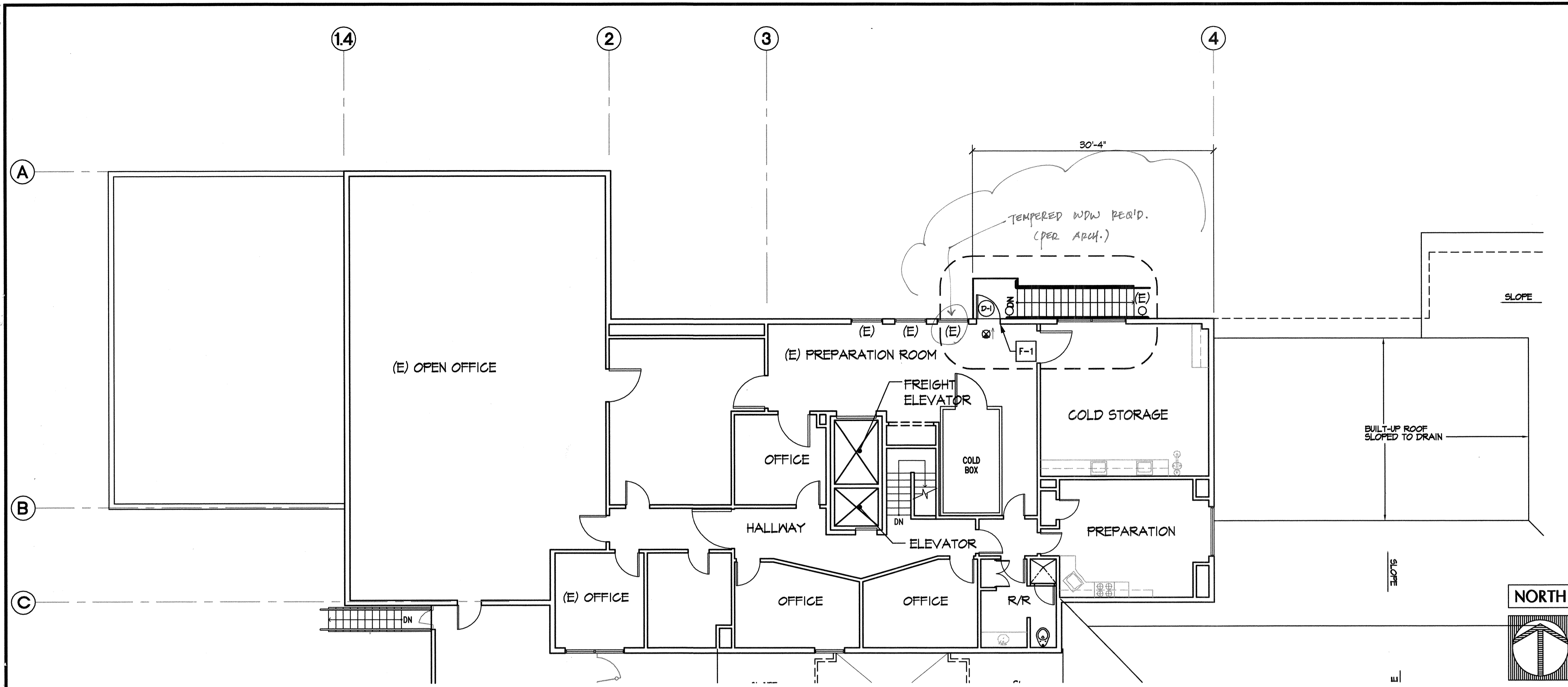
SHEET NUMBER
A-31

SITE PLAN (FOR REFERENCE ONLY)

SCALE	4
N.T.S.	



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SECOND FLOOR PLAN

SCALE
1/8" = 1'-0" 4

DOOR LEGEND

- EXISTING DOOR TO REMAIN
- NEW DOOR, 3'-0" X 7'-0" TO MATCH EXISTING EXTERIOR DOORS- DOOR TO HAVE HARDWARE ON THE INSIDE ONLY- NO OUTSIDE ACCESS- DOOR TO BE CONNECTED TO BUILDING SECURITY TO SOUND ALARM WHEN DOOR OPENS- INSTALL PANIC HARDWARE ON THE INSIDE-HARDWARE TO BE VON DUPREIN 98 SERIES OR EQUAL WITH NRP HINGES-SEE ELEVATION FOR LIGHT FIXTURE LOCATION AT TOP AND BOTTOM OF STAIRS-LIGHT FIXTURES TO HAVE VANDAL RESISTIVE COVERS

WINDOW LEGEND

- EXISTING WINDOW TO REMAIN

WALL & UTILITY LEGEND

(NOTE ALL GYP. BD. USED WILL BE 5/8" TYPE 'X')

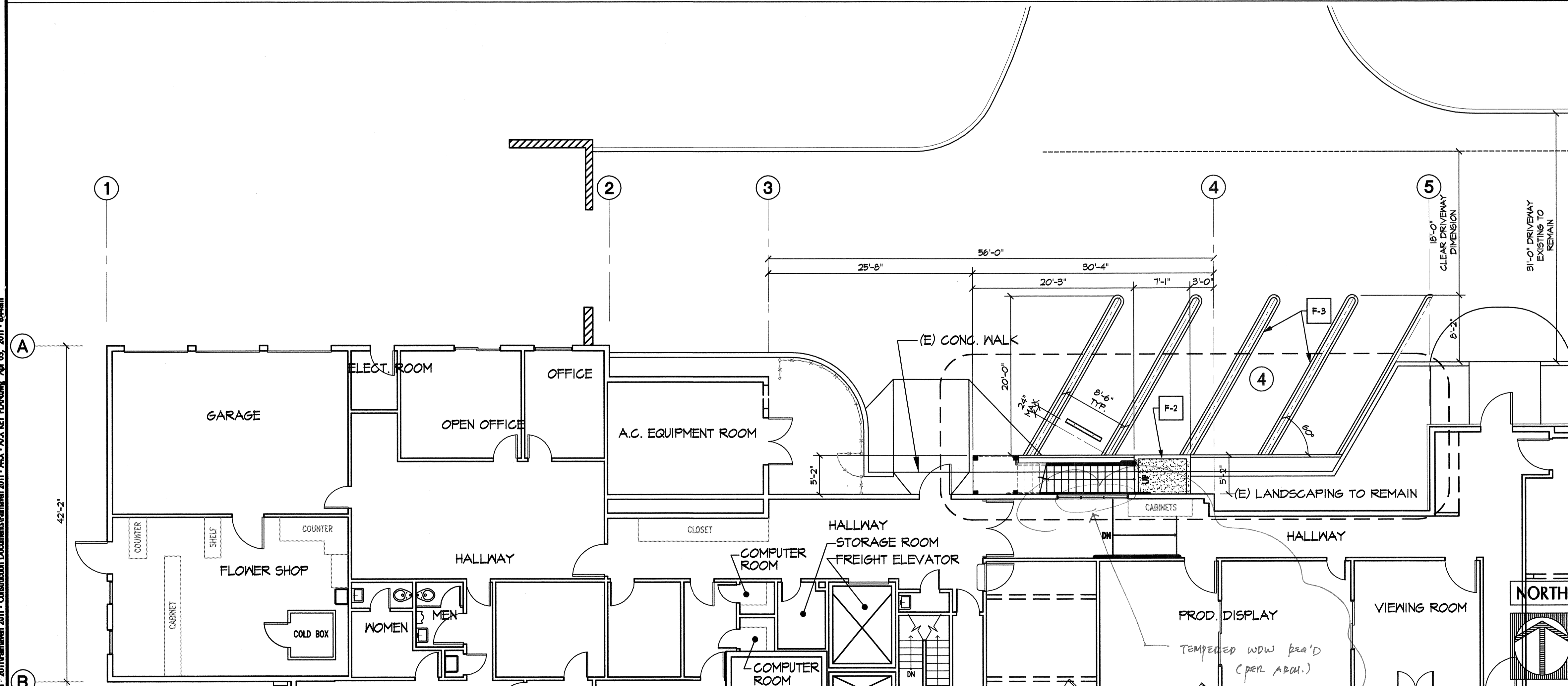
- EXISTING WALL TO REMAIN
- LIGHTED EXIT SIGNS WITH DIRECTIONAL ARROW
- WALL MOUNTED LIGHT FIXTURE TO HAVE VANDAL RESISTIVE COVER-SEE ELEVATION FOR LOCATION AND HEIGHT ABOVE LANDINGS
- WALL PACK @ BOTTOM OF STAIRS TO REMAIN

FLOOR PLAN KEYNOTES

- F-1 NEW DOOR OPENINGS- USE A 2X8 HDR FOR DOOR OPENING- REMOVE EXISTING STUCCO AS REQUIRED- FLASH DOOR AS REQUIRED- STUCCO COLOR TO MATCH EXISTING- SEE A-1.2 FOR ENLARGED STAIR DIMENSIONS-INSTALL EXIT LIGHT @ TOP OF DOOR-LIGHT TO BE CONNECTED TO EMERGENCY POWER-RE-ROUTE EXISTING ELECTRICAL CONDUIT IN THE PATH OF STAIR TO FEED FIXTURE FROM INSIDE OF BUILDING.
- F-2 (N) 4" THICK CONC. WALK SLOPED 1:20 AWAY FROM THE BUILDING- MEDIUM BROOM FINISH
- F-3 RE-STRIPE PARKING PER CITY STANDARDS-PARKING TO COMPLY WITH SECTION 41-1305 OF THE CITY OF SANTA ANA ZONING CODE.

SYMBOL LEGEND:

- SCOPE OF WORK



GROUND FLOOR PLAN

SCALE
1/8" = 1'-0" 8

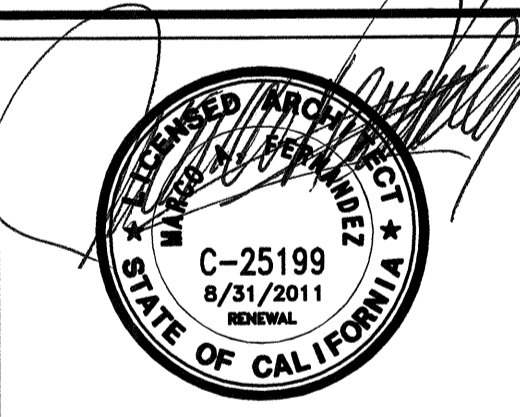
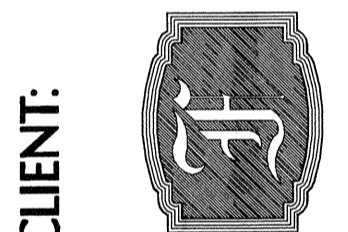
LEGENDS & NOTES

SCALE
N.T.S. 4

ANDERSON ASSOCIATES
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ANAHEIM, CA 92807
PHONE (714)632-9055
FAX (714)632-9015

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SANTA ANA, CALIFORNIA 92705
1702 EAST FAIRHAVEN

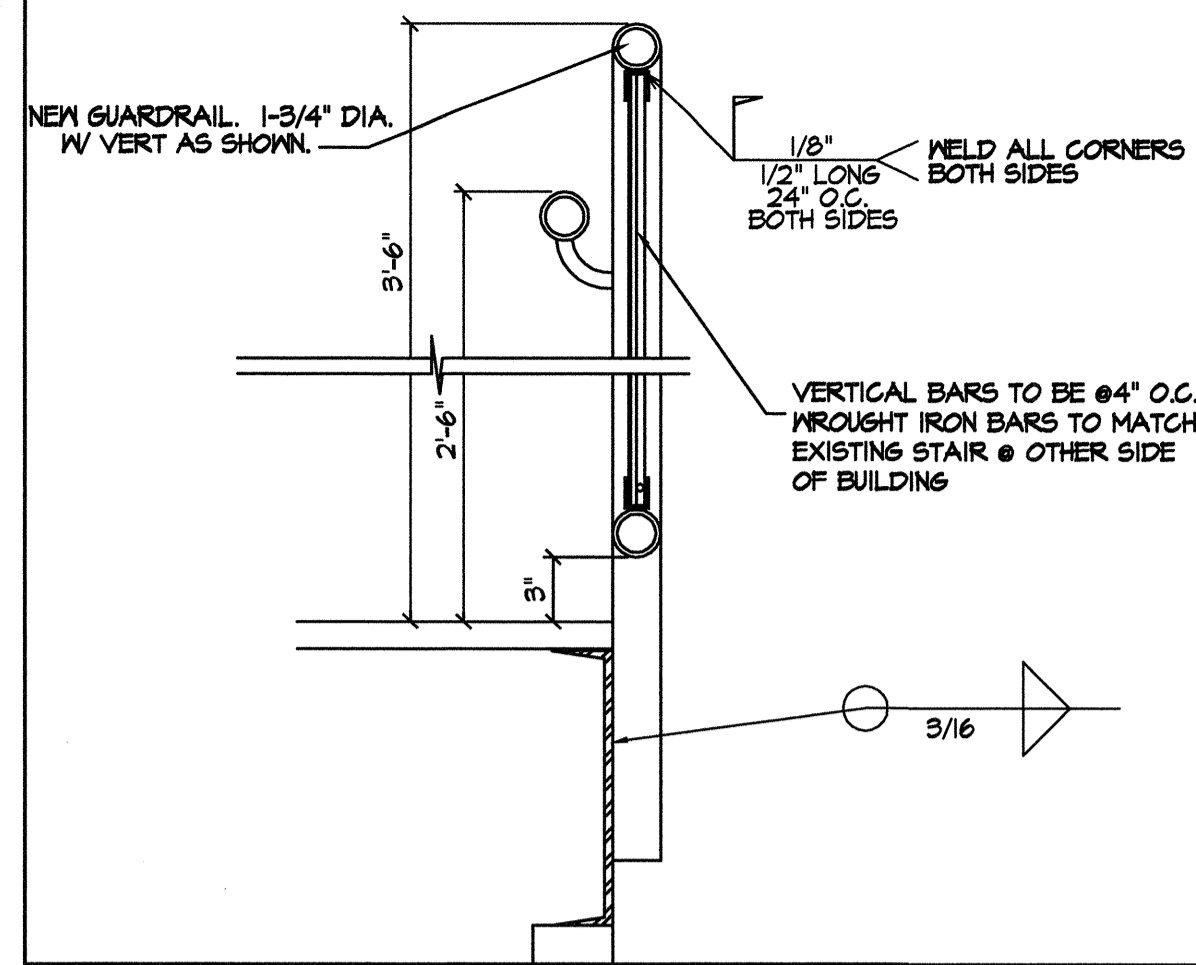


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1	4/6/2011	BUILDING DEPT. SUBMITTAL

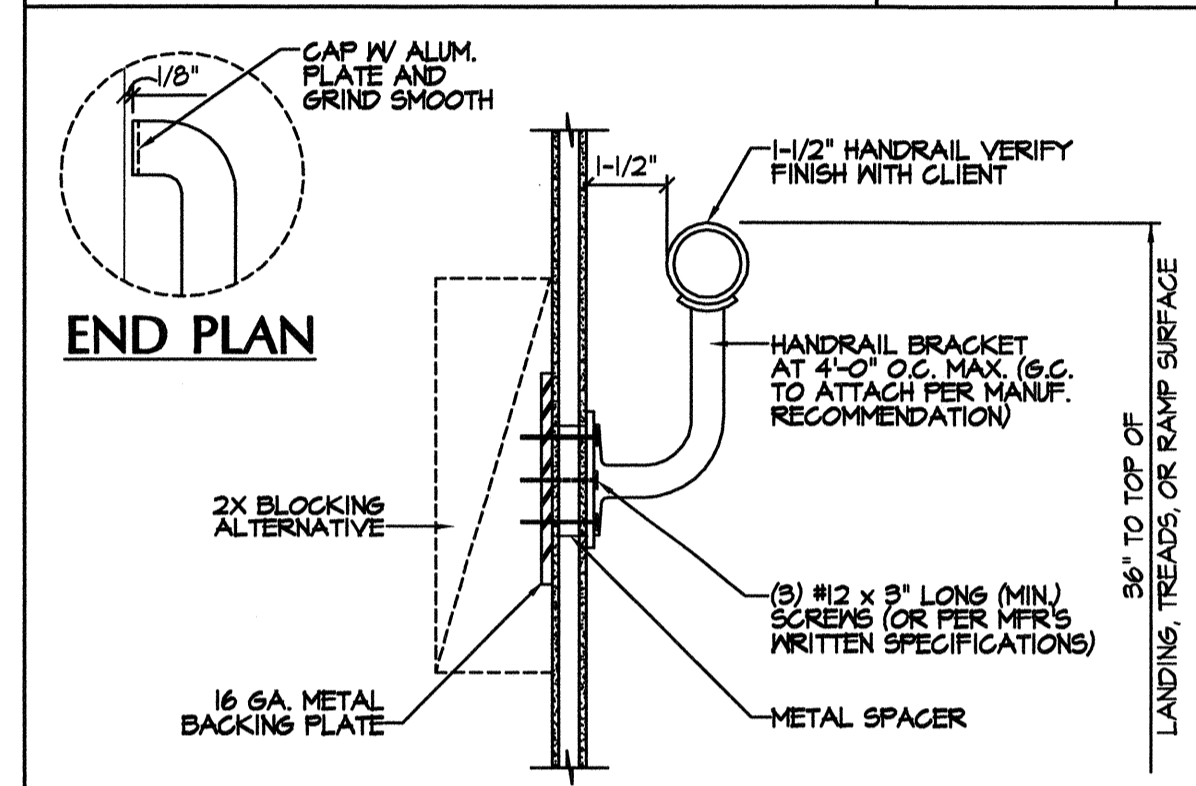
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DRAWN BY		CHECKED BY	DM
JOB NO.			
SHEET TITLE	FLOOR PLAN		
SHEET NUMBER	A-5.1		

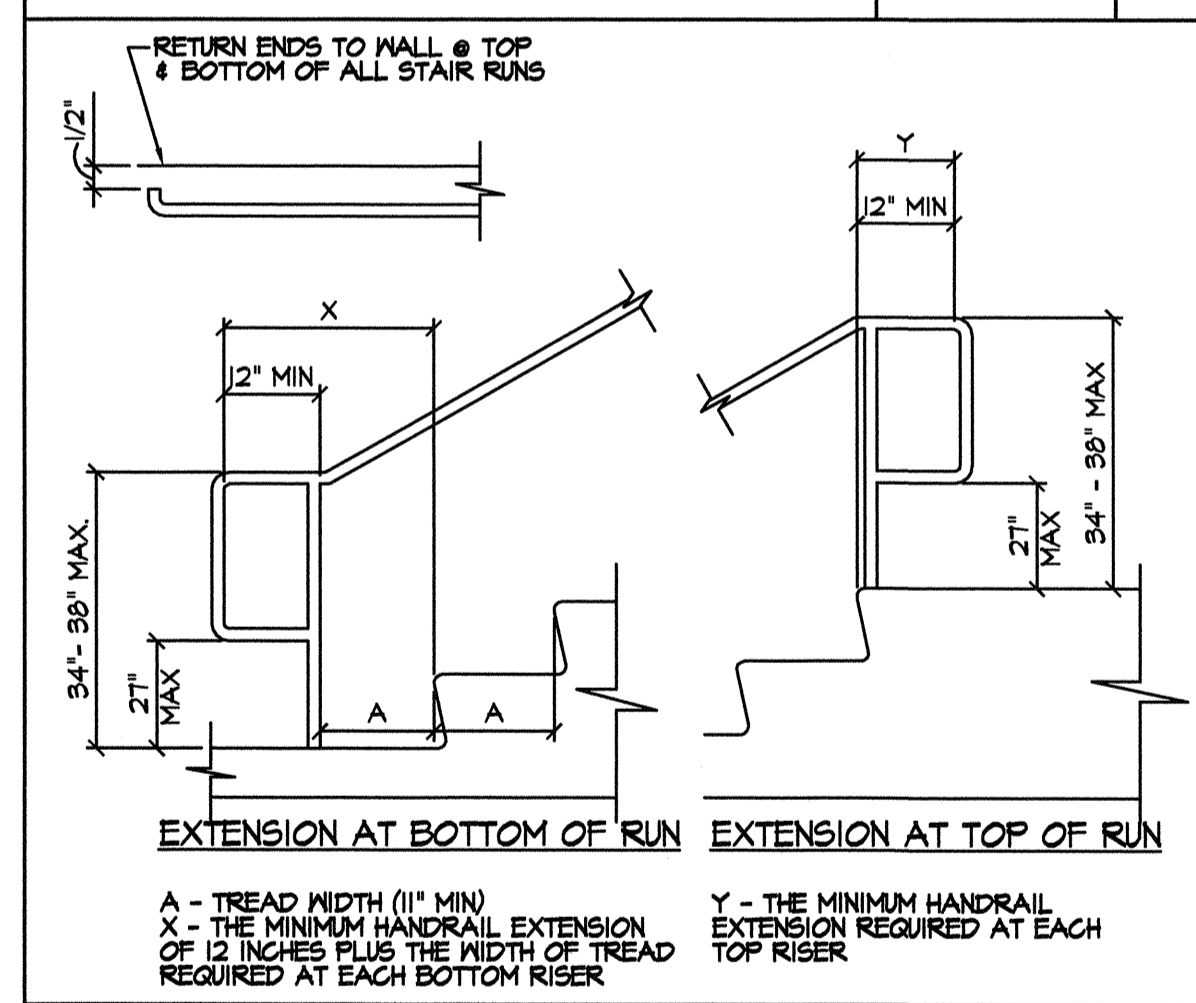
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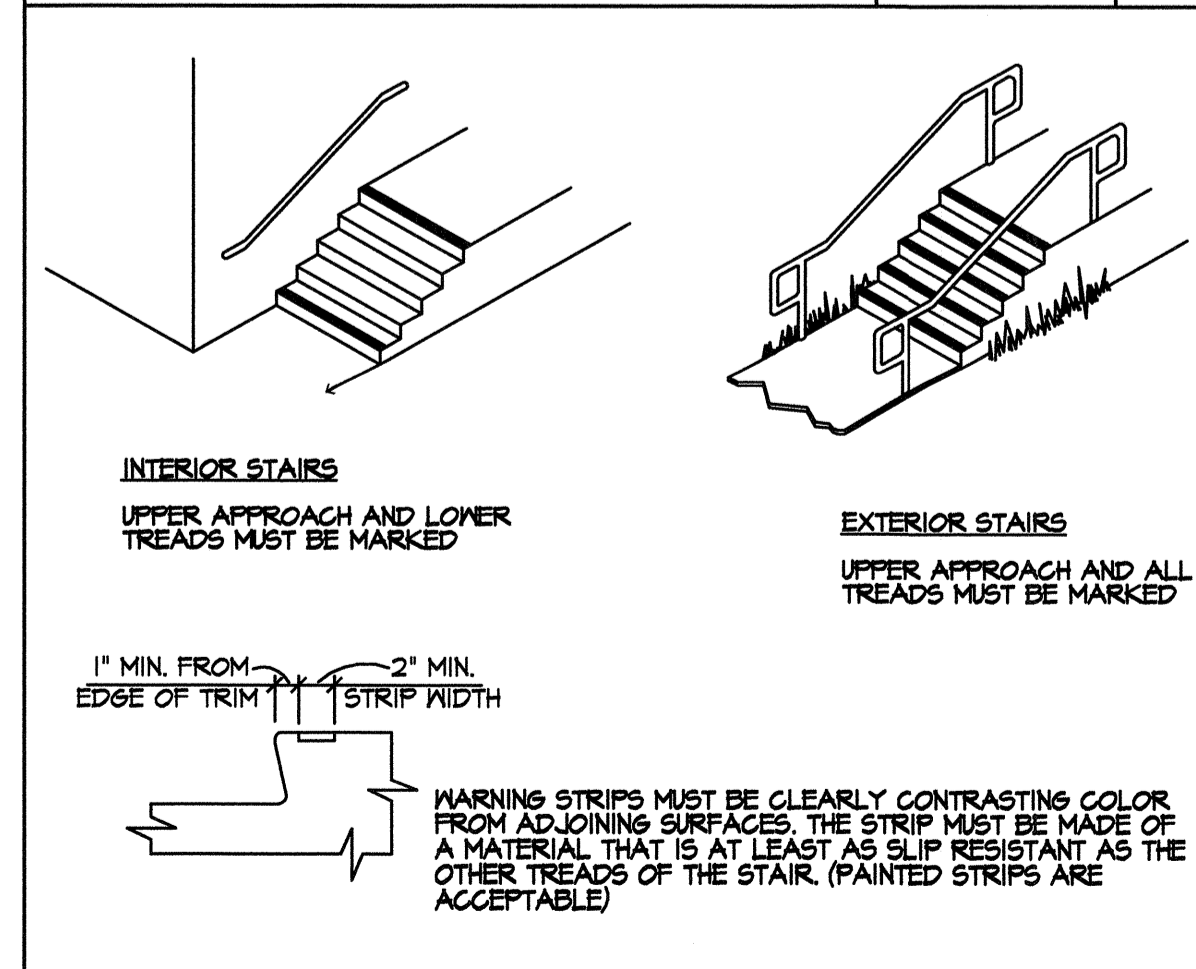
SECTION @ RAILING SCALE 13



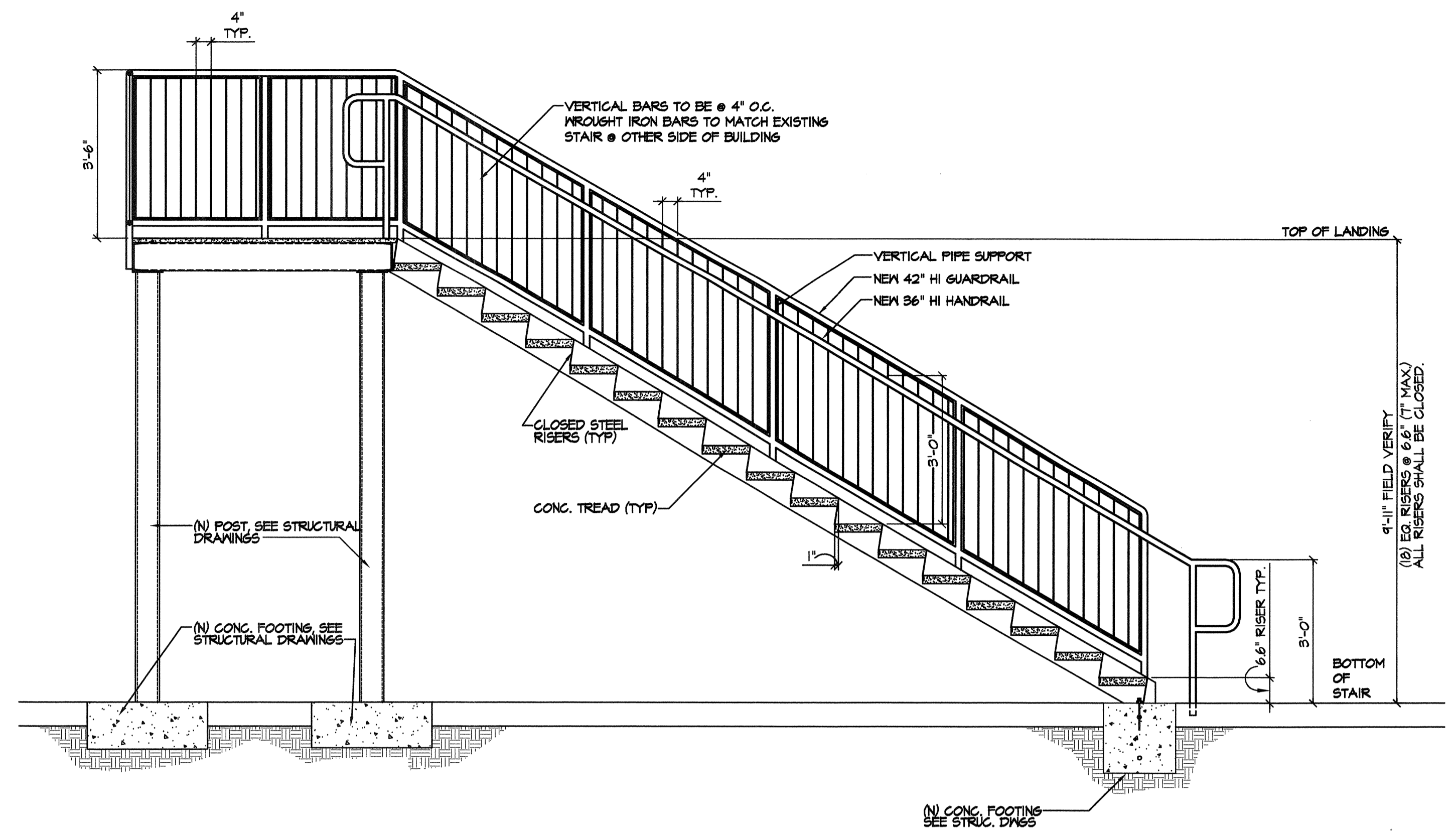
HANDRAIL SUPPORT SCALE 14



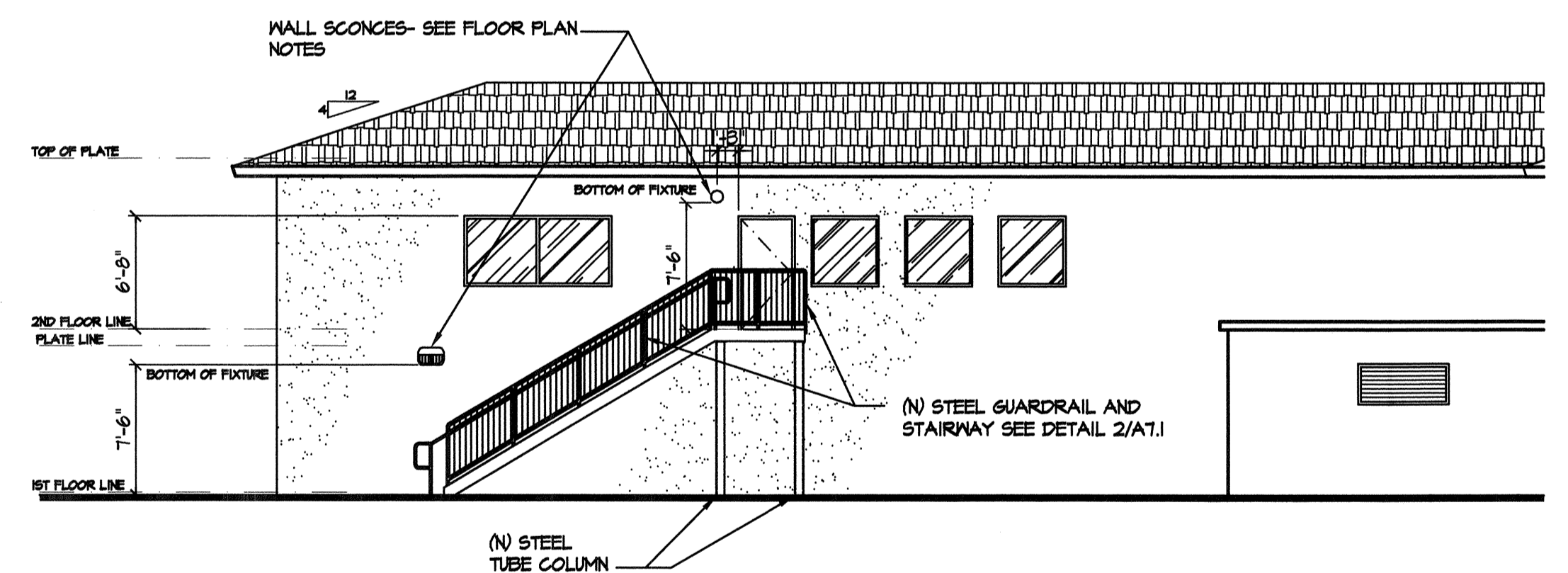
HANDRAIL DETAIL @ STAIRS SCALE 15



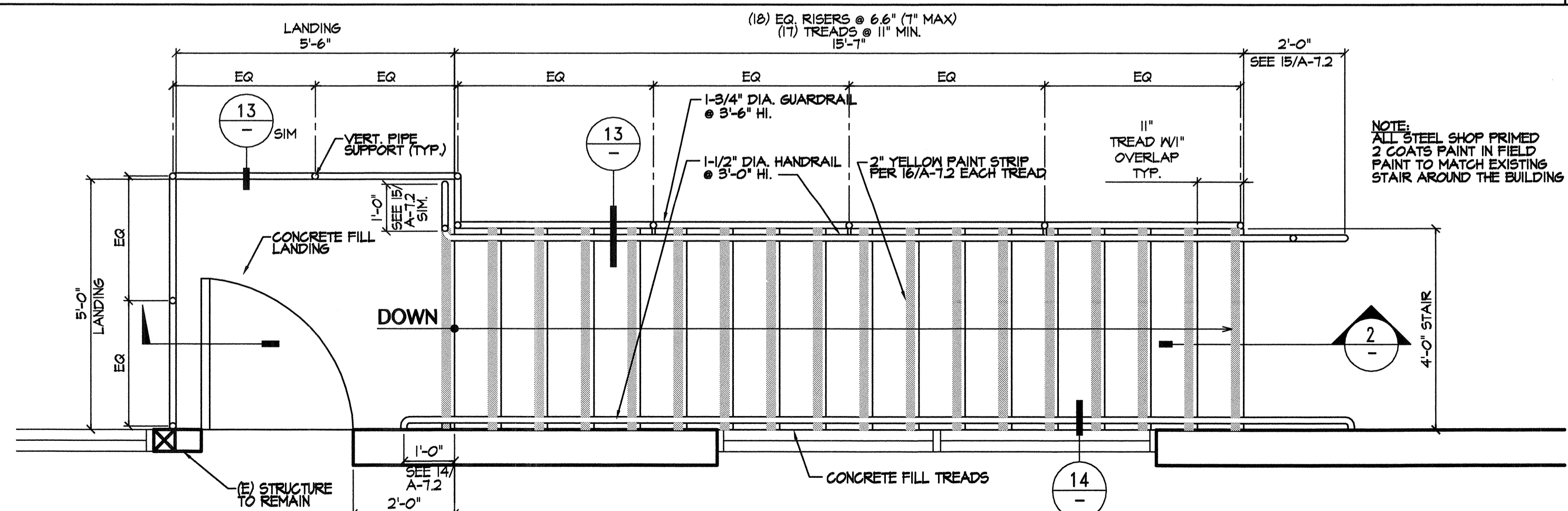
STAIR NOSING SCALE 16



SECTION @ STAIR SCALE 1/2"=1'-0" 2



PARTIAL ELEVATION SCALE 1/8"=1'-0" 3



ENLARGED STAIR PLAN SCALE 1/2"=1'-0" 4

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 ANAHEIM, CA 92807
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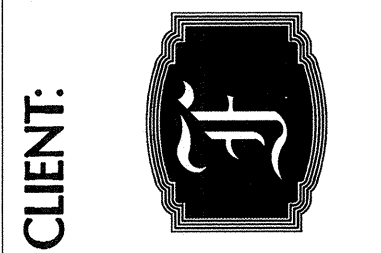
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1	4/6/2011	BUILDING DEPT. SUBMITTAL

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DATE: 00/00/00 SCALE: AS NOTED
 DRAWN BY: CHECKED BY: DM
 JOB NO.:
 SHEET TITLE: ENLARGED STAIR PLAN SECTION & DETAILS
 SHEET NUMBER: A-71

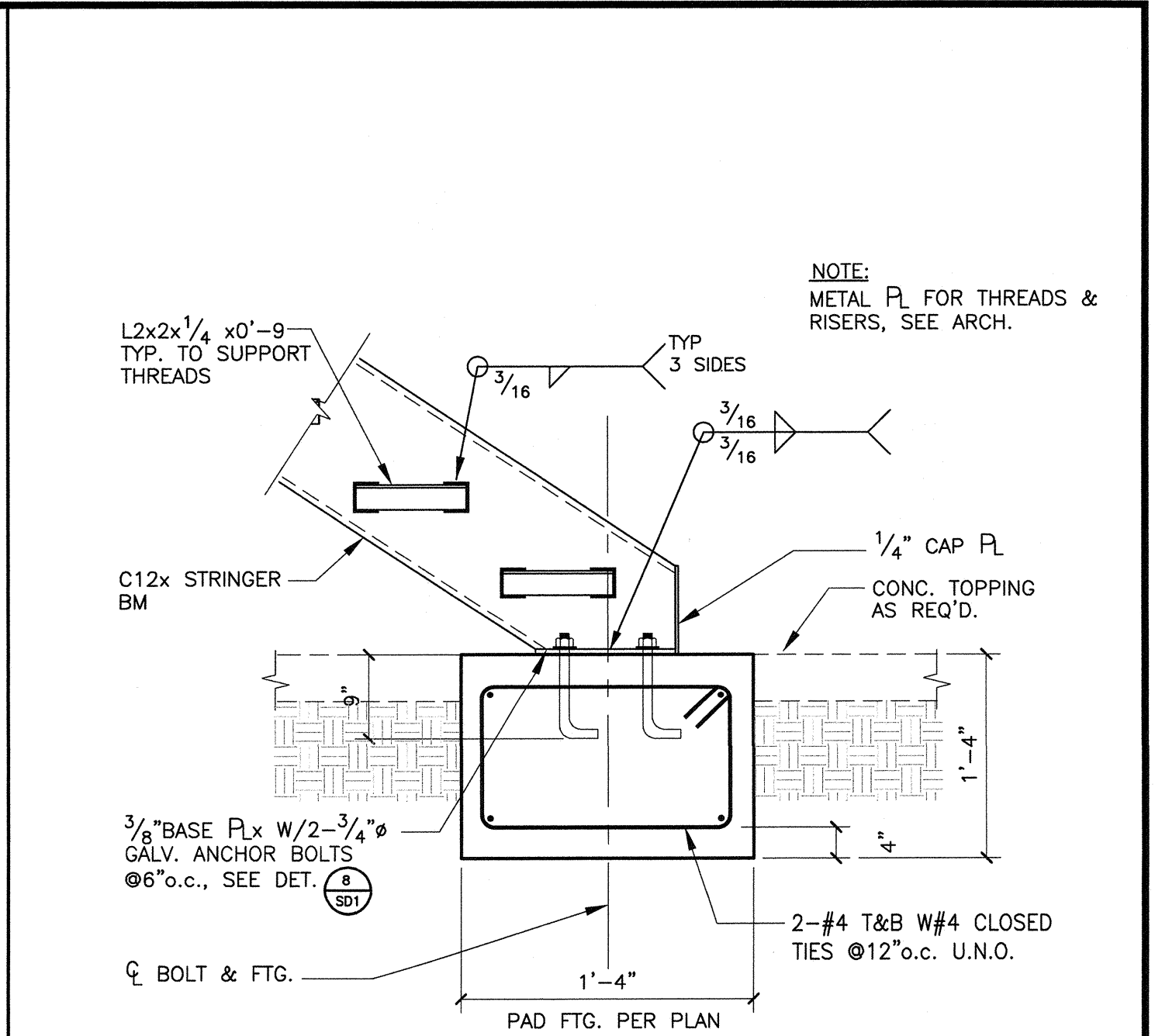
2011 Fairhaven 2011 - Construction Documents (Fairhaven) 2011-A71 ENLARGED STAIR PLAN.dwg Apr 05, 2011 - 8:42 am

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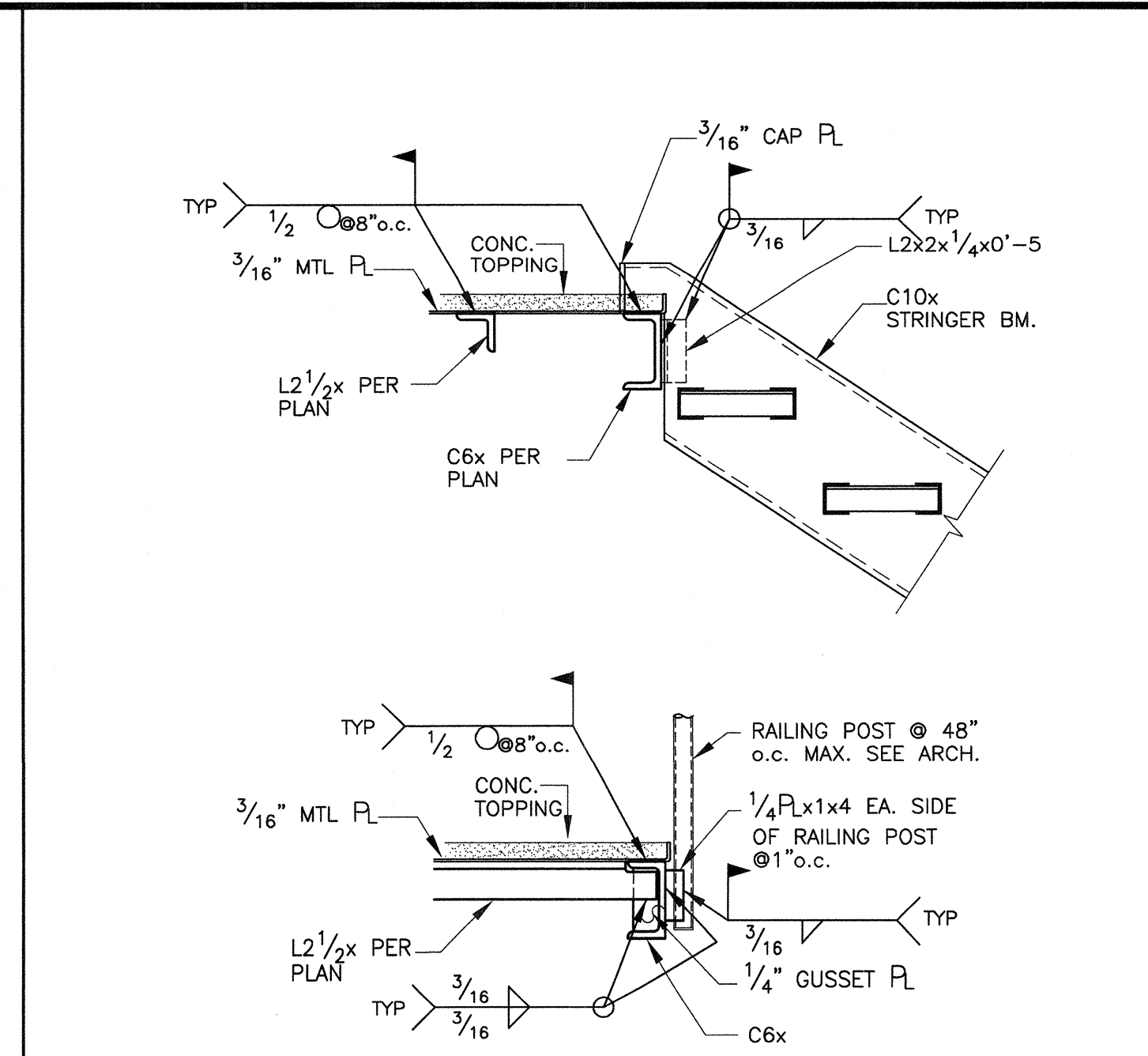


REV.	DATE	ISSUED FOR
	3/14/2011	BUILDING DEPT. SUBMITTAL
BOLD-FACE REVISIONS APPLY TO THIS SHEET		

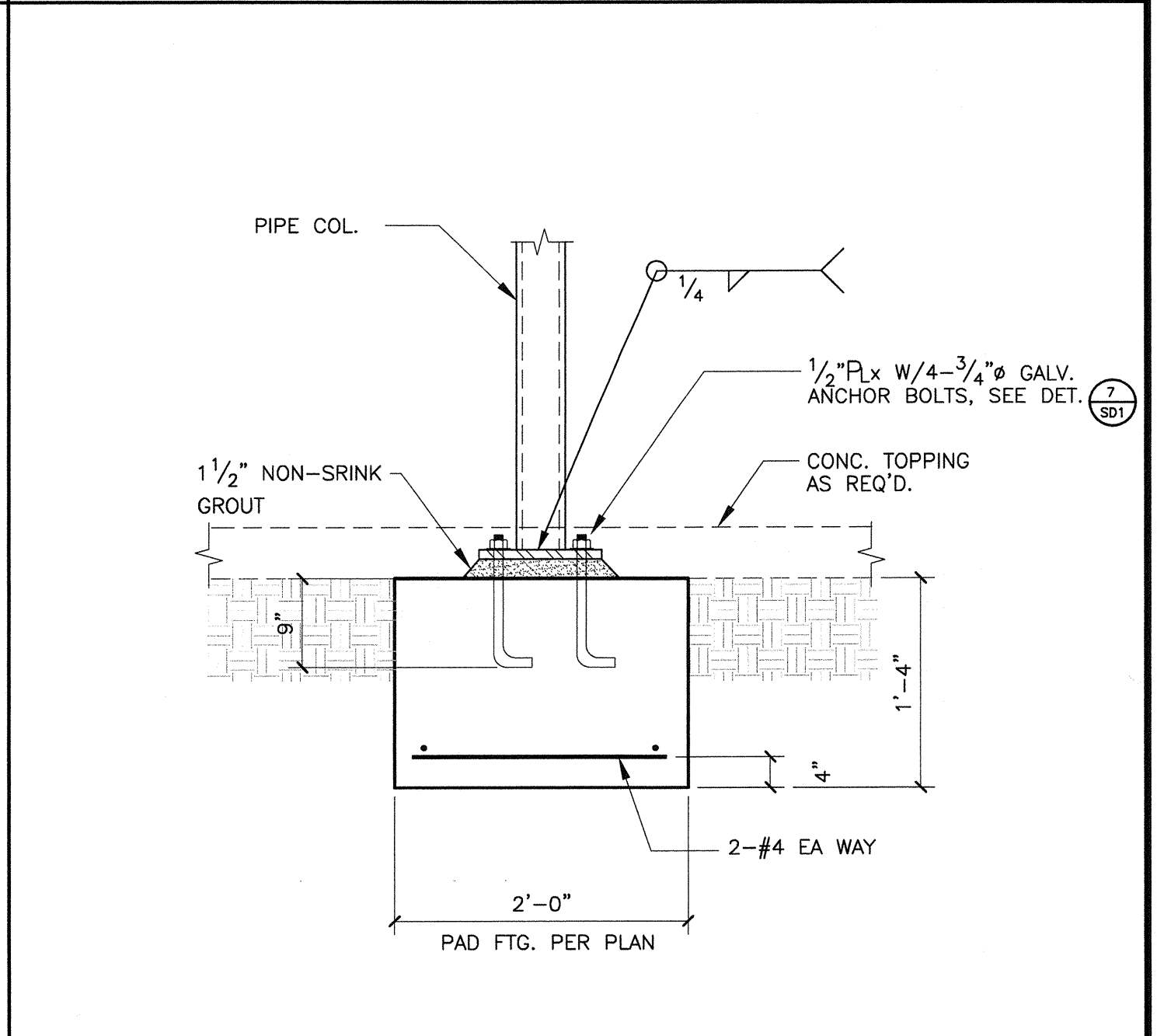
DATE: 00/00/00 SCALE: AS NOTED
 DRAWN BY: CHECKED BY: DM
 JOB NO.:
 SHEET TITLE: **SECTIONS & DETAILS**
 SHEET NUMBER: **SD1**



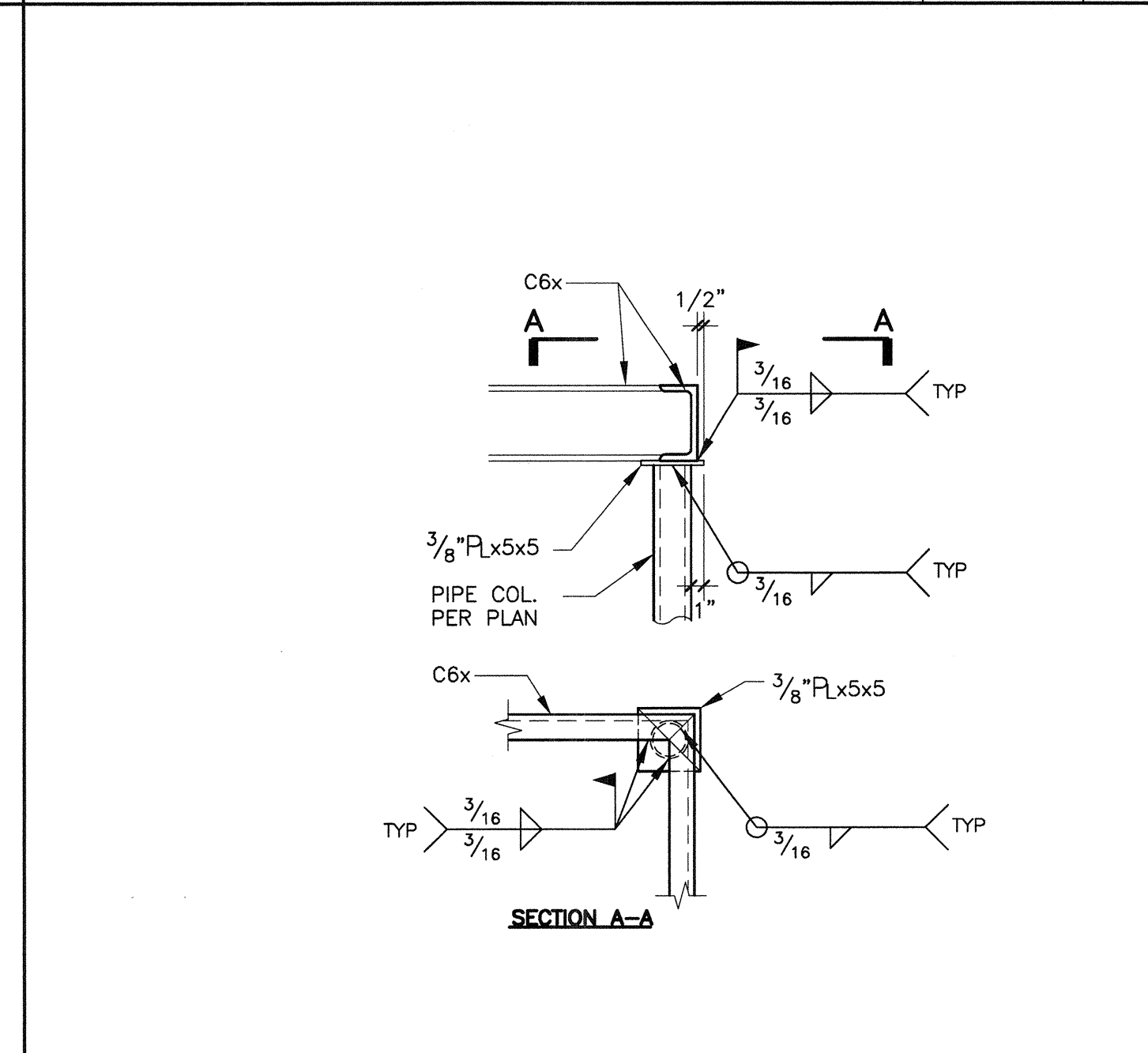
COLUMN CONN. SCALE 1"=1'-0" **3**



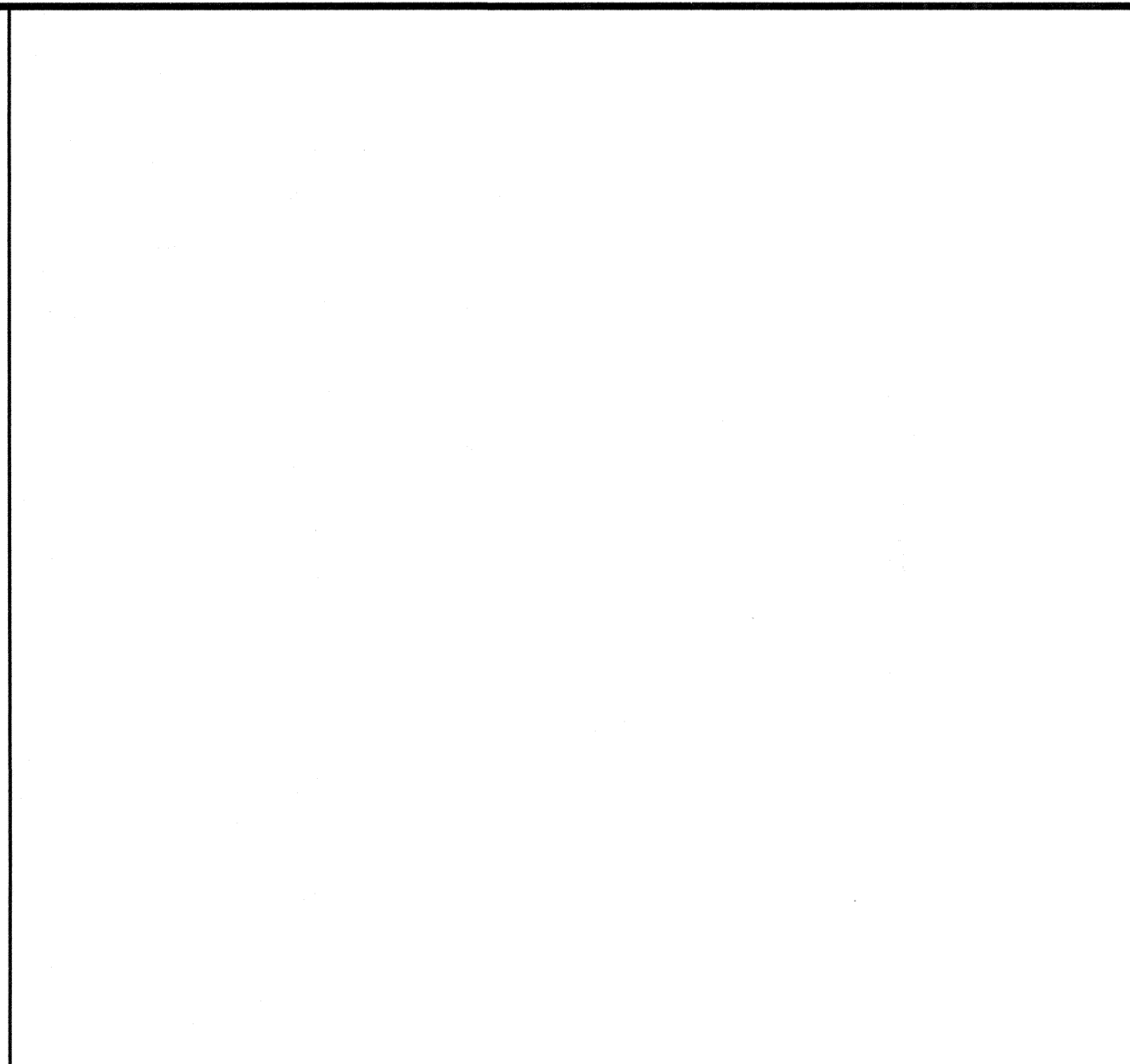
COLUMN CONN. SCALE 1"=1'-0" **6**



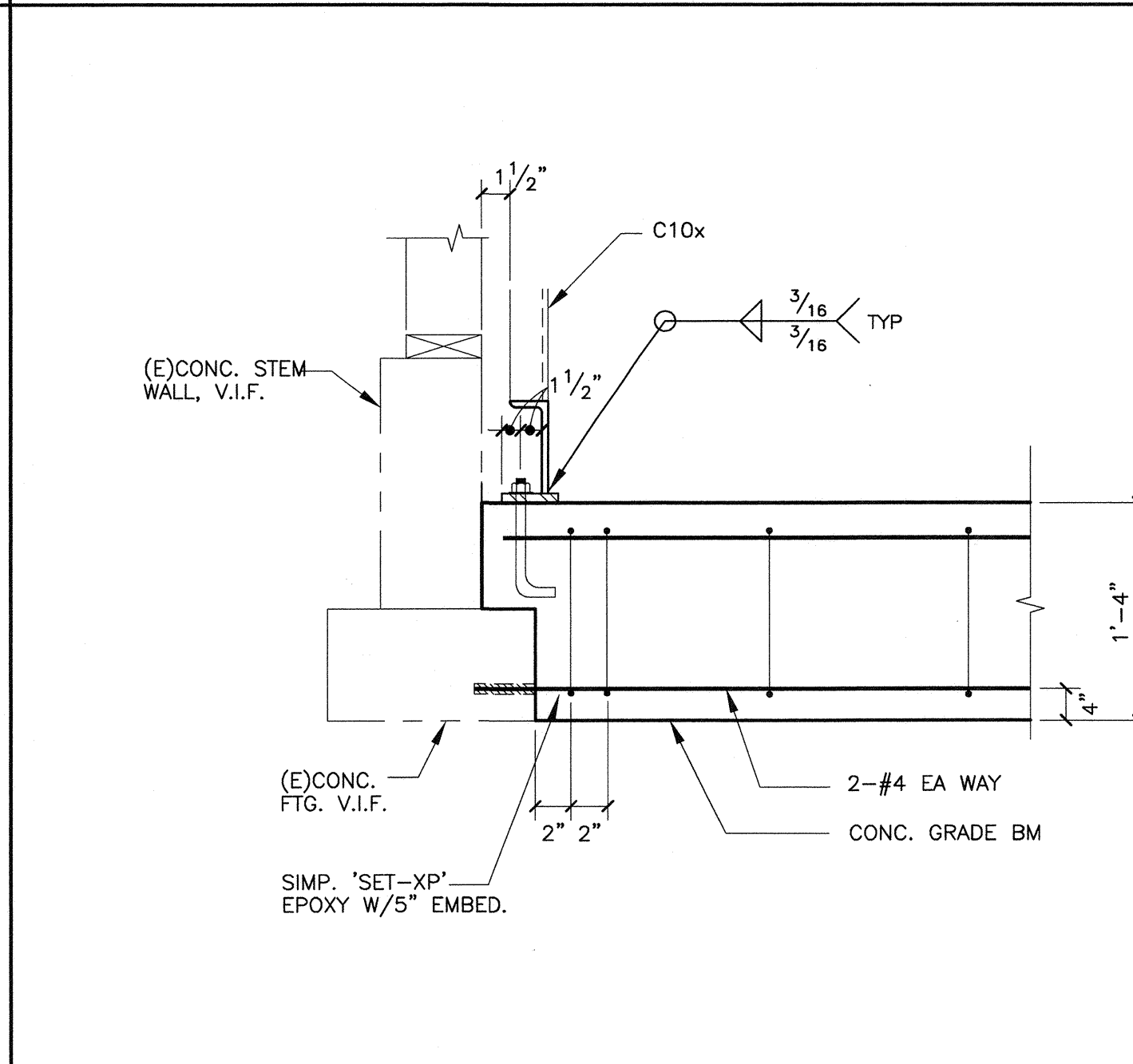
COLUMN CONN. SCALE 1"=1'-0" **2**



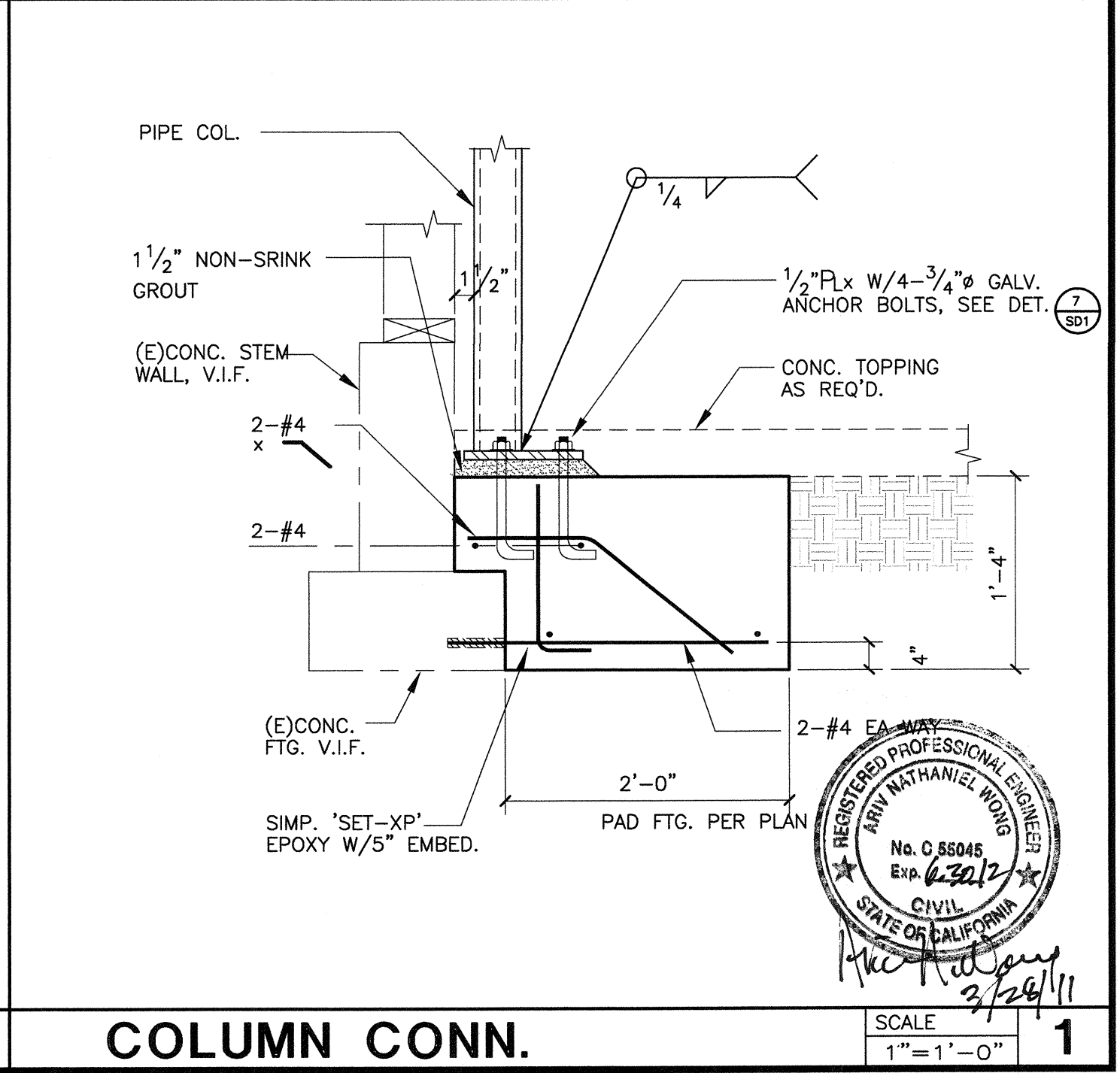
COLUMN CONN. SCALE 1"=1'-0" **5**



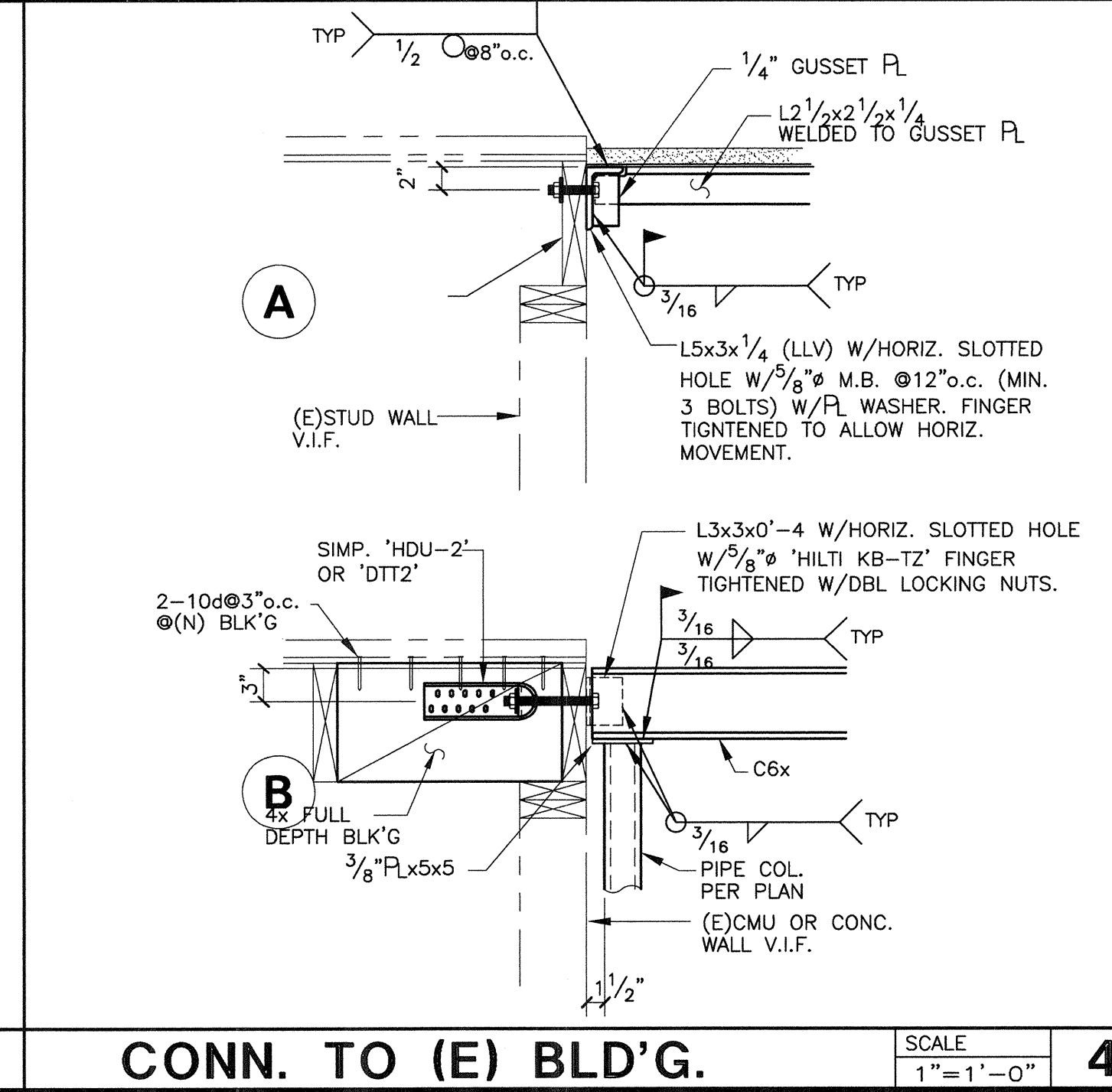
STRINGER & GRADE BM. SCALE 1"=1'-0" **8**



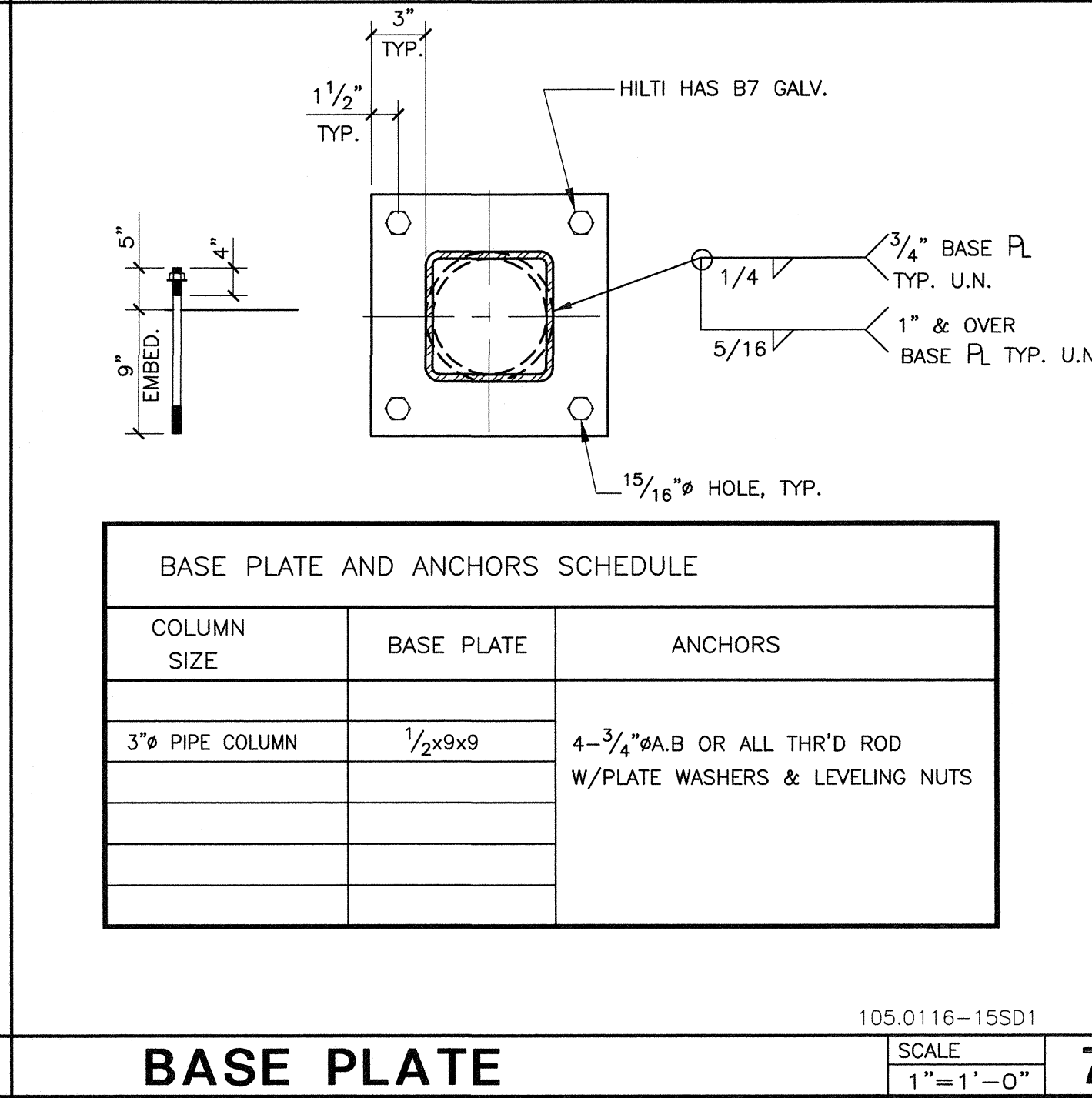
STRINGER & GRADE BM. SCALE 1"=1'-0" **8**



COLUMN CONN. SCALE 1"=1'-0" **1**



CONN. TO (E) BLD'G. SCALE 1"=1'-0" **4**



BASE PLATE SCALE 1"=1'-0" **7**

BASE PLATE AND ANCHORS SCHEDULE		
COLUMN SIZE	BASE PLATE	ANCHORS
3" PIPE COLUMN	1/2x9x9	4-3/4" @A,B OR ALL THR'D ROD W/PLATE WASHERS & LEVELING NUTS