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Chasco State Park and Museum Master Planset

A Training and Educational Plan
for the Construction Industry

Index of Drawings and Figures

Student Notes:

Only the pages of this planset that apply to your trade will be necessary during your studies. Please refer to the questions in your Business and Trade manuals for the correct pages based on you exam criteria.

Please Review All Plan Pages Provided Prior to Attending Class or Reviewing Any On-Line Course Work or Practice Testing. You will be Required to Reference Selected Pages When Solving Problems.

Stay Focused – Remember, Failing to prepare is preparing to fail!

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Master Planset

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ECONOMY INSURANCE MART

N84°-49'-40"W
165'
120'
5'
40'
N47°-57'-28"W
S78°-54'-43"W
4" Well
35'
30'
Property Boundary Lines
Tetherball Court 5' Radius
Seed Area #2
N5°-10'-20"E
5'
Angle "A"
Sod Area #2
Concrete Steps
Wood Deck
Park Ranger's Residence FFE 100.00'
Seed Area #1
Seed Area #3
155'
5'
Concrete Driveway
Planting Area #1 No Sod
2'
Sidewalk
3'
Decorative Wall
120'
S11°-05'-17"E
N21°-23'-57"E
10' Radius Typical
Septic Tank Area Drainfield In Ground
Limerock Driveway
Sod Area #1
55'
Property Boundary Lines
Angle "B"
Property Boundary Lines
S84°-49'-40"E
35'
95'
35'
165'
N
48'-8"
10' radius
10' radius
Concrete Curb and Gutter
2/3
10' radius
64'-4"
12'
148'-8"
Asphalt Surface Road and Parking Lot
28'
Jollet Street
BM 98.00'
Existing 8" Water Service
New 6" Water Main
Back Flow Preventer
Lift Station & Check Valve Vault
MH3
MH2
40' radius
62.91'
N86°-35'-42"W
222.33'
100'
6" Floor Slab
Equipment Room
Angle "C"
State Park Museum and Concession
FFE 100.00'
Retention Pond 5' deep - 1:1 slope
Horizontal Storm Drain
50'
6" Floor Slab
Pool Area - N.T.S.
20'
N04°-24'-13"W
174.41'
S0°-12'-40"W
142.08'
25'
15'
20'
25'
20' radius
Planter
15'
20'
8'
45°
1'
Mulch Area #1
11'-4"
Mulch Area #2
1'
45°
51'-3 3/4"
40'
65'
Security Fence
MH1
Summer Camp Apartments
Carport
37' Radius
25' Radius
Limerock Driveway
8'
30'-4"
20'
264'
Storm Drain Line
64'
64'
catch basin 3
catch basin 2
catch basin 1
Parking Lot "A"
20'
10' radius

SITE PLAN 1/32" = 1'

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Chasco State Park | C-01

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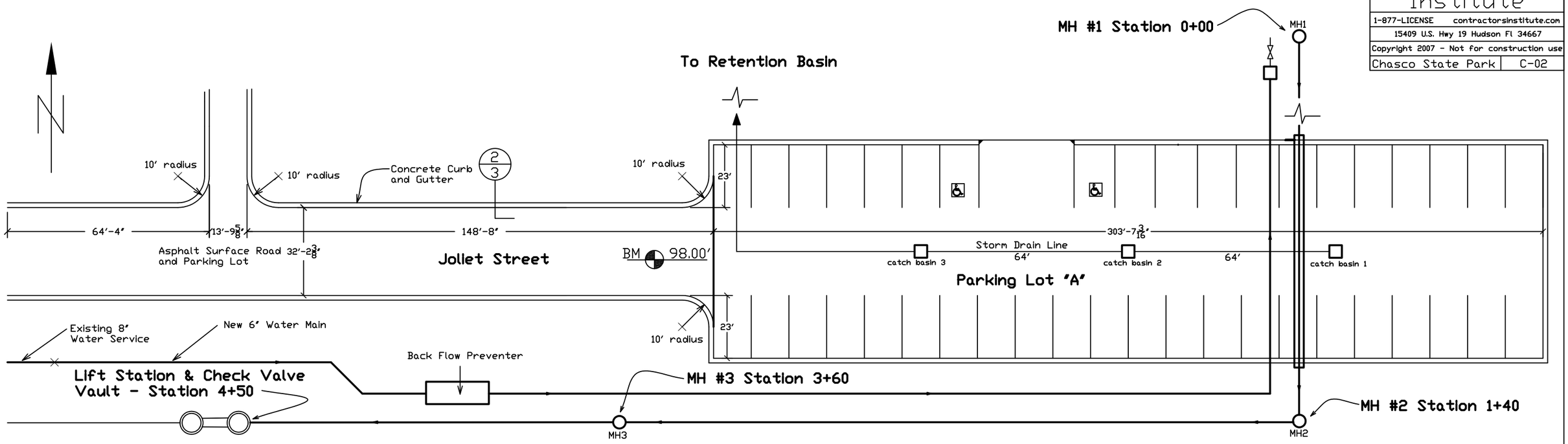
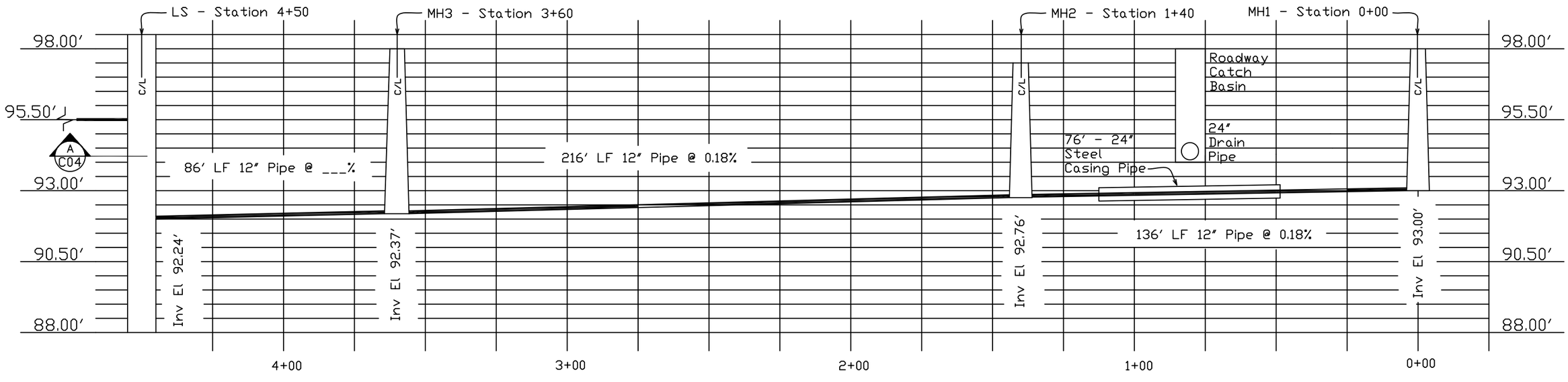
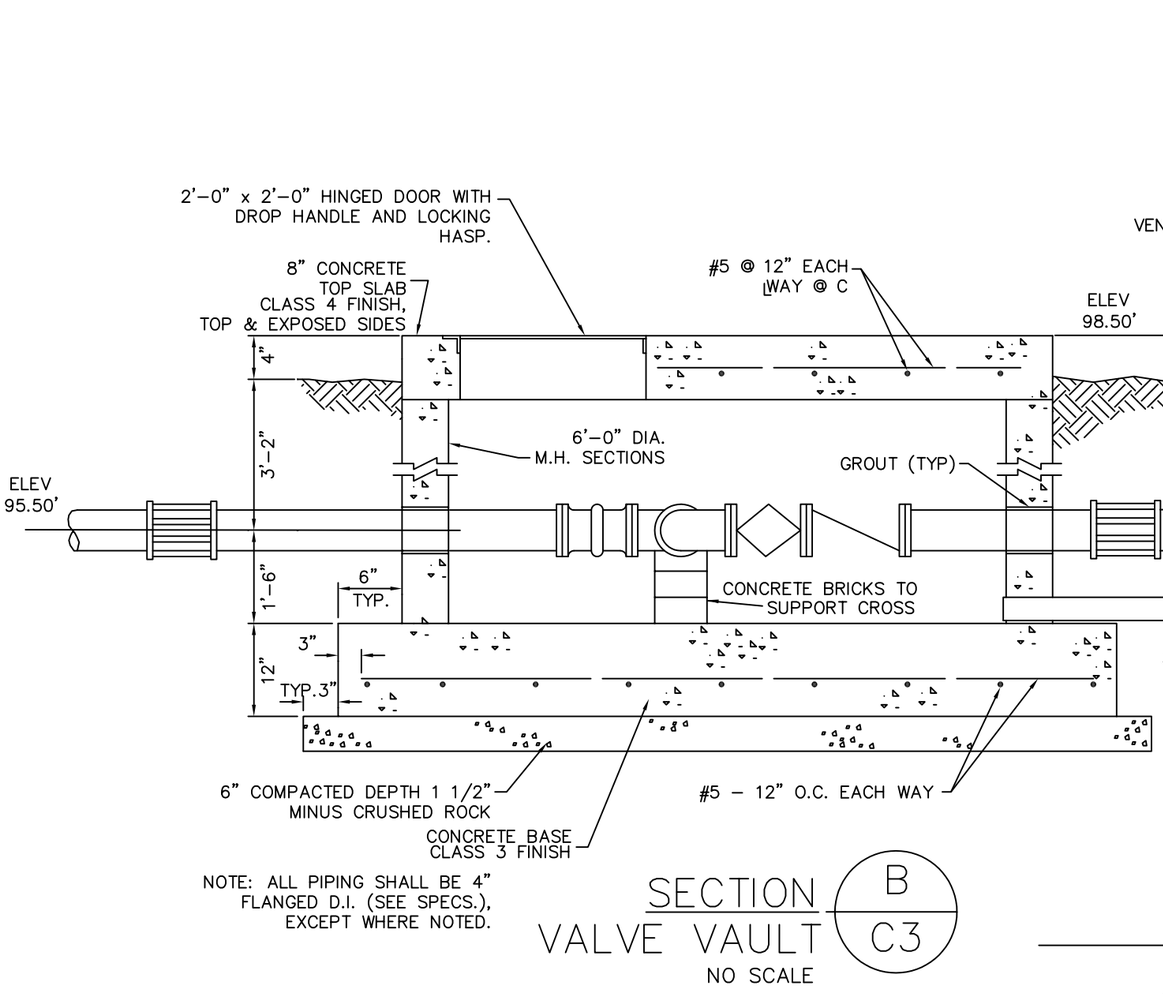




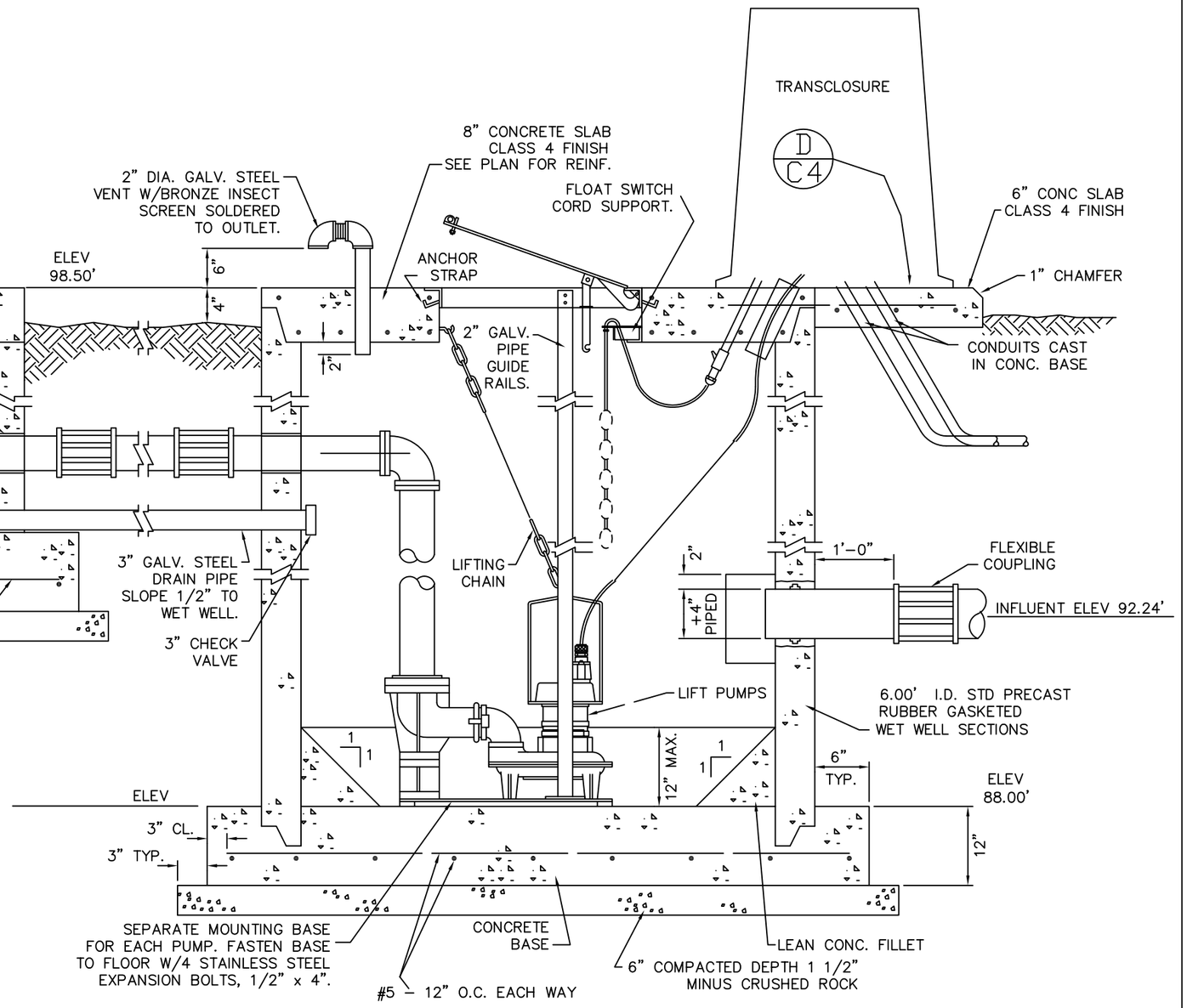
Sanitary Sewer / Lift Station - Plan & Profile - N.T.S.



NOTE: ALL PIPING SHALL BE 4" FLANGED D.I. (SEE SPECS.), EXCEPT WHERE NOTED.

SECTION B / VALVE VAULT / C3

NO SCALE



SECTION A / LIFT STATION / C3

NO SCALE

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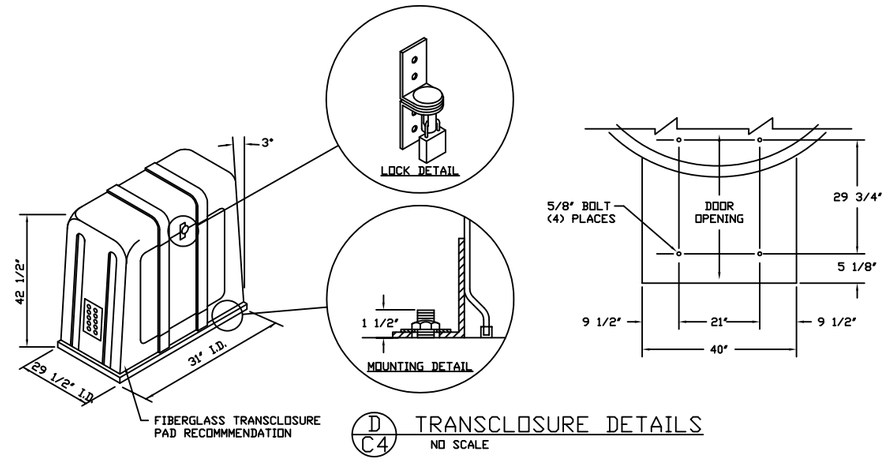
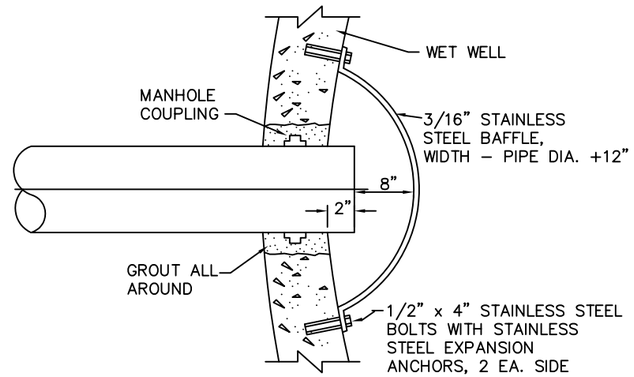
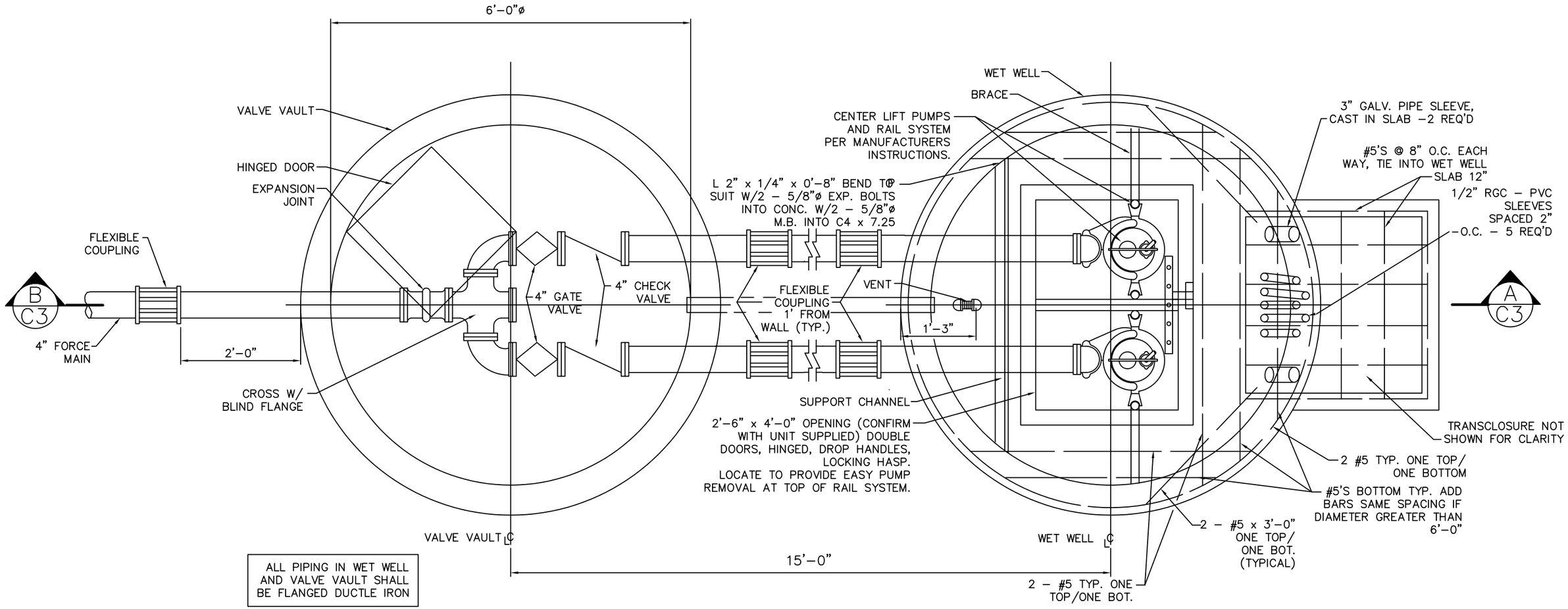


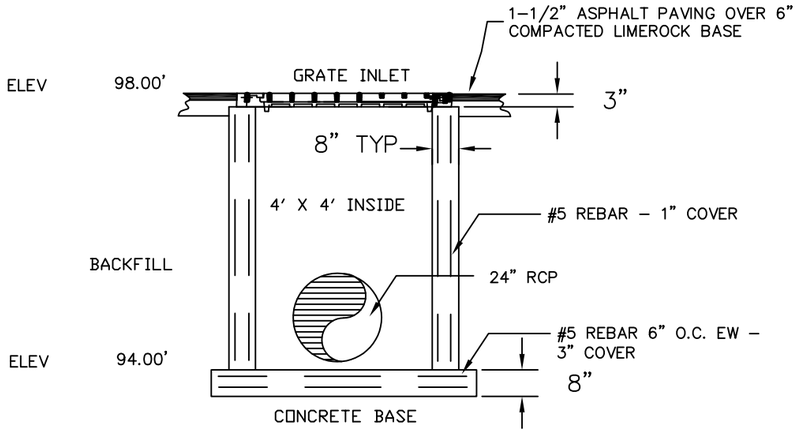
D C4 TRANSCLOSURE DETAILS
NO SCALE



C C4 WET WELL INLET DETAIL
NO SCALE



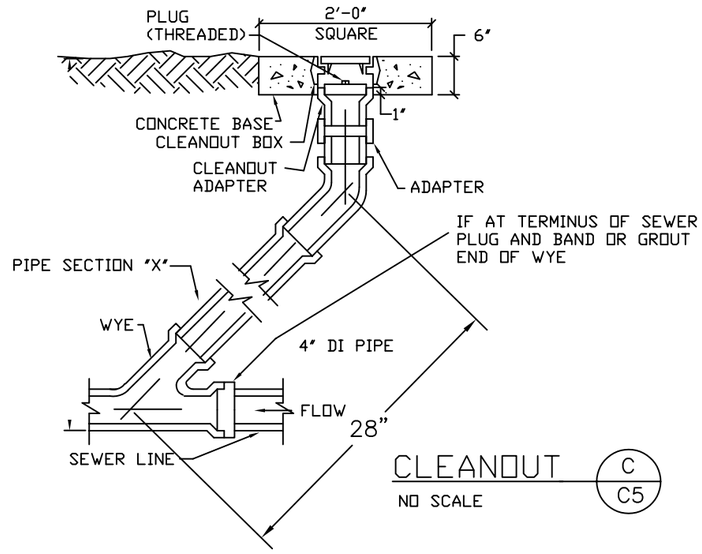
A C4 PLAN – TYPICAL PUMP STATION
NO SCALE



STORM DRAIN BASIN

NO SCALE

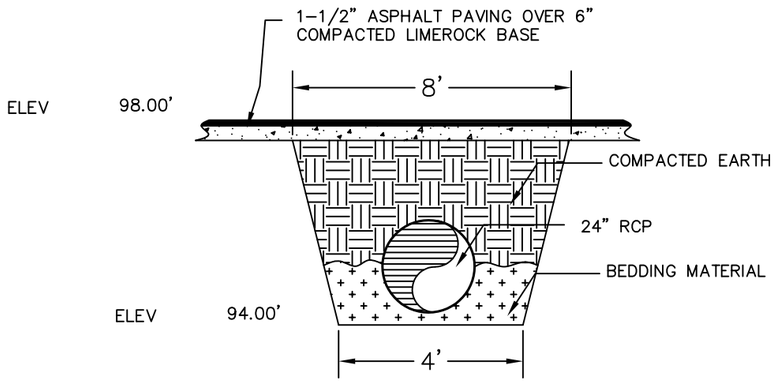
A C5



CLEANOUT

NO SCALE

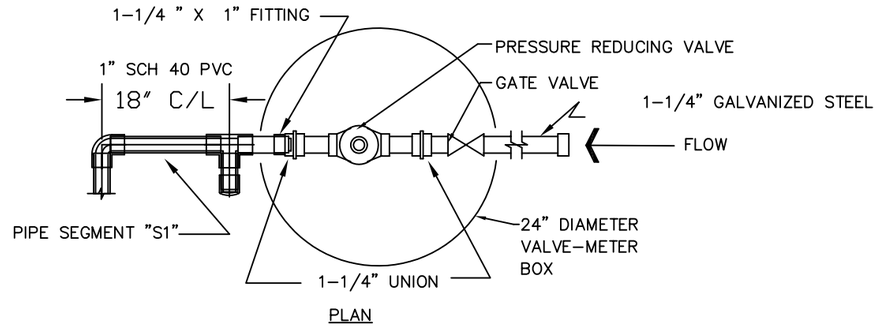
C C5



STORM DRAIN TRENCH

NO SCALE

B C5

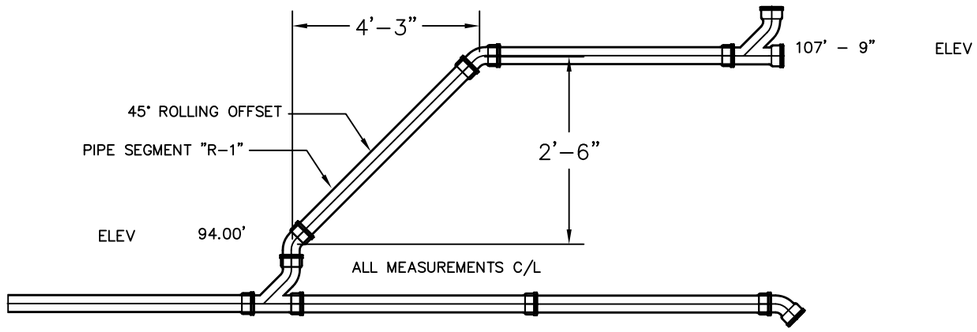


PLAN

PRESSURE REDUCING VALVE

NO SCALE

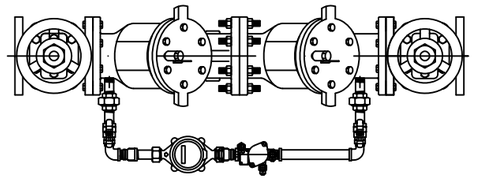
E C5



ROLLING OFFSET – PLAN VIEW

NO SCALE

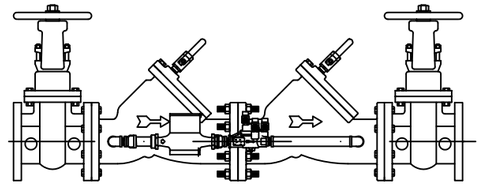
D C5



BACKFLOW PREVENTER

F C5

NO SCALE



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Chasco State Park | C-05

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Chasco State Park	A-01

63'-0"
50'-4"
12'-8"
Steps
A / 1
4 / 3
F.F.E. -0.104'
Wood Deck
8'-8"
tetherball court
5'
31'-8"
F.F.E. 0.00'
4" 2500 PSI Concrete Slab
6x6 10ga. WWM
6 Mil Vapor Barrier
3 / 3
34'-0"
25'-4"
12'
15'
53'
1 / 3
2'-8"
2'-4"
2'-0"
5'-4"
9'-8"
F.F.E. -0.33'
Concrete Driveway
16'-0"
16"
17'-0"
8'-0"
3'
10'
2'-0"
16"
2'-0"
Sidewalk
3'-0"
Decorative Wall
5 / 3
40'
10' Radius Typical
21'-4"
41'-8"
6'

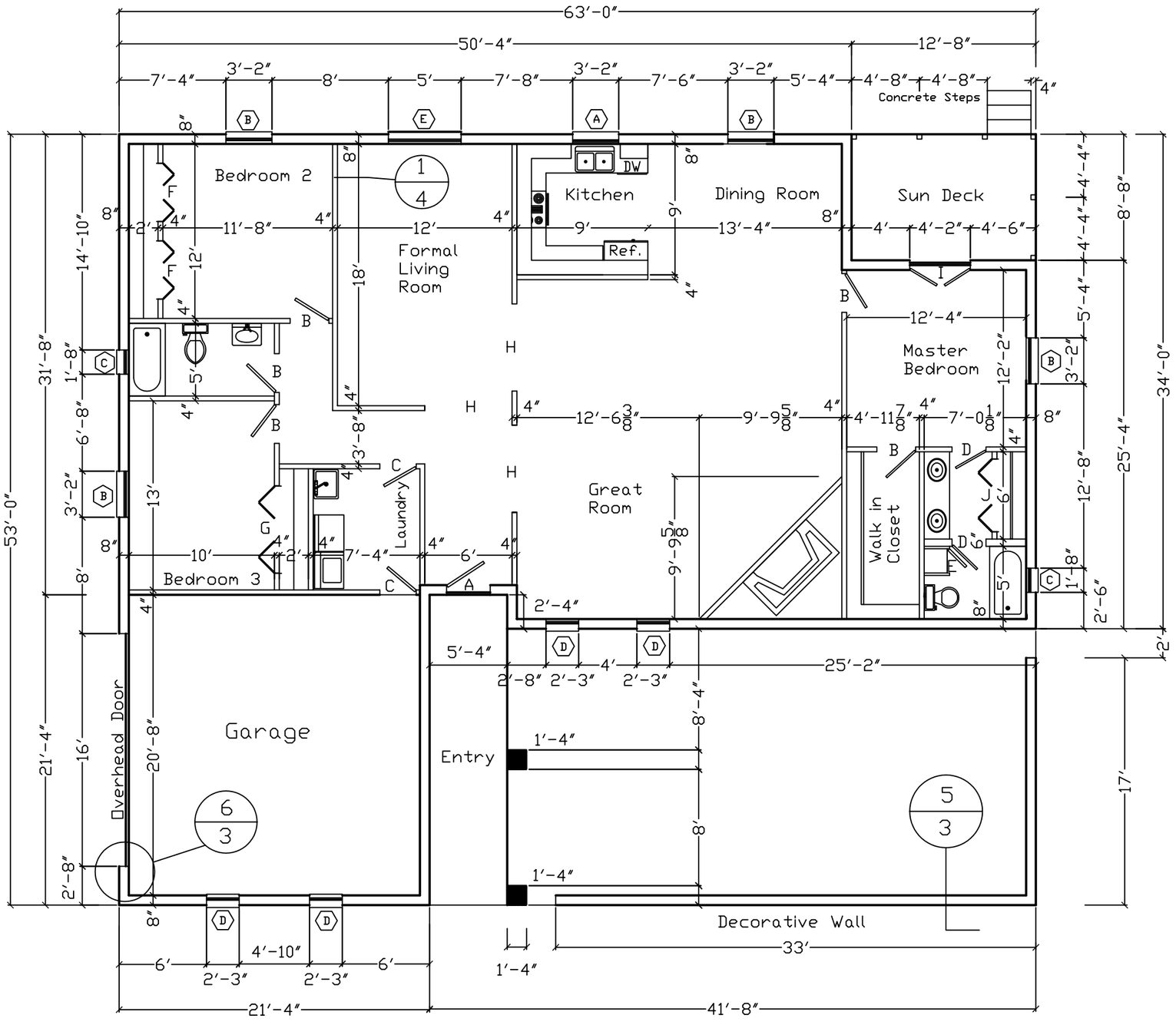
2' x 2' x 8' Footing
16" x 16" CMU
2"x6" PT Joists, 16" o.c.
Footing / Pier Detail

12'-8"
3'
4"
33"
2"x6" PT Joists, 16"o.c.
8'-8"
Floor Framing Plan

Concrete Steps
5/4"x 6" PT
Decking Plan

Wood Deck Framing Plan — A / 1

Residential Foundation Plan
scale 1/8"= 1'-0"



Window Schedule

Mark	Width	Height	Type	Material
A	37-1/4"	38-3/8"	SH 23-1/1	Alum-Mill
B	37-1/4"	50-5/8"	SH 24-1/1	Alum-Mill
C	19-1/8"	26"	SH 12-1/1	Alum-Mill
D	26-1/2"	63"	SH 1H5-1/1	Alum-Mill
E	5'-0"	6'-0"	Fixed Gl.	Alum-Mill

Door Schedule

Mark	Width	Height	Type	Material
A	3'-0"	6'-8"	Colonial	1-3/4" Wood
B	2'-8"	6'-8"	HC - Flush	1-3/8" Wood
C	2'-6"	6'-8"	HC – Flush	1-3/8" Wood
D	2'-4"	6'-8"	HC – Flush	1-3/8" Wood
E	2'-0"	6'-8"	HC - Flush	1-3/8" Wood
F	4'-0"	6'-8"	Bi-Fold	1-1/8" Wood
G	6'-0"	6'-8"	Bi-Fold	1-1/8" Wood
H	6'-0"	6'-8"	Archway	Wrapped
I	4'-0"	6'-8"	Dbl – French	1-3/4" Steel
J	5'-0"	6'-8"	Bi-Fold	1-1/8" Wood

Residential Floor Plan
scale 1/8" = 1'

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Chasco State Park | A-02

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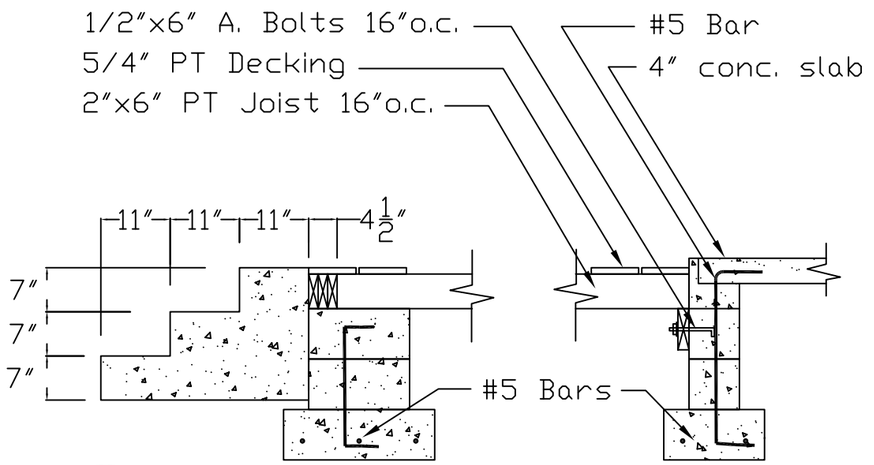
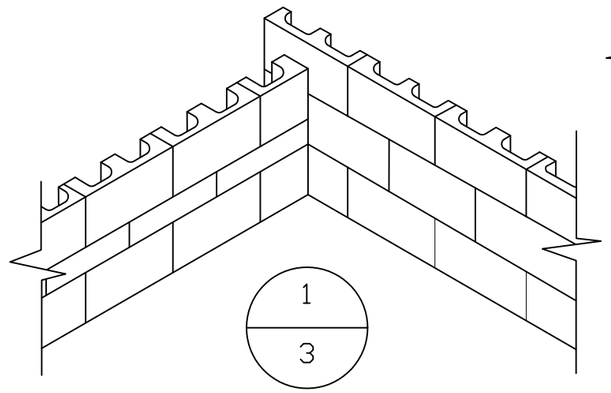
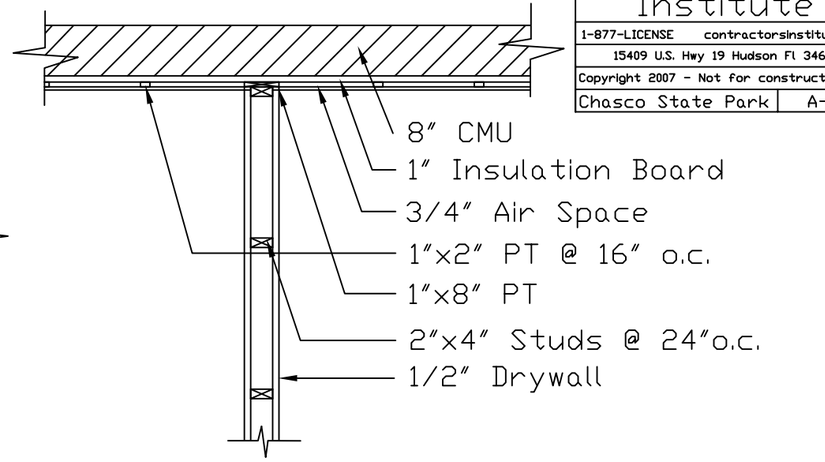
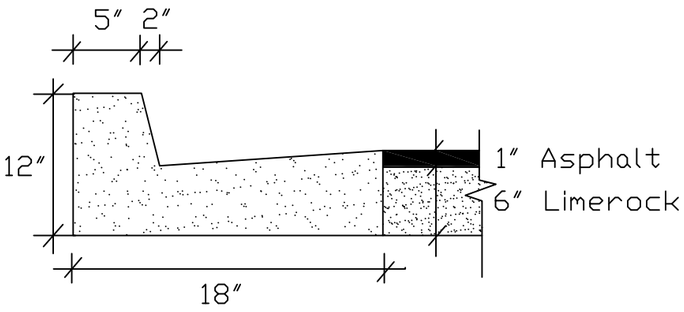
Chasco State Park | A-03



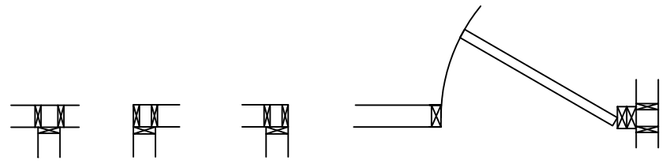
3 / 3 Wood Deck Steps



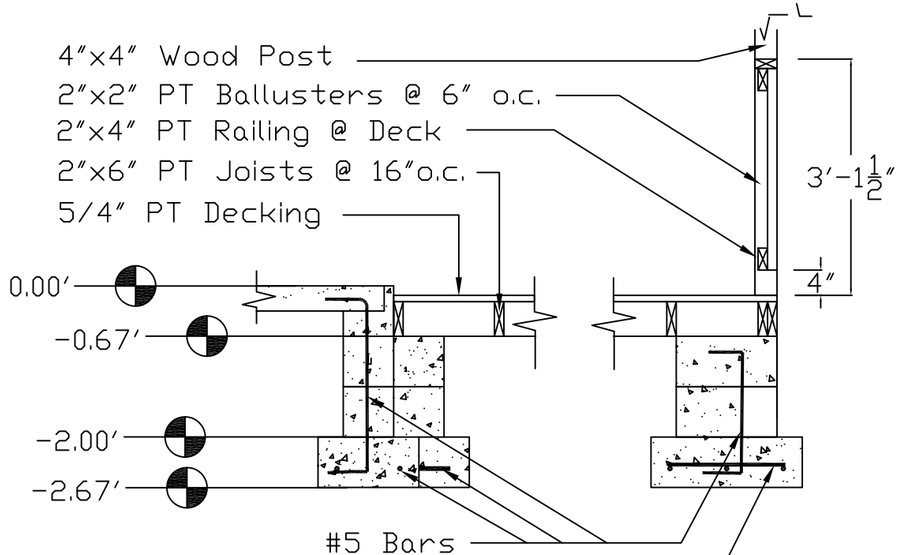




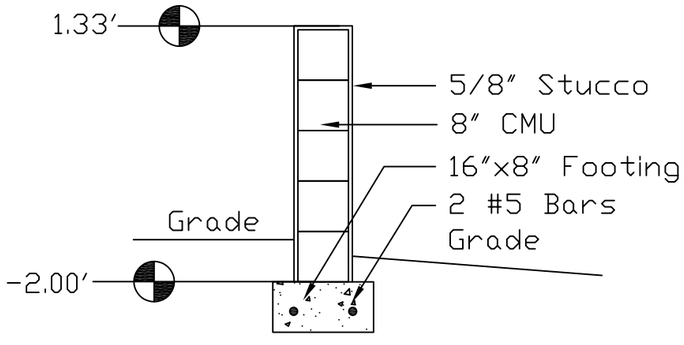
2 / 3 Curb and Gutter Detail



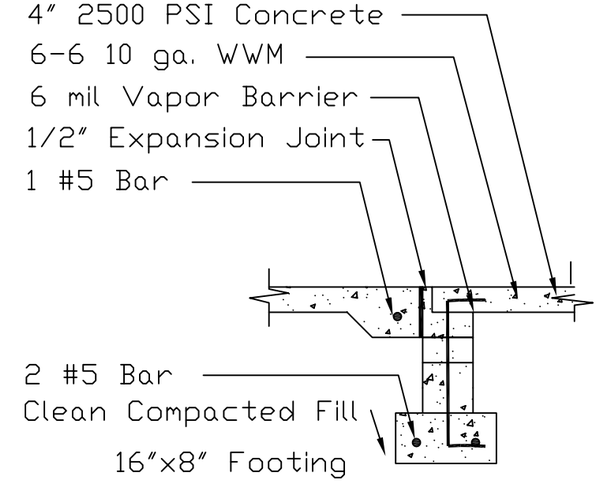
7 / 3 Typical Wall Intersection Details



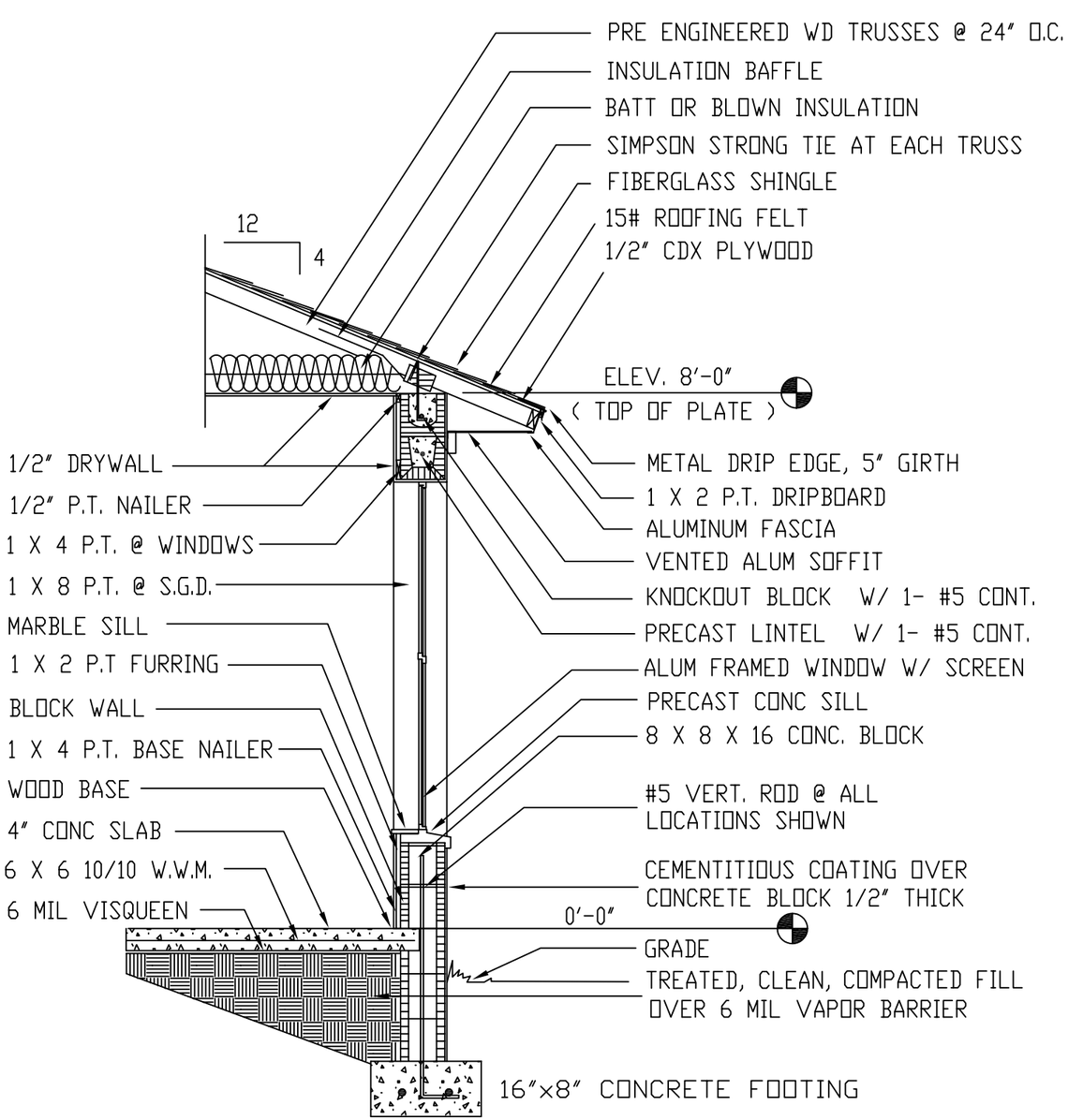
4 / 3 Section @ Wood Deck



5 / 3 Section @ Decorative Wall



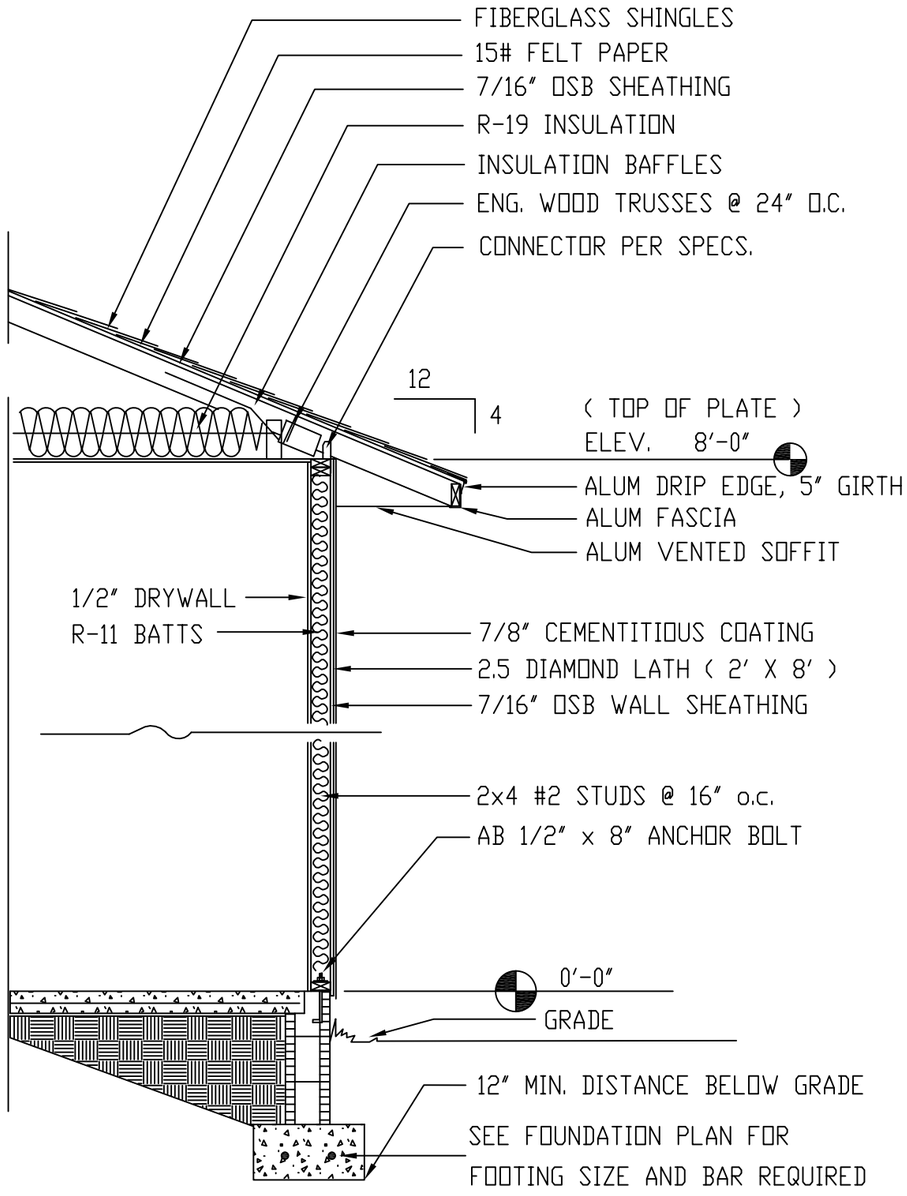
6 / 3 Driveway Detail



TYPICAL WALL SECTION

CONCRETE BLOCK CONST.

1/4



TYPICAL WALL SECTION

WOOD FRAME CONST.

1/4

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Chasco State Park | A-04

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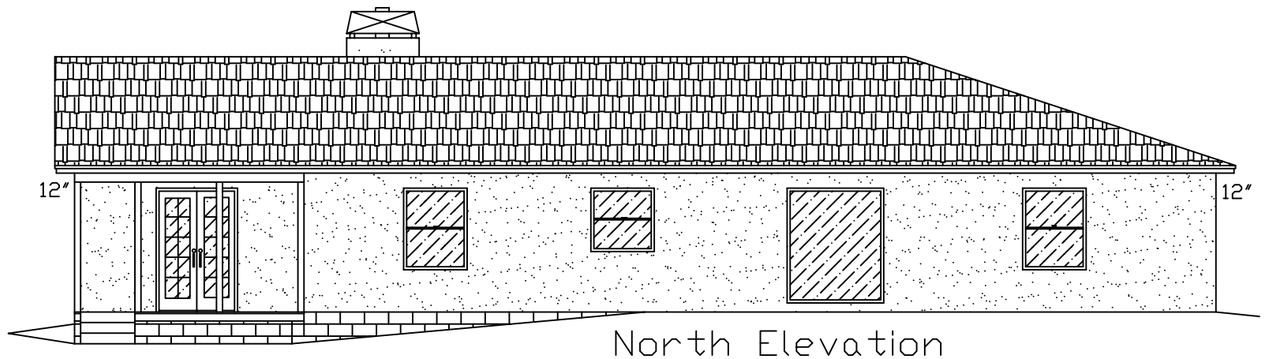
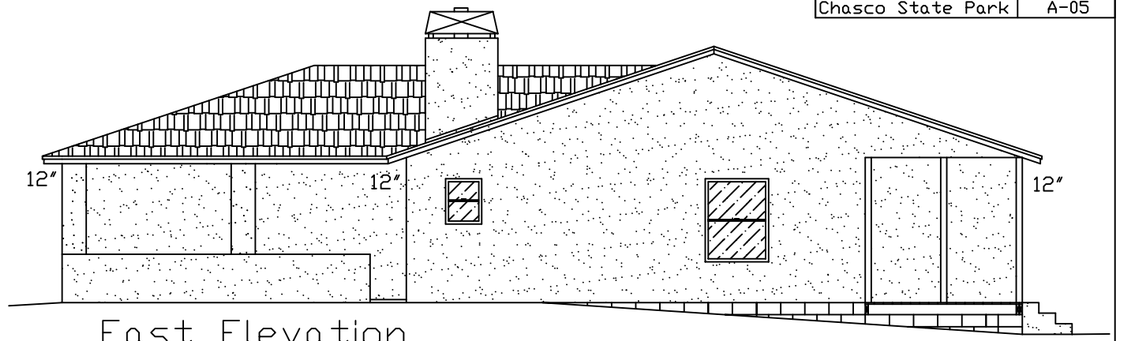
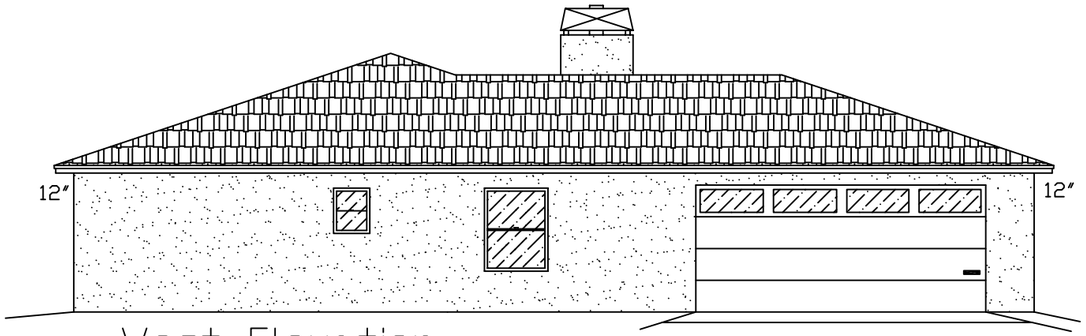
Chasco State Park	A-05



North Elevation

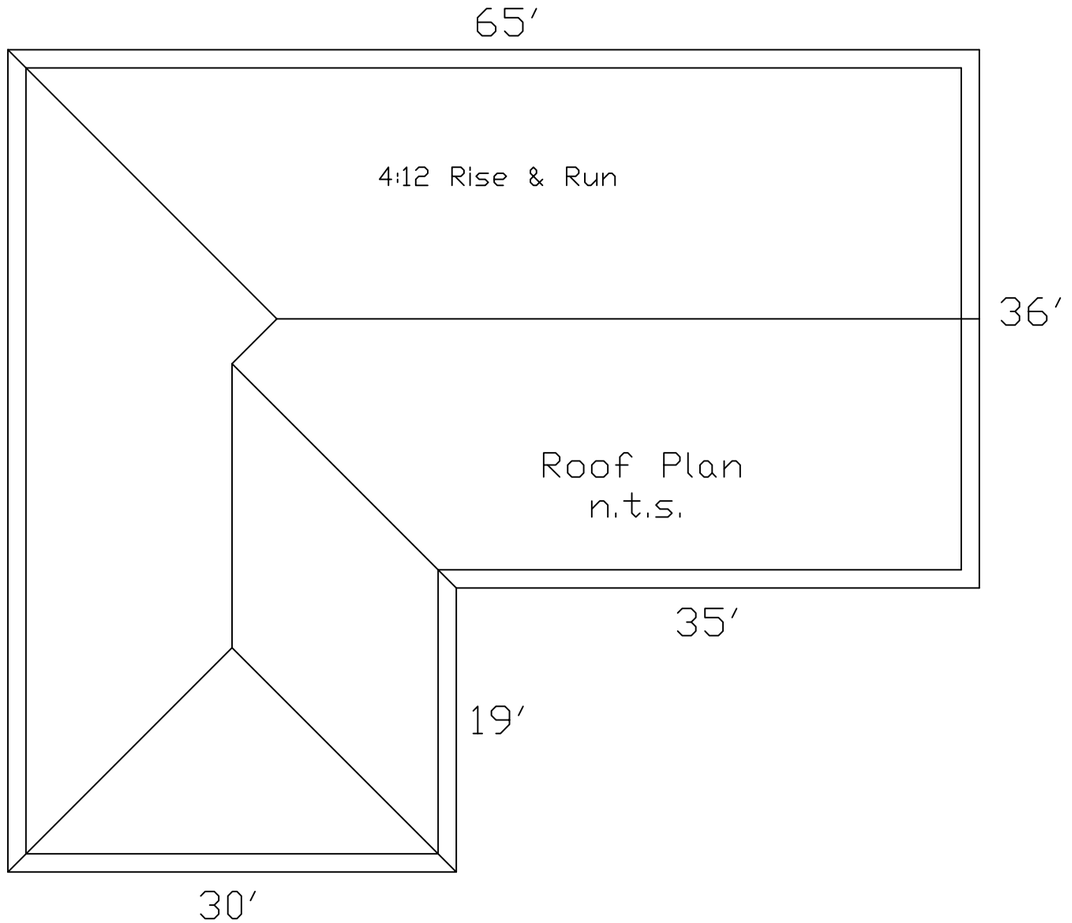


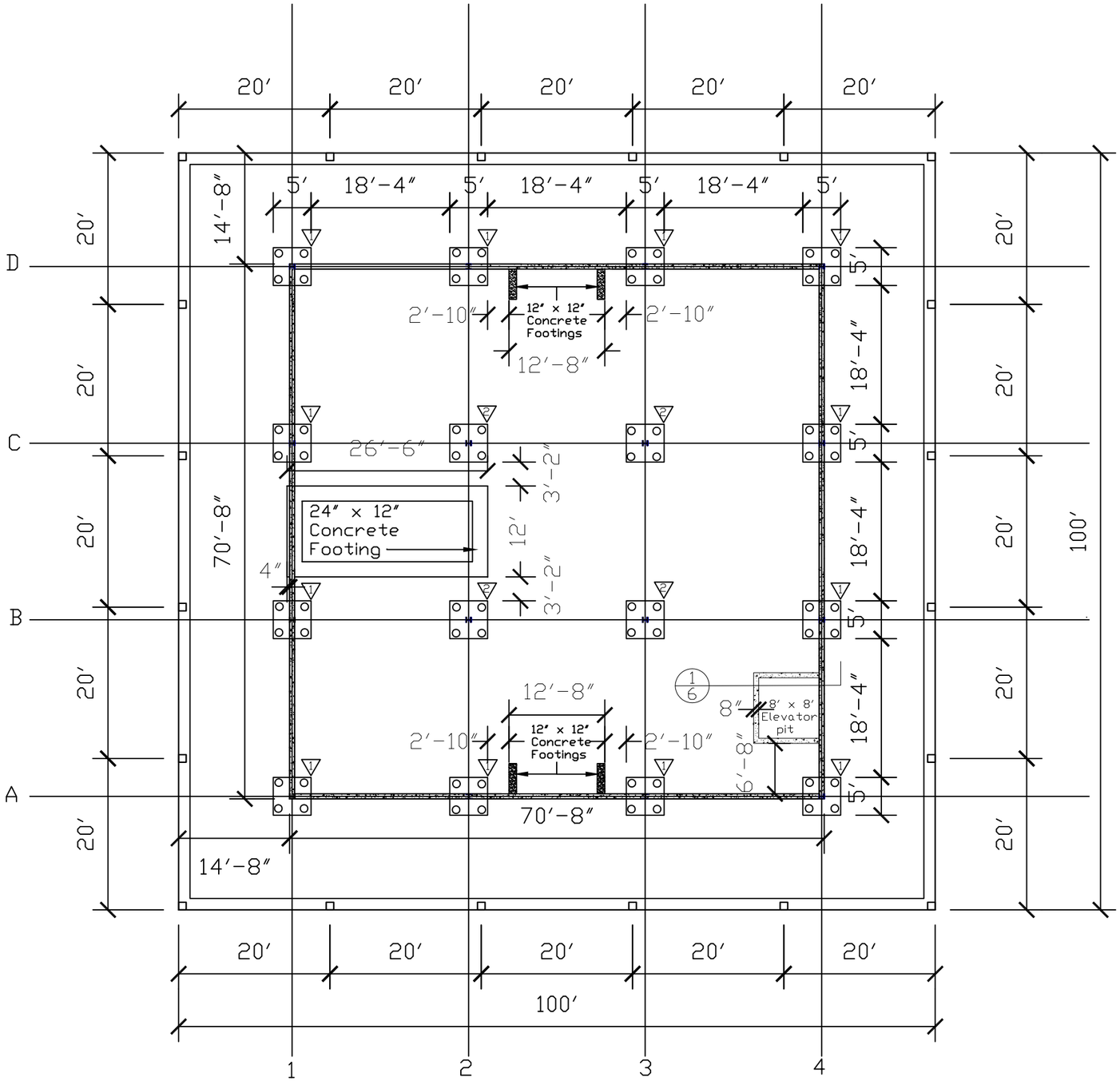
East Elevation



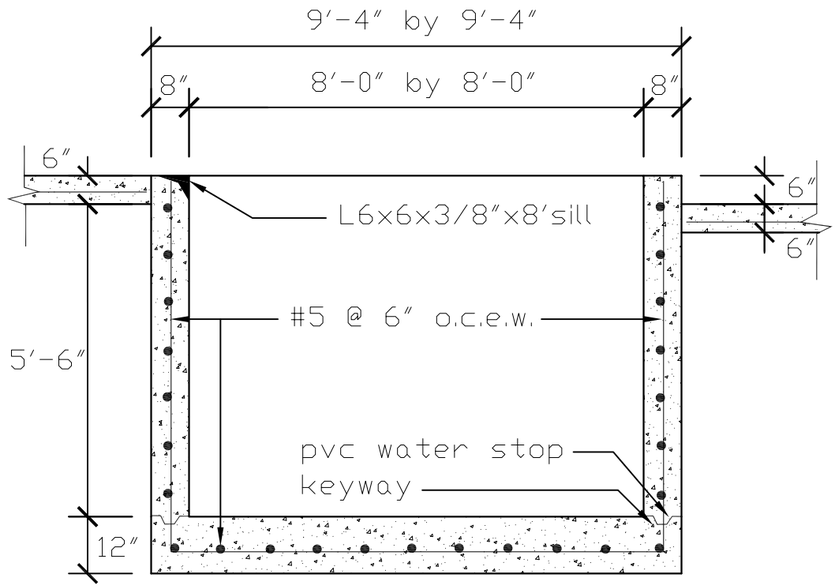
West Elevation

South Elevation





Museum Foundation Plan
scale 1/16″ = 1′-0″



Elevator Pit Section n.t.s.

1/6

General Notes:

1. All concrete pile caps measure 5′ x 5′ x 2′-4″
2. Pile cap reinforcing, #5 @ 6″ o.c.e.w. top & bottom
3. Pile caps cover 4-12″ diameter wood piles
4. Steel base plates measure 16″ x 16″ x 1-1/2″
5. Base plates anchor by 4-1″ diameter steel bolts
6. Base plates bed on 2″ grout
7. Grade beams measure 12″w. x 18″d. n.t.s.
8. Grade beam reinforcing 6-#5 continuous
9. Perimeter footing is 18″ x 12″ with 3-#5 bars
10. Grid lines measure 23′-4″ on center each way

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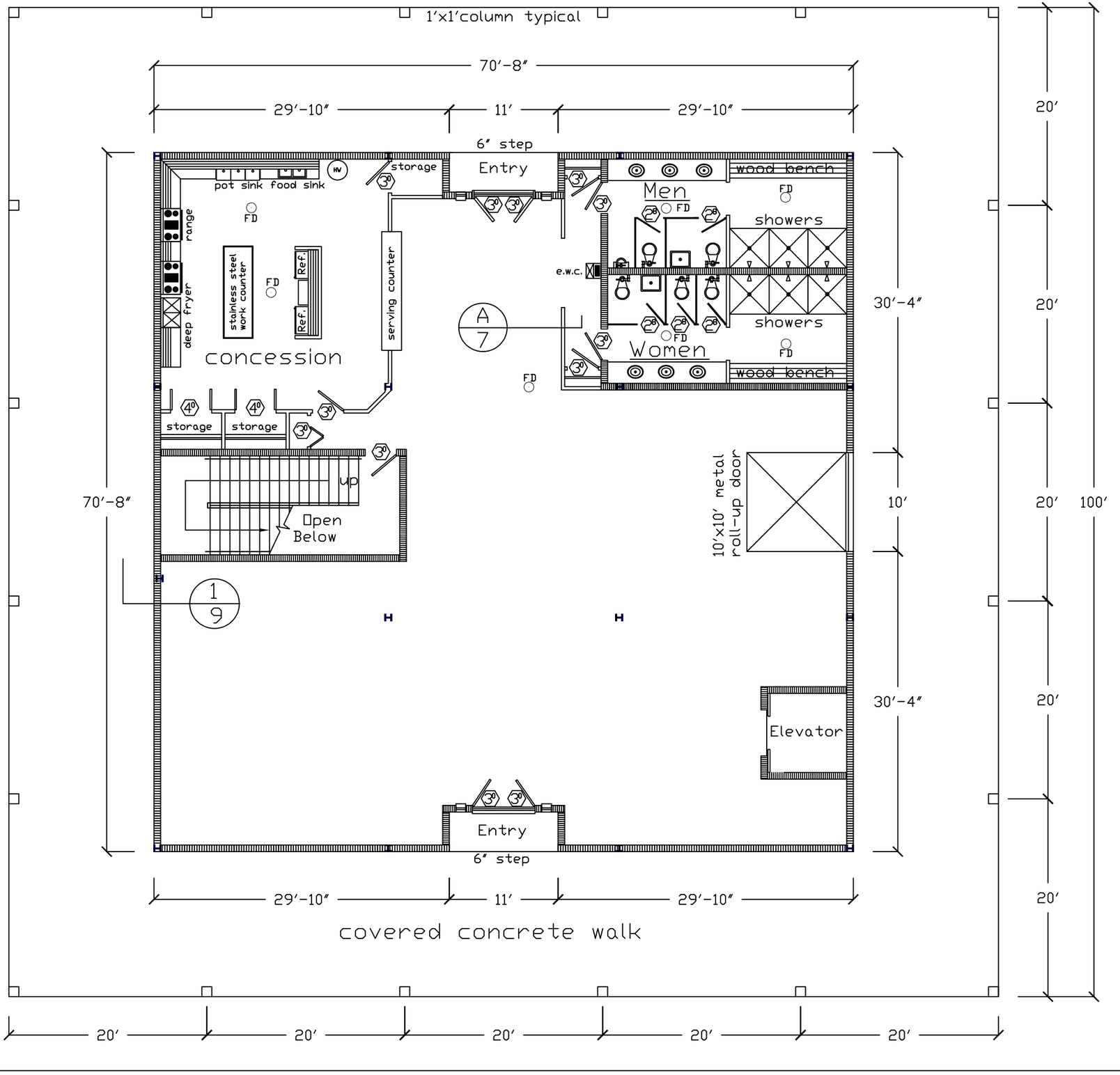

1st Floor Plan

Scale 3/32" = 1'-0"

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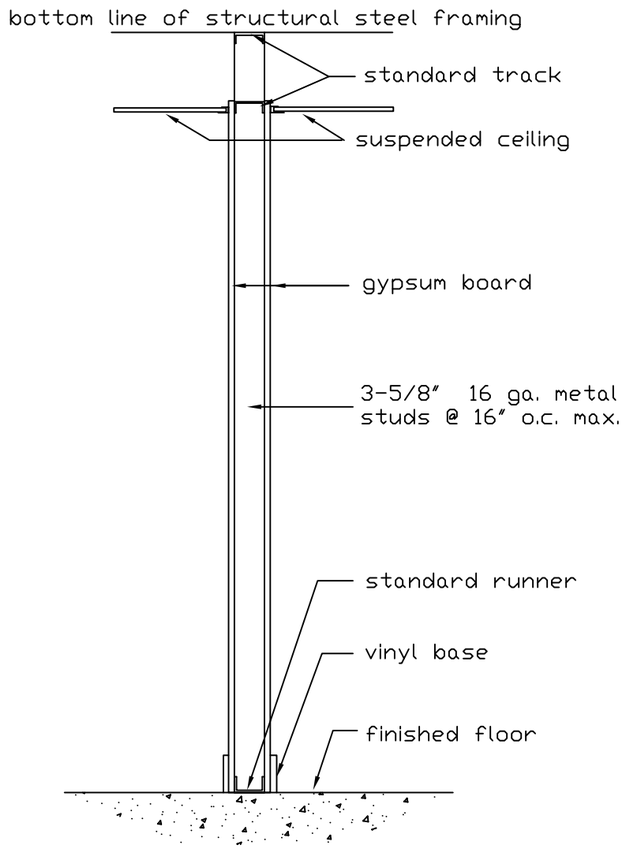
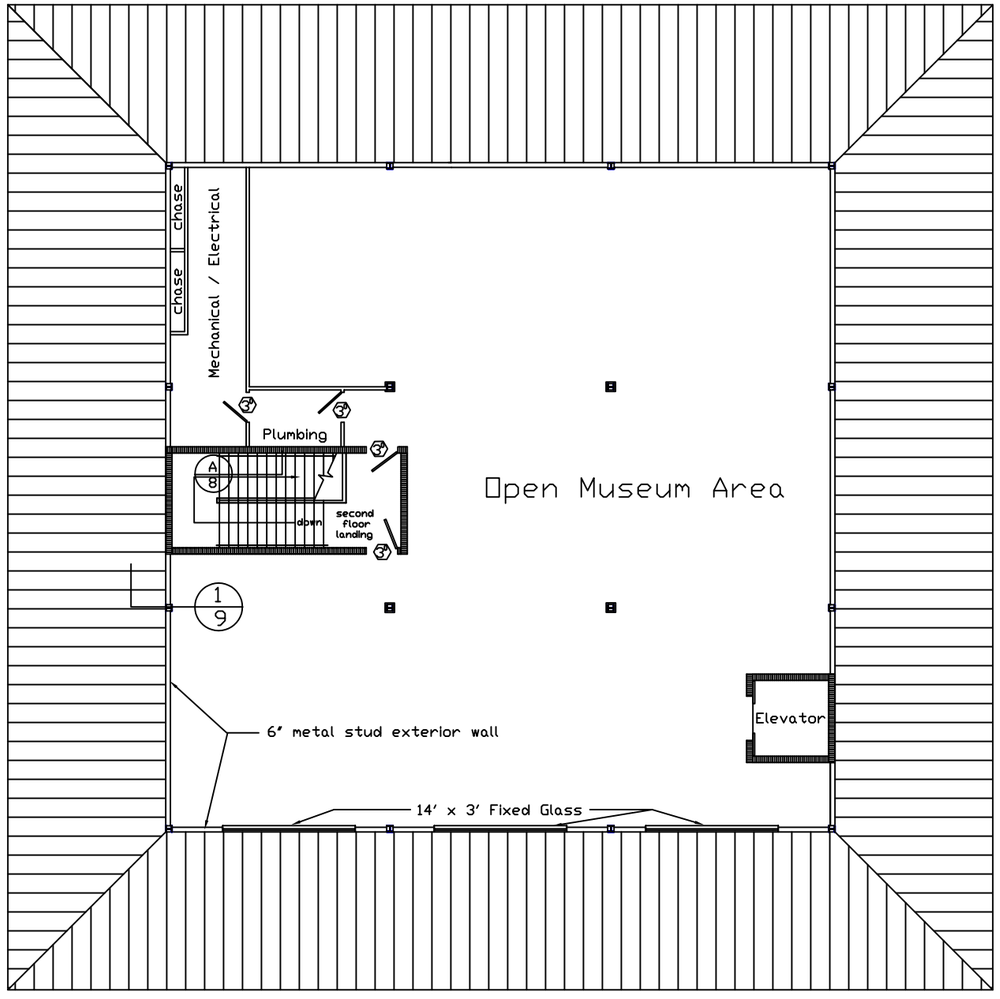
General Notes:

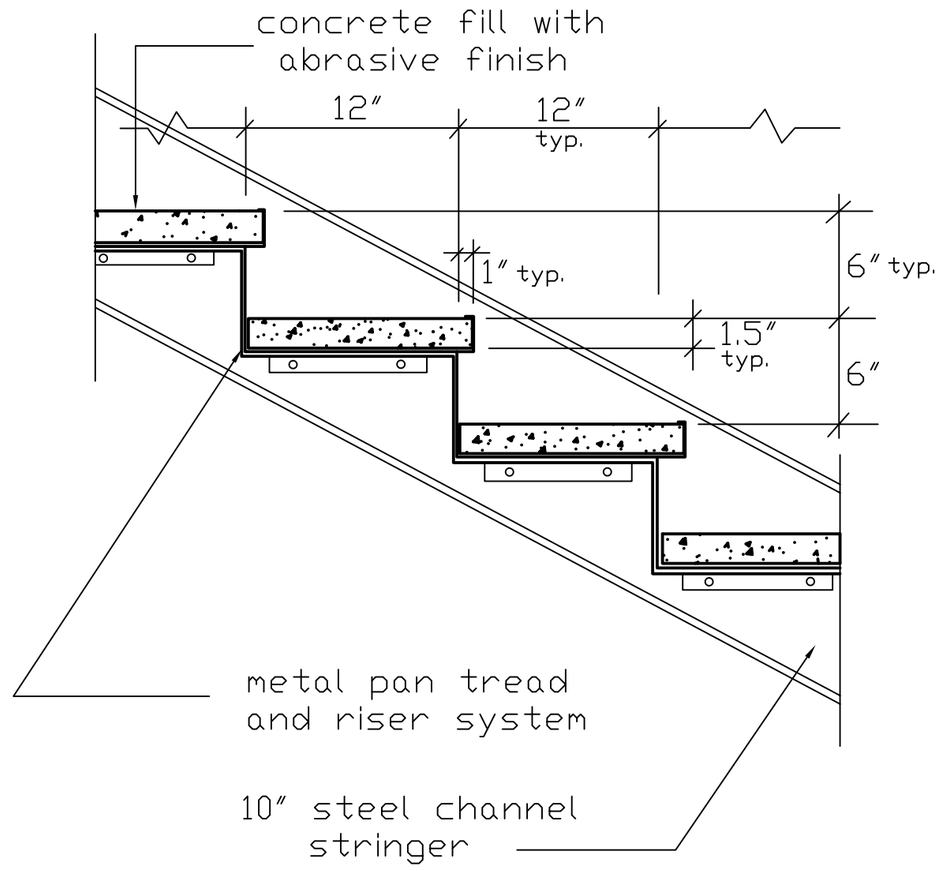
1. Roll-up door in 10'x10' rough opening
2. Boxing around all columns is 12"x12"
3. All concrete block are 8" CMU
4. Concrete floor slab is 6" thick
5. Ceiling height 11'-0", first floor
6. Int. walls extend 1' above ceiling
7. Metal stud partitions are 3-5/8"
8. Single leaf doors are 7' in height



metal stud partition A/7



Second Floor Plan
Scale 1/16" = 1'-0"



stair treads & risers A/8

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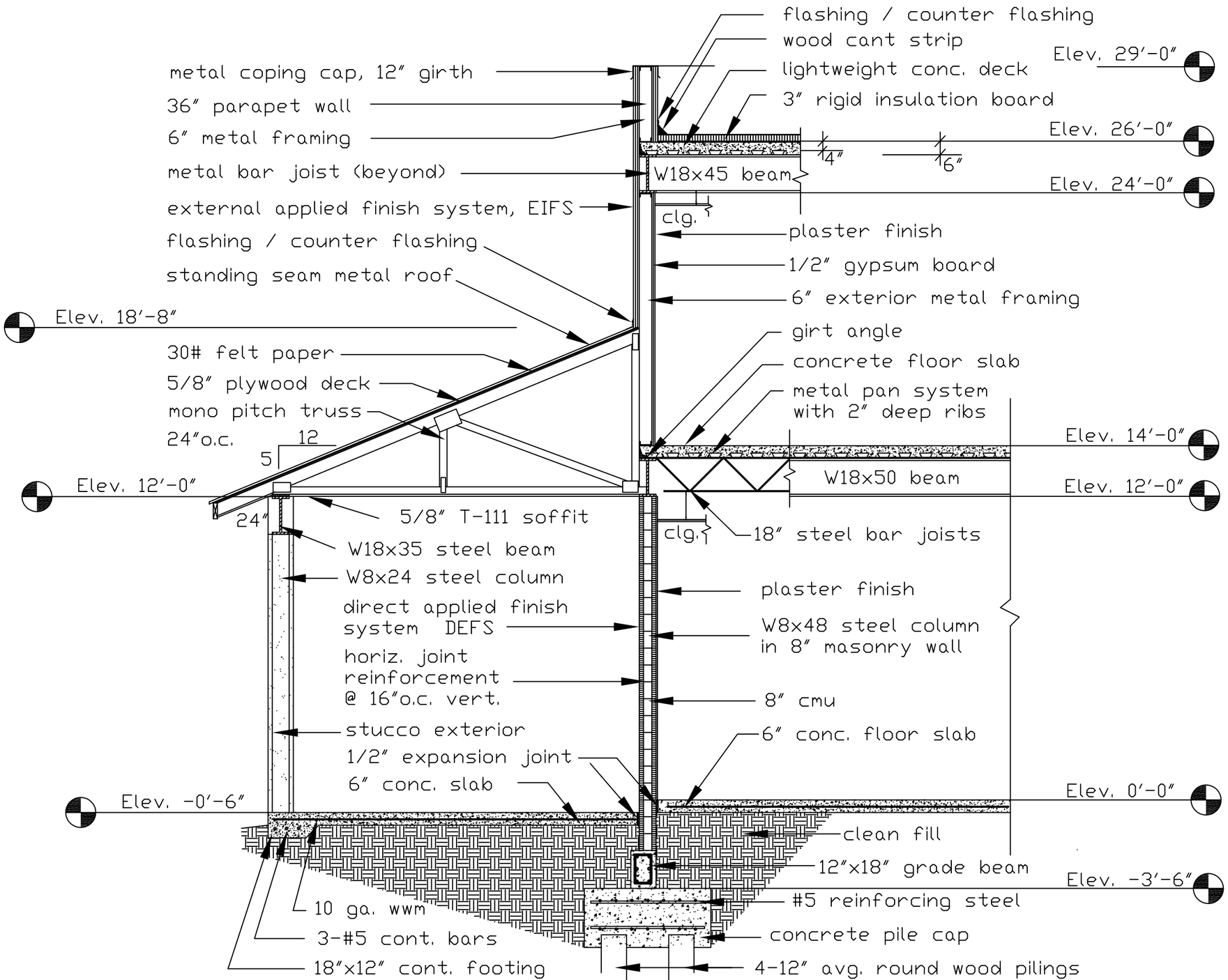
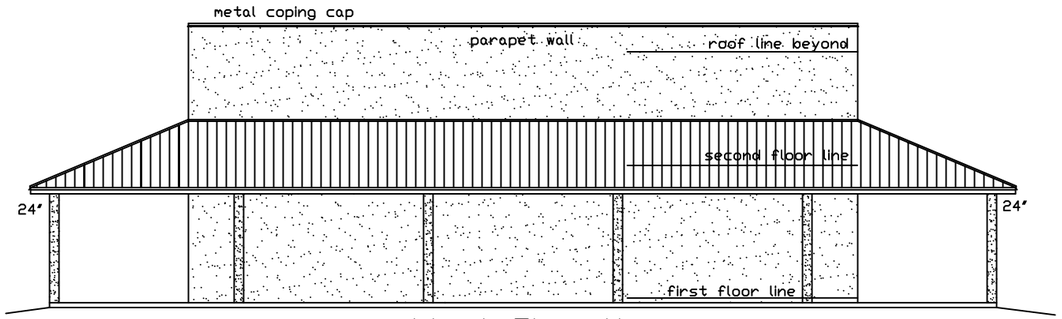
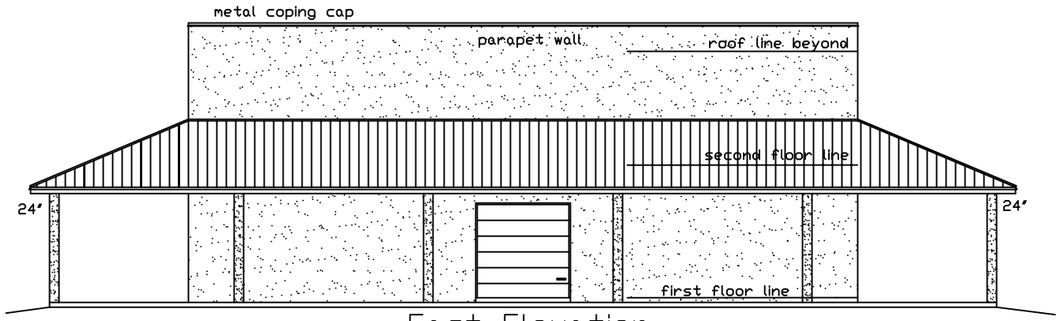


Typical Wall Section

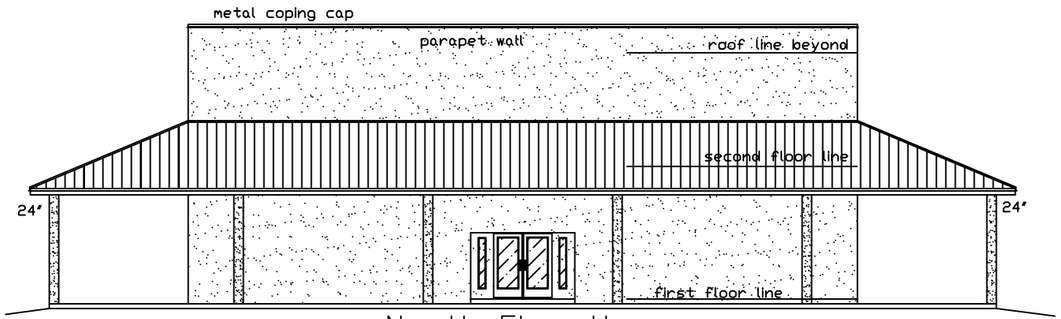
1/9



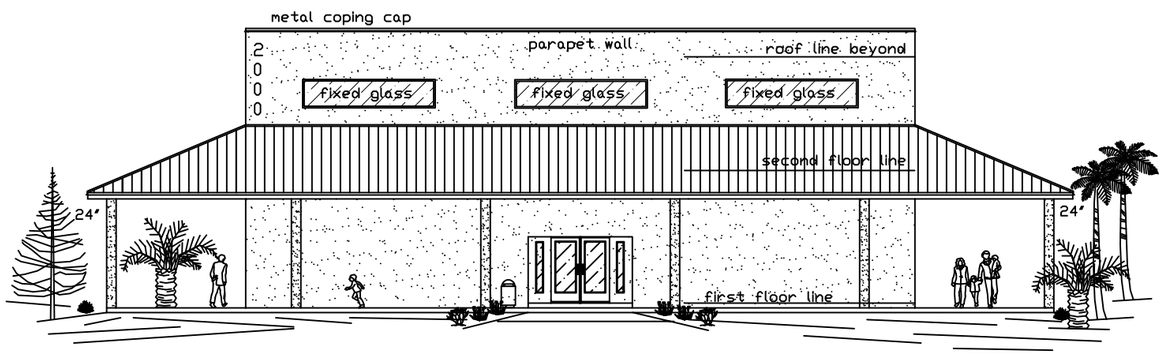
West Elevation



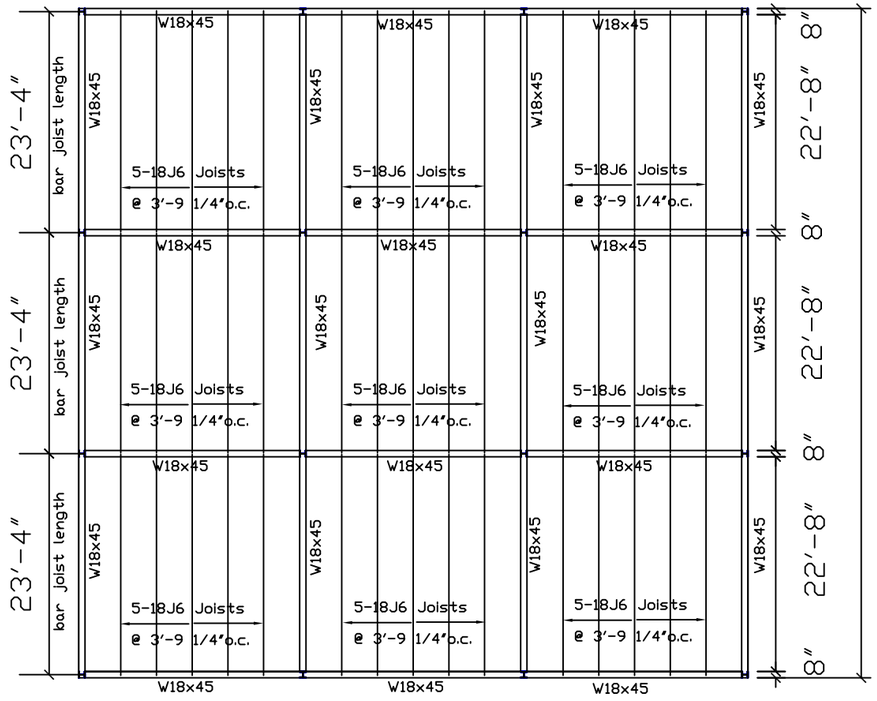
East Elevation



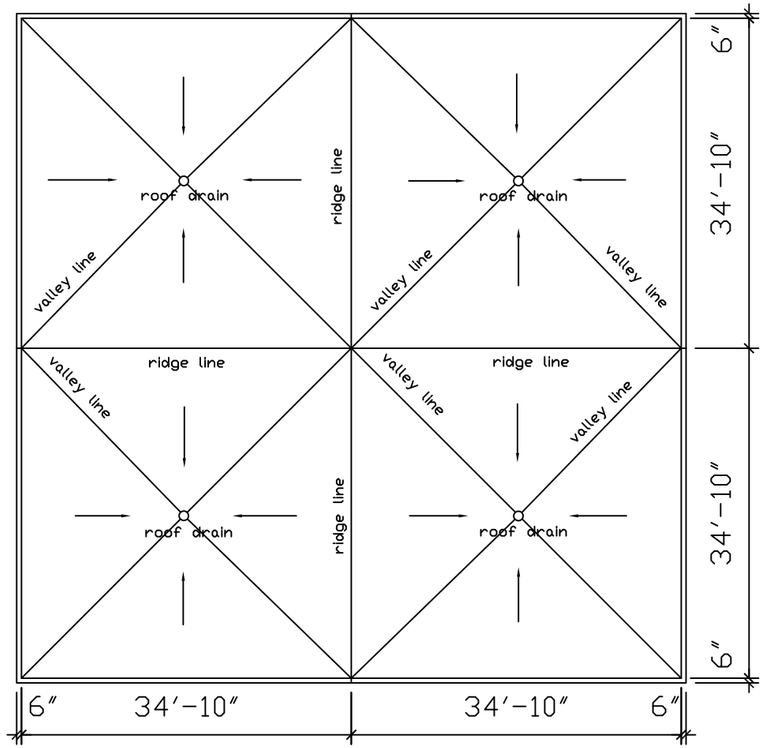
North Elevation



South Elevation
scale 1/16" = 1'-0"



Roof Framing Plan
scale 1/16" = 1'-0"



Roof Plan
scale 1/16" = 1'-0"

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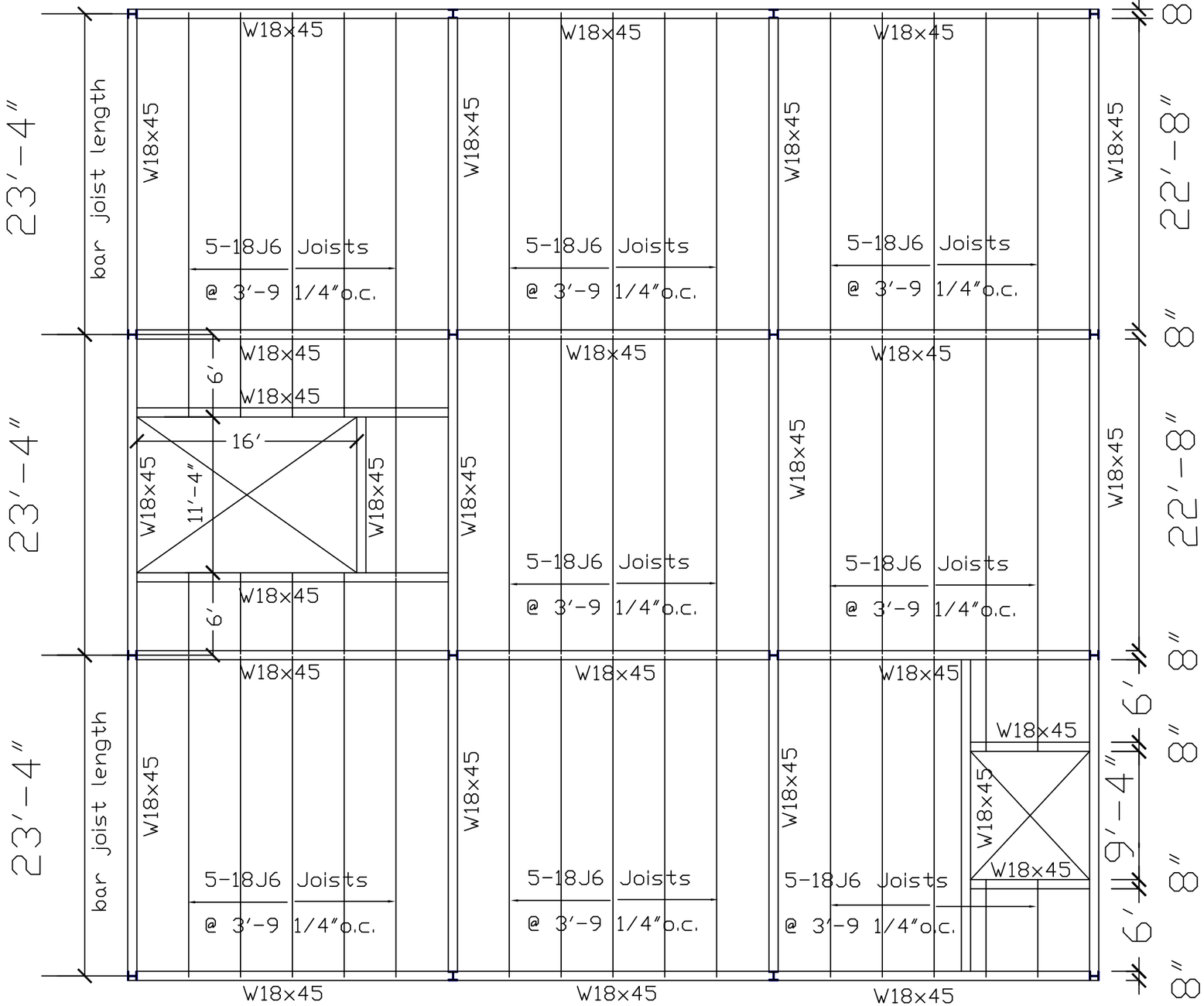
Chasco State Park	A-10



Second Floor Framing Plan
1/16"=1'

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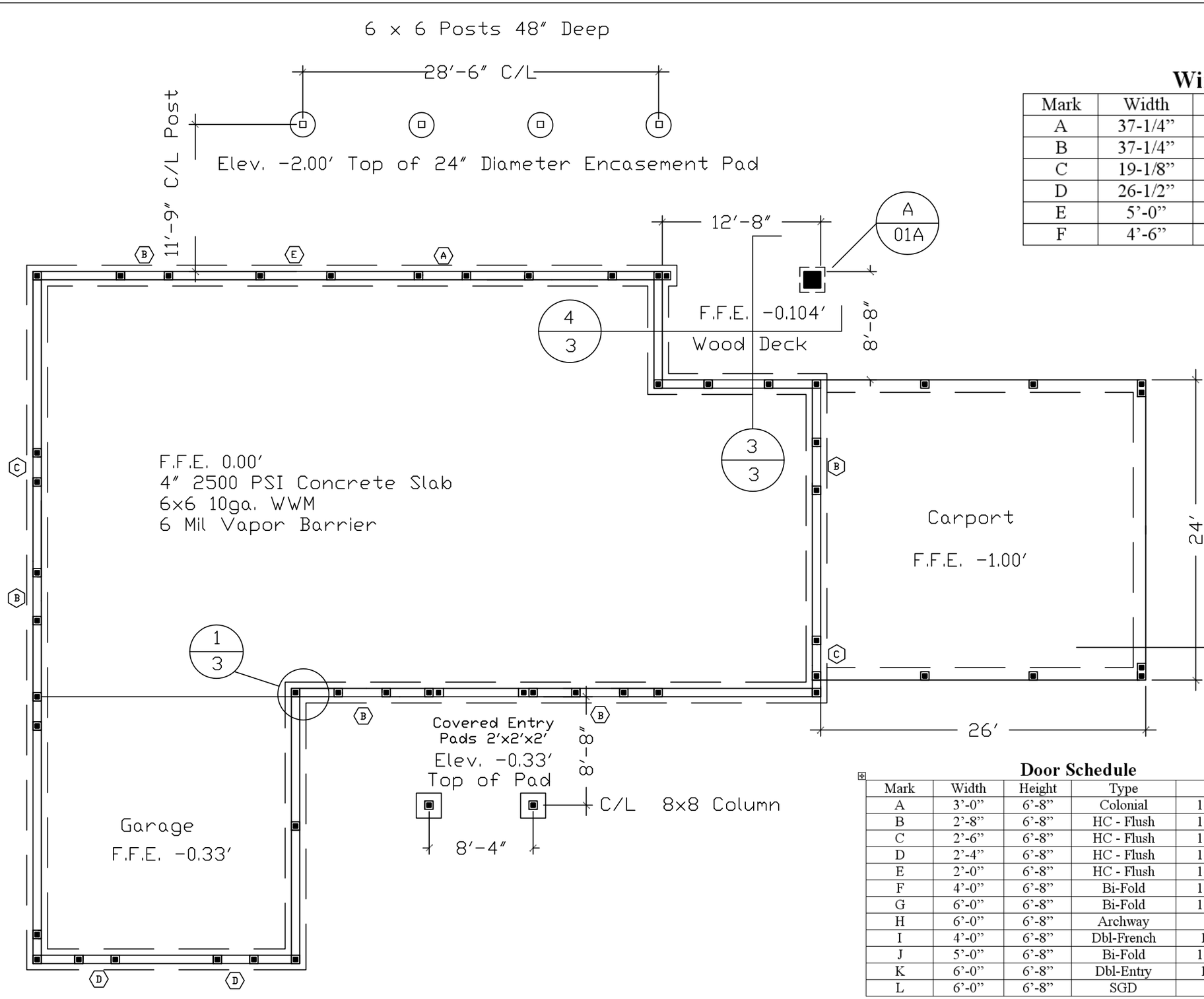
Chasco State Park | A-11

Column & Pile Cap Schedule

Pile Cap Mark	1	2
Column at Grid Point	A-1, A-2, A-3, A-4 B-1, B-4, C-1, C-4 D-1, D-2, D-3, D-4	B-2, B-3 C-2, C-3
Roof Line 26.00' / Top of Column 25.50'		
2nd Floor Line 14.00' / Top of Beam 13.50'	W8 x 48	W8 x 60
First Floor Line 0.00' / Top of Pile Cap -3.50'		
Base Plates — 2" Grout bed	16"x 16"x 1-½"	16"x 16"x 1-½"
Pile Caps — Piles Below	4	4
Pile Caps — Depth	2'- 4"	2'- 4"
Pile Caps — Reinforcing	#5's @ 6" o.c.e.w. Top & Bottom	#5's @ 6" o.c.e.w. Top & Bottom
Pile Caps — Plan View	5' / 5'	5' / 5'

Base Plates Anchored with 4 - 1" diameter bolts



Residential Foundation Plan

1/8"= 1'-0"

Window Schedule

Mark	Width	Height	Type	Material
A	37-1/4"	38-3/8"	SH 23-1/1	Alum-Mill
B	37-1/4"	63"	SH 25-1/1	Alum-Mill
C	19-1/8"	26"	SH 12-1/1	Alum-Mill
D	26-1/2"	63"	SH 1H5-1/1	Alum-Mill
E	5'-0"	6'-0"	Fixed Glass	Alum-Mill
F	4'-6"	2'-2"	AW32-1/1	Alum-Mill

Door Schedule

Mark	Width	Height	Type	Material
A	3'-0"	6'-8"	Colonial	1-3/4" Wood
B	2'-8"	6'-8"	HC - Flush	1-3/8" Wood
C	2'-6"	6'-8"	HC - Flush	1-3/8" Wood
D	2'-4"	6'-8"	HC - Flush	1-3/8" Wood
E	2'-0"	6'-8"	HC - Flush	1-3/8" Wood
F	4'-0"	6'-8"	Bi-Fold	1-1/8" Wood
G	6'-0"	6'-8"	Bi-Fold	1-1/8" Wood
H	6'-0"	6'-8"	Archway	Wrapped
I	4'-0"	6'-8"	Dbl-French	1-3/4" Steel
J	5'-0"	6'-8"	Bi-Fold	1-1/8" Wood
K	6'-0"	6'-8"	Dbl-Entry	1-3/4" Steel
L	6'-0"	6'-8"	SGD	Alum-Mil

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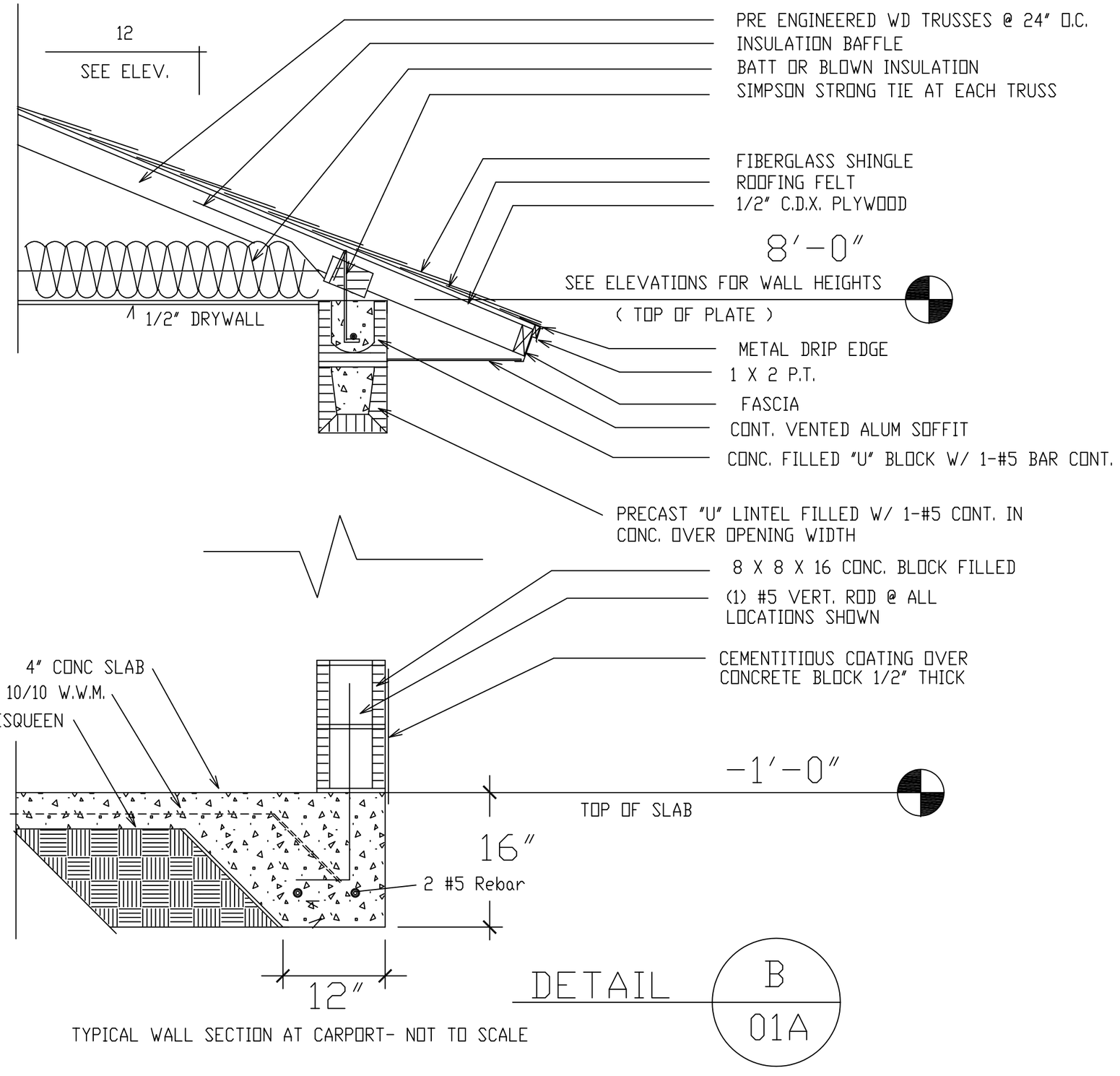
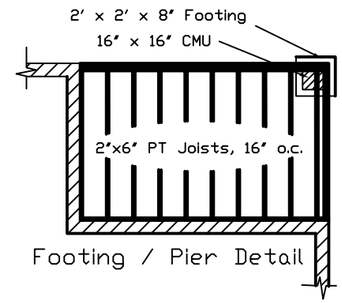
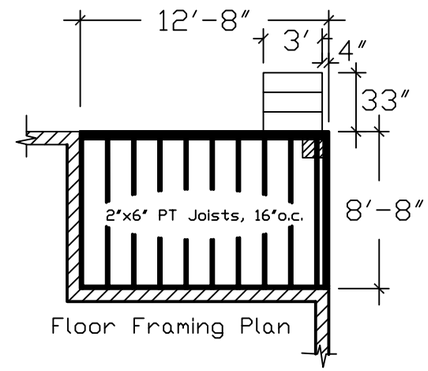


TYPICAL WALL SECTION AT CARPORT- NOT TO SCALE

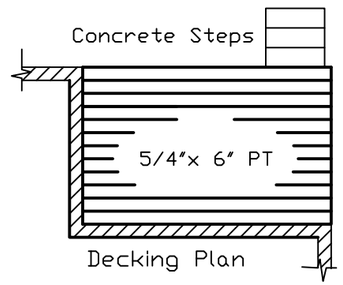
DETAIL B / 01A



Footing / Pier Detail

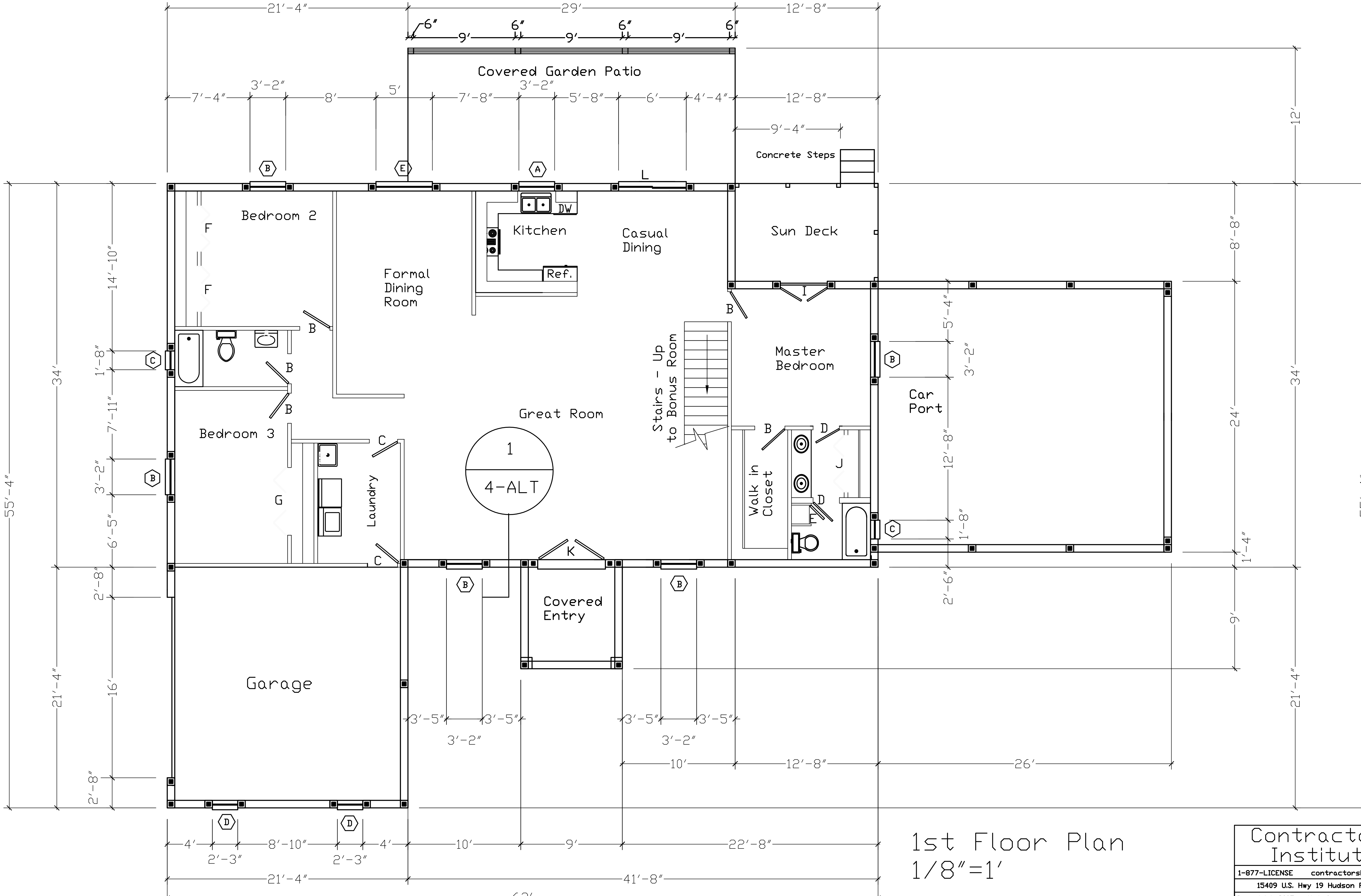


Floor Framing Plan



Decking Plan

Wood Deck Framing Plan A / 01A



1st Floor Plan
1/8"=1'

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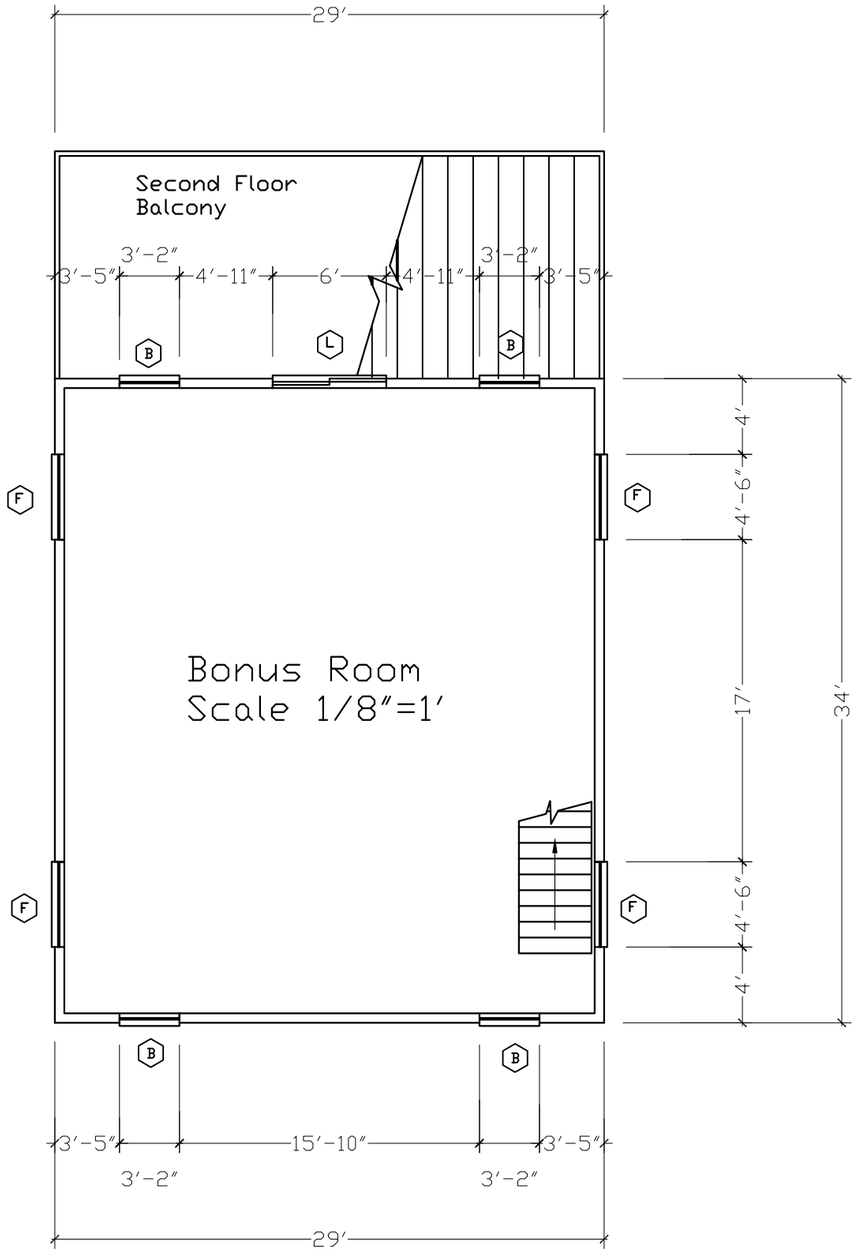
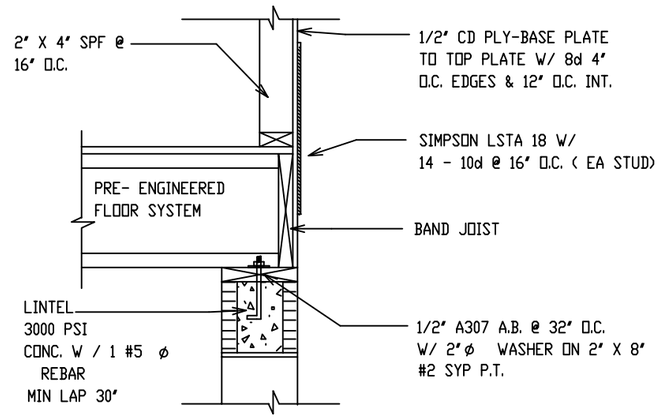
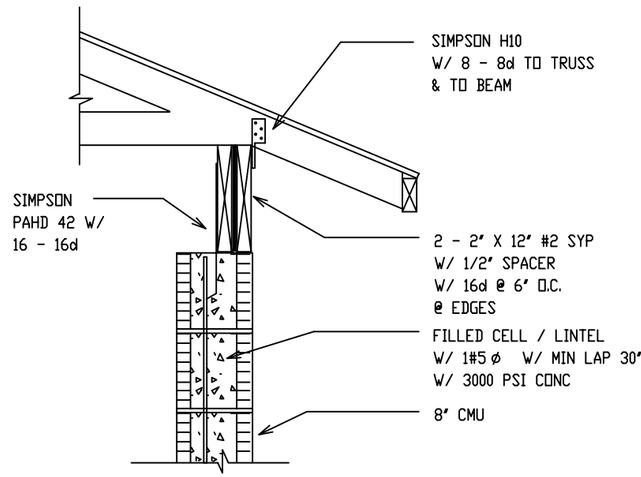




WALLS/FLOOR CONN. DETAIL

3/16"=1'

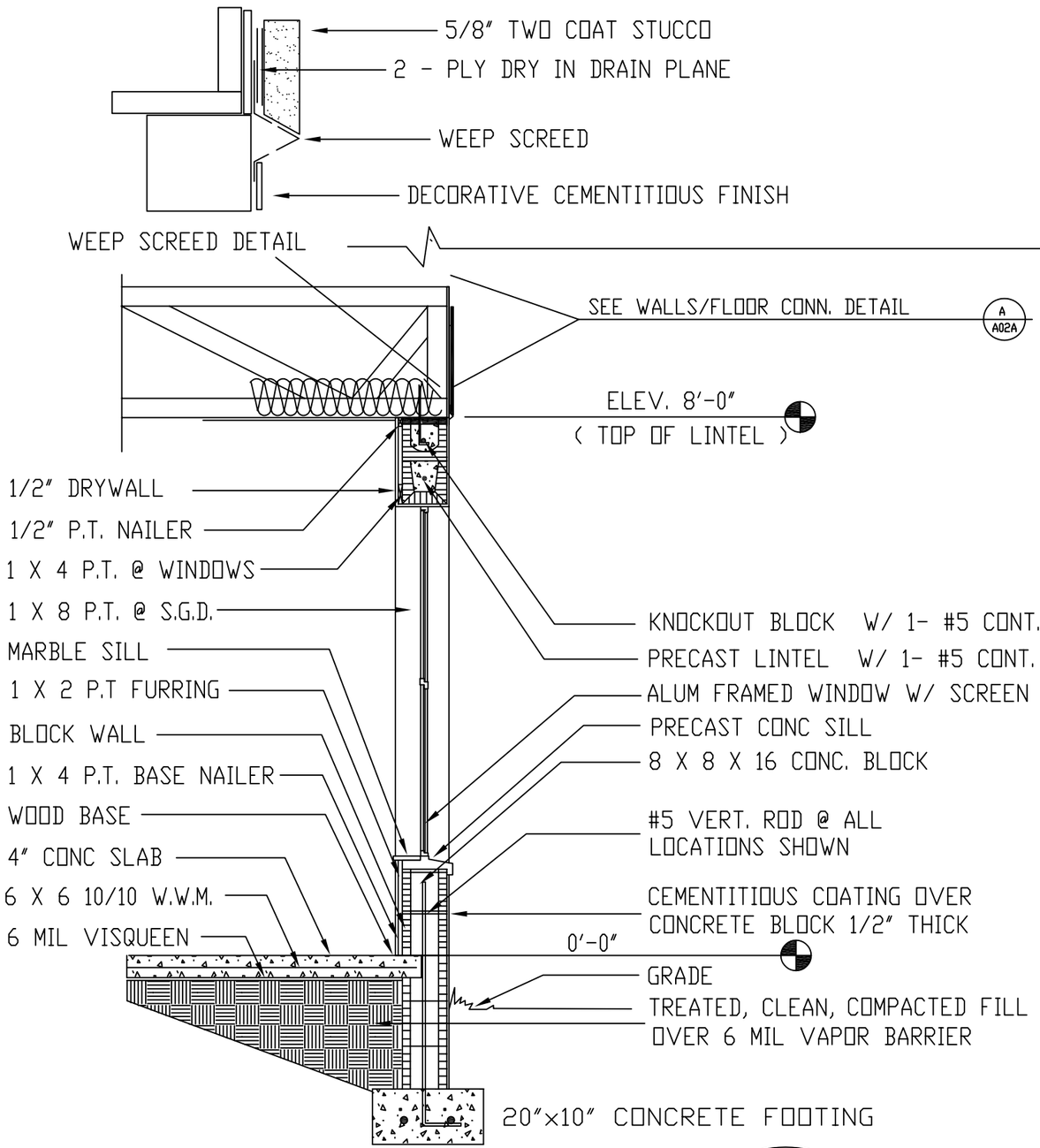
A
A02A



COL / BEAM DETAIL

3/16"=1'

B
A02A

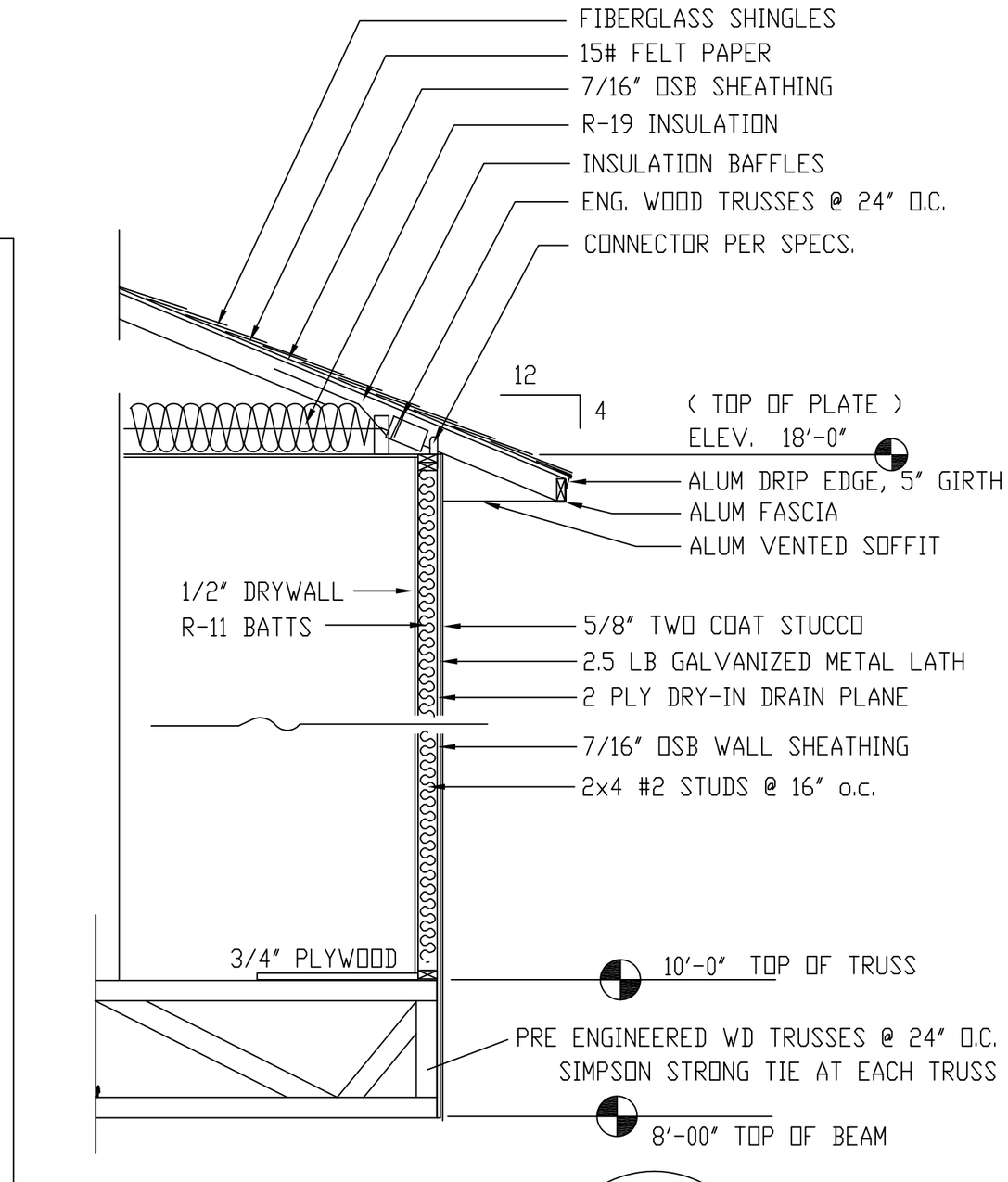


TYPICAL WALL SECTION

CONCRETE BLOCK CONST.

1

4-ALT



TYPICAL WALL SECTION

WOOD FRAME CONST.

1

4-ALT

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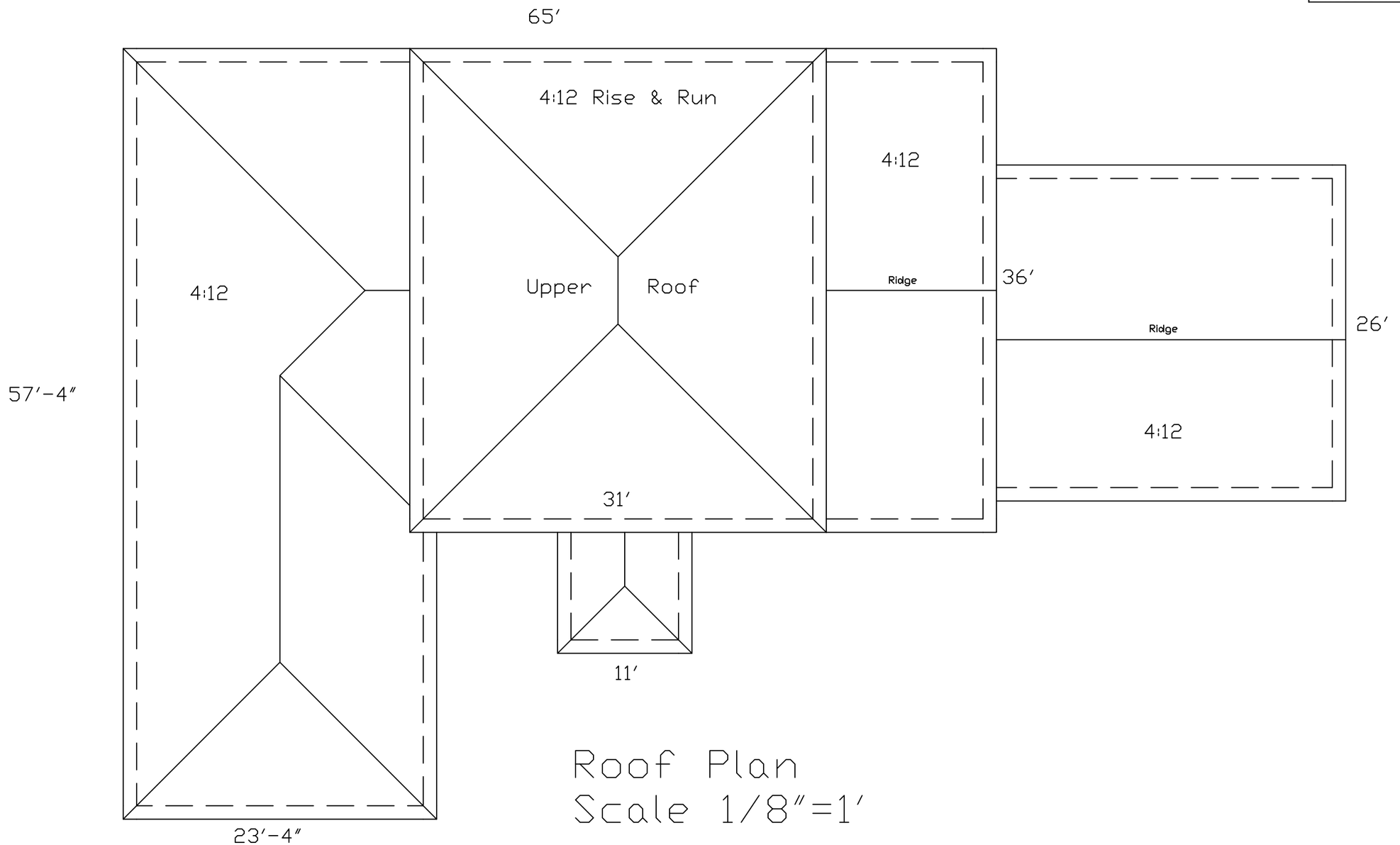
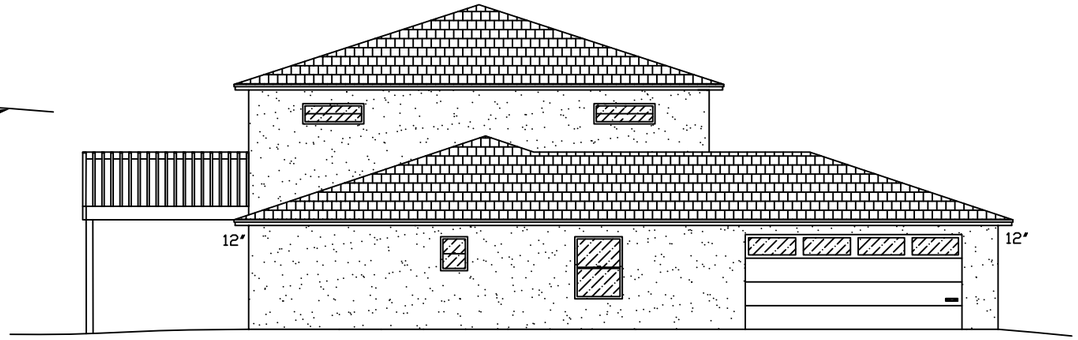


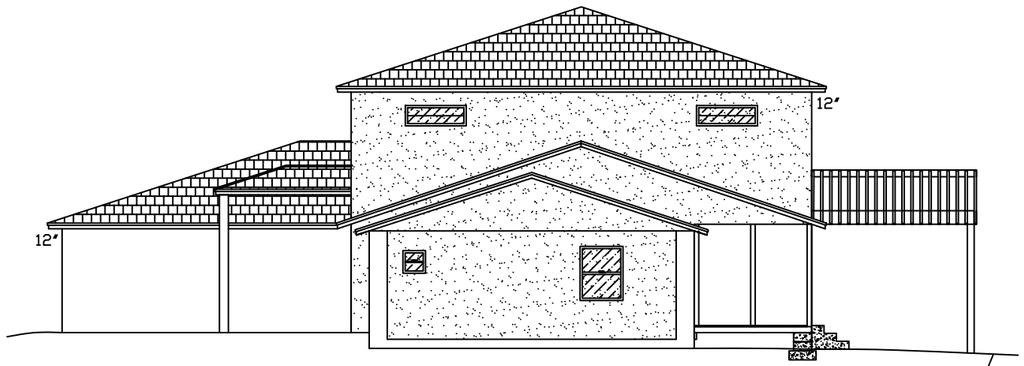
Roof Plan
Scale 1/8″=1′

South Elevation

Approx Grade



West Elevation



East Elevation Approx Grade

North Elevation

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Chasco State Park | ALT–06

GRAVITY LOADS

1. POWERS STEEL BOX LINTEL (PATENT NO. 6367209)

   PREFORMED STEEL LINTEL: GALVANIZED 16 GA. THICKNESS (0.0598 INCHES) AND 18 GAGE THICKNESS (0.0478 INCHES) COIL STEEL AS MANUFACTURED BY POWERS STEEL & WIRE PRODUCTS, INC. STEEL GRADE IS ASTM A570 GRADE C (FY=40 KSI). GALVANIZATION SHALL COMPLY WITH ASTM A525. THE POWERS STEEL GALVANIZED LINTEL IS NOT DEFINED AS AN ACCESSORY PER SECTION 2104.9.6 OF THE STANDARD BUILDING CODE AND THE FLORIDA BUILDING CODE. BUT IS, INSTEAD, DEFINED AS A STRUCTURAL ELEMENT, SECTION 2204.1 OF THE STANDARD BUILDING CODE AND THE FLORIDA BUILDING CODE. ACCESSORY ITEMS CONSIST OF HORIZONTAL JOINT REINFORCING, VENEER TIES, ANCHORS, WIRE FABRIC. THE POWERS GALVANIZED STEEL LINTEL COMPLIES WITH ASTM A570 WHICH IS THE SPECIFICATION FOR STRUCTURAL QUALITY STEEL.

2. SHORE LINTELS AS REQUIRED TO COMPENSATE FOR DEAD LOAD DEFLECTION ON NON–CURED MASONRY GROUT. ALL LINTELS GREATER THAN 18'–0" ARE BUILT WITH 1/2" CHAMBER.

3. LINTEL TO BE USED WITH CONCRETE MASONRY UNITS HAVING MINIMUM f'm AS SHOWN.

4. STEEL SURFACES IN CONTACT WITH GROUT AND/OR MORTAR SHALL BE UNPAINTED AND FREE OF MATERIAL THAT MIGHT INHIBIT BOND.

5. BEARING EACH END SHALL BE 4" ± 1". BEARING SHALL BE ON A MINIMUM 8" DEEP GROUTED CELL EXCEPT THAT L2 LINTELS MAY BEAR ON 1 1/4" THICK MINIMUM FACE SHELL.

6. f'm = 1500PSI. MASONRY UNITS SHALL CONFORM TO ASTM C90, GRADE N.

7. GROUT = 3000PSI. SLUMP RANGE: 8" TO 11". ROD OR VIBRATE GROUT ADEQUATELY TO ENSURE CONSOLIDATION OF GROUT (NO AIR POCKETS). GROUT SHALL COMPLY WITH ASTM C476–83 AND BE EITHER COARSE OR FINE GROUT. ALL LINTELS SHALL BE GROUT FILLED.

8. MORTAR: TYPE "S" OR TYPE "M" 1800PSI.

9. TOP REINFORCING OR TOP OF WALL REINFORCING, IS REQUIRED BY CODES TO PROVIDE A CONTINUOUS TIE AROUND A STRUCTURE AND TO PROVIDE FOR UPLIFT RESISTANCE AT LINTELS.

10. ATTACHMENTS TO TOP OF WALL PER ARCHITECTURAL AND/OR ENGINEERING DRAWINGS.

11. NOT USED.

12. NOT USED.

13. MASONRY WALL MAY OCCUR ABOVE COMPOSITE LINTEL HEIGHT. IN THE CASE THAT THE MASONRY WALL IS TWICE THE HEIGHT OF A 24" AND GREATER LINTEL, THE DEAD LOAD WEIGHT OF THE LINTEL MAY BE EXCLUDED FROM THE LOAD CALCULATIONS DUE TO THE COMPOSITE NATURE OF THE LINTEL ASSEMBLY.

14. A #5 REINFORCING BAR (GRADE 40) IS TO SET APPROX. 3" FROM TOP OF ALL STEEL LINTEL DESIGNS AND IN SOME CASES 3" FROM BOTTOM OF LINTEL AS SHOWN ON LOAD TABLES. TOP HORIZONTAL REINFORCEMENT IS TO BE A CONTINUOUS TIE AS NOTED IN NOTE #9. IN THE CASE THAT THE LINTEL IS NOT WITHIN A COMPOSITE BOND BEAM SYSTEM, TOP HORIZONTAL REINFORCEMENT IS TO EXTEND 2'–0" PAST INSIDE OF JAMBS.

15. MANUFACTURER:

    POWERS STEEL PRODUCTS LINTELS
    4118 E. ELWOOD PHOENIX, AZ 85040
    PH# 602–437–1160 FAX# 602–437–5409

16. TECHNICAL DATA AND ENGINEERING POWERS STEEL LINTELS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING:

    + SBCCI SSTD – 1999
    + STANDARD BUILDING CODE – 1999
    + FLORIDA BUILDING CODE – 2001
    + AISI LIGHT GAGE COLD FORMED STEEL DESIGN – 1996

    FOR COMPOSITE BEAM HEIGHTS GREATER THAN THOSE PUBLISHED, USE THE "SAFE LOAD" VALUES PER LINEAR FOOT, FROM THE NEXT LOWER HEIGHT TABLE AVAILABLE. ALL TABULATED VALUES INCLUDE A 1/3 INCREASE FOR WIND.

17. INSTALLATION:
    POWERS LINTELS ARE TO BE INSTALLED IN ACCORDANCE WITH STANDARD CONSTRUCTION PRACTICES, SET TO PROPER LINE AND LEVEL, PLUMB AND TRUE, AND IN THE CORRECT RELATION TO OTHER WORK.

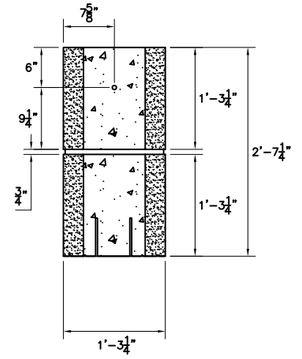
18. 16 GAUGE ALL LINTELS.

19. THIS PRINT IS THE PROPERTY OF POWERS STEEL & WIRE. PROFESSIONAL

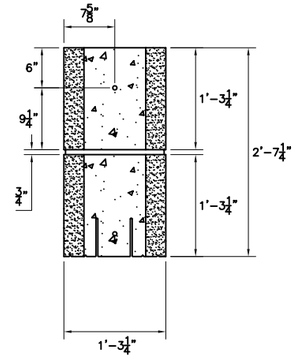
    SEAL VALID ONLY WHEN FABRICATED BY THE ABOVE. IT IS PROVIDED FOR PERMIT PURPOSES ONLY. THESE DRAWINGS ARE FOR USE ON INDIVIDUAL PROJECTS. USE AS A CITY STANDARD IS NOT ALLOWED. ANY OTHER USE OR REPRODUCTION IS PROHIBITED WITHOUT WRITTEN AUTHORIZATION FROM POWERS STEEL AND WIRE.

POWER LINTEL – PS8 (7–5/8") 16" COMPOSITE

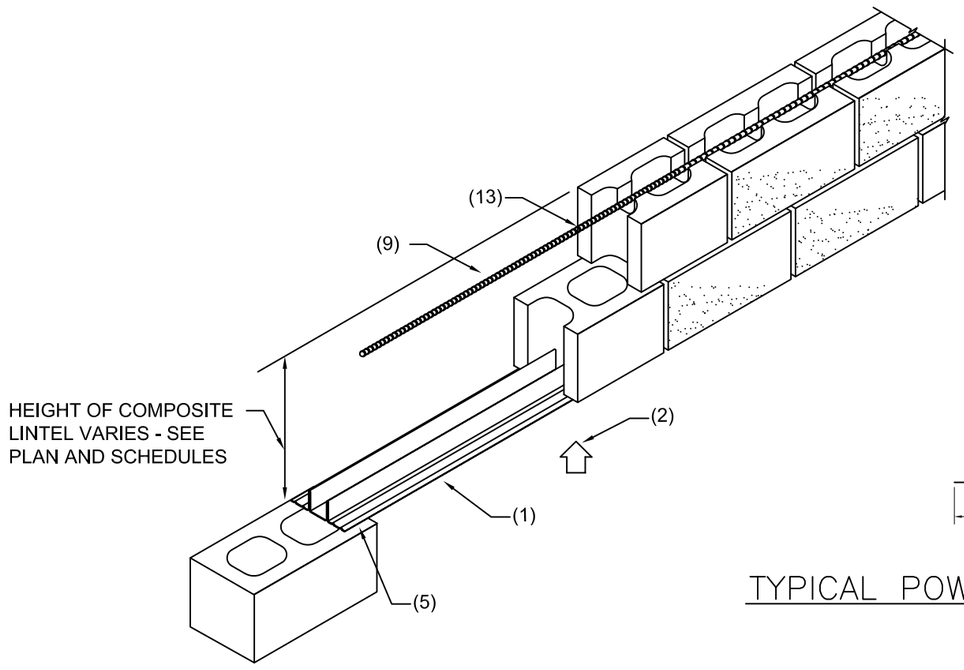
TOTAL SAFE GRAVITY LOAD – POUNDS PER LINEAR FOOT (LBS/FT)				
MARK NO.	NOMINAL CLEAR SPAN	TOTAL LINTEL LENGTH	FILLED W/ (1) #5 TOP DETAIL "I"	FILLED W/ (1) #5 T&B DETAIL "II"
L–1	1'–6"	2'–10"	9709	9709
L–2	2'–2"	3'–6"	6721	6721
L–3	2'–8"	4'–0"	5461	5461
L–4	3'–2"	4'–6"	4599	4599
L–5	4'–0"	5'–4"	3641	3641
L–6	4'–6"	5'–10"	3236	3236
L–7	5'–2"	6'–6"	2819	2819
L–8	6'–2"	7'–6"	2362	2362
L–9	7'–0"	8'–4"	2080	2080
L–10	8'–0"	9'–4"	1820	1820
L–11	9'–2"	10'–6"	1589	1589
L–12	10'–0"	11'–4"	1456	1456
L–13	11'–2"	12'–6"	1304	1304
L–14	12'–0"	13'–4"	1214	1214
L–15	12'–8"	14–0"	1150	1150
L–16	13'–4"	14'–8"	1092	1092
L–17	14'–0"	15'–4"	1040	1040
L–18	16'–0"	17'–4"	797	910
L–19	18'–0"	19'–4"	630	809
L–20	18'–8"	9'–4"	586	755
L–21	20'–8"	22'–0"	478	616
L–22	22'–8"	24'–0"	397	512
L–23	24'–0"	25'–4"	354	457

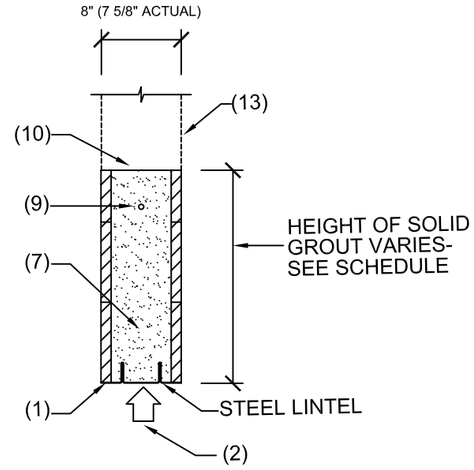


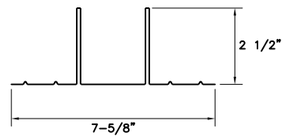
DETAIL "I"



DETAIL "II"







TYPICAL POWER 2 1/2" LINTEL SECTION

1. POWERS STEEL BOX LINTELS (PATENT NO. 6367209)

   PREFORMED STEEL LINTEL: GALVANIZED 16 GA. THICKNESS (0.0598 INCHES) AND 18 GAGE THICKNESS (0.0478 INCHES) COIL STEEL AS MANUFACTURED BY POWERS STEEL & WIRE PRODUCTS, INC. STEEL GRADE IS ASTM A570 GRADE C (FY=40 KSI). GALVANIZATION SHALL COMPLY WITH ASTM A525. THE POWERS STEEL GALVANIZED LINTEL IS NOT DEFINED AS AN ACCESSORY PER SECTION 2104.9.6 OF THE STANDARD BUILDING CODE AND THE FLORIDA BUILDING CODE. BUT IS, INSTEAD, DEFINED AS A STRUCTURAL ELEMENT, SECTION 2204.1 OF THE STANDARD BUILDING CODE AND THE FLORIDA BUILDING CODE. ACCESSORY ITEMS CONSIST OF HORIZONTAL JOINT REINFORCING, VENEER TIES, ANCHORS, WIRE FABRIC. THE POWERS GALVANIZED STEEL LINTEL COMPLIES WITH ASTM A570 WHICH IS THE SPECIFICATION FOR STRUCTURAL QUALITY STEEL.

2. SHORE LINTELS AS REQUIRED TO COMPENSATE FOR DEAD LOAD DEFLECTION ON NON-CURED MASONRY GROUT. ALL LINTELS GREATER THAN 18'-0" ARE BUILT WITH 1/2" CHAMBER.

3. LINTEL TO BE USED WITH CONCRETE MASONRY UNITS HAVING MINIMUM f'm AS SHOWN.

4. STEEL SURFACES IN CONTACT WITH GROUT AND/OR MORTAR SHALL BE UNPAINTED AND FREE OF MATERIAL THAT MIGHT INHIBIT BOND.

5. BEARING EACH END SHALL BE 4" ± 1". BEARING SHALL BE ON A MINIMUM 8" DEEP GROUTED CELL EXCEPT THAT L2 LINTELS MAY BEAR ON 1 1/4" THICK MINIMUM FACE SHELL.

6. f'm = 1500PSI. MASONRY UNITS SHALL CONFORM TO ASTM C90, GRADE N.

7. GROUT = 3000PSI. SLUMP RANGE: 8" TO 11". ROD OR VIBRATE GROUT ADEQUATELY TO ENSURE CONSOLIDATION OF GROUT (NO AIR POCKETS). GROUT SHALL COMPLY WITH ASTM C476-83 AND BE EITHER COARSE OR FINE GROUT. ALL LINTELS SHALL BE GROUT FILLED.

8. MORTAR: TYPE "S" OR TYPE "M" 1800PSI.

9. TOP REINFORCING OR TOP OF WALL REINFORCING, IS REQUIRED BY CODES TO PROVIDE A CONTINUOUS TIE AROUND A STRUCTURE AND TO PROVIDE FOR UPLIFT RESISTANCE AT LINTELS.

10. ATTACHMENTS TO TOP OF WALL PER ARCHITECTURAL AND/OR ENGINEERING DRAWINGS.

11. ALLOWABLE LOADS SHOWN IN THE TABLES FOR UPLIFT AND LATERAL LOAD CAPACITY INCLUDE A 1/3 INCREASE FOR WIND OR SEISMIC LOADING WITH NO FURTHER INCREASED ALLOWED. WHEN COMBINED LOADING CONDITIONS ARE APPLIED TO THE LINTELS, THE ALLOWABLE LOADS SHOWN IN THE TABLES MUST BE ADJUSTED USING A UNITY EQUATION. CALCULATIONS SHALL BE SUBMITTED TO THE CODE OFFICAL WHEN COMBINED LOADINGS CONDITIONS ARE CONSIDERED.

12. NOT USED.

13. MASONRY WALL MAY OCCUR ABOVE COMPOSITE LINTEL HEIGHT. IN THE CASE THAT THE MASONRY WALL IS TWICE THE HEIGHT OF A 24" AND GREATER LINTEL, THE DEAD LOAD WEIGHT OF THE LINTEL MAY BE EXCLUDED FROM THE LOAD CALCULATIONS DUE TO THE COMPOSITE NATURE OF THE LINTEL ASSEMBLY.

14. A #5 REINFORCING BAR (GRADE 40) IS TO SET APPROX. 3" FROM TOP OF ALL STEEL LINTEL DESIGNS AND IN SOME CASES 3" FROM BOTTOM OF LINTEL AS SHOWN ON LOAD TABLES. TOP HORIZONTAL REINFORCEMENT IS TO BE A CONTINUOUS TIE AS NOTED IN NOTE #9. IN THE CASE THAT THE LINTEL IS NOT WITHIN A COMPOSITE BOND BEAM SYSTEM, TOP HORIZONTAL REINFORCEMENT IS TO EXTEND 2'-0" PAST INSIDE OF JAMBS.

15. MANUFACTURER:

    POWERS STEEL PRODUCTS LINTELS
    4118 E. ELWOOD PHOENIX, AZ 85040
    PH# 602-437-1160 FAX# 602-437-5409

16. TECHNICAL DATA AND ENGINEERING POWERS STEEL LINTELS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING:

    + SBCCI SSTD - 1999
    + STANDARD BUILDING CODE - 1999
    + FLORIDA BUILDING CODE - 2001
    + AISI LIGHT GAGE COLD FORMED STEEL DESIGN - 1996

    FOR COMPOSITE BEAM HEIGHTS GREATER THAN THOSE PUBLISHED, USE THE "SAFE LOAD" VALUES PER LINEAR FOOT, FROM THE NEXT LOWER HEIGHT TABLE AVAILABLE. ALL TABULATED VALUES INCLUDE A 1/3 INCREASE FOR WIND.

17. INSTALLATION:
    POWERS LINTELS ARE TO BE INSTALLED IN ACCORDANCE WITH STANDARD CONSTRUCTION PRACTICES, SET TO PROPER LINE AND LEVEL, PLUMB AND TRUE, AND IN THE CORRECT RELATION TO OTHER WORK.

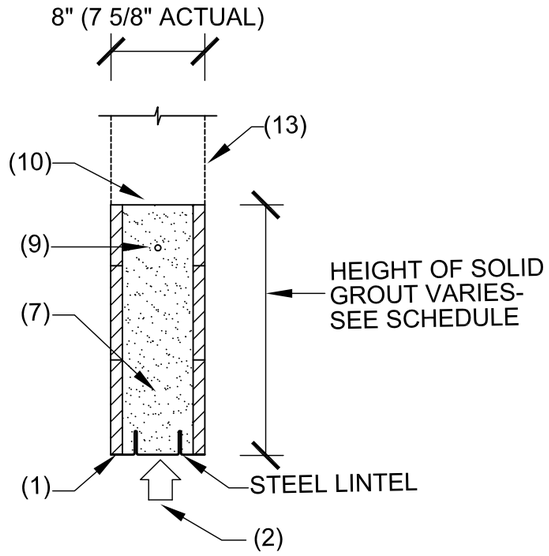
18. 16 GAUGE ALL LINTELS.

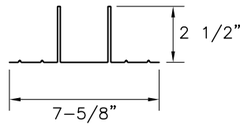
19. THIS PRINT IS THE PROPERTY OF POWERS STEEL & WIRE. PROFESSIONAL SEAL VALID ONLY WHEN FABRICATED BY THE ABOVE. IT IS PROVIDED FOR PERMIT PURPOSES ONLY. THESE DRAWINGS ARE FOR USE ON INDIVIDUAL PROJECTS. USE AS A CITY STANDARD IS NOT ALLOWED. ANY OTHER USE OR REPRODUCTION IS PROHIBITED WITHOUT WRITTEN AUTHORIZATION FROM POWERS STEEL AND WIRE.

UPLIFT LOADS

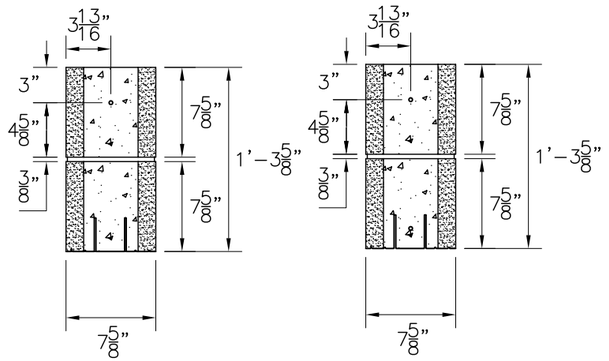
POWER LINTEL - PS8 (7-5/8") 16" COMPOSITE

TOTAL SAFE GRAVITY LOAD - POUNDS PER LINEAR FOOT (LBS/FT)				
MARK NO.	NOMINAL CLEAR SPAN	TOTAL LINTEL LENGTH	FILLED W/ (1) #5 TOP DETAIL "I"	FILLED W/ (1) #5 T&B DETAIL "II"
L-1	1'-6"	2'-10"	13527	13527
L-2	2'-2"	3'-6"	9365	9365
L-3	2'-8"	4'-0"	7609	7609
L-4	3'-2"	4'-6"	6408	6408
L-5	4'-0"	5'-4"	5073	5073
L-6	4'-6"	5'-10"	4499	4499
L-7	5'-2"	6'-6"	3412	3412
L-8	6'-2"	7'-6"	2395	2395
L-9	7'-0"	8'-4"	1859	1859
L-10	8'-0"	9'-4"	1423	1423
L-11	9'-2"	10'-6"	1084	1084
L-12	10'-0"	11'-4"	911	911
L-13	11'-2"	12'-6"	731	731
L-14	12'-0"	13'-4"	633	633
L-15	12'-8"	14-0"	568	568
L-16	13'-4"	14'-8"	512	512
L-17	14'-0"	15'-4"	465	465
L-18	16'-0"	17'-4"	356	356
L-19	18'-0"	19'-4"	281	281
L-20	18'-8"	9'-4"	261	261
L-21	20'-8"	22'-0"	213	213
L-22	22'-8"	24'-0"	177	177
L-23	24'-0"	25'-4"	158	158

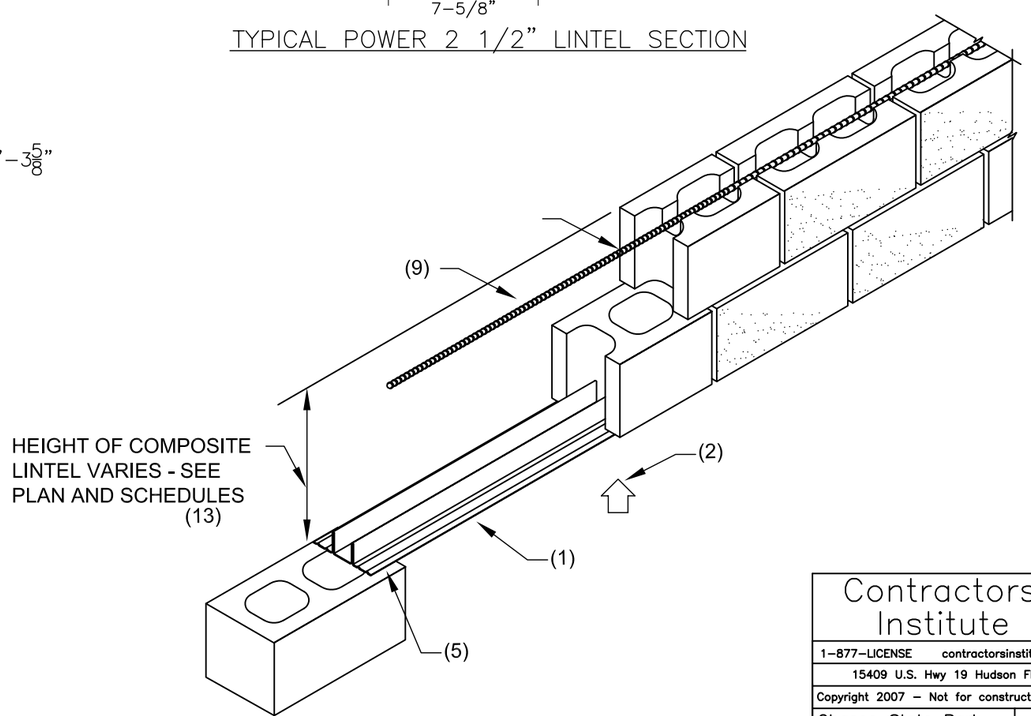




TYPICAL POWER 2 1/2" LINTEL SECTION



DETAIL "I" DETAIL "II"



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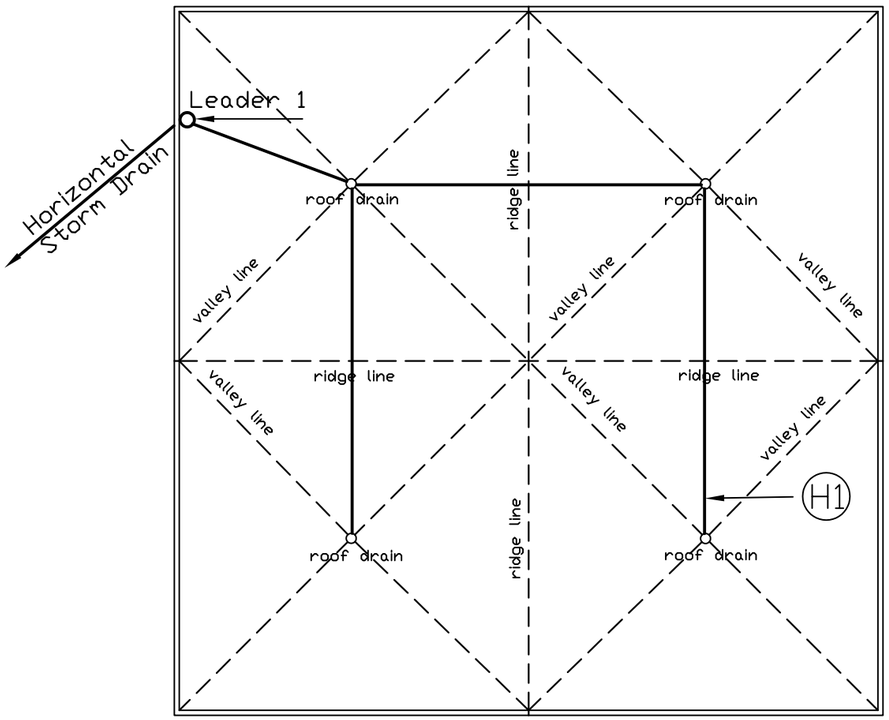
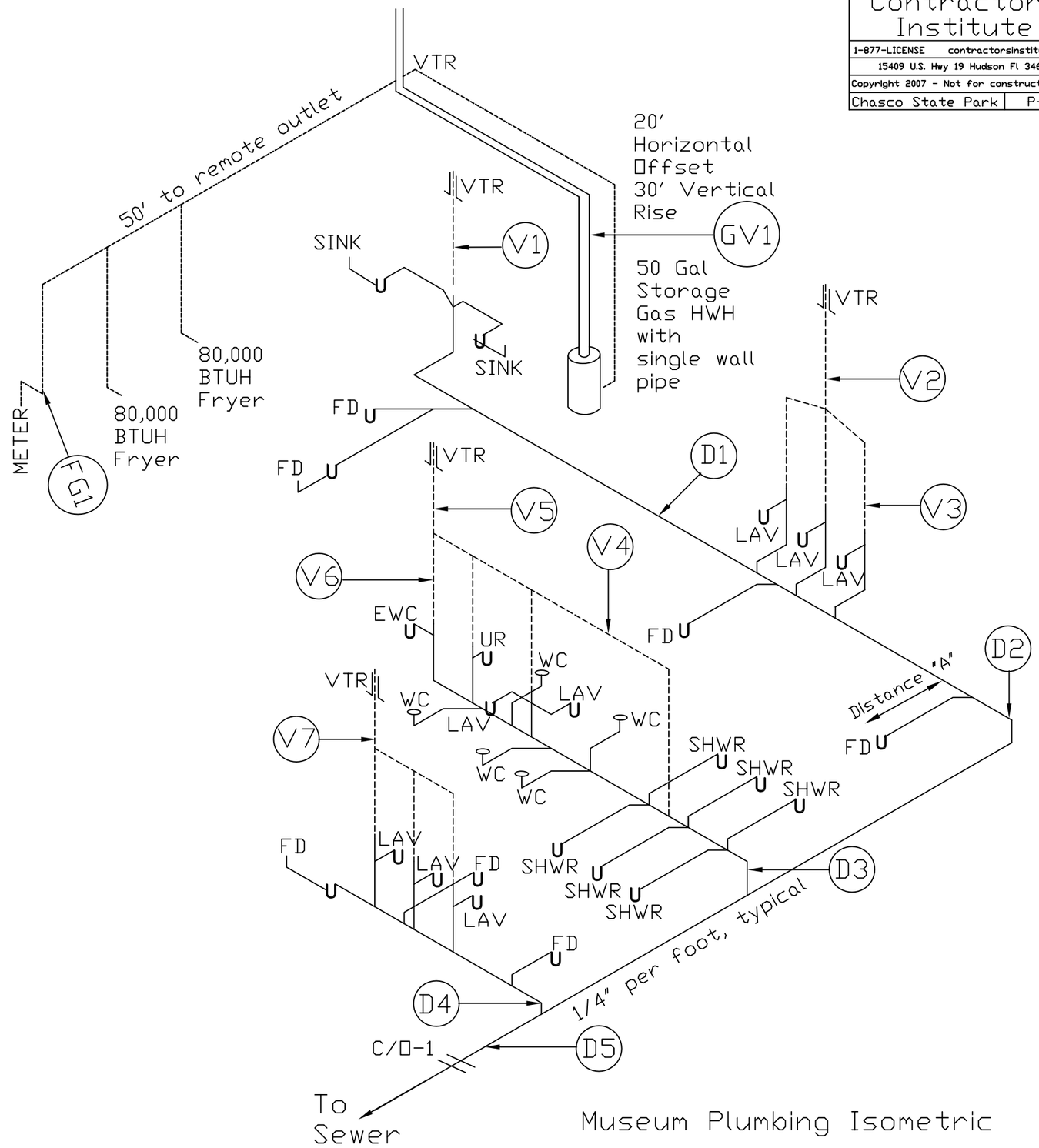
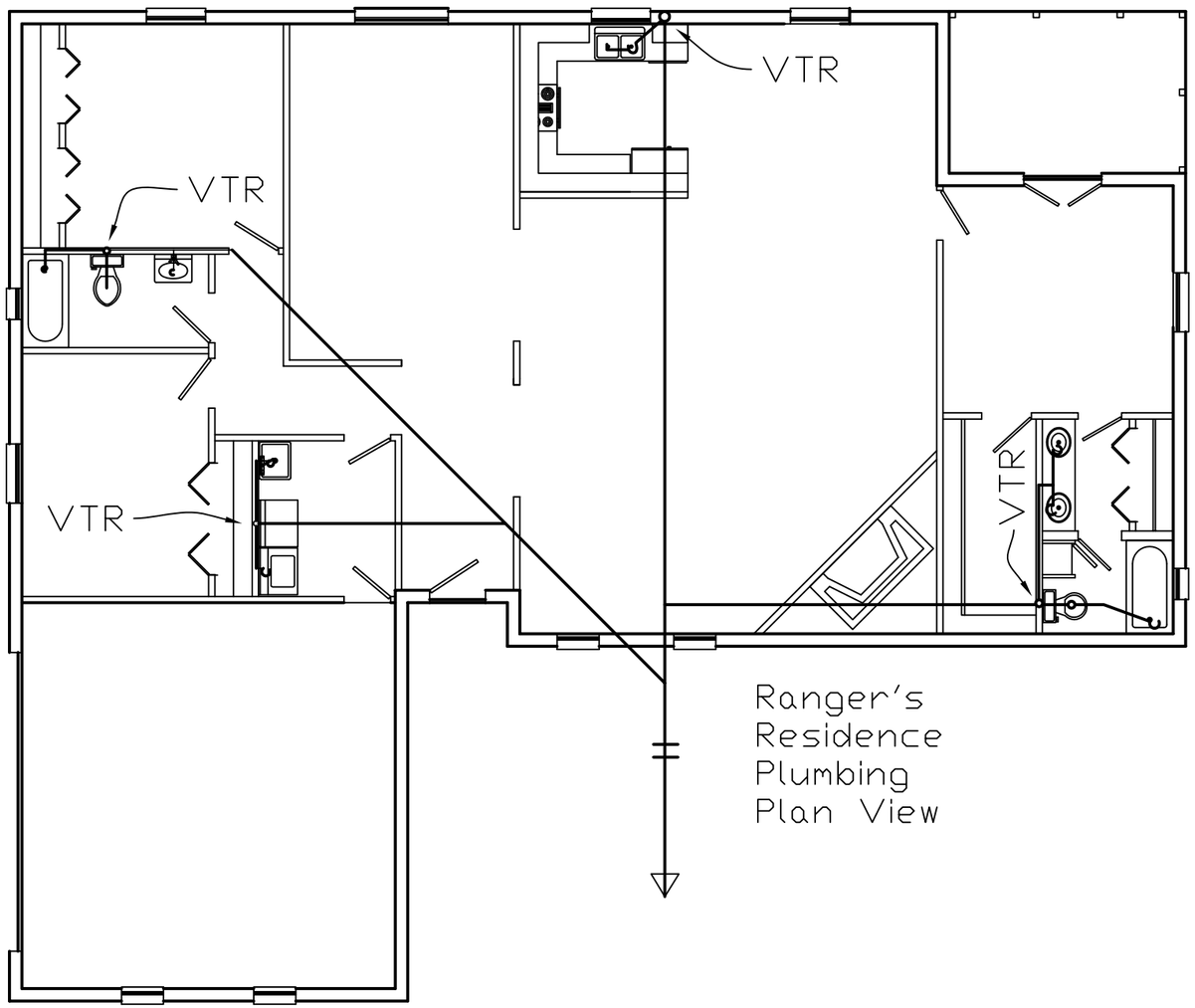
Museum Roof Plan



Legend	Fixture	Waste	Cold	Hot
EWC	Drinking Fountain	1-1/4"	3/8"	--
FD	Floor Drain	2"	--	--
LAV	Lavatory	1-1/4"	1/2"	1/2"
SHWR	Shower	2"	1/2"	1/2"
SINK	Sink	1-1/2"	1/2"	1/2"
UR	Urinal	2"	3/4"	--
WC	Water Closet	4"	1"	--
VTR	Vent Thru Roof	--	--	--
C/O	Cleanout	--	--	--
HWH	Hot Water Heater	3/4"	--	--
Notes				
Urinal: 1 GPF, Flushometer valve				
WC: 3.5 GPF, Flushometer valve				



Museum Plumbing Isometric



Ranger's
Residence
Plumbing
Plan View

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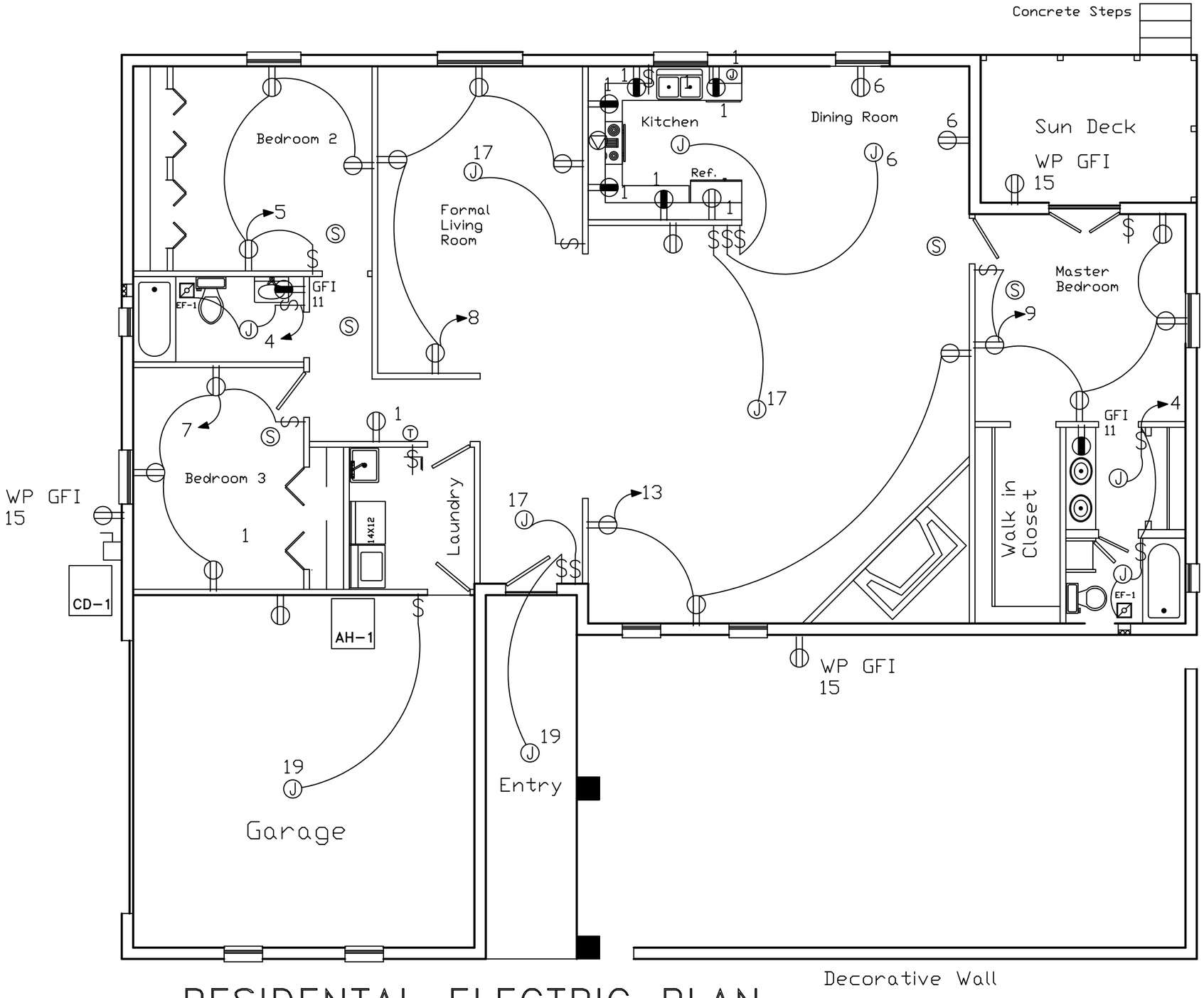

RESIDENTAL ELECTRIC PLAN

PANEL: PANEL A

PANEL VOLTAGE: 120/240V
M.C.B. : 150A
BUS RATING: 150

NOTES	CKT NO.	IDENTIFICATION	LOAD/ PHASE (KVA) 'A'	LOAD/ PHASE (KVA) 'B'	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLES	CIRCUIT BREAKER POLES	CIRCUIT BREAKER TRIP	LOAD/ PHASE (KVA) 'A'	LOAD/ PHASE (KVA) 'B'	IDENTIFICATION	CKT NO.	NOTES
	1	SMALL APPLIANCE CIRCUITS	1.5		20	1	1	20	0.4		DINING ROOM	2	
	3	SMALL APPLIANCE CIRCUITS		1.5	20	1	1	20		0.4	BATHROOMS	4	
	5	BEDROOM 1	0.4		20	1	1	20	0.3		DINING ROOM	6	
	7	BEDROOM 2		0.5	20	1	1	20		0.4	FORMAL LIVING ROOM	8	
	9	MASTER BEDROOM	0.4		20	1	2	20	1.1		AIR HANDLER	10	
	11	GFI RECEPTS		0.4	20	1	-	-		1.1	----------	12	
	13	FAMILY ROOM	0.4		20	1	2	30	2.2		CONDENSER	14	
	15	OUTSIDE RECEPTACLES		0.4	20	1	-	-		2.2	----------	16	
	17	LIGHTS & FANS	0.4		20	2	2	30	2.4		WATER HEATER	18	
	19	LIGHTS & RECEPTS		0.4	-	-	-	-		2.4	----------	20	
	21						2	30	2.4		DRYER	22	
	23						-	-		2.4	----------	24	
	25						2	20	1.3		RANGE	26	
	27						-	-		1.3	----------	28	
	29											30	
	31											32	
	33											34	
	35											36	
	37											38	
	39											40	
	41											42	
		TOTALS:	3.1	3.1					10.1	10.2			

TOTAL KVA PHASE A: 13.2
TOTAL KVA PHASE B: 13.3

TOTAL CONNECTED KVA: 26.5
TOTAL CONNECTED AMPS: 110.0

ELECTRICAL LOAD CALCULATION

LOAD DESCRIPTION			DEMAND LOAD
GENERAL LIGHTING	1685 SQ. FT X 3	5.0	5.0
LAUNDRY CKT		1.5	1.5
SMALL APPL. CKTS		3.0	3.0
DEMAND FACTORS			5.3
HEAT		5.5	5.5
A/C		5.5	
APPLIANCES		6.0	6.0
DRYER		5.0	5.0
COOKING EQUIPMENT		4.5	4.5
		TOTAL	26.5
		VOLTAGE: 120/240, DEMAND AMPS = 110.0	

ELECTRICAL NOTES

DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF THE WORK IN THE CONTRACT. ELECTRICAL DRAWINGS SHALL NOT BE SCALED. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF FIXTURES AND EQUIPMENT. REPORT ANY CONFLICTS TO THE GENERAL CONTRACTOR BEFORE PROCEEDING WITH THE WORK.

ELECTRICAL CONTRACTOR SHALL FURNISH ALL EQUIPMENT, LABOR, MATERIALS, ETC. NECESSARY TO PROVIDE A COMPLETE WORKABLE AND CODE APPROVED ELECTRICAL SYSTEM. WORK SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. FINISHED SYSTEM SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES.

THE ELECTRICAL CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN PERMITS, AND PAY ALL GOVERNMENT FEES, TAXES, AND OTHER ASSOCIATED COSTS. ELECTRICAL CONTRACTOR SHALL FILE ALL NECESSARY APPROVALS OF GOVERNMENT DEPARTMENTS HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION OF THIS WORK AND DELIVER TO THE GENERAL CONTRACTOR. THE SAME CERTIFICATES SHALL BE SUBMITTED BEFORE REQUEST FOR FINAL ACCEPTANCE AND PAYMENT.

THE ELECTRICAL CONTRACTOR SHALL GIVE FULL COOPERATION TO OTHER TRADES AND FURNISH IN WRITING TO THE GENERAL CONTRACTOR ANY INFORMATION NECESSARY TO PERMIT THE WORK OF ALL TRADES TO BE INSTALLED SATISFACTORILY. COORDINATE ALL CONDUIT RUNS AND EQUIPMENT WITH OTHER TRADES.

ELECTRCAL CONTRACTOR SHALL PROVIDE ALL ELECTRICAL WORK AS SHOWN. VERIFY ALL MOUNTING HEIGHTS AND LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN.

PROVIDE COMPLETE GROUNDING SYSTEM PER APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE. BOND SERVICE ENTRANCE TO BUILDING STEEL, METAL WATER MAIN, AND, AND MADE ELECTRODES.

ELECTRICAL CONTRACTOR TO SUPPLY ALL REQUIRED DISCONNECTS AND WIRE ALL AIR HANDLER UNITS, EXHAUST FANS, AND CONDENSING UNITS PROVIDED BY THE MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL VERIFY NAMEPLATE RATING OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH-IN.

MINOR DETAILS NOT SHOWN ON THE DRAWINGS BUT NECESSARY FOR GOOD WORKMANSHIP SHALL BE INCLUDED IN THE WORK.

ALL OUTSIDE RECEPTACLES SHALL BE WEATHER PROOF AND GFI.

ALL ELECTRICAL DEVICES SHALL BE ABOVE FLOOD PLANE AS REQUIRED.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
$	SINGLE POLE SWITCH 46" AFF OR AS NOTED
$3	THREE POLE SWITCH 46" AFF OR AS NOTED
	DUPLEX RECEPTACLE 18" AFF OR AS NOTED
	DUPLEX RECEPTACLE (MOUNTED ABOVE COUNTER) 46" AFF OR AS NOTED
	2 DUPLEX RECEPTACLES IN 2 GANG BOX WITH COMMON COVERPLATE, 18" AFF OR AS NOTED
S	SMOKE DETECTOR, UNITS SHALL BE INTERCONNECTED
	COMMUNICATIONS/DATA OUTLET 18" AFF OR AS NOTED, PROVIDE J-BOX
	DISCONNECT SWITCH, AMPERAGE/POLE/VOLTAGE/FUSE/NEMA TYPE (NEMA 1 UON) AS INDICATED
J	OUTLET, JUNCTION OR PULL BOX
J	HOME RUN TO PANEL (A)
	PANELBOARD 208Y/120V OR 240V/120V, TOP 72" AFF
	EXHAUST FAN

ABBREVIATIONS

GFI	GROUND FAULT INTERRUPTER
WP	WEATHER PROOF
ST	SHUNT TRIP BREAKER

LEGEND GENERAL NOTES:

(1) ALL MOUNTING HEIGHTS ARE TO CENTERLINE UON

(2) ALL SYMBOLS MAY NOT BE USED

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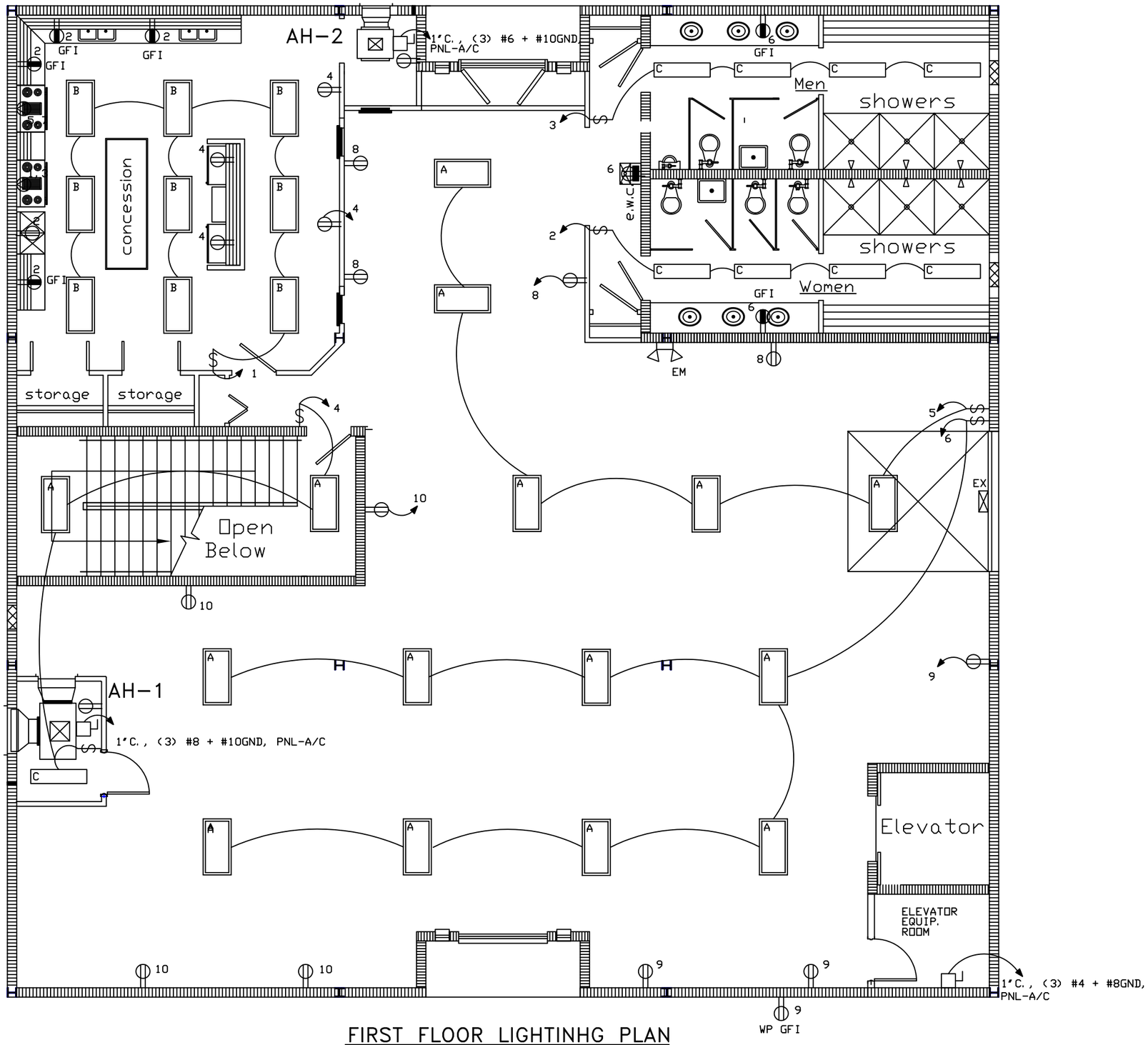

FIRST FLOOR LIGHTINHG PLAN

PANEL: A

PANEL VOLTAGE: 120/208V, 3PH., 4W
M.C.B. : 100
BUS RATING: 125
AIC RATING: 11,000

NOTES	CKT NO.	IDENTIFICATION	LOAD/ PHASE (KVA) 'A'	'B'	'C'	CIRCUIT BREAKER TRIP	POLES	POLES	TRIP	LOAD/ PHASE (KVA) 'A'	'B'	'C'	IDENTIFICATION	CKT NO.	NOTES
	1	RECEPTACLES	3.0			40	2	1	20	.90			RECEPTACLES	2	
	3	RECEPTACLES		3.0		–	–	1	20		.72		RECEPTACLES	4	
	5	RECEPTACLES			3.0	40	2	1	20			.54	RECEPTACLES	6	
	7	RECEPTACLES	3.0			–	–	1	20	.72			RECEPTACLES	8	
	9	RECEPTACLES		.90		20	1	1	20		.72		RECEPTACLES	10	
	11	RECEPTACLES			.72	20	1	1	20			.54	RECEPTACLES	12	
	13	RECEPTACLES	.72			20	1	1	20	X				14	
	15	X		X		20	1	1	20		X		X	16	
	17	X			X	20	1	1	20			X	X	18	
	19	X	X			20	1	1	20	X			X	20	
	21	X		X		20	1	1	20		X		X	22	
	23	X			X	20	1	1	20			X	X	24	
	25	X	X			20	1	1	20	X			X	26	
	27	X		X		20	1	1	20		X		X	28	
	29	X			X	20	1	1	20			X	X	30	
	31	X	X			20	1	1	20	X			X	32	
	33	X		X		20	1	1	20		X		X	34	
	35	X			X	20	1	1	20			X	X	36	
	37	X	X			20	1	1	20	X			X	38	
	39	X		X		20	1	1	20		X		X	40	
	41	X			X	20	1	1	20			X	X	42	
		TOTALS:	6.72	3.90	3.72					1.62	1.44	1.08			

TOTAL KVA PHASE A: 8.34
TOTAL KVA PHASE B: 5.34
TOTAL KVA PHASE C: 4.8

MAX. CONN. PHASE KVA: 8.34
TOTAL CONNECTED KVA: 18.48
TOTAL DEMAND KVA: 18.73
TOTAL DEMAND AMPS: 52

NOTES:

PANEL: B

PANEL VOLTAGE: 120/208V, 3PH., 4W
M.C.B. : 100
BUS RATING: 125
AIC RATING: 11,000

NOTES	CKT NO.	IDENTIFICATION	LOAD/ PHASE (KVA) 'A'	'B'	'C'	CIRCUIT BREAKER TRIP	POLES	POLES	TRIP	LOAD/ PHASE (KVA) 'A'	'B'	'C'	IDENTIFICATION	CKT NO.	NOTES
	1	LIGHT	7.2			40	2	1	20	2.1			LIGHT	2	
	3	LIGHT		2.1		–	–	1	20		2.1		LIGHT	4	
	5	LIGHT			8.5	40	2	1	20			5.3	LIGHT	6	
	7	LIGHT	13.8			–	–	1	20	9.6			LIGHT	8	
	9	LIGHT		2.4		20	1	1	20		X		LIGHT	10	
	11	LIGHT			X	20	1	1	20			X	LIGHT	12	
	13		X			20	1	1	20	X				14	
	15			X		20	1	1	20		X		X	16	
	17				X	20	1	1	20			X	X	18	
	19		X			20	1	1	20	X			X	20	
	21	X		X		20	1	1	20		X		X	22	
	23	X			X	20	1	1	20			X	X	24	
	25	X	X			20	1	1	20	X			X	26	
	27	X		X		20	1	1	20		X		X	28	
	29	X			X	20	1	1	20			X	X	30	
	31	X	X			20	1	1	20	X			X	32	
	33	X		X		20	1	1	20		X		X	34	
	35	X			X	20	1	1	20			X	X	36	
	37	X	X			20	1	1	20	X			X	38	
	39	X		X		20	1	1	20		X		X	40	
	41	X			X	20	1	1	20			X	X	42	
		TOTALS:	21.0	4.5	8.5					11.7	2.1	5.3			

TOTAL KVA PHASE A: 32.7
TOTAL KVA PHASE B: 6.6
TOTAL KVA PHASE C: 13.8

MAX. CONN. PHASE KVA: 32.7
TOTAL CONNECTED KVA: 53.1
TOTAL DEMAND KVA: 53.1
TOTAL DEMAND AMPS: 148

NOTES:

PANEL: A/C

PANEL VOLTAGE: 120/208V, 3PH., 4W
M.C.B. : 225
BUS RATING: 225
AIC RATING: 11,000

NOTES	CKT NO.	IDENTIFICATION	LOAD/ PHASE (KVA) 'A'	'B'	'C'	CIRCUIT BREAKER TRIP	POLES	POLES	TRIP	LOAD/ PHASE (KVA) 'A'	'B'	'C'	IDENTIFICATION	CKT NO.	NOTES
	1	CU-1	4.5			50	3	3	60	5.4			AH-1	2	
	3	----		4.5		–	–	–	–		5.4		----	4	
	5	----			4.5	–	–	–	–			5.4	----	6	
	7	CU-2	4.5			50	3	3	60	5.4			AH-2	8	
	9	----		4.5		–	–	–	–		5.4		----	10	
	11	----			4.5	–	–	–	–			5.4	----	12	
	13	CU-3	4.5			50	3	3	60	5.4			AH-3	14	
	15	----		4.5		–	–	–	–		5.4		----	16	
	17	----			4.5	–	–	–	–			5.4	----	18	
	19	ELEVATOR	7.0			80	3	1	20	X			X	20	
	21	----		7.0		–	–	1	20		X		X	22	
	23	----			7.0	–	–	1	20			X	X	24	
	25	X	X			20	1	1	20	X			X	26	
	27	X		X		20	1	1	20		X		X	28	
	29	X			X	20	1	1	20			X	X	30	
	31	X	X			20	1	1	20	X			X	32	
	33	X		X		20	1	1	20		X		X	34	
	35	X			X	20	1	1	20			X	X	36	
	37	X	X			20	1	1	20	X			X	38	
	39	X		X		20	1	1	20		X		X	40	
	41	X			X	20	1	1	20			X	X	42	
		TOTALS:	20.5	20.5	20.5					16.2	16.2	16.2			

TOTAL KVA PHASE A: 36.7
TOTAL KVA PHASE B: 36.7
TOTAL KVA PHASE C: 36.7

MAX. CONN. PHASE KVA: 36.7
TOTAL CONNECTED KVA: 110.1
TOTAL DEMAND KVA: 66.6
TOTAL DEMAND AMPS: 185.0

NOTES:

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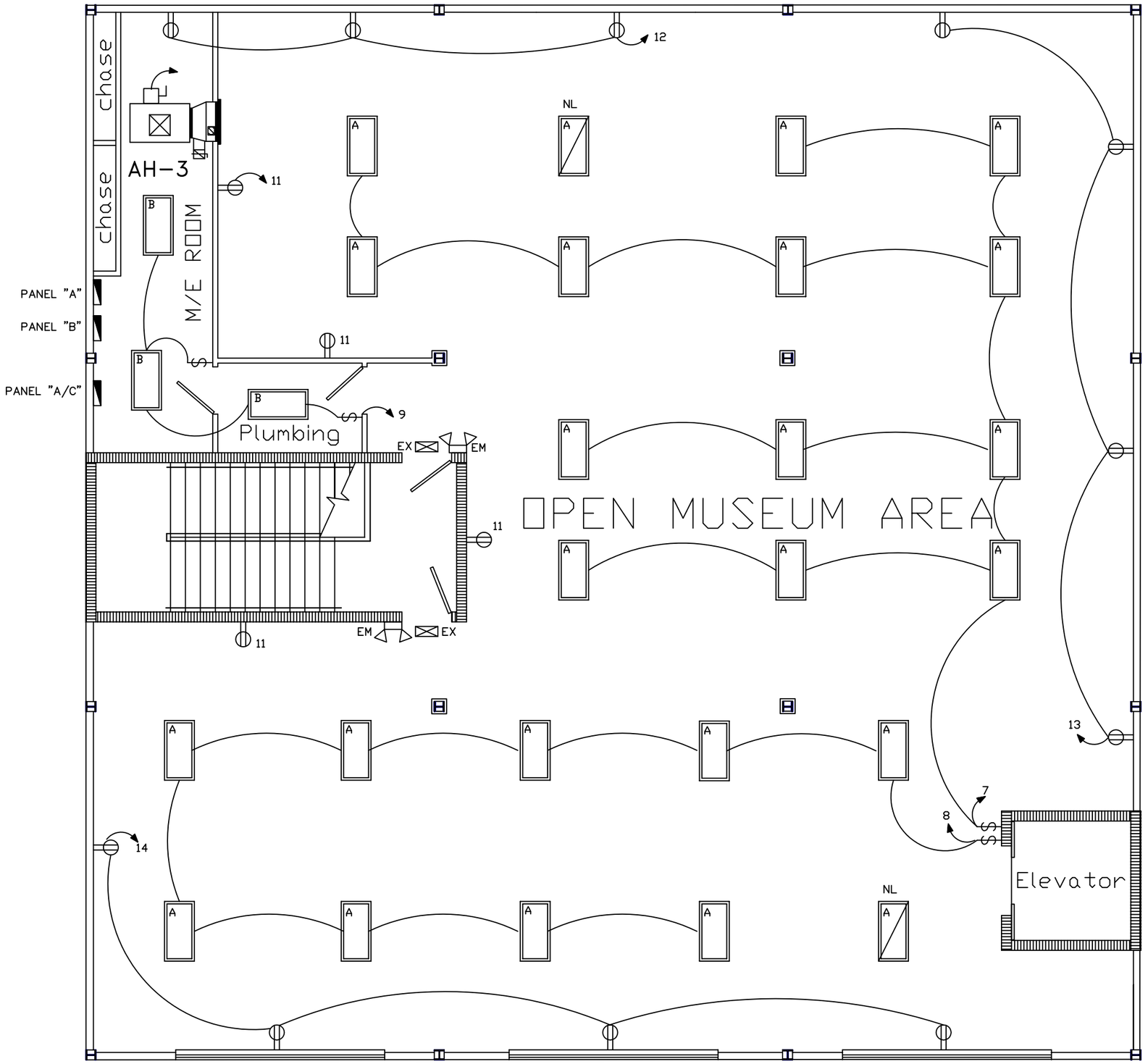

SECOND FLOOR ELECTRICAL PLAN

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
$	SINGLE POLE SWITCH 46" AFF OR AS NOTED, a = SWITCH DESIGNATION
$3	THREE POLE SWITCH 46" AFF OR AS NOTED, a = SWITCH DESIGNATION
$M	MANUAL MOTOR STARTER
	DUPLEX RECEPTACLE 18" AFF OR AS NOTED
	DUPLEX RECEPTACLE (MOUNTED ABOVE COUNTER) 46" AFF OR AS NOTED
	SINGLE RECEPTACLE 125V, 20A, 18" AFF OR AS NOTED (2)
	2 DUPLEX RECEPTACLES IN 2 GANG BOX WITH COMMON COVERPLATE, 18" AFF OR AS NOTED
	COMMUNICATIONS/DATA OUTLET 18" AFF OR AS NOTED, PROVIDE J-BOX & 3/4 " CONDUIT UP TO CEILING
	TELEPHONE OUTLET
	DISCONNECT SWITCH, AMPERAGE/POLE/VOLTAGE/FUSE/NEMA TYPE (NEMA 1 UON) AS INDICATED
	OUTLET, JUNCTION OR PULL BOX
	HOME RUN TO PANEL (A)
	PANELBOARD 208Y/120V OR 240V/120V, TOP 72" AFF
A5b	2X4 LIGHT FIXTURE. A = FIXTURE TYPE PER SCHEDULE. 5 = CIRCUIT NUMBER. b = SWITCH DESIGNATION. DESIGNATIONS THE SAME FOR ALL LIGHT FIXTURES.
	LIGHT STRIP PER FIXTURE SCHEDULE
	HID LIGHT FIXTURE, SEE SCHEDULE FOR SPECS
	EXHAUST FAN
	EXIT LIGHT
	EMERGENCY LIGHT
	TELEVISION OUTLET

ABBREVIATIONS

GFI	GROUND FAULT INTERRUPTER
WP	WEATHER PROOF
ST	SHUNT TRIP BREAKER

LEGEND GENERAL NOTES:

(1) ALL MOUNTING HEIGHTS ARE TO CENTERLINE UON

(2) ALL SYMBOLS MAY NOT BE USED

LIGHT FIXTURE SCHEDULE

LTR	MANUFACTURER	CATALOG NUMBER	MOUNTING	LAMPS	DESCRIPTION
A	LITHONIA OR EQUAL	2GT8432A12125	GRID	4-32W-T8	4-LAMP LENSED GRID
B	LITHONIA OR EQUAL	2GT8332A12125	GRID	3-32W-T8	3-LAMP WALL BRACKET
C	LITHONIA	2GT8232A12125	GRID	2-32W-T8	2-LAMP LENSED GRID
EX	LITHONIA OR EQUAL	LQMSW3R120ELN	WALL	INCLUDED	EXIT LIGHT
EM	LITHONIA OR EQUAL	6ELM2	WALL	INCLUDED	EMERGENCY LIGHT

① DIAGONAL LINE DENOTES NIGHT LIGHTS, WIRE AHEAD OF SWITCHES.

② EMERGENCY LIGHTS SHALL BE SERVED BY NEAREST LIGHTING CIRCUIT ON NON-SWITCHED LEG.

③ ALL LIGHTS THIS SHEET SHALL BE SERVED BY PANEL "A"

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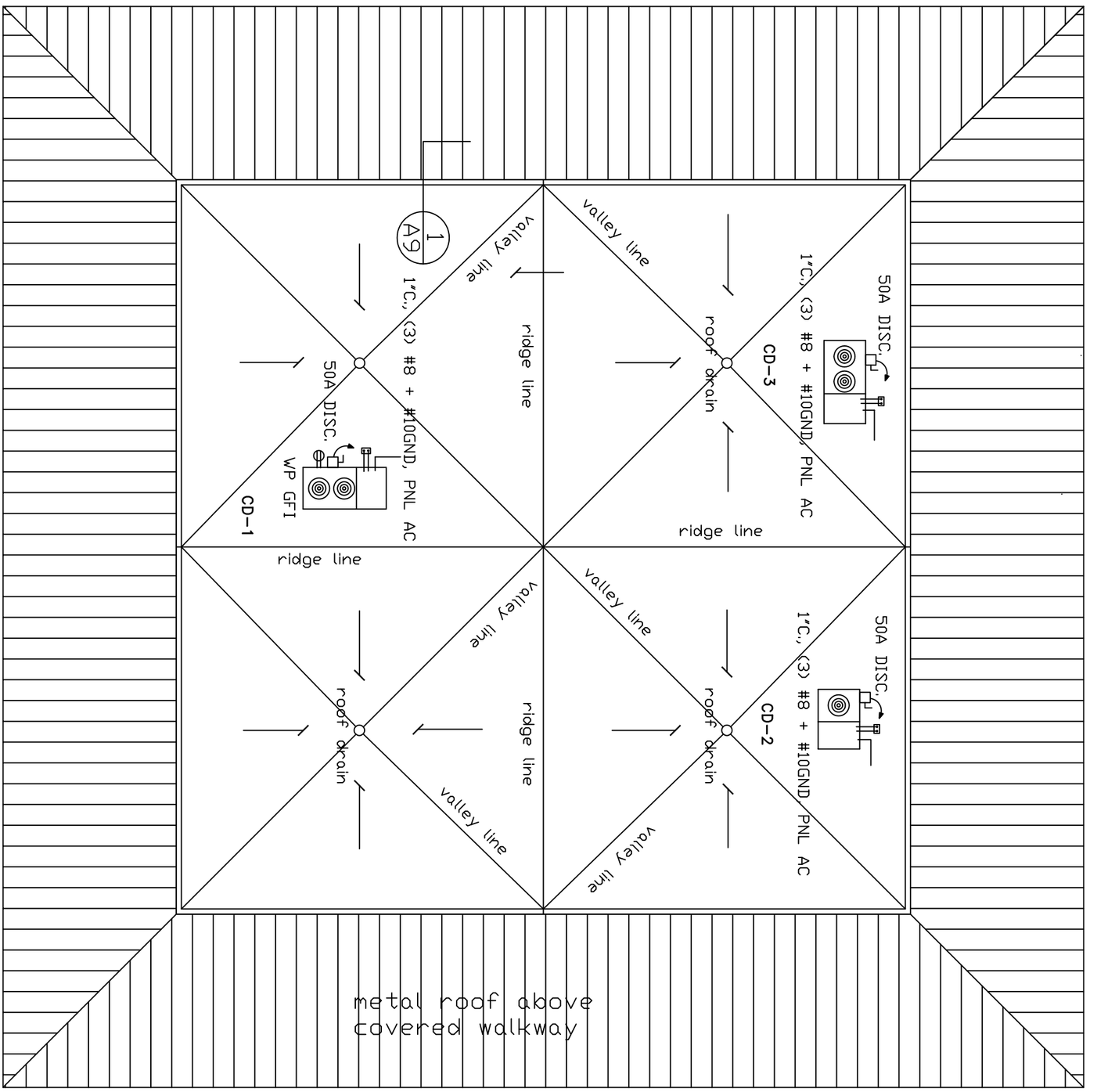
ELECTRICAL ROOF PLAN



LOAD CALCULATION

LOAD DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND LOAD
GENERAL LIGHTING	18.48	1.25	23.2
RECEPTACLES	9.0	1.0	9.0
AIR CONDITIONING	40.0	1.0	40.0
HEAT	48.0	1.0	48.0
MOTORS	22.6	25% OF LARGEST	5.6
ELEVATOR	21.0	1.0	21.0
MISC. NON-CONTINOUS	10.0	1.0	10.0
		TOTAL	156.6
		SUBTRACT A/C	40.0
		TOTAL DEMAND	116.6
	VOLTAGE: 120/208, 3-P, DEMAND AMPS =		324.0
			500 AMP SERVICE

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ELECTRICAL NOTES

DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF THE WORK IN THE CONTRACT. ELECTRICAL DRAWINGS SHALL NOT BE SCALED. REFER TO ARCHIOTECTURAL DRAWINGS FOR EXACT LOCATION OF FIXTURES AND EQUIPMENT. REPORT ANY CONFLICTS TO THE GENERAL CONTRACTOR BEFORE PROCEEDING WITH THE WORK.

ELECTRICAL CONTRACTOR SHALL FURNISH ALL EQUIPMENT, LABOR, MATERIALS, ETC. NECESSARY TO PROVIDE A COMPLETE WORKABLE AND CODE APPROVED ELECTRICAL SYSTEM. WORK SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. FINISHED SYSTEM SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES.

THE ELECTRICAL CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN PERMITS, AND PAY ALL GOVERNMENT FEES, TAXES, AND OTHER ASSOCIATED COSTS. ELECTRICAL CONTRACTOR SHALL FILE ALL NECESSARY APPROVALS OF GOVERNMENT DEPARTMENTS HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION OF THIS WORK AND DELIVER TO THE GENERAL CONTRACTOR. THE SAME CERTIFICATES SHALL BE SUBMITTED BEFORE REQUEST FOR FINAL ACCEPTANCE AND PAYMENT.

THE ELECTRICAL CONTRACTOR SHALL GIVE FULL COOPERATION TO OTHER TRADES AND FURNISH IN WRITING TO THE GENERAL CONTRACTOR ANY INFORMATION NECESSARY TO PERMIT THE WORK OF ALL TRADES TO BE INSTALLED SATISFACTORILY. COORDINATE ALL CONDUIT RUNS AND EQUIPMENT WITH OTHER TRADES.

ELECTRCAL CONTRACTOR SHALL PROVIDE ALL ELECTRICAL WORK AS SHOWN. VERIFY ALL MOUNTING HEIGHTS AND LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO ROUGH–IN.

PROVIDE COMPLETE GROUNDING SYSTEM PER APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE. BOND SERVICE ENTRANCE TO BUILDING STEEL, METAL WATER MAIN, AND, AND MADE ELECTRODES.

ELECTRICAL CONTRACTOR TO SUPPLY ALL REQUIRED DISCONNECTS AND WIRE ALL AIR HANDLER UNITS, EXHAUST FANS, AND CONDENSING UNITS PROVIDED BY THE MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL VERIFY NAMEPLATE RATING OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH–IN.

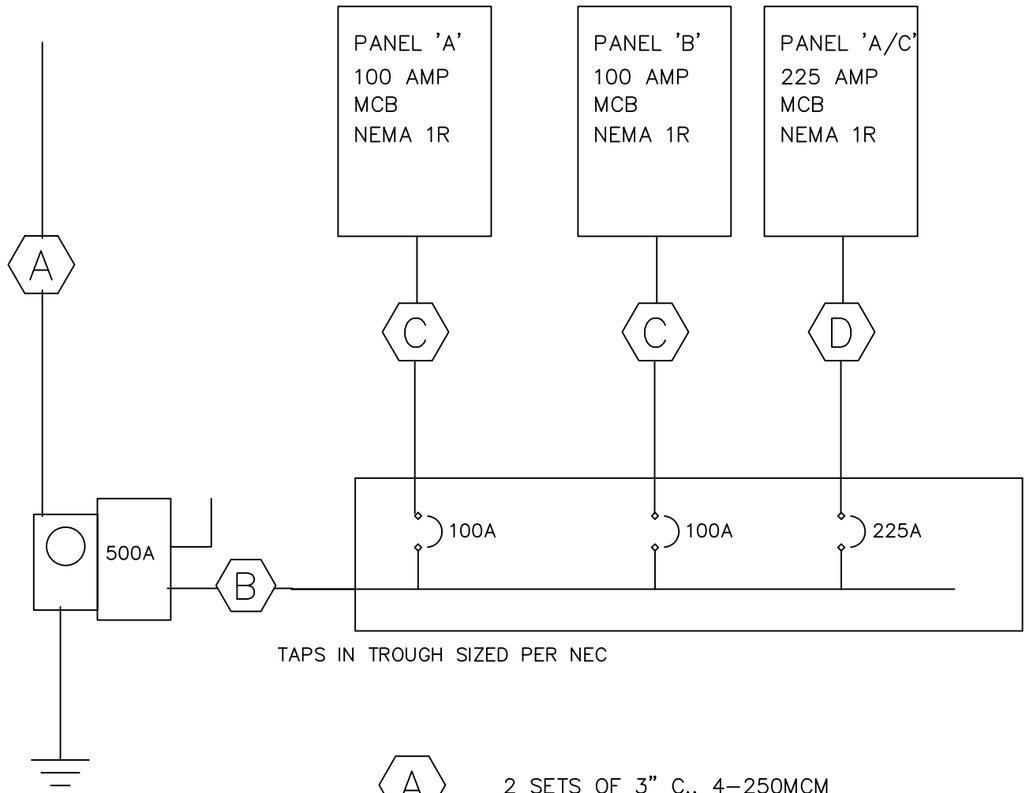
LIGHTING AND RECEPTACLE CIRCUITS SHALL BE 2#12 W #12 GROUND IN 3/4" CONDUIT. MC CABLE MAY BE USED WHERE CONCEALED AND OWNER APPROVED.

MINOR DETAILS NOT SHOWN ON THE DRAWINGS BUT NECESSARY FOR GOOD WORKMANSHIP SHALL BE INCLUDED IN THE WORK.

SUBMIT CUT–SHEETS OF ALL LIGHT FIXTURES, SWITCHES, RECEPTACLES, AND GENERAL ELECTRICAL DEVICES AND EQUIPMENT TO THE OWNER/ARCHITECT FOR APPROVAL BEFORE DOING THE WORK.

ALL OUTSIDE RECEPTACLES SHALL BE WEATHER PROOF AND GFI.

500 AMP SERVICE
120/208 3–PHASE



TAPS IN TROUGH SIZED PER NEC

1" C., W/ 3/0 GND
CONNECT TO (2) 5/8" X 10'
GROUND RODS, METAL WATER
MAIN AND BLDG STEEL

A	2 SETS OF 3" C., 4–250MCM (1) 3" C., SPARE
B	2 SETS OF 4–250MCM + 3/0GND
C	2" C., (4)#3 + #8GND
D	2–1/2" C., 4–4/0 + #4GND

NOTES:

1. PROVIDE SURGE SUPPRESSOR/ARRESTOR AT METER AND WHERE LOCAL CODES REQUIRE.
2. GROUND ALL REMOTE PANELS PER NEC.

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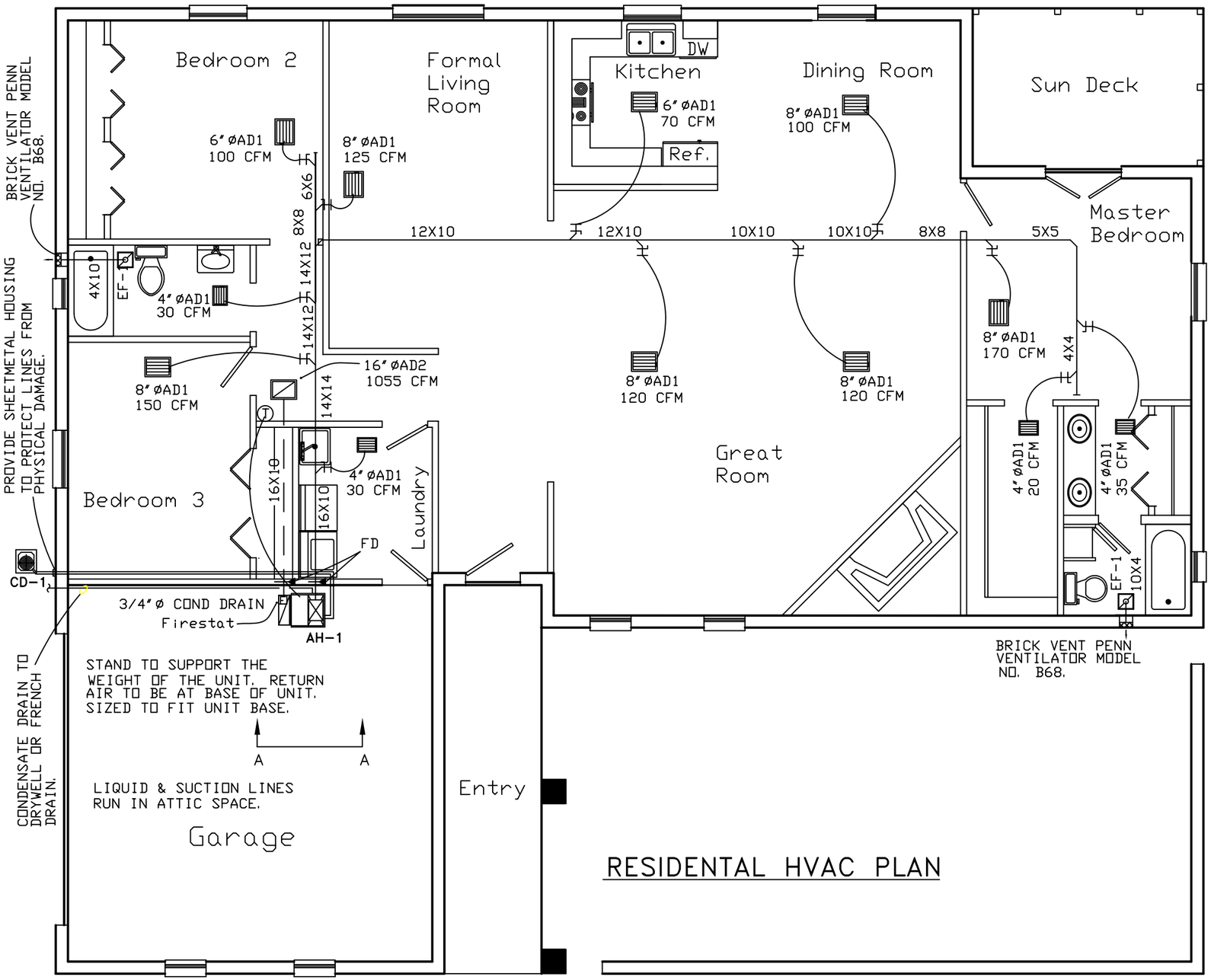
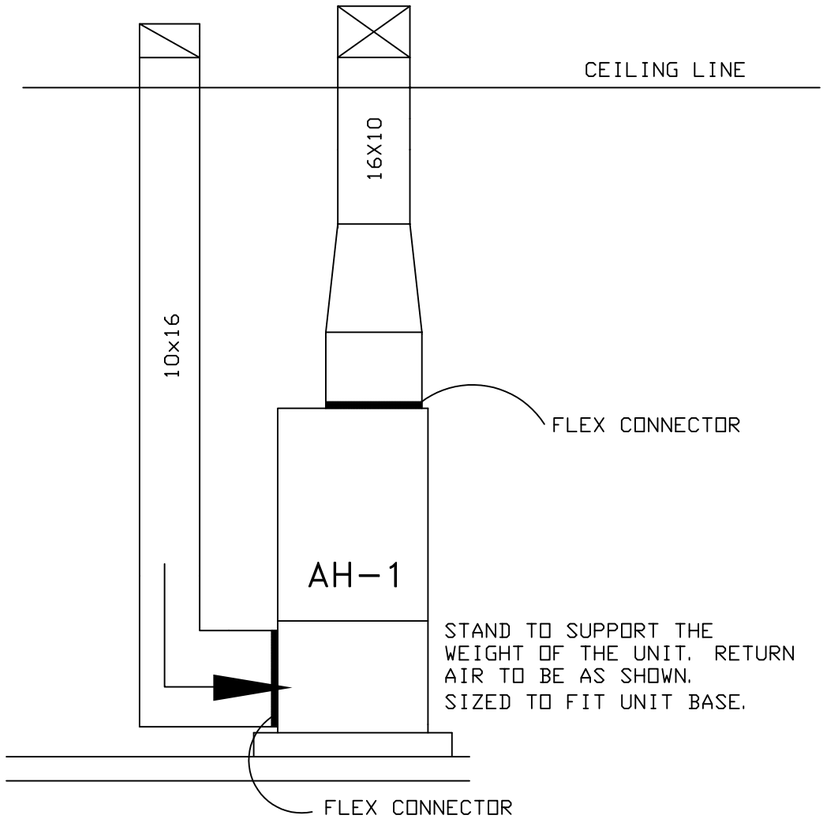
Chasco State Park | M-01



RESIDENTAL HVAC PLAN

ASHRAE OUTSIDE AIR REQUIREMENTS

A. ACCEPTABLE INDOOR AIR QUALITY IS ACCOMPLISHED USING THE VENTILATION PROCEDURE PER ASHRAE 62-1999, PAGE 4, SECTION 4.1, TOGETHER WITH TABLE 2. THE OUTSIDE AIR REQUIRED FOR THE RESIDENCE IS ACCOMPLISHED BY INFILTRATION, AROUND THE DOORS, WINDOWS AND OPENING AND CLOSING OF THE ENTRANCE DOOR.



SECTION A–A VIEW

NTS

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	NEW DUCTWORK
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
	SUPPLY AIR DEVICE
	RETURN OR EXHAUST AIR DEVICE
T	THERMOSTAT
S F	SMOKE DETECTOR, OR FIRE STAT
	FIRE DAMPER

SPLIT SYSTEM A/C SCHD

AIR HANDLING UNIT DATA		RESIDENTAL
MARK	–	AH–1
TOTAL CAPACITY	BTUH	29400
SENSIBLE CAPACITY	BTUH	20900
SUPPLY AIR	CFM	1095
OUTSIDE AIR	CFM	40
ENTERING AIR TEMP DB/WB	°F/°F	78.8/65.6
LEAVING AIR TEMP DB/WB	°F/°F	61.3/57.9
EXT. STATIC PRESSURE	IN. H_2O	0.60
MOTOR	H.P.	1/2
ELECTRICAL	V/ø/Hz	208/1/60
FILTER TYPE	–	TA
MANUFACTURER	–	TRANE
WEIGHT	LBS	115
ENERGY EFFICIENCY RATIO	EER	11.6
HEATING CAPACITY	KW	7.6/1
MODEL NO.		TWE036C
CONDENSING UNIT DATA		
MARK	–	CD–1
OUTDOOR TEMP.	°F	95
LIQUID LINE (SIZE)	IN. O.D.	3/8"ø
SUCTION LINE (SIZE)	IN. O.D.	7/8"ø
ELECTRICAL	V/ø/Hz	208/1/60
R.L.A.	AMPS	N/A
MANUFACTURER	–	TRANE
MODEL NO.		TWP030C100A
NOTES	#	1 2 3 4 5

1. BOTH UNITS ARE TO BE OF THE SAME MANUFACTURER.
2. PROVIDE EXTRA SET OF FILTERS FOR EACH AIR HANDLER.
3. PROVIDE COMBINATION THERMOSTAT, AND ELEC HEAT STRIPS.
4. PROVIDE WITH LOW AMBIENT CONTROL KIT.
5. CONTRACTOR TO VERIFY LOCATION OF CONDENSER UNIT AND DISTANCE TO AIR HANDLER. ADJUST SUCTION AND LIQUID LINE SIZES AND NEEDED.

FAN SCHEDULE

MARK	–	EF–1
SERVICE	–	TOILETS
AIR QUANTITY	CFM	50
EXT. STATIC PRESS.	IN. H_2O	.375
FAN TYPE	–	CENT.
DRIVE	–	DIRECT
SONES	–	2.1
MOTOR	H.P./WATTS	83 WATTS
MOTOR SPEED	RPM	1550
ELECTRICAL	V/ø/HZ	115/1/60
CONTROL	–	LITE SWITCH
LOCATION	–	CEILING
MANUFACTURER	–	PENN
MODEL	–	Z3H–TDA INLINE
NOTES	#	1 2 3

NOTES:

1. PROVIDE WITH BRICK VENT MODEL B86 FOR EACH FAN.
2. FINISH AND COLOR TO BE DETERMINED BY THE ARCHITECT.
3. PROVIDE WITH SPEED CONTROLLER, FOR BALANCING.

AIR DEVICE SCHEDULE

MARK	TYPE		FINISH	ACCESSORIES	MANUFACTURER AND MODEL	NECK SIZE	CFM	REMARKS
AD1	SUPPLY	STEEL	OFF–WHITE	OBD	AIR MATE SERIES 501–HM	4&6"ø * 8"ø	20–50 100–170	SURFACE MTD
AD2	RETURN	STEEL	OFF–WHITE	OBD	AIR MATE SERIES 170 FF	22X22	1055	SURFACE MTD

* SEE PLAN FOR TAKE–OFF SIZES.

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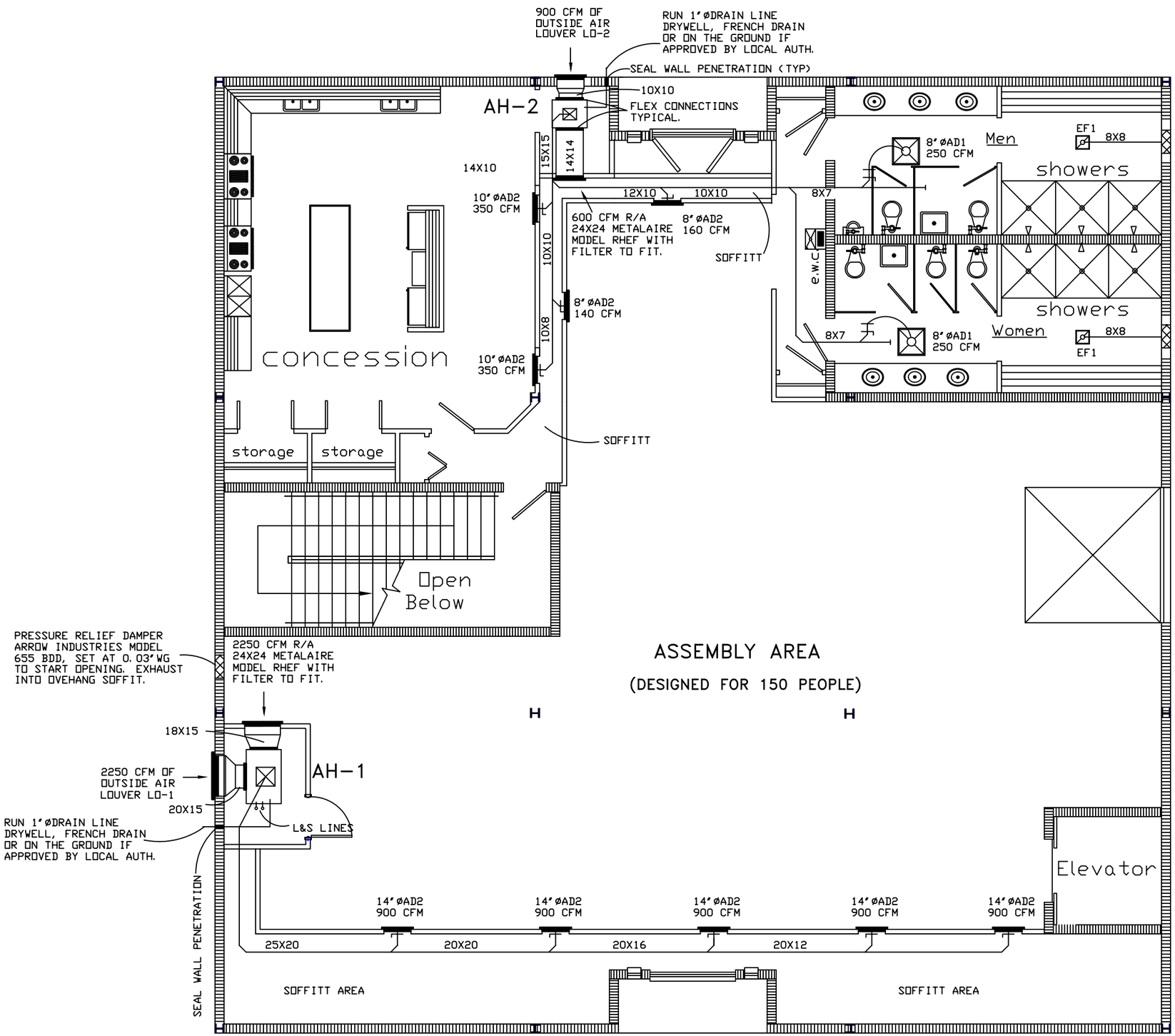

FIRST FLOOR HVAC PLAN

SCALE 1/8" = 1'-0"

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FAN SCHEDULE

MARK	–	EF-1
SERVICE	–	TOILETS
AIR QUANTITY	CFM	300
EXT. STATIC PRESS.	IN. H_2O	.375
FAN TYPE	–	CENT.
DRIVE	–	DIRECT
SONES	–	5.1
MOTOR	H.P./WATTS	130 WATTS
MOTOR SPEED	RPM	1550
ELECTRICAL	V/Ø/HZ	115/1/60
CONTROL	–	LITE SWITCH
LOCATION	–	CEILING
MANUFACTURER	–	PENN
MODEL	–	Z8H-RA
NOTES	(#)	(1)(2)(3)

NOTES:

1. PROVIDE WALL BRICK VENT MODEL B68 FOR EACH FAN.
2. FINISH AND COLOR TO BE DETERMINED BY THE ARCHITECT.
3. PROVIDE WITH SPEED CONTROLLER, FOR BALANCING.

LOUVER SCHEDULE

MARK	LO-1	LO-2	LO-3
SQUARE FEET FREE AREA	2.5	2.5	5.3
WIDTH X HEIGHT (INCHES)	24"X36"	24"X36"	36"X48"
THICKNESS (INCHES)	2"	2"	2"
MATERIAL	EXTR. ALUM	EXTR. ALUM	EXTR. ALUM
BIRD SCREEN	YES	YES	YES
INSECT SCREEN	YES	YES	YES
MANUFACTURER	PENN	PENN	PENN
MODEL NUMBER	MODEL #H	MODEL #H	MODEL #H
MAX. VOLACITY (FPM)	600	600	600
NOTES			

AIR BALANCE SCHEDULE

ROOM		SUPPLY	RETURN/OUTSIDE		EXHAUST
APPLICATION	PRESS. RELAT.	CFM	CFM R/A	CFM O/A	CFM
ASSEMBLY 1ST FLR	0	4500	2250	2250	0
1ST FLR TOILETS	–	500	0	0	600
ASSEMBLY 2ND FLR	0	6200	2450	3750	0

ASHRAE OUTSIDE AIR REQUIREMENTS

A. ACCEPTABLE INDOOR AIR QUALITY IS ACCOMPLISHED USING THE VENTILATION PROCEDURE PER FBC 2001, SECTION 4, TOGETHER WITH TABLE 403.3.

1. OFFICE SPACE:

a. OUTDOOR AIR QUALITY IS BASED ON 15 CFM PER OCCUPANT.
b. 150 OCCUPANTS = 2250 CFM.

2. EQUALIZATION OF AIR IS ACCOMPLISHED BY RELIEVING EXCESS AIR INTO SOFFITT OF OVERHANG.

COMMERCIAL MECHANICAL NOTES

1. IN GENERAL, PLANS AND DIAGRAMS ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED.

2. INTENT OF THESE NOTES AND MECHANICAL SPECIFICATIONS ON THE DRAWINGS IS TO CLARIFY THE SCOPE OF WORK AND ALERT CONTRACTOR OF EXISTING CONDITIONS. CONTRACTOR TO VISIT SITE AND VERIFY ALL CLEARANCES BEFORE FABRICATION OF DUCTWORK AND PROVIDE ADDITIONAL OFFSET AND/OR CHANGES IN DUCT SIZES TO MEET FIELD CONDITIONS AND COORDINATE THE ELECTRICAL AND PLUMBING SUBCONTRACTORS BEFORE ANY CONSTRUCTION WORK COMMENCES.

3. CONTRACTOR SHALL NOTIFY THE OWNER, ARCHITECT OR HIS AUTHORIZED REPRESENTATIVE OF ANY DAMAGE TO THE EXISTING INSTALLATION BEFORE PROCEEDING WITH THE WORK.

4. ALL MECHANICAL ENGINEERING DESIGN HAS BEEN; AND THE MECHANICAL CONSTRUCTION WORK SHALL BE IN STRICT COMPLIANCE WITH THE ENFORCED CODES AND ADOPTED AMENDMENTS ISSUED BY THE PASCO COUNTY AUTHORITY AND THE CITY OF HUDSON AT THE TIME OF CONSTRUCTION THAT IN PART INCLUDES THE FOLLOWING:

A. NATIONAL FIRE PROTECTION ASSOC. CODE.
B. SOUTHERN STANDARD PLUMBING
C. NATIONAL ELECTRICAL CODE.
D. SOUTHERN STANDARD MECHANICAL
E. OCCUPATIONAL HEALTH & SAFETY
F. AMERICANS W/ DISABILITIES ACT.

5. ALL PIPE AND MECHANICAL WORK TO BE INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE. NOT TO BE SUPPORTED BY CEILING SUSPENSION SYSTEM.

6. PATCH AND REPAIR ALL WALL AND FLOOR OPENINGS WITH DOW CORNING SEALANT. AREA TO BE FINISHED NEAT, AIRTIGHT AND MATCH EXISTING FINISH SURFACE.

7. CONTRACTOR TO OBTAIN AND PAY FEES FOR ALL REQUIRED PERMITS OF CONSTRUCTION.

8. CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND AND/OR SUPPORT MECHANICAL EQUIPMENT AND MATERIALS.

9. ALL MECHANICAL WORK SHALL MEET ALL THE REQUIREMENTS OF THE 'STANDARD MECHANICAL CODE.'

10. CONTRACTOR TO PROVIDE A CERTIFIED COPY OF THE TEST AND BALANCE REPORT. TEST TO BE CONDUCTED BY AN INDEPENDENT AGENCY QUALIFIED TO PERFORM SUCH TESTS. TEST TO BE CONDUCTED IN ACCORDANCE WITH AABC REQUIREMENTS. OTHER FORMATS CAN BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

11. UNLESS OTHERWISE NOTED, INSTALL DUCTWORK IN SOFFITTS. COORDINATE WITH OPTHER TRADES FOR CLEARANCES AND LOCATIONS.

12. INSTALL IN DUCTWORK, APPROVED FIRE DAMPERS FOR ALL RATED WALLS. FIRE DAMPERS TO BE RATED FOR THE WALL WHERE INSTALLED.

13. ALL EQUIPMENT USED SHALL MEET OR EXCEED THE REQUIREMENTS OF ASHRAE-62 LATEST EDITION IN RELATIONSHIP TO 'VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY.'

14. REFRIGERANT PIPING SHALL BE THE TYPE COPPER DESIGNATED FOR THIS APPLICATION. SIZE PIPING IN ACCORDANCE WITH SCHEDULE AND/OR MANUFACTURER'S RECOMMENDATIONS, WHICHEVER IS GREATEST.

15. GREASE AND OIL ALL EQUIPMENT AND REPLACE ALL FILTERS WITH CLEAN FILTERS BEFORE TURNING OVER JOB TO THE OWNER OR HIS/HER REPRESENTATIVE.

16. HVAC CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO STARTING ANY WORK OR ORDERING ANY MATERIALS TO INSURE COMPLETE COMPATIBILITY WITH ELECTRICAL SYSTEMS AND COMPLIANCE WITH ALL CODES. MECHANICAL CONTRACTOR TO VERIFY VOLTAGES, WIRE SIZES AND BREAKER SIZES AS PART OF THE COORDINATION.

17. HVAC SYSTEM AS INSTALLED SHALL MEET ALL STATE OF FLORIDA ENERGY CODE REQUIREMENTS.

18. ALL PLUMBING INSTALLATIONS TO MEET OR EXCEED THE SBCCI STANDARD PLUMBING CODE, AND ALL LOCAL CODES AND ORDINANCES.

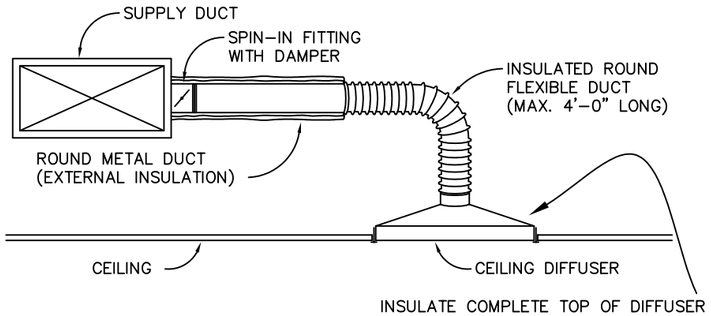
19. ALL SUPPLY AND RETURN DUCTS ARE TO BE INSULATED UNLESS SPECIFIED OTHERWISE. INSULATION TO BE JOHNS-MANVILLE 1 1/2 POUND DENSITY, 2" THICK WITH VAPOR BARRIER, SIMILAR TO MICRO-LITE OR APPROVED EQUAL, WITH A MINIMUM "R" VALUE OF 6.0

20. ALL SHEETMETAL DUCTWORK TO CONFORM TO ASHRAE AND/OR SMACNA STANDARDS FOR LIGHT COMMERCIAL INSTALLATION. SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. 90 DEGREE TURNS TURNS REQUIRE TURNING VANES. REFERENCE SMACNA MANUAL FIG. 2-5.

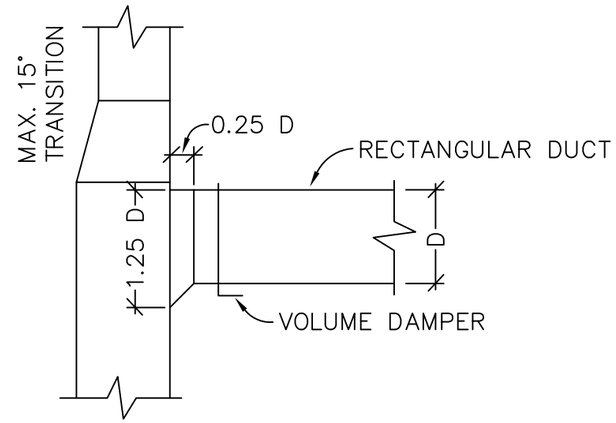
21. FIBERGLASS DUCT BOARD FOR AIR DISTRIBUTION CAN BE USED IF APPROVED BY LOCAL BUILDING DEPARTMENT, AND INSTALLED IN ACCORDANCE WITH ASHRAE, TIMA AND/OR SMACNA REQUIREMENTS. IF NOT APPROVED BY LOCAL AUTHORITY, THEN SHEETMETAL DUCTWORK TO CONFORM TO ASHRAE AND/OR SMACNA STANDARDS FOR LIGHT/MEDIUM PRESSURE, COMMERCIAL INSTALLATION. SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. 90 DEGREE TURNS REQUIRE TURNING VANES REFERENCE SMACNA ON 90 DEGREE TURNS. (CONTRACTOR TO NOTE: IF FIBERGLASS BOARD IS USED FOR DISTRIBUTION, THIS CONTRACTOR TO VERIFY FROM HVAC EQUIPMENT MANUFACTURER THAT THE SPECIFIED AIR HANDLER WILL IN FACT HAVE THE CAPACITY TO OVERCOME THE ADDITIONAL STATIC DEVELOPED BY THE FIBERGLASS BOARD, AND THE SYSTEM AS DESIGNED CAN BE INSTALLED, AND FUNCTION PROPERLY.) METAL DUCT IS DESIGN STANDARD.

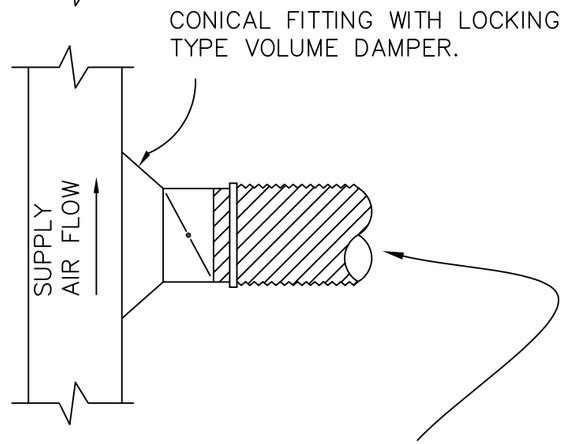
22. OR EQUALS MAY BE USED IF APPROVED BY THE ENGINEER.

23. PROVIDE VIBRASTION ISOLATORS FOR ALL ROTATING AND VIBRATING EQUIPMENT.



CEILING DIFFUSER RUNOUT DETAIL
NOT TO SCALE





FLEX DUCT OR ROUND SHEET METAL DUCT. FLEX DUCT MAX. 4'-0" LONG, USE CLAMP TO ATTACH FLEX DUCTS AND SEAL AS PER SPECIFICATIONS, SUPPORT FLEX DUCT EVERY 3'-0" FROM STRUCTURE.

BRANCH DUCT DETAILS
NOT TO SCALE

AIR DEVICE SCHEDULE

MARK	TYPE	MATERIAL	FINISH	ACCESSORIES	MANUFACTURER AND MODEL	REMARKS
AD1	SUPPLY	STEEL	OFF-WHITE	OBD	METAILAIRE SERIES 7500	T-LAY-IN
AD2	SUPPLY	STEEL	OFF-WHITE	OBD	METAILAIRE MODEL H4004D	SURFACE MTD
AD3	RETURN	STEEL	OFF-WHITE	OBD	METAILAIRE SERIES RHEF	SEE PLAN

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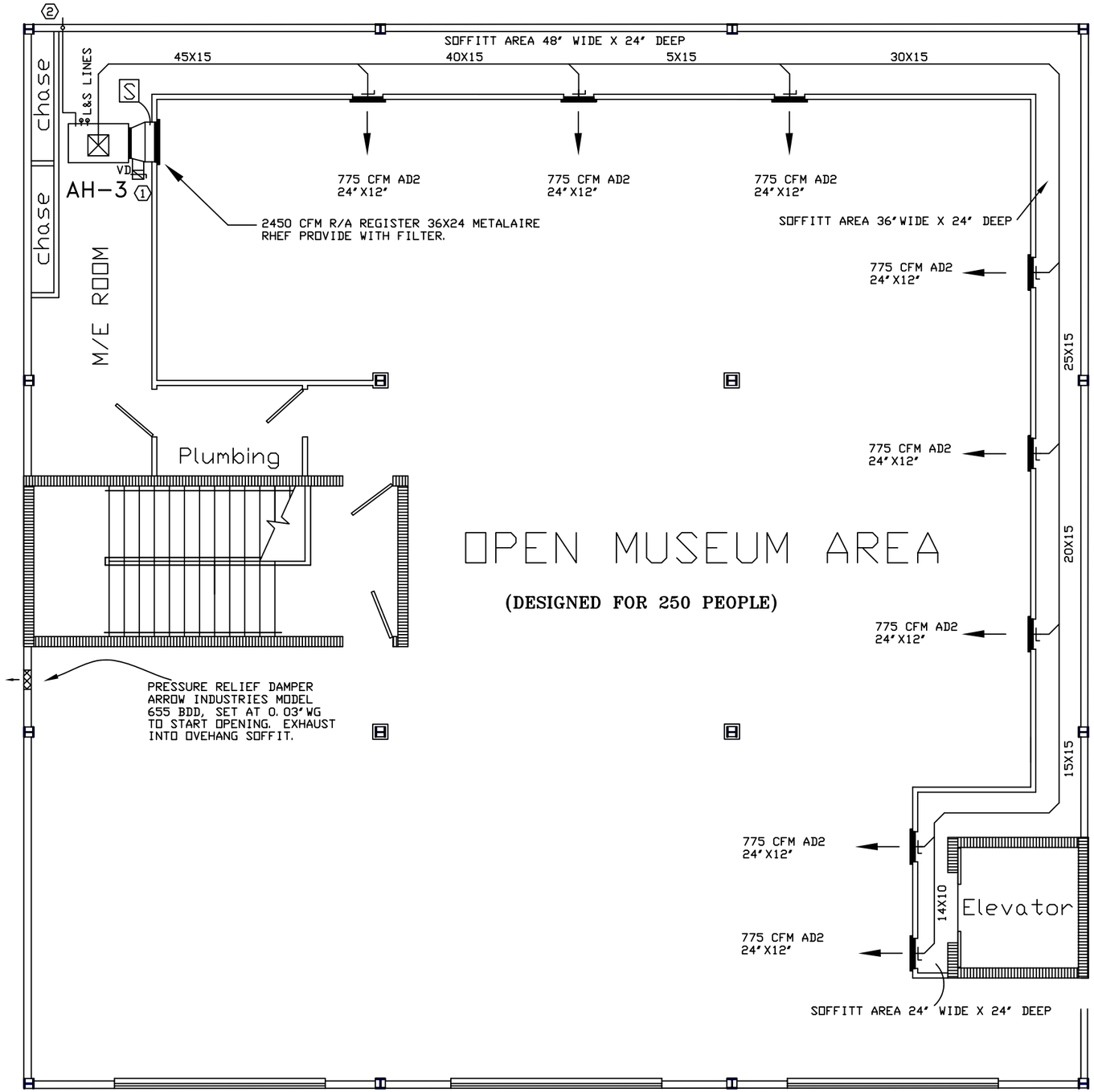
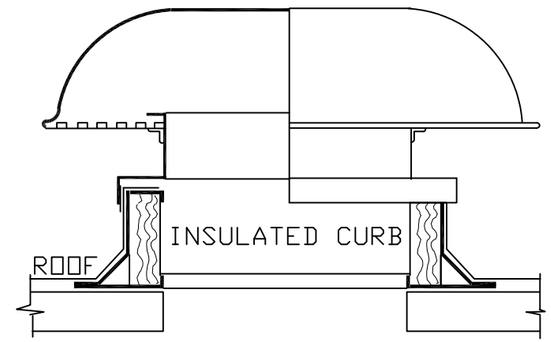


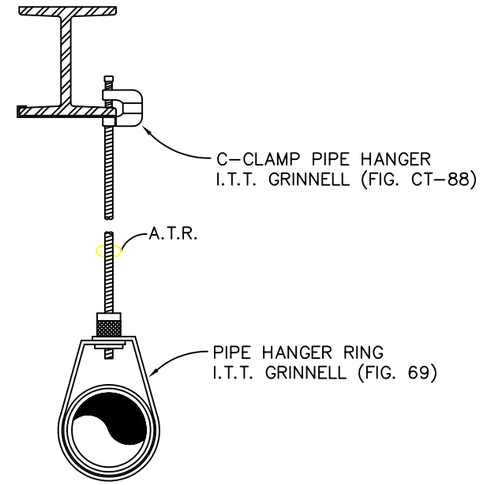
SECOND FLOOR HVAC PLAN

ROOF CAP FOR FRESH AIR.



ROOF CAP DETAIL

NTS



OR EDQUALS ARE ACCEPTABLE

PIPE HANGER DETAIL U.L./F.M. APPROVED

NOT TO SCALE

COMMERCIAL SPLIT SYSTEM A/C SCHD

AIR HANDLING UNIT DATA		1stflrassembly	1stflrkittoilets	2ndflrassembly
MARK	–	AH–1	AH–2	AH–3
TOTAL CAPACITY	BTUH	289250	63480	413790
SENSIBLE CAPACITY	BTUH	169350	42450	227220
SUPPLY AIR	CFM	4500	1500	6200
OUTSIDE AIR	CFM	2250	900	3750
ENTERING AIR TEMP DB/WB	°F/°F	84.4/70.6	81.3/68.7	86.5/73.3
LEAVING AIR TEMP DB/WB	°F/°F	50.1/49.8	55.5/55.4	53.1/5303
EXT. STATIC PRESSURE	IN. H_2O	1.0	1.0	1.0
MOTOR	H.P.	3	1.5	3
ELECTRICAL	V/ø/Hz	208/3/60	208/3/60	208/3/60
FILTER TYPE	–	TA	TA	TA
MANUFACTURER	–	TRANE	TRANE	TRANE
WEIGHT	LBS	941	347	1247
ENERGY EFFICIENCY RATIO	EER	8.9	10.0	8.9
HEATING CAPACITY	KW	47/2	13.0/2	50.0/2
MODEL NO.		LPCAA12	LPCAA03	LPCAA17
CONDENSING UNIT DATA				
MARK	–	CD–1	CD–2	CD–3
OUTDOOR TEMP.	°F	95	95	95
LIQUID LINE (SIZE)	IN. O.D.	1 1/8"ø	3/8"ø	1 1/8"ø
SUCTION LINE (SIZE)	IN. O.D.	2 1/8"ø	1 1/8"ø	1 5/8"ø
ELECTRICAL	V/ø/Hz	208/3/60	208/1/60	208/1/60
R.L.A.	AMPS	60.5 EACH	20	41.4 EACH
MANUFACTURER	–	TRANE	TRANE	TRANE
MODEL NO.		RAUC–C30	TTA072D	RAUC–C40
NOTES	(#)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

1. BOTH UNITS ARE TO BE OF THE SAME MANUFACTURER.
2. PROVIDE EXTRA SET OF FILTERS FOR EACH AIR HANDLER.
3. PROVIDE COMBINATION THERMOSTAT, AND ELEC HEAT STRIPS.
4. PROVIDE WITH LOW AMBIENT CONTROL KIT.
5. CONTRACTOR TO VERIFY LOCATION OF CONDENSER UNIT AND DISTANCE TO AIR HANDLER. ADJUST SUCTION AND LIQUID LINE SIZES AND NEEDED.

PLAN KEY NOTES

1. 3750 CFM OUTSIDE AIR PROVIDED BY 22"X20" SHEET METAL DUCT RUN TO ROOF AND TERMINATED WITH PENN VENTILATOR ROOF CAP # DR20 OR EQUAL, WITH INSULATED CURB.
2. RUN 1"øCONDENSATE DRAIN DOWN INSIDE WALL TO GROUND LEVEL, THEN TURN 90° AND RUN TO DRYWALL FRENCH DRAIN OR ONTO THE GROUND IF APPROVED BY LOCAL AUTHORITY AND OWNER.

ASHRAE OUTSIDE AIR REQUIREMENTS

A. ACCEPTABLE INDOOR AIR QUALITY IS ACCOMPLISHED USING THE VENTILATION PROCEDURE PER FBC 2001, SECTION 4, TOGETHER WITH TABLE 403.3.

1. OFFICE SPACE:

a. OUTDOOR AIR QUALITY IS BASED ON 15 CFM PER OCCUPANT.
b. 250 OCCUPANTS = 3750 CFM.

2. EQUALIZATION OF AIR IS ACCOMPLISHED BY RELIEVING EXCESS AIR VIA WALL.

CONTROLS SEQUENCE OF OPERATION FILE:

GENERAL (FOR ALL SPLIT SYSTEM UNITS)

SYSTEM SHALL INCORPORATE A UNIT MOUNTED PROCESSOR TO PROVIDE CONTROL FUNCTIONS AS HEREINAFTER DESCRIBED. CONTROLS TO ACCOMPLISH THIS SEQUENCE SHALL BE MOUNTED AND WIRED BY THE CONTROLS CONTRACTOR AND ADHERE TO ALL NATIONAL AND LOCAL CODES AND THE AUTHORITY HAVING JURISDICTION.

SYSTEM SHALL BE INDEXED ON/OFF BY AN ELECTRONIC SEVEN DAY TIME CLOCK WITH OVERRIDE FEATURE. A SPACE MOUNTED OVERRIDE FEATURE SHALL BE INCORPORATED INTO THE THERMOSTAT FOR EACH UNIT, AND EACH UNIT SHALL HAVE A SEPARATE TIME SCHEDULE.

WHEN THE UNIT IS STARTED IN THE OCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO MAINTAIN A MINIMUM OF OUTSIDE AIR AS SPECIFIED ON THE SPLIT SYSTEM SCHEDULE.

THE SYSTEM SHALL INCORPORATE A CONTROL SET THAT PREVENTS THE COMPRESSOR FROM SHORT CYCLING SO AS TO PREVENT COMPRESSOR DAMAGE.

THE CONTROL SYSTEM SHALL HAVE ALL NECESSARY SENSING, AND RECORDING DEVICES, AND BE CAPABLE OF DEMONSTRATING THAT IT MEETS OR EXCEEDS THE REQUIREMENTS OF ASHRAE 62-1999 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY.

OCCUPIED MODE - COOLING - A SPACE THERMOSTAT SHALL CONTROL THE COOLING TO MAINTAIN SPACE CONDITIONS OF 75FDB.

UNOCCUPIED MODE - COOLING - UNIT SHALL BE INDEXED OFF. IF THE SPACE TEMPERATURE SHOULD RISE ABOVE 80 FDB THE UNIT SHALL COME ON WITH THE OUTSIDE AIR DAMPER REMAINING CLOSED AND SHALL RUN TO SATISFY THE ABOVE SPACE CONDITIONS.

OCCUPIED MODE - HEATING - THE SPACE THERMOSTAT SHALL CONTROL THE ELECTRIC STRIP HEATER TO MAINTAIN A SPACE TEMPERATURE OF 72FDB..

UNOCCUPIED MODE - HEATING - UNIT SHALL BE OFF. IF TEMPERATURE OF THE SPACE DROPS BELOW 60 DEGFDB UNIT SHALL RUN TO MAINTAIN THE SET POINT. OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	NEW DUCTWORK
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
	CONDENSATE DRAIN
	LIQUID LINES
	SUCTION LINES
	SUPPLY AIR DEVICE
	RETURN OR EXHAUST AIR DEVICE
	UNDERCUT DOOR
T	THERMOSTAT
S	SMOKE DETECTOR

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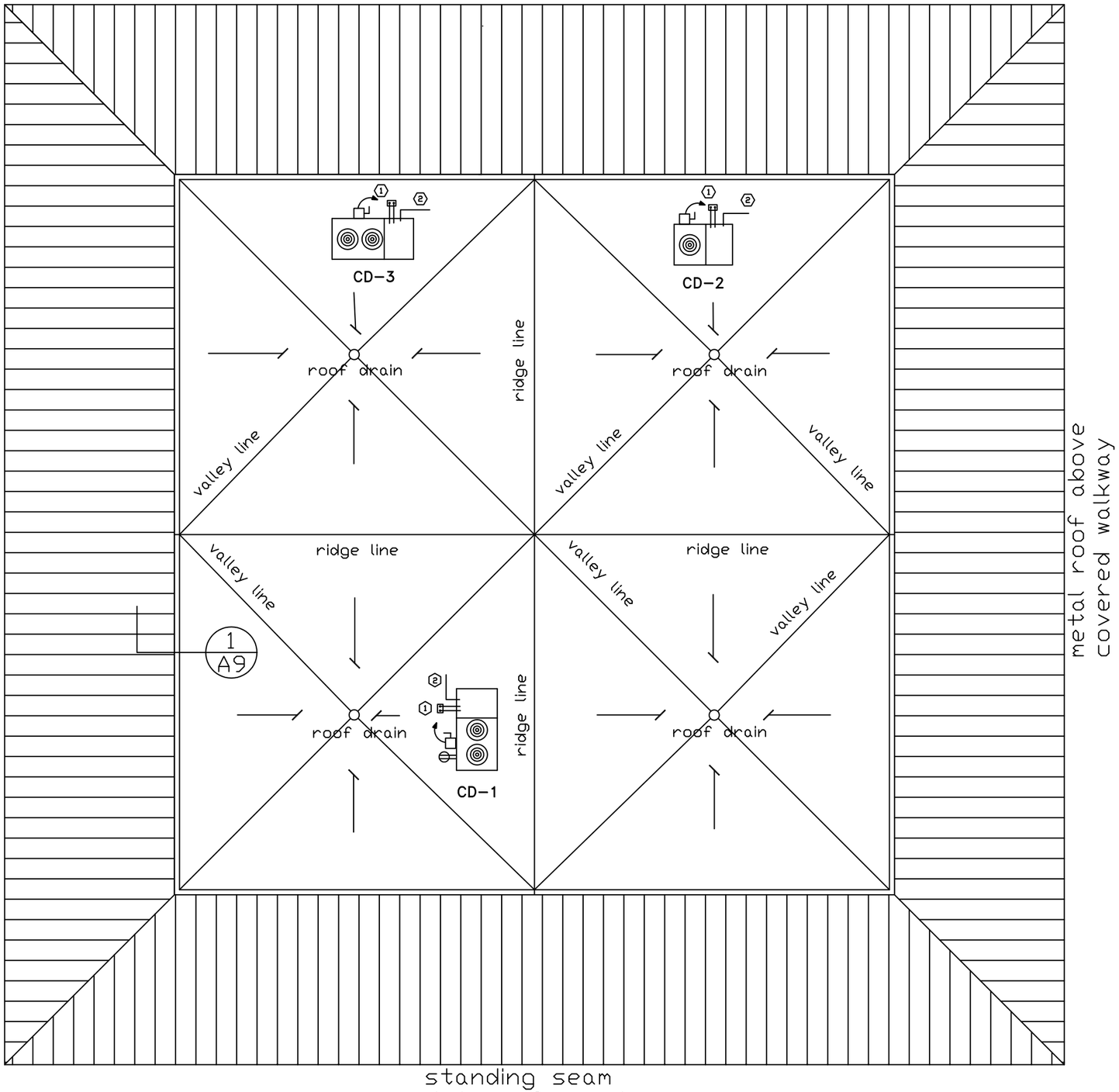
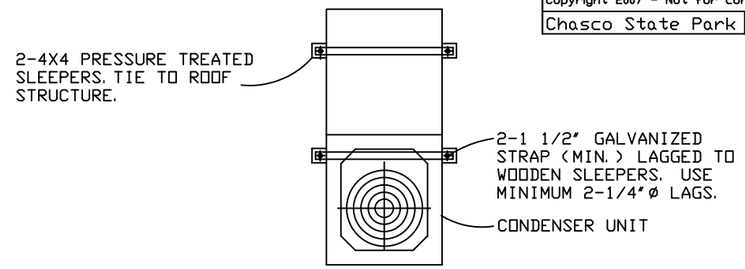
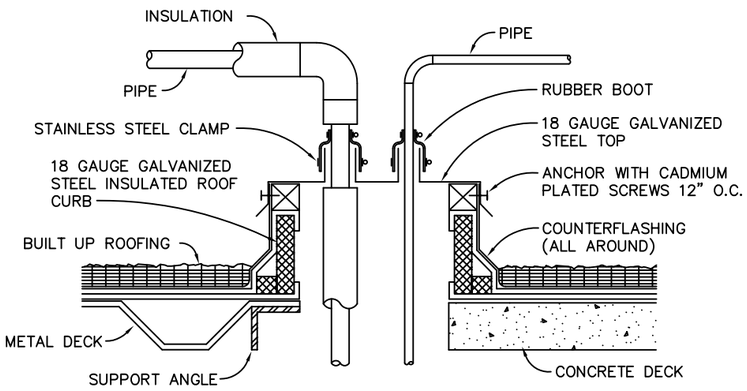




TYPICAL COND. TIE-DOWN
NTS

CD-X



PIPING ROOF CURB DETAIL
NOT TO SCALE

NOTE:

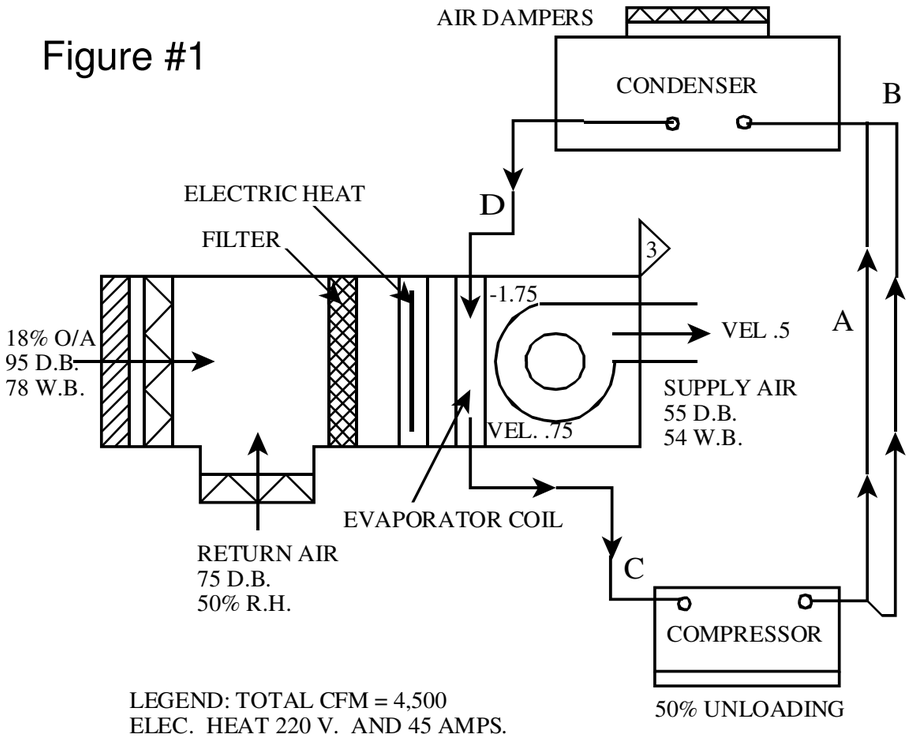
1. REFER TO DRAWINGS FOR QUANTITY AND SIZE OF PIPES TO RUN THRU CURB.
2. AS EQUAL PIPE PENETRATION DESIGNS ARE ACCEPTABLE WHEN APPROVED BY ENGINEER.
3. DETAIL SHOWS TWO DIFFERENT TYPES OF ROOF CONSTRUCTION.

SPLIT CONDENSER UNITS ON ROOF

PLAN KEY NOTES

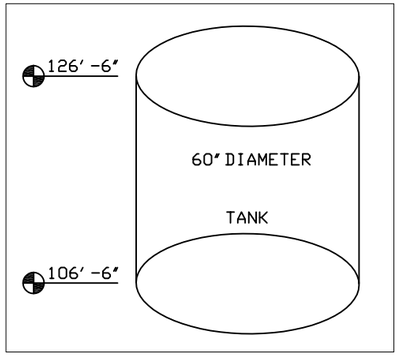
1. SEE DETAIL THIS SHEET FOR PIPING DATA.
2. 1 1/2"ø CONDENSATE DRAIN, RUN TO NEAREST ROOF DRAIN.

Figure #1



LEGEND: TOTAL CFM = 4,500
ELEC. HEAT 220 V. AND 45 AMPS.

Figure #2



MATERIAL FOR TANK
11 GAGE STAINLESS STEEL (400)
CLOSED TOP & BOTTOM

CONTRACTOR COSTS $1. 98/LB.
7% SALES TAX
10% DISCOUNT IF PAID CASH

Figure #3

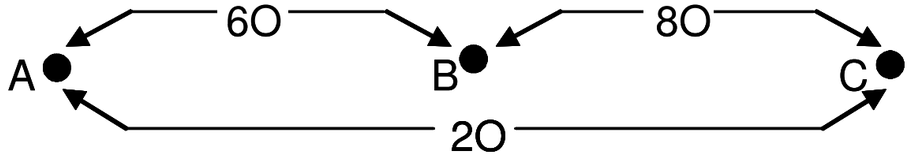


Figure #4

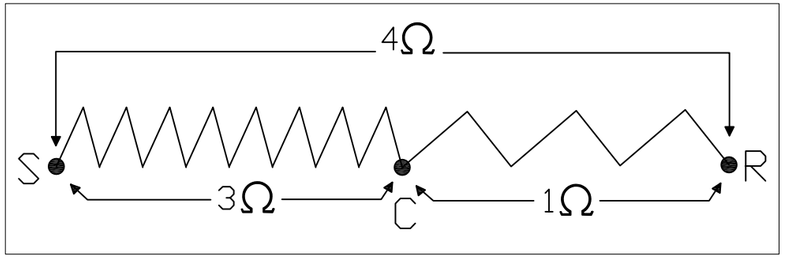
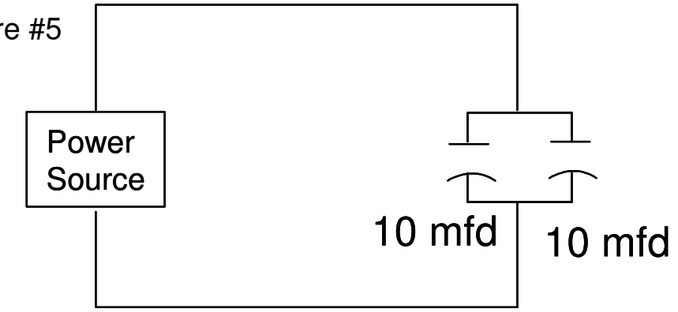


Figure #5



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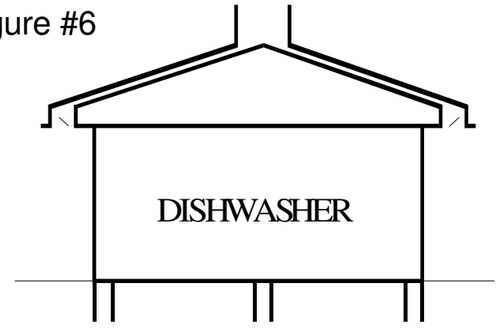
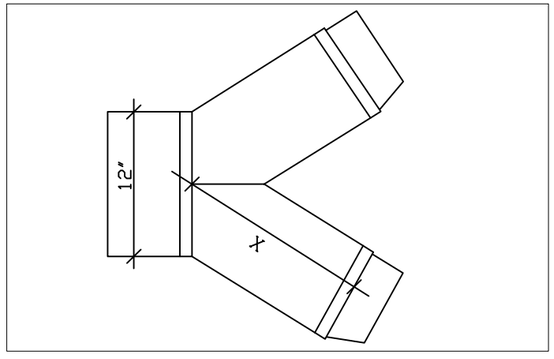


Figure #7



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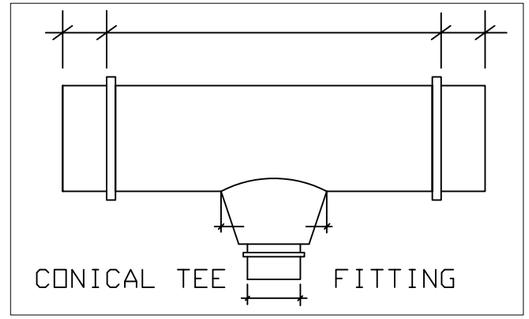
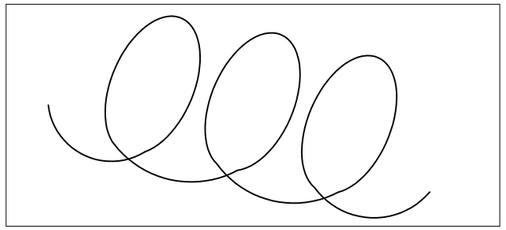


Figure #9



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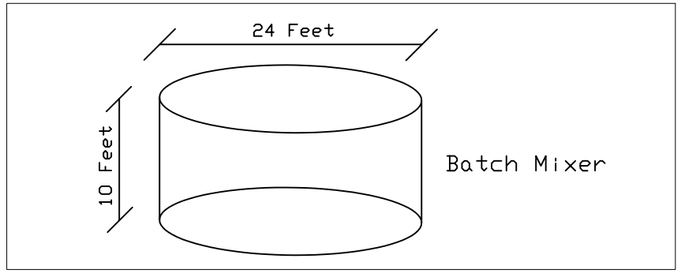
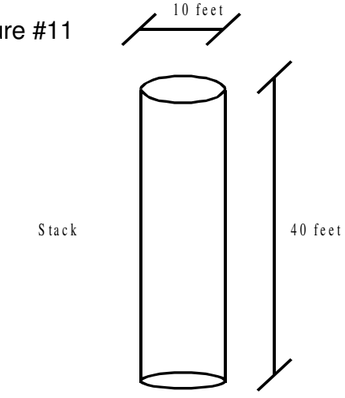


Figure #11



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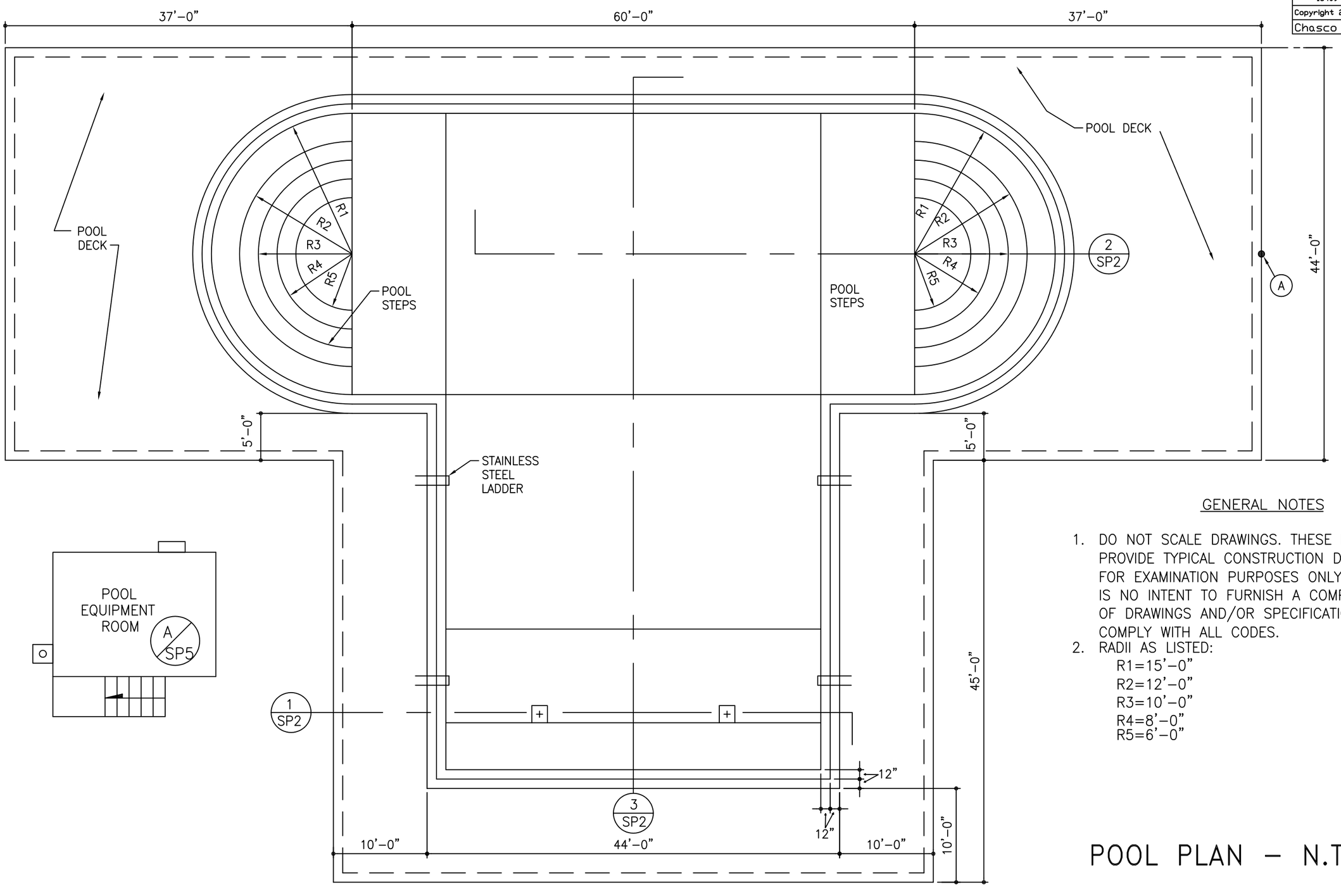
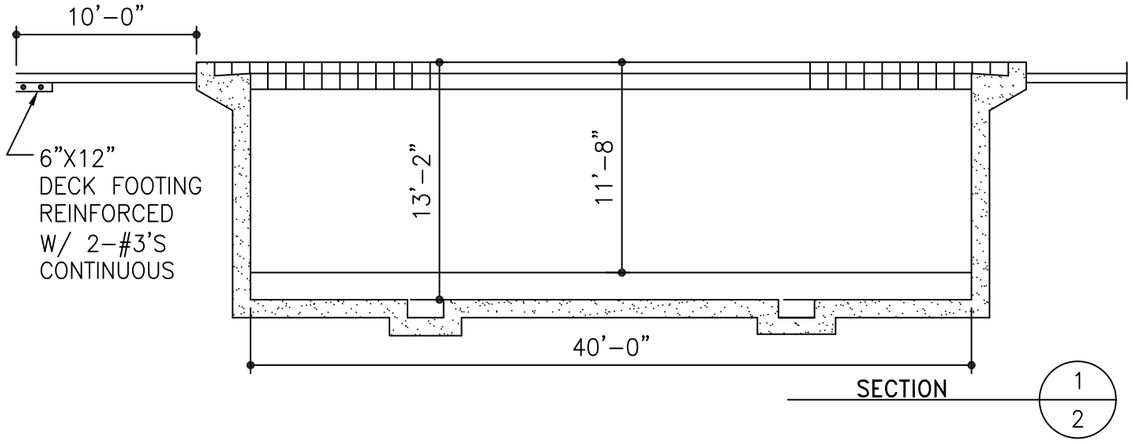


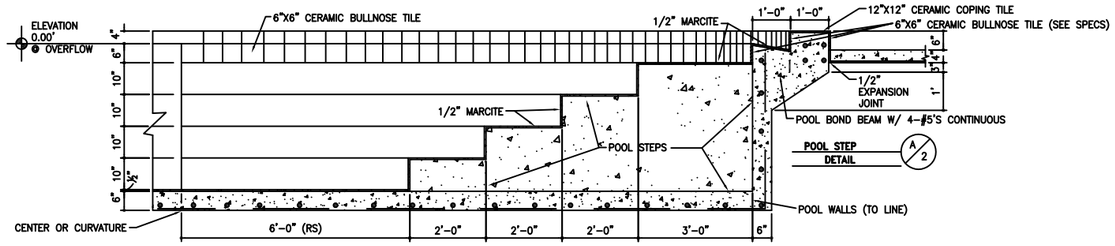
GENERAL NOTES

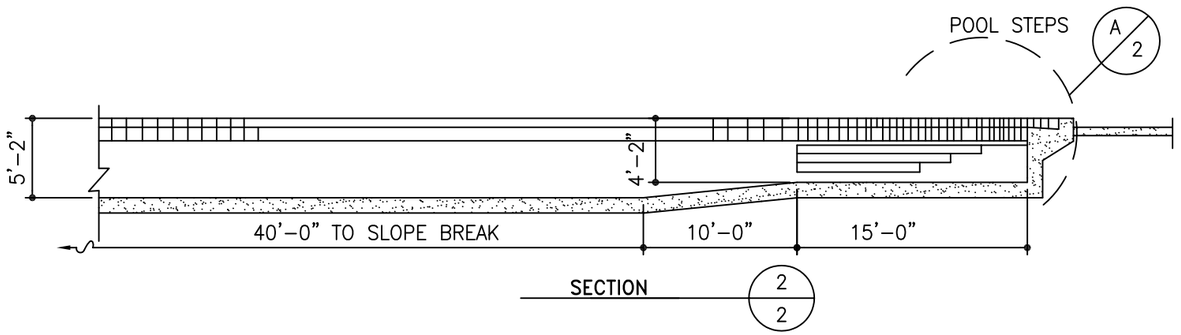
1. DO NOT SCALE DRAWINGS. THESE DRAWINGS PROVIDE TYPICAL CONSTRUCTION DETAILS FOR EXAMINATION PURPOSES ONLY. THERE IS NO INTENT TO FURNISH A COMPLETE SET OF DRAWINGS AND/OR SPECIFICATIONS OR COMPLY WITH ALL CODES.
2. RADII AS LISTED:
   R1=15'-0"
   R2=12'-0"
   R3=10'-0"
   R4=8'-0"
   R5=6'-0"

POOL PLAN - N.T.S.



SECTION 1/2





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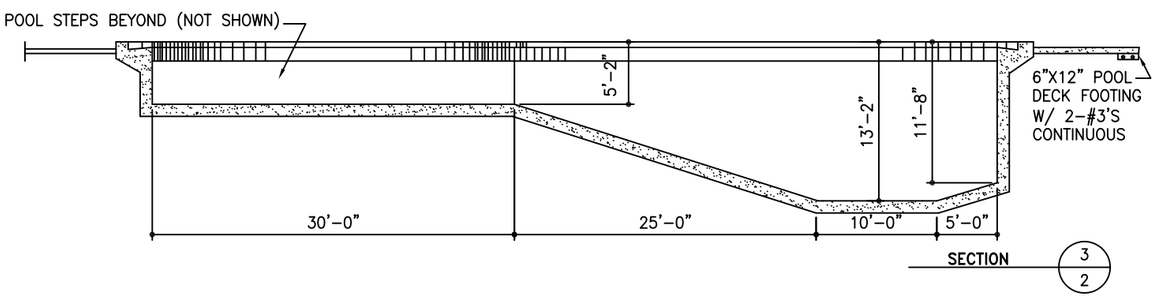
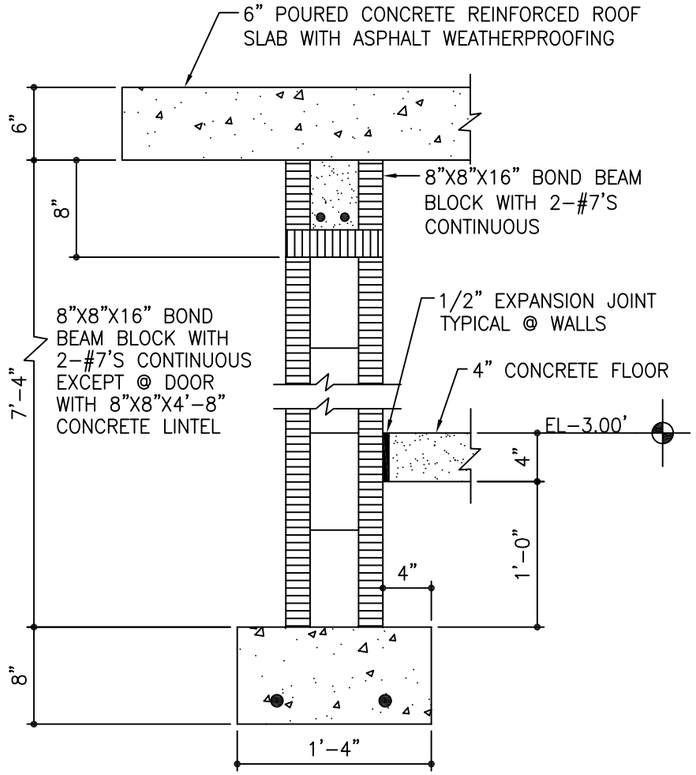


SECTION 3/2



POOL EQUIPMENT ROOM
TYPICAL WALL SECTION 5/2

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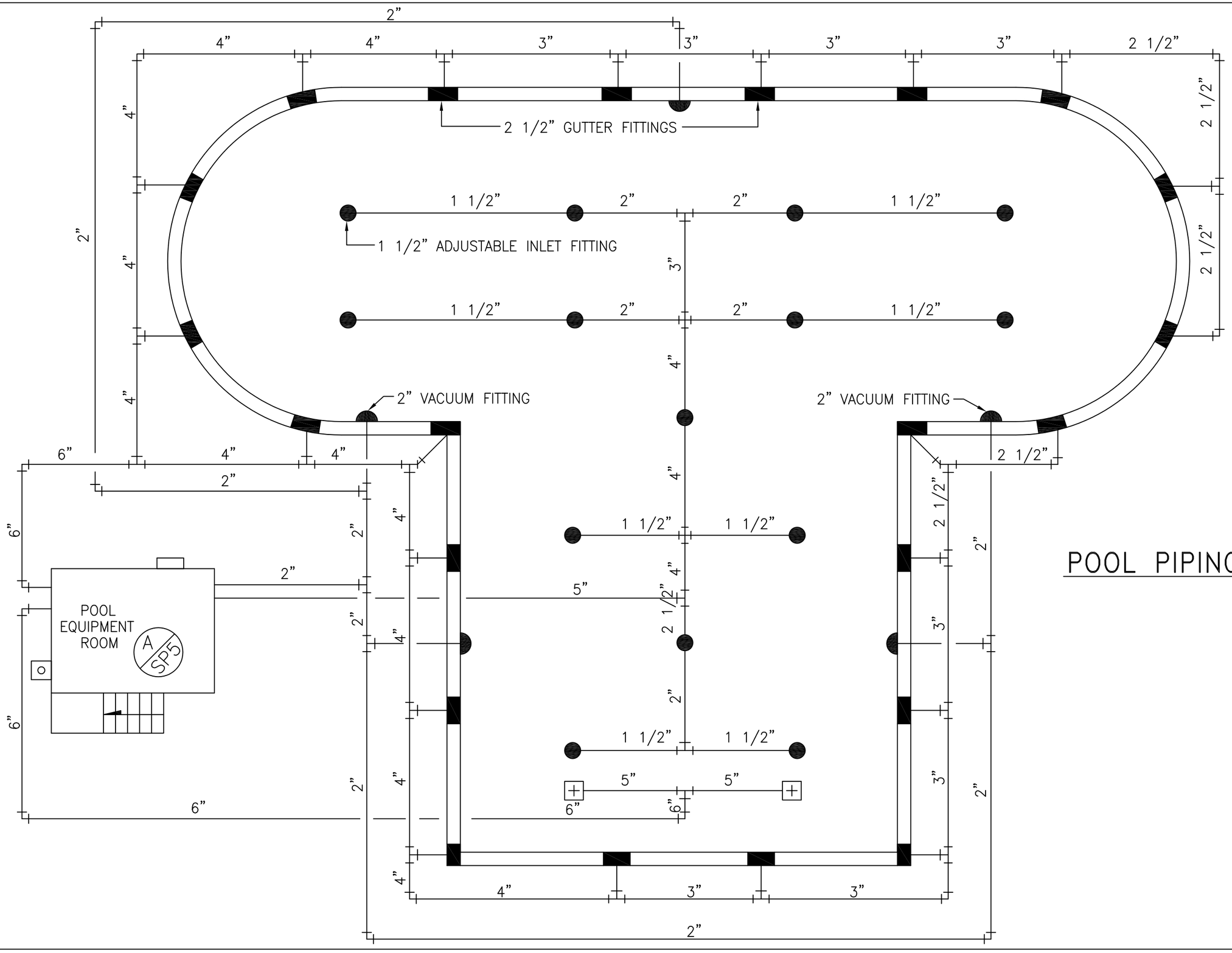
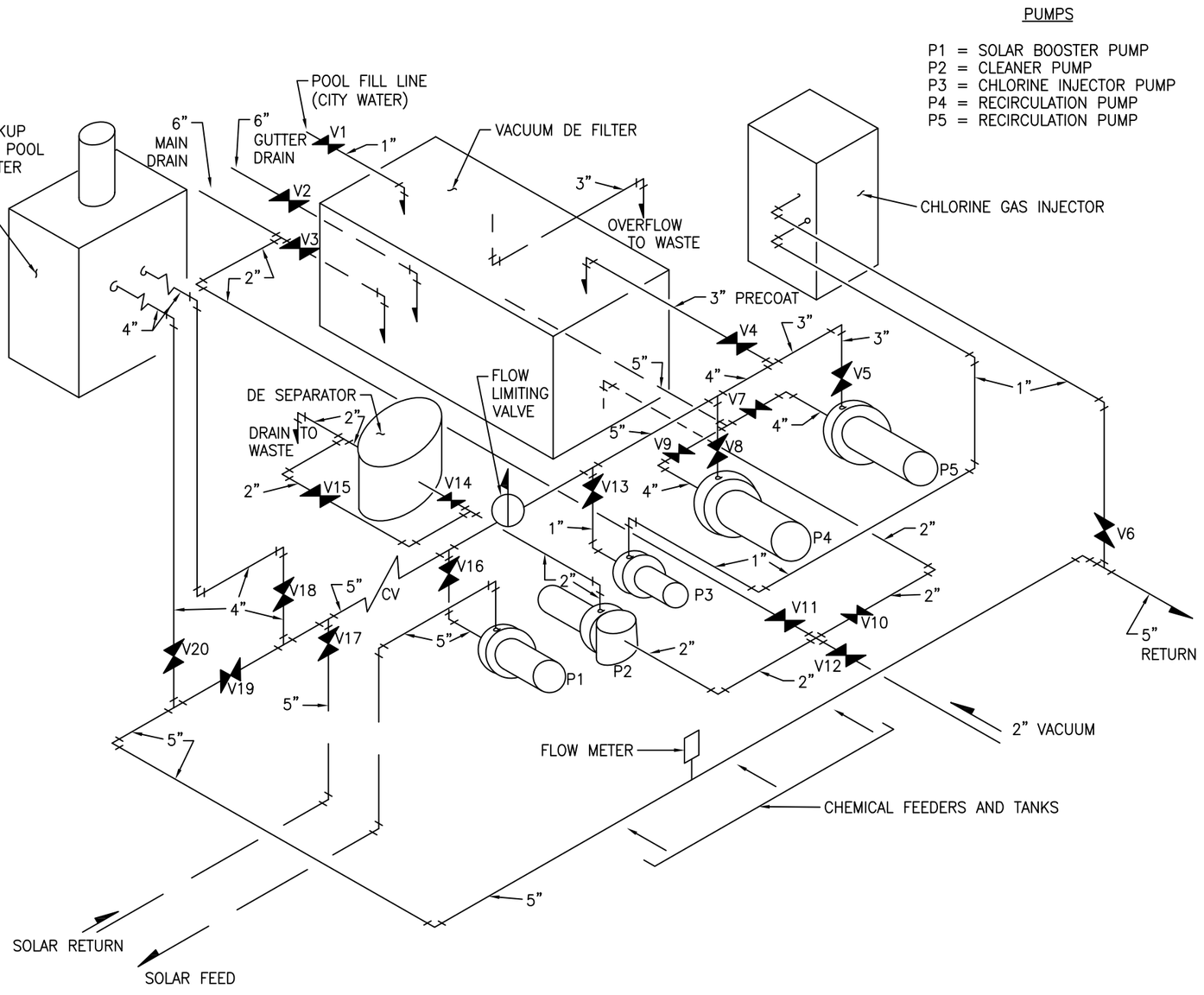
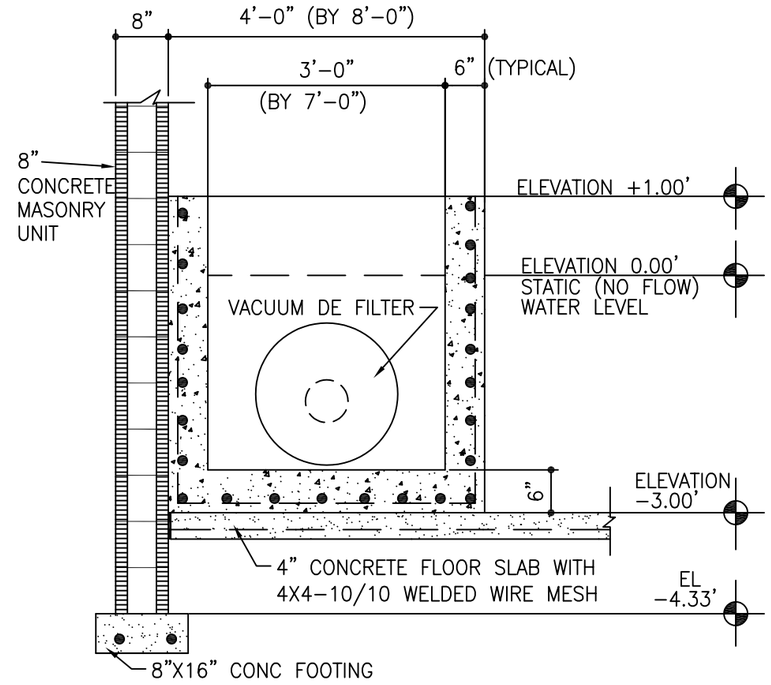
Chasco State Park | SP-03



POOL PIPING PLAN



EQUIPMENT ROOM PIPING ISOMETRIC



CONCRETE FILTER TANK SECTION 1/4

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20'-8"

OVERFLOW TO WASTE

1/4

CHLORINE GAS INJECTOR

1" POOL FILL

6" GUTTER DRAIN

6" MAIN DRAIN

V1

V2

V3

VACUUM DE FILTER LEAVES

V5

P5

V7

V4

V9

V8

P4

V6

5" RETURN

V10

2" VACUUM

V11

V12

V13

P3

DE SEPARATOR

DRAIN TO WASTE

V14

P2

FLOW LIMITING VALVE

V15

V16

P1

CHECK VALVE

V17

V18

V19

V20

DE SLURRY TANK

CHEMICAL TANK

CHEMICAL TANK

12'-8"

5/2

BACKUP GAS POOL HEATER

4" (STRAPPED TO CEILING)

1/2" EXPANSION JOINT

8"

3'-0"

(BY 6'-8")

8"X16" REINFORCED CONCRETE FOOTING (BELOW)

CONCRETE RETAINING WALL & STEPS (NOT SHOWN)

POOL EQUIPMENT ROOM DETAIL

A/5

Sample Balance Sheet

SAMPLE BALANCE SHEET

ASSETS	
Current Assets	
Cash	10,700.00
Accounts Receivable	6,000.00
Reserve for Bad Debt	< 273.00 >
Cost and Estimated Earnings In Excess of Billings	2,000.00
Inventory	1,573.00
Total Current Assets	**$20,000.00**
Fixed Assets	
Vehicles	28,000.00
Office Property	
	80,200.00
Equipment	18,000.00
Accumulated Depreciation	< 9,000.00 >
Total Fixed Assets	**$117,200.00**
TOTAL ASSETS	**$137,200.00**
LIABILITIES	
Current Liabilities	
Accounts Payable	1,510.00
Billings in excess of costs and estimated earnings	1,840.00
Current Portion Long-Term Debt	6,650.00
Total Current Liabilities	**$10,000.00**
Long Term Liabilities	
Mortgages	48,000.00
Long-Term Contracts	14,000.00
Total Long-Term Liabilities	**$62,000.00**
TOTAL LIABILITIES	**$72,000.00**
NET WORTH / CAPITAL / EQUITY	
Common Stock	
	20,000.00
Retained Earnings	40,200.00
Year to Date Profit / Loss	
	5,000.00
TOTAL NET WORTH	**$65,200.00**
TOTAL LIABILITIES & NET WORTH	**$137,200.00**

Sample Income Statement

SAMPLE INCOME STATEMENT

Sales, Volume or Revenue	100,000.00	100%
Costs:		
Direct Labor	15,000.00	
Sub-Contracts	10,000.00	
Materials	25,000.00	
Indirect Costs / Overhead	10,000.00	
Gross Profit (Project Profit)	**40,000.00**	40% Gross Profit Percentage
General & Administrative Expenses:		
Variable:		
Equipment Repair	2,000.00	
Production Bonuses	5,500.00	
Business Insurance	5,000.00	
Fixed:		
Mortgage	6,000.00	
Office Salary	10,000.00	
Office Utilities	4,000.00	
Depreciation	2,500.00	
Total Expenses	**35,000.00**	35% Expense Control Ratio
Net Profit	**5,000.00**	5% Net Profit Percentage

Financial Skeletons

BALANCE SHEET SKELETON

Assets	
Current	_____
Fixed	_____
Total assets	_____
Liability	
Current	_____
Long term	_____
Total liabilities	_____
Net worth	
Retained earnings	_____
Profit or loss	_____
Total net worth	_____

INCOME STATEMENT SKELETON

Sales	_____	100%
<Costs>	<_____>	___ %
Gross profit	_____	___ %
<Expenses>	<_____>	___ %
Net profit	_____	___ %

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Payroll Tax Facts

Refer to Circular E,
Employer's Tax Guide

1. F.I.T. = federal income tax:
   Calculated from the employee's gross wage

- The chart method (easy)
- The table percentage method (difficult)
- Supplemental wage method (_____ %) used for supplemental wage payments such as: bonuses or commissions, etc...

All methods above are for F.I.T.; the **gross wages** are still subject to F.I.C.A.

2. F.I.C.A. = federal insurance contribution act:
   Calculated from the employee's gross wage

Two taxes;

Social security:	gross wage	x	6.2%
Medicare:	gross wage	x	1.45%
	Total tax		7.65%

The taxes above this line are deducted from an employee's paycheck on behalf of the government

---

The taxes below this line are paid by the employer and cannot be deducted from employees pay

3. Employer must match the employee's F.I.C.A. tax amount

4. F.U.T.A. = federal unemployment tax act:
   Calculated on the first $7,000 of the employee's gross wages

Federal mandated rate:	6.2%
Credit for state program:	< 5.4% >
Tax	0.8%

5. S.U.T.A. = Florida state unemployment tax act:
   Calculated on the first $7,000 of the employee's gross wages

Initial rate:	2.7%
Maximum rate:	5.4%

All new employers start at the initial rate. Thereafter, the rate is periodically adjusted by the state (up or down) based upon the employer's reporting and payment record along with a layoff ratio adjustment. For examination questions, rates will be given in question or it will state "initial" or "maximum" rate.

Notes:
Backup withholding: payers must withhold _____ % on taxable interest payments, dividend payments, or any other payment if payees fail to furnish a correct taxpayer identification number. This does not apply to wages, pensions, or annuities.

There are 24 pay periods annually if paid semi-monthly.
There are 26 pay periods annually if paid bi-weekly.

Percentage of Completion

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Percentage of Completion Earnings Recognition Form

Step 1)

Cost to Date
---------- = Percentage of Completion (in decimal form)
Cost to Construct
(cost to date + cost to complete)

Step 2)
Percentage of Completion x Contract Amount = Revenue Earned

Step 3)
Revenue Earned - Amount Invoiced = either A or B

A. If the answer is a **Negative Amount:**
It is Unearned or Deferred Income, also called;
Billings in excess of costs and estimated earnings

- OR -

B. If the answer is a **Positive Amount:**
It is Earned or Accrued Income, also called;
Costs and estimated earnings in excess of billings

Refer to Balance sheet for Asset / Liability entry

Book Value and Trade In

BOOK VALUE AND ADJUSTED DEPRECIATION BASIS FORM

Original Purchase Price	_____	(Existing or Old Asset)
Accumulated Depreciation	<_____>	(Claimed to Date)
Current Book Value	_____	(Stop here if selling. Compare with selling price, Determine profit or loss)
Continue only if Trading In:		
Plus Purchase Price of New Asset	_____	(Bottom line of deal after Trade-in)
Adjusted Basis for Depreciation	_____	(The basis used to depreciate The new asset when the old One is traded in)

F. S. Chapter 713

Lien Chart

Days	Form	Requirement
	Notice of Commencement	Post the notice of commencement on the project "forthwith".
45	Notice to Owner	All non-privity contractors and materialmen must serve a "Notice to Owner" no later than 45 days from first beginning work or delivering material to the project, or before the owner receives the Final Contractors Affidavit, **whichever is earlier**
90	Claim of Lien	Any Lienor must record their claim of lien no later than 90 days from the date of last performing labor or last providing materials to the project. The prime contract must be greater than $2,500 for a non-privity contractor to have lien rights.
15	Send owner a copy of recorded lien	Once a Lien is filed, the lienor provides a copy to the owner.
5	Final Contractor's Affidavit	Privity contractors must serve a Final Contractors Affidavit at least 5 days prior to filing a lawsuit. Also establishes a final date for a non-privity contractor to serve a Notice to Owner.
365 1 year	Enforce Lien	All lienors must enforce their lien by filing a lawsuit within 1 year from the date of recording.
75	Removal of Lien	Any lienor, once paid, must remove the lien within 75 days or face disciplinary action. Any contractor must remove a lien from record if the contractor received payment for a sub-contractor or supplier and has not paid the sub or supplier, resulting in a lien.
20	Order to show cause	An order issued by the court, filed by an interested party, requiring the lienor to either file suit or file a written response why the suit should not be enforced at this time.
30	Request for sworn statement of account	Lienor (or potential lienor) must respond with a complete account summary or lose lien rights.
60	Notice of contest of lien	A Lienor receiving this notice must file the lawsuit within 60 days.

Workers & Unemployment Compensation

F. S. Chapter 440

WORKERS COMPENSATION

Requirements:

- Required for 1 or more employees in construction

Benefits:

- First week (7 days) – no benefits
- Second and successive weeks, .666 x Employees Average Weekly Wage
- After third week (21 days), the first week benefit is now paid
- 25% reduction in benefit for safety violation
- No benefit if employee is using illegal drugs or intoxicated

Drug Free Workplace (DFWP)

- 60 day notice for initial implementation

Premiums

- Premium based on $100.00 units of payroll

UNEMPLOYMENT

Requirements:

- If employer has one or more employees in 20 weeks or pays $1,500.00 in wages in any quarter (3 month period)

Benefits:

- .50 of the employee's average weekly wage

Premiums:

- Initial rate is 2.7% of the first $7,000.00 of wages paid to each employee

Overtime Computation

© F.L.S.A. OVERTIME COMPUTATIONS FORM

Step #1. Determine the total weekly remuneration = _____

Total weekly remuneration is the total amount you would pay a person if there were no overtime involved. It is the total of all ***straight time*** earnings. It does not matter what basis is used to compute the employee's earnings: hourly, piece work, salary or task basis. Include any and all amounts to be paid, including any "extra" items as: safety or production bonuses, commissions, piece work supplements, etc.

Step #2. Determine the regular rate of pay:

_____ / _____ = _____

Answer to Step #1 | hours worked in workweek | this answer must not violate minimum wage!

Step #3. Determine the gross pay:

Total weekly remuneration: _____ (the "1") answer to step #1

Plus

.5 x _____ x _____ + _____ (the "1/2")

Answer to Step #2 | o.t. hours worked in workweek | overtime compensation

Total gross pay: _____

Note:
In all cases involving overtime, the gross wage payment is determined by payment of the ONE (total weekly remuneration) and ONE-HALF of the regular rate of pay for all hours worked over 40 in each work week, hence the statement; "time and a half."

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Estimating Facts, Formulas and Data

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Chasco State Park | F-04

Decimal Equivalents of a Foot:

1"	= .08'
2"	= .17'
3"	= .25'
4"	= .33'
5"	= .42'
6"	= .50'
7"	= .58'
8"	= .67'
9"	= .75'
10"	= .83'
11"	= .92'
12"	= 1'

Decimal Equivalents of an Inch:

1/16	= 0.0625
1/8	= 0.125
3/16	= 0.1875
1/4	= 0.25
5/16	= 0.3125
3/8	= 0.375
7/16	= 0.4375
1/2	= 0.5
9/16	= 0.5625
5/8	= 0.625
11/16	= 0.6875
3/4	= 0.75
13/16	= 0.8125
7/8	= 0.875
15/16	= 0.9375
8/8	= 1 Inch

Insulation:
C = K ÷ Inch Thick
R = Inch Thick ÷ K
R = 1 ÷ K factor
R = 1 ÷ C factor
R = 1 ÷ U factor
U = 1 ÷ R total

Nail Lengths:
4d = 1-1/2"
5d = 1-3/4"
6d = 2"
8d = 2-1/2"
10d = 3"
12d = 3-1/4"
16d = 3-1/2
20d = 4"
30d = 5"

Constants Square Measure:
144 Sq In = 1 SqFt
9 SqFt = 1 SqYd
100 Sq Ft = 1 Roof Sq
43560 Sq Ft = 1 Sq Acre
640 Sq Acres = 1 Sq Mile

Constants Cubic Measure:
1728 Cu In = 1 Cu Ft
27 Cu Ft = 1 Cu Yd
1 Cu Ft = 7.48 Gal
231 Cu In = 1 Gal

Liquid Measure:
1 Tbs = 3 Tsp
1 Oz = 6 Tsp
1 Oz = 2 Tbs
1 Cup = 8 Oz
1 Pt = 2 Cups
1 Qt = 2 Pts
1 Gal = 4 Qts

Weights /Pressures:
1 Atmosphere = 14.7 PSI
1' Water Head = .434 PSI
2000 Lbs = 1 Ton
1000 Lbs = 1 Kip
1 Cu Ft Steel = 490 Lbs
1/2" Drywall = 2 PSF
1 CF Water = 62.4 Lbs
1 Gal Water = 8.34 Lbs
1 CF Cement = 94 Lbs
1 CF Sand = 100 Lbs

Miscellaneous:
1 Mile = 5280 Feet
1 Yard = 3 Feet
1 Mil = 1/1000 Inch
45 Degree = 1.414 Diag

Gage / Alum Equivalents:
16 = 0.050"
18 = 0.040"
20 = 0.032"
22 = 0.025"
24 = 0.020"
26 = 0.015"
28 = 0.012"
30 = 0.01"

Estimating Grids:

Concrete & Excavation (C.Y.):	*L' × W' = S.F. × D' ÷ 27 = C.Y.*
Paving & Stucco (S.Y.):	*L' × W' = S.F. ÷ 9 = S.Y.*
Roof Area (S.F.):	*L' × W' = S.F. × Factor = S.F. Roof Area ÷ 100 = # Squares*
Rake or Gable Fascia (L.F.):	*Span of Gable × Factor = True Length*
Hip or Valley (L.F.):	*Span of Valley or Hip × Hip or Valley Factor = True Length*
Site (acres):	*L' × W' = S.F. ÷ 43,560 = Acres*
Board Feet (BF):	*L' × T" × W" ÷ 12 = Board Feet*
Spacing :	*L' ÷ (spacing in feet) + 1 = Number of required members*
Concrete Block :	*L' × W' = S.F. × 1.125 = # of 8"× 8"× 16" Blocks*
Base Plate Steel Weight:	*L" × W" × T" ÷ 1728 × 490 lbs*
Water Pressure :	*Height of water column × .434 = PSI*
Center Line Rule :	*Add or Subtract 4 times the thickness (width) from perimeter*
Gallons of Paint, etc.. :	*Area in S.F. x 144 x mils ÷ 231 = Gallons*
BTUH :	*"U" value x Area in S.F. x Temp Difference = BTUH*

Metric Conversions:

Inches × 25.4 = mm	Feet × 0.3048 = m	S.I. × 645.16 = mm2	S.F. × 0.0929 = m2
C.I. × 0.01639 = L	C.F. × 28.3169 = L	C.F. × 0.02832 = m3	Gal × 3.785 = L
Gal × 0.003785 = m3	Lb × 0.4536 = kg	PLF × 1.4882 = kg/m	PSF × 4.882 = kg/m2
PCF × 16.02 = kg/m3	Lb Force×4.4482 = N	PLF x 14.5939 = N/m	PSI × 6.895 = kPa
PSF × 47.88 = Pa	kWh × 3.6 = MJ	Btu × 1055 = J	Ft Lb × 1.3558 = J
A/C Ton × 3.517 = kW	Btu/s × 1.0543 = kW	HP × 745.7 = W	Btu/h × 0.2931 = W
GPM × 0.0631 = L/s	CFM × 0.4719 = L/s	MPH × 0.447 = m/s	Degree × 0.01745 = rad

Roof Area or Rake Factors:

2/12	= 1.014
3/12	= 1.031
4/12	= 1.054
5/12	= 1.083
6/12	= 1.118
7/12	= 1.158
8/12	= 1.202

Hip or Valley Length per LF of Rafter Run Factors:

2/12	= 1.424
3/12	= 1.436
4/12	= 1.453
5/12	= 1.474
6/12	= 1.500
7/12	= 1.530
8/12	= 1.564

Roof Degree & Slope Data

Rise/Run	Degrees	%Slope
1" in 12"	04.76°	08 %
1-1/2" in 12"	07.13°	13 %
2" in 12"	09.46°	16 %
2-1/2" in 12"	11.76°	21 %
3" in 12"	14.04°	25 %
3-1/2" in 12"	16.26°	29 %
4" in 12"	18.44°	33 %
4-1/2" in 12"	20.56°	38 %
5" in 12"	22.62°	42 %
5-1/2" in 12"	24.62°	46 %
6-1/2" in 12"	28.44°	54 %
7" in 12"	30.26°	58 %
7-1/2" in 12"	32.00°	63 %
8" in 12"	33.69°	67 %
8-1/2" in 12"	35.31°	71 %
9" in 12"	36.87°	75 %
10" in 12"	39.80°	83 %
11" in 12"	42.51°	92 %
12" in 12"	45.00°	100 %

Metric (SI) Units:

Quantity	Unit	Symbol
length	meter	m
mass	gram	g
capacity	liter	L
time	second	s
electric current	ampere	A
temperature	kelvin	K
luminous intensity	candela	cd

Metric, changes in magnitude

mega	M	1 000 000 (one million)
kilo	k	1 000 (one thousand)
hecto	h	100 (one hundred)
deka	da	10 (ten)
metric unit		1 (meter, liter, gram, etc...)
deci	d	0.1 (one tenth)
centi	c	0.01 (one hundredth)
milli	m	0.001 (one thousandth)
micro	μ	0.000 001 (one millionth)

Electrical:
W = watts, A = amps
V = volts, R = resistance
W = A × V A = W ÷ V
V = W ÷ A V = A × R
A = V ÷ R R = V ÷ A

Proportions

Corresponding Items Set Across from Each Other

Like Items Set Under Each Other

Item ÷ Item = Item ÷ Unknown

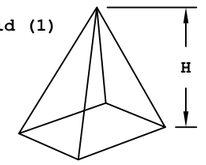
Solving Rule: Cross Multiply Then Divide

Example:
150 s.f. of wall area requires 5 lbs of dye. How many lbs of dye will be required for 2,500 s.f. of wall area.

s.f.	lbs
150	5
s.f.	lbs
2,500	?

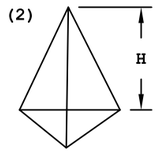
Solve:
2,500 x 5 / 150 = 83.33 lbs

Pyramid (1)



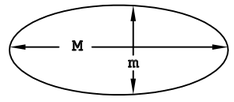
Volume = Area of Base x H / 3

Pyramid (2)



Volume = Area of Base / 2 x H / 3

Ellipse



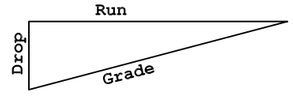
Area = M x m x .7854
Volume = Area x Depth

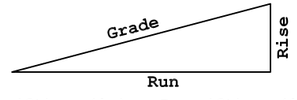
Roman Numerals

I	1
II	2
III	3
IV	4
V	5
VI	6
VII	7
VIII	8
IX	9
X	10
XI	11
XII	12
XIII	13
XIV	14
XV	15
XVI	16
XVII	17
XVIII	18
XIX	19
XX	20

i Lower Case 1
ii Lower Case 2
iii Lower Case 3

Drop, Run, Grade and % Grade Formulas

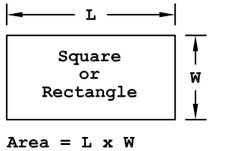




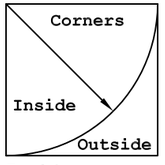
Grade (ft)or (in) = Drop or Rise (ft)or (in) ÷ Run (ft)or (in)
Drop or Rise (ft)or (in) = Grade (ft)or (in) × Run (ft)or (in)
Drop or Rise (ft)or (in) = Run (ft)or (in) × % Grade
Run (ft)or (in) = Drop or Rise (ft)or (in) ÷ % Grade
% Grade = Drop or Rise (ft)or (in) ÷ Run (ft)or (in) × 100

Note: Like units must be used for each calculation, i.e., inches and inches or feet and feet

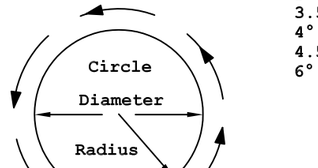
Degrees	Rise Per Foot Run	Grade	Degrees	Rise Per Foot Run	Grade
0.5°	1/8"	01%	8°	1-3/4"	15%
1°	1/4"	02%	12°	2-3/8"	20%
1.5°	3/8"	03%	14°	3"	25%
2°	1/2"	04%	17°	3-5/8"	30%
3°	5/8"	05%	20°	4-1/4"	35%
3.5°	3/4"	06%	24°	5-3/8"	45%
4°	7/8"	07%	26.5°	6"	50%
4.5°	1"	08%	35°	8-3/8"	70%
6°	1-1/4"	10%	45°	12"	100%



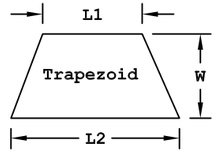
Area = L x W
Volume = Area x Depth



Inside
Area = .785 x R^2
Outside
Area = .215 x R^2

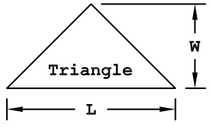


Area = 3.14 x R^2
Volume = Area x Depth
Circumference = 3.14 x D



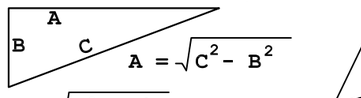
$$\text{Area} = \frac{L1 + L2}{2} \times W$$

Volume = Area x Depth



Area = .5 x L x W
Volume = Area x Depth

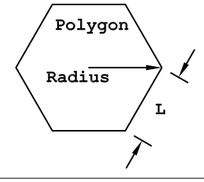
Right Triangle Leg Lengths



$C = \sqrt{A^2 + B^2}$

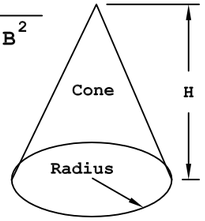
$A = \sqrt{C^2 - B^2}$

$B = \sqrt{C^2 - A^2}$



$$\text{Area} = \frac{\text{Sum of Sides (L)}}{2} \times \text{Radius}$$

Volume = Area x Depth



$$\text{Area} = \frac{3.14 \times R^2 \times H}{3}$$

Decimal System

Ten Thousands	Thousands	Hundreds	Tens	Units	(Decimal Point)	Tenths	Hundreths	Thousandths	Ten Thousandths
8	2	5	7	6	.	3	5	5	9

Notes

- _____
- _____
- _____
- _____
- _____
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- _____
- _____
- _____
- _____

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