

CODE INFORMATION:

2006 International Building Code with Village of Mundelein amendments
 2006 International Fire Code with Village of Mundelein amendments
 2006 International Mechanical Code
 2012 International Fuel Gas Code
 2008 National Electrical Code with Village of Mundelein amendments
 2004 Illinois State Plumbing Code with Village of Mundelein amendments
 1997 Illinois Accessibility Code
 2012 International Energy Conservation Code

CODE REQUIREMENTS	INTERNATIONAL BUILDING CODE (2006 EDITION)	
	REFERENCE	ALLOWABLE OR REQUIRED

OCCUPANCY GROUP(S)		
PRIMARY USE GROUP	R-2	R-2 APARTMENT HOUSES
SEPERATED PARKING USE	S-2	S-2 ENCLOSED PARKING STRUCTURE
CONSTRUCTION TYPE	TABLE 601	TYPE III B (COMB-NON-COMB - UNPROTECTED)
FLOORS 1 THRU 5 - APARTMENTS		TYPE IA (NON-COMB - PROTECTED)
LL + GROUND FLOOR PARKING		
BUILDING HEIGHT AND AREA		ACTUAL HEIGHT: 5 STORIES
ALLOWED (%)	TABLE 503	16,000 SF AREA PER FLOOR # 4 STORIES

SPRINKLER SYSTEM
 THE BUILDING SHALL BE EQUIPPED THROUGHOUT WITH AN AUTOMATIC FIRE SPRINKLER SYSTEM DESIGNED IN ACCORDANCE WITH NFPA 13. UNCONDITIONED AREAS SHALL BE PROTECTED WITH A DRY PIPE SPRINKLER SYSTEM.

AUTOMATIC SPRINKLER INCREASE	504.2 HEIGHT	INCREASE 1 STORY + 20 FT
AUTOMATIC SPRINKLER INCREASE	506.3 AREA	NOT REQUIRED

(EQUATION 5-1)
 $A_0 = A_t + \left[\frac{A_1}{100} \right] + \left[\frac{A_2}{100} \right]$
 $A_0 = 16000 + \left[\frac{16000(60)}{100} \right] + \left[\frac{16000(0)}{100} \right]$

WHERE:
 A₀ = ALLOWABLE AREA PER FLOOR (SF)
 A_t = TABULAR AREA PER FLOOR TABLE 503 (SF)
 I_f = INCREASE DUE TO FRONTAGE (PERCENTAGE)
 I_s = INCREASE DUE TO SPRINKLER (PERCENTAGE)

(EQUATION 5-2)
 $I_f = 100 \left[\frac{F}{P} - 0.25 \right] \frac{N}{30}$
 $I_f = 100 \left[\frac{534'}{534'} - 0.25 \right] \frac{24}{30}$
 $I_f = 60 \text{ PERCENT}$

WHERE:
 I_f = AREA INCREASE FRONTAGE (PERCENTAGE)
 F = PERIMETER FRONTING OPEN SPACE 20' MIN.
 P = PERIMETER OF ENTIRE BUILDING
 N = MINIMUM WIDTH OF PUBLIC WAY (FEET)

EXCESS FRONTAGE INCREASE 506.2 AREA BUILDING PERIMETER = 476' FRONTAGE = 476'

(EQUATION 5-2)
 $I_f = 100 \left[\frac{F}{P} - 0.25 \right] \frac{N}{30}$
 $I_f = 100 \left[\frac{534'}{534'} - 0.25 \right] \frac{24}{30}$
 $I_f = 60 \text{ PERCENT}$

ACTUAL FLOOR AREAS		
	GARAGE	FINISHED AREA
LOWER LEVEL GARAGE + ANNEX	10,465 S.F.	--
GROUND FLOOR	10,125 S.F.	1,970 S.F.
FIRST FLOOR	--	12,043 S.F.
SECOND FLOOR	--	12,043 S.F.
THIRD FLOOR	--	12,043 S.F.
FOURTH FLOOR	--	12,043 S.F.
FIFTH FLOOR	--	12,043 S.F.
TOTAL GROSS BUILDING AREA	24,000 S.F.	62,435 S.F.
TOTAL GROSS BUILDING AREA		41,523 S.F.

FIRE RESISTANCE RATINGS REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)				UL NUMBER
STRUCTURAL FRAME (CONCRETE)	TABLE 601	3 HOUR	IBC TABLE T20.1(2)	
PODIUM SLAB - FIRST FLOOR (CONCRETE) (PARKING AREA SEPARATION) (MIN SLAB THICKNESS REQ'D = 6.2')	509	3 HOUR	IBC TABLE T20.1(3)	
LOAD BEARING WALLS - EXTERIOR	TABLE 601; 104; 108.5;	2 HOUR	UB02	
LOAD BEARING WALLS - INTERIOR	TABLE 601;	1 HOUR	UB11	
NON-LOADBEARING WALLS & PARTITIONS EXTERIOR	TABLE 602; 104; 108.3; 115.3	0 HOUR	N/A	
NON-LOADBEARING WALLS & PARTITIONS INTERIOR	TABLE 601;	0 HOUR	N/A	
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS & JOISTS	TABLE 601;	1 HOUR	LS04	
ROOF CONSTRUCTION INCL. SUPPORTING BEAMS & JOISTS	I A TABLE 601	1 1/2 HOUR	IBC TABLE T20.1(2) LS09	
CORRIDORS	108; 101.1;	1/2 HOUR	UB11	
STAIRS	107.4; 102.0	2 HOUR	UB05	
APARTMENT SEPARATION	108; 115	1 HOUR	UB40	
ELEVATOR SHAFT ENCLOSURE	107	2 HOUR	UB05	
LINEN CHUTE SHAFT ENCLOSURE	107	2 HOUR	UB01	

INCIDENTAL USE AREAS:	WASTE & LINEN COLLECTION ROOMS > 100 SF	1 HOUR OR PROVIDE AUTOMATIC FIRE-EXTINGUISHING SYSTEM	UB57
INCIDENTAL USE AREAS: STORAGE > 100 SF	509.2	1 HOUR OR PROVIDE AUTOMATIC FIRE-EXTINGUISHING SYSTEM	UB57
INCIDENTAL USE AREAS: FURNACE RM > 400,000 BTU/HR INPUT	509.2	1 HOUR OR PROVIDE AUTOMATIC FIRE-EXTINGUISHING SYSTEM	UB57
INCIDENTAL USE AREAS: BOILERS OVER 15 PSI AND 10 HP	509.2	1 HOUR OR PROVIDE AUTOMATIC FIRE-EXTINGUISHING SYSTEM	UB57

OCCUPANT LOAD - 1004.1.1

MEANS OF EGRESS			
PRIMARY OCCUPANTS: RESIDENTIAL	60,465 SF	200 GROSS SF/OCCUPANT	303 PEOPLE
PARKING AREAS	28,303 SF	200 GROSS SF/OCCUPANT	142 PEOPLE
MECHANICAL/ACCESSORY	185 SF	300 GROSS SF/OCCUPANT	3 PEOPLE
BUSINESS - ADMINISTRATION	1,970 SF	100 GROSS SF/OCCUPANT	20 PEOPLE
MEANS OF EGRESS			468 PEOPLE
NUMBER OF EXITS	1015.1, 1019	2 MINIMUM PER STORY	2 PER STORY
NUMBER OF AREAS OF REFUGE	1007.6	EACH FLOOR EXCEPT AT EXIT LEVEL	
STAIRWAY WIDTH	1007.3	44" CLEAR MIN.	44" CLEAR MIN.
COMMON PATH OF TRAVEL	1014.3	25'-0" MAXIMUM (R-2)	
TRAVEL DISTANCE LIMIT	1016.1	250'-0" MAX	161'-0" MAX
CORRIDOR WIDTH	1017.2, 1005.1	44" MINIMUM	60" CLEAR
DEAD END CORRIDOR	1017.3	20'-0" MAX	18'-0"

STATEMENT OF SPECIAL INSPECTIONS

MATERIAL/SYSTEM	TYPE OF INSPECTION OR VERIFICATION	TYPE OR EXTENT OF TEST	CONTINUOUS INSPECTION	PERIODIC INSPECTION	
STEEL CONSTRUCTION	NON-HIGH-STRENGTH BOLTING	TIGHTNESS OF NUT		X	
	WELDED FILLER MATERIALS	IDENTIFICATION MARKINGS TO CONFORM TO A.I.S.I. SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.	-	-	
	FIELD WELDING OF STRUCTURAL STEEL	COMPLETE AND PARTIAL PENETRATION GROOVE WELDS.			X
		MULTIPASS FILLET WELDS			X
CONCRETE CONSTRUCTION	USE OF REQUIRED DESIGN MIX	SAMPLES OF FRESH CONCRETE		X	
	COMPRESSIVE STRENGTH	TEST CYLINDERS FOR COMPRESSION TEST		X	
	CONSISTENCY & WORKABILITY	SLUMP TEST		X	
	AIR CONTENT	AIR CONTENT TEST		X	
	TEMPERATURE	THERMOMETER		X	
SOILS	VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY			X	
	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.		X		
MASONRY CONSTRUCTION	USE OF REQUIRED MORTAR	TEST SAMPLES OF FRESH MORTAR		X	
	LOCATION AND PLACEMENT OF REINFORCEMENT	VISUAL INSPECTION OF REINFORCEMENT PRIOR TO GROUTING		X	
	GROUT PLACEMENT	VISUAL INSPECTION DURING PLACEMENT	X		
	PLACEMENT OF TIE + KEEPS IN VENEER	VISUAL INSPECTION OF FLASHING		X	

STRUCTURAL DESIGN LOADING

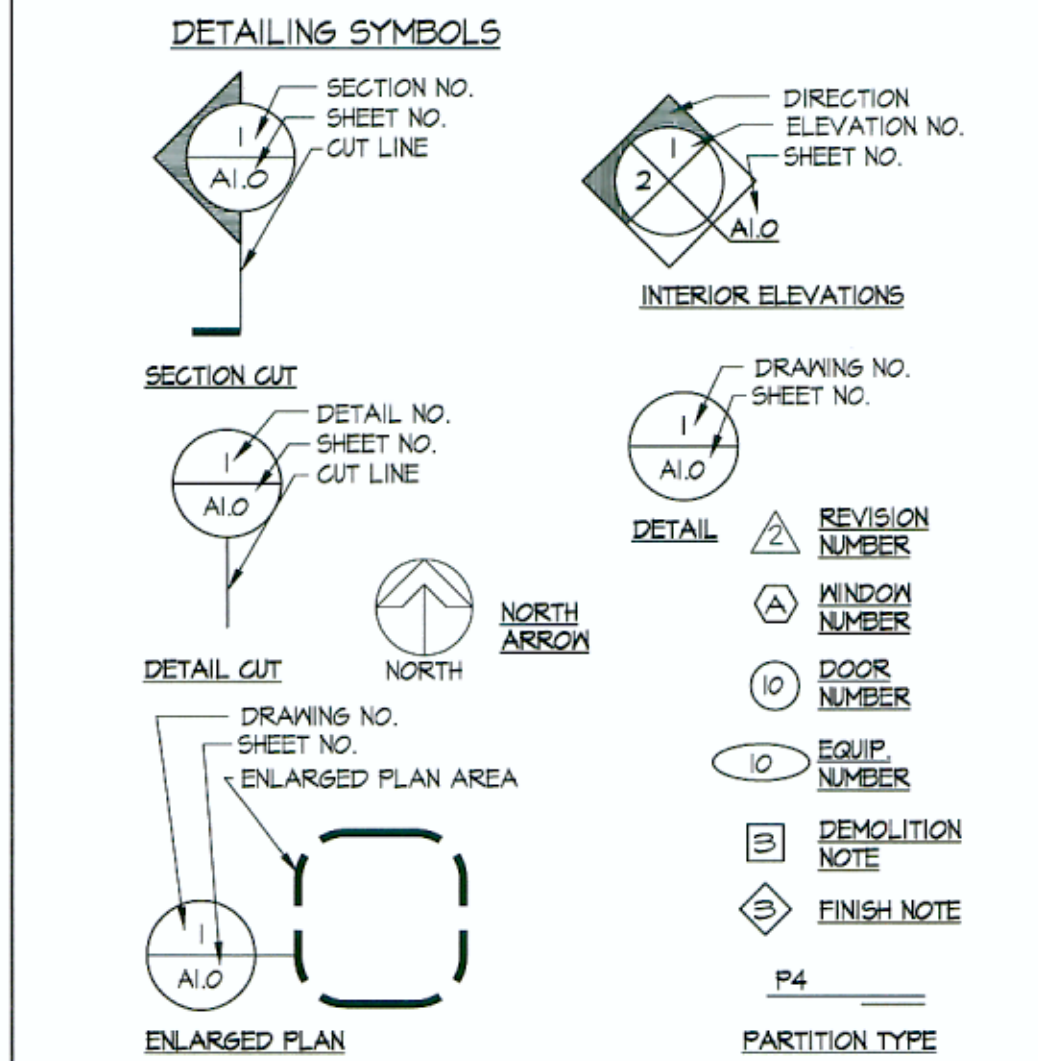
FLOOR LIVE LOAD = (TABLE 1601.1)
 28. RESIDENTIAL - MULTIPLE FAMILY DWELLINGS 40 PSF
 PRIVATE ROOMS AND CORRIDORS SERVING THEM 100 PSF
 PUBLIC ROOMS AND CORRIDORS SERVING THEM 100 PSF
 BALCONIES 100 PSF
 LANDINGS AND STAIRS 100 PSF
 PARKING - PASSENGER VEHICLES 40 PSF
 ROOF - PARKING ANNEX 50 PSF

ROOF LIVE LOAD = 20 PSF
GROUND SNOW LOAD = P_g = 30 PSF (TABLE 1608.2)
SITE CLASSIFICATION = C

WIND LOAD:
BASIC WIND SPEED = V = 90 MPH
IMPORTANCE FACTOR = 1.00 (TABLE 1604.5)
WIND EXPOSURE = EXPOSURE 'C'

SEISMIC DESIGN:
SPECTRAL RESPONSE ACCELERATION COEFFICIENTS = S_{D5}=0.31 S_{D1}=0.112
SITE CLASS (TABLE 1613.2) = C
PEAK VELOCITY (V_p) = 1.45
PEAK ACCELERATION (P_a) = 1.1
SEISMIC HAZARD EXPOSURE GROUP = GROUP 1
SEISMIC DESIGN CATEGORY = B
SOIL PROFILE TYPE = VERIFY W/ SOILS ENGINEER

BASIC STRUCTURAL SYSTEM = UPPER FLOORS- LIGHT FRAME WALLS WITH SHEAR PANELS-WOOD STRUCTURAL PANELS/SHEET STEEL PANELS
RESPONSE MODIFICATION FACTOR R = 6
SYSTEM OVER-STRENGTH FACTOR = 3
DEFLECTION AMPLIFICATION FACTOR C_d = 4
BUILDING HEIGHT LIMITATIONS BY CATEGORY = NOT LIMITED
ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE PROCEDURE



MATERIAL INDICATIONS

EARTH (BACKFILL)	WOOD BLOCKING (CONTINUOUS)
CONCRETE	WOOD BLOCKING (INTERMITTENT)
GRAVEL	WOOD (FINISH)
ASPHALT	PLYWOOD
CONCRETE MASONRY UNIT	INSULATION (BATT)
BRICK	INSULATION (RIGID)
EXISTING CONSTRUCTION	GYP. BD.
STEEL	ACOUSTIC TILE

ABBREVIATIONS

@	AT THE RATE OF ANCHOR BOLT	MAS	MASONRY MAXIMUM
AB	ACOUSTICAL CEILING TILE	MECH	MECHANICAL
ACT	ABOVE FINISH FLOOR	MCB	METAL CORNER BEAD
AFF	ADDITION	MFR	MANUFACTURER
ADD'L	ADJACENT	MIN	MINIMUM
ADD'N	ALTERNATE	MISC	MISCELLANEOUS
ADJ	ANCHOR	MO	MASONRY OPENING
ALT	APPROXIMATE	MTL	METAL
ALUM			
ANGH			
APPROX			
		NC	NOT IN CONTRACT NUMBER
		NO	NOMINAL
		NTS	NOT TO SCALE
BLDG	BUILDING		
BOF	BOTTOM OF FOOTING		
BRNS	BEARING		
BS	BRICK SHELF		
BSMT	BASEMENT	CA	OVERALL ON CENTER
		OC	CENTER
		OD	OUTSIDE DIAMETER
		OF	OUTSIDE FACE
		OH	OVER HEAD
		OPNG	OPENING
		OPF	OPPOSITE
		OFF HD	OPPOSITE HAND
CB	CASING BEAD	F-LAM	PLASTIC LAMINATE
CPT	CARPET	PL6	PLUMBING
CES	CARPET EDGE STRIP	PSF	POUNDS PER SQUARE FOOT
CJ	CONTROL JOINT	PSI	POUNDS PER SQUARE INCH
CL	CENTER LINE	PVC	POLYVINYL CHLORIDE
CLS	CEILING		
CMU	CONCRETE MASONRY UNIT	RAD, R	RADIUS
CO	CLEAN OUT	R	RISER
COL	COLUMN	REINF	REINFORCING
CONC	CONCRETE	REQ'D	REQUIRED
CONT	CONTINUOUS	RO	ROUGH OPENING
CONTR	CONTRACTOR		
CRS	COURSE	SF	SQUARE FOOT
CT	CERAMIC TILE	SH	SHELF
		SIM	SIMILAR
DBO	DESIGNED BY OTHERS	SOB	SLAB ON GRADE
DIA	DIAMETER	STD	STANDARD
DIM	DIMENSION	STL	STEEL
DN	DOWN	SUSP	SUSPENDED
DS	DOWNSPOUT		
DTL	DETAIL	T	TREAD
EA	EACH	TOB	TOP OF BEAM
EJ	EXPANSION JOINT	T & S	TONGUE AND GROOVE
ELEV, EL	ELEVATION	TEMP	TEMPERED
ELEC	ELECTRIC	TOF	TOP OF FOUNDATION
EQ	EQUAL	TOC	TOP OF CONCRETE
EQUIP	EQUIPMENT	TOM	TOP OF MASONRY
EXIST, (E)	EXISTING EXTERIOR	TOW	TOP OF WALL
		TOS	TOP OF SLAB
		T/S	TOP OF STEEL
		TYF	TIYPICAL
FD	FLOOR DRAIN	V	VINYL
FDN	FOUNDATION	VB	VAPOR BARRIER
FEC	FIRE EXTINGUISHER CABINET	VCT	VINYL COMPOSITION TILE
FIN	FINISH	VERT	VERTICAL
FLR	FLOOR	VVC	VINYL WALL COVERINGS
FTG	FOOTING	WC	WATER CLOSET
		WD	WOOD
GA	GAUZE	WP	WATERPROOFING
GALV	GALVANIZED	WWF	WELDED WIRE FABRIC
GC	GENERAL CONTRACTOR	W	WITH
GL	GLASS	W/O	WITHOUT
GL BLK	GLASS BLOCK		
GRAN	GRANULAR		
GYP BD,GB	GYPSEUM BOARD		
HB	HOSE BIBB		
HC	HANDICAPPED		
HDWR	HARDWARE		
HM	HOLLOW METAL		
HORIZ	HORIZONTAL		
INSUL	INSULATION		
INT	INTERIOR		
IJ	ISOLATION JOINT		
LAV	LAVATORY		

NOTE: SEE FINISH SCHEDULE FOR ABBREVIATIONS NOT LISTED HERE.

CARDINAL SQUARE

LUXURY TOWNHOME LIVING

GENERAL NOTES

- CONTRACTOR SHALL VISIT THE SITE OF WORK AND VERIFY EXISTING CONDITIONS, MATERIALS AND DIMENSIONS.
- ALL WORK SHALL BE AS INDICATED ON THE DRAWINGS AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES OF AUTHORITIES HAVING JURISDICTION.
- SEE FOUNDATION NOTES & PROJECT SPECIFICATION FOR ADDITIONAL INFORMATION.
- ALL INTERIOR PARTITION DIMENSIONS SHALL BE STUD TO STUD UNLESS OTHERWISE NOTED.
- HVAC, PLUMBING AND ELECTRICAL WORK REQUIRED SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES, ORDINANCES AND REQUIREMENTS OF LOCAL UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION. FURNISH ALL COMPONENTS FOR A COMPLETE INSTALLATION AND CODE COMPLIANCE EVEN THOUGH NOT SPECIFICALLY NOTED OR INDICATED. SYSTEM DESIGN NOT SPECIFICALLY INDICATED SHALL BE DESIGNED BY THE CONTRACTOR TO THE OWNER'S SPECIFICATIONS.
- REFER TO DRAWINGS PREPARED BY OTHERS FOR SITE DEVELOPMENT AND PLOT INFORMATION. (DESIGNED BY OTHERS)

GUESTROOM MIX

DESCRIPTION	1ST	2ND	3RD	4TH	5TH	TOTAL
STUDIO	2	1	1	2	2	8
ADAPTABLE STUDIO	0	1	1	0	0	2
ONE BEDROOM / ONE BATH	6	6	6	6	6	30
ADAPTABLE ONE BEDROOM/ONE BATH	2	2	2	2	2	10
TWO BEDROOM / ONE BATH	2	2	2	2	2	10
TWO BEDROOM / TWO BATH	0	1	1	1	1	4
ADAPTABLE TWO BEDROOM	1	0	0	0	0	1
TOTAL ROOMS	13	13	13	13	13	65

NOTES:
 1. 20% APARTMENTS TO BE ADAPTABLE PER ILLINOIS ACCESSIBILITY CODE.
 2. 13 TOTAL ADAPTABLE ROOMS PROVIDED.
 3. ALL UNITS SHALL COMPLY WITH FAIR HOUSING ACT REQUIREMENTS.

VILLAGE OF MUNDELEIN BUILDING DEPARTMENT
 APPROVED AS NOTED BY: *Pete Seluyko*
 DATE: 10/17/14

OUR STAMP ON THIS PLAN DOES NOT RELIEVE THE BUILDER FROM COMPLYING WITH VILLAGE OF MUNDELEIN BUILDING AND ZONING ORDINANCE REQUIREMENTS AND APPLICABLE CODES.

SCHEDULE OF DRAWINGS

61.0	COVER SHEET AND BUILDING SYNOPSIS
CIVIL ENGINEERING / SITE DESIGN DRAWINGS	
C1	COVER SHEET
TS1	TYPICAL SECTIONS AND GENERAL NOTES
E2	EXISTING CONDITIONS PLAN
LI	TREE SURVEY
LI	GEOMETRIC PLAN
G1	GRADING PLAN
U1	UTILITY PLAN
PF1	PLAN AND PROFILE PLAN - SANITARY SEWER
PF1	PLAN AND PROFILE PLAN - DITOMASI DRIVE
PF1	PLAN AND PROFILE PLAN - ANTHONY AVENUE
X1	SECTIONS
EC1	STORMWATER POLLUTION PREVENTION PLANS
EC2	STORMWATER POLLUTION PREVENTION PLANS
EC3	SOIL EROSION CONTROL PLAN
S1	DETAILS
D1	DETAILS
D2	DETAILS
DM	DEMOLITION PLAN
OV	OVERALL SITE PLAN
LS	LANDSCAPE PLAN
ARCHITECTURAL DRAWINGS	
A1.0	LOWER LEVEL PARKING PLAN
A1.1	GROUND LEVEL PARKING PLAN
A1.2	FIRST FLOOR PLAN
A1.3	TYPICAL APARTMENT FLOOR PLANS - FLOORS 2 + 3
A1.4	TYPICAL APARTMENT FLOOR PLANS - FLOORS 4 + 5
A1.5	ROOF PLAN
A2.0	EXTERIOR ELEVATIONS
A2.1	EXTERIOR ELEVATIONS
A2.2	BUILDING SECTIONS
A2.3	BUILDING SECTIONS
A2.4	BUILDING FOOTING ELEVATIONS
A3.0	FOUNDATION WALL SECTIONS
A3.1	WALL SECTIONS
A3.2	NOT USED
A3.3	ELEVATOR AND CHUTE SECTION
A3.4	STAIR SECTIONS AND DETAILS
A4.0	DOOR SCHEDULE AND DETAILS
A4.1	UL RATINGS
A4.2	FIRE PROTECTION DETAILS
A4.3	PARTITION TYPES
A4.4	PARTITION TYPES
A4.5	PARTITION TYPES
A5.0	ENLARGED FLOOR PLAN - PUBLIC SPACES
A5.1	ENLARGED PLANS - PUBLIC SPACES
A5.2	ENLARGED PLANS - APARTMENTS
A5.3	ENLARGED PLANS - APARTMENTS
A5.4	ENLARGED PLANS - APARTMENTS
A5.5	ENLARGED PLANS - APARTMENTS
STRUCTURAL DRAWINGS	
S0</	

GENERAL NOTES

- 1. REFERENCED CODES
A. ALL PAVEMENT AND STORM SEWER CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (SSBRC) AND SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS ADOPTED JANUARY 1, 2012 BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION AND ALL AMENDMENTS THERE TO AND IN ACCORDANCE WITH THE LATEST EDITION OF THE CODE OF THE MUNICIPALITY EXCEPT AS MODIFIED HEREIN. IN CASE OF CONFLICT, MUNICIPAL CODE SHALL TAKE PRECEDENCE.
B. ALL SANITARY SEWER AND WATERMAIN CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS PUBLISHED BY THE CODE OF THE MUNICIPALITY EXCEPT AS MODIFIED HEREIN OR BY ANY PUBLIC AGENCY PERMITS ISSUED FOR THIS WORK. IN CASE OF CONFLICT, THE MORE RESTRICTIVE PROVISIONS SHALL APPLY.
C. ALL SIDEWALK AND PUBLIC AREAS MUST BE CONSTRUCTED IN ACCORDANCE WITH CURRENT ADA, ILLINOIS HANDICAP ACCESSIBILITY AND ANY APPLICABLE LOCAL ORDINANCES. WHEN CONFLICTS EXIST BETWEEN THE GOVERNING AGENCIES, THE MORE STRINGENT SHALL GOVERN.
D. THE CITED STANDARD SPECIFICATIONS, CODES AND PERMITS, WITH THESE CONSTRUCTION PLANS AND DETAILS, ARE ALL TO BE CONSIDERED PART OF THE CONTRACT. INCIDENTAL ITEMS OR ACCESSORIES NECESSARY TO COMPLETE THIS WORK MAY NOT BE SPECIFICALLY NOTED BUT ARE CONSIDERED A PART OF THIS CONTRACT.

- 2. UTILITY LOCATIONS
A. THE UTILITY COMPANIES HAVE BEEN CONTACTED IN REFERENCE TO UTILITIES THEY OWN AND OPERATE WITHIN THE LIMITS FOR THIS PROJECT. DATA FROM THESE AGENCIES HAS BEEN INCORPORATED INTO THE PLANS. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM OR ESTABLISH THE EXISTENCE OF ALL UTILITY FACILITIES AND THEIR EXACT LOCATIONS, AND TO SAFELY SCHEDULE ALL UTILITY RELOCATIONS. FOR ADDITIONAL INFORMATION, THE AGENCIES LISTED ON THIS SHEET MAY BE CONTACTED.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING THE UTILITY COMPANIES LOCATE THEIR FACILITIES IN THE FIELD PRIOR TO CONSTRUCTION AND SHALL ALSO BE RESPONSIBLE FOR THE MAINTENANCE AND PRESERVATION OF THESE FACILITIES. THE ENGINEER DOES NOT WARRANT THE LOCATION OF ANY EXISTING UTILITIES SHOWN ON THE PLANS. THE CONTRACTOR SHALL CALL J.O.L.L.I.E., AT 800-892-0123 AND THE MUNICIPALITY, FOR UTILITY LOCATIONS. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND THE MUNICIPALITY TWENTY-FOUR (24) HOURS PRIOR TO STARTING ANY CONSTRUCTION.
C. EASEMENTS FOR THE EXISTING UTILITIES, BOTH PUBLIC AND PRIVATE, AND UTILITIES WITHIN PUBLIC RIGHTS-OF-WAY ARE SHOWN ON THE PLANS ACCORDING TO AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION IN THE FIELD OF THESE UTILITIES AND THE PROTECTION FROM DAMAGE DUE TO CONSTRUCTION OPERATIONS. IF EXISTING UTILITY LINES OF ANY NATURE ARE ENCOUNTERED WHICH CONFLICT WITH LOCATIONS OF THE NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.

- 23. FINAL ACCEPTANCE
A. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR AND HIS SURETY FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF FINAL ACCEPTANCE OF THE PROJECT AND THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL DEFECTS IN MATERIALS AND WORKMANSHIP OF WHATEVER NATURE DURING THAT PERIOD. THIS GUARANTEE SHALL BE PROVIDED IN THE FORM OF MAINTENANCE BOND IN THE AMOUNT OF 10% OF THE COST OF IMPROVEMENTS.
B. BEFORE ACCEPTANCE BY THE OWNER AND FINAL PAYMENT, ALL WORK SHALL BE INSPECTED BY THE OWNER OR HIS REPRESENTATIVE. FINAL PAYMENT WILL BE MADE AFTER ALL THE CONTRACTOR'S WORK HAS BEEN APPROVED AND ACCEPTED.
C. NO UNDERGROUND WORK SHALL BE COVERED UNTIL IT HAS BEEN APPROVED BY THE MUNICIPALITY. APPROVAL TO PROCEED MUST BE OBTAINED FROM THE MUNICIPALITY PRIOR TO INSTALLING PAVEMENT BASE, BINDER, SURFACE, AND PRIOR TO PLACING ANY CURBS OR SIDEWALKS.
D. AT THE CLOSE OF EACH WORKING DAY AND AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AND FLOW LINES SHALL BE FREE FROM DIRT AND DEBRIS.

- 24. UNDERGROUND NOTES
A. UNDERGROUND WORK SHALL INCLUDE TRENCHING, INSTALLATION OF PIPE, CASTINGS, STRUCTURES, BACKFILLING OF TRENCHES AND COMPACTION AND TESTING AS SHOWN ON THE CONSTRUCTION PLANS. FITTINGS AND ACCESSORIES NECESSARY TO COMPLETE THE WORK MAY NOT BE SPECIFIED, BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT.
B. WHERE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, EXISTING DRAINAGE STRUCTURES AND SYSTEMS SHALL BE CLEANED OF DEBRIS AND PATCHED AS NECESSARY TO ASSURE INTEGRITY OF THE STRUCTURE. THIS WORK SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH FOR STRUCTURES AND CONTRACT UNIT PRICE PER LINEAL FOOT FOR SYSTEMS WHICH SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAL FOOT FOR CLEANING, PATCHING, REMOVAL AND DISPOSAL OF DEBRIS AND DIRT. DRAINAGE STRUCTURES AND SYSTEMS CONSIDERED AS PART OF THIS PROJECT SHALL BE MAINTAINED BY THE CONTRACTOR AT HIS EXPENSE. NO PAYMENT WILL BE MADE FOR CLEANING STRUCTURES OR SYSTEMS CONSTRUCTED AS PART OF THIS PROJECT.
C. ANY DETERIORATED OF SEWER AND WATER TRENCHES AS WELL AS TEMPORARY SHEETING OR BRACING THAT MAY BE REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL NOT BE CONSIDERED EXTRA WORK UNLESS THERE IS A SPECIFIC LINE ITEM FOR DETERIORATING. IN THE EVENT THAT SOFT MATERIALS WITH UNCONFINED COMPRESSIVE STRENGTH LESS THAN 0.5 TSP ARE ENCOUNTERED IN SEWER CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE OWNER AND/OR ENGINEER TO OVER-EXCAVATE TO A DEPTH OF ONE (1) FOOT BELOW THE BOTTOM OF THE PIPE AND BACKFILL WITH COMPACTED CRUSHED STONE, PROPERLY FORMED TO FIT THE BOTTOM OF THE PIPE.
D. TRENCH BACKFILL WILL BE REQUIRED FOR THE FULL TRENCH DEPTH WITHIN TWO (2) FEET OF PROPOSED OR EXISTING PAVEMENTS, UTILITIES, DRIVEWAYS, AND SIDEWALKS AND EXTENDING A DISTANCE EQUAL TO A 1:1 SLOPE FROM SUBGRADE ELEVATION TO TOP OF PIPE. THE TRENCH BACKFILL SHALL CONSIST OF GRANULAR MATERIAL MEETING DOT CA-6 GRADATION. THE TRENCH BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH SSBRC SPECIFICATIONS. SETTING WITH WATER SHALL NOT BE PERMITTED. THE COST OF SUCH CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THIS CONTRACT AND SHALL BE INCLUDED IN THE UNIT PRICE OF THE PIPE. NO SEPARATE PAYMENT SHALL BE MADE FOR THIS ITEM.
E. THE CONTRACTOR SHALL INSTALL A 4" X 4" X 8' (NOMINAL) POST AT THE TERMINUS OF THE SANITARY, WATER AND STORM SERVICE, SANITARY AND STORM MANHOLES, CATCH BASINS, INLETS AND WATER VAULTS. THE POST SHALL EXTEND 4' ABOVE THE GROUND. THE TOP 12" OF SAID POST SHALL BE PAINTED AS FOLLOWS: SANITARY - RED, WATERMAIN - BLUE, STORM - GREEN.
F. AFTER THE STORM SEWER SYSTEM HAS BEEN CONSTRUCTED, THE CONTRACTOR SHALL PLACE EROSION CONTROL AT REAR YARD INLET LOCATIONS, AND AT OTHER LOCATIONS SELECTED BY THE ENGINEER, TO MINIMIZE THE AMOUNT OF SILTATION WHICH NORMALLY ENTERS THE SEWER SYSTEM.
G. HYDRANTS SHALL NOT BE FLUSHED DIRECTLY ON THE ROAD SUBGRADES. WHENEVER POSSIBLE, HOSES SHALL BE USED TO DIRECT THE WATER INTO LOT AREAS OR INTO THE WATER DISTRIBUTION SYSTEM. THE COST OF SUCH CONSTRUCTION SHALL BE CONSIDERED INCIDENTAL TO THIS CONTRACT AND SHALL BE INCLUDED IN THE UNIT PRICE OF THE PIPE. NO SEPARATE PAYMENT SHALL BE MADE FOR THIS ITEM.
H. ALL TOP OF FRAMES FOR STORM AND SANITARY SEWERS AND VALVE VAULT COVERS ARE TO BE ADJUSTED TO MEET FINAL FINISH GRADE. THIS ADJUSTMENT IS TO BE MADE BY THE SEWER AND WATER MAINS AND THE COST IS TO BE CONSIDERED INCIDENTAL. THESE ADJUSTMENTS TO FINISHED GRADE WILL NOT AFFECT THE CONTRACTOR FROM ANY ADDITIONAL ADJUSTMENTS AS REQUIRED BY THE MUNICIPALITY UPON FINAL INSPECTION OF THE PROJECT. (FINAL GRADES TO BE DETERMINED BY THE MUNICIPALITY AT THE TIME OF FINAL INSPECTION AND MAY VARY FROM PLAN GRADE.)
I. SLEEVES FOR UTILITY (COMED, TELEPHONE, ETC.) STREET CROSSING, SHALL BE INSTALLED WHERE DIRECTED BY THE OWNER. SLEEVES SHALL BE 6" PVC INSTALLED 36" BELOW THE TOP OF CURB AND EXTEND TWO FEET OUTSIDE THE CURB. TRENCH SHALL BE BACKFILLED WITH COMPACTED GRANULAR MATERIAL.
J. THE CONTRACTOR SHALL VERIFY THE SIZE AND INVERT ELEVATION OF ALL CONNECTIONS TO AVOID ANY CONFLICTS BEFORE STARTING WORK. NOTIFY OWNER OF ANY DISCREPANCIES.

SANITARY SEWER NOTES

- 1. GENERAL
A. SANITARY SEWER PIPE SHALL BE PVC (POLYVINYL CHLORIDE) PLASTIC PIPE WITH A STANDARD DIMENSION RATIO (SDR) OF 26 CONFORMING TO ASTM D-3034 WITH PUSH-ON JOINTS CONFORMING TO ASTM D-3212 AND PVC (POLYVINYL CHLORIDE) PLASTIC PIPE, DR18 CONFORMING TO ANNA C-900 WITH PUSH-ON JOINTS CONFORMING TO ANNA C-900 AS SHOWN ON THE PLANS. PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT OF SANITARY SEWER COMPLETE IN PLACE.
B. SANITARY SEWER PIPE 18" AND LARGER, WHERE NOTED ON THE PLANS, OR WHERE THE ILEPA MINIMUM SEPARATION CANNOT BE MAINTAINED, SHALL BE ONE OF THE FOLLOWING:
C. "HAND-SEAL" OR SIMILAR FLEXIBLE TYPE COUPLINGS SHALL BE USED WHEN CONNECTING SEWER PIPES OF DISSIMILAR MATERIALS. "HAND-SEAL", "FERROD", AND "MISSION" TYPE COUPLINGS SHALL NOT BE USED ON SEWER MAINS. CHANGES IN PIPE MATERIAL SHALL BE MADE AT A STRUCTURE.
D. ALL SANITARY SEWERS ARE TO BE CONSTRUCTED USING A LASER INSTRUMENT TO MAINTAIN LINE AND GRADE.
E. ALL FLOOR DRAINS SHALL CONNECT TO THE SANITARY SEWER.
F. CONNECTIONS TO EXISTING SANITARY SEWER SYSTEM SHALL NOT BE DONE UNTIL AUTHORIZED BY THE MUNICIPALITY.
G. WATERMANS SHALL BE SEPARATED FROM SANITARY SEWERS AND STORM SEWERS IN ACCORDANCE WITH ILEPA REQUIREMENTS AS SPECIFIED IN "WATER MAIN" SECTION.
H. NO WATER LINE SHALL BE PLACED IN THE SAME TRENCH AS A SEWER LINE EXCEPT UNDER SPECIAL CIRCUMSTANCES AND THEN ONLY UNDER THE FOLLOWING RULES:
1) PERMISSION SHALL BE OBTAINED FROM THE MUNICIPAL ENGINEERING DEPARTMENT IN WRITING PRIOR TO BEGINNING CONSTRUCTION.
2) THE BOTTOM OF A WATER LINE SHALL BE INSTALLED ON A SHELVE A MINIMUM OF 18" ABOVE THE TOP OF THE SEWER AND 18" HORIZONTALLY AWAY FROM THE EDGE OF THE SEWER.

SANITARY SEWER NOTES

- 4. FRAMES AND LIDS:
A. ALL SANITARY SEWER MANHOLE FRAMES AND LIDS SHALL BE NEENAH R-1712 UNLESS OTHERWISE NOTED ON THE PLANS. THE LIDS SHALL HAVE RECESSED (CONCEALED) PEEK HOLES AND BE SELF SEALING WITH AN "O" RING GASKET. THE LIDS SHALL HAVE THE WORDS "SANITARY" AND NAME OF MUNICIPALITY EMBOSSED ON THE SURFACE. THE JOINTS BETWEEN FRAME AND CONCRETE SECTION SHALL BE SEALED WITH A BUTYL ROPE.
B. A MAXIMUM OF SIX (6") INCHES OF CONCRETE ADJUSTING RINGS SHALL BE USED TO ADJUST FRAME ELEVATIONS. RINGS SHALL BE SEALED TOGETHER WITH BUTYL ROPE.
5. DROP MANHOLE ASSEMBLIES:
A. DROP MANHOLE ASSEMBLIES: DROP MANHOLE ASSEMBLIES SHALL BE PROVIDED AT THE JUNCTION OF SANITARY SEWERS WHERE THE DIFFERENCE IN INVERT GRADES EXCEEDS TWO FEET (2'), OR AS SHOWN ON THE PLANS. THE ENTIRE DROP ASSEMBLY SHALL BE CAST IN CONCRETE MONOLITHICALLY WITH THE MANHOLE BARREL SECTION.
6. CLEANING:
A. ALL MANHOLES AND PIPES SHALL BE THOROUGHLY CLEANED OF DIRT AND DEBRIS, AND ALL VISIBLE LEAKAGE ELIMINATED, BEFORE FINAL INSPECTION AND ACCEPTANCE.
7. TESTING:
A. DEFLECTION AND LEAKAGE TESTING WILL BE REQUIRED. THE PROCEDURE AND ALLOWABLE TESTING LIMITS SHALL BE AS SPECIFIED IN THE "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS", OR MUNICIPAL CODES IN THE EVENT OF A DISCREPANCY BETWEEN THE STANDARD SPECIFICATIONS AND THE MUNICIPAL CODE, THE MUNICIPAL CODE SHALL GOVERN. THE FULL LENGTH OF THE SANITARY SEWER IS REQUIRED TO BE BOTH AIR TESTED AND DEFLECTION TESTED.
B. TESTING THE ALIGNMENT/STRAIGHTNESS SHALL BE IN ACCORDANCE WITH MUNICIPAL CODE.
C. ALL SANITARY MANHOLES SHALL BE VACUUM TESTED FOR LEAKAGE IN ACCORDANCE WITH ASTM C1244.
8. TELEVISION:
A. ALL SANITARY SEWERS SHALL BE TELEVIEWED AND A COPY OF THE TAPE /DVD AND A WRITTEN REPORT SHALL BE SUBMITTED AND REVIEWED BY THE OWNER OR MUNICIPALITY BEFORE FINAL ACCEPTANCE. THE REPORT SHALL INCLUDE STUB LOCATION AS WELL AS A DESCRIPTION OF ALL DEFECTS, WATER LEVEL, LEAKS AND LENGTH. IDENTIFY MANHOLE TO MANHOLE BOTH VERBALLY AND ON-SCREEN USING MANHOLE NUMBERS FROM APPROVED PLANS. ORDER OF WRITTEN REPORT SHALL BE THE SAME AS THE VIDEO TAPES/DVDS.
9. TEST RESULTS:
A. IF THE SANITARY SEWER INSTALLATION FAILS TO MEET THE TEST REQUIREMENTS SPECIFIED, THE CONTRACTOR SHALL DETERMINE THE CAUSE OR CAUSES OF THE DEFECT AND SHALL, AT HIS OWN EXPENSE, REPAIR OR REPLACE ALL MATERIALS, AND WORKMANSHIP AS MAY BE NECESSARY TO COMPLY WITH THE TEST REQUIREMENTS.
10. CERTIFICATION:
A. CONTRACTOR SHALL SUBMIT CERTIFIED COPIES OF ALL REPORTS OF TESTS CONDUCTED BY AN INDEPENDENT LABORATORY BEFORE INSTALLATION OF PVC PLASTIC PIPE. TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH STANDARD METHOD OF TEST FOR "EXTERNAL LOADING PROPERTIES OF PLASTIC PIPE BY PARALLEL PLATE LOADING", ASTM STANDARDS D-2412 OR D-2241 AS APPROPRIATE FOR THE PIPE TO BE USED. TESTS SHALL ALSO BE CONDUCTED TO DEMONSTRATE JOINT PERFORMANCE AT 5% MAXIMUM DIAMETRIC DEFLECTION OF THE SPIGOT.
11. RECORD DRAWINGS:
A. THE CONTRACTOR SHALL PROVIDE ALL INFORMATION TO PREPARE RECORD DRAWING(S) INCLUDING SERVICE STUB LOCATIONS, TO SPACED, SPACED SHALL PREPARE RECORD DRAWINGS AND SUBMIT TO APPROPRIATE PUBLIC AGENCIES. IF FINAL MEASUREMENTS INDICATE DEFICIENCIES, THE CONTRACTOR, AT HIS OWN COST, WILL ADJUST MANHOLES AND/OR SEWERS TO PROPER ELEVATIONS AND OTHERWISE CORRECT THE DEFICIENCIES.

STORM SEWER NOTES

- 1. GENERAL:
A. ALL STORM SEWER PIPE SHALL BE RCP, UNLESS OTHERWISE NOTED ON THE PLANS, IN ACCORDANCE WITH THE FOLLOWING:
PLAN CODE: MATERIAL
RCP: REINFORCED CONCRETE PIPE (ASTM C-76) WITH O-RING GASKETED JOINTS. (ASTM C-443); CLASS IV, PER SSBRC SECTION 603. PRECAST FLARED END SECTIONS MAY HAVE MASTIC JOINTS. PAYMENTS SHALL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT OF STORM SEWER COMPLETE IN PLACE.
PVC: POLYVINYL CHLORIDE SEWER PIPE, SDR 26, CONFORMING TO ASTM D-3034 WITH ASTM D-3212 PUSH-ON GASKETED JOINTS.
LID: RIGID, PERFORATED PVC UNDERDRAIN PIPE (ASTM D-2729), SDR 26, OR ADS N-12, WITH SOLVENT WELD JOINTS AND FILTER FABRIC WRAPPING OR SOCK. PERFORATED HOPE PIPE ALSO ACCEPTABLE.
B. "HAND SEAL" OR SIMILAR COUPLINGS SHALL BE USED WHEN JOINING SEWER PIPES OF DISSIMILAR MATERIALS. "HAND SEAL", "FERROD", AND "MISSION" TYPE COUPLINGS SHALL NOT BE USED ON SEWER MAINS. CHANGES IN PIPE MATERIAL SHALL BE MADE AT A STRUCTURE.
C. ALL STORM SEWERS ARE TO BE CONSTRUCTED USING A LASER INSTRUMENT TO MAINTAIN LINE AND GRADE.
D. ALL FOOTING DRAIN AND SUMP PUMP DISCHARGE PIPES SHALL BE CONNECTED TO THE STORM SEWER SYSTEM. DOWNSPUTS SHALL DISCHARGE TO THE GROUND.
E. THE CONTRACTOR SHALL MAINTAIN AT LEAST THREE (3') FEET OF COVER OVER THE TOP OF SHALLOW PIPES AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL ROUND OVER ANY PIPES WHICH HAVE LESS THAN THREE (3') FEET OF COVER DURING CONSTRUCTION UNTIL THE AREA IS FINAL GRADE OR PAVED.
2. BEDDING:
A. ALL STORM SEWERS SHALL BE INSTALLED ON A TYPE A GRANULAR BEDDING, 1/4" TO 3/4" IN SIZE (CA-6 WITH A MINIMUM THICKNESS EQUAL TO 1/4 THE OUTSIDE DIAMETER OF THE SEWER PIPE BUT NOT LESS THAN 4". BLOCKING OF ANY KIND FOR GRADE IS NOT PERMITTED. THE BEDDING MATERIALS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR DENSITY. BEDDING SHALL EXTEND TO THE SPRING LINE ON ALL RCP AND DIP PIPE. BEDDING SHALL EXTEND TO 12" OVER ANY PVC OR HOPE PIPE. COST OF BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF PIPE. NO SEPARATE PAYMENT SHALL BE MADE FOR THIS.
3. STRUCTURES:
A. MANHOLE, CATCH BASIN AND INLET BOTTOMS SHALL BE PRECAST CONCRETE SECTIONAL UNITS OR MONOLITHIC CONCRETE. MANHOLES AND CATCH BASINS SHALL BE A MINIMUM 5' IN DIAMETER UNLESS OTHERWISE SPECIFIED ON THE PLANS. STRUCTURE JOINTS SHALL BE SEALED WITH O-RING OR BUTYL ROPE. A MAXIMUM OF SIX (6") INCHES OF ADJUSTING RINGS SHALL BE USED.
B. THE FRAME, GRATE, AND/OR CLOSED LID SHALL BE CAST IRON OF THE STYLE SHOWN ON THE PLANS.
C. MANHOLE LIDS SHALL BE MACHINE SURFACED, NON-ROCKING DESIGN. THE CLOSED LIDS SHALL HAVE THE WORD "STORM" AND MUNICIPALITY NAME CAST ON THE LID. THE JOINTS BETWEEN CONCRETE SECTION ADJUSTING RINGS, AND FRAME SHALL BE SEALED WITH A MASTIC COMPOUND.
4. CASTINGS:
A. CASTINGS FOR SEWER OR OTHER STRUCTURES SHALL BE "NEENAH" OR APPROVED EQUAL. COST OF CASTINGS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE STRUCTURE. NO SEPARATE PAYMENT SHALL BE MADE FOR THIS ITEM.
5. CLEANING:
A. THE STORM SEWER SYSTEM SHALL BE THOROUGHLY CLEANED PRIOR TO FINAL INSPECTION AND TESTING.
6. TELEVISION & TESTING:
A. THE STORM SEWER SYSTEM SHALL BE TELEVIEWED AND TESTED PER VILLAGE CODE.

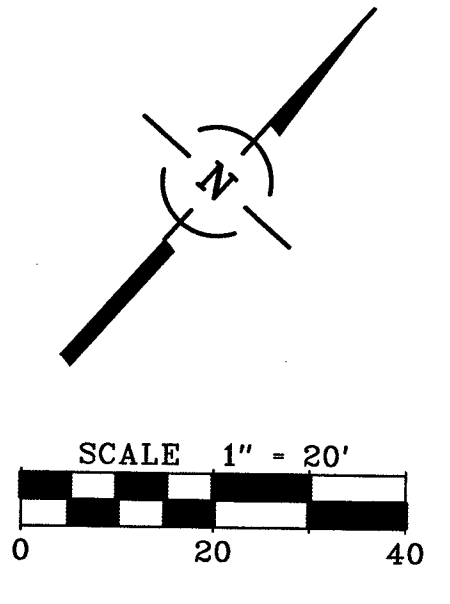
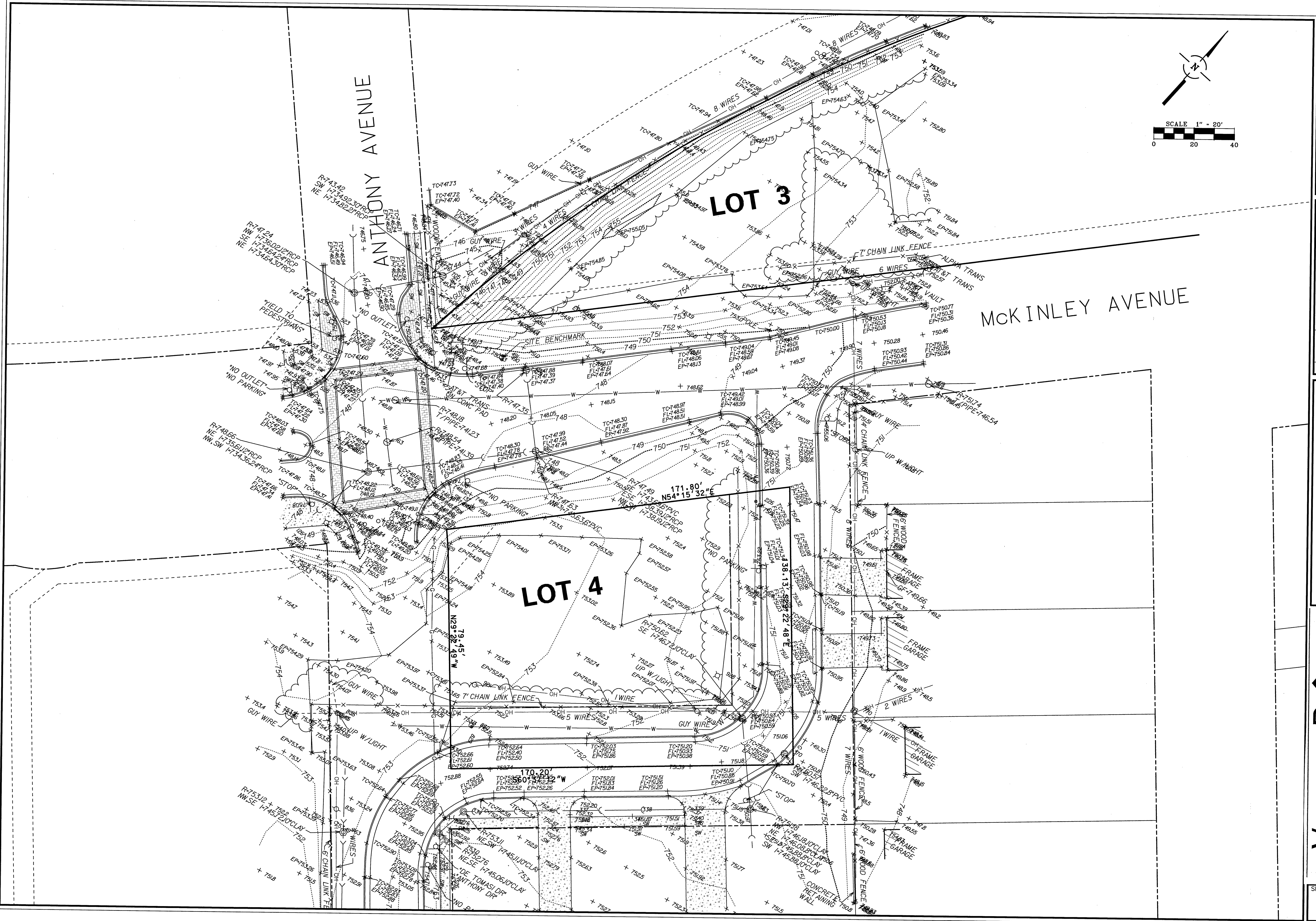
LEGEND table with columns: EXISTING, DESCRIPTION, PROPOSED. Includes symbols for DRAIN TILE, STORM SEWER, SANITARY SEWER, SANITARY TRUNK SEWER, WATER MAIN (WITH SIZE), PIPE TRENCH BACKFILL, GAS MAIN, TELEPHONE LINES, ELECTRIC LINE, FENCE, RIGHT-OF-WAY, EASEMENT, PROPERTY LINE, SETBACK LINE, CENTERLINE, CONTOUR, SANITARY MANHOLE, STORM MANHOLE, CATCH BASIN, INLET, FIRE HYDRANT, PRESSURE CONNECTION, PIPE REDUCER, VALVE AND VAULT, VALVE, FLARED END SECTION, STREET LIGHT, UTILITY POLE, CONTROL POINT, SIGN, SPOT ELEVATION, SOIL BORING, OVERLAND FLOW ROUTE, DRAINAGE SLOPE, GUARDRAIL, WATER'S EDGE, CONCRETE, REVERSE PITCH CURB, TREE, FIRE TREE, BUSH, & PROPOSED TREE TO REMOVE.

ABBREVIATIONS table with columns: M, S, CB, LP, VV, E, FH, GR, I, T/P, B/P, GF, TC, TD, TW, BW, OP, F, G, WM, SAN, STM, LO, PLO.

PERMITS table with columns: DESCRIPTION, LOG NO., PERMIT NO., DATE ISSUED.

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1500 FRANKLIN BLVD.
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TYPICAL SECTIONS AND GENERAL NOTES
CARDINAL SQUARE
MUNDELEIN, ILLINOIS
VANTAGEPOINT ENGINEERING
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TINLEY PARK, IL 60477
TSP@VPENGS.COM
VPENGS.COM | CIVIL ENGINEERING | LAND PLANNING | SURVEYING
SHEET 2 OF 20



NO.	DATE	REMARKS

NO.	DATE	REMARKS
2	12/10/13	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

EXISTING CONDITIONS
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

VANTAGEPOINT
 ENGINEERING
13311 NORTH CREEK DRIVE
 TIMBER LAKE, IL 60477
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TREE INVENTORY LISTING
 SPACECO, INC. - ANTHONY AVENUE SITE
 MUNDELEIN, ILLINOIS
 (CBBEL PROJECT NUMBER 130439)

NOTE: VALUES ASSIGNED FOR CONDITION AND FORM ARE SHOWN IN RIGHT COLUMN
 BELOW. RATINGS ARE BASED ON GENERAL OBSERVATIONS AND ON A SCALE OF
 1 (EXCELLENT) TO 5 (POOR)

INVENTORY COMPLETED ON SEPTEMBER 6, 2013.

Tag #	Species	Common Name	Size (inches)	Condition	Form	Comments
1	Populus deltoides	Cottonwood	4	3	4	
2	Populus deltoides	Cottonwood	3	3	4	
3	Salix nigra	Black willow	3	3	3	
4	Salix nigra	Black willow	3,3,4,4	3	4	
5	Salix nigra	Black willow	3	3	4	
6	Salix nigra	Black willow	4,4	3	4	
7	Salix nigra	Black willow	3	3	3	
8	Salix nigra	Black willow	3	3	3	
9	Salix nigra	Black willow	3	3	5	Lean
10	Salix nigra	Black willow	3	3	4	
11	Populus deltoides	Cottonwood	3,3	3	4	
12	Populus deltoides	Cottonwood	3,3	3	3	
13	Populus deltoides	Cottonwood	3	3	3	
14	Populus deltoides	Cottonwood	3	3	3	
15	Populus deltoides	Cottonwood	4	3	3	
16	Populus deltoides	Cottonwood	3	3	3	
17	Acer negundo	Box elder	3	3	3	
18	Populus tremuloides	Quaking aspen	3	3	3	
19	Ulmus pumila	Siberian elm	3	3	3	
20	Ulmus pumila	Siberian elm	3	3	3	
21	Ulmus pumila	Siberian elm	5	3	4	
22	Populus deltoides	Cottonwood	3,3	3	4	
23	Morus alba	White mulberry	3,4	3	4	
24	Morus alba	White mulberry	3,3	3	3	
25	Ulmus pumila	Siberian elm	3	3	3	
26	Ulmus pumila	Siberian elm	3	3	3	
27	Ulmus pumila	Siberian elm	3	3	3	
28	Prunus serotina	Black cherry	5	3	3	
29	Morus alba	White mulberry	4	3	3	
30	Rhamnus cathartica	Buckthorn	3	3	4	
31	Rhamnus cathartica	Buckthorn	3	3	4	
32	Rhamnus cathartica	Buckthorn	6,3,3	3	4	
33	Rhamnus cathartica	Buckthorn	4	3	4	
34	Ulmus pumila	Siberian elm	6	3	3	
35	Ulmus pumila	Siberian elm	7	3	3	
36	Rhamnus cathartica	Buckthorn	3	3	3	
37	Ulmus pumila	Siberian elm	3,3	3	4	
38	Rhamnus cathartica	Buckthorn	3,3,3,4	3	4	
39	Morus alba	White mulberry	3	3	4	
40	Ulmus pumila	Siberian elm	11	3	3	
41	Rhamnus cathartica	Buckthorn	4,3	3	4	
42	Ailanthus altissima	Tree of heaven	4	3	3	
43	Rhamnus cathartica	Buckthorn	4	3	3	
44	Morus alba	White mulberry	3	3	3	
45	Rhamnus cathartica	Buckthorn	5,3,3	3	4	
46	Ulmus pumila	Siberian elm	6,7	3	3	
47	Rhamnus cathartica	Buckthorn	5	3	4	
48	Gleditsia triacanthos	Honeylocust	7,6,6,4	3	3	
49	Rhamnus cathartica	Buckthorn	4,4	3	4	
50	Rhamnus cathartica	Buckthorn	4,4	3	4	
51	Acer negundo	Box elder	7	3	4	
52	Acer negundo	Box elder	7	3	4	
53	Rhamnus cathartica	Buckthorn	7,4	3	4	
54	Rhamnus cathartica	Buckthorn	3	3	4	
55	Acer negundo	Box elder	5,6	3	4	
56	Acer negundo	Box elder	6,6	3	4	
57	Rhamnus cathartica	Buckthorn	3,3,3,3	3	4	
58	Morus alba	White mulberry	5	3	4	
59	Rhamnus cathartica	Buckthorn	3,3	3	4	
60	Malus pumila	Crabapple	3	3	3	
61	Juglans nigra	Black walnut	3	3	3	
62	Acer negundo	Box elder	3,3	3	4	
63	Rhamnus cathartica	Buckthorn	3,3,3	3	4	
64	Ulmus pumila	Siberian elm	3,3	3	4	
65	Juglans nigra	Black walnut	4	3	3	
66	Rhamnus cathartica	Buckthorn	3	3	3	
67	Ulmus pumila	Siberian elm	3,3	3	3	
68	Ulmus americana	American elm	3	3	3	
69	Malus pumila	Crabapple	3,3	3	3	
70	Rhamnus cathartica	Buckthorn	3,3	3	4	
71	Juniperus virginiana	Red cedar	4	3	3	
72	Rhamnus cathartica	Buckthorn	3,3	3	4	
73	Rhamnus cathartica	Buckthorn	3,3	3	4	
74	Ulmus pumila	Siberian elm	3	3	3	
75	Juglans nigra	Black walnut	4	3	3	
76	Acer negundo	Box elder	3	3	3	
77	Fraxinus pennsylvanica	Green ash	4	3	3	
78	Rhamnus cathartica	Buckthorn	3,3	3	4	
79	Malus pumila	Crabapple	3	3	3	
80	Morus alba	White mulberry	3	3	3	
81	Malus pumila	Crabapple	4	3	3	
82	Juglans nigra	Black walnut	3	3	3	
83	Morus alba	White mulberry	3	3	3	
84	Gleditsia triacanthos	Honeylocust	6	2	2	
85	Ulmus pumila	Siberian elm	3	3	3	
86	Morus alba	White mulberry	4	3	3	
87	Acer platanoides	Norway maple	4,3	3	3	
88	Acer platanoides	Norway maple	4	3	3	
89	Ulmus pumila	Siberian elm	3	3	3	
90	Acer platanoides	Norway maple	21	2	2	
91	Acer platanoides	Norway maple	24	2	2	
92	Acer platanoides	Norway maple	22	2	2	
93	Morus alba	White mulberry	3	3	3	
94	Morus alba	White mulberry	3	3	3	
95	Morus alba	White mulberry	4	3	3	
96	Ulmus pumila	Siberian elm	20	5	5	Deadwood
97	Populus deltoides	Cottonwood	33	3	3	
98	Juglans nigra	Black walnut	3	3	3	
99	Ulmus pumila	Siberian elm	3,3	3	3	
100	Malus pumila	Crabapple	3	3	3	
101	Ulmus pumila	Siberian elm	3,3	3	4	



NOTE: AERIAL PHOTOGRAPH TAKEN IN OCTOBER, 2011

CHRISTOPHER B. BURKE ENGINEERING LTD.
 8575 West Higgins Road, Suite 600
 Rosemont, Illinois 60018
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TREE SURVEY
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

VANTAGE POINT
 ENGINEERING

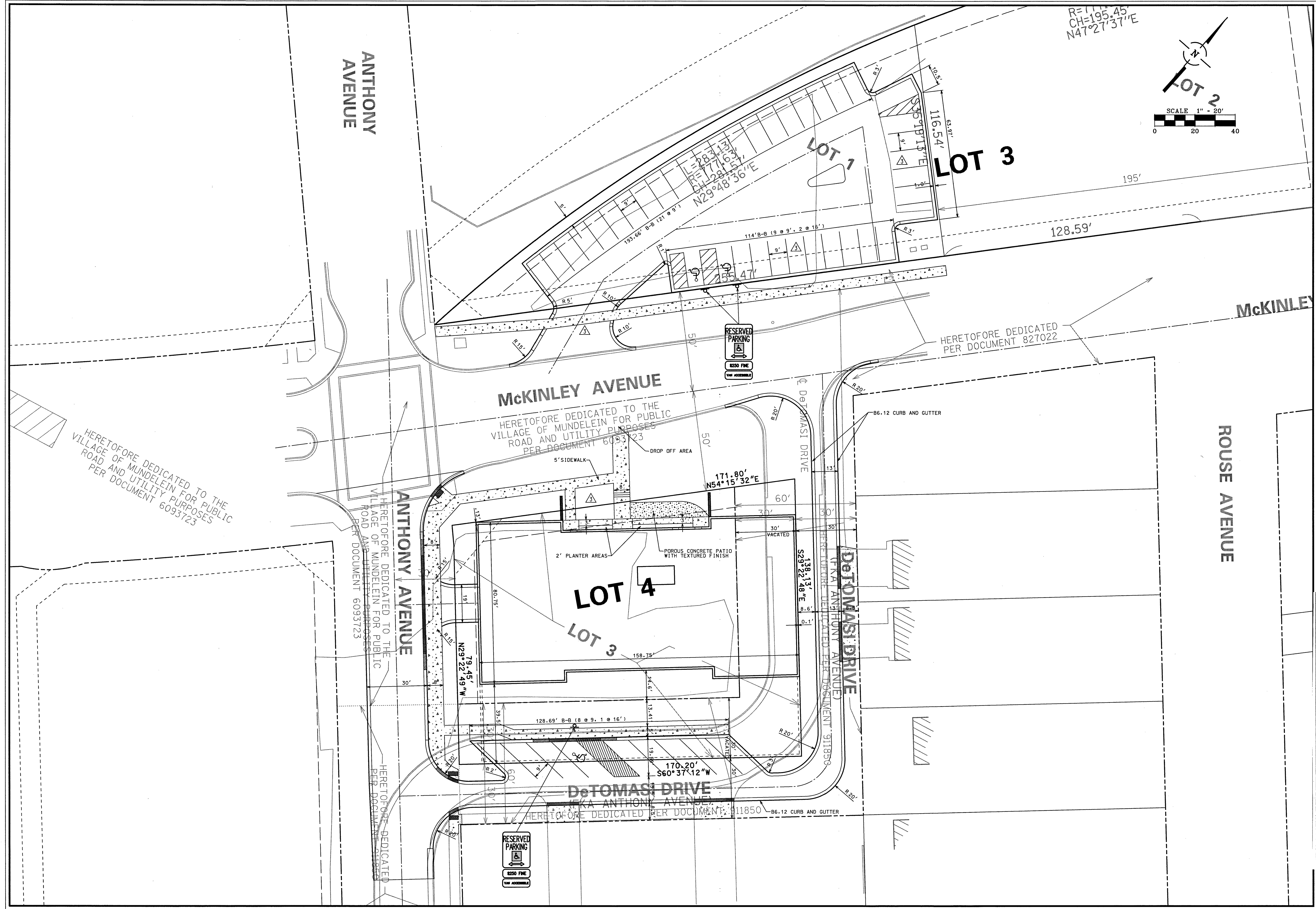
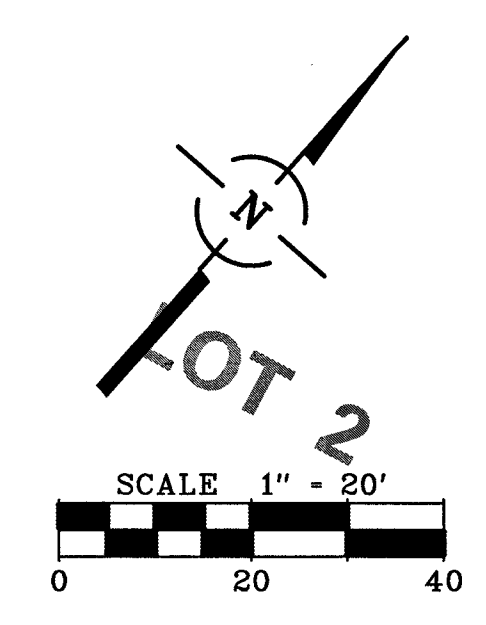
1831 NORTH CREEK DRIVE
 SUITE F
 TRINITY PARK, IL 60477

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NO.	DATE	PER VILLAGE	COMMENTS	NO.	REMARKS
1	9/17/13				

SHEET
E2
 4 OF 20

R=111.45'
 CH=195.45'
 N47°27'37"E



NO.	DATE	REMARKS
3	03/03/14	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

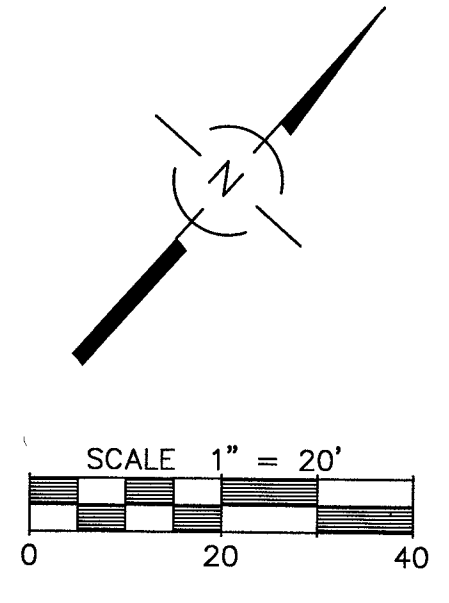
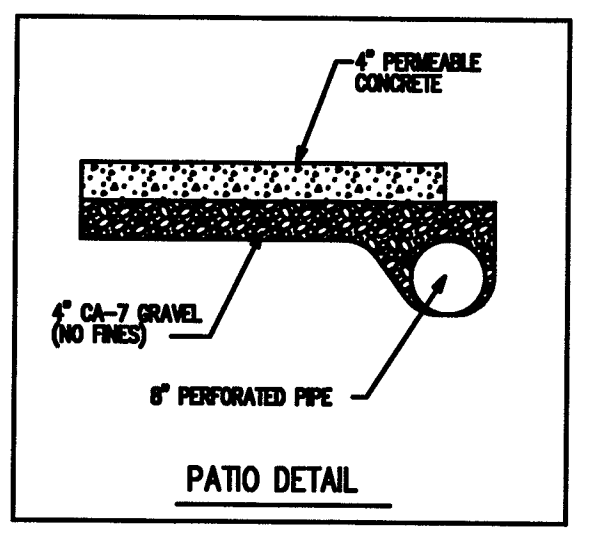
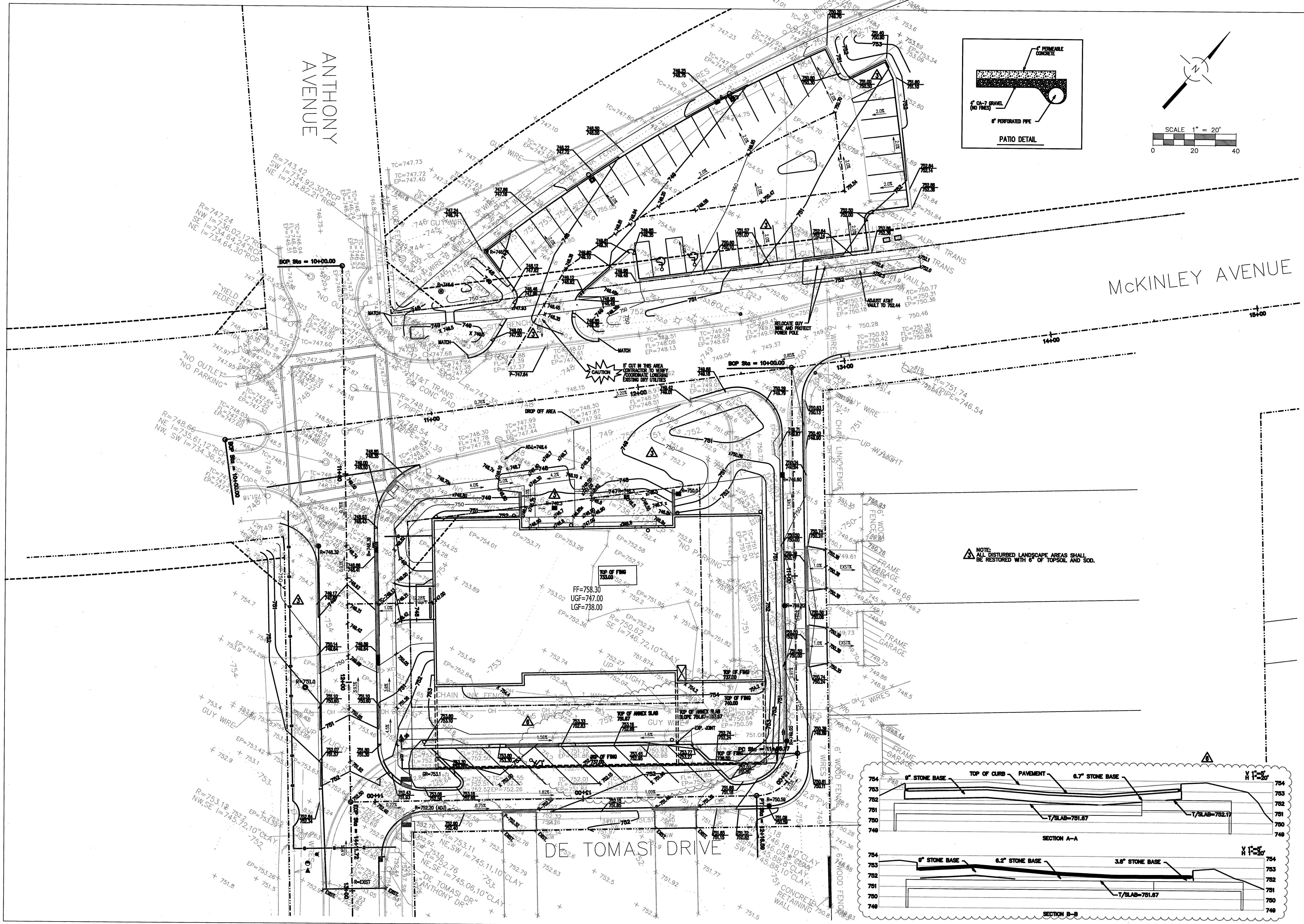
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3	03/03/14	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

GEOMETRIC PLAN
 CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

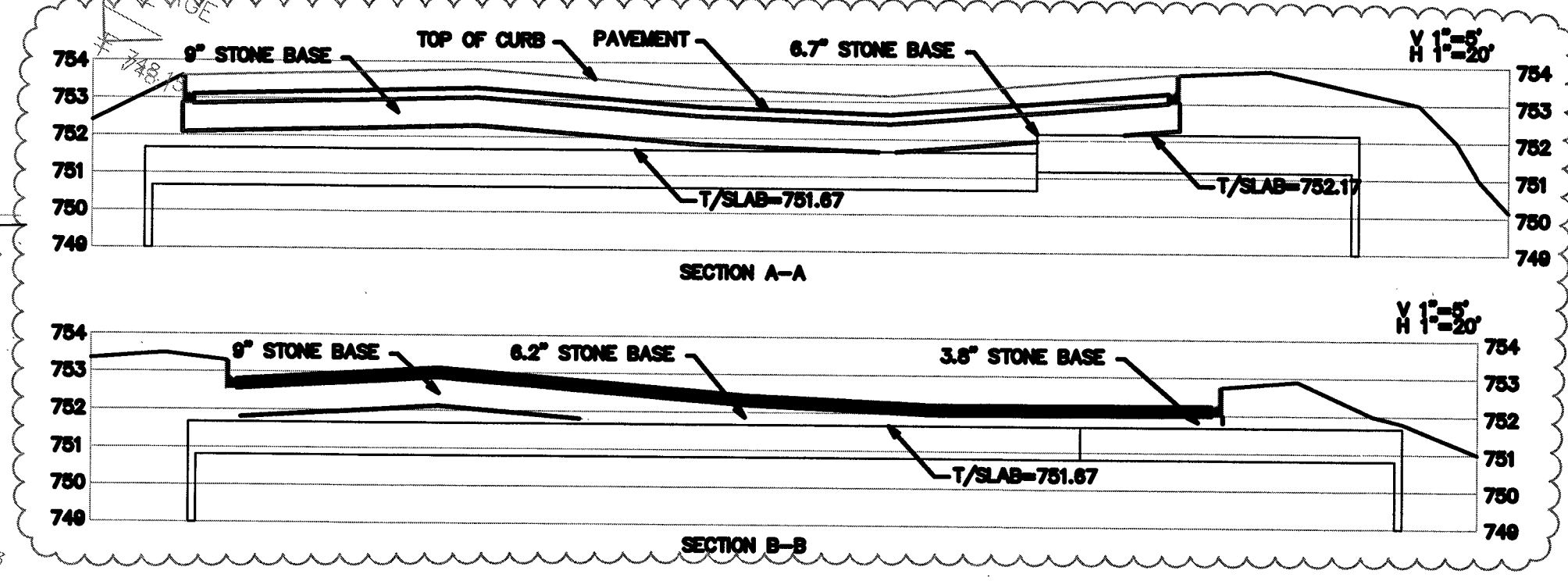
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1708 W. WISCONSIN DRIVE
 SUITE 100
 TILNEY PARK, IL 60477

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NOTE: ALL DISTURBED LANDSCAPE AREAS SHALL BE RESTORED WITH 6" OF TOPSOIL AND SOO.



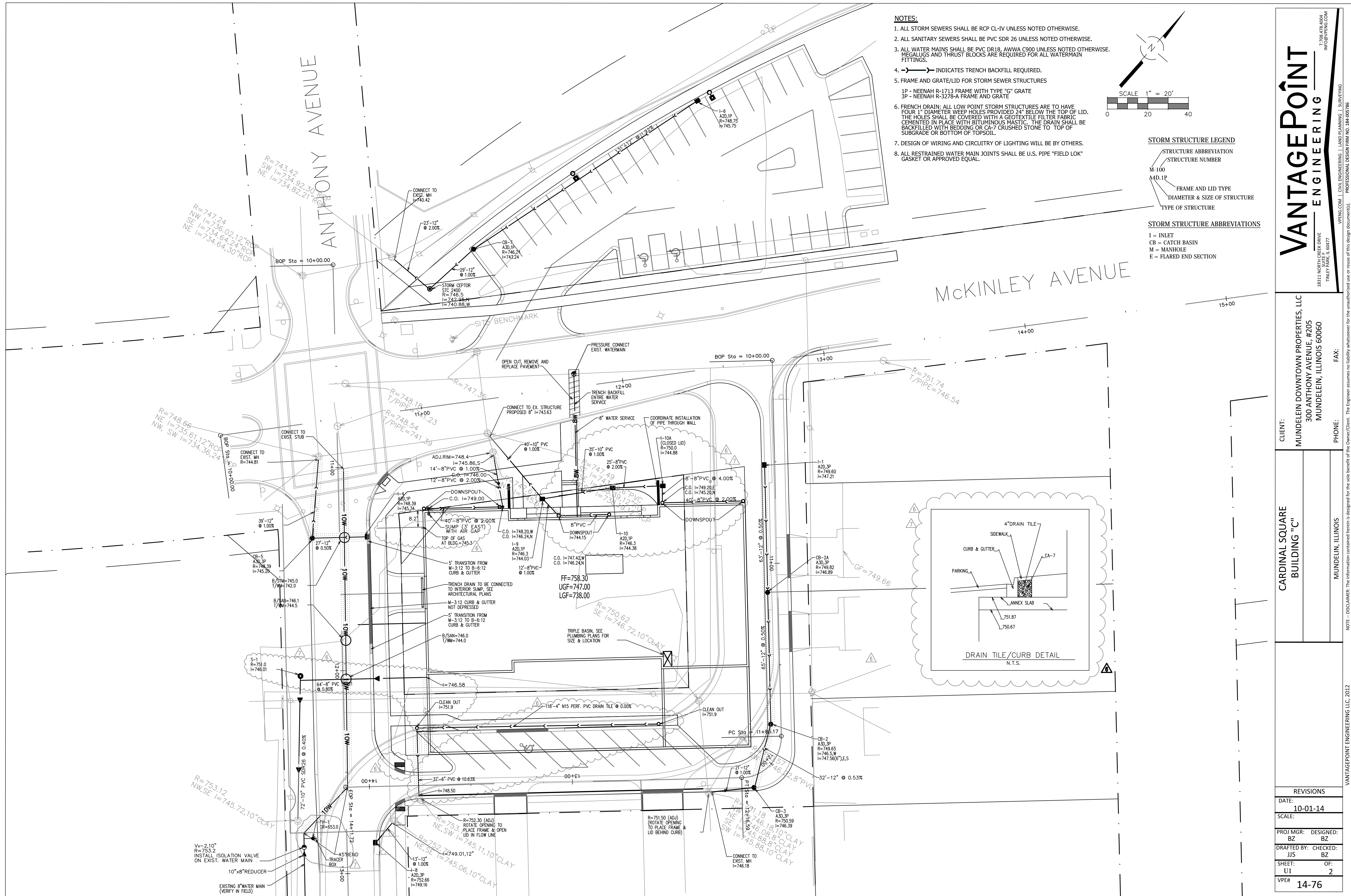
VANTAGEPOINT
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18311 NORTH WISCONSIN DRIVE
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 TULSA, OKLAHOMA 74116
 T: 918.478.4004
 INC@VPENG.COM

CLIENT: MUNDELEIN DOWNTOWN PROPERTIES, LLC
 300 ANTHONY AVENUE, #205
 MUNDELEIN, ILLINOIS 60060
 PHONE: FAX:

CARDINAL SQUARE BUILDING "C"
 MUNDELEIN, ILLINOIS
 VANTAGEPOINT ENGINEERING LLC, 2012

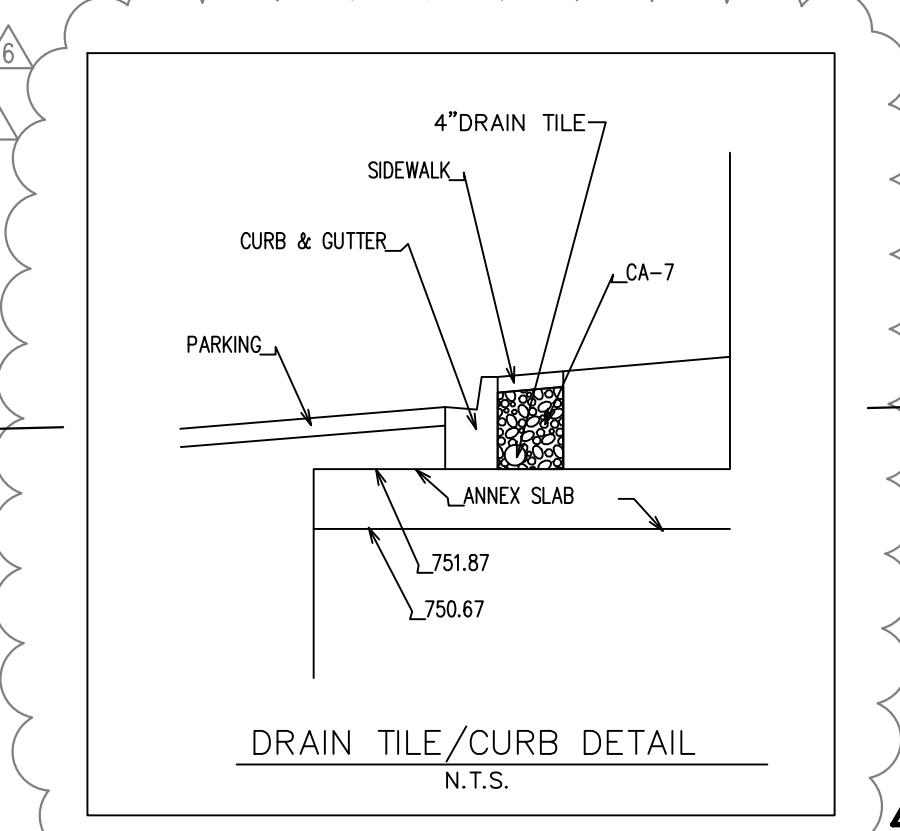
REVISIONS	
DATE:	10-01-14
SCALE:	
PROJ MGR:	BZ
DESIGNED:	BZ
DRAFTED BY:	JJS
CHECKED:	BZ
SHEET:	02
VPEN:	14-76

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- NOTES:**
1. ALL STORM SEWERS SHALL BE RCP CL-IV UNLESS NOTED OTHERWISE.
 2. ALL SANITARY SEWERS SHALL BE PVC SDR 26 UNLESS NOTED OTHERWISE.
 3. ALL WATER MAINS SHALL BE PVC DR18, AWWA C900 UNLESS NOTED OTHERWISE. MEGALUGS AND THRUST BLOCKS ARE REQUIRED FOR ALL WATERMAIN FITTINGS.
 4. → → → INDICATES TRENCH BACKFILL REQUIRED.
 5. FRAME AND GRATE/LID FOR STORM SEWER STRUCTURES
 1P - NEENAH R-1713 FRAME WITH TYPE "G" GRATE
 3P - NEENAH R-3278-A FRAME AND GRATE
 6. FRENCH DRAIN: ALL LOW POINT STORM STRUCTURES ARE TO HAVE FOUR 1" DIAMETER WEEP HOLES PROVIDED 24" BELOW THE TOP OF LID. THE HOLES SHALL BE COVERED WITH A GEOTEXTILE FILTER FABRIC CEMENTED IN PLACE WITH BITUMINOUS MASTIC. THE DRAIN SHALL BE BACKFILLED WITH BEDDING OR CA-7 CRUSHED STONE TO TOP OF SUBGRADE OR BOTTOM OF TOPSOIL.
 7. DESIGN OF WIRING AND CIRCUITRY OF LIGHTING WILL BE BY OTHERS.
 8. ALL RESTRAINED WATER MAIN JOINTS SHALL BE U.S. PIPE "FIELD LOK" GASKET OR APPROVED EQUAL.

- STORM STRUCTURE LEGEND**
- STRUCTURE ABBREVIATION
 - STRUCTURE NUMBER
 - M-100
 - A4D.1P
 - FRAME AND LID TYPE
 - DIAMETER & SIZE OF STRUCTURE
 - TYPE OF STRUCTURE
- STORM STRUCTURE ABBREVIATIONS**
- I = INLET
 - CB = CATCH BASIN
 - M = MANHOLE
 - E = FLARED END SECTION



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CLIENT:
 MUNDELEIN DOWNTOWN PROPERTIES, LLC
 300 ANTHONY AVENUE, #205
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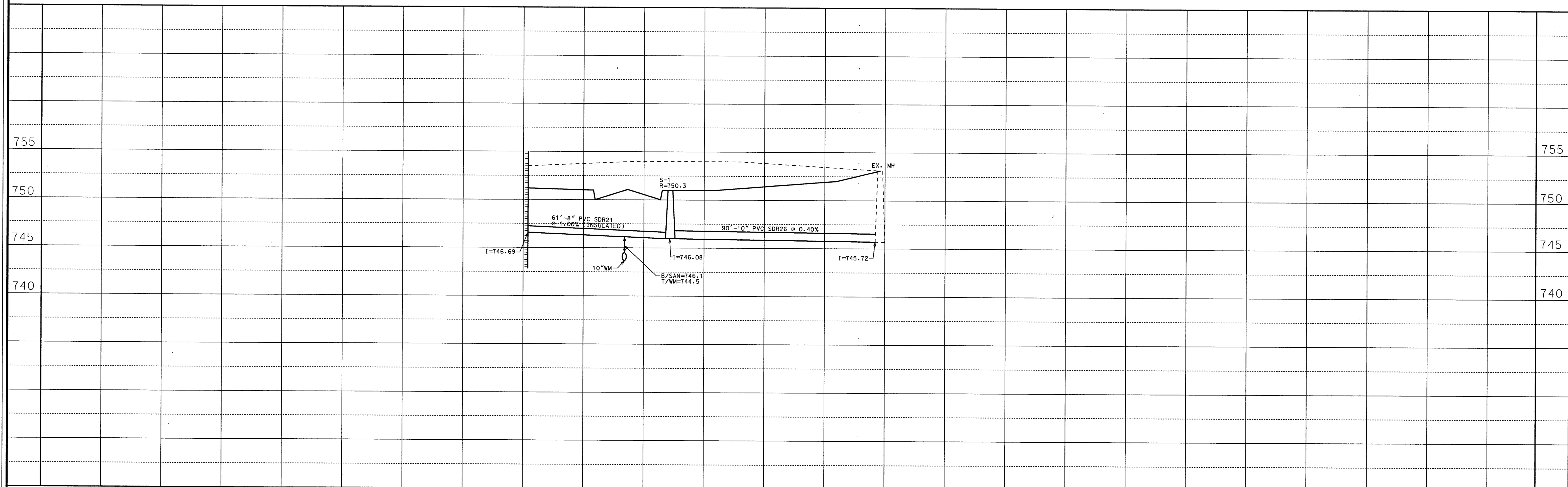
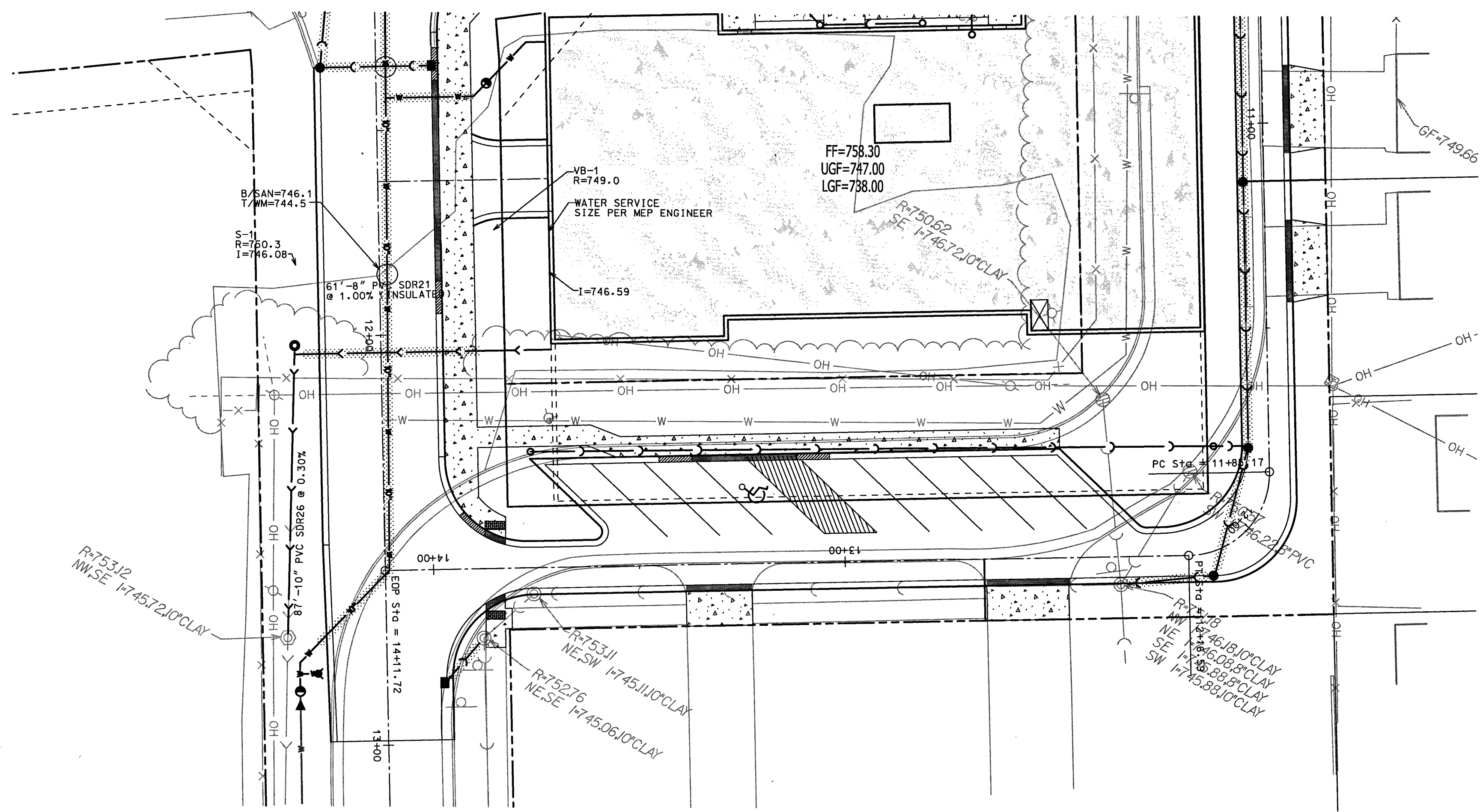
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VANTAGEPOINT ENGINEERING, LLC, 2012

REVISIONS	
DATE:	10-01-14
SCALE:	
PROJ MGR:	DESIGNED: BZ
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DRAFTED BY:	CHECKED: JJS
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VPE#	14-76



NO.	DATE	REMARKS

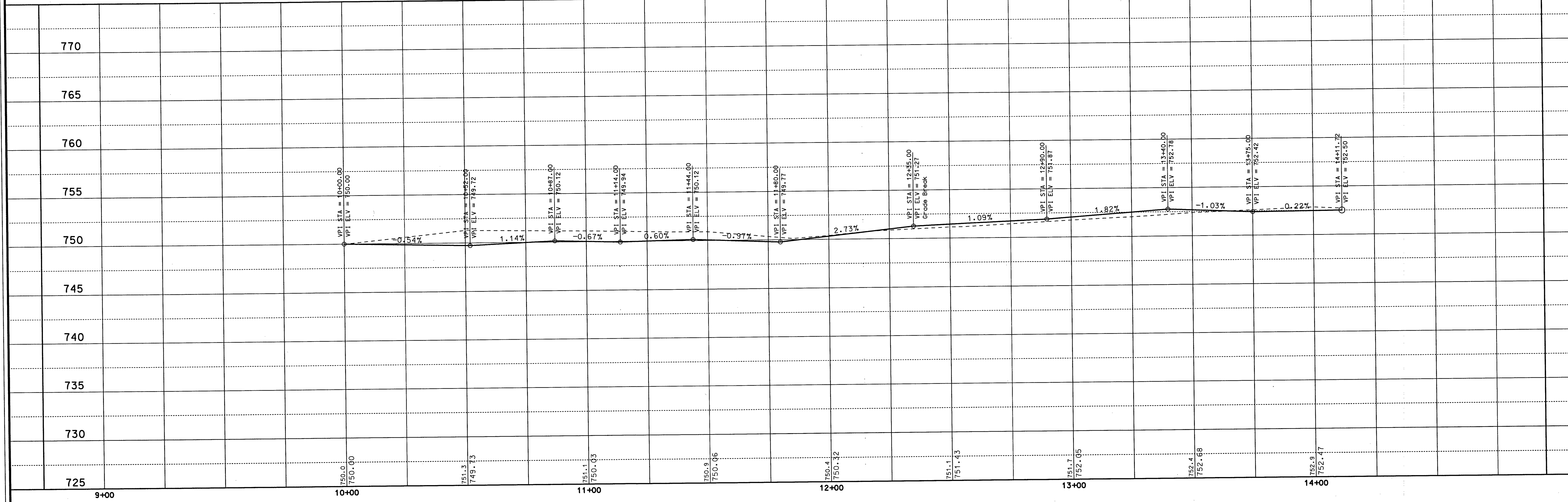
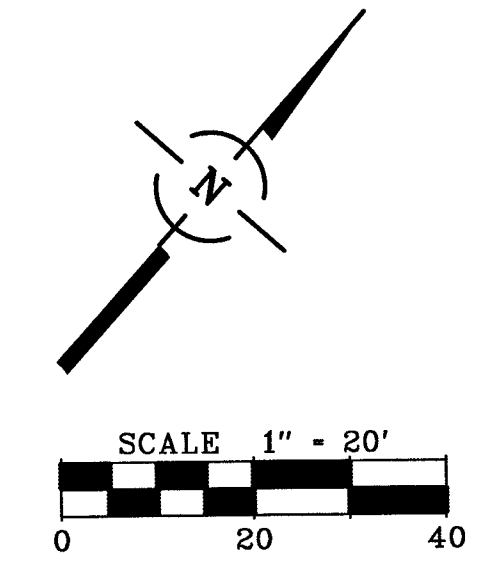
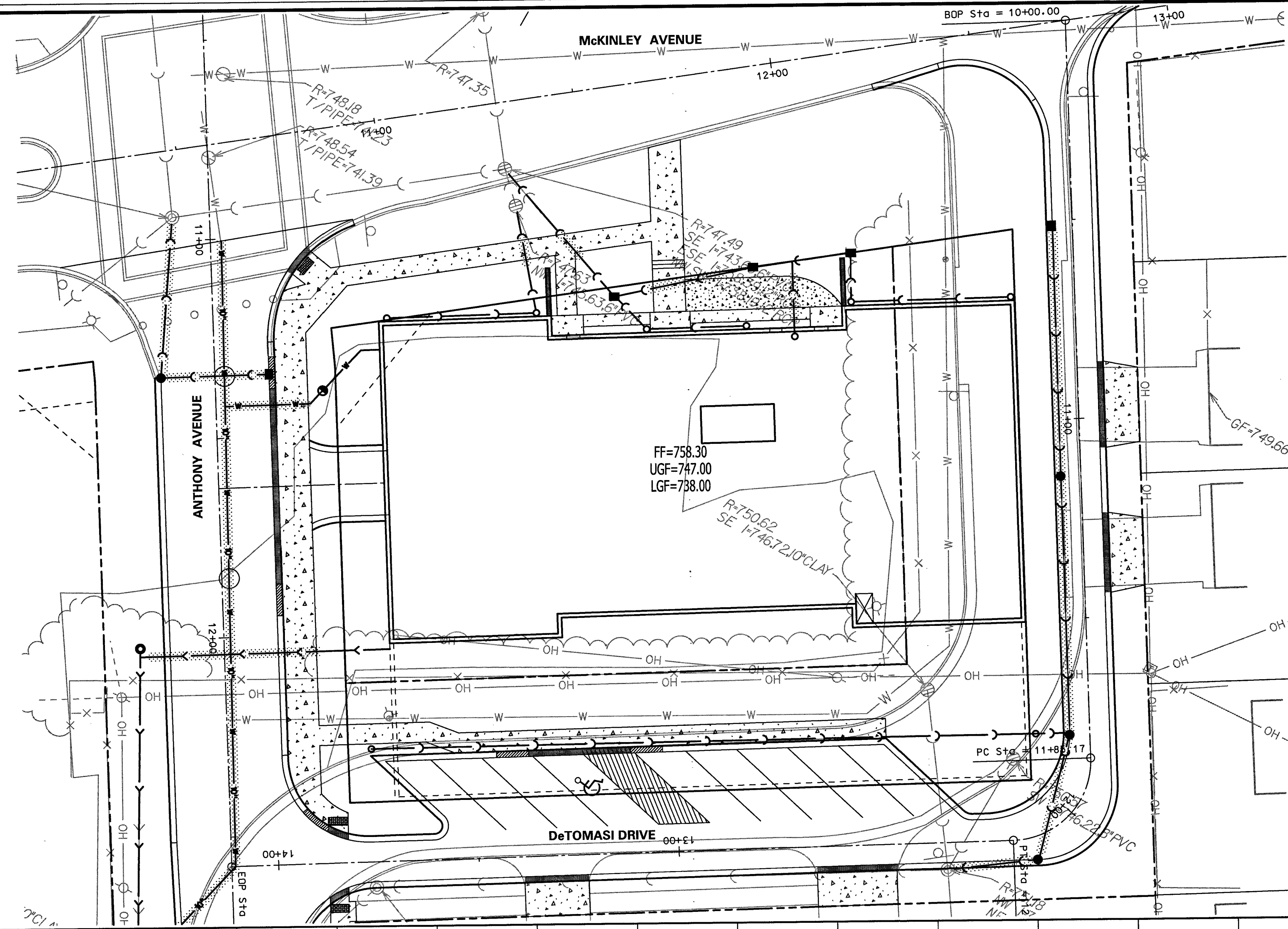
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1	9/17/13		

SANITARY PLAN AND PROFILE
CARDINAL SQUARE
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PLAN AND PROFILE - DeTOMASI DRIVE

CARDINAL SQUARE

MUNDELEIN, ILLINOIS

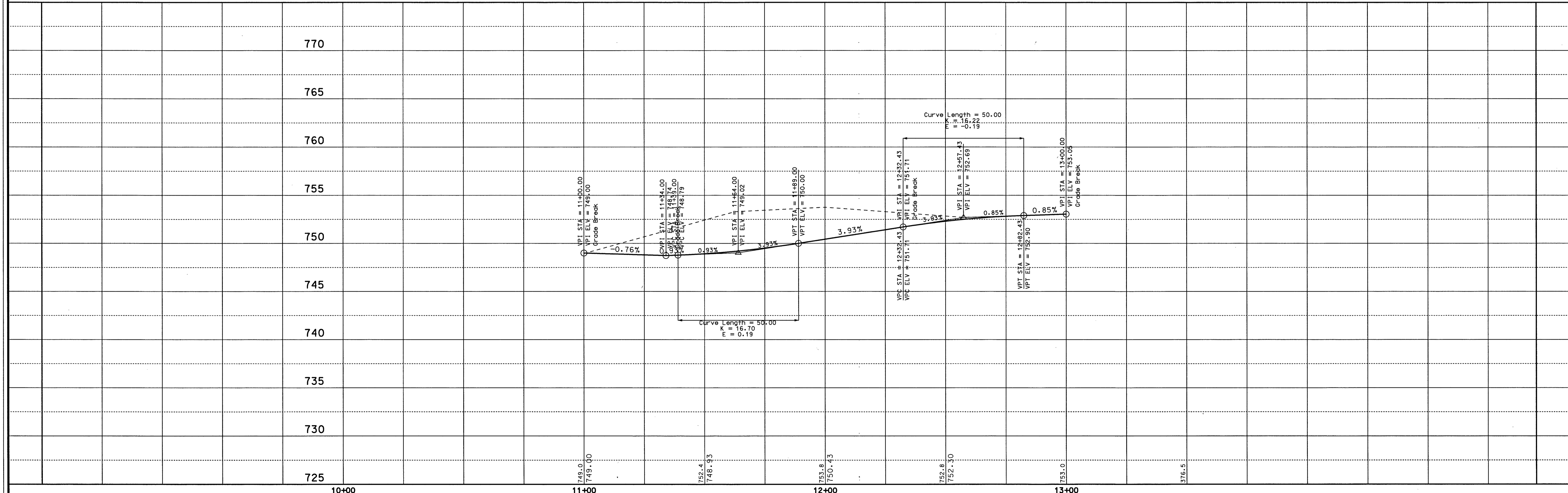
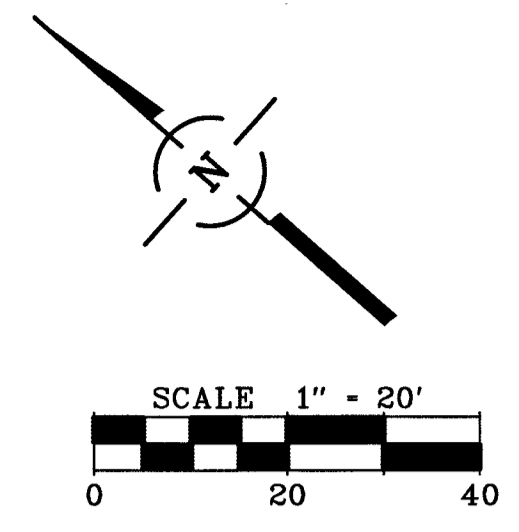
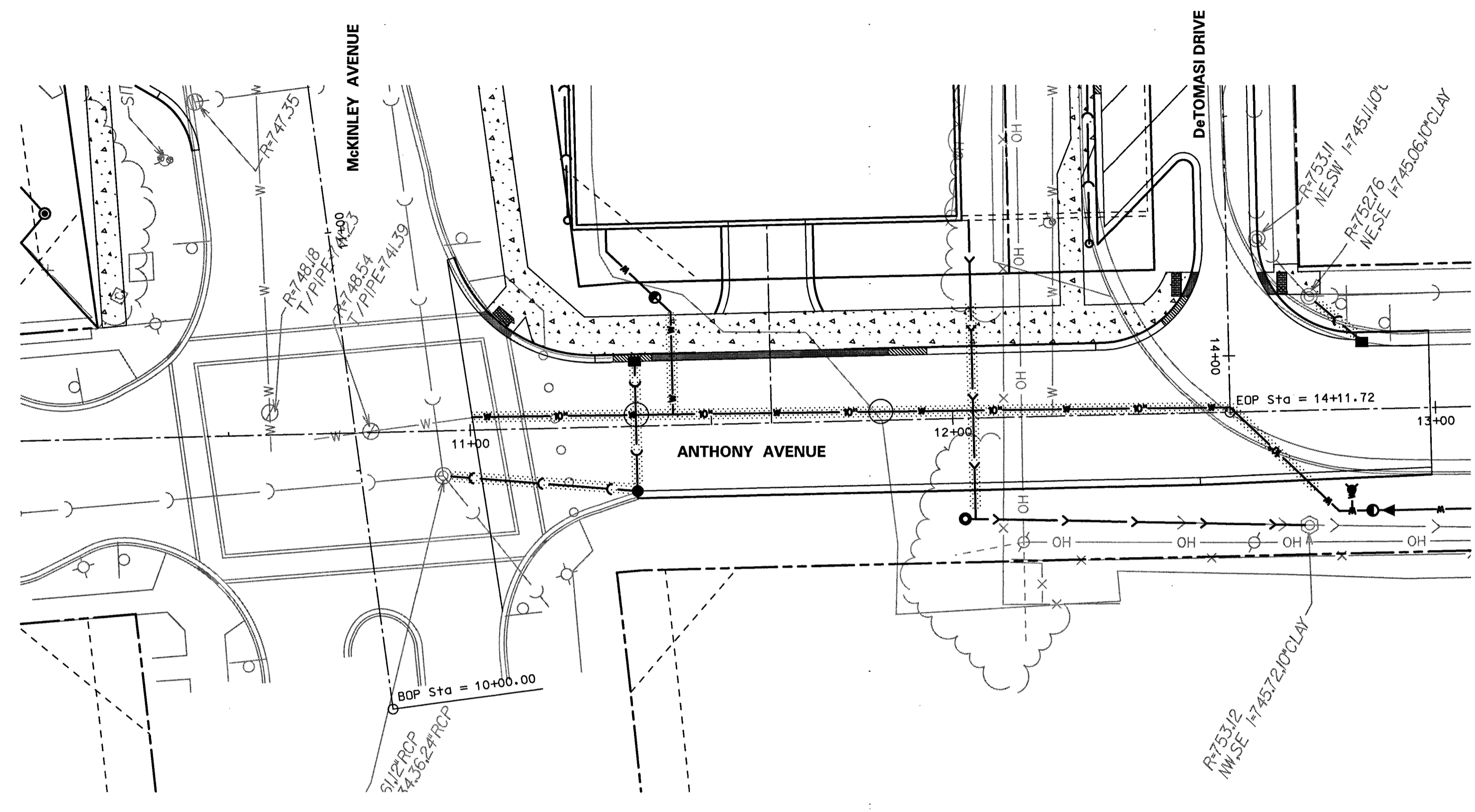
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NO.	DATE	REMARKS
3	03/03/14	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

SHEET
PP2
9 OF 20



NO.	DATE	REMARKS

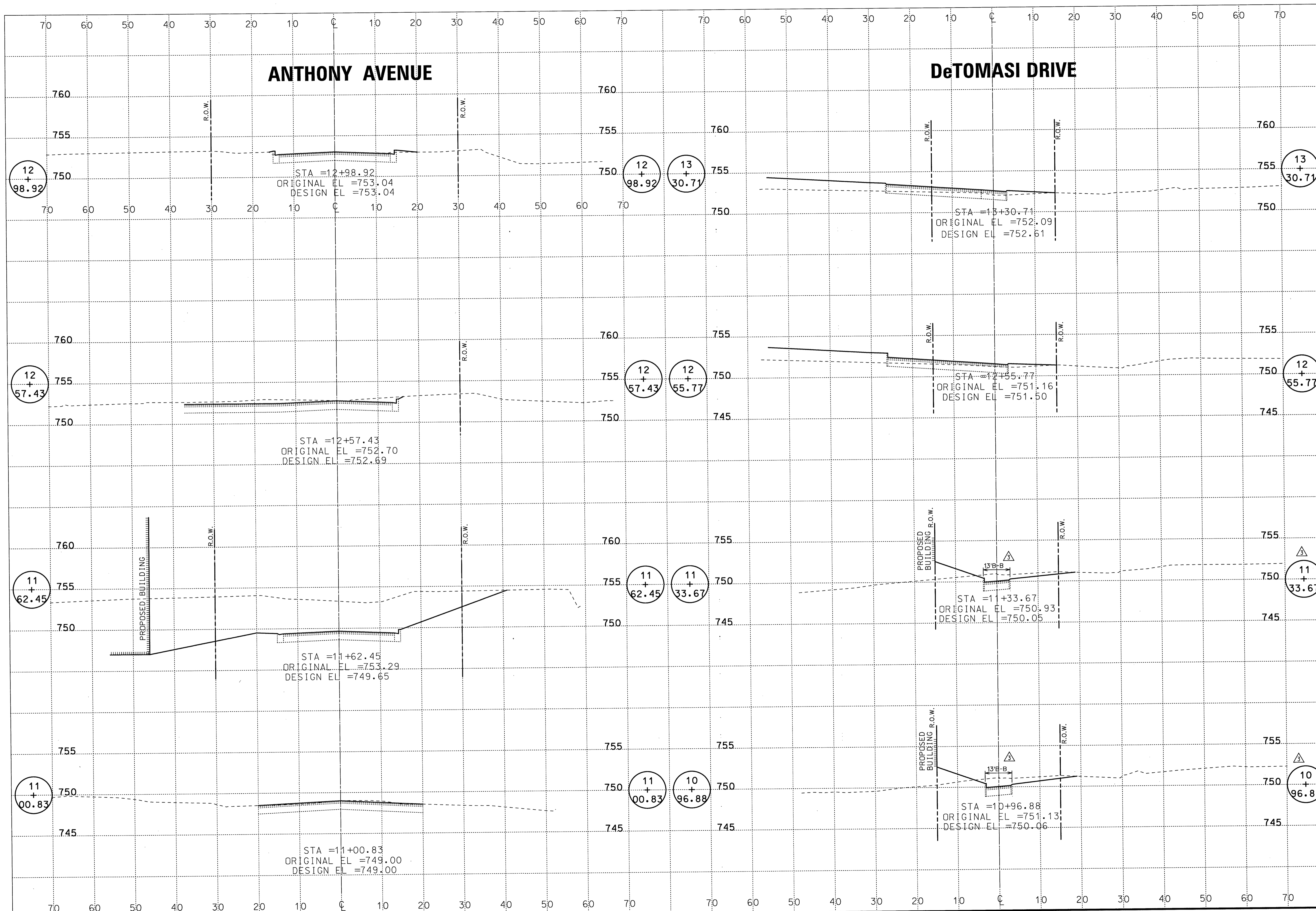
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1	9/17/13		

PLAN AND PROFILE - ANTHONY AVENUE
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

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NO.	DATE	REMARKS

NO.	DATE	REMARKS
3	03/03/14	PER VILLAGE COMMENTS, ADD R.O.W.
2	12/10/13	PER VILLAGE COMMENTS
1	09/17/13	PER VILLAGE COMMENTS

CROSS SECTIONS
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

VANTAGE POINT
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1811 NORTH CREEK DRIVE
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This Soil Erosion & Sediment Control (SESC) Plan has been prepared to fulfill one of the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit No. ILR10...

- 1. SITE DESCRIPTION
A. The following is a description of the nature of the construction activity: construction of apartment building, parking lot and access road.
B. The following is a description of the intended sequence of construction activities which will disturb soils for major portions of the construction site:

- Describe proposed construction sequence, sample follows:
1) Install perimeter sediment control measure
2) Selective vegetation removal for silt fence installation
3) Silt fence installation
4) Construction fencing around areas not to be disturbed
5) Stabilized construction entrance
6) Clear and grub (as necessary)
7) Construct sediment trapping devices (sediment traps, sediment basins, etc.)
8) Construct detention facilities and outlet control structure with restrictor & temporary perforated pipe
9) Strip topsoil, stockpile topsoil and grade site
10) Temporarily stabilize topsoil stockpiles (seed and silt fence around top of slope)
11) Install storm sewer restrictor and outlet control structure
12) Permanently stabilize detention basins with seed and erosion control blanket
13) Temporarily stabilize all areas including lots that have received base grade
14) Install roadways
15) Permanently stabilize all outlet areas
16) Install buildings and grade individual lots
17) Permanently stabilize lots
18) Remove all temporary soil erosion and sediment control measures after the site is stabilized with vegetation
C. The site has a total acreage of approximately 1.7 acres. Construction activity will disturb approximately 1.7 acres of the site.
D. 1) An estimated runoff coefficient of the site after construction activities are completed is 0.65.
2) Existing data describing the soil or quality of any discharge from the site is included in:

- E. Refer to Sheets S1-EC3 for a site plan indicating:
1) drainage patterns
2) approximate slopes anticipated before and after major grading activities
3) locations where vehicles enter or exit the site and controls to minimize off-site sediment tracking
4) areas of soil disturbance
5) the location of major structural and nonstructural controls
6) the location of areas where stabilization practices are expected to occur
7) surface waters (including wetlands) and
8) locations where storm water is discharged to a surface water.
F. 1) The name of the receiving water(s) is/are: Savage Drainage Basin.
2) The name of the ultimate receiving water is: Cassidina River.
3) The extent of wetland acreage of the site is: 0 acres.

- G. Potential sources of pollution associated with this construction activity may include:
- sediment from disturbed soils
- portable sanitary stations
- fuel tanks
- storage areas
- waste containers
- oil or other petroleum products
- adhesives
- pig solvents
- detergents
- fertilizers
- raw materials (e.g., bagged Portland cement)
- construction debris
- landscape waste
- concrete and concrete trucks
- litter
2. CONTROLS
This section of the SESC Plan describes the various controls that should be implemented for each of the major construction activities described in the "Site Description" section. For each measure identified in the SESP, the contractor shall implement the measure that will implement the intent of the permit and subcontractors that are identified should be required to sign a copy of the certification statement from Part IV.F. of the ILR10 Permit in accordance with Part VI.G. - Signatory Requirements, of the ILR10 Permit. All signed certification statements should be maintained in the SWPPP.

- A. Approved State or Local Plans
The management practices, controls and other provisions contained in the SWPPP should be at least as protective as the requirements contained in the Illinois Environmental Protection Agency's (IEPA) and the United States Department of Agriculture's Natural Resources Conservation Service's Illinois Urban Manual, 2002. Requirements specified in sediment and erosion control site plans or site permits or storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of a Notice of Intent (NOI) to be authorized to discharge under the ILR10 permit. Incorporated by reference and are enforceable under the ILR10 permit even if they are not specifically included in a SWPPP required under the ILR10 permit. This provision does not apply to provisions of master plans, comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit that is issued for the construction site.
The soil erosion and sediment control measures for this site should meet the requirements of the following agencies:
- Village of Mundelein
- Lake County
- IEPA
- U.S. Army Corps of Engineers

- B. Control Implementation Schedule
Best Management Practices will be implemented on an as-needed basis to protect water quality. Perimeter controls of the site should be installed prior to soil disturbance (excluding soil disturbance necessary to install the controls), including demolition activities. Perimeter controls, including the silt fence, should be actively maintained until final stabilization of those portions of the site upland of the perimeter control. Stabilized construction entrances and sediment traps should be installed as described in the intended sequence of construction activities. The contractor is responsible for the adequate protection (including sediment control) of existing sewers and sewer structures during construction operations. As necessary, the appropriate sediment control measure should be installed prior to land disturbing activities.
Stabilization measures should be initiated where construction activities have temporarily or permanently ceased, in accordance with Local and State requirements, as described below. Once construction activity in an area has permanently ceased, that area should be permanently stabilized. Temporary perimeter controls should be removed after final stabilization of those portions of the site upland of the perimeter control.

- C. Erosion and Sediment Controls
The appropriate soil erosion and sediment controls should be implemented on site and should be modified to reflect the current phase of construction. All temporary sediment and erosion control measures should be repaired or replaced as soon as practicable to maintain NPDES compliance. Permittee or an authorized agent is responsible for inspecting all sediment and erosion control measures at a minimum of every 7 calendar days and within 24 hours of the end of 0.5-inch (or greater) rain event, or snowfall equivalent.
Unless otherwise indicated, all vegetative and structural erosion and sediment control practices should be installed to the Standard Practice. The contractor is responsible for the installation of any additional erosion and sediment control measures necessary to minimize erosion and sedimentation as determined by the Engineer or Primary Contact.

- 1) Stabilization Practices - Areas that will not be paved or covered with non-erosive material should be stabilized using procedures in substantial conformance with the Illinois Urban Manual. This SESC Plan includes site-specific soil erosion and sediment control measures. Additional erosion controls should be implemented as necessary, as determined by the Engineer or Primary Contact.
The following temporary and permanent stabilization practices, at a minimum, are proposed:
- permanent seeding
- temporary seeding
- erosion control blanket
- other measures
Site-specific scheduling of the implementation of these practices is included in the Soil Protection Chart.
A record of the dates when major grading activities occur, when construction activities cease on a portion of the site, and when stabilization measures are initiated should be included in the SWPPP.
Except as provided in paragraphs (a) and (b) below, stabilization measures shall be initiated as soon as practicable on portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity on that portion of the site has temporarily or permanently ceased.
(a) Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.
(b) Where construction activity will resume on a portion of the site within 14 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 14 days) then stabilization measures do not have to be initiated on that portion of site by the 7th day after construction activity temporarily ceased.

- 2) Structural Practices - Provided below is a description of structural practices that should be implemented, to the degree attainable to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices should be placed on upland soils to the degree practicable. The installation of the following devices may be subject to Section 404 of the Clean Water Act:
- stabilized construction entrance
- silt fence
- sediment traps (provide locations and dimensions in plan set)
- other measures

- D. Storm Water Management
Provided below is a description of measures that will be installed during the construction process to control the pollutants in storm water discharges that will occur after the construction operations have been completed. The installation of these devices may be subject to Section 404 of the Clean Water Act.
1) The practices selected for implementation were determined on the basis of technical guidance contained in IEPA's Illinois Urban Manual, Federal, State, and/or Local Requirements. The storm water management measures include:
- storm sewers
- silt fence detention ponds

- 2) Velocity dissipation devices, such as rip-rap aprons at flood and sections or level spreaders, shall be placed at discharge locations and along the length of any natural channel as necessary to provide a non-erosive velocity flow from the structure to a watercourse so that the natural, physical, and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).
E. Waste Management
Solid waste materials including trash, construction debris, excess construction materials, machinery, tools and other items will be collected and disposed of off site by the contractor. The contractor is responsible to acquire the permit required for such disposal. Burning on site will not be permitted. No solid materials, including building materials, shall be discharged to waters of the State, except as authorized by a Section 404 permit. All waste materials should be collected and stored in approved receptacles. No wastes should be placed in any location other than in the approved containers appropriate for the materials being disposed. There should be no liquid waste deposited into dumpsters or other containers which may leak. Receptacles with deficiencies should be replaced as soon as possible and the appropriate clean-up procedure should take place, if necessary. Construction waste material is not to be buried on site. Waste disposal should comply with all Local, State, and Federal regulations.

- On-site hazardous material storage shall be minimized and stored in labeled, separate receptacles from non-hazardous waste. All hazardous waste should be disposed of in the manner specified by Local or State regulation or by the manufacturer.
F. Concrete Waste Management
Concrete waste or washout should not be allowed in the street or allowed to reach a storm water drainage system or watercourse. When practicable, a sign should be posted at each location to identify the washout. To the extent practicable, concrete washout areas should be located a reasonable distance from a storm water drainage inlet or watercourse, and should be located at least 10 feet behind the curb, if the washout area is adjacent to a paved road. A stabilized entrance that meets Illinois Urban Manual standards should be installed at each washout area.
The containment facilities should be of sufficient volume to completely contain all liquid and concrete waste materials including enough capacity for anticipated levels of rainwater. The dried concrete waste material should be picked up and disposed of properly when 75% capacity is reached. Hardened concrete can be properly recycled and used again on site (as approved by the Engineer) or hauled off site to an appropriate landfill.
G. Concrete Cutting
Concrete waste management should be implemented to contain and dispose of saw-cutting slurries. Concrete cutting should be cleaned-up and disposed into the concrete washout facility as described above.

- H. Vehicle Storage and Maintenance
When not in use, construction vehicles should be stored in a designated area(s) outside of the regulatory floodplain, away from any natural or created watercourse, or storm drainage or storm drain. Controls should be installed to minimize the potential of runoff from the storage areas from reaching storm drains or water courses. Vehicle maintenance (including both routine maintenance as well as on-site repairs) should be made within a designated area(s) to prevent the migration of mechanical fluids (oil, antifreeze, etc.) into watercourses, wetlands or storm drains. Drip pans or absorbent pads should be used for all vehicle and equipment maintenance that involve greases, oil, or other vehicle fluids. Construction vehicles should be inspected frequently to identify any leaks; leaks should be repaired immediately and the vehicle should be removed from site. Disposal of all used oil, antifreeze, solvents and other vehicle-related chemicals in accordance with United States Environmental Protection Agency (USEPA) and IEPA regulations and per Material Safety Data Sheet (MSDS) and/or manufacturer instructions. Contractors should immediately report spills to the Primary Contact.

- I. Material Storage and Good Housekeeping
Materials and/or contaminants should be stored in a manner that minimizes the potential to discharge into storm drains or watercourses. An on-site area should be designated for material delivery and storage. All materials kept on site should be stored in their original containers with legible labels, and if possible under a roof or other enclosure. Labels should be replaced if damaged or difficult to read. Bermed, bonded storage areas are an acceptable control measure to prevent contamination of storm water. MSDS should be available for referencing cleanup procedures. Any release of chemicals/contaminants should be immediately cleaned up and disposed of properly. Contractors should immediately report all spills to the Primary Contact, who should notify the appropriate agencies, if needed.
To reduce the risks associated with hazardous materials on site, hazardous products should be kept in original containers until they are no longer needed. The original labels and MSDS should be retained on site until all these hazardous materials and all other materials kept on site should be stored in accordance with manufacturer or MSDS specifications. When disposing of hazardous materials, follow manufacturer or Local and State recommended methods.

- The following good housekeeping practices should be followed on site during the construction project:
- An effort should be made to store only enough product required to do the job.
- All materials stored on site should be stored in a neat, orderly manner in their appropriate containers and adequately protected from the environment.
- Products should be kept in their original containers with the original manufacturer's label.
- Substances should not be mixed with one another unless recommended by the manufacturer.
- Operations should be observed as necessary to ensure proper use and disposal of materials on site.
- Whenever possible, all of a product should be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal should be followed.

- J. Management of Portable Sanitary Stations
To the extent practicable, portable sanitary stations should be located in an area that does not drain to any protected natural areas, waters of the State, or storm water structures and should be anchored to the ground to prevent from tipping over. Portable sanitary stations located on impervious surfaces should be placed on top of a secondary containment device, or be surrounded by a control device (e.g., gravel-bag berm). The contractor should not create or allow unsanitary conditions. Sanitary waste should be disposed of in accordance with applicable State and/or Local regulations.

- K. Spill Prevention and Clean-Up Procedures
Manufacturer's recommended methods for spill clean-up should be available and site personnel should be made aware of the procedures and the location of the information and clean-up supplies. Materials and equipment necessary for spill clean-up should be kept in the material storage area on site. Equipment and materials include brooms, dust pans, rags, gloves, goggles, kitty litter, sand, sawdust and plastic and/or metal trash containers specifically for this purpose.
Discharges of a hazardous substance or oil caused by a spill (e.g., a spill of oil into a separate storm sewer or Waters of the State) are not authorized by the ILR10 permit. If a spill occurs, notify the Primary Contact immediately. The construction site should have the capacity to control, contain, and remove spills. If they occur, spills should be cleaned up immediately (after discovery) in accordance with MSDS and should not be buried on site or washed into storm sewer drainage inlets, drainage-ways, or Waters of the State.
Spills in excess of Federal Reportable Quantities (as established under 40 CFR Parts 110, 117, or 302), should be reported to the National Response Center by calling (800) 424-8802. MSDS often include information on Federal Reportable Quantities for materials that are toxic or hazardous materials should be reported to the appropriate State or Local government agency, as required. When cleaning up a spill, the area should be kept well ventilated and appropriate personal protective equipment should be used to minimize injury from contact with a hazardous substance.

- In addition to the good housekeeping and other management practices discussed in the previous sections of these Notes, the following minimum practices should be followed to reduce the risk of spills:
- On-site vehicles should be monitored for leaks and should receive regular preventative maintenance to reduce the chance of leakage.
- Petroleum products should be stored in tightly sealed and clearly labeled containers.
- Contractors should follow the manufacturer's recommendations for proper use, storage, and disposal of materials. Excess materials should be disposed of according to the manufacturer's instructions or State and Local regulations, and should not be discharged to the storm sewer or waterbody.

- L. De-Watering Operations
During de-watering/pumping operations, only uncontaminated water should be allowed to discharge to protected natural areas, Waters of the State, or to a storm sewer system (in accordance with Local permits). Inlet hoses should be placed in a stabilized silt pit or floated at the surface of the water in the amount of sediment intake. Pumping operations may be discharged to a stabilized area that consists of an energy dissipating device (e.g., stone), sediment filter bag, or both. Adequate erosion control should be used during de-watering operations as necessary. Stabilized conveyance channels should be installed to direct water to the desired location as applicable. Additional control measures may be installed at the outlet area at the discretion of the Primary Contact or Engineer.

- M. Off-Site Vehicle Tracking
The site should have one or more stabilized construction entrances in conformance with the Plan details. Stabilized construction entrances should be installed to help reduce vehicle tracking of sediments. Streets should be swept as needed to reduce excess sediment, dirt, or stone tracked from the site. Maintenance may include top dressing the stabilized entrance with additional stone and removing top layers of stone and sediment as needed. Vehicles hauling erodible material to and from the construction site should be covered with a tarp.
N. Topsoil Stockpile Management
If topsoil is to be stockpiled at the site, select a location so that it will not erode, block drainage, or interfere with work on site. Topsoil stockpiles should not be located in the 100-year floodplain or designated buffer protecting Waters of the State. During construction of the project, soil stockpiles should be stabilized or protected with sediment trapping measures. Perimeter controls, such as silt fence, should be installed immediately. Stabilization of the stockpile should be completed if the stockpile is to remain undisturbed for longer than thirty days.

- O. Dust Control
Dust control should be implemented on site as necessary. Repetitive treatment should be applied as needed to accomplish control when temporary dust control measures are used. A water truck should be present on site (or available) for sprinkling/irrigation to limit the amount of dust leaving the site. Watering should be applied daily (or more frequently) to be effective. Caution should be used not to overwater, as that may cause erosion.
If field observations indicate that additional protection from wind erosion (in addition to, or in place of watering) is necessary, alternative dust suppressant controls should be implemented at the discretion and approval of the Engineer and/or Primary Contact.
Street cleaning should also be used as necessary to control dust. Paved areas that have soil on them from the construction site should be cleaned as needed, utilizing a street sweeper or bucket-type endloader or scraper at the direction of the Engineer and/or Primary Contact.

- 3. MAINTENANCE
Maintenance of the controls incorporated into this project should be performed as needed to assure their continued effectiveness. This includes prompt and effective repair and/or replacement of deficient control measures. The following is a description of procedures that should be used to maintain, in good and effective operating condition, erosion and sediment control measures and other protective measures identified in the SESC Plan and Standard Specifications.
Dust control: When temporary dust control measures are used, repetitive treatment should be applied as needed to accomplish control.
Sediment filter bags: Sediment filter bags should be installed on pump outlet hoses that discharge off site or to sensitive on-site areas, and should be placed in an area that allows for the bag to be removed without producing a sediment discharge. The bags should be inspected frequently and repaired or replaced as needed.

- Silt fence: Silt fences should be inspected regularly for undercutting where the fence meets the ground, overlapping and tears along the length of the fence. Deficiencies should be repaired immediately. Remove accumulated sediments from the fence base when the sediment reaches one-half the fence height. During final stabilization, properly dispose of any sediment that has built up in silt fence. Alternative sediment control measures should be considered for areas where silt fence continuously fails.
Stabilized construction entrances: The stabilized construction entrances should be maintained to prevent tracking of sediment onto public streets. Maintenance includes top dressing with additional stone and removing top layers of stone and sediment. The sediment tracked onto the public right-of-way should be removed immediately.
Temporary sediment traps: Temporary sediment traps should be inspected after each period of significant rainfall. Remove sediment and restore the trap to its original dimensions when the sediment has accumulated to one-half the design depth of the permanent pool. Place the sediment that is removed in a designated disposal area. The structure for damage from erosion or piping. After all sediment-producing areas have been permanently stabilized, remove the structure and all unstable sediment. Grade the area to blend with the adjoining areas and stabilize properly.

- 4. INSPECTIONS
The Permittee (or their authorized representative) will be responsible for conducting site inspections in compliance with the ILR10 NPDES Permit. After each inspection, a report should be prepared by the qualified personnel who conducted the inspection. The inspection report should be maintained on site as part of the SWPPP.
Inspections should be conducted at least once every seven calendar days and within 24 hours of the end of a storm event that is 0.5 inches or greater, or equivalent snowfall.
Each inspection should include the following components:
A. Disturbed areas and areas used for the storage of materials that are exposed to precipitation should be inspected for evidence of, or the potential for, pollutants entering the drainage system. The erosion and sediment control measures identified in the SWPPP should be observed to ensure that they have been installed and are operating correctly. Where discharge points are accessible, they should be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to the receiving waters. Locations where vehicles enter or exit the site should be inspected for off-site sediment tracking. All pumping operations and other potential non-storm water discharge sources should also be inspected.
B. Based on the results of the inspection, the description of potential pollutant sources identified, and the pollution prevention measures described in the SWPPP should be revised, as appropriate, as soon as practicable after the inspection, if any, shall provide for timely implementation of any changes to the SWPPP within 7 calendar days following the inspection.
C. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the SWPPP, and actions taken in accordance with paragraph B. above should be made and retained as part of the SWPPP for at least three years from the date that permit coverage expires or is terminated. The report shall be signed in accordance with Part VI.G. (Signatory Requirements) of the ILR10 NPDES Permit.

- D. The Permittee shall notify the appropriate agency field operations section office by e-mail at: epa-npdes@illinois.gov, telephone or fax within 24 hours of any incidence of non-compliance for any violation of the storm water pollution prevention plan observed during any inspection conducted or for violation of any condition of this permit. The Permittee should complete and submit within 5 days an Incidence of Non-Compliance (INOC) report for any violation of the SWPPP observed during an inspection conducted, including those not required by the SWPPP. Submission should be on forms provided by IEPA and include specific information on the cause of non-compliance, actions which were taken to prevent any further causes of non-compliance, and a statement detailing any environmental impact, which may have resulted from the non-compliance.
E. All reports of non-compliance shall be signed by a responsible authority as defined in Part VI.G. (Signatory Requirements), of the ILR10 NPDES Permit.
F. After the initial contact has been made within the appropriate agency field operations section office, all reports of non-compliance shall be mailed to IEPA at the following address:
Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

- 5. NON-STORM WATER DISCHARGES
Except for flows from fire fighting activities, possible sources of non-storm water that may be combined with storm water discharges associated with the proposed activity, are described below:
- Water used to wash vehicles where detergents are not used;
- Water used to control dust;
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials have been removed) and where detergents are not used;
- Irrigation ditches;
- Uncontaminated ground water and;
- Foundation or roofing drains where flows are not contaminated with process materials such as solvents;
- Landscape irrigation drainage;
- Uncontaminated air conditioning condensate.
Pollution prevention measures should be implemented for non-storm water components of the discharge.

Table with columns for Stabilization Type (Permanent Seeding, Dormant Seeding, Temporary Seeding, Sodding, Mulching) and months (Jan-Dec). Includes a legend for A-F and irrigation notes.

- A. KENTUCKY BLUEGRASS 90 LBS/ACRE MIXED WITH PERENNIAL RYEGRASS 50 LBS/ACRE
B. KENTUCKY BLUEGRASS 135 LBS/ACRE MIXED WITH PERENNIAL RYEGRASS 45 LBS/ACRE + STRAW MULCH 2 TONS/ACRE
C. SPRING OATS 100 LBS/ACRE
D. WHEAT OR CEREAL RYE 150 LBS/ACRE
E. SOD
F. STRAW MULCH 2 TONS/ACRE
* IRRIGATION NEEDED DURING JUNE AND JULY.
** IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD.

SOIL PROTECTION CHART

Table with columns for Stabilization Type (Permanent Seeding, Dormant Seeding, Temporary Seeding, Sodding, Mulching) and months (Jan-Dec). Includes a legend for A-F and irrigation notes.

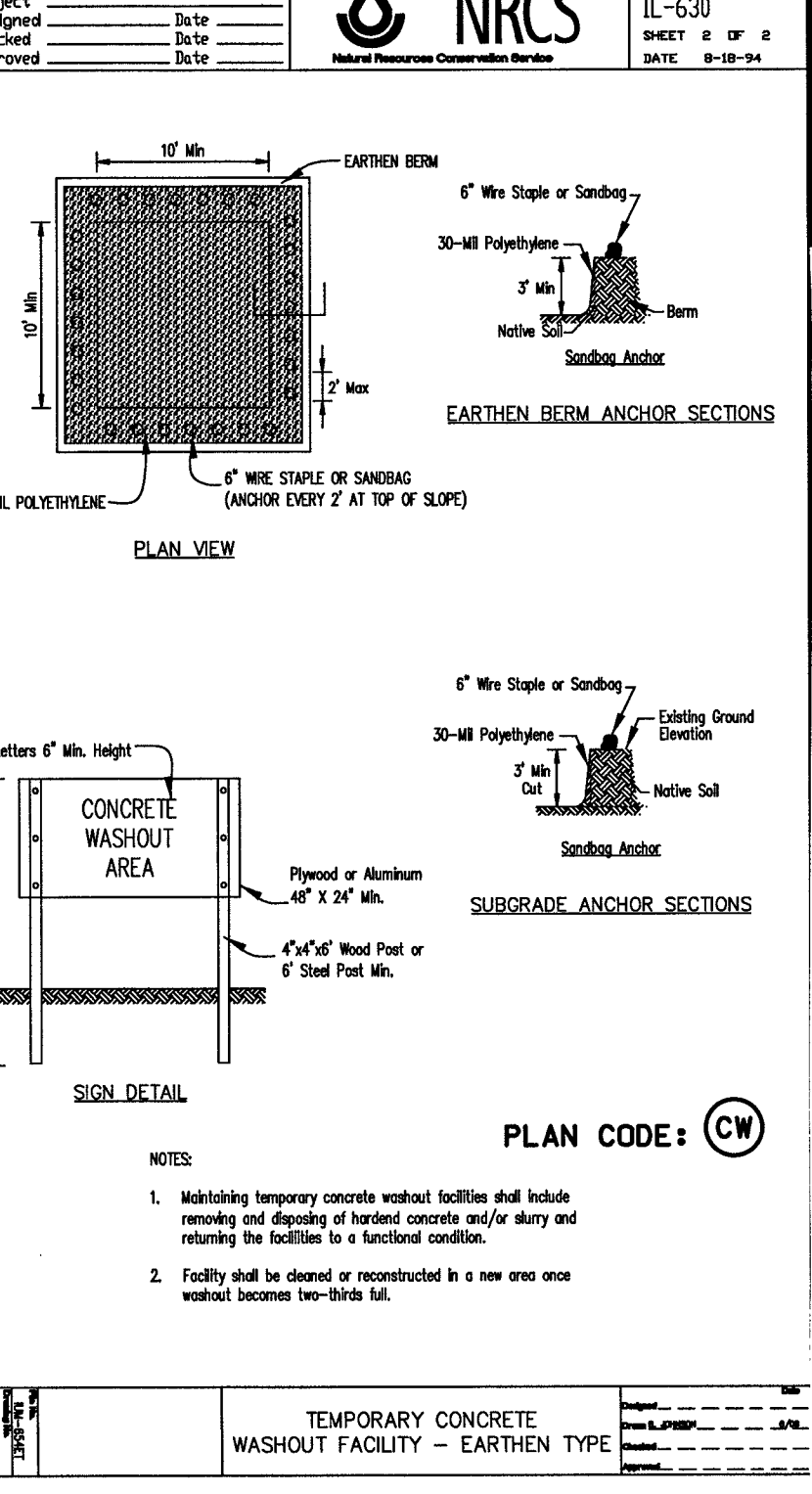
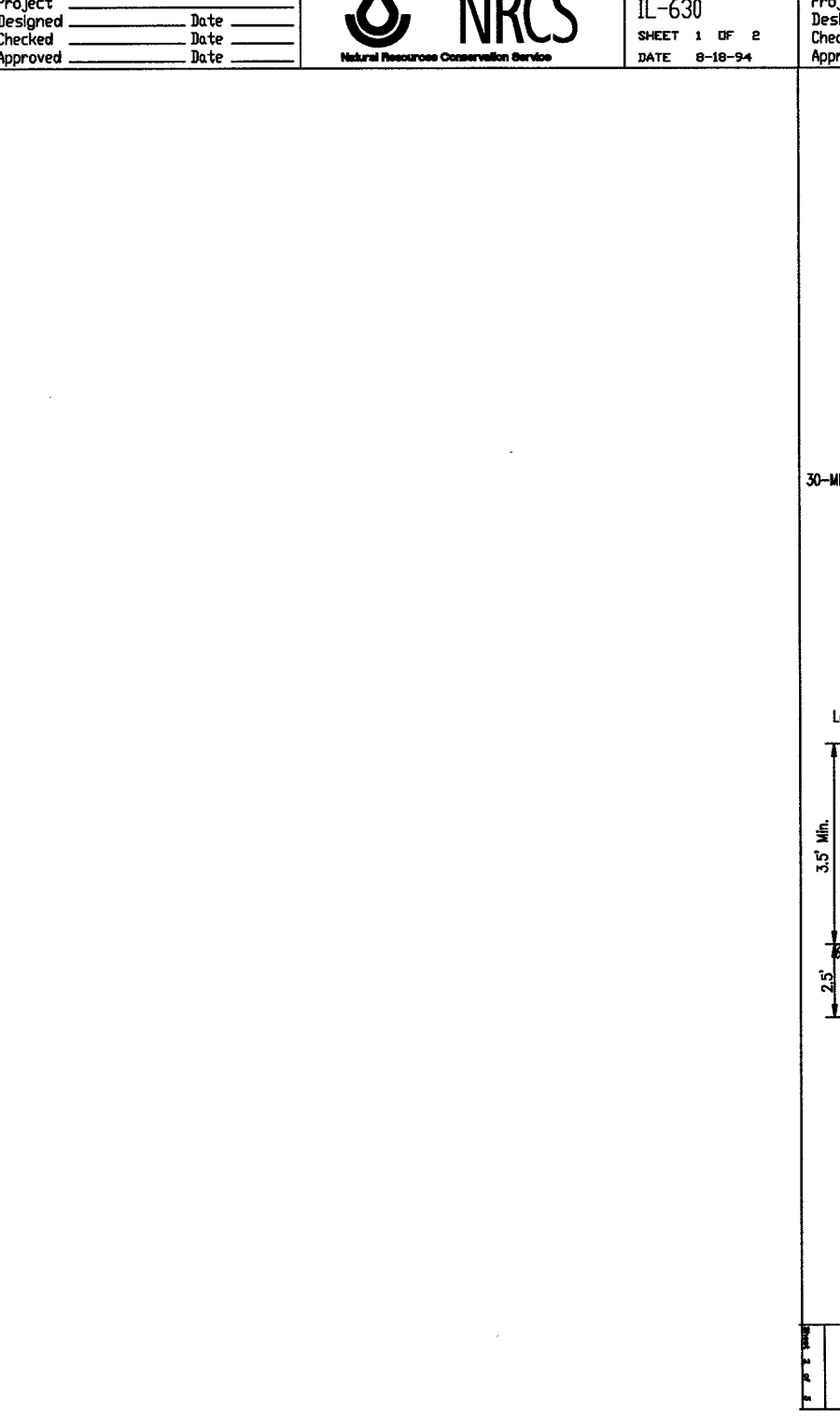
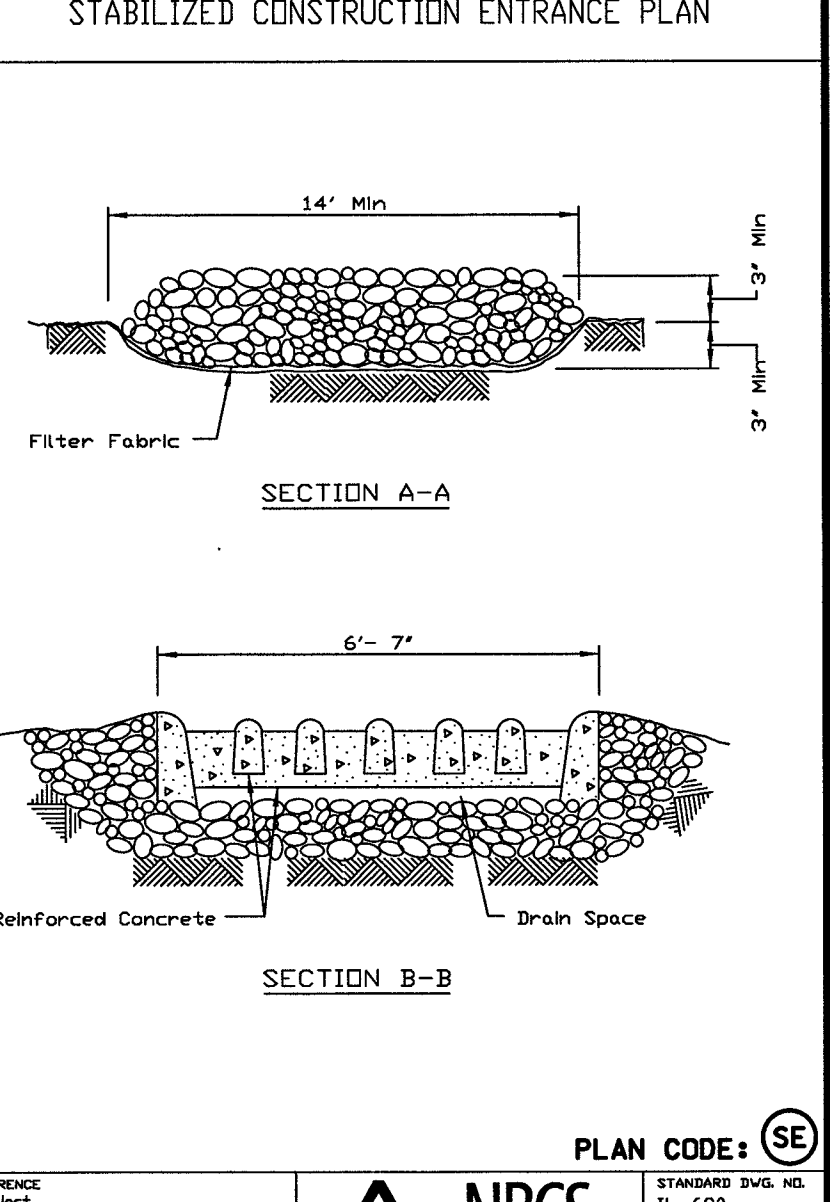
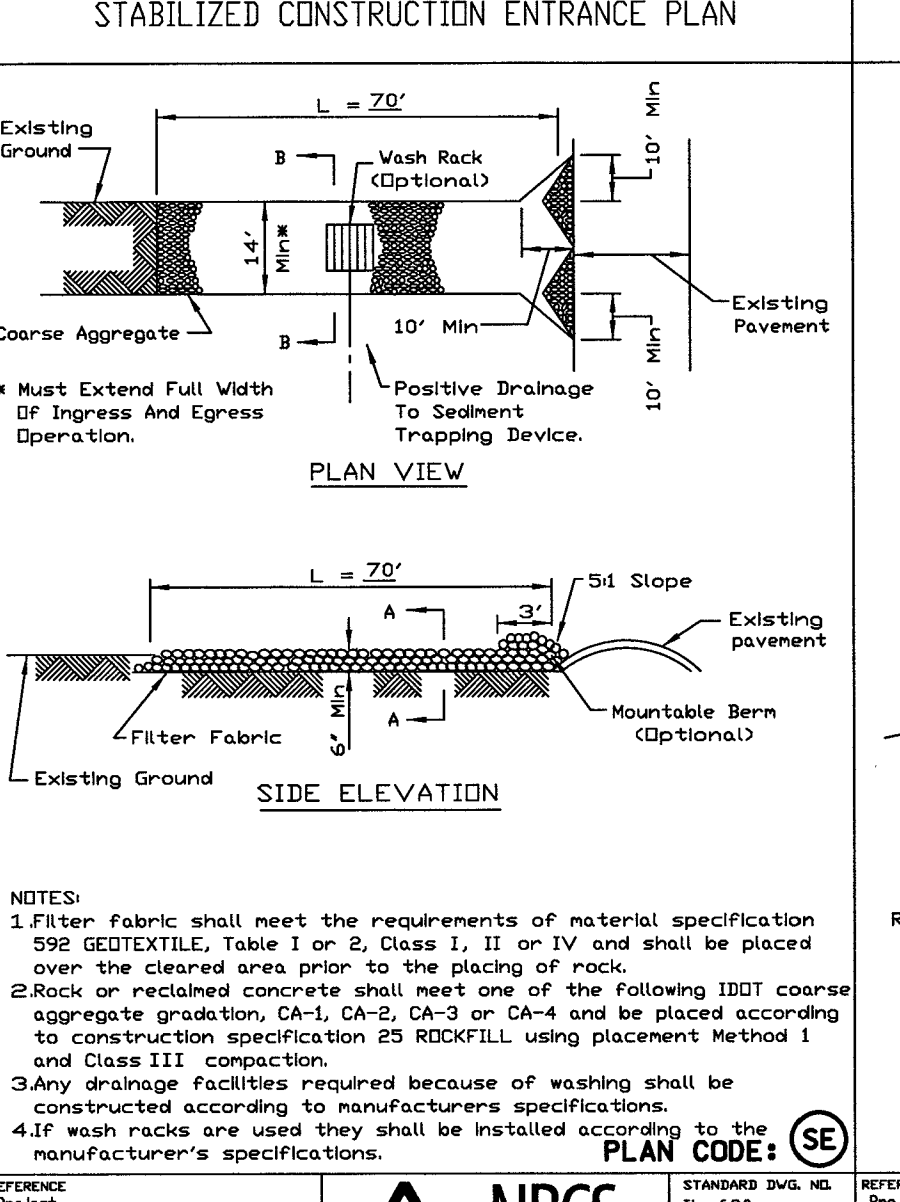
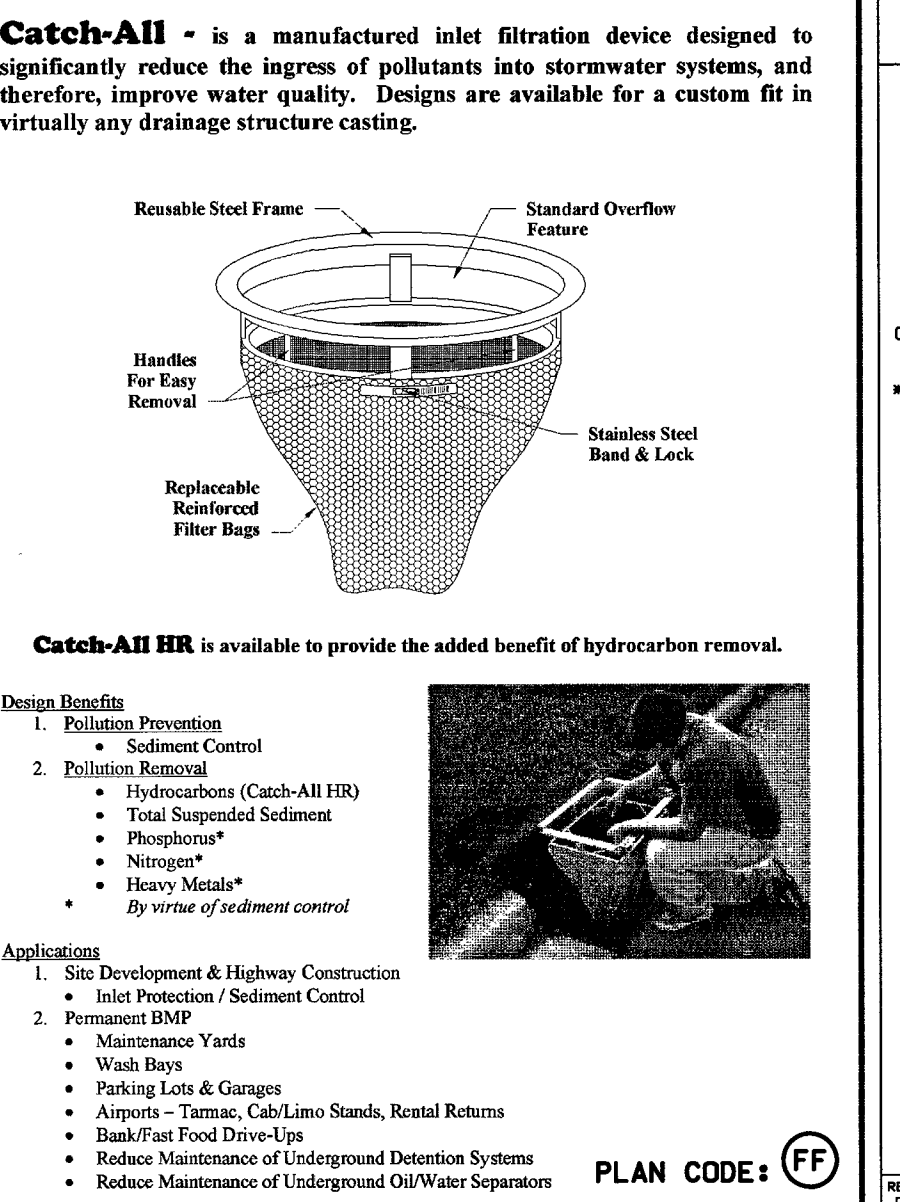
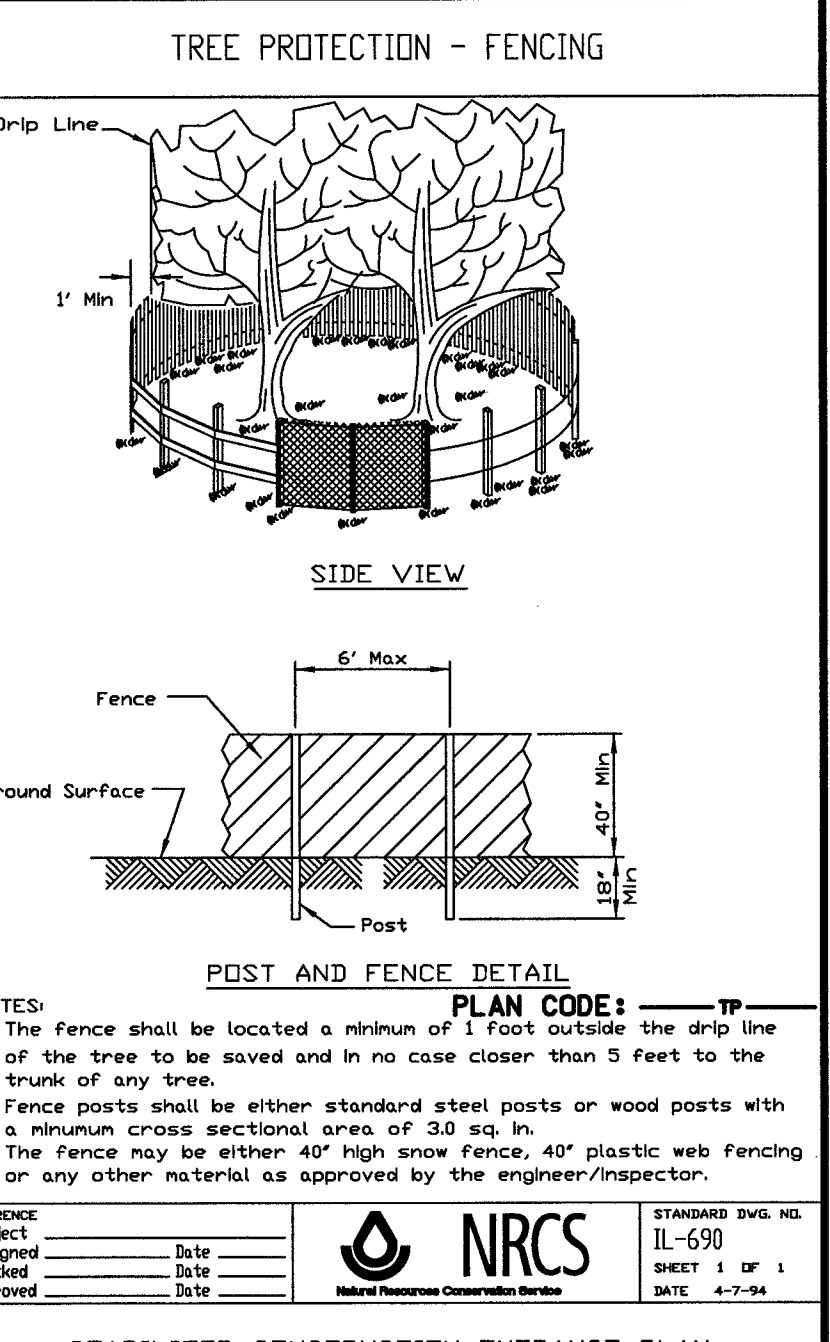
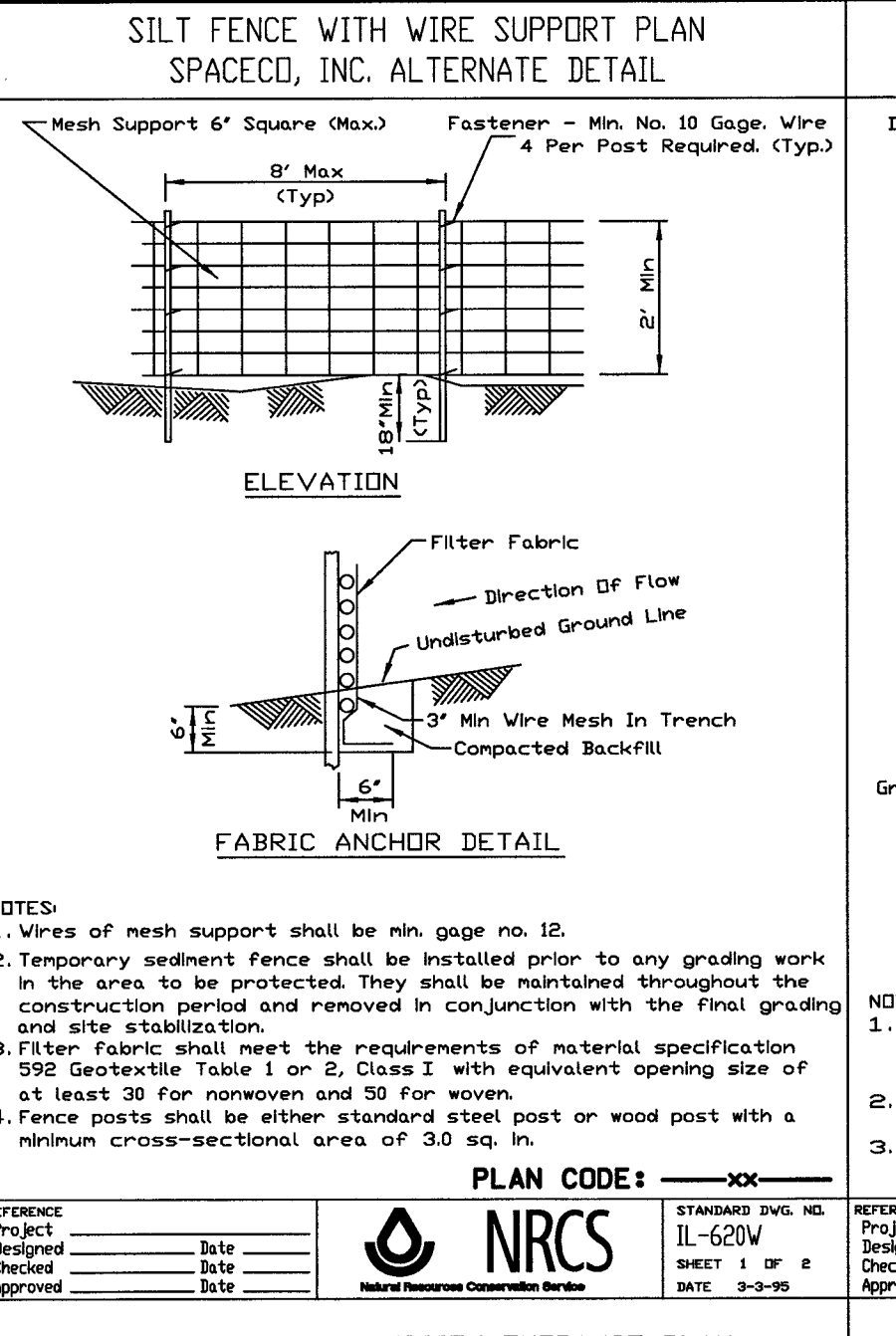
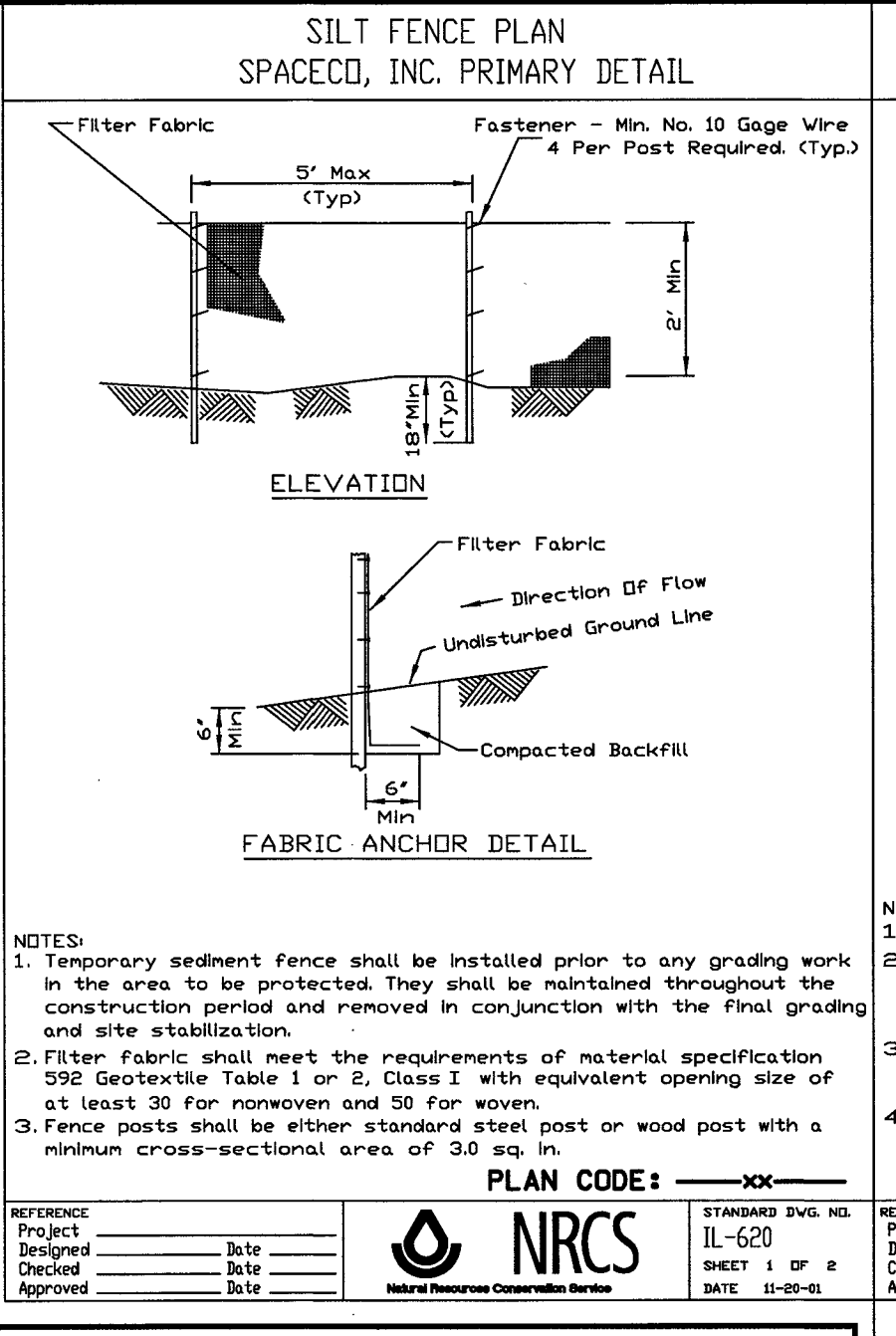
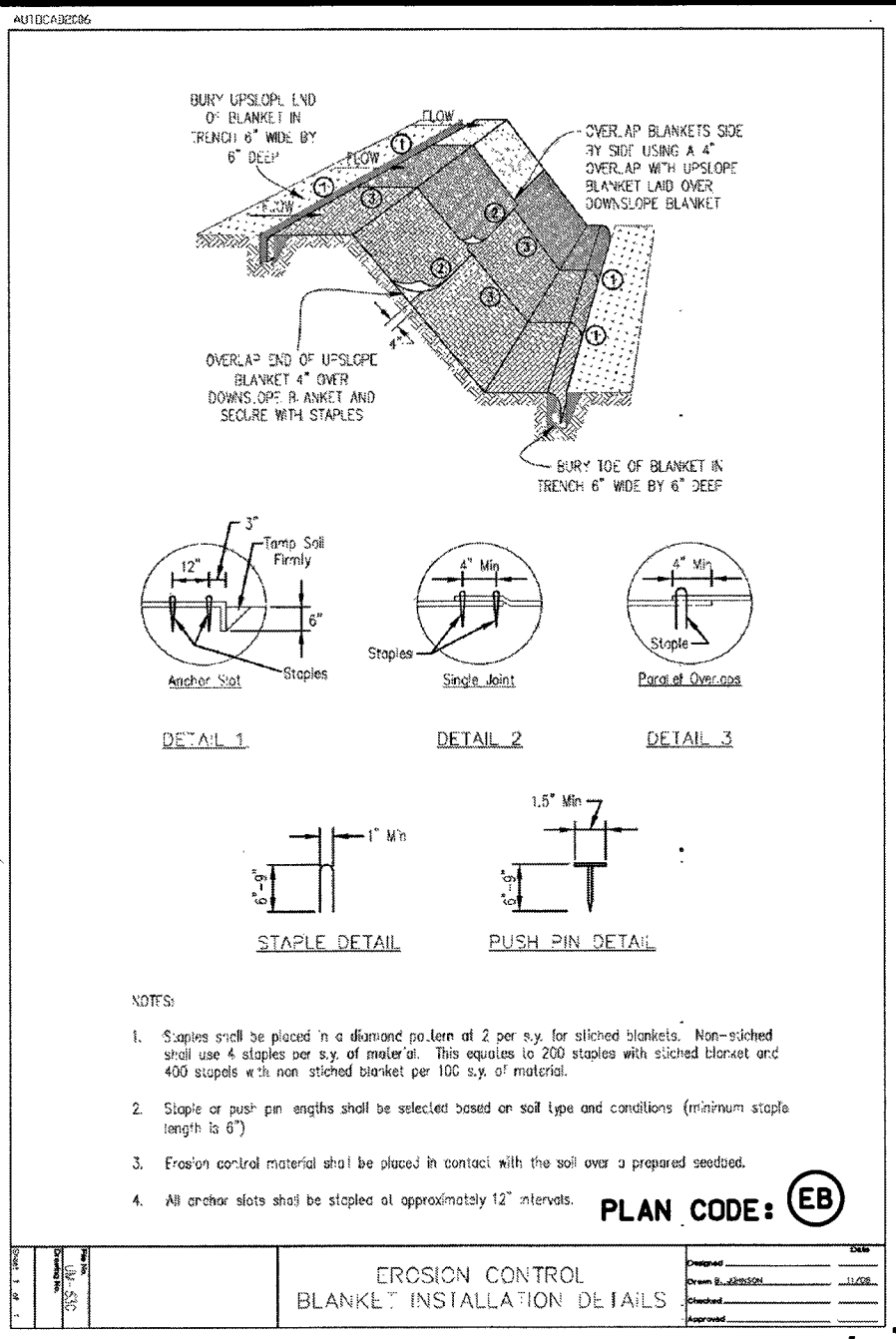
CONTRACTOR CERTIFICATION form with fields for Project, Permit #, Contractor Signature, Date, Telephone Number, Printed Name & Title, Name of Contracting Firm, Street Address, City, State, Zip Code, Trade/Responsibilities, and Signature of Owner.

OWNER SWPPP CERTIFICATION form with fields for Project, Permit #, Signature of Owner, Date, and Printed Name of Owner.

NOTE: THE CERTIFICATION ILLUSTRATED ABOVE SHALL BE SIGNED BY THE OWNER LISTED ON THE NOTICE OF INTENT IN ACCORDANCE WITH PART VI.G. OF THE ILR10 NPDES PERMIT. THE SIGNED STATEMENT SHALL BE MAINTAINED ON THE SITE WITH THE SWPPP.

Table with columns for No. and Remarks, containing entries for 9/17/13 PER VILLAGE COMMENTS and 9/17/13 PER VILLAGE COMMENTS.

SOIL EROSION AND SEDIMENT CONTROL PLAN CARDINAL SQUARE MUNDELEIN, ILLINOIS. VANTAGE POINT ENGINEERING logo and contact information.



NO.	DATE	REMARKS
1	9/17/13	PER VILLAGE COMMENTS

SOIL EROSION AND SEDIMENT CONTROL PLAN

CARDINAL SQUARE

MUNDELEIN, ILLINOIS

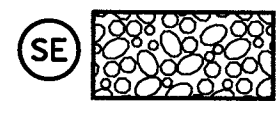
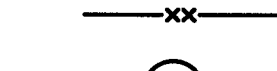


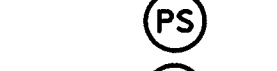



VANTAGEPOINT ENGINEERING

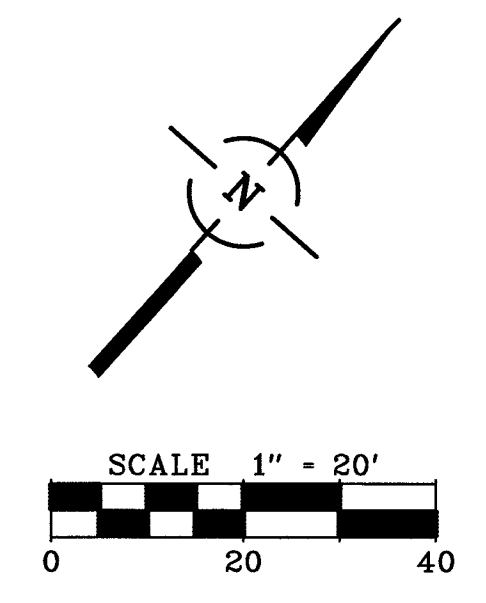
18311 NORTH CREEK DRIVE
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708.478.4004
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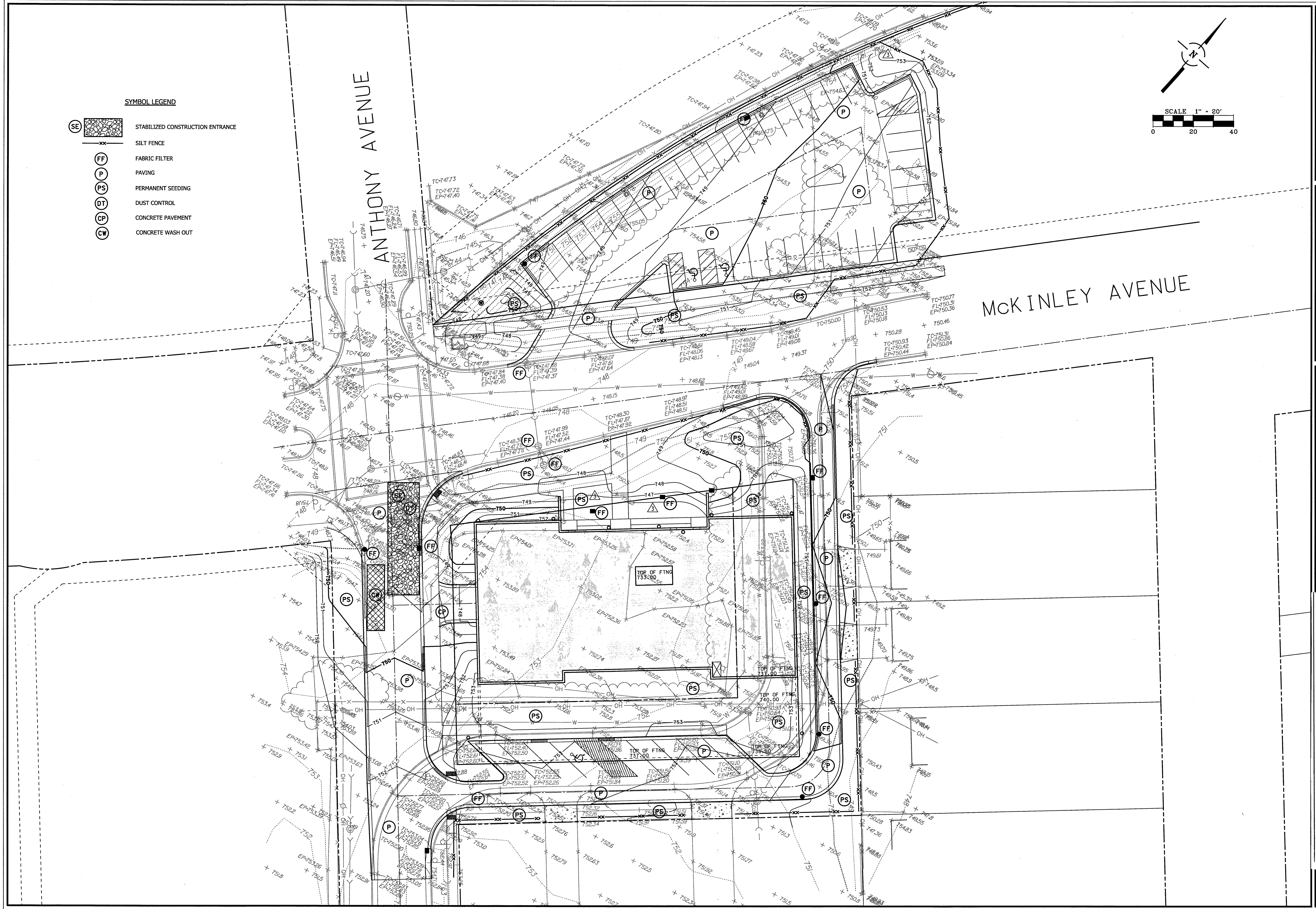
SYMBOL LEGEND

	STABILIZED CONSTRUCTION ENTRANCE
	SILT FENCE
	FABRIC FILTER
	PAVING
	PERMANENT SEEDING
	DUST CONTROL
	CONCRETE PAVEMENT
	CONCRETE WASH OUT



ANTHONY AVENUE

MCKINLEY AVENUE



NO.	DATE	REMARKS

3	03/03/14	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

SOIL EROSION CONTROL PLAN
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

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EARTHWORK NOTES

- 1. GENERAL
A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE SOIL AND GROUNDWATER CONDITIONS AT THE SITE. THE CONTRACTOR SHALL OBTAIN AND READ THE GEOTECHNICAL REPORTS AVAILABLE FROM THE OWNER.
B. ANY QUANTITIES IN THE BID PROPOSAL ARE INTENDED AS A GUIDE FOR THE CONTRACTOR'S USE IN DETERMINING THE SCOPE OF THE COMPLETED PROJECT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL MATERIAL QUANTITIES AND APPRAISE HIMSELF OF ALL SITE CONDITIONS. THE CONTRACT PRICE SUBMITTED BY THE CONTRACTOR SHALL BE CONSIDERED AS LUMP SUM FOR THE COMPLETE PROJECT. NO CLAIMS FOR EXTRA WORK WILL BE RECOGNIZED UNLESS SET IN WRITING BY THE OWNER.
C. THE CONTRACTOR WILL NOTE THAT THE ELEVATIONS SHOWN ON THE CONSTRUCTION PLANS ARE FINISHED GRADE ELEVATIONS AND THAT PAVEMENT THICKNESS, TOPSOIL, ETC. MUST BE SUBTRACTED TO DETERMINE SUBGRADE ELEVATIONS.
D. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION, AND PREVENT STORMWATER FROM RUNNING INTO OR STANDING IN EXCAVATED AREAS. THE FAILURE TO PROVIDE PROPER DRAINAGE WILL NEGATE ANY POSSIBLE ADDED COMPENSATION REQUESTED DUE TO DELAYS OR UNSUITABLE MATERIALS CREATED AS A RESULT THEREOF. FINAL GRADES SHALL BE PROTECTED AGAINST DAMAGE FROM EROSION, SEDIMENTATION AND TRAFFIC.
E. PLANS FOR THE SITE DRAINAGE, IF EMPLOYED, SHALL BE SUBMITTED TO AND APPROVED BY THE OWNER PRIOR TO IMPLEMENTATION. NO ADDITIONAL COMPENSATION SHALL BE MADE FOR DRAINAGE DURING CONSTRUCTION.
F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF THE "SOIL EROSION AND SEDIMENTATION CONTROL MEASURES". THE INITIAL ESTABLISHMENT OF EROSION CONTROL PROCEDURES AND THE PLACEMENT OF SILT AND FILTER FENCING, ETC. TO PROTECT ADJACENT PROPERTY, WETLANDS, ETC. SHALL OCCUR BEFORE GRADING BEGINS. A MUNICIPAL EROSION CONTROL INSPECTION MAY BE REQUIRED BEFORE ANY EARTHWORK IS PERFORMED.
G. PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES, THE CONTRACTOR SHALL ERECT A "SNOW FENCE" AROUND ANY TREE DESIGNATED TO BE PRESERVED. SAID FENCE SHALL BE PLACED IN A CIRCLE CENTERED AROUND THE TREE, THE DIAMETER OF WHICH SHALL BE SUCH THAT THE ENTIRE DRIP ZONE (EXTENT OF FURTHEST EXTENDING BRANCHES) SHALL BE WITHIN THE FENCE LIMITS. THE EXISTING GRADE WITHIN THE FENCED AREA SHALL NOT BE DISTURBED.
H. EXCESS MATERIALS, IF NOT UTILIZED AS FILL, SHALL BE COMPLETELY REMOVED FROM THE CONSTRUCTION SITE AND DISPOSED OF OFF-SITE BY THE CONTRACTOR.
I. ALL EARTHWORK SHALL BE DONE UNDER THE SUPERVISION OF AN ILLINOIS LICENSED ENGINEER WHO SPECIALIZES IN THE GEOTECHNICAL FIELD (SOILS ENGINEER). THIS ENGINEER WILL BE RESPONSIBLE FOR ENSURING THAT ALL UNSUITABLE MATERIALS ARE REMOVED, ALL STRUCTURAL FILL MATERIALS ARE PROPERLY PLACED AND COMPACTED, ALL PAVEMENT SUBGRADES ARE PROPERLY PREPARED, PROOF ROLLING SUBGRADES AND BASE COURSES, AND ENSURING THAT ALL WATER RETAINING EMBANKMENTS ARE PROPERLY CONSTRUCTED. THE DEVELOPER PAYS FOR ALL GEOTECHNICAL SERVICES.

- 2. TOPSOIL EXCAVATION INCLUDES:
A. EXCAVATION OF TOPSOIL AND OTHER STRUCTURALLY UNSUITABLE MATERIALS WITHIN THOSE AREAS THAT WILL REQUIRE EARTH EXCAVATION OR COMPACTED EARTH FILL MATERIAL. EXISTING VEGETATION SHALL BE REMOVED PRIOR TO STRIPPING TOPSOIL OR FILLING AREAS.
B. PLACEMENT OF THE EXCAVATED MATERIAL IN OWNER DESIGNATED AREAS FOR FUTURE USE WITHIN AREAS TO BE LANDSCAPED, AND THOSE AREAS NOT REQUIRING STRUCTURAL FILL MATERIAL. PROVIDE NECESSARY EROSION CONTROL MEASURES FOR STOCKPILE.
C. TOPSOIL STOCKPILED FOR RESPAID SHALL BE FREE OF CLAY AND SHALL NOT CONTAIN ANY OF THE TRANSITIONAL MATERIAL BETWEEN THE TOPSOIL AND CLAY. THE TRANSITIONAL MATERIAL SHALL BE USED IN NON-STRUCTURAL FILL AREAS OR DISPOSED OF OFF-SITE.
D. TOPSOIL RESPAID SHALL INCLUDE HAULING AND SPREADING 6" OF TOPSOIL OVER AREAS TO BE LANDSCAPED WHERE SHOWN ON THE PLANS OR DIRECTED BY THE OWNER.
E. MODERATE COMPACTION IS REQUIRED IN NON-STRUCTURAL FILL AREAS.

- 3. EARTH EXCAVATION INCLUDES:
A. EXCAVATION OF CLAY AND OTHER MATERIALS WHICH ARE SUITABLE FOR USE AS STRUCTURAL FILL. THE EXCAVATION SHALL BE TO WITHIN A TOLERANCE OF 0.1 FEET OF THE PLAN SUBGRADE ELEVATIONS WHILE MAINTAINING PROPER DRAINAGE. THE TOLERANCE WITHIN PAVEMENT AREAS SHALL BE SUCH THAT THE EARTH MATERIALS SHALL "BALANCE" DURING THE FINE GRADING OPERATION.
B. PLACEMENT OF THE CLAY AND OTHER SUITABLE MATERIALS SHALL BE WITHIN THOSE AREAS REQUIRING STRUCTURAL FILL IN ORDER TO ACHIEVE THE PLAN SUBGRADE ELEVATIONS TO WITHIN A TOLERANCE OF 0.1 FEET. THE FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS THAT SHALL NOT EXCEED EIGHT (8) INCHES IN THICKNESS, AND THE WATER CONTENT SHALL BE ADJUSTED IN ORDER TO ACHIEVE REQUIRED COMPACTION. STRUCTURAL FILL MATERIAL MAY BE PLACED WITHIN THOSE PORTIONS OF THE SITE NOT REQUIRING STRUCTURAL FILL, TO WITHIN SIX (6) INCHES OF THE PLAN FINISHED GRADE ELEVATION. IN AREAS REQUIRING STRUCTURAL FILL, HOWEVER, THIS MATERIAL SHALL NOT BE PLACED OVER TOPSOIL OR OTHER UNSUITABLE MATERIALS UNLESS SPECIFICALLY DIRECTED BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.
C. COMPACTION OF THE CLAY AND OTHER SUITABLE MATERIALS SHALL BE TO AT LEAST 93% OF THE MODIFIED PROCTOR DRY DENSITY WITHIN PROPOSED PAVEMENT AREAS, SIDEWALKS, ETC. COMPACTION SHALL BE AT LEAST 95% OF THE MODIFIED PROCTOR WITHIN PROPOSED BUILDING PAD AREAS.
D. EXCAVATION: QUANTITIES OF EARTH EXCAVATION INDICATED ELSEWHERE IN THIS CONTRACT HAVE BEEN COMPUTED BY THE END AREA METHOD AS PROVIDED FOR IN SECTION 202 OF THE STANDARD SPECIFICATIONS. EXCAVATED MATERIALS NOT NEEDED FOR THIS JOB SITE SHALL BE LEGALLY DISPOSED OF. PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE PER CUBIC YARD OF EARTH EXCAVATION.

- 4. UNSUITABLE MATERIAL
UNSUITABLE MATERIAL SHALL BE CONSIDERED AS MATERIAL WHICH IS NOT SUITABLE FOR THE SUPPORT OF PAVEMENT AND BUILDING CONSTRUCTION, AND IS ENCOUNTERED BELOW NORMAL TOPSOIL DEPTHS AND THE PROPOSED SUBGRADE ELEVATION. THE DECISION TO REMOVE SAID MATERIAL, AND TO WHAT EXTENT, SHALL BE MADE BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.
5. MISCELLANEOUS THE CONTRACTOR SHALL:
A. SPREAD AND COMPACT UNIFORMLY TO THE DEGREE SPECIFIED ALL EXCESS TRENCH SPOIL AFTER COMPLETION OF THE UNDERGROUND IMPROVEMENTS.
B. SCARIFY, DISC, AERATE, AND COMPACT, TO THE DEGREE SPECIFIED, THE UPPER TWELVE (12) INCHES OF THE SUITABLE SUBGRADE MATERIAL, IN ALL AREAS THAT MAY BE SOFT DUE TO EXCESS MOISTURE CONTENT. THIS APPLIES TO CUT AREAS AS WELL AS FILL AREAS.
C. PROVIDE WATER TO ADD TO DRY MATERIAL IN ORDER TO ADJUST THE MOISTURE CONTENT FOR THE PURPOSE OF ACHIEVING THE SPECIFIED COMPACTION.
D. BACKFILL THE CURB AND GUTTER AFTER ITS CONSTRUCTION AND PRIOR TO THE PLACEMENT OF THE BASE COURSE MATERIAL. THE CURBS SHALL NOT BE BACKFILLED UNTIL THE CONCRETE HAS CURED FOR AT LEAST 7 DAYS.
E. TRENCH COMPACTION: ALL TRENCHES SHALL BE COMPACTED BY MECHANICAL TECHNIQUES APPROVED BY THE SOILS ENGINEER UNTIL PROPER COMPACTION IS ACHIEVED. THE REQUIREMENT FOR MECHANICAL COMPACTION MAY BE WAIVED BY THE SOILS ENGINEER AND THE MUNICIPAL ENGINEER, WHEN THE BACKFILLED TRENCHES MEET THE DENSITY REQUIREMENTS. JETTING OF TRENCHES FOR COMPACTION WILL NOT BE ALLOWED.

- 6. TESTING AND FINAL ACCEPTANCE
A. THE CONTRACTOR SHALL PROVIDE AS A MINIMUM, A FULLY LOADED SIX-WHEEL TANDEM AXLE TRUCK FOR PROOF ROLLING THE PAVEMENT SUBGRADE, CURB AND GUTTER AND THE PLACEMENT OF THE SUBGRADE AND CURB MATERIAL. THIS SHALL BE WITNESSED BY MUNICIPAL ENGINEER AND THE OWNER. SEE PAVING SPECIFICATION.
B. ANY UNSUITABLE AREA ENCOUNTERED AS A RESULT OF PROOF ROLLING SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL, OR OTHERWISE CORRECTED, APPROVED BY THE SOILS CONSULTANT.
C. ANY TESTING THAT IS REQUIRED OF THIS CONSTRUCTION IS CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION. NO SEPARATE PAYMENT WILL BE MADE.

PAVING NOTES

- 1. GENERAL
A. PAVING WORK INCLUDES FINAL SUBGRADE PREPARATION AND COMPACTION; PLACEMENT OF CURB AND BASE COURSE MATERIALS; BITUMINOUS BINDER AND/OR SURFACE COURSES; FORMING, FINISHING AND SLEEVING CONCRETE PAVEMENT, CURBS AND WALKS; AND FINAL CLEAN-UP AND ALL RELATED WORK.
B. COMPACTION REQUIREMENTS: (REFERENCE ASTM D-1557 (MODIFIED PROCTOR)) SUB-GRADE = 95%; SUB-BASE = 95%; AGGREGATE BASE COURSE = 95%; BITUMINOUS COURSES = REFER TO SPEC ARTICLE 406.07. THE SOILS ENGINEER IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS ARE PROPERLY PLACED AND COMPACTED.
C. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE PROPER BARRICADING, WARNING DEVICES AND THE SAFE MANAGEMENT OF TRAFFIC WITHIN THE AREA OF CONSTRUCTION. ALL SUCH DEVICES AND THEIR INSTALLATION SHALL CONFORM TO THE ILLINOIS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION AND IN ACCORDANCE WITH THE MUNICIPAL CODE.
2. SUB-GRADE PREPARATION
A. EARTHWORK FOR PROPOSED PAVEMENT SUBGRADE SHALL BE FINISHED TO WITHIN 0.1 FOOT, PLUS OR MINUS, OF PLAN ELEVATION. THE CONTRACTOR SHALL SATISFY HIMSELF THAT THE SUBGRADE HAS BEEN PROPERLY PREPARED AND THAT THE FINISH TOP SUBGRADE ELEVATION HAS BEEN GRADED WITHIN TOLERANCES ALLOWED IN THESE SPECIFICATIONS. UNLESS THE CONTRACTOR ADVISES THE OWNER AND ENGINEER IN WRITING PRIOR TO FINE GRADING FOR BASE COURSE CONSTRUCTION, IT IS UNDERSTOOD THAT HE HAS APPROVED AND ACCEPTS THE RESPONSIBILITY FOR THE SUBGRADE.
B. PRIOR TO THE PLACEMENT OF THE BASE COURSE, THE SUBGRADE MUST BE PROOF ROLLED AND INSPECTED FOR UNSUITABLE MATERIALS AND/OR EXCESSIVE MOVEMENT. THE SOILS ENGINEER SHALL CONDUCT AND THE VILLAGE SHALL WITNESS ALL PROOF ROLLS. IF UNSUITABLE SUBGRADE IS ENCOUNTERED, IT SHALL BE CORRECTED IN A MANNER APPROVED BY THE OWNER OR HIS REPRESENTATIVE. THIS MAY INCLUDE ONE OR MORE OF THE FOLLOWING METHODS:
1) SCARIFY DISC AND AERATE.
2) REMOVE AND REPLACE WITH STRUCTURAL CLAY FILL.
3) REMOVE AND REPLACE WITH GRANULAR MATERIAL.
4) USE OF GEOTEXTILE FABRIC.
MAXIMUM DEFLECTION ALLOWED IN ISOLATED AREAS MAY BE 1/4" TO 1/2" IF NO DEFLECTION OCCURS OVER THE MAJORITY OF THE AREA.
C. PRIOR TO THE CONSTRUCTION OF THE CURB AND GUTTER AND THE PLACEMENT OF THE BASE MATERIAL, THE PAVEMENT AREA SHALL BE FINE GRADED TO WITHIN 0.04 FEET (1/2") OF FINAL SUBGRADE ELEVATION, TO A POINT TWO (2) FEET BEYOND THE BACK OF CURB, SO AS TO INSURE THE PROPER THICKNESS OF PAVEMENT COURSES. NO CLAIMS FOR EXCESS QUANTITY OF BASE MATERIALS DUE TO IMPROPER SUBGRADE PREPARATION WILL BE HONORED.
D. PRIOR TO PLACEMENT OF THE BASE COURSE, ALL SUBGRADES MUST BE APPROVED BY THE MUNICIPAL ENGINEER, SOILS ENGINEER AND/OR OWNER.

3. CONCRETE WORK

- A. ALL EXTERIOR CONCRETE SHALL BE PORTLAND CEMENT CONCRETE CLASS S1 OR PV PER (SSRBC) SECTION 1020.04 WITH AIR ENTRAINMENT OF NOT LESS THAN FIVE (5%) OR MORE THAN EIGHT (8%) PERCENT. CONCRETE SHALL BE A MINIMUM OF SIX (6) INCH MIX AND SHALL DEVELOP A MINIMUM OF 3,500 PSI COMPRESSIVE STRENGTH AT FOURTEEN (14) DAYS. ALL CONCRETE SHALL BE BROOM FINISHED PERPENDICULAR TO THE DIRECTION OF TRAVEL. THE ADDITION OF CALCIUM CHLORIDE AND THE SUBSTITUTION OF 1/2" AGG FOR PORTLAND CEMENT IS PROHIBITED. 1.50 lbs of COLLATED, FILLERATED, POLYPROPYLENE FIBER IN FIBERS 0.50 TO 0.75 INCHES IN LENGTH SHALL BE ADDED TO EACH CUBIC YARD OF CONCRETE USED FOR SIDEWALKS. THE FIBERS SHALL BE AS MANUFACTURED UNDER THE NAME "FIBERMESH" OR EQUAL.
B. CONCRETE CURB AND/OR COMBINATION CURB AND GUTTER SHALL BE OF THE TYPE SHOWN ON THE PLANS. THE CONTRACTOR IS CAUTIONED TO REFER TO THE CONSTRUCTION STANDARDS AND THE PAVEMENT CROSS-SECTION TO DETERMINE THE GUTTER FLAT THICKNESS AND THE AGGREGATE BASE COURSE THICKNESS BENEATH THE CURB AND GUTTER. PREMULDED FIBER EXPANSION JOINTS, WITH TWO 3/4" X 18" EPOXY COATED STEEL DOWEL BARS, SHALL BE INSTALLED AT SIXTY (60) FOOT INTERVALS AND AT ALL PO. 50, PT. 50 AND CURB RETURNS. ALTERNATE ENDS OF THE DOWEL BARS SHALL BE GRASSED AND FITTED WITH METAL EXPANSION TUBES. SAWED OR FORMED CONCRETE JOINTS SHALL BE PROVIDED AT NO GREATER THAN FIFTEEN (15) FOOT INTERVALS BETWEEN EXPANSION JOINTS. NO HOPE-COMBING OF THE CURB AND GUTTER WILL BE ACCEPTED.
C. CURBS SHALL BE DEPRESSED AT LOCATIONS WHERE PUBLIC WALKS/PEDESTRIAN PATHS INTERSECT CURB LINES, AND OTHER LOCATIONS AS DIRECTED FOR THE PURPOSE OF PROVIDING ACCESSIBILITY. (SEE CONSTRUCTION STANDARDS FOR DETAIL). BARRIER CURB SHALL ALSO BE DEPRESSED AT DRIVEWAY LOCATIONS.
D. THE CURBS SHALL BE BACKFILLED AFTER THEIR CONSTRUCTION AND PRIOR TO THE PLACEMENT OF THE BASE COURSE. THE CONCRETE MUST CURE FOR AT LEAST SEVEN DAYS BEFORE THE CURBS ARE BACKFILLED.
E. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH THE ABOVE AND THE PLANS. PROVIDE SCORED JOINTS AT 5 FOOT INTERVALS AND 1/2" PREMULDED FIBER EXPANSION JOINTS AT 50 FOOT INTERVALS, AND ADJACENT TO CONCRETE CURBS, DRIVEWAYS, FOUNDATIONS, ETC.
F. CONCRETE DRIVEWAY APRONS SHALL BE IN ACCORDANCE WITH THE ABOVE AND THE PLANS. PROVIDE 6" X 6" NO. 6 WELDED WIRE MESH IN DRIVEWAYS. PROVIDE 1/2" PREMULDED FIBER EXPANSION JOINT ADJACENT TO CURBS AND CONCRETE SIDEWALKS. PROVIDE SAWED OR FORMED CONTRACTION JOINT AT MID-POINT AND 15 FOOT MAXIMUM.
G. STANDARD REINFORCED CONCRETE PAVEMENT SHALL BE IN ACCORDANCE WITH THE ABOVE AND THE PLANS. SAWED OR FORMED CONTRACTION EXPANSION JOINTS SHALL BE AS SHOWN ON THE PLANS.
H. CONCRETE CURING AND PROTECTION SHALL BE IN ACCORDANCE WITH (SSRBC) - METHOD 1, II, OR III.
I. THE COST OF AGGREGATE BASE OR SUB-BASE UNDER CONCRETE WORK SHALL BE INCLUDED IN THE COST OF THE RESPECTIVE CONCRETE ITEM.
4. FLEXIBLE PAVEMENT
A. THE PAVEMENT MATERIALS FOR BITUMINOUS STREETS, PARKING LOTS, DRIVEWAYS, SIDEWALKS AND PATHS SHALL BE AS DETAILED ON THE PLANS. UNLESS OTHERWISE SHOWN ON THE PLANS, THE FLEXIBLE PAVEMENTS SHALL CONSIST OF AGGREGATE BASE COURSE, TYPE S1; BITUMINOUS CONCRETE BINDER COURSE; AND BITUMINOUS CONCRETE SURFACE COURSE OF THE THICKNESS AND MATERIALS SPECIFIED ON THE PLANS. THICKNESSES SPECIFIED SHALL BE CONSIDERED TO BE THE MAXIMUM COMPACTION THICKNESS. THE PAVING IS TO BE DONE IN ACCORD WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION IN ILLINOIS.
B. ALL TRAFFIC SHALL BE KEPT OFF THE COMPLETED AGGREGATE BASE UNTIL THE BINDER COURSE IS LAID. THE AGGREGATE BASE SHALL BE UNIFORMLY PRIME COATED AT A RATE OF 0.4 TO 0.5 GALLONS PER SQUARE YARD PRIOR TO PLACING THE BINDER COURSE. PRIME COAT MATERIALS SHALL BE BITUMINOUS M.C. - 30.
C. PRIOR TO PLACEMENT OF THE SURFACE COURSE, THE BINDER COURSE SHALL BE CLEANED, AND TACK COATED IF DUSTY OR DIRTY. ALL DAMAGED AREAS IN THE BINDER, BASE OR CURB SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER PRIOR TO LAYING THE SURFACE COURSE. THE CONTRACTOR SHALL PROVIDE WATER/VEHICLE EQUIPMENT AND MANPOWER NECESSARY, INCLUDING THE USE OF POWER BROOMS IF REQUIRED BY THE OWNER, TO PREPARE THE PAVEMENT FOR APPLICATION OF THE SURFACE COURSE. THE TACK COAT SHALL BE UNIFORMLY APPLIED TO THE BINDER COURSE AT A RATE OF 0.05 TO 0.10 GALLONS PER SQUARE YARD. TACK COAT SHALL BE AS SPECIFIED IN (SSRBC) SECTION 406.02.
D. SEAMS IN BASE, BINDER AND SURFACE COURSE SHALL BE STAGGERED A MINIMUM OF 6".
E. FOR NEW STREETS, THE CONTRACTOR SHALL PERMIT THE BITUMINOUS CONCRETE BINDER COURSE TO WEATHER ONE (1) WINTER SEASON PRIOR TO THE INSTALLATION OF THE BITUMINOUS CONCRETE SURFACE COURSE UNLESS OTHERWISE SPECIFIED BY THE MUNICIPAL ENGINEER OR OWNER.
5. TESTING AND FINAL ACCEPTANCE
A. THE CONTRACTOR SHALL FOLLOW THE QUALITY CONTROL TESTING PROGRAM FOR CONCRETE AND PAVEMENT MATERIALS ESTABLISHED BY THE OWNER AND/OR MUNICIPALITY. TESTING SHALL BE DONE IN ACCORD WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION IN ILLINOIS AND THE TESTING REQUIREMENTS OF THE MUNICIPALITY.
B. WHEN REQUESTED BY THE OWNER, TEST RESULTS AND DOCUMENTATION FOR THE CONCRETE, BASE COURSE, BITUMINOUS CONCRETE BINDER, AND/OR SURFACE COURSE, SHALL BE SUBMITTED FOR VERIFICATION.
C. PRIOR TO PLACEMENT OF THE BITUMINOUS CONCRETE SURFACE COURSE, THE CONTRACTOR, WHEN REQUIRED BY THE OWNER OR MUNICIPALITY, SHALL PROVIDE THE BINDER COURSE WITH A CORE DRILL WHERE DIRECTED, FOR THE PURPOSE OF THICKNESS VERIFICATION.
D. WHEN REQUESTED BY THE OWNER OR MUNICIPALITY, THE CONTRACTOR SHALL OBTAIN SPECIMENS OF THE FULL DEPTH BITUMINOUS CONCRETE PAVEMENT STRUCTURE WITH A CORE DRILL WHERE DIRECTED, IN ORDER TO CONFIRM THE PLAN THICKNESS. DEFICIENCIES IN THICKNESS SHALL BE ADJUSTED FOR BY THE METHOD DESCRIBED IN (SSRBC), ART. 407.10.
E. FINAL ACCEPTANCE OF THE TOTAL PAVEMENT INSTALLATION SHALL BE SUBJECT TO THE TESTING AND CHECKING REQUIREMENTS CITED ABOVE.

WATERMAIN NOTES

- 1. PIPE MATERIALS:
A. SEE VILLAGE OF MUNDELEIN SPECIFICATIONS THIS SHEET FOR PIPE MATERIAL SPECIFICATIONS.
2. FITTINGS:
A. SEE VILLAGE OF MUNDELEIN SPECIFICATIONS THIS SHEET FOR FITTINGS SPECIFICATION.
3. WATER SERVICES:
A. SEE VILLAGE OF MUNDELEIN SPECIFICATIONS THIS SHEET FOR WATER SERVICE SPECIFICATIONS.
4. VALVES:
A. SEE VILLAGE OF MUNDELEIN SPECIFICATIONS THIS SHEET FOR VALVE SPECIFICATIONS.
5. VALVE VAULTS:
A. VALVE VAULTS SHALL BE PRECAST CONCRETE STRUCTURES AS NOTED ON THE PLANS. THE FRAME AND LID SHALL BE NEENAH R-1712, OR EQUAL, WITH "WATER" EMBOSSED ON THE LID.
6. FIRE HYDRANTS:
A. FIRE HYDRANTS SHALL CONFORM TO AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARD NO. C-502, LATEST REVISION, AND SHALL BE A MODEL SHOWN ON THE PLANS AND APPROVED BY THE MUNICIPALITY. FIRE HYDRANTS SHALL BE INSTALLED WITH AN AUXILIARY VALVE AND CAST IRON VALVE BOX. THE PUMPER CONNECTION SHALL FACE ROUNDLY.
B. PROVIDE THE RODS FROM THE MAINLINE TEE TO THE AUXILIARY VALVE, AND BETWEEN THE AUXILIARY VALVE AND HYDRANT BARREL, WERE NOT BOLTED TOGETHER.
C. THE BREAK FLANGE AND ALL BELOW GRADE FITTINGS SHALL HAVE STAINLESS STEEL NUTS AND BOLTS.
7. CORPORATION STOPS:
A. CORPORATION STOPS SHALL BE BRONZE BODY KEY STOPS CONFORMING TO AWWA C-800, AND SHALL INCLUDE 1" BEND, TAIL PIECE, AND COMPRESSION FITTINGS. SIZE AND LOCATION AS SHOWN ON PLANS.
B. TAPPING SADDLES SPECIFICALLY DESIGNED FOR USE WITH PVC PIPE SHALL BE IN CONJUNCTION WITH THE CORPORATION STOP.
8. SERVICE BOX:
A. PROVIDE CURB VALVE AND CURB BOX AS INDICATED ON THE PLANS. BOX SHALL BE EXTENSION TYPE WITH FOOT PIECE AND STATIONARY RODS FOR SIX (6) FEET OR BURY.
B. MAXIMUM DEFLECTION AT PIPE JOINTS SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURER'S CURRENT RECOMMENDATIONS AND AWWA SPECIFICATIONS.
9. BEDDING:
A. ALL DUCTILE IRON WATERMAIN SHALL HAVE COARSE SAND BEDDING/EXTENDED TO AT LEAST SIX INCHES (6") ABOVE THE TOP OF THE PIPE. COST OF BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THIS PIPE. NO SEPARATE PAYMENT SHALL BE MADE FOR THIS ITEM.
B. GRANULAR BEDDING MATERIAL OR GRANULAR BACKFILL MATERIAL SHALL BE CAREFULLY PLACED TO 12" OVER THE TOP OF THE PIPE BEFORE FINAL BACKFILLING AND COMPACTION.
C. A MINIMUM DEPTH OF COVER OF 5'-6" SHALL BE MAINTAINED OVER THE WATER LINES. THE MAXIMUM COVER SHALL BE EIGHT (8) FEET EXCEPT AT SPECIAL CROSSINGS.
D. CONCRETE THRUST BLOCKING SHALL BE INSTALLED ON WATERMAIN AT ALL BENDS, TEE, ELBOWS, ETC.

10. JEPA WATERMAIN PROTECTION:

- A. HORIZONTAL SEPARATION
a) WATERMAINS SHALL BE LAID AT LEAST TEN FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED DRAIN, STORM SEWER, SANITARY SEWER OR SEWER SERVICES CONNECTION.
b) WATERMAINS MAY BE LAID DEEPER THAN TEN FEET TO A SEWER LINE WHEN:
1) LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF TEN FEET;
2) THE WATERMAIN IS AT LEAST 18 INCHES ABOVE THE CROWN OF THE SEWER; AND
3) THE WATERMAIN IS EITHER IN A SEPARATE TRENCH OR IN THE SAME TRENCH ON AN UNDISTURBED EARTH SHELF LOCATED TO ONE SIDE OF THE SEWER.
c) BOTH THE WATERMAIN AND DRAIN OR SEWER SHALL BE CONSTRUCTED WITH PIPE EQUIVALENT TO WATERMAIN STANDARDS OF CONSTRUCTION WHEN IT IS IMPOSSIBLE TO MEET (a) OR (b) ABOVE. THE DRAIN OR SEWER SHALL BE PRESSURE TESTED TO THE MAXIMUM EXPECTED SURCHARGE HEAD BEFORE BACKFILLING.
B. VERTICAL SEPARATION
a) A WATERMAIN SHALL BE LAID SO THAT ITS INVERT IS 18 INCHES ABOVE THE CROWN OF THE DRAIN OR SEWER WHENEVER WATERMAINS CROSS STORM SEWERS, SANITARY SEWERS OR SEWER SERVICE CONNECTIONS. THE VERTICAL SEPARATION SHALL BE MAINTAINED FOR THAT PORTION OF THE WATERMAIN LOCATED WITHIN TEN FEET HORIZONTALLY OF ANY SEWER OR DRAIN CROSSING. A LENGTH OF WATERMAIN PIPE SHALL BE CENTERED OVER THE SEWER TO BE CROSSED WITH JOINTS EQUIDISTANT FROM THE SEWER OR DRAIN.
b) BOTH THE WATERMAINS AND SEWER SHALL BE CONSTRUCTED WITH PIPE EQUIVALENT TO WATERMAIN STANDARDS OF CONSTRUCTION WHEN:
1) IT IS IMPOSSIBLE TO OBTAIN THE PROPER VERTICAL SEPARATION AS DESCRIBED IN (a) ABOVE; OR
2) THE WATERMAIN PASSES UNDER A SEWER OR DRAIN.
c) A VERTICAL SEPARATION OF 18 INCHES BETWEEN THE INVERT OF THE SEWER OR DRAIN AND THE CROWN OF THE WATERMAIN SHALL BE MAINTAINED WHERE A WATERMAIN CROSSES UNDER SEWER. SUPPORT THE SEWER OR DRAIN LINES TO PREVENT SETTLING AND BREAKING THE WATER MAIN.
d) CONSTRUCTION SHALL EXTEND ON EACH SIDE OF THE CROSSING UNTIL THE NORMAL DISTANCE FROM THE WATERMAIN TO THE SEWER OR DRAIN LINE IS AT LEAST TEN FEET.

11. TESTING:

- A. ALL WATERMAINS SHALL BE PRESSURE TESTED, FLUSHED AND DISINFECTED IN ACCORDANCE WITH AWWA AND MUNICIPAL SPECIFICATIONS. EACH VALVE SECTION SHALL BE PRESSURE TESTED FOR A MINIMUM OF 4 HOURS ALLOWING LEAKAGE TO BE ONLY THAT WHICH IS PREDICTED BY THE STANDARD SPECIFICATIONS FOR SEWER AND WATERMAIN CONSTRUCTION IN ILLINOIS. AT NO TIME IS THERE TO BE ANY VISIBLE LEAKAGE FROM THE MAIN.
B. CONTRACTOR IS RESPONSIBLE FOR PRESSURE TESTING AGAINST EXISTING WATER VALVES.

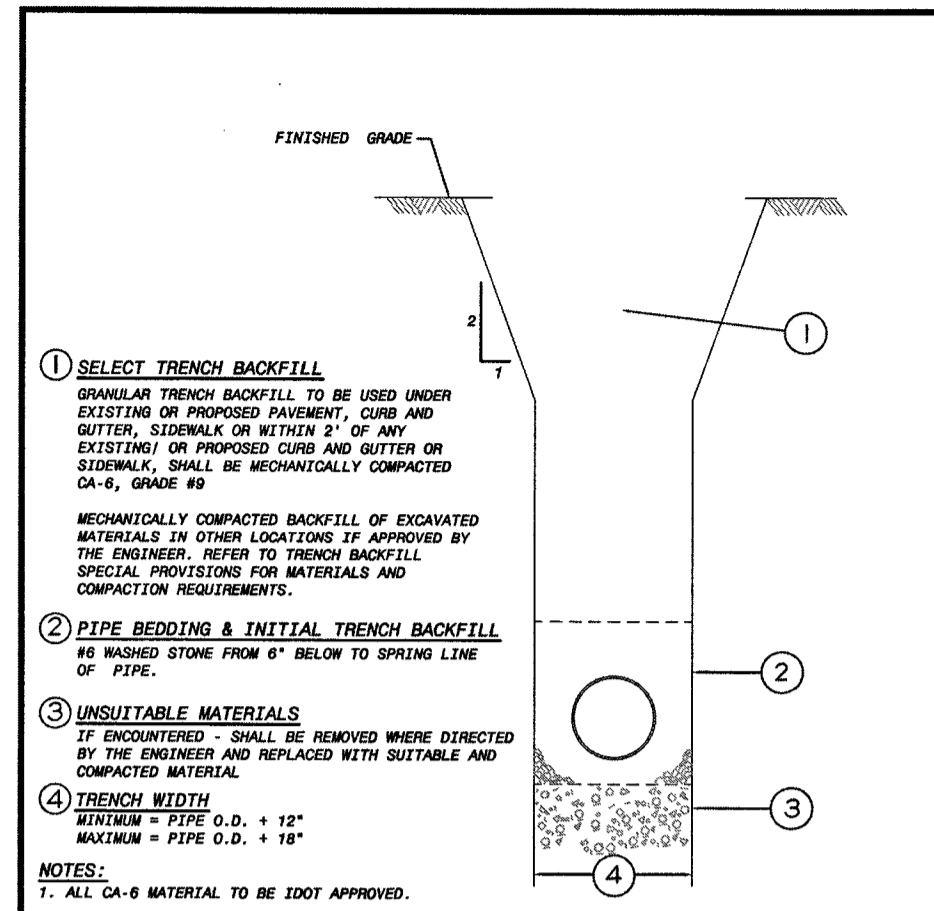
Miscellaneous Water Main Notes
Water Main
A. Water Main Pipe Materials
• PVC SDR 18 AWWA C-900 PVC Pipe
• Water main pipe must have a minimum of five (5)-feet six (6)-inches cover per the Trench Material Detail.
B. Restrained Joints
1. All mechanical joint fittings are to be restrained with mega-lugs produced by EBBA Iron Inc. or approved equivalent. This shall be for C-900 PVC Pipe or Class 52 Ductile Iron Pipe.
2. All mechanical joint fittings to be assembled with stainless steel Teflon coated nuts and bolts.
3. All mechanical joint fittings must contain two (2) zinc anode (6 ounce minimum) caps attached to every other foot of each fitting (see detail).
C. Tracer Wire
1. Tracer wire -12 awg copper wire with 30-mil polyethylene jacket must be buried with all water main pipe materials including Ductile Iron Pipe.
2. Tracer wire must be "duct" taped to the top of water main pipe at intervals not to exceed four (4)-feet.
3. Tracer wire split bolt connectors required when connecting two (2) pieces together. Bare wire and connector must be wrapped with electrical tape must be taped over (see example for split bolt connector).
4. Tracer wire must be brought up to grade using the locating wire box at each fire hydrant (per detail).
5. Tracer wire must be brought to top step in valve vaults (per detail).
Fire Hydrants
A. Materials
1. The Fire Hydrant must be Mueller Super Centurion 250, A-423 Model.
2. The below grade nuts & bolts on the hydrant must be stainless steel installed from the manufacturer.
3. Water main "spool" pieces of pipe between the branch tee and the hydrant shoe must be made of ductile iron pipe material.
4. Fire hydrant tees must be installed in a horizontal position to the water main. Hydrant auxiliary valve boxes of excessive depth must have an extension on the valve operative nut to permit clear operation above the hydrant.
W-0 (1 of 4)

B. Spacing and Locations
1. Fire hydrants shall be installed along all water mains constructed in public right-of-way, at a maximum spacing of 350-feet. However, fire hydrants must be installed on lot lines in single-family residential installations.
2. Fire hydrants must be at least 20-feet from any intersection.
3. Hydrants shall be installed no closer than three (3)-feet to the back of curb from the steamer port (pumper nozzle), nor further than eight (8)-feet from the back curb. No hydrant shall be installed within 48-inches of any obstruction, nor shall any obstruction be placed within 48-inches of an existing hydrant. A minimum five (5)-foot distance from any driveway entrance must be maintained.
C. Distance
Fire Department review required for distance from building.
D. Paintings
1. All hydrants shall be painted "Safety Red" with Sherwin-Williams brand "SHIR-CRL SAFETY RED", Rustoleum brand "FIRE HYDRANT PAINT RED", or as approved by the Water Superintendent.
Valves
A. Materials
All water valves must be Mueller Brand (per detail).
B. Spacing and Location
Water main valves shall be spaced at a minimum of 400-feet, or at a distance such that in the event of a required shut down of the public main, no more than 24 single family residential units shall be out of water service, whichever results in the shortest valve spacing or as approved by the Public Works Department. Valve vaults shall not be allowed within driveways or sidewalks.
Connection to Existing Mains
All connections to the Village water distribution system shall be made under full water service pressure in accordance with Village Engineering Design Details or as required.
A. Materials
1. When connection is size on size piping, a two (2) piece Ductile Iron Sleeve is required.
2. When branch size is smaller than existing pipe, a stainless steel tapping sleeve will be used.
3. All tapping sleeves must be air tested prior to tapping water main.
W-0 (2 of 4)

Water Service/Fire Lines (Two (2)-Inches and Smaller)
A. Materials
1. A water service line is designed to deliver water from a public water distribution main from the main to a single building, and includes corporation stop, curb stop, and service box. Service lines shall be Type K copper and installed approximately at a right angle to the centerline of the right-of-way. Service lines shall be continuous with no splices between either the corporation and the curb stop or the curb stop and the water meter.
2. The water service tap will include a full circle stainless steel tapping sleeve (per Detail W-5).
3. All fittings will consist of a flare by flare connection.
4. The Contractor/ Developer will provide the following materials for service lines. Tapping sleeve, corporation stop, curb stop, service box, and copper (per Detail W-5)
5. Contractor/developer must complete all work related to the service line.
B. Spacing and Locations
Service connections must maintain a three (3)-foot separation from any other service connection, pipe bell or fitting, valve vault, and/or fire hydrant.
C. Inspections Required
1. The Village of Mundelein Water Superintendent or his designate must witness the tapconnection to water main. For taps on PVC water main, the contractor shall make the tapconnection using an approved tapping tool and shall provide the removed coupon to the Village Mundelein Water Division inspector. 24-hour advanced notice is required.
2. The Village of Mundelein Plumbing Inspector or his designate must inspect the service line from the corporation stop to the curb stop. 24 hour advance notice is required.
3. The Village of Mundelein Plumbing Inspector or his designate must inspect the service line from the curb stop to the water meter. 24 hour advance notice is required.
D. Special Notes
1. The water service line inside of building must have a minimum of 12 inches of Type K copper prior to the first fitting. The water meter must be set within 18-inches after entering the building.
2. The water service must enter the front side of a single family residential building upon which it services.
W-0 (3 of 4)

Water Service/Fire Lines (Larger Than Two (2)-Inches)
Water services that are larger than two (2)-inch Type K copper services shall be a minimum size of four (4)-inch water main pipe. (Three (3)-inch piping is not permitted.) These water services can be a combination system for both domestic use and fire protection.
A. Materials
Water service lines larger than two (2)-inches must follow all the materials, procedures, policies, and details for water main installations.
B. Fire Protection
Any water service line designated for fire protection must be sized appropriately in order to sufficiently supply water for fire protection based on the fire flow requirement of the building. Documentation must be submitted and approved by the Village of Mundelein Fire Department.
C. Combination Fire/Domestic Usage
Any water service line designated for both fire and domestic usage must meet the following requirements:
1. Water service line must be sized to meet the fire protection requirements and domestic usage of the building.
2. Water service line must enter the building in a designated Meter/Fire Suppression Room when domestic service is manifolded into multiple water meters. Meter/Fire Suppression Room must meet Village of Mundelein Code 16.08.260(f) meter rooms.
3. Upon entering the building or Meter/Fire Suppression Room, the domestic service will branch off from the fire service with valves installed on the fire line and domestic service prior to pressure testing.
D. Inspections and Testing
The inspections and testing of the water service for fire/domestic usage shall follow the guidelines and methods for water main inspections and testing procedures.
W-0 (4 of 4)

SPECIFICATIONS
CARDINAL SQUARE
MUNDELEIN, ILLINOIS
1 9/17/13 PER VILLAGE COMMENTS
4 04/04/14 PER VILLAGE COMMENTS
NO. DATE REMARKS
NO. DATE REMARKS
VANTAGE POINT ENGINEERING
1811 NORTH CREEK DRIVE
THULEY PARK, IL 60477
708.678.8006
INFO@VPENG.COM
VPENG.COM | CIVIL ENGINEERING | LAND PLANNING | SURVEYING
SHEET
S1
15 OF 20

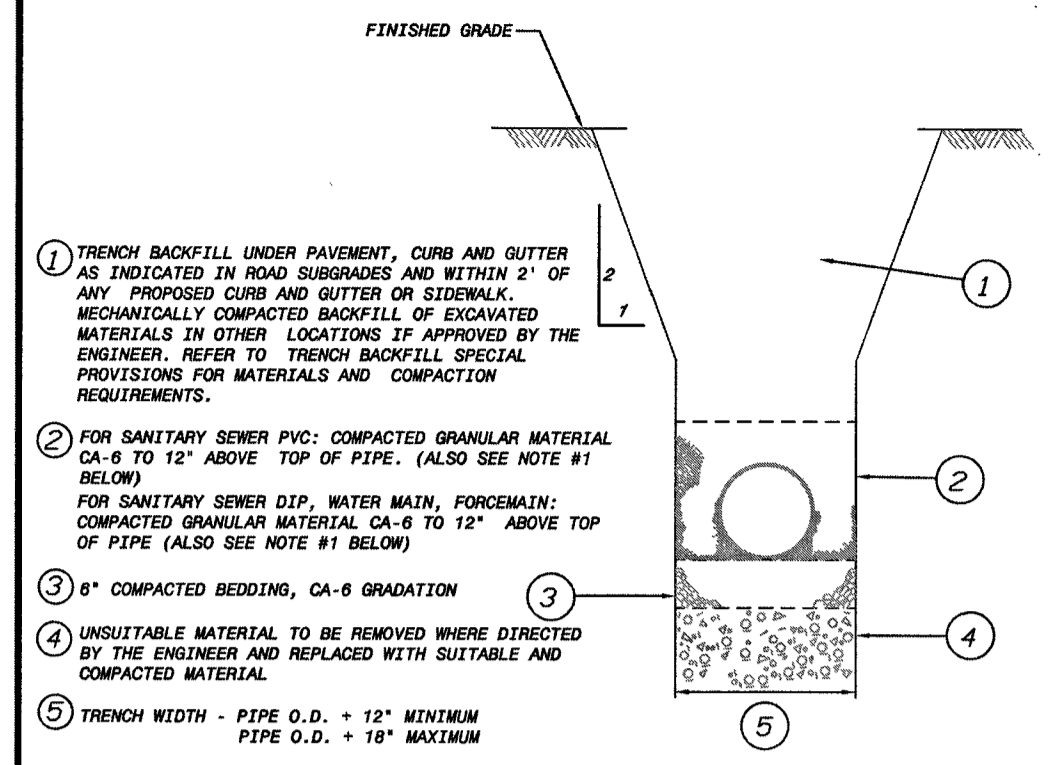


- SELECT TRENCH BACKFILL**
GRANULAR TRENCH BACKFILL TO BE USED UNDER EXISTING OR PROPOSED PAVEMENT, CURB AND GUTTER, SIDEWALK OR WITHIN 2' OF ANY EXISTING OR PROPOSED CURB AND GUTTER OR SIDEWALK. SHALL BE MECHANICALLY COMPACTED TO 95% RELATIVE DENSITY.
 - PIPE BEDDING & INITIAL TRENCH BACKFILL**
#6 WASHED STONE FROM 6" BELOW TO SPRING LINE OF PIPE.
 - UNSATURABLE MATERIALS**
IF ENCOUNTERED - SHALL BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE AND COMPACTED MATERIAL.
 - TRENCH WIDTH**
MINIMUM = PIPE O.D. + 12"
MAXIMUM = PIPE O.D. + 18"
- NOTES:
1. ALL CA-6 MATERIAL TO BE IDOT APPROVED.

VILLAGE OF MUNDELEIN
ENGINEERING DETAILS

TYPICAL STORM SEWER
TRENCH CROSS SECTION

DETAIL NO.
S7-6



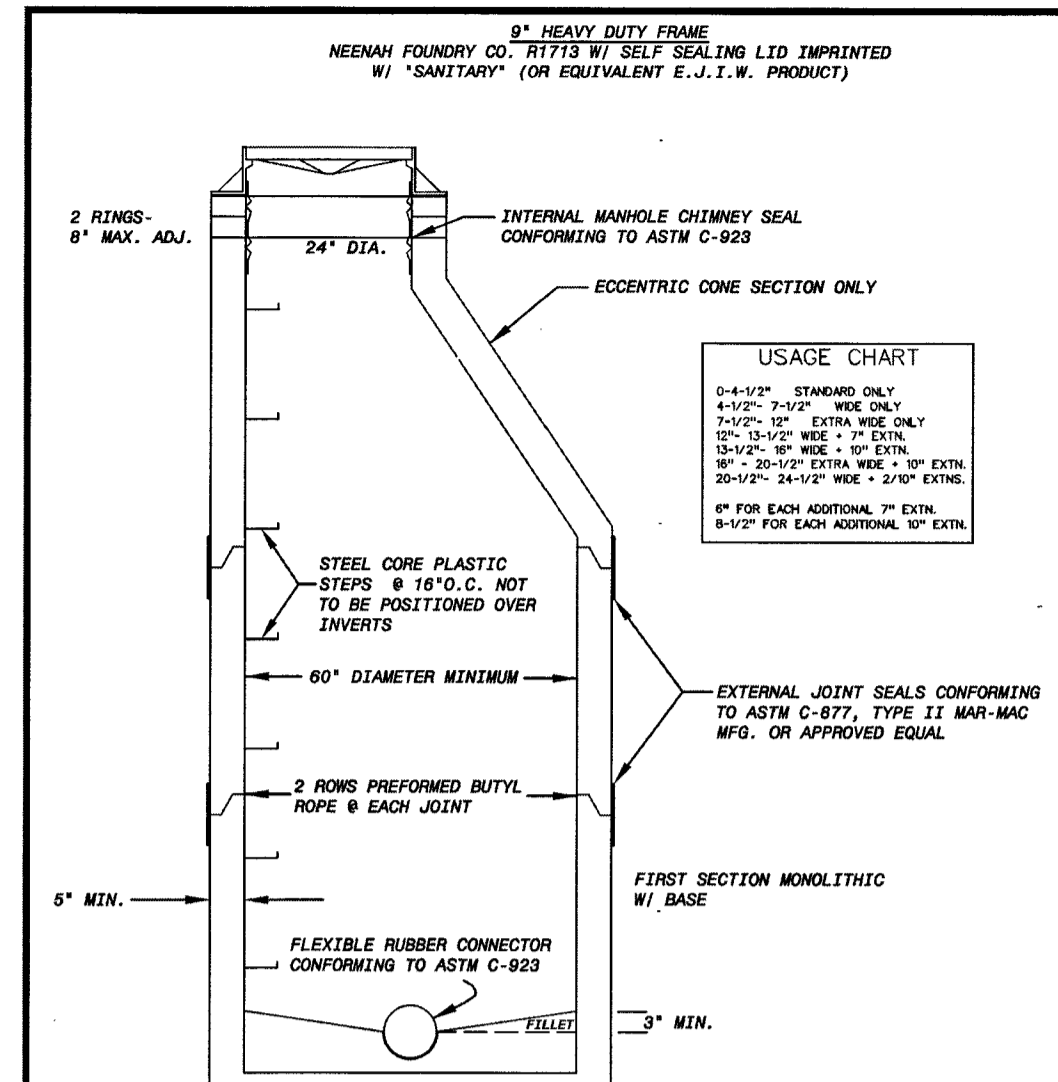
- TRENCH BACKFILL UNDER PAVEMENT, CURB AND GUTTER AS INDICATED IN ROAD SUBGRADES AND WITHIN 2' OF ANY PROPOSED CURB AND GUTTER OR SIDEWALK. MECHANICALLY COMPACTED BACKFILL OF EXCAVATED MATERIALS IN OTHER LOCATIONS IF APPROVED BY THE ENGINEER. REFER TO TRENCH BACKFILL SPECIAL PROVISIONS FOR MATERIALS AND COMPACTION REQUIREMENTS.
- FOR SANITARY SEWER PVC: COMPACTED GRANULAR MATERIAL CA-6 TO 12" ABOVE TOP OF PIPE. (ALSO SEE NOTE #1 BELOW)
- FOR SANITARY SEWER DTP, WATER MAIN, FORESLAM: COMPACTED GRANULAR MATERIAL CA-6 TO 12" ABOVE TOP OF PIPE (ALSO SEE NOTE #1 BELOW)
- UNSATURABLE MATERIAL TO BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE AND COMPACTED MATERIAL.
- TRENCH WIDTH - PIPE O.D. + 12" MINIMUM
PIPE O.D. + 18" MAXIMUM

NOTES:
1. PVC PIPE CONFORMING TO THE SOR SPECIFIED IN THE PLANS SHALL BE INSTALLED TO THE LATEST REVISED SPECIFICATION REQUIREMENTS OF ASTM D2381 USING EITHER COMPACTED CLASS 1 OR CLASS 2 GRANULAR MATERIALS FOR BEDDING, HAUNCHING AND INITIAL BACKFILL OF 12" OVER THE TOP OF PIPE TO PROVIDE THE NECESSARY SUPPORT FOR THE PIPE SO THAT THE MAXIMUM DEFLECTION DOES NOT EXCEED 5% OF THE PIPE'S ORIGINAL INTERNAL DIAMETER.
2. ALL CA-6 MATERIAL TO BE IDOT APPROVED.

VILLAGE OF MUNDELEIN
ENGINEERING DETAILS

TYPICAL SANITARY TRENCH
CROSS SECTION

DETAIL NO.
SAN-1

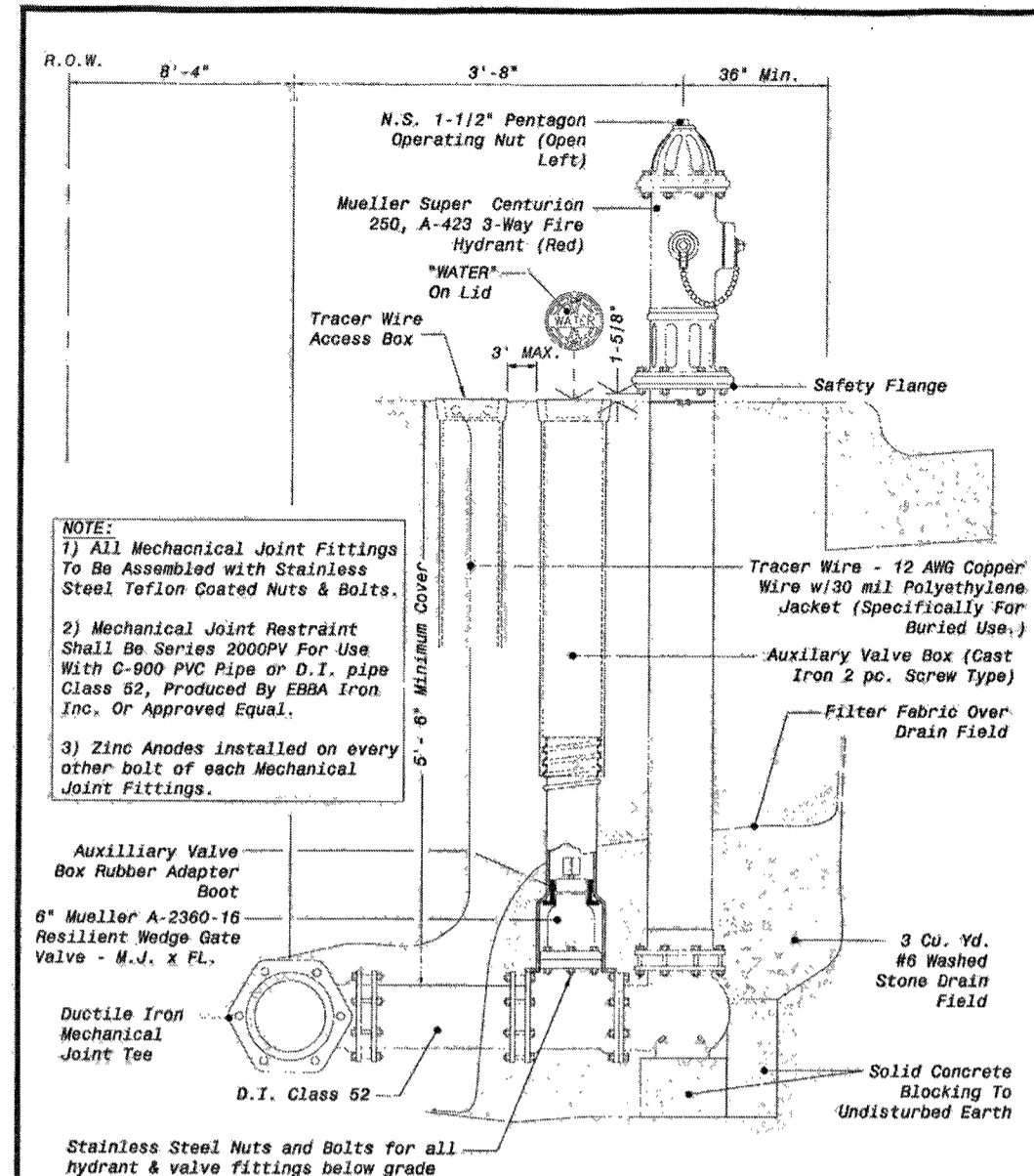


- 5" READY-DUTY FRAME
NEENAH FOUNDRY CO. R7175 W/ SELF SEALING LID IMPRINTED W/ "WATER" OR EQUIVALENT E.I.P. PRODUCT
- INTERNAL MANHOLE CHIMNEY SEAL
CONFORMING TO ASTM C-923
- ECCENTRIC CONE SECTION ONLY
- STEEL CORE PLASTIC
STEPS @ 16" O.C. NOT TO BE POSITIONED OVER INVERTS
- 60" DIAMETER MINIMUM
- 2 ROWS PERFORMED BUTYL
ROPE @ EACH JOINT
- EXTERNAL JOINT SEALS CONFORMING
TO ASTM C-877, TYPE II MAR-MAC
MFG. OR APPROVED EQUAL
- FIRST SECTION MONOLITHIC
W/ BASE
- 3" MIN.
- 5" MIN.
- 2 RIMS:
8" MAX. ADJ.
- USAGE CHART
- 4'-4 1/2" STEVED ONLY
4'-2 1/2" - 14'2" SEE ONLY
1'-2 1/2" - 12" EXTRA WIDE ONLY
12" - 14'2" SEE "E" OF PLAN
12" - 14'2" SEE "E" OF PLAN
12" - 14'2" SEE "E" OF PLAN
12" - 14'2" SEE "E" OF PLAN
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12" - 14'2" SEE "E" OF PLAN

VILLAGE OF MUNDELEIN
ENGINEERING DETAILS

SANITARY MAN-HOLE
TYPE 1

DETAIL NO.
SAN-1

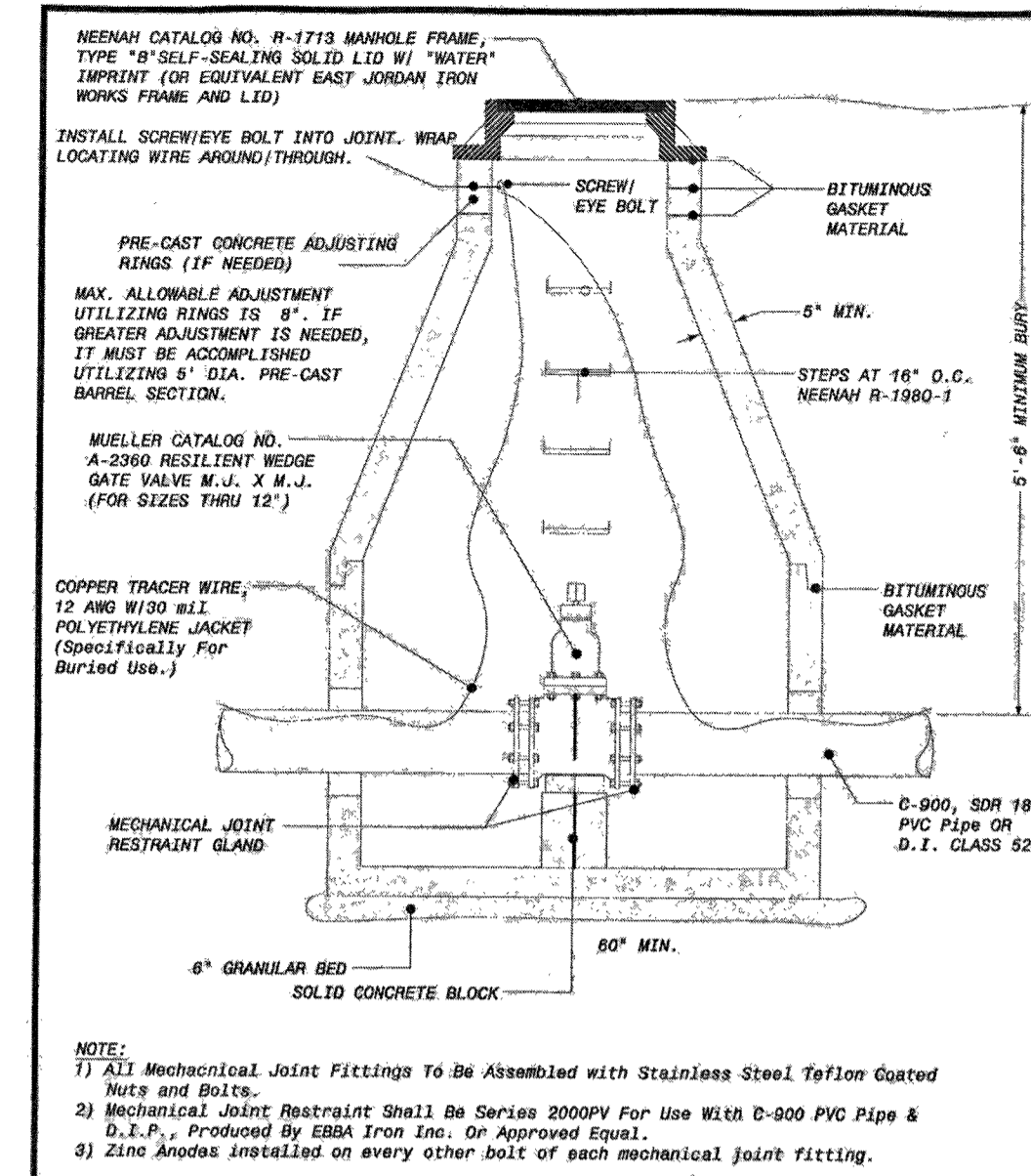


- N.S. 1-112" Pentagon
Operating Nut (Open
Left)
- Mueller Super Contourion
500, A-423 3-Way Fire
Hydrant (Red)
- "WATER"
On Lid
- Tracer Wire
Access Box
- Safety Flange
- Tracer Wire - 12 AWG Copper
Wire w/30 mil Polyethylene
Jacket (Specifically For
Buried Use.)
- Auxiliary Valve Box (Cast
Iron 2 pc. Screw Type)
- Filter Fabric Over
Drain Field
- 3 Cu. Yd.
#6 Braided
Stone Drain
Field
- Solid Concrete
Blocking to
Undisturbed Earth
- D.I. Class 52
- NOTE:
1) All Mechanical Joint Fittings to Be Assembled with Stainless Steel Teflon Coated Nuts & Bolts.
2) Mechanical Joint Restraint Shall Be Series 2000PV For Use With D-900 PVC Pipe or D.I. pipe Class 52, Produced by EBBA Iron Inc. or Approved Equal.
3) Zinc Anodes installed on every other bolt of each Mechanical Joint fitting.

VILLAGE OF MUNDELEIN
CONSTRUCTION DETAILS

TYPICAL FIRE HYDRANT

DETAIL NO.
W-1

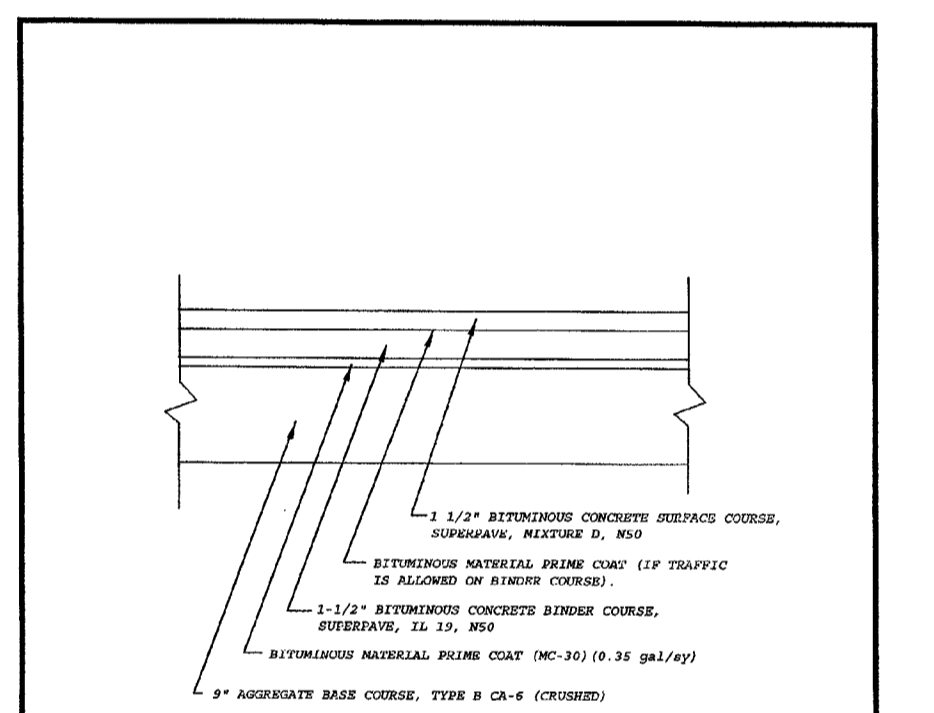


- NEENAH CATALOG NO. R-1713 MANHOLE FRAME,
TYPE "B" SELF-SEALING SOLID LID W/ "WATER"
IMPRINT OR EQUIVALENT EAST JOINT FROM
WORKS FRAME AND LID.)
- INSTALL SCREW/EYE BOLT INTO JOINT. WIRE
LOCATING WIRE AROUND/THROUGH.
- PRE-CAST CONCRETE ADJUSTING
RINGS (IF NEEDED)
- MAX. ALLOWABLE ADJUSTMENT
UTILIZING RINGS IS 8". IF
GREATER ADJUSTMENT IS NEEDED,
IT MUST BE ACCOMPLISHED
UTILIZING 5" DIA. PRE-CAST
INVERT SECTION.
- MUELLER CATALOG NO.
A-2380 RESILIENT WEDGE
GATE VALVE W.J. X H.J.
(FOR SIZES 12" & 18")
- BITUMINOUS
GASKET
MATERIAL
- 5" MIN.
- STEPS AT 16" O.C.
NEENAH R-1980-1
- 5'-6" MINIMUM HEIGHT
- MECHANICAL JOINT
RESTRAINT GLAND
- D-900, SOR 18
PVC PIPE OR
D.I. CLASS 52
- 60" MIN.
- 6" GRANULAR BED
SOLID CONCRETE BLOCK
- NOTE:
1) All Mechanical Joint Fittings to Be Assembled with Stainless Steel Teflon Coated Nuts and Bolts.
2) Mechanical Joint Restraint Shall Be Series 2000PV For Use With D-900 PVC Pipe & D.I.P., Produced by EBBA Iron Inc. or Approved Equal.
3) Zinc Anodes installed on every other bolt of each mechanical joint fitting.

VILLAGE OF MUNDELEIN
CONSTRUCTION DETAILS

TYPICAL VALVE VAULT
(5' I.D.)

DETAIL NO.
W-2

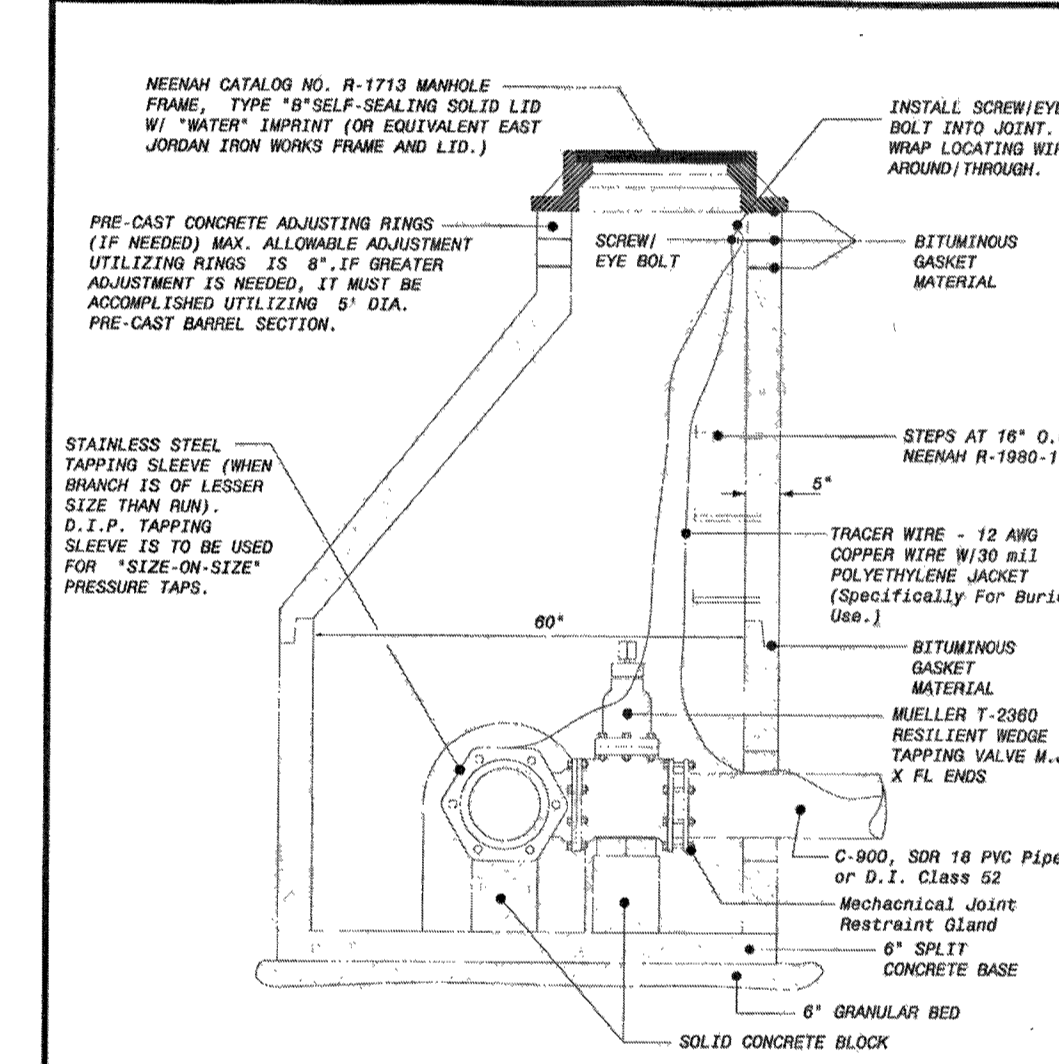


- 1 1/2" BITUMINOUS CONCRETE SURFACE COURSE,
H.M.A., MIXTURE D, NSO
- BITUMINOUS MATERIAL PRIME COAT (IF TRAFFIC
IS ALLOWED ON BINDER COURSE).
- 2" BITUMINOUS CONCRETE BINDER COURSE,
H.M.A. II-19 NSO
- BITUMINOUS MATERIAL PRIME COAT (MC-30) (0.35 gal/sy)
- 9 1/2" AGGREGATE BASE COURSE, TYPE B CA-6 (CRUSHED).
H.M.A. WITH 4" GRANULAR MATERIAL SUBBASE MAY BE
USED IN LIEU OF 9 1/2" OF AGGREGATE
- TOPSOIL FURNISH AND PLACE 4" (MIN.) AND
SEEDING.
- COMBINATION CONCRETE CURB & GUTTER, TYPE B-6.12.
- P.C.C. SIDEWALK 5" THICKNESS (6" THICKNESS
AT DRIVEWAYS)

VILLAGE OF MUNDELEIN
ENGINEERING DETAILS

PARKING LOT TYPICAL
PAVEMENT SECTION

DETAIL NO.
R-2

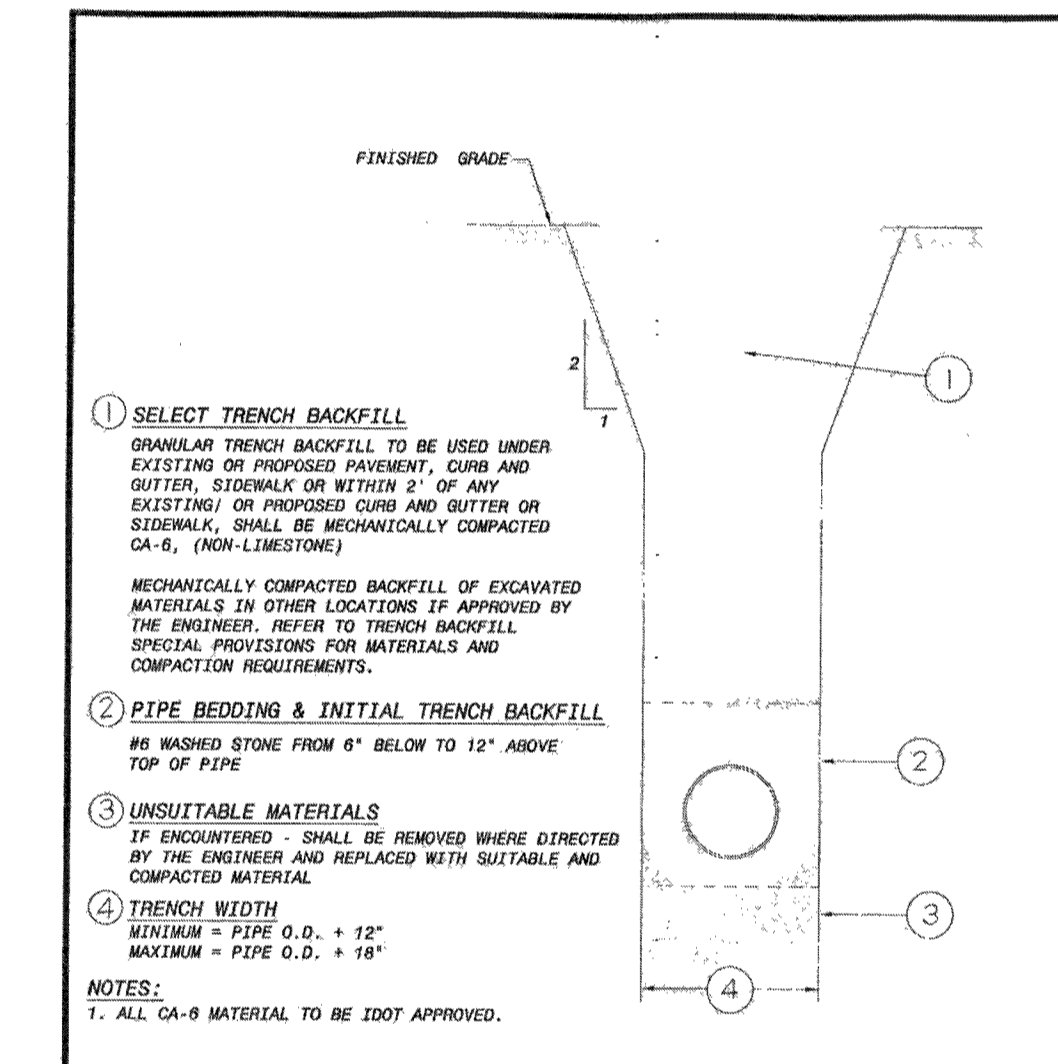


- NEENAH CATALOG NO. R-1713 MANHOLE
FRAME, TYPE "B" SELF-SEALING SOLID LID
W/ "WATER" IMPRINT OR EQUIVALENT EAST
JOINT FROM WORKS FRAME AND LID.)
- INSTALL SCREW/EYE
BOLT INTO JOINT.
WIRE LOCATING WIRE
AROUND/THROUGH.
- PRE-CAST CONCRETE ADJUSTING RINGS
(IF NEEDED) MAX. ALLOWABLE ADJUSTMENT
UTILIZING RINGS IS 8". IF GREATER
ADJUSTMENT IS NEEDED, IT MUST BE
ACCOMPLISHED UTILIZING 5" DIA.
PRE-CAST BARRIER SECTION.
- STAINLESS STEEL
TAPPING SLEEVE (WHEN
BRANCH IS OF LESSER
SIZE THAN RUN).
D.I.P. TAPPING
SLEEVE IS TO BE USED
FOR "SIZE-ON-SIZE"
PRESSURE TAPS.
- 1 1/2" BITUMINOUS CONCRETE SURFACE COURSE,
H.M.A., MIXTURE D, NSO
- BITUMINOUS MATERIAL PRIME COAT (IF TRAFFIC
IS ALLOWED ON BINDER COURSE).
- 2" BITUMINOUS CONCRETE BINDER COURSE,
H.M.A. II-19 NSO
- BITUMINOUS MATERIAL PRIME COAT (MC-30) (0.35 gal/sy)
- 9 1/2" AGGREGATE BASE COURSE, TYPE B CA-6 (CRUSHED)
- 6" GRANULAR BED
SOLID CONCRETE BLOCK
- C-900, SOR 18 PVC PIPE
OR D.I. CLASS 52
- MECHANICAL JOINT
RESTRAINT GASKET
MATERIAL
- MUELLER T-2380
RESILIENT WEDGE
TAPPING VALVE H.A.
X FL ENDS
- 6" SPLIT
CONCRETE BASE
- NOTE:
1) 12" FREE COPPER INSIDE OF BUILDING MUST BE MAINTAINED.
2) WATER METER MUST BE SET WITHIN 18" OF ENTERING BUILDING.
3) MUST USE SLEEVE, CORP. STOP, CURB STOP OR CURB BOX MEETING VILLAGE OF MUNDELEIN REQUIREMENTS.
4) TAP MUST BE 3' FROM ANY OTHER CONNECTION OR FITTING.

VILLAGE OF MUNDELEIN
CONSTRUCTION DETAILS

WATERMAIN PRESSURE
CONNECTION TAPPING
VALVE 10" & SMALLER

DETAIL NO.
W-3

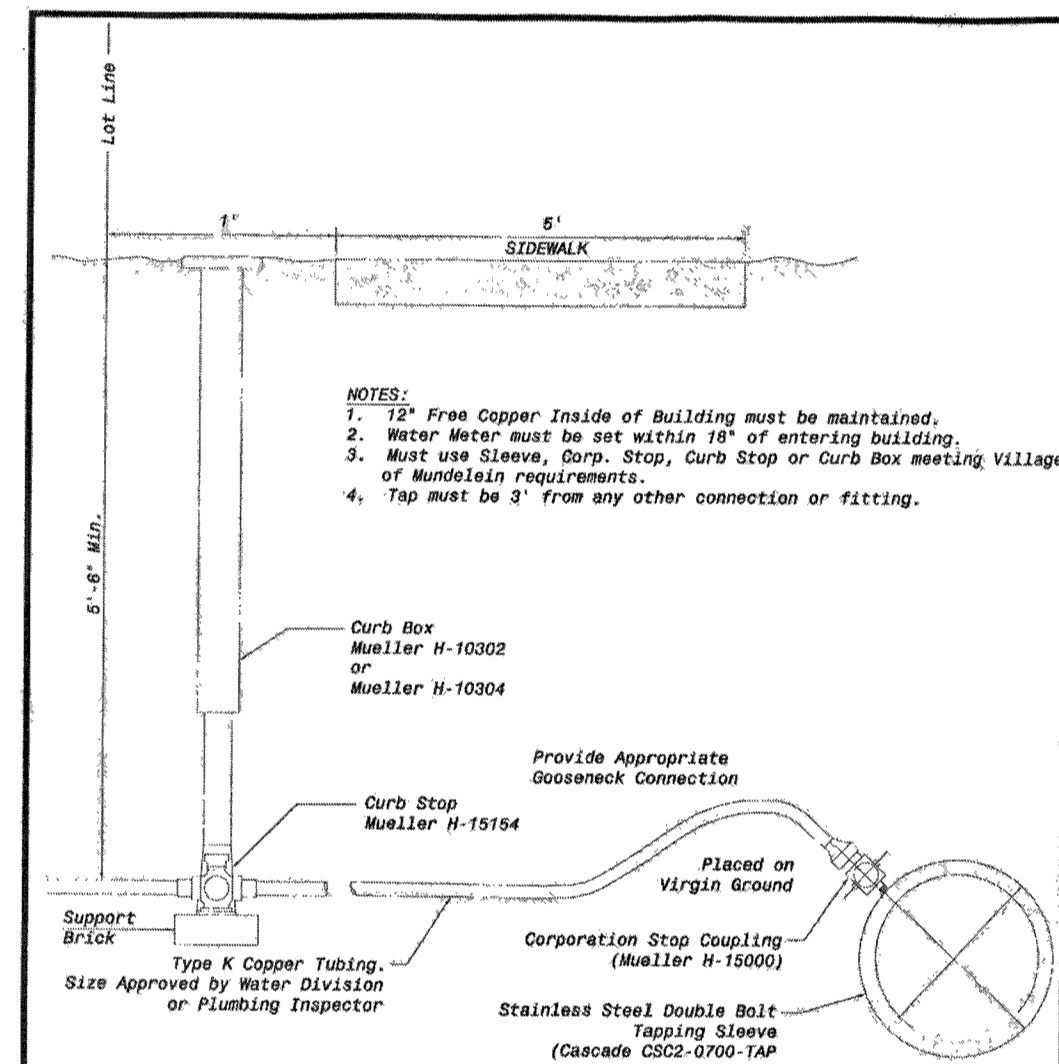


1. SELECT TRENCH BACKFILL
GRANULAR TRENCH BACKFILL TO BE USED UNDER EXISTING OR PROPOSED PAVEMENT, CURB AND GUTTER, SIDEWALK OR WITHIN 2' OF ANY EXISTING OR PROPOSED CURB AND GUTTER OR SIDEWALK. SHALL BE MECHANICALLY COMPACTED TO 95% RELATIVE DENSITY.
2. PIPE BEDDING & INITIAL TRENCH BACKFILL
#6 WASHED STONE FROM 6" BELOW TO 12" ABOVE TOP OF PIPE
3. UNSATURABLE MATERIALS
IF ENCOUNTERED - SHALL BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH SUITABLE AND COMPACTED MATERIAL.
4. TRENCH WIDTH
MINIMUM = PIPE O.D. + 12"
MAXIMUM = PIPE O.D. + 18"
- NOTES:
1. ALL CA-6 MATERIAL TO BE IDOT APPROVED.

VILLAGE OF MUNDELEIN
CONSTRUCTION DETAILS

TYPICAL WATERMAIN
TRENCH CROSS SECTION

DETAIL NO.
W-4

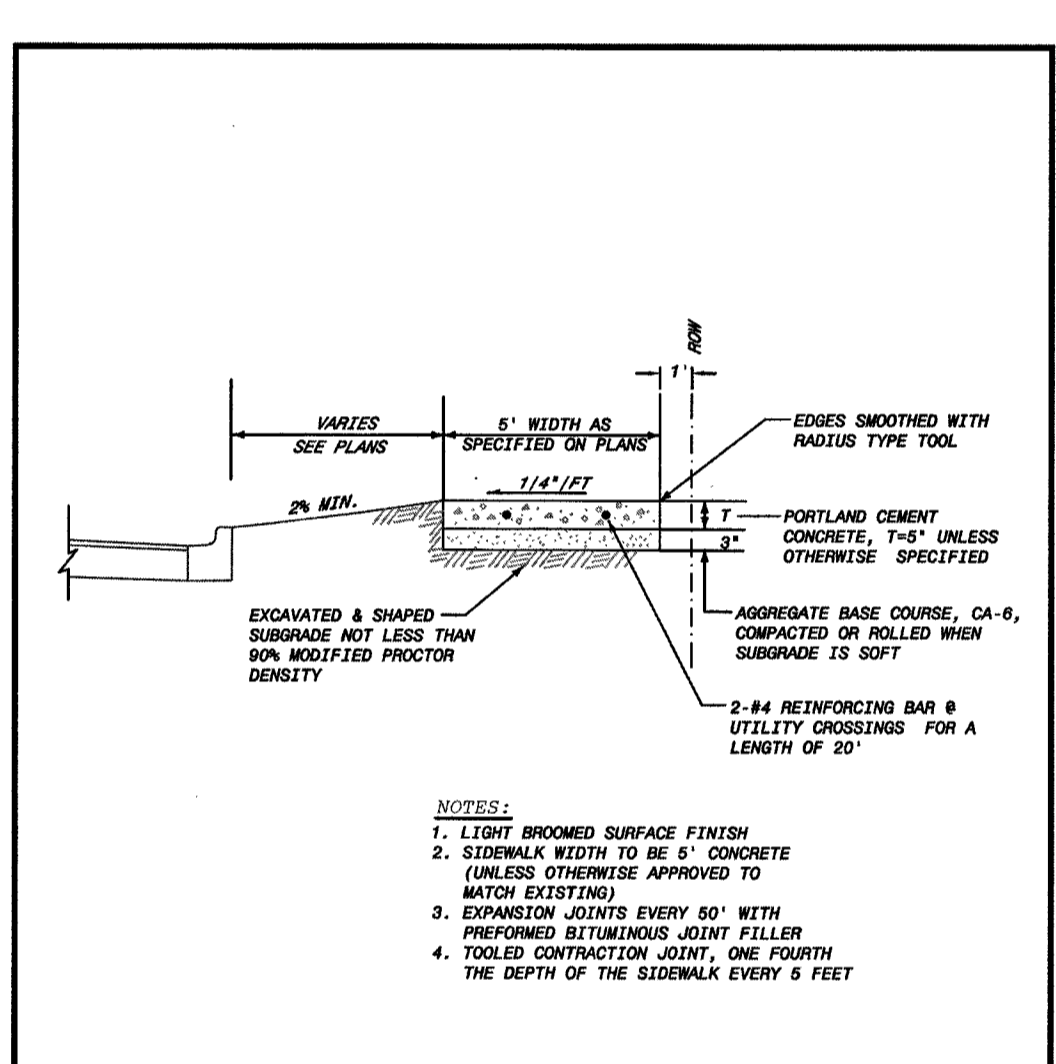


- NOTE:
1. 12" Free Copper Inside of Building must be maintained.
2. Water Meter must be set within 18" of entering building.
3. Must use Sleeve, Corp. Stop, Curb Stop or Curb Box meeting Village of Mundelein Requirements.
4. Tap must be 3' from any other connection or fitting.
- Provide Appropriate
Gooseneck Connection
- Placed on
Virgin Ground
- Corporation Stop Coupling
(Mueller H-15000)
- Stainless Steel Double Bolt
Tapping Sleeve
(Cascade CSC-0700-148
or
Sells Blair 372)
- Type K Copper Tubing -
Size Approved by Water Division
or Plumbing Inspector
- NOTE:
1. No Couplings permitted between Corporation and Curb Stop.
2. No Couplings permitted between curb stop and building.
3. No Limestone backfill shall come in contact with copper or brass.
4. B-Boxes must be located in a grassy non-paved area.

VILLAGE OF MUNDELEIN
CONSTRUCTION DETAILS

WATER SERVICE
CONNECTION

DETAIL NO.
W-5

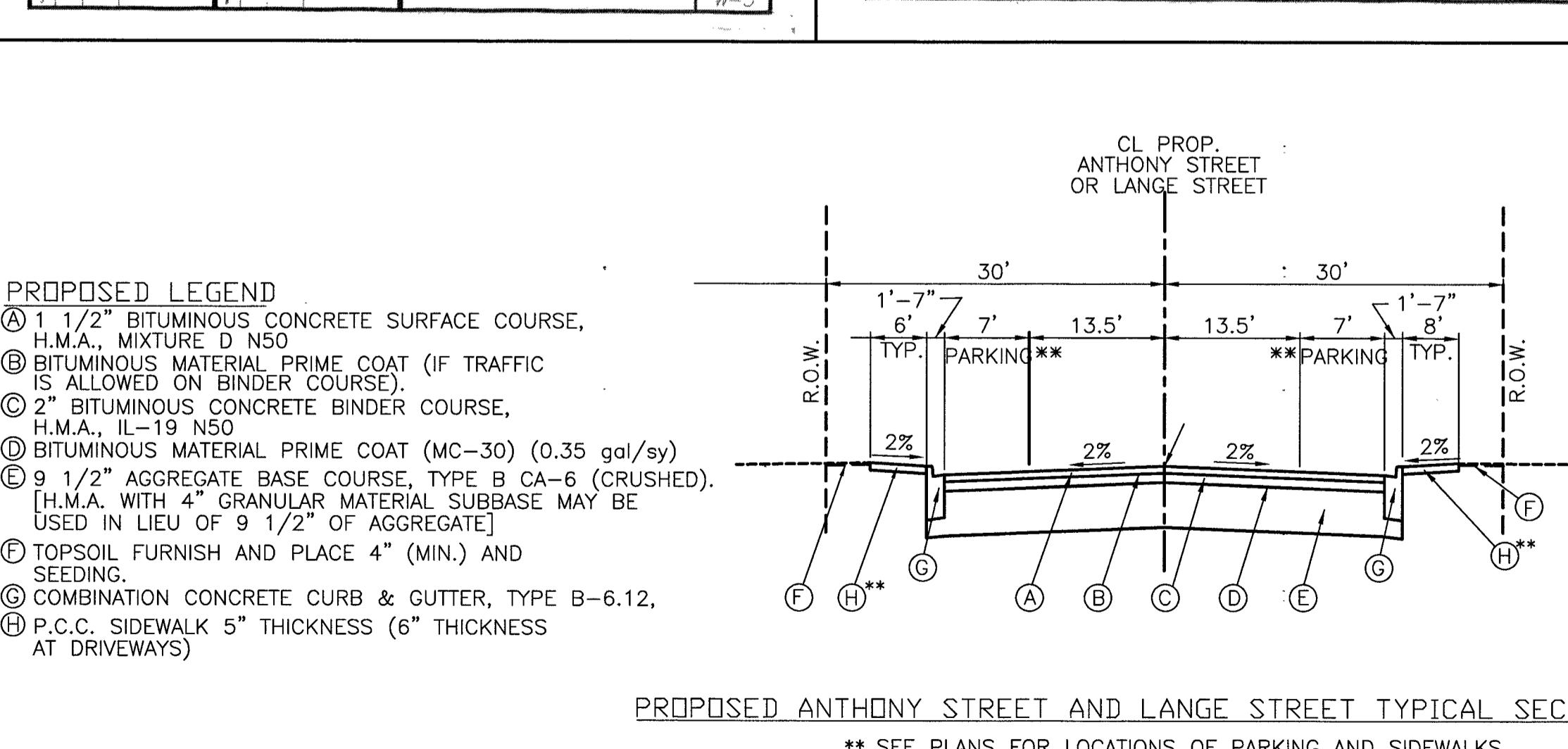


- VARIES
SEE PLANS
- 6" WIDTH AS
SPECIFIED ON PLANS
- EDGES SMOOTHED WITH
RADIUS TYPE TOOL
- PORTLAND CEMENT
CONCRETE, 1-4" UNLESS
OTHERWISE SPECIFIED
- 2-#4 REINFORCING BAR @
UTILITY CROSSINGS FOR A
LENGTH OF 20'
- AGGREGATE BASE COURSE, CA-6,
COMPACTED OR ROLLED WHEN
SUBGRADE IS SOFT
- EXCAVATED & SHAPED
SUBGRADE NOT LESS THAN
SON MODIFIED PROCTOR
DENSITY
- NOTE:
1. TYPED FINISHED SURFACE FINISH
2. SIDEWALK WIDTH TO BE 6" CONCRETE
(UNLESS OTHERWISE APPROVED TO
MATCH EXISTING)
3. EXPANSION JOINTS EVERY 60' WITH
PREFORMED BITUMINOUS JOINT FILLER
4. TOOLED CONTRACTION JOINT, ONE FOURTH
THE DEPTH OF THE SIDEWALK EVERY 8 FEET

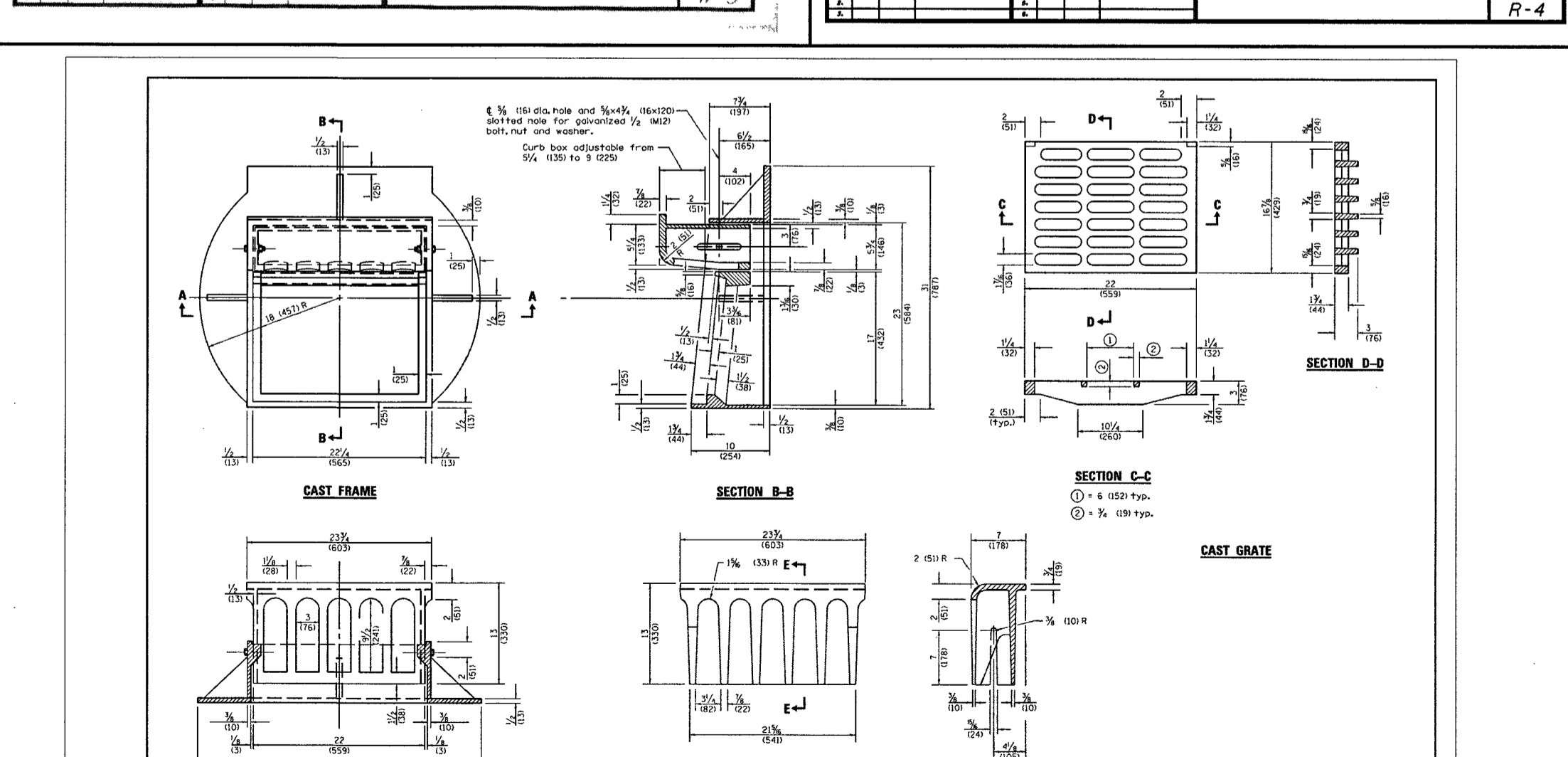
VILLAGE OF MUNDELEIN
ENGINEERING DETAILS

SIDEWALK DETAIL

DETAIL NO.
R-4



- CL PROP.
ANTHONY STREET
OR LANGE STREET
- PROPOSED LEGEND
- (A) 1 1/2" BITUMINOUS CONCRETE SURFACE COURSE,
H.M.A., MIXTURE D NSO
- (B) BITUMINOUS MATERIAL PRIME COAT (IF TRAFFIC
IS ALLOWED ON BINDER COURSE).
- (C) 2" BITUMINOUS CONCRETE BINDER COURSE,
H.M.A. II-19 NSO
- (D) BITUMINOUS MATERIAL PRIME COAT (MC-30) (0.35 gal/sy)
- (E) 9 1/2" AGGREGATE BASE COURSE, TYPE B CA-6 (CRUSHED).
H.M.A. WITH 4" GRANULAR MATERIAL SUBBASE MAY BE
USED IN LIEU OF 9 1/2" OF AGGREGATE
- (F) TOPSOIL FURNISH AND PLACE 4" (MIN.) AND
SEEDING.
- (G) COMBINATION CONCRETE CURB & GUTTER, TYPE B-6.12.
- (H) P.C.C. SIDEWALK 5" THICKNESS (6" THICKNESS
AT DRIVEWAYS)
- 1'-7" TYP. PARKING**
- 30'
- 13.5'
- 13.5'
- 7' 8"
- 1'-7" TYP.
- 2%
- 2%
- 2%
- 2%
- R.O.W.
- R.O.W.
- PROPOSED ANTHONY STREET AND LANGE STREET TYPICAL SECTION
- ** SEE PLANS FOR LOCATIONS OF PARKING AND SIDEWALKS



- CAST FRAME
- SECTION B-B
- SECTION C-C
- CAST GRATE
- SECTION A-A
- ALTERNATE CURB BOX
- SECTION E-E
- 48 dimensions are to nearest inch unless otherwise shown.
- DATE: 11-15-10
DESIGNED BY: [Name]
CHECKED BY: [Name]
SCALE: AS SHOWN
- FRAME AND GRATE
TYPE 3
STANDARD 60400-04

DETAILS - 1

CARDINAL SQUARE
MUNDELEIN, ILLINOIS

VANTAGEPOINT
ENGINEERING

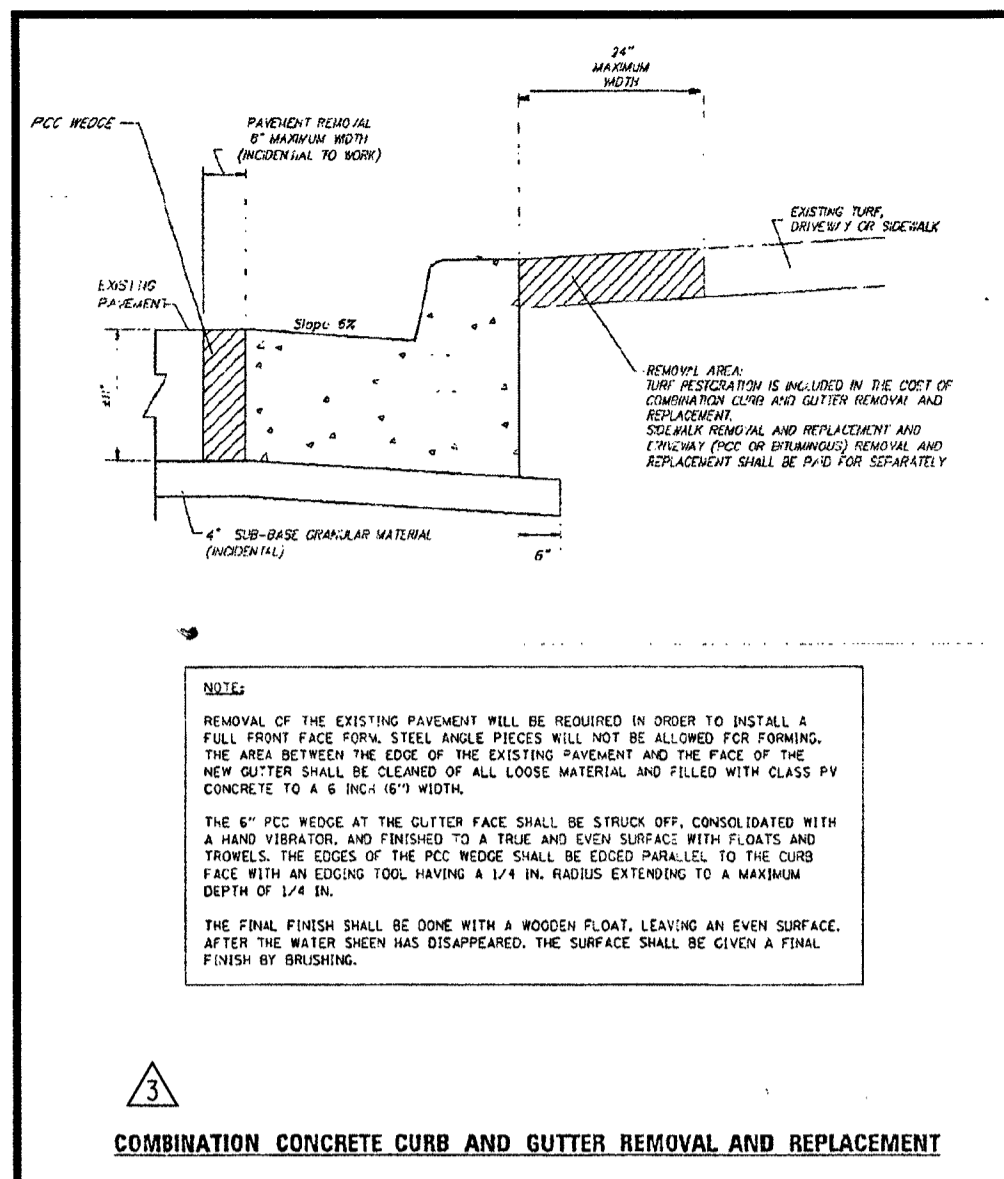
18311 NORTH CREEK DRIVE
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NO.	DATE	REMARKS
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1	9/17/13	PER VILLAGE COMMENTS

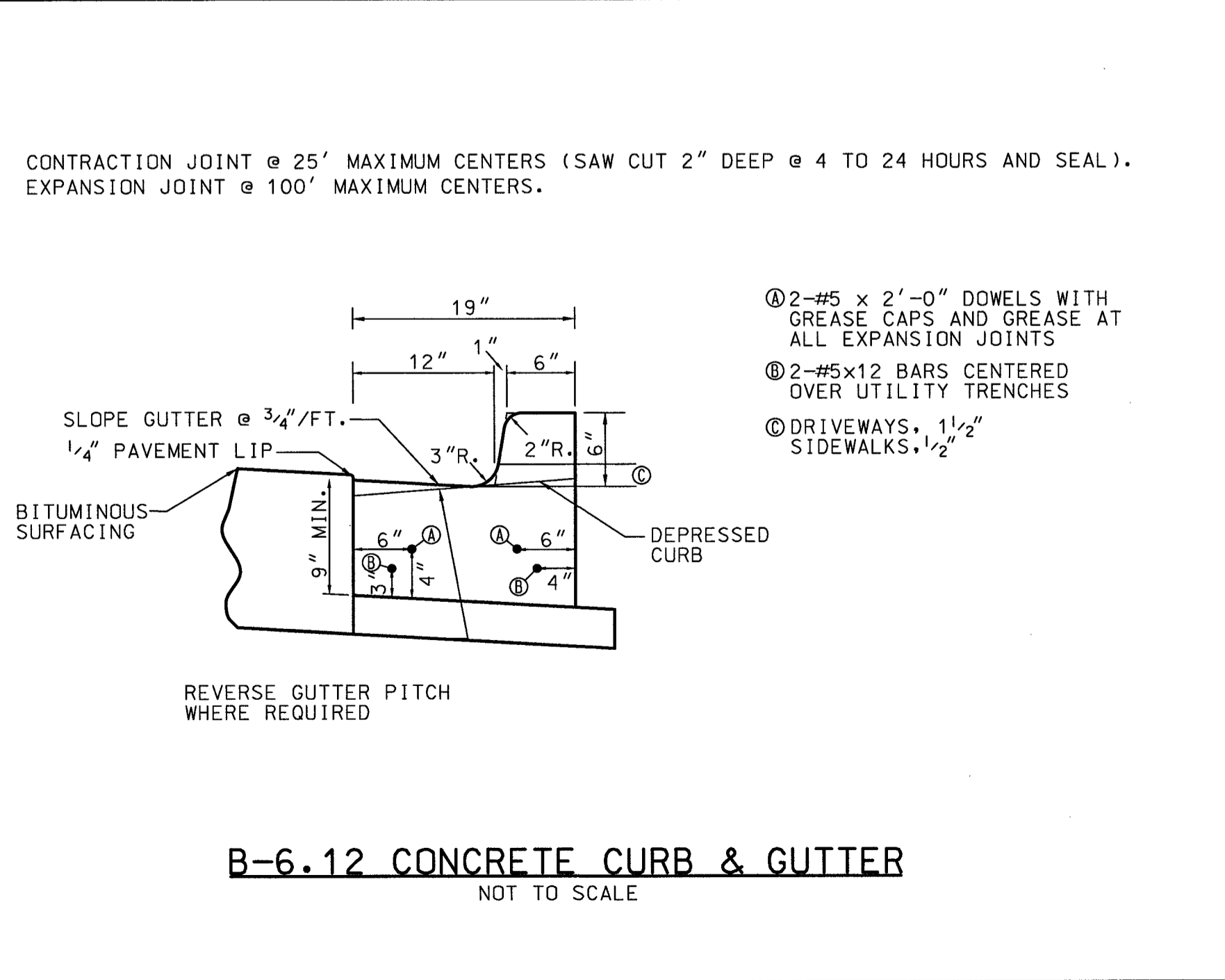
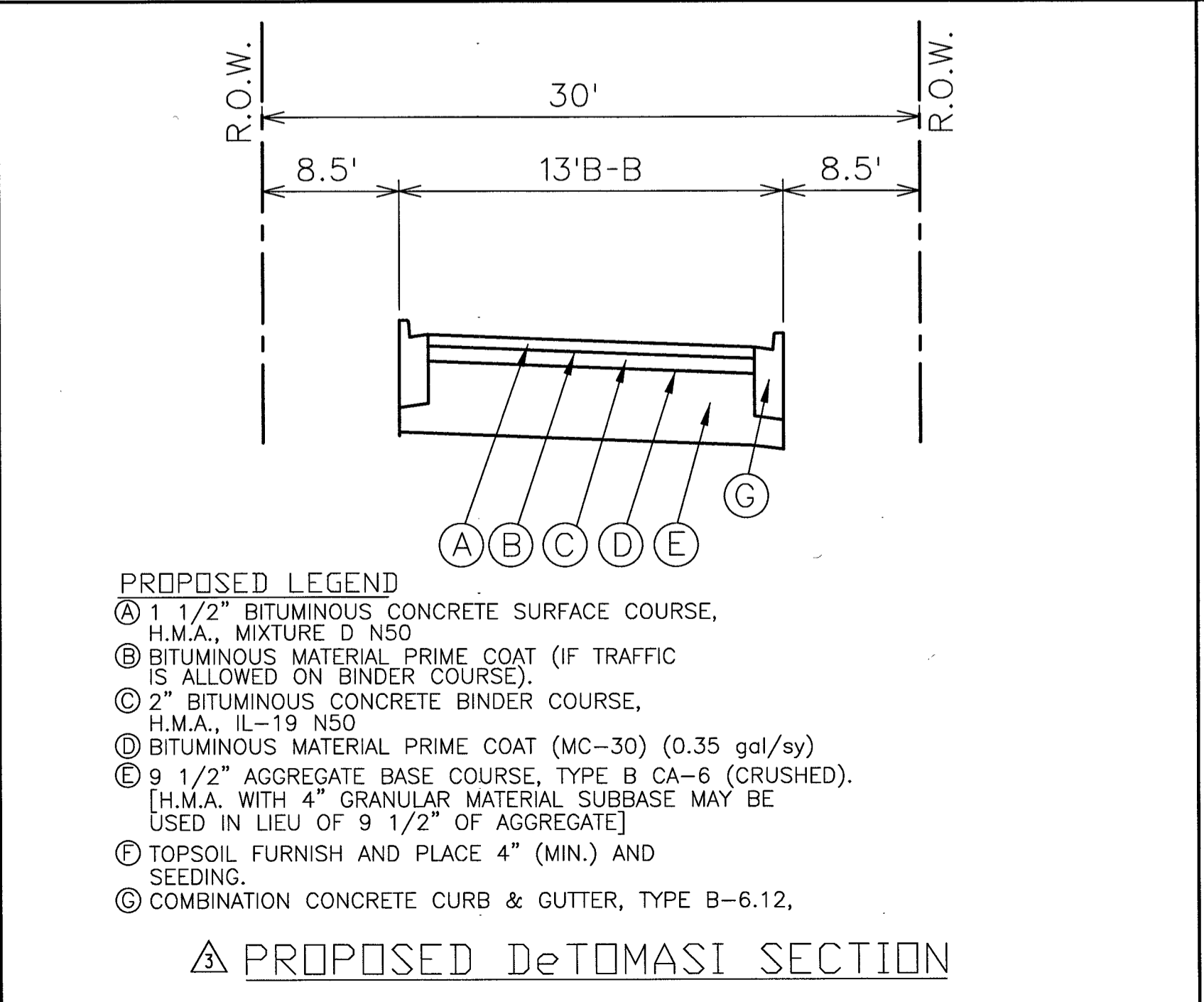
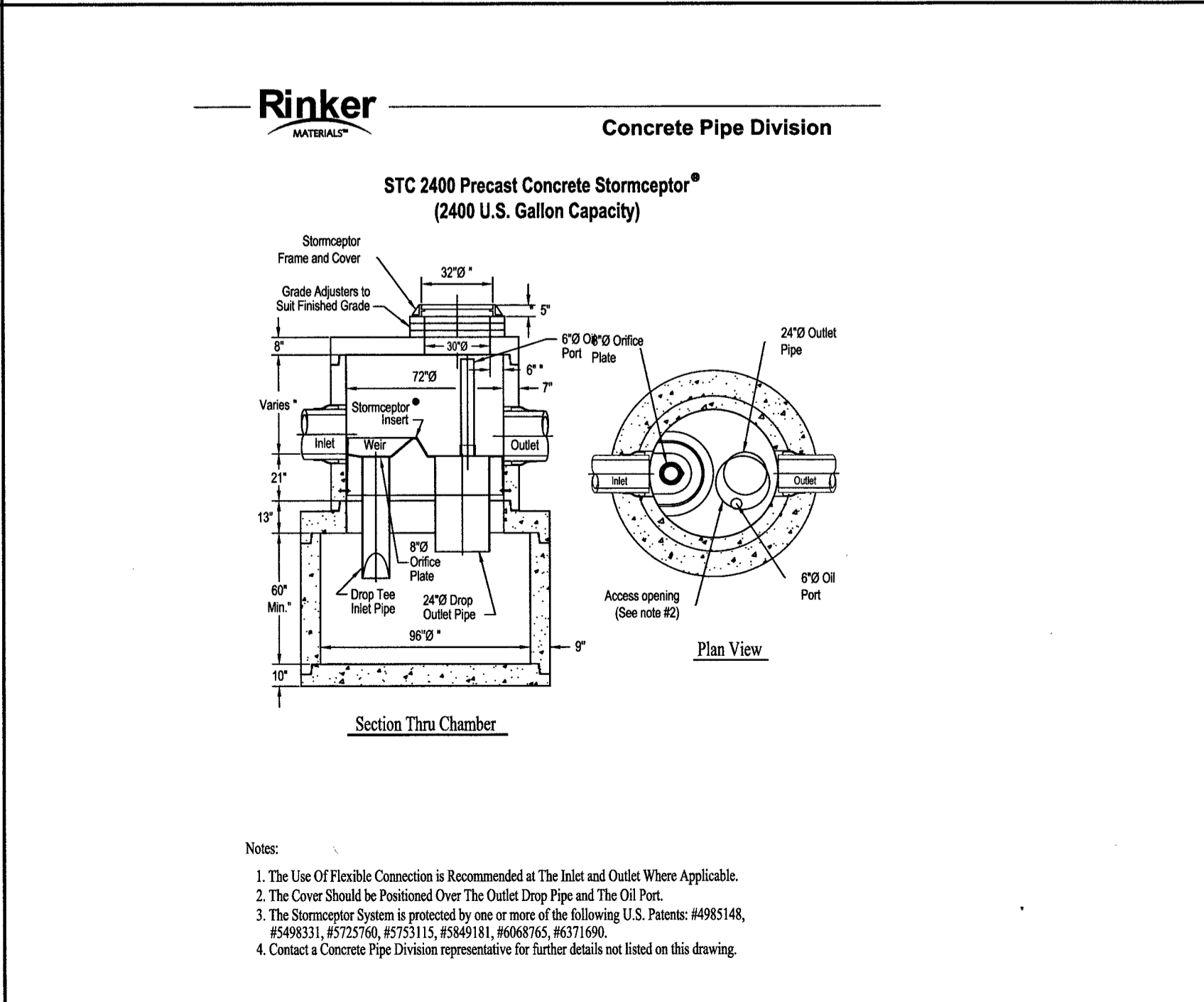
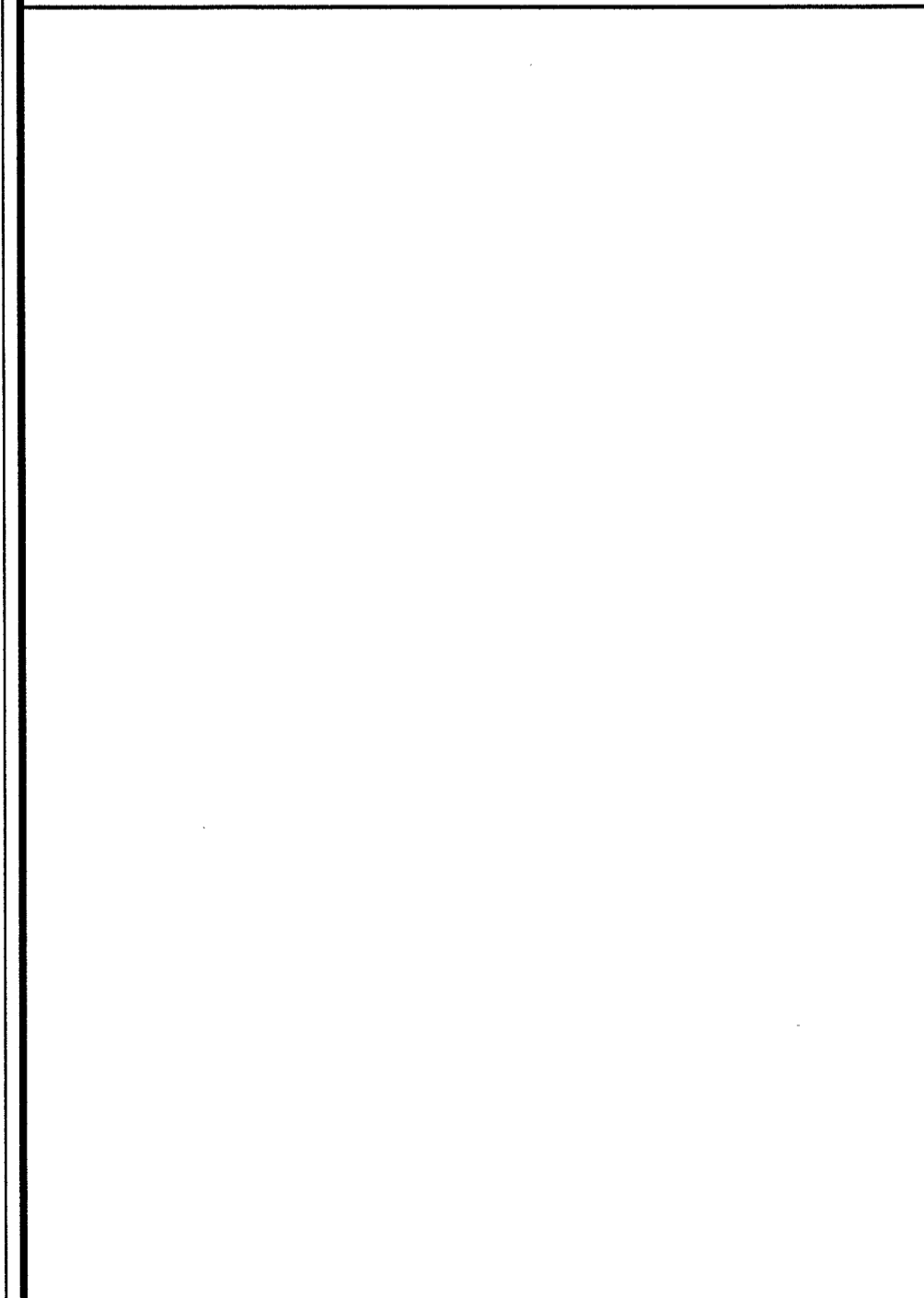
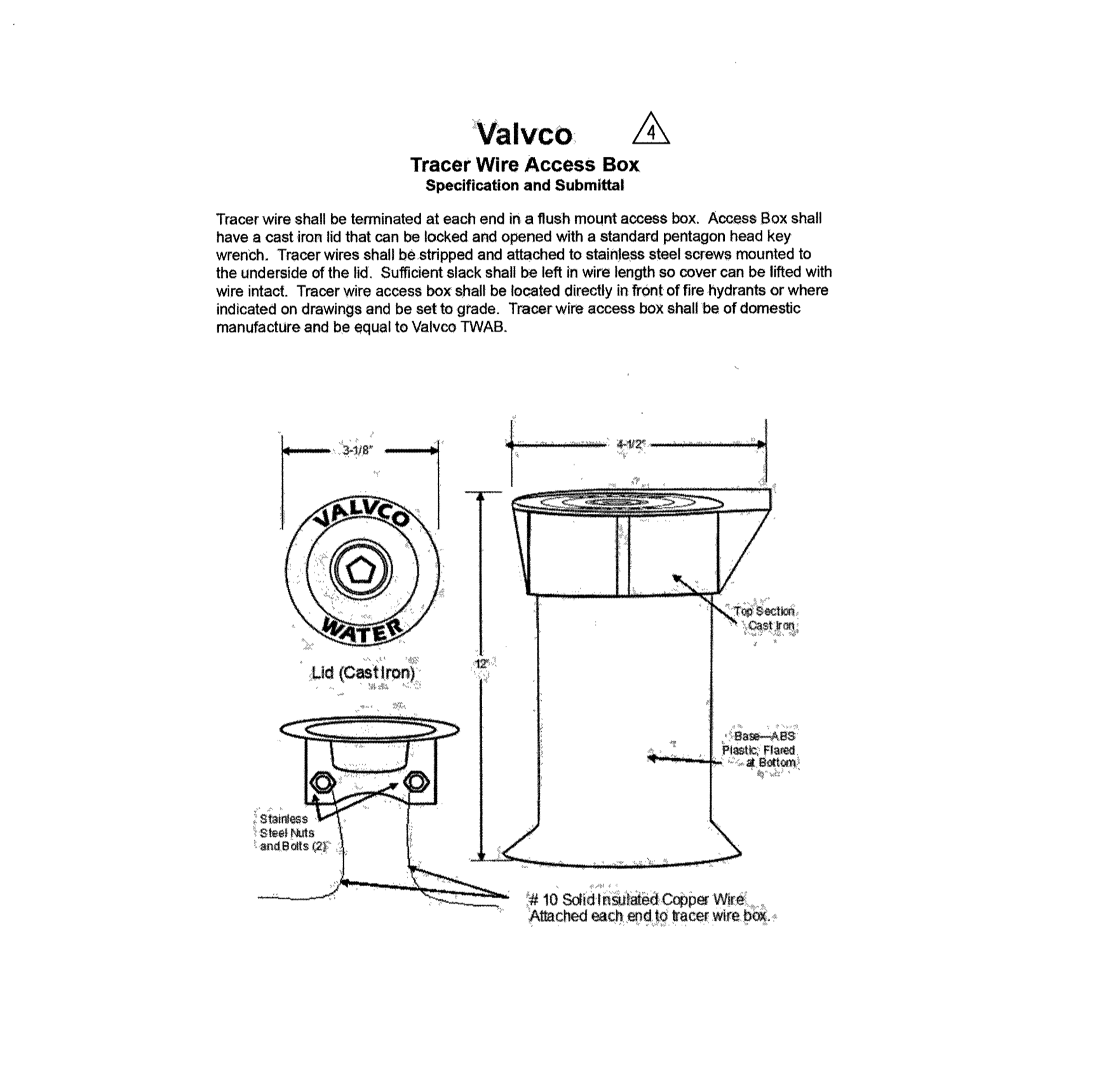
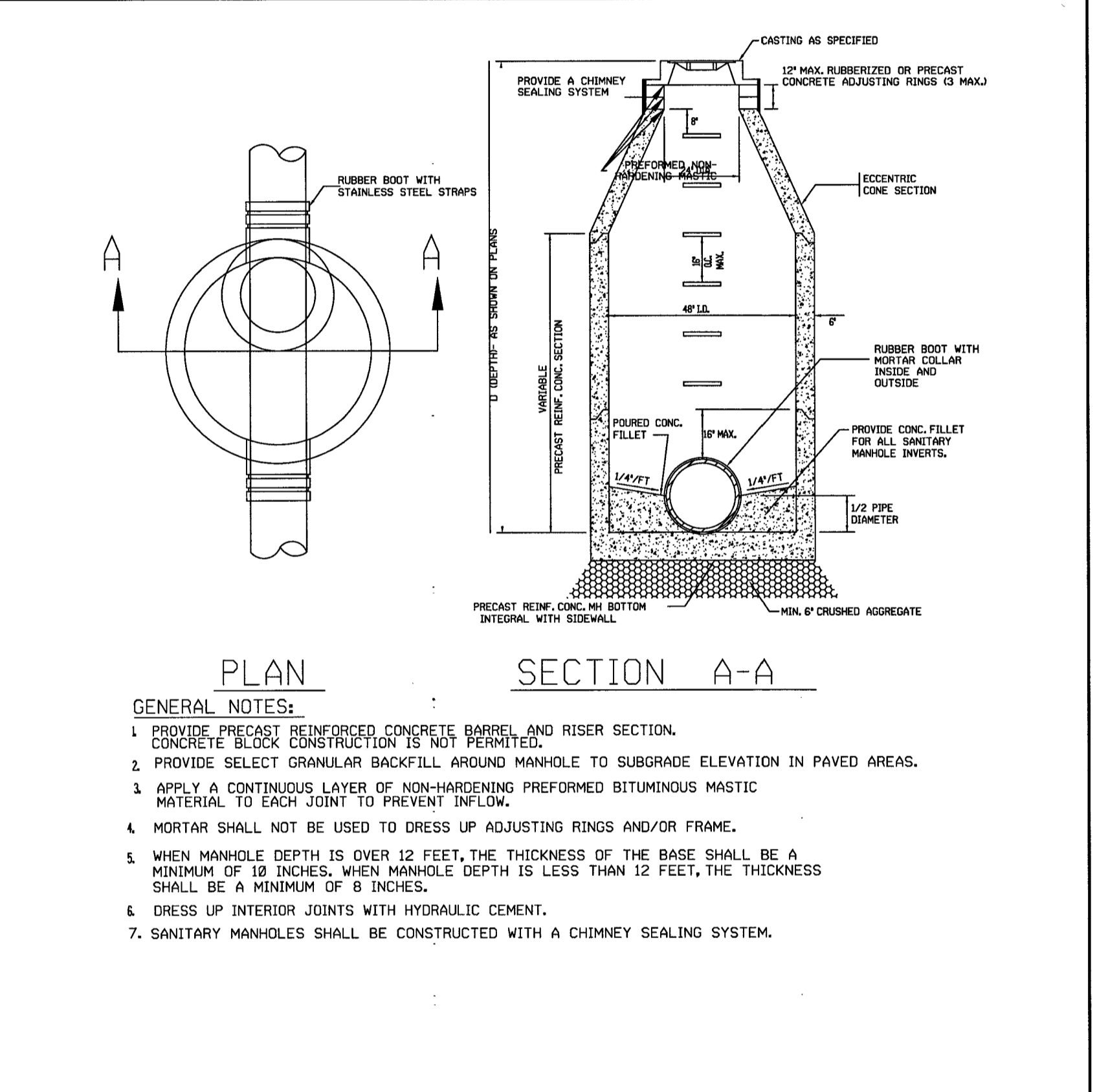
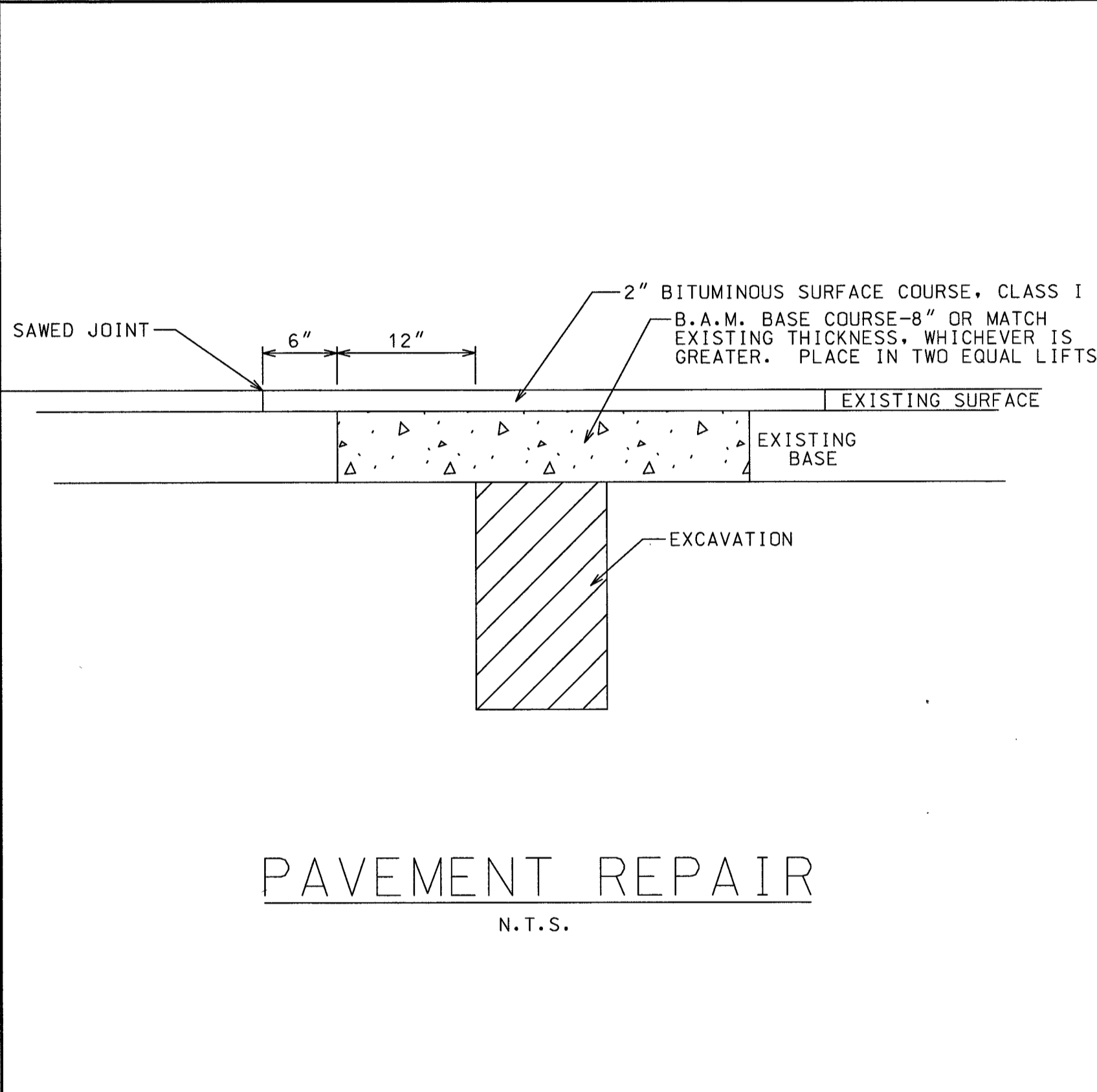
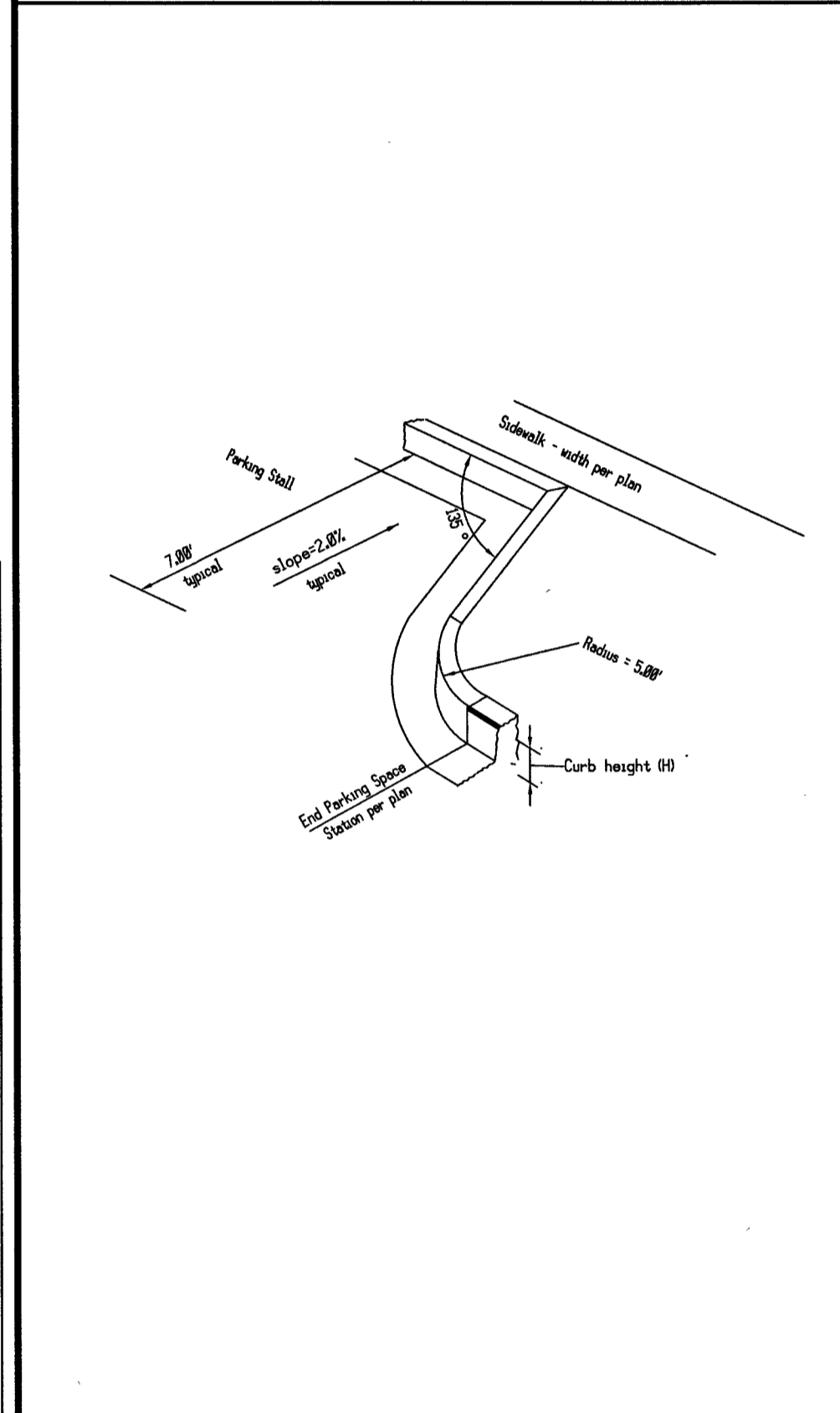
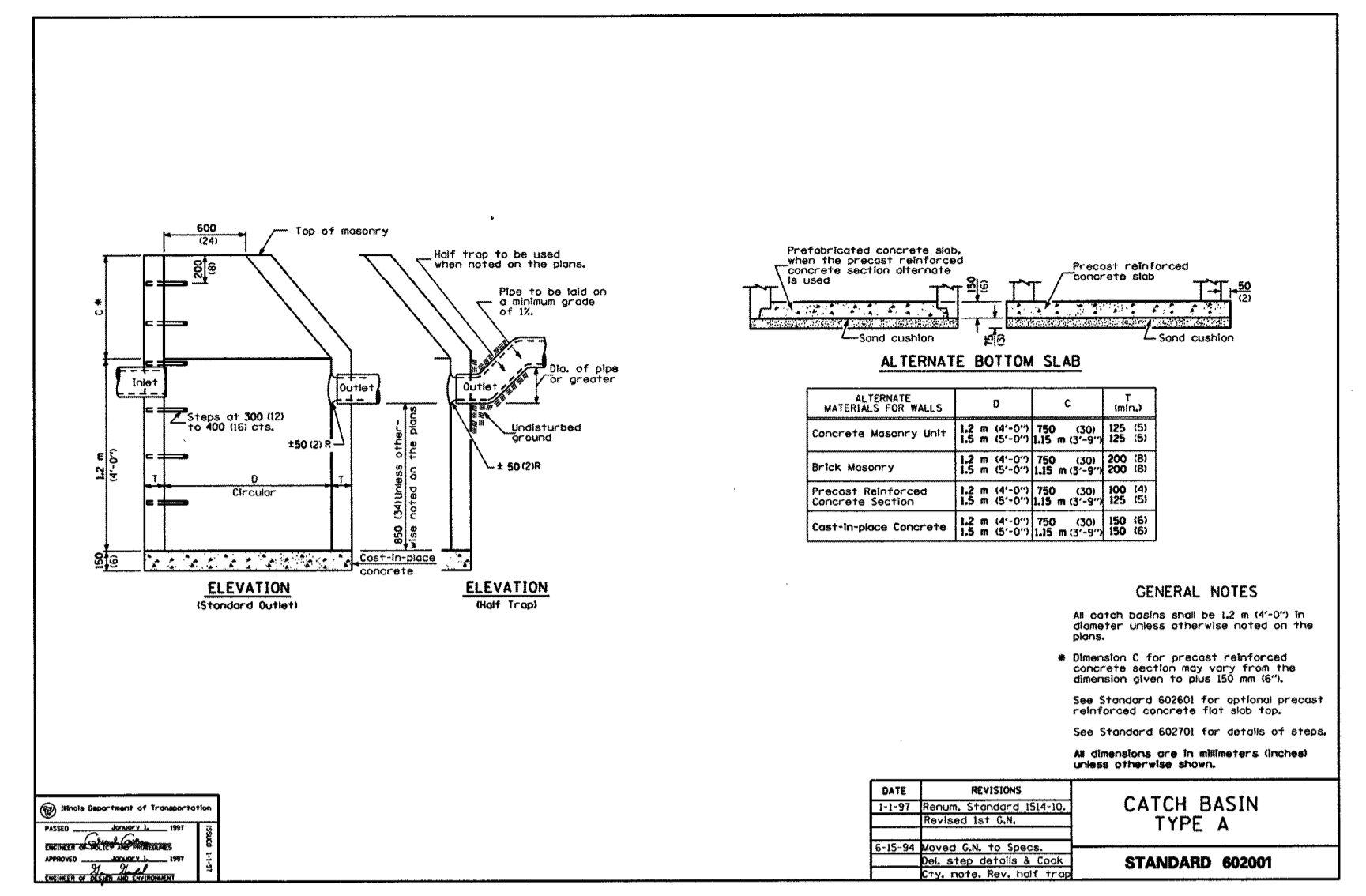
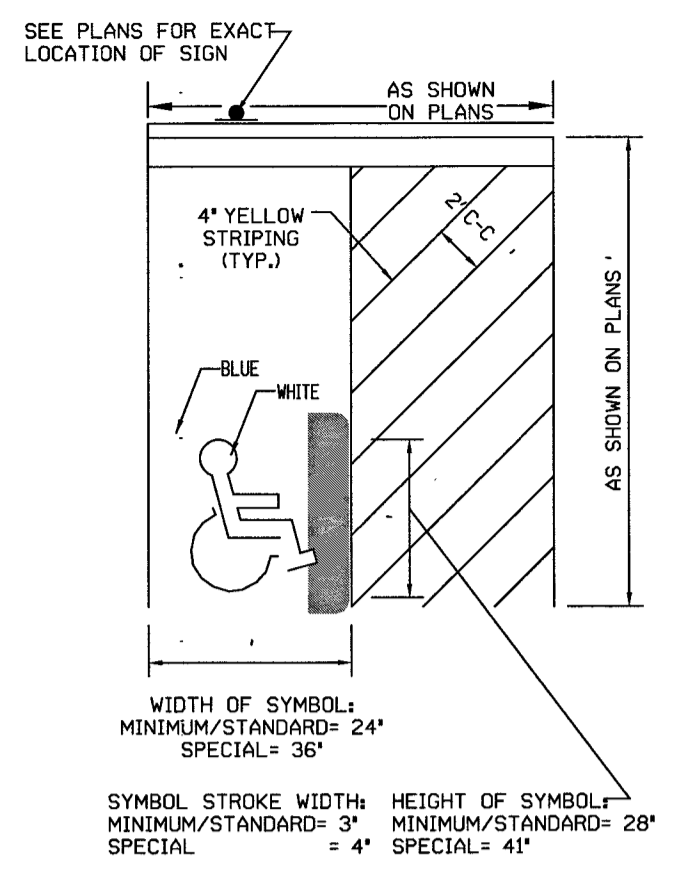
SHEET
D1
16 OF 20



Copperhead Tracer Wire Specification:

Locator Wire for Pipeline, Direct bury, and Open Cut

Tracer wire for open cut/open ditch shall be a #12 AWG HS-CCS high-strength copper clad steel conductor (HS-CCS), insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. HS-CCS conductor must be at 21% conductivity for locate purposes, break load 380 lbs. minimum. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Manufacturers supplying copper clad steel tracer wire must have available detailed performance data including 5 years of underground testing in terms of durability related to damage of protective insulation and effects of potential corrosion of the specific copper clad steel used. Origin of copper clad steel manufacturer is required and steel core must be manufactured in the United States. If manufacturer has not completed 5 year corrosion testing, a 5 year warranty must be provided. Tracer wire shall be Copperhead™ HS-CCS HDPE 30 mil or pre-approved equal and made in the USA.



NO.	DATE	REMARKS
4	04/04/14	PER VILLAGE COMMENTS
3	03/03/14	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

DETAILS - 2

CARDINAL SQUARE

MUNDELEIN, ILLINOIS

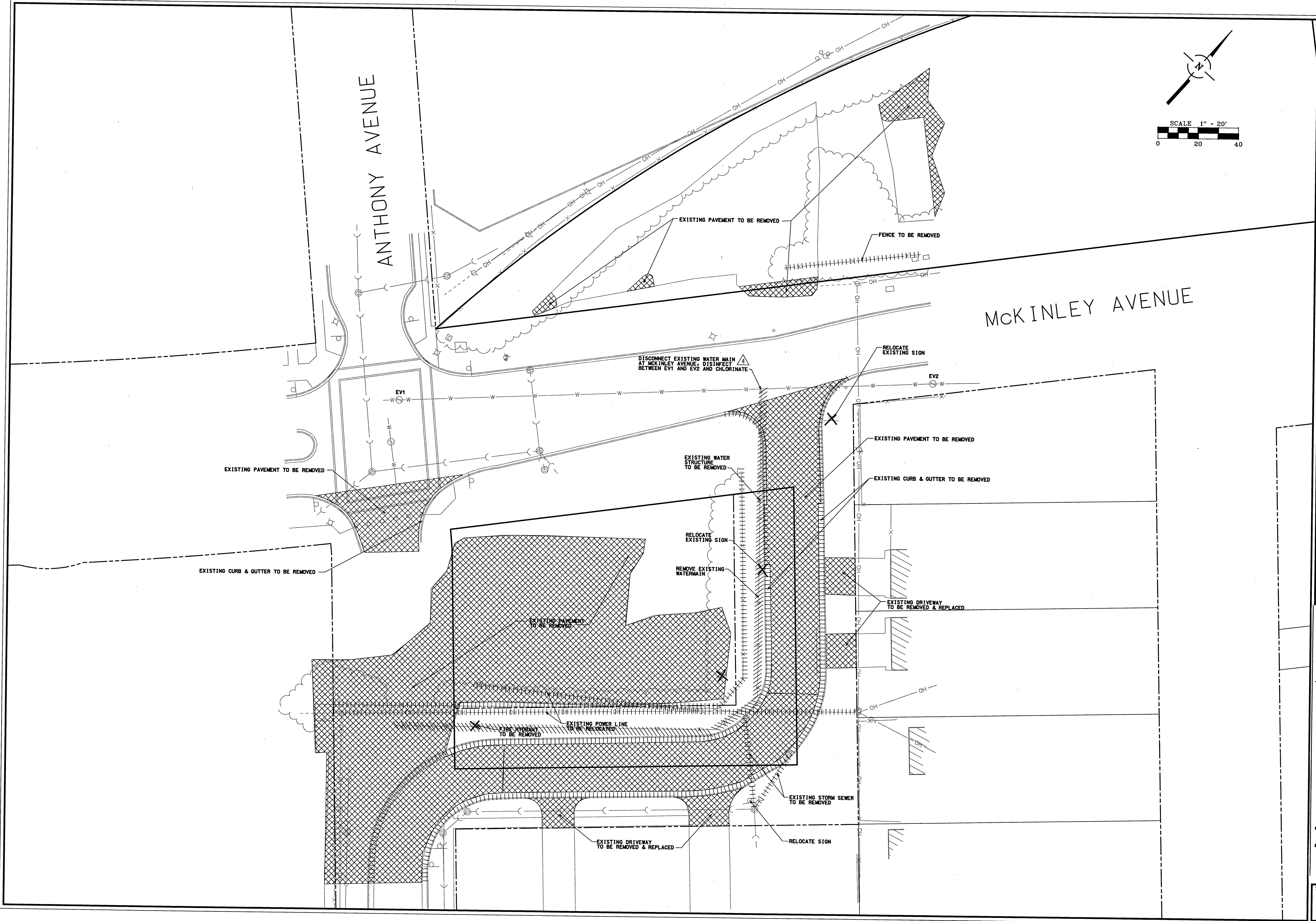
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SUITE 100
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SHEET **D2**

17 OF 20



NO.	DATE	REMARKS

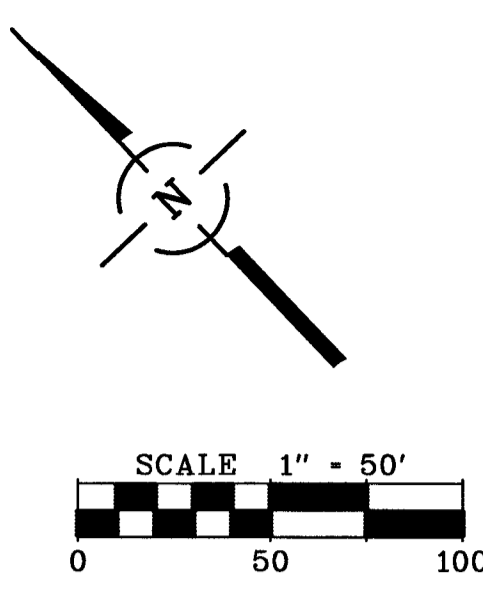
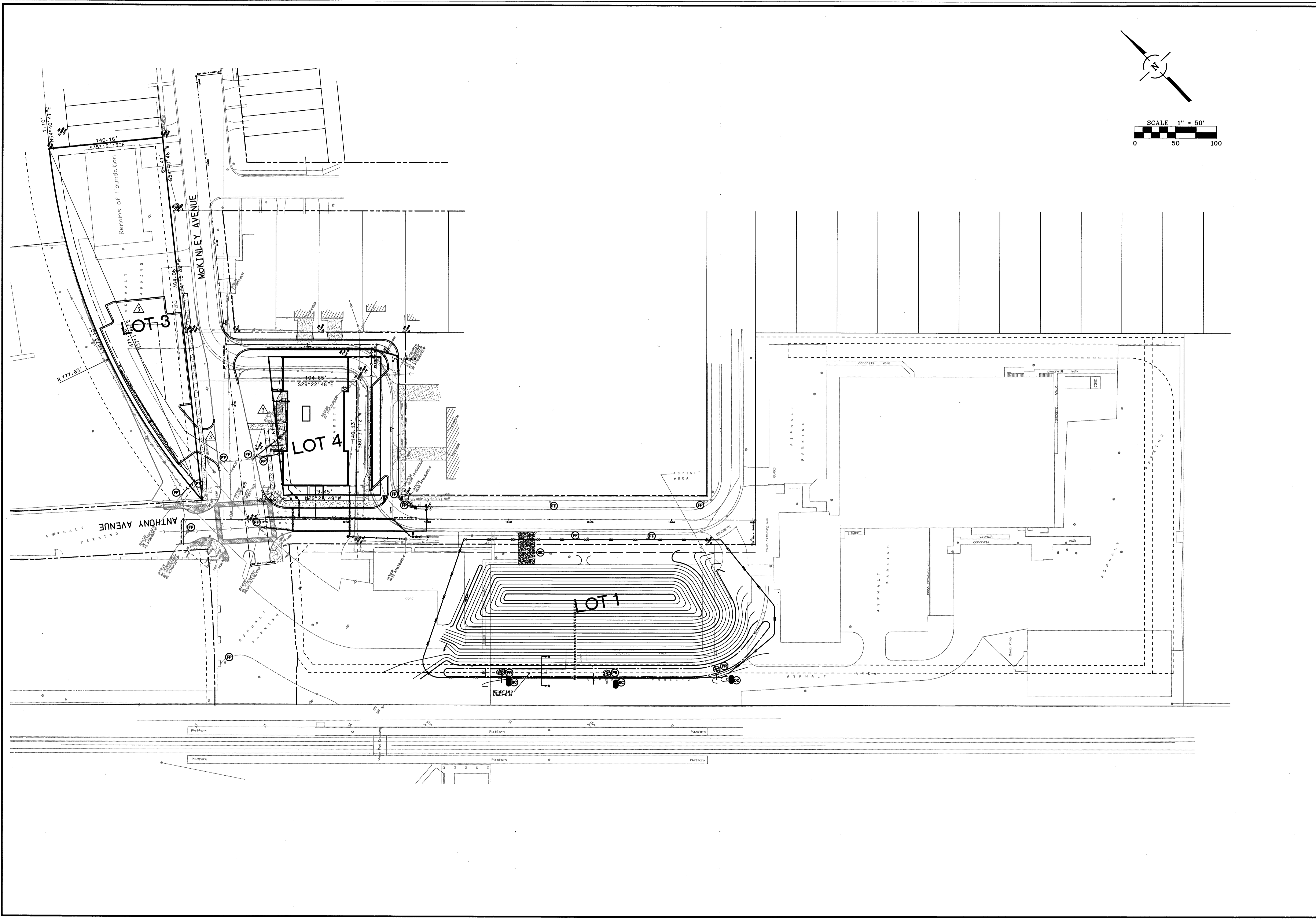
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2	12/10/13	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

DEMOLITION PLAN
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

VANTAGEPOINT
 ENGINEERING

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 815.398.4766
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NO.	DATE	REMARKS

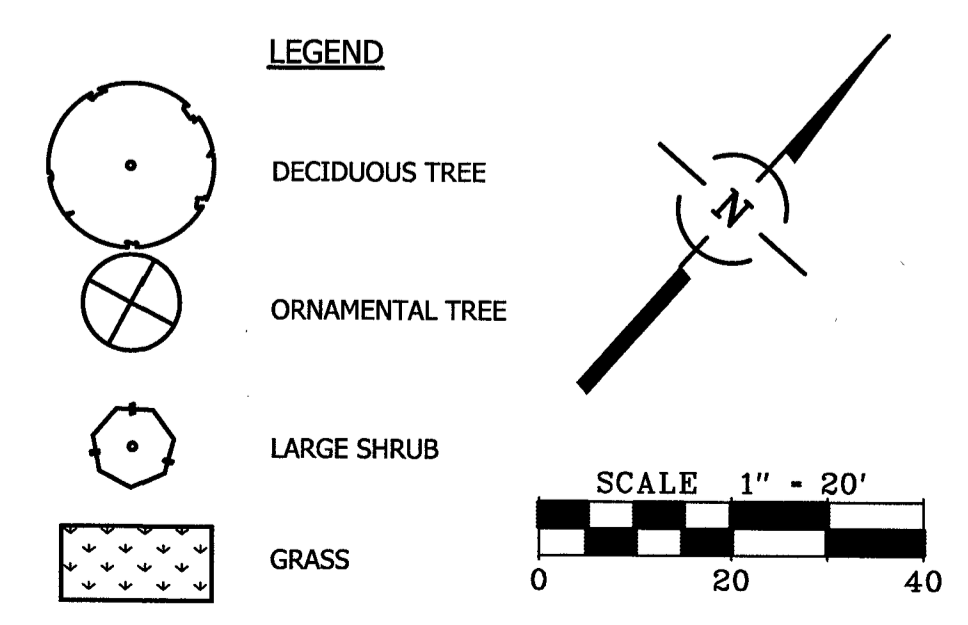
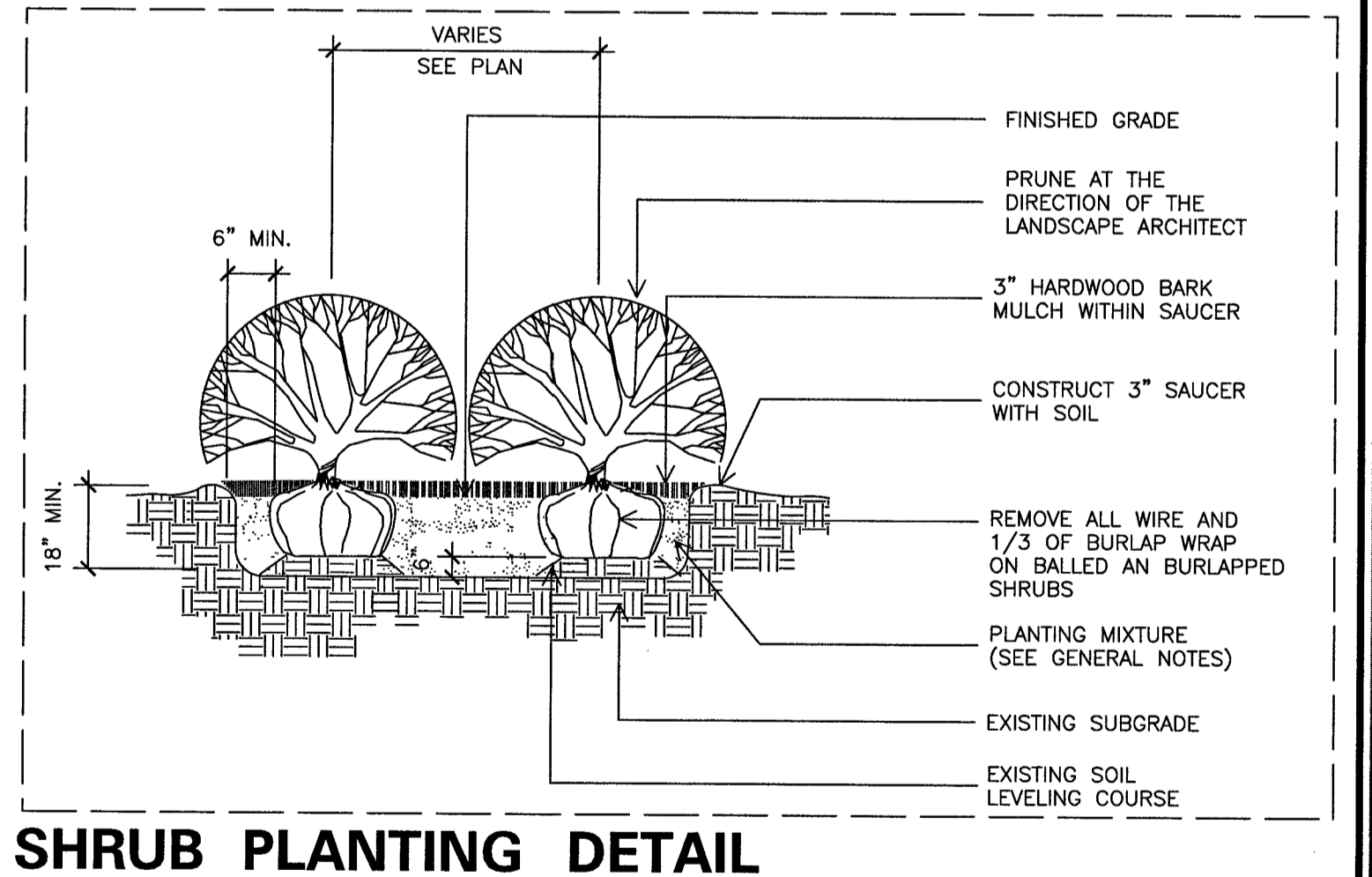
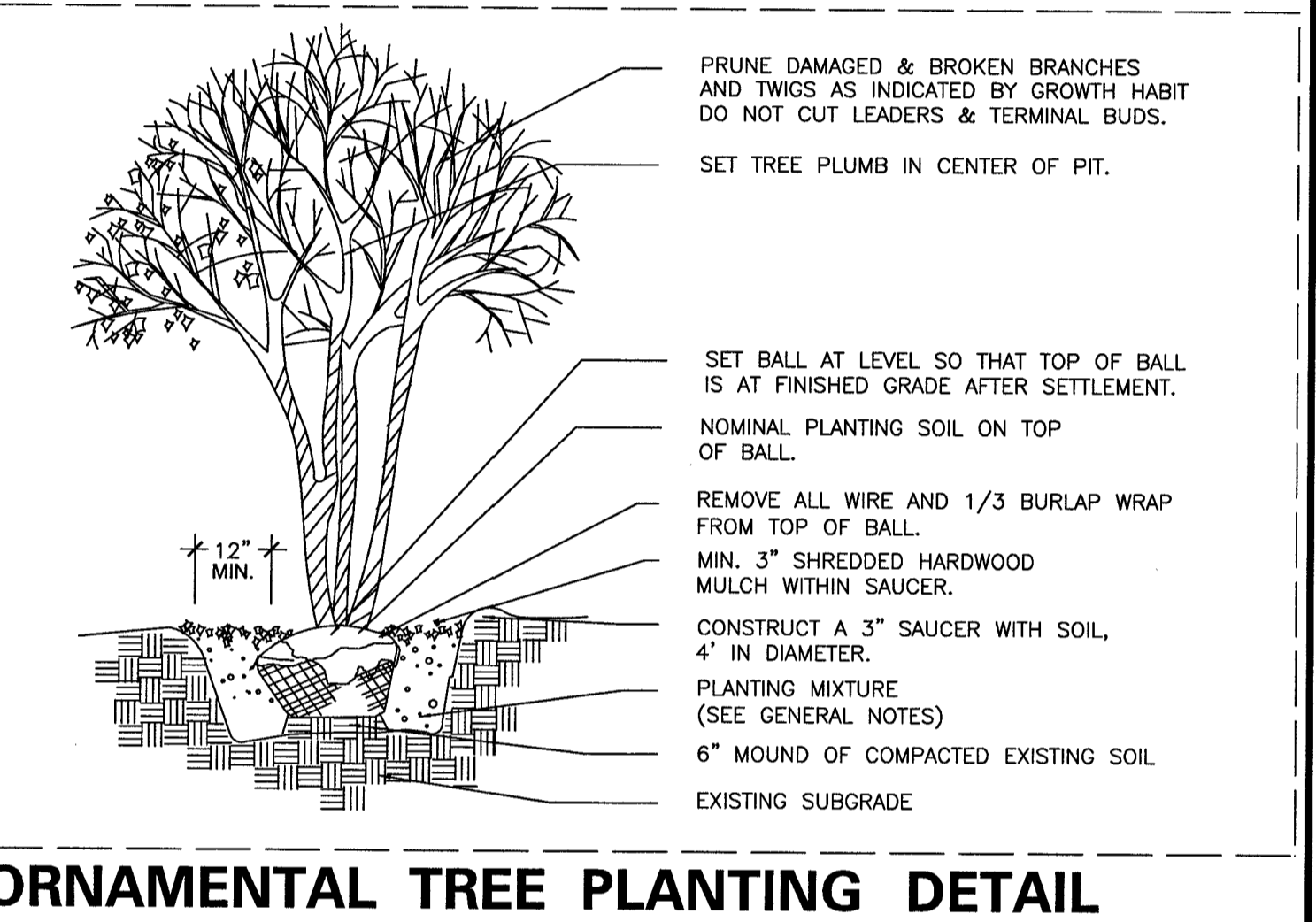
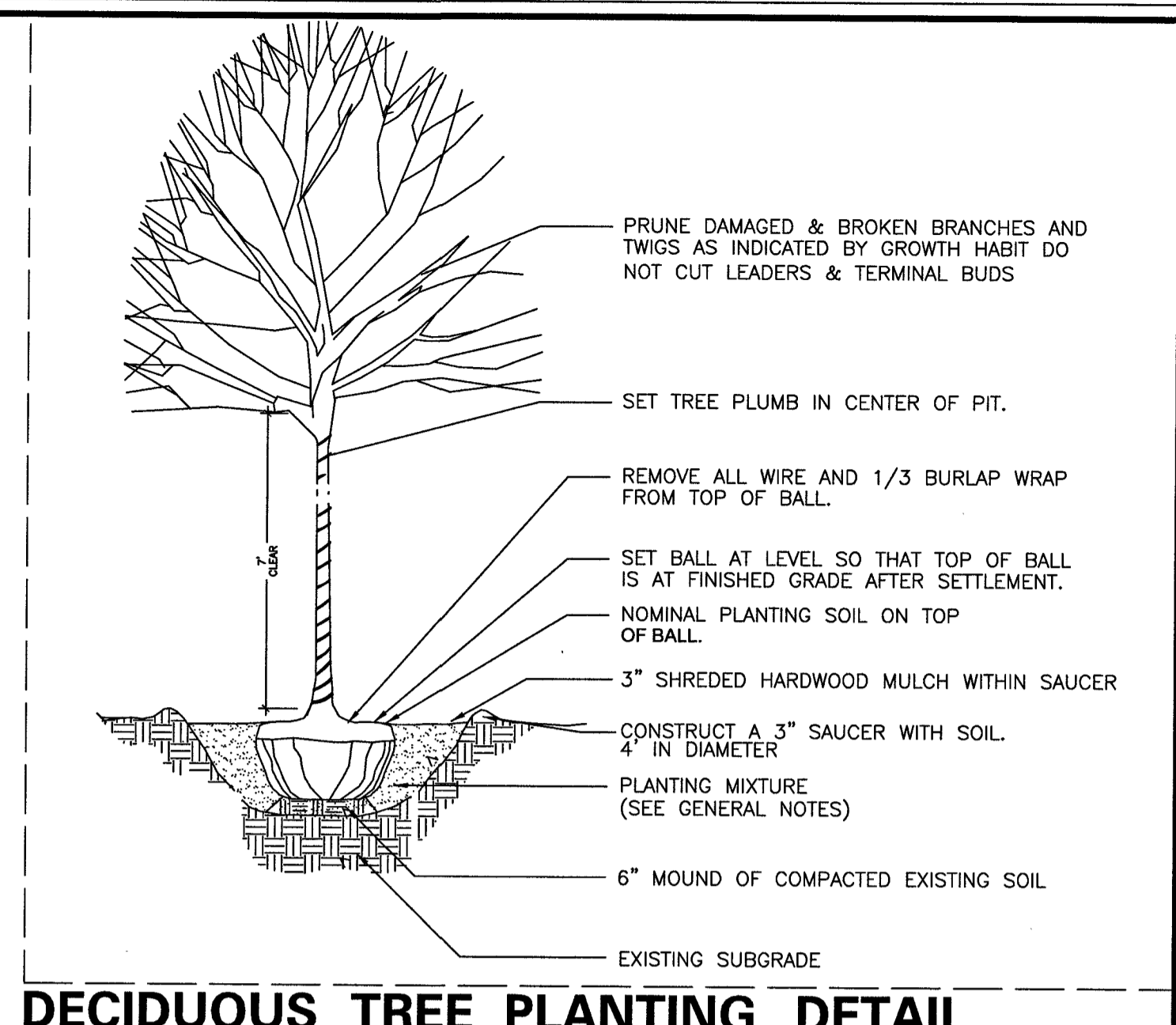
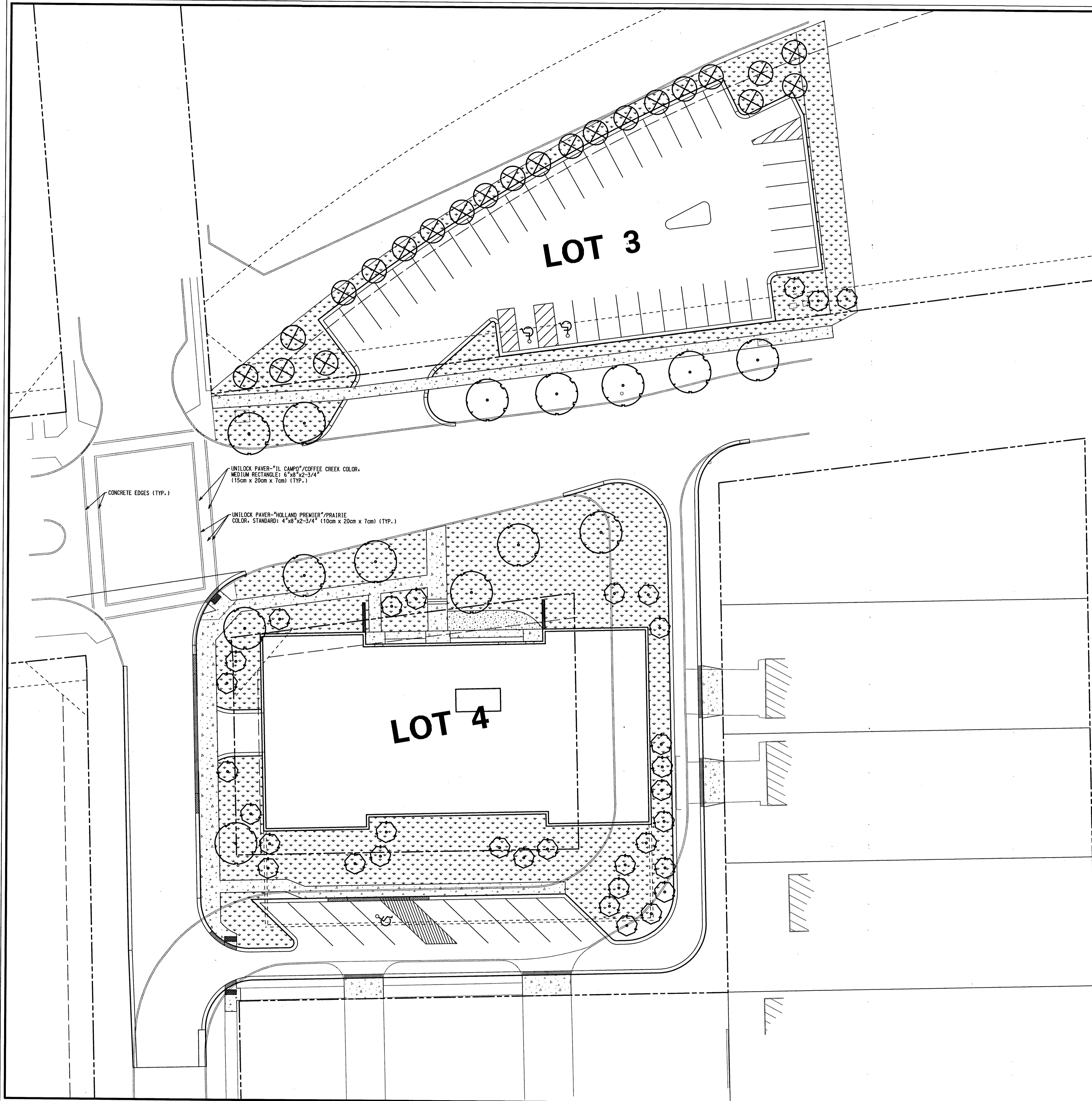
3	03/03/14	PER VILLAGE COMMENTS
2	12/10/13	PER VILLAGE COMMENTS
1	9/17/13	PER VILLAGE COMMENTS

OVERALL SITE PLAN
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

VANTAGE POINT
 ENGINEERING

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NO.	DATE	REMARKS
5	07/30/14	ADDED SHEET TO SET

LANDSCAPE PLAN
CARDINAL SQUARE
 MUNDELEIN, ILLINOIS

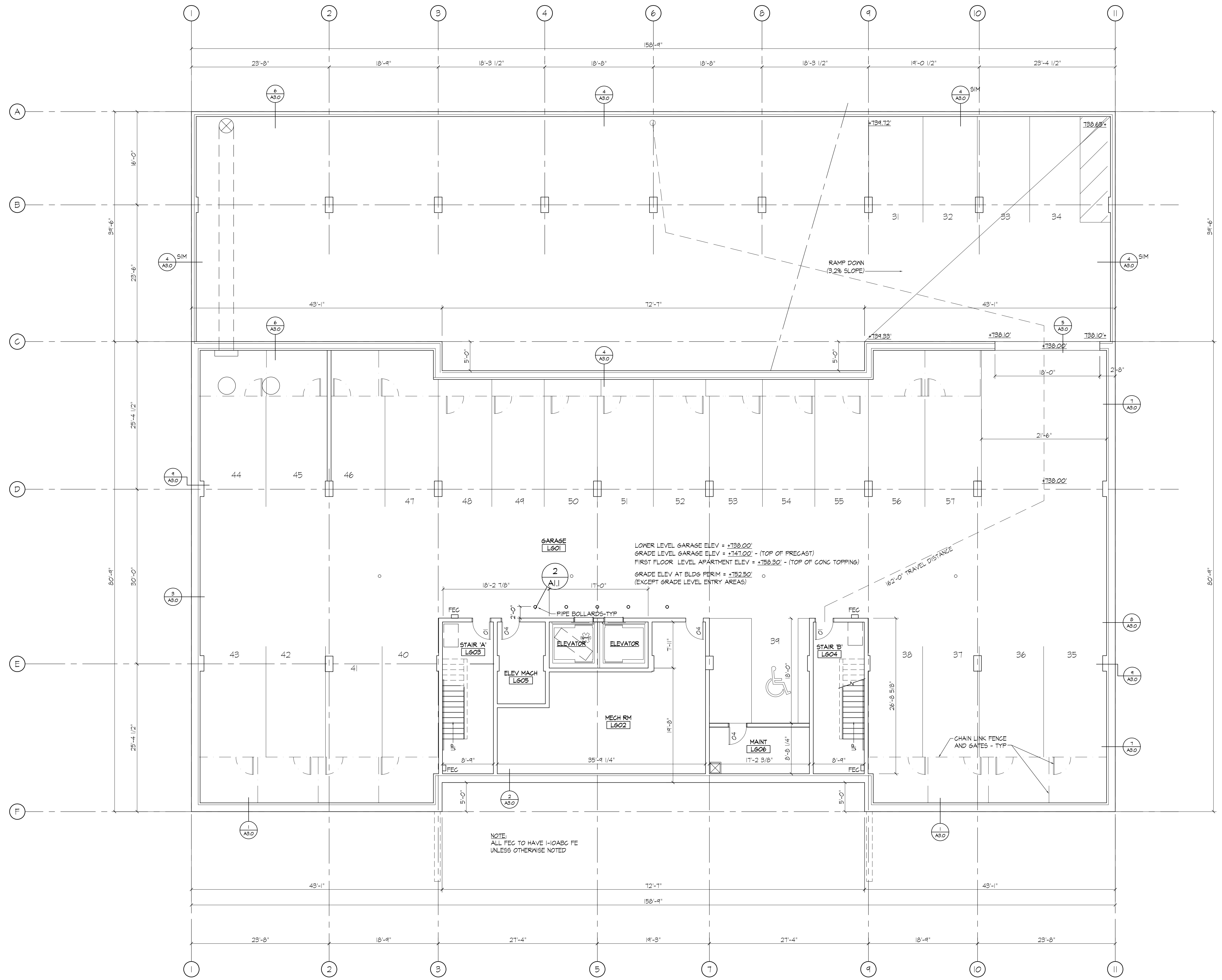
VANTAGE POINT
 ENGINEERING

18311 WORTHY CREEK DRIVE
 SUITE F
 TRILEY PARK, IL 60477

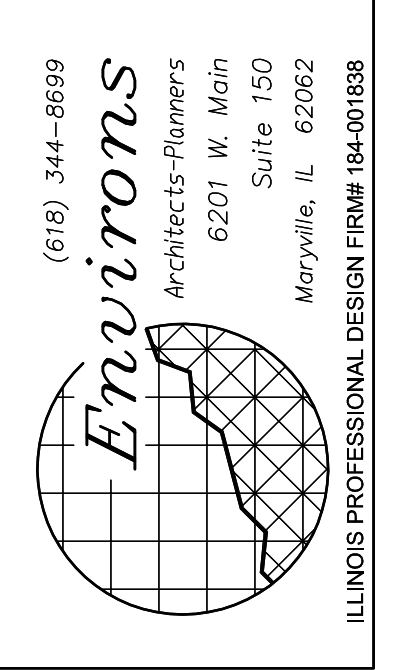
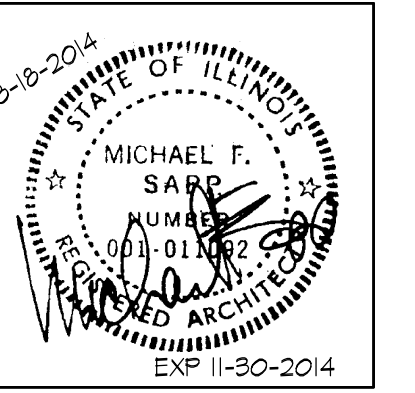
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SHEET
LS
 20 OF 20



LOWER LEVEL PARKING PLAN
SCALE: 1/8"=1'-0"



JOB NO.
13022

DATE:
DECEMBER 11, 2013

REVISED:
 1 FEBRUARY 20, 2014 PERMIT REVIEW
 PRECAST OPTION APRIL 28, 2014
 2 AUGUST 18, 2014 PERMIT REVIEW

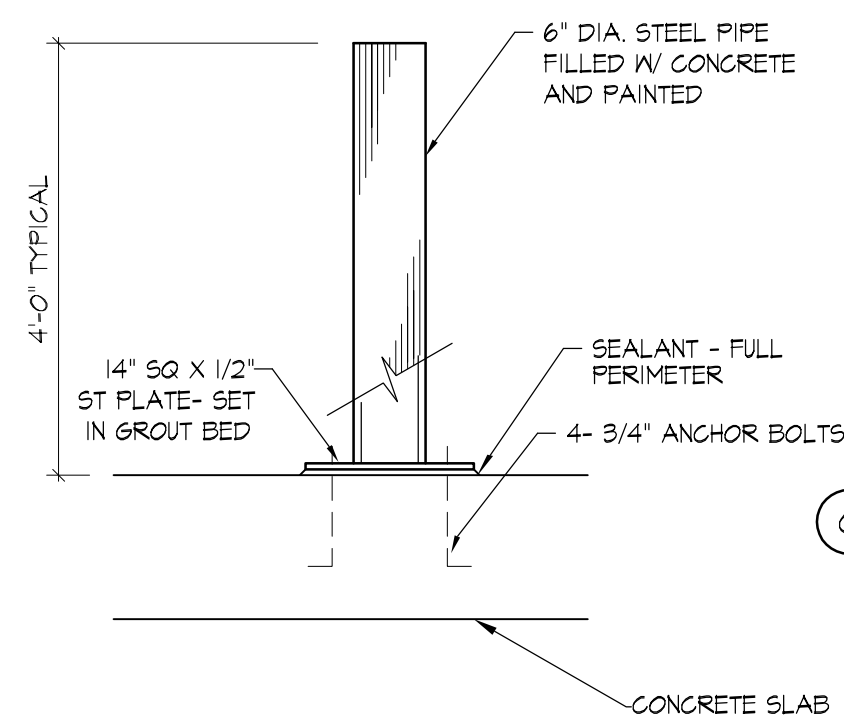


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

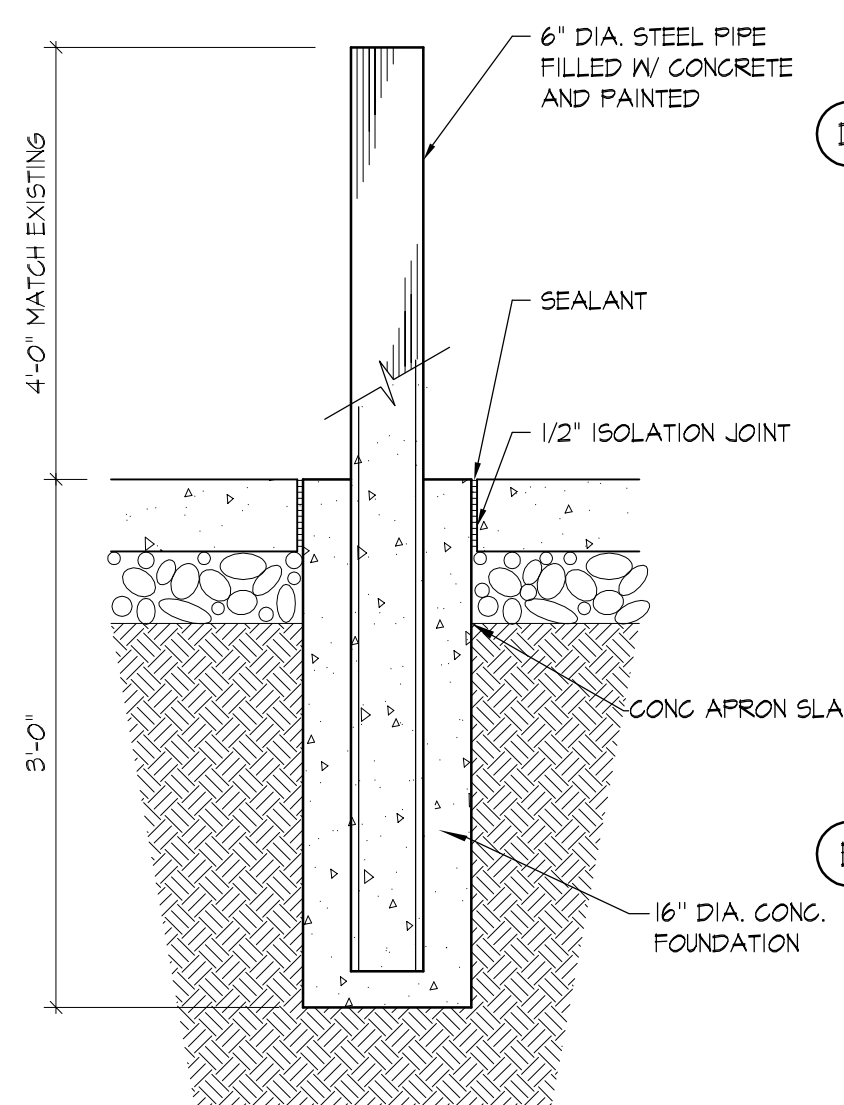
LOWER LEVEL PARKING PLAN

SHEET
A1.0
 OF 28

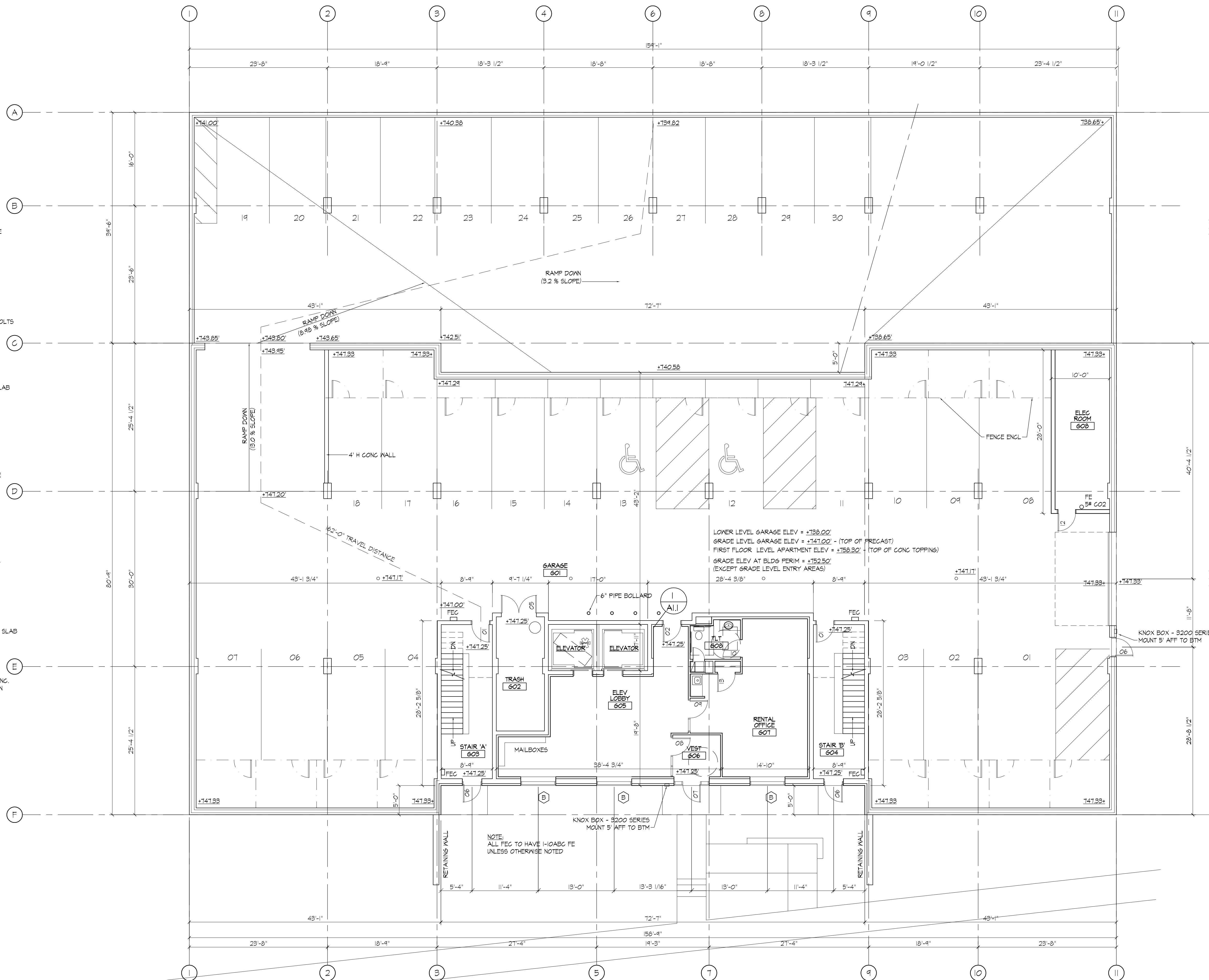
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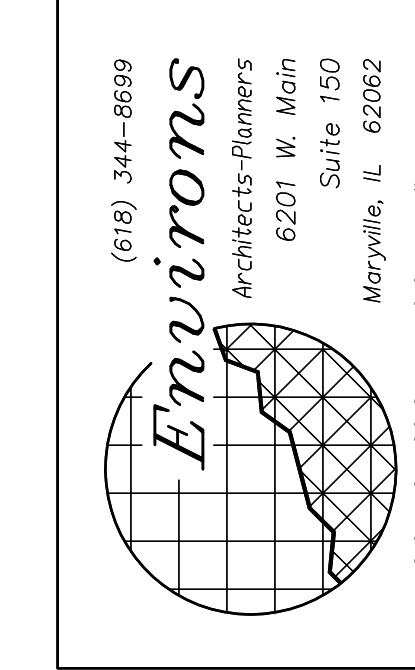
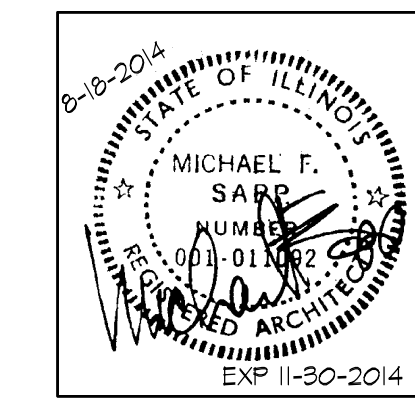
1 DETAIL - BOLLARD
SCALE: 3/4"=1'-0"



2 DETAIL - BOLLARD
SCALE: 3/4"=1'-0"



GROUND LEVEL PARKING PLAN
SCALE: 1/8"=1'-0"



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13022

DATE:
DECEMBER 11, 2013

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1 FEBRUARY 20, 2014 PERMIT REVIEW
2 PRECAST OPTION APRIL 28, 2014
3 AUGUST 18, 2014 PERMIT REVIEW

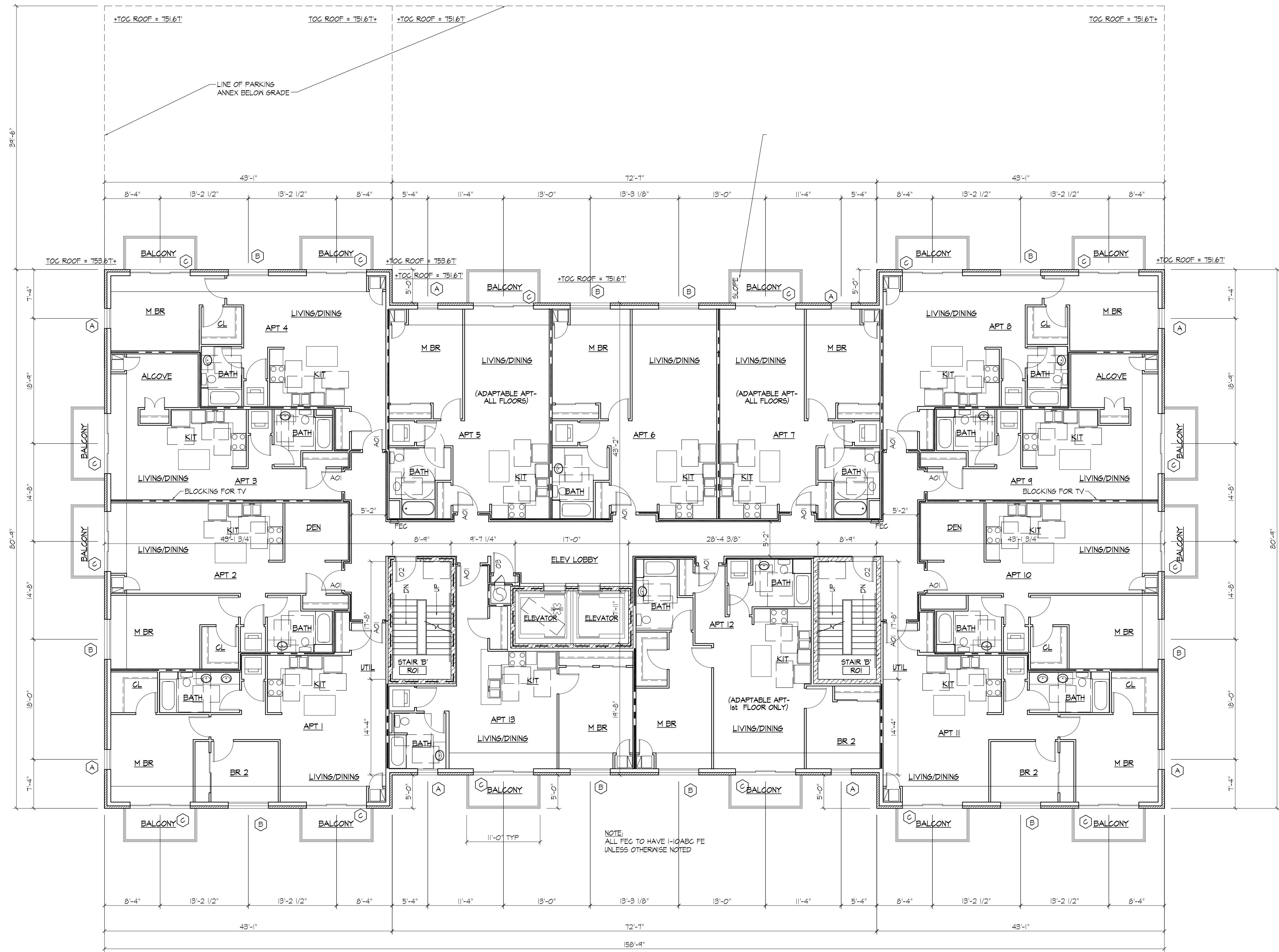


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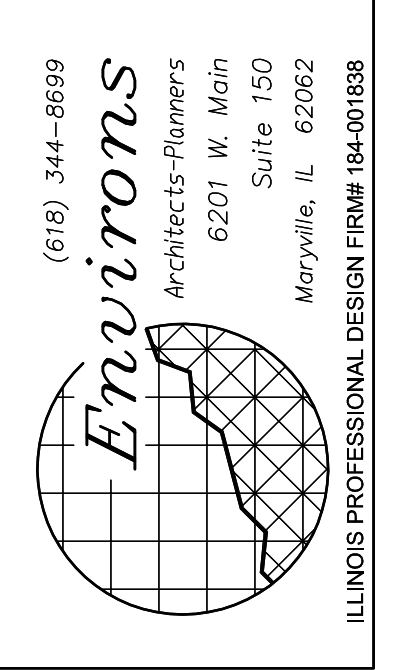
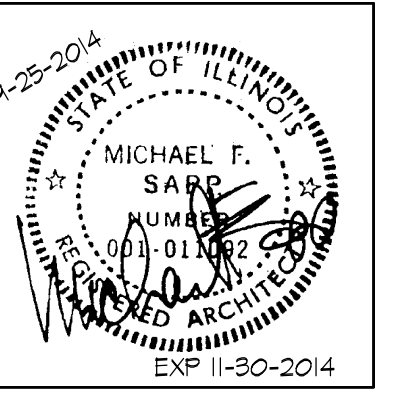
GROUND LEVEL PARKING PLAN

SHEET
A1.1
OF 28

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FIRST FLOOR PLAN
SCALE: 1/8"=1'-0" APPROX. 12,043 SF



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DATE:
DECEMBER 11, 2013

REVISED:

- 1 FEBRUARY 20, 2014 PERMIT REVIEW
- 2 PRECAST OPTION APRIL 28, 2014
- 3 AUGUST 18, 2014 PERMIT REVIEW
- 4 SEPTEMBER 25, 2014 PERMIT REVIEW

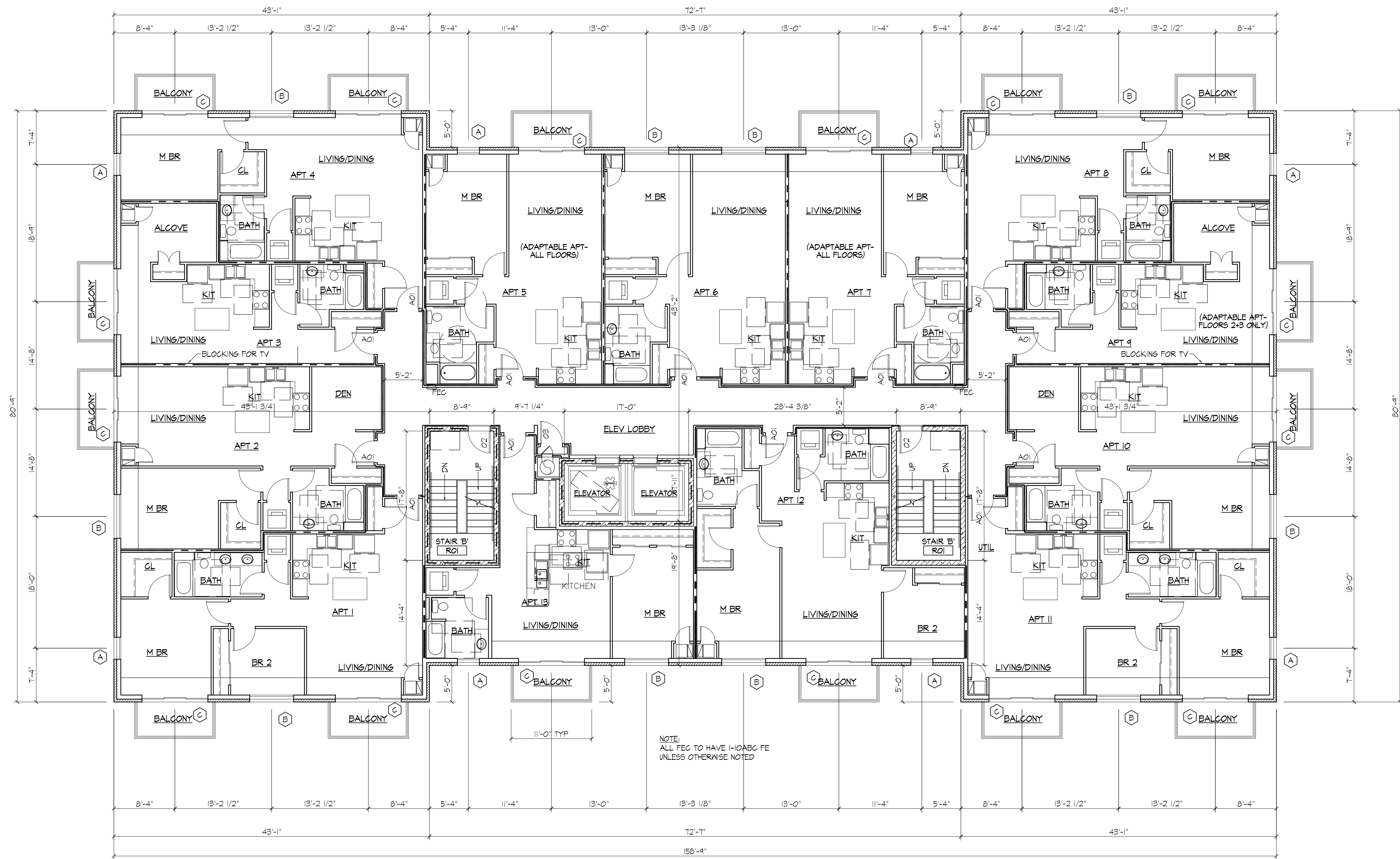


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CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

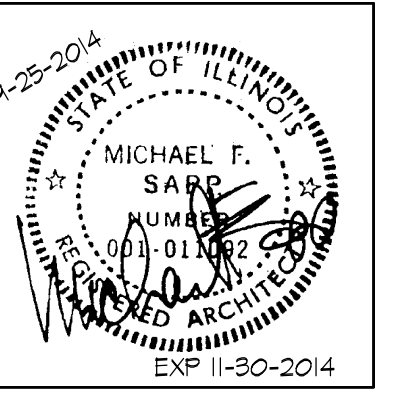
FIRST FLOOR APT PLAN

SHEET
A1.2
OF 28

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SECOND FLOOR PLAN
 SCALE: 1/8"=1'-0" APPROX. 12,043 SF
 THIRD FLOOR - SIMILAR



Environ
 (618) 344-8689
 Architects-Planners
 6201 W. Main Suite 150
 Maryville, IL 62062
 ILLINOIS PROFESSIONAL DESIGN FIRM 184-001838

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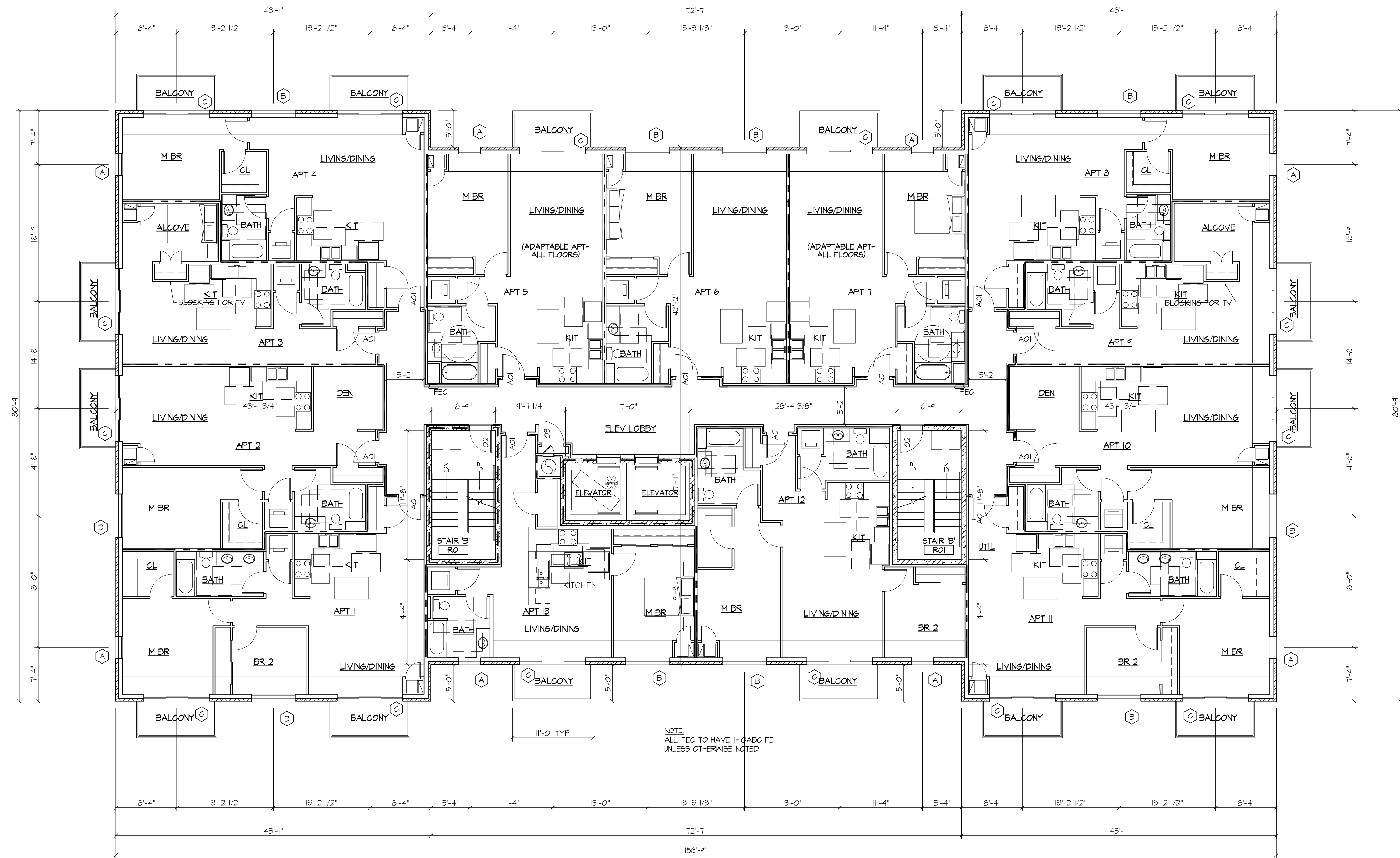
DATE:
 DECEMBER 11, 2013

REVISED:
 1 FEBRUARY 20, 2014 PERMIT REVIEW
 2 PRECAST OPTION APRIL 28, 2014
 3 AUGUST 18, 2014 PERMIT REVIEW
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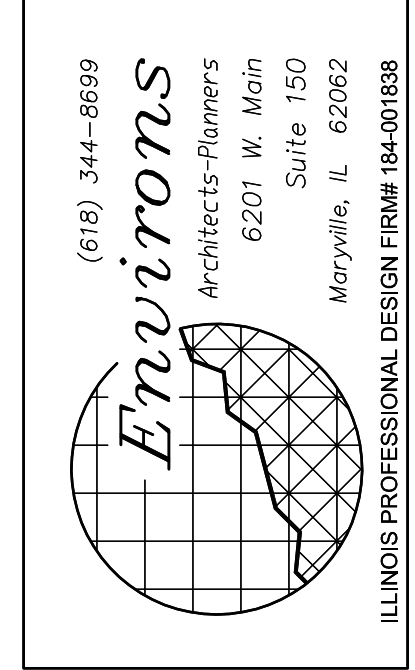
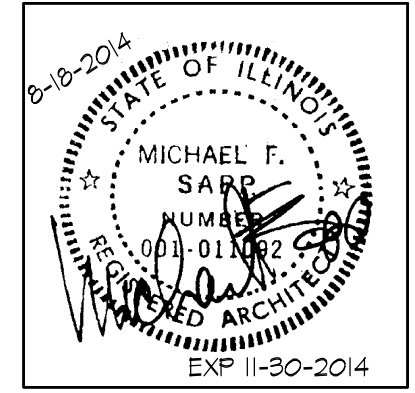
A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS
TYPICAL APT PLAN FLOORS 2-5

SHEET
A1.3
 OF 28



NOTE:
ALL FEC TO HAVE 1-1/2" GBC FE
UNLESS OTHERWISE NOTED

FOURTH FLOOR PLAN
SCALE: 1/8"=1'-0" APPROX. 12,043 SF
FIFTH FLOOR - SIMILAR



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13022

DATE:
DECEMBER 11, 2013

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 1 FEBRUARY 20, 2014 PERMIT REVIEW
 2 PRECAST OPTION APRIL 28, 2014
 3 AUGUST 18, 2014 PERMIT REVIEW



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

TYPICAL APT PLAN FLOORS 4+5

SHEET
A1.4
 OF 28

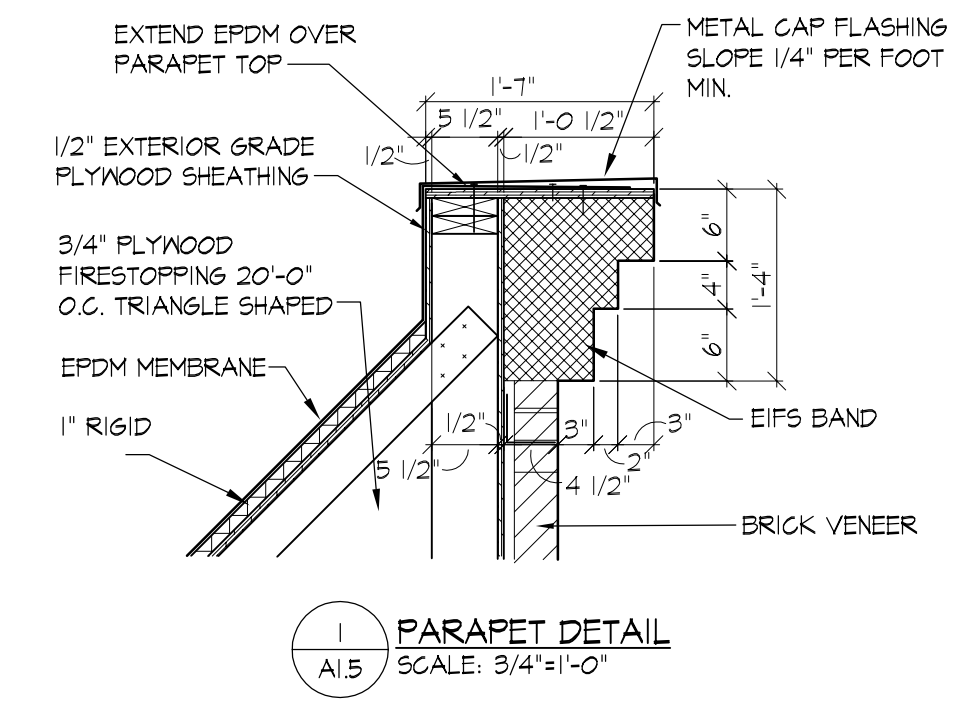
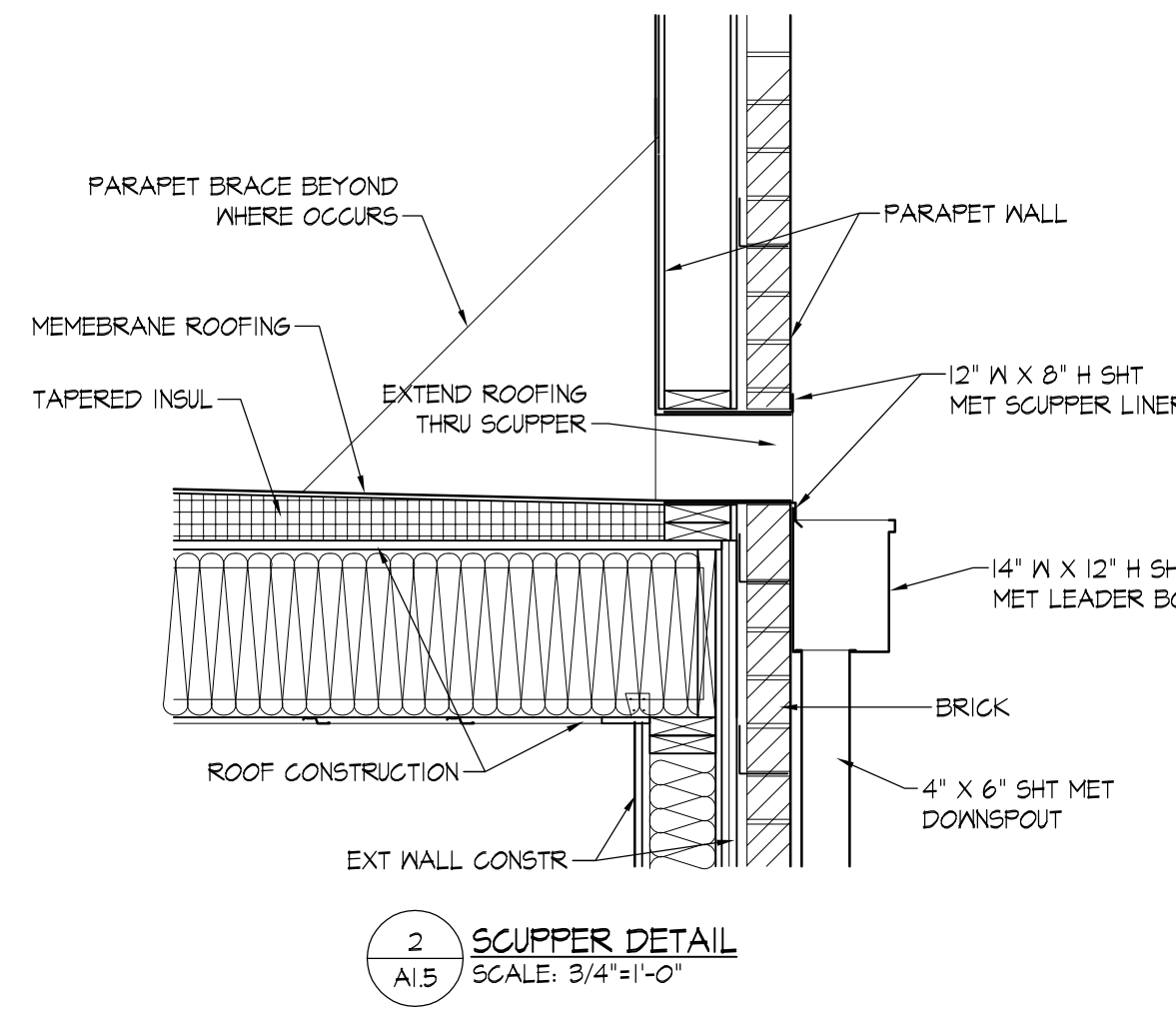
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SPECIFICATION NOTES:

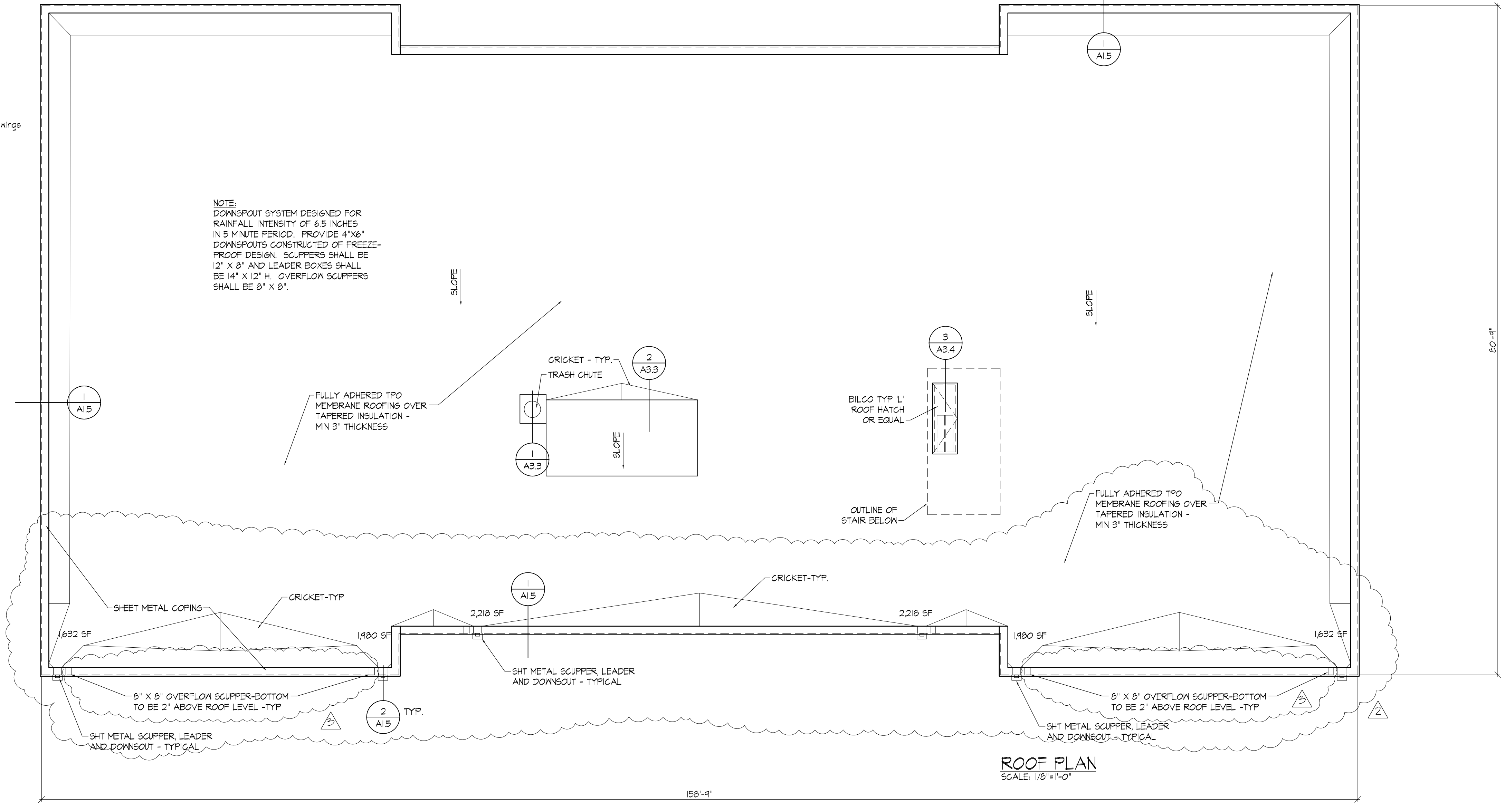
- All work shall be as indicated on the drawings and in compliance with all applicable codes and ordinances of authorities having jurisdiction.
- Provide all excavating, filling and grading necessary to complete the work indicated on the drawings. Excavations shall be neatly cut to line and proper depth. Bottoms of all footings shall be level, clean, clear of all loose material and free of standing water. Backfill with clean earth or sand, properly tamped and compacted. Finish grade all areas to drain away from structures.
- Provide subterranean termite control soil treatment chemicals similar to "Dursban TC" acceptable by FHA standards and passing U.S. Forest Service Five (5) year test. Apply under entire area of structure and perimeter of foundations and intensified rate along both sides of foundation and where utilities penetrate walls.
- See General Foundation Notes for specifications on concrete footings, foundation walls and slabs. Provide all concrete walks, pavings, curbs as indicated and required.
- Entire site shall be cleared and grubbed as required. Upon completion of final grading, site shall receive grass seed, fertilizer and straw. Water as required.
- See Structural Drawings for structural notes and information.
- Provide all necessary carpentry work including framing, layout, cutting, bracing blocking grounds and rough hardware. All framing shall be securely anchored, blocked, spiked or bolted in place, conditions governing. All nailing shall be in accordance with IBC Code. Provide diagonal bracing at all exterior wall corners.
- Non-structural Framing and board lumber shall be min. No. 2 grade SPF, except studs which shall be "stud" grade. Sizes shall be as indicated on the drawings. Firestop all partitions, soffits, overhangs and drop ceilings as required. Floor and Roof Joists shall be T-11 code approved for specific use. --designed by manufacturer. Roof trusses shall be designed to support loads indicated, and miscellaneous loading required. All framing exposed to the elements and plates in contact with concrete and masonry shall be treated with waterborne salt preservatives.
- Roof sheathing shall be minimum 5/8" thick APA rated plywood roof sheathing designed for the specific installation, exterior type, Group I veneer species. Floor and Roof Joists shall be T-11 code approved for specific use. --designed by manufacturer. Roof trusses shall be designed to support loads indicated, and miscellaneous loading required. All framing exposed to the elements and plates in contact with concrete and masonry shall be treated with waterborne salt preservatives.
- Wall sheathing at stud wall shall be minimum 1/2 inch thick APA Rated exterior wall sheathing designed for the specific installation. All joints shall occur over supports, nailing as recommended by the manufacturer. Provide diagonal bracing at corners as required.
- Provide shear walls where indicated on drawings. Shear walls shall be constructed by applying 1/2 inch thick, minimum 4'-0" wide C-D interior grade with exterior glue structural II plywood sheathing installed on exterior with face glue across studs and nailed 3" o.c. at all edges of panels and 8" o.c. at intermediate studs with IG3 common nails. (Note: Anchor bolts shall be minimum 8" embedment and 2'-0" o.c. at shear wall locations.)
- Plywood subfloor shall be 3/4" thick APA rated STURD-I-FLOOR, exterior type, Group I veneer species. End joints shall be staggered and shall occur over floor joists. Fit tightly to all penetrations. Provide underlayment at all areas to receive resilient flooring.
- All exterior load bearing frame walls shall be constructed from fire retardant treated materials.
- Not Used.
- All exterior woodwork for subbase for siding, trim, fascias, etc. shall be fir or southern pine, sizes as required. All exposed exterior woodwork and trim shall be redwood or equal.
- Plastic laminate work including guest room vanities, misc. casework and all countertops shall be fabricated and installed in accordance with ANI Standards. Colors shall be as selected by the Owner.
- Base and wall cabinets in the reception and office areas indicated shall be plastic laminate ANI Standard Custom Grade (Section 400).
- Provide shelving and supports where indicated on the drawings. Coat racks and poles in apartments shall be coated wire shelving system. Coordinate with Owner.
- Provide concrete filled steel pan stair system similar to system designed and manufactured by American Stair. Railings and guards shall be 1 1/2" diameter pipe railing with 1/2" dia. vertical pickets - 4" o.c., max.
- Exterior load bearing partitions have two layer 5/8" type 'X' gypsum drywall over 6 mil. poly vapor barrier on interior face of studs. Install one layer of 1/2" APA rated plywood or OSB sheathing as indicated on structural drawings on exterior face of 2x6 studs and then install two layers of 5/8" type 'X' gypsum sheathing.
- Exterior brick shall be Utility size brick as selected by the Owner. Install over one layer of Tyvek infiltration barrier installed over exterior sheathing. Provide relieving angles and brick veneer anchors as indicated and required by BIA requirements.
- Provide fiberglass unfaced batt insulation in walls and ceiling, where indicated. Minimum thickness in exterior stud walls shall be 6" (R=13). A 6 mil polyethylene vapor barrier shall be installed at the warm side of wall and ceiling insulation prior to installation of gypsum board. Ceiling insulation shall be minimum R=38 and shall completely fill joist cavity. Contractor may use blown-in insulation at ceiling locations.
- Not Used.
- Aluminum coping drips, soffits, trim, gutters and downspouts, etc. at roof and fascias shall be .024 inch thick, prefinished aluminum. Color shall be as selected and installed in accordance with manufacturer's recommendations. Provide perforated soffit for attic ventilation as required.
- EPDM roofing system shall be similar to Firestone Rubbergard Adhered system, 60 mil. EPDM over manufacturers manufacturers recommended installation.
- Caulking shall be one part acrylic caulking similar to Tremco "Dymonic". Caulk all exterior joints which are not self sealing and other points indicated.
- Exterior aluminum entrances and fixed frames at lobby area shall be Kanneer, Thermal Break, 451T, anodized aluminum with 1" insulating clear tempered glass.
- Windows and sliding exterior doors shall be nail fin design thermally broken vinyl frame single hung window with 5/8" insulated glass units similar to units manufactured by Columbia, Quaker, Crystal (or equal). Sizes as indicated on the drawings. Sliding door units shall be Horizontal Sliding units Thermal Break or equal. Provide all trim and accessories for a complete installation. Glazing shall be tinted insulated glass. Color/finish shall be as selected.
- Interior doors shall be 1-3/4" solid core wood doors similar to units manufactured by VTI and selected by Owner and Contractor. Verify finish hardware and locking requirements. Provide UL rated units where required. Provide 20 min. fire rated units at apartment entry and all other corridor doors. Provide "B" label units at all stair doors and "C" label at storage doors. Provide Refer to door schedule for additional information. Coordinate locking requirements with Owner. Provide 180° peepholes and security bar at all apartment corridor doors.
- All interior partitions and finish of exterior walls shall be minimum 5/8" gypsum board. Provide type 'X' or 'C' gypsum board at all ceilings and partitions where required. Finishes shall be as directed by the Owner. Provide 3/2" thick fiberglass thermal batt sound insulation at all toilet rooms and mechanical room partitions and partitions between units.
- Paint and finish all interior and exterior surfaces which are not prefinished. Utilize three coat work (including primer) for all work and insure full coverage. Colors to be selected by the Owner.
- Carpet all areas except toilet rooms, baths, laundry, mechanical and storage rooms as indicated on drawings. Carpet shall be a minimum 52 oz. carpet weight, carpet and base to be selected and provided by Owner. Provide sheet vinyl flooring at bath rooms and kitchens (as indicated on drawings). Flooring pattern and color to be selected by Owner.

- Provide one double toilet paper holder, two towel bars (24" long) and one shower curtain rod at each bath. Provide one Bobrick B-834T (or equal) facial tissue dispenser at each lavatory. Units shall utilize concealed fasteners. Units to be selected by Owner.
- Mirrors shall be 3/16" clear float glass with full silver coating. Mount mirrors with chrome mounting clips. Units to be selected by Owner.
- Provide grab bars at all handicapped restroom facilities as indicated on drawings. Units shall be similar to Bobrick washroom equipment and shall be installed in accordance with manufacturer's specifications.
- All signage both interior and exterior, except for emergency and or traffic signage shall be provided and installed by the Owner.
- Kitchen equipment (NIC) in Apartment and Breakfast Area to be provided by the Owner and installed by the Contractor.
- Owner shall provide all laundry and cleaning equipment.
- Plumbing and sewer work shall be installed complete in accordance with all codes and ordinances. Utilize copper pipe for water supply, type M or L, with wrought copper sweat fittings. Copper pipe below grade shall be type "K". All drain, waste and vent piping shall be schedule 40 DWV piping. Gas piping shall be black iron pipe and fittings rated for gas service and distribution use.
- Sprinkler work shall be designed and installed in accordance with NFPA 13, hydraulically designed by sprinkler contractor. Provide audible and visual alarms. Place piping in conditioned areas to prevent freezing or provide means to prevent pipes from freezing in unconditioned areas.
- Heating and air conditioning work shall be installed complete in accordance with all applicable codes and ordinances. Furnish all component parts including thermostats, connections, fittings, etc. for proper operation.
- EXTERIOR DOORS AND FRAMES, AND INTERIOR DOOR FRAMES SHALL BE 1 3/4" HOLLOW METAL DOORS & FRAMES SIMILAR TO UNITS MANUFACTURED BY STEELGRAFT AND SELECTED BY THE OWNER AND THE CONTRACTOR. VERIFY FINISH HARDWARE AND LOCKING REQUIREMENTS. PROVIDE UL RATED UNITS WHERE REQUIRED. PROVIDE TWENTY (20) MINUTE FIRE RATED UNITS AT GUEST ROOMS AND ALL OTHER CORRIDOR DOORS, EXCEPT 1 HOUR "B" LABEL UNITS AT ALL STAIR, STORAGE, MECHANICAL ROOM & MAINTENANCE AREA DOORS. PROVIDE YORK E4761LH-626 APARTMENT ENTRY LOCKS. BUILDING ENTRY DOORS SHALL BE EQUIPPED WITH CAT II CONTROLLER ACCESS TECHNOLOGY - SELECT ENGINEERED SYSTEM SYSTEM OF EQUAL. PROVIDE ALL HARDWARE REQUIRED FOR PROPER INSTALLATION. ALL HARDWARE SHALL COMPLY WITH THE REQUIREMENTS OF THE IBC CODE AND ADA REQMTS. NO HARDWARE SHALL BE MOUNTED ABOVE 48" A.F.F. AS REQUIRED FOR ADA COMPLIANCE.

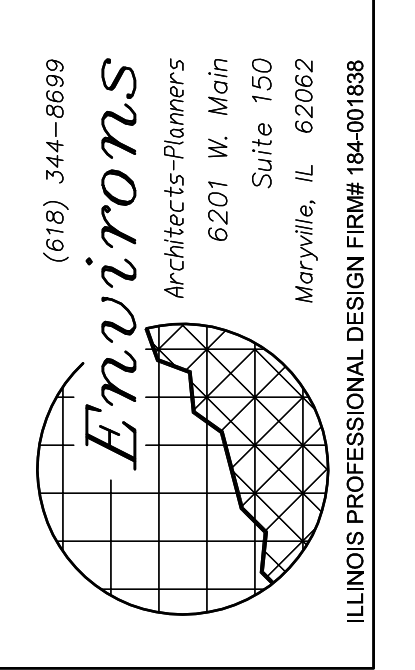
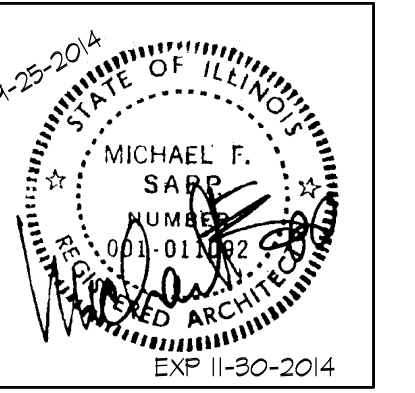
- Trash Chute: Shall be 24" diameter 16' gal. aluminized steel as manufactured by Nilkenon Chute Company. Intakes shall be 21"x21" size hinged "B" label, stainless steel (w/ embossed letters "Trash") in drywall construction. Type Vertical discharge w/ 1" dia. drain flange. Provide steel I floor frames, provide 1/2" 165 degree sprinkler head above top intake. Offset full diameter vent thru roof to occur at rear side of roof.
- ELEVATOR SHALL BE THYSSEN KRUPP SEVILLE, PASSENGER TYPE WITH CLASS A LOADING CAPACITY, 3500LB., 100 FPM SINGLE CAR WITH FRONT AND REAR OPENINGS. SINGLE SPEED DOOR 3'-0"x7'-0" BAKED ENAMEL FINISH, COLOR TO BE SELECTED BY THE OWNER. PROVIDE STANDARD FEATURES OF THE 3500 WITH OPTIONAL HALL LANTERNS. PROVIDE CAB WITH WALL MOUNTED HANDRAILS 2'-6" OFF FLOOR. ELEVATOR SHALL MEET ADA REQUIREMENTS AND COMPLIANT WITH THE SAFETY CODE OF ELEVATORS AND ESCALATORS (ASME A17.1) AND CSA SAFETY CODE FOR ELEVATORS. POWER SUPPLY SHALL BE 3 PHASE 60 HZ. CAB FINISH SHALL BE AS DIRECTED.



2 SCUPPER DETAIL SCALE: 3/4"=1'-0"



NOTE:
DOWNSPOUT SYSTEM DESIGNED FOR RAINFALL INTENSITY OF 6.5 INCHES IN 5 MINUTE PERIOD. PROVIDE 4"x6" DOWNSPOUTS CONSTRUCTED OF FREEZE-PROOF DESIGN. SCUPPERS SHALL BE 12" X 8" AND LEADER BOXES SHALL BE 14" X 12" H. OVERFLOW SCUPPERS SHALL BE 8" X 8".



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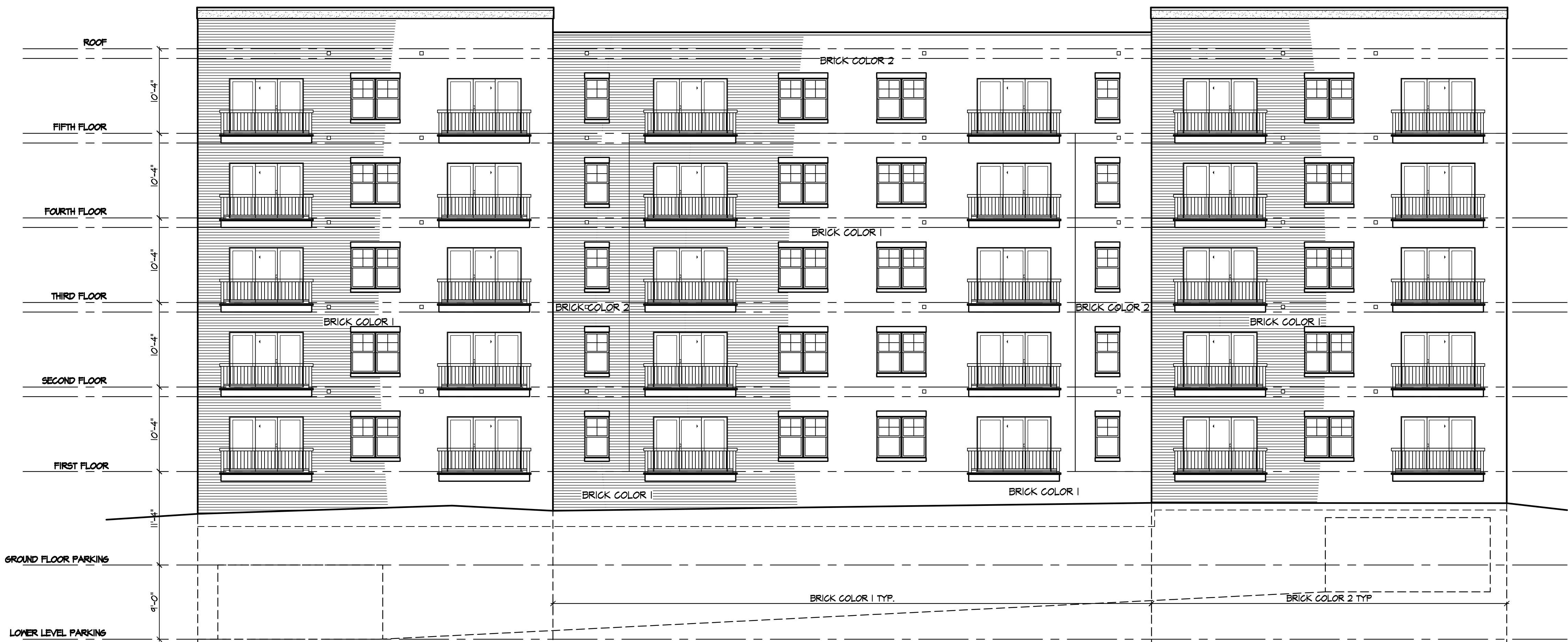
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ROOF PLAN

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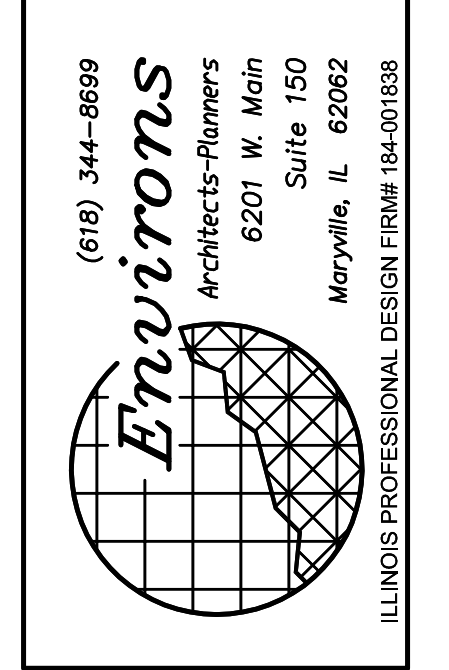
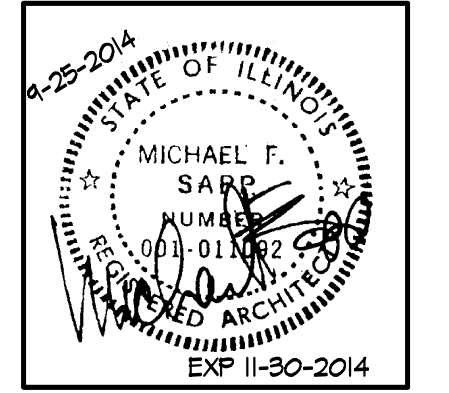
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NORTH ELEVATION



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



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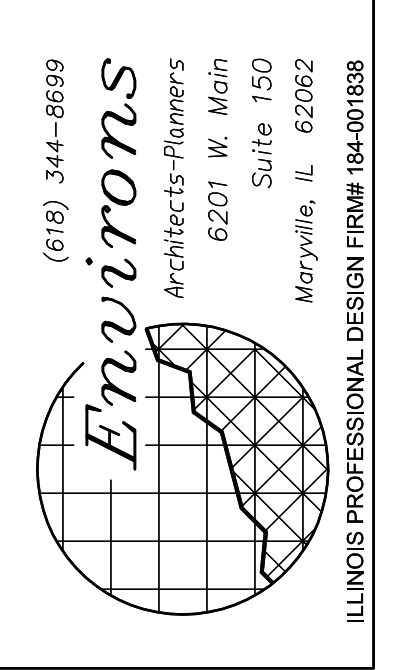
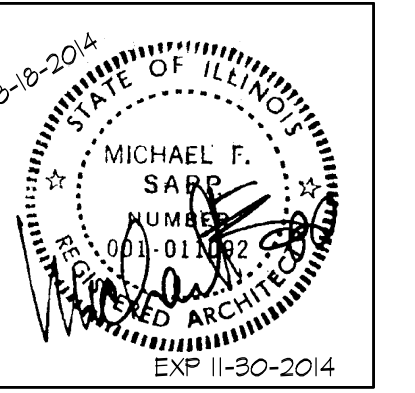


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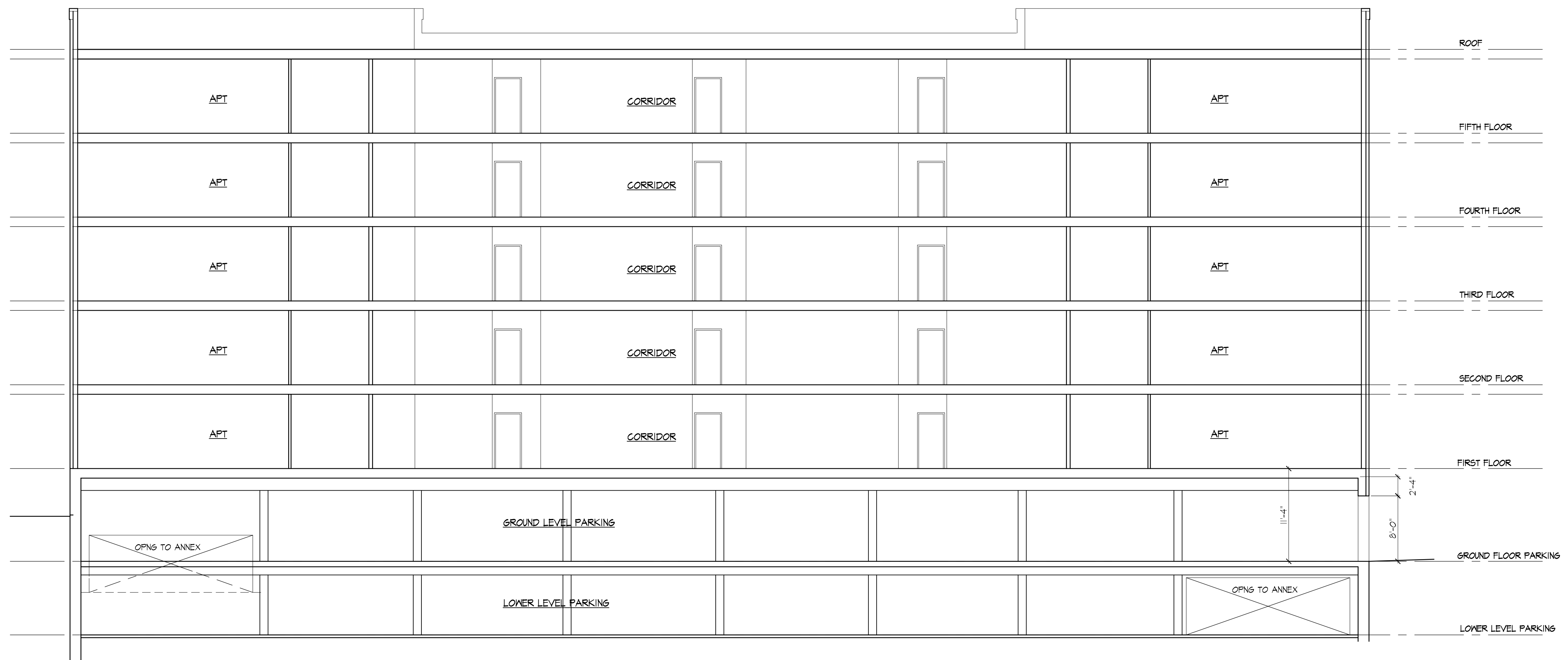
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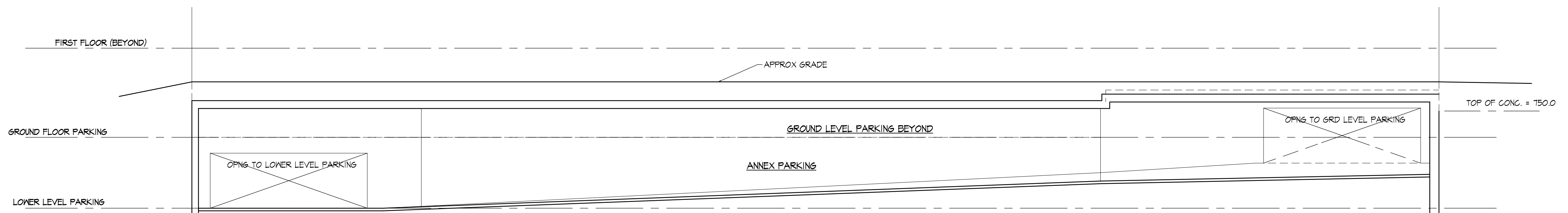
EAST ELEVATION
 SCALE: 1/8"=1'-0"



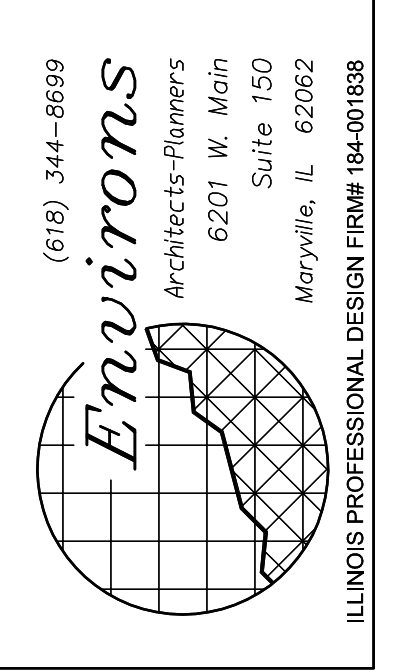
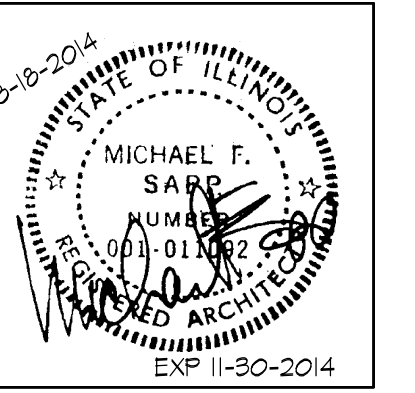
WEST ELEVATION
 SCALE: 1/8"=1'-0"



BUILDING SECTION - LOOKING SOUTH
SCALE: 1/8"=1'-0"



SECTION THRU ANNEX - LOOKING NORTH
SCALE: 1/8"=1'-0"



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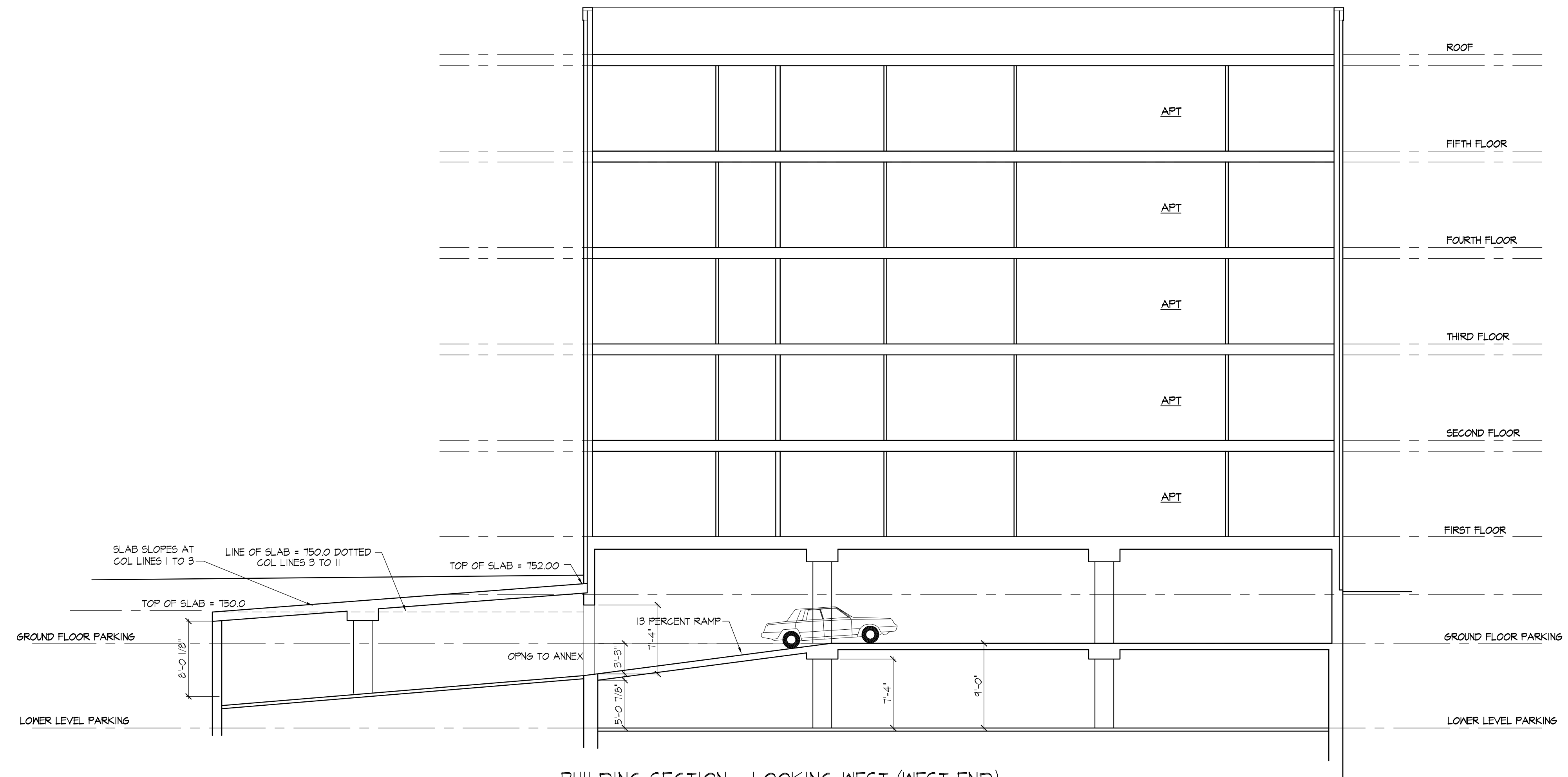


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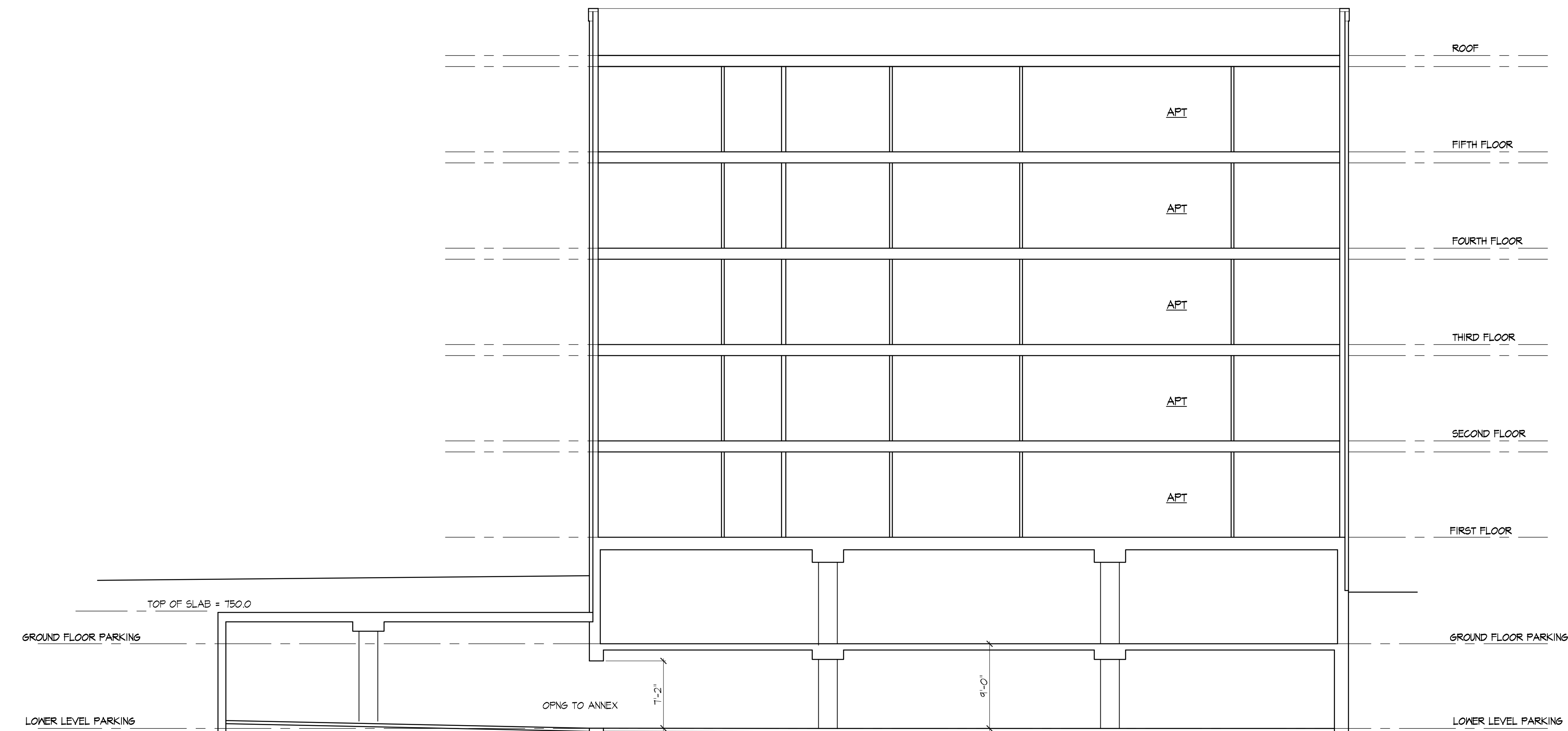
BUILDING SECTIONS

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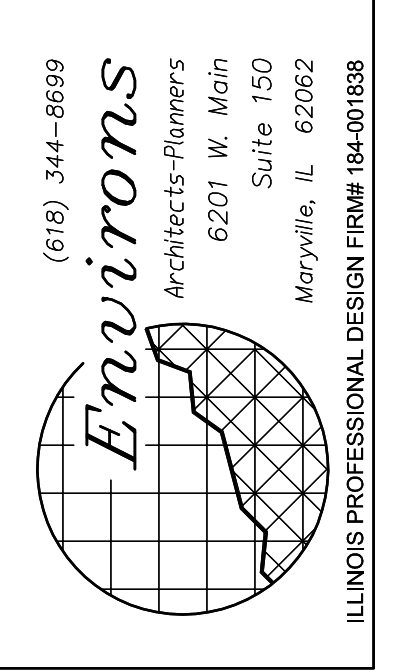
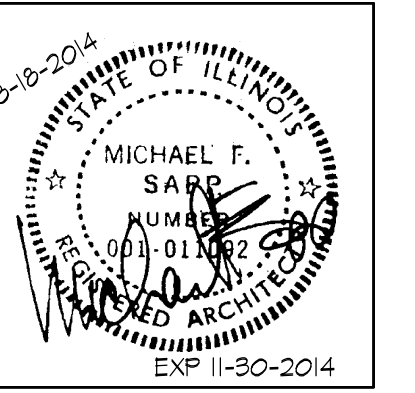
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BUILDING SECTION - LOOKING WEST (WEST END)
SCALE: 1/8"=1'-0"



BUILDING SECTION - LOOKING WEST (EAST END)
SCALE: 1/8"=1'-0"



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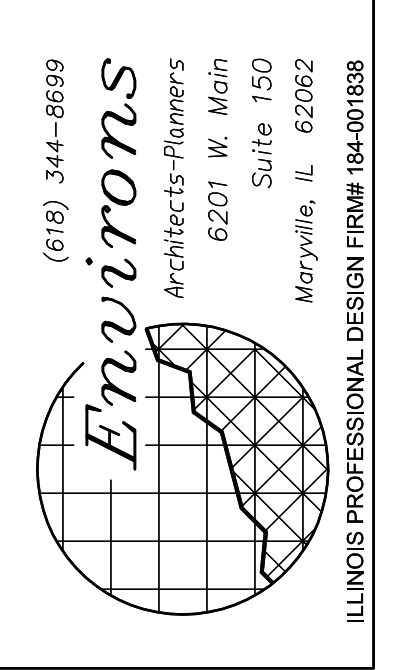
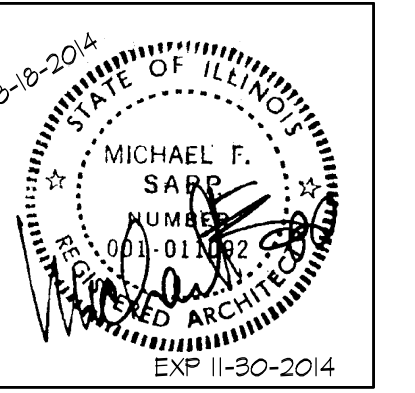


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BUILDING SECTIONS



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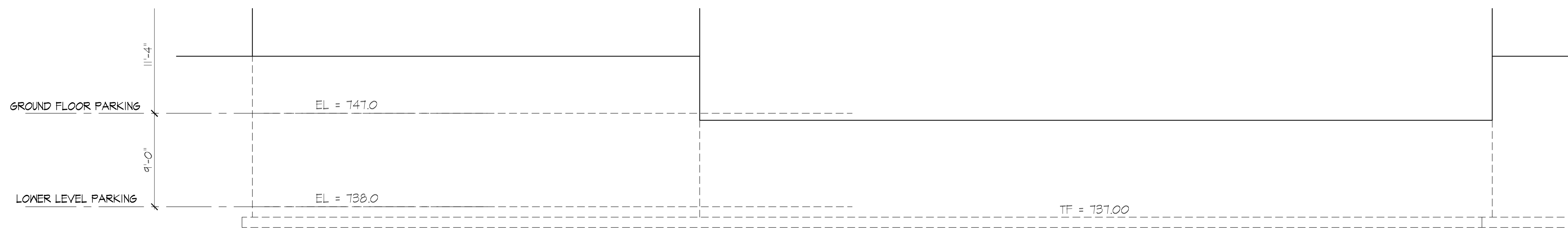
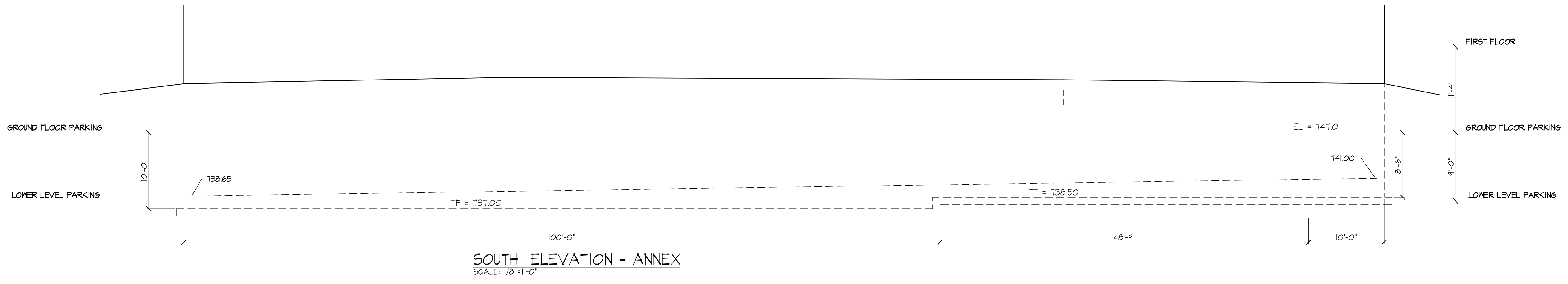
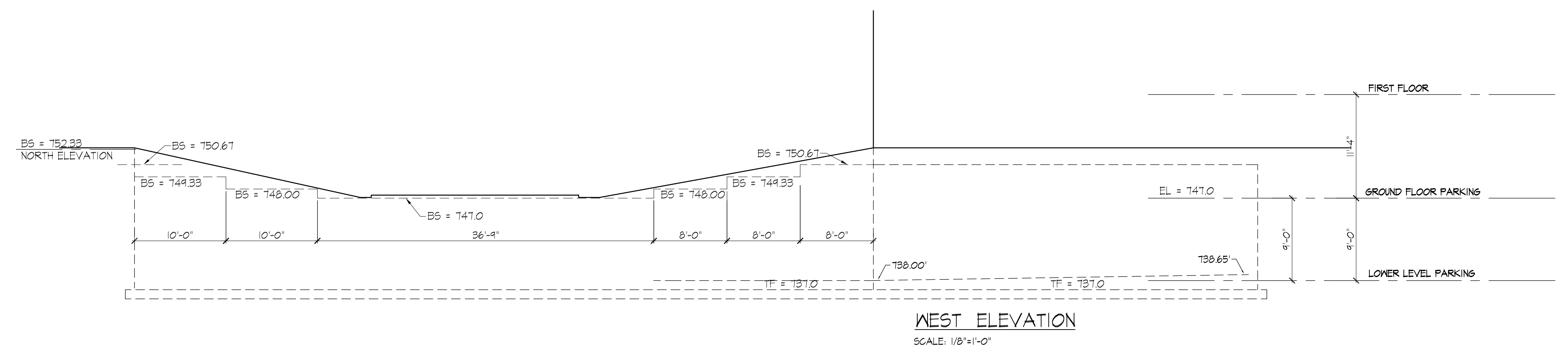
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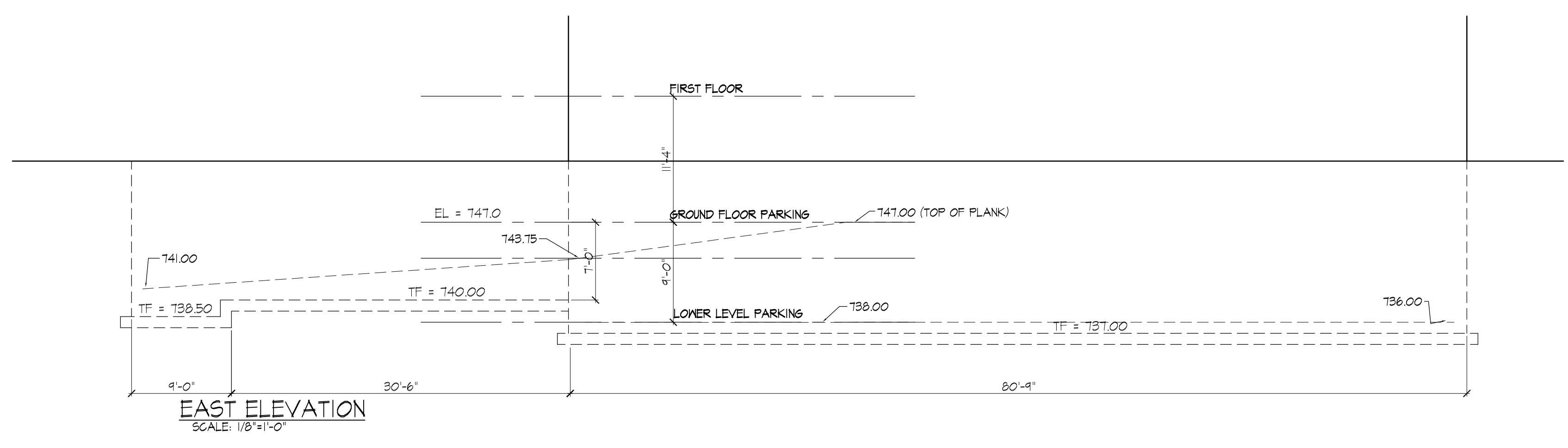
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STEP OF FOOTING AT ANNEX

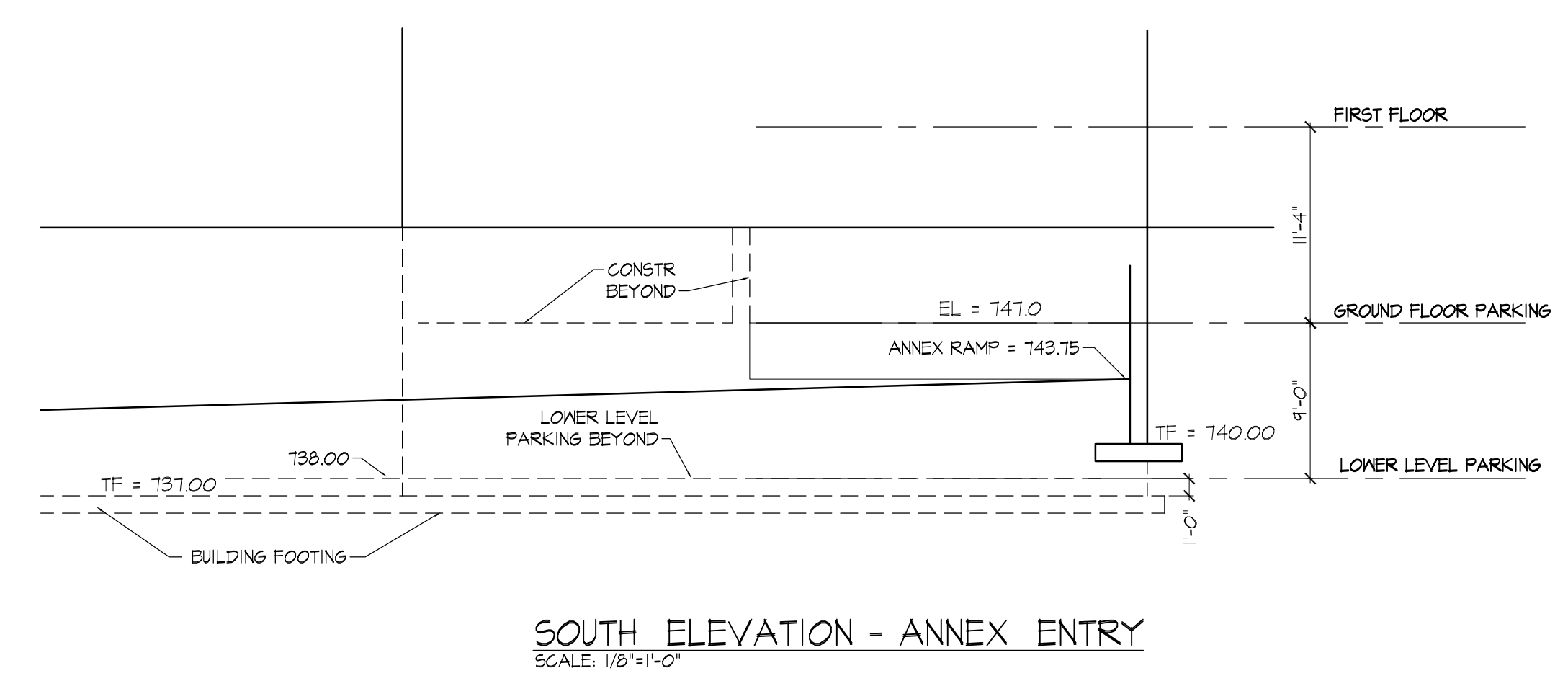
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NORTH ELEVATION
SCALE: 1/8"=1'-0"

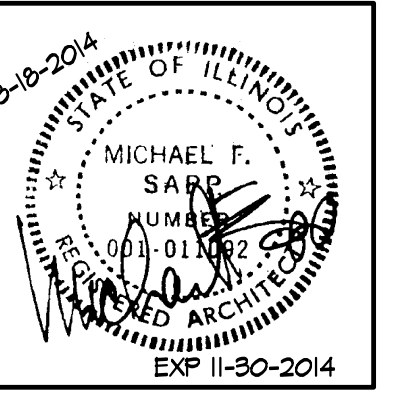
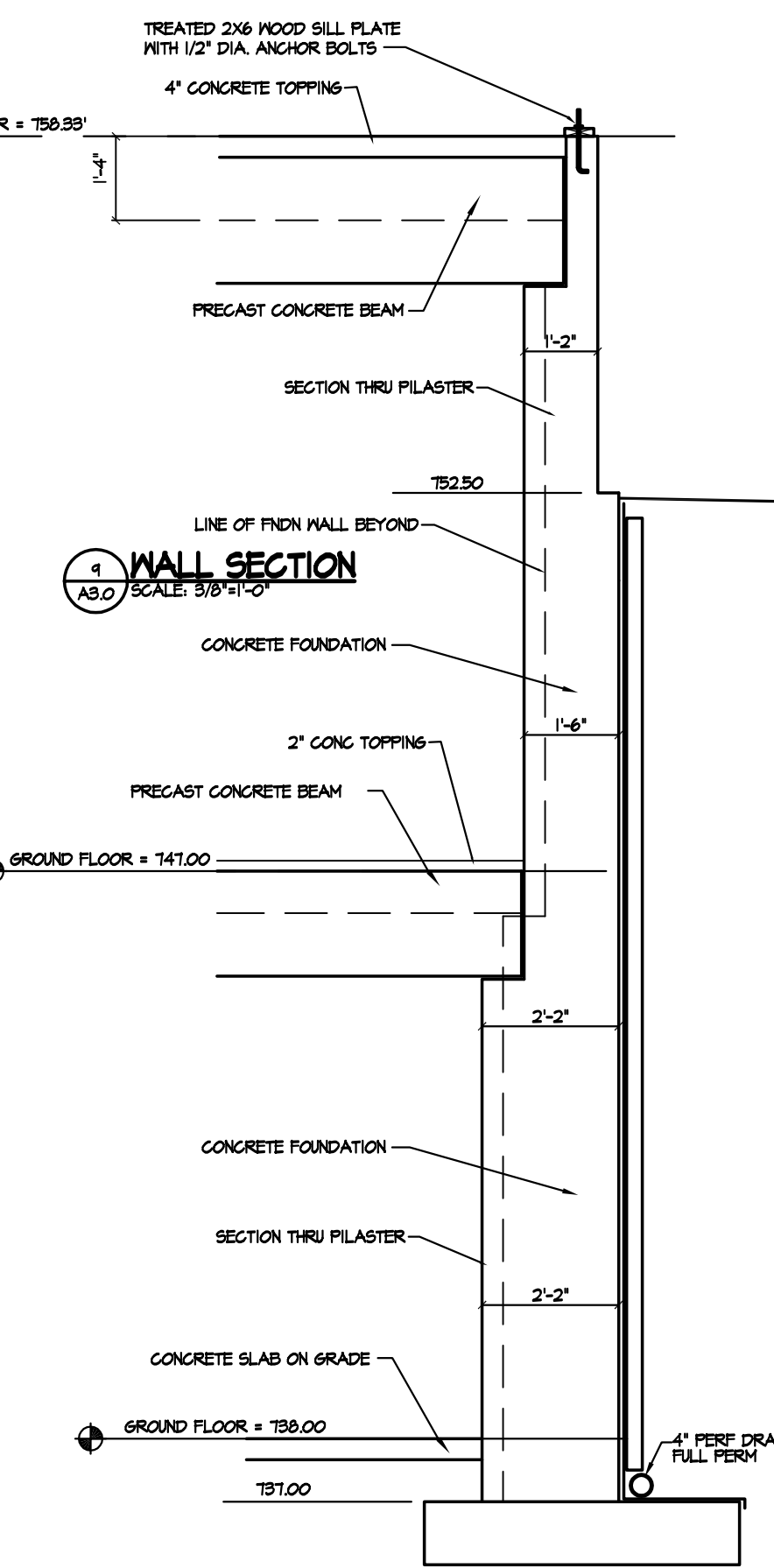
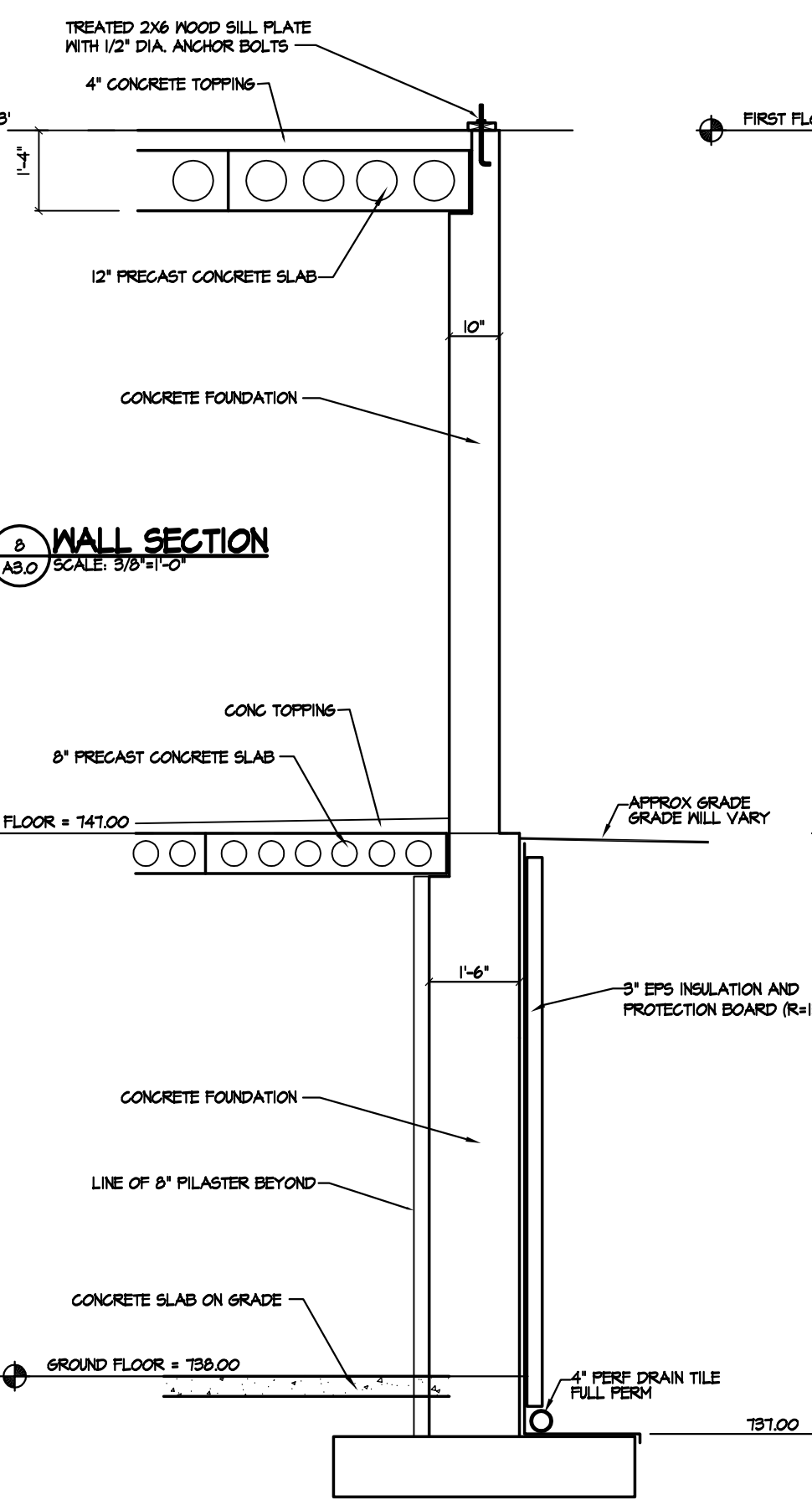
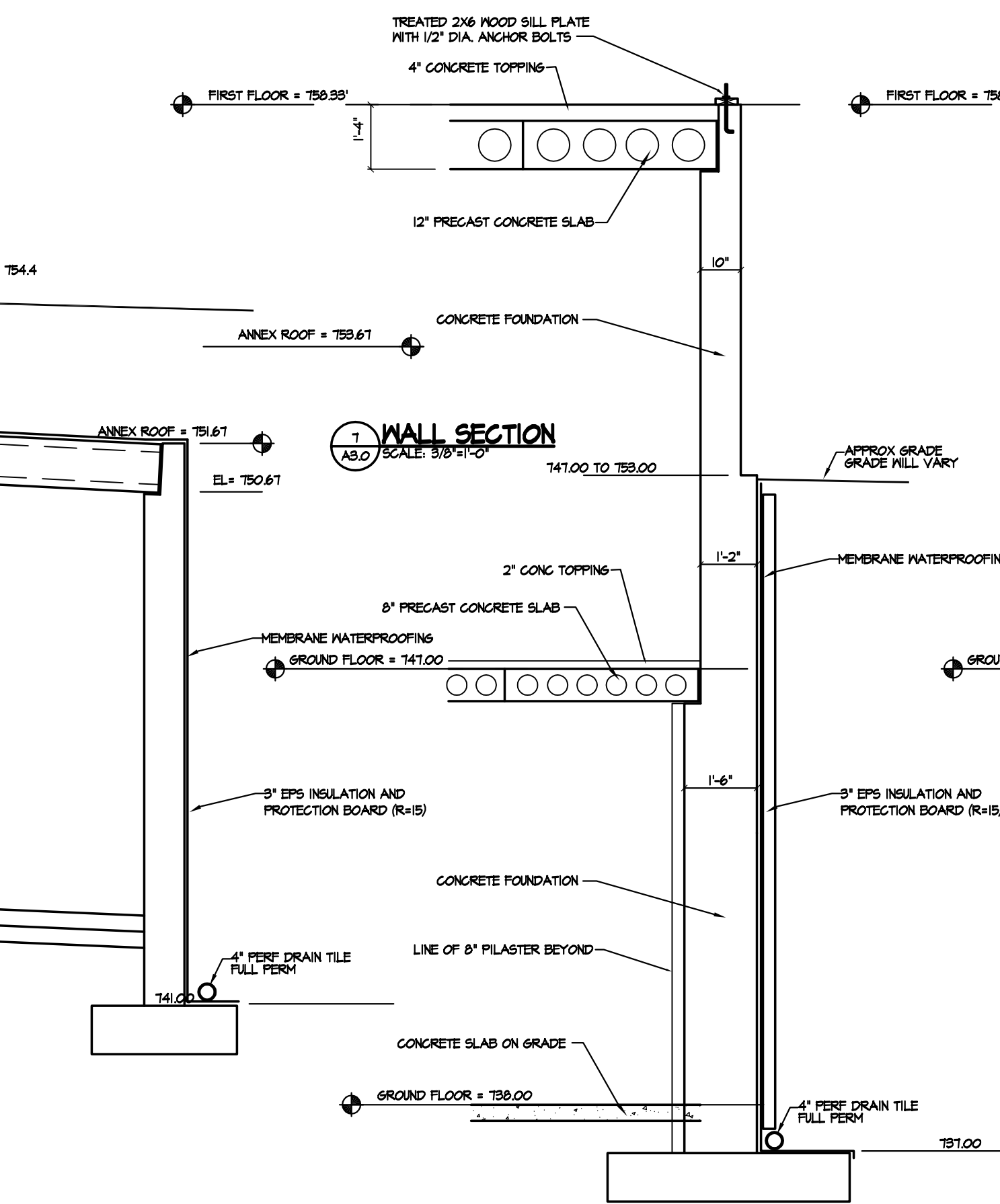
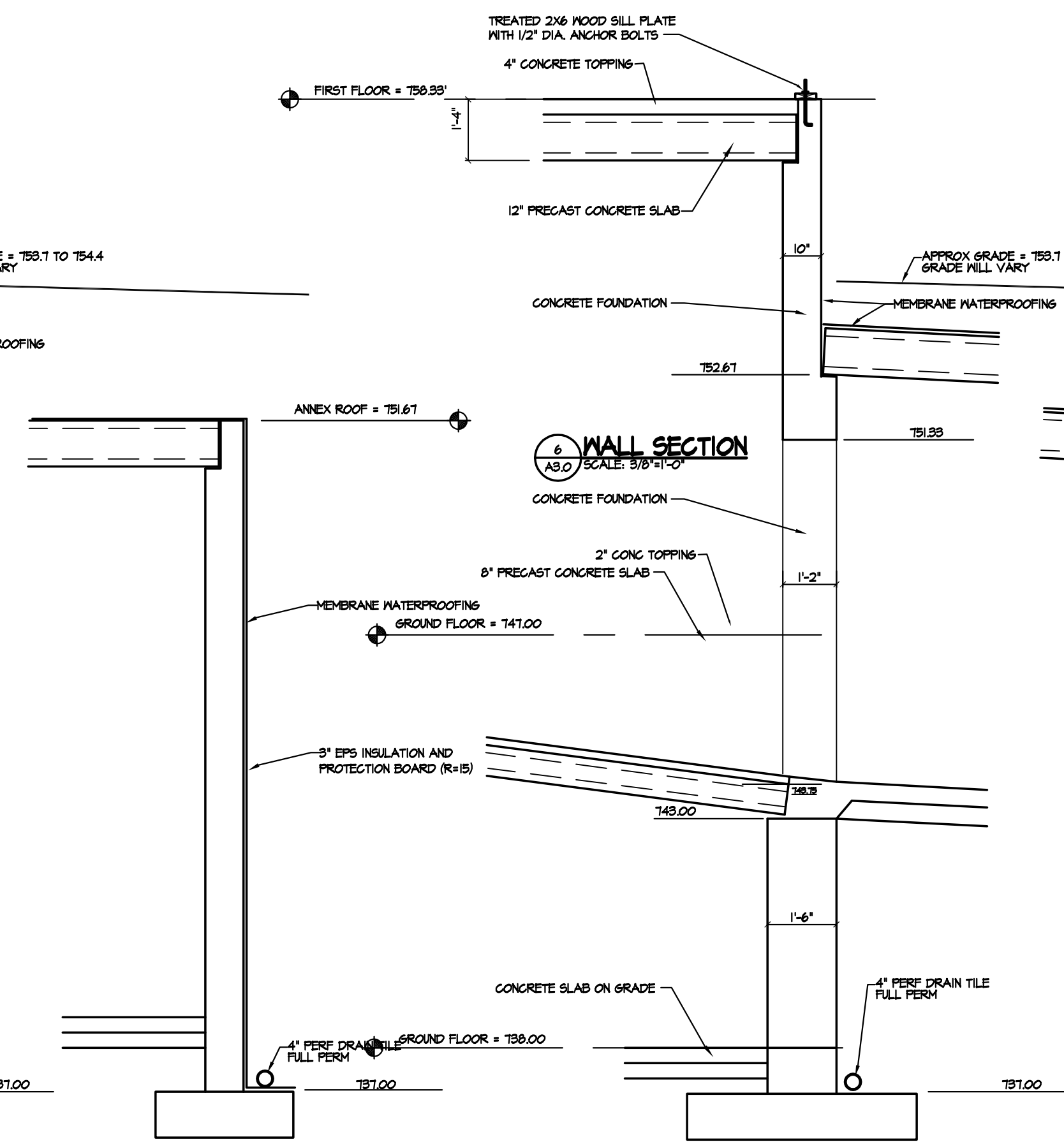
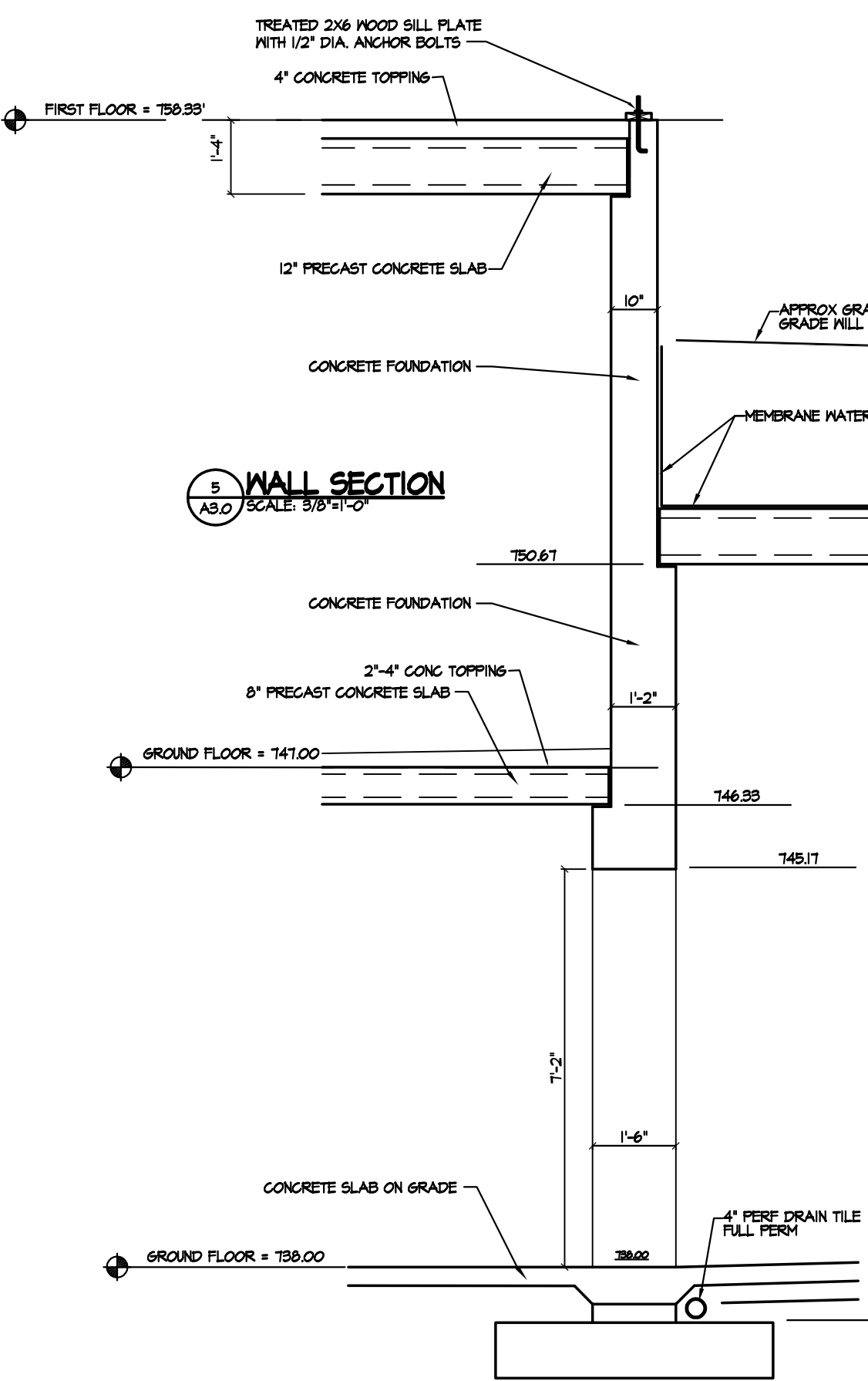
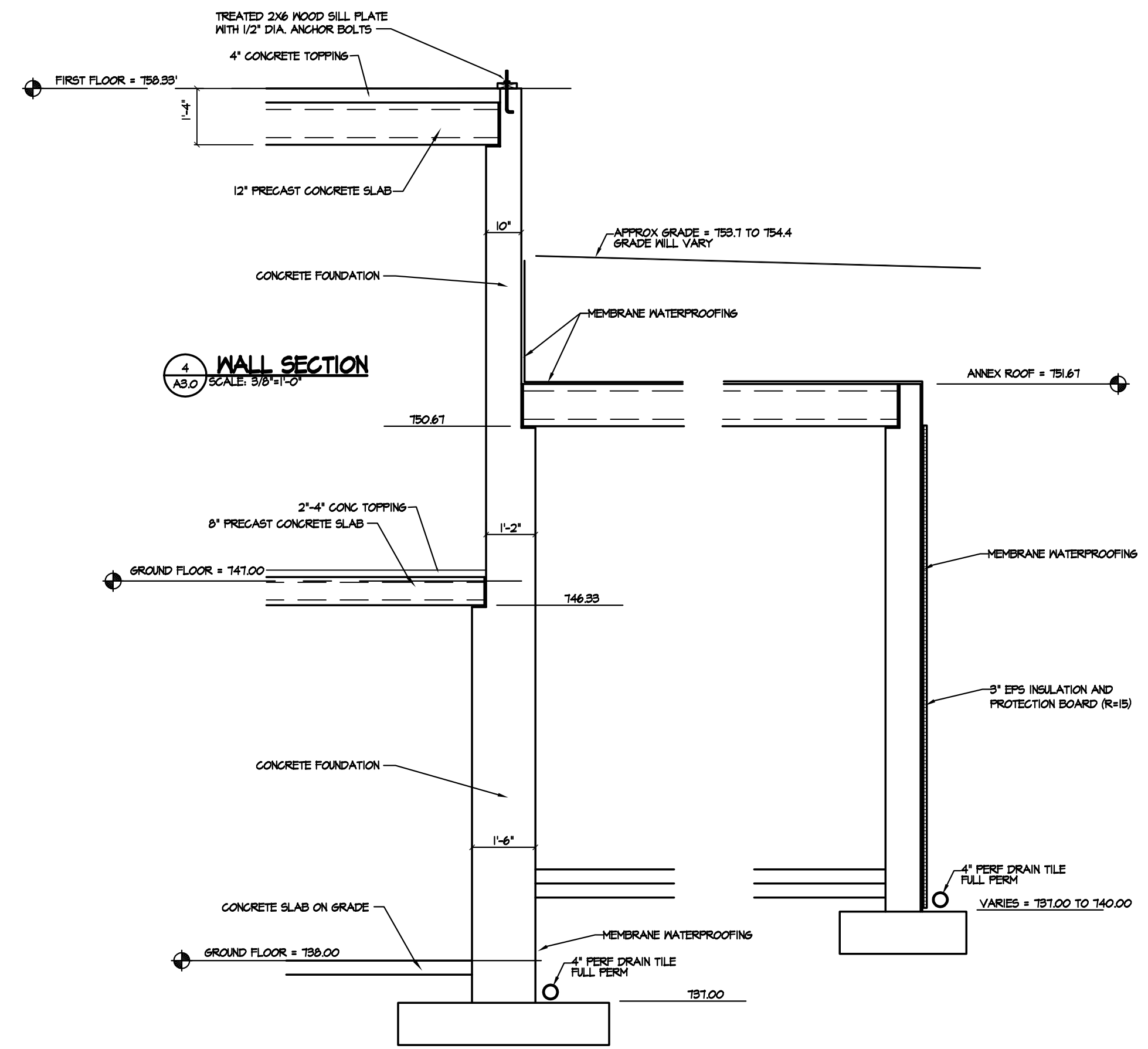
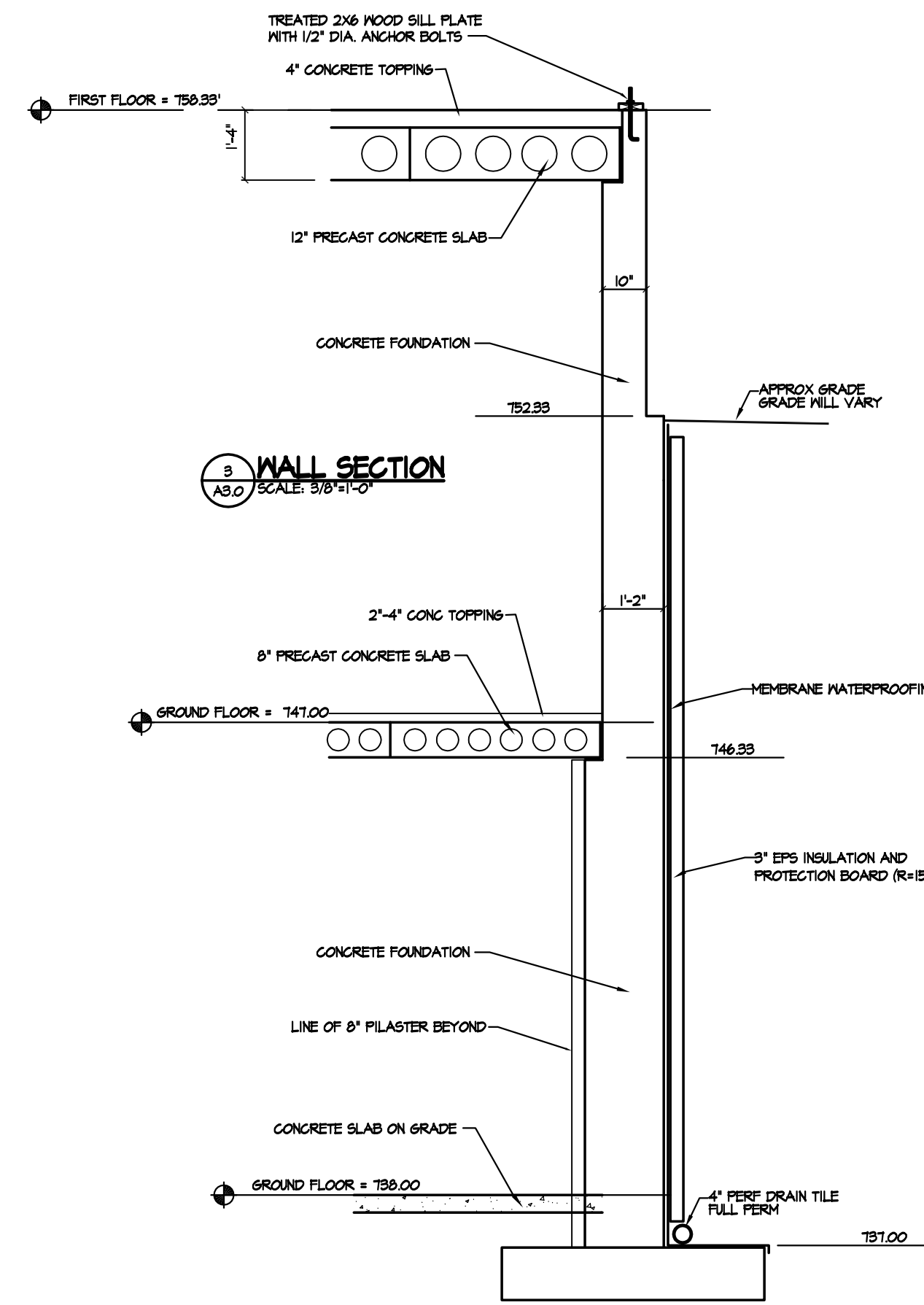
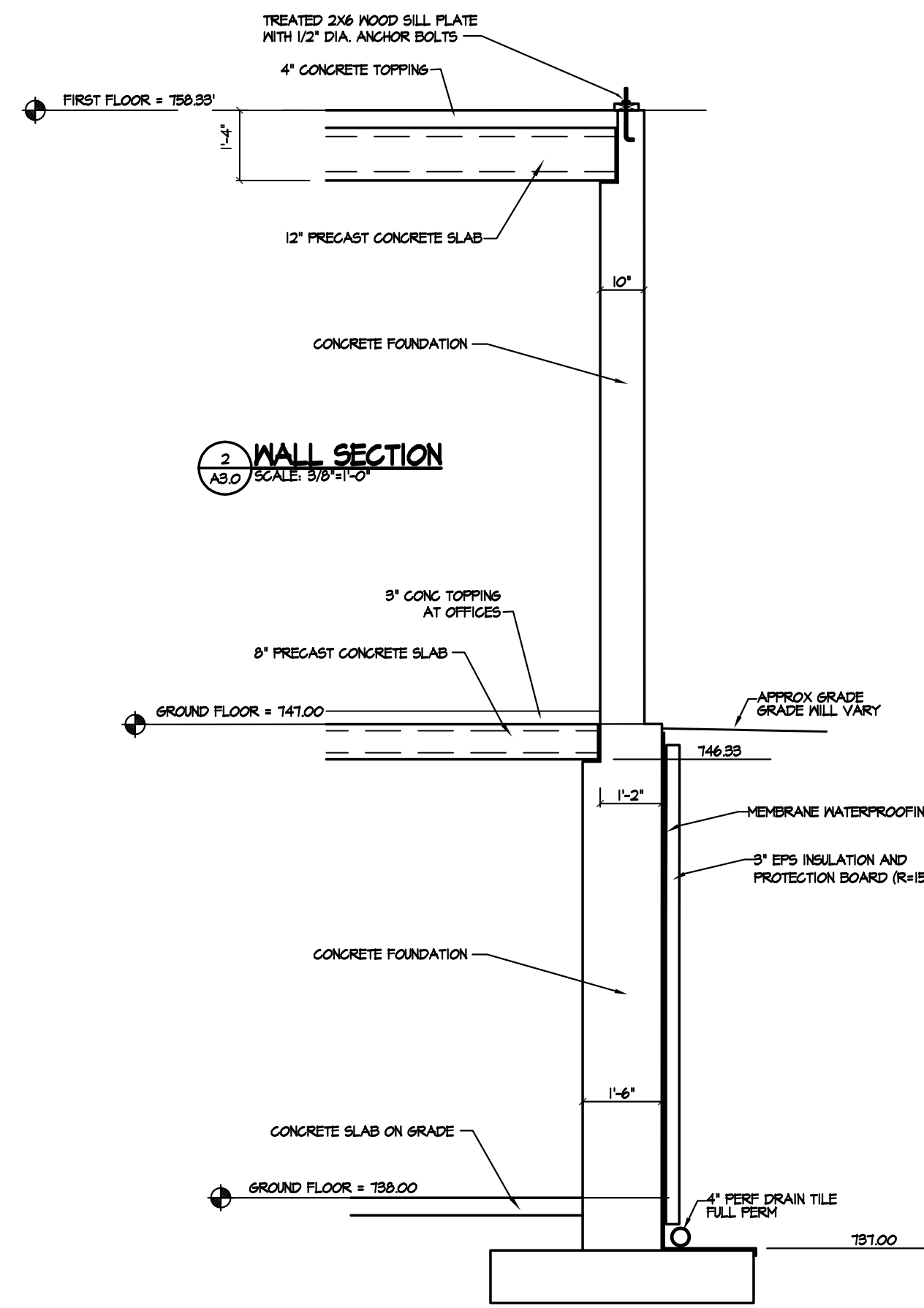
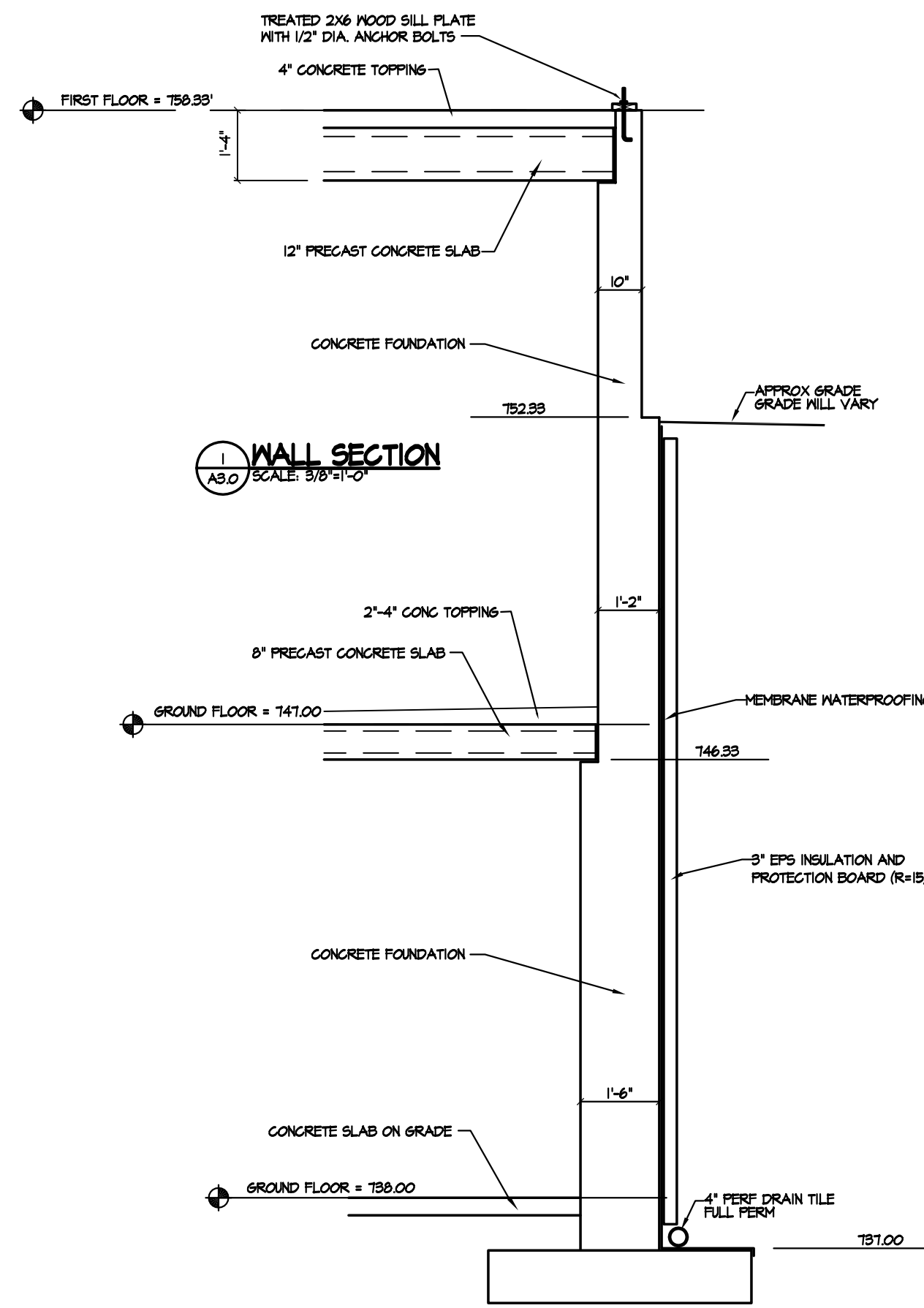


EAST ELEVATION
SCALE: 1/8"=1'-0"



SOUTH ELEVATION - ANNEX ENTRY
SCALE: 1/8"=1'-0"

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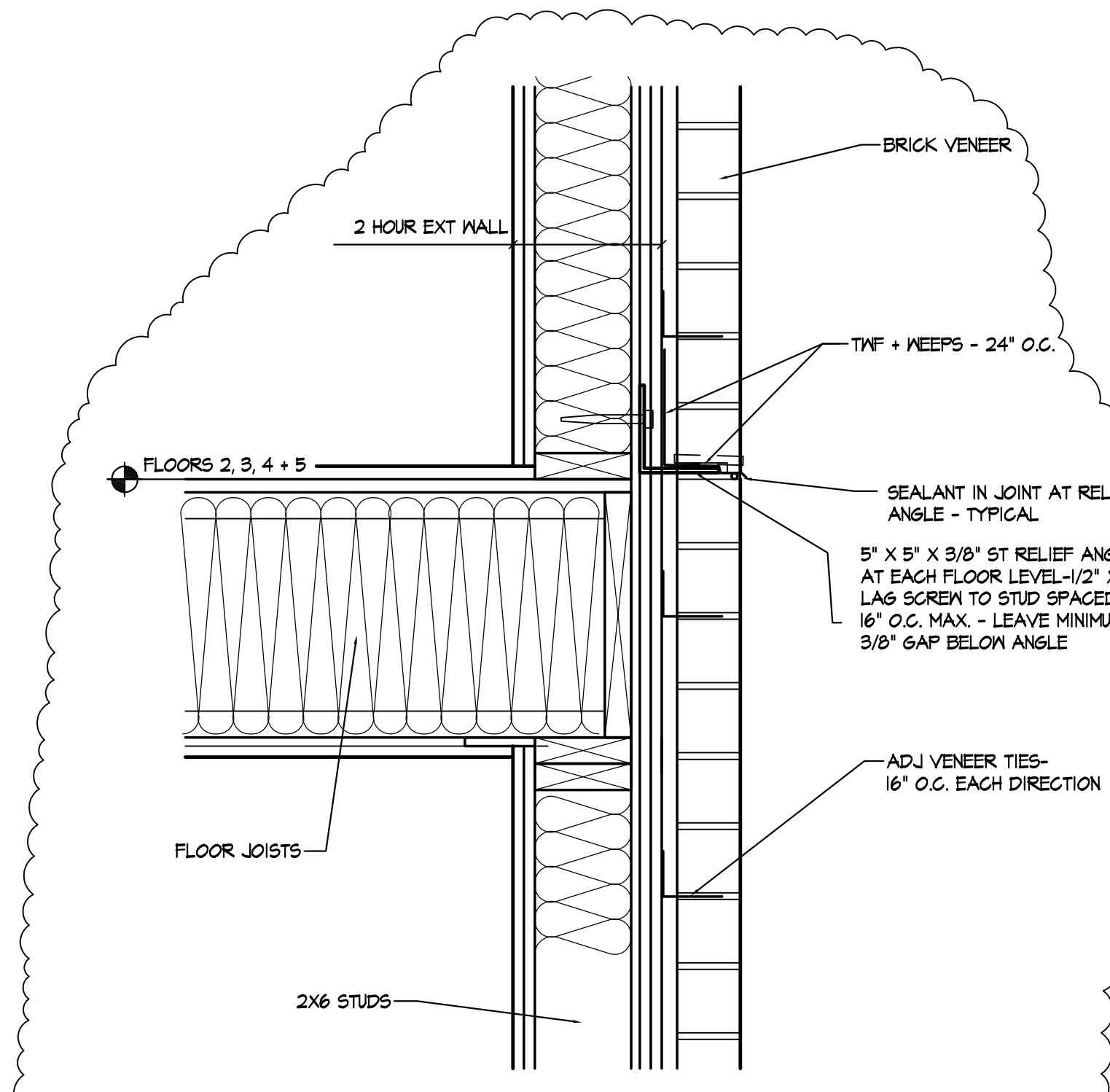
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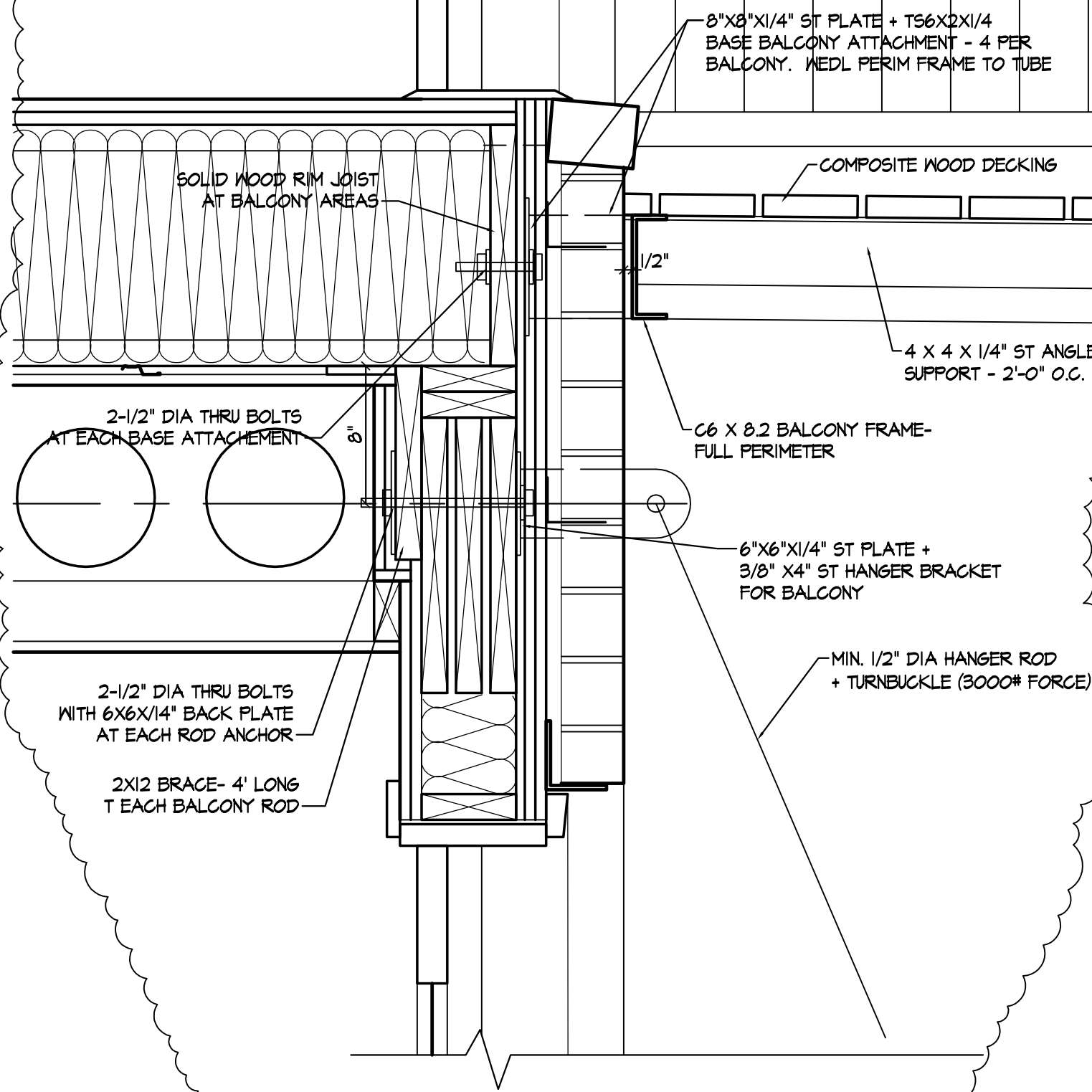
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WALL SECTIONS

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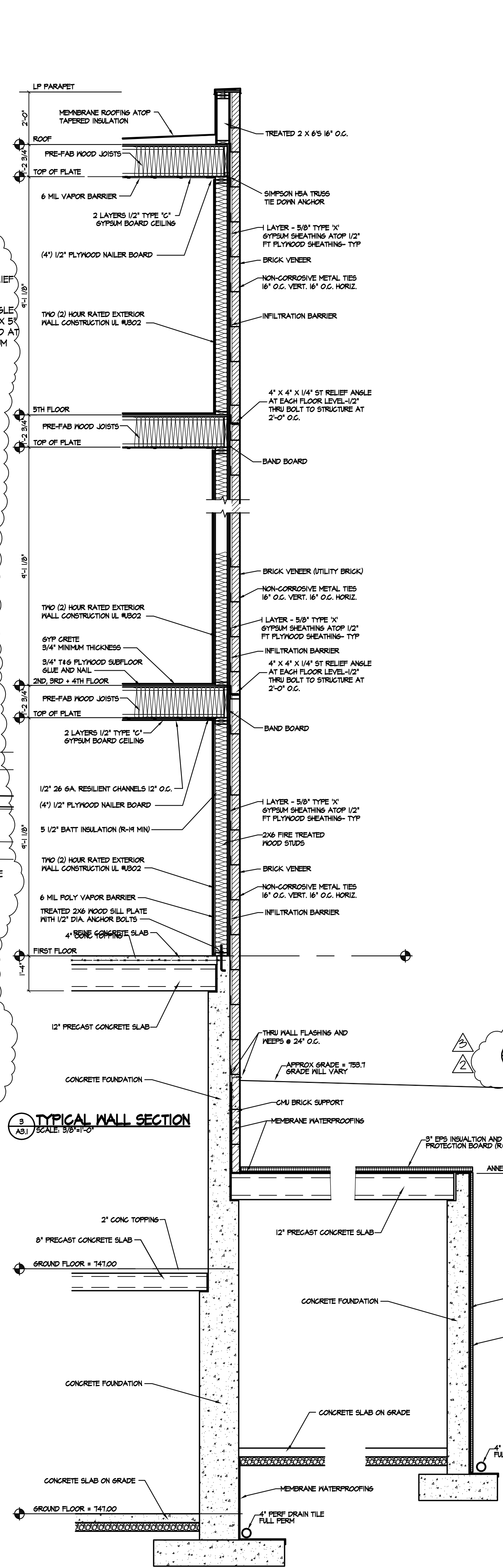
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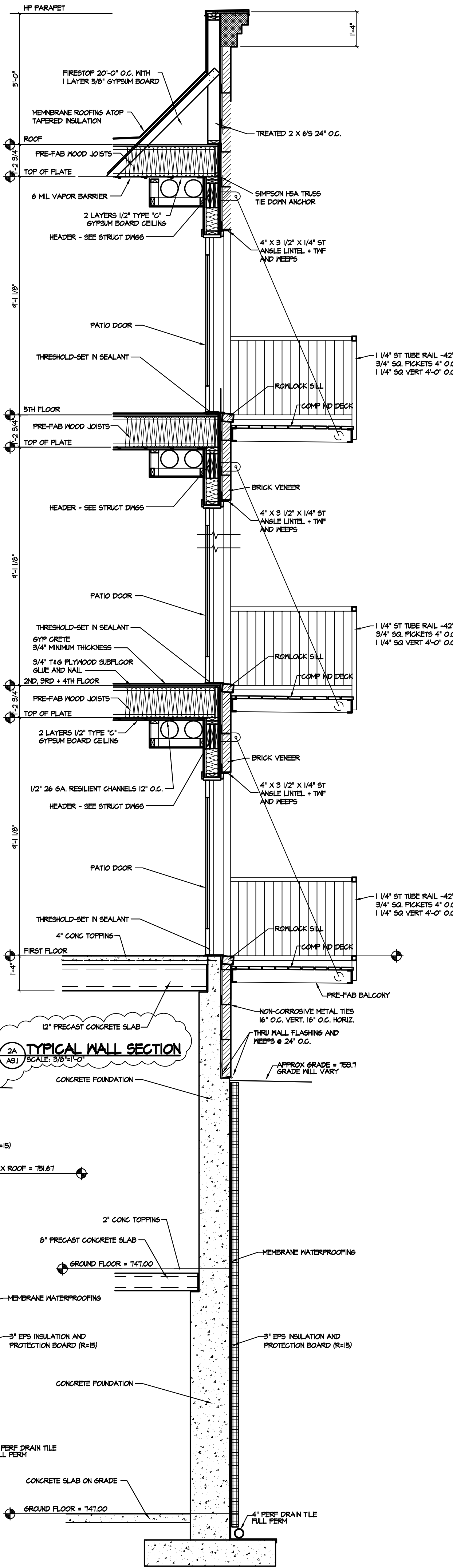
4 DETAIL AT RELIEF ANGLE
 A3.1 SCALE: 1/2"=1'-0"



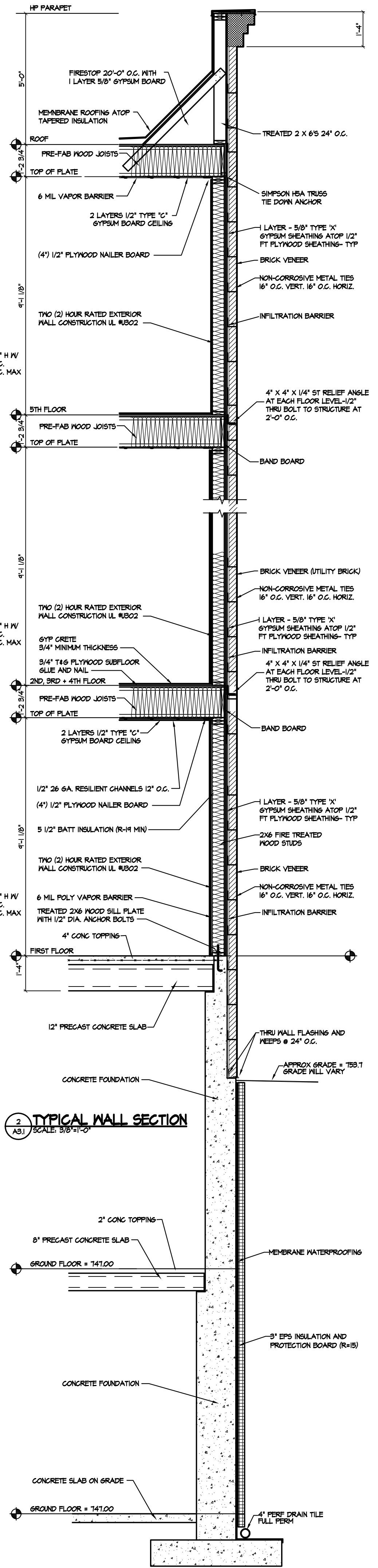
5 BALCONY ATTACHMENT DETAIL
 A3.1 SCALE: 1/2"=1'-0"



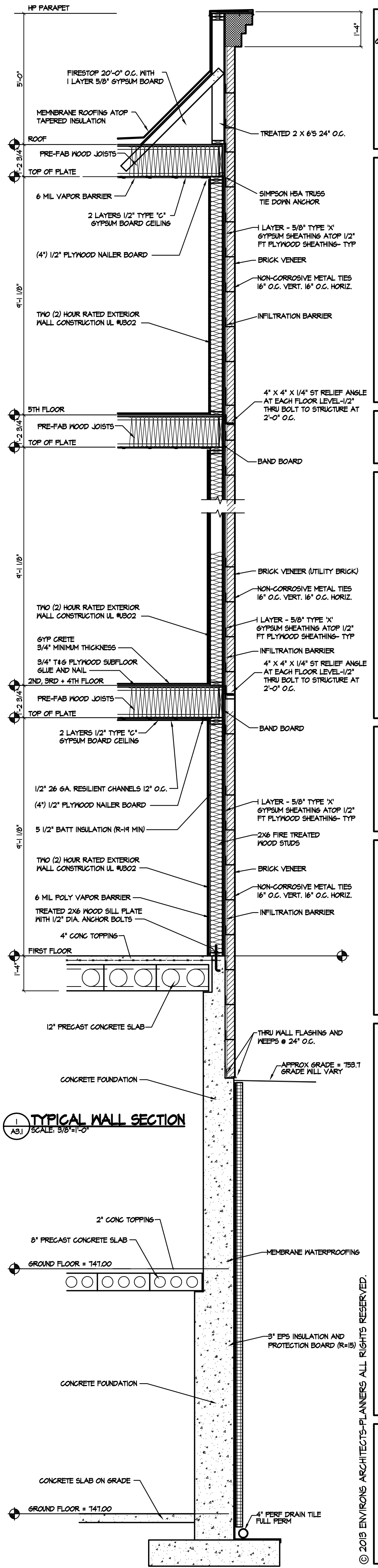
3 TYPICAL WALL SECTION
 A3.1 SCALE: 3/8"=1'-0"



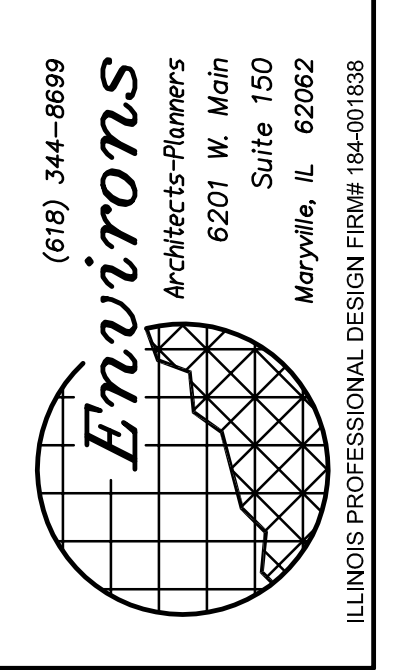
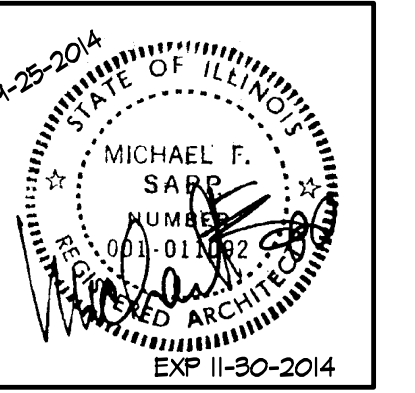
2A TYPICAL WALL SECTION
 A3.1 SCALE: 3/8"=1'-0"



2 TYPICAL WALL SECTION
 A3.1 SCALE: 3/8"=1'-0"



1 TYPICAL WALL SECTION
 A3.1 SCALE: 3/8"=1'-0"



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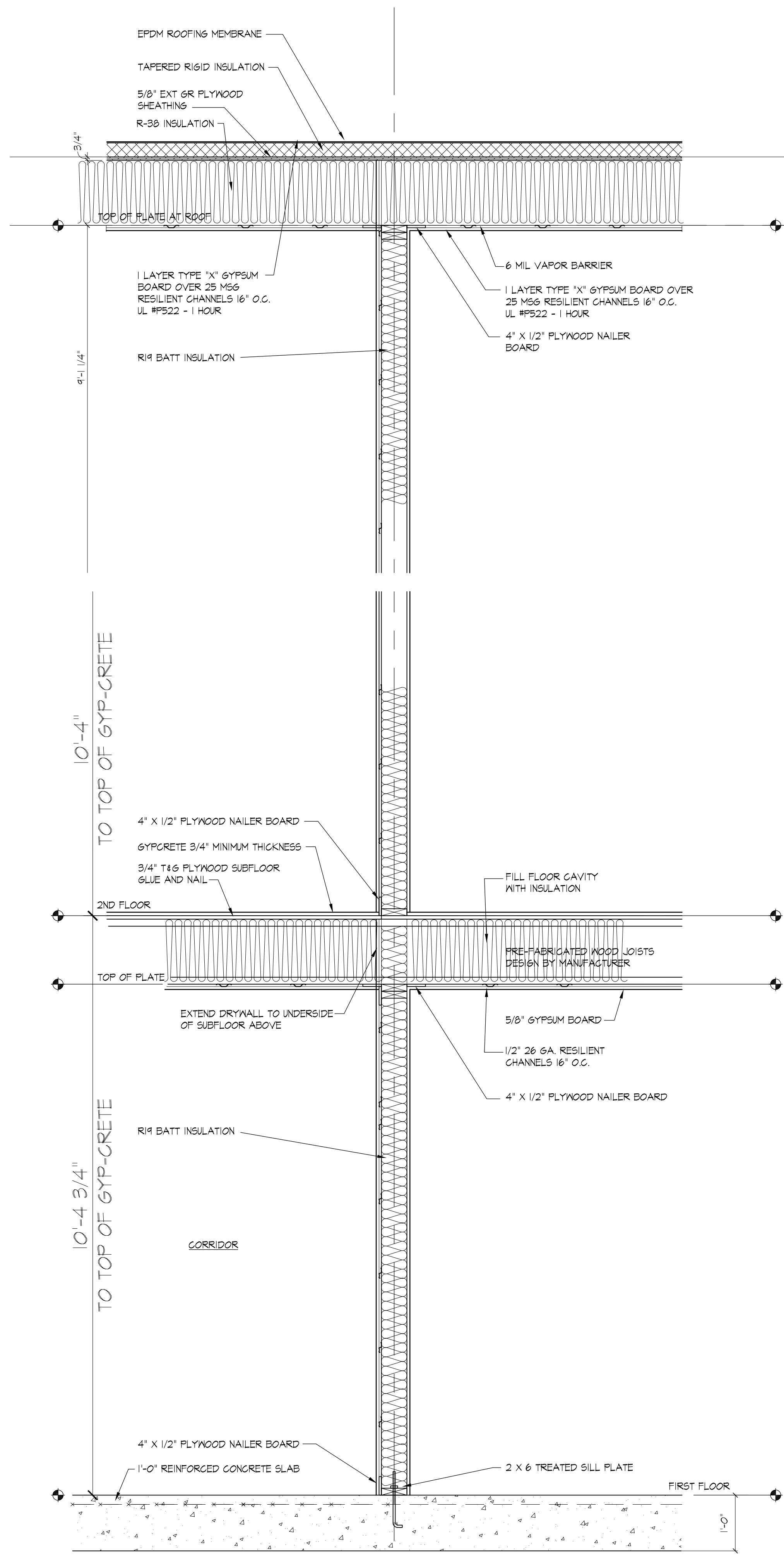
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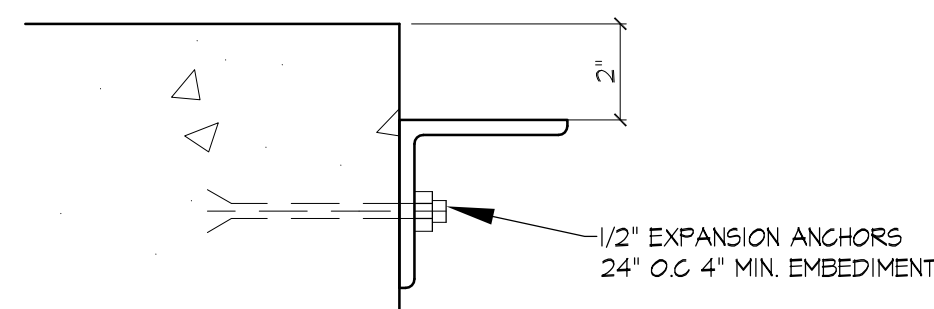
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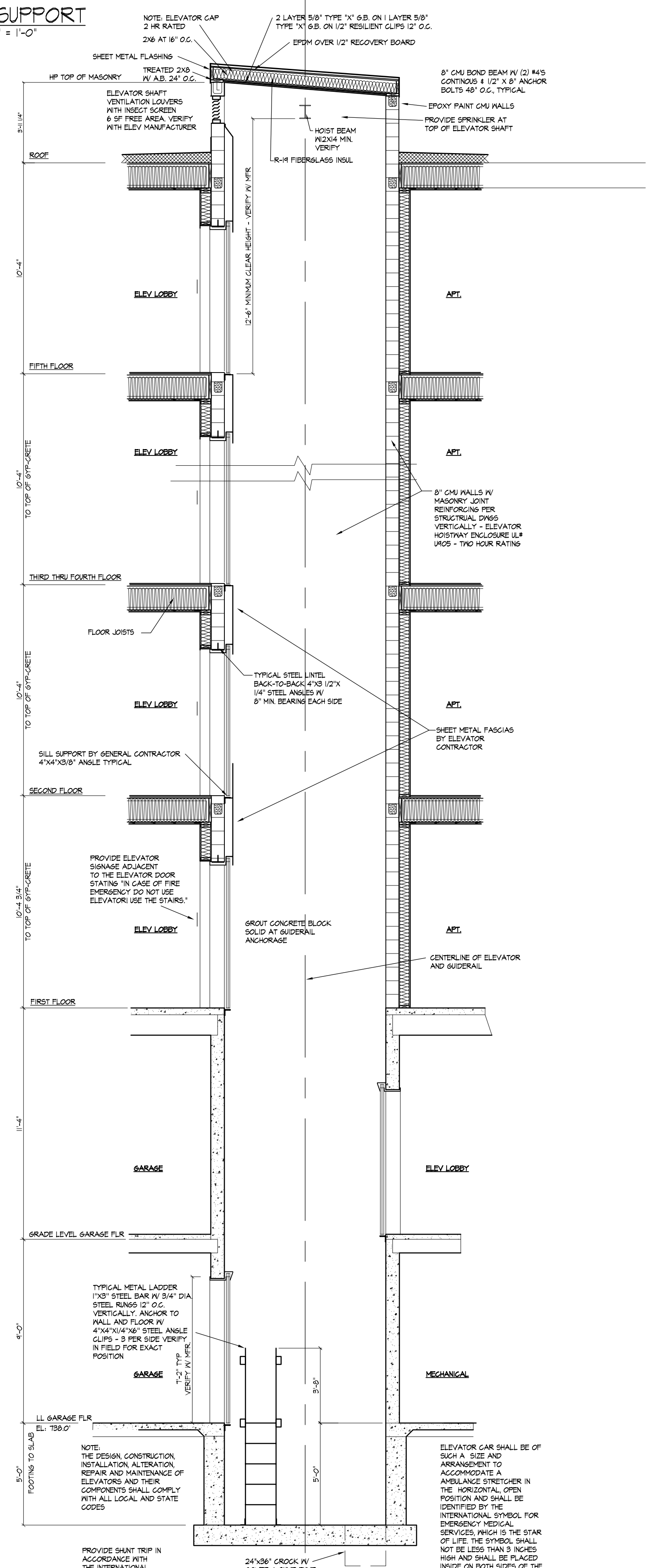
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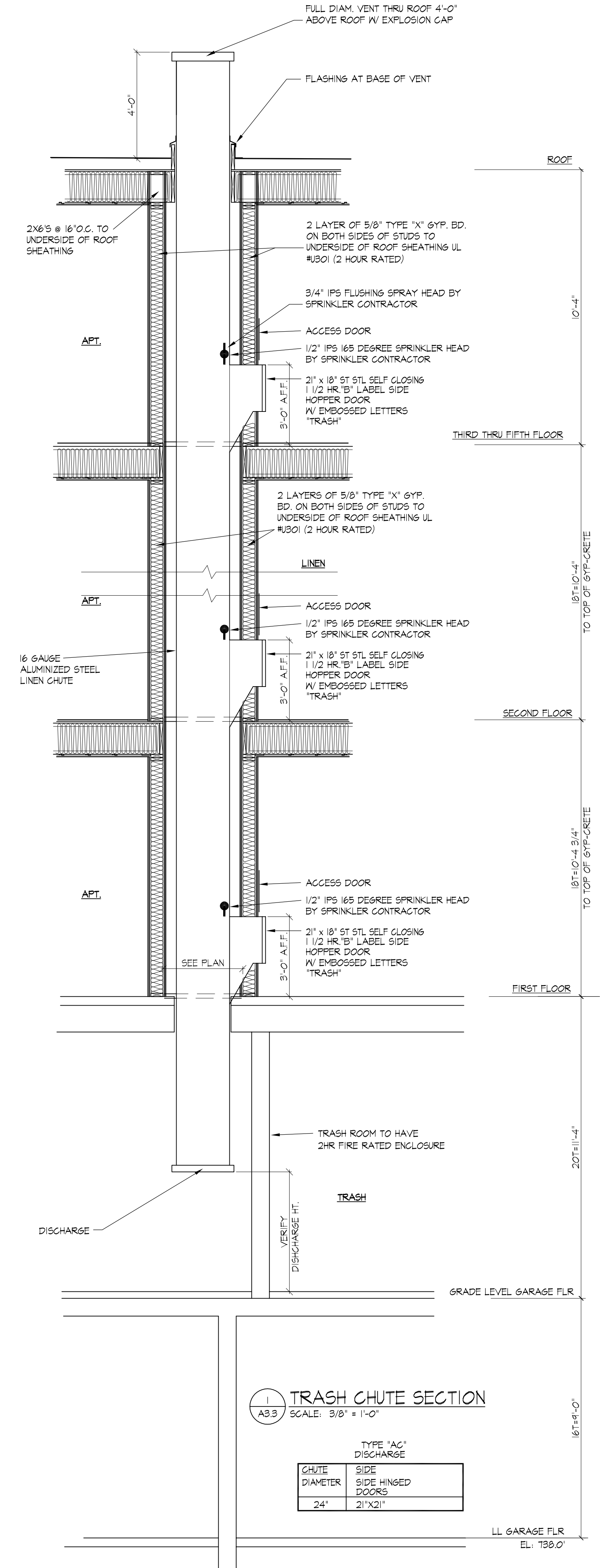
3 CORRIDOR WALL SECTION
 A3.3 SCALE: 3/4" = 1'-0"



4 SILL SUPPORT
 A3.3 SCALE: 3" = 1'-0"

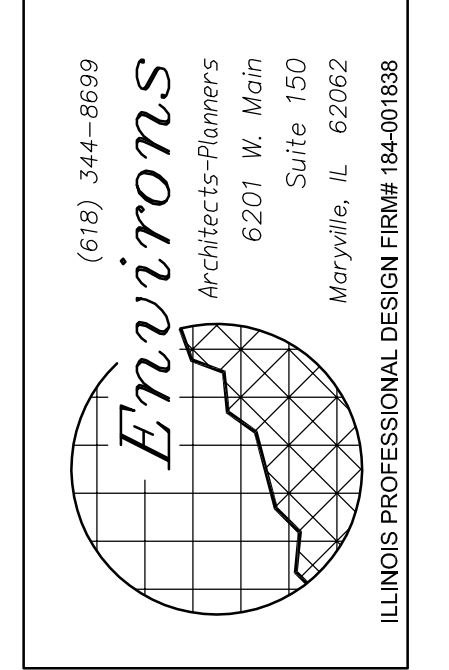
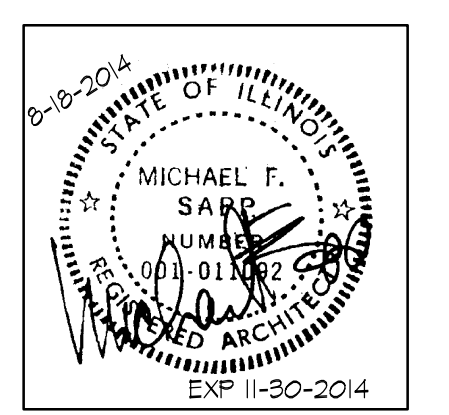


2 ELEVATOR SECTION
 A3.3 SCALE: 1/4" = 1'-0"



1 TRASH CHUTE SECTION
 A3.3 SCALE: 3/8" = 1'-0"

TYPE "AC" DISCHARGE	
CHUTE DIAMETER	SIDE HINGED DOORS
24"	21"X21"



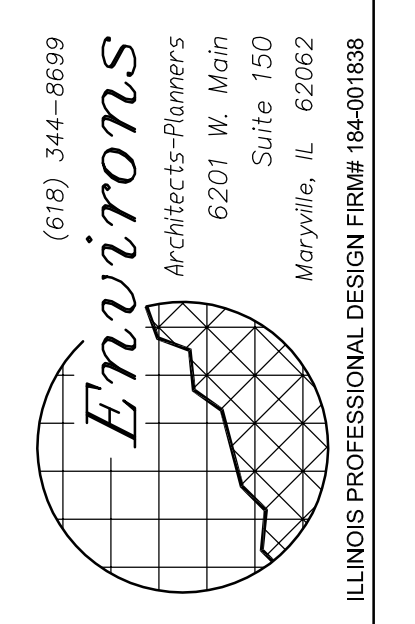
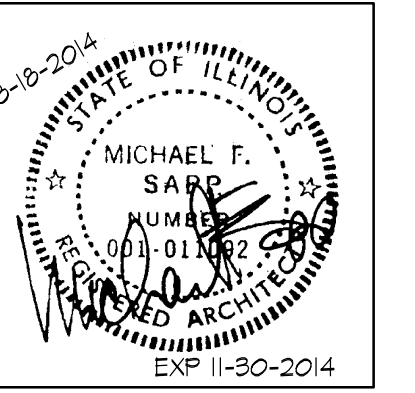
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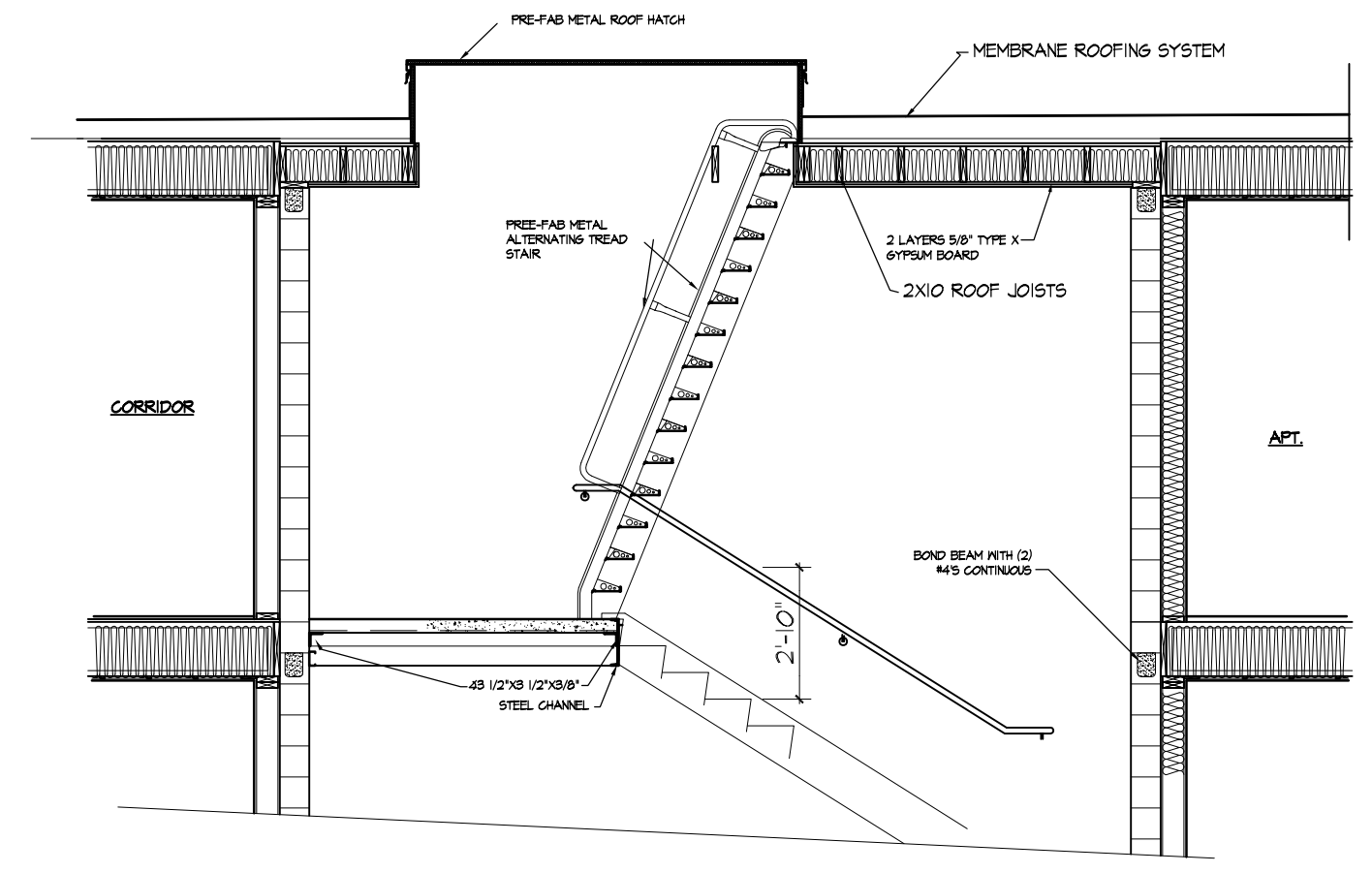
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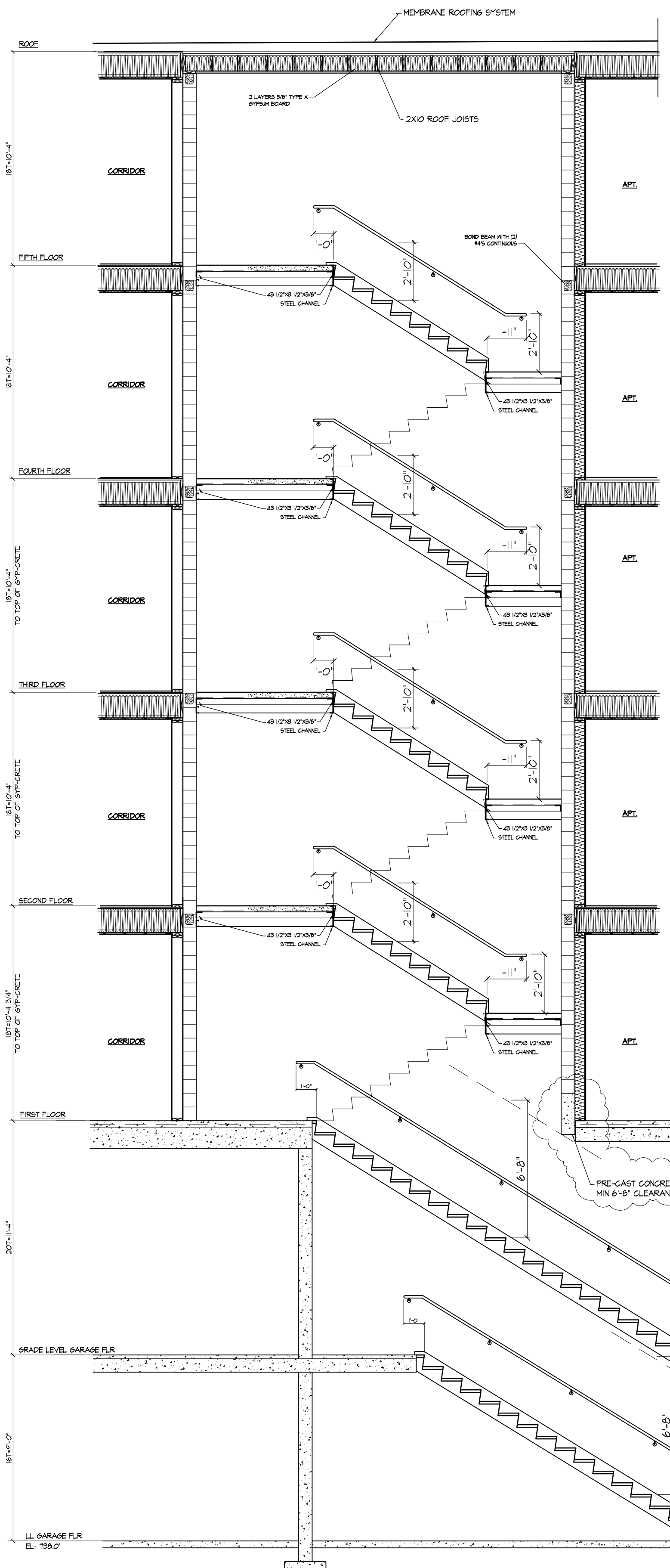
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STAIR SECTION DETAILS

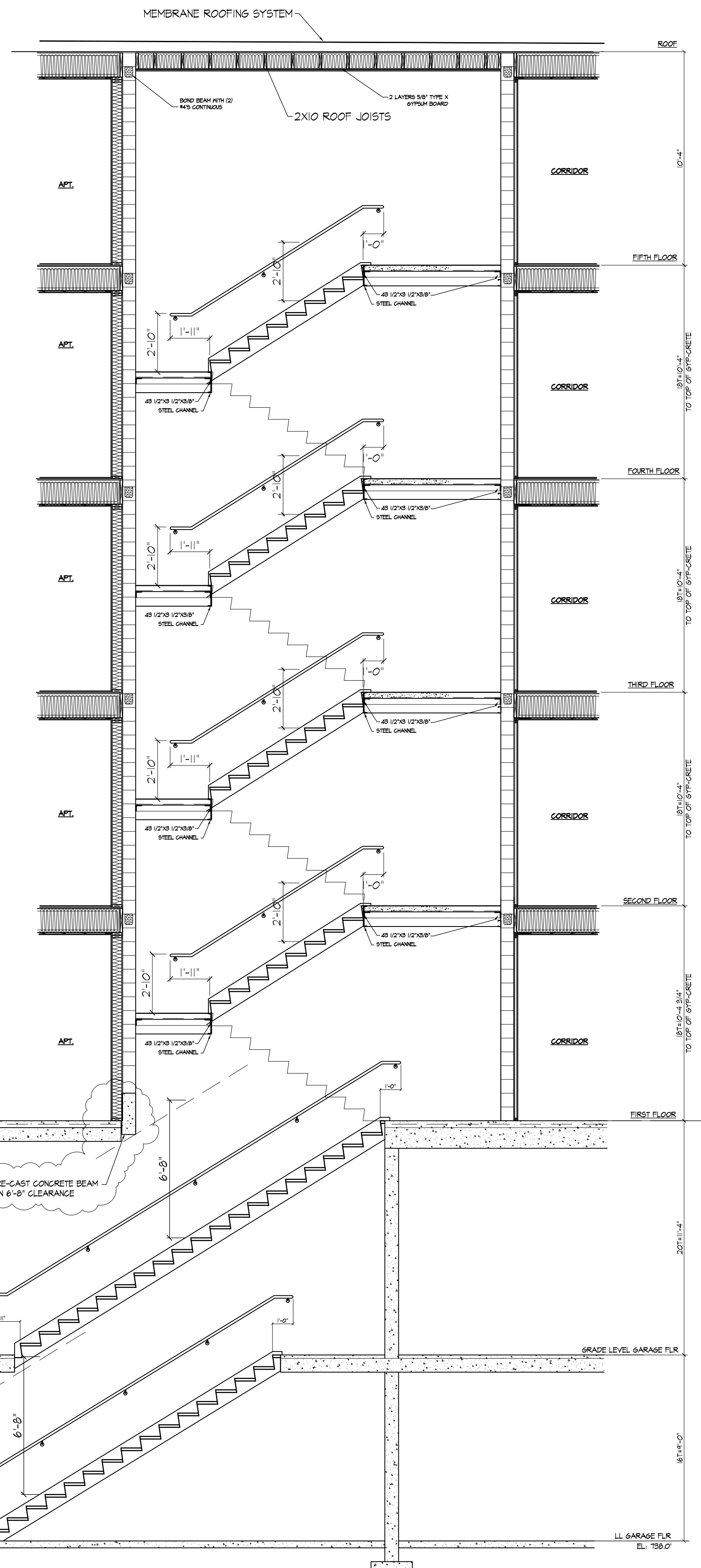
SHEET
A3.4
 OF 28



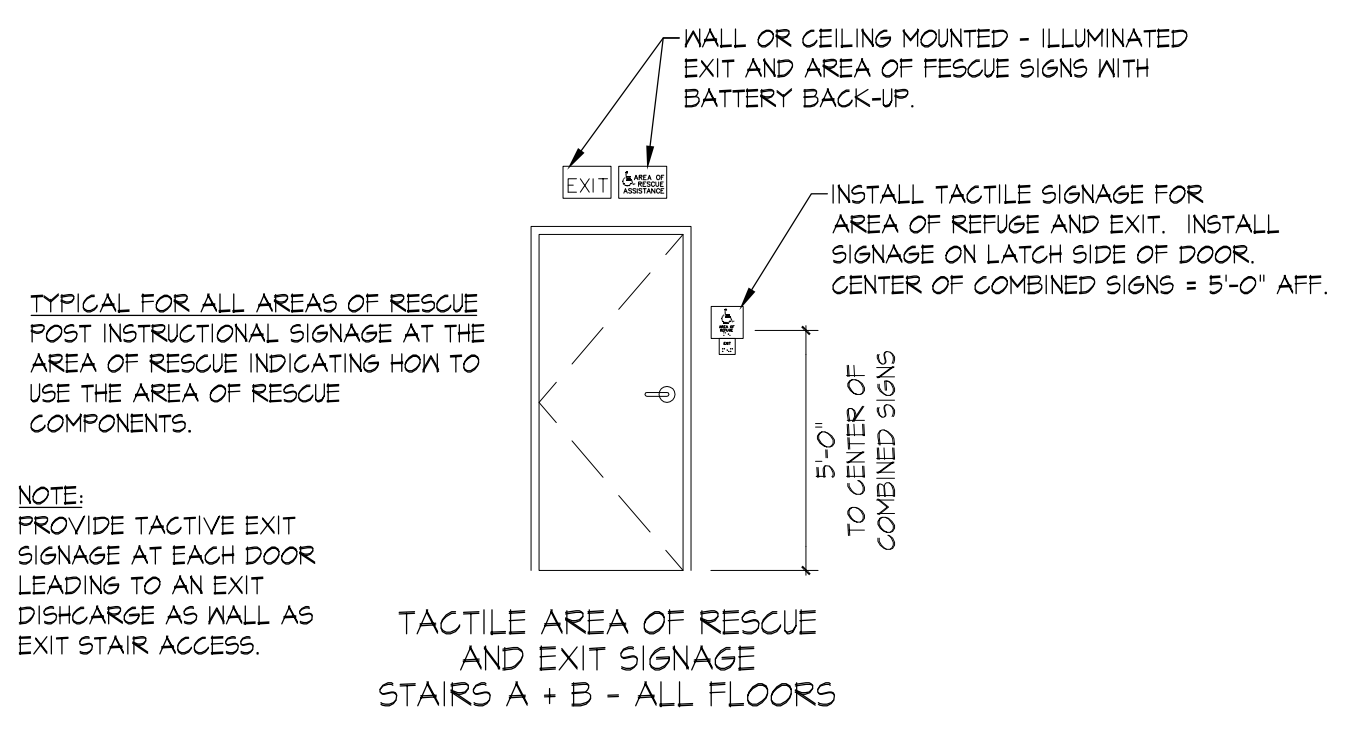
SECTION - STAIR 'B' - ROOF ACCESS
 SCALE: 1/4" = 1'-0"



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



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

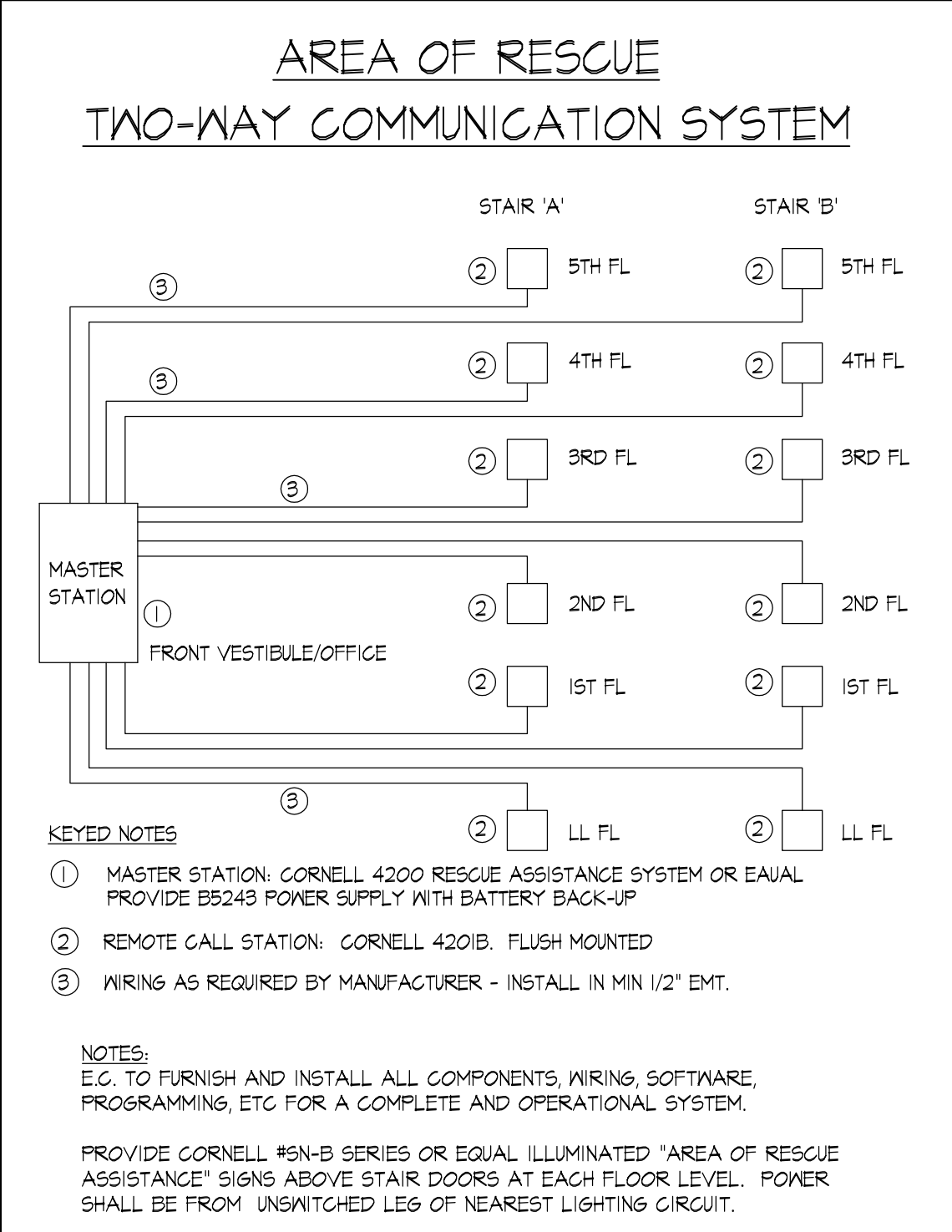


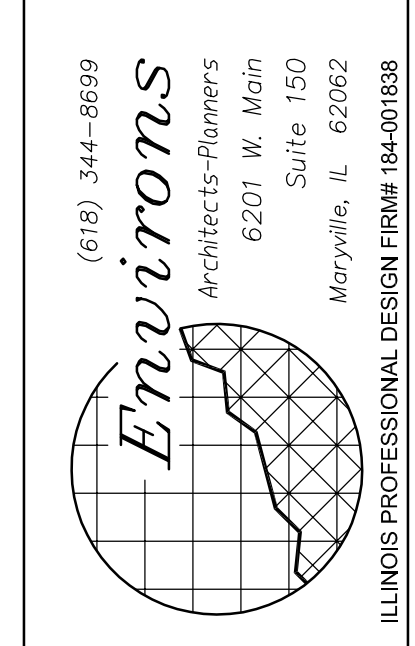
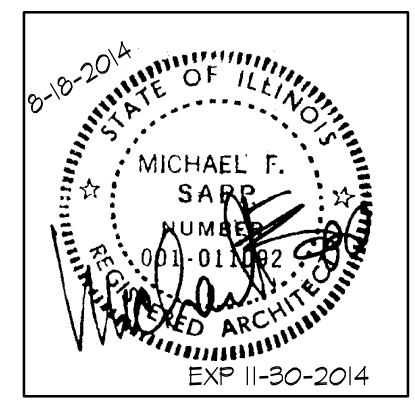
TYPICAL FOR ALL AREAS OF RESCUE POST INSTRUCTIONAL SIGNAGE AT THE AREA OF RESCUE INDICATING HOW TO USE THE AREA OF RESCUE COMPONENTS.

NOTE: PROVIDE TACTILE EXIT SIGNAGE AT EACH DOOR LEADING TO AN EXIT DISCHARGE AS WELL AS EXIT STAIR ACCESS.

NOTE: ALL ACCESSIBLE SIGNAGE TO COMPLY WITH REQUIREMENTS FOR CHARACTER PROPORTION, HEIGHT, RAISED AND BRAILED CHARACTERS AND PICTORIAL SYMBOLS SIGNS, FINISH AND CONTRAST AND MOUNTING HEIGHT/LOCATIONS.

NOTE: PROVIDE SIGNAGE AT EACH FLOOR LANDING IN THE STAIR ENCLOSURE WHICH DESIGNATES THE FLOOR LEVEL, THE TERMINUS AT THE TOP AND BOTTOM OF THE STAIR ENCLOSURE AND THE IDENTIFICATION OF THE STAIR. THE SIGNAGE SHALL INDICATE THE STORY OF AND THE DIRECTION TO THE EXIT DISCHARGE. SIGN SHALL BE LOCATED 5'-0" AFF AT LANDING VISIBLE WHEN DOOR IS OPEN OR CLOSED.





JOB NO.
13022

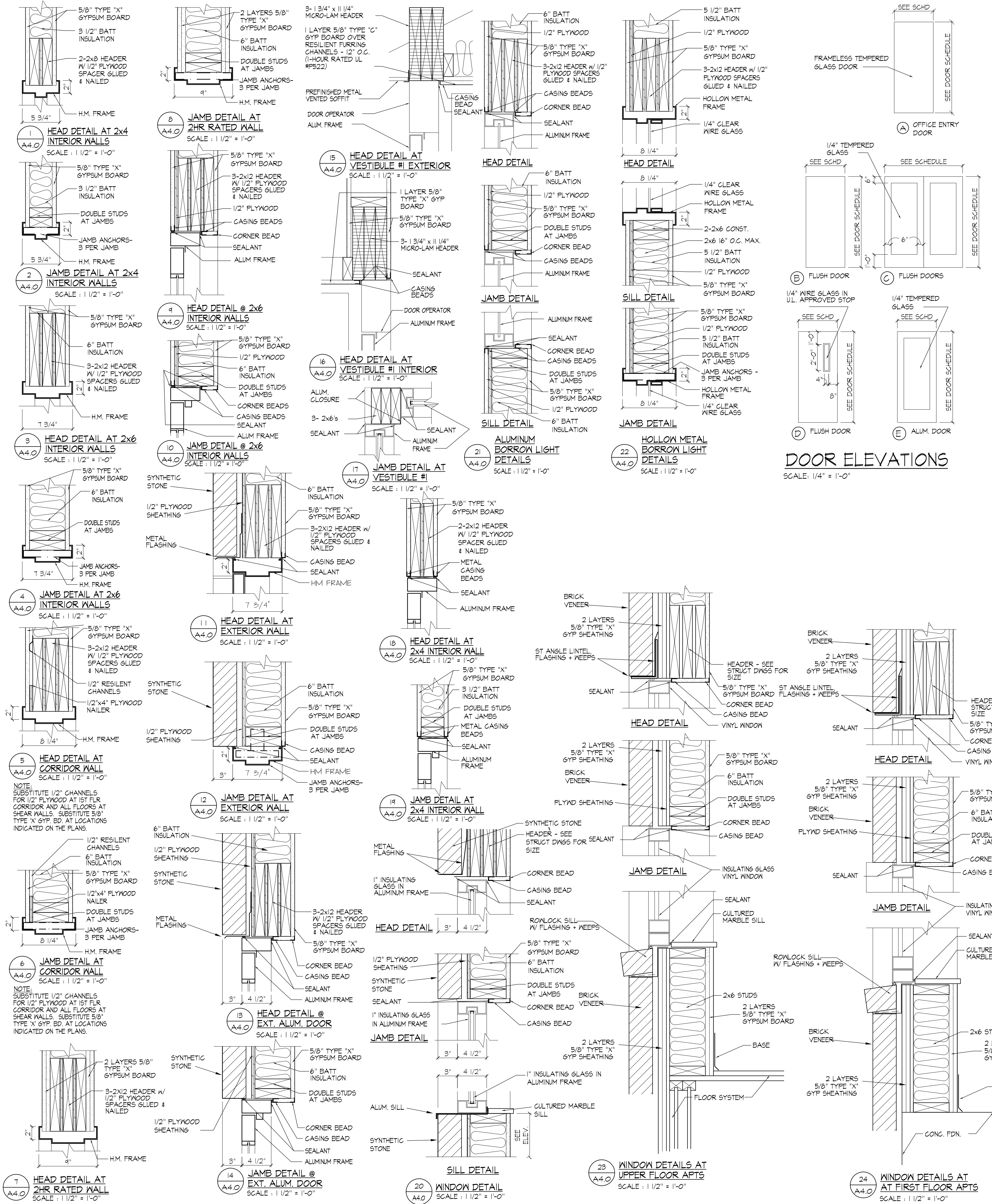
DATE:
DECEMBER 11, 2013

REVISED:
FEBRUARY 20, 2014 PERMIT REVIEW
PRECAST OPTION APRIL 28, 2014
AUGUST 18, 2014 PERMIT REVIEW



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

SHEET
A4.0
OF 28



DOOR SCHEDULE

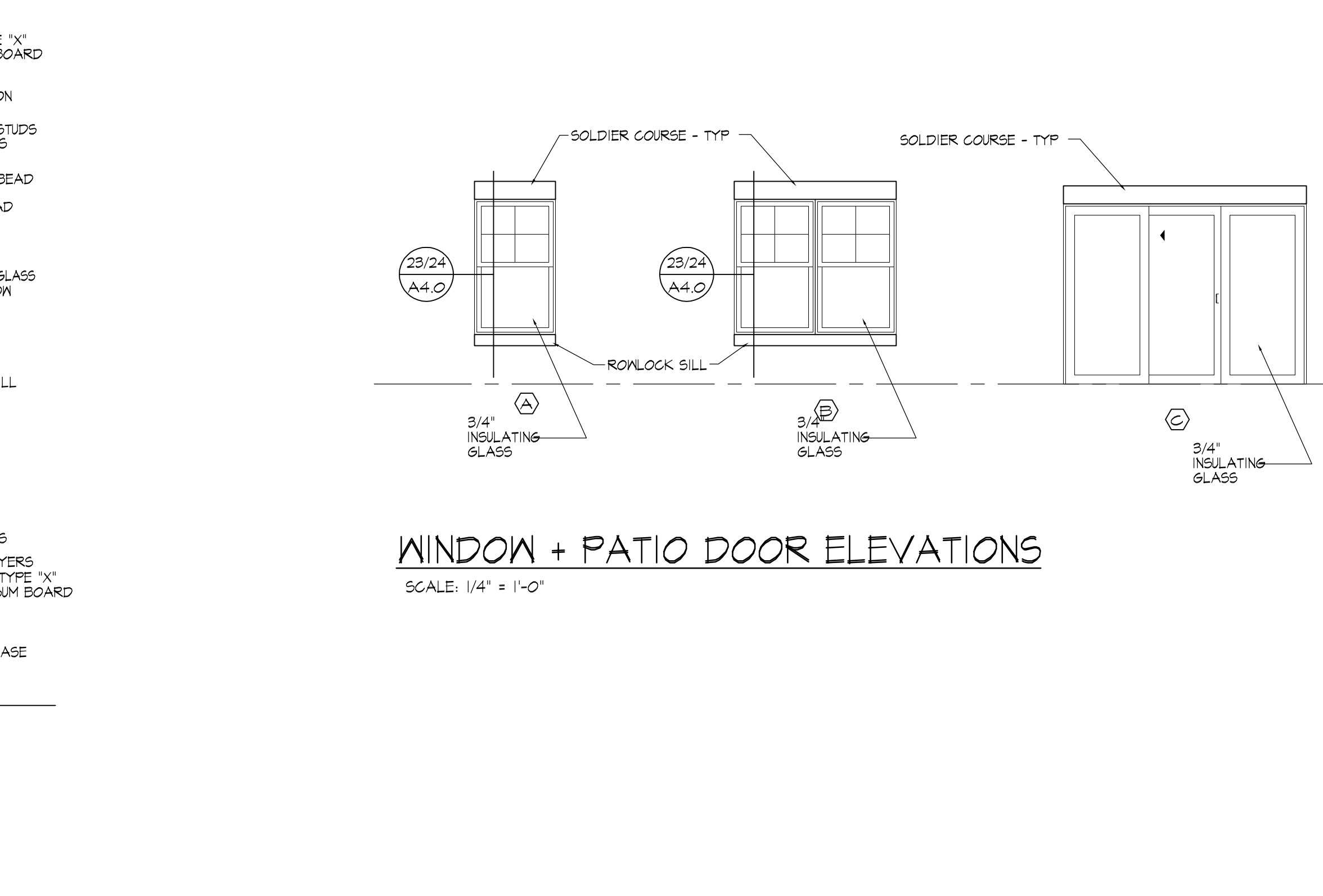
DOOR NUMBER	LOCATION	DOOR TYPE	DOOR SIZE	DOOR THICK	DOOR MAT	FRAME MAT	FIRE RATING	HEAD DETAIL	JAMB DETAIL	HDW SET	REMARKS
01	STAIR INTERIOR-GARAGE	D	3'-0"X6'-8"	1 3/4"	HM	HM	90 MIN	7/A4.0	8/A4.0	1	
02	STAIR INTERIOR	B	3'-0"X6'-8"	1 3/4"	SCVD	HM	90 MIN	7/A4.0	8/A4.0	1	
03	TRASH CHUTE	B	3'-0"X6'-8"	1 3/4"	SCVD	HM	90 MIN	5/A4.0	6/A4.0	3	
04	MECHANICAL	B	3'-0"X7'-0"	1 3/4"	HM	HM	45 MIN	5/A4.0	6/A4.0	3	
05	MECHANICAL	B	PR 3'-0"X7'-0"	1 3/4"	HM	HM	45 MIN	5/A4.0	6/A4.0	3	
06	STAIR EXTERIOR	B	3'-0"X7'-0"	1 3/4"	ALUM	ALUM.	---	18/A4.0	14/A4.0	2	
07	VESTIBULE - EXTERIOR	E	3'-0"X7'-0"	1 3/4"	ALUM	ALUM.	---	18/A4.0	14/A4.0	4	
08	VESTIBULE - INTERIOR	E	3'-0"X7'-0"	1 3/4"	ALUM	ALUM.	---	18/A4.0	14/A4.0	5	
09	OFFICE	A	3'-0"X6'-8"	1 3/4"	GLASS	---	---	---	---	6	FRAMELESS GLASS DOOR
10	TOILET	B	3'-0"X7'-0"	1 3/4"	SCVD	HM	---	1/A4.0	2/A4.0	7	
11	ELEVATOR EQUIPMENT	B	3'-0"X6'-8"	1 3/4"	SCVD	HM	90 MIN	7/A4.0	8/A4.0	3	
12	ELECTRICAL ROOM	B	3'-0"X6'-8"	1 3/4"	SCVD	HM	90 MIN	7/A4.0	8/A4.0	1	
13	CLOSET	B	3'-0"X7'-0"	1 3/4"	SCVD	HM	---	1/A4.0	2/A4.0	8	

DOOR ELEVATIONS

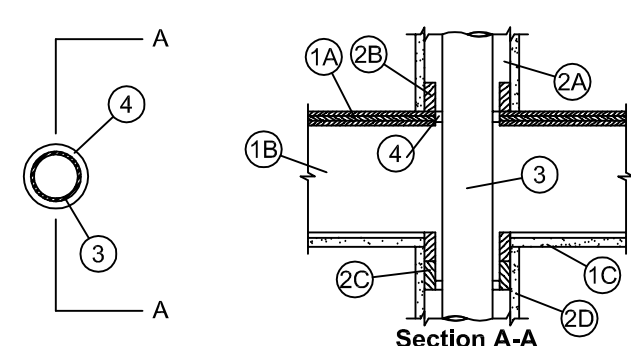
SCALE: 1/4" = 1'-0"

NOTE: HARDWARE SETS LISTED HERE ARE FOR INFORMATION PURPOSES ONLY. COORDINATE FINISH HARDWARE WITH BUILDING OWNER.
2. FIRE RATED DOORS SHALL BE SELF CLOSING OR BY ACTIVATION OF SMOKE DETECTOR.
3. ALL DOOR HARDWARE SHALL BE US26D FINISH UNLESS OTHERWISE DIRECTED.

HARDWARE GROUPS	APARTMENT HARDWARE GROUPS
SET #1 1/2 PAIR HINGES RIM EXIT DEVICE CLOSER SET SMOKE SEALS STOP	SET #A1 1/2 PAIR HINGES APARTMENT ENTRY LOCKSET CLOSER SET SMOKE SEALS STOP
SET #2 1/2 PAIR HINGES RIM EXIT DEVICE CLOSER + STOP SET WEATHERSTRIP H, J + S ADA THRESHOLD	SET #A2 1/2 PAIR HINGES PASSAGE LATCHSET CLOSER SET SMOKE SEALS STOP
SET #3 1/2 PAIR HINGES STORAGE - LOCKSET CLOSER STOP	SET #A3 1/2 PAIR HINGES PRIVACY - LOCKSET STOP
SET #4 1/2 PAIR HINGES RIM EXIT DEVICE + LOCK CLOSER ADA THRESHOLD	SET #A4 BI-PASS DOOR TRACK + CARRIERS FLUSH PULLS + BUMPER STOPS
SET #5 1/2 PAIR HINGES PUSH + PULL CLOSER	SET #7 1/2 PAIR HINGES PRIVACY - LOCKSET STOP
SET #6 2 PAIR PIVOTS 2 PUSH/PULLS OFFICE - DEAD LOCK W/ PADDLE CLOSER STOP	



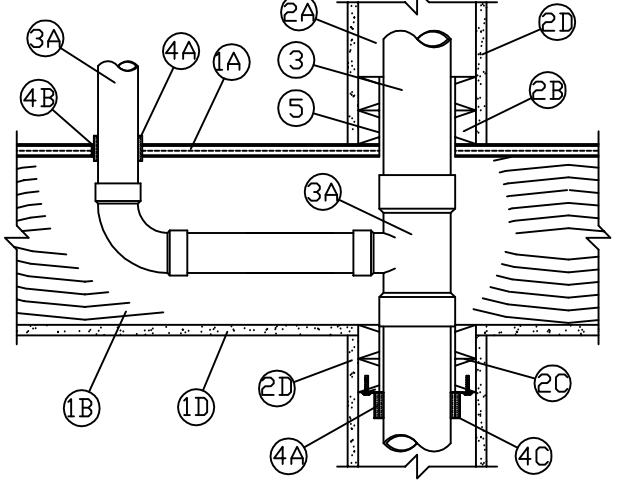
F Rating - 1 Hr
T Rating - 3/4 and 1 Hr (See Item 3)
L Rating At Ambient - Less Than 1 CFMsq ft
L Rating At 400 F - Less Than 1 CFMsq ft



- Floor-Ceiling Assembly** - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:
A. **Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture** as specified in the individual Floor-Ceiling Design.
B. **Max diam of floor opening** is 4'-12 in. (114 mm).
C. **Joists** - Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members** with bridging as required and with ends firestopped.
D. **Gypsum Board** - Nom 4 ft (1.2 m) wide by 5/8 (16 mm) thick wallboard direct attached to joists or screw-attached to furring channels as specified in the individual Floor-Ceiling Design.
E. **Chase Wall (Optional)** - The through penetrant (Item 3) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum wallboard chase wall constructed of the materials and in the manner specified in the individual L500 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. **Studs** - Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
B. **Soak Plate** - Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted.
C. **Top Plate** - The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 4'-12 in. (114 mm).
D. **Gypsum Board** - Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.
F. **Through Penetrants** - One metallic pipe, conduit or tubing to be installed within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor assembly. The annular space within the firestop system shall be max 1 in. (25 mm) clear. The following types and sizes of metallic pipes or conduits may be used:
A. **Steel Pipe** - Nom 3 in. (76 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. **Conduit** - Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
C. **Iron Pipe** - Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.
D. **Copper Tubing** - Nom 3 in. (76 mm) diam (or smaller) Type 1 (or heavier) copper tubing.
E. **Copper Pipe** - Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe.
G. **Fill Void or Cavity Material - Sealant** - Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with top surface of floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material also applied within the annulus of the ceiling or top plate, flush with bottom surface of gypsum board or lower top plate. Min 3/8 in. (10 mm) diam depth of fill material at joint contact location on top surface of floor or sole plate and on bottom surface of gypsum board or lower top plate.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant
*Bearing the UL Classification Mark

System No. F-C-2034

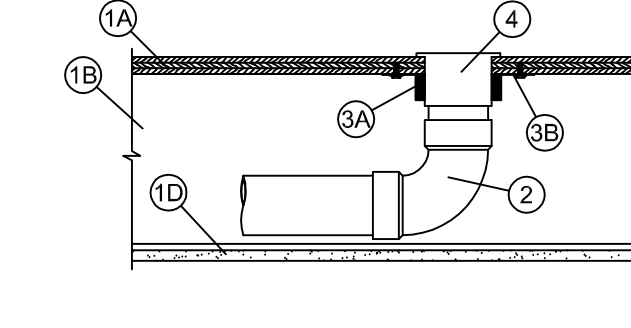
F Rating - 1 Hr
T Rating - 1 Hr



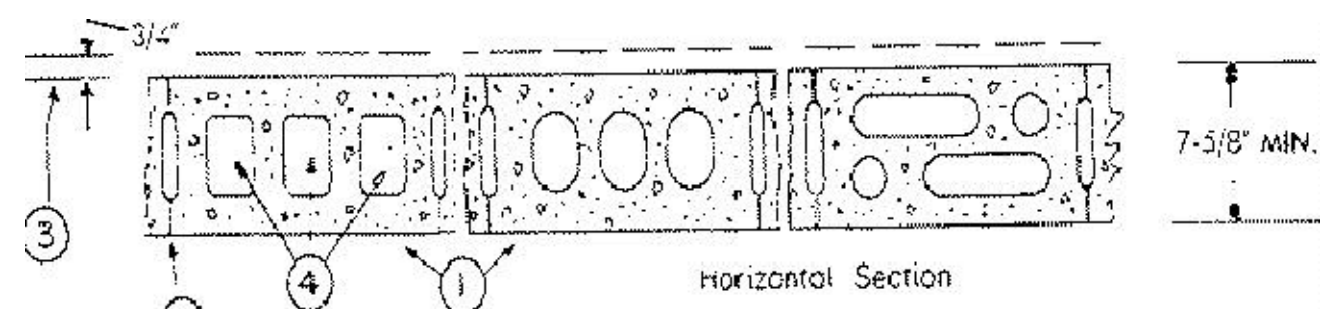
- Floor Assembly** - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Design in the UL Fire Resistance Directory, as summarized below:
A. **Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture** as specified in the individual Floor-Ceiling Design. Rectangular cutout in flooring to accommodate the bathtub drain piping (Item 2) to be max 8 in. by 12 in. Cutout to be placed on underside of subfloor using one layer of min 3/4 in. thick plywood or min 5/8 in. thick gypsum wallboard (Item 1C) sized to lap min 2 in. beyond each edge of rectangular cutout. Diam of opening hole-sized through patch to accommodate drain piping (Item 2) to be 1 in. larger than outside diam of drain piping and positioned such that drain piping is centered in opening. Patch split into two pieces at opening hole-sized for bathtub drain piping. Two pieces positioned around drain piping, with cut edges tightly butted, and screw-attached to underside of subfloor with 1-1/4 in. long Type S steel screws spaced max 6 in. OC.
B. **Wood Joists** - Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members** with bridging as required and with ends firestopped.
C. **Gypsum Board** - Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists as specified in the individual Floor-Ceiling Design. Max diam of ceiling opening is 5 in. (127 mm).
D. **Chase Wall (Optional)** - The through penetrant (Item 3) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum chase wall constructed of the materials and in the manner described in the individual L500 Series Design in the UL Fire Resistance Directory and shall include the following construction features:
A. **Studs** - Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
B. **Soak Plate** - Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted.
C. **Top Plate** - The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 5 in. (127 mm).
D. **Gypsum Board** - Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.
E. **Nonmetallic Pipe** - One nonmetallic pipe to be centered within the firestop system. Diam of opening hole-sized through Roofing (Item 1B) to be equal to the outside diam of pipe. Diam of circular opening hole-sized through top plate (Item 2C) to be max 1/2 in. (13 mm) larger than outside diam of pipe through both thicknesses of the lumber top plate. Max one pipe per opening. Pipe to be rigidly supported on both sides of Floor-Ceiling assembly. The following types and sizes of nonmetallic pipes may be used:
A. **Pipe/Inlets (PVC) Pipe** - Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
B. **Acrylonitrile Butadiene Styrene (ABS) Pipe** - Nom 4 in. (102 mm) diam Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
C. **Sanitary Tee (Optional)** - The vertical riser (Item 3) may be provided with a Schedule 40 PVC or ABS sanitary tee above the top flange of the chase wall for connection of a nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC or ABS drain pipe which penetrates the flooring and runs horizontally through the concealed space above the ceiling. Diam of the circular opening in the flooring shall be nom 1/2 in. (13 mm) larger than the pipe which is 1/4 to 3/8 in. (6 to 10 mm) annular space is present between the tee and the periphery of the opening.
F. **Firestop System** - The firestop system shall consist of the following:
A. **Fill Void or Cavity Material - Wrap Strip** - Nom 1/4 in. (6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips. Nom 1/2 in. (13 mm) wide strips tightly-wrapped around nonmetallic pipe with the edges butted against the underside of the ceiling or top plate around the entire perimeter of the hole-sized opening. For nom 1/2 in. (13 mm) to nom 2 in. (51 mm) diam pipes, a min one layer of wrap strip is required. For nom 2-1/2 in. (64 mm) to nom 4 in. (102 mm) diam pipes, a min of two layers of wrap strip is required. Each layer of wrap strip to be installed with butted seams. Butted seams in successive layers staggered or aligned. Wrap strip layer (s) held in position using aluminum foil tape. When max 2 in. (51 mm) diam nonmetallic drain pipe penetrates the flooring (Item 1B) for connection to the sanitary tee (Item 3A), a single layer of nom 1-1/2 in. (38 mm) wide wrap strip shall be tightly wrapped around the pipe with seams butted. Wrap strip layer secured together with 1-1/2 in. (38 mm) wide aluminum foil tape and tied into annular space such that the top edge of wrap strip extends nom 1/2 in. (13 mm) above the top surface of the flooring.
SPECIFIED TECHNOLOGIES INC. - SpecSeal RED Strip
B. **Fill Void or Cavity Material - Sealant** - (Not shown) When the optional firestop configuration for the max 2 in. (51 mm) diam nonmetallic drain pipe is used, a generous bead of fill material shall be applied to the annulus between the wrap strip layer and the flooring. Additional fill material to be installed such that a min 1/8 in. (3 mm) covers in formed around the nonmetallic drain pipe on top surface of floor.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant
C. **Steel Collar** - Collar fabricated from cold rolled steel available from wrap strip manufacturer. Collar shall be nom 1-1/2 in. (38 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs for securement to underside of ceiling or top plate. Retainer tabs, 3/4 in. (19 mm) wide tapering down to 1/4 in. (6 mm) wide and located opposite the anchor tabs, are folded 90 degrees toward through-penetrant surface to maintain the annular space around the through-penetrant and to retain the wrap strips. Steel collar wrapped around wrap strips and through-penetrant with a 1 in. (25 mm) wide overlap along its perimeter joint and secured together by means of a min 1/2 in. (13 mm) wide by 0.028 in. (0.7 mm) thick stainless steel hose clamp at mid-height of the steel collar. As an alternate to the steel hose clamp, the steel collar may be secured together by means of one No. 8 steel sheet metal screw. The length of the steel screws is dependent upon the number of layers of wrap strip used within the steel collar. For steel collars incorporating a single layer of wrap strips, the length of the steel screws shall be 1/4 in. (6 mm) long. For steel collars incorporating two or more layers of wrap strips, the length of the steel screws shall be 3/8 in. (10 mm) long. Collar secured to bottom of chase wall top plate (Item 2C) using min 3/4 in. (19 mm) long steel wood screws in conjunction with 1/4 in. (6 mm) by 1-1/4 in. (32 mm) diam steel ladder washers. Collar secured to bottom of ceiling using nom 3/16 in. (4.8 mm) diam steel toggle bolts in conjunction with nom 1-1/4 in. (32 mm) diam steel ladder washers. The number of screws used is dependent upon the nom diam of the through penetrant. Two fasteners, symmetrically located, are required for nom 1-1/2 through 2 in. (38 through 51 mm) diam through penetrants. Three fasteners, symmetrically located, are required for nom 2-1/2 through 3 in. (64 through 76 mm) diam through penetrants. Four fasteners, symmetrically located, are required for nom 3-1/2 through 4 in. (89 through 102 mm) diam through penetrants. When the optional firestop configuration for the max 2 in. (51 mm) diam nonmetallic drain pipe is used, steel collar is not required to be installed around the wrap strip at the underside of the flooring.
D. **Firestop Device** - (Not shown) As an alternate to Items 4A and 4B for nom 4 in. diam nonmetallic pipe (Item 3), a firestop device, consisting of a steel collar lined with intumescent material sized to fit the specific diam of the nonmetallic pipe, may be used. The firestop device to be installed on underside of the ceiling or top plate in accordance with the accompanying installation instructions.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Firestop Collar, SpecSeal LCC Collar or SpecSeal SSC Collar. When SpecSeal LCC Collar or SpecSeal SSC Collar are used, the max annular space shall be 1/8 in. (3 mm) for max 2-1/2 in. (64 mm) diam pipe or conduit and shall be max 1/4 in. (6 mm) for pipe or conduit larger than 2-1/2 in. (64 mm) diam.
*Bearing the UL Classification Mark

System No. F-C-2037

F Rating - 1 Hr
T Rating - 1 Hr



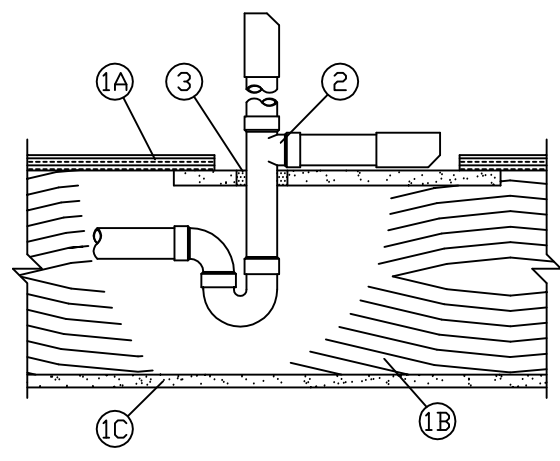
- Floor-Ceiling Assembly** - The fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:
A. **Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture** as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 5 in. (127 mm).
B. **Wood Joists** - Nom 2 by 10 in. (51 mm) OC with nom 1 by 3 in. lumber bridging and with ends firestopped.
C. **Furring Channels** - Resilient galv steel furring installed perpendicular to wood joists (Item 1B) between wallboard (Item 1D) and wood joists as required in the individual Floor-Ceiling Design.
D. **Gypsum Board** - Nom 4 ft wide by 5/8 in. thick as specified in the individual Floor-Ceiling Design. Wallboard secured to wood joists as specified in the individual Floor-Ceiling Design.
E. **Drain Piping** - Nom 4 in. diam (or smaller) Schedule 40 polyvinyl chloride (PVC) or acrylonitrile butadiene styrene (ABS) drain piping and fittings. Diam of circular opening hole through flooring (Item 1A) to be max 1/2 in. larger than outside diam of pipe. Short length of pipe (90 degree elbow) centered into bottom socket of closet flange (Item 5). Drain piping cemented to elbow.
F. **Fill Void or Cavity Material - Wrap Strip** - Nom 1/4 in. thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. wide strips. Nom 1-1/2 in. wide strips tightly-wrapped around nonmetallic pipe with the edges butted against the underside of the ceiling or top plate around the entire perimeter of the hole-sized opening. Two layers of wrap strip are required. Each layer of wrap strip to be installed with butted seams. Butted seams in successive layers staggered or aligned. Wrap strip layer(s) apparently held in position using aluminum foil tape.
SPECIFIED TECHNOLOGIES INC. - SpecSeal RED Strip
G. **Steel Collar** - Collar fabricated from cold rolled steel. For (30 MS) galv steel sheet available from wrap strip manufacturer. Collar shall be nom 1-1/2 in. deep with min 4 in. wide by 2 in. long anchor tabs for attachment to top surface of flooring. Retainer tabs, 3/4 in. wide tapering down to 1/4 in. wide and located opposite the anchor tabs, are folded 90 degrees toward through-penetrant surface to maintain the annular space around the through-penetrant and to retain the wrap strips. Steel collar wrapped around wrap strips and through-penetrant with a 1 in. wide overlap along its perimeter joint and secured together by means of a min 1/2 in. wide by 0.028 in. thick stainless steel hose clamp at mid-height of the steel collar. As an alternate to the steel hose clamp, the steel collar can be secured together by means of three No. 8 by 3/8 in. thick steel sheet metal screws. Anchor tabs of collar bent outward and secured to top surface of flooring or underside of floor using min 3/4 in. long steel wood screws in conjunction with 1/4 in. by 1-1/4 in. diam steel ladder washers.
H. **Closet Flange** - PVC or ABS closet flange sized to accommodate drain pipe. Closet flange installed in hole-sized opening in flooring system with flange secured to top of flooring with steel screws.
I. **Water Closet** - (Not shown) Floor mounted urinal china water closet.
*Bearing the UL Classification Mark



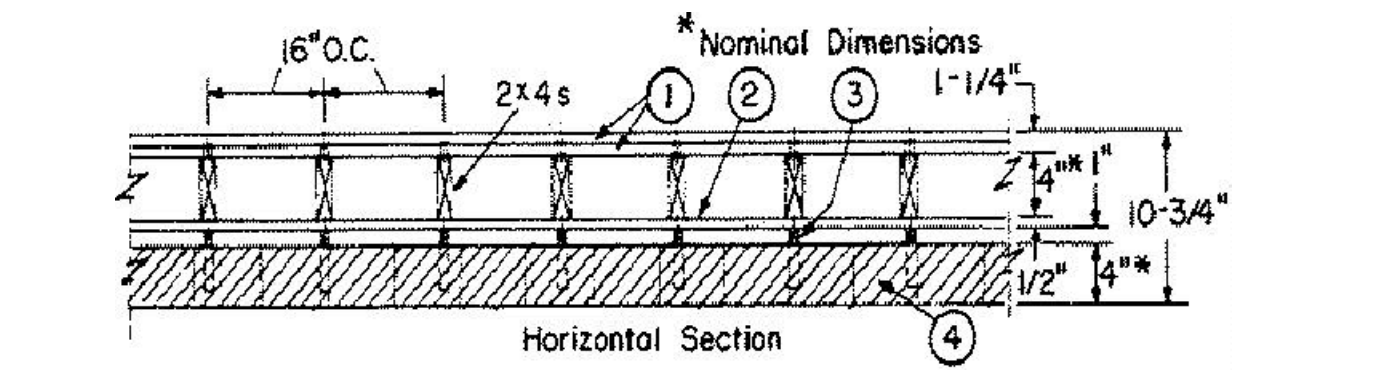
Design No. U905
March 17, 2004
Bearing Wall Rating - 2 HR
Nonbearing Wall Rating - 2 HR
Load Restricted for Canadian Applications - See Guide BXU17 <http://database.ul.com/cgi-bin/XYV/template.ISEXIT/IFRAME/showpage.html?name=BXU17.Guidelines&cnshoritle=Fire-Resistance-Ratings=CANUL-LC501M-Certified-for-Canada&objid=107420568&cfid=1073741824&version=version&parent_id=1073984820&sequence=1>
1. **Concrete Blocks** - Various designs. Classification D-2 (2 hr).
2. **Mortar** - Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4" and not more than 3-1/2" parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.
3. **Portland Cement Stucco or Gypsum Plaster** - Add 1/2 hr to classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 hr. Attached to concrete blocks (Item 1).
4. **Loose Masonry Fill** - If all core spaces are filled with loose dry expanded shale, expanded clay or shale (Rotary Klink Process), water repellent vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 2 to classification.
5. **Framed Plastic** - (Optional-Not Shown) - 1-1/2 in. thick max, 4 H wide sheathing attached to concrete blocks (Item 1).
THE DOW CHEMICAL CO. Type ThermoX
*Bearing the UL Classification Mark

System No. F-C-2156

F Rating - 1 Hr
T Rating - 1 Hr



- Floor-Ceiling Assembly** - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features and the manner described in the individual L500 Series Floor-Ceiling Design in the UL Fire Resistance Directory, as summarized below:
A. **Flooring System** - Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture** as specified in the individual Floor-Ceiling Design. Rectangular cutout in flooring to accommodate the bathtub drain piping (Item 2) to be max 8 in. by 12 in. Cutout to be placed on underside of subfloor using one layer of min 3/4 in. thick plywood or min 5/8 in. thick gypsum wallboard (Item 1C) sized to lap min 2 in. beyond each edge of rectangular cutout. Diam of opening hole-sized through patch to accommodate drain piping (Item 2) to be 1 in. larger than outside diam of drain piping and positioned such that drain piping is centered in opening. Patch split into two pieces at opening hole-sized for bathtub drain piping. Two pieces positioned around drain piping, with cut edges tightly butted, and screw-attached to underside of subfloor with 1-1/4 in. long Type S steel screws spaced max 6 in. OC.
B. **Wood Joists** - Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members** with bridging as required and with ends firestopped.
C. **Gypsum Board** - Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick, attached as described in the individual Floor-Ceiling Design.
D. **Drain Piping** - Nom 1-1/2 in. diam (or smaller) Schedule 40 cellular or solid core polyvinyl chloride (PVC) or acrylonitrile butadiene styrene (ABS), or SDR17 chlorinated polyvinyl chloride (CPVC) pipe and drain fittings cemented together and provided with PVC, ABS or CPVC bathtub waste/overflow fittings. The annular space shall be a min 3/8 in. to max 5/8 in.
E. **Fill Void or Cavity Material - Sealant** - Min 5/8 in. depth of fill material applied within annular space, flush with both surfaces of plywood or gypsum wallboard patch.
SPECIFIED TECHNOLOGIES INC. - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant
*Bearing the UL Classification Mark



Design No. U302 - January 28, 2008
Bearing Wall Rating - 2 HR
Finish Rating - 59 Min
Load Restricted for Canadian Applications - See Guide BXU17

- Wood Studs** - 5/8 in. thick, two layers applied either horizontally or vertically. Inner layer attached to studs with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads spaced 8 in. OC. Outer layer attached to studs over inner layer with 8d cement coated nails 2-3/8 in. long, 0.113 in. shank diam and 9/32 in. diam heads, spaced 8 in. OC. Vertical joints located over studs. Vertical and horizontal joints between inner and outer layers staggered. Outer layer joints covered with fiber tape and compound, nailheads covered with joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of classified veneer board. Joints reinforced. Wallboard over 4 in. wide, must be applied horizontally.
AMERICAN GYPSUM CO. - Types AG-G, AG-L, AGX-1

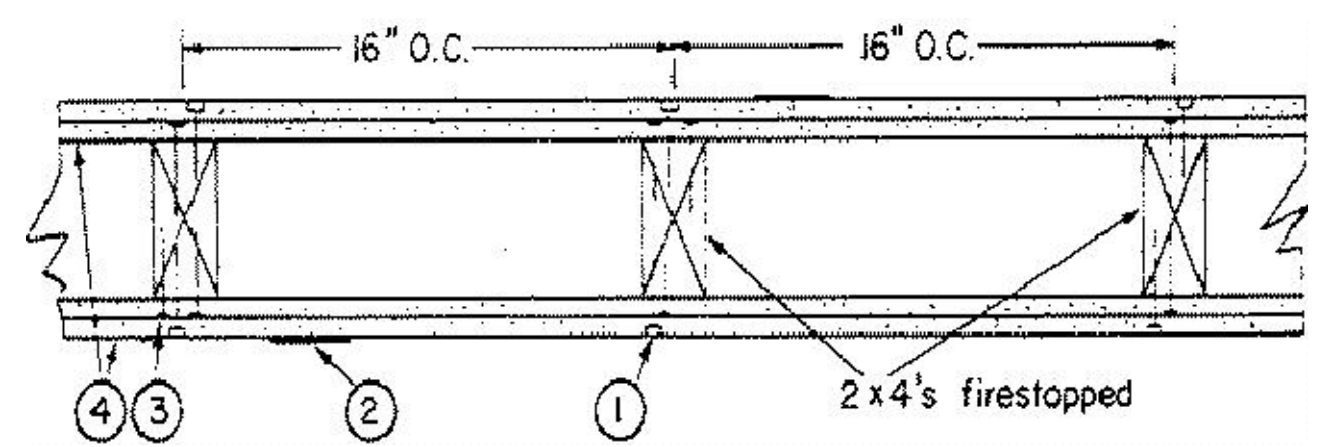
BEIJING NEW BUILDING MATERIALS PUBLIC - LTD CO - Type DBX-1.
CERTAINTED GYPSUM CANADA INC. - ProRoC Type C, ProRoC Type X, ProRoC Type X ProRoC Type ABC-Resistant.
CANADIAN GYPSUM COMPANY - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
FEDERAL GYPSUM CO. - Plaster/Rock
G-P GYPSUM CORP. SUB OF GEORGIA-PACIFIC CORP. - Types 5.9 C, DAP, DD, DA, DGG, DS, GPFS1, GPFS6.
LAFARGE NORTH AMERICA INC. - Types LGFC2, LGFC2A, LGFC3, LGFC4, LGFC6A, LGFC-C/A.
NATIONAL GYPSUM CO. - Types FSK-C, FSK-G, FSW, FSW-5, FSW-C, FSW-G.
PARCO BUILDING PRODUCTS L.L.C. DBA - PARCO GYPSUM - Type C, PG-3, PG-4, PG-5, PG-9 or PG-C.
PANEL REY S A - Type PRX.
SIAM GYPSUM INDUSTRY (SARABURJ) CO LTD - Type EX-1.

TEMPLE-INLAND FOREST PRODUCTS CORP. - Types TG-C, Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X.
UNITED STATES GYPSUM CO. - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
USG MEXICO S A DE C V - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

UNITED STATES GYPSUM CO. - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
USG MEXICO S A DE C V - Types AR, IP-AR, IPC-AR.
18. Gypsum Board - (As an Alternate to Item 1) - 5/8 in. thick, applied either horizontally or vertically. Inner layers fastened to framing with 1-1/4 in. long Type W course thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed horizontally. All joints in face layers staggered with joints in base layer offset with joints of base layer on opposite side.
AMERICAN GYPSUM CO. - Types AG-G, AG-C.

2. Sheathing - 1/2 in. thick exterior gypsum sheathing, 24 in. wide sheets, T&E edges. Min weight of sheets 1800 lb per 1000 sq ft, min thickness 0.480 in. Attached to studs horizontally with 1-3/4 in. long, 1 1/4 in. diam flathead galv roofing nails spaced 6 in. OC. Vertical joints located over studs and staggered between adjacent rows.
3. Corrugated Wall Ties - 3/4 in. wide by 6-5/8 in. long, 20 MSG galv steel. Attached to each stud with 2-3/8 in. long 8d cement coated nails, every sixth course of bricks.
4. Clay Face Blocks - 2-1/4 by 3-3/4 by 8 in. with cored holes. Laid in full bed of mortar 3/8 in. thick. Consisting of three parts of clean sharp sand to one part of portland cement (proportioned by vol) and 3 percent hydrated lime (by cement vol).
5. Cementitious Backer Unit - (Optional Item Not Shown) - For Use On Face Of 2 Hr Systems With All Standard Items Required - 1/2 in., 5/8 in., 3/4 in. or 1 in. thick, min 32 in. wide. Applied vertically with vertical joints centered over studs. Face layer fastened over gypsum board and studs and trimmers with cement board screws of adequate length to penetrate with a minimum of 3/8 in. for steel framing members, and a minimum of 3/4 in. for wood framing members behind a max of 8 in. OC.
NATIONAL GYPSUM CO. - Type Permabase

*Bearing the UL Classification Mark



Design No. U301
January 25, 2006
Bearing Wall Rating - 2 HR
Finish Rating - 66 Min
Load Restricted for Canadian Applications - See Guide BXU17 <http://database.ul.com/cgi-bin/XYV/template.ISEXIT/IFRAME/showpage.html?name=BXU17.Guidelines&cnshoritle=Fire-Resistance-Ratings=CANUL-LC501M-Certified-for-Canada&objid=107420568&cfid=1073741824&version=version&parent_id=1073984820&sequence=1>

- Naillads** - Exposed or covered with joint finisher.
2. **Joints** - Exposed or covered with fiber tape and joint finisher. As an alternate, nominal 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of classified veneer board. Joints reinforced.
3. **Nails** - 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam, 1/4 in. diam heads, and 8d cement coated nails 2-3/8 in. long, 0.113 in. shank diam, 9/32 in. diam heads.
4. **Gypsum Board** - 5/8 in. thick, two layers applied either horizontally or vertically. Inner layer attached to studs with the 1-7/8 in. nails spaced 6 in. OC. Outer layer attached to studs over inner layer with the 2-3/8 in. long nails spaced 8 in. OC. Vertical joints located over studs. All joints in face layers staggered with joints in base layers. Joints of each base layer offset with joints of base layer on opposite side. When used in widths other than 48 in., gypsum board to be installed horizontally.
When Steel Framing Members (Item 6) are used, base layer attached to furring channels with 1 in. long Type S bugle-head steel screws spaced max 24 in. OC; face layer attached with 1-5/8 in. long Type S bugle-head steel screws spaced max 12 in. OC.
AMERICAN GYPSUM CO. - Types AGX-1, AG-C, AGX-11.
BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO - Type DBX-1.
BPP AMERICA INC. - Types 1, FRPC, EGRC, ProRoC Type C, ProRoC Type X.
BPP CANADA INC. - ProRoC Type C, ProRoC Type X, ProRoC Type ABC-Resistant.
CANADIAN GYPSUM COMPANY - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
G-P GYPSUM CORP. SUB OF GEORGIA-PACIFIC CORP. - Types 5.9 C, DAP, DD, DA, DGG, DS, GPFS6.
LAFARGE NORTH AMERICA INC. - Types LGFC-C, LGFC2, LGFC3, LGFC4, LGFC6A, LGFC-C/A.
NATIONAL GYPSUM CO. - Types FSK, FSK-G, FSW, FSW-3, FSW-5, FSW-C, FSW-G.
PARCO BUILDING PRODUCTS L.L.C. DBA - PARCO GYPSUM - Type C, PG-3, PG-4, PG-5, PG-9 or PG-C.
PANEL REY S A - Type PRX.
SIAM GYPSUM INDUSTRY (SARABURJ) CO LTD - Type EX-1.
STANDARD GYPSUM L.L.C. - Type SG-C, Type SG-C, Type SG-C, Type SG-C.
TEMPLE-INLAND FOREST PRODUCTS CORP. - Type TG-C, Type X, Veneer Plaster Base-Type X, Water Rated-Type X, Sheathing Type-X, Soffit-Type X.
UNITED STATES GYPSUM CO. - Types AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
USG MEXICO S A DE C V - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
4A. Gypsum Board - (As an alternate to Item 4) - Nom 3/4 in. thick, installed as described in Item 4.
CANADIAN GYPSUM COMPANY - Types AR, IP-AR.
UNITED STATES GYPSUM CO. - Types AR, IP-AR.
USG MEXICO S A DE C V - Types AR, IP-AR.
4B. Gypsum Board - (As an alternate to Items 4 and 4A)-5/8 in. thick, 2 1/2 wide, tongue and groove edge, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 4. Joint covering (Item 2) not required.
CANADIAN GYPSUM COMPANY - Type SHX
UNITED STATES GYPSUM CO. - Type SHX
USG MEXICO S A DE C V - Type SHX
5. Molded Plastic - Not shown, Optional - Solid vinyl siding mechanically secured over the outer layer to framing members in accordance with manufacturer's recommended installation details.
ALSID, DIV OF ASSOCIATED MATERIALS INC.
GENTEX BUILDING PRODUCTS LTD
HEARTLAND BUILDING PRODUCTS INC
VYTE CORP
NEBRASKA PLASTICS INC
6. Steel Framing Members (Optional, Not Shown) - Furring channels and resilient sound isolation clip as described below:
A. **Furring Channels** - Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 1. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Wallboard attached to furring channels as described in Item 4.
B. **Steel Framing Members** - Resilient sound isolation clip used to attach furring channels (Item 6a) to studs. Clips spaced 48 in. OC, and secured to studs with No. 8 x 2 1/2 in. coarse drywall screw through the center opening. Furring channels are friction fitted into clips.
PAC INTERNATIONAL INC. - Type RSC-1.
*Bearing the UL Classification Mark

Design No. U311
December 17, 2004
Bearing Wall Rating - 1 HR
Finish Rating - 23 Min
Load Restricted for Canadian Applications - See Guide BXU17 <http://database.ul.com/cgi-bin/XYV/template.ISEXIT/IFRAME/showpage.html?name=BXU17.Guidelines&cnshoritle=Fire-Resistance-Ratings=CANUL-LC501M-Certified-for-Canada&objid=107420568&cfid=1073741824&version=version&parent_id=1073984820&sequence=1>

- Wood Studs** - Nom 2 by 4 in., spaced 16 or 24 in. OC. Effectively cross braced.
2. **Resilient Channel** - 25 MSG galv steel. Resilient channels spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped joint, double lead Phillips head steel screws.
3. **Steel Framing Members (Optional, Not Shown)** - As an alternate to Item 2, furring channels and resilient sound isolation clip as described below:
A. **Furring Channels** - Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 1. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.
B. **Steel Framing Members** - Resilient sound isolation clip used to attach furring channels (Item 6a) to studs (Item 1). Clips spaced 48 in. OC, and secured to studs with No. 8 x 2 1/2 in. coarse drywall screw through the center opening. Furring channels are friction fitted into clips.
PAC INTERNATIONAL INC. - Type RSC-1.
USG MEXICO S A DE C V - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

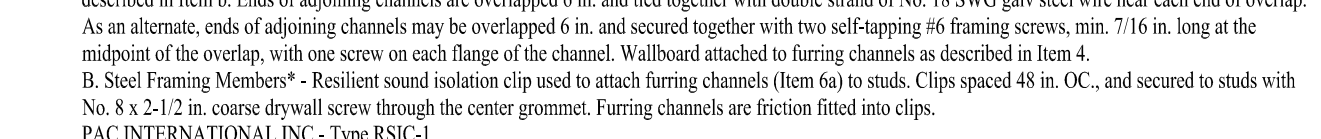
BEIJING NEW BUILDING MATERIALS PUBLIC - LTD CO - Type DBX-1.
CERTAINTED GYPSUM CANADA INC. - ProRoC Type C, ProRoC Type X, ProRoC Type X ProRoC Type ABC-Resistant.
CANADIAN GYPSUM COMPANY - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
FEDERAL GYPSUM CO. - Plaster/Rock
G-P GYPSUM CORP. SUB OF GEORGIA-PACIFIC CORP. - Types 5.9 C, DAP, DD, DA, DGG, DS, GPFS1, GPFS6.
LAFARGE NORTH AMERICA INC. - Types LGFC2, LGFC2A, LGFC3, LGFC4, LGFC6A, LGFC-C/A.
NATIONAL GYPSUM CO. - Types FSK-C, FSK-G, FSW, FSW-5, FSW-C, FSW-G.
PARCO BUILDING PRODUCTS L.L.C. DBA - PARCO GYPSUM - Type C, PG-3, PG-4, PG-5, PG-9 or PG-C.
PANEL REY S A - Type PRX.
SIAM GYPSUM INDUSTRY (SARABURJ) CO LTD - Type EX-1.

TEMPLE-INLAND FOREST PRODUCTS CORP. - Types TG-C, Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X.
UNITED STATES GYPSUM CO. - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
USG MEXICO S A DE C V - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

UNITED STATES GYPSUM CO. - Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC, WRX.
USG MEXICO S A DE C V - Types AR, IP-AR, IPC-AR.
18. Gypsum Board - (As an Alternate to Item 1) - 5/8 in. thick, applied either horizontally or vertically. Inner layers fastened to framing with 1-1/4 in. long Type W course thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed horizontally. All joints in face layers staggered with joints in base layer offset with joints of base layer on opposite side.
AMERICAN GYPSUM CO. - Types AG-G, AG-C.

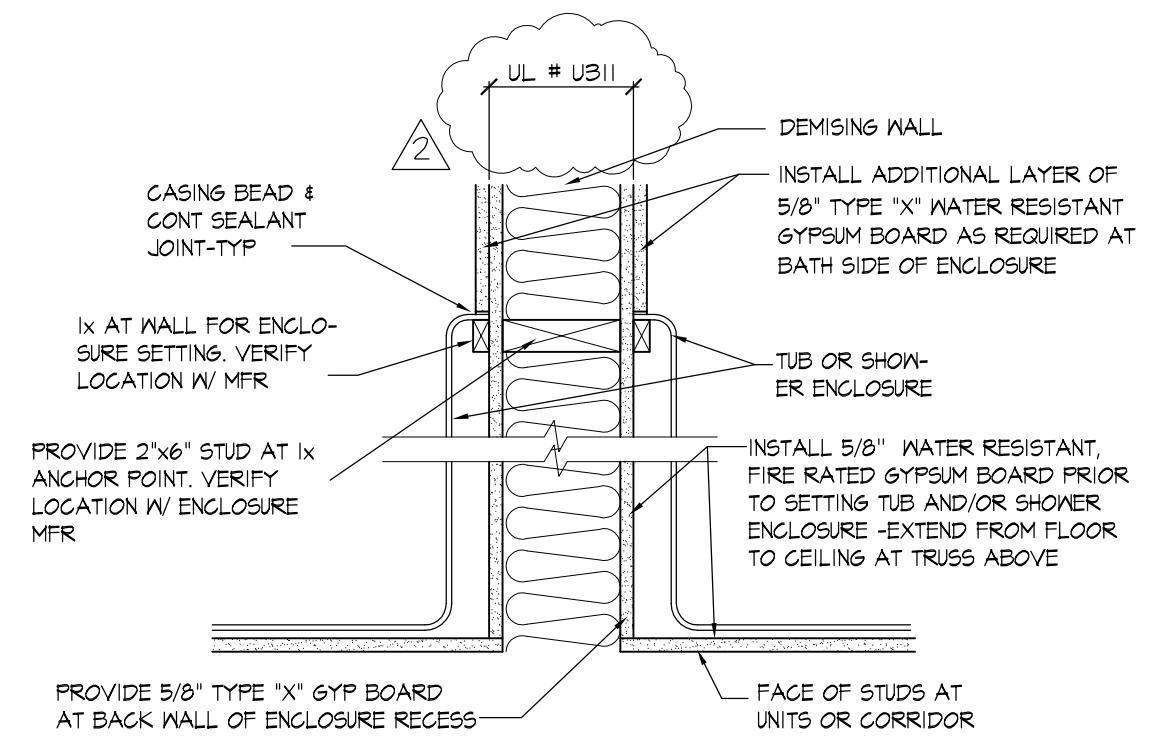
2. Sheathing - 1/2 in. thick exterior gypsum sheathing, 24 in. wide sheets, T&E edges. Min weight of sheets 1800 lb per 1000 sq ft, min thickness 0.480 in. Attached to studs horizontally with 1-3/4 in. long, 1 1/4 in. diam flathead galv roofing nails spaced 6 in. OC. Vertical joints located over studs and staggered between adjacent rows.
3. Corrugated Wall Ties - 3/4 in. wide by 6-5/8 in. long, 20 MSG galv steel. Attached to each stud with 2-3/8 in. long 8d cement coated nails, every sixth course of bricks.
4. Clay Face Blocks - 2-1/4 by 3-3/4 by 8 in. with cored holes. Laid in full bed of mortar 3/8 in. thick. Consisting of three parts of clean sharp sand to one part of portland cement (proportioned by vol) and 3 percent hydrated lime (by cement vol).
5. Cementitious Backer Unit - (Optional Item Not Shown) - For Use On Face Of 2 Hr Systems With All Standard Items Required - 1/2 in., 5/8 in., 3/4 in. or 1 in. thick, min 32 in. wide. Applied vertically with vertical joints centered over studs. Face layer fastened over gypsum board and studs and trimmers with cement board screws of adequate length to penetrate with a minimum of 3/8 in. for steel framing members, and a minimum of 3/4 in. for wood framing members behind a max of 8 in. OC.
NATIONAL GYPSUM CO. - Type Permabase

*Bearing the UL Classification Mark

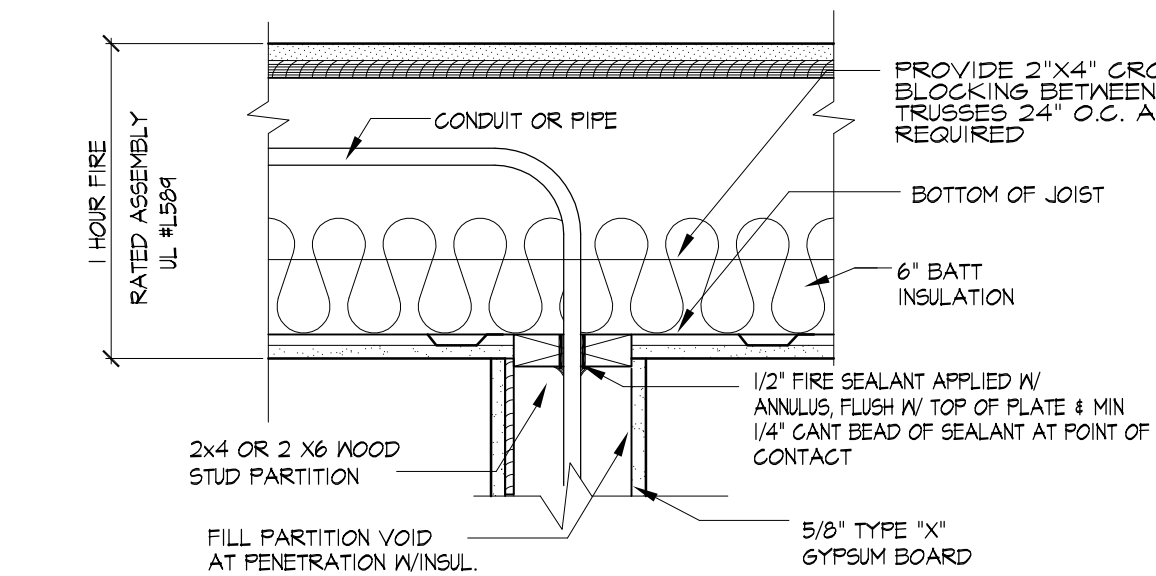


Design No. U310
December 17, 2004
Bearing Wall Rating - 1 HR
Finish Rating - 23 Min
Load Restricted for Canadian Applications - See Guide BXU17 <http://database.ul.com/cgi-bin/XYV/template.ISEXIT/IFRAME/showpage.html?name=BXU17.Guidelines&cnshoritle=Fire-Resistance-Ratings=CANUL-LC501M-Certified-for-Canada&objid=107420568&cfid=1073741824&version=version&parent_id=1073984820&sequence=1>

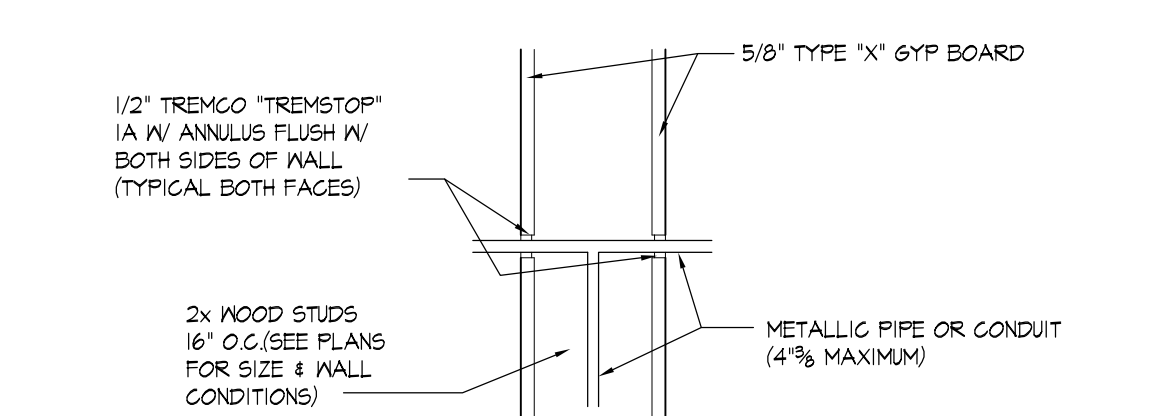
- Wood Studs** - Nom 2 by 4 in., spaced 16 or 24 in. OC. Effectively cross braced.
2. **Resilient Channel** - 25 MSG galv steel. Resilient channels spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped joint, double lead Phillips head steel screws.
3. **Steel Framing Members (Optional, Not Shown)** - As an alternate to Item 2, furring channels and resilient sound isolation clip as described below:
A. **Furring Channels** - Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep, spaced 24



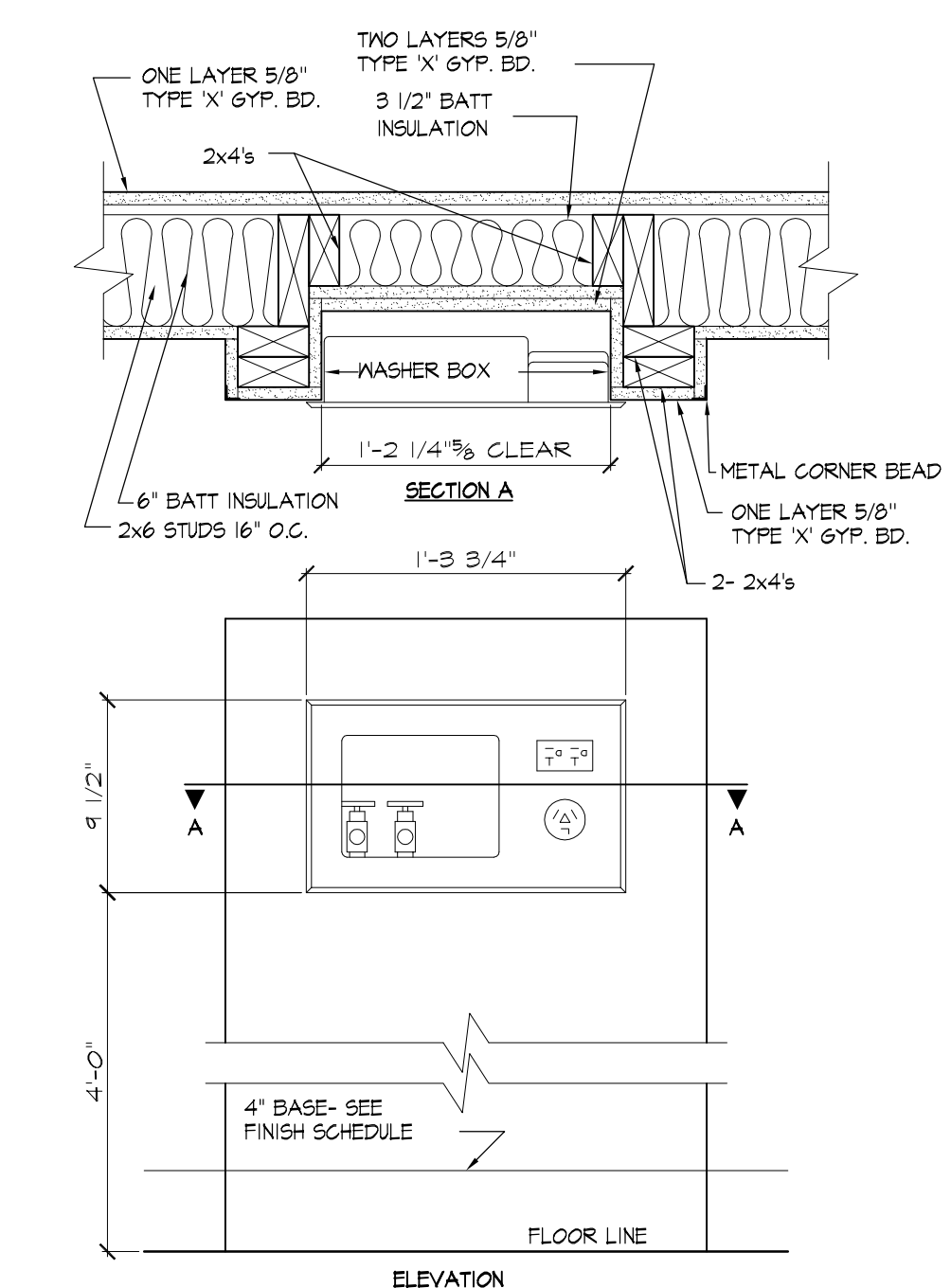
1 PLAN DETAIL AT FIRE RATED WALL FOR TUB OR SHOWER ENCLOSURES
SCALE: 1 1/2" = 1'-0"



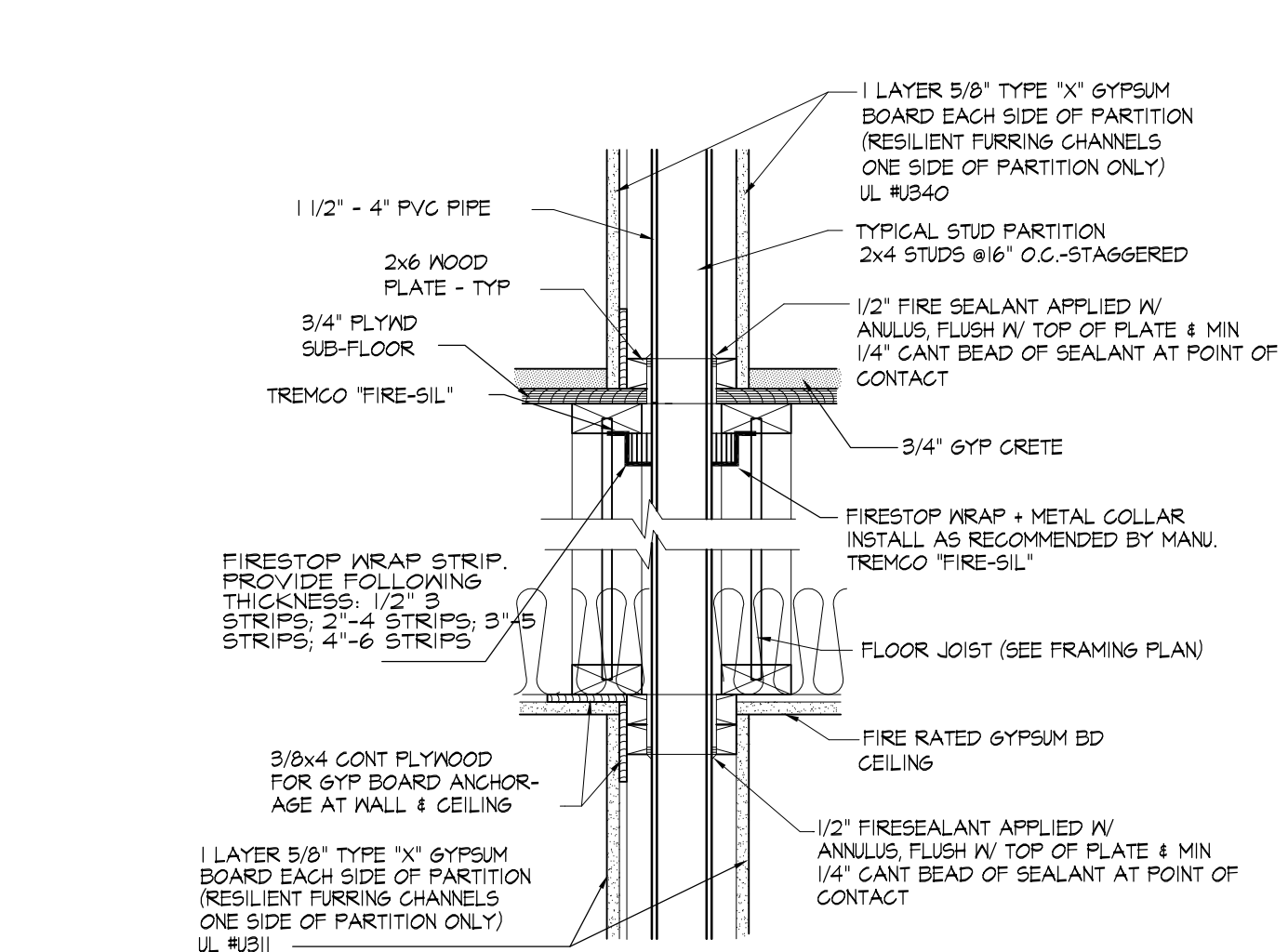
6 SINGLE PENETRATION AT INTERIOR PARTITIONS (UL F-C-1013)
SCALE: 1 1/2" = 1'-0"



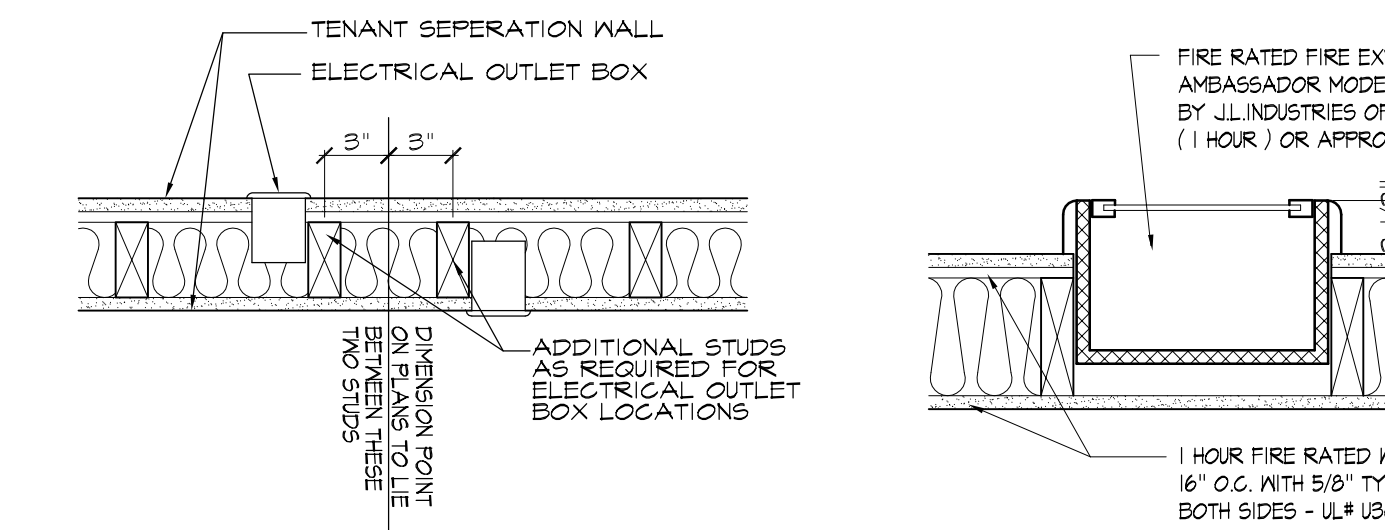
10 DETAIL AT METALLIC PIPE PENETRATION OF 1 HOUR WALL
SCALE: 1 1/2" = 1'-0"



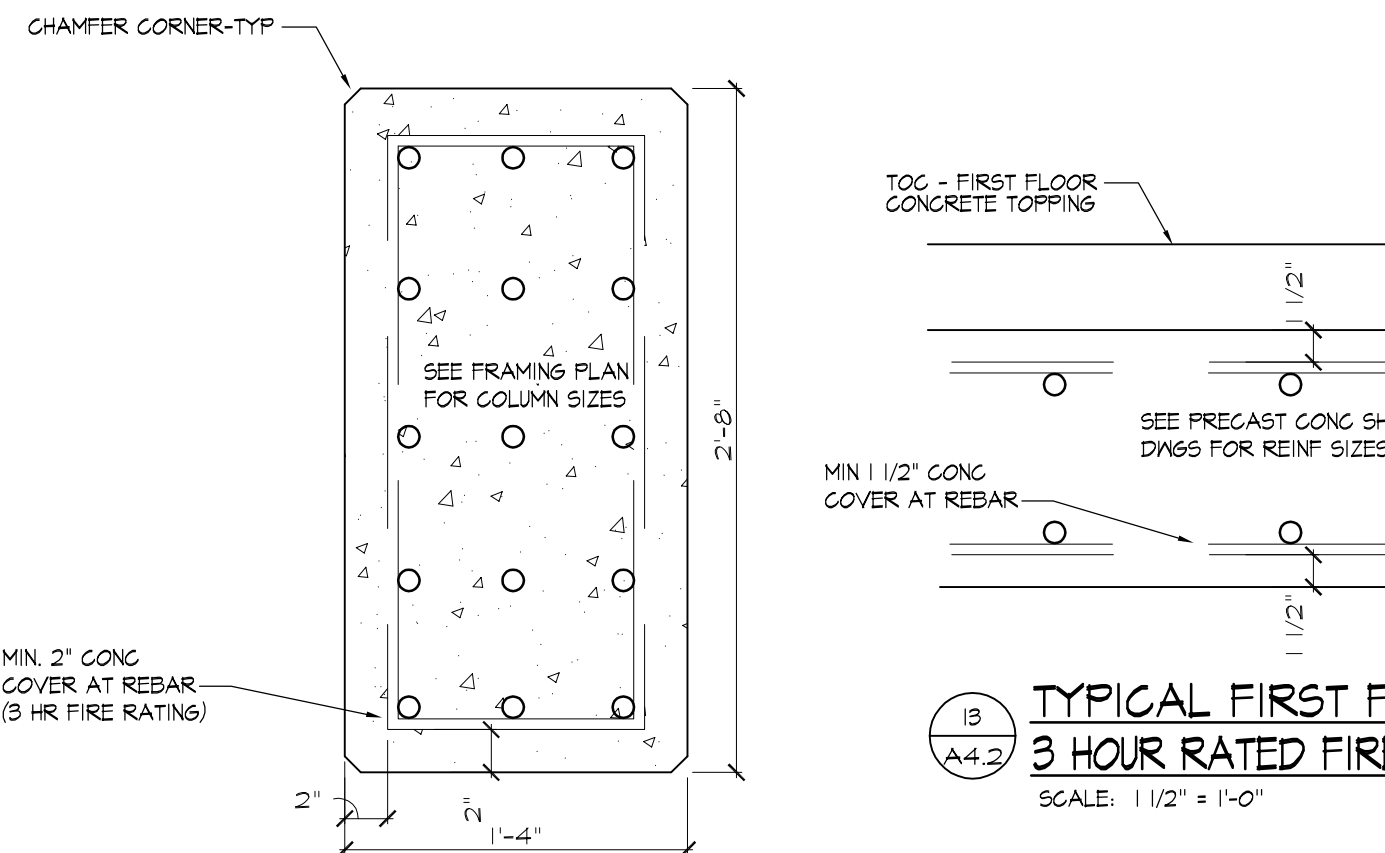
11 LAUNDRY BOX ENCLOSURE IN RATED WALL ASSEMBLY -
SCALE: 1 1/2" = 1'-0"



2 1 HOUR PVC PIPE (4" OR LESS) PENETRATION (UL #F-C-2034)
SCALE: 1 1/2" = 1'-0"



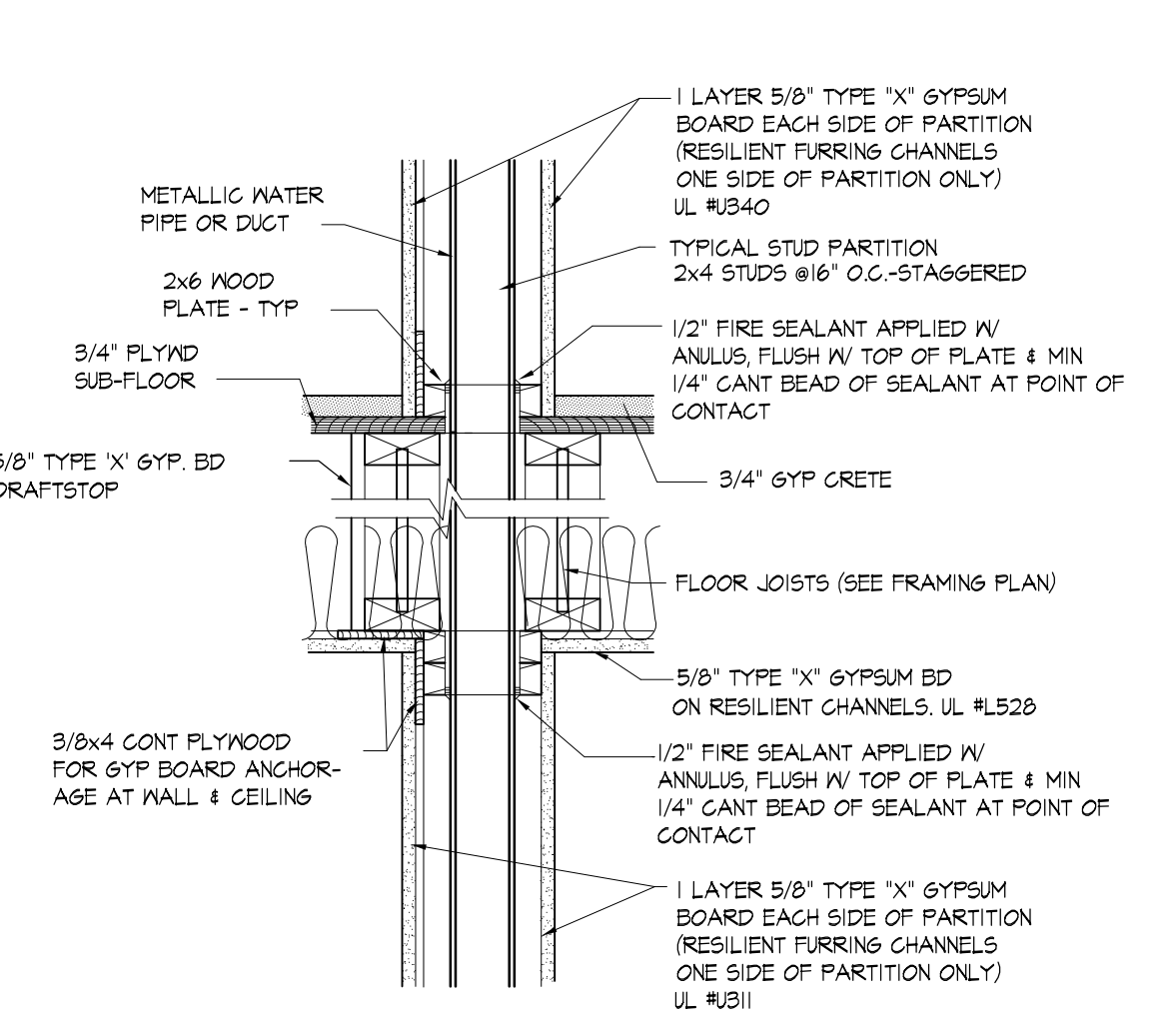
7 BACK TO BACK OUTLETS AT UNIT SEPERATION WALL
SCALE: 1 1/2" = 1'-0"



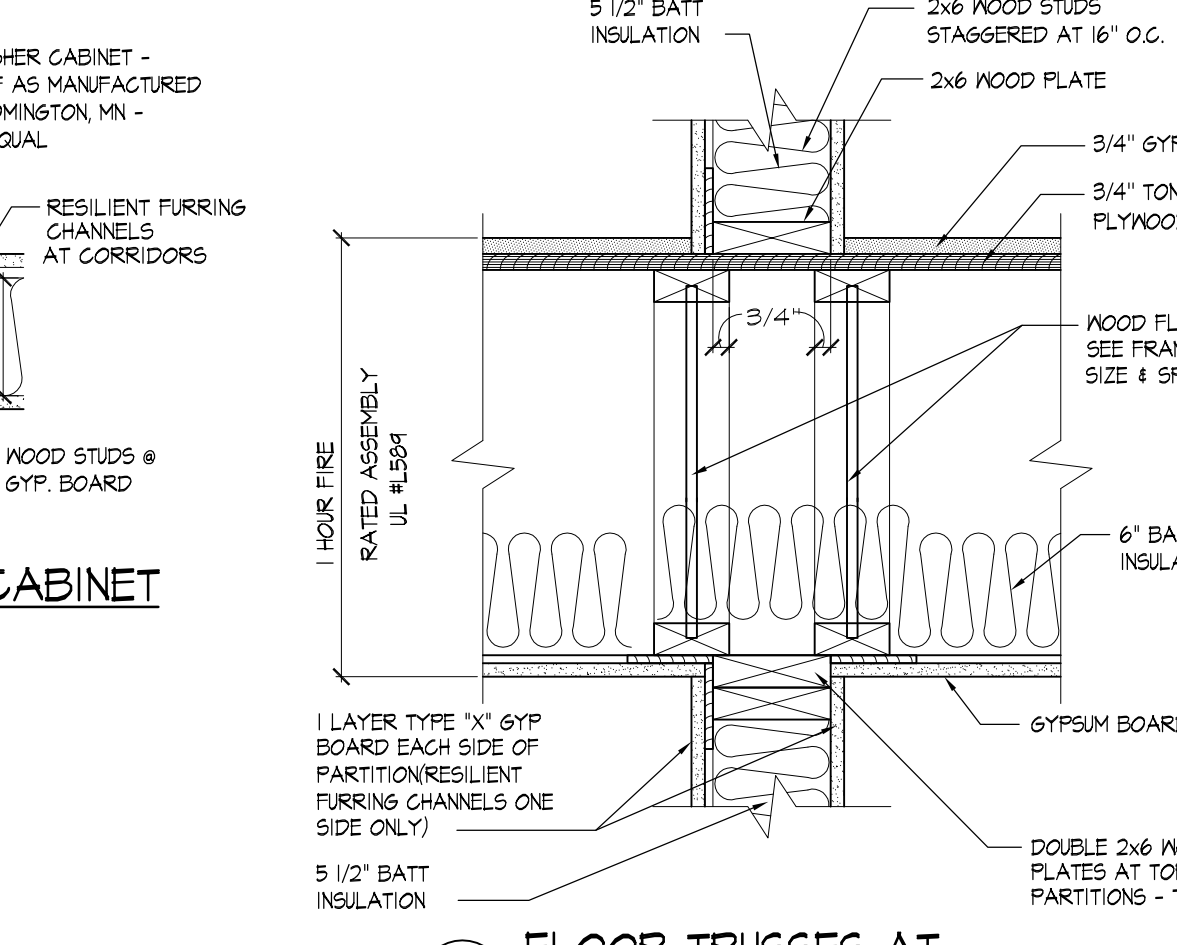
18 TYPICAL FIRST FLOOR SLAB DETAIL - 3 HOUR RATED FIREPROOFING
SCALE: 1 1/2" = 1'-0"



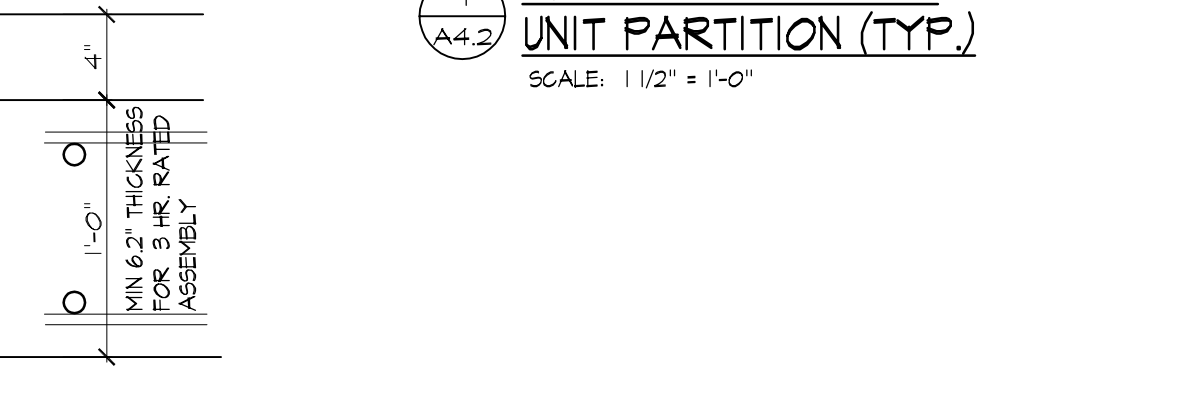
12 TYPICAL CONG COLUMN DETAIL - 1 HOUR RATED FIREPROOFING
SCALE: 1 1/2" = 1'-0"



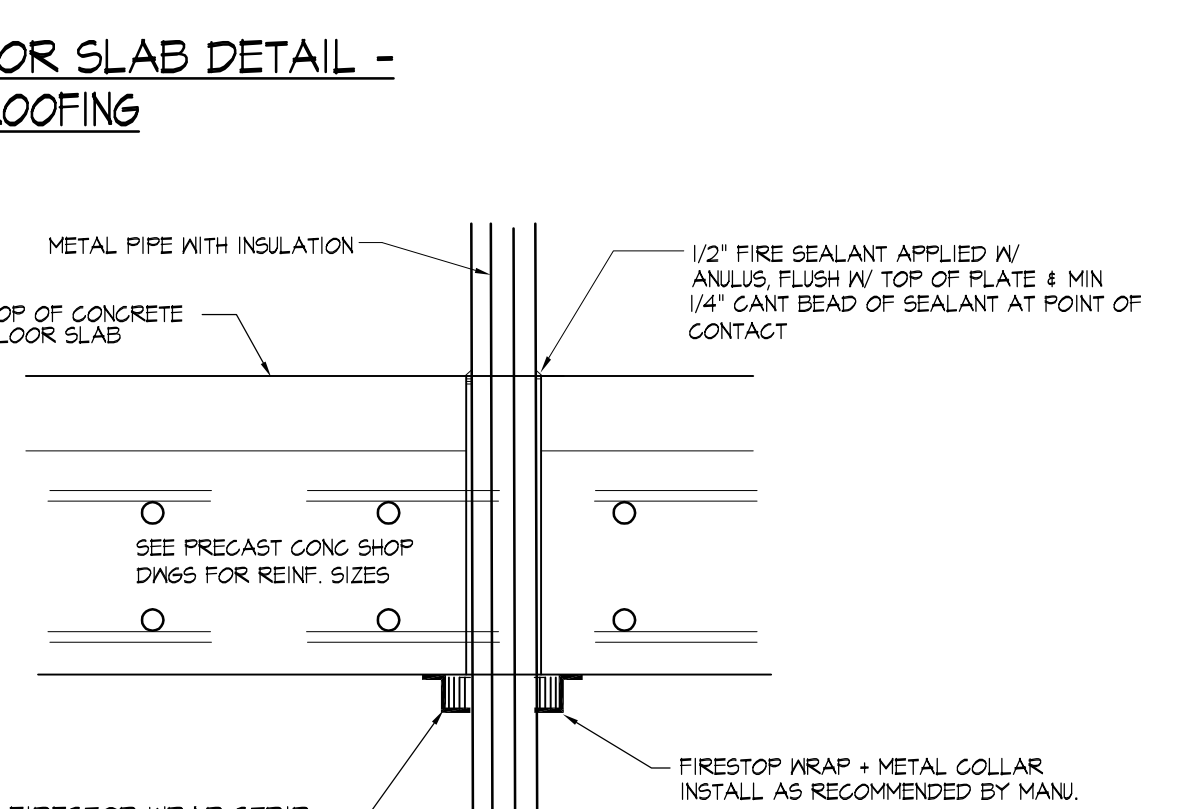
3 1 HOUR METALLIC WATER PIPE OR DUCT PENETRATION (UL #F-C-1013)
SCALE: 1 1/2" = 1'-0"



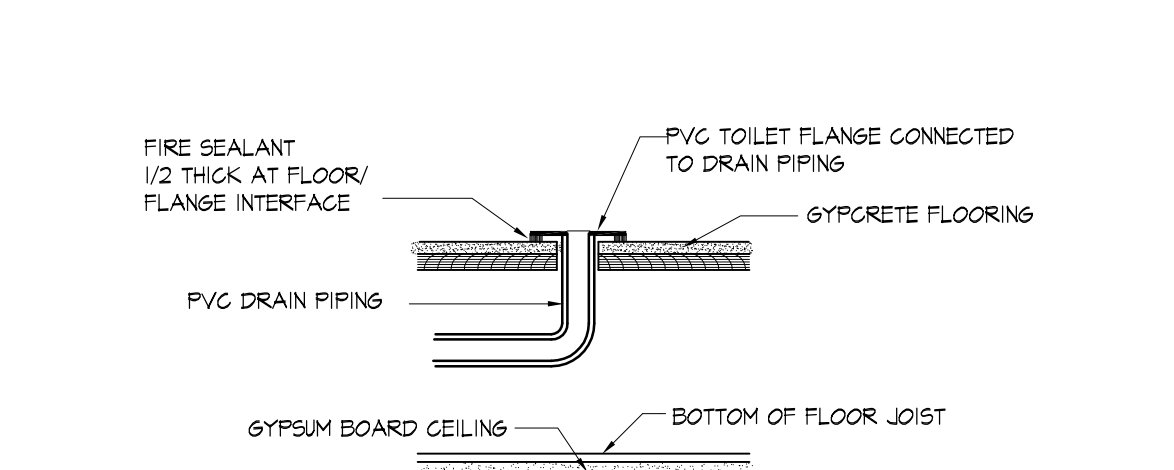
9 FLOOR TRUSSES AT UNIT PARTITION (TYP.)
SCALE: 1 1/2" = 1'-0"



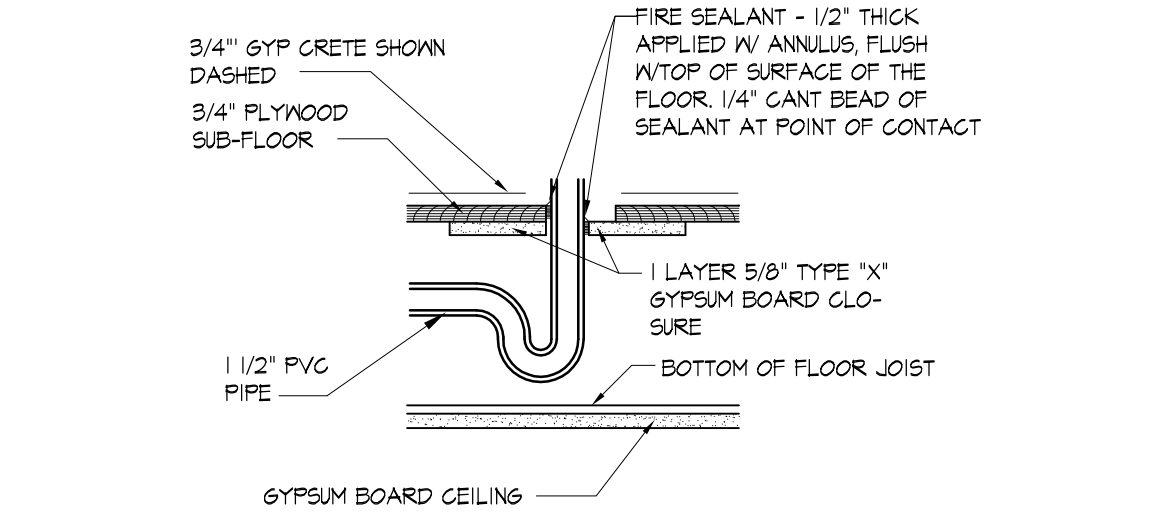
8 FIRE EXTINGUISHER CABINET
SCALE: 1 1/2" = 1'-0"



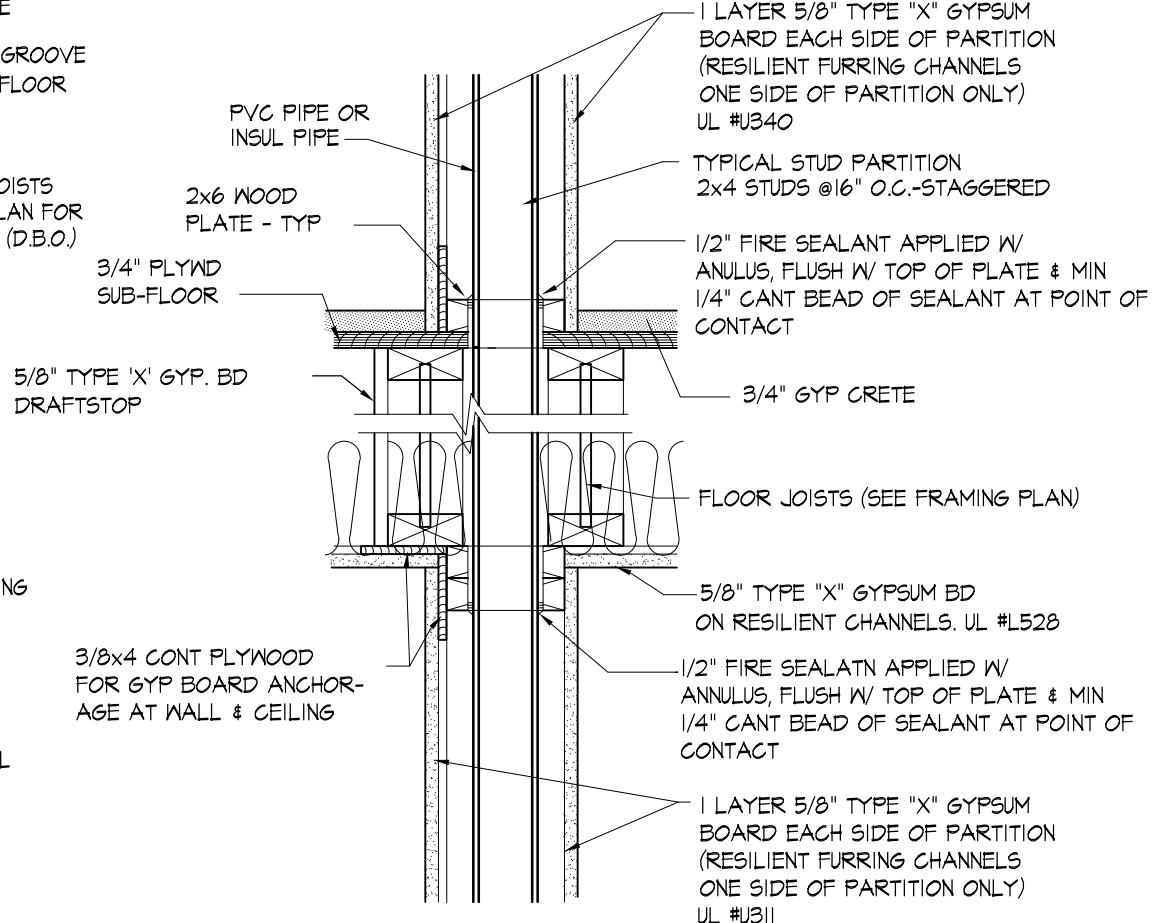
16 3 HOUR METAL PIPE WITH INSULATION PENETRATION (UL #CAJ2030)
SCALE: 1 1/2" = 1'-0"



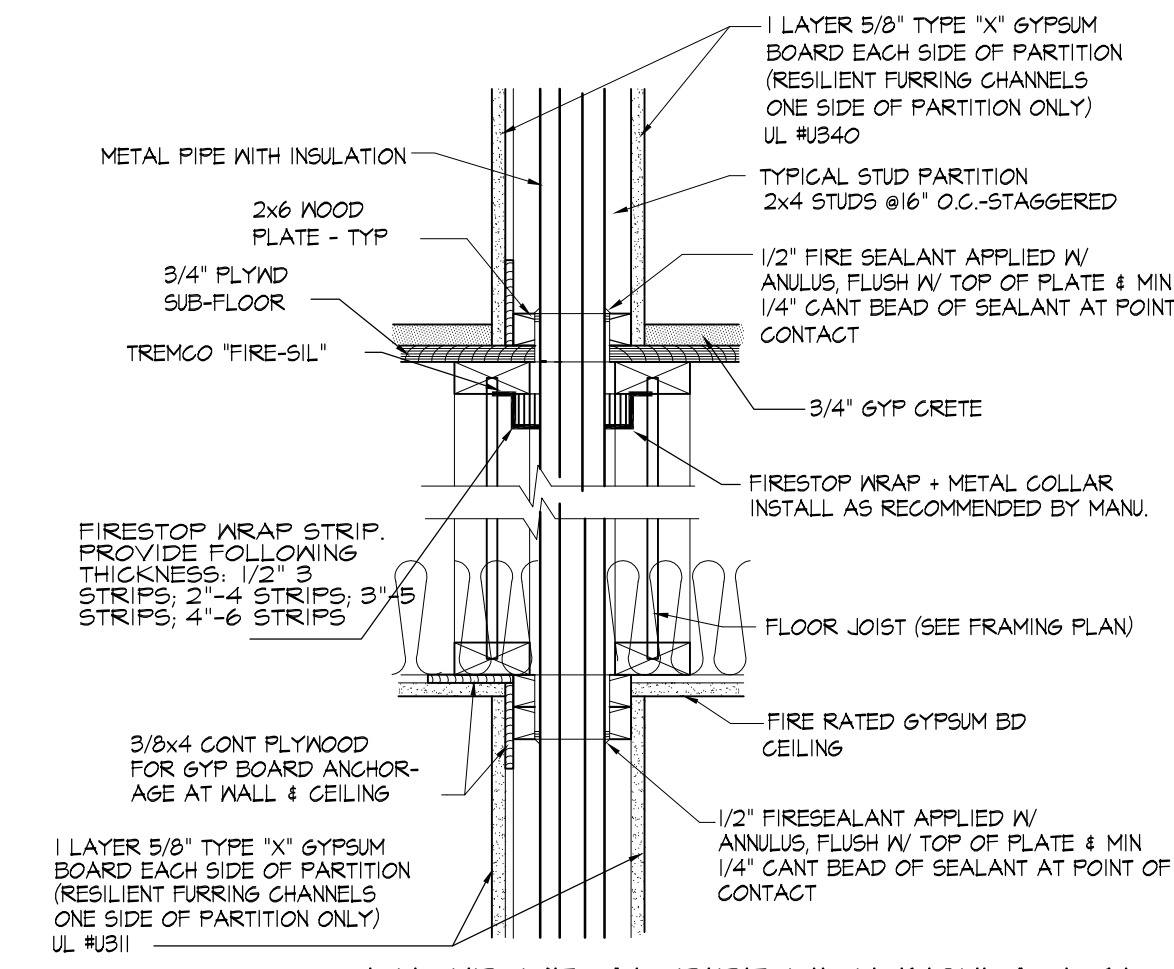
4 1 HOUR FIRESTOP AT PVC DRAIN (UL #F-C-2037)
SCALE: 1 1/2" = 1'-0"



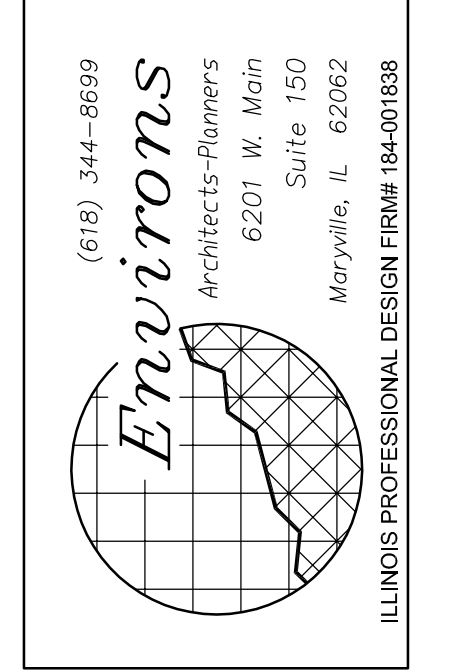
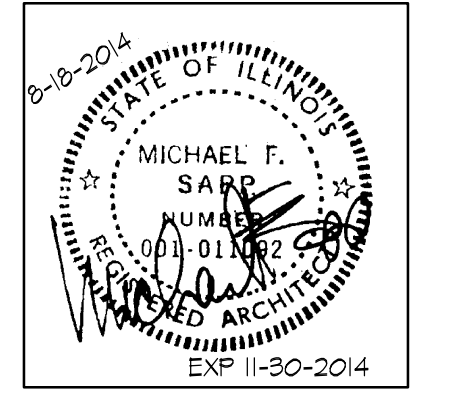
5 1 HOUR FIRESTOP AT PVC TUB DRAINS (UL #F-C-2156)
SCALE: 1 1/2" = 1'-0"



14 1 HOUR PVC PIPE (2" OR 4") PENETRATION (UL #F-C-2034)
SCALE: 1 1/2" = 1'-0"



15 1 HOUR METAL PIPE WITH INSULATION PENETRATION (UL #F-C-2147)
SCALE: 1 1/2" = 1'-0"

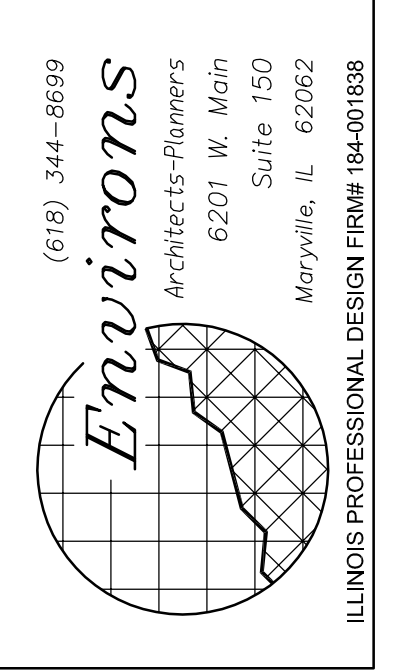
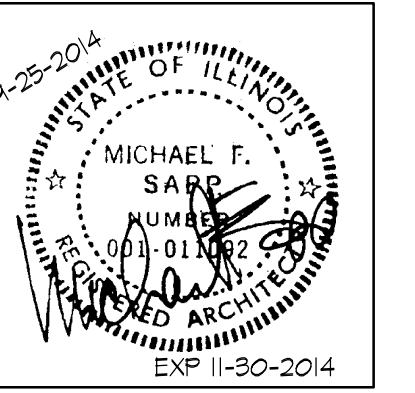


JOB NO. 13022

DATE: DECEMBER 11, 2013
REVISED: FEBRUARY 20, 2014 PERMIT REVIEW
PRECAST OPTION APRIL 28, 2014
AUGUST 18, 2014 PERMIT REVIEW



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS
FIRE PROTECTION DETAILS

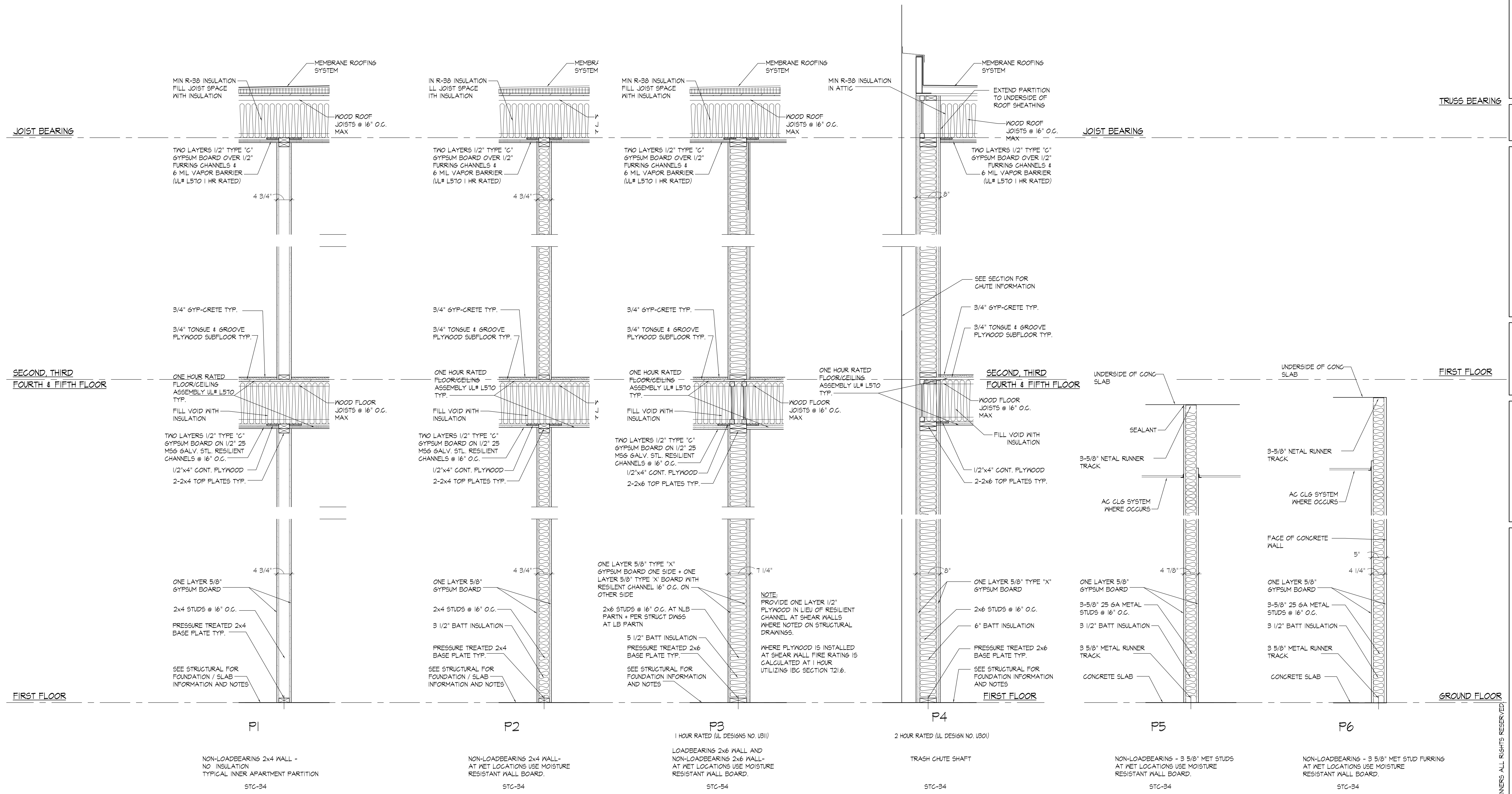


TRUSS BEARING

JOB NO.
13022

DATE:
DECEMBER 11, 2013

REVISED:
 1 FEBRUARY 20, 2014 PERMIT REVIEW
 PRECAST OPTION APRIL 28, 2014
 2 AUGUST 18, 2014 PERMIT REVIEW
 3 SEPTEMBER 25, 2014 PERMIT REVIEW



NOTE:

FLOAT-R-CLIP (USE THIS CLIP ONLY @ 2'x4' PARTITIONS)

2x6" DOUBLE PLATE AT TOP OF PARTITION

BOTTOM CHORD OF ROOF TRUSS OR CROSS BRACING

60-30 CEILING BACKER SPRING (AT 2'x6" PARTITIONS ONLY)

GYPSUM BOARD CLIP DETAIL AT TOP FLOOR & ROOF TRUSSES

1. WALLS & PARTITIONS MAY NOT BE CONTINUOUS FROM FIRST FLOOR SLAB THROUGH ALL FLOORS. REFER TO FLOOR PLANS & FRAMING PLANS FOR EXACT LOCATION OF PARTITIONS & LOAD BEARING WALLS AT EACH FLOOR.

2. CONTRACTOR SHALL VERIFY THE EXACT REQUIREMENTS FOR THE UL DESIGN NUMBERS INDICATED.

3. PROVIDE 1/2" PLYWOOD SHEATHING AT ALL INTERIOR SHEAR WALLS, AS DETAILED, BEHIND GYPSUM BOARD FINISH, AT ALL FLOORS WHERE INDICATED ON THE STRUCTURAL DRAWINGS.

RATED CLOSURES

WALLS UL14L-2043 2100 1 OR 2 HOUR WALLS; INSULATED PIPING UL14L-5014 1 OR 2 HOUR UP TO 4" IN DIAMETER; MULTIPLE PIPES UL14L-1043 1 OR 2 HOUR UP TO 2" DIA.; METALLIC PIPE UL14L-1033 1033; HVAC DUCTWORK UL14L-1009 2 HOUR RATINGS.

TYPICAL PARTITION TYPES (P1 THROUGH P5)

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

A NEW APARTMENT BUILDING 'C':

CARDINAL SQUARE APARTMENTS

MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

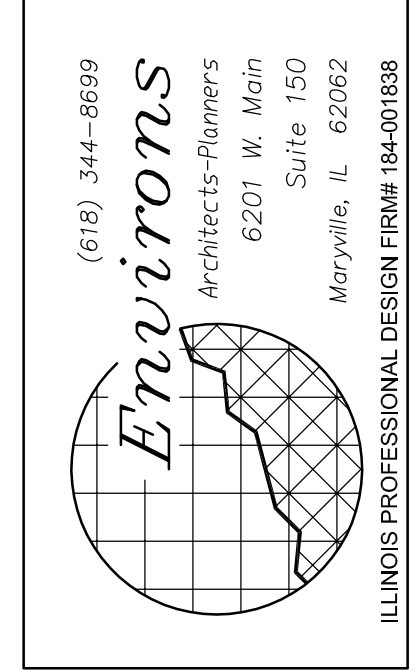
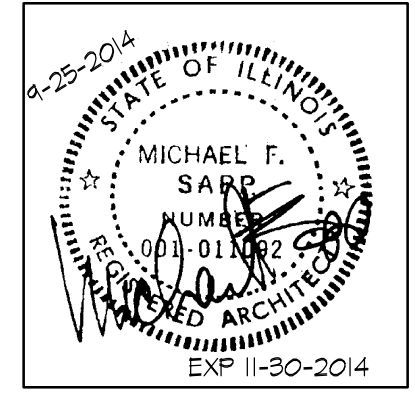
PARTITION TYPES

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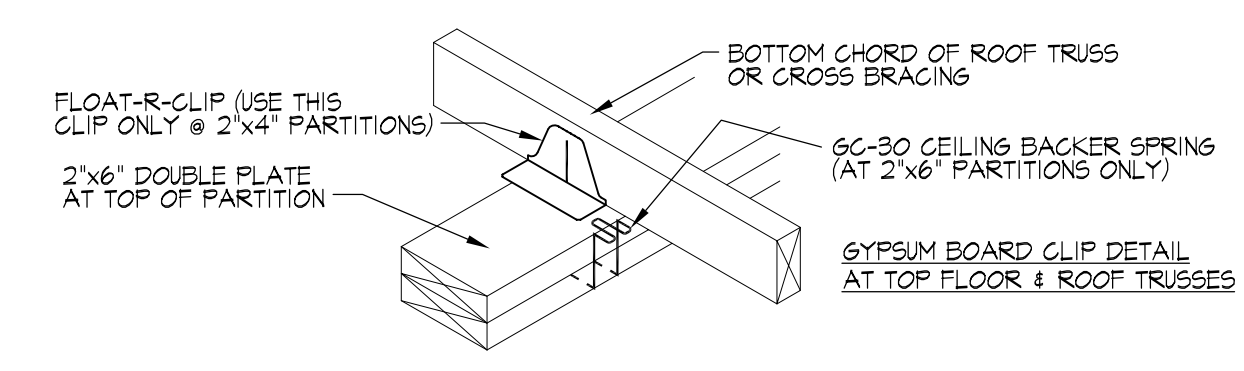
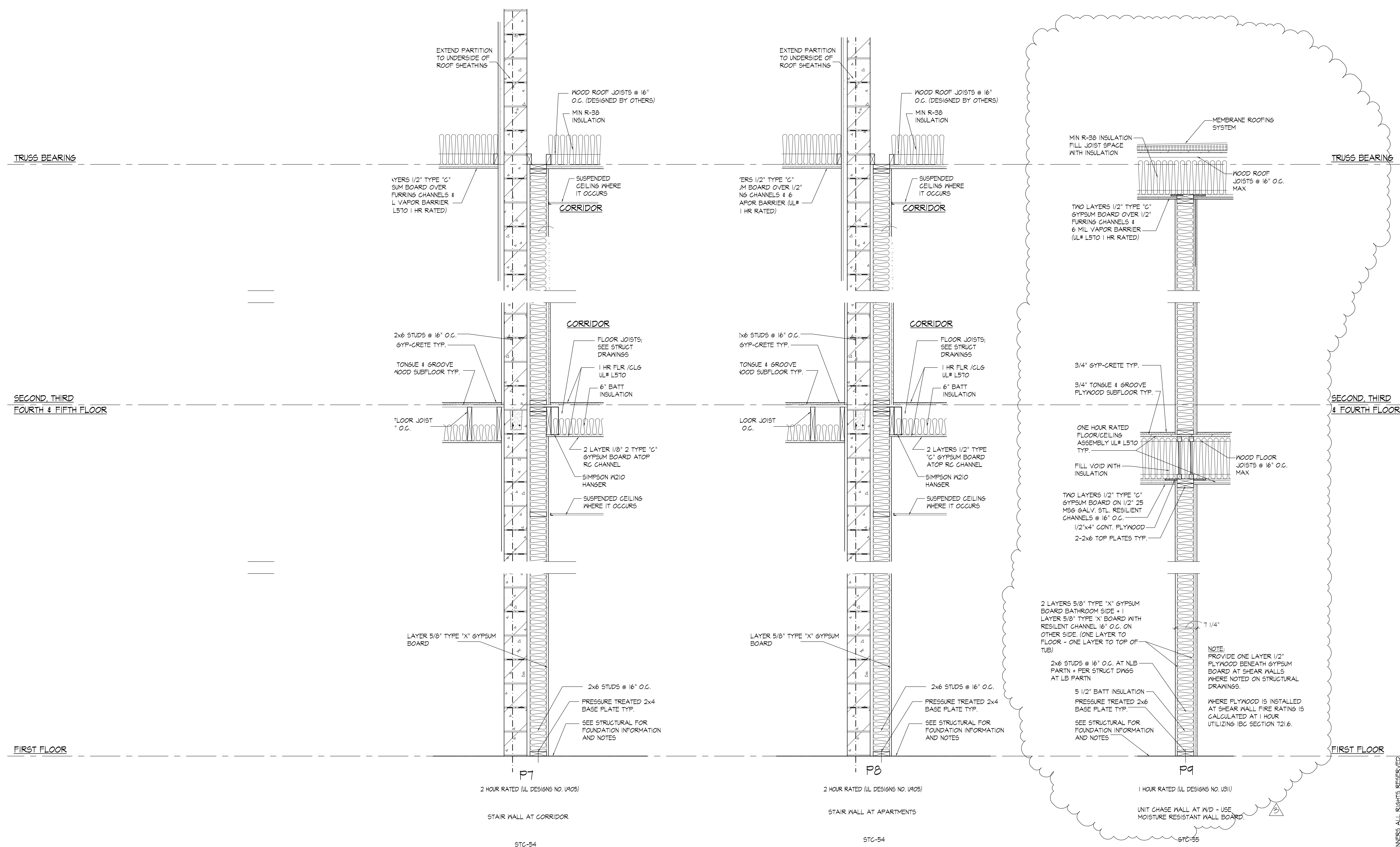
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A NEW APARTMENT BUILDING 'C':
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 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS
PARTITION TYPES

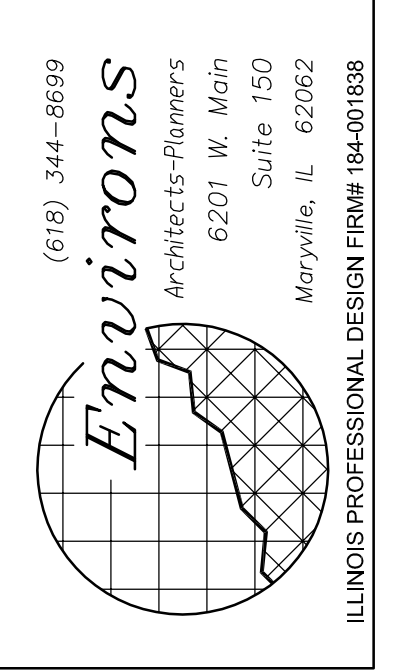
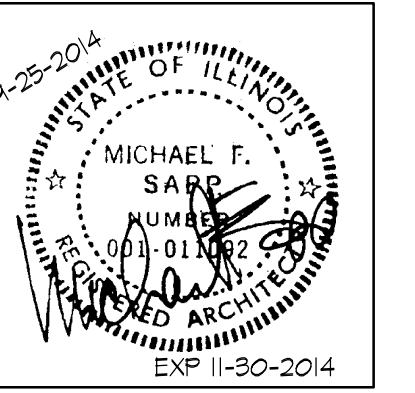


1. WALLS & PARTITIONS MAY NOT BE CONTINUOUS FROM FIRST FLOOR SLAB THROUGH ALL FLOORS. REFER TO FLOOR PLANS & FRAMING PLANS FOR EXACT LOCATION OF PARTITIONS & LOAD BEARING WALLS AT EACH FLOOR.
 2. CONTRACTOR SHALL VERIFY THE EXACT REQUIREMENTS FOR THE UL DESIGN NUMBERS INDICATED.
 3. PROVIDE 1/2" PLYWOOD SHEATHING AT ALL INTERIOR SHEAR WALLS, AS DETAILED, BEHIND GYPSUM BOARD FINISH, AT ALL FLOORS WHERE INDICATED ON THE STRUCTURAL DRAWINGS.

RATED CLOSURES
 WALLS UL/L-2043 2100 1 OR 2 HOUR WALLS; INSULATED PIPING UL/L-5014 1 OR 2 HOUR UP TO 4" IN DIAMETER; MULTIPLE PIPES UL/L-1043 1 OR 2 HOUR UP TO 2" DIA.; METALLIC PIPE UL/L-1033 1088; HVAC DUCTWORK UL/L-1009 2 HOUR RATING.

TYPICAL PARTITION TYPES (P6 THROUGH P9)
 SCALE: 3/4" = 1'-0"

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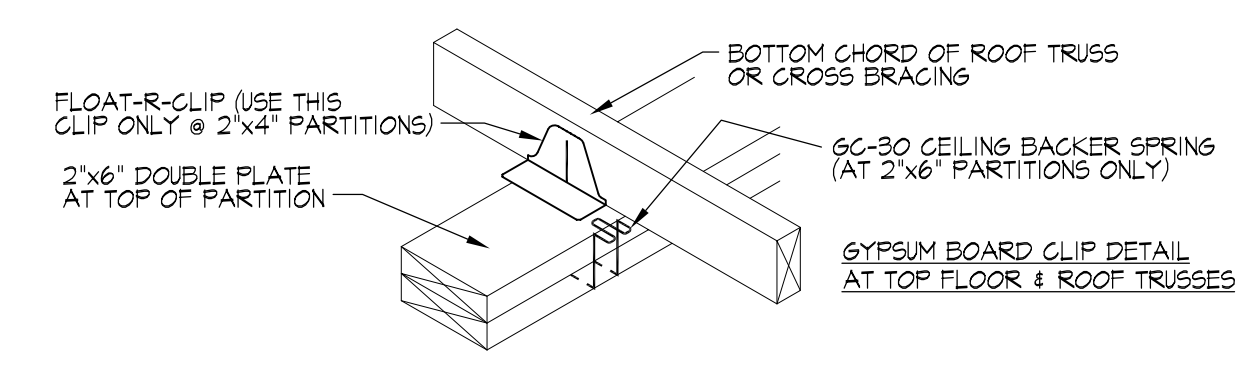
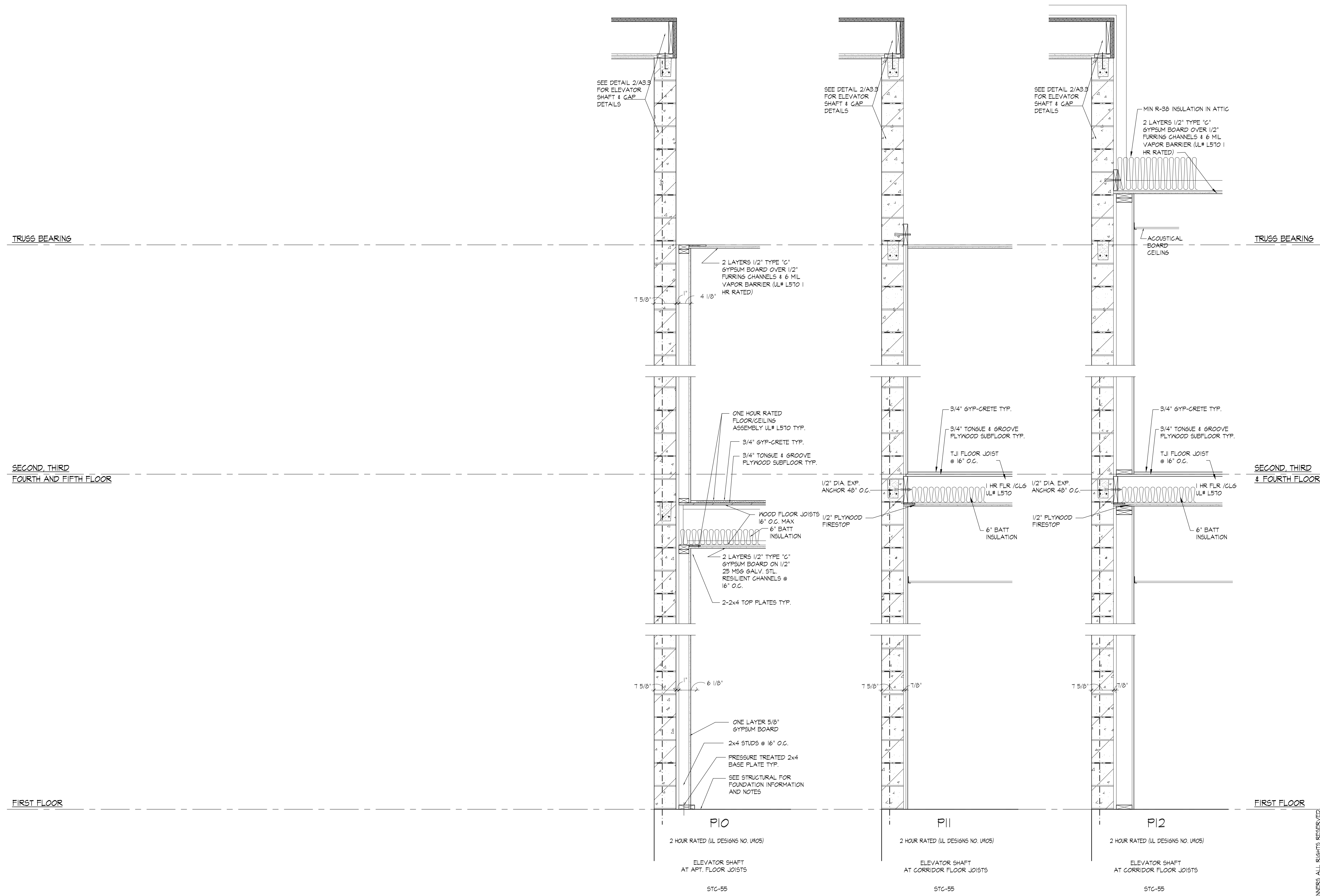
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PARTITION TYPES

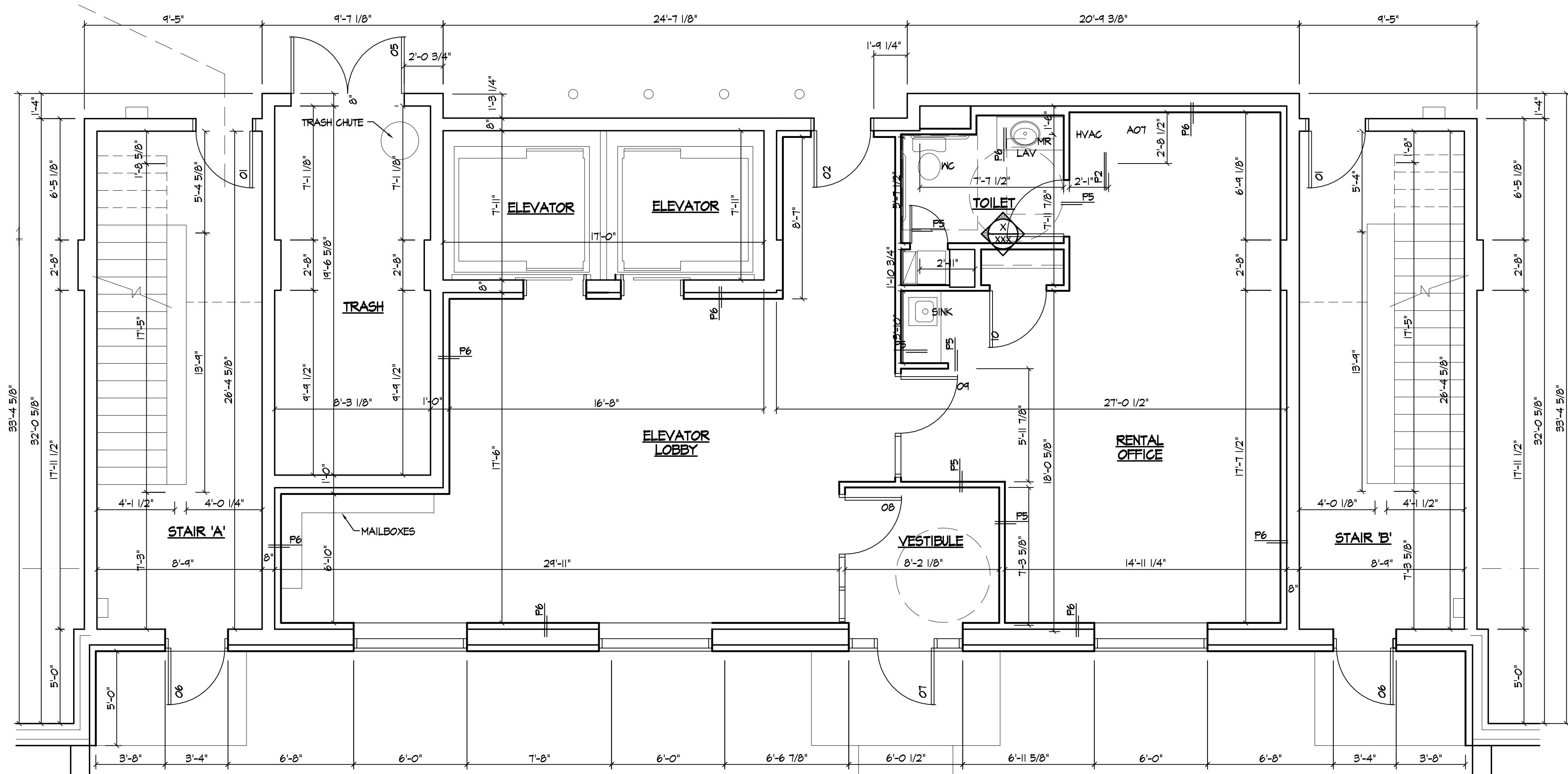


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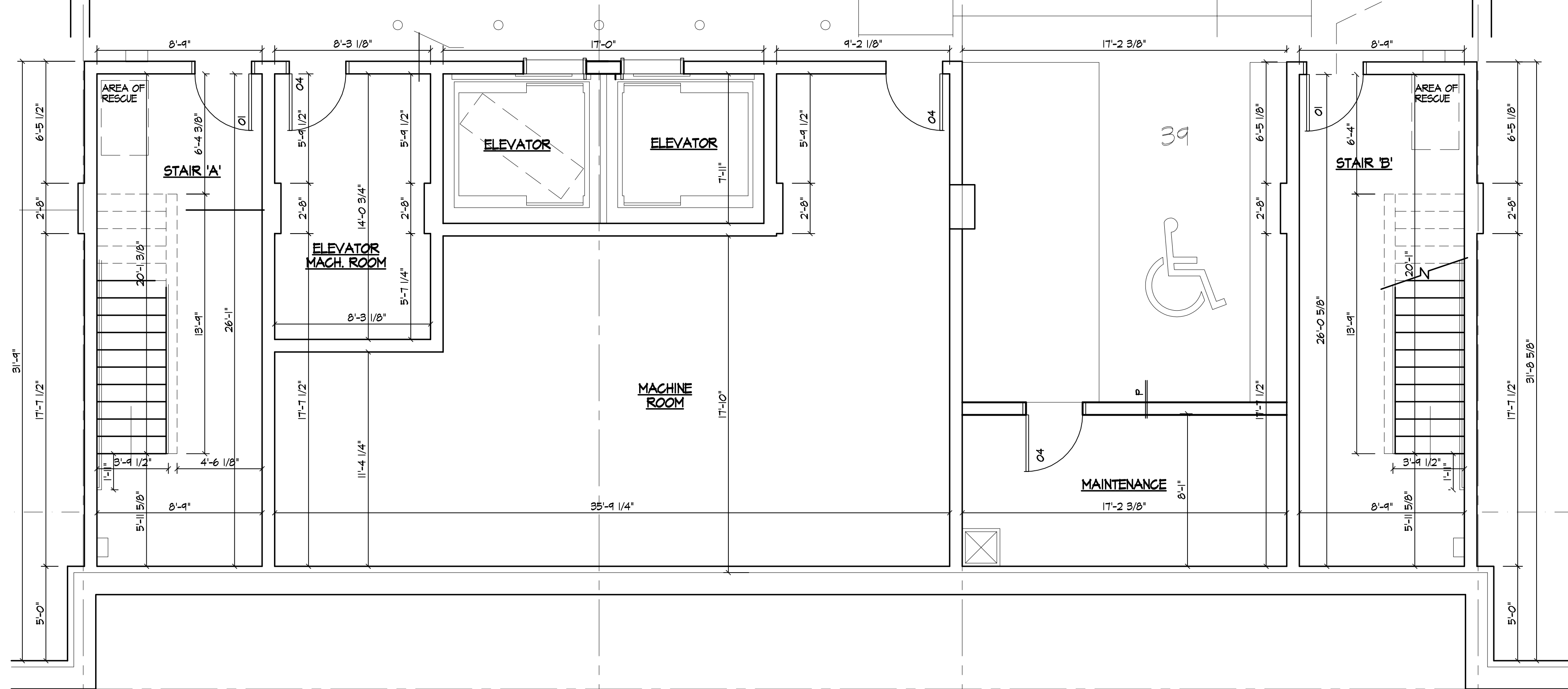
RATED CLOSURES
 WALLS ULXL-2093 2100 1 OR 2 HOUR WALLS; INSULATED PIPING ULXL-5014 1 OR 2 HOUR UP TO 4" IN DIAMETER; MULTIPLE PIPES ULXL-1093 1 OR 2 HOUR UP TO 2" DIA.; METALLIC PIPE ULXL-1033 1088; HVAC DUCTWORK ULXL-1009 2 HOUR RATINGS.

TYPICAL PARTITION TYPES (P10 THROUGH P12)
 SCALE: 3/4" = 1'-0"

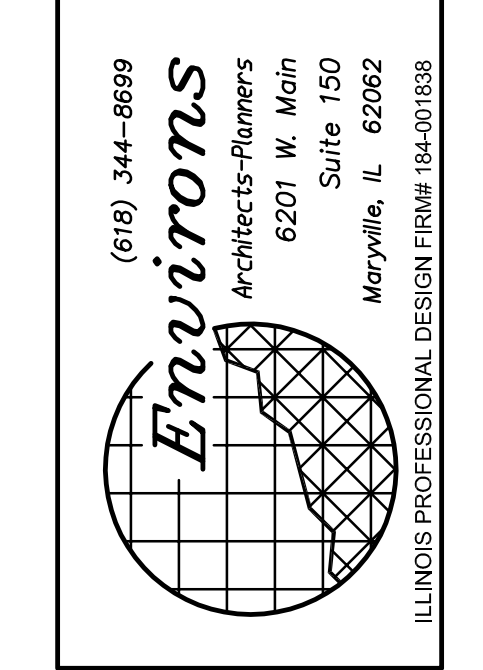
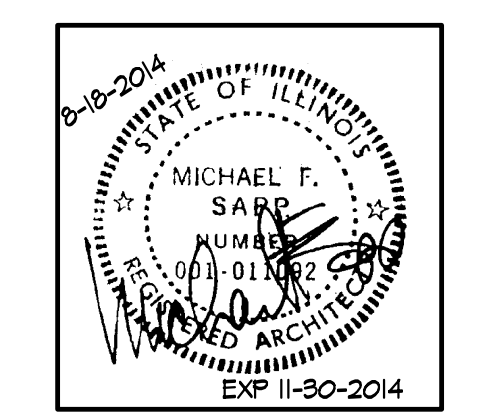
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ENLARGED GROUND FLOOR PLAN - PUBLIC SPACES
SCALE: 1/4"=1'-0"



ENLARGED LOWER LEVEL PLAN - PUBLIC SPACES
SCALE: 1/4"=1'-0"



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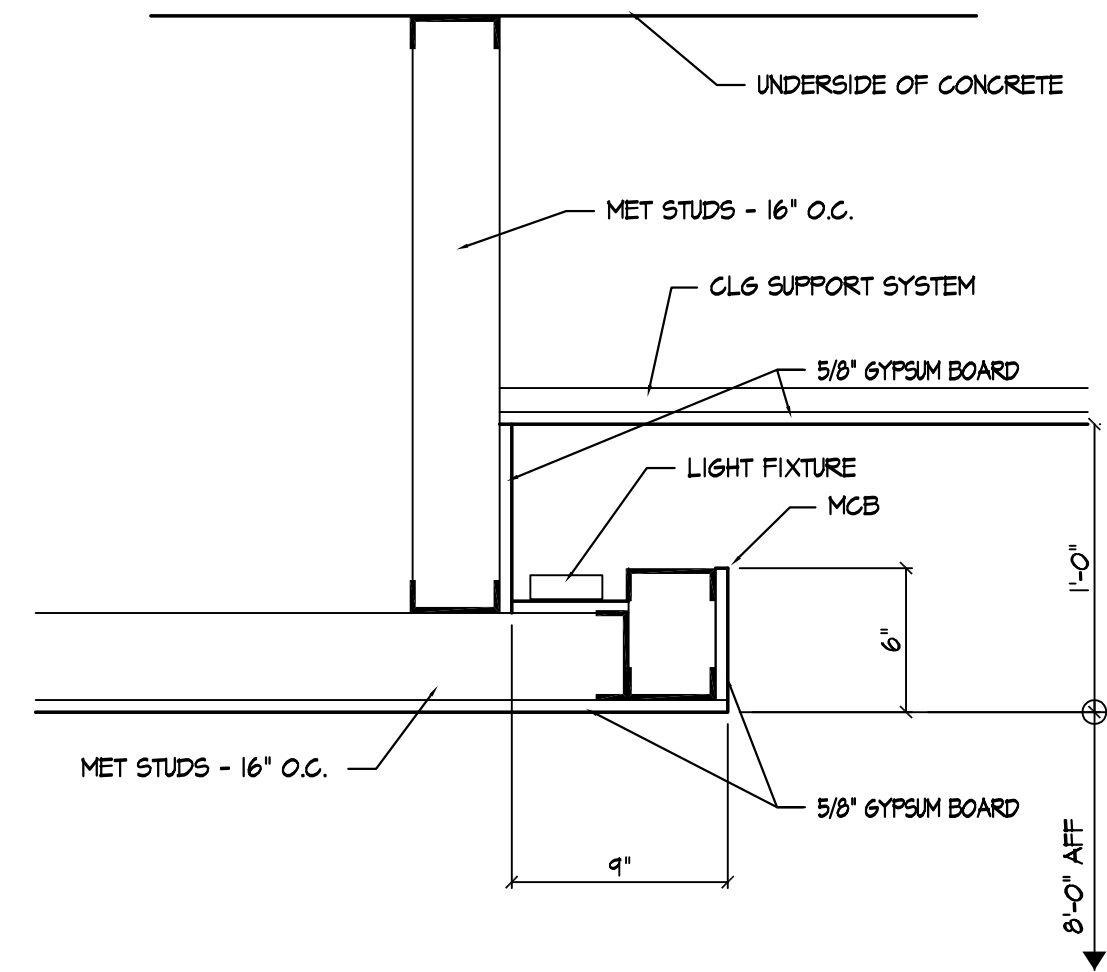


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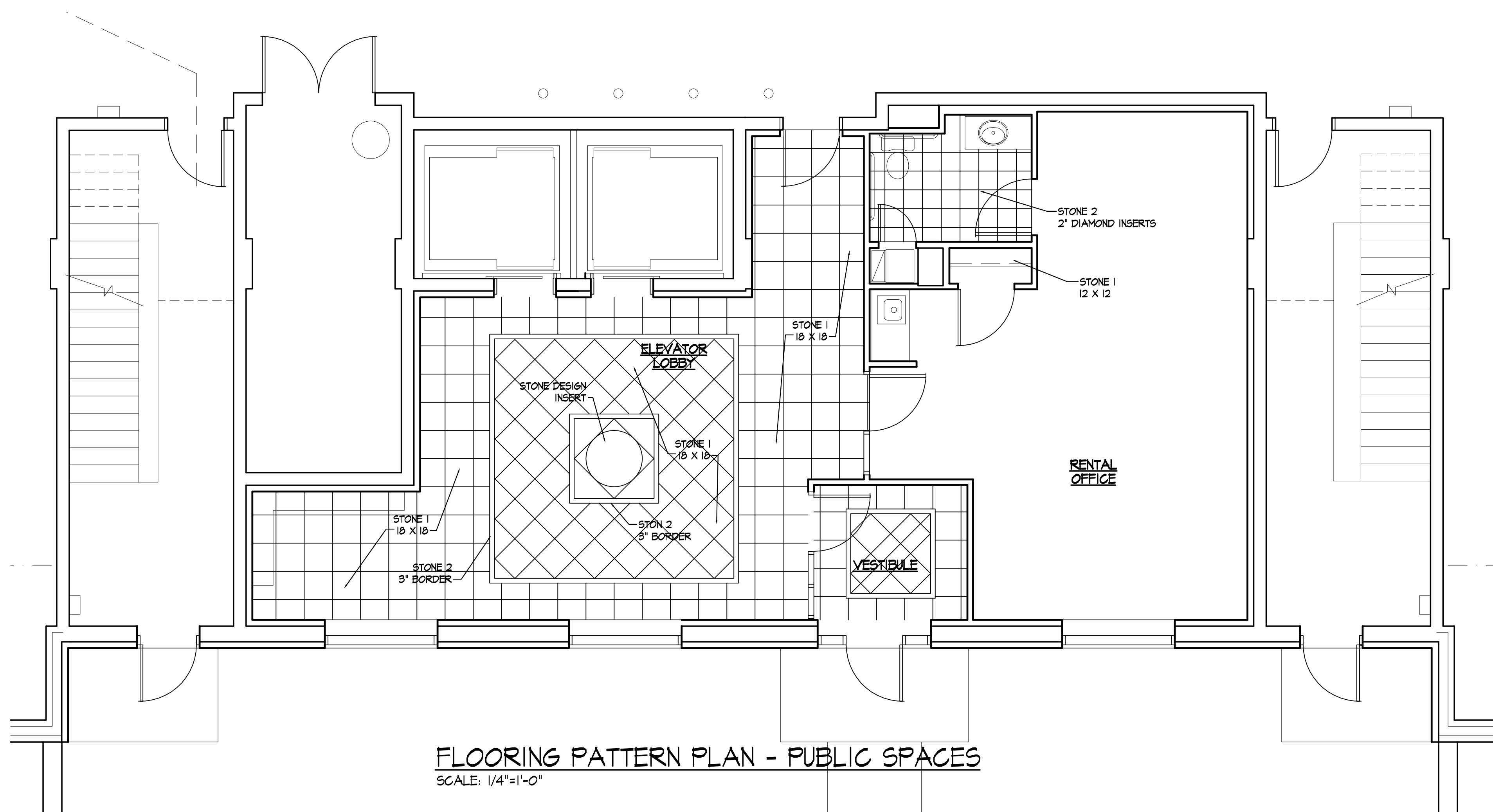
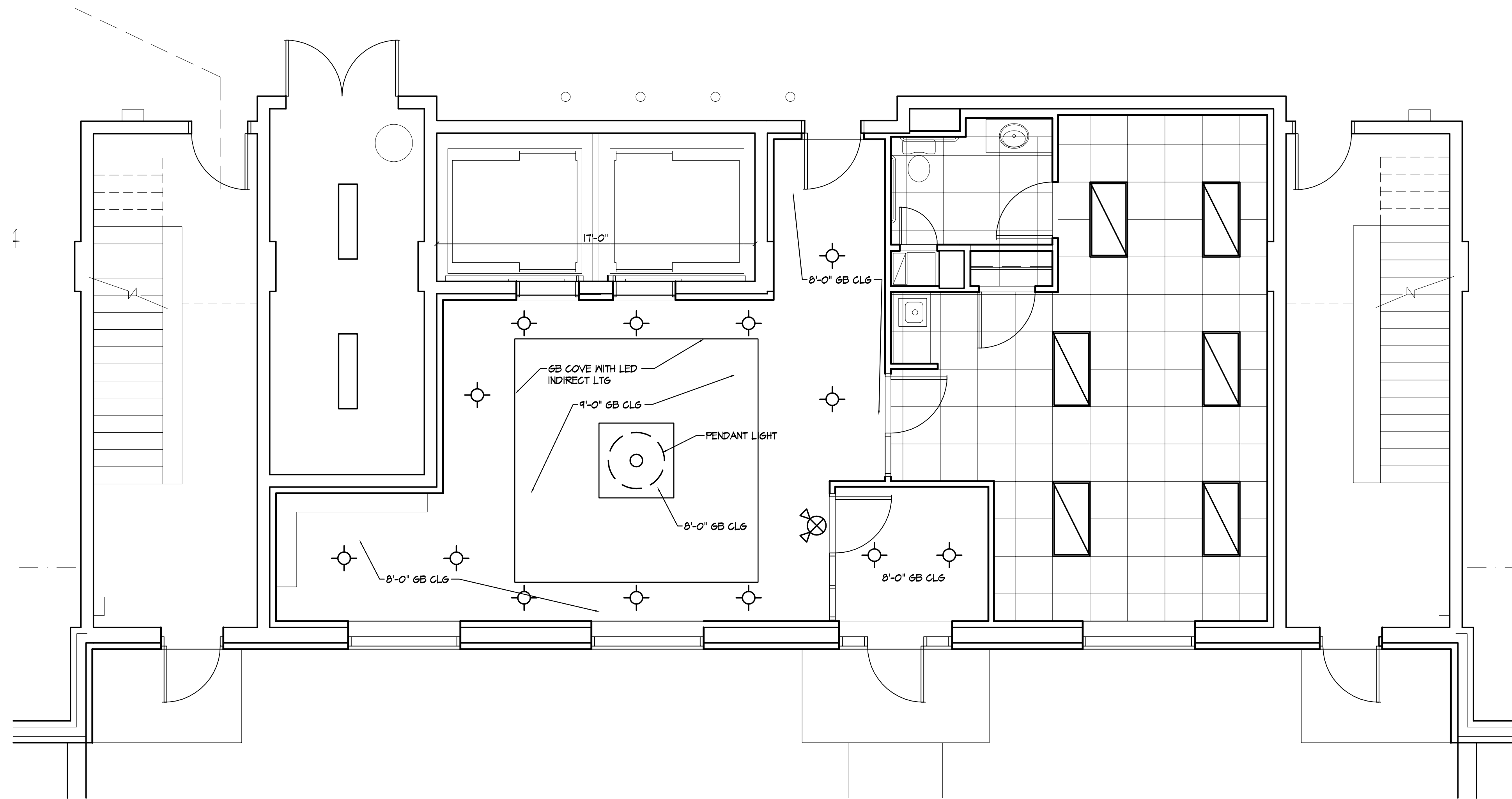
ENLARGED PLAN - PUBLIC SPACES

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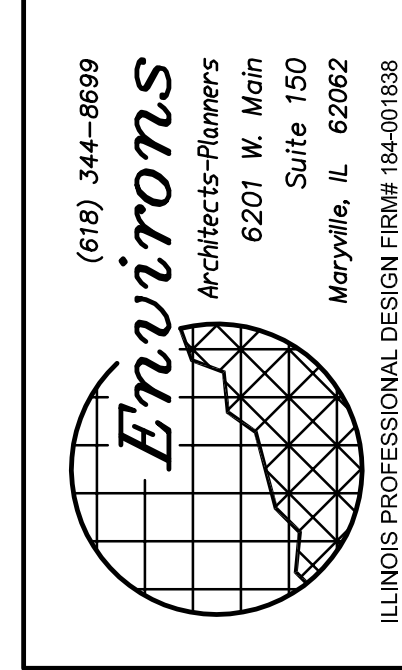
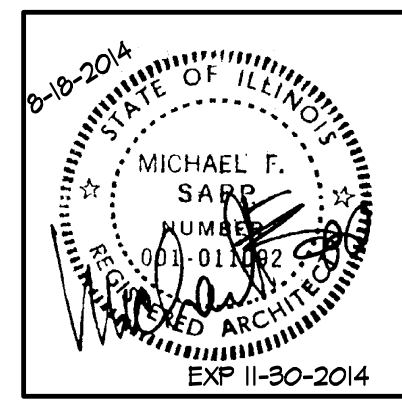
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SOFFIT DETAIL AT LOBBY
SCALE: 1/2" = 1'-0"



FLOORING PATTERN PLAN - PUBLIC SPACES
SCALE: 1/4" = 1'-0"



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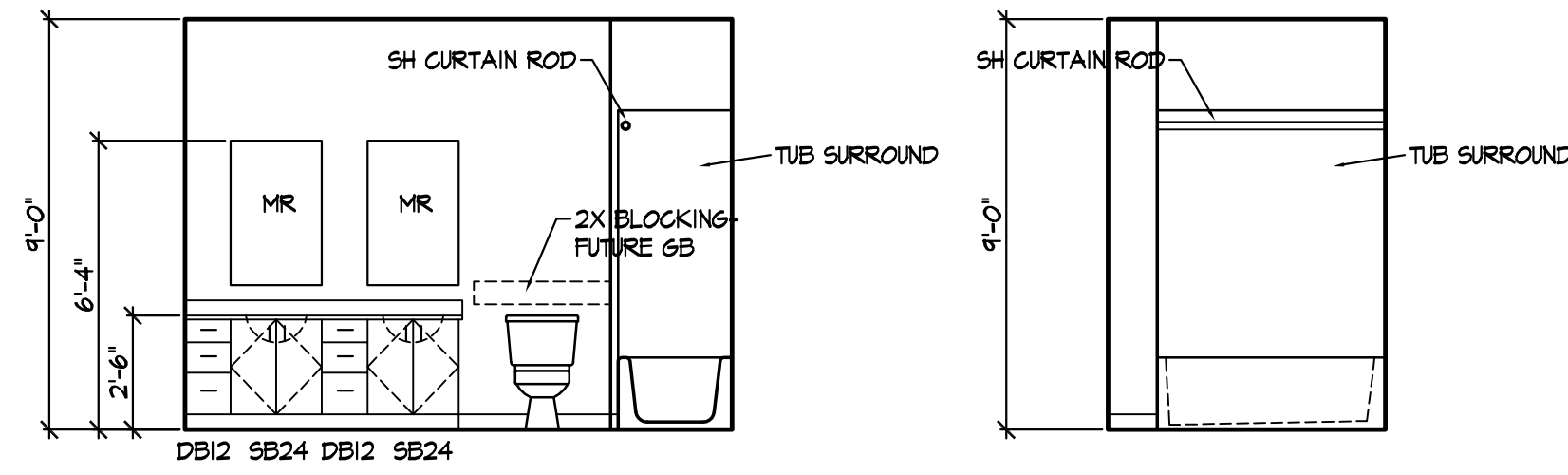


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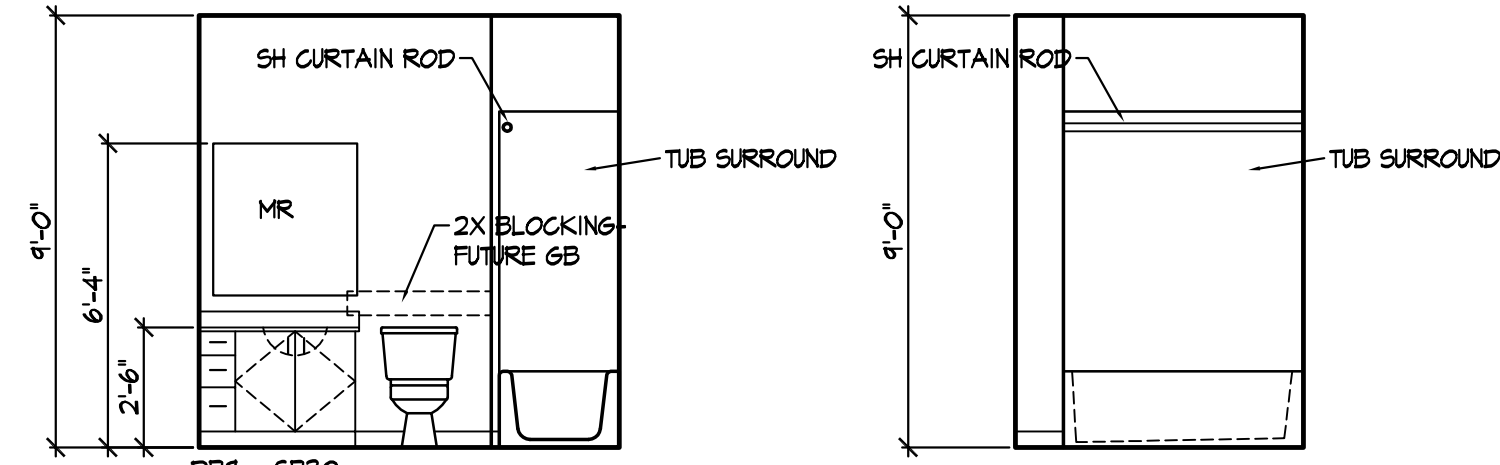
ENLARGED PLAN - PUBLIC SPACES

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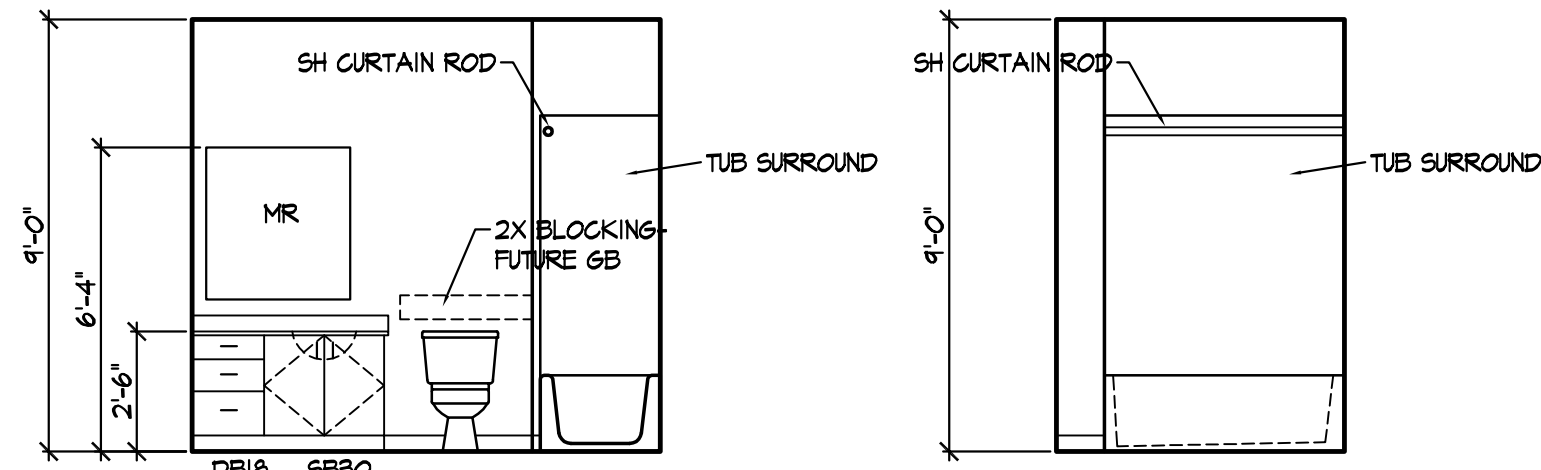
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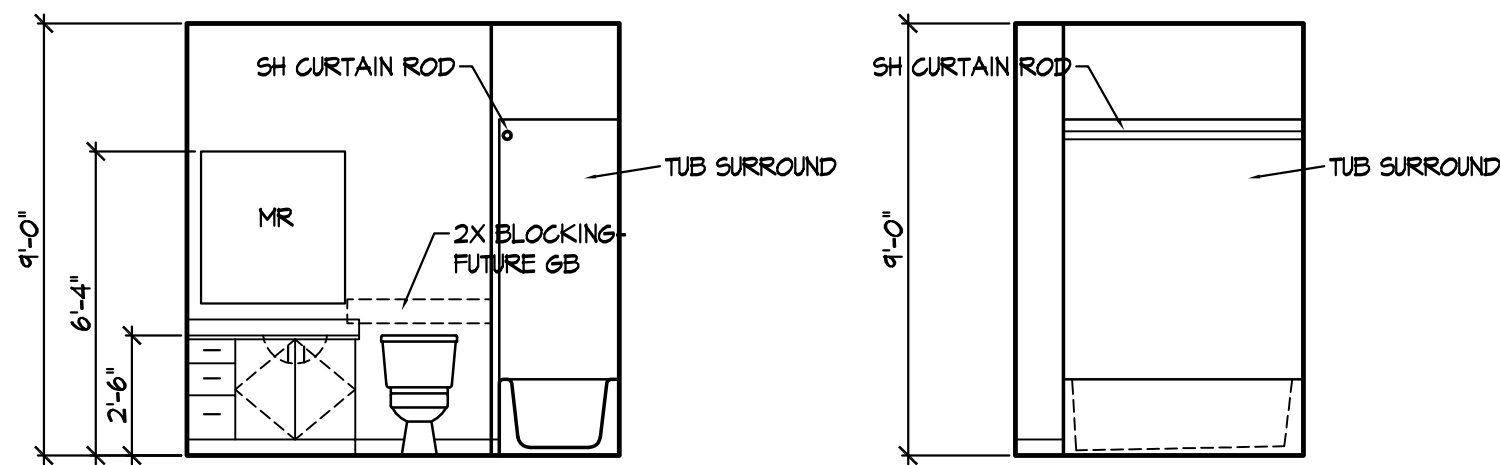
1 TOILET ROOM ELEVATIONS - APT 1 + 11
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



2 TOILET ROOM ELEVATIONS - APT 3 + 9
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR

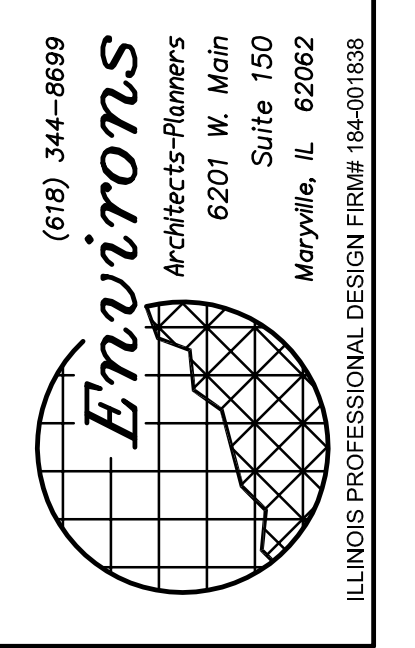
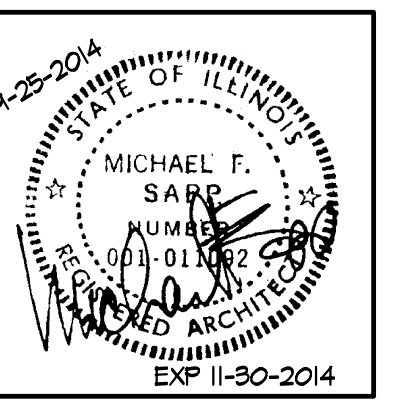
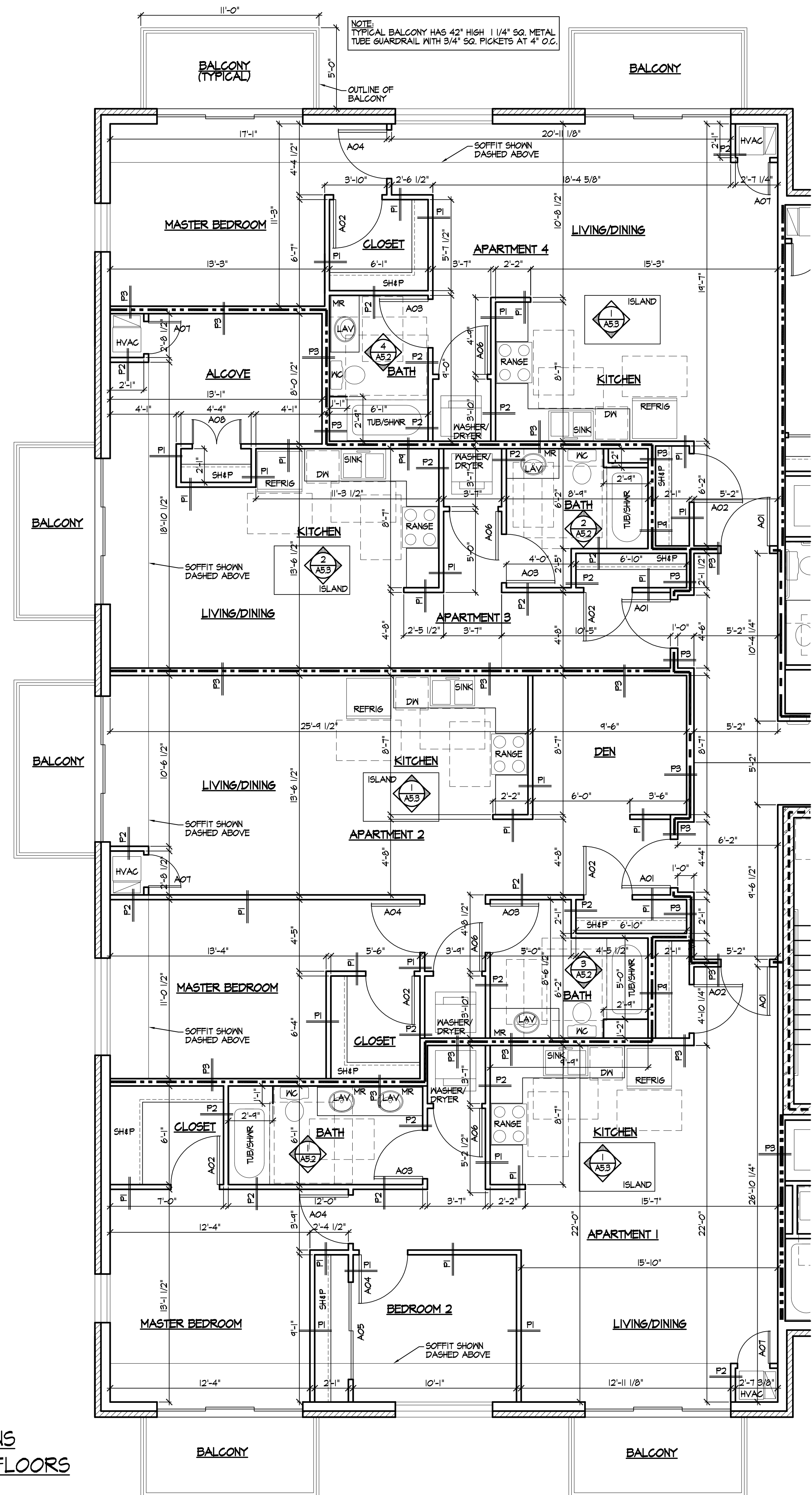


3 TOILET ROOM ELEVATIONS - APT 2 + 10
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



4 TOILET ROOM ELEVATIONS - APT 4 + 8
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR

APARTMENT PLANS
1, 2, 3 + 4 - ALL FLOORS
SCALE: 1/4"=1'-0"



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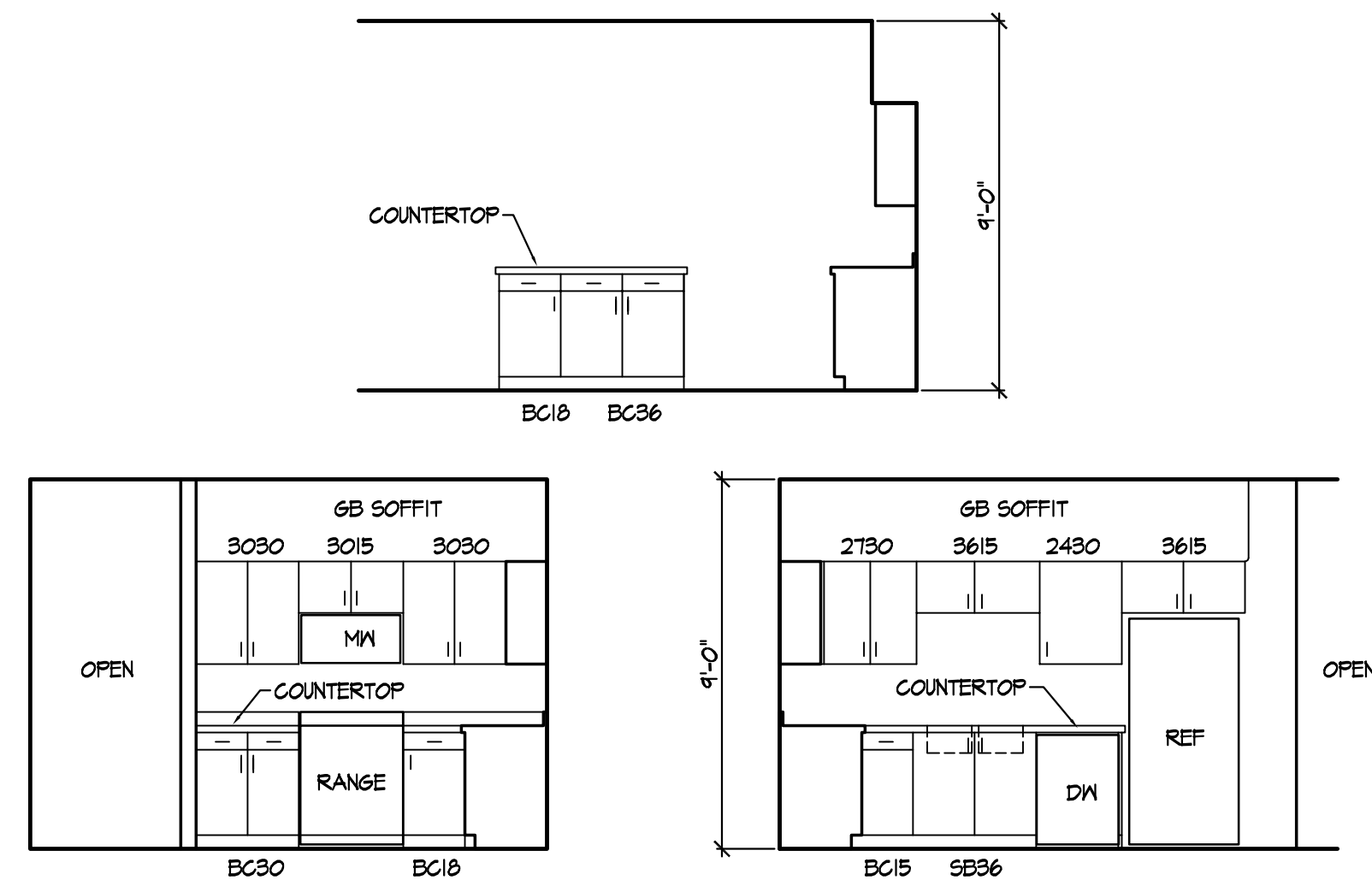
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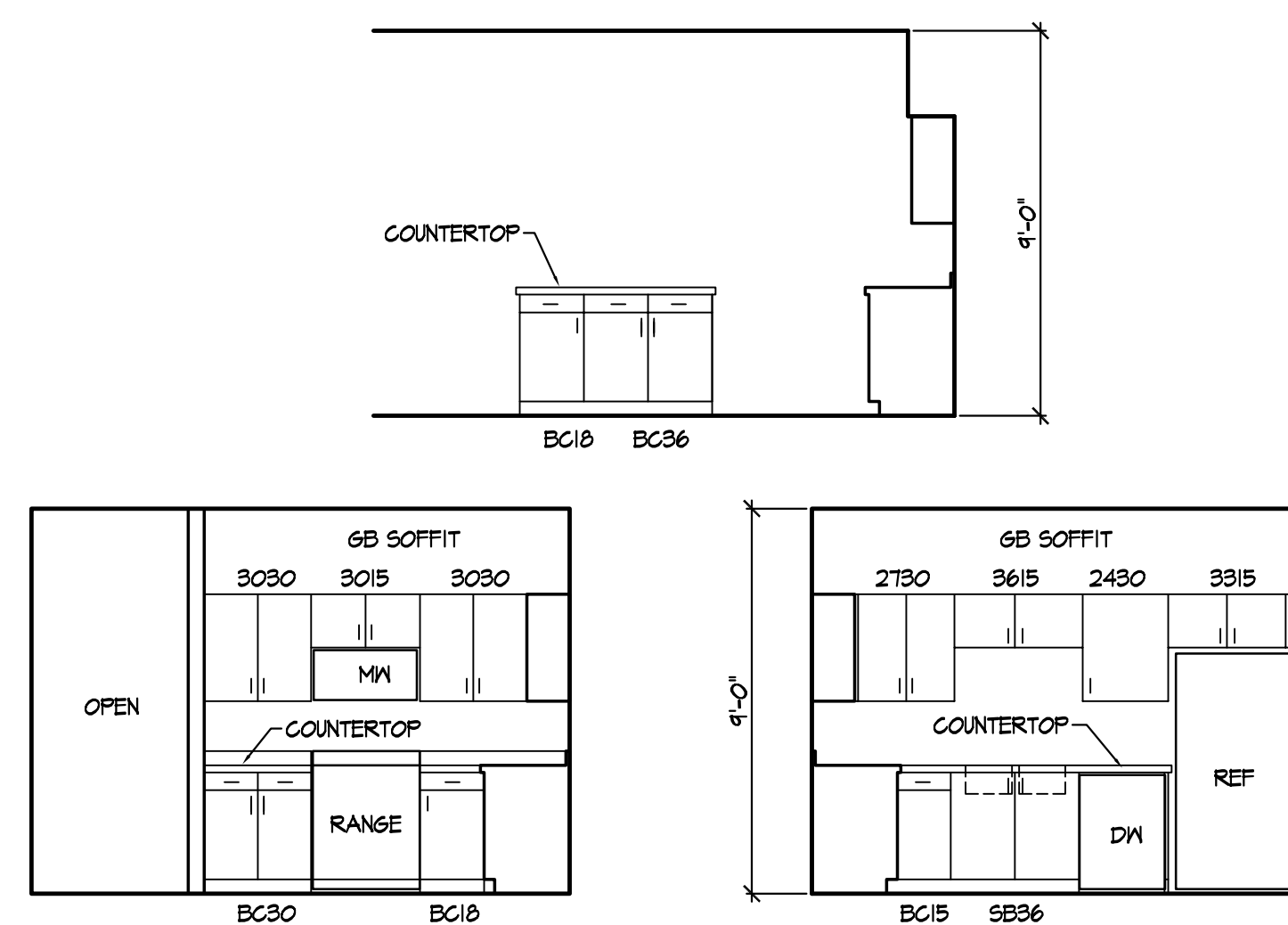
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ENLARGED PLAN - APTS- ALL FLOORS

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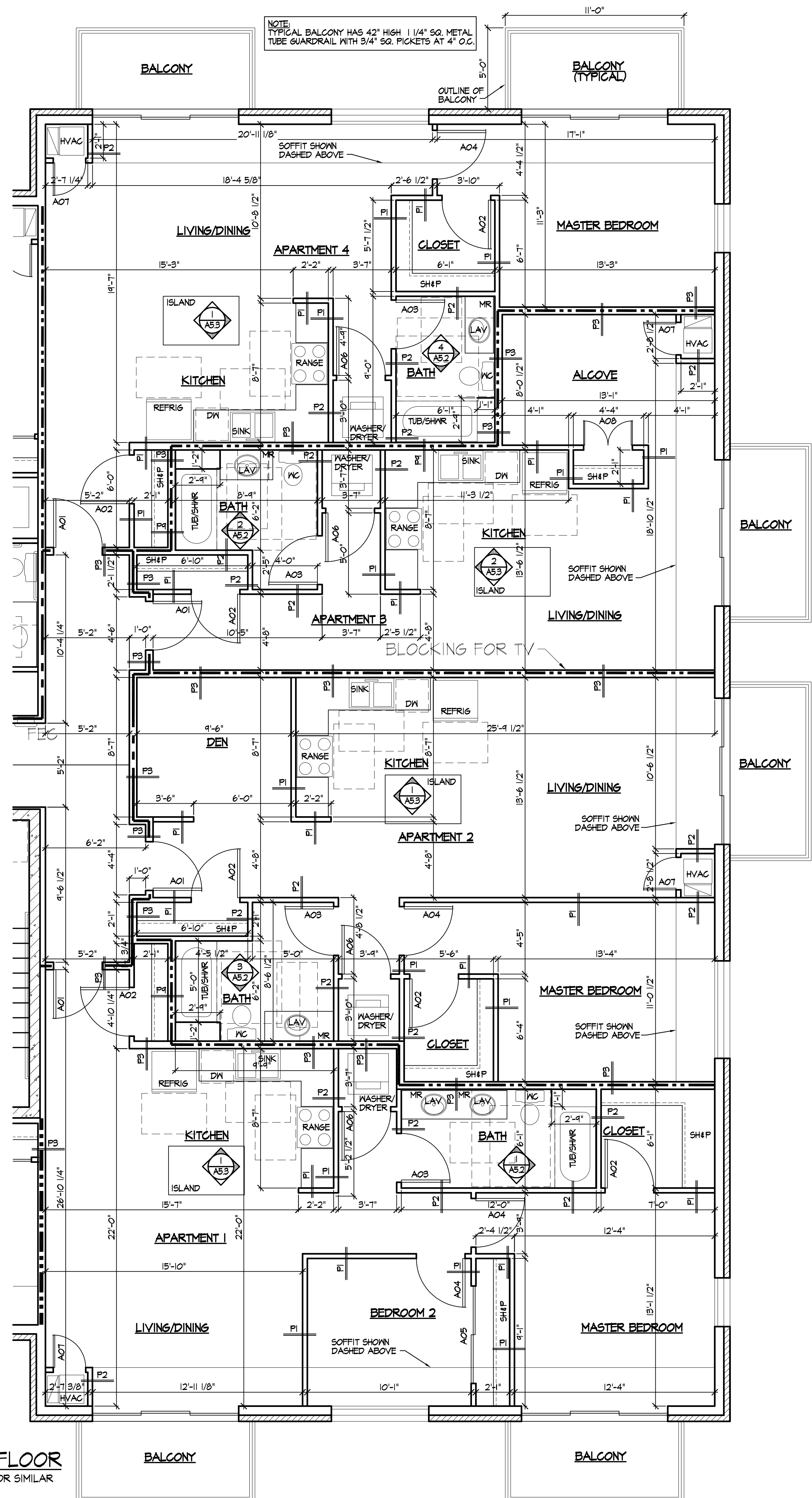
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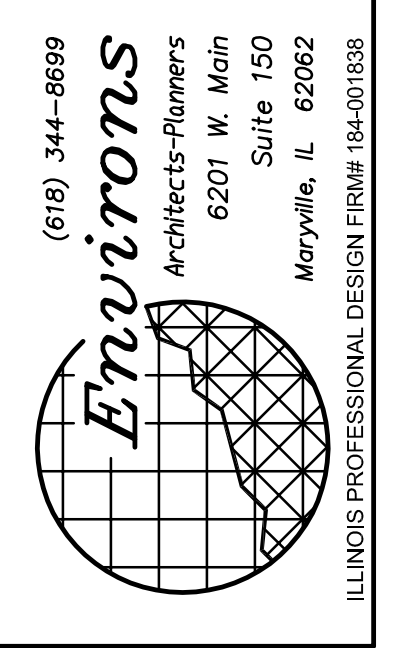
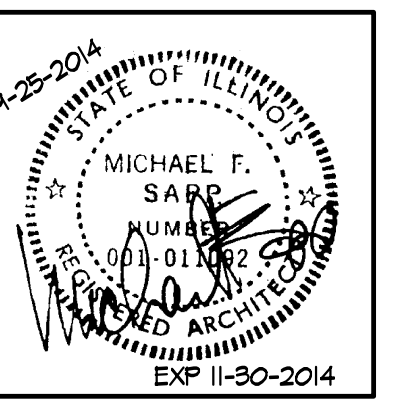
KITCHEN ELEVATIONS - APT 1, 2, 4, 8, 10, 11 + 12
 SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



KITCHEN ELEVATIONS - APT 3 + 9
 SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



APARTMENT PLANS
8, 9, 10 + 11 - SECOND FLOOR
 SCALE: 1/4"=1'-0" THIRD FLOOR SIMILAR



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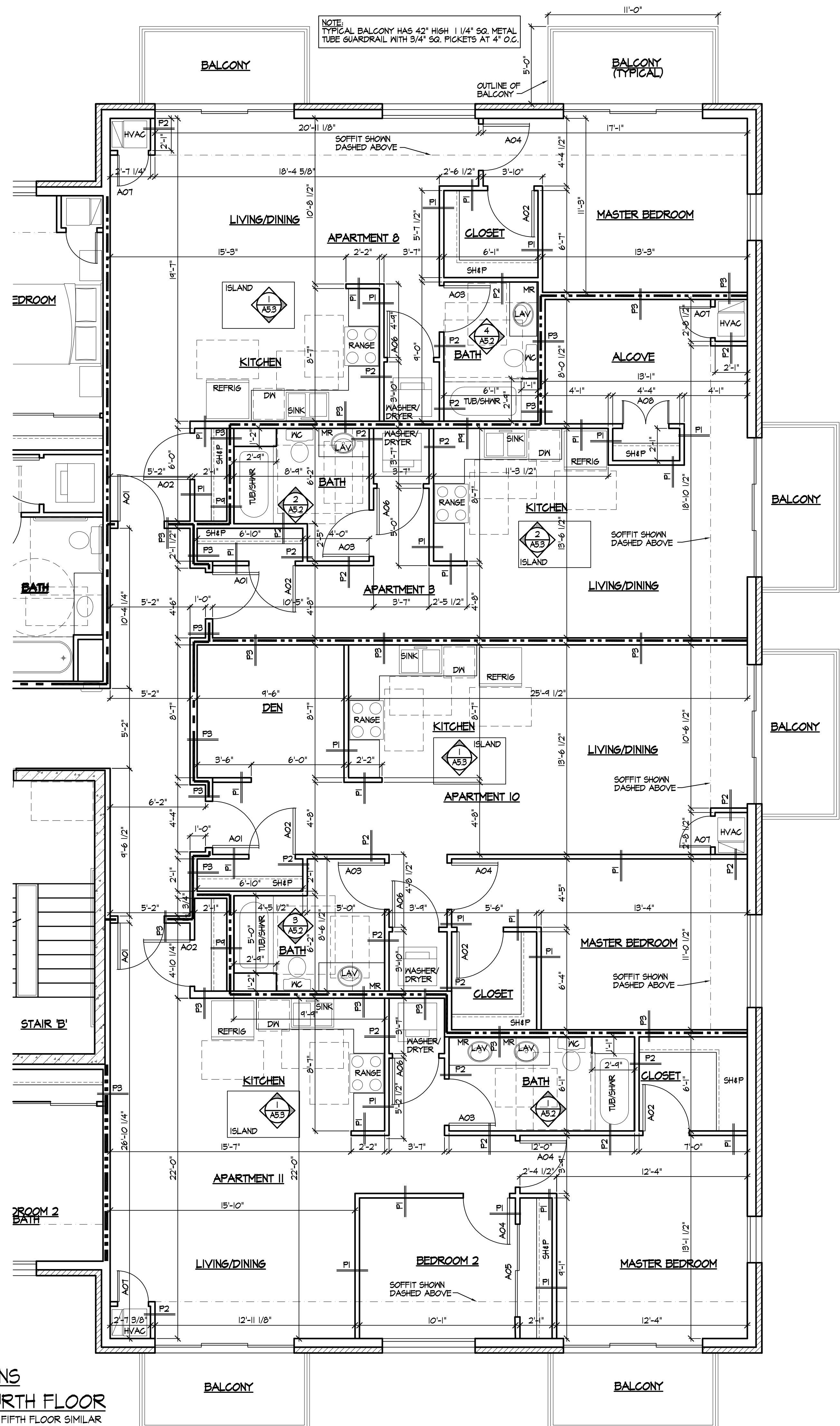


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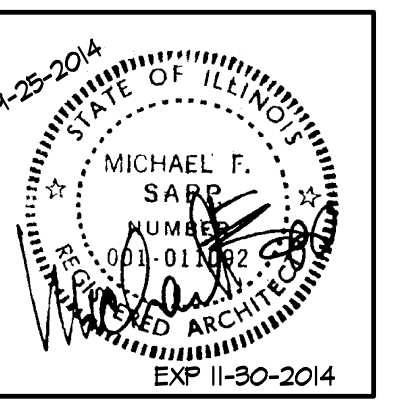
ENLARGED PLAN - APTS - FLOORS 2+3

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APARTMENT PLANS
8, 9, 10 + 11 - FOURTH FLOOR
SCALE: 1/4"=1'-0" FIFTH FLOOR SIMILAR



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Architects-Planners
6201 W. Main
Suite 150
Maryville, IL 62062
ILLINOIS PROFESSIONAL DESIGN FIRM 194-001838

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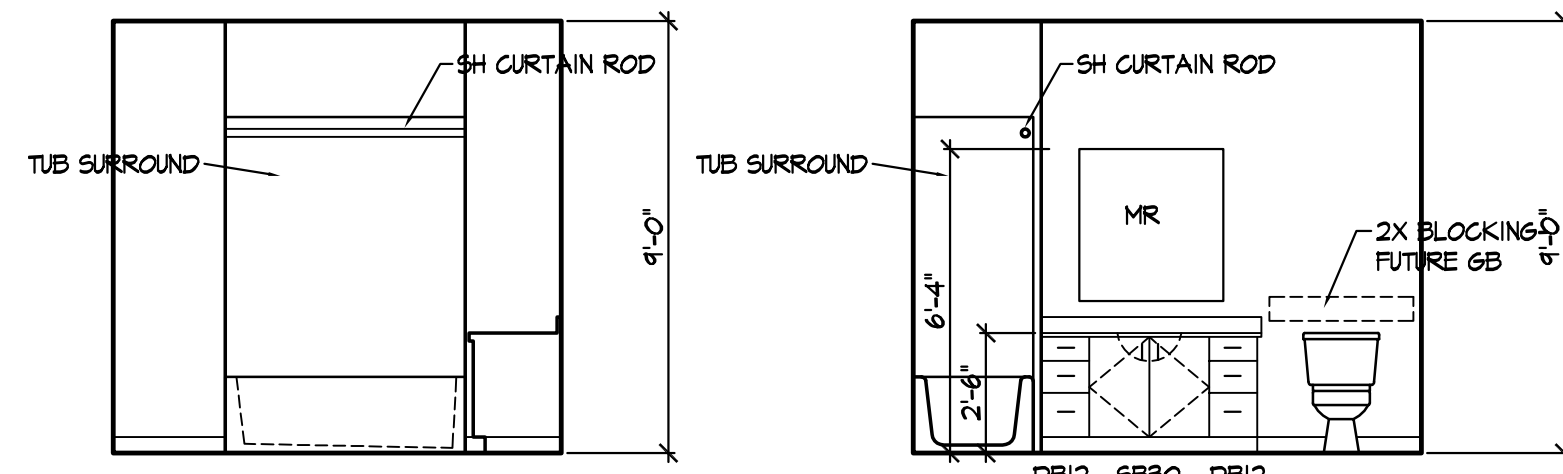


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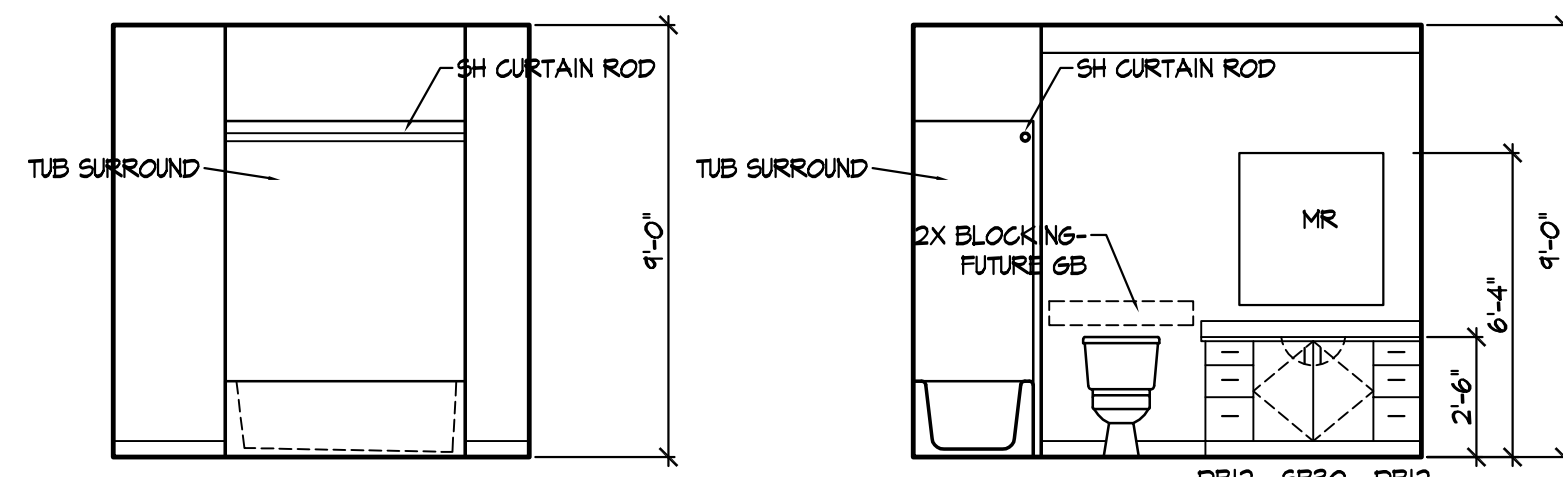
ENLARGED PLAN - APTS - FLOORS 4+5

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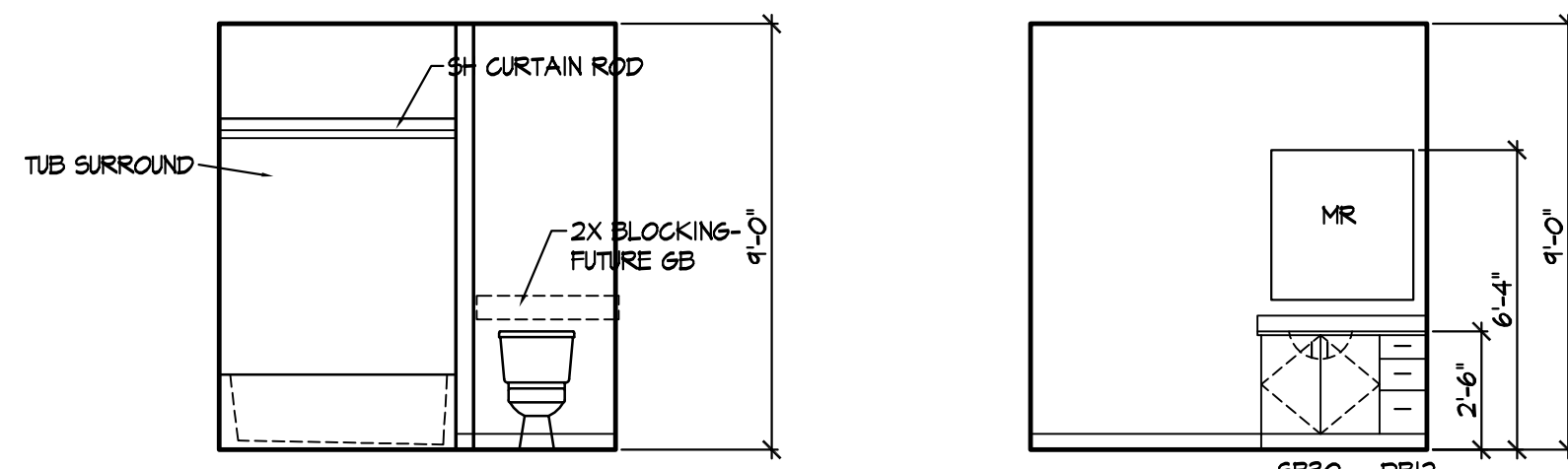
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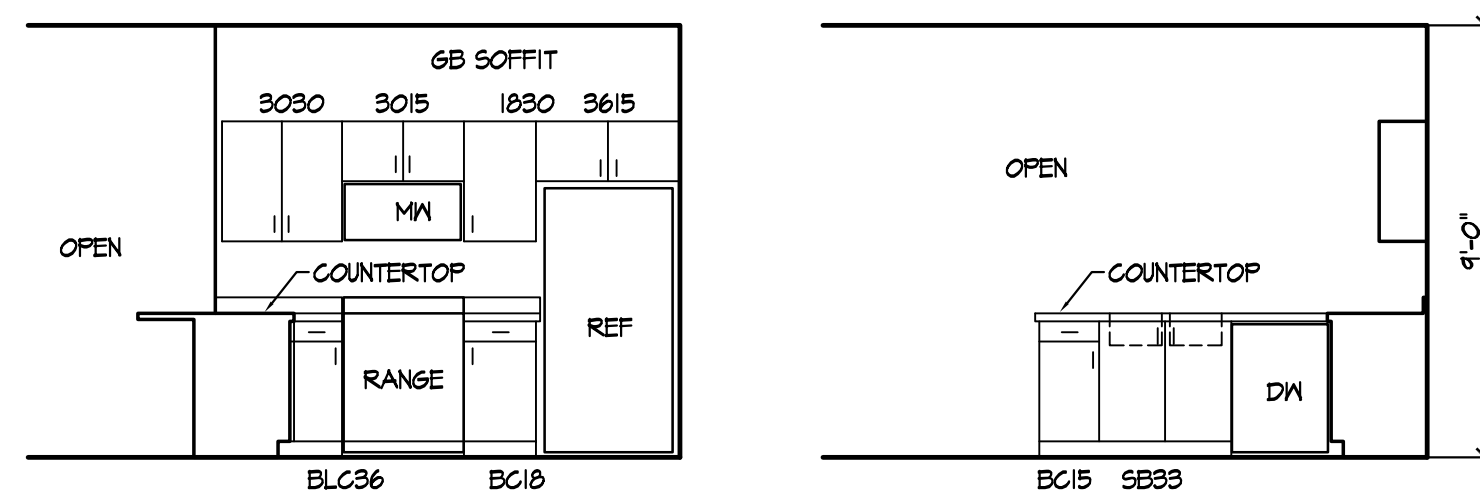
1 TOILET ROOM ELEVATIONS - APT 5, 7 + 12B
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



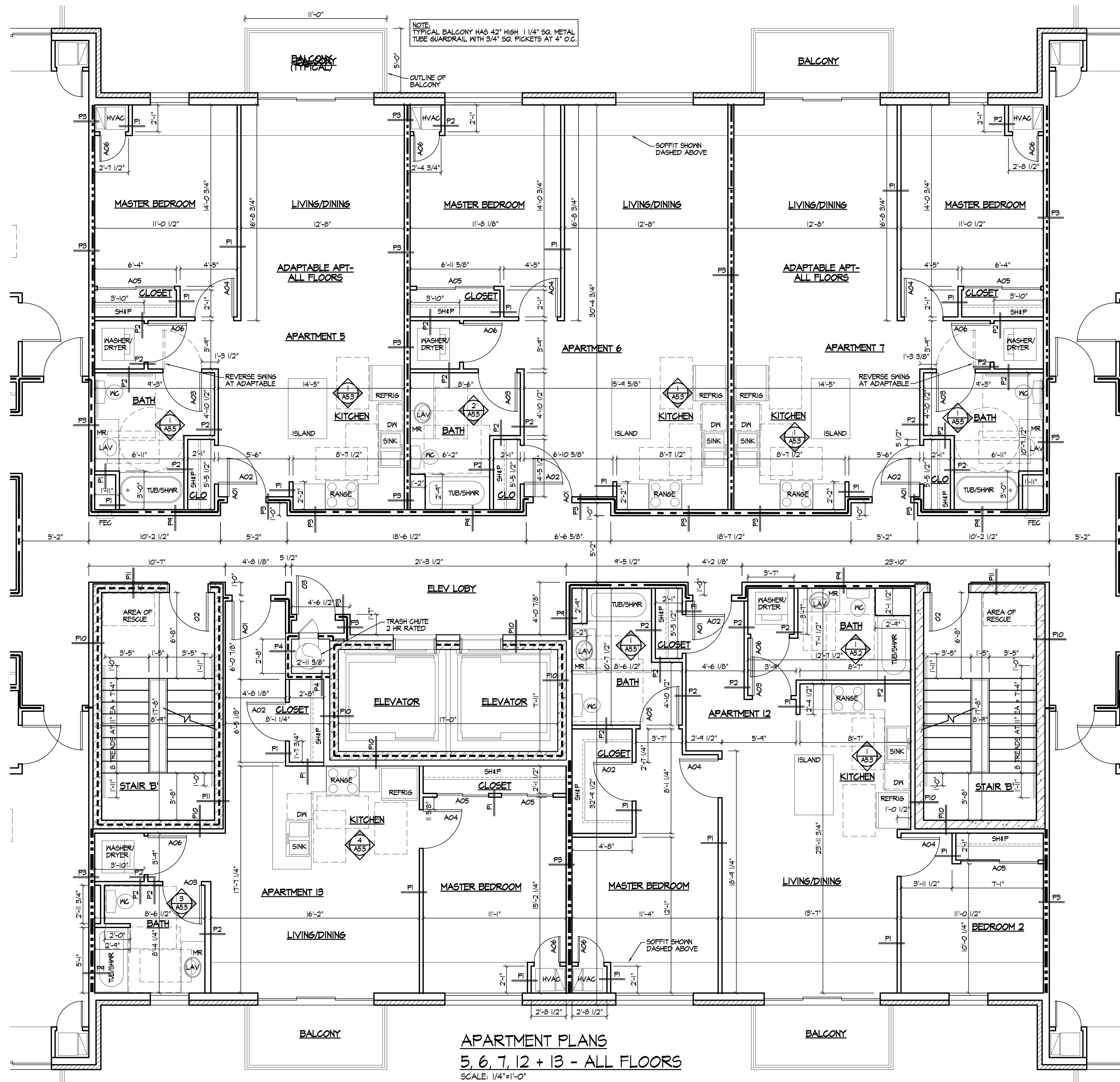
2 TOILET ROOM ELEVATIONS - APT 6
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



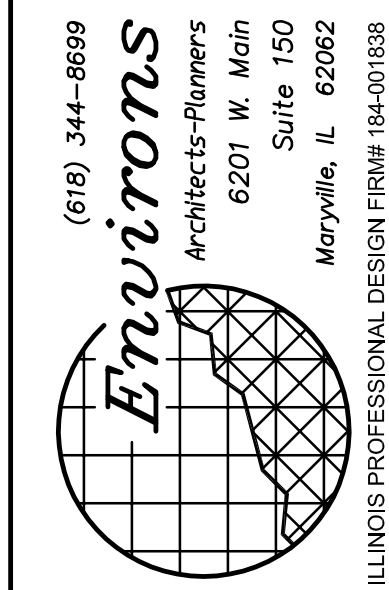
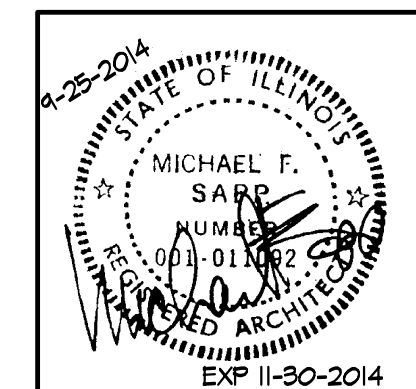
3 TOILET ROOM ELEVATIONS - APT 13
SCALE: 1/4"=1'-0" OPPOSITE HAND - SIMILAR



4 KITCHEN ELEVATIONS - APT 13
SCALE: 1/4"=1'-0"



APARTMENT PLANS
5, 6, 7, 12 + 13 - ALL FLOORS
SCALE: 1/4"=1'-0"



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ENLARGED PLAN - APARTMENTS

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GENERAL NOTES

- IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS MAY BE NECESSARY.
- DESIGN LIVE LOADS

ROOF	20 PSF
PRIVATE ROOMS	40 PSF
BALCONY	100 PSF
CORRIDORS/LANDINGS	100 PSF
STAIRS	100 PSF
MECH ROOMS	100 PSF
PUBLIC ROOMS	100 PSF
STORAGE ROOMS	100 PSF
SNOW LOAD	30 PSF
- DESIGN WIND LOAD SHALL BE BASED ON THE INTERNATIONAL BUILDING CODE 2006 REQUIREMENTS
 - BASIC WIND SPEED = 90 MPH
 - USE FACTOR = 1.0
 - EXPOSURE "C"
 - COMPONENTS & CLADDING PRESSURES: +2184 & -3356 PSF

FOUNDATIONS

- FOUNDATION DESIGN IS BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 3000 PSF AS RECOMMENDED IN THE FOUNDATION INVESTIGATION PREPARED BY SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING SERVICES, INC. (PROJECT NO. 13G0138) APRIL 24, 2013.
- PLACE FOOTINGS/SLAB ON COMPACTED SOIL. FOLLOW RECOMMENDATIONS OF SOILS REPORT.

CAST IN PLACE CONCRETE

- ALL CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:

SLAB ON GRADE, FOOTINGS	3000 PSI
REMAINING CONCRETE	4000 PSI
- ALL CONCRETE SHALL HAVE A SLUMP OF 4" PLUS OR MINUS 1", AND HAVE 6% AIR ENTRAINMENT, AND A MAXIMUM WATER/CEMENT RATIO OF 0.58.
- CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 301 CHAPTER 3, METHOD 1 OR METHOD 2. SUBMIT BACKUP DATA AS REQUIRED BY CHAPTER 5 SECTION 5.3. OF THE LATEST EDITION OF ACI 318.
- ALL REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A-615 GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-105. WUF SHALL BE LAPPED AT LEAST 8" AND CONTAIN AT LEAST ONE CROSS WIRE WITHIN THE 8".
- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI 318 LATEST EDITION, AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS," ACI 301.
- ALL REINFORCING DETAILS SHALL CONFORM TO "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" ACI 315 LATEST EDITION, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
- CONTRACTOR SHALL REVIEW ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS, SLOPES, ETC. REQUIRED BY OTHER TRADES. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
- CONTRACTOR SHALL VERIFY LOCATIONS OF ALL OPENINGS, SLEEVES, ANCHOR BOLTS, INSERTS, ETC., AS REQUIRED BY OTHER TRADES BEFORE CONCRETE IS PLACED.
- WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANY HOOK, IF REQUIRED, IS NOT INCLUDED. HOOKS SHALL BE PROVIDED AT DISCONTINUOUS ENDS OF ALL TOP BARS OF BEAMS AND AT SLABS EDGES.
- CONTRACTOR SHALL PROVIDE SPACERS, CHAIRS, BOLSTERS, ETC. NECESSARY TO SUPPORT REINFORCING STEEL. SUPPORT ITEMS WHICH BEAR ON EXPOSED CONCRETE SURFACES SHALL HAVE ENDS WHICH ARE PLASTIC TIPPED OR STAINLESS STEEL.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

3"	CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.
2"	CONCRETE EXPOSED TO EARTH OR WEATHER, #6 THROUGH #8 BARS.
1 1/2"	CONCRETE EXPOSED TO EARTH OR WEATHER, #5 BAR AND SMALLER.
1 1/2"	CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH FOR THE PRIMARY REINFORCEMENT, TIES, STIRRUPS, AND SPIRALS IN BEAMS AND COLUMNS.
3/4"	CONCRETE NOT EXPOSED TO WEATHER NOR IN CONTACT WITH EARTH FOR SLABS, WALLS, AND JOISTS, #1 BAR AND SMALLER.

- HORIZONTAL WALL AND FOOTING BARS SHALL BE BENT 1'-0" AROUND CORNERS OR CORNER BARS WITH 2'-0" LAP SHALL BE PROVIDED.
- HORIZONTAL KEYWAYS IN CONSTRUCTION JOINTS SHALL BE PROVIDED IN BEAMS, SUPPORTED SLABS, AND WALL FOOTINGS WITH A DEPTH OF 1-1/2" AND HEIGHT EQUAL TO ONE-THIRD OF THE MEMBER'S DEPTH. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS UNLESS OTHERWISE NOTED ON THE DRAWINGS. CONSTRUCTION JOINTS MAY BE USED ONLY AT LOCATIONS SHOWN ON THE DRAWINGS OR AT OTHER LOCATIONS APPROVED BY THE ARCHITECT.

- MINIMUM LAP SPLICES ON ALL REINFORCING BAR SPLICES SHALL BE 48 BAR DIAMETERS TYP. EXCEPT WHERE OTHERWISE NOTED ON THE DRAWINGS. FOR BEAMS AND ELEVATED SLABS, LAP BOTTOM STEEL AT THE SUPPORT AND TOP STEEL OVER THE MIDSPAN, UNLESS OTHERWISE NOTED.
- TESTING LABORATORY SHALL SUBMIT ONE COPY OF ALL CONCRETE TEST REPORTS DIRECTLY TO THE ENGINEER.

MASONRY WALL CONSTRUCTION

- HOLLOW LOAD BEARING UNITS SHALL BE NORMAL WEIGHT, GRADE N, TYPE 2, CONFORMING TO ASTM C90, WITH A MINIMUM NET COMPRESSIVE STRENGTH OF 2000 PSI (f'm = 1500 PSI).
- MORTAR SHALL BE TYPE M OR S, CONFORMING TO ASTM C270.
- COURSE GROUT SHALL CONFORM TO ASTM C476 WITH A MAXIMUM AGGREGATE SIZE OF 3/8" AND A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI.
- VERTICAL REINFORCEMENT SHALL BE AS NOTED ON THE DRAWINGS WITH CELLS FILLED WITH COARSE GROUT.
- VERTICAL REINFORCEMENT SHALL BE HELD IN POSITION AT THE TOP AND BOTTOM AND AT A MAXIMUM SPACING OF 8'-0". REINFORCEMENT SHALL BE PLACED IN THE CENTER OF THE MASONRY CELL TYPICAL UNLESS OTHERWISE NOTED. SEE TYPICAL GROUTING DETAILS FOR ADDITIONAL INFORMATION.
- REINFORCING STEEL SHALL BE LAPPED MINIMUM 30 BAR DIAMETERS WHERE SPLICED AT FOUNDATIONS OR FLOORS, OTHERWISE MINIMUM LAP IS 48 DIAMETERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- HORIZONTAL WALL REINFORCEMENT SHALL BE STANDARD TRUSS TYPE DUR-O-WAL AT 16" O.C., UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- SPLICED WIRE REINFORCEMENT SHALL BE LAPPED AT LEAST 6" AND CONTAIN AT LEAST ONE CROSS WIRE OF EACH PIECE OF REINFORCEMENT WITHIN THE 6". LAP WITH STANDARD 'T' AND 'L' SHAPED PIECES AT INTERSECTIONS AND CORNERS.
- WHEN A FOUNDATION DOVEL DOES NOT LINE UP WITH A VERTICAL CORE, IT SHALL NOT BE SLOPED MORE THAN ONE HORIZONTAL IN SIX VERTICALS. DOVELS SHALL BE GROUTED INTO A CORE IN VERTICAL ALIGNMENT, EVEN THOUGH IT IS IN AN ADJACENT CELL TO THE VERTICAL WALL REINFORCEMENT.
- PROVIDE PRECAST CONCRETE LINTELS OVER ALL OPENINGS UNLESS NOTED OTHERWISE ON DRAWINGS. LINTELS SHALL BE OF SUFFICIENT SIZE AND REINFORCEMENT FOR THE GIVEN SPANS AND LOADING CONDITIONS. SUBMIT SHOP DRAWINGS WITH RATED LOAD CAPACITIES TO THE ARCHITECT FOR REVIEW.
- PROVIDE A KNOCK OUT BLOCK OR U-BLOCK REINFORCED WITH 1 #5 CONTINUOUS AT THE SILL OF ALL WINDOW OPENINGS. EXTEND 16" BEYOND EACH SIDE OF THE OPENING TYPICALLY.

STRUCTURAL STEEL

- STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION.
- WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D11.
- BOLTS AND BOLTED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS" AS APPROVED BY THE COUNCIL ON RIVETED AND BOLTED JOINTS. USE BEARING TYPE BOLTS WITH THREADS ALLOWED ACROSS THE SHEAR PLANE. ANCHOR BOLTS SHALL CONFORM TO ASTM A-36.
- ALL BEAM CONNECTIONS SHALL BE STANDARD DOUBLE ANGLE TYPE UNLESS DETAILED OTHERWISE. FOR DESIGN OF STANDARD CONNECTIONS THE LARGER OF EITHER SHEAR SHOWN ON DRAWING OR 55% OF THE TOTAL LOAD CAPACITY, DERIVED FROM THE UNIFORM LOAD CONSTANT TABLES, PART 2, EIGHTH EDITION OF THE AISC CODE WHICHEVER IS GREATER. IN NO CASE SHALL THE ANGLE SIZE AND MINIMUM NUMBER OF ROWS OF BOLTS FOR THE GIVEN BEAM SIZE BE LESS THAN THAT SHOWN IN TABLE I, PART 4 OF THE SEVENTH EDITION OF THE AISC CODE.
- STRUCTURAL STEEL SHAPES, PLATES, ETC. SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36, UNLESS NOTED OTHERWISE. STEEL TUBES SHALL BE 46 KSI STEEL CONFORMING TO ASTM A-500.
- IN GENERAL, IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS THAT ALL SHOP CONNECTIONS BE WELDED OR BOLTED AND ALL FIELD CONNECTIONS BE BOLTED EXCEPT WHERE NOTED OTHERWISE.
- VERIFY THE EXACT LOCATION AND SIZE OF ALL ROOF AND FLOOR OPENINGS FOR MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR PRIOR TO FABRICATION OF MATERIALS. SEE TYPICAL DETAIL FOR FRAMING AROUND OPENINGS.
- ALL STEEL BEAMS SHALL BE FABRICATED WITH THE NATURAL CAMBER (WITHIN THE MILL TOLERANCE) LOCATED ABOVE THE HORIZONTAL CENTERLINE BETWEEN THE END CONNECTIONS.
- STEEL SHAPES, PLATES, ETC. WHICH ARE EXPOSED TO WEATHER SHALL BE GALVANIZED.
- PROVIDE ONE COAT OF STANDARD SHOP PAINT ON ALL UNGALVANIZED PIECES EXCEPT AT AREAS TO BE FIELD WELDED.

- TOUCH UP FIELD WELDS AND ANY DAMAGED AREAS OF PAINT IN FIELD AFTER WELDING. (USE GALVANIZING PAINT FOR TOUCH UP OF GALVANIZED STEEL).
- HEADED STUDS SHALL BE NELSON TYPE OR EQUAL. WELD HEADED STUDS TO EMBEDDED PLATES TO DEVELOP THE FULL TENSION CAPACITY OF THE STUD.
- ALL WELDS SHALL BE VISUALLY INSPECTED BY AN APPROVED LICENSED TESTING COMPANY. SEE SPECIFICATIONS FOR ADDITIONAL TESTING REQUIREMENTS.
- ALL STEEL TO STEEL CONNECTIONS NOT SHOWN BOLTED SHALL BE WELDED TO DEVELOP FULL SHEAR CAPACITY OF CONNECTING MEMBERS AS PER AISC SPECIFICATIONS. MINIMUM SIZE OF FILLET WELD (UNLESS NOTED OTHERWISE ON DRAWINGS):

MATERIAL THICKNESS OF THICKER PART JOINED	MINIMUM SIZE OF FILLET WELD
TO 1/4" INCLUSIVE	1/8" ALL AROUND
1/4" TO 1/2"	3/16" ALL AROUND
OVER 1/2" TO 3/4"	1/4" ALL AROUND
OVER 3/4" TO 1 1/2"	5/16" ALL AROUND

WOOD CONSTRUCTION

- WOOD CONSTRUCTION SHALL CONFORM TO THE NFPA "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", LATEST EDITION.
- ALL WALL STUDS AND MISC. WOOD FRAMING SHALL BE NO.2 SOUTHERN YELLOW PINE. STUDS FOR LOAD BEARING WALLS SHALL BE AS FOLLOWS:

FIRST FLOOR	2-2x6 @ 16" O.C. // 10d NAIL @ 10" O.C. (UNO)
SECOND FLOOR	2-2x6 @ 16" O.C. // 10d NAIL @ 10" O.C. (UNO)
THIRD FLOOR	2x6 @ 16" O.C. (UNO)
FORTH FLOOR	2x6 @ 16" O.C. (UNO)
FIFTH FLOOR	2x6 @ 16" O.C. (UNO)

ALL THE EXTERIOR STUD WALL MEMBERS SHALL BE FIRE RETARDANT TREATED, ALL THE INTERIOR STUD SHALL BE REGULAR WOOD STUD.
 ALL NON-LOAD BEARING PARTITIONS SHALL CONSIST OF 2x4 OR 2x6 STUDS SPACED AT 16" O.C. DEPENDING ON LOCATION. STUDS DO NOT NEED TO BE DOUBLED AT THE FIRST FLOOR FOR NON-LOAD BEARING PARTITIONS ONLY.

- PLACE A SINGLE PLATE AT THE BOTTOM AND A TRIPLE PLATE AT THE TOP OF ALL STUD WALLS AT FIRST FLOOR. 2x SOLE PLATES AT THE EDGES OF SLABS SHALL BE ATTACHED TO THE SLAB WITH 1/2" DIA. EPOXY ANCHORS, WITH 4" EMBEDMENT, WITH 1 1/2" DIA WASHER, AT 32" ON CENTER, OR 1/2" DIA ANCHORS, WITH 1" EMBEDMENT, WITH 1 1/2" DIA WASHER, AT 32" ON CENTER, AT INTERIOR STUD WALLS PROVIDE EITHER RED HEAD 1516SDC (WITH 2 1/2" LENGTH) POWDER DRIVEN FASTENERS WITH 1 1/2" DIA WASHER AT 8" ON CENTER, OR 1/2" DIA EXPANSION ANCHORS, WITH 4" EMBEDMENT, WITH 1 1/2" DIA WASHER, AT 32" ON CENTER, OR 1/2" DIAMETER ANCHORS WITH 6" EMBEDMENT WITH 1 1/2" WASHER, AT 32" ON CENTER, ALL OTHER SUBSTITUTIONS MUST BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION.
- ALL WOOD IN CONTACT WITH CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESSURE TREATED. PROVIDE GALVANIZED NAILS AND FASTENERS IN PRESSURE TREATED LUMBER.
- STUDS SHALL BE TRIPLED AT ALL ANGLES, CORNERS AND AROUND ALL OPENINGS.
- WHERE WOOD BEAMS/HEADERS ABOUT WOOD COLUMNS, PROVIDE SIMPSON "H4UC" CONNECTORS WITH ALL NAILS SPECIFIED BY THE MANUFACTURER.
- WALL SHEATHING SHALL BE: (SEE SHEAR WALL SCHEDULE BELOW FOR REQUIREMENTS AT SHEAR WALLS.)

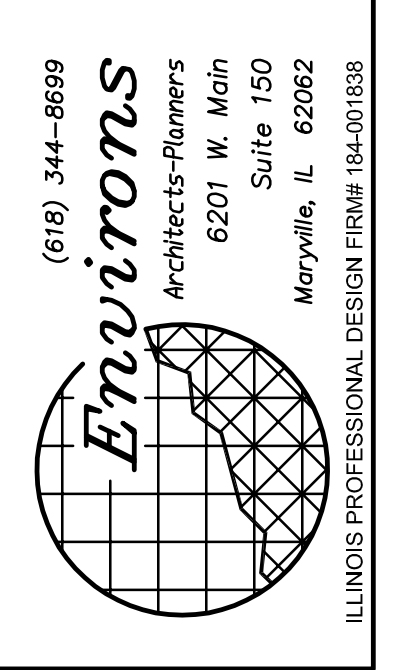
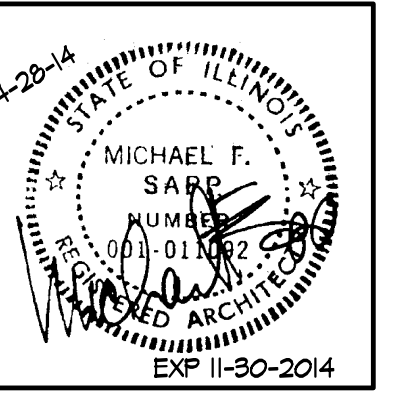
AT INTERIOR BEARING WALLS PROVIDE 1/2" OR 5/8" GYPSUM WALLBOARD (SEE ARCH DRAWINGS FOR LOCATIONS) EACH SIDE OF STUDS, NAILED WITH 6d COOLER NAILS AT 1' O.C. AT ALL SUPPORTS PROVIDE SOLID 2x BLOCKING AT ALL SHEET EDGES. BLOCKING IS NOT REQUIRED AT NON-LOAD BEARING PARTITIONS.

AT EXTERIOR WALLS SHEATH THE INTERIOR FACE OF WALLS WITH GYPSUM WALLBOARD AS NOTED ABOVE FOR INTERIOR WALLS. SHEATH THE EXTERIOR FACE OF WALLS WITH 1/2" C-DX PLYWOOD WITH FIRE RETARDANT TREATED, NAILED WITH 8d NAILS AT 6" O.C. AT ALL EDGE AND INTERMEDIATE SUPPORTS. PROVIDE SOLID DOUBLE 2x BLOCKING AT ALL SHEET EDGES. LAY UP ALL EXTERIOR WALL SHEATHING PER SHEARWALL SCHEDULE NOTE 5.

- FLOOR SHEATHING IS 3/4" TONGUE AND GROOVE C-C PLYWOOD, OR 3/4" OSB, GLUED AND NAILED WITH 10d NAILS AT 6" O.C. AT SUPPORTED EDGES, AND 10d NAILS AT 12" O.C. AT INTERMEDIATE SUPPORTS. ALL SHEATHING AT BALCONY SHALL BE PRESSURE TREATED. PROVIDE GALVANIZED NAILS AND FASTENERS IN PRESSURE TREATED LUMBER.
- ROOF SHEATHING SHALL BE 5/8" CDX PLYWOOD, NAILED TO TRUSSES BELOW SEE ROOF SHEATHING NAILING SCHEDULE FOR NAIL PATTERN. PROVIDE ONE PLYWOOD CLIP PER SPAN BETWEEN SHEET EDGES FOR 24" SPAN. PROVIDE TWO PLYWOOD CLIP PER SPAN BETWEEN SHEET EDGES FOR 48" SPAN. PROVIDE SOLID 2x BLOCKING BETWEEN SUPPORTS AT ALL HIPS, RIDGES, VALLEYS, AND CHANGES IN ROOF SLOPE.
- ALL LUMBER SHALL BE STAMPED WITH THE GRADE MARK OF AN APPROVED GRADING AGENCY.
- NAILING SCHEDULE:

CONNECTION	COMMON NAIL	NUMBER OR SPACING
SOLE PLATE TO TRUSS OR BLOCKING	16d	8" O.C.
STUD TO SOLE PLATE, TOE NAIL	8d	4
DOUBLE STUDS, FACE NAIL	16d	12" O.C.
DOUBLE TOP PLATES, FACE NAIL	16d	12" O.C.
TOP PLATES LAPS AND INTERSECTIONS	16d	3
TRUSSES, LAPS OVER WALLS, FACE NAIL	16d	4
BUILT-UP CORNER STUDS	16d	12" O.C.
STUDS TO SOLE PLATE, END NAIL	16d	2
- WHERE NAILING INTO PRESSURE TREATED WOOD, NAILS MUST BE HOT DIPPED GALVANIZED TO AVOID CORROSION.

WATERPROOFING FOR THIS BUILDING IS THE SOLE RESPONSIBILITY OF THE BUILDER/CONTRACTOR/ARCHITECT, HENCE NO DETAILS OF FLASHING, FLOOR SLOPE AND STEP, NOR ANY OTHER WATERPROOFING MEASURES HAVE BEEN INCLUDED IN OUR DRAWINGS. IF SLOPE AND FLOOR STEPS ARE SHOWN ON OUR DRAWINGS, THEY SHALL BE USED ONLY AS A REFERENCE. FLOOR SLOPE AND STEPS SHALL FOLLOW ARCHITECTURAL DRAWINGS.

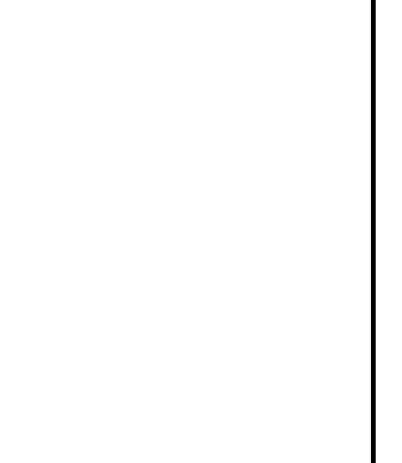


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A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

STRUCTURAL NOTES

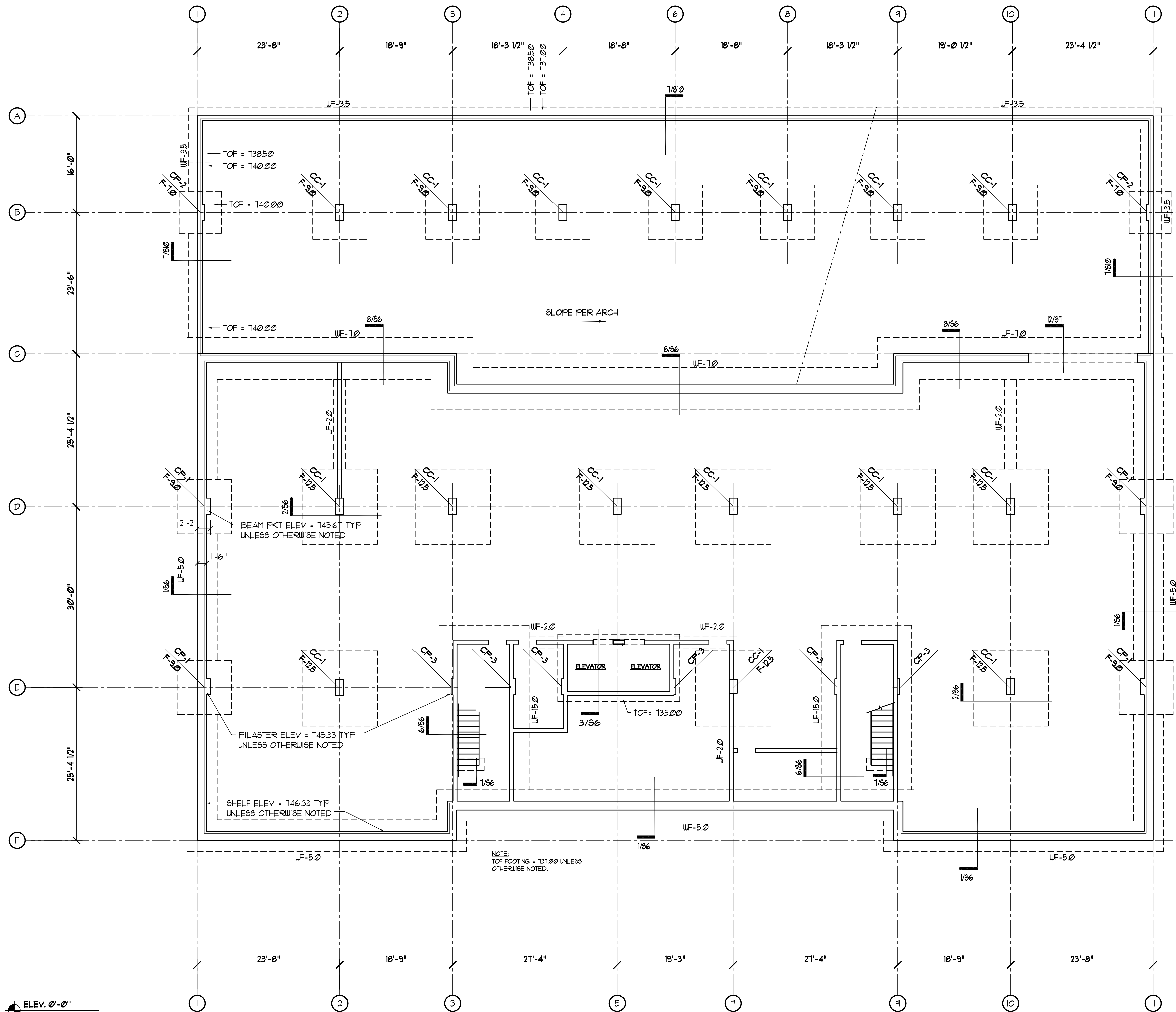
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PLAN NOTES:

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- 3 PROVIDE CORNER BARS WHERE ALL FOOTINGS AND / OR TURN DOWN SLAB EDGES CHANGE DIRECTION AND AT FOOTINGS AND / OR TURN DOWN SLAB EDGE INTERSECTIONS. SEE DETAIL SHEET FOR FURTHER INFORMATION.
- 4  INDICATES 10" CONCRETE BEARING WALLS REINFORCED WITH #5 @ 12" O.C. EA FACE VERTICALLY AND #4 @ 12" O.C. HORIZONTALLY EA FACE OF WALL, PLACE (6) ADDITIONAL #5 VERTICALLY AT EACH WALL END AND EA SIDE OF OPENING.



 INDICATES 8" CAST-IN-PLACE WALL REINFORCED WITH #4 @ 12" O.C. VERTICALLY AND #4 @ 12" O.C. HORIZONTALLY AT CENTER OF WALL, PLACE (3) ADDITIONAL #5 VERTICALLY AT EACH WALL END AND EA SIDE OF OPENING.
- 5 SEE ARCH'L. DRAWINGS FOR LOCATION / LIMITS AND CONSTRUCTION INFORMATION OF INTERIOR NON-BEARING PARTITION WALLS NOT SHOWN ON PLAN. (SEE 50 FOR ADDITIONAL WALL FRAMING INFORMATION)
- 6 STEEL STAIR. SEE ARCH'L. DRAWINGS FOR STAIR CONSTRUCTION INFORMATION AND GEOMETRY. FOR ATTACHMENT / SUPPORT THERE OF, COORDINATE WITH STEEL STAIR MANUFACTURER / SUPPLIER'S APPROVED SHOP DRAWINGS.
- 7 FIRST FLOOR CONSTRUCTION: 4" (TOTAL) CONCRETE SLAB REINFORCED WITH 6x6-W2.1xW2.1 W.W.F. OVER 6 MIL VAPOR BARRIER ON COMPACTED SUBGRADE. COORDINATE ANY AND ALL SLAB SLOPES, DEPRESSIONS AND LIMITS THERE OF WITH ARCH'L. DRAWINGS (FOR ACTUAL TOP OF SLAB ELEVATIONS, SEE ARCH'L. AND / OR CIVIL DRAWINGS)
- 8 THE MAXIMUM SPACING OF SLAB CONTROL JOINTS FOR ENCLOSED / INTERIOR AREAS SHALL NOT EXCEED 20' +/- O.C (EACH WAY) AND FOR OUTSIDE / EXTERIOR AREAS SHALL NOT EXCEED 10' +/- O.C. C.G. SHALL SUBMIT PROPOSED CONTROL JOINTS LOCATION.
- 9 COORDINATE SLAB RECESSES, SLOPES AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS
- 10 CC-1: PRE-CAST CONCRETE COLUMN - DESIGN BY OTHERS
CP-1: 26x32 CONC PILASTER W/ (10) #1 VERT. AND #3 TIES AT 10" O.C.
CP-2: 14x32 CONC PILASTER W/ (8) #1 VERT. AND #3 TIES AT 10" O.C.
CP-3: 12x32 CONC PILASTER W/ (8) #1 VERT. AND #3 TIES AT 10" O.C.
CP-4: 18x32 CONC PILASTER W/ (8) #1 VERT. AND #3 TIES AT 10" O.C.
- 11 COORDINATE STEP FOOTING LOCATION W/ ARCHITECTURAL DRAWINGS STEP FOOTING DETAIL SEE 9/66.

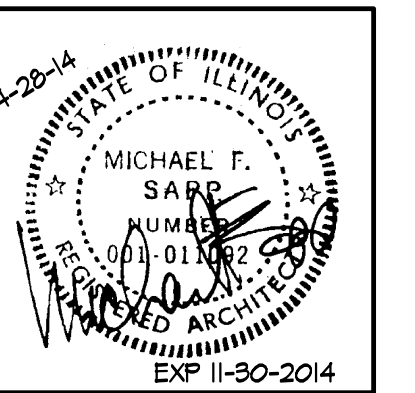
FOOTING SCHEDULE		
MARK	SIZE	REINFORCEMENT BOTTOM
	WIDTH x LENGTH x DEPTH	
UF-2.0	2'-0" x CONT x 1'-0"	(3) #5 CONT. LONG WAY #5 @ 48" O.C. SHORT WAY
UF-3.5	3'-6" x CONT x 1'-0"	(4) #5 CONT. LONG WAY #5 @ 16" O.C. SHORT WAY
UF-5.0	5'-0" x CONT x 1'-0"	(5) #5 CONT. LONG WAY #5 @ 8" O.C. SHORT WAY
UF-1.0	1'-0" x CONT x 1'-2"	(7) #5 CONT. LONG WAY #5 @ 6" O.C. SHORT WAY
UF-15.0	15'-0" x CONT x 1'-2"	(15) #5 CONT. LONG WAY #5 @ 6" O.C. SHORT WAY
F-1.0	1'-0" x 1'-0" x 1'-8"	(8) #1 EACH WAY
F-9.0	9'-0" x 9'-0" x 1'-8"	(10) #1 EACH WAY
F-12.5	12'-6" x 12'-6" x 2'-4"	(14) #1 EACH WAY



FOUNDATION PLAN

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

-  ELEV. 0'-0" T/CONC. SLAB
-  PER PLAN AND SECTION T/FOOTINGS



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ILLINOIS PROFESSIONAL DESIGN FIRM 94-001838

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SHRINAY

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A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

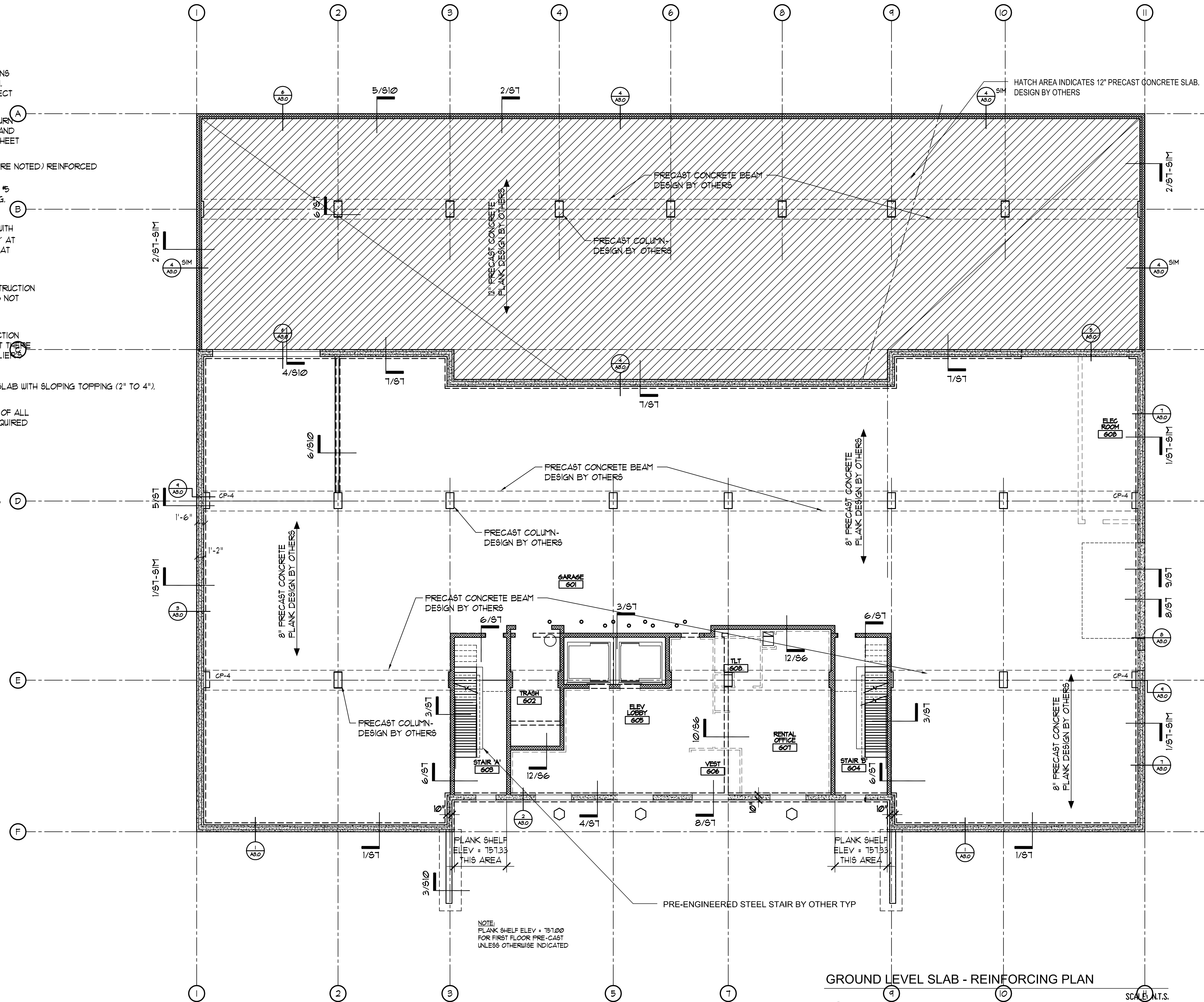
LOWER LEVEL FOUNDATION PLAN

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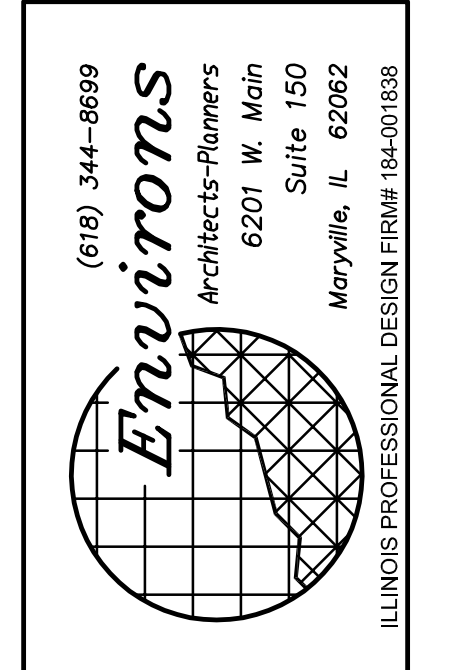
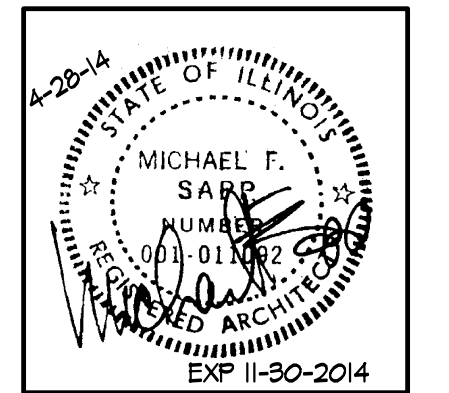
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- 3 PROVIDE CORNER BARS WHERE ALL FOOTINGS AND / OR TURN DOWN SLAB EDGES CHANGE DIRECTION AND AT FOOTINGS AND / OR TURN DOWN SLAB EDGE INTERSECTIONS. SEE DETAIL SHEET FOR FURTHER INFORMATION.
- 4  INDICATES 1'-2" CONCRETE BEARING WALLS (10' WHERE NOTED) REINFORCED WITH #5 @ 12" O.C. EA FACE VERTICALLY AND #4 @ 12" O.C. HORIZONTALLY EA FACE OF WALL, PLACE (6) ADDITIONAL #5 VERTICALLY AT EACH WALL END AND EA SIDE OF OPENING.
- 5  INDICATES 8" CAST-IN-PLACE WALL REINFORCED WITH #4 @ 12" O.C. VERTICALLY AND #4 @ 12" O.C. HORIZONTALLY AT CENTER OF WALL, PLACE (3) ADDITIONAL #5 VERTICALLY AT EACH WALL END AND EA SIDE OF OPENING.
- 6 SEE ARCH'L. DRAWINGS FOR LOCATION / LIMITS AND CONSTRUCTION INFORMATION OF INTERIOR NON-BEARING PARTITION WALLS NOT SHOWN ON PLAN. (SEE S0 FOR ADDITIONAL WALL FRAMING INFORMATION)
- 7 STEEL STAIR: SEE ARCH'L. DRAWINGS FOR STAIR CONSTRUCTION INFORMATION AND GEOMETRY. FOR ATTACHMENT / SUPPORT THERE OF, COORDINATE WITH STEEL STAIR MANUFACTURER / SUPPLIER'S APPROVED SHOP DRAWINGS.
- 8 GROUND FLOOR CONSTRUCTION: 8" PRE-CAST CONCRETE SLAB WITH SLOPING TOPPING (2" TO 4").
- 9 CONTRACTOR SHALL VERIFY LOCATIONS AND DIMENSIONS OF ALL OPENINGS, SLEEVES, ANCHOR BOLTS, INSERTS, ETC., AS REQUIRED BY OTHER TRADES BEFORE CONCRETE IS PLACED.
- 10 PROVIDE L 4x4x1/4 STEEL FOR BRICK VENEER OPENING WITH 4" BEARING MINIMUM, AND ATTACHED L4x4x1/4 TO CONCRETE WALL WITH 1/2 DIA x 5" EMBED EPOXY BLOT @ 32" O.C. UNO.
- 11 COORDINATE SLAB RECESSES, SLOPES AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS



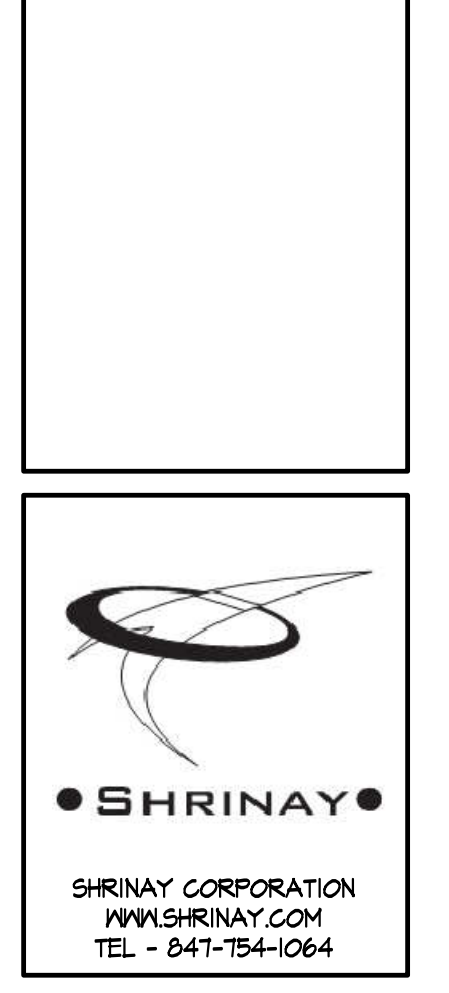
GROUND LEVEL SLAB - REINFORCING PLAN
 TOP BAR ————
 BTM BAR - - - - -
 SCALE: N.T.S.
 GROUND LEVEL PARKING PLAN



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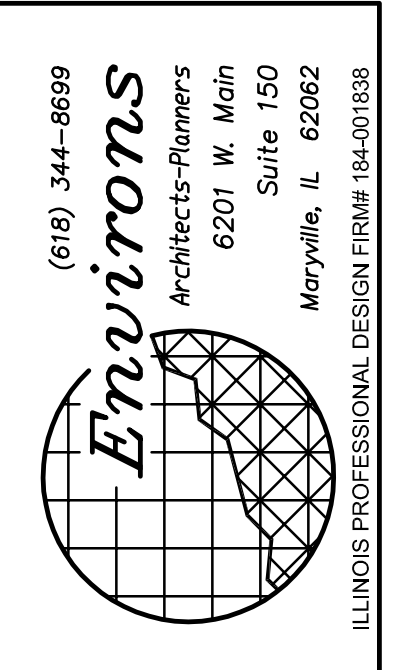
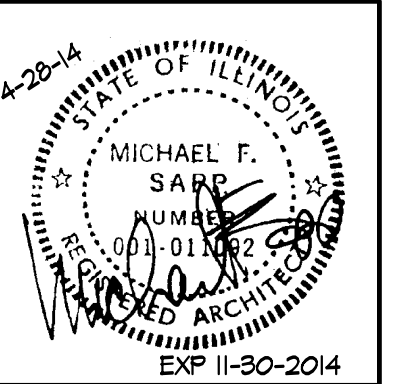
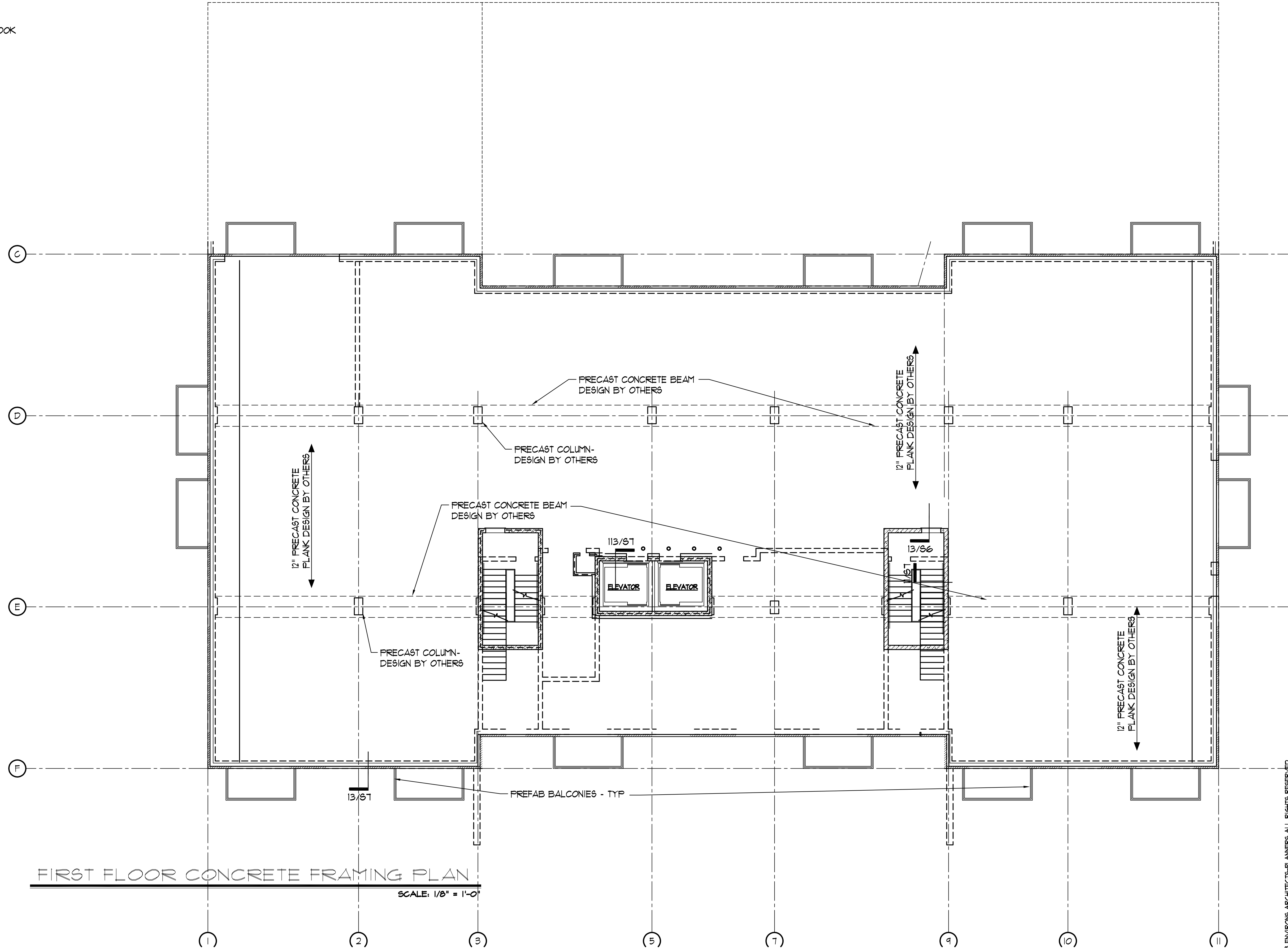
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GROUND FLOOR FRAMING PLAN

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- 3 ~~INDICATES~~ INDICATES 8" MASONRY BEARING WALLS REINFORCED WITH (1)-#5 BARS (VERT.) AND MATCHING DOUCEL AT FOOTING, IN SOLID CONC. FILLED CELLS AT ALL CORNERS, INTERSECTIONS, ADJACENT MASONRY OPENINGS, ENDS OF WALLS AND BETWEEN AT 16" OC (MAX.) SEE PLAN FOR ADDITIONAL LOCATIONS. EXTEND VERTICAL REINFORCING BARS THRU ALL LEVELS TO UPPER MOST TIE BEAM & TERMINATE BARS W/ HOOK. ADDITIONAL GROUT REQUIREMENTS:
- 4 SEE ARCH'L. DRAWINGS FOR LOCATION / LIMITS AND CONSTRUCTION INFORMATION OF INTERIOR NON-BEARING PARTITION WALLS NOT SHOWN ON PLAN. (SEE 50 FOR ADDITIONAL WALL FRAMING INFORMATION)
- 5 PRECAST CONCRETE SLAB THICKNESS IS 12" WITH 4" TOPPING SLAB.
- 6 SEE DETAILS FOR REINFORCING AT SLAB OPENINGS.
- 7 WALL OPENINGS FOR MEP CHASES SHALL BE NO MORE THAN 3'-0" WIDE.
- 8 COORDINATE SLAB RECESSES, SLOPES AND ELEVATIONS W/ ARCHITECTURAL DRAWINGS



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



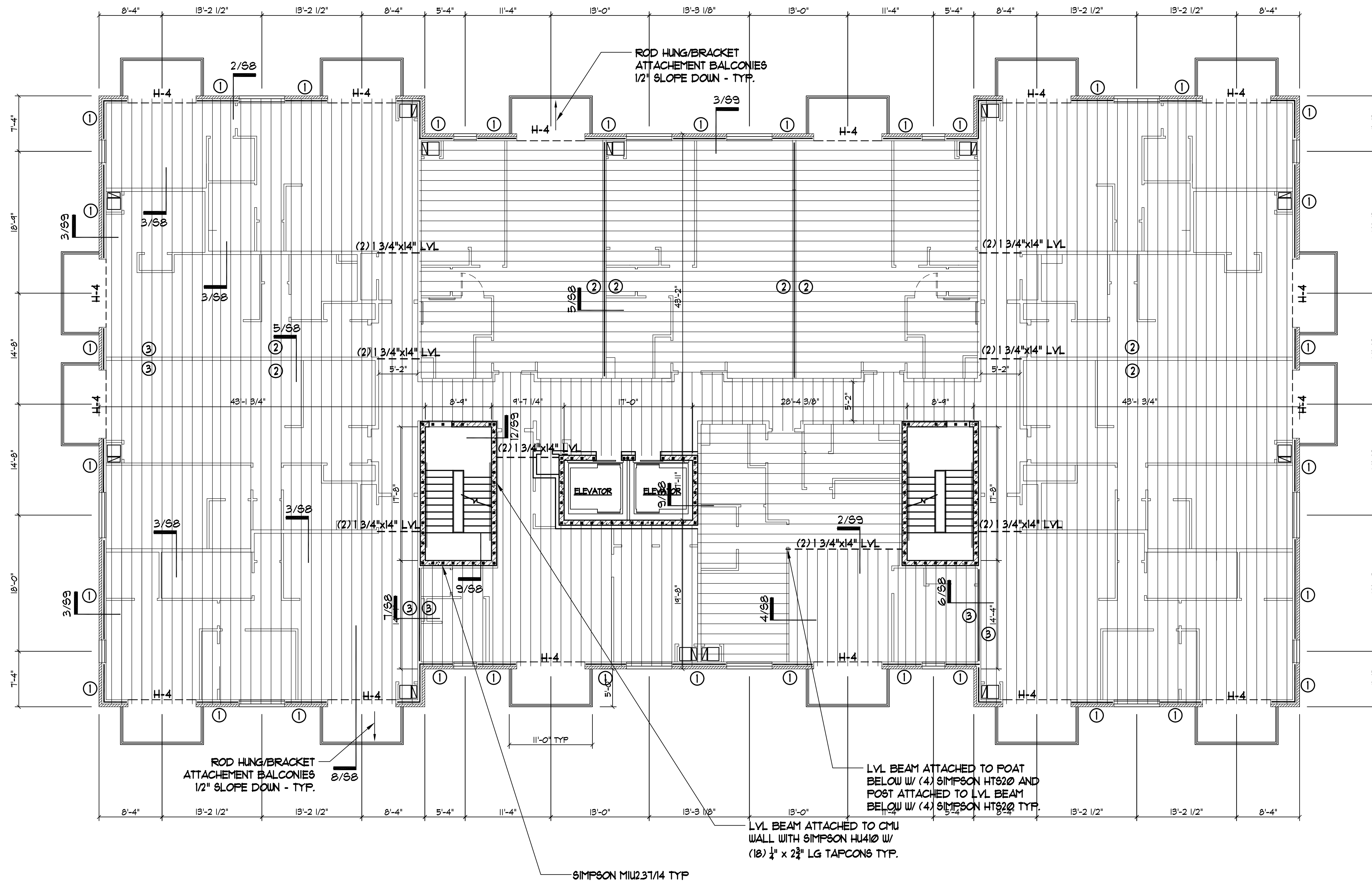
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FIRST FLOOR CONCRETE FRAMING PLAN

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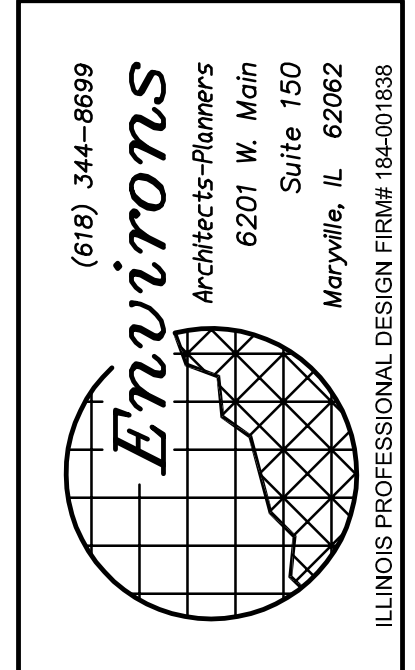
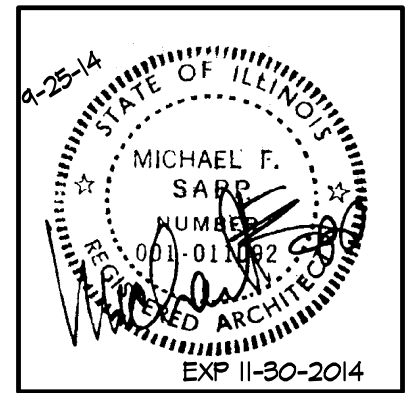
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- 4 SEE ARCH'L. DRAWINGS FOR LOCATION / LIMITS AND CONSTRUCTION INFORMATION OF INTERIOR NON-BEARING PARTITION WALLS NOT SHOWN ON PLAN. (SEE S0 FOR ADDITIONAL WALL FRAMING INFORMATION)
- 5 PROVIDE WOOD HEADER OVER ALL OPENINGS IN WOOD WALLS (COORD. EXACT SIZE, LOCATION AND ELEVATIONS WITH ARCH'L. DRAWINGS) IF NO HEADER TYPE HAS BEEN CALL-OUT ON PLAN, PROVIDE WOOD HEADER BASED ON HEADER SCHEDULE SHOWN ON S10 SHEET.
- 6 STEEL STAIR: SEE ARCH'L. DRAWINGS FOR STAIR CONSTRUCTION INFORMATION AND GEOMETRY. FOR ATTACHMENT / SUPPORT THERE OF, COORDINATE WITH STEEL STAIR MANUFACTURER / SUPPLIER'S APPROVED SHOP DRAWINGS.
- 7 PROVIDE MASONRY LINTEL OVER ALL OPENINGS IN MASONRY WALL (COORD. EXACT SIZE, LOCATION AND ELEVATIONS WITH ARCH'L. DRAWINGS) IF NO LINTEL TYPE HAS BEEN CALL-OUT ON PLAN, PROVIDE MASONRY LINTEL TYPE: #F16-1B/IT, SEE "LINTEL SCHEDULE" (ON S9 SHEET)
- 8 PROVIDE DOUBLE KNOCK OUT BOND BEAM WITH (1) #5 CONT. GROUT SOLID AT FLOOR AND ROOF LEVEL, UNO.
- 9 PROVIDE 14" DEEP TJI 560 JOISTS AT 16" O.C.
- 10 PROVIDE DOUBLE FIRE RETARDANT 2x8 AT 16" O.C. AT BALCONY.
- 11 COORDINATE LOCATION OF FLOOR TRUSSES W/ MECH AND LOCATION OF EXHAUST FAN.
- 12 THE REQUIRED NUMBER OF FASTENERS FOR CONNECTORS SUCH AS NAILS TO WOOD MEMBERS, SEE SIMPSON CATALOG.
- 13  INDICATES WOOD STUD SHEAR WALL TYPE, AND SHADING INDICATES EXTENT OF SHEAR WALL. SEE THE SHEAR WALL SCHEDULE ON SHEET S10 FOR SHEAR WALL INFORMATION.
- 14 - - - INDICATES (2) 1 3/4"x14" LVL BEAM.
- 15 ALL THE EXTERIOR WALL MEMBERS SHALL BE FIRE RETARDANT TREATED, ALL THE INTERIOR WALL MEMBERS SHALL BE REGULAR WOOD.
- 16 ALL THE EXTERIOR TJI BLOCKING SHALL BE FIRE RETARDANT TREATED
- 17 PROVIDE L 4x4x1/4 STEEL FOR BRICK VENEER OPENING WITH 4" BEARING MINIMUM, AND ATTACHED L 4x4x1/4 TO HEADER AND WOOD STUDS BEHIND WITH 1/2 DIA x 5" LG LAG SCREWS @ 32" O.C. UNO.
- 18 NAILED ALL MULTI-MEMBER STUDS TOGETHER WITH 16d NAILS AT 12" O.C. STAGGERED.
- 19 VERIFY ALL STEPS, SLOPES AND SLAB DEPRESSIONS WITH ARCH'L. DRAWINGS PRIOR TO START OF CONSTRUCTION. IF DISCREPANCIES SHOULD OCCUR - CONTACT THE ARCHITECT IN WRITING FOR CLARIFICATION BEFORE PROCEEDING.



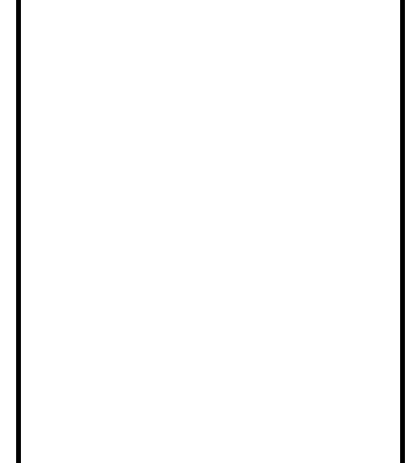
SECOND TO FIFTH FLOOR FRAMING PLAN
SCALE: 1/8" = 1'-0"



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

A NEW APARTMENT BUILDING 'C':
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McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

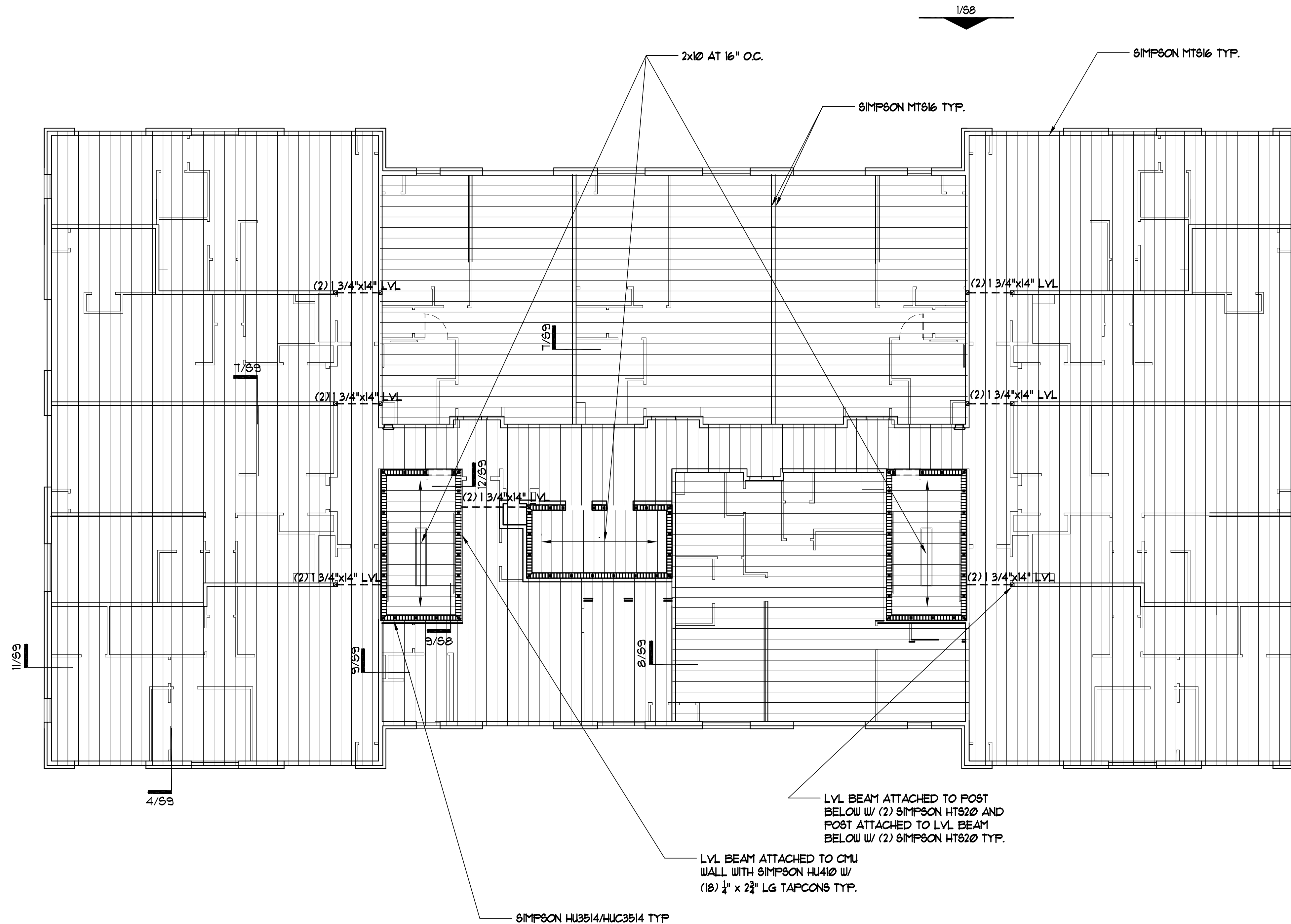
TYPICAL UPPER FLOOR FRAMING PLAN

SHEET
S4
OF 13

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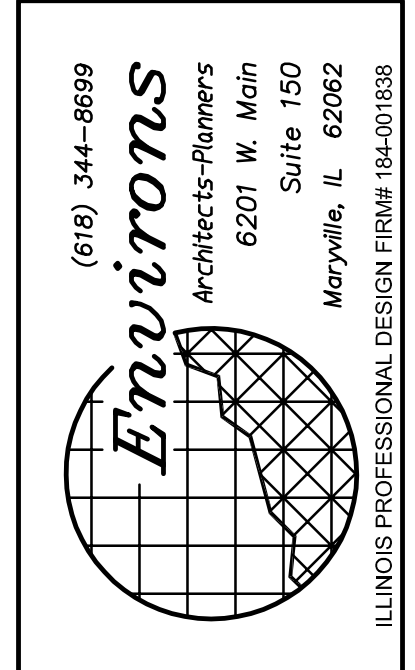
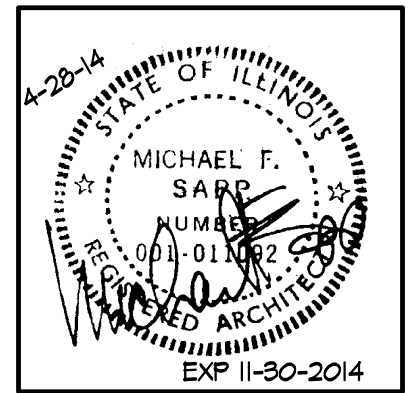
PLAN NOTES:

- 1 SEE SHEET 90 FOR GENERAL NOTES.
- 2 DO NOT SCALE DRAWINGS. SEE ARCH'L. DRAWINGS FOR ADDITIONAL DIMENSIONS NOT SHOWN, VERIFY ALL DIMENSIONS WITH ARCH'L. DRAWINGS PRIOR TO START OF CONSTRUCTION. IF DISCREPANCIES SHOULD OCCUR - CONTACT THE ARCHITECT IN WRITING FOR CLARIFICATION BEFORE PROCEEDING.
- 3  INDICATES 8" MASONRY BEARING WALLS REINFORCED WITH (1)-#5 BARS (VERT.) AND MATCHING DOUCEL AT FOOTING, IN SOLID CONC. FILLED CELLS AT ALL CORNERS, INTERSECTIONS, ADJACENT MASONRY OPENINGS ENDS OF WALLS AND BETWEEN AT 32" OC (MAX.) SEE PLAN FOR ADDITIONAL LOCATIONS. EXTEND VERTICAL REINFORCING BARS THRU ALL LEVELS TO UPPER MOST TIE BEAM & TERMINATE BARS W/ HOOK ADDITIONAL GROUT REQUIREMENTS.
- 4 SEE ARCH'L. DRAWINGS FOR LOCATION / LIMITS AND CONSTRUCTION INFORMATION OF INTERIOR NON-BEARING PARTITION WALLS NOT SHOWN ON PLAN. (SEE 90 FOR ADDITIONAL WALL FRAMING INFORMATION.)
- 5 PROVIDE WOOD HEADER OVER ALL OPENINGS IN WOOD WALLS (COORD. EXACT SIZE, LOCATION AND ELEVATIONS WITH ARCH'L. DRAWINGS) IF NO HEADER TYPE HAS BEEN CALL-OUT ON PLAN, PROVIDE WOOD HEADER BASED ON HEADER SCHEDULE SHOWN ON 90 SHEET.
- 6 STEEL STAIR: SEE ARCH'L. DRAWINGS FOR STAIR CONSTRUCTION INFORMATION AND GEOMETRY. FOR ATTACHMENT / SUPPORT THERE OF, COORDINATE WITH STEEL STAIR MANUFACTURER / SUPPLIER'S APPROVED SHOP DRAWINGS.
- 7 PROVIDE MASONRY LINTEL OVER ALL OPENINGS IN MASONRY WALL (COORD. EXACT SIZE, LOCATION AND ELEVATIONS WITH ARCH'L. DRAWINGS) IF NO LINTEL TYPE HAS BEEN CALL-OUT ON PLAN, PROVIDE MASONRY LINTEL TYPE: #F16-1B/IT, SEE "LINTEL SCHEDULE" (ON 99 SHEET)
- 8 PROVIDE DOUBLE KNOCK OUT BOND BEAM WITH (1) #5 CONT. GROUT SOLID AT FLOOR AND ROOF LEVEL, UNO.
- 9 PROVIDE 14" DEEP TJI 560 JOISTS AT 16" O.C.
- 10 ELEVATOR HOIST BEAM BY OTHER
- 11 COORDINATE LOCATION OF FLOOR TRUSSES W/ MECH AND LOCATION OF EXHAUST FAN.
- 12 THE REQUIRED NUMBER OF FASTENERS FOR CONNECTORS SUCH AS NAILS TO WOOD MEMBERS, SEE SIMPSON CATALOG.
- 13  INDICATES WOOD STUD SHEAR WALL TYPE, AND SHADING INDICATES EXTENT OF SHEAR WALL. SEE THE SHEAR WALL SCHEDULE ON SHEET 90 FOR SHEAR WALL INFORMATION.
- 14 - - - INDICATES (2) 1 3/4"x14" LVL BEAM.
- 15 ALL THE EXTERIOR WALL MEMBERS SHALL BE FIRE RETARDANT TREATED, ALL THE INTERIOR WALL MEMBERS SHALL BE REGULAR WOOD.
- 16 EXTERIOR WALL TJI BLOCKING SHALL BE FIRE RETARDANT TREATED
- 17 PROVIDE L 4x4x1/4 STEEL FOR BRICK VENEER OPENING WITH 4" BEARING MINIMUM, AND ATTACHED L4x4x1/4 TO HEADER AND WOOD STUDS BEHIND WITH 1/2 DIA x 5" LG LAG SCREWS @ 32" O.C. UNO.



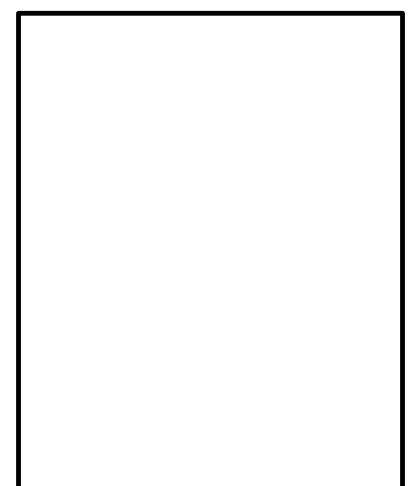
ROOF FRAMING PLAN

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



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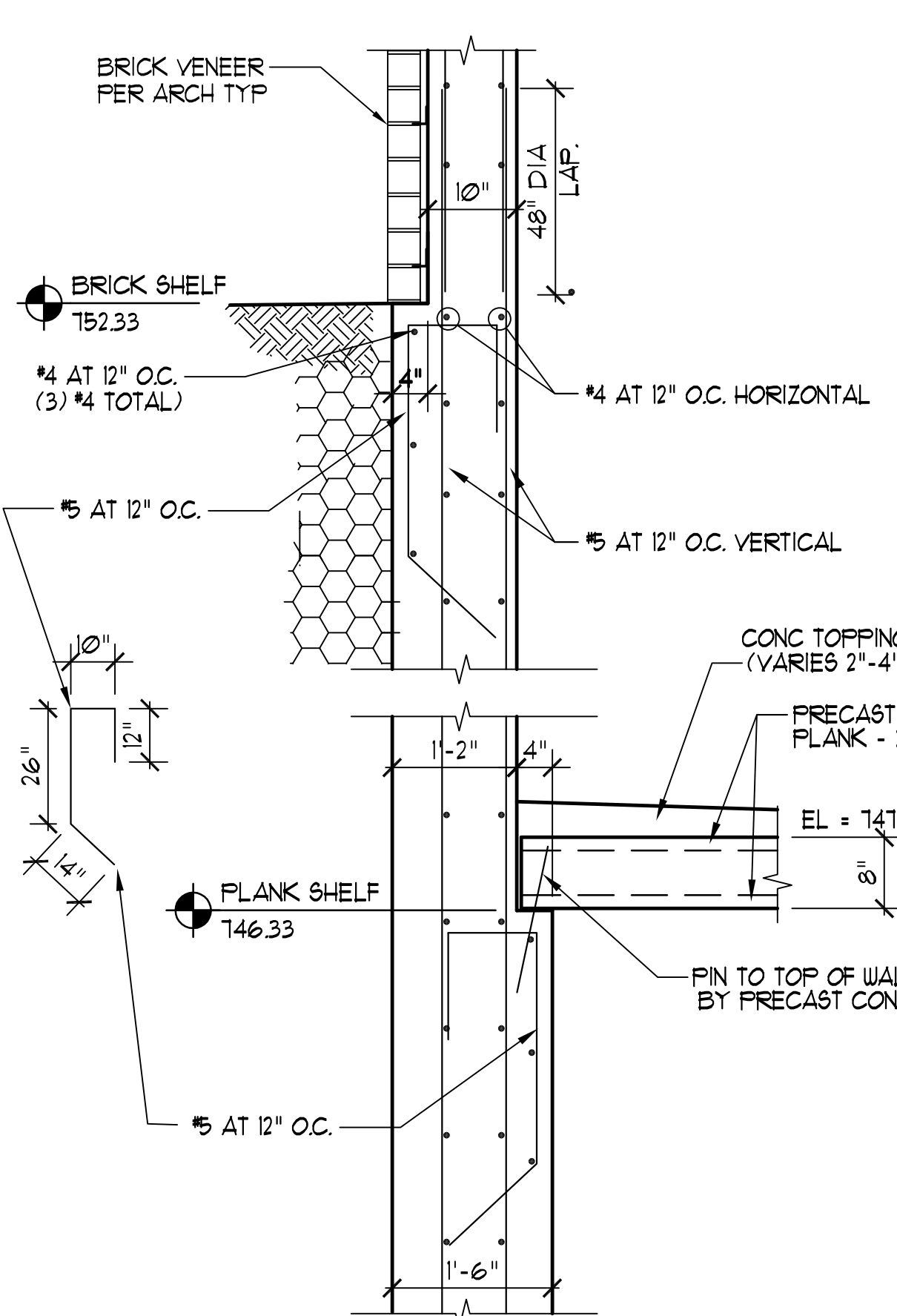


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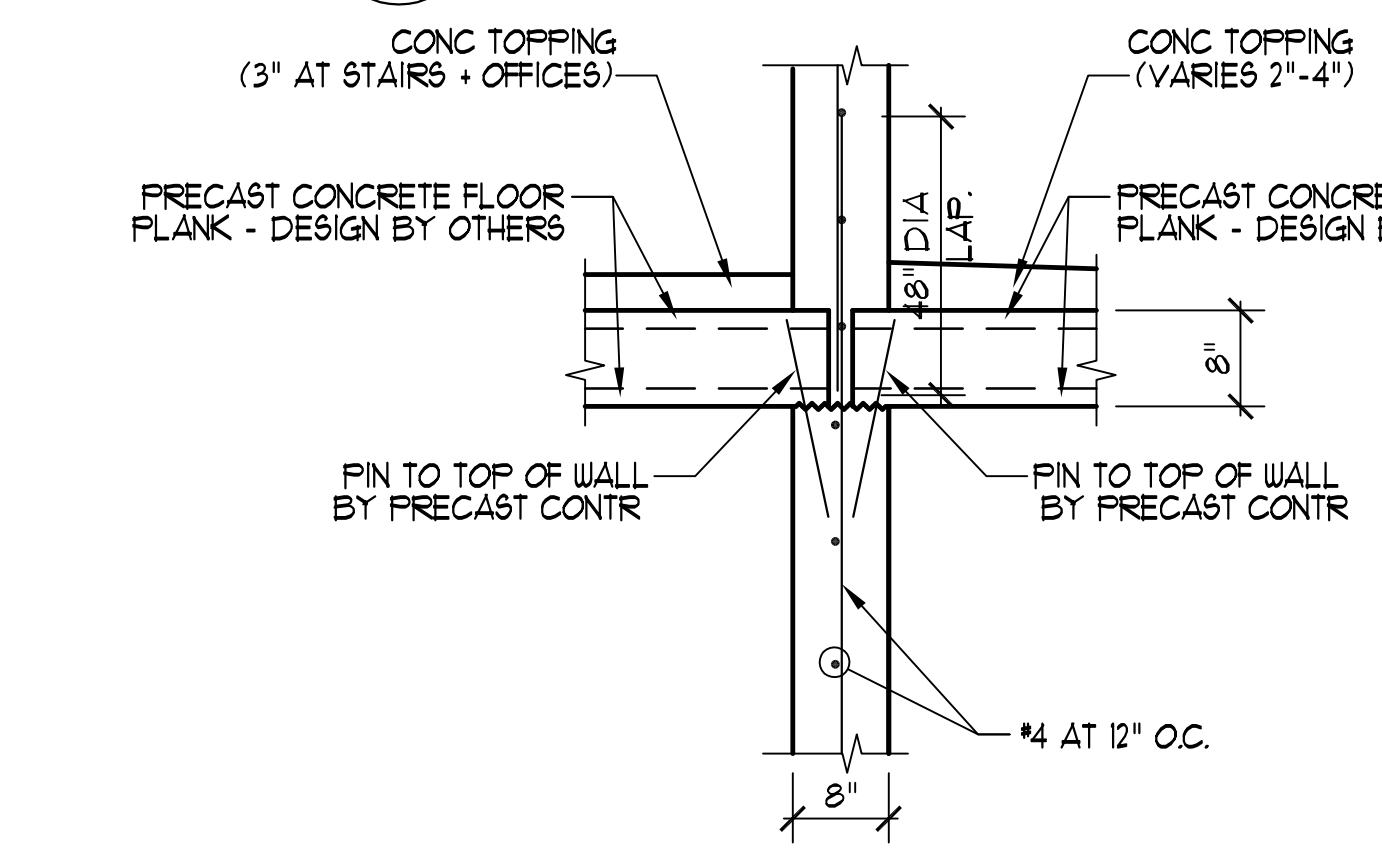
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McKINLEY + ANTHONY, AVE.
MUNDELEIN, ILLINOIS
ROOF FRAMING PLAN

SHEET
95
OF 13

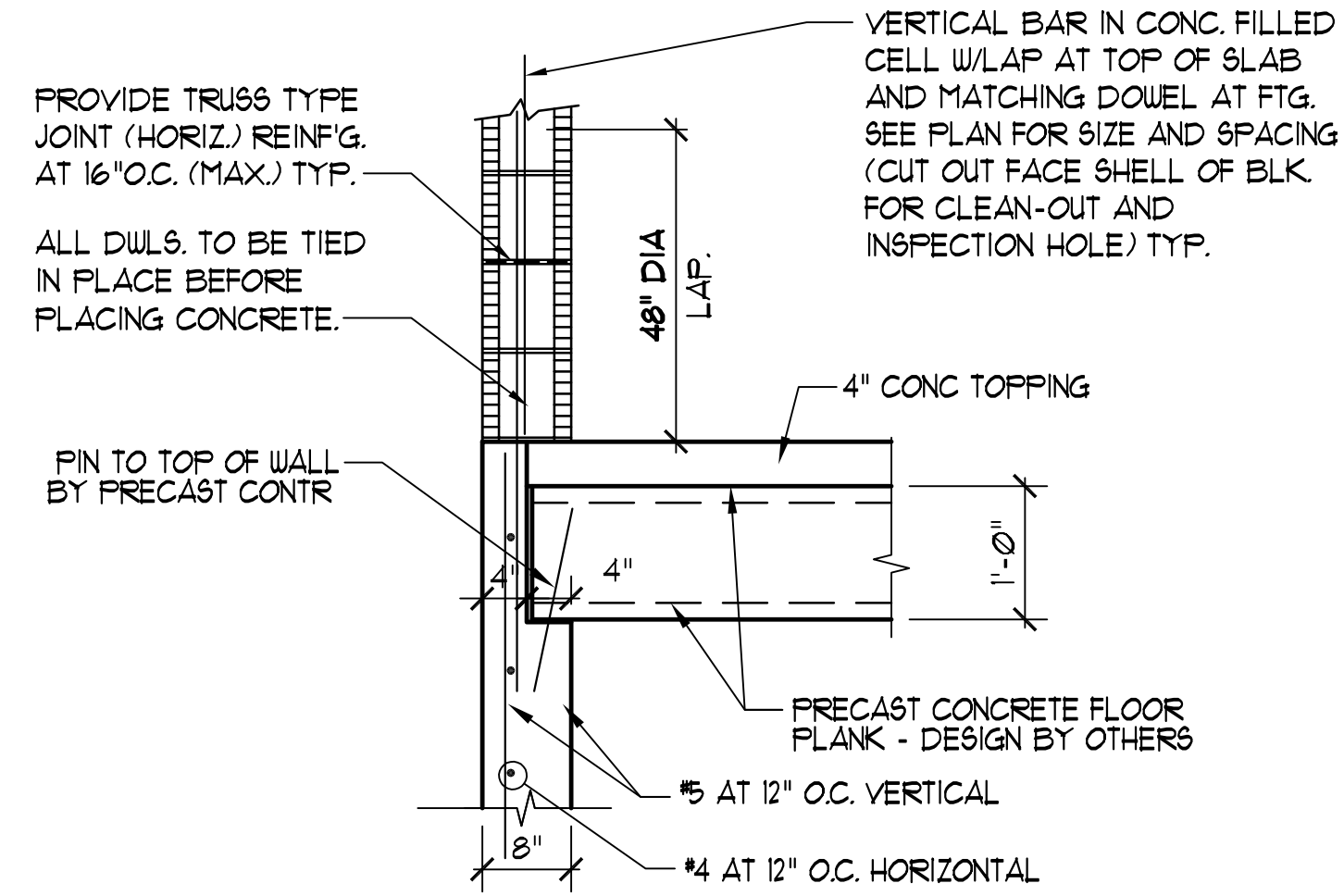
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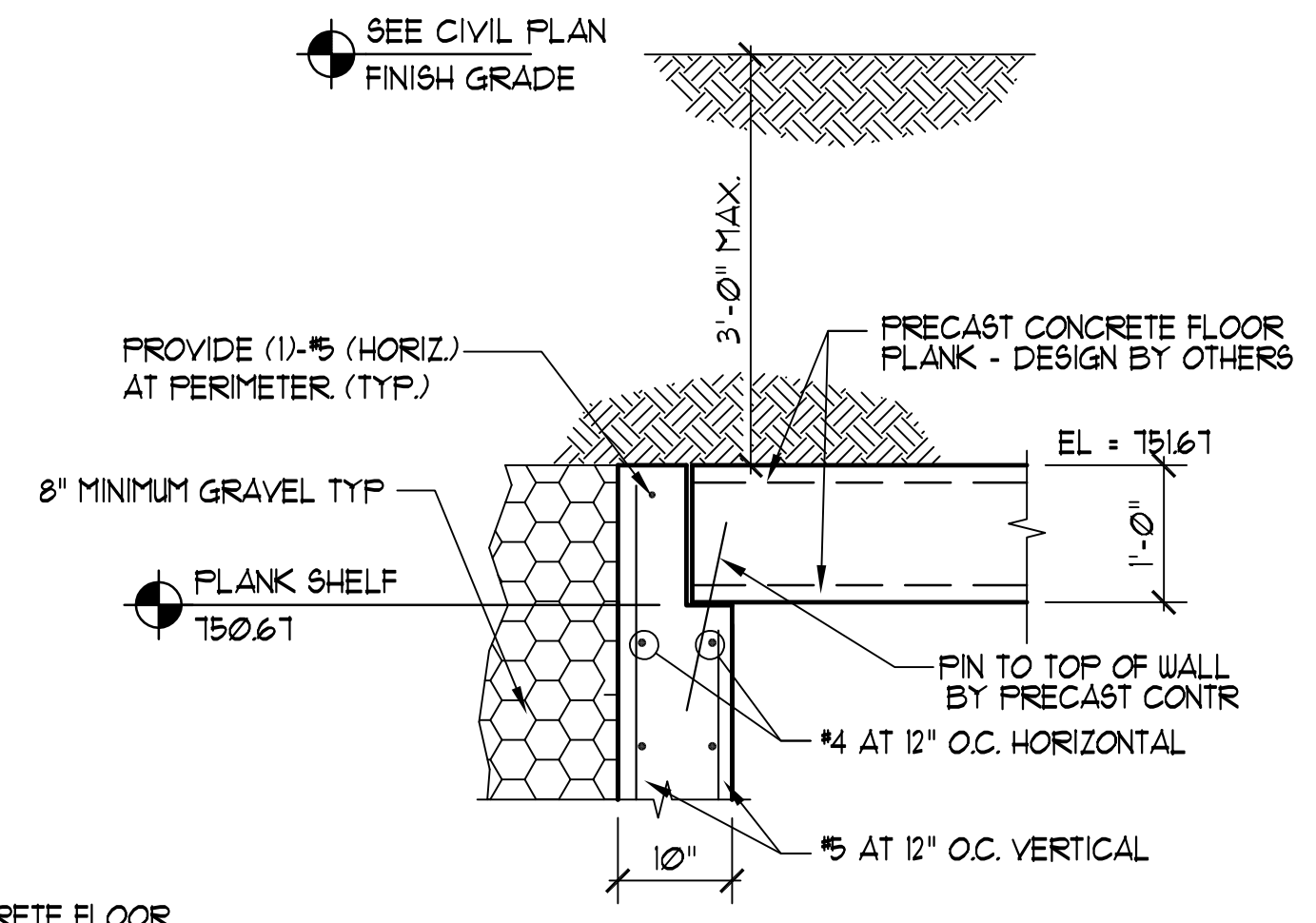
1 SECTION
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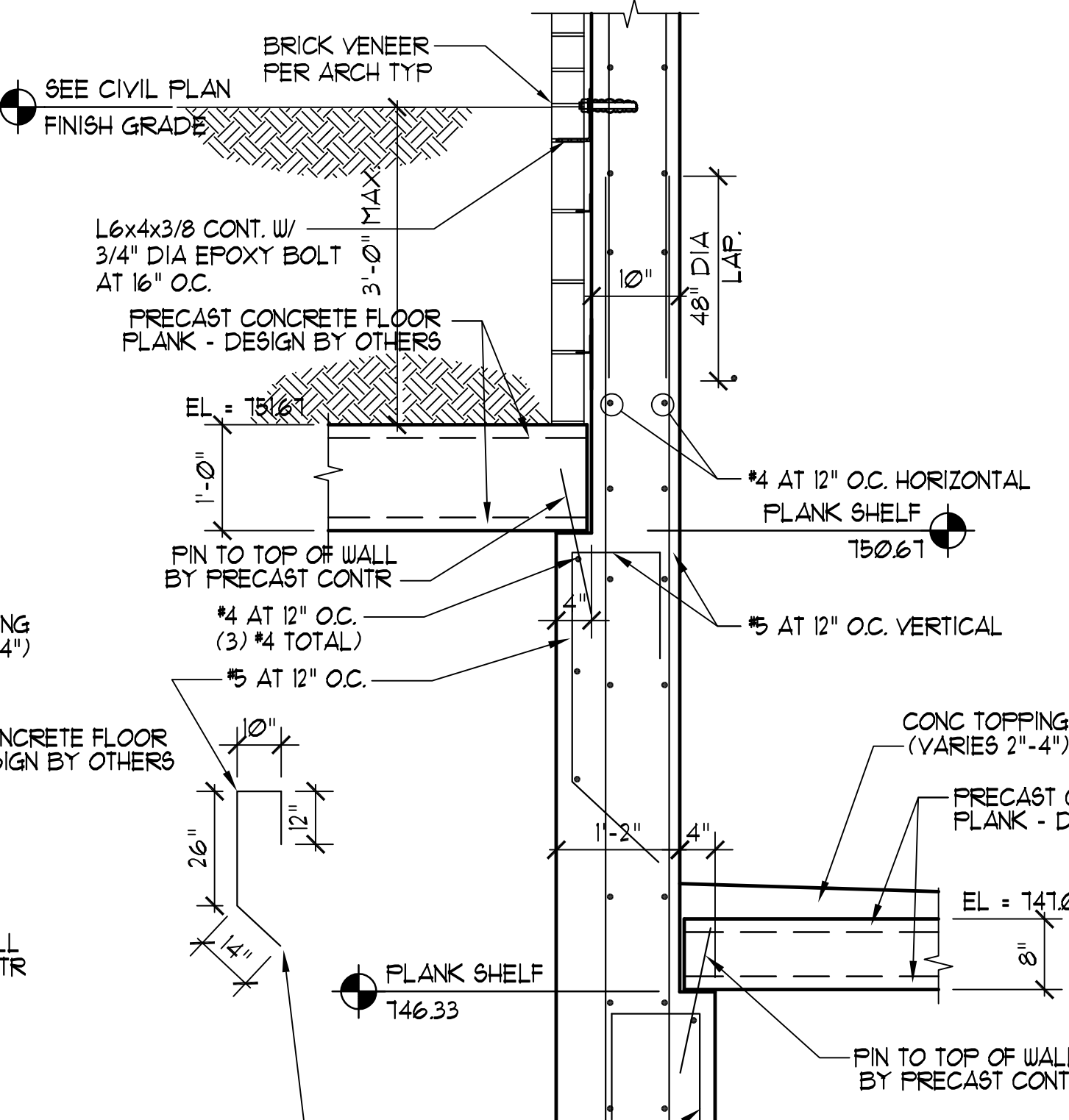
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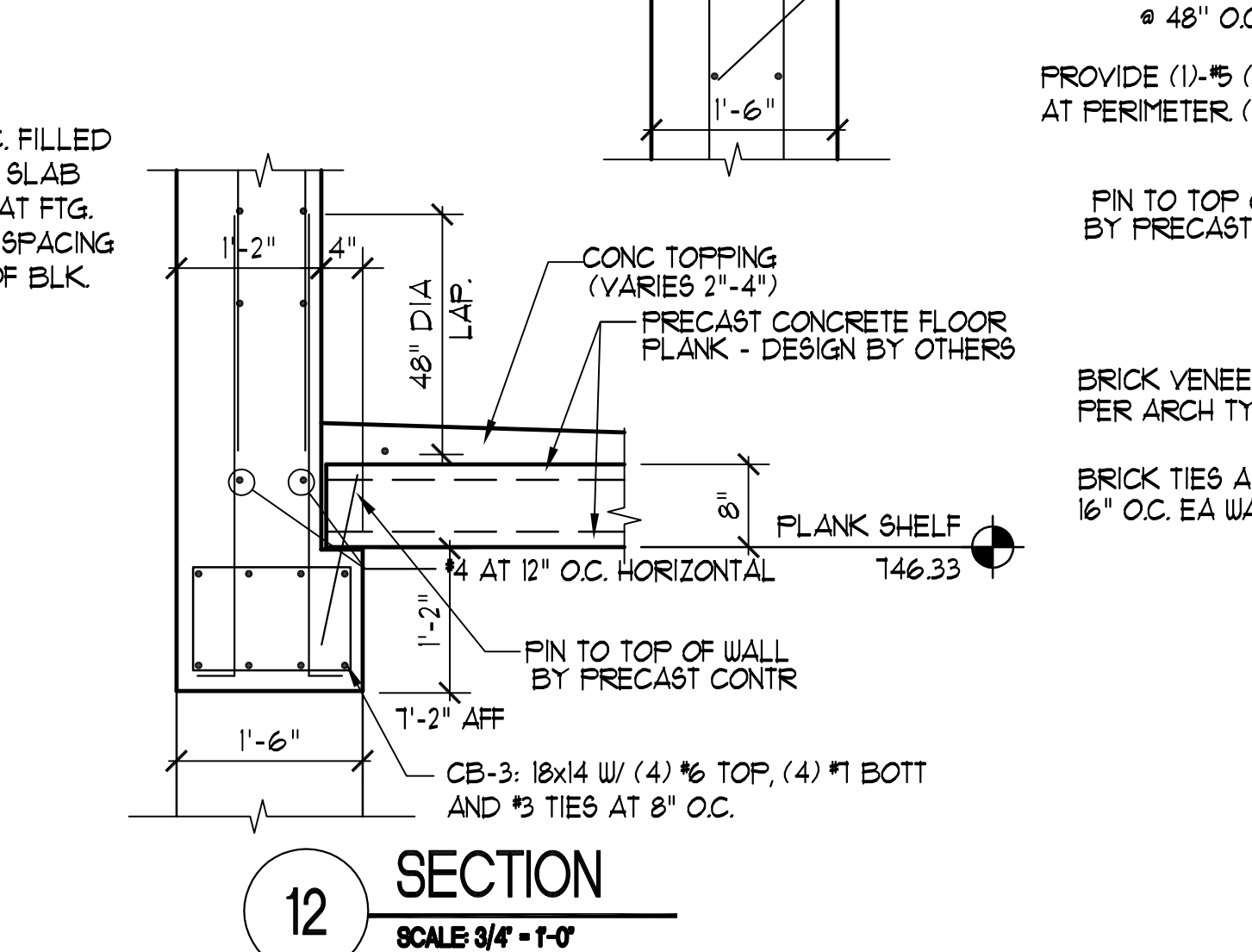
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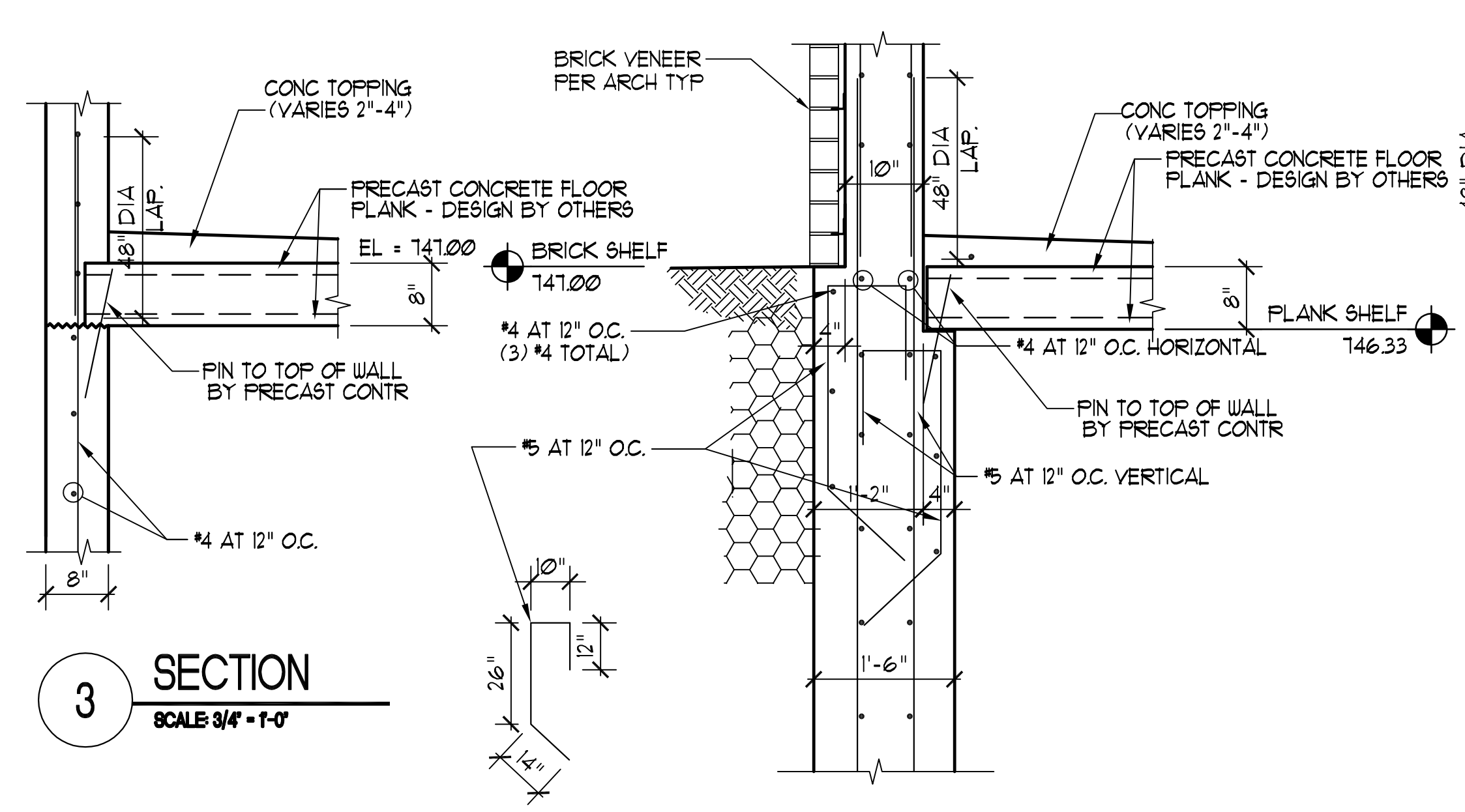
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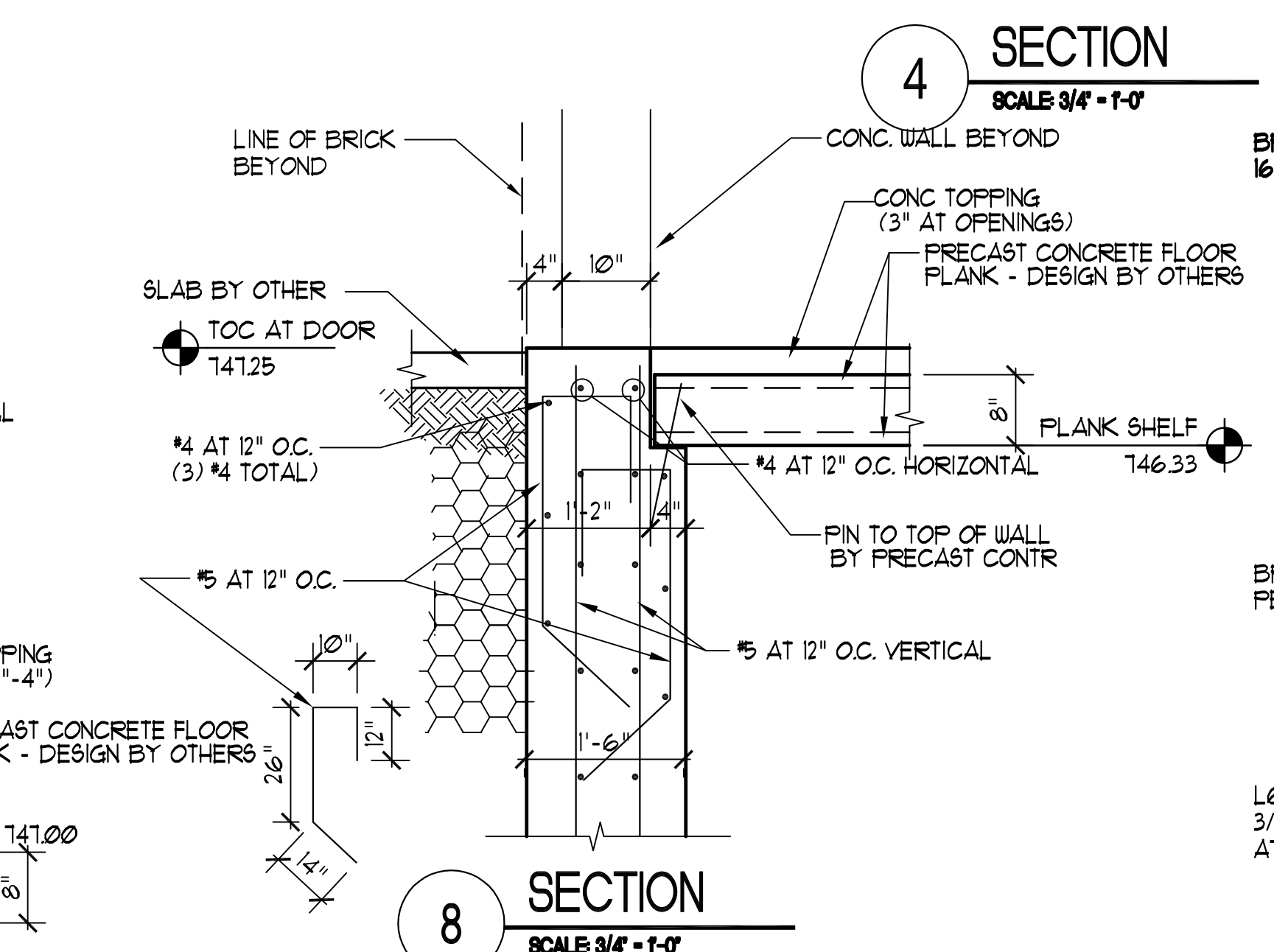
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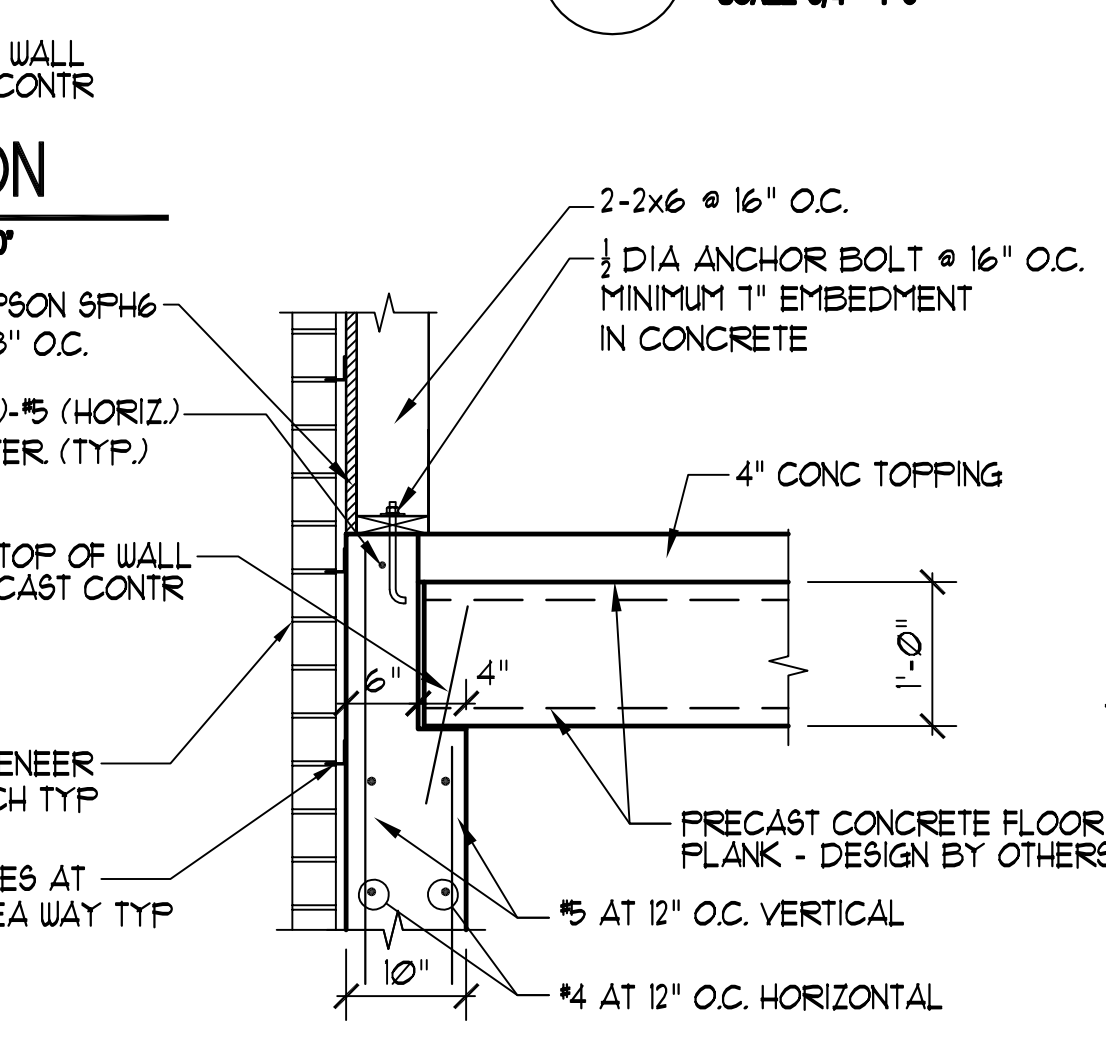
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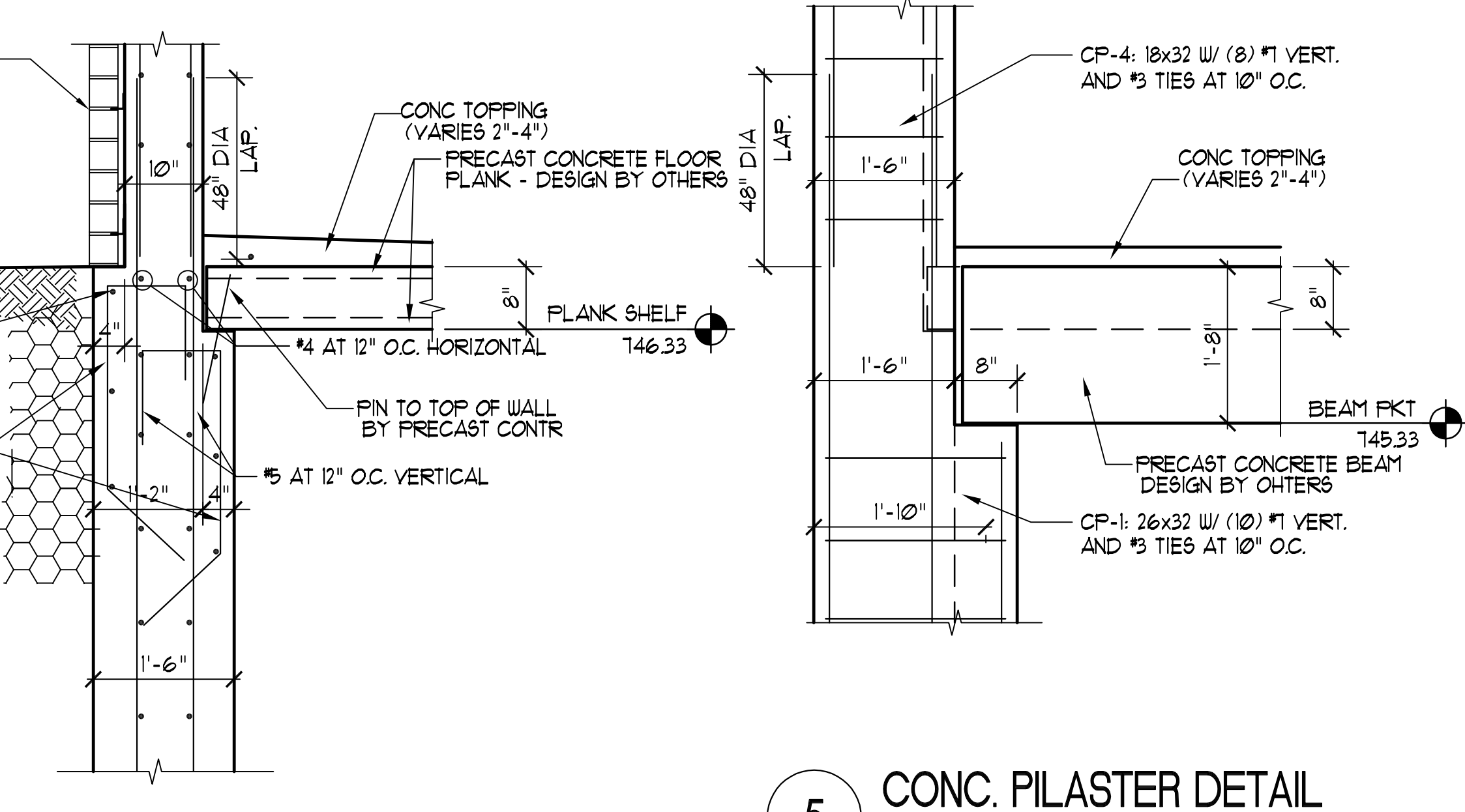
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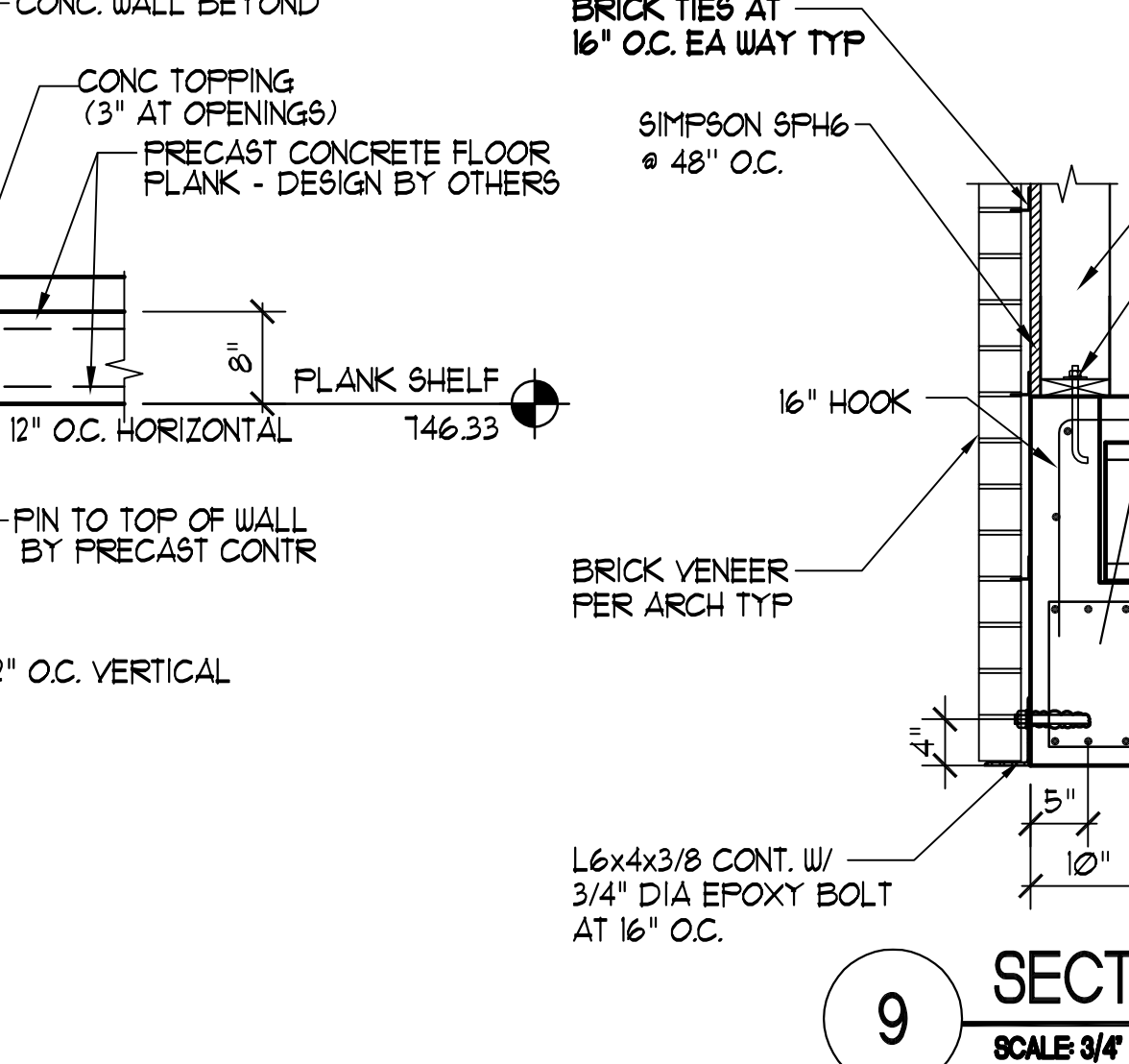
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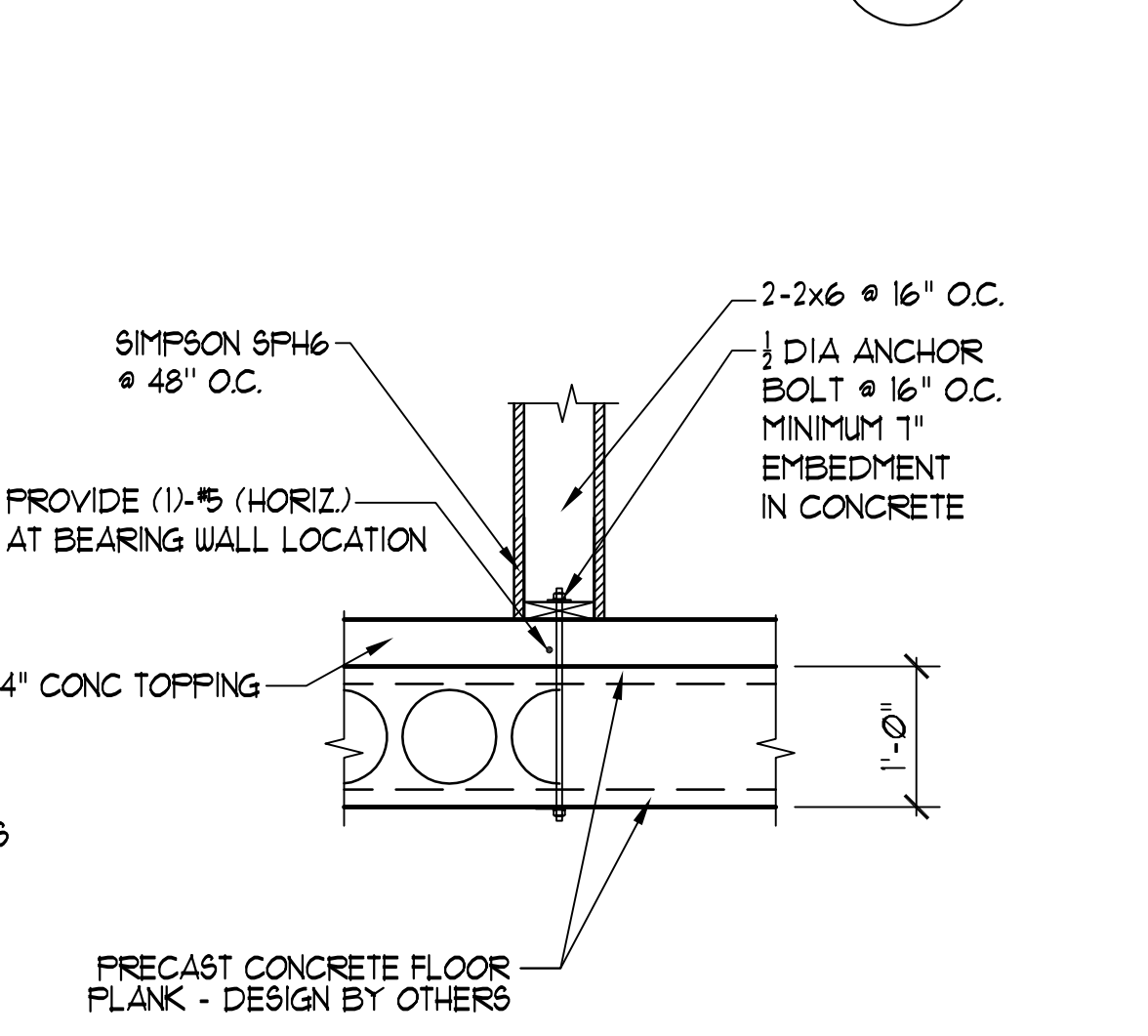
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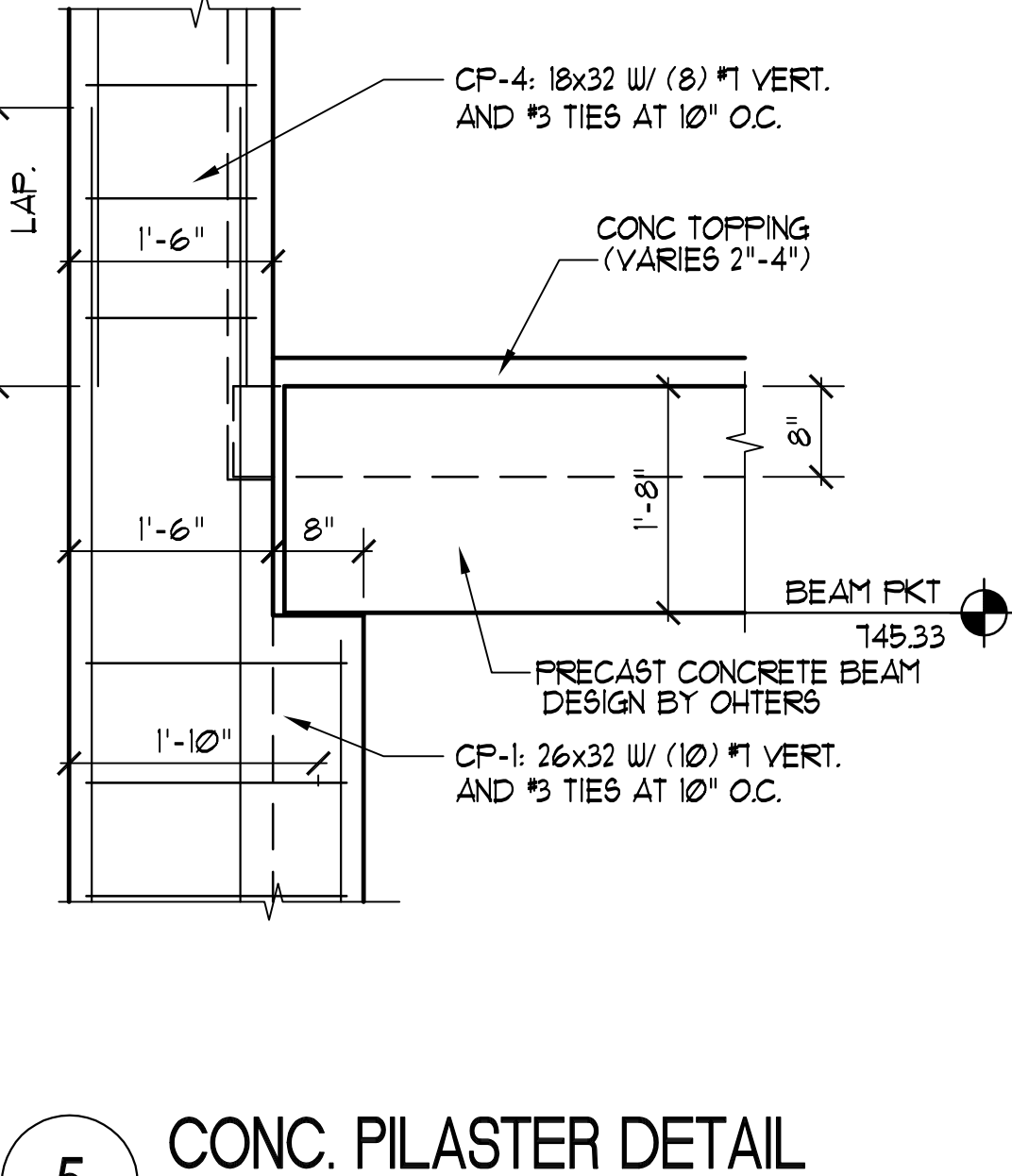
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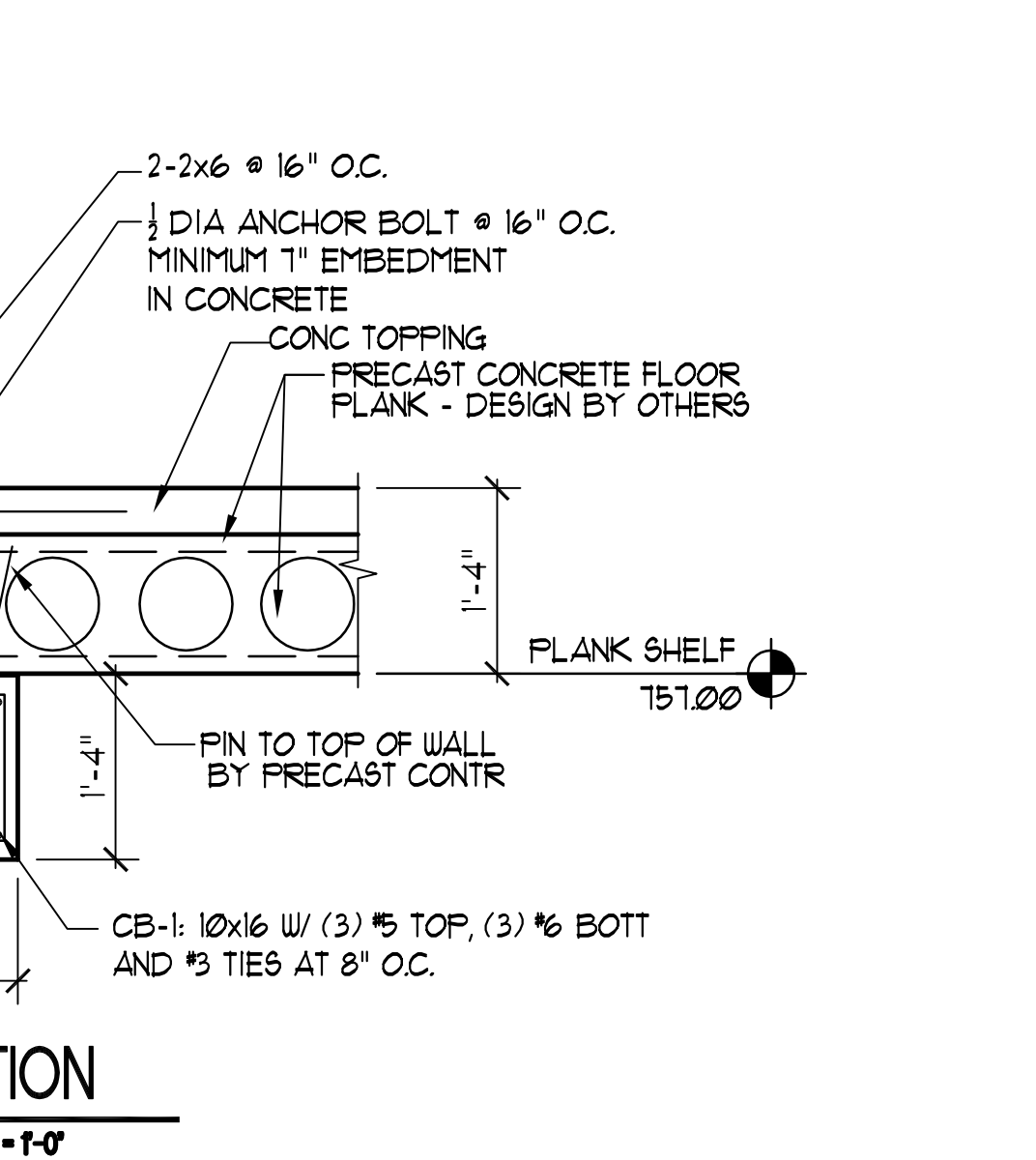
9 SECTION
SCALE 3/4" = 1'-0"



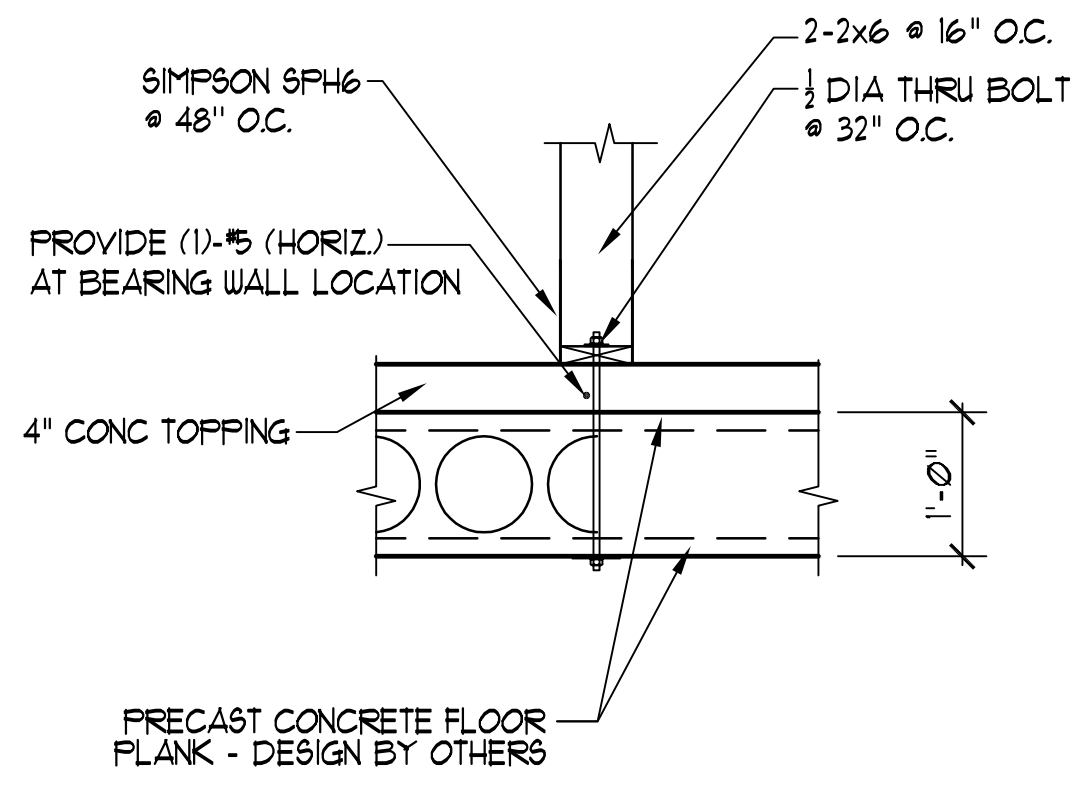
14 SECTION AT SHEAR WALL
SCALE 3/4" = 1'-0"



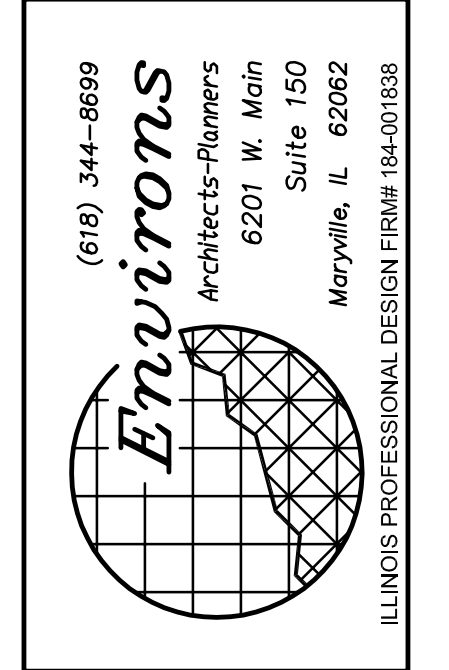
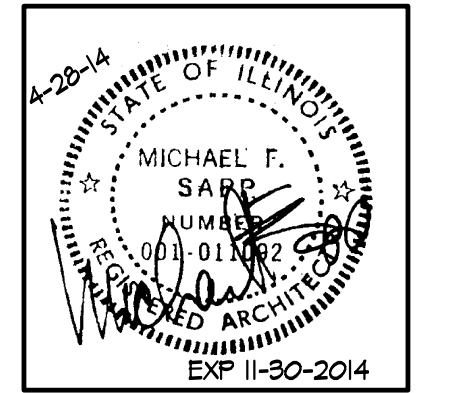
5 CONC. PILASTER DETAIL
SCALE 3/4" = 1'-0"



10 NOT USED
SCALE 3/4" = 1'-0"



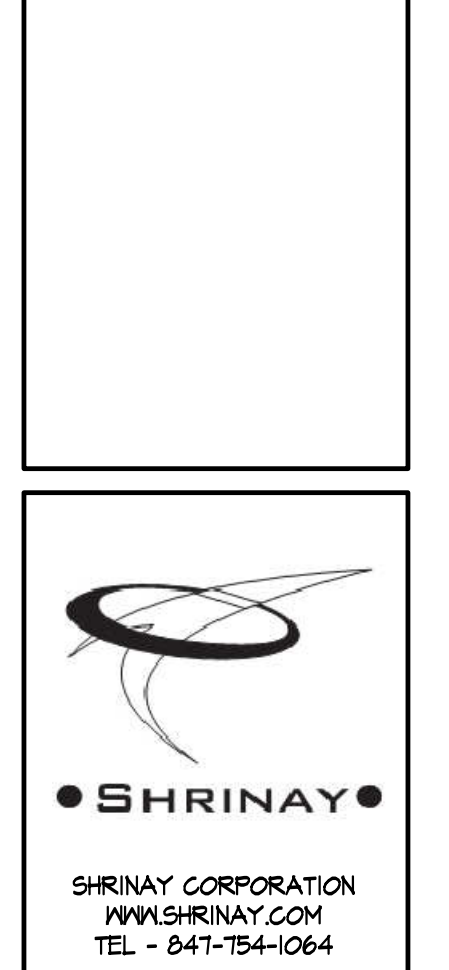
15 SECTION
SCALE 3/4" = 1'-0"



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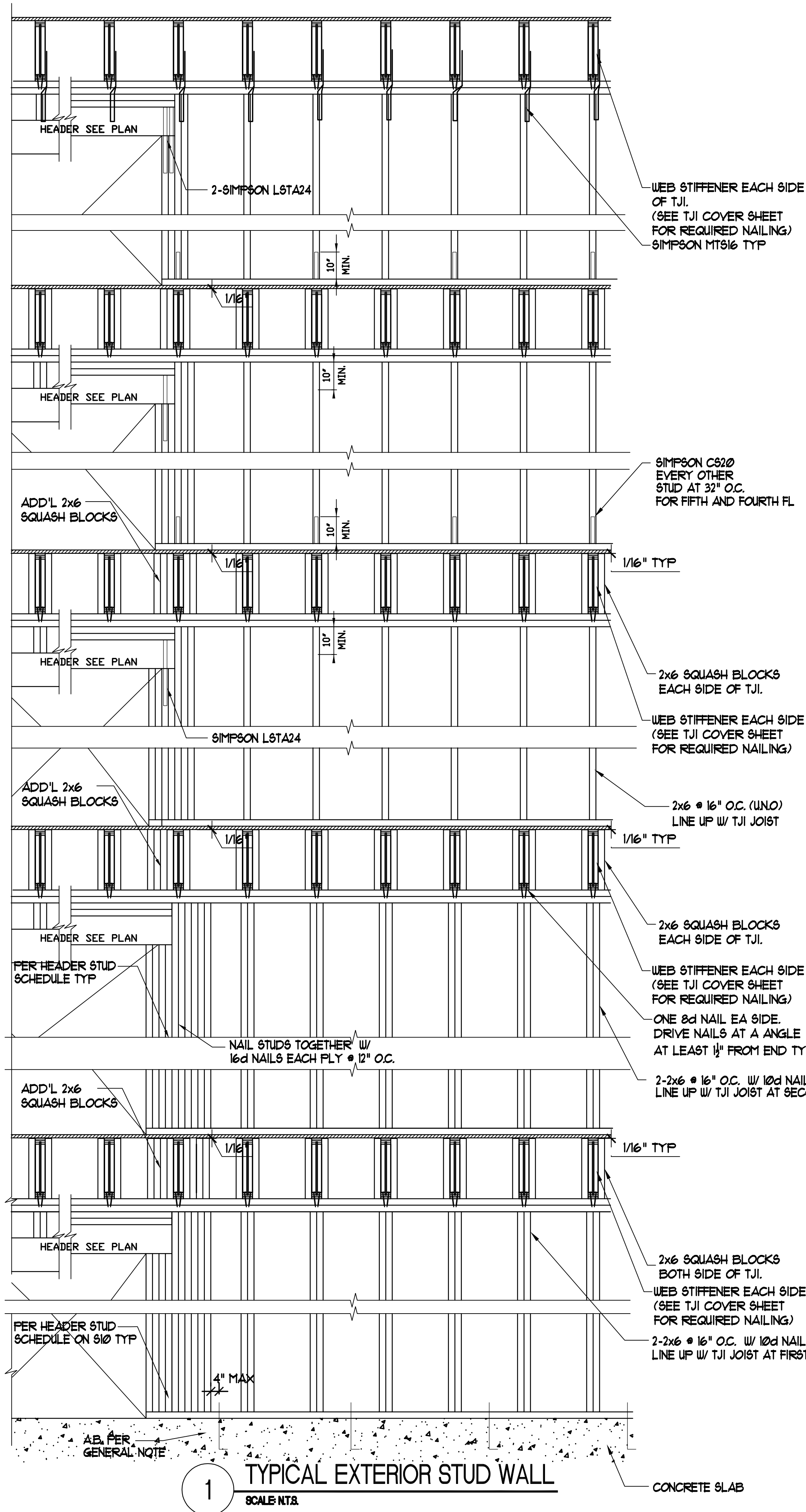
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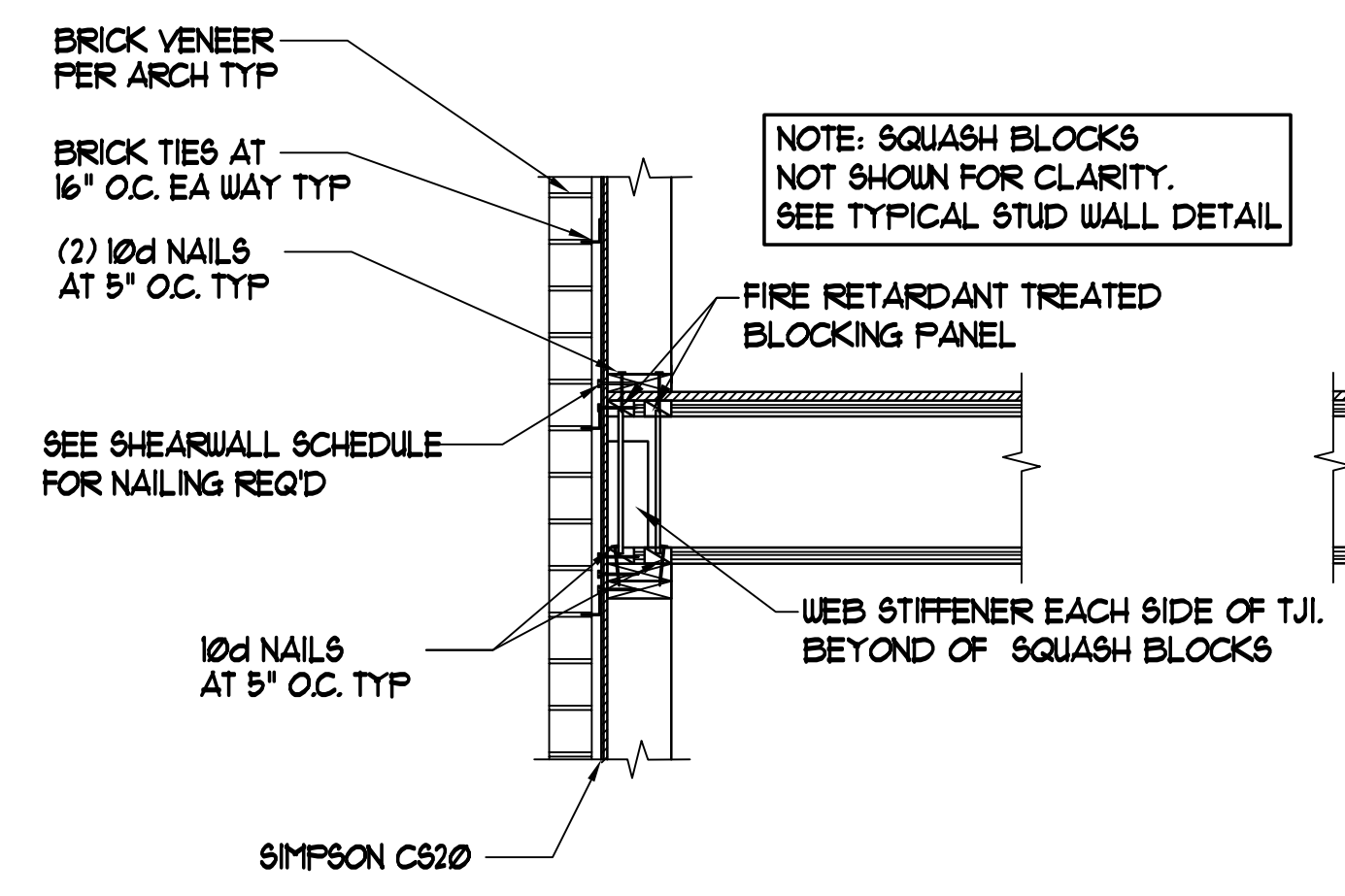


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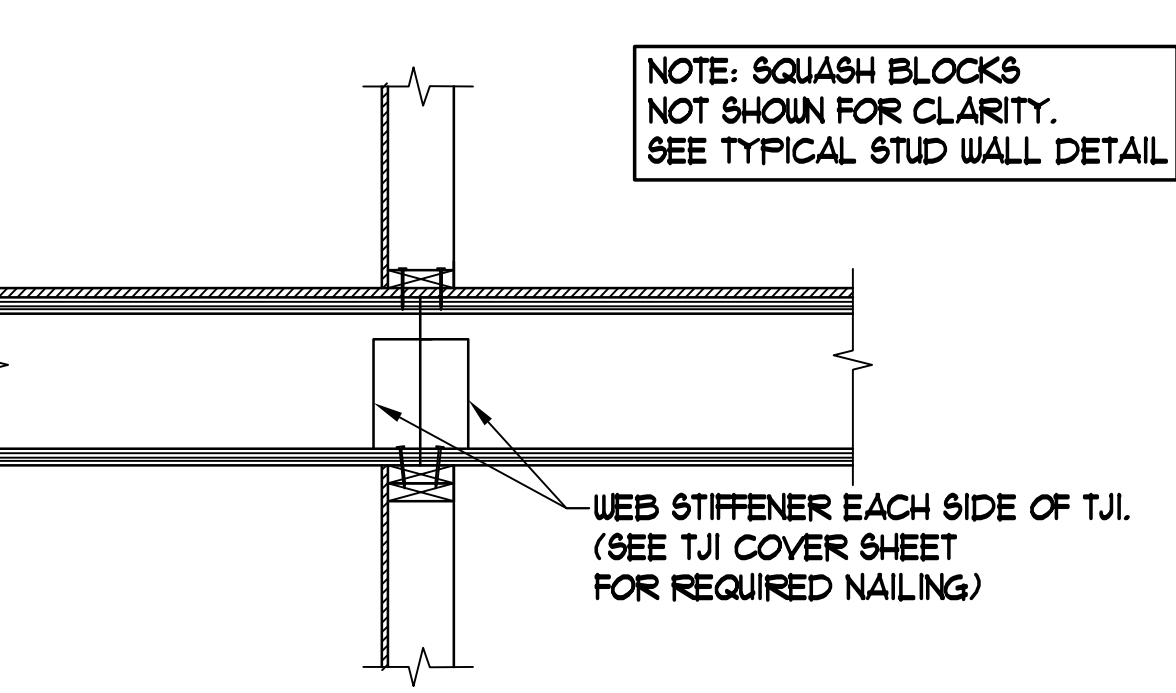
FOUND REINFORCING AND FRAMING DETAILS



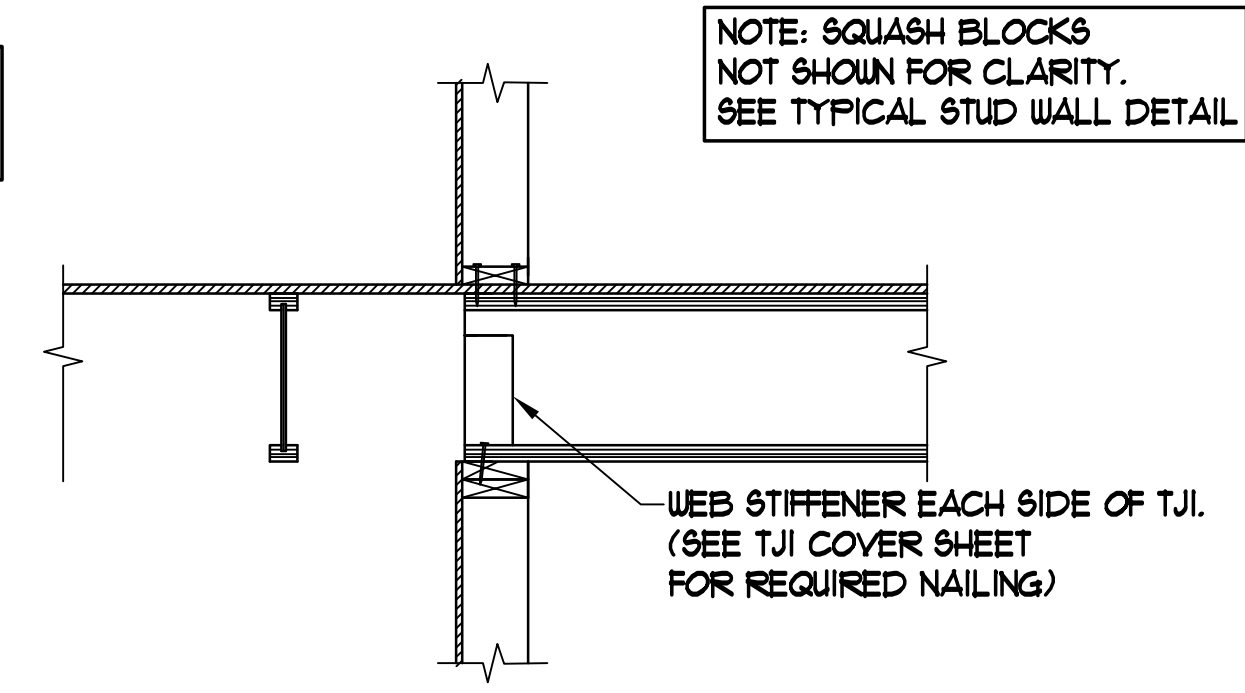
1 TYPICAL EXTERIOR STUD WALL
SCALE: NTS



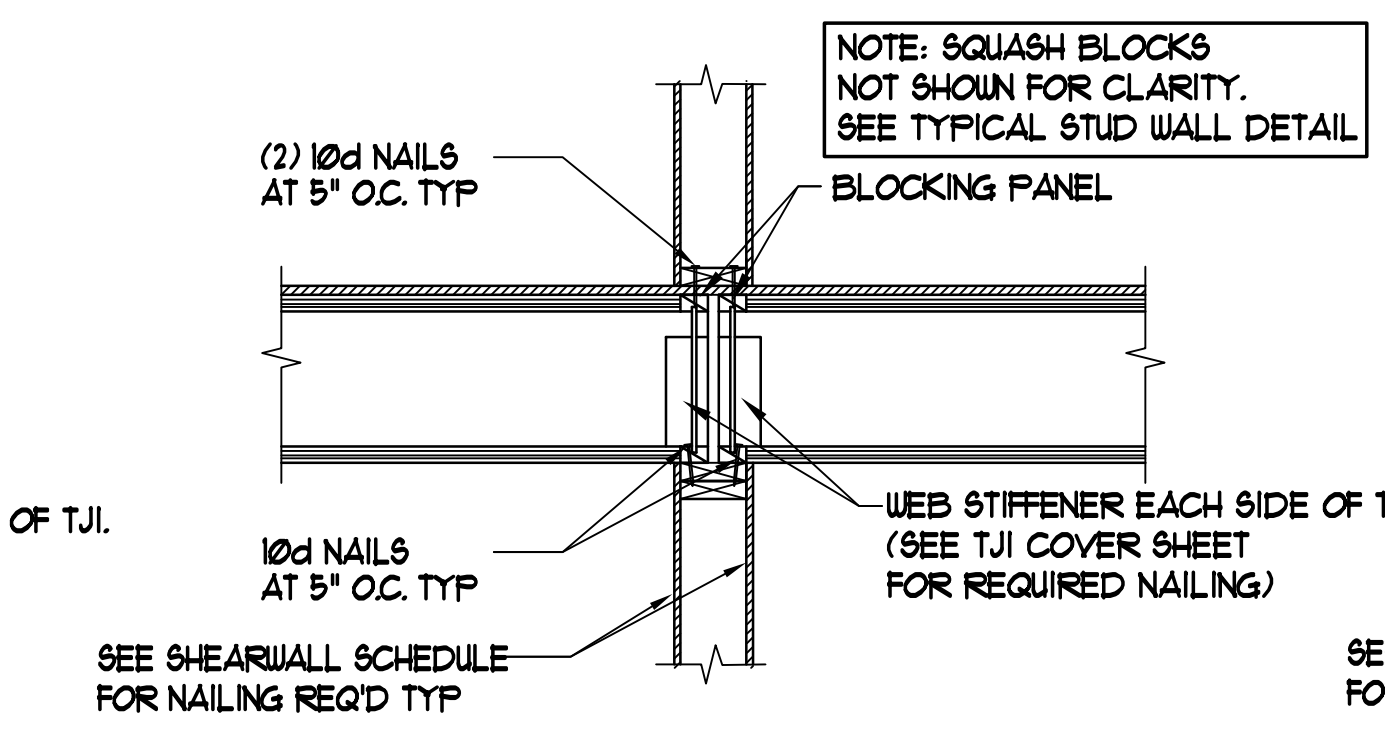
2 TYPICAL TJI EXT. (SHEAR WALL) BEARING AT STUD WALL
SCALE: 3/4" = 1'-0"



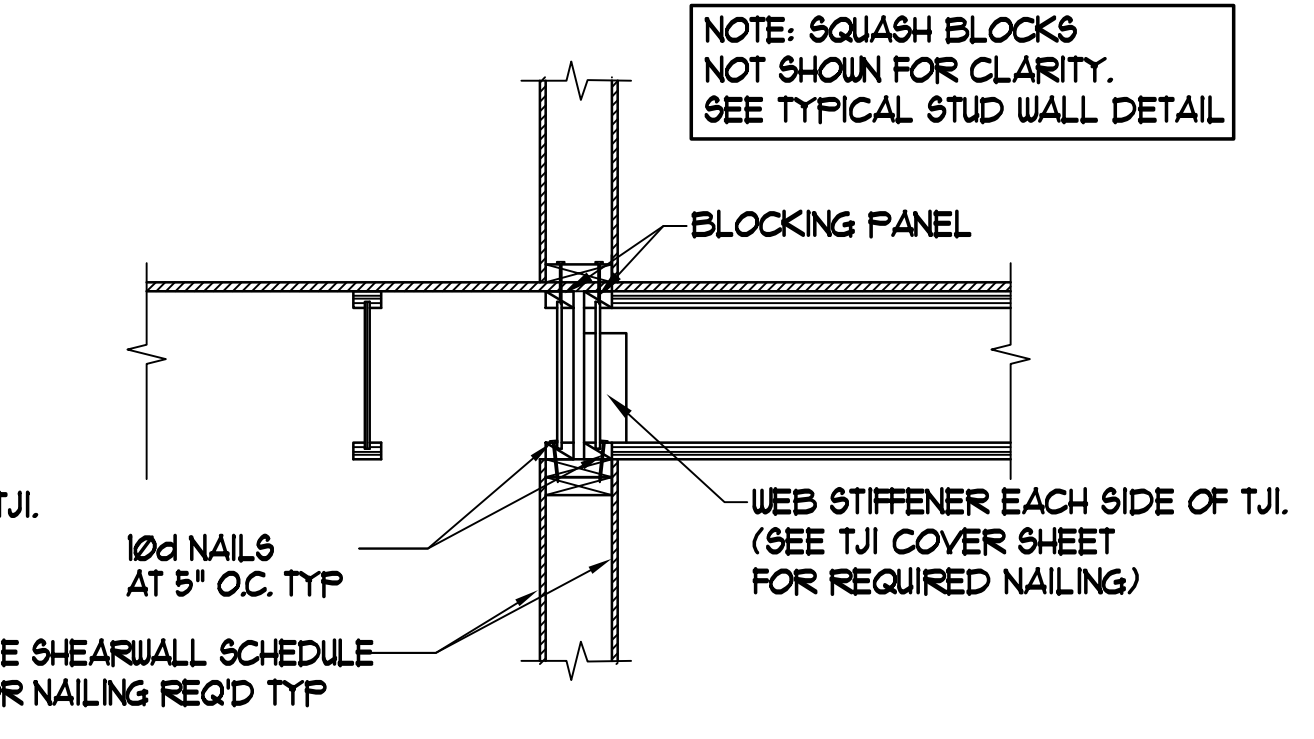
3 TYPICAL TJI INT. BEARING AT STUD WALL
SCALE: 3/4" = 1'-0"



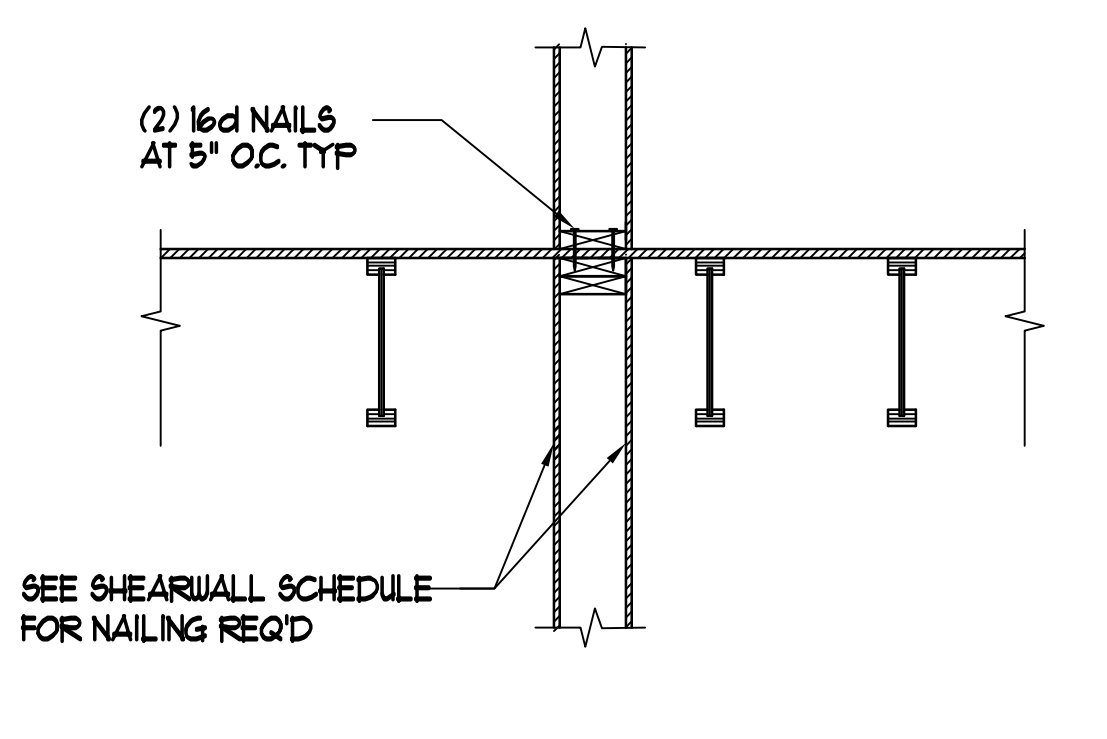
4 TYPICAL TJI INT. BEARING AT STUD WALL
SCALE: 3/4" = 1'-0"



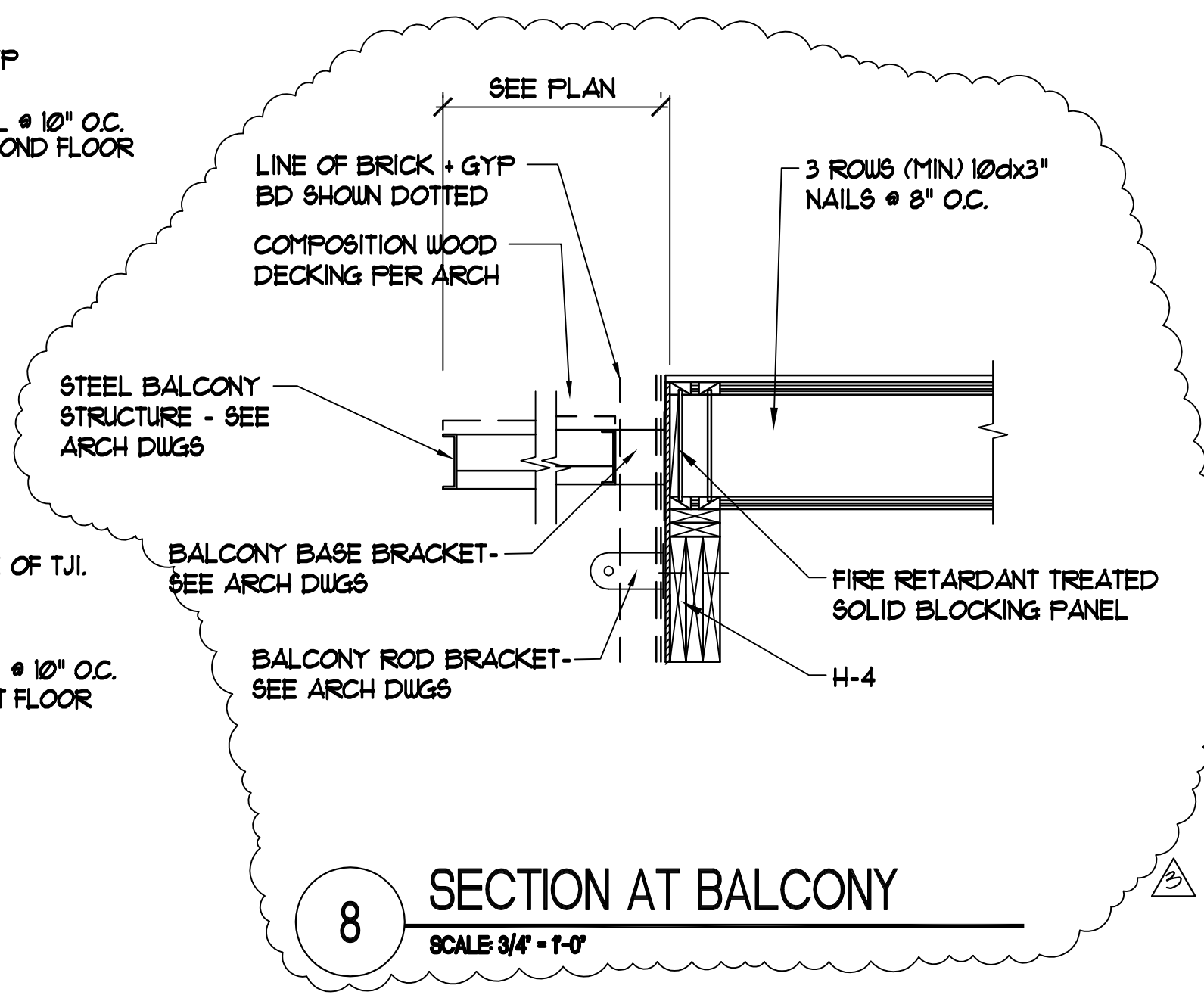
5 TYPICAL TJI INT. (SHEAR WALL) BEARING AT STUD WALL
SCALE: 3/4" = 1'-0"



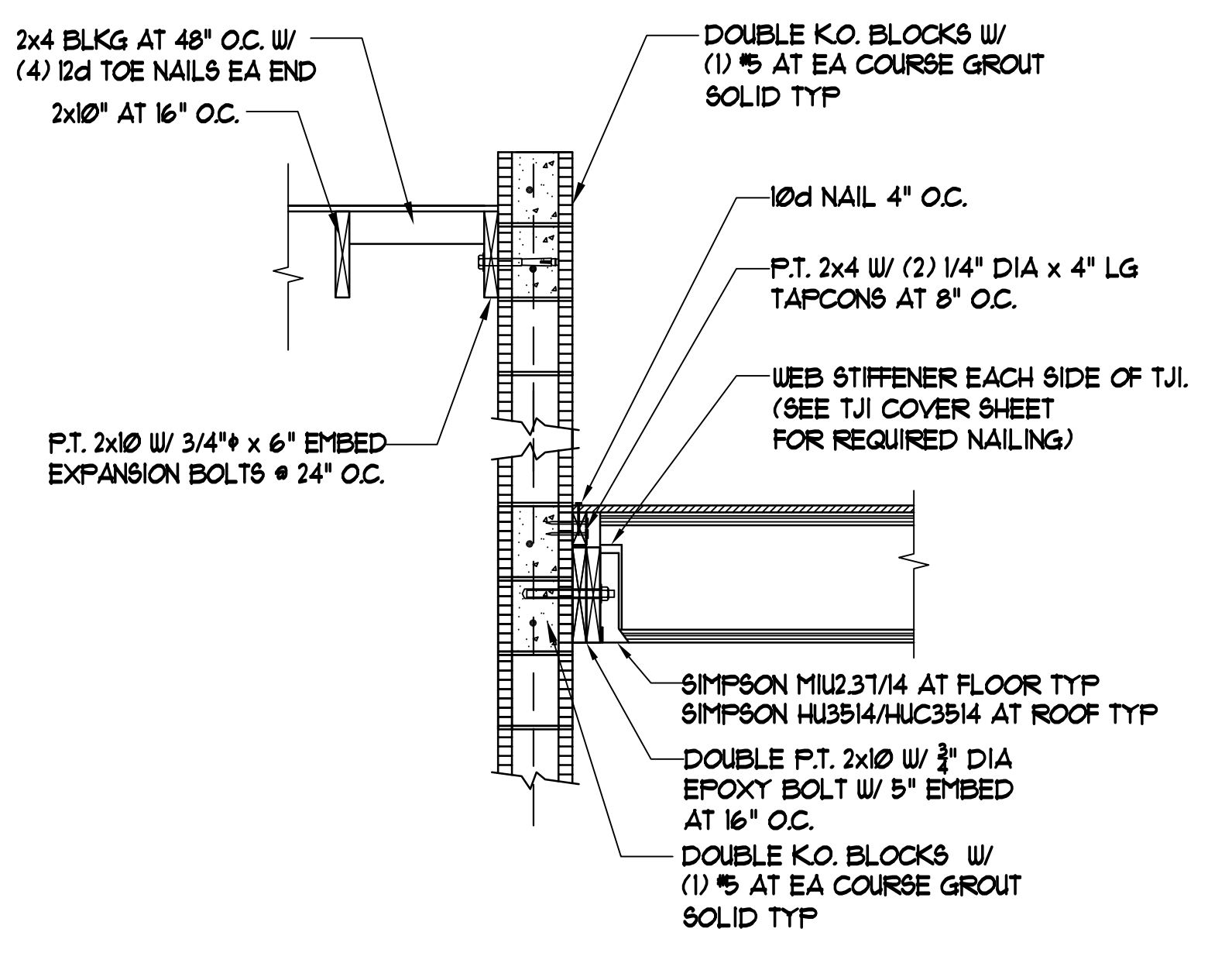
6 TYPICAL TJI INT. (SHEAR WALL) BEARING AT STUD WALL
SCALE: 3/4" = 1'-0"



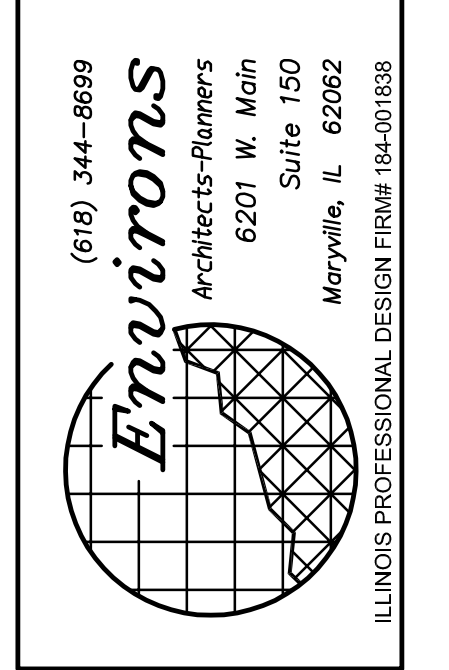
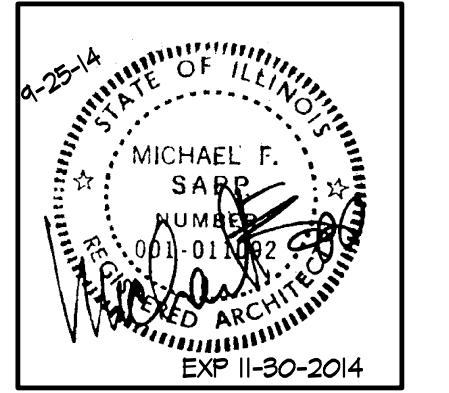
7 SHEAR WALL SECTION
SCALE: 3/4" = 1'-0"



8 SECTION AT BALCONY
SCALE: 3/4" = 1'-0"



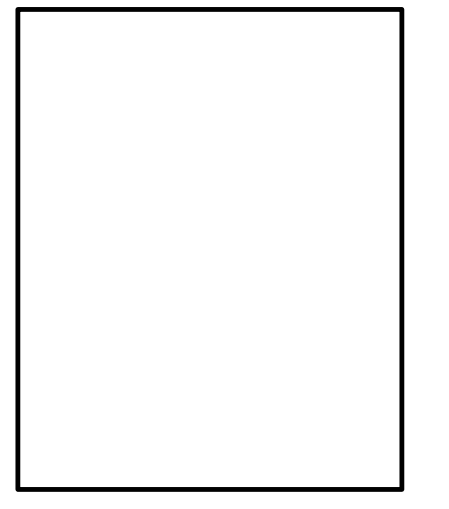
9 TYPICAL TJI INT. BEARING AT CMU WALL
SCALE: 3/4" = 1'-0"



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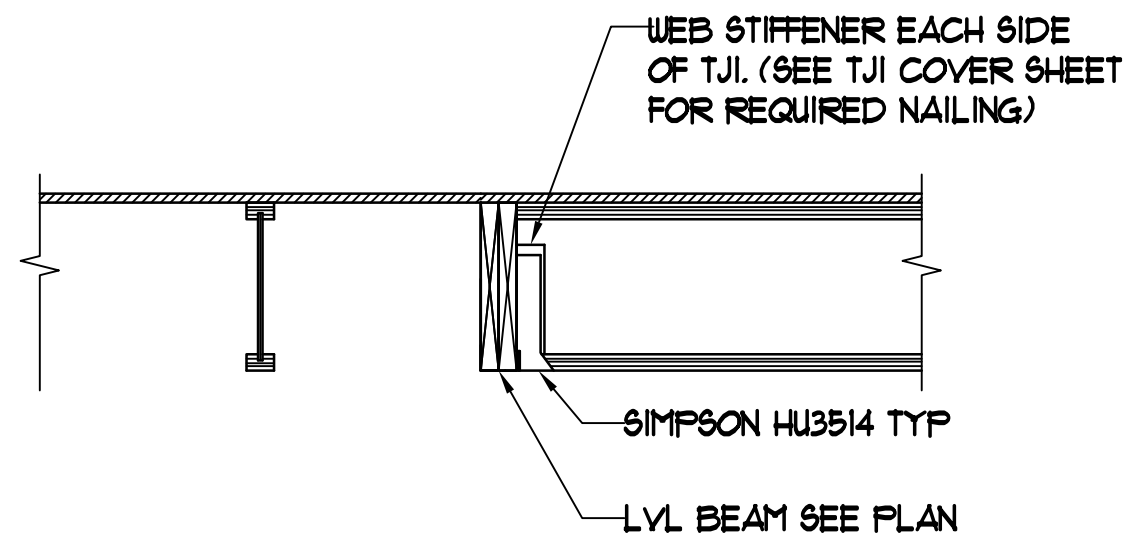
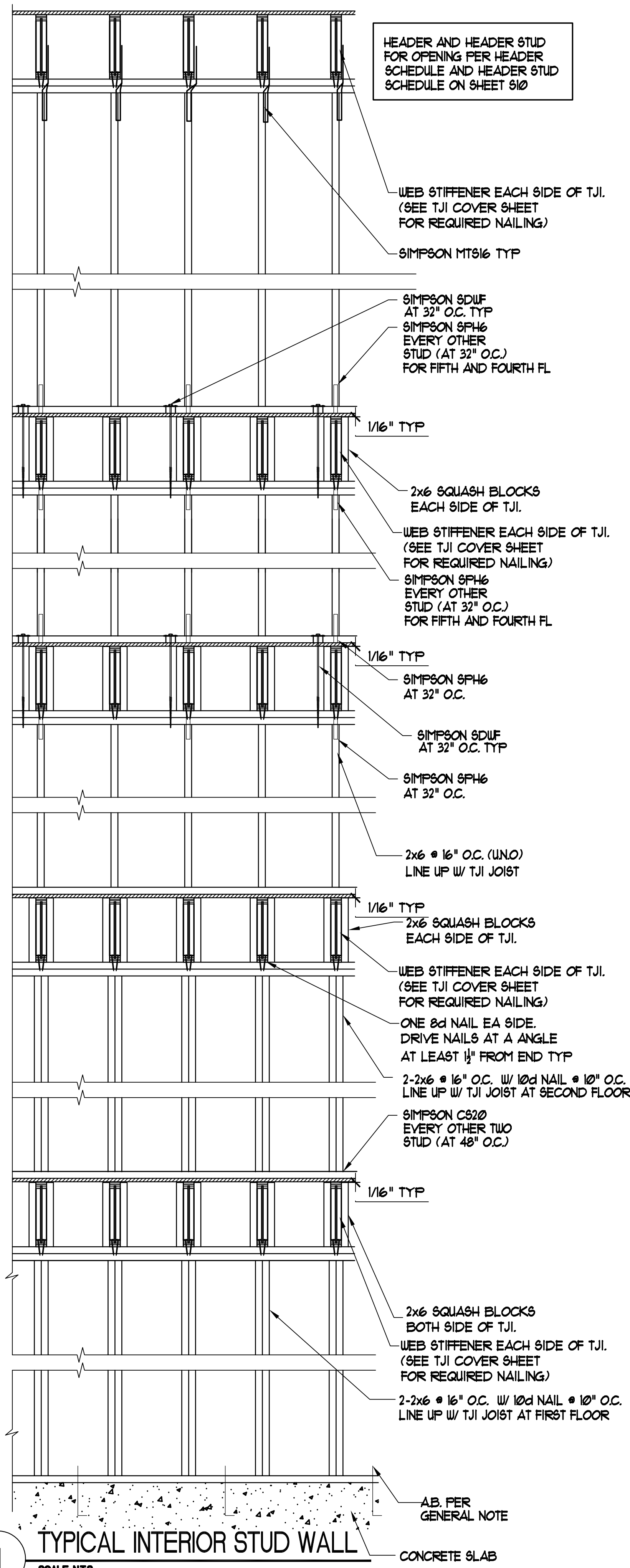
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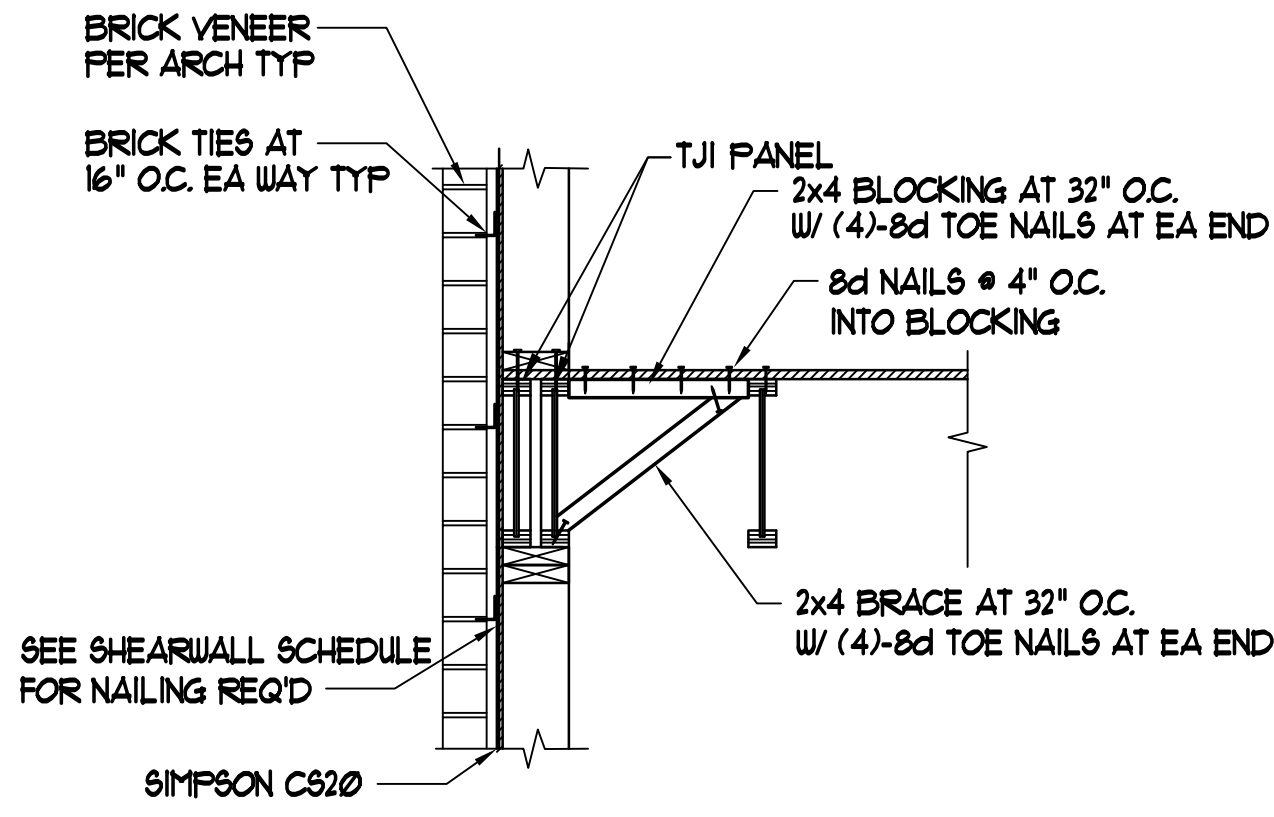
UPPER FLOOR FRAMING DETAILS

SHEET
58
OF 13

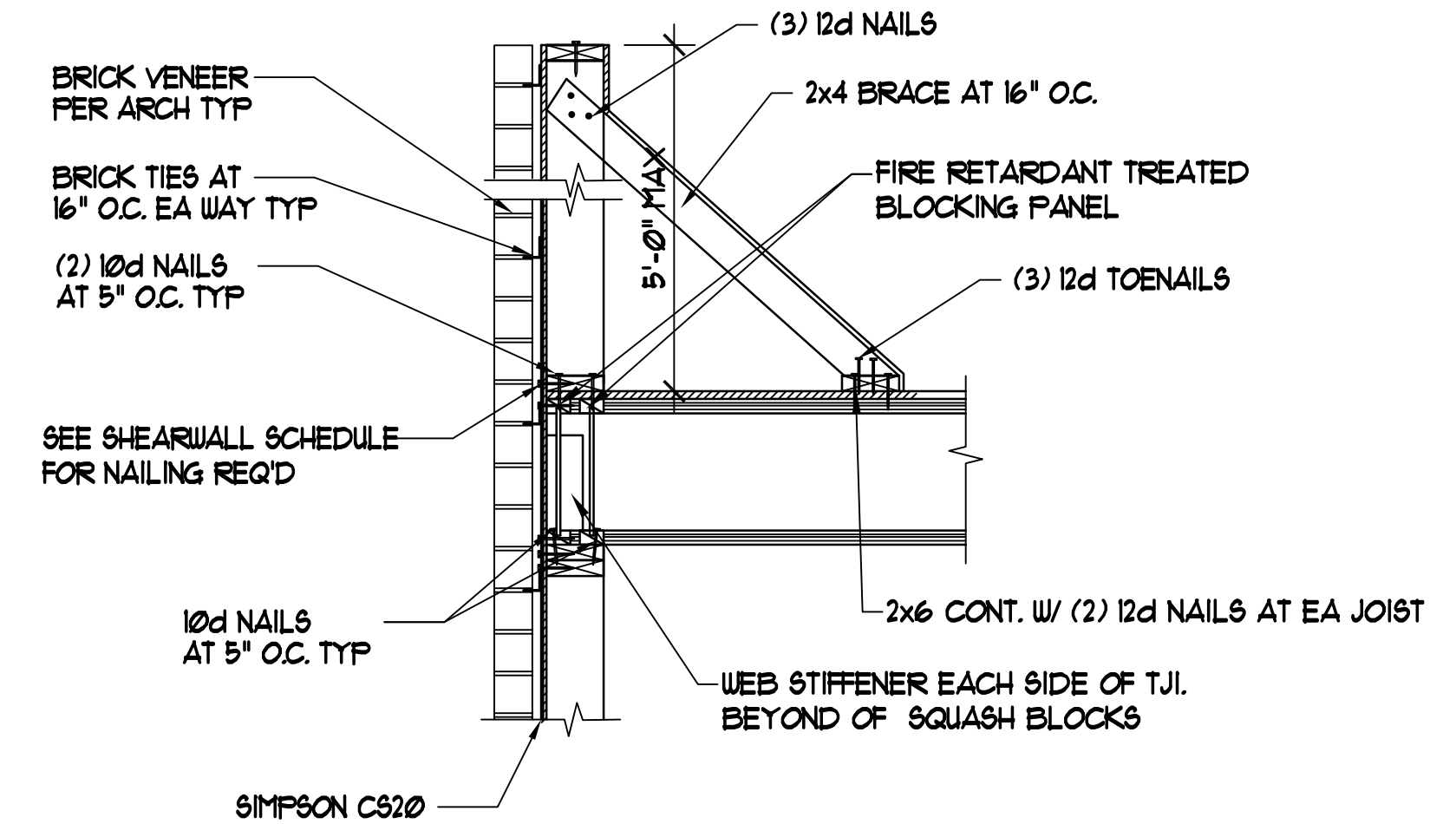
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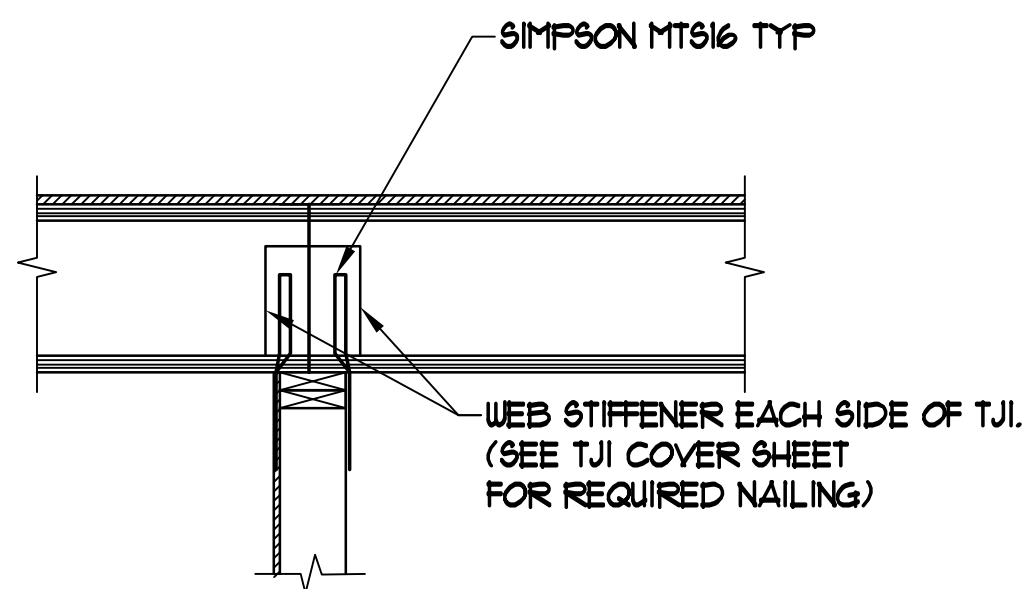
2 SECTION
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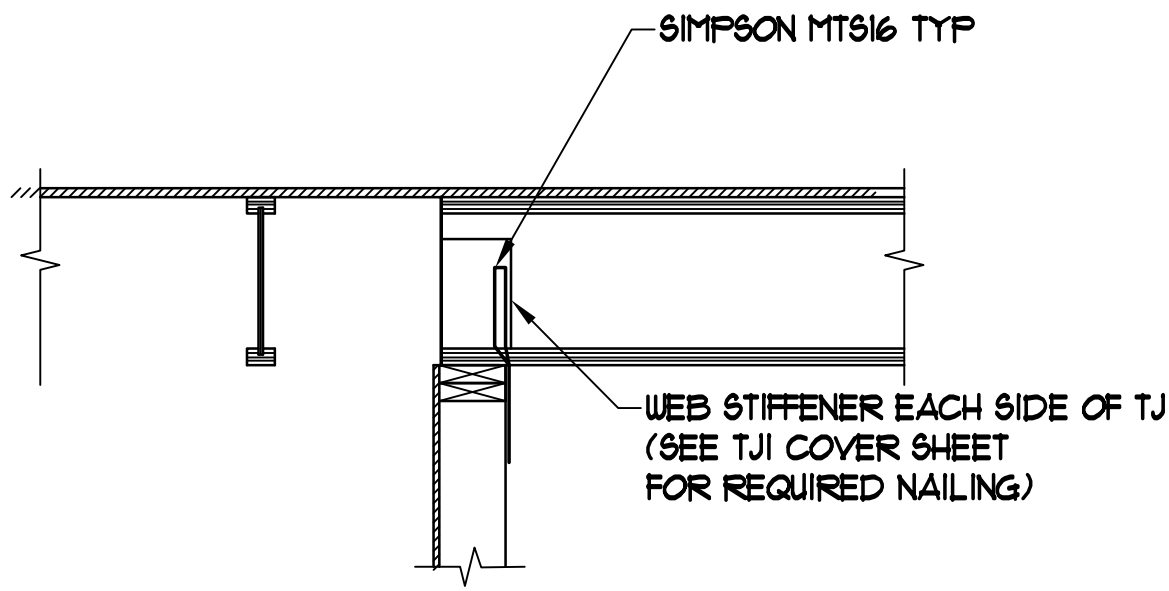
3 SECTION
SCALE 3/4" = 1'-0"



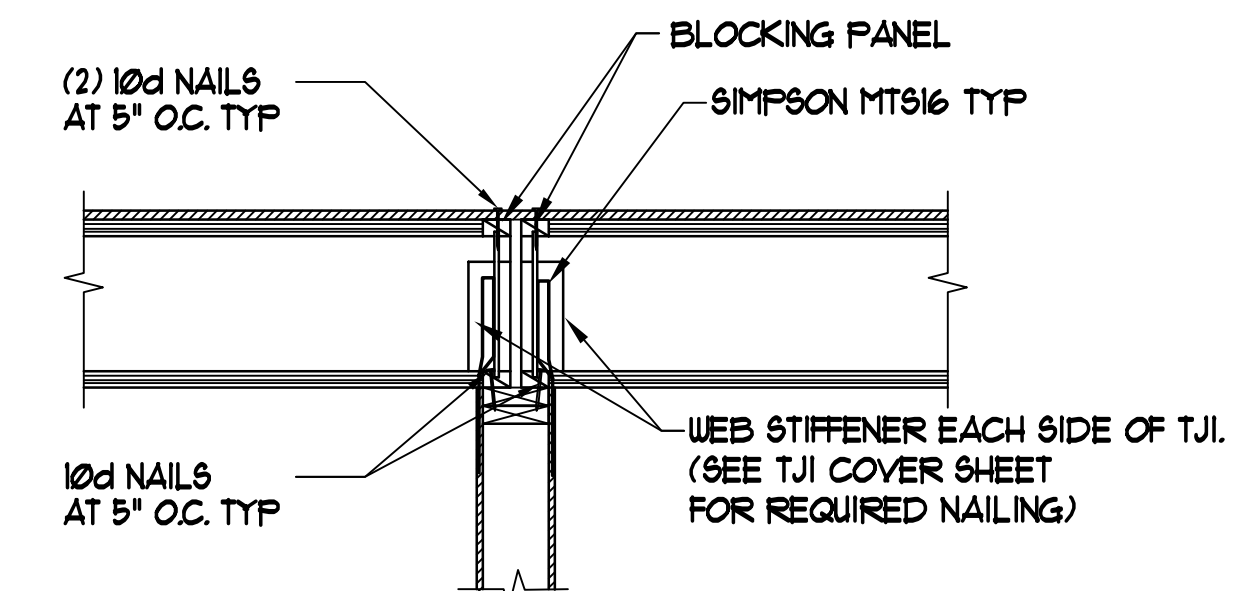
4 SECTION AT ROOF
SCALE 3/4" = 1'-0"



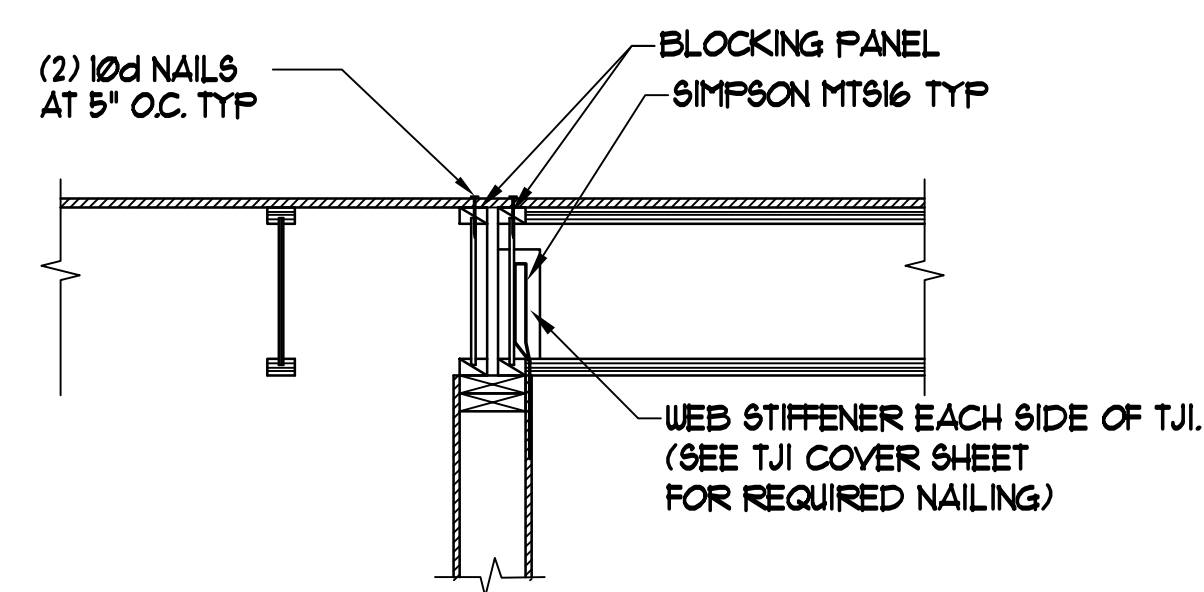
5 SECTION AT ROOF
SCALE 3/4" = 1'-0"



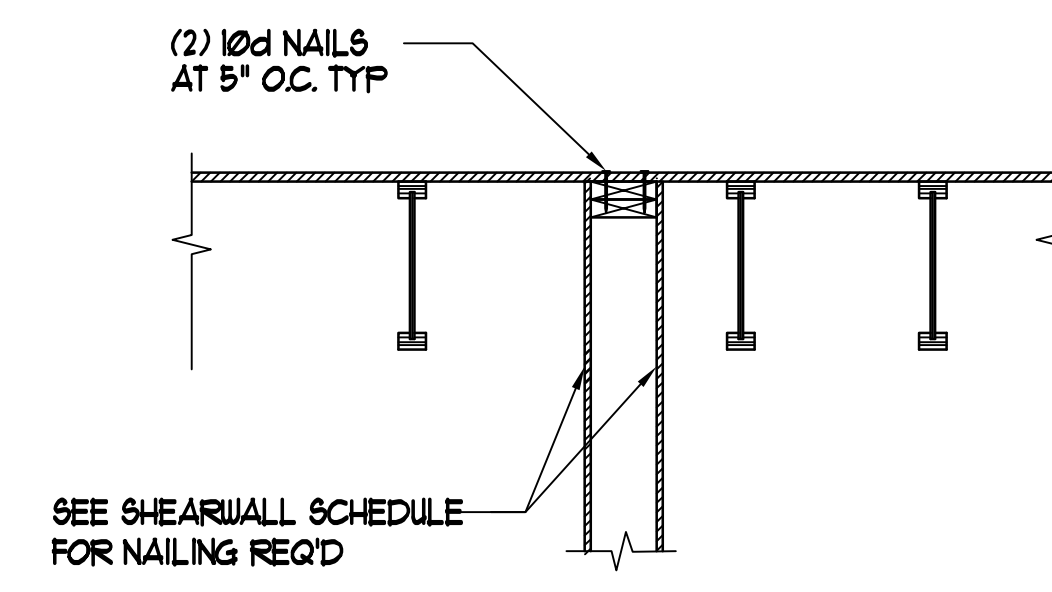
6 SECTION AT ROOF
SCALE 3/4" = 1'-0"



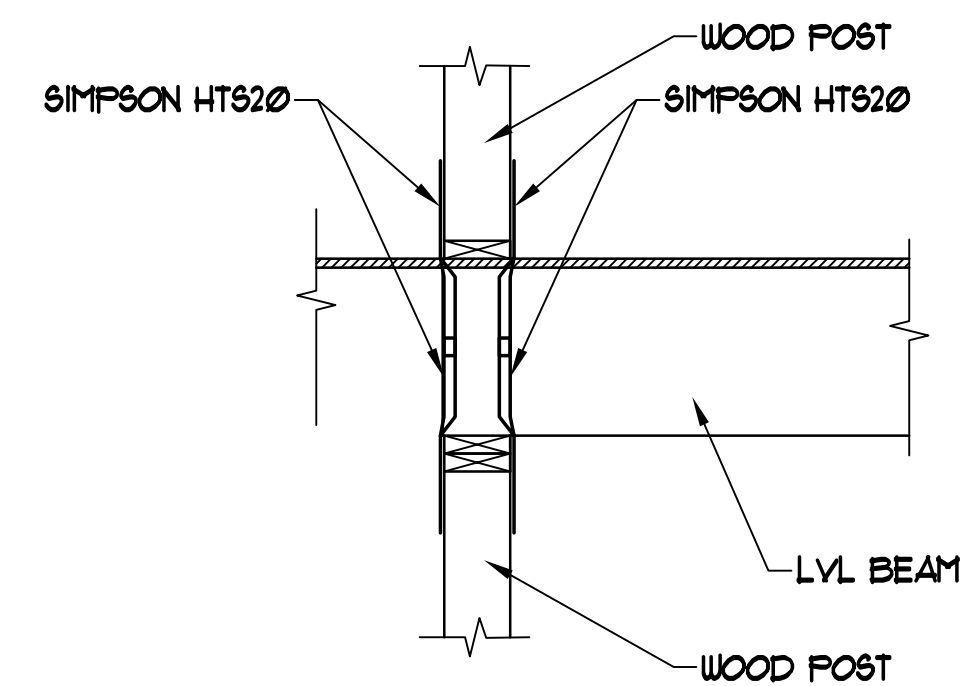
7 SHEAR WALL SECTION AT ROOF
SCALE 3/4" = 1'-0"



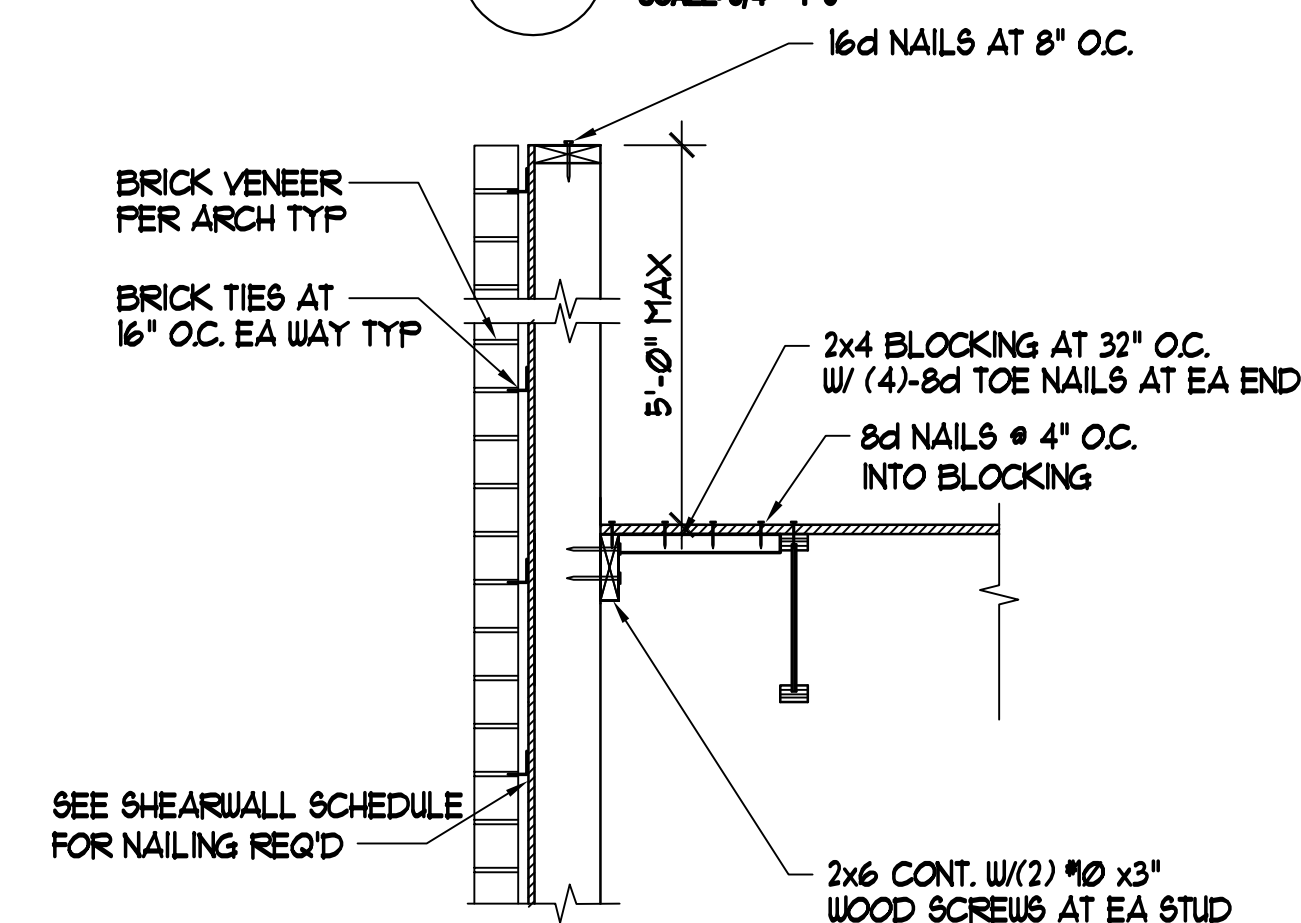
8 SHEAR WALL SECTION AT ROOF
SCALE 3/4" = 1'-0"



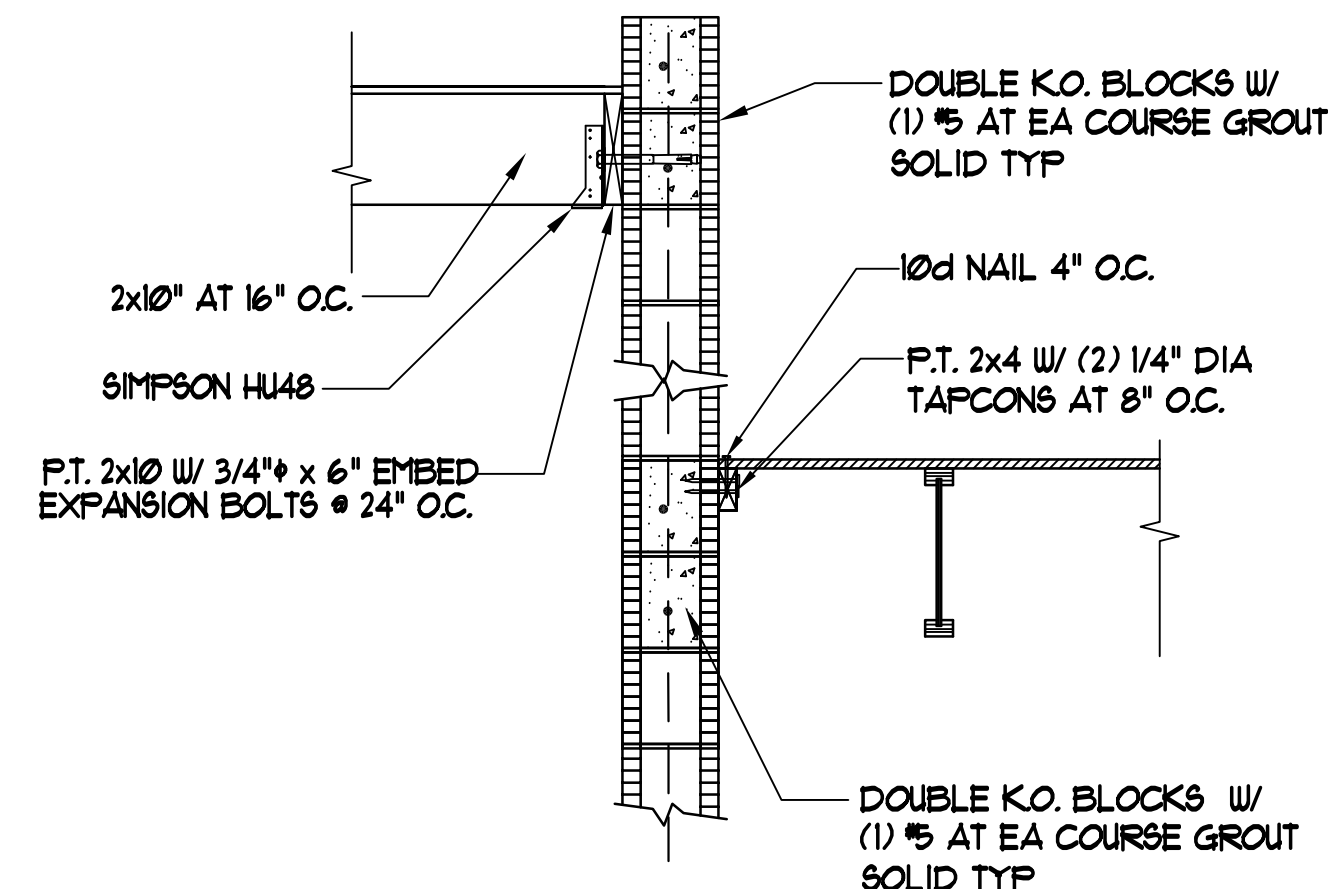
9 SHEAR WALL SECTION AT ROOF
SCALE 3/4" = 1'-0"



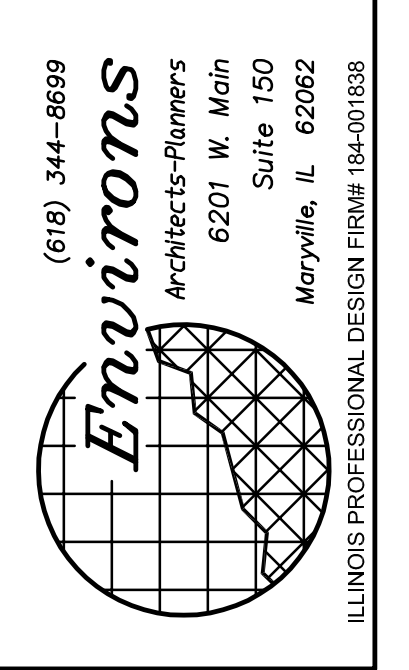
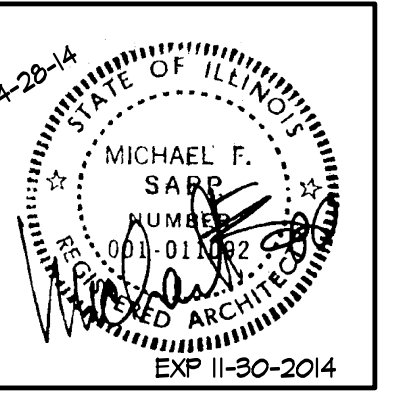
10 TYP POST AT FLOOR LEVEL
SCALE 3/4" = 1'-0"



11 SECTION AT ROOF
SCALE 3/4" = 1'-0"



12 SECTION
SCALE 3/4" = 1'-0"



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MUNDELEIN, ILLINOIS

UPPER FLOOR FRAMING DETAILS

WOOD SHEARWALL SCHEDULE '3

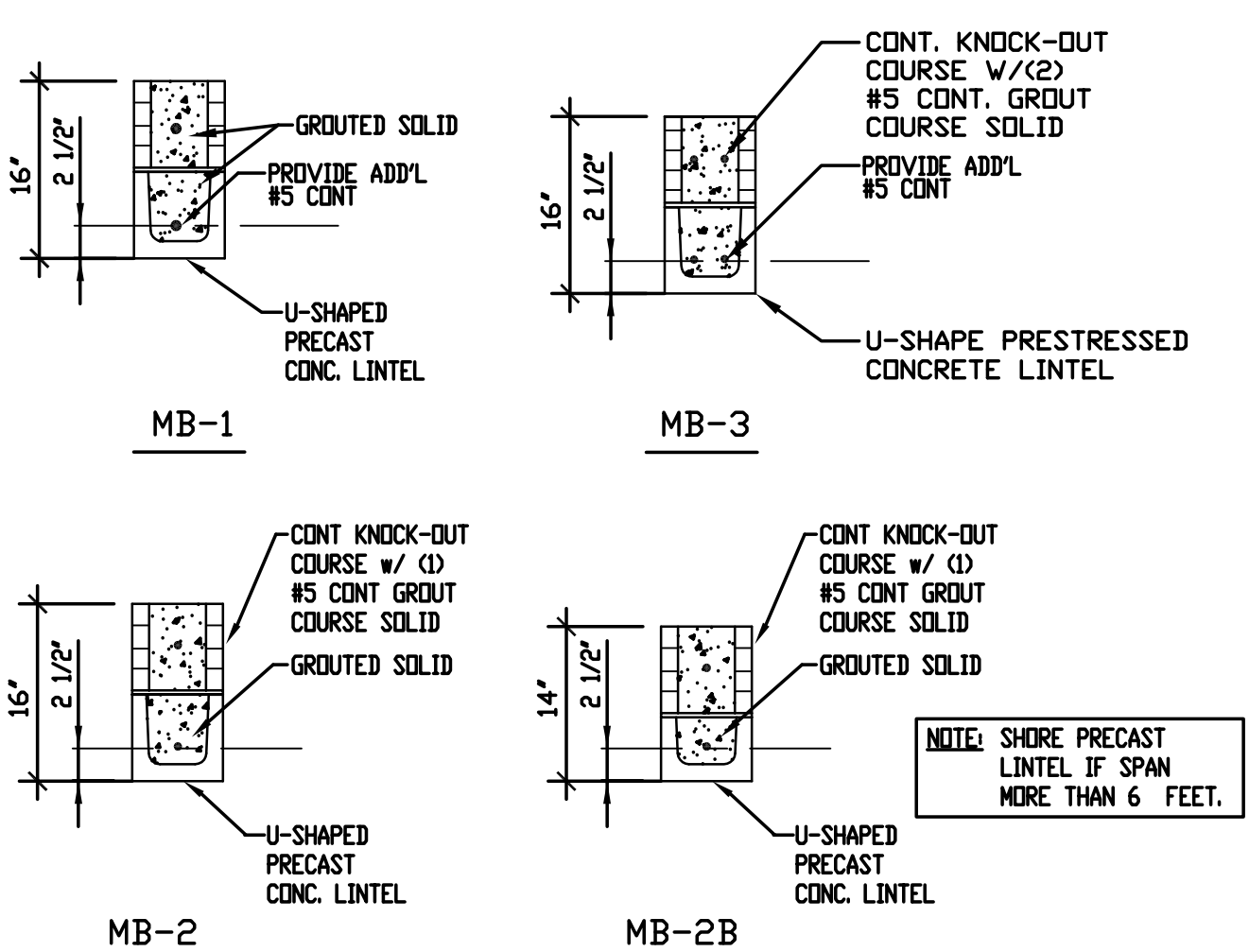
TYPE	SHEATHING					SHEATHING NAILING					FIRST CONN EACH END OF WALL				END SILE PLATE ATTACHMENT	2nd FLOOR CONN EACH END OF WALL			3rd FLOOR CONN EACH END OF WALL			4th FLOOR CONN EACH END OF WALL			5th FLOOR CONN EACH END OF WALL					
	1st-2nd FLR	2nd-ROOF @ 2 STORY	3rd-ROOF @ 3 STORY	4th-ROOF @ 4 STORY	5th-ROOF @ 5 STORY	1st-2nd FLR	2nd-ROOF @ 2 STORY	3rd-ROOF @ 3 STORY	4th-ROOF @ 4 STORY	4th-ROOF @ 4 STORY	5th-ROOF @ 5 STORY	CONNECTOR	FND BOLT-12" EMBED DBL NUT EA END	ATTACH TO STUDS	REQ'D STUDS AT END OF WALL	1/2" x 7" ANCHOR BOLTS @ 16" O.C.	CONNECTOR	NAILS EACH END OF STRAP AT STUD	REQ'D STUDS AT END OF WALL	CONNECTOR	NAILS EACH END OF STRAP AT STUD	REQ'D STUDS AT END OF WALL	CONNECTOR	NAILS EACH END OF STRAP AT STUD	REQ'D STUDS AT END OF WALL	CONNECTOR	NAILS EACH END OF STRAP AT STUD	REQ'D STUDS AT END OF WALL		
1	1/2" C-D PLYWD	1/2" C-D PLYWD	1/2" C-D PLYWD	1/2" C-D PLYWD	1/2" C-D PLYWD	8d NAILS @ 3" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 6" O.C.	H07B	5/8" DIA	32-16d SINKERS	(4) 2x6 OR VD POST	1/2" x 7" ANCHOR BOLTS @ 16" O.C.	2-C320x42	10-10d	(4) 2x6	C318x42	10-10d	(4) 2x6	C318x42	10-10d	(2) 2x6	C318x42	10-10d	(2) 2x6	C318x42	10-10d	(2) 2x6
2	1/2" C-D PLYWD	1/2" C-D PLYWD	1/2" C-D PLYWD	5/8" GYPSUM WALLBOARD	5/8" GYPSUM WALLBOARD	8d NAILS @ 3" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 6" O.C.	6d COOLER NAILS @ 4" O.C.	H07B	5/8" DIA	32-16d SINKERS	(4) 2x6 OR VD POST	1/2" x 7" ANCHOR BOLTS @ 16" O.C.	2-C320x42	10-10d	(4) 2x6	C318x42	10-10d	(4) 2x6	C318x42	10-10d	(2) 2x6	C318x42	10-10d	(2) 2x6	C318x42	10-10d	(2) 2x6
3	1/2" C-D PLYWD	1/2" C-D PLYWD	1/2" C-D PLYWD	5/8" GYPSUM WALLBOARD	5/8" GYPSUM WALLBOARD	8d NAILS @ 3" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 4" O.C.	8d NAILS @ 6" O.C.	6d COOLER NAILS @ 4" O.C.	H07B	5/8" DIA	32-16d SINKERS	(4) 2x6 OR VD POST	1/2" x 7" ANCHOR BOLTS @ 16" O.C.	2-C320x42	10-10d	(4) 2x6	C318x42	10-10d	(4) 2x6	C318x42	10-10d	(2) 2x6	C318x42	10-10d	(2) 2x6	C318x42	10-10d	(2) 2x6

- *1 SHEATH EXTERIOR FACE WITH SHEARWALL SCHEDULED, AND THE INTERIOR FACE OF STUDS AS SPECIFIED IN THE GENERAL NOTES FOR INTERIOR WALLS.
- *2 INTERIOR WALL BOTH FACE WITH SHEARWALL SCHEDULED.
- *3 TJI BLOCKING PANEL AT EVERY JOIST BETWEEN FOR SECOND AND THIRD FLOOR. TJI BLOCKING PANEL AT EVERY OTHER JOIST BETWEEN FOR FOURTH AND FIFTH FLOOR.
- *4 NO TJI BLOCKING PANEL FOR SHEAR TYPE (3).

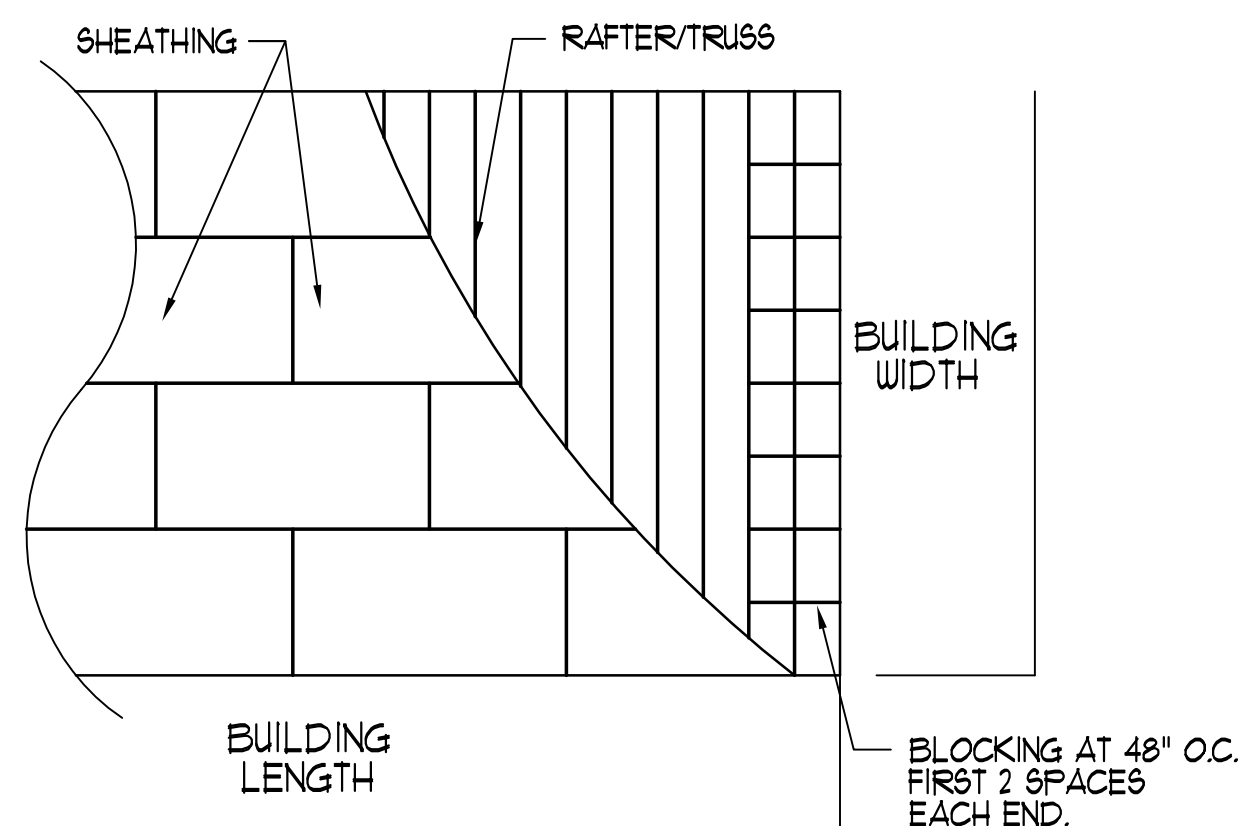
- NOTES:
- 1 ALL HD, HTT, AND C6 FASTENERS ARE AS MANUFACTURED BY THE SIMPSON STRONG-TIE COMPANY, INC., OR EQUAL.
 - 2 WHERE SCHEDULED ADDITIONAL STUDS AT THE ENDS OF SHEAR WALLS ARE INTERRUPTED AT TRUSS BEARING, PROVIDE SOLID BLOCKING IN THE TRUSS SPACE TO MATCH THE STUDS SCHEDULED FOR THE LOWER FLOOR.
 - 3 WHERE SCHEDULED SHEATHING CANNOT EXTEND FULL HEIGHT OF WALL, PROVIDE SHEATHING OR BLOCKING BETWEEN FLOOR TRUSSES AT ALL SHEARWALLS.
 - 4 SHEATHING SHALL EXTEND FULL HEIGHT OF SHEARWALLS. STAGGER SHEATHING HORIZONTAL JOINTS SO THEY DO NOT FALL AT HORIZONTAL JOINT BETWEEN DOUBLE TOP PLATES.
 - 5 WHEREVER THE SHEATHING OF A SHEAR WALL IS INTERRUPTED (I.E. BY AN INTERSECTING WALL) IN THE VERTICAL PLANE, THE SCHEDULED "ADD'L STUD AT END OF WALL" AND HOLDDOWN ANCHORS SHALL BE PROVIDED AT THE END OF THE SHEATHING (ONE EACH SIDE OF THE INTERRUPTION). THE QUANTITY OF SHEARWALL CALLOUTS ON THE PLANS MAY NOT ACCURATELY REFLECT THE NUMBER OF HOLDDOWNS REQUIRED BECAUSE OF THIS. THE CONTRACTOR MUST FIRST DETERMINE WHERE THE SHEARWALL SHEATHING WILL BE INTERRUPTED BEFORE DETERMINING THE NUMBER HOLDDOWNS REQUIRED.
 - 6 WHERE BOLTS ARE CALLED OUT FOR HOLDDOWN ANCHORS, THE BOLTS SHALL BE THROUGH BOLTS CONFORMING TO ASTM A307.
 - 7 1/16" O.S.B. MAY BE USED IN LIEU OF THE 1/16" C-DX PLYWOOD SHEATHING.
 - 8 ANCHOR BOLTS SHALL ALL HAVE 3" HOOKS. A36 ALL THREAD RODS, DRILLED AND EPOXY GROUTED INTO FOOTINGS, MAY BE SUBSTITUTED FOR ANCHOR BOLTS CAST IN PLACE. ALL THREAD RODS SHALL HAVE SAME EMBEDMENT DEPTH AS ANCHOR BOLTS.

MASONRY LINTEL SCHEDULE (CAST-CRETE LINTEL)			
MARK	LENGTH (L)	CAST-CRETE MARK	REMARK
MB-1	2'-10" < L ≤ 5'-10"	8F16-1B/1T PRECAST	
MB-2	5'-10" < L ≤ 14'-0"	8F16-1B/1T PRECAST	
MB-2B	2'-10" < L ≤ 9'-8"	8F14-1B/1T PRECAST	RECESS LINTEL FOR DOOR OPENING
MB-3	14'-8" < L < 24'-0"	8F16-2B/2T PRESTRESSED	

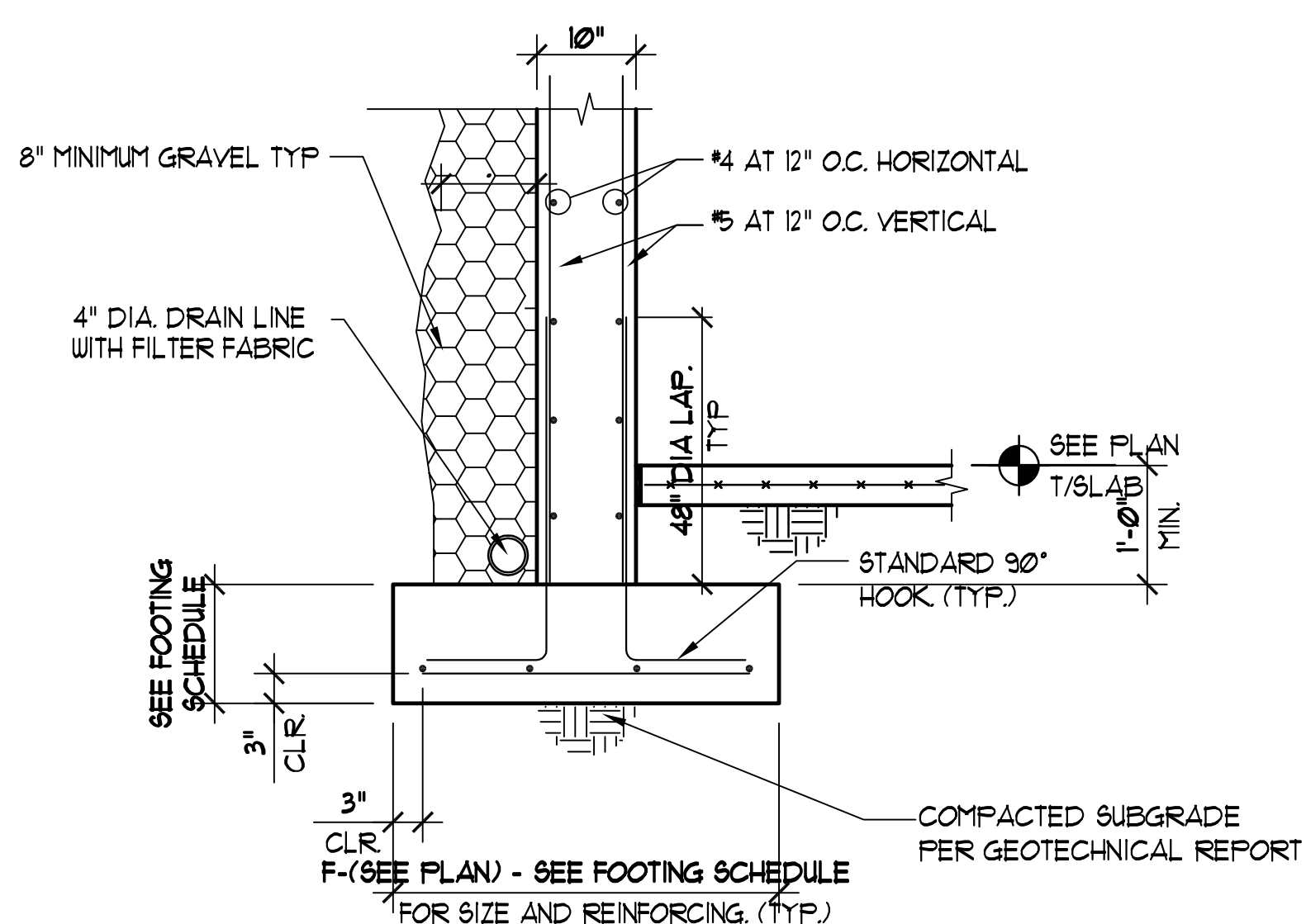
1. PROVIDE MASONRY LINTEL OVER ALL OPENINGS. IF NO LINTEL IS SPECIFIED, PROVIDE MB-2, AND MB-2B FOR DOOR OPENING (EXCEPT GARAGE DOOR).
2. PROVIDE MINIMUM END BEARING OF 8". CUT OUT BOTTOM OF LINTEL AT END TO ALLOW CONTINUATION OF FILLED CELL REINFORCING.
3. MASONRY LINTEL SUBSTITUTIONS MUST BE APPROVED BY ARCH.



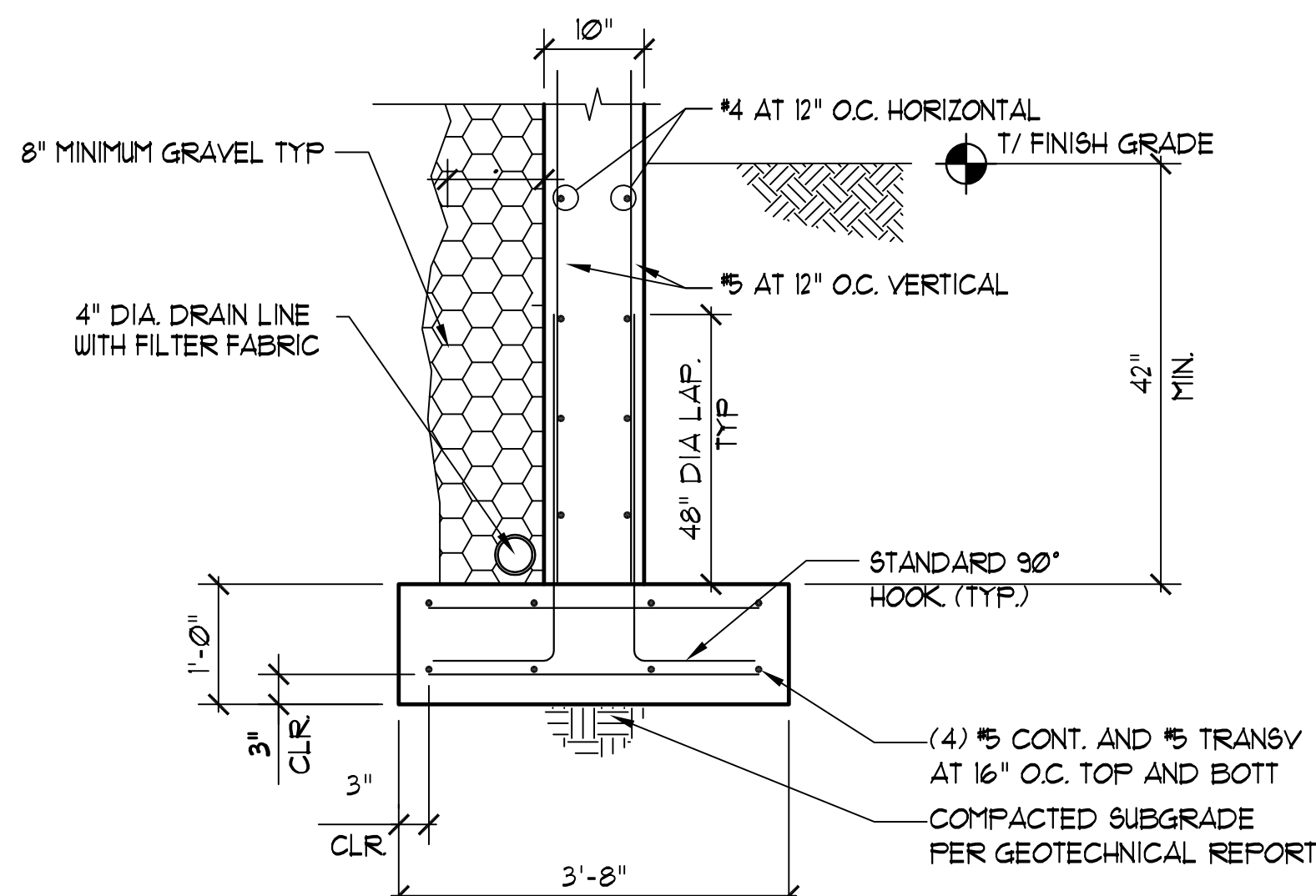
MASONRY LINTEL SCHEDULE



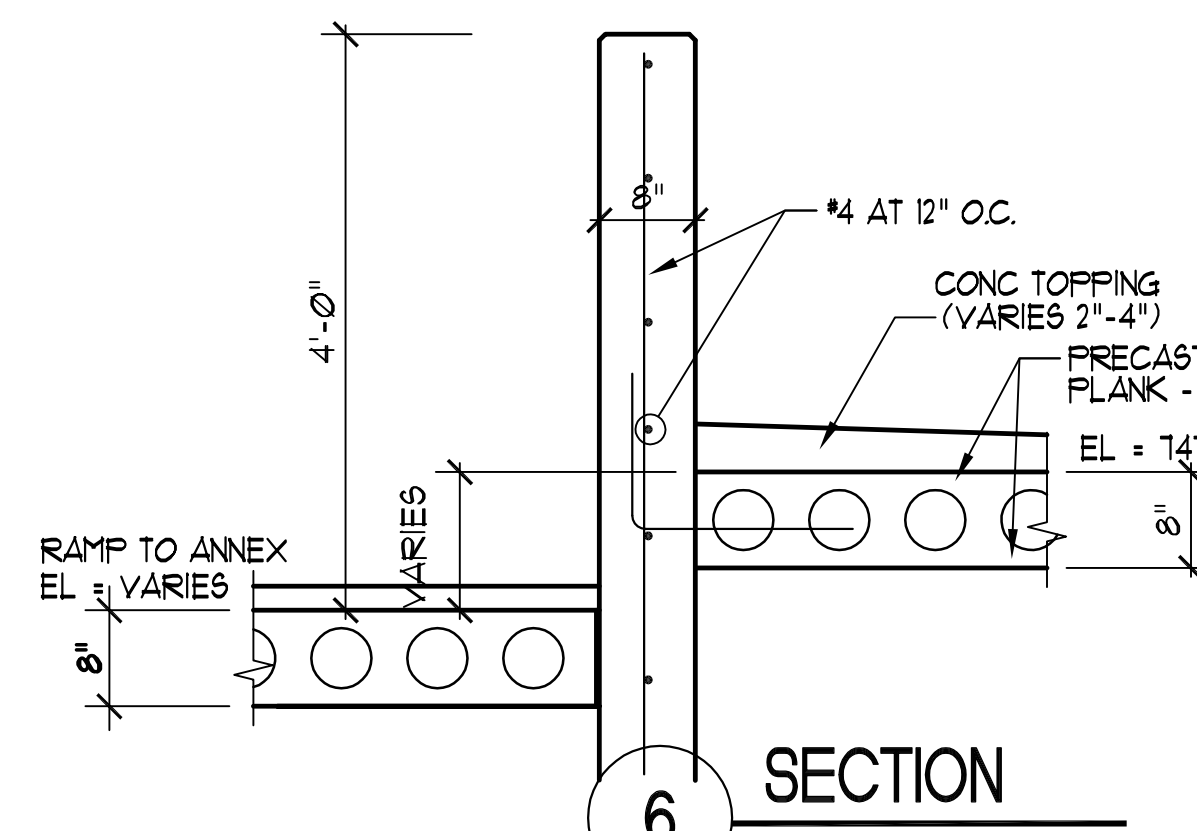
2 ROOF SHEATHING LAYOUT
SCALE: NTA



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



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



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

MINIMUM WALL AND HEADER STUD REQUIREMENTS

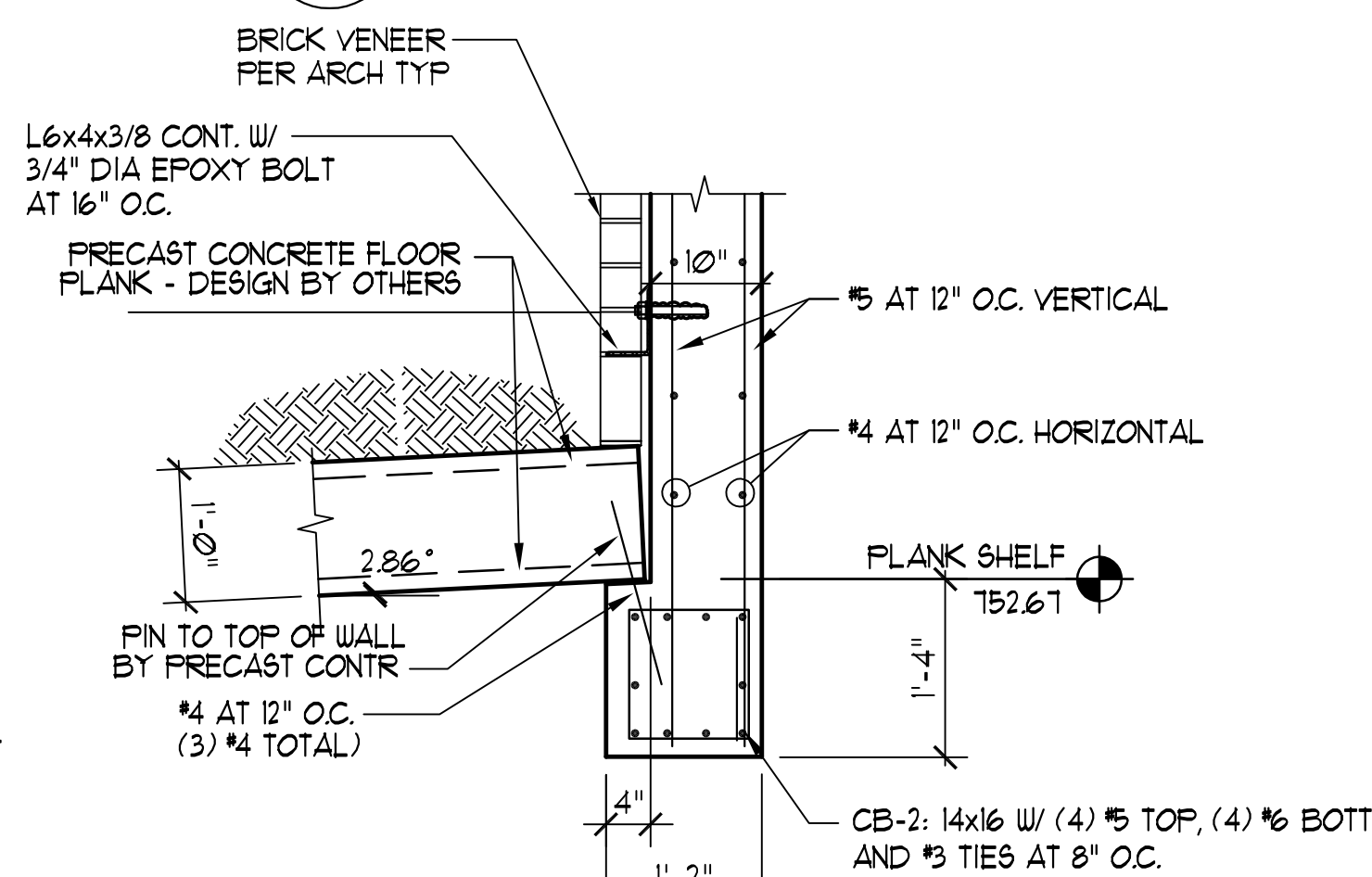
UPLIFT CONNECTION REQUIREMENT AT POINTS 'A' (TOP AND BOTTOM OF HEADER STUDS). UPLIFT CONNECTION IS REQUIRED AT EACH END OF HEADER AND AT BOTTOM OF HEADER STUDS IN ADDITION TO CONNECTORS AT WALL STUDS

	MAXIMUM HEADER SPAN (FEET)			
	3	6	9	12
NUMBER OF HEADER STUDS SUPPORTING END OF HEADER	2	3	4	4

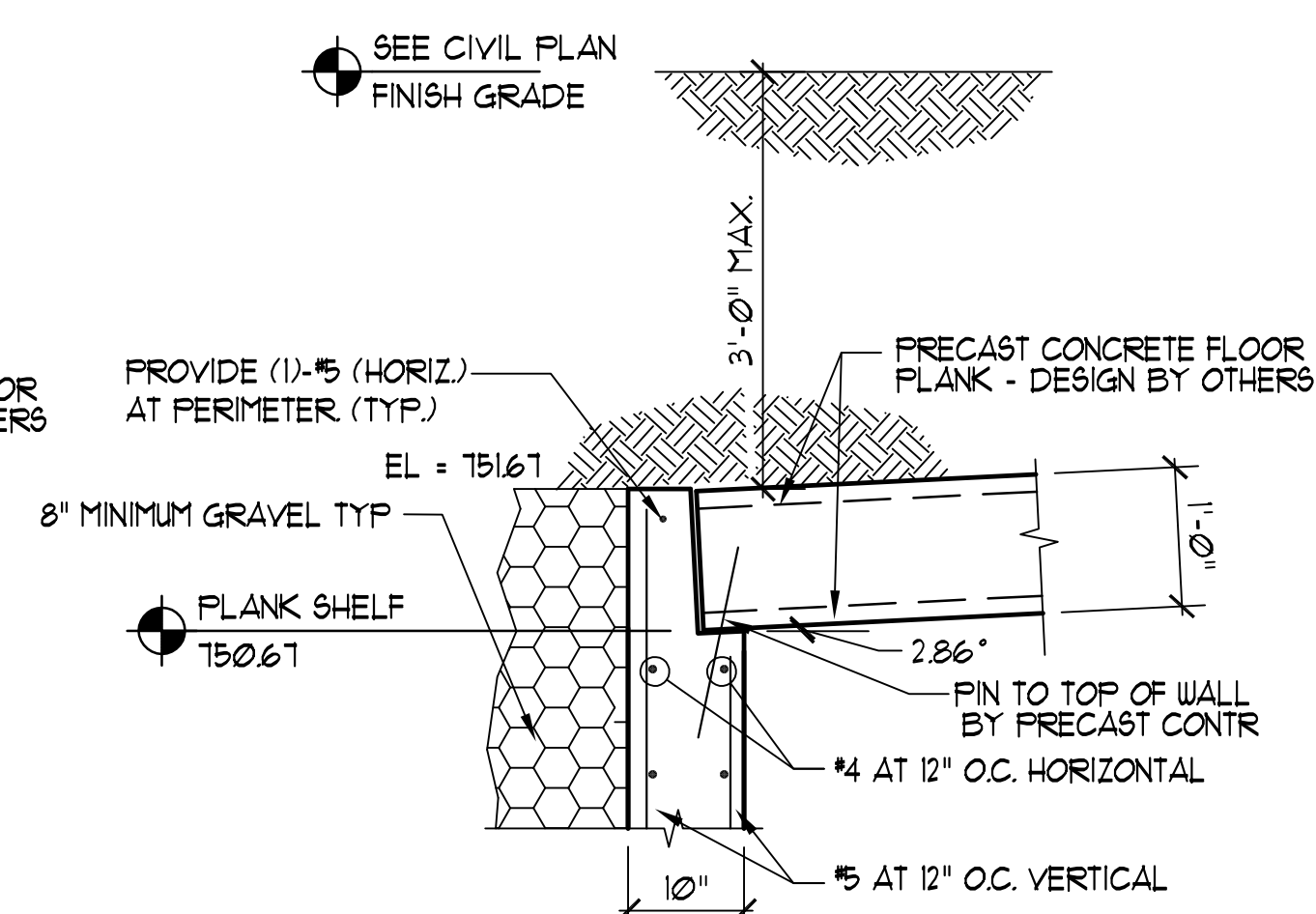
UNSUPPORTED WALL HEIGHT	STUD SPACING	NUMBER OF FULL LENGTH STUDS AT EACH END OF HEADER			
10' OR LESS	DOUBLE STUDS AT 16"	4	4	6	6
	16"	2	2	3	3
GREATER THAN 10'	DOUBLE STUDS AT 16"	4	4	6	8
	16"	2	2	3	3

ALL THE EXTERIOR WALL STUDS SHALL BE FIRE RETARDANT TREATED.

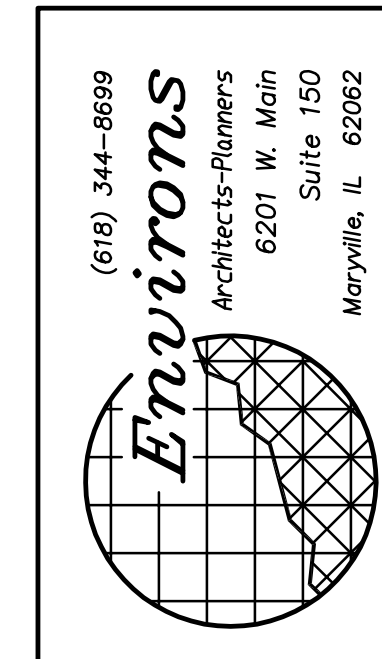
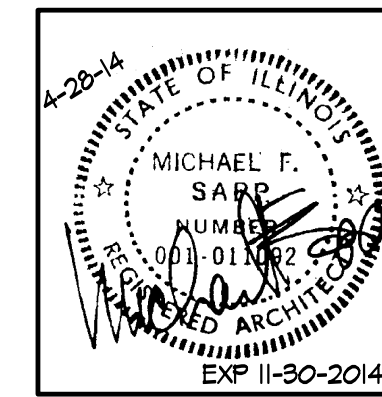
1 HEADER STUD SCHEDULE
SCALE: 3/4" = 1'-0"



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



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



JOB NO.
13022

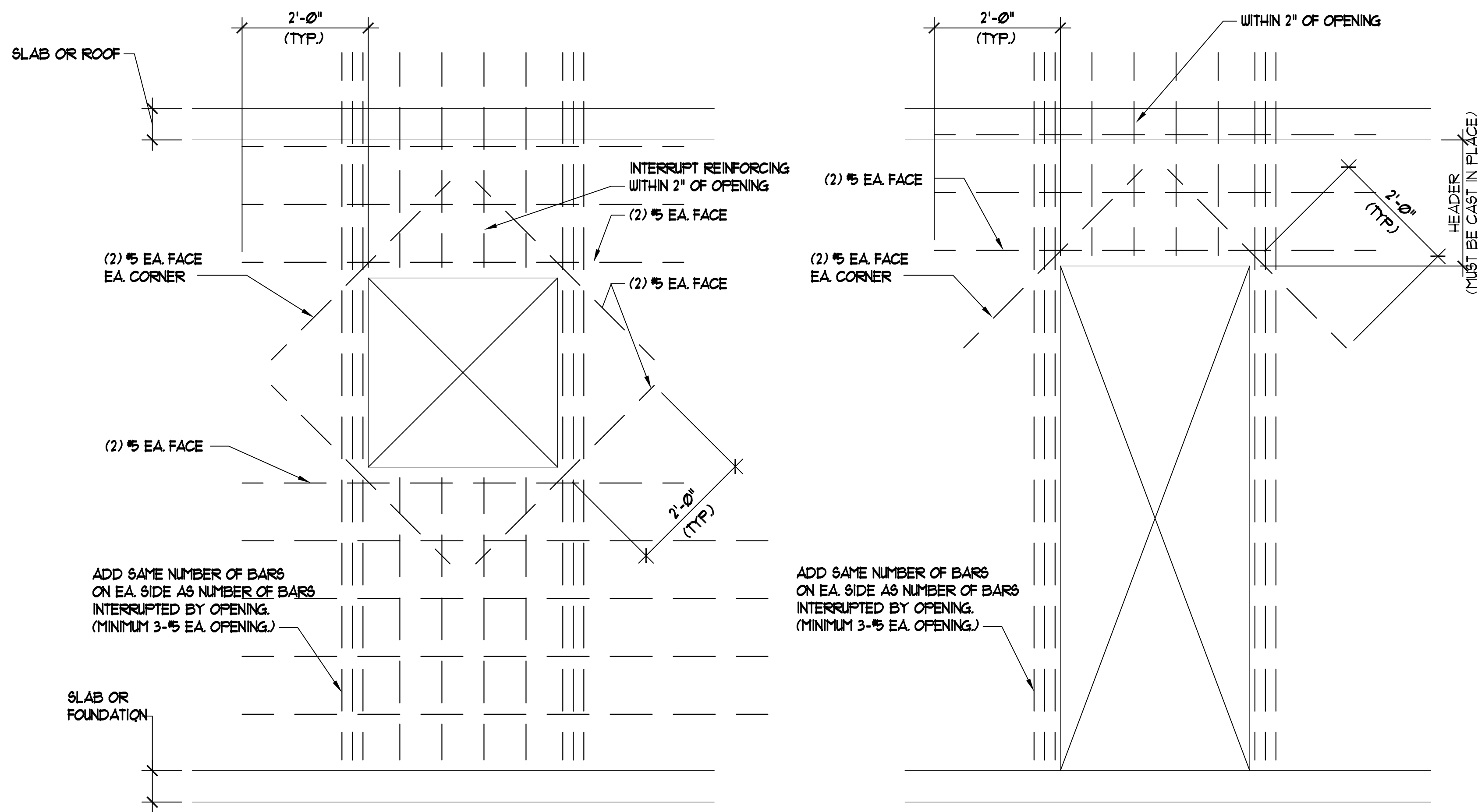
DATE:
DECEMBER 11, 2013
REVISED:
FEBRUARY 20, 2014
PRECAST OPTION
APRIL 28, 2014



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WWW.SHRINAY.COM
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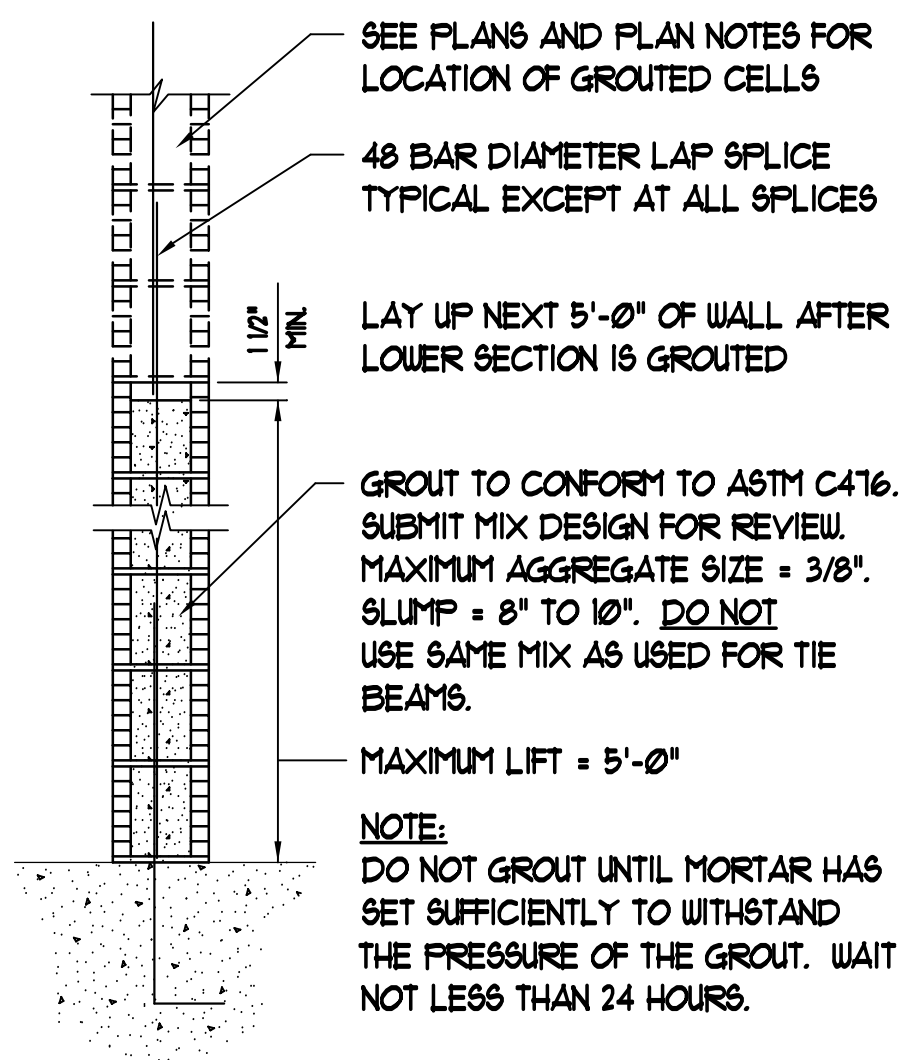
A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
510
OF 13



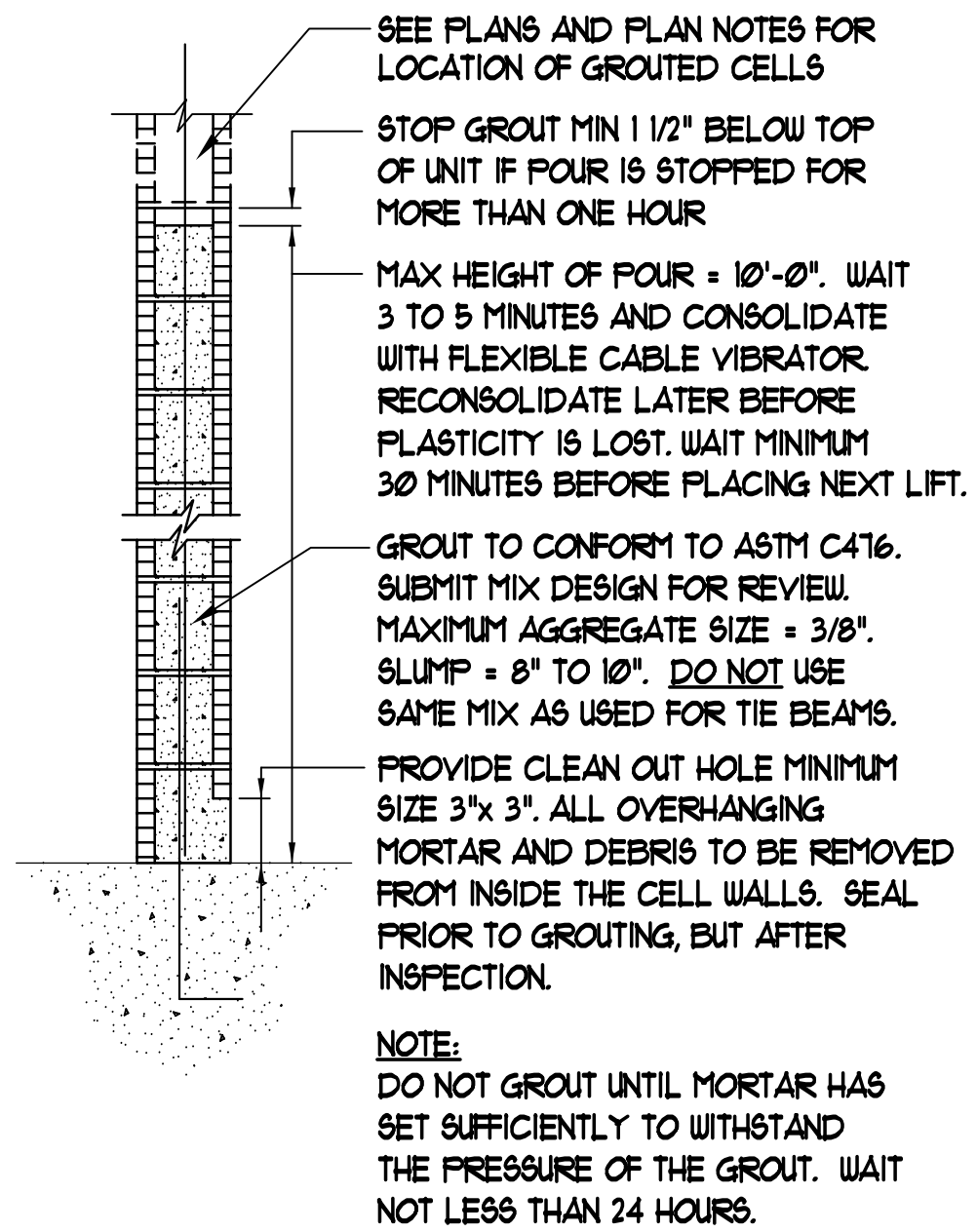
1 TYPICAL WALL OPENING DETAILS
(OPENING LESS THAN 5'-0")

SCALE NTS.



3 TYPICAL LOW LIFT
GROUTING SECTION

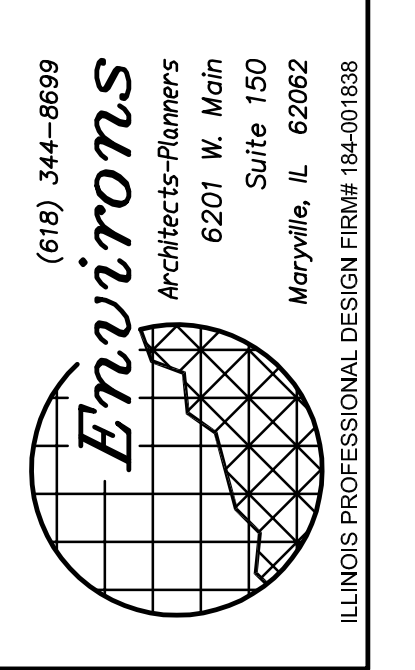
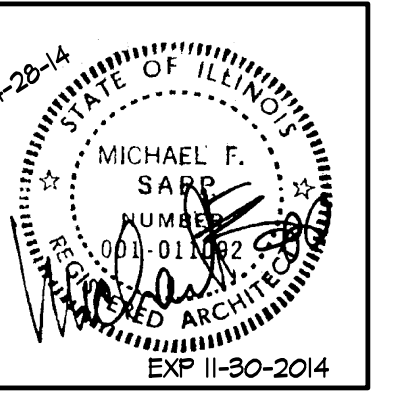
SCALE 3/4" = 1'-0"



4 TYPICAL HIGH LIFT
GROUTING SECTION

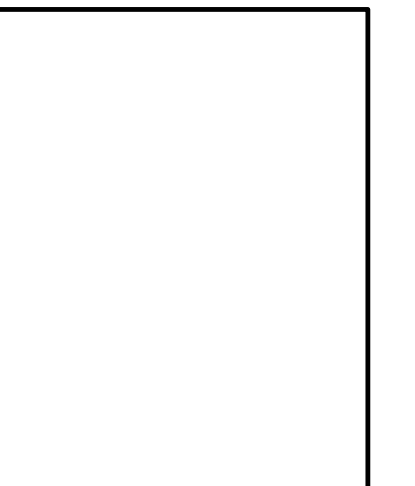
SCALE 3/4" = 1'-0"

2 NOT USED
SCALE 3/4" = 1'-0"



JOB NO.
13022

DATE:
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REVISED:
FEBRUARY 20, 2014
APRIL 28, 2014



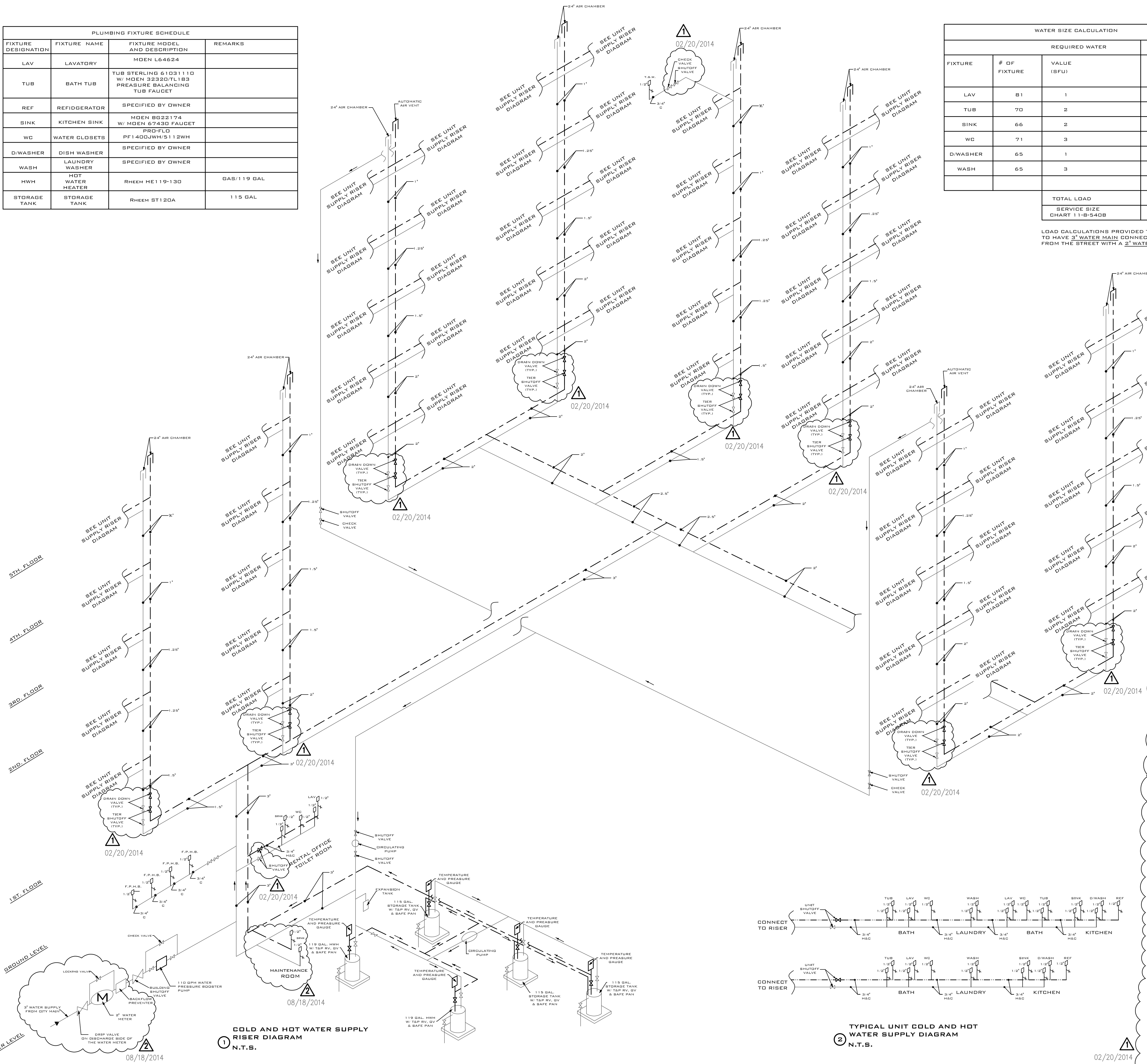
A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKinley + Anthony Ave.
Mundelein, Illinois
FRAMING DETAILS

SHEET
S11
OF 13

PLUMBING FIXTURE SCHEDULE			
FIXTURE DESIGNATION	FIXTURE NAME	FIXTURE MODEL AND DESCRIPTION	REMARKS
LAV	LAVATORY	MOEN L64624	
TUB	BATH TUB	TUB STERLING 61D311D W/ MOEN 32320/TL183 PRESURE BALANCING TUB FAUCET	
REF	REFRIDGERATOR	SPECIFIED BY OWNER	
SINK	KITCHEN SINK	MOEN 8622174 W/ MOEN 67430 FAUCET	
WC	WATER CLOSETS	PRO-FLO PF1400JWH/5112WH	
D.WASHER	DISH WASHER	SPECIFIED BY OWNER	
WASH	LAUNDRY WASHER	SPECIFIED BY OWNER	
HWH	HOT WATER HEATER	RHEEM HE119-130	GAS/119 GAL
STORAGE TANK	STORAGE TANK	RHEEM ST120A	115 GAL

WATER SIZE CALCULATION			
REQUIRED WATER			
FIXTURE	# OF FIXTURE	VALUE (SFU)	FIXTURES LOAD
LAV	81	1	81
TUB	70	2	140
SINK	66	2	132
WC	71	3	213
D.WASHER	65	1	65
WASH	65	3	195
TOTAL LOAD			826
SERVICE SIZE			3"

- CONTRACTOR TO VISIT JOB SITE OR PREMISES AND BE FAMILIAR WITH JOB CONDITIONS PRIOR TO SUBMITTING BID.
- CONTRACTOR TO PAY FOR ALL TAXES AND FEES AND GIVE LOCAL AUTHORITIES ALL NOTICES RELATING TO HIS WORK.
- ALL WORK SHALL BE DONE IN FIRST CLASS-MANNER.
- ALL MATERIALS USED FOR JOB SHALL BE NEW AND BEST OF THEIR KIND.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH STATE AND LOCAL CODES.
- CONTRACTOR IS TO GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR AFTER COMPLETION AGAINST ALL DEFECTS OF MATERIALS, EQUIPMENT AND WORKMANSHIP.
- CONTRACTOR TO TEST SYSTEM PRIOR TO OPERATION.
- ALL CUTTING AND PATCHING CAUSED BY THIS WORK SHALL BE DONE BY THIS CONTRACTOR.
- ALL UNDERGROUND SEWER LINES SHALL BE PVC AND FITTINGS.
- ALL SEWER PIPING ABOVE FLOOR SHALL BE PVC AND FITTINGS.
- ALL DOMESTIC HOT AND COLD WATER LINES SHALL BE COPPER PIPING TYPE "L".
- INSULATE COLD AND HOT WATER LINES WITH 1" THICK FACTORY PRE-INSULATED FIBERGLASS PIPE INSULATION WITH VAPOR BARRIER JACKET.
- ALL VALVES SHALL BE SIMILAR TO CRANE OR AMERICAN.
- ALL CONDUCITS TO BE INSULATED AT EACH CHANGE IN DIRECTION OF SEWER LINES.
- ALL PLUMBING & PLUMBING FIXTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE ILLINOIS STATE PLUMBING CODE.
- POLY VINYL CHLORIDE (PVC) PLASTIC PIPE AND FITTINGS SHALL CONFORM TO ASTM DESIGNATION D2665-88, INCLUDING THE APPENDIX, BEING MANDATORY, AND SHALL BE LIMITED TO SIZE 1-1/2", 2", 3" PIPE, THE SOLVENT CEMENT SHALL CONFORM TO ASTM DESIGNATION D2564-88 AND THE PLASTIC PRIMER SHALL CONFORM TO ASTM DESIGNATION F656-88 AND BE OF A CONTRASTING COLOR.
- ALL PIPES TO BE COPPER; PROVIDE AIR CHAMBERS MIN. 24"; PROVIDE THERMO EXPANSION TANK 1.9 GAL. W.H.
- NEW SANITARY SERVICE WILL BE USED.
- NEW WATER SERVICE WILL BE USED.
- ALL TUBS & SHOWERS NEED 2" P-TRAPS.
- TUBS & SHOWER TEMPERATURE NOT TO EXCEED 115° DEGREES
- ALL HAND HELD SHOWERS NEED VACUUM BREAKERS.
- PROVIDE BACK FLOW PREVENTION DEVICE ON ALL HAND HELD SPRAY @ TUBS.
- INSTALL PRESSURE RELIEF VALVES ON THE HIGH PRESSURE SIDE OF THE SYSTEM, UPSTREAM OF ANY INTERVENING VALVES
- MAX. LENGTH 1-1/2" VENT PIPING IS 10'
- MAX. LENGTH 1/2" WATER PIPING IS 10'
- PROVIDE THERMO EXPANSION TANK 1.9 GAL. W.H.
- FURNISH AND INSTALL GAS PIPING WITH SHUTOFF COCKS AT EACH AND EVERY APPLIANCE REQUIRING GAS, INCLUDING FURNACE, DOMESTIC WATER HEATERS, ETC. PIPING SHALL BE SCHEDULE 40 BLACK STEEL. "GRADE A" FITTINGS SHALL BE STANDARD WEIGHT, BLACK MALLEABLE IRON OR CAST IRON SCREWED AND RATED AT 150 PSI.



LOAD CALCULATIONS PROVIDED THE BUILDING TO HAVE 3" WATER MAIN CONNECTION FROM THE STREET WITH A 2" WATER METER.

PLUMBING DIAGRAM LEGEND	
SYMBOL	DESCRIPTION
(M)	WATER METER
---	VENT LINE
---	WASTE LINE
---	COLD WATER SUPPLY LINE
---	HOT WATER SUPPLY LINE

NOTES:

ALL PLUMBING FIXTURES MUST HAVE SHUT-OFF VALVES INCLUDING SHOWER VALVES

ALL SHOWER COMPARTMENTS AND SHOWER-BATH COMBINATIONS SHALL BE PROVIDED WITH AN AUTOMATIC SAFETY WATER MIXING DEVICE TO PREVENT SUDDEN UNANTICIPATED CHANGES IN WATER TEMPERATURE OR EXCESSIVE WATER TEMPERATURES. THE AUTOMATIC SAFETY WATER MIXING DEVICE SHALL BE ADJUSTED TO A MAXIMUM SETTING OF 115° AT THE TIME OF INSTALLATION

ASSE 1016-1996 APPROVED SHOWER VALVE IS REQUIRED.

SHOWER LOOKOUT REQUIRES A 90 DROP-EAR ELL SCREWED TO WOOD BACKING

DOMESTIC WATER SHOULD BE FED OFF FIRE SYSTEM

UNUSED SECTION OF WATER SERVICE OR WATER DISTRIBUTION PIPING ("DEAD ENDS"), WHERE THE WATER IN THE PIPING MAY BECOME STAGNANT, ARE PROHIBITED. A DEVELOPED LENGTH OF MORE THAN 2 FEET SHALL BE CONSIDERED A DEAD END

THE WATER DISTRIBUTION SYSTEM SHALL BE PROTECTED AGAINST BACKFLOW. EACH WATER OUTLET SHALL BE PROTECTED FROM BACKFLOW BY HAVING THE OUTLET END FROM WHICH THE WATER FLOWS SPACED A DISTANCE ABOVE THE FLOOD-LEVEL RIM OF THE RECEPTACLE INTO WHICH THE WATER FLOWS SUFFICIENT TO PROVIDE A MINIMUM FIXED AIR GAP. WHERE IT IS NOT POSSIBLE TO PROVIDE A MINIMUM FIXED AIR GAP, THE WATER OUTLET SHALL BE EQUIPPED WITH AN ACCESSIBLE BACKFLOW PREVENTION DEVICE OR ASSEMBLY IN ACCORDANCE WITH ILLINOIS PLUMBING CODE SUBSECTION (F) OF SECTION 890.1140

TYPE-M COPPER PIPE IS PROHIBITED AND NOT APPROVED MATERIAL FOR WATER DISTRIBUTION PIPE

FLANGES CONNECTING WATER CLOSETS TO THE FLOOR MUST BE SECURED USING NONFERROUS OR DALVANIZED SCREWS. ALL FIXTURES MUST BE ANCHORED TO THE FLOOR OR WALL, WITH THE USE OF NON-COMPRESSIVE SHIMS IF NECESSARY, THEN GROUTED COMPLETE TO AFFORD A SANITARY SEAL

WHEN WATER MAIN PRESSURE EXCEEDS 80 P.S.I., A PRESSURE REDUCING VALVE AND A STRAINER WITH A BY-PASS RELIEF VALVE SHALL BE INSTALLED IN THE WATER SERVICE PIPE NEAR THE ENTRANCE TO THE BUILDING TO REDUCE THE WATER PRESSURE TO 80 P.S.I. OR LOWER, EXCEPT WHERE THE WATER SERVICE PIPE SUPPLIES WATER DIRECTLY TO A WATER PRESSURE BOOSTER SYSTEM, AN ELEVATED WATER TANK, OR TO PUMPS PROVIDED IN CONNECTION WITH HYDRO-PNEUMATIC OR ELEVATED WATER SUPPLY TANK SYSTEM. SILL COCKS AND OUTSIDE HYDRANTS MAY BE LEFT ON FULL WATER MAIN PRESSURE.

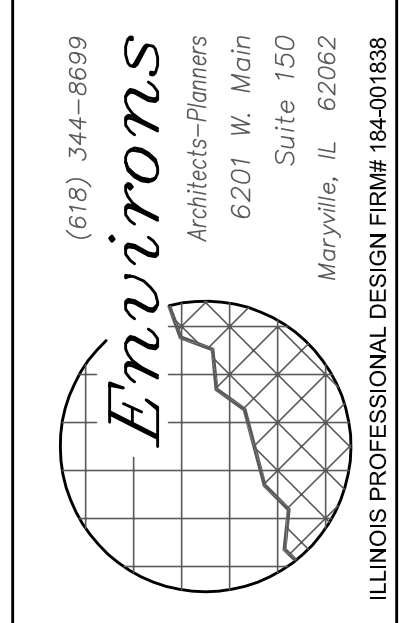
THE MINIMUM CONSTANT WATER SERVICE PRESSURE ON THE DISCHARGE SIDE OF THE WATER METER SHALL BE AT LEAST 20 P.S.I., AND THE MINIMUM CONSTANT WATER PRESSURE AT EACH FIXTURE SHALL BE AT LEAST 8 P.S.I. OR THE MINIMUM RECOMMENDED BY THE FIXTURE MANUFACTURER

WHEN A BOOSTER PUMP EXCEPT THOSE USED FOR FIRE PROTECTION IS USED ON AN AUXILIARY PRESSURE SYSTEM, THERE SHALL BE INSTALLED A LOW-PRESSURE CUT-OFF SWITCH ON THE BOOSTER PUMP TO PREVENT THE CREATION OF PRESSURES LESS THAN 5 P.S.I. ON THE SUCTION SIDE OF PUMP. A SHUT-OFF VALVE SHALL BE INSTALLED ON THE SUCTION SIDE OF THE WATER SYSTEM AND WITHIN 5 FEET FROM THE PUMP SUCTION INLET, AND A PRESSURE GAUGE SHALL BE INSTALLED BETWEEN THE SHUT-OFF VALVE AND PUMP

WHEN THE WATER PRESSURE EXCEEDS 80 P.S.I. AT ANY PLUMBING FIXTURE, A PRESSURE REDUCING VALVE, PRESSURE GAUGE AND A STRAINER WITH A BY-PASS RELIEF VALVE SHALL BE INSTALLED IN A WATER SUPPLY PIPE SERVING THE FIXTURE TO REDUCE THE WATER PRESSURE AT THE FIXTURE TO 80 P.S.I. OR LOWER

1 COLD AND HOT WATER SUPPLY RISER DIAGRAM N.T.S.

2 TYPICAL UNIT COLD AND HOT WATER SUPPLY DIAGRAM N.T.S.

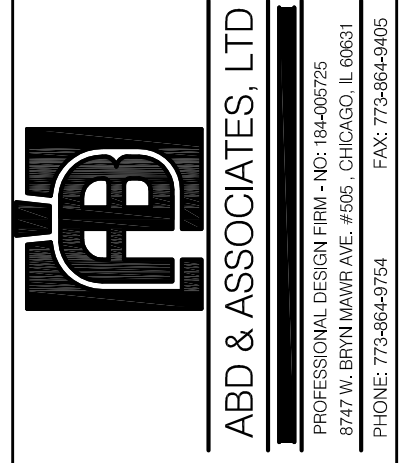


JOB NO. 13022

DATE: DECEMBER 11, 2013

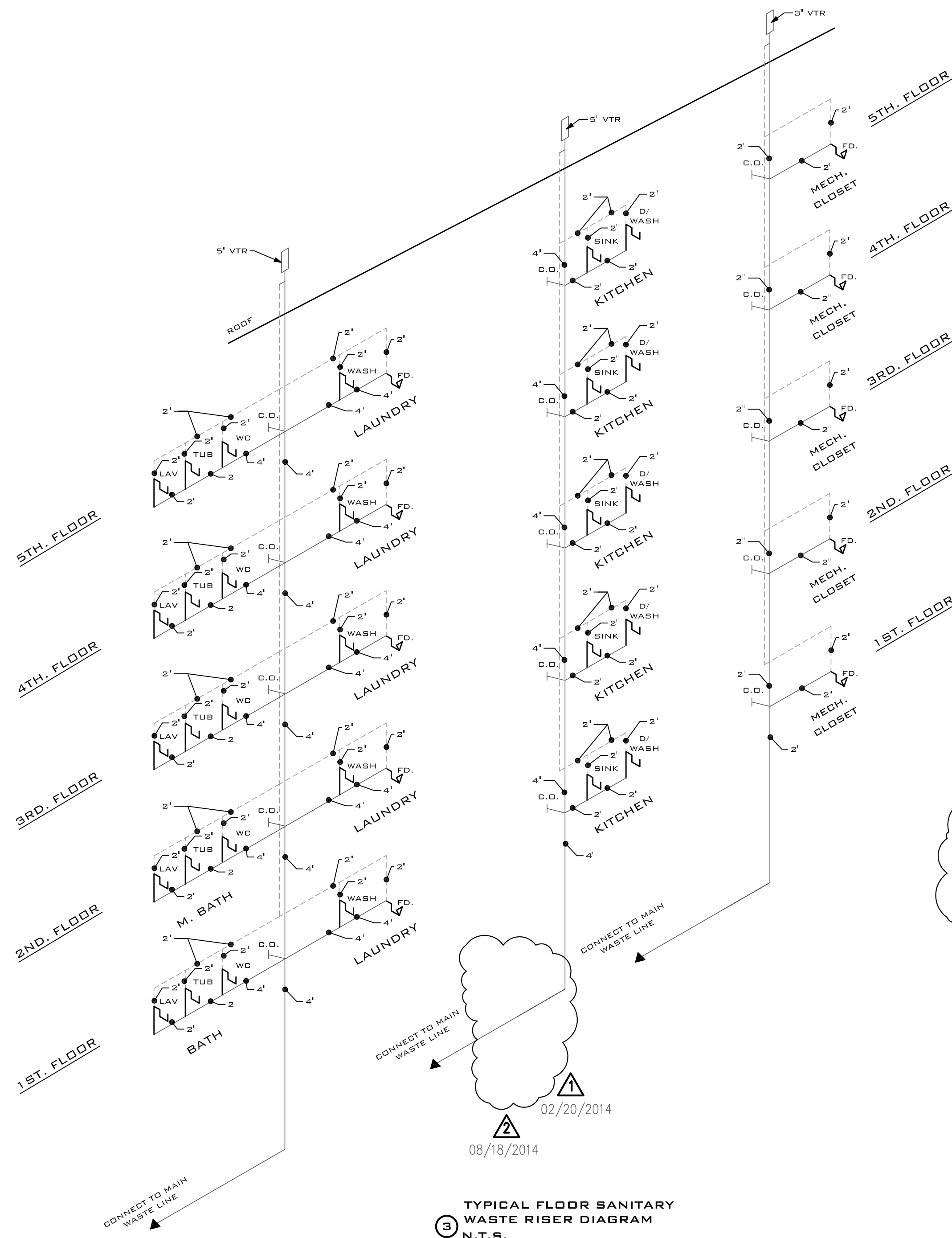
REVISED: FEBRUARY 20, 2014

AUGUST 18, 2014

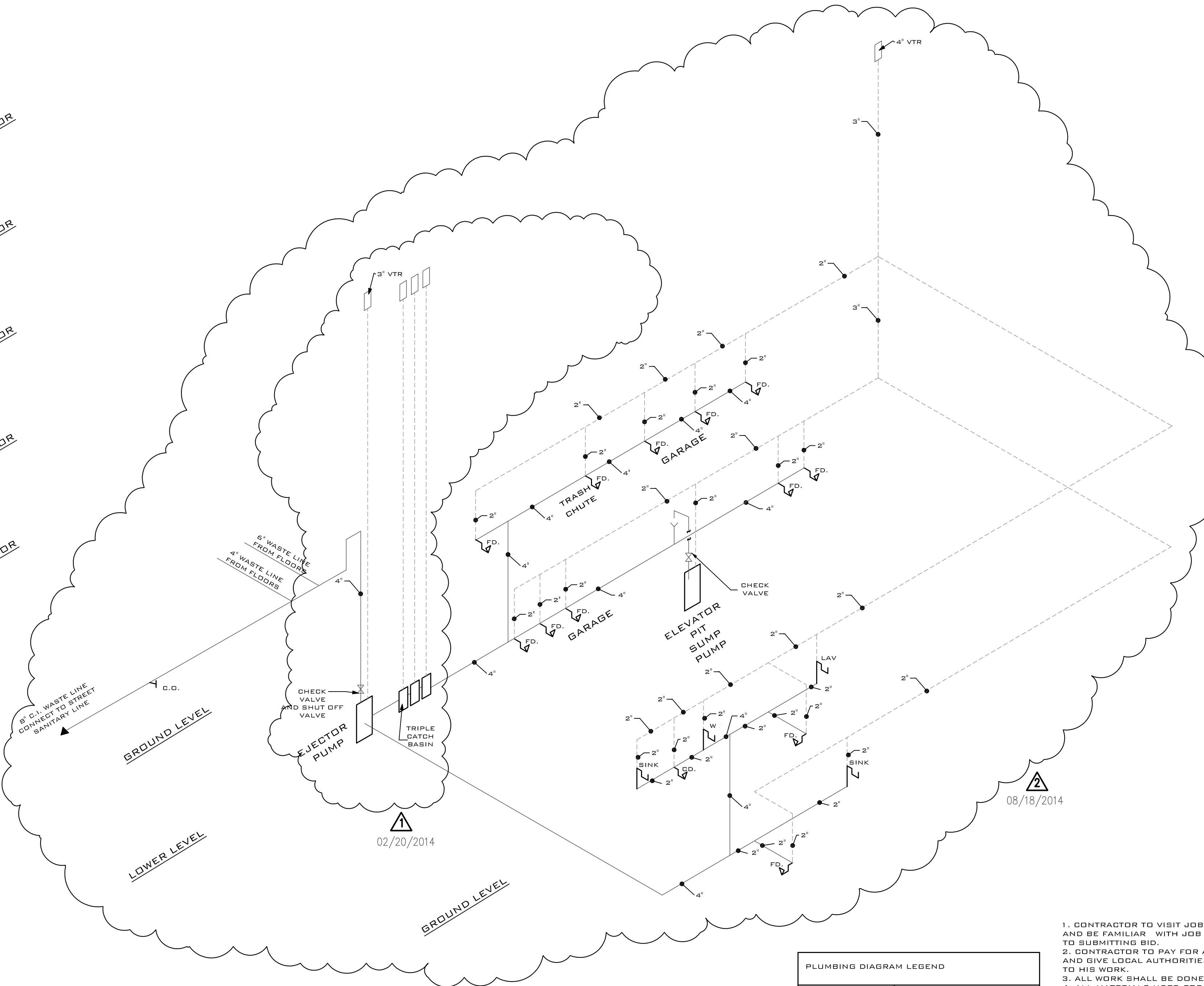


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

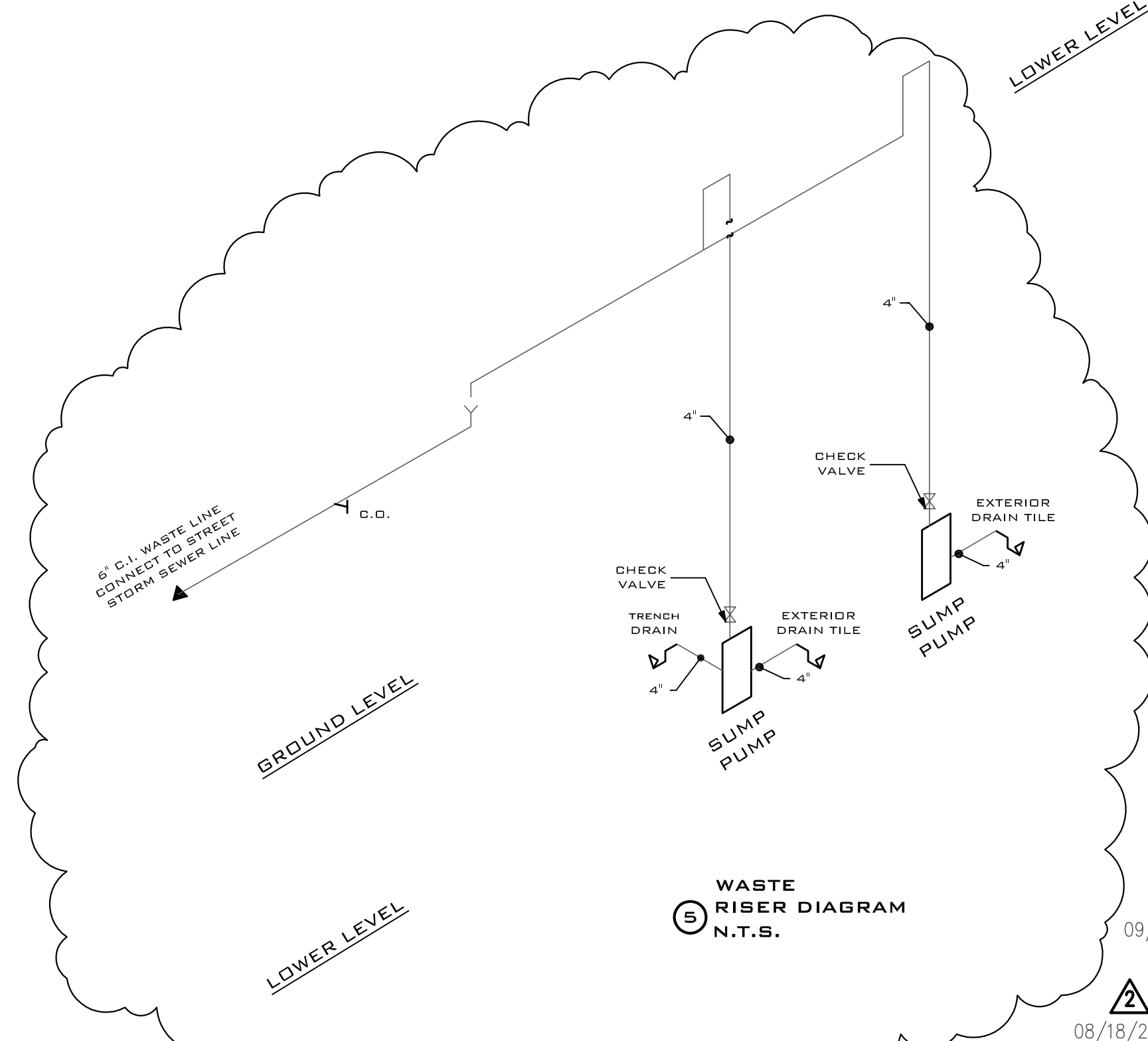
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3 TYPICAL FLOOR SANITARY WASTE RISER DIAGRAM N.T.S.



4 WASTE RISER DIAGRAM N.T.S.



5 WASTE RISER DIAGRAM N.T.S.

PLUMBING DIAGRAM LEGEND	
SYMBOL	DESCRIPTION
(M)	WATER METER
---	VENT LINE
---	WASTE LINE
---	COLD WATER SUPPLY LINE
---	HOT WATER SUPPLY LINE

NOTES:

CONTRACTOR TO CONFIRM WITH VILLAGE ENGINEER TYPE OF PIPING NECESSARY TO CONNECT THE SUMP PUMP WITH STORM SEWER TILE.

ALL KITCHEN SINKS MUST BE PROVIDED WITH 2 INCH DRAIN AND INDIVIDUAL TRAPS AND AN ACCESSIBLE CLEAN-OUT, THE SAME SIZE AS THE DRAIN PIPE

CONTRACTOR TO PREFORM STACK TEST WITH WATER SHALL BE REQUIRED FOR ALL ROUGH AND UNDERGROUND PLUMBING PIPING.

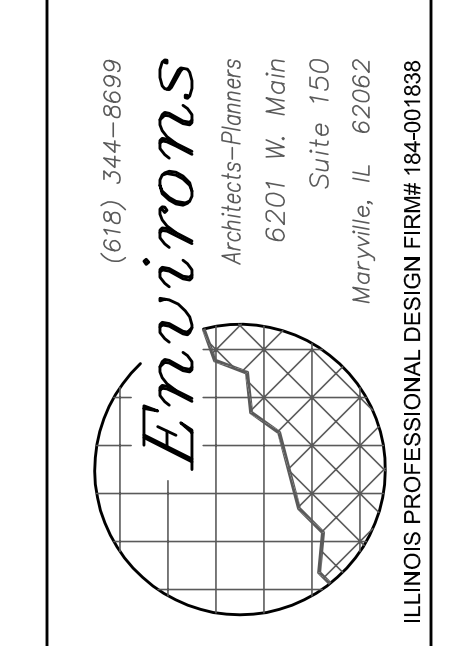
CONTRACTOR TO PREFORM 25LB AIR TEST SHALL BE REQUIRED ON ALL GAS PIPING AT TIME OF ROUGH INSPECTION

CONTRACTOR TO PREFORM 75LB AIR TEST OF WATER PRESSURE SHALL BE REQUIRED ON ALL WATER PIPING AT TIME OF ROUGH INSPECTION

WHEN A P-TRAP IS USED ON A BATH WASTE, IT SHALL BE DIRECTLY BELOW THE TUB OVERFLOW. THE OVERFLOW SHALL BE FASTENED TO THE TUB BY MEANS OTHER THAN THE FACEPLATE

WHEN A DOMESTIC DISHWASHER MACHINE DRAIN LINE IS CONNECTED TO THE HOUSE SIDE OF A TRAP FROM A SINK, THE DRAIN FROM THE DISHWASHER SHALL BE CARRIED UP TO THE UNDERSIDE OF THE SPILL RIM OF THE SINK. DISHWASHING MACHINES SHALL DISCHARGE SEPARATELY INTO A TRAP OR TAIL PIECE OF THE KITCHEN SINK AND SHALL NOT CONNECT TO THE FOOD WASTE DISPOSAL UNIT.

- CONTRACTOR TO VISIT JOB SITE OR PREMISES AND BE FAMILIAR WITH JOB CONDITIONS PRIOR TO SUBMITTING BID.
- CONTRACTOR TO PAY FOR ALL TAXES AND FEES AND GIVE LOCAL AUTHORITIES ALL NOTICES RELATING TO HIS WORK.
- ALL WORK SHALL BE DONE IN FIRST CLASS-MANNER.
- ALL MATERIALS USED FOR JOB SHALL BE NEW AND BEST OF THEIR KIND.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH STATE AND LOCAL CODES.
- CONTRACTOR IS TO GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR AFTER COMPLETION AGAINST ALL DEFECTS OF MATERIALS, EQUIPMENT AND WORKMANSHIP.
- CONTRACTOR TO TEST SYSTEM PRIOR TO OPERATION.
- ALL CUTTING AND PATCHING CAUSED BY THIS WORK SHALL BE DONE BY THIS CONTRACTOR.
- ALL UNDERGROUND SEWER LINES SHALL BE PVC AND FITTINGS.
- ALL SEWER PIPING ABOVE FLOOR SHALL BE PVC AND FITTINGS.
- ALL DOMESTIC HOT AND COLD WATER LINES SHALL BE COPPER PIPING TYPE "L"
- INSULATE COLD AND HOT WATER LINES WITH 1" THICK FACTORY PRE-MOLDED FIBERGLASS PIPE INSULATION WITH VAPOR BARRIER JACKET.
- ALL VALVES SHALL BE SIMILAR TO CRANE OR AMERICAN.
- ALL CLEANOUTS TO BE INSULATED AT EACH CHANGE IN DIRECTION OF SEWER LINES.
- ALL PLUMBING & PLUMBING FIXTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE ILLINOIS STATE PLUMBING CODE.
- POLY VINYL CHLORIDE (PVC) PLASTIC PIPE AND FITTINGS SHALL CONFORM TO ASTM DESIGNATION D2665-88, INCLUDING THE APPENDIX, BEING MANDATORY, AND SHALL BE LIMITED TO SIZE 1-1/2", 2", 3" PIPE. THE SOLVENT CEMENT SHALL CONFORM TO ASTM DESIGNATION D2564-88 AND THE PLASTIC PRIMER SHALL CONFORM TO ASTM DESIGNATION F656-88 AND BE OF A CONTRASTING COLOR.
- ALL PIPES TO BE COPPER; PROVIDE AIR CHAMBERS MIN. 24"; PROVIDE ACCESSIBLE SHUTOFF VALVES AT ALL FIXTURES; ALL PLUMBING WORK TO COMPLY WITH ILLINOIS PLUMBING CODE AND STATE OF ILLINOIS PLUMBING CODE
- NO DRUM TRAPS.
- PROVIDE:
 - 24" AIR CHAMBER AT ALL RISER MAINS.
 - 12" AIR CHAMBER AT ALL PLUMBING FIXTURES.
 - SHUT OFF VALVES AT ALL PLUMBING FIXTURES AND RISERS.
 - NON-FREEZE SILL COCKS - VACUUM BREAKER TYPE 2.
 - NEW SANITARY SERVICE WILL BE USED.
 - NEW WATER SERVICE WILL BE USED
 - ALL TUBS & SHOWERS NEED 2" P-TRAPS.
 - TUBS & SHOWERS TEMPERATURE NOT TO EXCEED 115° DEGREES
 - ALL HAND HELD SHOWERS NEED VACUUM BREAKERS.
 - PROVIDE BACK FLOW PREVENTION DEVICE ON ALL HAND HELD SPRAY @ TUBS.
 - INSTALL PRESSURE RELIEF VALVES ON THE HIGH PRESSURE SIDE OF THE SYSTEM, UPSTREAM OF ANY INTERVENING VALVES
 - MAX. LENGTH 1-1/2" VENT PIPING IS 10'
 - MAX. LENGTH 1/2" WATER PIPING IS 10'
 - INSTALL METAL DRAIN PAN UNDER ALL HOT WATER HEATERS.
 - PROVIDE THERMO EXPANSION TANK FOR 98 GAL. H.W.H.
 - FURNISH AND INSTALL GAS PIPING WITH SHUTOFF COCKS AT EACH AND EVERY APPLIANCE REQUIRING GAS, INCLUDING FURNACE, DOMESTIC WATER HEATERS, ETC. PIPING SHALL BE SCHEDULE 40 BLACK STEEL. "GRADE A" FITTINGS SHALL BE STANDARD WEIGHT, BLACK MALLEABLE IRON OR CAST IRON SCREENED AND RATED AT 150 PSI.



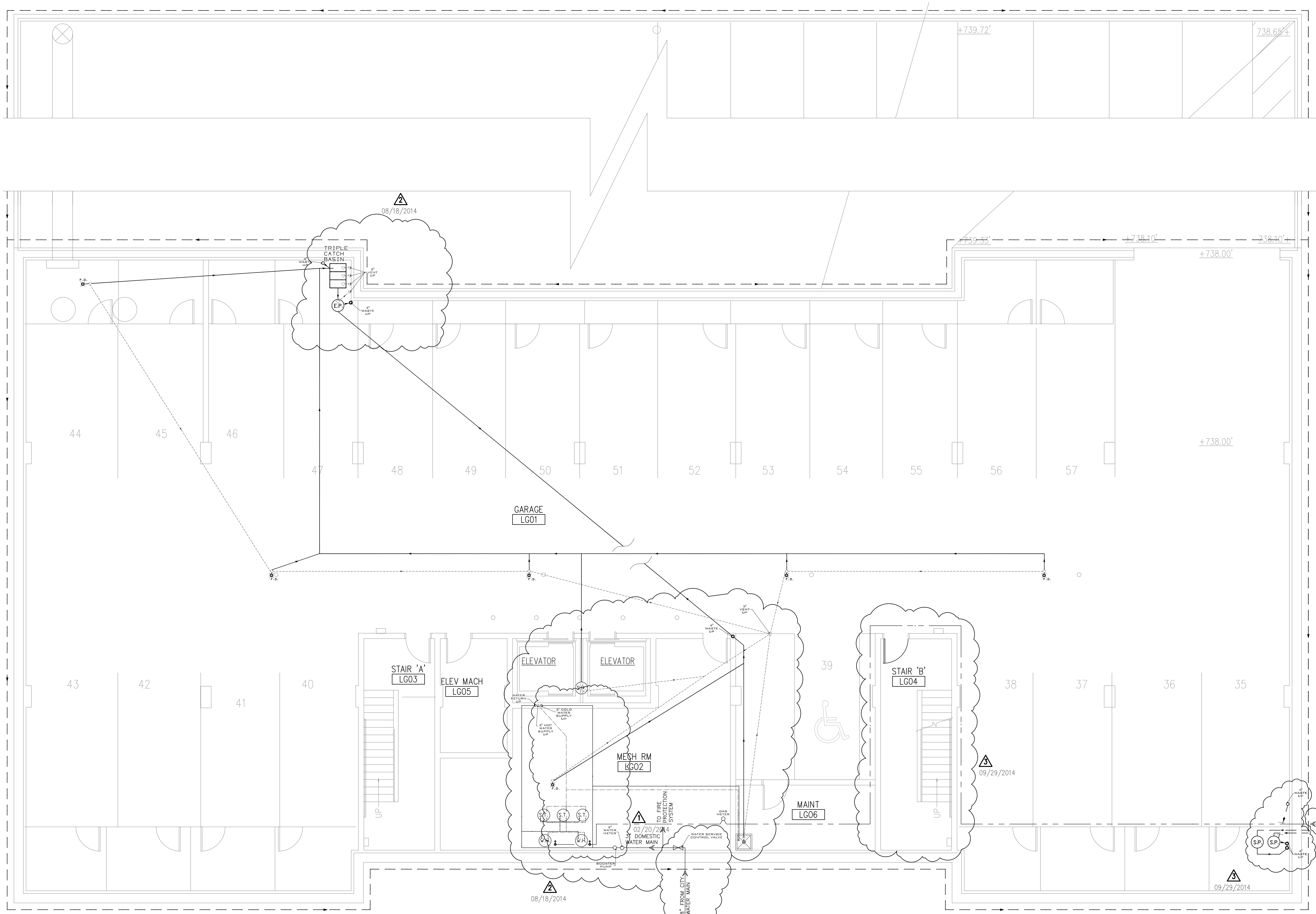
JOB NO. 13022

DATE: DECEMBER 11, 2013
 REVISED: FEBRUARY 20, 2014
 AUGUST 18, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

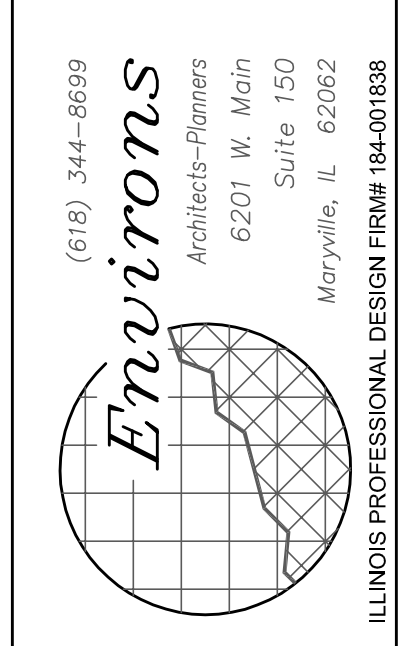
SHEET P1.2 OF --



LEGEND:

- WASTE LINE
- VENT LINE
- COLD WATER
- HOT WATER
- 1/2" H DROP
- 1/2" C DROP
- GAS CONNECTOR AND VALVE

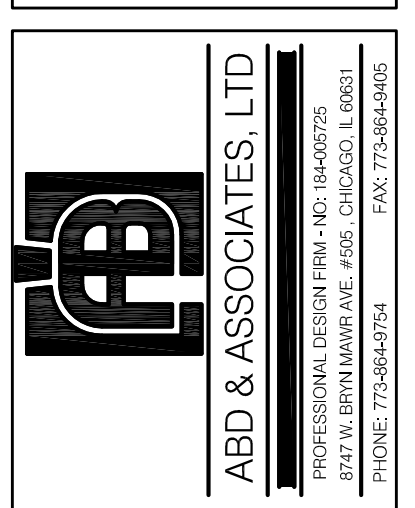
PLUMBING
LOWER LEVEL PARKING PLAN
 SCALE: 3/16"=1'-0"



JOB NO.
1 3 0 2 2

DATE:
DECEMBER 11, 2013

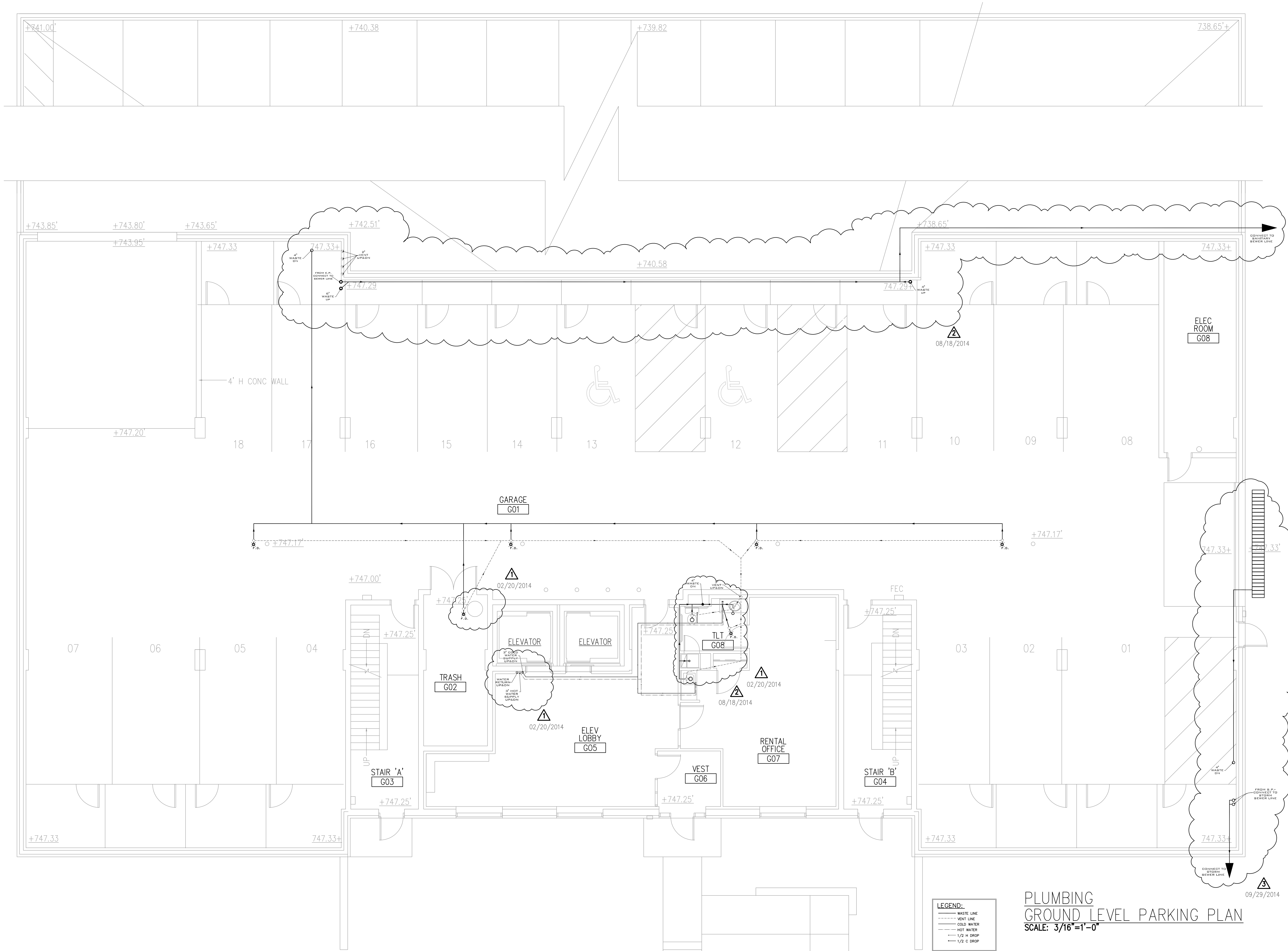
REVISED:
 ▲ FEBRUARY 20, 2014
 ▲ AUGUST 18, 2014
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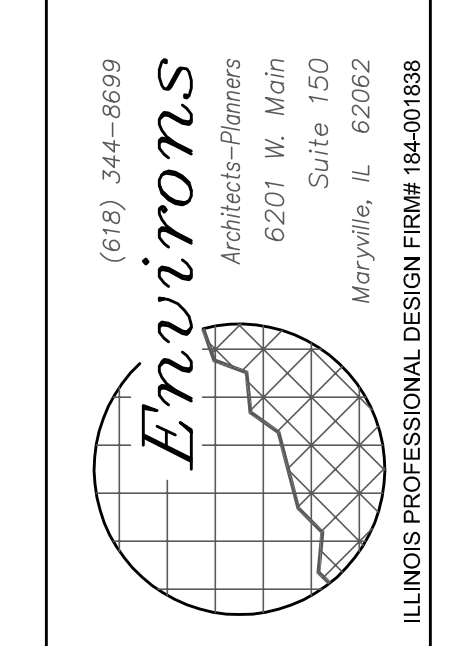
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P2.1
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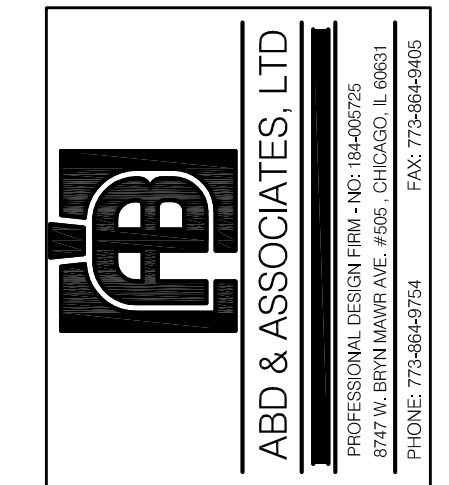
LEGEND:
 - - - - - WASTE LINE
 - - - - - VENT LINE
 - - - - - COLD WATER
 - - - - - HOT WATER
 - - - - - 1/2" H DROP
 - - - - - 1/2" C DROP

**PLUMBING
 GROUND LEVEL PARKING PLAN
 SCALE: 3/16"=1'-0"**



JOB NO.
13022

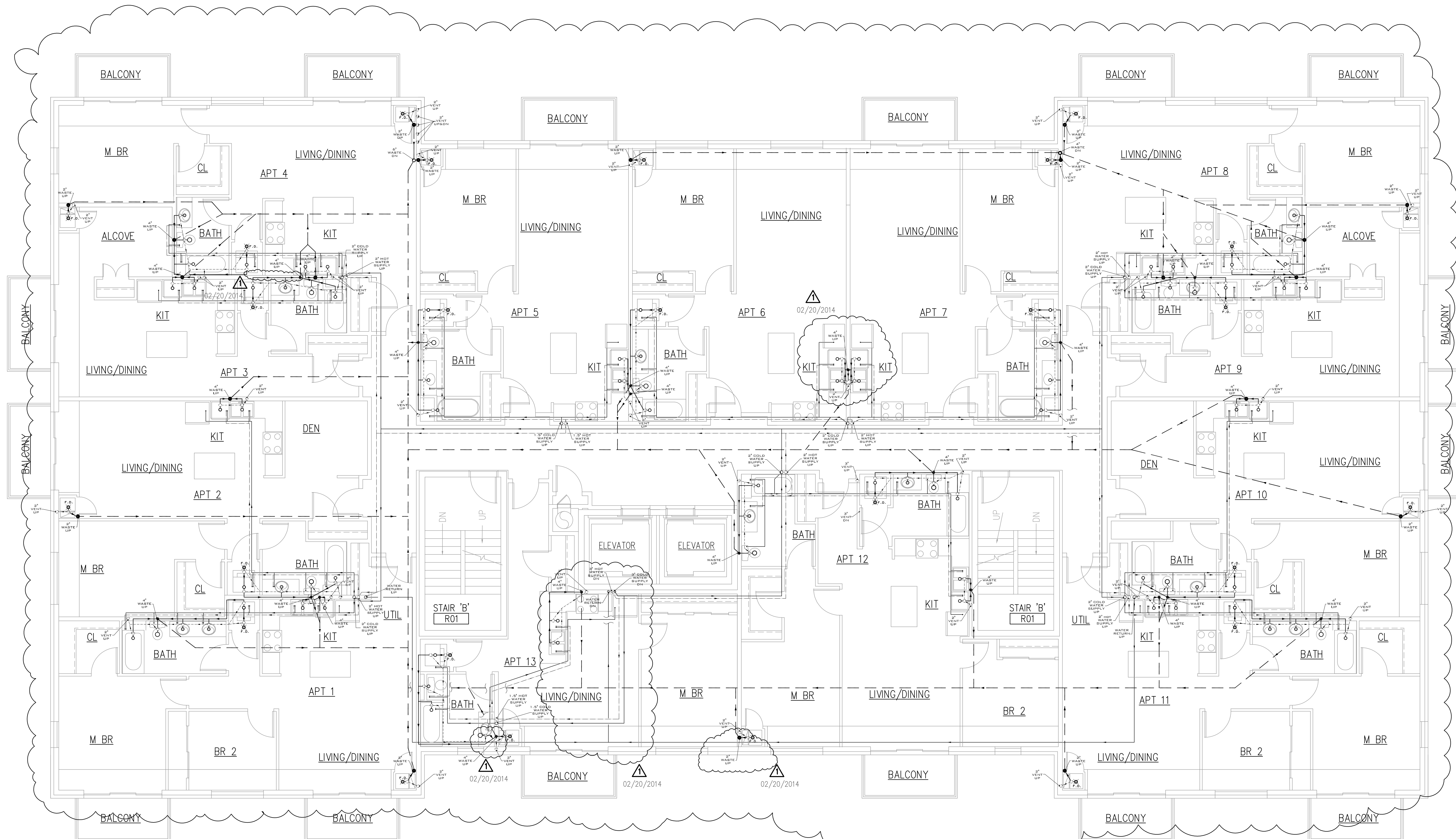
DATE:
DECEMBER 11, 2013
 REVISED:
 ▲ FEBRUARY 20, 2014
 ▲ AUGUST 18, 2014
 ▲ SEPTEMBER 29, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

SHEET
P2.2
 OF --

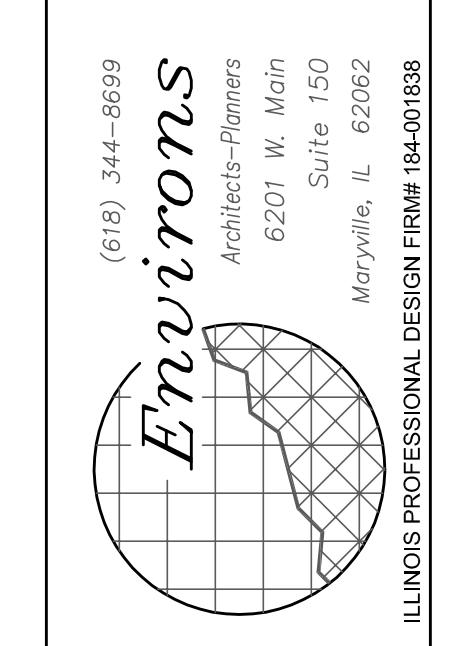
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- LEGEND:**
- WASTE LINE
 - VENT LINE
 - COLD WATER
 - HOT WATER
 - 1/2" H DROP
 - 1/2" C DROP

PLUMBING
FIRST FLOOR PLAN
 SCALE: 3/16"=1'-0" APPROX. 12,093 SF

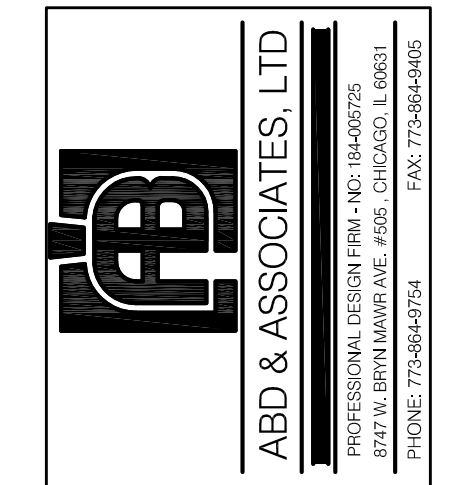
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13022

DATE:
DECEMBER 11, 2013

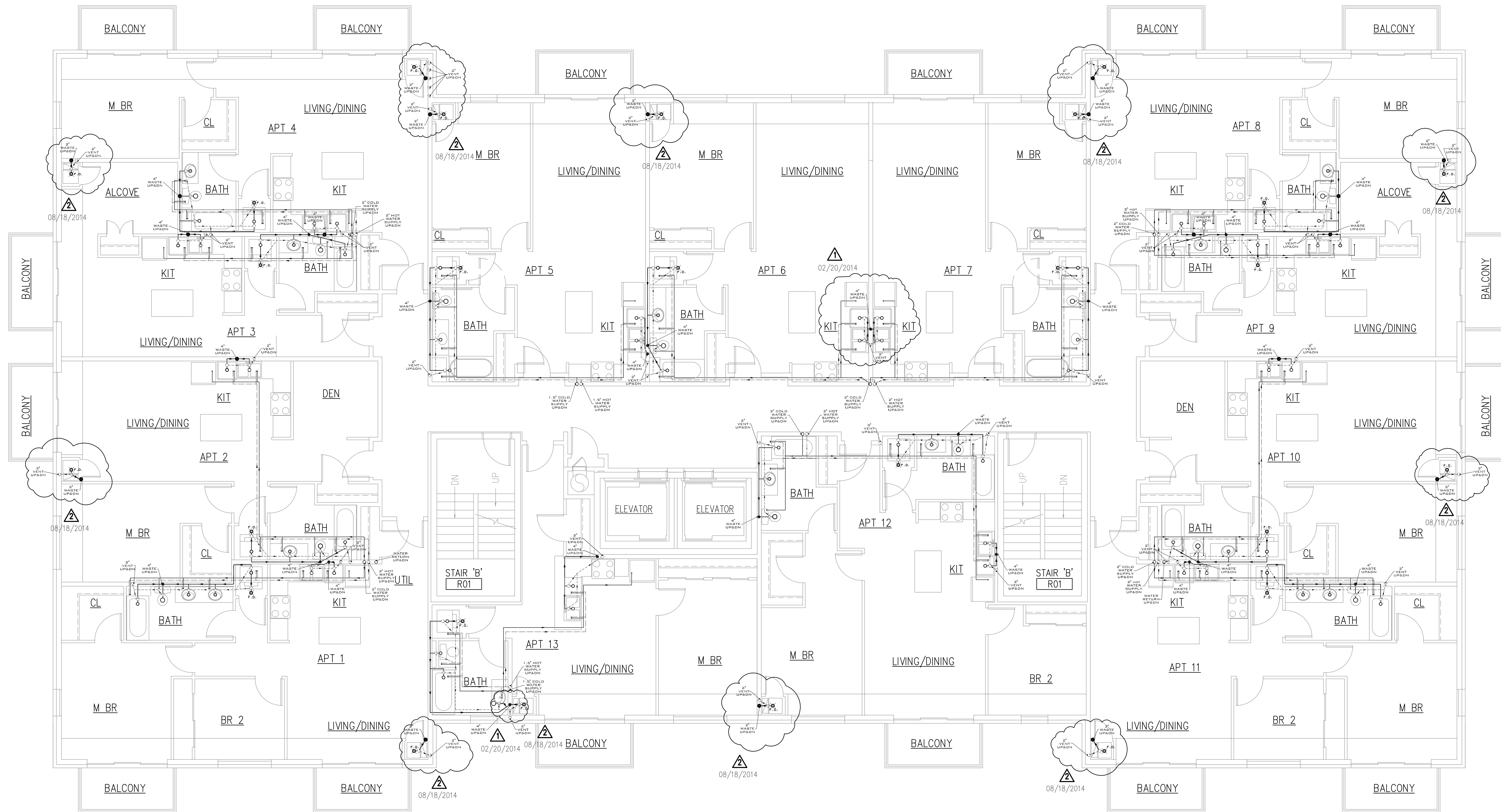
REVISED:
 ▲ FEBRUARY 20, 2014
 ▲ AUGUST 18, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

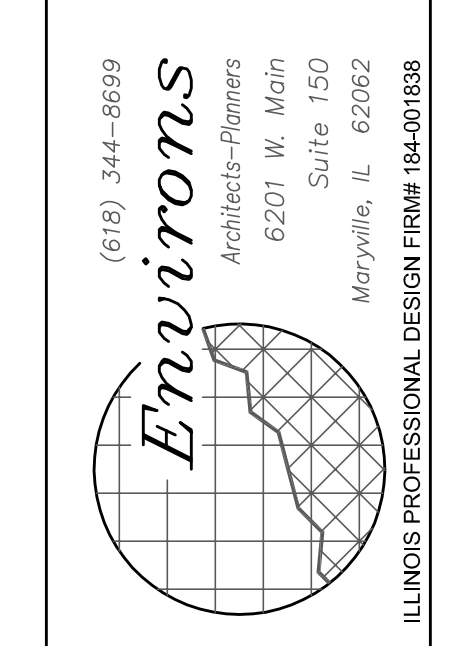
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P2.3
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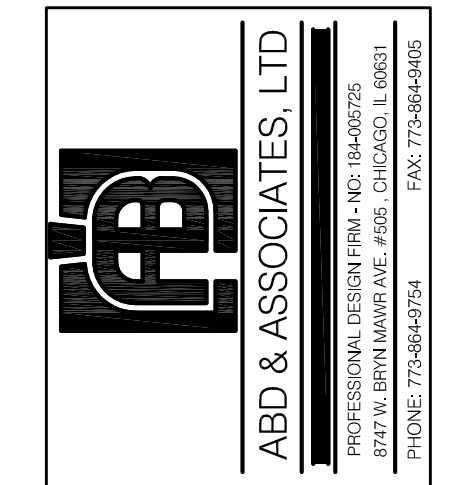


LEGEND:
 - - - - - WASTE LINE
 - - - - - VENT LINE
 - - - - - COLD WATER
 - - - - - HOT WATER
 - - - - - 1/2" DROP
 - - - - - 1/2" C DROP

PLUMBING SECOND FLOOR PLAN
 SCALE: 3/16"=1'-0" APPROX. 12,093 SF
 FLOORS 3 AND 4 - SIMILAR



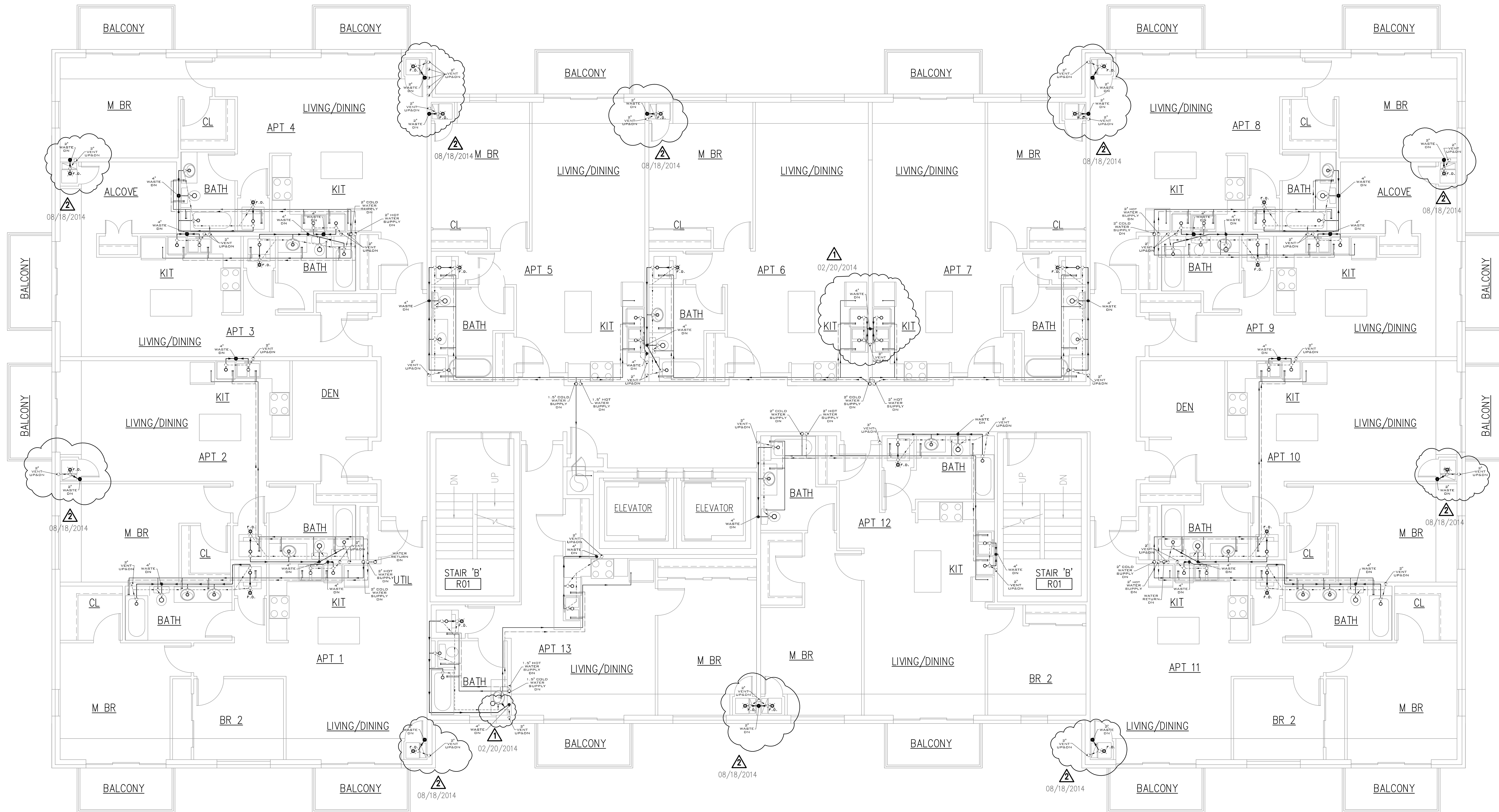
JOB NO. 13022
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 FEBRUARY 20, 2014
 AUGUST 18, 2014



A NEW APARTMENT BUILDING 'C':
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 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

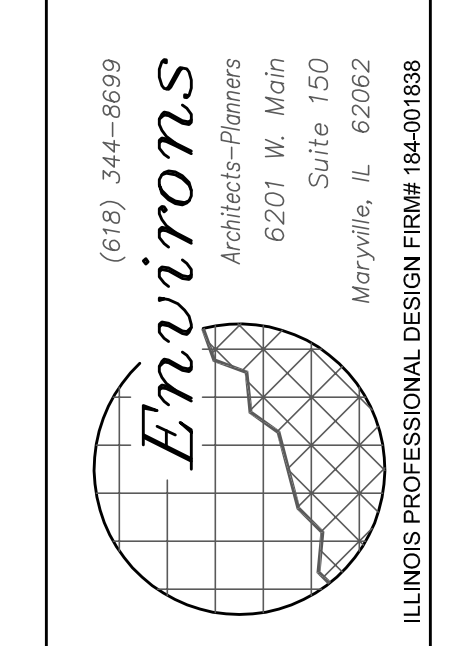
SHEET
P2.4
 OF --

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LEGEND:
 - - - - - WASTE LINE
 - - - - - VENT LINE
 - - - - - COLD WATER
 - - - - - HOT WATER
 - - - - - 1/2" H DROP
 - - - - - 1/2" C DROP

**PLUMBING
 FIFTH FLOOR PLAN**
 SCALE: 3/16"=1'-0" APPROX. 12,093 SF



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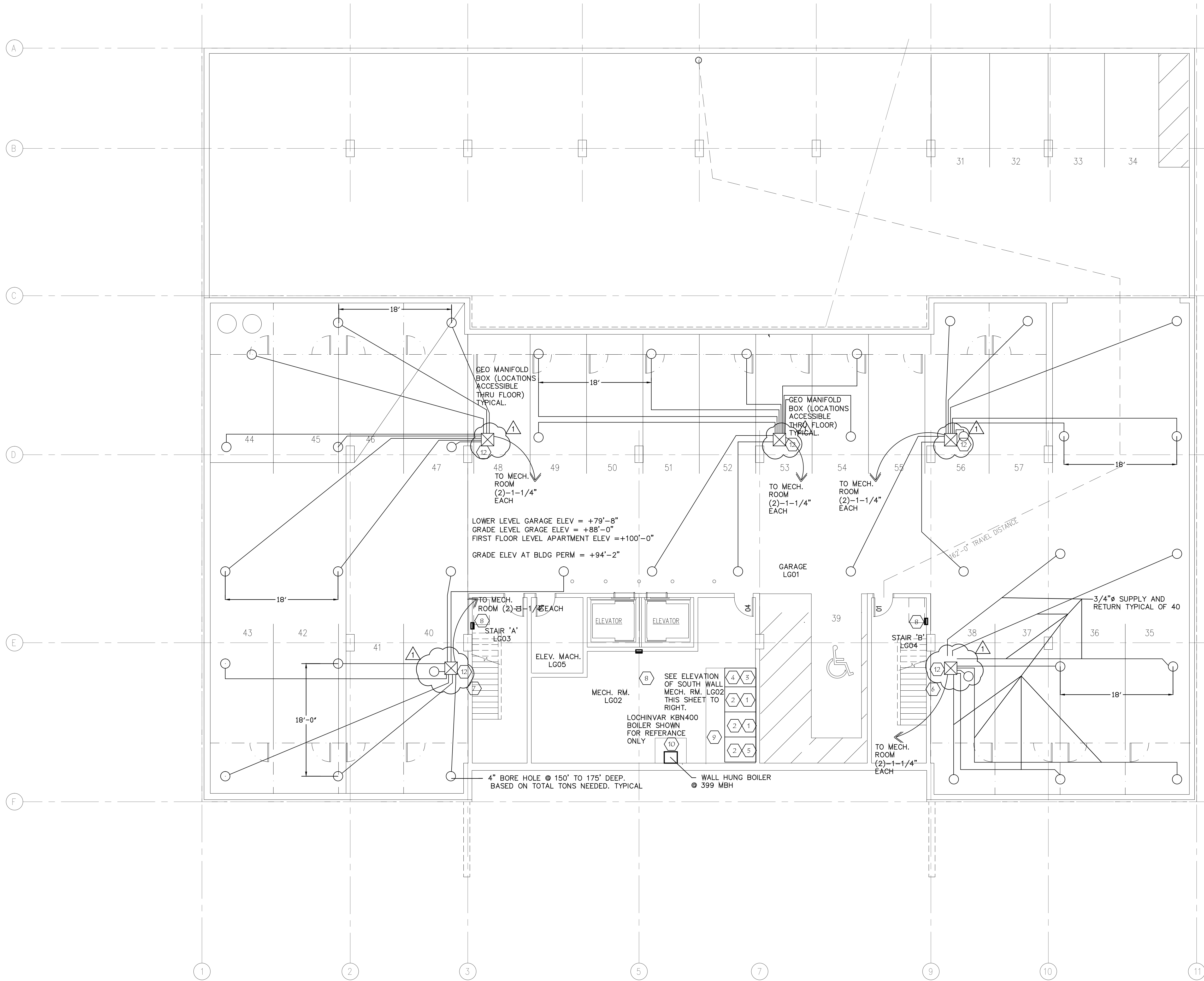
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 ▲ AUGUST 18, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

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P2.5
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LOWER LEVEL GEO-THERMAL PARKING PLAN
SCALE: 1/8" = 1'-0"

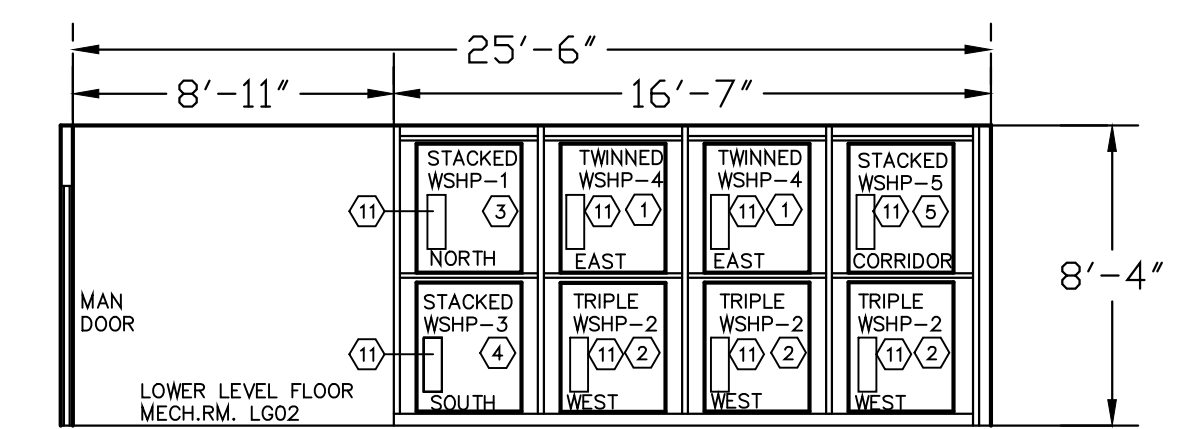
KEY NOTES: FOR WSHP UNITS

- 1 WATER SOURCE HEAT PUMPS (WSHP) TWINNED. ON TOP OF RACK. SERVES EAST ZONE.
- 2 WATER SOURCE HEAT PUMPS (WSHP) TRIPLED ON BOTTON OF RACKS. SERVES WEST ZONE.
- 3 WATER SOURCE HEAT PUMP (WSHP-STACKED BY TWO(2)). SERVES NORTH ZONE.
- 4 WATER SOURCE HEAT PUMP (WSHP-STACKED BY TWO(2)) SERVES SOUTH ZONE.
- 5 WATER SOURCE HEAT PUMP (WSHP-STACKED BY TWO(2)) SERVES LOBBY, RENTAL OFFICE AND 1ST FLOOR AND 5TH FLOOR CORRIDOR.
- 6 MANIFOLD ZONE-1. SEE CIRCUITS FOR MANIFOLD PLAN ON THIS SHEET.
- 7 MANIFOLD ZONE-2. SEE CIRCUITS FOR MANIFOLD PLAN ON THIS SHEET.
- 8 ELECTRICAL WALL HEATERS ARE SHOWN FOR REFERENCE ONLY.
- 9 SERVICE AREA FOR EQUIPMENT 36" IN FRONT EQUIPMENT.
- 10 LOCHINVAR BOILER (WALL MOUNT).
- 11 PUMP WILCO PUMPS 1.25 x 25 EACH HEAT PUMP(WSHP-1 THRU 5). SEE EQUIPMENT SCHEDULE FOR MORE INFORMATION.

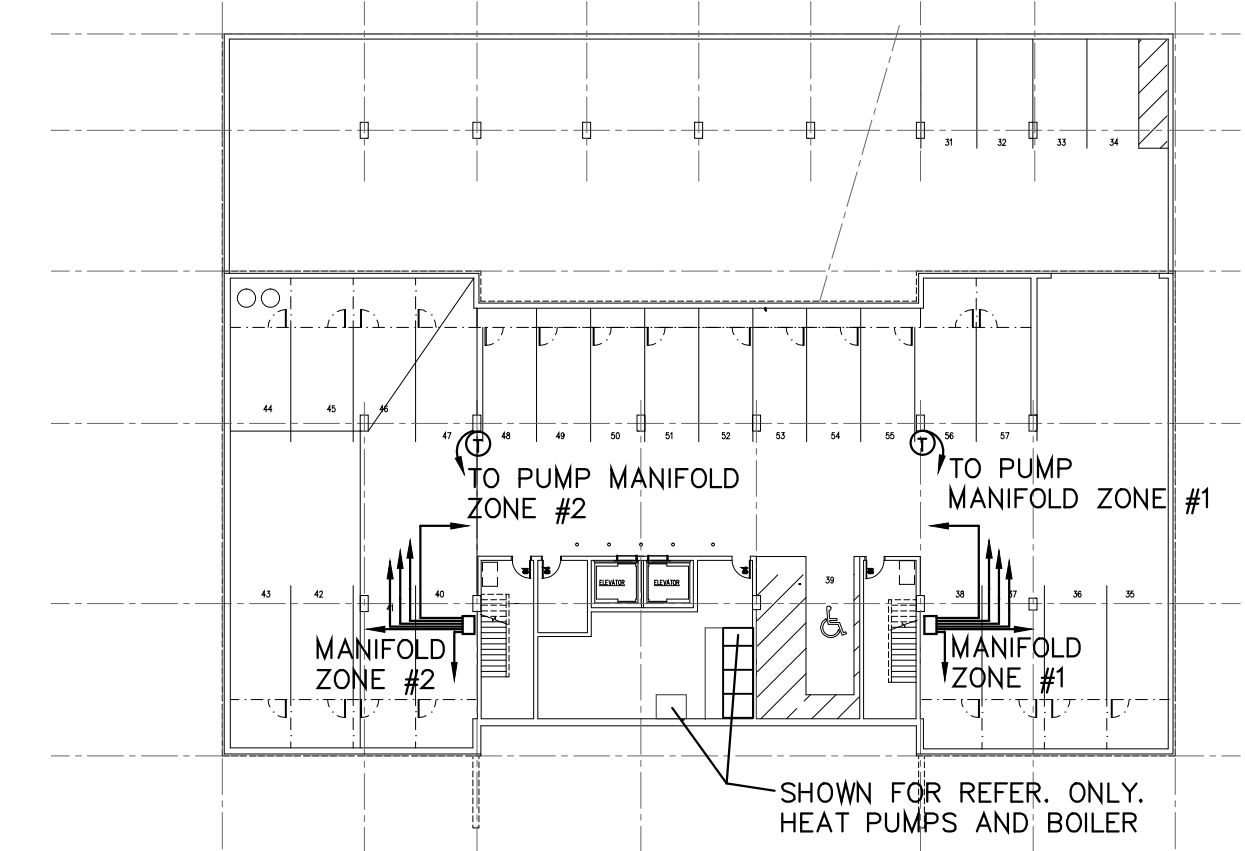
12 PROVIDE 24x24 STEEL MANIFOLD BOX, WITH SOLID STEEL COVER, IN LOCATION INDICATED. MAINTAIN MINIMUM 12" CLEARANCE BETWEEN BOX AND ALL FOOTINGS.

GENERAL NOTES

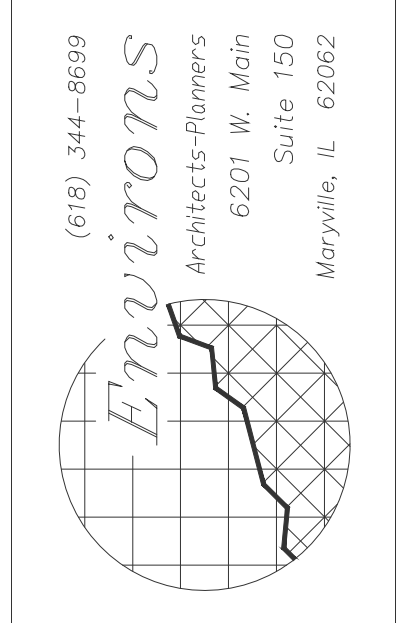
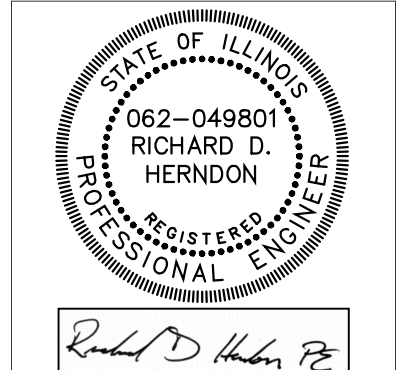
A. MECHANICAL CONTRACTOR TO COORDINATE GEOTHERMAL WELL LOCATIONS WITH PLUMBING AND ELECTRICAL DRAWINGS, STRUCTURAL FOOTINGS AND UTILITIES LOCATED UNDER THE SLAB.



LOWER LEVEL GEO-THERMAL HEAT PUMPS ELEVATION PLAN
SCALE: 3/16" = 1'-0" LOOKING SOUTH WALL



MANIFOLDS FOR SLAB RADIANT CIRCUITS PLAN
SCALE: 1/32" = 1'-0"
(2 ZONES @ 6 CIRCUITS) 12 TOTAL CIRCUITS - 5/8" x 500' BARRIER PEX AT 24" O.C.
2 ZONES / 2 PUMPS / 2 THERMOSTATS



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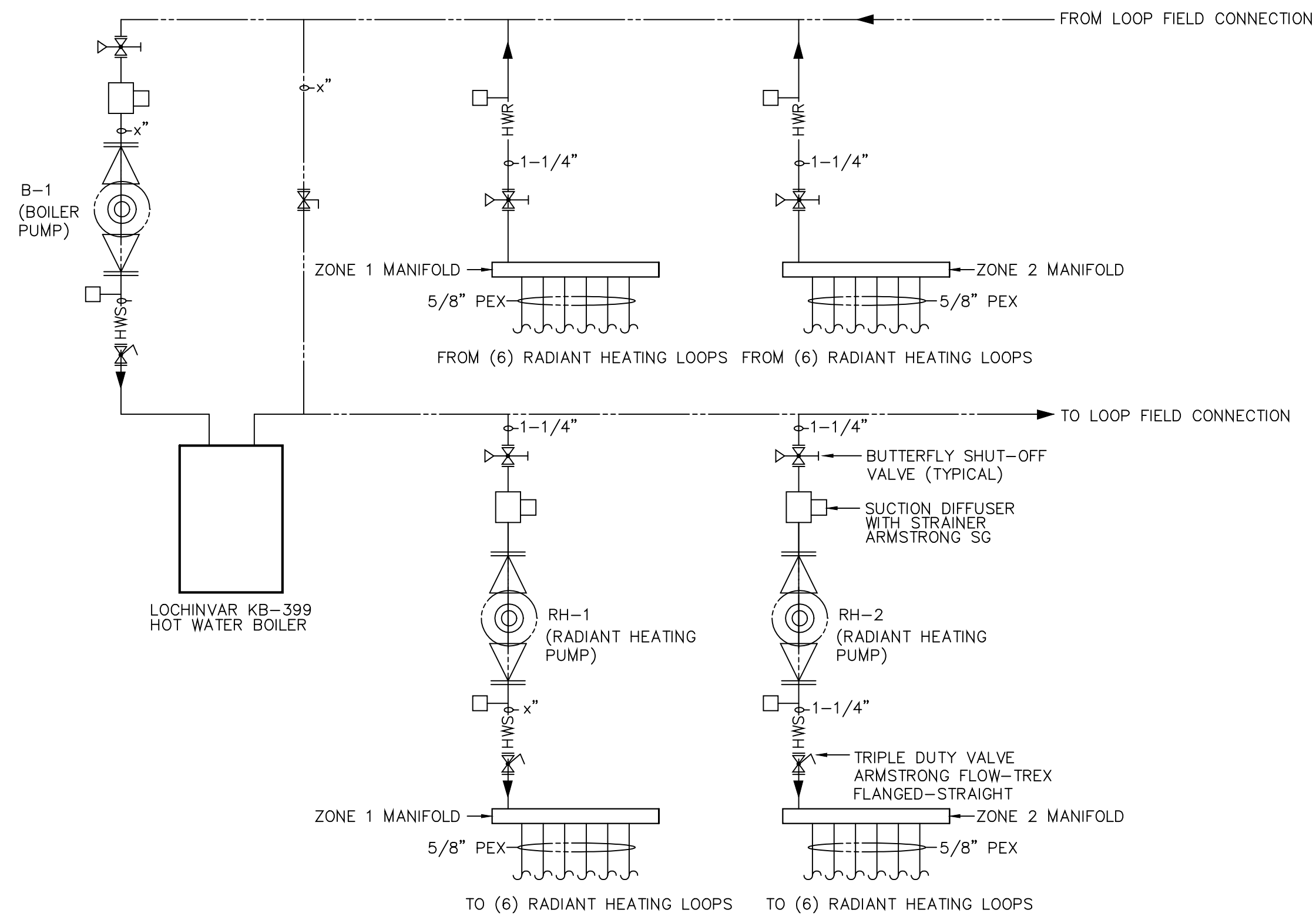


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

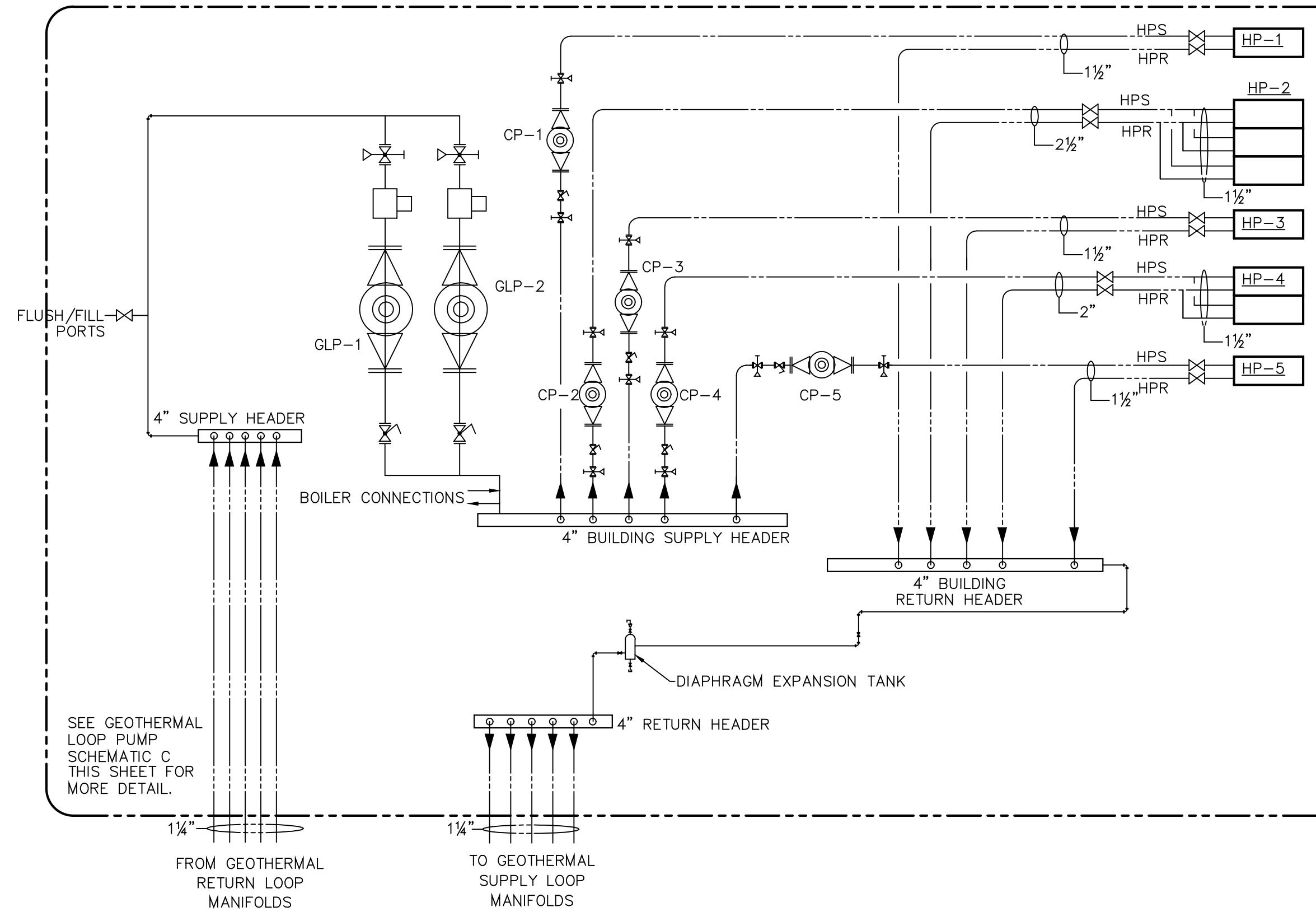
SHEET
M1.0
OF

F:\HES\Projects\3058 Cardinal Square Apartments - Amy Electric\Drawings\MFP\3058.dwg, M1.0, 2/19/2014 10:08:02 AM, bduim, DWG To PDF.pc3, ARCH expand D (3600 x 2400 inches), 11

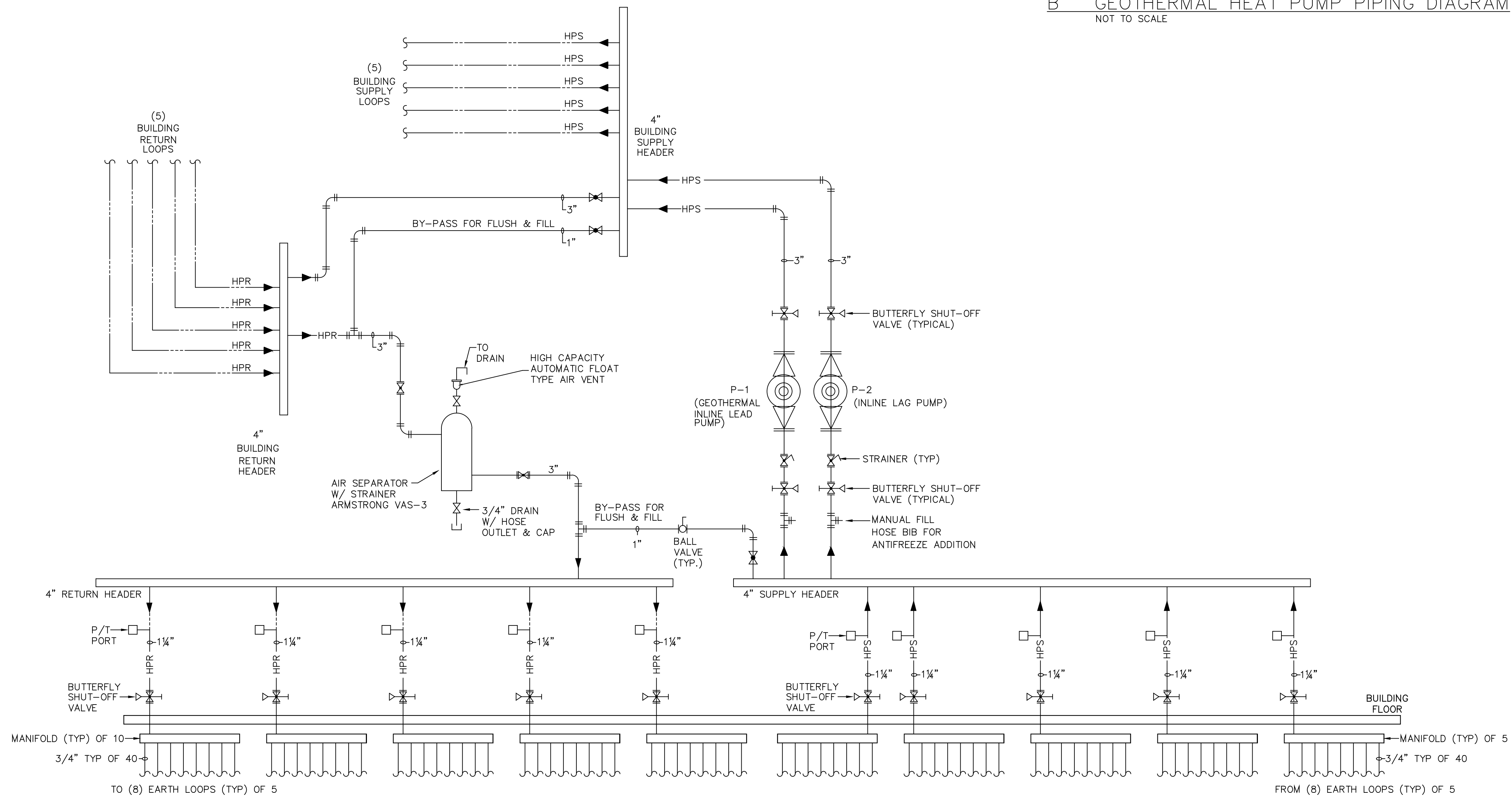
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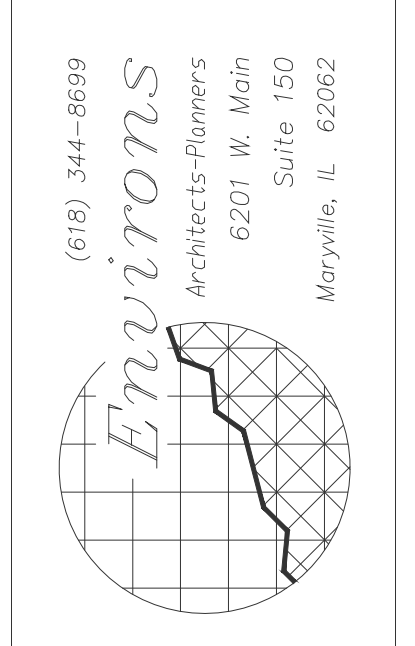
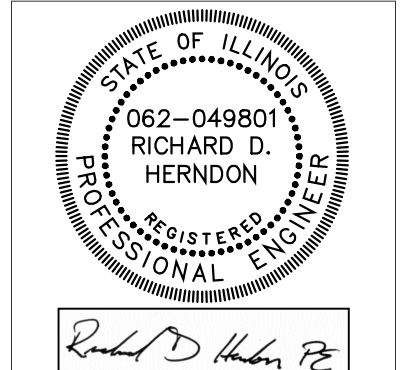
A RADIANT HEATING PIPING DIAGRAM
NOT TO SCALE



B GEOTHERMAL HEAT PUMP PIPING DIAGRAM
NOT TO SCALE



C GEOTHERMAL LOOP PUMP SCHEMATIC
NOT TO SCALE



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NOVEMBER 15, 2013
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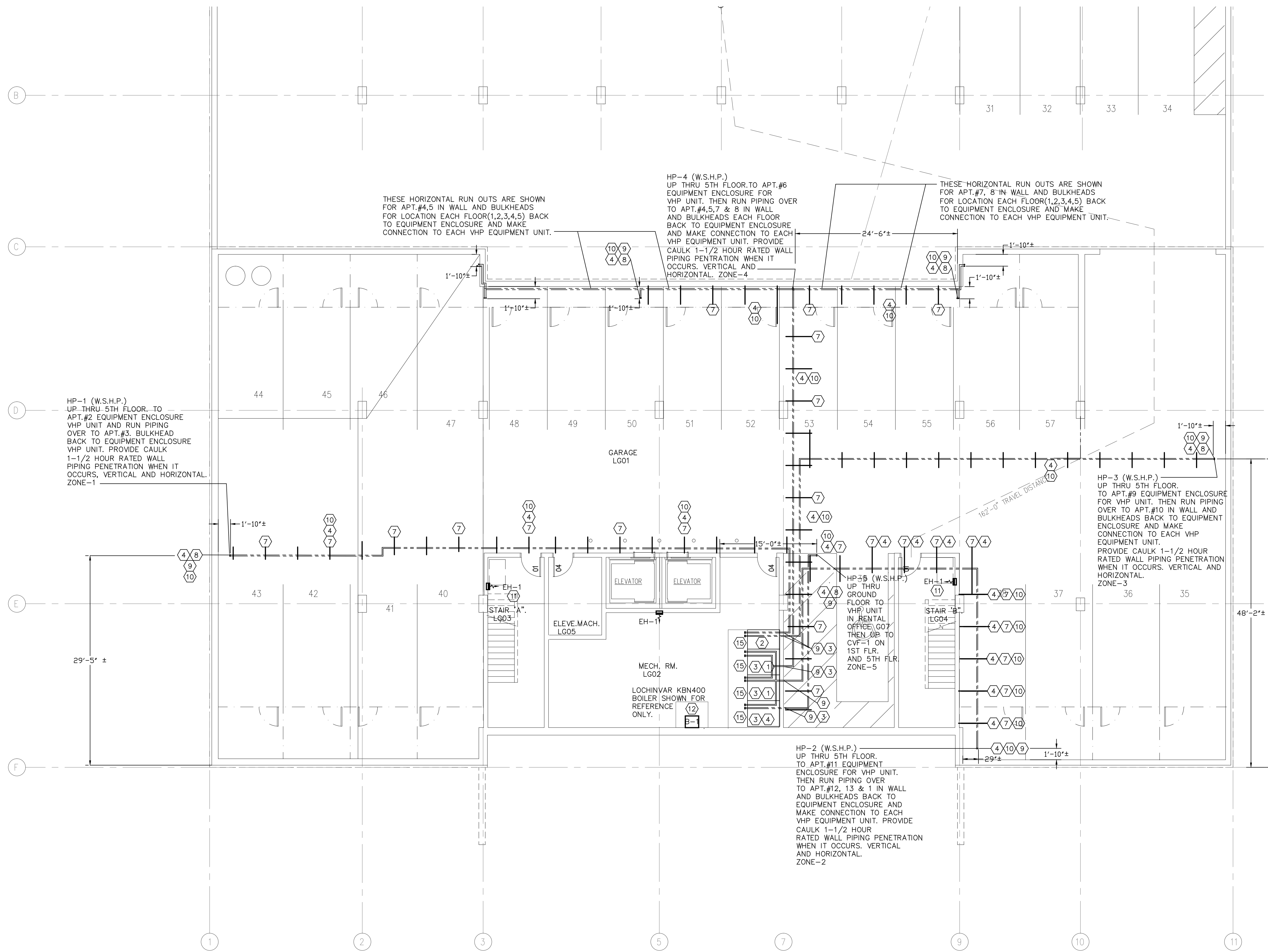


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
M1.1
OF

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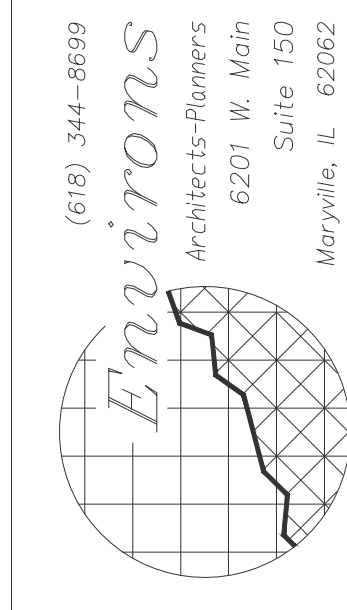
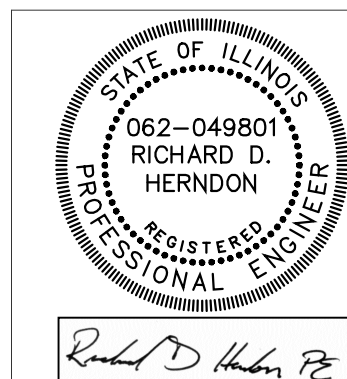


KEY NOTES: FOR WSHP UNITS

- 1 WATER SOURCE HEAT PUMPS (WSHP) TWINNED.
- 2 WATER SOURCE HEAT PUMP (WSHP)-STACKED BY TWO(2).
- 3 WATER SOURCE HEAT PUMP (WSHP) TIPPED.
- 4 WATER SOURCE HEAT PUMP (WSHP) SINGLE OVER TRIPPLED.
- 5 REFRIGERANT LINES TO RUN THROUGH BACK OF WALL NEXT TO UNDERSIDE OF GROUND FLOOR SLAB THEN TO SPOT SHOWN ON DRAWING UP AT THIS PLACE TO EQUIPMENT ENCLOSURE ON 1ST FLOOR.
- 6 PROVIDE AT LEAST R-6 INSULATION ON REFRIGERANT LINES IN UNCONDITIONED SPACE LIKE PARKING GARAGE SPACES.
- 7 PROVIDE EXHAUST FAN (EF-1) TYPICAL FOR BATH ROOMS. SEE EQUIPMENT SCHEDULE FOR INFORMATION.
- 8 PROVIDE ELECTRICAL WALL HEATER FOR STAIRWELLS SEE EQUIPMENT SCHEDULE FOR INFORMATION.
- 9 USED U-STRUT TO SUPPORT WATER SOURCE LIQUID PIPING AT 6" MIN. BELOW GROUND FLOOR SLAB.
- 10 HVAC CONTRACTOR TO FIELD VERIFY LOCATIONS OF VERTICAL PIPING FROM LOWER LEVEL TO 5TH FLOOR. SO PIPING COMES OUT IN ENCLOSURE FOR VERTICAL HEAT PUMPS ON EACH FLOOR.
- 11 FIRE CAULK ALL PIPE PENETRATIONS IN WALL WITH 3 HOUR CAULK.
- 12 THIS IS THE ROUTING OF REFRIGERANT PIPING. SYSTEM IS 2- PIPE SYSTEM SUPPLY AND RETURN.
- 13 SEE EQUIPMENT SCHEDULE FOR MORE INFORMATION.
- 14 SERVICE AREA AROUND BOILER.
- 15 W/LO CP-1 THRU 5 PUMPS LOCATED ON WATER SOURCE HEAT PUMPS (WSHP). SEE SHEET M1.1 AND M15.0 EQUIPMENT SHEET FOR MORE INFORMATION.

LOWER LEVEL PARKING PLAN - PIPING HVAC
SCALE: 1/8" = 1'-0"

EVERY WHERE THE REFRIGERATE PIPING PASS THRU A FIRE RATED ASSEMBLIES THE OPENINGS MUST BE SEALED WITH THE APPROPRIATE FIRE RATED CAULK.



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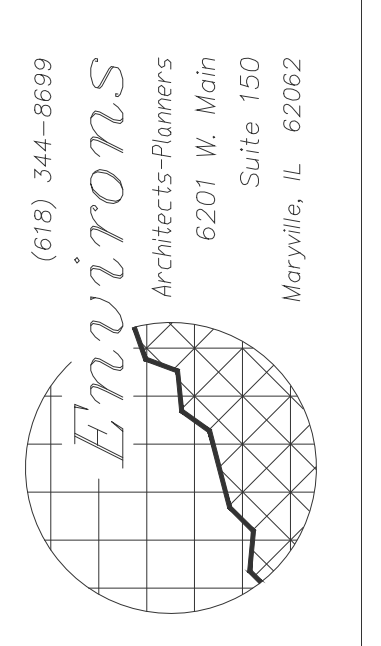
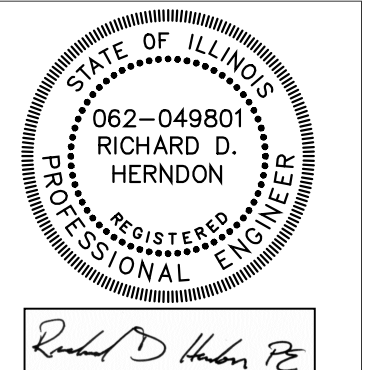


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

SHEET
M1.2
OF

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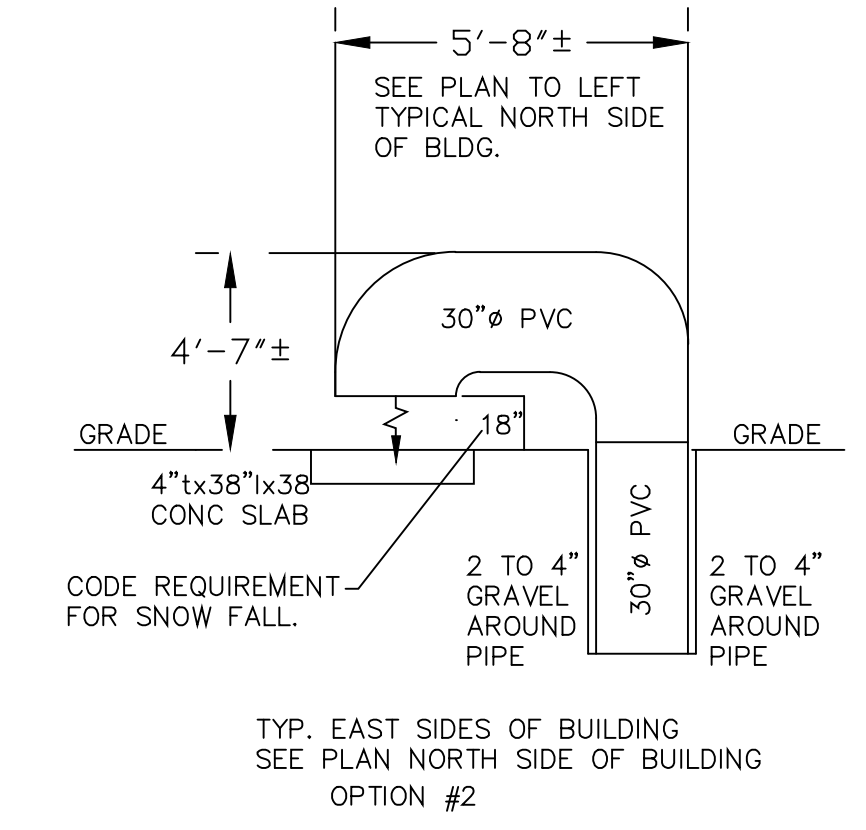


A NEW APARTMENT BUILDING 'C':
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McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
M1.3A
OF

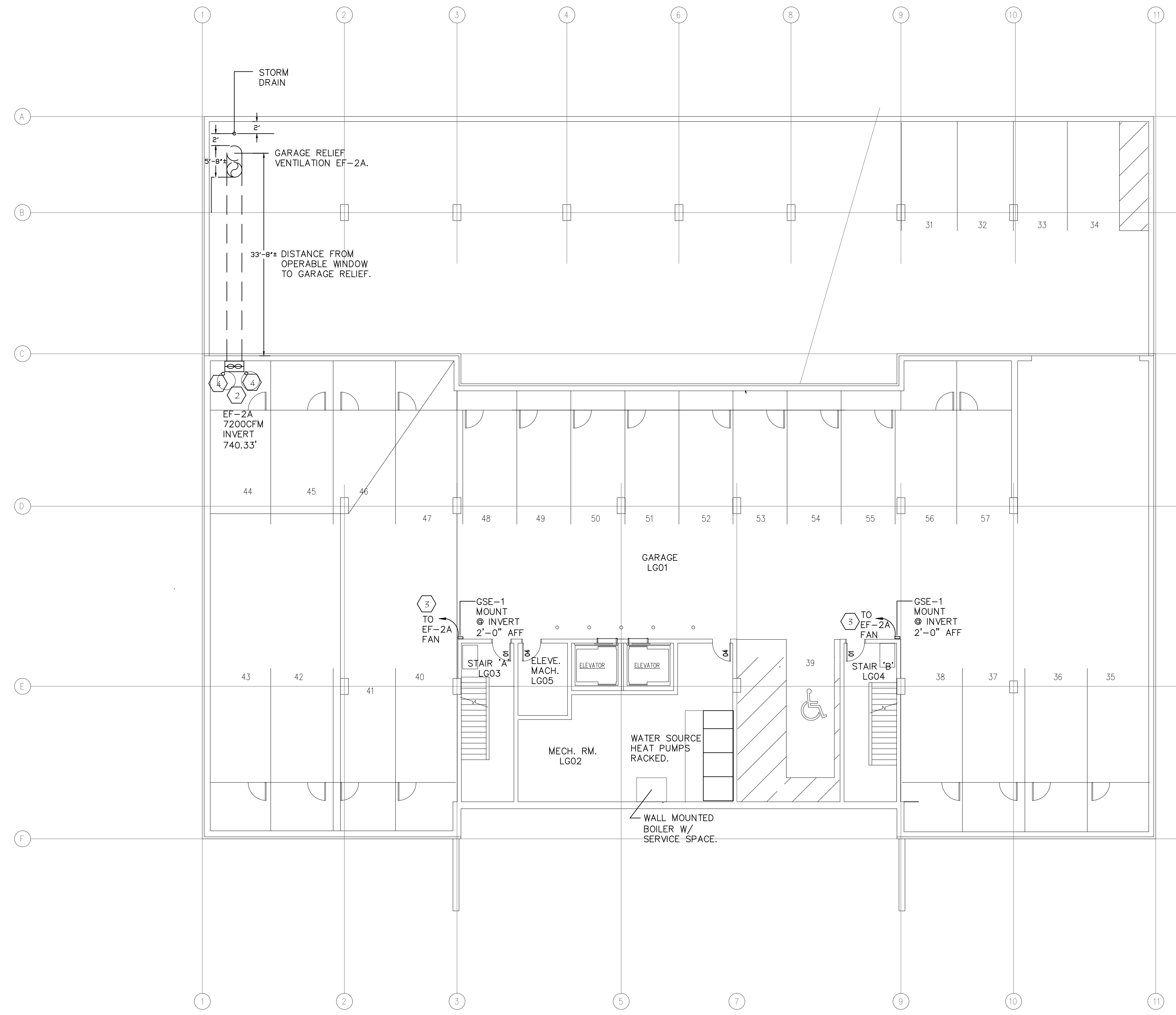
KEY NOTES: FOR PARKING LEVELS VENTILATION

- 1 PROVIDE SUPPLY VENTILATION FAN-1. GREENHECK-SBS-1H48-10. QUANTITY OF 2 FANS @ 15,500 EACH @ ESP. 0.2.
- 2 PROVIDE EXHAUST VENTILATION FAN-2. REENHECK-SBE-3L50-10. QUANTITY OF 2 @ 7,200 CFM EACH @ ESP 0.3.
- 3 PROVIDE GAS DETECTOR (GSE-1) MODEL GSE-CN-1 BRASCH.
- 4 PROVIDE CONC BALLARD 6"Ø AS SHOWN TO PROTECT FANS.

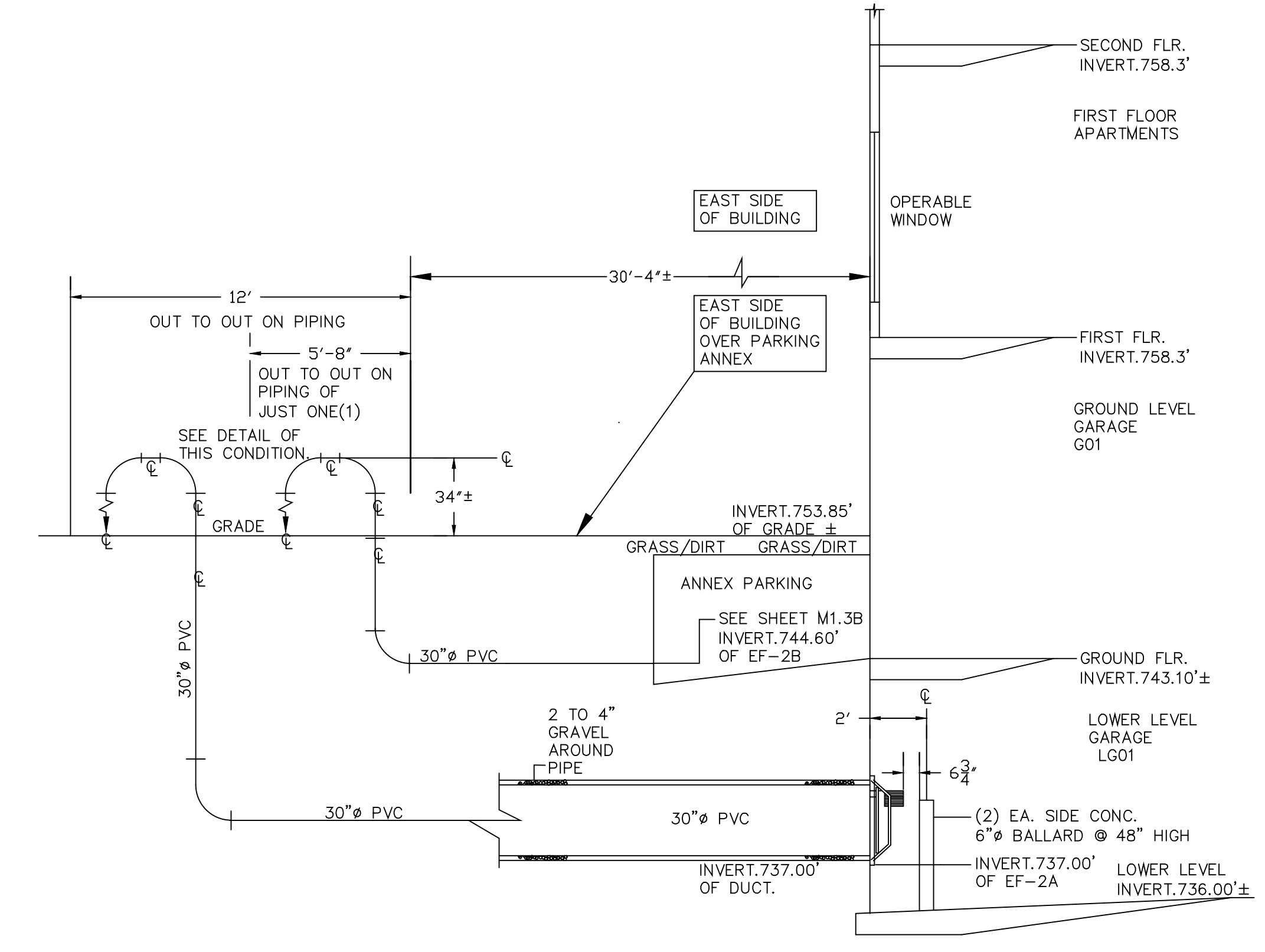


GROUND LEVEL PARKING DISCHARGE HOOD - VENTILATION
SCALE: 1/4" = 1'-0"
SEE SHEETS M1.3A AND M1.3B FOR INFORMATION

LOWER LEVEL PARKING DISCHARGE HOOD - VENTILATION
SCALE: 1/4" = 1'-0"
SEE SHEETS M1.3A AND M1.3B FOR INFORMATION

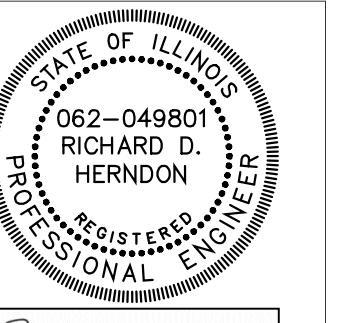


LOWER LEVEL PARKING PLAN - VENTILATION
SCALE: 3/32" = 1'-0"

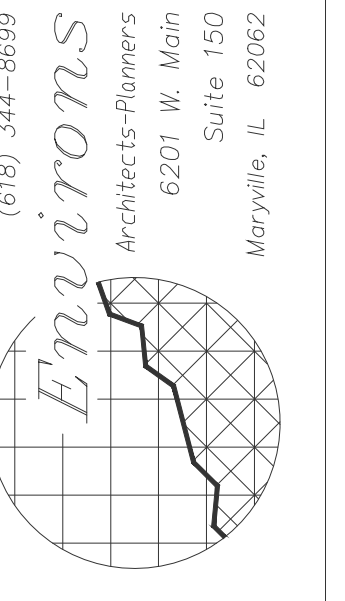


GROUND LEVEL PARKING ELEVATION - VENTILATION
SCALE: 1/4" = 1'-0"
SEE SHEETS M1.3A AND M1.3B FOR INFORMATION

LOWER LEVEL PARKING ELEVATION - VENTILATION
SCALE: 1/4" = 1'-0"
SEE SHEETS M1.3A AND M1.3B FOR INFORMATION



Richard D. Herndon, P.E.



JOB NO.
13027

DATE:
NOVEMBER 15, 2013

REVISED:
▲ FEBRUARY 20, 2014
▲ SEPTEMBER 8, 2014

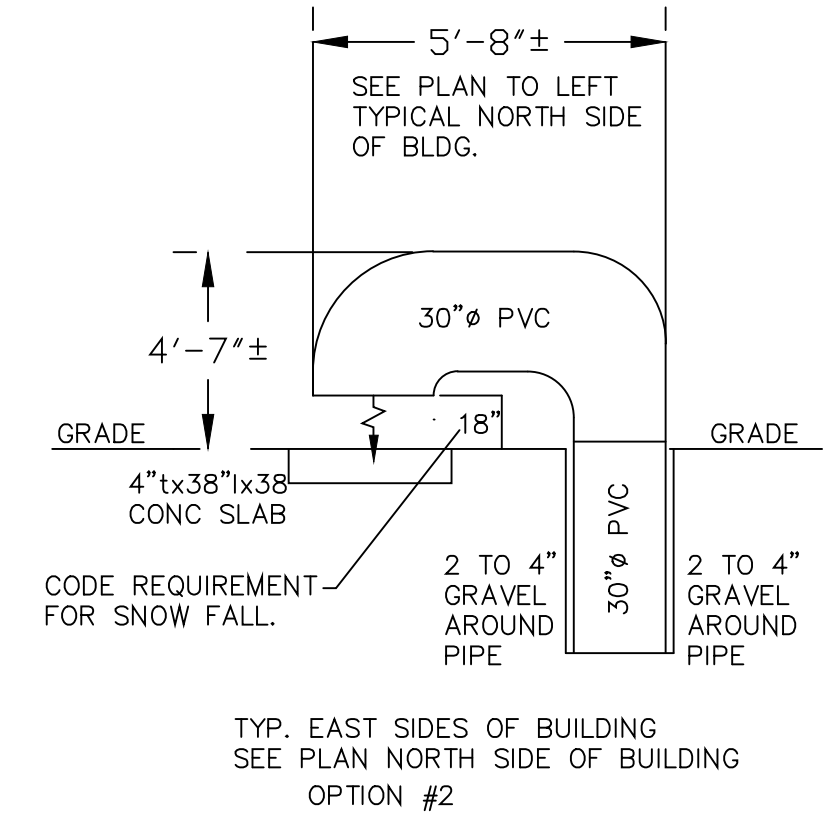


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

SHEET
M1.3B
OF

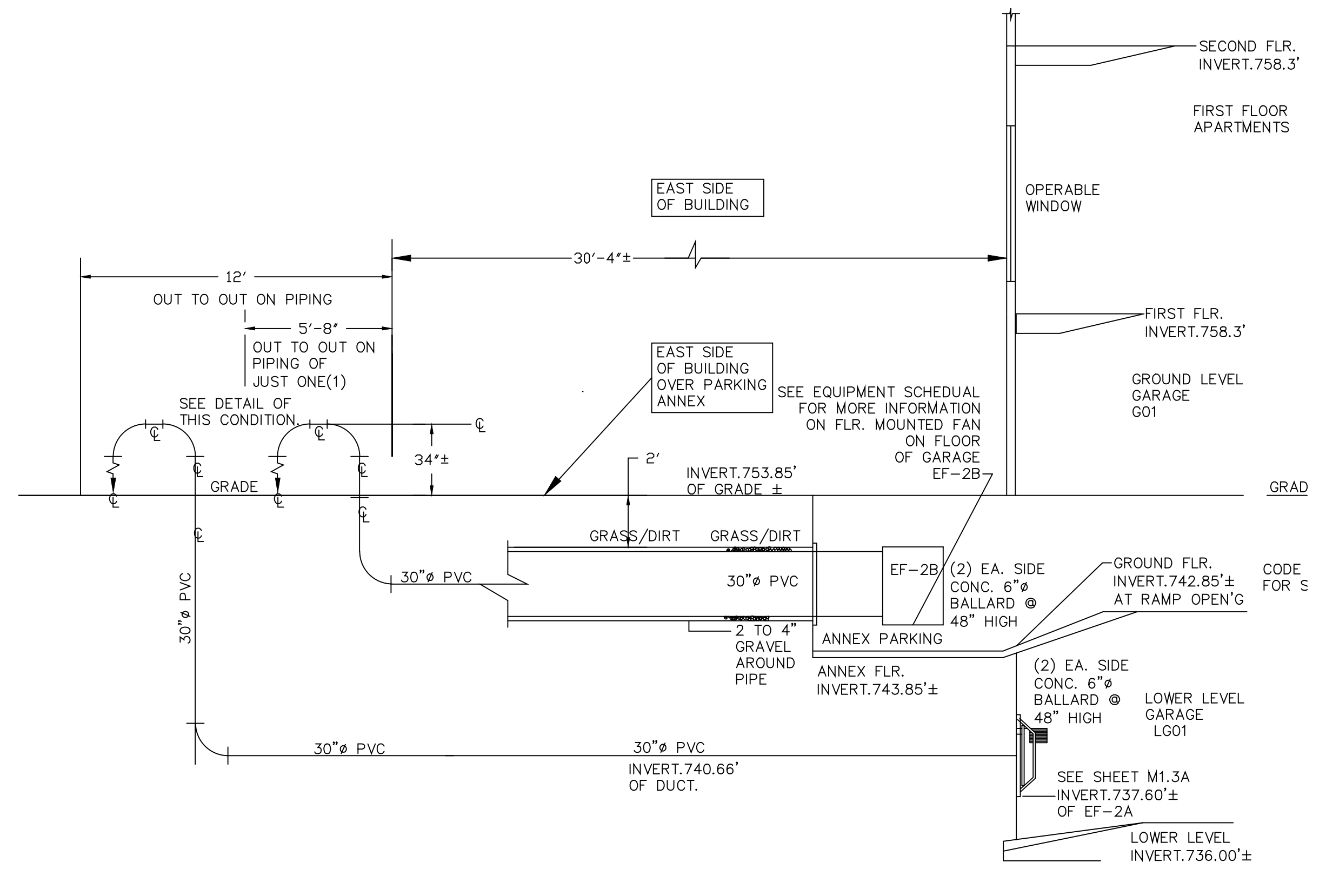
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- 2 PROVIDE EXHAUST VENTILATION FAN-2. REENHECK-SBE-3L30-10. QUANTITY OF 2 @ 7,200 CFM EACH @ ESP 0.3.
- 3 PROVIDE GAS DETECTOR (GSE-1) MODEL GSE-CN-1 BRASCH.
- 4 PROVIDE CONC BALLARD 6"Ø AS SHOWN TO PROTECT FANS.



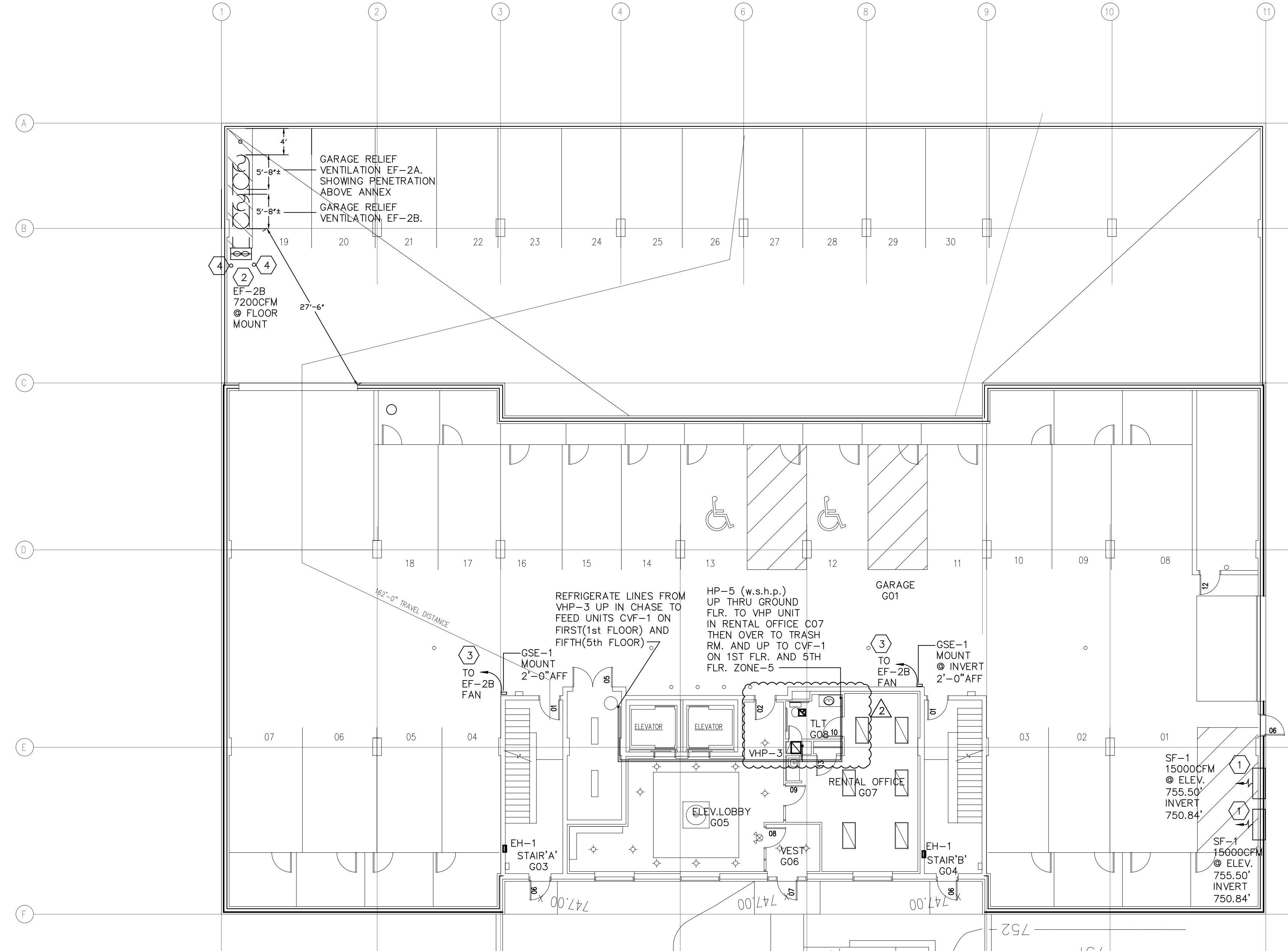
GROUND LEVEL PARKING ELEVATION - VENTILATION
SCALE: NTS

LOWER LEVEL PARKING ELEVATION - VENTILATION
SCALE: NTS

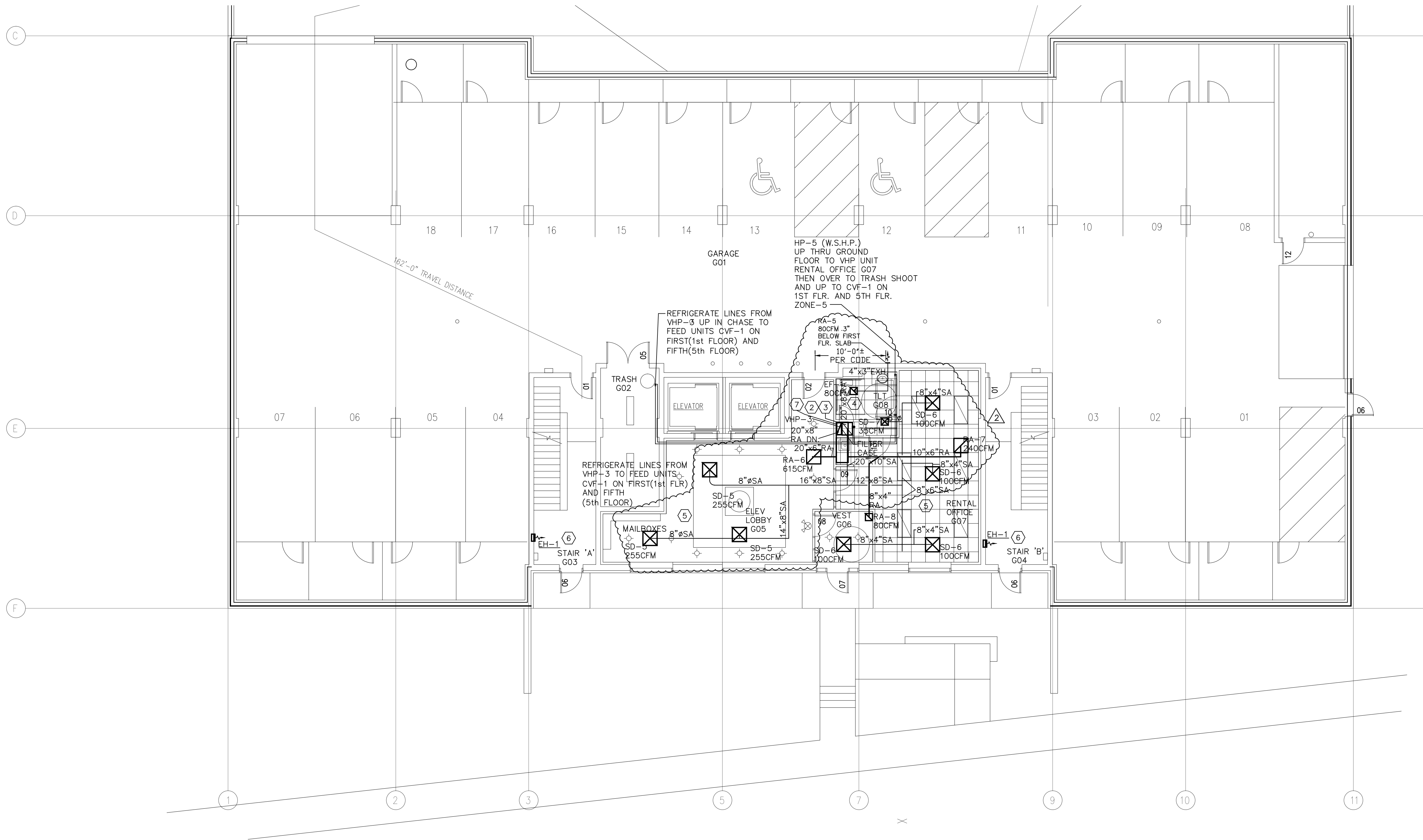


GROUND LEVEL PARKING ELEVATION - VENTILATION
SCALE: NTS
SEE SHEETS M1.3A AND M1.3B FOR INFORMATION

LOWER LEVEL PARKING ELEVATION - VENTILATION
SCALE: NTS
SEE SHEETS M1.3A AND M1.3B FOR INFORMATION



GROUND LEVEL PARKING PLAN - VENTILATION
SCALE: 3/32" = 1'-0"



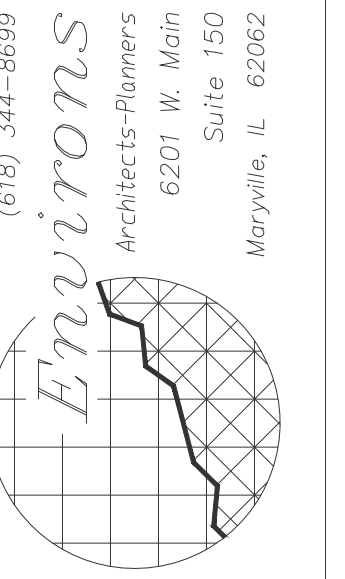
GROUND LEVEL PARKING PLAN - HVAC
SCALE: 1/8" = 1'-0"

KEY NOTES: FOR VHP UNITS

- 1 INSTALL REFRIGERANT LINE SETS IN EQUIPMENT ENCLOSURE VERTICALLY OF 1 THRU 5 FLOOR. FOR (VHP) AIR HANDLER FOR EACH APARTMENT. TO RISE UP AT THIS POINT.
- 2 REFRIGERANT LINES TO RISE UP IN EQUIPMENT ENCLOSURE.
- 3 PROVIDE AT LEAST R-6 INSULATION ON REFRIGERANT LINES IN UNCONDITIONED SPACE AND EQUIPMENT ENCLOSURE SPACES.
- 4 ELECTRICAL TO PROVIDE EXHAUST FAN (EF-1) TYPICAL FOR BATH ROOMS.
- 5 COORDINATE WITH GRID OF CEILING.
- 6 SEE EQUIPMENT SCHEDULE FOR INFORMATION.
- 7 TYP. ENCLOSURE FOR VHP IS AT CEILING 42"Dx25"W



Richard D. Herndon



JOB NO.
13027

DATE:
NOVEMBER 15, 2013

REVISED:
2 SEPTEMBER 8, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
M1.4
OF

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GENERAL NOTES

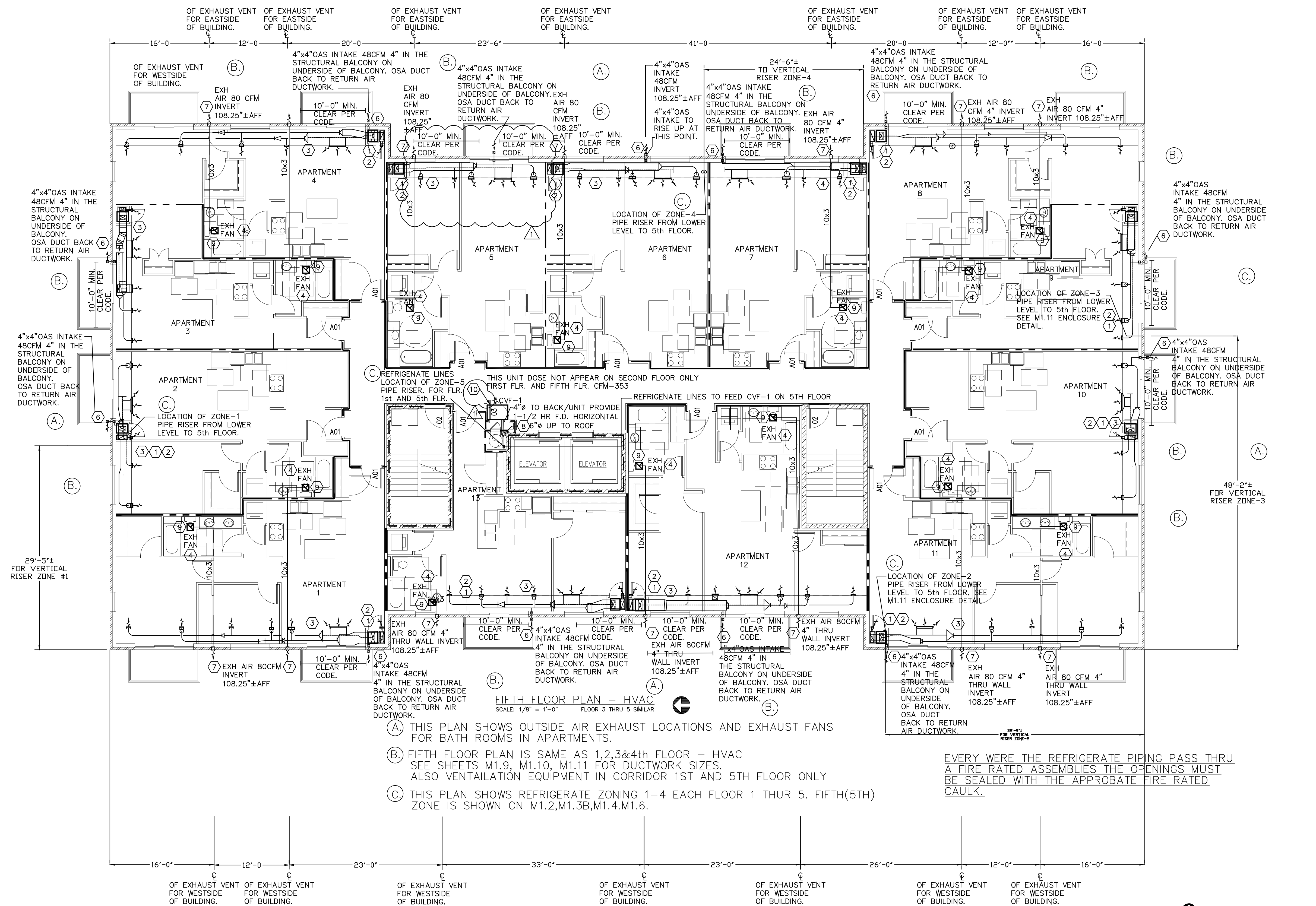
- A. THE HVAC CONTRACTOR SHALL VISIT THE PROJECT SITE BEFORE BIDDING AND VERIFY ANY ADDITIONAL MECHANICAL DEMOLITION TO BE DONE AT THIS LOCATION THAT WOULD INTERFERE WITH NEW CONSTRUCTION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. VERIFY ALL DIMENSIONS. DRAWINGS ARE ILLUSTRATIVE AND MAY NOT REFLECT EXACT CONDITIONS OR DIMENSIONS.
- B. HVAC CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL PIPES, DUCTWORK, UNITS, ETC. WITH ALL OTHER TRADES AND SHIFT LOCATION OR OFFSET WHERE NECESSARY.
- C. THE CONTRACTOR SHALL COORDINATE ALL AIR DEVICES WITH ELECTRICAL AND ARCHITECTURAL REFLECTED CEILING PLANS.
- D. THE LOCATION OF NEW DUCTWORK, AIR DEVICES, ETC. SHOWN ON THESE DRAWINGS SHOULD BE CONSIDERED IN ITS APPROXIMATE LOCATION. HVAC CONTRACTOR SHALL FIELD VERIFY ALL SIZES AND CLEARANCES PRIOR TO FABRICATION.
- E. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PLASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.
- F. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. EXACT LOCATIONS OF DEVICES AND ROUTING OF DUCTWORK SHALL BE DETERMINED BY CONTRACTOR AFTER COORDINATION WITH ALL OTHER TRADES AND FIELD DETERMINATION OF FINAL CONSTRUCTION DETAILS. MINOR ADJUSTMENTS TO DUCT ROUTING AND CONFIGURATION TO AVOID CONFLICT WITH BUILDING STRUCTURE OR OTHER TRADES SHALL BE INCLUDED IN CONTRACTOR'S PRICE. CONTRACTOR SHALL OBTAIN ENGINEERS APPROVAL IN WRITING FOR ANY MODIFICATIONS TO SYSTEM DESIGN PRIOR TO INSTALLATION.

- G. MAIN SUPPLY AIR DUCT SHALL BE WRAPPED WITH INSULATION SEE SPECIFICATIONS.
- H. ALL MAIN DUCT SUPPLY AND RETURN SIZE ARE WITHOUT INTERIOR INSULATION. ACTUAL OUTSIDE DIMENSION SHOULD AS ON DRAWINGS.

KEY NOTES: FOR VHP UNITS

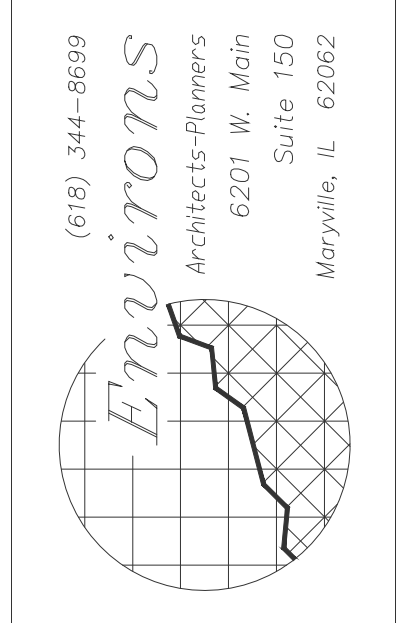
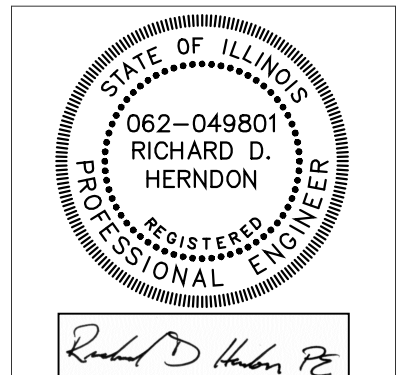
1. INSTALL REFRIGERANT LINE SETS IN EQUIPMENT ENCLOSURE VERTICALLY OF 1 THRU 5 FLOOR. FOR (VHP) AIR HANDLER FOR EACH APARTMENT.
2. REFRIGERANT LINES UP IN EQUIPMENT ENCLOSURE.
3. PROVIDE AT LEAST R-6 INSULATION ON DUCTS IN UNCONDITIONED EQUIPMENT ENCLOSURE SPACES.
4. PROVIDED BY ELECTRICAL EXHAUST FAN (EF-1) TYPICAL FOR BATH ROOMS.
5. NOT USED
6. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT VENT SIZE 4" FOR 48CFM.
7. PROVIDE 4"x4" EXHAUST AIR DUCT TO OUT SIDE BUILDING EXTERIOR VENT SIZE 4" FOR 80CFM. VENTS PROVIDED BY MECHANICAL CONTRACTOR. DEFLECTO WHITE ITEM NUMBER H54W/4B. MECHANICAL CONTRACTOR TO PAINT VENT TO MATCH BRICK COLOR.

8. RUN OUTSIDE AIR DUCT FROM ROOF W/ WEATHER CAP DOWN TO 1ST FLOOR CVF UNIT. TAKE 4" OSA DUCT TO CVF UNIT FOR OUTSIDE AIR. AND DO THE SAME FOR 5TH FLOOR OSA.
9. EXHAUST DUCTWORK TO TURN UP INTO CEILING AND RUN TIN STRUCTURE JOIST TO OUTSIDE OF BUILDING.
10. MOUNT CVF-1 FLUSH WITH THE CEILING. IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.



- A. THIS PLAN SHOWS OUTSIDE AIR EXHAUST LOCATIONS AND EXHAUST FANS FOR BATH ROOMS IN APARTMENTS.
- B. FIFTH FLOOR PLAN IS SAME AS 1,2,3&4th FLOOR - HVAC SEE SHEETS M1.9, M1.10, M1.11 FOR DUCTWORK SIZES. ALSO VENTILATION EQUIPMENT IN CORRIDOR 1ST AND 5TH FLOOR ONLY
- C. THIS PLAN SHOWS REFRIGERATE ZONING 1-4 EACH FLOOR 1 THUR 5. FIFTH(5TH) ZONE IS SHOWN ON M1.2,M1.3B,M1.4.M1.6.

EVERY WERE THE REFRIGERATE PIPING PASS THRU A FIRE RATED ASSEMBLIES THE OPENINGS MUST BE SEALED WITH THE APPROPRIATE FIRE RATED CAULK.



JOB NO. 13027

DATE: NOVEMBER 15, 2013
REVISED: FEBRUARY 20, 2014



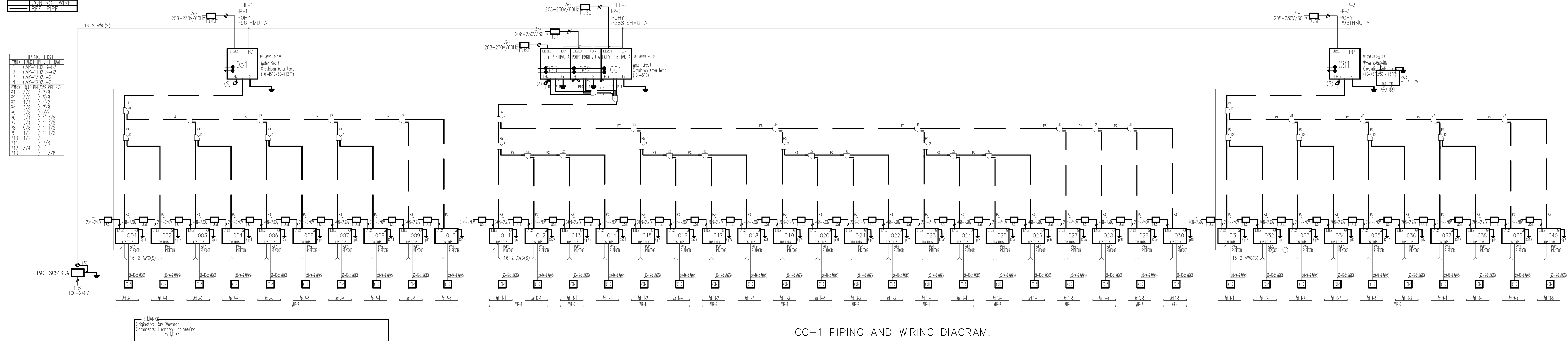
A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

SHEET
M1.5
OF

Cardinal Square Apts	
PROJECT NO.	16000000000000000000
DATE	11/15/13
DESIGNED BY	HERNDON
CHECKED BY	HERNDON
DATE	11/15/13

city MULT
SYSTEM SCHEMATIC DWG.

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
1.25oz(1/8 AMG) : 1.25oz(1/8 AMG) or more : 0.75oz(3/32 AMG) : between 0.5oz(1/4 AMG) and 0.75oz(3/32 AMG)

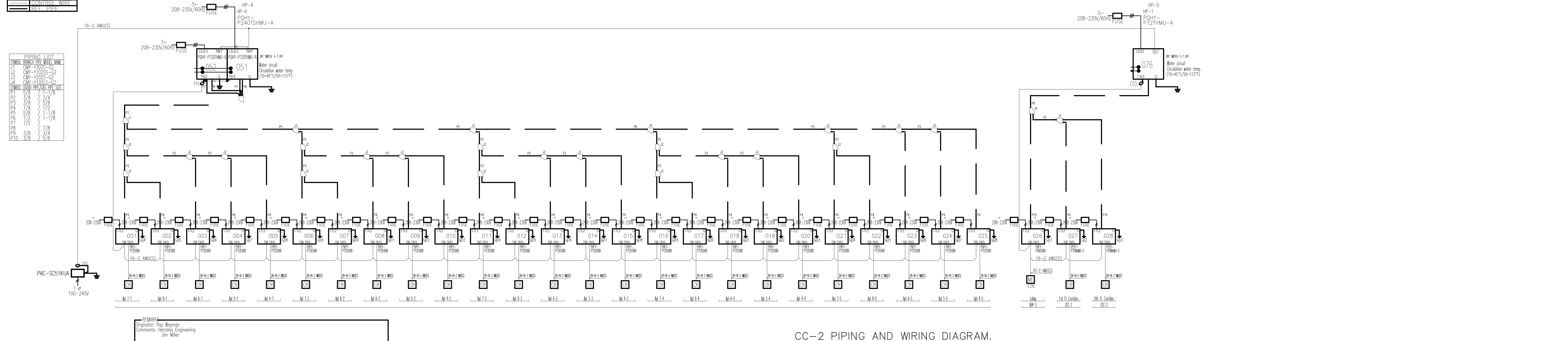


CC-1 PIPING AND WIRING DIAGRAM.

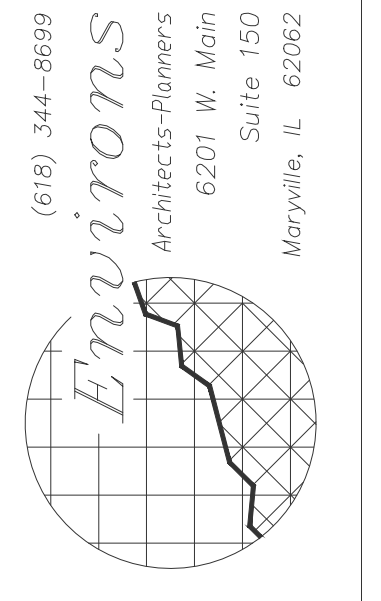
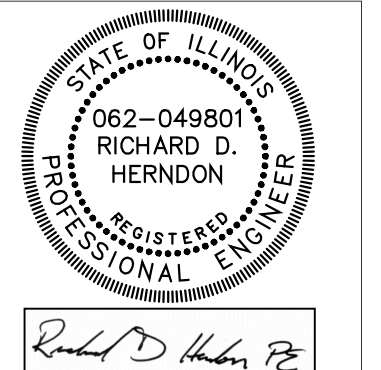
Cardinal Square Apts	
PROJECT NO.	16000000000000000000
DATE	11/15/13
DESIGNED BY	HERNDON
CHECKED BY	HERNDON
DATE	11/15/13

city MULT
SYSTEM SCHEMATIC DWG.

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
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CC-2 PIPING AND WIRING DIAGRAM.



JOB NO.
13027

DATE:
NOVEMBER 15, 2013
REVISED:

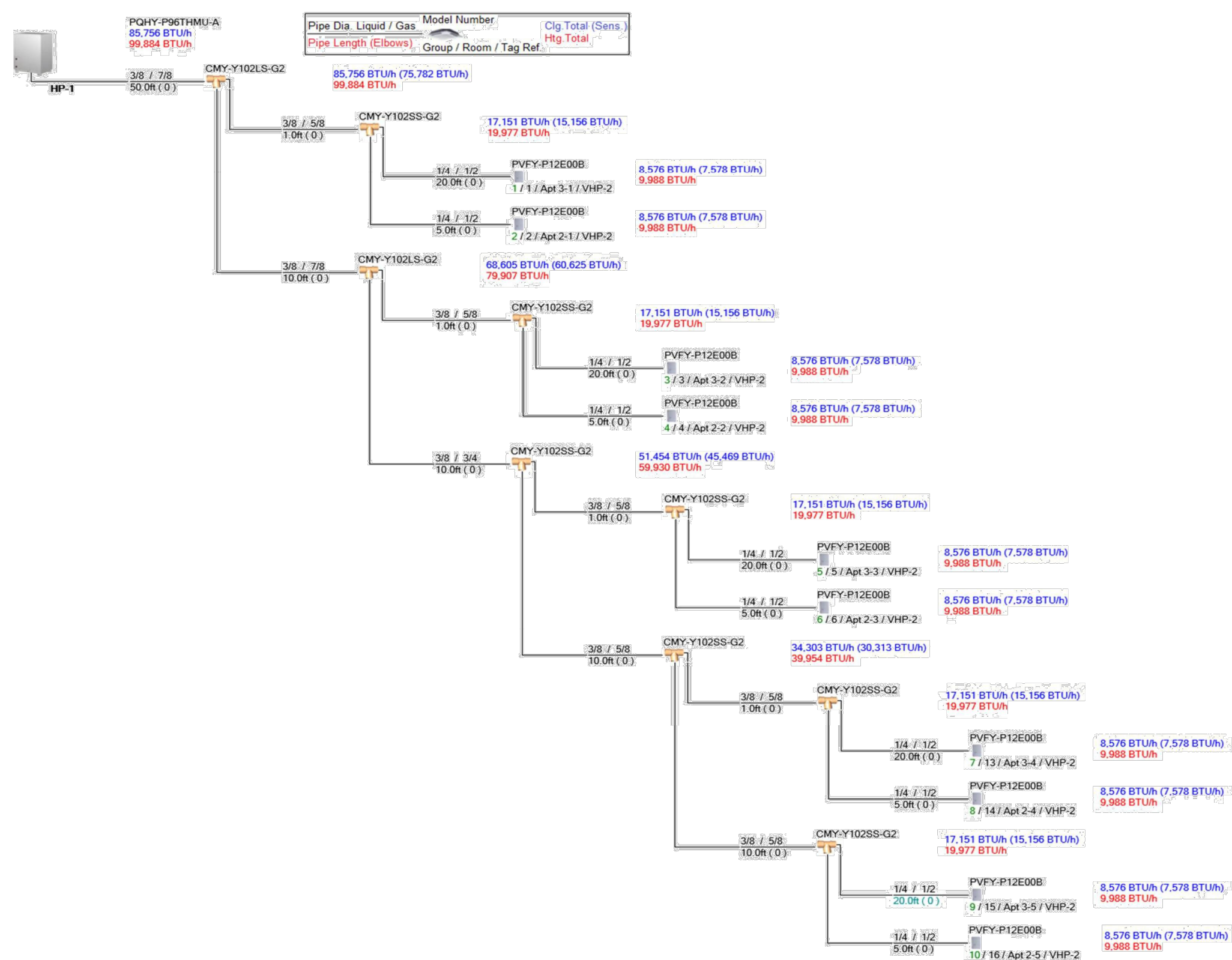


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
M1.6
OF

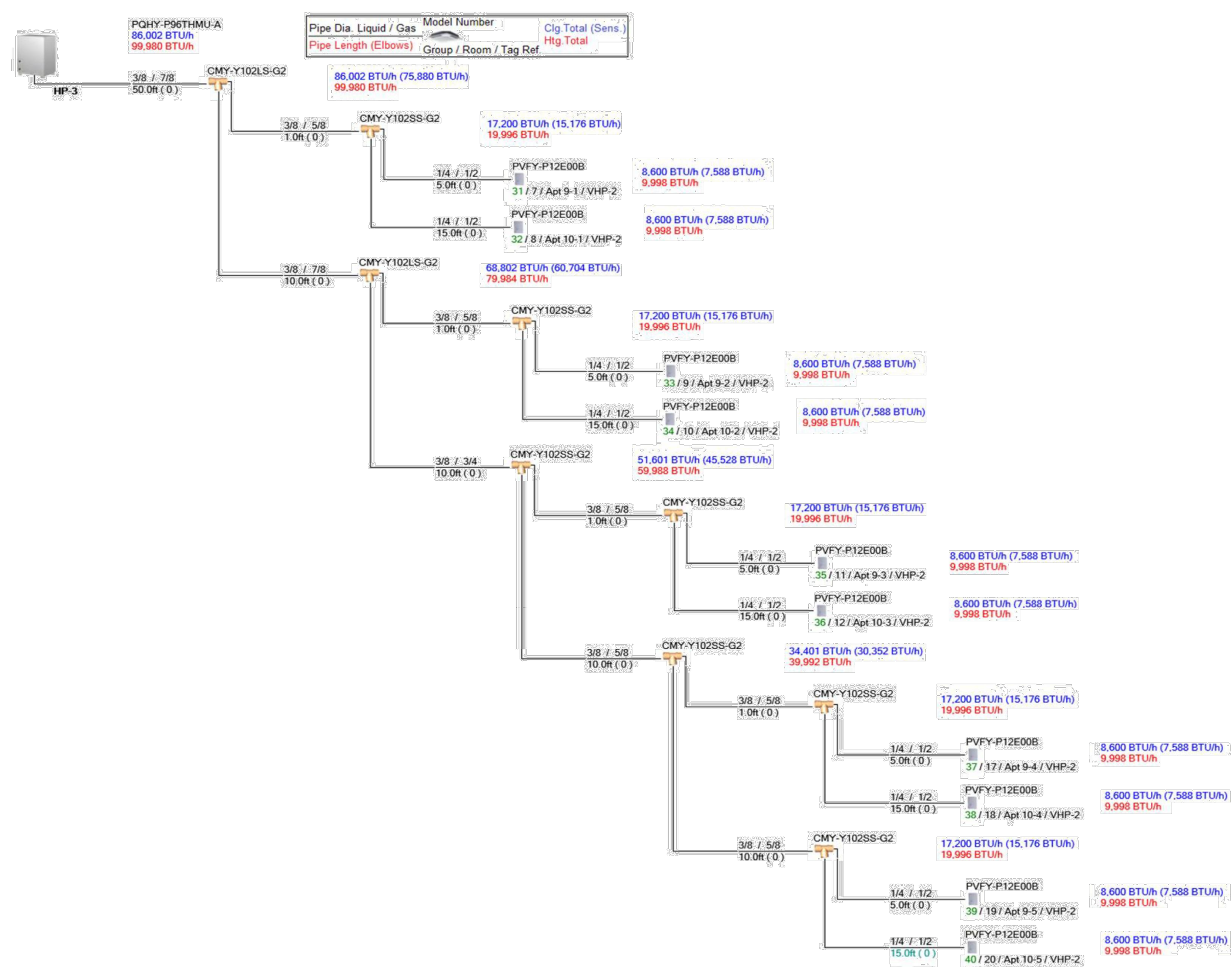
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Piping Diagram Image (Design View)



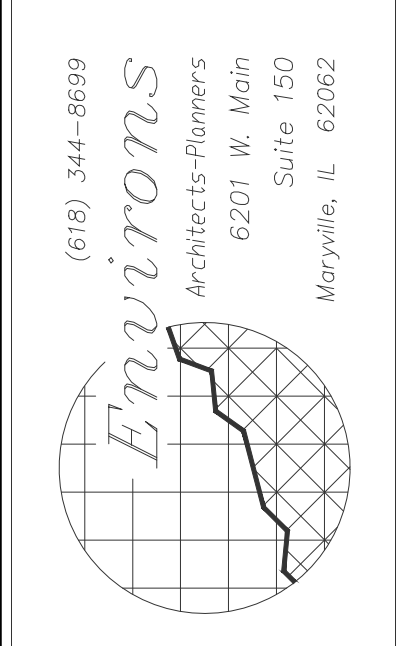
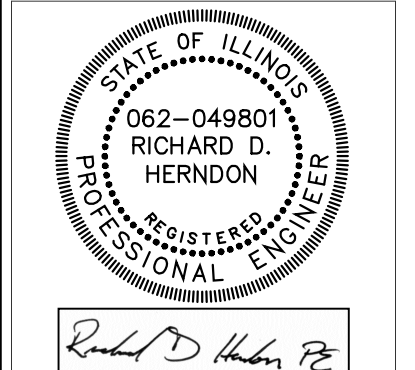
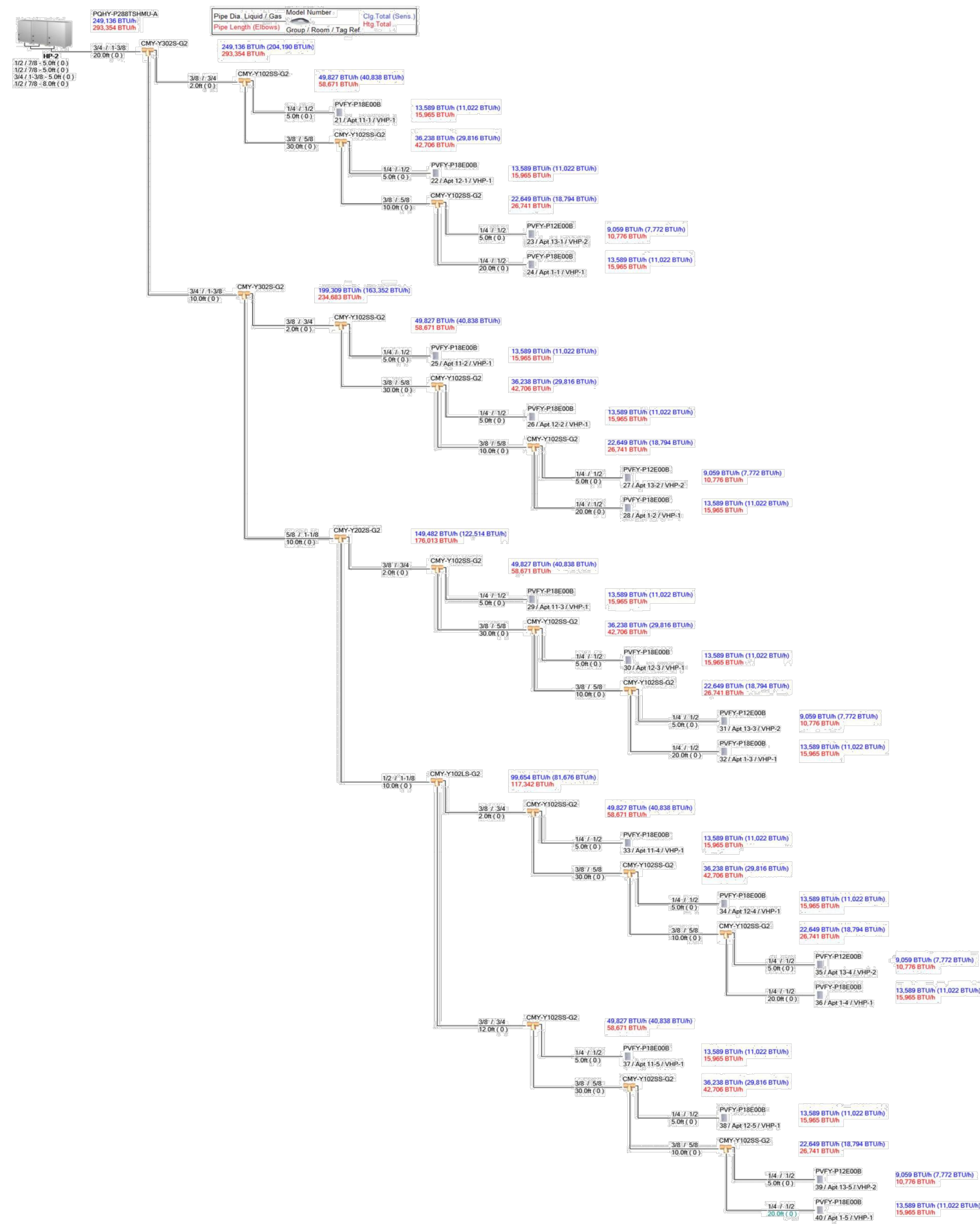
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Piping Diagram Image (Design View)



1-2

Piping Diagram Image (Design View)



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13027

DATE:
NOVEMBER 15, 2013

REVISED:



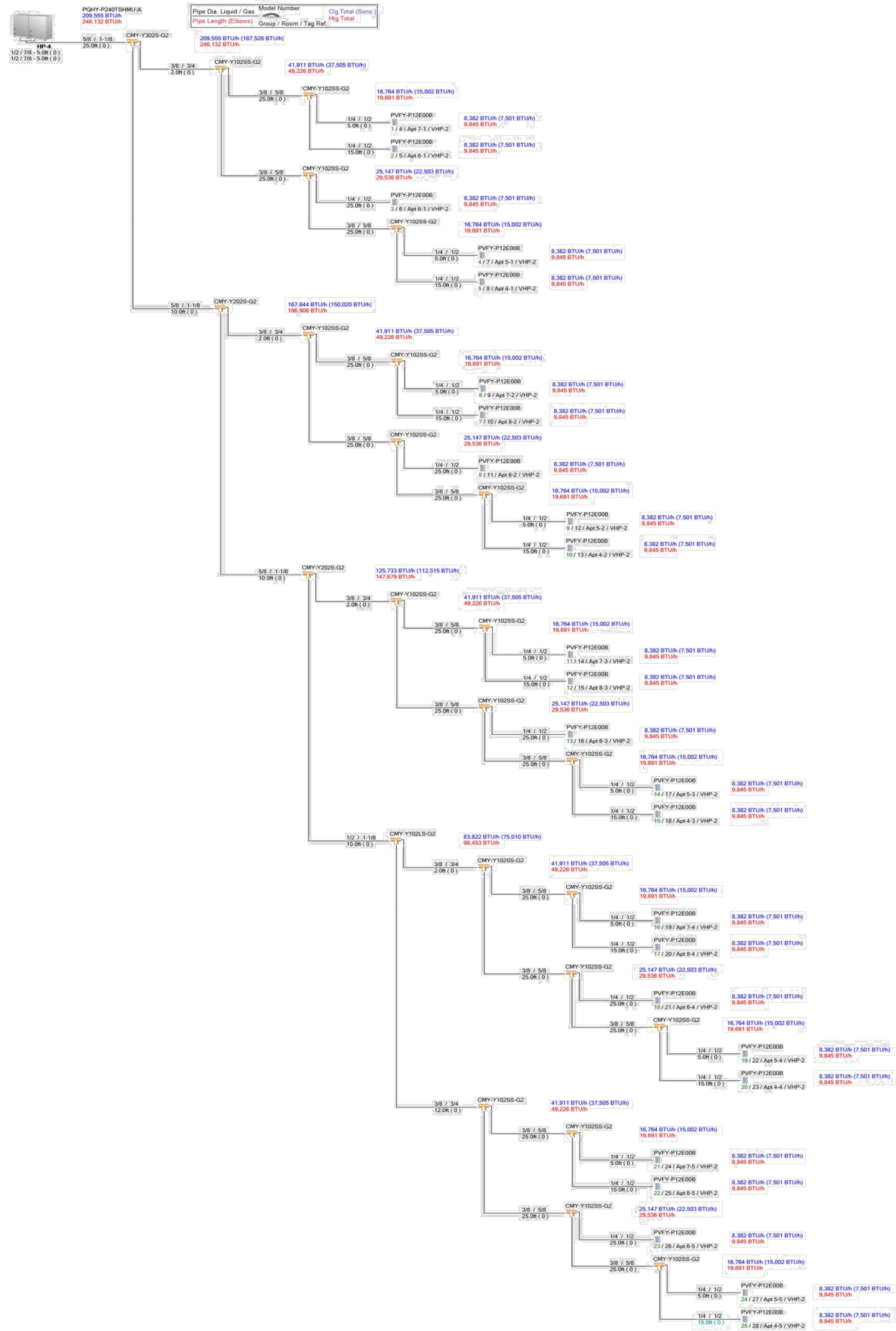
SHRINAY CORPORATION
WWW.SHRINAY.COM
TEL - 847-754-1064

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McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

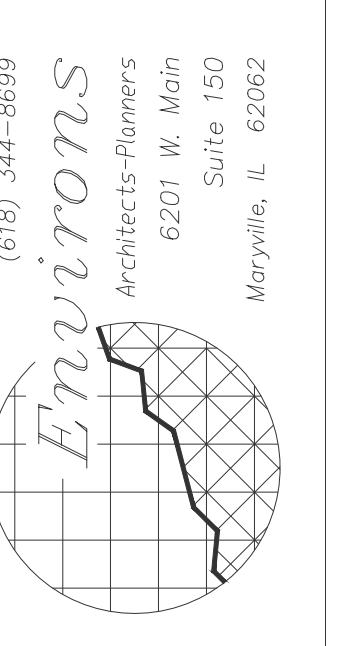
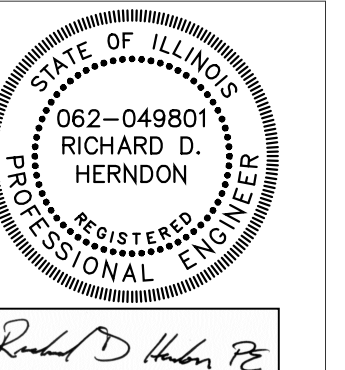
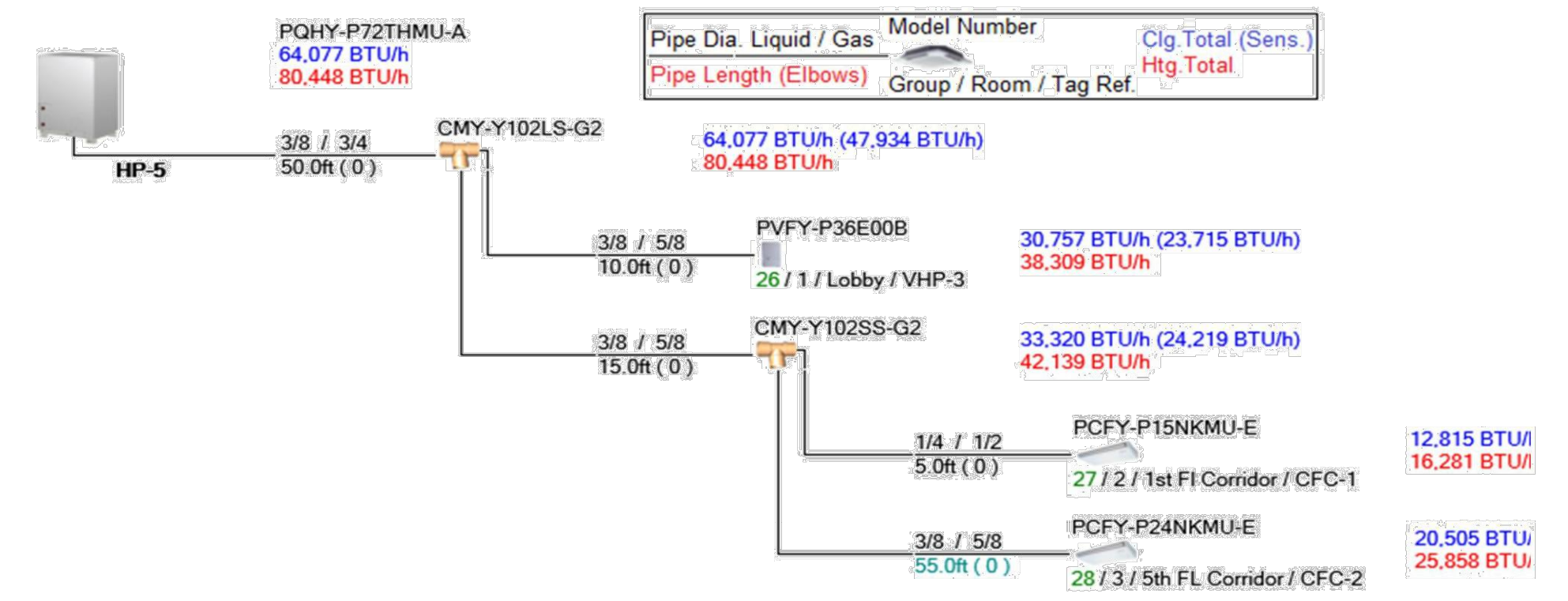
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Piping Diagram Image (Design View)



Piping Diagram Image (Design View)



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NOVEMBER 15, 2013

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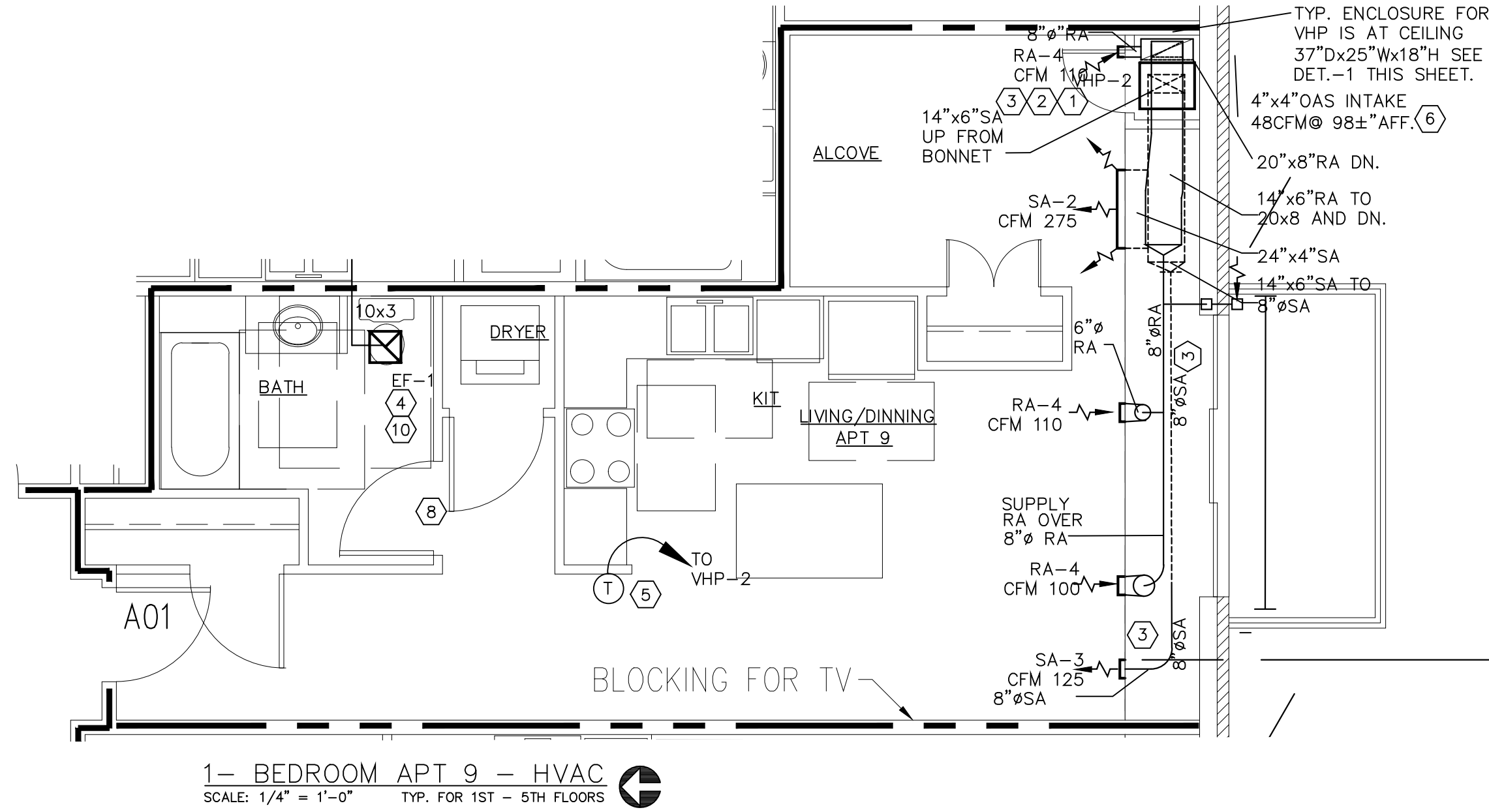
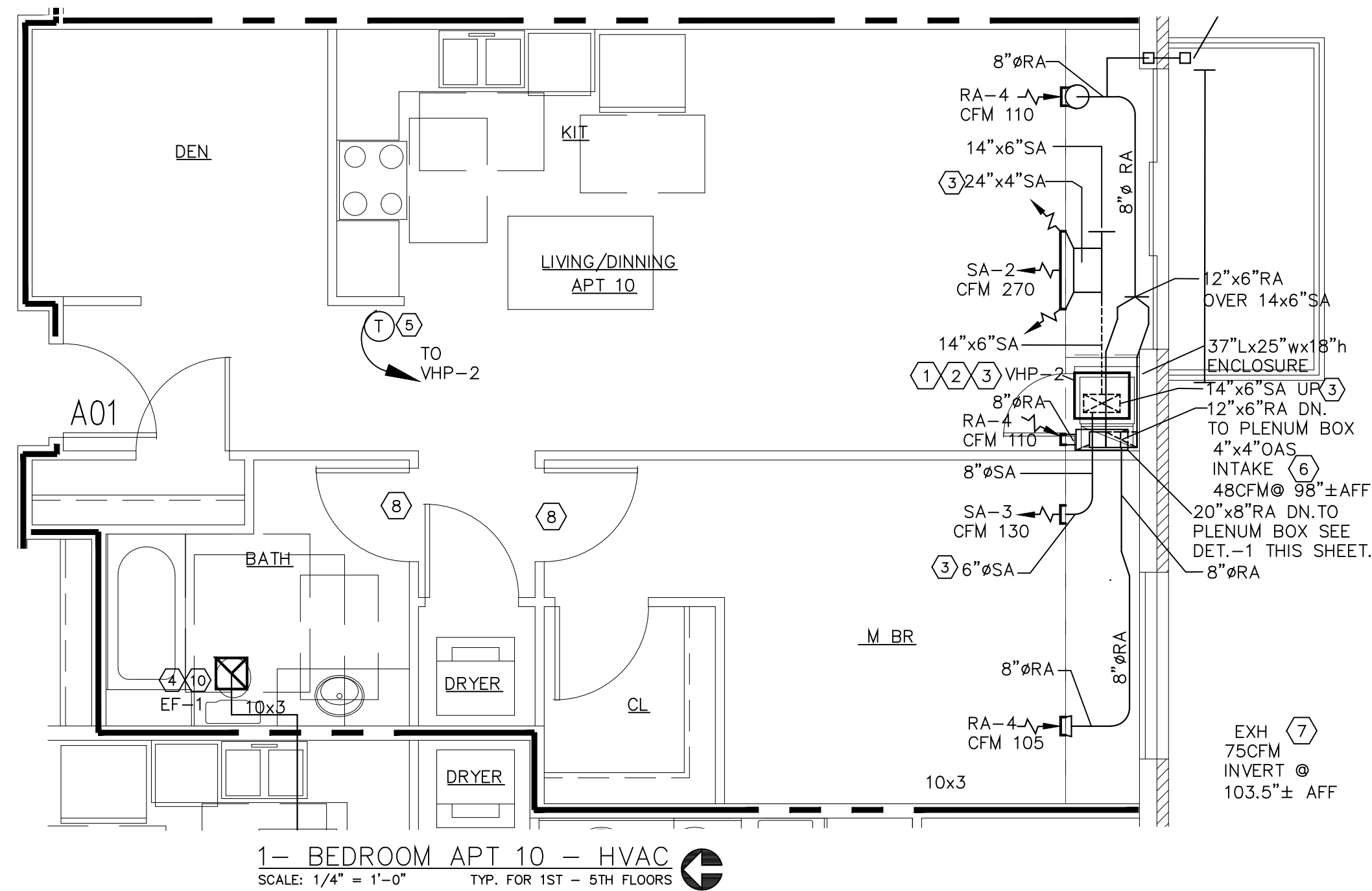
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McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

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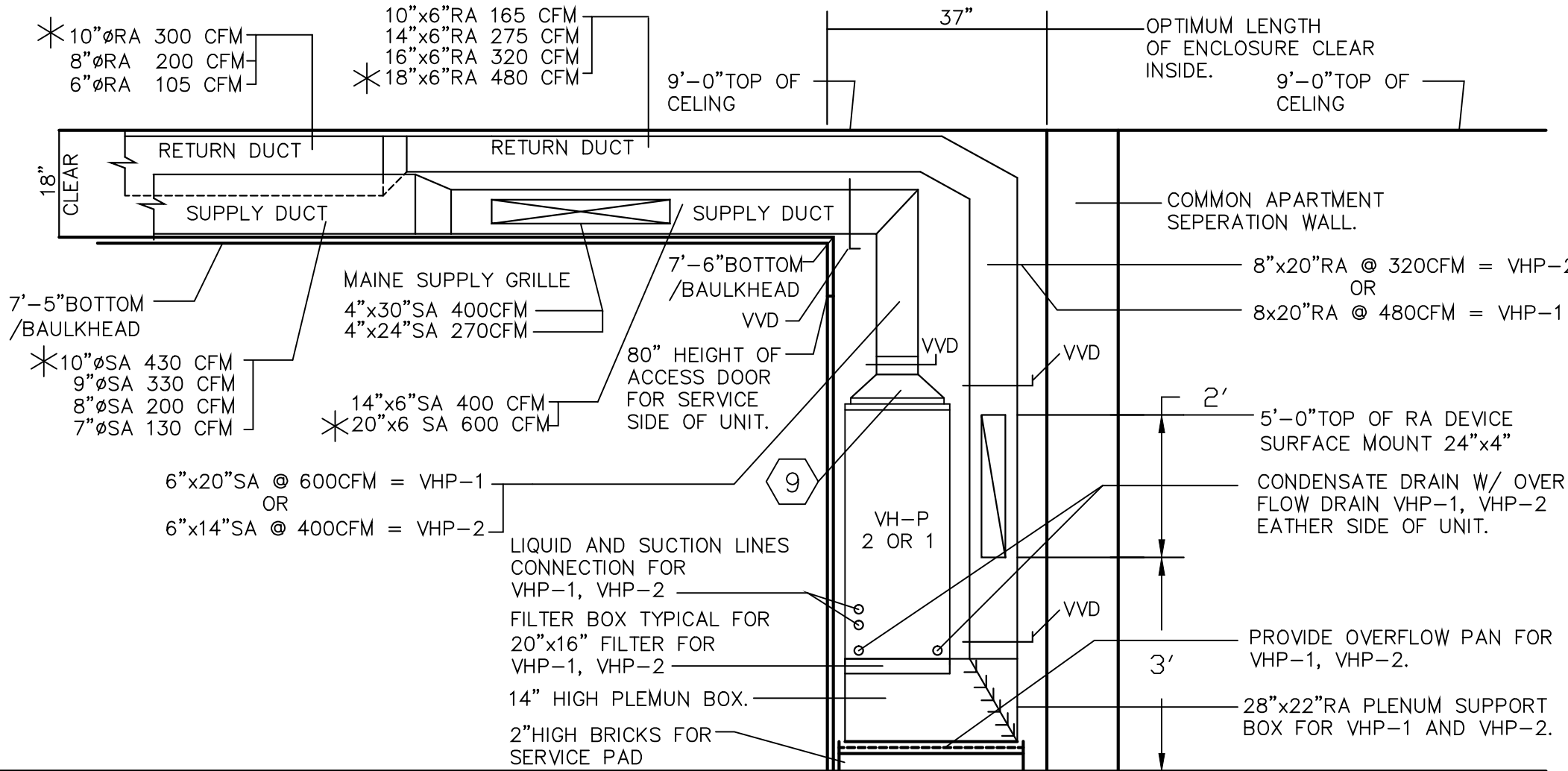
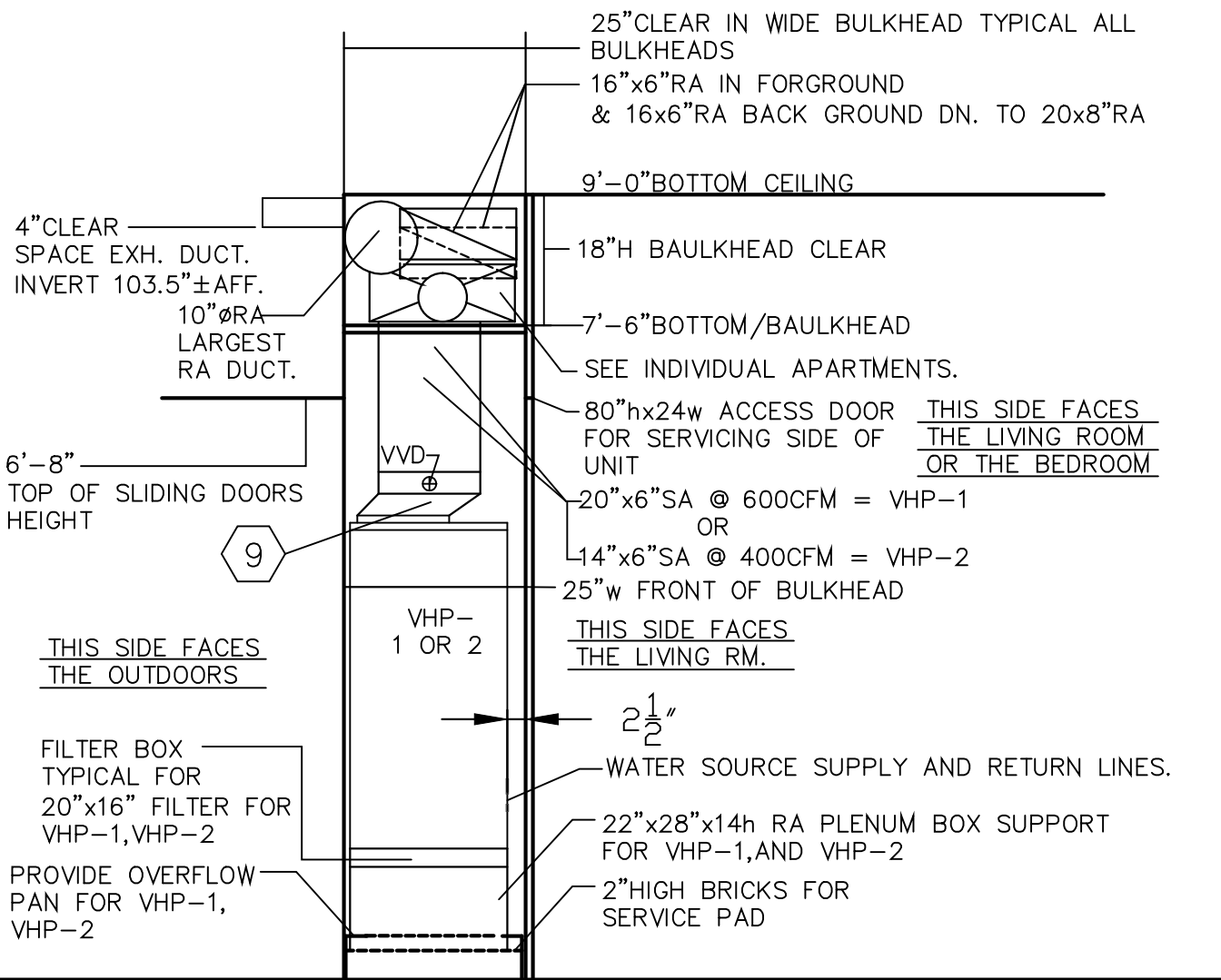
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HVAC LEGEND	
	RECTANGULAR DUCTWORK AND SIZE
	ROUND DUCTWORK AND SIZE
	FLEXIBLE DUCTWORK AND SIZE
	BALANCING/CONTROL/VOLUME DAMPER
	TURNING VANES
	HVAC UNIT
	SUPPLY DIFFUSER AND CFM
	SUPPLY REGISTER AND CFM
	RETURN AIR GRILLE & SIZE
	EXHAUST FAN AND CFM
	THERMOSTAT HONEYWELL T7350
	DUCT SMOKE DETECTOR SYSTEM SENSOR DH400-ACDCIHT
	ANNUNCIATOR - SYSTEM SENSOR APA451 WITH PIEZO ALERT
	DRAWING NOTE SYMBOL AND NUMBER
	CONNECT TO EXISTING
	AIR FLOW DIRECTION
	CONDENSATE DRAIN PIPING
	REFRIGERANT PIPING
	COMBUSTION AIR & FLUE PIPING



KEY NOTES: FOR VHP UNITS

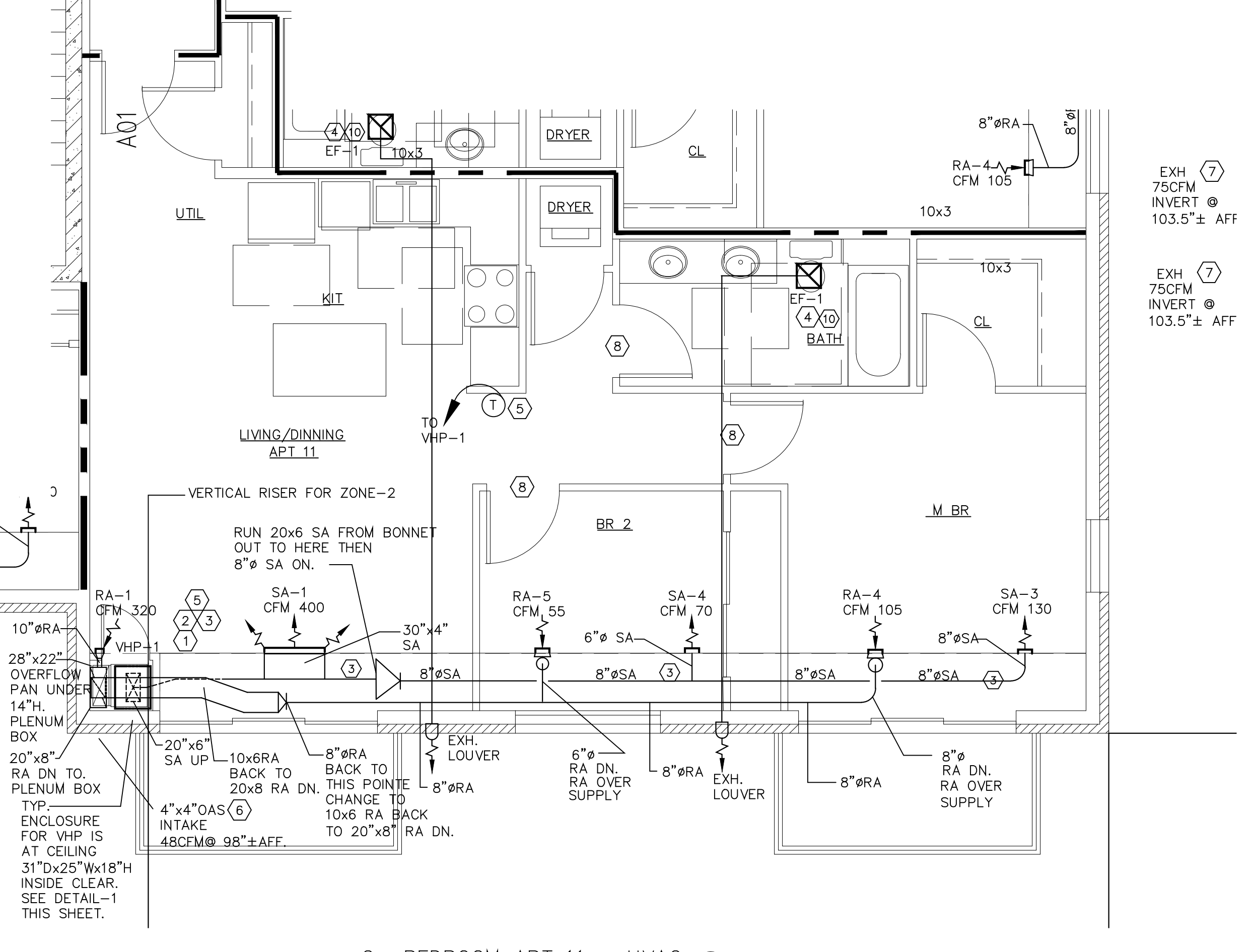
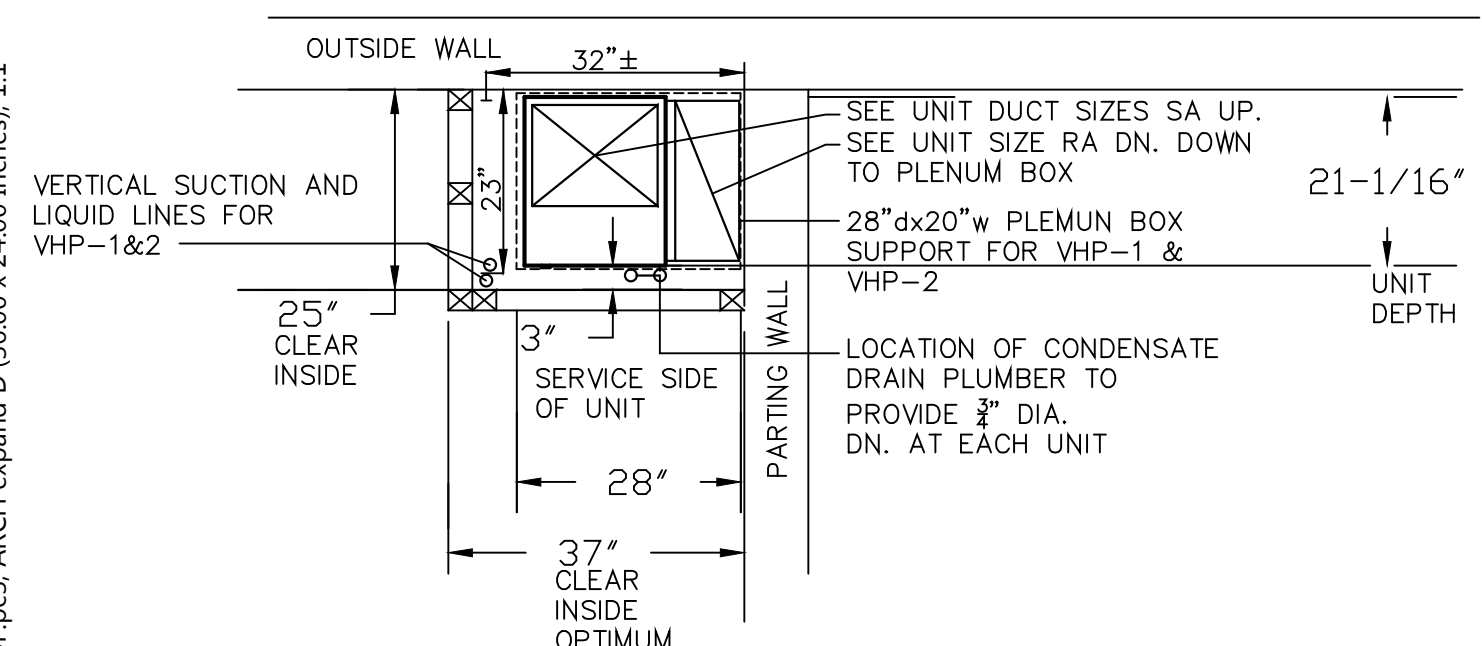
1. INSTALL REFRIGERANT LINE SETS IN EQUIPMENT ENCLOSURE VERTICALLY OF 1 THRU 5 FLOOR. FOR (VHP) AIR HANDLER FOR EACH APARTMENT.
2. REFRIGERANT LINES UP IN EQUIPMENT ENCLOSURE.
3. PROVIDE AT LEAST R-6 INSULATION ON DUCTS IN UNCONDITIONED EQUIPMENT ENCLOSURE SPACES.
4. ELECTRICAL CONTRACTOR PROVIDE EXHAUST FAN (EF-1) TYPICAL FOR BATH ROOMS.
5. PROVIDE AND INSTALL MITSUBISHI THERMOSTATS.
6. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT AND SEIHO VENT LOUVER SIZE 5" FOR 48CFM.
7. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT AND SEIHO VENT LOUVER SIZE 4" FOR 32CFM.
8. UNDERCUT DOOR BY 1/8" @ 42CFM PER LINEAL FOOT=129CFM.
9. PROVIDE AND INSTALL TRANSITION DUCT FROM BONNET OF VERTICAL HEAT PUMP(VHP) @ 15.6875"x12.5625" TO SUPPLY AIR DUCT REQUIRED FOR EACH UNIT. VHP-1 IS A 1-1/2 TON UNIT AND VHP-2 IS 1 TON UNIT.
10. EXHAUST DUCTWORK TO RISE UP IN TO STRUCTURAL CEILING THEN RUN IN CEILING TO OUTSIDE OF BUILDING.



KEY NOTES: FOR APARTMENTS PLANS

GENERAL NOTES

- THE HVAC CONTRACTOR SHALL VISIT THE PROJECT SITE BEFORE BIDDING AND VERIFY ANY ADDITIONAL MECHANICAL DEMOLITION TO BE DONE AT THIS LOCATION THAT WOULD INTERFERE WITH NEW CONSTRUCTION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. VERIFY ALL DIMENSIONS. DRAWINGS ARE ILLUSTRATIVE AND MAY NOT REFLECT EXACT CONDITIONS OR DIMENSIONS.
- HVAC CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL PIPES, DUCTWORK, UNITS, ETC. WITH ALL OTHER TRADES AND SHIFT LOCATION OR OFFSET WHERE NECESSARY.
- THE CONTRACTOR SHALL COORDINATE ALL AIR DEVICES WITH ELECTRICAL AND ARCHITECTURAL REFLECTED CEILING PLANS.
- THE LOCATION OF NEW DUCTWORK, AIR DEVICES, ETC. SHOWN ON THESE DRAWINGS SHOULD BE CONSIDERED IN ITS APPROXIMATE LOCATION. HVAC CONTRACTOR SHALL FIELD VERIFY ALL SIZES AND CLEARANCES PRIOR TO FABRICATION.
- DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PILASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.
- THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. EXACT LOCATIONS OF DEVICES AND ROUTING OF DUCTWORK SHALL BE DETERMINED BY CONTRACTOR AFTER COORDINATION WITH ALL OTHER TRADES AND FIELD DETERMINATION OF FINAL CONSTRUCTION DETAILS. MINOR ADJUSTMENTS TO DUCT ROUTING AND CONFIGURATION TO AVOID CONFLICT WITH BUILDING STRUCTURE OR OTHER TRADES SHALL BE INCLUDED IN CONTRACTOR'S PRICE. CONTRACTOR SHALL OBTAIN ENGINEERS APPROVAL IN WRITING FOR ANY MODIFICATIONS TO SYSTEM DESIGN PRIOR TO INSTALLATION.
- MAIN SUPPLY AIR DUCT SHALL BE LINED TO MINIMIZE NOISE.
- ALL MAIN DUCT SUPPLY AND RETURN SIZE ARE WITHOUT INTERIOR INSULATION. ACTUAL OUTSIDE DIMENSION SHOULD BE 2" LARGER.



EVERY WERE THE REFRIGERATE PIPING PASS THRU A FIRE RATED ASSEMBLY THE OPENINGS MUST BE SEALED WITH THE APPROPBATE FIRE RATED.

STATE OF ILLINOIS
062-04980
RICHARD D. HERNDON
REGISTERED PROFESSIONAL ENGINEER

Environics
Architects-Planners
6201 W. Main
Suite 150
Maryville, IL 62062

JOB NO.
13027

DATE:
NOVEMBER 15, 2013
REVISED:

SHRINAY
SHRINAY CORPORATION
WWW.SHRINAY.COM
TEL - 847-754-1064

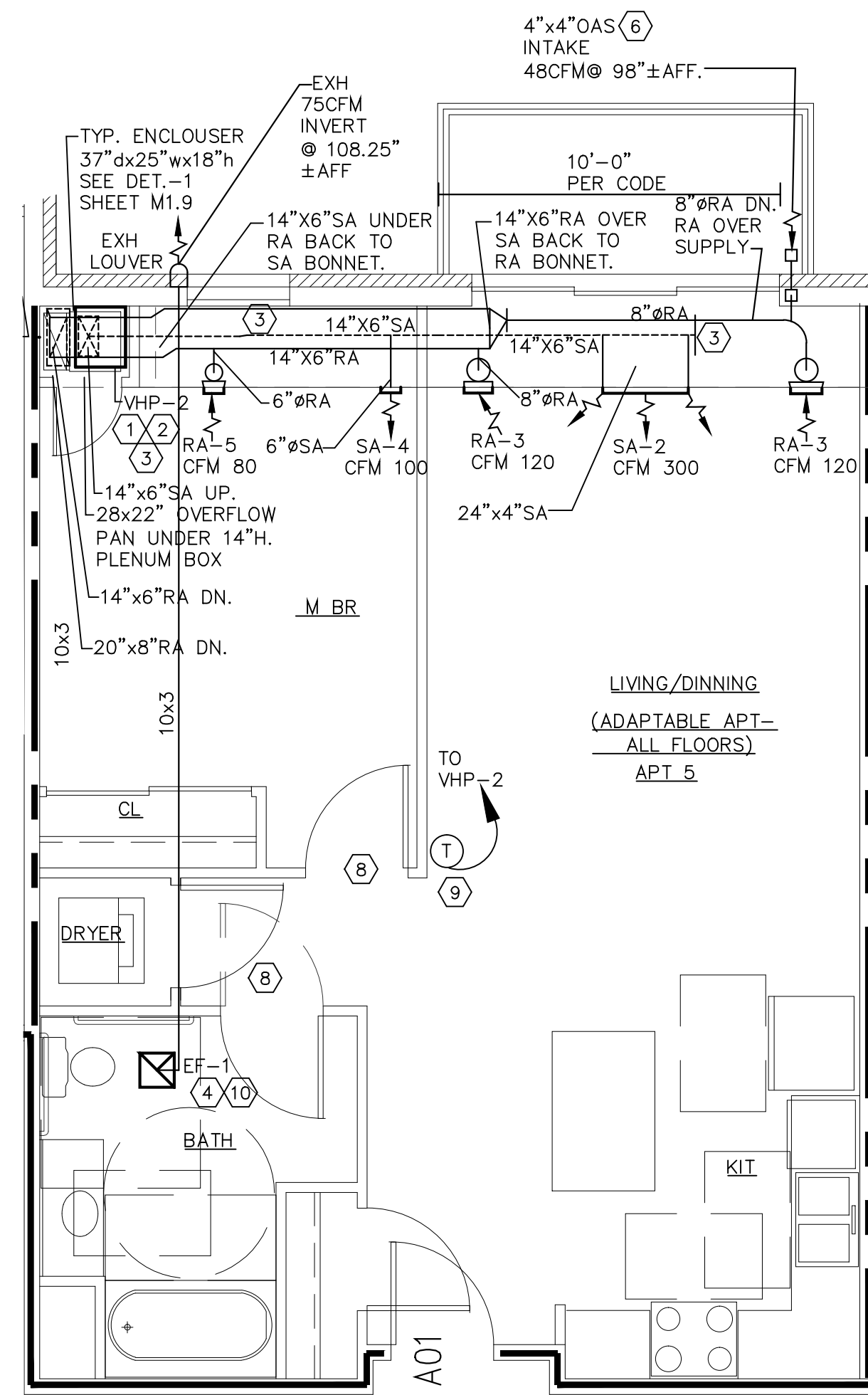
A NEW APARTMENT BUILDING 'C':
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OF

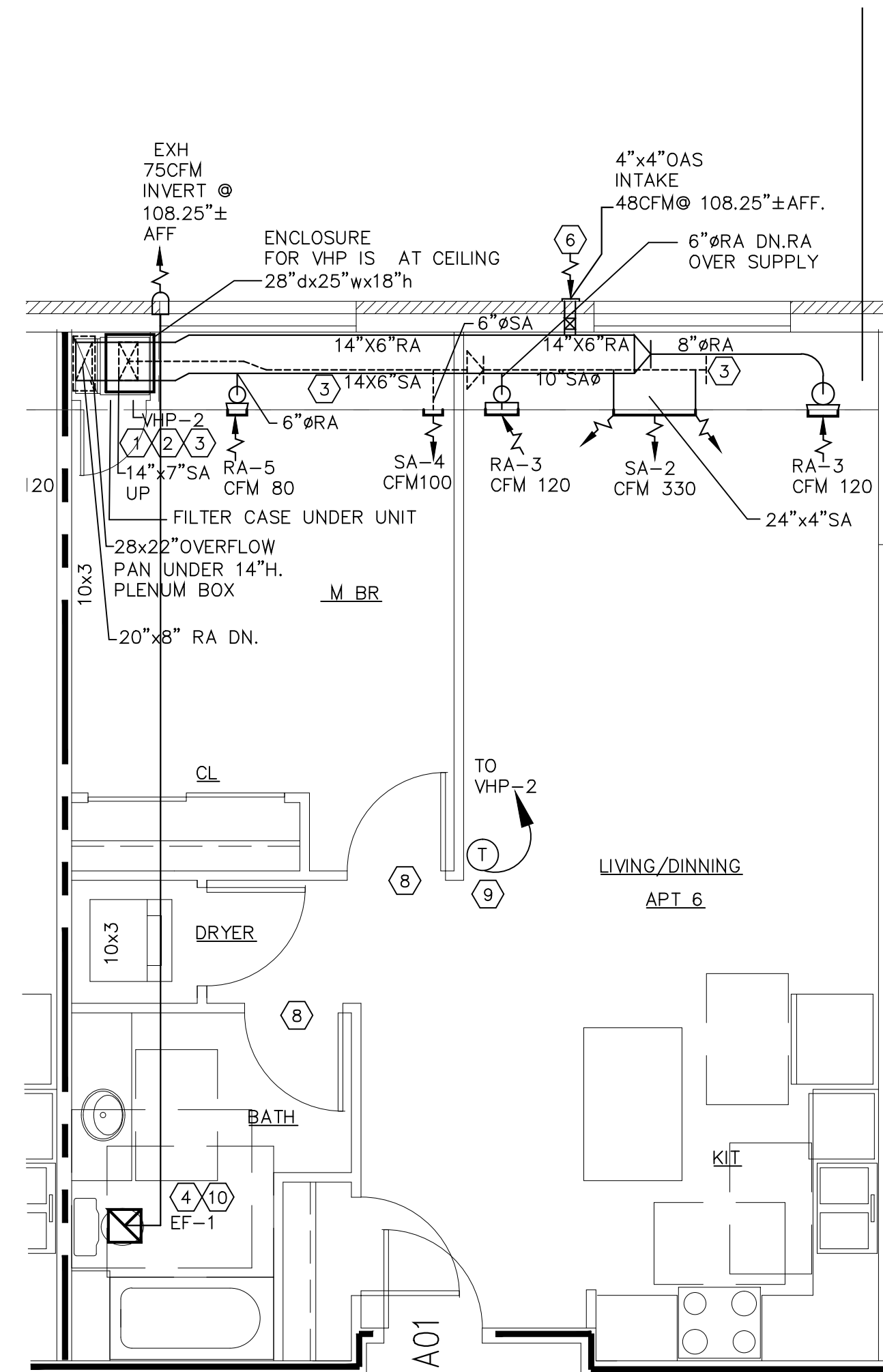
HERNDON ENGINEERING SERVICES, Inc.
5870 COOK ROAD, SUITE B, MILFORD OH 45150
Voice: (513) 248-2869 Fax: (513) 248-2869
Email: herndon@herndoneng.com Website: www.herndoneng.com

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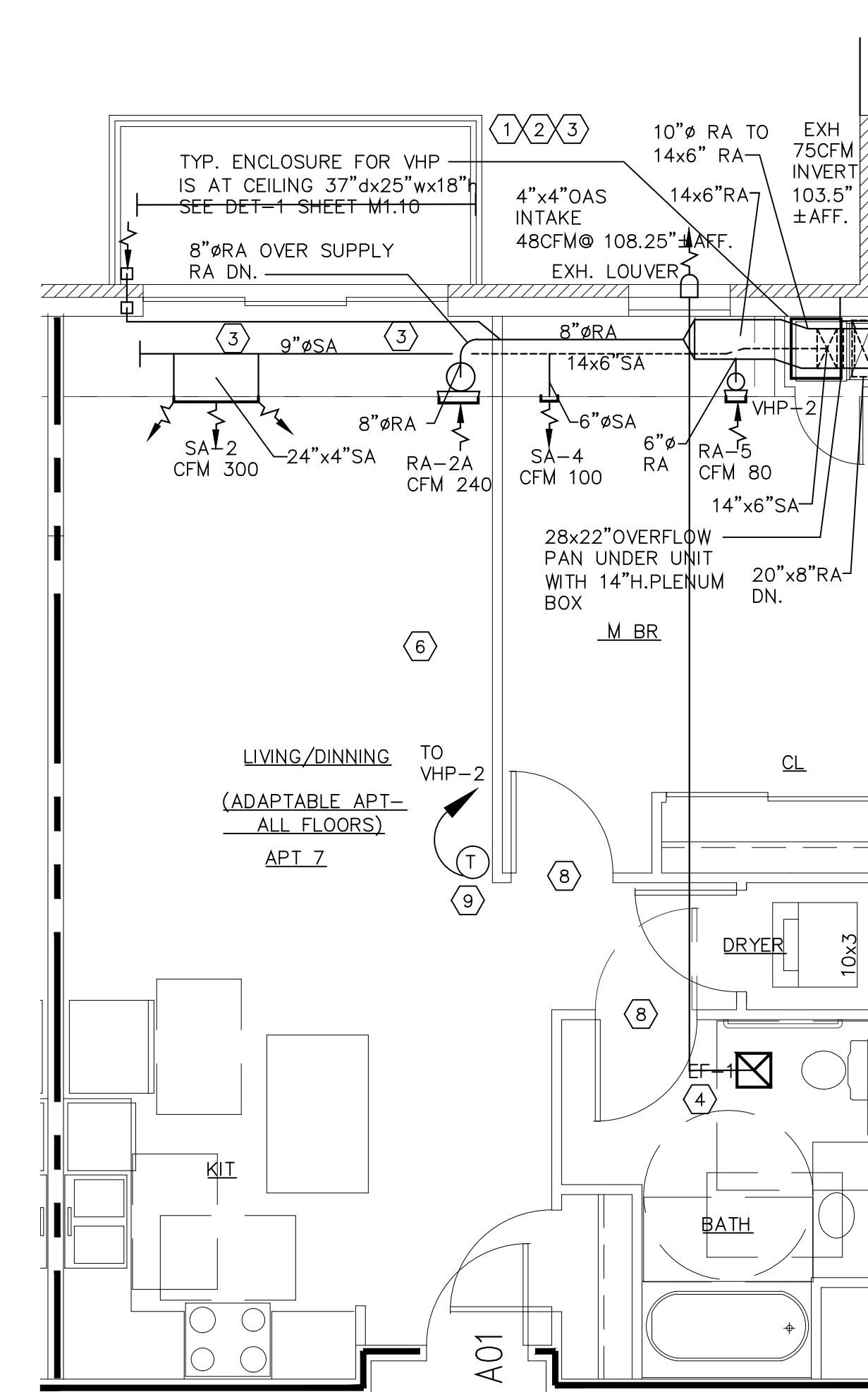
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1- BEDROOM APT 5 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



1- BEDROOM APT 6 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



1- BEDROOM APT 7 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS

KEY NOTES: FOR VHP UNITS

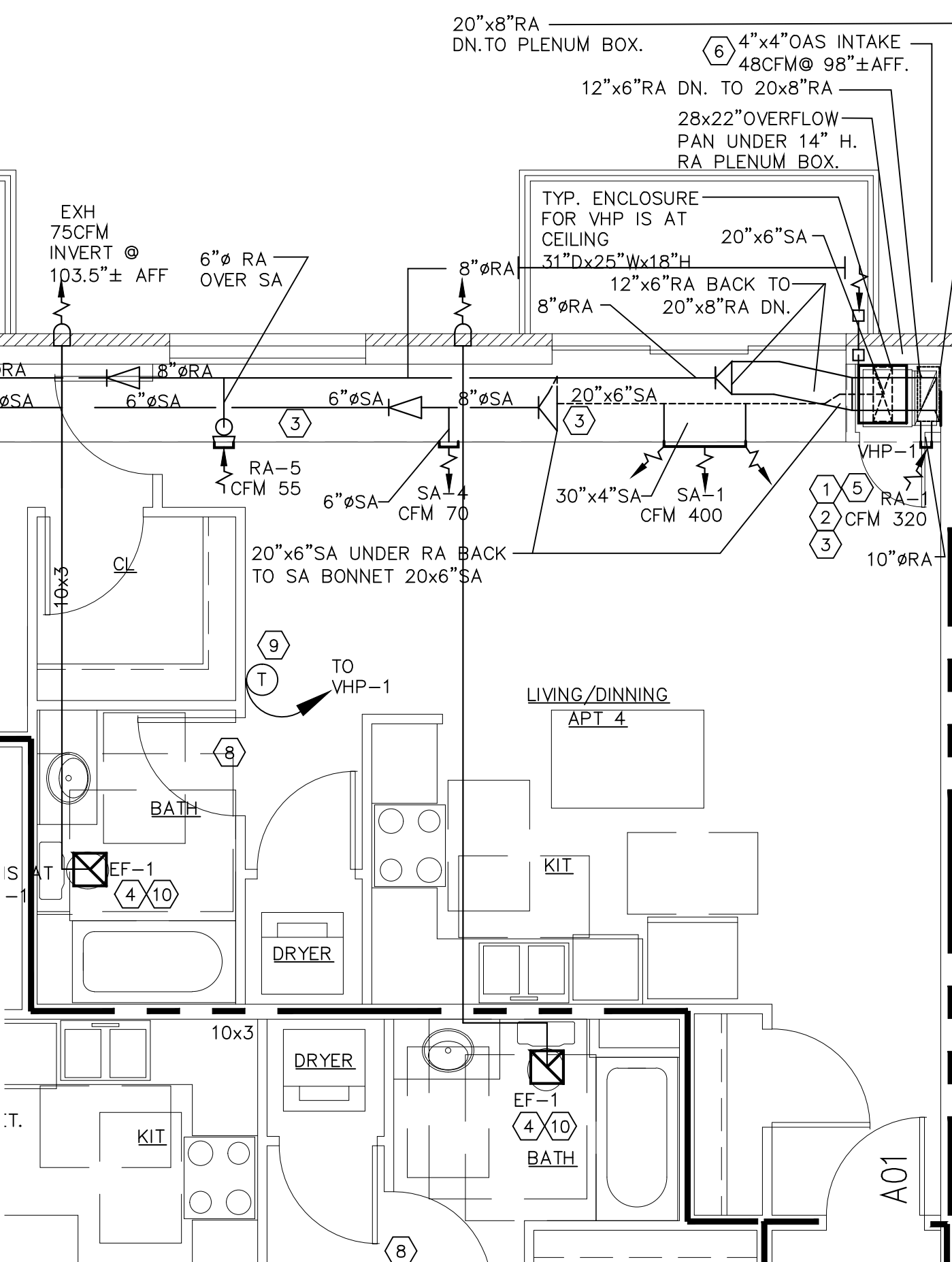
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2. REFRIGERANT LINES UP IN EQUIPMENT ENCLOSURE.
3. PROVIDE AT LEAST R-6 INSULATION ON DUCTS IN UNCONDITIONED EQUIPMENT ENCLOSURE SPACES.
4. ELECTRICAL CONTRACTOR PROVIDE EXHAUST FAN (EF-1) TYPICAL FOR BATH ROOMS. BY ELECTRICAL CONTRACTOR.
5. ENCLOSURE IS 34" LONG AT THIS APARTMENT ONLY.
6. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT AND SEIHO VENT LOUVER SIZE 5" FOR 48CFM.
7. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT AND SEIHO VENT LOUVER SIZE 4" FOR 32CFM.
8. UNDERCUT DOOR @ 1/8" @ 42CFM PER LINEAL FOOT = 123CFM.
9. HVAC CONTRACTOR TO PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT. PER MANUFACTURER REQUIREMENTS (MITSUBISHI).
10. EXHAUST DUCTWORK TO RISE INTO STRUCTURAL CEILING AND THEN GO TO OUT SIDE OF BUILDING.

EVERY WERE THE REFRIGERATE PIPING PASS THRU A FIRE RATED ASSEMBLIES THE OPENINGS MUST BE SEALED WITH THE APPROPRIATE FIRE RATED CAULK.

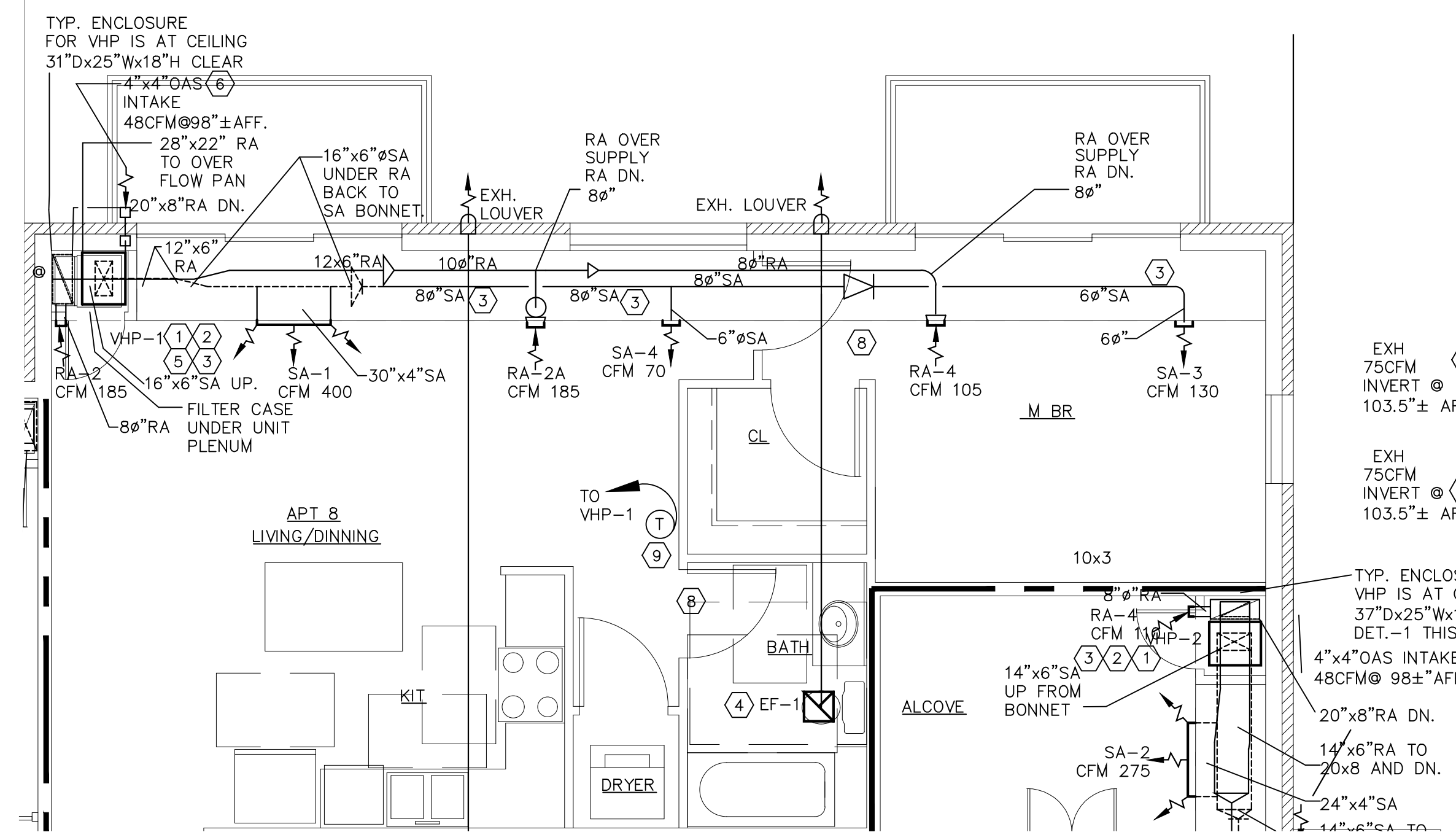
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- C. THE CONTRACTOR SHALL COORDINATE ALL AIR DEVICES WITH ELECTRICAL AND ARCHITECTURAL REFLECTED CEILING PLANS.
- D. THE LOCATION OF NEW DUCTWORK, AIR DEVICES, ETC. SHOWN ON THESE DRAWINGS SHOULD BE CONSIDERED IN ITS APPROXIMATE LOCATION. HVAC CONTRACTOR SHALL FIELD VERIFY ALL SIZES AND CLEARANCES PRIOR TO FABRICATION.
- E. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PILASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.
- F. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. EXACT LOCATIONS OF DEVICES AND ROUTING OF DUCTWORK SHALL BE DETERMINED BY CONTRACTOR AFTER COORDINATION WITH ALL OTHER TRADES AND FIELD DETERMINATION OF FINAL CONSTRUCTION DETAILS. MINOR ADJUSTMENTS TO DUCT ROUTING AND CONFIGURATION TO AVOID CONFLICT WITH BUILDING STRUCTURE OR OTHER TRADES SHALL BE INCLUDED IN CONTRACTOR'S PRICE. CONTRACTOR SHALL OBTAIN ENGINEERS APPROVAL IN WRITING FOR ANY MODIFICATIONS TO SYSTEM DESIGN PRIOR TO INSTALLATION.
- G. MAIN SUPPLY AIR DUCT SHALL BE LINED TO MINIMIZE NOISE.
- H. ALL MAIN DUCT SUPPLY AND RETURN SIZE ARE WITHOUT INTERIOR INSULATION. ACTUAL OUTSIDE DIMENSION SHOULD BE 2" LARGER.

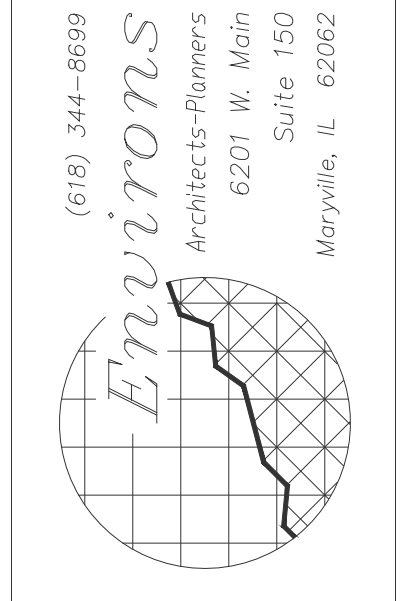
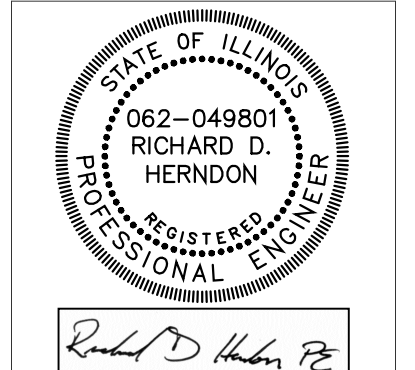
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2- BEDROOM APT 4 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



2- BEDROOM APT 8 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



JOB NO. 13027

DATE: NOVEMBER 15, 2013
REVISED:

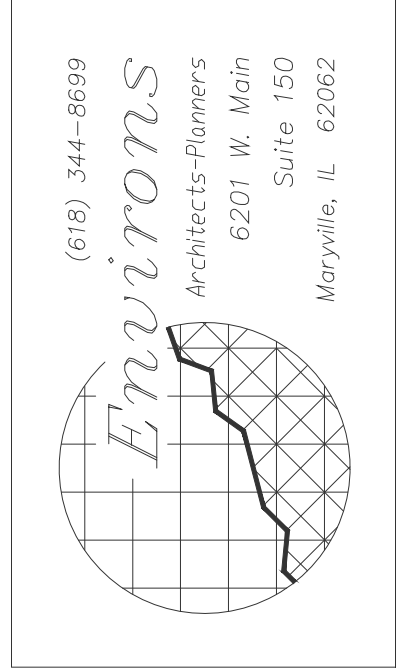
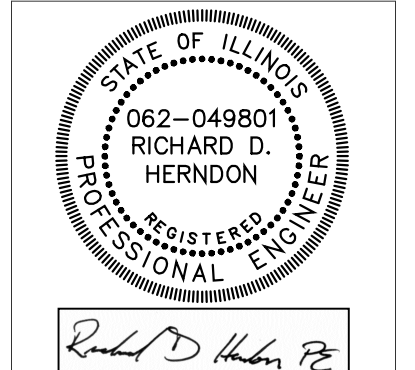


A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
MCKINLEY + ANTHONY AVE. MUNDELEIN, ILLINOIS

SHEET
M1.10
OF



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JOB NO.
13027

DATE:
NOVEMBER 15, 2013

REVISED:



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
MCKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
M1.11
OF

GENERAL NOTES

- A. THE HVAC CONTRACTOR SHALL VISIT THE PROJECT SITE BEFORE BIDDING AND VERIFY ANY ADDITIONAL MECHANICAL DEMOLITION TO BE DONE AT THIS LOCATION THAT WOULD INTERFERE WITH NEW CONSTRUCTION. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. VERIFY ALL DIMENSIONS. DRAWINGS ARE ILLUSTRATIVE AND MAY NOT REFLECT EXACT CONDITIONS OR DIMENSIONS.
- B. HVAC CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL PIPES, DUCTWORK, UNITS, ETC. WITH ALL OTHER TRADES AND SHIFT LOCATION OR OFFSET WHERE NECESSARY.
- C. THE CONTRACTOR SHALL COORDINATE ALL AIR DEVICES WITH ELECTRICAL AND ARCHITECTURAL REFLECTED CEILING PLANS.
- D. THE LOCATION OF NEW DUCTWORK, AIR DEVICES, ETC. SHOWN ON THESE DRAWINGS SHOULD BE CONSIDERED IN ITS APPROXIMATE LOCATION. HVAC CONTRACTOR SHALL FIELD VERIFY ALL SIZES AND CLEARANCES PRIOR TO FABRICATION.
- E. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PILASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.
- F. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. EXACT LOCATIONS OF DEVICES AND ROUTING OF DUCTWORK SHALL BE DETERMINED BY CONTRACTOR AFTER COORDINATION WITH ALL OTHER TRADES AND FIELD DETERMINATION OF FINAL CONSTRUCTION DETAILS. MINOR ADJUSTMENTS TO DUCT ROUTING AND CONFIGURATION TO AVOID CONFLICT WITH BUILDING STRUCTURE OR OTHER TRADES SHALL BE INCLUDED IN CONTRACTOR'S PRICE. CONTRACTOR SHALL OBTAIN ENGINEER'S APPROVAL IN WRITING FOR ANY MODIFICATIONS TO SYSTEM DESIGN PRIOR TO INSTALLATION.
- G. MAIN SUPPLY AIR DUCT SHALL BE LINED TO MINIMIZE NOISE.
- H. ALL MAIN DUCT SUPPLY AND RETURN SIZE ARE WITHOUT INTERIOR INSULATION. ACTUAL OUTSIDE DIMENSION SHOULD BE 2" LARGER.

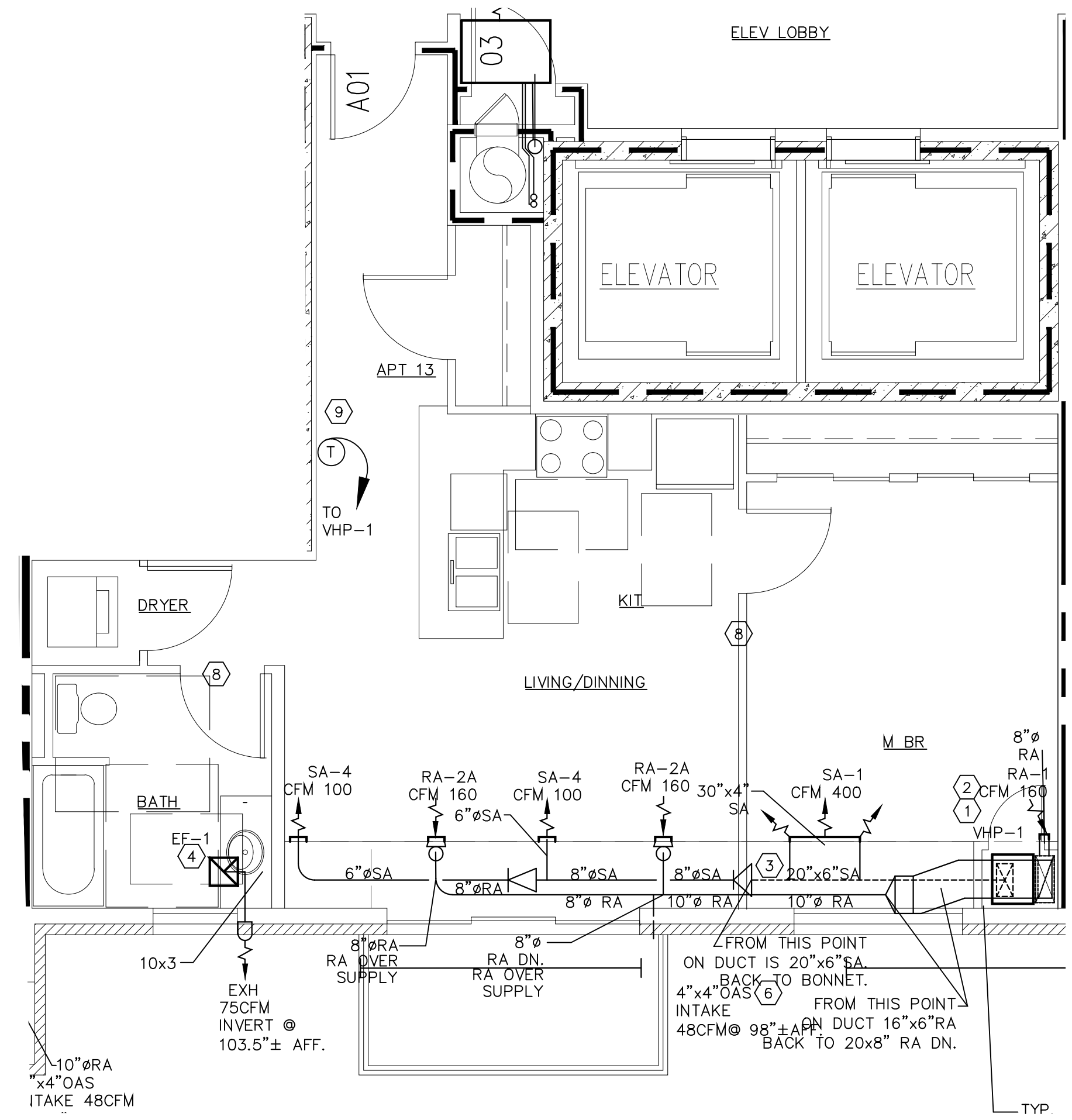
EVERY WHERE THE REFRIGERATE PIPING PASS THRU A FIRE RATED ASSEMBLIES THE OPENINGS MUST BE SEALED WITH THE APPROPRIATE FIRE RATED CAULK.

KEY NOTES: FOR VHP UNITS

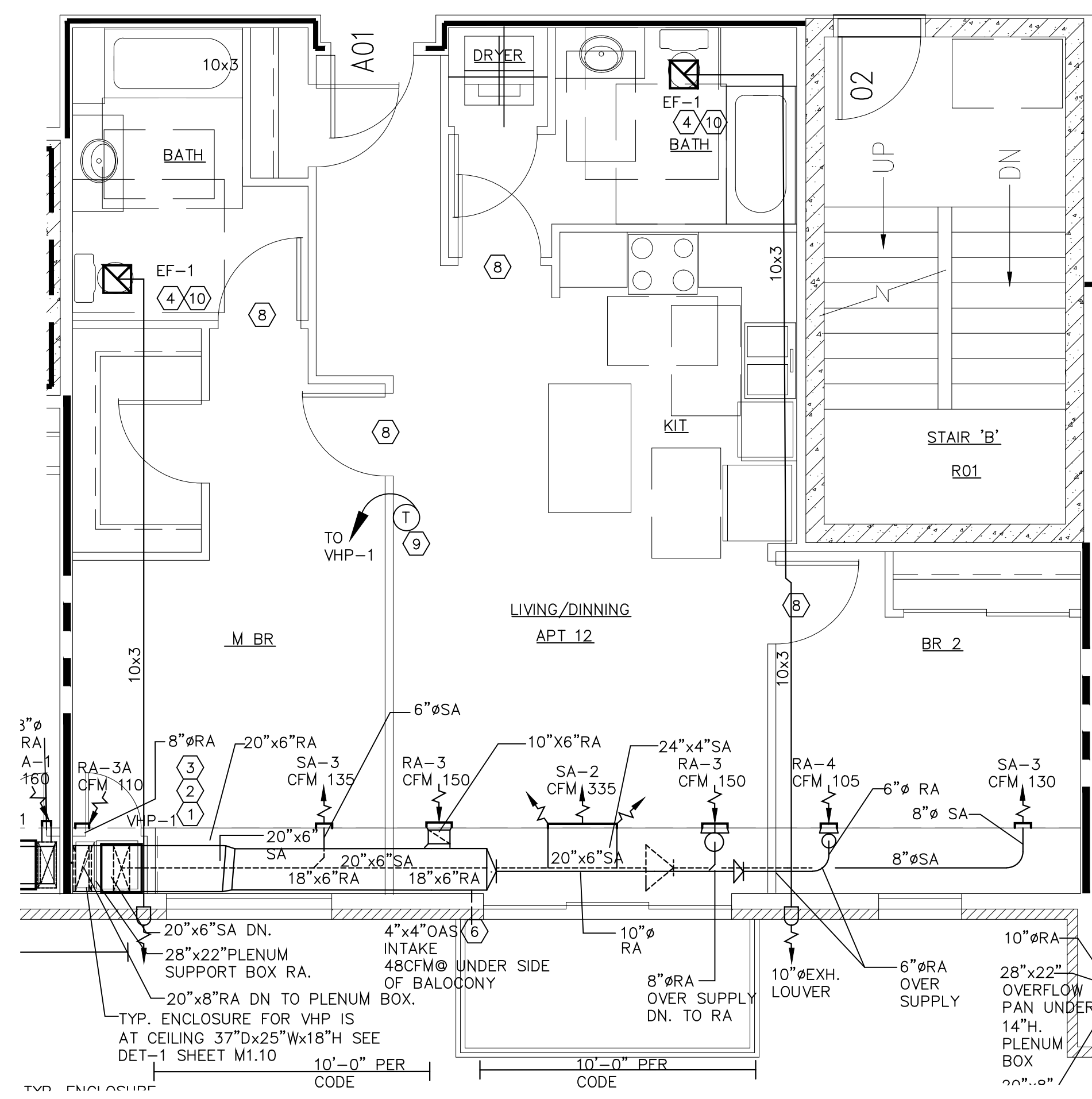
1. INSTALL REFRIGERANT LINE SETS IN EQUIPMENT ENCLOSURE VERTICALLY OF 1 THRU 5 FLOOR. FOR (VHP) AIR HANDLER FOR EACH APARTMENT.
2. REFRIGERANT LINES UP IN EQUIPMENT ENCLOSURE.
3. PROVIDE AT LEAST R-6 INSULATION ON DUCTS IN UNCONDITIONED EQUIPMENT ENCLOSURE SPACES.
4. ELECTRICAL CONTRACTOR TO PROVIDE EXHAUST FAN (EF-1) TYPICAL FOR BATH ROOMS.
5. ENCLOSURE IS 34" LONG AT THIS APARTMENT ONLY.
6. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT AND SEIHO VENT LOUVER SIZE 5" FOR 48CFM.
7. PROVIDE 4"x4" OSA DUCT TO RETURN AIR DUCT AND SEIHO VENT LOUVER SIZE 4" FOR 32CFM.
8. UNDER CUT DOOR @ 1/8" @ 42CFM PER LINTEL FOOT = 129CFM
9. HVAC CONTRACTOR PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT.
10. PER MANUFACTURER REQUIREMENTS (MITSUBISHI).
11. EXH. DUCTWORK TO RISE UP INTO STRUCTURAL CEILING THEN RUN TO OUTSIDE BUILDING.

HERNDON ENGINEERING SERVICES, Inc.
5870 COOK ROAD, SUITE B, MILFORD OH 45150
Voice: (513) 248-1313 Fax: (513) 248-2869
Email: herndon@herndoneng.com Website: www.herndoneng.com

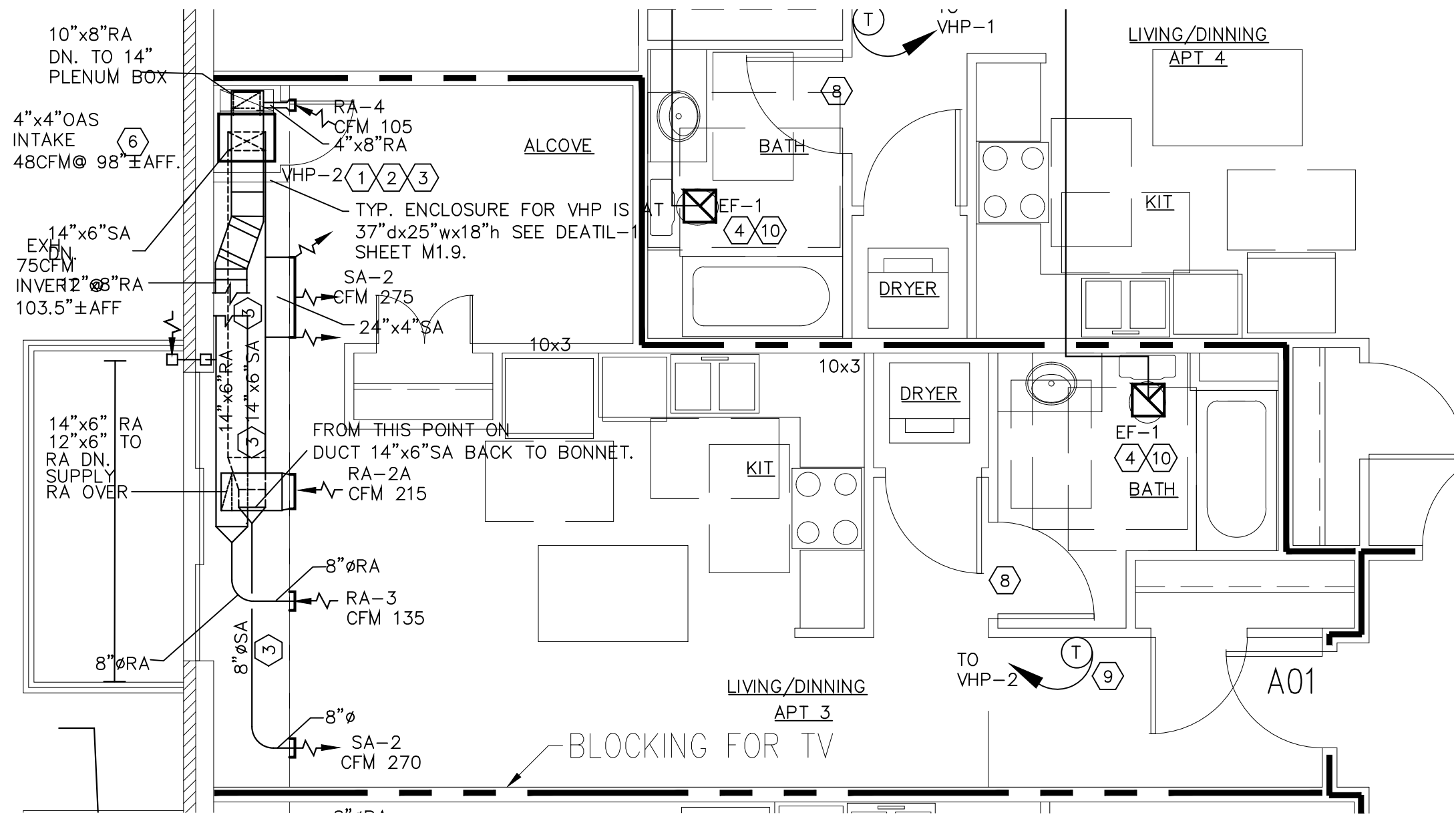
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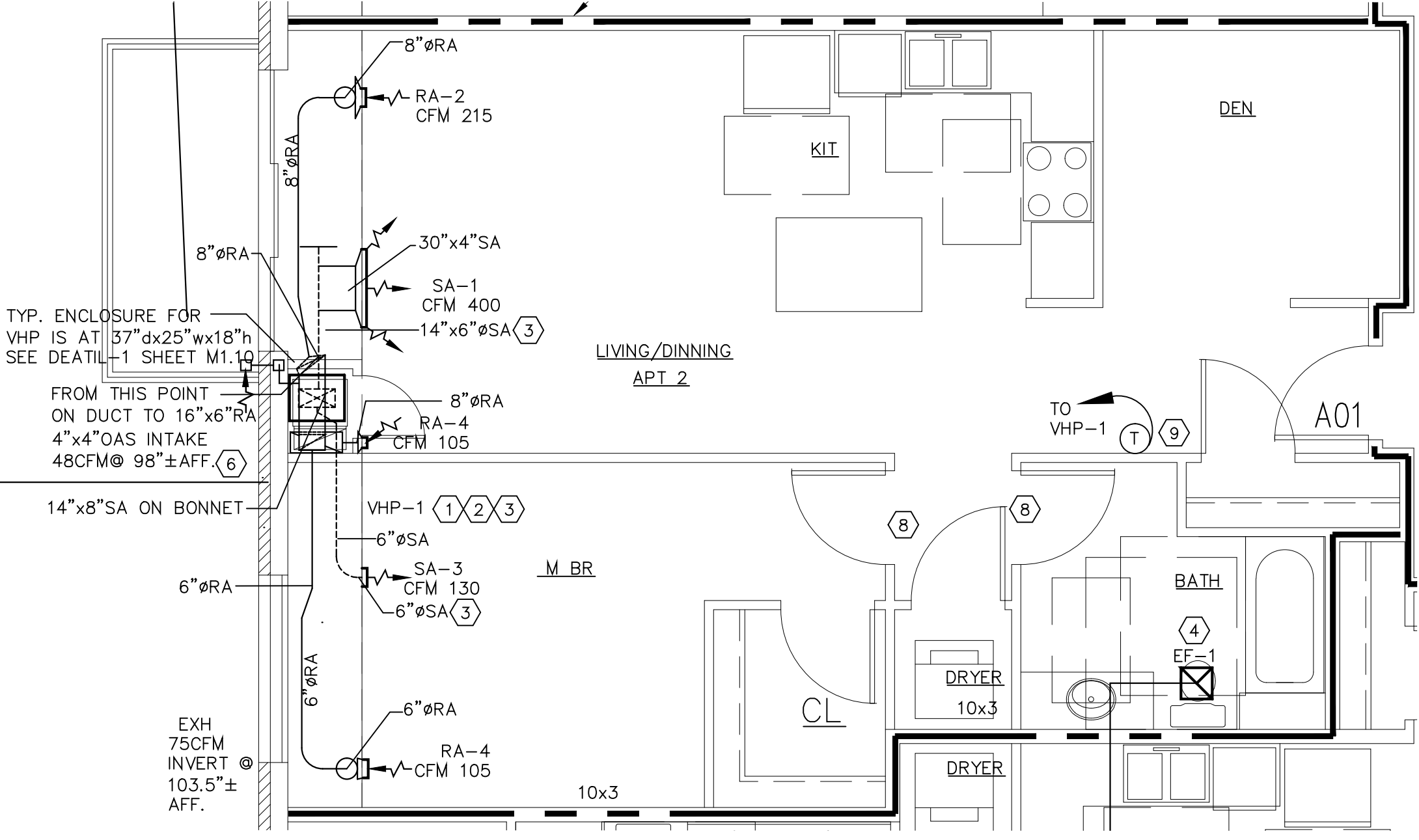
1- BEDROOM APT 13 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



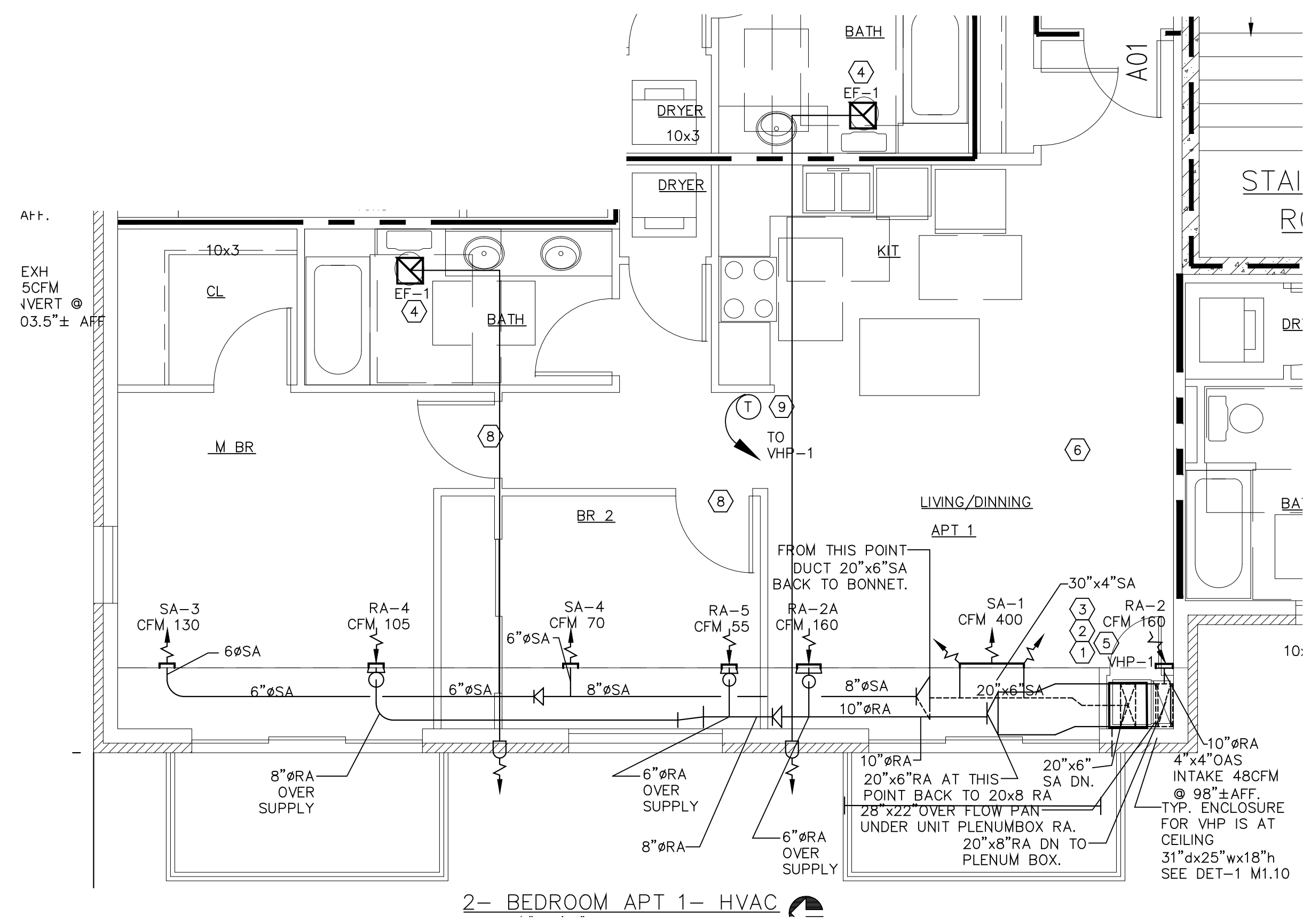
2- BEDROOM APT 12 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



1- BEDROOM APT 3 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



1- BEDROOM APT 2 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS



2- BEDROOM APT 1 - HVAC
SCALE: 1/4" = 1'-0" TYP. FOR 1ST - 5TH FLOORS

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VENTILATION AIR SCHEDULE ASHRAE STANDARD 62.1-2004														
Job# and Name: 3058 cardinal apts.														
Table 6-1														
typical floor	Room Name	Az sqft	Occupancy Category	Rp cfm/P	Ra cfm/sqft	Default People /1000sf	People Pz	People Rp x Pz	Area Azz Ra cfm	OA cfm	Voz= Az x Ra + Rp x Pz	SA cfm	10% OA cfm	
1	APARTMENT	938	living quarters	5	0.06	5	2	10	56	66	0.9	74	600	57
2	APARTMENT	805	living quarters	5	0.06	5	1	5	48	53	0.9	59	400	38
3	APARTMENT	573	living quarters	5	0.06	5	1	5	34	39	0.9	44	400	38
4	APARTMENT	751	living quarters	5	0.06	5	1	5	45	50	0.9	56	400	38
5	APARTMENT	747	living quarters	5	0.06	5	1	5	45	50	0.9	55	400	38
6	APARTMENT	767	living quarters	5	0.06	5	1	5	46	51	0.9	57	400	38
7	APARTMENT	749	living quarters	5	0.06	5	1	5	45	50	0.9	55	400	38
8	APARTMENT	748	living quarters	5	0.06	5	1	5	45	50	0.9	55	400	38
9	APARTMENT	577	living quarters	5	0.06	5	1	5	35	40	0.9	44	400	38
10	APARTMENT	829	living quarters	5	0.06	5	1	5	50	55	0.9	61	400	38
11	APARTMENT	899	living quarters	5	0.06	5	2	10	54	64	0.9	71	600	57
12	APARTMENT	630	living quarters	5	0.06	5	1	5	38	43	0.9	48	400	38
13	APARTMENT	952	living quarters	5	0.06	5	2	10	57	67	0.9	75	600	57
14	APTS. CORRIDOR	626	comidor	0	0.06	0	0	0	37.56	38	0.8	47	352	33
TOTAL 5th FLOOR														
typical floor-5	10591	living quarters	5	0.06	5	16	80	365	410	0.9	455	6152	584	
typical floor-4	10591	living quarters	5	0.06	5	16	80	365	410	0.9	512	6152	550	
typical floor-3	10591	living quarters	5	0.06	5	16	80	365	410	0.9	512	6152	550	
typical floor-2	10591	living quarters	5	0.06	5	16	80	365	410	0.9	512	6152	550	
typical floor-1	10591	living quarters	5	0.06	5	16	80	365	410	0.9	512	6152	550	
15	ground floor	345	lobby	0	0.06	0	0	0	21	21	0.9	23	680	65
16	office space	588	office space	5	0.06	5	1	5	35	40	0.9	45	400	38
17	lower level	578	mechanical room	0	0.12	0	0	0	69	69	0.9	77	900	86
total bldg. 54466														
total garage 20,561														
15	parking garage	9596	ground level parking	0	0.12	0	0	0	1152	1152	0.9	1279	15000	1425
17	parking garage	10965	lower level parking	0	0.12	0	0	0	1316	1316	0.9	1462	15000	1425
total garage 20,561														

(6-1) Vz = RpPz + RaAz Breathing Zone Outdoor Airflow
 Az = zone floor area Net occupied floor of the zone (ft2)
 Pz = zone population The largest number of people expected to occupy the zone during typical usage
 Rp = outdoor airflow rate required per person
 Ra = outdoor airflow rate required per unit area
 Ez = Zone air Distribution Effectiveness
 (6-2) Voz = Vz / Ez Zone Outdoor Airflow
 (6-3) Vot = Voz Outdoor Air Intake flow for Single Zone System

DESIGN BASIS: NUTONE EXHAUST FAN SCHEDULE FOR REFERANCE ONLY											
TAG	MODEL#	LOCATION	CFM	ESP	FRPM	POWER	VOLTAGE	dBA	SONES		
EF-1	-	BATHROOMS	80	0.1	-	23.3W	115/60/1	-	0.3	A,B,C,D,E,F,G	

ELECTRICAL TO PROVIDE EXHAUST FAN w/ LIGHT

REMARKS:
 A. MANUAL SWITCH NEXT TO LIGHT SWITCH. SWITCH-NEMA-1. THERMAL OVERLOADS.
 B. SPRING LOADED ALUMINUM BACKDRAFT DAMPER, DISCONNECT, MOUNTING BRACKET.
 C. PROVIDE HANGING VIBRATION ISOLATORS.
 D. STANDARD DESIGNER GRILLE, ALUMINUM GRILLE WITH WHITE ENAMEL FINISH.
 E. VENT. MODEL DEFLECTO PLASTIC WHIT MODEL HS4W/48, INSECT SCREEN ON WALL. DUCT TO BE 10x3 COMBINED SIZE. OR VENT LOUVER SIZE 4"x4" PAINT TO MATCH THE WALL COLOR.
 F. ELECTRICAL CONTRACTOR TO PROVIDE CONTROL SWITCH SEE ELECTRICAL.
 G. EXHAUST FAN TO HAVE LIGHT WITH IT.

DESIGN BASIS: GREENHECK EXHAUST AND SUPPLY FAN SCHEDULE FOR GARAGE VENTILATION											
TAG	MODEL#	LOCATION	CFM	ESP	RPM	POWER	VOLTAGE	dBA	SONES	WEIGHT	
EF-2A	SBE-3L30-10	LOWER LEVEL PARKING	7200	0.3	1343	1-HP	208/60/3	68	16.9	255	A,B,C,E,F,G,H
EF-2B	QEI-20-L-20	GROUND LEVEL PARKING	7200	0.625	1725	2-HP	208/60/3	74	16.9	380	A,C,F,H,K
SF-3A	SBS-1H48-10	GROUND LEVEL PARKING	15,000	0.2	1725	1-HP	208/60/3	68	16.4	611	A,B,C,D,F,G,H,J
SF-3B	SBS-1H48-10	GROUND LEVEL PARKING	15,000	0.2	1725	1-HP	208/60/3	68	16.4	611	A,B,C,D,F,G,H,J

REMARKS:
 A. MANUAL SWITCH NEXT TO DOOR. SWITCH-NEMA-1. THERMAL OVERLOADS. FOR EXHAUST & SUPPLY FANS.
 B. VERTICAL MOUNT EXHAUST GRAVITY DAMPER, DISCONNECT, MOUNTING BRACKET.
 C. PROVIDE BEARING WITH GREASE FITTINGS FOR EXHAUST FAN.
 D. STANDARD DESIGNER GRILLE, ALUMINUM GRILLE WITH WHITE ENAMEL FINISH.
 E. LOUVER SIZE 32"x32" FOR EXHAUST FAN.
 F. HVAC CONTRACTOR TO WIRE UP PARKING LOT SENSOR CONTROLS.
 G. POWER VENTILATION DAMPER WD-220-PB-50x50 MOUNTED NOT COATED DAMPER ACTUATOR 115 VAC ACTUATED. FOR SUPPLY FAN.
 H. PROVIDE BRASCH(GSE-CN-1) GAS DETECTOR. PROVIDE TWO (2) PER PARKING LEVEL.
 J. LOUVER SIZE 50"x50" FOR SUPPLY FAN.
 K. PROVIDE THREADED RODS TO STABILIZE SIDE TO SIDE MOTIONS,MOTOR WITH CLASS B INSULATION, MOUNTING SUPPORT- UNIVERSAL, BEARING- L(10) LIFE OF 80K HOURS, COATED WITH PERMATECTOR-GRAY,FAN AND ATTACHED ACCESSORIES, DIRECT MOUNT ISOLATORS, MOTOR COVER, UL/CUL-750-"POWER VENTILATORS", AND HOUSING IS SEAL HOUSING FOR OUTDOOR USE.

BASIS OF DESIGN: PRICE AIR DEVICE SCHEDULE											
TAG	MODEL#	PANEL	NECK SIZE	CFM	MISCL.	REMARKS					
SA-1	510	30x4" SIDEWALL DOUBLE DEFL.	30x4"	400		ABCDE					
SA-2	510	24x4" SIDEWALL DOUBLE DEFL.	24"x4"	275		ABCDE					
SA-3	510	10"x4"	8"ø	135		ABCDE					
SA-4	510	7"x4"	6"ø	55		ABC					
SA-5	SPD	24"x24"	12"ø	255		ABCDE					
SA-6	SPD	24"x24"	6"ø	100		ABCDE					
SA-7	SPD	24"x24" TB	4"ø	35		ABCDEF					
RA-1	80 SURFACE	24"x4" VERTICAL SEE DET.-3 M1.10	BOOT W/10"ø	320		ABCF					
RA-2	80 SURFACE	20"x4" VERTICAL SEE DET.-3 M1.10	BOOT W/10"ø	185		ABCF					
RA-2A	80 SURFACE	20"x4" HORIZONTAL	BOOT W/8"ø	185		ABCF					
RA-3	80 SURFACE	16"x4" HORIZONTAL	8"ø	135		ABCF					
RA-3A	80 SURFACE	16"x4" VERTICAL	8"ø	135		ABCF					
RA-4	80 SURFACE	7"x4" HORIZONTAL	8"ø	105		ABCF					
RA-5	80 SURFACE	7"x4" HORIZONTAL	6"ø	55		ABCF					
RA-6	80 LAYIN	24"x24" TB	16"x14"	960		ABCF					
RA-7	80 LAYIN	24"x24" TB	10"x10"	240		ABCF					

REMARKS:
 A. COLOR SHALL BE WHITE POWDER COAT.
 B. PROVIDE VOLUME DAMPERS IN TAKEOFFS WHERE ACCESSIBLE. WHERE DAMPERS ARE NOT ACCESSIBLE, PROVIDE OPPOSED BLADE DAMPER AT DIFFUSER.
 C. COORDINATE FRAME TYPE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
 D. PROVIDE DAMPER /W SUPPLY DIFFUSER.
 E. SURFACE MOUNT.
 F. PROVIDE 24"x24" PAN IN TB FRAME FOR LAY-IN CEILING.

BASIS OF DESIGN: WIL0 GEOTHERMAL PUMP SCHEDULE											
TAG	MODEL	LOCATION	TYPE	CAPACITY G.P.M.	HD(FT)	HP	RPM	VOLTS/ø	WEIGHT		
P-1	STRATOS 2x3-35	MECH LG02	VERTICAL INLINE	100	20	3/4	-	230/1	37.2		
P-2	STRATOS 2x3-35	MECH LG02	VERTICAL INLINE	100	20	3/4	-	230/1	37.2		

BASIS OF DESIGN: GRUNDFOS RADIANT PUMP SCHEDULE											
TAG	MODEL	LOCATION	TYPE	CAPACITY G.P.M.	HD(FT)	HP	RPM	VOLTS/ø	WEIGHT		
RH-1	UP-2699	MECH LG02	IN-LINE	0-37	0-32	1/6	-	120/1ø	-		
RH-2	UP-2699	MECH LG02	IN-LINE	0-37	0-32	1/6	-	120/1ø	-		

REMARKS:
 A. PUMPING LIQUID WATER
 B. RADIANT IN-LINE PUMP.
 C. GRUNDFOS UP-2699 SERIES VERTICAL IN-LINE PUMP.
 D. COORDINATE WITH MECHANICAL CONTRACTOR FOR LOCATION.

HVAC EQUIPMENT SCHEDULE																								
TAG	MFR.	MODEL#	APT. #	HEAT MBH TOTAL	COOLING MBH TOTAL SENSIBLE	GPM	CORRECTED COOLING TOTAL CAPACITY (BTU/H)	CORRECTED HEATING TOTAL CAPACITY (BTU/H)	NORM SYSTEM CORRECTED CAPACITY % OF NORM	REFRIG PIPE DIM HIGH/LOW PRESSURE(INCH) (SEE NOTE- G)	AIRFLOW - CFM SUPPLY RETURN O.A. EXHAUST				HP/W	RPM	MCA	MOCPP	GAS HEAT MBH INPUT / OUTPUT	VOLTS/PH	MOUNTING	WEIGHT IN lbs.	(db)	NOTES
HP-1	MITSUBISHI	PQHY-P96THMU-A	-	108.0	96.300	79,929.0	25.4	85,756.5	99,884.1	124.6%	3/8 , 7/8	-	-	-	-	-	22/22	30/30	- / -	208/230 3ø	PAD	433	49	A,D,F,G,H,M,N
CP-1	WIL0	1.25 x25	-	-	-	-	-	-	-	-	1/8 HP	3100	15	20	- / -	120 1ø	ON HEAT PUMP	-	-	120 1ø	ON HEAT PUMP	-	-	S
VHP-2	MITSUBISHI	PVFY-P18E00B	2	-	10.017	8.650	-	-	-	-	-	600	480	38	75	-	.78	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	3	-	10.008	8.625	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	98	32	A,B,D,E,F,G,M,N
HP-2	MITSUBISHI	PQHY-P288TSHMU-A	-	324.0	288.900	86,497	76.1	252,791.3	294,650.8	114.2%	3/4 , 1-3/8	-	-	-	-	-	23/22 22/22	30/30/30/30	- / -	208/230 3ø	PAD	433	54	
CP-2	WIL0	1.25 x25	-	-	-	-	-	-	-	-	1/8 HP	3100	15	20	- / -	120 1ø	ON HEAT PUMP	-	-	120 1ø	ON HEAT PUMP	-	-	S
VHP-1	MITSUBISHI	PVFY-P18E00B	1	-	14.841	12.975	-	-	-	-	-	600	480	57	75	-	.78	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	13	-	10.017	8.650	-	-	-	-	-	400	320	57	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	98	32	A,B,D,E
VHP-1	MITSUBISHI	PVFY-P18E00B	11	-	15.299	13.413	-	-	-	-	-	600	480	57	75	-	.78	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-1	MITSUBISHI	PVFY-P18E00B	12	-	15.299	13.413	-	-	-	-	-	600	480	38	75	-	.78	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
HP-3	MITSUBISHI	PQHY-P96THMU-A	-	108.0	96.300	108,000	25.4	86,002.4	99,980.3	124.6%	3/8 , 7/8	-	-	-	-	-	22/22	30/30	- / -	208/230 3ø	PAD	433	49	A,D,F,G,J,M,N
CP-3	WIL0	1.25 x25	-	-	-	-	-	-	-	-	1/8 HP	3100	15	20	- / -	120 1ø	ON HEAT PUMP	-	-	120 1ø	ON HEAT PUMP	-	-	S
VHP-2	MITSUBISHI	PVFY-P18E00B	9	-	12.941	10.554	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	10	-	12.941	10.554	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
HP-4	MITSUBISHI	PQHY-P240TSHMU-A	-	270.0	240.000	199,200	50.7	212,888.8	247,255.1	125.0%	5/8 , 1-1/8	-	-	-	-	-	29/26 29/26	40/40 40/40	- / -	208/230 3	PAD	433	54	A,D,F,G,K,M,N
CP-4	WIL0	1.25 x25	-	-	-	-	-	-	-	-	1/8 HP	3100	15	20	- / -	120 1ø	ON HEAT PUMP	-	-	120 1ø	ON HEAT PUMP	-	-	S
VHP-2	MITSUBISHI	PVFY-P12E00B	4	-	12.832	10.478	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	5	-	12.832	10.478	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	6	-	12.832	10.478	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	7	-	10.037	8.699	-	-	-	-	-	400	320	38	75	-	.25	15	- / -	208/230 1ø	FLR 1-5	88	31	A,B,D,E
VHP-2	MITSUBISHI	PVFY-P12E00B	8	-	12.832	10.478																		

MECHANICAL SPECIFICATION

1. GENERAL

- a. MECHANICAL INSTALLATION SHALL BE IN ACCORDANCE WITH ALL STATE, COUNTY, AND LOCAL CODES.
- b. ALL TESTS SHALL BE PERFORMED IN ACCORDANCE WITH STATE, COUNTY, AND ENGINEER'S REQUIREMENTS.
- c. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS, LABOR, PERMITS, INSPECTIONS, FEES, QUALITY OF MATERIALS AND WORKMANSHIP AND FINAL CLEAN-UP PERTAINING TO THE MECHANICAL WORK.
- d. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND SHALL LAY OUT HIS OWN WORK. HE SHALL BE RESPONSIBLE FOR ACCURACY OF THE SAME WITH RESPECT TO THE INTENT OF THESE SPECIFICATIONS. THIS CONTRACTOR SHALL TAKE HIS OWN MEASUREMENTS AND BE RESPONSIBLE FOR THEM.
- e. THIS CONTRACTOR SHALL VERIFY AND SATISFY HIMSELF THAT ALL EQUIPMENT FURNISHED WILL PROPERLY FIT IN THE SPACE PROVIDED, THAT IT WILL FUNCTION PROPERLY, AND THAT ALL PARTS OF EQUIPMENT REQUIRING SERVICE ARE READILY ACCESSIBLE.
- f. WORK INSTALLED BY THIS CONTRACTOR WHICH INTERFERES WITH OR AFFECTS THE EXISTING STRUCTURES SHALL BE CHANGED AS DIRECTED AND ALL COSTS INCIDENT TO SUCH CHANGES SHALL BE PAID BY THIS CONTRACTOR.
- g. ALL WORK OF THIS CONTRACT SHALL BE DONE NEATLY AND PROFICIENTLY AND ONLY BY MECHANICS SKILLED IN THEIR PARTICULAR CRAFT.
- h. ALL PIPING SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING WALLS AND FRAMING SYSTEM. ALL VERTICAL RUNS SHALL BE HELD AGAINST WALLS, COLUMNS, ETC., AS POSSIBLE TO PERMIT MAKING OF PIPE JOINTS.
- i. ALL MATERIALS SHALL BE FREE OF DEFECTS OR ERRORS WHICH WOULD RESULT IN POOR APPLICATION OR CAUSE DEFECTS IN WORKMANSHIP.
- j. CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF THIS WORK. ALL OPENINGS IN WALLS, FLOORS OR CEILINGS SHALL BE PROPERLY SEALED AND RESTORED IN KIND. FLASH AND COUNTERFLASH AT ROOF OPENINGS.
- k. ALL EQUIPMENT SHALL BE LISTED AND LABELED, UNLESS OTHERWISE APPROVED.
- l. ALL WIRING SHALL MEET THE REQUIREMENTS LISTED IN THE ELECTRICAL SPECIFICATIONS. ALL CONTROL AND INTERLOCK WIRING AND CONDUIT (120V OR 24V) SHALL BE BY THE MECHANICAL CONTRACTOR.
- m. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THIS CODE.

2. SUBSTITUTIONS

- a. CERTAIN MAKES OF MATERIALS AND EQUIPMENT ARE SPECIFIED AND DRAWINGS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE HIS BID ON FURNISHINGS AND INSTALLING THE SPECIFIED MAKE AND MODEL OR THE "EQUIVALENT" MODEL OF ANOTHER OF THE SPECIFIED MANUFACTURERS WHICH MEETS ALL THE QUALIFICATIONS OF THE SPECIFIED ITEMS.
- b. "EQUIVALENT" MATERIALS AND EQUIPMENT ARE THOSE OF MANUFACTURER WHICH MEET THE SAME STANDARDS OF PERFORMANCE, HAVE EQUAL OR BETTER MATERIALS OF CONSTRUCTION, AND EQUAL OR BETTER MAINTENANCE CHARACTERISTICS. ALL EQUIVALENTS MUST FIT THE SPACE PROVIDED IN THE BUILDING STRUCTURE. WHERE THE USE OF EQUIVALENTS RESULTS IN CHANGES, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR SUCH CHANGES AND ANY COSTS RESULTING FROM THEM.
- c. IF THE CONTRACTOR INTENDS TO USE EQUIPMENT OR MATERIALS NOT SPECIFIED, HE MUST RECEIVE APPROVAL FROM THE ENGINEER/ARCHITECT PRIOR TO THE AWARD OF THE CONTRACT. THIS PRIOR APPROVAL ONLY PERMITS SUBMITTAL OF A PARTICULAR MANUFACTURER'S EQUIPMENT IN GENERAL. THE SPECIFIED ITEM TO BE USED MUST AGAIN BE SUBMITTED FOR FINAL REVIEW AS SPECIFIED UNDER "SHOP DRAWINGS".

3. SHOP DRAWINGS

- a. SUBMIT TO ENGINEER/ARCHITECT THREE (3) COPIES OF CERTIFIED SHOP DRAWINGS, DESCRIPTIVE DATA, DIAGRAMS & SPECIFICATIONS ON ALL SPECIFIED MATERIALS & EQUIPMENT FOR REVIEW IN AMPLE TIME BEFORE MANUFACTURERS ARE AUTHORIZED TO MAKE SHIPMENT. THE INFORMATION SUBMITTED SHALL BE PREPARED AND ARRANGED IN A FORMAT WHICH WILL PERMIT EASY IDENTIFICATION AND COMPARISON BY THE ENGINEER/ ARCHITECT OF SPECIFIED EQUIPMENT. ONE COPY SHALL BE RETURNED TO THE CONTRACTOR FOLLOWING THE ENGINEER/ ARCHITECTS REVIEW. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH ANY ADDITIONAL COPIES (SHOWING ARCHITECT ENGINEER STAMP AND COMMENT) AS NECESSARY FOR SUPPLIERS AND/OR BUILDING OFFICIALS.
- b. THE MAKE, TYPE, AND FINISH OF ALL MATERIALS, EQUIPMENT AND APPARATUS SHALL BE APPROVED BY THE ENGINEER/ ARCHITECT IN WRITING BEFORE THE CONTRACTOR INSTALLS IT. ANY SUBSTITUTION FOR ANY SPECIFIED EQUIPMENT OR MATERIAL SHALL FIRST BE APPROVED BY THE ENGINEER/ARCHITECT IN WRITING.
- c. SUBMIT TYPEWRITTEN SCHEDULE SHOWING ALL ELECTRICAL CHARACTERISTICS AND REQUIREMENTS FOR ALL ELECTRICALLY OPERATED EQUIPMENT. THE SCHEDULE SHALL BE USED BY THE ELECTRICAL CONTRACTOR FROM WHICH HE WILL PREPARE HIS WORK.
- d. SHOP DRAWINGS SHALL INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING: MAKE, MODEL NUMBER, DIMENSIONS, ELECTRICAL CHARACTERISTICS (RATING), SHOP DRAWINGS SHALL BEAR NAME OF PROJECT AND LOCATION.
- e. CONTRACTOR SHALL KEEP AT LEAST ONE SET OF COLORED CORRECTED SHOP AND DESIGN DRAWINGS AT THE SITE. DRAWINGS SHALL BE CURRENT, DENOTING APPROVED MODIFICATIONS AND INSTALLED DEPARTURE. SUBMIT ONE SET OF "AS-BUILT" DRAWINGS TO OWNER BEFORE FINAL PAYMENT.

4. CLEANING

- a. THIS CONTRACTOR SHALL REMOVE FROM THE PREMISES ALL ACCUMULATION OF DIRT, DEBRIS, WASTE MATERIALS AND RUBBISH CAUSED BY HIS EMPLOYEES OR WORK, AT LEAST ONCE A WEEK, EXCEPT THAT COMBUSTIBLE MATERIALS SHALL BE REMOVED DAILY.

HVAC WORK

1. EQUIPMENT

- a. VERTICAL HEAT PUMP UNIT – MITSUBISHI HIGH EFFICIENCY UNIT. MEET ASHRAE 90.1 MINIMUM ENERGY EFFICIENCY REQUIREMENT. GAS HEATING WITH ELECTRIC COOLING. CAPACITIES SHALL BE AS LISTED. PROVIDE 2" PLEATED FILTER, ROOF CURB, PREWIRED CONTROL CENTER, ELECTRONIC PILOT, GAS VALVE, SAFETY LIMIT, MAX COOLING COIL PRESSURE DROP SHALL BE AS LISTED WHEN WET. SEE SCHEDULE ON DRAWING.
- a. UPFLOW VERTICAL HEAT PUMP AS SCHEDULE. CAPACITIES SHALL BE AS LISTED. PROVIDE EACH UNIT W/THROW AWAY FILTERS, BOTTOM PLENUM, PREWIRED CONTROL CENTER, FAN RELAY, BLOWER DOOR SAFETY SWITCH, FULLY INSULATED ENCASED. COOLING COIL W/TRANSITIONS AS REQUIRED. MAX COOLING COIL PRESSURE DROP SHALL BE AS LISTED WHEN WET.
- b. R-410A HIGH EFFICIENCY WATER COOLED CONDENSING UNIT AS SCHEDULE. COOLING CAPACITY SHALL BE AS LISTED. ACCESSORIES: LOW AND HIGH PRESSURE SWITCHES.
- c. DIFFUSERS AND GRILLES – AS SCHEDULED NC 30 OR LESS. FRAME TYPE TO MATCH CEILING LAYOUT. PROVIDE VOLUME DAMPERS IN TAKEOFFS WHERE ACCESSIBLE.
- d. ELECTRIC HEATERS AS SCHEDULE. QMARK OR BERKO OR EQUAL. SEE DRAWINGS FOR SIZE. BUILT IN THERMOSTAT, DISCONNECT SWITCH, END CAPS, OVERHEAT PROTECTION, MOUNTING KIT, COLOR AND FINISHED SELECTED BY ARCHITECT.
- e. ALL MECHANICAL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS WHICH SHALL BE AVAILABLE AT THE JOB SITE.
- f. ALL MECHANICAL EQUIPMENT SHALL BEAR THE LABEL OF AN APPROVED AGENCY. VERIFICATION THAT THE MECHANICAL EQUIPMENT HAS BEEN TESTED TO THE APPROPRIATE STANDARDS MUST BE SUBMITTED.

2. SHEET METAL DUCTWORK – LOW VELOCITY

- a. DUCTS SHALL BE GALVANIZED SHEET METAL OF STANDARD GAUGES. PROVIDE DUCT MATERIAL MEETING LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARD". NONMETALLIC DUCTS SHALL BE CONSTRUCTED WITH CLASS 0 OR CLASS 1 DUCT MATERIAL IN ACCORDANCE WITH UL181.
- b. CONSTRUCTION, INSTALLATION AND SUPPORT OF ALL DUCTWORK SHALL CONFORM TO THE LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARD –METAL AND FLEXIBLE". SUPPORT DUCT WITH APPROVED HANGERS AT INTERVALS NOT EXCEEDING 10 FEET.
- c. ALL DUCT ELBOWS SHALL BE EITHER FULL RADIUS OR WITH TURNING VANES. FULL RADIUS ELBOWS SHALL BE AS SHOWN IN SMACNA FIG. 2-2
- d. FLEXIBLE DUCT SHALL BE LISTED AND LABELED AS CLASS 0 OR CLASS 1. FIVE FEET MAXIMUM LENGTH TO DIFFUSER. INSTALL SHEET METAL ELBOW AT ALL DIFFUSERS AND USE FLEXIBLE DUCT TO CONNECT ELBOW TO SUPPLY DUCT.
- e. ALL JOINTS SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES) MASTIC –PLUS EMBEDDED –FABRIC SYSTEMS OR TAPES. TAPES AND MASTICS USED WITH RIGID FIBROUS GLASS DUCTS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181.
- f. COVER DUCTWORK AND KEEP DUCTS CLEAN. PROTECT ALL DUCTWORK AND EQUIPMENT FROM MOISTURE ABSORPTION.

3. DAMPERS

- a. DAMPERS WITH LOCKING DEVICE, WHERE ACCESSIBLE, SHALL BE RUSKIN MD-35. OPPOSED BLADE FOR RECTANGULAR DUCTS 12 INCHES AND ABOVE, AND MODEL MD-25 PARALLEL BLADE FOR DUCTS 10 INCHES AND BELOW, AND MODEL MDRS-25 FOR ROUND DUCTS. INSTALL PER MANUFACTURER'S INSTRUCTIONS. SINGLE BLADE ROUND DAMPERS WITH LOCKING DEVICE SHALL BE IN SPIN-IN COLLARS.

4. DUCT INSULATION

- a. INSULATE ALL SUPPLY AIR DUCTWORK AND DIFFUSER PLENUMS WITH FIBERGLASS INSULATION TO COMPLY WITH THE BUILDING / ENERGY CODE.

5. CONDENSATE DRAIN PIPING

- a. INSTALL TRAP AT EVAPORATOR COIL DRAIN. EXTEND DRAIN LINE FROM COIL TRAP TO DRAIN. PIPING SHALL BE STANDARD WEIGHT, PVC PIPE AND FITTINGS AND WITH JOINTS OF PVC SOLVENT CEMENT. PROVIDE CLEANOUTS THROUGHOUT RUN AND AT TOPS OF TRAPS.

6. REFRIGERANT PIPING

- a. FURNISH AND INSTALL ALL REFRIGERANT PIPING TO CONNECT COILS TO CONDENSING UNIT. PIPING SHALL BE INSTALLED IN SUCH A MANNER AS TO MEET WITH THE APPROVAL OF ALL GOVERNING AUTHORITIES AND THE HEREIN MENTIONED CODES.

7. CONTROLS

- a. ELECTRONIC 7-DAY PROGRAMMABLE THERMOSTAT SHALL BE MITSUBISHI OR EQUAL AS SPECIFIED UNDER EQUIPMENT.

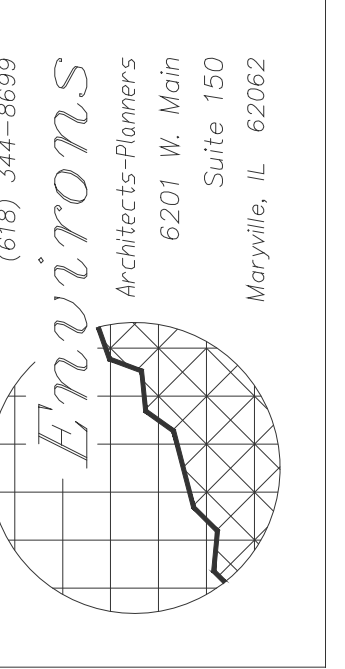
- b. FURNISH AND INSTALL ALL CONTROL TRANSFORMERS, INTERLOCKS, AND CONTROL WIRING.

8. TEST AND ADJUSTMENTS

- a. ALL SYSTEMS AND EQUIPMENT SHALL BE CAREFULLY ADJUSTED TO PROVIDE COMFORTABLE AND UNIFORM CONDITIONS IN EACH AND EVERY SPACE TO THE OWNER'S SATISFACTION. PROVIDE ANY REQUIRED DRIVES TO SATISFY QUANTITIES INDICATED.



Richard D. Herndon PE



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13027

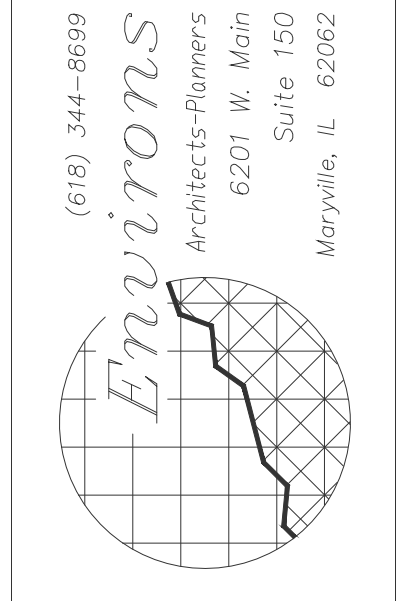
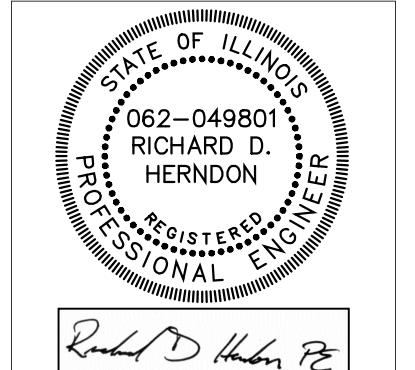
DATE:
NOVEMBER 15, 2013

REVISED:



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
M1.13
OF



JOB NO.
13027

DATE:
NOVEMBER 15, 2013
REVISED:
FEBRUARY 20, 2014
AUGUST 22, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
E1.0
OF

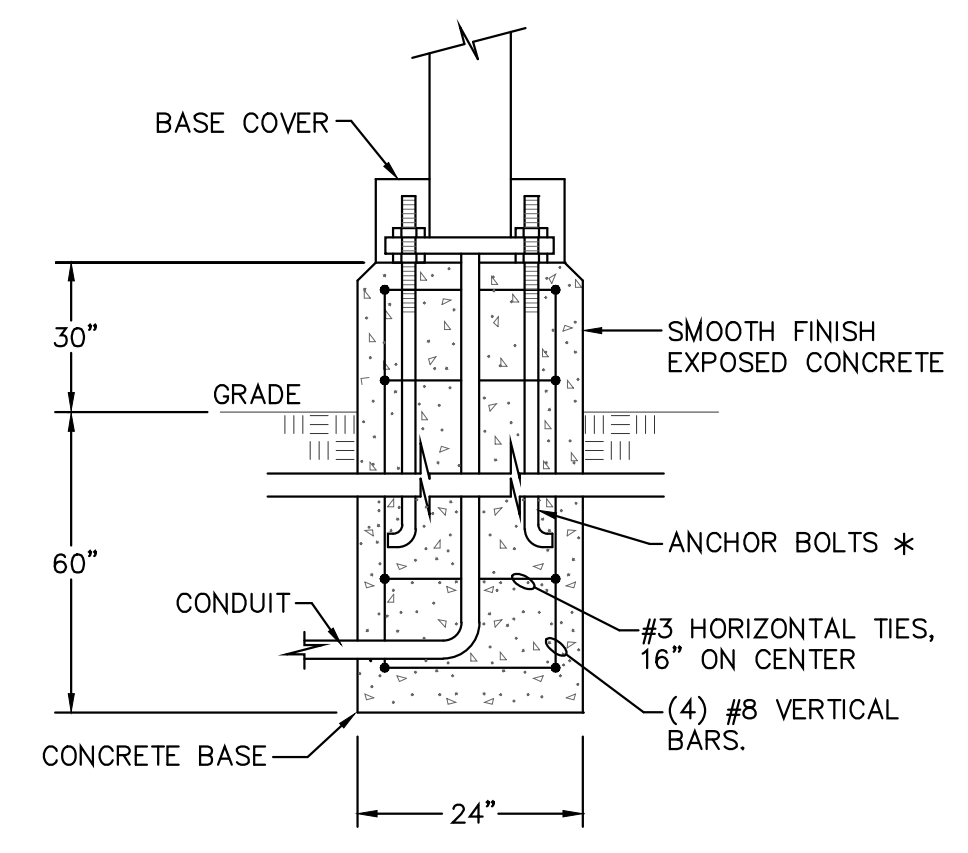
DRAWING KEY NOTE

1 ELECTRICAL CONTRACTOR TO WIRE THESE LIGHTING FIXTURES TO A PUBLIC STREET LIGHTING CONTROLLER, COORDINATE WITH VILLAGE OF MUNDELEIN.

LUMINAIRE SCHEDULE

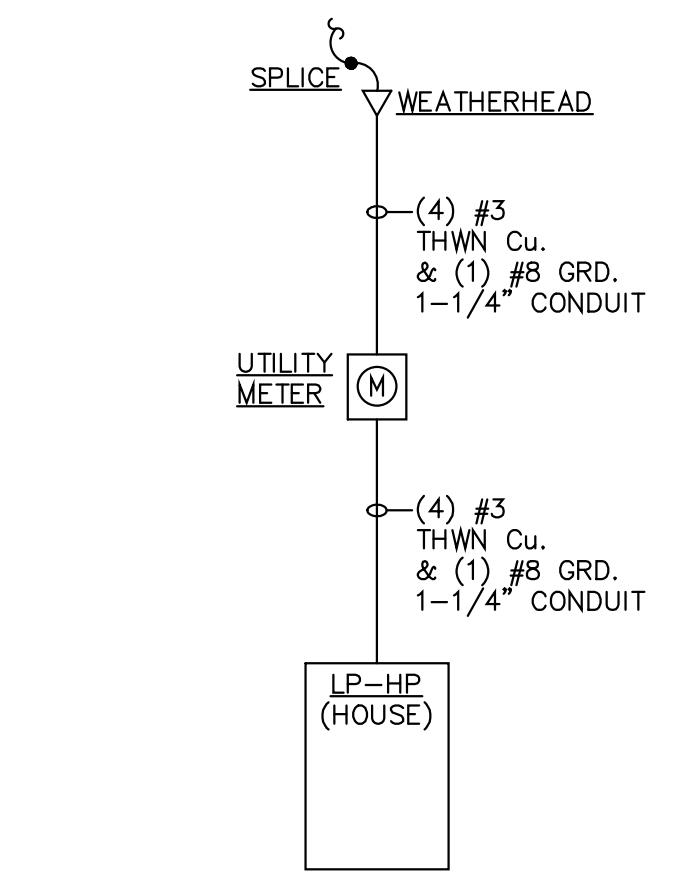
- A SURFACE MOUNTED LED TYPE GARAGE LUMINAIRE UL LISTED FOR WET LOCATIONS COMPLETE WITH 24 LED'S EQUAL TO HUBBELL "SEDONA" CAT. #SCP-24LU-4K-5M-* (*-COORDINATE COLOR WITH THE OWNER)
- B 2FT X 4FT RECESSED DIRECT/INDIRECT FLUORESCENT LUMINAIRE, COMPLETE WITH (3) 32WT8 LAMPS AND ELECTRONIC BALLAST, EQUAL TO COLUMBIA CAT. #STE24-332G-MPO-EU.
- C 4FT STRIP TYPE FLUORESCENT LUMINAIRE, COMPLETE WITH (2) 32WT8 LAMPS AND ELECTRONIC BALLAST, EQUAL TO COLUMBIA CAT. #K4-232-EU.
- D 4FT WALL MOUNTED FLUORESCENT LUMINAIRE, COMPLETE WITH (2) 32WT8, (1) 17WT8 LAMPS, ELECTRONIC BALLAST AND EMERGENCY BATTERY, EQUAL TO COLUMBIA CAT. #BL4-232-EPU-EL.
- E RECESSED INCANDESCENT CAN TYPE LUMINAIRE, COMPLETE WITH (1) 16W LED LAMP EQUAL TO PRESOLITE CAT. #DBX-TB60 (LUMINAIRE) AND WITH SOLAIS CAT. #LRP38/40/27K (LAMP).
- F SURFACE MOUNTED SCONCE TYPE FLUORESCENT LUMINAIRE, COMPLETE WITH (2) 13W PL LAMPS AND ELECTRONIC BALLAST, EQUAL TO ADVENT LIGHTING CAT. #AWB302-2F13-WHITE-120V. (MOUNT AT 7'-6" A.F.F.)
- G WALL MOUNTED FLUORESCENT, COMPLETE WITH (2) 13W PL LAMPS AND ELECTRONIC BALLAST, EQUAL TO INDESSA LIGHTING CAT. #5012CFQ13*. (*-COORDINATE COLOR WITH OWNER)
- H 30" WALL MOUNTED INCANDESCENT RESTROOM LUMINAIRE, COMPLETE WITH LAMPS, EQUAL TO PROGRESS LIGHTING CAT. #P3335-15.
- J COMBINATION EXHAUST FAN AND LIGHTING COMBINATION, COMPLETE WITH LAMPS AND 80CFM FAN, EQUAL TO NUTONE CAT. #XN80L.
- K WALL MOUNTED ELEVATOR PIT LIGHT UL LISTED FOR WET LOCATIONS, COMPLETE WITH (1) 100W. INCANDESCENT LAMP, EQUAL TO HUBBELL CAT. #VFB-15/VW-1/VG-15.
- L WALL MOUNTED LED TYPE LUMINAIRE UL LISTED FOR WET LOCATIONS, COMPLETE WITH 7W LED'S, EQUAL TO LUMINAIRE CAT. #SPC4122CR-7WHP-3500-120V.-OP-* (*-COORDINATE COLOR WITH THE OWNER)
- M WALL MOUNTED LED TYPE LUMINAIRE UL LISTED FOR WET LOCATIONS, COMPLETE WITH (7) 16.4W LED'S, EQUAL TO HUBBELL "LAREDO" CAT. #LNC-7LU-5K-3-* (*-COORDINATE COLOR WITH THE OWNER)
- N 2FT WALL MOUNTED FLUORESCENT LUMINAIRE, COMPLETE WITH (1) 17WT8 LAMP AND ELECTRONIC BALLAST EQUAL TO COLUMBIA CAT. #W2-117-EU.
- P1 POLE MOUNTED H.I.D. TYPE LUMINAIRE, COMPLETE WITH (1) 100W HIGH PRESSURE SODIUM LAMP, 14FT POLE AND ALL REQUIRED MOUNTING HARDWARE, HOLOPHNAE GRANDVILLE SERIES CAT. #GVJNT100HPMTB7RSB-P AND WADSWORTH SERIES STYLE POLE CAT. #W14F5/17-CA-BKH.
- P2 POLE MOUNTED H.I.D. TYPE LUMINAIRE, COMPLETE WITH (1) 320W METAL HALIDE LAMP, 25FT SQUARE STRAIGHT STEEL POLE AND ALL REQUIRED MOUNTING HARDWARE, EQUAL TO SPAULDING LIGHTING "CIMERRON" CAT. #CR1-A-P32-H4P-F-Q-*-*HS (LUMINAIRE) AND CAT. #SSS-25-50-7-AX-* (POLE), COORDINATE THE COLOR WITH THE OWNER.
- P3 POLE MOUNTED H.I.D. TYPE LUMINAIRE, COMPLETE WITH (1) 320W METAL HALIDE LAMP, 25FT SQUARE STRAIGHT STEEL POLE AND ALL REQUIRED MOUNTING HARDWARE, EQUAL TO SPAULDING LIGHTING "CIMERRON" CAT. #CR1-A-P32-H5-F-Q-*-*HS (LUMINAIRE) AND CAT. #SSS-25-50-7-AX-* (POLE), COORDINATE THE COLOR WITH THE OWNER.
- EX LED EXIT SIGN COMPLETE WITH BATTERY AND RED LETTERS EQUAL TO DUAL LITE CAT. #LXURW.
- EX1 LED EXIT SIGN COMPLETE WITH BATTERY, (2) HEADS, EXTRA CAPACITY AND RED LETTERS EQUAL TO DUAL LITE CAT. #LURW3.
- EM EMERGENCY BATTERY UNIT COMPLETE WITH BATTERY AND (2) HEADS EQUAL TO DUAL LITE CAT. #LZ2.
- RH REMOTE WEATHERPROOF EMERGENCY HEAD COMPLETE WITH 8W HALOGEN LAMP EQUAL TO DUAL LITE CAT. #OMSSW-0608.

ELECTRICAL LEGEND	
	FLUORESCENT FIXTURE
	CAN TYPE FIXTURE
	WALL MOUNTED FIXTURE
	EXIT LIGHT FIXTURE
	EMERGENCY BATTERY UNIT
	EXTERIOR REMOTE EMERGENCY HEAD
	EXIT LIGHT WITH HEADS
	JUNCTION BOX
	DISCONNECT SWITCH (HEAVY DUTY ONLY)
	COMBINATION STARTER DISCONNECT SWITCH
	SINGLE POLE SWITCH
	3 POLE SWITCH
	MOTOR RATED SWITCH
	DUPLEX RECEPTACLE
	GFCI TYPE DUPLEX RECEPTACLE
	SINGLE SPECIAL PURPOSE RECEPTACLE
	PHONE JACK WITH 1" CONDUIT STUBBED TO ABOVE CEILING
	CONDUIT AND WIRE ABOVE CLG. OR IN WALL
	CONDUIT AND WIRE BELOW FLOOR OR GRADE
	CONDUIT AND WIRE EXPOSED
	HOME RUN TO PANEL WITH CIRCUIT NO.
	FIXTURE TYPE
	KEY NOTE
	WEATHER PROOF
	N.F. NON-FUSED



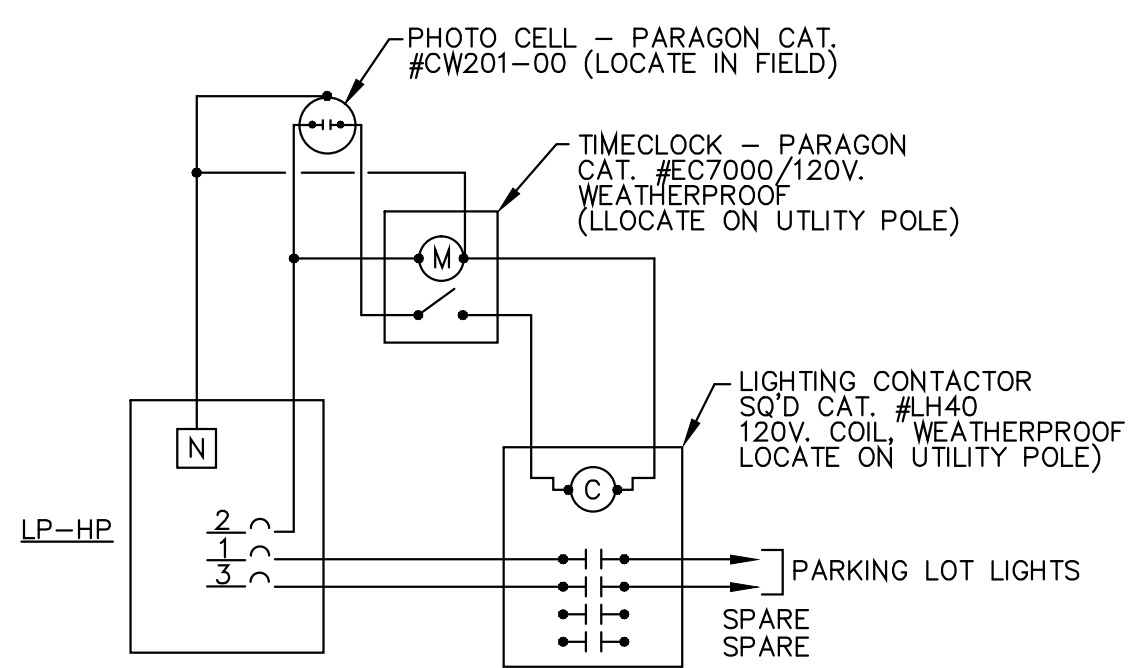
POLE BASE DETAIL
NOT TO SCALE

* = VERIFY EXACT REQUIREMENTS WITH POLE MANUFACTURER.



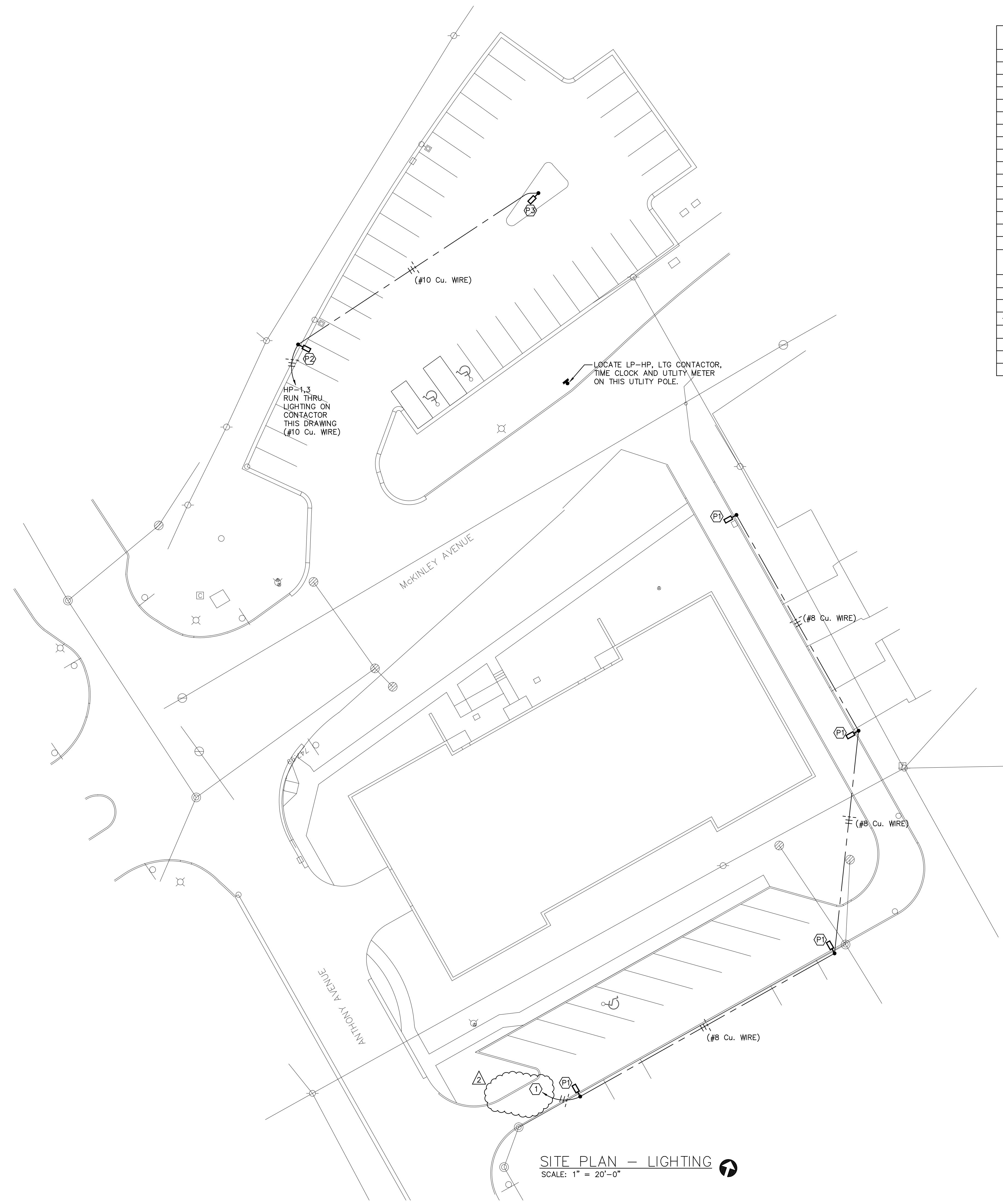
PARKING LOT LIGHTING SINGLE LINE RISER DIAGRAM

LP-HP (WEATHERPROOF)					
VOLTAGE: 120/208V. 3Ø 4W.		CONNECTED LOAD: 0.8KW.			
MOUNTING: SURFACE		MAIN: 100AMP MAIN BREAKER			
LOAD SERVED	KW	BRK	1	2	LOAD SERVED
PARKING LOT LTG	.4	20	1	20	LTG CONTACTOR
SPACE	.4	2P	3	4	SPACE
5					
6					
7					
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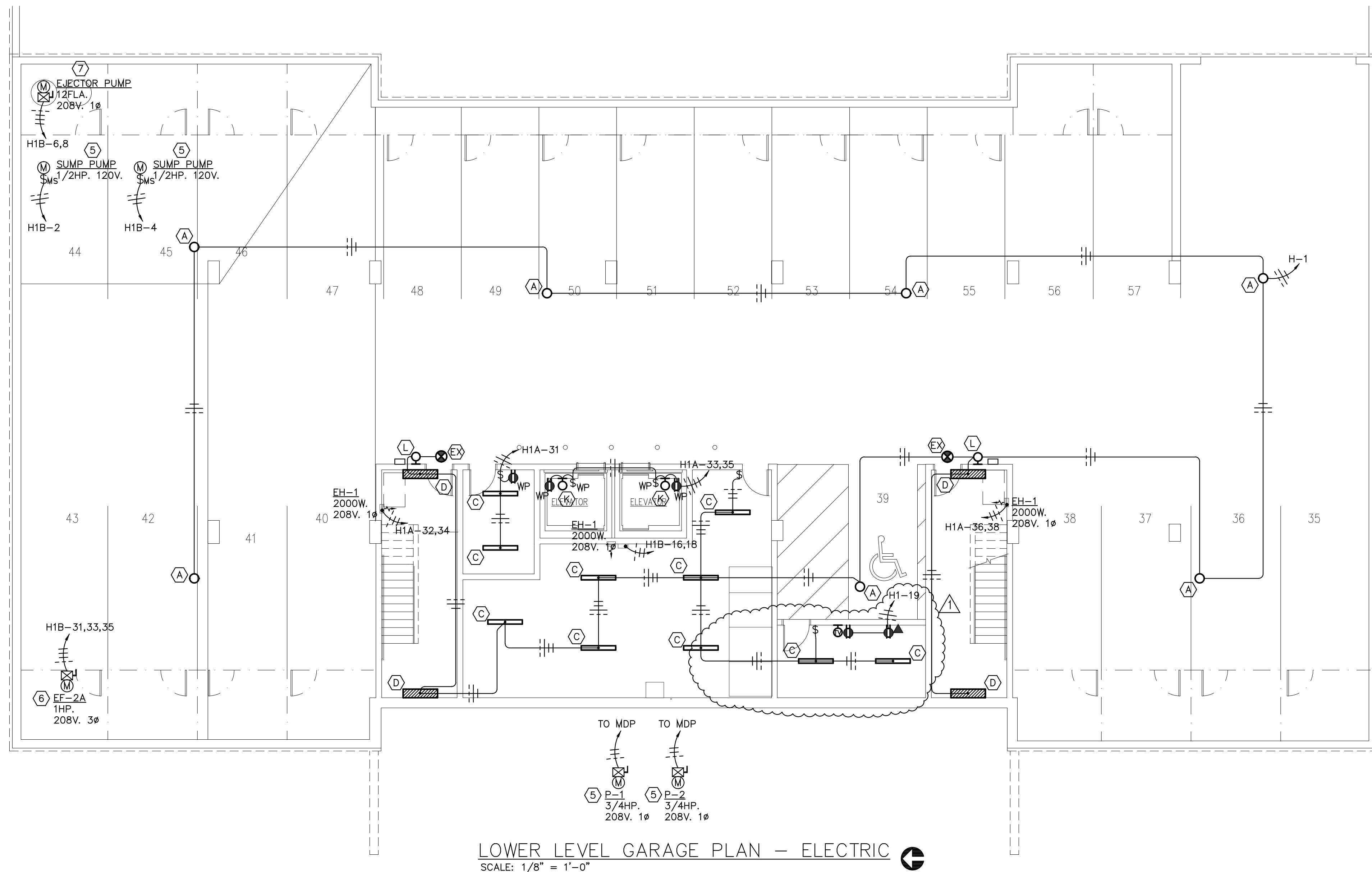
LIGHTING CONTROL WIRING DIAGRAM
NOT TO SCALE

HERNDON ENGINEERING SERVICES, Inc.
5870 COOK ROAD, SUITE B, MILFORD OH 45150
Voice: (513) 248-1313 Fax: (513) 248-2869
Email: herndon@herndoneng.com Website: www.herndoneng.com



SITE PLAN - LIGHTING
SCALE: 1" = 20'-0"

F:\IES\Projects\3058 Cardinal Square Apartments - Amy Electric\Drawings\EP3058.dwg, ELO, 8/21/2014 2:59:29 PM, bddm, DWG To PDF.pc3, ARCH expand D (36000 x 24100 inches), 11

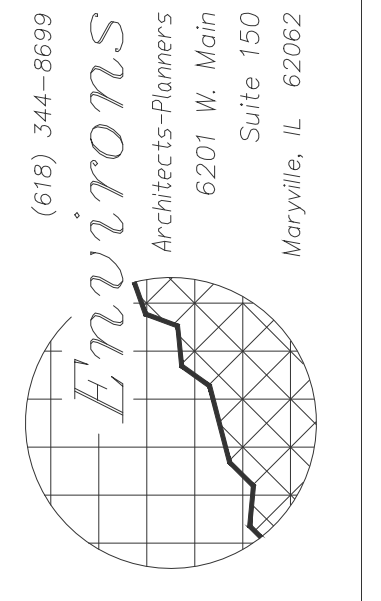


Ⓛ DRAWING KEY NOTES

- ELECTRICAL CONTRACTOR SHALL VERIFY THE POWER REQUIREMENTS FOR THE ELEVATOR WITH THE SHOP DRAWINGS BEFORE ANY ROUGH-IN.
- 30AMP. 1-POLE NON-FUSED DISCONNECT SWITCH FOR THE ELEVATOR LIGHTING AND FAN. RUN A 3/4" CONDUIT WITH (2) #12 THWN CU. & (1) #12 GRD. FROM THIS SWITCH TO THE ELEVATOR CONTROLLER, COORDINATE THE CONNECTION WITH THE CONTROLLER INSTALLER AND COORDINATE THE DISCONNECT LOCATION IN THE FIELD.
- COORDINATE THE LOCATION OF THIS FUSED SWITCH IN THE FIELD, SEE THE SINGLE LINE RISER DIAGRAM FOR SWITCH INFORMATION.
- FURNISH AND INSTALL A WEATHER PROOF JUNCTION BOX MIDWAY IN THE ELEVATOR SHAFT FOR THE ELEVATOR TELEPHONE. STUB A 3/4" CONDUIT WITH PULL STRING OUT INTO AN ACCESSIBLE CEILING.
- COORDINATE THE LOCATION AND POWER REQUIREMENTS OF THIS EQUIPMENT WITH THE INSTALLER AND SHOP DRAWINGS.
- COORDINATE THE LOCATION AND POWER REQUIREMENTS OF THIS FAN WITH THE INSTALLER, THE STARTER AND DISCONNECT SWITCH ARE FURNISHED WITH THE FAN.
- FURNISH AND INSTALL A COMBINATION STARTER FOR THIS MOTOR. UNIT TO HAVE A 30A. 2-POLE DISCONNECT SWITCH AND SIZE-1 STARTER WITH A 120V. CONTROL TRANSFORMER AND RUN LIGHT, SIZE THE OVERLOAD HEATERS PER THE MOTOR NAMEPLATE FULL LOAD AMPS. COORDINATE THE LOCATION AND POWER REQUIREMENTS WITH THE INSTALLER AND THE SHOP DRAWINGS.
- COORDINATE THE DISCONNECT LOCATION WITH THE INSTALLER.



Richard D. Herndon, P.E.



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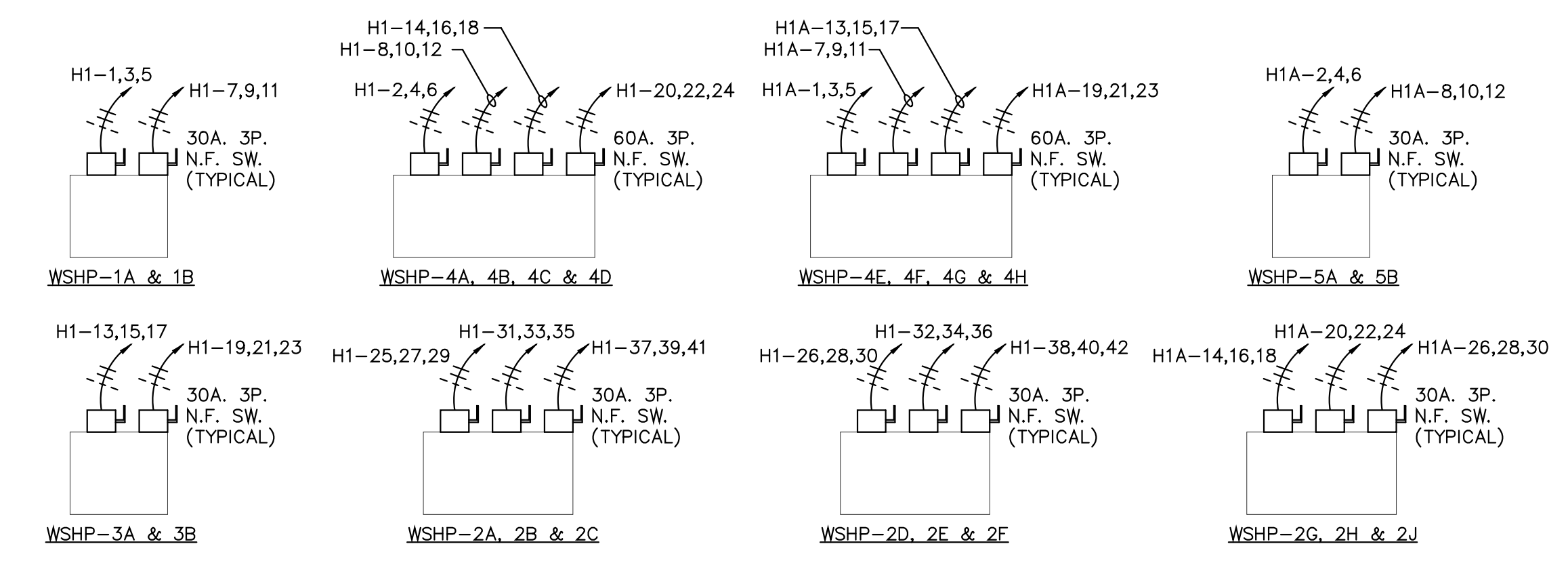
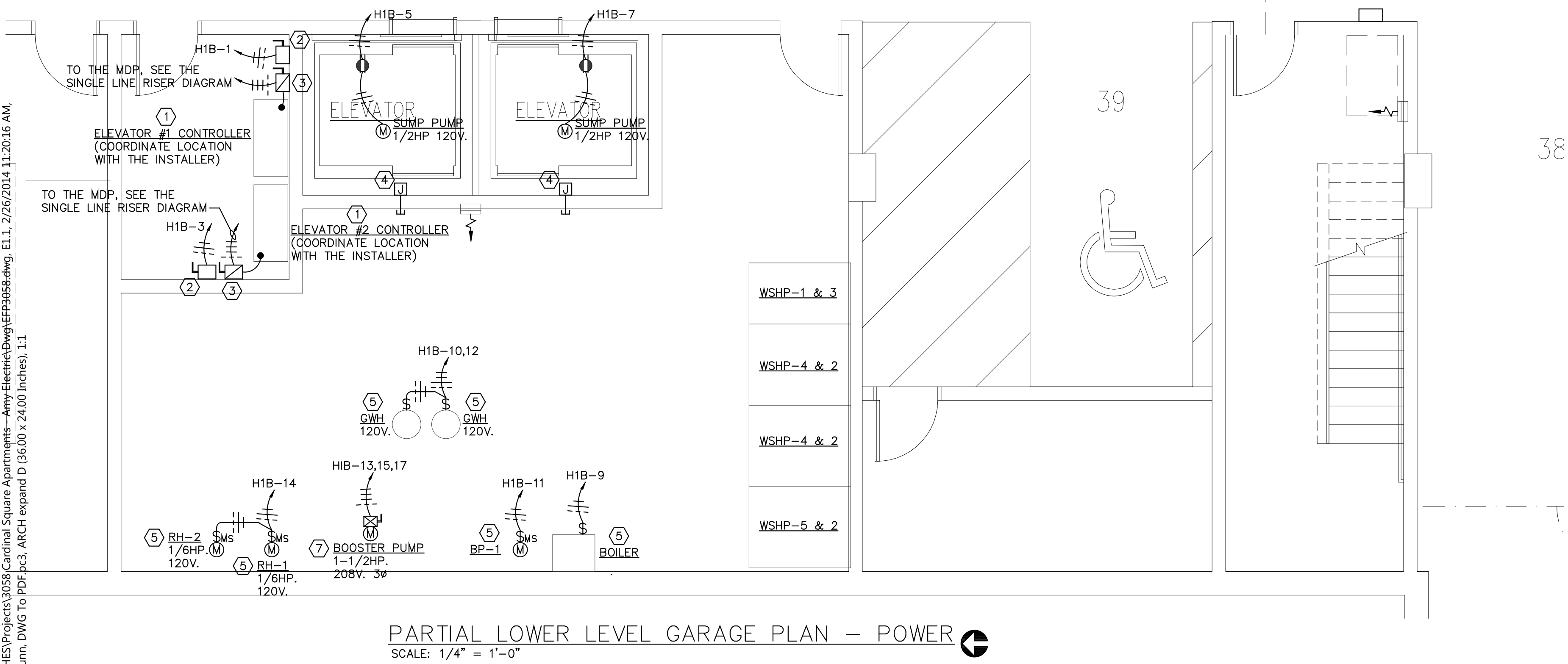
DATE:
NOVEMBER 15, 2013

REVISED:
FEBRUARY 26, 2014



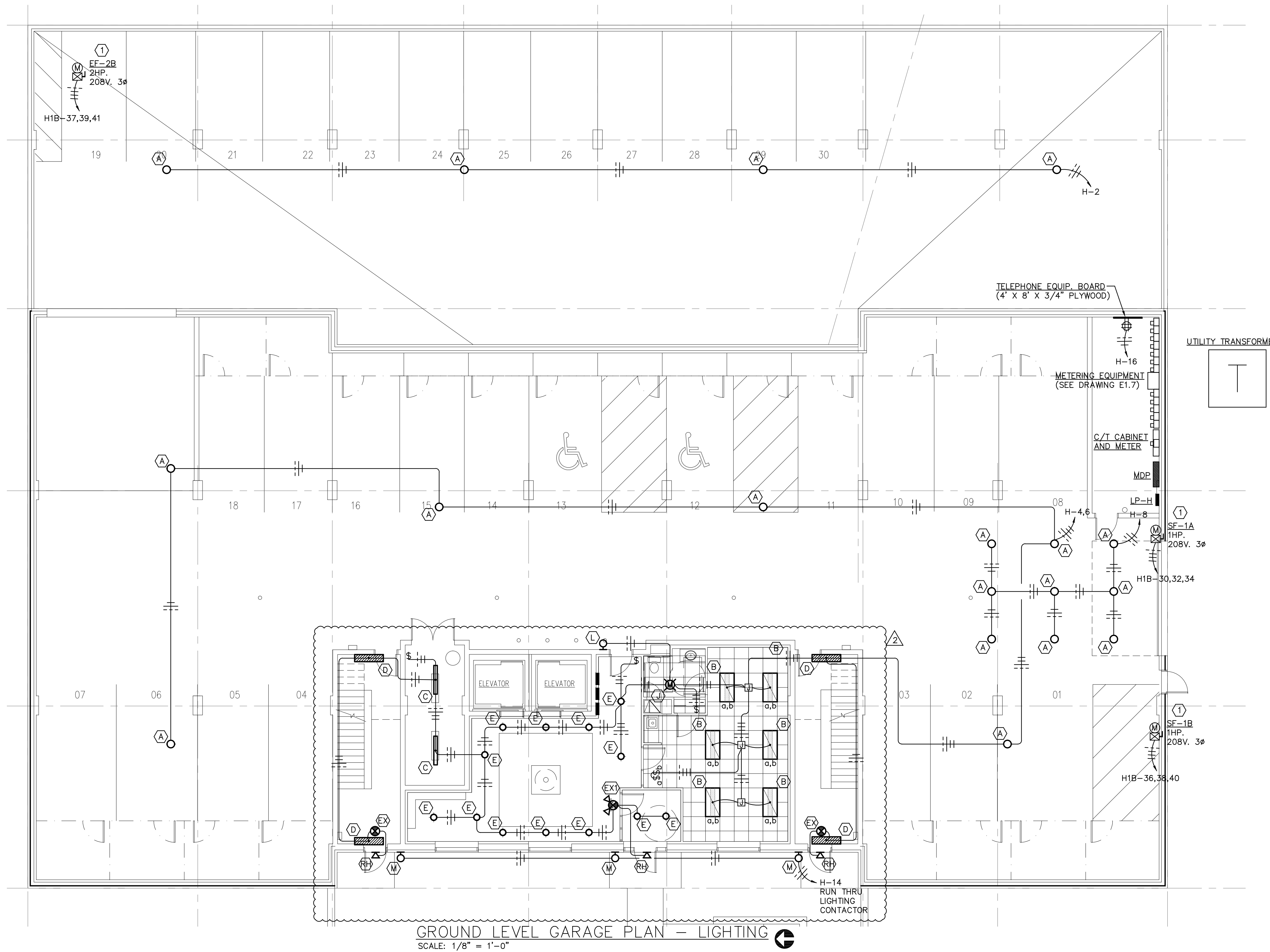
A NEW APARTMENT BUILDING 'C':
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SHEET
E1.1
OF

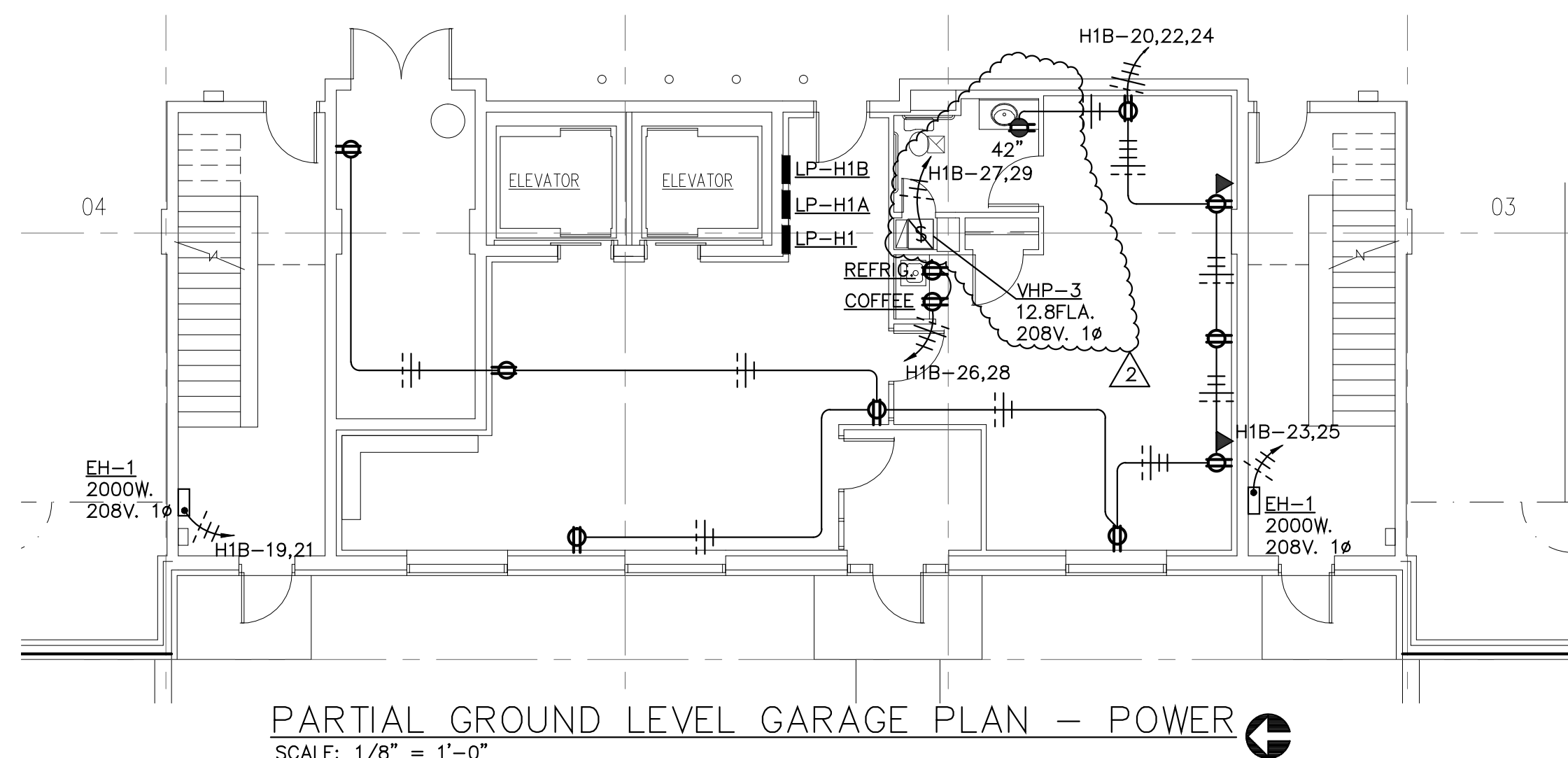


DRAWING KEY NOTES

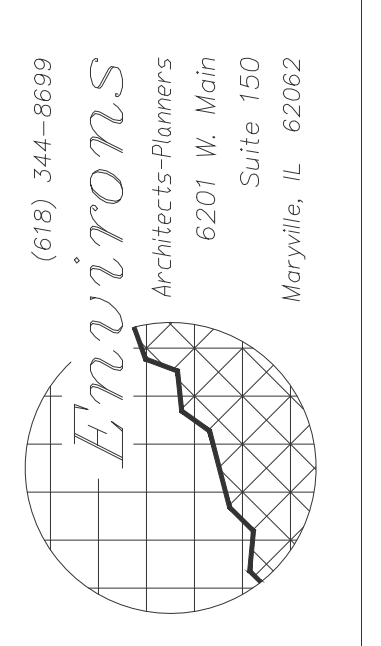
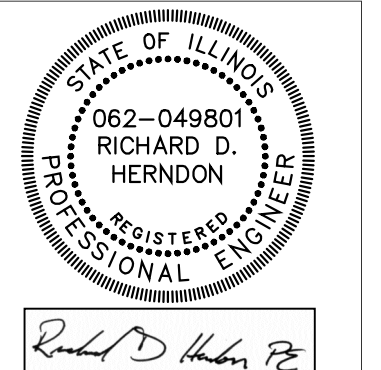
- COORDINATE THE LOCATION AND POWER REQUIREMENTS OF THIS FAN WITH THE INSTALLER, THE STARTER AND DISCONNECT SWITCH ARE FURNISHED WITH THE FAN.



GROUND LEVEL GARAGE PLAN - LIGHTING
SCALE: 1/8" = 1'-0"



PARTIAL GROUND LEVEL GARAGE PLAN - POWER
SCALE: 1/8" = 1'-0"



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13027

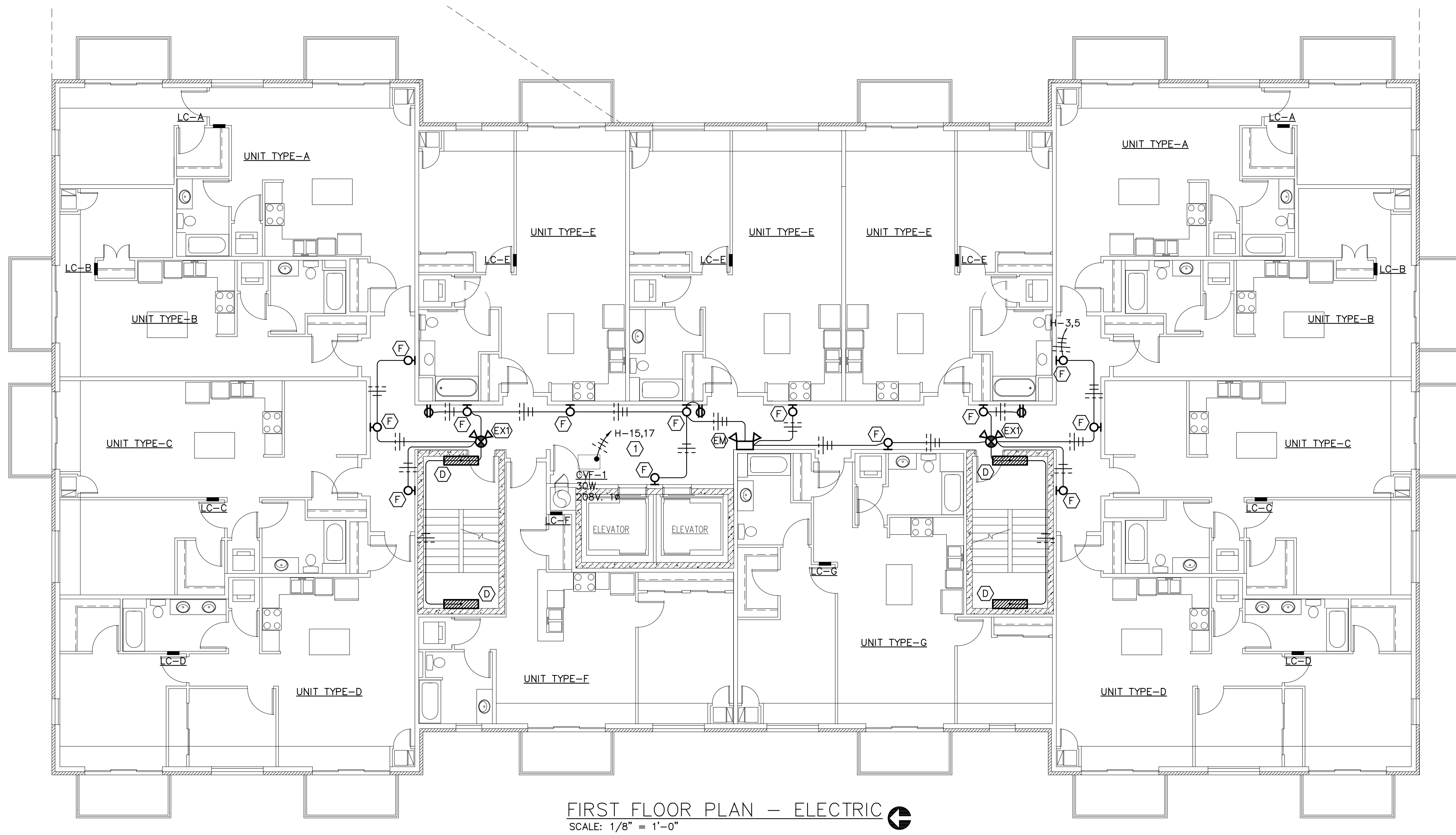
DATE:
NOVEMBER 15, 2013

REVISED:
2 SEPTEMBER 8, 2014



A NEW APARTMENT BUILDING 'C':
CARDINAL SQUARE APARTMENTS
McKINLEY + ANTHONY AVE.
MUNDELEIN, ILLINOIS

SHEET
E1.2
OF



GENERAL NOTES

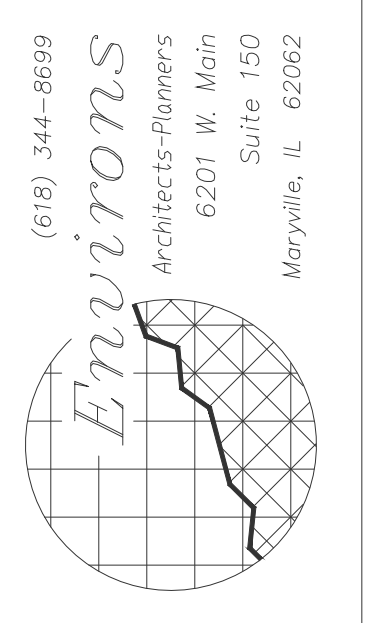
- A ALL UNIT TYPES ARE SHOWN FOR REFERENCE ONLY.
- B SEE DRAWINGS E1.5 AND E1.6 FOR THE WIRING OF THE APARTMENTS.

DRAWING KEY NOTE

- 1 COORDINATE THE LOCATION OF THIS HVAC UNIT WITH THE INSTALLER.



Richard D. Herndon, P.E.



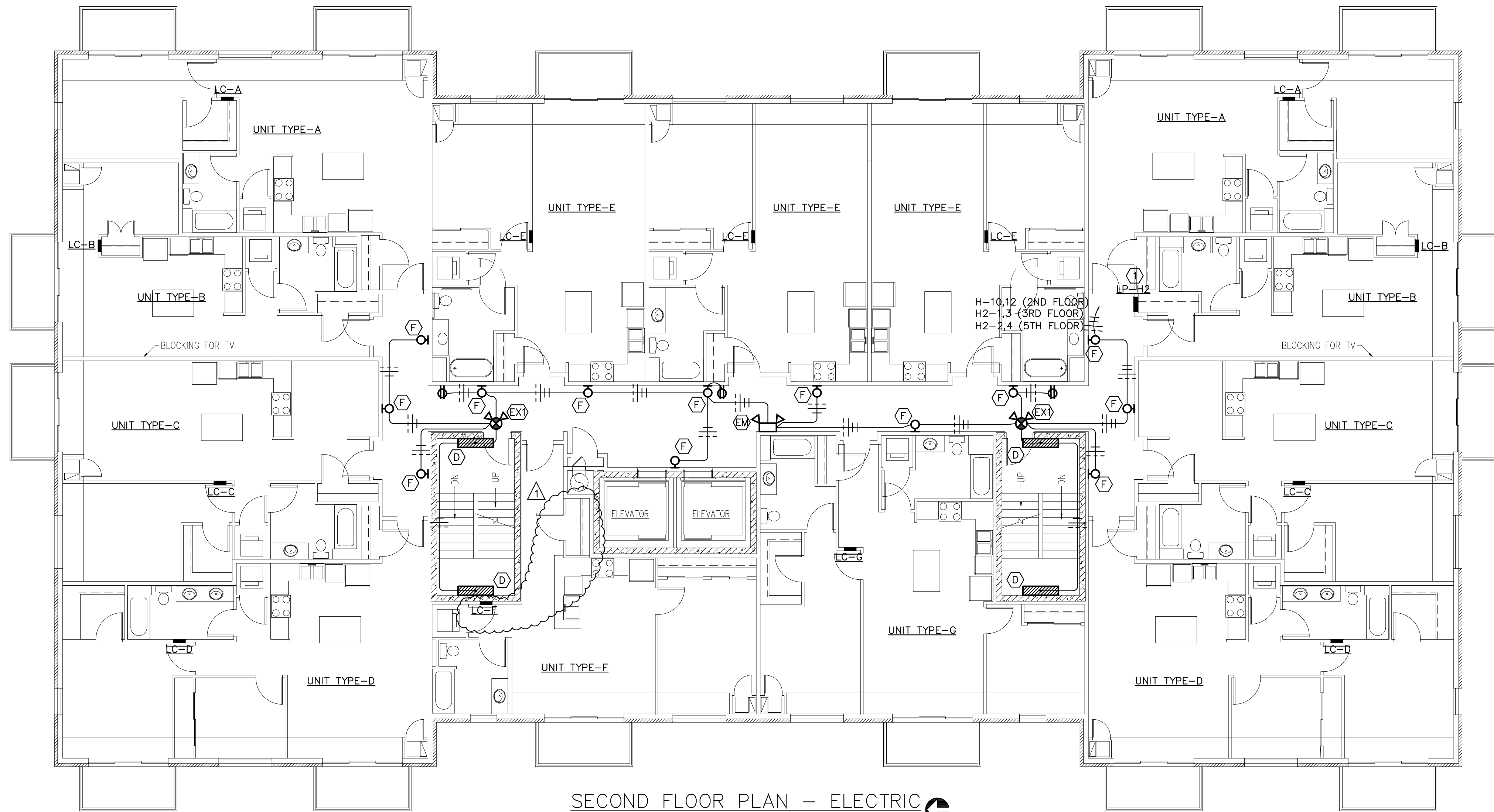
JOB NO.
13027

DATE:
NOVEMBER 15, 2013
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A NEW APARTMENT BUILDING 'C':
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SHEET
E1.3
OF



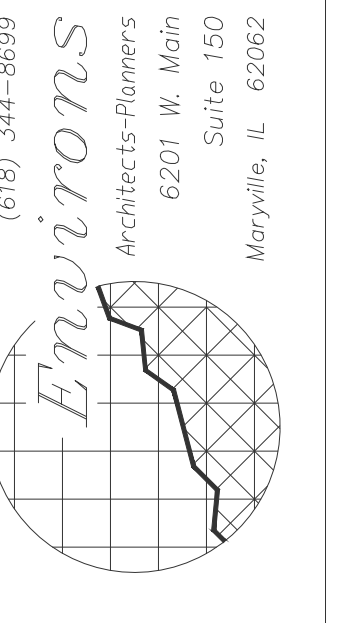
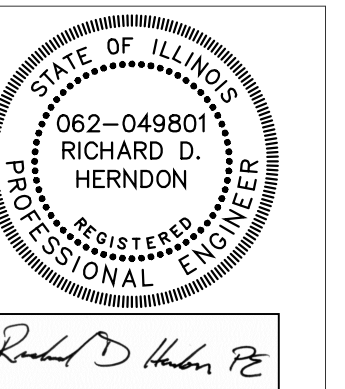
SECOND FLOOR PLAN - ELECTRIC
 SCALE: 1/8" = 1'-0"
 NOTE: THIS PLAN IS TYPICAL FOR THE 2ND, 3RD AND 5TH FLOOR.

GENERAL NOTES

- A ALL UNIT TYPES ARE SHOWN FOR REFERENCE ONLY.
- B SEE DRAWINGS E1.5 AND E1.6 FOR THE WIRING OF THE APARTMENTS.

DRAWING KEY NOTES

- 1 COORDINATE THE LOCATION OF THIS HOUSE PANEL IN THE FIELD.
- 2 COORDINATE THE LOCATION OF THIS HVAC UNIT WITH THE INSTALLER.



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 FEBRUARY 20, 2014



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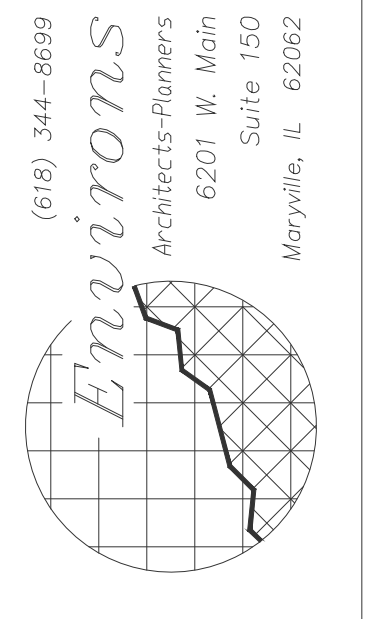
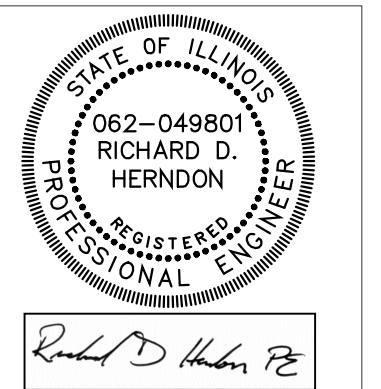
SHEET
E1.4
 OF



FOURTH FLOOR PLAN - ELECTRIC
SCALE: 1/8" = 1'-0"

GENERAL NOTES

- A ALL UNIT TYPES ARE SHOWN FOR REFERENCE ONLY.
- B SEE DRAWINGS E1.5 AND E1.6 FOR THE WIRING OF THE APARTMENTS.



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13027

DATE:
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REVISED:

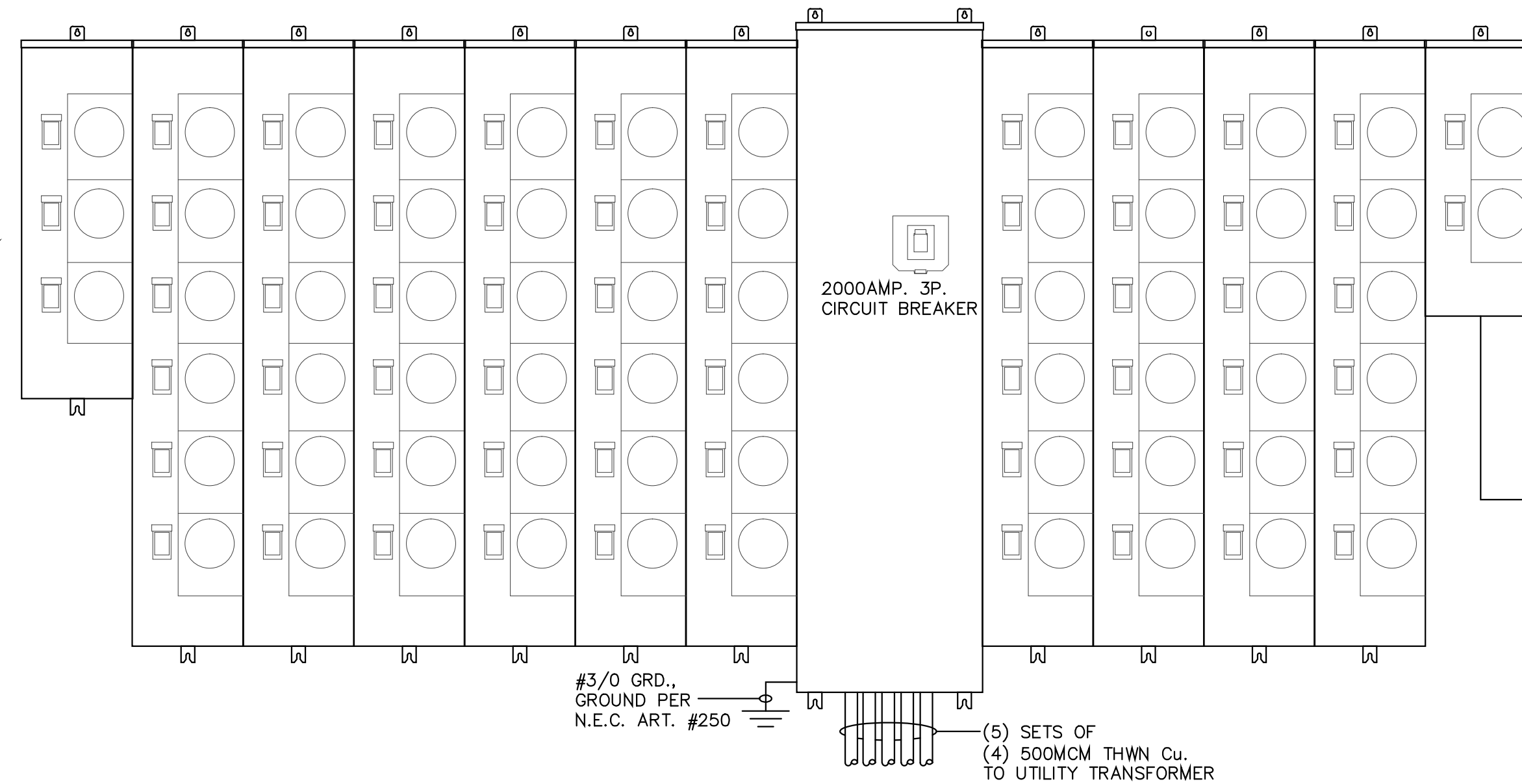


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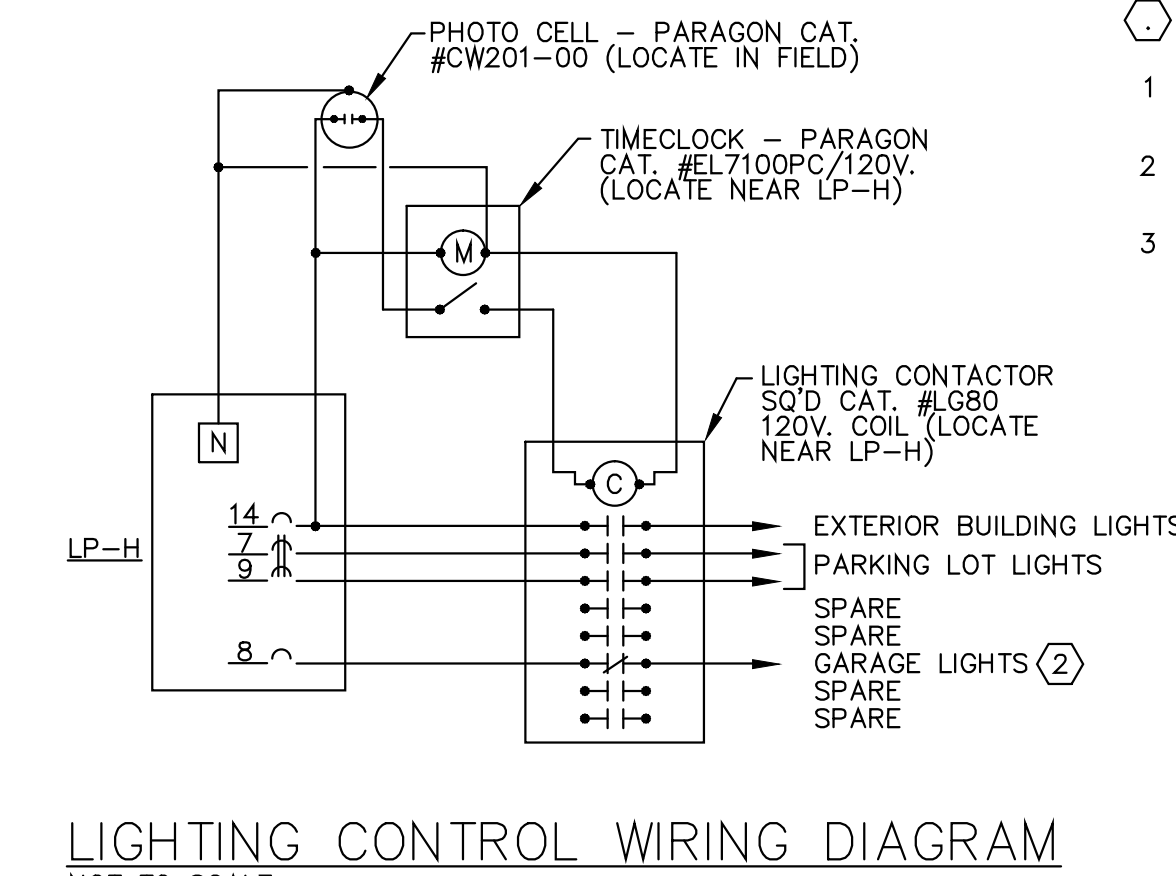
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MUNDELEIN, ILLINOIS

SHEET
E1.5
OF

1ST FLOOR THRU 3RD FLOOR
 UNIT TYPE-A = 20.5KW. X 6-UNITS = 123KW.
 UNIT TYPE-B = 20.4KW. X 6-UNITS = 122KW.
 UNIT TYPE-C = 20.8KW. X 6-UNITS = 125KW.
 UNIT TYPE-D = 20.8KW. X 6-UNITS = 125KW.
 UNIT TYPE-E = 20.5KW. X 9-UNITS = 185KW.
 UNIT TYPE-F = 20.8KW. X 3-UNITS = 63KW.
 UNIT TYPE-G = 20.8KW. X 3-UNITS = 63KW.
 TOTAL = 807KW.
 PER N.E.C. ARTICLE #220.84 39 DWELLING UNITS
 = 28% DEMAND FACTOR THEREFORE 807KW. @ 28%
 = 226KW.
 226KW. @ 208V. 3Ø = 628AMP.



4TH AND 5TH FLOORS PLUS HOSE LOADS
 UNIT TYPE-A = 20.5KW. X 2-UNITS = 41KW.
 UNIT TYPE-B = 20.4KW. X 2-UNITS = 41KW.
 UNIT TYPE-C = 20.8KW. X 2-UNITS = 42KW.
 UNIT TYPE-D = 20.8KW. X 2-UNITS = 42KW.
 UNIT TYPE-E = 20.5KW. X 6-UNITS = 123KW.
 UNIT TYPE-F = 20.8KW. X 2-UNITS = 42KW.
 UNIT TYPE-G = 20.8KW. X 2-UNITS = 42KW.
 TOTAL = 373KW.
 PER N.E.C. ARTICLE #220.84 26 DWELLING UNITS
 = 34% DEMAND FACTOR THEREFORE 373KW. @ 34%
 = 127KW.
 HOUSE LOAD = 296KW.
 APARTMENT LOAD = 127KW.
 TOTAL = 423KW.
 423KW. @ 208V. 3Ø = 1175AMP.



LIGHTING CONTROL WIRING DIAGRAM
 NOT TO SCALE

DRAWING KEY NOTES

- WIRE THIS CIRCUIT BREAKER SHUNT TRIP INTO THE FIRE ALARM SYSTEM, COORDINATE WITH THE SYSTEM INSTALLER.
- THE LIGHTING ON THIS CIRCUIT ARE TO BE ON DURING THE DAY ON/OFF AT NIGHT.
- FURNISH AND INSTALL ARC FAULT CIRCUIT BREAKER FOR BRANCH CIRCUITS AS REQUIRED BY THE NATIONAL ELECTRIC CODE.

③ LC - *

VOLTAGE: 120/208V. 1Ø 3W		DEMAND LOAD: (SEE BELOW)	
MOUNTING: RECESSED		MAIN: 100AMP. MAIN BREAKER	
LOAD SERVED	KW BRK	BRK	LOAD SERVED
SMALL APPL.	20 1	2	REFRIGERATOR
SMALL APPL.	20 3	4	DISHWASHER
GEN LTG & PWR	20 5	8	DISPOSER
GEN LTG & PWR	20 7	8	RANGE HOOD
GEN LTG & PWR	20 9	10	RANGE
RESTRM GFCCI REC	20 11	12	
BALCONY GFCCI REC	20 13	14	CLOTH DRYER
VHP	20 15	16	
	2P	18	CLOTH WASHER
SPACE	19	20	
	21	22	
	22	23	
	23	24	

NOTE: FILL IN "*" WITH APARTMENT NUMBER FOR THE FINISHED LOAD CENTER NUMBER.

DEMAND LOADS:
 UNIT TYPE-A AND E = 14.9KW. = 72AMP.
 UNIT TYPE-B = 14.8KW. = 71AMP.
 UNIT TYPE-C, D AND G = 15.2KW. = 73AMP.
 UNIT TYPE-F = 14.8KW. = 71AMP.

METER PAK - FRONT ELEVATION

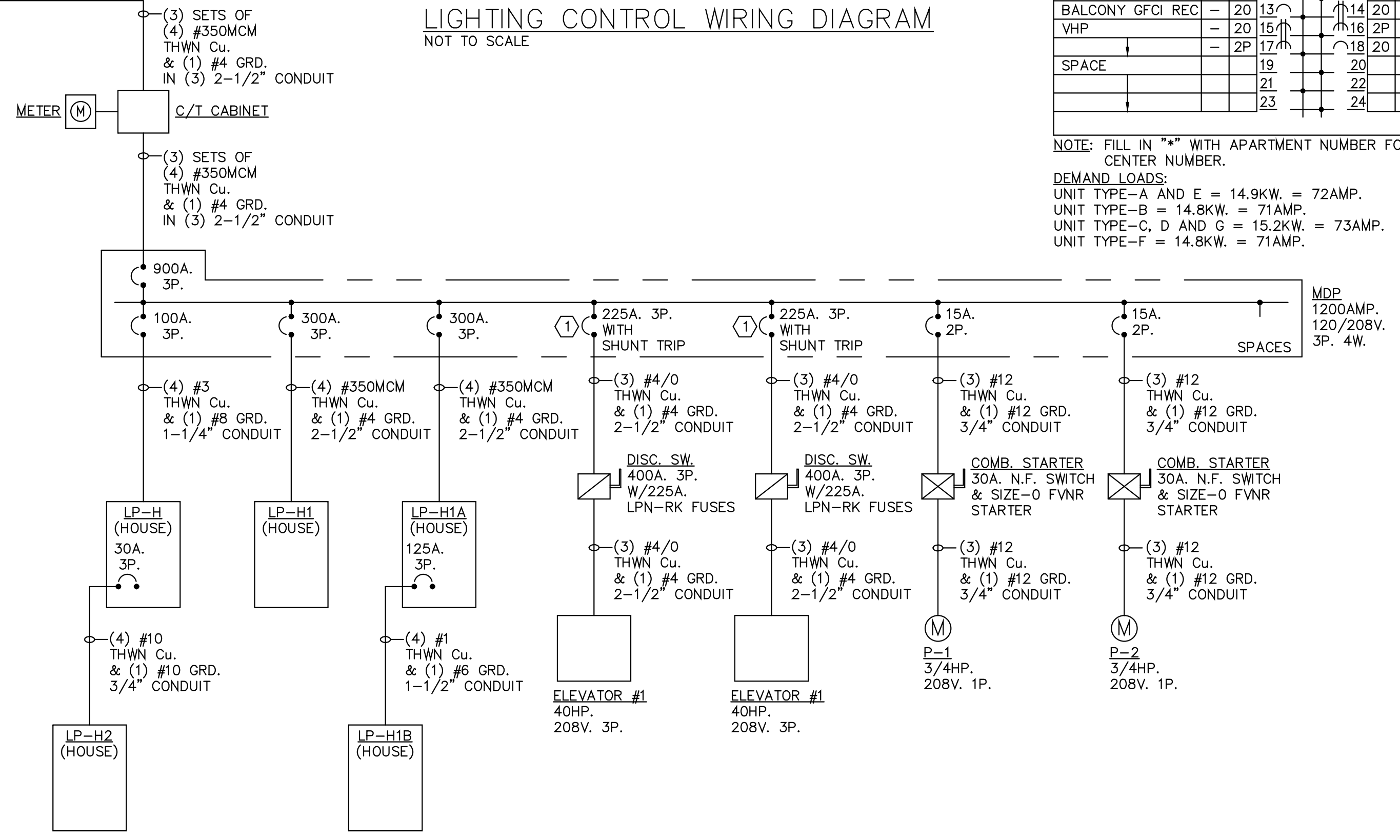
- NOT TO SCALE
- NOTES:
 1. ALL UTILITY METERS SHOWN ARE 125AMP. 208V. 1-PHASE WITH 100AMP. 2-POLE CIRCUIT BREAKERS
 2. RUN #1/3 CONDUCTOR W/GRD., SER. AL CABLE TO EACH APPARTMENT LOAD CENTER.
 3. THE MAIN CIRCUIT BREAKER IS TO BE CAPABLE OF WITHSTANDING THE AVAILABLE SHORT CIRCUIT CURRENT, COORDINATE WITH THE UTILITY CO.
 4. LABEL EACH METER/CIRCUIT BREAKER WITH THE APARTMENT NUMBER.

LOAD CALCULATIONS

HOUSE LOADS
 LIGHTING = 10.9KW. @ 125% = 13.6KW.
 RECEPTACLES = 5.4KW. @ 100% = 5.4KW.
 COOLING = 158.2KW.
 MOTORS = 261.5KW.
 LARGEST = 43.2KW. @ 125% = 54.0KW.
 REMAINDER = 218.3KW. @ 100% = 218.3KW.
 MISC = 4.4KW. @ 125% = 5.5KW.
 TOTAL HOUSE LOAD = 296.2KW. @ 208V. 3Ø = 823AMP.

APARTMENTS
 UNIT TYPE-A = 20.5KW. X 10-UNITS = 205KW.
 UNIT TYPE-B = 20.4KW. X 10-UNITS = 204KW.
 UNIT TYPE-C = 20.8KW. X 10-UNITS = 208KW.
 UNIT TYPE-D = 20.8KW. X 10-UNITS = 208KW.
 UNIT TYPE-E = 20.5KW. X 15-UNITS = 308KW.
 UNIT TYPE-F = 20.8KW. X 5-UNITS = 104KW.
 UNIT TYPE-G = 20.8KW. X 5-UNITS = 104KW.
 TOTAL = 1341KW.
 PER N.E.C. ARTICLE #220.84 65 DWELLING UNITS
 = 23% DEMAND FACTOR THEREFORE 1341KW. @ 23%
 = 309KW.

TOTAL BUILDING LOAD
 HOUSE LOAD = 297KW.
 APARTMENT LOAD = 309KW.
 TOTAL = 606KW.
 606KW. @ 208V. 3Ø = 1683AMP.



LP-H (HOUSE)

VOLTAGE: 120/208V. 3Ø 4W. CONNECTED LOAD: 13.9KW. MOUNTING: SURFACE MAIN: 100AMP. MAIN BREAKER

LOAD SERVED	KW	BRK	BRK	KW	LOAD SERVED
LTG-LOWER LEVEL	1.4	20	1	2	3
LTG-1ST FLOOR	.8	20	3	4	1.2
REC-1ST FLOOR	.5	20	5	6	20
PARKING LOT LTG	.4	20	7	8	20
SPARE	.4	2P	9	10	20
CVF1-1ST FLOOR	.1	20	15	16	20
REC-MAINTENANCE	.4	20	19	20	20
SPARE	20	21	22	20	
LP-H2	4.1	3P	27	28	
			29	30	

LP-H1 (HOUSE)

VOLTAGE: 120/208V. 3Ø 4W. CONNECTED LOAD: 87.3KW. MOUNTING: SURFACE MAIN: 300AMP. MAIN BREAKER

LOAD SERVED	KW	BRK	BRK	KW	LOAD SERVED
WSHP-1A	6.3	3P	3	4	3P 8.4
WSHP-1B	6.3	3P	7	8	40
WSHP-3A	6.3	3P	13	14	40
WSHP-3B	6.3	3P	19	20	40
WSHP-2A	6.3	3P	25	26	30
WSHP-2B	6.3	3P	31	32	30
WSHP-2C	6.3	3P	37	38	30
			41	42	

LP-H1A (HOUSE)

VOLTAGE: 120/208V. 3Ø 4W. CONNECTED LOAD: 102.3KW. MOUNTING: SURFACE MAIN: 300AMP. MAIN BREAKER

LOAD SERVED	KW	BRK	BRK	KW	LOAD SERVED
WSHP-4E	8.4	3P	3	4	3P 4.6
WSHP-4F	7.5	3P	9	10	3P 4.0
WSHP-4G	8.4	3P	15	16	3P 6.3
WSHP-4H	7.5	3P	21	22	3P 6.3
CP-1 & CP-2	1.2	20	25	26	30
CP-3 & CP-4	1.2	20	27	28	3P 6.3
CP-5	.6	20	29	30	
LTG & REC-LG05	.6	20	31	32	20 1.0
LTG & REC-ELEV PIT	.4	20	33	34	2P 1.0
LTG & REC-ELEV PIT	.4	20	35	36	20 1.0
LP-H1B	34.6	3P	39	40	2P 1.0
			41	42	

LP-H1B (HOUSE)

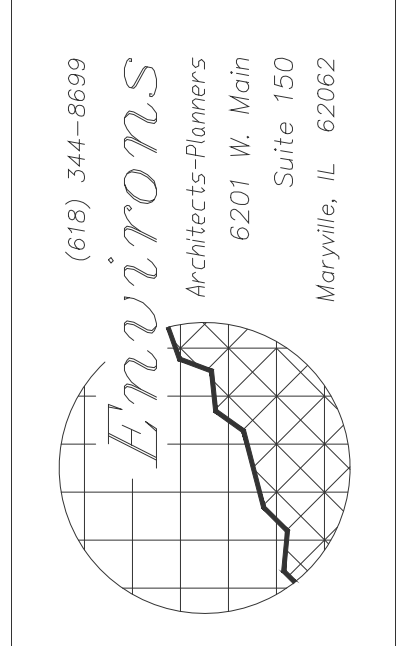
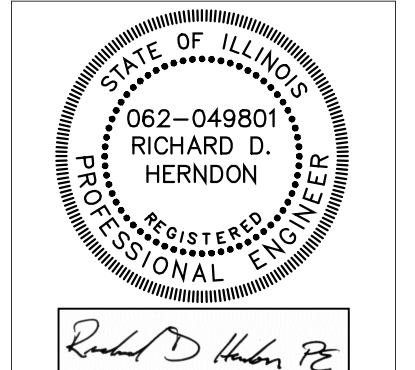
VOLTAGE: 120/208V. 3Ø 4W. CONNECTED LOAD: 34.6KW. MOUNTING: SURFACE MAIN: 125AMP. MAIN BREAKER

LOAD SERVED	KW	BRK	BRK	KW	LOAD SERVED
ELEV LTG & CNTLS	.5	20	1	2	1.2
ELEV SUMP PUMP	1.2	20	5	6	1.4
B-1	1.2	20	7	8	.9
BP-1	.8	20	11	12	1.1
BOOSTER PUMP	1.5	13	14	20	1.0
EH-1-G03	1.0	20	19	20	.6
EH-1-G04	1.0	20	21	22	.7
VHP-3	1.3	20	27	28	1.5
EF-2A	1.7	3P	33	34	1.5
EF-2B	2.8	3P	39	40	
			41	42	

LP-H2 (HOUSE)

VOLTAGE: 120/208V. 3Ø 4W. CONNECTED LOAD: 4.4KW. MOUNTING: RECESSED MAIN: 30AMP. MAIN BREAKER

LOAD SERVED	KW	BRK	BRK	KW	LOAD SERVED
LTG-3RD FLOOR	.8	20	1	2	.8
REC-3RD FLOOR	.5	20	3	4	.5
LTG-4TH FLOOR	.8	20	5	6	.1
REC-4TH FLOOR	.5	20	7	8	
SPARE	20	9	10		
	20	11	12		
	20	13	14		
	20	15	16		
	20	17	18		



JOB NO.
13027

DATE:
NOVEMBER 15, 2013

REVISED:
FEBRUARY 26, 2014
AUGUST 22, 2014
OCTOBER 1, 2014



SHRINAY CORPORATION
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TEL - 847-754-1064

A NEW APARTMENT BUILDING 'C':
 CARDINAL SQUARE APARTMENTS
 MCKINLEY + ANTHONY AVE.
 MUNDELEIN, ILLINOIS

SHEET
E1.8
OF

HERNDON ENGINEERING SERVICES, Inc.
 5870 COOK ROAD, SUITE B, MILFORD OH 45150
 Voice: (513) 248-1313 Fax: (513) 248-2869
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ELECTRICAL SPECIFICATIONS

1. GENERAL

A. ALL ELECTRICAL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL REGULATIONS, LAWS, AND ORDINANCES WHICH MAY BE APPLICABLE.

B. A CERTIFICATE OF FINAL INSPECTION AND APPROVAL SHALL BE SUBMITTED WITH THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT. NO FINAL PAYMENT WILL BE APPROVED WITHOUT THIS CERTIFICATE.

C. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER TO MINIMIZE INTERRUPTION OF BUILDING OPERATION. SCHEDULE OF ALL POWER OUTAGES MUST BE APPROVED BY THE OWNER PRIOR TO THE BEGINNING OF ANY WORK.

2. WORK INCLUDED

A. THE WORK COVERED BY THESE SPECIFICATIONS SHALL CONSIST OF PROVIDING ALL THE MATERIAL, LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE ELECTRICAL INSTALLATION AS SPECIFIED HEREIN. WORK IN THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:

1. INSTALLATION OF LIGHTING FIXTURES
2. TELEPHONE CONDUIT SYSTEM
3. WIRING DEVICES
4. BRANCH CIRCUITING
5. GROUNDING
6. CONNECTION OF HVAC EQUIPMENT
7. TEMPORARY ELECTRICAL WIRING
8. INSTALLATION OF NEW SERVICE

3. SUBMITTALS

A. THE ELECTRICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON THE FOLLOWING ITEMS FOR REVIEW BEFORE FABRICATION OR SHIPMENT:

1. PANEL BOARDS, LOAD CENTERS AND CIRCUIT BREAKERS
2. DISCONNECT SWITCHES
3. WIRING DEVICES
4. LIGHT FIXTURES
5. METER PACKS AND SERVICE ENTRANCE EQUIPMENT
6. MOTOR STARTERS AND CONTROL DEVICES

B. MAINTENANCE MANUALS: FURNISH THREE FINAL COPIES, INCLUDING WIRING DIAGRAMS, MAINTENANCE AND OPERATING INSTRUCTIONS, PARTS LISTINGS, AND COPIES OF OTHER SUBMITTALS INDICATED FOR INCLUSION.

C. ANY CHANGES TO ITEMS SPECIFIED MUST BE SUBMITTED AS A SUBSTITUTION, WITH COMPLETE DOCUMENTATION OF PRICE DIFFERENTIAL AND EQUIPMENT DETAILS.

4. PROJECT RECORD DRAWINGS

A. DURING PROGRESS OF THE WORK, MAINTAIN ON DRAWINGS AT THE SITE, AN ACCURATE RECORD OF THE INSTALLATION OF THE ELECTRICAL SYSTEM, INDICATING ALL ITEMS WHICH HAVE BEEN CHANGED OR ADDED.

5. PERMITS

A. THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND ELECTRICAL INSPECTIONS REQUIRED BY LOCAL AUTHORITY, FOR THE APPROVAL OF HIS WORK.

6. INSPECTION OF CONDITIONS

A. PRIOR TO ALL WORK, CAREFULLY INSPECT THE INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.

B. VERIFY THAT ELECTRICAL INSTALLATION MAY BE MADE IN COMPLETE ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS AND THE ORIGINAL DESIGN.

C. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE ELECTRICAL ENGINEER. DO NOT PROCEED WITH THE INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

D. PRIOR TO SUBMISSION OF BID THIS CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS WORK.

7. PREPARATION

A. COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE SCHEDULES FOR WORK OF ALL OTHER TRADES TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

B. WHERE LIGHT FIXTURE AND OTHER ELECTRICAL ITEMS ARE SHOWN IN CONFLICT WITH LOCATIONS OF STRUCTURAL MEMBERS AND MECHANICAL OR OTHER EQUIPMENT, FURNISH AND INSTALL ALL REQUIRED SUPPORTS AND WIRING TO CLEAR THE ENCROACHMENT.

C. VERIFY ALL EQUIPMENT LOCATIONS, SWITCHES, RECEPTACLES, LIGHTING FIXTURES, ETC., IN FIELD. THE OWNER RESERVES THE RIGHT TO CHANGE LOCATION OF ANY OUTLET OR FIXTURE FOR A DISTANCE OF 10 FT. IN ANY DIRECTION FROM DRAWING LOCATION, BEFORE THE WORK IS ACTUALLY ROUGHED IN, AT NO EXTRA CHARGE.

8. GROUNDING

A. ALL WIRE FOR GROUNDING PURPOSE SHALL BE COPPER, OR COPPER CLAD STEEL AS REQUIRED FOR TYPE AND SIZES INDICATED ON DRAWINGS, AND SHALL BE STRANDED.

B. BUILDING ELECTRODE GROUND RODS SHALL BE 10'-0" LONG X 3/4" DIAMETER (MINIMUM DIMENSIONS). GROUND RODS SHALL BE STEEL WITH A MOLECULARLY BONDED OUTER LAYER OF ELECTROLYTICALLY APPLIED COPPER JACKET OF GALVANIZED STEEL AS REQUIRED. ALL GROUND RODS SHALL BE TESTED WITH PROPER TEST EQUIPMENT FOR ROD TO EARTH RESISTANCE BEFORE CONNECTING GROUND WIRE.

C. METAL RACEWAYS MAY NOT BE USED FOR EQUIPMENT GROUNDING CONDUCTOR.

D. PROPERLY GROUND ALL MOTORS, TRANSFORMERS, EQUIPMENT, CONDUITS, SWITCH GEAR, ETC., IN COMPLIANCE WITH THE LATEST EDITION OF THE NEC AND AS INDICATED ON DRAWINGS.

E. PROVIDE BURNDY TYPE GAR GROUND CONNECTOR FOR CONNECTION AT WATER MAINS. PROVIDE EXOTHERMIC TYPE WELD CONNECTIONS AT ALL CONNECTIONS TO BUILDING STEEL AND GROUND RODS.

F. GROUND ALL LIGHT FIXTURES BY INSTALLING A SEPARATE GREEN GROUND WIRE IN ANY FLEXIBLE CONDUIT BETWEEN OUTLET BOX AND FIXTURE.

9. WIRING METHOD

A. NON-METALIC SHEATHED CABLE MAY BE USED FOR BRANCH CIRCUIT WIRING IN APARTMENTS ABOVE CEILINGS OR CONCEALED IN WALLS WHERE IT IS NOT SUBJECT TO DAMAGE.

B. EXPOSED INTERIOR BRANCH CIRCUIT WIRING SUBJECT TO DAMAGE SHALL BE INSTALLED IN EMT.

C. ALL NON-METALIC SHEATHED CABLE SHALL BE INSTALLED PER ARTICLE #334 OF THE N.E.C.

10. ELECTRICAL RACEWAYS

A. INTERIOR CONDUIT SHALL BE OF SUFFICIENT SIZE AND INSTALLED SO THAT THE REQUIRED NUMBER OR CONDUCTORS CAN BE INSERTED OR REMOVED WITHOUT INJURY TO, OR EXCESSIVE STRAIN UPON, THE INSULATION. THE MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE NOTED.

B. CONDUITS SHALL BE RUN CONTINUOUS FROM OUTLET TO OUTLET AND SHALL BE FASTENED TO ALL BOXES AND CABINETS WITH DOUBLE LOCKOUTS, TO PROVIDE CONTINUITY OF GROUND, AND A BUSHING. THE FULL NUMBER OF THREADS MUST PROJECT BEYOND LOCKOUT IN BOXES AND CABINETS TO ALLOW THE BUSHING TO BUTT UP TIGHT AGAINST THE END OF THE CONDUIT.

C. CONDUIT RUN EXPOSED SHALL RUN PARALLEL, OR PERPENDICULAR TO WALLS, CEILINGS, OR PRINCIPAL FRAMING MEMBERS. IT IS REQUIRED THAT ALL CONDUIT BE INSTALLED TO REFLECT NEAT, CAREFUL WORKMANSHIP THROUGHOUT THE JOB. CONDUIT WHICH HAS BEEN CRUSHED, DAMAGED, OR DEFORMED IN ANY WAY SHALL NOT BE INSTALLED IN THE JOB. CONDUIT SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST TROUBLE FROM COLLECTION OF TRAPPED CONDENSATE, AND ALL RUNS OF CONDUIT SHALL BE FREE OF SUCH TRAPS WHEREVER POSSIBLE.

D. CONDUITS SHALL BE INSTALLED A MINIMUM OF 12" FROM STEAM OR HOT WATER PIPING IN PARALLEL RUNS, AT LEAST 6" FROM CROSS RUNS AND AT LEAST 3" FROM COLD WATER PIPING. CONDUITS SHALL NOT BE SECURED TO OTHER PIPING OR OTHER PIPING SUPPORTS.

E. ALL CONDUIT HANGERS AND SUPPORTS SHALL BE RIGIDLY FASTENED TO THE BUILDING STRUCTURE. NO CONDUIT SHALL BE SUPPORTED FROM DUCTWORK, PIPING, OR CEILING GRID SYSTEMS.

F. PROVIDE FIRE SEALS WHEREVER CONDUIT PENETRATES FIRE WALLS, CEILING OR RATED FLOOR SLABS.

G. RIGID STEEL CONDUIT SHALL BE USED FOR ALL CONDUIT RUNS INSTALLED IN CONCRETE SLABS, IN ALL POURED CONCRETE CONSTRUCTION AND ALL APPLICATIONS INSIDE BUILDING REQUIRING 2" OR LARGER IN SIZE. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT-TO-EXCEED 7 FEET FOR 3/4" CONDUIT, 8 FEET INTERVALS FOR CONDUIT ON 1" TO AND INCLUDING 2", AND 10 FEET FOR CONDUITS 2-1/2" OR LARGER.

H. RIGID CONDUIT (ALUMINUM) SHALL NOT BE INSTALLED IN POURED CONCRETE. ALUMINUM CONDUIT MAY BE USED FOR SWITCH LEGS AND BRANCH CIRCUITS IN PARTITIONS, ABOVE CEILING, AND WHERE CONDUIT RUN IS EXPOSED. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT-TO-EXCEED 7 FEET FOR 3/4" CONDUIT, 8 FEET INTERVALS FOR CONDUIT 1" TO AND INCLUDING 2".

I. ELECTRICAL METALLIC TUBING (THIN WALL) MAY BE USED FOR SWITCH LEGS (EXCEPT IN POURED CONCRETE WALLS) AND BRANCH CIRCUITS IN PARTITIONS, ABOVE CEILINGS, AND WHERE CONDUIT RUN IS EXPOSED. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT-TO-EXCEED 7 FEET FOR 3/4" CONDUIT, 8 FEET INTERVALS FOR CONDUIT 1" TO AND INCLUDING 1-1/2". EMT LARGER THAN 1-1/2" WILL NOT BE PERMITTED. COMPRESSION FITTINGS SHALL BE USED OTHERWISE NOTED. SET-SCREW FITTINGS SHALL NOT BE ACCEPTABLE.

J. PLASTIC CONDUIT (PVC): PLASTIC CONDUIT MAY BE USED FOR UNDERGROUND CONDUIT RUNS OUTSIDE BUILDING AND BELOW OR IN CONCRETE FLOOR SLABS. UNDERGROUND CONDUIT RUNS OUTSIDE BUILDING SHALL BE A MINIMUM OF 2'-6" BELOW GRADE ENCASED IN CONCRETE. CONDUIT RUN BELOW FLOOR SLAB SHALL BE A MINIMUM OF 12" BELOW FLOOR SLAB.

K. FLEXIBLE CONDUIT SHALL BE USED BETWEEN OUTLET BOXES IN HUNG OR FURRED CEILING AND RECESSED LIGHTING FIXTURES. FLEXIBLE CONDUIT SHALL NOT EXCEED 6 FEET IN LENGTH.

L. LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE USED FOR FINAL CONNECTIONS TO ALL MOTORS. LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE USED FOR FINAL CONNECTIONS TO ALL MOTORS OR DEVICES WHICH DO OR MAY VIBRATE. LIQUID TIGHT FLEXIBLE CONDUIT SHALL NOT EXCEED 3 FEET IN LENGTH.

M. PROVIDE SEALING BUSHINGS IN ALL UNDERGROUND CONDUITS AS REQUIRED TO PREVENT THE ENTRY OF MOISTURE INTO ELECTRICAL EQUIPMENT.

N. MINIMUM SIZE CONDUIT SHALL BE 3/4" TRADE SIZE, UNLESS OTHERWISE NOTED.

O. PROVIDE CONDUIT EXPANSION FITTINGS WHERE CONDUIT CROSSES A BUILDING EXPANSION JOINT, AND IN ALL STRAIGHT CONDUIT RUNS 200 FEET OR LONGER.

11. CONDUCTORS, WIRE AND CONNECTORS

A. ALL CONDUCTORS SHALL BE NEW, NEC GRADE COPPER AND FREE FROM IMPERFECTIONS AND SHALL BE TYPE THWN/THHN EXCEPT AS OTHERWISE NOTED ON THE DRAWINGS.

B. FIXTURE WIRE CONFORMING TO NEC REQUIREMENTS SHALL BE USED IN ALL LIGHTING FIXTURES AND FROM LIGHTING FIXTURE TO FIRST JUNCTION OR OUTLET BOX.

C. NO CONDUCTOR SMALLER THAN NO. 12 AWG SHALL BE USED UNLESS OTHERWISE INDICATED. IN GENERAL, CONDUCTORS SMALLER THAN NO. 12 WILL BE PERMITTED ONLY FOR COMMUNICATION, SIGNAL, OR CONTROL CIRCUITS. WIRE NO. 10 AND SMALLER SHALL BE SOLID CONDUCTORS. WIRE NO. 8 AND LARGER SHALL BE STRANDED. STRANDED CONDUCTORS SMALLER THAN NO. 8 MAY BE USED ONLY IF "STA-KON" OR EQUAL COMPRESSION LUGS ARE USED FOR ALL TERMINATIONS.

D. ELECTRICAL ENERGY CONSUMING DEVICES SUCH AS LIGHTING FIXTURES INDICATED BY LOWER CASE LETTERS, OR OTHER READILY IDENTIFIED SYMBOLS ON THE DRAWINGS, ARE CONTROLLED BY CORRESPONDINGLY MARKED SWITCHES AND PANEL BOARDS.

E. CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET, NO SPLICES SHALL BE PERMITTED EXCEPT AT OUTLETS. ALL ELECTRICAL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC.

F. COLOR CODING IS REQUIRED FOR ALL SERVICE, FEEDER, BRANCH, CONTROL, AND SIGNALING CIRCUIT CONDUCTORS. INSULATION COLOR FOR NEUTRALS SHALL BE WHITE FOR 120 VOLT CIRCUITS. EQUIPMENT GROUNDING CONDUCTORS SHALL BE GREEN. THE COLOR OF THE INSULATION OF THE UNGROUNDED CONDUCTORS IN DIFFERENT VOLTAGE SYSTEMS SHALL BE AS FOLLOWS:

1. 208/120 VOLT, 3 PHASE, 4 WIRE: BLACK PHASE (A1), RED PHASE (B2), AND BLUE PHASE (C3).
2. ALL UNGROUNDED CONDUCTORS OF THE SAME COLOR SHALL BE CONNECTED TO THE SAME UNGROUNDED FEEDER CONDUCTOR.

G. USE NO WIRE SMALLER THAN NO. 12 AWG, RATED AT 600 VOLTS, FOR POWER AND LIGHTING CIRCUITS AND NO SMALLER THAN NO. 14 FOR CONTROL WIRING. BRANCH CIRCUIT CONDUCTORS FOR 20 AMPERE, 120 VOLT CIRCUITS SHALL BE NO. 12 AWG, WITH CONDUCTOR FROM PANEL BOARD TO THE FIRST OUTLET AS FOLLOWS:

0 - 75 FEET-----	#12 AWG
75 -150 FEET-----	#10 AWG
150-250 FEET-----	# 8 AWG
250-350 FEET-----	# 6 AWG

H. ALL JOINTS AND SPLICES SHALL BE MADE MECHANICALLY AND ELECTRICALLY SECURE. ALL SPLICES AND JOINTS SHALL BE MADE WITH APPROVED SOLDERLESS CONNECTORS, PROPERLY INSTALLED.

12. OUTLET BOXES AND FITTINGS

A. OUTLET BOXES SHALL BE NEC GAUGE STEEL, GALVANIZED, OF AMPLE SIZE TO ACCOMMODATE WIRE, SWITCHES, RECEPTACLES, OR OTHER DEVICES MOUNTED IN THE BOX WITHOUT CROWDING. USE GANG BOXES WHERE MORE THAN ONE DEVICE IS TO BE INSTALLED AT THE SAME LOCATION.

B. OUTLET BOXES FOR LIGHTING FIXTURES SHALL HAVE 3/8" FIXTURE STUD WHERE REQUIRED. CEILING OUTLET BOXES SHALL BE 4" OCTAGONAL, 2-1/8" DEEP FOR FURRED PLASTER AND EXPOSED WORK, AND 3" DEEP FOR CONCRETE WORK. ALL BOXES FOR CONCRETE WORK SHALL BE OF TYPE ESPECIALLY DESIGNED FOR INSTALLATION IN CONCRETE.

C. OUTLET BOXES FOR SWITCHES, RECEPTACLES, TELEPHONE, OR OTHER DEVICES RECESSED IN WALLS SHALL BE 4" SQUARE BOXES WITH EXTENSION RINGS AND PLASTER COVERS WHERE REQUIRED TO BRING BOX FLUSH WITH WALL. USE OF COVER PLATE AS TENSION OR RIGIDITY DEVICE WILL NOT BE PERMITTED.

D. PROVIDE OUTLET BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING MOUNTING BRACKETS, WALLBOARD HANGERS, EXTENSION RINGS, FIXTURE STUDS, CABLE CLAMPS, AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, COMPATIBLE WITH OUTLET BOXES BEING USED AND MEETING REQUIREMENTS OF INDIVIDUAL WIRING SITUATIONS.

E. JUNCTION AND PULL BOXES SHALL BE OF NEC GAUGE STEEL, GALVANIZED, AND OF SUFFICIENT SIZE TO ACCOMMODATE THE CONDUCTORS SERVED WITHOUT CROWDING. BOXES SHALL BE EQUIPPED WITH SCREWED OR HINGED COVERS AS CONDITIONS REQUIRE. PULL BOXES (NOT SHOWN ON THE CONTRACT DRAWINGS) SHALL BE INSTALLED AS REQUIRED TO FACILITATE PULLING OF CONDUCTORS ON LONG RUNS. PULL BOXES LOCATED IN FLOORS SHALL BE FLUSH WITH FINISHED FLOOR, AND OF CAST WROUGHT IRON, ALUMINUM, OR BRONZE WITH GASKETED, WATERPROOF COVER. CONDUIT ENTRANCES SHALL BE THREADED.

F. PROVIDE CORROSION RESISTANT CAST METAL WEATHERPROOF OUTLET WIRING BOXES, OF THE TYPE, SHAPE, AND SIZE REQUIRED FOR EACH APPLICATION, WITH THREADED CONDUIT ENDS, CAST METAL FACE PLATE WITH SPRING-HINGE, WATERPROOF CAP, SUITABLE CONFIGURED FOR EACH APPLICATION, INCLUDING FACE PLATE GASKET AND CORROSION PROOF FASTENERS.

G. PROVIDE WATERPROOF OUTLETS FOR INTERIOR AND EXTERIOR LOCATIONS EXPOSED TO WEATHER OR SUBJECT TO FREQUENT WASHING.

H. SECURE BOXES RIGIDLY TO THE SUBSTRATE UPON WHICH THEY ARE BEING MOUNTED, OR SOLIDLY EMBED BOXES IN CONCRETE OR MASONRY.

I. PROVIDE CORROSION RESISTANT PUNCHED-STEEL BOX KNOCKOUT CLOSURES, CONDUIT LOCK NUTS, AND MALLEABLE IRON CONDUIT BUSHINGS OF THE TYPE AND SIZE TO SUIT EACH RESPECTIVE USE AND INSULATION.

13. WIRING DEVICES

A. DUPLEX RECEPTACLES SHALL BE 20 AMP., 125 VOLT, 3 WIRE GROUNDING TYPE, PROVIDE SMOOTH IVORY THERMOPLASTIC COVER PLATE AND MATCHING SCREWS. APPROVED PRODUCTS: HUBBELL NO. 5362-I, LEVITON NO. 5362-I, COOPER WIRING DEVICES, BRYANT OR SLATER EQUAL, HUBBELL 18 OR EQUAL COVER PLATE.

B. WEATHERPROOF RECEPTACLES SHALL BE DUPLEX, 20 AMP., 125 VOLT, GROUND FAULT 3 WIRE GROUNDING TYPE WITH WEATHERPROOF COVER. APPROVED PRODUCTS: HUBBELL NO. GF5362-I, LEVITON NO. GF5362-I WITH COVER PLATE.

C. WALL SWITCHES SHALL BE 20 AMP., 120-277 VOLT, QUIET, HIGH CAPACITY, TOGGLE TYPE, SINGLE POLE SWITCHES. APPROVED PRODUCTS ARE SLATER NO. 720-AG-IV, COOPER WIRING, BRYANT, HUBBELL, LEVITON, THREE-WAY SWITCHES - APPROVED PRODUCTS ARE SLATER NO. 724-AG-IV, COOPER WIRING DEVICES, BRYANT, HUBBELL, LEVITON.

D. WALL PLATES FOR SWITCHES, TELEPHONE OUTLETS AND OTHER SPECIAL OUTLETS SHALL MATCH THE WALL PLATES PREVIOUSLY SPECIFIED WITH THE RECEPTACLES. ALL PLATES IN EACH ROOM SHALL MATCH UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE. APPROVED PRODUCTS: HUBBELL, BRYANT, SLATER, COOPER WIRING DEVICES, LEVITON.

E. WEATHER-PROOF WALL PLATES SHALL BE NEMA 3R RATED. COVERS SHALL BE GASKETED AND SHALL HAVE THE MEANS TO BE LATCHED AND HOLD SECURELY WHILE ELECTRIC CORDS ARE IN USE, THUS MAINTAINING THE NEMA 3R RATING AT ALL TIMES. APPROVED PRODUCTS: HUBBELL CAT. #WPM, BRYANT, SLATER, COOPER WIRING DEVICES, LEVITON.

F. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, SINGLE THROW DISCONNECT SWITCHES. ENCLOSURE SHALL BE NEMA 1 INDOOR AND NEMA 3R (RAIN TIGHT) WHERE THEY ARE REQUIRED TO BE WEATHERPROOF. THE AMPERE RATING, FUSIBLE OR NOT FUSIBLE AND VOLTAGE CHARACTERISTICS SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS AND/OR AS REQUIRED BY THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE. APPROVED PRODUCTS: SQUARE D COMPANY, GENERAL ELECTRIC ITE AND CUTLER HAMMER.

G. INSTALLATION OF WIRING DEVICES: OUTLET HEIGHTS GIVEN BELOW, OR AS SHOWN ON DRAWINGS, ARE TO THE CENTER OF THE OUTLET BOX. IN UNPLASTERED MASONRY WALLS WHERE OUTLETS ARE NOT DIMENSIONED, ADJUST HEIGHT TO THE NEXT HIGHER COURSE, AND ADJUST LOCATION TO THE NEAREST CENTER OF THE MASONRY UNIT.

1. CONVENIENCE OUTLETS - OFFICE AREAS: 18" A.F.F., UNLESS OTHERWISE NOTED ON DRAWING.

2. WALL SWITCH OUTLETS SHALL BE 4'-0" A.F.F. AND INSTALLED ON THE LOCK SIDE OF THE DOOR.

H. TESTING: TEST WIRING DEVICES TO ENSURE ELECTRICAL CONTINUITY OF GROUNDING CONNECTIONS, AND AFTER ENERGIZING CIRCUITRY, TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS.

14. PANEL BOARDS AND LOAD CENTERS

A. FURNISH AND INSTALL PANELBOARDS AND LOAD CENTERS AS SHOWN ON THE DRAWINGS. PANEL BOARDS SHALL BE DEAD FRONT EQUIPPED WITH THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKERS, OF FRAME AND TRIP RATINGS AS SHOWN ON THE SCHEDULES. EQUIPMENT SHALL BE MANUFACTURED IN ACCORDANCE WITH THE LATEST NEMA STANDARDS AND SHALL BE LISTED BY UL AND BEAR UL LABEL. ALL EQUIPMENTS SHALL BE OF ONE MANUFACTURER.

B. PANELBOARDS AND LOAD CENTER, MAIN BUSS, MAIN LUGS, AND/OR MAIN BREAKER SHALL BE RATED AS NOTED ON SCHEDULES. CURRENT DENSITY SHALL BE IN ACCORDANCE WITH UL REQUIREMENTS. BUSS MOUNTING FOR CIRCUIT BREAKERS SHALL BE BOLTED CONNECTIONS AND ACCOMMODATE ANY COMBINATION OF CIRCUIT BREAKER UNITS WITHOUT FURTHER MODIFICATIONS. THE COMPLETE PANEL BOARD, INCLUDING MAIN CIRCUIT BREAKER, BUSS AND LUGS, BRANCH CIRCUIT BREAKERS, AND CONNECTION SHALL BE PROPERLY DESIGNED AND UL LISTED TO WITHSTAND THE EFFECT OF THE AVAILABLE REQUIRED SHORT CIRCUIT CURRENT. ELECTRICAL CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH LOCAL UTILITY COMPANY AND SPECIFY AIC RATINGS ON SHOP DRAWINGS ACCORDINGLY.

C. MATERIALS: ALL PANELBOARDS AND LOAD CENTERS SHALL BE MOUNTED IN CODE GAUGE GALVANIZED STEEL CABINETS, HAVING HINGED DOOR. EACH DOOR SHALL BE EQUIPPED WITH A LATCH AND LOCK. ALL LOCKS ON ALL PANEL BOARD CABINET DOORS ON THIS PROJECT SHALL ACCEPT A COMMON KEY. FURNISH TWO KEYS WITH EACH LOCK.

D. FOR DETAILS CONCERNING THE NUMBER AND SIZE OF CIRCUIT BREAKERS, SIZE OF MAINS, SIZE AND LOCATION OF LUGS, AND WHETHER SURFACE OR FLUSH MOUNTED, SEE THE SCHEDULES ON THE CONTRACT DRAWINGS.

E. CABINET SHALL BE SIZED TO PROVIDE WIRING GUTTERS AT SIDES, TOP AND BOTTOM TO ACCOMMODATE THE NECESSARY CONDUCTORS WITHOUT CROWDING.

F. FLUSH MOUNTED ENCLOSURES SHALL HAVE FRONTS FINISHED WITH PRIME COAT ONLY, AND SURFACE MOUNTED ENCLOSURES SHALL HAVE FACTORY FINISHED FRONT.

G. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ON THE INSIDE OF THE DOOR FACE OF EACH PANELBOARD AND LOAD CENTER CABINET, AN ACCURATE TYPEWRITTEN CIRCUIT DIRECTORY PROTECTED BY GLASS OR CLEAR PLASTIC. HANDWRITTEN OR HAND PRINTED DIRECTORIES WILL NOT BE ACCEPTED. THE CONTRACTOR IS INSTRUCTED THAT THE FINAL TYPED DIRECTORY SHALL BE MADE AFTER THE PERMANENT ROOM NUMBERS ARE INSTALLED ON THE DOORS, AND THE DIRECTORIES SHALL LIST THESE NUMBERS RATHER THAN THE ROOM NUMBERS USED ON THE CONSTRUCTION DRAWINGS.

H. ALL PANEL BOARDSSHALL HAVE ENGRAVED NAME TAGS ATTACHED TO COVER INDICATING PANEL NUMBER AND VOLTAGE.

I. ANCHOR ENCLOSURES FIRMLY TO WALLS AND STRUCTURAL SURFACES, ENSURING THAT THEY ARE PERMANENTLY AND MECHANICALLY SECURED.

J. INSTALL ALL PANELBOARDS AND LOAD CENTERS WITH THE TOP 6'-6" ABOVE FINISHED FLOOR.

K. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL PROPER CIRCUIT BREAKER TYPES PER APPLICATION (GFI, HACR, AFCI, HID, SWITCH RATED, ETC.) VERIFY EXACT LOAD TYPE WITH DRAWINGS.

L. LIGHTING PANEL BOARDS (120/208 VOLT, 3 PHASE, 4 WIRE) - SHALL BE FACTORY ASSEMBLED, BOLTED CIRCUIT BREAKER TYPE, FOR 120/208 VOLT, 3 PHASE, 4 WIRE SERVICE, CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF NEC AND NEMA STANDARDS. APPROVED PRODUCTS: SQUARE "D" Co. TYPE "N00D", GENERAL ELECTRIC, ITE OR CUTLER HAMMER

M. LOAD CENTERS (120/208 VOLT, 1 PHASE, 3 WIRE) - SHALL BE FACTORY ASSEMBLED, BOLTED CIRCUIT BREAKER TYPE, FOR 120/208 VOLT, 1 PHASE, 3 WIRE SERVICE, CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF NEC AND NEMA STANDARDS. APPROVED PRODUCTS: SQUARE "D" Co. TYPE "N00", GENERAL ELECTRIC, ITE OR CUTLER HAMMER

N. DISTRIBUTION PANEL BOARDS (120/208 VOLT, 3 PHASE, 4 WIRE) - SHALL BE FACTORY ASSEMBLED, BOLTED CIRCUIT BREAKER TYPE, FOR 120/208 VOLT, 3 PHASE, 4 WIRE SERVICE, CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF NEC AND NEMA STANDARDS. APPROVED PRODUCTS: SQUARE "D" Co. TYPE "HGM", GENERAL ELECTRIC, ITE OR CUTLER HAMMER

15. LIGHTING FIXTURES

A. PROVIDE LIGHTING FIXTURES OF THE SIZE, TYPE, AND RATING INDICATED ON THE DRAWINGS: COMPLETE WITH, BUT NOT NECESSARILY LIMITED TO, LAMPS, LAMP HOLDERS, REFLECTORS, BALLASTS, STARTERS, WIRING AND MOUNTING HARDWARE.

B. FLUORESCENT BALLASTS - PROVIDE ELECTRONIC INSTANT START TYPE BALLASTS, ETL-CBM APPROVED, AUTO RESET TYPE, VOLTAGE AS INDICATED. APPROVED PRODUCTS: ADVANCE, MAGNETEK, GENERAL ELECTRIC.

C. H.I.D. BALLASTS - PROVIDE BALLASTS FOR HIGH INTENSITY DISCHARGE FIXTURES OPERATING LAMP OF TYPE AND RATING INDICATED, ETL-CBM APPROVED, TYPE C.W.A. APPROVED PRODUCTS: ADVANCE, UNIVERSAL.

D. LAMPS SHALL BE GENERAL ELECTRIC OR SYLVANIA. INCANDESCENT LAMPS SHALL BE INSIDE FROSTED, 130 VOLT, LONG LIFE TYPE, UNLESS OTHERWISE NOTED ON LIGHT FIXTURE LEGEND. FLUORESCENT AND H.I.D. LAMPS SHALL BE AS INDICATED ON LIGHT FIXTURE LEGEND.

E. FURNISH AND INSTALL ALL NECESSARY MOUNTING HARDWARE AND SUPPORTING CHANNEL AS REQUIRED TO SUPPORT FIXTURES FROM BUILDING STRUCTURE.

F. FURNISH AND INSTALL CONCRETE POLE BASES AS INDICATED ON CONTRACT DRAWINGS.

16. TELEPHONE CONDUIT SYSTEM

A. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE TELEPHONE CONDUIT SYSTEM, CONSISTING OF AN "EMPTY" CONDUIT SYSTEM AS SHOWN ON THE CONTRACT DRAWINGS.

B. THE OWNER SHALL MAKE ARRANGEMENTS WITH THE LOCAL TELEPHONE COMPANY FOR INSTALLATION OF THE TELEPHONE INSTRUMENTS, EQUIPMENT, AND WIRING. THIS IS NOT A PART OF THIS CONTRACT.

C. TELEPHONE OUTLETS SHALL BE EMPTY 4" SQUARE BOXES WITH EXTENSION RINGS AND COVER PLATE WITH 7/16" CORD HOLE IN CENTER.

D. INSTALL A FISH WIRE IN ALL EMPTY CONDUITS TO FACILITATE PULLING OF WIRE BY TELEPHONE COMPANY.

17. ELECTRIC SERVICE

A. PROVIDE NEW 120/208 VOLT, 3 PHASE, 4 WIRE ELECTRICAL SERVICE, AS SHOWN ON CONTRACT DOCUMENTS.

B. MAKE ALL NECESSARY ARRANGEMENTS WITH UTILITY COMPANY AS REQUIRED FOR INSTALLATION OF NEW SERVICE AND EQUIPMENT.

18. TEMPORARY ELECTRICAL SERVICE

A. ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY LIGHTING AND POWER FOR GENERAL USE RECEPTACLES REQUIRED FOR ALL TRADES DURING CONSTRUCTION.

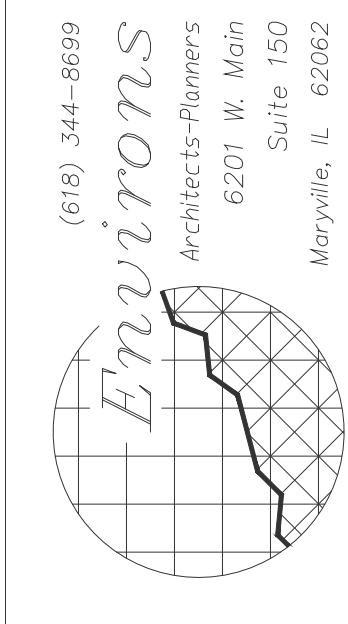
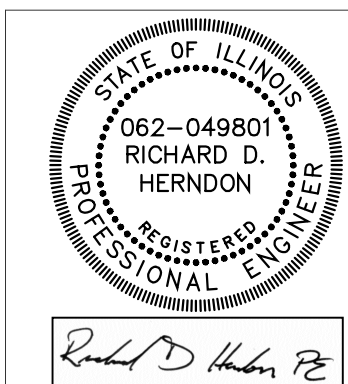
B. TEMPORARY SERVICE SHALL BE SUPPLIED FROM EXISTING BUILDING FACILITIES.

19. MISCELLANEOUS ELECTRICAL CONTROLS

A. THE EXTENT OF THE MISCELLANEOUS ELECTRICAL CONTROL WIRING IS INDICATED ON THE DRAWINGS. IT IS DEFINED, BUT NOT BY WAY OF LIMITATION, TO INCLUDE THE FOLLOWING: PLUMBING CONTROL WIRING; HEATING, VENTILATING, AND AIR CONDITIONING CONTROL WIRING.

B. RELATED WORK INCLUDED IS THE FURNISHING AND INSTALLING OF CONTROL DEVICES, INCLUDING REMOTE DEVICES WHERE THEY ARE INDICATED.

C. FURNISH AND INSTALL CONTROL WIRING TO HVAC UNITS, EXHAUST FANS, AND SUPPLY FANS IN ACCORDANCE WITH DRAWINGS. PROVIDE THE INTERLOCKING AND DAMPER WIRING AS INDICATED.



JOB NO.

13027

DATE:

NOVEMBER 15, 2013

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A NEW APARTMENT BUILDING 'C':
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