

ABBREVIATIONS:

AB	ANCHOR BOLT	L	LOW
ABV	ABOVE	LS	LINK BEAM
AC	AIR CONDITIONER	LS	FOUNDS
ACI	AMERICAN CONCRETE INSTITUTE	LB/FOUNDS PER FOOT	
ADD'L	ADDITIONAL	LC	DEVELOPMENT LENGTH
ADJ	ADJACENT	LC	LONG
AFT	ABOVE FINISHED FLOOR	LL	LIVE LOAD
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	LLRS	LATERAL LOAD RESISTING SYSTEM
ALT	ALTERNATE	LP	LOW POINT
ANCH	ANCHOR	LPRD	LOAD RESISTANCE FACTOR DESIGN
ANG	ANGLE	LT	LIGHT
APRO	APPROVED	LT	LIGHT WEIGHT
APPROX	APPROXIMATE	MAX	MAXIMUM
ARCH	ARCHITECTURAL	MAS	MASONRY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MATER	MATERIAL
AVG	AVERAGE	MC	MOMENT CONNECTION
AWG	AMERICAN WELDING SOCIETY	MD	METAL DECK
		MECH	MECHANICAL
		MSP	MECHANICAL ELECTRICAL AND PLUMBING
B	BASE	MEZZ	MEZZANINE
BETW	BETWEEN	MTS	MENTS SCALE
BF	BRACE FRAME	MF	MOMENT FRAME
BKT	BRACKET	MFG	MANUFACTURER
BL	BUILDING LINE	MVN	MINIMUM
BLDG	BUILDING	MISC	MISCELLANEOUS
BM	BEAM		
BOTT	BOTTOM	N	NORTH
BRK	BRICK	NA	NOT APPLICABLE
B/S/STL	BOTTOM OF STEEL	NIC	NOT IN CONTRACT
BS	BOTH SIDES	NO	NUMBER
		N-S	NORTH-SOUTH
CANT	CANTILEVER	NTS	NOT TO SCALE
CF	CUBIC FOOT	NN	NORMAL WEIGHT
CG	CENTER OF GRAVITY		
CIP	CAST IN PLACE	O/C	ON CENTER
CJT	CONCRETE JOINT	OPNG	OPENING
CL	CLEAR	OPP	OPPOSITE
CLG	CELLING		
CLR	CLEAR	PC	PILE CAP
CM	CONSTRUCTION MANAGER	PF	FOUNDS PER CUBIC FEET
CMU	CONCRETE MASONRY UNITS	PL	PLATE
COL	COLUMN	PL	PLATE
CONC	CONCRETE	PF	FOUNDS PER LINEAR FOOT
COND	CONDITIONS	PSF	FOUNDS PER SQUARE FOOT
CONN	CONNECTION	PSI	POUNDS PER SQUARE INCH
CONST	CONSTANT	PT	POINT TENSION
CONT	CONTINUOUS	RC	REINFORCED CONCRETE
CONTR	CONTRACTOR	RD	ROOT DRAIN
COORD	COORDINATE	REF	REFERENCE
CORR	CORRODED	REIN	REINFORCEMENT
CORR	CORRODED	REQ'D	REQUIRED
COY	CUBIC YARD	RFI	REQUEST FOR INFORMATION
DEMO	DEMOLITION	S	SOUTH
DEPT	DEPARTMENT	SCHED	SCHEDULE
DET	DETAIL	SHED	SHEDDLE BEAM
DIA	DIAMETER	SECT	SECTION
DM	DIMENSION	SP	SQUARE FOOT
DIR	DIRECTION	SP	SQUARE FOOT
DN	DOWN	SHT	SHEET
DNL	DOWEL	SL	SLAB
DWG	DRAWING	SPA	SPACING
		SPEC	SPECIFICATIONS
E	EAST	STD	STANDARD
EA	EACH	STD	STANDARD
EF	EACH FACE	STIFF	STIFFENER
EL	ELEVATION	STL	STEEL
ELEC	ELECTRIC	STRUCT	STRUCTURAL
ELEV	ELEVATOR	SW	SHEARWALL
EMBD	EMBEDMENT	SW	SHEARWALL
ENCL	ENCLOSURE	SW	SHEARWALL
ENCL	ENCLOSURE	SW	SHEARWALL
ENR	ENGINEER OF RECORD	T&B	TOP AND BOTTOM
EOS	EDGE OF SLAB	THK	THICK
EP	EMBEDDED PLATE	T/	TOP OF
EQ	EQUAL	T/	TOP OF
EQU	EQUIPMENT	TO	TO BE DETERMINED
ETC	ETCETERA	TEMP	TEMPORARY
E-W	EAST WEST	TSP	TONS PER SQUARE FOOT
EXIST	EXISTING	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
		UPTURNED	UPTURNED BEAM
JT	EXPANSION JOINT	VERT	VERTICAL
EXT	EXTENSION	VIF	VERIFY IN FIELD
EXTR	EXTERIOR		
FL	FLOOR	W	WEST
FND	FOUNDATION	W/O	WITH OUT
FOB	FACE OF BUILDING	W	WEST
FP	FIRE PROOFING	W/O	WITH OUT
FT	FOOT	WF	WIDE FLANGE
FTG	FOOTING	WP	WORKING POINT
		WPC	WATER PROOFING
GA	GAUGE	WS	WATER STOP
GALV	GALVANIZED	WT	WELD TRUSS
GC	GENERAL CONTRACTOR	WWF	WELDED WIRE FABRIC
GB	GRADE BEAM		
GRG	GRATING	C	CENTERLINE
OYP	BO GYPSUM BOARD	R	PLATE
		A	ANGLE
H	HIGH	AND	AND
HDR	HEADER	Ø	DIAMETER
HOT	HEIGHT	Ø	AT
HORIZ	HORIZONTAL		
HP	HIGH POINT		
HR	HOUR		
HS	HIGH STRENGTH		
HVAC	HEAT, VENTILATION & AIR CONDITIONING		
ID	INSIDE DIAMETER		
IF	INTERIOR FACE		
IN	INCH		
INCL	INCLUDING		
INFO	INFORMATION		
INSUL	INSULATION		
JOINT	JOINT		
K	KIP (1000 POUNDS)		
KPF	KIPS PER SQUARE FOOT		
KSI	KIPS PER SQUARE INCH		

GENERAL NOTES:

- ALL WORK TO BE PERFORMED IN COMPLIANCE WITH THE NEW YORK CITY BUILDING CODE, LATEST EDITION AND ALL SUPPLEMENTS.
- CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS IN THE FIELD AND BE RESPONSIBLE FOR ACCURACY OF INFORMATION.
- TEMPORARY SHORING IS REQUIRED AT ALL LOCATIONS WHERE PARTIAL REMOVAL OF BEAMS IS REQUIRED. CONTRACTOR IS RESPONSIBLE FOR ENGINEERING AND CONTROLLED INSPECTION OF TEMPORARY SYSTEMS.
- THE CONTRACTOR SHALL USE THESE DRAWINGS IN CONJUNCTION WITH THE ARCHITECTURAL AND MECHANICAL DEMOLITION DRAWINGS. IN THE EVENT OF CONFLICTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND THE ENGINEER.
- ALL UNDERPINNING, SHEETING, SHORING OR OTHER CONSTRUCTION REQUIRED FOR THE SUPPORT OF ADJACENT PROPERTIES, BUILDINGS, SIDEWALKS, UTILITIES, ETC., SHALL BE SUBJECT TO SPECIAL INSPECTION AS REQUIRED BY THE CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER ACCEPTABLE TO THE ENGINEER OF RECORD TO PROVIDE THE NECESSARY DESIGN AND THE REQUIRED INSPECTION. THE CONTRACTOR'S PROFESSIONAL ENGINEER SHALL PREPARE AND FILE THE REQUIRED FORMS FOR THE WORK WITH THE BUILDING DEPARTMENT.

FOUNDATION NOTES:

A. EXCAVATION

- ALL FOOTINGS SHALL BEAR ON ROCK WITH A SAFE BEARING CAPACITY OF 20/40 TON PER SQ. FT. U.O.N.
- WHERE THE REQUIRED BEARING MATERIAL IS NOT FOUND AT THE ANTICIPATED ELEVATION SHOWN (ELEVATION BASED ON BORING INTERPOLATED DATA) THE FOOTINGS SHALL BE LOWERED TO A DEPTH AT WHICH THE REQUIRED BEARING CAPACITY IS FOUND.
- BLASTING SHALL CONFORM STRICTLY TO ALL LOCAL AND STATE LAWS, RULES AND REGULATIONS APPLYING THERETO, AND SHALL AVOID EXCESS NOISE AND VIBRATION. AFTER CONCRETE IS PLACED NO BLASTING SHALL BE DONE WITHIN A 50 FT. RADIUS EXCEPT WHEN WRITTEN PERMITTING OF THE ENGINEER OF RECORD IS GIVEN.
- WHERE EXISTING FOOTING OR FOUNDATION OF ADJACENT PROPERTY IS LOWER THAN ELEVATIONS SHOWN, NEW FOUNDATIONS ARE TO BE LOWERED TO SAME ELEVATION. WHERE NEW FOUNDATION IS LOWER THAN EXISTING FOUNDATIONS CONTRACTOR IS TO UNDERPIN EXISTING FOUNDATION. CONTRACTOR IS TO ESTABLISH EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY THE ENGINEER OF RECORD.
- ALL UNDERPINNING, SHEETING, SHORING OR OTHER CONSTRUCTION REQUIRED FOR THE SUPPORT OF ADJACENT PROPERTIES, BUILDINGS, SIDEWALKS, UTILITIES, ETC., SHALL BE SUBJECT TO CONTROLLED INSPECTION AS REQUIRED BY THE CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER ACCEPTABLE TO THE ENGINEER OF RECORD TO PROVIDE THE NECESSARY DESIGN AND THE REQUIRED INSPECTION. THE CONTRACTOR'S PROFESSIONAL ENGINEER SHALL PREPARE AND FILE THE REQUIRED FORMS FOR THE WORK WITH THE BUILDING DEPARTMENT.

B. CONCRETE AND STEEL REINFORCEMENT

- NO CONCRETE FOOTING, FOUNDATION PIER, OR FOUNDATION WALL SHALL BE POURED UNTIL SUBGRADE FOR SAME HAS BEEN APPROVED BY A LICENSED PROFESSIONAL ENGINEER.
- ALL CONCRETE SHALL BE NORMAL WEIGHT CONTROLLED CONCRETE, U.O.N., AND COMPLY WITH A.C.I. BUILDING CODE AND THE CURRENT NEW YORK CITY BUILDING CODE.
- CONCRETE STRENGTH SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:  
--FOOTINGS, FOUNDATION PIERS, PILE CAPS 10000 PSI  
--BUTTRESSES AND FOUNDATION WALLS 10000 PSI  
--PRESSURE SLAB 10000 PSI  
--STRAP BEAMS 10000 PSI
- ALL STEEL REINFORCEMENT SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 80,000 PSI AS PER A.S.T.M. A615-83 GRADE 60 U.O.N.. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE NECESSARY CHAIRS, REBARS, TIES, SPACERS, ETC., TO SECURE AND SUPPORT THE REINFORCING WHILE PLACING THE CONCRETE.
- ALL BARS MARKED CONTINUOUS, SHALL BE LAPPED 36 DIAMETERS AT SPLICES AND CORNERS EXCEPT AS OTHERWISE SHOWN ON PLANS. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AND BOTTOM BARS AT SUPPORTS. HOOK TOP BARS AT DISCONTINUOUS ENDS.
- VERTICAL CONSTRUCTION JOINTS IN ALL WALLS SHALL BE USED ONLY IF UNAVOIDABLE, OR UNLESS OTHERWISE NOTED, AND TO BE LOCATED AT LEAST 4'-0" FROM ANY SUPPORTING COLUMN OR WALL OPENING. DISTANCE BETWEEN JOINTS IN WALL SHALL BE ALLOWED AS PER SPECIFICATIONS. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE ALLOWED IN GRADE BEAMS.
- IN NO CASE SHALL TRUCKS, BULLDOZERS, OR OTHER HEAVY EQUIPMENT BE PERMITTED CLOSER THAN 8'-0" FROM ANY FOUNDATION WALL UNLESS APPROVED BY THE ENGINEER.
- CONTRACTOR TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, ETC., AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS TO RECEIVE BEAMS AND SLABS SHALL BE PROVIDED AS REQUIRED FOR THE SUPERSTRUCTURE. SHOP DRAWINGS SHOWING THE POSITION OF OPENINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE.
- MINIMUM COVER FOR REINFORCING STEEL SHALL BE 4" FOR INTERIOR SLABS AND INTERIOR WALL SURFACES; 1 1/2" FOR BEAMS, GIRDERS, AND COLUMNS (TIES, STIRRUPS); FOR ALL CONCRETE EXPOSED TO WEATHER AND EARTH FILL, COVER SHALL BE 2" (1 1/2" FOR STIRRUPS); FOR CONCRETE PLACED AGAINST EARTH, MINIMUM COVER SHALL BE 3".
- ALL SLABS ON GROUND (AREAWAYS, RAMPS, ETC., INCLUSIVE) SHALL BE 6" THICK, U.O.N., REINF. WITH WELDED WIRE FABRIC 6 X 6 - W2.9 X W2.9, MINIMUM YIELD STRENGTH 70,000 PSI AND PLACED 1" BELOW TOP OF SLAB.
- ALL SLABS ON GROUND, U.O.N., TO BE POURED ON 6 MIL POLYETHYLENE FILM OVER A 6" GRAVEL BED. THE SLABS SHALL BE PLACED IN ALTERNATE PANELS, NOT EXCEEDING 1,200 SQ. FT. BETWEEN KEYED CONSTRUCTION JOINTS, BUT NO DIMENSION OF THE PANEL IS TO EXCEED 40 FEET.
- THE CONTRACTOR MUST SUBMIT REINFORCING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW. NO CONSTRUCTION IS TO BE STARTED UNTIL THE SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER.
- THE STRUCTURAL ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCING PRIOR TO CONCRETE PLACEMENT.

C. CODES AND TESTS

- THIS STRUCTURE HAS BEEN DESIGNED UNDER THE PROVISIONS OF THE NEW YORK CITY BUILDING CODE AS AMENDED AND A.C.I. 318.
- ALL CONTROLLED CONCRETE SHALL COMPLY WITH THE A.C.I. 318 BUILDING CODE. APPLICATION FOR CONTROLLED CONCRETE WITH CONCRETE TESTS AND CURVES OF TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER FOR FILING WITH THE BUILDING DEPARTMENT. NO CONCRETE SHALL BE PLACED WITHOUT THE DESIGN MIX BEING APPROVED BY THE BUILDING DEPARTMENT.
- DESIGN AND CONSTRUCTION OF FORMWORK IS TO COMPLY WITH THE A.C.I. 318 BUILDING CODE AND NEW YORK CITY BUILDING CODE AS AMENDED.

NON-STRUCTURAL ITEMS SHOWN ON THE STRUCTURAL FOUNDATION DRAWINGS

- THE FOLLOWING NON-STRUCTURAL ITEMS MAY BE SHOWN ON THE STRUCTURAL AND/OR FOUNDATION DRAWINGS FOR THE PURPOSE OF CLARITY IN INTERFACE WITH STRUCTURAL AND/OR FOUNDATION WORK. ITEMS BELOW MAY NOT BE FULLY DEFINED ON THE STRUCTURAL FOUNDATION DRAWINGS. THE INFORMATION FOR NON-STRUCTURAL ELEMENTS IS FURNISHED BY OTHER CONSULTANTS AS LISTED BELOW. ALL RFI AND SHOP DRAWINGS RELATED TO THESE NON-STRUCTURAL ITEMS SHALL BE SUBMITTED TO THE CONSULTANTS LISTED BELOW FOR THEIR REVIEW AND APPROVAL.

GEOTECHNICAL ENGINEER:

- FOUNDATION/UNDERSLAB WATERPROOFING, DAMPPROOFING SYSTEMS
- WALL AND UNDERSLAB DRAINAGE SYSTEM, INCLUDING SUMP PITS, GRAVEL & PIPING, CLEANOUTS
- ROCK ANCHORS
- ROCK CONTOURS

ARCHITECT OF RECORD:

- SUMP PITS
- WATERPROOFING/DAMPPROOFING APPLIED TO EXPOSED SURFACES, ELEVATOR OR SUMP PIT INTERIOR SURFACES
- PAINT
- FIREPROOFING
- CONCRETE CURBS: HEIGHT, WIDTH, EXTENT, LOCATION
- BRICK, BLOCK, TILE MASONRY, METAL PANELS, PRECAST FACADE PANELS, CURTAIN WALLS AND ALL OTHER FACADE SYSTEMS
- ROOFING SYSTEMS, DRAIN LOCATIONS, SLOPES TO DRAINS
- FILLS, INSULATION, PAVERS OR GRAVEL
- FLOATING/SECONDARY SLABS

SUPERSTRUCTURE CONCRETE NOTES

A. CONCRETE

- ALL CONCRETE SHALL BE NORMAL WEIGHT CONTROLLED CONCRETE, U.O.N., AND COMPLY WITH THE A.C.I. BUILDING CODE AND THE CURRENT NEW YORK CITY BUILDING CODE.
- CONCRETE STRENGTH SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:  
SLABS AND BEAM 6,000 PSI (U.O.N.)  
COLUMNS SEE COLUMN SCHEDULE  
SHEARWALLS SEE SHEARWALL NOTES ON DWG. S-945  
\*WHERE SUPPORTING COLUMN STRENGTH IS GREATER THAN 1.4 TIMES THE SLAB CONCRETE STRENGTH CONCRETE SLABS (IF POURED BEFORE THE COLUMNS ABOVE) MUST BE OF A STRENGTH ACCORDING TO THE DETAIL OF BEAM AND SLAB CONCRETE PLACEMENT AT HIGH STRENGTH COLUMN.\*
- NO CONCRETE SHALL BE PLACED UNTIL THE CONTRACTOR HAS INSTALLED ALL THE INSERTS AND DOVETAILS NECESSARY TO PROVIDE SUPPORT FOR MULLIONS, APPLIED FINISHES, PARTITIONS, PIPES, DUCTS, EQUIPMENT, ETC., AS REQUIRED IN ARCHITECTURAL, P.L.V.C. AND STRUCTURAL DRAWINGS. WHERE BROCK VONER EXCEEDS 18" IN HEIGHT, PROVIDE DOVETAIL TYPE MASONRY ANCHORS SPACED AT 24" O/C IN ALL BACK UP VERTICAL CONCRETE SURFACES.
- CONTRACTOR SHALL VERIFY LOCATIONS AND DIMENSIONS OF ALL SLOTS, PIPE SLEEVES, DUCTS AND ANY OTHER CONCRETE PENETRATIONS AS REQUIRED FOR VARIOUS TRADES BEFORE CONCRETE IS PLACED. SHOP DRAWINGS SHOWING COMPOSITE LAYOUT OF ALL PENETRATIONS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
- ALL FLOORING AND ELECTRICAL SLOTS SHALL BE FILLED WITH CONCRETE TO THE SAME DEPTH AS FLOOR AFTER CONDUITS AND/OR PIPES ARE INSTALLED.
- NO PIPES OR CONDUITS EXCEEDING 1/3 SLAB THICKNESS IN OUTSIDE DIAMETER NOR OVER NOMINAL 2" INSIDE DIAMETER SHALL BE EMBEDDED IN THE STRUCTURAL CONCRETE FLOOR OR SLAB. NO PIPES AND/OR CONDUITS SHOULD BE PLACED CLOSER THAN 3 DIAMETER ON CENTER NOR PASS WITHIN 24" OF COLUMN FACE, U.O.N.
- JUNCTION BOXES MAY BE PLACED IN STRUCTURAL CONCRETE SLAB BUT SHALL NOT EXCEED 48"x48"x36" IN DEPTH AND SHALL BE SEPARATED FROM OTHER JUNCTION BOXES BY NOT LESS THAN 8" OF CONCRETE.
- ALL MEMBERS IN THE FLOOR SYSTEM INCLUDING BEAMS, BRACKETS, COLUMN CAPITALS AND HAUNCHES SHALL BE PLACED MONOLITHICALLY. VERTICAL CONSTRUCTION JOINTS NECESSARY MAY BE MADE AT CENTER OF BEAM OR SLAB USING APPROVED BUILDINGS AND ADDITIONAL REINFORCING AS SHOWN ON DETAILS.
- NO CONCRETE FLOOR SYSTEM IS TO BE INSTALLED UNTIL AT LEAST TWO HOURS HAVE PASSED AFTER THE SUPPORTING COLUMNS AND WALLS ARE PLACED.
- WHEN PLACING CONCRETE AGAINST AN ADJACENT BUILDING OR AT EXPANSION JOINT, AT LEAST 1" (U.O.N.) STROGADO MUST BE PLACED AT THE INTERFACE BETWEEN THE EXISTING BUILDING AND THE NEW CONSTRUCTION. IN ADDITION, THE CONTRACTOR MUST TAKE ALL THE NECESSARY MEASURES SO AS NOT TO CREATE ANY DAMAGE TO THE EXISTING CONSTRUCTION WHILE PLACING THE NEW CONCRETE.
- ALL WORK MARKED S.S. (SUPERSTRUCTURE) IN FOUNDATION DRAWINGS SHALL BE PART OF THE SUPERSTRUCTURE CONTRACT.
- ALL SLABS ON GROUND ARE IN SUPERSTRUCTURE CONTRACT (U.O.N.). SEE FOUNDATION PLAN AND TYPICAL DETAILS.
- TEMPORARY SHORING AND RESHORING SHALL REMAIN IN PLACE AT LEAST 28 DAYS AFTER CONCRETE IS PLACED.
- NO DEVIATION FROM THE STRUCTURAL PLANS SHALL BE PERMITTED WITHOUT THE EXPRESS WRITTEN CONSENT OF THE STRUCTURAL ENGINEER.

B. REINFORCEMENT

- ALL STEEL REINFORCEMENT (STIRRUPS AND TIES INCLUSIVE) AND SHALL BE DEFORMED BARS CONFORMING TO "SPECIFICATIONS FOR DEFORMED BULLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AN ULTIMATE TENSILE STRENGTH OF 90,000 PSI AS PER A.S.T.M. A615 - REINFORCEMENT" A.S.T.M. A615 GRADE 60. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE CHAIRS, REBARS, ETC., TO SECURE AND SUPPORT THE REINFORCING WHILE PLACING THE CONCRETE.
- THE CONTRACTOR MUST SUBMIT REINFORCING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW. NO CONSTRUCTION IS TO BE STARTED UNTIL THE SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER.
- THE STRUCTURAL ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCEMENT PRIOR TO CONCRETE PLACEMENT.
- REINFORCING BARS SHALL BE CONTINUOUS SHALL BE LAPPED AT SPLICES AND CORNERS IN CONFORMANCE WITH LAP SPICE TABLES IN TYPICAL DETAILS UNLESS OTHERWISE NOTED. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AS REQUIRED. TERMINATE CONTINUOUS BARS AT END SUPPORTS WITH STANDARD HOOKS, U.O.N.
- MINIMUM COVER FOR REINFORCING STEEL SHALL BE 3" FOR INTERIOR SLABS AND INTERIOR WALL SURFACES; 1 1/2" FOR BEAMS, GIRDERS AND COLUMNS (TIES, STIRRUPS OR PRIMARY REINFORCEMENT); FOR ALL CONCRETE EXPOSED TO WEATHER AND EARTH FILL, COVER SHALL BE 2" (1 1/2" FOR STIRRUPS); FOR CONCRETE PLACED AGAINST EARTH, MINIMUM COVER SHALL BE 3".

C. CODES AND TESTS

- ALL CONTROLLED CONCRETE SHALL COMPLY WITH THE A.C.I. 318 BUILDING CODE AND THE NEW YORK CITY BUILDING CODE. APPLICATION FOR CONTROLLED CONCRETE WITH CONCRETE TESTS AND CURVES OF TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER FOR FILING WITH THE BUILDING DEPARTMENT. NO CONCRETE IS TO BE PLACED BEFORE SUCH AN AMENDMENT IS APPROVED BY THE BUILDING DEPARTMENT.
- DESIGN AND CONSTRUCTION OF FORMWORK IS TO COMPLY WITH THE A.C.I. 318 BUILDING CODE AND THE NEW YORK CITY BUILDING CODE AS AMENDED.
- TRANSPORTING, PLACING, CURING AND DEPOSITING OF CONCRETE SHALL COMPLY WITH THE A.C.I. BUILDING CODE.
- THE STEEL SUPPLIER SHALL PROVIDE THE ENGINEER WITH AN AFFIDAVIT OF THE PRODUCER OF STEEL CERTIFYING THAT THE STEEL MEETS THE REQUIREMENTS OF THE A.S.T.M.
- ALL STRUCTURAL STEEL (LINTELS, DUNNAGE BEAMS, ETC.) SHALL CONFORM TO A.S.T.M. A-36, U.O.N.
- THE BUILDING COMPLIES WITH EARTHQUAKE CODE REQUIREMENTS ACCORDING TO LOCAL LAW 17-95.

D. SEISMIC AND WIND CRITERIA

- THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE LATEST NEW YORK CITY BUILDING CODE (NYCBC 2014).
- STRUCTURAL SEPARATION, (NYCBC-1617.3.2): THE STRUCTURE SHALL BE SET BACK FROM THE PROPERTY LINES NOT COMMON TO A PUBLIC WAY BY 1' /SOFT OF HEIGHT. SMALLER SETBACK SHALL BE PERMITTED WHEN JUSTIFIED BY ENGINEERING ANALYSIS BASED ON MAXIMUM EXPECTED GROUND MOTION.
- WIND LOADS ARE BASED ON PROJECT SPECIFIC WIND TUNNEL TEST OCTOBER 30/2013 IN ACCORDANCE WITH PROVISION OF NYC BUILDING CODE 2014.
- EARTHQUAKE DESIGN DATA:  
SEISMIC IMPORTANCE FACTOR  $I_s = 1$   
 $S_s = 0.365$   $S_d = 0.071g$   
SITE CLASS = B  
SEISMIC DESIGN CATEGORY = B  
SEISMIC FORCE RESISTING SYSTEM = ORDINARY REINFORCED CONCRETE SHEARWALLS  
DESIGN BASE SHEAR (V):  $E/W = 1150k$   $N/S = 1150k$   
SEISMIC RESPONSE COEFFICIENT ( $C_s$ ):  $E/W = 0.013$   $N/S = 0.013$   
RESPONSE MODIFICATION FACTORS:  $R = 5$   
ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE PROCEDURE
- STRUCTURAL SEPARATIONS, (NYCBC-1617.3.2): THE STRUCTURE SHALL BE SET BACK FROM THE PROPERTY LINE NOT COMMON TO A PUBLIC WAY BY 1' /50 FT. OF HEIGHT. SMALLER SETBACK SHALL BE PERMITTED WHEN JUSTIFIED BY ENGINEERING ANALYSIS BASED ON MAXIMUM EXPECTED GROUND MOTION.

LEGEND:

- INDICATES ADDITIONAL WIND BARS
- INDICATES THE BOTTOM OF FOUNDATION WALL ELEVATION
- INDICATES THE TOP OF FOUNDATION WALL ELEVATION
- INDICATES TOP OF FOOTING ELEVATION
- INDICATES FOOTING MARK 4' 7/8"
- INDICATES SIZE OF PIER IN INCHES, FIRST DIMENSION SHOWN IS IN THE EAST-WEST DIRECTION.
- INDICATES UNDERGROUND PLUMBING
- INDICATES CLEANOUT
- INDICATES ADDITIONAL TOP REINFORCEMENT AT SUPPORTS
- INDICATES ADD'L BOTTOM REINFORCING AT SUPPORTS
- INDICATES ADDITIONAL TOP REINFORCEMENT CONTINUOUS BETWEEN SUPPORTS
- INDICATES ADDITIONAL BOTTOM REINFORCEMENT CONTINUOUS BETWEEN SUPPORTS
- 2" & 3" LAYERS
- INDICATES ORDER OF BAR PLACEMENT AS SHOWN ON PLAN.
- 1" & 4" LAYERS
- INDICATES CHANGE IN ELEVATION
- INDICATES CONCRETE COLUMN/BEAM/FOUNDATION WALL
- INDICATES CONCRETE COLUMN/SHEARWALL BELOW
- INDICATES LIGHT WEIGHT CONCRETE FILL
- INDICATES SLAB OPENING
- INDICATES COLUMN ABOVE OR BELOW
- INDICATES COLUMN NUMBER
- INDICATES SHEARWALL DESIGNATION
- INDICATES 615P ROCK ANCHOR. FOR ROCK ANCHOR SIZE SEE DETAIL ON DWG. FO-200.

POST/HANGER SCHEDULE:

- INDICATES 12x24 POST REINF. W/4-#8 VERT. & #3 #12 O/C TIES
- INDICATES 24x14 CONCRETE POST REINF. W/4-#8 VERT. & #3 #12 O/C TIES
- INDICATES 18"x CONCRETE POST REINF. W/4-#6 VERT. & #3 #12 O/C TIES
- INDICATES 12x24 CONCRETE POST REINF. W/4-#8 VERT. & #3 #12 O/C TIES
- INDICATES 18x18 CONCRETE POST REINF. W/4-#8 VERT. & #3 #12 O/C TIES
- SEE DETAIL 2A & 2B ON DRAWING S-640
- INDICATES 18x36 CONCRETE POST REINF. W/4-#11 VERT. & #3 #18 O/C TIES NOTE: VERTICAL BARS TO BE TENSION SPLICED.
- SEE DETAIL 3 ON DRAWING S-640
- INDICATES 8x30 CONCRETE HANGER REINF. W/4-#6 VERT. AND #3 #8 O/C

SPECIAL INSPECTION	
SPECIAL INSPECTION	CURRENT CODE REFERENCES
CONCRETE - CAST IN PLACE	1704.4
CONCRETE TEST CYLINDERS* (TR2)	1905.6
CONCRETE DESIGN MIX* (TR3)	1905.3
MASONRY	1704.5
SOILS - SITE PREPARATION	1704.7.1
SOILS - FILL PLACEMENT & IN-PLACE DENSITY	1704.7.2 & 1704.7.3
PIER FOUNDATIONS	1704.9
UNDERPINNING	1704.9.1
STRUCTURAL SAFETY - STRUCTURAL STABILITY	1704.19
PROGRESS INSPECTION	
FOOTING AND FOUNDATION	109.3.1
FINAL	28-116.2.4.2 & 109.5 AND DIRECTIVE 14-(1975)

\* THESE TEST MUST BE PERFORMED BY A LICENSED CONCRETE TESTING LAB.

NOTES:

- REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION ON SCOPE AND DETAILED REQUIREMENTS FOR INSPECTIONS.
- ALL SPECIAL INSPECTIONS SHALL BE PERFORMED UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.
- REPORTS OF RESULTS SHALL BE SUBMITTED TO THE OWNER AND ARCHITECT FOR REVIEW. SIGNED COPIES OF ALL TESTS AND INSPECTION REPORTS SHALL BE FILED WITH THE BUILDING DEPARTMENT (THROUGH THE APPLICANT).
- REPORTS SHALL STATE WHETHER RESULTS COMPLY WITH CONTRACT REQUIREMENTS, SUMMARIZE THE TYPE OF TEST, THE LOCATION OR COMPONENT TESTED, AND RECOMMEND ANY REMEDIAL MEASURES REQUIRED. REPORT SHOULD NOTE ANY OTHER DEVIATIONS FROM THE CONTRACT DOCUMENTS.
- FOR ITEMS OF WORK OF OTHER TRADES WHICH ARE SUBJECT TO SPECIAL INSPECTION, SEE THE CITY OF NEW YORK BUILDING CODE, AS WELL AS ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, ETC. DRAWINGS AND SPECIFICATIONS.
- IN ADDITION TO THE ABOVE REQUIREMENTS, ALL COLUMN SPICE, BEAM MOMENT CONNECTIONS AT BEAMS DESIGNATED AS "LRS" AND BRACE FRAME OR WIND TRUSS CONNECTIONS (PER S-940 SERIES OF DWGS.) SHALL COMPLY WITH THE INSPECTION REQUIREMENTS OF AWS D1.8 "STRUCTURAL WELDING CODE-SEISMIC SUPPLEMENT", IF WELDING IS PRESENT IN CONNECTION.

NOTES FOR:  
PARKING FLOORS, RAMPS, DRIVEWAYS EXPOSED TOPPING, SIDE WALKS - ALL DIRECTLY EXPOSED TO CARS AND/OR PEDESTRIAN TRAFFIC & CONCRETE TANKS.

- CONCRETE TO BE 5000 psi (U.O.N. ON PLAN) NORMAL WEIGHT MAX. WATER/CEMENT RATIO LESS THAN 0.4. ADMIXTURES: SUPERPLASTICIZER MIN. 80 OZ. 1.5 LB./CU. YD FIBER MESH, AIR ENTRAINED 7% MIN., SILICA FUME AND DCL OR SIMILAR CORROSION INHIBITOR
- THE CURING SHALL BE ONLY MOIST TYPE. NO CURING COMPOUND ACCEPTABLE.
- ALTHOUGH PROTECTIVE MEASURES WERE INCORPORATED IN THE DESIGN OF THE PARKING AREAS AND RAMPS, THESE AREAS MUST BE CAREFULLY MAINTAINED IN ORDER TO PREVENT EARLY DETERIORATION.

PROJECT:

138 EAST 50TH ST.  
NEW YORK, NY

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09-30-15	ISSUE TO TA
DATE:	REVISION:

D.O.B. NUMBER:  
NB#

NORTH:

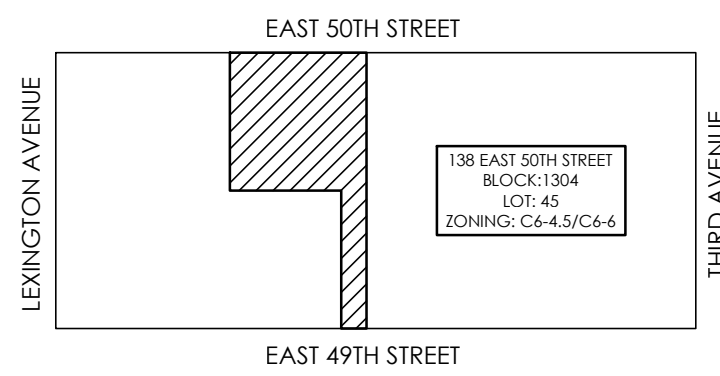


0' 1' 2' 4' 6'



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


KEY PLAN:



PROJECT:  
138 EAST 50TH STREET  
NEW YORK, N.Y.

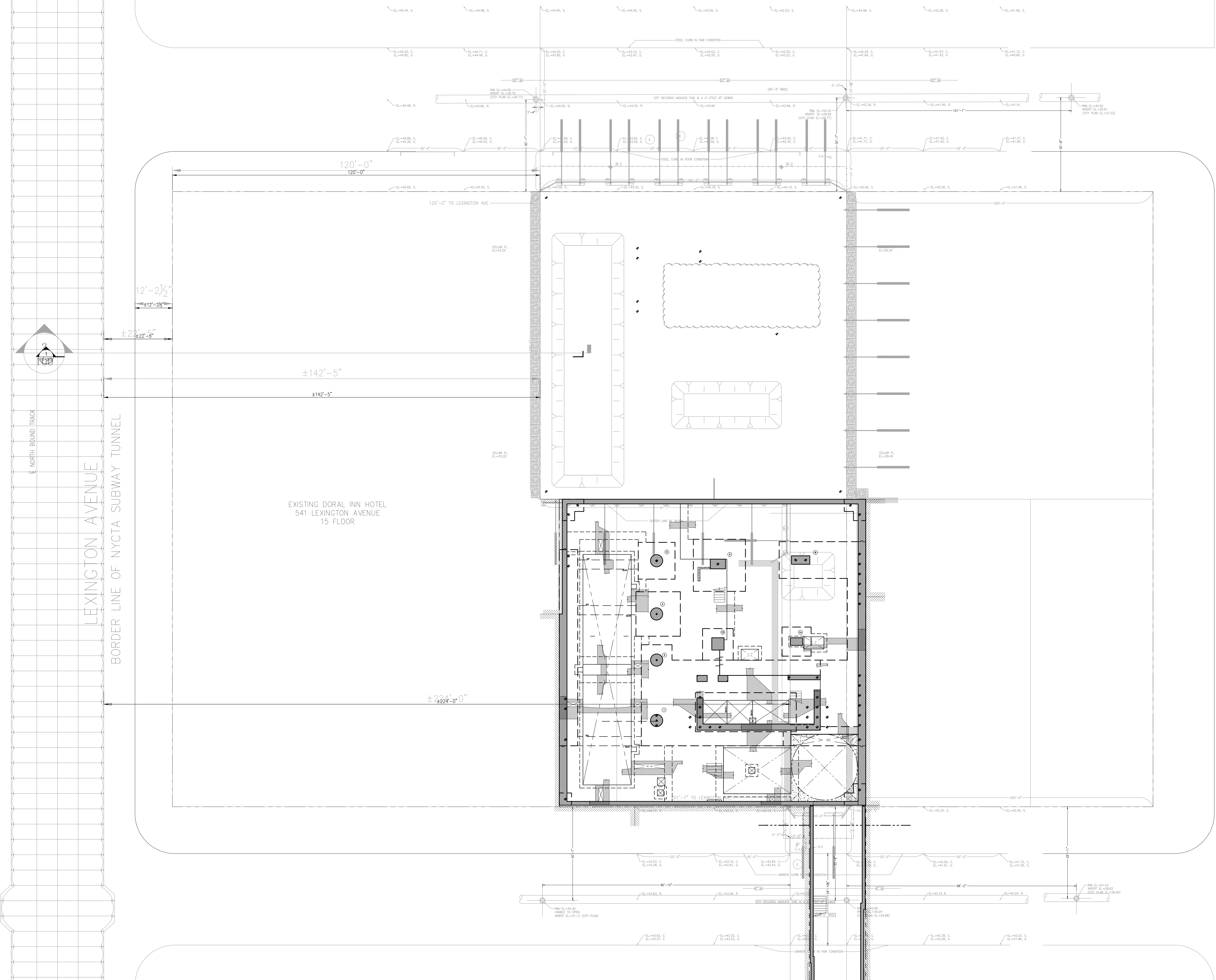
DRAWING TITLE:

FOUNDATION (SUB-CELLAR) PLAN

SEAL & SIGNATURE:	DATE: 05/14/20
	PROJECT No: 1590031
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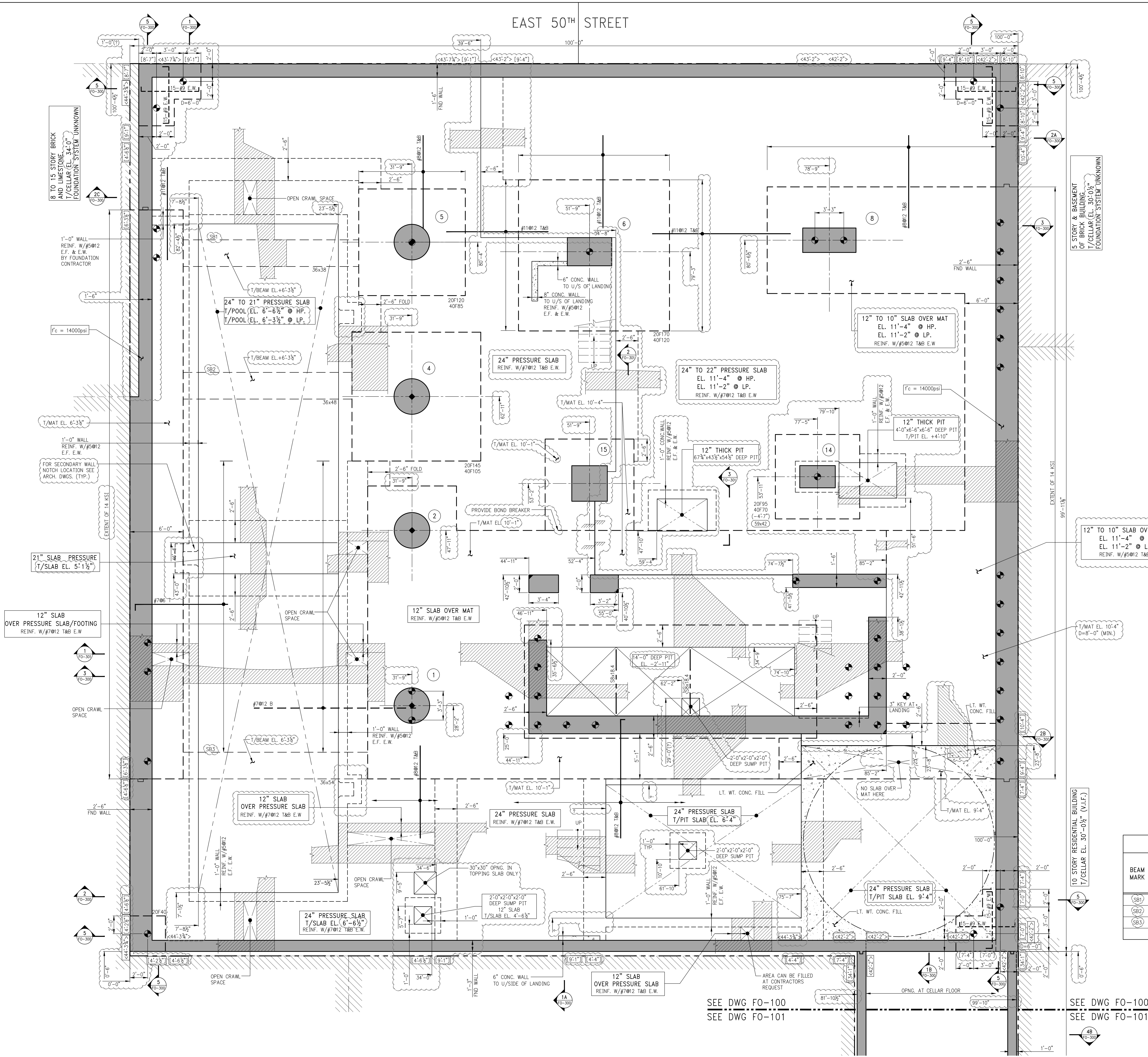
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1 FOUNDATION (SUB-CELLAR) PLAN  
FO-010 SCALE:  $3/32" = 1'-0"$





1 FOUNDATION (SUB-CELLAR) PLAN - PART 1

FO-100 SCALE: 1/8" = 1'-0"

NOTES:

1. TOP OF SLAB ELEVATION TO BE (1'-0") U.O.N. ON PLAN.
2. PRESSURE SLAB TO BE 2'-0" THICK U.O.N. THIS (1'-0") ON PLAN.
3. BOTTOM & TOP REINFORCEMENT TO BE #7@12 CONT. E.W. FOR 2'-0" PRESSURE SLAB.
4. TOP OF FOOTING TO BE 2'-4" BELOW TOP OF SLAB U.O.N.
5. FOOTINGS TO BE CENTERED ON COLUMNS OR WALLS U.O.N.
6. TOP OF FOUNDATION WALL TO BE 1'-4" BELOW TOP OF 1<sup>ST</sup> FLOOR SLAB U.O.N.
7. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING FO-001.
8. FOR FOUNDATION TYPICAL DETAILS SEE FO-200 SERIES DRAWINGS.
9. FOR FOUNDATION SECTIONS SEE FO-300 SERIES DRAWINGS.
10. FOR MAT REINFORCEMENT SEE DWG. FO-110.
11. FOR LINK BEAM SCHEDULE AND SHEARWALL DETAILS SEE S-940 SERIES DRAWINGS.
12. FOR COLUMN SIZES, REINFORCEMENT AND DETAILS SEE S-950 SERIES DRAWINGS.

LEGEND:

- [ ] INDICATES THE BOTTOM OF FOUNDATION WALL ELEVATION.
- [ ] INDICATES THE TOP OF FOUNDATION WALL ELEVATION.
- [ ] INDICATES TOP OF FOOTING ELEVATION IF NOT TYPICAL (SEE NOTE 2 ABOVE).
- XXX INDICATES FOOTING MARK.
- XXXX INDICATES SIZE OF PIER IN INCHES, FIRST DIMENSION SHOWN IS IN THE EAST-WEST DIRECTION.
- ⊕ INDICATES 615K ROCK ANCHOR. SEE FO-200 FOR DETAILS.

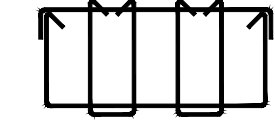
SQUARE FOOTING SCHEDULE				
CONCRETE: $f'_c = 10 \text{ ksi}$ ALLOWABLE BEARING PRESSURE = 20 TONS/SF ROCK				
MARK	SIZE	THICKNESS (DEPTH IN INCHES)	REINFORCEMENT EACH WAY*	REMARKS
20F40	4'-0"x4'-0"	72	8-#9	
20F95	9'-6"x9'-6"	54	17-#10	
20F120	12'-0"x12'-0"	68	25-#11	
20F145	14'-6"x14'-6"	78	32-#11	
20F170	17'-0"x17'-0"	92	45-#11	

\* DESIGNATION "1/4" INDICATES THAT REINFORCEMENT IS TO BE HOOKED 90° AT EACH END

SQUARE FOOTING SCHEDULE				
CONCRETE: $f'_c = 10 \text{ ksi}$ ALLOWABLE BEARING PRESSURE = 40 TONS/SF ROCK				
MARK	SIZE	THICKNESS (DEPTH IN INCHES)	REINFORCEMENT EACH WAY*	REMARKS
40F70	7'-0"x7'-0"	42	14-#10 (H)	
40F85	8'-6"x8'-6"	50	18-#11 (H)	
40F105	10'-6"x10'-6"	63	24-#11 (H)	
40F120	12'-0"x12'-0"	75	35-#11 (H)	

\* DESIGNATION "1/4" INDICATES THAT REINFORCEMENT IS TO BE HOOKED 90° AT EACH END

STRAP BEAM SCHEDULE						
BEAM MARK	SIZE (WxD)	REINFORCEMENT		STIRRUPS		REMARKS
		BOTTOM CONTINUOUS	TOP CONTINUOUS	TOP ADD'L BARS AT SUPPORT	TYPE SIZE SPACING	
SB1	36x38	11-#11	33-#11 (3 LAYERS)		3 #5 @6	#5@12 HORIZ. E.F.
SB2	36x48	11-#11	33-#11 (3 LAYERS)		3 #5 @6	#5@12 HORIZ. E.F.
SB3	36x54	14-#11 (2 LAYERS)	33-#11 (3 LAYERS)		3 #5 @6	#5@12 HORIZ. E.F.



TYPE 3 STIRRUP TYPES N.T.S.

PROJECT:

138 EAST 50TH ST.  
NEW YORK, NY

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09-30-15 ISSUE TO TA  
09-10-15 REVISED FOUNDATION  
09-21-15 ADDENDUM 1 PRICING SET  
08-03-15 ISSUE FOR SUPERSTRUCTURE BID

DATE: 09-10-15  
REVISION:

DOB'S NUMBER:

NB#

NOTES:

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

KEY PLAN:

EAST 50TH STREET  
EAST 49TH STREET  
LENGUEN AVENUE  
THIRD AVENUE

PROJECT:

138 EAST 50TH STREET  
NEW YORK, N.Y.

DRAWING TITLE:

FOUNDATION (SUB-CELLAR) PLAN  
(PART 1)

SEAL & SIGNATURE:

DATE: 05/14/2015  
PROJECT NO.: 1590331  
DRAWN BY: CACD  
CHECKED BY: CS  
DWG. NO.:  
FO-100.00  
SHEET NO.: of 0

FILE NO.: 1590331-001-001-001-001-001-001



PROJECT:  
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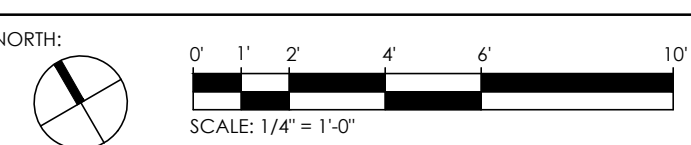
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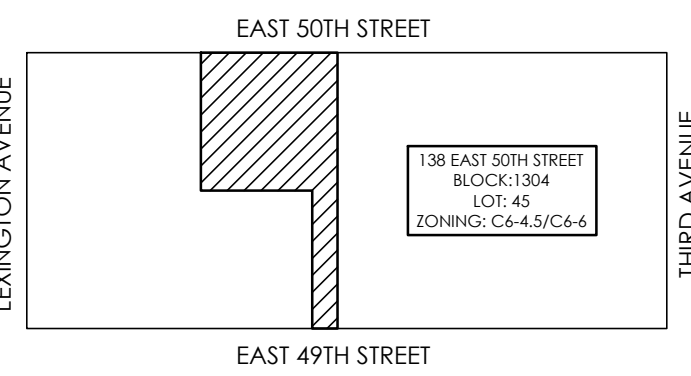
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02-10-15	REVISED SUPERSTRUCTURE
02-08-15	REVISED FOUNDATION FOR CONSTRUCTION
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DATE:	REVISION:

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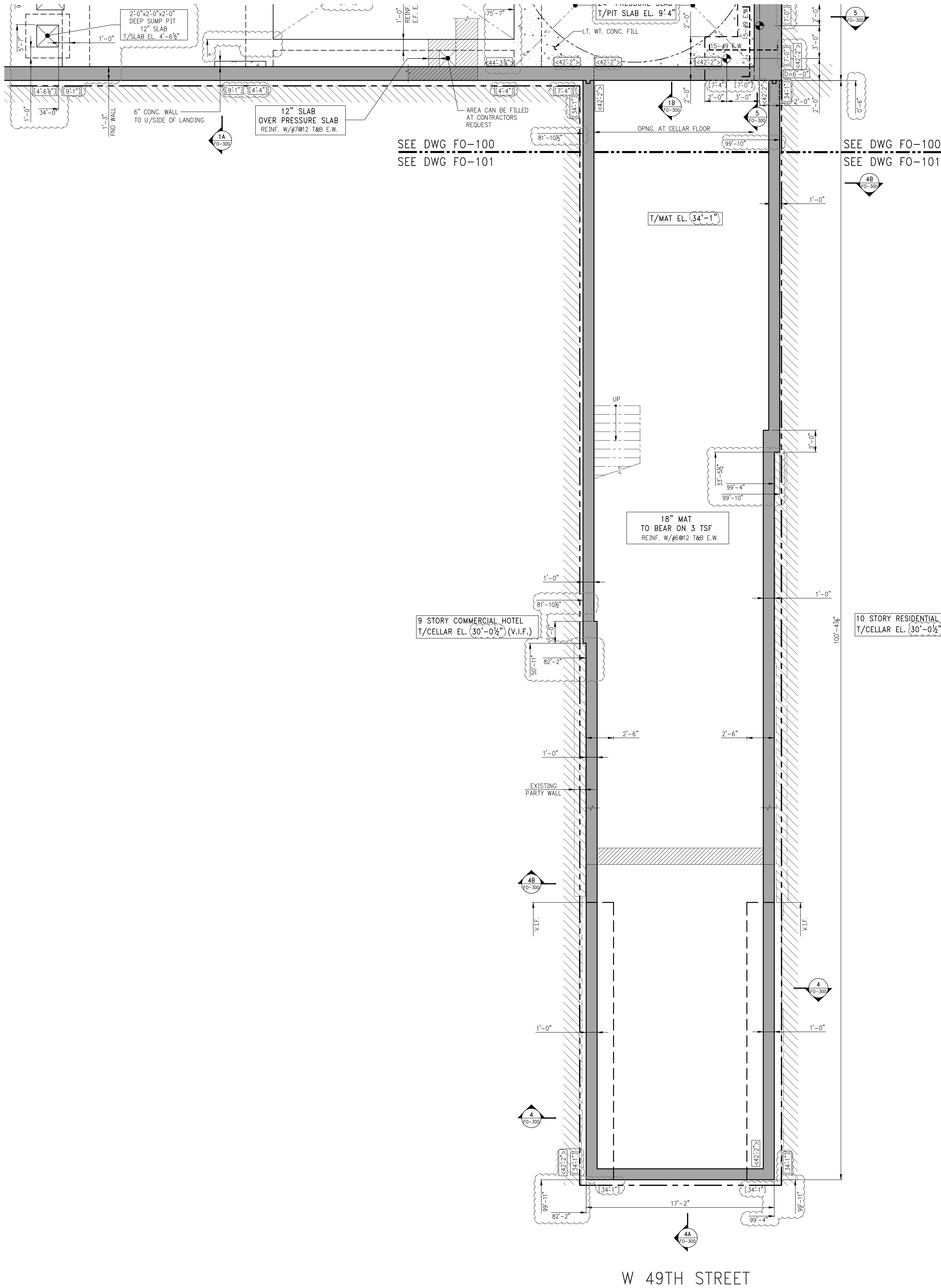


PROJECT:  
**138 EAST 50TH STREET  
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DRAWING TITLE:  
**FOUNDATION (SUB-CELLAR) PLAN  
(PART 2)**

SEAL & SIGNATURE:  DATE: 05/14/2015  
PROJECT No.: 1590031  
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CHECKED BY: CS  
DWG. No.: **FO-101.00**  
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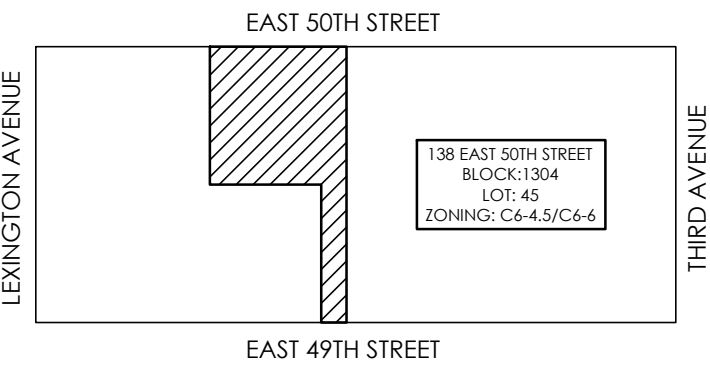
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DATE	REVISION

D.O.B. NUMBER:

**NB#**

NORTH  
SCALE: 1" = 1'-0"

KEY PLAN:



PROJECT:

138 EAST 50TH STREET  
NEW YORK, N.Y.

DRAWING TITLE:

**MAT FOOTING  
REINFORCEMENT PLAN**

SEAL & SIGNATURE:



DATE: 05/14/2015

PROJECT No.: 1590331

DRAWN BY: CACD

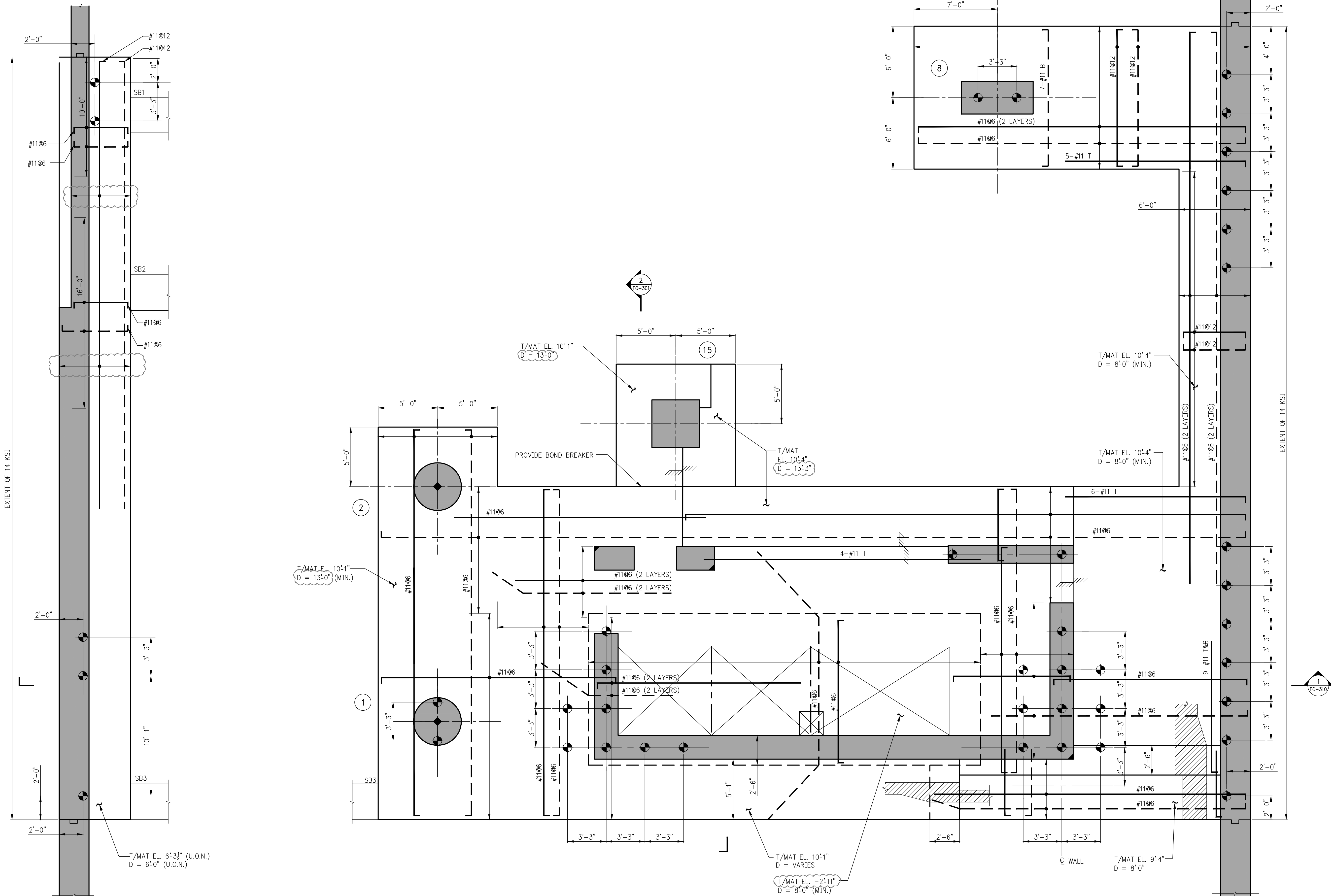
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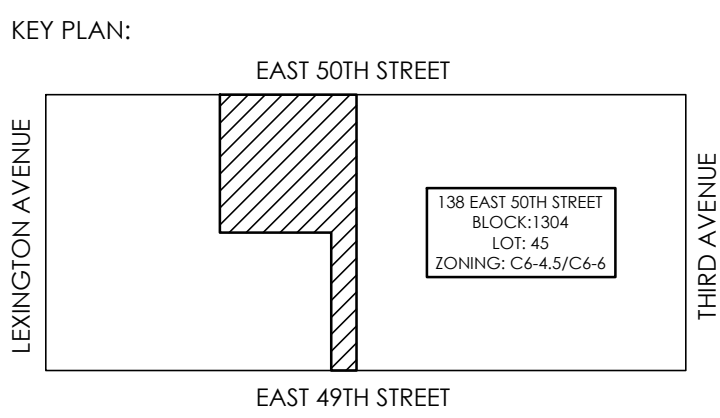
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DATE:	REVISION:

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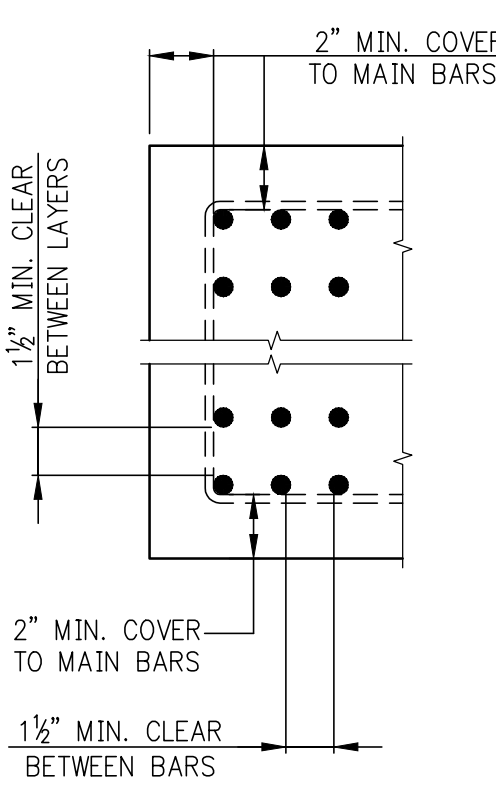
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TABLE #1: TENSION LAP SPICE LENGTHS (CLASS B MINIMUM)																	
TABLE 1.A: ¾" COVER TO OUTER LAYER BARS OUTER LAYER LAP LENGTHS (IN INCHES)									TABLE 1.C: 1½" COVER TO OUTER LAYER BARS OUTER LAYER LAP LENGTHS (IN INCHES)								
NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 4" O/C UP TO ¾" O/C FOR #9, #10, #11									NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 4" O/C UP TO ¾" O/C FOR #9, #10, #11								
BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
#3	16	16	16	16	16	16	16	16	#3	16	16	16	16	16	16	16	16
#4	21	20	20	20	20	20	20	20	#4	20	20	20	20	20	20	20	20
#5	31	27	24	24	24	24	24	24	#5	24	24	24	24	24	24	24	24
#6	43	37	33	30	29	29	29	29	#6	29	29	29	29	29	29	29	29
#7	69	60	53	49	45	42	40	38	#7	42	37	34	34	34	34	34	34
#8	85	74	66	60	56	52	49	47	#8	53	46	41	39	39	39	39	39
#9	103	89	80	73	67	63	59	56	#9	66	57	51	46	44	44	44	44
#10	121	105	94	86	79	74	70	66	#10	79	68	61	56	51	49	49	49
#11	140	122	109	99	92	86	81	77	#11	92	80	72	65	60	57	54	54
TABLE 1.B: ¾" COVER TO OUTER LAYER BARS INNER LAYER LAP LENGTHS (IN INCHES)									TABLE 1.D: 1½" COVER TO OUTER LAYER BARS INNER LAYER LAP LENGTHS (IN INCHES)								
NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 4" O/C UP TO ¾" O/C FOR #9, #10, #11									NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 5" O/C UP TO ¾" O/C FOR #9, #10, #11								
BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
#3	16	16	16	16	16	16	16	16	#3	16	16	16	16	16	16	16	16
#4	20	20	20	20	20	20	20	20	#4	20	20	20	20	20	20	20	20
#5	24	24	24	24	24	24	24	24	#5	24	24	24	24	24	24	24	24
#6	30	29	29	29	29	29	29	29	#6	29	29	29	29	29	29	29	29
#7	48	42	38	34	34	34	34	34	#7	37	34	34	34	34	34	34	34
#8	61	53	47	43	40	39	39	39	#8	43	39	39	39	39	39	39	39
#9	75	65	58	53	49	46	44	44	#9	53	46	44	44	44	44	44	44
#10	89	77	69	63	58	55	51	49	#10	64	55	49	49	49	49	49	49
#11	104	90	81	74	68	64	60	57	#11	75	65	58	54	54	54	54	54



#### NOTES FOR TENSION LAP SPLICES

- REINFORCEMENT IS UNCOATED, WITH  $F_y=60,000$  PSI.
- CONCRETE IS NORMAL WEIGHT (144--150#/C.F.).
- FOR "TOP" BAR SPICE LENGTHS ("TOP" IS DEFINED BY ACI 318 AS HAVING MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE BAR), TABULATED LENGTHS MUST BE MULTIPLIED BY 1.3.
- LENGTHS TABULATED MUST BE MULTIPLIED BY THE FOLLOWING MODIFICATION FACTORS:
  - LIGHTWEIGHT CONCRETE .....1.3
  - EPOXY-COATED BARS:
    - 1) BARS WITH COVER < 3db, OR WITH CLEAR SPACING < 6db ...1.5 FOR BOTTOM & VERTICAL BARS, 1.3 FOR TOP BARS
    - 2) ALL OTHER CONDITIONS .....1.2
  - FOR EPOXY-COATED "TOP" BARS THE MAXIMUM FOR COMBINED FACTORS = 1.7
- WHERE TENSION DEVELOPMENT LENGTH ( $L_d$ ) IS REQUIRED ON PLANS OR IN DETAILS, SEE TENSION DEVELOPMENT LENGTH TABLES.
- CLASS A LAP SPICE LENGTHS ARE EQUAL TO TENSION DEVELOPMENT LENGTHS. SEE TABLES FOR TENSION DEVELOPMENT LENGTHS ( $L_d$ ). APPLY APPROPRIATE MODIFICATION FACTORS TO CLASS A SPICE LENGTHS.

#### MULTIPLE LAYERS

PROVIDE MINIMUM COVER AND CLEARANCES SHOWN, USE TABLE 1.A FOR LAP SPICE LENGTHS.

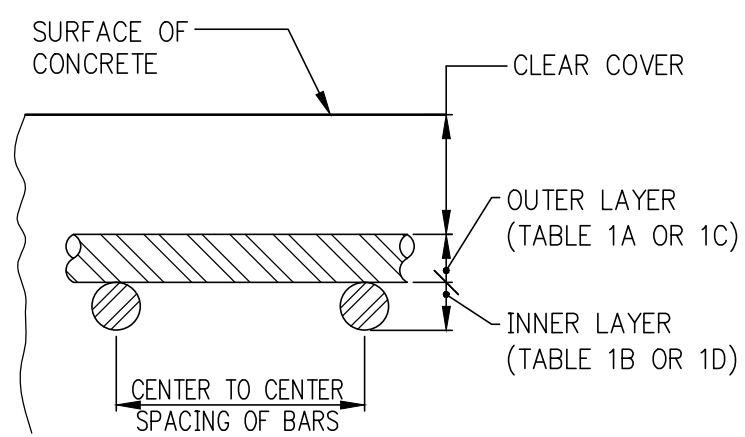


TABLE #2:

TENSION DEVELOPMENT LENGTHS ( $L_d$ ) (IN INCHES)

TABLE 2.A: ¾" COVER TO OUTER LAYER BARS OUTER LAYER DEVELOPMENT LENGTHS									TABLE 2.C: 1½" COVER TO OUTER LAYER BARS OUTER LAYER DEVELOPMENT LENGTHS								
BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
#3	12	12	12	12	12	12	12	12	#3	12	12	12	12	12	12	12	12
#4	16	14	13	12	12	12	12	12	#4	13	12	12	12	12	12	12	12
#5	24	21	19	17	16	15	14	13	#5	16	14	13	13	13	13	13	13
#6	33	28	25	23	22	20	19	18	#6	20	17	15	15	15	15	15	15
#7	53	46	41	37	35	32	31	29	#7	32	28	25	23	21	20	19	18
#8	66	57	51	46	43	40	38	36	#8	41	36	32	29	27	25	24	23
#9	79	69	61	56	52	49	46	43	#9	50	44	39	36	33	31	29	28
#10	93	81	72	66	61	57	54	51	#10	60	52	47	43	40	37	35	33
#11	108	94	84	76	71	66	62	59	#11	71	61	55	50	46	43	41	39

TABLE 2.B: ¾" COVER TO OUTER LAYER BARS INNER LAYER DEVELOPMENT LENGTHS									TABLE 2.D: 1½" COVER TO OUTER LAYER BARS INNER LAYER DEVELOPMENT LENGTHS								
BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	BAR#	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
#3	12	12	12	12	12	12	12	12	#3	12	12	12	12	12	12	12	12
#4	13	12	12	12	12	12	12	12	#4	13	12	12	12	12	12	12	12
#5	16	14	13	13	13	13	13	13	#5	16	14	13	13	13	13	13	13
#6	23	20	18	16	15	15	15	15	#6	20	17	15	15	15	15	15	15
#7	37	32	29	26	24	23	22	20	#7	29	25	22	20	19	18	18	18
#8	47	41	36	33	31	29	27	26	#8	33	28	25	23	22	20	20	20
#9	57	50	44	41	38	35	33	31	#9	41	35	31	29	27	25	23	23
#10	68	59	53	48	45	42	40	38	#10	49	42	38	35	32	30	28	27
#11	80	69	62	57	52	49	46	44	#11	58	50	45	41	38	35	33	32

#### NOTES FOR TENSION DEVELOPMENT LENGTHS ( $L_d$ )

- REINFORCEMENT IS UNCOATED, WITH  $F_y=60,000$  PSI.
- CONCRETE IS NORMAL WEIGHT (144--150#/C.F.).
- FOR "TOP" BAR DEVELOPMENT LENGTHS ("TOP" IS DEFINED BY ACI 318 AS HAVING MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE BAR), TABULATED LENGTHS MUST BE MULTIPLIED BY 1.3.
- LENGTHS TABULATED MUST BE MULTIPLIED BY THE FOLLOWING MODIFICATION FACTORS:
  - LIGHTWEIGHT CONCRETE .....1.3
  - EPOXY-COATED BARS:
    - 1) BARS WITH COVER < 3db, OR WITH CLEAR SPACING < 6db ...1.5 FOR BOTTOM & VERTICAL BARS, 1.3 FOR TOP BARS
    - 2) ALL OTHER CONDITIONS .....1.2
  - FOR EPOXY-COATED "TOP" BARS THE MAXIMUM FOR COMBINED FACTORS = 1.7
- WHERE TENSION DEVELOPMENT LENGTH ( $L_d$ ) IS REQUIRED ON PLANS OR IN DETAILS, SEE TENSION DEVELOPMENT LENGTH TABLES.
- CLASS A LAP SPICE LENGTHS ARE EQUAL TO TENSION DEVELOPMENT LENGTHS. SEE TABLES FOR TENSION DEVELOPMENT LENGTHS ( $L_d$ ). APPLY APPROPRIATE MODIFICATION FACTORS TO CLASS A SPICE LENGTHS.

TABLE #5 DEVELOPMENT LENGTHS FOR BARS IN COMPRESSION (LENGTHS IN INCHES)									
BAR SIZE	$f_y = 60,000$ PSI CONC. $f_c$ (IN PSI)			$f_y = 75,000$ PSI CONC. $f_c$ (IN PSI)			$f_y = 80,000$ PSI CONC. $f_c$ (IN PSI)		
	3,000	4,000	5,000 OR MORE	3,000	4,000	5,000 OR MORE	3,000	4,000	5,000 OR MORE
#3	12	12	12	12	12	12	12	12	12
#4	12	12	12	14	12	12	12	15	13
#5	14	12	12	17	15	14	18	16	15
#6	17	15	14	21	18	17	22	19	18
#7	19	17	16	24	21	20	26	22	21
#8	22	19	18	28	24	23	29	25	24
#9	25	22	21	31	27	25	33	28	27
#10	28	24	23	34	30	28	36	31	30
#11	31	27	26	38	33	31	40	34	33
#14	37	32	31	46	42	39	51	44	42
#18	50	43	41	62	54	51	65	56	54

TABLE #3 TENSION DEVELOPMENT LENGTHS FOR STANDARD END HOOKS (ldh) (LENGTHS IN INCHES)									
BAR SIZE	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000*	
#3	9	7	7	6	6	6	6	6	6
#4	11	10	9	8	7	7	7	6	
#5	14	12	11	10	9	9	8	8	
#6	17	15	13	12	11	10	10	9	
#7	19	17	15	14	13	12	11	11	
#8	22	19	17	16	15	14	13	12	
#9	25	22	19	18	16	15	15	14	
#10	28	24	22	20	19	17	16	16	
#11	31	27	24	22	21	19	18	17	
#14	37	32	29	27	25	23	22	21	
#18	50	43	39	35	33	31	29	27	

#### NOTES:

- TABLE 3 CONFORMS TO ACI 318-2002 (AND 2005). TABULATED VALUES ARE BASED UPON ACI 12.5.2, ASSUMING GRADE 60 REINFORCEMENT AND NORMALWEIGHT CONCRETE.
- PER ACI 12.5.3 a), FOR #11 AND SMALLER BARS, IF COVER TO BAR IS 28 INCHES OR MORE, AND FOR 90 DEGREE HOOK WITH COVER ON BAR EXTENSION BEYOND HOOK NOT LESS THAN 2 INCHES, A MODIFICATION FACTOR OF 0.7 MAY BE APPLIED. MINIMUM ldh SHALL NOT BE LESS THAN 6db NOR 6 INCHES.

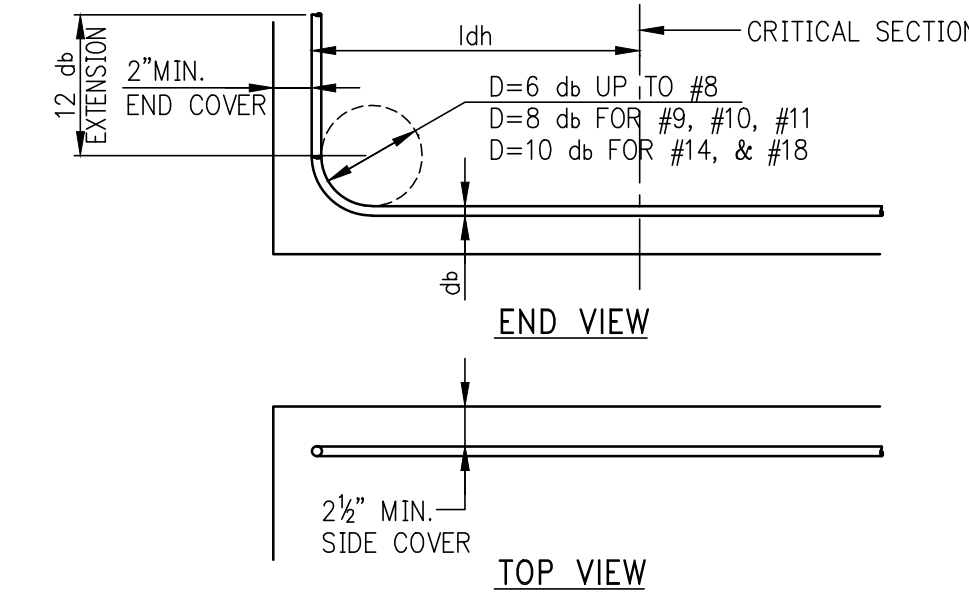


TABLE #4 COMPRESSION LAP SPLICES (LENGTHS IN INCHES)			
BAR SIZE	GRADE OF REINFORCEMENT		
	60 KSI (30 DIA.)	75 KSI (44 DIA.)	80 KSI (48 DIA.)
#3	12	17	18
#4	15	22	24
#5	19	28	30
#6	23	33	36
#7	27	39	42
#8	30	44	48
#9	34	50	54
#10	38	56	61
#11	43	62	68
#14 and #18	1. LAP SPLICES ARE NOT PERMITTED USE MECHANICAL CONNECTIONS OR WELDED SPLICES FOR #14 AND #18, PER ACI 318 (12.14.3).		
	2. LAP SPLICES ARE NOT PERMITTED FOR #14 AND #18, PER ACI 318 BARS TO #11 AND SMALLER BARS ARE PERMITTED PER ACI 318 (12.16.2)		
3. FOR BARS OF DIFFERENT SIZE, USE LARGER OF: SPLICE LENGTH OF SMALLER BAR (TABLE #4) OR DEVELOPMENT LENGTH OF LARGER BAR (FROM TABLE #5) PER ACI 318 (12.16.2).			



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**MGE**  
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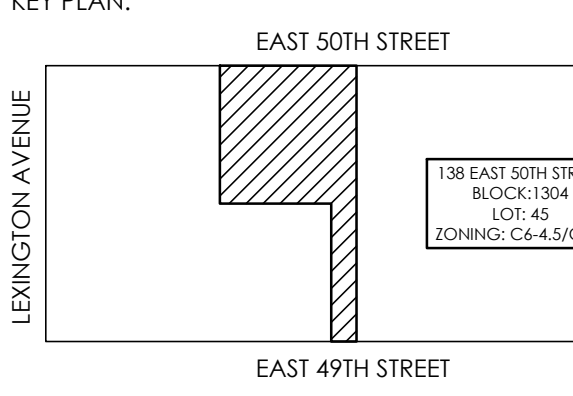
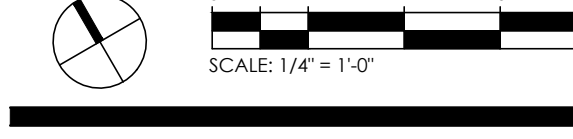
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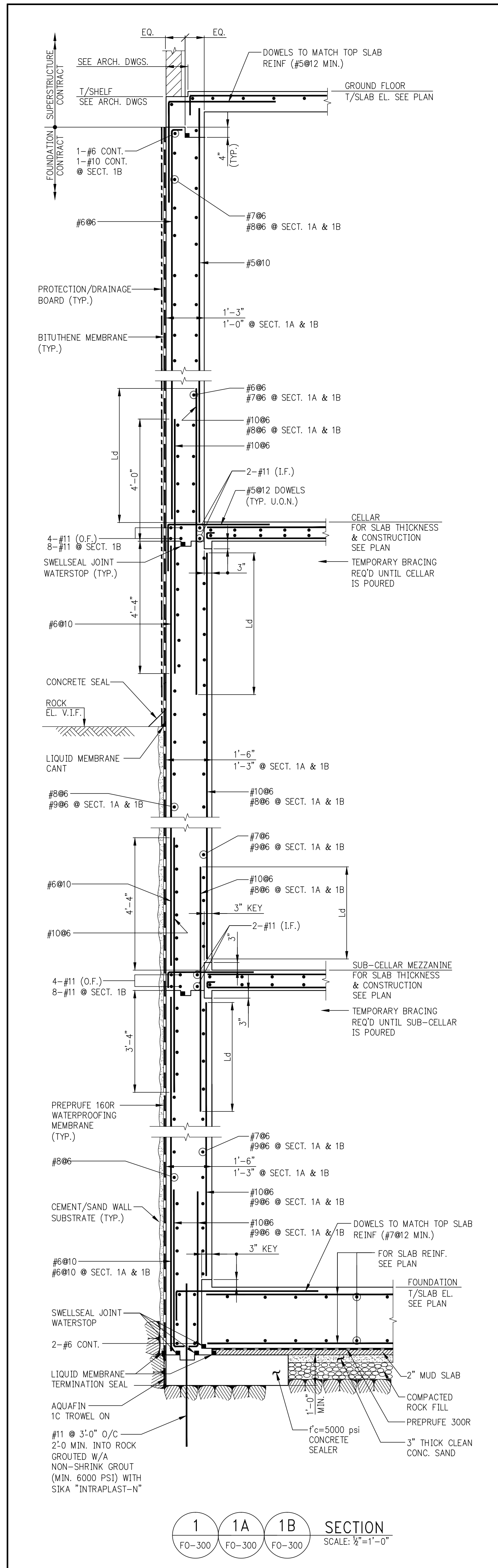
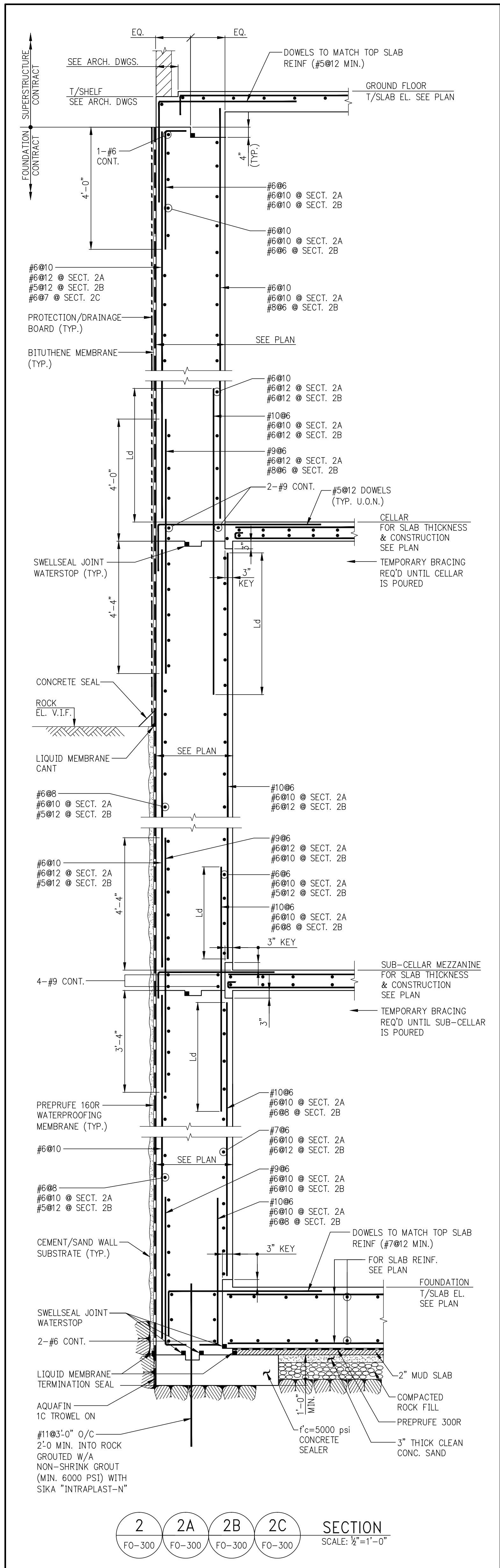
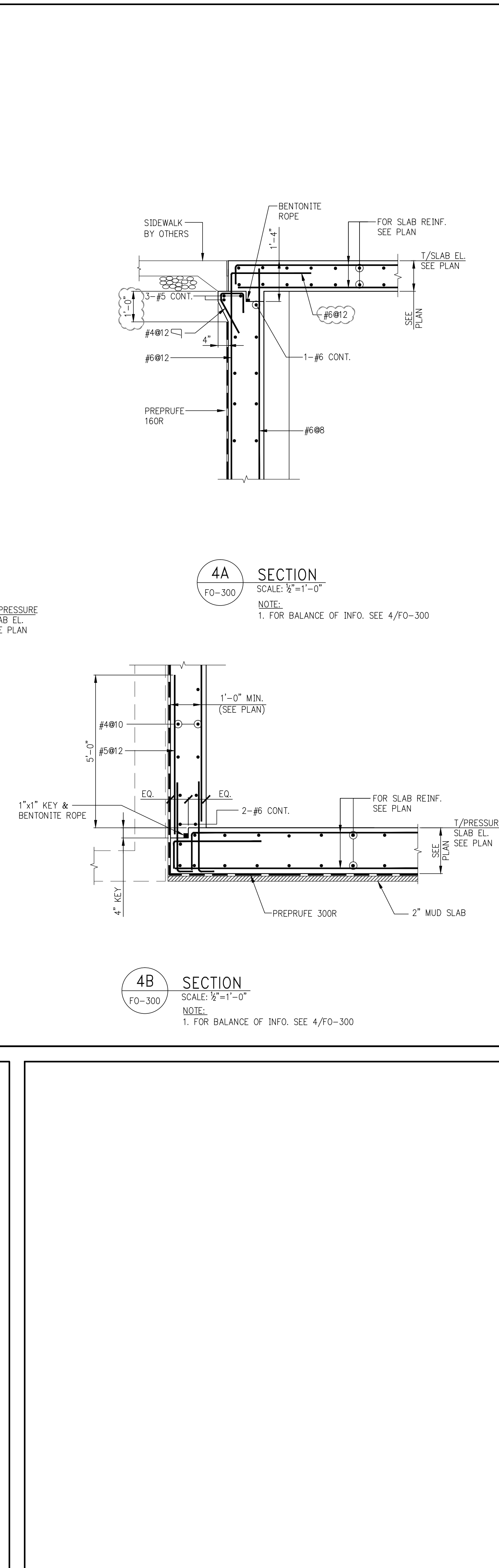
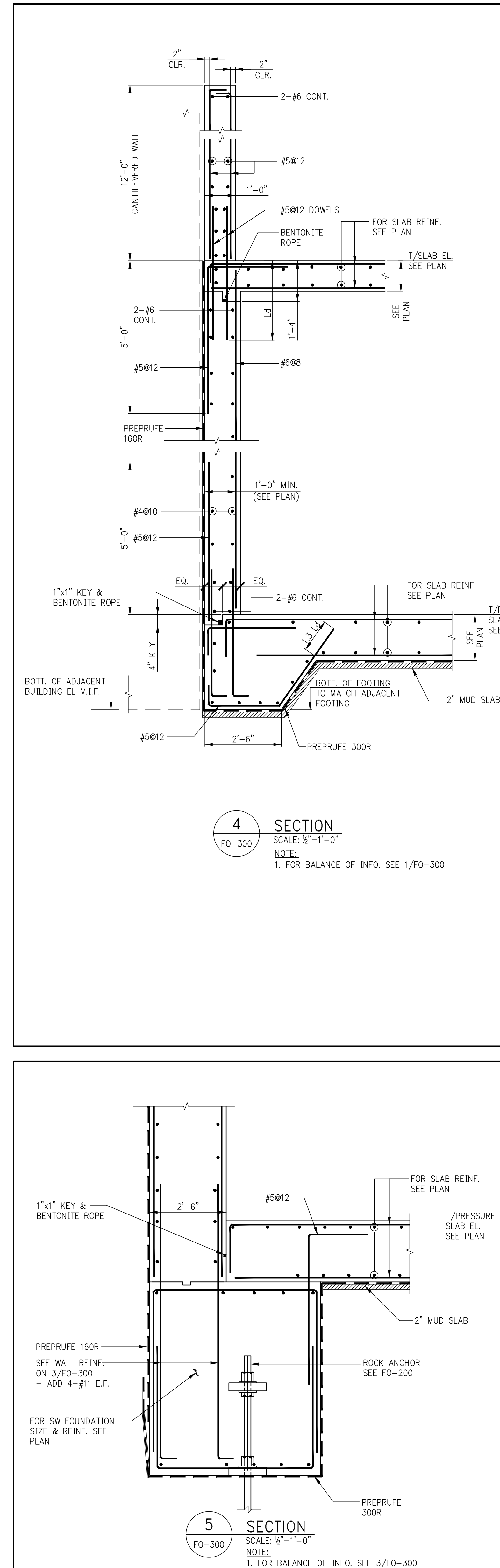
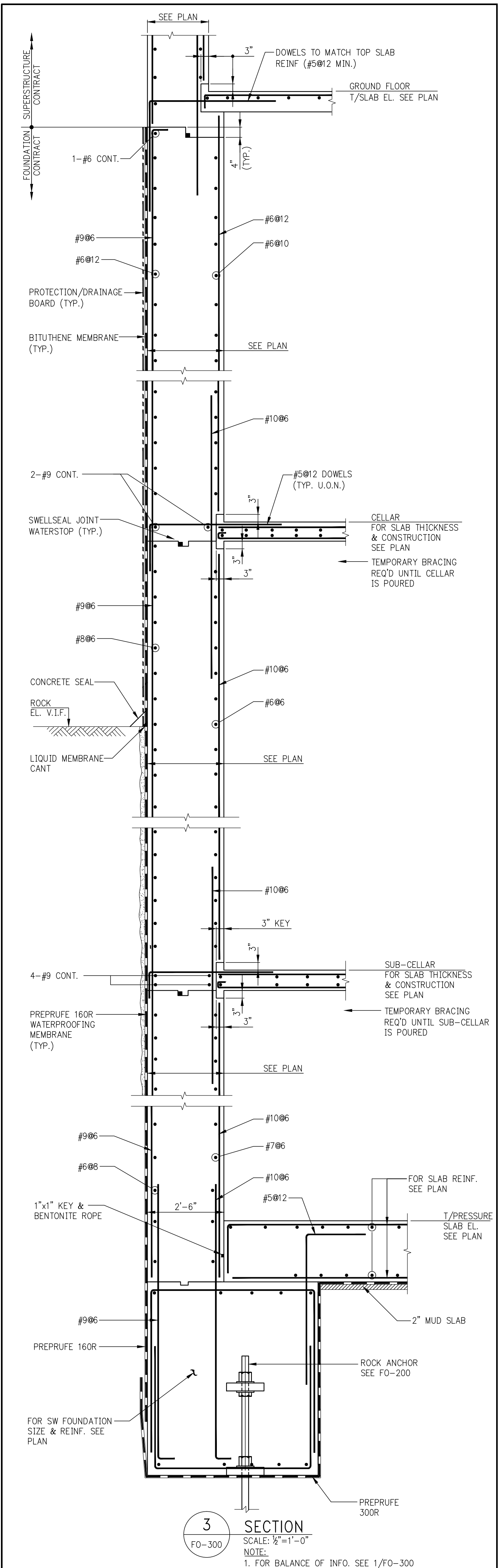
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PROJECT:  
138 EAST 50TH STREET  
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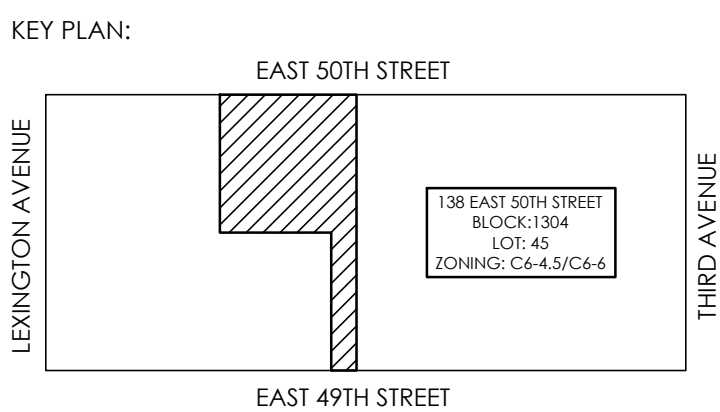
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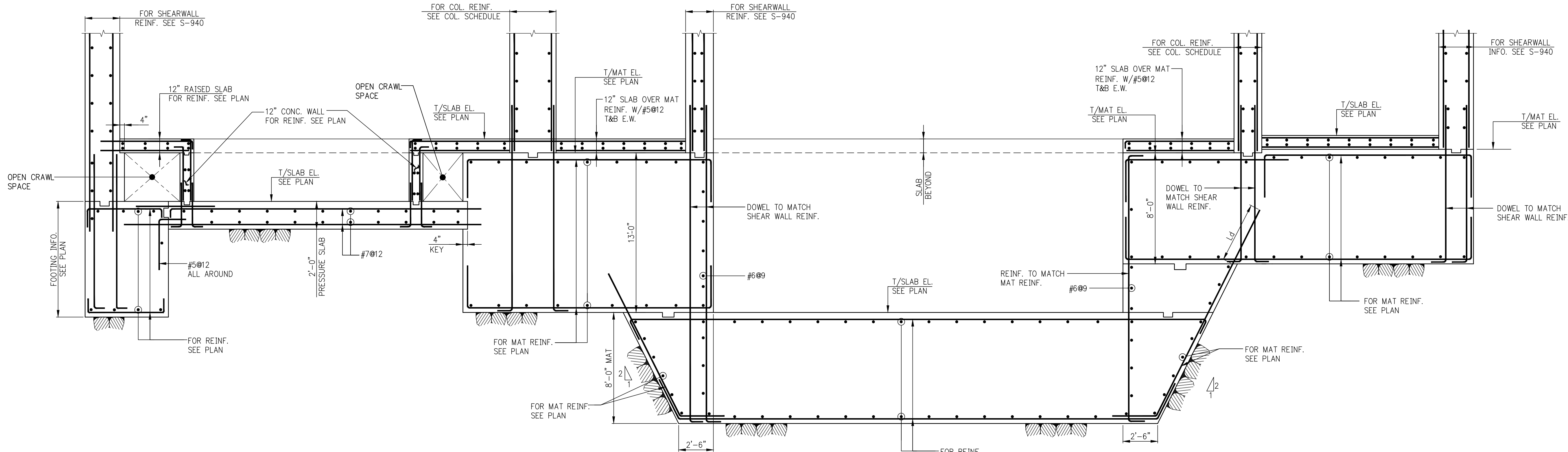


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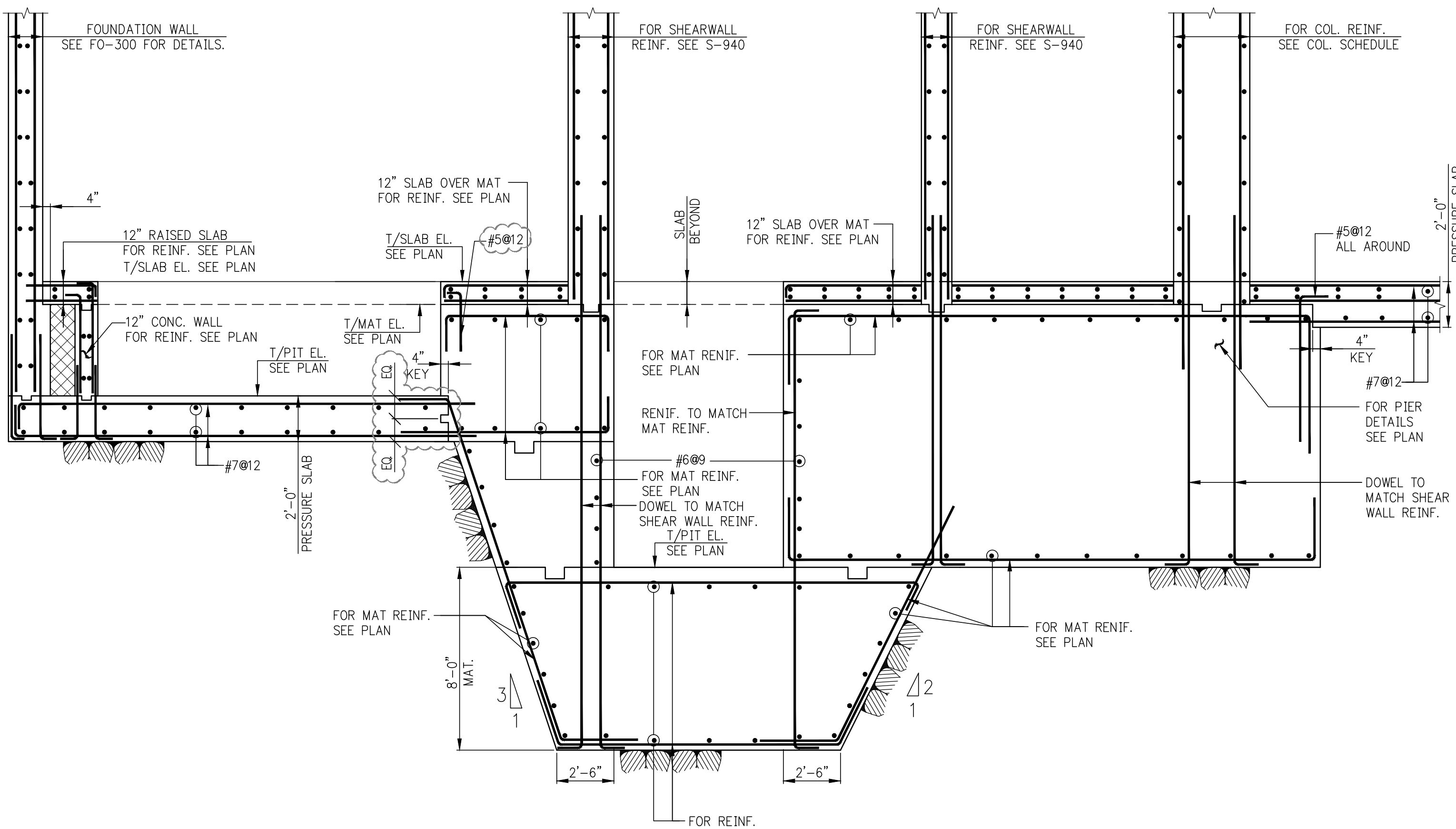
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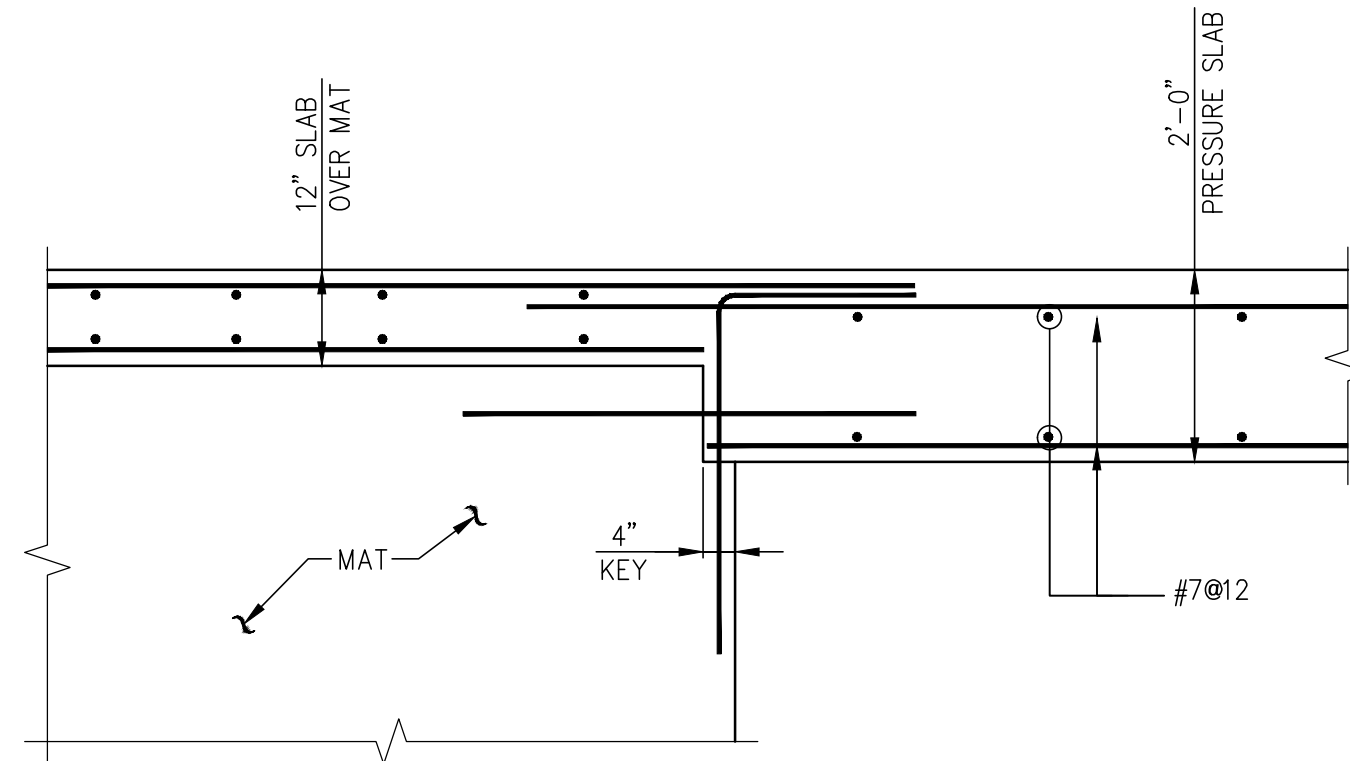
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SECTION  
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NOTE:  
1. FOR BALANCE OF INFO. SEE 1/FO-301.



SECTION  
SCALE: 3/8"=1'-0"  
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[www.wspgroup.com/usa](http://www.wspgroup.com/usa)

M.E.P. ENGINEER:

**MGE**

**MGE Engineering D.P.C.** / we engineer success  
116 West 32nd Street, 12th Floor, New York, N.Y. 10001  
P 212.643.9055 F 212.643.0503 [www.mgeopc.net](http://www.mgeopc.net)

CIVIL ENGINEER:  
**Philip Habib & Associates**  
102 MADISON AVENUE, 11TH FLOOR  
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Development Consulting Services  
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EXTERIOR WALL CONSULTANT:  
**Vidaris, Incorporated**  
360 PARK AVENUE SOUTH, 15TH FL.,  
NEW YORK, NEW YORK 10010  
TEL: (212) 689-5389

[illegible]D.O.B. NUMBER:  
NB#

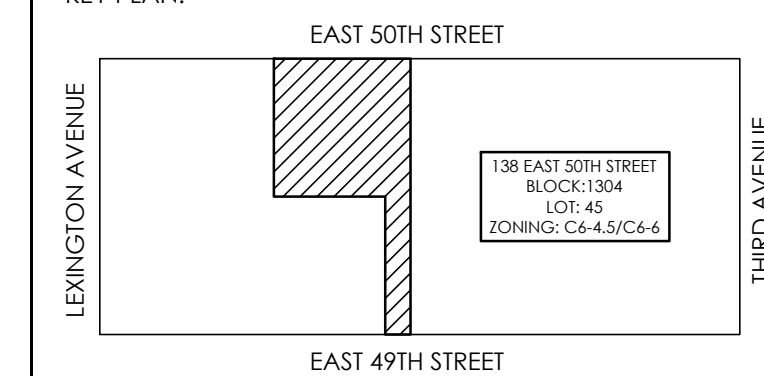
NORTH:



0' 1' 2' 4' 6' 10'

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


KEY PLANS:



PROJECT:  
138 EAST 50TH STREET  
NEW YORK, N.Y.

DRAWING TITLE:

FOUNDATION SECTION

SEAL & SIGNATURE:	DATE: 05/14/2015
	PROJECT No: 1590031
	DRAWN BY: CADD
	CHECKED BY: CS
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	FO-310.00
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