GENERAL NOTES

1. ALL ELEVATIONS SHOWN ON THE CONTRACT DRAWINGS ARE REFERENCED TO THE BOROUGH PRESIDENT OF MANHATTAN DATUM (BPMD), WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY, 1929. (NGVD = 0.0).
2. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OUTLINED ON THE CONTRACT DRAWINGS AND AS INDICATED IN THE PROJECT SPECIFICATIONS.
3. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE 2008 NEW YORK CITY BUILDING CODE AND THE REQUIREMENTS OF ALL OTHER AGENCIES HAVING JURISDICTION.
4. THE WORK SHOWN IN THESE DRAWINGS SHALL BE EXECUTED IN CONJUNCTION WITH THOSE OF THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, SITE/CIVIL DRAWINGS AND DRAWINGS OF ALL OTHER DISCIPLINES. DISCREPANCIES BETWEEN THESE DRAWINGS AND THOSE OF OTHER DISCIPLINES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION PRIOR TO COMMENCING WORK.
5. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK. VERIFY ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS OF EXISTING UTILITIES AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND THE FIELD CONDITIONS TO THE ARCHITECT FOR CLARIFICATION PRIOR TO COMMENCING WORK.
6. REFER TO STRUCTURAL DRAWINGS (S SERIES) FOR ALL OTHER BUILDING FOUNDATION DETAILS.
7. REFER TO ARCHITECTURAL DRAWINGS (A SERIES) FOR GENERAL BUILDING DETAILS.
8. REFER TO CIVIL DRAWINGS (C SERIES) FOR SITE UTILITIES AND GRADING DETAILS.
9. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF OTHER TRADES, INCLUDING BUT NOT LIMITED TO: SITE UTILITIES, GENERAL EARTHWORK, AND BUILDING FOUNDATION CONSTRUCTION.
10. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE APPROPRIATE AGENCIES PRIOR TO COMMENCING WORK, AS REQUIRED.
11. MAINTAIN GROUNDWATER LEVEL AT LEAST 2-FT BELOW SUBGRADE LEVEL DURING GENERAL EXCAVATION.
12. BENCH CUT OR SLOPE ALL EXCAVATIONS TO COMPLY WITH OSHA STANDARDS UNLESS SUITABLE TEMPORARY SHORING OR BRACING IS PROVIDED.
13. DO NOT OVER-EXCAVATE UNLESS DIRECTED BY THE OWNER'S ENGINEER FOR REMOVAL OF UNSUITABLE SOIL OR BEDROCK.
14. REFER TO GEOTECHNICAL ENGINEERING REPORT PREPARED BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C. DATED 10 MAY 2012 FOR INFORMATION PERTAINING TO GENERAL SUBSURFACE CONDITIONS.
15. ALL WORK SHALL BE SUBJECT TO SPECIAL INSPECTION AS REQUIRED BY THE NEW YORK CITY BUILDING CODE 2008. REFER TO NEW YORK CITY BUILDING DEPARTMENT NOTES FOR IDENTIFICATION OF SPECIAL INSPECTIONS.

STRUCTURAL STEEL NOTES

1. STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A992, GRADE 50, U.O.N.
2. SHEET PILING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572, GRADE 50 U.O.N.
3. STEEL PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A252, GRADE 3, WITH A MINIMUM YIELD STRENGTH OF 45 KSI.
4. MISCELLANEOUS STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, U.O.N.
5. FIELD WELDING SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1-06.
6. WELDING ELECTRODES SHALL BE E70XX, UNLESS NOTED OTHERWISE. FILLET WELDS SHALL NOT BE LESS THAN 3/16-INCH.
7. REFER TO DRAWING HYE-TC-S0-0002 AND THE PROJECT SPECIFICATIONS FOR STRUCTURAL STEEL REQUIREMENTS RELATED TO ALL OTHER WORK.

CONCRETE NOTES

1. CAST-IN-PLACE CONCRETE SHALL BE CONTROLLED CONCRETE AND SHALL HAVE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH AT 28 DAYS (F'C) OF 4,000 PSI U.O.N.
2. CONCRETE REINFORCEMENT BARS SHALL CONSIST OF DEFORMED BILLET STEEL MEETING ASTM A615, GRADE 60.
3. MECHANICAL SPLICES SHALL DEVELOP THE FULL TENSILE CAPACITY OF THE PARENT REINFORCING BAR.
4. MINIMUM CONCRETE COVER IN ACCORDANCE WITH ACI 318-02.
5. TOLERANCES FOR CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 117-06.
6. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED A MINIMUM OF ¾ INCHES.
7. REFER TO DRAWING HYE-TC-S0-0002 AND SECTION 03 30 00 FOR CONCRETE REQUIREMENTS RELATED TO ALL OTHER WORK.

SHEET PILING NOTES

1. STEEL SHEET PILING SHALL CONFORM TO ASTM A-572 GRADE 50. SHEET PILES SHALL BE AZ 18 OR APPROVED EQUAL.
2. SHEET PILING SHALL BE INSTALLED TO WITHIN 3-INCHES OF THEORETICAL LOCATION. SHEETS SHALL NOT DEVIATE MORE THAN 1 PERCENT FROM PLUMB. SHEETS DRIVEN OUTSIDE OF THE ABOVE TOLERANCES SHALL BE EXTRACTED AND redriven.
3. INSTALLATION PROCEDURE:
   - FIELD LOCATE EXISTING STRUCTURES AND UTILITIES TO ENSURE NECESSARY CLEARANCES.
   - PRE-TRENCH AS NECESSARY TO CLEAR OBSTRUCTIONS AND REMNANT FOUNDATION ELEMENTS WHICH MAY EFFECT THE INSTALLATION OF SHEETING. WHERE PRE-TRENCHING IS PERFORMED, TRENCHES SHALL BE BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) HAVING AN UNCONFINED COMPRESSIVE STRENGTH AT 28-DAYS NOT EXCEEDING 150 PSI.
   - SET PILING RIG AT DESIRED LOCATION AND PLUMB THE SHEETING PRIOR TO DRIVING.
   - DRIVE SHEETING USING APPROVED HAMMER TO REQUIRED MINIMUM DEPTHS.
   - VIBRATION AND SURVEY MONITORING SHALL BE PERFORMED DURING DRIVING. DRIVING SHALL BE CEASED IF VIBRATION LIMITS OR SETTLEMENTS EXCEED THE DEFINED THRESHOLD VALUES ESTABLISHED HEREIN.
   - THE TOP OF ALL SHEET PILING SHALL EXTEND A MINIMUM OF 6 INCHES ABOVE THE GROUND SURFACE.

INSTALLATION AND EXCAVATION SEQUENCE NOTES

1. PERFORM PRE-EXCAVATIONS AS REQUIRED ALONG ALIGNMENT OF SHEET PILE WALL TO CLEAR OBSTRUCTIONS.
2. GRADE SURFACE AS REQUIRED TO PROVIDE LEVEL WORKING PLATFORM.
3. FOUNDATIONS ALONG THE PERIMETER MUST BE INSTALLED PRIOR TO EXCAVATION WHERE IN CONFLICT WITH BRACING.
4. DRIVE SHEET PILE TO REQUIRED T0E ELEVATION USING AN APPROVED DRIVING METHOD.
5. INSTALL JET GROUT WALL.
6. EXCAVATE AND INSTALL BRACING AS REQUIRED INCLUDING DRILLING OF TIE-BACKS.
7. CONTINUE EXCAVATION AS REQUIRED TO ACHIEVE SUBGRADE ELEVATION, DEWATERING LOCALLY AS REQUIRED FOR INSTALLATION OF PERMANENT FOUNDATIONS.
8. INSTALL PERMANENT FOUNDATIONS AS REQUIRED.
9. BRACING SHALL REMAIN IN-PLACE UNTIL ADEQUATE SUPPORT IS PROVIDED BY PERMANENT STRUCTURAL ELEMENTS (I.E. FOUNDATIONS AND INTERMEDIATE FLOOR SLABS).
10. REFER TO DRAWINGS SOE-200.00 AND SOE-201.00 FOR TYPICAL SECTIONS AND DETAILED EXCAVATION SEQUENCING NOTES.
11. MONITORING OF SHEET PILE WALL AND JET GROUT WALL MOVEMENT AND ADJACENT STRUCTURES SHALL BE PERFORMED DURING INSTALLATION OF S.O.E., AND EXCAVATION, AND SHALL CONTINUE UNTIL PERMANENT FOUNDATION WALLS ARE IN-PLACE AND SUITABLY BRACED AGAINST LATERAL MOVEMENT .

TIEBACK INSTALLATION AND TESTING NOTES:

1. ALL ANCHORS SHALL BE CONFORM TO ASTM A-722, GRADE 150.
2. PLATES SHALL CONFORM TO ASTM A-36.
3. ANCHOR NUTS & COUPLERS SHALL BE CAPABLE OF DEVELOPING 100% OF THE ULTIMATE STRENGTH OF STRESSTEEL.
4. CARE MUST BE TAKEN NOT TO DAMAGE THE STRESSTEEL TENDONS. KEEP THE STRESSTEEL FREE OF DIRT OR OTHER DELETERIOUS SUBSTANCES.
5. ALL ANCHORS SHALL BE PROOF-TESTED USING A CALIBRATED CENTER HOLE JACK.
6. PERFORMANCE AND PROOF TESTING SHALL BE AS FOLLOWS:
   PERFORMANCE TEST:
   AL, 0.25P
   AL, 0.25P, 0.50P
   AL, 0.25P, 0.50P, 0.75P
   AL, 0.25P, 0.50P, 0.75P, 1.00P
   AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P
   AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P, 1.33P
7. HOLD 1.33P FOR CREEP TEST. RECORD MOVEMENTS USING A DIAL INDICATOR CAPABLE OF READING INCREMENTS OF 0.001 INCHES. RECORD READINGS AT 0, 1, 2, 3, 4, 5, 6, AND 10 MINUTES. RELEASE TO TRANSFER LOAD AND LOCK OFF ANCHOR NUT.
8. PROOF TEST: AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P, 1.33P. HOLD 1.33P FOR CREEP TEST. RECORD MOVEMENTS USING A DIAL INDICATOR CAPABLE OF READING INCREMENTS OF 0.001 INCHES. RECORD READINGS AT 0,1,2,3,4,5,6 AND 10 MINUTES. RELEASE TO TRANSFER LOAD AND LOCK OFF ANCHOR NUT.
9. CONTRACTOR SHALL SUBMIT ANCHOR SHOP DRAWING FOR APPROVAL PRIOR TO COMMENCING ANCHOR INSTALLATION. SHOP DRAWING SHALL CONTAIN ANCHOR DETAILS, INSTALLATION & TESTING PROCEDURES.
10. TIEBACKS SHALL BE INSTALLED USING TEMPORARY STEEL CASING EXTENDING THE FULL LENGTH OF THE ELEMENT.
11. TIEBACKS SHALL BE PRESSURE-GROUTED TO A MINIMUM PRESSURE OF 1.2 TIMES THE AVERAGE EFFECTIVE VERTICAL OVERBURDEN STRESS WITHIN THE BOND ZONE, BUT NOT MORE THAN 1.5 TIMES THE AVERAGE VERTICAL OVERBURDEN STRESS WITHIN THE BOND ZONE.

MONITORING NOTES

1. PROVIDE MONITORING OF S.O.E. WALL MOVEMENTS, GROUNDWATER LEVELS, AND PUMPING FLOW RATES AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH PROJECT SPECIFICATIONS.

   THE MONITORING PROGRAM SHALL CONSIST OF:
   - OPTICAL SURVEY MONITORING POINTS .
   - SEISMOGRAPHS
   - INCLINOMETERS DURING AND EXCAVATION
   - WATER LEVEL READINGS DURING EXCAVATION AND DEWATERING OPERATIONS.
2. PRIOR TO ANY SITE EXCAVATION BELOW EXISTING GRADE:
   - ESTABLISH SURVEY BASELINES FOR ADJACENT BUILDINGS AND INFRASTRUCTURE.
   - SUBMIT SAMPLE BASELINE LAYOUT AND SAMPLE DATA REPORT FORMS FOR APPROVAL.
3. MONITORING FREQUENCY: CONTRACTOR SHALL TAKE AND RECORD ALL READINGS ON A DAILY BASIS . MONITORING SHALL CONTINUE UNTIL THE PERMANENT FOUNDATION WALLS ARE IN-PLACE AND BRACED AGAINST LATERAL MOVEMENT..
4. ALERT LEVELS: SHOULD ANY OF THE FOLLOWING MAGNITUDES OF MOVEMENT BE DETECTED, THE CONTRACTOR SHALL IMMEDIATELY TAKE REMEDIAL ACTION AND ADVISE THE ENGINEER.
   - MONITORING POINTS: 0.5 INCHES TOTAL LATERAL MOVEMENT OR 0.25 INCHES LATERAL MOVEMENT BETWEEN READINGS. 0.375 INCHES TOTAL VERTICAL MOVEMENT OR 0.25 INCHES VERTICAL MOVEMENT BETWEEN READINGS.
   - VIBRATION: PEAK PARTICLE VELOCITIES EXCEEDING 2-INCHES PER SECOND.
   - INCLINOMETER: 0.5 INCHES TOTAL LATERAL MOVEMENT OR 0.25 INCHES BETWEEN READINGS.
   - WATER LEVEL: 2 FT INCREASE OR DECREASE IN ANY MEASUREMENT AFTER PUMPING HAS STABILIZED AT ANY TEMPORARY SUBGRADE DURING EXCAVATION.
5. THE CONTRACTOR WILL DETERMINE IF CONTINGENCY PLANS ARE NECESSARY.
6. IN THE EVENT THAT MONITORING INDICATES MOVEMENT EXCEEDS THE ABOVE DEFINED ALERT LEVELS (LATERAL OR VERTICAL), THE CONTRACTOR SHALL CEASE EXCAVATION AND PROVIDE STABILIZATION OF THE EXCAVATION SUPPORT SYSTEM VIA INSTALLATION OF TEMPORARY EARTHEN BERMS AND/OR ADDITIONAL BRACING. ADDITIONAL EXCAVATION ACTIVITIES SHALL NOT PROCEED WITHOUT THE AUTHORIZATION OF THE OWNER'S ENGINEER.
7. ALL SURVEY MONITORING POINTS SHALL BEAR A UNIQUE IDENTIFICATION. AS-BUILT PLANS SHALL BE PREPARED FOR ALL SURVEY MONITORING POINTS INSTALLED. PLANS SHALL BE AMENDED AS REQUIRED DURING CONSTRUCTION FOR THE ABANDONMENT, REPLACEMENT, OR ADDITION OF NEW SURVEY MONITORING LOCATIONS.
8. THE CONTRACTOR SHALL PERFORM VIBRATION MONITORING DURING ALL SOE OPERATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE MAXIMUM PERMISSIBLE VIBRATION LEVEL (PPV) OF ALL CONSTRUCTION ACTIVITIES SHALL BE 2.0-INCHES PER SECOND AS MEASURED AT THE PROJECT SITE PERIMETER. THRESHOLD TRIGGER VALUES FOR GEOPHONES SHALL BE SET TO A MAXIMUM OF 0.5-INCHES PER SECOND.
9. INSTALL SURVEY MONITORING POINTS AT LOCATIONS DETERMINED IN CONSULTATION WITH THE OWNER'S ENGINEER.
10. INSTALL GROUNDWATER MONITORING WELLS AT LOCATIONS TO BE COORDINATED WITH THE OWNER'S ENGINEER.
11. INSTALL SEISMOGRAPHS AT LOCATIONS DETERMINED IN CONSULTATION WITH THE OWNER'S ENGINEER.

NEW YORK CITY BUILDING DEPARTMENT NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE 2008 NEW YORK CITY BUILDING CODE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF BUILDINGS AND ADJACENT PROPERTY OWNER'S 24-48 HOURS PRIOR TO COMMENCING EXCAVATION AS PER SECTION 3304.3.1 AND 3304.3.2 OF THE NEW YORK CITY BUILDING CODE.
3. THE CONTRACTOR SHALL INSPECT AND MAINTAIN EXCAVATION SLOPES AND EMBANKMENTS IN ACCORDANCE WITH SECTION 3304.4.4.2 OF THE NEW YORK CITY BUILDING CODE.
4. THE CONTRACTOR SHALL PROVIDE MEANS OF SAFE INGRESS/EGRESS AT ALL TIMES AS PER SECTION 3304.7 OF THE NEW YORK CITY BUILDING CODE.
5. EXCAVATIONS SHALL BE DRAINED AND DRAINAGE SHALL BE MAINTAINED USING PUMPING AS REQUIRED AS PER SECTION 3304.8 OF THE NEW YORK CITY BUILDING CODE. WHERE PUMPING IS REQUIRED, PERMITS SHALL BE OBTAINED FROM THE AGENCY HAVING JURISDICTION.
6. ALL WORK CONTAINED HEREIN SHALL BE SUBJECT TO SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE NEW YORK CITY BUILDING CODE. SPECIAL INSPECTORS SHALL MEET THE QUALIFICATIONS OUTLINED IN THE RULES OF THE CITY OF NEW YORK, SECTION 101-06, DATED 6-30-08. REQUIRED SPECIAL INSPECTIONS INCLUDE:

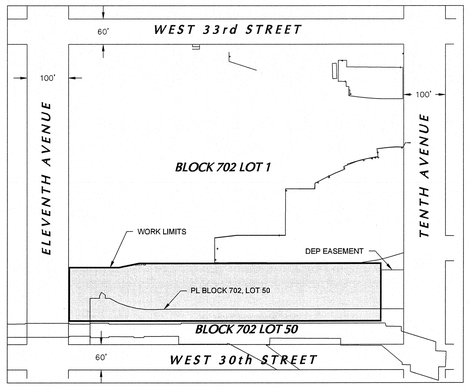
   A. SOILS AS PER SECTION 1704.7
      a. SITE PREPARATION
      b. FILL PLACEMENT
      c. IN-PLACE SOIL DENSITY
      d. SOILS - INVESTIGATION (BORINGS AND TEST PITS)

   B. CONCRETE CONSTRUCTION AS PER SECTION 1704.4
      a. GROUT MIX DESIGN
      b. GROUT CUBES AND TESTING

   D. EXCAVATION - SHEETING, SHORING AND BRACING AS PER 1704.19 AND 3304.4.1
      a. SHEET PILE INSTALLATION
      b. EXCAVATION
      c. TIEBACK INSTALLATION AND TESTING

   E. STEEL CONSTRUCTION AS PER SECTION 1704.3
      a. WELDING

   F. STRUCTURAL SAFETY - STRUCTURAL STABILITY AS PER SECTION 1704.19
4. IN CONFORMANCE WITH THE NEW YORK CITY BUILDING CODE, THE OWNER'S ENGINEER SHALL BE RETAINED TO CONDUCT THE NECESSARY SPECIAL INSPECTIONS FOR THE PROPOSED WORK AS APPROPRIATE.
5. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION ON SCOPE AND DETAILED REQUIREMENTS FOR INSPECTIONS AND TESTING.
6. REFER TO THE PROJECT SPECIFICATIONS AND DRAWINGS FOR INSPECTION AND TESTING REQUIREMENTS PERTAINING TO WORK OF OTHER TRADES.



1 PLOT PLAN
Scale: 1/128" = 1'-0"

Damian Titus
Buildings
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Under Directive 2 of 1975
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TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

Address
501 WEST 30TH STREET
NEW YORK, NY

Client
Related Companies
60 Columbus Circle
New York, NY 10023
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Architect
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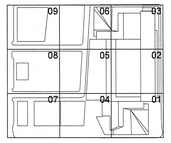
No.	Issue	Date
2	HIGHLINE COMMENTS	10-03-2012
1	DI-2: FNDN & UTIL BP	08-01-2012

Key Plan



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Project No.
170019112
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Drawing Title
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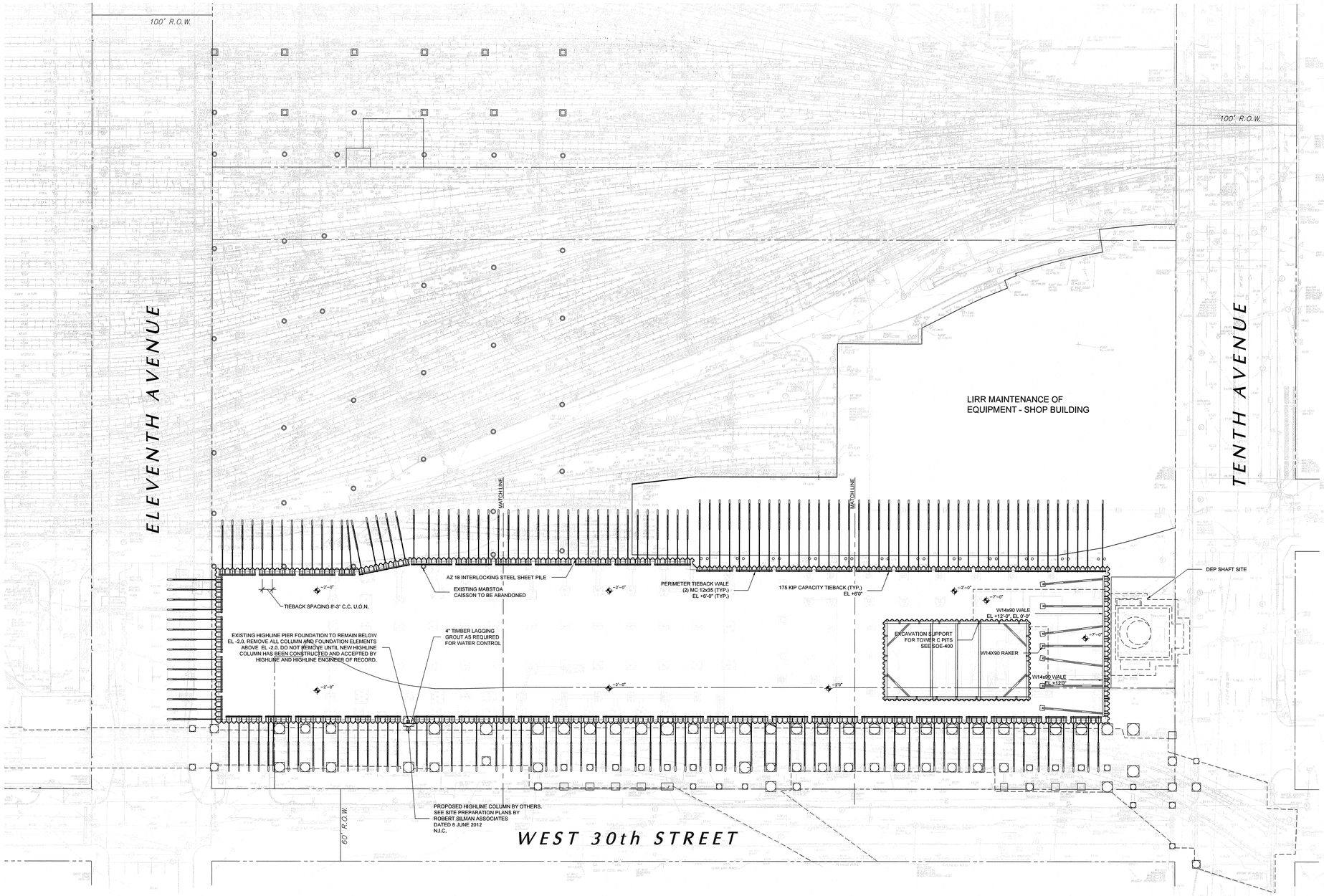

GENERAL NOTES

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2. ALL TIEBACKS ALONG THE NORTHERN WALL SHALL BE FIBER GLASS.
3. SEE GENERAL NOTES SHEET FOR ADDITIONAL NOTES.

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HUDSON YARDS - TOWER C

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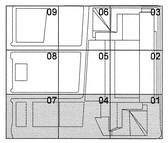
No.	Issue	Date
2	HIGHLINE COMMENTS	10-03-2012
1	DI-2 FNDN & UTIL BP	08-01-2012

Key Plan



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SMG
Sheet Number
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Drawing Title
COMPOSITE PLAN
Drawing Number
SOE1-0000
BuSCAN Drawing Number
SOE-100.00
SHEET 2 OF 11

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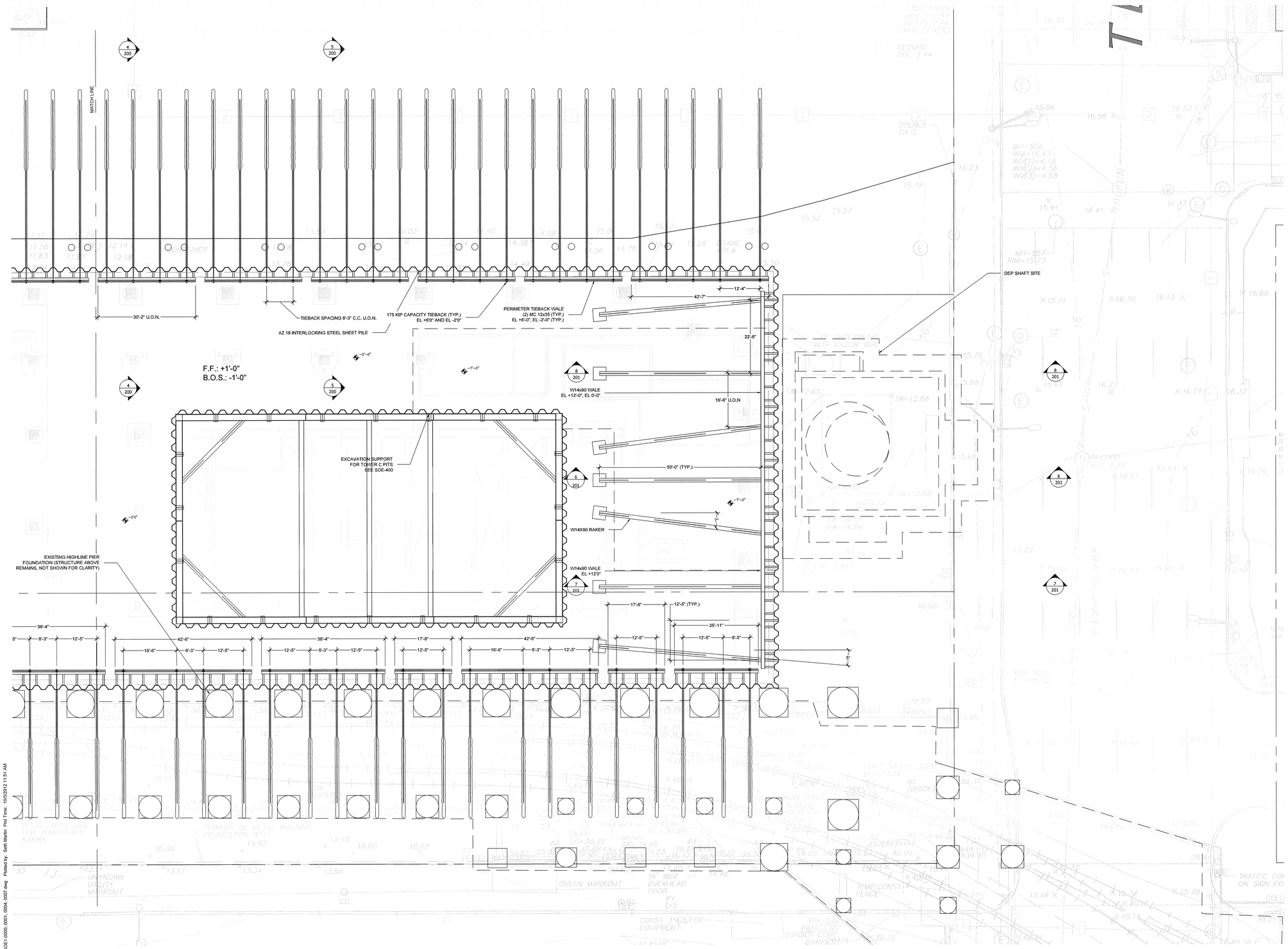

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0 6' 12' 24' 36'
GRAPHIC SCALE

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

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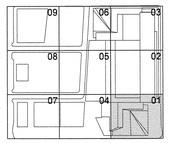
2	HIGHLINE COMMENTS	10-03-2012
1	DI-2: FNDN & UTIL BP	08-01-2012

Key Plan



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SHEET 3 OF 11

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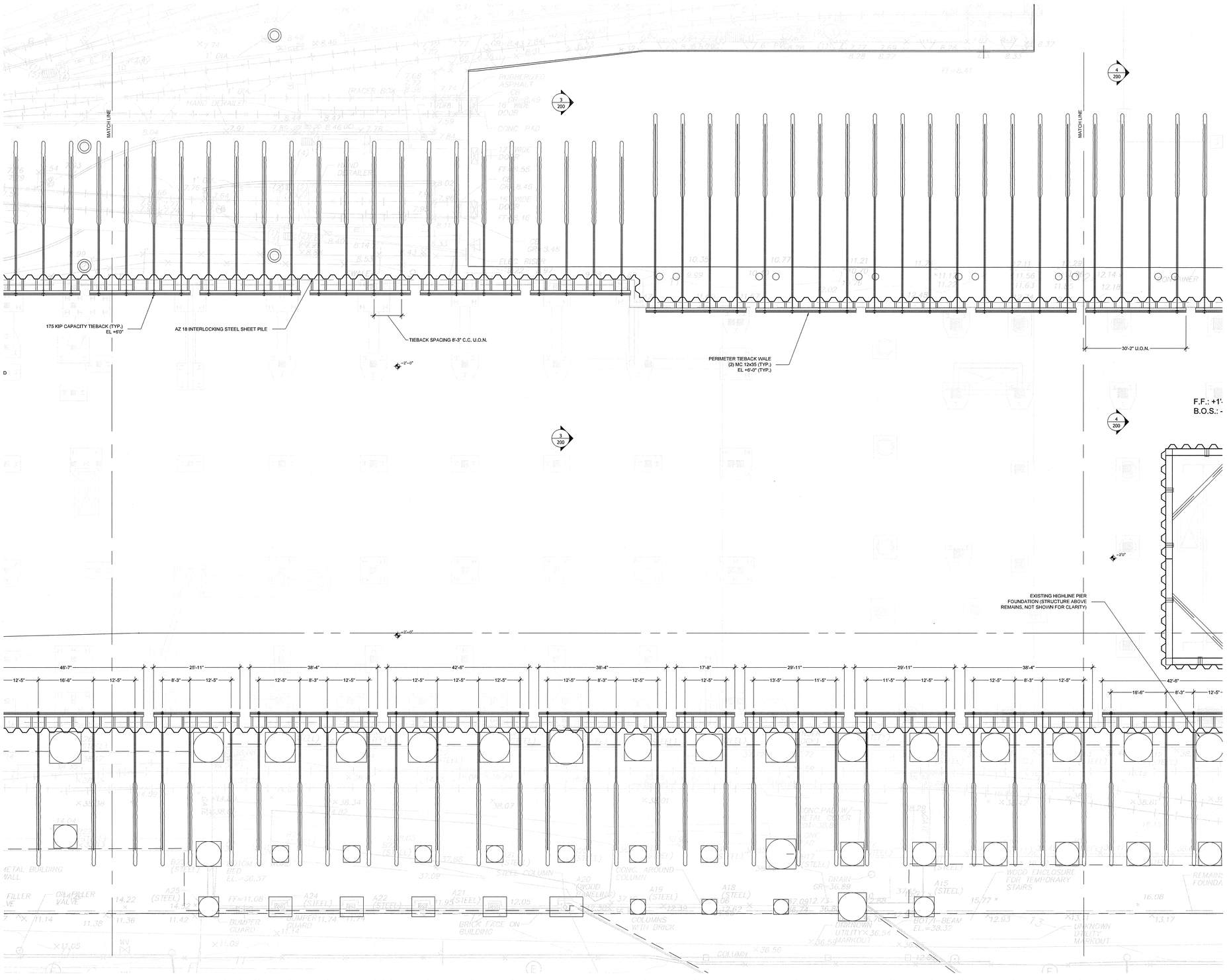

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GRAPHIC SCALE 0 6' 12' 24' 36'

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

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Tel: 212.986.7514 Fax: 212.986.7510

Construction Manager
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Tel: 212.708.3600

Architect
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Architects & Planning Consultants
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Tel: 212.977.6500 Fax: 212.956.2526

Structural Engineer
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Mechanical, Electrical, Plumbing, Fire Protection
Jaros Baum & Bolles Consulting Engineers
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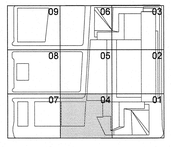
Geotechnical Engineer
Langan Engineering and Environmental Services PC
360 West 31st Street, 8th Floor
New York, NY 10001
Tel: 212.479.5400 Fax: 212.479.5555

No.	Issue	Date
2	HIGHLINE COMMENTS	10-03-2012
1	DI-2: FNDN & UTIL BP	08-01-2012

Key Plan



Date
10-03-12
Project No.
170019112
Drawn By
SMG
Sheet Number

HYE-TC-SOE1-0004
Drawing Title

PART PLAN

Drawing Number
SOE1-0004
B.S.C.A.'s Drawing Number
SOE-104.00
SHEET 4 OF 11

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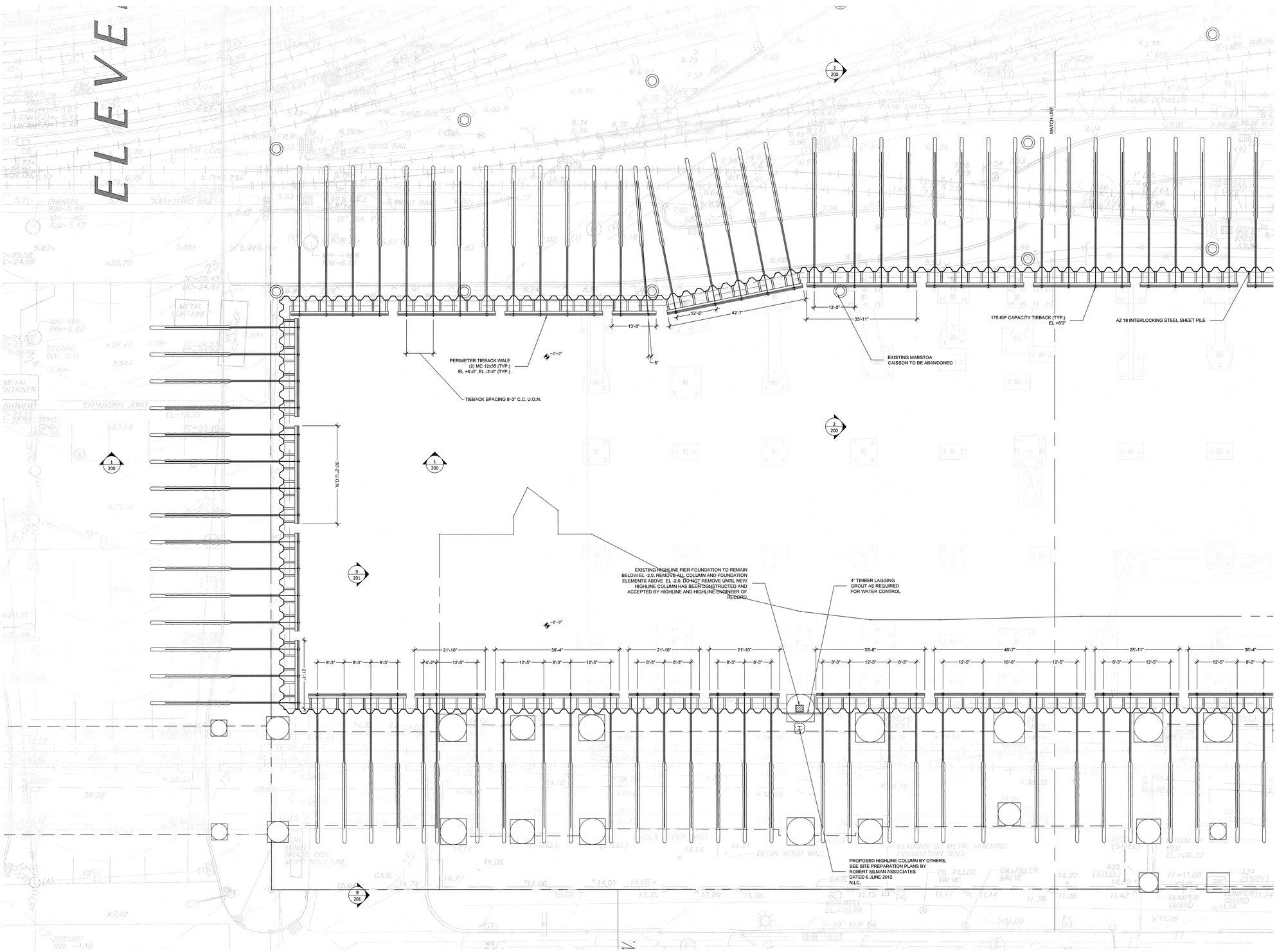

GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM TOPOGRAPHIC & BOUNDARY SURVEY PREPARED BY LANGAN ENGINEERING & ENVIRONMENTAL SERVICES, P.C. TITLED "HUDSON YARDS FINAL TOPO SURVEY," DATED 5 NOVEMBER 2010.
2. ALL TIEBACKS ALONG THE NORTHERN WALL SHALL BE FIBER GLASS.
3. SEE GENERAL NOTES SHEET FOR ADDITIONAL NOTES.

Damian Titus
Buildings
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0 6' 12' 24' 36'
GRAPHIC SCALE

N

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

Address
501 WEST 30TH STREET
NEW YORK, NY

Client
Related Companies
60 Columbus Circle
New York, NY 10023
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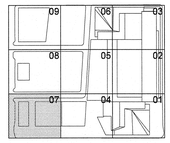
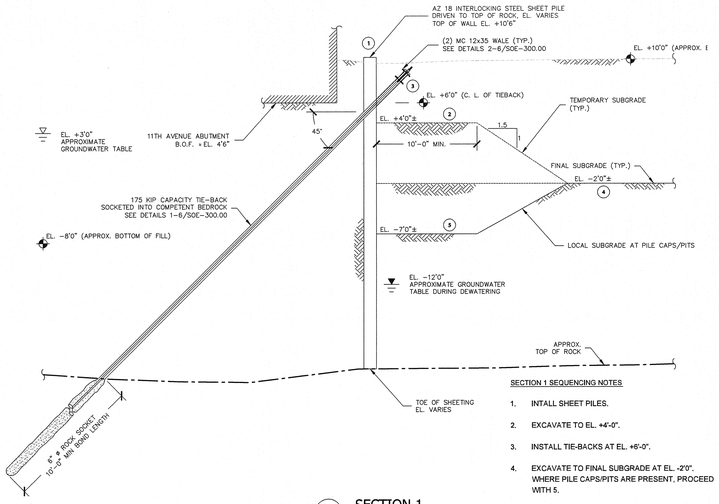
Key Plan



Date
10-03-12
Project No.
170019112
Drawn By
SMG
Sheet Number
HYE-TC-SOE1-0007
Drawing Title
PART PLAN

Drawing Number
SOE1-0007
B.C.A.I. Drawing Number
SOE-107.00
SHEET 5 OF 11

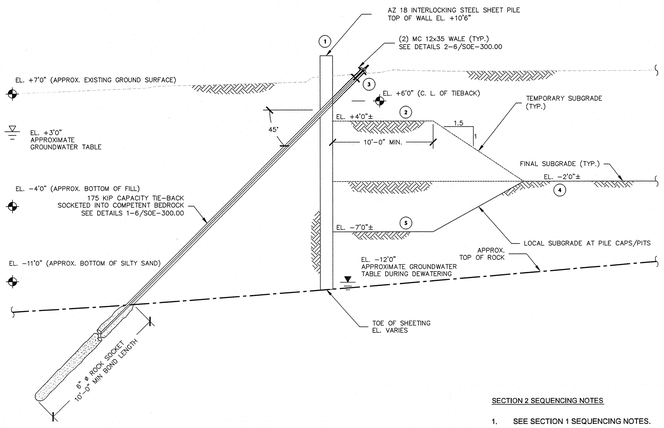
Filename: \\langan.com\data\NY\data\170\19112\CAD\ Date - 170019112\2012-10-03 Highline Comments\HYE-TC-SOE1-0000, 0001, 0004, 0007.dwg Plotted by: Seth Martin Plot Time: 10/3/2012 3:14 PM



1/100 SECTION 1
Scale: 3/16" = 1'

SECTION 1 SEQUENCING NOTES

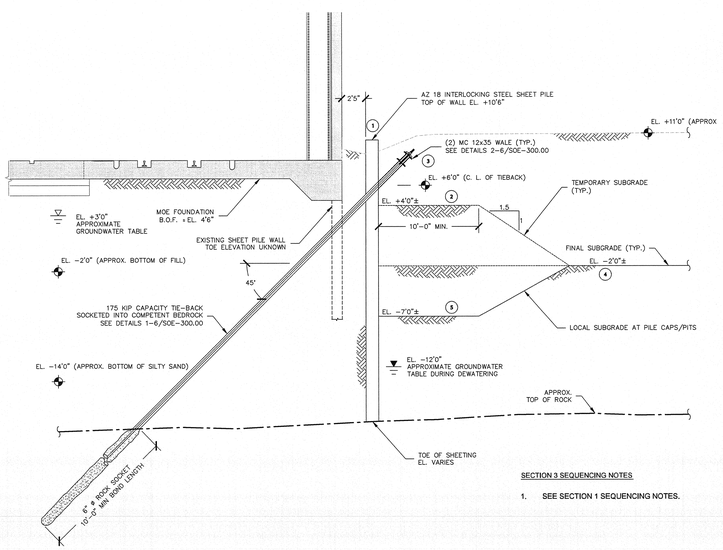
1. INTALL SHEET PILES.
2. EXCAVATE TO EL. +4'-0".
3. INSTALL TIE-BACKS AT EL. +6'-0".
4. EXCAVATE TO FINAL SUBGRADE AT EL. -2'0". WHERE PILE CAPS/PITS ARE PRESENT, PROCEED WITH 5.
5. EXCAVATE LOCALLY AT PILE CAPS TO FINAL SUBGRADE AT EL. -7'0". DO NOT EXCAVATE BEYOND PILE CAP PERIMETER UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
6. TIE-BACKS TO REMAIN TENSIONED UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION



2/100 SECTION 2
Scale: 3/16" = 1'

SECTION 2 SEQUENCING NOTES

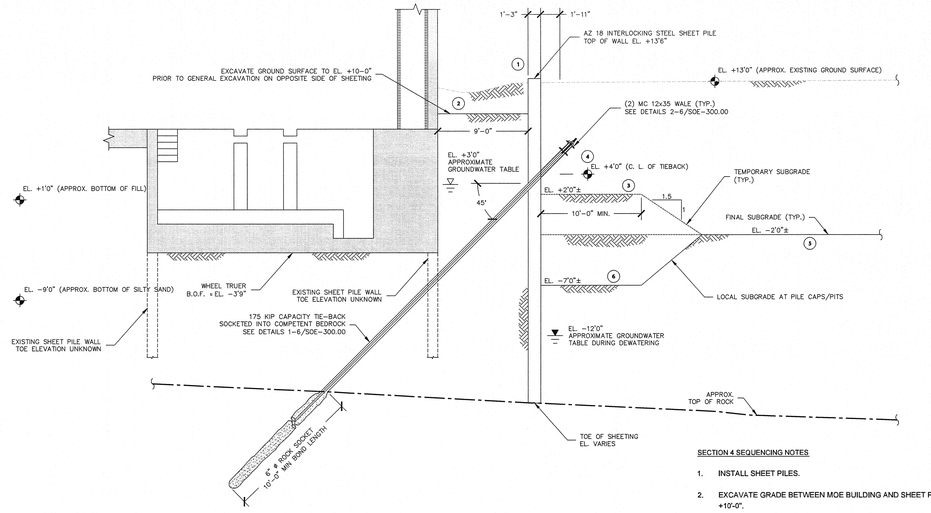
1. SEE SECTION 1 SEQUENCING NOTES.



3/100 SECTION 3
Scale: 3/16" = 1'

SECTION 3 SEQUENCING NOTES

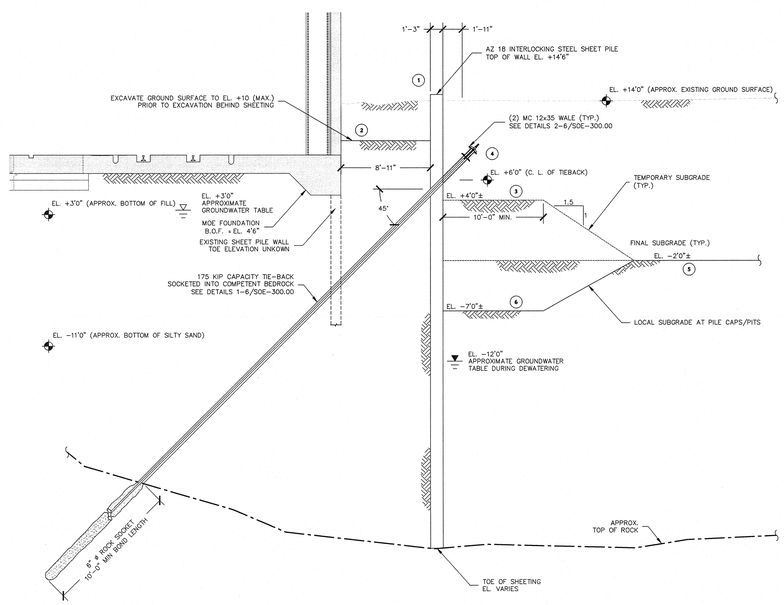
1. SEE SECTION 1 SEQUENCING NOTES.



4/100 SECTION 4
Scale: 3/16" = 1'

SECTION 4 SEQUENCING NOTES

1. INSTALL SHEET PILES.
2. EXCAVATE GRADE BETWEEN MOE BUILDING AND SHEET PILE TO EL. +10'-0".
3. EXCAVATE TO EL. +2'-0".
4. INSTALL TIE-BACKS AT EL. +4'-0".
5. EXCAVATE TO FINAL SUBGRADE AT EL. -2'-0". WHERE PILE CAPS/PITS ARE PRESENT, PROCEED TO 6.
6. EXCAVATE LOCALLY AT PILE CAPS TO FINAL SUBGRADE AT EL. -7'0". DO NOT EXCAVATE BEYOND PILE CAP PERIMETER UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
7. TIE-BACKS TO REMAIN TENSIONED UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION



5/100 SECTION 5
Scale: 3/16" = 1'

SECTION 5 SEQUENCING NOTES

1. INSTALL SHEET PILES.
2. EXCAVATE GRADE BETWEEN MOE BUILDING AND SHEET PILE TO EL. +10'-0".
3. EXCAVATE TO EL. +4'-0".
4. INSTALL TIE-BACKS AT EL. +6'-0".
5. EXCAVATE TO FINAL SUBGRADE AT EL. -2'-0". WHERE PILE CAPS/PITS ARE PRESENT, PROCEED TO 5B.
6. EXCAVATE LOCALLY AT PILE CAPS TO FINAL SUBGRADE AT EL. -7'0". DO NOT EXCAVATE BEYOND PILE CAP PERIMETER UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
7. TIE-BACKS TO REMAIN TENSIONED UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Nov 20, 2012 – 11:27 AM
NYC Development Hub

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

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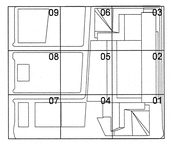
No.	Issue	Date
2	HIGHLINE COMMENTS	10-03-2012
1	DI-2: FNDN & UTIL BP	08-01-2012

Key Plan



Date
10-03-12
Project No.
170019112
Drawn By
SMG
Sheet Number
HYE-TC-SOE2-0001
Drawing Title
TYPICAL SECTIONS
Drawing Number
SOE2-0001
B.S.C.A.V. Drawing Number
SOE-200.00
SHEET 6 OF 11

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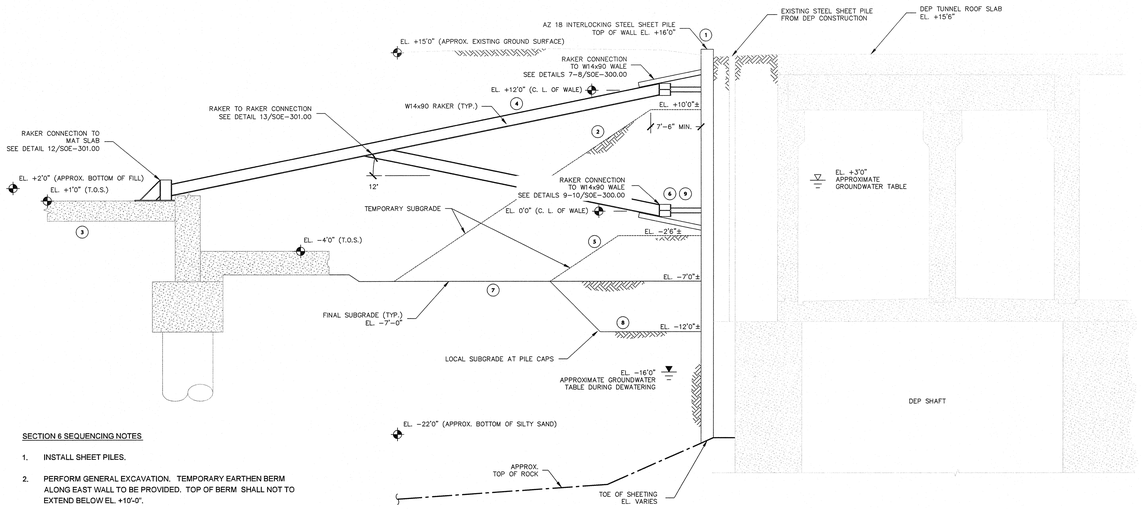
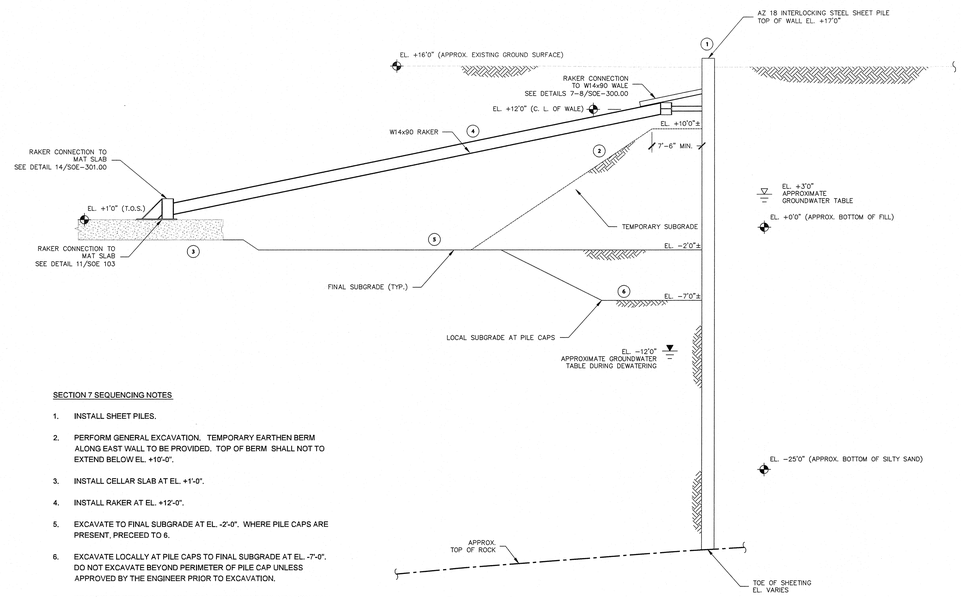


6 / 100 SECTION 6
Scale: 3/16" = 1'

SECTION 6 SEQUENCING NOTES

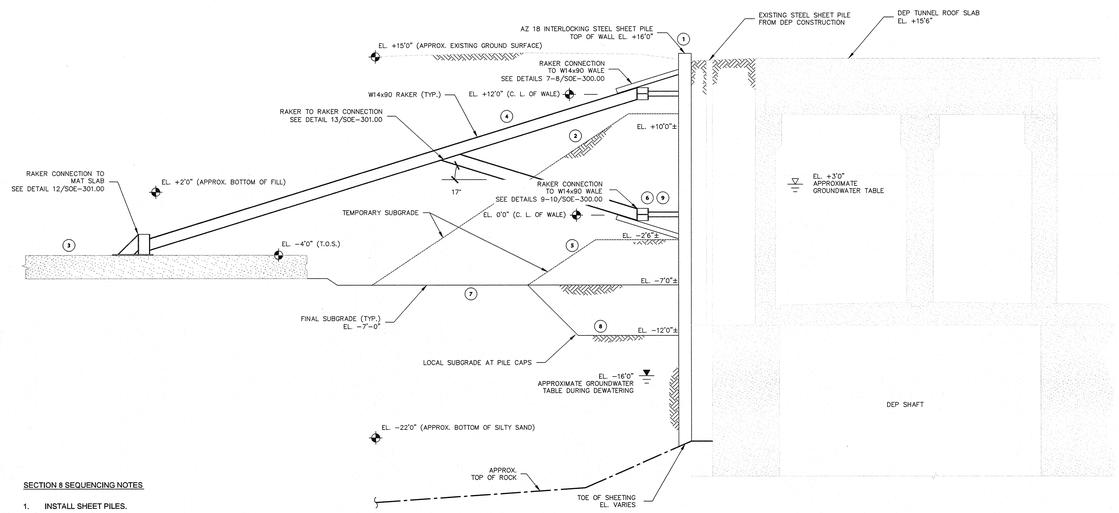
1. INSTALL SHEET PILES.
2. PERFORM GENERAL EXCAVATION. TEMPORARY EARTHEN BERM ALONG EAST WALL TO BE PROVIDED. TOP OF BERM SHALL NOT TO EXTEND BELOW EL. +10'-0".
3. INSTALL PILE CAPS AND CELLAR SLAB AT EL. +1'-0" AND EL. -4'-0" AS APPLICABLE.
4. INSTALL FIRST LEVEL OF RAKERS AT EL. +12'-0".
5. EXCAVATE TEMPORARY BERM TO EL. -2'-6".
6. INSTALL SECOND LEVEL OF RAKERS AT EL. 0'-0".
7. EXCAVATE TO FINAL SUBGRADE AT EL. -7'-0". WHERE PILE CAPS/PITS ARE PRESENT, PROCEED TO STEP 8, OTHERWISE PROCEED TO STEP 9
8. EXCAVATE LOCALLY AT PILE CAPS/PITS TO FINAL SUBGRADE AT EL. -12'-0". DO NOT EXCAVATE BEYOND PERIMETER OF PILE CAPS/PITS UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
9. REMOVE SECOND LEVEL OF RAKERS AFTER DEPRESSED SLAB HAS BEEN INSTALLED AT EL. -4'-0. CONCRETE CURE SHALL BE A MINIMUM O 3 DAYS PRIOR TO REMOVAL OF RAKERS.
10. TOP LEVEL OF BRACING TO REMAIN UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION.



7 / 100 SECTION 7
Scale: 3/16" = 1'

SECTION 7 SEQUENCING NOTES

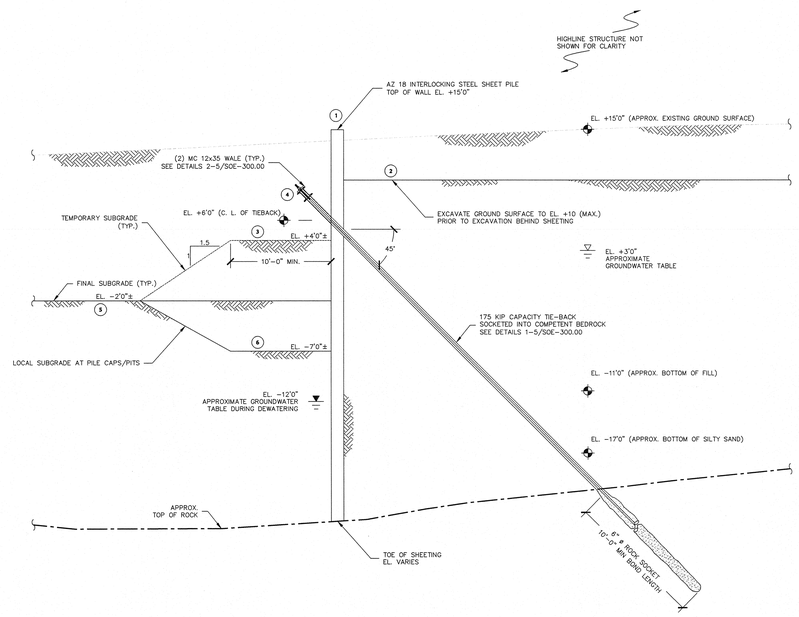
1. INSTALL SHEET PILES.
2. PERFORM GENERAL EXCAVATION. TEMPORARY EARTHEN BERM ALONG EAST WALL TO BE PROVIDED. TOP OF BERM SHALL NOT TO EXTEND BELOW EL. +10'-0".
3. INSTALL CELLAR SLAB AT EL. +1'-0".
4. INSTALL RAKER AT EL. +12'-0".
5. EXCAVATE TO FINAL SUBGRADE AT EL. -2'-0". WHERE PILE CAPS ARE PRESENT, PRECEED TO 6.
6. EXCAVATE LOCALLY AT PILE CAPS TO FINAL SUBGRADE AT EL. -7'-0". DO NOT EXCAVATE BEYOND PERIMETER OF PILE CAP UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
7. BRACING TO REMAIN IN PLACE UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION.



8 / 100 SECTION 8
Scale: 3/16" = 1'

SECTION 8 SEQUENCING NOTES

1. INSTALL SHEET PILES.
2. PERFORM GENERAL EXCAVATION. TEMPORARY EARTHEN BERM ALONG EAST WALL TO BE PROVIDED. TOP OF BERM SHALL NOT TO EXTEND BELOW EL. +10'-0".
3. INSTALL CELLAR SLAB AT EL. -4'-0" .
4. INSTALL FIRST LEVEL OF RAKERS AT EL. +12'-0".
5. EXCAVATE TEMPORARY BERM TO EL. -2'-6".
6. INSTALL SECOND LEVEL OF RAKERS AT EL. 0'-0".
7. EXCAVATE TO FINAL SUBGRADE AT EL. -7'-0". WHERE PILE CAPS/PITS ARE PRESENT, PROCEED TO STEP 8, OTHERWISE PROCEED TO STEP 9
8. EXCAVATE LOCALLY AT PILE CAPS/PITS TO FINAL SUBGRADE AT EL. -12'-0". DO NOT EXCAVATE BEYOND PERIMETER OF PILE CAPS/PITS UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
9. REMOVE SECOND LEVEL OF RAKERS AFTER DEPRESSED SLAB HAS BEEN INSTALLED AT EL. -4'-0. CONCRETE CURE SHALL BE A MINIMUM O 3 DAYS PRIOR TO REMOVAL OF RAKERS.
10. TOP LEVEL OF BRACING TO REMAIN UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION.



9 / 100 SECTION 9
Scale: 3/16" = 1'

SECTION 9 SEQUENCING NOTES

1. INSTALL SHEET PILES.
2. EXCAVATE GRADE BEHIND SHEET PILE WALL TO EL. +10'-0"
3. EXCAVATE TO EL. +4'-0".
4. INSTALL TIE-BACKS AT EL. +6'-0".
5. EXCAVATE TO FINAL SUBGRADE AT EL. -2'-0". WHERE PILE CAPS ARE PRESENT, PROCEED TO 6.
6. EXCAVATE LOCALLY AT PILE CAPS TO FINAL SUBGRADE AT EL. -7'-0". DO NOT EXCAVATE BEYOND PERIMETER OF PILE CAPS UNLESS APPROVED BY THE ENGINEER PRIOR TO EXCAVATION.
7. TIE-BACKS TO REMAIN TENSIONED UNTIL PERMANENT FOUNDATION WALL HAS BEEN INSTALLED AND IS BRACED AGAINST ROTATION.

Damian Titus

Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Nov 20, 2012 – 11:27 AM
NYC Development Hub

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

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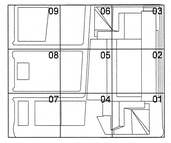
No.	Issue	Date
2	HIGHLINE COMMENTS	10-03-2012
1	DE-2: FNDN & UTIL BP	08-01-2012

Key Plan



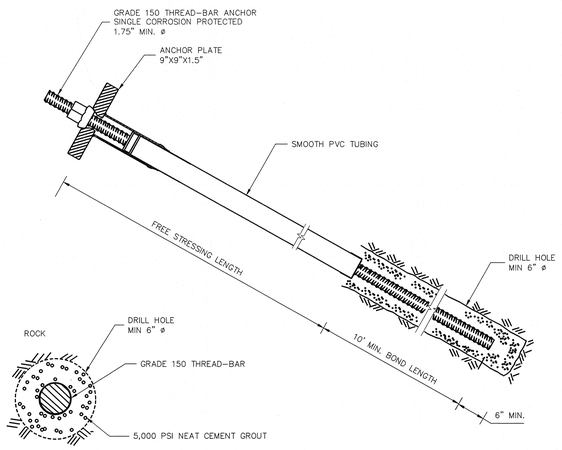
Date
10-03-12
Project No.
170019112
Drawn By
SMG
Sheet Number

STATE OF NEW YORK · BUILDINGS · PROFESSIONAL ENGINEER

HYE-TC-SOE2-0002
Drawing Title

TYPICAL SECTIONS

Drawing Number
SOE2-0002
RICAT Drawing Number
SOE-201.00



1 TYPICAL TIEBACK DETAIL
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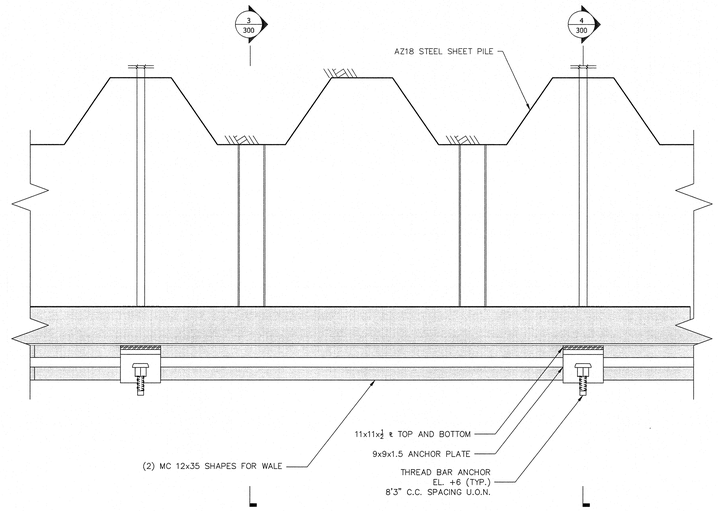
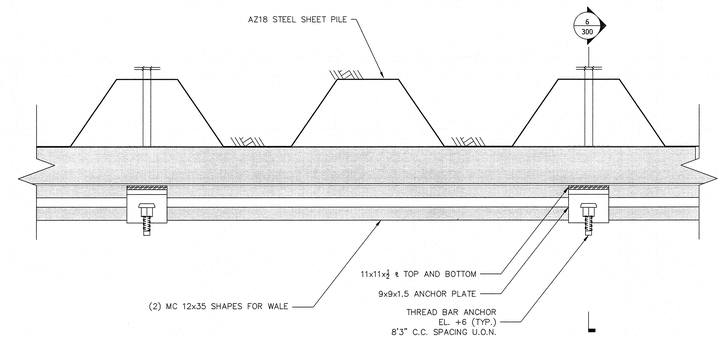


2 TYPICAL WALE CONNECTION @ TIE-BACK (FIRST LEVEL)
Scale: 1"=1'



5 TYPICAL WALE CONNECTION @ TIE-BACK (SECOND LEVEL)
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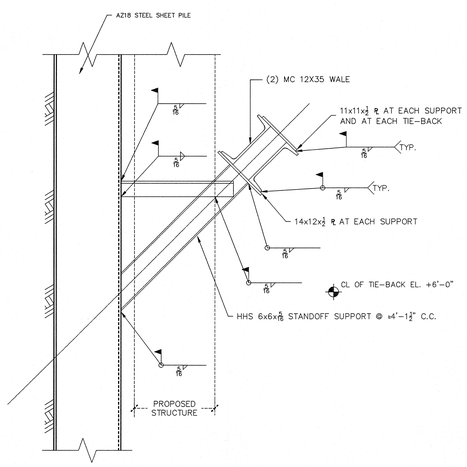
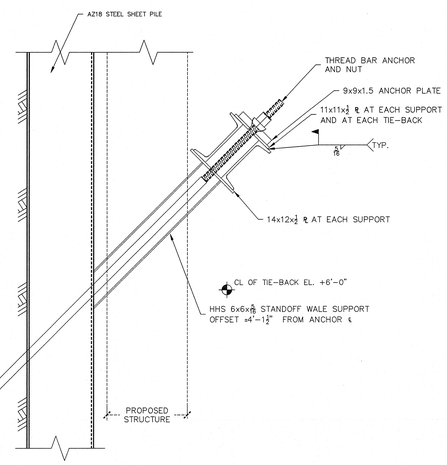
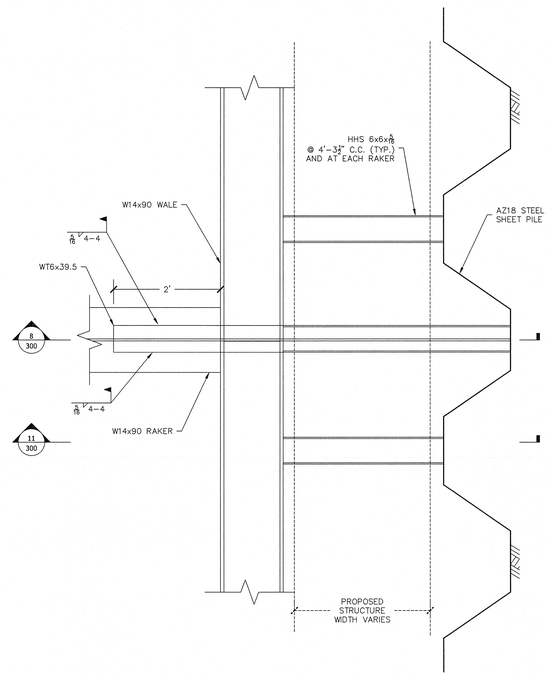


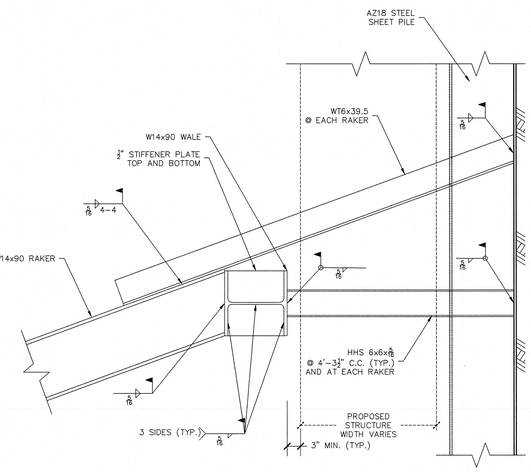
3 TYPICAL SECTION AT WALE SUPPORT BRACKET
Scale: 1"=1'



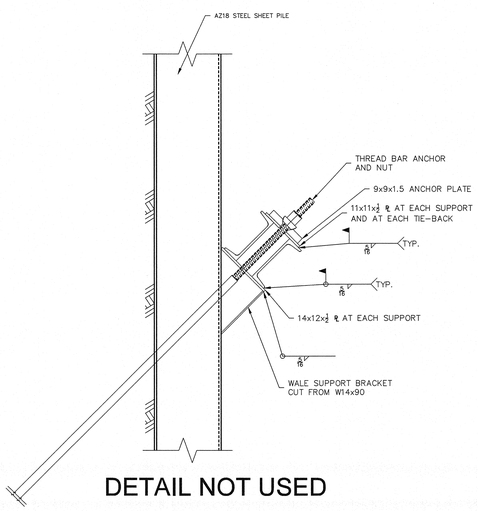
4 TYPICAL SECTION AT TIE-BACK (EL +6'-0")
Scale: 1"=1'



7 TYPICAL WALE CONNECTION @ INCLINDED RAKER (PLAN VIEW)
Scale: 1"=1'

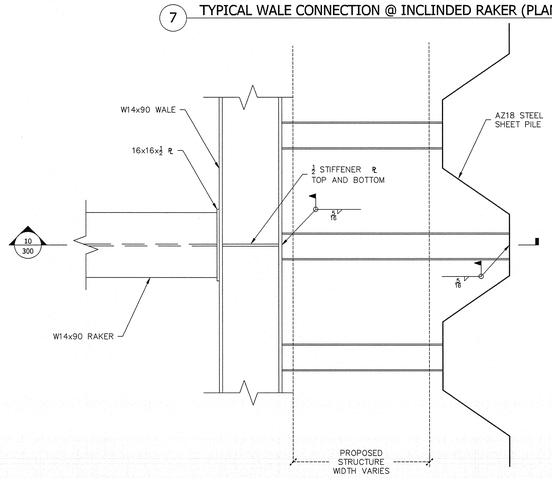


8 TYPICAL WALE CONNECTION @ INCLINED RAKER (SECTION VIEW)
Scale: 1"=1'

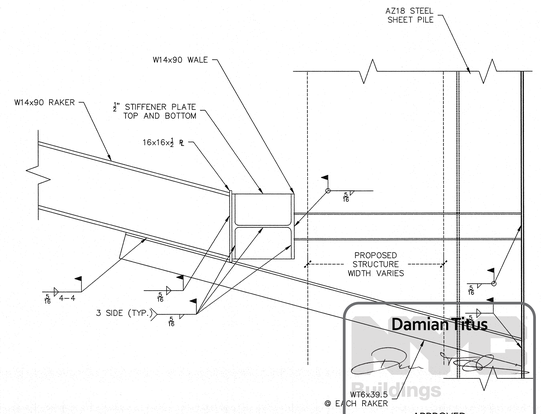


DETAIL NOT USED

6 TYPICAL SECTION AT TIEBACK (DIRECT MOUNT TO WALL)
Scale: 1"=1'



9 TYPICAL WALE CONNECTION @ HORIZONTAL RAKER (PLAN VIEW)
Scale: 1"=1'



10 TYPICAL WALE CONNECTION @ HORIZONTAL RAKER (SECTION VIEW)
Scale: 1"=1'

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New York, NY 10023
Tel: 212.801.1000 Fax: 212.801.1048

Oxford Properties Group
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Tel: 212.986.7514 Fax: 212.986.7510

Construction Manager
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100 Park Avenue, 5th Floor
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Architect
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Architects & Planning Consultants
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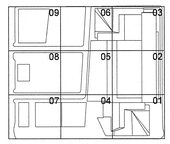
Tel: 212.530.9300 Fax: 212.269.5894

Geotechnical Engineer
Langan Engineering and Environmental Services PC
360 West 31st Street, 8th Floor
New York, NY 10001
Tel: 212.479.5400 Fax: 212.479.5555

No.	Issue	Date
2	HIGHLINE COMMENTS	10-03-2012
1	DD-2 FNDN & UTIL BP	08-01-2012

Key Plan



Date
10-03-12
Project No.
170019112
Drawn By
SMG
Sheet Number
HYE-TC-SOE5-0001
Drawing Title
TYPICAL DETAILS
Drawing Number
SOE5-0001
B-SCAN Drawing Number
SOE-300.00
SHEET 8 OF 11

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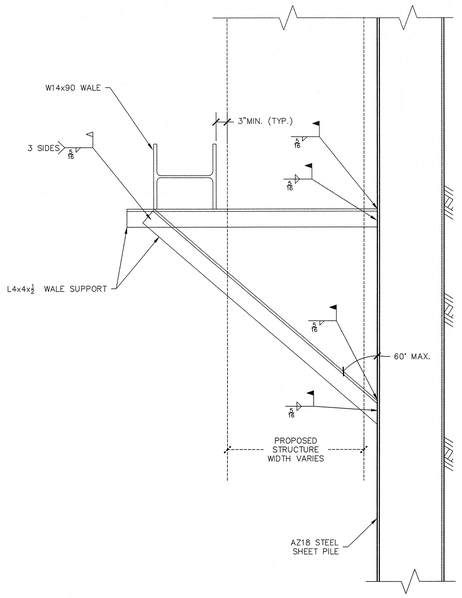
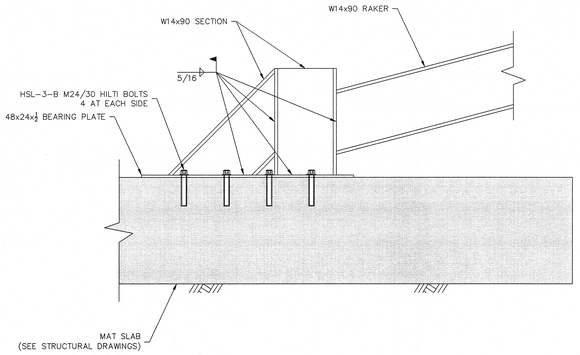
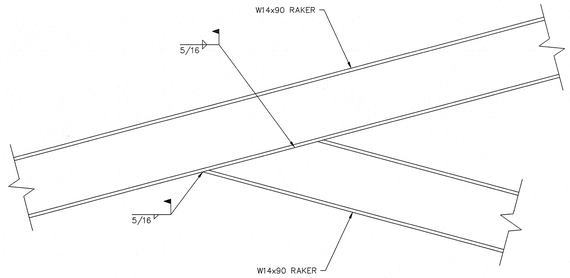


11 WALE SUPPORT BRACKET (EAST WALL)
Scale: 1"=1'



12 TYPICAL RAKER TO MAT SLAB CONNECTION
Scale: 1"=1'



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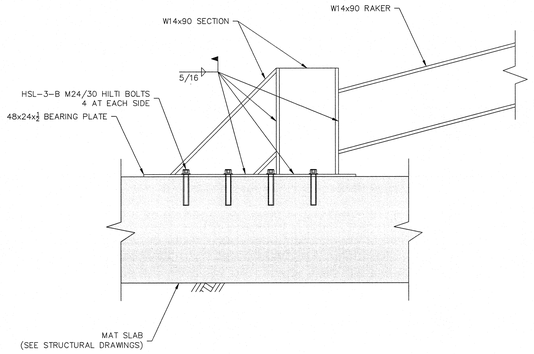

14 TYPICAL RAKER TO MAT SLAB CONNECTION
Scale: 1"=1'

Damian Titus
NYC Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Nov 20, 2012 – 11:27 AM
NYC Development Hub

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

Address
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NEW YORK, NY

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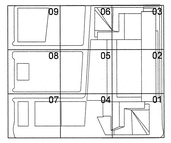
Key Plan



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Project No.
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Drawn By
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Sheet Number
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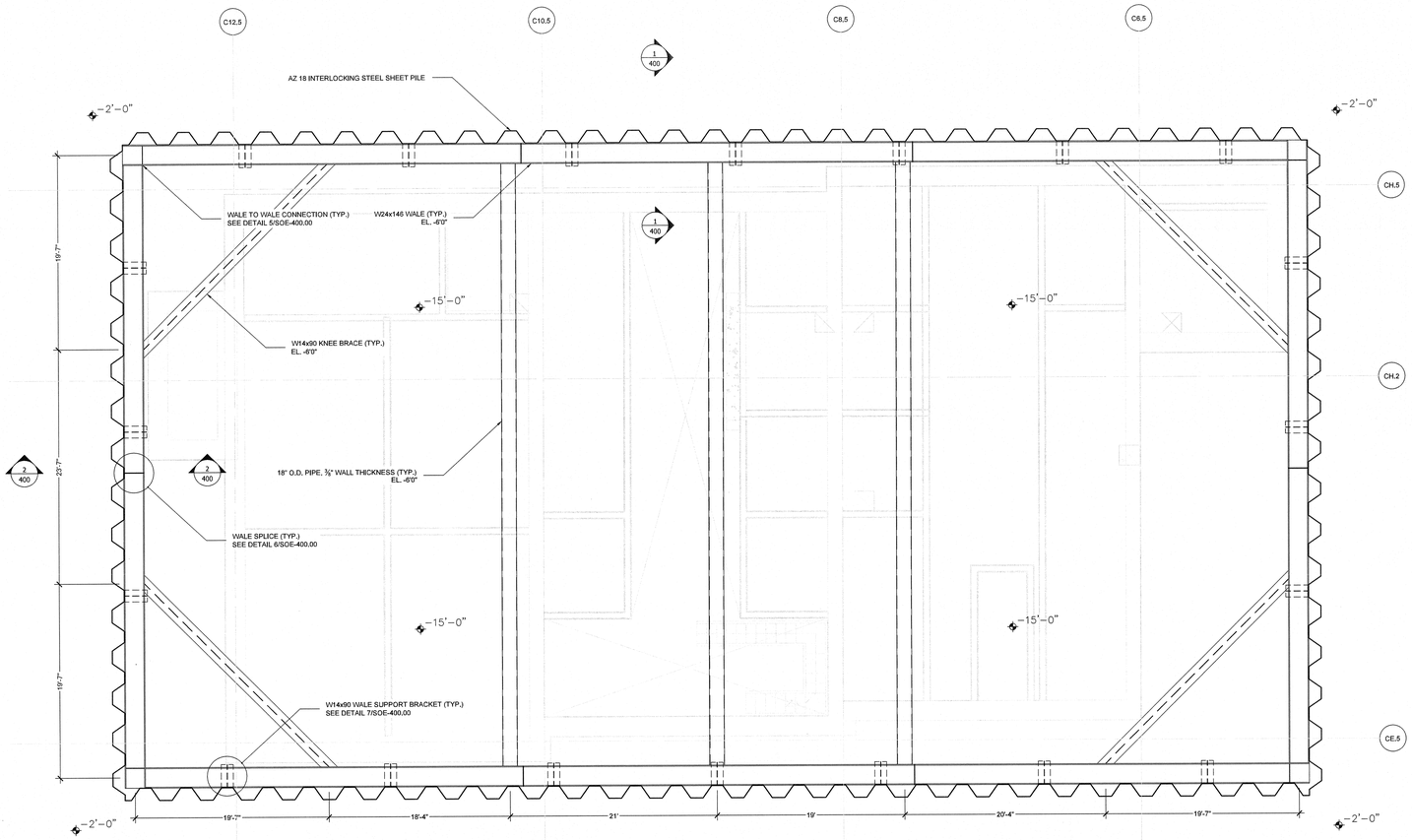
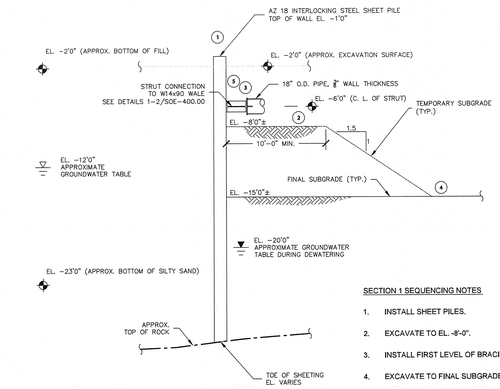
Drawing Title
TYPICAL DETAILS
Drawing Number
SOE5-0002
BJCAV Drawing Number
SOE-301.00



PART PLAN: TOWER C PITS

Scale: 3/32" = 1'

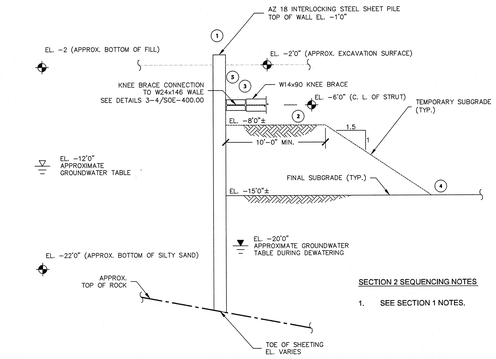


SECTION 1

Scale: 3/16" = 1'

SECTION 1 SEQUENCING NOTES

1. INSTALL SHEET PILES.
2. EXCAVATE TO EL. -8'-0".
3. INSTALL FIRST LEVEL OF BRACING AT EL. -6'-0".
4. EXCAVATE TO FINAL SUBGRADE AT EL. -15'-0".
5. BRACING TO REMAIN IN PLACE UNTIL ALL PIT SLABS ARE CAST TO AT LEAST EL. -12'-1" (T.O.S.). CONCRETE SHALL BE ALLOWED TO CURE A MINIMUM OF 3 DAYS PRIOR TO REMOVAL OF BRACING.

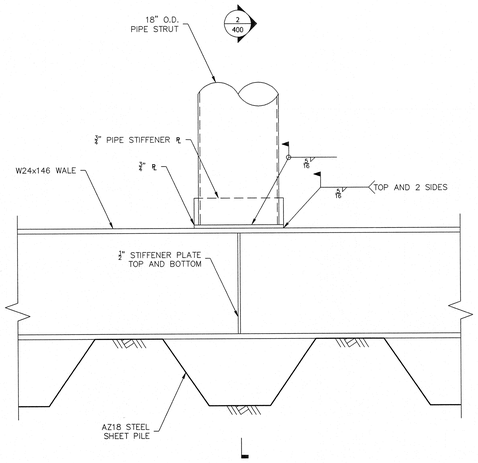


SECTION 2

Scale: 3/16" = 1'

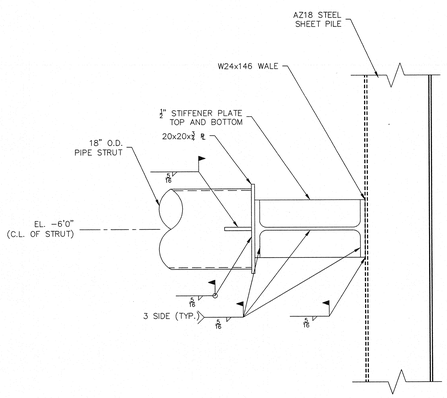
SECTION 2 SEQUENCING NOTES

1. SEE SECTION 1 NOTES.



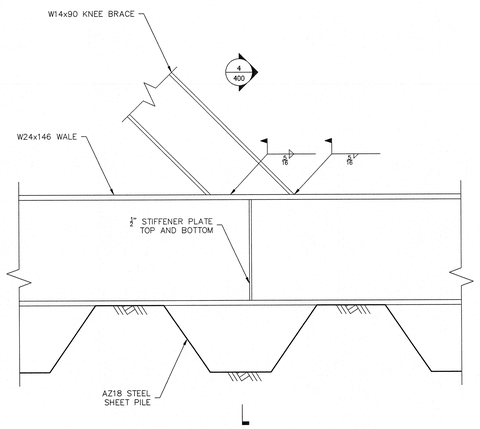
DETAIL 1: TYPICAL WALE CONNECTION @ STRUT (PLAN VIEW)

Scale: 1" = 1'



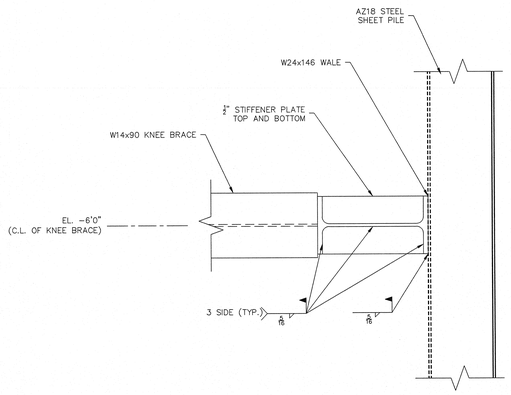
DETAIL 2: TYPICAL WALE CONNECTION @ STRUT (SECTION VIEW)

Scale: 1" = 1'



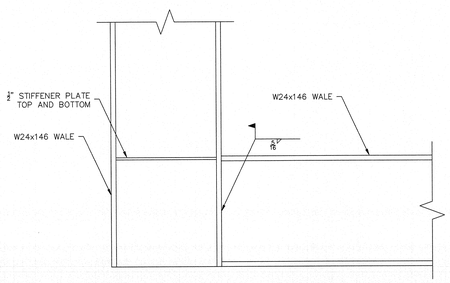
DETAIL 3: TYPICAL WALE CONNECTION @ KNEE BRACE (PLAN VIEW)

Scale: 1" = 1'



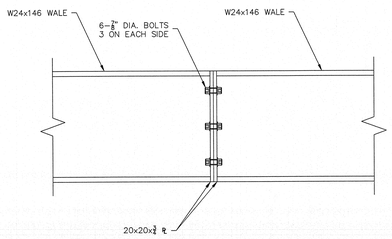
DETAIL 4: TYPICAL WALE CONNECTION @ KNEE BRACE (SECTION VIEW)

Scale: 1" = 1'



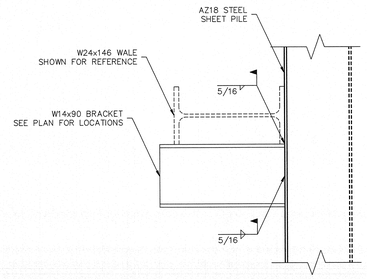
DETAIL 5: TYPICAL WALE TO WALE CONNECTION

Scale: 1" = 1'



DETAIL 6: TYPICAL WALE SPLICE

Scale: 1" = 1'



DETAIL 7: TYPICAL WALE SUPPORT BRACKET

Scale: 1" = 1'

Damian Titus
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NYC Development Hub

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

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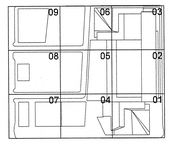
Key Plan



Date
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Project No.
170019112
Drawn By
SMG
Sheet Number
HYE-TC-SOE4-0001
Drawing Title
PART PLAN
Drawing Number
SOE4-0001
RSCAN Drawing Number
SOE-400.00
SHEET 10 OF 11

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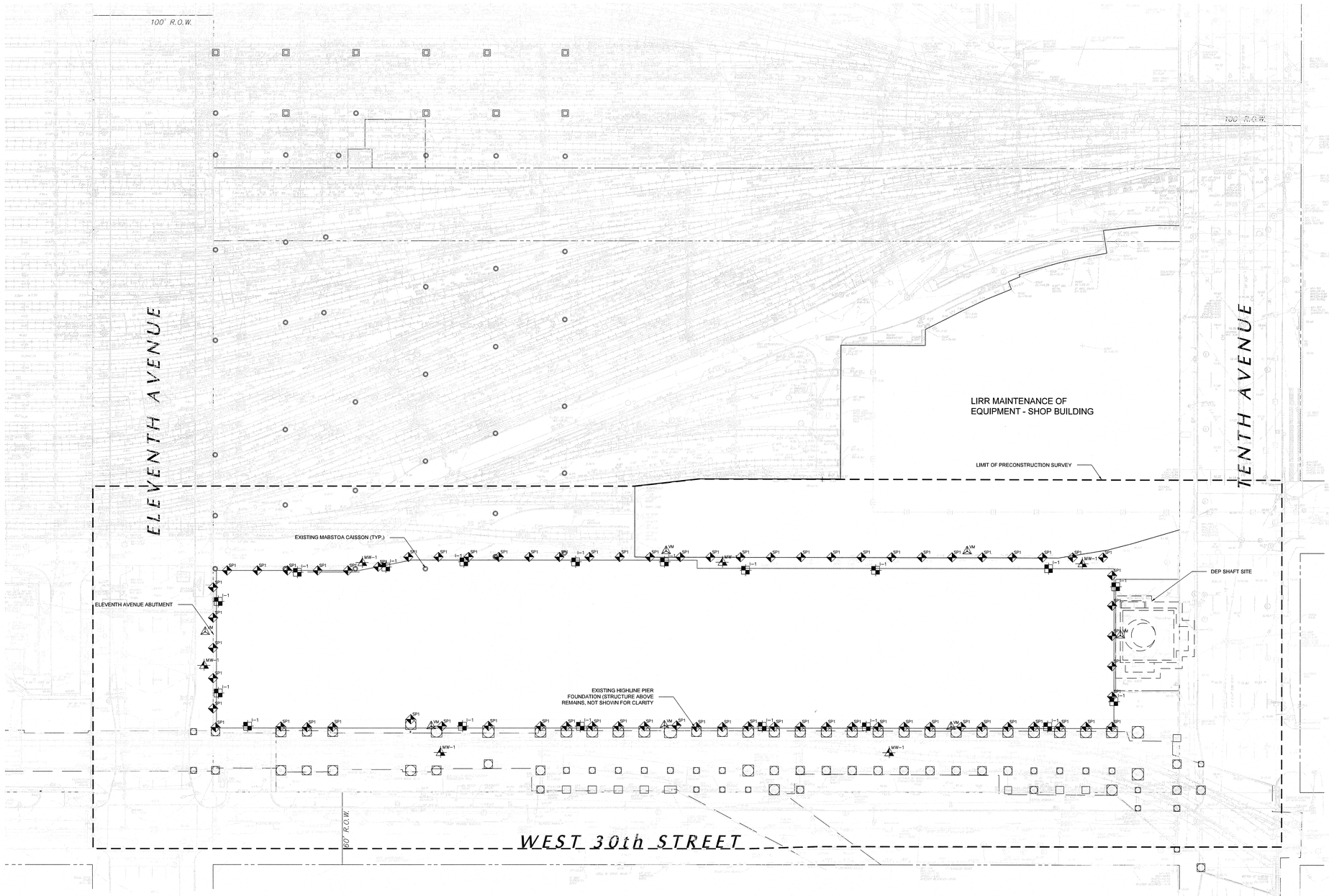

LEGEND

- VIBRATION MONITORING LOCATION
- SURVEY REFLECTOR OR PRISM POINT (MOUNTED TO VERTICAL SURFACE)
- INCLINOMETER MONITORING POINT
- GROUNDWATER MONITORING POINT
- LIMIT OF PRECONSTRUCTION SURVEY

SURVEY MONITORING NOTES

1. ALL MONITORING LOCATIONS SHOWN SHOULD BE CONSIDERED CONCEPTUAL. FINAL LOCATIONS OF MONITORING POINTS SHALL BE DETERMINED IN THE FIELD BASED ON ACCESS AND PROPOSED CONSTRUCTION ACTIVITIES AND SHALL BE SELECTED IN CONSULTATION WITH THE OWNER'S ENGINEER.
2. INSTALL SURVEY RELECTOR OR PRISM POINTS (SP1) AT BASE AND TOP OF LIRR MAINTENANCE OF EQUIPMENT SHOP BUILDING AT APPROXIMATE LOCATIONS SHOWN. INSTALL ADDITIONAL POINTS AS REQUIRED FOR SURVEY ACCESS DURING CONSTRUCTION.
3. INSTALL SURVEY REFLECTOR OR PRISM POINTS (SP1) ON FACE OF ELEVENTH AVENUE VIADUCT SOUTH ABUTMENT. INSTALL ADDITIONAL POINTS AS REQUIRED FOR SURVEY ACCESS DURING CONSTRUCTION.
4. INSTALL SURVEY REFLECTOR OR PRISM POINTS (SP1) ON FACE OF HIGHLINE COLUMNS. INSTALL ADDITIONAL POINTS AS REQUIRED FOR SURVEY ACCESS DURING CONSTRUCTION.
5. ALL SURVEY MONITORING POINTS SHALL BEAR A UNIQUE IDENTIFICATION. AS-BUILT PLANS SHALL BE PREPARED FOR ALL SURVEY MONITORING POINTS INSTALLED. PLANS SHALL BE AMENDED AS REQUIRED DURING CONSTRUCTION FOR THE ABANDONMENT, REPLACEMENT, OR ADDITION OF NEW SURVEY MONITORING LOCATIONS.
6. ALL SURVEY MONITORING LOCATIONS TO BE MEASURED CONTINUOUSLY VIA AUTOMATED MOTORIZED TOTAL STATION (AMTS). RESULTS SHALL BE TRANSMITTED TO THE OWNERS ENGINEER WITHIN 24-HOURS OF EACH WORK SHIFT. ADDITIONAL MEASUREMENTS SHALL BE TAKEN AS REQUIRED BY THE OWNERS ENGINEER BASED ON MOVEMENT DATA.
7. MONITORING SHALL BE PROVIDED IN A TABULATED ELECTRONIC FORMAT (MICROSOFT EXCEL), INCLUDING TIME HISTORY GRAPHS OF ALL DATA OBTAINED TO DATE.

VIBRATION MONITORING NOTES

1. ALL VIBRATION MONITORING LOCATIONS SHOWN SHOULD BE CONSIDERED CONCEPTUAL. FINAL LOCATIONS SHALL BE DETERMINED IN THE FIELD BASED ON ACCESS AND PROPOSED CONSTRUCTION ACTIVITIES AND SHALL BE SELECTED IN CONSULTATION WITH THE OWNER'S ENGINEER.
2. EACH VIBRATION MONITORING LOCATION SHALL BE GIVEN A UNIQUE DESIGNATION. ALL LOCATIONS SHALL BE REPRESENTED ON A SCALED PLAN IDENTIFYING THE NAME AND LOCATION OF VIBRATION MONITORS INSTALLED.
3. PROVIDE VIBRATION MONITORING AT AT LEAST TWO LOCATIONS ALONG LIRR MAINTENANCE OF EQUIPMENT SHOP BUILDING. WHERE REQUIRED, ANCHORS SHALL BE AFFIXED TO THE CONCRETE SLAB OR WALL. COORDINATE ANCHOR LOCATIONS WITH REPRESENTATIVES OF LIRR.
4. ALL GEOPHONES SHALL BE CAPABLE OF REMOTE OPERATION AND PROVIDING REAL-TIME MONITORING AND NOTIFICATION.
5. COORDINATE INSTALLATION OF MONITORING EQUIPMENT, INCLUDING SUPPLY POWER, MAINTENANCE AND RELOCATION WITH REPRESENTATIVES OF LIRR.
6. INSTALL GEOPHONES AT VIBRATION MONITORING LOCATIONS ALONG SITE PERIMETER IN CONSULTATION WITH THE OWNER'S ENGINEER. THE NUMBER AND LOCATION OF GEOPHONES SHALL BE DETERMINED BASED ON THE TYPE AND LOCATION OF ADJACENT CONSTRUCTION ACTIVITIES.
7. THE MAXIMUM PERMISSIBLE PEAK PARTICLE VELOCITY (PPV) SHALL BE 2-INCHES PER SECOND AS MEASURED AT THE PROJECT SITE PERIMETER. THRESHOLD TRIGGER VALUES FOR GEOPHONES SHALL BE SET 0.2-INCHES PER SECOND ABOVE BACKGROUND.

INCLINOMETER MONITORING NOTES

1. ALL INCLINOMETER MONITORING LOCATIONS SHOWN SHOULD BE CONSIDERED CONCEPTUAL. FINAL LOCATIONS SHALL BE DETERMINED IN THE FIELD BASED ON ACCESS AND PROPOSED CONSTRUCTION ACTIVITIES AND SHALL BE SELECTED IN CONSULTATION WITH THE OWNER'S ENGINEER.
2. EACH INCLINOMETER SHALL BE GIVEN A UNIQUE DESIGNATION. ALL LOCATIONS SHALL BE SURVEYED AND AN AS-BUILT PLAN PREPARED IDENTIFYING THE NAME AND LOCATION OF INCLINOMETERS INSTALLED.
3. PROVIDE INCLINOMETER CASING, INCLINOMETER CASING SHALL BE 2.75 INCH O.D. ABS OR ACCEPTABLE EQUIVALENT WITH BROADRED KEYWAYS, AND TWIST TOLERANCE BETTER THAN ONE DEGREE PER 10 FOOT LENGTH. COUPLINGS SHALL BE OF THE NON-TELESCOPING TYPE.
4. INCLINOMETER CASING SHALL BE INSTALLED MINIMUM 5 FEET INTO ROCK.
5. INCLINOMETERS SHALL BE IN-PLACE INCLINOMETERS (IPI). AND SHALL BE SPACED AT 5 FT INTERVALS. THE BOTTOM IPI MUST BE LOCATED WITHIN THE STABLE ROCK STRATA.
6. ALL MONITORING RESULTS SHALL BE SUBMITTED TO THE OWNER'S ENGINEER FOR REVIEW WITHIN 24-HOURS OF EACH WORK SHIFT. MONITORING SHALL BE PROVIDED IN A TABULATED ELECTRONIC FORMAT (MICROSOFT EXCEL), INCLUDING TIME HISTORY GRAPHS OF ALL DATA OBTAINED TO DATE.

GROUNDWATER MONITORING NOTES

1. ALL GROUNDWATER MONITORING LOCATIONS SHOWN SHOULD BE CONSIDERED CONCEPTUAL. FINAL LOCATIONS SHALL BE DETERMINED IN THE FIELD BASED ON ACCESS AND PROPOSED CONSTRUCTION ACTIVITIES AND SHALL BE SELECTED IN CONSULTATION WITH THE OWNER'S ENGINEER.
2. EACH GROUNDWATER MONITORING WELL SHALL BE GIVEN A UNIQUE DESIGNATION. ALL MONITORING WELL LOCATIONS SHALL BE SURVEYED AND AN AS-BUILT PLAN PREPARED IDENTIFYING THE NAME AND LOCATION OF MONITORING WELLS INSTALLED.
3. GROUNDWATER LEVELS SHALL BE MONITORED CONTINUOUSLY DURING DEWATERING.
4. PUMPING RATES AND DISCHARGE VOLUMES FROM DEWATERING ACTIVITIES SHALL BE RECORDED ON A DAILY BASIS DURING CONSTRUCTION.
5. GROUNDWATER LEVELS SHALL BE MEASURED USING REMOTE ACCESS AUTOMATED PIEZOMETER.
6. ALL MONITORING RESULTS SHALL BE SUBMITTED TO THE OWNER'S ENGINEER FOR REVIEW WITHIN 24-HOURS EACH WORK SHIFT. MONITORING SHALL BE PROVIDED IN A TABULATED ELECTRONIC FORMAT (MICROSOFT EXCEL), INCLUDING TIME HISTORY GRAPHS OF ALL DATA OBTAINED TO DATE.

CRACK MONITORING NOTES

1. ALL CRACKMETER LOCATIONS SHALL BE DETERMINED DURING THE PRECONSTRUCTION SURVEY.
2. EACH CRACKMETER SHALL BE GIVEN A UNIQUE DESIGNATION. AN AS-BUILT PLAN SHALL BE PREPARED IDENTIFYING THE NAME AND LOCATION OF EACH CRACKMETER.
3. CRACKMETERS SHALL BE AUTOMATED REMOTE VIBRATING WIRE TYPE.
4. CRACKMETER SHALL BE MONITORED CONTINUOUSLY DURING INSTALLATION OF SUPPORT OF EXCAVATION AND EXCAVATION.
5. ALL MONITORING RESULTS SHALL BE SUBMITTED TO THE OWNER'S ENGINEER FOR REVIEW WITHIN 24-HOURS OF EACH WORK SHIFT. MONITORING SHALL BE PROVIDED IN A TABULATED ELECTRONIC FORMAT (MICROSOFT EXCEL), INCLUDING TIME HISTORY GRAPHS OF ALL DATA OBTAINED TO DATE.

NOT IN CONTRACT
FOR REFERANCE ONLY

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NYC Development Hub

0 16' 32' 64'
N

TOWER C - HIGHLINE COMMENTS - 3 OCT 2012

HUDSON YARDS - TOWER C

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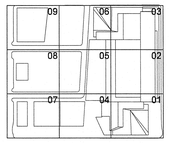

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HYE-TC-SOE7-0001
Drawing Title
MONITORING PLAN
Drawing Number
SOE7-0001
B-SCAN Drawing Number
SOE-500.00
SHEET 11 OF 11

ABBREVIATION AND SYMBOLS

ABBREVIATION	DESCRIPTION
ADDL	ADDITIONAL
ADJ	ADJACENT
ALT	ALTERNATE
APPRX	APPROXIMATE
ARCH	ARCHITECT OR ARCHITECTURAL
B/	BOTTOM OF
B/B	BACK TO BACK
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BRDG	BRIDGING
BRG	BEARING
BTWN	BETWEEN
C	COMPRESSION
C/C	CENTER TO CENTER
CIP	CAST-IN-PLACE
CL	CENTER LINE
CLR	CLEAR OR CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPRESSION
CONC	CONCRETE
CONN	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
db	REINFORCING BAR DIAMETER
DBL	DOUBLE
DEG	DEGREE(S)
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM(S)	DIMENSION(S)
DL	DEAD LOAD
DWG(S)	DRAWING(S)
DWL	DOWEL(S)
EA	EACH
ECC	ECCENTRICITY
EF	EACH FACE
EL	ELEVATION
ELEC	ELECTRICAL
ENGR	ENGINEER
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXST	EXISTING
EXT	EXTERIOR
F/F	FACE TO FACE
FIN	FINISH(ED)
FLR	FLOOR
FND	FOUNDATION
FP	FIREPROOF(ING)
FS	FAR SIDE
FTG	FOOTING
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GEN	GENERAL
GR	GRADE
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
ID	INSIDE DIAMETER
IF	INSIDE FACE
INFO	INFORMATION
INT	INTERIOR
INTRM	INTERMEDIATE
JST(S)	JOIST(S)
JT	JOINT
K	KIPS (1,000 POUNDS)
KLF	KIP PER LINEAR FOOT
KSF	KIP PER SQUARE FOOT
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LP	LOW POINT
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
M	MOMENT
MATL	MATERIAL
MAX	MAXIMUM
MC	MOMENT CONNECTION(S)
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION
MEZZ	MEZZANINE
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
NW	NORMAL WEIGHT
NWC	NORMALWEIGHT CONCRETE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OPNG(S)	OPENING(S)
OPP	OPPOSITE
OSL	OUTSTANDING LEG
P/T	POST-TENSIONED
PC	PIECE
PCY	POUNDS PER CUBIC YARD
PERP	PERPENDICULAR
PG	PLATE GIRDER
PL	PLATE
PRC	PRECAST
PRLL	PARALLEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
RAD	RADIUS
REF	REFERENCE

ABBREVIATION	DESCRIPTION
REINF	REINFORCE(D) (ING) OR (MENT)
REQD	REQUIRED
SCHED	SCHEDULE(D)
SDL	SUPERIMPOSED DEAD LOAD
SECT	SECTION
SER	STRUCTURAL ENGINEER OF RECORD
SF	SQUARE FOOT (FEET)
SHT	SHEET
SIM	SIMILAR
SOG	SLAB ON GRADE
SP	SPACE
SPEC(S)	SPECIFICATION(S)
STD	STANDARD
STL	STEEL
STR	STRUCTURE
STRCTL	STRUCTURAL
SYM	SYMMETRICAL
T	TENSION
T&B	TOP AND BOTTOM
T/	TOP OF
TEMP	TEMPERATURE OR TEMPORARY
TEN	TENSION
THK	THICK OR THICKNESS
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	SHEAR
VERT	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
WD	WOOD
WP	WORK POINT
WPFG	WATERPROOFING
WS	WATERSTOP
WWR	WELDED WIRE REINFORCEMENT

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Nov 20, 2012 – 11:27 AM
NYC Development Hub

HUDSON YARDS - TOWER C

501 WEST 30TH STREET
NEW YORK, NY

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Oxford Properties Group
320 Park Avenue, 17th Floor
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Construction Manager
Construction Manager Name
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No.	Description	Date
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STATE OF NEW YORK · ARIC M. BRAUN · 085442 · LICENSED PROFESSIONAL ENGINEER

HYE -TC -S0-0001

Drawing Title

ABBREVIATIONS AND SYMBOLS

Drawing Number
S0-0001

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ABBREVIATIONS AND SYMBOLS
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GR GENERAL REQUIREMENTS

GR-1 AS USED IN THESE GENERAL NOTES:
"DRAWINGS" MEANS THE LATEST STRUCTURAL DESIGN DRAWINGS, UON.
"SPECIFICATIONS" MEANS THE LATEST PROJECT SPECIFICATIONS, UON.
"CONTRACT DOCUMENTS" IS DEFINED AS THE DESIGN DRAWINGS AND THE SPECFICATIONS
"SER" IS DEFINED AS THE STRUCTURAL ENGINEER OF RECORD FOR THE STRUCTURE IN ITS FINAL CONDITION.
"DESIGN PROFESSIONALS" IS DEFINED AS THE OWNER'S ARCHITECT AND SER.
"MEP" INCLUDES, BUT IS NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION.
"CONTRACTOR" IS DEFINED TO INCLUDE ANY OF THE FOLLOWING: GENERAL CONTRACTOR AND THEIR SUBCONTRACTORS, CONSTRUCTION MANAGER AND THEIR SUBCONTRACTORS, STRUCTURAL STEEL FABRICATOR OR STRUCTURAL STEEL ERECTOR.
"BASE BUILDING STRUCTURE" IS DEFINED AS THE STRUCTURAL FRAME DESIGNED BY THORNTON TOMASETTI.
"STRUCTURE IN ITS FINAL CONDITION" MEANS ALL STRUCTURAL ELEMENTS SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS ARE INSTALLED AND COMPLETELY CONNECTED AND INSPECTED WITH NO OUTSTANDING NON-COMPLIANCE ISSUES.

GR-2 THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, CIVIL, MEP CONTRACT DOCUMENTS, AS WELL AS ANY OTHER APPLICABLE TRADES.

GR-3 THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE UNTIL THE CONSTRUCTION OF THE STRUCTURE REACHES ITS FINAL CONDITION.

GR-4 THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF TEMPORARY BRACING AND CONSTRUCTION SUPPORTS, FOR NEW AND EXISTING STRUCTURES, AS NECESSARY TO COMPLETE THE PROJECT. NO PORTION OF THE PROJECT WHILE UNDER CONSTRUCTION IS INTENDED TO BE STABLE IN THE ABSENCE OF THE CONTRACTOR'S TEMPORARY SUPPORTS AND BRACES. CONTRACTOR SHALL RETAIN A STRUCTURAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED TO DESIGN TEMPORARY BRACING AND CONSTRUCTION SUPPORTS.TEMPORARY BRACING SHALL CONSIDER LATERAL FORCES FROM SLOPED COLUMNS.
DESIGN ASSUMES THAT EACH ELEVATED SLAB IS FULLY DETAILED AND POURED PRIOR TO POURING CONCRETE SLABS ON SUBSEQUENT FLOORS. ALSO ALL GRADE BEAMS AND BACKFILL MUST BE IN PLACE PRIOR TO POURING ELEVATED SLABS.

GR-5 LATERAL LOAD RESISTANCE AND STABILITY OF THE STRUCTURE IN ITS FINAL CONDITION IS PROVIDED BY SHEAR WALLS AND BRACED FRAMES (TERRAFIRMA ROOF) AND LATERAL STABILITY OF OTHER ELEMENTS IS PROVIDED THROUGH FLOOR SLABS, ROOF DECK, AND IN FLOOR BRACING .

GR-6 THE SPECIFICATIONS ARE AN INTEGRAL PART OF THE CONTRACT DOCUMENTS AND SHALL BE USED IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS.

GR-7 THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS AND COORDINATE WITH THE STRUCTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS.

GR-8 IN CASES OF CONFLICT BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND OTHER DISCIPLINES OR EXISTING CONDITIONS, CONTRACTOR SHALL NOTIFY THE DESIGN PROFESSIONALS AND OBTAIN CLARIFICATION PRIOR TO BIDDING AND PROCEEDING WITH WORK.

GR-9 APPLY DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS WHERE CONDITIONS ARE SIMILAR TO THOSE INDICATED BY DETAIL, DETAIL TITLE OR NOTE.

GR-10 ONLY USE DIMENSIONS INDICATED ON THE DRAWINGS. DO NOT SCALE DRAWINGS.

GR-11 ASSUME EQUAL SPACING BETWEEN ESTABLISHED DIMENSIONS, IF NOT INDICATED ON DRAWINGS.

GR-12 CENTERLINES OF COLUMNS AND FOUNDATIONS COINCIDE WITH GRID LINE INTERSECTIONS, UON.

GR-13 CENTERLINES OF GRADE BEAMS AND WALLS COINCIDE WITH CENTERLINES OF FOUNDATIONS, UON.

GR-14 CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, UON.

GR-15 THE CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITIES FROM DAMAGE.

GR-16 THE CONTRACTOR SHALL VERIFY THAT CONSTRUCTION LOADS DO NOT EXCEED THE CAPACITY OF THE STRUCTURE AT THE TIME THE LOAD IS APPLIED.

GR-17 THE CONTRACTOR SHALL COORDINATE THE BOTTOM OF BASE PLATE ELEVATIONS WITH THE AS-BUILT TOP OF SUPPORT ELEVATIONS.

GR-18 THE CONTRACTOR SHALL VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES. THE DRAWINGS DO NOT SHOW ALL OPENINGS REQUIRED. ADDITIONAL OPENINGS, BLOCKOUTS AND SLEEVES MAY BE REQUIRED BY OTHER DISCIPLINES AND SHALL BE CONSTRUCTED USING THE TYPICAL DETAILS AND/OR THE CRITERIA INDICATED ON THE DRAWINGS. OPENINGS REQUIRED BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER.

GR-19 ELEVATIONS INDICATED ONSTRUCTURAL DRAWINGS ARE BASED ON A PROJECT DATUM INDICATED ON THE ARCHITECTURAL DRAWINGS.

GR-20 SEE ARCHITECTURAL, CIVIL, MEP, AND VERTICAL TRANSPORTATION, CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION RELATING TO THE COORDINATION OF STRUCTURAL COMPONENTS INCLUDING, BUT NOT LIMITED TO:

CIVIL:
SITING OF BUILDING GRID LINES WITH RESPECT TO CITY BENCHMARKS
SITE PREPARATION
BACKFILLING MATERIALS AND REQUIREMENTS
PAVING AND SITE ELEMENTS OUTSIDE OF BUILDING ENVELOPE
NEW AND EXISTING SITE UTILITIES

ARCHITECTURAL:
PLAN DIMENSIONS AND PROJECT DATUM
SLAB EDGE DIMENSIONS
FINISH ELEVATIONS
WATERPROOFING AND DAMP-PROOFING DETAILS
RAMP GEOMETRY, PITS, SLAB SLOPES AND DEPRESSIONS
EMBEDMENTS, INSERTS, BLOCKOUTS, ETC.
EXACT OPENING SIZES FOR PIPES, DUCTS, ETC.
CONCRETE FINISHES AND TOPPING SLABS
CONCRETE CURBS AND HOUSEKEEPING PADS
INTERIOR NON-STRUCTURAL MASONRY PARTITIONS
FIRE RATINGS
METAL PAN STAIRS AND SUPPORTS
OPERABLE PARTITIONS

MEP:
PIPE AND DUCT SIZES FOR OPENING AND SLEEVE COORDINATION
FLOOR DRAINS
UNDERFLOOR AND PERIMETER DRAINAGE SYSTEMS
EQUIPMENT CURBS
CONDUITS AND EMBEDMENTS IN WALLS AND SLABS

VERTICAL TRANSPORTATION:
INSERTS, HANGERS, TRENCHES, PITS, CONDUITS IN WALLS AND SLABS
EQUIPMENT SUPPORT
EQUIPMENT SUPPORT, ELEVATOR DIVIDER BEAMS, EMBEDMENTS, AND ANCHOR BOLTS.

CD CODES AND DESIGN CRITERIA

CD-1 PERFORM ALL CONSTRUCTION IN CONFORMANCE WITH THE BUILDING AND DESIGN CODES REFERENCED WITHIN THESE DOCUMENTS. THE PROJECT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS, UON:

2008 NYC BUILDING CODE

STRUCTURAL CONCRETE:
"BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
THE AMERICAN CONCRETE INSTITUTE (ACI 318-2008)

CONCRETE MASONRY:
"BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES"
THE AMERICAN CONCRETE INSTITUTE (ACI 530-2008)

STRUCTURAL STEEL:
"SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", [MARCH 9, 2005 THIRTEENTH EDITION] CONFORMING TO THE PROVISIONS OF LOAD RESISTANCE FACTOR DESIGN,
BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC-LRFD)

CD-2 LIVE LOADS:

OFFICES/FLOORS	100 LBS./SQ. FT.(REDUCIBLE,INCLUDES PARTITIONS)
EXIT FACILITIES	100 LBS./SQ. FT.
TERRACE	100 LBS./SQ. FT.
RETAIL AREAS	100 LBS./SQ. FT.
KITCHEN	100 LBS./SQ. FT.
CAFETERIA	100 LBS./SQ. FT.
AUDITORIUM	100 LBS./SQ. FT.
LIGHT STORAGE AREA	100 LBS./SQ. FT.
LOADING DOCK	250 LBS/SQ. FT.OR AASHTO HS20-44
MECHANICAL ROOMS	150 LBS/SQ. FT. OR ACTUAL WEIGHT
ROOFS (INCLUDINE GREEN ROOF)	30 LBS./SQ. FT. [UNREDUCED]

CD-3 SUPERIMPOSED DEAD LOADS:

ASSUMED SUPERIMPOSED DEAD LOADS

PLAZA	350 PSF FILL
PLATFORM LEVEL AT TOWER	50 PSF FLOOR FINISH 30 PSF HUNG MECHANICAL
PLATFORM LEVEL AT RETAIL	30 PSF FLOOR FINISH 30 PSF HUNG MECHANICAL
TYPICAL RETAIL FLOORS	30 PSF FLOOR FINISH 25 PSF PARTITIONS 10 PSF HUNG MECHANICAL/CEILING
TYPICAL OFFICE FLOORS	12 PSF RAISED FLOOR 10 PSF HUNG MECHANICAL/CEILING PARTITIONS INCLUDED IN THE LIVE LOAD SEE ABOVE
AMENITY/ASSEMBLY FLOORS	30 PSF FLOOR FINISH 25 PSF PARTITIONS 10 PSF HUNG MECHANICAL/CEILING
MECHANICAL FLOORS	20 PSF HUNG BELOW MECHANICAL/CEILING 50 PSF HUNG ABOVE MECHANICAL/CEILING
ROOF	50 PSF TAPERED FILL 15 PSF ROOFING AND INSULATION 15 PSF HUNG MECHANICAL/CEILING
FACADE WEIGHT	20 PSF

CD-4 SNOW LOADS:

FLAT ROOF SNOW LOAD (Pf):	20 PSF
GROUND SNOW LOAD (Pg)	25 PSF
SNOW EXPOSURE FACTOR (Ce):	0.9
SNOW LOAD IMPORTANCE FACTOR (Is):	1.0
THERMAL FACTOR (Ct):	1.0
SNOW DRIFTING PER CODE	

CD-5 WIND LOAD DESIGN DATA
MAIN WIND FORCE RESISTING SYSTEM PER RWDI REPORT JUNE 2012

COMPONENT AND CLADDING DESIGN PRESSURES PER RWDI REPORT JUNE 2012

ROOF EFFECTIVE WIND AREA = 10 SF
ROOF= 33 PSF ROOF EDGE = 52 PSF ROOF CORNER= 71 PSF

CD-6 SEISMIC LOAD DESIGN DATA:

SEISMIC IMPORTANCE FACTOR (Is)	1.0
Ss	0.365
S1	0.071
SDS	0.292
SD1	0.080
SITE CLASS	C
SEISMIC DESIGN CATEGORY	B
LATERAL SYSTEM DESCRIPTION	SHEAR WALL
SEISMIC RESPONSE COEFFICIENT (Cs)	0.0128
RESPONSE MODIFICATION FACTOR (R)	5 (NOT DETAILED FOR SEISMIC RESISTANCE)
ANALYSIS PROCEDURE DESCRIPTION	EQUIVALENT LATERAL FORCE
DESIGN BASE SHEAR	5150 kips

CD-7 IN CASES WHERE THE CONTRACTOR DETERMINES THAT SUSPENDED OR FLOOR MOUNTED MEP EQUIPMENT LOADS EXIST WHICH EXCEED DESIGN LOADS INDICATED ON CONTRACT DOCUMENTS, CONTRACTOR SHALL SUBMIT LOAD DATA TO DESIGN PROFESSIONALS FOR REVIEW PRIOR TO PROCEEDING WITH WORK.

CD-8 DISTRIBUTE THE MAXIMUM LOAD HUNG FROM ANY STRUCTURAL MEMBER FOR MEP DUCTWORK, PIPING ETC OVER THE MEMBER'S TRIBUTARY AREA IN A WAY THAT THE DESIGN SUPERIMPOSED DEAD LOADS LISTED IN CONTRACT DOCUMENTS ARE NOT EXCEEDED. THE CONTRACTOR SHALL COORDINATE THE LOADS OF ALL TRADES AND PROVIDE ADDITIONAL SUPPORT OR DISTRIBUTION FRAMING AS REQUIRED TO ACHIEVE THE ALLOWABLE LOAD DISTRIBUTION.

CD-9 ESCALATOR SUPPORTS AND PITS ARE BASED ON ESCALATOR TYPES INDICATED ON ARCHITECTURAL CONTRACT DOCUMENTS. CONTRACTOR SHALL SUBMIT FOR REVIEW ANY PLANNED CHANGE TO ESCALATORS TO DESIGN PROFESSIONALS PRIOR TO SUBMITTING CORRESPONDING STRUCTURAL SHOP DRAWINGS FOR ACTION.

CD-10 ELEVATOR GUIDERAIL SUPPORTS, MACHINE ROOMS, PITS, AND PENTHOUSES ARE BASED ON ELEVATOR TYPES INDICATED ON ARCHITECTURAL CONTRACT DOCUMENTS. CONTRACTOR SHALL SUBMIT FOR REVIEW ANY PLANNED CHANGE TO ELEVATORS TO DESIGN PROFESSIONALS PRIOR TO SUBMITTING CORRESPONDING STRUCTURAL SHOP DRAWINGS FOR ACTION.

CD-11 STRUCTURAL COMPONENTS ARE NOT DESIGNED FOR VIBRATING EQUIPMENT. MOUNT VIBRATING EQUIPMENT ON VIBRATION ISOLATORS.

CD-12 SERVICEABILITY

LIVE LOAD DEFLECTION IS LESS THAN [L/360]

LONG-TERM TOTAL DEFLECTION IS LESS THAN [L/240]

EXTERIOR SPANDRELS HAVE BEEN DESIGNED TO LIMIT LIVE LOAD MIDSPAN VERTICAL DEFLECTION TO 1/[360] OF THE SPAN OR [3/8]", WHICHEVER IS LESS.

EXTERIOR SPANDRELS HAVE BEEN DESIGNED TO LIMIT DEAD PLUS SUPERIMPOSED DEAD LOAD PLUS CURTAIN WALL WEIGHT PLUS LIVE LOAD MIDSPAN VERTICAL DEFLECTION TO 1/[240] OF THE SPAN OR [1/2"], WHICHEVER IS LESS.

LATERAL DRIFT DUE TO [WIND] LOADS IS LESS THAN OR EQUAL TO H/450

THE SEISMIC STORY DRIFT SHALL NOT EXCEED 0.02 OF THE TOTAL STORY HEIGHT.

VABRATION: BASIC FLOOR FRAMING HAS BEEN DESIGNED FOR A MAXIMUM FLOOR SYSTEM MEAN ACC EVERATION OF 0.5% g USING DAMPING OF 3%.

CD-13 CONNECTIONS OF SYSTEMS DESIGNED BY CONTRACTOR'S ENGINEER SUCH AS, BUT NOT LIMITED TO, CLADDING, STAIRS, ELEVATORS, ESCALATORS, PRECAST STADIA, AND MEP LOADS ARE ASSUMED TO IMPOSE VERTICAL AND/OR HORIZONTAL LOADS ON THE BASE BUILDING STRUCTURAL MEMBERS WITHOUT GENERATING TORSION IN THE SUPPORTING STRUCTURAL MEMBERS. CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL SUPPLEMENTARY BRACING MEMBERS AS REQUIRED TO PREVENT TORSION ON THE BASE BUILDING STRUCTURE.

CD-14 FOR FIRE RATING AND FIREPROOFING ASSEMBLY EVALUATIONS, CONSIDER THE FOLLOWING ASSEMBLIES RESTRAINED: COMPOSITE WIDE-FLANGE STEEL FRAMING, INTERIOR BAYS OF CONTINUOUS CAST-IN-PLACE CONCRETE CONSTRUCTION. CONSIDER ALL OTHER ASSEMBLIES UNRESTRAINED.

SS STRUCTURAL STEEL

SS-1 STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS:

ROLLED SHAPES AND CHANNELS:	ASTM A572 OR A992, MIN. YIELD STRENGTH 50 KSI
ANGLES FOR TRUSSES AND BRACES:	ASTM A36 MIN YIELD STRENGTH 36 KSI
MISCELLANEOUS ANGLES:	ASTM A36
HOLLOW STRUCTURAL SECTIONS:	ASTM A500 GRADE B, MIN YIELD STRENGTH 42 KSI FOR ROUND AND 46 KSI FOR RECTANGULAR HSS
SEAMLESS PIPE:	ASTM A53 GRADE B, TYPE S, MIN YIELD STRENGTH 35 KSI.
PLATES	ASTM A572, GRADE 50

SS-2 CONNECTION MATERIAL SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS OR AS NEEDED FOR CONNECTION DESIGN:

ANGLES:	ASTM A36
WTs:	ASTM A992
PLATES:	ASTM A36, MINIMUM YIELD STRENGTH 36 KSI
BOLTS:	ASTM A325 OR A490
NUTS:	ASTM A563
WASHERS:	ASTM F436
ANCHOR RODS:	ASTM F1554 GRADE 55 WITH WELDABILITY SUPPLEMENT S1
HEADED STUDS	ASTM A 108, GRADE 1010 THROUGH 1020 HEADED STUD TYPE, COLD-FINISHED CARBON STEEL, AWS D1.1, TYPE B. ¾" DIAMETER
WELD ELECTRODES:	E70XX

SS-3 WHERE NO CAMBER IS INDICATED, FABRICATE BEAMS SO THAT ANY NATURAL CAMBER IS UPWARD AFTER ERECTION.

SS-4 SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE SER IN WRITING.

SS-5 FOR STEEL MEMBERS AND EMBEDMENTS EXPOSED TO WEATHER, PROVIDE HOT-DIPPED GALVANIZED FINISH.

SS-6 PROVIDE HOLES IN ALL STEEL AS REQUIRED TO PREVENT ANY ACCUMULATION OF WATER. ALL PENETRATIONS THROUGH MAIN MEMBERS SHALL NOT EXCEED 1 1/8" DIA. AND SHALL BE GROUND SMOOTH. THESE DRAINS MUST BE KEPT CLEAN AND OPEN.

SS-7 SHOW ALL COPES, HOLES, OPENINGS AND MODIFICATIONS REQUIRED IN STRUCTURAL STEEL MEMBERS FOR ERECTION OR THE WORK OF OTHER TRADES ON THE SHOP DRAWINGS FOR APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER.

SS-8 FIELD MODIFICATION OF STRUCTURAL STEEL IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER.

SS-9 THE CONTRACTOR SHALL SUBMIT A STEEL ERECTION PROCEDURE, PREPARED UNDER THE SUPERVISION OF A STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE LOCATION OF THE PROJECT (THE CONTRACTOR'S ENGINEER) FOR REVIEW BY THE STRUCTURAL ENGINEER OF RECORD. THIS PROCEDURE MUST INCLUDE THE PROPOSED SURVEY REQUIRED BY THE STEEL SPECIFICATIONS. SURVEY SHALL INCLUDE SURVEY OF ALL SLOPED COLUMNS AT EACH LEVEL BEFORE AND AFTER CONCRETE POURS.

SS-10 STEEL USING COMPLETE JOINT PENETRATION GROOVE WELDS THAT FUSE THROUGH THE THICKNESS OF THE FLANGE OR WEB SHALL HAVE A MINIMUM CHARPY V-NOTCH IMPACT TESTING VALUE AS FOLLOWS:

A. ASTM A6/A6M HOT-ROLLED SHAPES WITH A FLANGE THICKNESS EXCEEDING **2** INCHES AND BUILT-UP HEAVY SHAPES WITH PLATES EXCEEDING 2 INCHES IN THICKNESS: 20 FT-LB @ 70 DEG. F
B. REGARDLESS OF THICKNESS, ALL TRUSSES, LATERAL SYSTEM MEMBERS (INCLUDING COLUMNS, WIND GIRDERS, BRACES, ETC.): 20 FT-LB @ 70 DEG. F
C. STEEL EXPOSED TO TEMPERATURES IN SERVICE BELOW 50 DEG. F: **25** FT-LB @ **40** DEG. F.
D. WELD METAL: 20 FT-LB @ MINUS 20 DEG. F AND 40 FT-LB @ 70 DEG. F
E. WELD METAL EXPOSED TO TEMPERATURES IN SERVICE BELOW 50 DEG. F: 25 FT-LB @ MINUS 40 DEG. F
F. TESTING IS TO BE IN ACCORDANCE WITH ASTM A6/A6M, SUPPLEMENTARY REQUIREMENT S30, CHARPY V-NOTCH IMPACT TEST FOR STRUCTURAL SHAPES – ALTERNATE CORE LOCATION, AT ROLLED SHAPES AND ASTM A673 FOR PLATES, AT ANY PERMITTED LOCATIONS.

FN FOUNDATIONS

FN-1 THE FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT BY LANGAN ENGINEERING & ENVIRONMENTAL SERVICES, P.C., DATED MAY 17TH 2012.

FN-2 FOUNDATIONS HAVE BEEN DESIGNED BASED ON THE DESIGN VALUES PROVIDED IN THE GEOTECHNICAL REPORT. SEE GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS AND INFORMATION. DESIGN VALUES SHALL BE FIELD VERIFIED BY QUALIFIED GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.

FN-3 THE CONTRACTOR SHALL VERIFY FOUNDATION INSTALLATION AND CONSTRUCTION IS IN CONFORMANCE WITH THE RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT.

FN-4 CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY PROTECT ALL EXCAVATION. WHERE NECESSARY, SHEET AND SHORE THE EXCAVATION WITH ALL REQUIRED TIEBACKS AND BRACING AS DETERMINED BY CONTRACTOR'S STRUCTURAL ENGINEER.

FN-5 PROVIDE BRACING FOR ALL BASEMENT FOUNDATION WALLS PRIOR TO BACKFILLING. THIS BRACING SHALL REMAIN IN PLACE UNTIL ALL SLABS AND BEAMS FRAMING INTO WALL HAVE BEEN PLACED AND HAVE ATTAINED 100% OF THEIR DESIGN STRENGTH.

FN-6 DO NOT BACKFILL AGAINST CANTILEVER RETAINING WALLS UNTIL THE CONCRETE HAS ATTAINED 100% OF ITS DESIGN STRENGTH.

CM CONCRETE MATERIALS

CM-1 CONCRETE STRENGTH SHALL MEET THE 28-DAY COMPRESSIVE STRENGTHS (f' c), NOTED IN THE DWG NOTES.

CM-2 PROVIDE NORMALWEIGHT CONCRETE WITH CURED DENSITY OF 145 +/- 5 PCF, AND AGGREGATE CONFORMING TO ASTM C33, UON. WHERE INDICATED, PROVIDE LIGHTWEIGHT CONCRETE WITH CURED DENSITY OF 112+/-3 PCF AND AGGREGATE CONFORMING TO ASTM C330.

CM-3 THE USE OF CALCIUM CHLORIDE AND OTHER CHLORIDE CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN AND CONTACT BETWEEN ALUMINUM ITEMS, INCLUDING ALUMINUM CONDUIT, AND CONCRETE IS PROHIBITED.

CM-4 ALL CAST-IN-PLACE CONCRETE WILL EXPERIENCE DIFFERING VARIATIONS OF CRACKING. ANY ELEMENT EXPOSED TO DIRECT WEATHER AND/OR TEMPERATURE VARIATIONS DURING CONSTRUCTION OR IN THE FINAL CONDITION IS TO BE TREATED AND REGULARLY MAINTAINED TO PREVENT PROPAGATION OF CRACKS AND WATER PENETRATION. THE CONTRACTOR SHALL DEVELOP A REGULAR MAINTENANCE PROGRAM AND SUBMIT IT TO THE OWNER.

RE CONCRETE REINFORCEMENT

RE-1 ALL CONCRETE SHALL INCLUDE REINFORCEMENT. IF REINFORCEMENT IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS VERIFY WITH THE STRUCTURAL ENGINEER.

RE-2 REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES UON:

DEFORMED BARS:	ASTM GRADE 75 #9 AND LARGER ASTM Grade 60 ALL OTHER BARS
WELDABLE DEFORMED BARS:	ASTM A706
EPOXY COATED DEFORMED BARS:	ASTM A615 / A775
WELDED WIRE REINFORCEMENT	ASTM A185
EPOXY COATED WELDED WIRE REINFORCEMENT	ASTM A185 / A884
DYWIDAG THREADBARS	ASTM A722 GRADE 150

RE-3 DETAIL REINFORCEMENT BASED ON THE PROJECT REQUIREMENTS, ACI-318 AND ACI-315, UON.

RE-4 WHERE A 90-DEG, 135 –DEG OR 180-DEG HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS UON.

RE-5 DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT UON.

RE-6 REINFORCEMENT SHALL HAVE CONCRETE PROTECTION (CLEAR COVER) PER ACI 318 UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

RE-7 LAP REINFORCEMENT AS SPECIFICALLY DETAILED ON THE DRAWINGS. SEE LAP SPLICE AND EMBEDMENT SCHEDULE.

RE-8 UNLESS OTHERWISE NOTED ALL LAP SPLICES ARE TO BE TENSION LAP SPLICES PER LAP SPLICE AND EMBEDMENT SCHEDULE.

RE-9 PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED. PROVIDE TENSILE, PRE-QUALIFIED, WELDED OR THREADED MECHANICAL SPLICES UON.

RE-10 LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACINGS, UON.

RE-11 PROVIDE LAP LOCATIONS AS FOLLOWS, UON:
A. GRADE BEAM / WALL (TOP HORIZONTAL REINFORCEMENT): AT CENTER OF SPAN
B. GRADE BEAM / WALL (BOTTOM HORIZONTAL REINFORCEMENT): AT SUPPORTS
C. WALL INSIDE FACE (VERTICAL REINFORCEMENT): AT SUPPORT
D. WALL OUTSIDE FACE (VERTICAL REINFORCEMENT): AT MIDHEIGHT OF WALL
E. UNLESS OTHERWISE NOTED TERMINATE BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.

RE-12 PROVIDE EPOXY COATED REINFORCEMENT AND ACCESSORIES IN AREAS OF DIRECT EXPOSURE TO THE ENVIRONMENT, CHEMICALS, OR DE-ICING FOR THE AREAS INDICATED ON THE DRAWINGS.

CJ CONCRETE CONSTRUCTION JOINTS

CJ-1 PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI-318. SUBMIT SHOP DRAWINGS SHOWING PROPOSED CONSTRUCTION JOINT LOCATIONS, DETAILS AND THE PLACEMENT SEQUENCE FOR THE STRUCTURAL ENGINEER'S APPROVAL PRIOR TO PROCEEDING WITH WORK.

CJ-2 NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED IN BEAMS, UPTURNED BEAMS, WALLS AND SLABS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED IN WRITING BY THE DESIGN PROFESSIONALS PRIOR TO CONSTRUCTION.

CJ-3 PLACE VERTICAL CONSTRUCTION JOINTS TO PROVIDE A 60 FT MAXIMUM LENGTH OF CONCRETE PLACEMENT AND LOCATE AS FOLLOWS:
A. FOUNDATION WALLS: MINIMUM OF 8 FT FROM ANY WALL INTERSECTION, PILASTER, PIER, OR WALL OPENING
B. BEAMS AND GRADE BEAMS: WITHIN THE MIDDLE THIRD OF THE CLEAR SPAN AVOIDING LAP SPLICES, SUBJECT TO SER APPROVAL.

CJ-4 PROVIDE CONTINUOUS WATERSTOPS AT ALL CONSTRUCTION JOINTS EXPOSED TO SOIL OR WATER, AS DESCRIBED IN THE SPECIFICATIONS.

HC TOWER HIGH-STRENGTH CONCRETE REQUIREMENTS:

HC-1 CONCRETE SHALL BE DESIGNED FOR THE PUMPING DISTANCES REQUIRED BY CONSTRUCTION SEQUENCING. CONTINUOUS MONITORING OF CONCRETE QUALITY AT THE TOP OF THE VERTICAL RISER INCLUDING FLOWABILITY, STRENGTH, AND AGGREGATE SEGREGATION SHALL BE REQUIRED.

HC-2 SPECIAL CONSIDERATION SHALL BE GIVEN TO FORMWORK REMOVAL TIMES AND CONCRETE MOISTURE RETENTION TO INSURE PROPER HYDRATION OF HIGH STRENGTH CONCRETE. IF CONSTRUCTION SEQUENCE REQUIRES PRIMARY FORMWORK REMOVAL TIMES THAT DO NOT INSURE PROPER HYDRATION, THEN STRUCTURAL ELEMENTS OF HIGH STRENGTH CONCRETE SHALL BE IMMEDIATELY RE-WRAPPED WITH MOISTURE MAINTAINING MATERIAL SYSTEMS, OR OTHER SURFACE APPLIED CURING MATERIALS, FOR A PERIOD OF TIME ACCEPTABLE TO THE STRUCTURAL ENGINEER. IF SUCH MEASURES ARE PROVEN TO BE INEFFECTIVE, THEN THE ENTIRE FORMWORK STRIPPING CYCLE MUST BE RE-EVALUATED.

HC-3 THE CONTRACTOR SHALL DEVELOP REQUIREMENTS TO TEST TOWER WALL CONCRETE IN ACCORDANCE WITH ACI AND ASTM STANDARDS. FOR TOWER WALL MIX DESIGNS, THE AVERAGE ELASTIC MODULUS AS INDICATED MAY GOVERN OVER THE MINIMUM COMPRESSIVE STRENGTH. SEE SPECIFICATION FOR TESTING REQUIREMENTS. THIS PROGRAM SHALL BEGIN PRIOR TO THE START OF THE TOWER CONSTRUCTION. AT MINIMUM THE 90 DAY ELASTIC MODULUS VALUES SHALL BE AVAILABLE PRIOR TO THE START OF CONSTRUCTION USING THAT MIX DESIGN. INDICATED INTERVALS OF TESTING AND REPORTING OF RESULTING VALUES SHALL BE CONTINUED FOR THE FULL TERM OF THE TOWER SUPERSTRUCTURE CONSTRUCTION PROGRAM.

PT POST-TENSIONED CONCRETE NOTES

PT-C1. STRUCTURAL POST-TENSIONED CONCRETE AND CONCRETING PRACTICES SHALL CONFORM WITH ACI-318, "AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" 2005 EDITION. DETAILS SHALL BE IN ACCORDANCE WITH ACI-ASCE COMMITTEE 423 UNLESS OTHERWISE NOTED ON THE DRAWINGS.

PT-C2. PRESTRESSING STEEL USED FOR POST-TENSIONING SHALL BE 1/2" DIAMETER, SEVEN WIRE LOW RELAXATION STRAND CONFORMING TO ASTM A-416, GRADE 270 AND FREE FROM CORROSION. ALL POST-TENSIONING TENDONS SHALL BE FROM ONE MANUFACTURER. THE CONTRACTOR SHALL KEEP ACCURATE RECORDS OF THE MODULUS OF ELASTICITY FOR EACH TENDON OR GROUP OF TENDONS FROM THE SAME MILL RUN. THIS MODULUS OF ELASTICITY SHALL BE USED TO DETERMINE THE ACTUAL ELONGATION.
A. NOMINAL DIAMETER 0.5"
B. AREA 0.153 SQ. INCHES
C. MODULUS OF ELASTICITY 28,000 KSI
D. ULTIMATE TENSILE STRENGTH 270 KSI

PT-C3. PROVIDE COMPLETE WATERTIGHT ENCAPSULATION SYSTEM FOR PRESTRESSING STEEL, ANCHORAGES, AND COUPLINGS. POST-TENSIONING TENDONS SHALL BE COVERED WITH A RUST PREVENTIVE MASTIC AND ENCLOSED IN AN EXTRUDED PLASTIC SLIPPAGE SHEATHING. TORN OR DAMAGED SHEATHING SHALL BE PATCHED BEFORE CONCRETE POURING.

PT-C4. MINIMUM CONCRETE COVER FOR PRESTRESSED AND NON-PRESTRESSED REINFORCEMENT SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE ON THE DRAWINGS:
A. BEAMS AT TYPICAL FLOORS: 1-1/2 "
B. BEAMS AT MECHANICAL FLOORS AND FLOORS ABOVE MECHANICAL: 4"

PT-C5. PROPER TENDON LOCATION SHALL HAVE PRIORITY OVER ALL OTHER MATERIALS.

PT-C6. LOCATE SUPPORTS FOR TENDONS AT COLUMN LINES AND MIDSPANS. AFTER A NATURAL PARABOLIC DRAPE IS ACHIEVED, PROVIDE ADDITIONAL SUPPORTS ACCORDING TO APPROVED SHOP DRAWINGS. TENDONS SHALL BE ACCURATELY LOCATED AT HIGH AND LOW POINTS. PLACING TOLERANCES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

PT-C7. PRESTRESSING TENDONS SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 4'-0" TO PREVENT DISPLACEMENTS DURING CONCRETE PLACEMENT. CONTINUOUS SUPPORTS SHALL CONSIST OF SLAB OR BEAM BOLSTERS OR SUPPORT BARS ON INDIVIDUAL CHAIRS SPACED NO MORE THAN 4'-0" ON CENTER.

PTC8. CONCRETE SHALL BE PLACED IN SUCH A MANNER AS TO INSURE THAT ALIGNMENT OF POST-TENSIONING TENDONS REMAINS UNCHANGED. SPECIAL PROVISIONS SHALL BE MADE TO INSURE PROPER VIBRATION OF CONCRETE AROUND ANCHORAGES.

PTC9. THE DESIGN DRAWINGS DEFINE THE AMOUNT AND DETAILS OF MILD STEEL REINFORCING AND THE MAGNITUDE AND LOCATION OF EFFECTIVE POST-TENSION FORCES REQUIRED BY DESIGN. THE POST-TENSIONING SUBCONTRACTOR SHALL BE RESPONSIBLE FOR COMPUTING THE JACKING FORCES AND METHODS REQUIRED TO ACHIEVE THE DESIGNED EFFECTIVE POST-TENSIONING. THE SUBCONTRACTOR SHALL TAKE INTO ACCOUNT ALL SOURCES OF LOSS OF POST-TENSIONING STRESS INCLUDING:
A. SLIP AT ACHORAGE
B. CREEP OF CONCRETE
C. ELASTIC SHORTENING OF CONCRETE
D. SHRINKAGE OF CONCRETE
E. RELAXATION OF STEEL TENDONS
F. FRICTION LOSS DUE TO INTENDED AND UNINTENDED CURVATURE OF THE TENDONS.

PTC10. CALCULATIONS SHOWING COMPUTATION OF ALL LOSSES AND DETERMINATION OF JACKING FORCES SHALL BE PREPARED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NEW YORK EXPERIENCED IN POST-TENSIONING AND SHALL BE SUBMITTED ALONG WITH THE SHOP DRAWINGS FOR REVIEW BY THE ENGINEER OF RECORD. SHOP DRAWINGS SHALL INCLUDE THE ACTUAL MODULUS OF ELASTICITY OF THE TENDONS USED, THE CALCULATED TENDON ELONGATIONS , AND THE ANTICIPATED JACKING FORCES. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE ADDITIONAL REINFORCING STEEL REQUIRED AT THE ANCHORAGES AND THESE DESIGNS SHALL BE SUBJECT TO REVIEW BY THE ENGINEER OF RECORD.

PTC11. RECORDS OF ALL JACKING FORCES AND ELONGATIONS SHALL BE KEPT BY THE OWNERS INDEPENDENT TESTING LABORATORY INSPECTOR. ALL RECORDS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO STRIPPING OF FORMS.

PTC12. ALL ANCHORING HARDWARE SHALL MEET THE MINIMUM REQUIREMENTS SET FORTH IN ACI 318-O5 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE," CHAPTER 18 AND POST-TENSIONING CONCRETE INSTITUTE "STANDARD BUILDING CODE FOR POST-TENSIONED CONCRETE."

PTC13. THE MAXIMUM ALLOWABLE NUMBER OF TENDONS PER BUNDLE IS FOUR FOR SLABS AND SIX FOR BEAMS. TWISTING OR ENTWINING OF INDIVIDUAL STRANDS OR TENDONS WITHIN A BUNDLE OR BEAM SHALL NOT BE PERMITTED.

PTC14. WHERE UNIFORMLY SPACED TENDONS ARE DETAILED, A MINIMUM OF TWO TENDONS SHALL PASS THROUGH EACH COLUMN.

PTC15. CONCRETE MUST ACHIEVE A STRENGTH OF AT LEAST 4,500 PSI PRIOR TO TENDON STRESSING. A TENDON STRESSING SEQUENCE SHALL BE SUBMITTED FOR REVIEW.

PTC16. THE POUR SIZE SHALL NOT EXCEED 150 CUBIC YARDS OF CONCRETE. BASED ON THIS CRITERIA, THE GENERAL CONTRACTOR SHALL PROPOSE A POUR SEQUENCE FOR REVIEW BY THE ARCHITECT AND STRUCTURAL ENGINEER.

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STRUCTURAL GENERAL NOTES

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S0-0002

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MA **MASONRY**

MA-1 LOAD BEARING AND BACKUP WALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE FOLLOWING MATERIAL STANDARDS:

CONCRETE BLOCK:	ASTM C90, NORMALWEIGHT – TYPE I
MORTAR:	ASTM C270, TYPE S OR M PORTLAND CEMENT / LIME ONLY (USE TYPE M MORTAR WHEN MASONRY IS IN DIRECT CONTACT WITH SOIL; TYPE S IN ALL OTHER CONDITIONS)
GROUT:	ASTM C476 (MINIMUM 28 DAY COMPRESSIVE STRENGTH 2000 PSI)
REINFORCEMENT:	ASTM A615, GRADE 60
JOINT REINFORCEMENT:	ASTM A82, TRUSS OR LADDER TYPE
EXTERIOR JT REINF:	GALVANIZE PER ASTM A153
INTERIOR JT REINF:	
TYPICAL	GALVANIZE PER ASTM A641
RELATIVE HUMIDITY >75%	GALVANIZE PER ASTM A641

MA-2 THE MINIMUM COMPRESSIVE STRENGTH OF THE MASONRY (F' M) SHALL BE 1,500 PSI, UON, AS DETERMINED IN ACCORDANCE WITH THE ABOVE REFERENCED SPECIFICATIONS FOR MASONRY STRUCTURES.

MA-3 CALCIUM CHLORIDE SHALL NOT BE USED IN MORTAR OR GROUT.

MA-4 PROVIDE FULL FACE SHELL MORTAR COVERAGE ON MASONRY UNIT HORIZONTAL AND VERTICAL (BED AND HEAD) FACE SHELL JOINTS.

MA-5 PROVIDE FULL MORTAR COVERAGE ON WEBS AROUND ALL GROUTED CELLS.

MA-6 LAY MASONRY UNITS IN RUNNING BOND UON WITH UNITS DESIGNED TO ALIGN WITH WEBS IN EACH COURSE.

MA-7 REFER TO PLANS AND DETAILS FOR BONDED JOINT REQUIREMENTS AT WALL CORNERS AND INTERSECTIONS. WHERE REQUIRED, INTERLOCK WALLS WITH METAL TIES, ANCHORS OR PREFABRICATED JOINT REINFORCEMENT UON ON DRAWINGS OR SEE SPECIFICATIONS.

MA-8 GROUT SOLID CELLS WITH REINFORCEMENT. GROUT SOLID CELLS IN BELOW GRADE CONSTRUCTION WHERE MASONRY IS IN CONTACT WITH SOIL.

MA-9 GROUT MINIMUM OF ONE (1) CELL WITH REINFORCEMENT AT EACH SIDE OF ALL OPENINGS.SEE DRAWINGSFOR ADDITIONAL REINFORCEMENT REQUIREMENTS.

MA-10 WHERE STRAP ANCHORS ARE REQUIRED BY DRAWINGS OR SPECIFICATIONS, LOCATE THEM AT DIFFERENT BED JOINTS THAN THOSE RECEIVING HORIZONTAL JOINT REINFORCEMENT.

MA-11 WHERE REQUIRED, LAP HORIZONTAL JOINT REINFORCEMENT BY AT LEAST 6 INCHES.

MA-12 PLACE GROUT BY THE LOW-LIFT METHOD. MAXIMUM GROUT POUR SHALL BE 4 FEET.

SC **STRUCTURAL STEEL CONNECTIONS**

SC-1 ALL STEEL DETAILS AND CONNECTIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", AISC-LOAD AND RESISTANCE FACTOR DESIGN.

SC-2 ALL CONNECTIONS, UNLESS INDICATED AS BEING FULLY DESIGNED ON THE STRUCTURAL DRAWINGS, SHALL BE DESIGNED AND DETAILED BY A LICENSED STRUCTURAL ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. THE DESIGN AND DETAILING SHALL COMPLY WITH ALL APPLICABLE CODES AND SPECIFICATION SECTIONS.

SC-3 UNLESS OTHERWISE NOTED, DETAILS INDICATED ON DRAWINGS INDICATE GENERAL CRITERIA FOR DESIGN AND DETAILING OF CONNECTIONS. DETAILS INDICATED ON DRAWINGS ARE NOT INTENDED TO CONVEY COMPLETE CONNECTOR SIZES, PLATE SIZES, WELD SIZES, NUMBER OF BOLTS, OR ANY OTHER SPECIFIC INFORMATION THAT IS OBTAINED THROUGH DESIGNING OF AN INDIVIDUAL CONNECTION FOR A GIVEN SET OF LOADS. THESE DETAILS DO NOT SHOW ERECTION AIDS. PROVIDE ERECTION AIDS AS REQUIRED AND REMOVE THEM AFTER WORK IS COMPLETE.

SC-4 SUBMIT CONNECTIONS NOT SPECIFICALLY DETAILED ON THE DRAWINGS TO THE SER FOR REVIEW PRIOR TO REVIEW OF SHOP DRAWINGS. FOR BIDDING PURPOSES, WHERE NO MOMENT IS INDICATED ON DRAWINGS PROVIDE FULL MOMENT CAPACITY OF MEMBER (.9 Fy Z) AND WHERE NO VERTICAL SHEAR IS INDICATED ON DRAWINGS PROVIDE FULL SHEAR CAPACITY (.54 Fy d tw).

SC-5 ALTERNATE CONNECTIONS TO THOSE SHOWN ON DRAWINGS WILL ONLY BE CONSIDERED ACCEPTABLE IF CONTRACTOR FORMALLY SUBMITS ALTERNATES AND THE SER APPROVES THE SUBMITTAL.

SC-6 FOR CONNECTION DESIGN AND DETAILING, SET CONNECTION WORK POINT AT INTERSECTION OF MEMBER CENTERLINES, UON.

SC-7 DESIGN ALL CONNECTIONS FOR FORCES INDICATED ON THE DRAWINGS. CONNECTION DESIGN FORCES INDICATED ON THE DRAWINGS ARE FACTORED UON.

SC-8 DESIGN OF MEMBERS IS BASED ON ASSUMPTION OF 3/4-INCH DIAMETER AND 1-INCH DIAMETER A325 OR A490 BOLTS. USE NO MORE THAN TWO BOLT DIAMETERS, ONE GRADE PER DIAMETER, SKIP ONE SIZE BETWEEN DIAMETERS.

SC-9 BEAM CONNECTION DESIGN NOTES

SEE PLANS FOR BEAM REACTIONS AND MOMENTS THAT ARE LARGER THAN THE VALUE SHOWN IN SCHEDULES.

DEVELOP THE LARGER OF THE BEAM SHEAR REACTION SCHEDULED, SHOWN ON PLANS OR SHOWN ON ELEVATIONS.

DEVELOP THE LARGER OF THE MOMENT SCHEDULED, SHOWN ON PLANS OR SHOWN ON ELEVATIONS.

DEVELOP THE LARGER OF THE AXIAL FORCE DENOTED AS P OR TF SHOWN ON PLANS OR SHOWN ON ELEVATIONS. SEE STEEL BEAM LEGEND.

WHERE NO AXIAL FORCE IS SHOWN ALL BEAM CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM AXIAL FORCE EQUALTO 5% OF THE VERTICAL SHEAR REACTION ACTING CONCURRENTLY WITH THE VERTICAL BEAM SHEAR

ALL BEAM REACTIONS, AXIAL FORCES AND MOMENTS ACT CONCURRENTLY. UON, BEAM REACTIONS ACT IN GRAVITY DIRECTION WHILE AXIAL FORCES AND MOMENTS ARE TO BE CONSIDERED REVERSIBLE.

EXCEPT WHERE "SNUG TIGHT" INSTALLATION IS SPECIFICALLY PERMITTED ON DRAWINGS or "SLIP CRITICAL" DETAILING IS REQUIRED, ALL HIGH STRENGTH BOLTS SHALL BE INSTALLED AS FULL PRETENSIONED BOLTS.

AT A MINIMUM ALL BOLTED MOMENT AND AXIAL CONNECTION SHALL HAVE PRETENSIONED BOLTS IN STANDARD HOLES.

BOLTED MOMENT CONNECTIONS AT CANTILEVERS AND BACKSPANS SHALL USE SLIP CRITICAL BOLTS.

DO NOT USE OVERSIZED OR SLOTTED HOLES FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED IN WRITING BY THE SER.

SC-10 ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE STRUCTURAL WELDING CODE, ANSI/AWS D1.1, LATEST EDITION. ALL WELD SIZES SHALL BE THE LARGER OF THE SIZE REQUIRED BY CONNECTION FORCES, THE MINIMUM SIZE PER ANSI/AWS D1.1, OR 3/16 INCH MINIMUM FILLET WELD UON. ANY WELD SIZES SHOWN ON THE DESIGN DRAWINGS ARE CONSIDERED EFFECTIVE WELD SIZES AND SHALL BE INCREASED IN ACCORDANCE WITH AWS AS REQUIRED BY GAPS OR SKEWS BETWEEN COMPONENTS.

SC-11 USE RUNOFF TABS AT ALL BEVEL AND FULL PENETRATION WELDS. REMOVE RUNOFF TABS BY NEAT CUTS AFTER WELD IS COMPLETED. GRIND SMOOTH WHERE REQUIRED BY DETAIL.

SC-12 WHERE REQUIRED BY DETAIL REMOVE WELD BACK UP BARS AND GRIND SMOOTH AFTER WELD IS COMPLETED.

SC-13 FOR TRUSS DETAILING USE A MINIMUM BOLT SPACING OF 3 TIMES THE BOLT DIAMETER AND A MINIMUM EDGE DISTANCE OF 2 INCHES. ALSO REFER TO TYPICAL DETAILS.

SC-14 DESIGN, DETAIL, FURNISH AND INSTALL STIFFENERS, CONTINUITY PLATES, DOUBLER PLATES, OR OTHER NECESSARY ADDITIONAL LOCAL STRENGTHENING MEASURES AS REQUIRED. MEMBER SIZES INDICATED ON THE DRAWINGS ARE BASED ON MEMBER BEHAVIOR AWAY FROM CONNECTIONS.

PA **POST-INSTALLED ANCHORS**

PA-1 EPOXY-ANCHORED REINFORCING BAR SYSTEMS:

HIT RE 500 EPOXY ADHESIVE ANCHOR	HILTI, TULSA, OK
HIT RE 500-SD EPOXY ADHESIVE ANCHOR	HILTI, TULSA, OK

OVERHEAD AND/OR CONSTANT TENSION EPOXY ANCHOR INSTALLATIONS NOT SHOWN ON THE DRAWINGS SHALL NOT BE PERMITTED UNLESS EACH CONDITION IS REVIEWED AND APPROVED IN WRITING BY THE SER.

PA-2 ALTERNATIVE SYSTEM EQUIVALENT TO OR EXCEEDING THE PROPERTIES OF THE SYSTEM ABOVE WILL BE CONSIDERED.

PA-3 FIELD DRILLED EXPANSION ANCHOR SYSTEMS:

KWIK BOLT 3	HILTI, TULSA, OK
KWIK TZ FOR CRACKED CONCRET	HILTI, TULSA, OK

PA-4 ALTERNATIVE SYSTEM EQUIVALENT TO OR EXCEEDING THE PROPERTIES OF THE SYSTEM ABOVE WILL BE CONSIDERED.

PA-5 ANCHORS ARE TO BE MINIMUM 3/4" DIAMETER WITH A MINIMUM EMBEDMENT OF 6", UON.

PA-6 INSTALL ANCHORS TO MEET THE REQUIREMENTS INDICATED IN THE CONTRACT DOCUMENTS AND THE MANUFACTURER' S RECOMMENDATIONS.

PA-7 LOCATE, BY NON-DESTRUCTIVE MEANS, AND AVOID ALL EXISTING REINFORCEMENT PRIOR TO INSTALLATION OF ANCHORS. IF EXISTING REINFORCING LAYOUT PROHIBITS THE INSTALLATION OF ANCHORS AS INDICATED IN THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE DESIGN PROFESSIONALS IMMEDIATELY.

PA-8 INSTALL MASONRY ANCHORS IN SOLID MASONRY OR IN HOLLOW MASONRY THAT HAS BEEN GROUTED SOLID AT LEAST ONE COURSE ABOVE AND ONE COURSE BELOW THE ANCHOR, UON.

SI SPECIAL INSPECTIONS:

SI-1 THE FOLLOWING STRUCTURAL ITEMS REQUIRE SPECIAL TESTING AND/OR INSPECTIONS
STRUCTURAL STEEL – WELDING
STRUCTURAL STEEL – ERECTION & BOLTING
CONCRETE – CAST-IN-PLACE
CONCRETE – PRECAST
CONCRETE – PRESTRESSED
CONCRETE TEST CYLINDERS
CONCRETE DESIGN MIX
FOOTING AND FOUNDATION
PILE FOUNDATIONS & DRILLED PIER INSTALLATION

DOB DEPARTMENT OF BUILDINGS NOTES:

DOB-1 STRUCTURAL DESIGN: BUILDING, STRUCTURES, AND PARTS THEREOF ARE DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH STRENGTH DESIGN, LOAD AND RESISTANCE FACTOR DESIGN, ALLOWABLE STRESS DESIGN, EMPIRICAL DESIGN, OR CONVENTIONAL CONSTRUCTION METHODS, AS PER REQUIREMENTS OF 2008 NYC BUILDING CODE, BC 1604. REFER TO STRUCTURAL DRAWINGS FOR FURTHER INFORMATION.

DOB-2 SOILS AND FOUNDATIONS: BUILDING AND FOUNDATION SYSTEM DESIGNED AS PER REQUIREMENTS OF BC 1801.

DOB-3 FOOTINGS AND FOUNDATIONS: FOOTINGS AND FOUNDATIONS DESIGNED AS PER REQUIREMENTS OF BC 1805.

DOB-4 SEISMIC DESIGN PROVISIONS: CONCRETE COMPONENTS THAT RESIST SEISMIC FORCES DESIGNED AS PER REQUIREMENTS OF BC 1910 AND LL 17/95.

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Sheet Number

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Drawing Title

STRUCTURAL GENERAL NOTES II

Drawing Number
S0-0003

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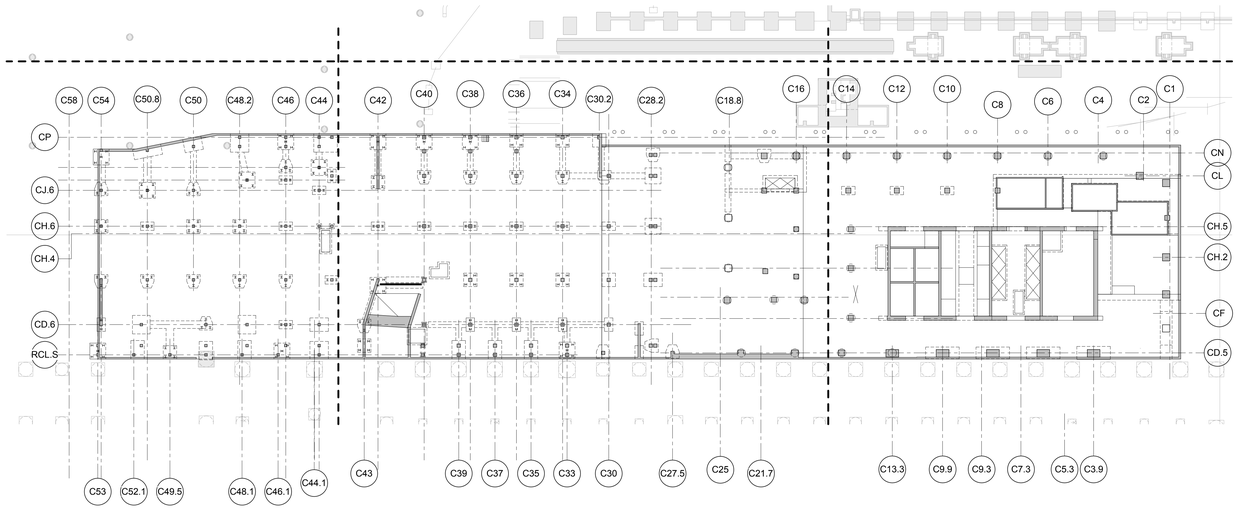

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COMPOSITE PLAN CELLAR LEVEL ALL SECTORS

Drawing Number
S1-C100

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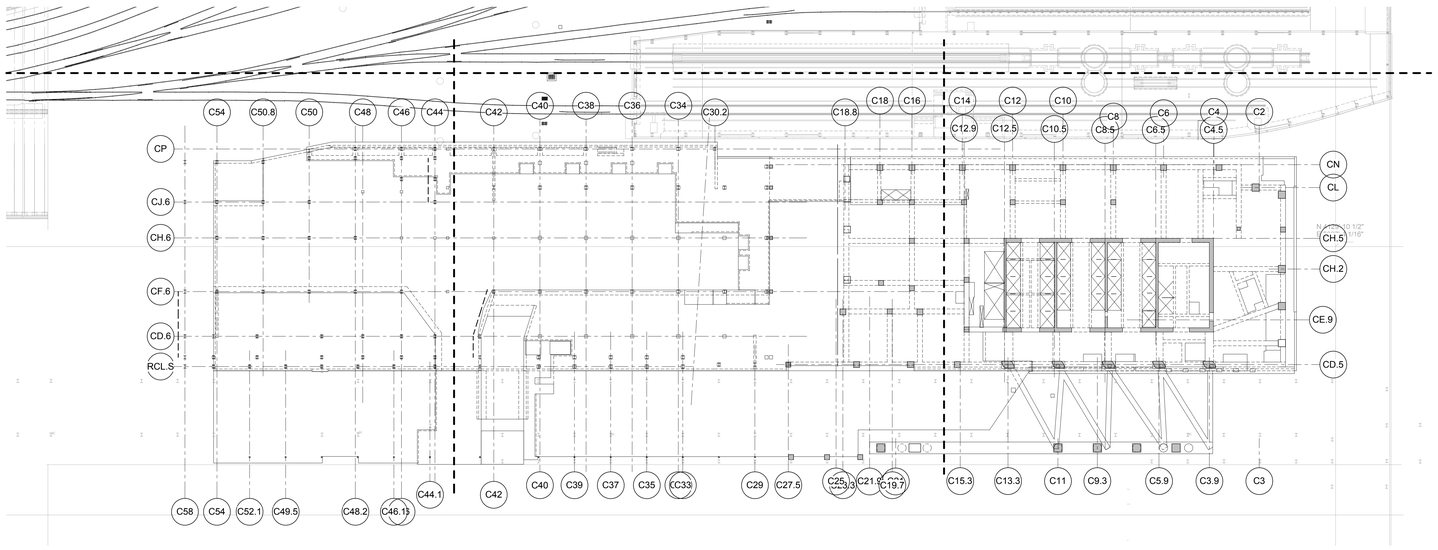

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Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number

STATE OF NEW YORK
ARIC M. BRAUN
LICENSED PROFESSIONAL ENGINEER

HYE -TC -S1-0000

Drawing Title

COMPOSITE PLAN FLOOR 00 (STREET) ALL SECTORS

Drawing Number
S1-0000

B/Scan Drawing Number
S-005.00

SHEET 5 OF 133

S1-0000
9/19/2012 10:33:37 AM
COMPOSITE PLAN FLOOR 00 (STREET) ALL SECTORS
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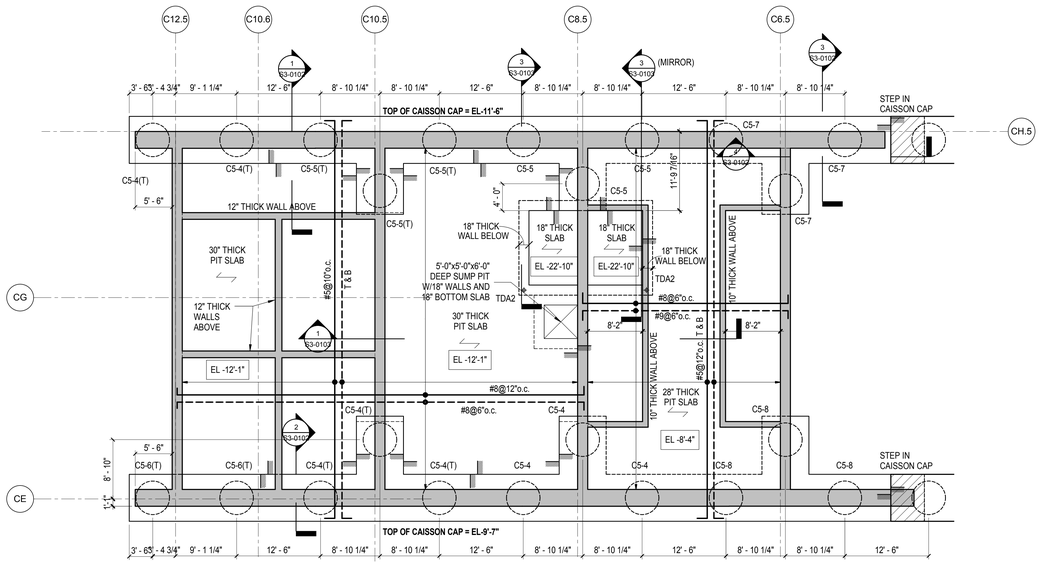
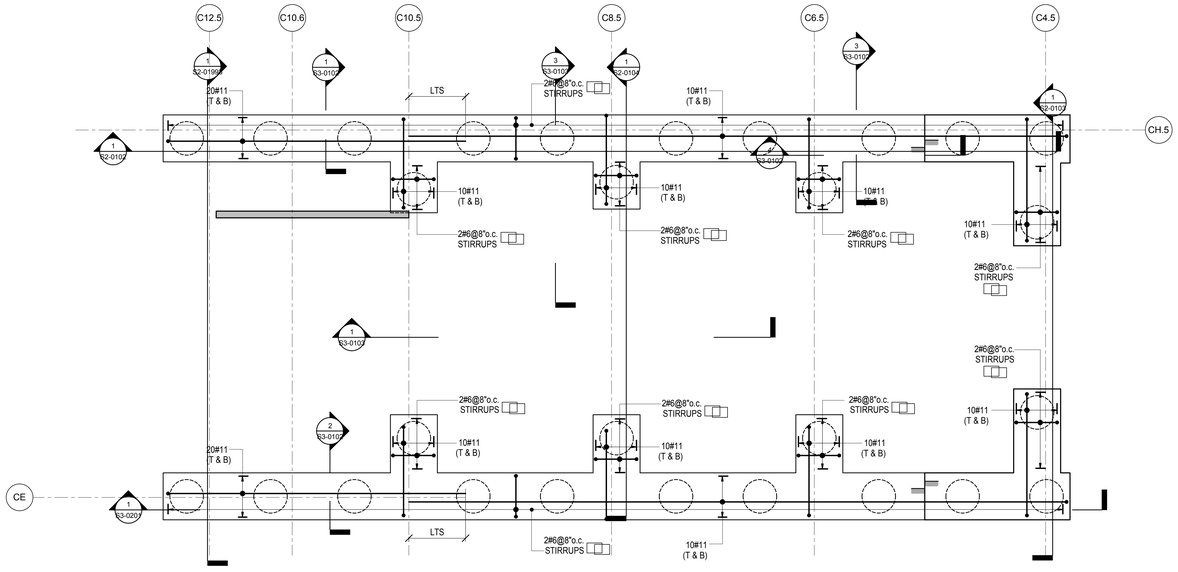


1 DEPRESSED CORE PIT PLAN
1/8" = 1'-0"



2 CAISSON CAP REINFORCING LAYOUT
1/8" = 1'-0"

HUDSON YARDS - TOWER C

501 WEST 30TH STREET
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No.	Description	Date
	ISSUE FOR FILING	09/19/2012
2	ADD-1: FNDN & UTIL BP	08/10/2012
1	D1-2: FNDN & UTIL BP	08/01/2012

Key Plan

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Nov 20, 2012 – 11:27 AM
NYC Development Hub

Issue Date: 08/01/12
Project No. 1776.10
Drawn By:
Sheet Number
HYE -TC -S1-C001
Drawing Title
DEPRESSED CORE PIT PLAN
Drawing Number
S1-C001
B-Scan Drawing Number
S-007.00

SHEET 7 OF 133

S1-C001
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DEPRESSED CORE PIT PLAN
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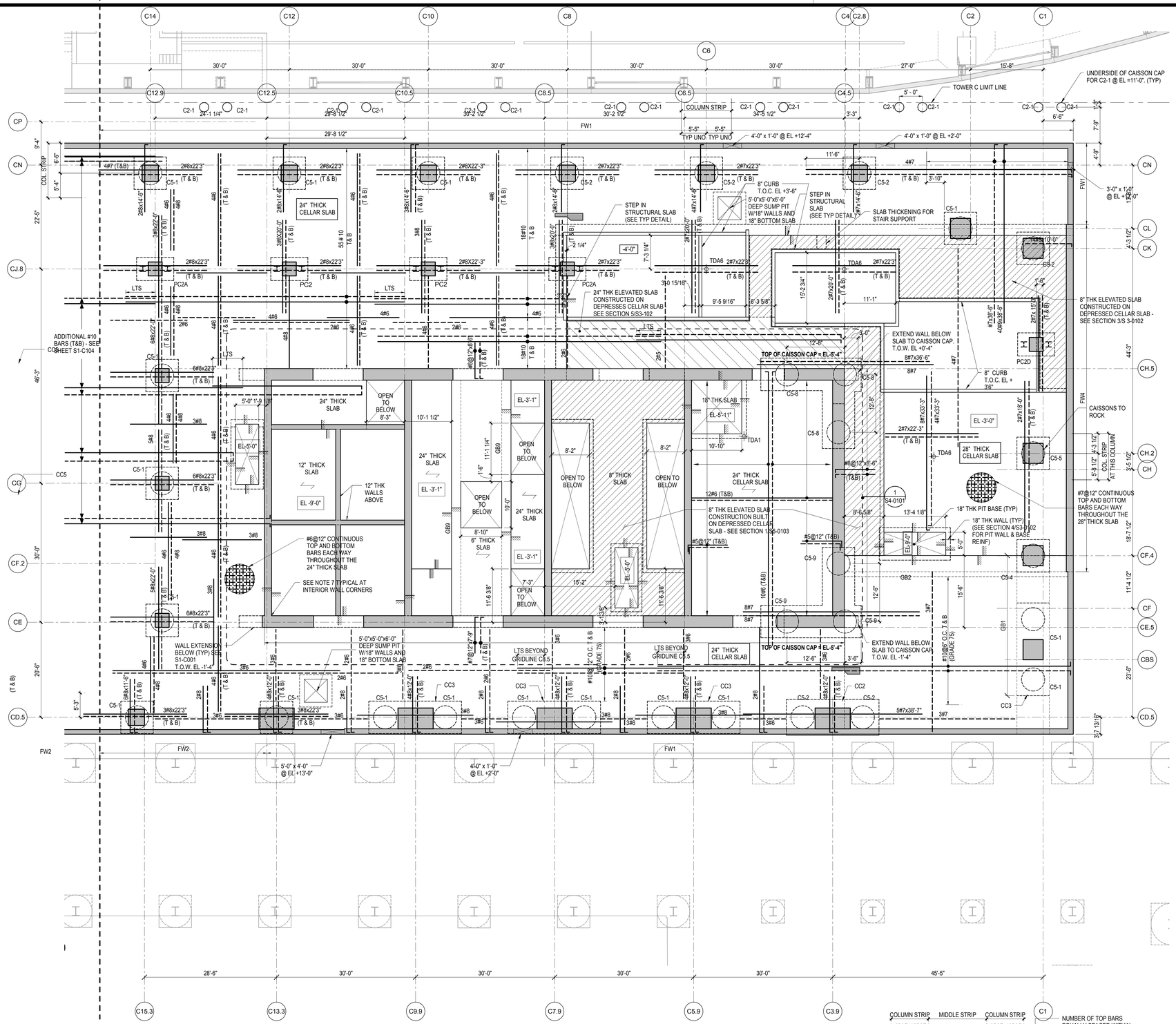
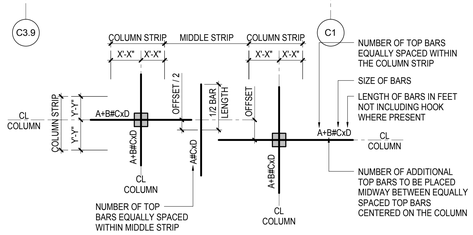


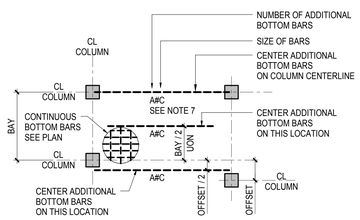


TOP BAR LEGEND NOTES:

1. NUMBER/SIZE/LENGTH OF MIDDLE STRIP BARS SHOWN IN ONE DIRECTION ONLY SAME NOTATION APPLIES IN PERPENDICULAR DIRECTION
2. CENTERLINE OF COLUMN MAY NOT COINCIDE W/ GRIDLINES SEE DRAWINGS FOR OFFSET DIMENSION
3. HOOK ALL TOP BARS THAT PASS THROUGH COLUMN AT EXTERIOR SUPPORT WITH 90° STANDARD HOOK OR IF NECESSARY USE 180° STANDARD HOOK

TOP BAR REINF. LEGEND

NOT TO SCALE



BOTTOM BAR LEGEND NOTES:

1. NUMBER / SIZE / LENGTH OF BARS SHOWN IN ONE DIRECTION ONLY SAME NOTATIONS APPLY IN PERPENDICULAR DIRECTION
2. CENTERLINE OF COLUMN MAY NOT COINCIDE W/ GRIDLINES SEE DRAWINGS FOR OFFSET DIMENSION
3. PLACE ADDITIONAL BARS AT SAME SPACING OF CONTINUOUS BARS AND MIDWAY BETWEEN CONTINUOUS BARS UON
4. ALL CONTINUOUS BOTTOM BARS TO EXTEND WITHIN 2 INCHES OF SLAB EDGE
5. A MINIMUM OF 2 BOTTOM BARS MUST EXTEND THROUGH THE COLUMN JOINT IN EACH DIRECTION
6. AT EXTERIOR SUPPORT HOOK 2 BOTTOM BARS THAT PASS THROUGH COLUMN WITH 90° STANDARD HOOK OR IF NECESSARY USE 180° STANDARD HOOK.
7. FOR BOTTOM BAR LENGTHS SEE TYPICAL TWO WAY SLAB DETAILS

BOTTOM BAR REINF. LEGEND

NOT TO SCALE

NOTES:

1. TOP OF FLOOR AT ELEVATIONS NOTED ON PLAN.
2. STRUCTURAL CELLAR SLAB THICKNESS NOTED ON PLANS. SEE TYP DETAILS OF S5-0106
3. TOP OF GRADE BEAMS, PILE CAPS AND CAISSON CAPS SHALL BE LOCATED 3" BELOW BOTTOM OF STRUCTURAL CELLAR SLAB EXCEPT AT CORE, WHERE THEY SHALL BE LOCATED DIRECTLY BELOW THE BOTTOM OF THE STRUCTURAL CELLAR SLAB. OTHER DEVIATIONS NOTED IN PLAN.
4. SYMBOLS:

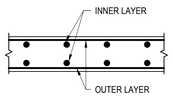
   AT THIS LEVEL, FOUNDATION ELEMENTS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f' c) AS FOLLOWS:

CELLAR SLAB -	5000 psi.
GRADE BEAMS -	5000 psi.
FOUNDATION WALLS -	5000 psi.
CORE WALLS -	SEE SCHEDULE ON S6-0201
CAISSON CAPS -	SEE SCHEDULE ON S6-0101
CAISSONS -	SEE SCHEDULE ON S6-0101
PILE CAPS -	5000 psi.

5. NOTATION:
   - PC"X" — INDICATES PILECAPS WITH "X" NUMBER OF 200 TON WORKING CAPACITY PILES BEARING ON ROCK. REFER TO TYPICAL DETAILS ON S5-0102 AND SCHEDULE ON S6-0101.
   - C"X"-"Y" — INDICATES CAISSON OF "X" FEET DIAMETER AND TYPE "Y". REFER TO TYPICAL DETAILS ON S5-0101 AND SCHEDULE ON S6-0101. (T) SUFFIX INDICATES TENSION CAISSON - SEE TYP DETAILS ON S5-0101.
   - CC.... — INDICATES CAISSON CAP TYPE. ALL CAISSON CAPS ARE TYPE CC1 U.N.O. ON PLAN. SEE SCHEDULE ON S6-0101. FOR CONTINUOUS CAISSON CAP REBAR UNDER CORE SEE DWG S1-001. WHERE CAPS LOCATED AT STEP IN SLAB, CAPS TO BE AT UNDERSIDE OF LOWER SLAB.
   - P.... — INDICATES PIER TYPE. TOP OF PIERS ARE NOTED THUS (±....) ON PLAN REFERENCED TO TOP OF FINISHED FLOOR. REFER TO SCHEDULE ON S6-0101.
   - FW.... — INDICATES FOUNDATION WALL TYPE. REFER TO TYPICAL DETAILS ON S5-0103, FOUNDATION WALL SECTIONS ON S3 SERIES DWGS AND SCHEDULE ON S6-0101.
   - GB.... — INDICATES GRADE BEAM TYPE. TOP OF GRADE BEAMS SHALL MATCH TOP OF FOOTINGS OR PILECAPS AT EACH END UNLESS NOTED THUS (±....) ON PLAN REFERENCED TO TOP OF FINISHED FLOOR. REFER TO SCHEDULE ON S6-0101.
   - DB — INDICATES HSS6X4X3/8 ELEVATOR DIVIDER BEAM (NOT FIRE-PROOFED) WITH TOP OF STEEL NOTED THUS (±....) ON PLAN REFERENCED TO TOP OF FINISHED FLOOR. REFER TO TYPICAL DETAIL ON S5-0200.
   - PA/PB — INDICATES POST ABOVE/BELOW
   - HA/HB — INDICATES HANGER ABOVE/BELOW
   - CA/CB — INDICATES COLUMN ABOVE/BELOW
6. SYMBOLS:
   - INDICATES STEP IN SLAB
   - INDICATES CHANGE IN SLAB THICKNESS
   - TDA... — TIE-DOWN ANCHOR. SEE SCHEDULE ON S6-0101.
   - OPENING IN FOUNDATION WALL OF 'W' x 'D' DIMENSIONS WITH CL OF OPENING @ ELEVATION INDICATED
7. ALL CONCRETE IN SLABS, CAISSON CAPS, PILE CAPS, FOUNDATION WALLS, GRADE BEAMS, AND SHEAR WALLS AT CELLAR LEVEL TO INCLUDE CORROSION INHIBITING ADMIXTURE.
8. ASSUME 16#9 COLUMN DOWELS FOR ALL COLUMNS NOT CURRENTLY INCLUDED IN COLUMN SCHEDULE.

REINFORCEMENT PLAN NOTES:

1. SLAB BOTTOM BAR CLEAR COVER 2"
2. SLAB TOP BAR CLEAR COVER 1 1/2"
3. TWO-WAY SLAB BAR PLACEMENT:
   1. N-S DIRECTION OUTER LAYER
   2. E-W DIRECTION INNER LAYER
4. ONE-WAY SLAB BAR PLACEMENT:
   1. TOP AND BOTTOM BARS PARALLEL TO SPAN DIRECTION
   2. SHRINKAGE AND TEMPERATURE BARS PERPENDICULAR TO SPAN DIRECTION
5. SEE TYPICAL SLAB DETAILS ON S5-0106
6. FOR COLUMN STRIP WIDTH SEE TOP BARS LEGEND
7. FOR SLAB CORNERS SUPPORTED BY BEAMS OR WALLS, SEE TYPICAL BEAM / WALL SUPPORTED SLAB EXTERIOR CORNER DETAIL



SLAB SECTION

TYPICAL SHEET NOTES

NOT TO SCALE

HUDSON YARDS - TOWER C

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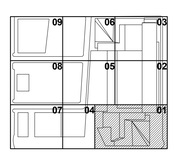
2	ADD-1: FNDN & UTIL BP	08/10/2012
1	D1-2: FNDN & UTIL BP	08/01/2012

Key Plan



Issue Date: 08/01/12
Project No. 1776.10
Drawn By
Sheet Number

HYE -TC -S1-C101

Drawing Title

CELLAR FRAMING PLAN SECTOR 1

Drawing Number
S1-C101

R-Scan Drawing Number
S-008.00

SHEET 8 OF 133

S1-C101
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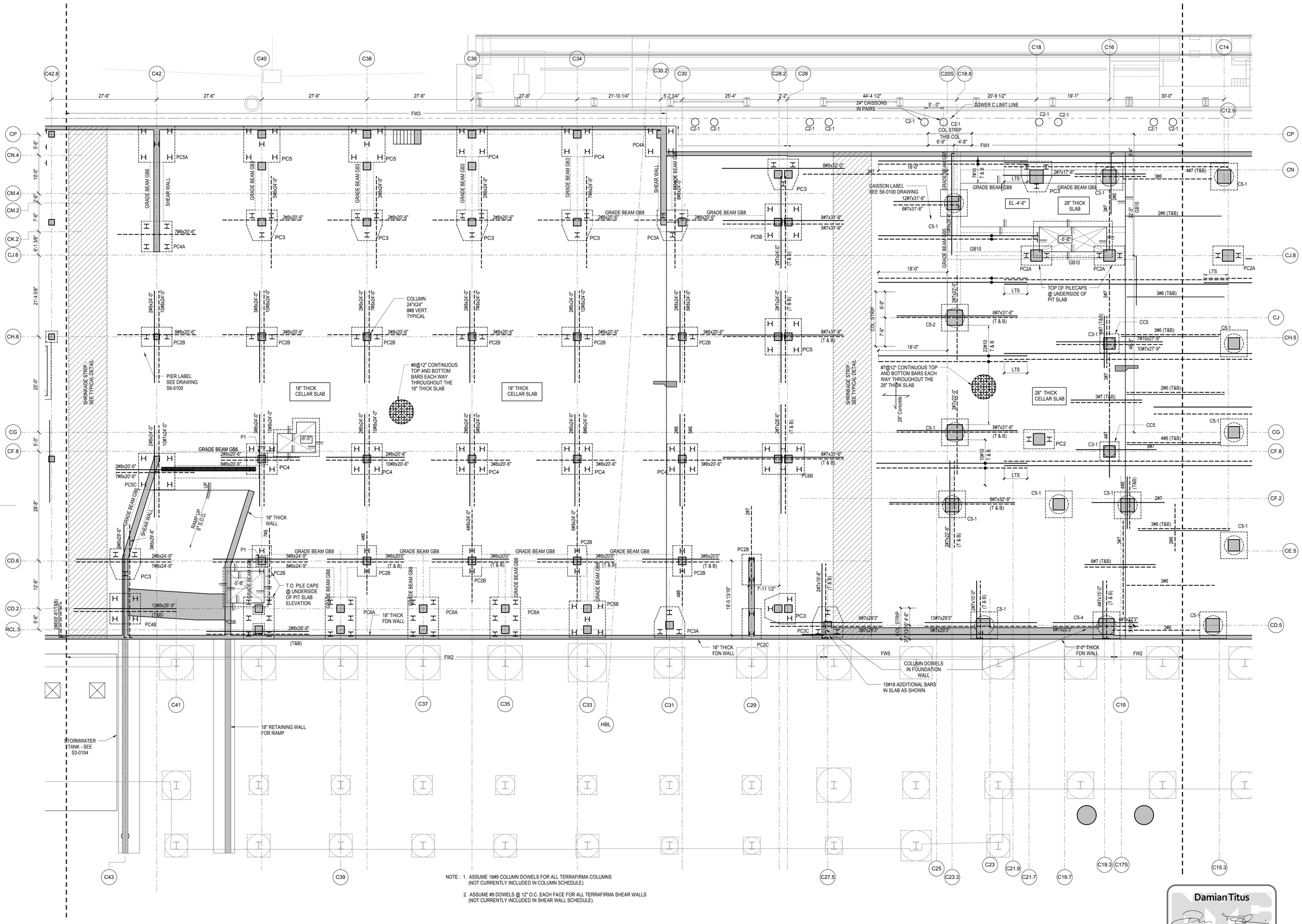

NOTE : 1. ASSUME 16#9 COLUMN DOWELS FOR ALL TERRAFIRMA COLUMNS (NOT CURRENTLY INCLUDED IN COLUMN SCHEDULE).

2. ASSUME #9 DOWELS @ 12" O.C. EACH FACE FOR ALL TERRAFIRMA SHEAR WALLS (NOT CURRENTLY INCLUDED IN SHEAR WALL SCHEDULE).

Damian Titus

Buildings

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SEE S1-C101 FOR SHEET AND SLAB NOTES

0 4' 8' 16'

N

HUDSON YARDS - TOWER C

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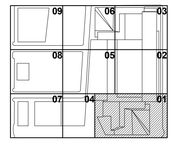
Key Plan



Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number

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HYE -TC -S1-C104

Drawing Title

CELLAR FRAMING PLAN SECTOR 4

Drawing Number
S1-C104

B-Scan Drawing Number
S-009.00

SHEET 9 OF 133

S1-C104
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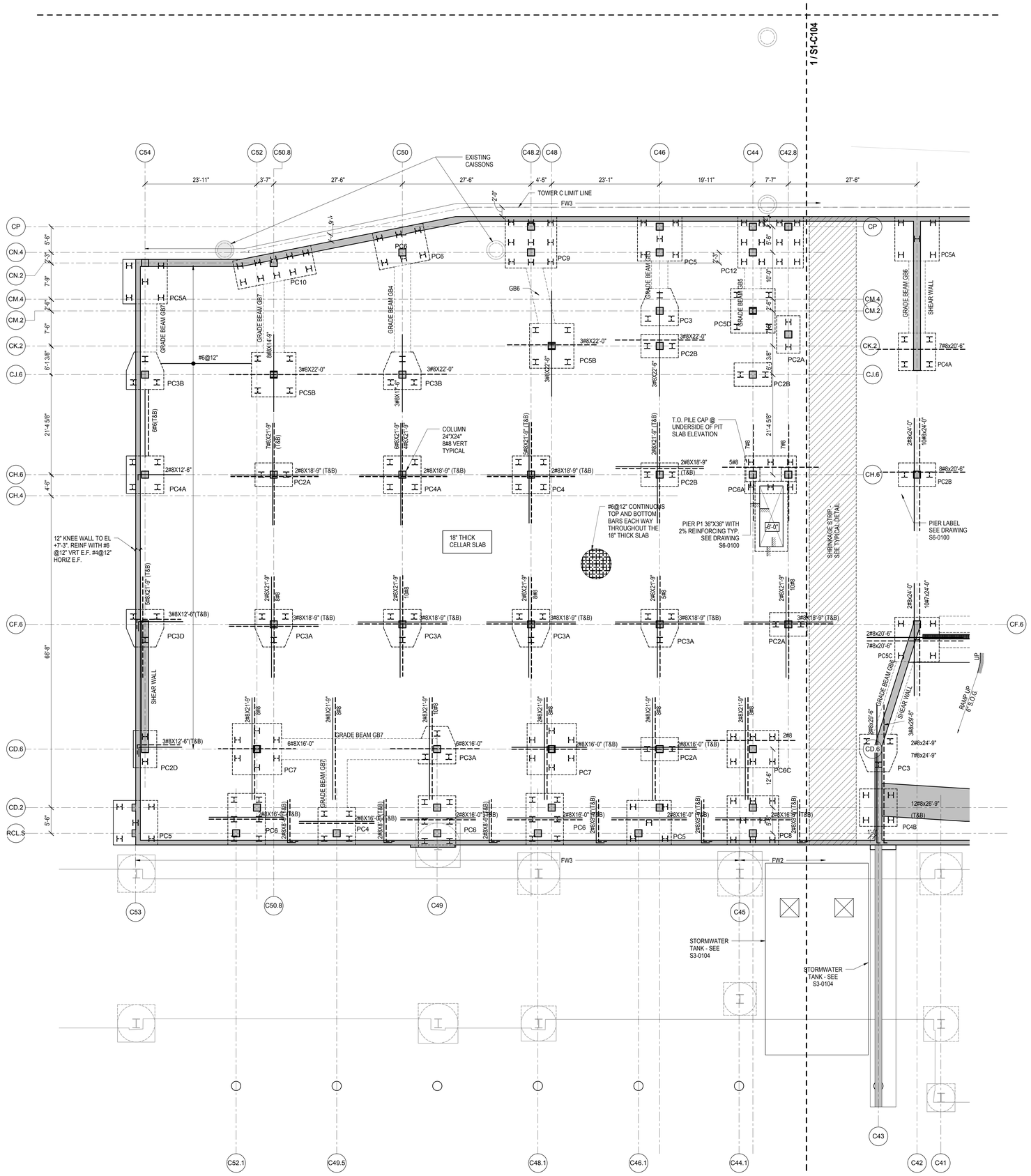

SEE S1-C101 FOR SHEET NOTES

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HUDSON YARDS - TOWER C

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No.	Description	Date
	ISSUE FOR FILING	09/19/2012

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Issue Date:
Project No. 1776.10
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Sheet Number

STATE OF NEW YORK · STEVE M. BRAZE · 082843-1 · LICENSED PROFESSIONAL ENGINEER

HYE -TC -S1-C107

Drawing Title

CELLAR FRAMING PLAN SECTOR 7

Drawing Number
S1-C107

R-Scan Drawing Number
S-010.00

SHEET 10 OF 133

S1-C107
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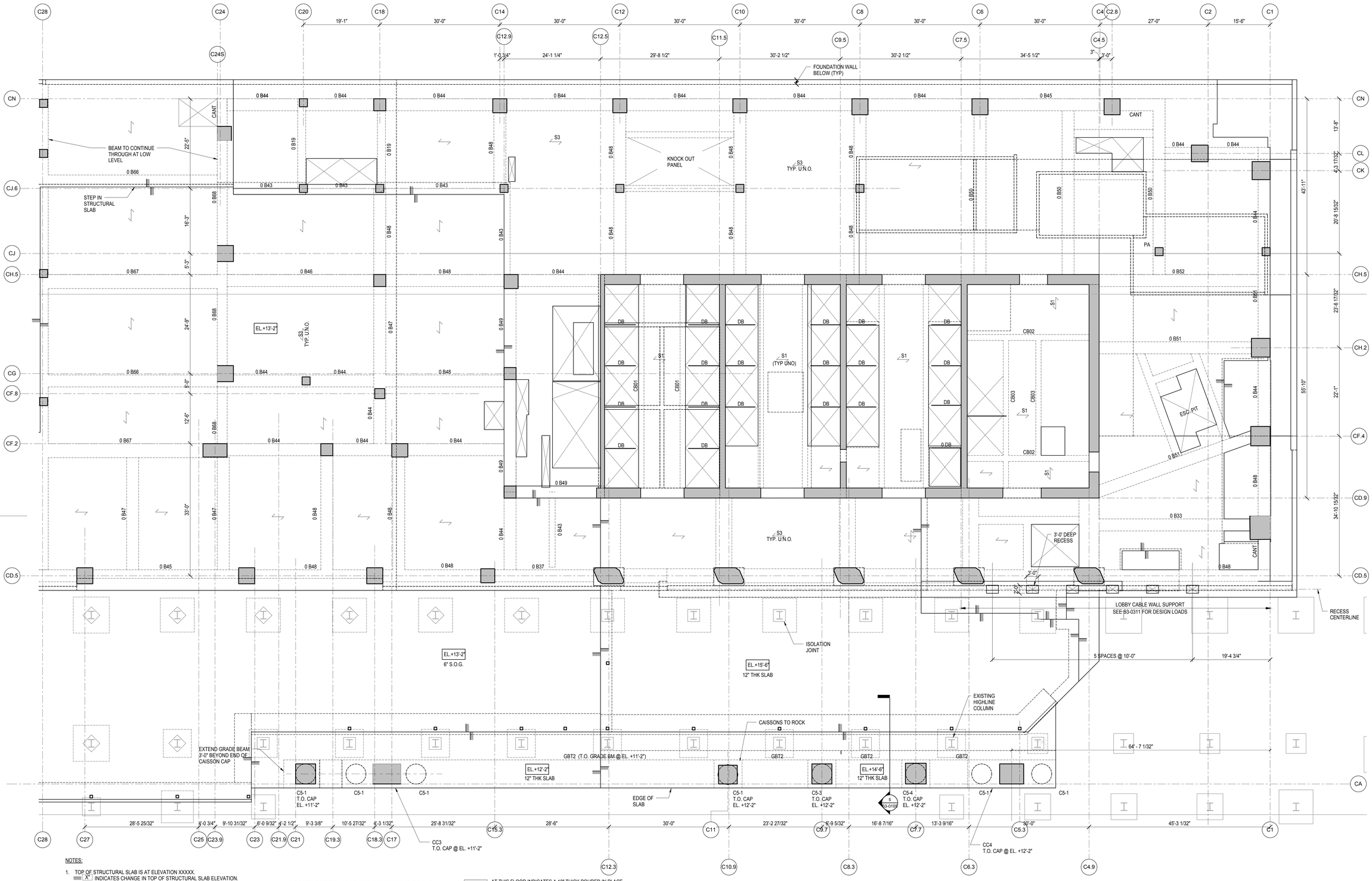

NOTES:

1. TOP OF STRUCTURAL SLAB IS AT ELEVATION XXXXX.
   X INDICATES CHANGE IN TOP OF STRUCTURAL SLAB ELEVATION.
2. TYPICAL SLAB TO BE 9" THICK FILIGREE SLABS.
   SLABS ARE EITHER 9" SOLID (INDICATED AS F9S - #) OR 9" VOIDED (INDICATED AS F9V- #). SEE PLAN FOR SLAB DESIGNATIONS. SEE S5-0203 FOR SCHEDULE AND DETAILS.
   S# INDICATES A CONVENTIONALLY FORMED CAST IN PLACE SLAB. SEE S5-0202 FOR SCHEDULE AND DETAILS.
3. AT THIS FLOOR, SLAB SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 8,000 PSI. REFER TO TYP DETAILS FOR CONCRETE PUDDLING AT VICINITY OF HIGH STRENGTH COLUMNS.
4. FOR ADDITIONAL INFORMATION, REFER TO THE FOLLOWING DRAWINGS:

GENERAL NOTES	S0 SERIES DRAWINGS.
FOUNDATION DETAILS	S3 SERIES DRAWINGS.
COLUMN SCHEDULES AND DETAILS	S6 SERIES DRAWINGS.
SHEAR WALL DETAILS	S6 SERIES DRAWINGS.
CONCRETE SUPERSTRUCTURE DETAILS	S5 SERIES DRAWINGS.
STEEL SUPERSTRUCTURE DETAILS	S5 SERIES DRAWINGS.

5. SYMBOLS:
   INDICATES ADDITIONAL TOP REINFORCING BARS. REFER TO TYPICAL DETAILS ON S5 SERIES DRAWINGS.
   INDICATES ADDITIONAL BOTTOM REINFORCING BARS. REFER TO TYPICAL DETAILS ON S5 SERIES DRAWINGS.
   INDICATES DIRECTION OF SPAN OF ONE-WAY CONCRETE SLAB. REFER TO SLAB SCHEDULE ON SX SERIES DRAWINGS. REFER TO TYPICAL DETAIL ON S5 SERIES DRAWINGS.
   X INDICATES X" CAMBER UPWARD WHEN DIFFERS FROM CAMBER SPECIFIED IN GENERAL NOTES.
   INDICATES STEP IN SLAB
   INDICATES CHANGE IN SLAB THICKNESS
6. NOTATION:
   XB.. INDICATES REINFORCED CONCRETE BEAM AT FLOOR X. REFER TO BEAM SCHEDULE ON SX SERIES DRAWINGS. REFER TO TYPICAL DETAIL ON S6 SERIES DRAWINGS.
   XPTB.. INDICATES POST-TENSIONED REINFORCED CONCRETE BEAM AT FLOOR X. REFER TO BEAM SCHEDULE ON SX SERIES DRAWINGS. REFER TO TYPICAL DETAIL ON S6 SERIES DRAWINGS.
   DB... INDICATES HSS 8x4x1/4 ELEVATOR DIVIDER BEAM (NOT FIRE-PROOFED). REFER TO TYPICAL DETAIL ON S5 SERIES DRAWINGS.
   CA/CB INDICATES COLUMN ABOVE/BELOW.
   PA/PB INDICATES POST ABOVE/BELOW.
   HA/HB INDICATES HANGER ABOVE/BELOW.
   TW INDICATES TRANSFER WALL SEE S3-210 SERIES.
7. AT THIS FLOOR INDICATES A 12" THICK POURED IN PLACE SLAB MARK_ S3_
   REINFORCING SHOWN ON PLAN IS IN ADDITION TO REINF CALLED ON SCHEDULE.

Damian Titus
NYC Buildings
APPROVED
Under Directive 2 of 1975
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TOWER C - DOB BUILDING PERMIT SUBMISSION - 24 SEPT 2012

HUDSON YARDS - TOWER C

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No.	Description	Date

Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
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HYE -TC -S1-0001

Drawing Title

00 LEVEL FRAMING PLAN SECTOR 1

Drawing Number
S1-0001
B/Scan Drawing Number
S-011.00 SHEET 11 OF 133

S1-0001 00 LEVEL FRAMING PLAN SECTOR 1
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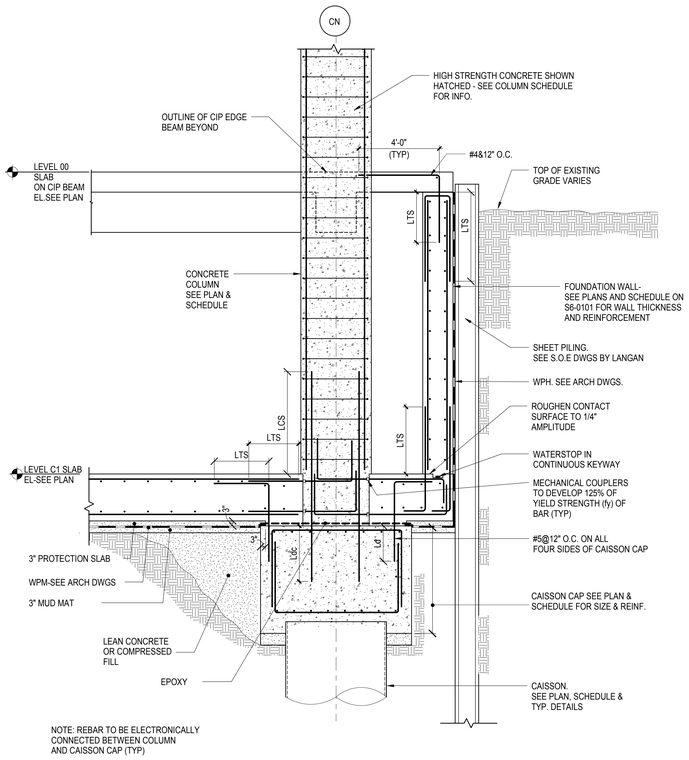
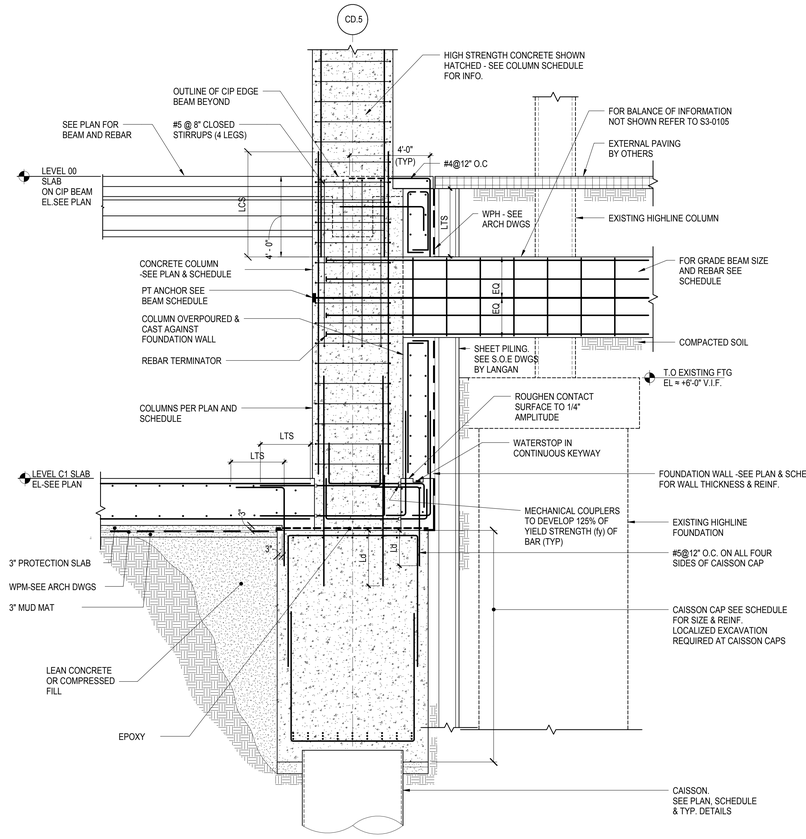
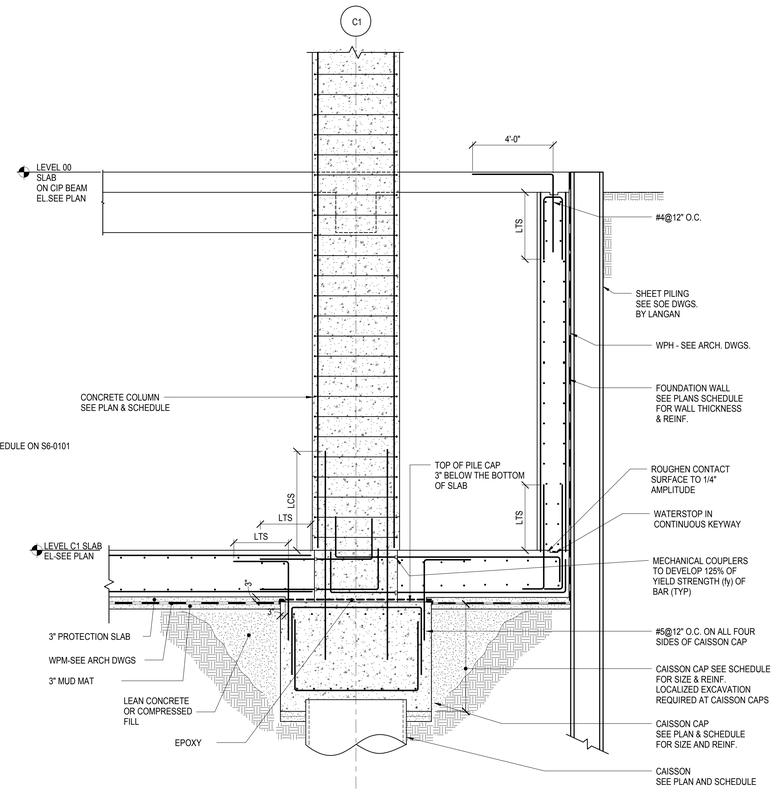


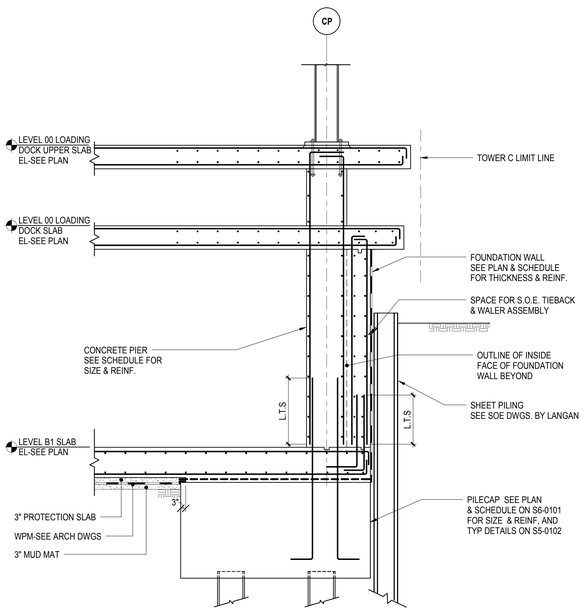
1 TYPICAL SECTION @ GRIDLINE CN TOWER COLUMNS
3/8" = 1'-0"



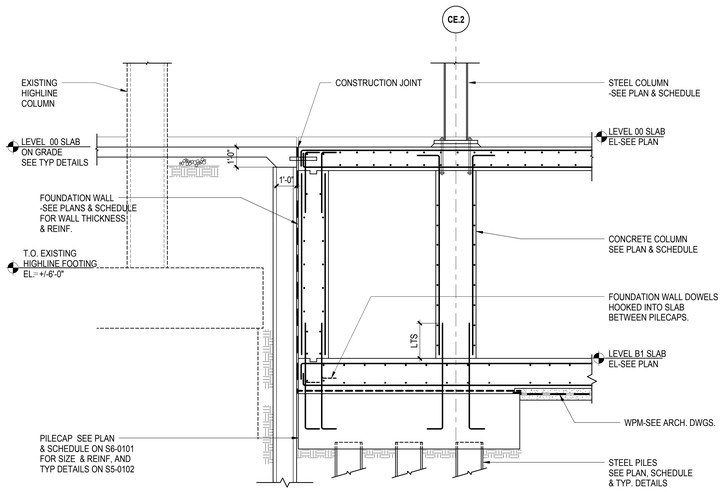
2 TYPICAL SECTION @ GRIDLINE CD.5 TOWER COLUMNS
3/8" = 1'-0"



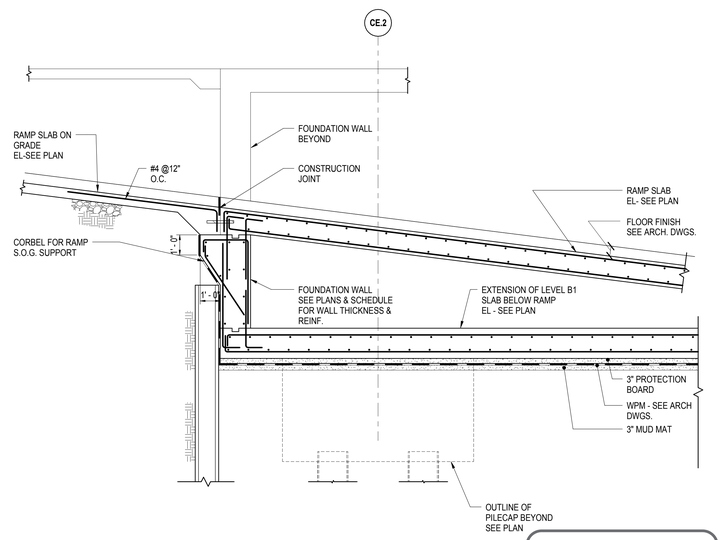
3 TYPICAL SECTION @ GRIDLINE C1 TOWER COLUMNS
3/8" = 1'-0"



4 TYPICAL SECTION @ GRIDLINE CP (TERRAFIRMA) COLUMNS
3/8" = 1'-0"



5 TYPICAL SECTION THROUGH SOUTH FOUNDATION WALL (TERRAFIRMA)
3/8" = 1'-0"



6 TYPICAL SECTION THROUGH SOUTH FOUNDATION WALL @ RAMP (TERRAFIRMA)
3/8" = 1'-0"

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HUDSON YARDS - TOWER C

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No.	Description	Date
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2	ADD-1: FNDN & UTIL BP	08/10/2012
1	D1-2: FNDN & UTIL BP	08/01/2012

Key Plan

Issue Date: 08/01/12
Project No. 1776.10
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HYE -TC -S3-0101

Drawing Title

FOUNDATION SECTIONS I

Drawing Number
S3-0101

B-Scan Drawing Number
S-074.00

S3-0101
9/17/2012 3:30:14 PM
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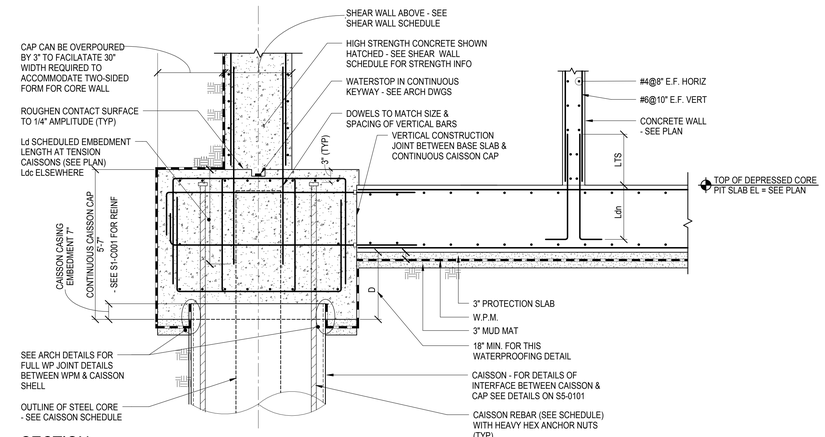

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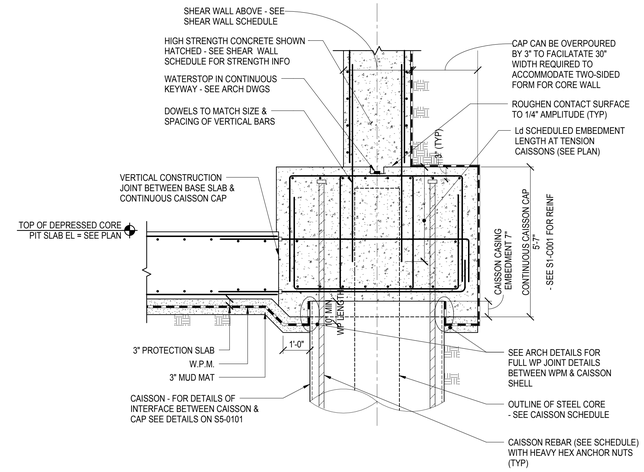

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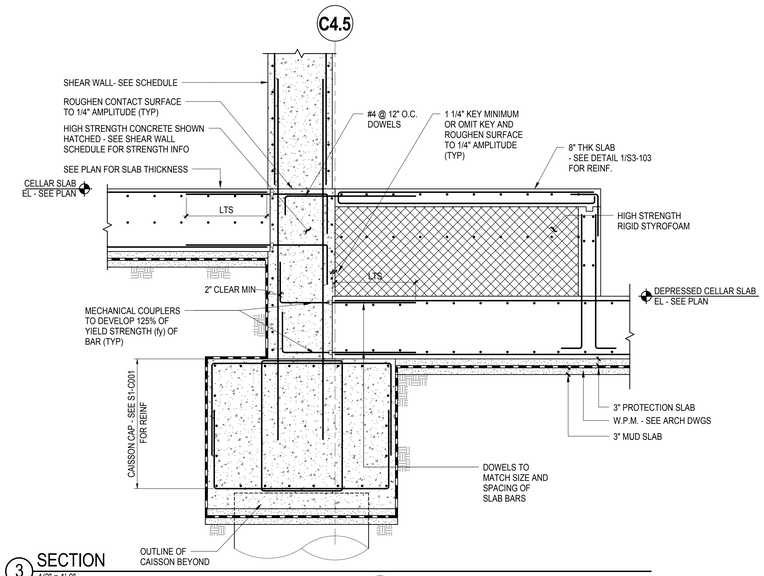
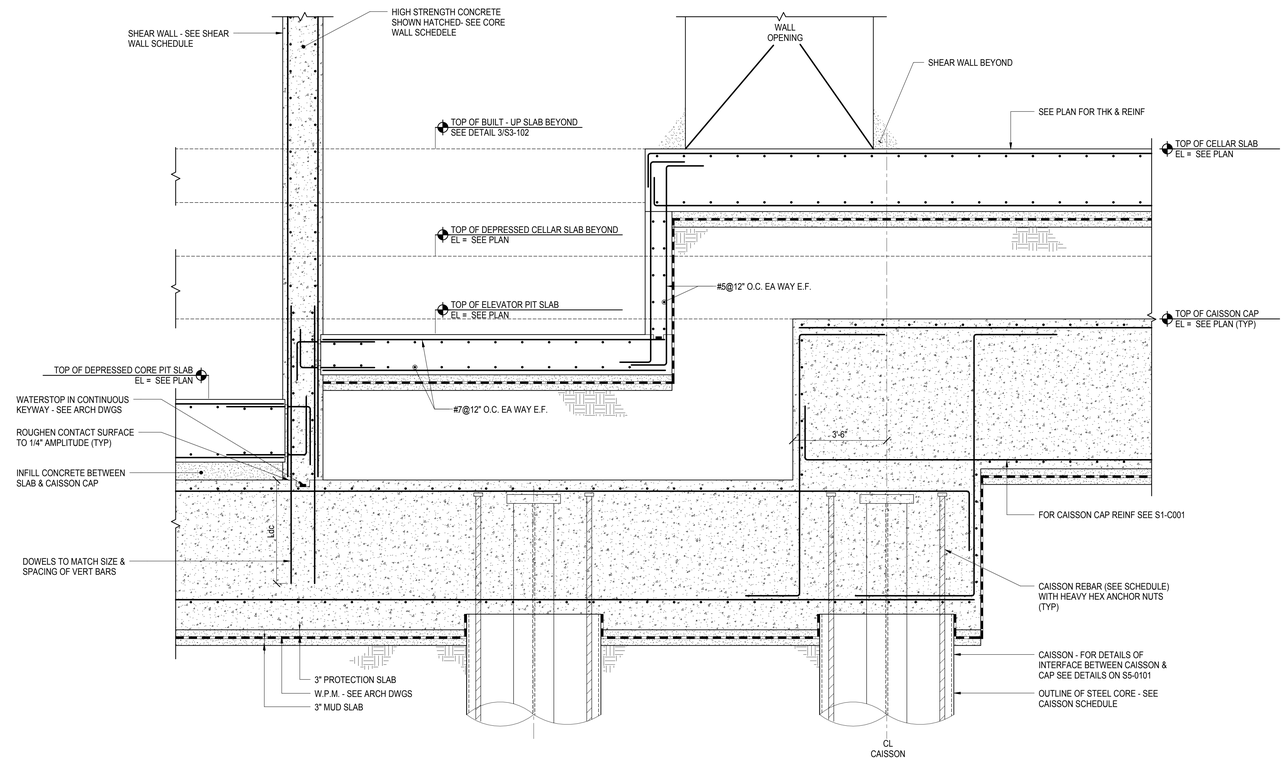
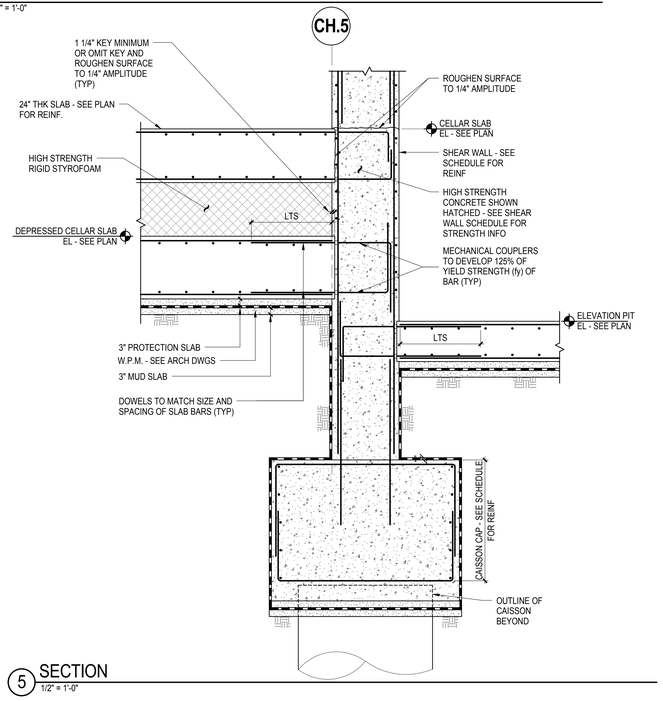
1/2" = 1'-0"



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



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



5 SECTION
1/2" = 1'-0"

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Key Plan

Issue Date: 08/01/12
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Drawn By:
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HYE -TC -S3-0102

Drawing Title

FOUNDATION SECTIONS II

Drawing Number
S3-0102

R/Scan Drawing Number
S-075.00

S3-0102
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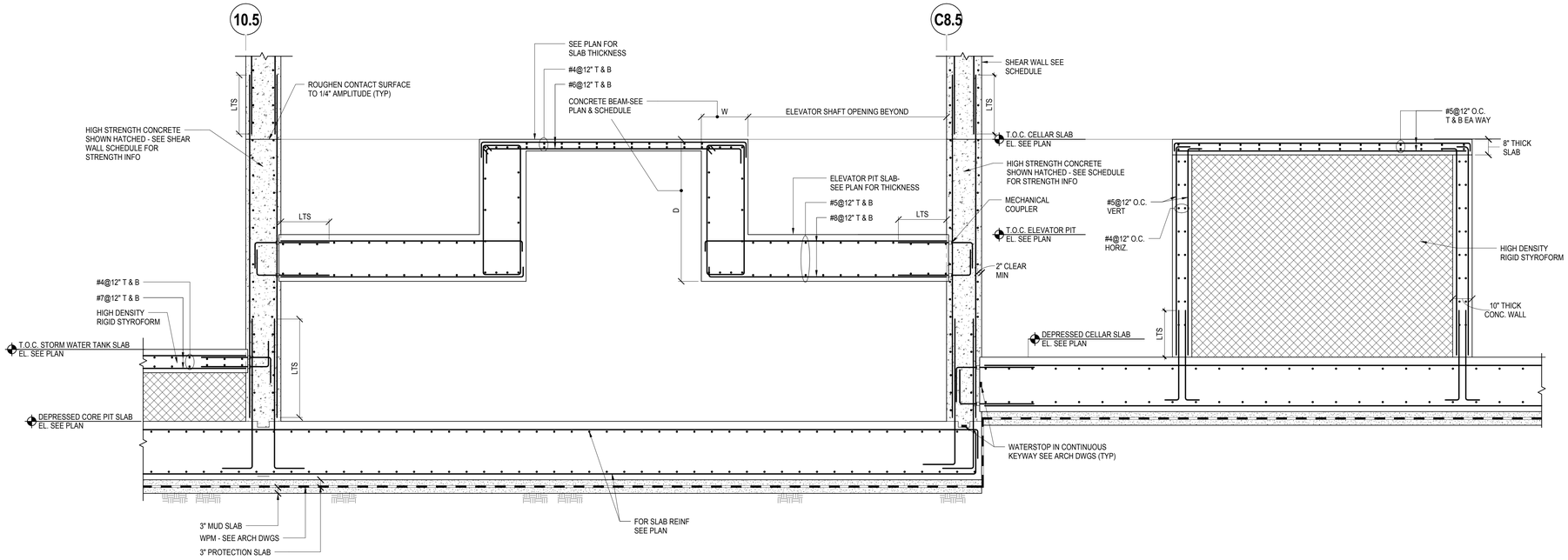

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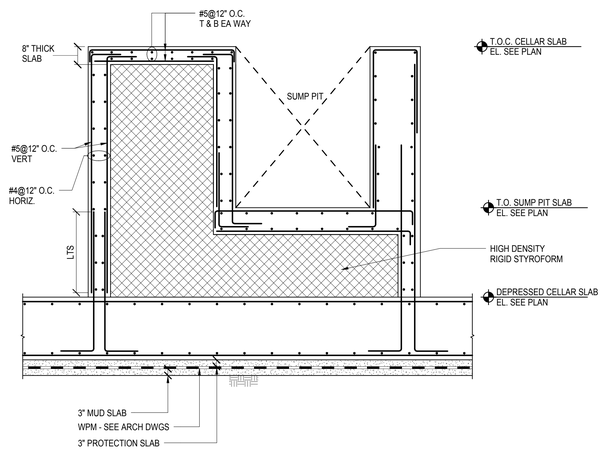

2 SECTION - 2
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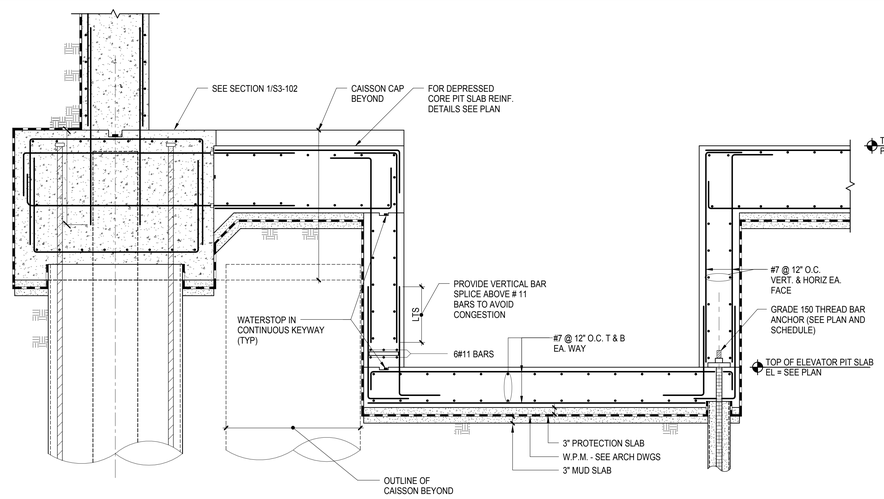
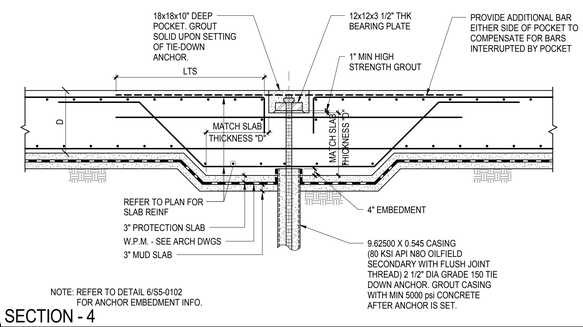
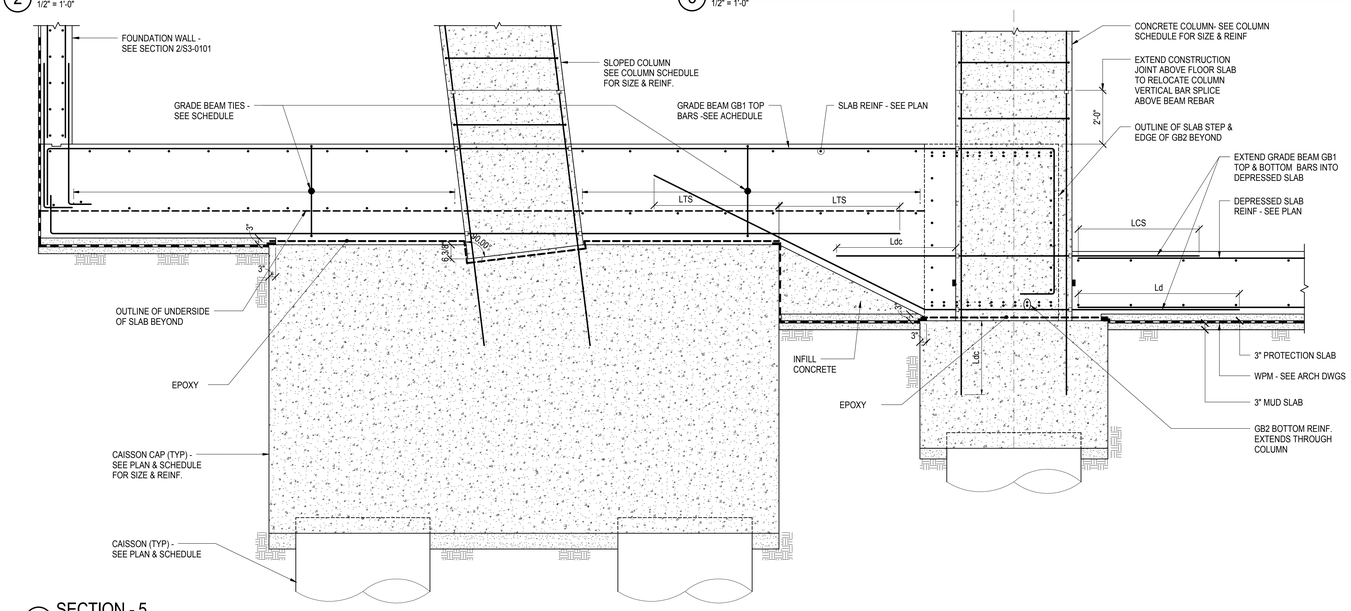


3 SECTION - 3
1/2" = 1'-0"

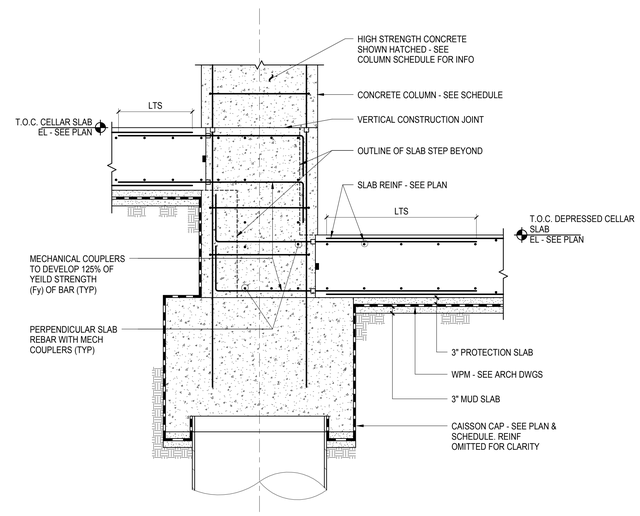


NOTE: REFER TO DETAIL 6/S5-0102 FOR ANCHOR EMBEDMENT INFO.

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



5 SECTION - 5
1/2" = 1'-0"



6 SECTION - 6
1/2" = 1'-0"

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Key Plan

Issue Date: 08/01/12
Project No. 1776.10
Drawn By:
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HYE -TC -S3-0103

Drawing Title

FOUNDATION SECTIONS III

Drawing Number
S3-0103

R-Scan Drawing Number
S-076.00 SHEET 76 OF 133

FOUNDATION SECTIONS III
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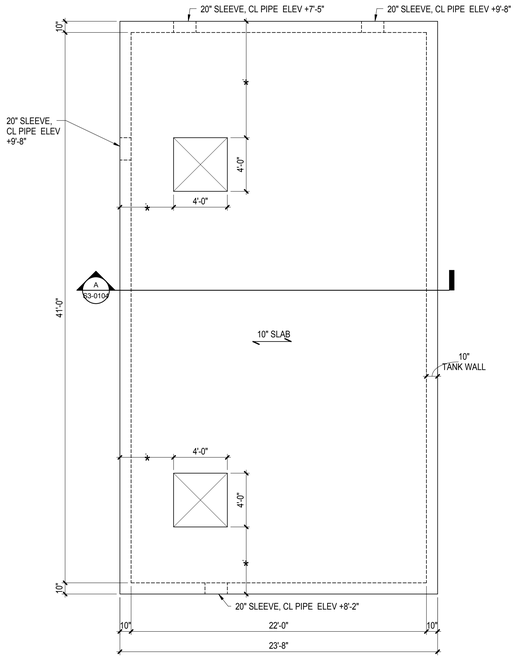
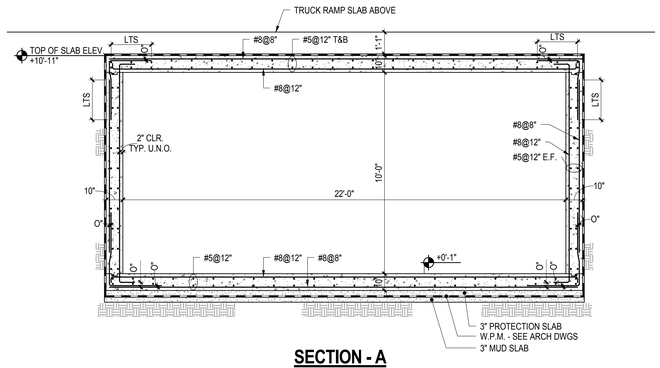


PLAN

1/4" = 1'-0"

NOTES:
1. REFER TO MEP DWGS FOR HATCH LOCATION DIMENSIONS NOTED (*).
2. PRIOR TO CONSTRUCTION, CONFIRM SLEEVE DIMENSIONS AND EL. WITH MEP DWGS.



SECTION - A

3/8" = 1'-0"

1 STORMWATER TANK DETAILS

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Drawing Title

FOUNDATION SECTIONS IV

Drawing Number
S3-0104

R-Scan Drawing Number
S-077.00 SHEET 77 OF 133

S3-0104
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FOUNDATION SECTIONS IV
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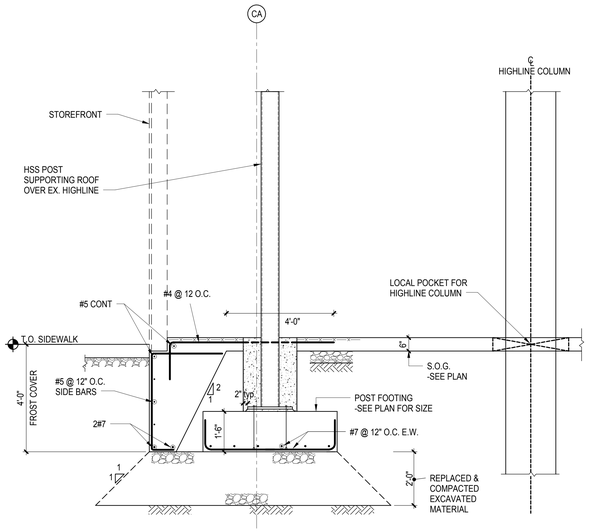
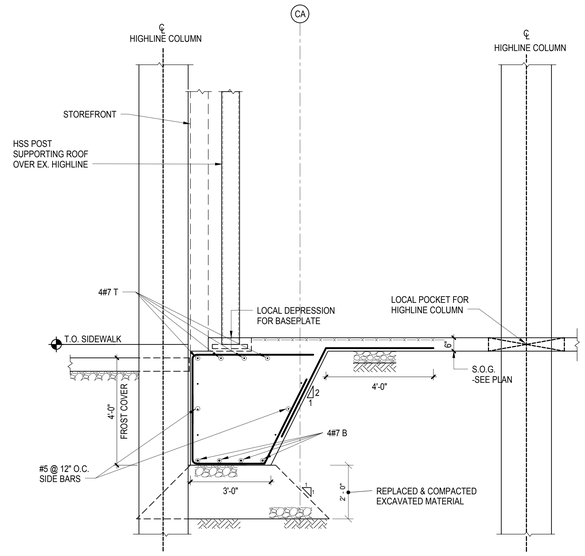


1 SECTION
1/2" = 1'-0"



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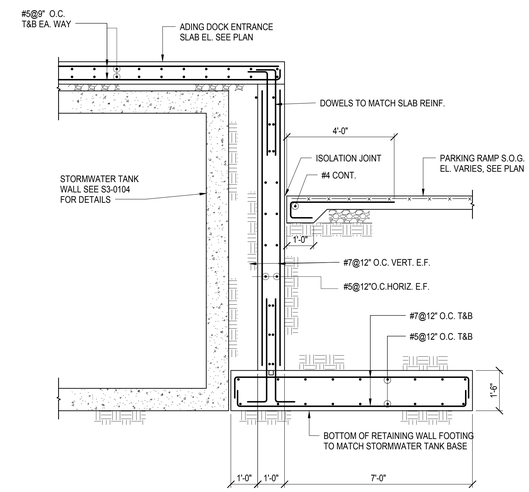
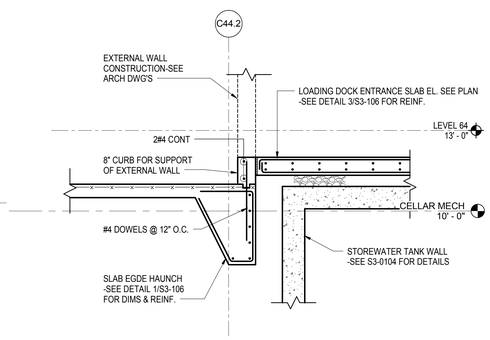
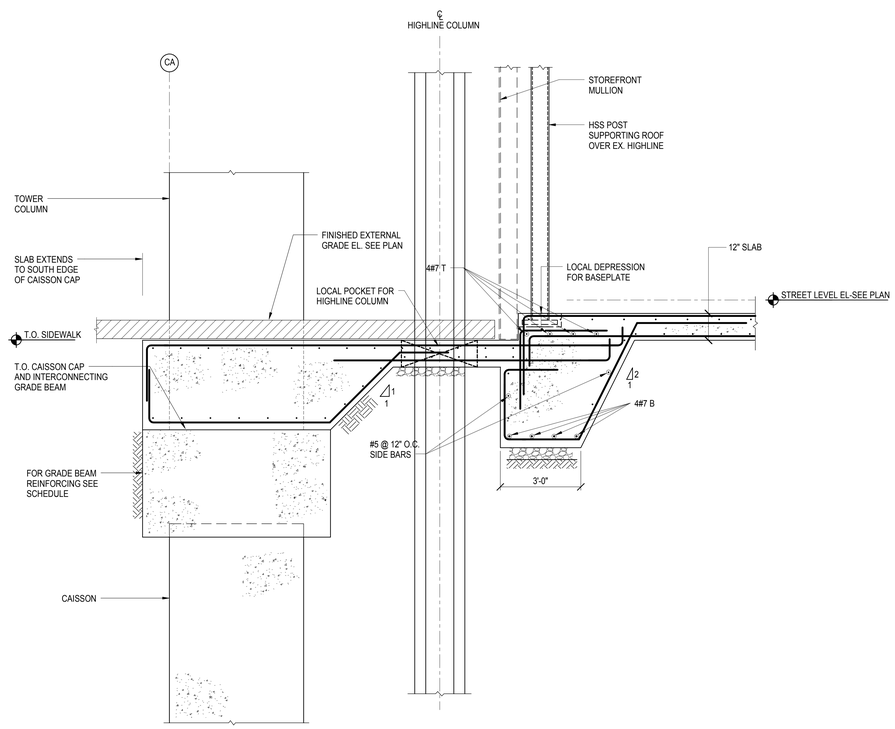


3 TYPICAL SECTION THROUGH SOUTH FOUNDATION WALL (TERRAFIRMA)
1/2" = 1'-0"



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



5 SECTION
1/2" = 1'-0"

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Key Plan

Issue Date: 09/14/12
Project No. 1776.10
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Sheet Number HYE -TC -S3-0105

Drawing Title
FOUNDATION SECTIONS V

Drawing Number
S3-0105

R-Scan Drawing Number
S-078.00

S3-0105
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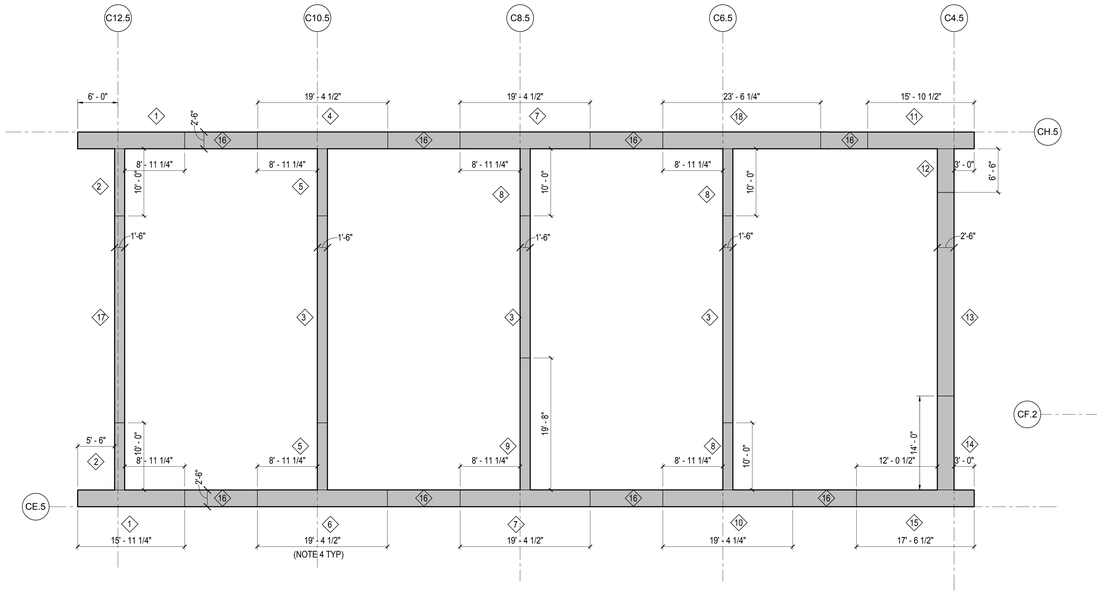
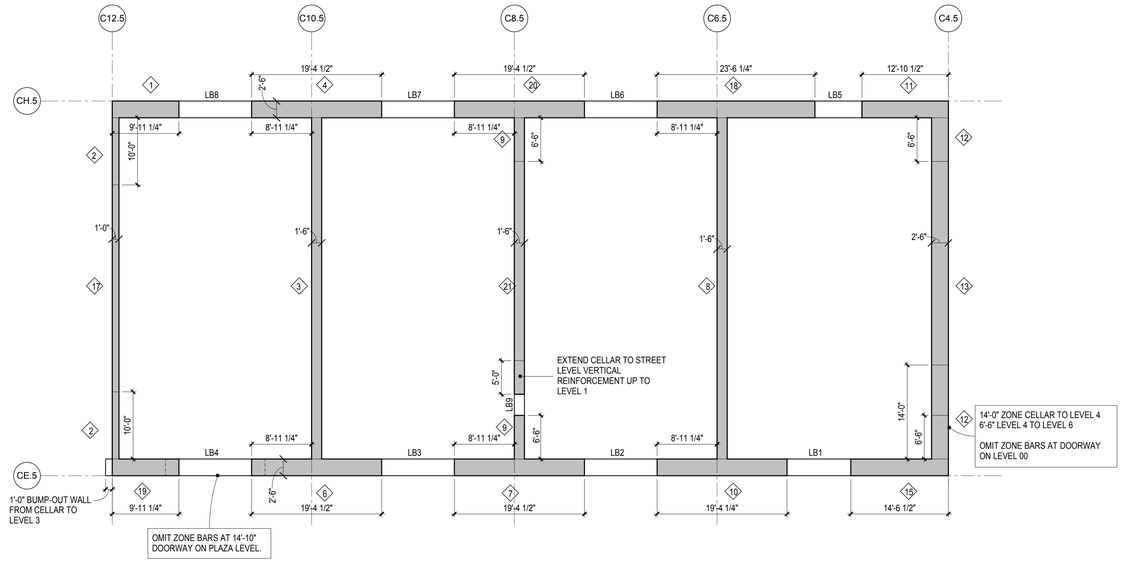


1 CORE WALL PART PLAN - FOUNDATION TO LEVEL 00

1/8" = 1'-0"



2 CORE WALL PART PLAN - LEVEL 00 TO LEVEL 6

1/8" = 1'-0"

NOTES:

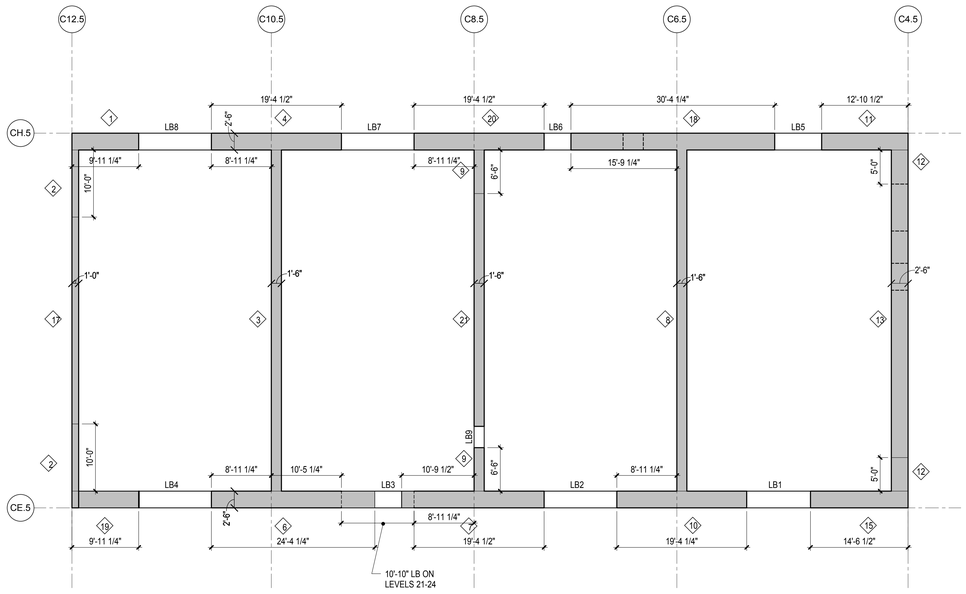
1. ◇ INDICATES ZONE NUMBER. SEE CORE WALL SCHEDULE ON S6-0201 - CORE WALL SCHEDULES.

2. LBX INDICATES LINK BEAM SEE ELEVATION AND SCHEDULE FOR DIMENSIONS

3. FOR ADDITIONAL INFORMATION REFER TO THE FOLLOWING DRAWINGS:

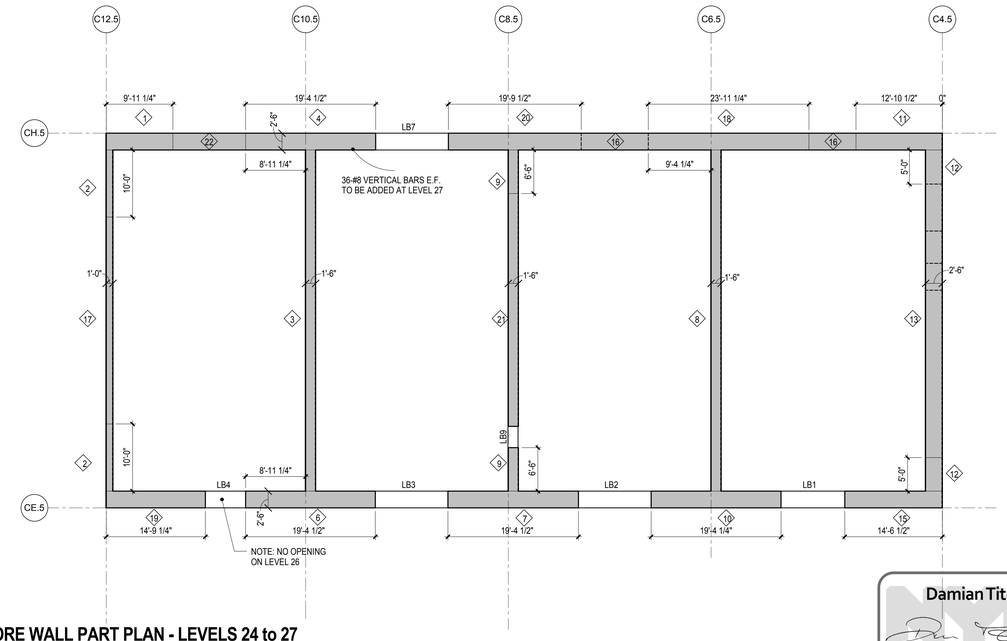
GENERAL NOTES	S0 SERIES
SHEAR WALL DETAILS	
SUPER STRUCTURE PLAN	S1 SERIES
SHEAR WALL ELEVATIONS	S2-0100 SERIES
SHEAR WALL DETAILS	S5-0500 SERIES
SHEAR WALL SCHEDULE	S6-0200 SERIES

4. FINAL WALL OPENING/ PIER DIMENSIONS TO BE COORDINATED W/ ARCHITECTURAL AND STRUCTURAL TOLERANCES.



3 CORE WALL PART PLAN - LEVELS 6 TO 24

1/8" = 1'-0"



4 CORE WALL PART PLAN - LEVELS 24 to 27

1/8" = 1'-0"

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Buildings

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Issue Date:

Project No. 1776.10

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Drawing Title

CORE WALL PART PLANS I

Drawing Number

S4-0101

B/Scan Drawing Number

S-097.00 SHEET 97 OF 133

S4-0101
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CORE WALL PART PLANS I
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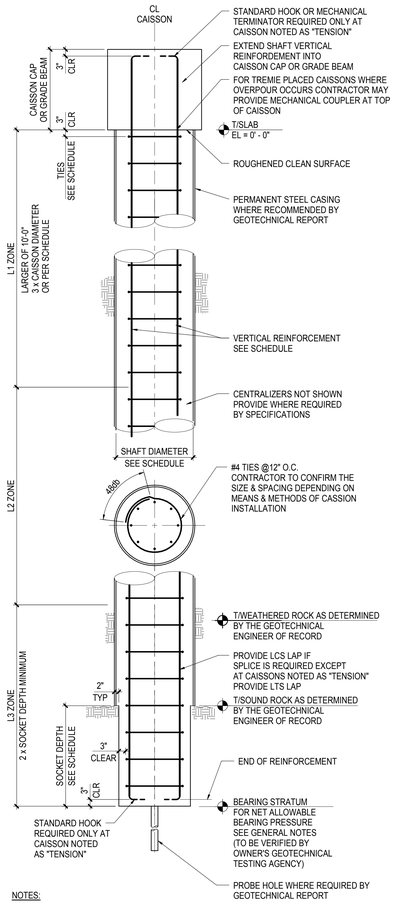
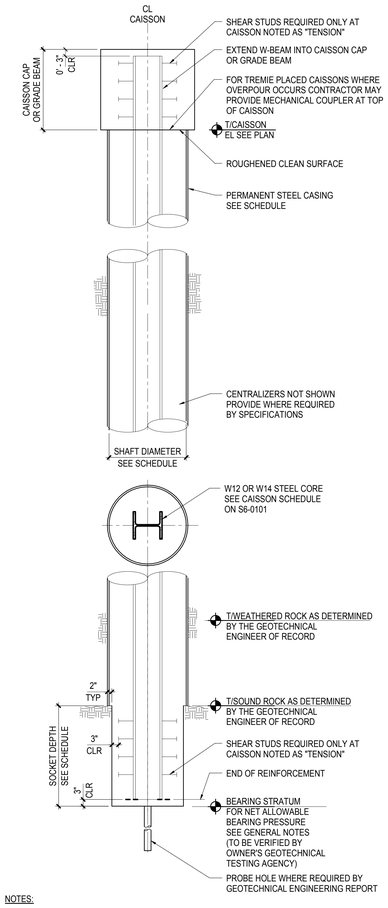


NOTES:

1. OWNER'S GEOTECHNICAL TESTING AGENCY SHALL VERIFY BEARING STRATA AT CAISSON
2. WHERE PROBE HOLES ARE REQUIRED, USE A MINIMUM DIAMETER AS NOTED IN GEOTECHNICAL REPORT AND A MINIMUM DEPTH OF 8 FEET GROUT EACH PROBE HOLE PRIOR TO INSTALLING CAISSON

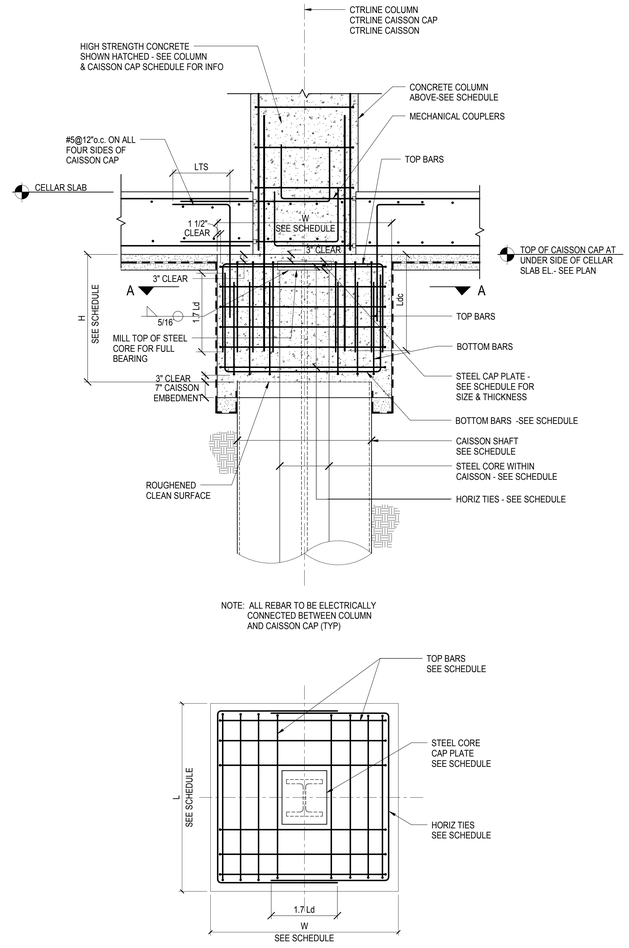
1 TYPICAL SOCKETED CAISSON IN CASED SHAFT - REBAR REINFORCED
NOT TO SCALE



NOTES:

1. OWNER'S GEOTECHNICAL TESTING AGENCY SHALL VERIFY BEARING STRATA AT CAISSON
2. WHERE PROBE HOLES ARE REQUIRED, USE A MINIMUM DIAMETER AS NOTED IN GEOTECHNICAL REPORT AND A MINIMUM DEPTH OF 8 FEET GROUT EACH PROBE HOLE PRIOR TO INSTALLING CAISSON
3. FOR CAISSONS WHICH INCLUDE STEEL CORES AND REBAR, ADOPT DETAILS FROM 1 & 2 / S5-0101.

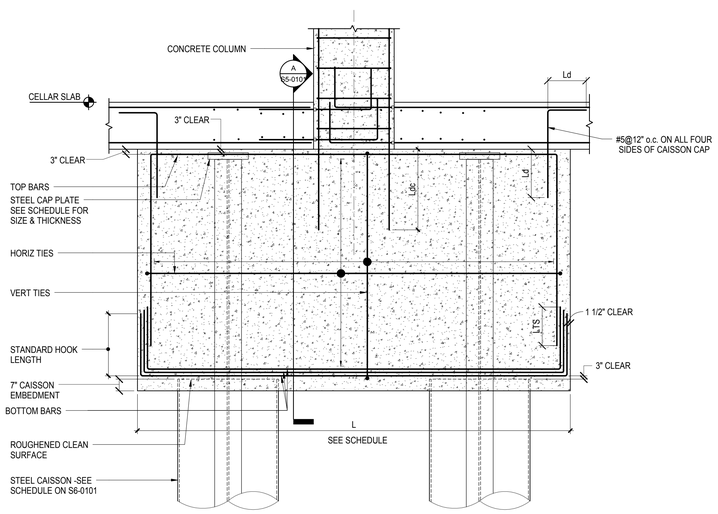
2 TYPICAL SOCKETED CAISSON INCASED SHAFT - STEEL CORE REINFORCED
NOT TO SCALE



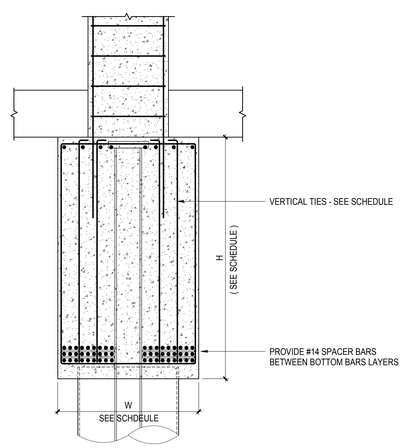
NOTE: ALL REBAR TO BE ELECTRICALLY CONNECTED BETWEEN COLUMN AND CAISSON CAP (TYP)

VIEW A-A

3 SINGLE CAISSON CAP REINFORCING LAYOUT
1/2" = 1'-0"



4 TWIN CAISSON CAP REINF LAYOUT
3/8" = 1'-0"



SECTION A-A

Damian Titus
Buildings
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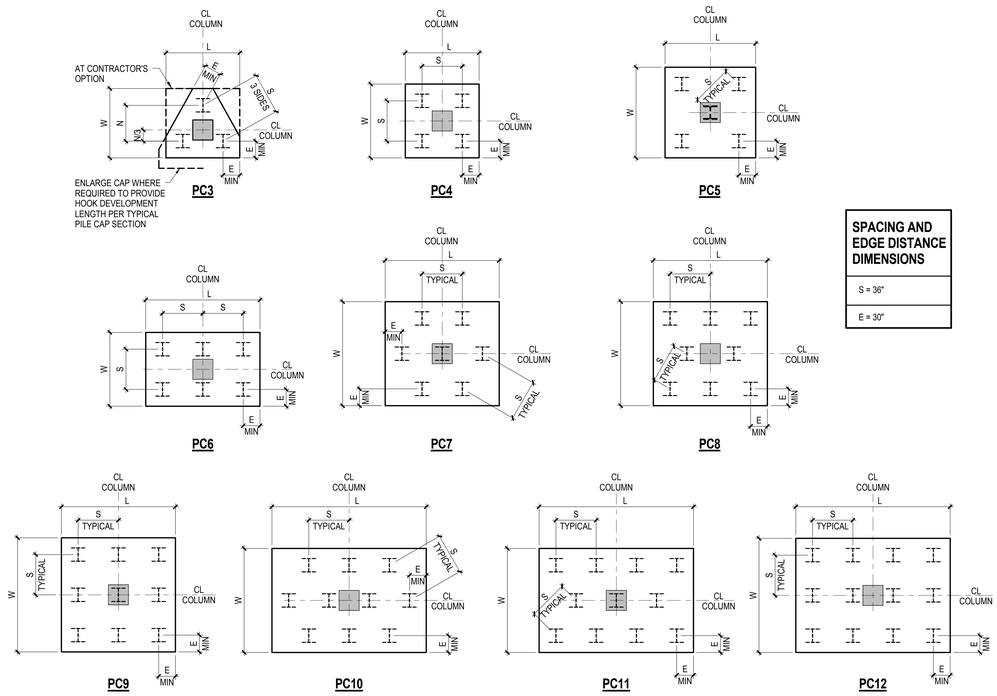
HYE -TC -S5-0101

Drawing Title

FOUNDATION DETAILS I

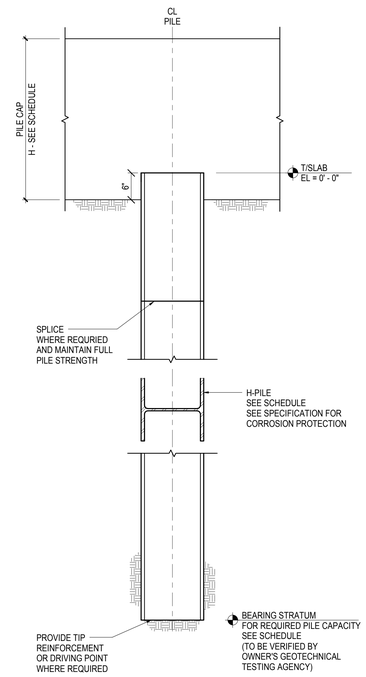
Drawing Number
S5-0101

R-Scan Drawing Number
S-105.00 SHEET 105 OF 133

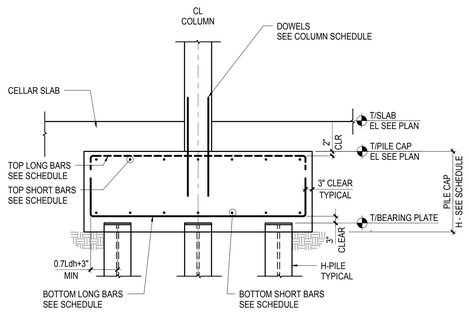


SPACING AND EDGE DISTANCE DIMENSIONS
S = 36"
E = 30"

1 STEEL PILE CAP LAYOUT DETAILS
NOT TO SCALE

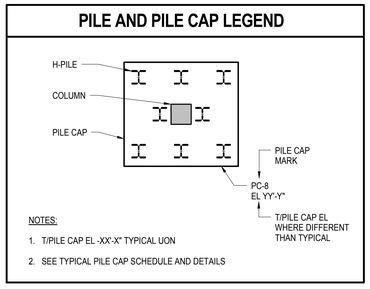


2 TYPICAL STEEL PILE DETAIL
NOT TO SCLAE

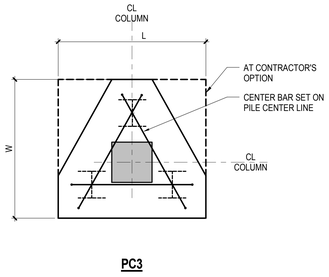


3 TYPICAL STEEL PILE CAP SECTION - CONCRETE COLUMN
NOT TO SCLAE

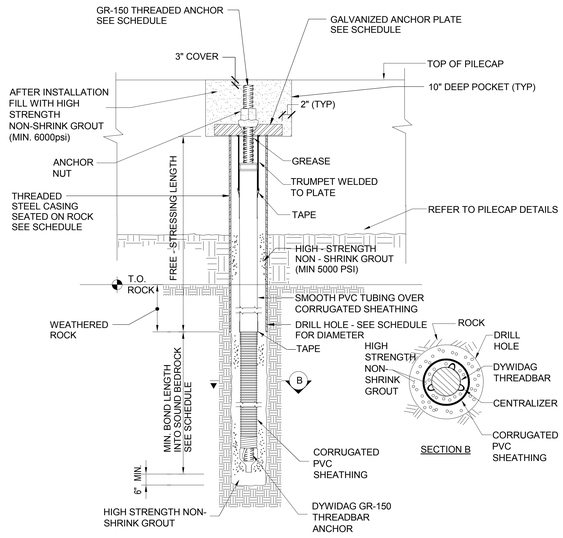
PILE AND PILE CAP LEGEND



4 PILE AND PILE CAP LEGEND
NOT TO SCALE



5 THREE PILE REINFORCEMENT LAYOUT
NOT TO SCALE



6 TYPICAL PILECAP THREADED ROCK ANCHOR DETAIL
3/4" = 1'-0"

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Key Plan

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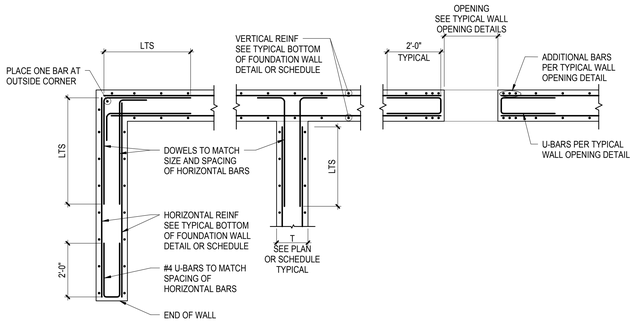
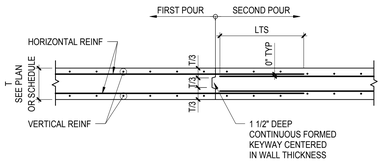
Sheet Number HYE -TC -S5-0102
Drawing Title

FOUNDATION DETAILS II

Drawing Number
S5-0102
B/Scan Drawing Number
S-106.00 SHEET 106 OF 133



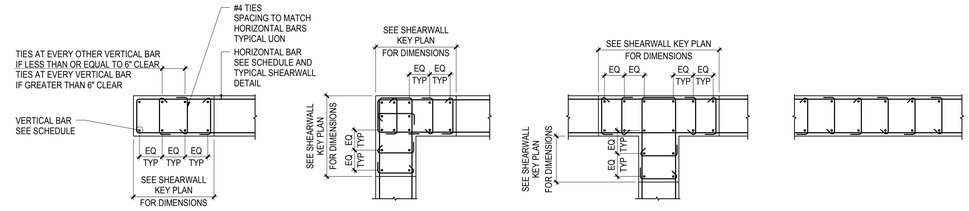
1 TYPICAL FOUNDATION WALL DETAIL - PLAN
NOT TO SCALE



NOTES:

1. SEE ARCHITECTURAL DOCUMENTS FOR WATERSTOP REQUIREMENTS
2. SEE GENERAL NOTES FOR CONSTRUCTION JOINT MAXIMUM SPACING

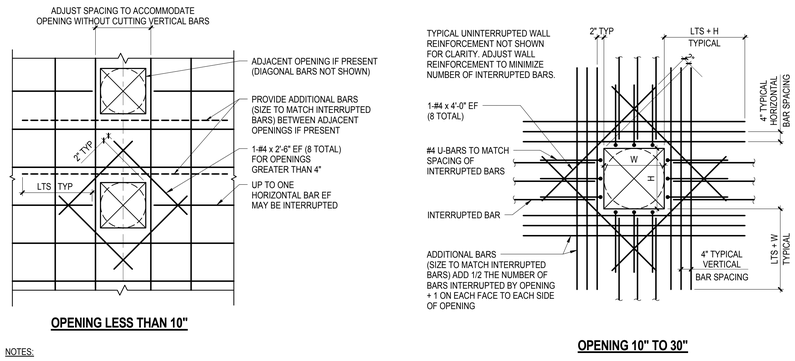
2 TYPICAL VERTICAL CONSTRUCTION JOINT IN CONCRETE WALL
NOT TO SCALE



NOTES:

1. FOR INFORMATION NOT SHOWN, SEE END OF WALL DETAIL
2. TIES WITH 135 AND 90 DEGREE HOOKS TO ALTERNATE IN PLAN AND IN ELEVATION

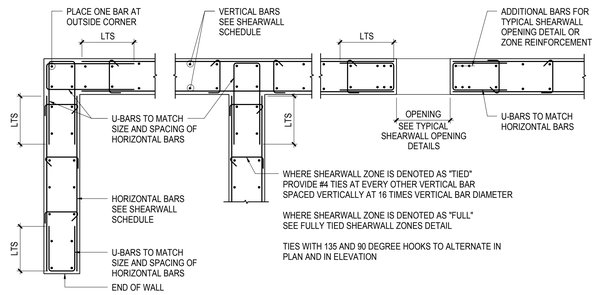
3 FULLY TIED SHEARWALL ZONES
NOT TO SCALE



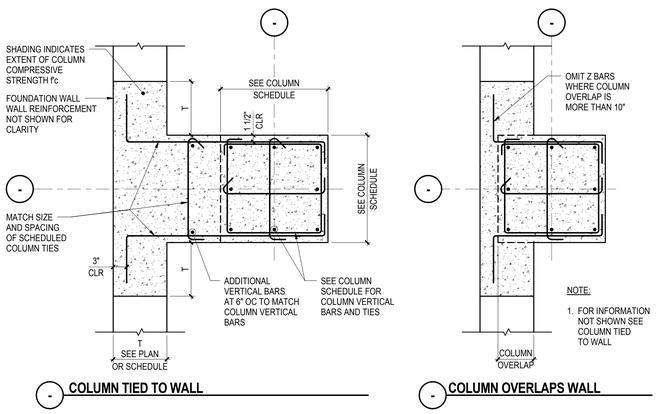
NOTES:

1. MINIMUM CLEAR DISTANCE BETWEEN OPENINGS IS 2 TIMES MAXIMUM OPENING SIZE
2. FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS, CONTRACTOR TO SUBMIT LOCATIONS AND SPACING TO STRUCTURAL ENGINEER FOR WRITTEN APPROVAL

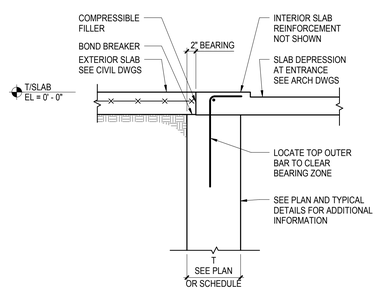
4 TYPICAL WALL OPENING DETAILS
NOT TO SCALE



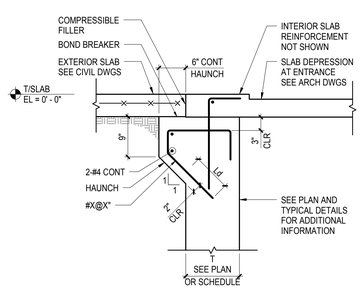
5 TYPICAL SHEARWALL REINFORCEMENT ARRANGEMENT - PLAN
NOT TO SCALE



6 COLUMN OR PIER AT FOUNDATION WALL
NOT TO SCALE



7 TYPICAL SECTION AT ENTRANCE
NOT TO SCALE



8 TYPICAL SECTION AT ENTRANCE WITH HAUNCH
NOT TO SCALE

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No.	Description	Date
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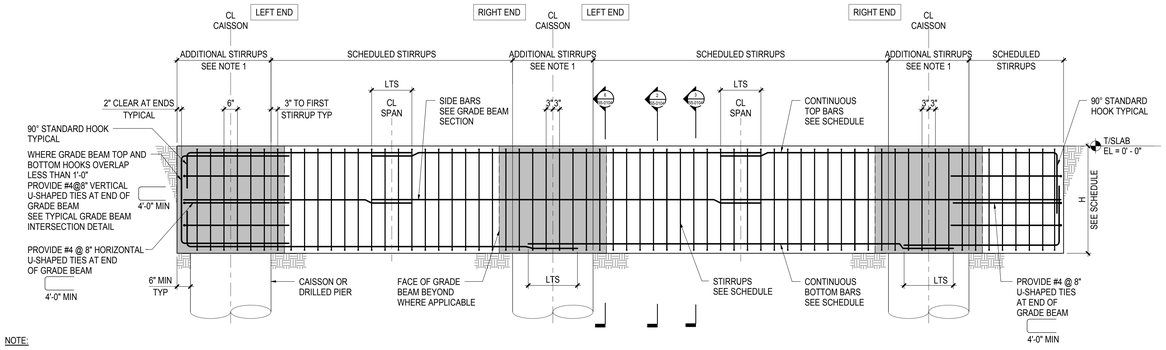
Drawing Title

FOUNDATION DETAILS III

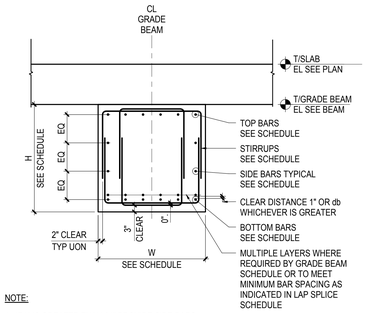
Drawing Number
S5-0103
B-Scan Drawing Number
S-107.00 SHEET 107 OF 133



NOTE:

1. PROVIDE #4@6" TYPE 2A STIRRUPS OVER CAISSON SUPPORT TYPICAL

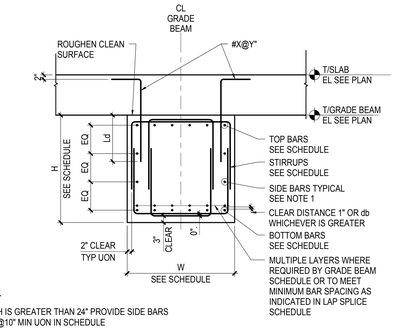
1 TYPICAL GRADE BEAM ELEVATION
NOT TO SCALE



NOTE:

1. IF H IS GREATER THAN 24" PROVIDE SIDE BARS #5@10" MIN UON IN SCHEDULE

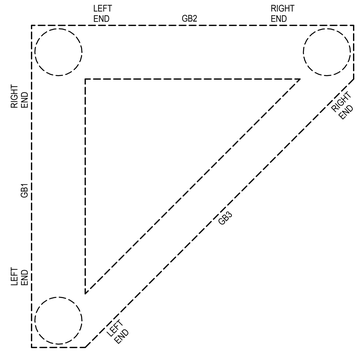
2 GRADE BEAM SECTION - TYPICAL
NOT TO SCALE



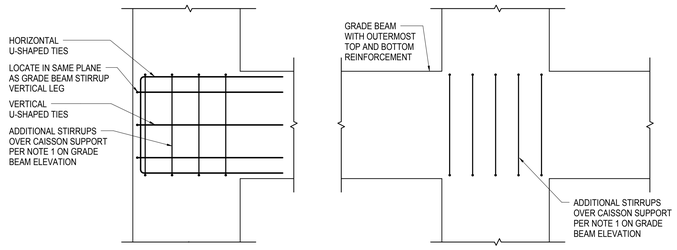
NOTE:

1. IF H IS GREATER THAN 24" PROVIDE SIDE BARS #5@10" MIN UON IN SCHEDULE

3 GRADE BEAM SECTION - BASE SHEAR TRANSFER CONDITION
NOT TO SCALE

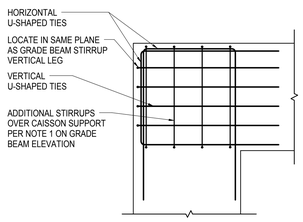


4 GRADE BEAM ORIENTATION KEY PLAN
NOT TO SCALE



GRADE BEAM - T-INTERSECTION

GRADE BEAM - INTERIOR INTERSECTION



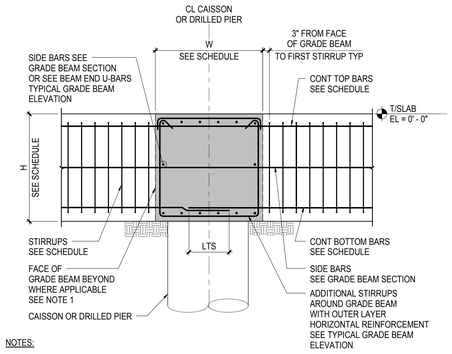
GRADE BEAM - CORNER CONDITION

NOTES:

1. GRADE BEAM LONGITUDINAL REINFORCEMENT AND STIRRUPS NOT SHOWN FOR CLARITY

2. FOR U-SHAPED TIES SEE TYPICAL BRADE BEAM ELEVATION

5 TYPICAL GRADE BEAM INTERSECTION PLAN DETAILS
NOT TO SCALE

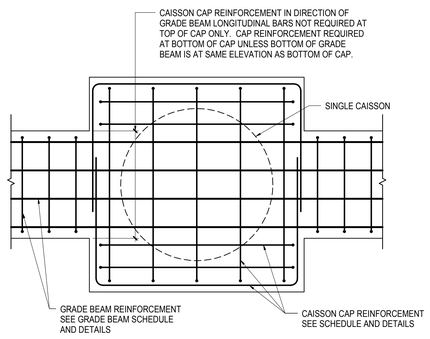


NOTES:

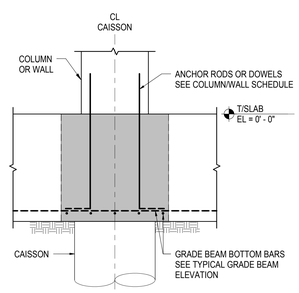
1. CONSTRUCTION JOINTS SHALL NOT BE PLACED AT FACE OF GRADE BEAMS WITHOUT WRITTEN APPROVAL FROM SER

2. SLAB ON GRADE NOT SHOWN FOR CLARITY

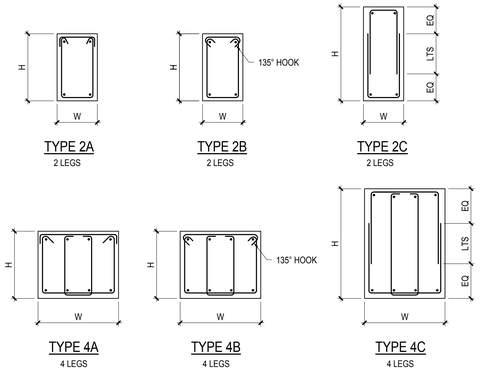
6 TYPICAL GRADE BEAM INTERIOR INTERSECTION DETAIL
NOT TO SCALE



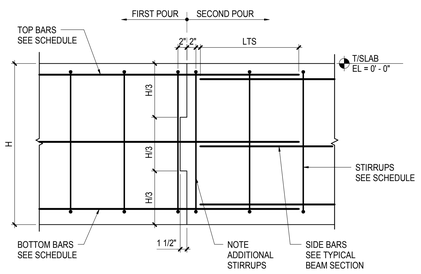
7 CAISSON CAP AT GRADE BEAM - PLAN
NOT TO SCALE



8 TYPICAL GRADE BEAM DETAIL AT COLUMN / WALL INTERSECTION
NOT TO SCALE



9 GRADE BEAM STIRRUP TYPES
NOT TO SCALE

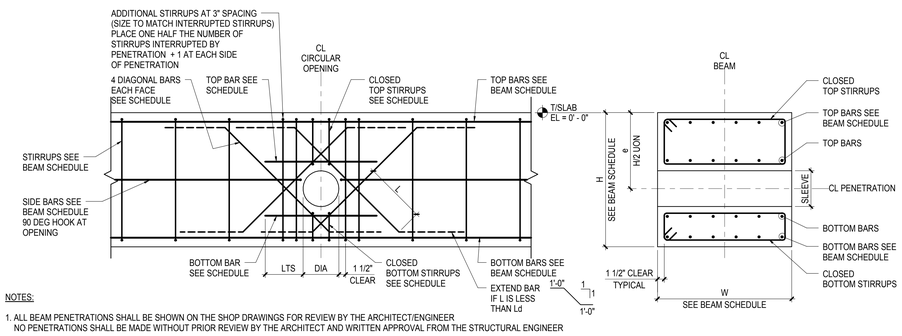


NOTES:

1. CONTRACTOR SHALL SUBMIT CONCRETE CONSTRUCTION JOINT LAYOUT FOR REVIEW AND APPROVAL (REFER TO GENERAL NOTES AND SPECIFICATIONS) PRIOR TO REINFORCEMENT SUBMITTAL

2. HORIZONTAL CONSTRUCTION JOINTS ARE NOT PERMITTED WITHOUT WRITTEN APPROVAL FROM SER

10 TYPICAL GRADE BEAM CONSTRUCTION JOINT - ELEVATION
NOT TO SCALE



NOTES:

1. ALL BEAM PENETRATIONS SHALL BE SHOWN ON THE SHOP DRAWINGS FOR REVIEW BY THE ARCHITECT/ENGINEER NO PENETRATIONS SHALL BE MADE WITHOUT PRIOR REVIEW BY THE ARCHITECT AND WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER

2. THESE DETAILS SHALL BE USED IN CONJUNCTION WITH CONCRETE BEAM PENETRATION SCHEDULE

3. THE MINIMUM CLEAR SPACE BETWEEN TWO ADJACENT PENETRATIONS SHALL BE GREATER OF THE LARGEST PENETRATION DIMENSION OR TWO TIMES THE BEAM DEPTH

4. THE MINIMUM CLEAR DIMENSION BETWEEN THE EDGE OF A PENETRATION AND THE FACE OF SUPPORT SHALL BE THE DEPTH OF THE BEAM

5. SEE STRUCTURAL DRAWINGS FOR PENETRATIONS. GENERAL CONTRACTOR SHALL VERIFY QUANTITY, SIZE, AND LOCATION OF ALL PENETRATIONS WITH MEP DRAWINGS. NOTIFY STRUCTURAL ENGINEER IN WRITING OF ANY DISCREPANCIES FOR REVIEW AND APPROVAL

6. NO ADDITIONAL REINFORCEMENT IS REQUIRED FOR OPENINGS WITH 4" DIAMETER OR SMALLER PROVIDED NO BEAM REINFORCEMENT IS INTERRUPTED AND MINIMUM CONCRETE COVER IS PROVIDED AROUND ALL BARS. IT IS ACCEPTABLE TO ADJUST BEAM REINFORCEMENT WITHIN MAXIMUM SPACING LIMITS FOR STIRRUPS OR SIDE BARS

11 TYPICAL GRADE BEAM SLEEVE - ELEVATION
NOT TO SCALE

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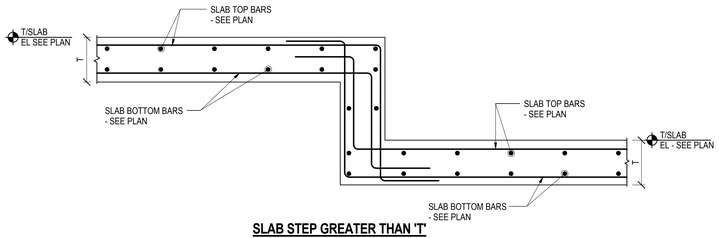
HYE -TC -S5-0104

Drawing Title

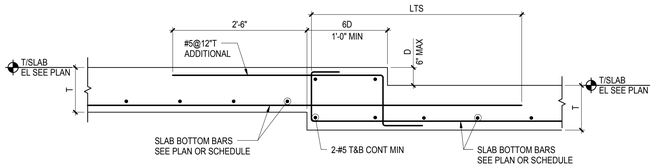
FOUNDATION DETAILS VI

Drawing Number
S5-0104

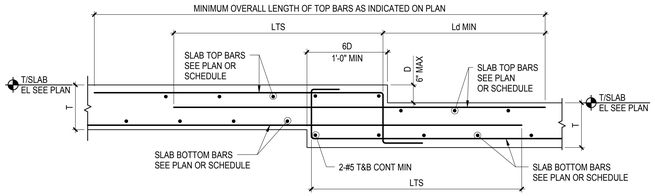
B-Scan Drawing Number
S-108.00 SHEET 108 OF 133



SLAB STEP GREATER THAN 'T'



D LESS THAN T MINUS 2 INCHES
BOTTOM BARS INTERRUPTED BY STEP

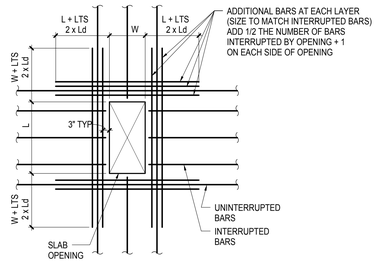


D LESS THAN T MINUS 2 INCHES
TOP AND BOTTOM BARS INTERRUPTED BY STEP

1 TYPICAL STEP IN SLAB DETAILS
NOT TO SCALE

NOTES:

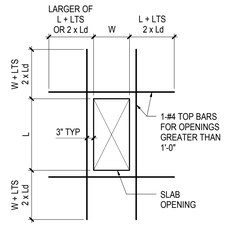
1. REFER TO PLANS FOR ADDITIONAL BARS AROUND OPENINGS
2. SEE STRUCTURAL DRAWINGS FOR QUANTITY AND LOCATIONS OF OPENINGS. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH MEP DRAWINGS NOTIFY STRUCTURAL ENGINEER IN WRITING OF ANY DISCREPANCIES FOR REVIEW AND APPROVAL
3. FOR TWO-WAY SLAB SEE TYPICAL TWO-WAY SLAB OPENING LIMITATIONS. FOR OPENING NOT MEETING LIMITATIONS OR GREATER THAN 3 FEET, SUBMIT OPENINGS TO SER FOR APPROVAL
4. FOR ONE-WAY SLABS WHERE THE OPENING DIMENSION PERPENDICULAR TO THE DIRECTION OF THE SPAN IS GREATER THAN 2 FEET, SUBMIT OPENINGS TO SER FOR APPROVAL
5. WHERE ADJACENT OPENINGS ARE NOT SEPARATED BY 2X THE LARGEST OPENING DIMENSION OR WOULD INTERRUPT THE ADDITIONAL REINFORCEMENT FROM THE ADJACENT OPENING, SUBMIT OPENINGS TO SER FOR APPROVAL



ADDITIONAL BARS WHERE BARS ARE INTERRUPTED

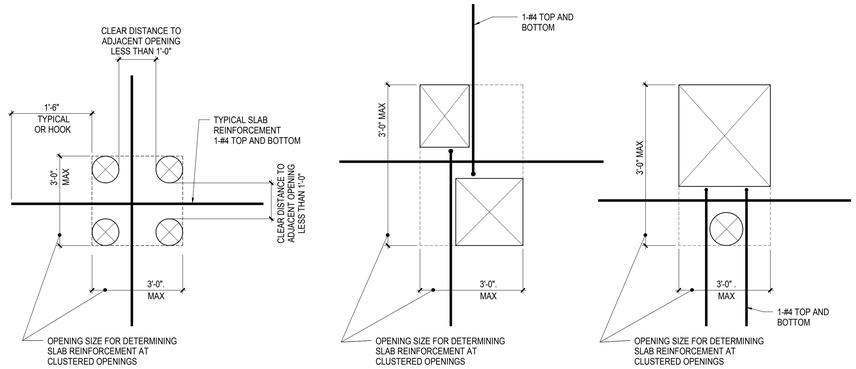
NOTES: ADDITIONAL BARS

1. PROVIDE ADDITIONAL BARS ON EACH SIDE OF OPENING FOR TOP AND BOTTOM BARS THAT ARE INTERRUPTED BY OPENINGS DISTRIBUTE REPLACEMENT BARS EQUALLY TO BOTH SIDES OF OPENING AT 3" SPACING
2. PROVIDE A MINIMUM OF 2 BARS EACH SIDE OF OPENING TOP AND BOTTOM WHERE NO TOP BARS ARE PRESENT, PROVIDE ADDITIONAL TOP BARS SHOWN ABOVE
3. AT CLUSTERED OPENINGS, PROVIDE THESE ADDITIONAL BARS AROUND THE CLUSTER PLUS THE ADDTIONAL BARS SHOWN IN THE CLUSTERED OPENING DETAIL



ADDITIONAL TOP BARS WHERE NO TOP BARS ARE PRESENT

ADDITIONAL TOP BARS	
OPENING SIZE (LARGER DIMENSION OF OPENING)	TOP BARS ALL SIDE
0 - 12"	NONE
12" - 36"	1 - #4



TYPE 1

TYPE 2
SEE TYPE 1 FOR INFORMATION NOT SHOWN

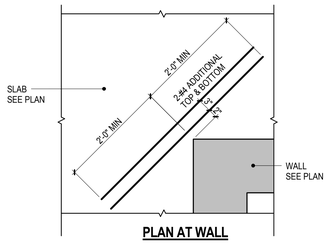
TYPE 3
SEE TYPE 1 FOR INFORMATION NOT SHOWN

CLUSTERED OPENING ADDITIONAL REINFORCEMENT

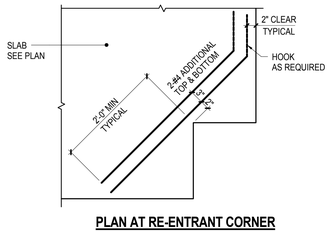
NOTES: CLUSTERED OPENINGS

1. THE REINFORCEMENT REQUIREMENTS AT CLUSTERED OPENING ARE IN ADDITION TO THE TYPICAL SLAB OPENING DETAIL REQUIREMENTS AROUND THE ENTIRE CLUSTER
2. FOR ONE-WAY SLABS, WHEN CLUSTERED OPENING IS GREATER THAN 2 FEET, SUBMIT TO SER FOR APPROVAL.
3. FOR TWO-WAY SLABS, WHEN CLUSTERED OPENING DOES NOT MEET TWO-WAY SLAB OPENING LIMITATIONS OR IS GREATER THAN 3 FEET, SUBMIT TO SER FOR APPROVAL

2 TYPICAL SLAB OPENING DETAILS
NOT TO SCALE

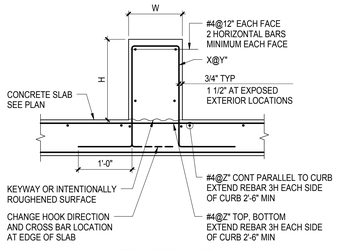


PLAN AT WALL



PLAN AT RE-ENTRANT CORNER

3 TYPICAL CORNER SLAB DETAILS
NOT TO SCALE



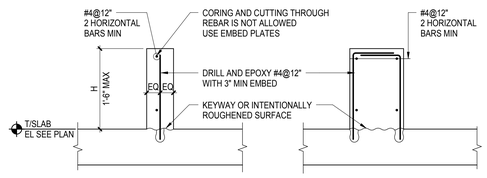
CURB WIDTH OVER 8"

NOTES:

1. FOR SIZE AND LOCATION SEE ARCH, MEP, OR STRUCTURAL DRAWINGS
2. ROUGHEN SURFACE OF SLAB TO 1/4" AMPLITUDE CLEAN THOROUGHLY AND APPLY EPOXY BONDING COMPOUND IMMEDIATELY BEFORE CASTING CURB
3. THIS DETAIL IS APPLICABLE TO CURBS SUPPORTING EXTERIOR WALLS. SEE ADDITIONAL DETAILS FOR CURTAIN WALL SUPPORT. SEE ARCH DRAWINGS FOR EMBEDDED PLATES AND BLOCKOUTS
4. SEE ARCH DRAWINGS FOR EMBEDDED PLATES AND BLOCKOUTS. REPLACE REINFORCEMENT INTERRUPTED BY BLOCKOUTS
5. AT CONTRACTORS OPTION DRILLED & EPOXIED DOWELS MAY BE PERMITTED BAR SIZE AND SPACING MAY CHANGE DEPENDING ON EMBEDMENT REQUIRED CONTRACTOR TO VERIFY WITH SER

CURB DIMENSION AND REINFORCEMENT SCHEDULE			
W	H	X@Y"	Z"

4 TYPICAL CURB DETAILS (SUBJECT TO LATERAL LOADS)
NOT TO SCALE



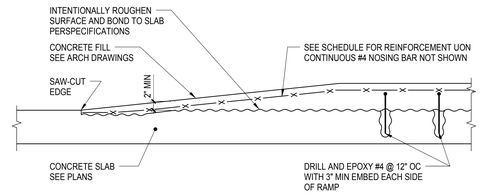
CURB WIDTH - 4" MIN TO 7" MAX

CURB WIDTH OVER 7"

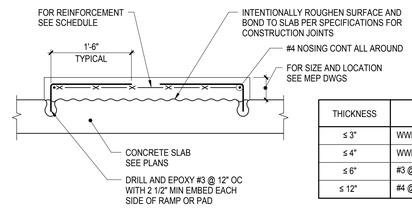
NOTES:

1. FOR SIZE AND LOCATION SEE ARCH, MEP, OR STRUCTURAL DRAWINGS
2. ROUGHEN SURFACE OF SLAB TO 1/4" AMPLITUDE CLEAN THOROUGHLY AND APPLY EPOXY BONDING COMPOUND IMMEDIATELY BEFORE CASTING CURB
3. THIS DETAIL IS APPLICABLE AT CURBS FOR NON-STRUCTURAL ELEMENTS SUCH AS SKYLIGHTS, INTERIOR PARTITIONS AND INTERIOR RAILINGS
4. SEE ARCH DRAWINGS FOR EMBEDDED PLATES AND BLOCKOUTS REPLACE REINFORCEMENT INTERRUPTED BY BLOCKOUTS
5. AT CONTRACTORS OPTION DRILLED & EPOXIED DOWELS MAY BE PERMITTED BAR SIZE & SPACING MAY CHANGE DEPENDING ON EMBEDMENT REQUIRED CONTRACTOR TO VERIFY WITH SER

5 TYPICAL CURB DETAILS (NOT SUBJECT TO LATERAL LOADS)
NOT TO SCALE



DETAIL AT RAMP



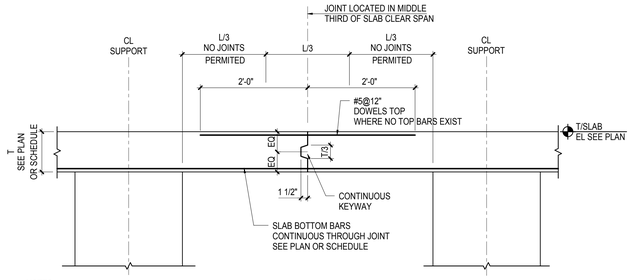
THICKNESS	REINFORCEMENT
≤ 3"	WWR 6x6 - W2.9xW2.9
≤ 4"	WWR 6x6 - W4.0xW4.0
≤ 6"	#3 @ 10" TOP EACH WAY
≤ 12"	#4 @ 12" TOP & BOTTOM EACH WAY

NOTE:

1. THIS DETAIL IS NOT APPLICABLE TO GENERAL RAISED SLAB AREA HIGHER THAN 4" OTHER THAN MECHANICAL PADS AND HOUSEKEEPING PADS

SECTION AT RAMP OR PAD

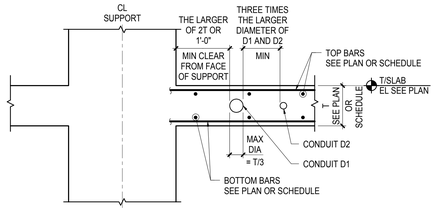
6 TYPICAL DETAIL OF CONCRETE FILL HOUSEKEEPING PAD / MECHANICAL PAD / RAMP
NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL SUBMIT CONSTRUCTION JOINT LAYOUT PLAN FOR SER APPROVAL
2. FOR SLAB REINFORCEMENT NOT SHOWN, SEE PLAN OR SCHEDULE

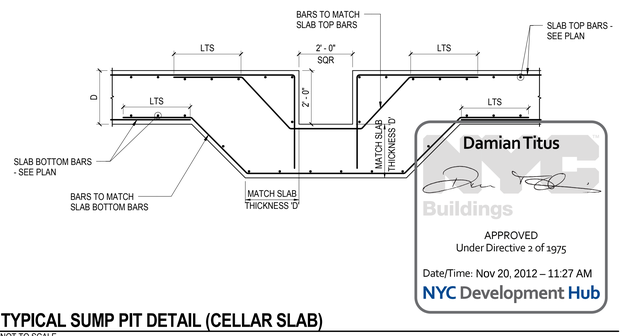
7 TYPICAL SLAB CONSTRUCTION JOINT
NOT TO SCALE



NOTES:

1. PLACE CONDUITS BETWEEN TOP AND BOTTOM LAYER OF REINFORCEMENT CENTER WITHIN SLAB DEPTH
2. CROSSOVER OF CONDUITS AND/OR PIPES IS NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL BY SER
3. USE OF ALUMINUM CONDUITS IS NOT PERMITTED
4. ANY DEVIATIONS FROM THE ABOVE STATED CONDITIONS REQUIRE WRITTEN APPROVAL BY THE SER

8 TYPICAL CONDUITS IN SLAB
NOT TO SCALE



9 TYPICAL SUMP PIT DETAIL (CELLAR SLAB)
NOT TO SCALE

HUDSON YARDS - TOWER C

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No.	Description	Date
	ISSUE FOR FILING	09/19/2012

Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number

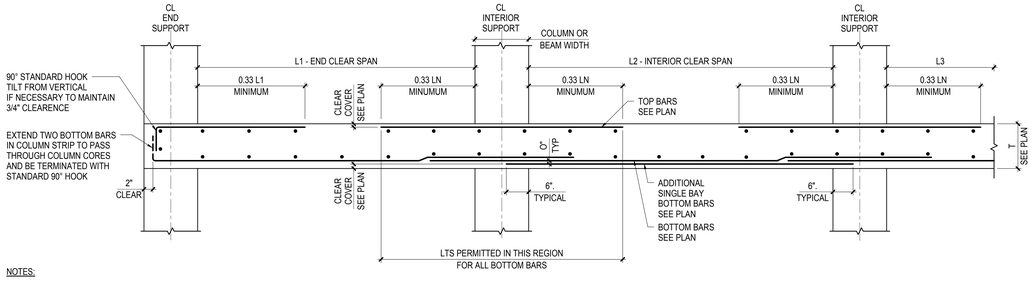
HYE -TC -S5-0105

Drawing Title

TYPICAL CONCRETE SLAB DETAILS

Drawing Number
S5-0105

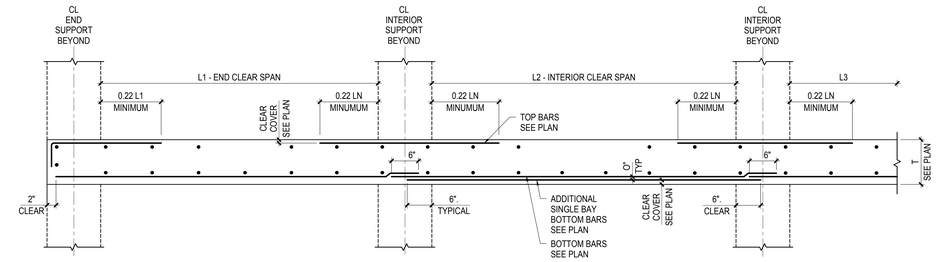
B/Scott Drawing Number
S-109.00 SHEET 109 OF 133



NOTES:

1. LN DENOTES LARGER OF ADJACENT SPANS
2. TOP BAR LENGTH TO BE LARGER OF LENGTH INDICATED ON PLAN AND LENGTH INDICATED ABOVE
3. ADDITIONAL MULTI-BAY BOTTOM BARS TO BE SPLICED AS SHOWN ABOVE AND EXTEND 6" INTO SUPPORT AT BAR END

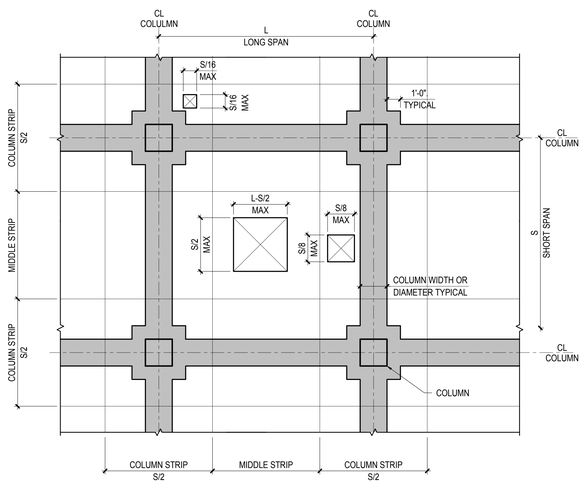
1 TYPICAL TWO-WAY FLAT PLATE - COLUMN STRIP
NOT TO SCALE



NOTES:

1. LN DENOTES LARGER OF ADJACENT SPANS
2. TOP BAR LENGTH TO BE LARGER OF LENGTH INDICATED ON PLAN AND LENGTH INDICATED ABOVE
3. ADDITIONAL MULTI-BAY BOTTOM BARS TO BE SPLICED AS SHOWN ABOVE AND EXTEND 6" INTO SUPPORT AT BAR END

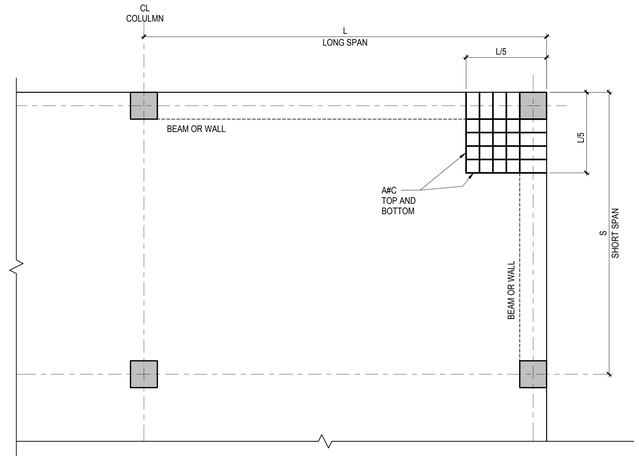
2 TYPICAL TWO-WAY FLAT PLATE - MIDDLE STRIP
NOT TO SCALE



NOTES:

1. INDICATES ZONE WHERE OPENINGS ARE NOT PERMITTED WITHOUT WRITTEN APPROVAL BY SER OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS MUST BE COORDINATED AND APPROVED BY SER
2. OPENINGS MEETING THE LIMITATIONS ABOVE SHALL BE PROVIDED WITH REINFORCEMENT AS SHOWN ON PLAN AND FOLLOWING TYPICAL SLAB OPENING DETAILS INCLUDING ADDITIONAL BARS FOR INTERRUPTED REINFORCEMENT
3. OPENINGS SHALL BE SHOWN ON COORDINATED PENETRATON DRAWINGS AND REINFORCEMENT SHOP DRAWINGS FOR SER REVIEW
4. OPENINGS NOT MEETING THESE LIMITATIONS MUST BE SUBMITED TO THE SER FOR COORDINATION, DESIGN, AND APPROVAL PRIOR TO SUBMITTING SHOP DRAWINGS

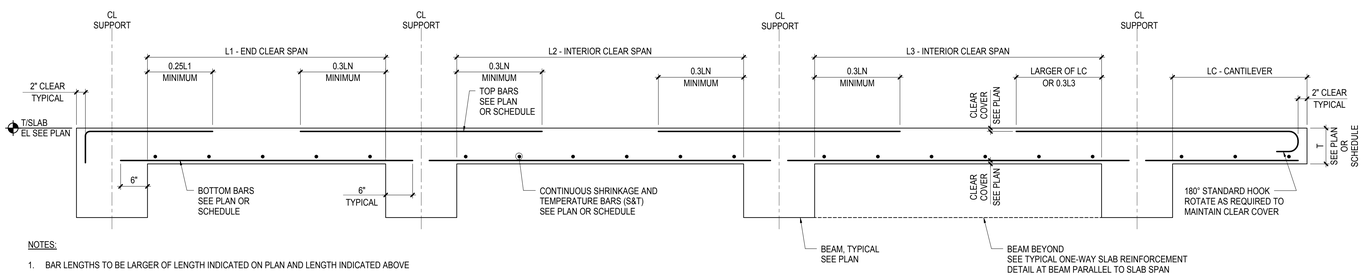
3 TYPICAL TWO-WAY SLAB OPENING LIMITATIONS
NOT TO SCALE



NOTES:

1. SEE PLAN FOR SLAB REINFORCEMENT
   BARS SHOWN ABOVE ARE ADDITIONAL TO THOSE SHOWN ON PLAN
   BARS SHALL BE LOCATED IN SAME LAYERS AS SLAB REINFORCEMENT
   BEAM TOP BARS TO BE LOCATED BELOW SLAB TOP BARS
2. ADDITIONAL BARS TO BE EQUALLY SPACED WITHIN EXTENT SHOWN ABOVE
3. ADDITIONAL TOP BARS TO BE HOOKED INTO SUPPORT
   ADDITIONAL BOTTOM BARS TO EXTEND 6" INTO SUPPORT

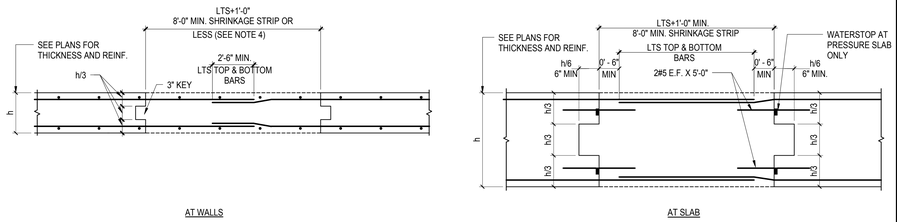
4 TYPICAL BEAM OR WALL SUPPORTED SLAB EXTERIOR CORNER DETAIL
NOT TO SCALE



NOTES:

1. BAR LENGTHS TO BE LARGER OF LENGTH INDICATED ON PLAN AND LENGTH INDICATED ABOVE
2. LN DENOTES LARGER OF ADJACENT CLEAR SPANS
3. WHERE REINFORCEMENT IS SHOWN IN A SCHEDULE PROVIDE GREATER AREA OF STEEL SCHEDULED FOR TOP BARS AT ADJACENT SPANS
4. BEAM MAIN TOP BARS (NOT SHOWN, SEE TYPICAL BEAM SECTION) ARE BELOW PERPENDICULAR ONE-WAY SLAB TOP BARS

5 TYPICAL ONE-WAY SLAB ELEVATION
NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL WAIT AT LEAST 56 DAYS FROM THE TIME THE LAST POUR ON A FLOOR HAS OCCURRED, BEFORE CASTING SHRINKAGE STRIPS AT THAT PARTICULAR FLOOR.

6 TYPICAL SHRINKAGE STRIP DETAIL
NOT TO SCALE

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Drawn By:
Sheet Number

STATE OF NEW YORK · ALEXIS M. BRAZIE · 082543-1 · LICENSED PROFESSIONAL ENGINEER

HYE -TC -S5-0106
Drawing Title

TYPICAL CONCRETE TWO-WAY SLAB DETAILS
Drawing Number
S5-0106
B/Scan Drawing Number
S-110.00 SHEET 110 OF 133

PILE CAP SCHEDULE

f'c = SEE DWG NOTES

PILE CAP MARK	PILE TYPE	H (IN)	L (IN)	W (IN)	REINFORCEMENT BOTTOM LONG BARS	BOTTOM SHORT BARS	TOP LONG BARS	TOP SHORT BARS	# OF TIE DOWN ANCHORS
PC2	HP W14X117	4'-0"	8'-0"	5'-0"	6#11	8#11	-	-	0
PC2A	HP W14X117	4'-0"	8'-0"	5'-0"	6#11	8#11	6#11	8#11	1 x TD1
PC2B	HP W14X117	4'-0"	8'-0"	5'-0"	6#11	8#11	6#11	8#11	1 x TD2
PC2C	HP W14X117	4'-0"	8'-0"	5'-0"	6#11	8#11	6#11	8#11	1 x TD3
PC2D	HP W14X117	4'-0"	8'-0"	5'-0"	6#11	8#11	6#11	8#11	1 x TD5
PC3	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	-	-	0
PC3A	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	8#11	8#11	1 x TD1
PC3B	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	8#11	8#11	1 x TD2
PC3C	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	8#11	8#11	1 x TD3
PC3D	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	8#11	8#11	1 x TD5
PC4	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	-	-	0
PC4A	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	8#11	8#11	1 x TD1
PC4B	HP W14X117	4'-0"	8'-0"	8'-0"	8#11	8#11	8#11	8#11	2 x TD4
PC5	HP W14X117	4'-4"	9'-6"	9'-6"	12#11	16#11	-	-	0
PC5A	HP W14X117	4'-4"	9'-6"	9'-6"	12#11	16#11	12#11	16#11	1 x TD1
PC5B	HP W14X117	4'-4"	9'-6"	9'-6"	12#11	16#11	12#11	16#11	1 x TD2
PC5C	HP W14X117	4'-4"	9'-6"	9'-6"	12#11	16#11	12#11	16#11	1 x TD3
PC5D	HP W14X117	4'-4"	9'-6"	9'-6"	12#11	16#11	12#11	16#11	2 x TD5
PC6	HP W14X117	5'-2"	11'-0"	8'-0"	12#11	14#11	-	-	0
PC6A	HP W14X117	5'-2"	11'-0"	8'-0"	12#11	14#11	12#11	14#11	1 x TD2
PC6B	HP W14X117	5'-2"	11'-0"	8'-0"	12#11	14#11	12#11	14#11	1 x TD3
PC6C	HP W14X117	5'-2"	11'-0"	8'-0"	12#11	14#11	12#11	14#11	2 x TD5
PC7	HP W14X117	5'-2"	11'-0"	10'-6"	14#11	14#11	14#11	14#11	1 x TD1
PC8	HP W14X117	5'-2"	11'-0"	10'-6"	14#11	16#11	14#11	16#11	2 x TD6
PC9	HP W14X117	5'-8"	11'-0"	11'-0"	16#11	16#11	-	-	0
PC10	HP W14X117	7'-2"	17'-0"	11'-0"	22#11	21#11	22#11	21#11	1 x TD1
PC12	HP W14X117	6'-2"	14'-0"	11'-0"	20#11	28#11	20#11	28#11	2 x TD7

NOTES:

1. TOP OF PILE CAP SHALL BE AT UNDERSIDE OF CELLAR SLAB U.N.O.
2. REFER TO DWG S5-0102 FOR TYPICAL PILECAP & ROCK ANCHOR DETAILS
3. SEE ROCK ANCHOR SCHEDULE (THIS DWG.) FOR ROCK ANCHOR INFO.

1 PILE CAP SCHEDULE

ROCK ANCHOR SCHEDULE

TIE DOWN ANCHOR DESIGNATION	TENSIONING FORCE	MIN. ANCHOR DIA.	CASING OD	CASING t	ROCK SOCKET NOMINAL DIA	ROCK SOCKET MIN. SOCKET LENGTH	ANCHOR PLATE D	ANCHOR PLATE W	ANCHOR PLATE t
	(kips)	(in)	(in)	(in)	(in)	(ft)	(in)	(in)	(in)
TD1	140	1.375	7	0.408	5.5	13	10	10	3
TD2	170	1.75	7	0.408	5.5	14	10	10	3
TD3	220	1.75	7	0.408	5.5	16	11	11	3
TD4	300	2.25	9.625	0.545	8	17	13	13	3 1/2
TD5	350	2.25	9.625	0.545	8	18	14	14	3 1/2
TD6	400	2.5	9.625	0.545	8	20	14	14	4
TD7	500	3	9.625	0.545	8	22	16	16	4

NOTES:

1. CASING TO BE 80 ksi API N80 OILFIELD SECONDARY WITH FLUSH JOINT THREADS.
2. CASING CAP TO BE GRADE 50 MIN.
3. ANCHORS TO BE GRADE 150.
4. REFER TO DWG S5-0102 FOR TYPICAL ROCK ANCHOR DETAILS.

2 ROCK ANCHOR SCHEDULE

FOUNDATION WALL SCHEDULE

MARK	CONCRETE STRENGTH f'c (PSI)	LEVEL X	T WALL THICKNESS (INCH)	CLEAR COVER (INCH)	OUTSIDE BARS	INSIDE BARS	HORIZONTAL CONTINUOUS BARS	REMARKS
FW1	5000	C1	14	3	#6 @ 12"	#9 @ 12"	#6 @ 12"	
FW2	5000	C1	12	3	#5 @ 12"	#8 @ 12"	#5 @ 12"	
FW3	5000	C1	12	3	#5 @ 12"	#7 @ 12"	#5 @ 12"	
FW4	5000	C1	18	3	#6 @ 12"	#10 @ 10"	#6 @ 12"	
FW5	5000	C1	36	3	#8 @ 16"	#8 @ 16"	#8 @ 16"	

3 FOUNDATION WALL SCHEDULE

GRADE BEAM SCHEDULE

f'c = SEE DWG NOTES

GRADE BEAM MARK	SIZE W (IN)	SIZE H (IN)	REINFORCEMENT LEFT END TOP BARS	RIGHT END TOP BARS	BOTTOM BARS	SIDE BARS EACH FACE SEE NOTE 3	STIRRUPS TYPE	STIRRUPS SIZE	STIRRUPS SPACING EACH END	REMARKS
GB1	84	42	18#11	18#11	18#11	-	2A	#4	22"	-
GB2	60	74	20#11	20#11	20#11	10#11	4A	#4	12"	TOP & BOTT BARS IN TWO LAYERS
GB3	42	48	14#11	14#11	6#7	-	2A	#4	10"	-
GB4	42	48	18#11	18#11	6#7	-	2A	#4	8"	TOP BARS IN TWO LAYERS
GB5	42	60	15#11	15#11	6#7	-	2A	#4	12"	-
GB6	42	48	6#7	6#7	8#9	-	2A	#4	12"	TOP BARS IN TWO LAYERS
GB7	54	60	25#11	25#11	10#7	-	4A	#4	5"	-
GB8	42	60	9#11	9#11	8#7	-	2A	#4	8"	-
GB9	24	73	4#6	4#6	14#11	-	4A	#4	12"	BOTT BARS IN TWO LAYERS
GB10	24	106	12#11	12#11	12#11	-	2A	#4	12"	TOP & BOTT BARS IN TWO LAYERS
GBC1	36	48	4#11	4#11	8#11	3#8	2A	#4	12"	-
GBT1	36	48	4#11	4#11	8#11	3#8	2A	#4	12"	EFF. PRESTRESS FORCE = 900K (STRAIGHT @ MIDDLE
GBT2	84	48	18#9	18#9	18#9	9#9	2A	#4	12"	-

NOTES:

1. SEE PLAN FOR TOP OF GRADE BEAM ELEVATION
2. LEFT END AND RIGHT END OF BEAM ARE DEFINED ON BEAM ORIENTATION KEY PLAN
3. SEE TYPICAL GRADE BEAM SECTION DETAIL WHERE NO SIDE BARS ARE INDICATED

REINFORCEMENT LEGEND:

NUMBER OF BARS — BAR SIZE — BAR LENGTH

3-#9x7'-2"

4 GRADE BEAM SCHEDULE

CAISSON CAP SCHEDULE

MARK	CONCRETE STRENGTH (ksi)	SIZE W	SIZE L	SIZE H	REINFORCEMENT BOTTOM BARS	TOP BARS	HORIZONTAL TIES	VERTICAL TIES	REMARKS
CC1	12	7'-0"	7'-0"	5'-0"	#4@8"	#4@8"	#4@8"	#4@8" (2 LEGS)	-
CC2	12	7'-9"	20'-0"	13'-6"	54#11	8#8	#5@8" (8 LEGS)	#5@8" (8 LEGS)	BOTTOM BARS IN 3 LAYERS
CC3	12	7'-0"	20'-0"	12'-0"	54#11	8#8	#5@8" (8 LEGS)	#5@8" (8 LEGS)	BOTTOM BARS IN 3 LAYERS
CC4	12	7'-6"	20'-0"	12'-0"	54#11	8#8	#5@8" (8 LEGS)	#5@8" (8 LEGS)	BOTTOM BARS IN 3 LAYERS
CC5	12	5'-0"	5'-0"	5'-0"	#4@8"	#4@8"	#4@8"	#4@8" (2 LEGS)	-

NOTES: 1. REFER TO DWG S5-0101 FOR TYPICAL CAISSON CAP DETAILS.

2. CONTINUOUS CAISSON CAP FOR SUPPORT OF CORE SHOWN ON S1-C001 TO BE 12 KSI CONCRETE STRENGTH.

5 CAISSON CAP SCHEDULE

CAISSON SCHEDULE

MARK	CONCRETE STRENGTH (ksi)	SIZE SHAFT DIAMETER	SIZE PERMANENT CASING	SOCKET DEPTH DEPTH (Baseline)	SOCKET DEPTH CASING EMBEDMENT	REINFORCEMENT STEEL CORES	REINFORCEMENT SHEAR STUDS (Tension Caissons Only)	REINFORCEMENT VERT REBAR	STEEL CORE CAP PLATE DIMS WIDTH (B)	STEEL CORE CAP PLATE DIMS DEPTH (D)	STEEL CORE CAP PLATE DIMS THICKNESS (t)	NOTES
C2-1	10	24"	3/4"	17'-0"+5'-0"	3'	-	-	17#11	-	-	-	
C3-1	10	36"	3/4"	15'-0"+5'-0"	3'	W12x120	-	-	18"	20"	2.5"	
C5-1	10	60"	3/4"	16'-0"+5'-0"	3'	W14x145	-	-	18"	20"	2.5"	
C5-2	10	60"	3/4"	19'-0"+5'-0"	3'	W14x257	90	-	20"	24"	3"	
C5-3	10	60"	3/4"	20'-0"+5'-0"	3'	W14x311	-	-	20"	24"	3"	
C5-4	10	60"	3/4"	22'-0"+5'-0"	3'	W14x398	130	22#18	22"	26"	3"	VERT REBAR ONLY REQ'D FOR C5-4 CAISSONS BELOW CORE
C5-5	10	60"	3/4"	23'-0"+5'-0"	3'	W14x500	110	10#11	24"	30"	4"	VERT REBAR ONLY REQ'D FOR C5-5 CAISSONS BELOW CORE
C5-6	12	60"	3/4"	19'-0"+5'-0"	3'	W14x257	90	24#18 (GR.150)	20"	24"	3"	
C5-7	12	60"	3/4"	27'-0"+5'-0"	3'	W14x500	-	24#18 (GR.150)	24"	30"	4"	
C5-8	12	60"	3/4"	29'-0"+5'-0"	3'	W14x605	-	24#18 (GR.150)	26"	32"	4"	
C5-9	12	60"	3/4"	32'-0"+5'-0"	3'	W14x730	-	24#18 (GR.150)	26"	34"	5"	

NOTES:

1. Fy SHELL = 50 ksi
2. Fy CORE = 65 ksi
3. Fy REBAR = 75 ksi U.N.O.
4. Fy CAP PLATE = 50 ksi

5. SOCKET DEPTH : BASELINE = 200 psi SIDE FRICTION 150 psi SIDE FRICTION FOR UPLIFT
ROCK CAPACITY TO BE DETERMINED BY ON SITE TESTING
CASING EMBEDMENT REFERS TO DEPTH INTO ROCK THAT THE CASING IS TO BE SOCKED.
THIS DIMENSION IS ALREADY INCLUDED IN THE SOCKET DEPTHS
SOCKET DEPTH IS INDICATED AS X'-X'+5'-0".
THE X'-X' IS THE REQURIED SOCKET DEPTH.
THE + 5'-0" IS AN ALLOWANCE FOR DETERIORATED ROCK.

6. REFER TO DWG S5-0101 FOR TYPICAL CAISSON DETAILS.

6 CAISSON SCHEDULE

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No.	Description	Date
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2	ADD-1: FNDN & UTIL BP	08/10/2012
1	D1-2: FNDN & UTIL BP	08/01/2012

Key Plan

Issue Date: 08/01/12
Project No. 1776.10
Drawn By:
Sheet Number

STATE OF NEW YORK · ERIC W. BRAZIL · 082842-1 · LICENSED PROFESSIONAL ENGINEER

HYE -TC -S6-0101

Drawing Title

FOUNDATION SCHEDULES

Drawing Number
S6-0101

B-Scan Drawing Number
S-123.00 SHEET 123 OF 133

CAISSON REINFORCEMENT
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)		COMPRESSION (LCS)
		f'c = 10 KSI	f'c = 12 KSI	
#5	2.125	20	20	19
#6	2.250	24	24	23
#7	2.375	35	35	27
#8	2.500	39	39	30
#9	2.875	44	44	34
#10	3.250	50	50	39
#11	3.625	55	55	43
#14	4.375	69	69	53
#18	5.750	88	88	68

COLUMN REINFORCEMENT
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f'c = 4 KSI	f'c = 5 KSI	f'c = 6 KSI	f'c = 7 KSI	f'c = 8 KSI	f'c = 9 KSI	f'c = 10 KSI	f'c = 11 KSI	f'c = 12 KSI	
#5	2.125	31	28	26	24	22	21	20	20	20	19
#6	2.250	37	34	31	28	27	25	24	24	24	23
#7	2.375	54	49	45	41	39	36	35	35	35	27
#8	2.500	62	56	51	47	44	42	39	39	39	30
#9	2.875	70	63	57	53	50	47	44	44	44	34
#10	3.250	79	71	64	60	56	53	50	50	50	39
#11	3.625	87	78	71	66	62	58	55	55	55	43
#14	4.375	87	78	71	66	62	58	69	55	69	53

GRADE BEAM/BEAM REINFORCEMENT
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)													
		f'c = 4 KSI		f'c = 5 KSI		f'c = 6 KSI		f'c = 7 KSI		f'c = 8 KSI		f'c = 9 KSI		f'c = 10 KSI	
		TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER
#4	1.500	33	25	29	23	27	21	25	19	23	18	22	17	21	16
#5	1.625	41	31	36	28	33	26	31	24	29	22	27	21	26	20
#6	1.750	49	37	44	34	40	31	37	28	35	27	33	25	31	24
#7	1.875	71	54	63	49	58	45	54	41	50	39	47	36	45	35
#8	2.000	81	62	72	56	66	51	61	47	57	44	54	42	51	39
#9	2.375	91	70	81	63	74	57	69	53	64	50	61	47	58	44
#10	2.625	102	79	92	71	84	64	77	60	72	56	68	53	65	50
#11	2.875	114	87	102	78	93	71	86	66	80	62	76	58	72	55

SLAB REINFORCEMENT
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION LAP (LTS)													
		f'c = 4 KSI		f'c = 5 KSI		f'c = 6 KSI		f'c = 7 KSI		f'c = 8 KSI		f'c = 9 KSI		f'c = 10 KSI	
		TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER
#4	1.500	33	25	29	23	27	21	25	19	23	18	22	17	21	16
#5	1.875	41	31	36	28	33	26	31	24	29	22	27	21	26	20
#6	2.250	49	37	44	34	40	31	37	28	35	27	33	25	31	24
#7	2.625	71	54	63	49	58	45	54	41	50	39	47	36	45	35
#8	3.000	81	62	72	56	66	51	61	47	57	44	54	42	51	39
#9	3.500	91	70	81	63	74	57	69	53	64	50	61	47	58	44
#10	3.875	102	79	92	71	84	64	77	60	72	56	68	53	65	50
#11	4.250	114	87	102	78	93	71	86	66	80	62	76	58	72	55

FOUNDATION WALL REINFORCEMENT - VERTICAL BARS
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f'c = 4 KSI	f'c = 5 KSI	f'c = 6 KSI	f'c = 7 KSI	f'c = 8 KSI	f'c = 9 KSI	f'c = 10 KSI	f'c = 11 KSI	f'c = 12 KSI	
#4	2.000	25	23	21	19	18	17	16	16	16	15
#5	2.125	31	28	26	24	22	21	20	20	20	19
#6	2.250	37	34	31	28	27	25	24	24	24	23
#7	2.625	54	49	45	41	39	36	35	35	35	27
#8	3.000	62	56	51	47	44	42	39	39	39	30
#9	3.500	70	63	57	53	50	47	44	44	44	34
#10	3.875	79	71	64	60	56	53	50	50	50	39
#11	4.250	87	78	71	66	62	58	55	55	55	43

FOUNDATION WALL REINFORCEMENT - HORIZONTAL BARS
LAP SPLICE LENGTH SCHEDULE (INCHES)

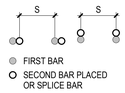
BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f'c = 4 KSI	f'c = 5 KSI	f'c = 6 KSI	f'c = 7 KSI	f'c = 8 KSI	f'c = 9 KSI	f'c = 10 KSI	f'c = 11 KSI	f'c = 12 KSI	
#4	1.500	33	30	27	25	23	22	21	21	21	15
#5	1.875	40	36	34	31	29	27	26	26	26	19
#6	2.250	48	44	40	36	35	33	31	31	32	23
#7	2.625	70	64	59	53	51	47	46	46	46	27
#8	3.000	81	73	66	61	57	55	51	51	51	30
#9	3.500	91	82	74	69	65	61	57	57	57	34
#10	3.875	103	92	83	78	73	69	65	65	65	39
#11	4.250	113	101	92	86	81	75	72	72	72	43

DEVELOPMENT LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES) [MAX OF db+1" OR 2db]	TENSION																						COMPRESSION									
		NOTED AS Ld ON DRAWINGS										NOTED AS Ldh ON DRAWINGS										NOTED AS Ldc ON DRAWINGS									
		f'c (PSI)										f'c (PSI)										f'c (PSI)									
		3000	4000	5000	6000	7000	8000	9000	10,000	11,000	12,000	3000	4000	5000	6000	7000	8000	9000	10,000	11,000	12,000	3000	4000	5000	6000	7000	8000	9000	10,000	11,000	12,000
#3	1.375	17	15	13	12	12	12	12	12	12	12	9	8	7	6	6	6	6	6	6	6	9	8	8	8	8	8	8	8	8	8
#4	1.500	22	19	17	16	15	14	13	12	12	12	11	10	9	8	8	7	7	6	6	6	11	10	9	9	9	9	9	9	9	9
#5	1.625	28	24	22	20	18	17	16	15	15	15	14	12	11	10	9	9	8	8	8	8	14	12	12	12	12	12	12	12	12	12
#6	1.750	33	29	26	24	22	21	19	18	18	18	17	15	13	12	11	11	10	9	9	9	17	15	14	14	14	14	14	14	14	14
#7	1.875	48	42	38	34	32	30	28	27	27	27	20	17	15	14	13	12	12	11	11	11	20	17	16	16	16	16	16	16	16	16
#8	2.000	55	48	43	39	36	34	32	30	30	30	22	19	17	16	15	14	13	12	12	12	22	19	18	18	18	18	18	18	18	18
#9	2.375	62	54	48	44	41	38	36	34	34	34	25	22	20	18	17	16	15	14	14	14	25	22	21	21	21	21	21	21	21	21
#10	2.625	70	61	54	50	46	43	41	39	39	39	28	25	22	20	19	18	17	16	16	16	28	25	23	23	23	23	23	23	23	23
#11	2.875	78	67	60	55	51	48	45	43	43	43	31	27	24	22	21	19	18	17	17	17	31	27	26	26	26	26	26	26	26	26

LAP SPLICE NOTES:

1. TABULATED VALUES ARE PER ACI-08 REQUIREMENTS FOR NORMALWEIGHT CONCRETE. THE VALUES ON THIS SHEET DO NOT APPLY TO LIGHTWEIGHT CONCRETE.
2. SEE TYPICAL DETAILS FOR CLEAR COVER.
3. MINIMUM BAR SPACING DIAGRAM - "S"



4. WHERE ACTUAL CONDITIONS DIFFER FROM THE CLEAR COVER SHOWN ON THE TYPICAL DETAILS OR DIFFER FROM PROVIDED SCHEDULED BAR SIZE, MINIMUM SPACING AND/OR f'c, LENGTHS SHALL BE ADJUSTED ONLY WITH THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
5. TABULATED VALUES ARE FOR NON-EPOXY COATED REINFORCEMENT. FOR EPOXY COATED REINFORCEMENT MULTIPLY VALUES BY 1.3 FOR "TOP BARS" AND 1.5 FOR ALL OTHER REINFORCEMENT.
6. WHERE BARS OF DIFFERENT SIZES ARE LAP SPLICED IN TENSION, THE LAP LENGTH SHALL BE THE TENSION LAP SPLICE LENGTH (LTS) OF THE SMALLER BAR.
7. WHERE BARS OF DIFFERENT SIZES ARE LAP SPLICED IN COMPRESSION, THE COMPRESSION LAP LENGTH (LCS) SHALL BE THE LARGER OF THE COMPRESSION DEVELOPMENT LENGTH (Ldc) OF THE LARGER BAR OR THE COMPRESSION LAP SPLICE LENGTH OF THE SMALLER BAR.
8. "TOP BARS" ARE DEFINED PER ACI HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE . "OTHER BARS ARE ALL BARS FOR WHICH THIS DOES NOT APPLY".
9. FOUNDATION WALL LAP SPLICES ARE BASED ON A MINIMUM 2 INCH CLEAR COVER. IF CLEAR COVER IS REDUCED ON INTERIOR FACE, LAP SPLICES MUST BE REVISED.
10. TABULATED VALUES BARS ON REBAR f.y = 60 ks'c. FOR GIGHER f.y STRENGTHS MULTIPLY BY FACTOR OF fY/60.

SHEARWALL REINFORCEMENT - VERTICAL BARS
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f'c = 4 KSI	f'c = 5 KSI	f'c = 6 KSI	f'c = 7 KSI	f'c = 8 KSI	f'c = 9 KSI	f'c = 10 KSI	f'c = 11 KSI	f'c = 12 KSI	
#4	2.000	25	23	21	19	18	17	16	16	16	15
#5	2.125	31	28	26	24	22	21	20	20	20	19
#6	2.250	37	34	31	28	27	25	24	24	24	23
#7	2.375	54	49	45	41	39	36	35	35	35	27
#8	2.500	62	56	51	47	44	42	39	39	39	30
#9	2.875	70	63	57	53	50	47	44	44	44	34
#10	3.250	118	106	96	89	84	79	75	75	75	39
#11	3.625	131	117	107	99	93	87	83	83	83	43

SHEARWALL REINFORCEMENT - HORIZONTAL BARS
LAP SPLICE LENGTH SCHEDULE (INCHES)

BAR SIZE	MIN BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f'c = 4 KSI	f'c = 5 KSI	f'c = 6 KSI	f'c = 7 KSI	f'c = 8 KSI	f'c = 9 KSI	f'c = 10 KSI	f'c = 11 KSI	f'c = 12 KSI	
#4	1.500	33	30	27	25	23	22	21	21	21	15
#5	1.875	40	36	34	31	29	27	26	26	26	19
#6	2.250	48	44	40	36	35	33	31	31	32	23
#7	2.625	105	95	87	81	75	70	68	68	68	27
#8	3.000	121	108	99	91	86	81	77	77	77	30
#9	3.500	137	122	112	103	92	91	86	86	86	34
#10	3.875	153	138	125	116	109	103	98	98	98	39
#11	4.250	170	152	139	129	121	113	108	108	108	43

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	ISSUE FOR FILING	09/19/2012

Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number

HYE -TC -S6-0102

Drawing Title

FOUNDATION LAP SPLICE SCHEDULES

Drawing Number
S6-0102

B-Scan Drawing Number
S-124.00 SHEET 124 OF 133

S6-0102
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SHEARWALL NOTES:

1. FOR TOP OF STRUCTURAL SLAB ELEVATIONS SEE PLANS
2. SEE TYPICAL SHEARWALL REINFORCEMENT ARRANGEMENT - PLAN FOR VERTICAL BAR AND TIE ARRANGEMENT INFORMATION
3. PROVIDE COMPRESSION LAP SPLICE AT ALL VERTICAL BARS UNLESS OTHERWISE NOTED SEE SHEARWALL LAP SPLICE SCHEDULE
4. VERTICAL AND HORIZONTAL REINFORCEMENT SHALL BE PLACED ON EACH FACE OF WALL UNLESS NOTED OTHERWISE.
5. FOR VERTICAL BARS DESIGNATED AS (3L), PROVIDE AN ADDITIONAL LAYER OF REINFORCEMENT AT CENTERLINE OF WALL.
5. AT BARS DESIGNATED AS TENSION (T) PROVIDE TENSION LAP SPLICE AT ALL VERTICAL BARS SEE SHEARWALL LAP SPLICE SCHEDULE
6. ALL SHEARWALL HORIZONTAL BARS SHALL BE LAPPED USING THE TENSION LAP SPLICE LENGTHS SEE SHEARWALL LAP SPLICE SCHEDULE
7. SHEARWALL PENETRATIONS ARE SHOWN ON THE SHEARWALL ELEVATIONS ADDITIONAL PENETRATIONS ARE NOT ALLOWED UNLESS APPROVED IN WRITING BY THE SER
8. "NONE" INDICATES NO TIES ARE REQUIRED
   "TIED" INDICATES TYPICAL TIES AS SHOWN IN TYPICAL SHEARWALL REINFORCEMENT ARRANGEMENT - PLAN
   "FULL" INDICATES FULLY TIED AS SHOWN IN FULLY TIED SHEARWALL ZONES DETAIL
9. MECHANICAL COUPLERS ARE REQUIRED FOR SPLICES OF #14 BARS AND LARGER
10. FOR ADDITIONAL INFORMATION REFER TO THE FOLLOWING DRAWINGS:

GENERAL NOTES	S0 SERIES
SHEAR WALL DETAILS	
SUPER STRUCTURE PLAN	S1 SERIES
SHEAR WALL ELEVATIONS	S2-0100 SERIES
SHEAR WALL DETAILS	S5-0500 SERIES
SHEAR WALL SCHEDULE	S6-0200 SERIES

SHEARWALL CONSTRUCTION TOLERANCES NOTES:

1. WALL THICKNESS	- 1/4" TO +3/8"
2. VARIATIONS FROM PLUMB:	
A. IN ANY STORY	± 1/2"
B. ENTIRE HEIGHT	± 1"
3. VARIATION IN LOCATION OF EMBEDED PLATES:	
A. HORIZONTAL AND VERTICAL	± 1 1/2"
B. ALIGNMENT AND PLUMB	+ 1/4" IN 12"
4. VARIATION IN SIZE OF SLEEVES	± 1/2" (TYPICAL)
5. DOOR BLOCKOUTS:	
A. SIDE JAMBS	+ 1" PLUS DRAFT
B. HEADS	+ 1" PLUS DRAFT
6. OTHER BLOCKOUTS	+ 1", - 1/4" PLUS DRAFT

CONCRETE SHEAR WALL SCHEDULE

CONCRETE STRENGTH f'c (KSI)	SHEAR WALL MARK / FLOOR	1			2			3			4			5			6			7			8			SHEAR WALL MARK / FLOOR
		VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	VERT BARS EACH FACE	HORIZ BARS EACH FACE	TIES	
8	LEVEL 47 - ROOF																			28-#8-T	#8@9"	FULL	#6@18"	#6@18"	NONE	LEVEL 47 - ROOF
	LEVEL 42 - LEVEL 47																			24-#8-T	#6@10"	FULL	#6@18"	#6@18"	NONE	LEVEL 42 - LEVEL 47
	LEVEL 38 - LEVEL 42																			20-#8-T	#6@10"	NONE	#6@18"	#6@18"	NONE	LEVEL 38 - LEVEL 42
	LEVEL 35 - LEVEL 38																			20-#8-T	#6@6"	FULL	#6@18"	#6@18"	NONE	LEVEL 35 - LEVEL 38
	LEVEL 31 - LEVEL 35							#8@16"-T	#6@10"	NONE	23-#8-T	#6@4"	FULL	22-#8-T	#6@10"	FULL	24-#8-T	#6@6"	FULL	32-#8-T	#6@4"	NONE	#6@18"	#6@18"	NONE	LEVEL 31 - LEVEL 35
	LEVEL 27 - LEVEL 31							#8@16"-T	#6@6"	NONE	33-#8-T	#6@14"	FULL	34-#8-T	#6@6"	FULL	24-#8-T	#6@6"	FULL	32-#8-T	#6@14"	NONE	#6@18"	#6@18"	NONE	LEVEL 27 - LEVEL 31
	LEVEL 22 - LEVEL 27	23-#11-T	#8@5"	FULL	12-#8-T	#6@6"	FULL	#8@12"-T	#6@6"	NONE	60-#8-T	#8@5"	FULL				40-#8-T	#6@6"	NONE	35-#8-T	#6@6"	NONE	#6@18"	#6@18"	NONE	LEVEL 22 - LEVEL 27
	LEVEL 18 - LEVEL 22	16-#11-T	#6@10"	FULL	12-#8-T	#6@10"	FULL	#8@16"	#6@10"	NONE	22-#8-T	#6@10"	NONE				44-#8-T	#8@5"	NONE	50-#8-T	#6@4"	FULL	#6@18"	#6@18"	NONE	LEVEL 18 - LEVEL 22
	LEVEL 14 - LEVEL 18	16-#11-T	#6@10"	FULL	15-#8-T	#6@18"	FULL	#8@16"	#6@6"	NONE	37-#8-T	#6@10"	NONE				44-#8-T	#8@9"	NONE	30-#8-T	#8@9"	NONE	#6@14"	#6@14"	NONE	LEVEL 14 - LEVEL 18
10	LEVEL 10 - LEVEL 14	16-#11-T	#6@10"	FULL	20-#8-T	#6@18"	FULL	#8@14"-T	#6@6"	NONE	23-#11-T	#6@10"	FULL				54-#8-T	#6@4"	NONE	30-#8-T	#8@9"	NONE	#8@18"	#6@10"	NONE	LEVEL 10 - LEVEL 14
	LEVEL 6 - LEVEL 10	20-#11-T	#6@10"	FULL	26-#8-T	#6@14"	FULL	#8@14"-T	#6@6"	NONE	30-#11-T	#6@10"	FULL				40-#11-T	#6@4"	FULL	50-#8-T	#6@4"	FULL	#8@18"	#6@10"	NONE	LEVEL 6 - LEVEL 10
12	LEVEL 4 - LEVEL 6	20-#14-T	#6@6"	FULL	20-#11-T	#6@6"	FULL	#8@8"-T	#8@9"	NONE	37-#14-T	#6@6"	FULL				40-#11-T	#8@9"	FULL	25-#11-T	#8@9"	FULL	#8@9"	#8@9"	NONE	LEVEL 4 - LEVEL 6
	LEVEL 1 - LEVEL 4	24-#14-T	#6@4"	FULL	20-#11-T	#6@10"	FULL	#8@8"-T	#6@14"	NONE	42-#14-T	#6@4"	FULL				40-#11-T	#6@4"	FULL	25-#11-T	#6@4"	FULL	#8@9"	#6@14"	NONE	LEVEL 1 - LEVEL 4
	CELLAR - LEVEL 1	24-#14-T	#6@4"	FULL	20-#11-T	#6@10"	FULL	#8@8"-T	#6@6"	TIED	47-#14-T	#8@5"	FULL				40-#11-T	#6@4"	FULL	45-#11-T	#6@4"	FULL	#8@9"	#6@6"	NONE	CELLAR - LEVEL 1
	DEPRESSED CORE PIT	38-#14-T	#9@6"	FULL	20-#11-T	#8@6"	FULL	#8@6"	#8@6"	TIED	47-#14-T	#8@6"	FULL	23-#11-T	#8@6"	FULL	42-#11-T	#9@6"	FULL	45-#11-T	#9@6"	FULL	14-#11-T	#8@6"	FULL	DEPRESSED CORE PIT
	DOWELS	38-#14-T			20-#11-T			#8@6"			47-#14-T			23-#11-T			42-#11-T			45-#11-T			14-#11-T			DOWELS
	REMARKS																									REMARKS

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No.	Description	Date
	ISSUE FOR FILING	09/19/2012

Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number

STATE OF NEW YORK · ARIC M. BRAIL · 082544-1 · LICENSED PROFESSIONAL ENGINEER

HYE -TC -S6-0201

Drawing Title

CORE WALL SCHEDULES I

Drawing Number
S6-0201

B/Scan Drawing Number
S-125.00 SHEET 125 OF 133

SHEARWALL NOTES:

1. FOR TOP OF STRUCTURAL SLAB ELEVATIONS SEE PLANS
2. SEE TYPICAL SHEARWALL REINFORCEMENT ARRANGEMENT - PLAN FOR VERTICAL BAR AND TIE ARRANGEMENT INFORMATION
3. PROVIDE COMPRESSION LAP SPLICE AT ALL VERTICAL BARS UNLESS OTHERWISE NOTED SEE SHEARWALL LAP SPLICE SCHEDULE
4. VERTICAL AND HORIZONTAL REINFORCEMENT SHALL BE PLACED ON EACH FACE OF WALL UNLESS NOTED OTHERWISE.
5. FOR VERTICAL BARS DESIGNATED AS (3L), PROVIDE AN ADDITIONAL LAYER OF REINFORCEMENT AT CENTERLINE OF WALL.
5. AT BARS DESIGNATED AS TENSION (T) PROVIDE TENSION LAP SPLICE AT ALL VERTICAL BARS SEE SHEARWALL LAP SPLICE SCHEDULE
6. ALL SHEARWALL HORIZONTAL BARS SHALL BE LAPPED USING THE TENSION LAP SPLICE LENGTHS SEE SHEARWALL LAP SPLICE SCHEDULE
7. SHEARWALL PENETRATIONS ARE SHOWN ON THE SHEARWALL ELEVATIONS ADDITIONAL PENETRATIONS ARE NOT ALLOWED UNLESS APPROVED IN WRITING BY THE SER
8. "NONE" INDICATES NO TIES ARE REQUIRED
   "TIED" INDICATES TYPICAL TIES AS SHOWN IN TYPICAL SHEARWALL REINFORCEMENT ARRANGEMENT - PLAN
   "FULL" INDICATES FULLY TIED AS SHOWN IN FULLY TIED SHEARWALL ZONES DETAIL
9. MECHANICAL COUPLERS ARE REQUIRED FOR SPLICES OF #14 BARS AND LARGER
10. FOR ADDITIONAL INFORMATION REFER TO THE FOLLOWING DRAWINGS:

GENERAL NOTES	S0 SERIES
SHEAR WALL DETAILS	
SUPER STRUCTURE PLAN	S1 SERIES
SHEAR WALL ELEVATIONS	S2-0100 SERIES
SHEAR WALL DETAILS	S5-0500 SERIES
SHEAR WALL SCHEDULE	S6-0200 SERIES

SHEARWALL CONSTRUCTION TOLERANCES NOTES:

1. WALL THICKNESS	- 1/4" TO +3/8"
2. VARIATIONS FROM PLUMB:	
A. IN ANY STORY	± 1/2"
B. ENTIRE HEIGHT	± 1"
3. VARIATION IN LOCATION OF EMBEDED PLATES:	
A. HORIZONTAL AND VERTICAL	± 1 1/2"
B. ALIGNMENT AND PLUMB	+ 1/4" IN 12"
4. VARIATION IN SIZE OF SLEEVES	± 1/2" (TYPICAL)
5. DOOR BLOCKOUTS:	
A. SIDE JAMBS	+ 1" PLUS DRAFT
B. HEADS	+ 1" PLUS DRAFT
6. OTHER BLOCKOUTS	+ 1", - 1/4" PLUS DRAFT

CONCRETE SHEAR WALL SCHEDULE

CONCRETE STRENGTH f'c (KSI)	SHEARWALL MARK / FLOOR	19 VERT BARS EACH FACE	19 HORIZ BARS EACH FACE	19 TIES	20 VERT BARS EACH FACE	20 HORIZ BARS EACH FACE	20 TIES	21 VERT BARS EACH FACE	21 HORIZ BARS EACH FACE	21 TIES	22 VERT BARS EACH FACE	22 HORIZ BARS EACH FACE	22 TIES	SHEAR WALL MARK / FLOOR
8	LEVEL 47 - ROOF				8-#6-T	#6@18"	NONE	#6@18"-T	#6@18"	NONE				LEVEL 47 - ROOF
	LEVEL 42 - LEVEL 47				8-#6-T	#6@18"	NONE	#6@18"-T	#6@18"	NONE				LEVEL 42 - LEVEL 47
	LEVEL 38 - LEVEL 42				15-#6-T	#6@18"	NONE	#6@18"	#6@18"	NONE				LEVEL 38 - LEVEL 42
	LEVEL 35 - LEVEL 38				21-#6-T	#6@14"	NONE	#6@18"	#6@18"	NONE				LEVEL 35 - LEVEL 38
	LEVEL 31 - LEVEL 35				21-#6-T	#6@14"	NONE	#6@14"	#6@14"	NONE				LEVEL 31 - LEVEL 35
	LEVEL 27 - LEVEL 31				27-#8-T	#6@14"	NONE	#6@18"	#6@18"	NONE				LEVEL 27 - LEVEL 31
	LEVEL 22 - LEVEL 27	26-#11-T	#8@5"	FULL	15-#8-T	#6@10"	NONE	#8@18"	#6@10"	NONE	#8@5"	#8@5"	NONE	LEVEL 22 - LEVEL 27
	LEVEL 18 - LEVEL 22	16-#11-T	#6@6"	FULL	15-#8-T	#6@10"	NONE	#8@15"	#6@6"	NONE				LEVEL 18 - LEVEL 22
	LEVEL 14 - LEVEL 18	13-#11-T	#6@6"	FULL	23-#8-T	#6@10"	NONE	#8@15"	#6@6"	NONE				LEVEL 14 - LEVEL 18
10	LEVEL 10 - LEVEL 14	13-#11-T	#6@6"	FULL	35-#8-T	#6@6"	NONE	#8@15"	#6@6"	NONE				LEVEL 10 - LEVEL 14
	LEVEL 6 - LEVEL 10	13-#11-T	#6@6"	FULL	58-#8-T	#6@6"	FULL	#8@15"	#6@6"	NONE				LEVEL 6 - LEVEL 10
12	LEVEL 4 - LEVEL 6	13-#14-T	#8@9"	FULL	50-#11-T	#8@9"	FULL	#8@11"	#8@9"	NONE				LEVEL 4 - LEVEL 6
	LEVEL 1 - LEVEL 4	26-#14-T	#6@4"	FULL	50-#11-T	#6@4"	FULL	#8@11"	#6@18"	NONE				LEVEL 1 - LEVEL 4
	CELLAR - LEVEL 1	26-#14-T	#6@4"	FULL	50-#11-T	#8@5"	FULL	#8@11"	#6@18"	NONE				CELLAR - LEVEL 1
	DEPRESSED CORE PIT													DEPRESSED CORE PIT
	DOWELS													DOWELS
	REMARKS													REMARKS

CONCRETE SHEAR WALL SCHEDULE

CONCRETE STRENGTH f'c (KSI)	SHEAR WALL MARK / FLOOR	9 VERT BARS EACH FACE	9 HORIZ BARS EACH FACE	9 TIES	10 VERT BARS EACH FACE	10 HORIZ BARS EACH FACE	10 TIES	11 VERT BARS EACH FACE	11 HORIZ BARS EACH FACE	11 TIES	12 VERT BARS EACH FACE	12 HORIZ BARS EACH FACE	12 TIES	13 VERT BARS EACH FACE	13 HORIZ BARS EACH FACE	13 TIES	14 VERT BARS EACH FACE	14 HORIZ BARS EACH FACE	14 TIES	15 VERT BARS EACH FACE	15 HORIZ BARS EACH FACE	15 TIES	16 VERT BARS EACH FACE	16 HORIZ BARS EACH FACE	16 TIES	17 VERT BARS EACH FACE	17 HORIZ BARS EACH FACE	17 TIES	18 VERT BARS EACH FACE	18 HORIZ BARS EACH FACE	18 TIES	SHEAR WALL MARK / FLOOR
8	LEVEL 47 - ROOF	15-#8-T	#6@18"	FULL	28-#6-T	#6@6"	NONE				10-#8-T	#6@18"	FULL	#6@18"	#6@18"	NONE				28-#6-T	#6@10"	NONE							40-#6-T	#6@18"	NONE	LEVEL 47 - ROOF
	LEVEL 42 - LEVEL 47	15-#8-T	#6@18"	FULL	18-#6-T	#6@18"	NONE				10-#8-T	#6@18"	FULL	#6@18"	#6@18"	NONE				20-#6-T	#6@18"	NONE							31-#6-T	#6@18"	NONE	LEVEL 42 - LEVEL 47
	LEVEL 38 - LEVEL 42	13-#8-T	#6@18"	FULL	18-#6-T	#6@14"	NONE				5-#8-T	#6@18"	NONE	#6@18"	#6@18"	NONE				20-#6-T	#6@14"	NONE							31-#6-T	#6@14"	NONE	LEVEL 38 - LEVEL 42
	LEVEL 35 - LEVEL 38	13-#8-T	#6@18"	FULL	18-#6-T	#6@6"	NONE				5-#8-T	#6@14"	NONE	#6@14"	#6@14"	NONE				20-#6-T	#6@10"	NONE							36-#6-T	#6@14"	NONE	LEVEL 35 - LEVEL 38
	LEVEL 31 - LEVEL 35	6-#8-T	#6@14"	NONE	18-#6-T	#6@14"	NONE				8-#8-T	#6@14"	NONE	#6@14"	#6@14"	NONE				20-#6-T	#6@14"	NONE							36-#6-T	#6@14"	NONE	LEVEL 31 - LEVEL 35
	LEVEL 27 - LEVEL 31	6-#8-T	#6@18"	NONE	18-#8-T	#6@10"	NONE				12-#8-T	#6@14"	NONE	#6@14"	#6@14"	NONE				28-#6-T	#6@14"	NONE							36-#6	#6@14"	NONE	LEVEL 27 - LEVEL 31
	LEVEL 22 - LEVEL 27	8-#8-T	#6@10"	NONE	13-#8-T	#6@10"	NONE	12-#6	#6@10"	NONE	12-#8-T	#6@10"	NONE	#6@10"	#6@10"	NONE				15-#6-T	#6@10"	NONE	#8@18"	#6@10"	NONE	#6@6"-T	#6@6"	NONE	26-#8	#6@6"	NONE	LEVEL 22 - LEVEL 27
	LEVEL 18 - LEVEL 22	8-#8-T	#6@6"	NONE	13-#8-T	#6@10"	NONE	12-#6	#6@10"	NONE	17-#8-T	#6@10"	NONE	#6@10"	#6@10"	NONE				15-#6-T	#6@10"	NONE				#6@12"-T	#4@6"	NONE	21-#8-T	#6@10"	NONE	LEVEL 18 - LEVEL 22
	LEVEL 14 - LEVEL 18	10-#8-T	#6@6"	NONE	13-#8-T	#6@10"	NONE	12-#6	#6@10"	NONE	11-#11-T	#6@10"	FULL	#6@10"	#6@10"	NONE				15-#6-T	#6@10"	NONE				#6@18"-T	#4@8"	NONE	21-#8-T	#6@10"	NONE	LEVEL 14 - LEVEL 18
10	LEVEL 10 - LEVEL 14	17-#8-T	#6@6"	FULL	13-#8-T	#6@10"	NONE	12-#6-T	#6@10"	NONE	11-#11-T	#6@10"	FULL	#8@16"	#6@10"	NONE				22-#6-T	#6@10"	NONE				#6@18"-T	#4@8"	NONE	21-#8-T	#6@10"	NONE	LEVEL 10 - LEVEL 14
	LEVEL 6 - LEVEL 10	17-#8-T	#6@6"	FULL	20-#8-T	#6@10"	NONE	18-#8-T	#6@6"	NONE	14-#14-T	#6@10"	FULL	#8@16"	#6@10"	NONE				22-#8-T	#6@6"	NONE				#6@14"-T	#4@6"	NONE	36-#11-T	#8@5"	FULL	LEVEL 6 - LEVEL 10
12	LEVEL 4 - LEVEL 6	11-#11-T	#6@6"	FULL	20-#11-T	#6@6"	NONE	18-#11-T	#6@4"	FULL	14-#14-T	#8@9"	FULL	#8@8"	#8@9"	NONE				14-#11-T	#8@9"	NONE				#8@11"-T	#6@6"	NONE	34-#11-T	#6@4"	FULL	LEVEL 4 - LEVEL 6
	LEVEL 1 - LEVEL 4	11-#11-T	#6@18"	FULL	30-#11-T	#6@4"	FULL	24-#11-T	#8@5"	FULL	14-#14-T	#6@10"	FULL	#8@16"	#6@10"	NONE				24-#11-T	#8@5"	FULL				#8@11"-T	#6@10"	NONE	34-#11-T	#8@9"	FULL	LEVEL 1 - LEVEL 4
	CELLAR - LEVEL 1	14-#11-T	#6@18"	FULL	53-#11-T	#8@9"	FULL	31-#14 (3L)-T	#8@5"	FULL	13-#14 (3L)-T	#6@10"	FULL	#8@16"	#6@10"	NONE				28-#14 (3L)-T	#8@5"	FULL				#8@11"-T	#6@10"	NONE	34-#11-T	#8@5"	FULL	CELLAR - LEVEL 1
	DEPRESSED CORE PIT	19-#11-T	#8@6"	FULL	53-#11-T	#8@6"	FULL	31-#14 (3L)-T	#8@6"	FULL	13-#14 (3L)-T	#10@6"	FULL	#10@6"	#10@6"	TIED	25-#14 (3L)-T	#10@6"	FULL	28-#14 (3L)-T	#8@6"	FULL	#7@12"	#7@12"	NONE	#8@6"-T	#8@6"	TIED	34-#11-T	#9@6"	FULL	DEPRESSED CORE PIT
	DOWELS	19-#11-T			53-#11-T			31-#14 (3L)-T			13-#14 (3L)-T			#10@6"			25-#14 (3L)-T			28-#14 (3L)-T			#7@12"			#8@6"-T			34-#11-T			DOWELS
	REMARKS																															REMARKS

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Buildings
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No.	Description	Date
	ISSUE FOR FILING	09/19/2012

Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number
HYE -TC -S6-0202
Drawing Title
CORE WALL SCHEDULES II

Drawing Number
S6-0202
R-Scan Drawing Number
S-126.00 SHEET 126 OF 133

COLUMN MARK / FLOOR	C5-CA C53-CA	C5-CA	C5.3-CA	C7-CA	C7.3-CA	C9-CA	C9.3-CA	C11-CA	C17S-CA	C19-CA	C21-CA	C21.7-CA	C1-CB C1-CBS	C17S-CC	C19-CC C20S-CC	C27-CC	C3.9-CD.5 C4.5-CC.5	C5.9-CD.5 C6.5-CC.5	C7.9-CD.5 C8.5-CC.5	C9.9-CD.5 C10.5-CC.5	C10.65-CC C10.6-CC.5	C12.5-CC.5 C13.3-CD.5	C1-CD	C15.3-CD.5	C19.3-CD.5	C23-CD.5	C27.5-CD.5	C10.65-CE C10.6-CE.5	C19-CE.5 C53S-CE	C27-CE	C12.9-CE.5	C1-CF	C19-CF.2	C19.7-CF.2	COLUMN MARK / FLOOR
CONCRETE STRENGTH	10 KSI — HIGHLIGHTED COLUMNS IN THIS GROUP: 12 KSI EXCEPT COL C1-CD IS 14 KSI WHERE SHOWN																																		CONCRETE STRENGTH
24																																			24
23	5050 2020 36X36 24 #14	4930 1690 36X36 18 #14		4885 1545 36X36 14 #14		4830 1515 36X36 12 #14		2525 745 30X30 8 #10	4775 1105 36X36 16 #10				3165 1515 30X36 10 #10		3265 995 36X36 12 #10		9185 3590 42X60 30 #14	7320 2745 42X60 12 #14	7425 2565 42X60 16 #11	6785 1985 48X42 14 #11		4535 1235 36X36 12 #11	5280 1865 36X36 22 #14						3065 975 30X36 10 #10		175 55 24X24 6 #9	4865 1545 36X36 20 #11			23
22	5195 2050	5110 1730 18 #14		5075 1585 14 #14		5015 1550 12 #14		2725 785 30X30 8 #10	4965 1145 16 #10				3280 1535		3490 1040		9525 3665 30 #14	7600 2800	7700 2620	7050 2040 14 #11		4860 1310 12 #11	5480 1905 22 #14						3205 1005		350 100	5055 1585 20 #11			22
21	5340 2080	5290 1765 22 #14		5265 1625 20 #14		5200 1590 18 #14		2940 830 36X36 12 #10	5155 1180 22 #14				3390 1560	215 60 24X24 6 #9	3720 1090		9870 3740 40 #14	7880 2860	7975 2680	7320 2100 24 #11		5190 1390 24 #11	5680 1950 16 #14						3345 1030		535 145	5240 1620 20 #14			21
20	5485 2105 24 #14	5465 1800 22 #14		5455 1665 20 #14		5390 1630 18 #14		3350 880	5575 1215				3505 1580 10 #10	520 110	3935 1130 12 #10		10210 3815 40 #14	8160 2920 12 #14	8255 2740 16 #11	7635 2155 24 #11		5350 1420 24 #11	5875 1990 16 #14						3500 1060 30X36 10 #10		715 185	5425 1660 20 #14			20
19	5625 2135 16 #14	5630 1835 18 #14		5645 1705 18 #14		5540 1655 22 #14		3400 885	5610 1215				3620 1600 18 #10	725 150	4150 1175 16 #10		10550 3890 28 #14	8440 2980 18 #14	8540 2795 18 #11	7785 2180 20 #14		5470 1445 32 #11	6065 2030 24 #14						3670 1095 36X41 22 #10		900 230	5615 1700 22 #14			19
18	5780 2220 16 #14	5810 1940		5855 1830		5745 1775		3555 965	5760 1290	190 115 24X24 10 #9	150 85 24X24 6 #9		3745 1670 18 #10	960 295	4555 1430 16 #10	285 170 30X30 14 #10	10925 4120 28 #14	8745 3165 18 #14	8850 2975 18 #11	8055 2340 20 #14		5610 1520	6275 2150 24 #14						3930 1250 36X36 12 #10	110 65 24X24 6 #9	1100 365	5815 1820			18
17	5920 2245 20 #14	5970 1970		6045 1865		5900 1805		3615 970	5885 1310	345 160 10 #9	285 125		3860 1690 22 #10	1155 340	4895 1505 20 #14	535 240	11245 4190 38 #14	9025 3220 22 #14	9135 3035 30 #11	8210 2370 28 #14		5630 1520	6460 2190 12 #14						4155 1300	210 95	1285 405	6000 1855			17
16	6060 2270 20 #14	6125 2000 18 #14		6235 1905 18 #14		6085 1845		3755 995	6010 1330 22 #14	500 195 6 #9	415 160		3975 1710 22 #10	1350 380	5230 1585	780 295	11565 4255 38 #14	9305 3280 22 #14	9420 3090 30 #11	8460 2420 28 #14		5755 1540 32 #11	6640 2230 12 #14						4380 1350	305 120	1465 450	6190 1895			16
15	6195 2300 16 #14	6280 2030 22 #14		6425 1945 22 #14		6240 1870		3815 1000	6130 1350 16 #14	650 230	545 190		4090 1735 10 #10	1535 420	5560 1660	1025 350	11880 4325 44 #14	9585 3340 12 #14	9705 3150 16 #11	8610 2445 12 #14		5775 1540 16 #14	6815 2265 20 #14						4610 1400	405 145	1650 490	6375 1935			15
14	6335 2325	6425 2060		6615 1985		6425 1910 22 #14		3960 1025	6250 1370 16 #14	795 265	675 215		4205 1755 10 #10	1715 460	5885 1735 20 #14	1275 405	12200 4395 44 #14	9865 3400 12 #14	9990 3210	8860 2495 12 #14		5900 1565 16 #14	6985 2300 20 #14						4845 1455	500 165	1835 535	6560 1970			14
13	6475 2350	6570 2090		6805 2025		6580 1940 12 #14		4020 1030	6360 1390 18 #14	940 295	805 245		4320 1775 10 #11	1890 500	6200 1810 24 #14	1520 460	12520 4465 30 #14	10145 3455 16 #14	10275 3265	9010 2520 16 #14		5920 1565 20 #14	7155 2335 24 #14						5080 1505	595 185	2020 580	6745 2010			13
12	6615 2380 16 #14	6705 2115		6995 2065		6765 1980 12 #14		4160 1055	6470 1405 18 #14	1075 325	940 270		4435 1795 30X36 10 #11	2060 535	6510 1880	1770 515	12840 4530 30 #14	10425 3515 16 #14	10560 3325 16 #11	9260 2570 16 #14		6045 1585	7315 2365 24 #14						5320 1560 12 #10	695 205	2205 620 24X24 6 #9	6935 2050			12
11	6755 2405 20 #14	6840 2140		7185 2105		6920 2005 18 #14		4225 1060	6575 1425 20 #14	1210 350	1070 300		4555 1820 30X36 8 #11	2220 570	6815 1950	2015 565	13160 4600 38 #14	10705 3575 24 #14	10845 3380 18 #14	9410 2600 24 #14		6070 1585	7475 2400 W14x48 4 #10						5565 1615 24 #10	790 225	2390 665 30X30 8 #10	7120 2090			11
10	6890 2430 20 #14	6970 2165		7375 2145 22 #14		7105 2045 18 #14		4365 1085	6675 1440 20 #14	1340 380	1200 325		4675 1840	2375 605 6 #9	7115 2020	2265 620 14 #10	13480 4670 38 #14	10985 3635 24 #14	11130 3440 42X60 18 #14	9660 2650 24 #14		6195 1610	7630 2430 W14x48 4 #10						5795 1665 24 #10	885 245	2580 705	7305 2125 22 #14			10
9	7025 2455 24 #14	7095 2190		7570 2185 W14x48 4 #10		7260 2075 22 #14		4430 1090	6775 1455 16 #14	1465 405	1330 350		4790 1860	2525 635 12 #10	7405 2085 24 #14	2510 675 8 #10	13795 4735 44 #14	11265 3690 30 #14	11420 3495 28 #14	9810 2675 32 #14		6215 1610	7780 2460 W14x48 4 #10						6030 1715 28 #11	985 265	2765 745	7495 2165 W14x48 4 #10			9
8	7160 2480	7215 2215 22 #14		7760 2220 W14x48 4 #10		7445 2110 22 #14		4575 1115	6870 1465	1590 435	1460 380		4910 1885 8 #11	2670 665 24X24 12 #10	7695 2150 W14x48 4 #10	2760 730	14115 4805 W14x90 8 #10	11545 3750 30 #14	11705 3555 28 #14	10060 2725 32 #14		6340 1630	7925 2490 W14x48 4 #10						6270 1770 28 #11	1080 280	2950 790	7680 2205 W14x48 4 #10			8
7	7295 2505	7335 2235 W14x48 8 #10		7950 2260 W14x48 4 #10		7600 2140 W14x48 4 #10		4635 1120	6960 1480	1705 460	1595 405		5030 1905 10 #11	2810 695 30X30 8 #10	7975 2215 W14x48 4 #10	3005 785	14435 4875 W14x90 8 #10	11825 3810 38 #14	11990 3615 36 #14	10210 2750 36 #14		6360 1630	8060 2515 W14x48 4 #10						6505 1820 20 #11	1180 300	3135 830	7865 2240 W14x48 4 #10			7
6	7460 2530 36X36 24 #14	7450 2255 36X36 W14x48 8 #10		8185 2300 36X36 W14x48 12 #14		7830 2180 36X36 W14x48 12 #10		4820 1145 12 #10	7070 1490 36X36 16 #14	1850 480 24X24 6 #9	1755 435 24X24 6 #9		5180 1925 36X36 10 #11	2980 720 30X30 8 #10	8310 2280 36X36 W14x48 8 #11	3315 840 30X30 8 #10	14835 4945 42X60 W14x90 8 #10	12175 3870 42X60 38 #14	12345 3670 42X60 38 #14	10525 2805 48X42 36 #14		6520 1650 36X36 20 #14	8200 2545 36X36 W14x48 12 #14						6805 1875 36X36 20 #11	1300 320 24X24 6 #9	3360 865 30X30 8 #10	8100 2280 36X36 W14x48 10 #14			6
5M	15240 4925 TRANSFER WALL W14x48			8465 2425 TRANSFER WALL W14x48		8105 2300 TRANSFER WALL W14x48		4950 1300 16 #14	7055 1590 40X40 20 #14	2005 555 TRANSFER WALL	1940 520 TRANSFER WALL		13595 4550 48X60 W14x48	3180 870 40 #14 TRANSFER WALL	8695 2470 36X36 W14x48	3665 1010 30X30 TRANSFER WALL	15290 5155 48X72 W30x90 48 #14	12575 4055 42X60 22 #14	12740 3850 48X72 22 #14	10860 2985 60X48 28 #14		6895 1830 48X52 12 #14							7145 2045 TRANSFER WALL	1435 380 TRANSFER WALL	3600 985 30X36 30 #9	8375 2405 TRANSFER WALL W14x48			5M
5	15340 4925 TRANSFER WALL			8525 2425 TRANSFER WALL		8250 2365 TRANSFER WALL		5175 1405	7330 1735 40X40 20 #14	2170 690 TRANSFER WALL	2195 735 TRANSFER WALL		13680 4550 48X60 40 #14	3420 1095 TRANSFER WALL	8730 2470 TRANSFER WALL	3965 1265 TRANSFER WALL	15365 5155	12650 4055	12960 3945	11150 3130		7145 1990							7175 2045 TRANSFER WALL	1560 475 TRANSFER WALL	3625 985 30 #9	8440 2405 TRANSFER WALL			5
4			24110 7535 60X72 BU50x44x4 8 #14		6815 2000 42X42 8 #14		6715 1985 42X42 12 #11	6010 1700 36X36 16 #14	13330 3505 60X84 86 #14 T			5185 1625 60X60 48 #14 T	17090 5475 60X60 40 #14				15855 5500	13080 4350	13385 4235	11840 3420		7505 2245		6680 2000 42X42 12 #14	8345 2345 48X48 12 #14	10225 1800 48X48 12 #14				3845 1155		5490 1450 30X36 8 #14	2185 655 30X36 8 #8		4
3			24475 7735 BU50x44x4 8 #14		7165 2205 62X62 32 #14		7080 2205 60X60 56 #11 T	6510 2035 56X56 48 #14 T	13825 3785			5300 1625 60X60 40 #14	18270 5610 60X60 40 #14				17745 5845 48 #14	14080 4640 22 #14	14670 4525 22 #14	12995 3710 28 #14		8780 2495		7360 2295 12 #14	8605 2505 12 #14	11850 1960 28 #14				4070 1330 30X36 28 #9		5660 1595 36X36 8 #14	2355 770 36X36 8 #8		3
2			24585 7735 BU50x44x4 8 #14		7265 2205		7175 2205 60X60 56 #11 T	6590 2035 56X56 48 #14 T	13960 3785			5405 1625	18475 5705 70X60 76 #14				17945 5950 BU36x36x3.5 8 #14	14255 4725 34 #14	14845 4605 38 #14	13150 3790 42 #14		9085 2750		7575 2460 32 #14	8830 2665 18 #14	12085 2115 40 #14				4260 1495 36X36 20 #14		5835 1715 40X48 12 #14	2500 880 12 #8		2
1			24710 7735 BU50x44x4 8 #14		7375 2205		7280 2205	6685 2035	14105 3785			5520 1625	18600 5705				18050 5950 BU36x36x3.5 8 #14	14355 4725	14945 4605 38 #14	13240 3790 42 #14		9160 2750		7635 2460 32 #14	8900 2665	12175 2115 40 #14				4315 1495 20 #14		5890 1715	2540 880		1
0			24860 7735 60X72 BU50x44x4 8 #14		7505 2205 62X62 32 #14		7405 2205 60X60 56 #11 T	6795 2035 56X56 48 #14 T	14285 3785 60X84 86 #14 T			5660 1625 60X60 48 #14 T	17845 5705 76 #14				18175 5950 BU36x36x3.5 12 #14	14155 4725 34 #14	14205 4635 48X72 36 #14	12655 3840 60X48 34 #14		8730 2910		6970 2560 18 #14	9155 2765	11430 2225 34 #14	-2095 75 48X48 20 #14			4525 1600		6090 1790	2735 970		0
C1													18095 5825 70X60 60 #14				16895 6015 48X91 BU36x36x3.5 12 #14	14140 4780 48X91 76 #14	14360 4685 48X91 78 #14	12800 3890 91X48 34 #14		8985 3065 48X52 12 #14		7300 2785 42X42 18 #14	9495 2990 48X48 18 #14	11790 2470 48X48 34 #14	-1955 145 48X48 20 #14			4685 1705 36X36 8 #14		6220 1865 40X48 12 #14	2875 1055 36X36 12 #8		C1
CONCRETE STRENGTH / FLOOR COLUMN MARK	12 KSI — HIGHLIGHTED COLUMNS IN THIS GROUP: 14 KSI																																		CONCRETE STRENGTH / FLOOR COLUMN MARK

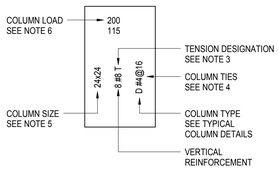
COLUMN NOTES:

1. FOR TOP OF STRUCTURAL SLAB ELEVATIONS SEE PLANS
2. PROVIDE COMPRESSION LAP SPLICE AT ALL VERTICAL BARS UNLESS OTHERWISE NOTED
   SEE COLUMN LAP SPLICE SCHEDULE FOR SPLICE LENGTH
3. AT COLUMNS DESIGNATED AS TENSION (T) PROVIDE TENSION LAP SPLICE AT ALL VERTICAL BARS
   SEE COLUMN LAP SPLICE LENGTH SCHEDULE FOR SPLICE LENGTH
4. PROVIDE #4@12" TIES UNLESS OTHERWISE NOTED
   TIE SPACING IS NOT TO EXCEED LEAST COLUMN DIMENSION OR 16 VERICAL BAR DIAMETERS
5. COLUMN SIZES SHOWN ARE PLAN DIMENSIONS IN INCHES FOR COLUMN ORIENTATION SEE PLAN
6. COLUMN LOADS SHOWN ON SCHEDULE ARE AS FOLLOWS:

   XXX = SERVICE AXIAL DEAD LOAD IN KIPS x 1.2
   XXX = SERVICE AXIAL REDUCED LIVE LOAD IN KIPS x 1.6

7. WHERE SCHEDULED INFORMATION IS NOT SHOWN SEE FLOOR BELOW

COLUMN LEGEND:



8. ★: SEE CROWN ELEVATIONS S3-0320.
9. TWO GRID LABELS THAT APPEAR IN ONE CELL INDICATE SAME COLUMN SHIFTS.
10. ALL ENCASED STEEL SHAPES ARE GR. 50.
11. BU 36X36X3.5 = BUILT UP SHAPE b x d x t.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
Date/Time: Nov 20, 2012 – 11:28 AM
NYC Development Hub

HUDSON YARDS - TOWER C

501 WEST 30TH STREET
NEW YORK, NY

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Related Companies
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New York, NY 10023
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Oxford Properties Group
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New York, NY 10022
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Construction Manager
Construction Manager Name
Address
Address
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Mechanical, Electrical, Plumbing, Fire Protection
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New York, NY 10013
TEL: 212.530.9300 FAX: 212.269.5894

No.	Description	Date
	ISSUE FOR FILING	09/19/2012

Key Plan

Issue Date:
Project No. 1776.10
Drawn By:
Sheet Number

HYE -TC -S6-0401

Drawing Title

COLUMN SCHEDULE I

Drawing Number
S6-0401
R/Scan Drawing Number
S-130.00 SHEET 130 OF 133

COLUMN MARK / FLOOR	CONCRETE STRENGTH	C21.9-CF.2	C25-CF.2	C23.3-CF.2	C1-CF.4	C16-CF.8	C18-CF.9	C10.6S-CG C10.6-CG	C12.9-CG	C20S-CG	C1-CH.1	C1-CH.2	C10.6S-CH.5	C12.9-CH.5	C16-CH.5	C1-CH.9	C20S-CJ	C8-CJ.8	C10-CJ.8	C12-CJ.8	C12.9-CJ.8	C16-CJ.8	C18-CJ.8	C1-CK
24																								
23	10 KSI HIGHLIGHTED COLUMNS IN THIS GROUP: 12 KSI								145 45 24X24 6 #9	2825 900 30X30 8 #10	4095 1255 36X36 12 #10			190 60 24X24 6 #9			2670 700 30X30 8 #10							
22									290 85	2950 925 30X30 8 #10	4270 1290			385 105			2795 725							
21									440 120	3080 950 30X36 10 #10	4450 1325			590 155			2920 750							
20									595 160	3215 975	4645 1365 12 #10			805 205			3055 775 30X30 8 #10							
19									755 195	3360 1005	4840 1405 12 #14			1030 260			3200 805 30X36 10 #10							
18		190 120 24X24 16 #9	125 70 24X24 6 #9						930 315	3485 1075	5055 1535 12 #14			1290 435			3360 895							
17		360 170 10 #9	230 100						1100 355	3605 1100	5255 1575 20 #14			1540 495			3510 925							
16		530 215 10 #9	340 130						1275 395	3730 1125	5455 1620 20 #14			1795 555			3670 960							
15		705 250 6 #9	445 150						1450 435	3860 1150	5660 1660 16 #14			2065 620			3830 995							
14		875 290	555 175						1630 475	3995 1175	5860 1705 16 #14			2340 690 24X24 6 #9			4000 1030							
13		1045 325	660 195						1815 520	4135 1205	6070 1745 22 #14			2635 755 30X30 8 #10			4170 1065							
12		1215 365	765 220						2005 565 24X24 6 #9	4275 1230 10 #10	6275 1790			2940 830			4350 1100 10 #10							
11		1390 405	875 240						2210 610 30X30 8 #10	4420 1260 14 #10	6485 1835			3255 905			4530 1140 12 #10							
10		1575 445	980 260						2415 660	4570 1295 30X36 14 #10	6700 1880			3580 980 30X30 8 #10			4720 1180 30X36 12 #10							
9		1760 485	1090 280						2620 705	4730 1325 38X36 12 #10	6910 1925			3920 1060 38X36 12 #10			4915 1220 38X36 12 #10							
8		1945 525 24X24 6 #9	1195 300						2835 755	4895 1360	7125 1970			4275 1140			5120 1265							
7	12 KSI HIGHLIGHTED COLUMNS IN THIS GROUP: 14 KSI	2135 570 30X30 8 #10	1305 325						3055 805	5065 1395	7340 2015 22 #14			4555 1205			5325 1305							
6		2375 610 30X30 8 #10	1440 345 24X24 6 #9						3330 860 30X30 8 #10	5280 1430 36X36 12 #10	7615 2060 39X36 W14x48 12 #9			4915 1270 38X36 12 #10			5595 1350 38X36 12 #10							
5M		2640 740 TRANSFER WALL	1590 410 TRANSFER WALL						3660 1025 30X36 32 #9	5530 1540 42X42 12 #14	7925 2205 TRANSFER WALL W14x48			5340 1485 42X42 8 #14	395 205 24X30 8 #9		5905 1495 42X42 8 #14							
5		2860 935 TRANSFER WALL	1720 510 TRANSFER WALL			370 185			3685 1025	5575 1540	7980 2205 TRANSFER WALL			5775 1805	410 205		5955 1495							
4				7015 1500 72X40 14 #14	7785 2195 48X48 16 #14	1285 295			4035 1175	5920 1635 42X42 12 #14		9665 2655 48X48 16 #14		6240 2000	1710 365 8 #9		6345 1605 42X42 8 #14							6190 1545 42X42 16 #14
3				6310 1680 46 #14 T	8065 2370 48X48 16 #14	1655 665 24X30 8 #9			4280 1380 30X36 32 #9	6160 1800 48X48 38 #14		10055 2920 48X48 16 #14		6565 2260 8 #14	2245 915 24X30 10 #9		6615 1795 48X48 36 #14 T							6445 1705 42X42 22 #14
2				6560 1850	8315 2540 58X58 36 #14	1875 870 30X30 32 #9	90 100 24X24 4 #6		4495 1565 38X36 22 #14	6225 1800		10410 3185 58X56 48 #14		6840 2500 24 #14	2525 1170 38X36 10 #11		6680 1795 54X54 58 #14 T							6690 1870 54X54 58 #14 T
1				6655 1850 46 #14 T	8415 2540	2005 910 32 #9	180 135		4545 1565 22 #14	6295 1800 38 #14		10505 3185		6900 2500 24 #14	2555 1170		6755 1795 36 #14 T	155 60 24X24 4 #6	155 60 24X24 4 #6	155 60 24X24 4 #6	155 60 24X24 4 #6	155 60 24X24 4 #6	105 40 24X24 4 #6	6785 1870
0				6115 1970 14 #14	8530 2540 36 #14	2260 1050 12 #9	295 195		4775 1680 10 #14	6635 1955 12 #14		10625 3185 48 #14		7205 2650 16 #14	2880 1345	145 75 24X24 4 #6	7155 1985 12 #14	345 165	345 165	345 165	345 165	225 105	6955 1900 58 #14 T
C1				6410 2150 72X40 14 #14	8735 2640 58X58 16 #14	2470 1195 30X30 12 #9	395 260 24X24 4 #6		4955 1800 38X36 10 #14	6895 2115 48X48 12 #14		10975 3400 58X56 14 #14		7435 2800 42X42 18 #14	3130 1515 38X36 10 #11	250 150 24X24 4 #6	7460 2175 48X48 12 #14	495 265 24X24 4 #6	495 265 24X24 4 #6	495 265 24X24 4 #6	495 265 24X24 4 #6	320 170 24X24 4 #6	7110 1965 54X54 14 #14
FLOOR / COLUMN MARK	CONCRETE STRENGTH	C21.9-CF.2	C25-CF.2	C23.3-CF.2	C1-CF.4	C16-CF.8	C18-CF.9	C10.6S-CG C10.6-CG	C12.9-CG	C20S-CG	C1-CH	C1-CH.2	C10.6S-CH.5	C12.9-CH.5	C16-CH.5	C1-CH.9	C20S-CJ	C8-CJ.8	C10-CJ.8	C12-CJ.8	C12.9-CJ.8	C16-CJ.8	C18-CJ.8	C1-CK

COLUMN MARK / FLOOR	CONCRETE STRENGTH	C1-CKS	C2-CL	C20S-CM	C4-CN C2.9-CN	C6-CN	C8-CN	C8.6S-CN C10-CN	C12-CN	C14-CN	C16-CN	CONCRETE STRENGTH	COLUMN MARK / FLOOR
24													24
23	10 KSI HIGHLIGHTED COLUMNS IN THIS GROUP: 12 KSI	4610 1100 36X36 10 #10	3195 725 30X30 8 #10	1630 505 24X24 6 #9	3670 1090 30X36 10 #10	3800 1130 30X36 10 #10	3800 1130 30X36 14 #10	3245 945 30X36 12 #10	2600 875 30X30 8 #10	1245 285 24X30 8 #10			23
22		4755 1130 10 #10	3325 755 8 #10	1730 525	3845 1125 10 #10	3960 1170 30X36 10 #10	3960 1170 30X36 14 #10	3400 985 30X36 12 #10	2755 910	1385 320			22
21		4900 1160 12 #10	3450 785 12 #10	1830 545	4000 1160 16 #10	4125 1210 38X36 12 #10	4125 1210 38X36 12 #10	3565 1025 38X36 12 #10	2915 950	1525 355			21
20		5045 1195 12 #10	3580 810 30X30 12 #10	1940 565 24X24 6 #9	4150 1195 30X36 16 #10	4285 1245	4285 1245 12 #10	3725 1060	3070 985 30X30 8 #10	1675 395			20
19		5190 1225 16 #14	3710 840 30X36 10 #10	2055 585 30X30 8 #10	4310 1235 36X36 12 #10	4445 1285	4445 1285 12 #11	3890 1100	3225 1025 30X36 10 #10	1825 430			19
18		5365 1325 16 #14	3865 925	2190 660	4500 1345 12 #10	4645 1400 12 #10	4645 1400 12 #11	4090 1215 12 #10	3425 1145	2015 550			18
17		5510 1360 18 #14	3995 955	2315 685	4660 1385 12 #11	4810 1440 16 #11	4810 1440 18 #11	4250 1255 20 #10	3580 1180	2175 590			17
16		5655 1390 18 #14	4125 985	2445 710	4815 1420	4970 1480 16 #11	4970 1480 18 #11	4415 1295 20 #10	3740 1220	2340 630			16
15		5800 1425 12 #14	4255 1010	2580 735	4970 1455	5135 1515 8 #11	5135 1515 12 #11	4575 1330 12 #10	3900 1255	2505 670	140 45 24X30 6 #10		15
14		5945 1455 12 #14	4385 1040	2720 760	5130 1490	5295 1555 8 #11	5295 1555	4735 1370 12 #10	4055 1295	2675 715 24X30 8 #10	280 80		14
13		6090 1490 16 #14	4515 1070	2865 790	5285 1530	5460 1590 12 #11	5460 1590	4900 1405 14 #10	4215 1335	2850 760 30X30 8 #10	430 115		13
12		6235 1520 16 #14	4645 1095	2955 805	5440 1565	5620 1630 12 #11	5620 1630 12 #11	5060 1445 14 #10	4375 1370 30X36 10 #10	3005 795	555 140		12
11		6380 1555 20 #14	4775 1125	3045 820	5595 1600	5780 1670 12 #14	5780 1670 16 #14	5225 1480 14 #14	4535 1410 38X36 12 #10	3160 835	680 165		11
10		6525 1585 20 #14	4905 1155 30X36 10 #10	3130 835	5755 1640 12 #11	5945 1705 12 #14	5945 1705 16 #14	5385 1520 14 #14	4700 1445	3315 870	815 195		10
9		6675 1615 22 #14	5040 1185 38X36 12 #10	3220 850	5910 1675 16 #14	6105 1745 20 #14	6105 1745 20 #14	5550 1560 20 #14	4860 1485	3470 910	950 225		9
8		6820 1650 22 #14	5170 1210	3310 865	6065 1710 16 #14	6270 1780 20 #14	6270 1780 20 #14	5710 1595 20 #14	5025 1520	3625 945 8 #10	1095 255		8
7	12 KSI HIGHLIGHTED COLUMNS IN THIS GROUP: 14 KSI	6965 1680 16 #14	5305 1240	3400 885	6225 1745 20 #14	6430 1820 22 #14	6430 1820 22 #14	5870 1635 22 #14	5185 1560	3780 985 12 #10	1240 285		7
6		7155 1715 38X36 16 #14	5480 1270 38X36 12 #10	3520 900 38X30 8 #10	6425 1785 38X36 20 #14	6640 1855 38X36 22 #14	6640 1855 38X36 22 #14	6080 1670 38X36 22 #14	5395 1600 38X36 12 #10	3980 1025 30X30 12 #10	1425 315 24X30 6 #10		6
5M		7385 1815 TRANSFER WALL	5685 1360 42X42 12 #14	3665 955 38X36 16 #14	6690 1895 78X36 28 #14	6900 1975 42X42 22 #14	6900 1975 42X42 22 #14	6340 1790 42X42 16 #14	5655 1715 42X42 18 #14	4235 1140 38X36 12 #10	1650 425 30X30 8 #10		5M
5		7440 1815 TRANSFER WALL	5740 1360	3705 955	6765 1895	6950 1975	6950 1975	6390 1790	5705 1715 18 #14	4275 1140	1680 425		5
4			5975 1505	4005 1035 38X36 16 #14	7060 2080 78X36 28 #14	7230 2165 22 #14	7230 2165 22 #14	6670 1980	5985 1905 14 #14	4650 1295	2260 490		4
3			6205 1650 42X42 12 #14	4215 1180 42X42 30 #14 T	7345 2260 48X48 8 #14	7510 2355 42X42 24 #14	7510 2355 42X42 28 #14	6950 2170 16 #14	6265 2095 14 #14	4920 1495 38X36 12 #10	2515 725 30X30 8 #10		3
2			6420 1795 50X50 34 #14	4280 1180	7590 2440 12 #14	7760 2545 48X48 12 #14	7760 2545 48X48 12 #14	7190 2360 28 #14	6505 2285 22 #14	5155 1685 42X42 8 #14	2750 920 38X36 14 #10		2
1			6500 1795	4345 1180 30 #14 T	7815 2485	7995 2590	7995 2590	7410 2405 42X42 28 #14	6720 2330 22 #14	5375 1730	2970 970 14 #10		1
0			6715 1865 34 #14	4740 1370 8 #14	8090 2600	8275 2710	8275 2710	7690 2525 48X48 22 #14	6990 2450 14 #14	5640 1850	3245 1100 12 #10		0
C1			6875 1955 50X50 12 #14	5045 1560 42X42 8 #14	8290 2715 48X48 12 #14	8485 2830 48X48 12 #14	8485 2830 48X48 12 #14	7900 2645 48X48 22 #14	7190 2570 42X42 14 #14	5840 1970 42X42 8 #14	3455 1230 38X36 12 #10		C1
FLOOR / COLUMN MARK	CONCRETE STRENGTH	C1-CKS	C2-CL	C20S-CM	C4-CN C2.9-CN	C6-CN	C8-CN	C8.6S-CN C10-CN	C12-CN	C14-CN	C16-CN	CONCRETE STRENGTH	FLOOR / COLUMN MARK

COLUMN NOTES:

1. FOR TOP OF STRUCTURAL SLAB ELEVATIONS SEE PLANS
2. PROVIDE COMPRESSION LAP SPLICE AT ALL VERTICAL BARS UNLESS OTHERWISE NOTED
   SEE COLUMN LAP SPLICE SCHEDULE FOR SPLICE LENGTH
3. AT COLUMNS DESIGNATED AS TENSION (T) PROVIDE TENSION LAP SPLICE AT ALL VERTICAL BARS
   SEE COLUMN LAP SPLICE LENGTH SCHEDULE FOR SPLICE LENGTH
4. PROVIDE #4@12" TIES UNLESS OTHERWISE NOTED
   TIE SPACING IS NOT TO EXCEED LEAST COLUMN DIMENSION OR 16 VERICAL BAR DIAMETERS
5. COLUMN SIZES SHOWN ARE PLAN DIMENSIONS IN INCHES FOR COLUMN ORIENTATION SEE PLAN
6. COLUMN LOADS SHOWN ON SCHEDULE ARE AS FOLLOWS:
   XXX = SERVICE AXIAL DEAD LOAD IN KIPS x 1.2
   XXX = SERVICE AXIAL REDUCED LIVE LOAD IN KIPS x 1.6
7. WHERE SCHEDULED INFORMATION IS NOT SHOWN SEE FLOOR BELOW

COLUMN LEGEND:

8. ★: SEE CROWN ELEVATIONS S3-0320.
9. TWO GRID LABELS THAT APPEAR IN ONE CELL INDICATE SAME COLUMN SHIFTS.
10. ALL ENCASED STEEL SHAPES ARE GR. 50.
11. BU 36X36X3.5 = BUILT UP SHAPE b x d x t.

Damian Titus
Buildings
APPROVED
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Key Plan

Issue Date:
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HYE -TC -S6-0402

Drawing Title

COLUMN SCHEDULE II

Drawing Number
S6-0402

B-Scan Drawing Number
S-131.00 SHEET 131 OF 133

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