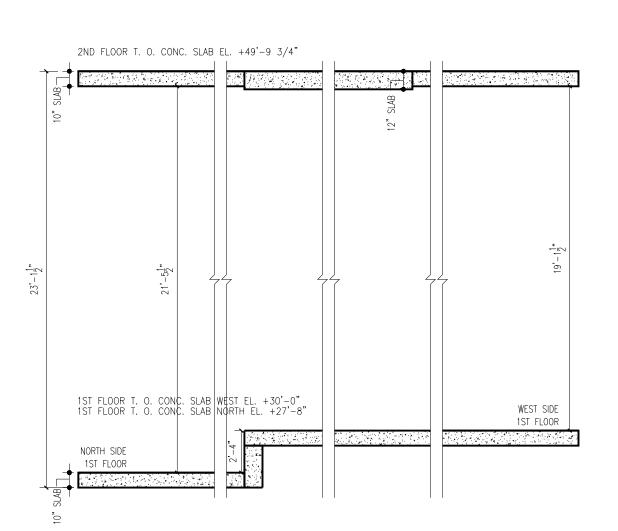
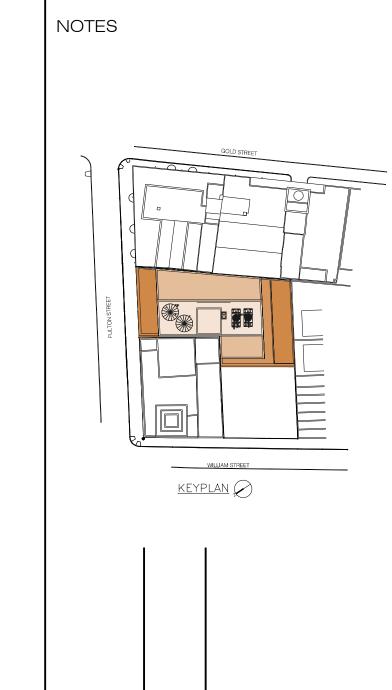


SCALE: 1/8" = 1'-0"



2 HEIGHT DIAGRAM

SCALE: 3/16" = 1'-0"



8 01/06/2017
7 11/11/2016
6 10/07/2016
5 07/06/2016
1 06/20/2016
3 06/10/2016
2 04/29/2016
1 02/25/2016

Number: Date: Revision:

THE LIGHTSTONE GROUP 130 WILLIAM STREET PROPERTY OWNER LLC 460 PARK AVE, 13TH FLOOR NEW YORK, NY 10022 TEL. (212) 616.9971

PROJECT NAME: 130 WILLIAM STREET

ADDRESSES: 130 WILLIAM STREET

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MCNAMARA SALVIA

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MEP Engineer

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Landscape Architect

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Geotech Engineer
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512 7th Avenue, 6th Fl. New York, NY 10018 Tel (646) 484.3252 Fax (646) 484.3251 PW GROSSER CONSULTING, INC Environmental Consultant

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DOB STAMPS & SIGNATURES:

Clara Gomez

APPROVED

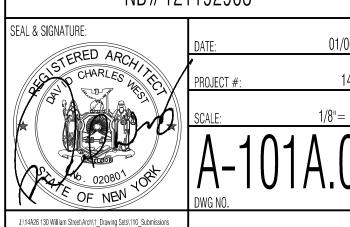
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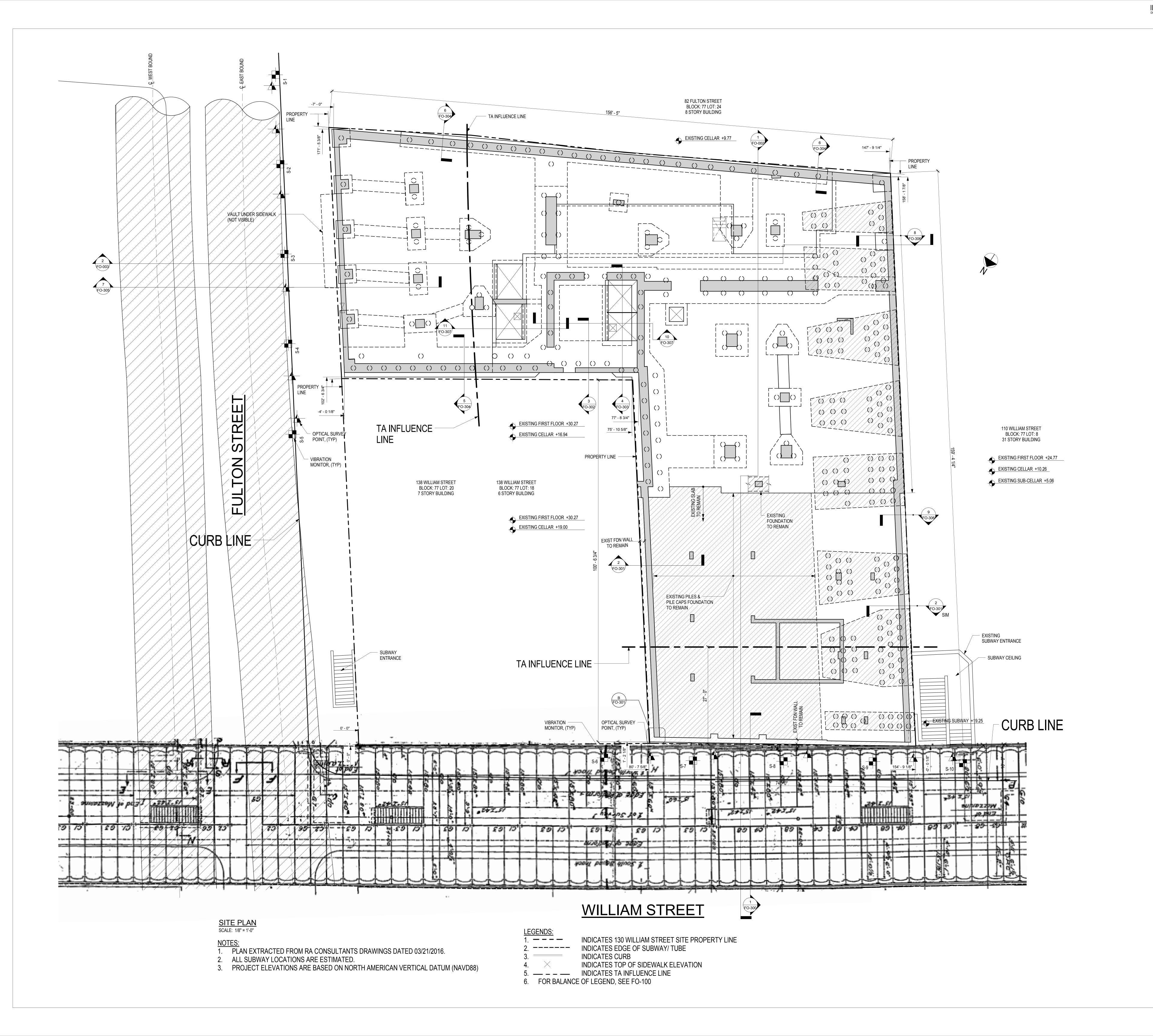
Date: 04/03/2017:

NYC Development Hub

1ST FLOOR PLAN OVERALL

UVERALL NB#121192903





01/06/2017 HUB SUBMISSION
11/11/2016 CORE AND SHELL BUY SET
10/19/2016 MTA APPROVAL
10/07/2016 CORE AND SHELL BID SET
09/09/2016 MTA APPROVAL
07/28/2016 FOUNDATION BID SET
07/06/2016 ISSUED TO DOB

06/24/2016 MTA APPROVAL 06/20/2016 100% DD SUBMISSION

Number: Date: Revision:

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Clara Gomez

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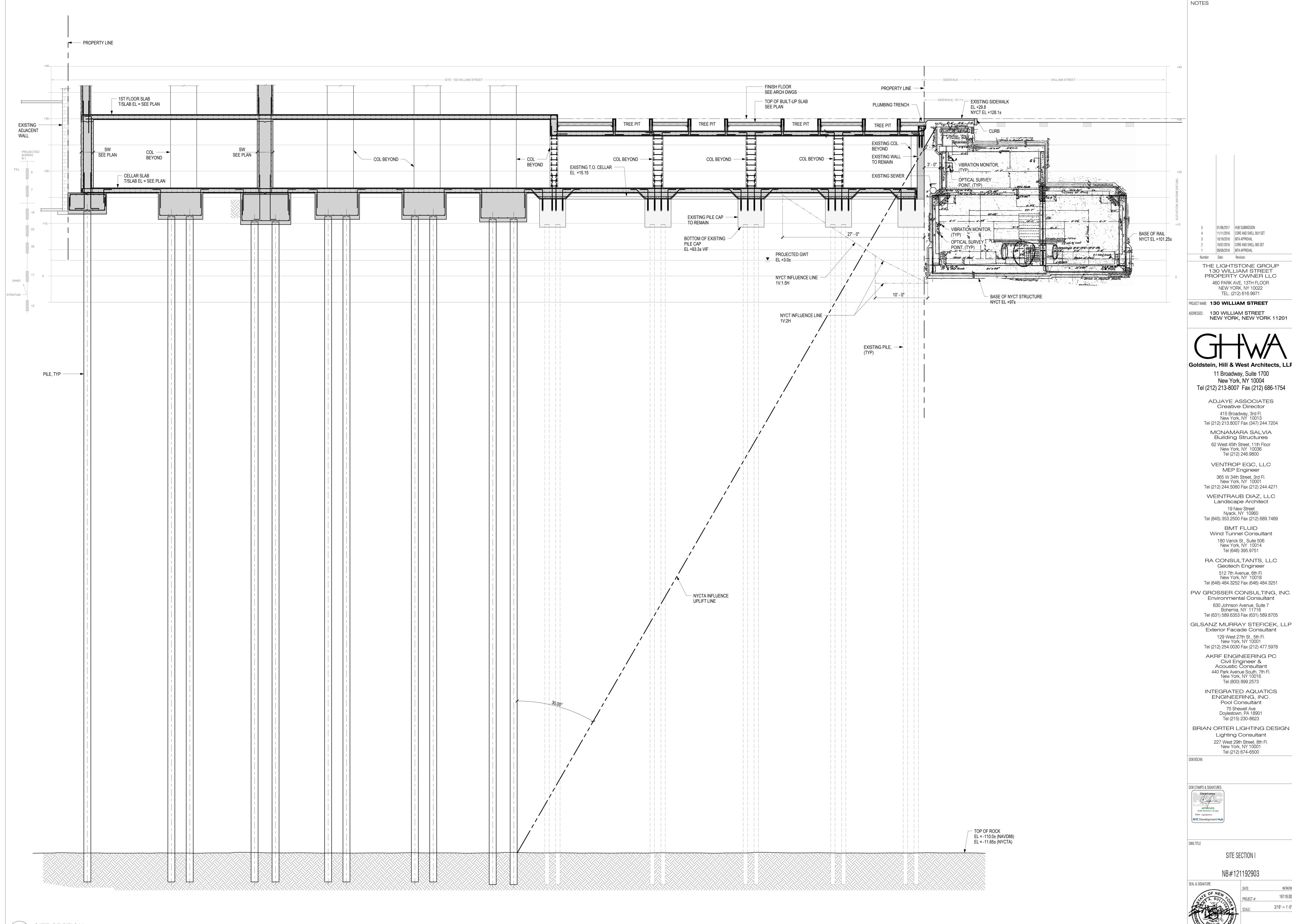
DWG TITLE

SITE PLAN NB#121192903



T/8" = 1'-0"

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1 SITE SECTION

SCALE: 3/16" = 1'-0"

SITE SECTION SCALE: 3/16" = 1'-0"

- 1. THE NYC TRANSIT (NYCT) RESERVES THE RIGHT TO PLACE INSPECTORS, FLAGMEN OR OTHER PERSONNEL IN THE SUBWAY STRUCTURES DURING CONSTRUCTION OF THE PROJECT LINKED BY A TELEPHONE SYSTEM, IF DEEMED NECESSARY, TO OBSERVE THE EFFECTS OF THE CONSTRUCTION ON THE TRANSIT FACILITIES. NYCT FURTHER RESERVES THE RIGHT TO PLACE SUCH PERSONNEL WHENEVER, IN ITS OPINION, THE PROJECT CONDITIONS WARRANT SUCH PLACEMENT, REGARDLESS OF DISTANCE. THE COST OF SUCH PERSONNEL, TELEPHONE INSTALLATION AND ANY RE-ROUTES, DIVERSIONS OF SERVICE, WORK TRAINS, ETC., MADE NECESSARY BY THE PROJECT, MUST BE BORNE BY THE PROJECT OR THE RESPONSIBLE NEW YORK CITY/STATE AGENCY.
- 2. ALL ROCK EXCAVATION ADJACENT TO THE TRANSIT STRUCTURE IS TO BE CHANNEL DRILLED TWO FEET BELOW SUBGRADE.
- 3. IF TOP OF ROCK IS FOUND BELOW SUBWAY STRUCTURE, THE SUBWAY STRUCTURE MUST BE UNDERPINNED IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 4. IF ROCK IS SOFT OR SEAMY, LATERAL SUPPORTS MUST BE PROVIDED BELOW THE SUBWAY STRUCTURE IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 5. BLASTING WILL BE PERMITTED ONLY WITH LIGHT CHARGES SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND IN ACCORDANCE WITH THE REGULATIONS OF THE FIRE DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A DETAILED MONITORING PLAN, PROVIDING FOR MEASUREMENTS OF BOTH PARTICLE VELOCITY AND DISPLACEMENTS AT CRITICAL LOCATIONS OF THE NYCT STRUCTURE. THE MONITORING PLAN SHALL INCLUDE THRESHOLD AND UPSET LEVELS OF BOTH PARTICLE VELOCITY AND SETTLEMENT TOGETHER WITH AN ACTION PLAN FOR THEIR IMPLEMENTATION. THE CONTRACTOR SHALL SECURE AN APPROVED SEISMOLOGIST TO INSTALL AND OPERATE SUITABLE VELOCITY GAUGES TO CONTINUOUSLY MONITOR PARTICLE VELOCITY AND AN INDEPENDENT LICENSED SURVEYOR TO MONITOR DISPLACEMENTS. THE PRESENCE OF A QUALIFIED TECHNICIAN FROM MONITORING COMPANY IS NECESSARY TO PROVIDE THE VIBRATION READING UPON REQUEST OF NYCT ENGINEER. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE BLASTING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.
- 6. BEFORE PLACING CONCRETE, THE SUBGRADE OF THE FOUNDATIONS IN THE VICINITY OF THE SUBWAY STRUCTURE IS TO BE INSPECTED AND APPROVED BY NYCT'S ENGINEER.
- 7. IF ANY PORTION OF THE SUBWAY STRUCTURE OR FINISH IS DAMAGED, IT SHALL BE REPAIRED OR REPLACED WITH THE SAME MATERIALS IN PLACE, SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND AT THE EXPENSE OF THE PROJECT.
- 8. EXCAVATION EMBANKMENTS ARE TO BE SHORED AND BRACED, DRAWINGS INDICATING A SUGGESTED METHOD OF CONSTRUCTION ARE TO BE SUBMITTED TO NYCT FOR APPROVAL IN CONJUNCTION WITH THE PROJECT'S CONTRACT DRAWINGS. IN CASE OF EXCAVATION UNDERMINING THE SUBWAY STRUCTURE, UNDERPINNING MAY BE REQUIRED. DRAWINGS FOR UNDERPINNING ARE TO BE SUBMITTED TO NYCT FOR APPROVAL
- 9. TEMPORARY SHORING MAY BE PLACED IN DIRECT CONTACT WITH NYCT STRUCTURES ONLY IF THE NYCT STRUCTURE IS SHOWN TO BE ABLE TO SUPPORT ALL ANTICIPATED LOADS THAT CAN BE TRANSFERRED THROUGH. THE TEMPORARY STRUCTURES WITHOUT DAMAGING THE EXISTING STRUCTURE. AT THE COMPLETION OF THE PROJECT, THESE TEMPORARY SHORING AND BRACING SYSTEMS ARE TO BE REMOVED OR CUT-OFF AS APPROVED
- 10. WHEN PILES ARE TO BE DRIVEN OR DRILLED ADJACENT TO THE SUBWAY STRUCTURE, BORING DATA, PILE LAYOUTS, SPECIFICATIONS AND INSTALLATION PROCEDURES ARE TO BE SUBMITTED TO NYCT FOR APPROVAL VELOCITY METERS ARE TO BE INSTALLED IN THE SUBWAY TUNNEL AT CRITICAL LOCATIONS TO MONITOR INDUCED VIBRATIONS. INDUCED DISPLACEMENTS ALONG THE TUNNEL STRUCTURE AND TRACK INVERT ARE TO BE MONITORED DURING DRIVING OR DRILLING. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE DRIVING OR DRILLING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.
- 11. NO PILES ARE PERMITTED TO BE INSTALLED BY ANY METHOD WITHIN THREE FEET OF SUBWAY STRUCTURE, MEASURED FROM THE EDGE OF THE PILE OR CASING TO THE WALL. CLOSED-END PILES WILL NOT BE PERMITTED TO BE DRIVEN WITHIN TEN FEET OF THE SUBWAY STRUCTURE.
- 12. ALL PILES ARE TO BE PLACED WITHIN A PREAUGERED CASED HOLE TO THE INFLUENCE LINE. THE CASING SHALL BE CLEANED WITHOUT DISTURBING THE SOIL OUTSIDE THE CASING AND THE PILE TO BE PLACED WITHIN THE CASING FOR INSTALLATION. THE PILES MAY THEN BE DRIVEN BEYOND THE INFLUENCE LINE WITHIN THE CASING.
- 13. THE INFLUENCE LINE SHALL START AT THE BOTTOM OF THE SUBWAY STRUCTURE AND EXTEND FROM 1H:1V TO 2H:1V SLOPE DEPENDING ON THE SOIL PROPERTIES AND GROUND WATER TABLE. FOR PILES INSTALLED WITHIN TEN FEET OF THE SUBWAY STRUCTURE, THE CASING SHALL BE EXTENDED UP TO THE BOTTOM OF THE SUBWAY
- 14. ALL PILES ARE TO BE DRIVEN OR DRILLED A MINIMUM OF TEN FEET BELOW THE INTERSECTION OF THE PILE CENTERLINE AND THE INFLUENCE LINE OF THE SUBWAY STRUCTURE.
- 15. THE USE OF "DOWN-THE-HOLE -HAMMERS" FOR INSTALLATION OF PILES THROUGH OVERBURDEN AND FILL WILL BE PERMITTED ONLY TO REMOVE BOULDERS. IT WILL NOT BE PERMITTED AS A MATTER OF COURSE TO ADVANCE THE HOLE. THEIR USE TO CONSTRUCT ROCK SOCKETS WILL NOT BE ALLOWED WITHIN 5 FEET OF THE NYCT STRUCTURE. THE USE OF MACHINE UTILIZING AIR FOR SOIL REMOVAL WILL NOT BE ALLOWED.
- 16. VIBRATORY HAMMERS WILL NOT BE PERMITTED WITHIN 75 FEET OF SUBWAY STRUCTURES. HOERAMS WILL NOT BE PERMITTED WITHIN 25 FEET OF SUBWAY STRUCTURES.
- 17. DYNAMIC COMPACTION METHODS USING DROPPED HEAVY WEIGHTS CANNOT BE CONDUCTED WITHIN 1000 FEET OF ANY NYCT STRUCTURE UNLESS IT IS SHOWN THAT INDUCED SETTLEMENTS AND VIBRATIONS WILL NOT DAMAGE THESE STRUCTURES. A SUITABLE MONITORING PLAN INCLUDING SETTLEMENT AND VIBRATION MEASUREMENTS MUST BE APPROVED BY NYCT'S ENGINEER FOR ALL SUCH OPERATIONS WITHIN THESE DISTANCES.
- 18. THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3 FEET OF NYCT STRUCTURES. POWER DUCT LINES, OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION.
- 19. ALL DEWATERING OPERATIONS CONDUCTED WITHIN 500 FEET OF THE NYCT STRUCTURE MUST BE PERFORMED IN ACCORDANCE WITH DRAWINGS AND PROCEDURES SUBMITTED TO NYCT FOR APPROVAL. THE DISTANCE FROM THE STRUCTURE TO THE DEWATERING OPERATION CAN BE REDUCED PROVIDED THAT SOIL CONDITIONS AT THE SITE INDICATE THAT THE RADIUS OF INFLUENCE OF THE DEWATERING IS LESS THAN 500 FEET. FOR DEWATERING WITHIN THE RADIUS OF INFLUENCE, THE DEWATERING PROGRAM MUST BE SHOWN TO HAVE NEGLIGIBLE INFLUENCE ON SETTLEMENTS OF THE NYCT STRUCTURE.
- 20. SUBWAY ENTRANCES (VENTILATORS, ETC.) ARE TO BE UNDERPINNED OR SHORED AND BRACED IF DIRECTED BY NYCT'S ENGINEER.
- 21. NYCT, AT ITS DISCRETION, RESERVES THE RIGHT TO REQUIRE THE PROJECT TO CLOSE OR MAINTAIN AND PROTECT EXISTING SUBWAY ENTRANCES, VENTILATORS, ETC. ADJACENT TO THE PROJECT DURING CONSTRUCTION. SUCH CONSTRUCTION MAY INCLUDE UNDERPINNING, SHORING, BRACING AND ERECTION OF SUITABLE BARRICADES. AND/OR CANOPIES AND SHIELDS. SUCH PROTECTION SHALL BE IN ACCORDANCE WITH DRAWINGS SUBMITTED TO NYCT FOR APPROVAL.
- 22. IF SHIELDS ARE TO BE INSTALLED TO PROTECT NYCT FACILITIES AND/OR THE PUBLIC, PLANS SHOWING THE LOCATION, TYPE AND METHOD OF ATTACHMENT TO THE TRANSIT STRUCTURE MUST BE SUBMITTED TO NYCT FOR
- ALL LUMBER AND PLYWOOD USED FOR PROTECTION OF SUBWAY FACILITIES MUST BE FIRE RETARDANT.
- 24. SUBWAY EMERGENCY EXITS MUST BE KEPT CLEAR AT ALL TIMES.
- 25. IN EXCAVATING OVER OR NEAR THE SUBWAY ROOF, SPECIAL CARE SHALL BE EXERCISED SO THAT THE THIN CONCRETE PROTECTION OF THE SUBWAY WATERPROOFING IS NOT DAMAGED.
- 26. BURNING OF, WELDING TO OR DRILLING THROUGH EXISTING STEEL STRUCTURES WILL NOT BE PERMITTED EXCEPT AS SHOWN ON DRAWINGS APPROVED BY NYCT.
- 27. HORIZONTAL AND VERTICAL CONTROL SURVEY DATA OF THE EXISTING NYCT STRUCTURE IS TO BE TAKEN BY A LICENSED LAND SURVEYOR TO MONITOR ANY MOVEMENTS THAT OCCUR DURING CONSTRUCTION AND TO SHOW THAT THE INDUCED MOVEMENTS ARE WITHIN ALLOWABLES NOTED BELOW. IF ANY MOVEMENTS EXCEED ALLOWABLES, REMEDIATION AS APPROVED BY NYCT SHALL BE PERFORMED.

<u>STRUCTURE</u> NOTIFY NYCT ENGINEER STOP WORK ELEVATED 1/4 INCH 1/8 INCH 1/4 INCH 1/2 INCH SUBWAY

28. BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE BUS DIVERSIONS. THESE ARRANGEMENTS SHALL BE MADE THROUGH:

> MS. SARAH WYSS ACTING DIRECTOR, OPERATIONS PLANNING NEW YORK CITY TRANSIT 2 BROADWAY, ROOM A17.82 NEW YORK, NEW YORK 10004 TELEPHONE NUMBER 646/252-5517

WHEN IMPACTING ANY BUS STOP, SPECIAL OPERATIONS MUST BE NOTIFIED TWO WEEKS IN ADVANCE.

- 29. DUCT LINES MUST BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. ANY INTERFERENCE WITH DUCT LINES SHOULD BE REPORTED TO NYCT INSPECTOR. WHEN A DUCT LINE CONTAINING CABLES IS TO BE REMOVED, OR WHEN MASONRY ADJACENT THERETO IS TO BE REMOVED, PENETRATED, OR DRILLED, THE WORK SHALL BE DONE WITH HAND LABOR ENTIRELY, USING HAMMER AND CHISEL. JACKHAMMERS, BULL POINTS OR OTHER POWER EQUIPMENT SHALL NOT BE USED.
- 30. WHERE MANHOLES ARE ENCOUNTERED:
- a) THEY SHALL BE PROTECTED AND RAISED OR LOWERED AS REQUIRED, TO MATCH THE NEW STREET GRADE.
- b) IF MANHOLE COVERS ARE RAISED OR LOWERED, PROTECT CABLES IN MANHOLE BY WOOD SHEETING OF 2" NOMINAL THICKNESS.
- c) PRIOR TO THE START OF CONSTRUCTION OPERATIONS AFFECTING MANHOLES AND DUCT LINES, SEVEN DAYS NOTICE MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE OF WAY, AT 718/694-1358.
- 31. CONSTRUCTION WORK DONE NEAR VENT GRATINGS AND HATCHES SHALL BE AS FOLLOWS:
  - a) UNLESS APPROVED BY THE NYCT'S ENGINEER, ALL VENT GRATINGS AND HATCHES SHOULD REMAIN OUTSIDE THE CONSTRUCTION SITE, SEPARATED BY A CONSTRUCTION FENCE. PROTECTIVE SHIELDS MUST BE PROVIDED OVER VENT GRATINGS AS REQUIRED BY NYCT'S ENGINEER.
- b) NO BUILDING MATERIAL, VEHICLES OR CONSTRUCTION EQUIPMENT IS TO BE STORED OR RUN OVER VENT. GRATINGS, HATCHES OR EMERGENCY EXITS.
- c) DETAILS OF SIDEWALK RECONSTRUCTION AROUND VENT GRATINGS, HATCHES AND EMERGENCY EXITS ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 32. TRACTORS, CRANES, EXCAVATORS, ETC. USED IN THE VICINITY OF THE ELEVATED STRUCTURES SHALL BE ISOLATED FROM THE GROUND. SINCE THE ELEVATED STRUCTURE IS USED AS A NEGATIVE RETURN PATH, WITH A CONSEQUENT POTENTIAL BETWEEN IT AND THE GROUND, ANY CONTACT BETWEEN THE STRUCTURE AND GROUNDED EQUIPMENT COULD RESULT IN BURNING OF THE STEEL.
- 33. TEMPORARY CONSTRUCTION SHEDS, BARRICADES OR PLYWOOD PARTITIONS MUST BE A MINIMUM OF 5'-0" FROM EDGE OF FINISHED PLATFORM.
- 34. STATION AREAS OR STAIRWAY/CLOSINGS: THE GENERAL REQUIREMENTS FOR STATION AREAS OR STAIRWAY/CLOSINGS ARE AS FOLLOWS:
- a) ONLY ONE STAIRWAY AT EACH STATION WILL BE PERMITTED TO BE CLOSED AT THE SAME TIME. APPROVALS FOR CLOSING ANY STAIRWAY MUST BE OBTAINED FROM THE DIVISION OF STATION OPERATIONS AT LEAST THREE WEEKS IN ADVANCE.
- b) MR. ASHOK PATEL, DIRECTOR, OFFICE OF STATION PROGRAMS; TELEPHONE 718/694-1695 OF THE DIVISION OF STATIONS MUST BE NOTIFIED ONE WEEK PRIOR TO THE ACTUAL CLOSING AND REOPENING OF THE ENTRANCE.
- c) SIGNAGE MUST BE SUPPLIED AND POSTED AT LEAST ONE WEEK IN ADVANCE. ADVISING THE PUBLIC OF THE PROPOSED SUBWAY STAIR CLOSING. HOWEVER, IF IT IS AN ENTIRE ENTRANCE CLOSING, SIGNAGE MUST BE POSTED TWO WEEKS IN ADVANCE.
- d) THE STREET ENTRANCE STAIRWAY SHOULD NOT BE CLOSED UNLESS MANPOWER AND MATERIALS ARE AVAILABLE TO COMMENCE WORK ON DATES PERMITTED.
- e) ONCE THE CLOSING IS EFFECTED, CONSTRUCTION SIGNS MUST BE PLACED AT APPROPRIATE LOCATIONS ON THE BARRICADES AT THE STREET AND MEZZANINE LEVELS, STATING THE CONTRACTOR'S NAME, 24 HOUR EMERGENCY TELEPHONE NUMBER, CONTRACT NUMBER, THE DURATION OF THE CLOSING, DIRECTION TO AN ALTERNATE ENTRANCE/EXIT. AND AN APOLOGY FOR THE INCONVENIENCE TO OUR CUSTOMERS.
- f) EXISTING STATION SIGNAGE MUST BE ADJUSTED TO REFLECT ANY CHANGES IN ACCESS/EGRESS.
- a) BARRICADES ARE TO BE PAINTED AND KEPT GRAFFITI FREE AT ALL TIMES. THE CONTRACTOR MUST MAINTAIN THE BARRICADED AREA CLEAN OF ALL DEBRIS.
- h) ALL MATERIALS ARE TO BE PROPERLY STORED AND SECURED AWAY FROM PASSENGER TRAFFIC.
- i) THE CONTRACTOR MUST REMOVE ALL WASTE MATERIAL AND BARRICADES FROM ALL STATION AREAS WHEN CONSTRUCTION IS COMPLETED.
- i) INSPECTION OF THE AREA UNDER CONSTRUCTION BY AUTHORIZED STATION DEPARTMENT EMPLOYEES SHALL NOT BE INHIBITED.
- k) IF STREETLIGHTS ON THE SIDEWALKS ARE AFFECTED, TEMPORARY LIGHTS SHALL BE PROVIDED.
- 35. IF NEW CONCRETE CONSTRUCTION IS JOINED TO EXISTING CONCRETE, DOWELS AND KEYWAYS ARE TO BE USED IN ACCORDANCE WITH NYCT STANDARDS.
- 36. IF THE PROJECT INVOLVES CONSTRUCTION OR ALTERATION OF A SUBWAY FACILITY ON PRIVATE PROPERTY, THE PROPERTY OWNERS WILL BE REQUIRED TO ENTER INTO AN AGREEMENT WITH NYCT PERTAINING TO ALL WORK AFFECTING THE TRANSIT FACILITIES AND CLEARLY DEFINING LIMITS AND RESPONSIBILITY FOR MAINTENANCE AND LIABILITY.
- 37. WHEREVER A NEW SIDEWALK IS BEING PLACED ADJACENT TO NYCT STRUCTURES THE FOLLOWING WILL BE REQUIRED:
- a) THE TOP OF THE NEW SIDEWALK SHALL BE FLUSH WITH THE SUBWAY VENT GRATINGS, HATCHES AND EMERGENCY EXITS.
- b) THE SLOPE OF THE NEW SIDEWALK SHALL BE SUCH THAT THE DRAINAGE BE AWAY FROM THESE STRUCTURES.
- c) A 1/2" PREMOLDED FILLER SHALL BE INSTALLED BETWEEN THE NEW SIDEWALK AND NYCT STRUCTURE.
- d) WHERE SIDEWALK ELEVATIONS ARE BEING CHANGED DETAILS OF PROPOSED WORK AROUND NYCT STRUCTURES ARE TO BE SUBMITTED FOR APPROVAL.
- 38. BEFORE ENTERING NYCT PROPERTY, CONTRACTOR OR SUBCONTRACTOR'S PERSONNEL SHALL HAVE ATTENDED NYCT TRACK SAFETY TRAINING AND EXPECT TO FOLLOW NYCT RULES AND REGULATIONS AS PER TRAINING AND ENGINEER INSTRUCTIONS
- 39. BEFORE THE START OF ANY WORK, THE CONTRACTOR SHALL MAKE AN EXAMINATION, IN THE PRESENCE OF NYCT'S ENGINEER, OF THE INTERIOR AND EXTERIOR OF NYCT SUBWAY OR OTHER STRUCTURE ADJACENT TO THE PROPOSED WORK. THE PERSON OR PERSONS AUTHORIZED BY THE CONTRACTOR TO MAKE THESE EXAMINATIONS SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL PHOTOGRAPHS AS MAY BE NECESSARY OR ORDERED TO INDICATE THE EXISTING CONDITION OF NYCT STRUCTURE. ONE COPY OF EACH PHOTOGRAPH, EIGHT INCHES BY TEN INCHES IN SIZE, AND THE NEGATIVE IS TO BE SUBMITTED TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, 130 LIVINGSTON STREET, ROOM 8044D, BROOKLYN, NEW YORK 11201, TELEPHONE 718/694-1358 BEFORE THE START OF CONSTRUCTION.
- 40. ALL ARCHITECTURAL DETAILS (TOKEN BOOTHS, RAILINGS, DOORS, ETC.) ARE TO CONFORM TO THE LATEST NYCT STANDARDS. THESE STANDARDS ARE AVAILABLE AT NYCT.
- 41. STANDARD NYCT INSURANCE CLAUSES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS. PROOF THAT THE NECESSARY INSURANCE IS IN EFFECT WILL BE REQUIRED BEFORE WORK CAN COMMENCE
- 42. AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO TRANSIT FACILITIES, ONE SET OF VELLUMS OR MYLARS, FIVE SETS OF 35MM MICROFILM, AND ELECTRONIC COPIES COMPLYING TO MICROSTATION.DGN FORMAT OF "APPROVED AS-BUILTS" MUST BE PROVIDED TO NYCT FOR ITS RECORDS. FOR DETAILS OF SPECIFIC REQUIREMENTS CONTACT NYCT OUTSIDE PROJECTS.
- 43. AT LEAST SEVEN WORKING DAYS PRIOR TO THE START OF CONSTRUCTION OPERATIONS, NOTIFICATION MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, AT 718/694-1358. THE CONTRACTOR TO PROVIDE TEMPORARY QUARTERS NEAR THE JOB SITE FOR NYCT INSPECTORS CONTAINING A DESK AND TELEPHONE.

NYCT "NOT FOR BENEFIT" INSURANCE REQUIREMENTS

#### SECTION A: INSURANCE REQUIREMENTS

THE PERMITTEE AT ITS SOLE COST AND EXPENSE SHALL CARRY AND MAINTAIN POLICIES OF INSURANCE AT ALL TIMES DURING THE PERIOD OF PERFORMANCE UNDER THIS AGREEMENT AS HEREIN SET FORTH BELOW:

- WORKERS' COMPENSATION: INCLUDING EMPLOYER'S LIABILITY INSURANCE WITH LIMITS OF LIABILITY NOT LESS THAN \$2,000,000 WHICH MAY BE MET BY A COMBINATION OF PRIMARY AND EXCESS INSURANCE MEETING THE STATUTORY LIMITS OF NEW YORK STATE.
- COMMERCIAL GENERAL LIABILITY: (ISO 2001 FORM OR EQUIVALENT) APPROVED BY PERMITTOR IN THE PERMITTEE'S NAME WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$3,000,000 FOR EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS FOR INJURIES TO PERSONS (INCLUDING DEATH) AND DAMAGE TO PROPERTY, \$3,000,000 GENERAL AGGREGATE AND \$3,000,000 IN THE AGGREGATE WITH RESPECT TO PRODUCTS/COMPLETED OPERATIONS. THE LIMITS MAY BE PROVIDED IN THE FORM OF A PRIMARY POLICY OR COMBINATION OF PRIMARY AND UMBRELLA/EXCESS POLICY. WHEN THE MINIMUM CONTRACT AMOUNTS CAN ONLY BE MET WHEN APPLYING THE UMBRELLA/EXCESS POLICY, THE UMBRELLA/EXCESS POLICY MUST FOLLOW FORM OF THE UNDERLYING POLICY AND BE EXTENDED TO "DROP DOWN" TO BECOME PRIMARY IN THE EVENT PRIMARY LIMITS ARE REDUCED OR AGGREGATE LIMITS ARE EXHAUSTED. SUCH INSURANCE SHALL BE PRIMARY AND NON-CONTRIBUTORY TO ANY OTHER VALID AND COLLECTIBLE INSURANCE AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE.

SUCH POLICY SHOULD BE WRITTEN ON AN OCCURRENCE FORM, AND SHALL INCLUDE THE FOLLOWING COVERAGES:

- ADDITIONAL INSURED ENDORSEMENT (I.S.O. FORM CG 20 26 07/04) VERSION OR EQUIVALENT APPROVED BY THE PERMITTOR, SHALL NAME THE INDEMNITEES AS REFERENCED UNDER SECTION B OF THIS AGREEMENT AS ADDITIONAL INSUREDS.
- CONTRACTUAL LIABILITY ASSUMED BY THE PERMITTEE UNDER THIS AGREEMENT;
- PERSONAL AND ADVERTISING INJURY; PRODUCTS—COMPLETED OPERATIONS;
- INDEPENDENT CONTRACTORS;
- "XCU" (EXPLOSION, COLLAPSE, AND UNDERGROUND HAZARDS) WHERE NECESSARY;
- CONTRACTUAL LIABILITY EXCLUSION, APPLICABLE TO CONSTRUCTION OR DEMOLITION OPERATIONS TO BE PERFORMED WITHIN 50 FEET OF RAILROAD TRACKS, MUST BE REMOVED, WHERE NECESSARY;
- BUSINESS AUTOMOBILE LIABILITY: (ISO FORM CA 00 01 10 01 OR EQUIVALENT) APPROVED BY THE PERMITTOR IS REQUIRED IF PERMITTEE'S VEHICLE ENTERS PERMITTOR'S PROPERTY. THE INSURANCE MUST BE IN THE NAME OF THE PERMITTEE OR ITS CONTRACTOR ENTERING THE PERMITTOR PROPERTY WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$2,000,000 EACH ACCIDENT FOR CLAIMS FOR BODILY INJURIES (INCLUDING DEATH) TO PERSONS AND FOR DAMAGE TO PROPERTY ARISING OUT OF THE OWNERSHIP, MAINTENANCE OR USE OF ANY OWNED, HIRED OR NON-OWNED MOTOR VEHICLE.
- 4. RAILROAD PROTECTIVE LIABILITY: (ISO-RIMA OR EQUIVALENT FORM) APPROVED BY PERMITTOR COVERING THE WORK TO BE PERFORMED AT THE DESIGNATED JOB SITE AND AFFORDING PROTECTION FOR DAMAGES ARISING OUT OF BODILY INJURY OR DEATH, PHYSICAL DAMAGE TO OR DESTRUCTION OF PROPERTY, INCLUDING DAMAGE TO THE INSURED'S OWN PROPERTY AND CONFORMING TO THE FOLLOWING:
  - THE POLICY SHALL BE ISSUED TO THE "NAMED INSUREDS" LISTED UNDER SECTION B.
  - THE LIMIT OF LIABILITY SHALL BE NOT LESS THAN \$2,000,000 PER OCCURRENCE, SUBJECT TO A \$6,000,000 ANNUAL AGGREGATE:
  - POLICY MUST BE ENDORSED TO PROVIDE COVERAGE FOR CLAIMS ARISING FROM INJURY TO EMPLOYEES COVERED BY FEDERAL EMPLOYER'S LIABILITY ACT (FELA).
  - INDICATE THE NAME AND ADDRESS OF THE DESIGNATED CONTRACTOR, PROJECT LOCATION AND DESCRIPTION OF WORK, AND PERMIT NUMBER IF APPLICABLE
  - EVIDENCE OF RAILROAD PROTECTIVE LIABILITY INSURANCE, MUST BE PROVIDED IN THE FORM OF A POLICY. A DETAILED INSURANCE BINDER (ACORD OR MANUSCRIPT FORM) WILL BE ACCEPTED PENDING ISSUANCE OF THE POLICY, WHICH MUST BE PROVIDED WITHIN 30 DAYS FROM THE EFFECTIVE DATE.
- ENVIRONMENTAL INSURANCE: IN THE EVENT ENVIRONMENTAL OR POLLUTION EXPOSURES EXIST. THE PERMITTEE SHALL REQUIRE THE ENVIRONMENTAL CONTRACTOR OR SUB-CONTRACTOR TO PROVIDE THE APPLICABLE INSURANCE COVERING SUCH EXPOSURE. THE LIMITS AND TYPES OF INSURANCE PROVIDED MUST BE SATISFACTORY TO THE PERMITTOR AND APPROVED PRIOR TO THE START OF THE WORK.

#### SECTION B: INDEMNITEES (ADDITIONAL INSUREDS / NAMED INSUREDS)

NEW YORK CITY TRANSIT AUTHORITY ("NYCT"), THE MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY ("MABSTOA"), THE STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY ("SIRTOA"), THE METROPOLITAN TRANSPORTATION AUTHORITY ("MTA") INCLUDING ITS SUBSIDIARIES AND AFFILIATES, MTA CAPITAL CONSTRUCTION ("MTACC"), MTA BUS COMPANY ("MTA BUS"), AND THE CITY OF NEW YORK ("CITY" AS OWNER) AND THE RESPECTIVE AFFILIATES AND SUBSIDIARIES EXISTING CURRENTLY OR IN THE FUTURE OF AND SUCCESSORS TO EACH INDEMNIFIED PARTIES LISTED HEREIN.

SECTION C: GENERAL INSURANCE REQUIREMENTS

- INSURANCE COMPANIES: ALL OF THE INSURANCE REQUIRED BY THIS ARTICLE SHALL BE WITH COMPANIES LICENSED OR AUTHORIZED TO DO BUSINESS IN THE STATE OF NEW YORK WITH AN A.M. BEST COMPANY RATING OF NOT LESS THAN A-/VII OR BETTER AND REASONABLY APPROVED BY THE PERMITTOR/MTA.
- 2. FORMS: ALL FORMS SHALL COMPLY WITH THE INSURANCE SERVICES OFFICE, INC. ("ISO") OR ITS EQUIVALENT APPROVED BY THE INSURANCE DEPARTMENT OF THE STATE OF NEW YORK
- 3. POLICY DEDUCTIBLE / SELF INSURED RETENTION: INSURANCE MAY CONTAIN A DEDUCTIBLE AND OR SELF-INSURED RETENTION AND SHALL NOT EXCEED \$100,000. THE PERMITTEE SHALL BE RESPONSIBLE FOR ALL CLAIM EXPENSES AND LOSS PAYMENTS WITHIN THE DEDUCTIBLE OR SELF-INSURED RETENTION.
- 4. POLICY TERMS: THESE POLICIES MUST: (I) BE WRITTEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE PARAGRAPHS ABOVE, AS APPLICABLE: (II) BE ENDORSED IN FORM ACCEPTABLE TO INCLUDE A PROVISION THAT SHOULD THE POLICY BE CANCELED, MATERIALLY CHANGED, OR NOT RENEWED, NOTICE SHALL BE DELIVERED IN ACCORDANCE WITH THE INSURANCE POLICY PROVISIONS TO THE PERMITTOR, AND (III) STATE OR BE ENDORSED TO PROVIDE THAT THE COVERAGE AFFORDED UNDER THE PERMITTEE'S POLICIES SHALL APPLY ON A PRIMARY AND NOT ON AN EXCESS OR CONTRIBUTING BASIS WITH ANY POLICIES WHICH MAY BE AVAILABLE TO THE PERMITTOR/MTA, AND ALSO THAT THE PERMITTEE'S POLICIES, PRIMARY AND EXCESS, MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. (IV) IN ADDITION, PERMITTEE'S POLICIES SHALL STATE OR BE ENDORSED TO PROVIDE THAT, IF A SUBCONTRACTOR'S POLICY CONTAINS ANY PROVISION THAT MAY ADVERSELY AFFECT WHETHER PERMITTEE'S POLICIES ARE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE, PERMITTEE'S AND SUBCONTRACTOR'S POLICIES SHALL NEVERTHELESS BE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. AT LEAST TWO (2) WEEKS PRIOR TO THE EXPIRATION OF THE POLICIES, THE PERMITTEE SHALL ENDEAVOR TO PROVIDE EVIDENCE OF RENEWAL OR REPLACEMENT POLICIES OF INSURANCE, WITH TERMS AND LIMITS NO LESS FAVORABLE THAN THE EXPIRING POLICIES.

SECTION D: SUBMISSION OF INSURANCE

CERTIFICATES OF INSURANCE MAY BE SUPPLIED AS EVIDENCE OF POLICIES EXCEPT FOR RAILROAD PROTECTIVE LIABILITY. HOWEVER, IF REQUESTED BY THE PERMITTOR, THE PERMITTEE SHALL DELIVER TO THE PERMITTOR WITHIN FORTY-FIVE (45) DAYS A COPY OF SUCH POLICIES, CERTIFIED BY THE INSURANCE CARRIER AS BEING TRUE AND COMPLETE. IF A CERTIFICATE OF INSURANCE IS SUBMITTED, IT MUST: (1) BE PROVIDED ON THE PERMITTOR CERTIFICATE OF INSURANCE: (2) BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE CARRIER OR PRODUCER AND NOTARIZED; (3) DISCLOSE ANY DEDUCTIBLE, SELF-INSURED RETENTION, SUB-LIMIT, AGGREGATE LIMIT OR ANY EXCLUSIONS TO THE POLICY THAT MATERIALLY CHANGE THE COVERAGE: (4) INDICATE THE ADDITIONAL INSUREDS AS REQUIRED HEREIN UNDER SECTION B; THE PERMITTEE MUST PROVIDE A COPY OF THE ADDITIONAL INSURED ENDORSEMENT (ISO) FORM CG 20 26 07/04 OR ITS EQUIVALENT AND MUST REFERENCE THE POLICY INFORMATION: (5) INDICATE PROJECT NAME AND LOCATION ON THE CERTIFICATE: AND (6) EXPRESSLY REFERENCE THE INCLUSION OF ALL REQUIRED ENDORSEMENTS.

THE PERMITTEE OR ITS CONTRACTOR/SUBCONTRACTOR PERFORMING THE WORK SHALL FURNISH EVIDENCE OF ALL POLICIES BEFORE ANY WORK IS STARTED TO THE APPROPRIATE DEPARTMENT:

NEW AGREEMENTS: RENEWAL INSURANCE: MTA/NYCT MOW ENGINEERING MTA RISK INSURANCE MANAGEMENT ATTENTION: RUTH APOSTOL ATTENTION: MR. JOHN MALVASIO 2 BROADWAY - 21ST FLOOR 130 LIVINGSTON STREET BROOKLYN, NY 11201 NEW YORK, NY 10004

SECTION E: NO LIMIT OF LIABILITY THE MINIMUM AMOUNTS OF INSURANCE REQUIRED IN THE DETAIL DESCRIPTION OF POLICIES ABOVE SHALL NOT BE CONSTRUED TO LIMIT THE EXTENT OF THE PERMITTEE'S LIABILITY UNDER THIS AGREEMENT.

SECTION F: RIGHT TO REQUEST ADDITIONAL INSURANCE PERMITTEE FURTHER AGREES TO PROVIDE, AT PERMITTEE'S SOLE COST AND EXPENSE, SUCH INCREASED OR EXPANDED INSURANCE COVERAGE AS PERMITTOR MAY FROM TIME TO TIME AS DEEM APPROPRIATE

SECTION G: EVENT OF DEFAULT IF, AT ANY TIME DURING THE PERIOD OF THIS AGREEMENT, INSURANCE AS REQUIRED IS NOT IN EFFECT, OR PROOF THEREOF IS NOT PROVIDED TO THE PERMITTOR, THE PERMITTOR SHALL HAVE THE OPTIONS TO: (I) DIRECT THE PERMITTEE TO SUSPEND WORK OR OPERATION WITH NO ADDITIONAL COST OR EXTENSION OF TIME DUE ON ACCOUNT THEREOF; OR (II) TREAT SUCH FAILURE AS AN EVENT OF DEFAULT.

SECTION H: NOTICE OF CLAIM THE PERMITTEE SHALL IMMEDIATELY FILE WITH NYCT/MTA'S TORT DIVISION (WITH A COPY TO THE PROJECT MANAGER), 130 LIVINGSTON STREET, 11TH FLOOR, BROOKLYN, NEW YORK 11201, A NOTICE OF ANY OCCURRENCE LIKELY TO RESULT IN A CLAIM AGAINST NYCT/MTA AND SHALL ALSO FILE WITH THE TORTS DIVISION DETAILED SWORN PROOF OF INTEREST AND LOSS WITH THE CLAIM. THIS PARAGRAPH SHALL SURVIVE THE EXPIRATION OR EARLIER TERMINATION OF THE CONTRACT.

01/06/2017 HUB SUBMISSION 11/11/2016 | CORE AND SHELL BUY SET 10/19/2016 | MTA APPROVAL 10/07/2016 | CORE AND SHELL BID SET

09/09/2016 | MTA APPROVAL

07/06/2016 | ISSUED TO DOB

06/24/2016 | MTA APPROVAL

07/28/2016 | FOUNDATION BID SET

NOTES

06/20/2016 | 100% DD SUBMISSION Number: Date: Revision: THE LIGHTSTONE GROUP 130 WILLIAM STREET PROPERTY OWNER LLC 460 PARK AVE, 13TH FLOOR NEW YORK, NY 10022

TEL. (212) 616.9971 PROJECT NAME: 130 WILLIAM STREET ADDRESSES: 130 WILLIAM STREET

NEW YORK, NEW YORK 11201



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Wind Tunnel Consultant 180 Varick St., Suite 506 New York, NY 10014 Tel (646) 395.9751 RA CONSULTANTS, LLC Geotech Engineer

512 7th Avenue, 6th Fl. New York, NY 10018 Tel (646) 484.3252 Fax (646) 484.3251 PW GROSSER CONSULTING, INC Environmental Consultant 630 Johnson Avenue, Suite 7

Tel (631) 589.6353 Fax (631) 589.8705 GILSANZ MURRAY STEFICEK, LLP Exterior Facade Consultant 129 West 27th St., 5th Fl.

Tel (212) 254.0030 Fax (212) 477.5978 AKRF ENGINEERING PC Civil Engineer & Acoustic Consultan 440 Park Avenue South. 7th Fl. New York, NY 10016

INTEGRATED AQUATICS ENGINEERING, INC. Pool Consultant 75 Shewell Ave Doylestown, PA 18901 Tel (215) 230-8623

BRIAN ORTER LIGHTING DESIGN Lighting Consultant 227 West 29th Street, 8th Fl. New York, NY 10001

Tel (212) 674-6500

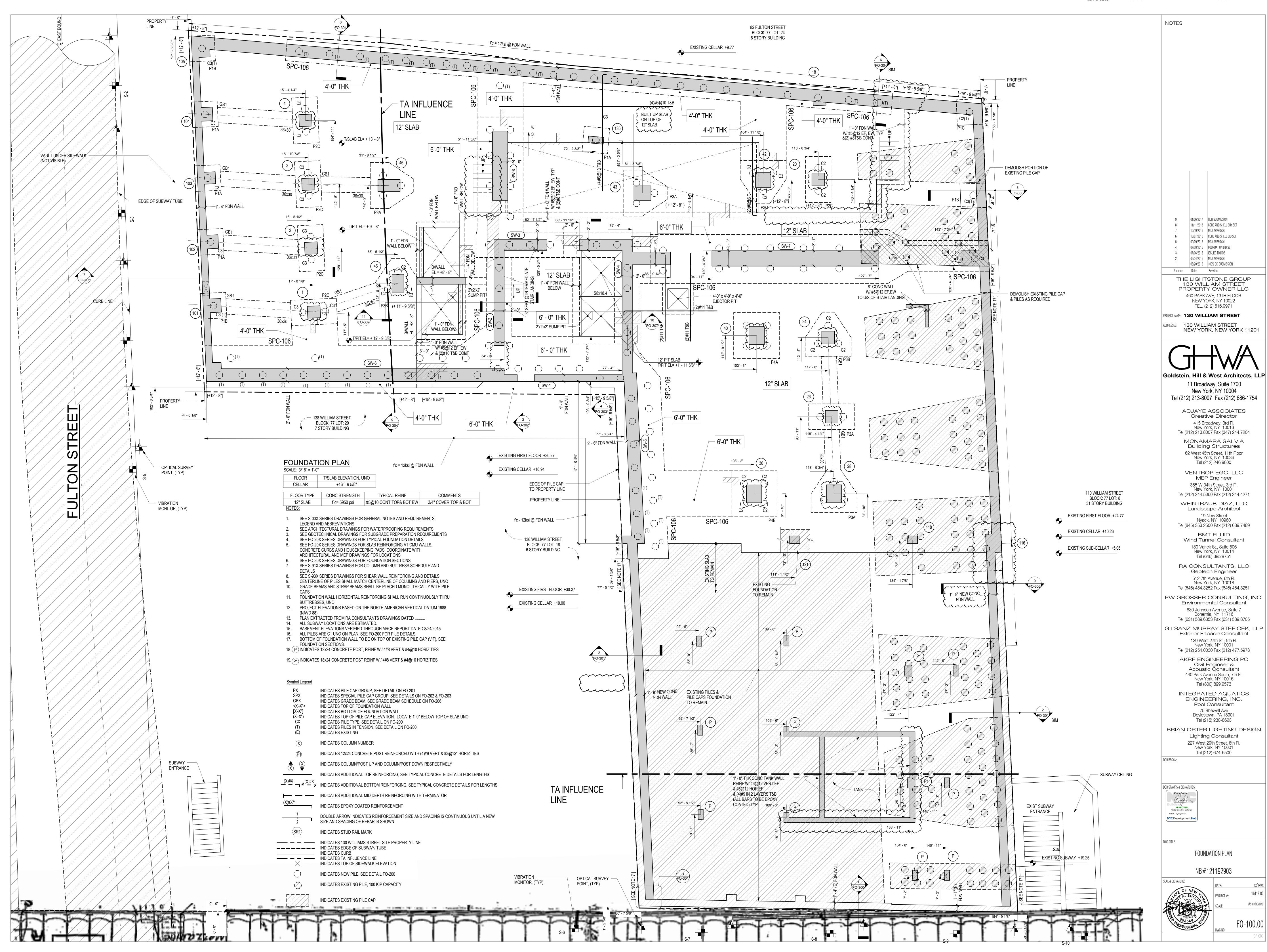


TA NOTES AND INSURANCE CLAUSES NB#121192903



16118.00 1" = 1'-0"

FO-004.00



#### CAISSON INSTALLATION NOTES:

- ALL CAISSONS SHALL BE INSTALLED AT LOCATIONS AS SHOWN ON CONTRACT DRAWINGS.
- UTILITY IDENTIFICATION AND EXPLORATION AS NECESSARY BY OTHERS.
- THE DIAMETER OF THE CUTTING SHOE SHALL NOT EXTEND MORE THAN A 1/4-INCH BEYOND THE DIAMETER OF THE CASING.
- 4. "GROUT" SHALL BE A MIXTURE OF CEMENT AND WATER OR SAND, CEMENT AND WATER TO ATTAIN SPECIFIED STRENGTH.
- GROUT SAMPLES SHALL BE TAKEN BY A LICENSED CONCRETE TESTING LAB IN ACCORDANCE WITH CODE REQUIREMENTS
- 6. ALL DRILLED CAISSONS SHALL BE VIDEO INSPECTED WITH A DOWN-THE-HOLE CAMERA TO VERIFY ROCK INTEGRITY IN LIEU OF LOAD
- CAISSONS SHALL BE INSPECTED BY RA CONSULTANTS LLC.

#### CAISSON INSTALLATION PROCEDURE:

- 1. MOBILIZE TO SITE.
- 2. SET UP RIG ON PROPER LOCATION AND PLUMB MAST
- 3. DRILL CAISSONS USING INTERNAL FLUSH DUPLEX DRILLING METHODS.
- MAINTAIN BOTTOM OF BIT FLUSH WITH BOTTOM OF CAISSON WITHIN 3-INCHES.
- CONTRACTOR SHALL ADJUST DRILLING PROCEDURE AS REQUIRED TO PREVENT LOSS OF GROUND, SETTLEMENT, AND/OR LATERAL MOVEMENT OF BUILDINGS, UTILITIES, AND OTHER STRUCTURES.
- EMBED CASING INTO COMPETENT ROCK AS INDICATED ON DRAWINGS.
- DRILL ROCK SOCKET AS INDICATED ON DRAWINGS.
- FLUSH HOLE CLEAN OF SPOILS. MAINTAIN POSITIVE HEAD AT ALL TIMES.
- PERFORM THE FOLLOWING UNDER OBSERVATION OF RA CONSULTANTS LLC.

- 9.1 ROCK SOCKETS FOR CAISSONS SHOULD BE VIDEO INSPECTED AND APPROVED BY THE ENGINEER OF RECORD PRIOR TO PLACING
- THREADED BAR OR GROUT.

  9.2 INTRODUCE REINFORCING THREADED BAR
  WITH SPACERS TO THE BOTTOM OF THE
- 9.3 TREMIE GROUT THE CAISSON FROM THE BOTTOM UP TO DISPLACE THE DRILLING FLUID AND SOIL CUTTINGS. CONTINUE GROUTING UNTIL CLEAR GROUT FLOWS OUT THE TOP OF THE CAISSON.
- 10. WAIT UNTIL GROUT HAS CURED FOR 24 HOURS OR MORE BEFORE DRILLING WITHIN 5 CAISSON DIAMETERS, UNLESS APPROVED BY RA CONSULTANTS LLC ENGINEER.

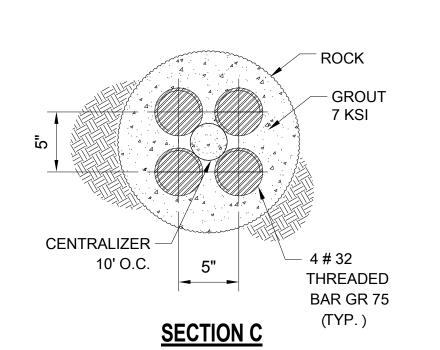
#### MINI-CAISSON DESIGN CRITERIA

CAISSON.

- CAISSONS DESIGNED PER 2014 NYC BUILDING CODE.
- 2. THE DESIGN IS BASED IN PART ON GEOTECHNICAL ENGINEERING REPORT PREPARED BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES AND DATED.

#### REQUIRED SPECIAL INSPECTIONS

- 1 CONCRETE CAST-IN-PLACE (BC 1704.4). 2 - CONCRETE - SAMPLING AND TESTING (BC 1905.6
- BC 1913.10).
- 3 CONCRETE DESIGN MIX (BC 1905.5 BC 1913.5). 4 - DEEP FOUNDATION ELEMENTS (BC 1704.8).



SECTION E

-

SECTION A

CENTRALIZER -

10' O.C.

- STEEL CASING GR75

- FULL LOAD #28

**HEX NUTS** 

4 # 32 THREADED

STEEL CASING GR75

(TYP.)

16"x 0.5"

- GROUT

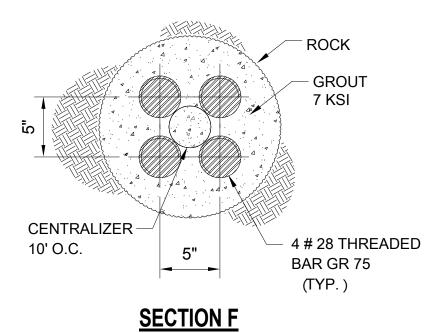
7 KSI

THREADED

BAR GR 75

STAGGERED

16"x 0.5" BELOW



**SECTION E** 

- STEEL CASING GR75

- FULL LOAD #28

**HEX NUTS** 

4 # 28 THREADED

- STEEL CASING GR75

BAR GR 75

(TYP.)

16"x 0.5"

— GROUT

4 # 28 THREADED

BAR GR 75

(TYP.)

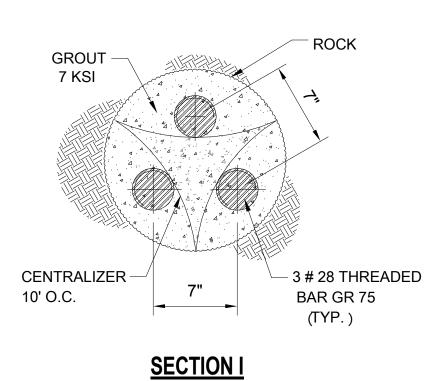
SECTION D

CENTRALIZER -

10' O.C.

STAGGERED

16"x 0.5" BELOW



**SECTION H** 

- STEEL CASING GR75

- FULL LOAD #28 HEX NUTS

- 3 # 28 THREADED

— STEEL CASING GR75

BAR GR 75

(TYP.)

16"x 0.5"

└─ 3 # 28 THREADED

BAR GR 75

(TYP.)

**SECTION G** 

7 KSI

CENTRALIZER -

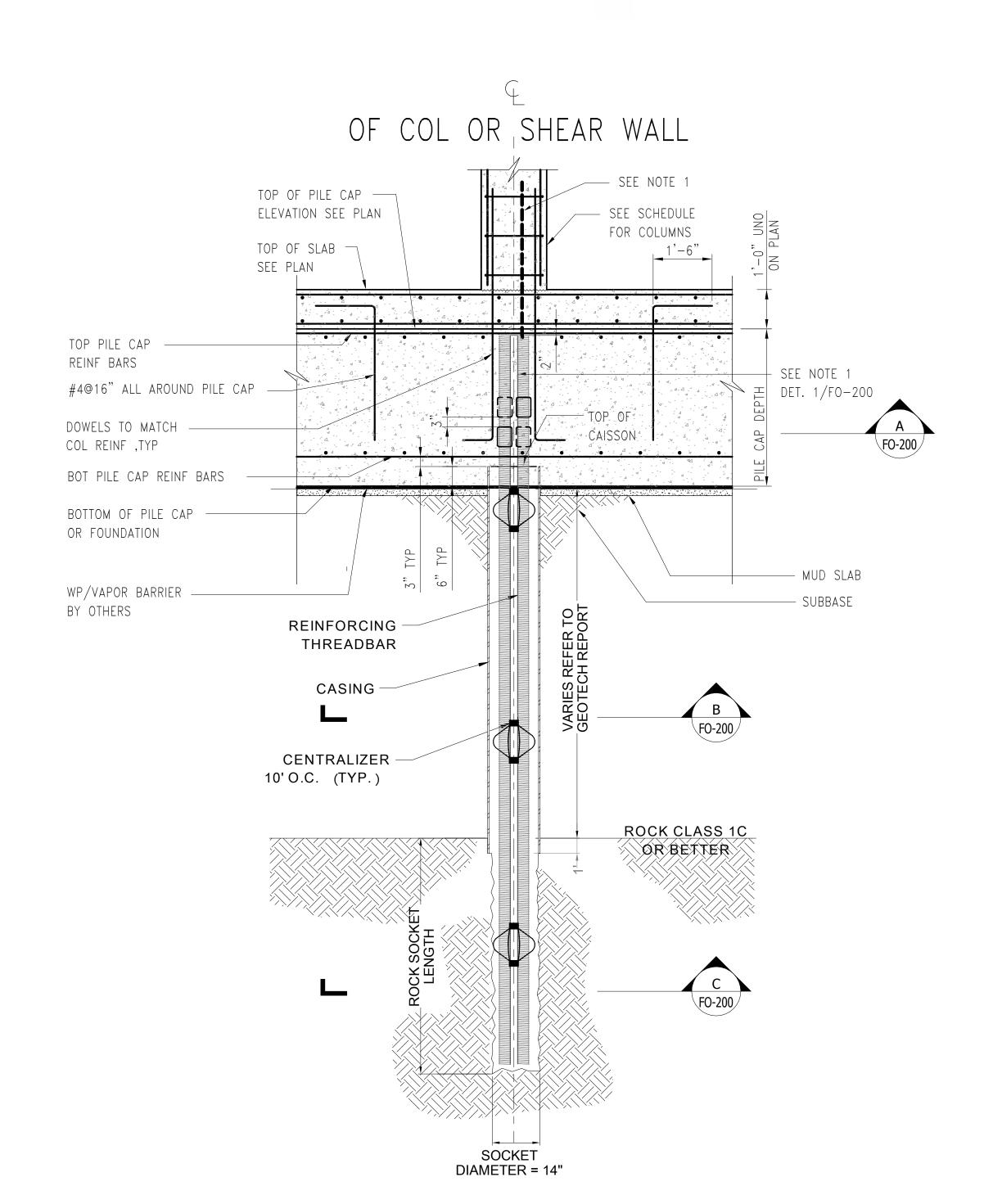
10' O.C.

16"x 0.5" BELOW

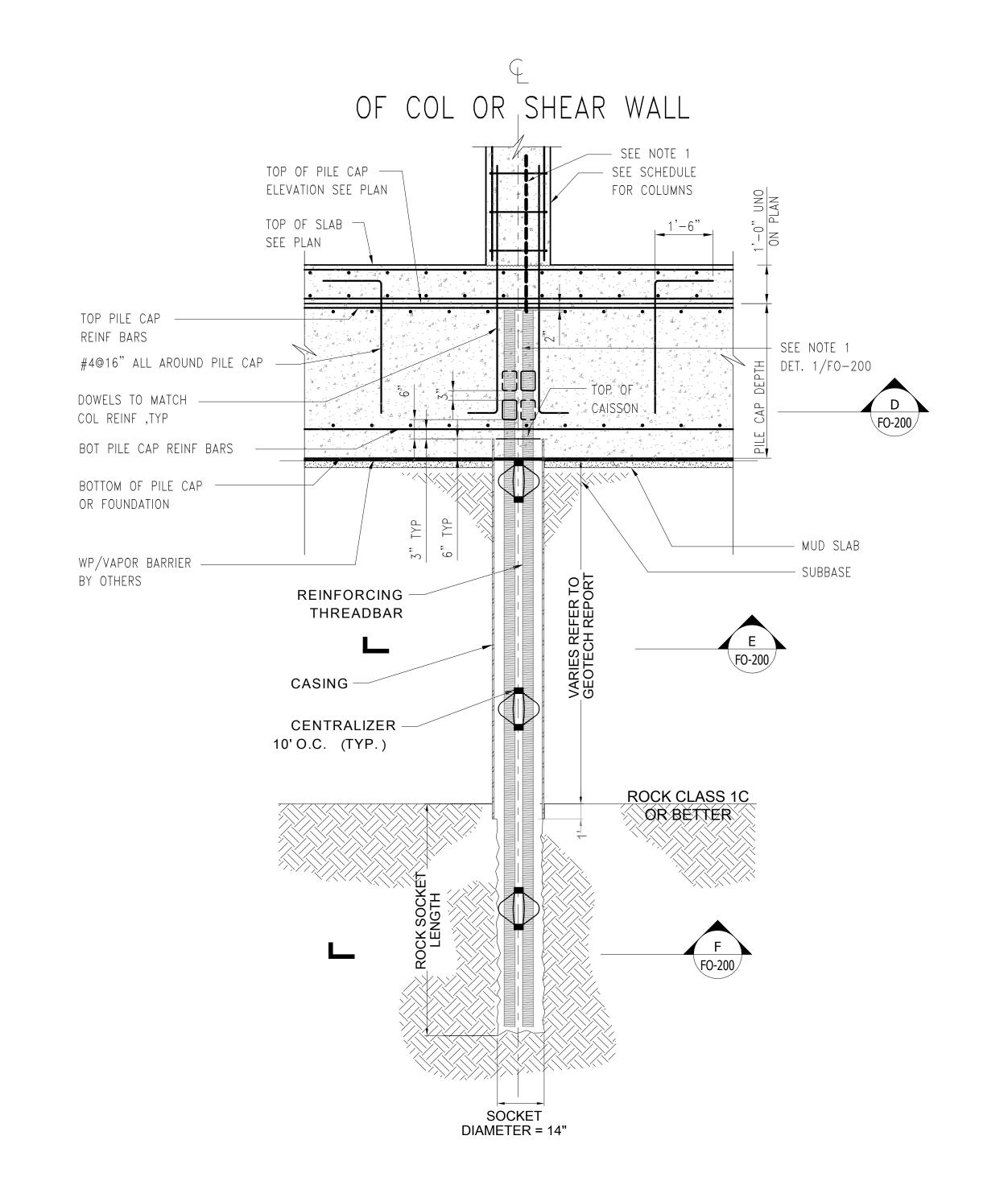
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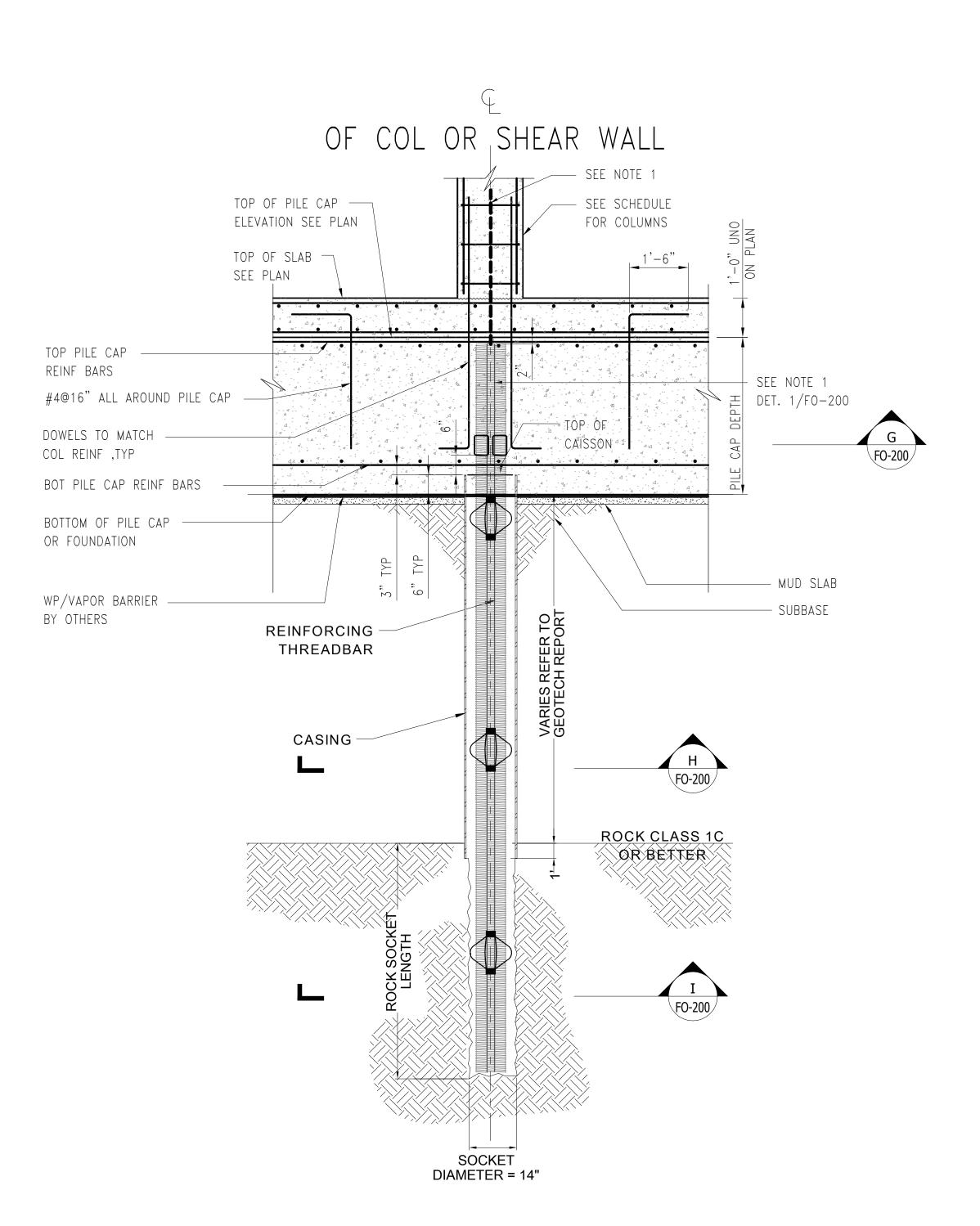
FOR PILES/ CAISSONS MARKED WITH (T) ON PLAN LOCATED BELOW WALL, EXTEND (1)#28 7'-0" ABOVE TOP OF PILE/ CAISSON. ALL OTHER THREADBARS SHALL EXTEND UP TO 2" BELOW TOP OF PILE CAP.

|      | Р           | ILE/ CAISS | ON CAPACITY SCHED     | ULE                      |
|------|-------------|------------|-----------------------|--------------------------|
| TVDE | COMPRESSION | TENSION    | LATERAL CA            | APACITY (KIPS)           |
| TYPE | (KIPS)      | (KIPS)     | WITHIN NYCT INFLUENCE | AWAY FROM NYCT INFLUENCE |
| C1   | 1700        | 600        | 0                     | 40                       |
| C2   | 1400        | 600        | 0                     | 40                       |
| C3   | 1200        | 600        | 0                     | 40                       |



**CAISSON C1 DETAIL** 





CAISSON C2 DETAIL

01/06/2017 HUB SUBMISSION
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07/28/2016 FOUNDATION BID SET

07/06/2016 | ISSUED TO DOB

06/24/2016 MTA APPROVAL

Number: Date: Revision:

06/20/2016 | 100% DD SUBMISSION

THE LIGHTSTONE GROUP 130 WILLIAM STREET PROPERTY OWNER LLC 460 PARK AVE, 13TH FLOOR NEW YORK, NY 10022

TEL. (212) 616.9971

NEW YORK, NEW YORK 11201

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ADDRESSES: 130 WILLIAM STREET

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INTEGRATED AQUATICS

BRIAN ORTER LIGHTING DESIGN Lighting Consultant 227 West 29th Street, 8th Fl. New York, NY 10001 Tel (212) 674-6500

OB STAMPS & SIGNATURES:

Clara Gomez

APPROVED
Under Directive 2 of 1975
Date: 04/03/2017:

NYC Development Hub

CONCRETE PILE CAP DETAILS

NB#121192903

SEAL & SIGNATURE:

DATE:

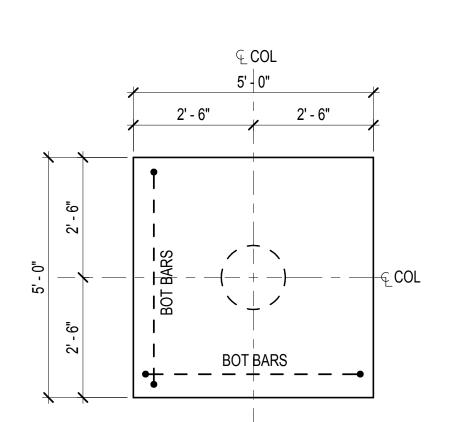
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SCALE:

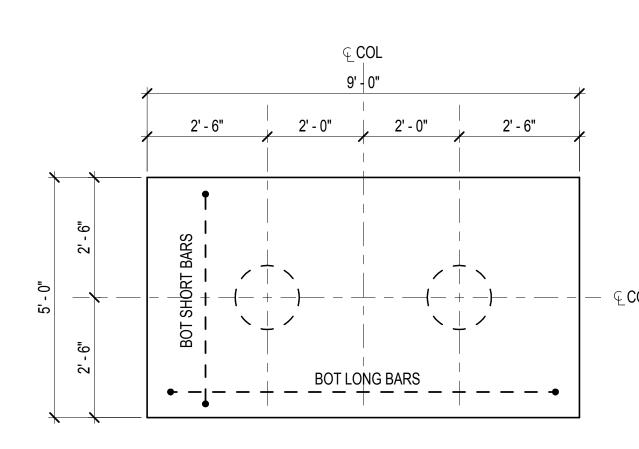
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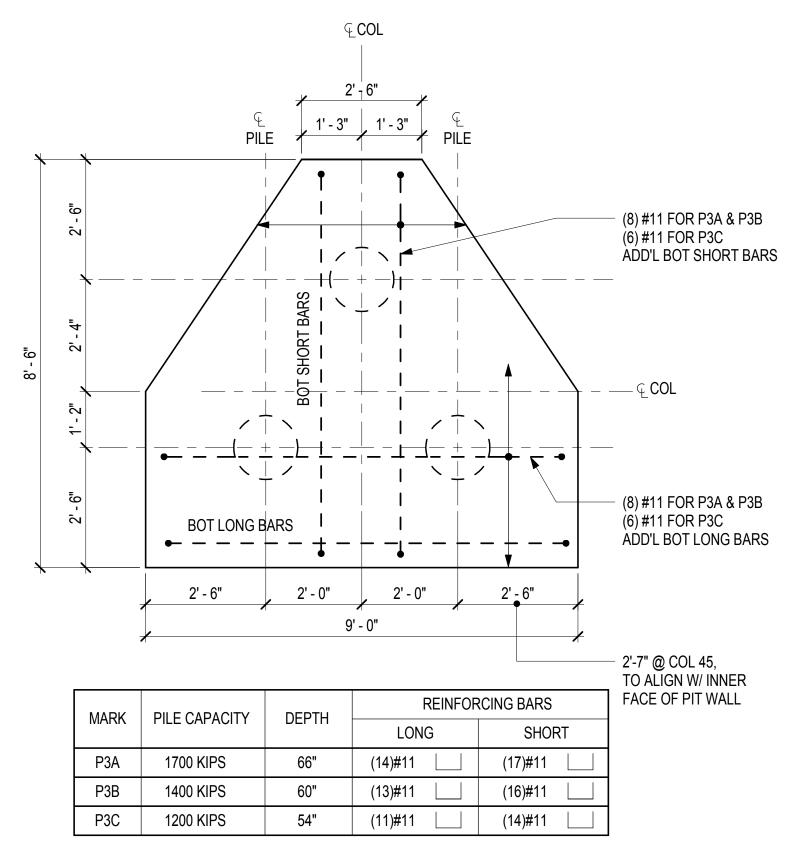
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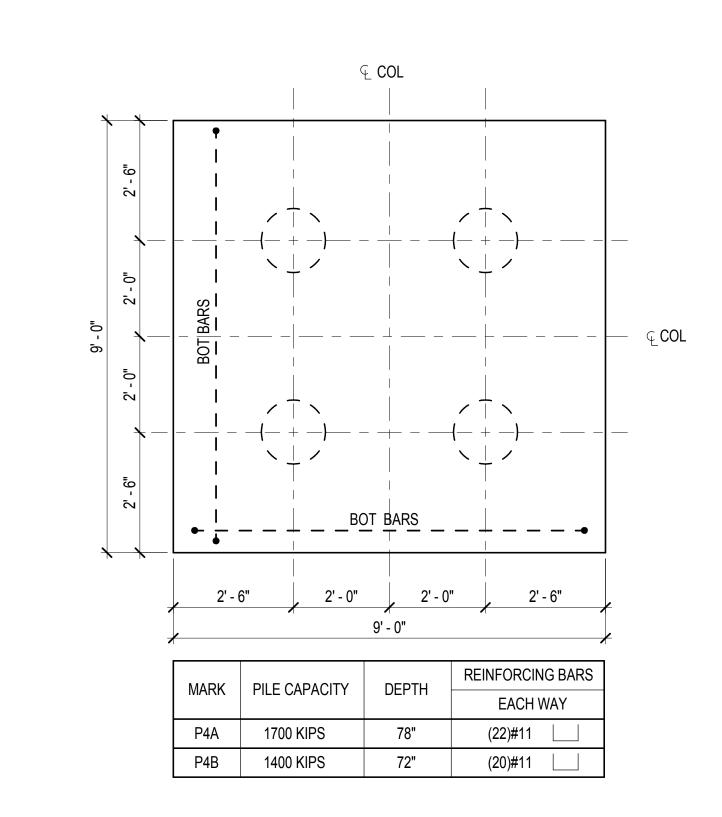
| _ |        |               |        |                  |
|---|--------|---------------|--------|------------------|
|   | MARK   | PILE CAPACITY | DEPTH  | REINFORCING BARS |
|   | IVIAIN | FILE CAPACITY | DEFIII | EACH WAY         |
|   | P1A    | 1200 KIPS     | 36"    | (5)#9            |
|   | P1B    | 1200 KIPS     | 48"    | (5)#10           |
|   | P1C    | 1400 KIPS     | 48"    | (5)#10           |



| MARK   | PILE CAPACITY | DEPTH  | REINFOR | RCING BARS |
|--------|---------------|--------|---------|------------|
| IVIANN | FILE CAPACITY | DEFIII | LONG    | SHORT      |
| P2A    | 1700 KIPS     | 72"    | (11)#11 | (9)#11     |
| P2B    | 1400 KIPS     | 60"    | (10)#11 | (8)#11     |
| P2C    | 1200 KIPS     | 54"    | (10)#11 | (7)#11     |



NOTES:
1. ALL ADDITIONAL BARS SHALL BE PLACED @ 2ND LAYER WITH SAME SPACING WITH 1ST LAYER
2. ALL ADDITIONAL BARS SHALL BE CENTERED ON PILE



9 01/06/2017 HUB SUBMISSION
8 11/11/2016 CORE AND SHELL BUY SET
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THE LIGHTSTONE GROUP
130 VVILLIAM STREET

PROPERTY OWNER LLC 460 PARK AVE, 13TH FLOOR NEW YORK, NY 10022 TEL. (212) 616.9971

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DOB BSCAN:

DOB STAMPS & SIGNATURES:

Clara Gomez

APPROVED
Under Directive 2 of 1975
Date: 04/03/2017:

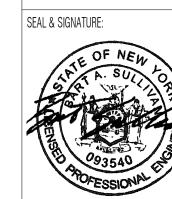
NYC Development Hub

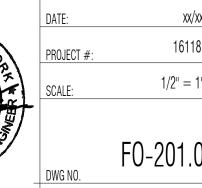
DWG TITLE

ND #10110000

PILE CAP DETAILS

NB#121192903





01/06/2017 HUB SUBMISSION
11/11/2016 CORE AND SHELL BUY SET
10/19/2016 MTA APPROVAL
10/07/2016 CORE AND SHELL BID SET
09/09/2016 MTA APPROVAL
07/28/2016 FOUNDATION BID SET
07/06/2016 ISSUED TO DOB
06/24/2016 MTA APPROVAL
06/20/2016 100% DD SUBMISSION

PROPERTY OWNER LLC

460 PARK AVE, 13TH FLOOR
NEW YORK, NY 10022
TEL. (212) 616.9971

THE LIGHTSTONE GROUP 130 WILLIAM STREET

PROJECT NAME: 130 WILLIAM STREET

ADDRESSES: 130 WILLIAM STREET

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Number: Date: Revision:

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DOB BSCAN:

Clara Gomez

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APPROVED

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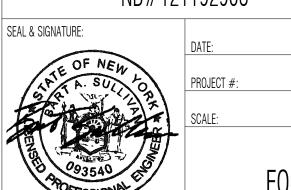
Date: 04/03/2017:

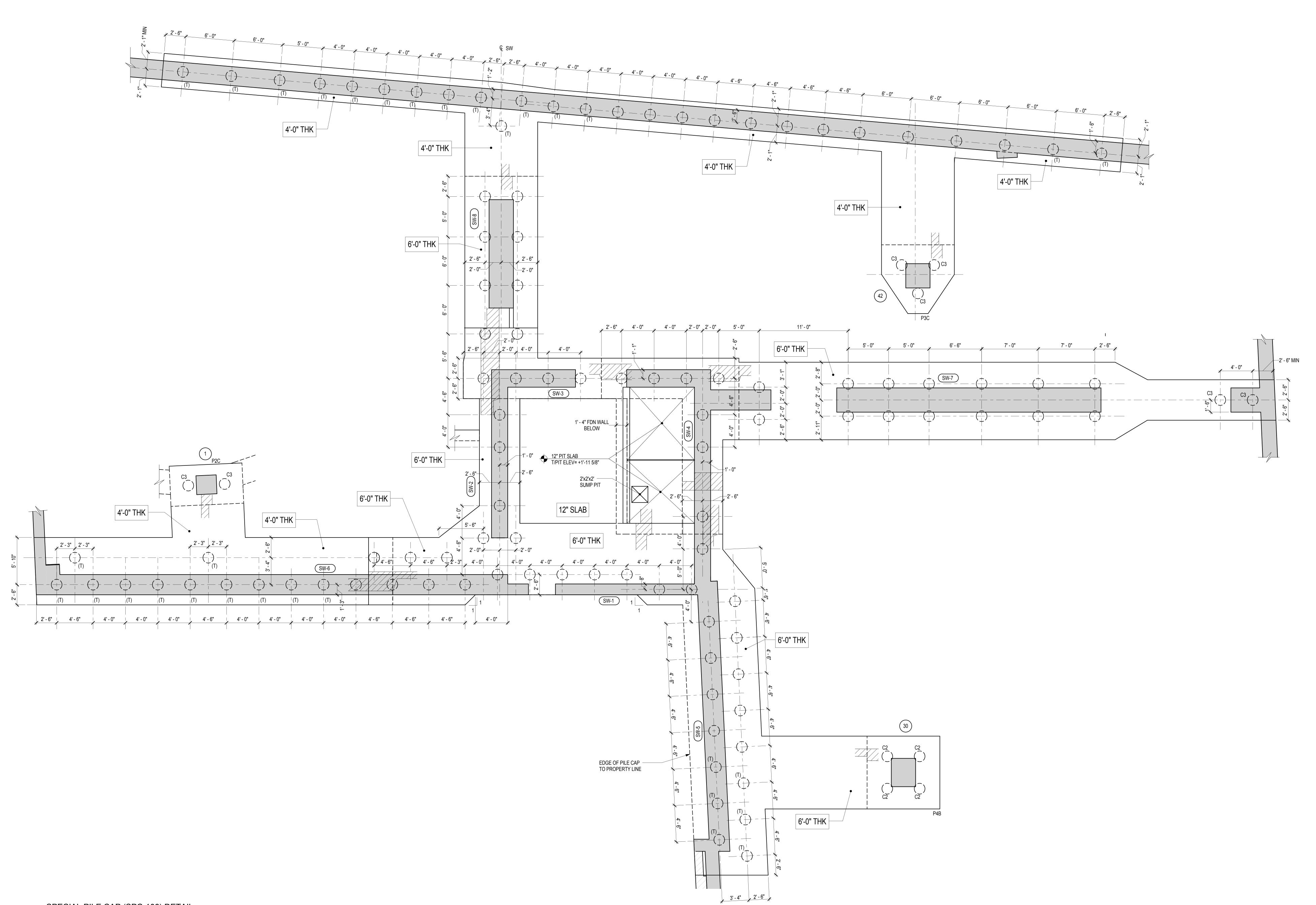
NYC Development Hub

DWG TITLE

SPECIAL PILE CAP DETAILS

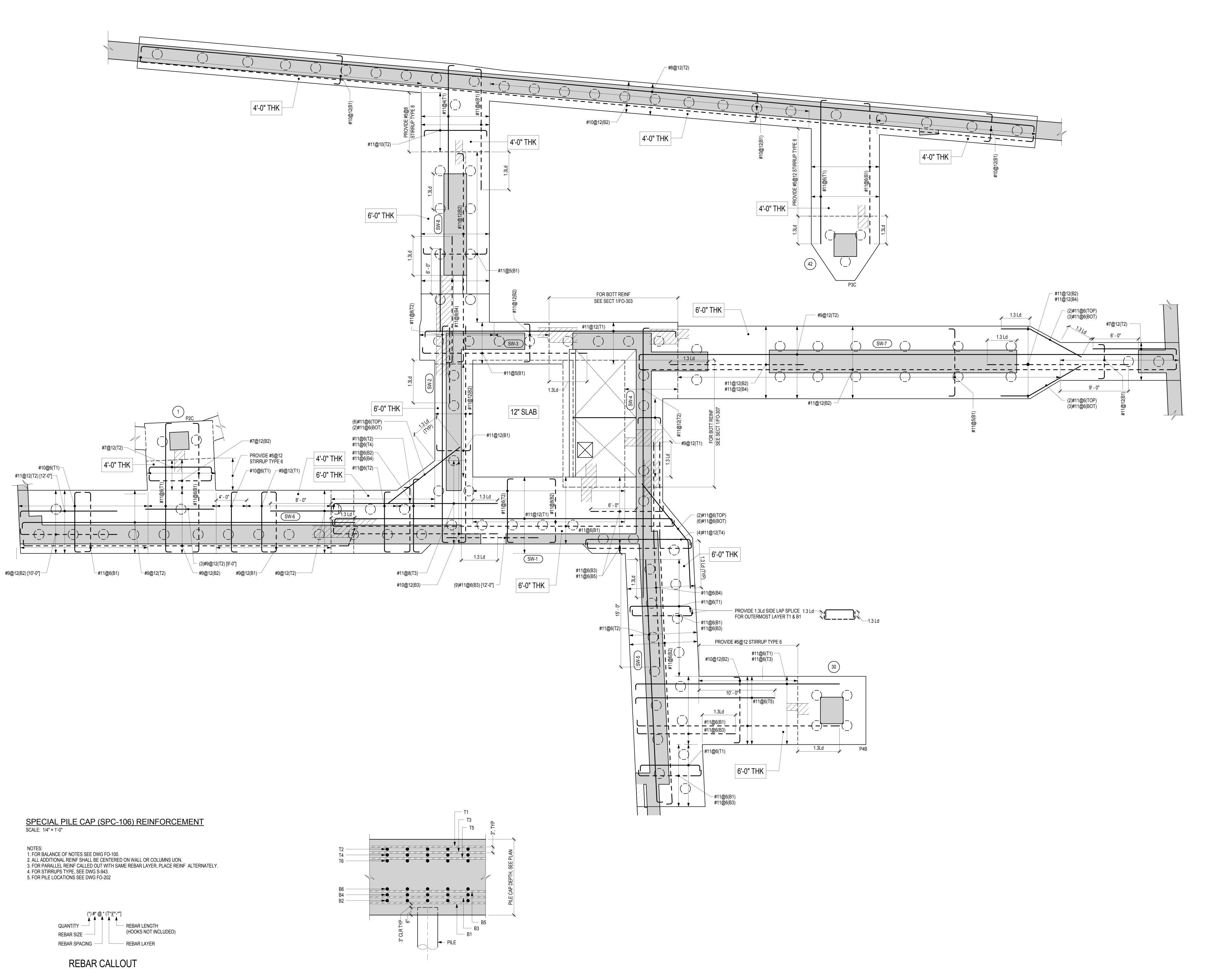
NB#121192903





SPECIAL PILE CAP (SPC-106) DETAIL
SCALE: 1/4" = 1'-0"

NOTES:
1. FOR BALANCE OF NOTES SEE DWG FO-100.
2. FOR PILE CAP REINF SEE DWG FO-203
3. (T) INDICATES TENSION PILES



01/06/2017 HUB SUBMISSION 11/11/2016 | CORE AND SHELL BUY SET 10/19/2016 | MTA APPROVAL 10/07/2016 | CORE AND SHELL BID SET 09/09/2016 MTA APPROVAL 07/28/2016 FOUNDATION BID SET 07/06/2016 | ISSUED TO DOB 06/24/2016 MTA APPROVAL

06/20/2016 | 100% DD SUBMISSION

Number: Date: Revision:

THE LIGHTSTONE GROUP 130 WILLIAM STREET PROPERTY OWNER LLC 460 PARK AVE, 13TH FLOOR NEW YORK, NY 10022 TEL. (212) 616.9971

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DOB STAMPS & SIGNATURES: Clara Gomez

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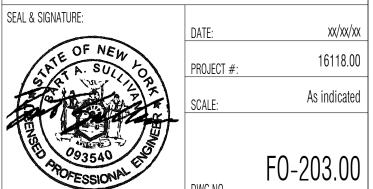
Under Directive 2 of 1975

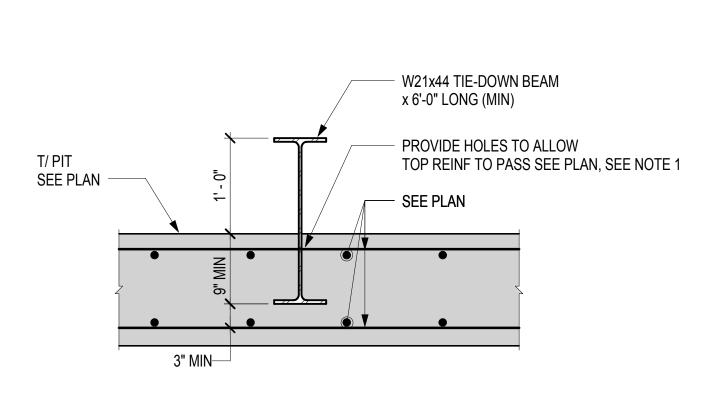
Date: 04/03/2017:

SPECIAL PILE CAP REINFORCEMENT

NB#121192903

As indicated





TOP REINF AT ELEVATOR TIE-DOWN BEAMS SHALL NOT BE LESS THAN #5@12 COORDINATE QUANTITY, POSITION AND LENGTH OF TIE-DOWN BEAM WITH ELEVATOR CONTRACTOR

TYPICAL ELEVATOR TIE-DOWN BEAM

Clara Gomez

Building

APPROVED

Under Directive 2 of 1975

Date: 04/03/2017:

01/06/2017 HUB SUBMISSION 11/11/2016 | CORE AND SHELL BUY SET

10/19/2016 MTA APPROVAL

09/09/2016 MTA APPROVAL 07/28/2016 FOUNDATION BID SET 07/06/2016 | ISSUED TO DOB 06/24/2016 MTA APPROVAL 06/20/2016 | 100% DD SUBMISSION

Number: Date: Revision:

10/07/2016 | CORE AND SHELL BID SET

THE LIGHTSTONE GROUP

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NEW YORK, NEW YORK 11201

PROJECT NAME: 130 WILLIAM STREET

ADDRESSES: 130 WILLIAM STREET

NB#121192903 SEAL & SIGNATURE:

TYPICAL FOUNDATION DETAILS

01/06/2017 HUB SUBMISSION 11/11/2016 | CORE AND SHELL BUY SET

10/19/2016 MTA APPROVAL

10/07/2016 | CORE AND SHELL BID SET 09/09/2016 MTA APPROVAL

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07/28/2016 FOUNDATION BID SET

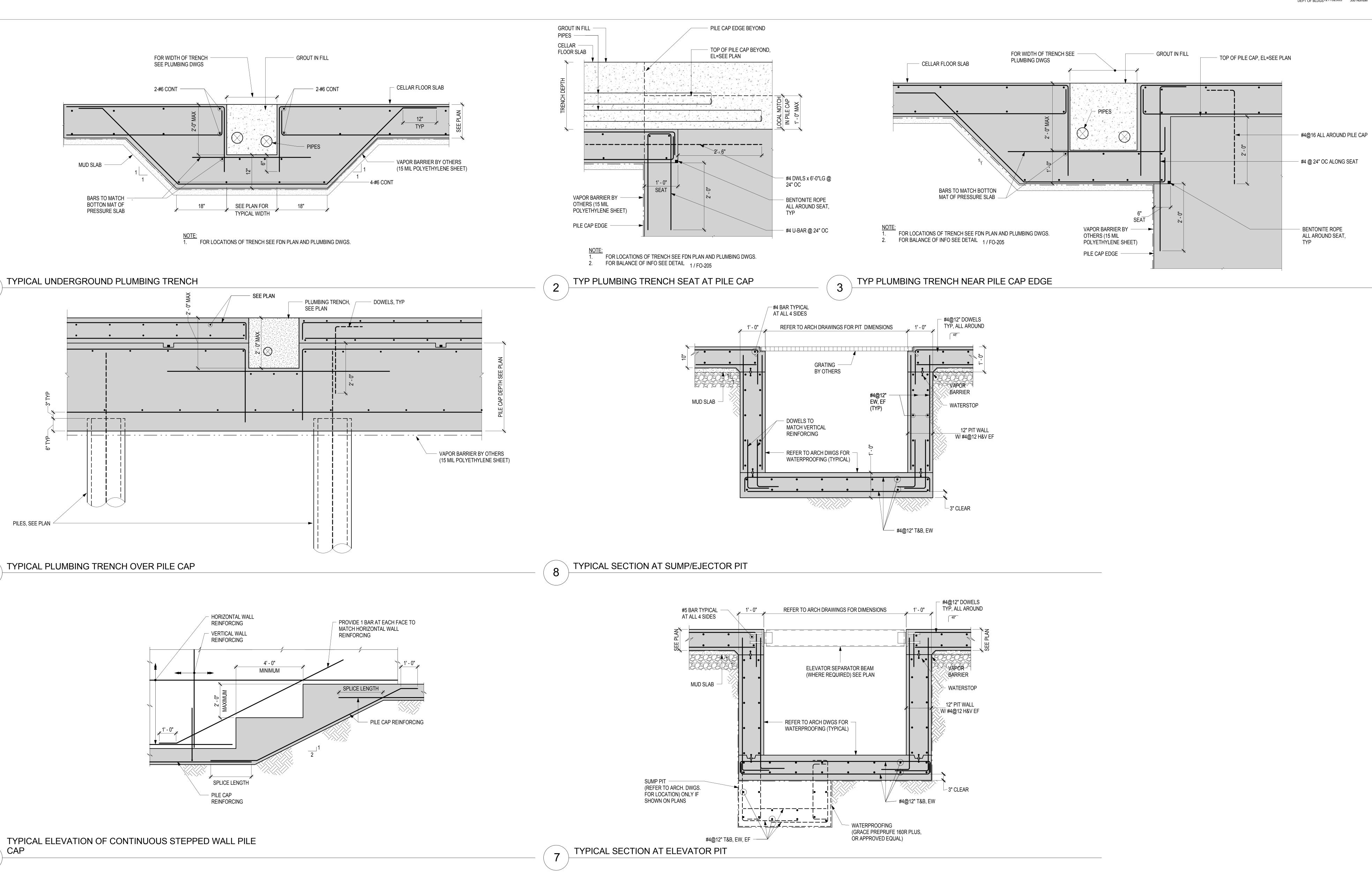
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06/24/2016 MTA APPROVAL 06/20/2016 | 100% DD SUBMISSION

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PILES, SEE PLAN

INTEGRATED AQUATICS ENGINEERING, INC. Pool Consultant 75 Shewell Ave Doylestown, PA 18901 Tel (215) 230-8623 BRIAN ORTER LIGHTING DESIGN Lighting Consultant 227 West 29th Street, 8th Fl. New York, NY 10001 Tel (212) 674-6500 DOB STAMPS & SIGNATURES: Clara Gomez

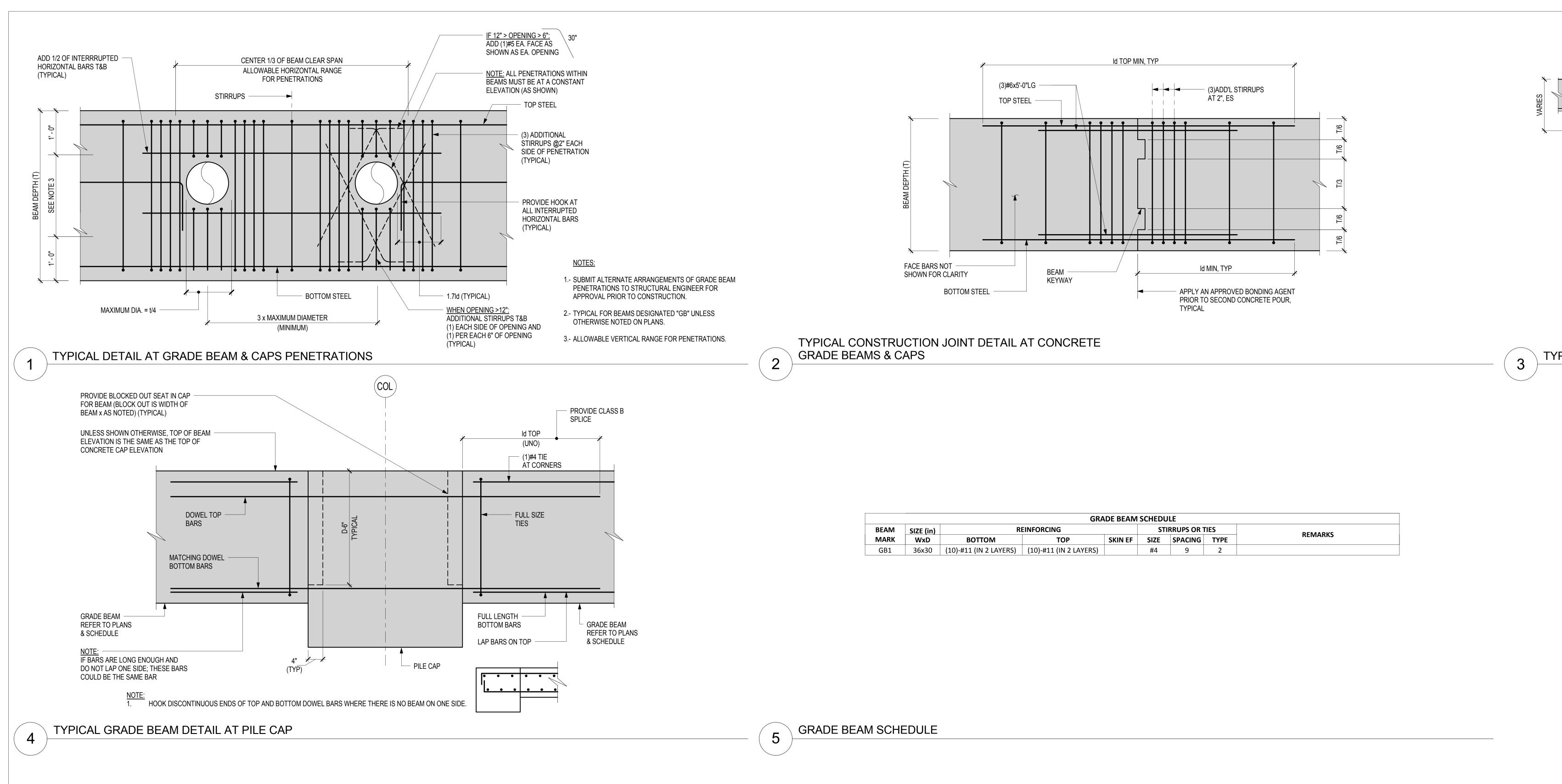
Building

APPROVED

Under Directive 2 of 1975

Date: 04/03/2017: DWG TITLE TYPICAL FOUNDATION DETAILS NB#121192903

SEAL & SIGNATURE: As indicated



GRADE BEAM (GB)
(REFER TO PLAN)

BEAM WIDTH (b)

TYPICAL SLAB CONNECTION TO GRADE BEAM

Number: Date: Revision:

01/06/2017 HUB SUBMISSION

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OOB BSCAN:

DOB STAMPS & SIGNATURES:

ClararGomez

Build 10

APPROVED

Under Directive 2 of 1975

Date: 04/03/2017:

NYC Development Hub

DWG TITLE

TYPICAL FOUNDATION DETAILS

NB#121192903



PROJECT #:

SCALE:

As indicate

TO-206.0

DWG NO.

|       | MPRESSION DEVELOR<br>MPRESSION LAP SPL<br>(UNLESS NOTED OT | ICE LENGT      |              |
|-------|--|----------------|--------------|
|       | fc = 4000 PSI, NORMAL WE                                   | EIGHT CONCRETE |              |
| BAR   | LENCTH TVPF  | REINFORCING    | G GRADE (Fy) |
| SIZE  | LENGTH TYPE  | Fy=60 ksi      | Fy=75 ksi    |
| #3    | COMPRESSION DEVELOPMENT                                    | 12             | 12           |
| #3    | COMPRESSION LAP SPLICE                                     | 12             | 17           |
| #4    | COMPRESSION DEVELOPMENT                                    | 12             | 12           |
| #4    | COMPRESSION LAP SPLICE                                     | 15             | 22           |
| #5    | COMPRESSION DEVELOPMENT                                    | 12             | 15           |
| #0    | COMPRESSION LAP SPLICE                                     | 19             | 28           |
| #6    | COMPRESSION DEVELOPMENT                                    | 14             | 18           |
| #0    | COMPRESSION LAP SPLICE                                     | 23             | 33           |
| #7    | COMPRESSION DEVELOPMENT                                    | 17             | 21           |
| πι    | COMPRESSION LAP SPLICE                                     | 27             | 39           |
| #8    | COMPRESSION DEVELOPMENT                                    | 19             | 24           |
| #0    | COMPRESSION LAP SPLICE                                     | 30             | 44           |
| #9    | COMPRESSION DEVELOPMENT                                    | 21             | 27           |
| πJ    | COMPRESSION LAP SPLICE                                     | 34             | 50           |
| #10   | COMPRESSION DEVELOPMENT                                    | 24             | 30           |
| #10   | COMPRESSION LAP SPLICE                                     | 38             | 56           |
| #11   | COMPRESSION DEVELOPMENT                                    | 27             | 33           |
| " 1 1 | COMPRESSION LAP SPLICE                                     | 42             | 62           |

|            | MPRESSION DEVELOR<br>MPRESSION LAP SPL<br>(UNLESS NOTED OT | ICE LENGT         |              |
|------------|--|-------------------|--------------|
|            | fc = 5000 PSI OR GREATER, NORM                             | MAL WEIGHT CONCRI | ETE          |
| BAR        | LENGTH TYPE  | REINFORCING       | G GRADE (Fy) |
| SIZE       | LENGITTIFE   | Fy=60 ksi         | Fy=75 ksi    |
| <b>4</b> 0 | COMPRESSION DEVELOPMENT                                    | 12                | 12           |
| #3         | COMPRESSION LAP SPLICE                                     | 12                | 17           |
| #4         | COMPRESSION DEVELOPMENT                                    | 12                | 12           |
| #4         | COMPRESSION LAP SPLICE                                     | 15                | 22           |
| #5         | COMPRESSION DEVELOPMENT                                    | 12                | 13           |
| #5         | COMPRESSION LAP SPLICE                                     | 19                | 28           |
| #6         | COMPRESSION DEVELOPMENT                                    | 13                | 16           |
| #0         | COMPRESSION LAP SPLICE                                     | 23                | 33           |
| #7         | COMPRESSION DEVELOPMENT                                    | 15                | 19           |
| #1         | COMPRESSION LAP SPLICE                                     | 27                | 39           |
| #8         | COMPRESSION DEVELOPMENT                                    | 17                | 21           |
| #0         | COMPRESSION LAP SPLICE                                     | 30                | 44           |
| #9         | COMPRESSION DEVELOPMENT                                    | 19                | 24           |
| #3         | COMPRESSION LAP SPLICE                                     | 34                | 50           |
| #10        | COMPRESSION DEVELOPMENT                                    | 22                | 27           |
| #10        | COMPRESSION LAP SPLICE                                     | 38                | 56           |
| #11        | COMPRESSION DEVELOPMENT                                    | 24                | 30           |
| πιι        | COMPRESSION LAP SPLICE                                     | 42                | 62           |

### TYPICAL REINFORCING BAR DEVELOPMENT LENGTH/LAP SPLICE LENGTH SCHEDULES, U.N.O.

- TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS. CLEAR BAR SPACING = CENTER TO CENTER SPACING - BAR DIAMETER.
- AVOID SPLICES IN REGIONS OF MAXIMUM MOMENT. IF THIS IS NOT POSSIBLE, STAGGER SPLICES SO THAT SPLICES
- DO NOT REQUIRE MORE THAN 50% OF THE BARS ARE SPLICED WITHIN Ld REQUIRED SPLICE LENGTH OTHERWISE INCREASE SPLICE LENGTH BY 30%.
- 4. FOR GRADE 75, REINFORCING BARS SPLICE LENGTHS SHOWN ABOVE SHALL BE INCREASED BY Ld FACTOR = 1.25.

|                |         | ٦  | ENSI     | ON D             | EVEL   | OPME             | ENT L    | ENGT             | H (Ld    | ) AND            | TEN         | SION             | LAP S     | SPLIC            | E LEI    | NGTH             | (Lap     | Class            | B OR     | 1.3L             | d) FOF   | 3                |          |                  |          |
|----------------|---------|--|----------|------------------|--------|------------------|----------|------------------|----------|------------------|-------------|------------------|-----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|
|                |         |  |          |                  |        |                  | GF       | RADE             | 60 DI    | FOR              | MED         | REIN             | FORC      | ING E            | BARS     | (inche           | es)      |                  |          |                  |          |                  |          |                  |          |
|                |         |  |          |                  |        |                  |          |                  |          |                  | (UNLESS I   | NOTED OT         | HERWISE)  |                  |          |                  |          |                  |          |                  |          |                  |          |                  |          |
|                |         |  |          |                  |        |                  |          |                  |          | f                | `c = 4000 P | SI, NORMA        | AL WEIGHT | CONCRET          | E        |                  |          |                  |          |                  |          |                  |          |                  |          |
|                |         | CC   | NCRETE C | OVER ≥ 0.7       | 75 in  | CC               | NCRETE C | OVER ≥ 1.        | 0 in     | CO               | NCRETE C    | OVER ≥ 1.2       | 25 in     | CO               | NCRETE C | OVER ≥ 1.5       | 60 in    | CO               | NCRETE C | OVER ≥ 2.0       | 00 in    | CO               | NCRETE C | OVER ≥ 3.0       | 00 in    |
| AR<br>ZE       | E H     | CLEAR BAR SPACING 2 ≥ 1.50 in CLEAR BAR SPACING 2 ≥ 2.0 in CLEAR BAR SPACING 2 ≥ 2.50 in CLEAR BAR SPACING 2 ≥ 3.0 in CLEAR BAR SPACING 2 ≥ 4.0 in CLEAR BAR SPACING 2 ≥ 6.0 in CLEAR BAR SPACING 2 ≥ 4.0 in CLEAR BAR SPACING 2 ≥ 6.0 in CLEAR BAR SPAC |          |                  |        |                  |          |                  |          |                  |             |                  |           |                  |          |                  | 6.0 in   |                  |          |                  |          |                  |          |                  |          |
| ZE             | ΞĒ      | UNC  | DATED    | EPOXY-           | COATED | UNCC             | ATED     | EPOXY-           | COATED   | UNCC             | ATED        | EPOXY-           | COATED    | UNCO             | DATED    | EPOXY-           | COATED   | UNCC             | ATED     | EPOXY-           | COATED   | UNCC             | ATED     | EPOXY-           | COATED   |
|                |         | TOP <sup>1</sup>   | OTHER    | TOP <sup>1</sup> | OTHER  | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER       | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER    |
| £3             | Ld      | 12   | 12       | 15               | 13     | 12               | 12       | 15               | 13       | 12               | 12          | 14               | 12        | 12               | 12       | 14               | 12       | 12               | 12       | 14               | 12       | 12               | 12       | 14               | 12       |
| .5             | В       | 15   | 12       | 19               | 17     | 15               | 12       | 19               | 17       | 15               | 12          | 18               | 14        | 15               | 12       | 18               | 14       | 15               | 12       | 18               | 14       | 15               | 12       | 18               | 14       |
| 4              | Ld      | 19   | 15       | 25               | 22     | 15               | 12       | 20               | 18       | 15               | 12          | 20               | 18        | 15               | 12       | 18               | 14       | 15               | 12       | 18               | 14       | 15               | 12       | 18               | 14       |
|                | В       | 25   | 19       | 32               | 28     | 20               | 15       | 26               | 23       | 20               | 15          | 26               | 23        | 20               | 15       | 24               | 18       | 20               | 15       | 24               | 18       | 20               | 15       | 24               | 18       |
| ±5             | Ld      | 28   | 21       | 36               | 32     | 23               | 17       | 29               | 26       | 19               | 15          | 25               | 22        | 19               | 15       | 25               | 22       | 19               | 15       | 23               | 18       | 19               | 15       | 23               | 18       |
|                | В       | 36   | 28       | 47               | 41     | 29               | 23       | 38               | 34       | 25               | 19          | 32               | 28        | 25               | 19       | 32               | 28       | 25               | 19       | 29               | 23       | 25               | 19       | 29               | 23       |
| <del>4</del> 6 | Ld      | 37   | 29       | 49               | 43     | 31               | 24       | 40               | 35       | 26               | 20          | 34               | 30        | 23               | 18       | 30               | 26       | 23               | 18       | 30               | 26       | 23               | 18       | 27               | 21       |
|                | B       | 49   | 37       | 63               | 56     | 40               | 31       | 52               | 46       | 34               | 26          | 44               | 39        | 29               | 23       | 38               | 34       | 29               | 23       | 38               | 34       | 29               | 23       | 35               | 27       |
| <b>‡</b> 7     | Ld      | 60   | 46       | 78               | 69     | 50               | 38       | 65               | 57       | 42               | 33          | 55               | 49        | 37               | 29       | 48               | 43       | 33               | 25       | 43               | 38       | 33               | 25       | 39               | 30       |
|                | В       | 78   | 60       | 102              | 90     | 65               | 50       | 84               | 74       | 55               | 42          | 72               | 63        | 48               | 37       | 63               | 55       | 43               | 33       | 56               | 49       | 43               | 33       | 51               | 39       |
| 8              | Ld<br>B | 74   | 57       | 97               | 86     | 62<br>81         | 48       | 81               | 72       | 53               | 41          | 70               | 61        | 47               | 36<br>47 | 61               | 54       | 37               | 29       | 49               | 43       | 37               | 29       | 45               | 35       |
|                | Ld      | 97<br>90   | 74<br>69 | 126<br>118       | 111    | 76               | 62<br>58 | 105<br>99        | 93<br>87 | 69<br>65         | 53<br>50    | 90<br>85         | 80<br>75  | 61<br>58         | 44       | 79<br>75         | 70<br>66 | 49               | 37<br>36 | 63<br>61         | 56<br>53 | 49               | 37<br>33 | 58<br>55         | 45<br>49 |
| ŧ9             | В       | 117  | 90       | 153              | 135    | 98               | 76       | 128              | 113      | 85               | 65          | 111              | 98        | 75               | 58       | 97               | 86       | 60               | 46       | 79               | 69       | 55               | 42       | 71               | 63       |
|                | Ld      | 108  | 83       | 141              | 125    | 92               | 71       | 120              | 106      | 80               | 61          | 104              | 92        | 70               | 54       | 92               | 81       | 57               | 44       | 75               | 66       | 47               | 37       | 62               | 55       |
| 10             | B       | 141  | 108      | 184              | 162    | 119              | 92       | 156              | 137      | 103              | 80          | 135              | 119       | 91               | 70       | 119              | 105      | 74               | 57       | 97               | 85       | 62               | 47       | 80               | 71       |
|                | Ld      | 127  | 98       | 166              | 146    | 108              | 83       | 142              | 125      | 95               | 73          | 124              | 109       | 84               | 65       | 110              | 97       | 68               | 53       | 89               | 79       | 53               | 41       | 69               | 61       |
| 11             | B       | 165  | 127      | 215              | 190    | 141              | 108      | 184              | 162      | 123              | 95          | 160              | 142       | 109              | 84       | 142              | 126      | 89               | 68       | 116              | 102      | 68               | 53       | 89               | 79       |
|                |         | L  | I        |                  |        |                  | L        | L                |          | 0                | L           | . 50             |           | . 50             |          | ·                | 0        |                  |          | L                | ı .,_    |                  | l "      |                  | L        |

|      |                | T                | ENSI       | ON D                   | EVEL      | OPME             |           |                  | •        | ,                | TEN<br>RMED<br>(UNLESS) | REIN                   | FORC     |                  |           |                      | ٠.       | Class            | BOR       | ? 1.3L               | d) FOI   | ₹                |           |                      |          |
|------|----------------|------------------|------------|------------------------|-----------|------------------|-----------|------------------|----------|------------------|-------------------------|------------------------|----------|------------------|-----------|----------------------|----------|------------------|-----------|----------------------|----------|------------------|-----------|----------------------|----------|
|      |                |                  |            |                        |           |                  |           |                  |          |                  | fc = 5000 P             | SI, NORMA              | L WEIGHT | CONCRET          | E         |                      |          |                  |           |                      |          |                  |           |                      |          |
|      |                | СО               | NCRETE C   | OVER ≥ 0.7             | 75 in     | CC               | ONCRETE C | COVER ≥ 1.       | 0 in     | CC               | NCRETE C                | OVER ≥ 1.2             | 25 in    | CO               | NCRETE C  | OVER ≥ 1.5           | 60 in    | CO               | NCRETE C  | OVER ≥ 2.0           | 00 in    | CO               | NCRETE C  | OVER ≥ 3.0           | 00 in    |
| BAR  |                | CLEA             | AR BAR SPA | ACING <sup>2</sup> ≥ 1 | 1.50 in   | CLE              | AR BAR SP | 'ACING ² ≥ :     | 2.0 in   | CLE              | AR BAR SPA              | ACING <sup>2</sup> ≥ 2 | 2.50 in  | CLE              | AR BAR SF | ACING <sup>2</sup> ≥ | 3.0 in   | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ | 4.0 in   | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ | 6.0 in   |
| SIZE | LENGTH<br>TYPE | UNCC             | DATED      | EPOXY-                 | COATED    | UNCC             | DATED     | EPOXY-           | COATED   | UNC              | DATED                   | EPOXY-                 | COATED   | UNCC             | DATED     | EPOXY-               | COATED   | UNC              | DATED     | EPOXY-               | COATED   | UNCC             | DATED     | EPOXY-               | COATED   |
|      |                | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup>       | OTHER     | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup> | OTHER                   | TOP <sup>1</sup>       | OTHER    | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>     | OTHER    | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>     | OTHER    | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>     | OTHER    |
| #3   | Ld             | 12               | 12         | 13                     | 12        | 12               | 12        | 13               | 12       | 12               | 12                      | 12                     | 12       | 12               | 12        | 12                   | 12       | 12               | 12        | 12                   | 12       | 12               | 12        | 12                   | 12       |
| #0   | В              | 13               | 12         | 17                     | 15        | 13               | 12        | 17               | 15       | 13               | 12                      | 16                     | 12       | 13               | 12        | 16                   | 12       | 13               | 12        | 16                   | 12       | 13               | 12        | 16                   | 12       |
| #4   | Ld             | 17               | 13         | 22                     | 20        | 14               | 12        | 18               | 16       | 14               | 12                      | 18                     | 16       | 14               | 12        | 16                   | 13       | 14               | 12        | 16                   | 13       | 14               | 12        | 16                   | 13       |
|      | В              | 22               | 17         | 29                     | 25        | 18               | 14        | 23               | 20       | 18               | 14                      | 23                     | 20       | 18               | 14        | 21                   | 16       | 18               | 14        | 21                   | 16       | 18               | 14        | 21                   | 16       |
| #5   | Ld             | 25               | 19         | 32                     | 29        | 20               | 16        | 26               | 23       | 17               | 13                      | 22                     | 20       | 17               | 13        | 22                   | 20       | 17               | 13        | 20                   | 16       | 17               | 13        | 20                   | 16       |
|      | В              | 32               | 25         | 42                     | 37        | 26               | 20        | 34               | 30       | 22               | 17                      | 29                     | 25       | 22               | 17        | 29                   | 25       | 22               | 17        | 26                   | 20       | 22               | 17        | 26                   | 20       |
| #6   | Ld             | 34               | 26         | 44                     | 39        | 28               | 21        | 36               | 32       | 23               | 18                      | 30                     | 27       | 20               | 16        | 26                   | 23       | 20               | 16        | 26                   | 23       | 20               | 16        | 24                   | 19       |
|      | В              | 44               | 34         | 57                     | 50        | 36               | 28        | 47               | 41       | 30               | 23                      | 39                     | 35       | 26               | 20        | 34                   | 30       | 26               | 20        | 34                   | 30       | 26               | 20        | 31                   | 24       |
| #7   | Ld             | 54               | 42         | 70                     | 62        | 45               | 34        | 58               | 51       | 38               | 29                      | 50                     | 44       | 33               | 26        | 43                   | 38       | 29               | 23        | 38                   | 34       | 29               | 23        | 35                   | 27       |
|      | B              | 70               | 54         | 91                     | 81        | 58               | 45        | 75               | 67       | 49               | 38                      | 64                     | 57       | 43               | 33        | 56                   | 50       | 38               | 29        | 50                   | 44       | 38               | 29        | 46                   | 35       |
| #8   | Ld             | 67               | 51         | 87                     | 77        | 56               | 43        | 73               | 64       | 48               | 37                      | 62                     | 55       | 42               | 32        | 55                   | 48       | 34               | 26        | 44                   | 39       | 34               | 26        | 40                   | 31       |
|      | B              | 87<br>81         | 67<br>62   | 113<br>105             | 100<br>93 | 72               | 56<br>52  | 94<br>89         | 83<br>78 | 62<br>59         | 48                      | 81<br>76               | 71<br>67 | 54<br>52         | 42        | 71<br>67             | 63<br>59 | 44               | 34        | 57<br>54             | 50<br>48 | 38               | 34<br>29  | 52<br>49             | 40<br>44 |
| #9   | Ld<br>B        | 105              | 81         | 137                    | 121       | 68<br>88         | 68        | 115              | 101      | 76               | 59                      | 99                     | 88       | 67               | 52        | 87                   | 77       | 54               | 42        | 70                   | 62       | 49               | 38        | 64                   | 56       |
|      | Ld             | 97               | 75         | 126                    | 112       | 82               | 63        | 107              | 95       | 71               | 55                      | 93                     | 82       | 63               | 49        | 82                   | 73       | 51               | 39        | 67                   | 59       | 43               | 33        | 55                   | 49       |
| #10  | В              | 126              | 97         | 164                    | 145       | 107              | 82        | 139              | 123      | 93               | 71                      | 121                    | 107      | 82               | 63        | 107                  | 94       | 66               | 51        | 87                   | 76       | 55               | 43        | 72                   | 64       |
|      | Ld             | 114              | 87         | 148                    | 131       | 97               | 75        | 127              | 112      | 85               | 65                      | 111                    | 98       | 75               | 58        | 98                   | 87       | 61               | 47        | 80                   | 71       | 47               | 36        | 62                   | 54       |
| #11  | В              | 147              | 114        | 193                    | 170       | 126              | 97        | 164              | 145      | 110              | 85                      | 144                    | 127      | 97               | 75        | 127                  | 112      | 80               | 61        | 104                  | 92       | 61               | 47        | 80                   | 70       |

TENSION DEVELOPMENT LENGTH (Ld) AND TENSION LAP SPLICE LENGTH (Lap Class B OR 1.3Ld) FOR

GRADE 60 DÉFORMED REINFORCING BARS (inches)

|       |                |                  |            |                  |         |                  |            |                  |        | f                | c = 6000 PS | SI, NORMA              | L WEIGHT | CONCRET          | E          |                  |        |                  |           |                  |         |                  |           |                  |         |
|-------|----------------|------------------|------------|------------------|---------|------------------|------------|------------------|--------|------------------|-------------|------------------------|----------|------------------|------------|------------------|--------|------------------|-----------|------------------|---------|------------------|-----------|------------------|---------|
|       |                | CO               | NCRETE CO  | OVER ≥ 0.7       | 75 in   | CC               | NCRETE C   | OVER ≥ 1.        | 0 in   | CO               | NCRETE CO   | OVER ≥ 1.2             | 25 in    | CO               | NCRETE C   | OVER ≥ 1.        | 50 in  | CO               | NCRETE C  | OVER ≥ 2.0       | 00 in   | CC               | NCRETE C  | OVER ≥ 3.        | 00 in   |
| BAR   | LENGTH<br>TYPE | CLEA             | AR BAR SPA | ACING ² ≥ ′      | 1.50 in | CLE/             | AR BAR SPA | ACING ²≥         | 2.0 in | CLEA             | R BAR SPA   | ACING <sup>2</sup> ≥ 2 | 2.50 in  | CLE              | AR BAR SP. | ACING ² ≥        | 3.0 in | CLE              | AR BAR SP | ACING ² ≥        | 4.0 in  | CLE              | AR BAR SP | ACING ² ≥        | 6.0 in  |
| SIZE  | EN             | UNCC             | ATED       | EPOXY-           | COATED  | UNCC             | ATED       | EPOXY-           | COATED | UNCC             | ATED        | EPOXY-                 | COATED   | UNCC             | ATED       | EPOXY-           | COATED | UNCC             | DATED     | EPOXY-           | -COATED | UNC              | DATED     | EPOXY            | -COATED |
|       |                | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup> | OTHER   | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup> | OTHER  | TOP <sup>1</sup> | OTHER       | TOP <sup>1</sup>       | OTHER    | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup> | OTHER  | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup> | OTHER   | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup> | OTHER   |
| #3    | Ld             | 12               | 12         | 12               | 12      | 12               | 12         | 12               | 12     | 12               | 12          | 12                     | 12       | 12               | 12         | 12               | 12     | 12               | 12        | 12               | 12      | 12               | 12        | 12               | 12      |
| #0    | В              | 12               | 12         | 16               | 14      | 12               | 12         | 16               | 14     | 12               | 12          | 15                     | 12       | 12               | 12         | 15               | 12     | 12               | 12        | 15               | 12      | 12               | 12        | 15               | 12      |
| #4    | Ld             | 16               | 12         | 20               | 18      | 13               | 12         | 16               | 14     | 13               | 12          | 16                     | 14       | 13               | 12         | 15               | 12     | 13               | 12        | 15               | 12      | 13               | 12        | 15               | 12      |
|       | В              | 20               | 16         | 26               | 23      | 16               | 13         | 21               | 19     | 16               | 13          | 21                     | 19       | 16               | 13         | 19               | 15     | 16               | 13        | 19               | 15      | 16               | 13        | 19               | 15      |
| #5    | Ld             | 23               | 18         | 30               | 26      | 18               | 14         | 24               | 21     | 16               | 12          | 20                     | 18       | 16               | 12         | 20               | 18     | 16               | 12        | 19               | 14      | 16               | 12        | 19               | 14      |
|       | В              | 29               | 23         | 38               | 34      | 24               | 18         | 31               | 27     | 20               | 16          | 26                     | 23       | 20               | 16         | 26               | 23     | 20               | 16        | 24               | 19      | 20               | 16        | 24               | 19      |
| #6 -  | Ld             | 31               | 24         | 40               | 35      | 25               | 20         | 33               | 29     | 21               | 17          | 28                     | 25       | 19               | 14         | 24               | 21     | 19               | 14        | 24               | 21      | 19               | 14        | 22               | 17      |
| •     | В              | 40               | 31         | 52               | 46      | 33               | 25         | 43               | 38     | 28               | 21          | 36                     | 32       | 24               | 19         | 31               | 28     | 24               | 19        | 31               | 28      | 24               | 19        | 29               | 22      |
| #7    | Ld             | 49               | 38         | 64               | 57      | 41               | 31         | 53               | 47     | 35               | 27          | 45                     | 40       | 30               | 23         | 40               | 35     | 27               | 21        | 35               | 31      | 27               | 21        | 32               | 25      |
|       | В              | 64               | 49         | 83               | 74      | 53               | 41         | 69               | 61     | 45               | 35          | 59                     | 52       | 39               | 30         | 51               | 45     | 35               | 27        | 45               | 40      | 35               | 27        | 42               | 32      |
| #8    | Ld             | 61               | 47         | 80               | 70      | 51               | 39         | 66               | 59     | 44               | 34          | 57                     | 50       | 38               | 30         | 50               | 44     | 31               | 24        | 40               | 35      | 31               | 24        | 37               | 28      |
|       | В              | 79               | 61         | 103              | 91      | 66               | 51         | 86               | 76     | 57               | 44          | 74                     | 65       | 50               | 38         | 65               | 57     | 40               | 31        | 52               | 46      | 40               | 31        | 48               | 37      |
| #9    | Ld             | 74               | 57         | 96               | 85      | 62               | 48         | 81               | 71     | 53               | 41          | 70                     | 62       | 47               | 36         | 61               | 54     | 38               | 29        | 50               | 44      | 35               | 27        | 45               | 40      |
|       | В              | 96               | 74         | 125              | 110     | 80               | 62         | 105              | 93     | 69               | 53          | 91                     | 80       | 61               | 47         | 80               | 70     | 49               | 38        | 64               | 57      | 45               | 35        | 58               | 52      |
| #10   | Ld             | 88               | 68         | 116              | 102     | 75               | 58         | 98               | 86     | 65               | 50          | 85                     | 75       | 58               | 44         | 75               | 66     | 47               | 36        | 61               | 54      | 39               | 30        | 51               | 45      |
|       | В              | 115              | 88         | 150              | 132     | 97               | 75         | 127              | 112    | 85               | 65          | 110                    | 97       | 75               | 58         | 97               | 86     | 61               | 47        | 79               | 70      | 50               | 39        | 66               | 58      |
| #11   | Ld             | 104              | 80         | 135              | 120     | 89               | 68         | 116              | 102    | 77               | 60          | 101                    | 89       | 69               | 53         | 90               | 79     | 56               | 43        | 73               | 65      | 43               | 33        | 56               | 50      |
| 3. 3. | В              | 135              | 104        | 176              | 155     | 115              | 89         | 150              | 133    | 100              | 77          | 131                    | 116      | 89               | 69         | 116              | 103    | 73               | 56        | 95               | 84      | 56               | 43        | 73               | 64      |

| TENSION DEVELOPMENT LENGTH (Ld) AND TENSION LAP SPLICE LENGTH (Lap Class B OR |
|---|
| 1.3Ld) FOR GRADE 60 DÉFORMED REINFORCING BARS (inches)                        |
| (UNLESS NOTED OTHERWISE)  |

| f`c = 7000 PSI, NORMAL WEIGHT CONCRETE | : |
|--|---|

|            |       | 1                |          |                        |        |                  |           |                        |        |                  |            |                        |        |                  |           |                      |        |                  |           |                                   |        |                  |           |                        |        |
|------------|-------|------------------|----------|------------------------|--------|------------------|-----------|------------------------|--------|------------------|------------|------------------------|--------|------------------|-----------|----------------------|--------|------------------|-----------|-----------------------------------|--------|------------------|-----------|------------------------|--------|
|            |       | СО               | NCRETE C | OVER ≥ 0.7             | 75 in  | CO               | NCRETE C  | OVER ≥ 1.              | 0 in   | СО               | NCRETE C   | OVER ≥ 1.2             | 25 in  | CO               | NCRETE C  | OVER ≥ 1.5           | 50 in  | CO               | NCRETE CO | OVER ≥ 2.0                        | 00 in  | СО               | NCRETE CO | OVER ≥ 3.0             | 00 in  |
| BAR        | ENGTH | CLEA             | R BAR SP | ACING <sup>2</sup> ≥ 1 | .50 in | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ 2 | 2.0 in | CLEA             | AR BAR SPA | ACING <sup>2</sup> ≥ 2 | .50 in | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ | 3.0 in | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ <sup>4</sup> | 4.0 in | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ ( | 6.0 in |
| SIZE       | LE    | UNCC             | ATED     | EPOXY-                 | COATED | UNCC             | ATED      | EPOXY-                 | COATED | UNCC             | DATED      | EPOXY-                 | COATED | UNCC             | ATED      | EPOXY-               | COATED | UNC              | DATED     | EPOXY-                            | COATED | UNCC             | DATED     | EPOXY-                 | COATED |
|            |       | TOP <sup>1</sup> | OTHER    | TOP <sup>1</sup>       | OTHER  | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>       | OTHER  | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup>       | OTHER  | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>     | OTHER  | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>                  | OTHER  | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>       | OTHER  |
| 40         | Ld    | 12               | 12       | 12                     | 12     | 12               | 12        | 12                     | 12     | 12               | 12         | 12                     | 12     | 12               | 12        | 12                   | 12     | 12               | 12        | 12                                | 12     | 12               | 12        | 12                     | 12     |
| #3         | В     | 12               | 12       | 15                     | 13     | 12               | 12        | 15                     | 13     | 12               | 12         | 14                     | 12     | 12               | 12        | 14                   | 12     | 12               | 12        | 14                                | 12     | 12               | 12        | 14                     | 12     |
| #4         | Ld    | 14               | 12       | 19                     | 17     | 12               | 12        | 15                     | 13     | 12               | 12         | 15                     | 13     | 12               | 12        | 14                   | 12     | 12               | 12        | 14                                | 12     | 12               | 12        | 14                     | 12     |
| #4         | В     | 19               | 14       | 24                     | 21     | 15               | 12        | 20                     | 17     | 15               | 12         | 20                     | 17     | 15               | 12        | 18                   | 14     | 15               | 12        | 18                                | 14     | 15               | 12        | 18                     | 14     |
| <b>"</b> г | Ld    | 21               | 16       | 27                     | 24     | 17               | 13        | 22                     | 20     | 14               | 12         | 19                     | 17     | 14               | 12        | 19                   | 17     | 14               | 12        | 17                                | 13     | 14               | 12        | 17                     | 13     |
| #5         | В     | 27               | 21       | 35                     | 31     | 22               | 17        | 29                     | 25     | 19               | 14         | 24                     | 21     | 19               | 14        | 24                   | 21     | 19               | 14        | 22                                | 17     | 19               | 14        | 22                     | 17     |
| "0         | Ld    | 28               | 22       | 37                     | 33     | 23               | 18        | 30                     | 27     | 20               | 15         | 26                     | 23     | 17               | 13        | 22                   | 20     | 17               | 13        | 22                                | 20     | 17               | 13        | 21                     | 16     |
| #6         | В     | 37               | 28       | 48                     | 42     | 30               | 23        | 39                     | 35     | 26               | 20         | 33                     | 30     | 22               | 17        | 29                   | 26     | 22               | 17        | 29                                | 26     | 22               | 17        | 27                     | 21     |
|            | Ld    | 46               | 35       | 59                     | 53     | 38               | 29        | 49                     | 43     | 32               | 25         | 42                     | 37     | 28               | 22        | 37                   | 32     | 25               | 19        | 33                                | 29     | 25               | 19        | 30                     | 23     |
| #7         | В     | 59               | 46       | 77                     | 68     | 49               | 38        | 64                     | 56     | 42               | 32         | 54                     | 48     | 36               | 28        | 47                   | 42     | 32               | 25        | 42                                | 37     | 32               | 25        | 39                     | 30     |
| "0         | Ld    | 56               | 44       | 74                     | 65     | 47               | 36        | 61                     | 54     | 40               | 31         | 53                     | 47     | 35               | 27        | 46                   | 41     | 28               | 22        | 37                                | 33     | 28               | 22        | 34                     | 26     |
| #8         | В     | 73               | 56       | 96                     | 84     | 61               | 47        | 80                     | 70     | 52               | 40         | 68                     | 60     | 46               | 35        | 60                   | 53     | 37               | 28        | 48                                | 42     | 37               | 28        | 44                     | 34     |
| "0         | Ld    | 68               | 53       | 89                     | 79     | 57               | 44        | 75                     | 66     | 50               | 38         | 65                     | 57     | 44               | 34        | 57                   | 50     | 35               | 27        | 46                                | 41     | 32               | 25        | 42                     | 37     |
| #9         | В     | 89               | 68       | 116                    | 102    | 74               | 57        | 97                     | 86     | 64               | 50         | 84                     | 74     | 57               | 44        | 74                   | 65     | 46               | 35        | 59                                | 53     | 42               | 32        | 54                     | 48     |
|            | Ld    | 82               | 63       | 107                    | 94     | 69               | 54        | 91                     | 80     | 60               | 47         | 79                     | 70     | 53               | 41        | 70                   | 61     | 43               | 33        | 56                                | 50     | 36               | 28        | 47                     | 41     |
| #10        | В     | 106              | 82       | 139                    | 123    | 90               | 69        | 118                    | 104    | 78               | 60         | 102                    | 90     | 69               | 53        | 90                   | 80     | 56               | 43        | 73                                | 65     | 47               | 36        | 61                     | 54     |
|            | Ld    | 96               | 74       | 125                    | 111    | 82               | 63        | 107                    | 95     | 72               | 55         | 93                     | 83     | 64               | 49        | 83                   | 73     | 52               | 40        | 68                                | 60     | 40               | 31        | 52                     | 46     |
| #11        | В     | 125              | 96       | 163                    | 144    | 106              | 82        | 139                    | 123    | 93               | 72         | 121                    | 107    | 82               | 64        | 108                  | 95     | 67               | 52        | 88                                | 78     | 52               | 40        | 68                     | 60     |

## TENSION DEVELOPMENT LENGTH (Ld) AND TENSION LAP SPLICE LENGTH (Lap Class B OR 1.3Ld) FOR GRADE 60 DEFORMED REINFORCING BARS (inches)

fo = 8000 PSI NORMAI WEIGHT CONCRETE

(UNLESS NOTED OTHERWISE)

|      |                |                  |            |                        |          |                  |           |                        |          | f                | c = 8000 P | SI, NORMA              | L WEIGHT | CONCRET          | E         |                      |          |                  |           |             |          |                  |           |                  |          |
|------|----------------|------------------|------------|------------------------|----------|------------------|-----------|------------------------|----------|------------------|------------|------------------------|----------|------------------|-----------|----------------------|----------|------------------|-----------|-------------|----------|------------------|-----------|------------------|----------|
|      |                | CO               | NCRETE C   | OVER ≥ 0.7             | 75 in    | CC               | NCRETE C  | OVER ≥ 1.              | 0 in     | CO               | NCRETE C   | OVER ≥ 1.2             | 25 in    | CO               | NCRETE C  | OVER ≥ 1.5           | 60 in    | CO               | NCRETE C  | OVER ≥ 2.0  | 00 in    | CO               | NCRETE C  | OVER ≥ 3.0       | 00 in    |
| BAR  | LENGTH<br>TYPE | CLEA             | AR BAR SPA | ACING <sup>2</sup> ≥ 1 | .50 in   | CLE/             | AR BAR SP | ACING <sup>2</sup> ≥ 3 | 2.0 in   | CLEA             | R BAR SPA  | ACING <sup>2</sup> ≥ 2 | 2.50 in  | CLE              | AR BAR SP | ACING <sup>2</sup> ≥ | 3.0 in   | CLE              | AR BAR SP | ACING ² ≥ 4 | 4.0 in   | CLE              | AR BAR SP | ACING ² ≥ (      | 6.0 in   |
| SIZE | LEN            | UNCC             | DATED      | EPOXY-                 | COATED   | UNCC             | ATED      | EPOXY-                 | COATED   | UNCC             | ATED       | EPOXY-                 | COATED   | UNCC             | ATED      | EPOXY-               | COATED   | UNCC             | ATED      | EPOXY-      | COATED   | UNC              | DATED     | EPOXY-           | COATED   |
|      |                | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup>       | OTHER    | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>       | OTHER    | TOP <sup>1</sup> | OTHER      | TOP <sup>1</sup>       | OTHER    | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup>     | OTHER    | TOP <sup>1</sup> | OTHER     | TOP 1       | OTHER    | TOP <sup>1</sup> | OTHER     | TOP <sup>1</sup> | OTHER    |
| #3   | Ld             | 12               | 12         | 12                     | 12       | 12               | 12        | 12                     | 12       | 12               | 12         | 12                     | 12       | 12               | 12        | 12                   | 12       | 12               | 12        | 12          | 12       | 12               | 12        | 12               | 12       |
|      | В              | 12               | 12         | 14                     | 12       | 12               | 12        | 14                     | 12       | 12               | 12         | 13                     | 12       | 12               | 12        | 13                   | 12       | 12               | 12        | 13          | 12       | 12               | 12        | 13               | 12       |
| #4   | Ld             | 14               | 12         | 18                     | 16       | 12               | 12        | 14                     | 13       | 12               | 12         | 14                     | 13       | 12               | 12        | 13                   | 12       | 12               | 12        | 13          | 12       | 12               | 12        | 13               | 12       |
|      | В              | 18               | 14         | 23                     | 20       | 14               | 12        | 18                     | 16       | 14               | 12         | 18                     | 16       | 14               | 12        | 17                   | 13       | 14               | 12        | 17          | 13       | 14               | 12        | 17               | 13       |
| #5   | Ld             | 20               | 15         | 26                     | 23       | 16               | 12        | 21                     | 18       | 14               | 12         | 18                     | 16       | 14               | 12        | 18                   | 16       | 14               | 12        | 16          | 13       | 14               | 12        | 16               | 13       |
|      | В              | 26               | 20         | 33                     | 29       | 21               | 16        | 27                     | 24       | 18               | 14         | 23                     | 20       | 18               | 14        | 23                   | 20       | 18               | 14        | 21          | 16       | 18               | 14        | 21               | 16       |
| #6   | Ld             | 27               | 21         | 35<br>45               | 31       | 22               | 17        | 28                     | 25       | 19               | 14         | 24                     | 21       | 16               | 13        | 21                   | 19       | 16               | 13        | 21          | 19       | 16               | 13        | 19               | 15       |
|      | B<br>Ld        | 35<br>43         | 27<br>33   | 45<br>56               | 40<br>49 | 28<br>35         | 22        | 37<br>46               | 33<br>41 | 24<br>30         | 19<br>23   | 31<br>39               | 28<br>35 | 21<br>26         | 16<br>20  | 27<br>34             | 24<br>30 | 21               | 16<br>18  | 27<br>30    | 24<br>27 | 21               | 16<br>18  | 25<br>28         | 19<br>22 |
| #7   | B              | 55               | 43         | 72                     | 64       | 46               | 35        | 60                     | 53       | 39               | 30         | 51                     | 45       | 34               | 26        | 44                   | 39       | 30               | 23        | 39          | 35       | 30               | 23        | 36               | 28       |
|      | Ld             | 53               | 41         | 69                     | 61       | 44               | 34        | 58                     | 51       | 38               | 29         | 49                     | 44       | 33               | 26        | 43                   | 38       | 27               | 21        | 35          | 31       | 27               | 21        | 32               | 25       |
| #8   | В              | 69               | 53         | 89                     | 79       | 57               | 44        | 75                     | 66       | 49               | 38         | 64                     | 57       | 43               | 33        | 56                   | 50       | 35               | 27        | 45          | 40       | 35               | 27        | 41               | 32       |
|      | Ld             | 64               | 49         | 83                     | 74       | 54               | 41        | 70                     | 62       | 46               | 36         | 60                     | 53       | 41               | 32        | 53                   | 47       | 33               | 25        | 43          | 38       | 30               | 23        | 39               | 35       |
| #9   | В              | 83               | 64         | 108                    | 96       | 70               | 54        | 91                     | 80       | 60               | 46         | 78                     | 69       | 53               | 41        | 69                   | 61       | 43               | 33        | 56          | 49       | 39               | 30        | 51               | 45       |
| #10  | Ld             | 77               | 59         | 100                    | 88       | 65               | 50        | 85                     | 75       | 56               | 44         | 74                     | 65       | 50               | 39        | 65                   | 58       | 41               | 31        | 53          | 47       | 34               | 26        | 44               | 39       |
| #10  | В              | 100              | 77         | 130                    | 115      | 84               | 65        | 110                    | 97       | 73               | 56         | 96                     | 84       | 65               | 50        | 84                   | 75       | 53               | 41        | 69          | 61       | 44               | 34        | 57               | 50       |
| #11  | Ld             | 90               | 69         | 117                    | 104      | 77               | 59        | 100                    | 88       | 67               | 52         | 87                     | 77       | 59               | 46        | 78                   | 69       | 49               | 37        | 63          | 56       | 37               | 29        | 49               | 43       |
| πιι  | В              | 117              | 90         | 152                    | 135      | 100              | 77        | 130                    | 115      | 87               | 67         | 114                    | 100      | 77               | 59        | 101                  | 89       | 63               | 49        | 82          | 73       | 48               | 37        | 63               | 56       |

#### TENSION DEVELOPMENT LENGTH (Ld) AND TENSION LAP SPLICE LENGTH (Lap Class B OR 1.3Ld) FOR GRADE 60 DÉFORMED REINFORCING BARS (inches)

(UNLESS NOTED OTHERWISE) f'c = 10,000 PSI, NORMAL WEIGHT CONCRETE

| BAR<br>SIZE |                | СО                                       | NCRETE C | OVER ≥ 0.7       | '5 in | CONCRETE COVER ≥ 1.0 in |   |                  |       | CONCRETE COVER ≥ 1.25 in |  |                  |       | CONCRETE COVER ≥ 1.50 in |   |                  |       | CO                                      | NCRETE C | OVER ≥ 2.0       | 00 in | CONCRETE COVER ≥ 3.00 in                |       |                  |       |
|-------------|----------------|--|----------|------------------|-------|-------------------------|---|------------------|-------|--------------------------|--|------------------|-------|--------------------------|---|------------------|-------|---|----------|------------------|-------|---|-------|------------------|-------|
|             | LENGTH<br>TYPE | CLEAR BAR SPACING <sup>2</sup> ≥ 1.50 in |          |                  |       | CLE                     | CLEAR BAR SPACING <sup>2</sup> ≥ 2.0 in |                  |       |                          | CLEAR BAR SPACING <sup>2</sup> ≥ 2.50 in |                  |       |                          | CLEAR BAR SPACING <sup>2</sup> ≥ 3.0 in |                  |       | CLEAR BAR SPACING <sup>2</sup> ≥ 4.0 in |          |                  |       | CLEAR BAR SPACING <sup>2</sup> ≥ 6.0 in |       |                  |       |
|             | LEN            | UNCOATED                                 |          | EPOXY-COATED     |       | UNCOATED                |   | EPOXY-COATED     |       | UNCOATED                 |  | EPOXY-COATED     |       | UNCOATED                 |   | EPOXY-COATED     |       | UNCOATED                                |          | EPOXY-COATED     |       | UNCOATED                                |       | EPOXY-COATED     |       |
|             |                | TOP <sup>1</sup>                         | OTHER    | TOP <sup>1</sup> | OTHER | TOP <sup>1</sup>        | OTHER                                   | TOP <sup>1</sup> | OTHER | TOP <sup>1</sup>         | OTHER                                    | TOP <sup>1</sup> | OTHER | TOP <sup>1</sup>         | OTHER                                   | TOP <sup>1</sup> | OTHER | TOP <sup>1</sup>                        | OTHER    | TOP <sup>1</sup> | OTHER | TOP <sup>1</sup>                        | OTHER | TOP <sup>1</sup> | OTHER |
| #3          | Ld             | 12                                       | 12       | 12               | 12    | 12                      | 12                                      | 12               | 12    | 12                       | 12                                       | 12               | 12    | 12                       | 12                                      | 12               | 12    | 12                                      | 12       | 12               | 12    | 12                                      | 12    | 12               | 12    |
|             | В              | 12                                       | 12       | 12               | 12    | 12                      | 12                                      | 12               | 12    | 12                       | 12                                       | 12               | 12    | 12                       | 12                                      | 12               | 12    | 12                                      | 12       | 12               | 12    | 12                                      | 12    | 12               | 12    |
| #4          | Ld             | 12                                       | 12       | 16               | 14    | 12                      | 12                                      | 13               | 12    | 12                       | 12                                       | 13               | 12    | 12                       | 12                                      | 12               | 12    | 12                                      | 12       | 12               | 12    | 12                                      | 12    | 12               | 12    |
|             | В              | 16                                       | 12       | 20               | 18    | 13                      | 12                                      | 16               | 15    | 13                       | 12                                       | 16               | 15    | 13                       | 12                                      | 15               | 12    | 13                                      | 12       | 15               | 12    | 13                                      | 12    | 15               | 12    |
| #5          | Ld             | 18                                       | 14       | 23               | 20    | 14                      | 12                                      | 19               | 17    | 12                       | 12                                       | 16               | 14    | 12                       | 12                                      | 16               | 14    | 12                                      | 12       | 15               | 12    | 12                                      | 12    | 15               | 12    |
|             | В              | 23                                       | 18       | 30               | 26    | 19                      | 14                                      | 24               | 21    | 16                       | 12                                       | 20               | 18    | 16                       | 12                                      | 20               | 18    | 16                                      | 12       | 19               | 15    | 16                                      | 12    | 19               | 15    |
| #6          | Ld             | 24                                       | 18       | 31               | 27    | 20                      | 15                                      | 26               | 23    | 17                       | 13                                       | 22               | 19    | 15                       | 12                                      | 19               | 17    | 15                                      | 12       | 19               | 17    | 15                                      | 12    | 17               | 13    |
|             | В              | 31                                       | 24       | 40               | 36    | 25                      | 20                                      | 33               | 29    | 22                       | 17                                       | 28               | 25    | 19                       | 15                                      | 24               | 22    | 19                                      | 15       | 24               | 22    | 19                                      | 15    | 22               | 17    |
| #7          | Ld             | 38                                       | 30       | 50               | 44    | 32                      | 24                                      | 41               | 36    | 27                       | 21                                       | 35               | 31    | 24                       | 18                                      | 31               | 27    | 21                                      | 16       | 27               | 24    | 21                                      | 16    | 25               | 19    |
|             | В              | 50                                       | 38       | 65               | 57    | 41                      | 32                                      | 53               | 47    | 35                       | 27                                       | 46               | 40    | 31                       | 24                                      | 40               | 35    | 27                                      | 21       | 35               | 31    | 27                                      | 21    | 32               | 25    |
| #8          | Ld             | 47                                       | 36       | 62               | 54    | 39                      | 30                                      | 51               | 45    | 34                       | 26                                       | 44               | 39    | 30                       | 23                                      | 39               | 34    | 24                                      | 18       | 31               | 27    | 24                                      | 18    | 29               | 22    |
|             | В              | 61                                       | 47       | 80               | 71    | 51                      | 39                                      | 67               | 59    | 44                       | 34                                       | 57               | 51    | 39                       | 30                                      | 50               | 44    | 31                                      | 24       | 40               | 36    | 31                                      | 24    | 37               | 29    |
| #9          | Ld             | 57                                       | 44       | 75               | 66    | 48                      | 37                                      | 63               | 55    | 42                       | 32                                       | 54               | 48    | 37                       | 28                                      | 48               | 42    | 30                                      | 23       | 38               | 34    | 27                                      | 21    | 35               | 31    |
|             | В              | 74                                       | 57       | 97               | 85    | 62                      | 48                                      | 81               | 72    | 54                       | 42                                       | 70               | 62    | 47                       | 37                                      | 62               | 55    | 38                                      | 30       | 50               | 44    | 35                                      | 27    | 45               | 40    |
| #10         | Ld             | 69                                       | 53       | 90               | 79    | 58                      | 45                                      | 76               | 67    | 51                       | 39                                       | 66               | 58    | 45                       | 34                                      | 58               | 51    | 36                                      | 28       | 47               | 42    | 30                                      | 23    | 39               | 35    |
|             | В              | 89                                       | 69       | 116              | 103   | 76                      | 58                                      | 99               | 87    | 66                       | 51                                       | 86               | 76    | 58                       | 45                                      | 76               | 67    | 47                                      | 36       | 61               | 54    | 39                                      | 30    | 51               | 45    |
| #11         | Ld             | 80                                       | 62       | 105              | 93    | 69                      | 53                                      | 90               | 79    | 60                       | 46                                       | 78               | 69    | 53                       | 41                                      | 69               | 61    | 43                                      | 34       | 57               | 50    | 33                                      | 26    | 44               | 39    |
|             | В              | 104                                      | 80       | 136              | 120   | 89                      | 69                                      | 116              | 103   | 78                       | 60                                       | 102              | 90    | 69                       | 53                                      | 90               | 80    | 56                                      | 43       | 74               | 65    | 43                                      | 33    | 57               | 50    |

#### TENSION DEVELOPMENT LENGTH (Ld) AND TENSION LAP SPLICE LENGTH (Lap Class B OR 1.3Ld) FOR GRADE 60 DÉFORMED REINFORCING BARS (inches) (UNLESS NOTED OTHERWISE)

f`c = 12,000 PSI, NORMAL WEIGHT CONCRETE

|             | LENGTH<br>TYPE |  | NODETE O | 0\/ED > 0.7      | 7E in | 00                                      | NICDETE C | OVED > 1.0       | n in                                     | 00               | CONCRETE COVER ≥ 1.25 in |                  |   |                  | CONCRETE COVER ≥ 1.50 in |   |       |                          | NODETE CO | \/FD > 2.0                   | 0 in  | CONCRETE COVER ≥ 3.00 in |       |                  |       |
|-------------|----------------|--|----------|------------------|-------|---|-----------|------------------|--|------------------|--------------------------|------------------|---|------------------|--------------------------|---|-------|--------------------------|-----------|------------------------------|-------|--------------------------|-------|------------------|-------|
|             |                | CONCRETE COVER ≥ 0.75 in                 |          |                  |       | CONCRETE COVER ≥ 1.0 in                 |           |                  |  |                  |                          |                  |   |                  |                          |   |       | CONCRETE COVER ≥ 2.00 in |           |                              |       |                          |       |                  |       |
| BAR<br>SIZE |                | CLEAR BAR SPACING <sup>2</sup> ≥ 1.50 in |          |                  |       | CLEAR BAR SPACING <sup>2</sup> ≥ 2.0 in |           |                  | CLEAR BAR SPACING <sup>2</sup> ≥ 2.50 in |                  |                          |                  | CLEAR BAR SPACING <sup>2</sup> ≥ 3.0 in |                  |                          | CLEAR BAR SPACING <sup>2</sup> ≥ 4.0 in |       |                          |           | CLEAR BAR SPACING 2 ≥ 6.0 in |       |                          |       |                  |       |
|             |                | UNCOATED                                 |          | EPOXY-COATED     |       | UNCOATED                                |           | EPOXY-COATED     |  | UNCOATED         |                          | EPOXY-COATED     |   | UNCOATED         |                          | EPOXY-COATED                            |       | UNCOATED                 |           | EPOXY-COATED                 |       | UNCOATED                 |       | EPOXY-COATED     |       |
|             |                | TOP <sup>1</sup>                         | OTHER    | TOP <sup>1</sup> | OTHER | TOP <sup>1</sup>                        | OTHER     | TOP <sup>1</sup> | OTHER                                    | TOP <sup>1</sup> | OTHER                    | TOP <sup>1</sup> | OTHER                                   | TOP <sup>1</sup> | OTHER                    | TOP <sup>1</sup>                        | OTHER | TOP <sup>1</sup>         | OTHER     | TOP <sup>1</sup>             | OTHER | TOP <sup>1</sup>         | OTHER | TOP <sup>1</sup> | OTHER |
| #3          | Ld             | 12                                       | 12       | 12               | 12    | 12                                      | 12        | 12               | 12                                       | 12               | 12                       | 12               | 12                                      | 12               | 12                       | 12                                      | 12    | 12                       | 12        | 12                           | 12    | 12                       | 12    | 12               | 12    |
| #3          | В              | 12                                       | 12       | 12               | 12    | 12                                      | 12        | 12               | 12                                       | 12               | 12                       | 12               | 12                                      | 12               | 12                       | 12                                      | 12    | 12                       | 12        | 12                           | 12    | 12                       | 12    | 12               | 12    |
| #4          | Ld             | 12                                       | 12       | 14               | 13    | 12                                      | 12        | 12               | 12                                       | 12               | 12                       | 12               | 12                                      | 12               | 12                       | 12                                      | 12    | 12                       | 12        | 12                           | 12    | 12                       | 12    | 12               | 12    |
| #4          | В              | 14                                       | 12       | 19               | 17    | 12                                      | 12        | 15               | 13                                       | 12               | 12                       | 15               | 13                                      | 12               | 12                       | 14                                      | 12    | 12                       | 12        | 14                           | 12    | 12                       | 12    | 14               | 12    |
| #5          | Ld             | 16                                       | 13       | 21               | 19    | 13                                      | 12        | 17               | 15                                       | 12               | 12                       | 14               | 13                                      | 12               | 12                       | 14                                      | 13    | 12                       | 12        | 13                           | 12    | 12                       | 12    | 13               | 12    |
|             | В              | 21                                       | 16       | 27               | 24    | 17                                      | 13        | 22               | 20                                       | 14               | 12                       | 19               | 17                                      | 14               | 12                       | 19                                      | 17    | 14                       | 12        | 17                           | 13    | 14                       | 12    | 17               | 13    |
| #6          | Ld             | 22                                       | 17       | 28               | 25    | 18                                      | 14        | 23               | 21                                       | 15               | 12                       | 20               | 18                                      | 13               | 12                       | 17                                      | 15    | 13                       | 12        | 17                           | 15    | 13                       | 12    | 16               | 12    |
| #0          | В              | 28                                       | 22       | 37               | 33    | 23                                      | 18        | 30               | 27                                       | 20               | 15                       | 26               | 23                                      | 17               | 13                       | 22                                      | 20    | 17                       | 13        | 22                           | 20    | 17                       | 13    | 20               | 16    |
| #7          | Ld             | 35                                       | 27       | 46               | 40    | 29                                      | 22        | 38               | 33                                       | 25               | 19                       | 32               | 28                                      | 22               | 17                       | 28                                      | 25    | 19                       | 15        | 25                           | 22    | 19                       | 15    | 23               | 18    |
| #1          | В              | 45                                       | 35       | 59               | 52    | 37                                      | 29        | 49               | 43                                       | 32               | 25                       | 42               | 37                                      | 28               | 22                       | 36                                      | 32    | 25                       | 19        | 32                           | 29    | 25                       | 19    | 30               | 23    |
| #8          | Ld             | 43                                       | 33       | 56               | 50    | 36                                      | 28        | 47               | 42                                       | 31               | 24                       | 40               | 36                                      | 27               | 21                       | 35                                      | 31    | 22                       | 17        | 28                           | 25    | 22                       | 17    | 26               | 20    |
| #0          | В              | 56                                       | 43       | 73               | 65    | 47                                      | 36        | 61               | 54                                       | 40               | 31                       | 52               | 46                                      | 35               | 27                       | 46                                      | 41    | 28                       | 22        | 37                           | 33    | 28                       | 22    | 34               | 26    |
| #9          | Ld             | 52                                       | 40       | 68               | 60    | 44                                      | 34        | 57               | 51                                       | 38               | 29                       | 49               | 44                                      | 33               | 26                       | 44                                      | 38    | 27                       | 21        | 35                           | 31    | 25                       | 19    | 32               | 28    |
| #9          | В              | 68                                       | 52       | 88               | 78    | 57                                      | 44        | 74               | 66                                       | 49               | 38                       | 64               | 57                                      | 43               | 33                       | 56                                      | 50    | 35                       | 27        | 46                           | 40    | 32                       | 25    | 41               | 37    |
| #10         | Ld             | 63                                       | 48       | 82               | 72    | 53                                      | 41        | 69               | 61                                       | 46               | 36                       | 60               | 53                                      | 41               | 32                       | 53                                      | 47    | 33                       | 26        | 43                           | 38    | 28                       | 21    | 36               | 32    |
| #10         | В              | 81                                       | 63       | 106              | 94    | 69                                      | 53        | 90               | 80                                       | 60               | 46                       | 78               | 69                                      | 53               | 41                       | 69                                      | 61    | 43                       | 33        | 56                           | 50    | 36                       | 28    | 47               | 41    |
| #11         | Ld             | 73                                       | 57       | 96               | 85    | 63                                      | 48        | 82               | 72                                       | 55               | 42                       | 72               | 63                                      | 49               | 38                       | 63                                      | 56    | 40                       | 31        | 52                           | 46    | 31                       | 24    | 40               | 35    |
| #''         | В              | 95                                       | 73       | 125              | 110   | 81                                      | 63        | 106              | 94                                       | 71               | 55                       | 93               | 82                                      | 63               | 49                       | 82                                      | 73    | 52                       | 40        | 67                           | 59    | 40                       | 31    | 52               | 46    |

01/06/2017 HUB SUBMISSION 11/11/2016 | CORE AND SHELL BUY SET 10/19/2016 MTA APPROVAL 10/07/2016 | CORE AND SHELL BID SET

09/09/2016 MTA APPROVAL

07/28/2016 FOUNDATION BID SET 07/06/2016 ISSUED TO DOB 06/24/2016 MTA APPROVAL 1 06/20/2016 100% DD SUBMISSION Number: Date: Revision:

THE LIGHTSTONE GROUP

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DOB STAMPS & SIGNATURES: Clara Gomez

Build 10

APPROVED

Under Directive 2 of 1975

Date: 04/03/2017:

REINF DEVELOPMENT LENGTH/LAP SPLICE



# 130 WILLIAM STREET

GENERAL

LLC IS THE SPECIAL INSPECTION AGENCY AS LISTED UNDER SPECIAL INSPECTIONS SECTION.

1. THESE DRAWINGS MAY BE USED FOR CONSTRUCTION ONLY IF RA CONSULTANTS

- 2. THESE DRAWINGS WERE CREATED WITH THE SOLE INTENTION OF USE BY THE CLIENT LISTED IN THESE DRAWINGS FOR THE PROJECT LISTED IN THESE
- 3. RA CONSULTANTS LLC SHALL BE ADDED TO THE PROJECT WRAP AND/OR CONTRACTOR'S GENERAL LIABILITY INSURANCE AS AN ADDITIONAL INSURED.
- 4. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT DRAWINGS AND AS INDICATED IN THE PROJECT SPECIFICATIONS.
- 5. 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.
- 6. ANY PROPOSED CHANGES TO THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO RA CONSULTANTS LLC FOR REVIEW AND CONSIDERATION.
- 7. PROPOSED DESIGN CHANGES SHALL CONSIST OF SIGNED AND SEALED DRAWINGS (TO SCALE). THE DRAWINGS SHALL BE SUBMITTED TO RA

CONSULTANTS LLC FOR REVIEW AND CONSIDERATION.

SURVEYS, AND STRUCTURAL DRAWINGS.

- 8. DIFFERING FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF RA
- CONSULTANTS IMMEDIATELY. 9. RA CONSULTANTS PERSONNEL ARE NOT 40-HR OSHA TRAINED AND CANNOT
- WORK ON SITES WITH A (C) DESIGNATION. 10. LOCATION OF EXISTING AND PROPOSED CONDITIONS INCLUDING BUT NOT LIMITED TO FOUNDATION WALL, FOOTINGS AND SLAB LOCATIONS AND ELEVATIONS WERE TAKEN FROM RA CONSULTANTS FIELD MEASUREMENTS.
- 11. LOCATIONS AND ELEVATIONS OF ALL PROPOSED STRUCTURAL BUILDING ELEMENTS SHOWN ON THIS DRAWING MAY BE APPROXIMATE AND SHALL BE SUPERSEDED BY FINAL STRUCTURAL AND ARCHITECTURAL DRAWINGS.
- 12. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE UTILITIES AND BELOW GROUND STRUCTURES IN THE AREA OF PRIOR TO COMMENCEMENT OF WORK.
- 13. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF THE OTHER TRADES, INCLUDING BUT NOT LIMITED TO: SITE UTILITIES, GENERAL EARTHWORK, AND BUILDING FOUNDATION CONSTRUCTION. 14. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL DIMENSIONS IN THE
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO EVALUATE THE CONDITION. MODIFICATIONS TO THESE DRAWINGS MAY BE NECESSARY. 15. EXISTING STRUCTURES SHALL BE EVALUATED BY A LICENSED ENGINEER TO

DETERMINE IF THEY CAN SUPPORT THE ADDITIONAL LOADS FROM CONCRETE

FIELD. IF CONDITIONS OBSERVED IN THE FIELD DIFFER FROM THESE DRAWINGS,

16. CONTRACTOR IS RESPONSIBLE FOR DEWATERING AS NECESSARY TO MAINTAIN DRY AND STABLE SUBGRADE. GROUNDWATER LEVEL SHALL BE MAINTAINED AT LEAST 2-FT BELOW PROPOSED SUBGRADE LEVEL FOR THE DURATION OF THE

PLACEMENT IN ACCORDANCE WITH DOB BULLETIN 2009-011.

**EXCAVATION AND CONSTRUCTION.** 17. BENCH CUT OR SLOPE ALL EXCAVATIONS IN ACCORDANCE WITH OSHA

STANDARDS UNLESS SUITABLE TEMPORARY SHORING OR BRACING IS

- 18. THESE DRAWINGS DO NOT ADDRESS SAFETY ISSUES RELATED TO THE EXCAVATION AND SHORING WORK. OTHERS SHALL BE RESPONSIBLE FOR SITE SAFETY AND PROVIDE A SAFETY PLAN CONFORMING TO OSHA AND ALL
- 19. BARRIERS AND FENCING AROUND SITE MUST BE PROVIDED BY CONTRACTOR IN ACCORDANCE WITH NEW YORK CITY DEPARTMENT OF BUILDINGS AND ALL APPLICABLE LAWS.

APPLICABLE LAWS.

OF EXCAVATION ONLY.

- 20. IF THE CONDITIONS OBSERVED AS THE EXCAVATION ADVANCES ARE DIFFERENT THAN THE CONDITIONS SHOWN ON THE DESIGN DRAWINGS, THE CONTRACTOR SHALL STOP WORK AND NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER.
- STRUCTURES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER. 22. LOOSE AREAS OF FOUNDATION WALL OR FOOTINGS THAT ARE DAMAGED OR

21. OBSERVED MOVEMENTS OF THE SUPPORT OF EXCAVATION OR OTHER

- LOOSE SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR **EVALUATION AND REMEDIAL MEASURES.**
- 23. PINS, WIRE MESH AND PARGING MAY BE REQUIRED TO STABILIZE THE FOUNDATION WALL, OR FOOTINGS. 24. THE DESIGNS ON THESE DRAWINGS ARE INTENDED FOR TEMPORARY SUPPORT
- 25. NOTIFY DOB 24- TO 48-HRS PRIOR TO EXCAVATION (RULE 52).
- 26. CONSENT FROM OWNERS OF ADJACENT PROPERTIES SHALL BE OBTAINED IF
- REQUIRED WORK EXTENDS BEYOND PROPERTY LINE. 27. SIDEWALK CLOSING FROM NYDOT IS REQUIRED TO OVERCUT THE SIDEWALK.
- 28. CONTRACTOR SHALL COMPLY WITH BUILDING BULLETIN #2009-2011. SURVEY AND MONITORING
- 1. A PRE-CONSTRUCTION (PRE-CONDITION) SURVEY OF THE ADJACENT STRUCTURES SHALL BE DONE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH NYC BUILDING CODE SECTION 3309.3. AS FOLLOWS 1.1 WHEN PERMISSION TO ENTER UPON ADJOINING PROPERTY HAS BEEN
- CONDUCTED PRIOR TO THE COMMENCEMENT OF THE OPERATIONS AND AT REASONABLE PERIODS DURING THE PROGRESS OF THE WORK. OBSERVED CONDITIONS SHALL BE RECORDED, AND SUCH RECORDS SHALL BE MADE AVAILABLE TO THE DOB UPON REQUEST.

OBTAINED. A PHYSICAL EXAMINATION OF SUCH PROPERTY SHALL BE

- THE CONTRACTOR SHALL REVIEW AND FAMILIARIZE HIMSELF WITH THE RESULTS OF THE SURVEY. 1.3 CRACK MONITORS SHALL BE INSTALLED ON ALL VISIBLE AND ACCESSIBLE CRACKS
- 1.4 CRACK MONITORS SHALL BE READ EVERY 2 WEEKS. REFER TO SECTIONS 5.1.AND 5.2 IN "SURVEY AND MONITORING" FOR CRACK READING CRITERIA. READING FREQUENCY MAY BE INCREASED IF REQUESTED BY RA CONSULTANTS LLC.
- 2. MONITORING LOCATIONS FOR ADJACENT BUILDINGS ARE SHOWN ON THE SUPPORT OF EXCAVATION PLAN.
- 3. BASELINE READINGS OF THE MONITORING POINTS SHALL BE OBTAINED PRIOR TO AND DURING EXCAVATION AND NEW CONSTRUCTION.

4. PERFORM OPTICAL SURVEYS AT LEAST TWICE PER WEEK. IF MOVEMENTS

- OCCUR, INCREASE THE FREQUENCY OF THE READINGS AS DIRECTED BY THE
- 5. NON-LANDMARK BUILDING MOVEMENT AND VIBRATION CRITERIA
- 5.1. IF THE VERTICAL OR LATERAL BUILDING MOVEMENT REACHES 1/4-INCH IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER. IF THE BUILDING MOVEMENT REACHES 1/2-INCH, IMMEDIATELY INFORM THE CONSTRUCTION MANAGER AND ENGINEER AND STOP WORK. THE WORK SHALL RESUME UPON APPROVAL BY THE CONSTRUCTION MANAGER AND APPROVED REMEDIAL MEASURES AND/OR MODIFIED CONSTRUCTION
- 5.3. IF THE VIBRATIONS REACH 1-INCHES PER SECOND (IPS) THE CONSTRUCTION MANAGER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY. 5.4. IF THE VIBRATIONS EXCEED 2-IPS. IMMEDIATELY INFORM THE
- CONSTRUCTION MANAGER AND ENGINEER AND STOP WORK. THE WORK SHALL RESUME UPON APPROVAL BY THE CONSTRUCTION MANAGER AND APPROVED REMEDIAL MEASURES AND/OR MODIFIED CONSTRUCTION PROCEDURES BY THE ENGINEER.
- 6. VIBRATION MONITORS SHALL TAKE REAL TIME READINGS.

PROCEDURES BY THE ENGINEER.

- 7. OPTICAL MONITOR ACCURACY SHALL BE WITHIN 1/32 INCH.
- 8. ALL MONITORING DATA SHALL BE PRESENTED TO THE CONSTRUCTION MANAGER AND ENGINEER AT THE END OF EACH DAY.
- 9. THE STRUCTURAL STABILITY ENGINEER OF RECORD SHALL VISIT THE SITE PERIODICALLY WHEN THEY DEEM NECESSARY TO ASSESS STABILITY OF THE EXISTING STRUCTURES. SITE VISITS SHALL BE NO LESS THAN ONCE PER WEEK DURING SOE WORK.

<u>REFERENCES</u>

- ALL ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988. 2. BASE PLANS AND SECTIONS ARE DEVELOPED FROM: 2.1. ARCHITECTURAL SURVEY BY TRUE NORTH SURVEYORS P.C. DATED APRIL 24.
- 2.2. STRUCTURAL DRAWINGS BY MCNAMARA SALVIA INC. DATED JANUARY 20, 2.4 NYCT DRAWINGS. A. ROOF PLAN: ROUTE NO. 48 SECTION NO. 2 WILLIAM ST ANN ST TO JOHN
- ST, DATED JULY 20, 1915. B. SECTION: ROUTE NO. 48 SECTION NO. 2 SECTION A-A, DATED MARCH C. SECTION:ROUTE NO. 131 SECTION NO. 1 STRUCTURAL PLANS, DATED DECEMBER 18, 1925.
- 3. SOIL DATA OBTAINED FROM: 3.1 PRELIMINARY REPORT OF GEOTECHNICAL INVESTIGATION PREPARED BY RA CONSULTANTS LLC DATED SEPTEMBER 14, 2015
- SOLDIER PILE AND LAGGING (DRILLED IN PILES)
- 1. TEMPORARY SHEETING WALL IS DESIGNED WITH AN ADDED ALLOWABLE SURCHARGE LOADING AT SIDEWALK GRADE OF 240 POUNDS PER SQUARE FOOT. HEAVY EQUIPMENT OR MATERIAL STORAGE MUST BE PLACED AT A DISTANCE FROM THE SHEETING WALL EQUAL TO THE EXCAVATION DEPTH AND MUST BE EVALUATED BY RA CONSULTANTS LLC.
- 2. EXCAVATE TEST PITS AS REQUIRED TO VERIFY ELEVATIONS AND LOCATIONS OF EXISTING FOUNDATIONS, UTILITIES AND BELOW GRADE STRUCTURES.
- REQUIRED TO PREVENT LOSS OF GROUND, SETTLEMENT AND/OR LATERAL MOVEMENT OF BUILDINGS, UTILITIES, AND OTHER STRUCTURES. 4. NO LOSS OF MATERIAL FROM THE OUTSIDE OF THE SOLDIER PILE WILL BE

SOLDIER PILE CASING SHALL BE INSTALLED USING INTERNAL FLUSH DUPLEX

DRILLING METHOD. CONTRACTOR SHALL ADJUST DRILLING PROCEDURE AS

- PERMITTED. THE CONTRACTOR SHALL ADOPT THE NECESSARY DRILLING PROCEDURES TO PREVENT LOSS OF MATERIAL FROM AROUND THE OUTSIDE OF THE SOLDIER PILE.
- 5. STEEL CASING SHALL HAVE A MINIMUM WALL THICKNESS OF 0.50-INCHES. SPLICES IN THE CASING SHALL BE THREADED AND FULLY WELDED.
- HIGH-STRENGTH CUTTING SHOE WITH HARDENED CUTTING EDGE. 7. NO CONCRETE OR GROUT SHALL BE PLACED AT ANY SOLDIER PILE LOCATION
- UNTIL TIP ELEVATION HAS BEEN CONFIRMED, CLEANED OF MUD AND ANY EXTRANEOUS MATERIAL, AND INSPECTED AND APPROVED BY THE ENGINEER. 8. CONCRETE OR GROUT SHALL BE PLACED CONTINUOUSLY FOR THE FULL DEPTH

6. THE BOTTOM OF EACH DRILLED SOLDIER PILE SHALL BE PROTECTED BY A

- OF THE SOLDIER PILE STARTING AT THE BOTTOM OF THE ROCK SOCKET AND UP TO THE DESIGNATED CUTOFF ELEVATION. NO COLD JOINT IS ALLOWED. 9. FINAL DETERMINATION OF THE ELEVATION OF THE PILE TIP WILL BE DETERMINED
- BY RA CONSULTANTS LLC. 10. RA CONSULTATNS LLC MAY DIRECT AN INCREASE IN SOLDIER PILE DEPTH FROM THAT SPECIFIED HEREIN OR AS SHOWN ON THE DRAWINGS IF INFERIOR SOIL OR
- ROCK IS ENCOUNTERED ABOVE THE ORIGINAL MINIMUM TIP ELEVATION. 11. NO SOLDIER PILE SHALL BE OUT OF PLUMB MORE THAN ONE PERCENT (1%) OF ITS EMBEDDED LENGTH.
- CONSULTANTS LLC REQUIRE CORRECTIVE MEASURES, SUCH CORRECTIVE MEASURES, INCLUDING COSTS OF ENGINEERING REDESIGN, SHALL BE PAID FOR BY THE CONTRACTOR.

12. IF ANY OF THE ABOVE TOLERANCES ARE EXCEEDED AND IN THE OPINION OF RA

- 13. BEFORE BRACING IS INSTALLED, MAXIMUM EXCAVATION BELOW BRACING LEVEL, IS 2-FT FOR ANCHORS AND RAKERS UNLESS NOTED ON DRAWING. 14. LAGGING SHALL BE INSTALLED AS THE EXCAVATION ADVANCES WITH A MAXIMUM
- DEPTH OF 2-FT PRIOR TO LAGGING. 15. IF MATERIAL BEHIND LAGGING HAS BEEN LOST OR DISTURBED, LEAVE A 1- TO 1-1/2 INCH SPACE BETWEEN LAGGING BOARDS TO IMMEDIATELY BACKFILL OR
- 16. HAY OR FILTER FABRIC SHALL BE USED TO MINIMIZE MIGRATION OF FINES INTO THE EXCAVATION.
- 17. BRACING SHALL REMAIN IN PLACE UNTIL SOE IS SUPPORTED BY BACKFILL AGAINST PERMANENT STRUCTURAL ELEMENTS (FOUNDATIONS, FIRST FLOOR, ETC.) DO NOT REMOVE ANY TEMPORARY LATERAL BRACING UNLESS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
- 18. LOCATE RAKERS AND HEEL BLOCKS TO AVOID CONFLICT WITH THE PROPOSED CONSTRUCTION, DO NOT UNDERMINE RAKER HEEL BLOCKS BY SUBSEQUENT
- HOLLOW BAR TIE-BACK INSTALLATION
- 1. CEMENT GROUT SHALL BE UTILIZED TO FLUSH THE DRILL CUTTINGS FROM THE BOREHOLE AND STABILIZE THE BOREHOLE DURING INSTALLATION.
- 2. GROUT PRESSURE SHALL BE HIGH ENOUGH TO OBTAIN CIRCULATION AT ALL TIME WITH A SMALL AMOUNT OF GROUT AND SOIL CUTTING RETURN.
- 3. DRILLING WITH AIR AS A MEANS OF ADVANCING OR REMOVING CUTTINGS FROM THE BOREHOLE WILL NOT BE ALLOWED.
- 4. ALL TIE-BACKS SHALL BE PROOF AND/OR PERFORMANCE TESTED IN ACCORDANCE WITH PTI RECOMMENDATIONS AND GUIDELINES. 4.1 TIEBACKS SHALL BE PRESSURE GROUTED TO A MINIMUM PRESSURE OF
- 5. TIE-BACK SOIL/GROUT BOND ZONE LENGTH AND DIAMETER IS APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DESIGN THE GROUT MIX AND INCREASE OR DECREASE THE SOIL/GROUT BOND ZONE AND/OR DIAMETER TO CONSTRUCT A TIE-BACK THAT MEETS THE REQUIRED DESIGN LOAD AND PASSES PTI PROOF/PERFORMANCE TESTS.
- 6. TIE-BACKSS SHALL BE INSTALLED WITH NEAT CEMENT-GROUT HAVING A MINIMUM 28-DAY BREAK STRENGTH OF 4,000 PSI. THE DRILL HOLE SHALL BE PUMPED WITH GROUT CONTINUOUSLY WHILE DRILLING.
- 7. ANCHOR NUTS AND COUPLERS SHALL BE CAPABLE OF DEVELOPING 100 PERCENT OF THE ULTIMATE STRENGTH OF THE ANCHOR.
- 8. CARE MUST BE TAKEN NOT TO DAMAGE THE ANCHOR BARS. KEEP THE ANCHOR BARS FREE OF DIRT OR OTHER DELETERIOUS SUBSTANCES.
- 9. ALL TIE-BACKS HALL BE PROOF TESTED USING A CALIBRATED CENTER HOLE JACK. NO LESS THAN 5 PERCENT OF THE TIE-BACKS SHALL BE PERFORMANCE
- 10. PERFORMANCE AND PROOF TESTING SHALL BE AS FOLLOWS: 10.1 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 (CREEP TEST) AL, LOCK-OFF LOAD (0.8P), UNLESS OTHERWISE NOTED ON SECTIONS. 10.2 PROOF TEST: AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P, 1.33P (CREEP TEST)
- AL, LOCK-OFF LOAD (0.8P) 10.3 GENERAL: THE FOLLOWING SHALL HOLD TRUE FOR BOTH PERFORMANCE TESTS AND PROOF TEST, HOLD 1.33P FOR CREEP TEST. RECORD MOVEMENTS USING A DIAL INDICATOR CAPABLE OF READING INCREMENTS OF 0.001 INCHES. RECORD READINGS AT 0,1,2,3,5,6 AND 10 MINUTES. RELEASE TO TRANSFER LOAD AND LOCK OFF ANCHOR NUT. LOCK OFF TIEBACK ANCHORS AT 80 PERCENT OF THE DESIGN LOAD UNLESS OTHERWISE SHOWN ON SOE DRAWINGS.
- 11. CONTRACTOR SHALL SUBMIT TIE-BACK SHOP DRAWINGS FOR APPROVAL AT LEAST 15 WORKING DAYS PRIOR TO COMMENCING TIE-BACK INSTALLATION. SHOP DRAWINGS SHALL CONTAIN ANCHOR DETAILS, INSTALLATION AND TESTING
- 12. CONTRACTOR SHALL SUBMIT MILL CERTIFICATES FOR APPROVAL FOR ALL STRUCTURAL STEEL PRIOR TO COMMENCING INSTALLATION.
- 13. CONTRACTOR SHALL SUBMIT RECENT JACK CALIBRATIONS FOR APPROVAL AT LEAST 7-DAYS PRIOR TO COMMENCEMENT OF JACKING. JACK MUST BE CALIBRATED WITHIN 1-YEAR.
- 14. TIEBACKS SHALL BE PRESSURE GROUTED TO A MINIMUM PRESSURE OF 10 PSI BUT SHALL NOT EXCEED 16 PSI.

**EXCAVATION, SHORING, & UNDERPINNING** 

- STRUCTURAL CONCRETE FOR UNDERPINNING PIERS SHALL HAVE A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 4000-PSI AT 28 DAYS.
- 2. CONCRETE PIERS AND DRY PACK SHALL BE ALLOWED TO CURE PRIOR TO JACKING, EXCAVATING AN ADJACENT PIT, OR ADVANCING THE EXCAVATION IN FRONT OF THE PIT.
- 3. GROUTING TO STABILIZE SOIL AT UNDERPINNING PITS SHALL BE PERFORMED USING SODIUM SILICATE OR MICRO-FINE CEMENT. GROUT MIX DESIGN. EQUIPMENT, DRILLING PROCEDURE, AND SEQUENCE SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED FOR REVIEW.
- 4. DEPTH OF EXCAVATION BELOW FOOTING AND PREVIOUSLY INSTALLED LAGGING BOARDS SHALL NOT EXCEED 18-INCHES. MAINTAIN TIGHT CONTACT BETWEEN SOIL AND LAGGING BOARDS. IF MATERIAL IS CAVING INTO EXCAVATION. DECREASE THE UNBRACED EXCAVATION DEPTH AND/OR GROUT THE MATERIAL TO MINIMIZE LOSS.
- 5. IF MATERIAL BEHIND LAGGING HAS BEEN LOST OR DISTURBED, LEAVE A 1- TO 1-1/2 INCH SPACE BETWEEN LAGGING BOARDS TO IMMEDIATELY BACKFILL OR
- EXCAVATION FOR UNDERPINNING PIERS MUST BE PERFORMED IN THE DRY. DEWATERING MAY BE NECESSARY PRIOR TO EXCAVATION TO MAINTAIN WATER LEVELS A MINIMUM OF 1-FT BELOW THE PROPOSED SUBGRADE LEVEL OF THE PIER. HAY OR FILTER FABRIC SHALL BE USED TO MINIMIZE MIGRATION OF FINES INTO THE EXCAVATION.
- UNDERPINNING PIER SUBGRADE BEARING MATERIAL SHALL BE EQUAL OR BETTER CLASS THAN THE ORIGINAL BEARING MATERIAL, BUT NOT LESS THAN
- 8. MAXIMUM PIT WIDTH IS 3-FT UNLESS OTHERWISE NOTED ON THE DRAWINGS. UNDERPINNING WIDTH MAY BE CHANGED BASED ON RA CONSULTANTS LLC FIELD
- 9. APPROACH PITS FOR UNDERPINNING PITS SHOULD CAUSE MINIMAL DISTURBANCE TO SOIL SUBGRADE BELOW THE FOOTING. IT IS THE CONTRACTORS RESPONSIBILITY TO EXCAVATE PITS FOLLOWING OSHA AND

LOCAL LAWS.

11. DO NOT LEAVE PITS OPEN OVERNIGHT.

- 10. EXCAVATE PITS SUCH THAT A MINIMUM OF 12-FT OF UNDISTURBED SOIL OR CURED UNDERPINNING PIER IS MAINTAINED BETWEEN OPEN PITS UNTIL ALL UNDERPINNING IS COMPLETE UNLESS APPROVED BY RA CONSULTANTS LLC
- 12. UNDERPINNING PIER THICKNESS SHALL BE 2'-0" OR WIDTH OF FOOTING,
- WHICHEVER IS GREATER. 13. UNDERPINNING SHALL BE CONSTRUCTED IN ONE VERTICAL LIFT.
- 14. IF NECESSARY, LINE DRILL BEDROCK ADJACENT TO ALL FOUNDATION WALLS PRIOR TO ROCK REMOVAL.
- 15. UNDERPINNING PIERS CAN BE ELIMINATED IF THE EXISTING FOOTING IS BEARING ON CLASS 1B BEDROCK OR BETTER AS DETERMINED BY RA CONSULTANTS LLC 16. BOTTOM OF UNDERPINNING CAN BEAR ON CLASS 1B BEDROCK OR BETTER ABOVE UNDERPINNING SUBGRADE LEVEL SHOWN ON THESE DRAWINGS AS
- DETERMINED BY RA CONSULTANTS LLC.. 17. SOIL SLOPE BELOW GROUNDWATER SHALL BE PROTECTED AGAINST EROSION AS NECESSARY.
- MATERIALS & TESTING 1. THE OWNER/CONSTRUCTION MANAGER SHALL RETAIN THE SERVICES OF AN
- 2. CONCRETE PLACEMENT TIME SHALL NOT EXCEED 2-HOURS OR AS RECOMMENDED BY THE TESTING COMPANY.

INDEPENDENT TESTING LABORATORY/COMPANY.

- 3. PERFORM ONE SLUMP TEST FOR EACH BATCH OF CONCRETE. SLUMP SHALL BE BETWEEN 4- AND 6-INCHES FOR UNDERPINNING.
- 4. MAKE A SET OF 5 (MINIMUM) CYLINDERS EACH DAY CONCRETE IS CAST FOR UNDERPINNING OR GROUT IS BEING PLACED FOR SOLDIER PILES.
- 5. PERFORM COMPRESSION TEST ON 1 CYLINDER AT 7 DAYS AND 1 AT 14 DAYS. IF THE DESIGN STRENGTH IS ACHIEVED AT 14 DAYS, NO FURTHER TESTING IS REQUIRED. OTHERWISE TEST ONE OR TWO CYLINDERS, DEPENDING IF THE DESIGN STRENGTH IS ACHIEVED AT 28 DAYS. ONE OR TWO SAMPLES SHALL BE SAVED FOR 56 DAY TESTING IF THE PREVIOUS CYLINDERS FAIL TO MEET DESIGN STRENGTH REQUIREMENTS.
- PROVIDE TESTING RESULTS TO THE CONSTRUCTION MANAGER AND/OR OWNER. IF THE DESIGN STRENGTH REQUIREMENTS ARE NOT MET, THE CONTRACTOR SHALL PERFORM REMEDIATION AS DIRECTED BY THE CONSTRUCTION MANAGER, AT NO ADDITIONAL COST TO THE OWNER.
- 8. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 USING E-70 ELECTRODES.
- 9. ALL STRUCTURAL STEEL SHALL BE GRADE 50, ASTM A-572.
- 10. 1-BAG MIX SHALL CONSIST OF 1-94 LB. BAG OF CEMENT TO 1 CY OF SAND. QUANTITY OF WATER SHALL BE ADEQUATE TO ALLOW THE MIX TO FLOW.
- 11. TIMBER LAGGING SHALL BE ROUGH CUT, FULL SIZE CONSTRUCTION GRADE, WITH A MINIMUM ALLOWABLE BENDING STRESS OF 1200-PSI. TIMBER SIZES SHOWN ARE ACTUAL SIZES.
- 12. DRY PACK SHALL CONSIST OF ONE PART CEMENT TO TWO PARTS SAND BY VOLUME. WATER SHALL BE ADDED TO PRODUCE A MIXTURE WHICH HOLDS ITS SHAPE WHEN FORMED INTO A BALL BY HAND.
- 13. MISCELLANEOUS STEEL (PLATES AND WEDGES) SHALL BE ASTM A36.
- SPECIAL INSPECTIONS
- 1. A SPECIAL INSPECTOR AND/OR SPECIAL INSPECTION AGENCY SHALL HAVE RESPONSIBILITIES AS SET FORTH IN CHAPTER 17 OF THE NEW YORK CITY BUILDING CODE AND ELSEWHERE IN THE CODES WHERE SPECIAL INSPECTIONS ARE REQUIRED. THE RESPONSIBILITIES OF THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY AT A SPECIAL INSPECTION SHALL INCLUDE THOSE TASKS AND STANDARDS SET FORTH IN CHAPTER 17 OF THE CODE. THE REFERENCE STANDARDS AND ELSEWHERE IN THE CODE, THIS RULE OR ANY RULE OF ANY AGENCY IN CONNECTION WITH THE WORK THAT IS THE SUBJECT OF SUCH SPECIAL INSPECTION.
- 2. NECESSARY SPECIAL INSPECTIONS:
- BY RA CONSULTANTS LLC: A. SUBSURFACE INVESTIGATION (BORINGS/TEST PITS) (BC 1704.7.4). B. EXCAVATION - SHEETING, SHORING, AND BRACING (BC 1704.20.2). UNDERPINNING (NYC BC 1704.9.1).
- BY OTHERS: D. SUBGRADE INSPECTION (BC 1704.7.1).
- DEEP FOUNDATION ELEMENTS (BC 1704.8) CONCRETE - CAST-IN-PLACE (BC 1704.4). G. CONCRETE - SAMPLING AND TESTING (BC 1905.6 BC 1913.10). H. CONCRETE - DESIGN MIX (BC 1905.5 BC 1913.5).
- STRUCTURAL STEEL WELDING (BC 1704.3.1). J. STRUCTURAL STABILITY - EXISTING BUILDINGS (BC 1704.20.1)
- 1. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING TO RA CONSULTANTS FOR APPROVAL: 1.1 CONCRETE MIX DESIGN 1.2 CUT SHEETS FOR ALL STRUCTURAL STEEL

1.3 CALIBRATION FOR ALL MEASURING DEVICES.

LIST OF DRAWINGS:

6 OF 6 SOE-300 DETAILS

- 1 OF 6 SOE-001 SUPPORT OF EXCAVATION NOTES 2 OF 6 SOE-100 SUPPORT OF EXCAVATION PLAN
- 3 OF 6 SOE-200 SECTIONS 4 OF 6 SOE-201 SECTIONS 5 OF 6 SOE-202 SECTIONS

NEW YORK CITY TRANSIT GENERAL NOTES

- NOTE: THE APPROPRIATE NOTES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT 1. THE NYC TRANSIT (NYCT) RESERVES THE RIGHT TO PLACE INSPECTORS, FLAGMEN
- OR OTHER PERSONNEL IN THE SUBWAY STRUCTURES DURING CONSTRUCTION OF THE PROJECT LINKED BY A TELEPHONE SYSTEM, IF DEEMED NECESSARY, TO OBSERVE THE EFFECTS OF THE CONSTRUCTION ON THE TRANSIT FACILITIES. NYCT FURTHER RESERVES THE RIGHT TO PLACE SUCH PERSONNEL WHENEVER, IN ITS OPINION, THE PROJECT CONDITIONS WARRANT SUCH PLACEMENT, REGARDLESS OF DISTANCE. THE COST OF SUCH PERSONNEL, TELEPHONE INSTALLATION AND ANY RE-ROUTES, DIVERSIONS OF SERVICE, WORK TRAINS, ETC., MADE NECESSARY BY THE PROJECT, MUST BE BORNE BY THE PROJECT OR THE RESPONSIBLE NEW YORK CITY/STATE AGENCY.
- ALL ROCK EXCAVATION ADJACENT TO THE TRANSIT STRUCTURE IS TO BE CHANNEL DRILLED TWO FEET BELOW SUBGRADE. 3. IF TOP OF ROCK IS FOUND BELOW SUBWAY STRUCTURE, THE SUBWAY STRUCTURE

MUST BE UNDERPINNED IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT

- 4. IF ROCK IS SOFT OR SEAMY, LATERAL SUPPORTS MUST BE PROVIDED BELOW THE SUBWAY STRUCTURE IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR
- APPROVAL OF NYCT'S ENGINEER AND IN ACCORDANCE WITH THE REGULATIONS OF THE FIRE DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A DETAILED MONITORING PLAN. PROVIDING FOR MEASUREMENTS OF BOTH PARTICLE VELOCITY AND DISPLACEMENTS AT CRITICAL LOCATIONS OF THE NYCT STRUCTURE. THE MONITORING PLAN SHALL INCLUDE THRESHOLD AND UPSET LEVELS OF BOTH PARTICLE VELOCITY AND SETTLEMENT TOGETHER WITH AN ACTION PLAN FOR THEIR IMPLEMENTATION. THE CONTRACTOR SHALL SECURE AN APPROVED SEISMOLOGIST TO INSTALL AND OPERATE SUITABLE VELOCITY GAUGES TO CONTINUOUSLY MONITOR PARTICLE VELOCITY AND AN INDEPENDENT LICENSED SURVEYOR TO MONITOR DISPLACEMENTS. THE PRESENCE OF A QUALIFIED TECHNICIAN FROM MONITORING COMPANY IS NECESSARY TO PROVIDE THE VIBRATION READING UPON REQUEST OF NYCT ENGINEER. THE THRESHOLD MAXIMUM

5. BLASTING WILL BE PERMITTED ONLY WITH LIGHT CHARGES SUBJECT TO THE

INCHES PER SECOND. BEFORE PLACING CONCRETE, THE SUBGRADE OF THE FOUNDATIONS IN THE VICINITY OF THE SUBWAY STRUCTURE IS TO BE INSPECTED AND APPROVED BY NYCT'S

PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE BLASTING WILL BE 0.5 INCH PER

ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0

- IF ANY PORTION OF THE SUBWAY STRUCTURE OR FINISH IS DAMAGED, IT SHALL BE REPAIRED OR REPLACED WITH THE SAME MATERIALS IN PLACE, SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND AT THE EXPENSE OF THE PROJECT.
- 8. EXCAVATION EMBANKMENTS ARE TO BE SHORED AND BRACED, DRAWINGS INDICATING A SUGGESTED METHOD OF CONSTRUCTION ARE TO BE SUBMITTED TO NYCT FOR APPROVAL IN CONJUNCTION WITH THE PROJECT'S CONTRACT DRAWINGS. IN CASE OF b) MR. ASHOK PATEL, DIRECTOR, OFFICE OF STATION PROGRAMS; TELEPHONE DRAWINGS FOR UNDERPINNING ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 9. TEMPORARY SHORING MAY BE PLACED IN DIRECT CONTACT WITH NYCT STRUCTURES ONLY IF THE NYCT STRUCTURE IS SHOWN TO BE ABLE TO SUPPORT ALL ANTICIPATED LOADS THAT CAN BE TRANSFERRED THROUGH THE TEMPORARY STRUCTURES WITHOUT DAMAGING THE EXISTING STRUCTURE. AT THE COMPLETION OF THE PROJECT, THESE TEMPORARY SHORING AND BRACING SYSTEMS ARE TO BE

REMOVED OR CUT-OFF AS APPROVED BY NYCT.

- WHEN PILES ARE TO BE DRIVEN OR DRILLED ADJACENT TO THE SUBWAY STRUCTURE, BORING DATA, PILE LAYOUTS, SPECIFICATIONS AND INSTALLATION PROCEDURES ARE TO BE SUBMITTED TO NYCT FOR APPROVAL. VELOCITY METERS ARE TO BE INSTALLED IN THE SUBWAY TUNNEL AT CRITICAL LOCATIONS TO MONITOR INDUCED VIBRATIONS. INDUCED DISPLACEMENTS ALONG THE TUNNEL STRUCTURE AND TRACK INVERT ARE TO BE MONITORED DURING DRIVING OR DRILLING. THE THRESHOLD MAXIMUM f) EXISTING STATION SIGNAGE MUST BE ADJUSTED TO REFLECT ANY CHANGES IN PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE DRIVING OR DRILLING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED
- OF 2.0 INCHES PER SECOND 11. NO PILES ARE PERMITTED TO BE INSTALLED BY ANY METHOD WITHIN THREE FEET OF SUBWAY STRUCTURE, MEASURED FROM THE EDGE OF THE PILE OR CASING TO THE WALL. CLOSED-END PILES WILL NOT BE PERMITTED TO BE DRIVEN WITHIN TEN FEET OF
- THE SUBWAY STRUCTURE. 12. ALL PILES ARE TO BE PLACED WITHIN A PREAUGERED CASED HOLE TO THE INFLUENCE LINE. THE CASING SHALL BE CLEANED WITHOUT DISTURBING THE SOIL OUTSIDE THE CASING AND THE PILE TO BE PLACED WITHIN THE CASING FOR INSTALLATION. THE PILES MAY THEN BE DRIVEN BEYOND THE INFLUENCE LINE WITHIN THE CASING.
- 13. THE INFLUENCE LINE SHALL START AT THE BOTTOM OF THE SUBWAY STRUCTURE AND EXTEND FROM 1H:1V TO 2H:1V SLOPE DEPENDING ON THE SOIL PROPERTIES AND GROUND WATER TABLE. FOR PILES INSTALLED WITHIN TEN FEET OF THE SUBWAY STRUCTURE, THE CASING SHALL BE EXTENDED UP TO THE BOTTOM OF THE SUBWAY STRUCTURE.
- 14. ALL PILES ARE TO BE DRIVEN OR DRILLED A MINIMUM OF TEN FEET BELOW THE INTERSECTION OF THE PILE CENTERLINE AND THE INFLUENCE LINE OF THE SUBWAY STRUCTURE.
- 15. THE USE OF "DOWN-THE-HOLE -HAMMERS" FOR INSTALLATION OF PILES THROUGH OVERBURDEN AND FILL WILL BE PERMITTED ONLY TO REMOVE BOULDERS. IT WILL NOT BE THE FOLLOWING WILL BE REQUIRED: PERMITTED AS A MATTER OF COURSE TO ADVANCE THE HOLE. THEIR USE TO CONSTRUCT ROCK SOCKETS WILL NOT BE ALLOWED WITHIN 5 FEET OF THE NYCT STRUCTURE. THE USE OF MACHINE UTILIZING AIR FOR SOIL REMOVAL WILL NOT BE
- 16. VIBRATORY HAMMERS WILL NOT BE PERMITTED WITHIN 75 FEET OF SUBWAY STRUCTURES. HOERAMS WILL NOT BE PERMITTED WITHIN 25 FEET OF SUBWAY
- 17. DYNAMIC COMPACTION METHODS USING DROPPED HEAVY WEIGHTS CANNOT BE CONDUCTED WITHIN 1000 FEET OF ANY NYCT STRUCTURE UNLESS IT IS SHOWN THAT INDUCED SETTLEMENTS AND VIBRATIONS WILL NOT DAMAGE THESE STRUCTURES. A SUITABLE MONITORING PLAN INCLUDING SETTLEMENT AND VIBRATION MEASUREMENTS MUST BE APPROVED BY NYCT'S ENGINEER FOR ALL SUCH OPERATIONS WITHIN THESE
- 18. THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3 FEET OF NYCT STRUCTURES, POWER DUCT LINES, OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION.
- 19. ALL DEWATERING OPERATIONS CONDUCTED WITHIN 500 FEET OF THE NYCT STRUCTURE MUST BE PERFORMED IN ACCORDANCE WITH DRAWINGS AND PROCEDURES SUBMITTED TO NYCT FOR APPROVAL. THE DISTANCE FROM THE STRUCTURE TO THE DEWATERING OPERATION CAN BE REDUCED PROVIDED THAT SOIL CONDITIONS AT THE SITE INDICATE THAT THE RADIUS OF INFLUENCE OF THE DEWATERING IS LESS THAN 500 FEET. FOR DEWATERING WITHIN THE RADIUS OF INFLUENCE, THE DEWATERING PROGRAM P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, 130 LIVINGSTON MUST BE SHOWN TO HAVE NEGLIGIBLE INFLUENCE ON SETTLEMENTS OF THE NYCT
- STRUCTURE. 20. SUBWAY ENTRANCES (VENTILATORS, ETC.) ARE TO BE UNDERPINNED OR SHORED AND BRACED IF DIRECTED BY NYCT'S ENGINEER.

21. NYCT, AT ITS DISCRETION, RESERVES THE RIGHT TO REQUIRE THE PROJECT TO

ADJACENT TO THE PROJECT DURING CONSTRUCTION. SUCH CONSTRUCTION MAY

CLOSE OR MAINTAIN AND PROTECT EXISTING SUBWAY ENTRANCES, VENTILATORS, ETC.

- INCLUDE UNDERPINNING, SHORING, BRACING AND ERECTION OF SUITABLE BARRICADES AND/OR CANOPIES AND SHIELDS. SUCH PROTECTION SHALL BE IN ACCORDANCE WITH DRAWINGS SUBMITTED TO NYCT FOR APPROVAL. 22. IF SHIELDS ARE TO BE INSTALLED TO PROTECT NYCT FACILITIES AND/OR THE PUBLIC, PLANS SHOWING THE LOCATION, TYPE AND METHOD OF ATTACHMENT TO THE
- TRANSIT STRUCTURE MUST BE SUBMITTED TO NYCT FOR APPROVAL. 23. ALL LUMBER AND PLYWOOD USED FOR PROTECTION OF SUBWAY FACILITIES MUST

24. SUBWAY EMERGENCY EXITS MUST BE KEPT CLEAR AT ALL TIMES.

EXERCISED SO THAT THE THIN CONCRETE PROTECTION OF THE SUBWAY

WATERPROOFING IS NOT DAMAGED. 26. BURNING OF, WELDING TO OR DRILLING THROUGH EXISTING STEEL STRUCTURES WILL NOT BE PERMITTED EXCEPT AS SHOWN ON DRAWINGS APPROVED BY NYCT. 27. HORIZONTAL AND VERTICAL CONTROL SURVEY DATA OF THE EXISTING NYCT

STRUCTURE IS TO BE TAKEN BY A LICENSED LAND SURVEYOR TO MONITOR ANY

25. IN EXCAVATING OVER OR NEAR THE SUBWAY ROOF, SPECIAL CARE SHALL BE

| OWAE | BLES, REMEDIATION | N AS APPROVED BY NYCT SH | ALL BE PERFORM | ED. |
|------|-------------------|--------------------------|----------------|-----|
| ı    |                   |                          |                |     |
|      | STRUCTURE         | NOTIFY NYCT ENGINEER     | STOP WORK      |     |
|      | ELEVATED          | 1/8 INCH                 | 1/4 INCH       |     |

 $\frac{1}{2}$  INCH

MOVEMENTS THAT OCCUR DURING CONSTRUCTION AND TO SHOW THAT THE INDUCED

MOVEMENTS ARE WITHIN ALLOWABLES NOTED BELOW. IF ANY MOVEMENTS EXCEED.

28. BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE BUS DIVERSIONS. THESE ARRANGEMENTS SHALL BE MADE THROUGH:

 $\frac{1}{4}$  INCH

ACTING DIRECTOR, OPERATIONS PLANNING NEW YORK CITY TRANSIT 2 BROADWAY, ROOM A17.82 NEW YORK, NEW YORK 10004 TELEPHONE NUMBER (646) 252-5517

MS. SARAH WYSS

SUBWAY

WHEN IMPACTING ANY BUS STOP, SPECIAL OPERATIONS MUST BE NOTIFIED TWO WEEKS

- 29. DUCT LINES MUST BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. ANY INTERFERENCE WITH DUCT LINES SHOULD BE REPORTED TO NYCT INSPECTOR. WHEN A DUCT LINE CONTAINING CABLES IS TO BE REMOVED, OR WHEN MASONRY ADJACENT THERETO IS TO BE REMOVED, PENETRATED, OR DRILLED, THE WORK SHALL BE DONE
- 30. WHERE MANHOLES ARE ENCOUNTERED:

OR OTHER POWER EQUIPMENT SHALL NOT BE USED.

THE NEW STREET GRADE. b) IF MANHOLE COVERS ARE RAISED OR LOWERED, PROTECT CABLES IN MANHOLE BY WOOD SHEETING OF 2" NOMINAL THICKNESS.

a) THEY SHALL BE PROTECTED AND RAISED OR LOWERED AS REQUIRED, TO MATCH

WITH HAND LABOR ENTIRELY, USING HAMMER AND CHISEL. JACKHAMMERS, BULL POINTS

- PRIOR TO THE START OF CONSTRUCTION OPERATIONS AFFECTING MANHOLES AND DUCT LINES, SEVEN DAYS NOTICE MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE OF WAY, AT 718/694-1358. CONSTRUCTION WORK DONE NEAR VENT GRATINGS AND HATCHES SHALL BE AS
- UNLESS APPROVED BY THE NYCT'S ENGINEER, ALL VENT GRATINGS AND HATCHES SHOULD REMAIN OUTSIDE THE CONSTRUCTION SITE, SEPARATED BY A CONSTRUCTION FENCE. PROTECTIVE SHIELDS MUST BE PROVIDED OVER VENT GRATINGS AS REQUIRED
- NO BUILDING MATERIAL, VEHICLES OR CONSTRUCTION EQUIPMENT IS TO BE STORED OR RUN OVER VENT, GRATINGS, HATCHES OR EMERGENCY EXITS. DETAILS OF SIDEWALK RECONSTRUCTION AROUND VENT GRATINGS, HATCHES AND EMERGENCY EXITS ARE TO BE SUBMITTED TO NYCT FOR APPROVAL. 32. TRACTORS, CRANES, EXCAVATORS, ETC. USED IN THE VICINITY OF THE ELEVATED STRUCTURES SHALL BE ISOLATED FROM THE GROUND. SINCE THE ELEVATED SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S STRUCTURE IS USED AS A NEGATIVE RETURN PATH, WITH A CONSEQUENT POTENTIAL
  - TEMPORARY CONSTRUCTION SHEDS, BARRICADES OR PLYWOOD PARTITIONS MUST BE A MINIMUM OF 5'-0" FROM EDGE OF FINISHED PLATFORM. 34. STATION AREAS OR STAIRWAY/CLOSINGS: THE GENERAL REQUIREMENTS FOR

BETWEEN IT AND THE GROUND, ANY CONTACT BETWEEN THE STRUCTURE AND

GROUNDED EQUIPMENT COULD RESULT IN BURNING OF THE STEEL.

STATION AREAS OR STAIRWAY/CLOSINGS ARE AS FOLLOWS:

ACTUAL CLOSING AND REOPENING OF THE ENTRANCE.

DEPARTMENT EMPLOYEES SHALL NOT BE INHIBITED.

- a) ONLY ONE STAIRWAY AT EACH STATION WILL BE PERMITTED TO BE CLOSED AT THE SAME TIME. APPROVALS FOR CLOSING ANY STAIRWAY MUST BE OBTAINED FROM THE DIVISION OF STATION OPERATIONS AT LEAST THREE WEEKS IN ADVANCE. EXCAVATION UNDERMINING THE SUBWAY STRUCTURE, UNDERPINNING MAY BE REQUIRED. 718/694-1695 OF THE DIVISION OF STATIONS MUST BE NOTIFIED ONE WEEK PRIOR TO THE
  - ENTIRE ENTRANCE CLOSING, SIGNAGE MUST BE POSTED TWO WEEKS IN ADVANCE. d) THE STREET ENTRANCE STAIRWAY SHOULD NOT BE CLOSED UNLESS MANPOWER AND MATERIALS ARE AVAILABLE TO COMMENCE WORK ON DATES PERMITTED. e) ONCE THE CLOSING IS EFFECTED, CONSTRUCTION SIGNS MUST BE PLACED AT

SIGNAGE MUST BE SUPPLIED AND POSTED AT LEAST ONE WEEK IN ADVANCE,

ENTRANCE/EXIT, AND AN APOLOGY FOR THE INCONVENIENCE TO OUR CUSTOMERS. ACCESS/EGRESS. BARRICADES ARE TO BE PAINTED AND KEPT GRAFFITI FREE AT ALL TIMES. THE BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL

CONTRACTOR MUST MAINTAIN THE BARRICADED AREA CLEAN OF ALL DEBRIS.

STATING THE CONTRACTOR'S NAME, 24 HOUR EMERGENCY TELEPHONE NUMBER,

CONTRACT NUMBER, THE DURATION OF THE CLOSING, DIRECTION TO AN ALTERNATE

h) ALL MATERIALS ARE TO BE PROPERLY STORED AND SECURED AWAY FROM PASSENGER TRAFFIC THE CONTRACTOR MUST REMOVE ALL WASTE MATERIAL AND BARRICADES FROM ALL STATION AREAS WHEN CONSTRUCTION IS COMPLETED.

INSPECTION OF THE AREA UNDER CONSTRUCTION BY AUTHORIZED STATION

k) IF STREETLIGHTS ON THE SIDEWALKS ARE AFFECTED, TEMPORARY LIGHTS SHALL BE PROVIDED.

AND KEYWAYS ARE TO BE USED IN ACCORDANCE WITH NYCT STANDARDS.

36. IF THE PROJECT INVOLVES CONSTRUCTION OR ALTERATION OF A SUBWAY FACILITY ON PRIVATE PROPERTY, THE PROPERTY OWNERS WILL BE REQUIRED TO ENTER INTO AN AGREEMENT WITH NYCT PERTAINING TO ALL WORK AFFECTING THE TRANSIT FACILITIES AND CLEARLY DEFINING LIMITS AND RESPONSIBILITY FOR MAINTENANCE AND LIABILITY.

35. IF NEW CONCRETE CONSTRUCTION IS JOINED TO EXISTING CONCRETE, DOWELS

- 37. WHEREVER A NEW SIDEWALK IS BEING PLACED ADJACENT TO NYCT STRUCTURES a) THE TOP OF THE NEW SIDEWALK SHALL BE FLUSH WITH THE SUBWAY VENT GRATINGS, HATCHES AND EMERGENCY EXITS.
- b) THE SLOPE OF THE NEW SIDEWALK SHALL BE SUCH THAT THE DRAINAGE BE AWAY FROM THESE STRUCTURES. c) A 1/2" PREMOLDED FILLER SHALL BE INSTALLED BETWEEN THE NEW SIDEWALK AND NYCT STRUCTURE.

d) WHERE SIDEWALK ELEVATIONS ARE BEING CHANGED DETAILS OF PROPOSED WORK

BEFORE ENTERING NYCT PROPERTY, CONTRACTOR OR SUBCONTRACTOR'S PERSONNEL SHALL HAVE ATTENDED NYCT TRACK SAFETY TRAINING AND EXPECT TO FOLLOW NYCT RULES AND REGULATIONS AS PER TRAINING AND ENGINEER INSTRUCTIONS BEFORE THE START OF ANY WORK. THE CONTRACTOR SHALL MAKE AN EXAMINATION, IN THE PRESENCE OF NYCT'S ENGINEER, OF THE INTERIOR AND EXTERIOR OF NYCT SUBWAY OR OTHER STRUCTURE ADJACENT TO THE PROPOSED WORK. THE PERSON OR PERSONS AUTHORIZED BY THE CONTRACTOR TO MAKE THESE EXAMINATIONS

SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL

AROUND NYCT STRUCTURES ARE TO BE SUBMITTED FOR APPROVAL.

STREET, ROOM 8044D, BROOKLYN, NEW YORK 11201, TELEPHONE 718/694-1358 BEFORE THE START OF CONSTRUCTION.

PHOTOGRAPHS AS MAY BE NECESSARY OR ORDERED TO INDICATE THE EXISTING

CONDITION OF NYCT STRUCTURE. ONE COPY OF EACH PHOTOGRAPH, EIGHT INCHES BY

TEN INCHES IN SIZE, AND THE NEGATIVE IS TO BE SUBMITTED TO MR. JOHN MALVASIO.

41. STANDARD NYCT INSURANCE CLAUSES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS. PROOF THAT THE NECESSARY INSURANCE IS IN EFFECT WILL BE REQUIRED BEFORE WORK CAN COMMENCE. 42. AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO

TRANSIT FACILITIES. ONE SET OF VELLUMS OR MYLARS. FIVE SETS OF 35MM MICROFILM.

AND ELECTRONIC COPIES COMPLYING TO MICROSTATION.DGN FORMAT OF "APPROVED

- REQUIREMENTS CONTACT NYCT OUTSIDE PROJECTS. 43. AT LEAST SEVEN WORKING DAYS PRIOR TO THE START OF CONSTRUCTION OPERATIONS, NOTIFICATION MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, AT (718) 694-1358. THE CONTRACTOR IS TO PROVIDE TEMPORARY QUARTERS NEAR THE JOB SITE FOR NYCT INSPECTORS CONTAINING A DESK AND TELEPHONE.
- SECTION A: INSURANCE REQUIREMENTS

STATE.

NYCT "NOT FOR BENEFIT" INSURANCE REQUIREMENTS

THE PERMITTEE AT ITS SOLE COST AND EXPENSE SHALL CARRY AND MAINTAIN POLICIES OF INSURANCE AT ALL TIMES DURING THE PERIOD OF PERFORMANCE UNDER THIS AGREEMENT AS HEREIN SET FORTH BELOW:

WORKERS' COMPENSATION: INCLUDING EMPLOYER'S LIABILITY INSURANCE WITH

LIMITS OF LIABILITY NOT LESS THAN \$2,000,000 WHICH MAY BE MET BY A COMBINATION OF

PRIMARY AND EXCESS INSURANCE MEETING THE STATUTORY LIMITS OF NEW YORK

2. COMMERCIAL GENERAL LIABILITY: (ISO 2001 FORM OR EQUIVALENT) APPROVED BY

PERMITTOR IN THE PERMITTEE'S NAME WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$3,000,000 FOR EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS FOR INJURIES TO PERSONS (INCLUDING DEATH) AND DAMAGE TO PROPERTY, \$3,000,000 GENERAL AGGREGATE AND \$3,000,000 IN THE AGGREGATE WITH RESPECT TO PRODUCTS/COMPLETED OPERATIONS. THE LIMITS MAY BE PROVIDED IN THE FORM OF A PRIMARY POLICY OR COMBINATION OF PRIMARY AND UMBRELLA/EXCESS POLICY. WHEN THE MINIMUM CONTRACT AMOUNTS CAN ONLY BE MET WHEN APPLYING THE UMBRELLA/EXCESS POLICY, THE UMBRELLA/EXCESS POLICY MUST FOLLOW FORM OF THE UNDERLYING POLICY AND BE EXTENDED TO "DROP DOWN" TO BECOME PRIMARY IN THE EVENT PRIMARY LIMITS ARE REDUCED OR AGGREGATE LIMITS ARE EXHAUSTED. SUCH

INSURANCE SHALL BE PRIMARY AND NON-CONTRIBUTORY TO ANY OTHER VALID AND

COLLECTIBLE INSURANCE AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY

PERMITTOR/MTA POLICY AVAILABLE

PERSONAL AND ADVERTISING INJURY;

- SUCH POLICY SHOULD BE WRITTEN ON AN OCCURRENCE FORM, AND SHALL INCLUDE THE FOLLOWING COVERAGES:
  - ADDITIONAL INSURED ENDORSEMENT (I.S.O. FORM CG 20 26 07/04) VERSION OR EQUIVALENT APPROVED BY THE PERMITTOR. SHALL NAME THE INDEMNITEES AS REFERENCED UNDER SECTION B OF THIS AGREEMENT AS ADDITIONAL INSUREDS. CONTRACTUAL LIABILITY ASSUMED BY THE PERMITTEE UNDER THIS AGREEMENT:
- PRODUCTS-COMPLETED OPERATIONS; INDEPENDENT CONTRACTORS: "XCU" (EXPLOSION, COLLAPSE, AND UNDERGROUND HAZARDS) WHERE NECESSARY: CONTRACTUAL LIABILITY EXCLUSION. APPLICABLE TO CONSTRUCTION OR DEMOLITION OPERATIONS TO BE PERFORMED WITHIN 50 FEET OF RAILROAD TRACKS,
- MUST BE REMOVED, WHERE NECESSARY; . BUSINESS AUTOMOBILE LIABILITY: (ISO FORM CA 00 01 10 01 OR EQUIVALENT) APPROVED BY THE PERMITTOR IS REQUIRED IF PERMITTEE'S VEHICLE ENTERS PERMITTOR'S PROPERTY. THE INSURANCE MUST BE IN THE NAME OF THE PERMITTEE OR ITS CONTRACTOR ENTERING THE PERMITTOR PROPERTY WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$2,000,000 EACH ACCIDENT FOR CLAIMS FOR BODILY INJURIES (INCLUDING DEATH) TO PERSONS AND FOR DAMAGE TO PROPERTY ARISING OUT
- OF THE OWNERSHIP, MAINTENANCE OR USE OF ANY OWNED, HIRED OR NON-OWNED MOTOR VEHICLE. RAILROAD PROTECTIVE LIABILITY: (ISO-RIMA OR EQUIVALENT FORM) APPROVED BY PERMITTOR COVERING THE WORK TO BE PERFORMED AT THE DESIGNATED JOB SITE AND
- AFFORDING PROTECTION FOR DAMAGES ARISING OUT OF BODILY INJURY OR DEATH, PHYSICAL DAMAGE TO OR DESTRUCTION OF PROPERTY, INCLUDING DAMAGE TO THE INSURED'S OWN PROPERTY AND CONFORMING TO THE FOLLOWING: THE POLICY SHALL BE ISSUED TO THE "NAMED INSUREDS" LISTED UNDER SECTION B.
- THE LIMIT OF LIABILITY SHALL BE NOT LESS THAN \$2,000,000 PER OCCURRENCE, SUBJECT TO A \$6,000,000 ANNUAL AGGREGATE; POLICY MUST BE ENDORSED TO PROVIDE COVERAGE FOR CLAIMS ARISING FROM INJURY TO EMPLOYEES COVERED BY FEDERAL EMPLOYER'S LIABILITY ACT (FELA). INDICATE THE NAME AND ADDRESS OF THE DESIGNATED CONTRACTOR, PROJECT LOCATION AND DESCRIPTION OF WORK, AND PERMIT NUMBER IF APPLICABLE. EVIDENCE OF RAILROAD PROTECTIVE LIABILITY INSURANCE, MUST BE PROVIDED IN THE FORM OF A POLICY. A DETAILED INSURANCE BINDER (ACORD OR MANUSCRIPT FORM)
- WITHIN 30 DAYS FROM THE EFFECTIVE DATE 5. ENVIRONMENTAL INSURANCE: IN THE EVENT ENVIRONMENTAL OR POLLUTION EXPOSURES EXIST, THE PERMITTEE SHALL REQUIRE THE ENVIRONMENTAL CONTRACTOR OR SUB-CONTRACTOR TO PROVIDE THE APPLICABLE INSURANCE COVERING SUCH

EXPOSURE. THE LIMITS AND TYPES OF INSURANCE PROVIDED MUST BE SATISFACTORY

WILL BE ACCEPTED PENDING ISSUANCE OF THE POLICY, WHICH MUST BE PROVIDED

SECTION B: INDEMNITEES (ADDITIONAL INSUREDS / NAMED INSUREDS) NEW YORK CITY TRANSIT AUTHORITY ("NYCT"), THE MANHATTAN AND BRONX SURFACE

TO THE PERMITTOR AND APPROVED PRIOR TO THE START OF THE WORK.

("MTACC"), MTA BUS COMPANY ("MTA BUS"), AND THE CITY OF NEW YORK ("CITY" AS ADVISING THE PUBLIC OF THE PROPOSED SUBWAY STAIR CLOSING. HOWEVER, IF IT IS AN OWNER) AND THE RESPECTIVE AFFILIATES AND SUBSIDIARIES EXISTING CURRENTLY OR IN THE FUTURE OF AND SUCCESSORS TO EACH INDEMNIFIED PARTIES LISTED HEREIN. SECTION C: GENERAL INSURANCE REQUIREMENTS

TRANSIT OPERATING AUTHORITY ("MABSTOA"), THE STATEN ISLAND RAPID TRANSIT

OPERATING AUTHORITY ("SIRTOA"), THE METROPOLITAN TRANSPORTATION AUTHORITY

INSURANCE COMPANIES: ALL OF THE INSURANCE REQUIRED BY THIS ARTICLE

("ISO") OR ITS EQUIVALENT APPROVED BY THE INSURANCE DEPARTMENT OF THE STATE

SHALL BE WITH COMPANIES LICENSED OR AUTHORIZED TO DO BUSINESS IN THE STATE OF

("MTA") INCLUDING ITS SUBSIDIARIES AND AFFILIATES, MTA CAPITAL CONSTRUCTION

- NEW YORK WITH AN A.M. BEST COMPANY RATING OF NOT LESS THAN A-/VII OR BETTER APPROPRIATE LOCATIONS ON THE BARRICADES AT THE STREET AND MEZZANINE LEVELS, AND REASONABLY APPROVED BY THE PERMITTOR/MTA. . FORMS: ALL FORMS SHALL COMPLY WITH THE INSURANCE SERVICES OFFICE. INC.
  - OF NEW YORK 3. POLICY DEDUCTIBLE / SELF INSURED RETENTION: INSURANCE MAY CONTAIN A DEDUCTIBLE AND OR SELF-INSURED RETENTION AND SHALL NOT EXCEED \$100,000. THE PERMITTEE SHALL BE RESPONSIBLE FOR ALL CLAIM EXPENSES AND LOSS PAYMENTS WITHIN THE DEDUCTIBLE OR SELF-INSURED RETENTION.
  - 4. POLICY TERMS: THESE POLICIES MUST: (I) BE WRITTEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE PARAGRAPHS ABOVE, AS APPLICABLE; (II) BE ENDORSED IN FORM ACCEPTABLE TO INCLUDE A PROVISION THAT SHOULD THE POLICY BE CANCELED, MATERIALLY CHANGED, OR NOT RENEWED, NOTICE SHALL BE DELIVERED IN ACCORDANCE WITH THE INSURANCE POLICY PROVISIONS TO THE PERMITTOR, AND (III) STATE OR BE ENDORSED TO PROVIDE THAT THE COVERAGE AFFORDED UNDER THE PERMITTEE'S POLICIES SHALL APPLY ON A PRIMARY AND NOT ON AN EXCESS OR CONTRIBUTING BASIS WITH ANY POLICIES WHICH MAY BE AVAILABLE TO THE PERMITTOR/MTA, AND ALSO THAT
  - THE PERMITTEE'S POLICIES, PRIMARY AND EXCESS, MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. (IV) IN ADDITION, PERMITTEE'S POLICIES SHALL STATE OR BE ENDORSED TO PROVIDE THAT, IF A SUBCONTRACTOR'S POLICY CONTAINS ANY PROVISION THAT MAY ADVERSELY AFFECT WHETHER PERMITTEE'S POLICIES ARE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. PERMITTEE'S AND SUBCONTRACTOR'S POLICIES SHALL NEVERTHELESS BE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. AT LEAST TWO (2) WEEKS PRIOR TO THE EXPIRATION OF THE POLICIES, THE PERMITTEE SHALL ENDEAVOR TO PROVIDE EVIDENCE OF RENEWAL

OR REPLACEMENT POLICIES OF INSURANCE, WITH TERMS AND LIMITS NO LESS

FAVORABLE THAN THE EXPIRING POLICIES.

SECTION D: SUBMISSION OF INSURANCE CERTIFICATES OF INSURANCE MAY BE SUPPLIED AS EVIDENCE OF POLICIES EXCEPT FOR RAILROAD PROTECTIVE LIABILITY. HOWEVER, IF REQUESTED BY THE PERMITTOR, THE PERMITTEE SHALL DELIVER TO THE PERMITTOR WITHIN FORTY-FIVE (45) DAYS A COPY OF SUCH POLICIES, CERTIFIED BY THE INSURANCE CARRIER AS BEING TRUE AND COMPLETE. IF A CERTIFICATE OF INSURANCE IS SUBMITTED. IT MUST: (1) BE PROVIDED ON THE PERMITTOR CERTIFICATE OF INSURANCE; (2) BE SIGNED BY AN AUTHORIZED

REPRESENTATIVE OF THE INSURANCE CARRIER OR PRODUCER AND NOTARIZED; (3)

ANY EXCLUSIONS TO THE POLICY THAT MATERIALLY CHANGE THE COVERAGE; (4)

INDICATE THE ADDITIONAL INSUREDS AS REQUIRED HEREIN UNDER SECTION B; THE

DISCLOSE ANY DEDUCTIBLE, SELF-INSURED RETENTION, SUB-LIMIT, AGGREGATE LIMIT OR

THE PERMITTEE OR ITS CONTRACTOR/SUBCONTRACTOR PERFORMING THE WORK SHALL

- PERMITTEE MUST PROVIDE A COPY OF THE ADDITIONAL INSURED ENDORSEMENT (ISO) FORM CG 20 26 07/04 OR ITS EQUIVALENT AND MUST REFERENCE THE POLICY INFORMATION: (5) INDICATE PROJECT NAME AND LOCATION ON THE CERTIFICATE: AND (6) EXPRESSLY REFERENCE THE INCLUSION OF ALL REQUIRED ENDORSEMENTS.
- -URNISH EVIDENCE OF ALL POLICIES BEFORE ANY WORK IS STARTED TO THE APPROPRIATE DEPARTMENT: **NEW AGREEMENTS:** RENEWAL INSURANCE: MTA/NYCT MOW ENGINEERING MTA RISK INSURANCE MANAGEMENT ATTENTION: MR. JOHN MALVASIO

ATTENTION: RUTH APOSTOL

2 BROADWAY - 21ST FLOOR

LIABILITY UNDER THIS AGREEMENT.

130 LIVINGSTON STREET

BROOKLYN, NY 11201

40.. ALL ARCHITECTURAL DETAILS (TOKEN BOOTHS, RAILINGS, DOORS, ETC.) ARE TO NEW YORK, NY 10004 CONFORM TO THE LATEST NYCT STANDARDS. THESE STANDARDS ARE AVAILABLE AT SECTION E: NO LIMIT OF LIABILITY THE MINIMUM AMOUNTS OF INSURANCE REQUIRED IN THE DETAIL DESCRIPTION OF POLICIES ABOVE SHALL NOT BE CONSTRUED TO LIMIT THE EXTENT OF THE PERMITTEE'S

SECTION F: RIGHT TO REQUEST ADDITIONAL INSURANCE

SUCH INCREASED OR EXPANDED INSURANCE COVERAGE AS PERMITTOR MAY FROM TIME AS-BUILTS" MUST BE PROVIDED TO NYCT FOR ITS RECORDS. FOR DETAILS OF SPECIFIC TO TIME AS DEEM APPROPRIATE. SECTION G: EVENT OF DEFAULT IF, AT ANY TIME DURING THE PERIOD OF THIS AGREEMENT, INSURANCE AS REQUIRED IS

OR OPERATION WITH NO ADDITIONAL COST OR EXTENSION OF TIME DUE ON ACCOUNT

NOT IN EFFECT, OR PROOF THEREOF IS NOT PROVIDED TO THE PERMITTOR. THE

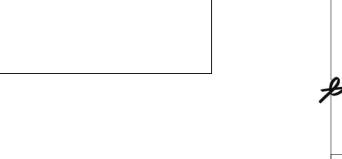
THEREOF; OR (II) TREAT SUCH FAILURE AS AN EVENT OF DEFAULT.

PERMITTEE FURTHER AGREES TO PROVIDE, AT PERMITTEE'S SOLE COST AND EXPENSE,

SECTION H: NOTICE OF CLAIM THE PERMITTEE SHALL IMMEDIATELY FILE WITH NYCT/MTA'S TORT DIVISION (WITH A COPY TO THE PROJECT MANAGER), 130 LIVINGSTON STREET, 11TH FLOOR, BROOKLYN, NEW YORK 11201, A NOTICE OF ANY OCCURRENCE LIKELY TO RESULT IN A CLAIM AGAINST NYCT/MTA AND SHALL ALSO FILE WITH THE TORTS DIVISION DETAILED SWORN PROOF OF DWG TITLE INTEREST AND LOSS WITH THE CLAIM. THIS PARAGRAPH SHALL SURVIVE THE EXPIRATION

MTA RIM - 08/15/2013

OR EARLIER TERMINATION OF THE CONTRACT.







01/06/2017 HUB SET 10/06/2016 NYCT SUBMITTAL 09/06/2016 NYCT SUBMITTAL 06/22/2016 NYCT SUBMITTAL 03/21/2016 NYCT SUBMITTAL Number: Date: Revision: THE LIGHTSTONE GROUP 130 WILLIAMS STREET

PROPERTY OWNER LLC

460 PARK AVE. 13TH FLOOR

NEW YORK, NY 10022

TEL. (212) 616.9971

MCNAMARA SALVIA, INC

365 W 34th Street, 3rd Fl.

New York, NY 10001

Tel (212) 244.5060 Fax (212) 689.7489

BMT FLUID

Wind Tunnel Consultant

180 Varick St., Suite 506

New York, NY 10018

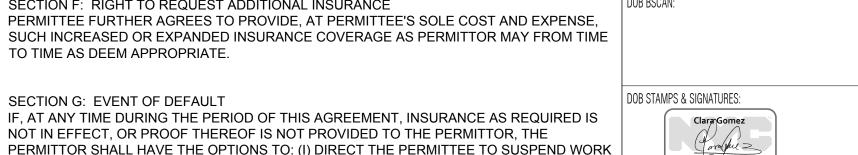
Tel (646) 484.3252 Fax (646) 484.3251

PW GROSSER CONSULTING, INC.

03/21/2017 | COORDINATED SE

PROJECT NAME: 130 WILLIAM STREET ADDRESSES: 130 WILLIAM STREET NEW YORK, NEW YORK 11201

- GOLDSTEIN, HILL & WEST ARCHITECTS LLP 11 Broadway, Suite 1700 New York, NY 10004 Tel (212) 213-8007 Fax (212) 686-1754
- Structural Engineers 62 West 45th Street, 11th Floor New York, NY 10036 Tel (212) 246.9800 Ventrop EGC, LLC Building Systems
- WEINTRAUD DIAZ, LLC Landscape Architect 19 New Street Nyack, NY 10960 Tel (845) 353.2500 Fax (212) 689.7489
- New York, NY 10014 Tel (646) 395.9751 RA CONSULTANTS, LLC Geotech Engineer 512 7th Avenue, 6th Fl
- Environmental Consultant 630 Johnson Avenue, Suite 7 Bohemia, NY 11716 Tel (631) 589.6353 Fax (631) 589.8705



APPROVED
Under Directive 2 of 1975

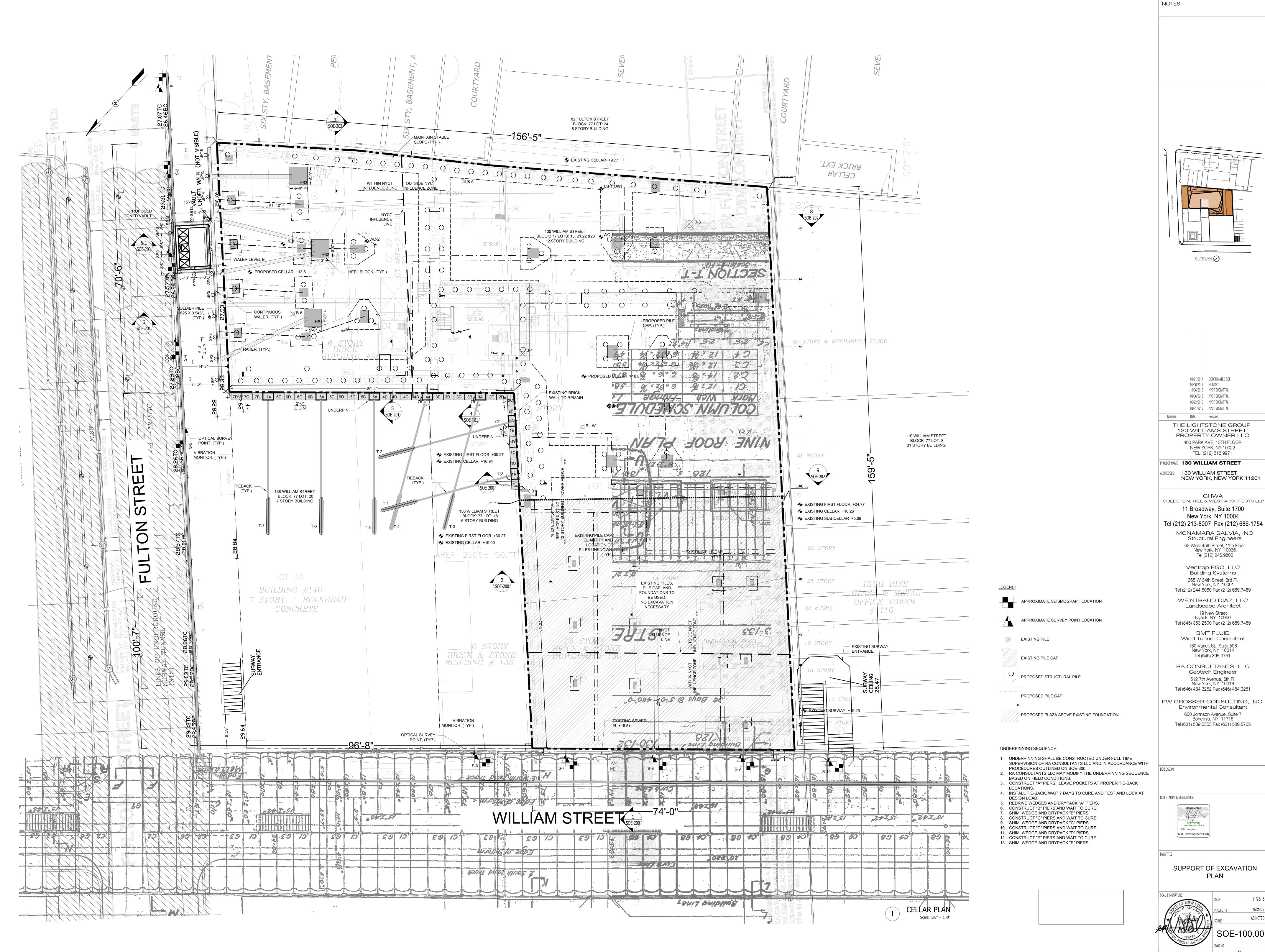
NYC Development Hub

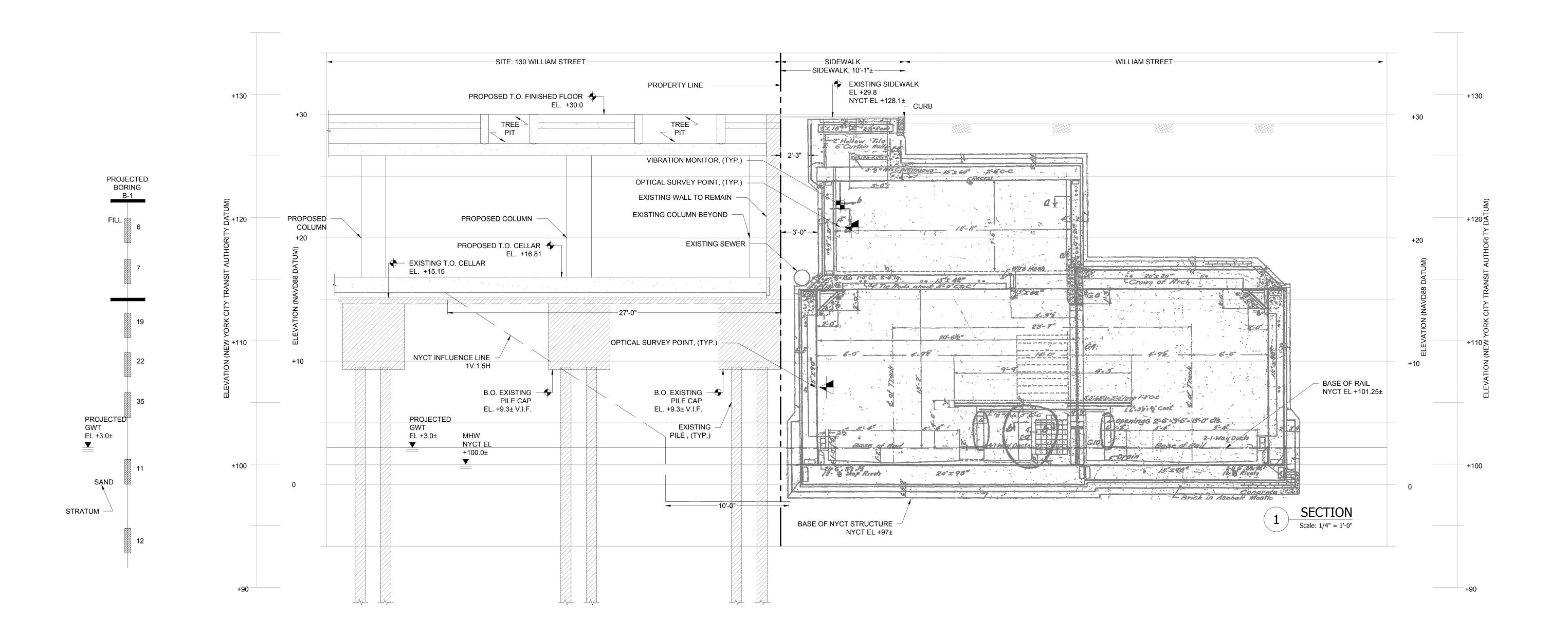
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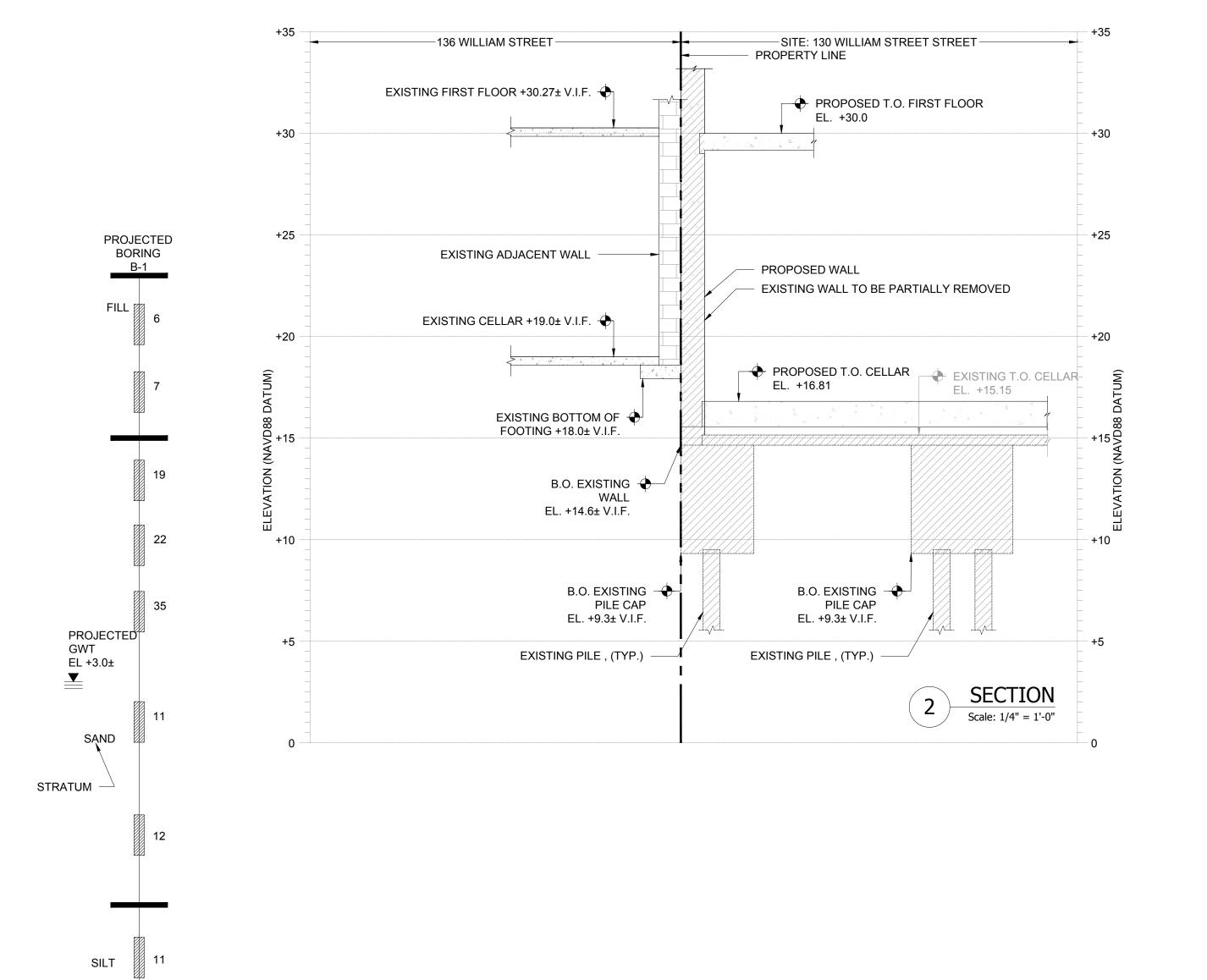
SUPPORT OF EXCAVATION

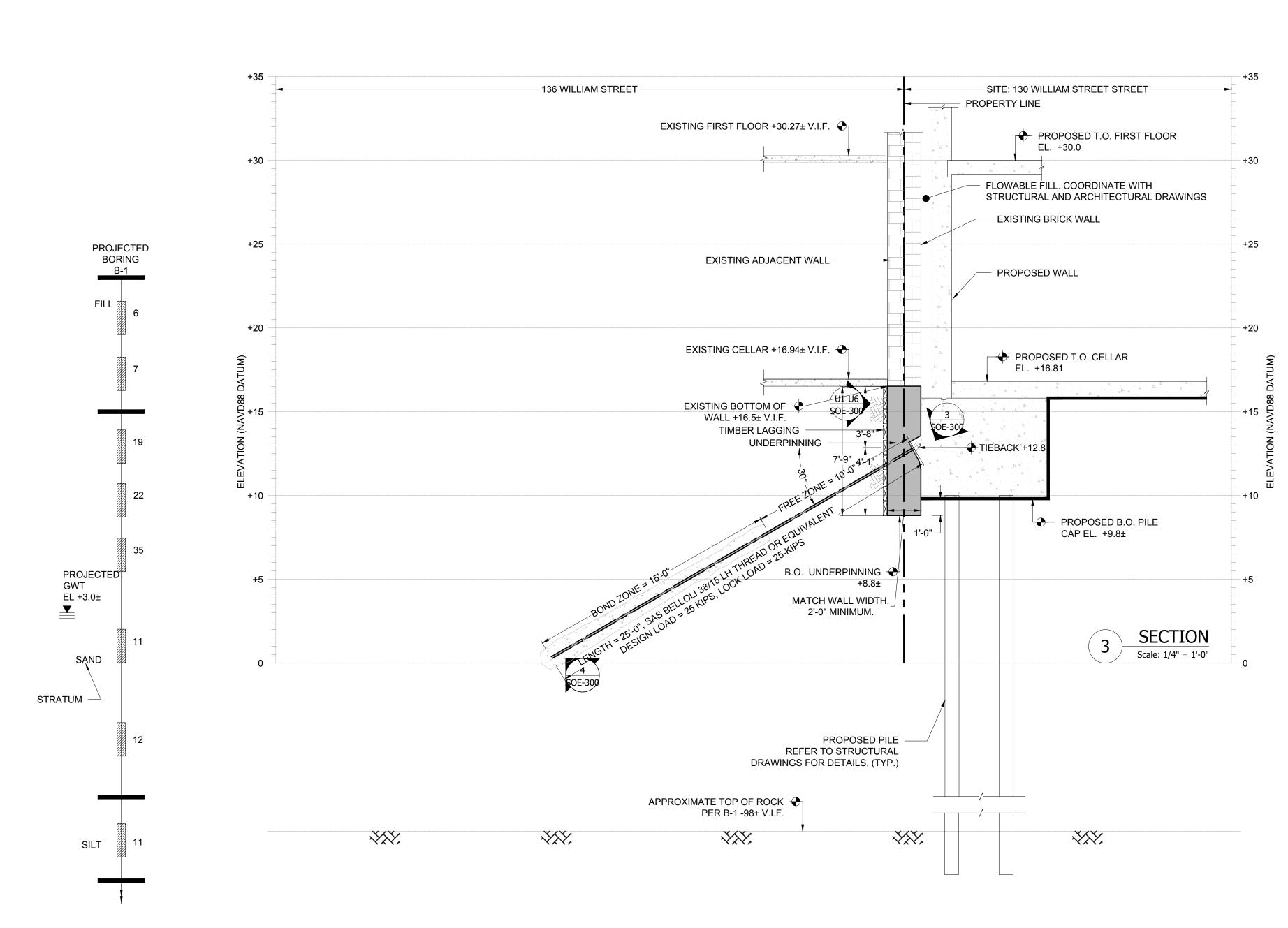
AND NYCT NOTES

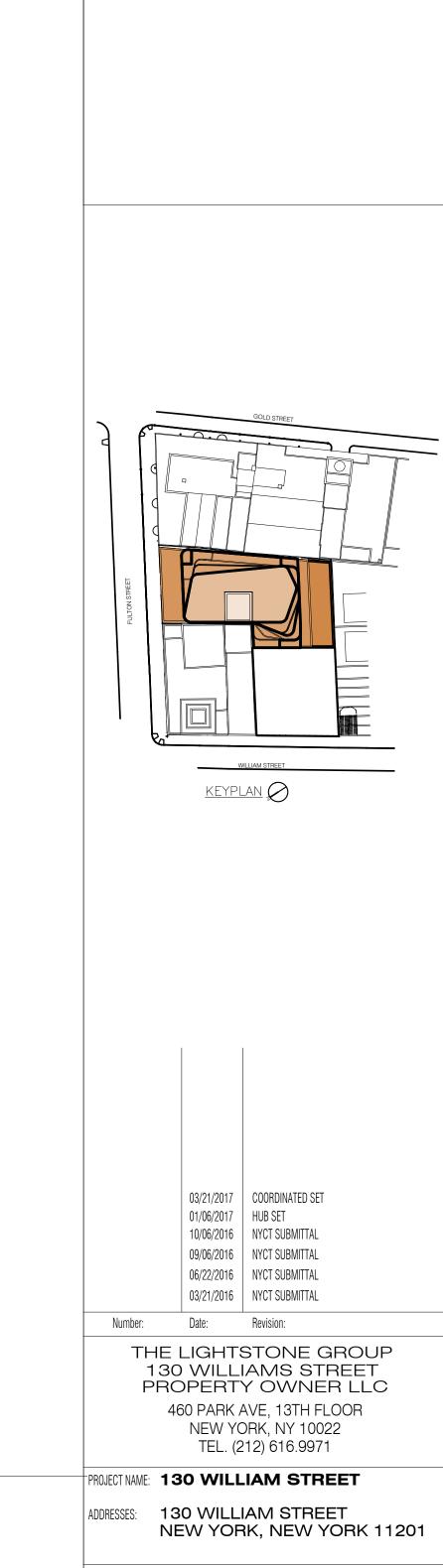












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DOB STAMPS & SIGNATURES:



SUPPORT OF EXCAVATION SECTIONS

