

APPENDIX C.8
CASE 10-T-0139
STRUCTURAL DRAWINGS – AUXILIARY ENCLOSURES
PILES AND FOUNDATIONS
ASTORIA HVDC CONVERTER STATION - SEGMENT 22

ASTORIA HVDC CONVERTER STATION

AUXILIARY ENCLOSURES STRUCTURAL PILES AND FOUNDATIONS

SCOPE OF WORK

THE STRUCTURAL SCOPE OF WORK INCLUDES THE PROPOSED PILE/FOUNDATION WORK FOR THE SAUXILIARY ENCLOSURES (WHERE REQUIRED) FOR THE FOLLOWING AREAS AS SUBJECT TO THE REQUIREMENTS AND PERFORMANCE CRITERIA PROVIDED IN THE STRUCTURAL BASIS OF DESIGN:

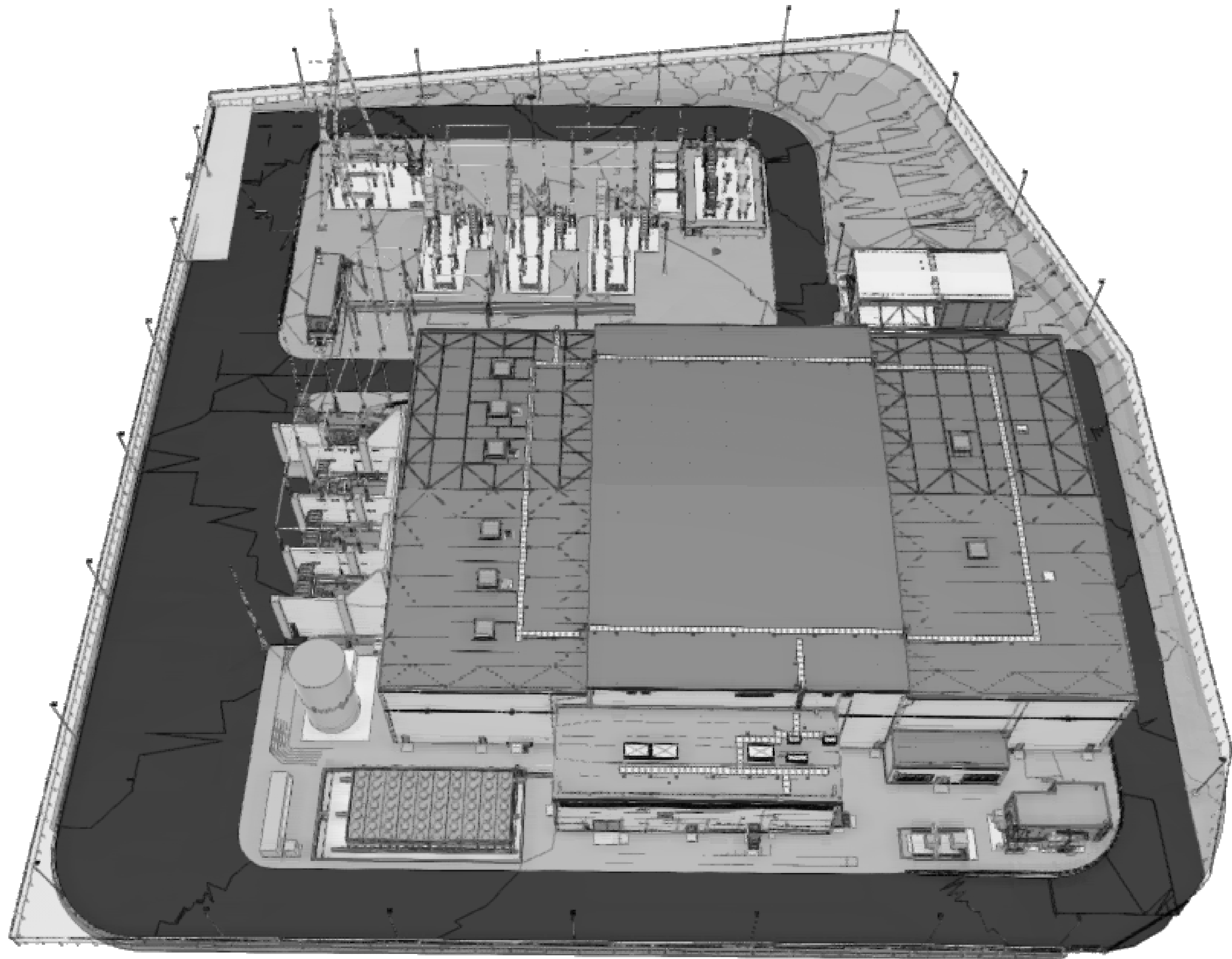
1. RELAY ENCLOSURE
2. STORAGE ENCLOSURE
3. MVS ENCLOSURE

FLOOD ZONE DESIGN CERTIFICATION:

THE EXISTING PROPERTY IS IN THE SPECIAL FLOOD HAZARD AREA (SFHA), ZONE AE PER EFFECTIVE 2015 FLOOD INSURANCE RATE MAP(FIRM). THIS IS TO CONFIRM THAT THE PROPOSED INSTALLATION IS IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN APPENDIX Q OF THE NYC BUILDING CODE.

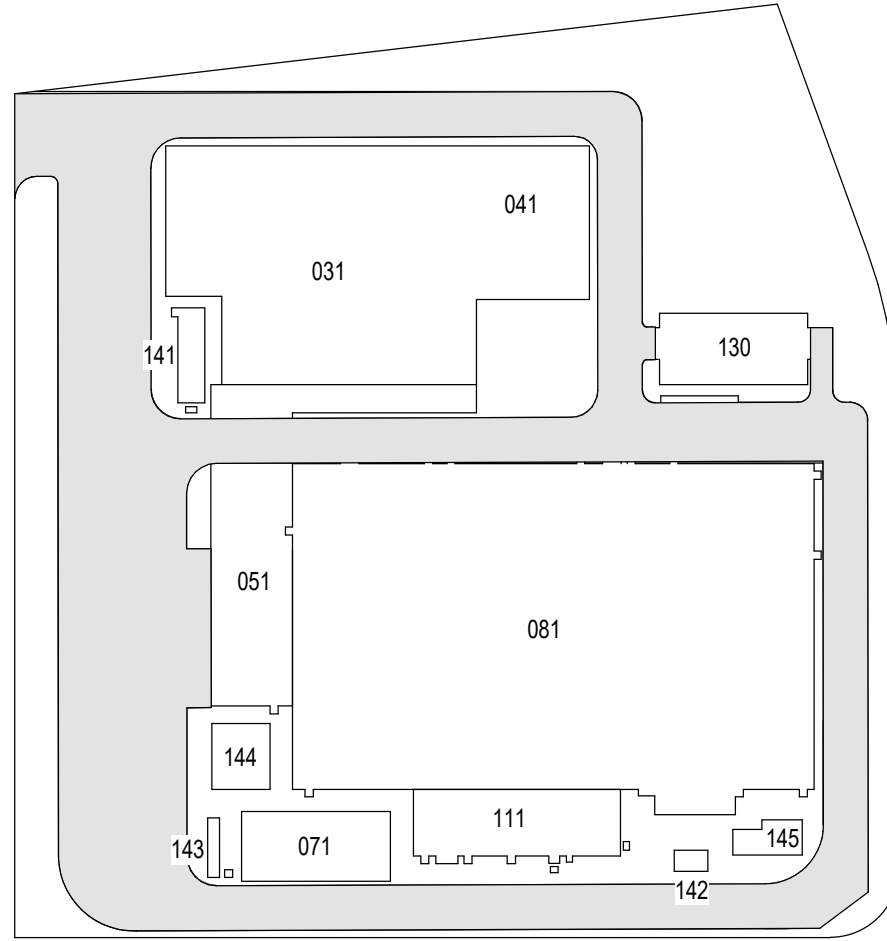
NYC ENERGY CODE COMPLIANCE:

STATEMENT: TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE. PROPOSED WORK MEETS THE GUIDELINES AND INSTRUCTIONS OUTLINED IN THE 2020 NYC ECC CHAPTER 4.



1 OVERALL SITE VIEW
T-001.00 N.T.S.

ISSUED FOR PERMIT



KEY PLAN
N.T.S.

PLAN NORTH

N

K Engineering and
Land Surveying, P.C.

370 7th Avenue
SUITE 1604
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**SOWINSKI
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CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEPTOR SHALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE. EXCLUDED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.

| | | | | |
|-----|--------------------|--------|--------|------------|
| B | FINAL SUBMISSION | VSP | EK | 11/08/2022 |
| A | INTERIM SUBMISSION | VSP | EK | 09/13/2022 |
| REV | DESCRIPTION | DRW BY | CHK BY | DATE |

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

**Astoria HVDC
Converter Station**

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

COVER SHEET



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY V. PATEL
CHECKED BY E. KIDANE
DRAWING NO
T-001.00
CADD FILE NO
AstoriaHVDC-CoverSheet.rvt
1 of 18

GN GENERAL REQUIREMENTS

- GN-1. THE DESIGN DRAWINGS ARE NOT TO BE CONSIDERED ALL INCLUSIVE, AND IT IS THE FIELD PERSONNEL'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH FOUNDATION INSTALLATION OR ANY OTHER CONSTRUCTION. ANY DISCREPANCIES FOUND BETWEEN THE DESIGN DRAWINGS AND THE ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD FOR REEVALUATION BEFORE PROCEEDING WITH WORK.
- GN-2. IN CASE OF CONFLICT BETWEEN DESIGN DRAWINGS AND SPECIFICATIONS, THE ENGINEER OF RECORD SHALL BE NOTIFIED TO OBTAIN CLARIFICATION PRIOR TO PROCEEDING WITH WORK.
- GN-3. ONLY USE DIMENSIONS INDICATED ON THE DESIGN DRAWINGS. DO NOT SCALE DESIGN DRAWINGS.
- GN-4. STRUCTURES HAVE BEEN DESIGNED TO BE STABLE IN THEIR FINAL STATE. CONTRACTOR TO ENGAGE A QUALIFIED ENGINEER FOR ALL TEMPORARY CONDITIONS. ERECTION AIDS, LIFTING DEVICES, ETC. ARE NOT SHOWN AND ARE THE RESPONSIBILITY OF THE ERECTOR'S ENGINEER OR AS APPROVED BY THE ENGINEER OF RECORD.

CS CODES AND SPECIFICATIONS

- CS-1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING CODES AND MANUALS.
- a. NFPA 850: RECOMMENDED PRACTICE FOR FIRE PROTECTION FOR ELECTRIC GENERATING PLANTS AND HIGH VOLTAGE DIRECT CURRENT CONVERTER STATIONS (2020).
- b. NEW YORK CITY BUILDING CODE, 2022
- c. INTERNATIONAL BUILDING CODE, IBC 2012 AND 2015
- d. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI 7-2016
- e. ASCE 113-2008 SUBSTATION STRUCTURE DESIGN GUIDE.
- f. ASCE 48-19 DESIGN OF STEEL TRANSMISSION POLE STRUCTURES.
- g. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318-2014 AS MODIFIED BY NYBC1908.
- h. SPECIFICATIONS FOR STRUCTURAL CONCRETE, ACI 301-2010
- i. MANUAL OF STANDARD PRACTICE, CRSI MSP-1 2009
- j. BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES, ASCE 5-13 OR TMS 402/602-16
- k. STEEL CONSTRUCTION MANUAL – 15TH EDITION, AISC 325-2015
- l. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC 360-2016
- m. STRUCTURAL WELDING CODE – STEEL, AWS D1.1/D1.1M:2015
- n. STRUCTURAL WELDING CODE – REINFORCING STEEL, STEEL REINFORCING BARS, AWS D1.4/D1.4M:2018
- o. STANDARD FOR NON-COMPOSITE STEEL FLOOR DECK, ANSI/SDI NC1.0- 2017
- p. STANDARD FOR STEEL ROOF DECK, ANSI/SDI RD1.0- 2017
- q. STANDARD FOR COMPOSITE STEEL FLOOR DECK - SLABS, SDI C- 2017
- r. STANDARD FOR QUALITY CONTROL AND QUALITY ASSURANCE FOR INSTALLATION OF STEEL DECK, SDI QA/QC- 2017
- s. OCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS, DEPARTMENT OF LABOR, PART 1910 AND PART 1926
- CS-2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
- a. SECTION 023200, GEOTECHNICAL INVESTIGATION
- b. SECTION 312000, EARTHWORK
- c. SECTION 031100, CONCRETE FORMING
- d. SECTION 033000, CAST-IN-PLACE CONCRETE
- e. SECTION 032000, CONCRETE REINFORCEMENT
- f. SECTION 036000, GROUTING
- g. SECTION 031500, CONCRETE ACCESSORIES, ANCHORS, AND EMBEDMENTS
- h. SECTION 034100, PRECAST STRUCTURAL CONCRETE
- i. SECTION 051200, STRUCTURAL STEEL FABRICATION AND SUPPLY
- j. SECTION 053100, STEEL DECK
- k. SECTION 055300, GRATING FABRICATION AND SUPPLY
- l. SECTION 316216, STEEL DRIVEN HP OR PIPE PILES
- m. SECTION 051210, STRUCTURAL STEEL ERECTION
- n. SECTION 133419, METAL BUILDING SYSTEMS
- o. 95.87, SECTION 099713, FIELD APPLIED PROTECTIVE COATINGS
- p. SECTION 099723, COATINGS FOR CONCRETE AND MASONRY
- q. SECTION 099600, SPECIALTY PAINTING

DL DESIGN LOADS

- DL-1. REFER TO LOAD DIAGRAMS FOR SPECIFIC CONDITIONS.
- DL-2. RISK CATEGORY.....IV
- DL-3. MINIMUM LIVE LOADS:
- a. CATWALKS.....40 PSF
- b. CONTROL ROOMS.....250 PSF
- c. ELECTRICAL EQUIPMENT ROOMS.....75 PSF + ACTUAL EQUIPMENT WEIGHT
- d. FIRE PROTECTION SPRINKLER PIPING SUPPORT......5x WATER WT + 250 LB
- e. ISOLATED PLATFORM FOR SERVICING EQUIPMENT.....150 PSF
- f. PLATFORMS & WALKWAYS.....100 PSF
- g. ROOF LIVE LOAD.....20 PSF
- h. SLABS-ON-GRADE.....250 PSF
- i. STAIRS AND RAMPS.....100 PSF
- j. STORAGE AREA.....250 PSF
- CS-3. SURCHARGE ADJACENT TO STRUCTURES:
- a. AASHTO DESIGN TRUCK LOADING.....HL-93

- b. SIDEWALK, VEHICULAR DRIVEWAYS SUBJECTED AND YARD SUBJECTED TO TRUCKING.....300 PSF
- DL-4. WIND LOADS:
- a. IMPORTANCE FACTOR (I_w).....1.0
- b. BASIC WIND SPEED (V_{ult}).....132 MPH
- c. NOMINAL WIND SPEED (V_{as0}).....102 MPH
- d. EXPOSURE CATEGORY.....C
- DL-5. SEISMIC LOADS:
- a. IMPORTANCE FACTOR (I_e).....1.5
- b. SITE CLASS.....D
- c. MAPPED SPECTRAL RESPONSE ACCELERATIONS:
- i. 0.2 SECOND SHORT PERIOD (S_s).....0.296
- ii. 1.0 SECOND PERIOD (S_1).....0.061
- d. DESIGN SPECTRAL RESPONSE ACCELERATIONS:
- i. 0.2 SECOND SHORT PERIOD (S_{ds})0.310
- ii. 1.0 SECOND PERIOD (S_{d1}).....0.098
- e. SEISMIC DESIGN CATEGORY.....C
- f. SEISMIC RESPONSE COEFFICIENT.....CS=0.10
- g. RESPONSE MODIFICATION FACTOR.....R=3
- h. OVERSTRENGTH FACTOR.....3
- i. ANALYSIS PROCEDURE USED.....EQUIVALENT LATERAL FORCE PROCEDURE
- j. BASIC SEISMIC FORCE RESISTING SYSTEM.....STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
- DL-6. SNOW LOADS:
- a. IMPORTANCE FACTOR (I_s).....1.15
- b. GROUND SNOW LOAD (p_g).....25 PSF
- c. EXPOSURE FACTOR (C_e).....1.0
- d. THERMAL FACTOR (C_t).....1.2
- e. FLAT ROOF SNOW LOAD (p_f).....24.15 PSF
- DL-7. SERVICEABILITY
- a. ROOF MEMBERS - VERTICAL DEFLECTION:
- i. LIVE.....L/180
- ii. DEAD + LIVE.....L/120
- b. FLOOR MEMBERS - VERTICAL DEFLECTION:
- i. LIVE.....L/360
- ii. DEAD.....L/240
- c. GIRTS:
- i. VERTICAL DEFLECTION.....L/360
- ii. LATERAL DEFLECTION.....L/180
- d. LATERAL DRIFT DUE TO 10-YR MRI WIND LOADS:
- i. BUILDINGS.....H/400
- ii. PIPE RACK AND SIMILAR OPEN STRUCTURES.....H/200
- DL-8. REFER TO VENDOR DOCUMENTATION FOR SPECIFIC EQUIPMENT FOUNDATION LOAD AND SERVICEABILITY INFORMATION.

FO FOUNDATIONS

- FO-1. FOUNDATION DESIGN IS BASED UPON THE INFORMATION AND RECOMMENDATIONS INCLUDED IN THE LATEST GEOTECHNICAL REPORT PREPARED BY GZA GEOENVIRONMENTAL OF NEW YORK.
- FO-2. ALLOWABLE FOUNDATION SOIL PRESSURE IS 2000 PSF.
- FO-3. FOUNDATION SURFACES SHALL BE PREPARED, AND UNSUITABLE BEARING SOILS REMOVED, IN ACCORDANCE WITH THE RECOMMENDATIONS INCLUDED IN THE GEOTECHNICAL REPORT. FOUNDATIONS MUST BEAR ON A MINIMUM OF ONE FOOT OF COMPACTED STRUCTURAL FILL, ON TOP OF PROPERLY PREPARED NATIVE SOILS OR FILL. MUD MAT MAY BE USED IN LIEU OF OR ON TOP OF COMPACTED STRUCTURAL FILL.
- FO-4. INSPECTORS SHALL SUBMIT REPORTS TO FIELD PERSONNEL AND THE ENGINEER OF RECORD INDICATING APPROVAL OF MATERIALS, METHODS OF CONSTRUCTION, AND COMPLIANCE WITH THE SPECIFICATIONS AFTER SATISFACTORY COMPLETION OF THE REQUIRED TESTS.
- FO-5. PROVIDE BRACING FOR ALL FOUNDATION WALLS PRIOR TO BACKFILLING UNLESS SPECIFICALLY INDICATED OTHERWISE WITHIN THE CONTRACT DOCUMENTS. THIS BRACING SHALL REMAIN IN PLACE UNTIL ALL SLABS AND BEAMS FRAMING INTO THE WALL HAVE BEEN PLACED AND HAVE ATTAINED 100% OF THEIR DESIGN STRENGTH.
- FO-6. DO NOT BACKFILL AGAINST CANTILEVER RETAINING WALLS UNTIL THE CONCRETE HAS ATTAINED 100% OF ITS DESIGN STRENGTH.
- FO-7. FOUNDATION CONSTRUCTION ON OR IN FROZEN SOIL IS NOT PERMITTED.
- FO-8. EMBEDDED PIPING, CONDUIT, AND UNISTRUT SHALL NOT COME IN CONTACT WITH REINFORCING STEEL.
- FO-9. ALL PILES AND CONCRETE REINFORCEMENT SHALL BE ELECTRICALLY GROUNDED. GROUNDING DETAILS IN ELECTRICAL DRAWINGS SHALL BE REFERENCED IN CONJUNCTION WITH THIS STRUCTURAL PACKAGE.

DF DEEP FOUNDATIONS

- DF-1. FOUNDATION DESIGN IS BASED UPON THE INFORMATION AND RECOMMENDATIONS INCLUDED IN THE GEOTECHNICAL REPORT PREPARED BY GZA GEOENVIRONMENTAL OF NEW YORK IN THEIR REPORT FILE #41.0163020.00 DATED 07-22-22.
- DF-2. DEEP FOUNDATIONS ARE DESIGNED FOR THE FOLLOWING ALLOWABLE LOADS:
- a. TYPE 1 FIXED HEAD:
- i. STRONG-AXIS SHEAR
- ia. SHEAR FOR 3 FT. PILE SPACING.....16.3 KIPS
- ib. SHEAR FOR 5 FT. PILE SPACING.....18.2 KIPS
- ic. SHEAR FOR 8 FT. PILE SPACING.....19.3 KIPS
- ii. WEAK-AXIS SHEAR
- ii.a. SHEAR FOR 3 FT. PILE SPACING.....10 KIPS
- ii.b. SHEAR FOR 5 FT. PILE SPACING.....11.2 KIPS
- ii.c. SHEAR FOR 8 FT. PILE SPACING.....12 KIPS


- iii. COMPRESSION.....220 KIPS
- iv. TENSION FOR 50 FOOT LONG PILES.....60 KIPS
- v. TENSION FOR 30 FOOT LONG PILES.....22 KIPS
- b. TYPE 2: FREE HEAD:
- i. STRONG-AXIS SHEAR
- ia. SHEAR FOR 3 FT. PILE SPACING.....3.1 KIPS
- ib. SHEAR FOR 5 FT. PILE SPACING.....3.5 KIPS
- ii.c. SHEAR FOR 8 FT. PILE SPACING.....3.7 KIPS
- ii. WEAK-AXIS SHEAR
- ii.a. SHEAR FOR 3 FT. PILE SPACING.....1.9 KIPS
- ii.b. SHEAR FOR 5 FT. PILE SPACING.....2.1 KIPS
- ii.c. SHEAR FOR 8 FT. PILE SPACING.....2.3 KIPS
- iii. COMPRESSION.....220 KIPS

- DF-3. PILE CAPACITIES WILL BE VERIFIED BY MEANS OF AN INDICATOR TEST PILE PROGRAM IN ACCORDANCE WITH ASTM D3966, THE NEW YORK CITY BUILDING CODE, AND THE GEOTECHNICAL REPORT.
- DF-4. THE PILING CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF EACH PILE INSTALLATION, WHICH SHALL BE AVAILABLE FOR INSPECTION BY THE ENGINEER OF RECORD OR ENGINEER OF RECORD'S REPRESENTATIVE. THE RECORD SHALL INCLUDE PILE NUMBER, AS-BUILT LOCATION, GROUND ELEVATION, AND TOP OF PILE ELEVATION.
- DF-5. PILES SHALL BE LOCATED AS SHOWN ON THE DESIGN DRAWINGS OR AS OTHERWISE DIRECTED BY THE ENGINEER OF RECORD. PILE CENTER SHALL BE LOCATED TO A HORIZONTAL ACCURACY OF +/- THREE INCHES. PILES SHALL BE PLUMB WITHIN TWO PERCENT UNLESS NOTED OTHERWISE. TOP OF PILE ELEVATION SHALL BE LOCATED TO AN ACCURACY OF +/- ONE INCH.
- DF-6. INSPECTORS SHALL SUBMIT REPORTS TO THE CONTRACTOR AND THE ENGINEER OF RECORD INDICATING APPROVAL OF MATERIALS, METHODS OF CONSTRUCTION, AND COMPLIANCE WITH ASTM D3966, THE NEW YORK CITY BUILDING CODE, AND THE GEOTECHNICAL REPORT AFTER SATISFACTORY COMPLETION OF THE REQUIRED TESTS.

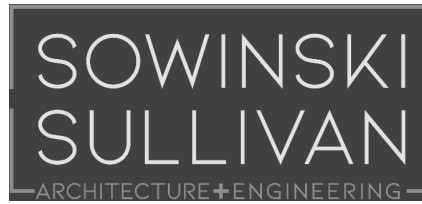
CM CONCRETE MATERIALS

- CM-1. CONCRETE MIX DESIGN, PLACEMENT, AND CURING SHALL BE IN ACCORDANCE WITH ACI 301.
- CM-2. USE A MINIMUM 28-DAY CONCRETE COMPRESSIVE STRENGTH OF 5,000 PSI UNLESS NOTED OTHERWISE.
- CM-3. ALL EXTERIOR FOUNDATIONS SHALL BE BROOM FINISHED, UNLESS NOTED OTHERWISE. ALL INTERIOR SLABS SHALL BE SMOOTH TROWEL FINISHED UNLESS NOTED OTHERWISE.
- CM-4. ALL MASS CONCRETE WILL BE INDICATED ON THE INDIVIDUAL FOUNDATION AND CONCRETE DESIGN DRAWINGS. PLACEMENTS OF MASS CONCRETE SHALL BE INSTALLED IN ACCORDANCE WITH THERMAL CONTROL PLANS AND BE APPROVED BY THE ENGINEER OF RECORD.
- CM-5. CONCRETE SHALL BE CURED ACCORDING TO ACI 308.1. CONCRETE SHALL BE PROTECTED FROM LOSS OF MOISTURE FOR NOT LESS THAN SEVEN DAYS AFTER PLACEMENT AND WITH NECESSARY PROTECTION FOR COLD OR HOT WEATHER PLACEMENT.
- CM-6. THE USE OF CALCIUM CHLORIDE AND OTHER CHLORIDE-CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN/CONTACT BETWEEN ALUMINUM ITEMS (INCLUDING ALUMINUM CONDUIT) AND CONCRETE IS PROHIBITED.
- CM-7. ALL PERMANENTLY EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER UNLESS NOTED OTHERWISE.
- CM-8. CONSULT MECHANICAL AND ELECTRICAL DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR OPENINGS AND EMBEDDED ITEMS SUCH AS FLOOR DRAIN SYSTEMS, CONDUIT, ETC.
- CM-9. OBSERVABLE CRACKS SHALL BE REPORTED TO THE ENGINEER OF RECORD TO DETERMINE CAUSE AND APPROPRIATE REPAIR PROCEDURE.
- CM-10. PERFORM CONCRETE TESTING IN ACCORDANCE WITH SPECIFICATIONS.

ISSUED FOR PERMIT

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Land Surveying, P.C.

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| B | FINAL SUBMISSION | DJF | WA | 11/08/2022 | |
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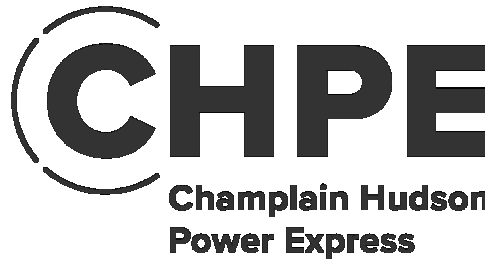
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PROJECT

 **CHPE**
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STRUCTURAL GENERAL
NOTES



| | |
|---------------------------------------|------------|
| DATE | 11/08/2022 |
| PROJECT NO | 105121 |
| DRAWING BY | D. FLYNN |
| CHECKED BY | W. ABBASSI |
| DRAWING NO | FO-001.00 |
| CADD FILE NO | 2 of 18 |
| Astoria-HVDC-CHPE-000-XX-M2-S-001.rvt | |

RE. CONCRETE REINFORCEMENT

- RE-1. REINFORCING BAR STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 AND GRADE 80 DEFORMED BARS UNLESS NOTED OTHERWISE. WELDED WIRE REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A1064. MILL TEST CERTIFICATES SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS.
- RE-2. FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 AND ACI 301.
- RE-3. CHAIRS, SPACERS, STANDEES, AND CARRIER BARS SHALL BE SIZED, SPACED, AND PLACED TO PROVIDE THE REQUIRED SPACING, ALIGNMENT, AND CLEARANCES OF REINFORCING. CARRIER BARS SHALL NOT BE USED AS PRIMARY REINFORCING BARS.
- RE-4. REINFORCING BAR LAP SPLICES NOT OTHERWISE INDICATED SHALL BE ACI CLASS B. WELDED WIRE REINFORCEMENT SHALL BE LAPPED ONE PANEL PLUS TWO INCHES MINIMUM.
- RE-5. WHERE A 90-DEGREE, 135-DEGREE, OR 180-DEGREE HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI 318-14 STANDARD HOOKS UNLESS NOTED OTHERWISE.
- RE-6. DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT UNLESS NOTED OTHERWISE.
- RE-7. REINFORCING STEEL SHALL BE SECURELY TIED IN PLACE.
- RE-8. ALL BENDING OF REINFORCEMENT SHALL BE DONE COLD.
- RE-9. PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED. ALL MECHANICAL SPLICES SHALL BE APPROVED BY THE ENGINEER OF RECORD.
- RE-10. PROVIDE MIN CONCRETE COVER OVER REINFORCING STEEL AS FOLLOWS UNLESS NOTED OTHERWISE:

| CONCRETE EXPOSURE | MEMBER | REINFORCEMENT | SPECIFIED COVER, IN. |
|---|---|--|----------------------|
| CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND | ALL | ALL | 3 |
| EXPOSED TO WEATHER OR IN CONTACT WITH GROUND | ALL | #6 THROUGH #18 BARS | 2 |
| | | #5 BAR, W31 OR D31 WIRE AND SMALLER | 1-1/2 |
| NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND | SLABS, JOISTS, AND WALLS | #14 AND #18 BARS | 1-1/2 |
| | BEAMS, COLUMNS, PEDESTALS, AND TENSION TIES | #11 BAR AND SMALLER | 1 1/2 UNO |
| | | PRIMARY REINFORCEMENT, STIRRUPS, TIES, AND HOOPS | 1-1/2 |

- RE-12. PROVIDE SPLICES, DEVELOPMENT, AND STANDARD HOOKS AS FOLLOWS UNLESS NOTED OTHERWISE:

| REINFORCING STEEL SPLICE CHART FOR F'c = [5000 PSI] | | | | | | |
|---|-------------------------|------------|--------------------|------------|---------------------------------------|--------------------------|
| BAR SIZE | SPLICE LENGTH (CLASS B) | | DEVELOPMENT LENGTH | | DEVELOPMENT LENGTH FOR STANDARD HOOKS | LENGTH OF STANDARD HOOKS |
| | TOP BARS | OTHER BARS | TOP BARS | OTHER BARS | | |
| #3 | 22" | 17" | 17" | 13" | 6" | 7" |
| #4 | 29" | 22" | 22" | 17" | 9" | 9" |
| #5 | 36" | 27" | 28" | 21" | 11" | 11" |
| #6 | 43" | 33" | 33" | 25" | 13" | 14" |
| #7 | 62" | 48" | 48" | 37" | 15" | 16" |
| #8 | 72" | 55" | 55" | 42" | 17" | 18" |
| #9 | 81" | 62" | 62" | 48" | 19" | 23" |
| #10 | 91" | 70" | 70" | 54" | 22" | 25" |
| #11 | 101" | 78" | 78" | 60" | 24" | 28" |

CJ. CONCRETE CONSTRUCTION JOINTS

- CJ-1. SEE DESIGN DRAWINGS FOR ALL CONSTRUCTION JOINT, CRACK CONTROL JOINT, EXPANSION JOINT, AND ISOLATION JOINT LOCATIONS.
- CJ-2. NO HORIZONTAL CONSTRUCTION JOINTS SHALL BE PERMITTED IN BEAMS, WALLS, OR SLABS UNLESS SPECIFICALLY SHOWN ON THE DESIGN DRAWINGS OR APPROVED BY THE ENGINEER OF RECORD.
- CJ-3. PROVIDE CONTINUOUS WATERSTOPS AT ALL CONSTRUCTION JOINTS EXPOSED TO SOIL OR WATER ON THE DESIGN DRAWINGS UNLESS NOTED OTHERWISE. INSTALL PER SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
- CJ-4. WATERSTOPS SHALL BE FOUR-INCH RIBBED CENTERBULB-TYPE POLYVINYL CHLORIDE PER SPECIFICATIONS UNLESS NOTED OTHERWISE.
- CJ-5. FOR ALL CONSTRUCTION JOINTS ROUGHEN EXPOSED CONCRETE SURFACE TO AN AMPLITUDE OF APPROXIMATELY 1/4" UNLESS NOTED OTHERWISE. CLEAN THE EXPOSED CONCRETE SURFACE OF ALL LOOSE MATERIAL AND LAITANCE.
- CJ-6. SAWCUT JOINTS SHALL BE CUT AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT AGGREGATE BEING DISLODGED BY SAW; GENERALLY, WITHIN FOUR HOURS AFTER PLACING IN HOT WEATHER AND NOT MORE THAN 12 HOURS IN COLD WEATHER.

SP. STRUCTURAL PRECAST CONCRETE

- SP-1. DO NOT USE POWER-DRIVEN ANCHORS OR ANCHORS WHICH REQUIRE DRILLING AT PRESTRESSED UNITS. SUBMIT PROPOSED ANCHOR PROCEDURES FOR PRECAST UNITS TO THE ENGINEER OF RECORD AND PRECAST SUPPLIER FOR REVIEW.
- SP-2. ALL PRECAST DESIGN, DETAILING, AND CONNECTIONS SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF PCI AND SPECIFICATIONS.

GT. GROUT

- GT-1. GROUT SHALL BE NON-SHRINK, NON-METALLIC, NON-GASEOUS, PREMIX TYPE UNLESS NOTED OTHERWISE. COMPRESSIVE STRENGTH OF CEMENTITIOUS GROUT SHALL BE MINIMUM 5000 PSI AT 28 DAYS. COMPRESSIVE STRENGTH OF EPOXY GROUT SHALL BE MINIMUM 12,000 PSI AT SEVEN DAYS. CURING SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS.
- GT-2. THE ORDER OF PRECEDENCE FOR GROUTING OF MACHINERY AND EQUIPMENT SHALL BE AS FOLLOWS: EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS, DESIGN DRAWINGS, AND THEN SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THESE DOCUMENTS, NOTIFY THE ENGINEER OF RECORD PRIOR TO PROCEEDING WITH WORK.

FL FLOOD

- FL-1. THE SITE IS DEFINED AS A ZONE (NON-COASTAL).
- FL-2. BASE FLOOD ELEVATION, BFE, = 13 FEET NAVD 88.
- FL-3. RECOMMENDED FREE BOARD BY THE 2022 NYCBC-APPENDIX G IS 2.0 FEET.
- FL-4. RECOMMENDED DESIGN FLOOD ELEVATION, DFE = 15 FEET NAVD 88.
- FL-5. THE STRUCTURE IS NOT SUBJECTED TO HYDRODYNAMIC LOADS.

| DESIGN ELEVATION / DEPTH | FEET IN NAVD 88 |
|-----------------------------|-----------------|
| DESIGN BASE FLOOD ELEVATION | 13.0 |
| FINISH FLOOR ELEVATION | 15.0 |
| SEA LEVEL RISE | NOT CONSIDERED |



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Kiewit

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Hitachi Energy

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PROJECT

CHPE
Champlain Hudson
Power Express

**Astoria HVDC
Converter Station**

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

STRUCTURAL GENERAL
NOTES



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY D. FLYNN
CHECKED BY W. ABBASI
DRAWING NO
FO-002.00
CADD FILE NO
Astoria-HVDC-CHPE
Astoria-CHA-KIE-000-XX-M2-S-001.rvt
3 of 18

SI-1. REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION.

| VERIFICATION AND INSPECTION | CONTINUOUS | PERIODIC | REFERENCED STANDARD | BC REFERENCE | CONCRETE SPECIAL INSPECTOR (CAST IN PLACE, PRECAST, & PRESTRESSED) | LICENSED CONCRETE TESTING LABORATORY |
|--|------------|----------|--|---|--|--------------------------------------|
| 1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT | - | X | ACI 318: 3.5, 7.1-7.7 | 1903.6 1907.1 1907.4 1911.4 | X | |
| 2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2, ITEM 2B | - | - | AWS D1.4 ACI 318: 3.5.2 | 1903.6.2 | | |
| 3. INSPECTION OF ANCHORS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED | - | X | ACI 318: 8.1.3, 21.2.8 | 1901.3 | X | |
| 4. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS | - | X | ACI 318: 3.8.6, 8.1.3, 21.2.8 | - | X | |
| 5. VERIFYING USE OF REQUIRED DESIGN MIX | - | X | ACI 318: CH. 4, 5.2-5.4 | 1904, 1905.2-1905.4, 1911.3 | | X |
| 6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE | X | - | ASTM C 172, ASTM C 31, ACI 318: 5.8, 5.8 | 1905.6, 1911.10 | | X |
| 7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES | X | - | ACI 318: 5.9, 5.10 | 1905.9, 1905.10, 1911.6, 1911.7, 1911.8 | X | |
| 8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES | - | X | ACI 318: 5.11-5.13 | 1905.11, 1905.13, 1911.9 | X | |
| 9. INSPECTION OF PRESTRESSED CONCRETE: A. APPLICATION OF PRESTRESSING FORCES | X | | ACI 318: 18.20 | | X | |
| B. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC FORCE-RESISTING SYSTEM | X | - | ACI 318: 18.18.4 | - | | |
| 10. ERECTION OF PRECAST CONCRETE MEMBERS | - | X | ACI 318: CH. 16 | - | X | |
| 11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS | - | X | ACI 318: 6.2 | 1906.2 | --- | X |
| 12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED | - | X | ACI 318: 6.1.1 | 1906.2 | X | |

SI-2. REQUIRED SPECIAL INSPECTIONS OF SUBSURFACE CONDITIONS:

| VERIFICATION AND INSPECTION TASK | CONTINUOUS DURING TASK LISTED | PERIODICALLY DURING TASK LISTED |
|---|-------------------------------|---------------------------------|
| 1. DURING FILL PLACEMENT: DURING PLACEMENT AND COMPACTION OF THE FILL MATERIAL, THE SPECIAL INSPECTOR SHALL DETERMINE THAT THE MATERIAL BEING USED AND THE MAXIMUM LIFT THICKENSS COMPLY WITH THE APPROVED GEOTECHNICAL REPORT, AS SPECIFIED IN SECTION 1804.5. | X | - |
| 2. EVALUATION OF IN-PLACE DENSITY: THE SPECIAL INSPECTOR SHALL DETERMINE THAT THE IN-PLACE DRY DENSITY OF THE SOPACTED FILL COMPLIES WITH THE APPROVED CONSTRUCTION DOCUMENTS | X | - |
| 3. SUBGRADE INSPECTION: IMMEDIATELY PRIOR TO PLACEMENT OF EACH AND EVERY FOOTING, FOUNDATION, FILL OR OTHER SUPPORTING MATERIALS, THE SPECIAL INSPECTOR SHALL ETERMINE THAT THE SITE HAS BEEN PREPARED AND IS IN ACCORDANCE WITH THE APPROVED GEOTECHNICAL REPORT. | - | X |

SI-3. REQUIRED VERIFICATION AND INSPECTION OF DRIVEN DEEP FOUNDATION ELEMENTS:

| VERIFICATION AND INSPECTION TASK | CONTINUOUS DURING TASK LISTED | PERIODICALLY DURING TASK LISTED |
|---|-------------------------------|---------------------------------|
| 1. VERIFY ELEMENT MATERIALS, SIZES AND LENGTHS COMPLY WITH THE REQUIREMENTS | X | - |
| 2. DETERMINE CAPACITIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL LOAD TESTS, AS REQUIRED | X | - |
| 3. OBSERVE DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT | X | - |
| 4. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM TYPE AND SIZE OF HAMMER, RECORD NUMBER OF BLOWS PER FOOT OF PENETRATION, DETERMINE REQUIRED BLOWS PER FOOT OF PENETRATION TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENT ANY DAMAGE TO FOUNDATION ELEMENT | X | - |
| 5. FOR STEEL ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.2 | - | - |
| 6. FOR CONCRETE ELEMENTS AND CONCRETE-FILLED ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705. | - | - |
| 7. FOR SPECIALTY ELEMENTS, PERFORM ADDITIONAL INSPECTIONS AS DETERMINED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE | - | - |

SI-4. REQUIRED SPECIAL INSPECTIONS AND TESTS OF DEEP FOUNDATION ELEMENTS

| INSTALLATION | CONTINUOUS SPECIAL INSPECTION | PERIODIC SPECIAL INSPECTION |
|--|-------------------------------|-----------------------------|
| 1. VERIFY THE IDENTIFYING DESIGNATION OF THE DEEP FOUNDATION ELEMENT AND RECORD THE DATE OF THE INSTALLATION, INCLUDING THE START AND END TIMES. | X | - |
| 2. VERIFY THE SIZE, MATERIAL, AND ALLOWABLE CAPACITY AS SPECIFIED IN THE CONSTRUCTION DOCUMENTS. | X | - |
| 3. RECORD THE ELEVATION OF THE MINIMUM REQUIRED DEPTH OF PENETRATION AND RECORD THE FINAL TIP ELEVATION AND BUTT ELEVATION. | X | - |
| 4. RECORD THE ELEVATION OF SPLICES AND NOTE WHETHER OR NOT THE SPLICES WERE INSTALLED AND LOCATED IN COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. | X | - |
| LOAD TEST | | |
| 5. FOR LOAD TEST REQUIRING A LOAD OR REACTION FRAME, INSPECT THE CONSTRUCTION OF THE LOAD OR REACTION FRAME. RECORD THE RESULTS OF THE INSPECTION AND NOTE WHETHER OR NOT THE FRAME COMPLIES WITH THE CONSTRUCTION DOCUMENTS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL. | - | X |
| 6. RECORD THE IDENTIFYING DESIGNATION FOR THE ELEMENT BEING TESTED, AND THE DATE OF THE TESTING, INCLUDING THE START AND END TIME. | X | - |
| 7. RECORD THE METHOD OF PERFORMING THE TEST, INCLUDING THE EQUIPMENT BEING USED, AS WELL AS THE TEST RESULTS, NOTING WHETHER OR NOT THE METHOD OF TESTING AND THE TEST RESULTS COMPLY WITH THE REQUIREMENTS OF SECTIONS 1810, 1811, AND 1812 AND THE CONSTRUCTION DOCUMENTS. | X | - |


SI-5. PROGRESS INSPECTORS OF FOOTINGS AND FOUNDATIONS SHALL COMPLY WITH SECTION 110.3.1 OF THE BUILDING CODE.

SI-6. INSPECTION OF WELDING:

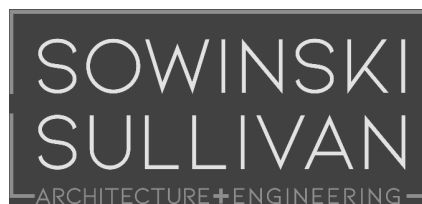
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|--|-------------|-------------|----------|----------|
| INSPECTION OF WELDING: | | | | |
| A. STRUCTURAL STEEL: | - | - | - | - |
| 1) COMPLETE AND PARTIAL PENETRATION GROOVE WELDS. | X | - | AWS D1.1 | 1705.2.1 |
| 2) MULTI-PASS FILLET WELDS. | X | - | | |
| 3) SINGLE-PASS FILLET WELDS > 5/16" - | X | - | | |
| 4) PLUG AND SLOT WELDS. | X | - | | |
| 5) SINGLE-PASS FILLET WELDS < 5/16" - | - | X | AWS D1.3 | - |
| 6) FLOOR AND ROOF DECK WELDS. | - | X | | |
| 7) COLD-FORMED STEEL WELDS. | - | X | | |
| B. REINFORCING STEEL: | - | - | AWS D1.4 | 1903.6.2 |
| 1) PRE-WELDING VERIFICATION OF BASE METAL. | - | X | | |
| 2) REINFORCING STEEL-RESISTING FLEXURAL AND AXIAL FORCES INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS AND SHEAR REINFORCEMENT. | X | - | | |
| 3) SHEAR REINFORCEMENT. | X NOTE A | - | | |
| 4) OTHER REINFORCING STEEL. | - | X NOTE B | | |

SI-7. INSPECTORS SHALL SUBMIT REPORTS TO FIELD PERSONNEL AND ENGINEER OF RECORD INDICATING APPROVAL OF MATERIALS, METHODS OF CONSTRUCTION, AND COMPLIANCE WITH SPECIFICATIONS AFTER SATISFACTORY COMPLETION OF REQUIRED TESTS AND SUBMISSION OF REQUIRED TEST REPORTS.

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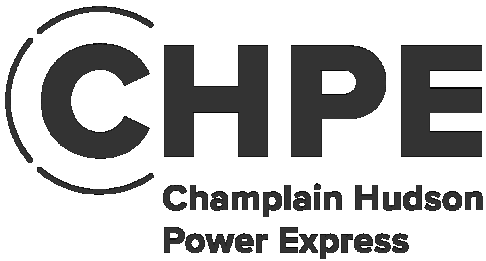
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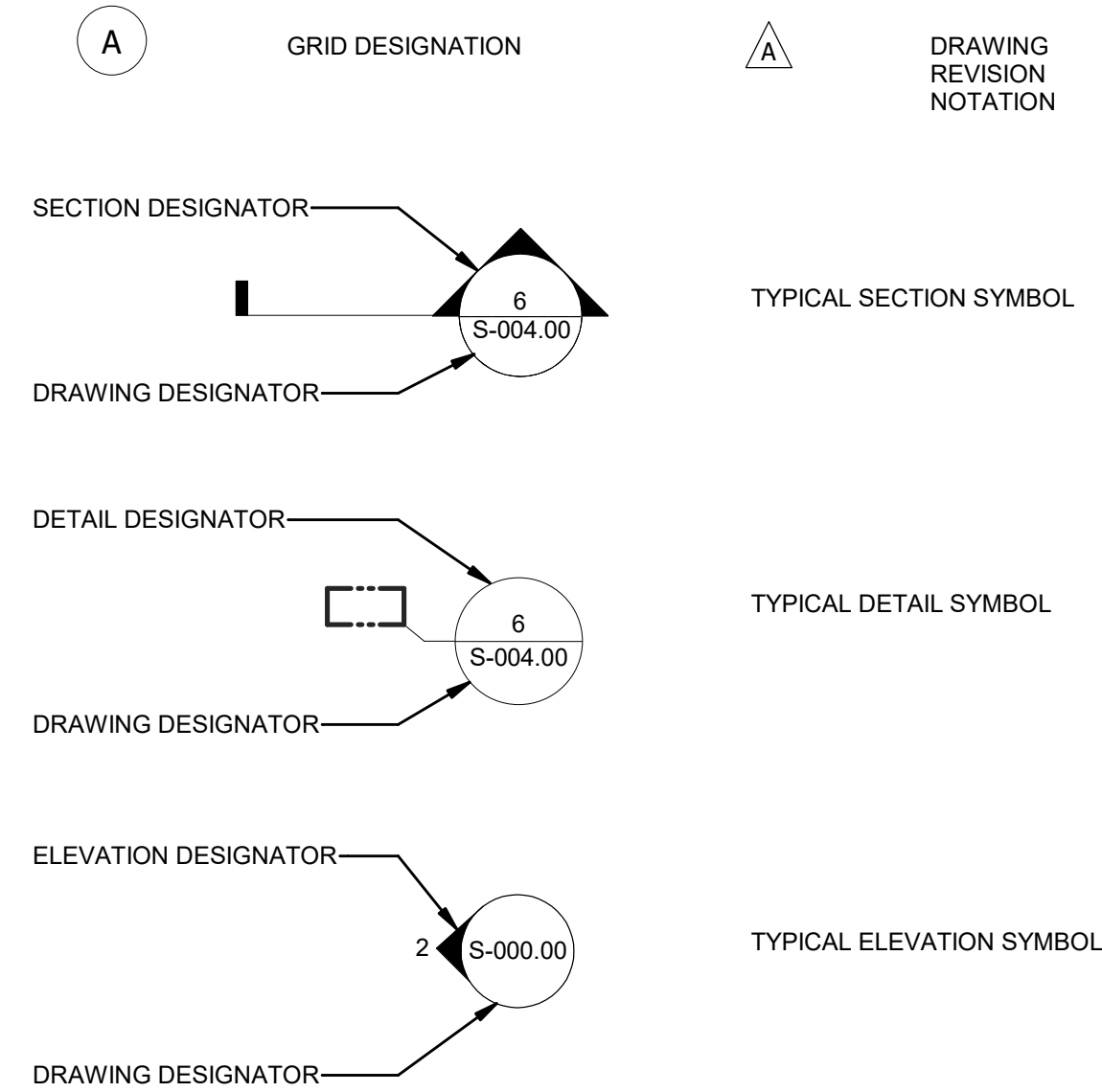
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DATE 11/08/2022
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DRAWING BY D. FLYNN
CHECKED BY W. ABBASSI
DRAWING NO
FO-003.00
CADD FILE NO
Astoria-HVDC-CHPE
Astoria-CHA-KIE-000-XX-M2-S-001.rvt
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| ABBREVIATIONS | | | |
|---------------|--|--------|---|
| AB | ANCHOR BOLT | Ld | STRAIGHT BAR DEVELOPMENT LENGTH |
| ACI | AMERICAN CONCRETE INSTITUTE | LG | LONG |
| ADHV | ADHESIVE | Lh | DEVELOPMENT LENGTH FOR STANDARD HOOKS |
| AFF | ABOVE FINISHED FLOOR | LL | LIVE LOAD |
| AISC | AMERICAN INSTITUTE OF STEEL CONSTRUCTION | LLBB | LONG LEGS BACK TO BACK |
| ALT | ALTERNATE | LLH | LONG LEG HORIZONTAL |
| ALUM | ALUMINUM | LLV | LONG LEG VERTICAL |
| ANC | ANCHOR | LOC | LOCATION |
| ANSI | AMERICAN NATIONAL STANDARDS INSTITUTE | LP | LOW POINT |
| APPROX | APPROXIMATE | LRFD | LOAD AND RESISTANCE FACTOR DESIGN |
| AR | ANCHOR ROD | LSH | LONG SLOTTED HOLE |
| ASCE | AMERICAN SOCIETY OF CIVIL ENGINEERS | LSL | LONG SLOTTED LIGHT |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS | MACH | MACHINE |
| AVG | AVERAGE | MAS | MASONRY |
| AWS | AMERICAN WELDING SOCIETY | MATL | MATERIAL |
| BB | BACK TO BACK | MAX | MAXIMUM |
| BC | BOLT CIRCLE | MECH | MECHANICAL |
| BF | BRACED FRAME | MEP | MECHANICAL/ELECTRICAL/PLUMBING |
| BLDG | BUILDING | MFR | MANUFACTURER |
| BM | BEAM | MIN | MINIMUM |
| BO | BOTTOM OF | MISC | MISCELLANEOUS |
| BCC | BOTTOM OF CONCRETE | MO | MASONRY OPENING |
| BOF | BOTTOM OF FOOTING | MTL | METAL |
| BOS | BOTTOM OF STEEL | MWFRS | MAIN WIND FORCE RESISTING SYSTEM |
| BOT | BOTTOM | N | NORTH |
| BP | BASE PLATE | NER | NEUTRAL EARTHING RESISTOR |
| BRG | BEARING | NIC | NOT IN CONTRACT |
| BT | BRACING TRUSS | NO | NUMBER |
| CA | COLUMN ABOVE | NS | NEAR SIDE |
| CB | COLUMN BELOW | NTS | NOT TO SCALE |
| CC | CENTER TO CENTER | OC | ON CENTER |
| C&C | COMPONENTS AND CLADDING | OD | OUTSIDE DIAMETER |
| CHKD | CHECKED | OLP | OPERATING LOAD PRESSURE |
| CFMF | COLD-FORMED METAL FRAMING | OLT | OPERATING LOAD TRANSIENT PRESSURE |
| CJ | CONSTRUCTION/CONTROL JOINT | OPNG | OPENING |
| CJP | COMPLETE JOINT PENETRATION | OPP | OPPOSITE |
| CL | CENTERLINE | OSHA | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION |
| CLR | CLEAR | OVS | OVERSIZED |
| CMU | CONCRETE MASONRY UNIT | PA | POST ABOVE |
| COL | COLUMN | PB | POST BELOW |
| CONC | CONCRETE | PCF | POUNDS PER CUBIC FOOT |
| CONN | CONNECTION | PENE | PENETRATION |
| CONT | CONTINUOUS | PERP | PERPENDICULAR |
| CRSI | CONCRETE REINFORCING STEEL INSTITUTE | PG | PLATE GIRDER |
| CTR | CENTER | PJFF | PULSE JET FABRIC FILTER |
| CTRD | CENTERED | PJP | PARTIAL JOINT PENETRATION |
| CY | CUBIC YARD | PL | PLATE |
| DEG | DEGREE | PLCS | PLACES |
| DEMO | DEMOLITION/DEMOLISH | PLTF | PLATFORM |
| DET | DETAIL | PROJ | PROJECTION |
| DIA | DIAMETER | PSF | POUNDS PER SQUARE FOOT |
| DIAG | DIAGONAL | PSI | POUNDS PER SQUARE INCH |
| DM | DIMENSION | R | RADIUS |
| DN | DOWN | RCSC | RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS |
| DWG | DRAWING | RD | ROOF DRAIN |
| DWL | DOWEL | REBAR | REINFORCING BAR |
| EA | EACH | REF | REFERENCE |
| EJ | EACH FACE | REINF | REINFORCING |
| EJ | EXPANSION JOINT | REQD | REQUIRED |
| EL | ELEVATION | REV | REVISION |
| ELEC | ELECTRICAL | SC | SLIP CRITICAL |
| EMB | EMBEDMENT | SCH | SCHEDULE |
| EOD | EDGE OF DECK | SECT | SECTION |
| EOG | EDGE OF GRATING | SEI | STRUCTURAL ENGINEERING INSTITUTE |
| EOR | ENGINEER OF RECORD | SF | SQUARE FOOT |
| EOS | EDGE OF SLAB | SHT | SHEET |
| EQ | EQUAL | SIM | SIMILAR |
| EQUIP | EQUIPMENT | SLBB | SHORT LEGS BACK TO BACK |
| EW | EACH WAY | SPA | SPACES |
| EXIST | EXISTING | SPEC | SPECIFICATIONS |
| EXP | EXPANSION | SQ | SQUARE |
| FD | FLOOR DRAIN | SS | STAINLESS STEEL |
| FDN | FOUNDATION | SSH | SHORT SLOTTED HOLE |
| FIN | FINISH | SSL | SHORT SLOTTED |
| FLG | FLANGE | STD | STANDARD |
| FLR | FLOOR | STIFF | STIFFENER |
| FS | FAR SIDE | STL | STEEL |
| FT | FOOT | STRUCT | STRUCTURAL |
| FTG | FOOTING | SUPT | SUPPORT |
| FV | FIELD VERIFY | SYM | SYMMETRICAL |
| GA | GAUGE | SYS | SYSTEM |
| GALV | GALVANIZED | T & B | TOP AND BOTTOM |
| GRTG | GRATING | TEMP | TEMPORARY |
| HA | HANGER ABOVE | THD | THREAD |
| HB | HANGER BELOW | THK | THICK |
| HGR | HANGER | THRU | THROUGH |
| HORIZ | HORIZONTAL | TO | TOP OF |
| HP | HIGH POINT | TOC | TOP OF CONCRETE |
| HR | HANDRAIL | TOF | TOP OF FOOTING |
| HS | HEADED STUDS | TOS | TOP OF STEEL |
| HT | HEIGHT | TYP | TYPICAL |
| ID | INSIDE DIAMETER | UG | UNDERGROUND |
| IJ | ISOLATION JOINT | UNO | UNLESS NOTED OTHERWISE |
| IN | INCHES | VERT | VERTICAL |
| INT | INTERIOR | w/ | WITH |
| JST | JOIST | w/o | WITHOUT |
| JT | JOINT | WF | WIDE FLANGE |
| K | KIP | WP | WORK POINT |
| KB | KNEE BRACE | WS | WATER STOP |
| KPL | KICK PLATE | WT | WEIGHT |
| KSI | KIPS PER SQUARE INCH | WWR | WELDED WIRE REINFORCEMENT |
| L | LENGTH | | |
| LB | POUND | | |
| LF | LINEAR FEET | | |
| LFRS | LATERAL FORCE RESISTING SYSTEM | | |

| LEGEND | | | |
|--------|----------------------|--|-------------------|
| | COMPACTED CRUSH ROCK | | LEAN CONCRETE MAT |
| | CONCRETE | | GRATING |
| | COMPACTED BACKFILL | | CHECKERED PLATE |
| | UNDISTURBED EARTH | | OPENING |



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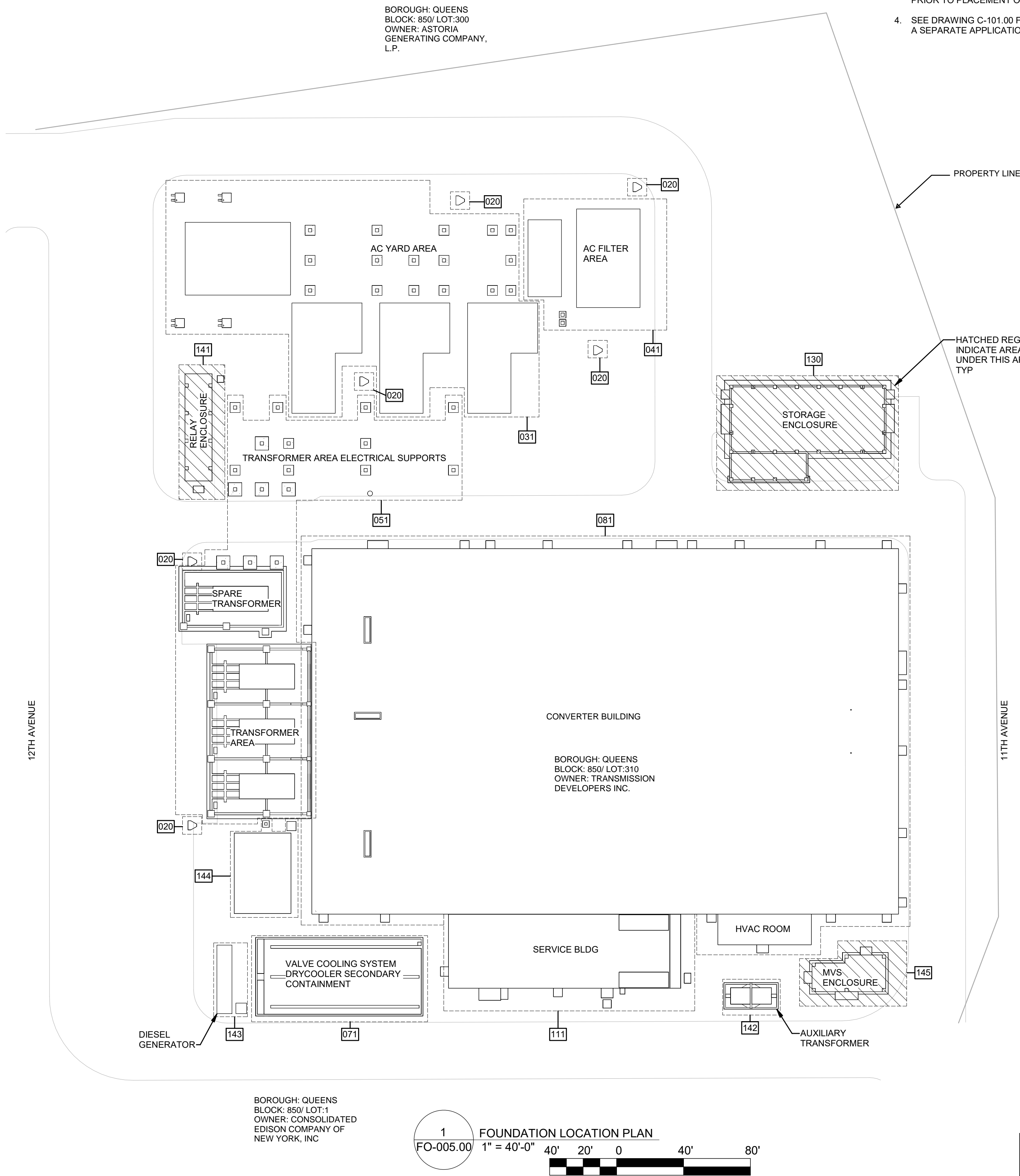
STRUCTURAL GENERAL NOTES



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FO-004.00
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| FOUNDATION SHEET INDEX | | |
|------------------------|--|--------------|
| PPID | SHEET NAME | SHEET NUMBER |
| 000 | STRUCTURAL GENERAL NOTES | FO-001.00 |
| 000 | STRUCTURAL GENERAL NOTES | FO-002.00 |
| 000 | STRUCTURAL GENERAL NOTES | FO-003.00 |
| 000 | STRUCTURAL GENERAL NOTES | FO-004.00 |
| 000 | FOUNDATION LOCATION PLAN | FO-005.00 |
| 130 | STORAGE ENCLOSURE FOUNDATION 3D VIEW | FO-020.00 |
| 141 | RELAY ENCLOSURE FOUNDATION 3D VIEW | FO-050.00 |
| 145 | MVS ENCLOSURE FOUNDATION 3D VIEW | FO-055.00 |
| 130 | STORAGE ENCLOSURE FOUNDATION PLAN | FO-120.00 |
| 141 | RELAY ENCLOSURE FOUNDATION PLAN, SECTIONS, AND DETAILS | FO-125.00 |
| 145 | MVS ENCLOSURE FOUNDATION PLAN, SECTIONS, AND DETAILS | FO-130.00 |
| 130 | STORAGE ENCLOSURE FOUNDATION SECTIONS AND DETAILS | FO-330.00 |
| 000 | ANCHOR BOLT TYPICAL DETAILS | FO-601.00 |
| 000 | CONCRETE TYPICAL DETAILS | FO-602.00 |
| 000 | CONCRETE PENETRATION TYPICAL DETAILS | FO-603.00 |
| 000 | CONCRETE REINFORCING TYPICAL DETAILS | FO-604.00 |
| 000 | CONCRETE JOINT TYPICAL DETAILS | FO-605.00 |

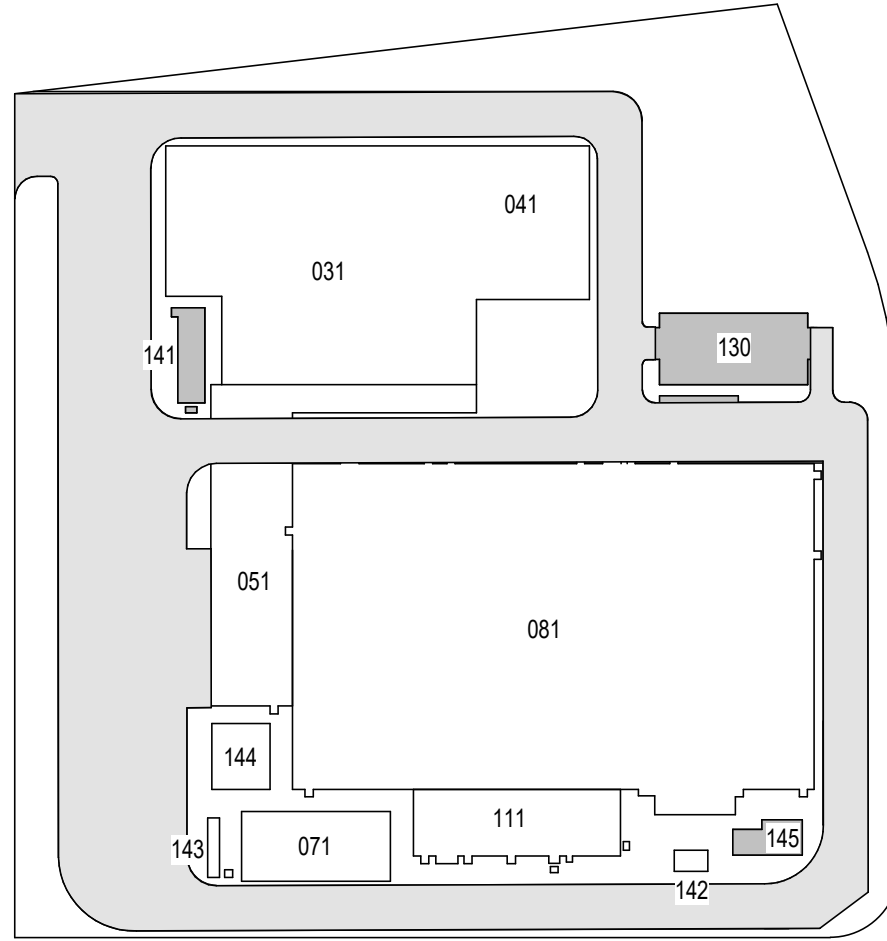
Grand total: 17



STRUCTURE NOTES:

1. SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
2. SEE DRAWINGS FO-601.00 THRU FO-605.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
3. SEE MECHANICAL YARD PIPING DRAWINGS AND ELECTRICAL UNDERGROUND DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR THE LOCATION OF UNDER FOUNDATION PIPING, CONDUITS, AND DUCTBANKS TO BE PLACED BEFORE THE FOUNDATION IS CONSTRUCTED. EMBEDDED PIPING AND CONDUITS SHALL BE SET IN THE FOUNDATION PRIOR TO PLACEMENT OF CONCRETE.
4. SEE DRAWING C-101.00 FOR CIVIL SITE GRADING DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR FINISHED GRADE ELEVATIONS.

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| | | | | |
|-----|--------------------|--------|--------|------------|
| B | FINAL SUBMISSION | DJF | WA | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | WA | 08/29/2022 |
| REV | DESCRIPTION | DRW BY | CHK BY | DATE |

Kiewit

470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy

901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

Astoria HVDC
Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

FOUNDATION LOCATION
PLAN



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY D. FLYNN
CHECKED BY W. ABBASSI

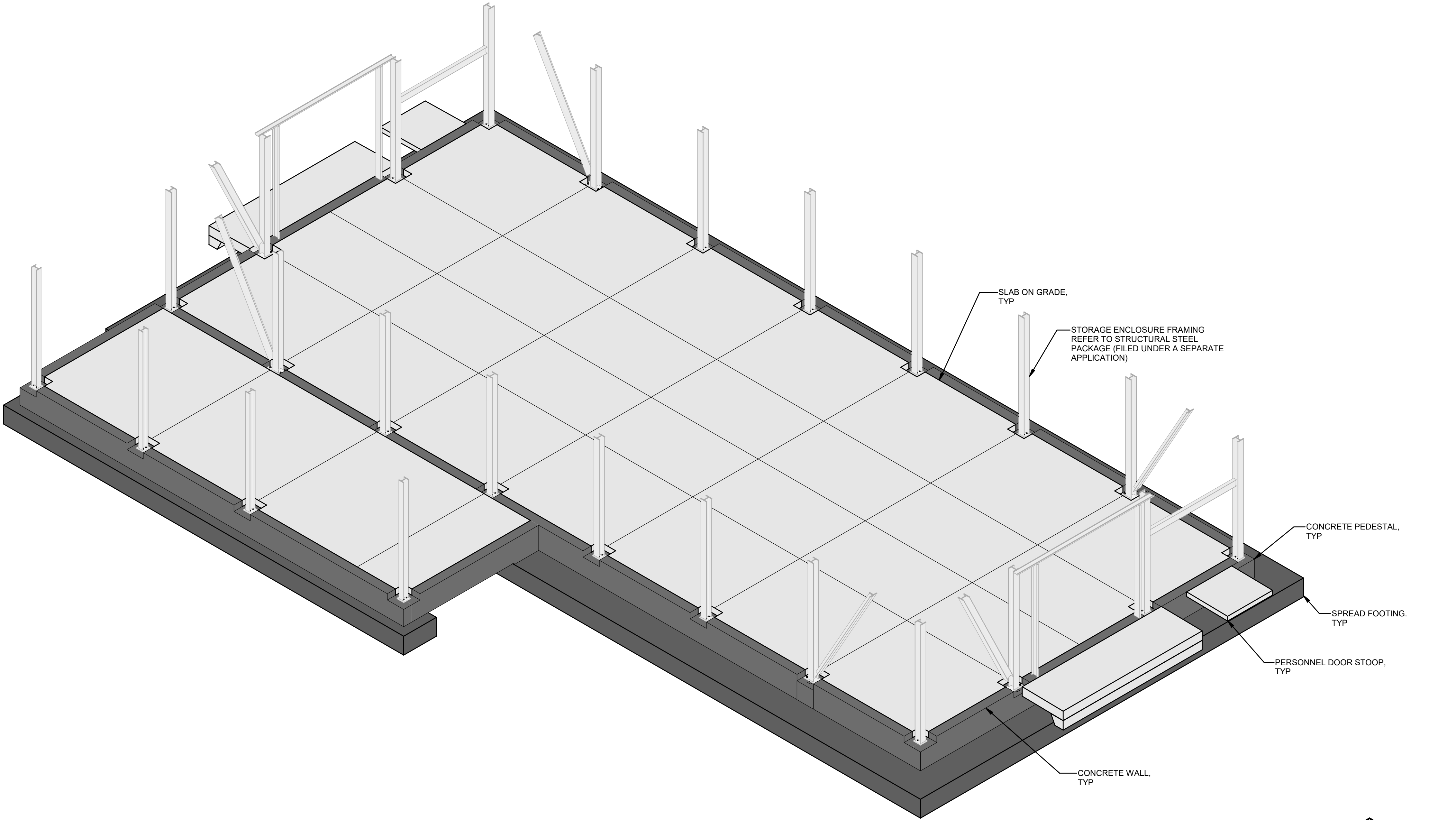
DRAWING NO

FO-005.00

CADD FILE NO
Astoria-HVDC-CHPE
Astoria-CHPE-005-F-1-MD-S-001.rvt

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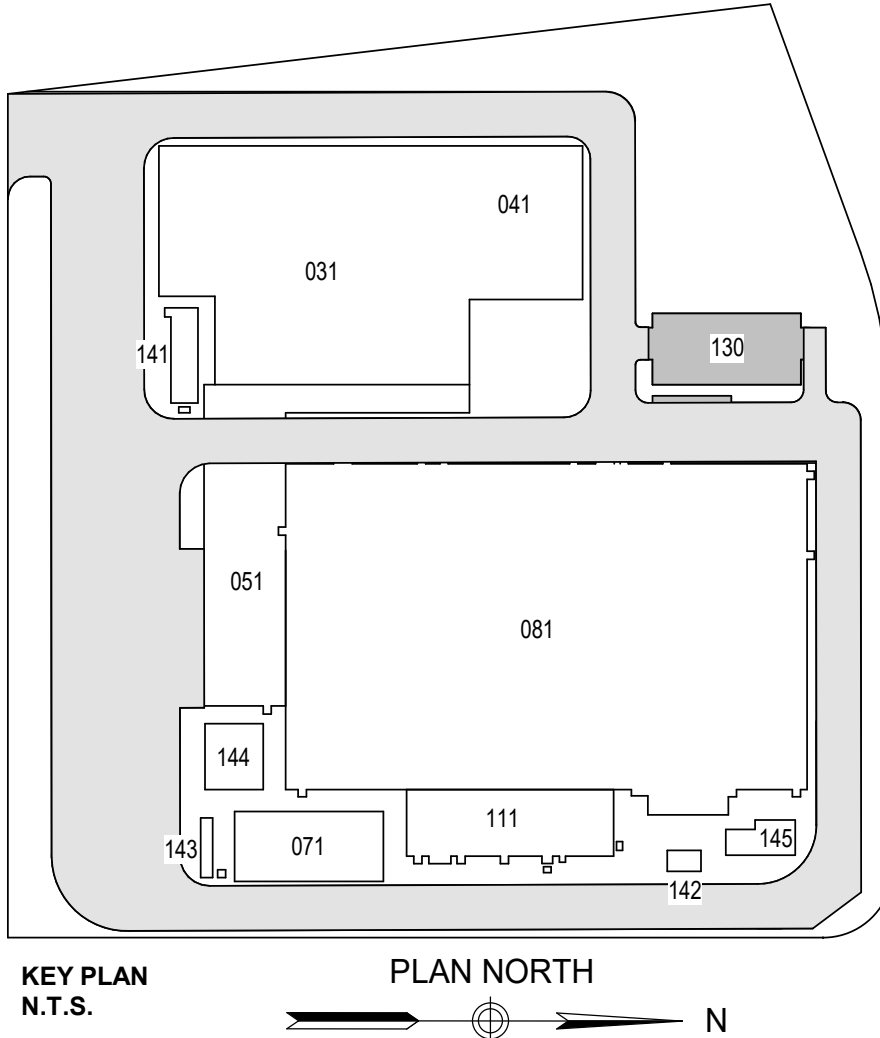
| STORAGE ENCLOSURE FOUNDATION SHEET INDEX | |
|---|--------------|
| SHEET NAME | SHEET NUMBER |
| STORAGE ENCLOSURE FOUNDATION 3D VIEW | FO-020.00 |
| STORAGE ENCLOSURE FOUNDATION PLAN | FO-120.00 |
| STORAGE ENCLOSURE FOUNDATION SECTIONS AND DETAILS | FO-330.00 |



1 STORAGE ENCLOSURE FOUNDATION 3D VIEW
FO-020.00 N.T.S.

- STRUCTURE NOTES:
- SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
 - SEE DRAWING FO-005.00 FOR FOUNDATION LOCATION PLAN.
 - SEE DRAWINGS FO-601.00 THRU FO-605.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
 - SEE MECHANICAL YARD PIPING DRAWINGS AND ELECTRICAL UNDERGROUND DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR THE LOCATION OF UNDER FOUNDATION PIPING, CONDUITS, AND DUCTBANKS TO BE PLACED BEFORE THE FOUNDATION IS CONSTRUCTED. EMBEDDED PIPING AND CONDUITS SHALL BE SET IN THE FOUNDATION PRIOR TO PLACEMENT OF CONCRETE.
 - SEE CIVIL SITE GRADING DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR FINISHED GRADE ELEVATIONS.
 - SOG SHALL BE 8" WITH #4@12" EACH WAY AT TOP.
 - JOINTS FOR SOG SHALL HAVE A MAXIMUM SPACING OF 15'.

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| REV | DESCRIPTION | DRW BY | CHK BY | DATE |
|-----|--------------------|--------|--------|------------|
| B | FINAL SUBMISSION | DJF | DS | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | BZ | 08/29/2022 |

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT **CHPE**
Champlain Hudson
Power Express
**Astoria HVDC
Converter Station**
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

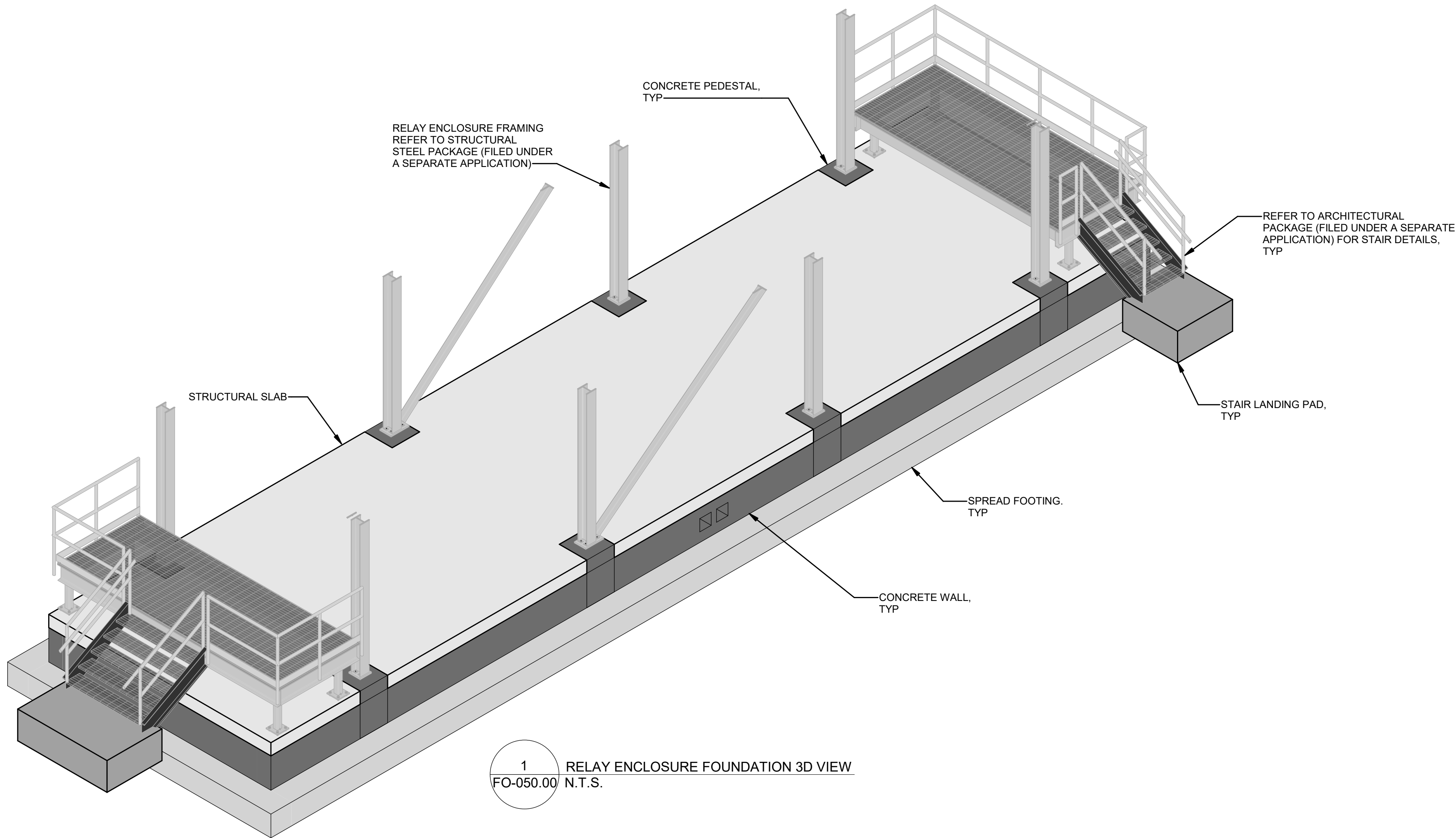
STORAGE ENCLOSURE
FOUNDATION 3D VIEW



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY C.SPAULDING
CHECKED BY D.SANCHEZ
DRAWING NO
FO-020.00
CADD FILE NO
Astoria/CHA-KIE-130-F-1-M3-S-001.rvt 7 of 18

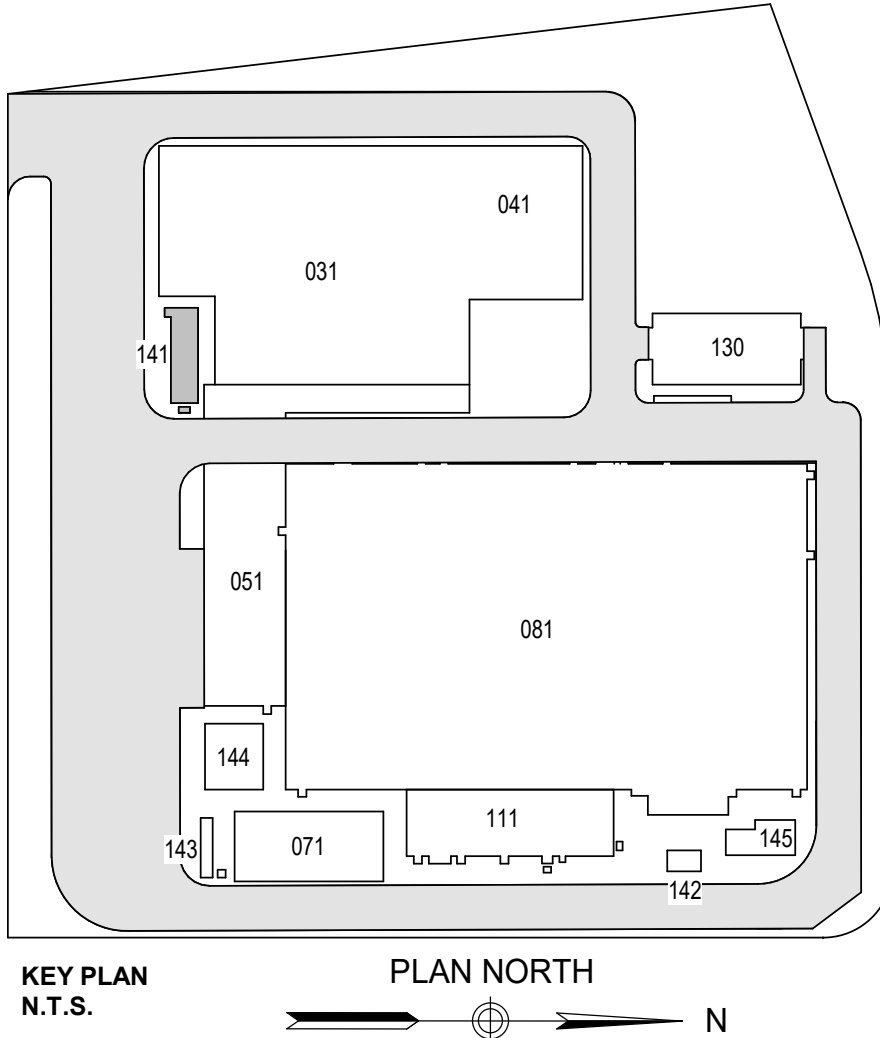
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| RELAY ENCLOSURE FOUNDATION SHEET INDEX | |
|--|--------------|
| SHEET NAME | SHEET NUMBER |
| RELAY ENCLOSURE FOUNDATION 3D VIEW | FO-050.00 |
| RELAY ENCLOSURE FOUNDATION PLAN, SECTIONS, AND DETAILS | FO-125.00 |



- STRUCTURE NOTES:
- SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
 - SEE DRAWING FO-005.00 FOR FOUNDATION LOCATION PLAN.
 - SEE DRAWINGS FO-601.00 THRU FO-605.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
 - SEE MECHANICAL YARD PIPING DRAWINGS AND ELECTRICAL UNDERGROUND DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR THE LOCATION OF UNDER FOUNDATION PIPING, CONDUITS, AND DUCTBANKS TO BE PLACED BEFORE THE FOUNDATION IS CONSTRUCTED. EMBEDDED PIPING AND CONDUITS SHALL BE SET IN THE FOUNDATION PRIOR TO PLACEMENT OF CONCRETE.
 - SEE CIVIL SITE GRADING DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR FINISHED GRADE ELEVATIONS.

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| REV | DESCRIPTION | DRW BY | CHK BY | DATE |
|-----|--------------------|--------|--------|------------|
| B | FINAL SUBMISSION | DJF | DS | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | BZ | 08/29/2022 |

Kiewit

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Hitachi Energy

901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

Astoria HVDC
Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

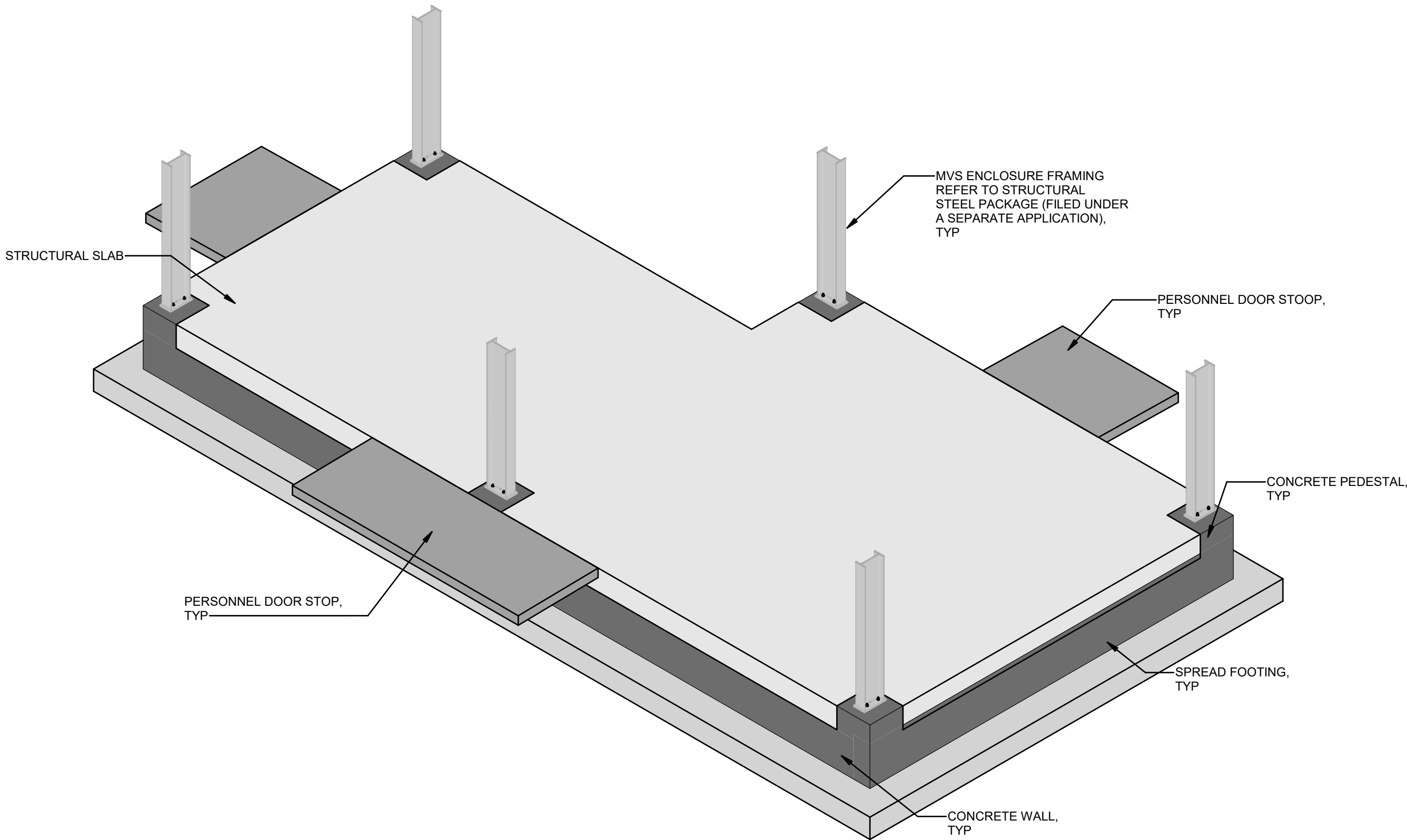
RELAY ENCLOSURE
FOUNDATION 3D VIEW



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY C.SPAULDING
CHECKED BY D.SANCHEZ
DRAWING NO
FO-050.00
CADD FILE NO
Astoria/CHA-KIE-141-F-1-M3-S-001.rvt
8 of 18

11/10/2022 8:22:21 AM

| MVS ENCLOSURE FOUNDATION SHEET INDEX | |
|--|--------------|
| SHEET NAME | SHEET NUMBER |
| MVS ENCLOSURE FOUNDATION 3D VIEW | FO-055.00 |
| MVS ENCLOSURE FOUNDATION PLAN, SECTIONS, AND DETAILS | FO-130.00 |

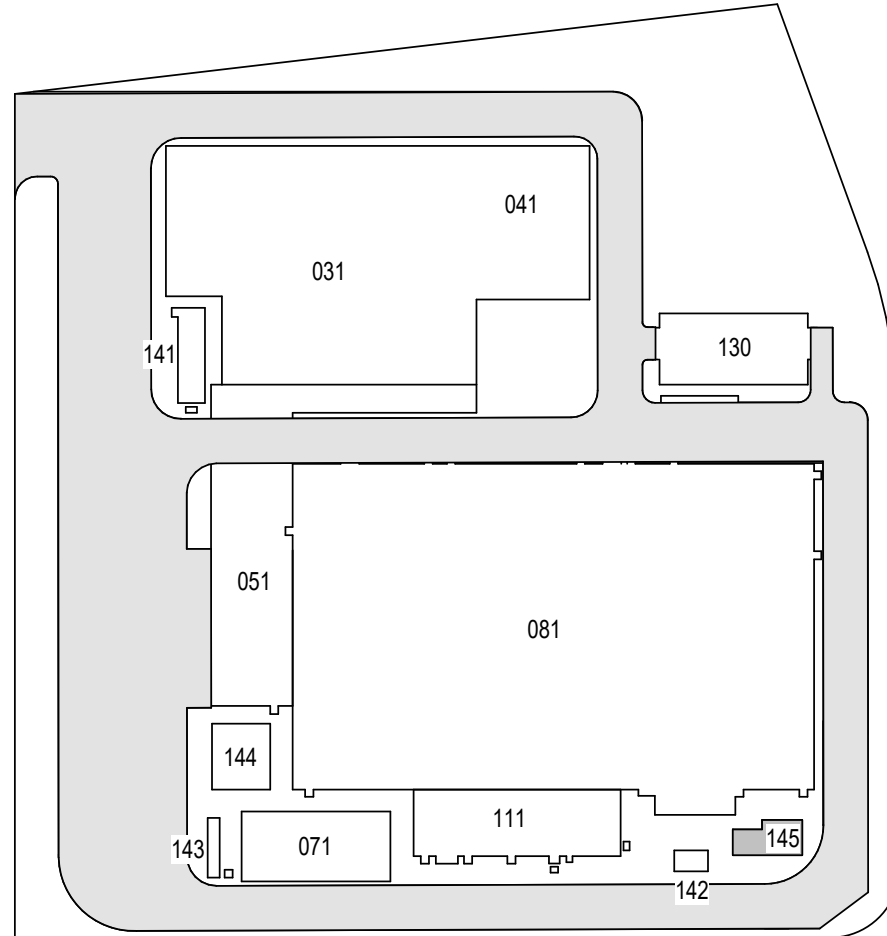


1
FO-055.00
MVS ENCLOSURE FOUNDATION 3D VIEW
N.T.S.

STRUCTURE NOTES:

- SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
- SEE DRAWING FO-005.00 FOR FOUNDATION LOCATION PLAN.
- SEE DRAWINGS FO-601.00 THRU FO-605.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
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- SEE CIVIL SITE GRADING DRAWINGS (FILED UNDER A SEPARATE APPLICATION) FOR FINISHED GRADE ELEVATIONS.

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KEY PLAN
N.T.S.

PLAN NORTH



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| A | INTERIM SUBMISSION | DJF | DS | 08/29/2022 |

Kiewit
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Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

**Astoria HVDC
Converter Station**

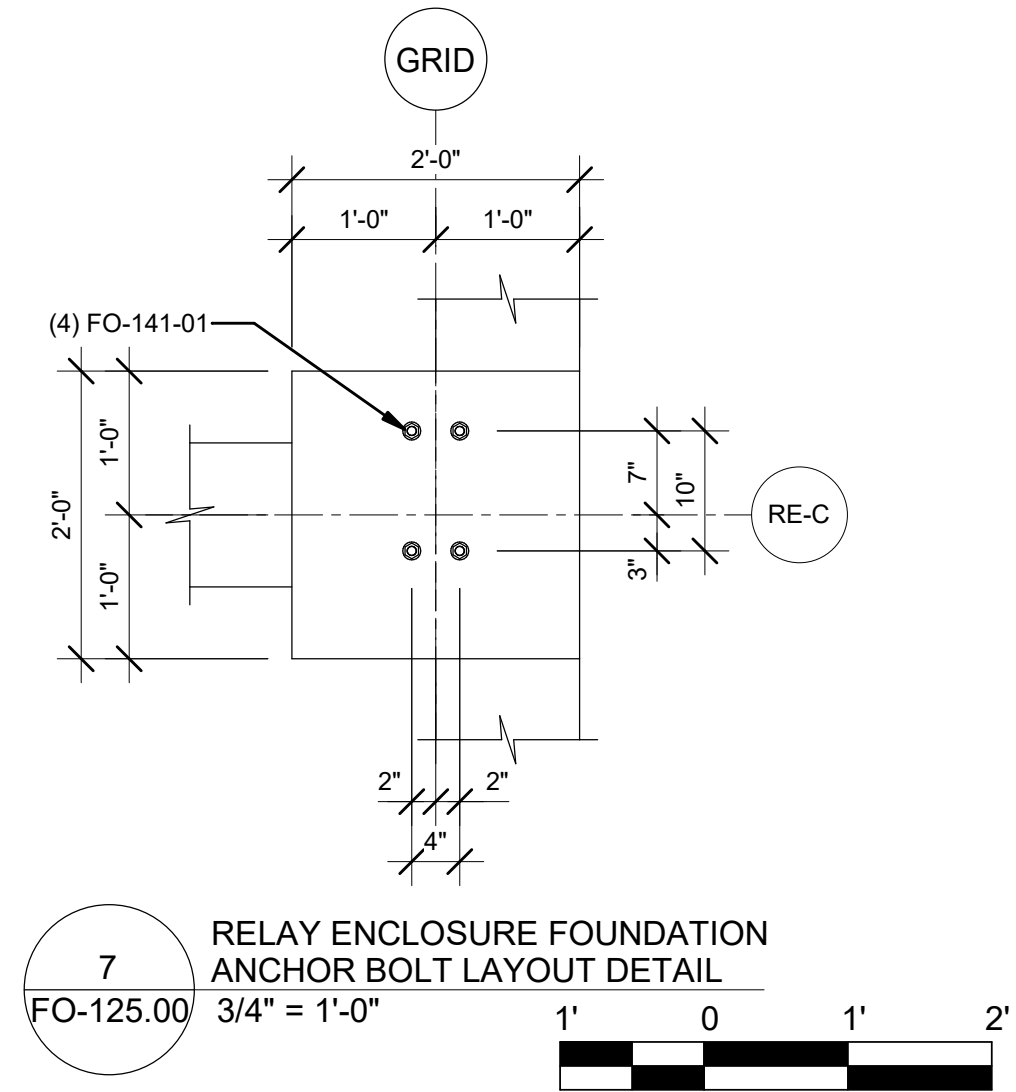
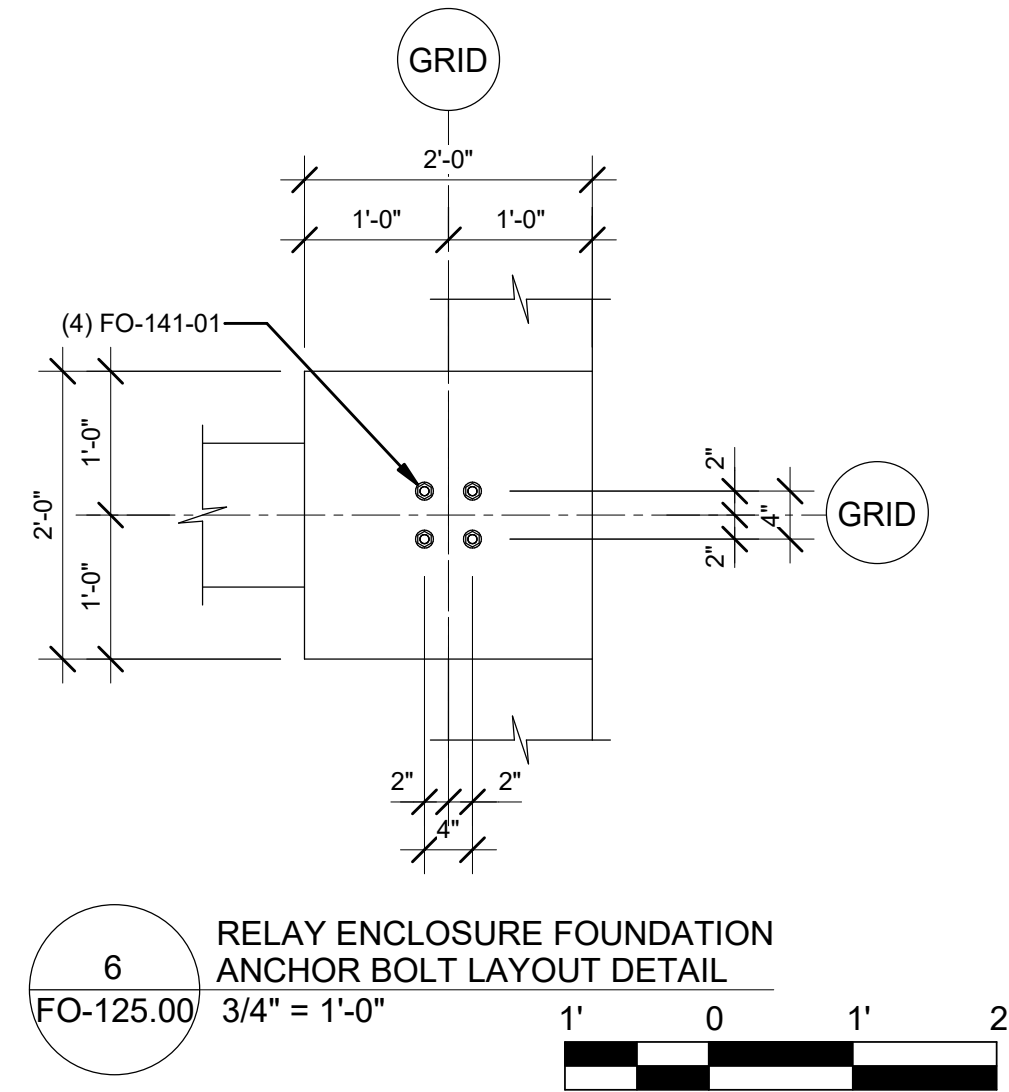
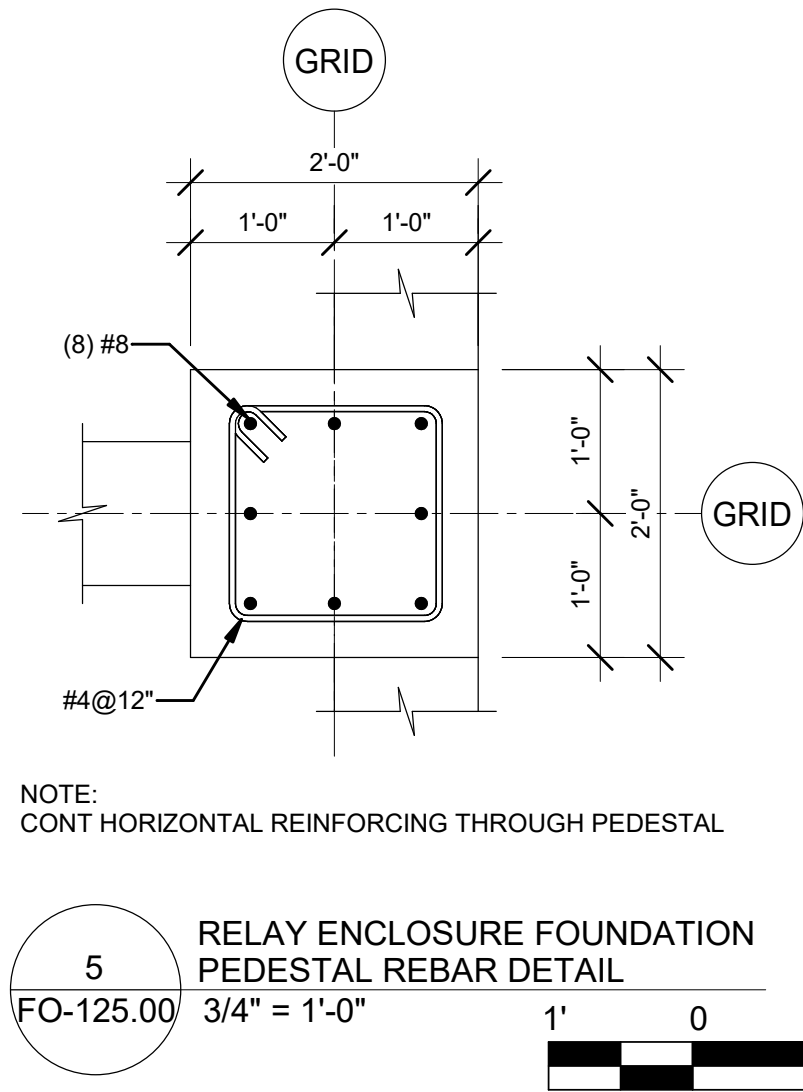
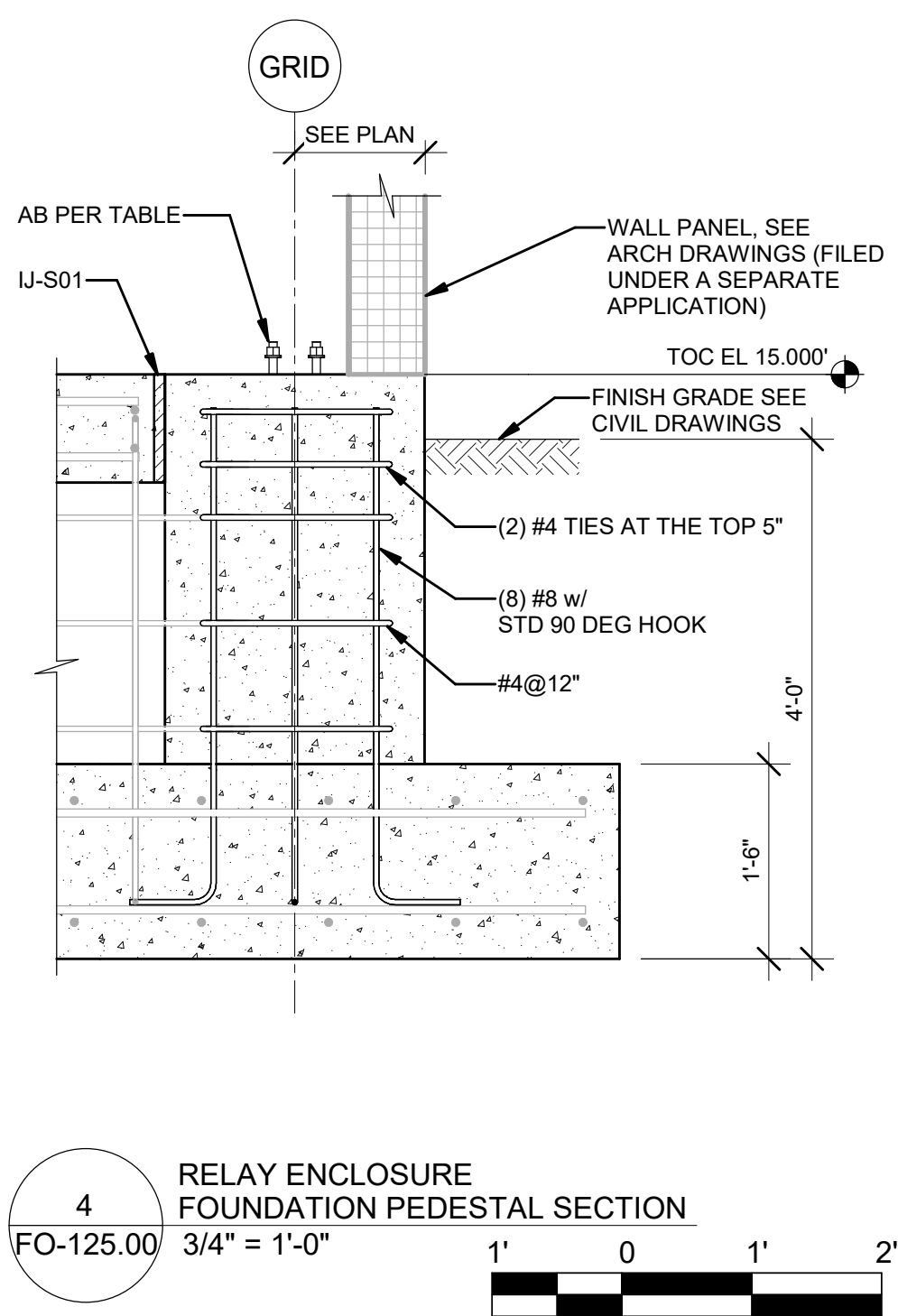
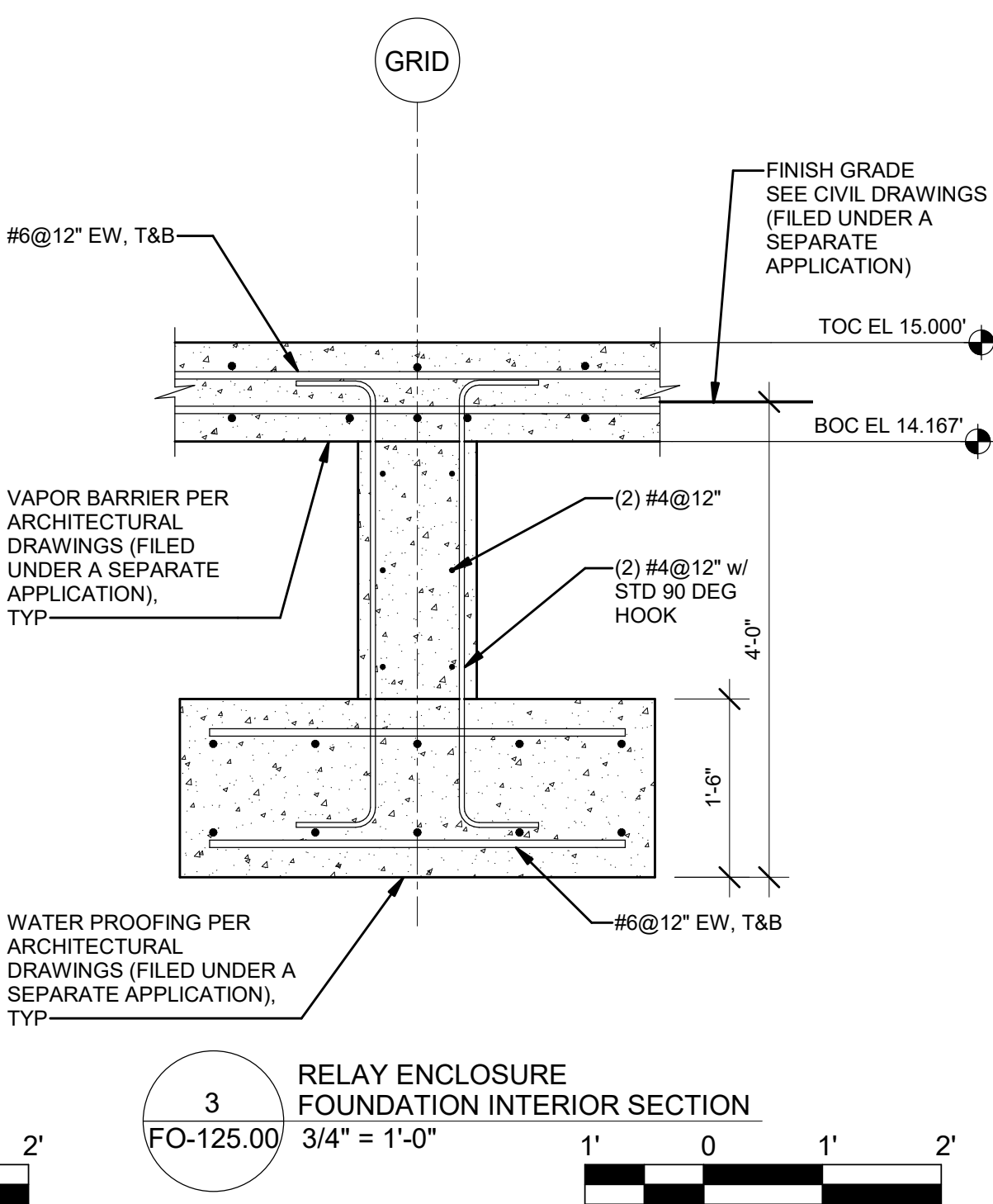
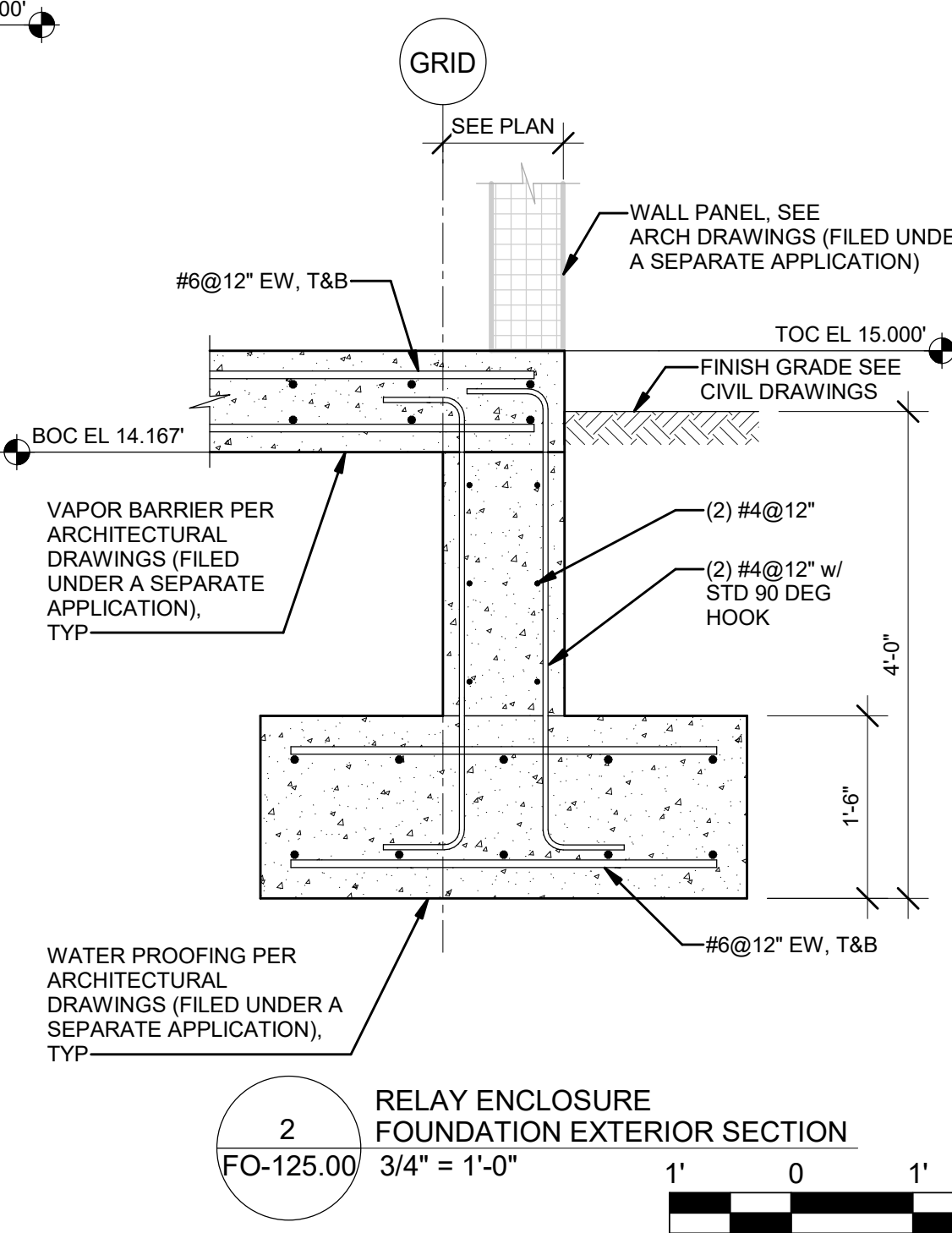
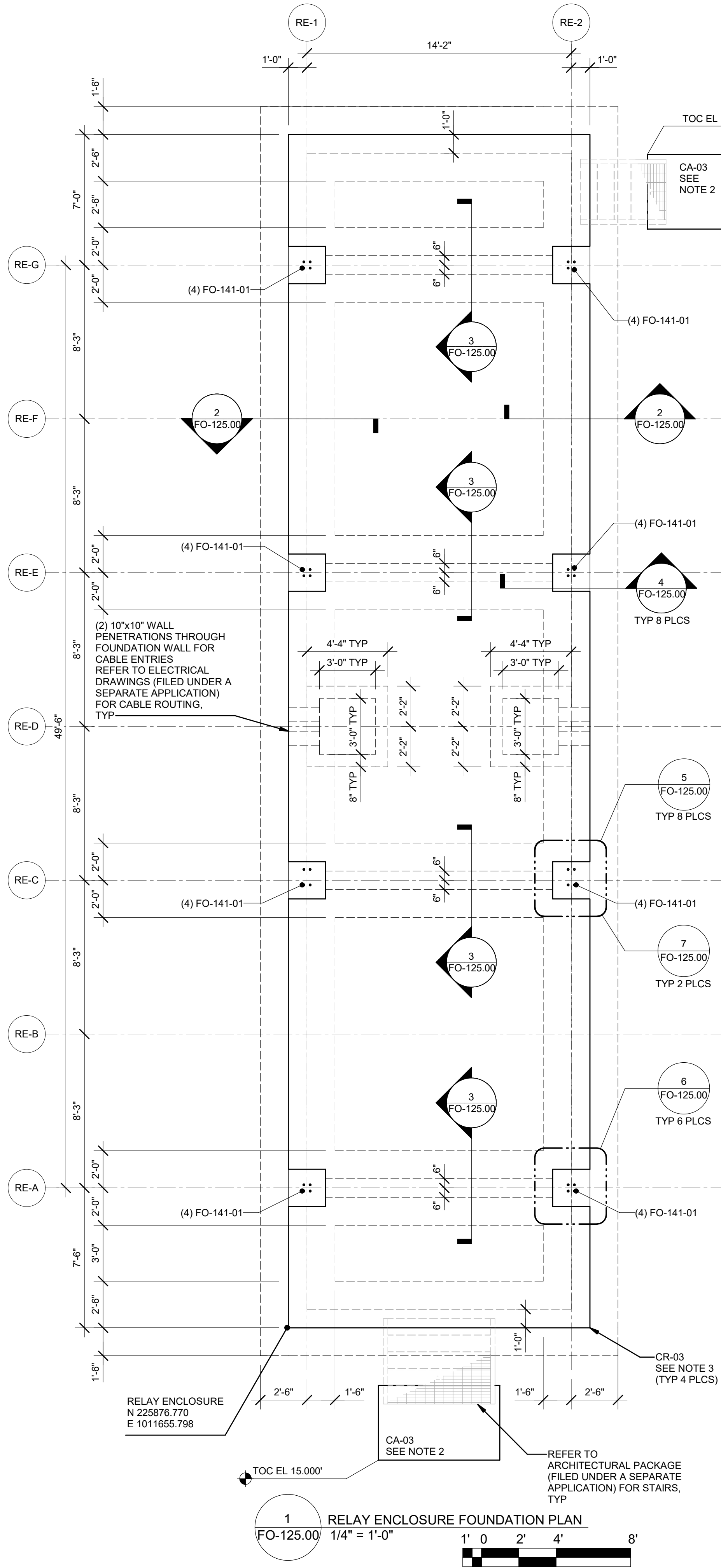
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

**MVS ENCLOSURE
FOUNDATION 3D VIEW**



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY C.SPAULDING
CHECKED BY D.SANCHEZ
DRAWING NO
FO-055.00
CADD FILE NO
Astoria/CHA-KIE-141-F-1-M3-S-001.rvt
9 of 18

11/10/2022 8:22:26 AM

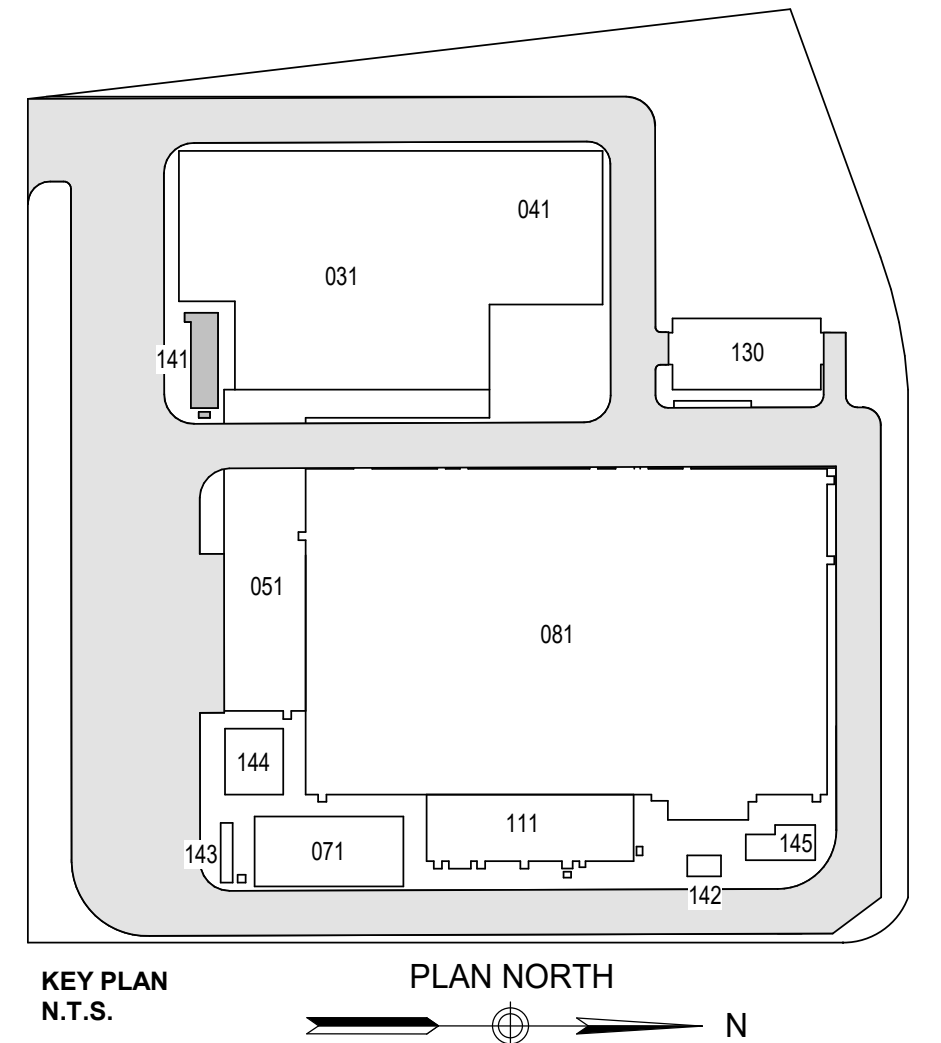


PLAN NORTH
N

SHEET NOTES:

1. SEE DRAWING FO-050.00 FOR STRUCTURE NOTES.
2. CA-XX ON PLAN DENOTES CONCRETE TYPICAL DETAILS, SEE DRAWING FO-602.00.
3. CR-XX ON PLAN DENOTES CONCRETE WALL TYPICAL DETAILS, SEE DRAWING FO-604.00.

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| B | FINAL SUBMISSION | DJF | DS | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | BZ | 08/29/2022 |
| REV | DESCRIPTION | DRW BY | CHK BY | DATE |

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

**Astoria HVDC
Converter Station**

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

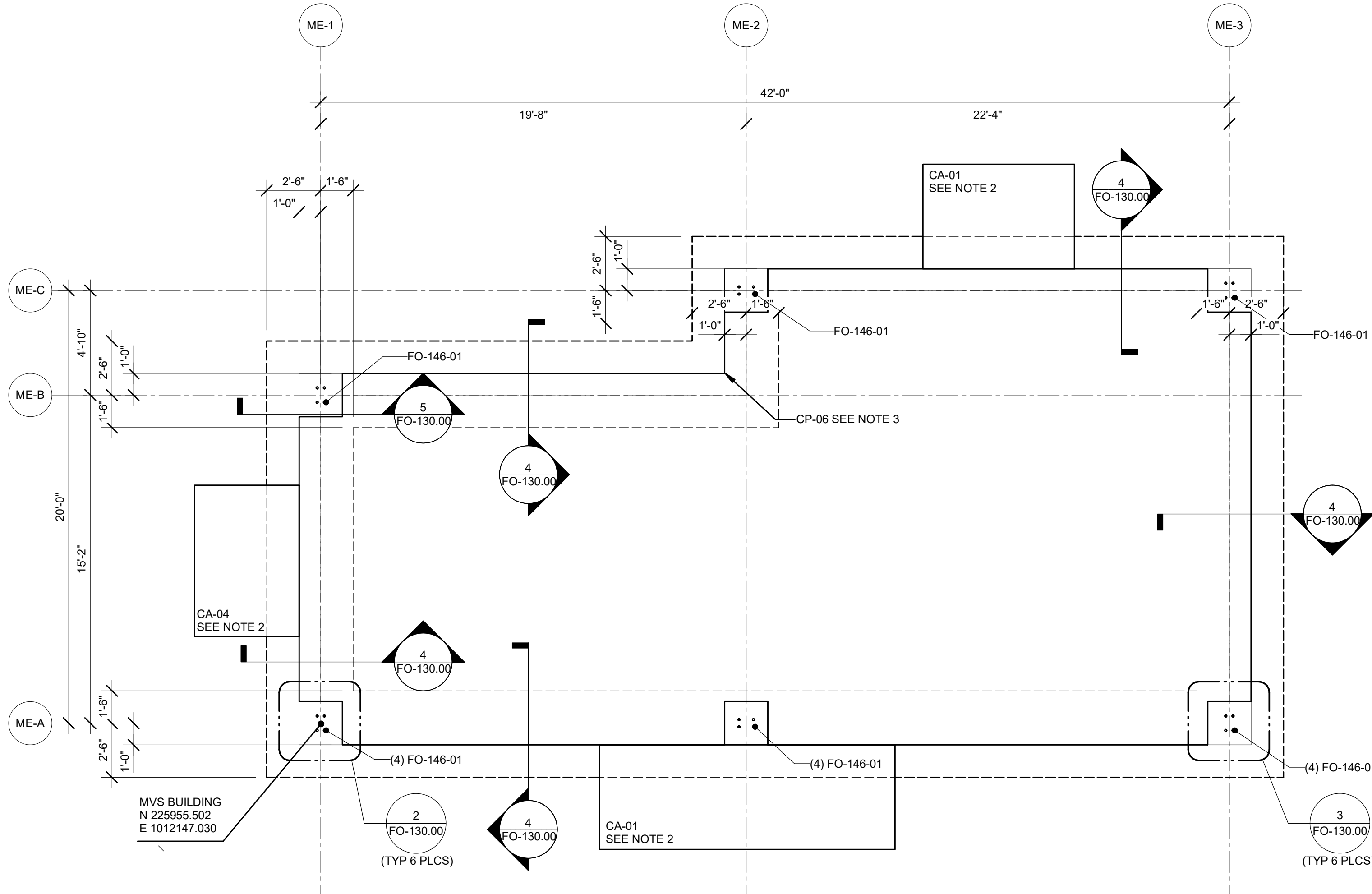
**RELAY ENCLOSURE
FOUNDATION PLAN,
SECTIONS, AND DETAILS**



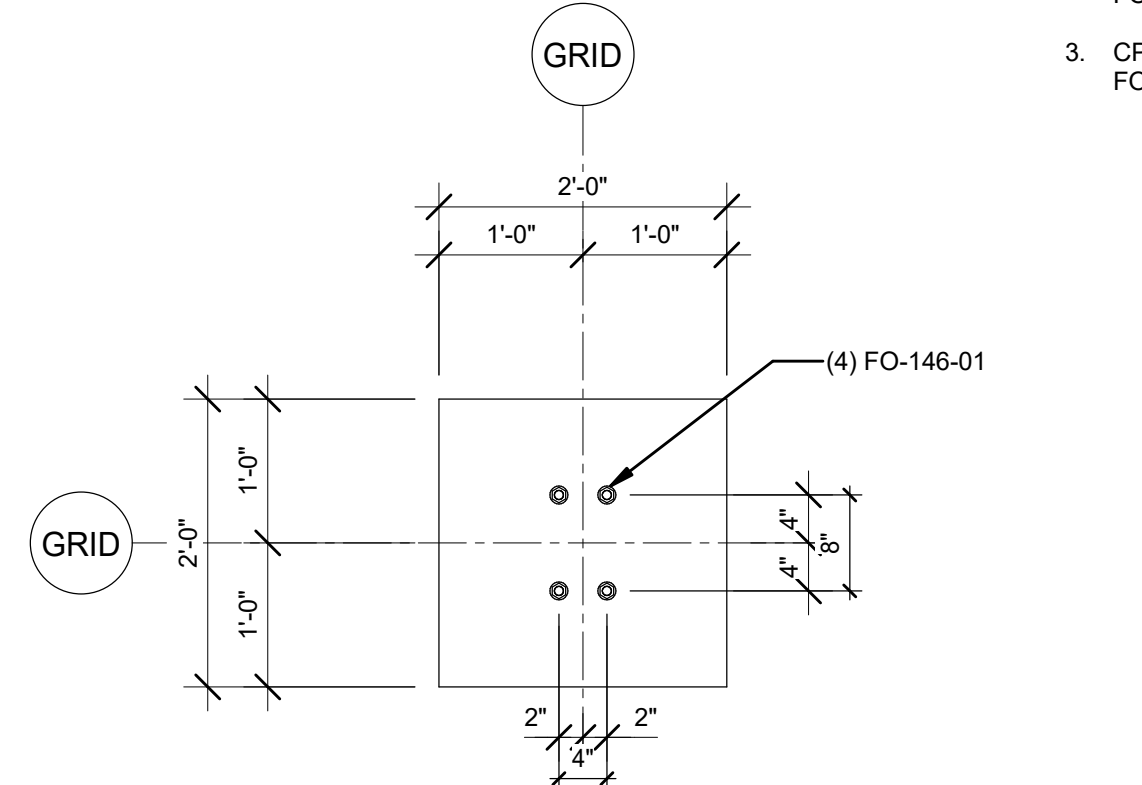
DATE 11/08/2022
PROJECT NO 105121
DRAWING BY C.SPALDING
CHECKED BY D.SANCHEZ
DRAWING NO
FO-125.00
CADD FILE NO
Astoria/CHPE-141-F-1-M3-S-001.rvt
11 of 18

| RELAY ENCLOSURE ANCHOR BOLT TABLE (SEE FO-601.00 FOR ANCHOR BOLT SCHEDULE LEGEND) | | | | | | | | | | | | |
|---|-----------|-----|-------|---------------|------|-------|-------|---------|-----------|-------|---------|----------|
| EQUIPMENT/BUILDING | MARK | QTY | TYPE | ANCHOR TYPE | D | L | E | T | GROUT THK | GRADE | COATING | COMMENTS |
| RELAY ENCLOSURE | FO-141-01 | 32 | AB-01 | CAST-IN-PLACE | 3/4" | 1'-7" | 1'-0" | 10 1/2" | 1 1/2" | | | |

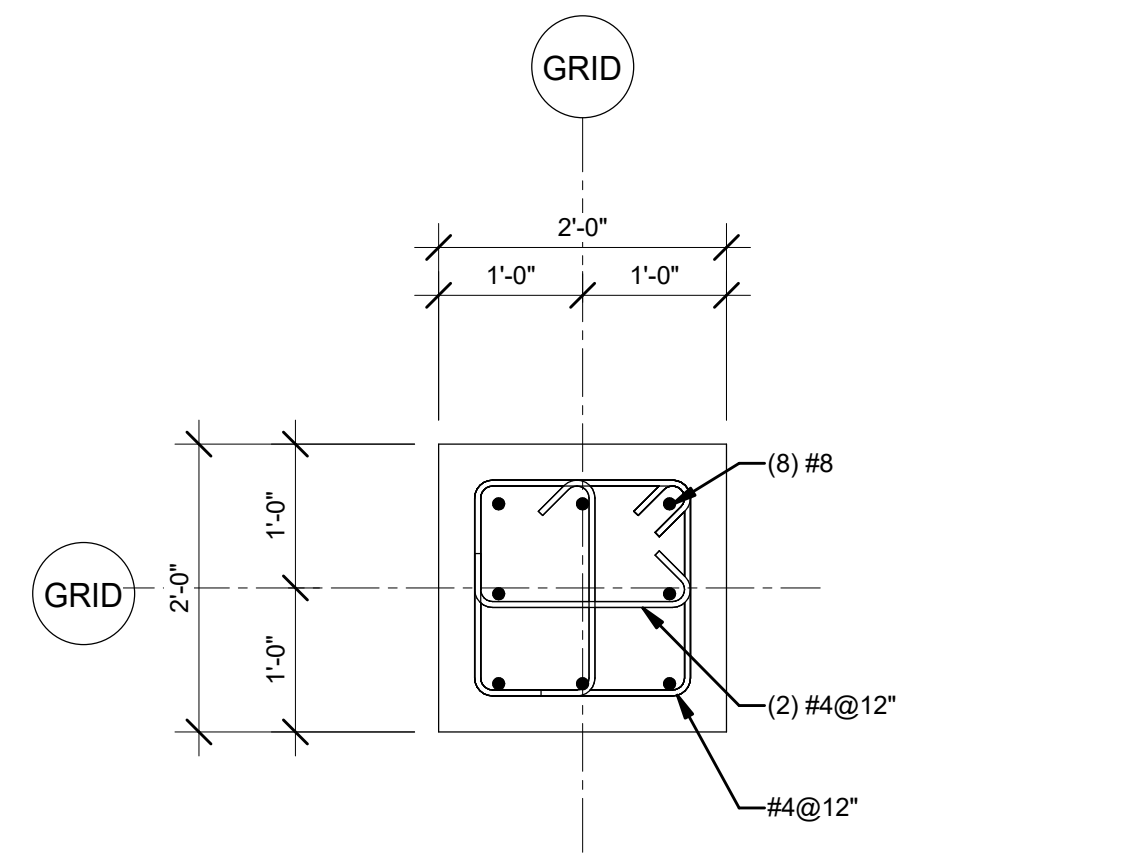
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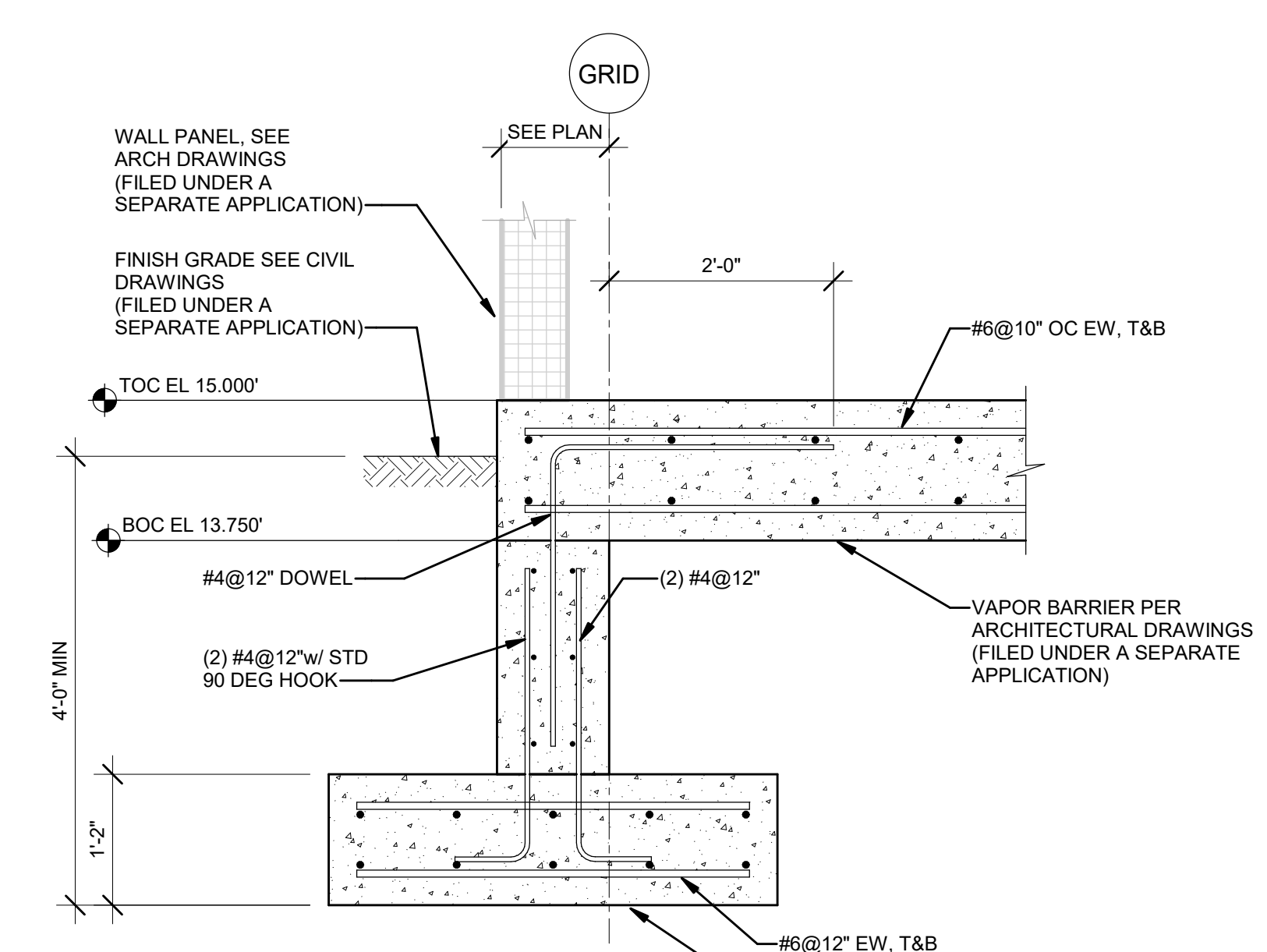
1 MVS ENCLOSURE FOUNDATION PLAN
FO-130.00 1/4" = 1'-0" 1' 0 2' 4' 8'



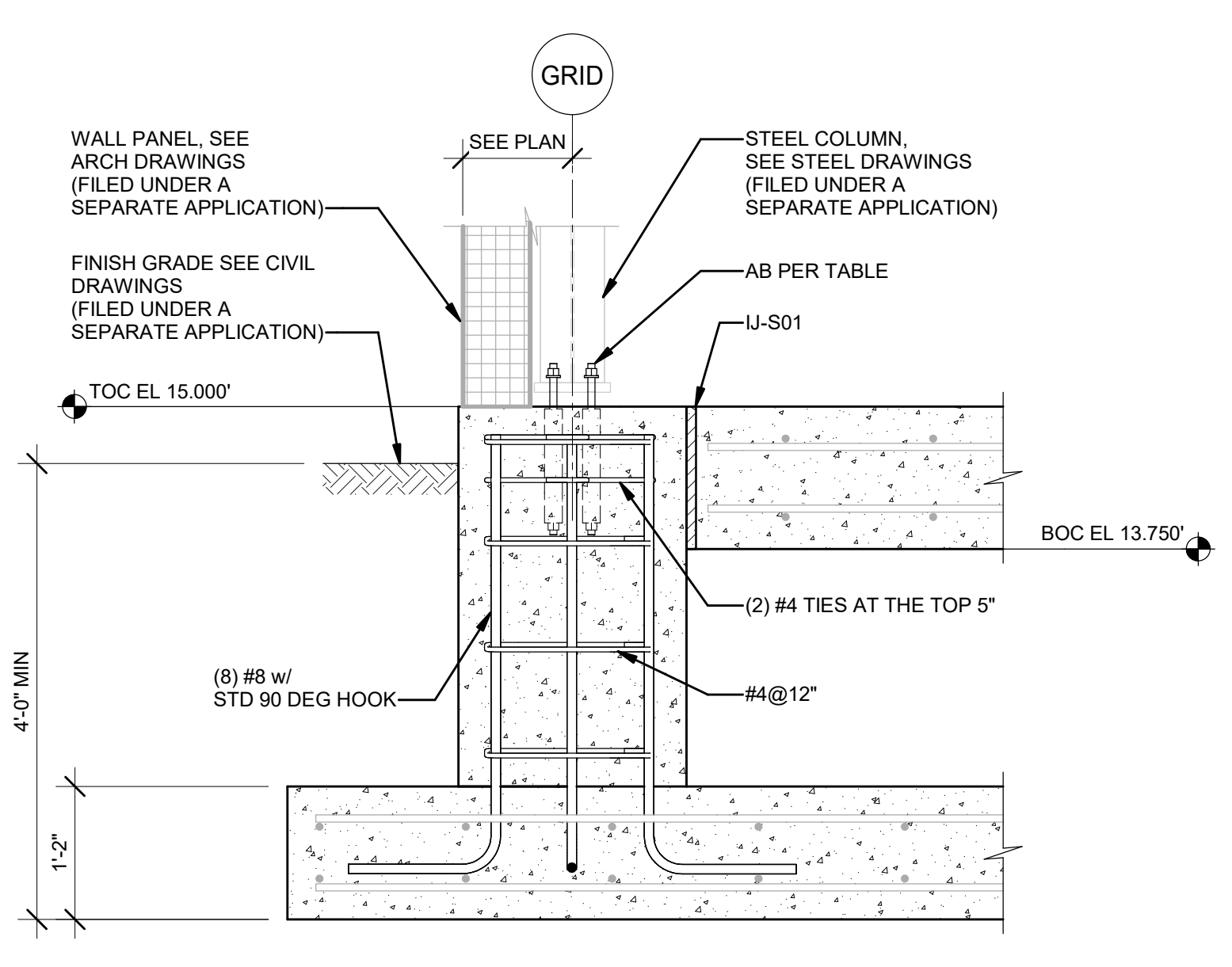
2 MVS ENCLOSURE FOUNDATION EAST ANCHOR BOLT LAYOUT
FO-130.00 3/4" = 1'-0" 1' 0 1' 2'



3 MVS ENCLOSURE FOUNDATION PEDESTAL REBAR
FO-130.00 3/4" = 1'-0" 1' 0 1' 2'



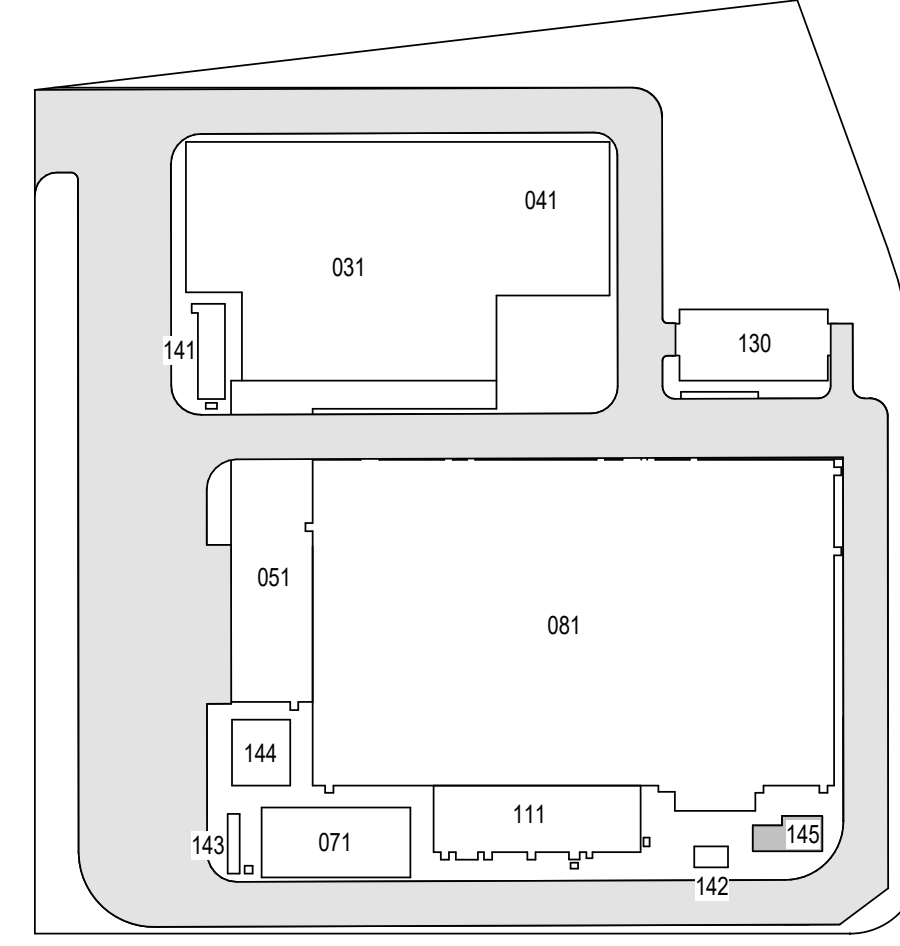
4 MVS ENCLOSURE FOUNDATION EXTERIOR SECTION
FO-130.00 3/4" = 1'-0" 1' 0 1' 2'



5 MVS ENCLOSURE FOUNDATION PEDESTAL SECTION
FO-130.00 3/4" = 1'-0" 10' 0 10' 20'

- SHEET NOTES:
- SEE DRAWING FO-055.00 FOR STRUCTURE NOTES.
 - CA-XX ON PLAN DENOTES CONCRETE TYPICAL DETAILS, SEE DRAWING FO-602.00.
 - CP-XX ON PLAN DENOTES PENETRATION TYPICAL DETAILS, SEE DRAWING FO-603.00.

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PROJECT
CHPE
Champlain Hudson Power Express
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31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

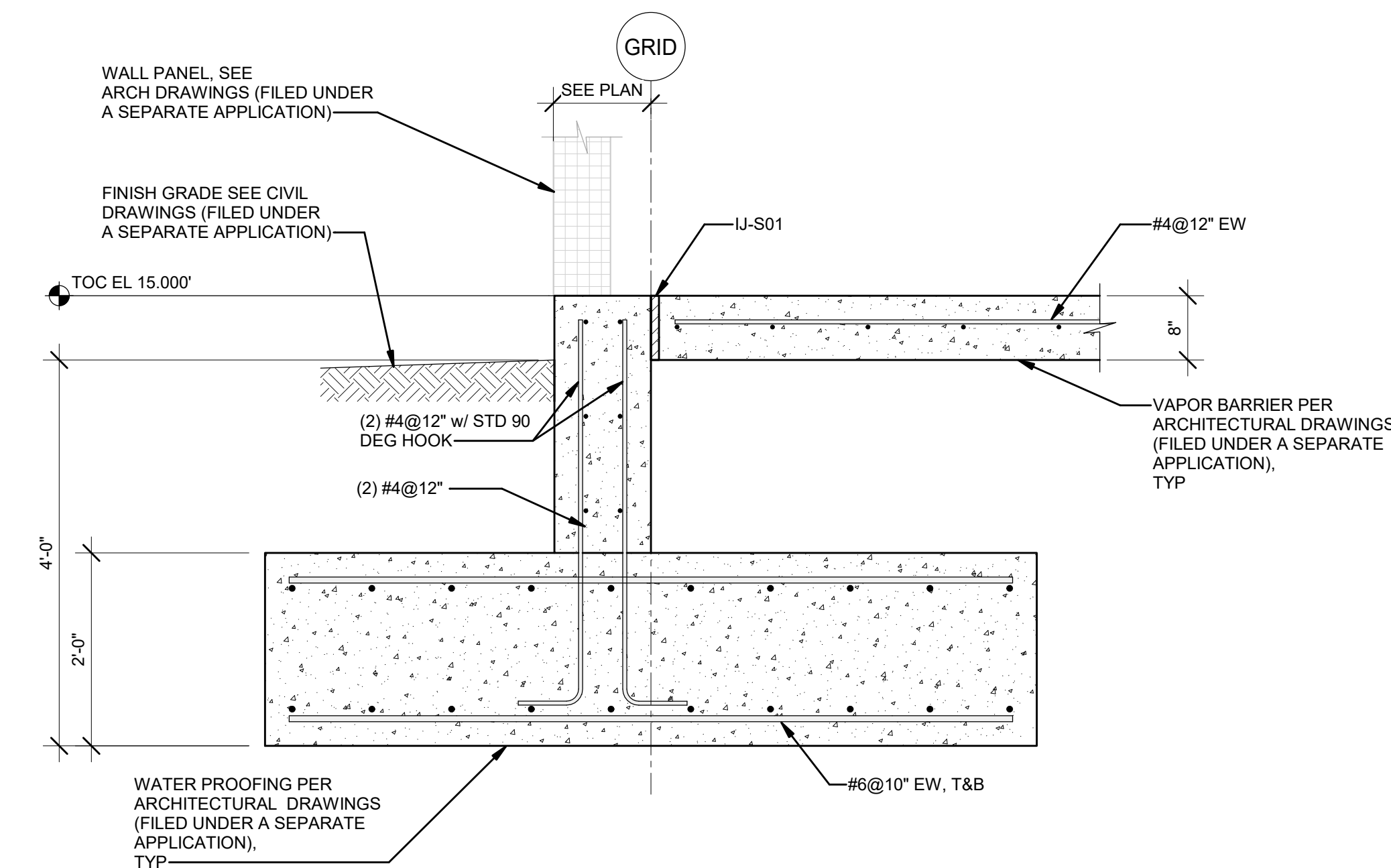
MVS ENCLOSURE FOUNDATION PLAN, SECTIONS, AND DETAILS



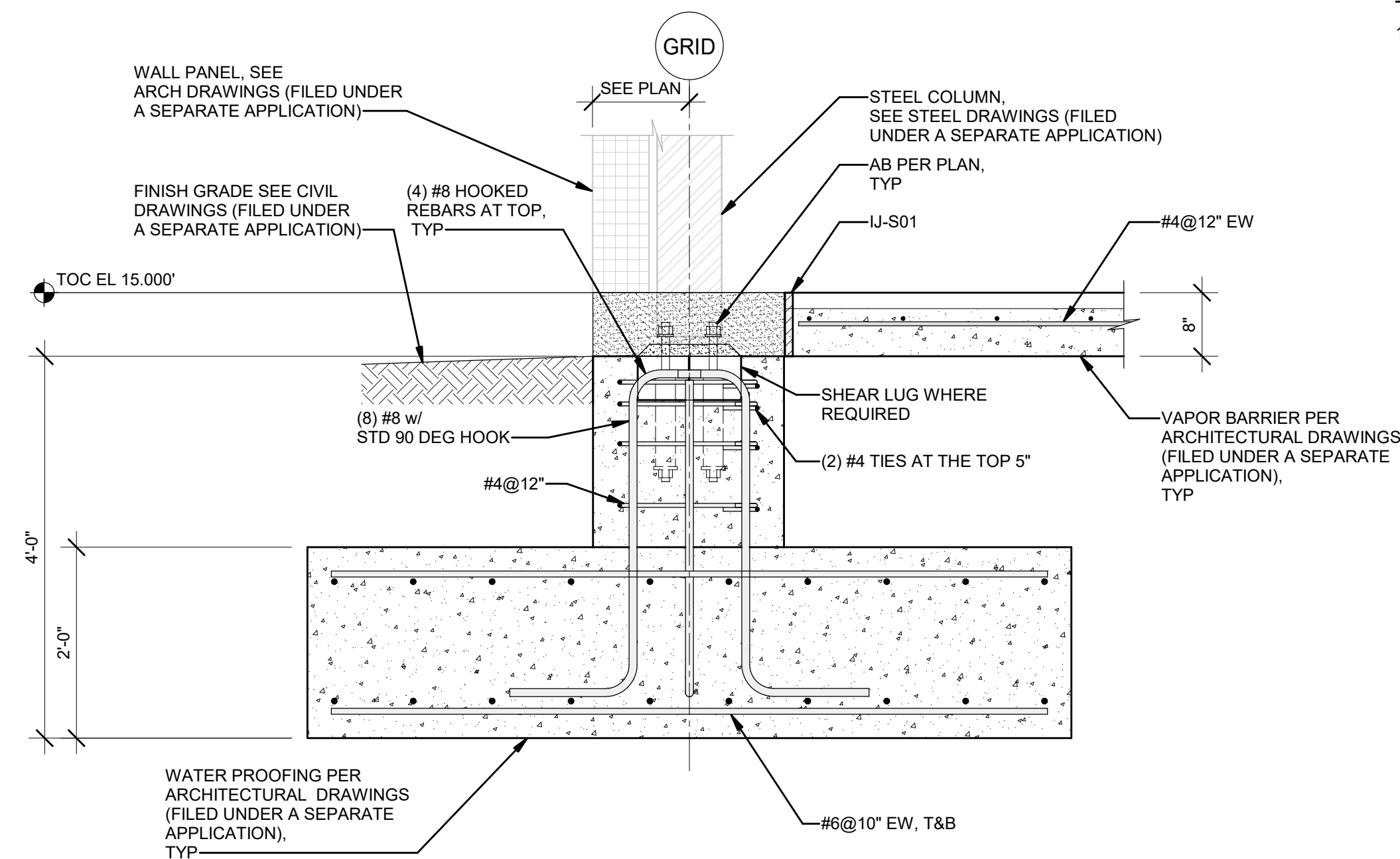
DATE 11/08/2022
PROJECT NO 105121
DRAWING BY C.SPAULDING
CHECKED BY D.SANCHEZ
DRAWING NO
FO-130.00
CADD FILE NO
Astoria/CHPE-141-F-130-S-001.rvt
12 of 18

| MVS ENCLOSURE ANCHOR BOLT TABLE (SEE FO-601.00 FOR ANCHOR BOLT SCHEDULE LEGEND) | | | | | | | | | | | | |
|---|-----------|-----|-------|---------------|------|-------|-------|---------|------------|-------|---------|----------|
| EQUIPMENT/BUILDING | MARK | QTY | TYPE | ANCHOR TYPE | D | L | E | T | GROUT THK. | GRADE | COATING | COMMENTS |
| MVS ENCLOSURE | FO-146-01 | 24 | AB-01 | CAST-IN-PLACE | 3/4" | 1'-6" | 1'-0" | 10 1/2" | 1 1/2" | | | |

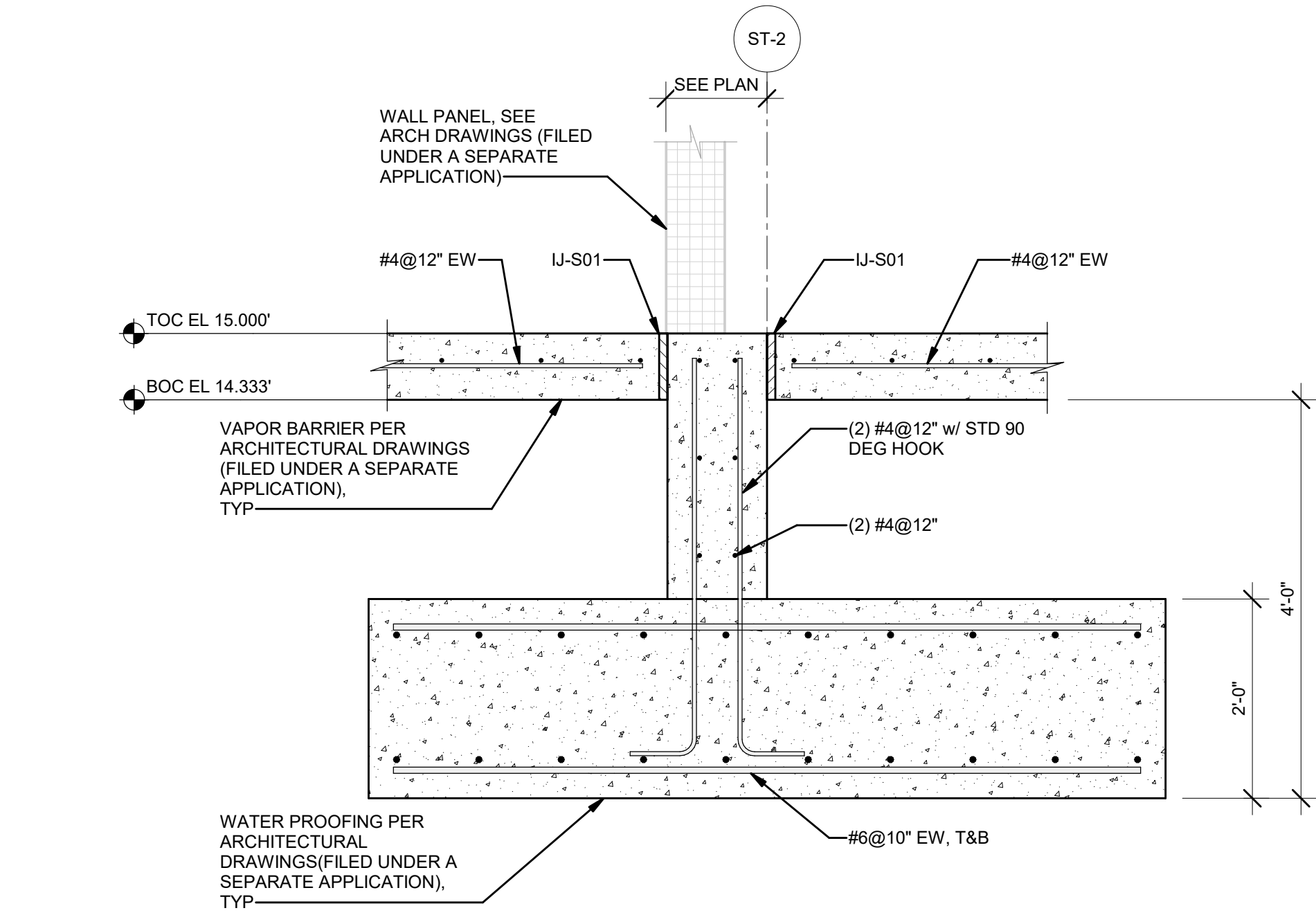
11/10/2022 8:28:33 AM



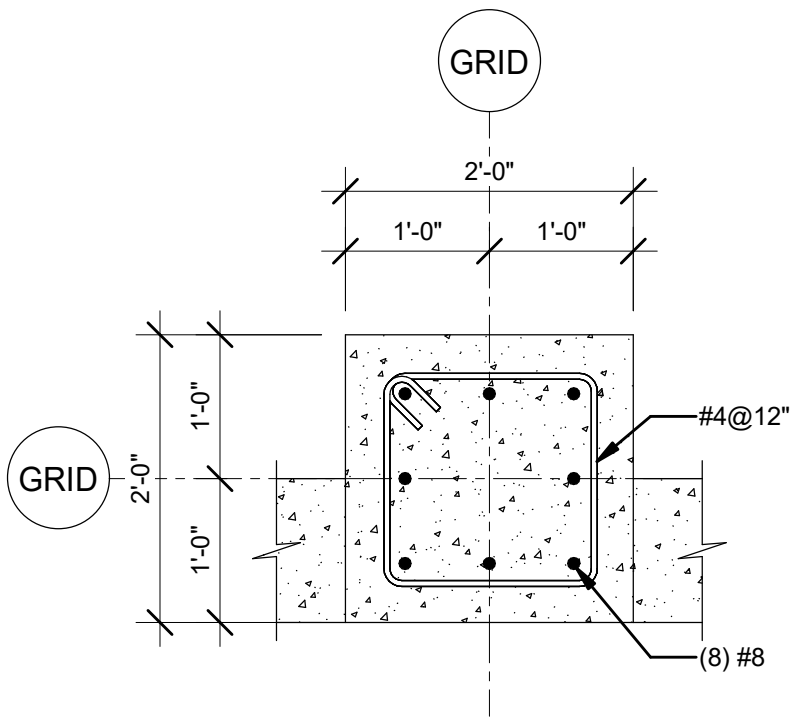
1 STORAGE ENCLOSURE
FOUNDATION EXTERIOR WALL SECTION
FO-120.00 3/4" = 1'-0"



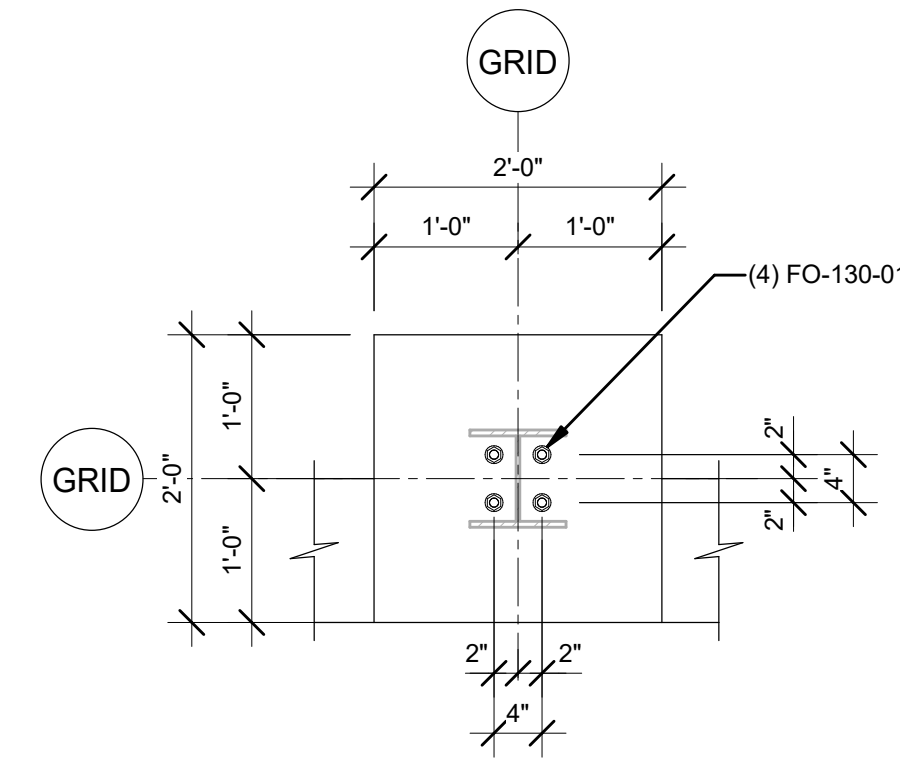
2 STORAGE ENCLOSURE
FOUNDATION PEDESTAL SECTION
FO-120.00 3/4" = 1'-0"



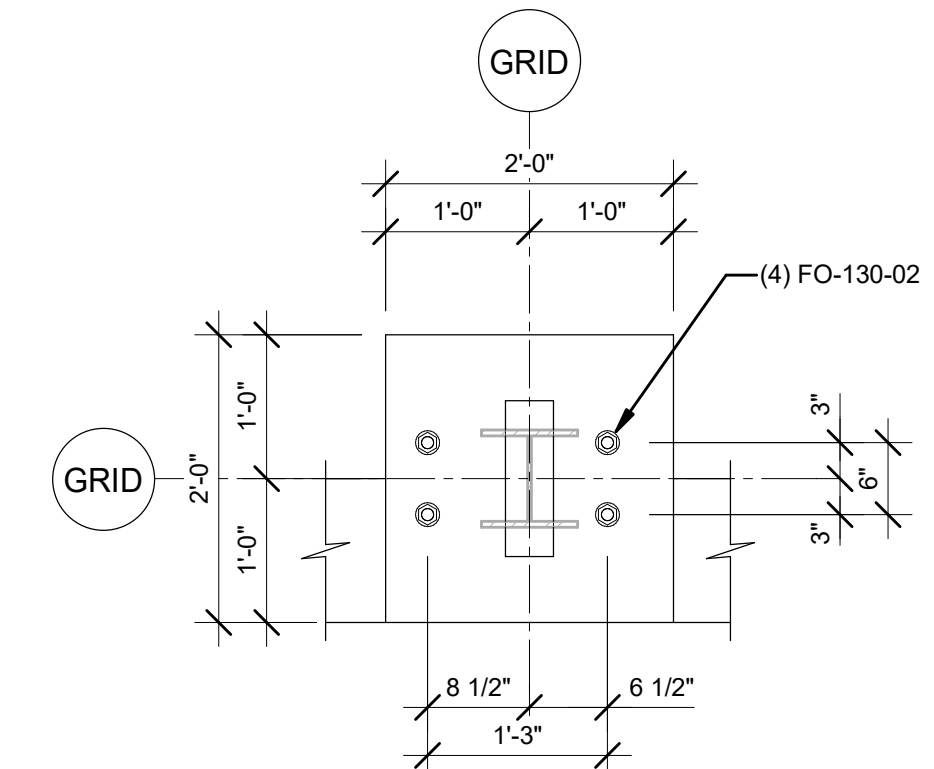
3 STORAGE ENCLOSURE
FOUNDATION INTERIOR WALL SECTION
FO-120.00 3/4" = 1'-0"



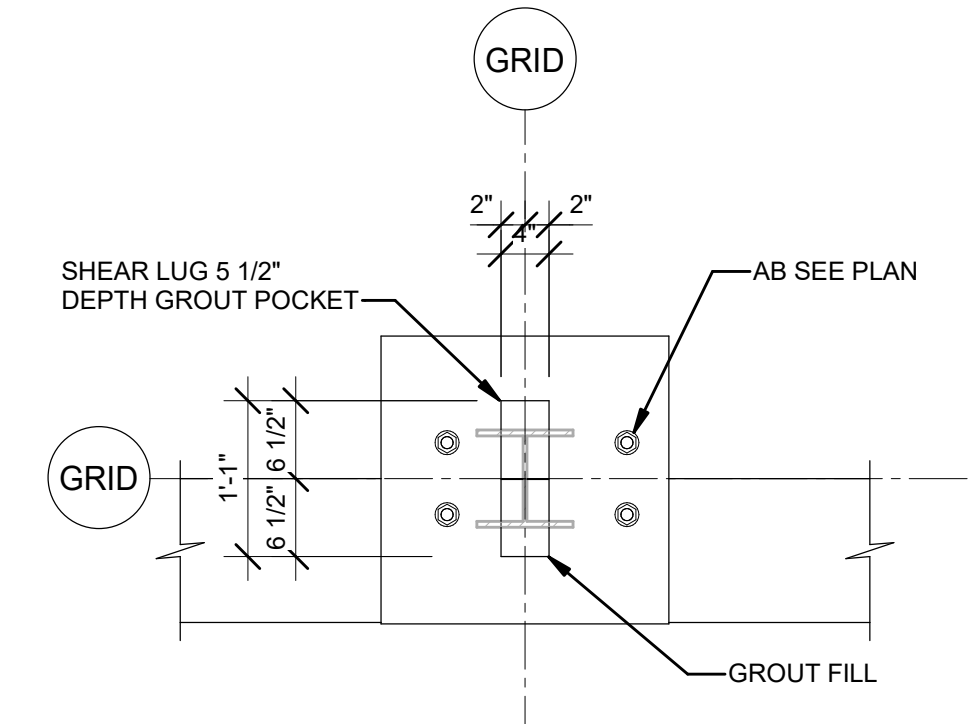
4 STORAGE ENCLOSURE
FOUNDATION PEDESTAL DETAIL
FO-120.00 3/4" = 1'-0"



5 STORAGE ENCLOSURE
FOUNDATION ANCHOR BOLT LAYOUT DETAIL
FO-120.00 3/4" = 1'-0"



6 STORAGE ENCLOSURE
FOUNDATION ANCHOR BOLT LAYOUT DETAIL
FO-120.00 3/4" = 1'-0"



7 STORAGE ENCLOSURE
FOUNDATION GP-01 DETAIL
FO-120.00 3/4" = 1'-0"

SHEET NOTES:
1. SEE DRAWING FO-020.00 FOR STRUCTURAL NOTES.

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| REV | DESCRIPTION | DRW BY | CHK BY | DATE |
|-----|--------------------|--------|--------|------------|
| B | FINAL SUBMISSION | DJF | DS | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | BZ | 08/29/2022 |

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT
CHPE
Champlain Hudson
Power Express

**Astoria HVDC
Converter Station**

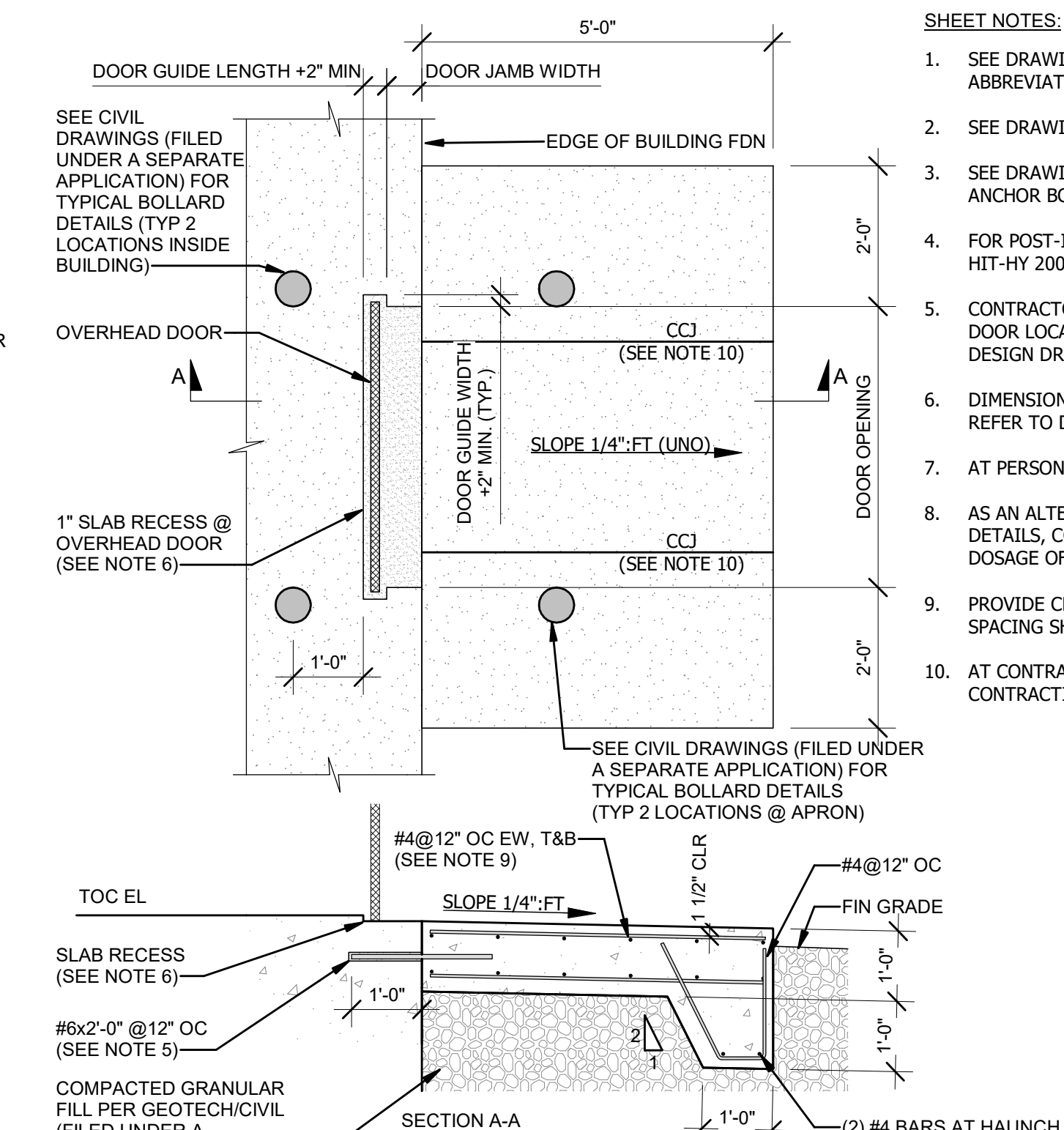
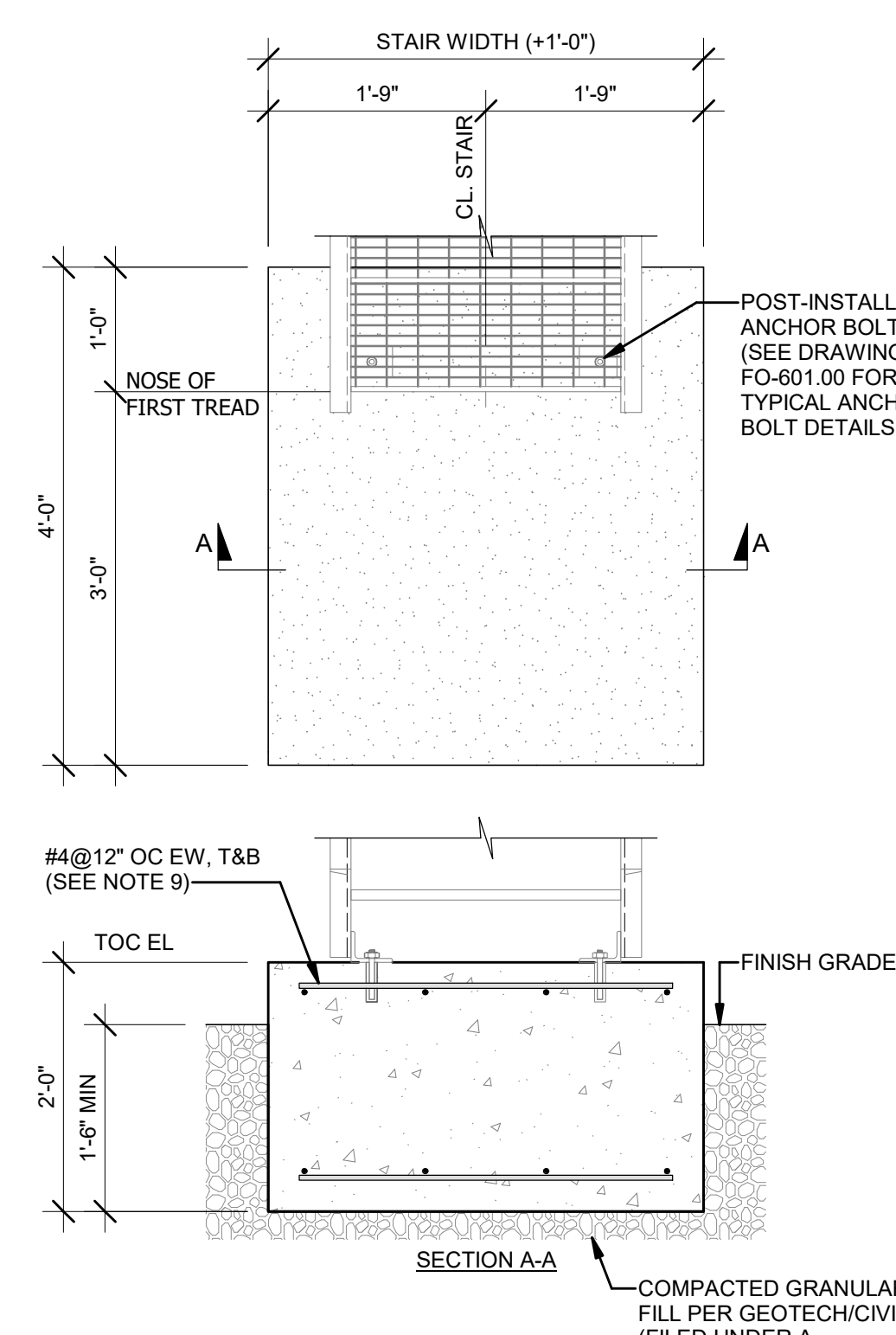
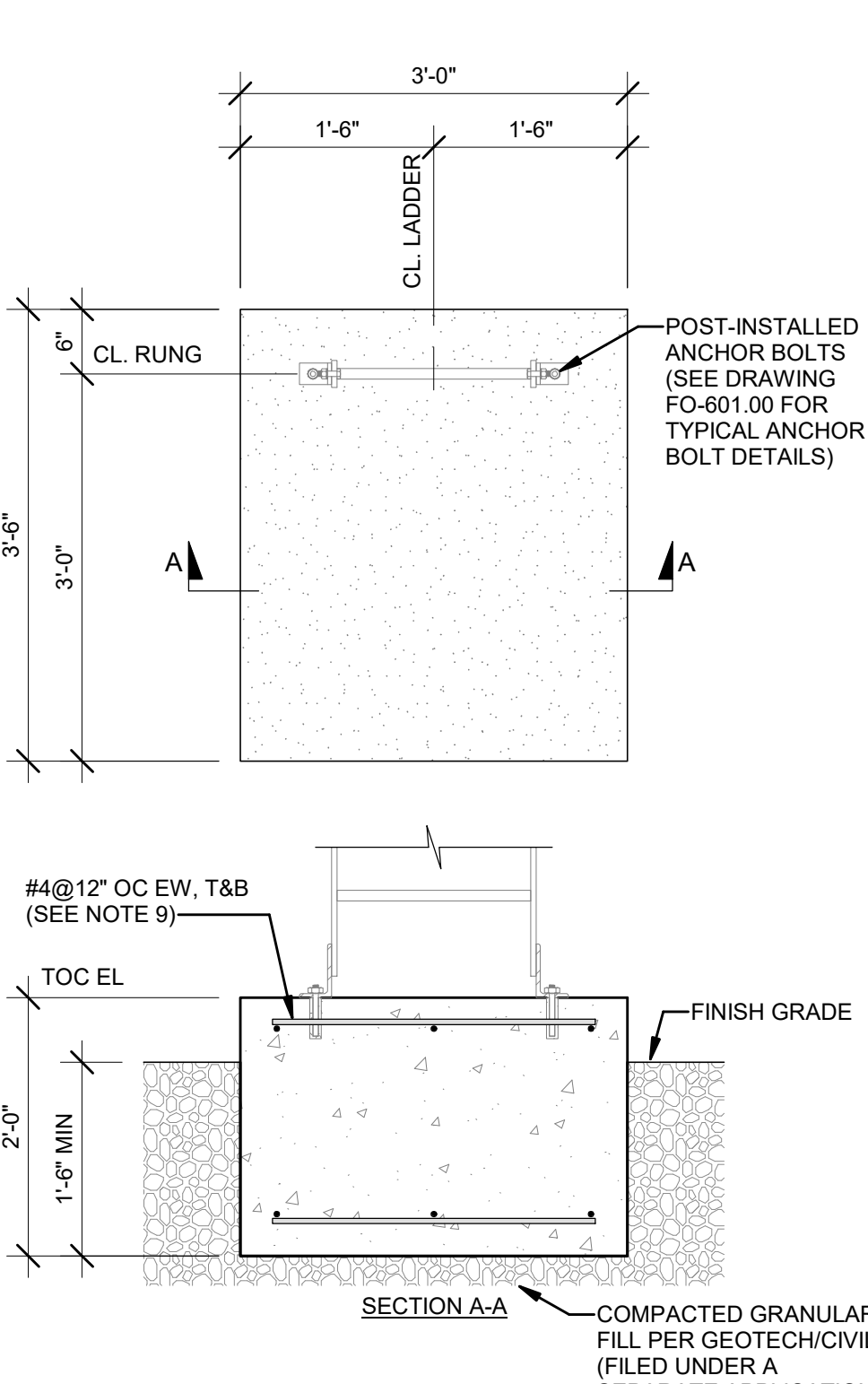
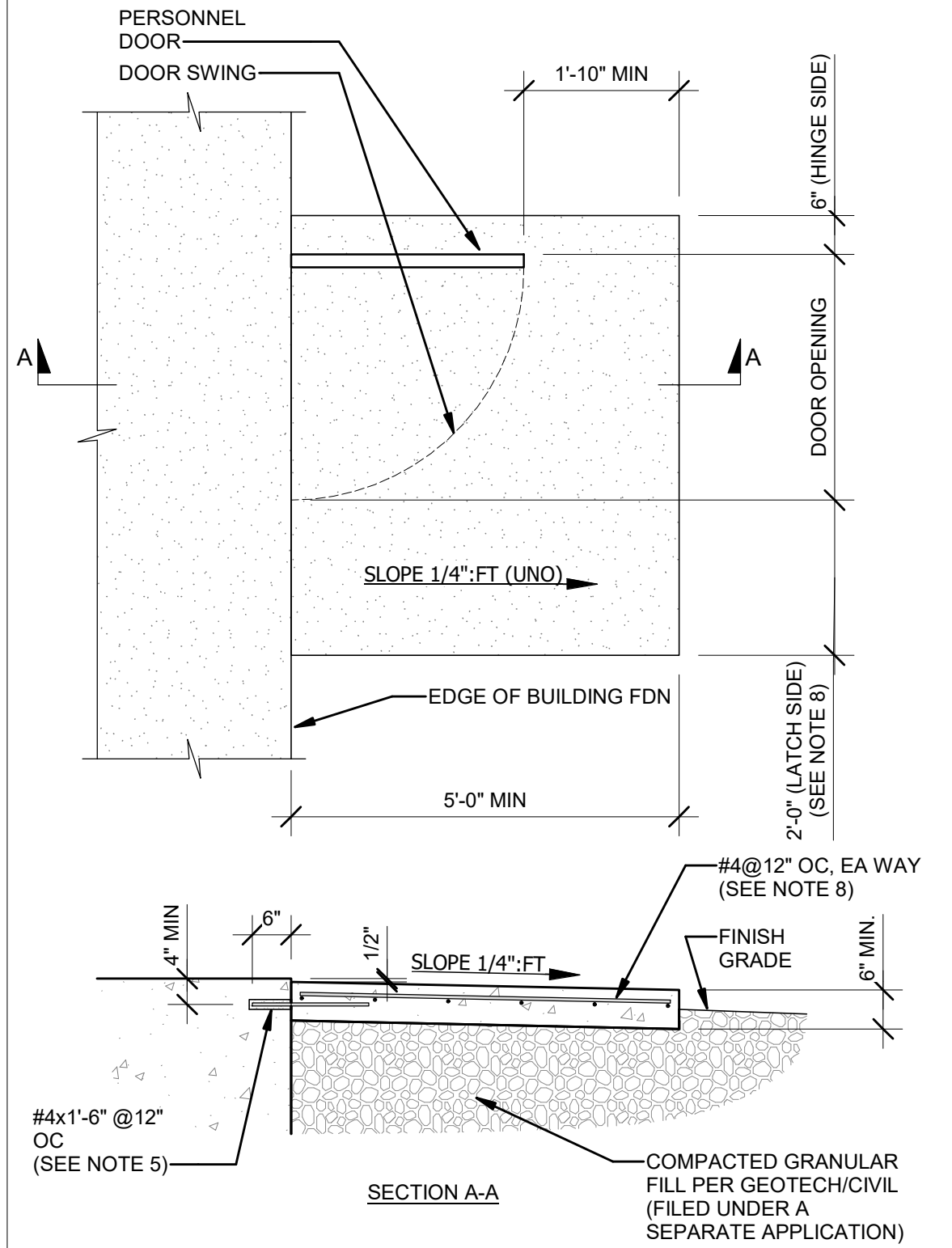
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

STORAGE ENCLOSURE
FOUNDATION SECTIONS
AND DETAILS

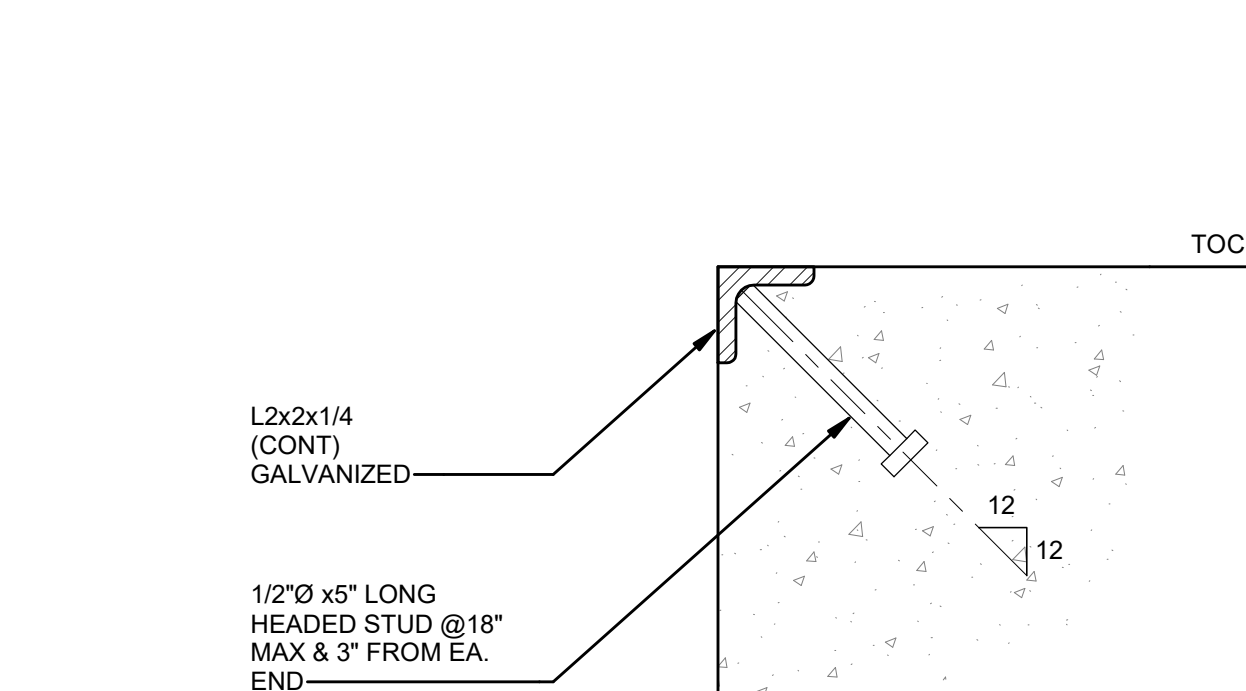
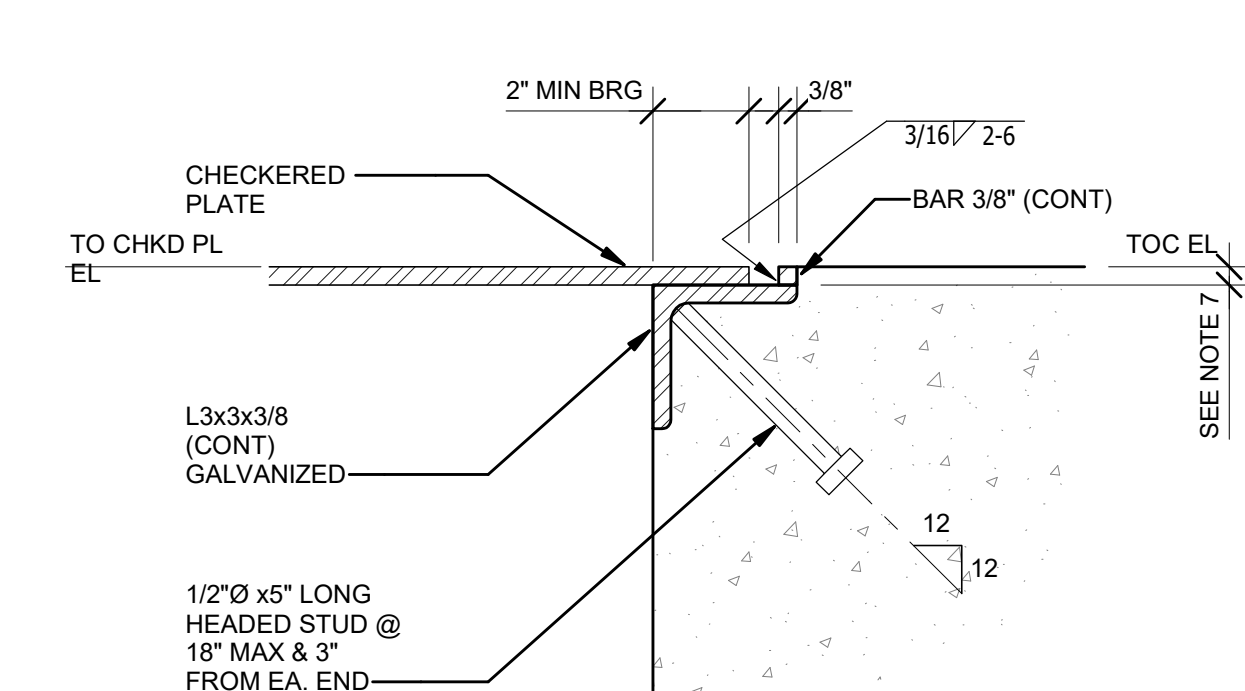
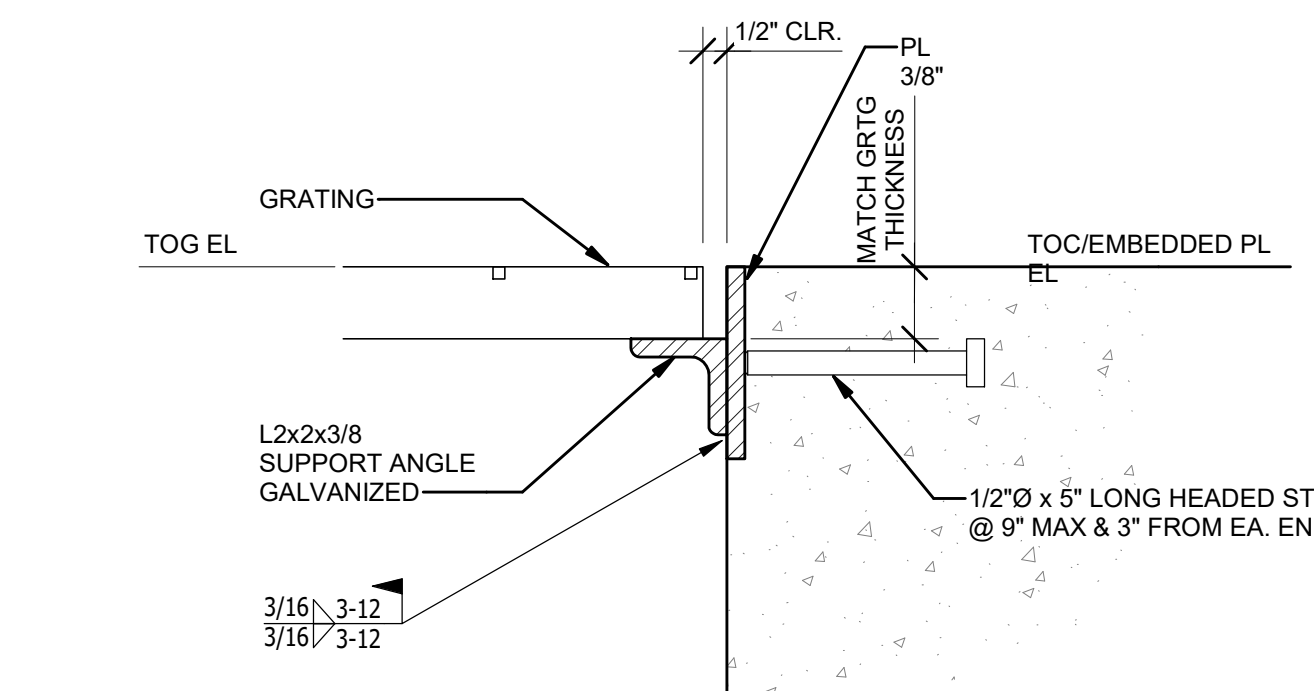
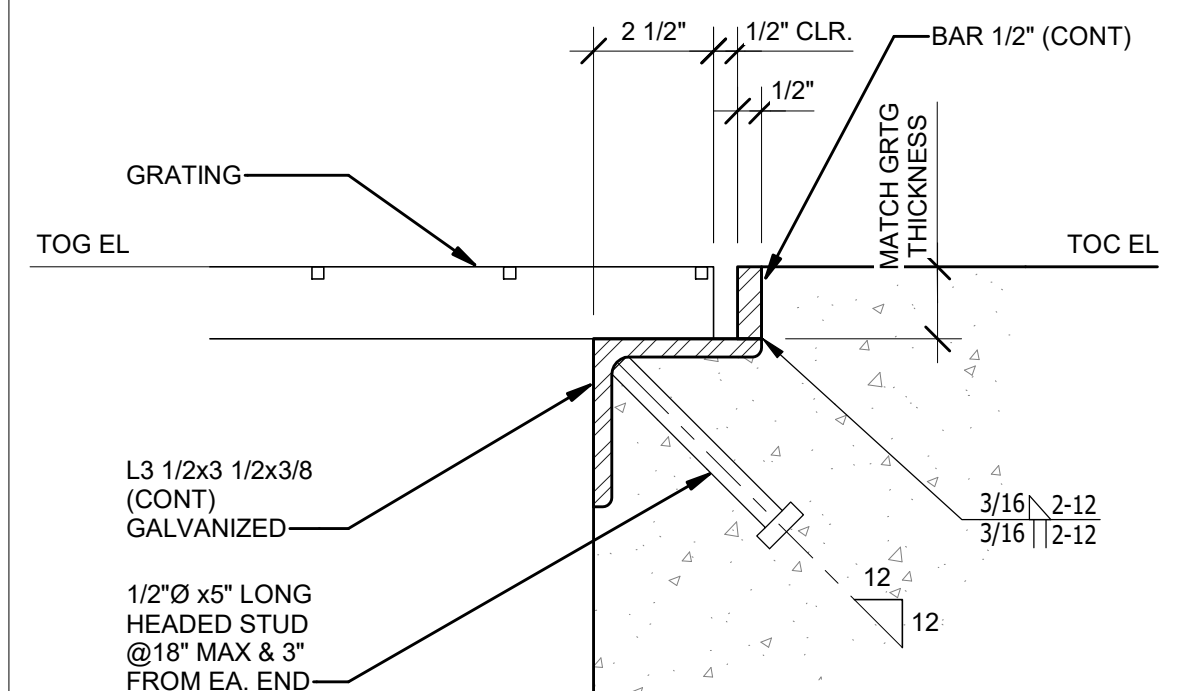


DATE 11/08/2022
PROJECT NO 105121
DRAWING BY C.SPAULDING
CHECKED BY D.SANCHEZ
DRAWING NO
FO-330.00
CADD FILE NO
Astoria HVDC CHPE
Astoria CHA-KIE-130-F-1-M3-S-001.rvt
13 of 18





- SHEET NOTES:
- SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
 - SEE DRAWING FO-005.00 FOR FOUNDATION LOCATION PLAN.
 - SEE DRAWING FO-601.00 THRU FO-605.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
 - FOR POST-INSTALLED APPLICATIONS, DRILL AND INSTALL DOWELS USING HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM.
 - CONTRACTOR SHALL PROVIDE 1" RECESS WITH TOOLED EDGE AT OVERHEAD DOOR LOCATIONS. RECESS DETAIL AND LOCATIONS SHALL BE PER SHOWN ON DESIGN DRAWINGS.
 - DIMENSION ON DETAIL CE-03 TO MATCH CHECKERED PLATE THICKNESS. REFER TO DESIGN DRAWINGS FOR CHECKERED PLATE SPECIFICATION.
 - AT PERSONNEL DOUBLE DOOR ENTRY, EXTEND STOOPS 6" ON BOTH SIDES.
 - AS AN ALTERNATIVE TO REINFORCEMENT SPECIFIED WHERE NOTED IN "CA" DETAILS, CONTRACTOR MAY SUBSTITUTE WITH HELIX 5-25 MICRO-REBAR AT DOSAGE OF 11 POUNDS PER CUBIC YARD.
 - PROVIDE CRACK CONTROL JOINT WHEN USING HELIX MICRO-REBAR. JOINT SPACING SHALL BE LESS THAN 1.5X THE APRON PLAN DIMENSION.
 - AT CONTRACTOR'S OPTION, CONSTRUCTION JOINTS MAY BE USED IN LIEU OF CONTRACTION JOINTS.

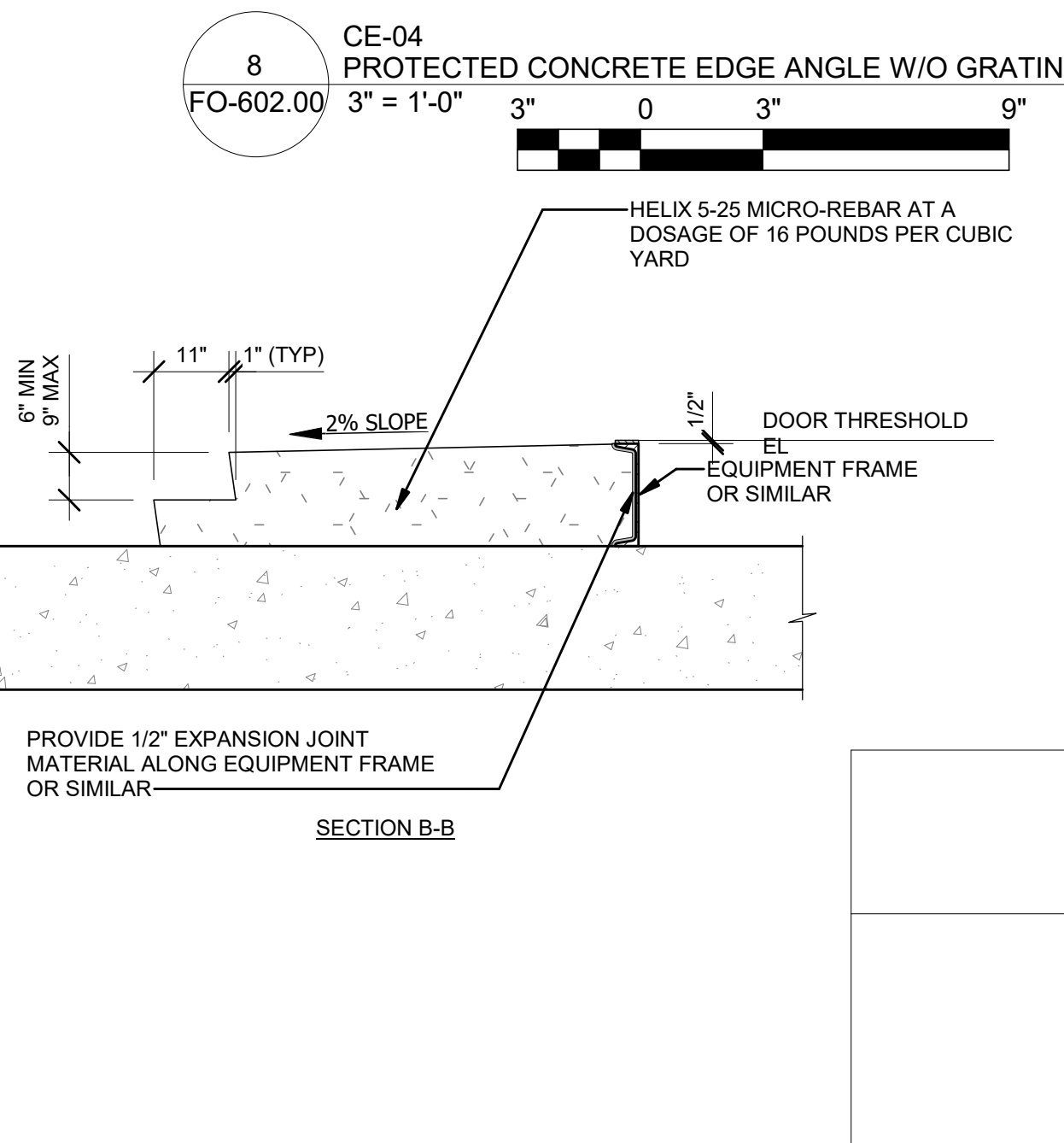
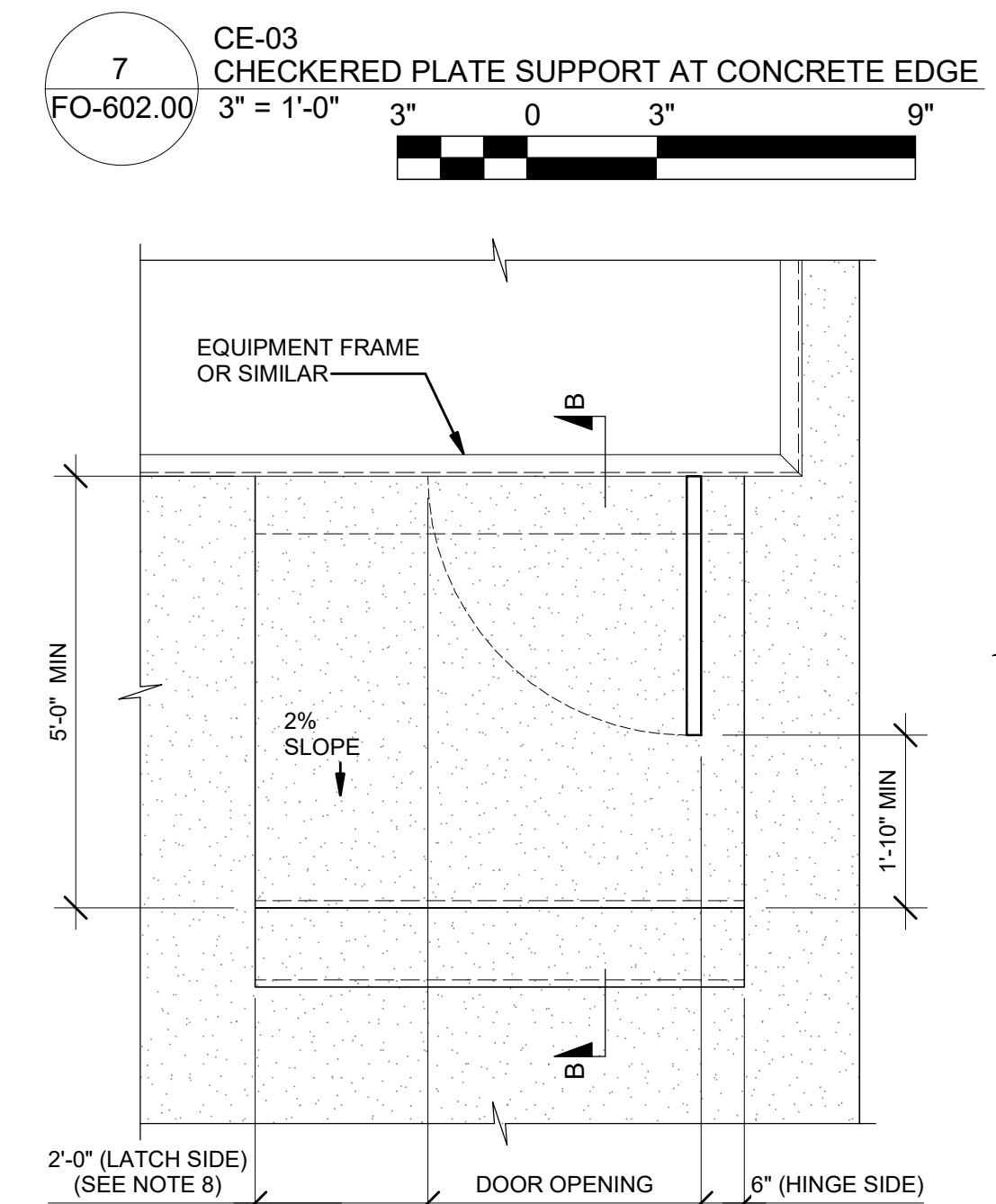
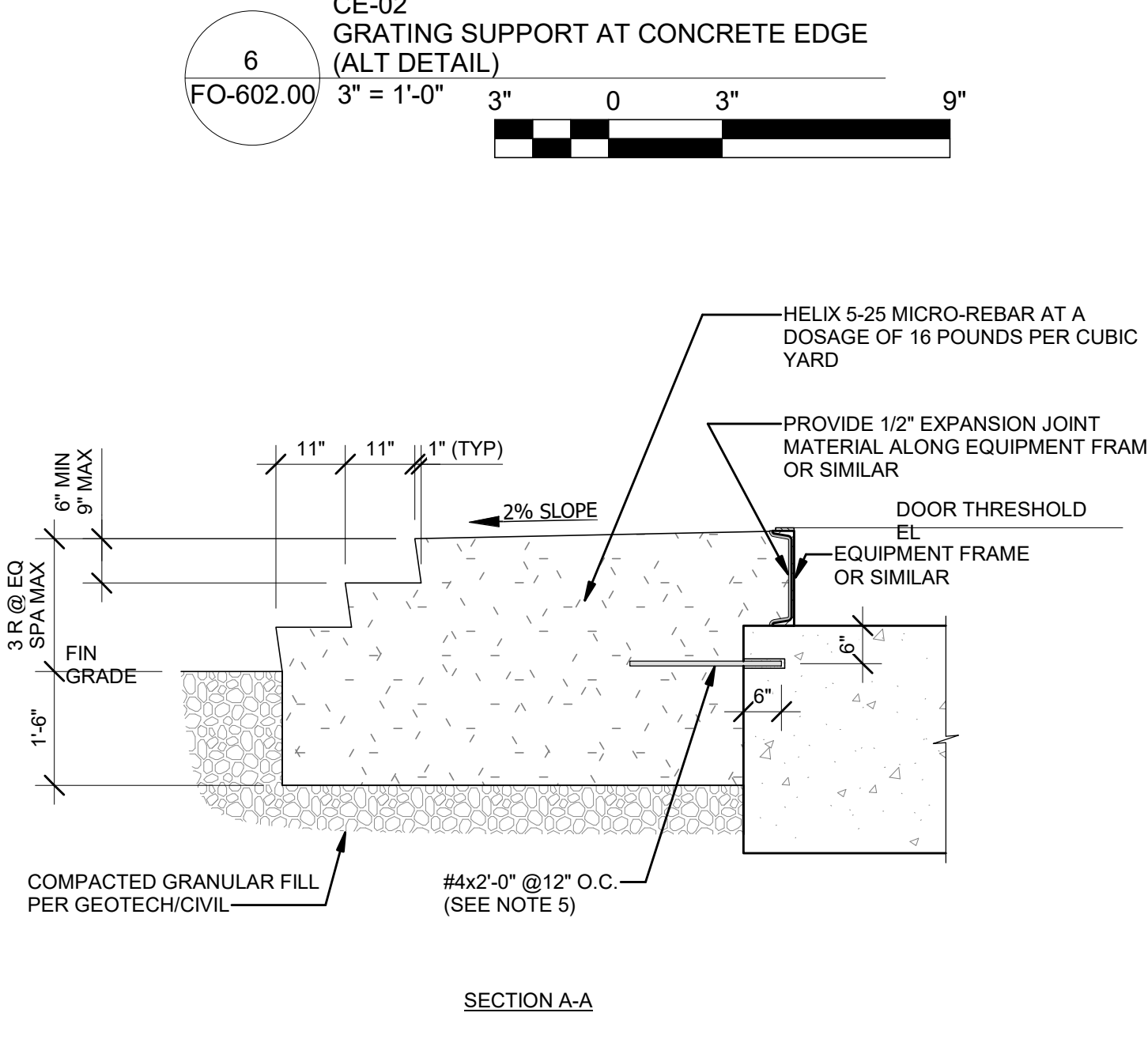
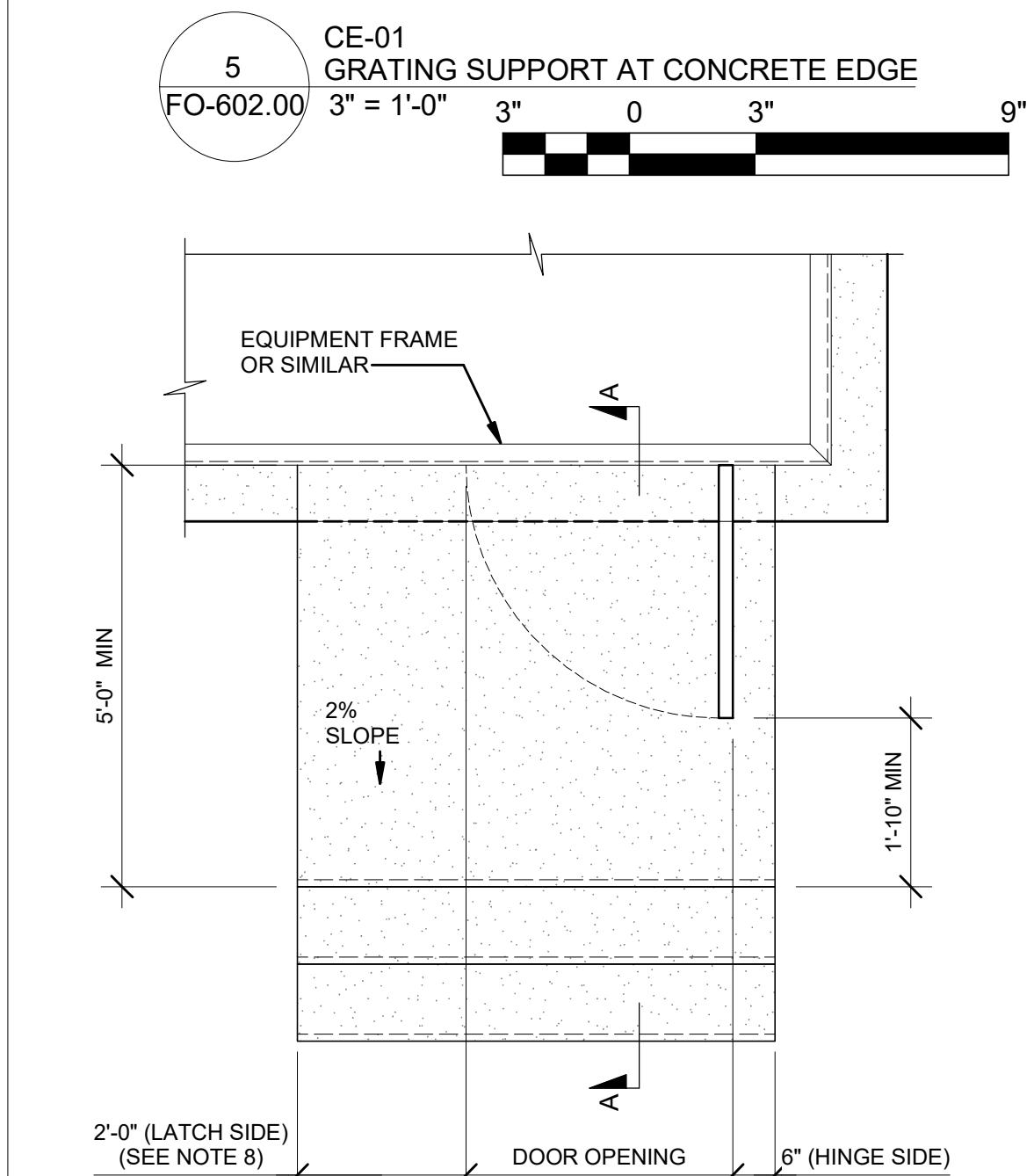


NOTES:
A. REINFORCING NOT SHOWN FOR CLARITY.
B. MITER AND WELD (GRIND FLUSH) AT CORNERS.

NOTE:
A. REINFORCING NOT SHOWN FOR CLARITY.

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NOTES:
A. REINFORCING NOT SHOWN FOR CLARITY.
B. MITER AND WELD (GRIND FLUSH) AT CORNERS.



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| B | FINAL SUBMISSION | DJF | WA | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | WA | 08/29/2022 |

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

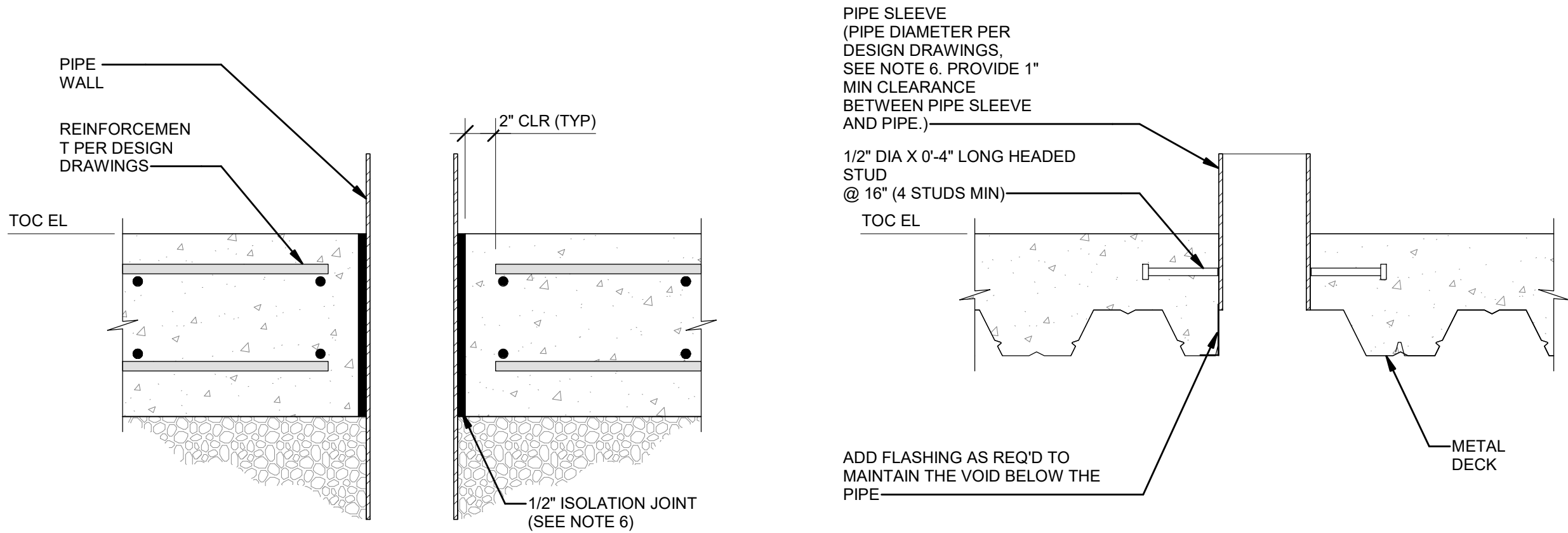
PROJECT
CHPE
Champlain Hudson
Power Express
**Astoria HVDC
Converter Station**
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

CONCRETE TYPICAL
DETAILS



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY D. FLYNN
CHECKED BY W. ABBASSI
DRAWING NO
FO-602.00
CADD FILE NO
Astoria HVDC CHPE
Astoria HVDC CHPE-000-XX-M2-S-001.rvt
15 of 18

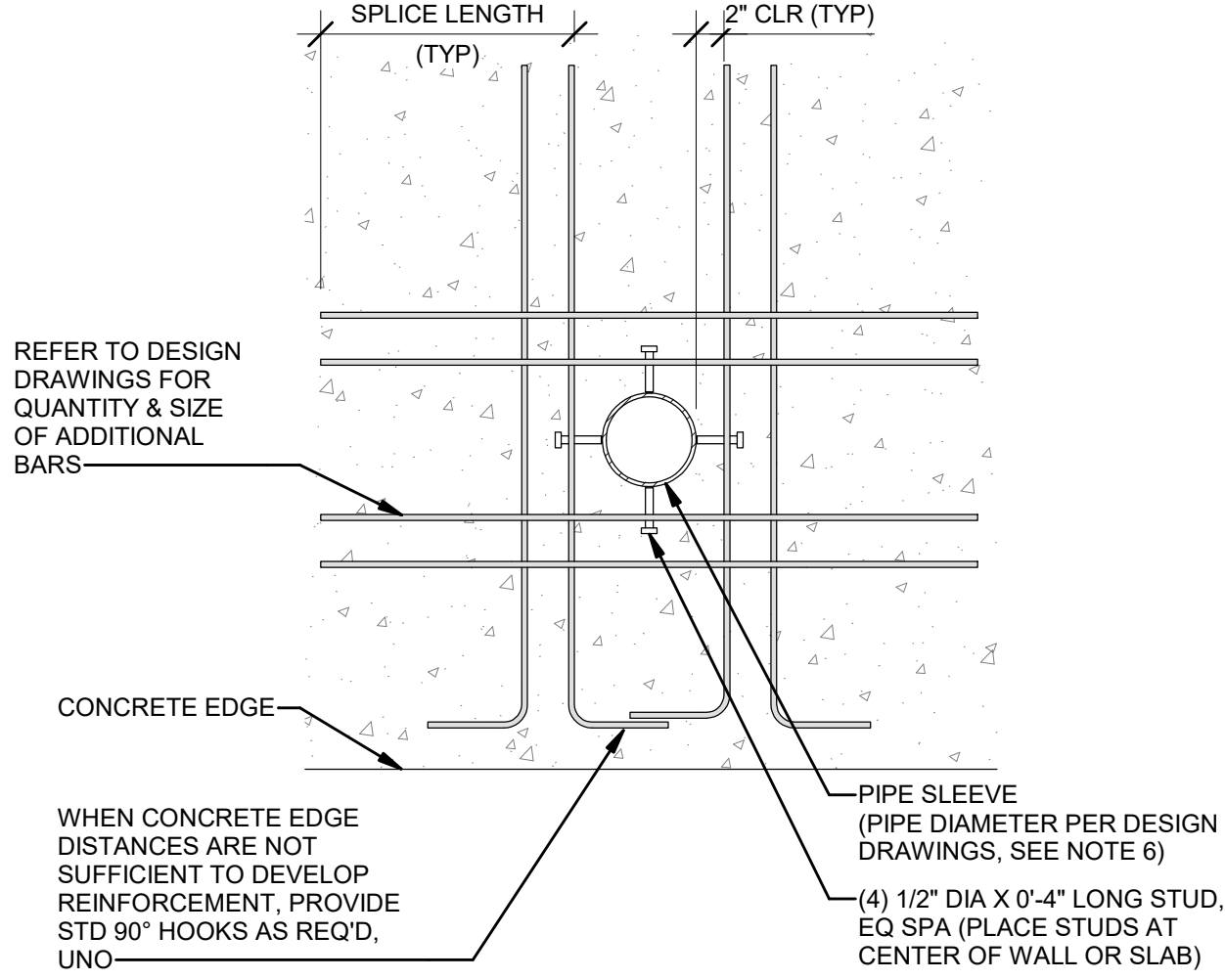
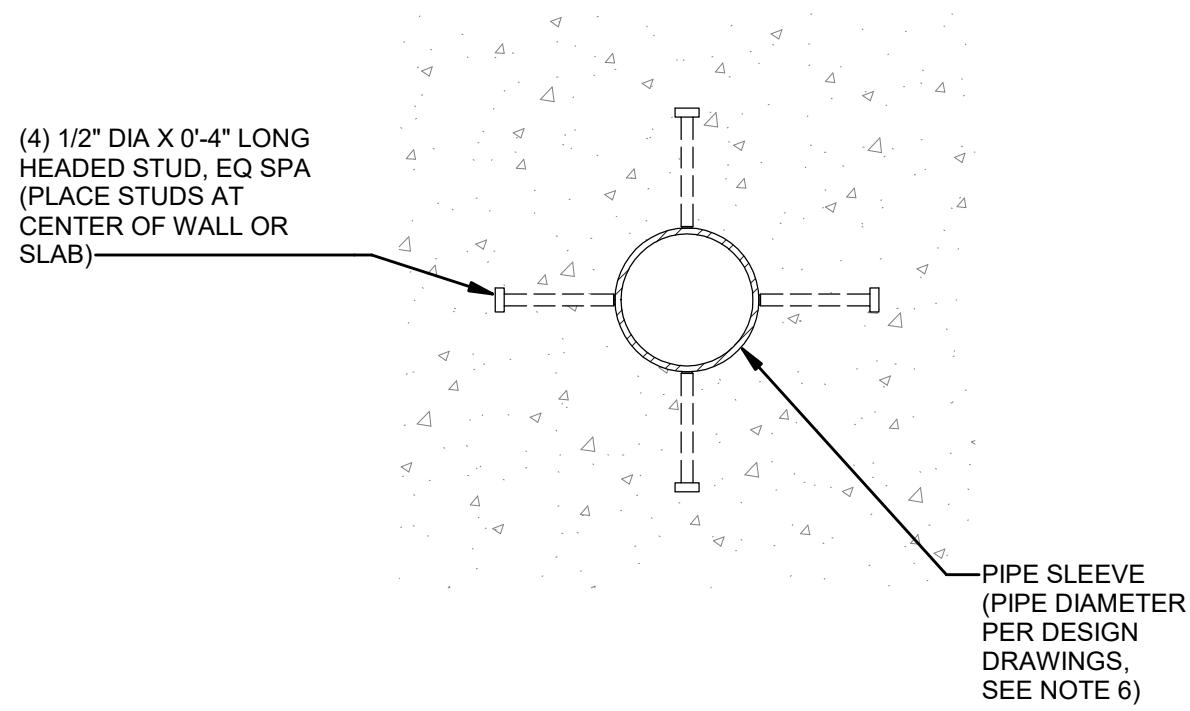
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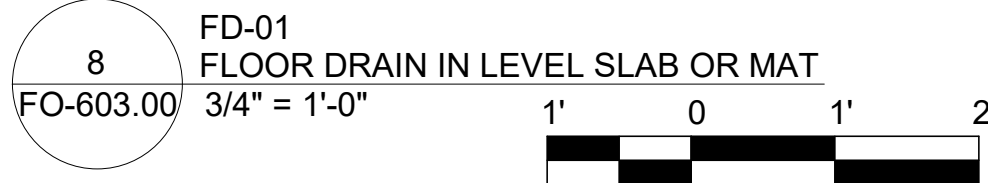
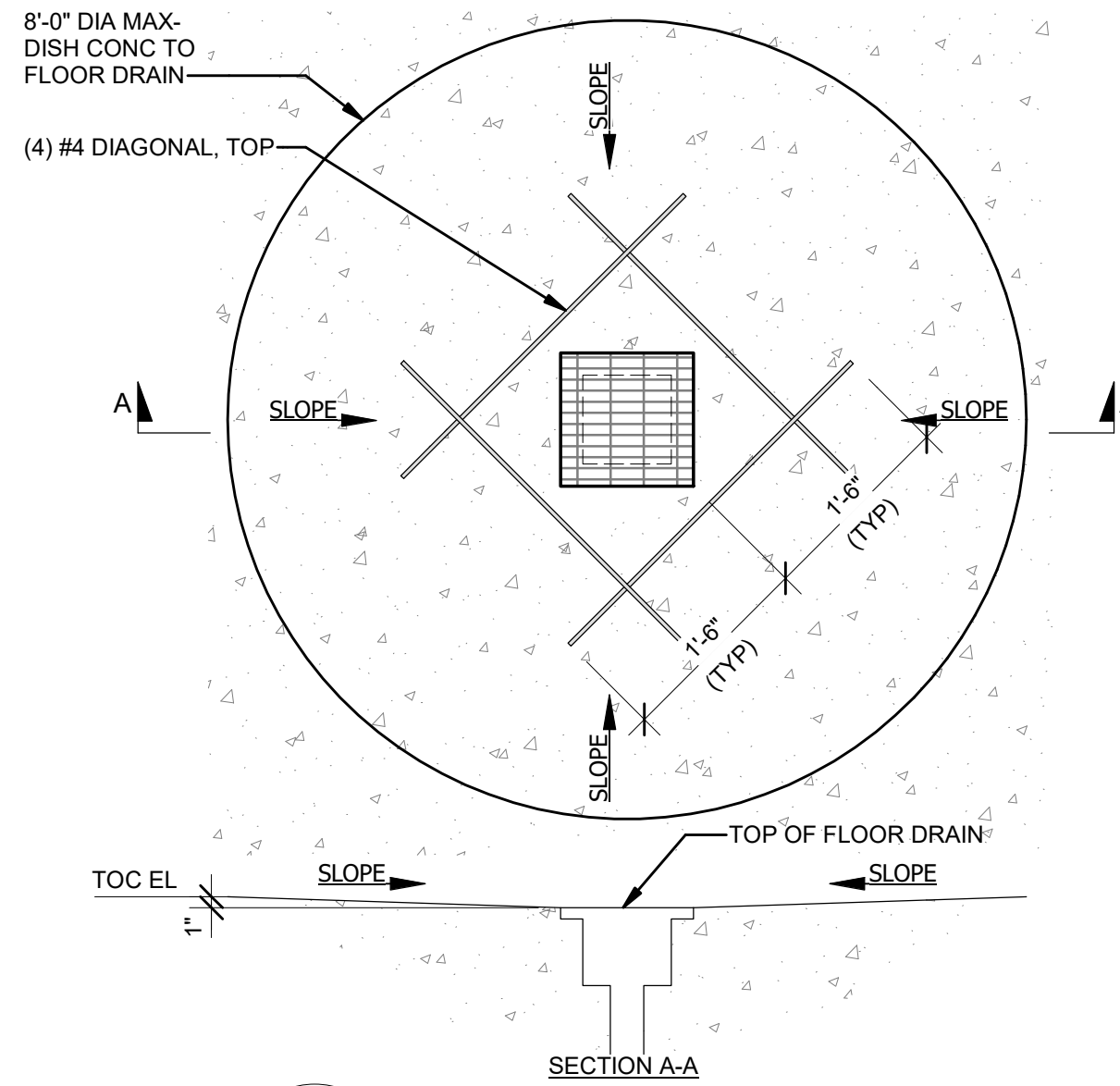
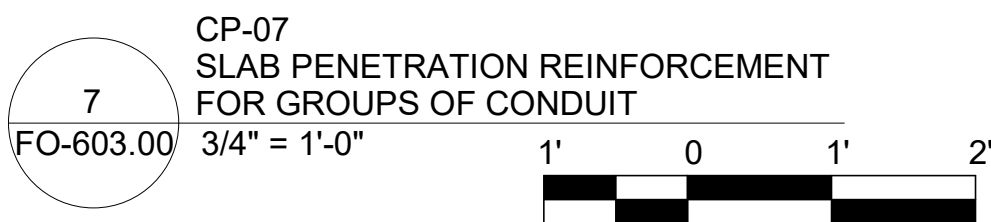
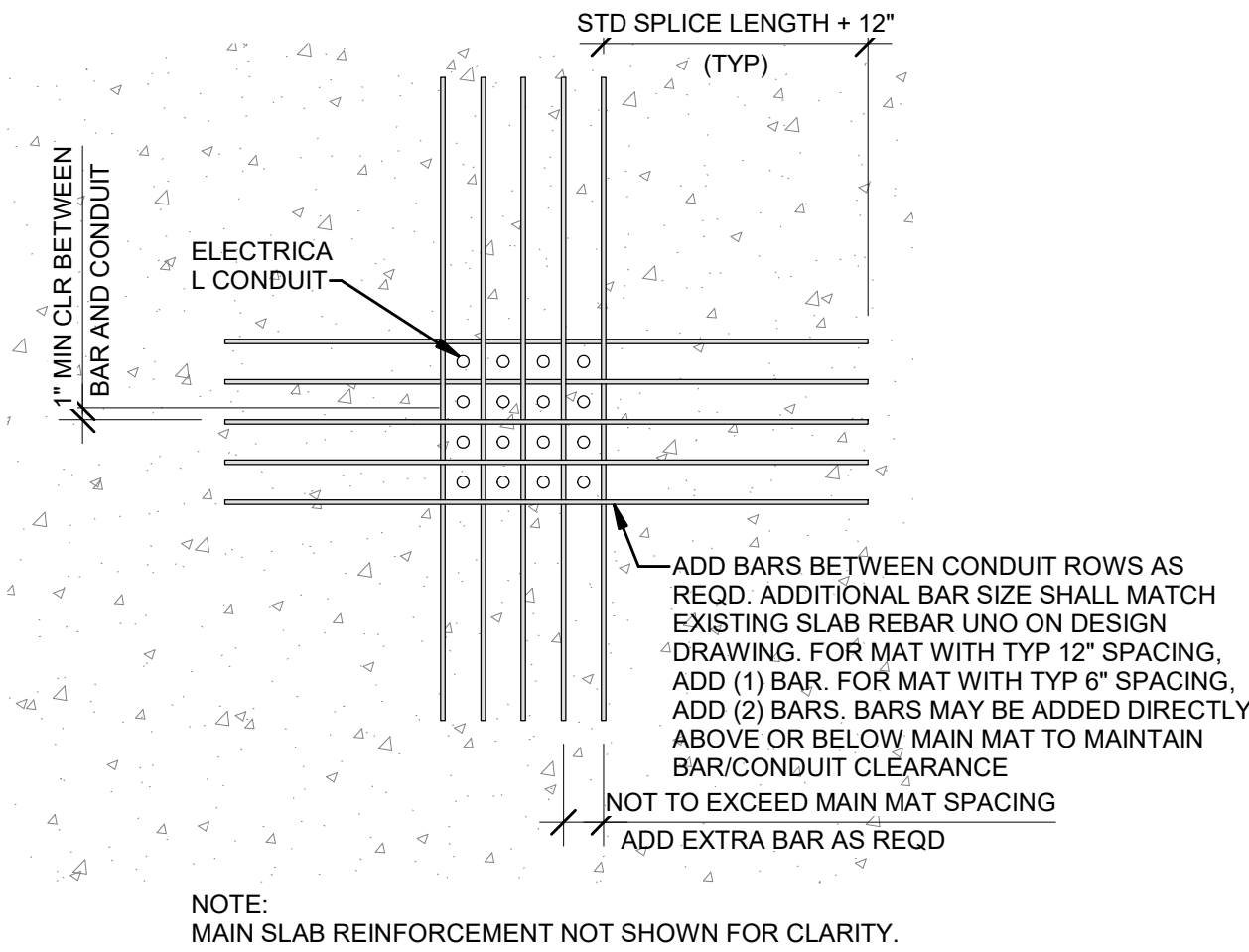
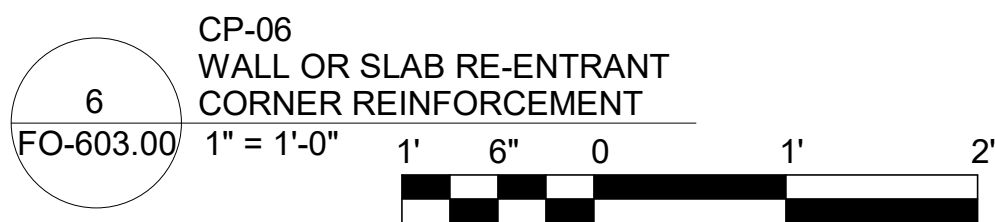
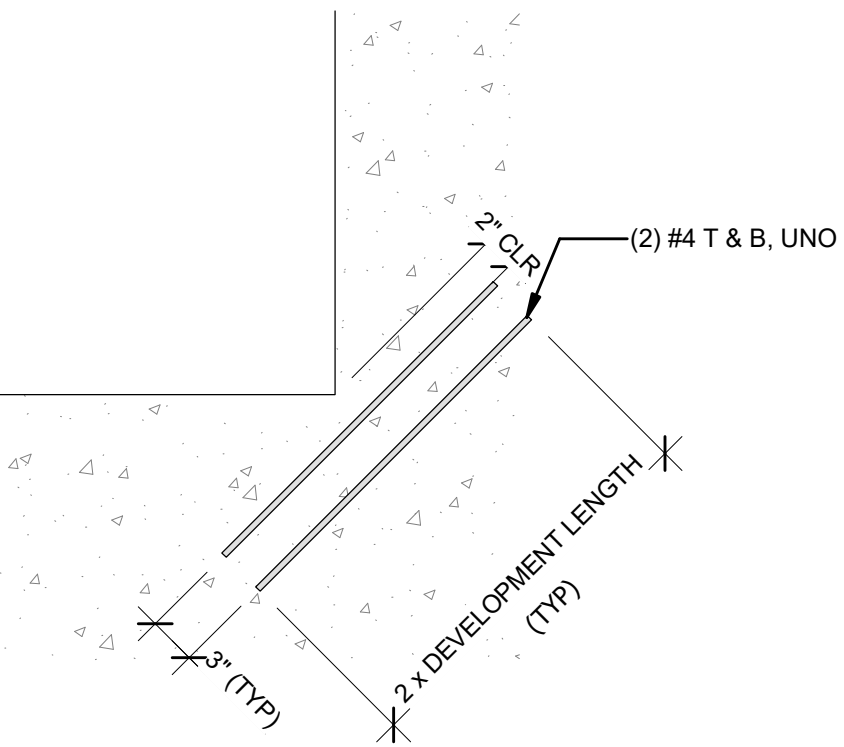
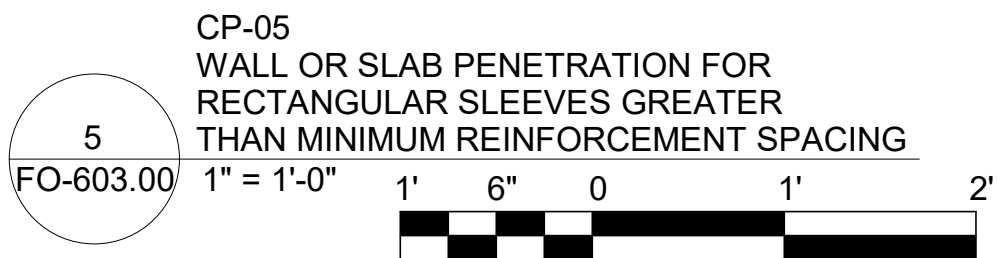
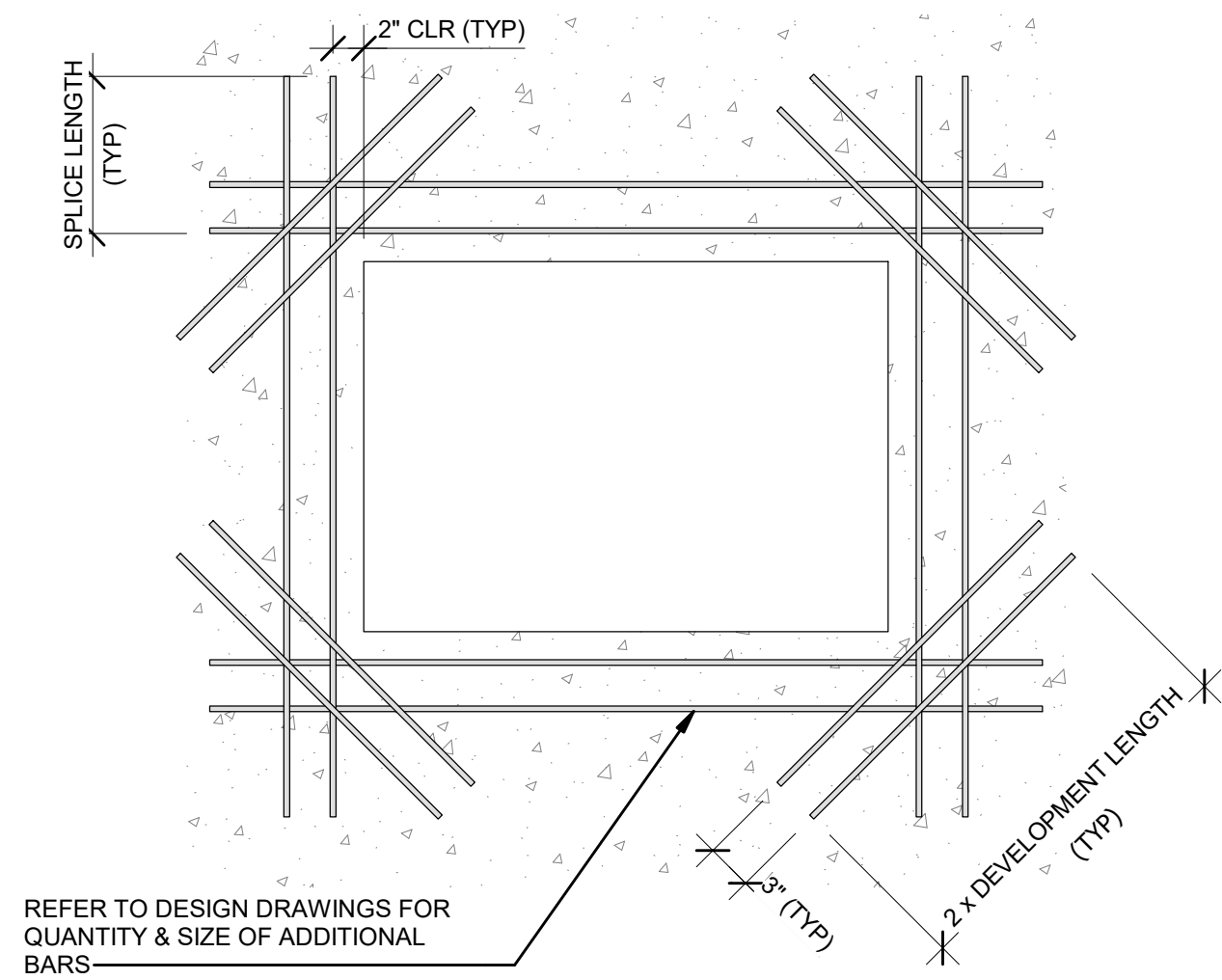
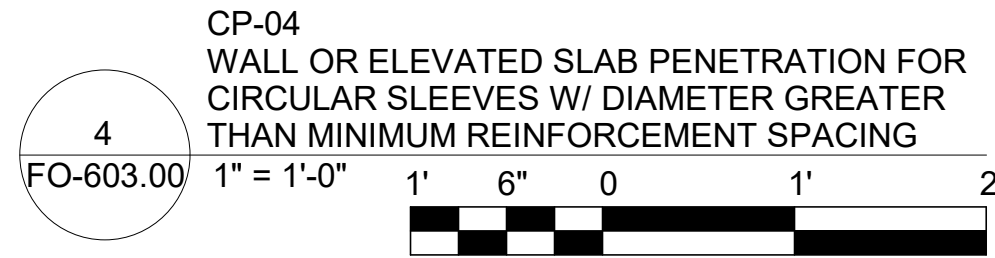
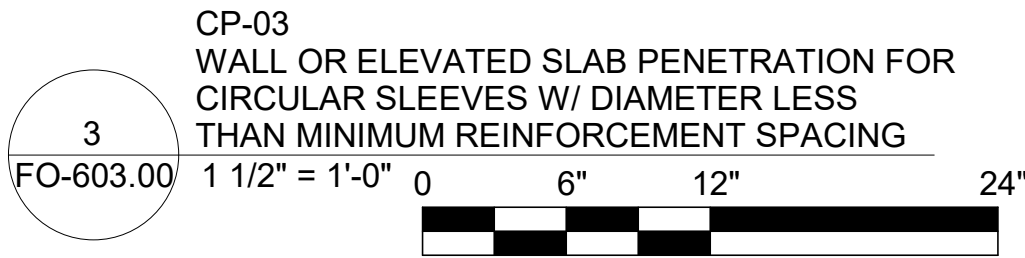
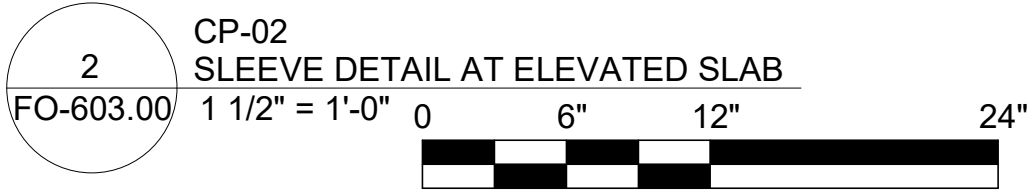
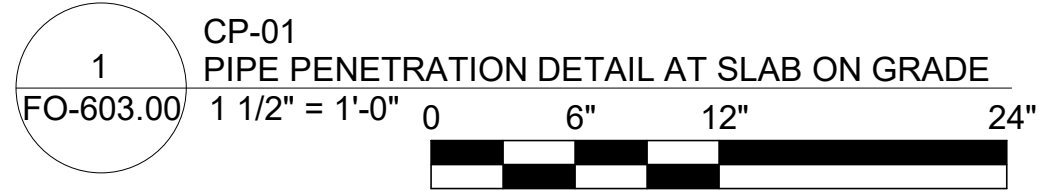
NOTES:

A. PIPE SLEEVE SMALLER THAN 30" OUTSIDE DIA SHALL BE STANDARD WEIGHT PIPE. SLEEVES WITH OUTSIDE DIA 30" AND LARGER SHALL BE 3/8" THICK PLATE.

B. PIPE SLEEVE TO BE INSTALLED SUCH THAT STEEL DECK WILL BE CUT AT LEAST 7 DAYS AFTER PLACING OF CONCRETE.



- SHEET NOTES:
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 - SEE DRAWING FO-005.00 FOR FOUNDATION LOCATION PLAN.
 - SEE DRAWING FO-601.00 THRU FO-606.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
 - FOR POST-INSTALLED APPLICATIONS, DRILL AND INSTALL DOWELS USING HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM OR APPROVED EQUAL.
 - WHERE PIPE SLEEVE PENETRATIONS ARE REQUIRED TO BE WATERTIGHT, PIPE SLEEVES SHALL BE SEALED USING LINK-SEAL MODULAR SEAL (OR APPROVED EQUAL), UNLESS NOTED OTHERWISE ON DESIGN DRAWINGS.
 - WHERE SLAB ON GRADE PENETRATIONS ARE REQUIRED TO BE WATERTIGHT, REPLACE ISOLATION JOINT MATERIAL WITH HYDROPHILIC WATERSTOP, INSTALLED AT CENTER OF SLAB.



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Kiewit
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Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

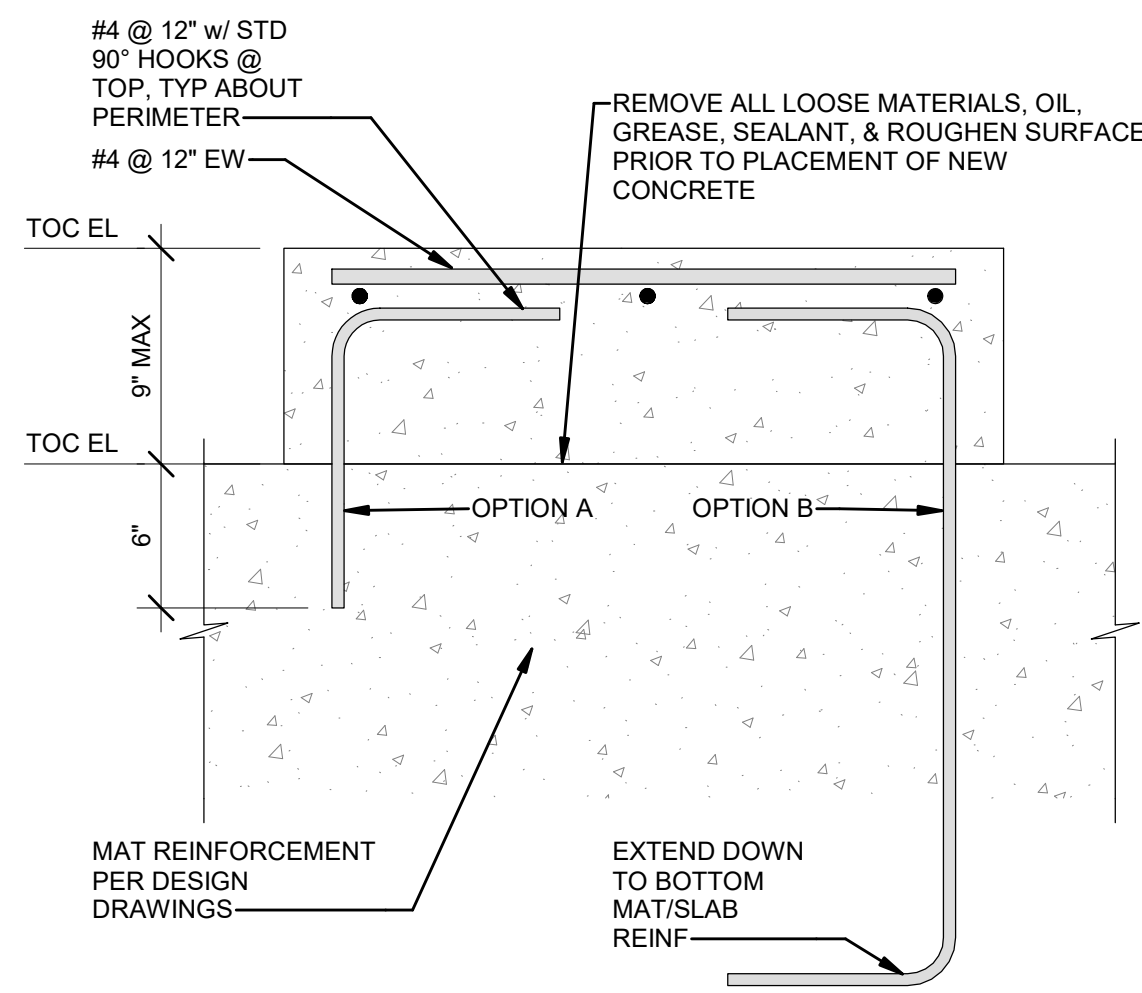
Astoria HVDC
Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

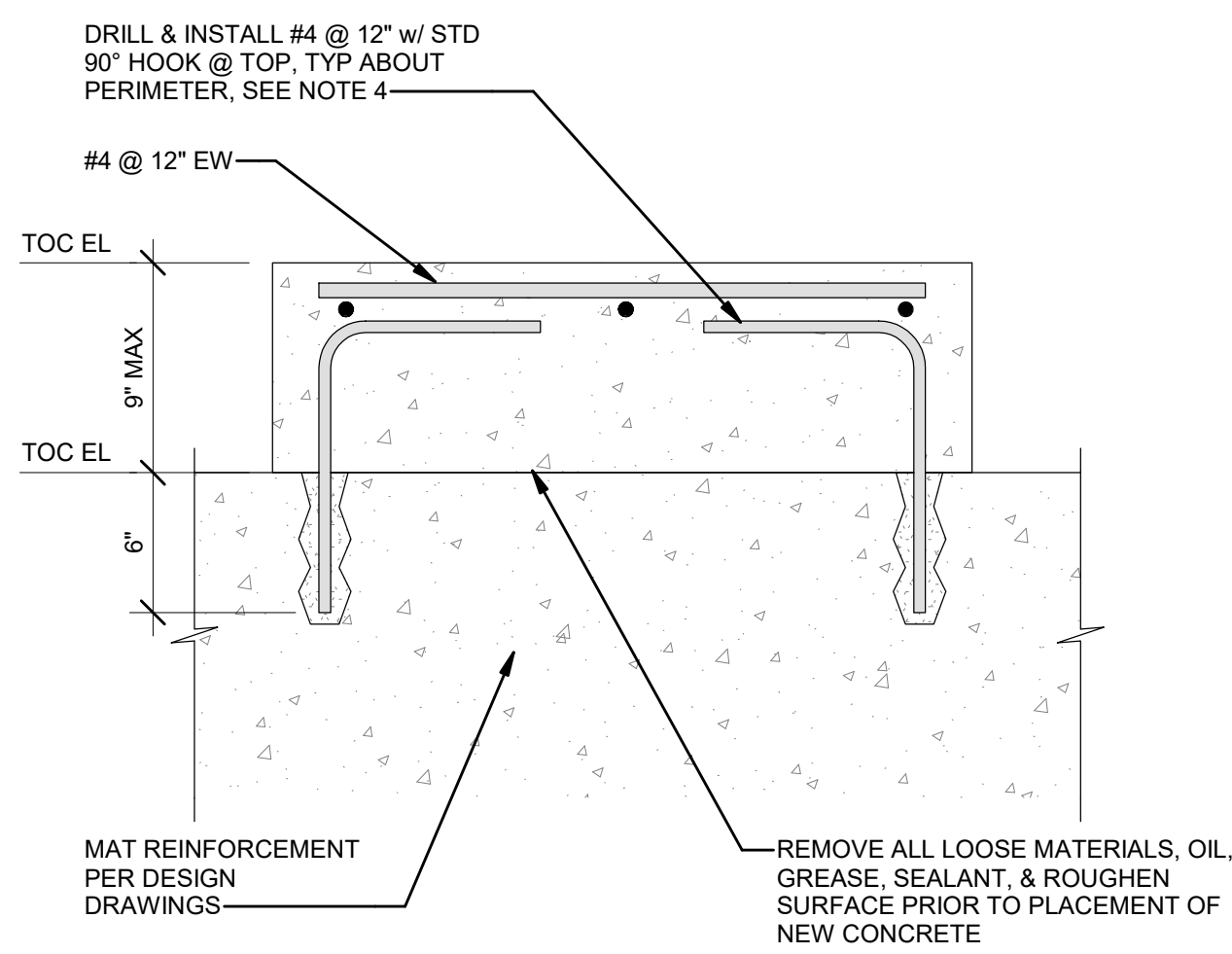
CONCRETE PENETRATION
TYPICAL DETAILS



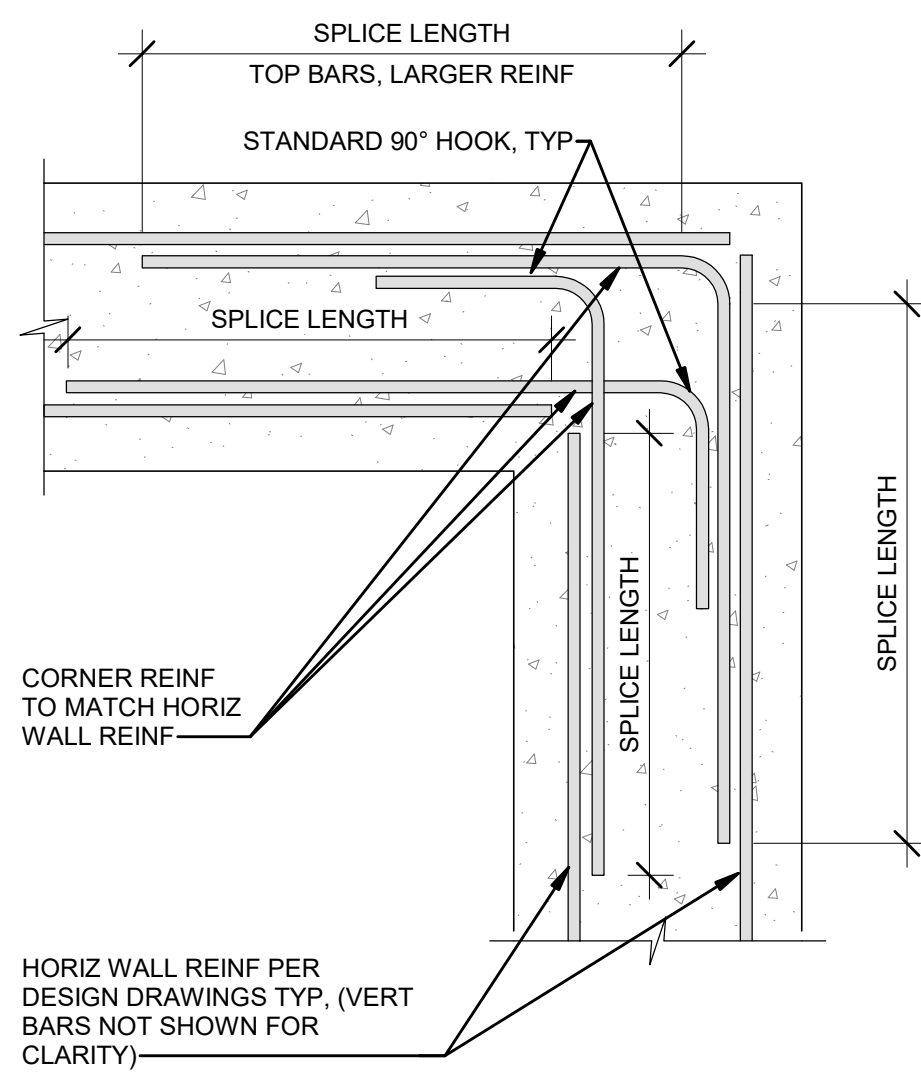
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PROJECT NO 105121
DRAWING BY D. FLYNN
CHECKED BY W. ABBASSI
DRAWING NO
FO-603.00
CADD FILE NO
Astoria/CHA-KIE-000-XX-M2-S-001.rvt
16 of 18



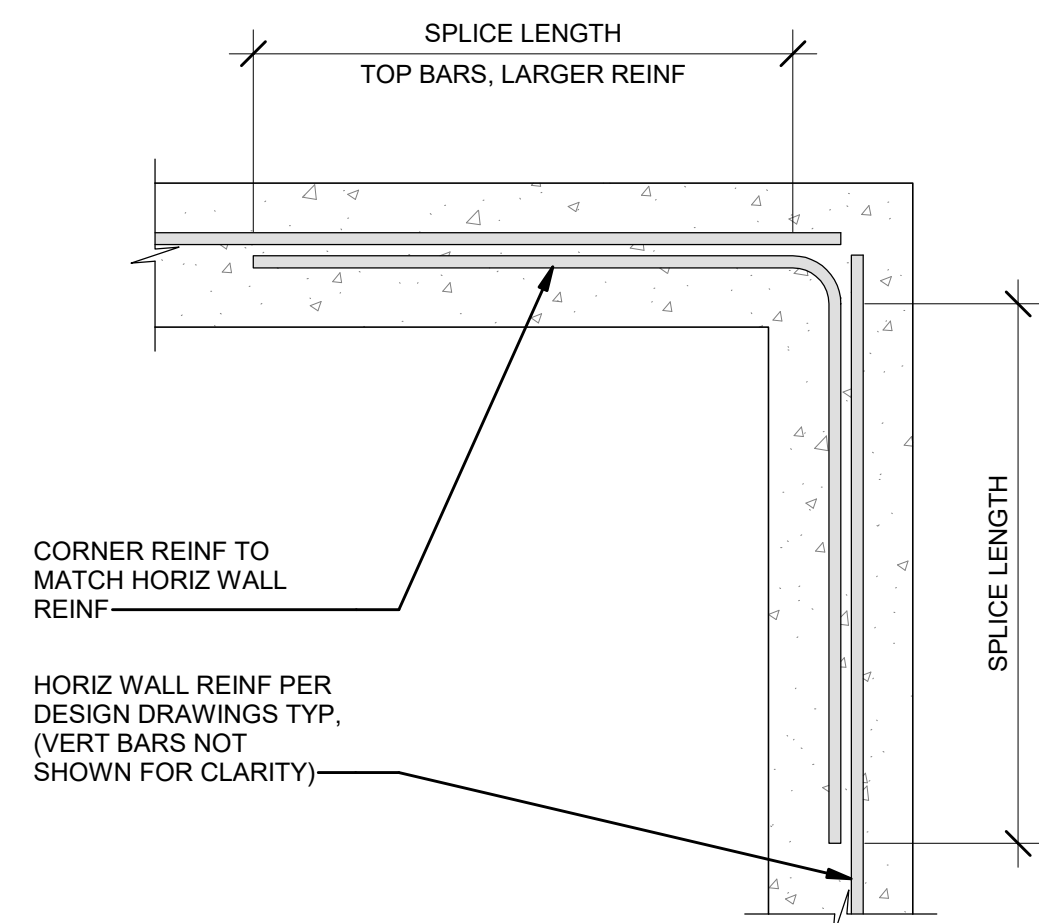
1 CR-01
EQUIPMENT PAD
w/ CAST-IN-PLACE DOWELS
FO-604.00 1 1/2" = 1'-0" 0 6" 12" 24"



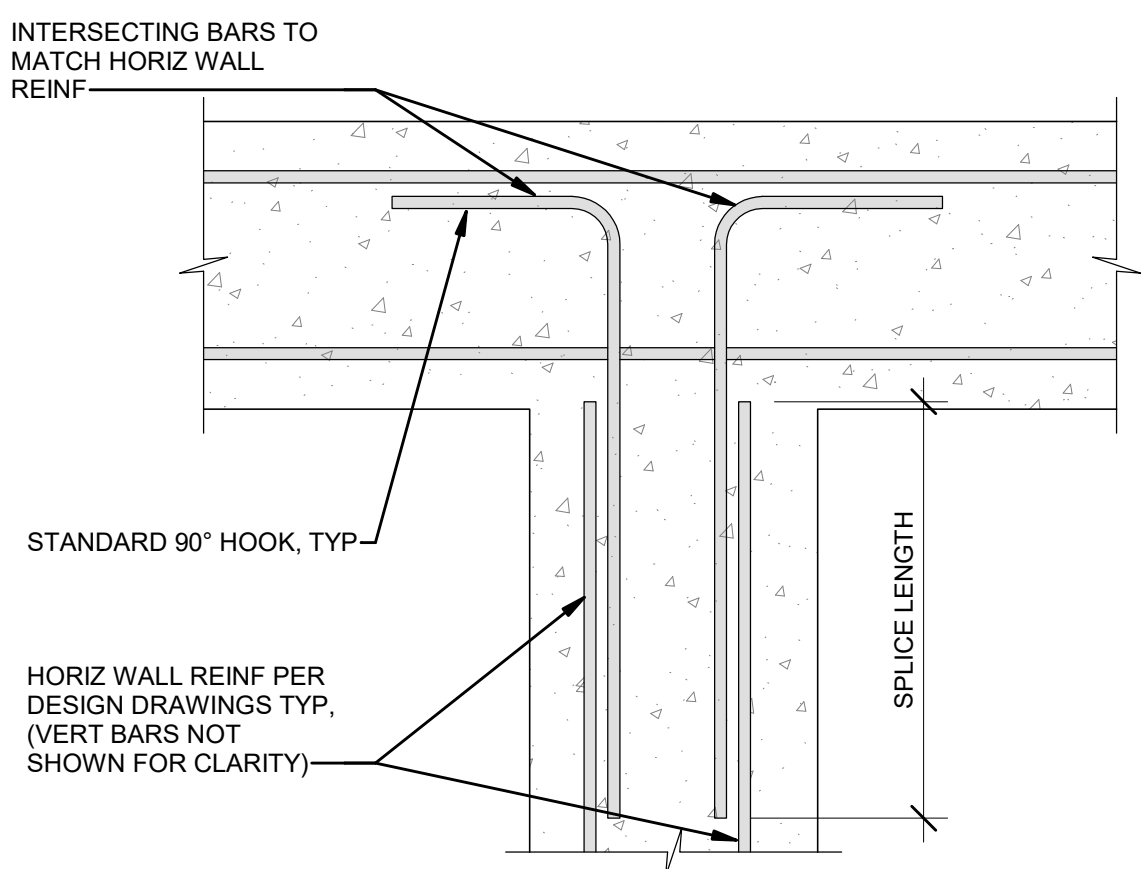
2 CR-02
EQUIPMENT PAD
w/ POST-INSTALLED DOWELS
FO-604.00 1 1/2" = 1'-0" 0 6" 12" 24"



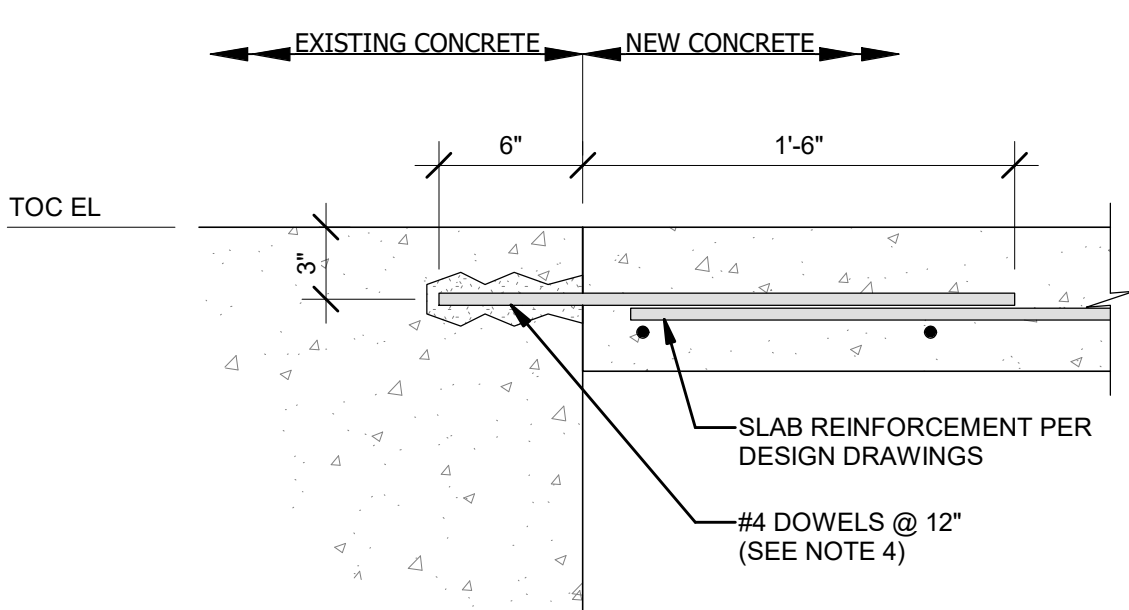
3 CR-03
WALL CORNER REINFORCEMENT
FO-604.00 1 1/2" = 1'-0" 0 6" 12" 24"



4 CR-04
WALL CORNER REINFORCEMENT
FO-604.00 1 1/2" = 1'-0" 0 6" 12" 24"



5 CR-05
WALL INTERSECTION REINFORCEMENT
FO-604.00 1 1/2" = 1'-0" 0 6" 12" 24"



6 CR-06
SLAB ON GRADE ATTACHMENT
TO CONCRETE
FO-604.00 1 1/2" = 1'-0" 0 6" 12" 24"

SHEET NOTES:

1. SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
2. SEE DRAWING FO-005.00 FOR FOUNDATION LOCATION PLAN.
3. SEE DRAWING FO-601.00 THRU FO-605.00 FOR TYPICAL CONCRETE AND TYPICAL ANCHOR BOLT DETAILS.
4. FOR POST-INSTALLED APPLICATIONS, DRILL AND INSTALL DOWELS USING HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM OR APPROVED EQUAL.

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Hitachi Energy
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Raleigh, North Carolina 27606

PROJECT

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Champlain Hudson
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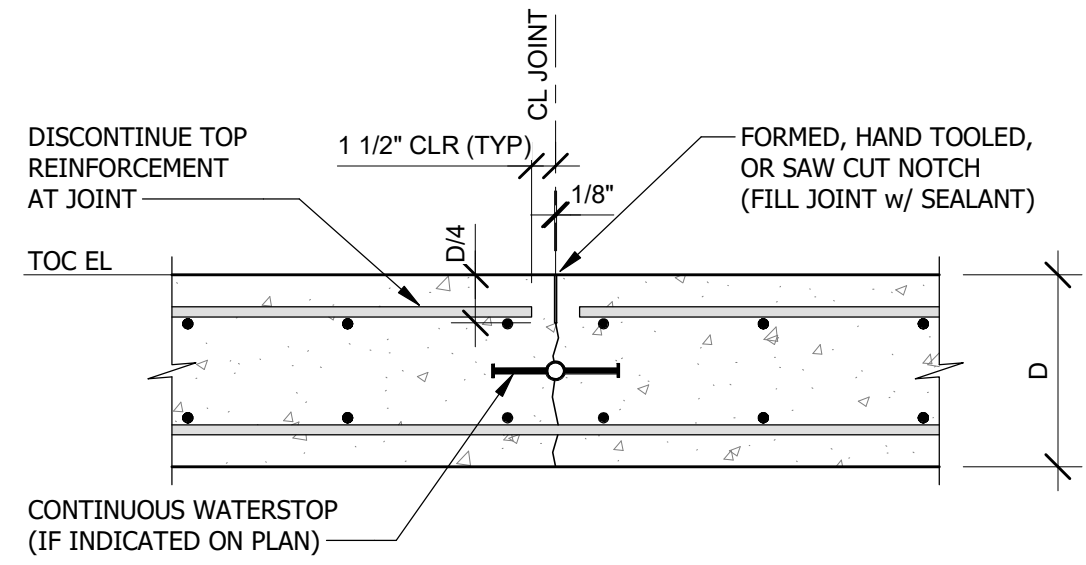
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

**CONCRETE REINFORCING
TYPICAL DETAILS**

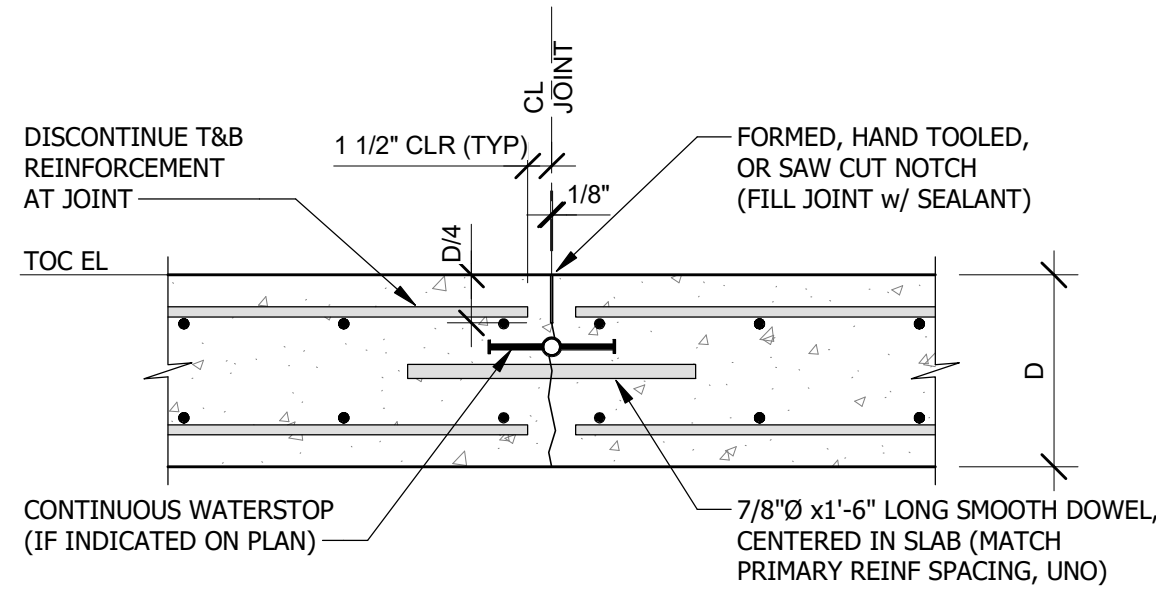


DATE 11/08/2022
PROJECT NO 105121
DRAWING BY D. FLYNN
CHECKED BY W. ABBASSI
DRAWING NO
FO-604.00
CADD FILE NO
Astoria/CHA-KIE-000-XX-M2-S-001.rvt
17 of 18

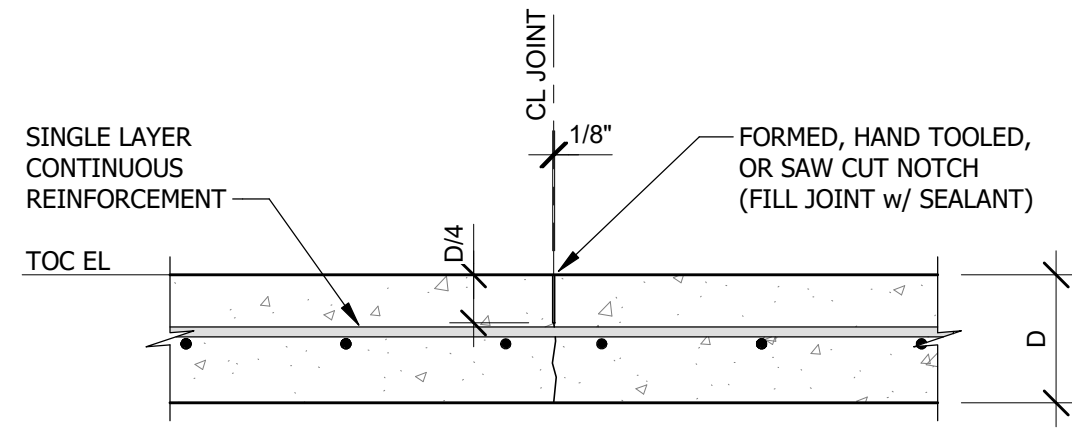
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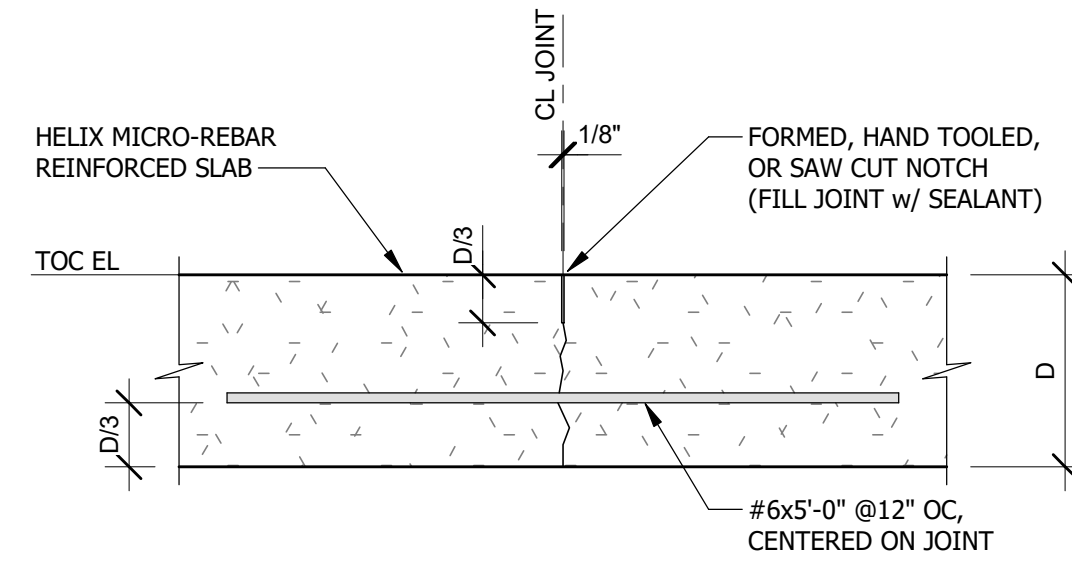
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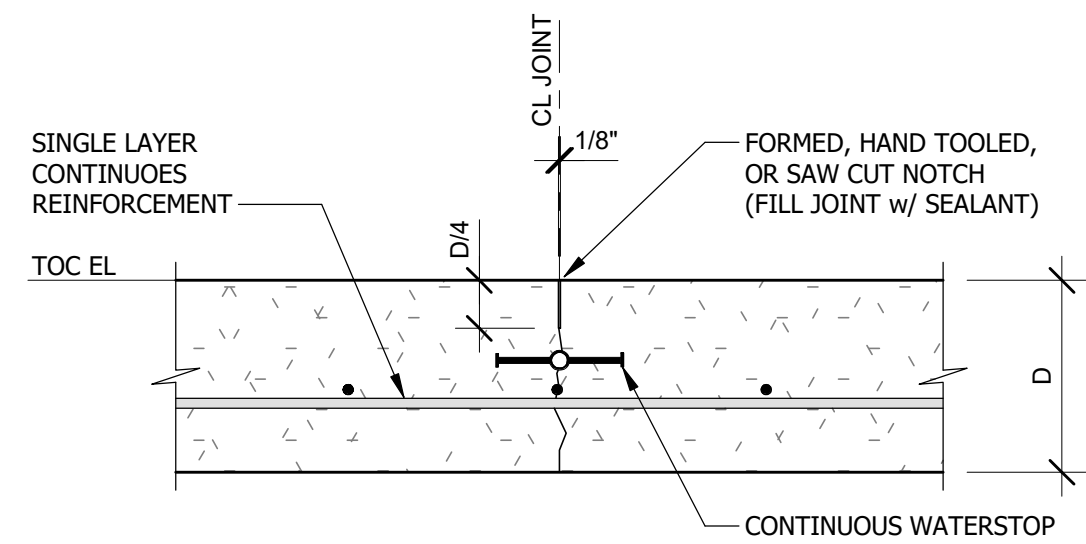
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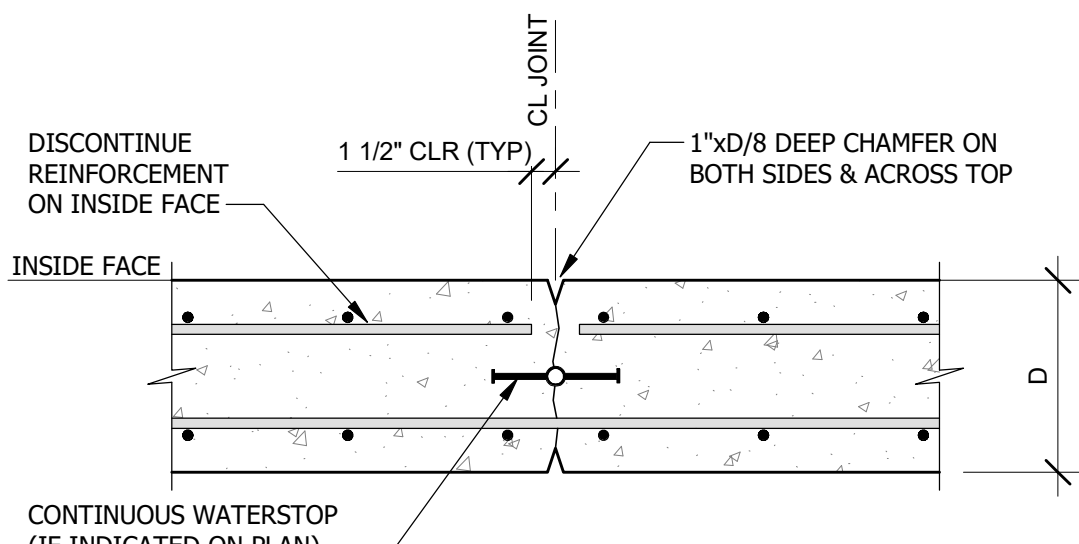
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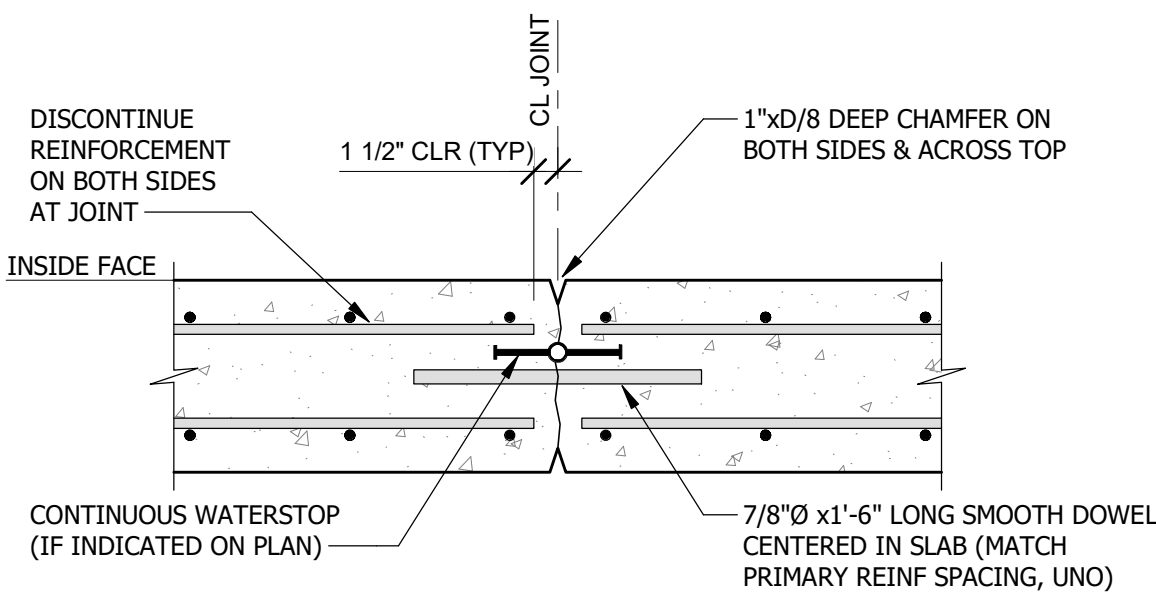
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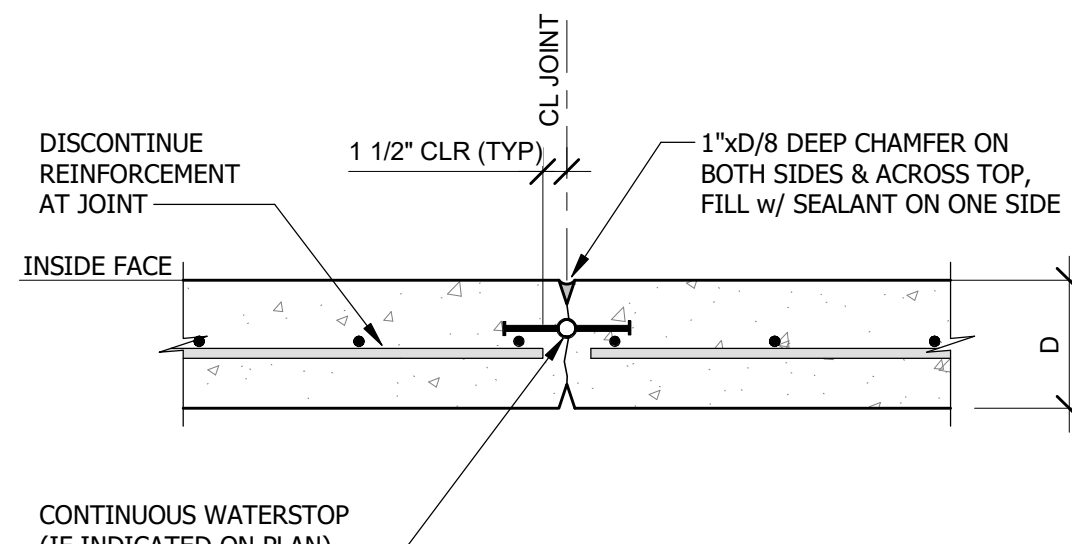
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FO-605.00 1" = 1'-0" 1' 6" 0 1' 2'



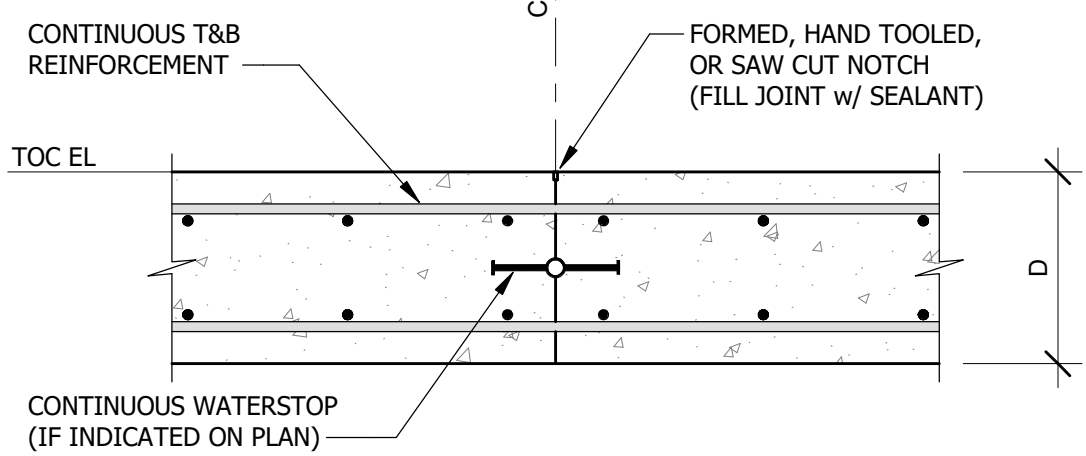
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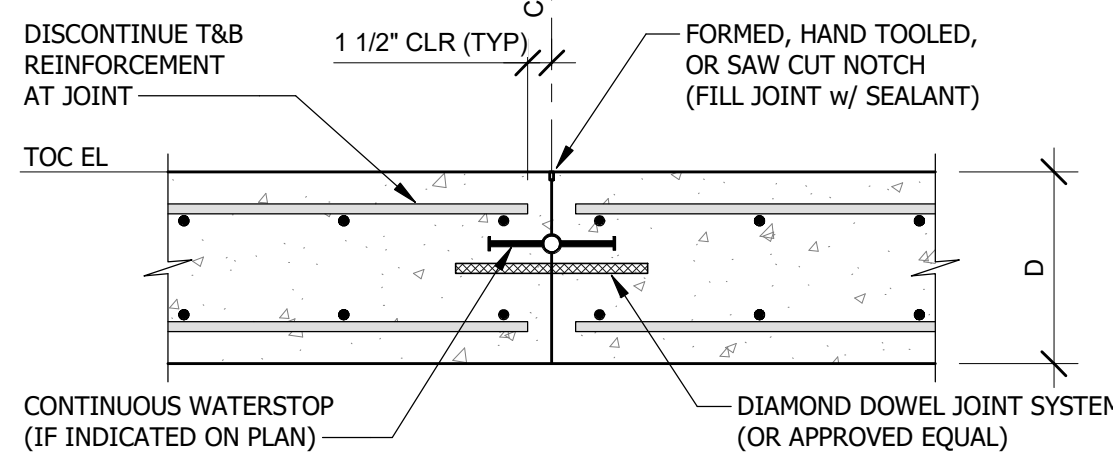
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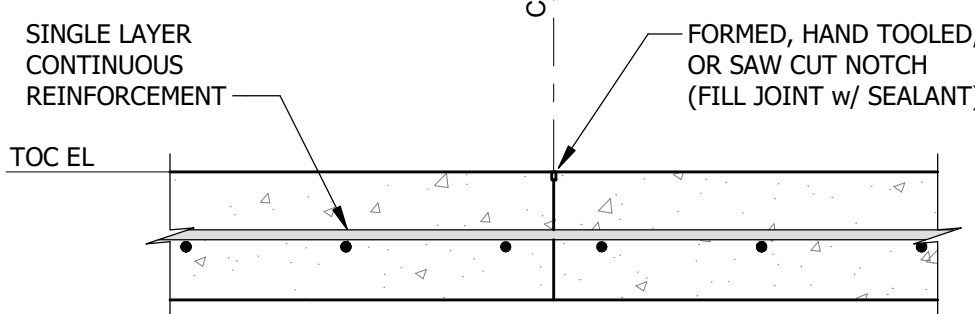
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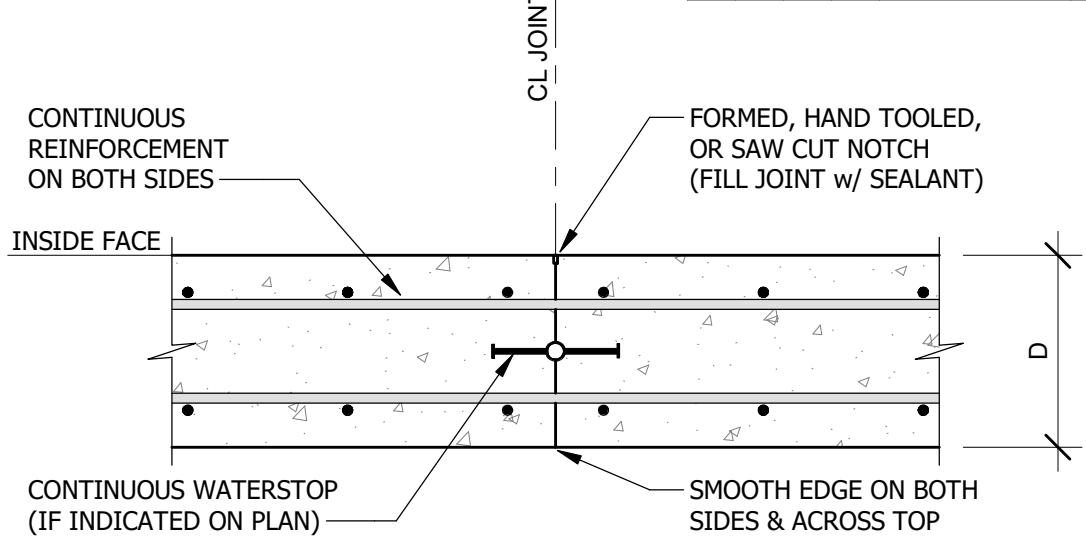
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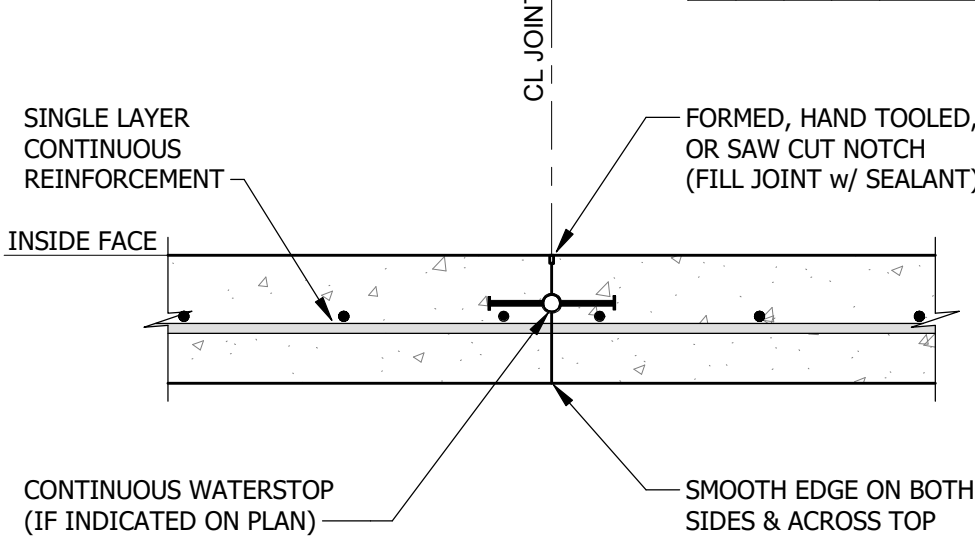
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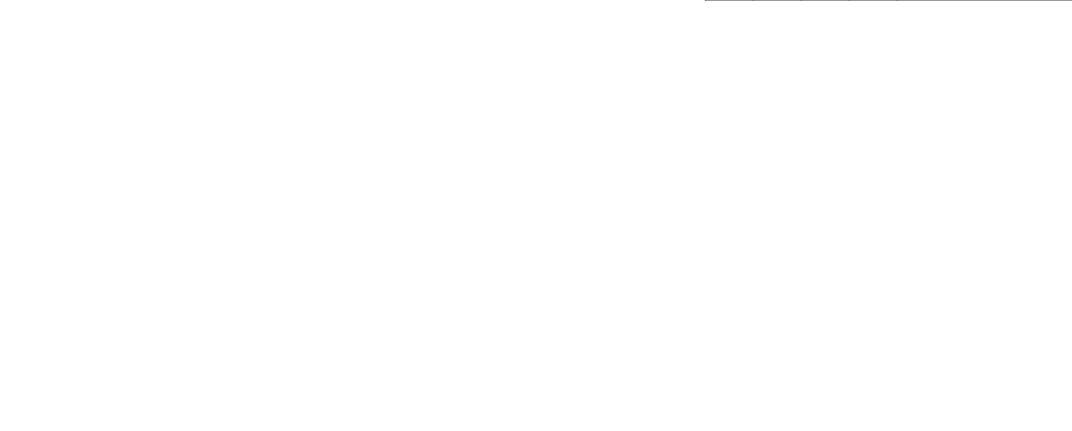
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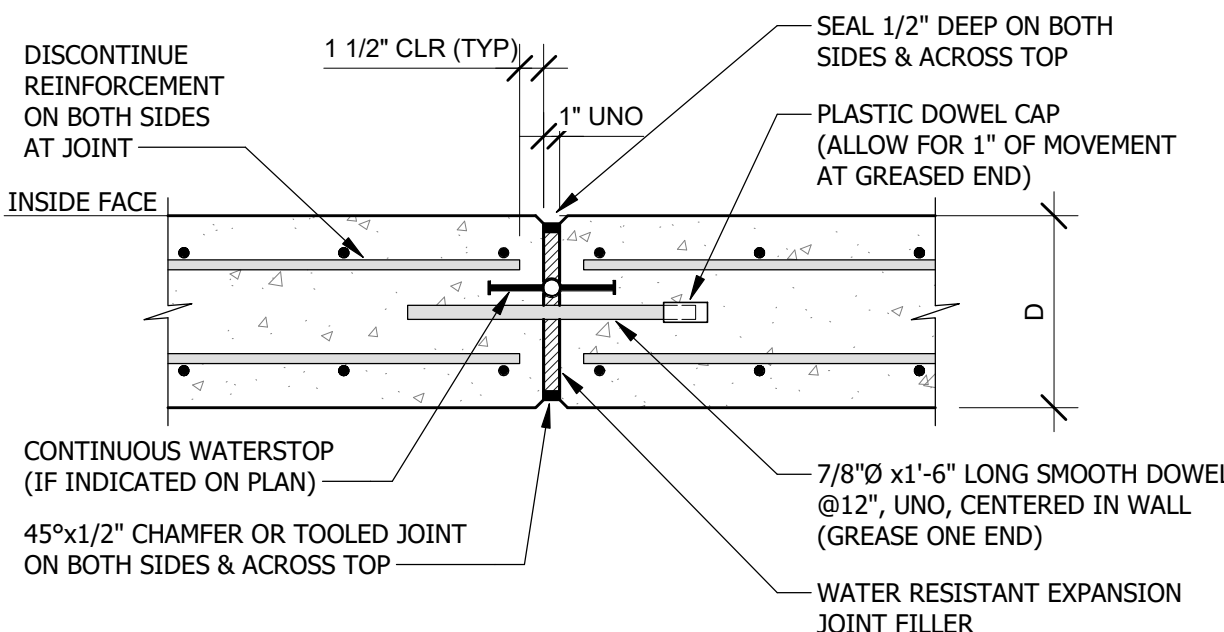
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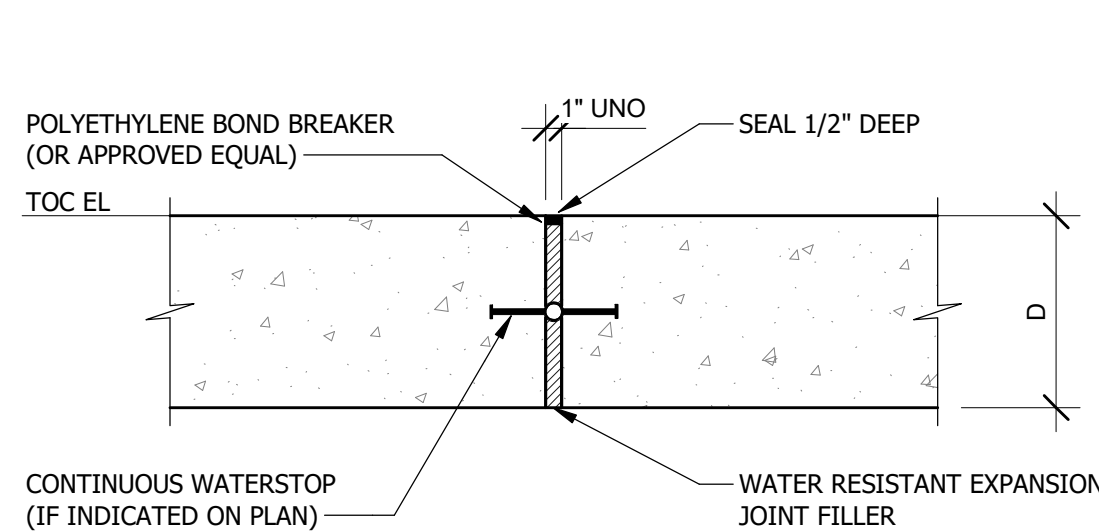
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SLAB EXPANSION JOINT
FO-605.00 1" = 1'-0" 1' 6" 0 1' 2'



15 EJ-W01
WALL EXPANSION JOINT
FO-605.00 1" = 1'-0" 1' 6" 0 1' 2'



16 IJ-S01
ISOLATION JOINT
FO-605.00 1" = 1'-0" 1' 6" 0 1' 2'

SHEET NOTES:

- SEE DRAWINGS FO-001.00 THRU FO-004.00 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS. SEE FO-001.00, SECTION "CJ CONCRETE JOINTS" FOR ADDITIONAL DETAIL INFORMATION.
- AT CONTRACTOR'S OPTION, CONSTRUCTION JOINTS MAY BE USED IN LIEU OF CONTRACTION JOINTS.

ISSUED FOR PERMIT

Engineering and
Land Surveying, P.C.

370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI
SULLIVAN
ARCHITECTURE+ENGINEERING

25 Mohawk Avenue
Sparta, NJ 07871

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| B | FINAL SUBMISSION | DJF | WA | 11/08/2022 |
| A | INTERIM SUBMISSION | DJF | WA | 08/29/2022 |

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson
Power Express

Astoria HVDC
Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

CONCRETE JOINT TYPICAL
DETAILS



DATE 11/08/2022
PROJECT NO 105121
DRAWING BY D. FLYNN
CHECKED BY W. ABBASSI
DRAWING NO
FO-605.00
CADD FILE NO
Astoria CHPE-000-XX-M2-S-001.rvt
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