

**PROJECT DESCRIPTION**

1. THE STRUCTURAL WORK SHOWN ON THESE DRAWINGS COMPRISES THE DESIGN OF TRAFFIC MAST ARM, OVERHEAD CONTACT SYSTEM AND STREETLIGHT POLES AND FOUNDATIONS; SPECIAL FOUNDATION CONDITIONS; CONCRETE CISTERN MODIFICATIONS; SUB-SIDEWALK BASEMENT MODIFICATION AND BOARDING ISLANDS AND RAMPS.

**GENERAL**

- THESE GENERAL NOTES APPLY THROUGHOUT ALL STRUCTURAL DRAWINGS EXCEPT WHERE SPECIFICALLY SHOWN BY NOTES ON DRAWINGS AND/OR DETAILS.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF CONSTRUCTION OR FABRICATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION OR FABRICATION. ANY DISCREPANCIES, INCONSISTENCIES, OR UNSOUND CONDITIONS SHALL BE REPORTED TO THE ENGINEER FOR RESOLUTION PRIOR TO THE START OF ANY CONSTRUCTION OR FABRICATION SO THAT A CLARIFICATION CAN BE ISSUED.
- DIMENSIONS ARE TO CENTERLINE OF STEEL FRAMING, FACE OF CONCRETE SURFACES, FACE OF STUDS, FACE OF CONCRETE MASONRY UNITS (CMU), TOP OF SHEATHING, OR TOP OF STRUCTURAL SLAB, UNLESS OTHERWISE NOTED.
- DIMENSIONS IN THE STRUCTURAL DRAWINGS ARE AS NOTED. DO NOT USE DIMENSIONS SCALED FROM THE STRUCTURAL DRAWINGS.
- ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE CITY.
- ALL TYPICAL DETAILS AND NOTES SHOWN ON DRAWINGS SHALL APPLY UNLESS OTHERWISE NOTED. TYPICAL DETAILS MAY NOT NECESSARILY BE INDICATED ON THE PLANS, BUT SHALL STILL APPLY AS SHOWN OR DESCRIBED IN THE DETAILS. WHERE TYPICAL DETAILS ARE NOTED ON THE DRAWINGS, THE SPECIFIED TYPICAL DETAIL SHALL BE USED. WHERE NO DETAILS ARE NOTED, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK. THE CONTRACTOR SHALL SUBMIT ALL PROPOSED ALTERNATE TYPICAL DETAILS TO THOSE PROVIDED WITH RELATED CALCULATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO SHOP DRAWING PRODUCTION AND FIELD USE.
- REFER TO OTHER DISCIPLINES' DRAWINGS AND COORDINATE INFORMATION RELATED TO THOSE OTHER DISCIPLINES' SYSTEMS FOR ITEMS SUCH AS:
  - FINISH FLOOR ELEVATIONS, CHANGES IN ELEVATION, SLOPES, DRAINS, CURBS, PADS, INSERTS, ETC.
  - WATERPROOFING AND WATERSTOPS.
  - PIPE RUNS, SLEEVES, TRENCHES, OPENINGS, ETC., EXCEPT AS SHOWN OR NOTED.
  - ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS, ETC., IN SLABS.
- FOR OPENINGS LARGER THAN 6" THAT ARE REQUIRED BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL SUBMIT DRAWINGS INDICATING OPENING LOCATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
- THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS AND/OR METHODS OF CONSTRUCTION. ALTHOUGH THE NEED FOR SHORING MAY SOMETIMES BE INDICATED IN THE STRUCTURAL DRAWINGS, IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DESIGN, PROVIDE, AND MAINTAIN TEMPORARY BRACING, SHORING, CUYING, OR OTHER TEMPORARY SUPPORT AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION OF ADJACENT STRUCTURES DURING CONSTRUCTION. THE CONTRACTOR SHALL BEAR ALL EXPENSE FOR REPAIR OR REPLACEMENT.
- THE USE OF NEW CONSTRUCTION FOR TEMPORARY SUPPORT OR STORAGE OF CONSTRUCTION EQUIPMENT OR MATERIALS IS RESTRICTED TO THE DESIGN CAPACITY OF THE NEW CONSTRUCTION AT THE TIME IT IS TO BE USED. EQUIPMENT OR MATERIALS SHALL BE PLACED SO AS NOT TO EXCEED THE CAPACITY OF INDIVIDUAL ELEMENTS. PROVIDE ADEQUATE, ENGINEERED SHORING AND/OR BRACING WHERE DESIGN CAPACITY IS NOT SUFFICIENT.

- CONSTRUCTION LOADS SHALL NOT BE PLACED ON NEW CONCRETE CONSTRUCTION, FOR AT LEAST 7 DAYS AFTER CONCRETE PLACEMENT.
- SPECIFICATIONS AND DETAILING OF ALL WATERPROOFING AND DRAINAGE ITEMS, ALTHOUGH SOMETIMES INDICATED ON THE STRUCTURAL DRAWINGS FOR GENERAL INFORMATION PURPOSES ONLY, ARE SOLELY THE DESIGN RESPONSIBILITY OF OTHERS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING PIPES, DUCTS, AND UTILITIES, WHETHER SHOWN HEREIN OR NOT, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSE FOR REPAIR OR REPLACEMENT.
- ALL STRUCTURAL MEMBERS AND ELEMENTS SHOWN ON THE STRUCTURAL DRAWINGS ARE NEW UNLESS NOTED (E) FOR EXISTING CONDITIONS.

**BASIS OF DESIGN**

- ALL NEW CONSTRUCTION SHALL CONFORM TO THE 2013 SAN FRANCISCO BUILDING CODE (SFBC) WHICH COMPRISES THE 2013 CALIFORNIA BUILDING CODE (CBC) AND 2013 SAN FRANCISCO AMENDMENTS.
- THE PUBLICATIONS LISTED BELOW ARE THE GOVERNING CODES AND STANDARDS REFERENCE BY THE CBC AND ARE REFERENCED HEREIN BY THEIR BASIC DESIGNATION. IN THE CASE OF CONFLICTING REQUIREMENTS, THE SFBC SHALL GOVERN.
 

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, "STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS", SIXTH EDITION 2013
ACI 301-10	AMERICAN CONCRETE INSTITUTE, "SPECIFICATIONS FOR STRUCTURAL CONCRETE", 2010 EDITION
ACI 318-11	AMERICAN CONCRETE INSTITUTE, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", 2011 EDITION
RCSC	RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS, "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", JUNE 30, 2004
AISC 303-05	AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", MARCH 18, 2005
AISC 341-10	AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS", 2010
AISC 360-10	AMERICAN INSTITUTE OF STEEL CONSTRUCTION, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", JUNE 22, 2010
ASCE 7-10	AMERICAN SOCIETY OF CIVIL ENGINEERS, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", 2010 EDITION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS D1.1	AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - STEEL", 2010 EDITION
AWS D1.4	AMERICAN WELDING SOCIETY, "STRUCTURAL WELDING CODE - REINFORCING STEEL", 2011 EDITION

**STRUCTURAL DESIGN CRITERIA**

- DESIGN LIVE LOADS:
 

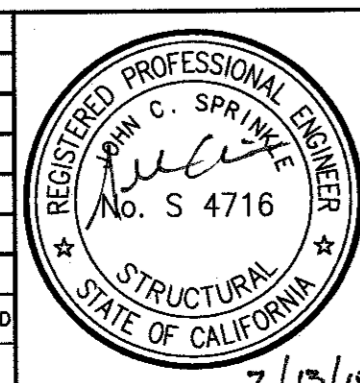
PLATFORMS:	100 PSF
PUBLIC AREAS	50 PLF OR 200 LB
RAILING	
SUB-SIDEWALK BASEMENT LOCATIONS:	
SIDEWALKS/DRIVEWAY	250 PSF OR 8,000 LB
(SUBJECT TO TRUCKING)	
- WIND DESIGN CRITERIA:
 

TRAFFIC AND OCS POLES	100 MPH (3 SECOND GUST)
BASIC WIND SPEED:	AASHTO
METHOD	

INDEX TO 2010 CALTRANS STANDARD PLANS	
SHEET NO.	TITLE
A10A	ABBREVIATIONS (SHEET 1 OF 2)
RSP A10B	ABBREVIATIONS (SHEET 2 OF 2)
A10C	LINES AND SYMBOLS (SHEET 1 OF 3)
A10D	LINES AND SYMBOLS (SHEET 2 OF 3)
A10E	LINES AND SYMBOLS (SHEET 3 OF 3)
ES-4D	ELECTRICAL SYSTEMS (SIGNAL MOUNTING)
ES-7M	ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD - DETAIL NO. 1)
ES-7N	ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD - DETAIL NO. 2)
ES-7O	ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD - DETAIL NO. 3)
REFERENCE:	

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NO.	DATE	DESCRIPTION	BY	APPROVED



**DESIGN AND ENGINEERING DIVISION**  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
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Section Mgr:	RAYMOND LUI	Date:	7/13/15
Deputy Division Mgr.:	FERNANDO CISNEROS		
Division Mgr.:	PATRICK RIVERA		

CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED: *Vincent Harris*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

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**FOUNDATIONS**

- THE FOUNDATION DESIGN IS BASED UPON THE PROJECT GEOTECHNICAL MEMORANDUM "GEOTECHNICAL PARAMETERS FOR FOOTING DESIGN OF LIGHTLY-LOADED STRUCTURES FOR VAN NESS AVENUE BUS RAPID TRANSIT (BRT) PROJECT" PREPARED BY THE DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING, DATED NOVEMBER 25, 2014.
- REFER TO THE GEOTECHNICAL REPORT FOR DESIGN SOIL PARAMETERS AND ADDITIONAL INFORMATION AND RECOMMENDATIONS NOT NOTED HERE.
- THE GEOTECHNICAL ENGINEER SHALL VERIFY THE CONDITIONS AND/OR ADEQUACY OF ALL SUBGRADES, ENGINEERED FILLS, AND BACKFILLS BEFORE PLACEMENT OF FILLS, FOOTINGS, SLABS, OR OTHER CONSTRUCTION DEPENDENT UPON THEM.
- EXCAVATIONS FOR FOOTINGS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING REINFORCING AND CONCRETE. THE CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER WHEN THE EXCAVATIONS ARE READY FOR OBSERVATION BY THE GEOTECHNICAL ENGINEER.
- FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED NATIVE SOIL OR ENGINEERED FILL. ALL ABANDONED FOOTINGS, UTILITIES, ETC., SHALL BE REMOVED. ALL FOOTINGS SHALL BE FOUNDED AT A DEPTH AT LEAST 30" BELOW THE LOWEST ADJACENT GRADE. FOOTING DEPTHS SHOWN ON THE STRUCTURAL DRAWINGS ARE MINIMUM DEPTHS AND SHALL BE VERIFIED IN THE FIELD BY THE GEOTECHNICAL ENGINEER.
- SIDES OF FOUNDATIONS SHOWN STRAIGHT ARE FORMED. IF SITE CONDITIONS ALLOW AND GEOTECHNICAL ENGINEER CONCURS, SIDES OF FOUNDATION MAY BE FORMED OR NOT FORMED AT CONTRACTOR'S OPTION.
- WHERE FOUNDATIONS ARE CAST AGAINST EARTH, SLOPE SIDES OF EXCAVATIONS AS APPROVED BY GEOTECHNICAL ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF SLOUGHED MATERIALS BEFORE AND DURING CONCRETE PLACEMENT. CONCRETE COVER FOR REINFORCEMENT MAY BE AFFECTED.
- CONTRACTOR SHALL PROVIDE FOR DE-WATERING IF WATER IS PRESENT IN THE EXCAVATION. DE-WATERING PLANS SHALL BE SUBMITTED FOR REVIEW. DE-WATERING PLANS MAY INCLUDE A MONITORING PROGRAM TO EVALUATE SETTLEMENT IN THE ADJACENT IMPROVEMENTS. SEE GEOTECHNICAL REPORT.
- ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE THE CONCRETE OR GROUT HAS ATTAINED FULL DESIGN STRENGTH UNLESS SPECIFICALLY APPROVED BY THE ENGINEER IN WRITING. THE CONTRACTOR SHALL BRACE OR PROTECT ALL BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL STRENGTH. THE CONTRACTOR SHALL PROVIDE FOR THE DESIGN, PERMITS, AND INSTALLATION OF SUCH BRACING.
- OVER-EXCAVATED FOOTINGS SHALL BE BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) (f'c min = 100 PSI, f'c max = 1,200 PSI).
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF APPROPRIATE, ADEQUATE SHORING AND BRACING OF FOUNDATION EXCAVATION, AND UNDERPINNING OF EXISTING STRUCTURES TO ENSURE PROTECTION OF LIFE AND ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES. UNDERPINNING, SHORING, LAGGING, ETC., SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA AND SHALL BE CONSTRUCTED UNDER SEPARATE PERMIT. SHORING PLAN TO BE SUBMITTED TO THE GEOTECHNICAL ENGINEER AND THE STRUCTURAL ENGINEER FOR REVIEW TO ENSURE CONFORMANCE WITH DESIGN DOCUMENTS.
- THE CONTRACTOR SHALL NOT UNDERMINE EXISTING FOUNDATIONS AND STRUCTURES DURING EXCAVATION. IF UNDERMINING OCCURS, THE CONTRACTOR SHALL PROVIDE CORRECTIVE MEASURES FOR ENGINEER TO REVIEW AND APPROVE AT CONTRACTOR'S EXPENSE.
- INSTALLATION OF CAST-IN-DRILLED HOLE PILES SHALL BE PERFORMED WHILE UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER OF RECORD.
- THE GEOTECHNICAL ENGINEER SHALL PREPARE A LETTER FOR THE DEPARTMENT OF BUILDING INSPECTION GIVING AN OPINION REGARDING CONFORMANCE OF THE FOOTING EXCAVATIONS, ENGINEERED FILL COMPACTION, SUBGRADE PREPARATION, AND BACKFILL WITH THE REQUIREMENTS CONTAINED IN THE GEOTECHNICAL REPORT.

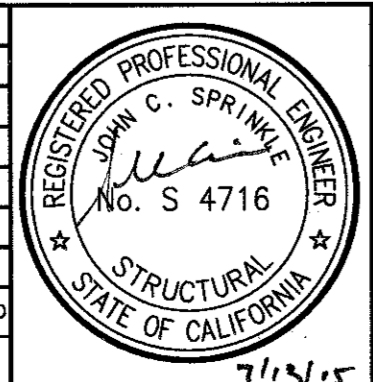
**CONCRETE**

- MIXING, BATCHING, TRANSPORTING, PLACING, AND CURING OF ALL CONCRETE AND SPECIFICATION OF CONCRETE MATERIALS, SHALL CONFORM TO ACI 301 "SPECIFICATION FOR STRUCTURAL CONCRETE", EXCEPT AS NOTED BELOW.
  - CONCRETE SHALL BE READY-MIXED CONFORMING TO ASTM C94. CEMENT SHALL BE PORTLAND CEMENT TYPE I/II, CONFORMING TO ASTM C150. ALL CONCRETE USED IN SLABS-ON-GRADE SHALL BE DESIGNED WITH A SHRINKAGE LIMITATION OF 0.04% AFTER 28 DAYS OF DRYING.
  - CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER AND APPROVED PRIOR TO USE. SELECTION OF CONCRETE MIX PROPORTIONS SHALL BE IN ACCORDANCE WITH ACI 301. MIX PROPORTIONS SHALL MEET OR EXCEED THE REQUIREMENTS LISTED BELOW FOR THE LOCATIONS NOTED. THE MORE STRINGENT OF THE REQUIREMENTS LISTED SHALL GOVERN.
  - SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCM), SUCH AS SLAG, FLY ASH, SILICA FUME, AND CALCINED CLAY, AS A PERCENTAGE OF TOTAL WEIGHT OF CEMENTITIOUS MATERIAL SHALL BE A MINIMUM OF 25 PERCENT AND A MAXIMUM OF 50 PERCENT. COAL FLY ASH, AS A PERCENTAGE OF TOTAL WEIGHT OF CEMENTITIOUS MATERIAL, SHALL BE A MAXIMUM OF 20 PERCENT. COAL FLY ASH SHALL BE CLASS F, MEETING ASTM C618 REQUIREMENTS. FINELY GROUND GRANULATED BLAST-FURNACE SLAG SHALL CONFORM TO ASTM C989. WATER/CEMENT RATIO SHALL BE BASED ON TOTAL CEMENTITIOUS MATERIAL, INCLUDING SUPPLEMENTARY CEMENTITIOUS MATERIALS.
  - PROPORTIONS OF AGGREGATE TO CEMENTITIOUS PASTE SHALL BE SUCH AS TO PRODUCE A DENSE, WORKABLE MIX THAT CAN BE PLACED WITHOUT SEGREGATION OR EXCESS FREE SURFACE WATER. SUPERPLASTICIZERS MAY BE USED TO IMPROVE WORKABILITY IN THIN OR CONGESTED SECTIONS.
  - ALL CONCRETE USED IN HORIZONTAL SURFACES EXPOSED TO THE WEATHER SHALL CONTAIN AN ACCEPTABLE ADMIXTURE TO PRODUCE AIR-ENTRAINED CONCRETE WITH TOTAL AIR CONTENT OF 4.5 PERCENT +/- 1 PERCENT. AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE OF THE TRUCK. IF CONCRETE IS PUMPED, AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE END OF THE PUMP LINE. TESTS FOR AIR CONTENT SHALL MEET ASTM C172 REQUIREMENTS.
  - CONCRETE SHALL HAVE THE FOLLOWING CHARACTERISTICS:
- | LOCATION      | STRENGTH, f'c | TEST AGE | MAXIMUM        |                    | MAX SLUMP |
|---------------|---------------|----------|----------------|--------------------|-----------|
|               |               |          | AGGREGATE SIZE | WATER/CEMENT RATIO |           |
| FOOTINGS      | 4,000 PSI     | 28 DAYS  | 1 1/2"         | 0.50               | 4"        |
| CIDH PILES    | 4,000 PSI     | 28 DAYS  | 1"             | 0.45               | 4"        |
| SLAB-ON-GRADE | 4,000 PSI     | 28 DAYS  | 3/4"           | 0.45               | 4"        |
- PIPES OTHER THAN ELECTRICAL CONDUITS SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED BY THE ENGINEER. OUTSIDE DIAMETER OF CONDUIT EMBEDDED IN CONCRETE SHALL NOT EXCEED 1/5 TIMES THE MEMBER THICKNESS, OR 1 1/4", WHICHEVER IS LESS, WITHOUT APPROVAL OF THE ENGINEER. MINIMUM CLEAR DISTANCE BETWEEN CONDUITS OR REBAR SHALL BE 3 TIMES CONDUIT-DIAMETER (LARGER CONDUIT) OR 1 INCH, WHICHEVER IS GREATER. CONDUIT EMBEDDED IN SLABS SHALL BE EMBEDDED IN ONE LAYER AT MID-DEPTH OF SLABS. CONDUITS SHALL BE FIRMLY CHAISED AND TIED TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. CONDUIT CAN BE TIED TO REBAR WHEN ORIENTED PERPENDICULAR TO THEM, PROVIDE THE LOCATION OF THE REBAR IS NOT AFFECTED BY THE CONDUIT. PLACE #3 AT 12 INCHES ADDED REINFORCEMENT PERPENDICULAR TO CONDUITS WHERE REQUIRED TO SUPPORT CONDUIT. CONDUITS WITHOUT CLEARANCE NOTED ABOVE SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION. ADDED TRIM REINFORCEMENT WILL BE REQUIRED WHERE CLEARANCES CANNOT BE MET, SUCH AS ELECTRICAL PANEL ROOMS.
  - SLEEVES, WHEN EMBEDDED IN CONCRETE, SHALL BE SPACED WITH ONE SLEEVE-DIAMETER (LARGER SLEEVE) CLEAR BETWEEN ADJACENT SLEEVES OR REBAR, OR 1 INCH, WHICHEVER IS GREATER. SLEEVES WITHOUT CLEARANCE NOTED ABOVE SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION. ADDED TRIM REINFORCEMENT WILL BE REQUIRED WHERE CLEARANCES CANNOT BE MET, SUCH AS ELECTRICAL PANEL ROOMS.

- ALUMINUM PIPES, CONDUITS, AND SLEEVES SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE.
- THE CONTRACTOR SHALL INFORM THE ENGINEER AT LEAST 3 DAYS PRIOR TO POURING ANY STRUCTURAL CONCRETE SO THAT THE ENGINEER MAY HAVE THE OPPORTUNITY OF REVIEWING THE WORK PRIOR TO CONCRETE PLACEMENT.
- ALL CONCRETE EXCEPT SLABS-ON-GRADE 6" THICK OR LESS SHALL BE MECHANICALLY VIBRATED AS TO COMPLETELY FILL THE FORM WITHOUT CAUSING UNDOE SEGREGATION.
- FOR EACH CLASS OF CONCRETE, FOUR TEST CYLINDERS FROM EACH 150 CUBIC YARDS OR 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS, PLACED IN ANY ONE DAY, SHALL BE SECURED AND TESTED BY THE BUREAU OF CONSTRUCTION MANAGEMENT - ONE TO BE TESTED AT 7 DAYS, TWO AT 28 DAYS, AND THE FOURTH HELD IN RESERVE. FOR POST-TENSIONED CONCRETE, SECURE FIVE CYLINDERS PER 150 CUBIC YARDS OR 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS, PLACE IN ANY ONE DAY, TWO SETS MINIMUM - ONE TO BE TESTED AT 4 DAYS, TWO AT 28 DAYS, AND TWO HELD IN RESERVE.
- THE CONTRACTOR SHALL REMOVE AND REPLACE ANY CONCRETE WHICH FAILS TO ATTAIN SPECIFIED STRENGTH IN 28 DAYS IF SO DIRECTED BY THE ENGINEER. ANY DEFECTS IN THE HARDENED CONCRETE SHALL BE SATISFACTORILY REPAIRED OR THE HARDENED CONCRETE SHALL BE REPLACED.
- PROJECTING CORNERS SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.
- ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 318 AND THE TYPICAL CONSTRUCTION JOINT DETAILS SHOWN ON THE STRUCTURAL DRAWINGS. ALL SURFACES OF CONSTRUCTION JOINTS SHALL BE CLEANED TO REMOVE DUST, CHIPS, OR OTHER FOREIGN MATTER PRIOR TO PLACING THE ADJACENT CONCRETE. THE CONTRACTOR SHALL SUBMIT THE PROPOSED LOCATIONS OF CONSTRUCTION JOINTS TO THE ARCHITECT FOR REVIEW PRIOR TO START OF CONSTRUCTION.
- WHERE NEW CONCRETE IS TO BE CAST AGAINST EXISTING CONCRETE, THE EXISTING CONCRETE SURFACE SHALL BE ROUGHENED TO A MINIMUM OF 1/4" AMPLITUDE BY SANDBLASTING OR BUSH HAMMERING. THE EXISTING SURFACE SHALL BE CLEANED AND LANTANCE REMOVED. APPLY "SIKADUR 32, HI-MOD" EPOXY BONDING ADHESIVE, AS MANUFACTURED BY SIKA CORPORATION, LYNDHURST, NEW JERSEY, OR APPROVED EQUAL, TO EXISTING CONCRETE SURFACE PRIOR TO PLACEMENT OF NEW CONCRETE.

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NO.	DATE	DESCRIPTION	BY	APPROVED



**DESIGN AND ENGINEERING DIVISION**  
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Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: *Patrick Rivera* PATRICK RIVERA

Date: 7/13/15  
11/20/15  
4/24/15

DESIGNED	DATE
FR	7/13/15
DL	11/20/15
JS	4/24/15
RL	
PW	
FM	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED: *Kevin Han*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

1289	REVISION
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GENERAL NOTES

**REINFORCING STEEL**

- REINFORCING STEEL DETAILING, FABRICATION, AND PLACEMENT SHALL CONFORM TO THE ACI 318, CHAPTER 7.
- REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS:  

DEFORMED BARS	ASTM A615 OR ASTM A706, GRADE 60
WELDED REINFORCEMENT, WHEN SPECIFIED BY THE ENGINEER	ASTM A706, GRADE 60
WELDED WIRE FABRIC (WWF) (SMOOTH WIRE)	ASTM A185
WELDED WIRE REINFORCEMENT (DEFORMED WIRE)	ASTM A496, ASTM A497
SPIRAL REINFORCEMENT	ASTM A615
- ALL STEEL REINFORCING BAR BENDS SHALL BE MADE COLD.
- REINFORCEMENT AND EMBEDMENTS SHALL BE ACCURATELY POSITIONED AND SECURED AGAINST DISPLACEMENT BEFORE AND DURING CONCRETE PLACEMENT. PROVIDE SUFFICIENT SUPPORTS TO PREVENT DAMAGE OR DISPLACEMENT DUE TO CONSTRUCTION TRAFFIC ON REINFORCEMENT.
- PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE. SPLICE ONLY AS SHOWN OR APPROVED.
- WHERE NOTED ON PLANS, PROVIDE THREADED COUPLERS CAPABLE OF DEVELOPING 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING STEEL. THREADED COUPLERS SHALL BE "LENTON COUPLERS", AS MANUFACTURED BY ERICO COMPANY, SOLON, OHIO, OR APPROVED EQUAL WITH CURRENT ICC-ES EVALUATION REPORT.
- WELDING (INCLUDING TACK WELD) OF REINFORCING BARS IS PROHIBITED EXCEPT WHERE DETAILED OR APPROVED IN WRITING BY ENGINEER.
- REINFORCEMENT CROSSING CONSTRUCTION JOINTS SHALL BE CONTINUOUS OR LAP SPLICED PER TENSION LAP TABLE OR APPROVED COUPLERS.
- MINIMUM CLEAR COVER DISTANCES FROM FINISHED FACE OF CONCRETE TO STEEL REINFORCEMENT SHALL BE AS FOLLOWS:  

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3"
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THROUGH #18 BARS	2"
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1 1/2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, JOISTS	
#14 AND #18 BARS	1 1/2"
#11 BAR AND SMALLER	3/4"
BEAMS, COLUMNS	1 1/2"
- SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION. SUBMIT MILL CERTIFICATES FOR REINFORCING STEEL PRIOR TO REBAR PLACEMENT.

**STRUCTURAL STEEL AND MISCELLANEOUS IRON**

- STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL BE FABRICATED AND ERECTED ACCORDING TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S "SPECIFICATIONS FOR DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION, AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", LATEST EDITION.
- UNLESS OTHERWISE NOTED, STRUCTURAL STEEL MATERIAL SHALL CONFORM TO THE FOLLOWING:  

WIDE FLANGE BEAMS AND COLUMNS	ASTM A992, FY = 50 KSI
OTHER HOT-ROLLED STRUCTURAL SHAPES	ASTM A36
HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500, GRADE B
PIPE	ASTM A53, GRADE B
PLATES AND BARS	ASTM A36 OR ASTM A572
TAPERED STEEL TUBE	ASTM A572
- UNLESS OTHERWISE NOTED, BOLTS WASHERS, NUTS, AND SHEAR STUDS SHALL CONFORM TO THE FOLLOWING:  

MACHINE BOLTS (M.B.)	ASTM A307, GRADE A
HIGH-STRENGTH BOLTS (H.S.B.)	ASTM A325 OR ASTM A490
ANCHOR RODS AND THREADED RODS	ASTM A36 OR ASTM F1554
NUTS	ASTM A563
WASHERS	ASTM F436
SHEAR STUD CONNECTORS	ASTM A108
- ALL STEEL TO STEEL BOLTED CONNECTIONS SHALL BE BOLTED WITH HIGH-STRENGTH BOLTS CONFORMING TO ASTM A325 OR ASTM A490. OTHER BOLTED CONNECTIONS, INCLUDING ANCHOR BOLTS, SHALL BE BOLTED WITH UNFINISHED BOLTS CONFORMING TO ASTM A307.
- ALL WELDED CONNECTIONS SHALL BE WELDED ACCORDING TO THE "STRUCTURAL WELDING CODE - STEEL", AWS D1.1. WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED FOR THE WELDS TO BE MADE. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, UNLESS OTHERWISE NOTED.
- THE WELD LENGTHS CALLED FOR ON THE STRUCTURAL DRAWINGS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE FILLET WELD SYMBOL IS GIVEN WITHOUT INDICATION OF SIZE, USE THE MINIMUM SIZE WELDS AS SPECIFIED IN THE AISC "MANUAL OF STEEL CONSTRUCTION".
- PROVIDE GALVANIZED STEEL IN ACCORDANCE WITH ASTM A123 "STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS" WHERE INDICATED.
- ADDITIONAL MISCELLANEOUS METAL ITEMS SUCH AS EMBEDS, RAILINGS, AND SUPPORTS FOR INTERIOR FINISHES MAY BE SHOWN ON DRAWINGS PREPARED BY OTHERS. SEE ARCHITECTURAL DRAWINGS AS REQUIRED.
- SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
- COMPLETE JOINT PENETRATION (C.J.P.) AND PARTIAL JOINT PENETRATION (P.J.P.) WELDS SHALL BE EXAMINED BY ULTRASONIC TESTING. ALL TESTING AND INSPECTION SHALL CONFORM TO CBC REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- ERECTION CLIPS, TEMPORARY BRACING, ETC., REQUIRED BY THE CONTRACTOR ARE NOT SHOWN.

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NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND  
ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Date: 7/13/15  
Deputy Division Mgr: FERNANDO CISNEROS  
7/20/15  
Division Mgr: PATRICK RIVERA  
7/29/15

DESIGNED	RR
DRAWN	DL
CHECKED	JS
REVIEWED	AL
RECOMMENDED	PW
APPROVED	F.M.
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*Vincent...*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT

1289
CL-29070
ST-003
REVISION
0

GENERAL NOTES

**GROUT AND ADHESIVES**

- NON-SHRINK GROUT SHALL BE "SIKAGROUT 212", AS MANUFACTURED BY SIKA CORPORATION, LYNDHURST, NEW JERSEY, OR APPROVED EQUAL. NON-SHRINK GROUT SHALL BE NON-METALLIC AND CONTAIN NO CHLORIDES.

**ADHESIVE AND MECHANICAL ANCHORS**

- ADHESIVE ANCHORS FOR CONCRETE CONSTRUCTION SHALL USE "HILTI HIT-RE 500-SD EPOXY" (ICC-ES ESR-2322), AS MANUFACTURED BY HILTI INC., TULSA, OKLAHOMA, OR "SIMPSON SET-XP" (ICC-ES ESR-2508), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA, OR APPROVED EQUAL. ADHESIVE ANCHORS SHALL CONFORM TO ICC-ES ACCEPTANCE CRITERIA AC308 FOR CRACKED AND UNCRACKED CONCRETE.

- ADHESIVE ANCHORS IN CONCRETE SHALL BE INSTALLED WITH THE FOLLOWING MINIMUM EMBEDMENT AND DIRECT TENSION TEST LOAD AND/OR TORQUE TEST LOAD, U.O.N.:

REBAR OR THREADED BOLT	MIN EMBED	TENSION TEST LOAD	MIN TORQUE
#3 OR 3/8" DIA	3 3/8"	2,000 POUNDS	20 FOOT-POUNDS
#4 OR 1/2" DIA	4 1/2"	4,000 POUNDS	40 FOOT-POUNDS
#5 OR 5/8" DIA	5 5/8"	6,000 POUNDS	60 FOOT-POUNDS
#6 OR 3/4" DIA	6 3/4"	9,000 POUNDS	90 FOOT-POUNDS
#7 OR 7/8" DIA	7 7/8"	12,000 POUNDS	
#8 OR 1" DIA	9"	15,000 POUNDS	

5 PERCENT OF ALL NEW ADHESIVE ANCHORS IN EXISTING CONCRETE, BUT NOT LESS THAN TWO ANCHORS, SHALL BE SUBJECT TO DIRECT TENSION TEST, AND AN ADDITIONAL 20 PERCENT, BUT NOT LESS THAN THREE ANCHORS, SHALL BE TESTED USING A TORQUE CALIBRATED WRENCH. IF ANY ONE ANCHOR FAILS, THEN ALL ANCHORS INSTALLED BY THAT CREW SHALL BE TESTED. ANCHORS THAT FAIL THE TEST LOAD SHALL BE REPLACED AND RE-TESTED AT CONTRACTOR'S EXPENSE.

- MECHANICAL EXPANSION ANCHORS FOR CONCRETE CONSTRUCTION SHALL BE "HILTI KWIK BOLT TZ WEDGE ANCHOR" (ICC-ES ESR-1917), AS MANUFACTURED BY HILTI INC., TULSA, OKLAHOMA, OR "SIMPSON STRONG-BOLT WEDGE ANCHOR" (ICC-ES ESR-1771), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA, OR APPROVED EQUAL.

- MECHANICAL EXPANSION ANCHORS IN CONCRETE SHALL BE INSTALLED PER MANUFACTURER'S DIRECTIONS. 25 PERCENT OF ALL ANCHORS, BUT NOT LESS THAN THREE ANCHORS, SHALL BE TESTED USING A TORQUE CALIBRATED WRENCH TO LOADS RECOMMENDED BY THE MANUFACTURER. IF ANY ONE ANCHOR FAILS, THEN ALL ANCHORS INSTALLED BY THAT CREW SHALL BE TESTED. ANCHORS THAT FAIL THE TEST LOAD SHALL BE REPLACED AND RE-TESTED AT CONTRACTOR'S EXPENSE.

**SPECIAL INSPECTION, TESTING, STRUCTURAL OBSERVATION, AND SUBMITTALS**

- WHERE INDICATED WITH AN "X", THE FOLLOWING ITEMS SHALL BE INSPECTED IN ACCORDANCE WITH SFBC 1704 BY A CERTIFIED SPECIAL INSPECTOR FROM AN ESTABLISHED SPECIAL INSPECTION AGENCY. "C" INDICATES CONTINUOUS SPECIAL INSPECTION AND "P" INDICATES PERIODIC SPECIAL INSPECTION. THE SPECIAL INSPECTION AGENCY SHALL SEND COPIES OF ALL SPECIAL INSPECTION REPORTS DIRECTLY TO THE RESIDENT ENGINEER, ARCHITECT, ENGINEER, AND BUILDING OFFICIAL. ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

VERIFICATION AND INSPECTION	C	P	NOTES
<b>STEEL CONSTRUCTION</b>			
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X	
2. INSPECTION OF HIGH-STRENGTH BOLTING:			
2.1. BEARING-TYPE CONNECTIONS		X	
2.2. SLIP-CRITICAL CONNECTIONS	X	X	
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL		X	
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS		X	
5. INSPECTION OF STRUCTURAL STEEL WELDING:			
5.1. COMPLETE & PARTIAL PENETRATION GROOVE WELDS	X		
5.2. MULTI-PASS FILLET WELDS		X	
5.3. SINGLE-PASS FILLET WELDS > 3/16"		X	
5.4. SINGLE-PASS FILLET WELDS ≤ 3/16"		X	
5.5. FLOOR AND ROOF DECK WELDS		X	
5.6. WELDED STUDS WHEN USED FOR STRUCTURAL DIAPHRAGMS		X	
5.7. WELDED SHEET STEEL FOR COLD-FORMED STEEL FRAMING MEMBERS SUCH AS STUDS AND JOISTS		X	
5.8. WELDING OF STAIRS AND RAILING SYSTEMS		X	
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR AND COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS		X	INCLUDES MEMBER LOCATIONS, DETAILS SUCH AS JOINTS, BRACING & STIFFENING

VERIFICATION AND INSPECTION	C	P	NOTES
<b>CONCRETE CONSTRUCTION</b>			
1. INSPECTION OF REINFORCING STEEL PLACEMENT		X	INCLUDING PRESTRESSING TENDONS
2. INSPECTION OF REINFORCING STEEL WELDING:			
2.1. VERIFICATION OF WELDABILITY		X	
2.2. REINFORCING STEEL RESISTING FLEXURAL & AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS	X		
2.3. SHEAR REINFORCEMENT	X		
2.4. OTHER REINFORCING STEEL		X	
3. INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE	X		
4. VERIFY USE OF REQUIRED DESIGN MIX		X	
5. FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF CONCRETE		X	
6. INSPECTION OF CONCRETE & SHOTCRETE PLACEMENT	X		
7. INSPECTION OF CONCRETE CURING		X	
8. INSPECTION OF PRESTRESSED CONCRETE:			
8.1. APPLICATION OF PRESTRESSING FORCES		X	
8.2. GROUTING OF BONDED PRESTRESSING TENDONS		X	
9. ERECTION OF PRECAST CONCRETE MEMBERS		X	
10. VERIFICATION OF IN-SITU CONCRETE STRENGTH		X	PRIOR TO PRESTRESSING OF TENDONS & REMOVAL OF FORMS
11. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X	

VERIFICATION AND INSPECTION	C	P	NOTES
<b>SOILS</b>			
1. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIRED BEARING CAPACITY		X	BY GEOTECHNICAL ENGINEER
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND REACHED PROPER MATERIAL		X	BY GEOTECHNICAL ENGINEER
3. PERFORM CLASSIFICATION AND TESTING OF ENGINEERED FILL MATERIAL		X	BY GEOTECHNICAL ENGINEER
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF ENGINEERED FILL		X	BY GEOTECHNICAL ENGINEER
5. PRIOR TO PLACEMENT OF ENGINEERED FILL, OBSERVE SUBGRADE & VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X	BY GEOTECHNICAL ENGINEER

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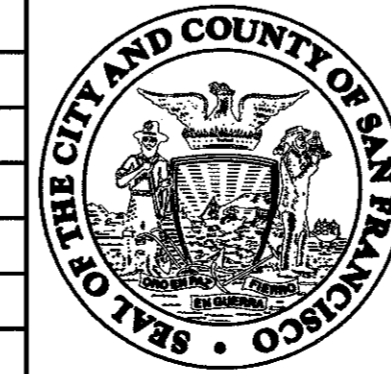
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY AND COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond LUI* RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: *Patrick Rivera* PATRICK RIVERA

DESIGNED	FR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	pw
APPROVED	P.L.
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*Vincent J. Hanna*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM		1289
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT		CL-29071
ST-004	REVISION	
GENERAL NOTES		0

VERIFICATION AND INSPECTION	C	P	NOTES
CIDH PILE/PIER FOUNDATIONS			
1. OBSERVE DRILLING OPERATIONS AND MAINTAIN RECORDS FOR EACH PIER/CIDH PILE	X		BY GEOTECHNICAL ENGINEER
2. VERIFY LOCATIONS OF PILES AND PLUMBNESS	X		BY GEOTECHNICAL ENGINEER
2.1. CONFIRM PIER DIAMETERS			
2.2. BELL DIAMETERS (IF APPLICABLE)			
2.3. LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE)			
2.4. ADEQUATE END STRATA BEARING CAPACITY			

2. WHERE INDICATED WITH AN "X", THE FOLLOWING ITEMS SHALL BE SAMPLED AND/OR TESTED BY A CERTIFIED TECHNICIAN FROM AN ESTABLISHED MATERIALS TESTING LABORATORY IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, GENERAL NOTES, OR PREVAILING BUILDING, WHICHEVER IS MORE STRINGENT. ALL MATERIAL SAMPLING AND TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM REQUIREMENTS. THE MATERIALS TESTING LABORATORY SHALL SEND COPIES OF ALL STRUCTURAL TESTING REPORTS DIRECTLY TO THE RESIDENT ENGINEER, ARCHITECT, ENGINEER, AND BUILDING OFFICIAL. ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATION SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

STRUCTURAL TESTING FOR SEISMIC RESISTANCE	REQ'D	NOTES
<b>ITEMS</b>		
<b>MASONRY</b>		
1. COMPRESSIVE STRENGTH TESTS FOR MINIMUM COMPRESSIVE STRENGTH, f <sub>m</sub> AND f <sub>MAC</sub>	X	
<b>CONCRETE</b>		
1. COMPRESSIVE STRENGTH TESTS FOR CONCRETE WITH SPECIFIED MINIMUM COMPRESSIVE STRENGTH, f <sub>c</sub> , OF 3,000 PSI OR GREATER AT 28 DAYS	X	
2. SHOTCRETE TEST PANELS AND CORE SAMPLES	X	
<b>REINFORCING AND PRESTRESSING STEEL</b>		
1. WELDABILITY OF REINFORCEMENT, EXCEPT THAT WHICH CONFORMS WITH ASTM A706	X	
<b>STRUCTURAL STEEL</b>		
1. TESTING CONTAINED IN THE QUALITY ASSURANCE PLAN	X	THIS INCLUDES NON-DESTRUCTIVE TESTING (NDT) OF WELDS
2. BASE METAL THICKER THAN 1/2"	X	ULTRASONIC TESTING FOR DISCONTINUITIES BEHIND & ADJACENT TO WELDS SUBJECT TO THROUGH-THICKNESS WELD SHRINKAGE STRAINS
<b>POST-INSTALLED ANCHOR BOLTS IN CONCRETE AND MASONRY</b>		
1. TENSILE TEST	X	MINIMUM OF 5% OF ALL ANCHOR BOLTS

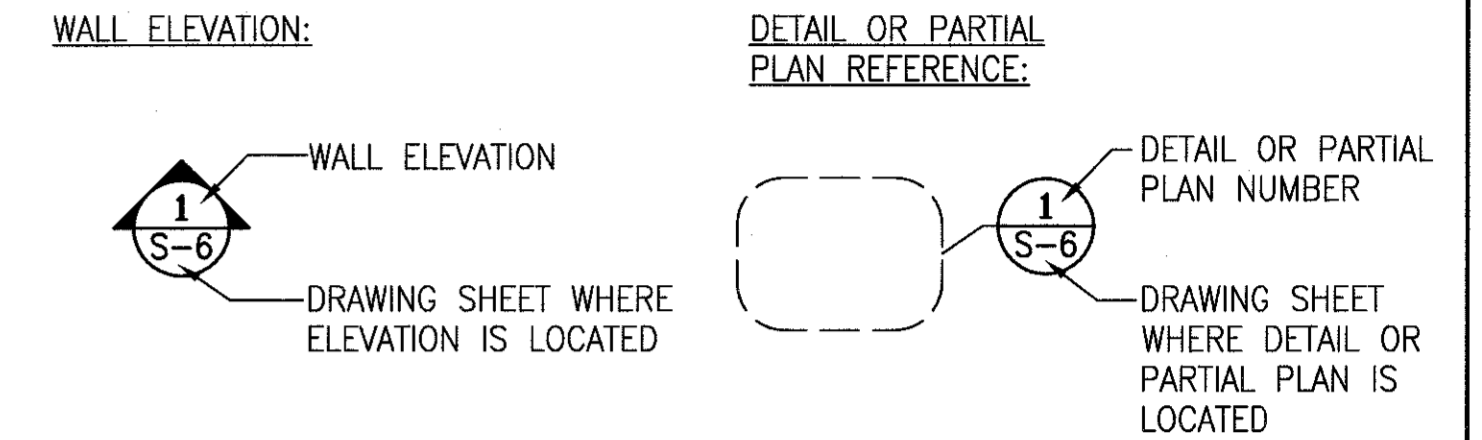
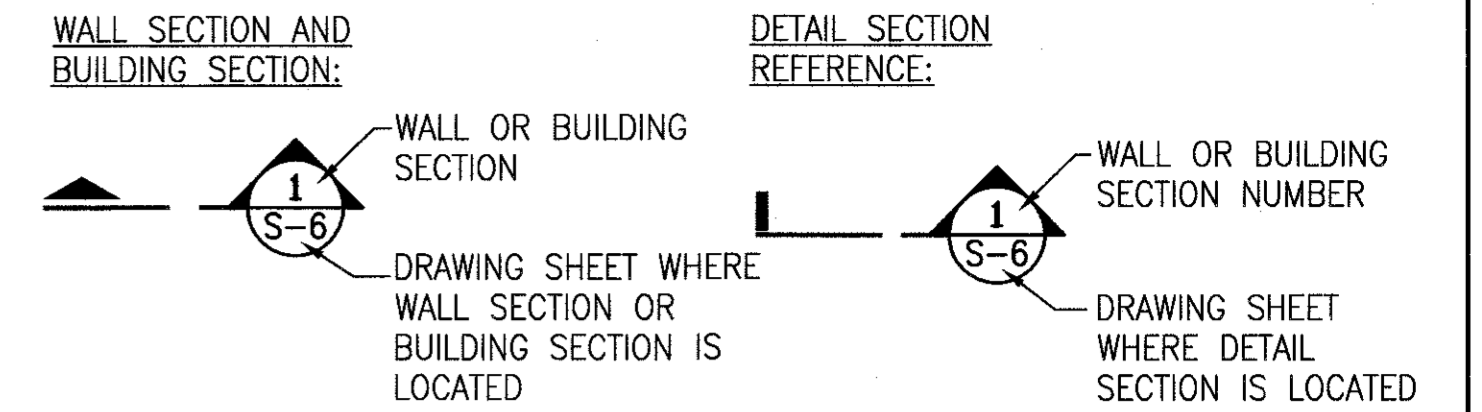
3. THE ENGINEER OF RECORD SHALL PROVIDE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM, BELOW, FOR GENERAL CONFORMANCE TO THE APPROVED PLANS AND INDICATED WITH AN "X" SPECIFICATIONS AT SIGNIFICANT CONSTRUCTION STAGES AND AT THE COMPLETION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR THE INSPECTIONS AND SPECIAL INSPECTIONS REQUIRED BY THE SFBG.

STRUCTURAL OBSERVATION REQUIREMENTS	REQ'D	NOTES
<b>FOUNDATIONS</b>		
1. ISOLATED & CONTINUOUS FOOTINGS, STEM WALLS	X	
2. MAT FOUNDATIONS		
3. PIERS, CAISSONS, PILES, PILE CAPS		
4. RETAINING WALLS, HILLSIDE CONSTRUCTION		
<b>SHEAR WALLS</b>		
1. LIGHT-FRAMED SHEAR WALLS, INCLUDING HOLDOWN INSTALLATION AND SHEATHING NAILING	X	
2. CONCRETE SHEAR WALLS, INCLUDING REINFORCING STEEL PLACEMENT AND CONCRETE PLACEMENT	X	
3. MASONRY SHEAR WALLS, INCLUDING REINFORCING STEEL PLACEMENT AND GROUT PLACEMENT		
4. STEEL SHEAR WALLS		
<b>MOMENT-RESISTING FRAMES</b>		
1. CONCRETE MOMENT-RESISTING FRAMES, INCLUDING REINFORCING STEEL PLACEMENT & CONCRETE PLACEMENT	X	
2. STEEL MOMENT-RESISTING FRAMES		
<b>BRACED FRAMES</b>		
1. STEEL BRACED FRAMES		
<b>HORIZONTAL ROOF AND FLOOR DIAPHRAGMS</b>		
1. CONCRETE		
2. STEEL DECK, CONCRETE ON STEEL DECK		
3. WOOD	X	
4. CHORDS AND/OR COLLECTORS		
<b>OTHER</b>		

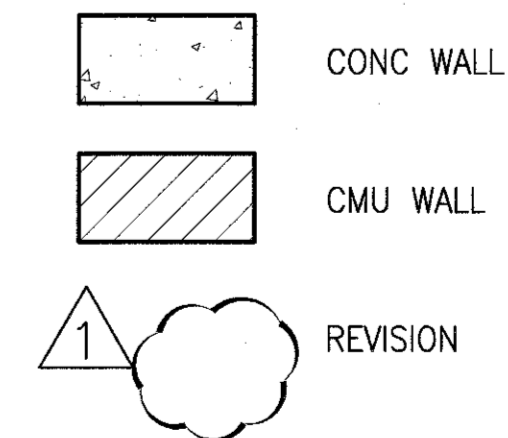
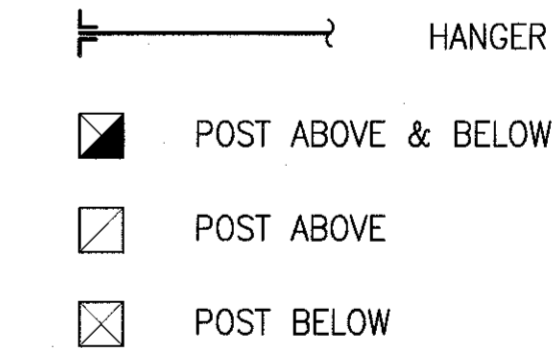
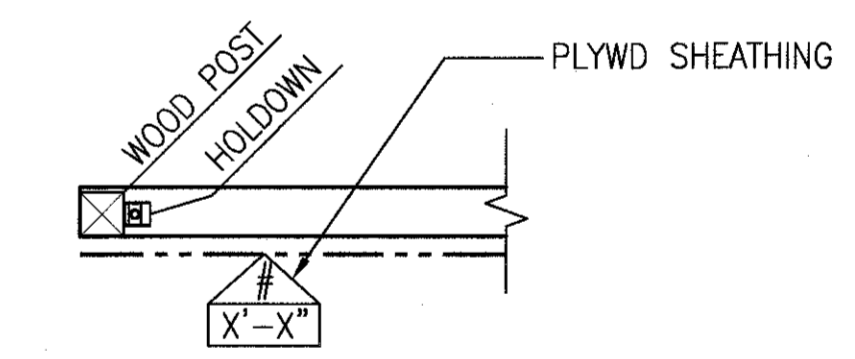
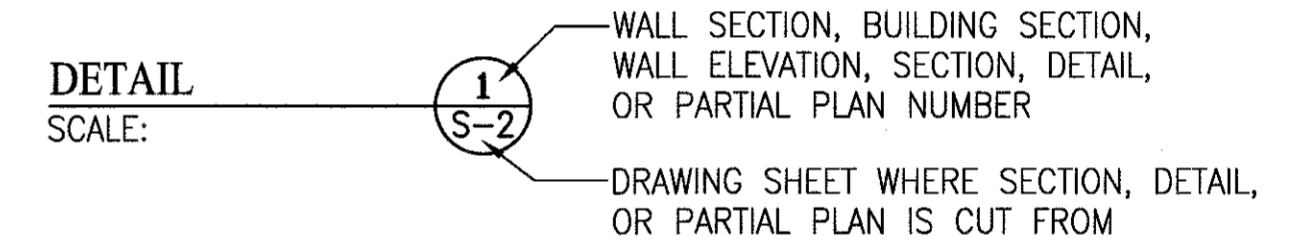
4. WHERE INDICATED WITH AN "X" BELOW, THE CONTRACTOR SHALL SUBMIT CERTIFICATES OF CONFORMANCE, SHOP DRAWINGS, CALCULATIONS, AND DETAILS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. WHERE CALCULATIONS AND DETAILS ARE REQUIRED, THE SUBMITTAL SHALL BE SEALED AND SIGNED BY A REGISTERED DESIGN PROFESSIONAL IN THE STATE OF CALIFORNIA. FOR ADDITIONAL INFORMATION REGARDING SUBMITTALS, SEE SPECIFICATIONS.

ITEM	CERTIFICATES	SHOP DRAWINGS	CALCULATIONS & DETAILS	REMARKS
CONCRETE, REINFORCING	X	X		
CONCRETE, MIX DESIGN		X		
CONCRETE, CEMENT	X			
CONCRETE, FINE AGGREGATES	X			
CONCRETE, COARSE AGGREGATES	X			
CONCRETE, ADMIXTURES	X			
SHOTCRETE, MIX DESIGN		X		
PRECAST CONCRETE MEMBERS		X	X	
<b>MASONRY, REINFORCING</b>				
MASONRY, MORTAR MIX DESIGN	X	X		
MASONRY, GROUT MIX DESIGN	X			
MASONRY, UNITS	X			
MASONRY, LIME	X			
<b>STRUCTURAL STEEL</b>				
OPEN WEB JOISTS	X	X		
METAL DECKING WITH STUD LAYOUT		X		
<b>COLD-FORMED STRUCTURAL STEEL</b>				
METAL STAIRS		X	X	
TEMPORARY SHORING SYSTEM		X	X	

**LEGEND**



WALL SECTION, BUILDING SECTION, WALL ELEVATION, SECTION DETAIL, PARTIAL PLAN:



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REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 6TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond C. Sprinkle* RAYMOND LUI  
Date: 7/13/15  
Deputy Division Mgr: FERNANDO CISNEROS  
11/20/15  
Division Mgr: PATRICK RIVERA  
4/24/15

DESIGNED	RR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	PW
APPROVED	P.W.
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT

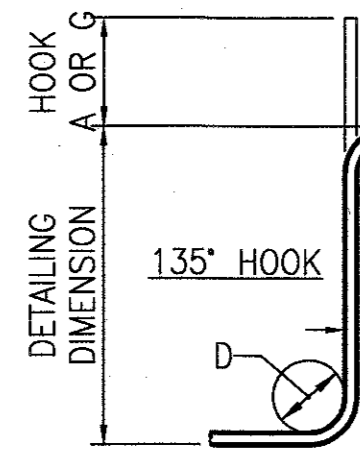
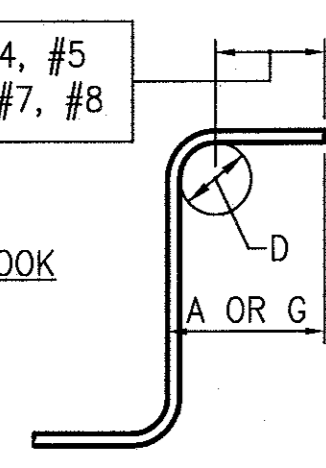
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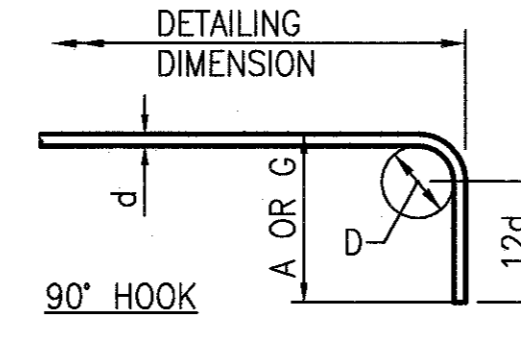
GENERAL NOTES

6d FOR #3, #4, #5  
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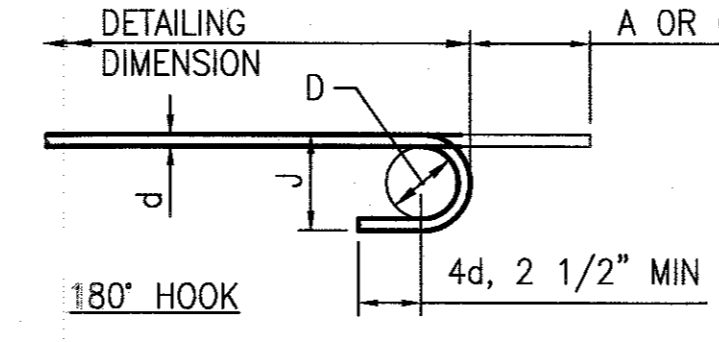
90° HOOK



d = BAR DIAMETER  
D = BEND DIAMETER



90° HOOK



180° HOOK

STIRRUP / TIE HOOK				
BAR SIZE	D	90° HOOKS		135° HOOKS
		A OR G	A OR G	APPROX H
#3	1 1/2"	4"	4 1/4"	3"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	1'-0"	8"	4 1/2"
#7	5 1/4"	1'-2"	9"	5 1/4"
#8	6"	1'-4"	10 1/2"	6"

MAIN REBAR HOOK				
BAR SIZE	D	90° HOOKS		180° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	6"	3"	5"
#4	3"	8"	4"	6"
#5	3 3/4"	10"	5"	7"
#6	4 1/2"	1'-0"	6"	8"
#7	5 1/4"	1'-2"	7"	10"
#8	6"	1'-4"	8"	11"
#9	9 1/2"	1'-7"	11 3/4"	1'-3"
#10	10 3/4"	1'-10"	1'-1 1/4"	1'-5"
#11	1'-0"	2'-0"	1'-2 3/4"	1'-7"
#14	1'-6 1/4"	2'-7"	1'-9 3/4"	2'-3"
#18	2'-0"	3'-5"	2'-4 1/2"	3'-0"

TYPICAL REINFORCEMENT BAR HOOKS AND BENDS  
SCALE: N.T.S.

BAR SIZE	f'c = 3,000 PSI				
	MIN DEVELOPMENT LENGTH			MIN LAP SPLICE LENGTH	
	STRAIGHT		HOOKED	TOP	OTHER
#3	1'-10"	1'-5"	0'-9"	2'-4"	1'-10"
#4	2'-5"	1'-10"	0'-11"	3'-1"	2'-5"
#5	3'-0"	2'-4"	1'-2"	3'-11"	3'-0"
#6	3'-7"	2'-9"	1'-5"	4'-8"	3'-7"
#7	5'-3"	4'-0"	1'-8"	6'-9"	5'-3"
#8	6'-0"	4'-7"	1'-10"	7'-9"	6'-0"
#9	6'-9"	5'-2"	2'-1"	8'-9"	6'-9"
#10	7'-6"	5'-10"	2'-4"	9'-10"	7'-6"
#11	8'-5"	6'-6"	2'-7"	10'-11"	8'-5"

1. ALL REINFORCING BARS SHALL BE DEVELOPED OR LAP SPLICED AS SHOWN, U.O.N.
2. LAP SPLICE LOCATIONS SHALL BE STAGGERED WHENEVER POSSIBLE.
3. TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE LAP SPLICE.

DEVELOPMENT LENGTH & LAP SPLICE SCHEDULE  
SCALE: N.T.S.

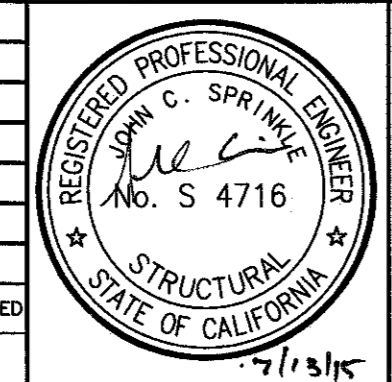
BAR SIZE	f'c = 4,000 PSI				
	MIN DEVELOPMENT LENGTH			MIN LAP SPLICE LENGTH	
	STRAIGHT		HOOKED	TOP	OTHER
#3	1'-7"	1'-3"	0'-8"	2'-0"	1'-7"
#4	2'-1"	1'-7"	0'-10"	2'-8"	2'-1"
#5	2'-7"	2'-0"	1'-0"	3'-5"	2'-7"
#6	3'-1"	2'-5"	1'-3"	4'-1"	3'-1"
#7	4'-6"	3'-6"	1'-5"	5'-11"	4'-8"
#8	5'-2"	4'-0"	1'-7"	6'-9"	5'-2"
#9	5'-10"	4'-6"	1'-10"	7'-7"	5'-10"
#10	6'-7"	5'-1"	2'-1"	8'-6"	6'-7"
#11	7'-3"	5'-7"	2'-3"	9'-5"	7'-3"

1. ALL REINFORCING BARS SHALL BE DEVELOPED OR LAP SPLICED AS SHOWN, U.O.N.
2. LAP SPLICE LOCATIONS SHALL BE STAGGERED WHENEVER POSSIBLE.
3. TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE LAP SPLICE.

DEVELOPMENT LENGTH & LAP SPLICE SCHEDULE  
SCALE: N.T.S.

V:\21061\_VANNESS\_BRT\_MISSION\_LOMBARD\_V2\_Design\_Working\_Drawings\EST\_Current\21061\_ST-006.dwg drawing Mon Jul 13, 2015 - 8:01 am

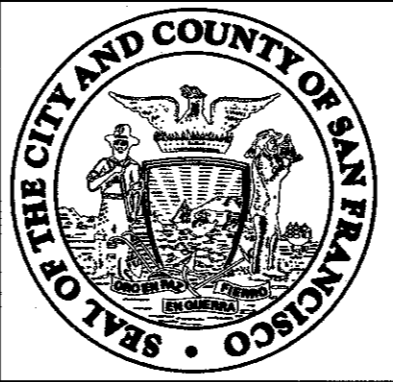
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr:	RAYMOND LUI	Date:	7/13/15
Deputy Division Mgr:	FERNANDO CISNEROS		
Division Mgr:	PATRICK RIVERA		

DESIGNED	RR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	PW
APPROVED	F.M.
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT  
TYPICAL DETAILS

1289	REVISION
CL-29073	
ST-006	0

**SIGNAL MAST ARM DATA**

E PROJECTED LENGTH	F MIN	H	MIN OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM PL THICKNESS	L POLE PL THICKNESS	θ	X MAX
25'-0"	12'-0"	19'-0" OR 22'-6"	8"	0.2391"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	1°	10'-6"
30'-0"	12'-0"		8 1/2"		12"		1'-0"	1 1/4"	1 1/2"		
35'-0"	14'-0"	9"	13 1/2"		1'-1 1/2"		1 1/2"	1 3/4"			

**POLE DATA**

POLE TYPE	WIND VELOCITY (MPH)	A HEIGHT	MIN OD		THICKNESS	BASE PLATE DATA				CIDH PILE FOUNDATION		
			BASE	TOP		C	BC= BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	DIAMETER	DEPTH	REINFORCED
770	100	30'-0"	13"	8.8"	2 PLY - #6 (0.625")	2'-0"	1'-10"	2 3/4"	2 1/4"Øx45"	3'-6"	12'-0"	YES

**LUMINAIRE MAST ARM DATA**

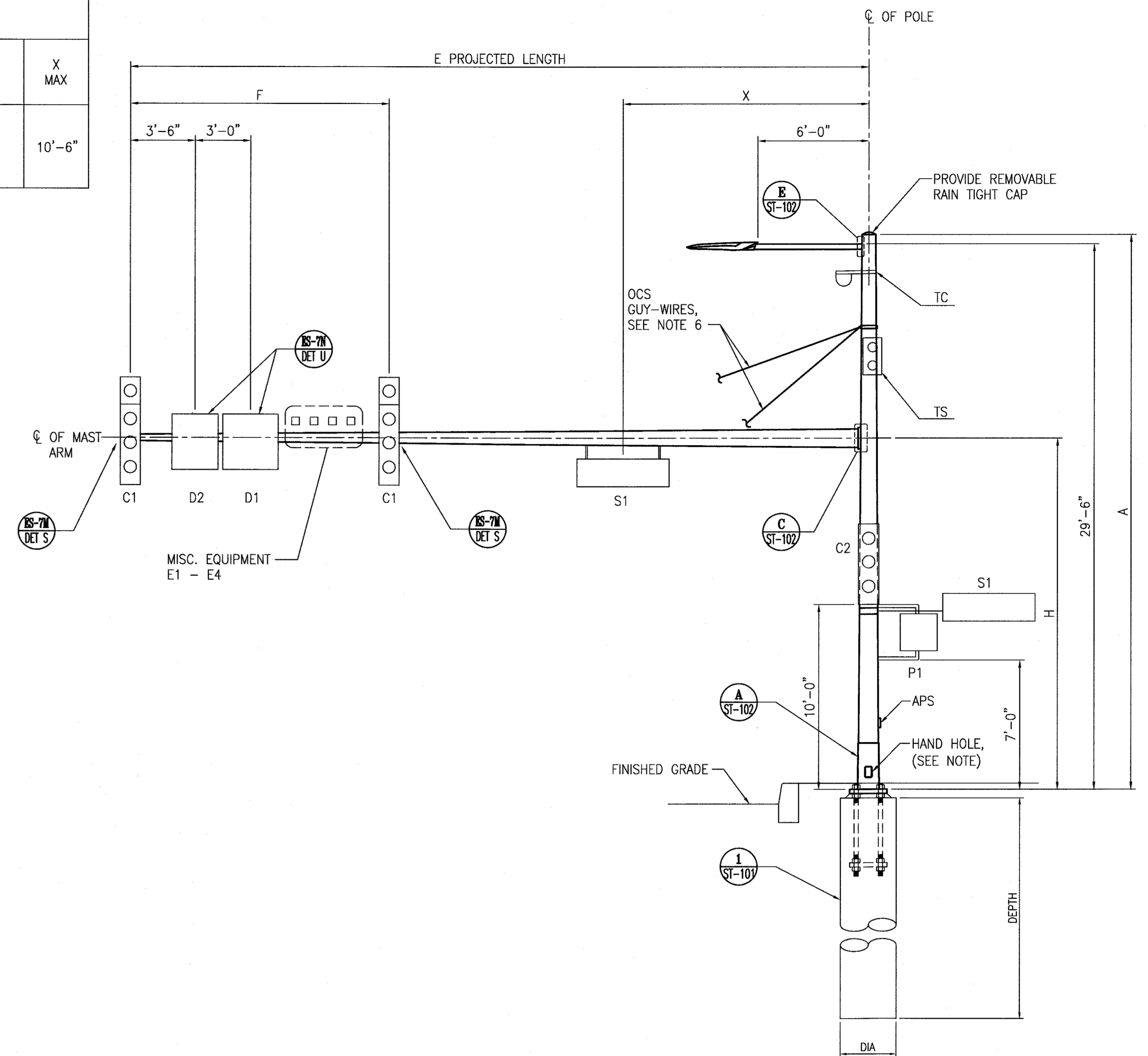
PROJECTED LENGTH	MIN OD AT POLE	THICKNESS
6'-0"	3 1/4"	0.1196"

**EQUIPMENT DATA (FOR INFORMATION ONLY)**

ITEM	DESCRIPTION	SIZE (INCHES)	WEIGHT (LBS)
C1	SIGNAL	70 x 13.5 x 7	100
C2	SIGNAL	56.5 x 13.5 x 7	65
D1	SIGN	36 x 36	10.1
D2	SIGN	36 x 30	8.4
E1	GPS UNIT	4.47 x 14.57	1.8
E2	WIFI	4.47 x 14.57	10
E3	ACCESS POINT	4.47 x 14.57	3.3
E4	REPEATER	4.47 x 14.57	2.6
P1	PED SIGNAL	18.8 x 18.5 x 9.1	65
S1	SIGN	60 x 18	8.4
TC	TRAFFIC CAMERA	11 x 24	10
TS	TROLLEY SIGNAL	12 x 24	25

**NOTES:**

- OUTSIDE DIAMETER, WALL THICKNESS, AND CORRESPONDING SECTION PROPERTIES OF POLES AND MAST ARMS ARE MINIMUMS. UNLESS OTHERWISE SPECIFIED, ALTERNATIVE SECTIONS SHALL REQUIRE APPROVAL BY THE ENGINEER.
- SIGNAL MAST ARMS SHALL BE ROUND TAPERED STEEL TUBES, MAXIMUM TAPER 0.143-INCH PER FOOT.
- WIND LOADING (3 SECOND): 100 MPH.
- UNIT STRESSES (STRUCTURAL STEEL):
  - F<sub>y</sub> = 55,000 psi (TAPERED STEEL TUBE AND ANCHOR BOLTS)
  - F<sub>y</sub> = 50,000 psi (UNLESS OTHERWISE NOTED)
- UNIT STRESSES (REINFORCED CONCRETE):
  - F<sub>c</sub> = 4,000 psi (AT 28 DAYS)
  - F<sub>y</sub> = 60,000 psi
- FOR OVERHEAD CONTACT SYSTEM, SEE OVERHEAD PLANS (OV SHEETS).
- HAND HOLE SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
- LUMINAIRE MAST ARMS SHALL BE ROUND, TAPERED STEEL TUBES, TAPER OF 0.1375" TO 0.143" PER FOOT WITH AN END SECTION OF 2 3/8" OD FOR MOUNTING HARDWARE. EXTENSIONS OF 2 NPS STANDARD PIPE AND 7" LONG MAY BE USED AT THE OPTION OF THE MANUFACTURER.
- FOR POLE LOCATIONS AND MOUNTING HEIGHT OF TRAFFIC MAST ARMS, SEE TRAFFIC SIGNAL PLANS (ET SHEETS).

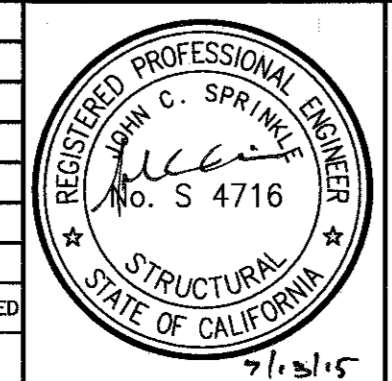


**ELEVATION**

1

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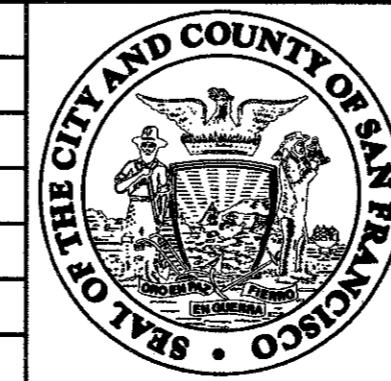
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGNED AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond LUI* RAYMOND LUI  
Date: 7/13/15  
Deputy Division Mgr: FERNANDO CISNEROS  
11/20/15  
Division Mgr: PATRICK RIVERA  
11/24/15

DESIGNED	RR
DRAWN	DL
CHECKED	JS
REVIEWED	AL
RECOMMENDED	PW
APPROVED	F.M.
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*Vincent Ho*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT

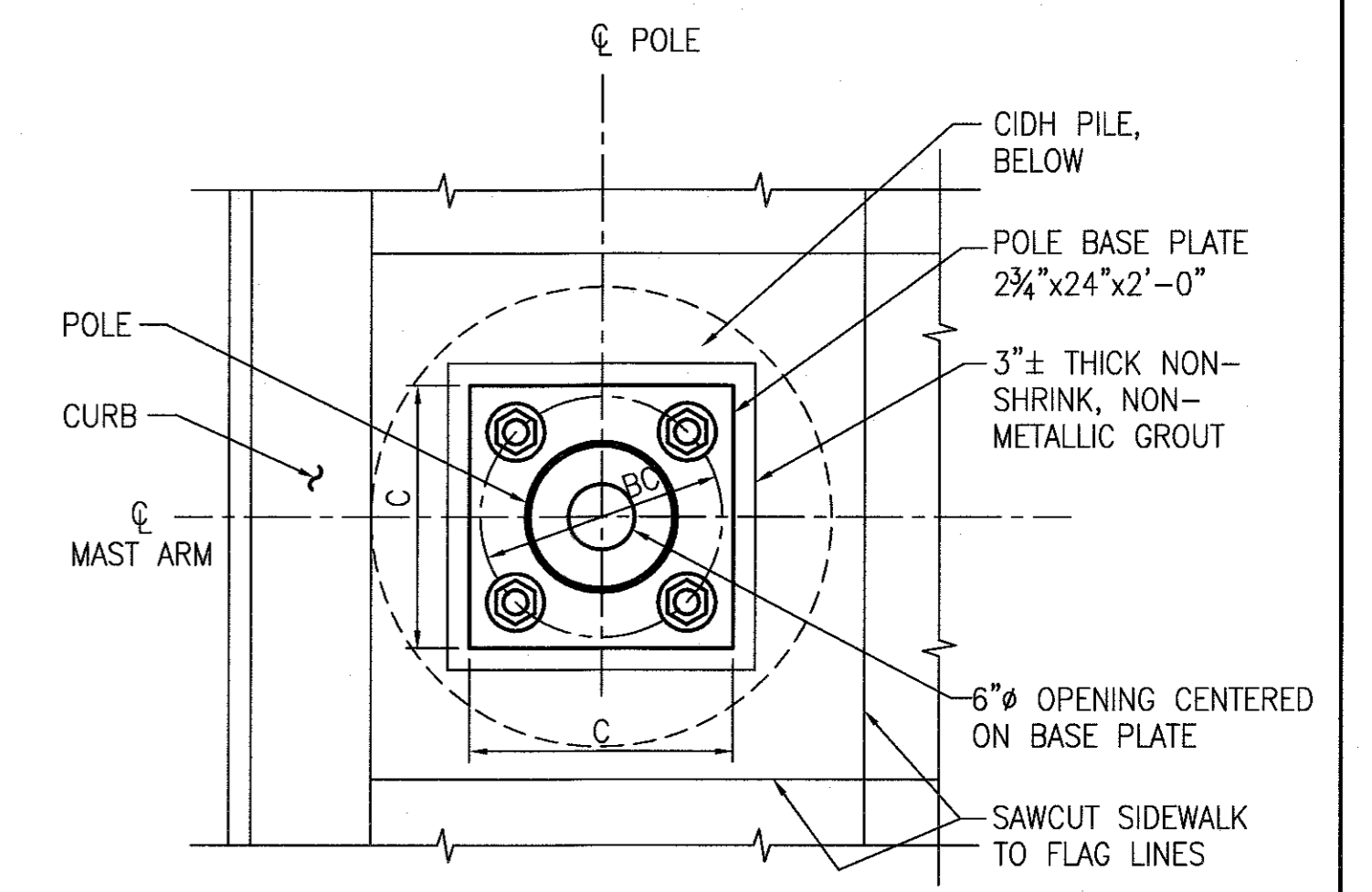
TRAFFIC MAST ARM, OCS AND STREETLIGHT POLE

1289	REVISION
CL-29074	
ST-100	0

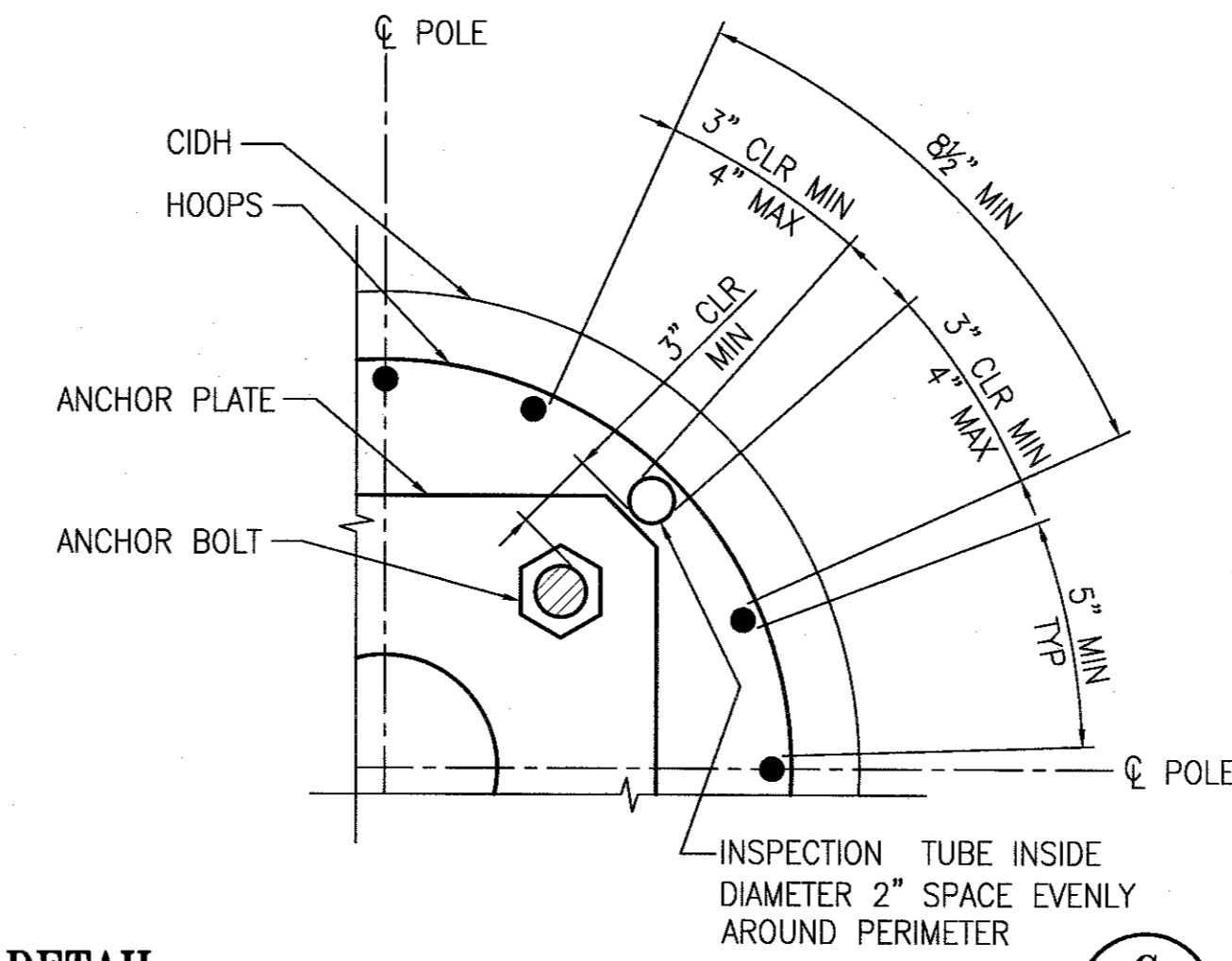
NOTES:

1. PROVIDE A HEX NUT, LEVELING NUT AND 2 WASHERS FOR EACH ANCHOR BOLT.
2. FOR ANCHOR BOLTS, THREAD TOP 10" AND GALVANIZE TOP 1'-0"; THREAD BOTTOM 8".
3. 4"x6½" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. HANDHOLE REINFORCEMENT RING SHALL BE ¾"x2". PROVIDE ½" COVER PLATE.
4. HANDHOLES SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
5. DURING POLE INSTALLATION, THE POST SHALL BE RAKED WITH THE USE OF LEVELING NUTS. SEE OVERHEAD PLANS FOR RAKING REQUIREMENTS OF POLES.
6. FOR PAVING COLOR & FINISH SEE LANDSCAPE DRAWINGS.
7. PROVIDE CONDUIT TO PULL BOX OR AS SHOWN ON PLANS.

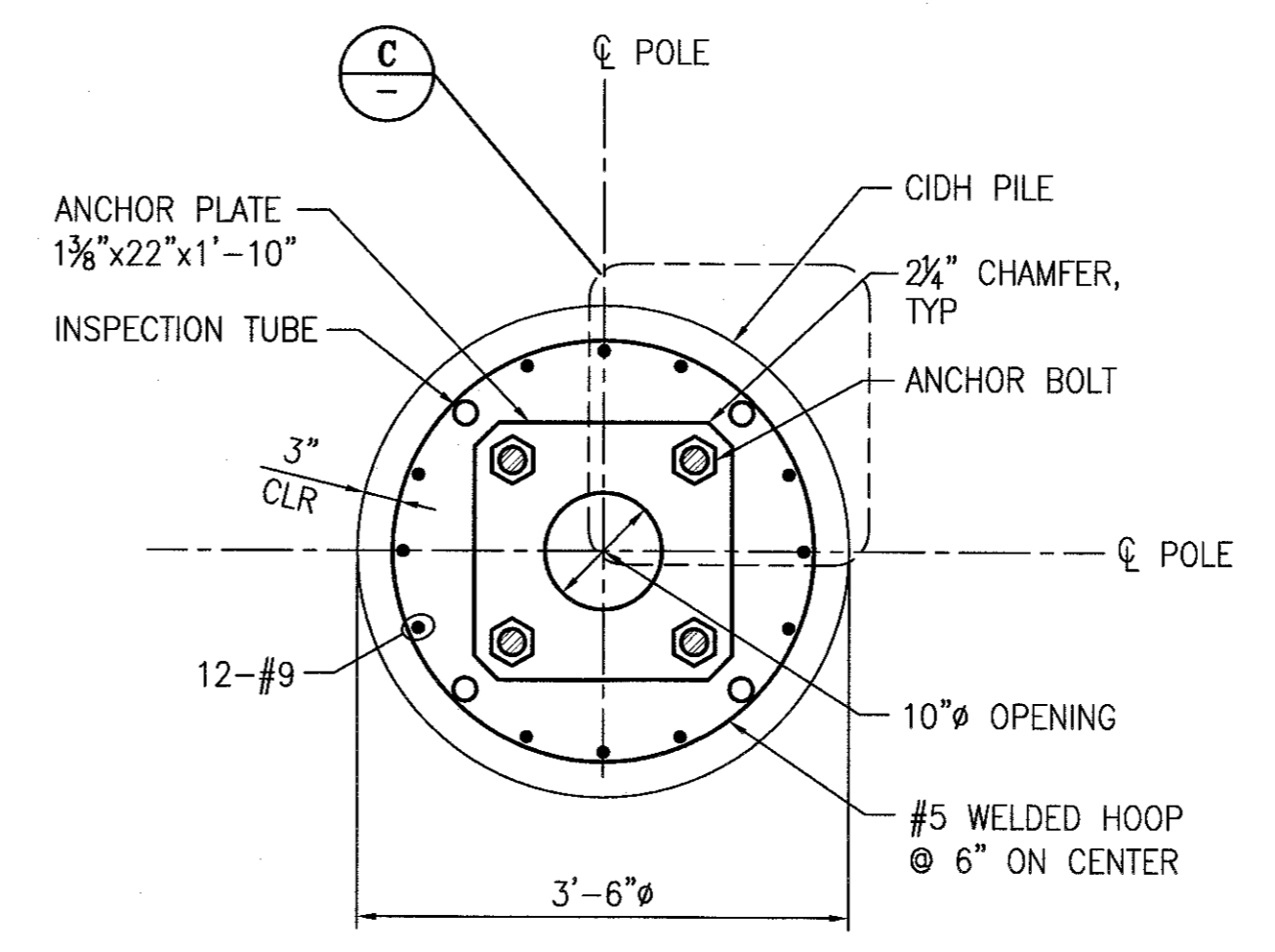
CIDH REINFORCING AND INSPECTION TUBE SCHEDULE			
CIDH DIAMETER	VERTICAL BARS	HOOPS (WELDED)	INSPECTION TUBE
3'-6"	12-#9	#5 @ 6"	4



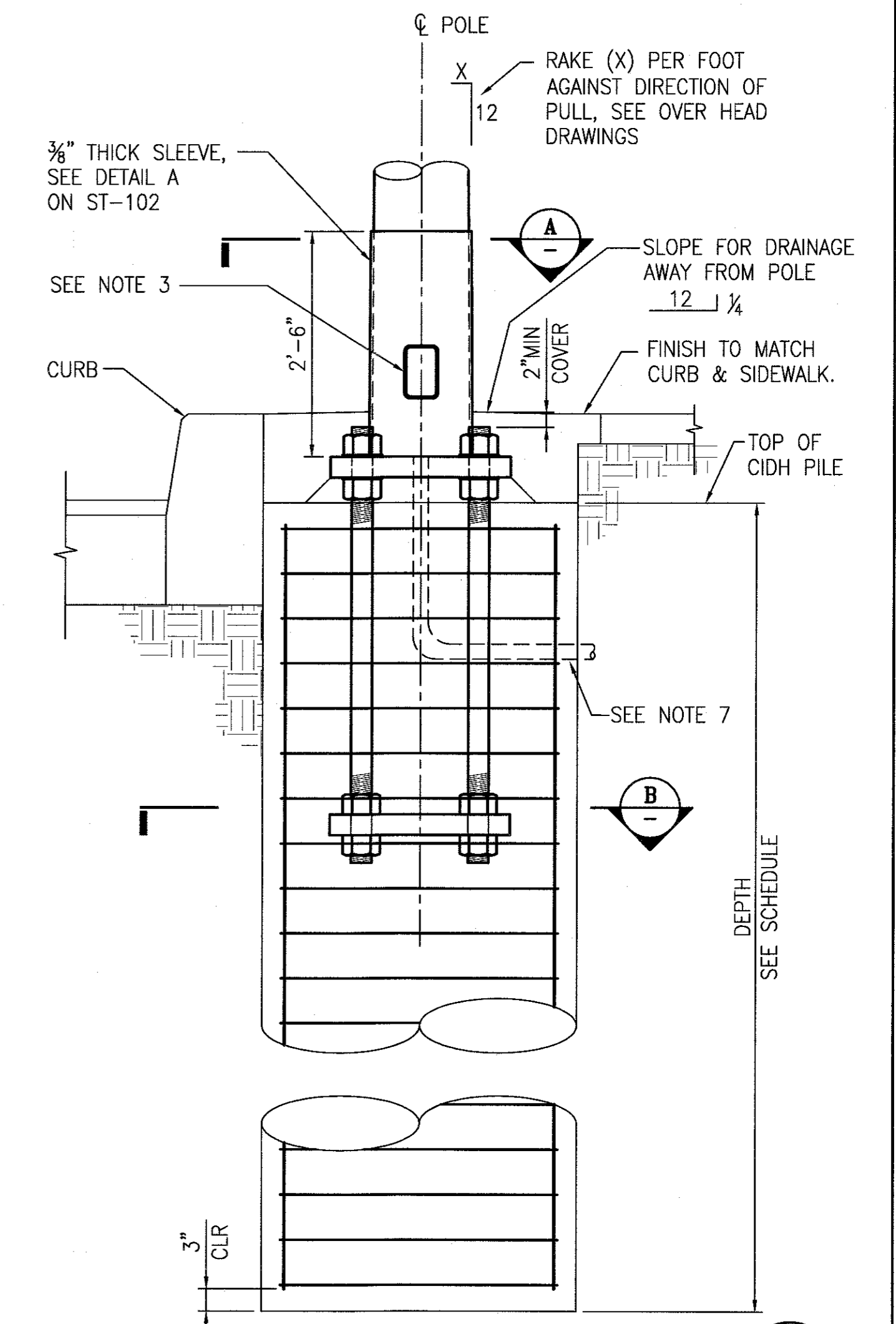
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**DETAIL C**  
SCALE: 1 1/2"=1'-0"



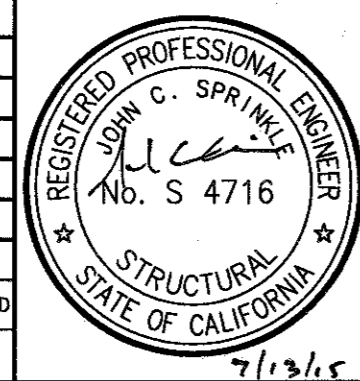
**SECTION B**  
SCALE: 3/4"=1'-0"



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

V:\21061\_VANNESS\_BRT\_MISSION\_LONBARD\_V2\_Design\_Working\_Drawings\EST\Current\21061\_ST-101.dwg dtg Mon Jul 13 2015 - 8:03 am

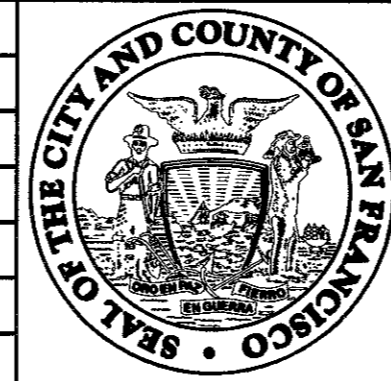
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date:	DESIGNED: FR
7/13/15	DRAWN: DL
11/20/15	CHECKED: JS
4/20/15	REVIEWED: RL
	RECOMMENDED: PW
	APPROVED: F.M.
	DATE:



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: [Signature]  
for the DIRECTOR OF TRANSPORTATION

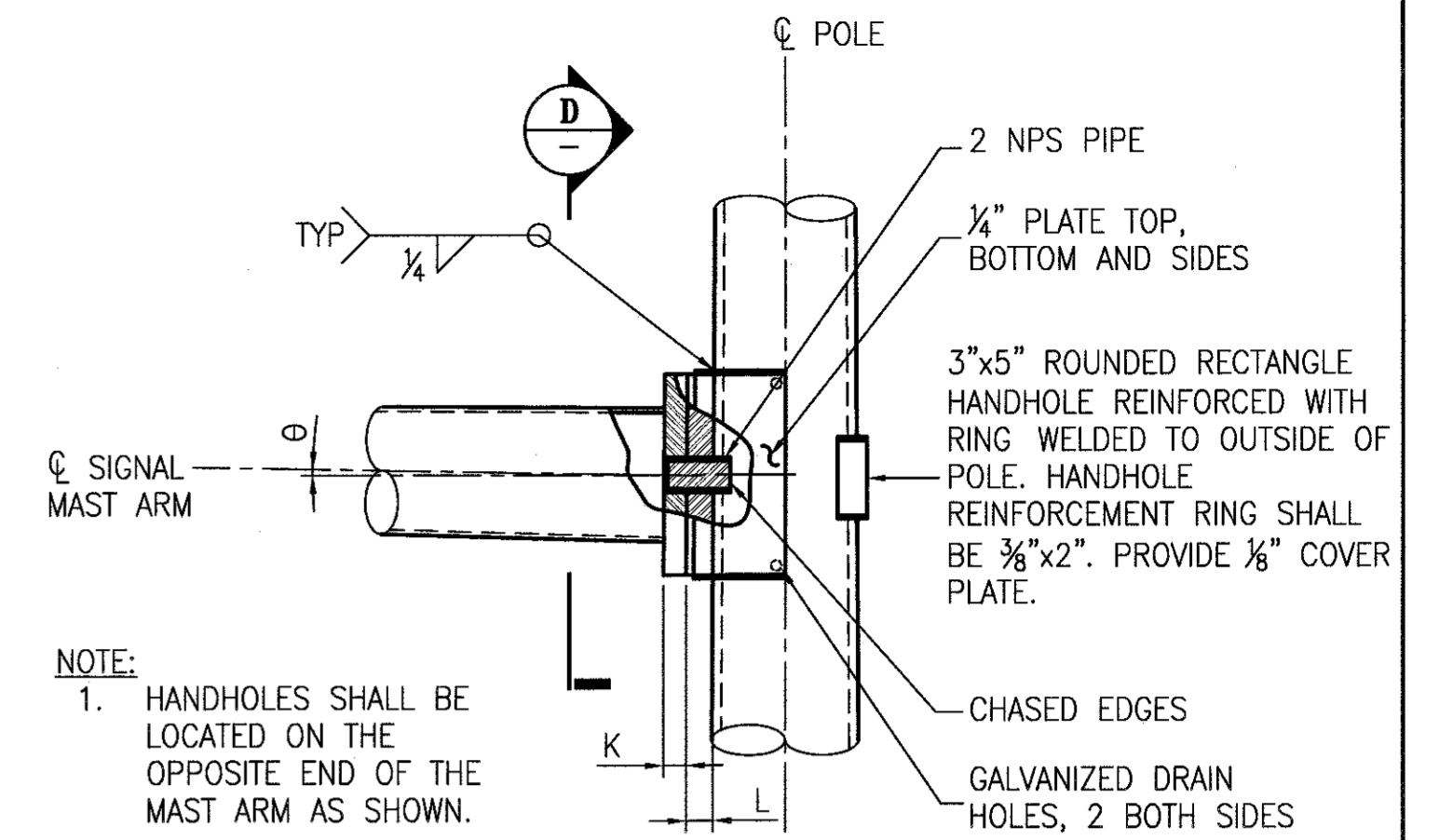
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
TRAFFIC MAST ARM, OCS AND STREETLIGHT  
POLE FOUNDATION DETAILS

1289	REVISION
CL-29075	
ST-101	0



**NOTES:**

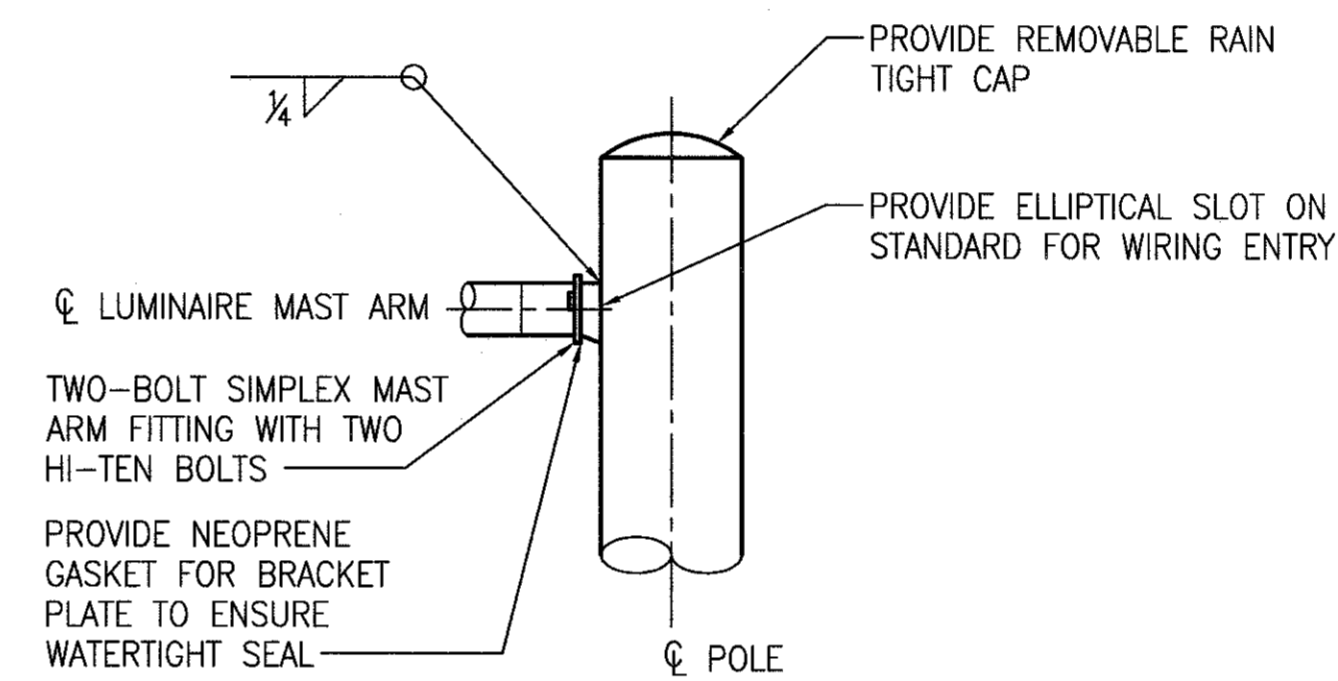
- CAP SCREWS SHALL BE TIGHTENED BY THE TURN-OF-NUT METHOD 1/2 TURN FROM A SNUG TIGHT CONDITION. NO WASHER WILL BE REQUIRED.



**NOTE:**  
1. HANDHOLES SHALL BE LOCATED ON THE OPPOSITE END OF THE MAST ARM AS SHOWN.

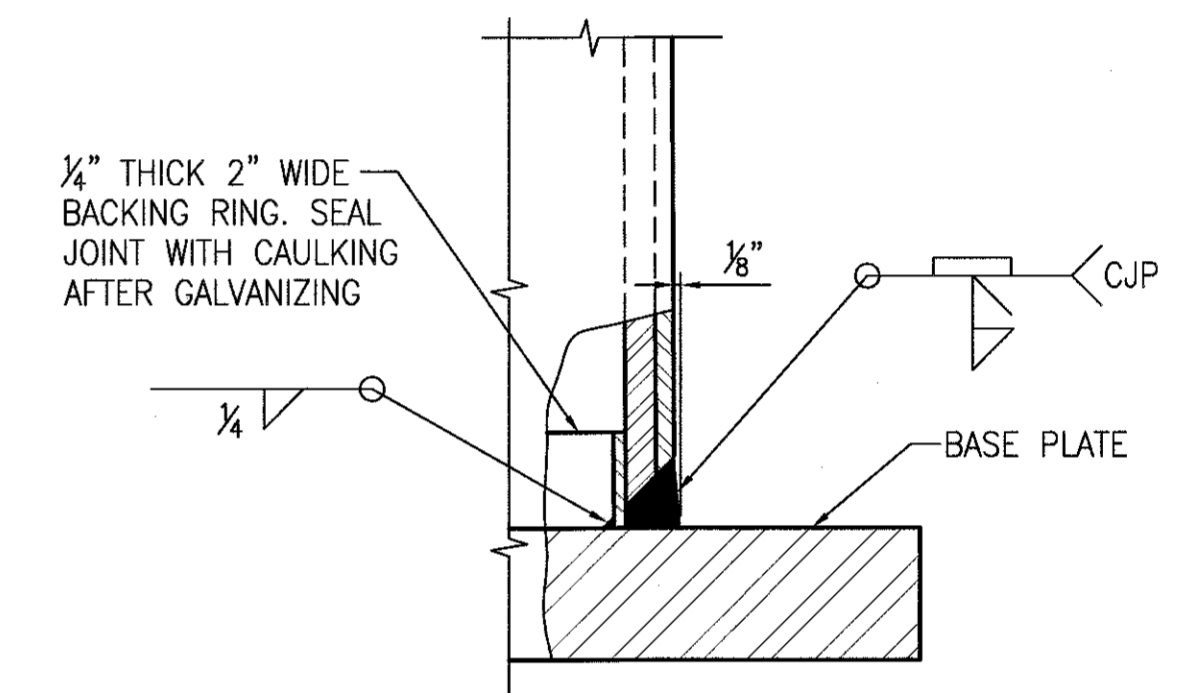
**ELEVATION**  
SCALE: 1"=1'-0"

**C**  
ST-100



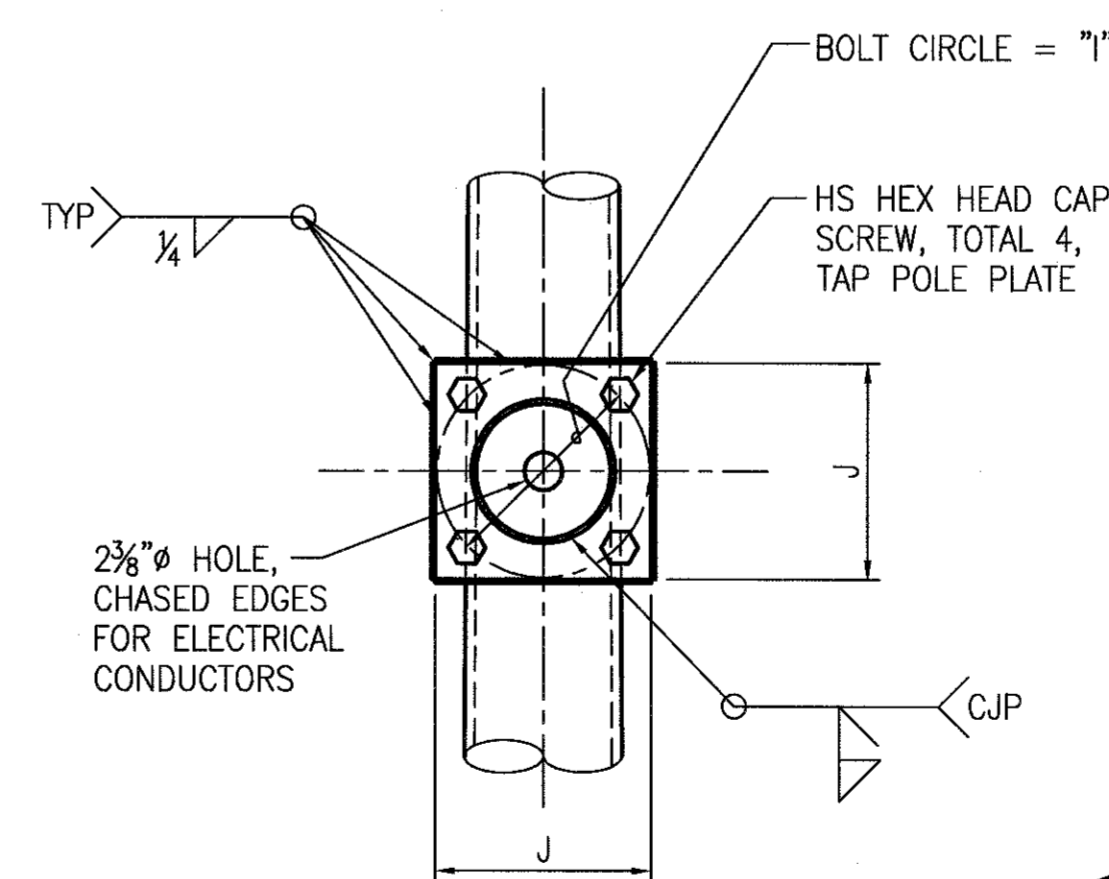
**ELEVATION**  
SCALE: 1"=1'-0"

**E**  
ST-100



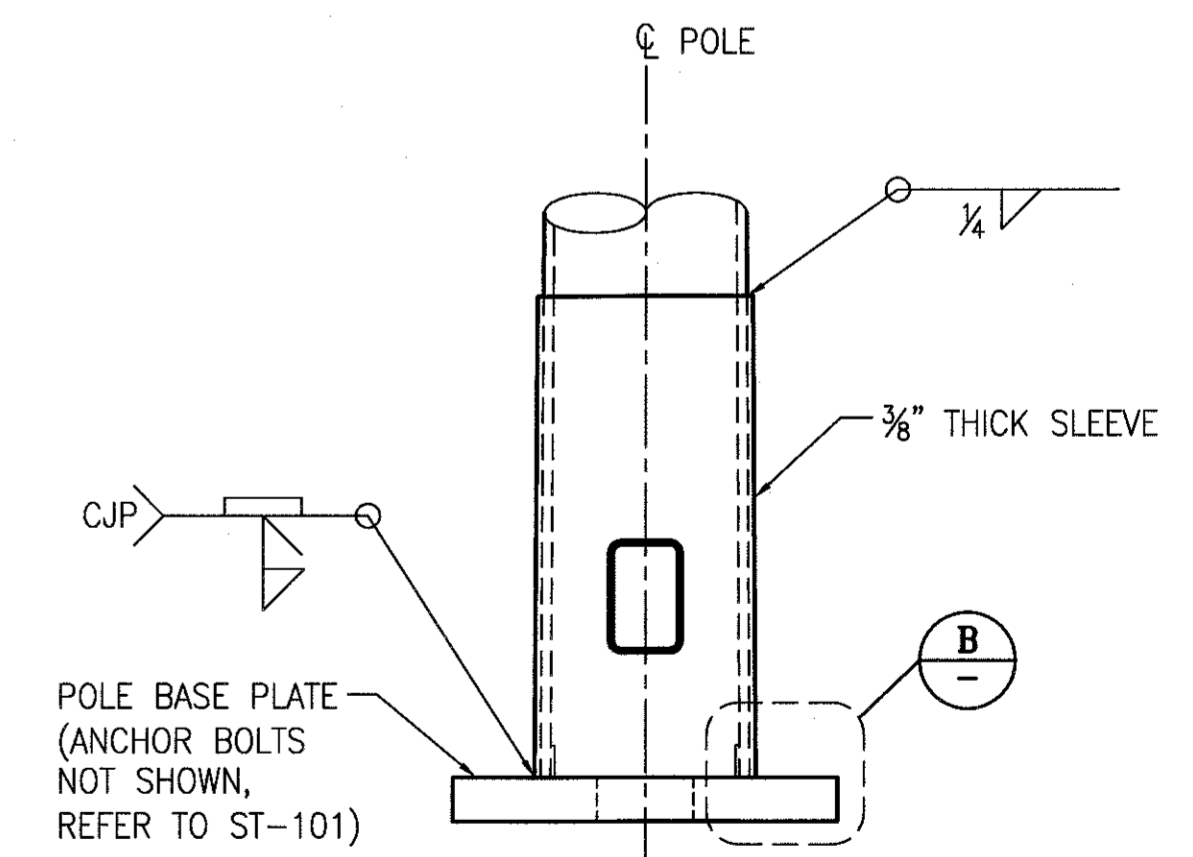
**DETAIL**  
SCALE: 3"=1'-0"

**B**  
-



**SECTION**  
SCALE: 1"=1'-0"

**D**  
-

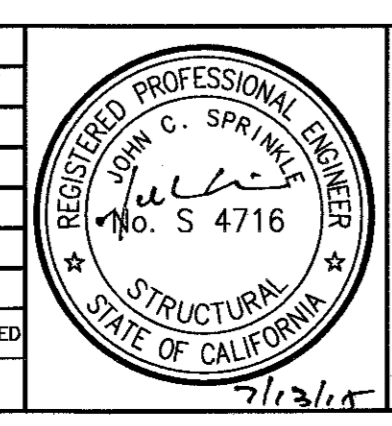


**ELEVATION**  
SCALE: 1"=1'-0"

**A**  
ST-100

V:\21061\_VANNESS\_BRT\_MISSION\_LCOMBARD\_V2\_Design\_Working\_Drawings\EST\_Current\21061\_ST-102.dwg diaung Mon Jul 13, 2015 8:03 am

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				

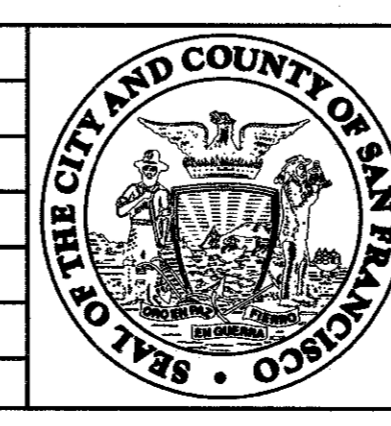


DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond Lui* RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: *Patrick Rivera* PATRICK RIVERA

Date: 7/13/15  
11/20/15  
4/24/15

DESIGNED: FR  
DRAWN: DL  
CHECKED: JS  
REVIEWED: RL  
RECOMMENDED: PW  
APPROVED: F.M.  
DATE:



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: *Linette Ha*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT  
TRAFFIC MAST ARM, OCS AND STREETLIGHT POLE DETAILS

1289  
CL-29076  
ST-102  
REVISION  
0

**SIGNAL MAST ARM DATA**

E PROJECTED LENGTH	F MIN	H	MIN OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM PL THICKNESS	L POLE PL THICKNESS	θ	X MAX
35'-0"	10'-0"	19'-0"	9"	0.2391"	13 1/2"	1 1/4"-7NC-3"	1'-1 1/2"	1 1/2"	1 3/4"	1'	13'-0"
40'-0"	15'-0"	22'-6"	9 5/8"		16"	1 1/2"-6NC-3 1/4"	1'-4"	1 3/4"	1 3/4"		14'-0"

POLE DATA					BASE PLATE DATA				CIDH PILE FOUNDATION			
POLE TYPE	WIND VELOCITY (MPH)	A HEIGHT	MIN OD		THICKNESS	C	BC= BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	DIAMETER	DEPTH	REINFORCED
			BASE	TOP								
765N	100	30'-0"	12"	7.8"	1 PLY - #8 (0.3125")	1'-7"	1'-5 1/2"	2"	1 3/4"φx45"	3'-0"	12'-0"	YES

**NOTES:**

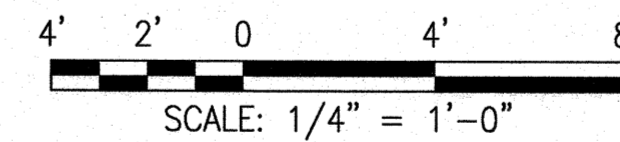
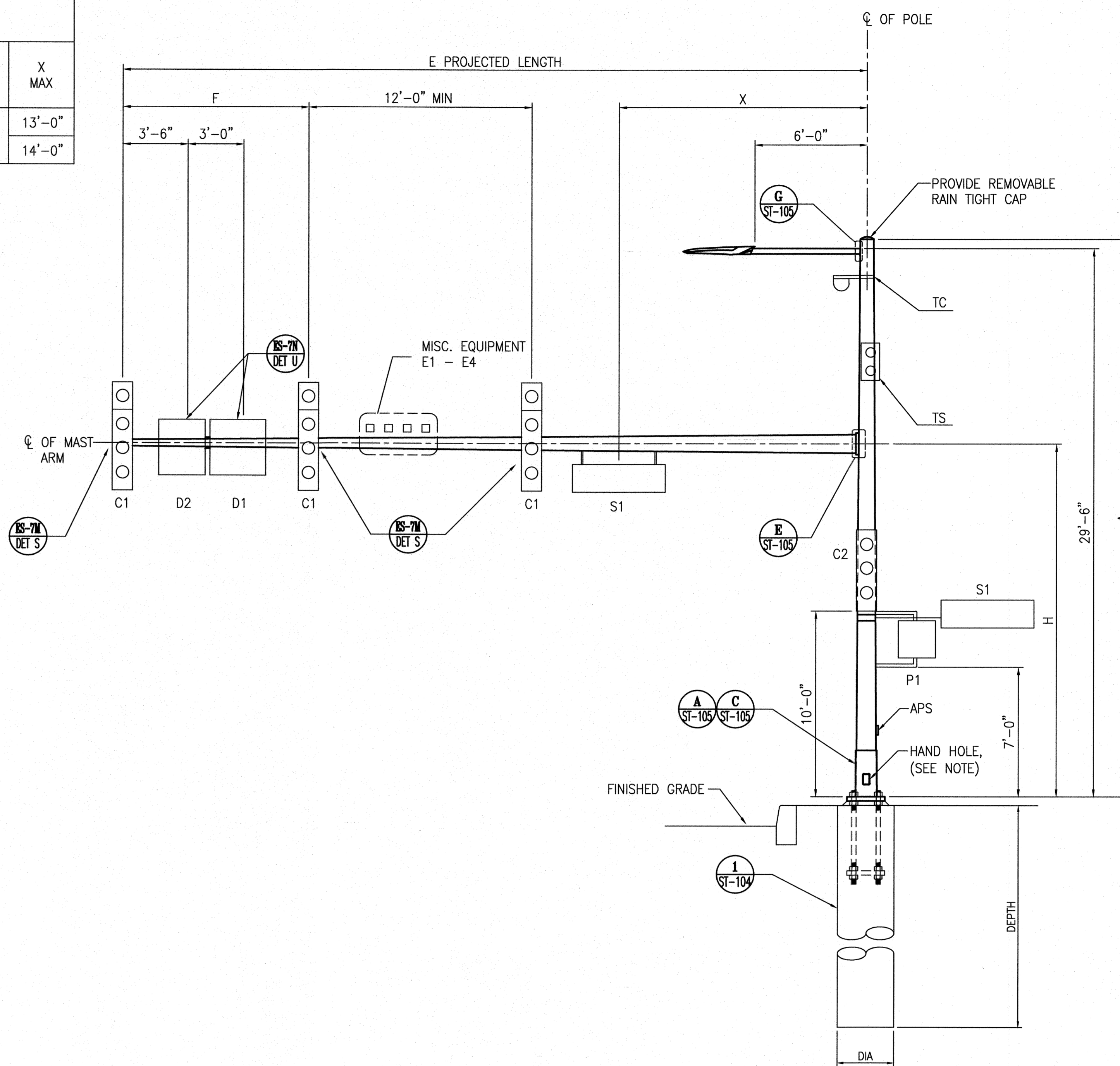
- OUTSIDE DIAMETER, WALL THICKNESS, AND CORRESPONDING SECTION PROPERTIES OF POLES AND MAST ARMS ARE MINIMUMS. UNLESS OTHERWISE SPECIFIED, ALTERNATIVE SECTIONS SHALL REQUIRE APPROVAL BY THE ENGINEER.
- SIGNAL MAST ARMS SHALL BE ROUND TAPERED STEEL TUBES, MAXIMUM TAPER 0.143-INCH PER FOOT.
- WIND LOADING (3 SECOND): 100 MPH.
- UNIT STRESSES (STRUCTURAL STEEL):
  - Fy = 55,000 psi (TAPERED STEEL TUBE AND ANCHOR BOLTS)
  - Fy = 50,000 psi (UNLESS OTHERWISE NOTED)
- UNIT STRESSES (REINFORCED CONCRETE):
  - F'c = 4,000 psi (AT 28 DAYS)
  - Fy = 60,000 psi
- HAND HOLE SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
- LUMINAIRE MAST ARMS SHALL BE ROUND, TAPERED STEEL TUBES, TAPER OF 0.1375" TO 0.143" PER FOOT WITH AN END SECTION OF 2 3/8" OD FOR MOUNTING HARDWARE. EXTENSIONS OF 2 NPS STANDARD PIPE AND 7" LONG MAY BE USED AT THE OPTION OF THE MANUFACTURER.
- FOR POLE LOCATIONS AND MOUNTING HEIGHT OF TRAFFIC MAST ARMS, SEE TRAFFIC SIGNAL PLANS (ET SHEETS).

**LUMINAIRE MAST ARM DATA**

PROJECTED LENGTH	MIN OD AT POLE	THICKNESS
6'-0"	3 1/4"	0.1196"

**EQUIPMENT DATA (FOR INFORMATION ONLY)**

ITEM	DESCRIPTION	SIZE (INCHES)	WEIGHT (LBS)
C1	SIGNAL	70 x 13.5 x 7	100
C2	SIGNAL	56.5 x 13.5 x 7	65
D1	SIGN	36 x 36	10.1
D2	SIGN	36 x 30	8.4
E1	GPS UNIT	4.47 x 14.57	1.8
E2	WIFI	4.47 x 14.57	10
E3	ACCESS POINT	4.47 x 14.57	3.3
E4	REPEATER	4.47 x 14.57	2.6
P1	PED SIGNAL	18.8 x 18.5 x 9.1	65
S1	SIGN	60 x 18	8.4
TC	TRAFFIC CAMERA	11 x 24	10
TS	TROLLEY SIGNAL	12 x 24	25



**ELEVATION**

1

V:\21064\_VANNESS\_BRT\_MISSION\_LONBARD\_V2\_Design\_Working\_Drawings\EST\_Current\21064\_ST-103.dwg VU Wed Jun 15, 2016 - 3:00 pm

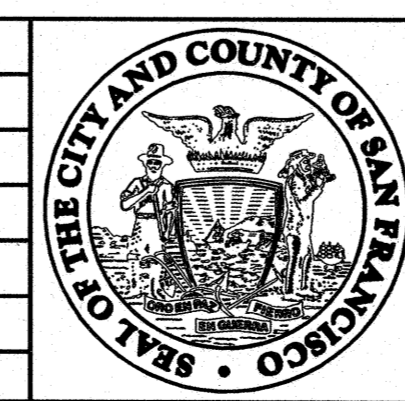
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Date: 6/27/16  
Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

DESIGNED: RR  
DRAWN: TEAM  
CHECKED: JS  
REVIEWED:  
RECOMMENDED:  
APPROVED:  
DATE:



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED

for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

TRAFFIC MAST ARM AND STREETLIGHT POLE

1289

CL-29077

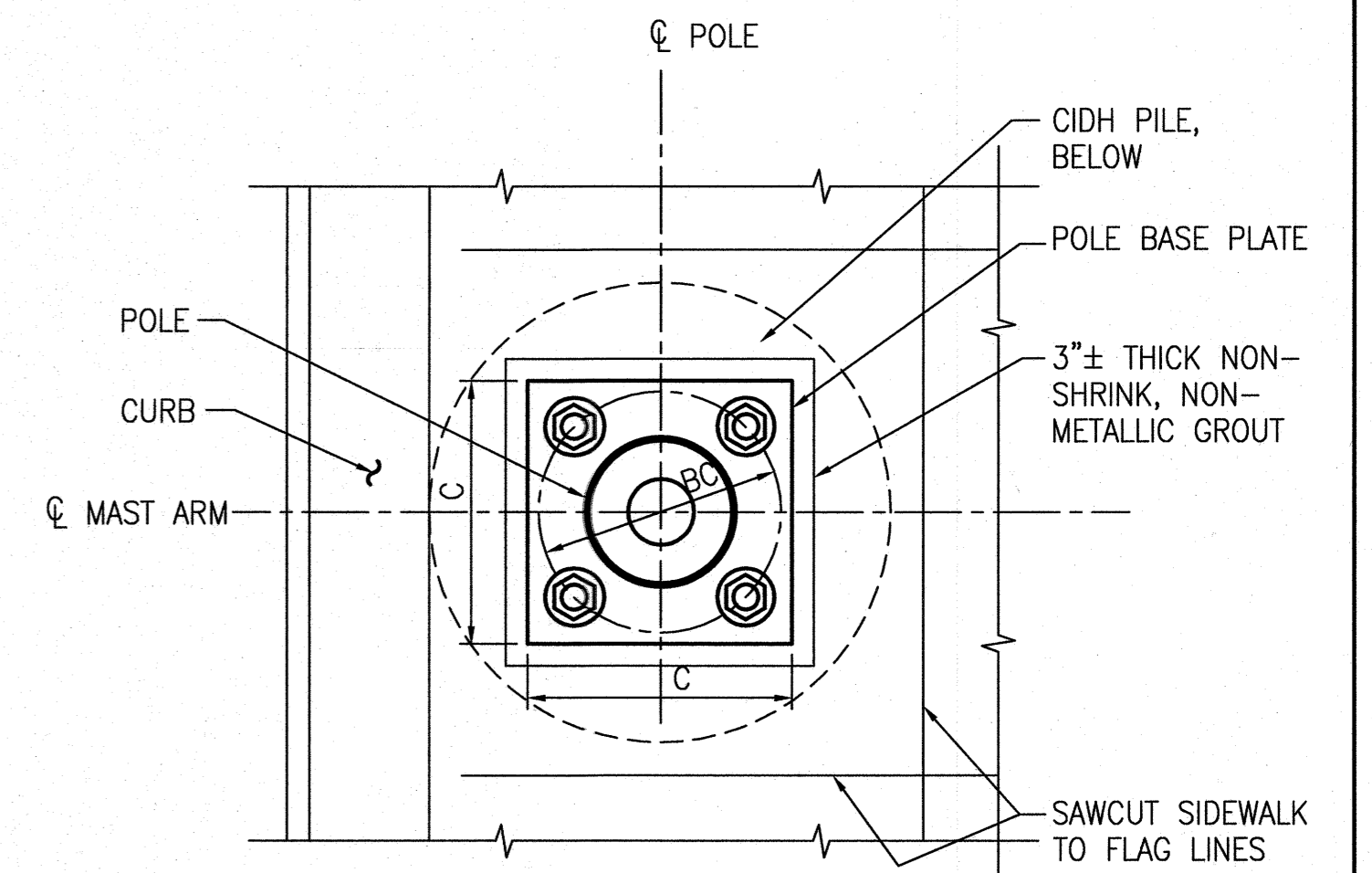
ST-103	REVISION
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**CIDH REINFORCING AND INSPECTION TUBE SCHEDULE**

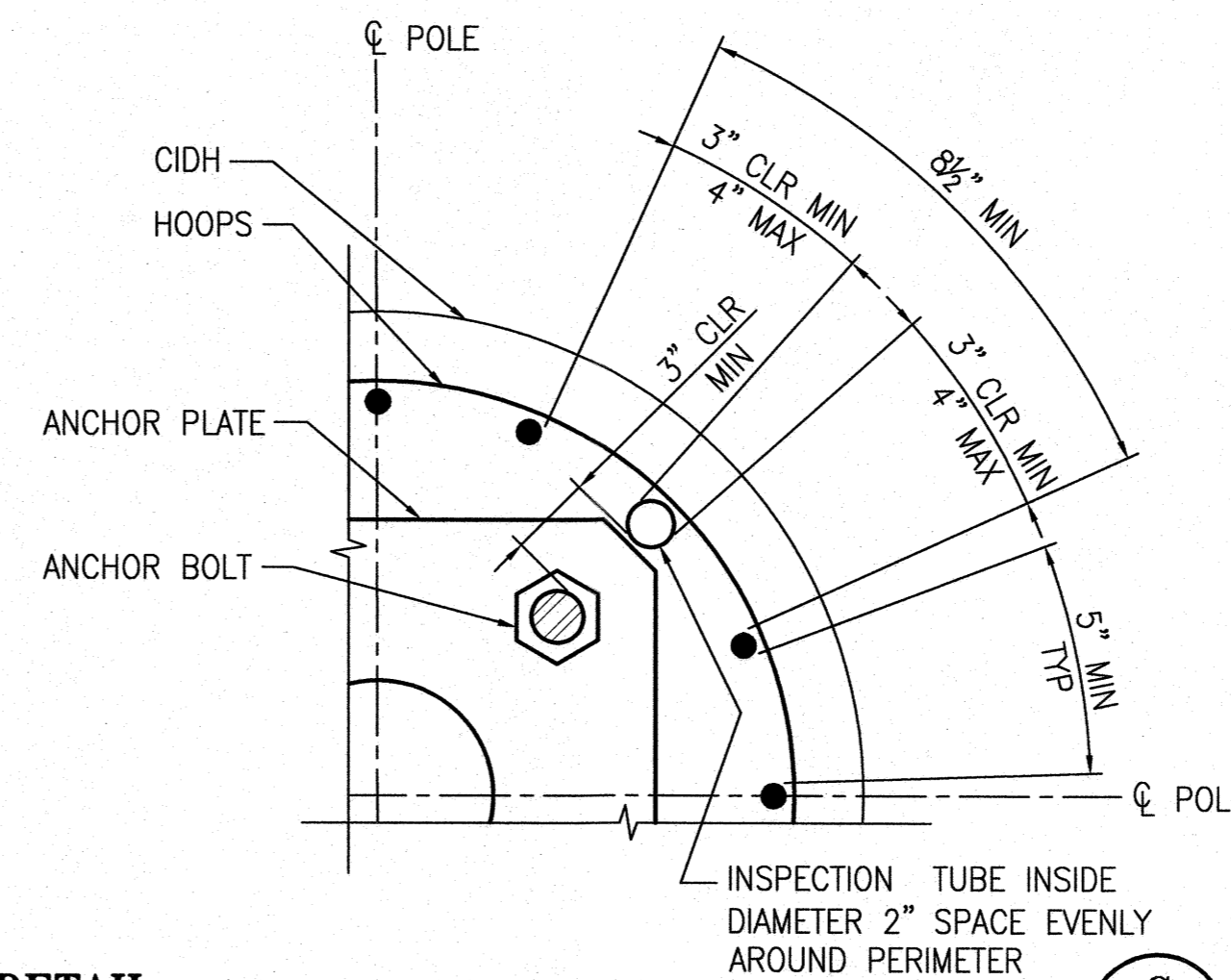
CIDH DIAMETER	VERTICAL BARS	HOOPS (WELDED)	INSPECTION TUBE
3'-0"	12-#7	#5 @ 6"	4

**NOTES:**

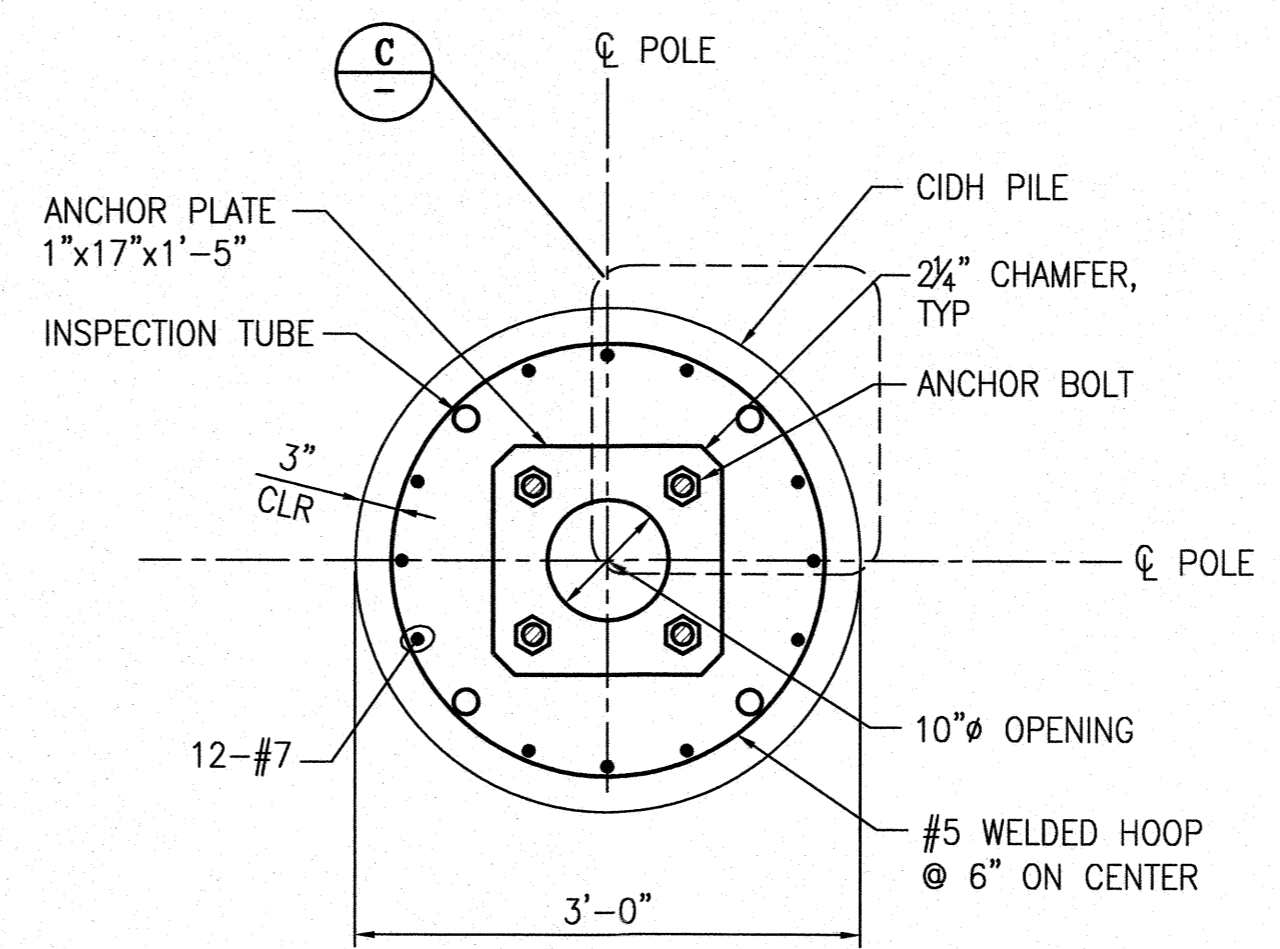
- PROVIDE A HEX NUT, LEVELING NUT AND 2 WASHERS FOR EACH ANCHOR BOLT.
- FOR ANCHOR BOLTS, THREAD TOP 10" AND GALVANIZE TOP 1'-0"; THREAD BOTTOM 8".
- 4"x6½" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. HANDHOLE REINFORCEMENT RING SHALL BE ¾"x2". PROVIDE ¼" COVER PLATE.
- HANDHOLES SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
- DURING POLE INSTALLATION, THE POST SHALL BE RAKED WITH THE USE OF LEVELING NUTS. SEE OVERHEAD PLANS FOR RAKING REQUIREMENTS OF POLES.
- SOME LOCATIONS MAY REQUIRE THE USE OF CASINGS, REFER TO PROJECT GEOTECHNICAL MEMORANDUM.
- PROVIDE CONDUIT TO PULL BOX OR AS SHOWN ON PLANS.



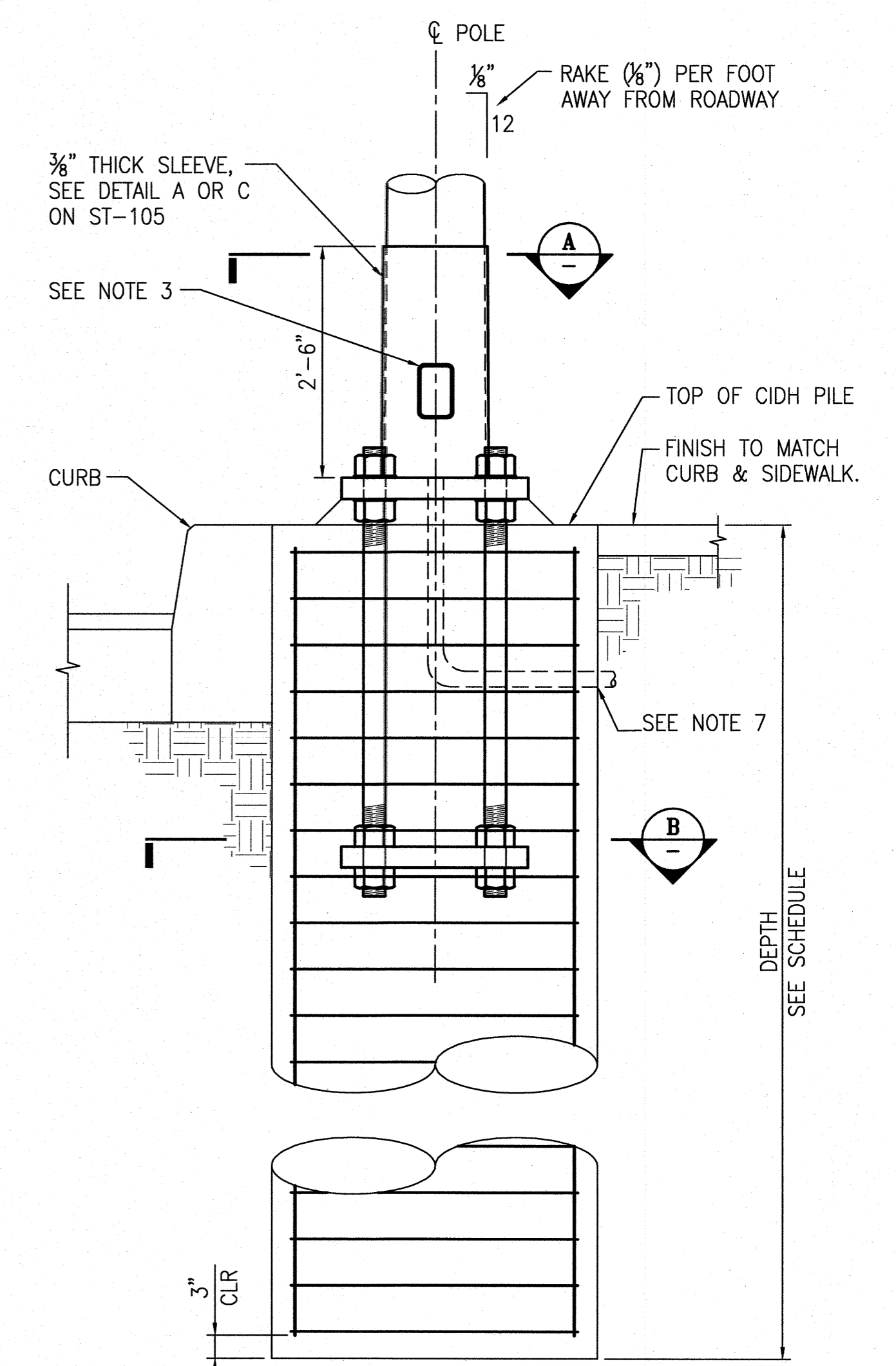
**SECTION A**  
SCALE: 3/4"=1'-0"



**DETAIL C**  
SCALE: 1 1/2"=1'-0"



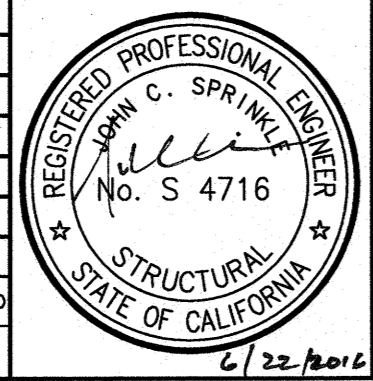
**SECTION B**  
SCALE: 3/4"=1'-0"



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

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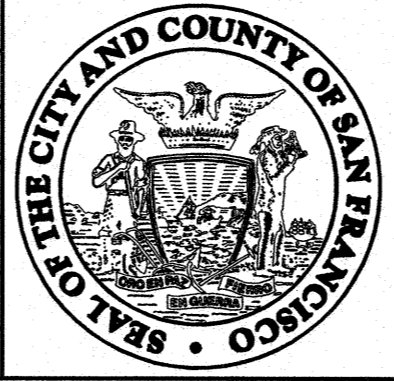
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



**DESIGN AND ENGINEERING DIVISION**  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr:	RAYMOND LUI	Date:	6/27/16
Deputy Division Mgr:	FERNANDO CISNEROS		6/27/16
Division Mgr:	PATRICK RIVERA		6/28/16

DESIGNED	FR
DRAWN	TEAM
CHECKED	JS
REVIEWED	
RECOMMENDED	
APPROVED	
DATE	



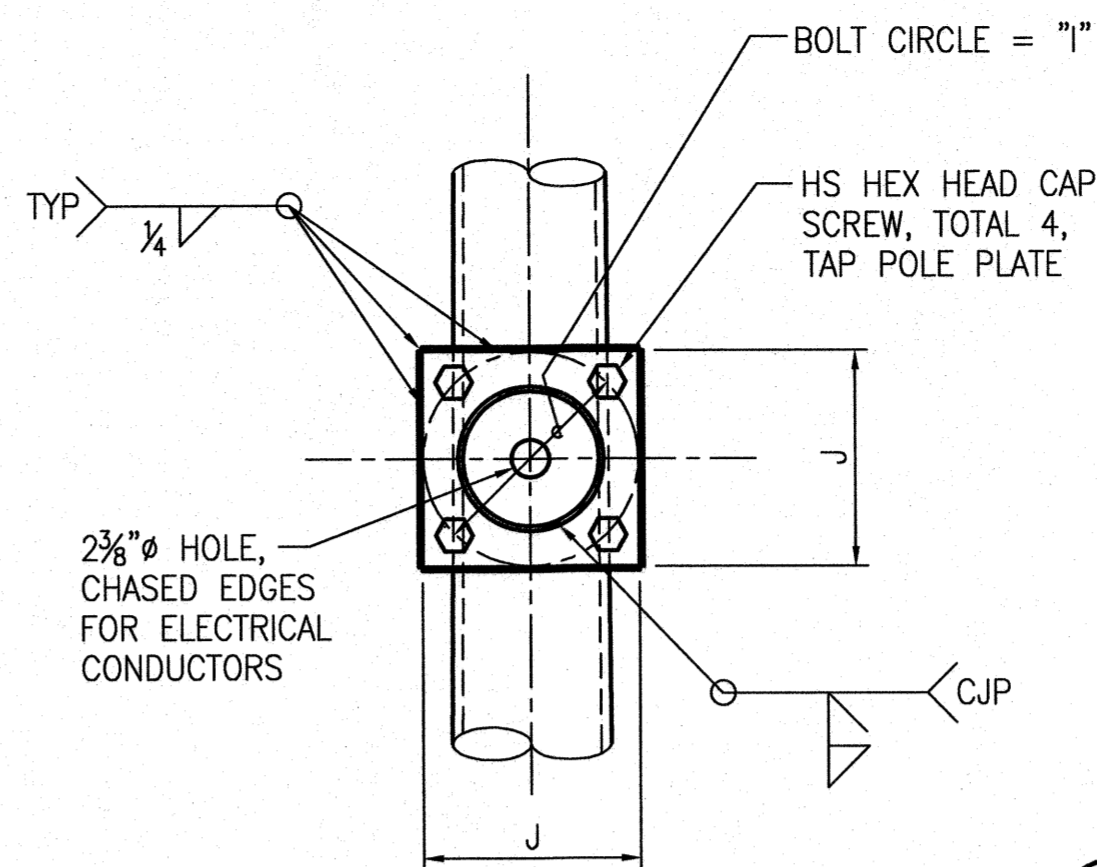
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
  
APPROVED  
  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
  
TRAFFIC MAST ARM AND STREETLIGHT  
POLE FOUNDATION DETAILS

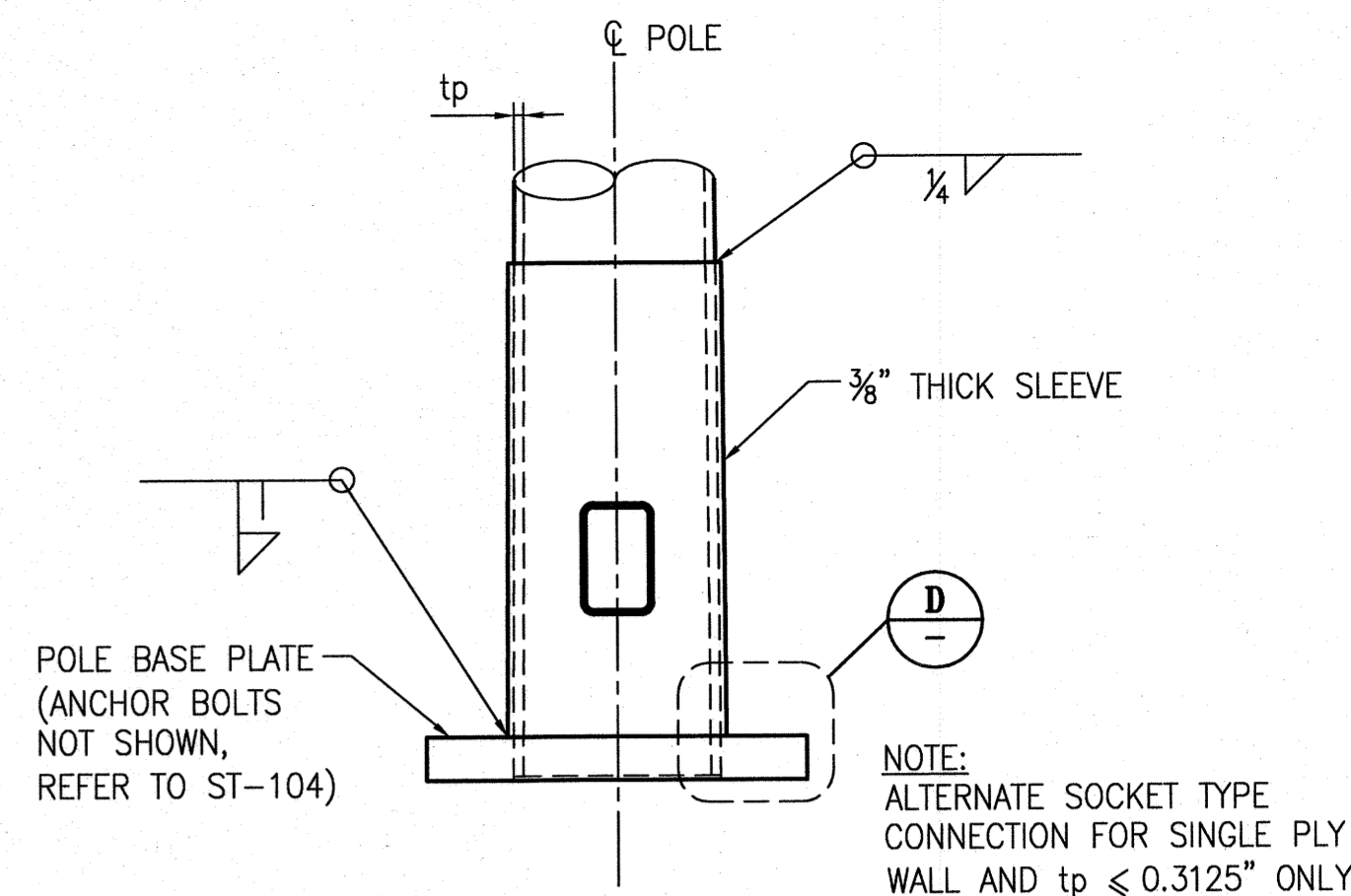
1289
CL-29078
ST-104
REVISION 0

**NOTES:**

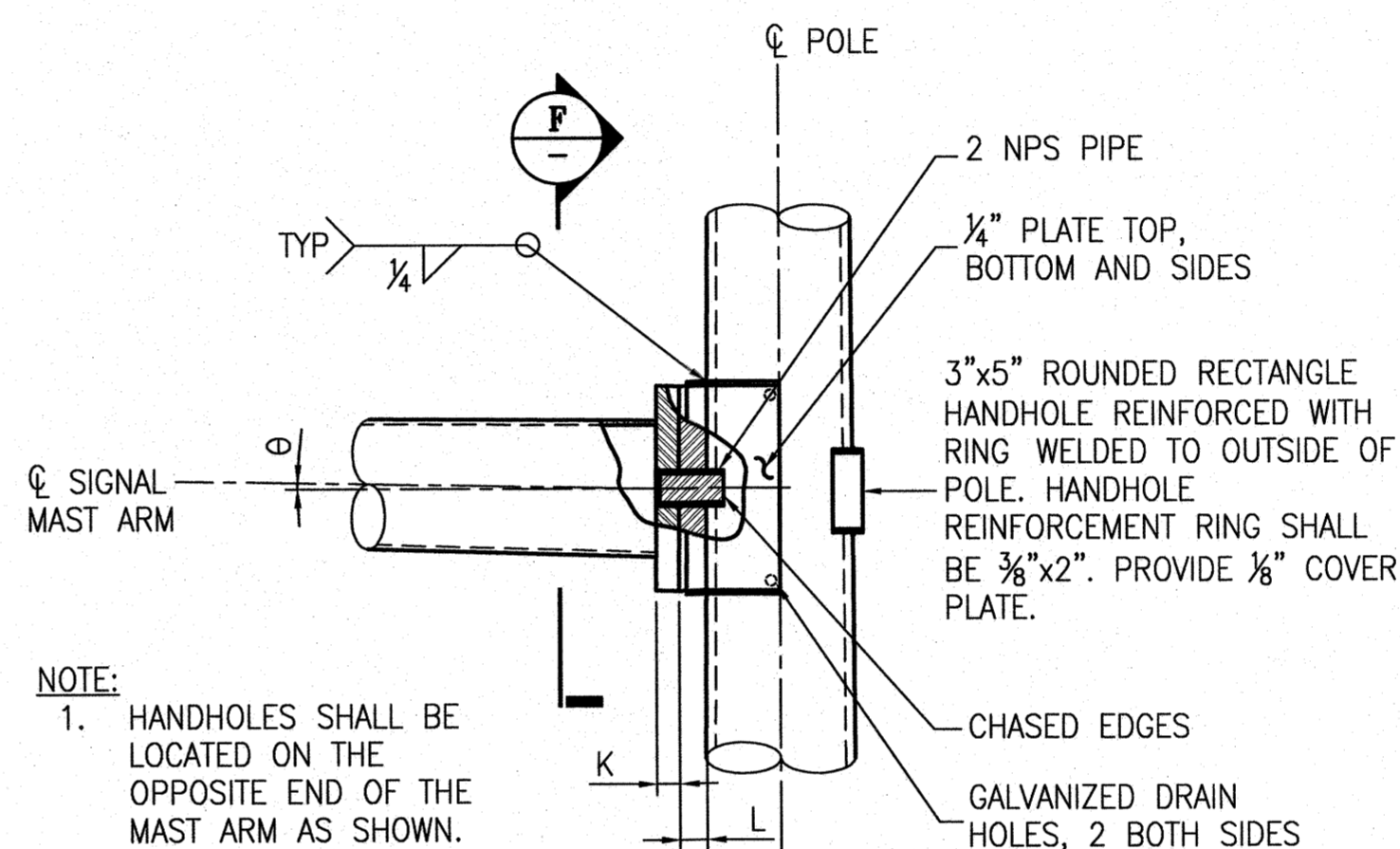
- CAP SCREWS SHALL BE TIGHTENED BY THE TURN-OF-NUT METHOD  $\frac{1}{2}$  TURN FROM A SNUG TIGHT CONDITION. NO WASHER WILL BE REQUIRED.



**SECTION F**  
 SCALE: 1"=1'-0"

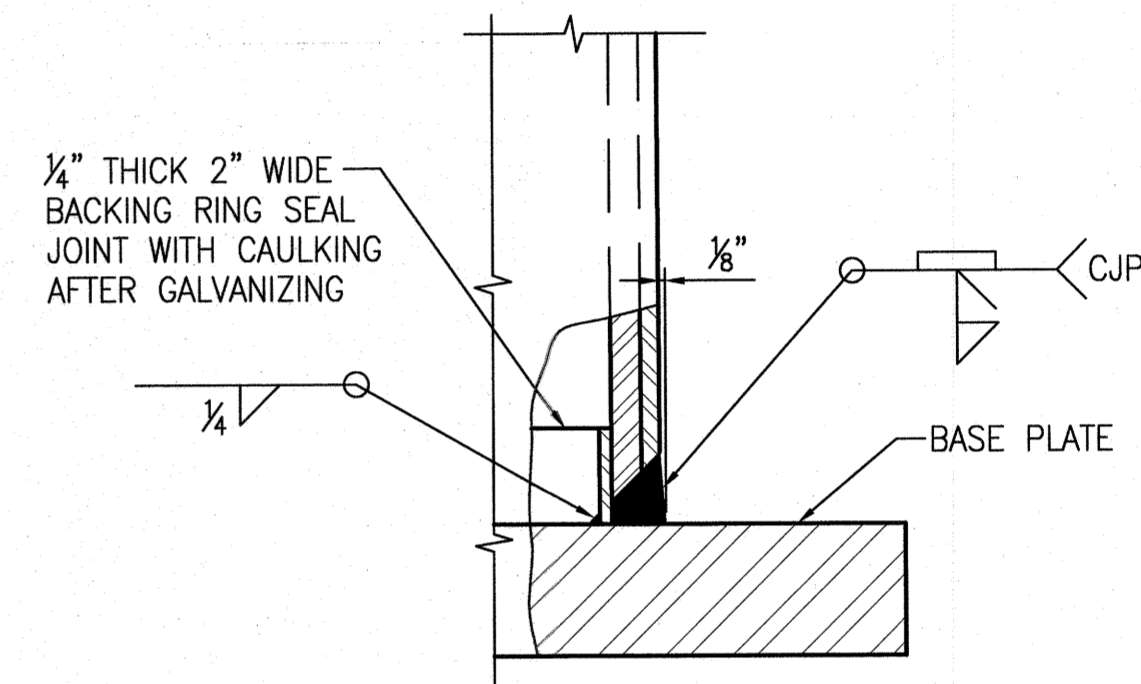


**ELEVATION C**  
 SCALE: 1"=1'-0"  
 NOTE: ALTERNATE SOCKET TYPE CONNECTION FOR SINGLE PLY WALL AND tp  $\leq$  0.3125" ONLY

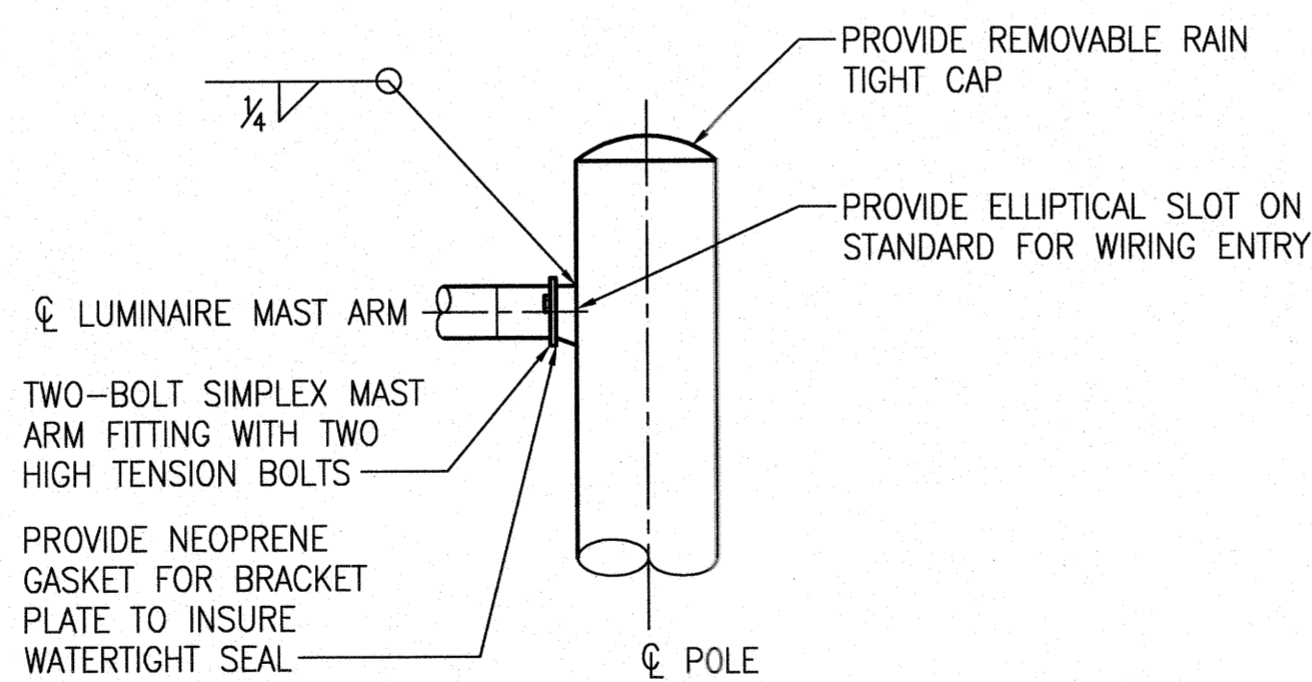


- NOTE:**
- HANDHOLES SHALL BE LOCATED ON THE OPPOSITE END OF THE MAST ARM AS SHOWN.

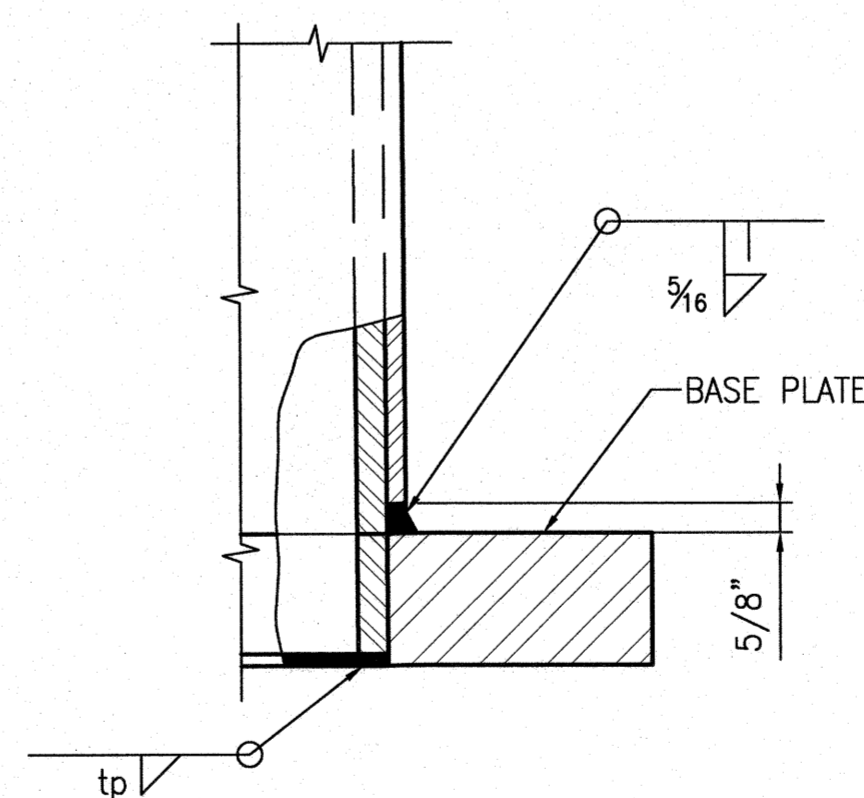
**ELEVATION E**  
 SCALE: 1"=1'-0"  
 ST-103



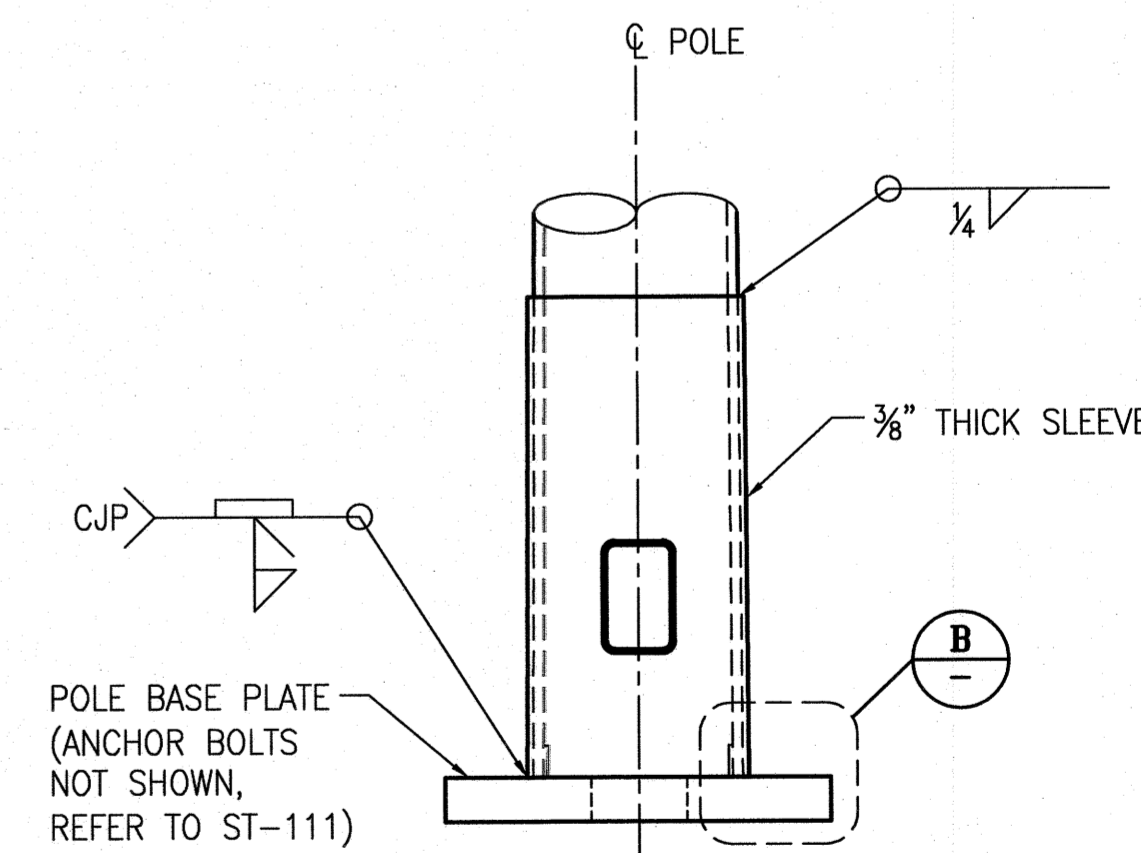
**DETAIL B**  
 SCALE: 3"=1'-0"



**ELEVATION G**  
 SCALE: 1"=1'-0"  
 ST-103



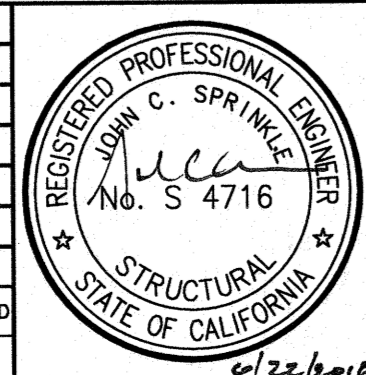
**DETAIL D**  
 SCALE: 3"=1'-0"



**ELEVATION A**  
 SCALE: 1"=1'-0"  
 ST-103

V:\21061\_VANNESS\_BRT\_MISSION\_LOMBARD\_V2\_Design\_Working\_Drawings\EST\_Current\21061\_ST-103.dwg YU Wed Jun 15, 2016 - 5:00 pm

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
 PUBLIC WORKS  
 CITY & COUNTY OF SAN FRANCISCO  
 30 VAN NESS AVENUE, 5TH FLOOR  
 SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
 Date: 6/27/16  
 Deputy Division Mgr: FERNANDO CISNEROS  
 Date: 6/27/16  
 Division Mgr: PATRICK RIVERA  
 Date: 6/28/16

DESIGNED: FR  
 DRAWN: TEAM  
 CHECKED: JS  
 REVIEWED:  
 RECOMMENDED:  
 APPROVED:  
 DATE:



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED

for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
 VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT

TRAFFIC MAST ARM AND STREETLIGHT POLE DETAILS

1289

CL-29079

ST-105	REVISION
	0

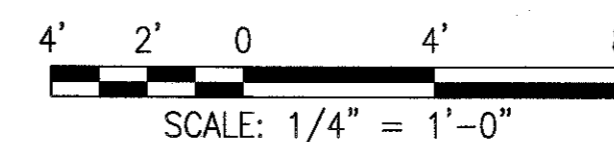
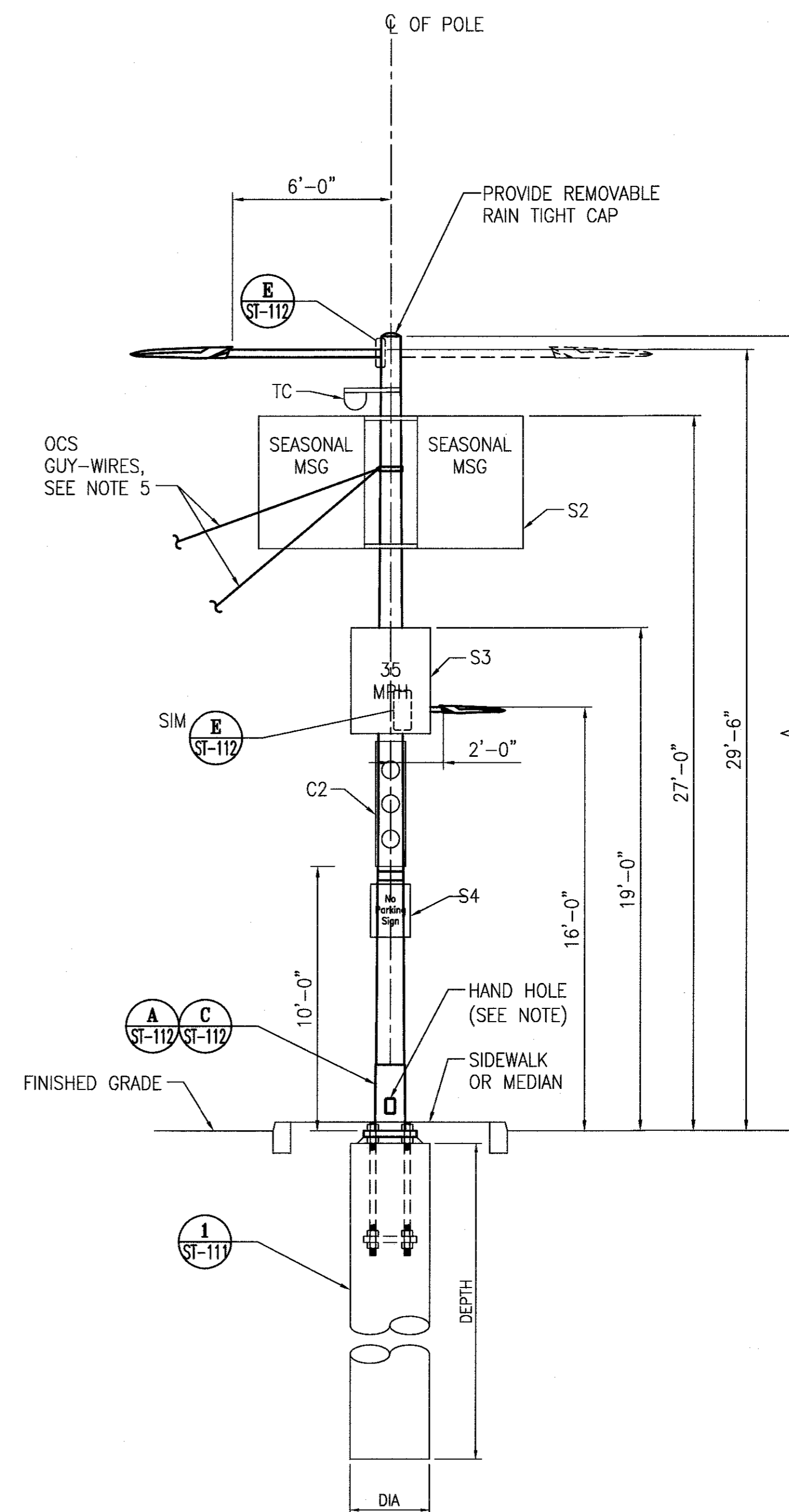
POLE DATA					BASE PLATE DATA			ANCHOR PLATE DATA		CIDH PILE FOUNDATION				
POLE TYPE	WIND VELOCITY (MPH)	A HEIGHT	MIN OD		THICKNESS	C	BC= BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	THICKNESS	W X L	DIAMETER	DEPTH	REINFORCED
			BASE	TOP										
761N	100	30'-0"	10"	5.8"	1 PLY - #3 (0.2391")	1'-5"	1'-3"	1 1/2"	1 1/2"Øx45"	1"	15" X 15"	3'-0"	12'-0"	YES
765N			12"	7.8"	1 PLY - #Ø (0.3125")	1'-7"	1'-5 1/2"	2"	1 3/4"Øx45"	1"	17" X 17"	3'-0"		
767			12"	7.8"	2 PLY - #3 (0.4782")	1'-11"	1'-10"	2 1/4"	2"Øx45"	2"	21" X 21"	3'-6"		
770			13"	8.8"	2 PLY - #Ø (0.625")	2'-0"	1'-10"	2 3/4"	2 1/4"Øx45"	2 1/4"	22" X 22"	3'-6"		

**NOTES:**

- OUTSIDE DIAMETER, WALL THICKNESS, AND CORRESPONDING SECTION PROPERTIES OF POLES ARE MINIMUMS. UNLESS OTHERWISE SPECIFIED, ALTERNATIVE SECTIONS SHALL REQUIRE APPROVAL BY THE ENGINEER.
- WIND LOADING (3 SECOND): 100 MPH.
- UNIT STRESSES (STRUCTURAL STEEL):  
a. Fy = 55,000 psi (TAPERED STEEL TUBE AND ANCHOR BOLTS)  
b. Fy = 50,000 psi (UNLESS OTHERWISE NOTED)
- UNIT STRESSES (REINFORCED CONCRETE):  
a. Fc = 4,000 psi (AT 28 DAYS)  
b. Fy = 60,000 psi
- FOR OVERHEAD CONTACT SYSTEM, SEE OVERHEAD PLANS (OV SHEETS).
- HAND HOLE SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
- LUMINAIRE MAST ARMS SHALL BE ROUND, TAPERED STEEL TUBES, TAPER OF 0.1375" TO 0.143" PER FOOT WITH AN END SECTION OF 2 3/8" OD FOR MOUNTING HARDWARE. EXTENSION OF 2 NPS STANDARD PIPE AND 7" LONG MAY BE USED AT THE OPTION OF THE MANUFACTURER.
- FOR POLE LOCATIONS, SEE OVERHEAD PLANS (OV SHEETS)

LUMINAIRE MAST ARM DATA		
PROJECTED LENGTH	MIN OD AT POLE	THICKNESS
2'-0"	2 5/8"	0.1196"
6'-0"	3 1/4"	0.1196"

EQUIPMENT DATA (FOR INFORMATION ONLY)			
ITEM	DESCRIPTION	SIZE (INCHES)	WEIGHT (LBS)
C2	SIGNAL	56.5 x 13.5	65
S2	SIGN	72 x 36	20
S3	SIGN	48 x 36	10
S4	SIGN	24 x 18	5
TC	TRAFFIC CAMERA	11 x 24	10



ELEVATION

1

V:\21061\_VANNESS\_BRT\_MISSION\_LOMBARD\_V2\_Design\_Working\_Drawings\_EST\_Current\21061\_ST-110.dwg dlsung Mon Jul 13, 2015 8:07 am

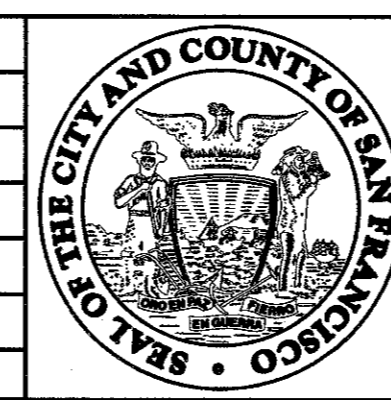
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date: 7/13/15  
11/20/15  
11/20/15



CITY AND COUNTY OF SAN FRANCISCO  
MUNICIPAL TRANSPORTATION AGENCY

APPROVED  
for the DIRECTOR OF TRANSPORTATION

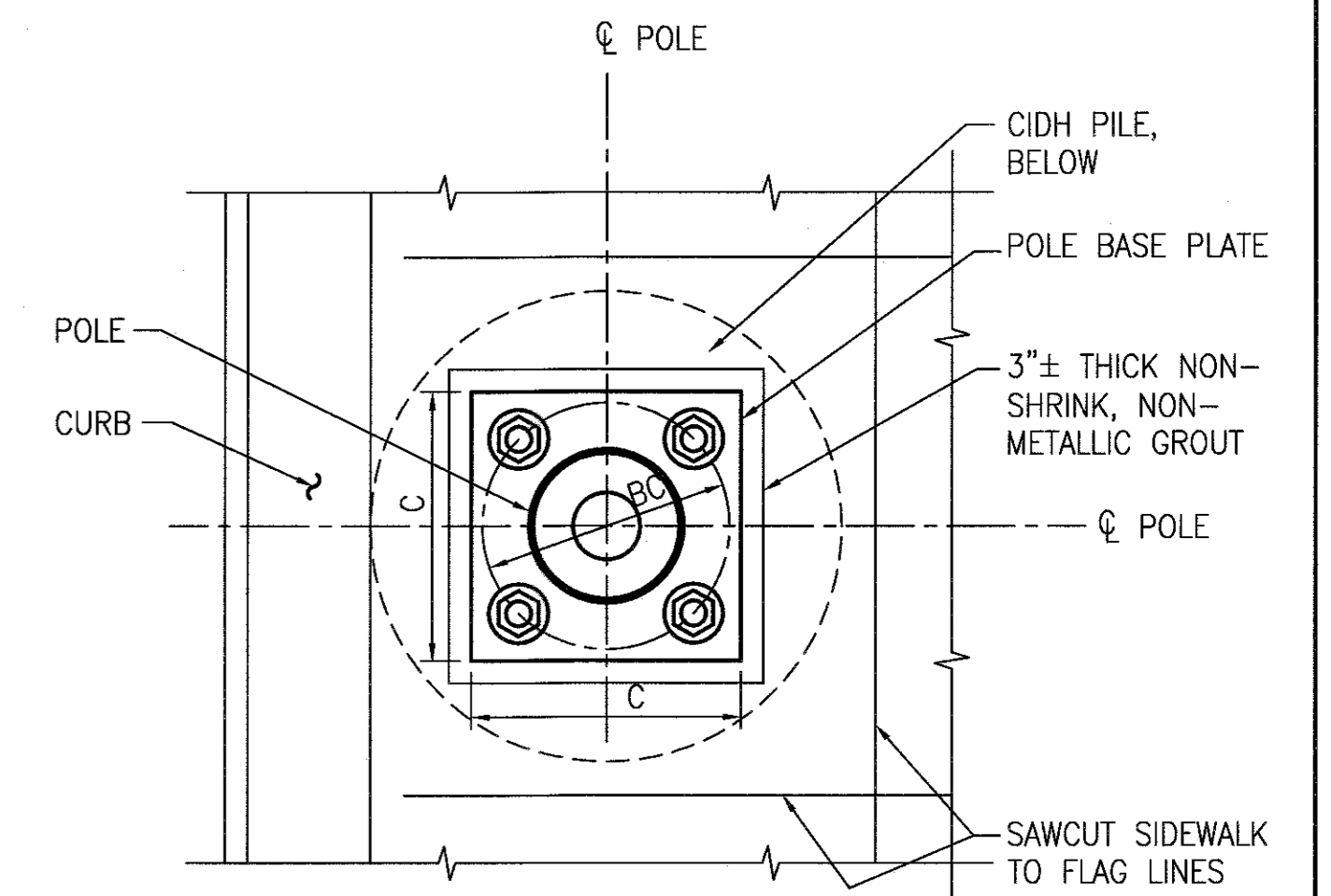
MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT  
OCS AND STREETLIGHT POLES

1289	REVISION
CL-29080	
ST-110	0

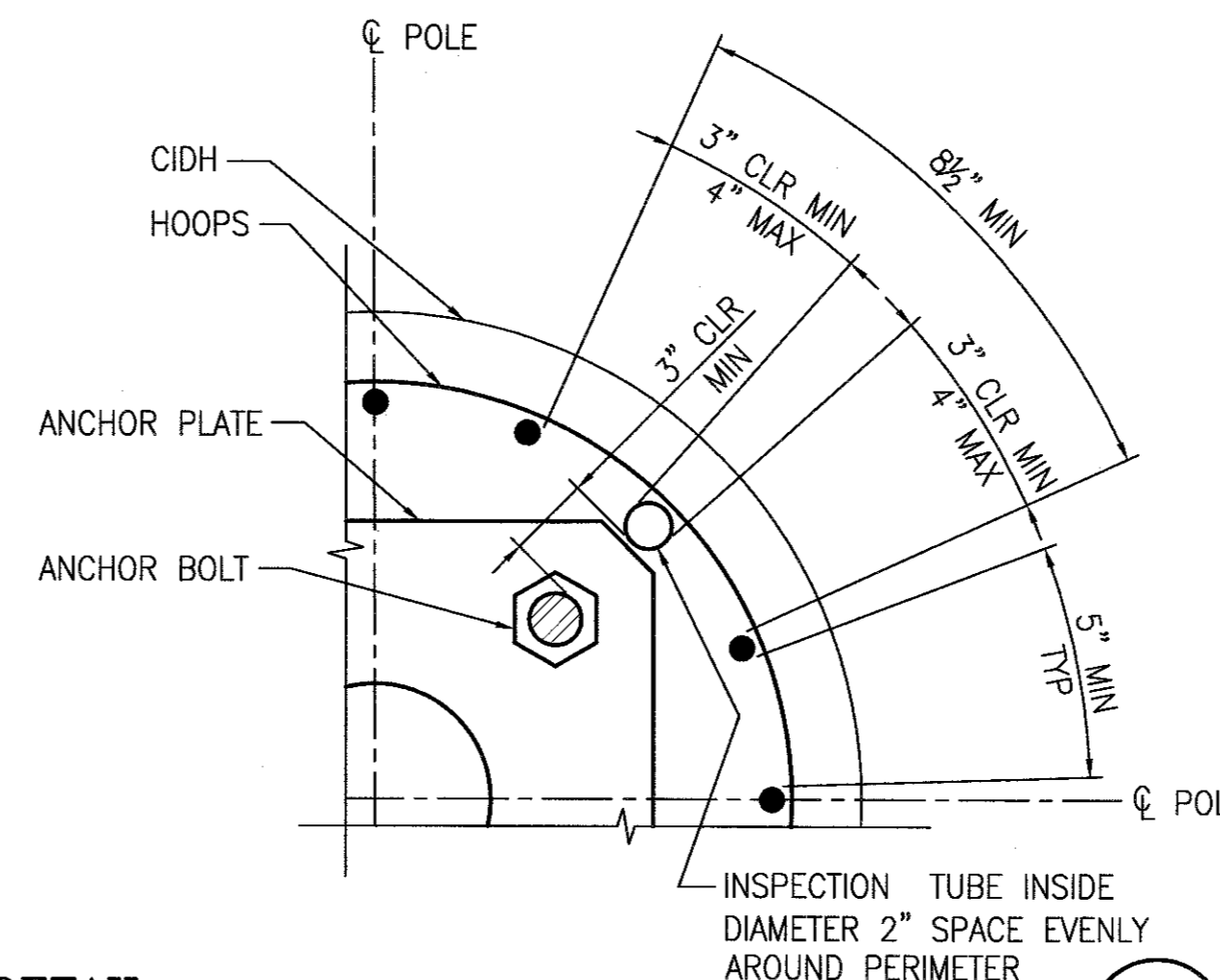
CIDH REINFORCING AND INSPECTION TUBE SCHEDULE			
CIDH DIAMETER	VERTICAL BARS	HOOPS (WELDED)	INSPECTION TUBE
3'-0"	12-#7	#5 @ 6"	4
3'-6"	12-#9	#5 @ 6"	4

**SHEET NOTES:**

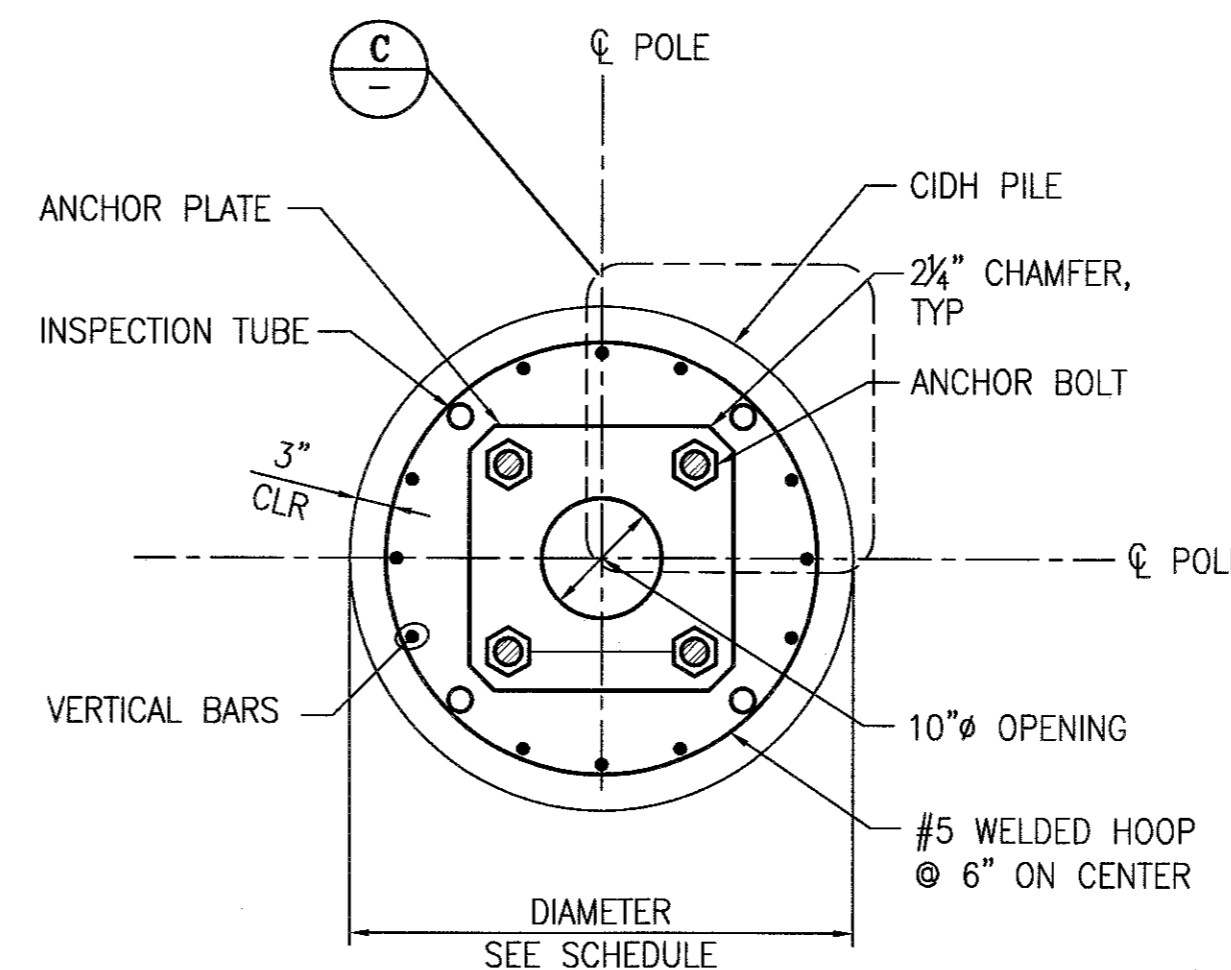
1. PROVIDE A HEX NUT, LEVELING NUT AND 2 WASHERS FOR EACH ANCHOR BOLT.
2. FOR ANCHOR BOLTS, THREAD TOP 10" AND GALVANIZE TOP 1'-0"; THREAD BOTTOM 8".
3. 4"x6½" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. HANDHOLE REINFORCEMENT RING SHALL BE ¾"x2". PROVIDE ½" COVER PLATE.
4. HANDHOLES SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
5. DURING POLE INSTALLATION, THE POST SHALL BE RAKED WITH THE USE OF LEVELING NUTS. SEE OVERHEAD PLANS FOR RAKING REQUIREMENTS OF POLES.
6. FOR PAVING COLOR & FINISH SEE LANDSCAPE DRAWINGS
7. PROVIDE CONDUIT TO PULL BOX OR AS SHOWN ON PLANS.



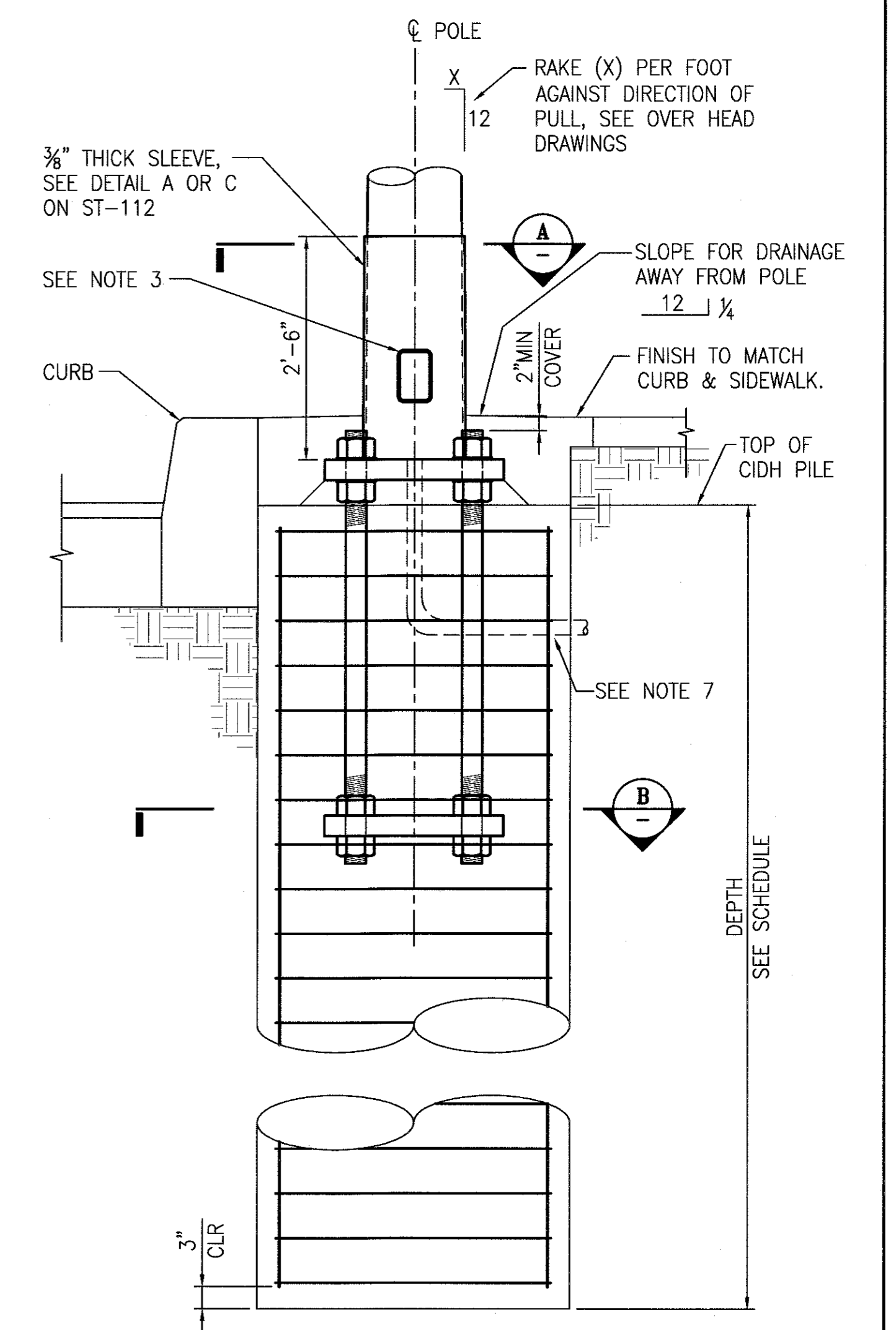
**SECTION A**  
SCALE: 3/4"=1'-0"



**DETAIL C**  
SCALE: 1 1/2"=1'-0"



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



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

V:\1081\_VANNESS\_BRT\_MISSION\_LOMBARD\2\_Design\Working Drawings\EST\Current\ 21081\_ST-111.dwg dtung Mon Jul 13 2015 - 8:08 am

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				

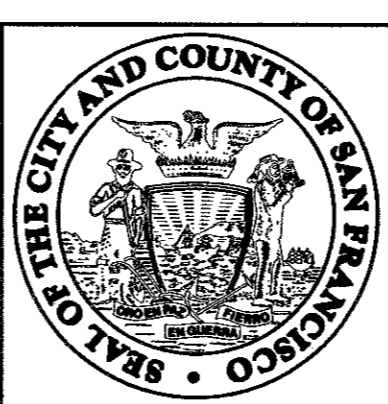


**DESIGN AND ENGINEERING DIVISION**  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond C. Sprinkle* RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date: 7/13/15  
11/20/15  
4/24/15

DESIGNED: RFR  
DRAWN: DL  
CHECKED: JS  
REVIEWED: *AT*  
RECOMMENDED: *pw*  
APPROVED: *RN*  
DATE:



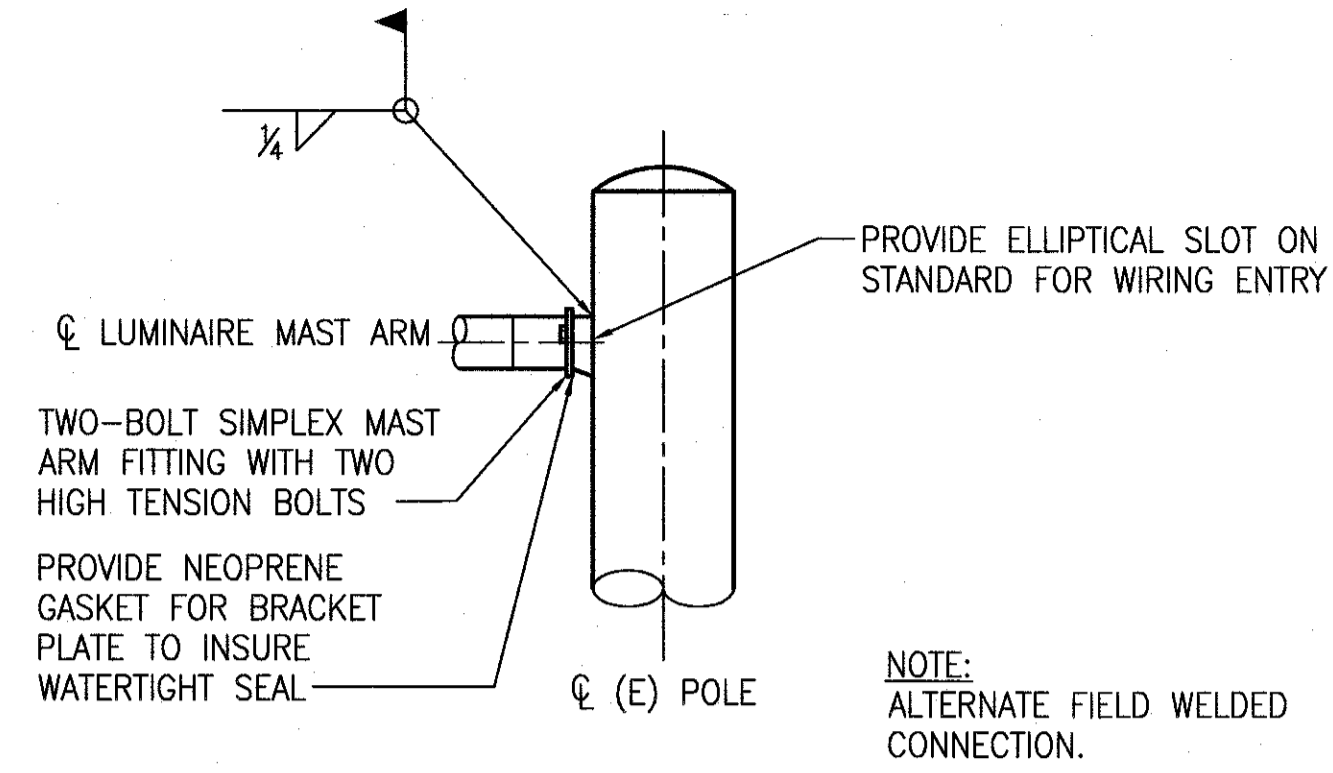
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: *[Signature]*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
OCS AND STREETLIGHT  
POLE FOUNDATION DETAILS

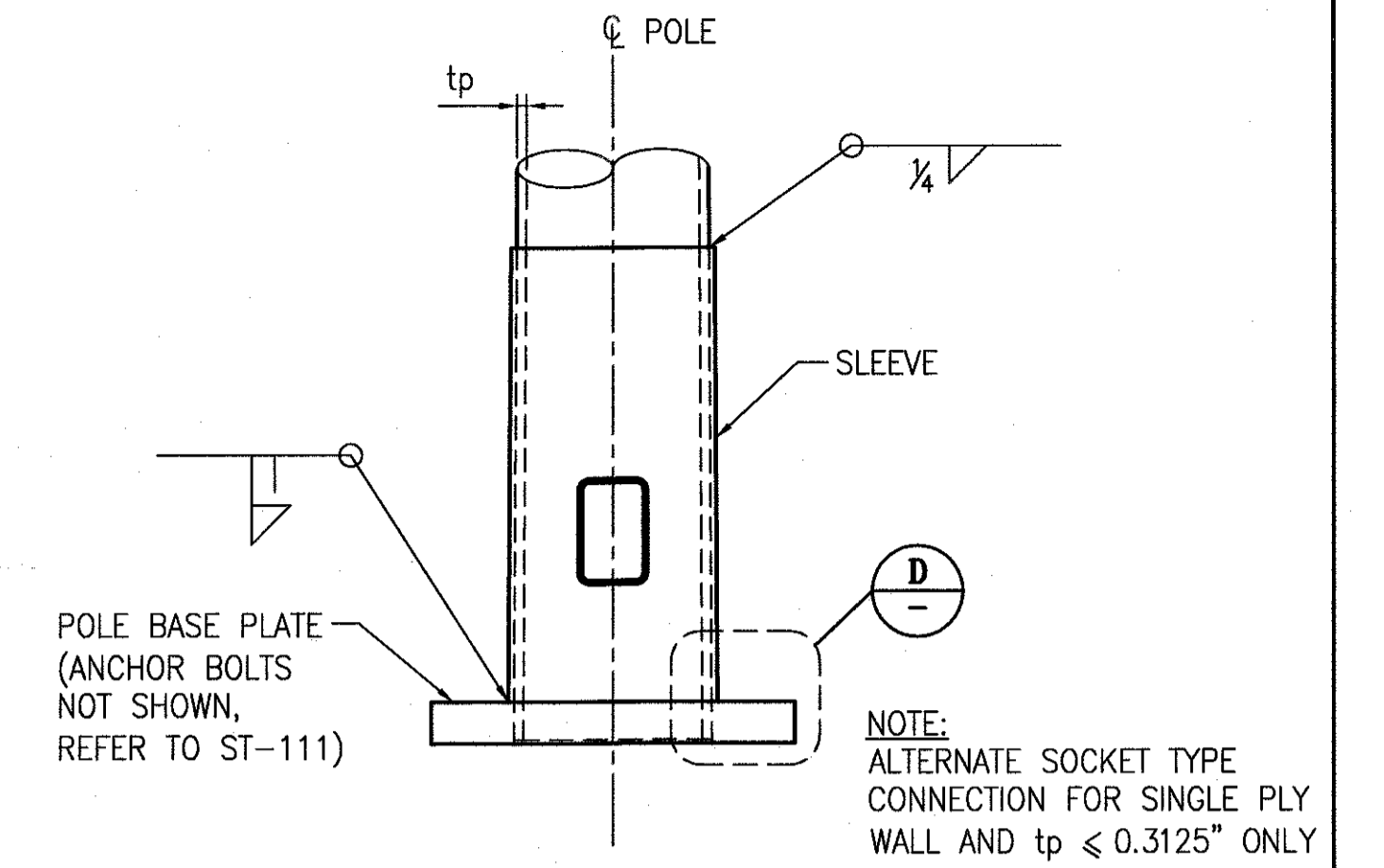
1289	REVISION
CL-29081	
ST-111	0

**SHEET NOTES:**

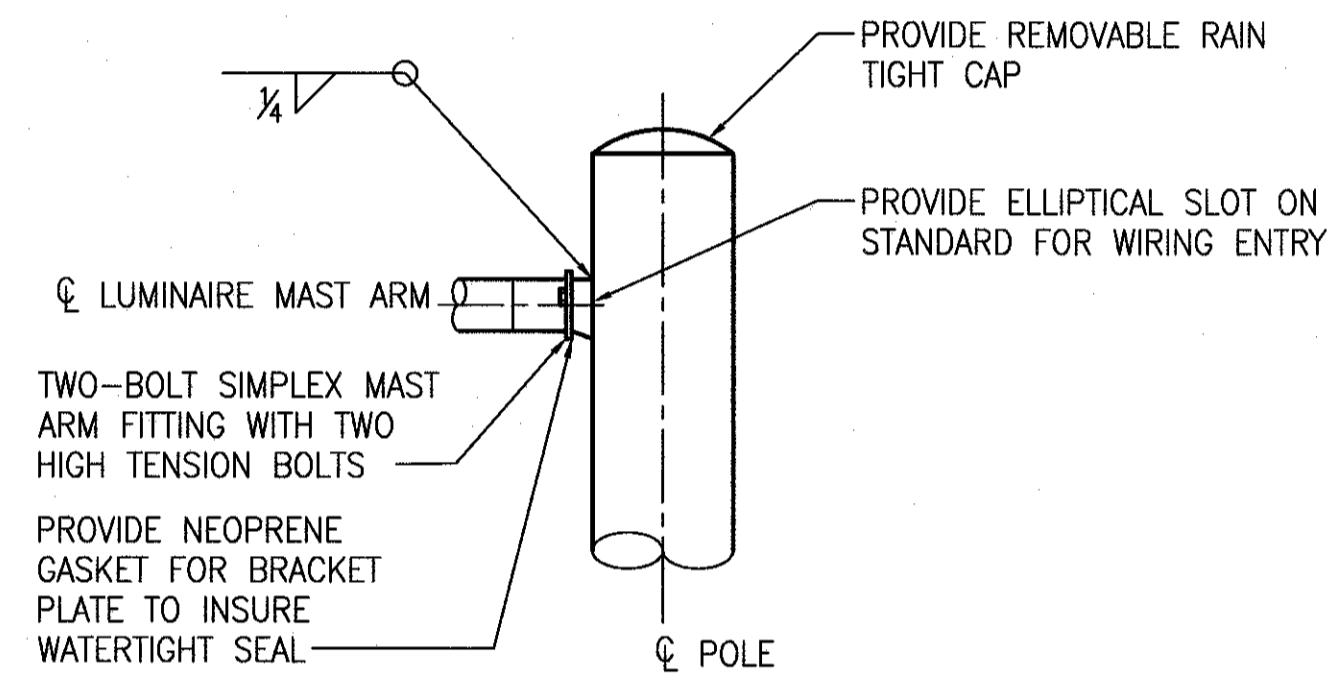
- CAP SCREWS SHALL BE TIGHTENED BY THE TURN-OF-NUT METHOD 1/8 TURN FROM A SNUG TIGHT CONDITION. NO WASHER WILL BE REQUIRED.



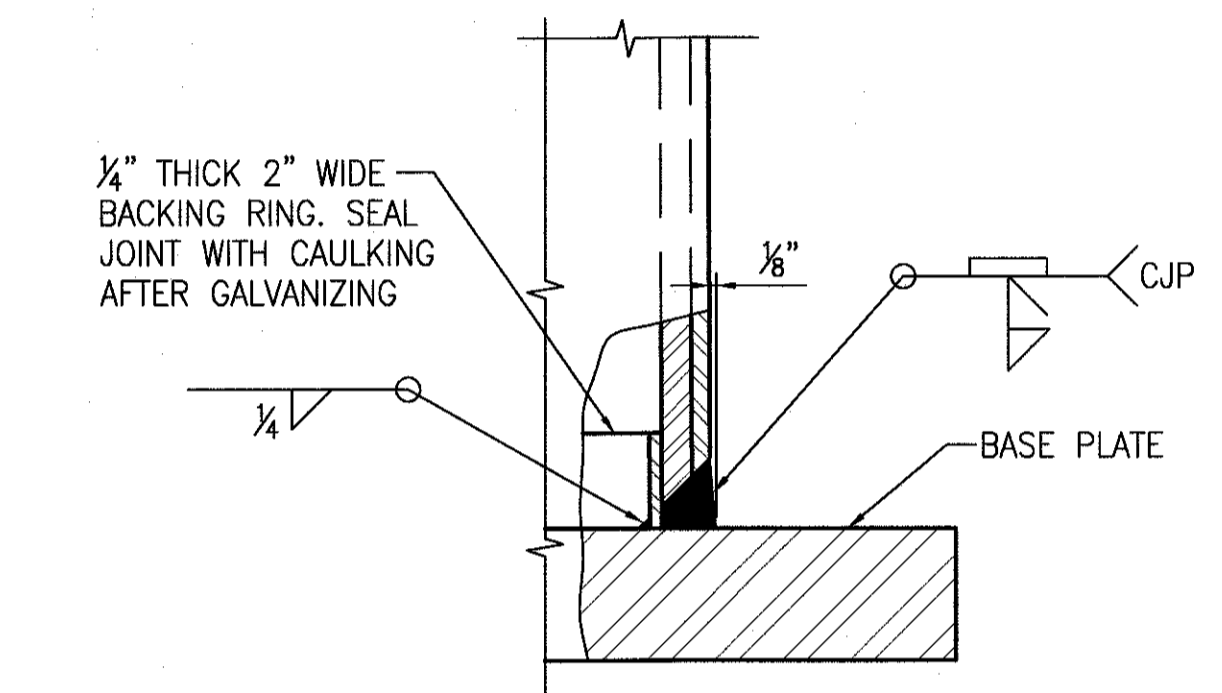
**ELEVATION**  
SCALE: 1"=1'-0"  
F  
ST-110



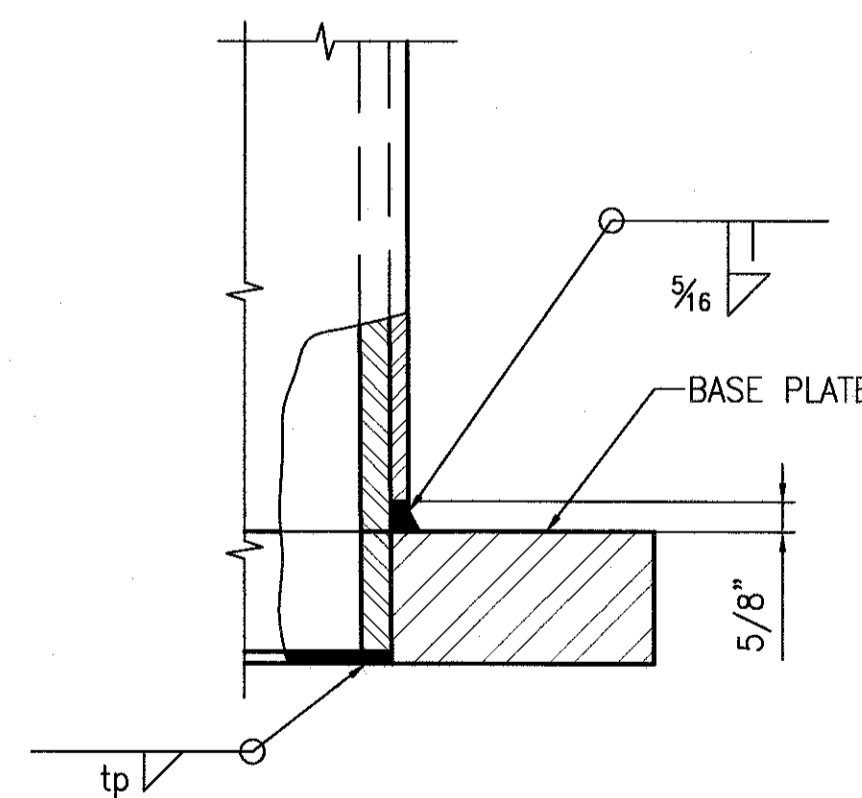
**ELEVATION**  
SCALE: 1"=1'-0"  
C  
ST-110



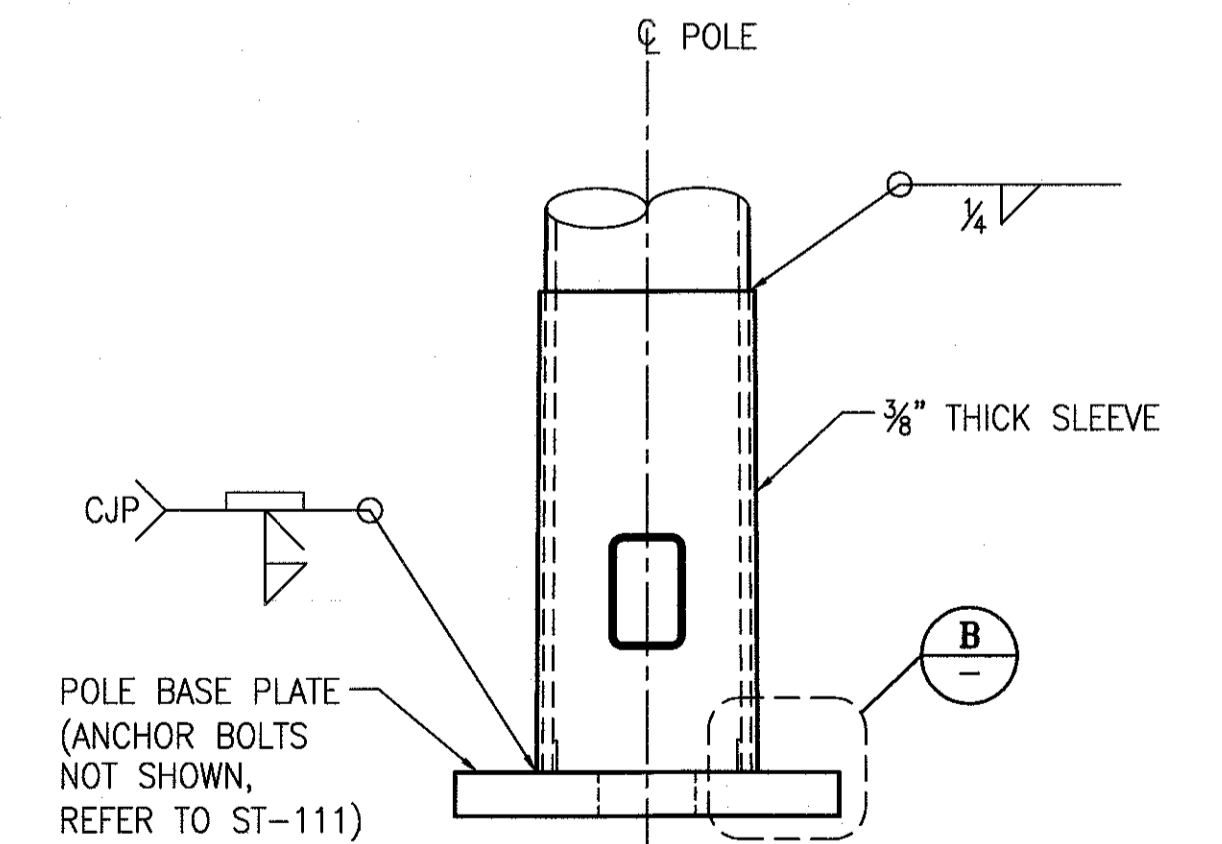
**ELEVATION**  
SCALE: 1"=1'-0"  
E  
ST-110



**DETAIL**  
SCALE: 3"=1'-0"  
B



**DETAIL**  
SCALE: 3"=1'-0"  
D



**ELEVATION**  
SCALE: 1"=1'-0"  
A  
ST-110

V:\2106L\_VANNESS\_BRT\_MMISSION\_LOMBARD\_V2\_Design\_Working\_Drawings\_EST\Current\2106L\_ST-112.dwg rrlise Thu Nov 19, 2015 - 3:37 pm

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



<b>DESIGN AND ENGINEERING DIVISION</b> PUBLIC WORKS CITY & COUNTY OF SAN FRANCISCO 30 VAN NESS AVENUE, 5TH FLOOR SAN FRANCISCO, CA 94102 - 6028		Section Mgr. <i>Raymond C. Sprinkle</i> RAYMOND LUI	Date: 11/17/15	DESIGNED: RR
		Deputy Division Mgr. <i>Fernando Cisneros</i> FERNANDO CISNEROS	11/20/15	DRAWN: DL
		Division Mgr. <i>Patrick Rivera</i> PATRICK RIVERA	11/20/15	CHECKED: JS
				REVIEWED: RL
				RECOMMENDED: PW
				APPROVED: R.N.
				DATE:

CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED: *Vincent Ha*  
 for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM		1289
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT		CL-29082
OCS AND STREETLIGHT POLE DETAILS	ST-112	REVISION
		0

**SIGNAL MAST ARM DATA**

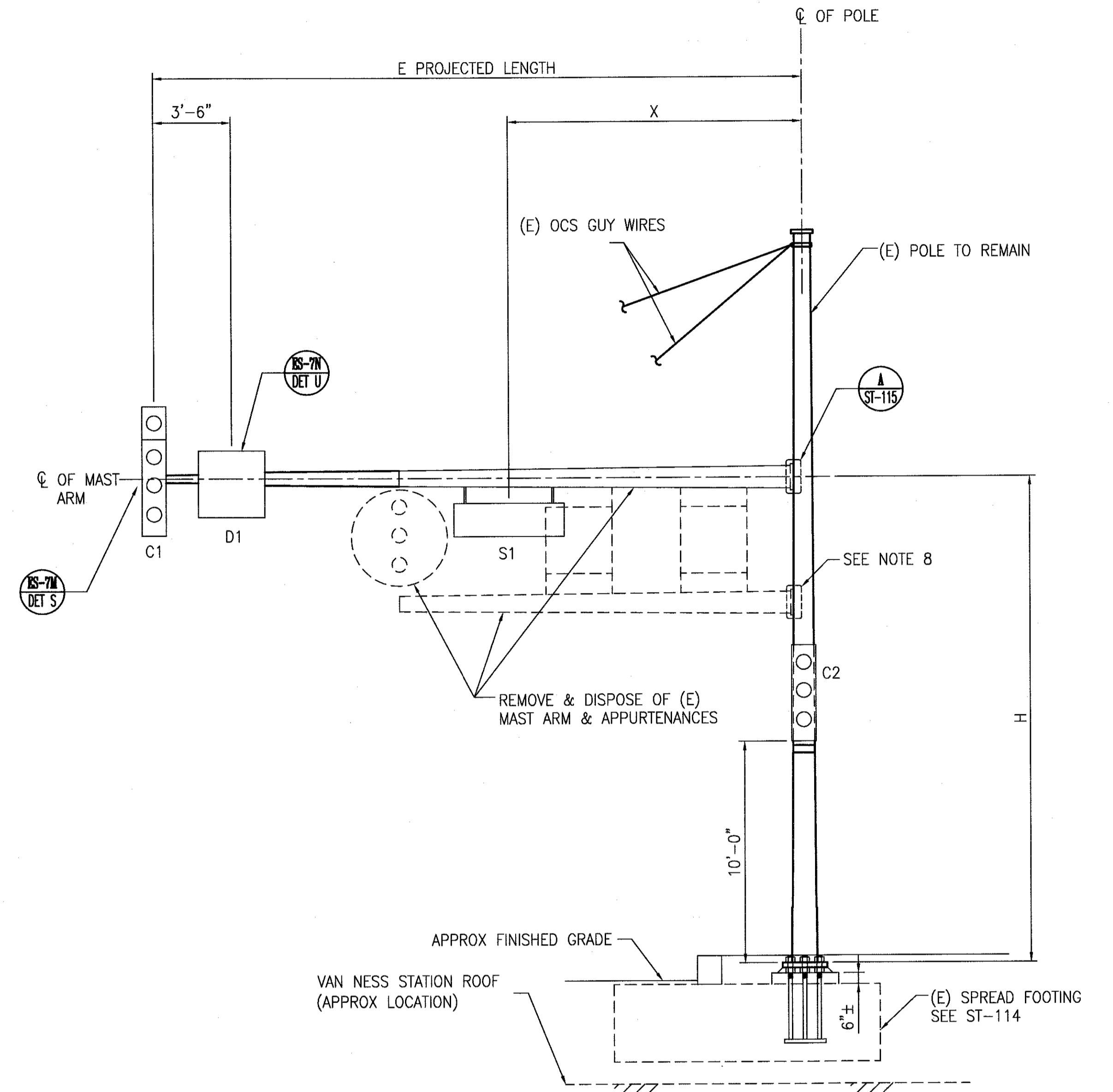
E PROJECTED LENGTH	H	MIN OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM PL THICKNESS	L POLE PL THICKNESS	θ	X MAX
10'-0" 20'-0"	19'-0" OR 22'-6"	8"	0.2391	12"	1¼"-7NC-3"	1'-0"	1 ¼"	1 ½"	1'	10'-6"

**NOTES:**

- OUTSIDE DIAMETER, WALL THICKNESS, AND CORRESPONDING SECTION PROPERTIES OF POLES AND MAST ARMS ARE MINIMUMS. UNLESS OTHERWISE SPECIFIED, ALTERNATIVE SECTIONS SHALL REQUIRE APPROVAL BY THE ENGINEER.
- SIGNAL MAST ARMS SHALL BE ROUND TAPERED STEEL TUBES, MAXIMUM TAPER 0.143-INCH PER FOOT.
- WIND LOADING (3 SECOND): 100 MPH.
- UNIT STRESSES (STRUCTURAL STEEL):
  - F<sub>y</sub> = 55,000 psi (TAPERED STEEL TUBE AND ANCHOR BOLTS)
  - F<sub>y</sub> = 50,000 psi (UNLESS OTHERWISE NOTED)
- UNIT STRESSES (REINFORCED CONCRETE):
  - F'<sub>c</sub> = 4,000 psi (AT 28 DAYS)
  - F<sub>y</sub> = 60,000 psi
- FOR OVERHEAD CONTACT SYSTEM, SEE OVERHEAD PLANS (OV SHEETS).
- FOR MOUNTING HEIGHT OF TRAFFIC MAST ARMS, SEE TRAFFIC SIGNAL PLANS (ET SHEETS).
- REMOVE AND GRIND SMOOTH THE (E) MAST ARM ATTACHMENT, AND COVER HOLE, SEE SECTION C, ST-115.

**EQUIPMENT DATA (FOR INFORMATION ONLY)**

ITEM	DESCRIPTION	SIZE (INCHES)	WEIGHT (LBS)
C1	SIGNAL	70 x 13.5 x 7	100
C2	SIGNAL	56.5 x 13.5 x 7	65
D1	SIGN	36 x 36	10.1
S1	SIGN	60 x 18	8.4

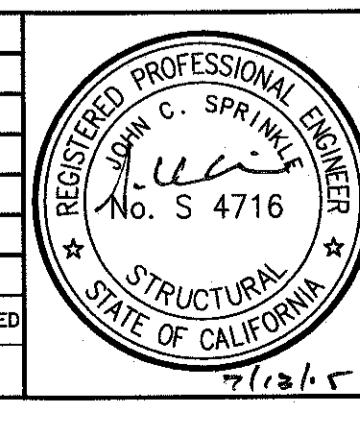


**ELEVATION**

1

V:\21061\_VANNESS\_BRT\_MISSION\_LOMBARD\2\_Design\_Working\_Drawings\EST\Current\1\_21061\_ST-113.dwg diaing Mon Jul 13, 2015 - 8:32 am

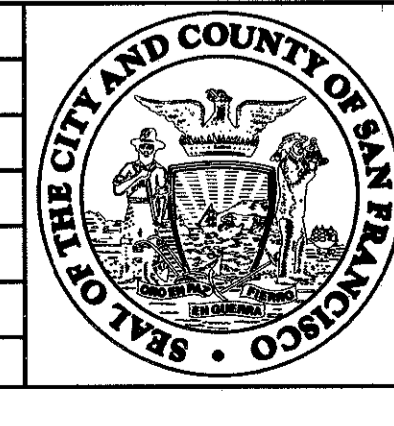
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond LUI* RAYMOND LUI  
Date: 7/13/15  
Deputy Division Mgr: FERNANDO CISNEROS  
11/20/15  
Division Mgr: PATRICK RIVERA  
11/20/15

DESIGNED: RR  
DRAWN: DL  
CHECKED: JS  
REVIEWED: RL  
RECOMMENDED: PW  
APPROVED: R.N.  
DATE:



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: *Vincent...*  
for the DIRECTOR OF TRANSPORTATION

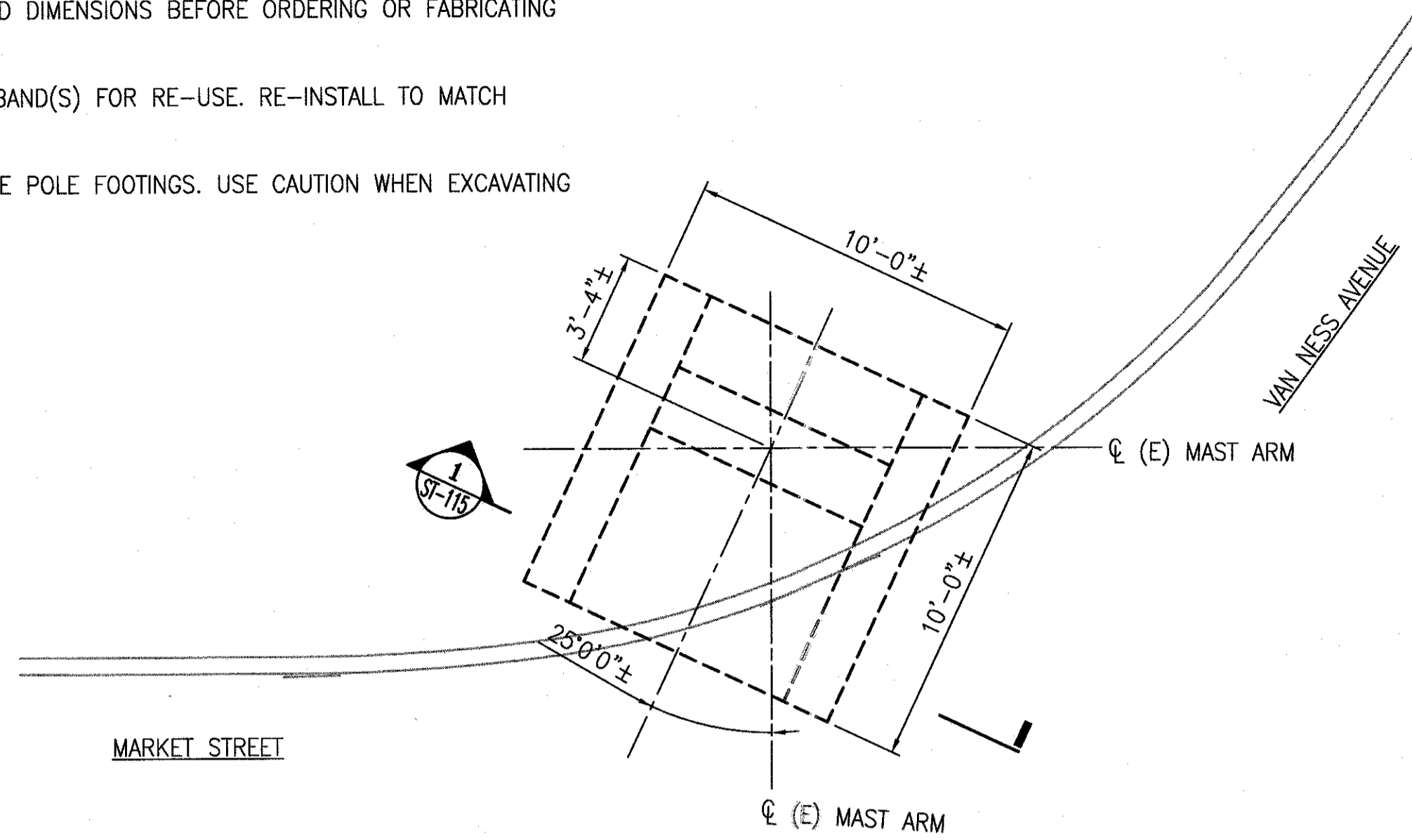
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
MARKET STREET TRAFFIC POLE MODIFICATIONS

1289	REVISION
CL-29083	
ST-113	0

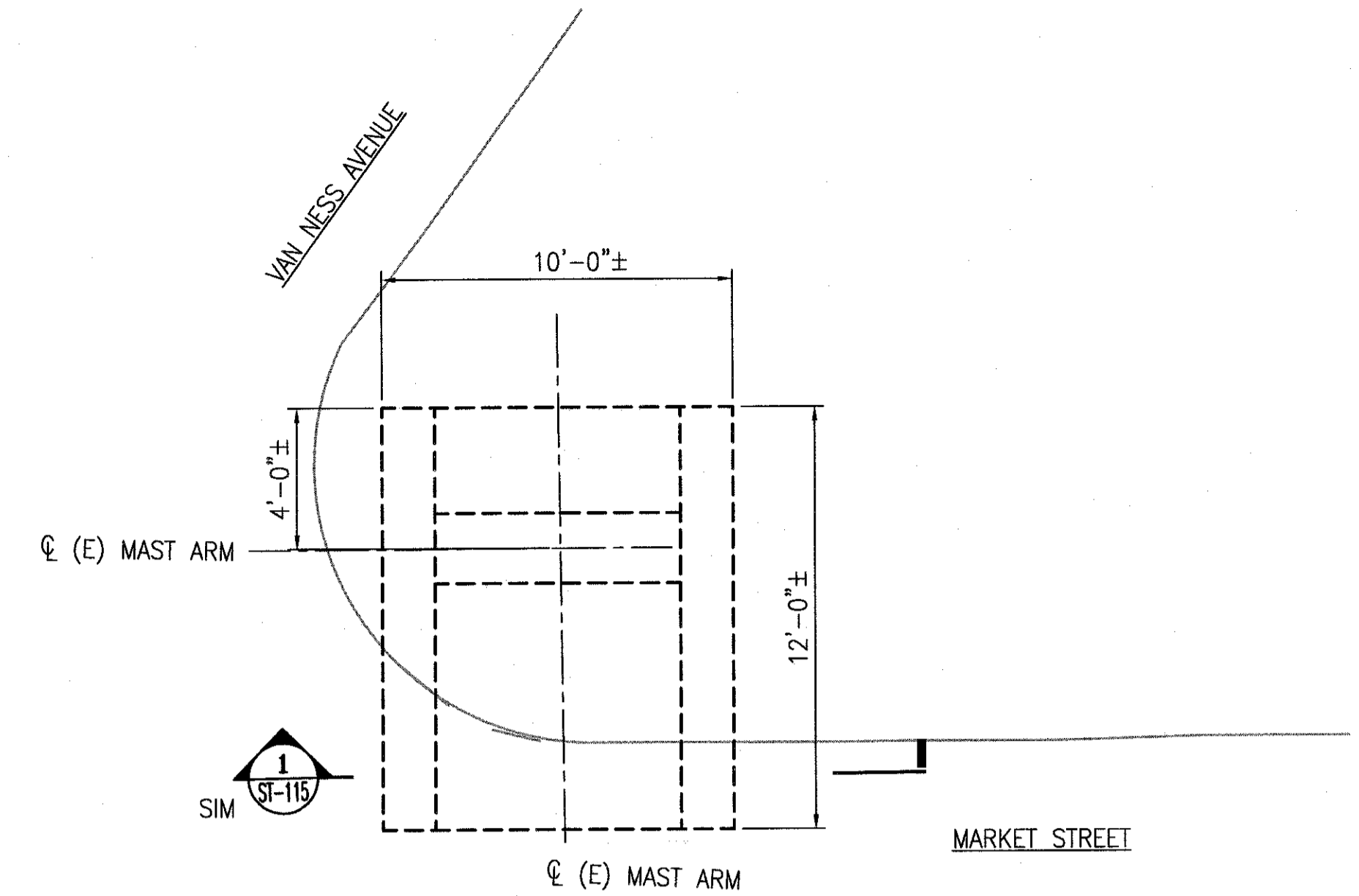
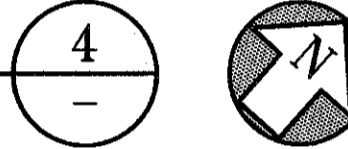


NOTES:

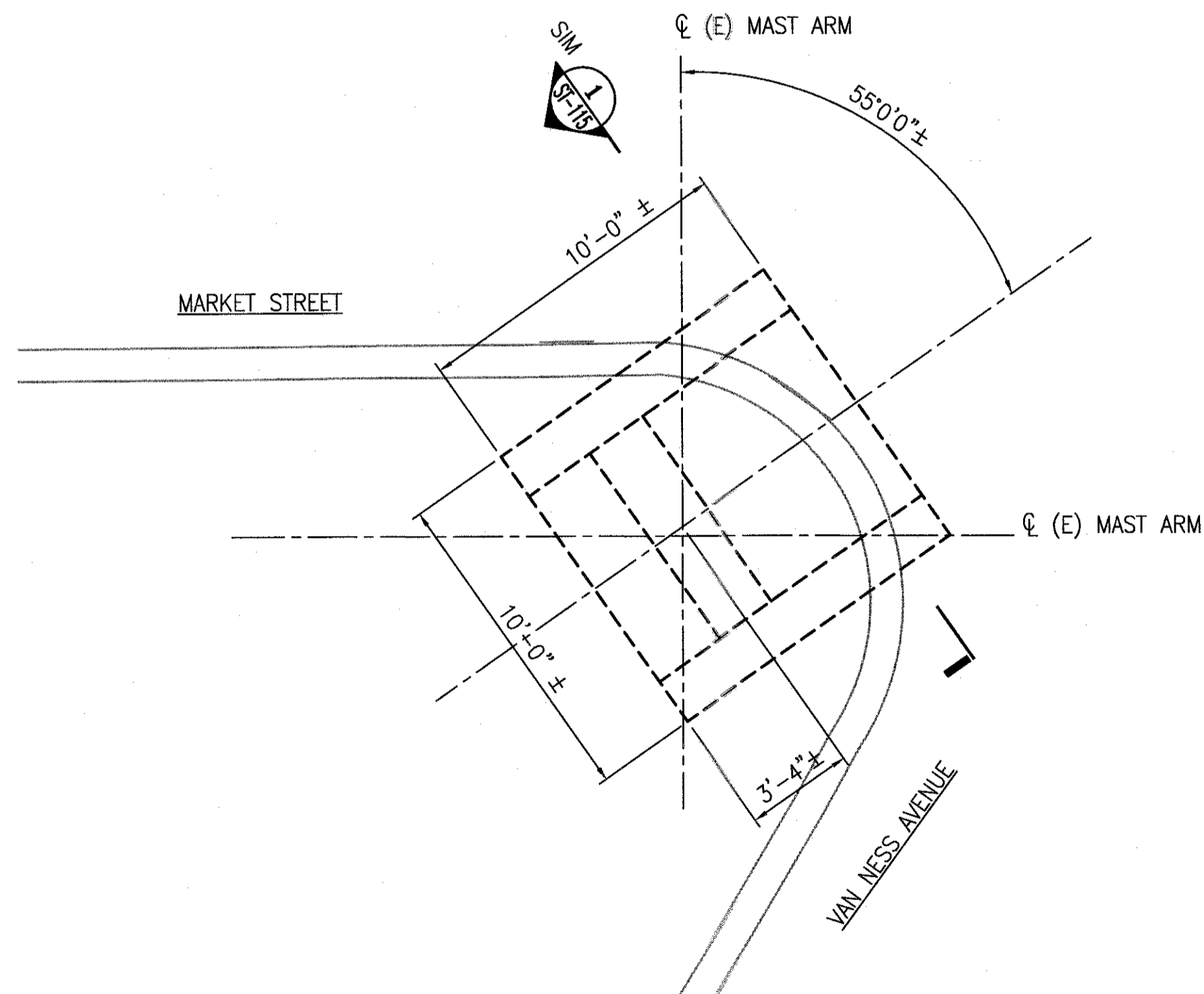
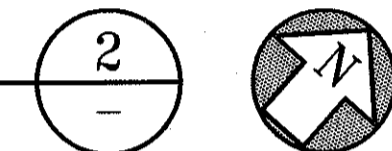
1. THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
2. SALVAGE (E) GRANITE CURBS, PAVERS, AND GROOVED BAND(S) FOR RE-USE. RE-INSTALL TO MATCH (E) CONDITIONS.
3. VAN NESS STATION IS LOCATED IMMEDIATELY BELOW THE POLE FOOTINGS. USE CAUTION WHEN EXCAVATING OR DURING CONSTRUCTION.



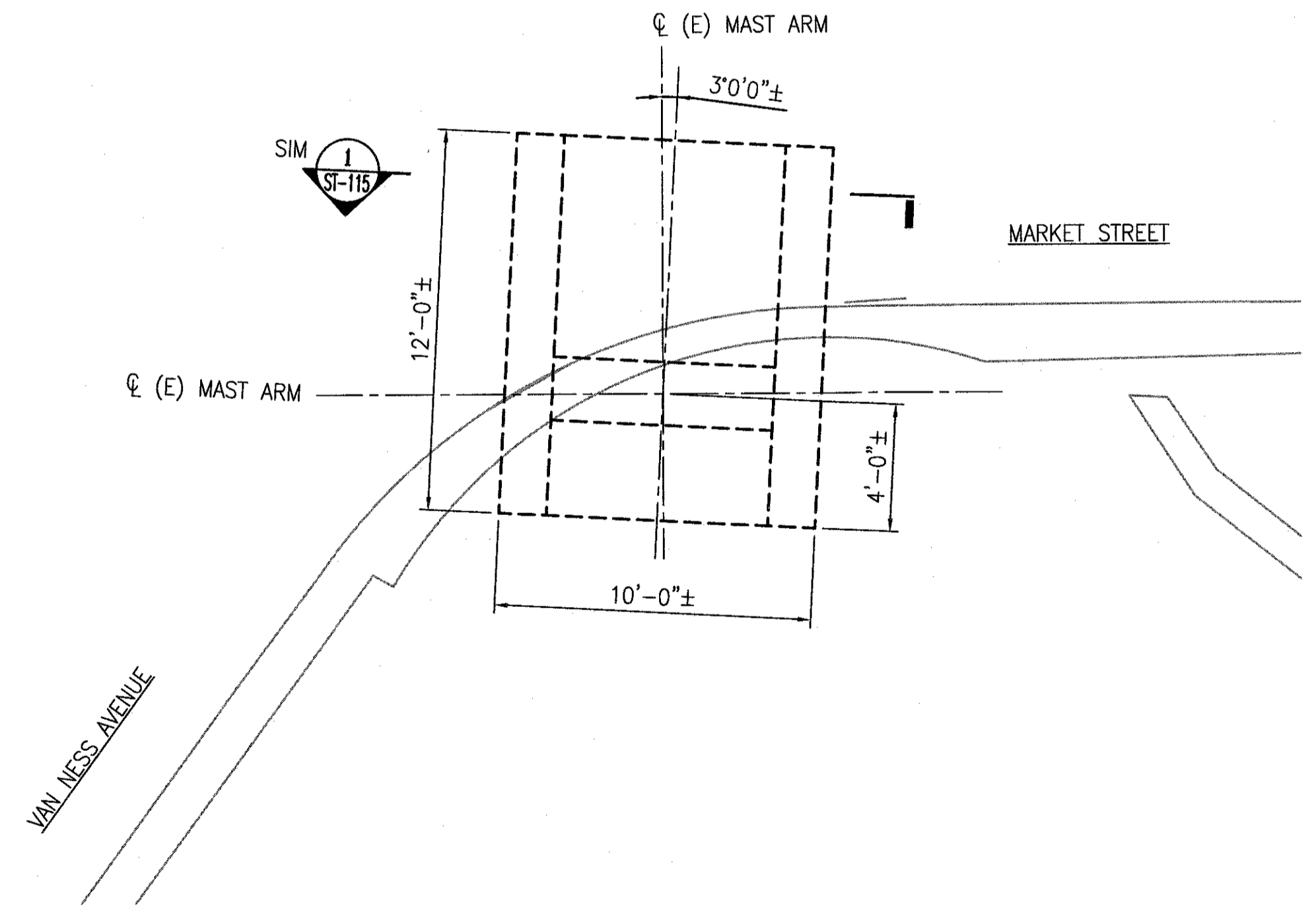
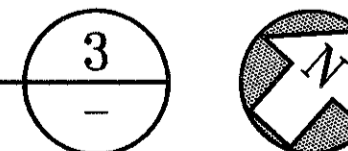
**PARTIAL PLAN - NW CORNER**  
SCALE: 1/4"=1'-0"



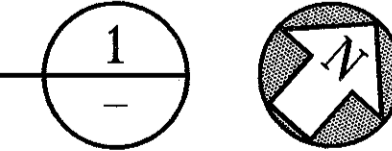
**PARTIAL PLAN - NE CORNER**  
SCALE: 1/4"=1'-0"



**PARTIAL PLAN - SW CORNER**  
SCALE: 1/4"=1'-0"



**PARTIAL PLAN - SE CORNER**  
SCALE: 1/4"=1'-0"



V:\21061\_VANNESS\_BRT\_MISSON\_LOMBARD\_V2\_Design\_Working\_Drawings\EST\Current\ 21061\_ST-114.dwg plotting Mon Jul 13 2015 - 9:22 am

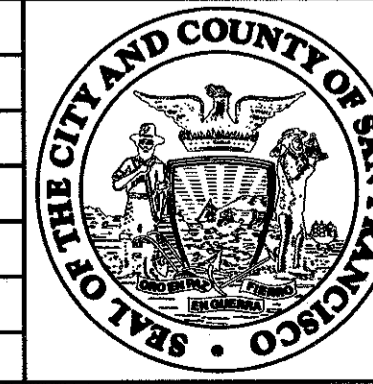
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND  
ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond C. Sprinkle* RAYMOND LUI  
Date: 7/13/15  
Deputy Division Mgr: FERNANDO CISNEROS  
7/13/15  
Division Mgr: PATRICK RIVERA  
4/4/15

DESIGNED	FR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	PW
APPROVED	J.M.
DATE	



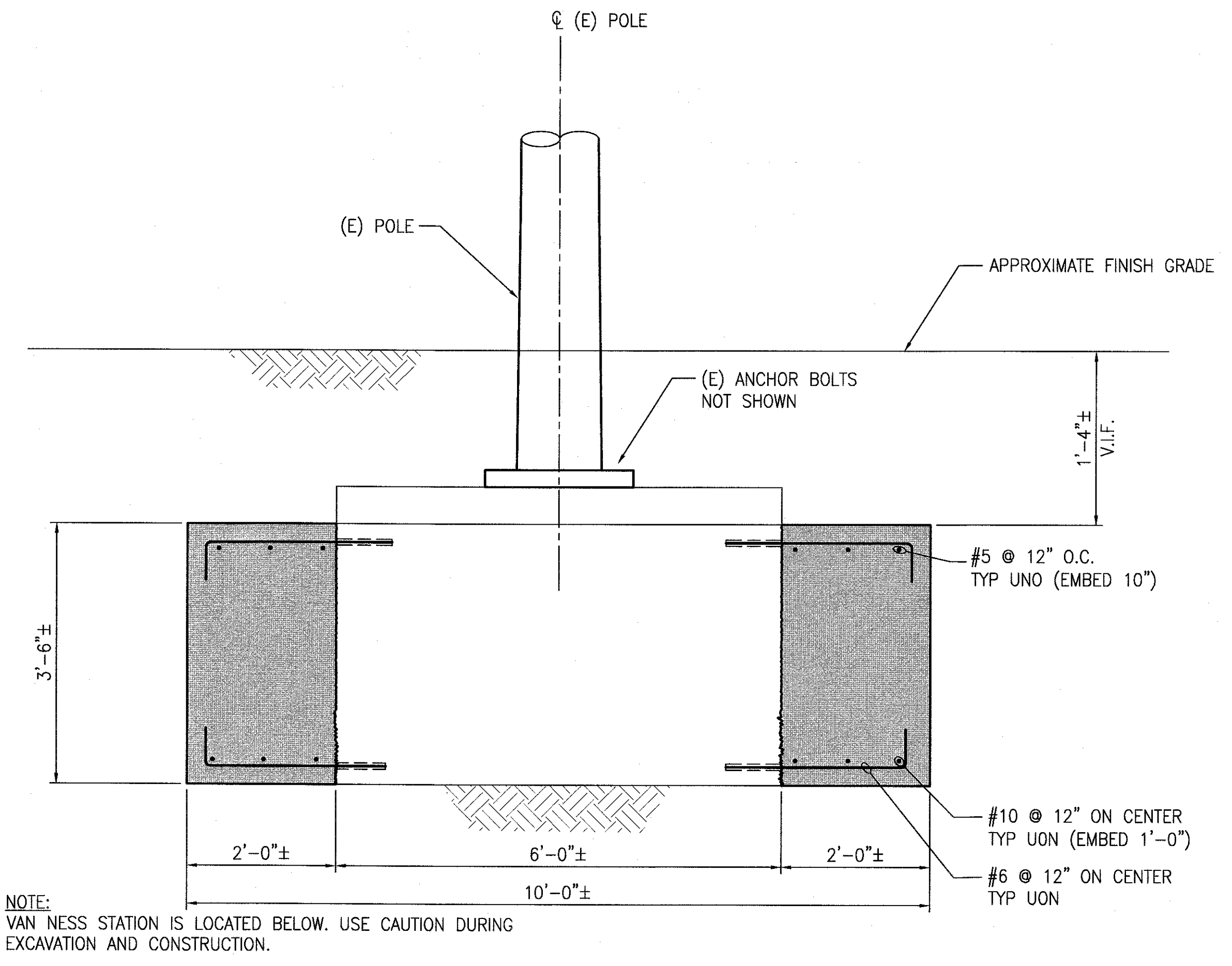
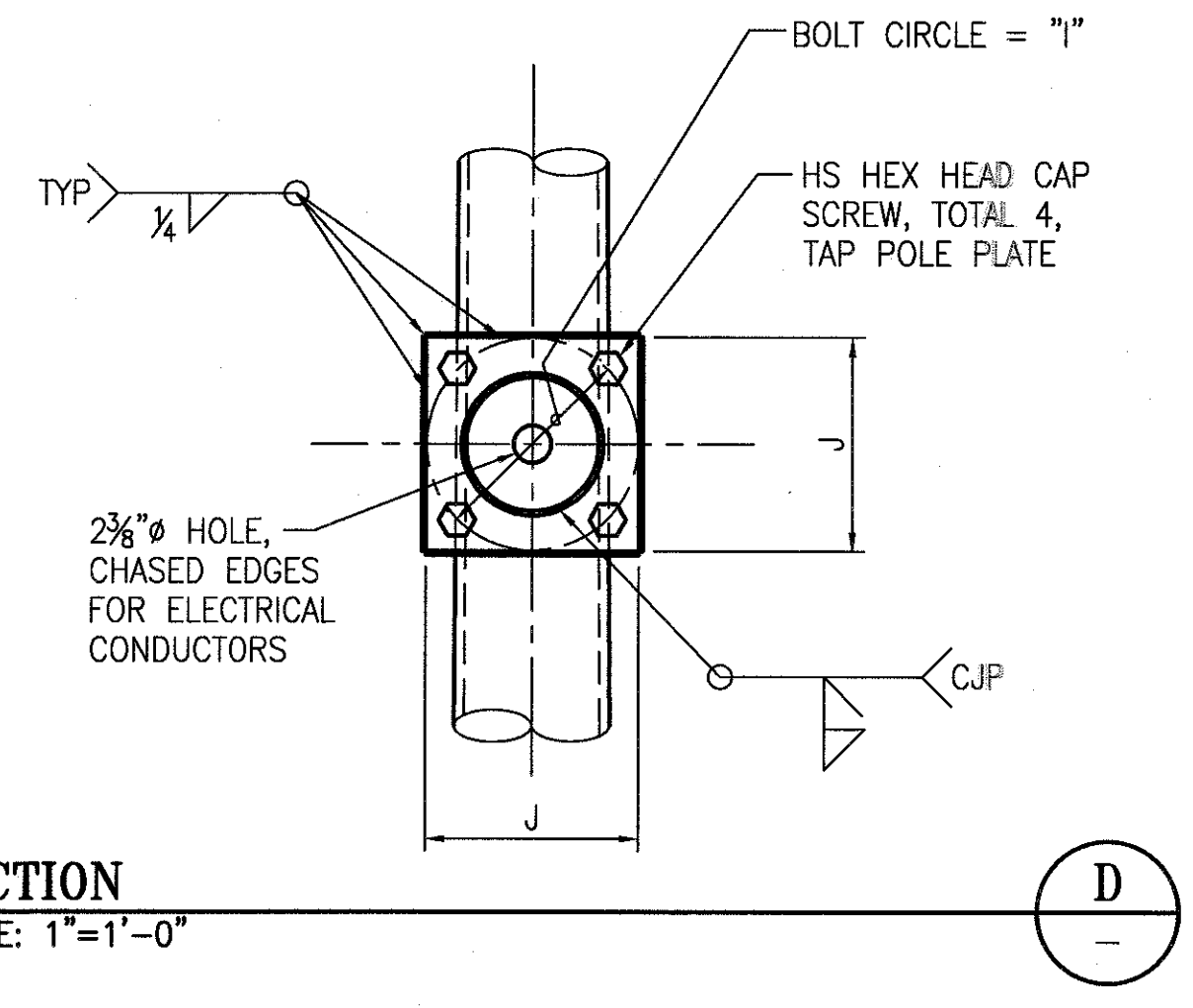
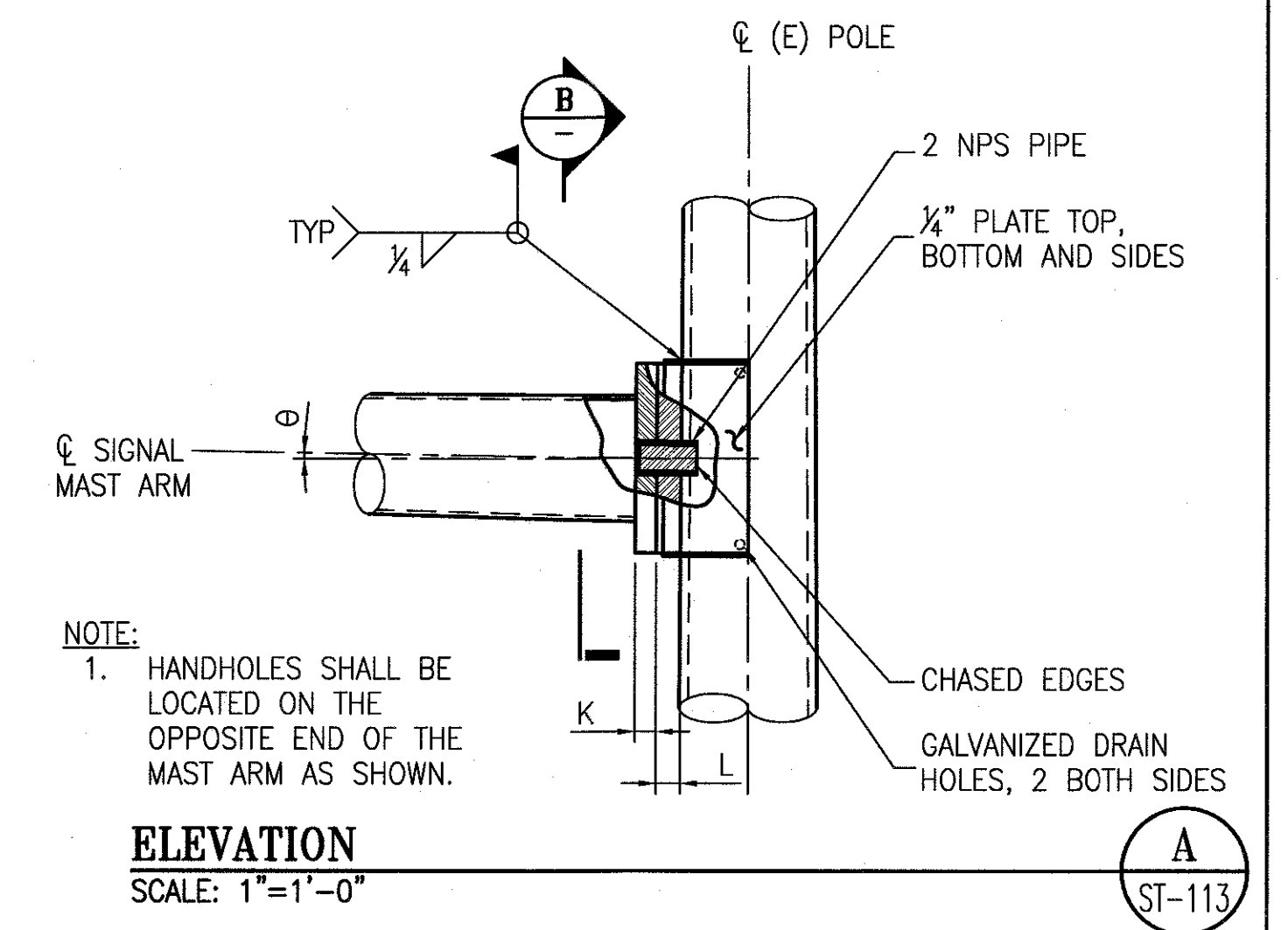
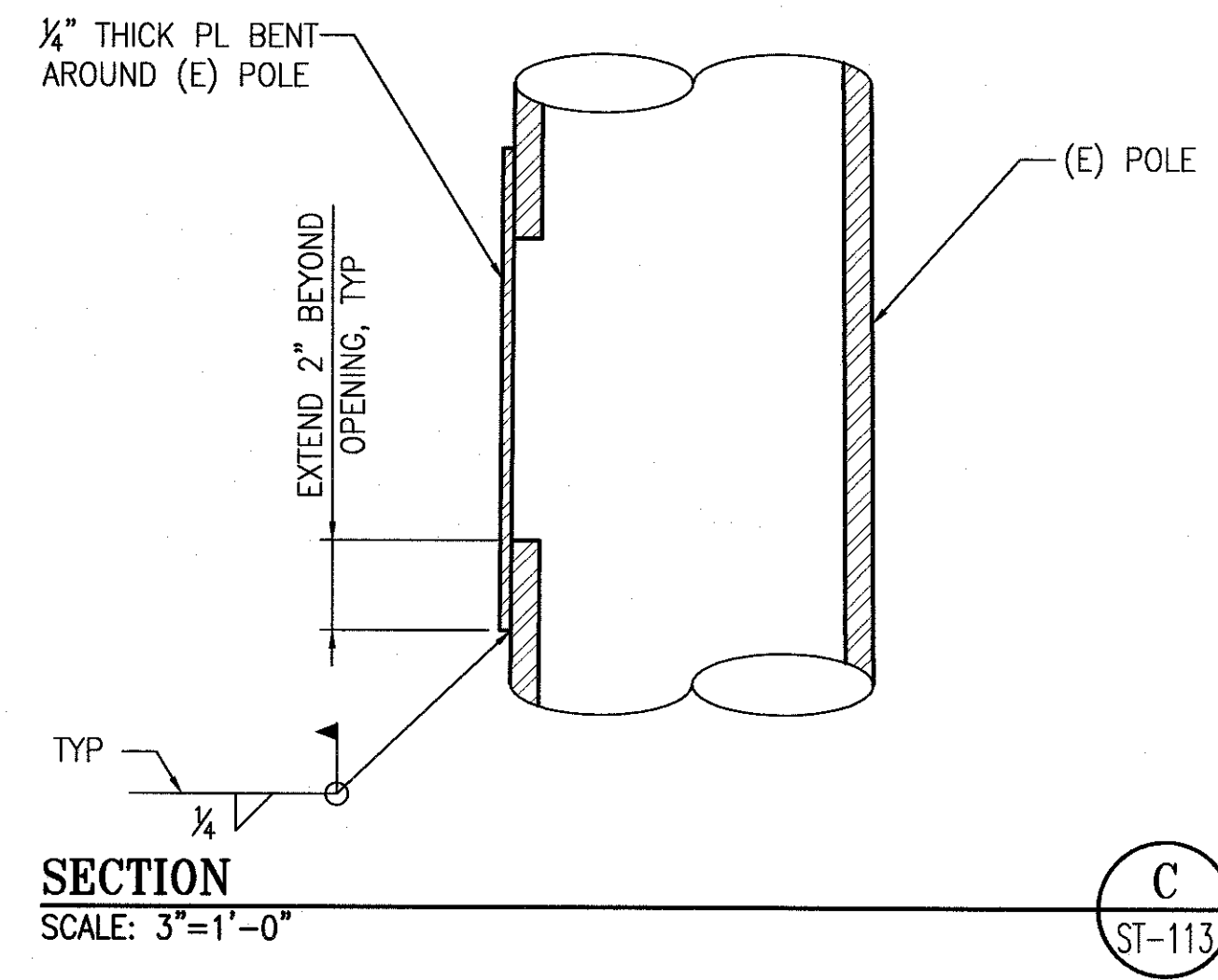
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*Vincent Han*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT

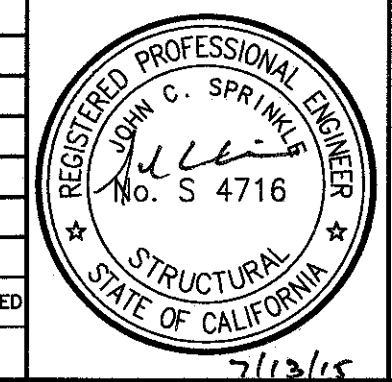
MARKET STREET TRAFFIC POLE MODIFICATIONS  
FOUNDATION PLAN

1289	REVISION
CL-29084	0
ST-114	



V:\21064\_VANNESS\_BRT\_MISSON\_LOMBARD\2\_Design\Working\_Drawings\EST\Current\21064\_ST-115.dwg drawing Mon Jul 13 2015 - 8:23 am

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				

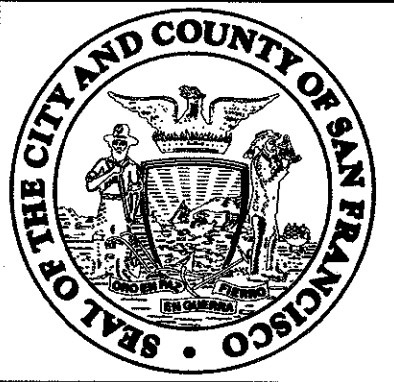


DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date: 7/13/15  
11/24/15  
1/29/15

DESIGNED	RR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	PW
APPROVED	P.N.
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

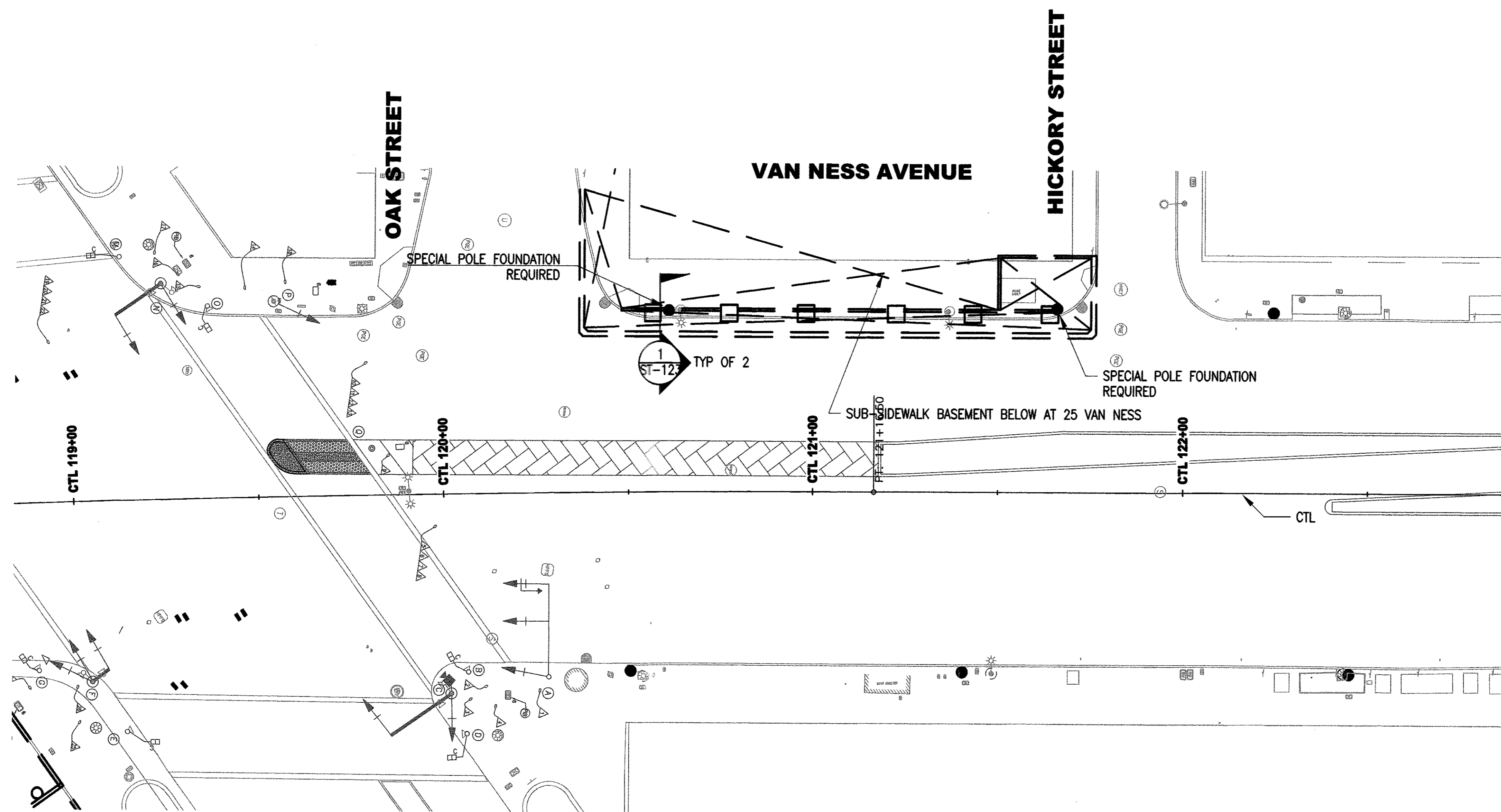
MARKET STREET TRAFFIC POLE MODIFICATIONS DETAILS

1289	REVISION
CL-29085	
ST-115	
0	



**NOTES:**

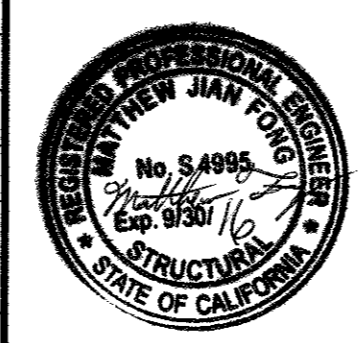
1. CONTRACTOR TO VERIFY IN FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.



I:\CPT610 - Van Ness BRT\2-CER\500\_Design Components\501\_Drawings\17-Structural\1\_Pole Foundations (SMTA)\Sheet Files\ST-114.dwg kmandapa Tue Jul 28 2015 11:34 am

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED <i>Matthew...</i>
DRAWN <i>Matthew...</i>
CHECKED <i>...</i>
REVIEWED <i>Mark A....</i>
RECOMMENDED <i>...</i>
APPROVED <i>S....</i>
DATE



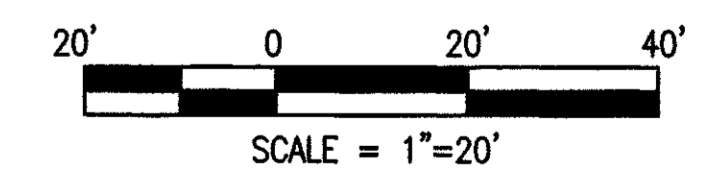
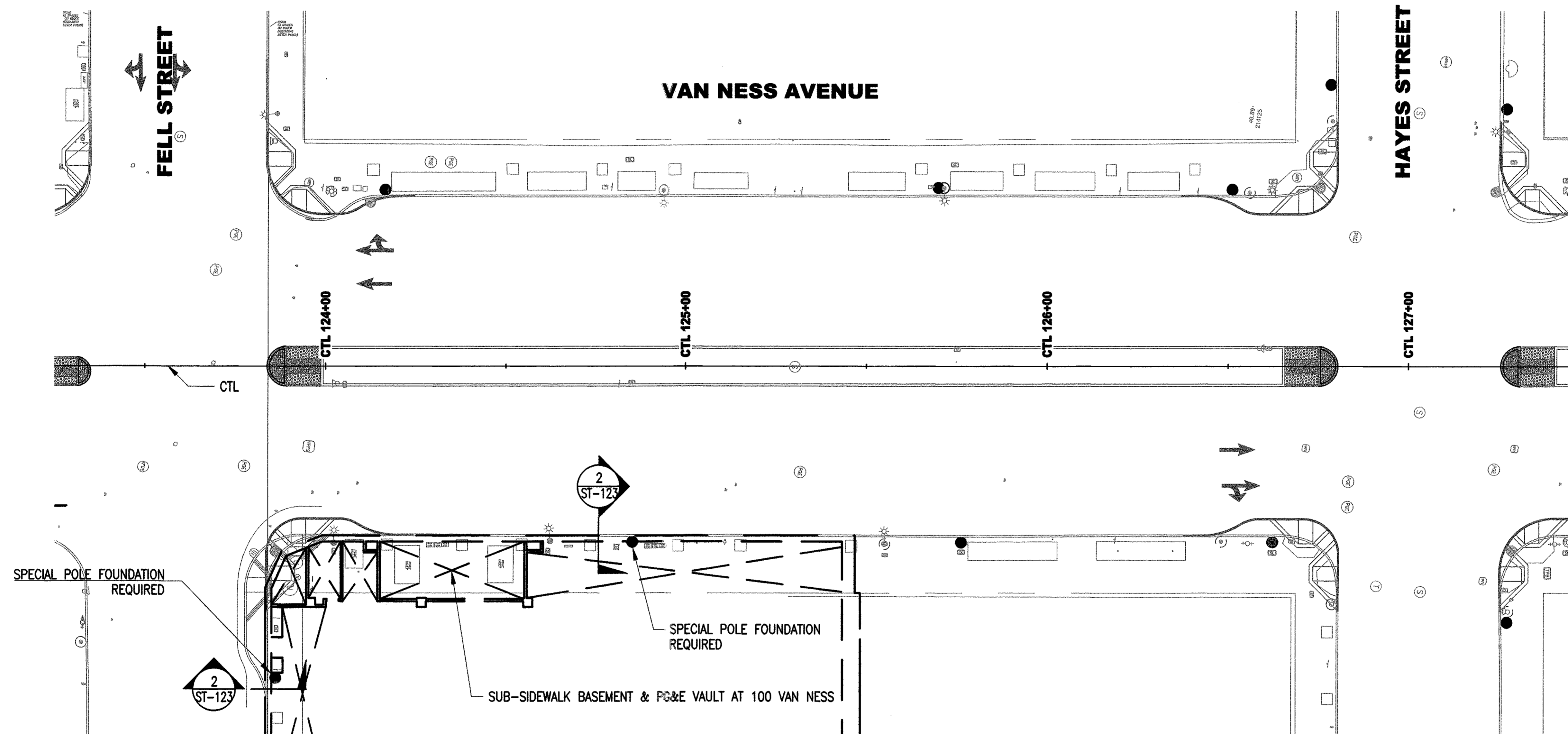
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
 APPROVED  
*Vincent...*  
 for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
 STRUCTURAL  
**SPECIAL POLE FOUNDATION**  
**VAN NESS BETWEEN OAK AND HICKORY**

1289
CL-29065
ST-117
REVISION 0

**NOTES:**

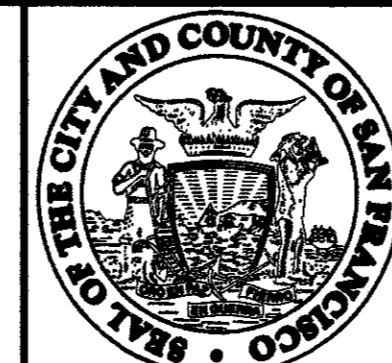
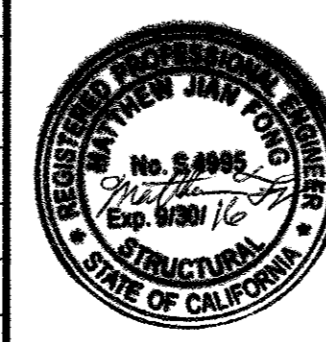
- CONTRACTOR TO VERIFY IN FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.



I:\CPT\6401\_Van Ness BRTA\_2\_CFR\500\_Design\_Components\501\_Drawings\17\_Structural\1\_Pole Foundations (SMTA)\Sheet Files\ST-115.dwg kncandapa, Tue Jul 28, 2015 - 11:36 am

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED: *Matthew Fong*  
 DRAWN: *Kathryn Manapat*  
 CHECKED: *[Signature]*  
 REVIEWED: *Mark A. Redrueh*  
 RECOMMENDED: *[Signature]*  
 APPROVED: *[Signature]*  
 DATE: *[Signature]*



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
 for the DIRECTOR OF TRANSPORTATION

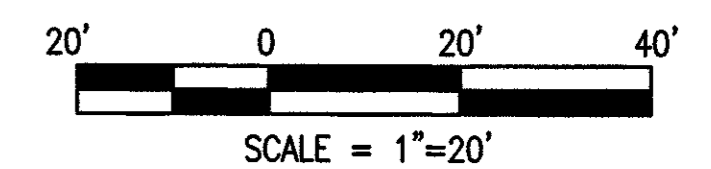
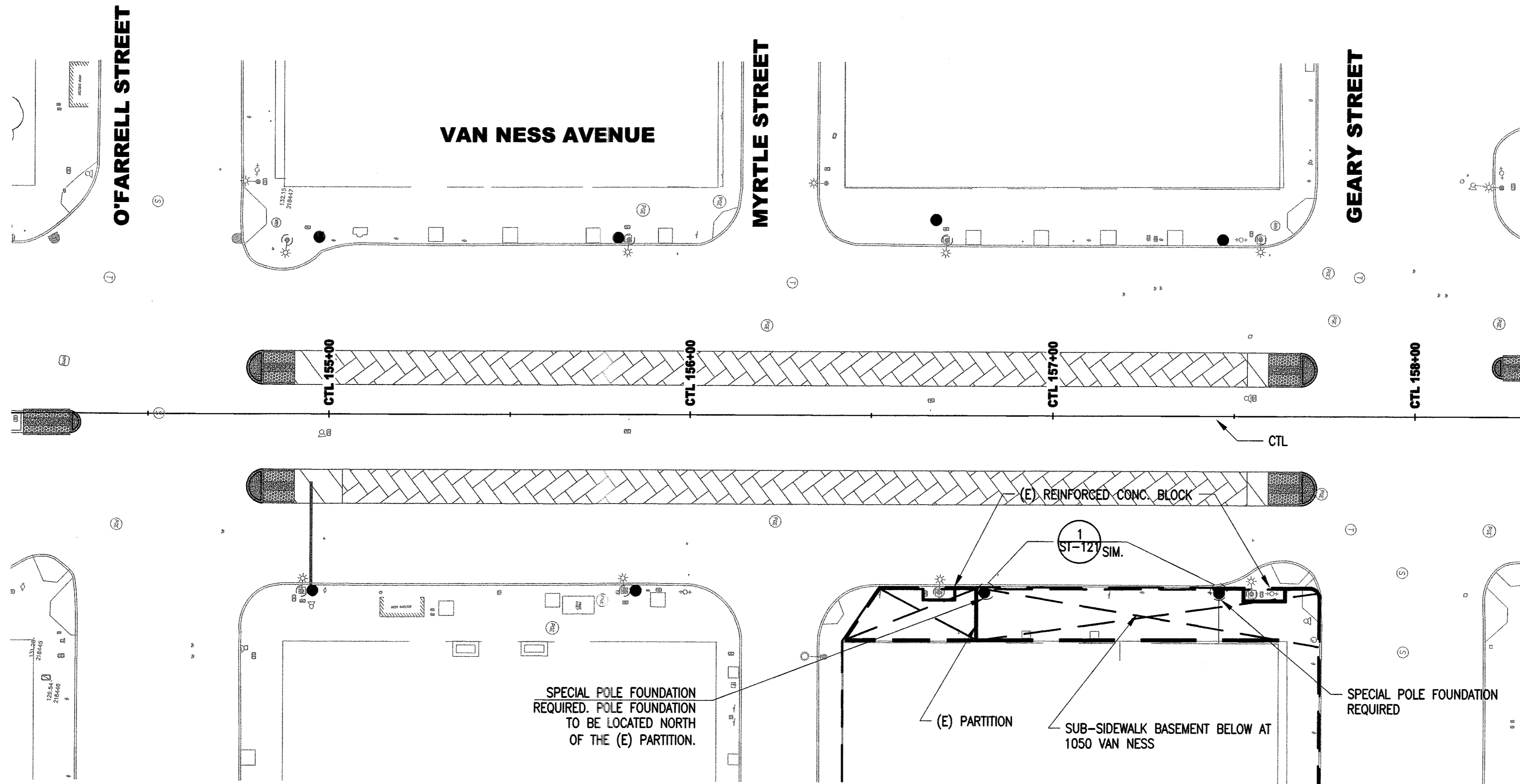
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

**STRUCTURAL  
 SPECIAL POLE FOUNDATION  
 FELL AND HAYES**

1289	
CL-29066	
ST-118	REVISION
	0

**NOTES:**

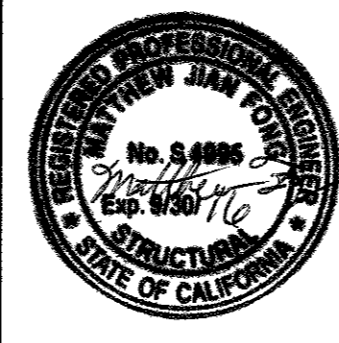
- CONTRACTOR TO VERIFY IN FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.



I:\CPT\B401\_Van Ness BRT\_V\_CER\500\_Design Components\501\_Drawings\17\_Structural\17\_Pole Foundations (SFM)\A\Sheet Files\ST-116.dwg kmandaga Tue Jul 28 2015 - 11:37 am

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED: *Matthew*  
 DRAWN: *Katrina*  
 CHECKED: *Mia*  
 REVIEWED: *Mark L. Rodin*  
 RECOMMENDED: *Franklin*  
 APPROVED: *[Signature]*  
 DATE: *[Signature]*



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
 for the DIRECTOR OF TRANSPORTATION

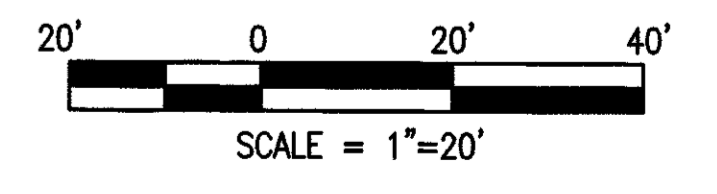
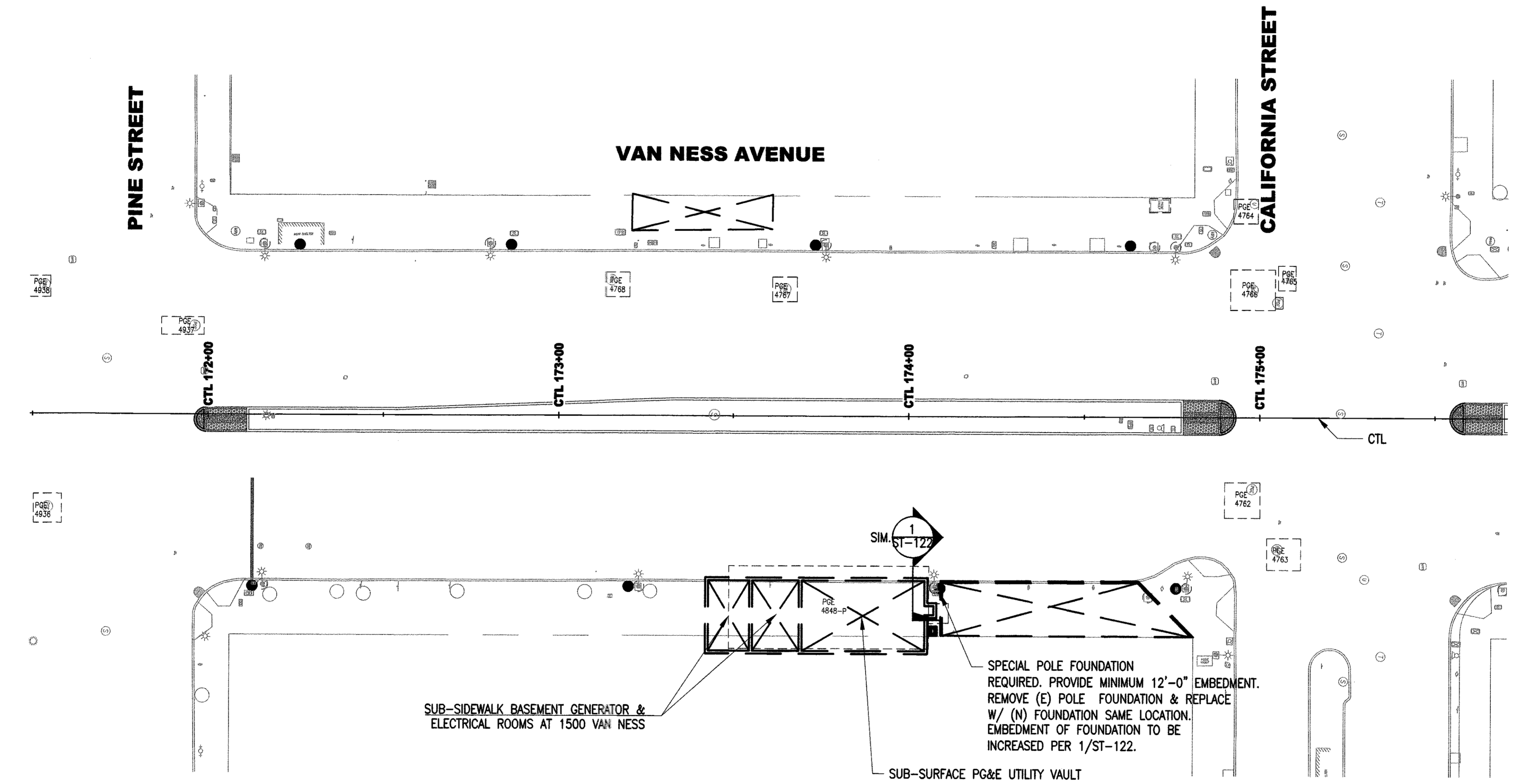
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

**STRUCTURAL  
 SPECIAL POLE FOUNDATION  
 OFARRELL AND GEARY**

1289  
 CL-29067  
 ST-119  
 REVISION  
 0

**NOTES:**

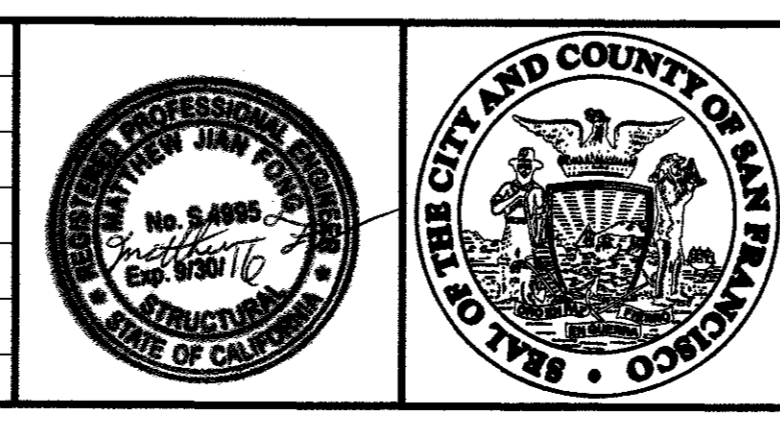
1. CONTRACTOR TO VERIFY IN FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.



I:\CP1640.1\_Van Ness BRT\2\_CERA\500\_Design Components\501\_Drawings\7\_Structural\7\_Pole Foundations (SMTA)\Sheet Files\ST-120.dwg kmanappa Tue Jul 28 2015 11:45 am

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED: *Matthew F. [Signature]*  
 DRAWN: *Lathrop Montefort [Signature]*  
 CHECKED: *[Signature]*  
 REVIEWED: *Mark A. Redwood [Signature]*  
 RECOMMENDED: *[Signature]*  
 APPROVED: *[Signature]*  
 DATE: *[Signature]*



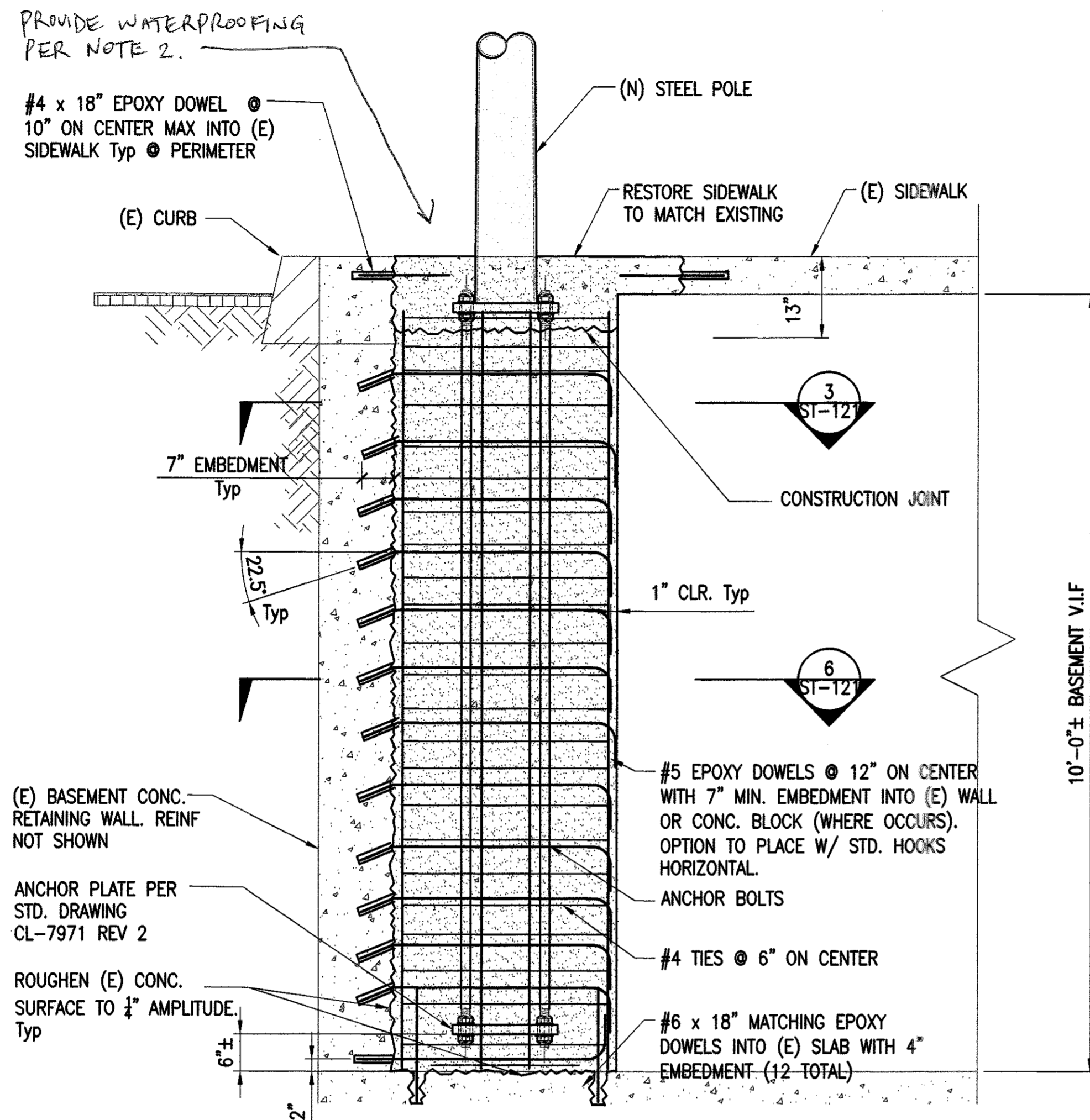
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
 for the DIRECTOR OF TRANSPORTATION

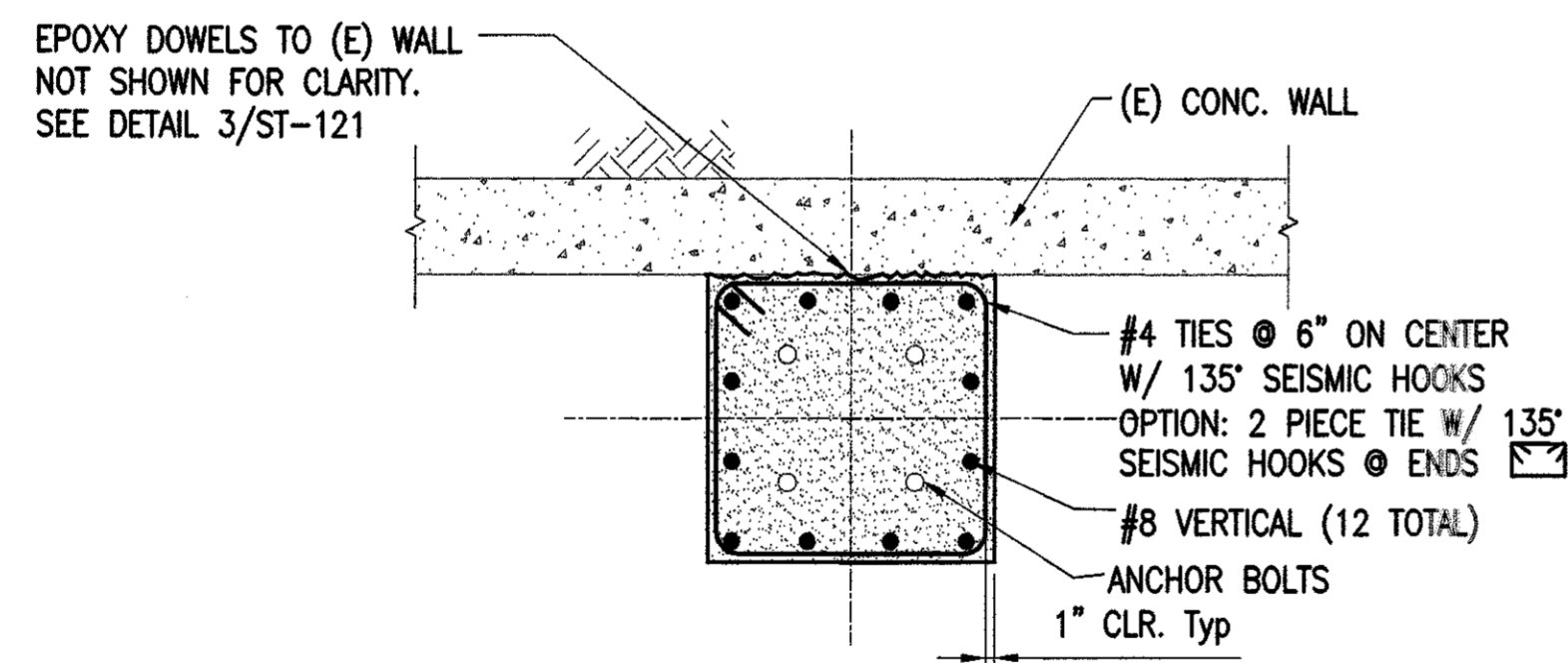
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

STRUCTURAL  
**SPECIAL POLE FOUNDATION  
 PINE AND CALIFORNIA**

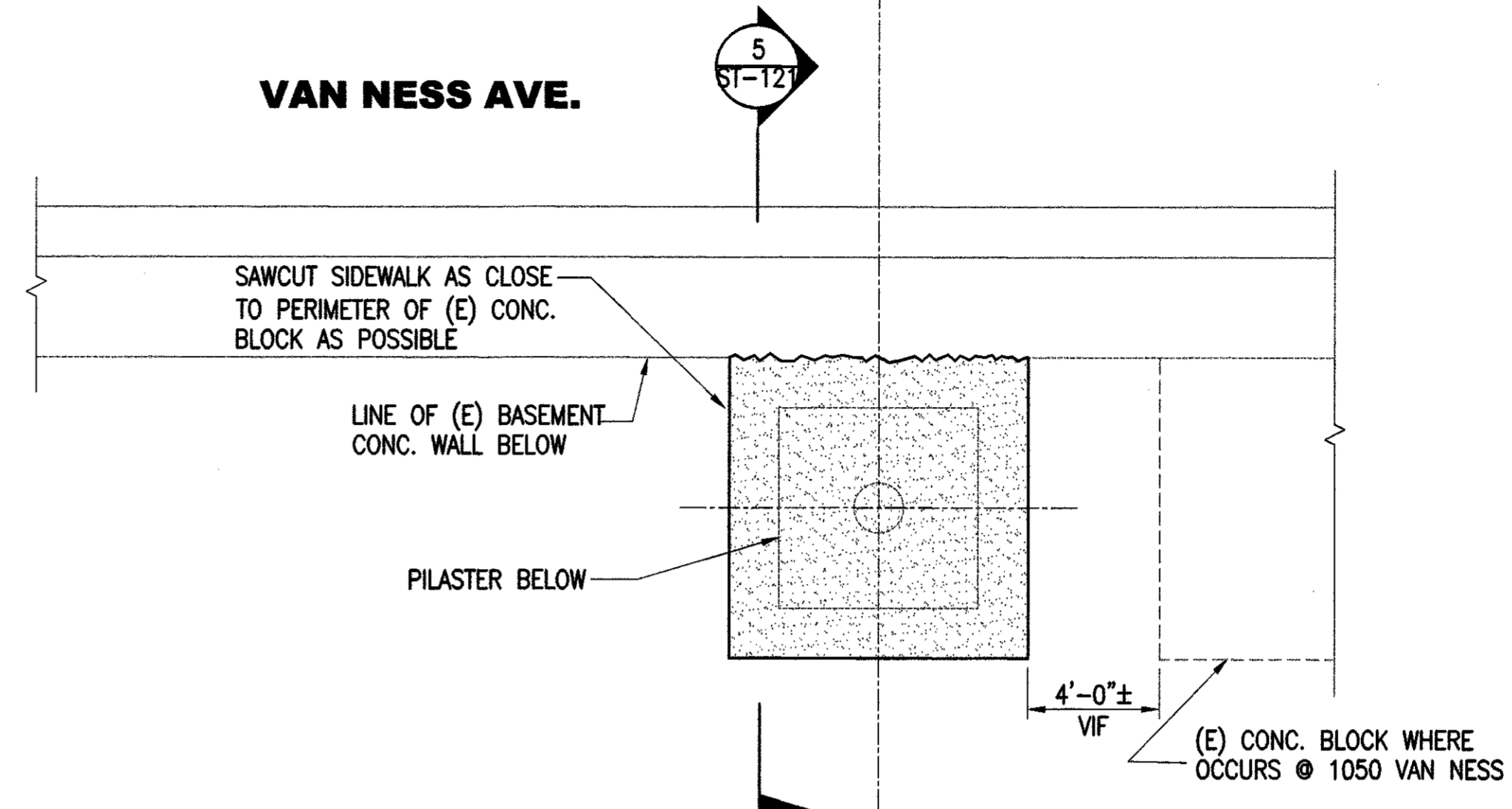
1289	REVISION
CL-29094	0
ST-120	



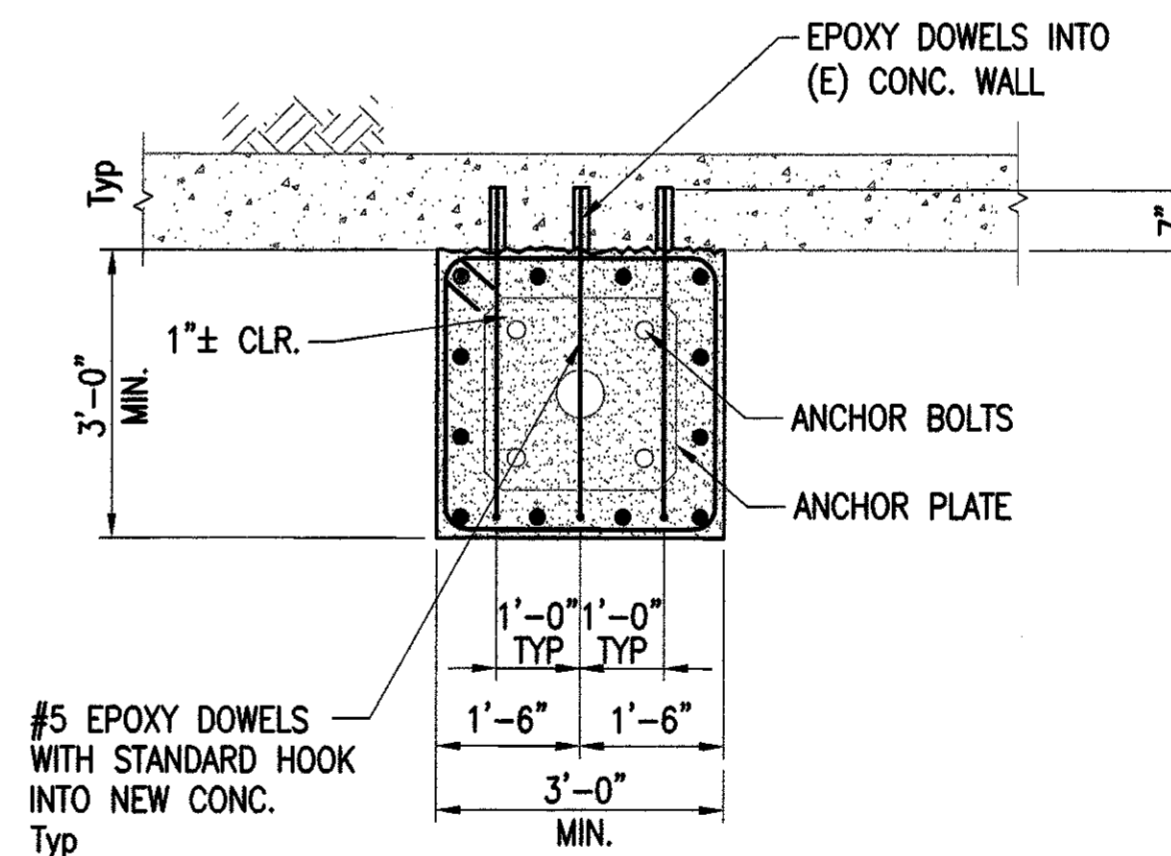
**5 TYPICAL PILASTER AT BASEMENT**  
ST-121 NOT TO SCALE



**6 TYPICAL PILASTER DETAIL**  
ST-121 NOT TO SCALE



**1 TYPICAL PILASTER PLAN AT SIDEWALK ABOVE BASEMENT**  
ST-121 NOT TO SCALE



**3 TYPICAL PILASTER DETAIL AT CONC. WALL**  
ST-121 NOT TO SCALE

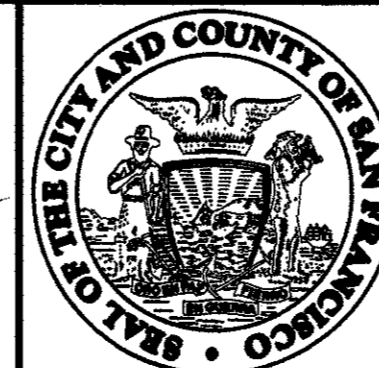
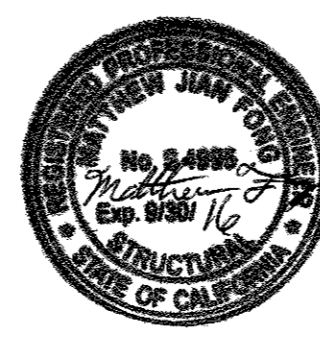
**NOTES:**

1. CONTRACTOR TO VERIFY IN FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.
2. CONTRACTOR TO PROVIDE WATERPROOFING AT ALL SIDEWALK PENETRATIONS AND AT CONSTRUCTION JOINTS. PROVIDE WATERPROOFING AND INSTALL AS PER RECOMMENDATIONS FROM GIRACE COMPANY, A WATERPROOFING CONSULTANT

I:\CPT\401\_Van Ness BRTA\_2\_CER\500\_Design\_Components\501\_Drawings\17\_Structural\1\_Pole Foundations\501\_Sheet Files\ST-121.dwg kmcadogan, Tue Jul 28, 2015 - 11:46 am

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED: *Matthew...*  
 DRAWN: *Kathleen...*  
 CHECKED: *...*  
 REVIEWED: *Mark G....*  
 RECOMMENDED: *...*  
 APPROVED: *...*  
 DATE: *...*



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*Vincent...*  
 for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

STRUCTURAL  
**SPECIAL POLE FOUNDATION DETAILS**  
 SHEET 1 OF 3

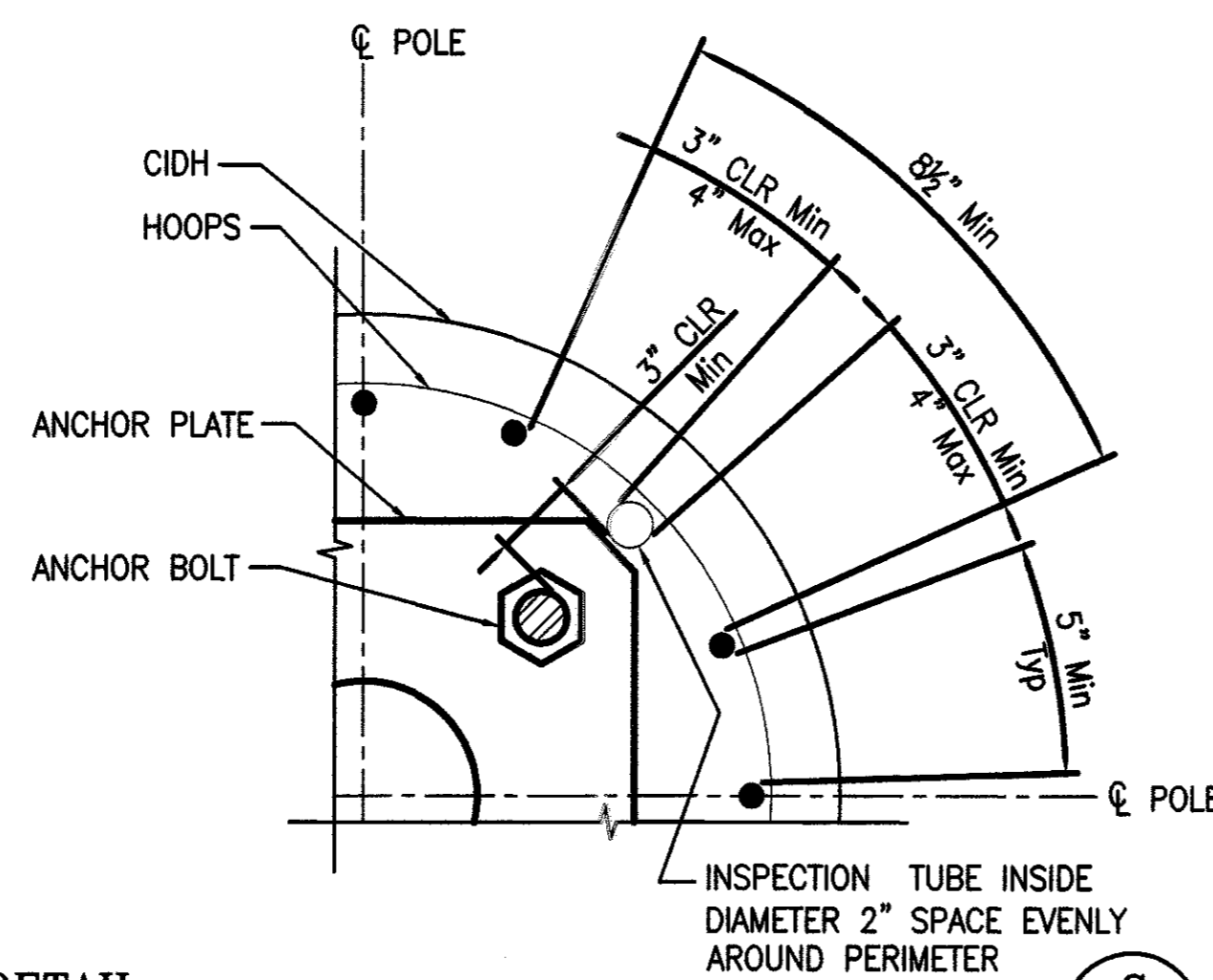
1289	REVISION
CL-29095	0
ST-121	



CIDH REINFORCING AND INSPECTION TUBE SCHEDULE			
CIDH DIAMETER	VERTICAL BARS	HOOPS (WELDED)	INSPECTION TUBE
3'-0"	12-#8	#4 @ 6"	4
3'-6"	12-#9	#5 @ 6"	4

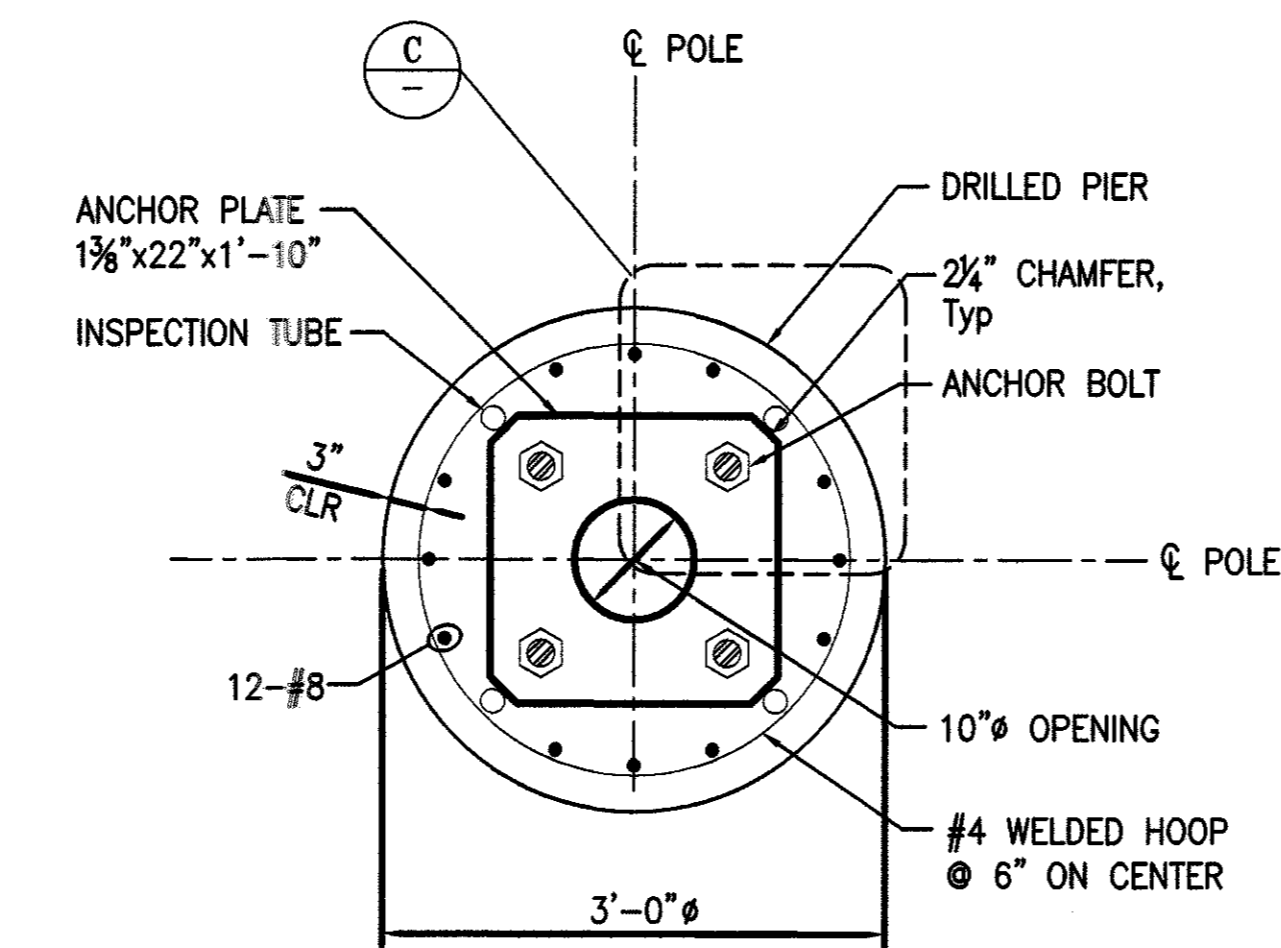
**NOTES:**

- PROVIDE A HEX NUT, LEVELING NUT AND 2 WASHERS FOR EACH ANCHOR BOLT.
- FOR ANCHOR BOLTS, THREAD TOP 10" AND GALVANIZE TOP 1'-0"; THREAD BOTTOM 8".
- 4"x6 1/2" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. HANDHOLE REINFORCEMENT RING SHALL BE 3/8"x2". PROVIDE 1/8" COVER PLATE.
- HANDHOLES SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
- DURING POLE INSTALLATION, THE POST SHALL BE RAKED WITH THE USE OF LEVELING NUTS. SEE OVERHEAD PLANS FOR RAKING REQUIREMENTS OF POLES.
- UNIT STRESSES (STRUCTURAL STEEL):
  - F<sub>y</sub> = 55,000 psi (TAPERED STEEL TUBES AND ANCHOR BOLTS)
  - F<sub>y</sub> = 50,000 psi (UNLESS OTHERWISE NOTED)
- UNIT STRESSES (REINFORCED CONCRETE):
  - F'<sub>c</sub> = 4,000 psi (AT 28 DAYS)
  - F<sub>y</sub> = 60,000 psi
- FOR OVERHEAD CONTACT SYSTEM, SEE OVERHEAD PLANS (OV SHEET).
- FOR POLES PROPERTIES, BASE PLATES, AND ANCHOR BOLTS. SEE SHEET ST-110 (OCS AND STREETLIGHT POLES)



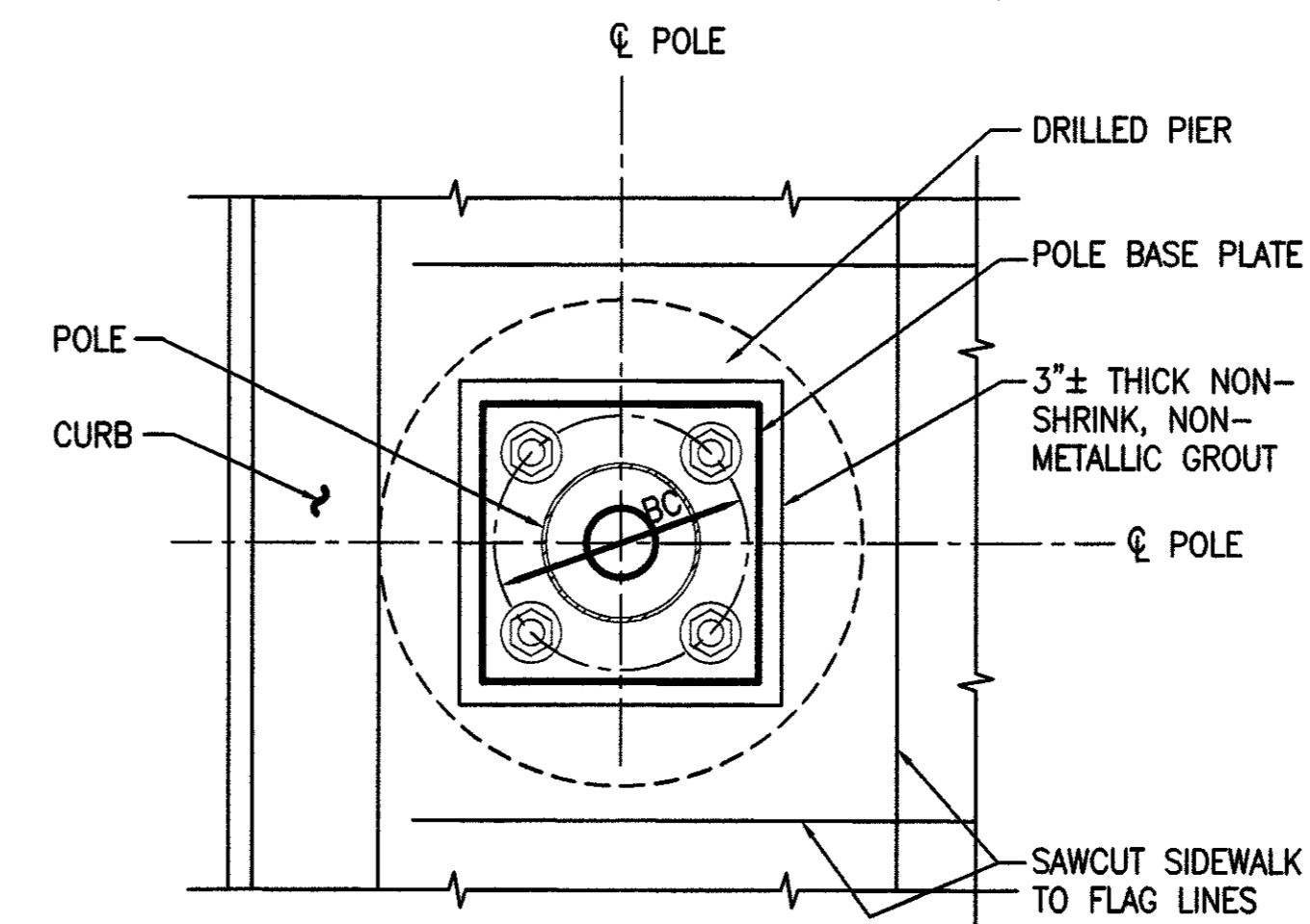
**DETAIL**

SCALE: 1 1/2"=1'-0"



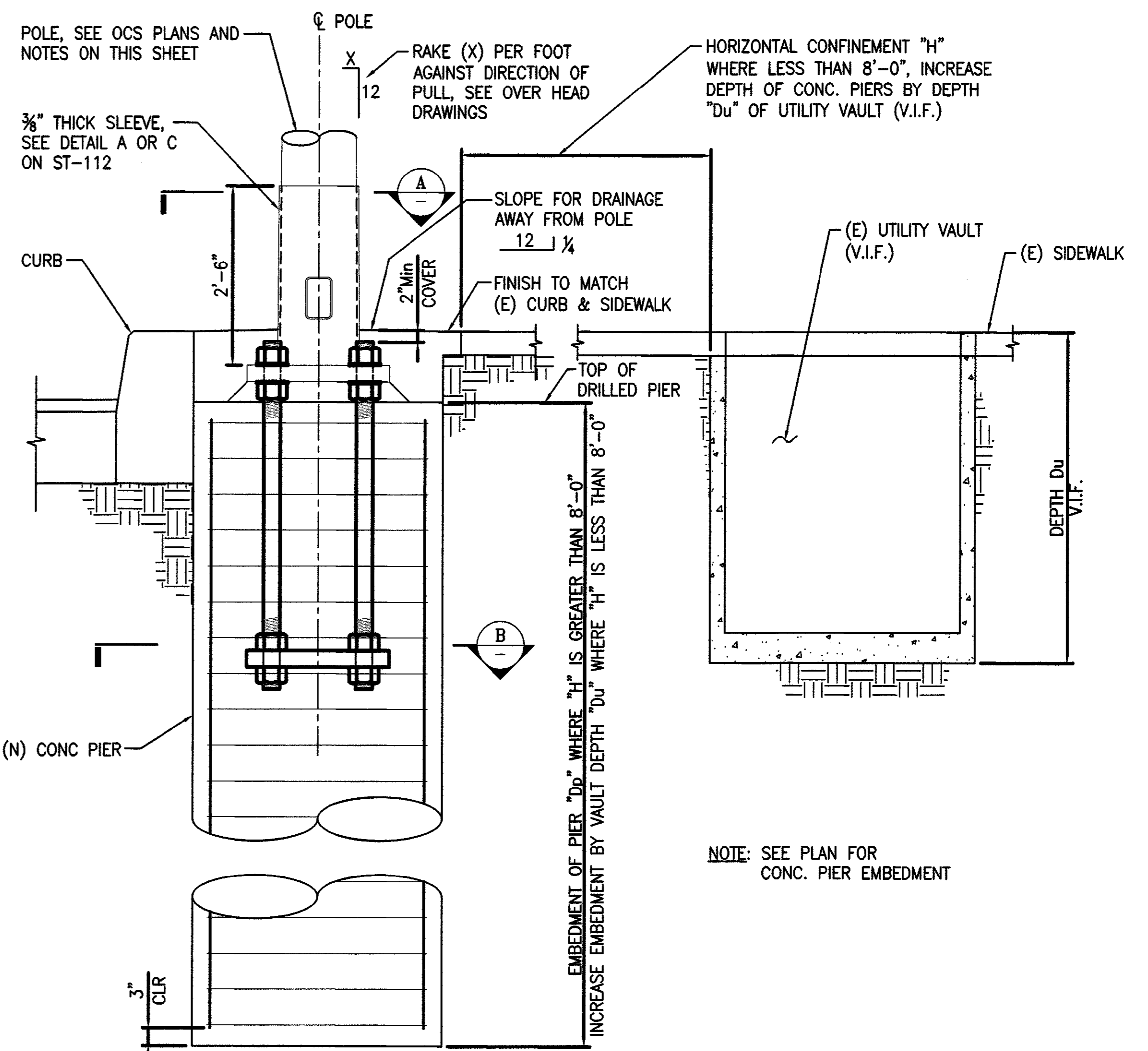
**SECTION**

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



**SECTION**

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



**TYPICAL POLE FOUNDATION**

AT UTILITY VAULT

NOT TO SCALE

**1**

SCALE: ST-122

**NOTES:**

- CONTRACTOR TO VERIFY ON FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.

NOTE: SEE PLAN FOR CONC. PIER EMBEDMENT

I:\PTB40.1\_Van Ness BRTV2\_CER\500\_Design\_Components\501\_Drawings\17\_Structural\1\_Pole Foundations (SMTA)\Sheet Files\ST-122.dwg Jun 28, 2015 - 11:47 am

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED: *Matthew Fong*  
 DRAWN: *Kathryn Manduca*  
 CHECKED: *J.L.C.*  
 REVIEWED: *Mark A. Redmond*  
 RECOMMENDED: *Pravara*  
 APPROVED: *R. Mohl*  
 DATE:



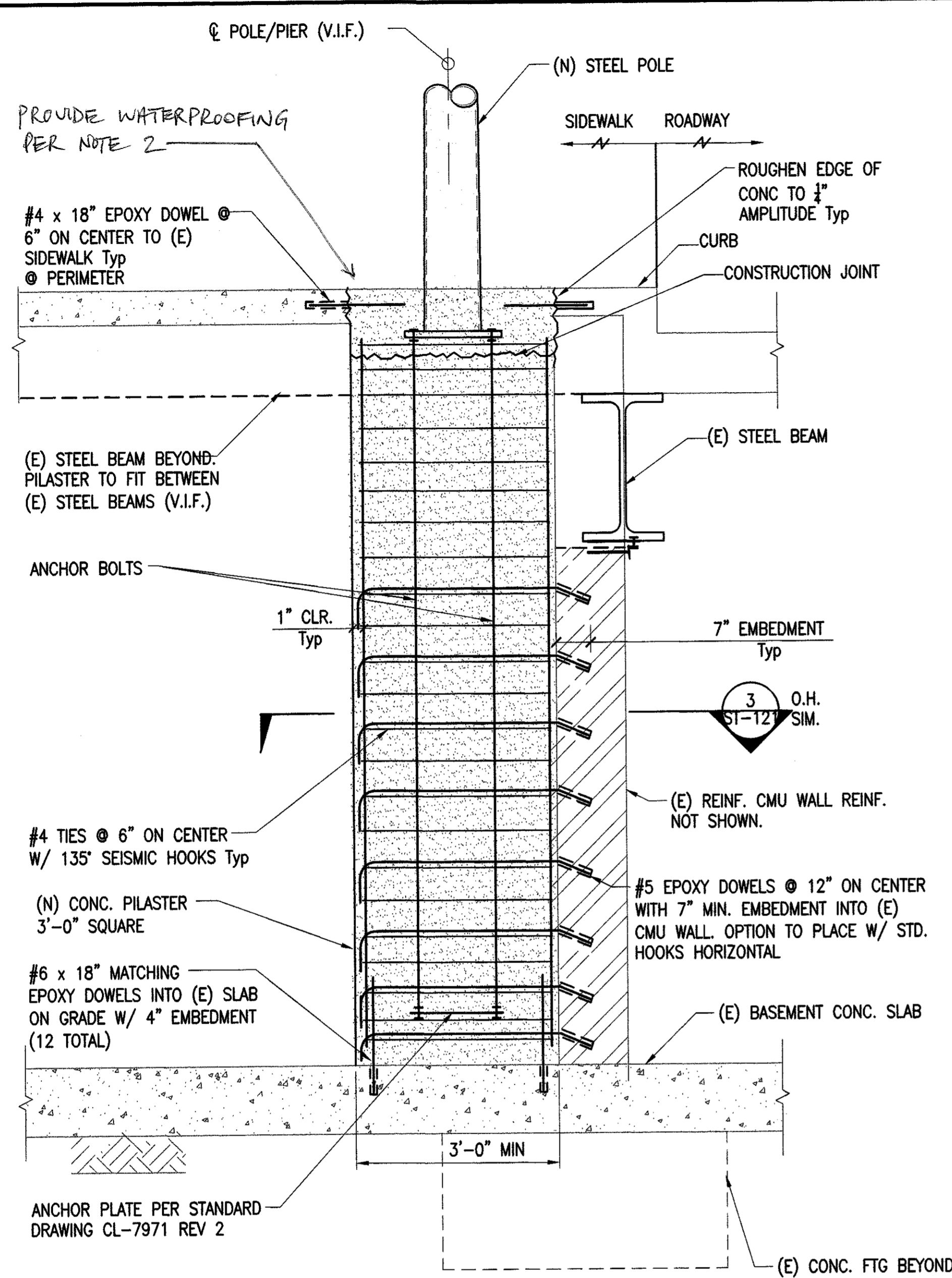
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
 for the DIRECTOR OF TRANSPORTATION

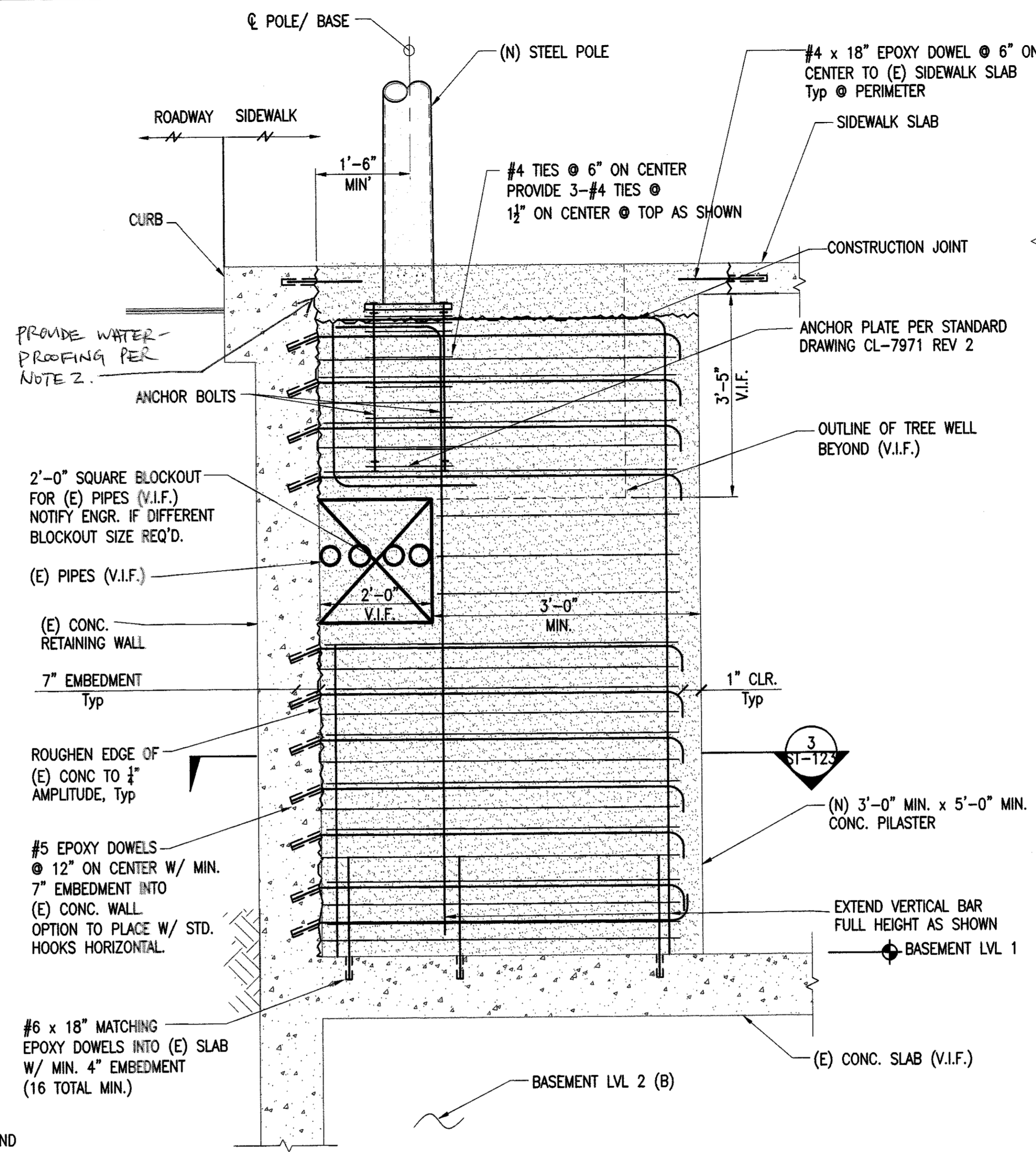
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

STRUCTURAL  
**SPECIAL POLE FOUNDATION DETAILS**  
 SHEET 2 OF 3

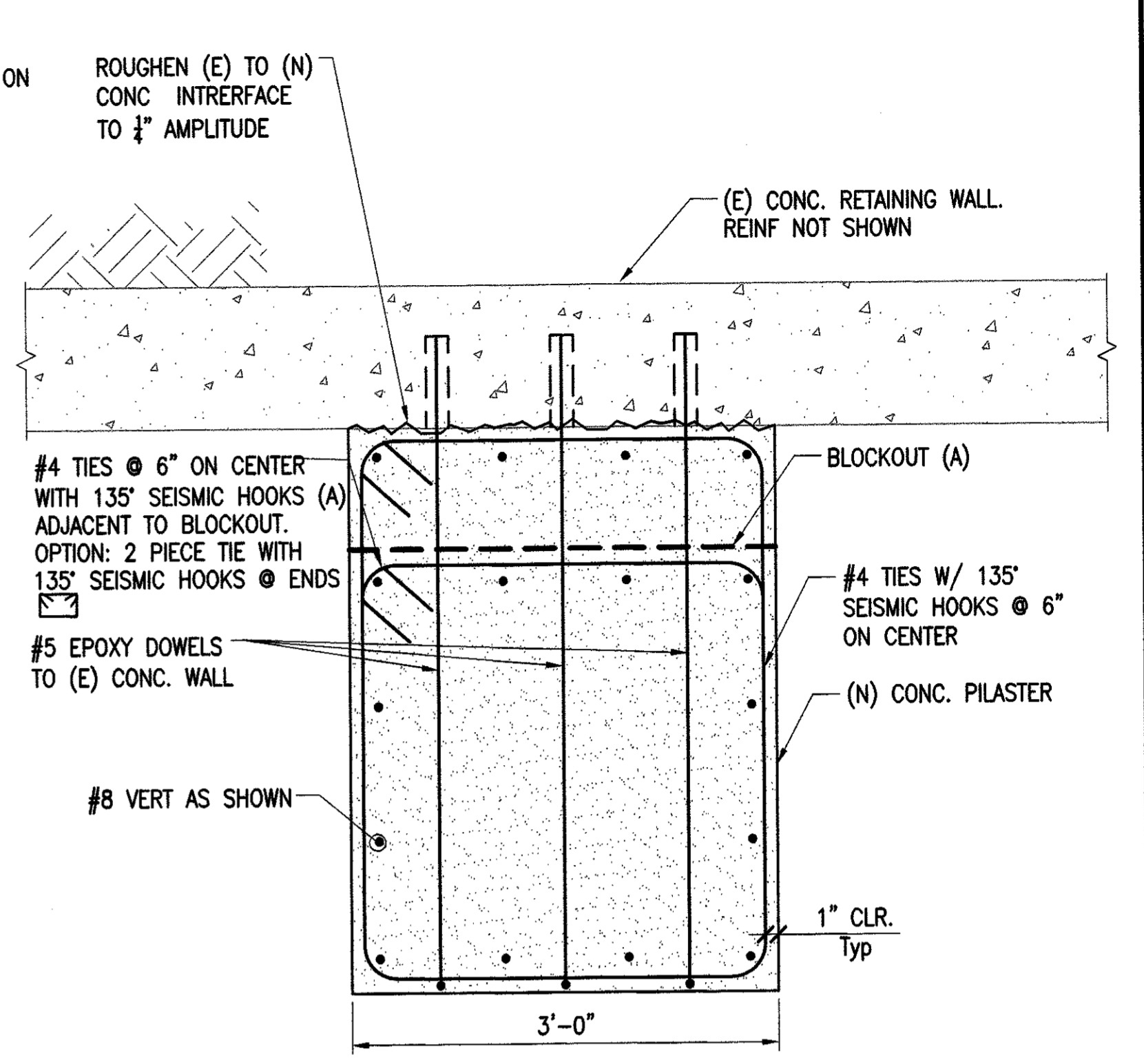
1289	CL-29096
ST-122	REVISION
	0



1 **PILASTER**  
ST-123 NOT TO SCALE



2 **PILASTER BETWEEN TREE WELLS**  
ST-123 NOT TO SCALE



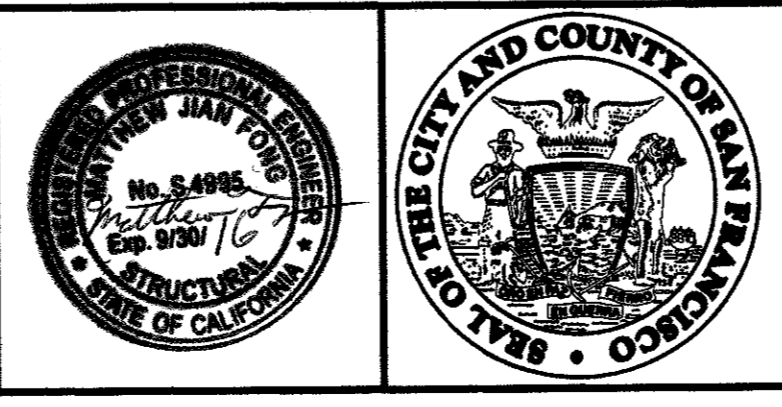
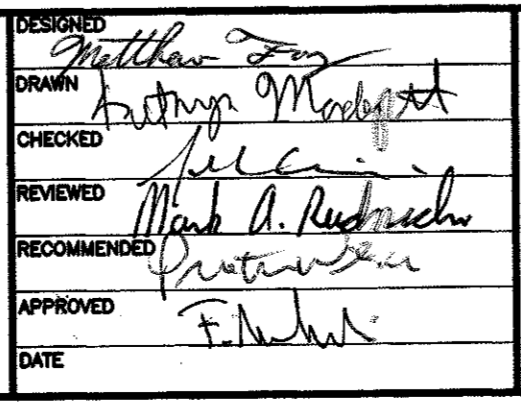
3 **PILASTER SECTION**  
ST-123 NOT TO SCALE

- NOTES:**
- CONTRACTOR TO VERIFY ON FIELD LOCATIONS, DEPTHS, AND EXTENT OF SUBSIDEWALK BASEMENTS AND UTILITY VAULTS PRIOR TO CONSTRUCTION. IF CONDITIONS DIFFER FROM THESE DRAWINGS, NOTIFY ENGINEER.
  - CONTRACTOR TO PROVIDE WATERPROOFING AT ALL SIDEWALK PENETRATIONS AND AT CONSTRUCTION JOINTS. PROVIDE WATERPROOFING AND INSTALL AS PER RECOMMENDATIONS FROM GRACE COMPANY A WATERPROOFING CONSULTANT.

I:\CPT6401\_Van Ness BRTV\_CER\500\_Design Components\501\_Drawings\17\_Structural\1\_Pole Foundations\SMATA\Sheet Files\ST-123.dwg krmadgop Tue Jul 26 2016 12:02 pm

NO.	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
REVISIONS					

DESIGNED <i>William J. ...</i>
DRAWN <i>Anthony ...</i>
CHECKED <i>...</i>
REVIEWED <i>Mark A. ...</i>
RECOMMENDED <i>...</i>
APPROVED <i>F. ...</i>
DATE



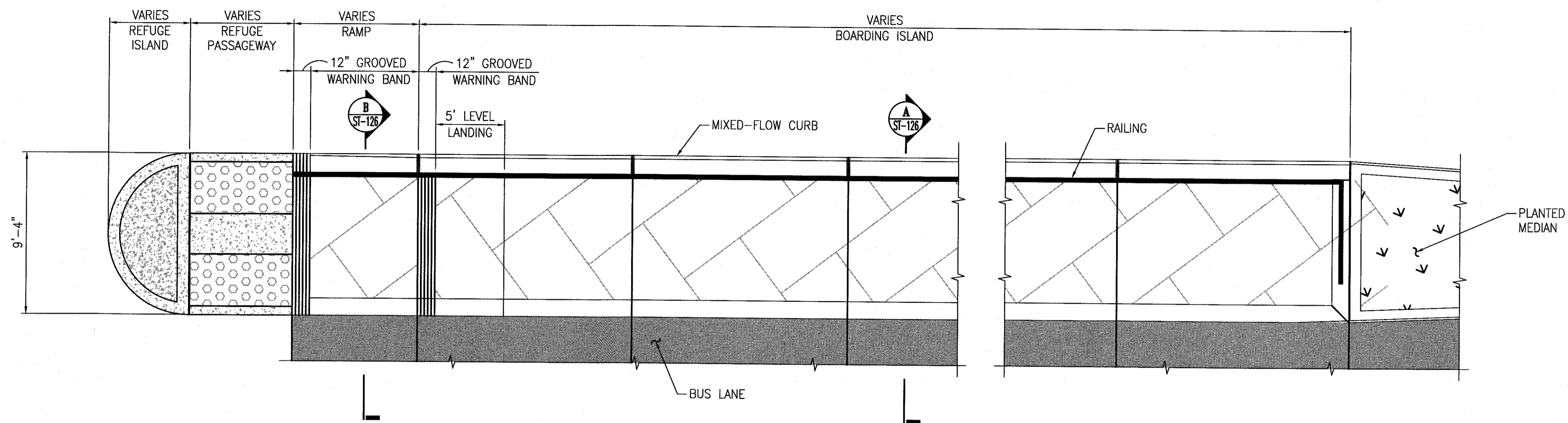
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*...*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT

STRUCTURAL  
SPECIAL POLE FOUNDATION DETAILS  
SHEET 3 OF 3

1289
CL-29097
ST-123
0



**PLAN OF BOARDING ISLAND AND RAMP**  
SCALE: 1/4"=1'-0"

1

**NOTES:**

1. FOR ADDITIONAL PLATFORM DETAILS, SEE CIVIL DRAWINGS.
2. FOR PLATFORM FURNISHINGS AND RAILING, SEE ARCHITECTURAL DRAWINGS.
3. FOR LANDSCAPING, SEE LANDSCAPE DRAWINGS.

V:\21061\_VANNESS\_BRT\_MISSION\_LOMBARD\_V2\_Design\_Working\_Drawings\EST\Current\21061\_ST-125.dwg drawing Thu Jul 30, 2015 - 12:46 pm

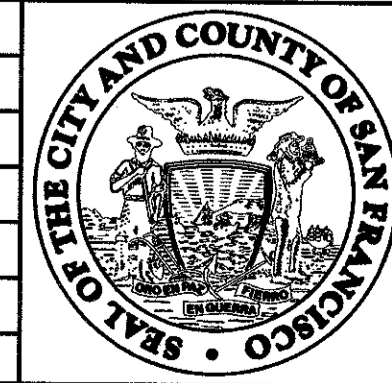
NO.	DATE	DESCRIPTION	BY	APPROVED



**DESIGN AND ENGINEERING DIVISION**  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Designed For Ray Lui 7/5/15 Date: 7/5/15  
Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS 11/20/15  
Division Mgr: PATRICK RIVERA 11/24/15

DESIGNED	FR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	PW
APPROVED	P.M.
DATE	



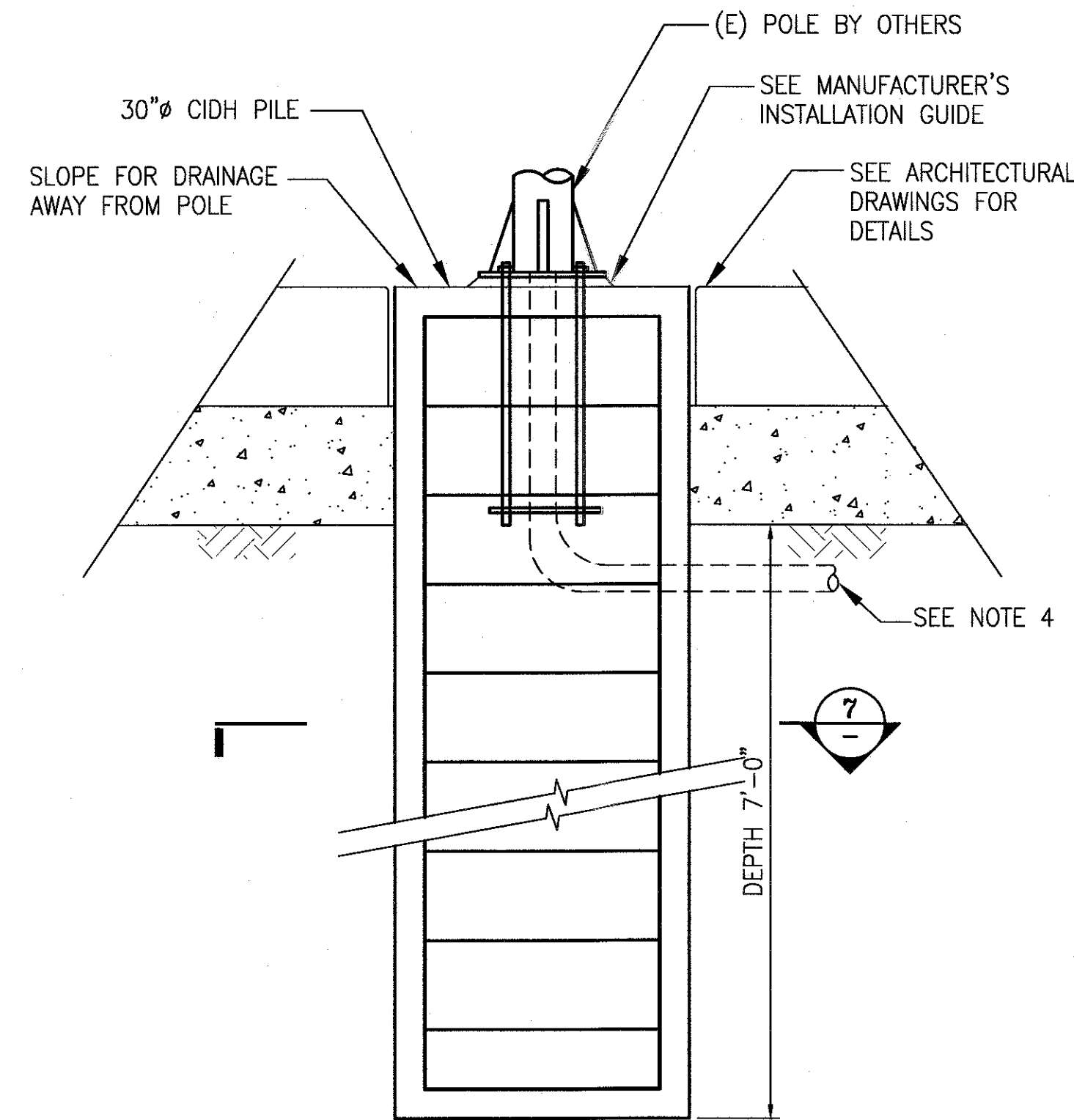
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
TYPICAL BOARDING ISLAND PLAN

1289	REVISION
CL-29086	
ST-125	0

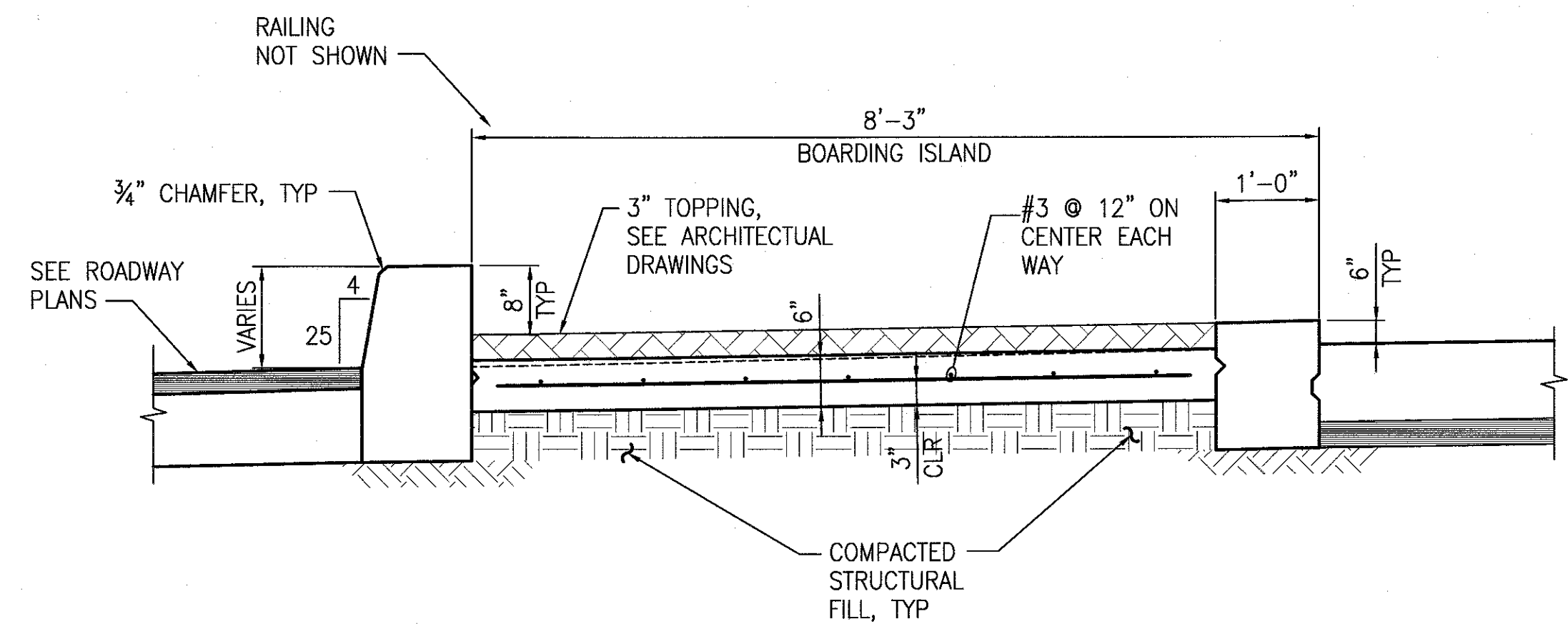
NOTES:

1. FOR ADDITIONAL PLATFORM DETAILS INCLUDING DRAINAGE REQUIREMENTS, SEE CIVIL DRAWINGS.
2. FOR PLATFORM FURNISHINGS AND RAILING, SEE ARCHITECTURAL DRAWINGS.
3. FOR LOCATION OF CCTV POLE, SEE ARCHITECTURAL DRAWINGS.
4. PROVIDE CONDUIT TO PULL BOX OR AS SHOWN ON PLANS.



**CCTV POLE FOUNDATION SECTION**  
SCALE: 1 1/2"=1'-0"

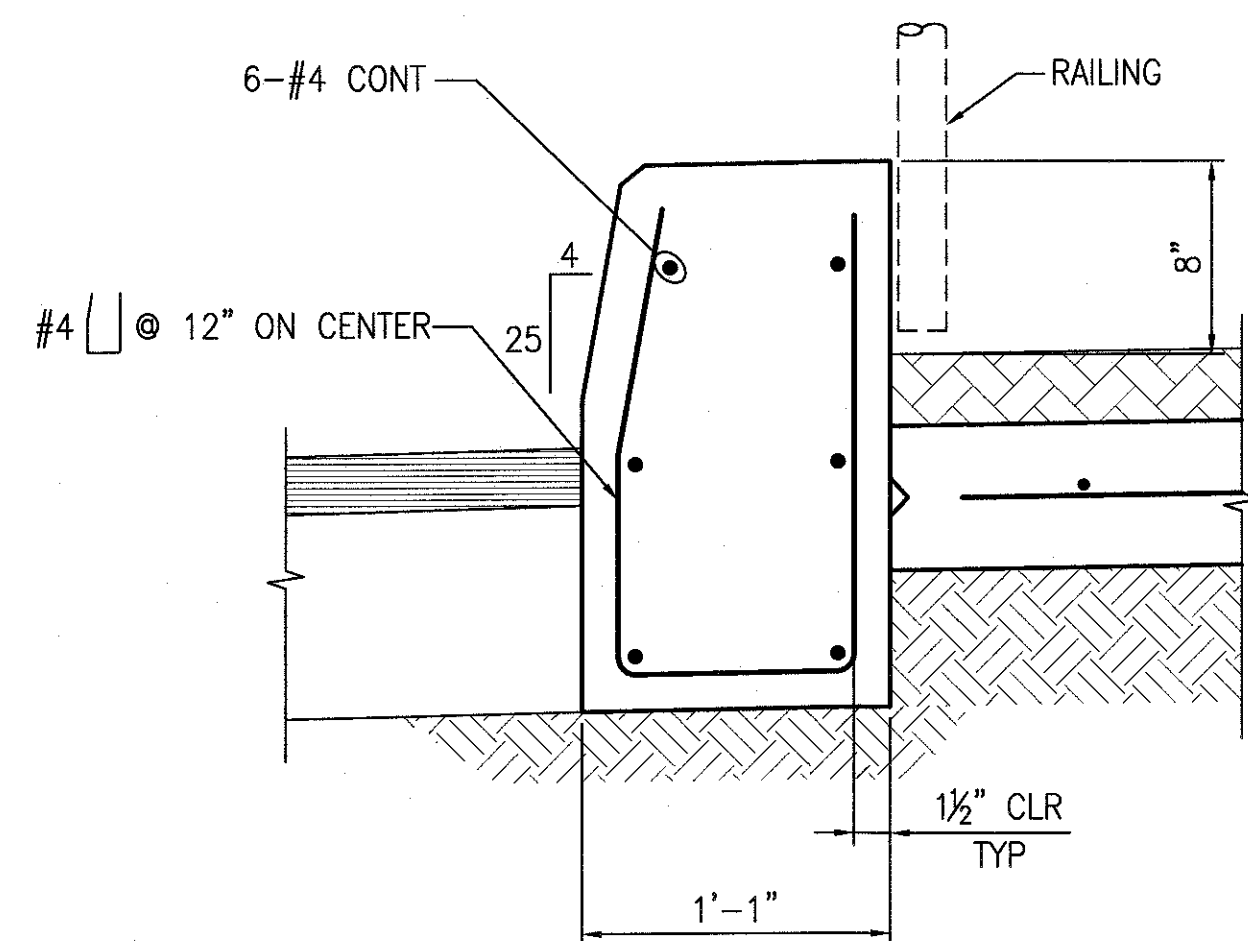
8



**SECTION - TYPICAL @ PLATFORM RAMP**  
SCALE: 3/4"=1'-0"

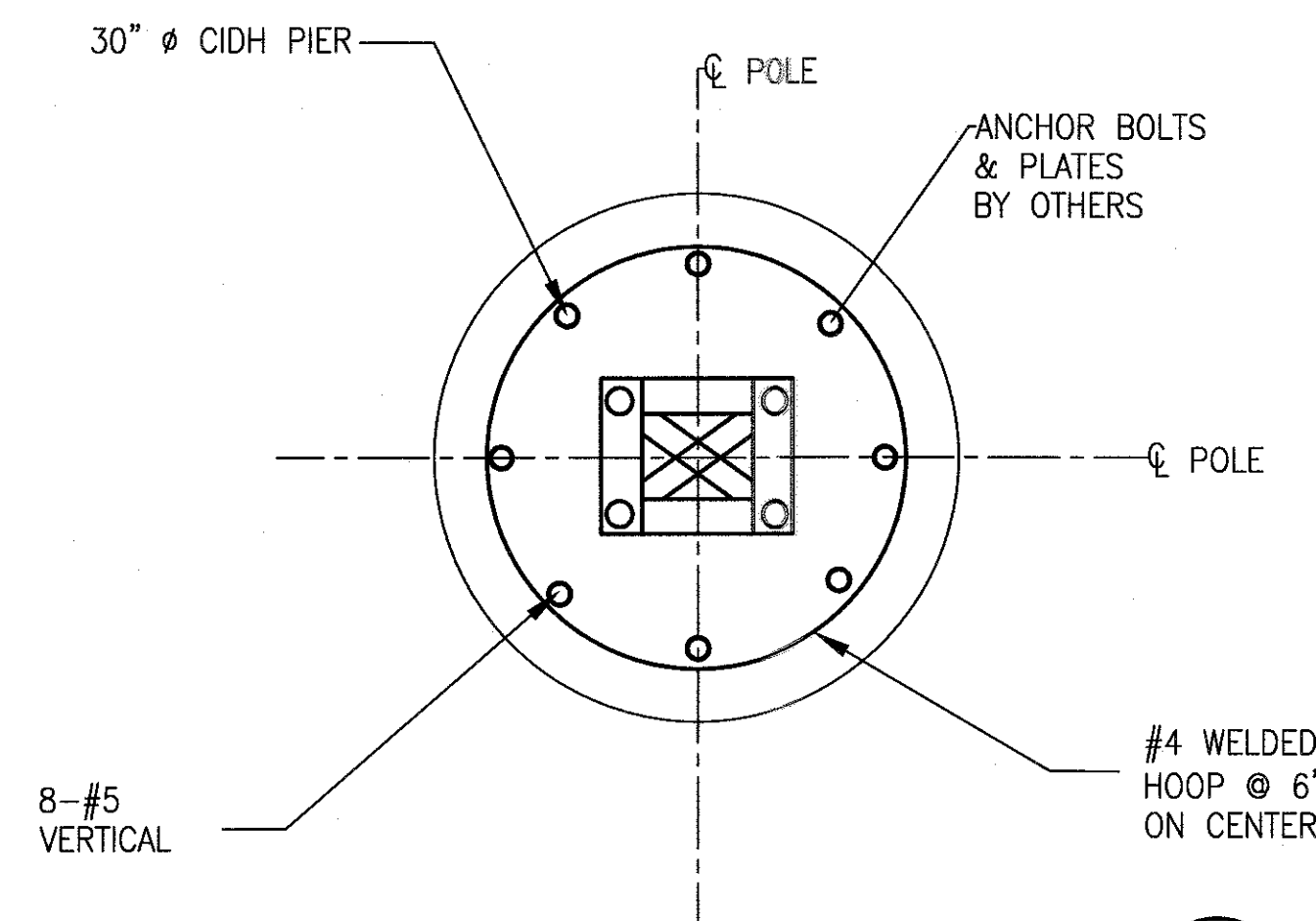
B

ST-125



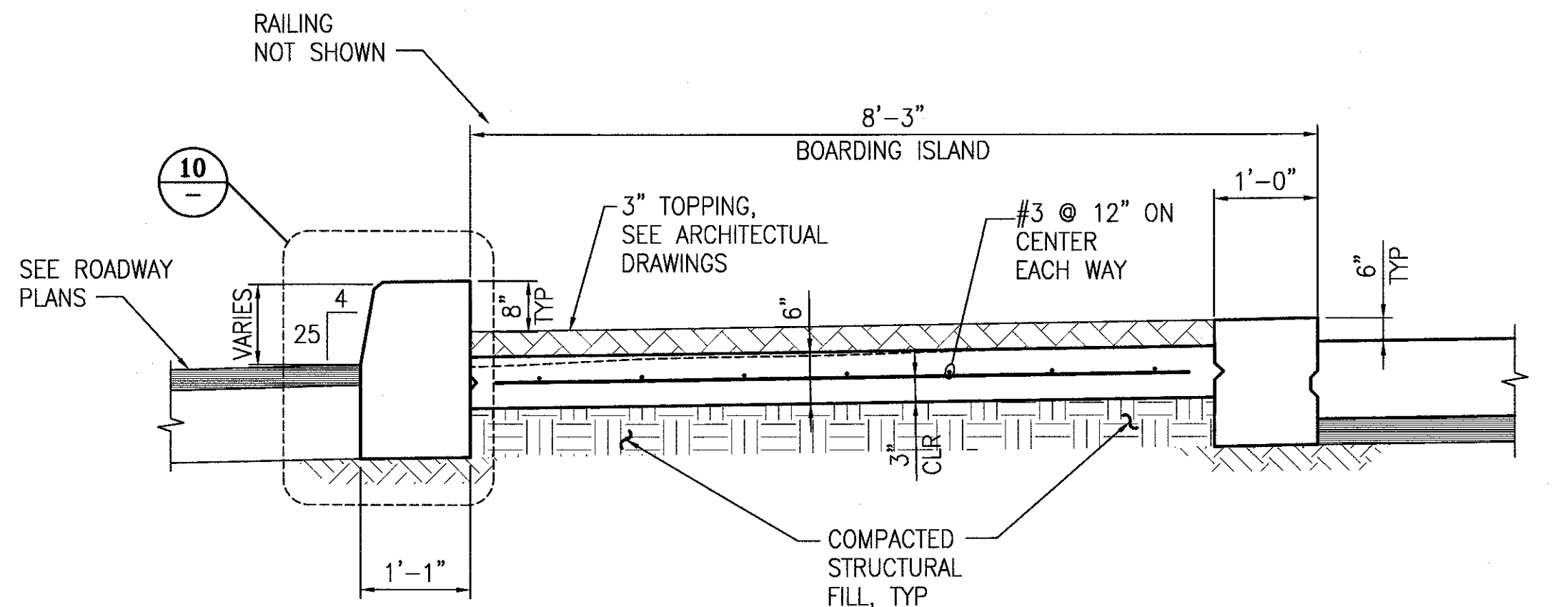
**DETAIL**  
SCALE: 1 1/2"=1'-0"

10



**CCTV POLE FOUNDATION SECTION**  
SCALE: 1 1/2"=1'-0"

7



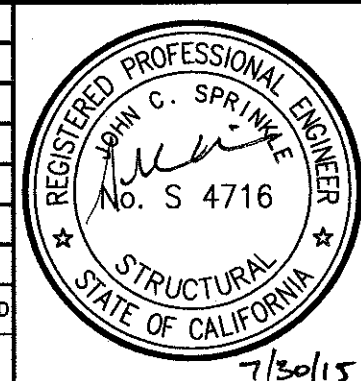
**SECTION - TYPICAL @ PLATFORM**  
SCALE: 3/4"=1'-0"

A

ST-125

V:\2106\_VANNESS\_BRT\_MISSION\_LAND\_2\_Design\_Working\_Drawings\EST\Current\2106\_ST-125.dwg drawing Thu Jul 30, 2015 - 10:25 am

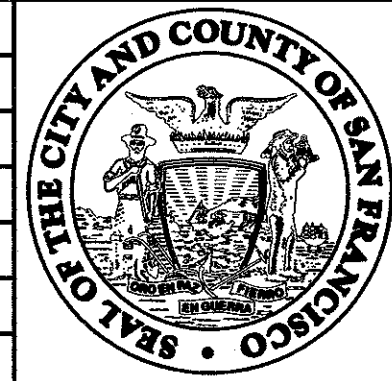
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date: 7/30/15  
DESIGNED: RFL  
DRAWN: DL  
CHECKED: JS  
REVIEWED: RL  
RECOMMENDED: PW  
APPROVED: P.M.  
DATE: 11/24/15

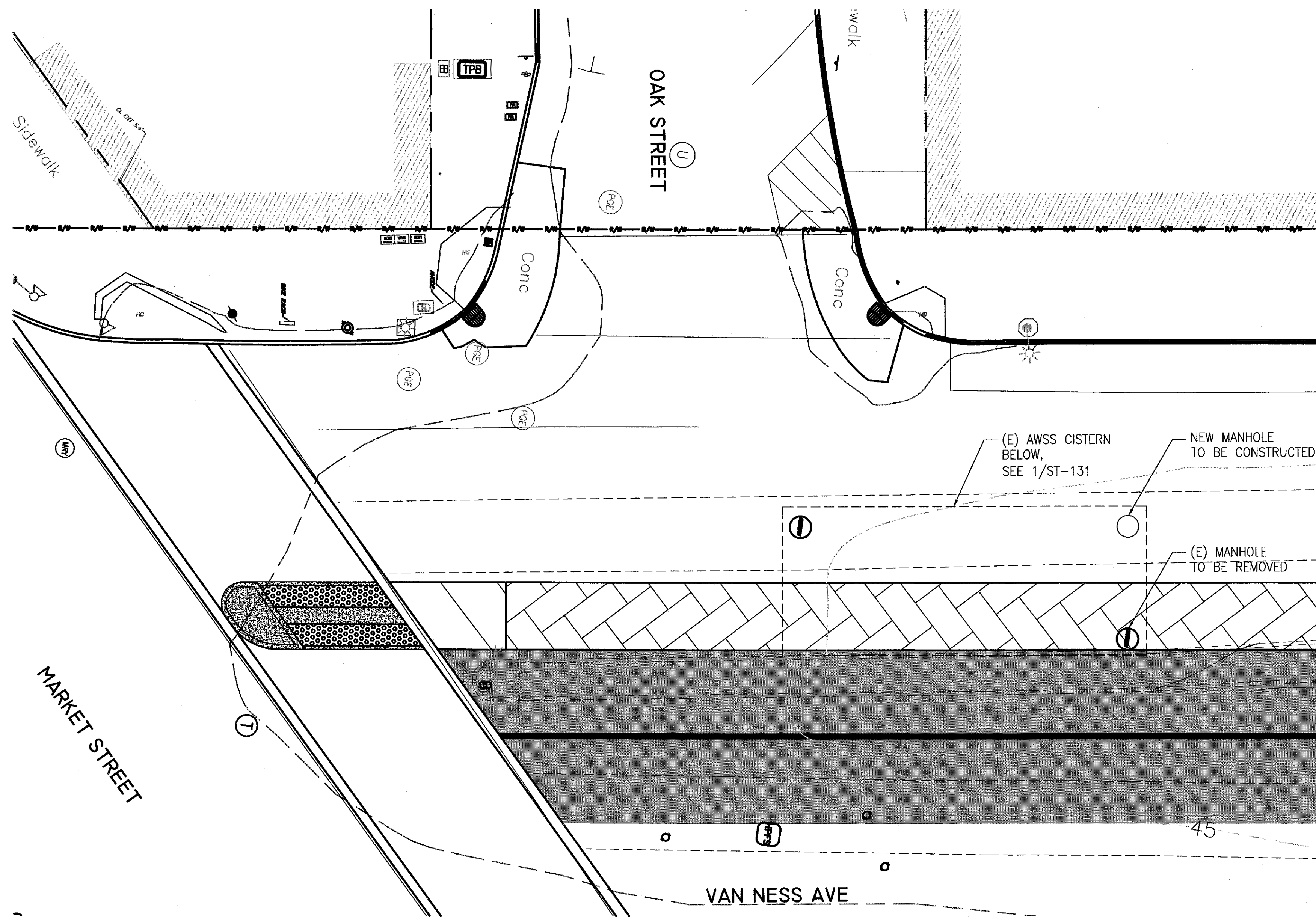


CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: Vincent Star  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT  
TYPICAL BOARDING PLATFORM DETAILS

1289  
CL-29087  
ST-126  
REVISION  
0

U:\01061\_VANNESS\_BRT\_MUNICIPAL\_TRANSPORTATION\2\_Design\Working\_Drawings\EST\Curren\ 21061\_ST-130.dwg dlmeng Mon Jul 13 2015 - 8:16 am



**AWSS CISTERN LOCATION PLAN**  
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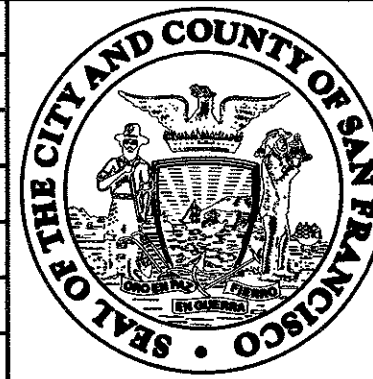
1  
-

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND  
 ENGINEERING DIVISION  
 PUBLIC WORKS  
 CITY & COUNTY OF SAN FRANCISCO  
 30 VAN NESS AVENUE, 5TH FLOOR  
 SAN FRANCISCO, CA 94102 - 8028

Section Mgr:	RAYMOND LUI	Date:	7/13/15
Deputy Division Mgr:	FERNANDO CISNEROS	Checked:	JS
Division Mgr:	PATRICK RIVERA	Reviewed:	RL
		Recommended:	PW
		Approved:	P.M.
		Date:	7/13/15



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*Vincent Han*  
 for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

AWSS CISTERN LOCATION PLAN

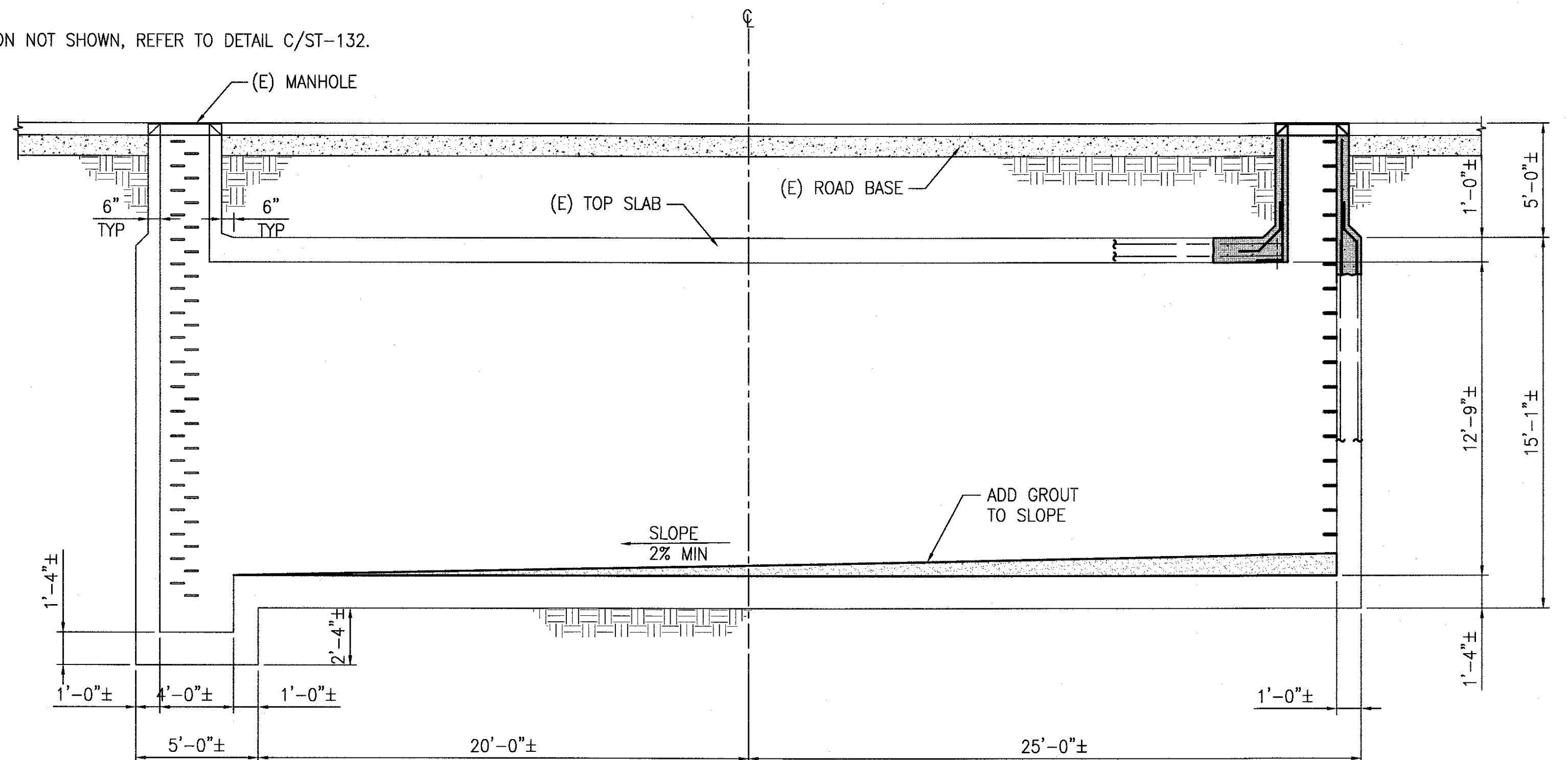
1289
CL-29088
ST-130
REVISION
0

NOTE:

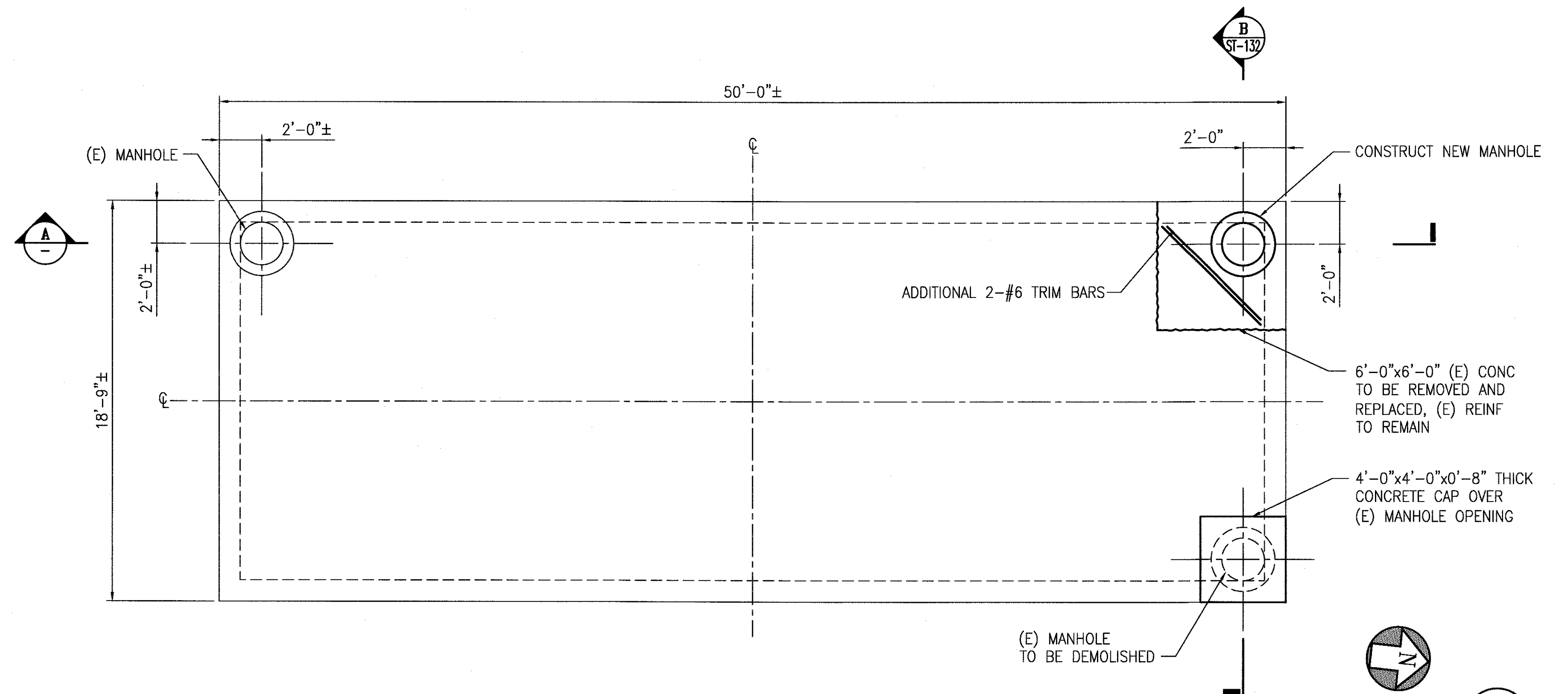
- CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.

NOTE:

INFORMATION NOT SHOWN, REFER TO DETAIL C/ST-132.



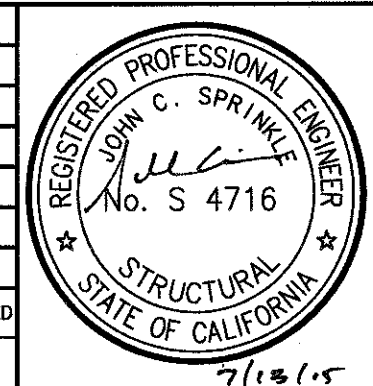
SECTION  
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PLAN  
SCALE: 1/4"=1'-0"

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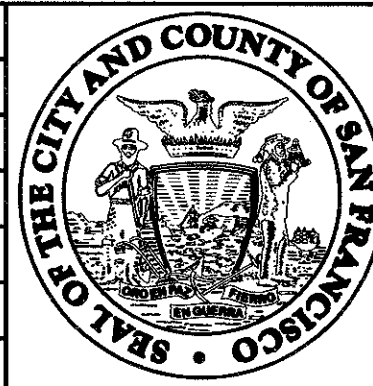
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND  
ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond Lui* RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: *Patrick Rivera* PATRICK RIVERA

Date: 7/13/15  
11/20/15  
11/24/15



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
for the DIRECTOR OF TRANSPORTATION

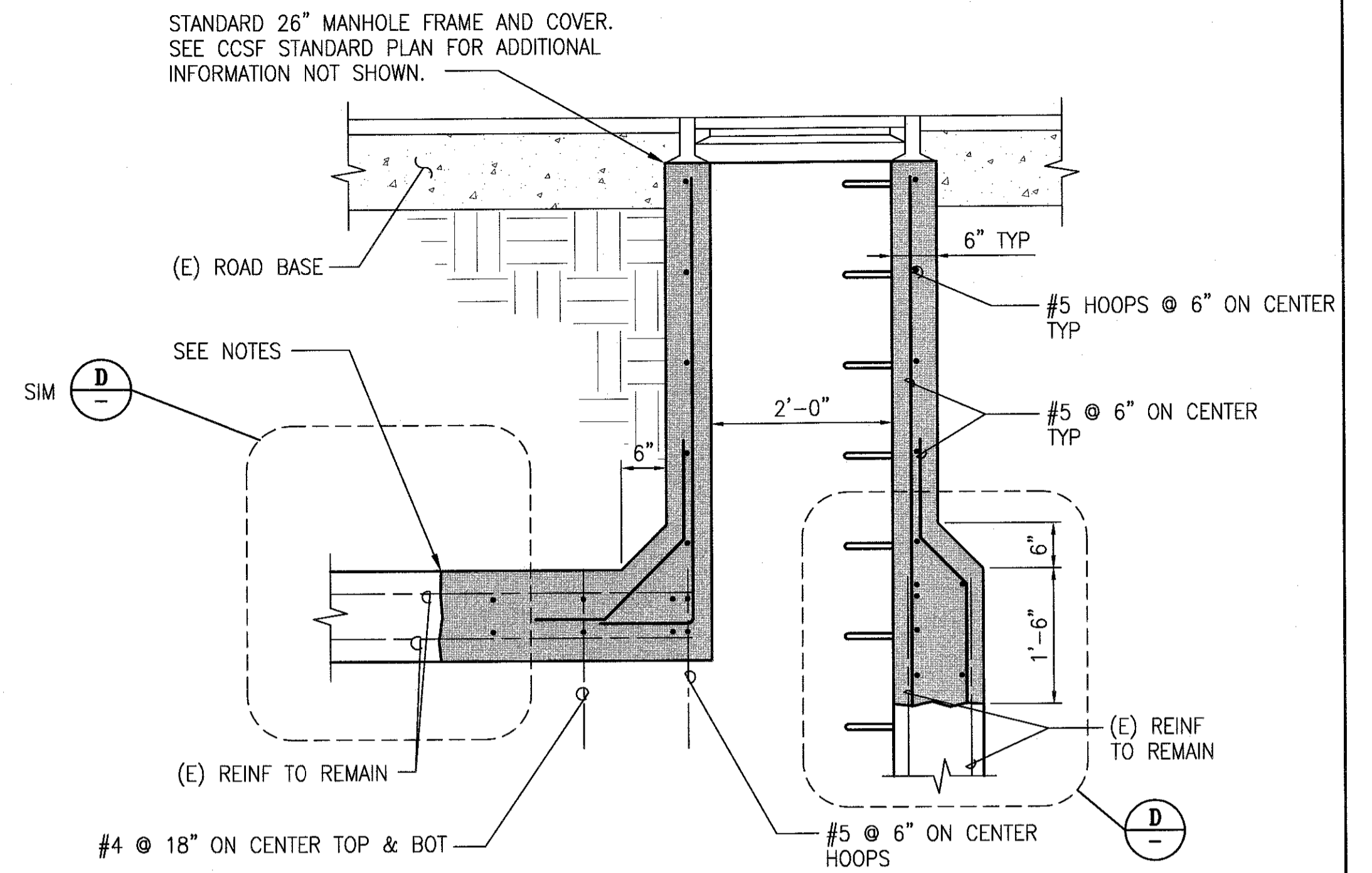
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

**AWSS CISTERN  
PLAN AND SECTIONS**

1289	REVISION
CL-29089	
ST-131	0

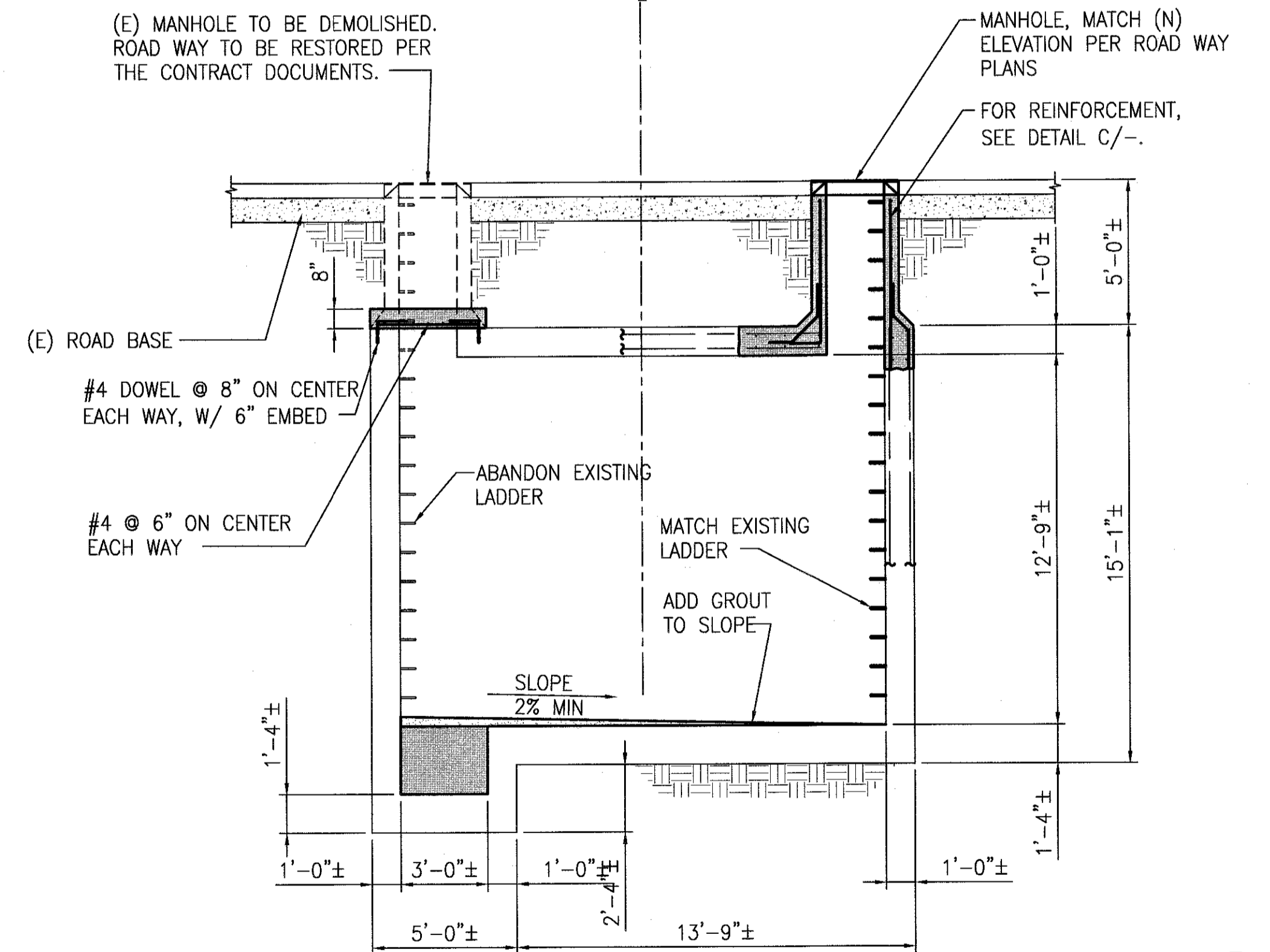
**NOTES:**

1. SAW-CUT 1-INCH DEEP SCORE LINES ON EXTERIOR SLAB AND WALL FACES. (VERIFY DEPTH OF CUT TO CLEAR EXISTING REINFORCING.)
2. CHIP TO REMOVE THE CONCRETE WITHIN SCORE LINE, WHILE PRESERVING THE EXISTING WALL AND SLAB REINFORCING.
3. GRIND 1/2" WIDE CONTINUOUS SMOOTH SURFACE ALL AROUND THE OPENING AT CENTER OF WALL OR SLAB. CLEAN SURFACES AND BOND CONTINUOUS HYDROPHILIC WATER STOP IN PLACE.
4. INSTALL ADDITIONAL REINFORCING AS SHOWN.
5. SATURATE CONCRETE SURFACES AND WITHIN 15-MINUTES CAST CONCRETE CLOSURE POUR. (CONCRETE CLOSURE POUR MUST BE CAST BEFORE HYDROPHILIC WATER STOP EXPANDS.)
6. CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.



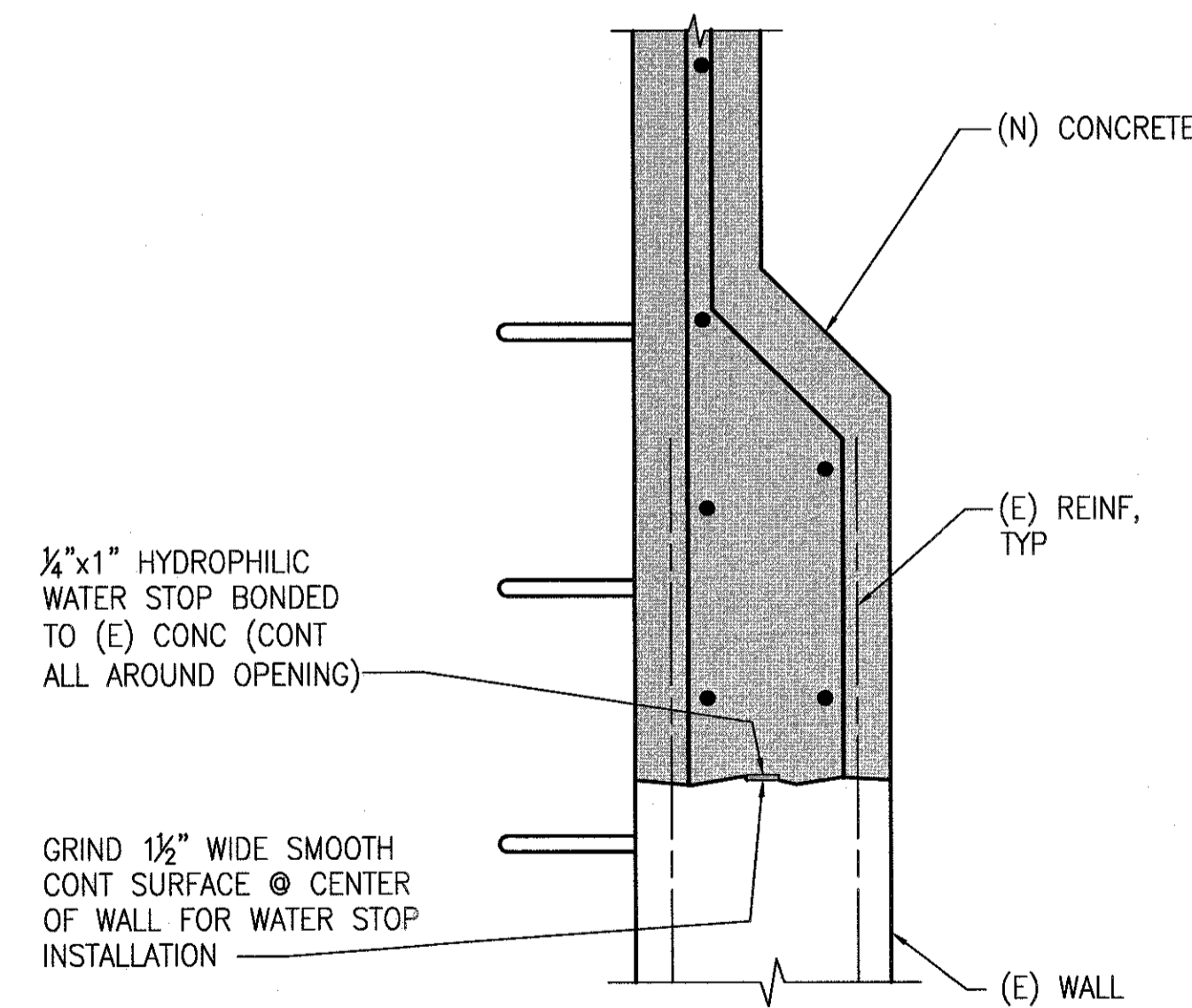
**SECTION**

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



**SECTION**

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



**DETAIL**

SCALE: 1 1/2" = 1'-0"

V:\21061\_VANNESS\_BRT\_MMISSION\_L0MBARD\Design\Working\_Drawings\EST\Current\21061\_ST-132.dwg, Mon Jul 13, 2015 - 8:19 am

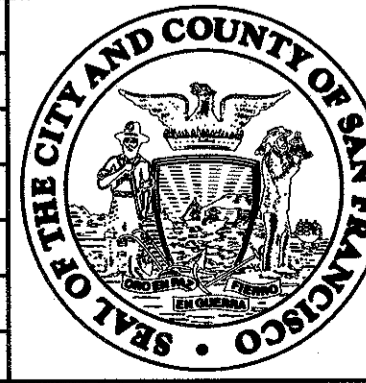
NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond LUI* RAYMOND LUI  
Date: 7/13/15  
Deputy Division Mgr: FERNANDO CISNEROS  
11/20/15  
Division Mgr: PATRICK RIVERA  
14/20/15

DESIGNED	FR
DRAWN	DL
CHECKED	JS
REVIEWED	RL
RECOMMENDED	FM
APPROVED	FM
DATE	



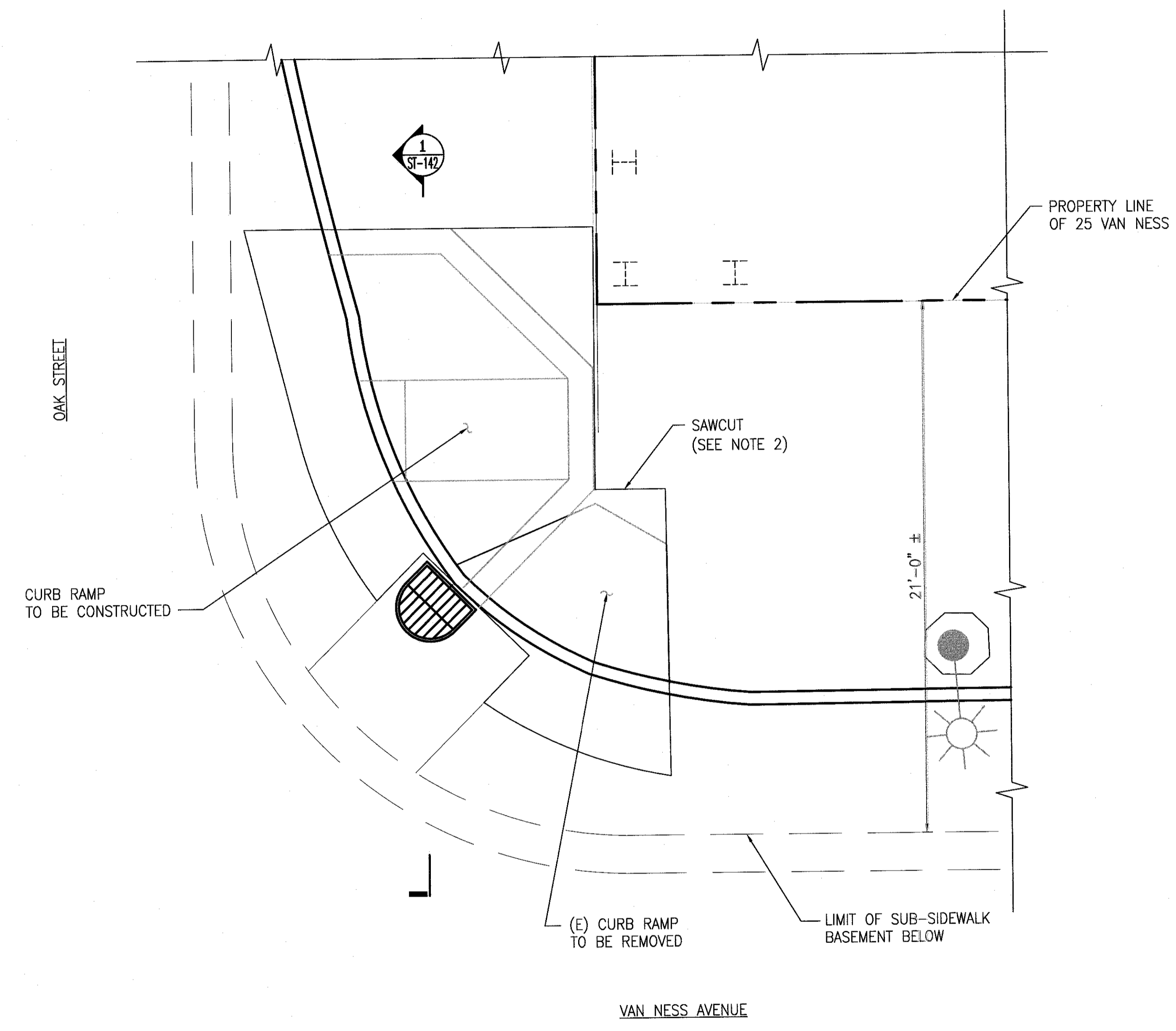
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
for the DIRECTOR OF TRANSPORTATION

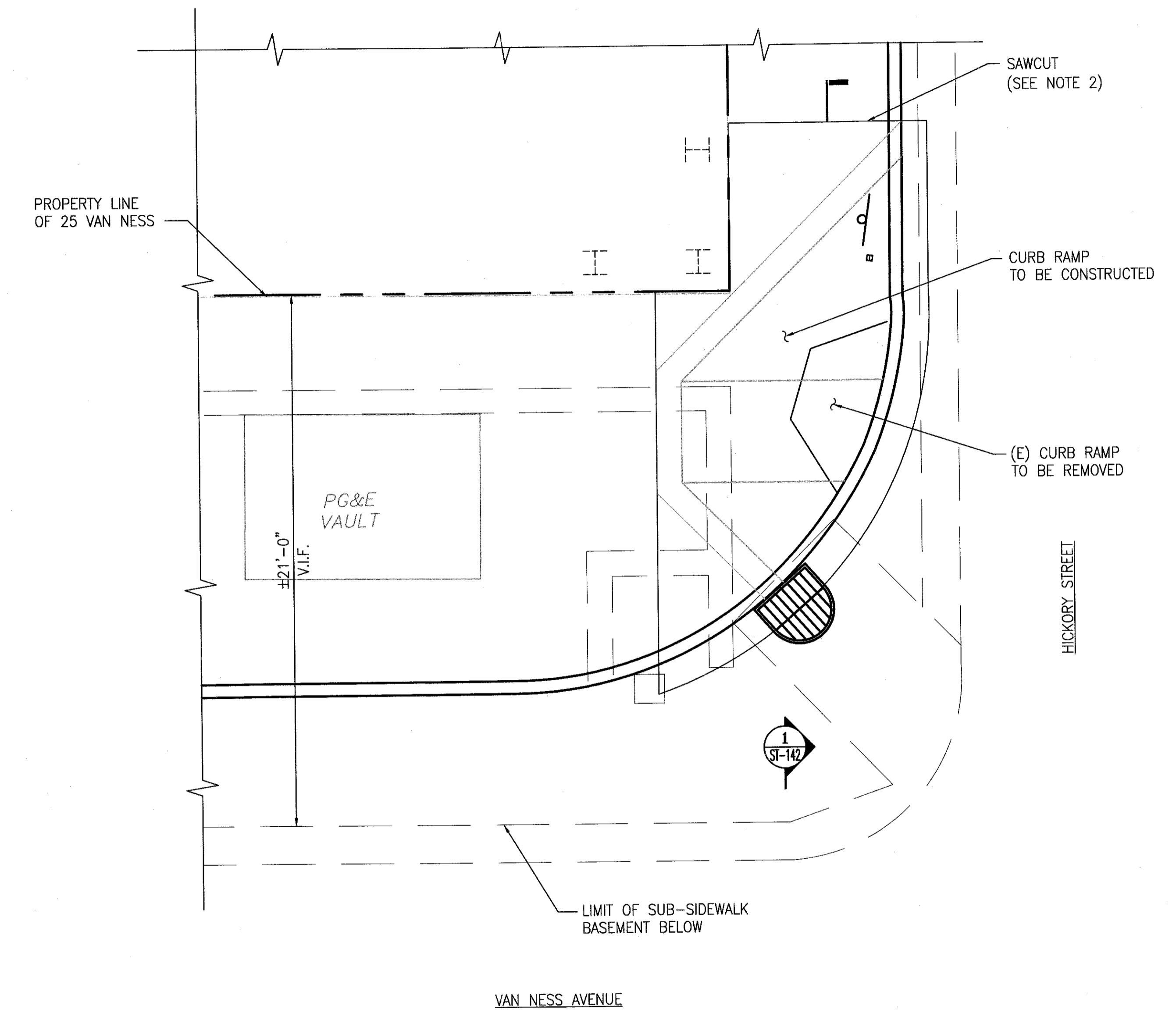
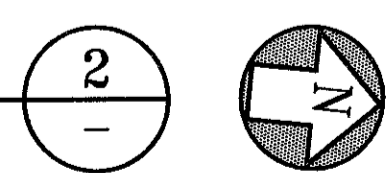
MUNI BUS RAPID TRANSIT SYSTEM		1289
VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT		CL-29090
AWSS CISTERN SECTIONS		ST-132
		REVISION
		0

**NOTES:**

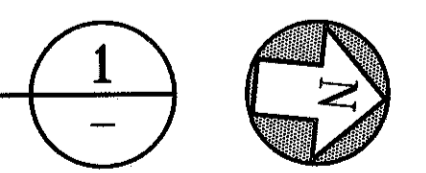
1. THE CONSTRUCTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.
2. SAW CUT 1" DEEP SCORE LINE (VERIFY DEPTH OF CUT TO CLEAR (E) REINF) AS SHOWN.
3. CHIP TO REMOVE (E) CONCRETE WITHIN SCORE LINES WHILE PRESERVING (E) SLAB REINF.
4. IF AN (E) BEAM IS LOCATED WITHIN LIMITS OF WORK OR CONDITIONS VARY, IMMEDIATELY CONTACT THE CITY REPRESENTATIVE.
5. REPLACE THE DEMOLISHED AREA WITH (N) CONCRETE AS INDICATED IN DETAIL 1/ST-142.
6. FOR ADDITIONAL INFORMATION NOT SHOWN, SEE ROADWAY PLANS.



**PARTIAL PLAN - OAK STREET AND VAN NESS AVENUE**  
SCALE: 1"=40'-0"



**PARTIAL PLAN - HICKORY STREET AND VAN NESS AVENUE**  
SCALE: 1"=40'-0"



V:\2106\_VANNESS\_BRT\_MISSION\_LOMBARD\2\_Design\_Working\_Drawings\EST\Current\2106L\_ST-140.dwg drawing Mon Jul 13 2015 - 8:21 am

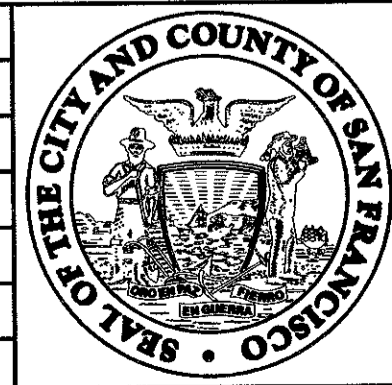
NO.	DATE	DESCRIPTION	BY	APPROVED



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: **RAYMOND LUJAN**  
Deputy Division Mgr: **FERNANDO CISNEROS**  
Division Mgr: **PATRICK RIVERA**

Date: **7/13/15**  
DESIGNED: **RR**  
DRAWN: **DL**  
CHECKED: **JS**  
REVIEWED: **RL**  
RECOMMENDED: **PW**  
APPROVED: **F.M.**  
DATE: **7/13/15**



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: **[Signature]**  
for the DIRECTOR OF TRANSPORTATION

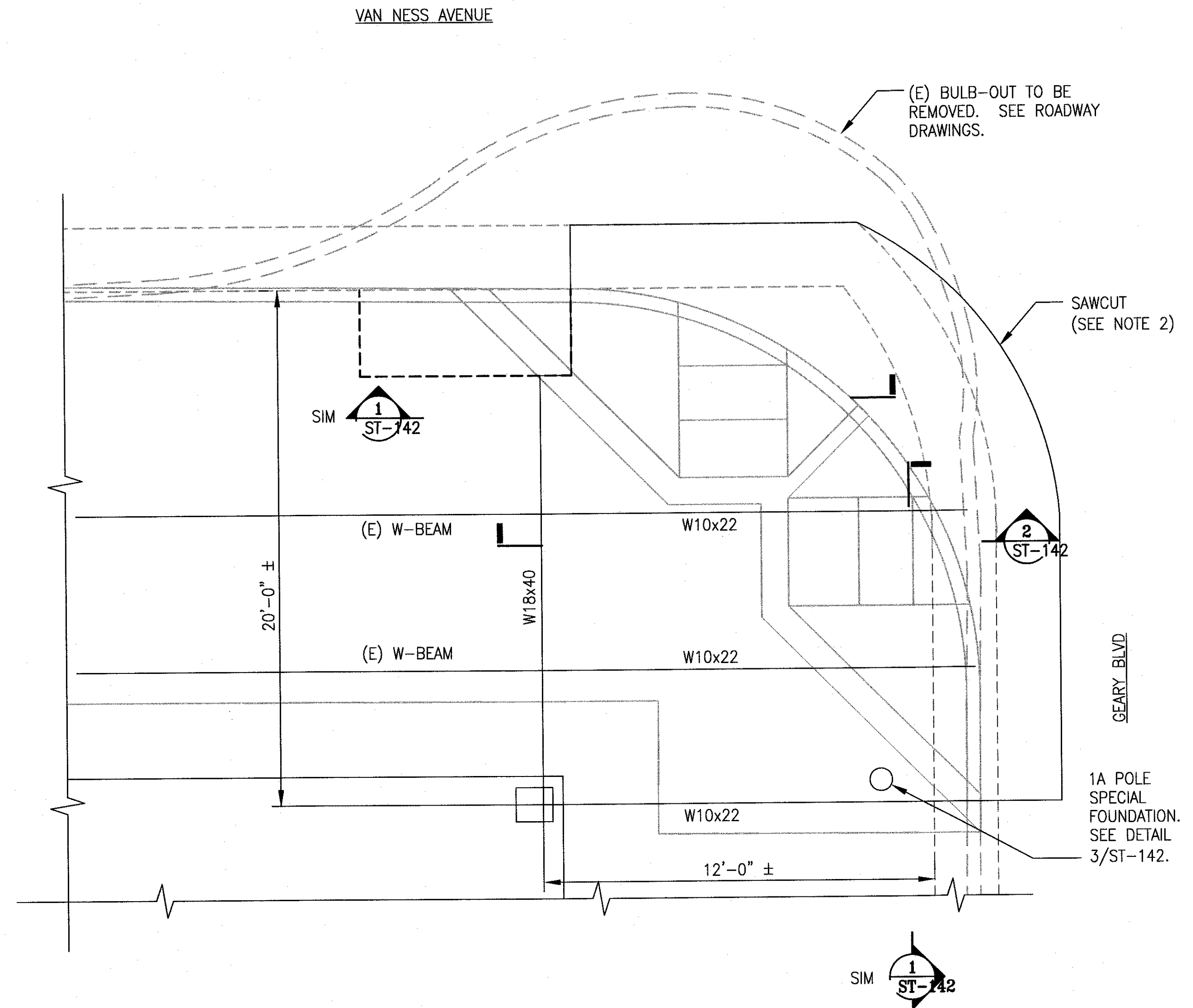
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
SUB-SIDEWALK BASEMENT  
PARTIAL PLAN - 25 VAN NESS AVENUE

1289  
CL-29091  
ST-140  
REVISION  
0

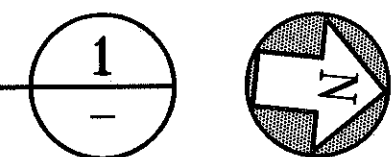


**NOTES:**

1. THE CONSTRUCTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.
2. SAW CUT 1" DEEP SCORE LINE (VERIFY DEPTH OF CUT TO CLEAR (E) REINF) AS SHOWN.
3. CHIP TO REMOVE (E) CONCRETE WITHIN SCORE LINES WHILE PRESERVING (E) SLAB REINF.
4. IF AN (E) BEAM IS LOCATED WITHIN LIMITS OF WORK OR CONDITIONS VARY, IMMEDIATELY CONTACT THE CITY REPRESENTATIVE.
5. REPLACE THE DEMOLISHED AREA WITH (N) CONCRETE AS INDICATED IN DETAIL 1/ST-142.
6. FOR ADDITIONAL INFORMATION NOT SHOWN, SEE ROADWAY PLANS.



**PARTIAL PLAN SOUTHEAST CORNER**  
SCALE: 1"=40'-0"



V:\2106L VANNESS\_BRT\_MASSION\_LONGBARD\_V2\_Design\_Working\_Drawings\_EST\_Current\2106L\_ST-141.dwg rrfes Thu Nov 19 2015 - 3:36 pm

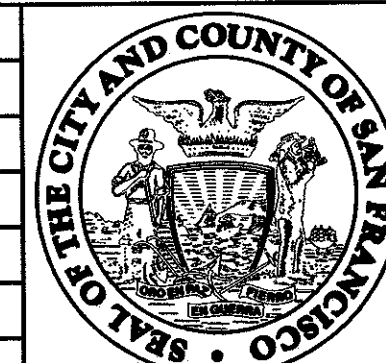
NO.	DATE	DESCRIPTION	BY	APPROVED
01	10/6/15	REVISION		



**DESIGN AND ENGINEERING DIVISION**  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Date: 11/19/15  
Deputy Division Mgr: FERNANDO CISNEROS  
Date: 11/20/15  
Division Mgr: PATRICK RIVERA  
Date: 11/24/15

DESIGNED: RR  
DRAWN: DL  
CHECKED: JS  
REVIEWED: RL  
RECOMMENDED: RW  
APPROVED: F.M.  
DATE:



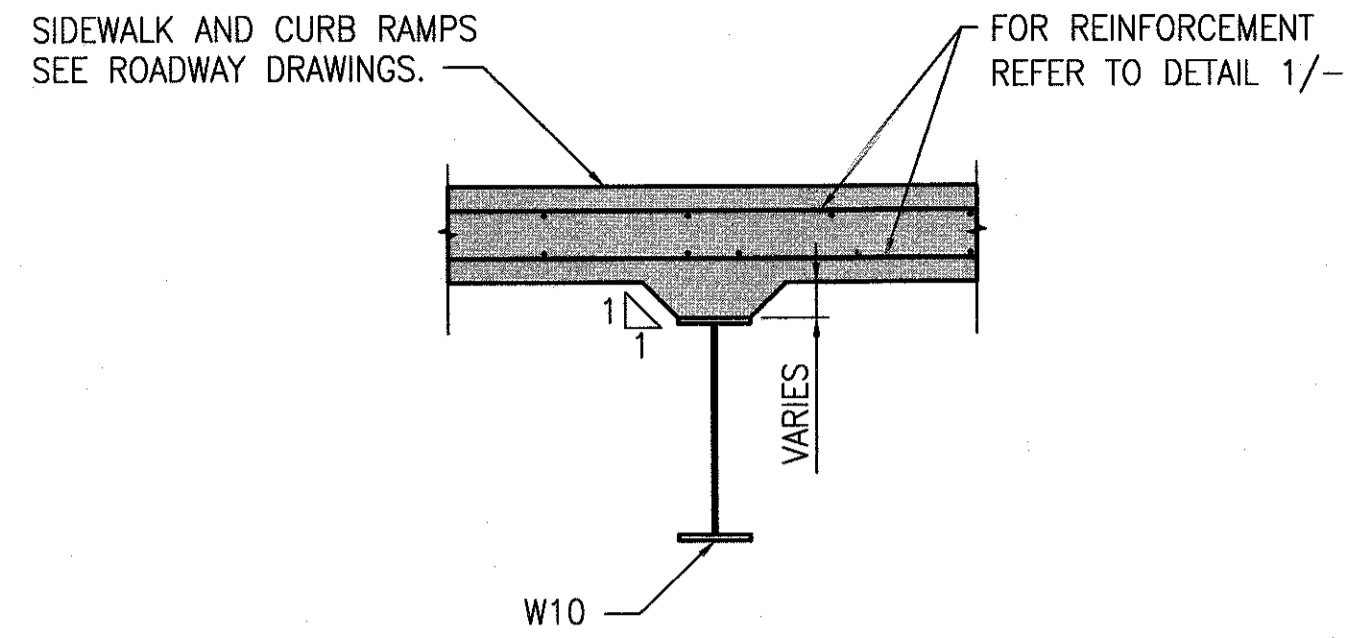
CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED: [Signature]  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
SUB-SIDEWALK BASEMENT  
PARTIAL PLAN - VAN NESS AVENUE AND GEARY BLVD

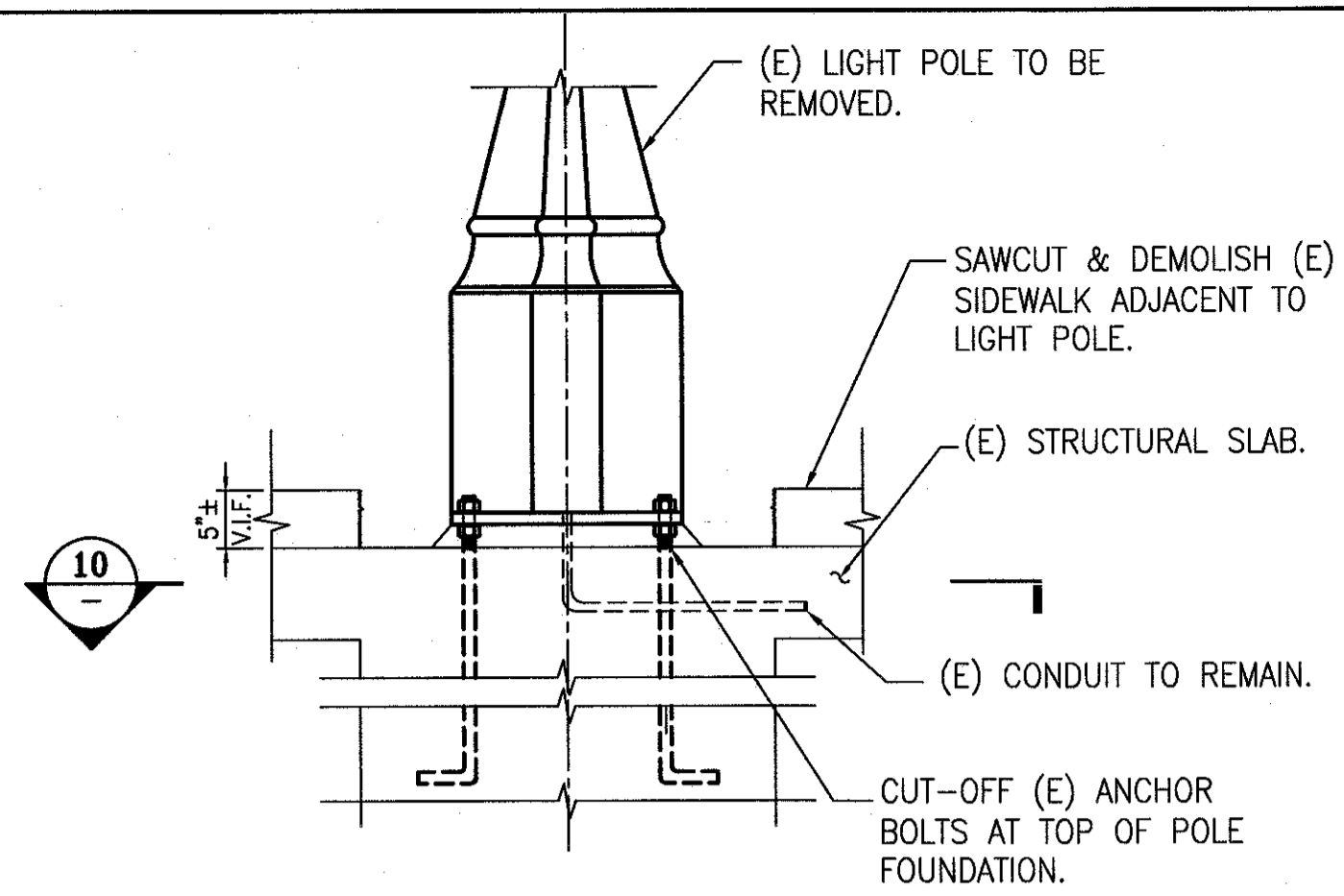
1289	REVISION
CL-29092	
ST-141	
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**NOTES:**

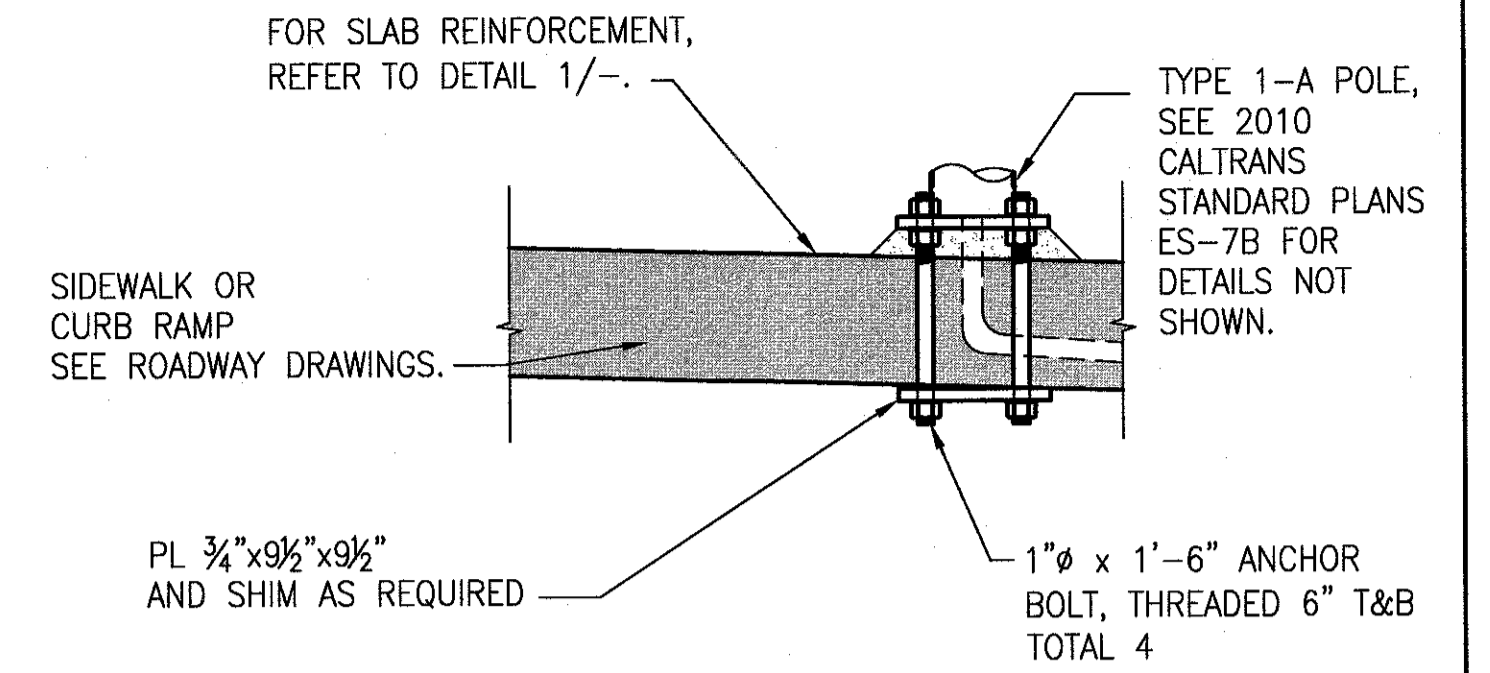
1. THE CONSTRUCTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.



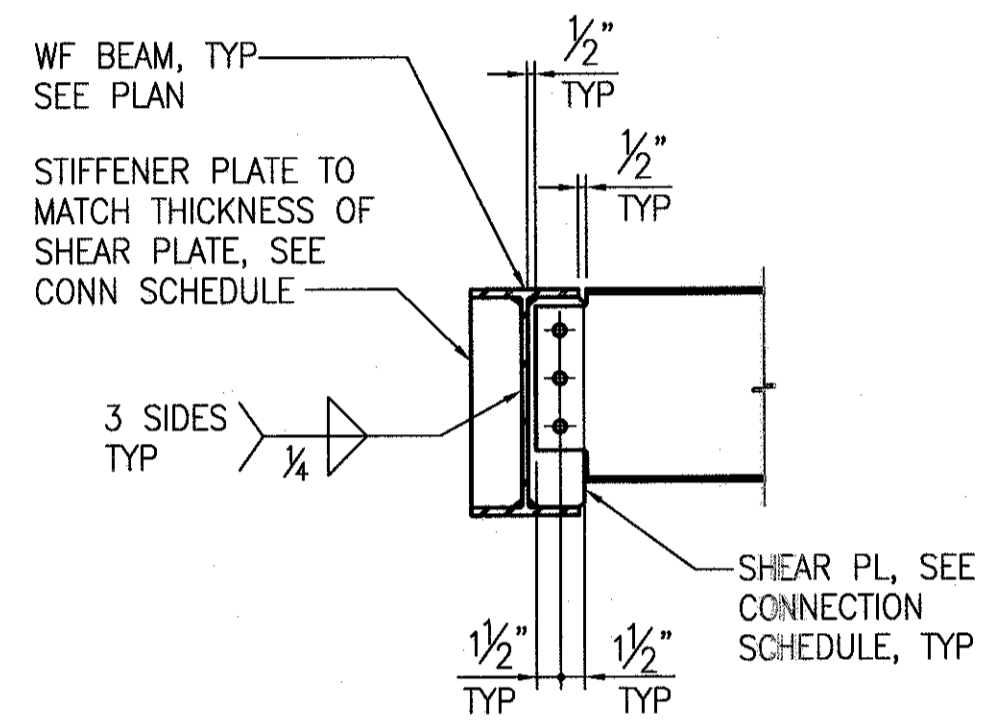
**ELEVATION**  
SCALE: 3/4"=1'-0" 9



**(E) LIGHT POLE @ VAN NESS & FELL**  
SCALE: 3/4"=1'-0" 6

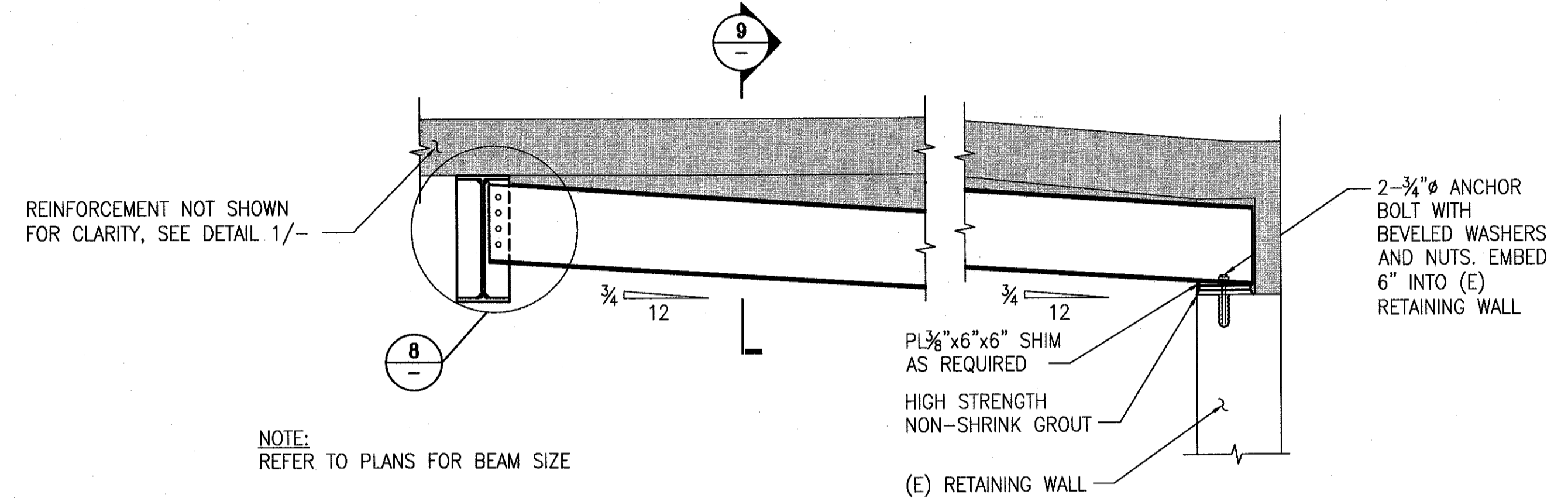


**SECTION**  
SCALE: 1"=1'-0" 3  
ST-141



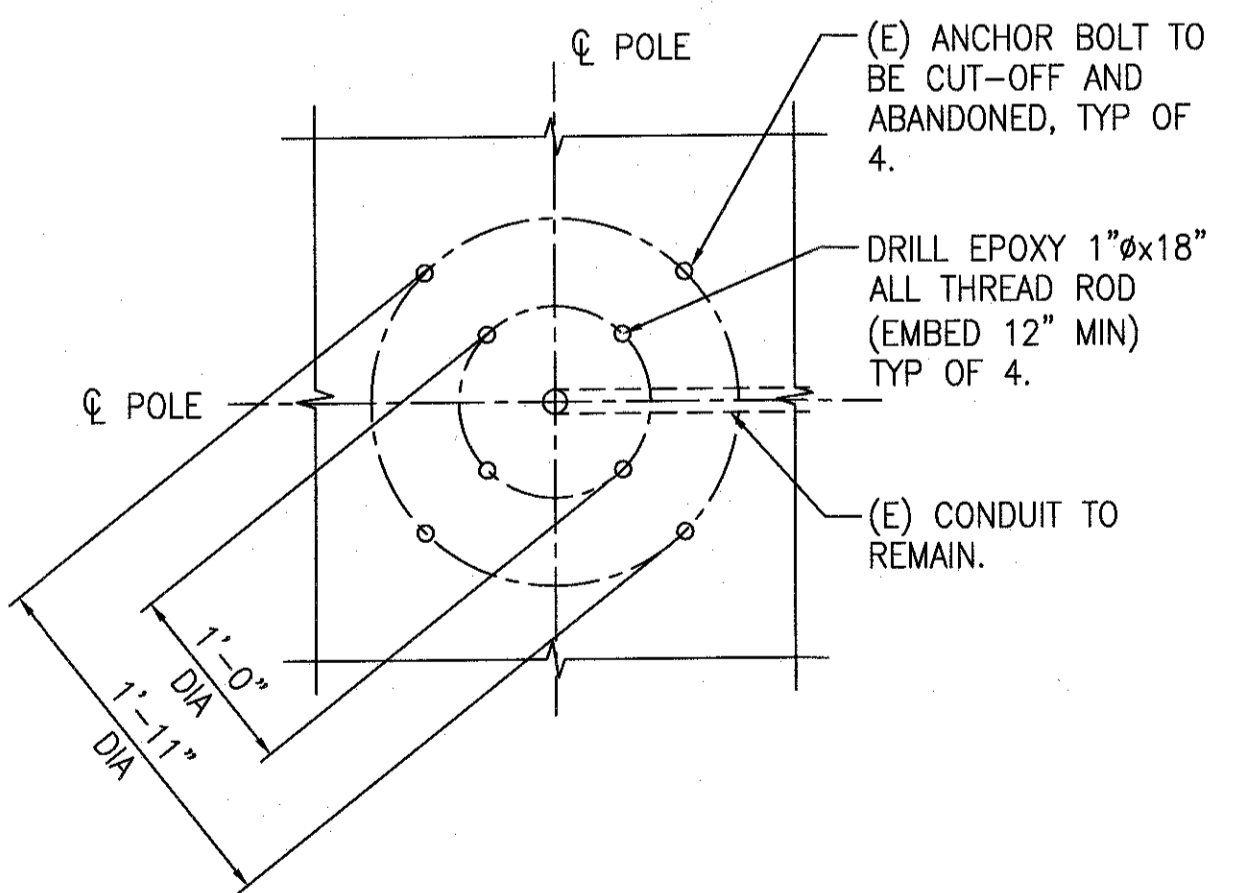
FOR INFORMATION NOT SHOWN OR NOTED, SEE CONNECTION SCHEDULE

**WF BEAM TO WF GIRDER**  
SCALE: NTS 8



NOTE: REFER TO PLANS FOR BEAM SIZE

**ELEVATION**  
SCALE: 3/4"=1'-0" 2  
ST-141

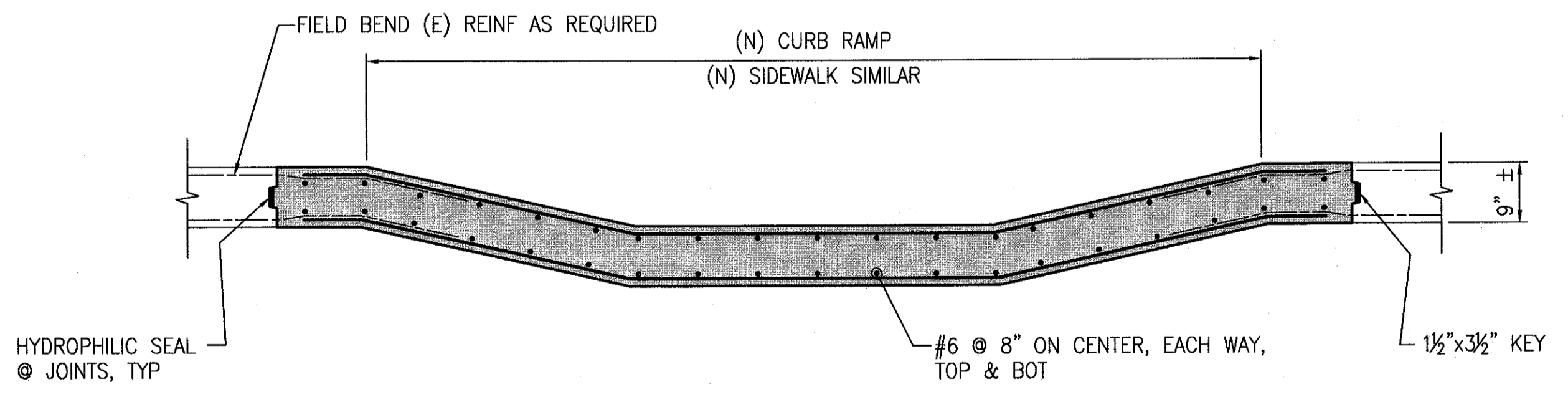


**DETAIL**  
SCALE: 1"=1'-0" 10

CONNECTION SCHEDULE			
BEAM SIZE	A325 BOLTS	SHEAR PLATE THICKNESS	REMARKS
W10	2-3/4"Ø	3/8"	
W18	4-3/4"Ø	3/8"	

NOTE:  
ALL PLATES TO BE Fy=50 KSI.

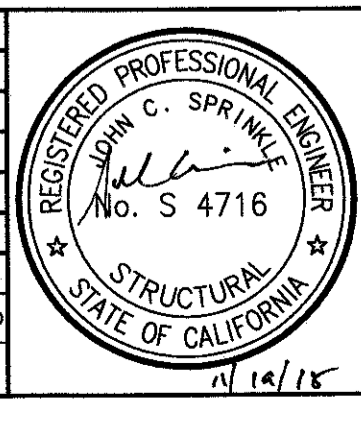
**CONNECTION SCHEDULE**  
SCALE: NTS 7



**SECTION**  
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ST-141 ST-140

V:\21061-VANNESS\_BRT\_MISSON\_LOMBARD\_2\_Design\_Working\_Drawings\EST\Current\21061-ST-142.dwg rthas Thu Nov 19, 2015 - 3:40 pm

NO.	DATE	DESCRIPTION	BY	APPROVED
01	10/6/15	REVISION		



DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: *Raymond Lui* RAYMOND LUI  
Deputy Division Mgr: *Fernando Cisneros* FERNANDO CISNEROS  
Division Mgr: *Patrick Rivera* PATRICK RIVERA

Date: 11/19/15  
11/20/15  
4/20/15

CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED  
*[Signature]*  
for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

1289  
CL-29093

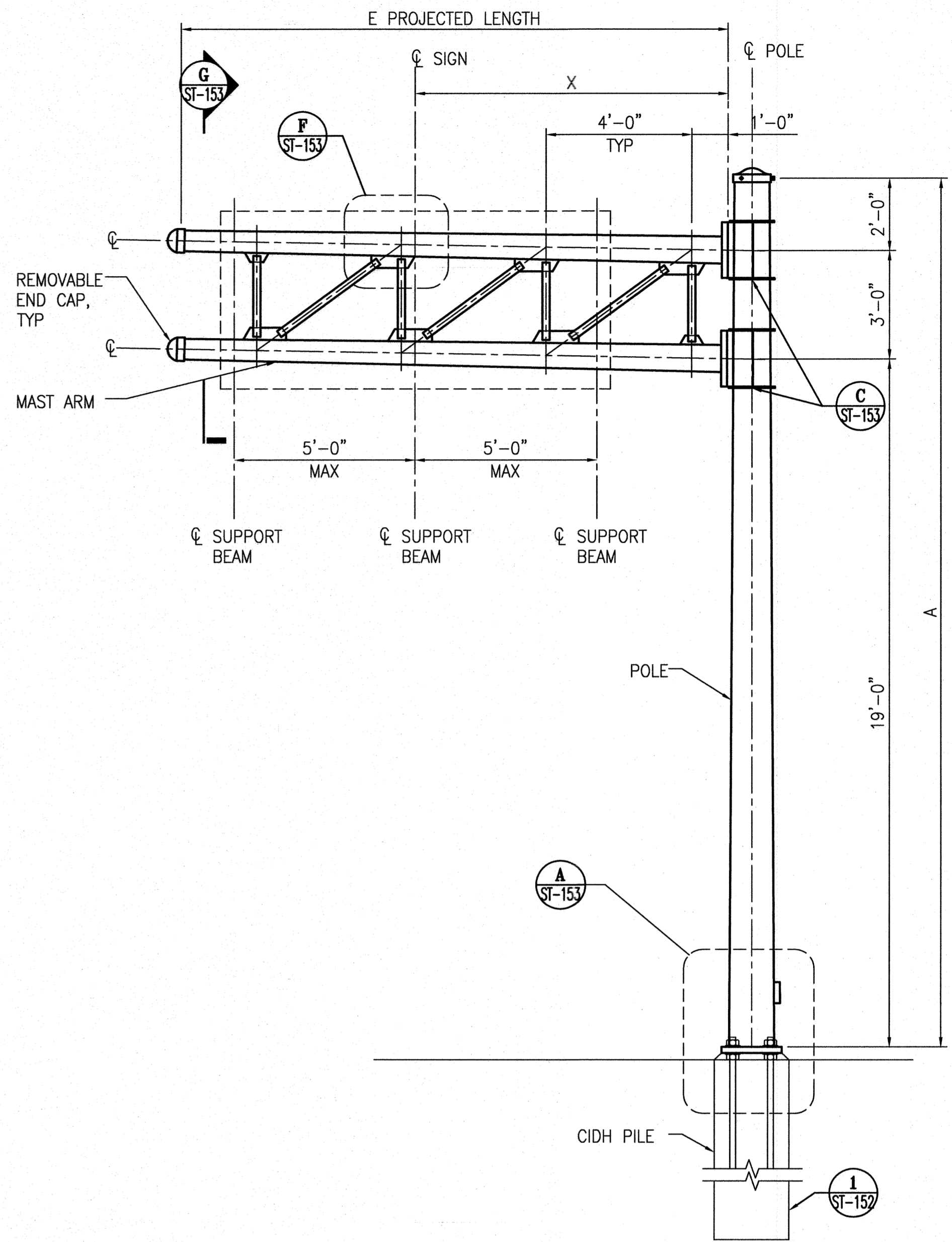
ST-142  
REVISION  
0

MAST ARM DATA										
E PROJECTED LENGTH	OD AT POLE	OD AT END	THICKNESS	I BOLT CIRCLE	HS BOLTS	J PLATE SIZE	K MAST ARM PL THICKNESS	L POLE PL THICKNESS	X MAX	X MIN
15'-0"	9"	6.9"	0.1763"	21"	1 1/2"x5.75"LG	18.50"	2"	2"	8.625'	8.375'

POLE DATA				BASE PLATE DATA				CIDH PILE FOUNDATION			
WIND VELOCITY (MPH)	A HEIGHT	MIN OD		THICKNESS	C	BC= BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	DIAMETER	DEPTH	REINFORCED
		BASE	TOP								
100	24'-0"	15"	11.64"	0.3125"	21.0"	20"	2"	2 1/4" øx45"	3'-6"	12'-0"	YES

**NOTES:**

- OUTSIDE DIAMETER, WALL THICKNESS, AND CORRESPONDING SECTION PROPERTIES OF POLES AND MAST ARMS ARE MINIMUMS. UNLESS OTHERWISE SPECIFIED, ALTERNATIVE SECTIONS SHALL REQUIRE APPROVAL BY THE ENGINEER.
- MAST ARMS SHALL BE ROUND TAPERED STEEL TUBES, MAXIMUM TAPER 0.14-INCH PER FOOT.
- WIND LOADING (3 SECOND): 100 MPH.
- UNIT STRESSES (STRUCTURAL STEEL):
  - Fy = 55,000 psi (TAPERED STEEL TUBE AND ANCHOR BOLTS)
  - Fy = 50,000 psi (UNLESS OTHERWISE NOTED)
- UNIT STRESSES (REINFORCED CONCRETE):
  - F'c = 4,000 psi (AT 28 DAYS)
  - Fy = 60,000 psi
- HAND HOLE SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
- FOR POLE LOCATIONS SEE TRAFFIC SIGNAL PLANS (ET SHEETS).
- WEIGHT OF VARIABLE MESSAGE SIGN DISPLAY INCLUDING SUPPORT BEAM IS LIMITED TO 1100LBS.
- MAXIMUM SIZE OF VMS BOARD SHALL NOT EXCEED 4'-11"x10'-9".

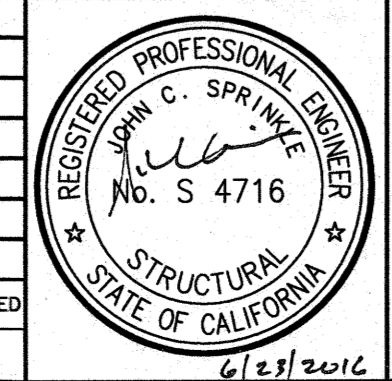


**ELEVATION**  
SCALE: 3/8"=1'-0"

1  
-

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NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				

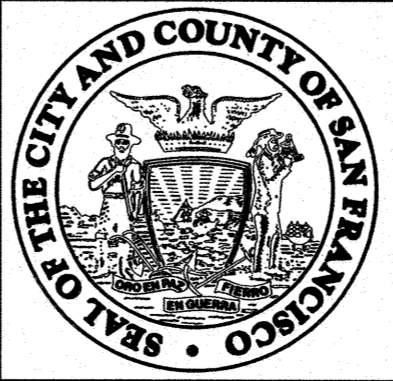


DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date: 6/27/16  
6/29/16  
6/29/16

DESIGNED	RR
DRAWN	TEAM
CHECKED	JS
REVIEWED	
RECOMMENDED	
APPROVED	
DATE	



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**

APPROVED

for the DIRECTOR OF TRANSPORTATION

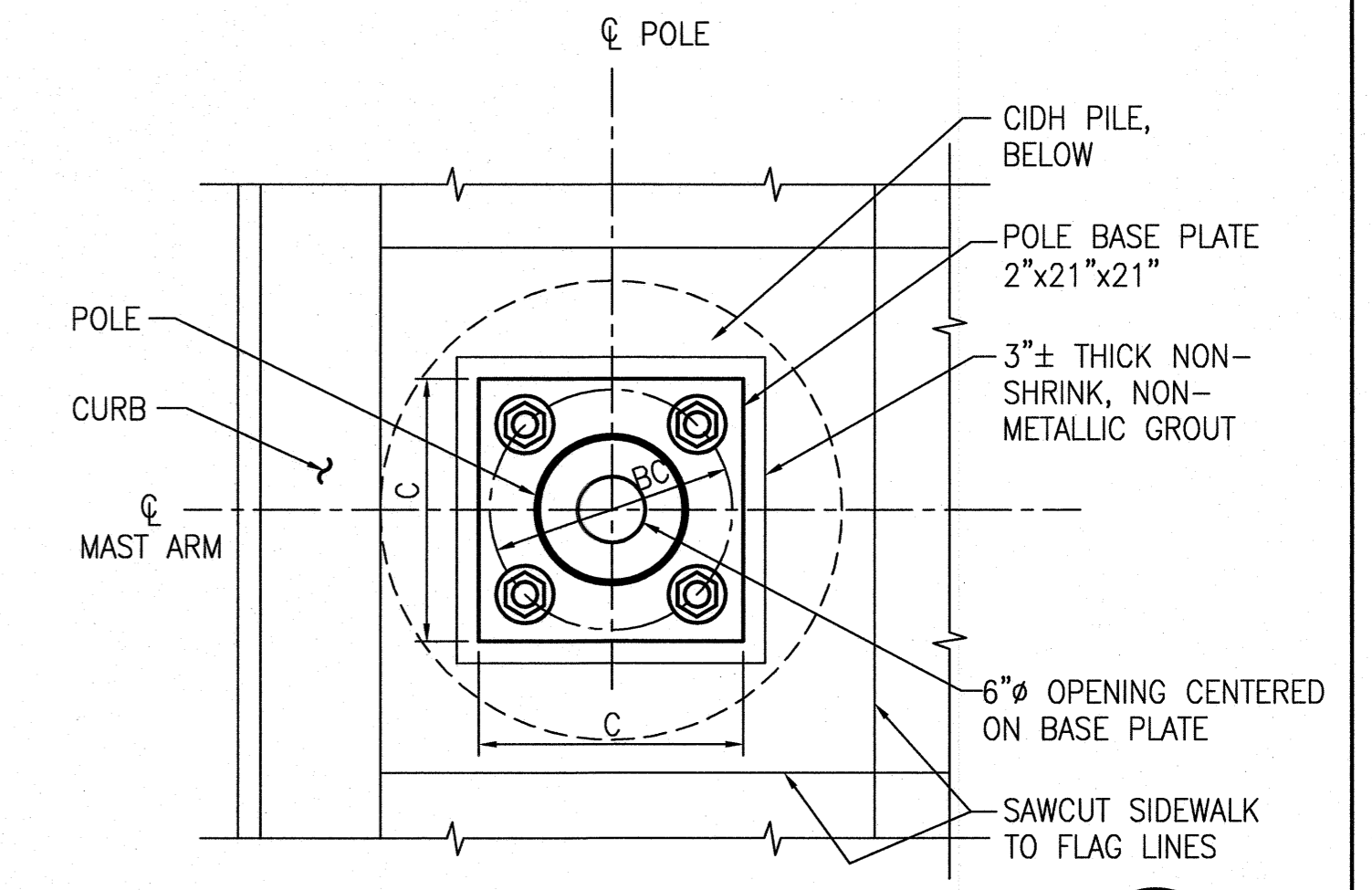
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**

VMS TRAFFIC SIGN STRUCTURE

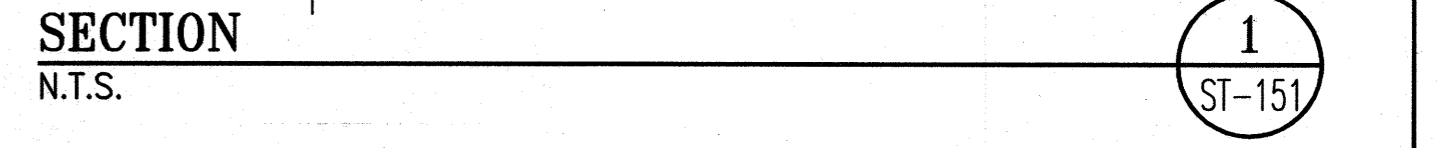
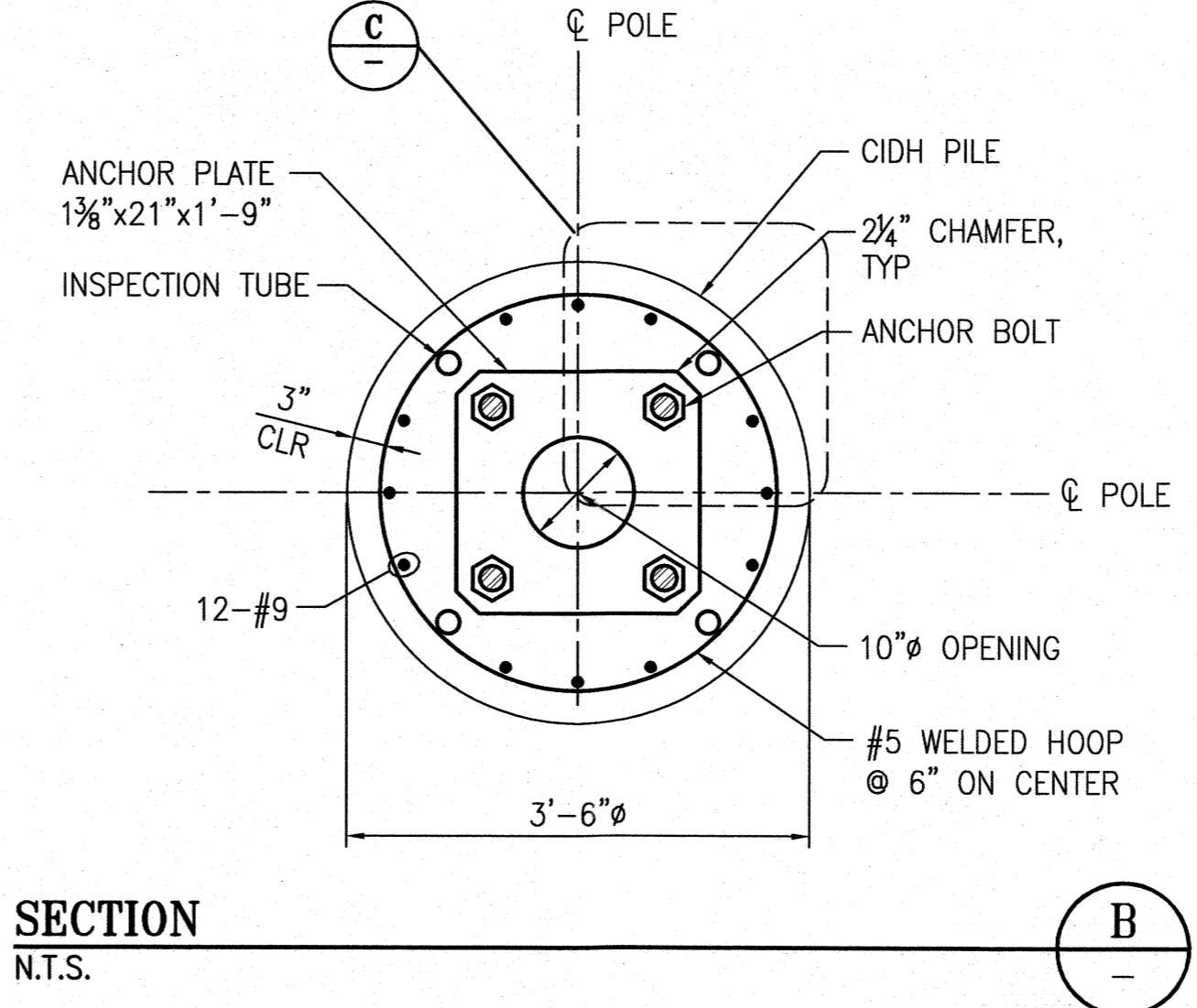
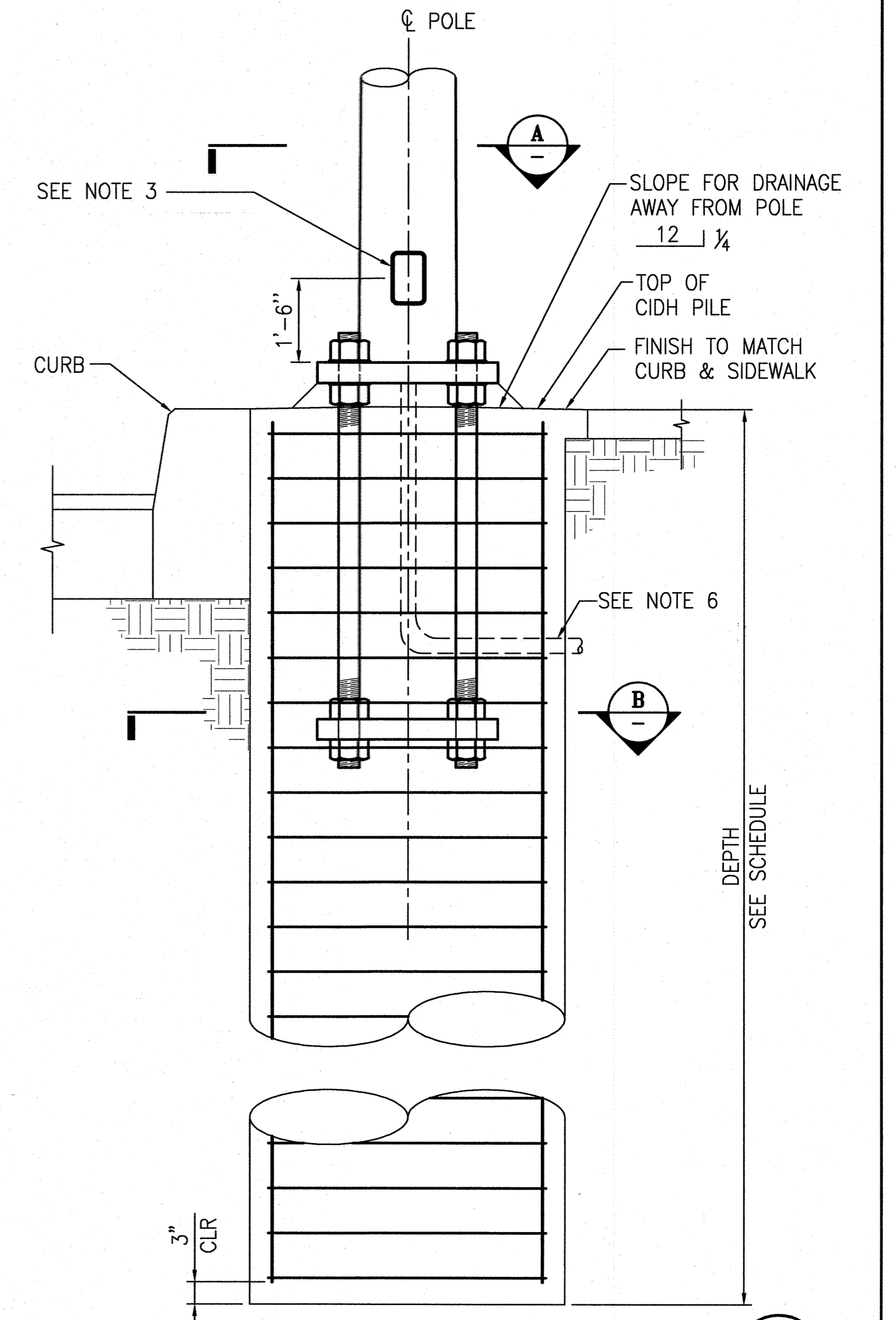
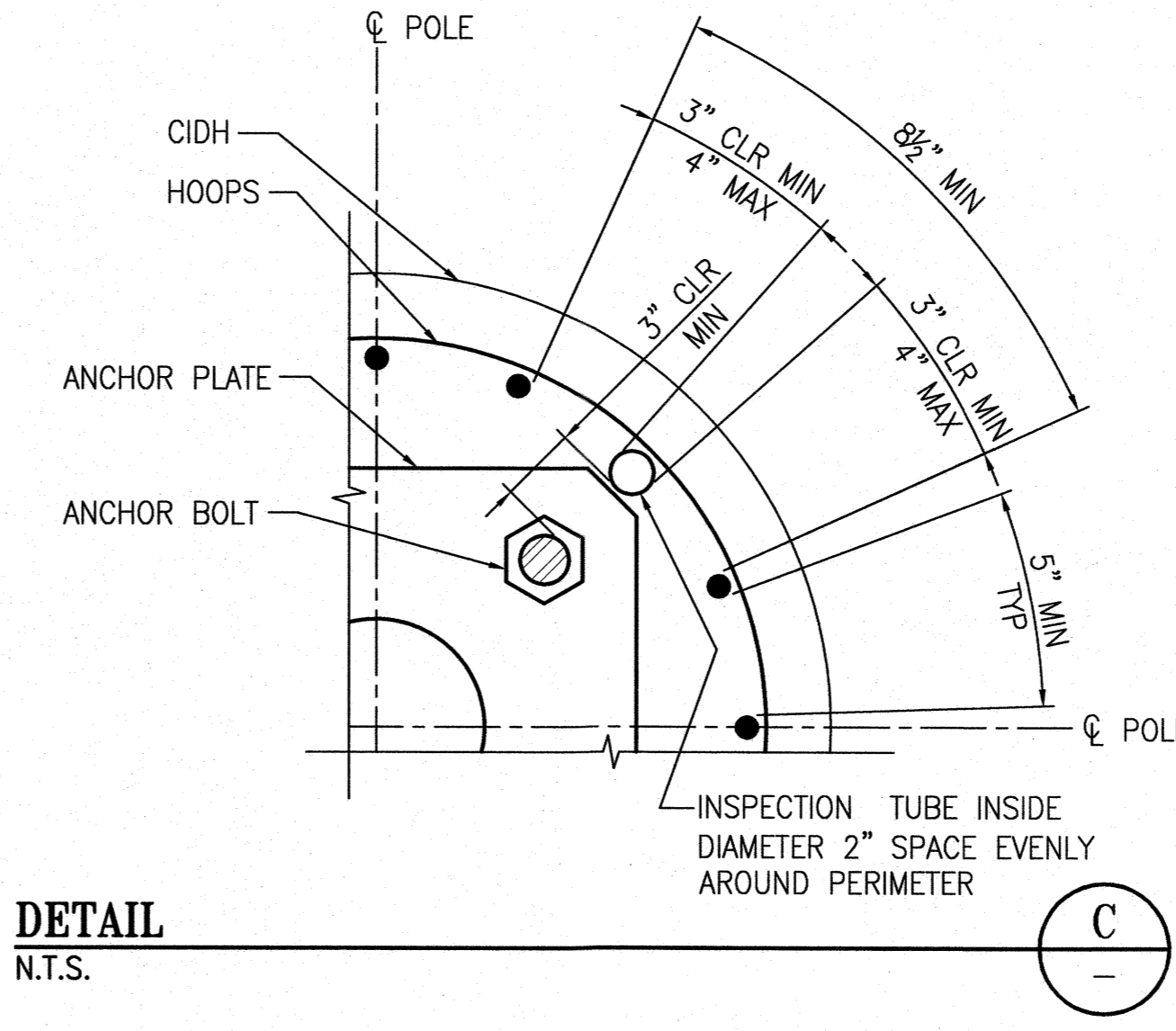
1289	
ST-151	REVISION
	0

**NOTES:**

1. PROVIDE A HEX NUT, LEVELING NUT AND 2 WASHERS FOR EACH ANCHOR BOLT.
2. FOR ANCHOR BOLTS, THREAD TOP 8" AND GALVANIZE TOP 1'-0"; THREAD BOTTOM 8".
3. 5 7/8" x 7 7/8" ROUNDED RECTANGLE HANDHOLE REINFORCED WITH RING WELDED TO OUTSIDE OF POLE. HANDHOLE REINFORCEMENT RING SHALL BE 3/8" x 2". PROVIDE 1/8" COVER PLATE.
4. HANDHOLES SHALL BE LOCATED ON THE DOWNSTREAM SIDE OF TRAFFIC.
5. FOR PAVING COLOR & FINISH SEE LANDSCAPE DRAWINGS.
6. PROVIDE CONDUIT TO PULL BOX OR AS SHOWN ON PLANS.



CIDH REINFORCING AND INSPECTION TUBE SCHEDULE			
CIDH DIAMETER	VERTICAL BARS	HOOPS (WELDED)	INSPECTION TUBE
3'-6"	12-#9	#5 @ 6"	4



V:\21064\_VANNESS\_BRT\_MISSION\_LONBARD\_V2\_Design\Working\_Drawings\_EST\_Current\21064\_ST-152.dwg VYU Wed Jun 15, 2016 - 2:35 pm

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				

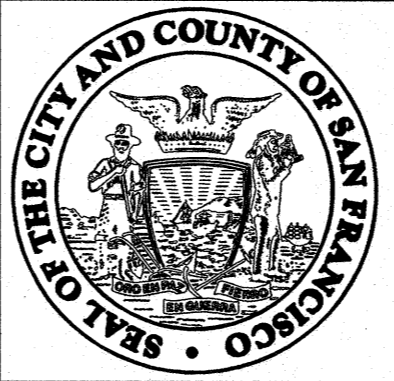


DESIGN AND ENGINEERING DIVISION  
PUBLIC WORKS  
CITY & COUNTY OF SAN FRANCISCO  
30 VAN NESS AVENUE, 5TH FLOOR  
SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
Deputy Division Mgr: FERNANDO CISNEROS  
Division Mgr: PATRICK RIVERA

Date: 6/27/16  
6/29/16  
6/28/16

DESIGNED: RR  
DRAWN: TEAM  
CHECKED: JS  
REVIEWED:  
RECOMMENDED:  
APPROVED:  
DATE:

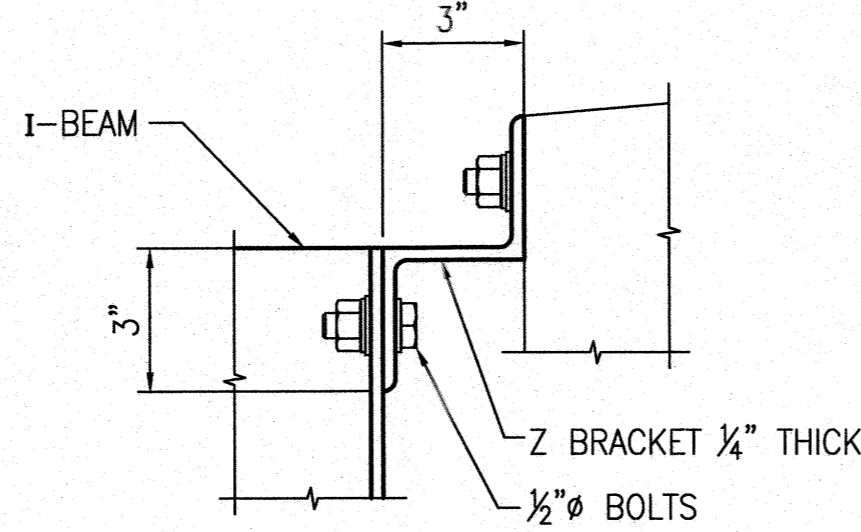


CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
APPROVED  
for the DIRECTOR OF TRANSPORTATION

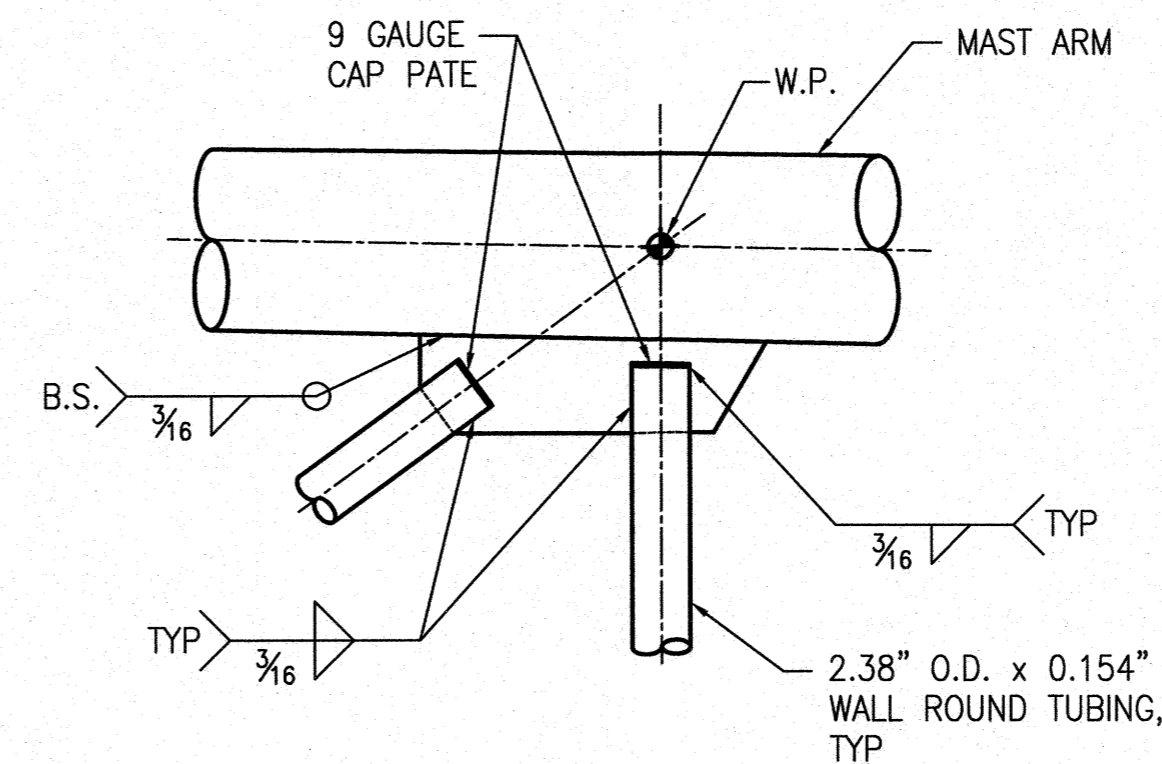
MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
VMS TRAFFIC SIGN STRUCTURE  
POLE FOUNDATION DETAILS

1289	
ST-152	REVISION
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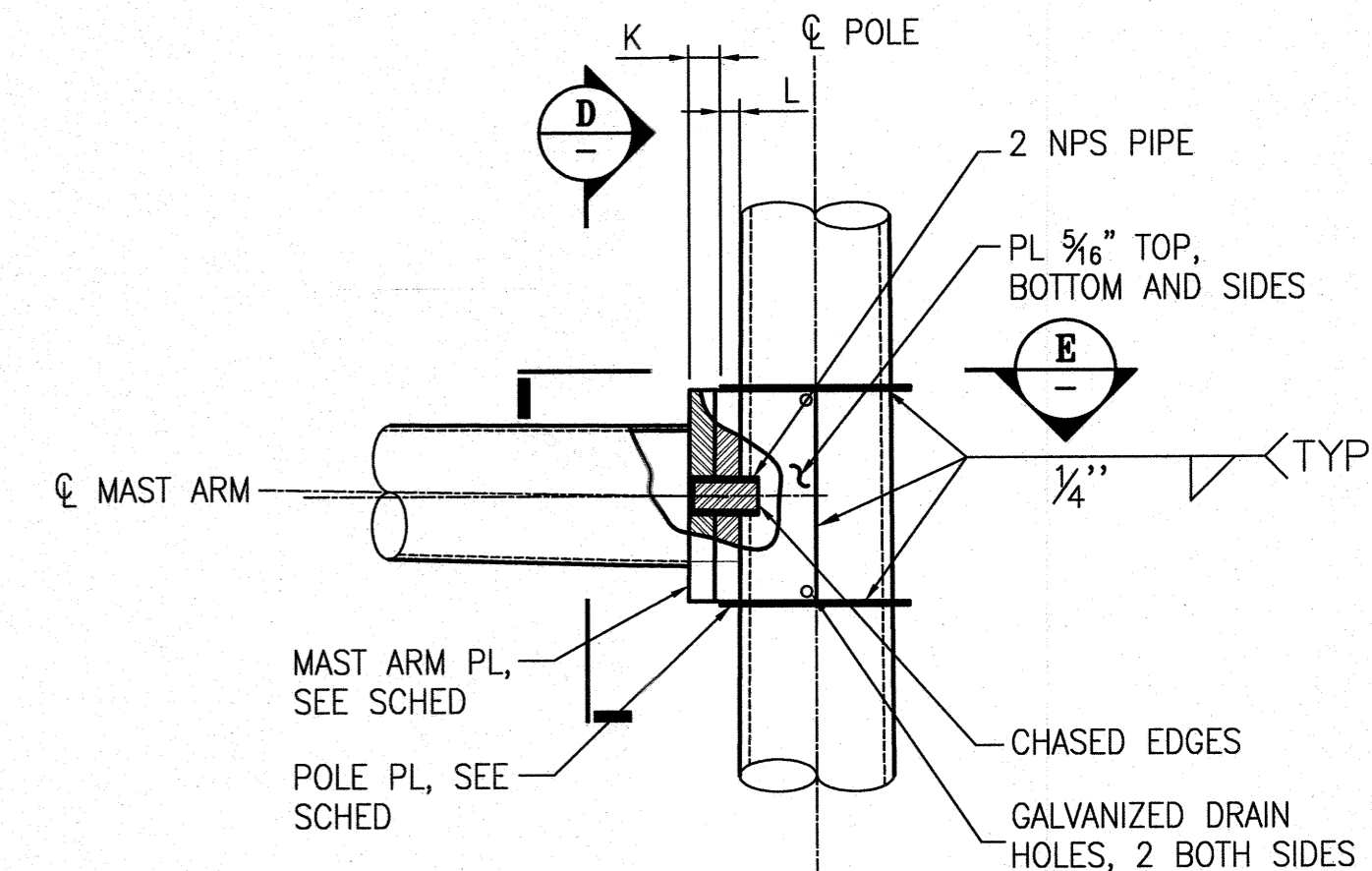
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 BORDER REVISED 11/17/05



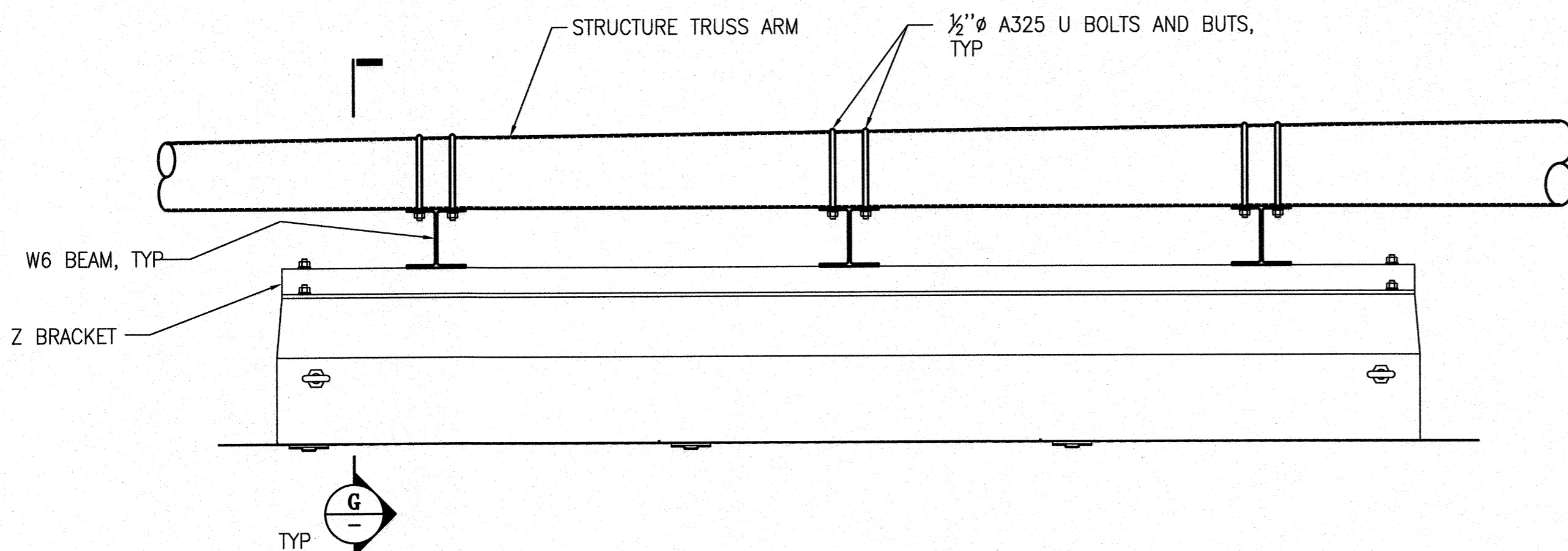
**DETAIL I**  
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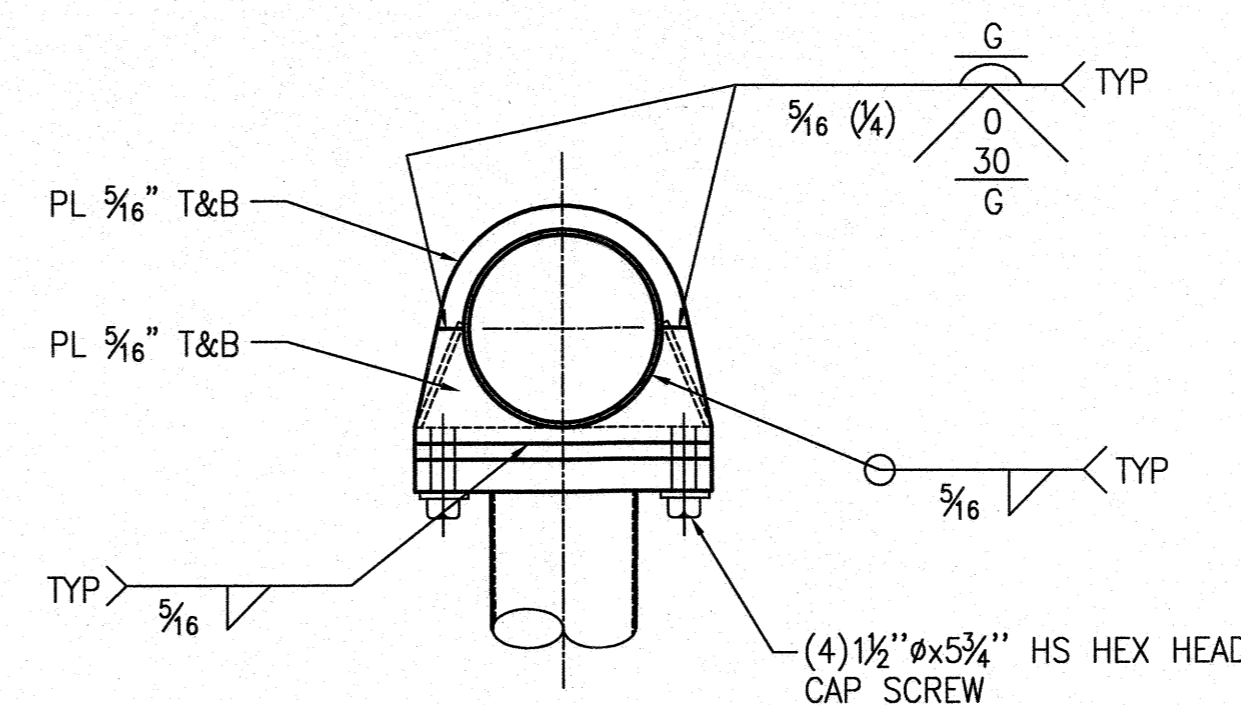
**DETAIL F**  
SCALE: 1 1/2"=1'-0"  
ST-151



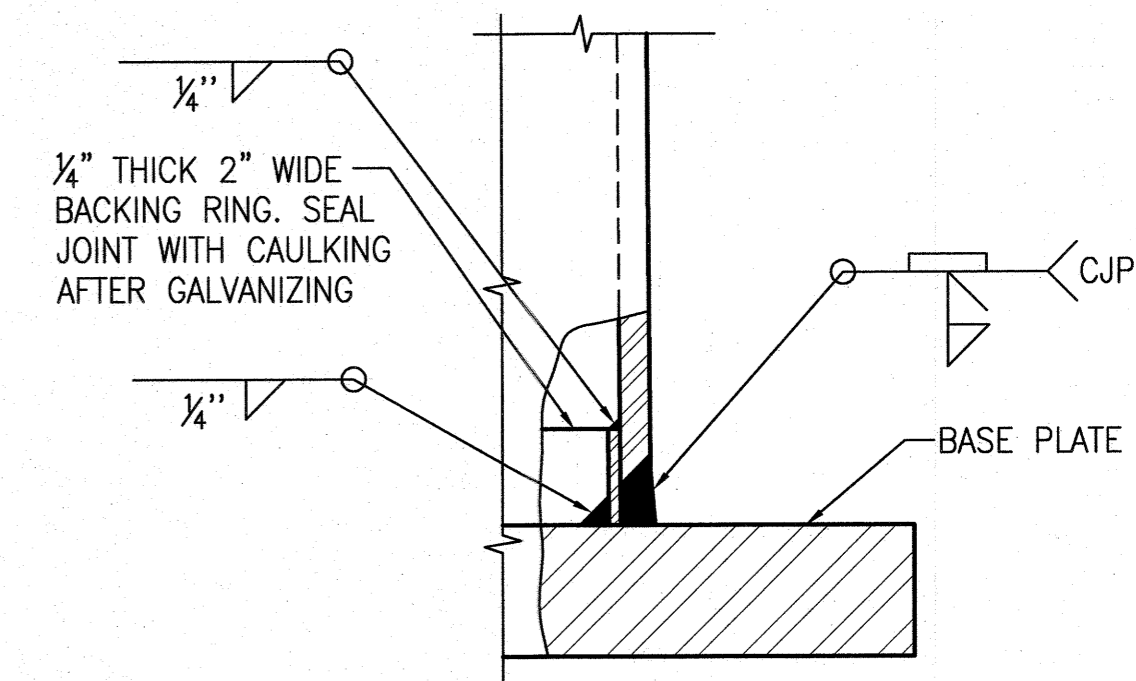
**ELEVATION C**  
SCALE: 1"=1'-0"  
ST-151



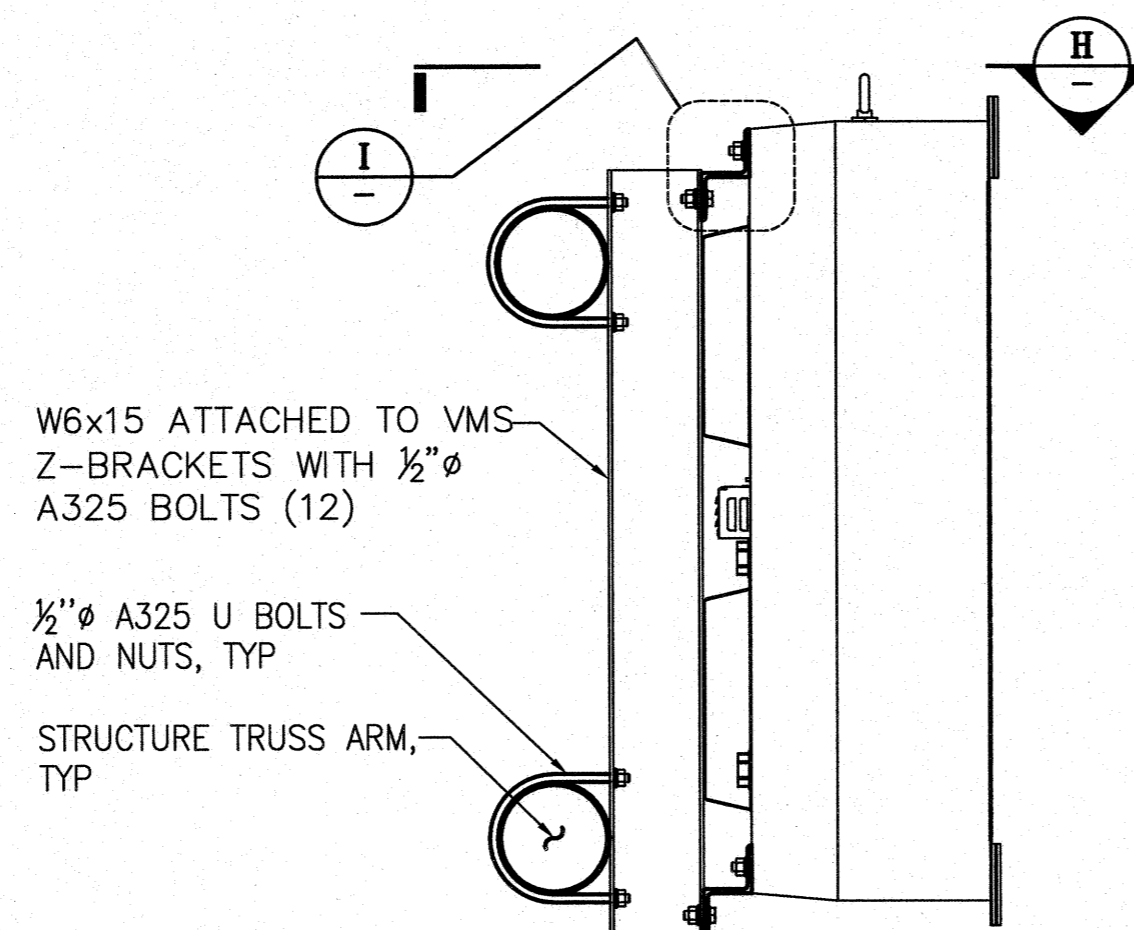
**SECTION G**  
SCALE: 1"=1'-0"



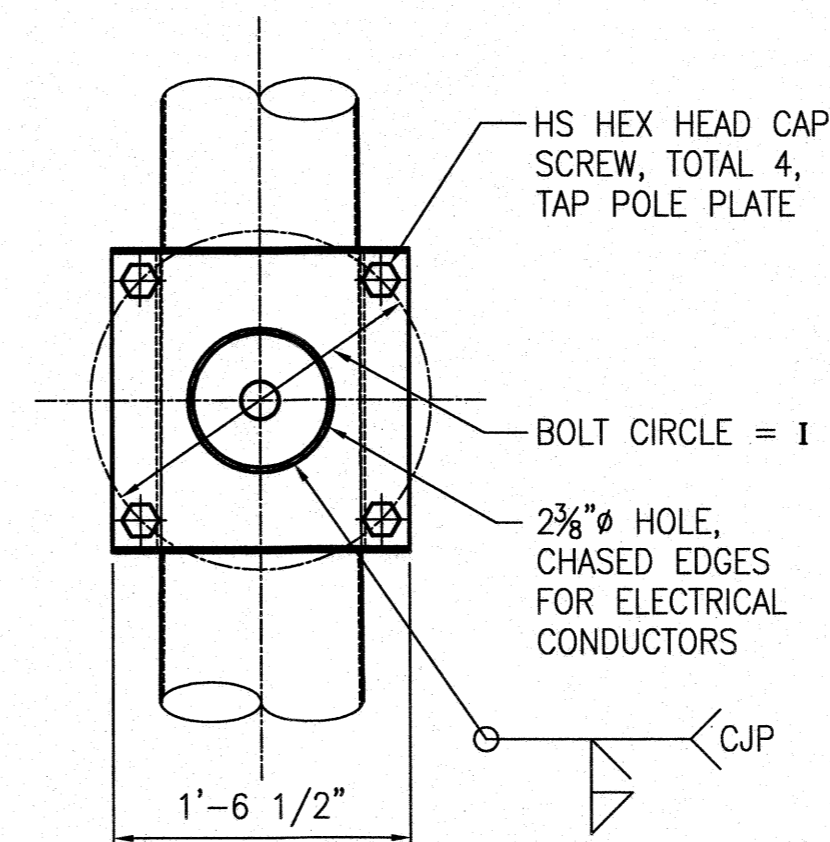
**SECTION E**  
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ST-151



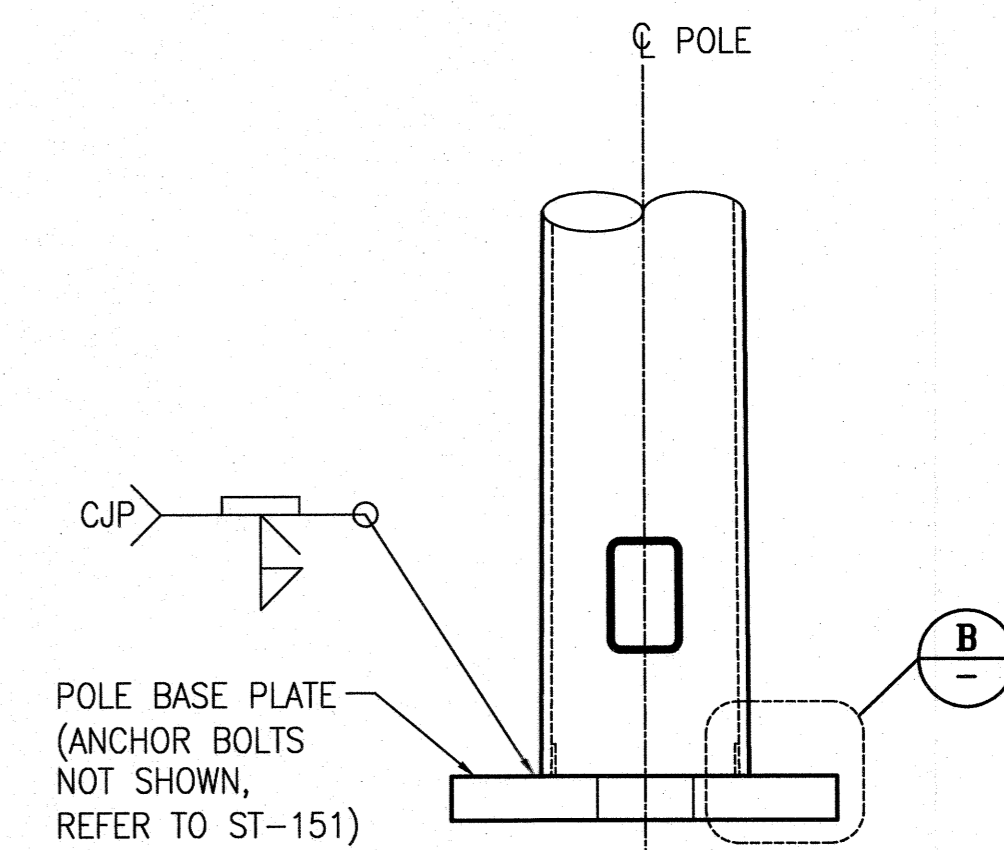
**DETAIL B**  
SCALE: 3"=1'-0"



**SECTION H**  
SCALE: 1"=1'-0"  
151



**SECTION D**  
SCALE: 1"=1'-0"



**ELEVATION A**  
SCALE: 1"=1'-0"  
ST-151

NO.	DATE	DESCRIPTION	BY	APPROVED
REVISIONS				

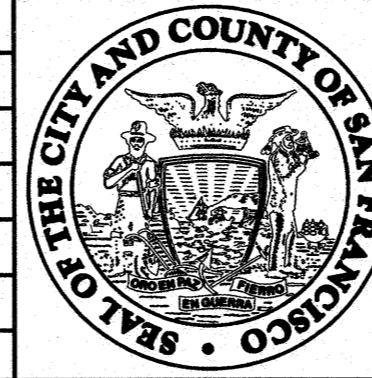


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 SAN FRANCISCO, CA 94102 - 6028

Section Mgr: RAYMOND LUI  
 Deputy Division Mgr: FERNANDO CISNEROS  
 Division Mgr: PATRICK RIVERA

Date: 6/27/10  
 6/27/10  
 6/25/10

DESIGNED: RR  
 DRAWN: TEAM  
 CHECKED: JS  
 REVIEWED:  
 RECOMMENDED:  
 APPROVED:  
 DATE:



CITY AND COUNTY OF SAN FRANCISCO  
**MUNICIPAL TRANSPORTATION AGENCY**  
 APPROVED  
 for the DIRECTOR OF TRANSPORTATION

MUNI BUS RAPID TRANSIT SYSTEM  
**VAN NESS CORRIDOR TRANSIT IMPROVEMENT PROJECT**  
 VMS TRAFFIC SIGN STRUCTURE DETAILS

1289	
ST-153	REVISION
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