

Metropolitan Council

Central Corridor

Light Rail Transit Project

4TH St. Advanced Utility Construction Contract

**VOLUME "D" - STRUCTURAL AREAWAY MODIFICATIONS
(180 E. 5TH STREET & SIBLEY SQUARE RAMP)**

**PRELIMINARY SUBMITTAL - 180 E. 5TH STREET
100% SUBMITTAL - SIBLEY SQUARE RAMP**

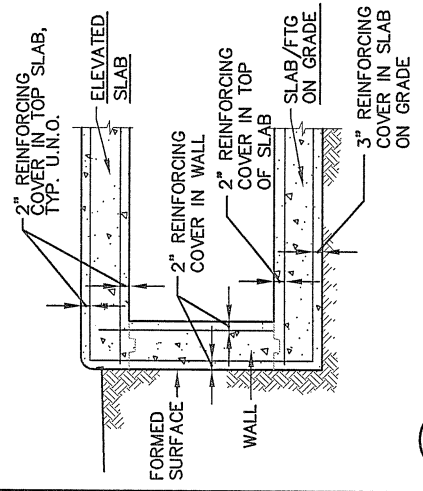
DATE : 07/15/09

AECOM

TKDA
ENGINEERING • ARCHITECTURE • PLANNING

CONFORMED

STRUCTURAL NOTES



1 REINFORCED COVER DETAIL
NO SCALE

LAP SPLICE TABLE (LAP IN INCHES)		
BAR# (mm)	BLACK BAR	
	TOP BARS	OTHER BARS
3 (10)	25	19
4 (13)	33	25
5 (16)	41	31
6 (19)	49	37
7 (22)	71	54
8 (25)	81	62
9 (29)	91	70
10 (32)	101	78
11 (36)	111	85

REINFORCING LAP SPLICE TABLE
NO SCALE

C. CONCRETE AND GROUT (CAST-IN-PLACE):

- Concrete $f_c' = 5,000$ PSI min. after 28 days. Maximum slump shall be 3 inches plus or minus 1 inch before addition of superplasticizer, max. 7 inches after. All concrete shall be air entrained to 6% plus or minus 1.5%. Water-cement ratio shall not exceed 0.45. Admixtures shall not be used without pre-approval. Admixtures containing chlorides shall not be used. Concrete shall not be placed on frozen ground. Mechanically vibrate all concrete when placed. See specifications for curing.
- Concrete reinforcement shall be ASTM A615, Grade 60 $f_y = 60,000$ PSI (except reinforcement to be welded shall be ASTM A706). All welding of reinforcement shall conform to the structural welding codes, Reinforcing Steel ASW D1.4, current edition.
- Reinforcing steel shall be continuous through construction joints unless noted otherwise.
- All reinforcing steel in concrete shall be lapped in accordance with ACI standard 318-05 per table this sheet. Where bars are shown spliced they may run continuous at Contractor's option.
- Shop drawings shall be provided to Engineer for review prior to fabrication. All splice locations are subject to Engineer's approval. Place rebar per CRSI standards.
- All bars and dowels shall be supported and wired in place. Dowels shall be wired in place, not pushed into fresh concrete. Bar supports in contact with exposed surfaces shall have plastic tips.
- For details and location of OCS, Signal and Traffic Lighting work, refer to Traffic Signal, Lighting, Urban Design and System Wide Electrical drawings.
- Provide 1-#5 reinforcing bar per mat at each side around openings and at all re-entrant corners in concrete walls and slabs. Bars shall extend 24" beyond the corners of the openings. Also provide #5 diagonal bars at each corner of opening.
- All construction joints shall be keyed unless specifically noted on plans. Horizontal construction joints are not permitted unless shown on the drawings or approved in advance.
- All reinforcing steel shall have concrete cover as shown on reinforcing cover detail this sheet, unless specifically labeled otherwise.
- All exposed edges shall be finished with a standard edger.
- Walls and bulkheads shall not be backfilled until the top slab of the section has been placed and cured for at least 7 days.
- All concrete shown on 's' series drawings shall be reinforced U.N.O. (except grout and lean concrete, which shall have dowels as noted). Sections and plans shown without reinforcement are intended to show dimensions and details of construction only. Reinforcement of these sections shall be provided in accordance with details showing reinforcement.
- Waterstops shall be PVC material. Water stops shall be wired to reinforcement to prevent rollover during concrete placement. All joints, except straight butt joints, shall be shop made by the manufacturer. Field splices shall be heat welded per manufacturer's recommendation.
- Grout shall be non-shrink, non-metallic, U.S. Grout Corp. Five Star Grout; ASTM C-827, C-191, and C-109, or prior approved equal. Grout shall be mixed and installed per manufacturer's recommendation; minimum compressive strength shall be 7000 PSI in 7 days.

D. STRUCTURAL STEEL:

- Structural steel Wide-Flange Shapes shall conform to ASTM A992, Grade 50.
- Structural Steel Channels, Angles, Plates and Bars shall comply with ASTM A36.
- Anchor rods for OCS poles shall be ASTM F1554 grade 55 with ASTM A563 heavy hex nuts and galvanized per ASTM A153.
- Anchor Rods shall conform to ASTM F1554, Grade 36. Galvanize per ASTM A123. All-thread rod shall not be used for anchor bolts.
- Bolted connections shall be fastened with high strength A-325 bolts designed for threads included in shear planes (connection type N) except as noted on the plans.
- Welding shall conform to current American Welding Society code. Welding electrodes shall be E70xx, unless noted otherwise. All welding shall be by AWS certified welders. Welds which are found to be faulty shall be reworked by the contractor at no cost.
- The structure consists of Type 2 (simple framing) construction. The structure is a Self-supporting Steel Frame as defined in the AISC Code of Standard Practice.
- Columns and continuous beams may be spliced as required for constructability with the approval of the engineer. Splices may be bolted or full penetration welded, and shall be sealed by an engineer registered in the state of the project.
- Expansion bolts shall be HILTI KWIK-BOLT 3 or pre-approved alternate with allowable values equal to or exceeding those for HILTI, per current ES Report ESR-2302. Expansion anchors shall be stainless steel.
- Adhesive anchors shall be HILTI HY-150 MAX or pre-approved alternate with allowable values equal to or exceeding those for HILTI, per current ES Report ESR-2262.

E. STEEL DECK:

- Metal deck shall be 3 inch rib, 18 GA., galvanized. Provide galvanized deck and repair galvanizing at welds and other damaged areas in accordance with ASTM A780.
- Deck units shall be continuous over two spans minimum. Yield stress shall be 33,000 PSI minimum.
- Welding electrodes shall be low hydrogen type E70XX or E60XX. Fasten deck to supporting members using minimum 5/8" diameter puddle welds or approved fasteners.
- Opening edges shall receive same welding/attachment as required for transverse supports.

F. GENERAL CONSTRUCTION:

- The Structural Engineer shall not have control or charge of, and shall not be responsible for, construction means, methods, techniques, sequences or procedures, for safety precautions and programs in connection with the work, for the acts or omissions of the contractor, subcontractors or any other persons performing any of the work in accordance with the contract documents.

2. Any temporary facilities placed by the contractor for construction operations, such as crane bases, trailers, sheet piling, etc., shall be located so as not to interfere with permanent building construction. If interference occurs, contractor shall remove or relocate his temporary facilities at his own expense.

3. Do not backfill against building, areaway walls below grade until floor (or roof) slab has been placed and cured for at least seven days and walls have attained a strength of 3000 PSI.

4. The contractor shall adequately brace and shore the structure during erection against wind and construction loads.

5. Contractor shall provide adequate lateral bracing of beams while placing concrete slabs.

6. Contractor shall be aware of overhead power lines, subfloor electrical conduit, and subgrade utilities at the site. Verify utility locations with Gopher State One-call (651-454-0002) and Xcel Energy utility company for areas outside of areaways. Contact the property management company for electrical questions within areaways.

7. Any engineering design provided by others and submitted for review shall bear the signature and valid registration number of a professional engineer licensed in the state of the project.

8. Unless otherwise noted, details on structural drawings are typical as indicated by cuts, references or titles.

9. Contractor shall field verify all existing conditions and dimensions at the building and/or site.

NO.	DATE	BY	CHECK DESIGN	REVISION / SUBMITTAL
0	07-01-2009	WRL	RDC	CBM / ADDENDUM NO. 5 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
C. BRETT MORSE
DATE: *4/30/09* Lic. No. 25469

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

100% SUBMITTAL

Central Corridor
Light Rail Transit

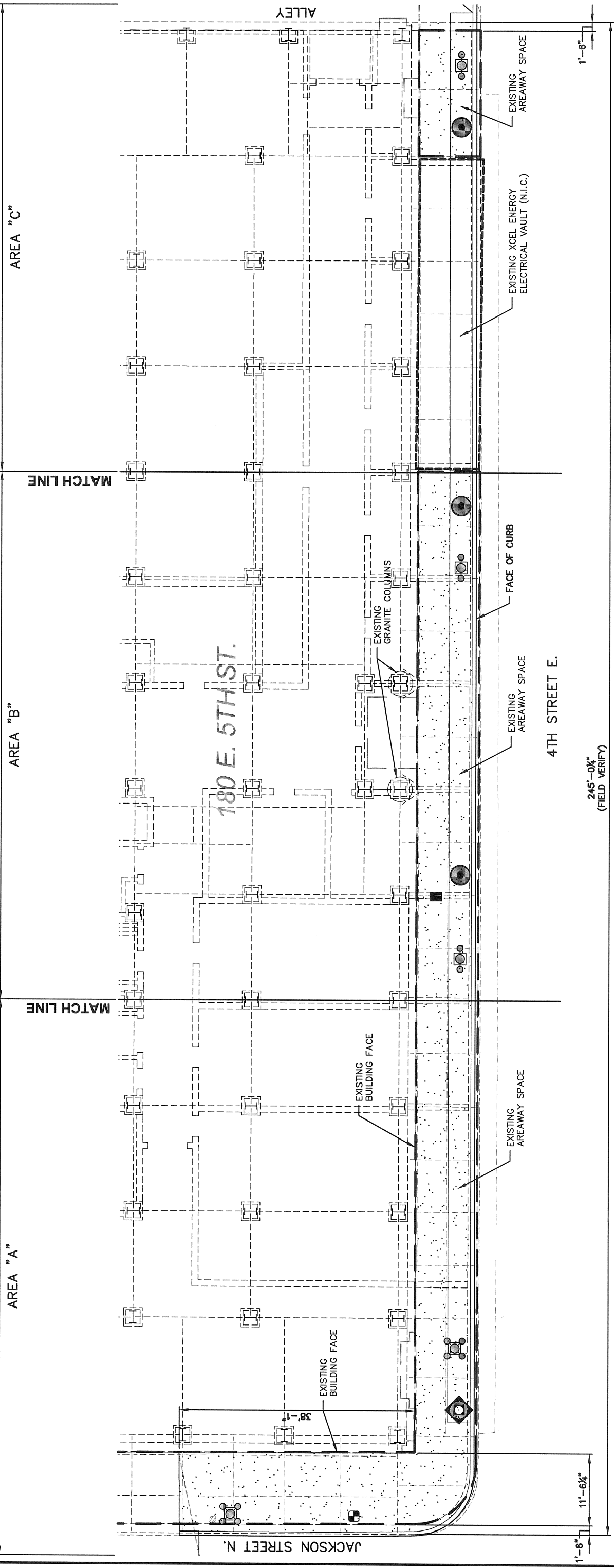
Metropolitan Council



SEE SHEET 7 FOR BUILDING PLAN
SEE SHEET 4 FOR REMOVAL PLAN

SEE SHEET 8 FOR BUILDING PLAN
SEE SHEET 5 FOR REMOVAL PLAN

SEE SHEET 9 FOR BUILDING PLAN
SEE SHEET 6 FOR REMOVAL PLAN



1 180 E. 5TH STREET BUILDING AREAWAY PLAN

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	08-21-09	WRL	RDC	CBM	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	BWH	ADDENDUM NO. 6 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
C. BRETT MORSE
DATE: 8/21/07 Lic. No. 25469

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

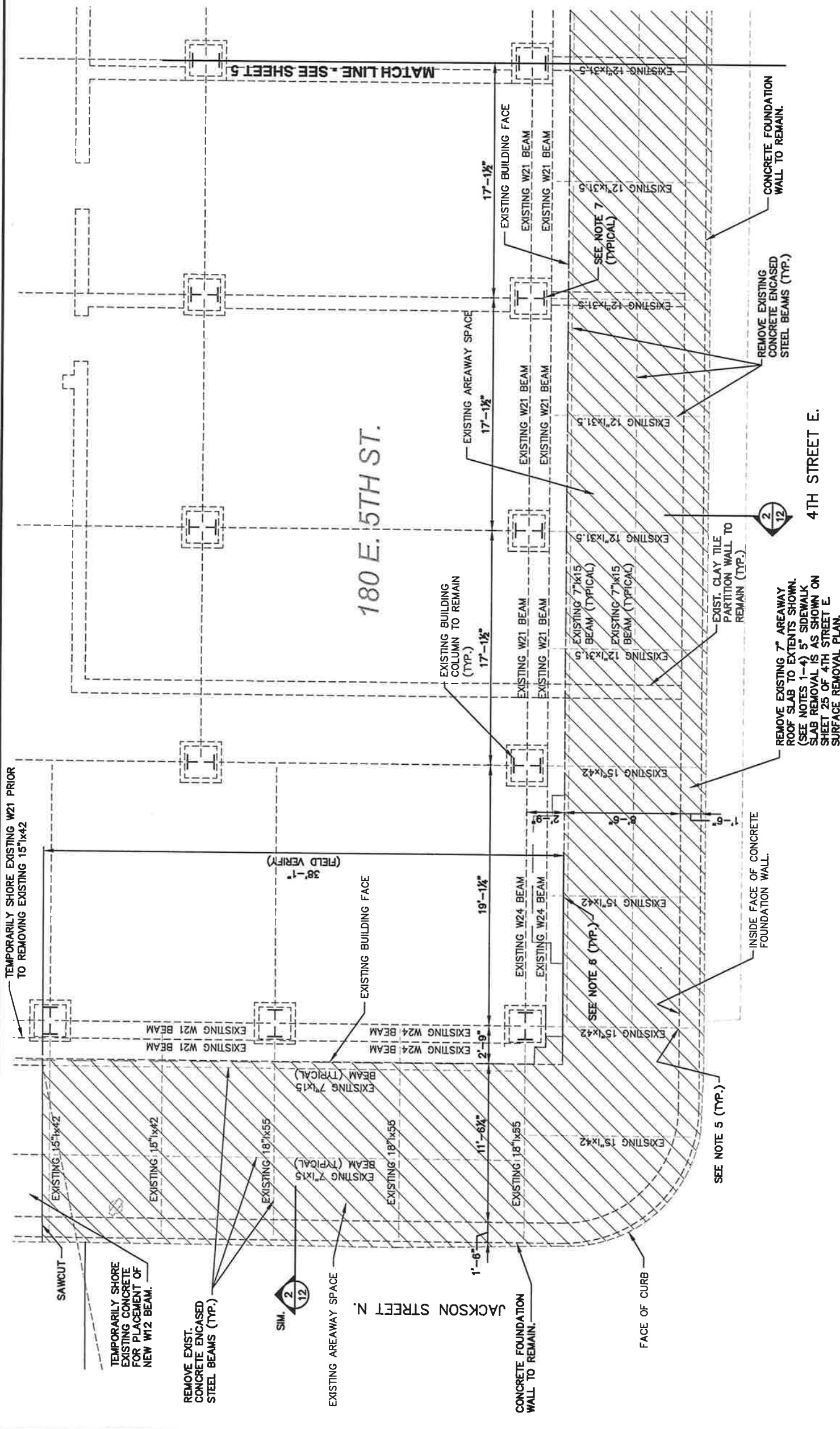
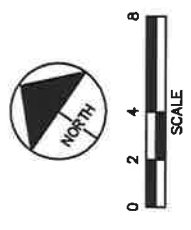
Central Corridor
Light Rail Transit
Metropolitan Council

4TH ST. ADV. UTILITY CONST. CONTRACT
PLAN SHEET LAYOUT INDEX
180 E. 5TH STREET BUILDING AREAWAY PLAN

DISCIPLINE: STRUCTURAL SHEET NAME: STU-4TH-PLN-D03

SHEET 3 OF 18

100% SUBMITTAL



- NOTES:
1. SEE "EXISTING SIGNING PLAN" FOR SIGNS TO BE SALVAGED.
 2. SEE "EXISTING LIGHTING" FOR LIGHT POLE REMOVALS.
 3. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY PIPE AND CONDUIT SUPPORTS FOR EXISTING UTILITIES IN AREAWAY PRIOR TO REMOVAL OF AREAWAY ROOF SLAB.
 4. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS PRIOR TO THE REMOVAL OF AREAWAY ROOF SLAB.
 5. CUT EXISTING STEEL BEAM AT WALL. REMOVE BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE WALL FACE.
 6. WHERE STEEL BEAMS FRAME INTO EXISTING W21 OR W24 BEAMS, CUT EXISTING STEEL BEAM AT CONCRETE BEAM. REMOVE STEEL BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE BEAM FACE.
 7. WHERE STEEL BEAMS FRAME INTO COLUMNS, REMOVE CONCRETE COLUMN WRAP TO THE EXTENTS WHICH WILL ALLOW ACCESS TO BEAM/COLUMN CONNECTION. PROVIDE TEMPORARY SHORING AT W21 AND W24, EACH SIDE OF BEAM. REMOVE BEAM.

1 180 E. 5TH STREET BUILDING AREAWAY REMOVAL PLAN AREA "A"

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK DESIGN	REVISION	SUBMITTAL
1	08-21-09	WRL	RDC	CBM	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	CBM	ADDENDUM NO. 6 - ISSUED FOR BID

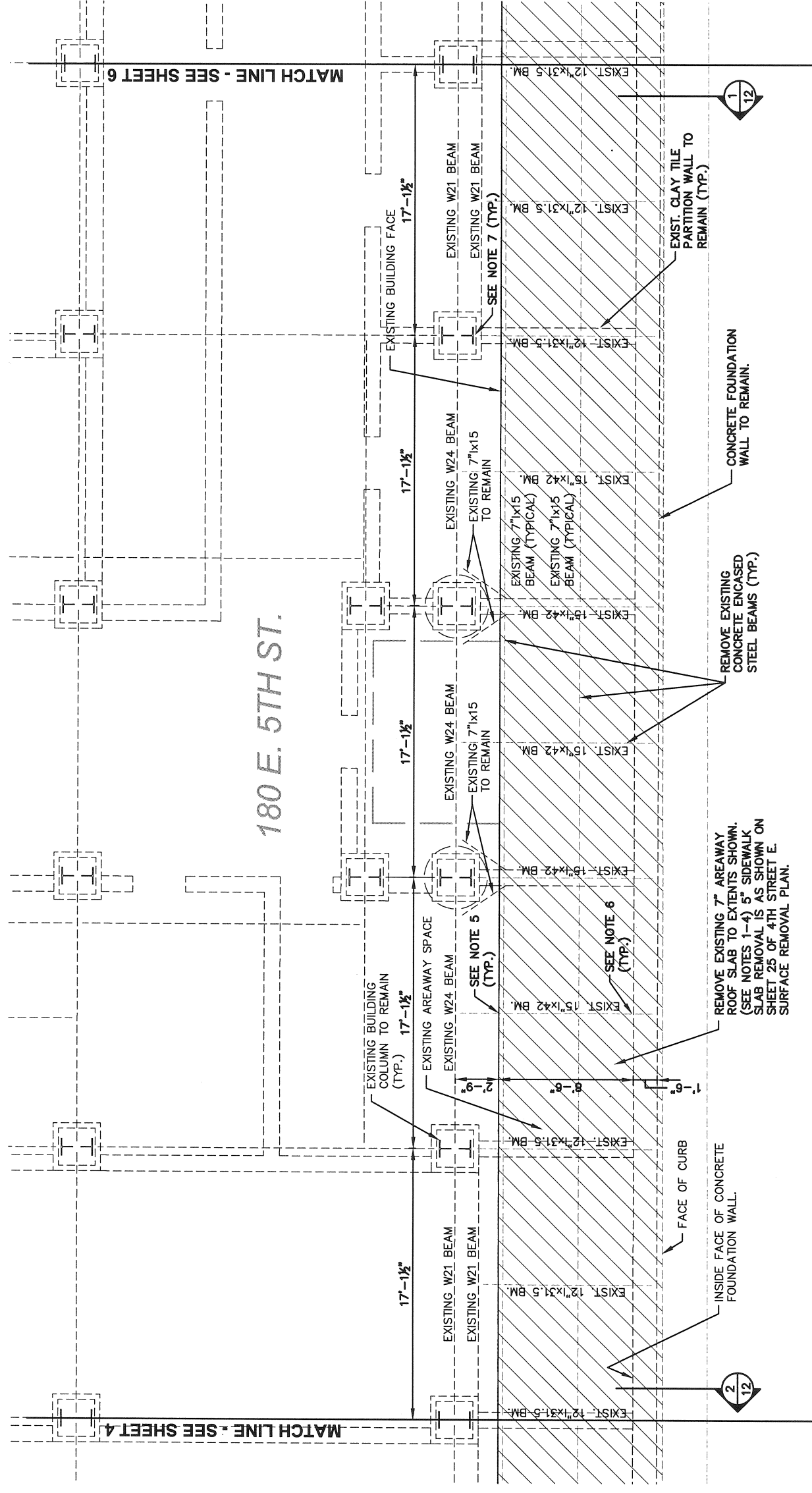
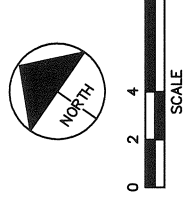
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: C. Brett Morse
 C. BRETT MORSE
 DATE: 8/21/09 Lic. No. 25469

AECOM **TKDA**

Central Corridor
 Light Rail Transit
 Metropolitan Council

4TH ST. ADV. UTILITY CONST. CONTRACT
 REMOVAL PLAN
 180 E. 5TH STREET BUILDING AREAWAY
 SHEET 4 OF 18
 DISCIPLINE: STRUCTURAL
 SHEET NAME: STU-4TH-PLN-D04



NOTES:

- SEE "EXISTING SIGNING PLAN" FOR SIGNS TO BE SALVAGED.
- SEE "EXISTING LIGHTING" FOR LIGHT POLE REMOVALS.
- THE PROPERTY OWNER SHALL PROVIDE TEMPORARY PIPE AND CONDUIT SUPPORTS FOR EXISTING UTILITIES IN AREAWAY PRIOR TO REMOVAL OF AREAWAY ROOF SLAB.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS PRIOR TO THE REMOVAL OF AREAWAY ROOF SLAB.
- WHERE 12" OR 15" STEEL BEAMS FRAME INTO EXISTING W21 OR W24 BEAMS, CUT EXISTING STEEL BEAM AT CONCRETE BEAM. REMOVE STEEL BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE BEAM FACE.
- CUT EXISTING STEEL BEAM AT WALL. REMOVE BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE WALL FACE.
- WHERE STEEL BEAMS FRAME INTO COLUMNS, REMOVE CONCRETE COLUMN WRAP TO THE EXTENTS WHICH WILL ALLOW ACCESS TO BEAM/COLUMN CONNECTION. PROVIDE TEMPORARY SHORING AT W21 AND W24, EACH SIDE OF BEAM. REMOVE BEAM.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

1
5

180 E. 5TH STREET BUILDING AREAWAY REMOVAL PLAN AREA "B"

NO.	DATE	BY	CHECK DESIGN / REVISION / SUBMITTAL
1	08-21-09	WRL	RDC CBM ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC CBM APPENDUM NO. 6 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
C. BRETT MORSE Lic. No. 25469

DATE: 8/21/09

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

Central Corridor
Light Rail Transit

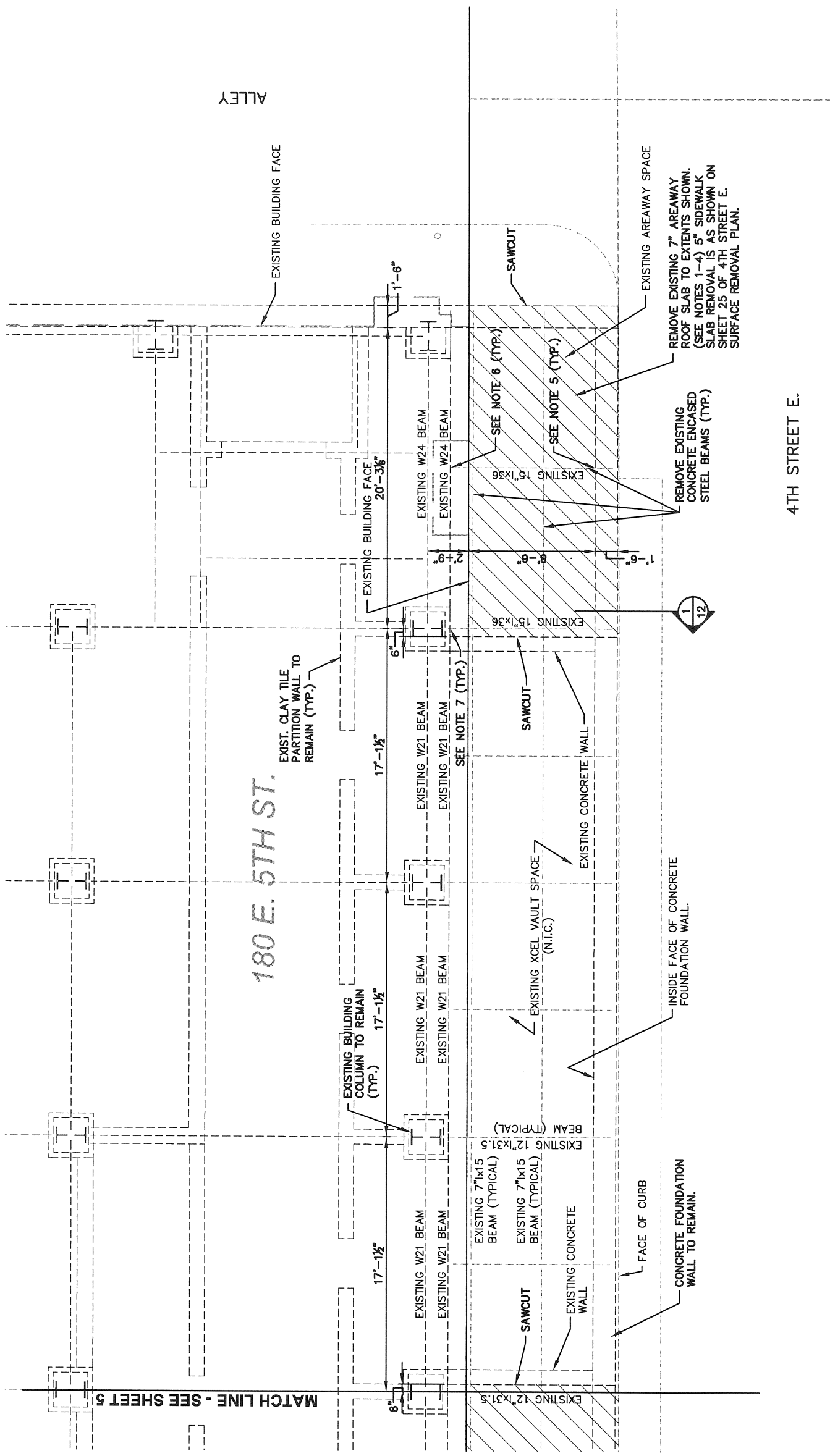
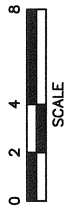
Metropolitan Council

100% SUBMITTAL

4TH ST. ADV. UTILITY CONST. CONTRACT
REMOVAL PLAN
180 E. 5TH STREET BUILDING AREAWAY

DISCIPLINE: STRUCTURAL

SHEET NAME: STU-4TH-PLN-D05



NOTES:

- 1. SEE "EXISTING SIGNING PLAN" FOR SIGNS TO BE SALVAGED.
- 2. SEE "EXISTING LIGHTING" FOR LIGHT POLE REMOVALS.
- 3. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY PIPE AND CONDUIT SUPPORTS FOR EXISTING UTILITIES IN AREA WAY PRIOR TO REMOVAL OF AREA WAY ROOF SLAB.
- 4. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREA WAY WALLS PRIOR TO THE REMOVAL OF AREA WAY ROOF SLAB.
- 5. CUT EXISTING STEEL BEAM AT WALL. REMOVE BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE WALL FACE.
- 6. WHERE STEEL FRAMES INTO EXISTING W21 OR W24 BEAMS, CUT EXISTING STEEL BEAM AT CONCRETE BEAM. REMOVE STEEL BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE BEAM FACE.
- 7. WHERE STEEL BEAMS FRAME INTO COLUMNS, REMOVE CONCRETE COLUMN WRAP TO THE EXTENTS WHICH WILL ALLOW ACCESS TO BEAM/COLUMN CONNECTION. PROVIDE TEMPORARY SHORING AT W21 AND W24, EACH SIDE OF BEAM. REMOVE BEAM.

1 180 E. 5TH STREET BUILDING AREA WAY REMOVAL PLAN AREA "C" 6

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Bret Morse*
 C. BRETT MORSE Lic. No. 25469

DATE: *8/2/09*

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	08-21-09	WRL	RDC	CBM	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	CBM	ADDENDUM NO. 6 - ISSUED FOR BID

Central Corridor Light Rail Transit



4TH ST. ADV. UTILITY CONST. CONTRACT

REMOVAL PLAN

180 E. 5TH STREET BUILDING AREA WAY

DISCIPLINE: STRUCTURAL SHEET NAME: STU-4TH-PLN-D06

100% SUBMITTAL

NO.

DATE

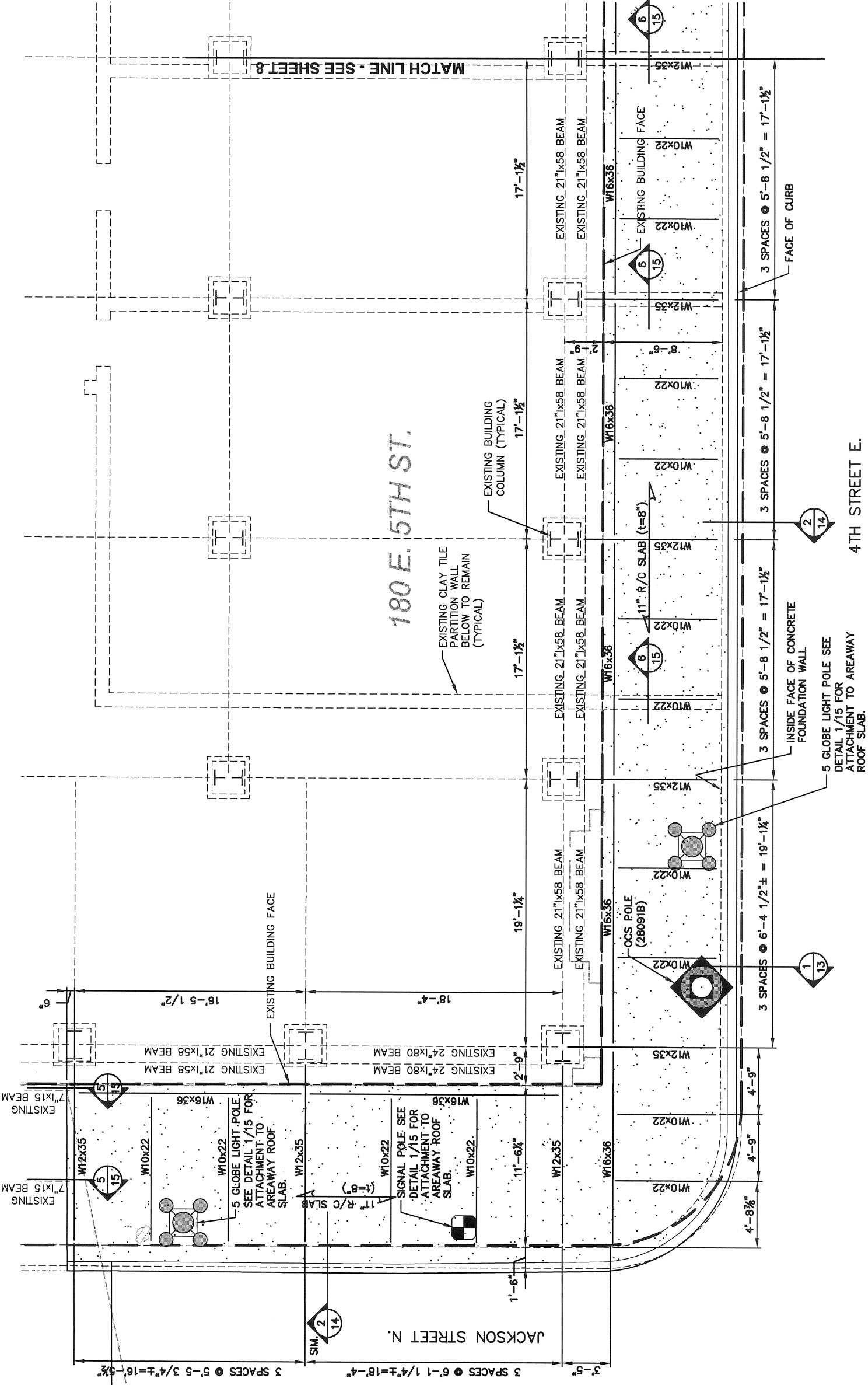
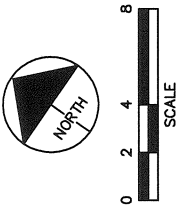
BY

CHECK

DESIGN

REVISION / SUBMITTAL

SHEET 6 OF 18



180 E. 5TH STREET BUILDING AREAWAY PLAN AREA "A"

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK DESIGN	REVISION / SUBMITTAL
1	08-21-09	WRL	RDC	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	ADDENDUM NO. 6 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
 C. BRETT MORSE
 Lic. No. 25469

DATE: 8/21/09

AECOM **TKDA**
 ENGINEERING • ARCHITECTURE • PLANNING

Central Corridor
 Light Rail Transit

Metropolitan Council

100% SUBMITTAL

4TH ST. ADV. UTILITY CONST. CONTRACT

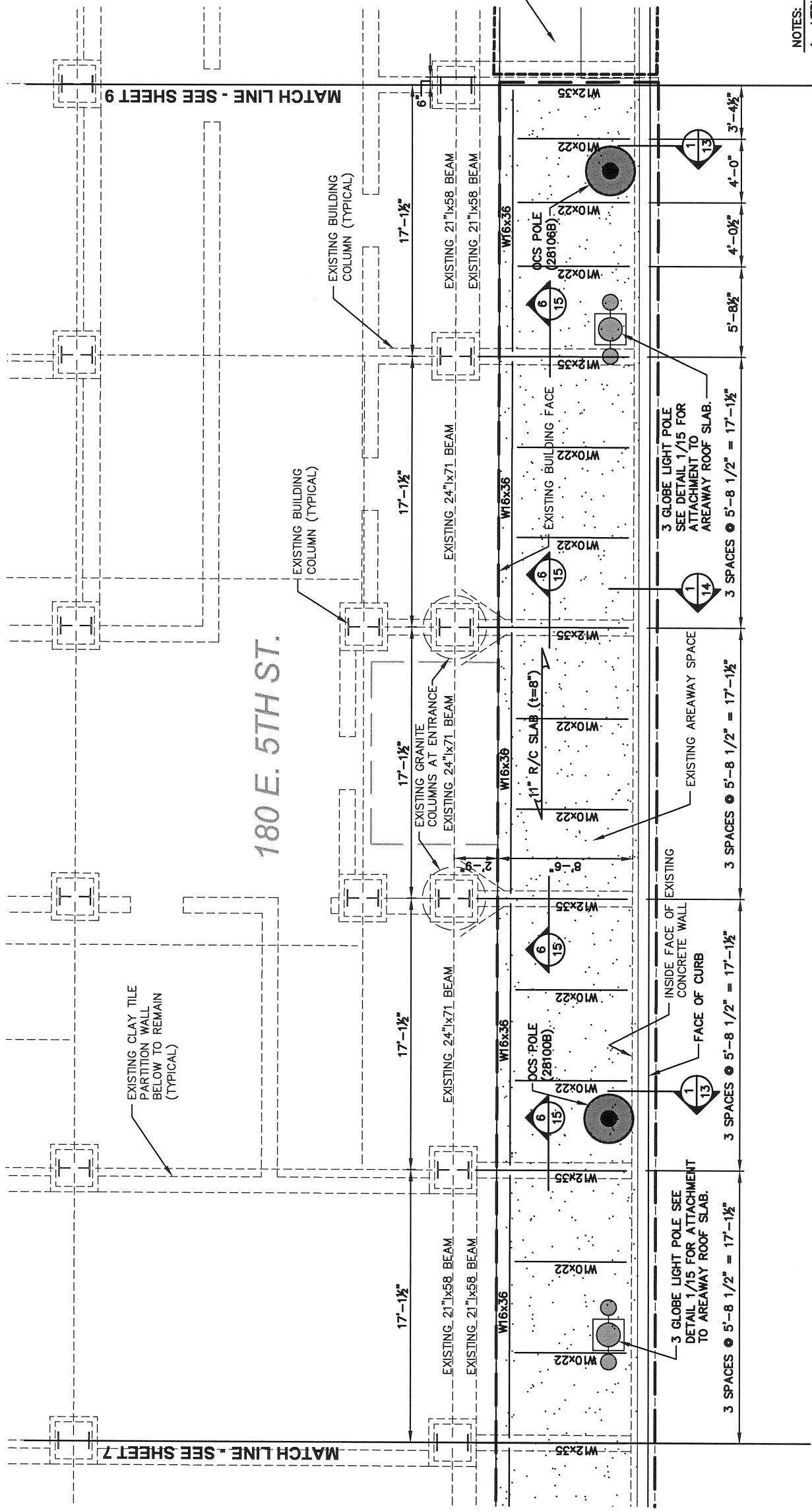
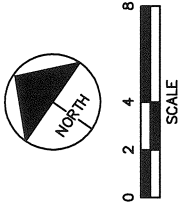
AREAWAY ROOF PLAN

180 E. 5TH STREET BUILDING AREAWAY

STRUCTURAL

DISCIPLINE: STU-4TH-PLN-D07

SHEET 7 OF 18



NOTES:

1. VERIFY LOCATIONS OF OCS, TRAFFIC SIGNAL AND LIGHTING STRUCTURES WITH "SYSTEM WIDE ELECTRICAL PLAN" AND "LIGHTING" PLANS, FOR SPECIFIC STATIONING AND OFFSET PLACEMENT.
2. PROVIDE NEW WATERPROOFING MEMBRANE SYSTEM BETWEEN AREAWAY ROOF SLAB AND AREAS WHERE EXISTING SIDEWALK WILL BE REMOVED AND REPLACED.
3. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY SUPPORTS FOR EXISTING UTILITIES IN THE AREAWAY DURING THE INSTALLATION OF THE AREAWAY ROOF SLAB.
4. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS DURING THE INSTALLATION OF THE AREAWAY ROOF SLAB.
5. CONTRACTOR SHALL MAINTAIN TEMPORARY WALL SHORING UNTIL NEW STEEL BEAMS ARE INSTALLED AND NEW CONCRETE AREAWAY ROOF SLAB HAS ATTAINED 4,000 PSI STRENGTH.

4TH STREET E.

1 80 E. 5TH STREET BUILDING AREAWAY PLAN AREA "B"

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK DESIGN / REVISION / SUBMITTAL
1	08-21-09	WRL	RDC CBM
0	07-15-09	WRL	RDC CBM

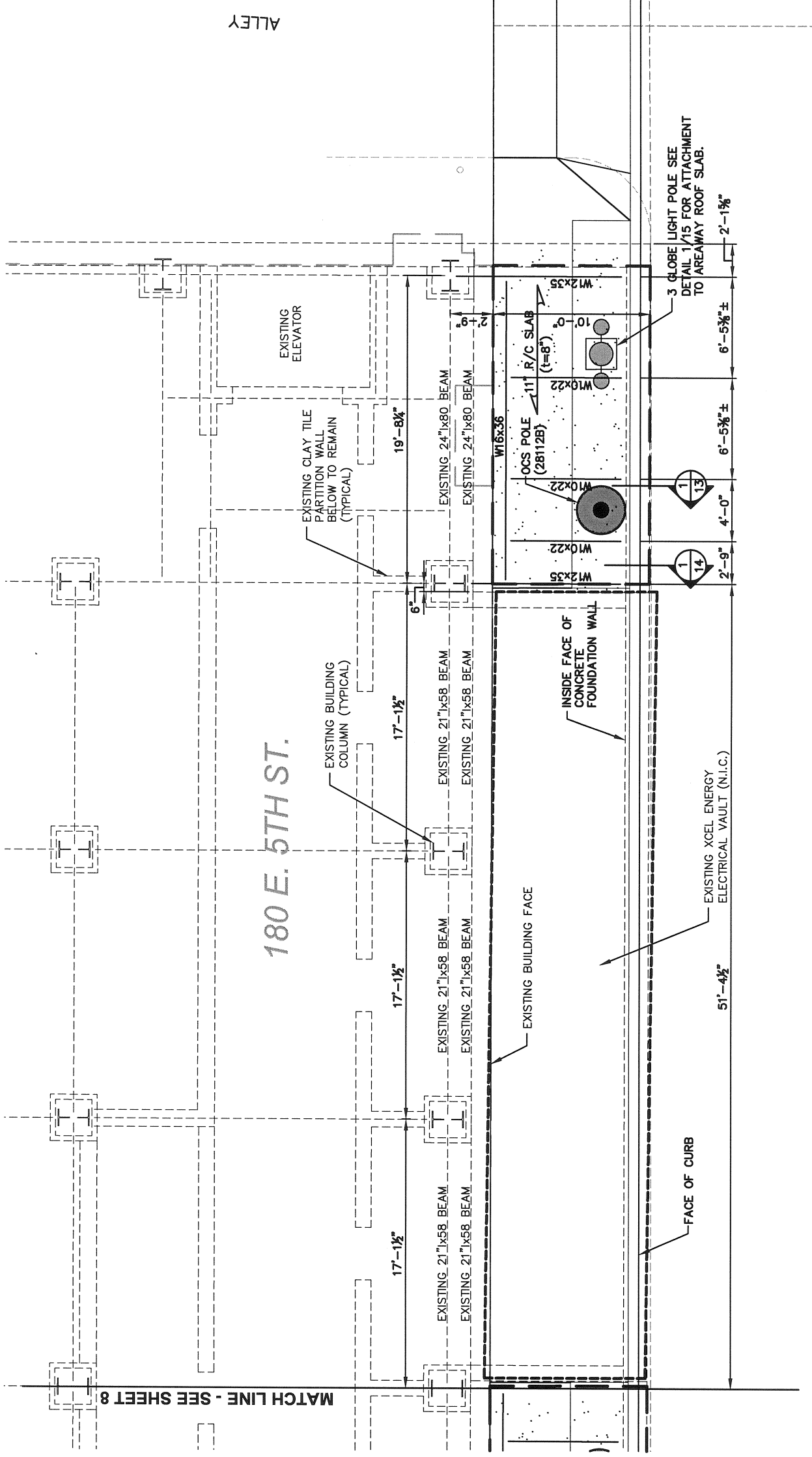
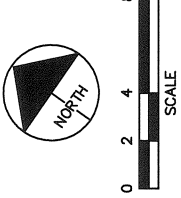
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
 C. BRETT MORSE
 DATE: 8/10/09 Lic. No. 25469

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

100% SUBMITTAL

Central Corridor
Light Rail Transit
 Metropolitan Council



4TH STREET E.

1 180 E. 5TH STREET BUILDING AREAWAY PLAN AREA "C"

- NOTES:
1. VERIFY LOCATIONS OF OCS, TRAFFIC SIGNAL AND LIGHTING STRUCTURES WITH "SYSTEM WIDE ELECTRICAL PLAN" AND "LIGHTING" PLANS, FOR SPECIFIC STATIONING AND OFFSET PLACEMENT.
 2. PROVIDE NEW WATERPROOFING MEMBRANE SYSTEM BETWEEN AREAWAY ROOF SLAB AND AREAS WHERE EXISTING SIDEWALK WILL BE REMOVED AND REPLACED.
 3. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY SUPPORTS FOR EXISTING UTILITIES IN THE AREAWAY DURING THE INSTALLATION OF THE AREAWAY ROOF SLAB.
 4. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS DURING THE INSTALLATION OF THE AREAWAY ROOF SLAB.
 5. CONTRACTOR SHALL MAINTAIN TEMPORARY WALL SHORING UNTIL NEW STEEL BEAMS ARE INSTALLED AND NEW CONCRETE AREAWAY ROOF SLAB HAS ATTAINED 4,000 PSI STRENGTH.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	08-21-09	WRL	RDC	CBM	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	CBM	ADDENDUM NO. 6 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

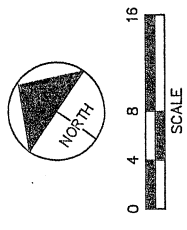
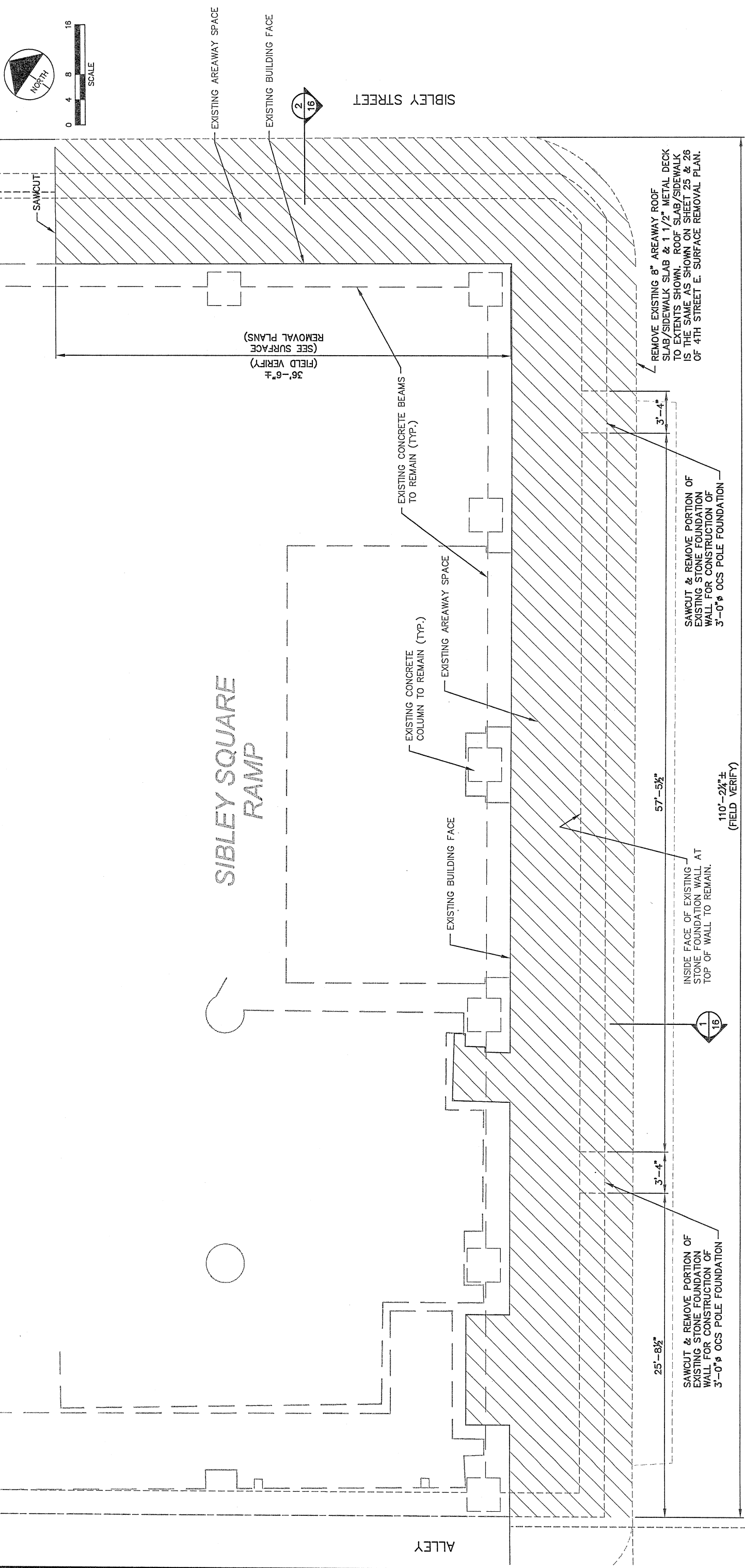
ENGINEER: *C. Brett Morse*
C. BRETT MORSE
DATE: 8/21/09 Lic. No. 25469

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

100% SUBMITTAL

Central Corridor
Light Rail Transit

Metropolitan Council



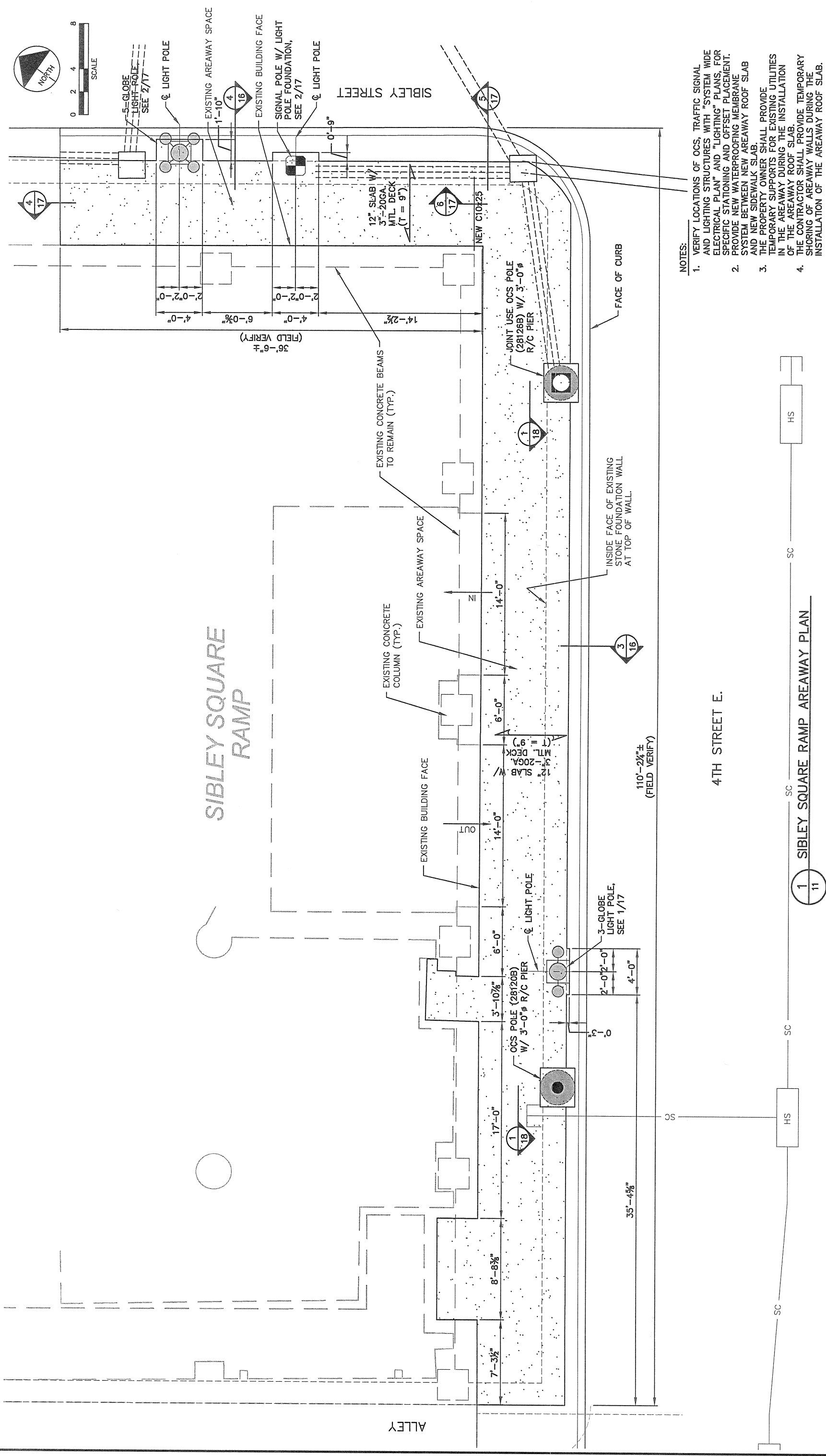
- NOTES:
1. SEE "EXISTING SIGNING PLAN" FOR SIGNS TO BE SALVAGED.
 2. SEE "EXISTING LIGHTING" FOR LIGHT POLE REMOVALS.
 3. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY PIPE AND CONDUIT SUPPORTS FOR EXISTING UTILITIES IN AREAWAY PRIOR TO REMOVAL OF AREAWAY ROOF SLAB.
 4. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS PRIOR TO THE REMOVAL OF ROOF SLAB.

4TH STREET E.

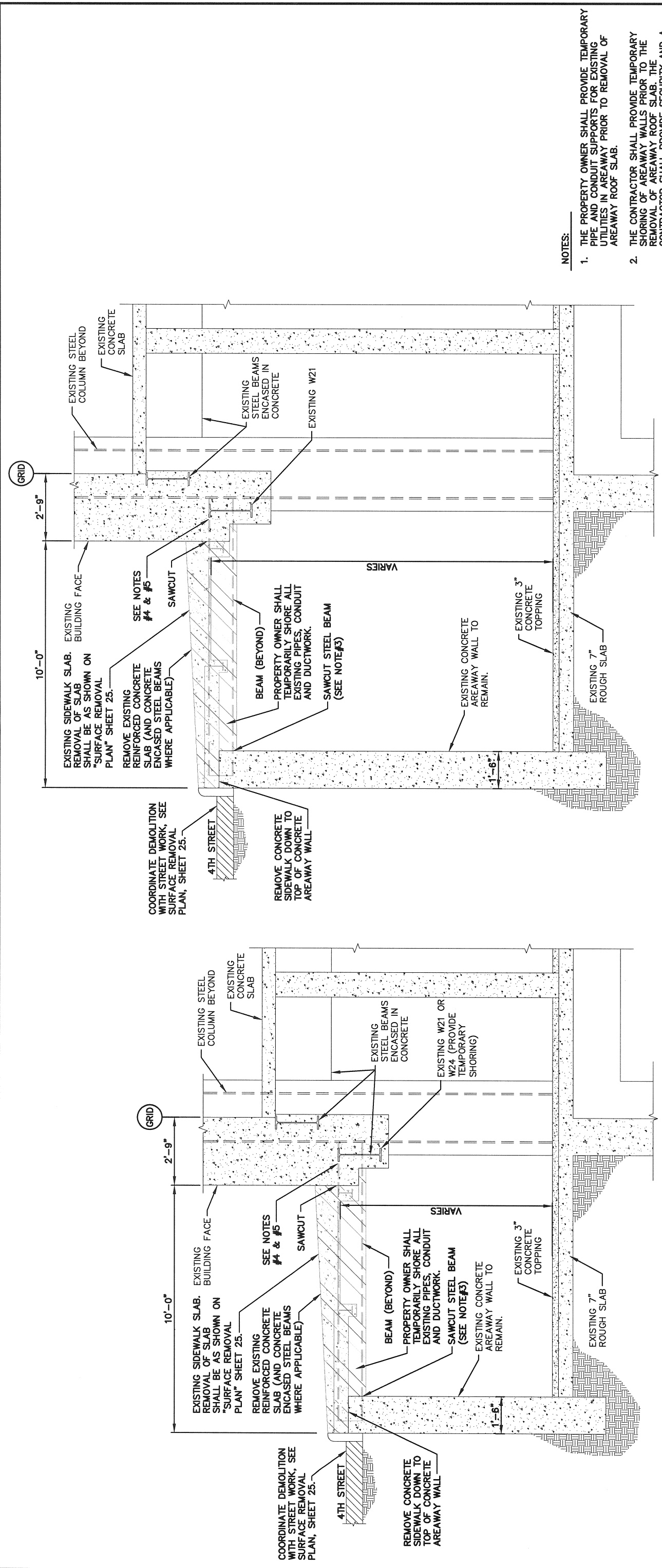
1 10 SIBLEY SQUARE RAMP AREAWAY REMOVAL PLAN

NO.	DATE	BY	CHECK DESIGN	REVISION / SUBMITTAL	WRL	RDC	BWH	ADDENDUM NO. 6 - ISSUED FOR BID	07-15-09	I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.	ENGINEER: <i>C. Brett Morse</i> C. BRETT MORSE	DATE: 7/14/09 Lic. No. 25469	AECOM TKDA ENGINEERING - ARCHITECTURE - PLANNING	Central Corridor Light Rail Transit Metropolitan Council	4TH ST. ADV. UTILITY CONST. CONTRACT	REMOVAL PLAN SIBLEY SQUARE RAMP AREAWAY	DISCIPLINE: STRUCTURAL	SHEET NAME: STU-4TH-PLN-D10	SHEET NO. 10	OF 18
																			100% SUBMITTAL	

NO.	DATE	BY	CHECK (DESIGN)	REVISION / SUBMITTAL
0	07-15-09	WRL	RDC	BWH ADDENDUM NO. 6 - ISSUED FOR BID



- NOTES:
1. VERIFY LOCATIONS OF OCS, TRAFFIC SIGNAL AND LIGHTING STRUCTURES WITH "SYSTEM WIDE ELECTRICAL PLAN" AND "LIGHTING" PLANS, FOR SPECIFIC STATIONING AND OFFSET PLACEMENT.
 2. PROVIDE NEW WATERPROOFING MEMBRANE SYSTEM BETWEEN NEW AREAWAY ROOF SLAB AND NEW SIDEWALK SLAB.
 3. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY SUPPORTS FOR EXISTING UTILITIES IN THE AREAWAY DURING THE INSTALLATION OF THE AREAWAY ROOF SLAB.
 4. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS DURING THE INSTALLATION OF THE AREAWAY ROOF SLAB.



NOTES:

1. THE PROPERTY OWNER SHALL PROVIDE TEMPORARY PIPE AND CONDUIT SUPPORTS FOR EXISTING UTILITIES IN AREAWAY PRIOR TO REMOVAL OF AREAWAY ROOF SLAB.
2. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF AREAWAY WALLS PRIOR TO THE REMOVAL OF AREAWAY ROOF SLAB. THE CONTRACTOR SHALL PROVIDE SECURITY AND A WEATHER PROOF SYSTEM DURING CONSTRUCTION OF AREAWAY MODIFICATIONS. SEE SPECIFICATION 151000 FOR DETAILS.
3. CUT EXISTING STEEL BEAM AT WALL. REMOVE BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE WALL FACE.
4. WHERE STEEL FRAMES INTO EXISTING W21 OR W24 BEAMS. CUT EXISTING STEEL BEAM AT CONCRETE BEAM. REMOVE STEEL BEAM. GRIND REMAINING BEAM FLUSH WITH CONCRETE BEAM FACE.
5. WHERE STEEL BEAMS FRAME INTO COLUMNS, REMOVE CONCRETE COLUMN WRAP TO THE EXTENTS WHICH WILL ALLOW ACCESS TO BEAM/COLUMN CONNECTION. PROVIDE TEMPORARY SHORING AT W21 AND W24, EACH SIDE OF BEAM. REMOVE BEAM.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	08-21-09	WRL	RDC	CBM	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	CBM	ADDENDUM NO. 6 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
C. BRETT MORSE Lic. No. 25469

DATE: 8/20/09

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

100% SUBMITTAL

Central Corridor
Light Rail Transit

Metropolitan Council

4TH ST. ADV. UTILITY CONST. CONTRACT

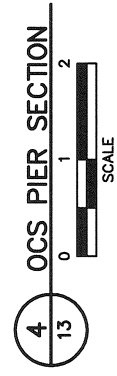
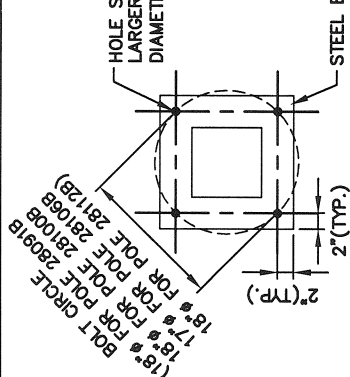
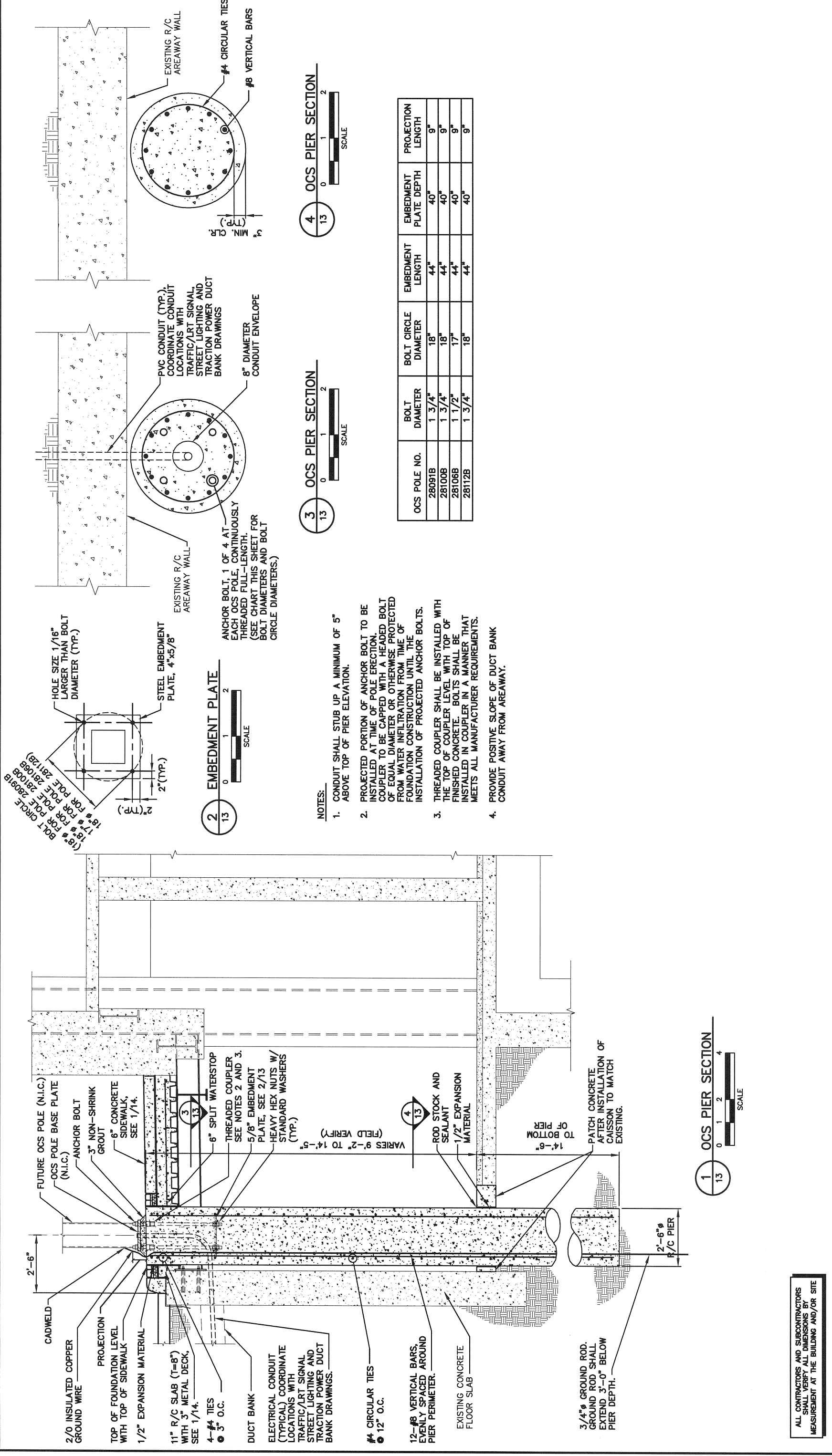
SECTIONS AND DETAILS

180 E. 5TH STREET AREAWAY

DISCIPLINE: STRUCTURAL

SHEET 12 OF 18

SHEET NAME: STU-4TH-DET-D12



NOTES:

- CONDUIT SHALL STUB UP A MINIMUM OF 5" ABOVE TOP OF PIER ELEVATION.
- PROJECTED PORTION OF ANCHOR BOLT TO BE INSTALLED AT TIME OF POLE ERECTION. COUPLER TO BE CAPPED WITH A HEADED BOLT OF EQUAL DIAMETER OR OTHERWISE PROTECTED FROM WATER INFILTRATION FROM TIME OF FOUNDATION CONSTRUCTION UNTIL THE INSTALLATION OF PROJECTED ANCHOR BOLTS.
- THREADED COUPLER SHALL BE INSTALLED WITH THE TOP OF COUPLER LEVEL WITH TOP OF FINISHED CONCRETE. BOLTS SHALL BE INSTALLED IN COUPLER IN A MANNER THAT MEETS ALL MANUFACTURER REQUIREMENTS.
- PROVIDE POSITIVE SLOPE OF DUCT BANK CONDUIT AWAY FROM AREAWAY.

OCS POLE NO.	BOLT DIAMETER	BOLT CIRCLE DIAMETER	EMBEDMENT LENGTH	EMBEDMENT PLATE DEPTH	PROJECTION LENGTH
28091B	1 3/4"	18"	44"	40"	9"
28100B	1 3/4"	18"	44"	40"	9"
28106B	1 1/2"	17"	44"	40"	9"
28112B	1 3/4"	18"	44"	40"	9"



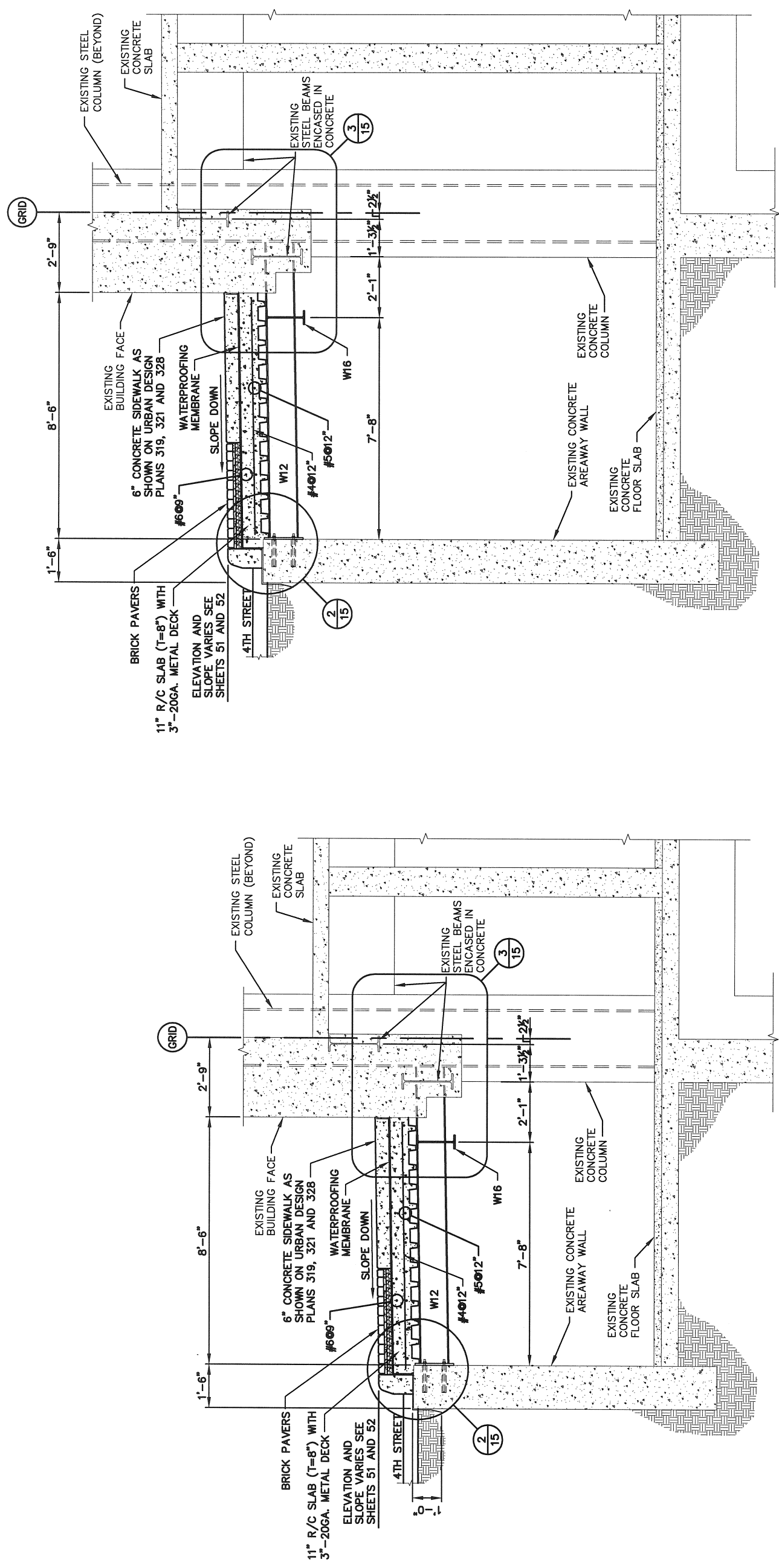
ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK/DESIGN	REVISION / SUBMITTAL
1	06-21-09	WRL	RDC	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	ADDENDUM NO. 6 - ISSUED FOR BID

ENGINEER: *C. Brett Morse*
 C. BRETT MORSE
 DATE: 8/21/09 Lic. No. 25469

AECOM **TKDA**
ENGINEERING • ARCHITECTURE • PLANNING

100% SUBMITTAL



ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

NO.	DATE	BY	CHECK/DESIGN	REVISION / SUBMITTAL
1	08-21-09	WRL	RDC	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	CBM ADDENDUM NO. 6 - ISSUED FOR BID

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

ENGINEER: *C. Brett Morse*
 C. BRETT MORSE Lic. No. 25469
 DATE: 8/21/09

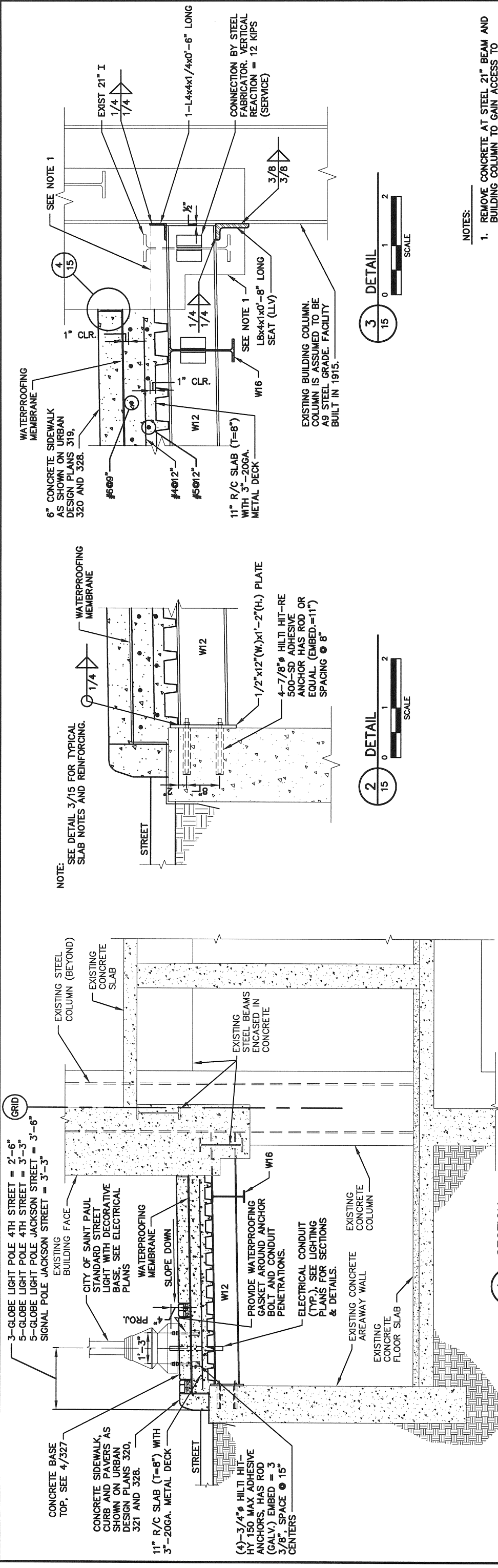
AECOM **TKDA**
 ENGINEERING • ARCHITECTURE • PLANNING

100% SUBMITTAL

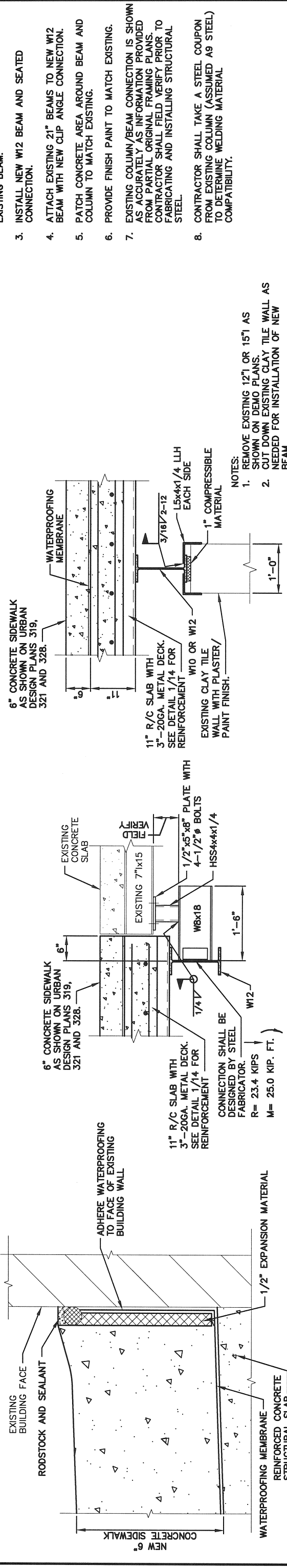
Central Corridor
 Light Rail Transit
 Metropolitan Council

4TH ST. ADV. UTILITY CONST. CONTRACT
 SECTIONS AND DETAILS
 180 E. 5TH STREET AREAWAY
 DISCIPLINE: STRUCTURAL
 SHEET NAME: STU-4TH-DET-D14

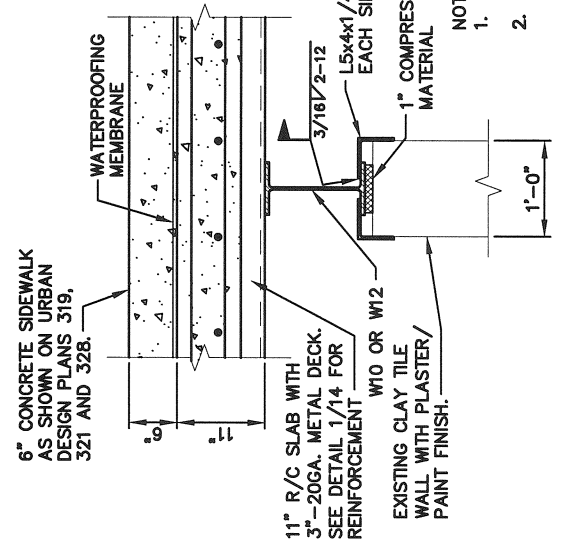
SHEET 14 OF 18



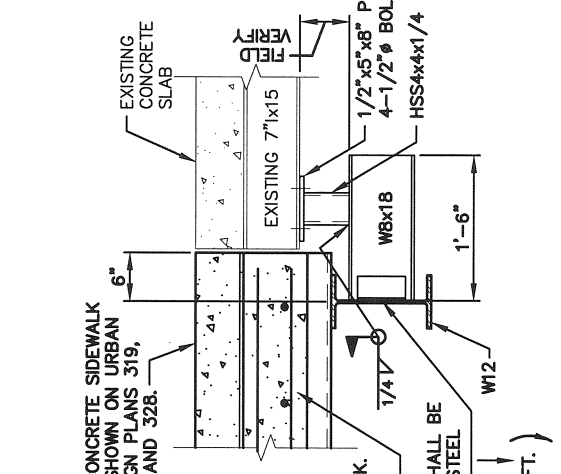
1 SECTION
15 0 1 2 4 SCALE



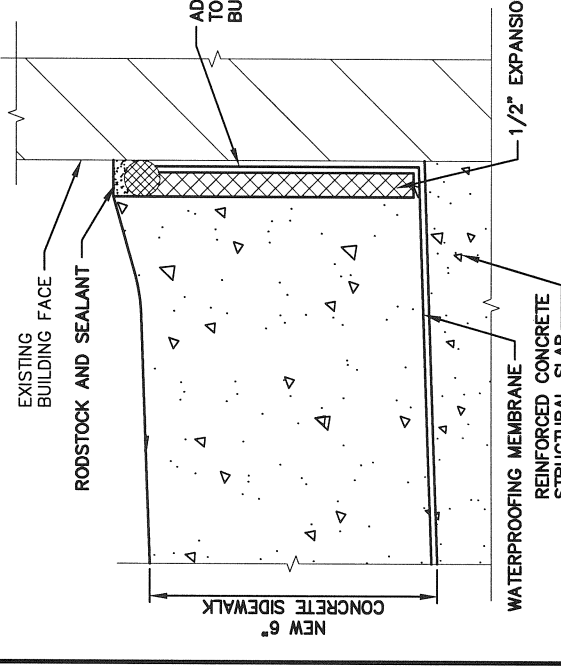
4 EXPANSION JOINT DETAIL
15 0 1 2 4 SCALE



6 DETAIL
15 0 1 2 SCALE



5 DETAIL
15 0 1 2 SCALE



3 DETAIL
15 0 1 2 SCALE

SEE NOTE 1

4 15

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

15 0 1 2 SCALE

NOTES:

1. REMOVE CONCRETE AT STEEL 21" BEAM AND BUILDING COLUMN TO GAIN ACCESS TO BEAM/COLUMN CONNECTION.
2. SHORE EXISTING 21" STEEL BEAMS EACH SIDE OF NEW W12 BEAM PRIOR TO REMOVING EXISTING BEAM.
3. INSTALL NEW W12 BEAM AND SEATED CONNECTION.
4. ATTACH EXISTING 21" BEAMS TO NEW W12 BEAM WITH NEW CLIP ANGLE CONNECTION.
5. PATCH CONCRETE AREA AROUND BEAM AND COLUMN TO MATCH EXISTING.
6. PROVIDE FINISH PAINT TO MATCH EXISTING.
7. EXISTING COLUMN/BEAM CONNECTION IS SHOWN AS ACCURATELY AS INFORMATION PROVIDED FROM PARTIAL ORIGINAL FRAMING PLANS. CONTRACTOR SHALL FIELD VERIFY PRIOR TO FABRICATING AND INSTALLING STRUCTURAL STEEL.
8. CONTRACTOR SHALL TAKE A STEEL COUPON FROM EXISTING COLUMN (ASSUMED A9 STEEL) TO DETERMINE WELDING MATERIAL COMPATIBILITY.

NOTES:

1. REMOVE EXISTING 12" OR 15" AS SHOWN ON DEMO PLANS.
2. CUT DOWN EXISTING CLAY TILE WALL AS NEEDED FOR INSTALLATION OF NEW BEAM.
3. INSTALL NEW W10 OR W12 AS SHOWN ON PLANS.
4. INSTALL COMPRESSIBLE MATERIAL ANGLES, PATCH AND PAINT DISTURBED AREAS OF TILE WALL.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS BY MEASUREMENT AT THE BUILDING AND/OR SITE

CONNECTION SHALL BE DESIGNED BY STEEL FABRICATOR.
R = 23.4 KIPS
M = 25.0 KIP. FT.

<p>4TH ST. ADV. UTILITY CONST. CONTRACT</p>	<p>SHEET 15 OF 18</p>	<p>STRUCTURAL</p>	<p>SHEET NAME: STU-4TH-DET-D15</p>		
<p>SECTIONS AND DETAILS</p> <p>180 E. 5TH STREET AREAWAY</p>					
<p>Central Corridor Light Rail Transit</p>		<p>Metropolitan Council</p>			
<p>100% SUBMITTAL</p>					
<p>AECOM TKDA ENGINEERING • ARCHITECTURE • PLANNING</p>					
<p>I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.</p>					
<p>ENGINEER: C. BRETT MORSE</p>					
<p>DATE: 8/21/09 Lic. No. 25469</p>					
<p>NO. DATE BY CHECK DESIGN REVISION / SUBMITTAL</p>					
1	08-21-09	WRL	RDC	CBM	ISSUED FOR CONSTRUCTION
0	07-15-09	WRL	RDC	CBM	ADDENDUM NO. 6 - ISSUED FOR BID

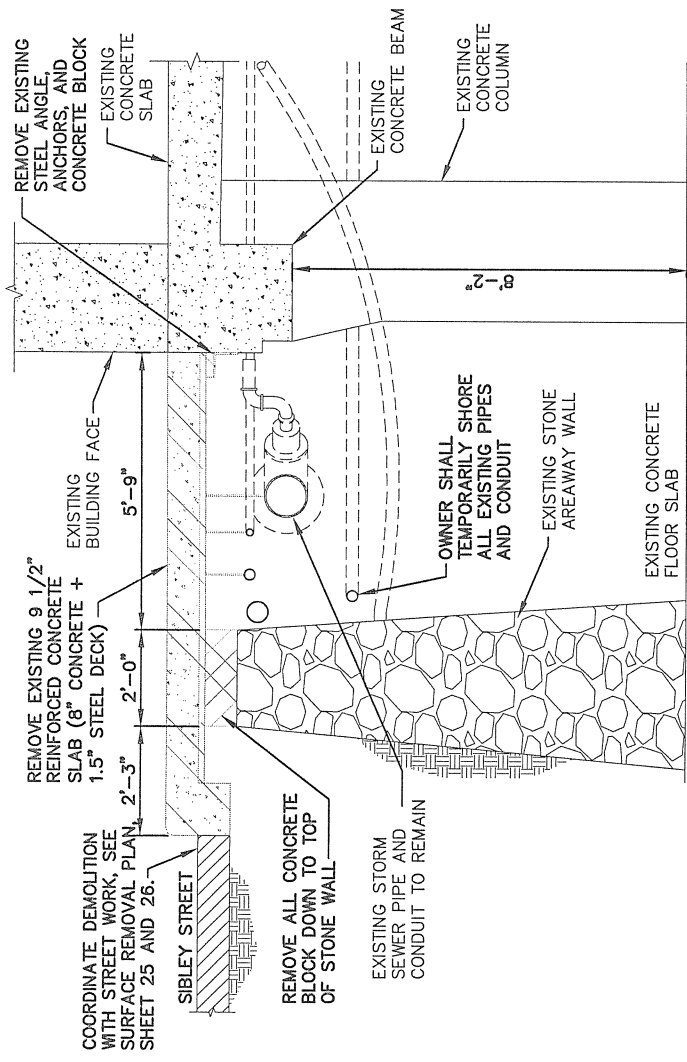
4TH ST. ADV. UTILITY CONST. CONTRACT
SECTIONS AND DETAILS
SIBLEY SQUARE RAMP AREAWAY

Central Corridor
Light Rail Transit

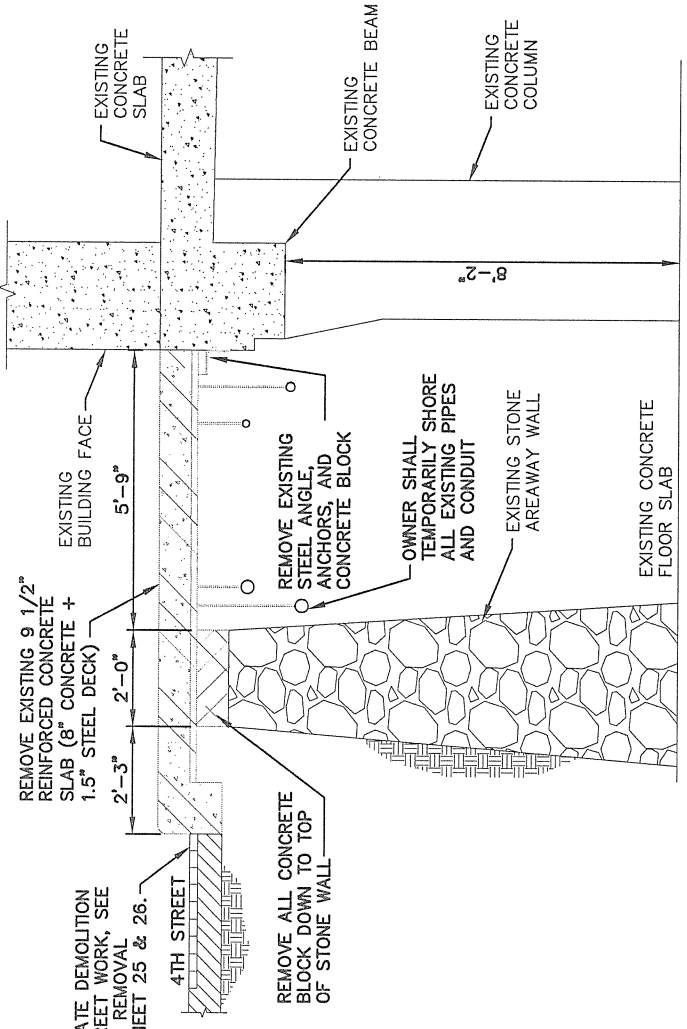
Metropolitan Council

100% SUBMITTAL

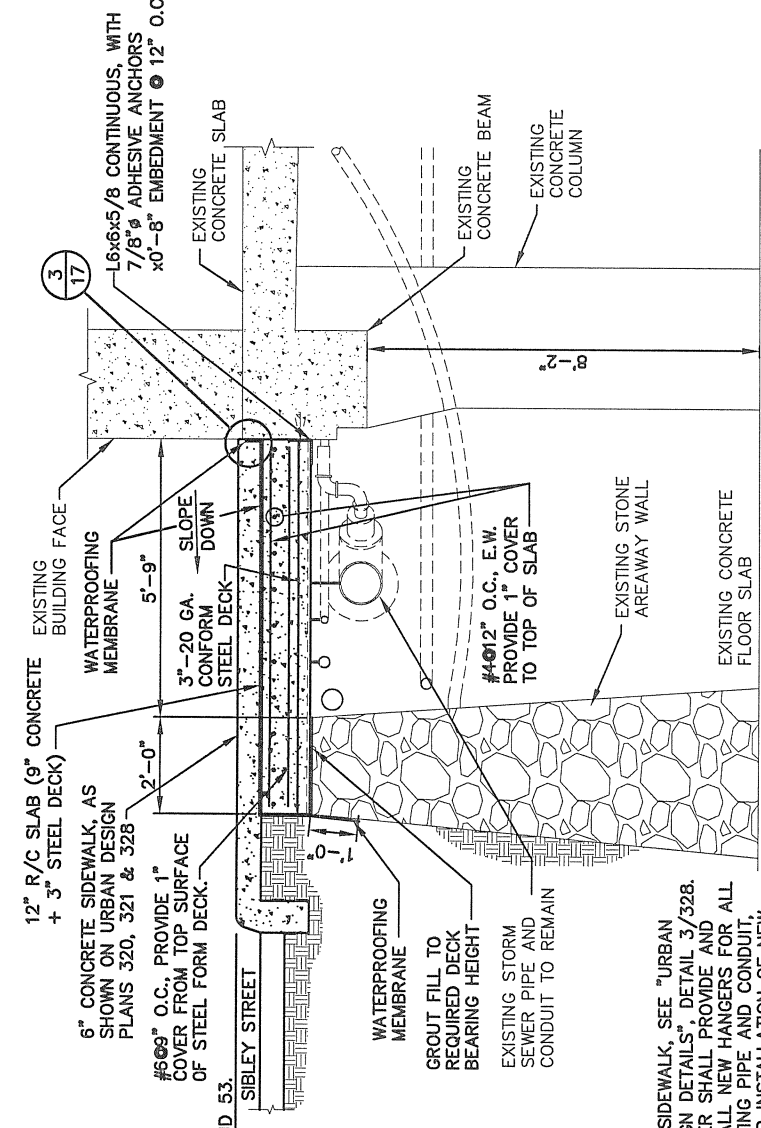
DISCIPLINE: STRUCTURAL
SHEET NAME: STU-4TH-DET-D16



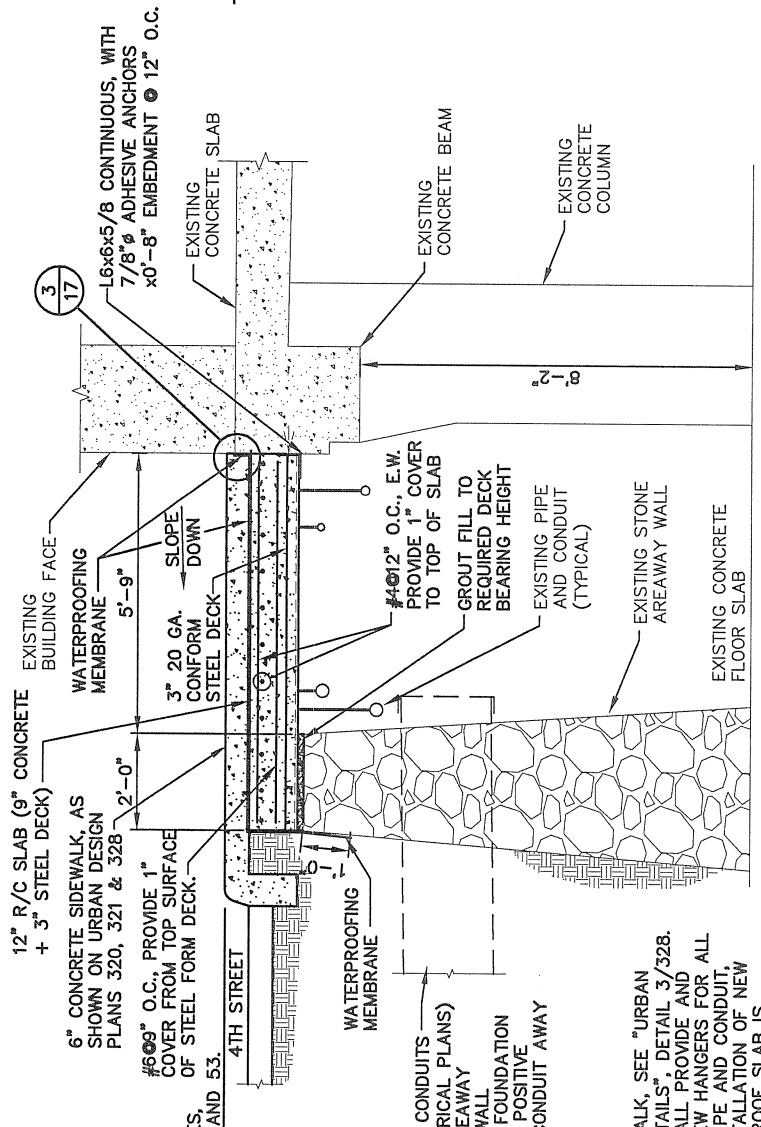
1
16
REMOVAL SECTION
SCALE 0 1 2 4



2
16
REMOVAL SECTION
SCALE 0 1 2 4



3
16
SECTION
SCALE 0 1 2 4



4
16
SECTION
SCALE 0 1 2 4

- NOTES:
- FOR SIDEWALK, SEE "URBAN DESIGN DETAILS", DETAIL 3/32B. OWNER SHALL PROVIDE AND INSTALL NEW HANGERS FOR ALL EXISTING PIPE AND CONDUIT. AFTER INSTALLATION OF NEW AREAWAY ROOF SLAB IS COMPLETE.
 - FOR SIDEWALK, SEE "URBAN DESIGN DETAILS", DETAIL 3/32B. OWNER SHALL PROVIDE AND INSTALL NEW HANGERS FOR ALL EXISTING PIPE AND CONDUIT. AFTER INSTALLATION OF NEW AREAWAY ROOF SLAB IS COMPLETE.

- DUCTBANK WITH (6)-4" CONDUITS (SEE SYSTEMWIDE ELECTRICAL PLANS) THROUGH WALL INTO AREAWAY BEYOND. COORDINATE WALL PENETRATION WITH OCS FOUNDATION AT THIS SITE. PROVIDE POSITIVE SLOPE OF DUCT BANK CONDUIT AWAY FROM AREAWAY.
- NOTES:
- FOR SIDEWALK, SEE "URBAN DESIGN DETAILS", DETAIL 3/32B.
 - OWNER SHALL PROVIDE AND INSTALL NEW HANGERS FOR ALL EXISTING PIPE AND CONDUIT. AFTER INSTALLATION OF NEW AREAWAY ROOF SLAB IS COMPLETE.

COORDINATE DEMOLITION WITH STREET WORK, SEE SURFACE REMOVAL PLAN, SHEET 25 & 26.

REMOVE ALL CONCRETE BLOCK DOWN TO TOP OF STONE WALL

REMOVE EXISTING STEEL ANGLE, ANCHORS, AND CONCRETE BLOCK

OWNER SHALL TEMPORARILY SHORE ALL EXISTING PIPES AND CONDUIT

REMOVE EXISTING 9 1/2" REINFORCED CONCRETE SLAB (8" CONCRETE + 1.5" STEEL DECK)

12" R/C SLAB (9" CONCRETE + 3" STEEL DECK)

6" CONCRETE SIDEWALK, AS SHOWN ON URBAN DESIGN PLANS 320, 321 & 328

#609" O.C., PROVIDE 1" COVER FROM TOP SURFACE OF STEEL FORM DECK. ELEVATION VARIES, SEE SHEETS 52 AND 53.

WATERPROOFING MEMBRANE

3" 20 GA. CONFORM STEEL DECK

16x6x5/8 CONTINUOUS, WITH 7/8" ADHESIVE ANCHORS x0'-8" EMBEDMENT @ 12" O.C.

EXISTING CONCRETE SLAB

EXISTING CONCRETE BEAM

EXISTING CONCRETE COLUMN

EXISTING STONE AREAWAY WALL

EXISTING CONCRETE FLOOR SLAB

REMOVE EXISTING 9 1/2" REINFORCED CONCRETE SLAB (8" CONCRETE + 1.5" STEEL DECK)

EXISTING BUILDING FACE

5'-9"

2'-0"

2'-3"

SIBLEY STREET

COORDINATE DEMOLITION WITH STREET WORK, SEE SURFACE REMOVAL PLAN, SHEET 25 AND 26.

REMOVE ALL CONCRETE BLOCK DOWN TO TOP OF STONE WALL

EXISTING STORM SEWER PIPE AND CONDUIT TO REMAIN

OWNER SHALL TEMPORARILY SHORE ALL EXISTING PIPES AND CONDUIT

EXISTING STONE AREAWAY WALL

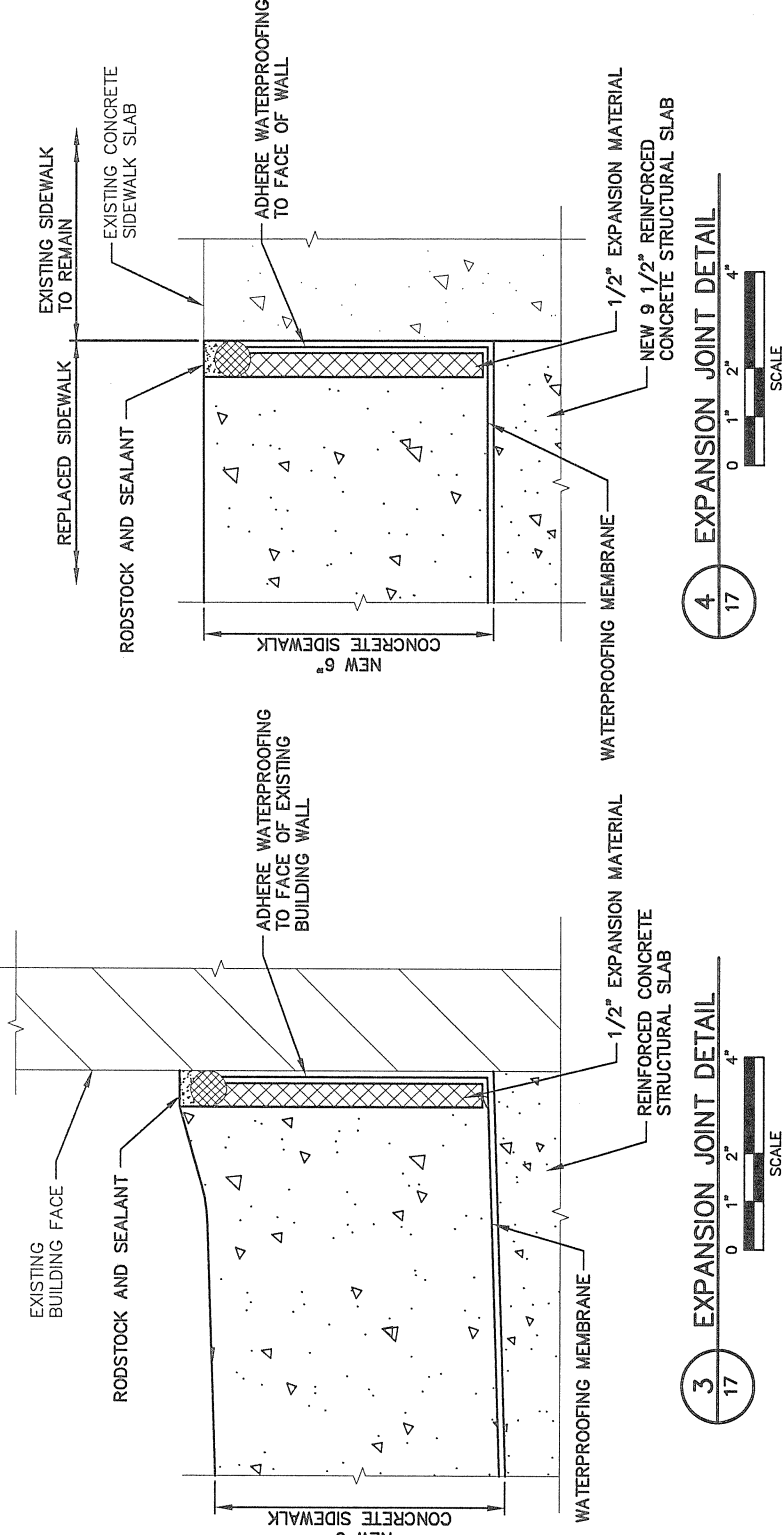
EXISTING CONCRETE FLOOR SLAB

EXISTING CONCRETE BEAM

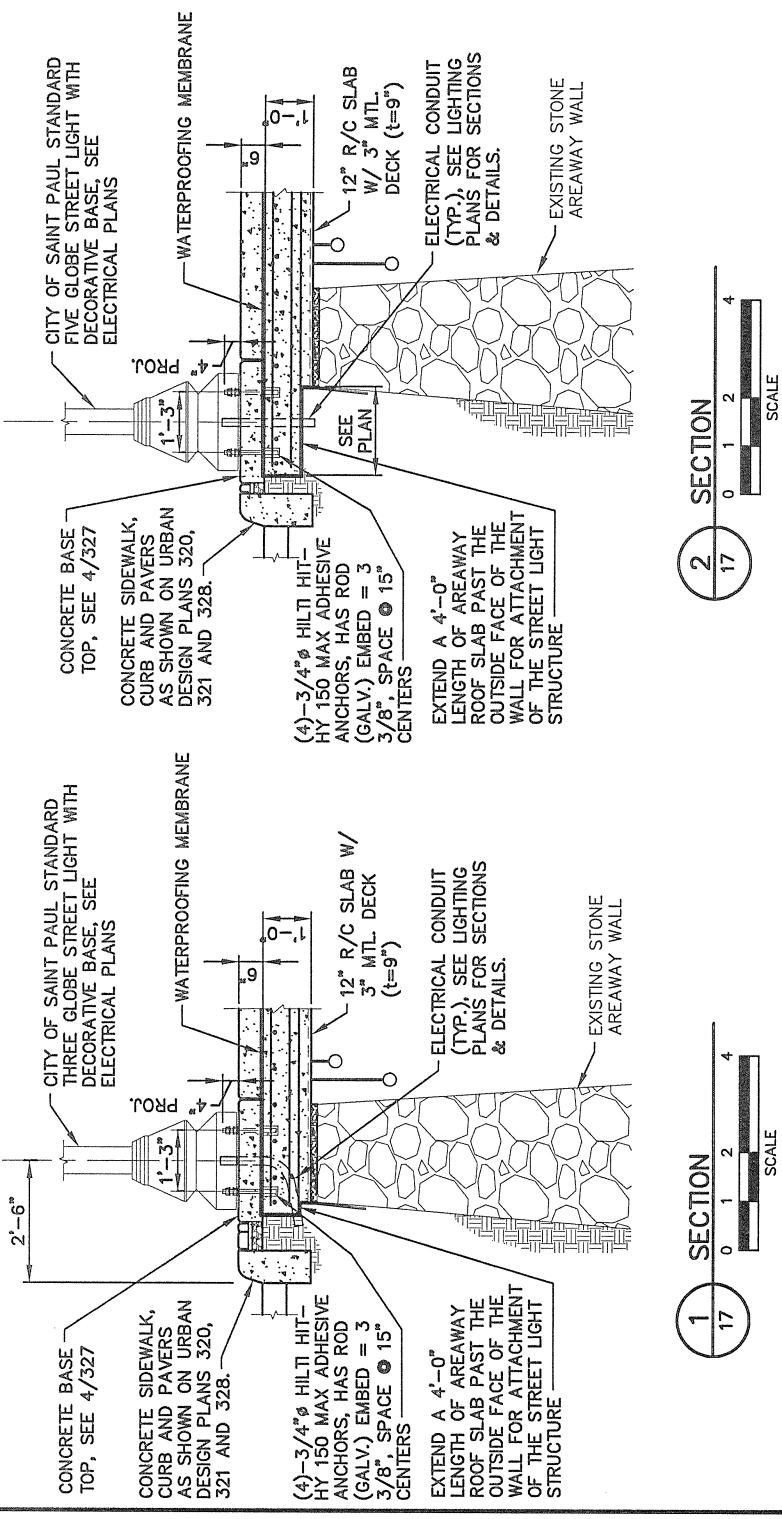
EXISTING CONCRETE COLUMN

REMOVE EXISTING STEEL ANGLE, ANCHORS, AND CONCRETE BLOCK

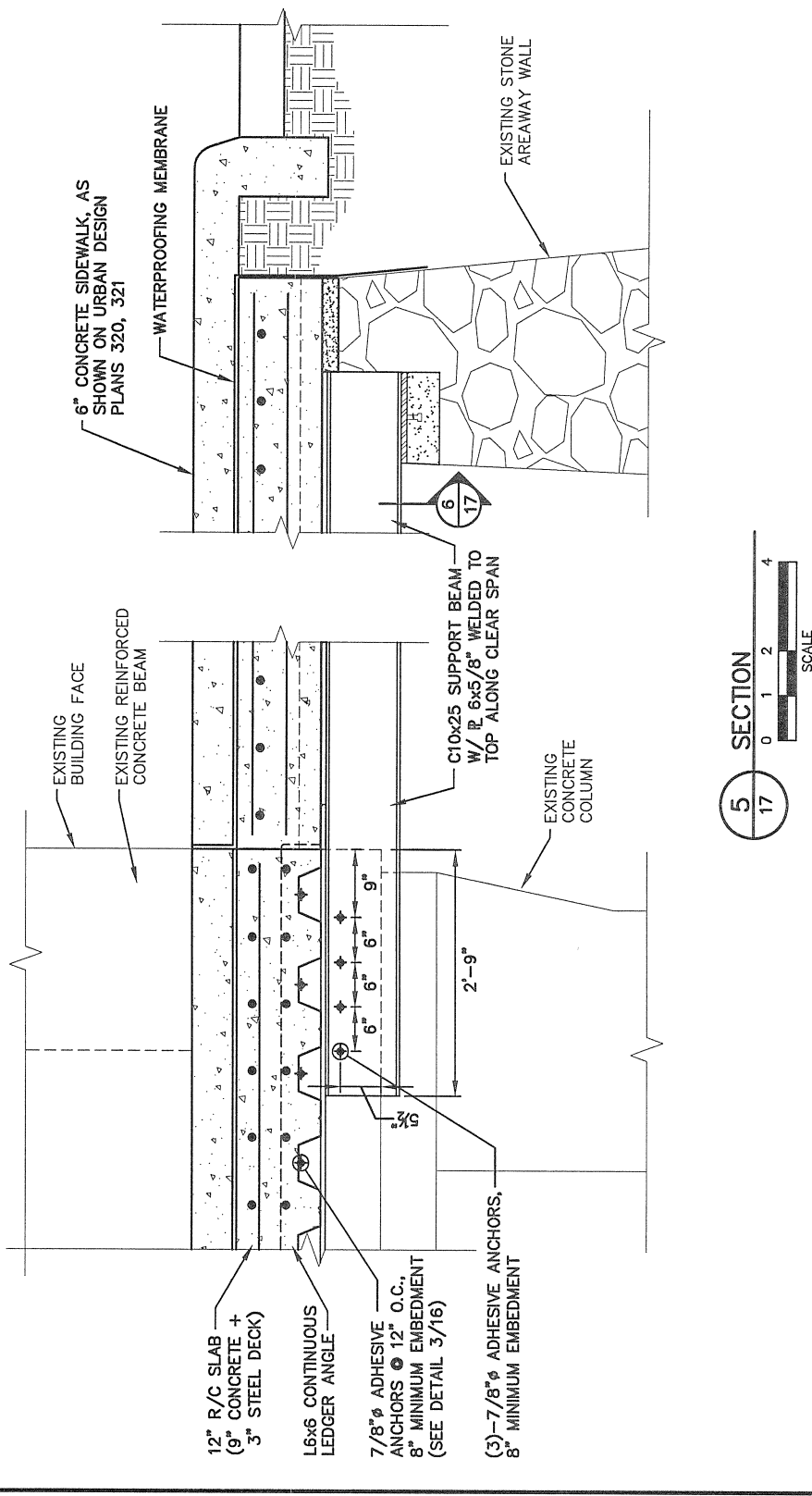
EXISTING CONCRETE SLAB



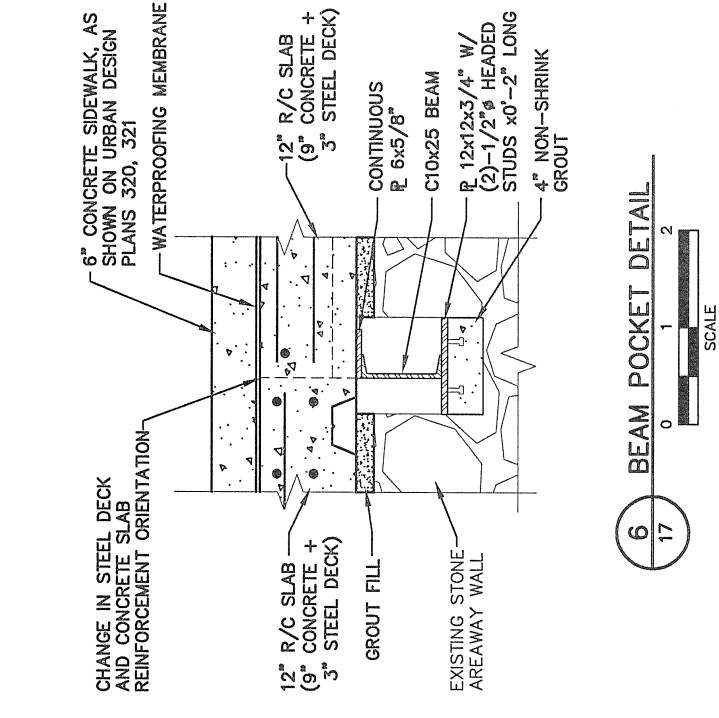
3 EXPANSION JOINT DETAIL
SCALE: 0 1 2 4



4 EXPANSION JOINT DETAIL
SCALE: 0 1 2 4

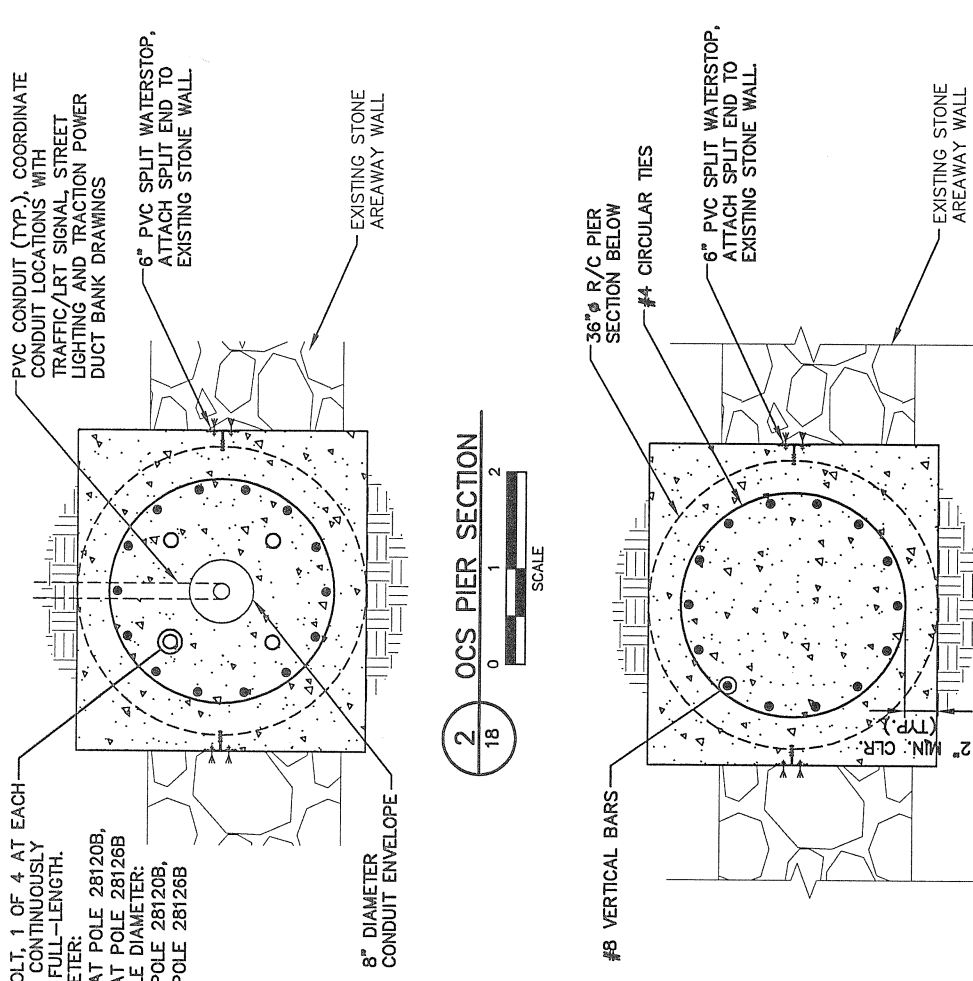


5 SECTION
SCALE: 0 1 2 4



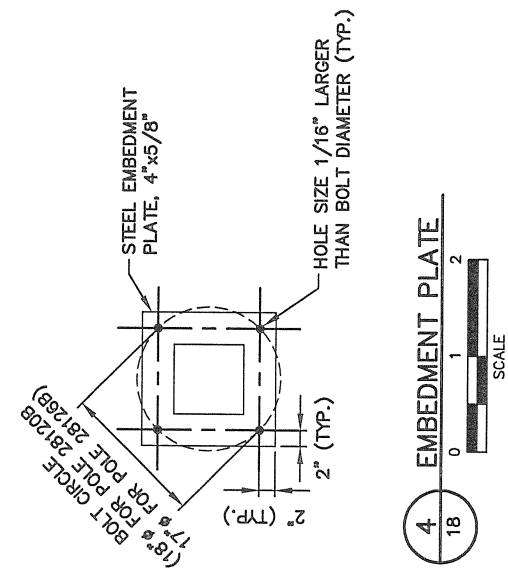
6 BEAM POCKET DETAIL
SCALE: 0 1 2

2 SECTION
SCALE: 0 1 2 4

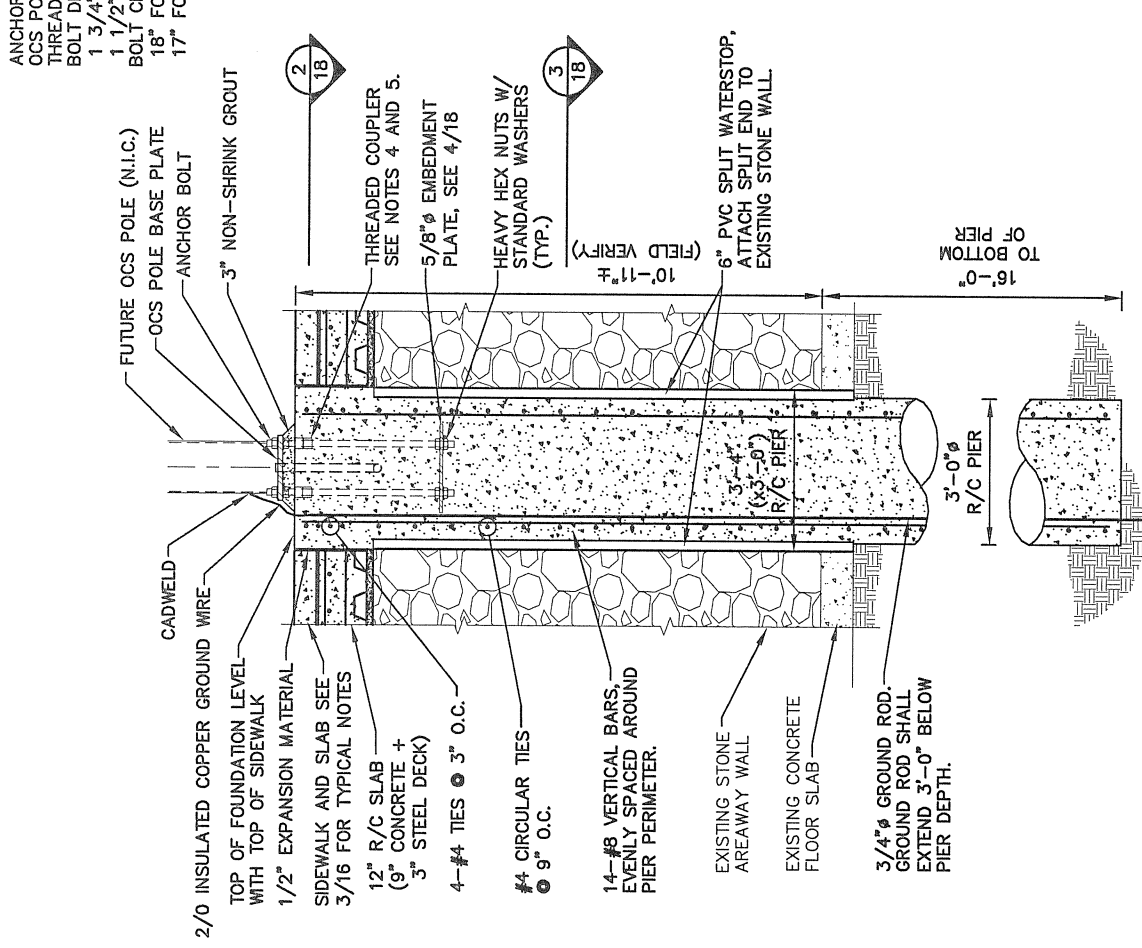


2 OCS PIER SECTION
SCALE

3 OCS PIER SECTION
SCALE



4 EMBEDMENT PLATE
SCALE



1 OCS PIER SECTION
SCALE

- NOTES:
- CONDUIT SHALL STUB UP A MINIMUM OF 5" ABOVE TOP OF PIER ELEVATION. PROJECTED PORTION OF ANCHOR BOLT TO BE INSTALLED AT TIME OF POLE ERECTION. COUPLER TO BE CAPPED WITH A HEADED BOLT OF EQUAL DIAMETER OR OTHERWISE PROTECTED FROM WATER INFILTRATION FROM TIME OF FOUNDATION CONSTRUCTION UNTIL THE INSTALLATION OF PROJECTED ANCHOR BOLTS. THREADED COUPLER SHALL BE INSTALLED WITH THE TOP OF COUPLER LEVEL WITH TOP OF FINISHED CONCRETE. BOLTS SHALL BE INSTALLED IN COUPLER IN A MANNER THAT MEETS ALL MANUFACTURER REQUIREMENTS.
 -
 -

- ANCHOR BOLT, 1 OF 4 AT EACH OCS POLE, CONTINUOUSLY THREADED FULL-LENGTH. BOLT DIAMETER:
 1 3/4" AT POLE 28120B,
 1 1/2" AT POLE 28126B
 BOLT CIRCLE DIAMETER:
 18" FOR POLE 28120B,
 17" FOR POLE 28126B

- PVC CONDUIT (TYP.), COORDINATE CONDUIT LOCATIONS WITH TRAFFIC/LRT SIGNAL STREET LIGHTING AND TRACTION POWER DUCT BANK DRAWINGS
 6" PVC SPLIT WATERSTOP, ATTACH SPLIT END TO EXISTING STONE WALL
 EXISTING STONE AREAWAY WALL
 8" DIAMETER CONDUIT ENVELOPE

- 10'-11"± TO BOTTOM OF PIER
 16'-10"± TO BOTTOM OF PIER
 3'-0"± R/C PIER
 3'-0"± GROUND ROD. GROUND ROD SHALL EXTEND 3'-0" BELOW PIER DEPTH.
 EXISTING STONE AREAWAY WALL
 EXISTING CONCRETE FLOOR SLAB

- 2/0 INSULATED COPPER GROUND WIRE
 TOP OF FOUNDATION LEVEL WITH TOP OF SIDEWALK
 1/2" EXPANSION MATERIAL
 SIDEWALK AND SLAB SEE 3/16 FOR TYPICAL NOTES
 12" R/C SLAB (9" CONCRETE + 3" STEEL DECK)
 4-#4 TIES @ 3" O.C.
 #4 CIRCULAR TIES @ 9" O.C.
 14-#8 VERTICAL BARS, EVENLY SPACED AROUND PIER PERIMETER.
 EXISTING STONE AREAWAY WALL
 EXISTING CONCRETE FLOOR SLAB
 3/4" GROUND ROD. GROUND ROD SHALL EXTEND 3'-0" BELOW PIER DEPTH.
 3'-0"± R/C PIER
 3"± NON-SHRINK GROUT
 THREADED COUPLER SEE NOTES 4 AND 5.
 5/8"± EMBEDMENT PLATE, SEE 4/18
 HEAVY HEX NUTS W/ STANDARD WASHERS (TYP.)
 6" PVC SPLIT WATERSTOP, ATTACH SPLIT END TO EXISTING STONE WALL
 FUTURE OCS POLE (N.I.C.)
 OCS POLE BASE PLATE
 ANCHOR BOLT

NO.		DATE	BY	CHECK/DESIGN	REVISION / SUBMITTAL
0	07-15-09	SRE	RDC	BWH	ADDENDUM NO. 6 - ISSUED FOR BID
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.					
ENGINEER: <i>C. Brett Morse</i> C. BRETT MORSE Lic. No. 25469					
DATE: 7/14/09					
100% SUBMITTAL					
AECOM TKDA ENGINEERING • ARCHITECTURE • PLANNING			Central Corridor Light Rail Transit Metropolitan Council		
4TH ST. ADV. UTILITY CONST. CONTRACT			DISCIPLINE: STRUCTURAL		
SECTIONS AND DETAILS			SHEET NAME: STU-4TH-DET-D18		
SIBLEY SQUARE RAMP AREAWAY			SHEET 18 OF 18		