WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

metro

SECTION A-11

BETHESDA STATION - SOUTH ENTRANCE
CONCEPT PE SUBMITTAL
CONTRACT NO. XXXX

OCTOBER 2013

MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION

RUMMEL, KLEPPER & KAHL, LLP
IN ASSOCIATION WITH
WHITMAN, REQUARDT & ASSOCIATES, LLP

RK&K
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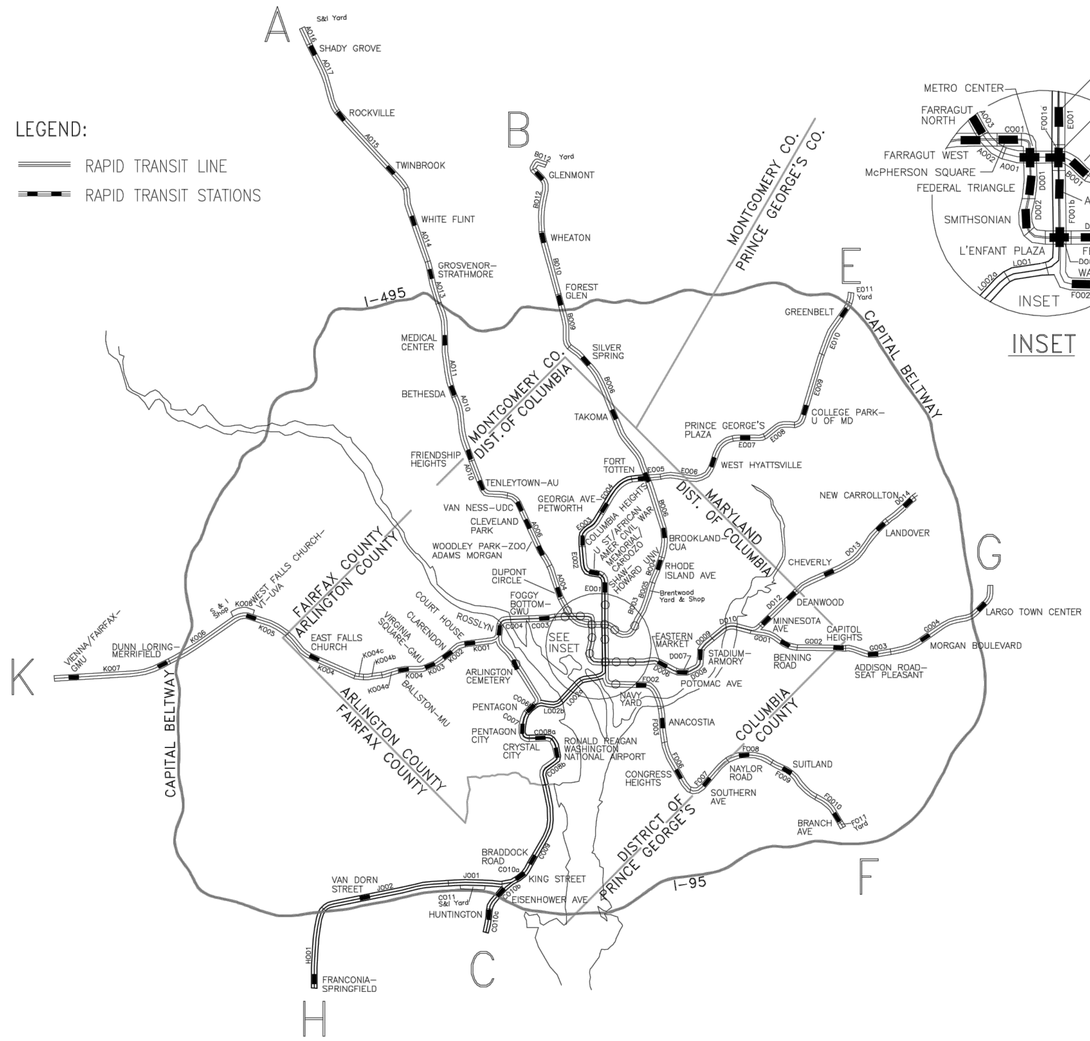
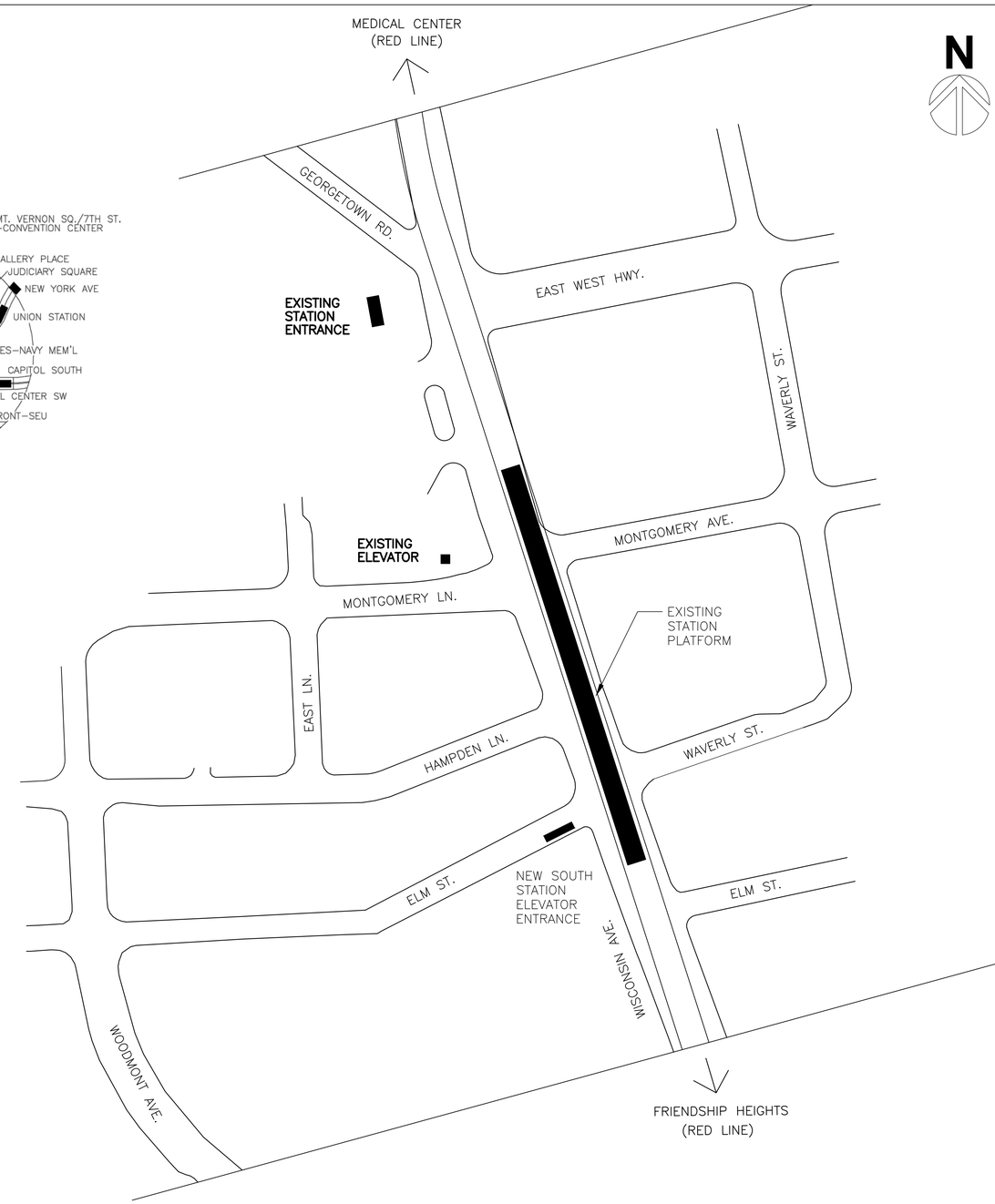
801 South Caroline Street, Baltimore, Maryland 21231



SYSTEM MAP
NOT TO SCALE



VICINITY MAP
SCALE: 1" = 100'

CONTRACT NO.
XXXXXX

DESIGNED		DATE
DRAWN	A.U. OGBUE	DATE
CHECKED	D.S. TUSING	DATE
APPROVED		DATE

REVISIONS		
DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
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APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE

SYSTEM WIDE & VICINITY MAP

SCALE	DRAWING NO.
AS NOTED	G–01

RK&K\SYS – C:\pwworking\mtopa\rkk--anikwenze.ogbue\d0122590\G-01.dwg Oct 14, 2013 – 2:21pm monochrome.CTB Plot Scale 1=1 Plot By: ogbue Tab: Sheet 1 – PDF Fullsize

DWG. NO.	DWG. TITLE
G–00	COVER SHEET
G–01	SYSTEM WIDE AND VICINITY MAP
G–02	INDEX OF DRAWINGS
C–01	CIVIL NOTES, ABBREVIATIONS AND LEGEND
C–02	WMATA MONUMENT RECORD SHEET
C–03	ALIGNMENT SCHEMATIC & HORIZONTAL CONTROL GEOMETRY
SP–01	EXISTING SITE PLAN ELM STREET LEVEL
SP–02	EXISTING SITE PLAN PURPLE LINE/TRAIL LEVEL
S0–01	BORING LOG – 1
S0–02	BORING LOG – 2
S0–03	BORING LOG – 3
S0–04	BORING LOG – 4
PP–01	VERTICAL PROFILE ELM STREET
U–01	EXISTING UTILITY COMPOSITE – 1
U–02	EXISTING UTILITY COMPOSITE – 2 PEPCO
U–03	EXISTING UTILITY COMPOSITE – 3 VERIZON
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S–1	STRUCTURAL GENERAL NOTES
S–2	STRUCTURAL ABBREVIATION AND LEGEND
S–3	BETHESDA STATION PLATFORM DEMOLITION PLAN AND SECTIONS STA. 391+07 TO STA. 389+07
S–4	BETHESDA STATION PLATFORM DEMOLITION SECTIONS
S–5	PLATFORM DEMOLITION SECTIONS AND DETAILS
S–6	PRECAST VAULT DEMOLITION DETAILS AT SOUTH PASSAGEWAY
S–7	PRECAST VAULT DEMOLITION DETAILS AT SOUTH PASSAGEWAY
S–8	PRECAST VAULT DEMOLITION DETAILS AT SOUTH PASSAGEWAY
S–9	BETHESDA STATION PLATFORM PLAN STA. 391+07 TO STA. 389+07
S–10	BETHESDA STATION PLATFORM SECTIONS
S–11	PLATFORM SECTIONS AND DETAILS
S–12	PLATFORM SECTIONS AND DETAILS
S–13	SECTION AT SOUTH PASSAGEWAY
S–14	VAULT DETAILS AT SOUTH PASSAGEWAY
S–15	PRECAST VAULT AND PLATFORM DETAILS
S–16	DETAILS AT SOUTH PASSAGEWAY
S–17	DETAILS AT SOUTH PASSAGEWAY
S–18	PROPOSED PASSAGEWAY PLAN
S–19	PROPOSED PASSAGEWAY SECTIONS
S–20	ELEVATOR MACHINE ROOM FLOOR PLAN
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S–23	WATERPROOFING SYSTEM DETAILS – 1
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S–26	WATERPROOFING SYSTEM DETAILS – 4
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S–28	WATERPROOFING SYSTEM DETAILS – 6
S–29	BETHESDA STATION TEMPORARY SUPPORT FOR MEZZANINE CONSTRUCTION STA. 391+07 TO STA. 389+07
S–30	TEMPORARY SUPPORT FOR MEZZANINE CONSTRUCTION – SECTION
ST–S–001	CUT AND COVER SECTIONS TYPICAL DETAILS AND REINFORCEMENT
ST–S–004	DRAINAGE AND VENTILATION STRUCTURES TYPICAL DETAILS AND REINFORCEMENT
ST–S–007	ELECTRICAL BONDING OF REINFORCING STEEL, SECTIONS AND DETAILS SHEET 1 OF 2
ST–S–009	CRITERIA FOR THE DESIGN OF TEMPORARY STRUCTURES
ST–S–021	ELECTRICAL BONDING OF REINFORCING STEEL SECTIONS AND DETAILS, SHEET 2 OF 2
ST–S–022	TYPICAL ELECTRICAL BONDING FOR STRUCTURES

DWG. NO.	DWG. TITLE
A–101	RED LINE PLATFORM LEVEL FLOOR PLAN
A–102	RED LINE MEZZANINE LEVEL FLOOR PLAN
A–103	EMERGENCY STAIR INTERMEDIATE LANDING FLOOR PLANS"
A–104	PURPLE LINE LOBBY FLOOR PLAN
A–105	ELM STREET FLOOR PLAN
A–106	ELM STREET ROOF PLAN
A–301	BUILDING SECTIONS

CONTRACT NO.
XXXXXX

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
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801 South Caroline Street, Baltimore, Maryland 21231

APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE

INDEX OF DRAWINGS

SCALE
AS NOTED

DRAWING NO.
G–02

CIVIL NOTES

1. FOR THE CONVENIENCE AND INFORMATION OF BIDDERS, PRINTS OF THE PLANS FOR EXISTING PERTINENT STRUCTURES ARE INCLUDED WITH THIS CONTRACT. NO RESPONSIBILITY FOR THEIR ACCURACY OR COMPLETENESS IS ASSUMED BY MONTGOMERY COUNTY. DIMENSIONS, DETAILS, ETC. AS SHOWN THEREON MAY NOT BE AS-BUILT.
2. BASELINE AND STATIONING FOR THE INBOUND TRACK ARE BASED ON ORIGINAL A11b CONTRACT DRAWINGS.

SURVEY NOTES

1. TOPOGRAPHIC SURVEY WAS PREPARED BY RK&K. ALL EXISTING SURFACE FEATURES SHOWN WERE SURVEYED IN AUGUST 2008.
2. SEE SHEET C-04 FOR WMATA METRO CONTROL MONUMENTS NOT SHOWN ON THIS SHEET (A129R, A406 & A407).
3. THIS DRAWING IS BASED ON WMATA GRID HORIZONTAL COORDINATES AND THE NGVD 1929 VERTICAL DATUM.
4. TO CONVERT NGVD 1929 ELEVATIONS TO OTHER VERTICAL DATUMS SEE DATUM PLANES – WASHINGTON METROPOLITAN AREA WMATA DESIGN CRITERIA FIGURE 11.4 (MODIFIED).

ABBREVIATIONS

AHD	AHEAD
BC	BOTTOM OF CURB
BP	BEGINNING POINT
BK	BACK
CATV	CABLE TELEVISION
℄	CENTERLINE
CONC.	CONCRETE
ELEV.	ELEVATION
EP	END POINT
MAC	MACADAM
MO	MIDDLE ORDINATE
NR	NOT REQUIRED
NU	NOT USED
PC	POINT OF CURVATURE
PROP	PROPOSED
POVC	POINT ON VERTICAL CURVE
PGL	PROFILE GRADE LINE
PT.	POINT
PT	POINT OF TANGENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RET	RETURN
ROW	RIGHT OF WAY
T	TANGENT
TC	TOP OF CURB
T/R	TOP OF RAIL
W/	WITH

LEGEND

- BOLLARD
- BORING
- CLEANOUT
- ELECTRIC METER
- ELECTRIC POLE
- ELECTRIC MANHOLE
- FIRE HYDRANT
- GAS MANHOLE
- GAS METER
- GAS VALVE
- HANDBOX
- HANDICAPPED
- LIGHT POLES
- PETROLEUM MANHOLE
- PETROLEUM VALVE
- SAN. SEWER MANHOLE
- SIGN
- STORM DRAIN MANHOLE
- SURVEY TRAVERSE
- TELEPHONE MANHOLE
- TREE GENERAL
- WATER METER
- WATER VALVE
- UNKNOWN MANHOLE

DATUM PLANES – WASHINGTON METROPOLITAN AREA

ELEVATION RELATIVE TO PROJECT DATUM (FEET) — DATUM

ABOVE PROJECT DATUM

0.94	WASHINGTON AQUEDUCT AND FILTRATION PLANTS (W.A.D.)
0.717	NORTH AMERICAN VERTICAL DATUM (NAVD 1988)
0.70	DISTRICT OF COLUMBIA ENGINEERING DEPARTMENT Potomac Electric Power Company Washington Gas Company C. & P. Telephone Company D. C. Engineering Departments
0.57	PENNSYLVANIA RAILROAD
0.00	PROJECT DATUM = SEA LEVEL DATUM (NGVD 1929 GENERAL ADJUSTMENT) U.S. Coast & Geodetic Survey U.S. Geological Survey Naval Research Laboratory (Bellevue) R. F. & P. Railroad B. & O. Railroad (Alexandria Branch) Arlington County

BELOW PROJECT DATUM

0.15	SEA LEVEL DATUM (1912 GENERAL ADJUSTMENT) * Washington Suburban Sanitary Commission * Montgomery County
1.41	LOW WATER DATUM – WASHINGTON HARBOR (L.W.D.) Baltimore District, Corps of Engineers (Except Washington Aqueduct) National Park Service Public Roads Administration Washington National Airport
1.63	BOLLING AIR FORCE BASE
4.50	NAVAL GUN FACTORY
4.70	ANACOSTIA NAVAL AIR STATION

* Note: The Washington Suburan Sanitary Commission and Montgomery County also use sea level datum (1929 general adjustment) in some areas.

EXAMPLE:

CAPITOL BENCH MARK – APEX OF BRONZE BOLT SET IN EAST WINDOW SILL OF THE SOUTH SIDE OF THE SENATE WING OF THE U.S. CAPITOL. IT WAS PLACED IN POSITION IN JUNE 1894 AND IS INSCRIBED "CAPITOL B.M."

DISTRICT OF COLUMBIA ENGINEERING DEPARTMENT	89.840
PENNSYLVANIA RAILROAD	89.970
PROJECT DATUM = SEA LEVEL DATUM (1929 GEN. ADJ.)	90.540

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DIVISION OF PLANNING
DEVELOPMENT ENGINEERING & CONSTRUCTION
OFFICE OF THE CHIEF ENGINEER - FACILITIES

DATUM PLANES
WASHINGTON METROPOLITAN AREA

WMATA DESIGN CRITERIA FIGURE 11.4 (MODIFIED)

CONTRACT NO. XXXXXX

DESIGNED ____ DATE
DRAWN A.U. OGBUE DATE
CHECKED D.S. TUSING DATE
APPROVED ____ DATE

REVISIONS		
DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY ____

RK&K Rummel, Klepper & Kahl, LLP — 81 MOSHER STREET | BALTIMORE, MD 21217 — PH: (410) 728-2900 FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP — 8th South Caroline Street, Baltimore, Maryland 21202

APPROVED ____

BETHESDA STATION – SOUTH ENTRANCE

CIVIL NOTES, ABBREVIATIONS AND LEGEND

SCALE AS NOTED

DRAWING NO. C-01

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

metro

NOV 0 8 2005

MONUMENT RECORD SHEET

A–LINE

MONUMENT NAME: A–129R

DESCRIPTION: 3 1/2" DIA. STD. METRO SURVEY CONTROL BRONZE DISK STAMPED AND SET IN CONCRETE ISLAND OF INTERSECTION AT MONTGOMERY AVE. AND WISCONSIN AVE.

CONTRACT: A–11

DATE SET:

VERTICAL CONTROL DATA	
ELEVATION IN FEET	DATUM
345.161	NAVD '88
345.877	NGVD '29

HORIZONTAL CONTROL MONUMENTS HELD:

VERTICAL CONTROL MONUMENTS HELD:

COMMENTS:

HORIZONTAL CONTROL DATA		
NAD '83 LATITUDE:	Y (NORTH):	418866.8148
NAD '83 LONGITUDE:	X (EAST):	773246.9523

DATUM: METRO PROJECT GRID ( )
COMBINED SCALE FACTOR (GROUND TO GRID):

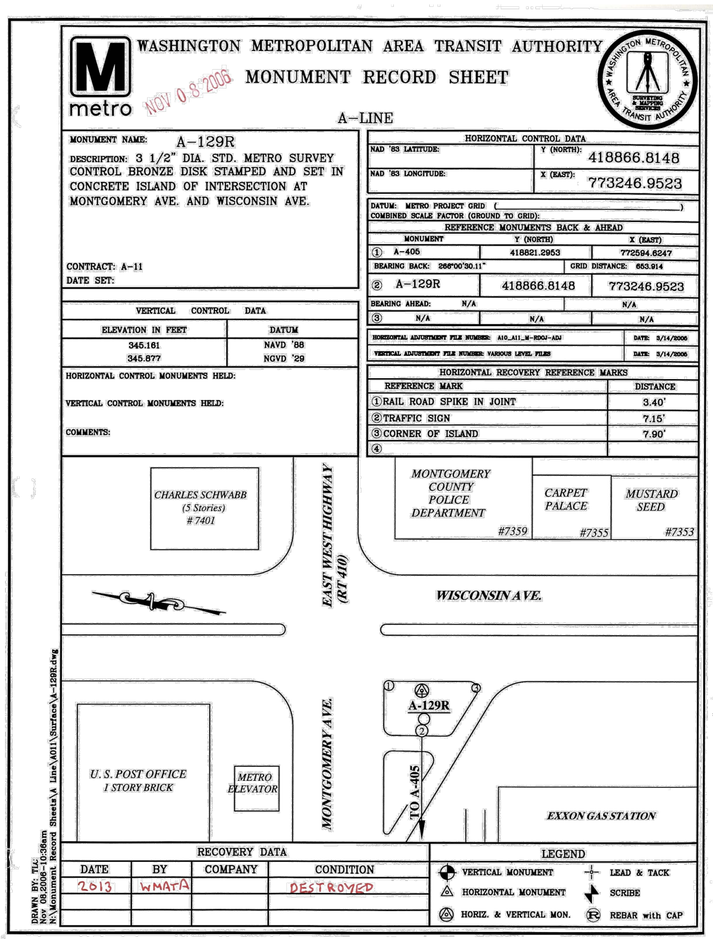
REFERENCE MONUMENTS BACK & AHEAD

MONUMENT	Y (NORTH)	X (EAST)
① A-406	418821.2953	772594.6247
BEARING BACK: 256°00'30.11"	GRID DISTANCE:	653.914
② A–129R	418866.8148	773246.9523
BEARING AHEAD: N/A		N/A
③ N/A	N/A	N/A

HORIZONTAL ADJUSTMENT FILE NUMBER: A10_A11_M-RDOJ-ADJ — DATE: 3/14/2006
VERTICAL ADJUSTMENT FILE NUMBER: VARIOUS LEVEL FILES — DATE: 3/14/2006

HORIZONTAL RECOVERY REFERENCE MARKS

REFERENCE MARK	DISTANCE
①RAIL ROAD SPIKE IN JOINT	3.40'
②TRAFFIC SIGN	7.15'
③CORNER OF ISLAND	7.90'
④	



RECOVERY DATA			
DATE	BY	COMPANY	CONDITION
2013	WMATA		DESTROYED

LEGEND

VERTICAL MONUMENT	LEAD & TACK
HORIZONTAL MONUMENT	SCRIBE
HORIZ. & VERTICAL MON.	REBAR with CAP

DRAWN BY: TLC
Nov 08,2005 - 10:05am
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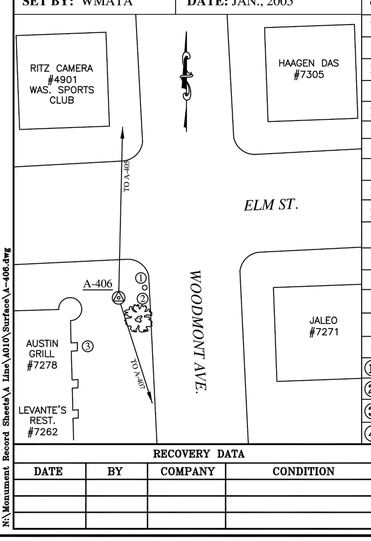
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
600 Fifth Street; Washington, D.C. 20001

metro

MONUMENT RECORD SHEET

COORDINATES ARE CONTRACT SPECIFIC

MONUMENT NAME:	A-406	**WMATA SURFACE CONTROL**
CONTRACT NUMBER:	A-10	HORIZONTAL ADJUSTMENT FILE: A10_A11_M-RDOJ-ADJ
DESCRIPTION: STANDARD 3½" METRO BRASS CONTROL DISK SET FLUSH WITH CONCRETE SIDEWALK AND STAMPED "A-406".		VERTICAL ADJUSTMENT FILE: Various Level Files
		LINK TO MRS IMAGE:
LOCATION: ON SOUTH WESTERLY CORNER OF THE INTERSECTION OF WOODMONT AVE. AND ELM ST. IN FRONT OF BUILDING #7278.		**COMMENTS:** S.R. # A11-METAB-8079
SET BY: WMATA	**DATE:** JAN., 2005	COMBINED SCALE:



WMATA NORTHING	WMATA EASTING
418304.1778	772618.1934
MD NAD 27 NORTHING	MD NAD 27 EASTING
MD NAD 83 NORTHING	MD NAD 83 EASTING
LATITUDE	LONGITUDE

ELEVATION NGVD 29 (FEET)	318.809	DIFF.
ELEVATION NAVD 88 (FEET)	318.092	DIFF.

REFERENCE MONUMENTS

STATION BACK: A-405	AZIMUTH: 357°23'25.56"
HORIZONTAL GROUND DISTANCE:	517.654
STATION AHEAD: A-407	AZIMUTH: 136°14'55.24"
HORIZONTAL GROUND DISTANCE:	415.387

REFERENCE MARK	DISTANCE
① SIGNAL POLE	11.85'
② TREE	8.15'
③ SOUTHERN CORNER OF COLM BUILDING	10.00'
④	

RECOVERY DATA			
DATE	BY	COMPANY	CONDITION

LEGEND

VERTICAL MONUMENT	LEAD & TACK
HORIZONTAL MONUMENT	SCRIBE
HORIZ. & VERTICAL MON.	REBAR with CAP

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Nov 08,2005 - 10:13am
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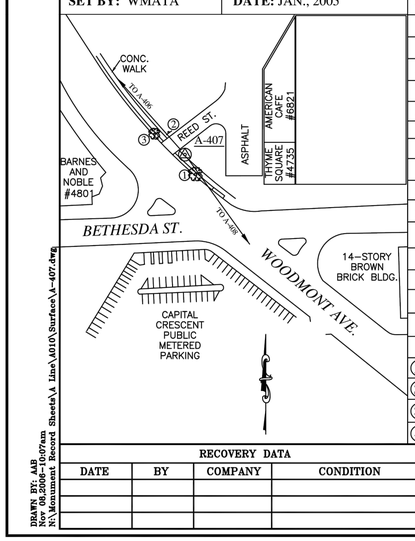
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
600 Fifth Street; Washington, D.C. 20001

metro

MONUMENT RECORD SHEET

COORDINATES ARE CONTRACT SPECIFIC

MONUMENT NAME:	A-407	**WMATA SURFACE CONTROL**
CONTRACT NUMBER:	A-10	HORIZONTAL ADJUSTMENT FILE: A10_A11_M-RDOJ-ADJ
DESCRIPTION: STANDARD 3½" METRO BRASS CONTROL DISK SET FLUSH WITH CONCRETE SIDEWALK AND STAMPED "A-407".		VERTICAL ADJUSTMENT FILE: Various Level Files
		LINK TO MRS IMAGE:
LOCATION: ON SOUTHERN CORNER OF THE INTERSECTION OF WOODMONT AVE. AND REED ST.		**COMMENTS:** S.R. # A11-METAB-8079
SET BY: WMATA	**DATE:** JAN., 2005	COMBINED SCALE:



WMATA NORTHING	WMATA EASTING
418004.1239	772905.4458
MD NAD 27 NORTHING	MD NAD 27 EASTING
MD NAD 83 NORTHING	MD NAD 83 EASTING
LATITUDE	LONGITUDE

ELEVATION NGVD 29 (FEET)	322.179	DIFF.
ELEVATION NAVD 88 (FEET)	321.463	DIFF.

REFERENCE MONUMENTS

STATION BACK: A-406	AZIMUTH: 316°14'55.24"
HORIZONTAL GROUND DISTANCE:	415.387
STATION AHEAD: A-408	AZIMUTH: 136°31'24.53"
HORIZONTAL GROUND DISTANCE:	550.571

REFERENCE MARK	DISTANCE
① 10" TREE	7.30'
② WOODMONT & REED STREET SIGN	32.25'
③ 5" TREE	37.75'
④	

RECOVERY DATA			
DATE	BY	COMPANY	CONDITION

LEGEND

VERTICAL MONUMENT	LEAD & TACK
HORIZONTAL MONUMENT	SCRIBE
HORIZ. & VERTICAL MON.	REBAR with CAP

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Nov 08,2005 - 10:07am
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CONTRACT NO. XXXXXX

DESIGNED	DATE
DRAWN A.U. OGBUE	DATE
CHECKED D.S. TUSING	DATE
APPROVED	DATE

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

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APPROVED

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Two South Carolina Street, Baltimore, Maryland 21231

BETHESDA STATION – SOUTH ENTRANCE

WMATA MONUMENT RECORD SHEET

SCALE AS NOTED

DRAWING NO. C–02

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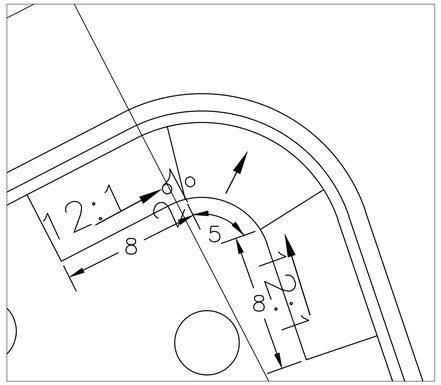
CIVIL NOTES

1. BASELINE AND STATIONING FOR THE INBOUND TRACK ARE BASED ON ORIGINAL A11b CONTRACT DRAWINGS.
2. PROPOSED SIDEWALK RAMP GRADES PER STD. MD–655.13.

EDGE OF PAVEMENT STAKEOUT CHART					
POINT	NORTHING	EASTING	STATION	OFFSET	ELEVATION
1	418440.3070	773186.5363	11+37.89 ELM ST. RT	27.53'	MEET EXISTING
2	418443.2778	773190.0143	11+42.35 ELM ST. RT	26.48'	340.56
3	418471.2537	773210.5468	11+73.43 ELM ST. RT	11.04'	342.26
4	418474.2227	773214.0214	11+77.88 ELM ST. RT	10.00'	342.45
5	418546.4289	773353.8926	13+35.29 ELM ST. RT	10.00'	348.59
6	418546.8160	773362.2230	20+80.16 WISC. AVE. RT	40.68'	348.91
7	418523.3475	773373.8524	20+98.54 WISC. AVE. RT	41.01'	MEET EXISTING



PROPOSED SW CURB AT ELM ST. & WISCONSIN AVE.
SCALE 1" = 20'

ELM STREET TYPICAL SECTION
SCALE 1" = 5'

CONTRACT NO. XXXXXX

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APPROVED ____

BETHESDA STATION – SOUTH ENTRANCE

ALIGNMENT SCHEMATIC & HORIZONTAL CONTROL GEOMETRY

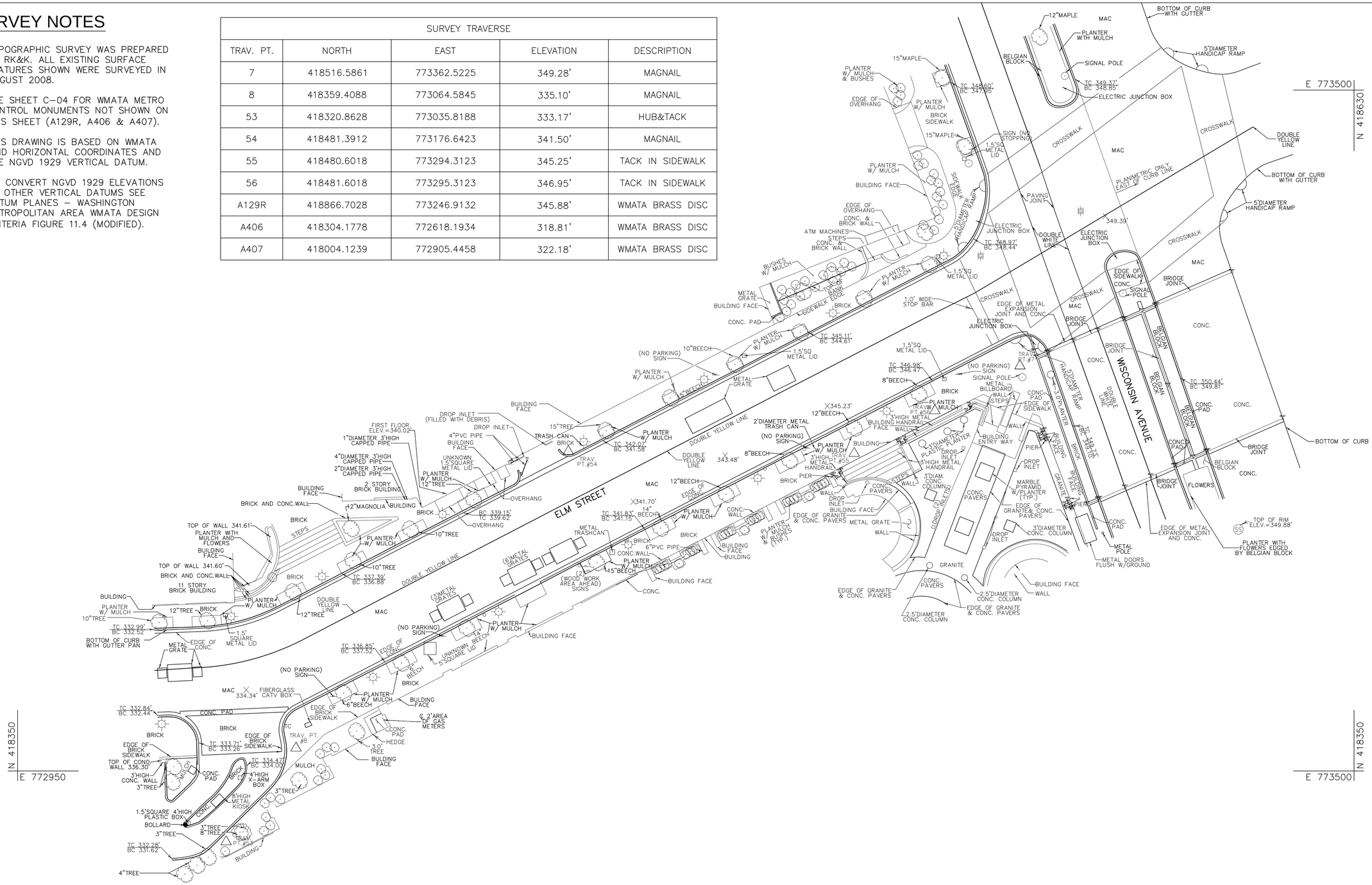
SCALE 1" = 20'

DRAWING NO. C–03

SURVEY NOTES

1. TOPOGRAPHIC SURVEY WAS PREPARED BY RK&K. ALL EXISTING SURFACE FEATURES SHOWN WERE SURVEYED IN AUGUST 2008.
2. SEE SHEET C–04 FOR WMATA METRO CONTROL MONUMENTS NOT SHOWN ON THIS SHEET (A129R, A406 & A407).
3. THIS DRAWING IS BASED ON WMATA GRID HORIZONTAL COORDINATES AND THE NGVD 1929 VERTICAL DATUM.
4. TO CONVERT NGVD 1929 ELEVATIONS TO OTHER VERTICAL DATUMS SEE DATUM PLANES – WASHINGTON METROPOLITAN AREA WMATA DESIGN CRITERIA FIGURE 11.4 (MODIFIED).

SURVEY TRAVERSE				
TRAV. PT.	NORTH	EAST	ELEVATION	DESCRIPTION
7	418516.5861	773362.5225	349.28'	MAGNAIL
8	418359.4088	773064.5845	335.10'	MAGNAIL
53	418320.8628	773035.8188	333.17'	HUB&TACK
54	418481.3912	773176.6423	341.50'	MAGNAIL
55	418480.6018	773294.3123	345.25'	TACK IN SIDEWALK
56	418481.6018	773295.3123	346.95'	TACK IN SIDEWALK
A129R	418866.7028	773246.9132	345.88'	WMATA BRASS DISC
A406	418304.1778	772618.1934	318.81'	WMATA BRASS DISC
A407	418004.1239	772905.4458	322.18'	WMATA BRASS DISC



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WHITMAN, REQUARDT & ASSOCIATES, LLP
Ben South Carolina Street, Baltimore, Maryland 21202

APPROVED _____

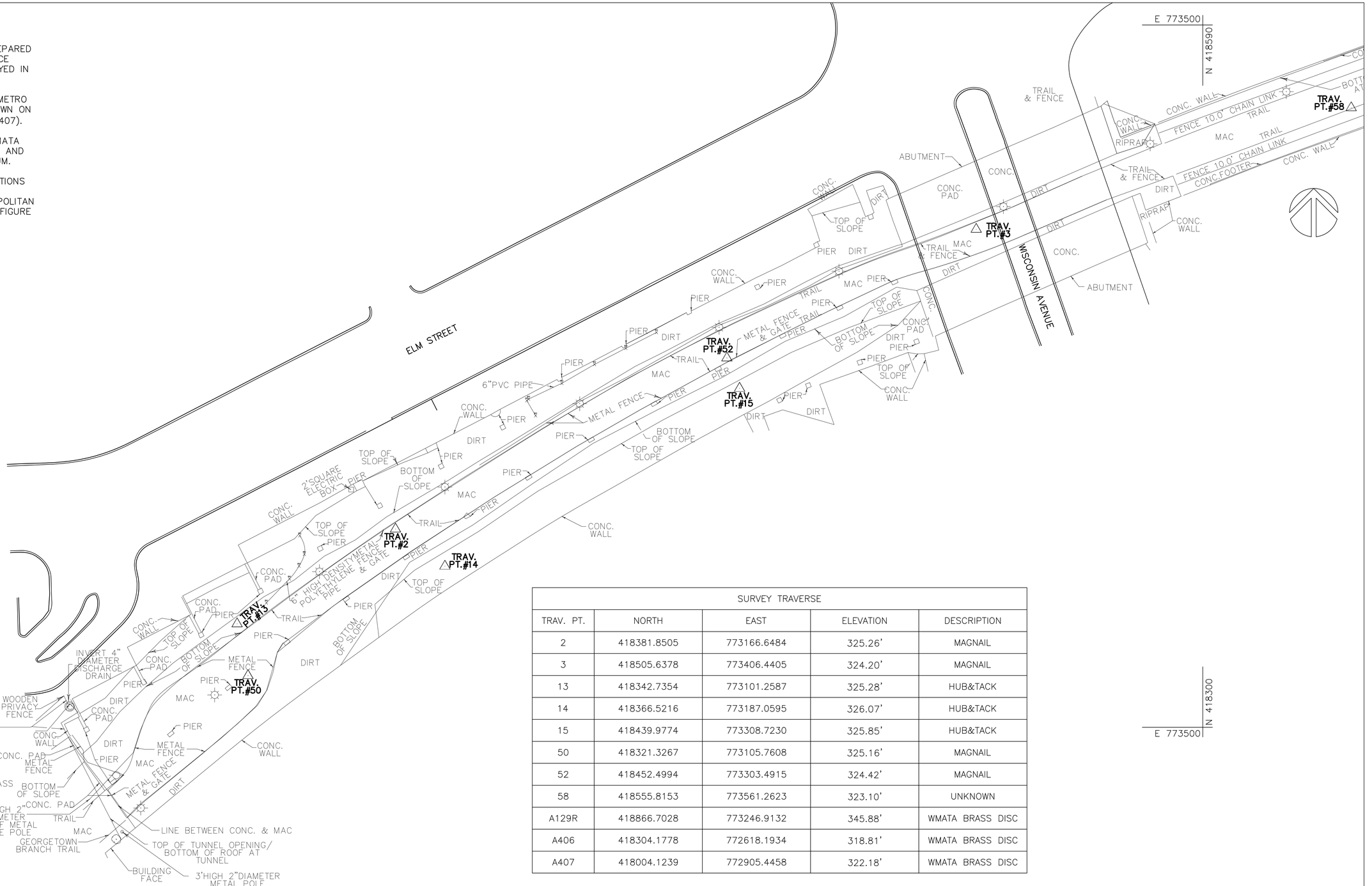
BETHESDA STATION – SOUTH ENTRANCE
EXISTING SITE PLAN
ELM STREET LEVEL

SCALE	DRAWING NO.
1"=20'	SP–01

RK&K2\SYS – C:\pwworking\mtapw\rkk–anikwenze ogbue\d0122592\SP–01.dwg Oct 16, 2013 – 1:55pm monochrome.CTB Plot Scale 1=1 Plot By: ogbue Tab:Sheet 1 – PDF Fullsize

SURVEY NOTES:

1. TOPOGRAPHIC SURVEY WAS PREPARED BY RK&K. ALL EXISTING SURFACE FEATURES SHOWN WERE SURVEYED IN AUGUST 2008.
2. SEE SHEET C–04 FOR WMATA METRO CONTROL MONUMENTS NOT SHOWN ON THIS SHEET (A129R, A406 & A407).
3. THIS DRAWING IS BASED ON WMATA GRID HORIZONTAL COORDINATES AND THE NGVD 1929 VERTICAL DATUM.
4. TO CONVERT NGVD 1929 ELEVATIONS TO OTHER DATUMS SEE DATUM PLANES – WASHINGTON METROPOLITAN AREA WMATA DESIGN CRITERIA FIGURE 11.4 (MODIFIED).



SURVEY TRAVERSE				
TRAV. PT.	NORTH	EAST	ELEVATION	DESCRIPTION
2	418381.8505	773166.6484	325.26'	MAGNAIL
3	418505.6378	773406.4405	324.20'	MAGNAIL
13	418342.7354	773101.2587	325.28'	HUB&TACK
14	418366.5216	773187.0595	326.07'	HUB&TACK
15	418439.9774	773308.7230	325.85'	HUB&TACK
50	418321.3267	773105.7608	325.16'	MAGNAIL
52	418452.4994	773303.4915	324.42'	MAGNAIL
58	418555.8153	773561.2623	323.10'	UNKNOWN
A129R	418866.7028	773246.9132	345.88'	WMATA BRASS DISC
A406	418304.1778	772618.1934	318.81'	WMATA BRASS DISC
A407	418004.1239	772905.4458	322.18'	WMATA BRASS DISC

CONTRACT NO. XXXXXX

DESIGNED _____ DATE
DRAWN A.U. OGBUE DATE
CHECKED D.S. TUSING DATE
APPROVED _____ DATE

REVISIONS		
DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE
EXISTING SITE PLAN
PURPLE LINE/TRAIL LEVEL

SCALE 1" = 20'

DRAWING NO. SP–02

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station		PROJECT NO.: 08519-04	BORING NO.: E - 4
SITE: Elm Street, Bethesda	BEGUN: 02/20/09	COMPLETED: 02/23/09	HOLE SIZE: 5dd
COORDINATES: N 470224.59 E 1285672.51	DEPTH WATER ENC.: N/A	AT END DRILL: N/A	AT 24 HRS:	CAVED DEPTH: N/A
DRILLER: Ed Hill	WEIGHT OF HAMMER: 140 lbs	HEIGHT OF FALL: 30 inches	TYPE OF CORE:	DEPTH OF BORING: 56
TYPE OF DRILL RIG & METHOD: D-50	DEPTH TO ROCK: 56.0	LOGGED BY: M. Patel		PAGE NO.: 1 OF 3

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
0	344.0								5" Asphalt 9" Concrete
	343.0		Moist, Stiff, Orange Brown, Moist, Silty CLAY, little Fine to Medium Sand, little Fine to Coarse Gravel (Fill)	S-1	18"	9-7-4	DS	8"	
2.5	341.0		Moist, Loose to Medium Dense, Orange Brown, Moist, fine to medium SAND and SILT, trace Clay (SM)	S-2	18"	3-3-4	DS	10"	
5				S-3	18"	3-4-5	DS	18"	First 4 samples with Augers. Casing was driven till 10' and mud sampling after that.
7.5				S-4	18"	5-5-6	DS	18"	
10	333.5		Moist, Stiff to Hard, Orange Brown, Moist, mix of SILT and fine to medium SAND, trace fine Gravel, trace Clay. (ML/SM) (Saprolite)	S-5	16"	7-22-50/4"	DS	16"	
12.5				S-6	18"	4-7-10	DS	10"	
15				S-7	18"	4-8-11	DS	8"	
17.5									

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station		PROJECT NO.: 08519-04	BORING NO.: E - 4
			PAGE NO.: 2 OF 3

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
20				S-8	18"	5-6-7	DS	10"	
22.5				S-9	18"	7-11-15	DS	12"	
25				S-10	18"	9-14-31	DS	15"	
27.5				S-11	18"	14-22-24	DS	14"	
30				S-12	18"	15-20-22	DS	16"	
32.5	311.0		Completely Weathered Rock: Moist, Very Dense, Dark Brown, Gray, Dry, fine to coarse SAND, some Silt (SM).	S-13	17"	31-50-50/5"	DS	15"	
35									
37.5									
40				S-14	18"	14-20-22	DS	14	

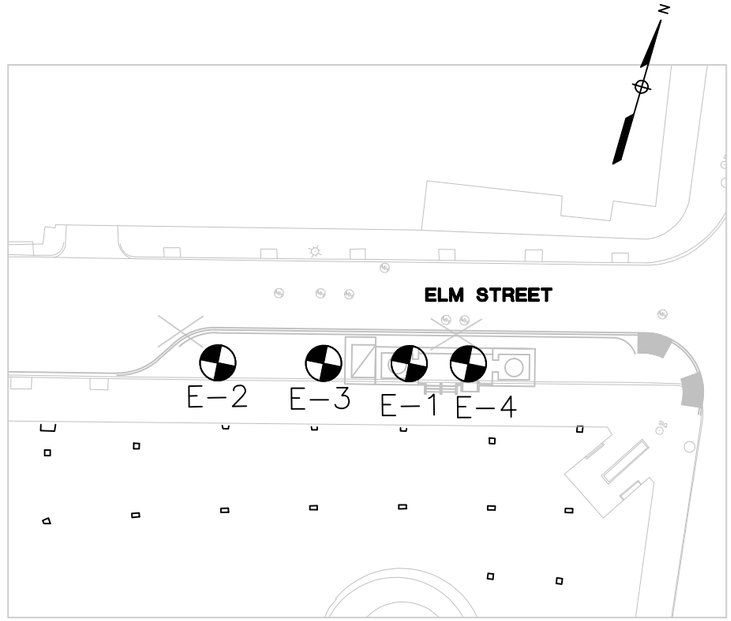
E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station		PROJECT NO.: 08519-04	BORING NO.: E - 4
			PAGE NO.: 3 OF 3

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
42.5	301.0		Completely Weathered Rock: Moist, Hard, Medium to Dark Brown, Moist, SILT, Rock Fragments (ML).	S-15	4"	50/4"	DS	4"	
45									
47.5				S-16	1"	50/1"	DS	1"	Spoon Refusal @ 48.5'
50									
52.5				S-17	1"	50/1"		0	Auger refusal @ 56.0' Set well @ 55'
55									
57.5			End of Boring @ 56.0'						
60									
62.5									

NOTES

1. BORING E-1 WAS DRILLED IN APRIL, 2008 AND BORINGS E-2 THROUGH E-4 WERE DRILLED IN FEBRUARY, 2009 BY E2CR, INC. OF BALTIMORE, MARYLAND.
2. N VALUE - BLOWS ON A 2 INCH SPLIT BARREL SAMPLING SPOON BY A 140-LB. DRIVE-WEIGHT FALLING 30-INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENERTATION IN LIEU OF BLOWS PER FOOT. PENERATION LESS THAN 6 INCHES ARE INDICATED BY BLOWS OVER THE NEAREST INCH.
3. RQD - ROCK QUALITY DESIGNATION IS DEFINED AS THE SUM OF THE LENGTH OF ROCK PIECES GREATER THAN 4 INHCES DIVIDED BY THE TOTAL CORE RUN LENGTH.
4. THE SOIL AND ROCK SAMPLES WERE VISUALLY CLASSIFIED IN THE FIELD AT THE TIME OF SAMPLING BY A FIELD TECHNICIAN. THE CLASSIFICATIONS WERE UPDATED BASED ON THE RESULTS OF LABORATORY TESTING AND REVIEW OF THE SAMPLES BY AN E2CR ENGINEER.



BORING LOCATION PLAN
SCALE: 1" = 40'-0"

RK2K2\SYS – \\bdanv03\v2008\2008\08040_mta1117a\Task 6 – Bethesda Metro Station\geotech\CADD\SO-4.dwg Oct 14, 2013 – 11:31am MTAPDF.CTB Plot Scale 1=1 Plot By: mbland Tab:Layout1

CONTRACT NO. XXXXXX

DESIGNED DATE	REVISIONS		DEPARTMENT OF OPERATIONS SERVICES OFFICE OF ENGINEERING SERVICE		BETHESDA STATION - SOUTH ENTRANCE	
DRAWN DATE	DATE	BY DESCRIPTION			BORING LOG - 4	
CHECKED DATE			SUBMITTED BY	APPROVED	SCALE: AS NOTED	DRAWING NO.: SO-4
APPROVED DATE						

MONTGOMERY COUNTY 1776 MARYLAND

MTA Maryland

RK&K Rummel, Klepper & Kahl, LLP 81 MOSHER STREET | BALTIMORE, MD 21217 PH: (410) 728-2900 FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP

E2CR, Inc. — BORING LOG

BORING NO. E - 3 | PROJECT NO. 08519-04 | PAGE NO. 1 OF 7

PROJECT: South Entrance to Bethesda Metro Station
SITE: Elm Street, Bethesda
COORDINATES: N 479202.0533 E 1485629.11
DRILLER: Gil Hill
TYPE OF DRILL RIG & METHOD: D-50
BEGUN: 02/09/09 | COMPLETED: 02/12/09 | HOLE SIZE: 5.5in | GROUND ELEVATION: 342
DEPTH WATER ENC.: N/A | AT END DRILL: N/A | AT 24 HRS: | CAVED DEPTH:
WEIGHT OF HAMMER: 140 lbs | HEIGHT OF FALL: 30 inches | TYPE OF CORE: | DEPTH OF BORING: 151
DEPTH TO ROCK: 56.0 | LOGGED BY: K. Habib | PAGE NO.

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	REMARKS
0	342.0								5" Asphalt 9" Concrete
	341.0		Moist, Stiff, Tan, Clayey SILT, little fine to coarse Sand (FILL)	S-1	18"	5-6-8	DS	8"	
2.5				S-2	18"	4-6-8	DS	11"	
5				S-3	18"	4-5-6	DS	6"	First 4 samples with Augers. Casing was driven till 10' and mud sampling after that.
7.5	334.0		Moist, Stiff, Tan, Clayey SILT, some sand (ML)	S-4	18"	5-5-8	DS	18"	
10				S-5	18"	6-8-8	DS	15"	
12.5	329.0		Moist, Very Stiff to Hard, Brown, Black, Tan, SILT and Sand, trace Clay (ML)	S-6	18"	6-9-14	DS	12"	
15				S-7	18"	5-8-14	DS	12"	
17.5				S-8	18"	6-9-11	DS	12"	
20				S-9	18"	7-12-21	DS	14"	
22.5				S-10	18"	6-10-10	DS	14"	
25	316.5		Moist, Hard, Brown, Black, Tan, Green, Sandy SILT (ML)	S-11	18"	11-17-17	DS	14"	
27.5	314.0		Completely Weathered Rock: Moist, Hard, Greenish Brown, SILT and fine to medium SAND, trace Clay, trace mica (ML)	S-12	18"	15-34-50/4"	DS	12"	Spoon refusal @ 53.5'
30									Auger refusal @ 55.0'
32.5				S-13	18"	26-50/5"	DS	11"	
35	305.5		Completely Weathered Rock: Moist, Hard, Greenish Gray, Clayey SILT, some Sand (ML).						All Dip Angles Measured from Horizontal.
37.5				S-14	18"	50/2"	DS	2"	
40									

E2CR, Inc. — BORING LOG

BORING NO. E - 3 | PROJECT NO. 08519-04 | PAGE NO. 2 OF 7

PROJECT: South Entrance to Bethesda Metro Station

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	REMARKS
42.5	300.5		Completely Weathered Rock: Moist, Hard, Greenish Brown, Sandy SILT (ML).	S-15	18"	50/3"	DS	3"	
45									
47.5	295.5		Completely Weathered Rock: Moist, Hard, Greenish Brown, Clayey SILT, some Sand (ML).	S-16	18"	50/1"	DS	1"	
50									
52.5				S-17	18"	50/0"	DS	0"	
55	286.0		Black and White, SCHIST: Fresh to Highly Weathered, Very Broken to Massive, Thin and Irregular Foliation 80 Degrees, Joints 45 Degrees.	R-1	60"	RQD=20" 33%	RC	46%	
57.5									
60	281.0		R-2: Micaceous at 65.4-ft, Joints 75 Degrees, 45-55 Degrees, 15-25 Degrees.						
62.5									

E2CR, Inc. — BORING LOG

BORING NO. E - 3 | PROJECT NO. 08519-04 | PAGE NO. 3 OF 7

PROJECT: South Entrance to Bethesda Metro Station

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	REMARKS
65				R-2	60"	RQD=48" 80%	RC	100%	
67.5	278.0		R-3: Moderately Weathered, Clay at 69.3-ft, Thin and Irregular Foliation 70 Degrees, Joints 45-50 Degrees, 5 Degrees.	R-3	60"	RQD=52" 86%	RC	100%	Laboratory UCC= 8,212-psi at 66.3-ft. Cerchar Abrasivity Index= 3.7 at 66.3-ft. Tensile Strength= 855-psi at 66.3-ft. Triaxial Compressive Strength= 8,233-psi at 66.3-ft
70									
72.5	271.0		R-4: Moderately Weathered, Soft and Highly Weathered from 72 to 73-ft and from 73.4 to 74.1-ft, Clay from 72.2 to 72.7-ft and from 73.3 to 74.0-ft, Thin Foliation 70 Degrees Joints 45 Degrees, 10 Degrees, 5 Degrees, 75 Degrees, 20 Degrees, 30 Degrees.	R-4	60"	RQD=26" 43%	RC	100%	
75									
77.5	266.0		R-5: Very Thin Foliation 70 Degrees, Joints 45-55 Degrees, 10-20 Degrees, 30 Degrees, 70 Degrees.	R-5	60"	RQD=42" 71%	RC	100%	
80									
82.5	261.0		R-6: Hard, with Soft Weathered Zones from 82 to 82.1-ft and from 82.7 to 82.8-ft, Joints 30-35 Degrees, 55-60 Degrees, 75 Degrees, 55 Degrees.	R-6	60"	RQD=48" 80%	RC	100%	
85									

E2CR, Inc. — BORING LOG

BORING NO. E - 3 | PROJECT NO. 08519-04 | PAGE NO. 4 OF 7

PROJECT: South Entrance to Bethesda Metro Station

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	REMARKS
	256.0		R-7: Moderately Weathered to Fresh, Hard, Thin Foliation 60-70 Degrees, Joints 85 Degrees, 45-55 Degrees, 5-10 Degrees, 20 Degrees.	R-7	60"	RQD=60" 83%	RC	100%	Tensile Strength= 1,579-psi at 88.5-ft Laboratory UCC= 9,883-psi at 88.5-ft Cerchar Abrasivity Index= 4.2 at 88.5-ft. Triaxial Compressive Strength= 10,505-psi at 88.5-ft
87.5									
90	251.0		R-8: Hard, Massive, with Occasional Light Banding, High Mica Content, Foliation 70-80 Degrees, Joints 70-80 Degrees.	R-8	60"	RQD=47" 78%	RC	100%	
92.5									
95	246.0		R-9: Hard, Massive to Very Broken, Irregular Foliation 80 Degrees, Joints 45-55 Degrees, 10-20 Degrees, 80 Degrees.	R-9	60"	RQD=42" 70%	RC	100%	
97.5									
100	241.0		R-10: hard, Very Broken to Slightly Broken, with Near Vertical and Irregular Foliation, Joints 45-60 Degrees, 75-85 Degrees, 15-20 Degrees.	R-10	60"	RQD=14" 23%	RC	100%	
102.5									
105	238.0		R-11: Hard, Broken to Massive, with Near Vertical Irregular Foliation, with Quartz from 107.6 to 108.3-ft, Joints 20-30 Degrees, 75-85 Degrees.						
107.5									

E2CR, Inc. — BORING LOG

BORING NO. E - 3 | PROJECT NO. 08519-04 | PAGE NO. 6 OF 7

PROJECT: South Entrance to Bethesda Metro Station

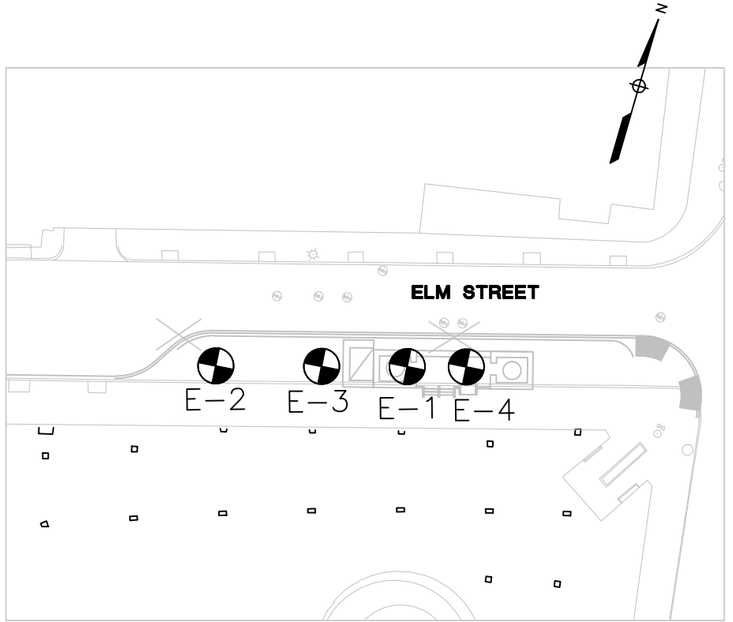
DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	REMARKS
110				R-11	60"	RQD=44" 73%	RC	100%	Laboratory UCC= 10,410-psi at 110-ft. Cerchar Abrasivity Index= 3.4 at 110-ft. Tensile Strength= 800-psi at 110-ft. Triaxial Compressive Strength= 10,931-psi at 110-ft.
112.5	231.0		R-12: Hard, Massive to Broken, Fine-Grained to Coarse-Grained, Joints 45-50 Degrees, 5 Degrees, 20 Degrees.	R-12	60"	RQD=37" 61%	RC	100%	
115	228.6		Gray and White, Quartz, Hard						
117.5	228.4		Black and White, GNEISS, Fresh, Hard, Slightly Broken, with Muscovite Banding, Joints 45-50 Degrees, 60 Degrees. R-13: Broken to Massive, with Irregular Foliation, Joints 50-60 Degrees, 5-10 Degrees, 20 Degrees, 70 Degrees, 85 Degrees, 45 Degrees.	R-13	60"	RQD=26" 41%	RC	100%	
120	226.0								
122.5	221.0		R-14: Broken to Massive, with Indistinct Foliation, Joints 65 Degrees, 40-50 Degrees, 65 Degrees, 20 Degrees.	R-14	60"	RQD=50" 83%	RC	100%	
125	216.0		R-15: Slightly Weathered, Massive, Coarse-Grained, Occasional Biotite Banding, Foliation 60 Degrees, Joints 45 Degrees.	R-15	60"	RQD=58" 96%	RC	100%	
127.5									
130									

E2CR, Inc. — BORING LOG

BORING NO. E - 3 | PROJECT NO. 08519-04 | PAGE NO. 7 OF 7

PROJECT: South Entrance to Bethesda Metro Station

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE / RQD (%)	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	REMARKS
	211.0		R-16: Massive, Coarse-Grained, with Irregular Foliation, with Quartz Intrusions at 133.2-ft, Joints 15-20 Degrees, 5 Degrees.	R-16	60"	RQD=52" 86%	RC	100%	
132.5									
135	206.0		R-17: Massive, Coarse-Grained, with Irregular Foliation, Joints 65 Degrees, 45 Degrees, 15-20 Degrees.	R-17	60"	RQD=46" 76%	RC	100%	
137.5									
140	201.0		R-18: Massive, Coarse-Grained, Foliation 60-70 Degrees, Joints 15-20 Degrees, 60 Degrees.	R-18	60"	RQD=55" 91%	RC	100%	
142.5									
145	196.0		R-19: Fresh, Broken to Massive, Coarse-Grained, Foliation 80 Degrees, Joints 15-20 Degrees, 5 Degrees, 60 Degrees.	R-19	60"	RQD=54" 90%	RC	100%	
147.5									
150									
152.5			End of Boring @ 151.0'						



BORING LOCATION PLAN
SCALE: 1" = 40'-0"

NOTES

1. BORING E-1 WAS DRILLED IN APRIL, 2008 AND BORINGS E-2 THROUGH E-4 WERE DRILLED IN FEBRUARY, 2009 BY E2CR, INC. OF BALTIMORE, MARYLAND.
2. N VALUE - BLOWS ON A 2 INCH SPLIT BARREL SAMPLING SPOON BY A 140-LB. DRIVE-WEIGHT FALLING 30-INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENERTATION IN LIEU OF BLOWS PER FOOT. PENERATION LESS THAN 6 INCHES ARE INDICATED BY BLOWS OVER THE NEAREST INCH.
3. RQD - ROCK QUALITY DESIGNATION IS DEFINED AS THE SUM OF THE LENGTH OF ROCK PIECES GREATER THAN 4 INHCES DIVIDED BY THE TOTAL CORE RUN LENGTH.
4. THE SOIL AND ROCK SAMPLES WERE VISUALLY CLASSIFIED IN THE FIELD AT THE TIME OF SAMPLING BY A FIELD TECHNICIAN. THE CLASSIFICATIONS WERE UPDATED BASED ON THE RESULTS OF LABORATORY TESTING AND REVIEW OF THE SAMPLES BY AN E2CR ENGINEER.

CONTRACT NO. XXXXXX

DESIGNED DATE
DRAWN DATE
CHECKED DATE
APPROVED DATE

REVISIONS
DATE BY DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 | FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP

APPROVED

BETHESDA STATION - SOUTH ENTRANCE
BORING LOG - 3

SCALE: AS NOTED
DRAWING NO. SO-3

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 1 OF 7

SITE: Elm Street, Bethesda | BEGUN: 02/12/09 | COMPLETED: 02/12/09 | HOLE SIZE: 8 inch | GROUND ELEVATION: 340.5

COORDINATES: N 470185.6667 E 1285597.6 | DEPTH WATER ENC.: N/A | AT END DRILL: N/A | AT 24 HRS: N/A | CAVED DEPTH: N/A

DRILLER: Ed Hill | WEIGHT OF HAMMER: 140 lbs | HEIGHT OF FALL: 30 inches | TYPE OF CORE: | DEPTH OF BORING: 151

TYPE OF DRILL RIG & METHOD: D-50 53" | DEPTH TO ROCK: | LOGGED BY: K. Habib | PAGE NO.: 1 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
0	340.5								5" Asphalt 9" Concrete
	339.5		Moist, Stiff, Light Brown, Tan, Clayey SILT, trace to little fine to medium Sand, presence of mica (FILL)	S-1	18"	3-4-4	DS	12"	
2.5				S-2	18"	5-7-7	DS	12"	
5	335.0		Moist, Medium Dense, Tan, White, Black, fine to coarse SAND, some Silt, trace fine Gravel, trace Clay (SM)	S-3	18"	4-6-6	DS	15"	First 4 samples with Augers. Casing was driven till 10' and mud rotary after that.
7.5				S-4	18"	8-7-8	DS	18"	
10	330.0		Moist, Tan, Stiff, SILT, trace Sand, presence of mica (ML)	S-5	18"	6-7-9	DS	4"	
12.5				S-6	18"	3-6-9	DS	12"	
15	325.0		Moist, Medium Dense to Dense, Brown, White, Black, fine to coarse SAND and SILT trace fine Gravel, trace Clay, presence of mica (SM)	S-7	18"	5-8-12	DS	12"	
17.5									

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 2 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
20				S-8	18"	8-10-16	DS	12"	
22.5	317.5		Completely Weathered Rock: Moist, Very Dense, Brown, White, Black, fine to coarse SAND and SILT trace fine Gravel, trace Clay, presence of mica (SM)	S-9	18"	7-15-34	DS	14"	
25				S-10	18"	18-41-50/5"	DS	15"	
27.5				S-11	18"	45-50/3"	DS	9"	
30				S-12	18"	50/3"	DS	3"	
32.5				S-13	18"	50/1"	DS	0"	
35									
37.5				S-14	18"	41-50/4"	DS	8"	At 40' after drilling, the hole filled up 3-4 feet. Redeamed the hole. Lost all water. Sampled
40									

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 3 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
	299.0								@ 40', Drilled to 45' No water recovery. Drilled to 50' cleaned hole 3 times then sampled. No water recovery. After sampling @ 60', dropped Auger. Refusal @ 53'
42.5			Completely Weathered Rock: Moist, Hard, Brown, Sandy SILT, trace fine to coarse Gravel (ML)	S-15	18"	50/1"	DS	1"	
45									
47.5				S-16	18"	50/1"	DS	1"	
50									
52.5	287.5		Black and White, GNEISS, Hard, Very Broken to Massive, with Quartz Intrusions at 53.2-ft and 54.7-ft. with a Biotite Rich Band from 58.6 to 59.0-ft. Foliation 45-60 Degrees, Joints 45-60 Degrees, 70-80,1 Degrees.	R-1	36"	RQD=20" 55%	RC	55%	All Dip Angles Measured from Horizontal From 53' to 115' approx 15' of water head was in the hole.
55	284.5		R-2: with Quartz Intrusions at 57-ft and 58.3-ft.	R-2	60"	RQD=52" 87%	RC	100%	
57.5									
60	279.5		R-3: Slightly Broken, Moderately Weathered, Slightly Stained. Foliation about 60-Degrees, Joints 15-20 Degrees, 45 Degrees, 5 Degrees, 60 Degrees, 70-75						(100% water loss @ 56.0')
62.5									

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 4 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
65			Degrees.	R-3	60"	RQD=42" 70%	RC	100%	
	274.5		R-4: Massive, Unstained, Joints 20-30 Degrees, 85 Degrees, 45-50 Degrees, 70 Degrees. Stained Joints from 69 to 69.5-ft.						
67.5				R-4	60"	RQD=52" 87%	RC	100%	Tensile Strength= 1309-psi at 68-ft. Laboratory UCC= 12,095-psi at 68-ft. Cerchar Abrasivity Index= 5.3 at 68-ft. Triaxial Compressive Strength= 9,897-psi at 68-ft
70									
	269.5		R-5: Moderately Weathered from 71 to 72-ft. Massive, with Thin Irregular Foliation, with Light Staining from 72 to 73-ft with Occasional Large Crystals, Foliation 60 Degrees, Joints 45 Degrees, 85 Degrees, 20-30 Degrees.						
72.5				R-5	60"	RQD=55" 92%	RC	100%	
75									
	264.5		R-6: Moderately to Slightly Weathered, Broken to Slightly Broken, with Biotite Banding from 76.3 to 76.2-ft., with Soil Fill at 78.1-ft and at 78.8-ft., with Quartz Intrusions at 79.2-ft and 80.8-ft. Foliation 40-50 Degrees, Joints 20-30 Degrees, 45-50 Degrees, 70 Degrees.						
77.5				R-6	60"	RQD=46" 78%	RC	100%	
80									
	259.5		R-7: Broken to Massive, with Granitic Texture, with Occasional Biotite Banding. Thin and Irregular Foliation 45 Degrees, Joints 45-50 Degrees, 60-70 Degrees, 20-30 Degrees, 80 Degrees.						
82.5				R-7	60"	RQD=54" 90%	RC	100%	
85									

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 5 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
	254.5		R-8: Moderately Weathered Massive to Slightly Broken, with Granitic Texture, Thin and Irregular Foliation 60-70 Degrees, Joints 85 Degrees, 70 Degrees, 45 Degrees, 60 Degrees.	R-8	60"	RQD=42" 70%	RC	100%	Cerchar Abrasivity Index= 4.4 at 86.7-ft Tensile Strength= 1,278-psi at 86.7-ft. Laboratory UCC= 10,501-psi at 86.7-ft Triaxial Compressive Strength= 8,301-psi at 86.7-ft
87.5									
90	249.5		R-9: Moderately Weathered, Broken to Slightly Broken, with Granitic Texture, Thin and Irregular Foliation 60 Degrees, Joints 30 Degrees, 60 Degrees, 45 Degrees, 20 Degrees, 80 Degrees.	R-9	60"	RQD=48" 80%	RC	100%	
92.5									
95	244.5		R-10: Fresh, Massive, with Occasional Biotite Banding from 100.5 to 101-ft, Foliation Indistinct, Joints 45 Degrees.	R-10	60"	RQD=60" 100%	RC	100%	
97.5									
100	239.5		R-11: Massive, with Contorted Biotite Banding at 101-ft, with Granitic Texture, with Occasional Large Crystals, with a Quartz Inclusion at 103.3-ft, with Occasional Muscovite Banding. Foliation 60 Degrees, Joints 20-30 Degrees, 70 Degrees, 45 Degrees.	R-11	60"	RQD=57" 85%	RC	100%	
102.5									
105	234.5		R-12: Fresh, Massive, with Large Crystals, Foliation 70 Degrees from 109 to 110.5-ft. Indistinct Elsewhere, Joints 20 Degrees, 45 Degrees.						Laboratory UCC= 10,706-psi at 106-ft Tensile Strength= 1545-psi at 106-ft. Cerchar
107.5									

E2CR, Inc. — BORING LOG

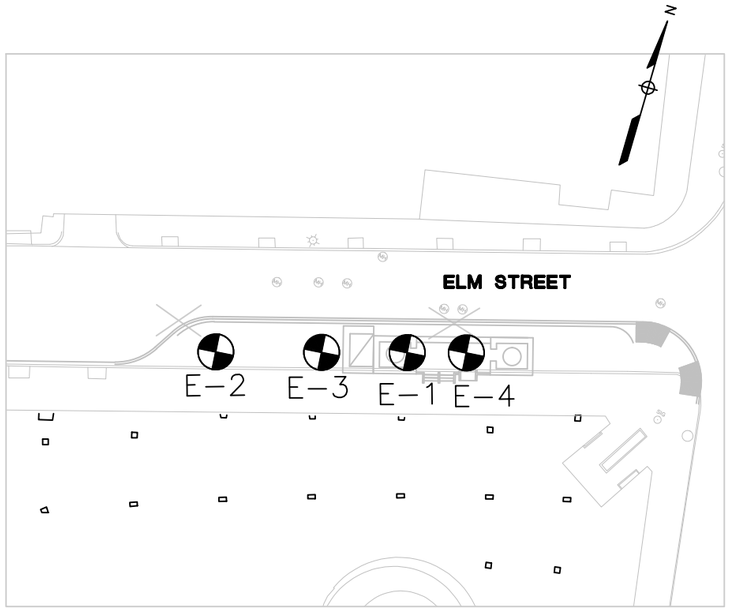
PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 6 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
110				R-12	60"	RQD=60" 100%	RC	100%	Abrasivity Index= 5.1 at 106-ft. Cerchar Abrasivity Index= 5.1 at 106-ft.
	229.5		R-13: Fresh to Moderately Weathered, Massive, with Biotite Banding from 112 to 112.9-ft, Foliation 60 Degrees, Joints 45 Degrees, 60 Degrees.						
112.5				R-13	60"	RQD=57" 95%	RC	100%	
115									
	224.5		R-14: Moderately Weathered to Fresh, Massive, Fine Grained, Foliation 60-65 Degrees at 119.3-ft. Irregular Elsewhere, Joints 45 Degrees.						Water level at 115' while coring from 116' to 150'.
117.5				R-14	60"	RQD=56" 94%	RC	100%	
120									
	219.5		R-15: Fresh, Massive, with Occasional Biotite Bands, with Indistinct Foliation, Joints 30 Degrees, 45 Degrees.						
122.5				R-15	60"	RQD=60" 100%	RC	100%	
125									
	214.5		R-16: Massive, with Granitic Texture, with Biotite Banding from 130.5 to 131-ft, with Indistinct Foliation.						
127.5				R-16	60"	RQD=54" 90%	RC	100%	
130									

E2CR, Inc. — BORING LOG

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 08519-04 | BORING NO.: E - 2 | PAGE NO.: 7 OF 7

DEPTH	STRATA ELEV / DEPTH	GRADELOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
	209.5		R-17: Massive, Fine-Grained to Coarse-Grained, with Granitic Texture from 131 to 131.3-ft, Mica-Rich from 131.3 to 132.6-ft, No Foliation, Joints 70-80 Degrees.	R-17	60"	RQD=64" 90%	RC	100%	
132.5									
135	204.5		R-18: Fresh, Massive, Coarse-Grained, Joints 90 Degrees.	R-18	60"	RQD=60" 100%	RC	100%	
137.5									
140	199.5		R-19: Slightly Weathered, Massive, Coarse-Grained, with Indistinct Foliation, Joints 45 Degrees, 20 Degrees, 5 Degrees, 15 Degrees.	R-19	60"	RQD=50" 84%	RC	100%	
142.5									
145	194.5		R-20: Fresh, Massive, Coarse Grained, with Biotite Banding from 149 to 149.9-ft. with Indistinct Foliation, Joints 20 Degrees, 45 Degrees.	R-20	60"	RQD=60" 100%	RC	100%	
147.5									
150			End of Boring @ 151.0'						
152.5									



BORING LOCATION PLAN
SCALE: 1" = 40'-0"

NOTES

1. BORING E-1 WAS DRILLED IN APRIL, 2008 AND BORINGS E-2 THROUGH E-4 WERE DRILLED IN FEBRUARY, 2009 BY E2CR, INC. OF BALTIMORE, MARYLAND.
2. N VALUE - BLOWS ON A 2 INCH SPLIT BARREL SAMPLING SPOON BY A 140-LB. DRIVE-WEIGHT FALLING 30-INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENERTATION IN LIEU OF BLOWS PER FOOT. PENERATION LESS THAN 6 INCHES ARE INDICATED BY BLOWS OVER THE NEAREST INCH.
3. RQD - ROCK QUALITY DESIGNATION IS DEFINED AS THE SUM OF THE LENGTH OF ROCK PIECES GREATER THAN 4 INHCES DIVIDED BY THE TOTAL CORE RUN LENGTH.
4. THE SOIL AND ROCK SAMPLES WERE VISUALLY CLASSIFIED IN THE FIELD AT THE TIME OF SAMPLING BY A FIELD TECHNICIAN. THE CLASSIFICATIONS WERE UPDATED BASED ON THE RESULTS OF LABORATORY TESTING AND REVIEW OF THE SAMPLES BY AN E2CR ENGINEER.

CONTRACT NO. XXXXXX

DESIGNED DATE
DRAWN DATE
CHECKED DATE
APPROVED DATE

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

APPROVED

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
200 South Charles Street, Baltimore, Maryland 21201

BETHESDA STATION - SOUTH ENTRANCE
BORING LOG - 2

SCALE: AS NOTED

DRAWING NO. SO-2

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 1 OF 7

PROJECT: South Entrance to Bethesda Metro Station	PROJECT NO.: 0851J-04		BORING NO.: E - 1
SITE: Elm Street, Bethesda	BEGUN: 4/23/08	COMPLETED: 4/24/08	HOLE SIZE: 5.87
COORDINATES:	DEPTH WATER ENC.: N/A	AT END DRILL: N/A	AT 24 HRS:	GROUND ELEVATION: CAVED DEPTH: N/A
DRILLER: Johnny Sois	WEIGHT OF HAMMER: 140 lbs	HEIGHT OF FALL: 30 inches	TYPE OF CORE:	DEPTH OF BORING: 149.7
TYPE OF DRILL RIG & METHOD: D-50	DEPTH TO ROCK: 56.5	LOGGED BY: BRS		PAGE NO.: 1 OF 7

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
0	347.0 / 0		5" Asphalt						5" Asphalt
	346.0 / 1		Dry, Very Stiff, Brown, Silty CLAY, Trace Sand (CL-ML) FILL						
2.5				S-1	18"	6-8-10	DS	13"	
			S-2: Stiff (FILL)	S-2	18"	4-6-8	DS	14"	
5									
			S-3: Moist, Stiff, Brown, Tan, Little Sand (FILL)	S-3	18"	4-7-7	DS	13"	First 4 samples with Augers. Casing was driven till 10' and mud sampling after that.
7.5									
			S-4: Moist, Very Stiff, Black, Brown, Little Sand (FILL)	S-4	18"	5-8-10	DS	16"	
10									
12.5	333.5 / 13.5								
			Moist, Very Stiff, Black, Green, Tan, SILT, Trace Mica, Trace Sand (ML)	S-5	18"	4-6-10	DS	18"	
15									
17.5									

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 2 OF 7

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 0851J-04

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
20			S-6: Moist, Hard (ML)	S-6	18"	11-16-24	DS	18"	
22.5									
			S-7: Moist, Hard (ML)	S-7	18"	6-18-21	DS	18"	
25									
27.5	318.5 / 28.5								
			Completely Weathered Rock Sampled As: Moist, Hard, Black Green, Tan, SILT, Trace Mica, Trace Rock Fragments (ML)	S-8	18"	12-19-32	DS	18"	
30									
32.5									
				S-9	18"	29-20-37	DS	13"	
35									
37.5	308.5 / 38.5								
			Dry, Hard, Green, Brown, Sandy SILT, Trace Mica, Trace Rock Fragments (ML)	S-10	3"	50/3"	DS	3"	
40									

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 3 OF 7

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 0851J-04

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
42.5									
				S-11	2"	50/2"	DS	2"	
45									
47.5									
				S-12	2"	50/2"	DS	2"	
50									
52.5									
				S-13	2.5"	50/2.5"	DS	2.5"	
55			S-14: Wet, Hard (ML)						
	290.5 / 56.5		Black, Brown, Green, and Gray, Hornblende GNEISS, Highly Weathered, Soft to Hard, Massive	S-14	2"	50/2"	DS		Water on Rods at 56-ft Auger Refusal at 56.5-ft
57.5				R-1	42"	RQD=36.4%	RC	42%	Coring time 10 min.
60									
62.5									Coring time 10 min.
				R-2	60"	RQD=10%	RC	28%	

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 4 OF 7

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 0851J-04

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
65	281.8 / 65		Black and Gray, Hornblende GNEISS, Slightly Weathered, Hard, Slightly Broken						Coring time 12 min.
67.5				R-3	60"	RQD=79.3%	RC	100%	
70									Field PLT converted to UCC=12982-psi Laboratory UCC = 1203-psi at 68.5 ft
72.5				R-4	60"	RQD=56.7%	RC	100%	
75									
77.5				R-5	60"	RQD=71.7%	RC	100%	
80			R-6: Massive						Field PLT converted to UCC=22498-psi
82.5				R-6	60"	RQD=88.7%	RC	100%	
85			R-7: Slightly Broken to Massive						

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 5 OF 7

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 0851J-04

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
87.5			R-8: Massive	R-7	60"	RQD=83.3%	RC	100%	
90									
92.5				R-8	60"	RQD=90%	RC	100%	
95			R-9: Slightly Broken to Massive						Field PLT converted to UCC=2154-psi
97.5	249.1 / 97.5								
	248.0 / 99		White, Gray, and Black, GNEISS, Slightly Weathered, Hard, Massive	R-9	60"	RQD=83.3%	RC	100%	
100	248.4 / 98.6		White, Gray, and Red, PEGMATITE, Very Hard, Fresh, Massive						
			Gray and Black, Diortic GNEISS, Slightly Weathered, Hard, Massive						
102.5				R-10	60"	RQD=90%	RC	100%	
105									
107.5				R-11	60"	RQD=88.3%	RC	100%	

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 6 OF 7

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 0851J-04

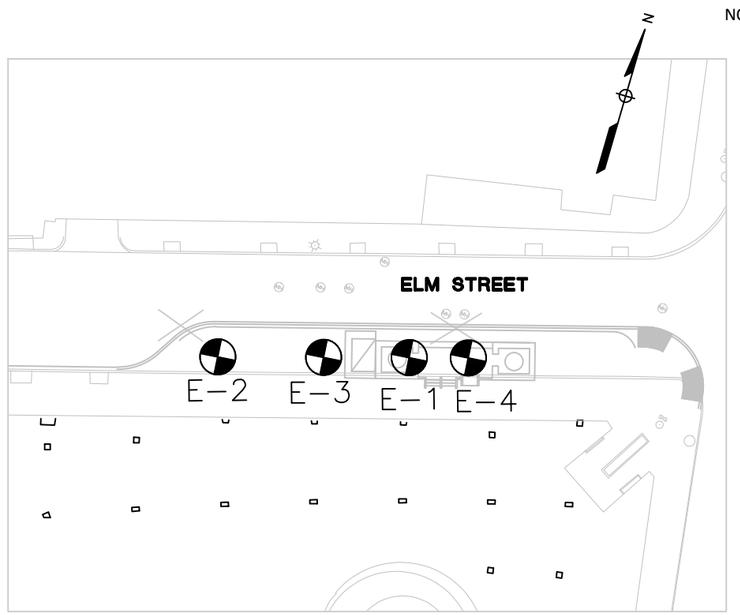
DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
110									Field PLT UCC 54197-psi Laboratory UCC= 11780-psi at 109-ft Laboratory UCC- 11330-psi at 109.1-ft
112.5			R-13: Massive to Broken	R-12	60"	RQD=75%	RC	100%	
115									
117.5				R-13	60"	RQD=75%	RC	100%	Field PLT UCC 27845-psi Laboratory UCC= 13390-psi at 119-ft.
120									
122.5				R-14	60"	RQD=83.3%	RC	100%	
125									
127.5				R-15	54"	RQD=98.7%	RC	100%	
130									Field PLT UCC 31510-psi Laboratory UCC= 7560-psi at 129-ft

E2CR, Inc. — BORING LOG

BORING NO. E - 1 | PAGE NO. 7 OF 7

PROJECT: South Entrance to Bethesda Metro Station | PROJECT NO.: 0851J-04

DEPTH	STRATA ELEV / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH	N VALUE or RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS
132.5				R-16	60"	RQD=88.7%	RC	100%	
135			R-17: Fresh						Field PLT UCC 22177-psi
137.5				R-17	60"	RQD=78.3%	RC	100%	
140	206.3 / 140.2								
			Black and Gray, GNEISS, Hard, Broken to Massive , Fresh	R-18	60"	RQD=65%	RC	100%	
142.5									
145			R-19: Massive						Laboratory UC = 2750-psi at 145ft Field PLT converted to UC=24754-psi
147.5				R-19	60"	RQD=90%	RC	100%	
150	197.3 / 149.7		Bottom of boring at 149.7feet						
152.5									



BORING LOCATION PLAN
SCALE: 1" = 40'-0"

NOTES

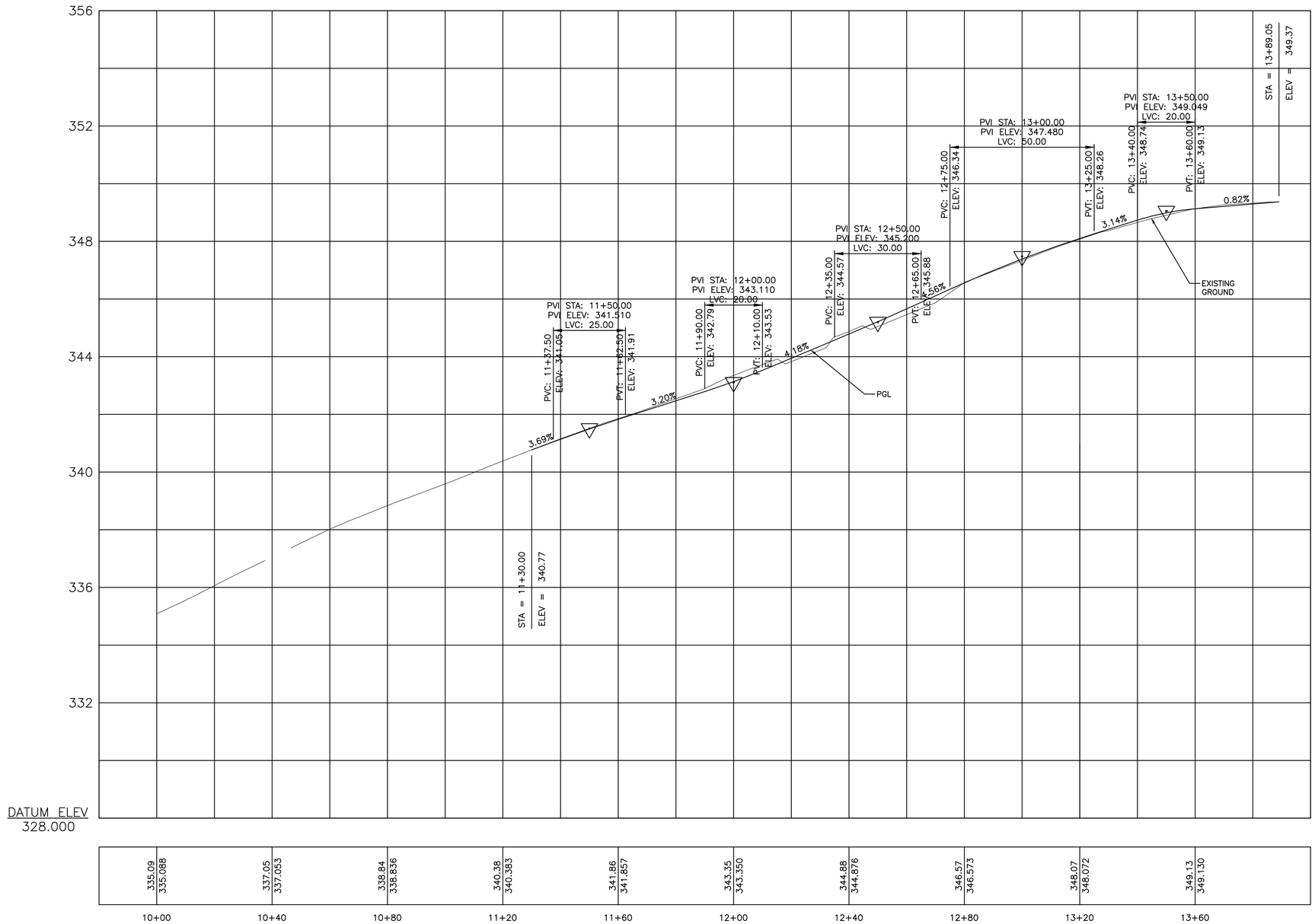
1. BORING E-1 WAS DRILLED IN APRIL, 2008 AND BORINGS E-2 THROUGH E-4 WERE DRILLED IN FEBRUARY, 2009 BY E2CR, INC. OF BALTIMORE, MARYLAND.
2. N VALUE - BLOWS ON A 2 INCH SPLIT BARREL SAMPLING SPOON BY A 140-LB. DRIVE-WEIGHT FALLING 30-INCHES INDICATING SUCCESSIVE 6 INCH INCREMENTS OF PENERTATION IN LIEU OF BLOWS PER FOOT. PENERATION LESS THAN 6 INCHES ARE INDICATED BY BLOWS OVER THE NEAREST INCH.
3. RQD - ROCK QUALITY DESIGNATION IS DEFINED AS THE SUM OF THE LENGTH OF ROCK PIECES GREATER THAN 4 INHCES DIVIDED BY THE TOTAL CORE RUN LENGTH.
4. THE SOIL AND ROCK SAMPLES WERE VISUALLY CLASSIFIED IN THE FIELD AT THE TIME OF SAMPLING BY A FIELD TECHNICIAN. THE CLASSIFICATIONS WERE UPDATED BASED ON THE RESULTS OF LABORATORY TESTING AND REVIEW OF THE SAMPLES BY AN E2CR ENGINEER.

CONTRACT NO. XXXXXX

DESIGNED DATE	REVISIONS	MONTGOMERY COUNTY MARYLAND	DEPARTMENT OF OPERATIONS SERVICES OFFICE OF ENGINEERING SERVICE
DRAWN DATE	DATE BY DESCRIPTION	MTA Maryland	SUBMITTED BY
CHECKED DATE			RK&K Rummel, Klepper & Kahl, LLP 81 MOSHER STREET | BALTIMORE, MD 21217 PH: (410) 728-2900 | FAX: (410) 728-3160
APPROVED DATE			APPROVED WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP

BETHESDA STATION - SOUTH ENTRANCE
BORING LOG - 1

SCALE: AS NOTED | DRAWING NO.: SO-1



CONTRACT NO.
XXXXXX

REVISIONS		
DATE	BY	DESCRIPTION

DESIGNED _____ DATE
DRAWN A.U. OGBUE DATE
CHECKED D.S. TUSING DATE
APPROVED _____ DATE

MONTGOMERY COUNTY 17 76 MARYLAND

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

APPROVED _____

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
851 South Caroline Street, Baltimore, Maryland 21231

BETHESDA STATION – SOUTH ENTRANCE

VERTICAL PROFILE – ELM STREET

SCALE V: 1" = 2'
H: 1" = 20'

DRAWING NO.
PP–01

RKK22\SYS – C:\pwworking\vmtapw\rkk--anikwenze ogbue\d0122592\PP-01.dwg Oct 16, 2013 - 1:46pm monochrome.CTB Plot Scale 1=1 Plot By: aogbue Tab:Sheet 1 – PDF Fullsize (2)

LEGEND

E	PEPCO UG
T	VERIZON UG
G	WASHINGTON GAS UG
W	WSSC UG

Survey Worksheet

Wisconsin Ave. and Elm St.
Bethesda, MD

Drawing Scale 1" = 1'
Print Scale 1" = 20'
Plot Created on: August 13, 2008
M:\projects\06036_bct\Survey\mTO-C000-MTABeth-ElmSt.dgn

WORKSPACE USED: MDSHA_V8_01
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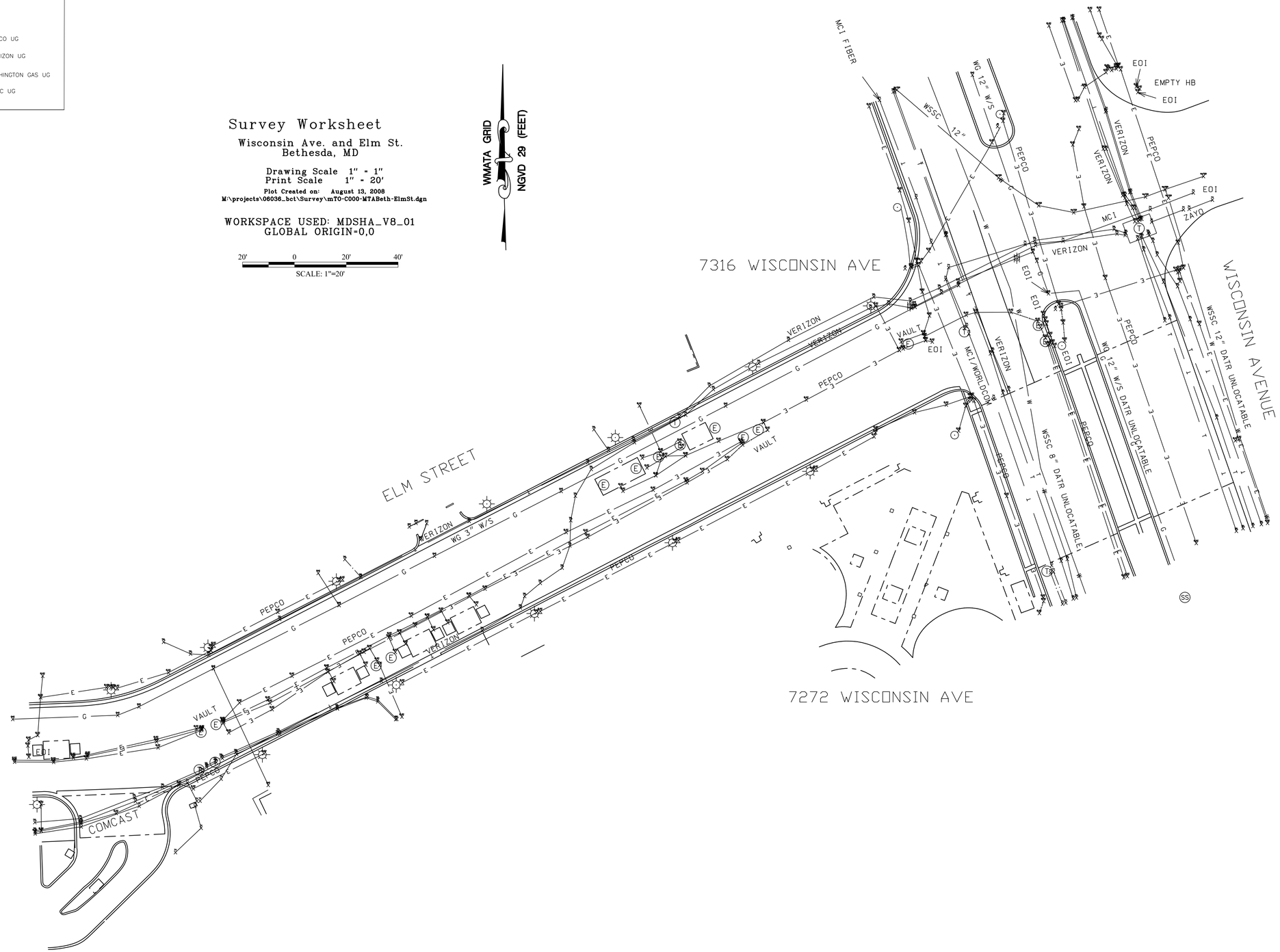
WMATA GRID
NGVD 29 (FEET)

20' 0 20' 40'
SCALE: 1"=20'



CONTRACT NO.
XXXXXX

DESIGNED	M. ATKINSTALL	DATE	
DRAWN	K. VILKER	DATE	
CHECKED		DATE	
APPROVED		DATE	

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-2160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE
EXISTING UTILITY COMPOSITE - 1

SCALE
AS NOTED 1"=20'-0"

DRAWING NO.
U-01

LEGEND

E	PEPCO UG
T	VERIZON UG
G	WASHINGTON GAS UG
W	WSSC UG

Survey Worksheet

Wisconsin Ave. and Elm St.
Bethesda, MD

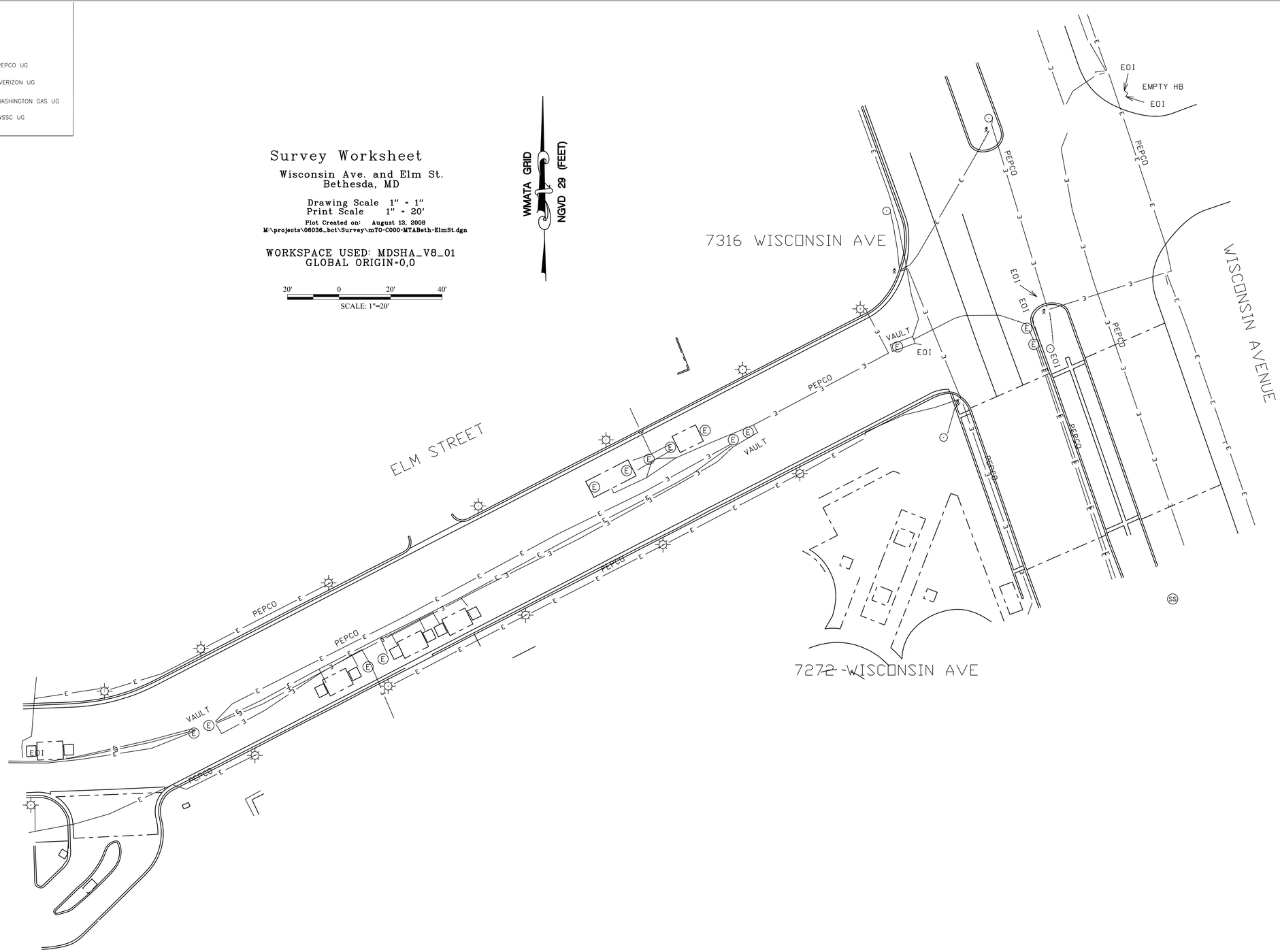
Drawing Scale 1" - 1'
Print Scale 1" - 20'

Plot Created on: August 13, 2008
M:\projects\060036_bct\Survey\mT0-C000-MTABeth-ElmSt.dgn

WORKSPACE USED: MDSHA_V8_01
GLOBAL ORIGIN=0,0

20' 0 20' 40'
SCALE: 1"=20'

WMATA GRID
NGVD 29 (FEET)



CONTRACT NO.
XXXXXX

DESIGNED	M. ATKINSTALL	DATE
DRAWN	K. VILKER	DATE
CHECKED		DATE
APPROVED		DATE

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K
Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE
EXISTING UTILITY COMPOSITE - 2
PEPCO

SCALE
AS NOTED 1"=20'-0"

DRAWING NO.
U-02

LEGEND

E	PEPCO UG
T	VERIZON UG
G	WASHINGTON GAS UG
W	WSSC UG

Survey Worksheet

Wisconsin Ave. and Elm St.
Bethesda, MD

Drawing Scale 1" - 1"
Print Scale 1" - 20'

Plot Created on: August 13, 2008
M:\projects\06036_bct\Survey\mTO-C000-MTABeth-ElmSt.dgn

WORKSPACE USED: MDSHA_V8_01
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WMATA GRID
NGVD 29 (FEET)

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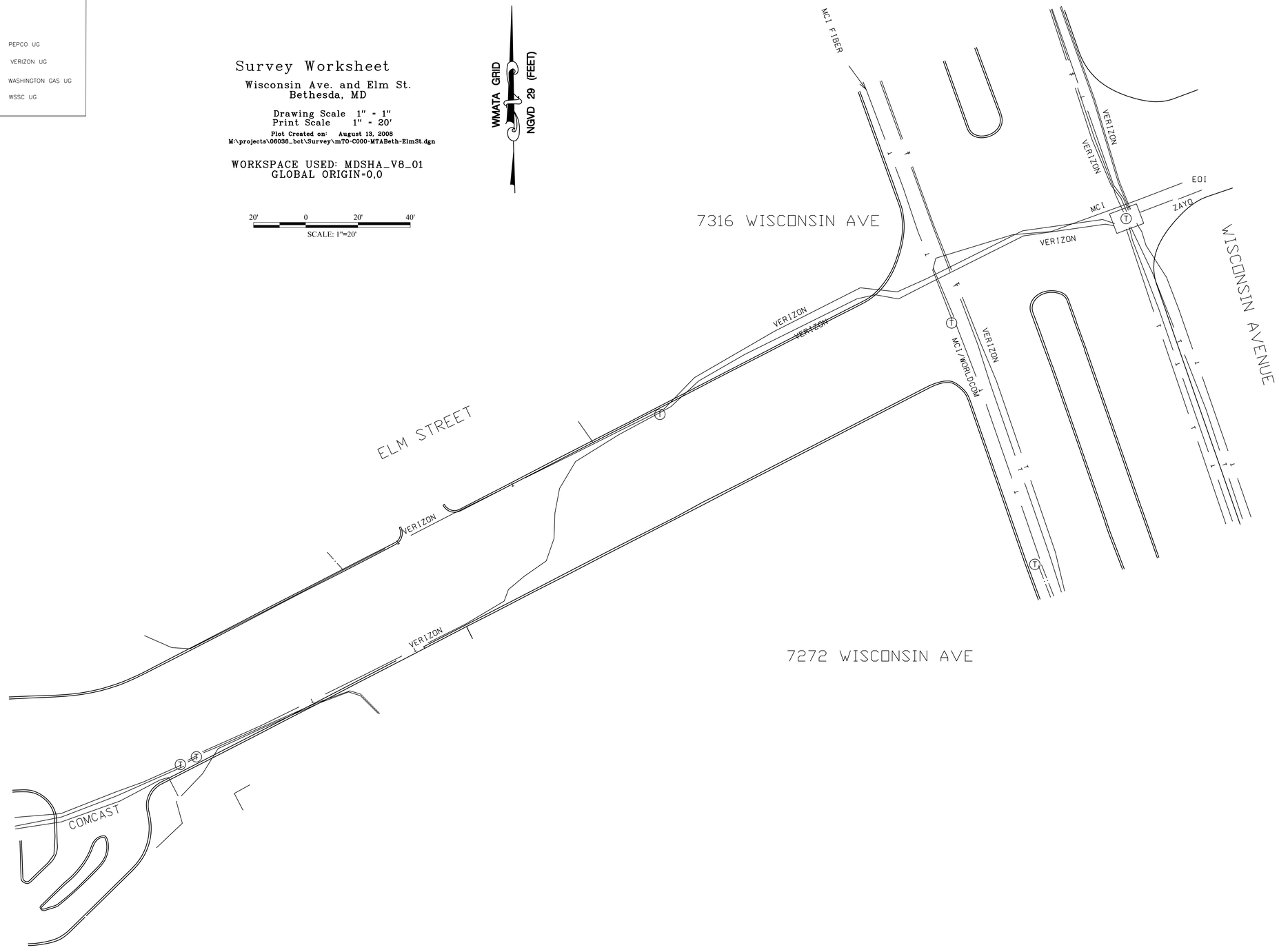

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REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

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APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE
EXISTING UTILITY COMPOSITE - 3
VERIZON

SCALE	DRAWING NO.
AS NOTED 1"=20'-0"	U-03

LEGEND

E	PEPCO UG
T	VERIZON UG
G	WASHINGTON GAS UG
W	WSSC UG

Survey Worksheet

Wisconsin Ave. and Elm St.
Bethesda, MD

Drawing Scale 1" - 1'
Print Scale 1" - 20'

Plot Created on: August 13, 2008
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SCALE: 1"=20'

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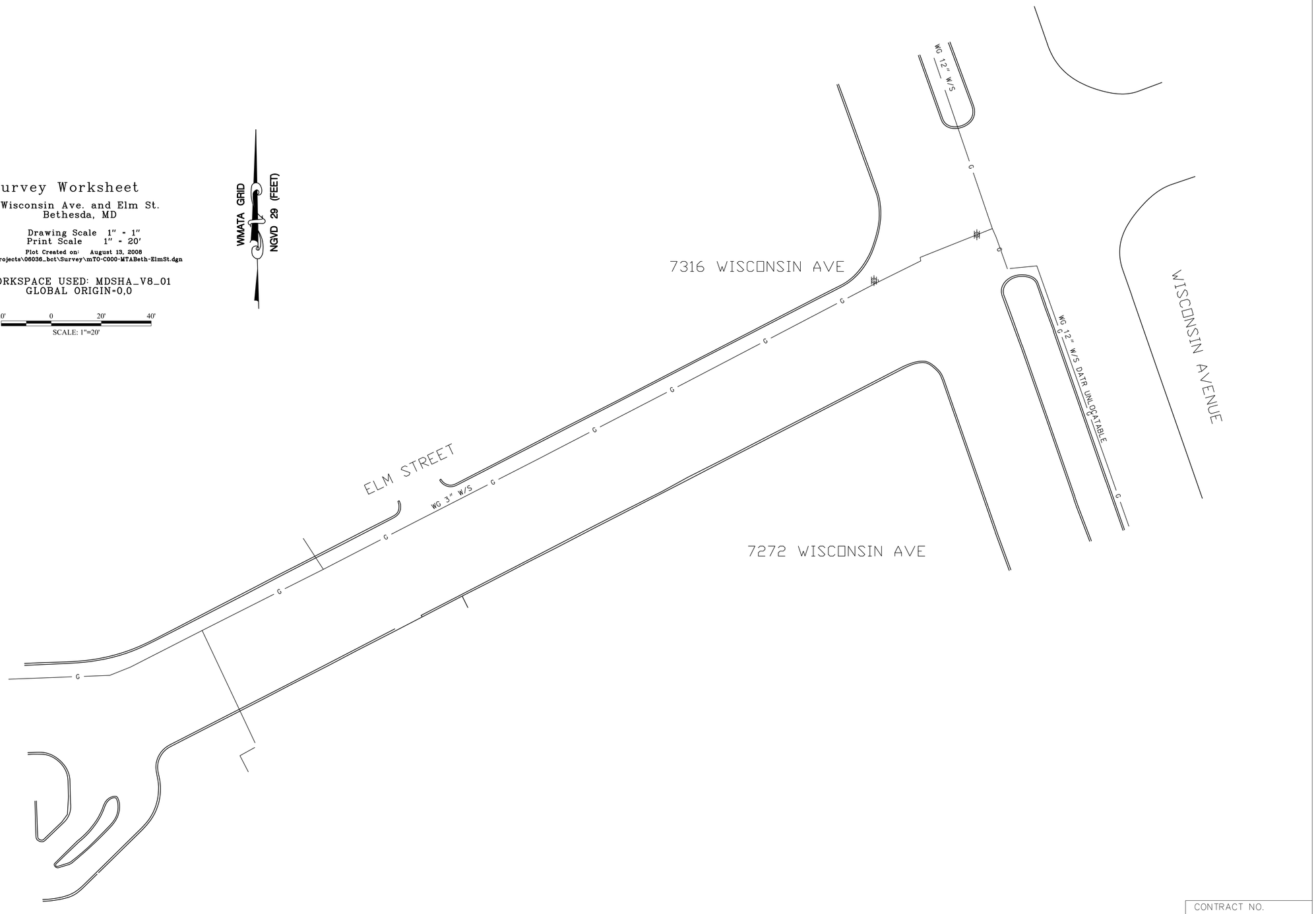

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DRAWN	K. VILKER	DATE	
CHECKED		DATE	
APPROVED		DATE	

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY 1776 MARYLAND

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

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APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE
EXISTING UTILITY COMPOSITE - 4
WASHINGTON GAS

SCALE	DRAWING NO.	
AS NOTED 1"=20'-0"	U-04	

GENERAL STRUCTURAL NOTES

1. SPECIFICATIONS:
   A. WMATA "GENERAL PROVISIONS AND STANDARD SPECIFICATIONS FOR CONTRACT DRAWINGS."
   B. WMATA "DIRECTIVE DRAWINGS."
2. DESIGN CRITERIA:
   A. WMATA "MANUAL OF DESIGN CRITERIA FOR MAINTAINING AND CONTINUED OPERATION OF FACILITIES AND SYSTEMS, MAY 2008."
   B. ACI 318–99 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ALTERNATE DESIGN METHOD.
   C. AISC MANUAL OF STEEL CONSTRUCTION, 14TH EDITION.
   D. AMERICAN WELDING SOCIETY STANDARD D1.1.
   E. ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
   F. INTERNATIONAL BUILDING CODE, 2012.
3. DESIGN LOADING
   A. DEAD LOADS

– CONCRETE	150 PCF
– STEEL	490 PCF
– SOILS	130 PCF (BUOYANT WEIGHT = 68 PCF)
– ROCK	170 PCF

   B. LIVE LOADS

– STATION PLATFORMS	150 PSF
– STAIRWAYS	150 PSF OR CONCENTRATED LOAD OF 300 LBS. ON STAIR TREAD
– MEZZANINE	150 PSF
– PASSAGEWAYS	150 PSF
– EQUIPMENT AND SERVICE ROOMS	250 PSF (UNO)
– HORIZONTAL LOAD AT TOP OF CONCRETE PARAPET	150 PLF
– VERTICAL LOAD AT TOP OF CONCRETE PARAPET	100 PLF
– SAFETY WALKS	85 PSF
– RAILINGS	200 LBS. IN ANY DIRECTION OR 50 PLF
– AIR PRESSURE FROM RUNNING TRAINS ON SERVICE AREA WALLS, DOORS & HARDWARE	70 PSF
– GRATINGS AND HATCHES	250 PSF

4. DESIGN LOADINGS FOR ELEVATORS
   A. SURFACE ELEVATORS

– SNOW LOAD	30 PSF
– BASIC WIND LOAD	40 PSF
– CANOPY FRAME LIVE LOAD	100 PLF FOR FREE EDGES
– ELEVATOR PIT SLAB	AS PER MEP AND ELEVATOR MANUFACTURER DWGS. PLUS IMPACT

   B. MEZZANINE TO PLATFORM ELEVATORS

– ENCLOSURE, GLAZED AREA	30 PSF
– ENCLOSURE, UNGLAZED AREA	15 PSF

5. WIND LOADS

– COMPONENTS AND CLADDING	IN ACCORDANCE WITH ASCE 7–10
– BASIC WIND VELOCITY	90 MPH
– EXPOSURE	C
– IMPORTANCE FACTOR	1.15
– CATEGORY	III

6. CONCRETE
   A. ALL CONSTRUCTION JOINTS IN EXTERIOR WALLS SHALL BE BONDED JOINTS.
   B. ALL VERTICAL CONSTRUCTION JOINTS IN EXTERIOR WALLS AND SLABS SHALL BE KEYED.
   C. ALL HORIZONTAL CONSTRUCTION JOINTS IN INTERIOR MEMBERS SHALL BE KEYED.
   D. ALL VERTICAL CONSTRUCTION JOINTS IN INTERIOR MEMBERS SHALL BE KEYED.
   E. ADDITIONAL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS MAY BE ADDED ONLY WITH WRITTEN AUTHORIZATION OF THE ENGINEER. ENGINEER APPROVED ADDITIONAL CONSTRUCTION JOINTS SHALL NOT RESULT IN ADDITIONAL EXPENSE TO THE OWNER.
   F. ALL CONTRACTION JOINTS SHALL HAVE A BOND BREAKER APPLIED.
   G. PROVIDE 9" PVC DUMBBELL WATERSTOPS IN ALL EXTERIOR CONSTRUCTION AND CONTRACTION JOINTS. FOR JOINT DETAILS, SEE DWG. NO. ST–S–001.
   H. CHAMFER ALL EXPOSED EDGES 3/4" X 3/4". CHAMFER REQUIRED UNLESS NOTED OTHERWISE IN DRAWINGS.
   I. ALLOW 48 HOURS MINIMUM CURING TIME BETWEEN PLACEMENT OF ADJACENT CONCRETE POURS.
   J. ALL CONDUITS IN THE FINAL LINER AND SLABS SHALL BE ROUTED ON THE DRY SIDE OF THE WATER STOPS.
   K. REINFORCED CONCRETE STRUCTURES SHALL BE DETAILED AND CONSTRUCTED IN ACCORDANCE WITH THE CURRENT "ACI STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318).
   L. SEE ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL EMBEDDED ITEMS SUCH AS SCREWS, ANCHORS, ELECTRICAL CONDUITS, OPENINGS, ETC. WHICH MAY INTERFERE WITH CONCRETE CONSTRUCTION.
   M. CONCRETE STRENGTH SHALL BE AS FOLLOWS:

– WALLS, SLABS, SLABS ON GRADE, BEAMS AND COLUMNS	f'c = 4,000 PSI
– PRECAST CONCRETE	f'c = 5,000 PSI
– ALL OTHER CAST–IN–PLACE CONCRETE	f'c = 3,500 PSI

7. REINFORCING STEEL
   A. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
   B. CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE ON THE DRAWINGS:
      – UNFORMED CONCRETE BOTTOM BARS IN FOOTINGS AND SLABS ON EARTH, GRAVEL OR CRUSHED STONE.....3"
      – EXTERIOR UNFORMED SURFACE OF WALLS.....3"
      – BEAMS, COLUMNS, SLABS AND WALLS EXPOSED TO GROUND OR WEATHER AFTER THE REMOVAL OF FORMS.....2"
      – BEAMS, COLUMNS AND WALLS NOT EXPOSED TO GROUND OR WEATHER AFTER THE REMOVAL OF FORMS.....1 1/2"
      – SLABS NOT EXPOSED TO GROUND OR WEATHER AFTER THE REMOVAL OF FORMS.....3/4"
   C. ALL SPLICES SHALL BE CLASS B TENSION LAPS UNLESS OTHERWISE NOTED ON THE PLANS.
   D. ALL REINFORCEMENT SHALL BE MADE ELECTRICALLY CONTINUOUS. THIS INCLUDES INTERFACE WITH ADJACENT CONTRACTS; CHIP OUT EXISTING CONCRETE TO MAKE CONNECTION WHERE NECESSARY. UNLESS OTHERWISE SHOWN OR NOTED, ELECTRICALLY BONDED CIRCUMFERENTIAL CONTRACTION JOINTS ARE TO BE CONSTRUCTED AT A MAXIMUM INTERVAL OF 50'–0" MEASURED HORIZONTALLY. FOR DETAILS OF ELECTRICAL BONDING, SEE DWG. NO. ST–S–007 AND ST–S–021.
   E. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI 315–99 "MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES." THE CONTRACTOR SHALL SUBMIT DRAWINGS OF REINFORCING STEEL BEFORE PROCEEDING WITH FABRICATION.
   F. WELDED STEEL WIRE FABRIC SHALL CONFORM TO ASTM A185–06. THE FABRIC SHALL BE FURNISHED IN FLAT SHEETS.
   G. UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS, SPLICE AND EMBEDMENT LENGTHS FOR REINFORCING BARS SHALL BE IN ACCORDANCE WITH TABLE SHOWN BELOW:

REINFORCING SPLICE AND DEVELOPMENT LENGTHS (INCHES)

	#3	#4	#5	#6	#7	#8	#9	#10	#11
Ld	12	14	17	26	41	53	68	86	106
TOP BAR Ld	14	18	22	36	46	60	77	97	120
Ls	14	18	22	33	53	69	88	112	138
TOP BAR Ls	17	23	29	47	60	78	100	127	156

   Ld=DEVELOPMENT LENGTH
   Ls=SPLICE LENGTH
   NOTE: TOP BARS ARE DEFINED AS HAVING MORE THAN 12" OF FRESH CONCRETE CAST BELOW BAR.
8. STRUCTURAL STEEL
   A. MATERIALS SHALL CONFORM TO THE FOLLOWING:

– W–SHAPES	ASTM A572 GRADE 50
– SHAPES AND PLATES	ASTM A36
– TUBES	ASTM A500 GRADE B
– STRUCTURAL BOLTS	ASTM A325
– ANCHOR BOLTS	ASTM F1554 GRADE 55
– ROCK BOLTS	ASTM F432

   B. THE CONTRACTOR SHALL SUBMIT ERECTION PLANS AND SHOP DETAILS BEFORE PROCEEDING WITH FABRICATION.
   C. MILL BOTTOM OF ALL COLUMNS AND FINISH TOP OF ALL BASE PLATES IN ACCORDANCE WITH AISC SPECIFICATIONS. BASE PLATES SHALL BE WELDED TO BOTTOM OF COLUMNS.
   D. 1/4" THICK LEVELING PLATES SHALL BE USED UNDER ALL BEAMS AND COLUMNS RESTING ON CONCRETE.
   E. ALL SHOP CONNECTIONS SHALL BE WELDED WITH ELECTRODES AS SPECIFIED. ALL FIELD CONNECTIONS SHALL BE HIGH STRENGTH BOLTED JOINTS, TYPE ST, EXCEPT WHERE NOTED. BOLTS SHALL BE A325 AND CERTIFIED AS NOT TO BE COUNTERFEIT.
   F. ELECTRODES FOR WELDING CONNECTIONS SHALL BE AS FOLLOWS:

SHIELDED METAL ARC	E70XX
SUBMERGED ARC	F7X–EXXX

   G. CONNECTION DETAILS SHALL BE DESIGNED AND SUBMITTED ON SHOP DRAWINGS BY THE CONTRACTOR AND ACCOMPANIED BY COMPLETE STRUCTURAL CALCULATIONS PREPARED AND SIGNED AND SEALED BY AN ENGINEER, LICENSED IN THE STATE OF MARYLAND.
9. GENERAL REQUIREMENTS
   A. ELEVATIONS ARE TO BE ACTUAL FINISH ELEVATION.
   B. SHORING REQUIRED FOR THE STABILITY OF THE UNCOMPLETED STRUCTURE OR FOR INSTALLATION OR MODIFICATION OF STRUCTURAL MEMBERS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. ANY REQUIRED TEMPORARY STRUCTURES SHALL BE DESIGNED FOR THE LOADINGS SHOWN ON DWG. NO. ST–S–009.
   C. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLIFTS FOUND IN CONTRACT DOCUMENTS AND/OR FIELD CONDITIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS. THE ± MARKS SHOWN WITH DIMENSIONS AND STATIONS DO NOT INDICATE ANY DEGREE OF PRECISION. THESE ± MARKS INDICATE DIMENSIONS AND STATIONS FROM EXISTING PLANS THAT MAY VARY AND DO REQUIRE FIELD VERIFICATION BY THE CONTRACTOR.
   D. CONTRACTOR SHALL COORDINATE ALL REQUIRED OPENINGS WITH MECHANICAL, ELECTRICAL, AND ARCHITECTURAL DRAWINGS. CONTRACTOR SHALL COORDINATE FINAL SIZE AND LOCATION OF ALL OPENINGS WITH THE ACTUAL EQUIPMENT SUPPLIED, PROJECT REQUIREMENTS, AND WITH FIELD CONDITIONS.
   E. THE ENGINEER PERMITS NO ALTERATIONS OR OPENINGS THROUGH BEAMS OR COLUMNS, UNLESS DETAILED ON STRUCTURAL PLANS.
   F. THE SIZES AND LOCATIONS OF EQUIPMENT PADS, PEDESTALS AND FLOOR AND SLAB OPENINGS ARE DEPENDENT ON THE ACTUAL EQUIPMENT FURNISHED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND VERIFY ALL SUCH ITEMS. NO DIMENSIONS INDICATED ON THESE DRAWINGS SHALL BE ALTERED WITHOUT THE ENGINEERS APPROVAL.
   G. THE STRUCTURES HAVE BEEN DESIGNED TO RESISTS DESIGN LOADS ONLY AS COMPLETED STRUCTURES, UNLESS NOTED OTHERWISE ON THE DRAWINGS. ANY PROPOSED APPLICATION OF CONSTRUCTION LOADS WHICH EXCEED THE DESIGN LOADS, OR ANY LOADS APPLIED TO A PARTIALLY COMPLETED STRUCTURE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. ALL THE COST OF ANALYSIS, REDESIGN AND ANY ADDITIONAL CONSTRUCTION COSTS RESULTING FROM THE REDESIGN SHALL BE ACCOMPLISHED AT THE CONTRACTOR'S EXPENSE.
   H. WHERE A SPECIFIC MODEL AND/OR MANUFACTURER OF AN ITEM ARE NAMED ON A DRAWING AND/OR IN THE SPECIFICATIONS, THE MODEL AND/OR MANUFACTURER ARE THE BASIS OF DESIGN. ITEMS BY OTHER MANUFACTURERS OF EQUAL DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR REVIEW AS APPROVED EQUAL.
   I. ALL PLAN DIMENSIONS ON THE DRAWINGS ARE MEASURED IN A TRUE HORIZONTAL PLANE UNLESS NOTED OTHERWISE.
   J. ALL VERTICAL DIMENSIONS SHALL BE MEASURED IN A TRUE VERTICAL PLANE FOR ALL STRUCTURES UNLESS NOTED OTHERWISE..
   K. COLUMNS, WALLS, DOORS, CONSTRUCTION JOINTS AND ELEVATORS WITHIN THE STATION AND THE SERVICE AREAS SHALL BE PLACED TRULY VERTICAL, UNLESS NOTED OTHERWISE.
   L. SUBMITTALS
      – REPRODUCTION OF ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR RESUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED AND RETURNED.
      – ALL FORMWORK, SHORING AND RESHORING SHALL BE DESIGNED BY THE CONTRACTOR'S ENGINEER REGISTERED IN THE STATE OF MARYLAND. ALL SUBMISSIONS SHALL BEAR HIS SEAL AND SIGNATURE.
      – ALL SHORING, SHEETING, AND DEWATERING SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR. SHEETING AND SHORING SHALL BE DESIGNED BY THE CONTRACTORS ENGINEER REGISTERED IN THE STATE OF MARYLAND. ALL SUBMITTALS SHALL BEAR HIS/HER SEAL AND SIGNATURE AND MUST ACCOUNT FOR THE CONSTRUCTION SEQUENCE, DRAINAGE AND WALL THICKNESS. SUPPORT OF EXCAVATION SYSTEM FOR SHAFT AND ARCH SHALL PROVIDE SUFFICIENT CLEARANCE FOR CONSTRUCTION EXCAVATION, DELIVERY OF EQUIPMENT AND MATERIALS, WORKER ACCESS AND CONSTRUCTION OF FINAL STRUCTURE.
      – STEEL GRATING SHALL HAVE DEPTH AS SHOWN ON DRAWINGS. MANUFACTURER SHALL DESIGN GRATING FOR THE LOADS SPECIFIED IN SECTION "3 DESIGN LOADING". ALL GRATING SHALL BE GALVANIZED PER ASTM A123.
      – CONTRACTOR SHALL FURNISH DIMENSIONED COORDINATED SHOP DRAWINGS AT ALL LEVELS SHOWING THE LOCATION OF ALL SLEEVES AND OPENINGS REQUIRED BY ALL TRADES ON ONE PLAN FOR EACH LEVEL. CONFLICTS BETWEEN TRADES WILL BE RESOLVED BY GENERAL CONTRACTOR BEFORE SUBMISSION TO THE ENGINEER.
      – REVIEW OF SHOP DRAWINGS DESIGNED BY CONTRACTORS ENGINEER'S SHALL BE FOR GENERAL CONFORMANCE WITH THE PROJECT PARAMETERS AS INDICATED ON THE DRAWINGS AND IN THE GENERAL NOTES.
   M. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT ALL EXISTING STRUCTURES, CURBS, STREETS, ETC., FROM DAMAGE BY CONSTRUCTION EQUIPMENT. THE CONTRACTOR SHALL NOT DISPOSE OF ANY LIQUIDS, SLURRY, SOILS OR CHEMICALS ON THE SITE EXCEPT AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL RESOURCES OR OTHER AGENCIES HAVING JURISDICTION.
   N. THESE DESIGN STRUCTURAL DRAWINGS REPRESENT THE COMPLETED PROJECT, WHICH HAS BEEN DESIGNED FOR THE WEIGHTS OF THE MATERIALS INDICATED ON THE DRAWINGS AND FOR THE SUPERIMPOSED LOADS INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING AND SHORING ETC.
   O. ALL COSTS OF INVESTIGATION AND/OR REDESIGN, DUE TO CONTRACTOR MISLOCATION OF STRUCTURAL ELEMENTS OR OTHER LACK OF CONFORMANCE WITH THE PROJECT DOCUMENTS SHALL BE AT THE CONTRACTOR'S EXPENSE.
   P. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR DETAILED INFORMATION REGARDING FINISHES, FIREPROOFING, ETC.
   Q. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, DETAILS AND SPECIFICATIONS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
   R. BACKFILL PLACED AROUND SHAFT STRUCTURE SHALL BE SELECT MATERIAL.
10. EXCAVATION AND EARTHWORK
   A. REFERENCE GEOTECHNICAL DATA REPORT FOR SOUTH ENTRANCE TO BETHESDA METRO STATION BY E2CR, INC. DATED FEBRUARY 2010 FOR INFORMATION.
   B. LOCATE ANY EXISTNG UTILITY LINES OR APPURTENANCES AND ADVISE ENGINEER OF ANY CONFLICTS OR DISCREPANCIES SHOWN IN PLANS PRIOR TO CONSTRUCTION. DO NOT DEMOLISH ANY EXISTING STRUCTURES WITHOUT WRITTEN AUTHORIZATION.
   C. ALL EXCAVATIONS SHALL BE KEPT DRY. STANDING WATER SHALL NOT BE ALLOWED IN EXCAVATIONS.

CONTRACT NO. XXXXXX

DESIGNED _____ DATE
DRAWN E.M. THOMPSON DATE
CHECKED D.S. TUSING DATE
APPROVED _____ DATE

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
8ee South Caroline Street, Baltimore, Maryland 21202

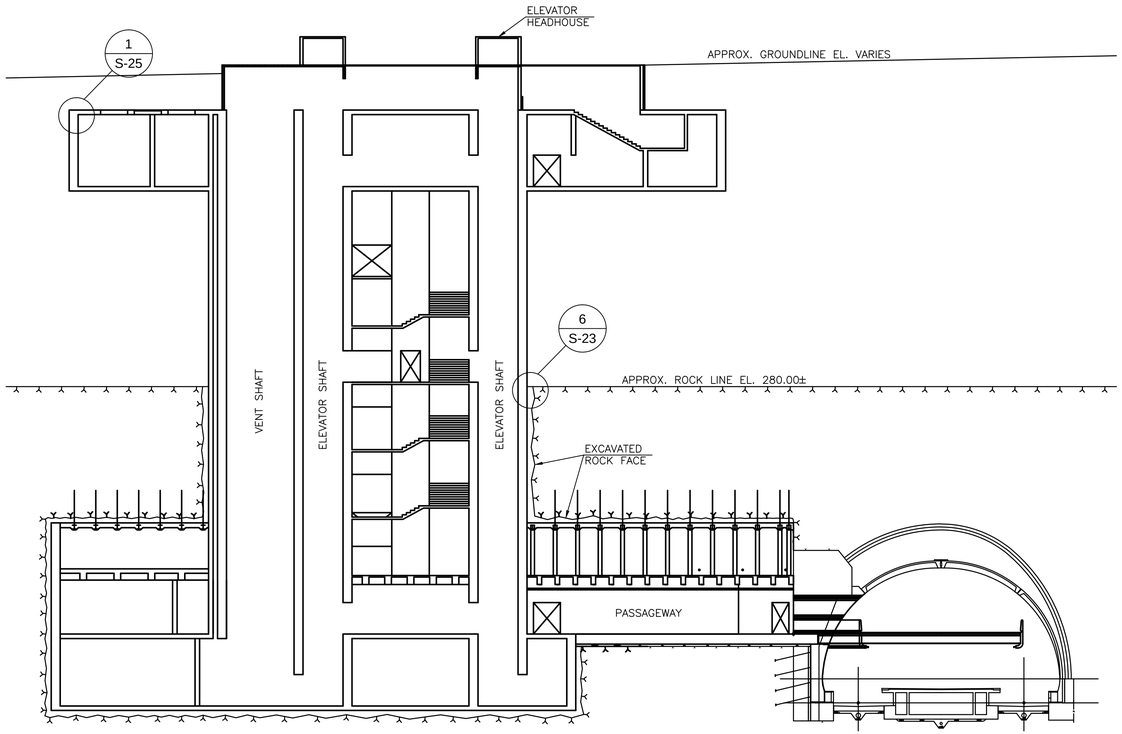
APPROVED _____

BETHESDA STATION - SOUTH ENTRANCE

STRUCTURAL GENERAL NOTES

SCALE AS NOTED

DRAWING NO. S–1



NOTES:
1. THE ACTUAL CONSTRUCTION SEQUENCE AND SUPPORT OF EXCAVATION SYSTEM SHALL NOT RESULT IN LATERIAL PRESSURES TO THE SHAFT AND PASSAGEWAY ARCH RIBS HIGHER THAN THOSE SHOWN IN THE GEOTECHNICAL REPORT.
2. SEE GEOTECHNICAL DRAWINGS FOR SUPPORT OF EXCAVATION DETAILS BELOW EL. 280.00 ±. DESIGN OF SUPPORT OF EXCAVATION SYSTEM ABOVE EL. 280.00 ± SHALL BE BY CONTRACTOR. SYSTEM SHALL PROVIDE SUFFICIENT CLEARANCE FOR CONSTRUCTION EXCAVATION, DELIVERY OF EQUIPMENT AND MATERIALS AND WORKER ACCESS.
3. WATERPROOFING
   A. WATERPROOFING MEMBRANE AND GEOTEXTILE SHALL SATISFY THE REQUIREMENTS OF THE SPECIFICATIONS.
   B. WATERPROOFING ABOVE THE APPROXIMATE ROCK LINE SHALL SATISFY THE FOLLOWING REQUIREMENTS:
      – APPLY WATERPROOFING MEMBRANE AND GEOTEXTILE TO ALL EXTERIOR CONCRETE SURFACES. FOR WATERPROOFING TERMINATION NEAR GROUND SURFACE, SEE DETAIL 3/S–25.
      – PROVIDE PROTECTIVE CONCRETE OVER WATERPROOFING ON ROOF SLABS, SEE DETAIL 1/S–25.
      – WATERPROOFING SHALL BE SPLICED AT APPROXIMATE ROCK LINE, SEE DETAIL 6/S–23.
      – BACKFILL VOID BETWEEN WATERPROOFING AND SUPPORT OF EXCAVATION WITH SELECT FILL.
   C. WATERPROOFING DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

ABBREVIATIONS

L	ANGLE
APPROX.	APPROXIMATE
@	AT
BOT.	BOTTOM
BRG.	BEARING
C.I.P.	CAST–IN–PLACE
℄	CENTERLINE
C	CHANNEL
CL.	CLEAR, CLEARANCE
CONST.	CONSTRUCTION
CONTR.	CONTRACTION
ø	DIAMETER
D.O.	DOOR OPENING
DWG.	DRAWING
EA.	EACH
EF	EACH FACE
EW	EACH WAY
EL.	ELEVATION
EQ.	EQUAL
EXP.	EXPANSION
EXT.	EXTERIOR
FIN.	FINISHED
FT.	FEET
FTG.	FOOTING
GALV.	GALVANIZED
HPR	HYDROSTATIC PRESSURE RELIEF
I.B.	INBOUND
I.F.	INSIDE FACE
INT.	INTERIOR
JT.	JOINT
K.O.	KNOCK–OUT
LG.	LONG
LBS.	POUNDS
MAX.	MAXIMUM
MEZZ.	MEZZANINE
MIN.	MINIMUM
NO.	NUMBER
#	NUMBER (REINFORCING)
N.T.S.	NOT OT SCALE
O.B.	OUTBOUND
O.F.	OUTSIDE FACE
OPNG.	OPENING
ℙ	PLATE
P.S.F.	POUNDS PER SQUARE FOOT
P.S.I.	POUNDS PER SQUARE INCH
R	RADIUS
SCH.	SCHEDULE
STA.	STATION
STRUCT.	STRUCTURAL
SVCI	SERVICE WEIGHT CAST IRON
SYMM.	SYMMETRICAL
THK.	THICK
T/	TOP OF
T/R	TOP OF RAIL
TYP.	TYPICAL
UNO	UNLESS NOTED OTHERWISE
W	WIDE FLANGE
W.P.	WORKING POINT

STRUCTURAL LEGEND

EXISTING	PROPOSED
CONTOUR	WATERSTOP
INDEX CONTOUR	REINFORCING STEEL
CENTERLINE	W OR I SHAPE
CONCRETE, CONCRETE FILL	ANGLE SHAPE
	OPENING
	CENTERLINE
	CONCRETE, CONCRETE FILL
	LIMITS OF DEMOLITION
	WATER BARRIER
	PIPE

SYMBOLS

SECTION CUT

SECTION DESIGNATION
DWG. NO. ON WHICH SECTION APPEARS

PLUS OR MINUS ±

CONTRACT NO. XXXXXX

DESIGNED	DATE	REVISIONS	
DRAWN E.M. THOMPSON	DATE	DATE / BY / DESCRIPTION	
CHECKED D.S. TUSING	DATE		
APPROVED	DATE		

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

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WHITMAN, REQUARDT & ASSOCIATES, LLP
800 South Caroline Street, Baltimore, Maryland 21231

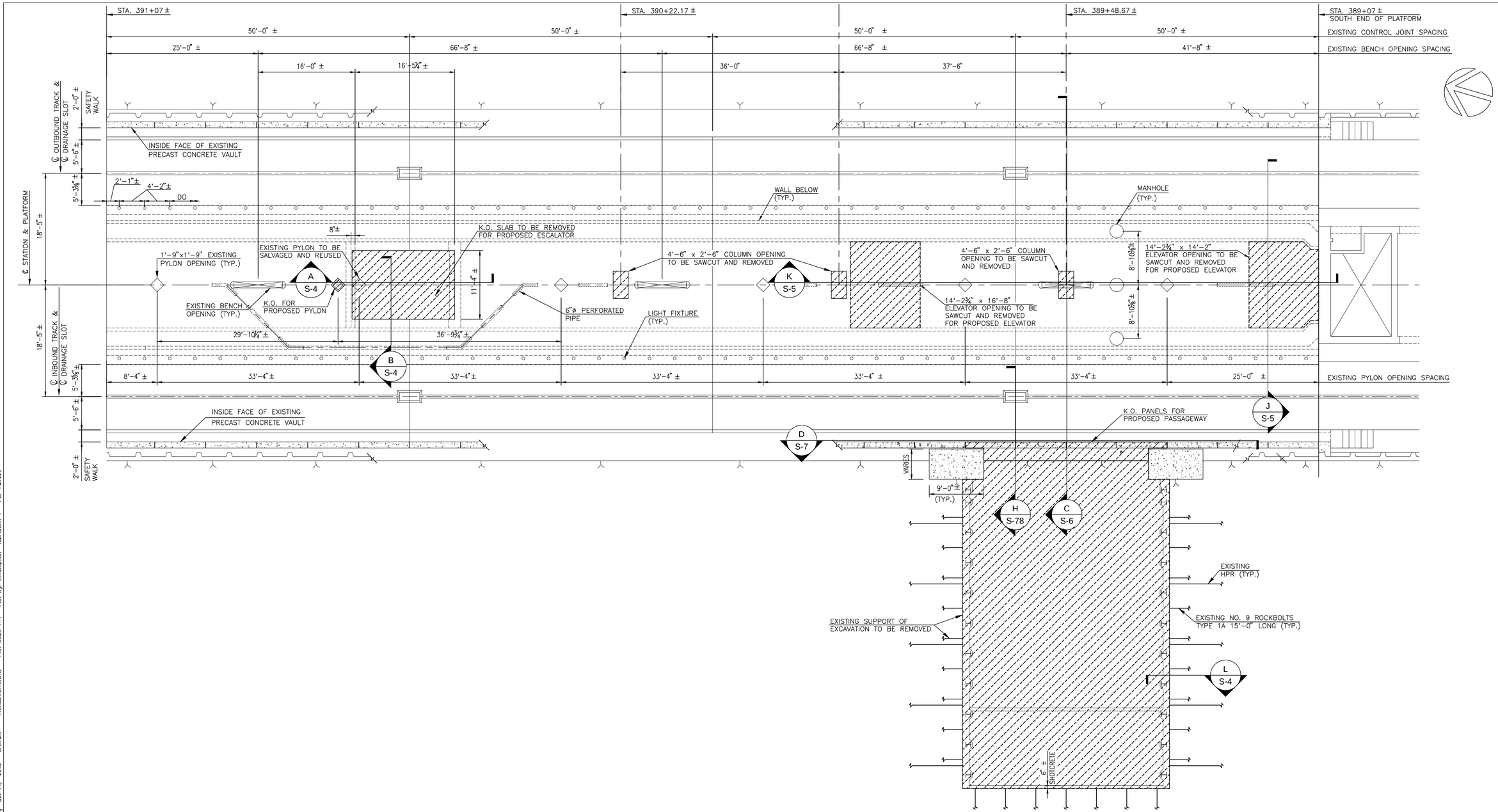
APPROVED

BETHESDA STATION - SOUTH ENTRANCE

STRUCTURAL ABBREVIATION AND LEGEND

SCALE AS NOTED

DRAWING NO. S–2



PARTIAL PLATFORM DEMOLITION PLAN

SCALE: ⅛" = 1'-0"

CONTRACT NO. XXXXXX

DESIGNED	DATE
DRAWN E.M. THOMPSON	DATE
CHECKED D.S. TUSING	DATE
APPROVED	DATE

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

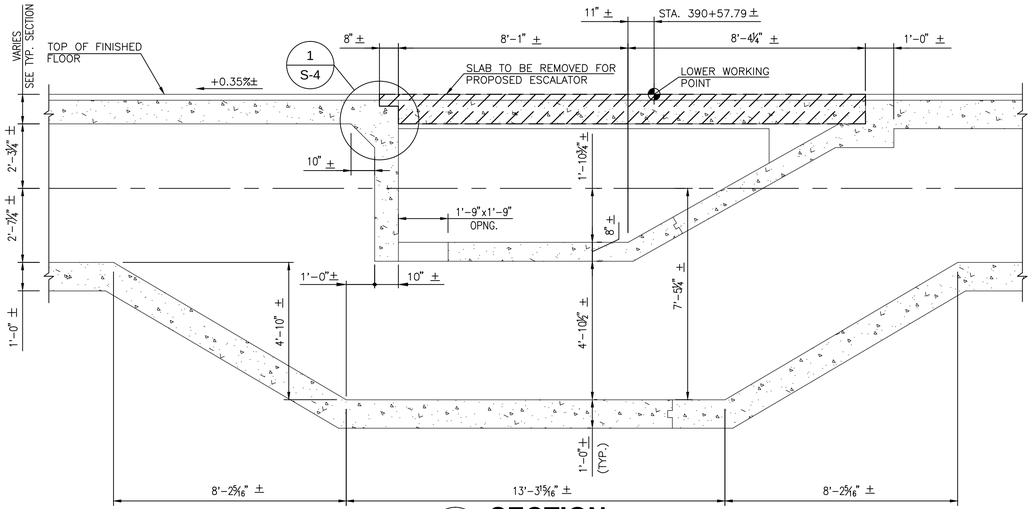
WHITMAN, REQUARDT & ASSOCIATES, LLP
200 South Caroline Street, Baltimore, Maryland 21231

APPROVED _____

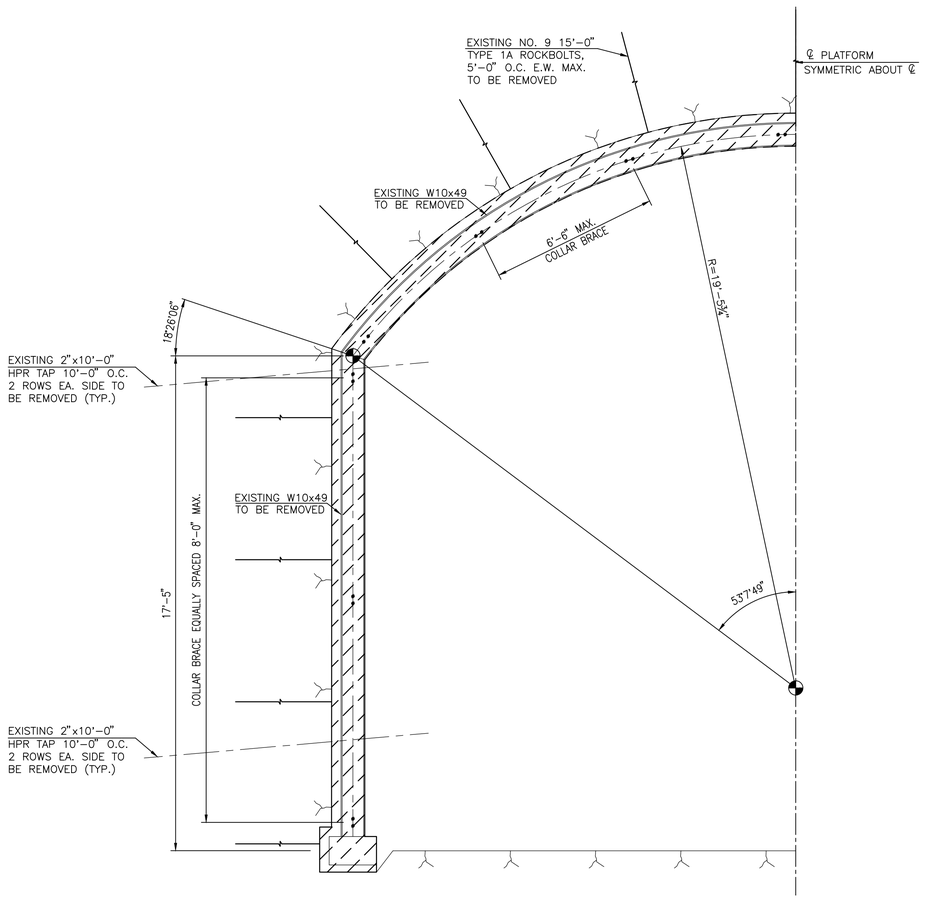
BETHESDA STATION - SOUTH ENTRANCE
BETHESDA STATION PLATFORM
DEMOLITION PLAN AND SECTIONS
STA. 391+07 TO STA. 389+07

SCALE: AS NOTED

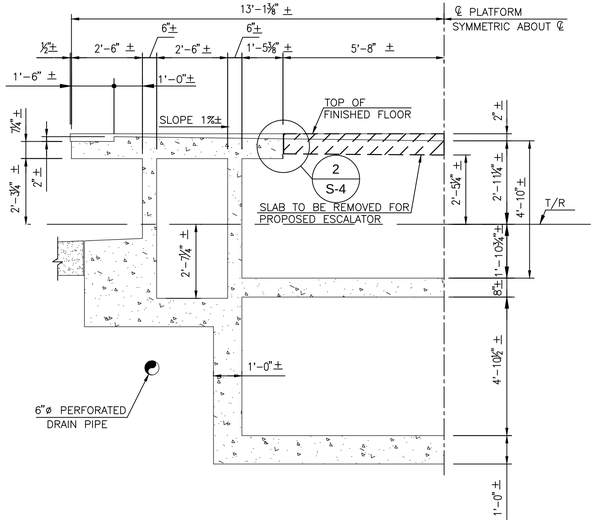
DRAWING NO. S-3



A S-3 **SECTION**
SCALE: ⅜"=1'-0"



L S-3 **SECTION**
SCALE: ⅜"=1'-0"



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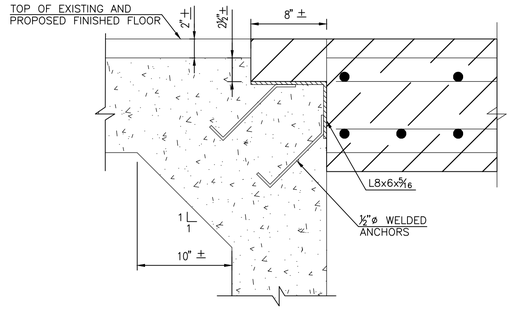
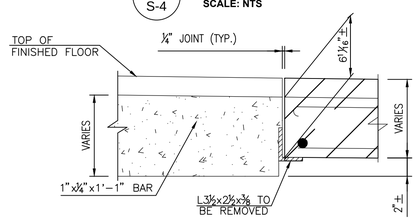
SCALE: ⅜"=1'-0"



1 S-4 **DETAIL**
SCALE: NTS



2 S-4 **DETAIL**
SCALE: NTS

CONTRACT NO.
XXXXXX

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

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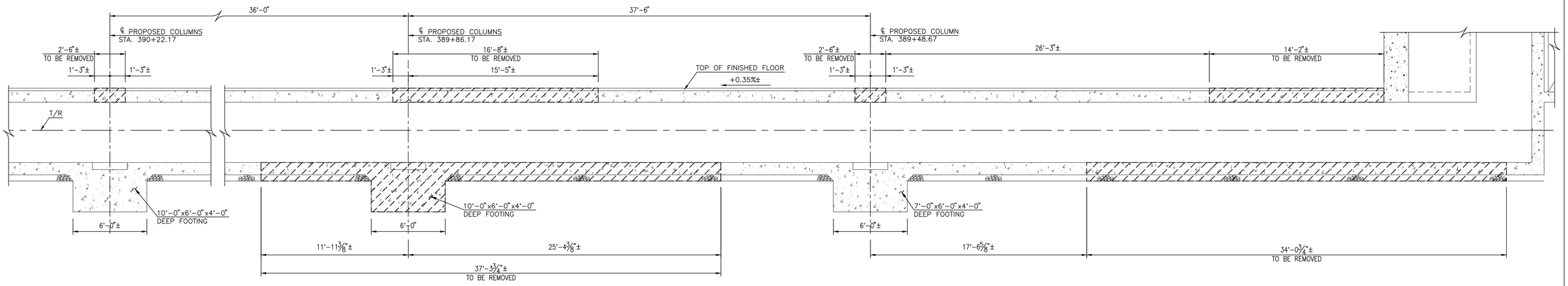
WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
800 South Caroline Street, Baltimore, Maryland 21231

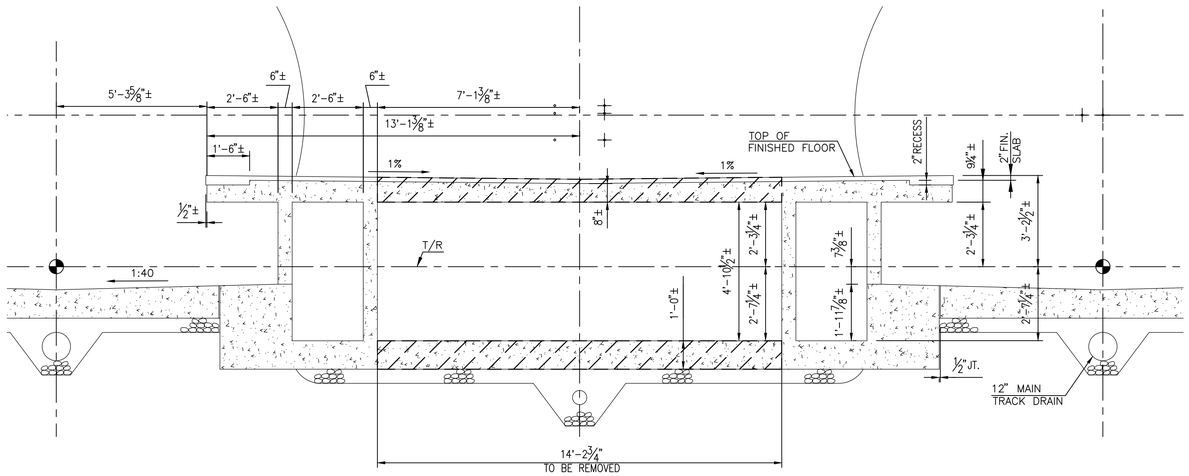
BETHESDA STATION - SOUTH ENTRANCE
BETHESDA STATION PLATFORM
DEMOLITION PLAN AND SECTIONS
STA. 391+07 TO STA. 389+07

SCALE: AS NOTED

DRAWING NO. S-4



K / S-3 **SECTION**
SCALE: ¼"=1'-0"



J / S-3 **SECTION**
SCALE: ⅜"= 1-0"

CONTRACT NO.
XXXXXX

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DRAWN E.M. THOMPSON	DATE
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Bw South Caroline Street, Baltimore, Maryland 21202

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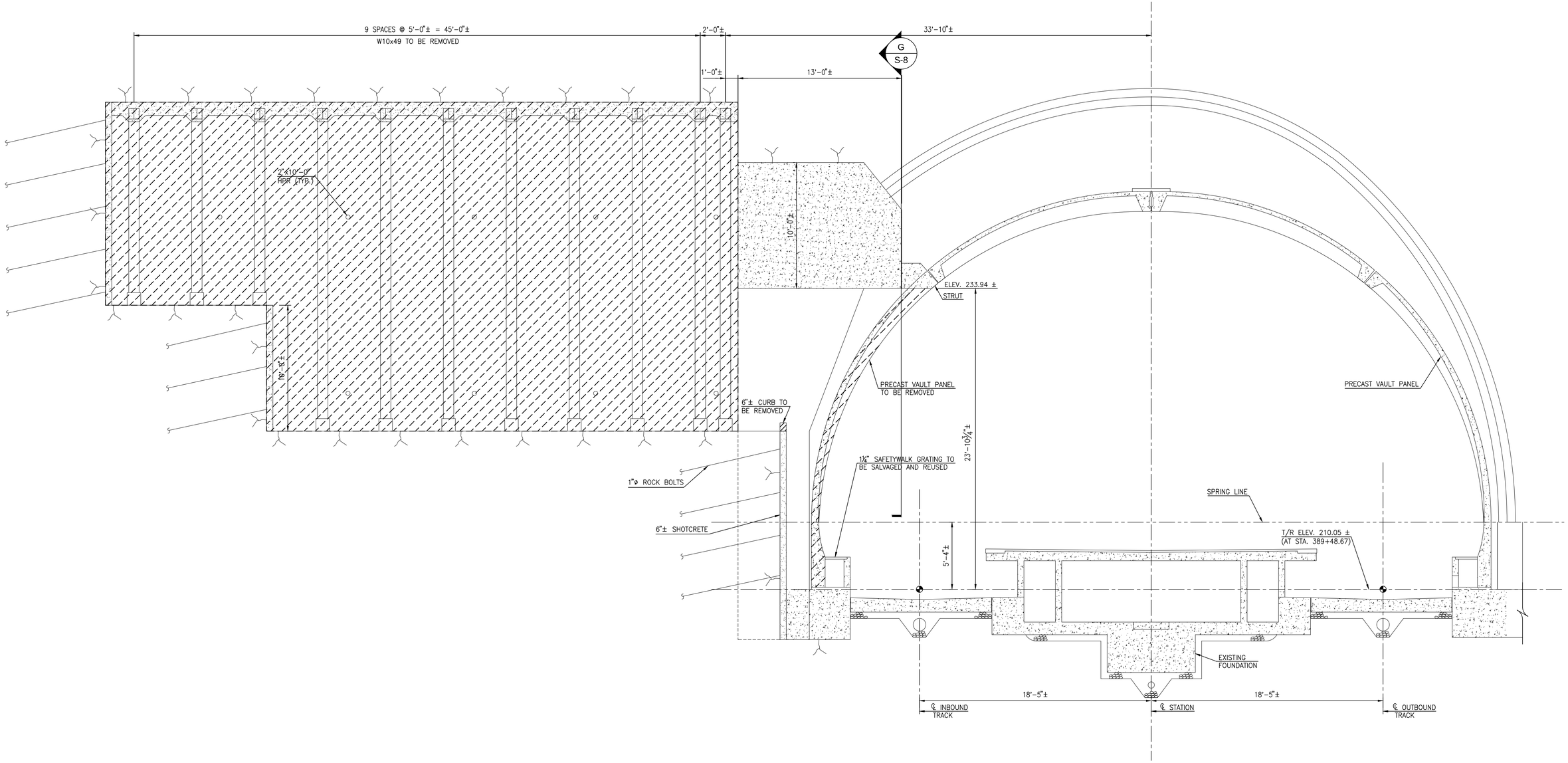
BETHESDA STATION - SOUTH ENTRANCE

PLATFORM DEMOLITION SECTIONS AND DETAILS

SCALE: AS NOTED

DRAWING NO. S-5

RK#22\SYS – C:\pwworking\mtcpw\rkk-erik thompson\d0122585\S-05.dwg Oct 14, 2013 – 9:56am monochrome.CTB Plot Scale 1=1 Plot By: ethompson Tab: Sheet 1 – PDF Fullsize



C
S-3,6

SECTION

SCALE: ¼"=1'-0"

CONTRACT NO.
XXXXXX

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DRAWN	E.M. THOMPSON	DATE
CHECKED	D.S. TUSING	DATE
APPROVED		DATE

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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One South Caroline Street, Baltimore, Maryland 21202

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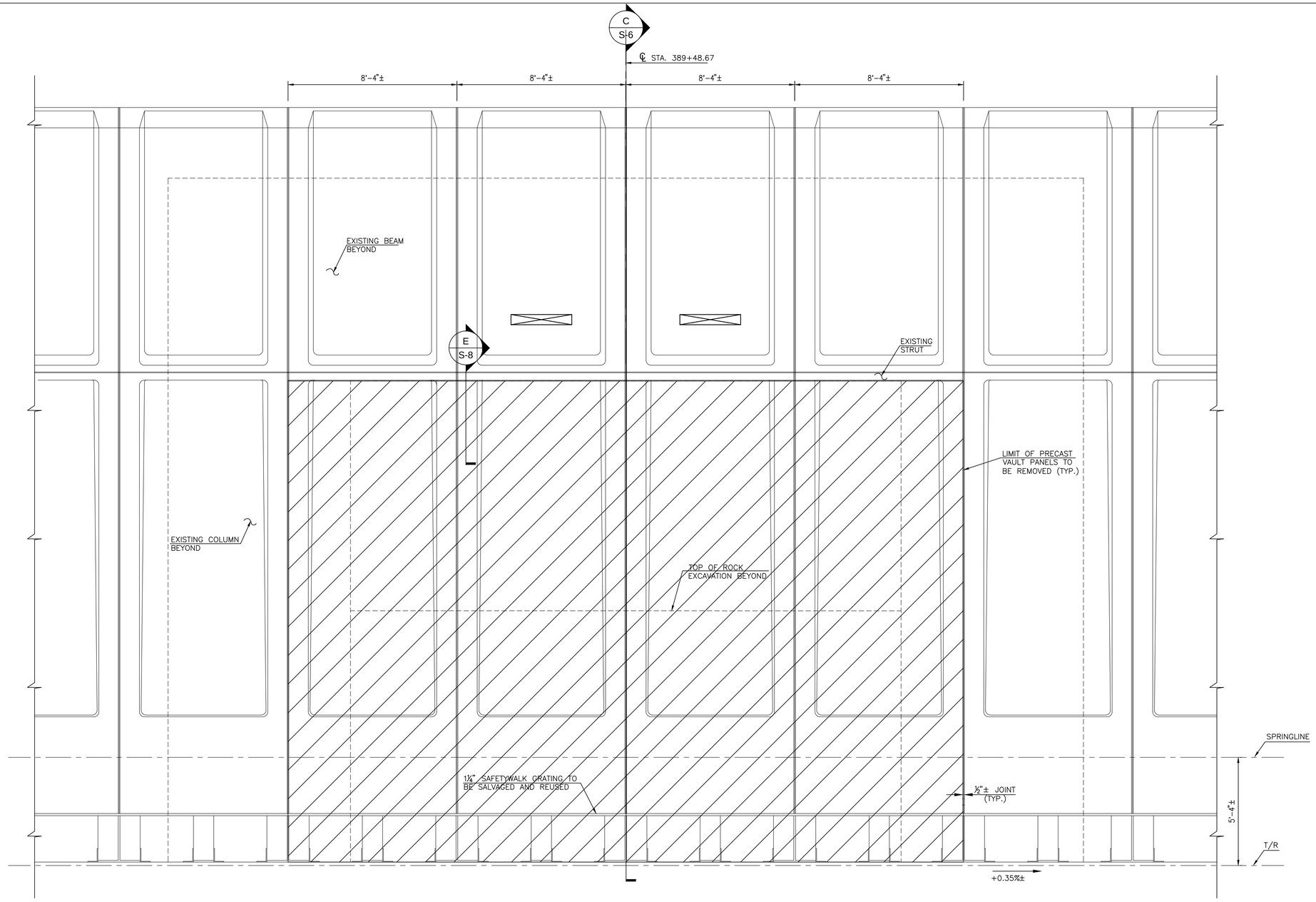
BETHESDA STATION - SOUTH ENTRANCE

PRECAST VAULT DEMOLITION DETAILS AT SOUTH PASSAGEWAY

SCALE
AS NOTED

DRAWING NO.
S-6



D
S-3

SECTION

SCALE: ⅜"= 1-0"

CONTRACT NO.
XXXXXX

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DRAWN E.M. THOMPSON DATE

CHECKED D.S. TUSING DATE

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DATE	BY	DESCRIPTION

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WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
8th South Caroline Street, Baltimore, Maryland 21202

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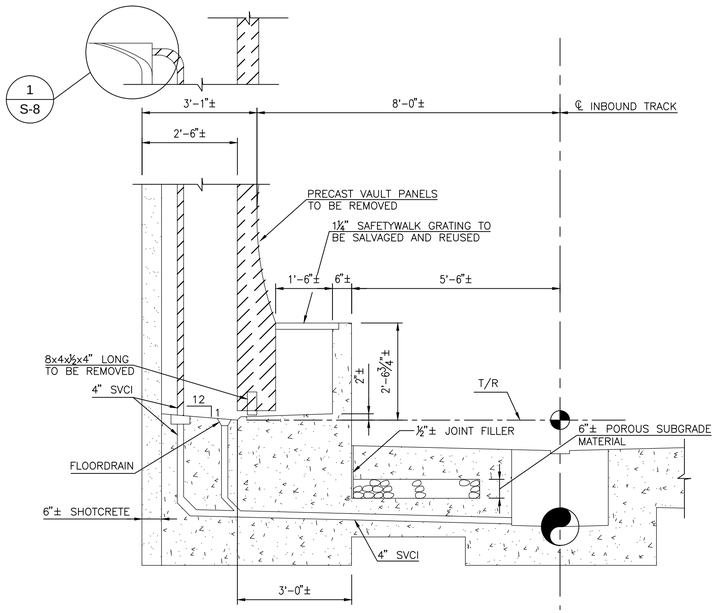
BETHESDA STATION - SOUTH ENTRANCE

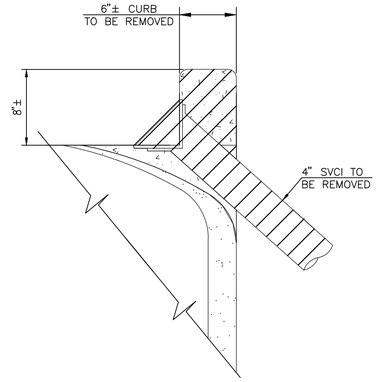
PRECAST VAULT DEMOLITION DETAILS AT SOUTH PASSAGEWAY

SCALE
AS NOTED

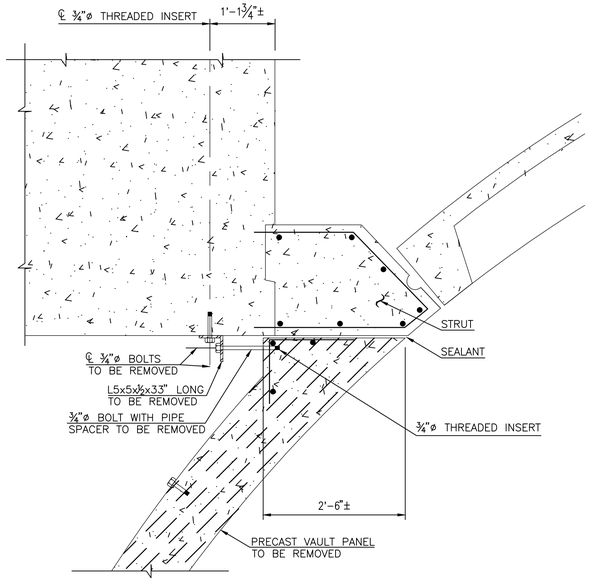
DRAWING NO.
S-7



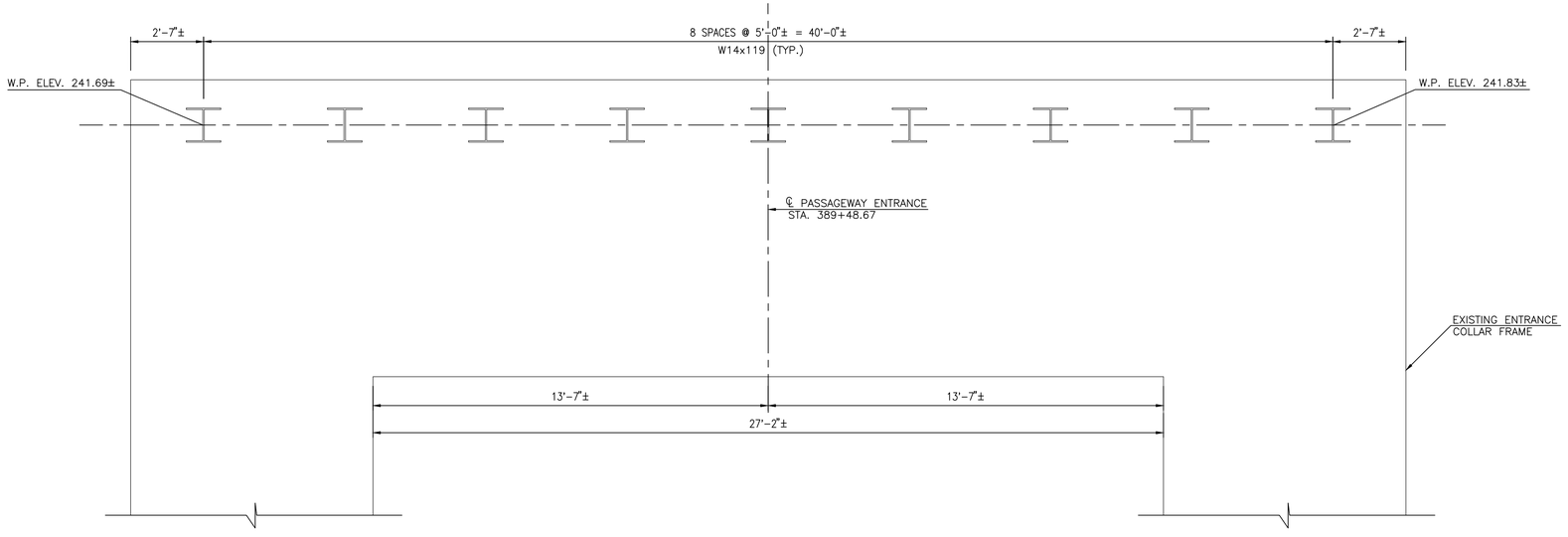
H S-3 **SECTION**
SCALE: ½"=1'-0"



1 S-8 **DETAIL**
SCALE: 1½"=1'-0"



E S-7 **SECTION**
SCALE: ¾"=1'-0"



G S-6 **SECTION**
SCALE: ⅜"=1'-0"

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801 South Caroline Street, Baltimore, Maryland 21231

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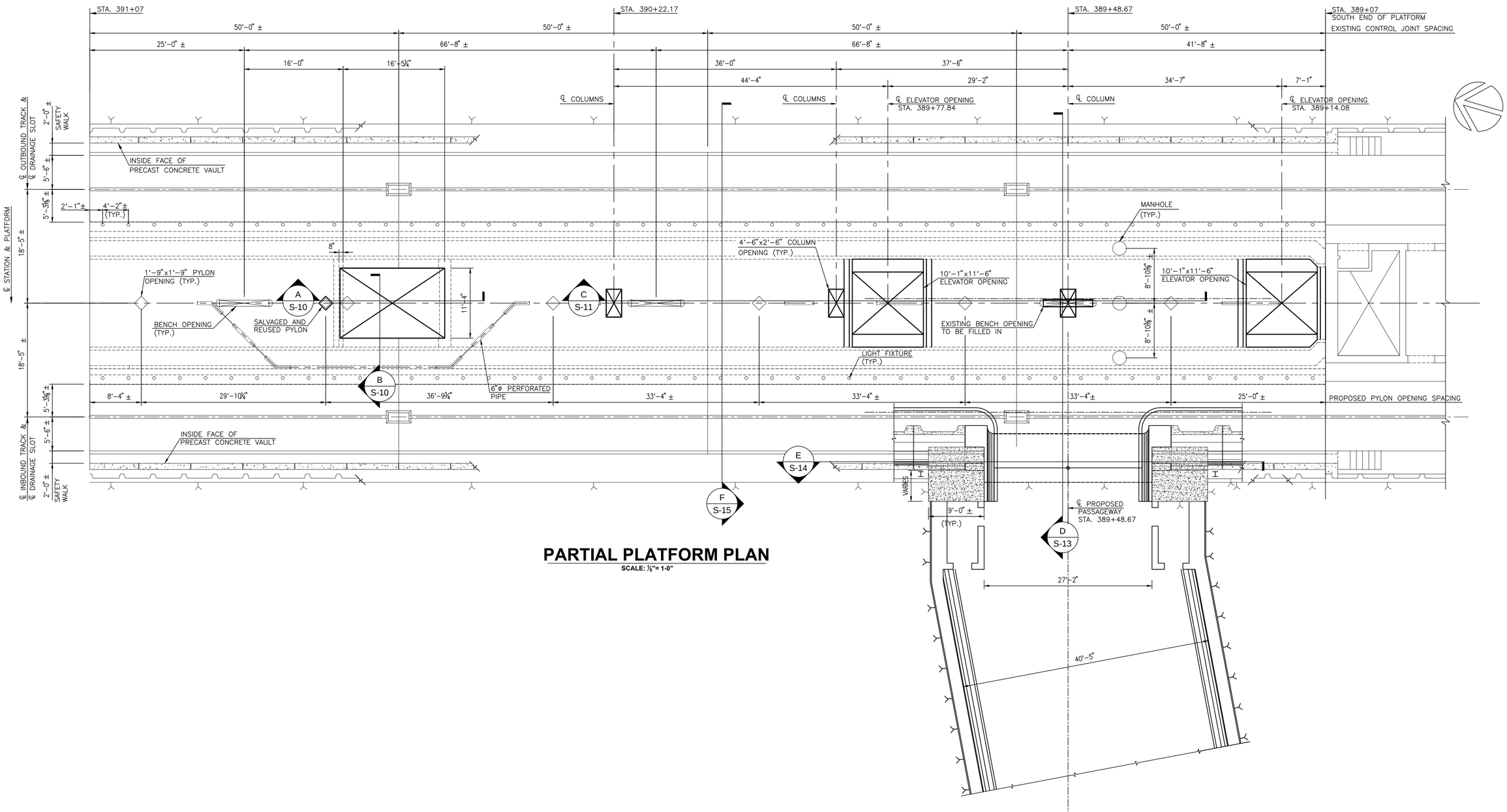
BETHESDA STATION - SOUTH ENTRANCE

PRECAST VAULT DEMOLITION DETAILS AT SOUTH PASSAGEWAY

SCALE: AS NOTED

DRAWING NO. S-8



PARTIAL PLATFORM PLAN

SCALE: ⅛"= 1-0"

RK&K2\SYS – C:\pwworking\mtapw\rkk-erik.thompson\d0122585\S-09.dwg Oct 14, 2013 – 11:08am monochrome.CTB Plot Scale 1=1 Plot By: ethompson Tab:Sheet 1 – PDF Fullsize

CONTRACT NO. XXXXXX

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APPROVED		DATE	

REVISIONS		
DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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8th South Caroline Street, Baltimore, Maryland 21202

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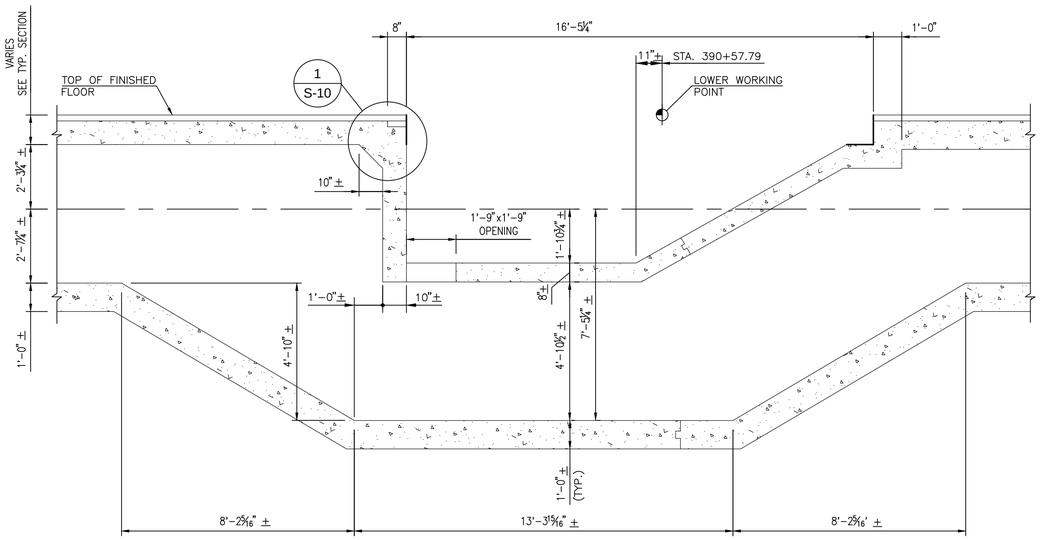
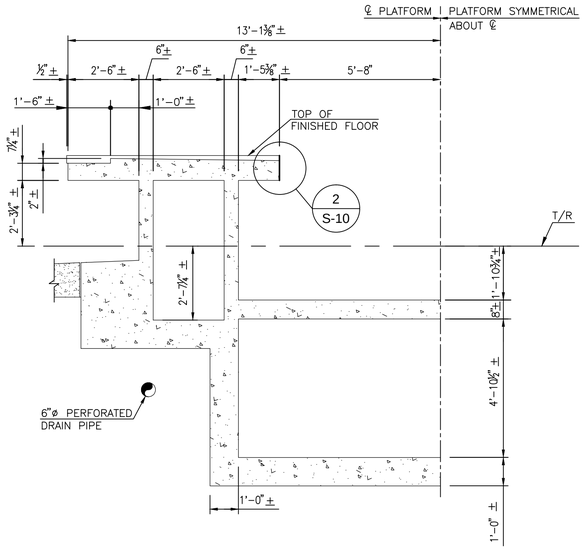
BETHESDA STATION - SOUTH ENTRANCE

BETHESDA STATION PLATFORM PLAN AND SECTIONS STA. 391+07 TO STA. 389+07

SCALE	DRAWING NO.
AS NOTED	S-9



A S-9 **SECTION**
SCALE: ⅜"=1'-0"



B S-9 **SECTION**
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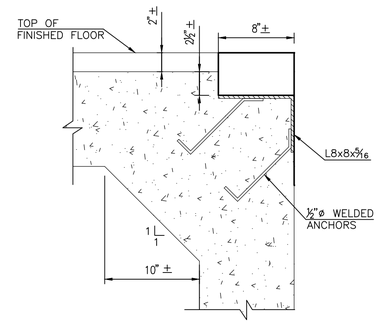
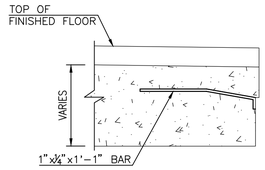
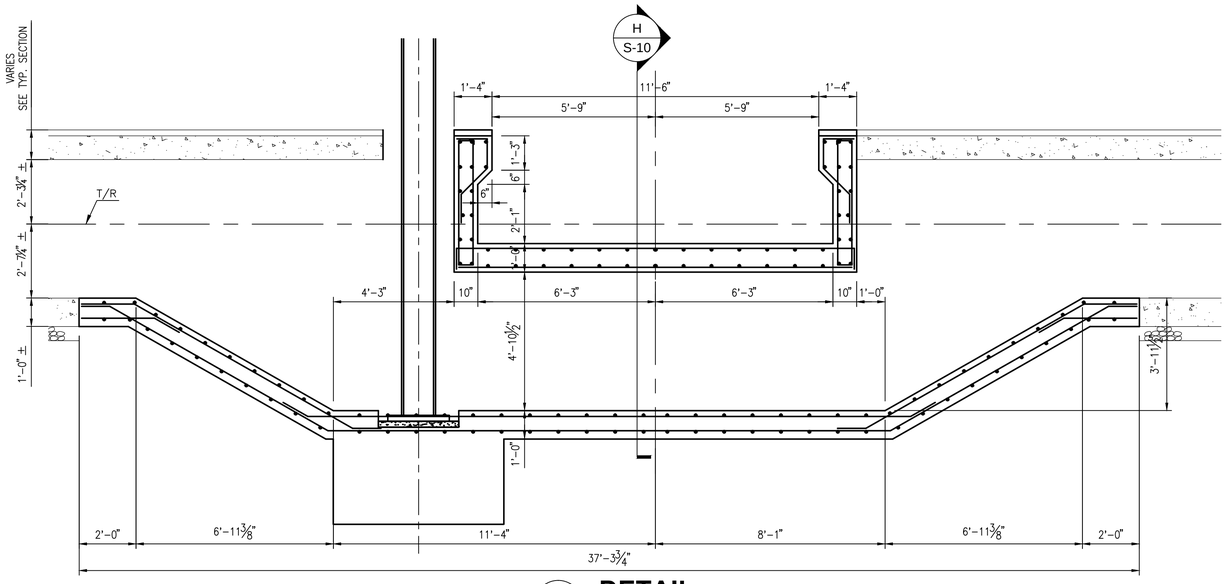


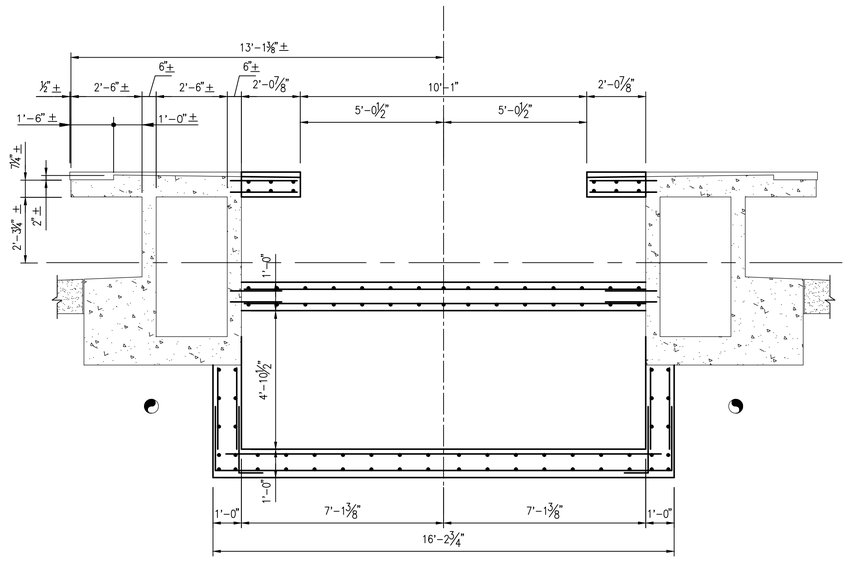
1 S-10 **DETAIL**
SCALE: NTS



2 S-10 **DETAIL**
SCALE: NTS



G S-11 **DETAIL**
SCALE: ⅜"=1'-0"



H S-10 **SECTION**
SCALE: ⅜"=1'-0"

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
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81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
8th South Caroline Street, Baltimore, Maryland 21202

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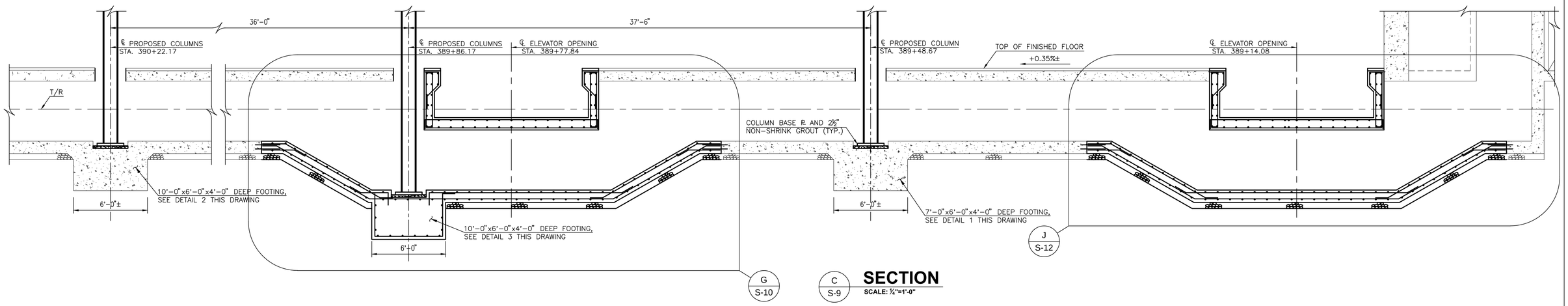
BETHESDA STATION - SOUTH ENTRANCE

PLATFORM SECTIONS AND DETAILS

SCALE: AS NOTED

DRAWING NO. S-10



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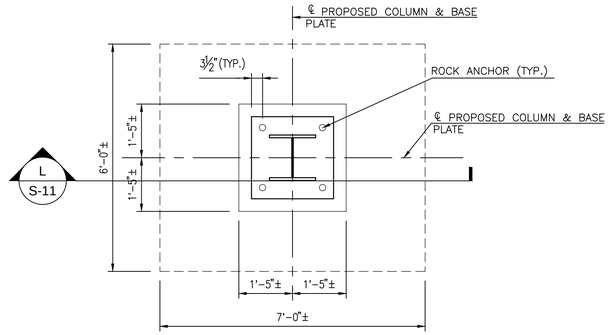
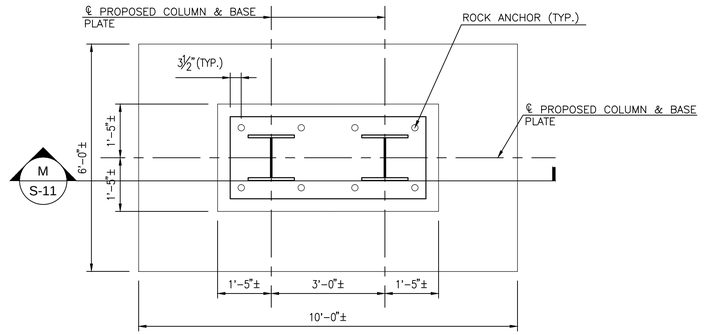


1 DETAIL
S-11
SCALE: ½"=1'-0"



2 DETAIL
S-11
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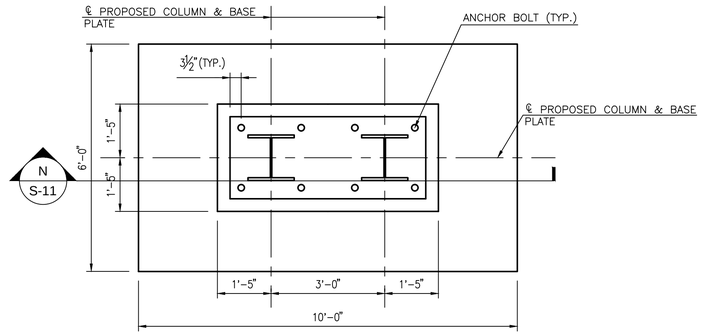
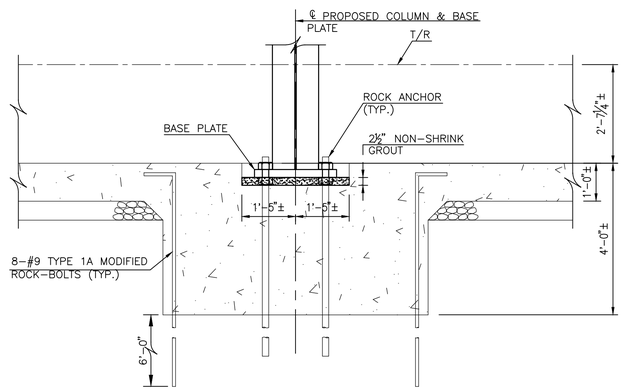
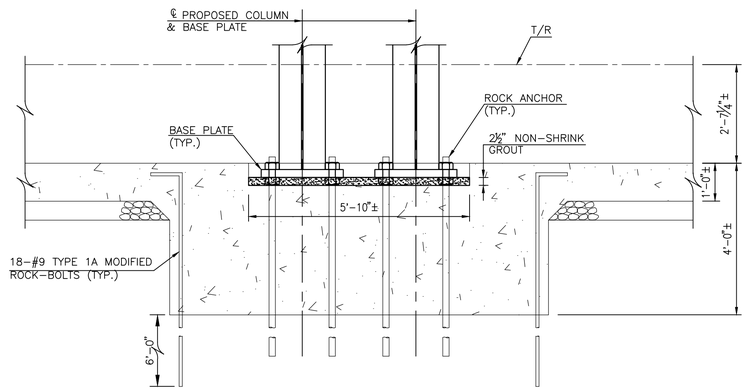


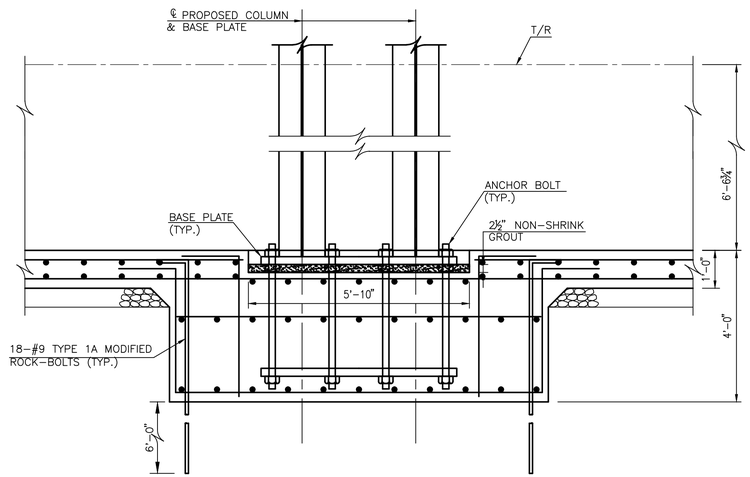
3 DETAIL
S-11
SCALE: ½"=1'-0"



L SECTION
S-11
SCALE: ½"=1'-0"



M SECTION
S-11
SCALE: ½"=1'-0"



N SECTION
S-11
SCALE: ½"=1'-0"

CONTRACT NO.
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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
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RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
851 South Caroline Street, Baltimore, Maryland 21231

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BETHESDA STATION - SOUTH ENTRANCE

PLATFORM SECTIONS AND DETAILS

SCALE
AS NOTED

DRAWING NO.
S-11

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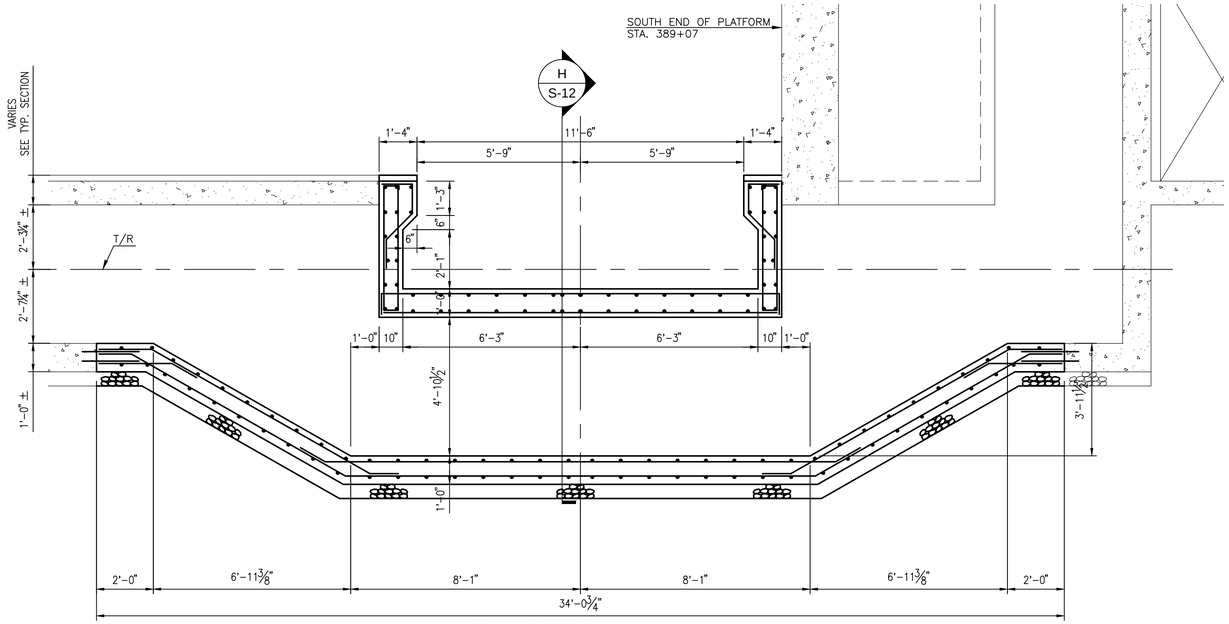
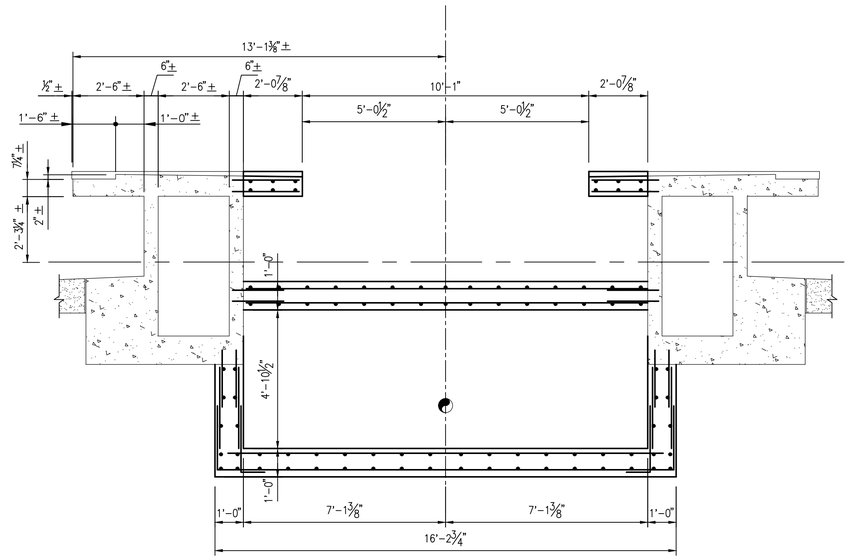


J
S-11
DETAIL
SCALE: ⅜"=1'-0"



H
S-12
SECTION
SCALE: ⅜"=1'-0"

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MONTGOMERY COUNTY MARYLAND 1776 — MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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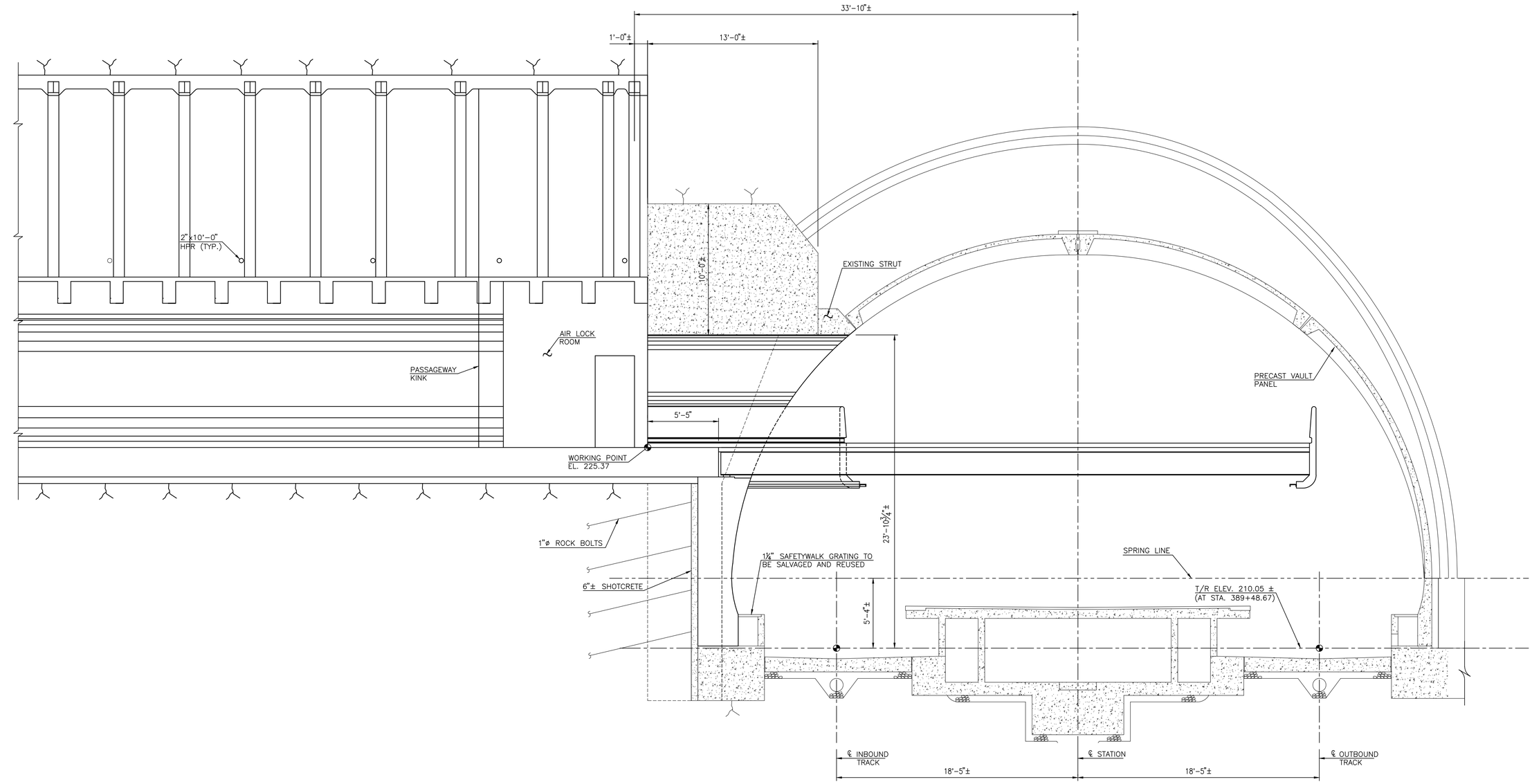
801 South Caroline Street, Baltimore, Maryland 21231

BETHESDA STATION - SOUTH ENTRANCE

PLATFORM SECTIONS AND DETAILS

SCALE: AS NOTED

DRAWING NO.: S-12



D / S-9 **SECTION**
SCALE: ¼"=1'-0"

CONTRACT NO.
XXXXXX

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One South Caroline Street, Baltimore, Maryland 21202

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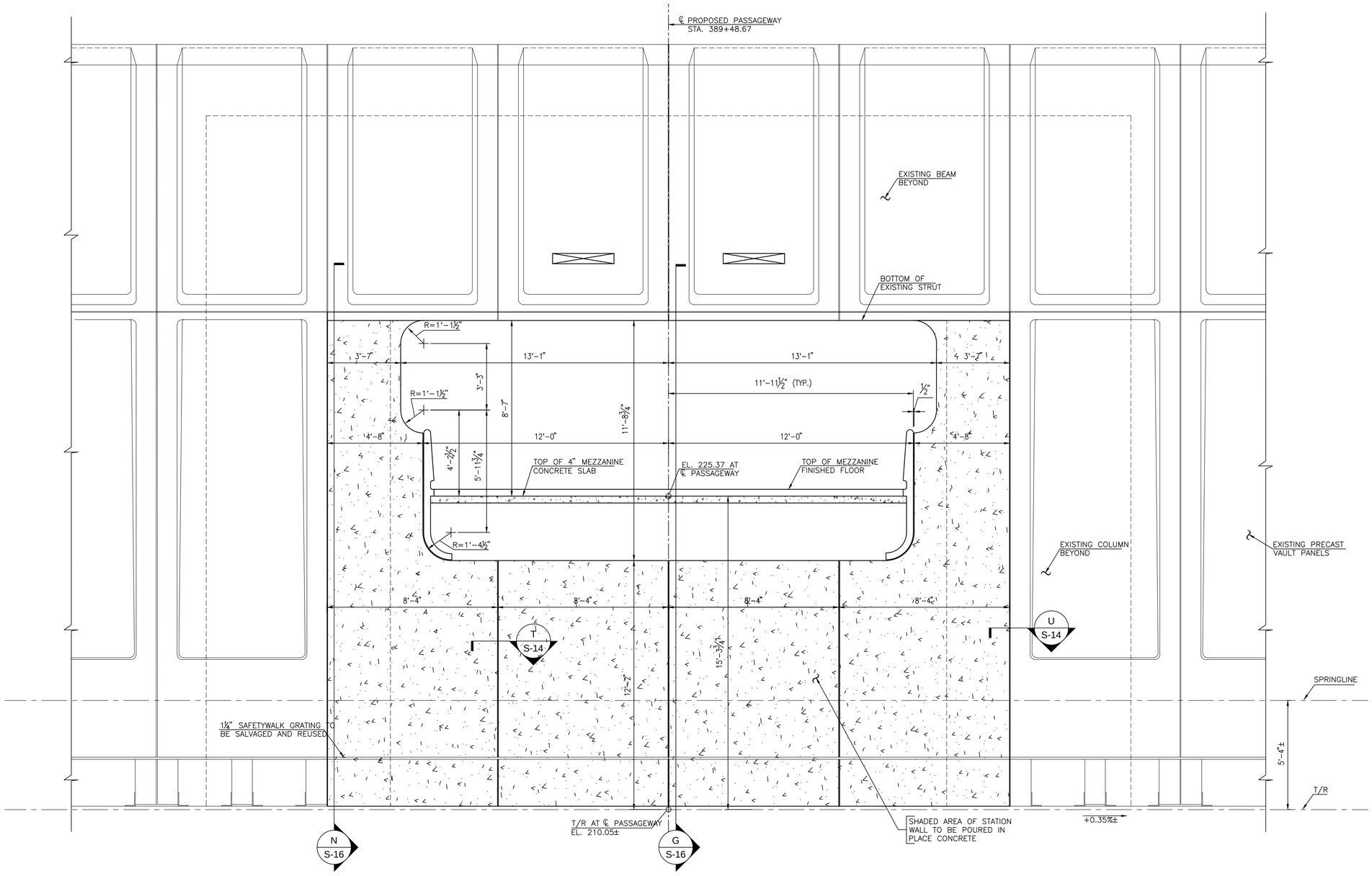
BETHESDA STATION - SOUTH ENTRANCE

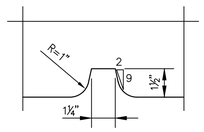
SECTION AT SOUTH PASSAGEWAY

SCALE
AS NOTED

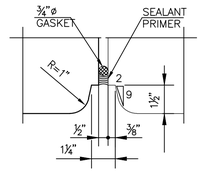
DRAWING NO.
S-13



E S-9 **SECTION**
SCALE: ¾"= 1-0"



T S-14 **SECTION**
(TYPICAL 3 LOCATIONS)
SCALE: 1½"= 1-0"



U S-14 **SECTION**
(TYPICAL 2 LOCATIONS)
SCALE: 1½"= 1-0"

CONTRACT NO.
XXXXXX

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8th South Caroline Street, Baltimore, Maryland 21202

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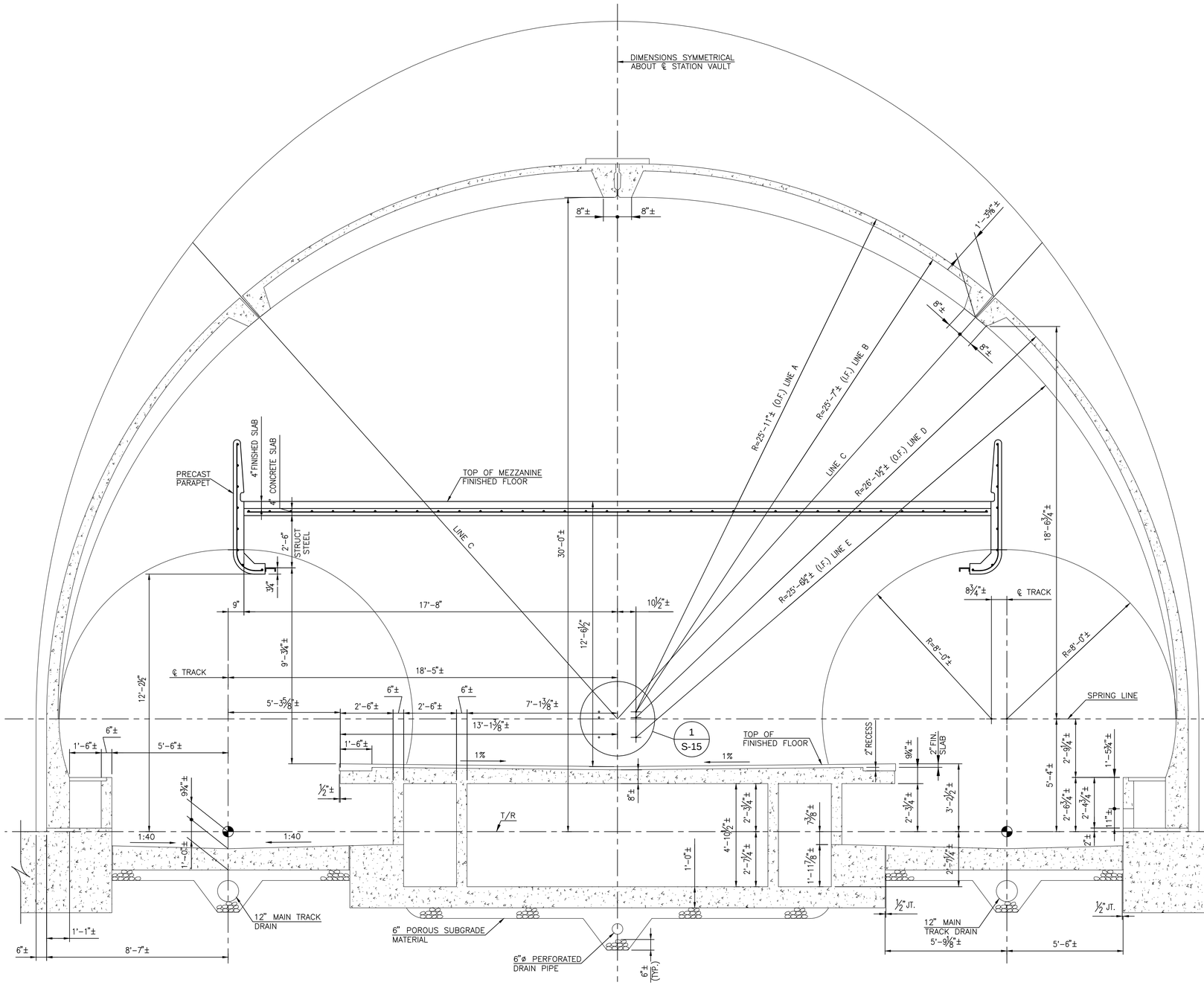
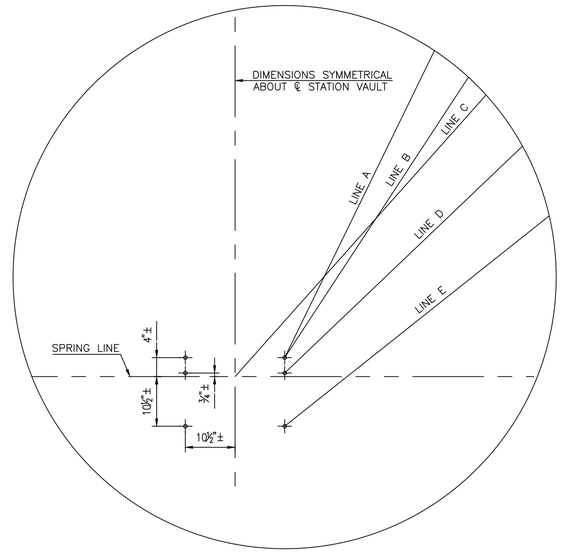
BETHESDA STATION - SOUTH ENTRANCE

VAULT DETAILS AT SOUTH PASSAGEWAY

SCALE	DRAWING NO.
AS NOTED	S-14



F S-9 **TYPICAL SECTION THROUGH STATION**
SCALE: ⅜"= 1-0"



1 S-15 **DETAIL**
SCALE: ¾"= 1-0"

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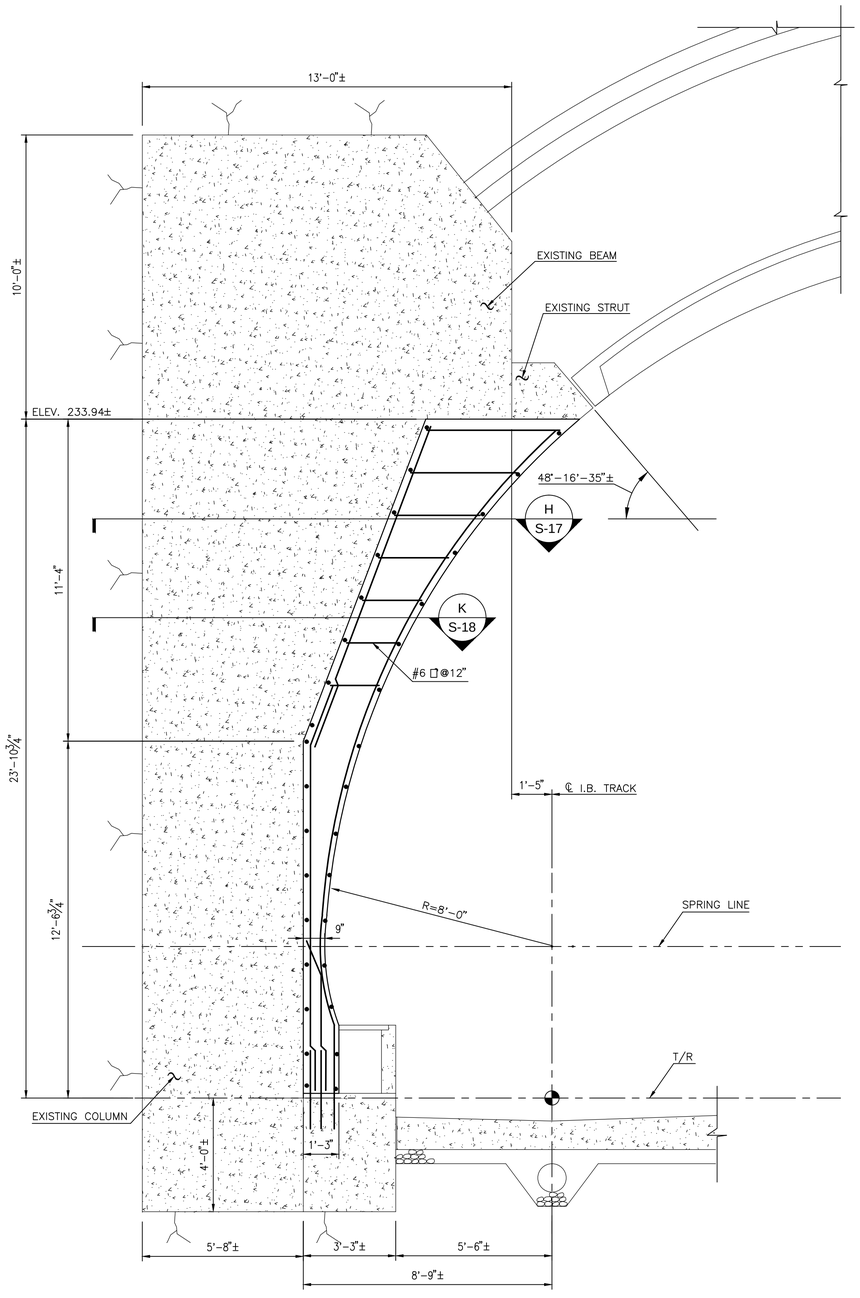
BETHESDA STATION - SOUTH ENTRANCE

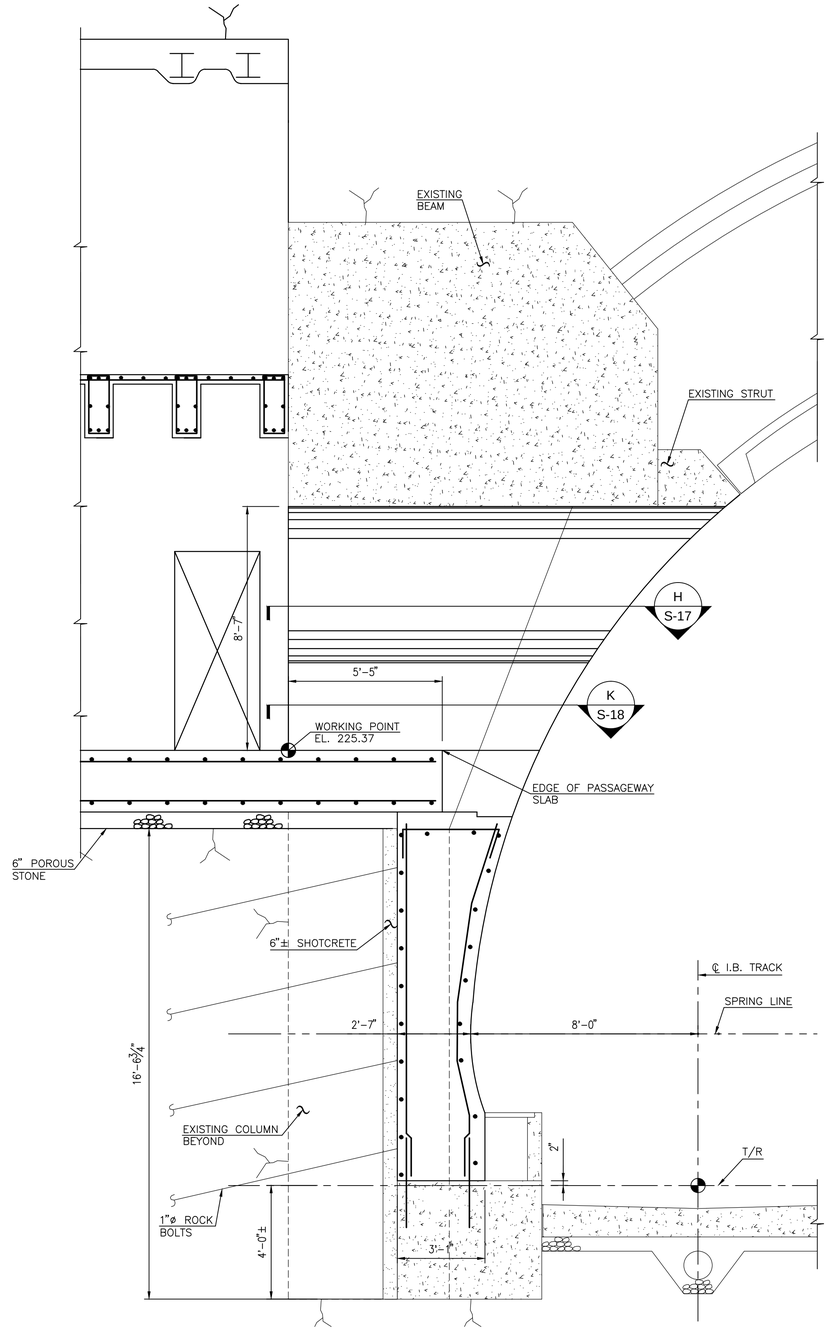
PRECAST VAULT AND PLATFORM DETAILS

SCALE: AS NOTED

DRAWING NO. S-15



N S-14 **SECTION**
SCALE: ⅜"= 1-0"



G S-14 **SECTION**
SCALE: ⅜"= 1-0"

CONTRACT NO.
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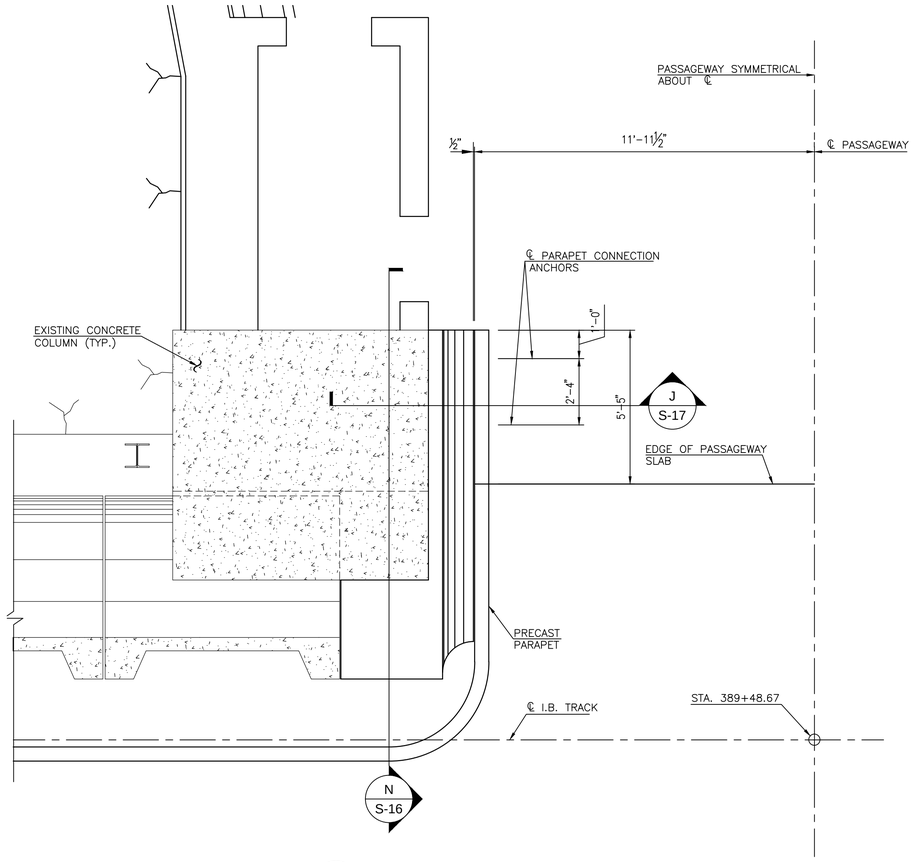
BETHESDA STATION - SOUTH ENTRANCE

DETAILS AT SOUTH PASSAGEWAY

SCALE
AS NOTED

DRAWING NO.
S-16



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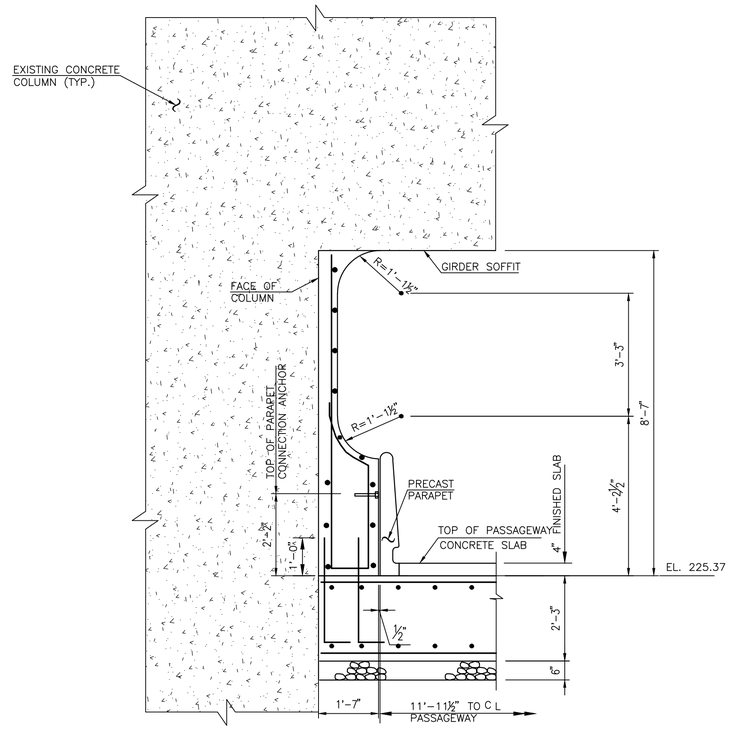
SCALE: ⅜"= 1-0"



J S-17 **SECTION**
SCALE: ½"= 1-0"

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CHECKED	D.S. TUSING	DATE
APPROVED		DATE

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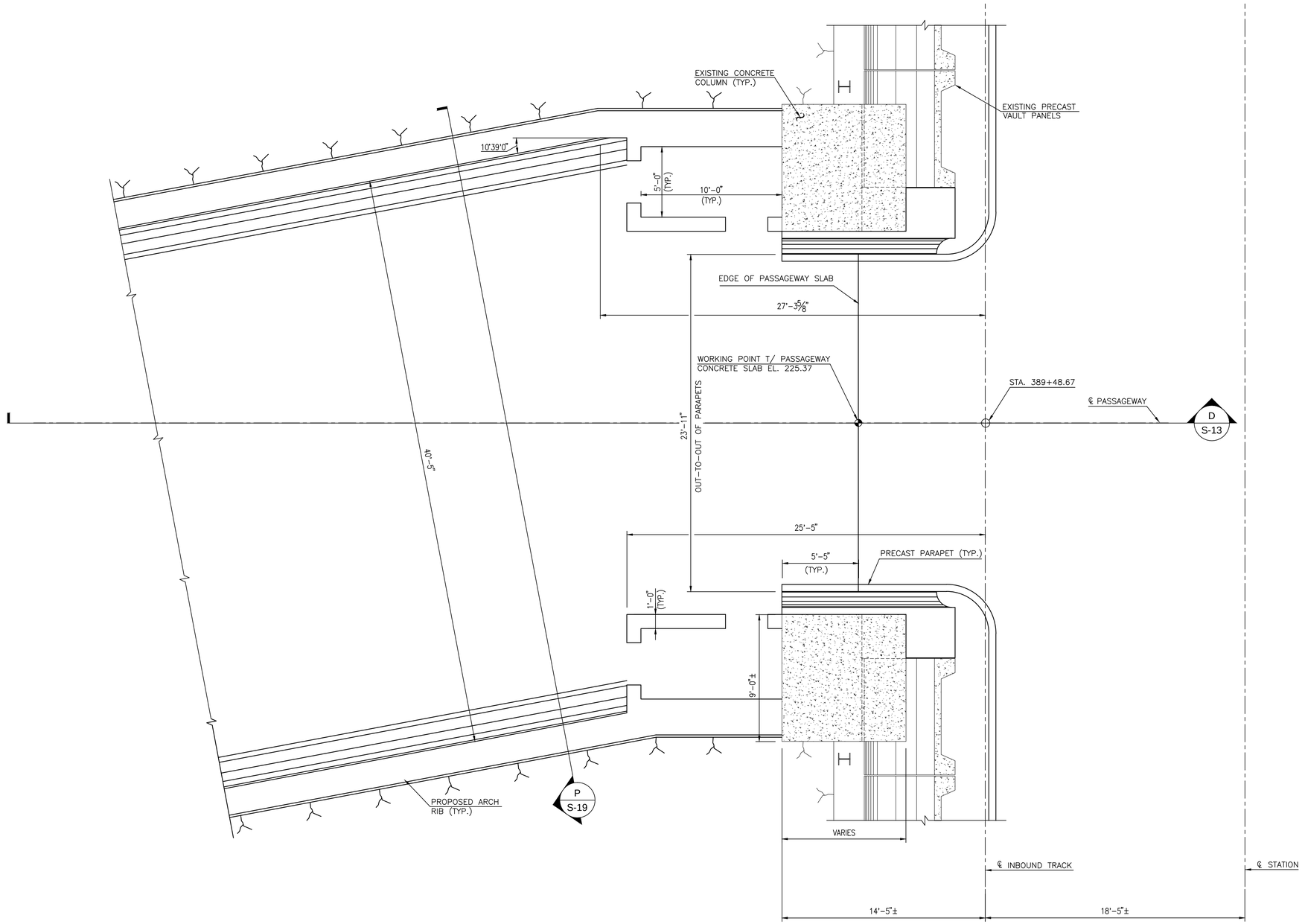
BETHESDA STATION - SOUTH ENTRANCE

DETAILS AT SOUTH PASSAGEWAY

SCALE
AS NOTED

DRAWING NO.
S-17



K
S-14

SECTION - PROPOSED PASSAGEWAY PLAN

SCALE: ¼"=1'-0"

CONTRACT NO.
XXXXXX

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APPROVED	DATE		

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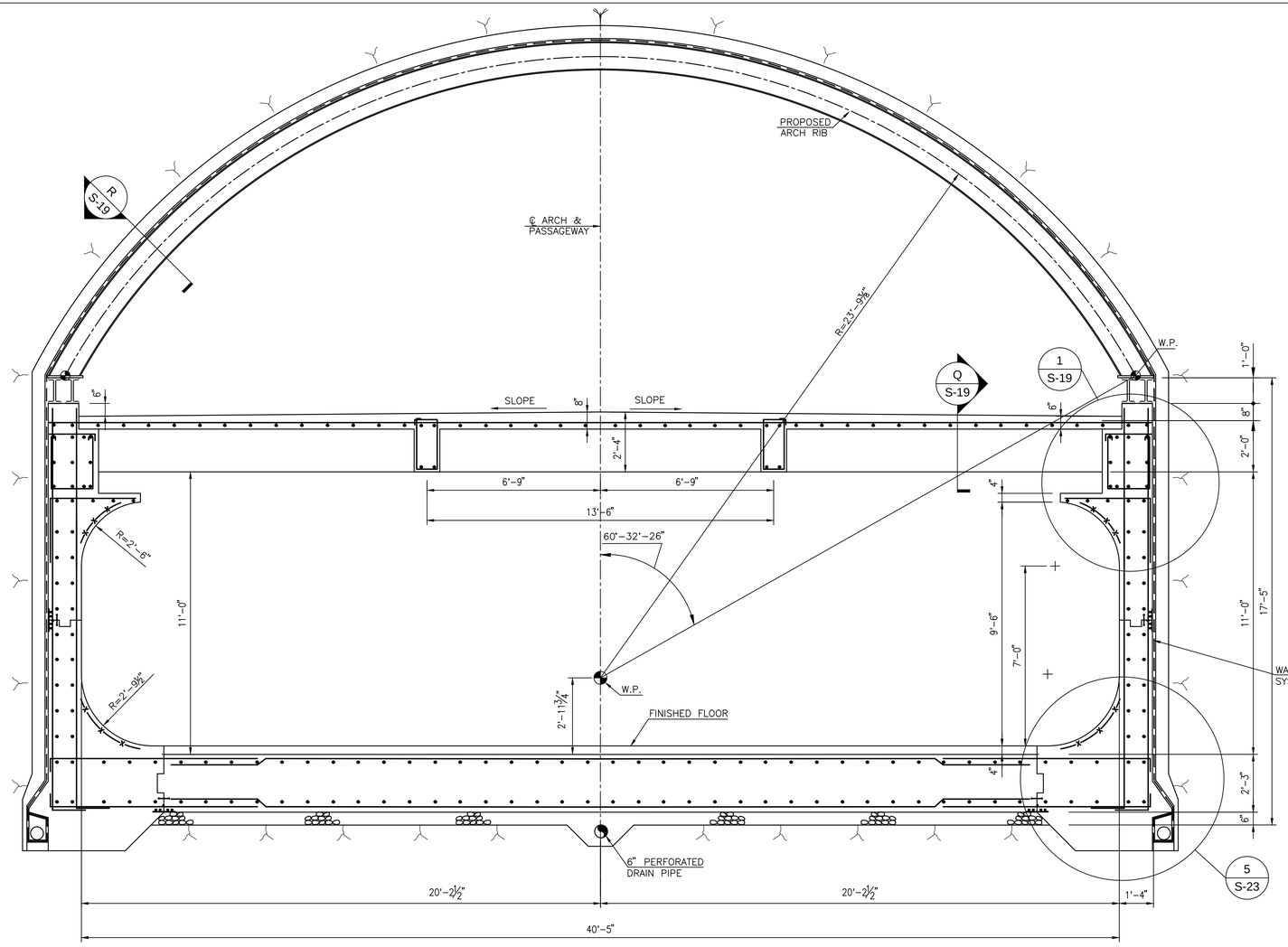
BETHESDA STATION - SOUTH ENTRANCE

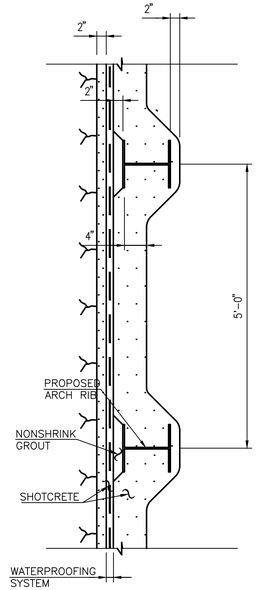
PROPOSED PASSAGEWAY PLAN

SCALE
AS NOTED

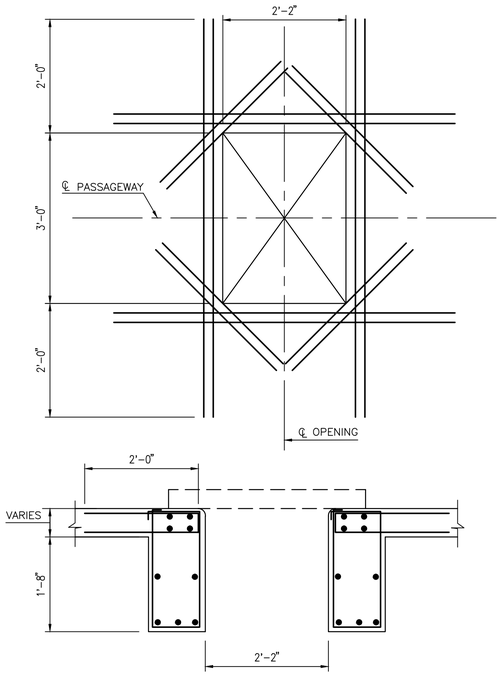
DRAWING NO.
S-18



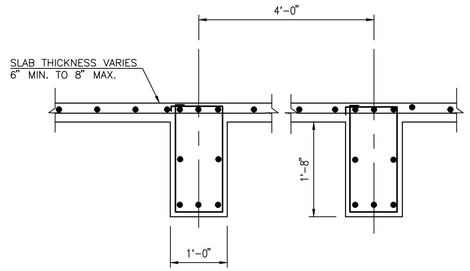
P S-18 **SECTION**
SCALE: ⅜"= 1-0"



R S-19 **SECTION**
SCALE: ¾"= 1-0"



ROOF SCUTTLE OPENING DETAIL
SCALE: ¾"= 1-0"



Q S-19 **SECTION**
SCALE: ¾"= 1-0"

1 S-19 **DETAIL**
SCALE: ¾"= 1-0"

CONTRACT NO.
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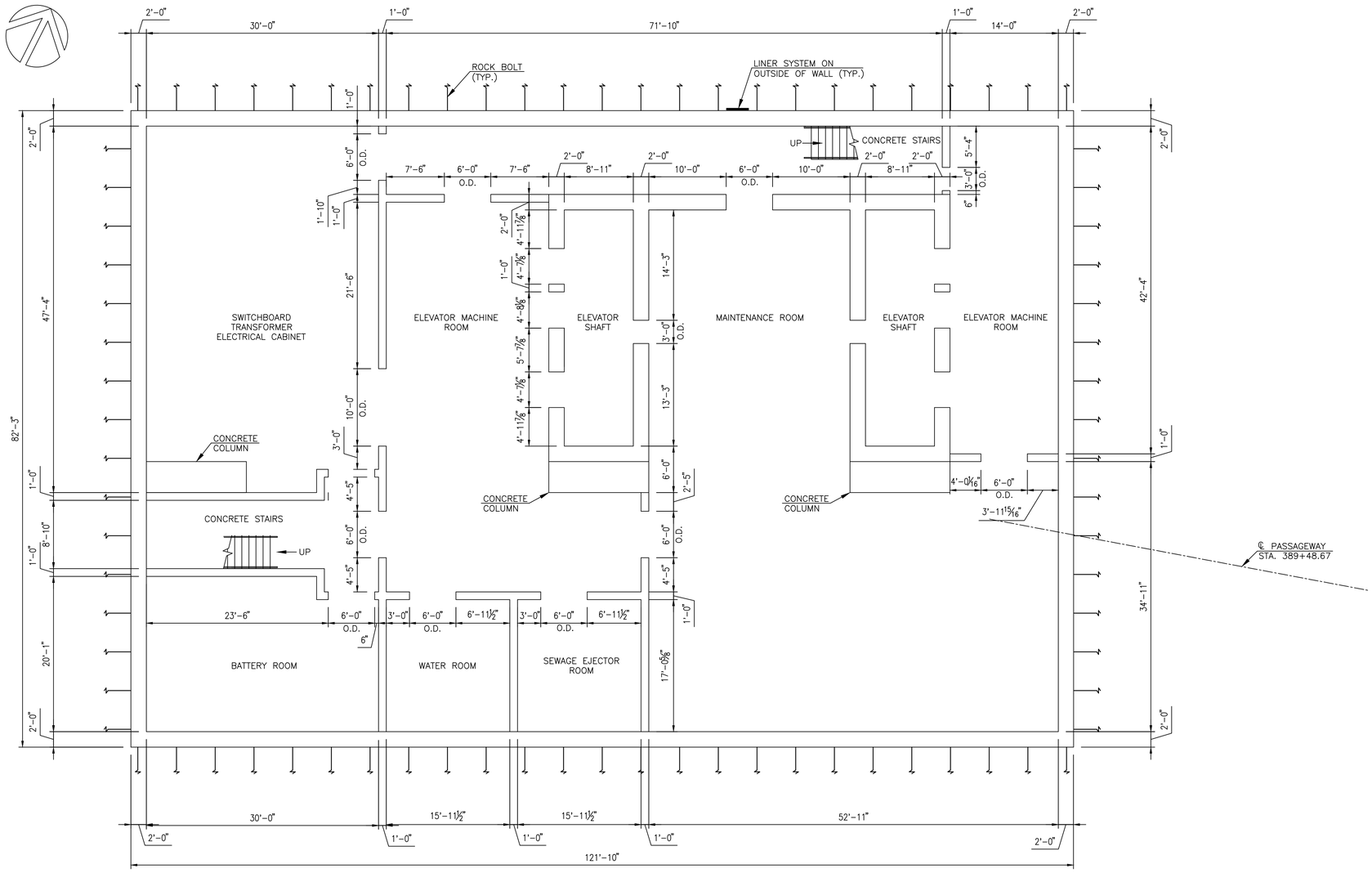
BETHESDA STATION - SOUTH ENTRANCE

PROPOSED PASSAGEWAY SECTIONS

SCALE
AS NOTED

DRAWING NO.
S-19

NOTE:
DOOR OPENING DIMENSIONS
SHOWN ARE NOMINAL.



ELEVATOR MACHINE ROOM FLOOR PLAN

SCALE: ⅛" = 1'-0"

CONTRACT NO.
XXXXXX

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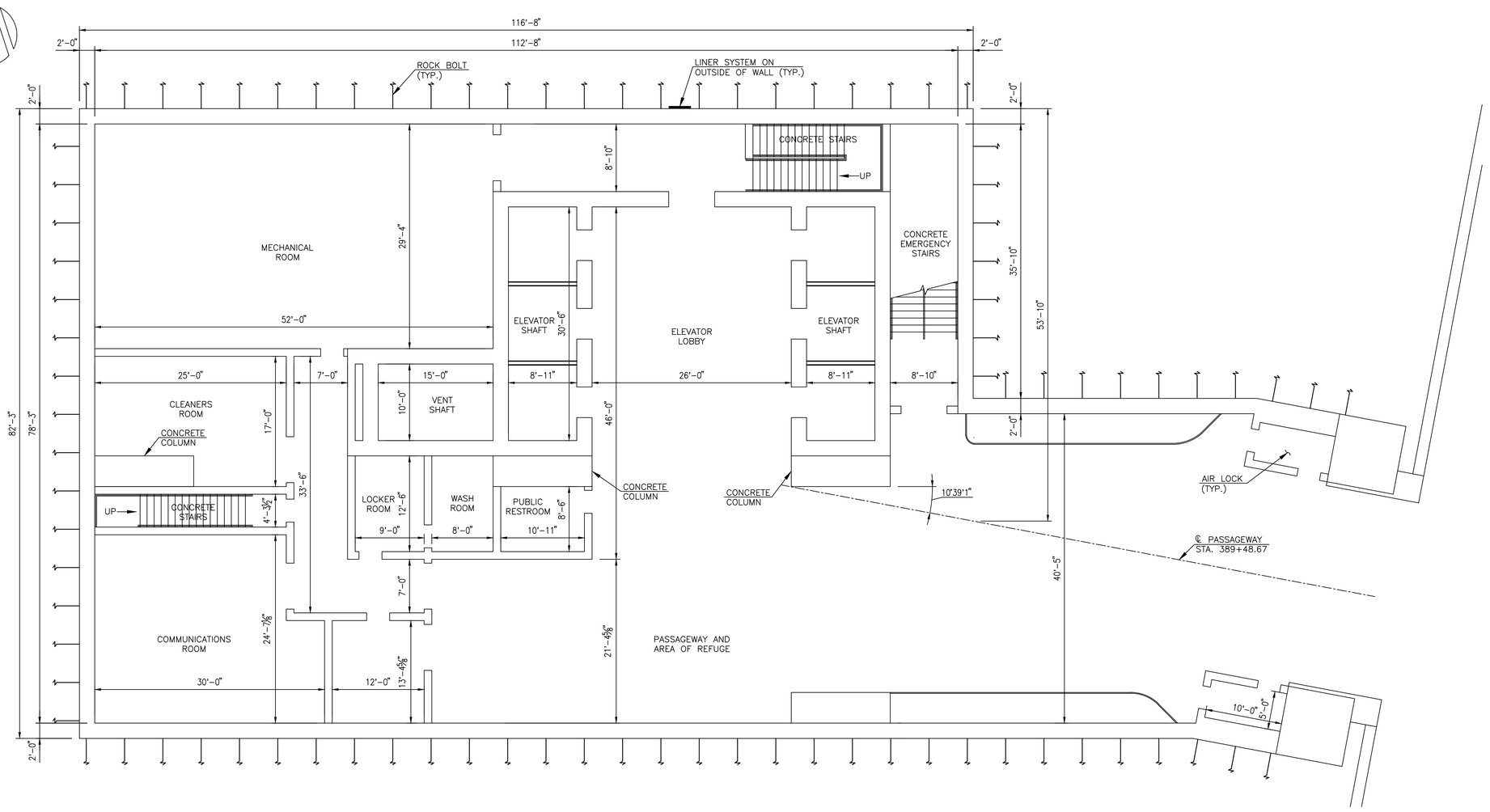
BETHESDA STATION - SOUTH ENTRANCE

ELEVATOR MACHINE ROOM FLOOR PLAN

SCALE
AS NOTED

DRAWING NO.
S-20



MEZZANINE LEVEL FLOOR PLAN

SCALE: ⅛" = 1'-0"

CONTRACT NO. XXXXXX

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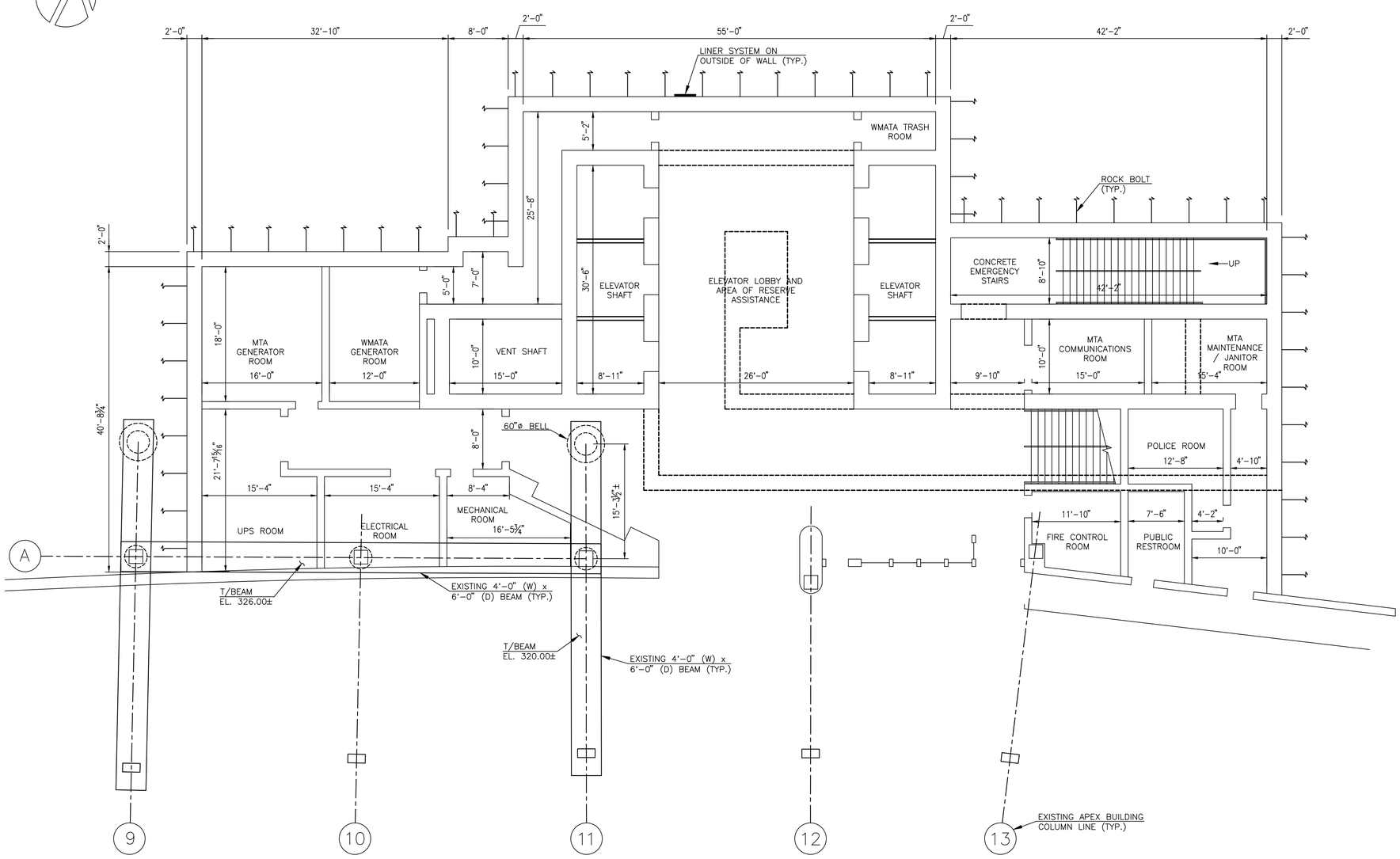
BETHESDA STATION - SOUTH ENTRANCE

MEZZANINE LEVEL FLOOR PLAN

SCALE: AS NOTED

DRAWING NO. S-21



PURPLE LINE FLOOR PLAN

SCALE: ⅛" = 1'-0"

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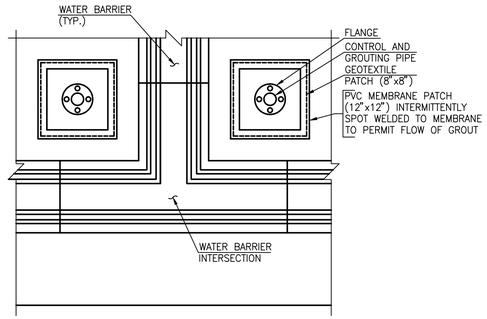
BETHESDA STATION - SOUTH ENTRANCE

PURPLE LINE FLOOR PLAN

SCALE AS NOTED

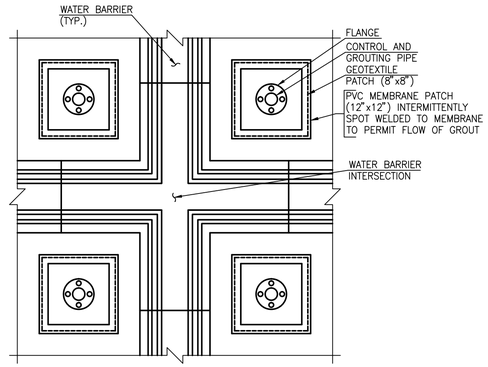
DRAWING NO. S-22



1 S-23

WATER BARRIER "T" INTERSECTION

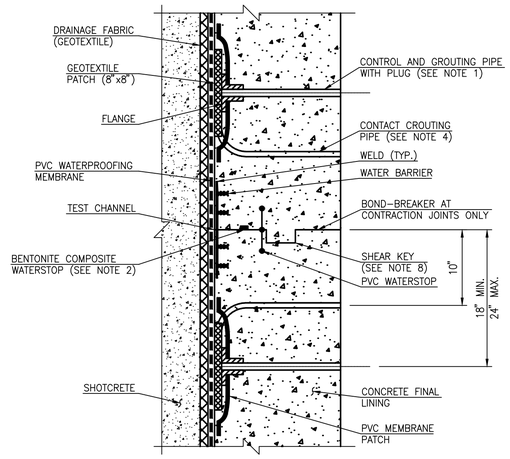
SCALE: N.T.S.



2 S-23

WATER BARRIER "X" INTERSECTION

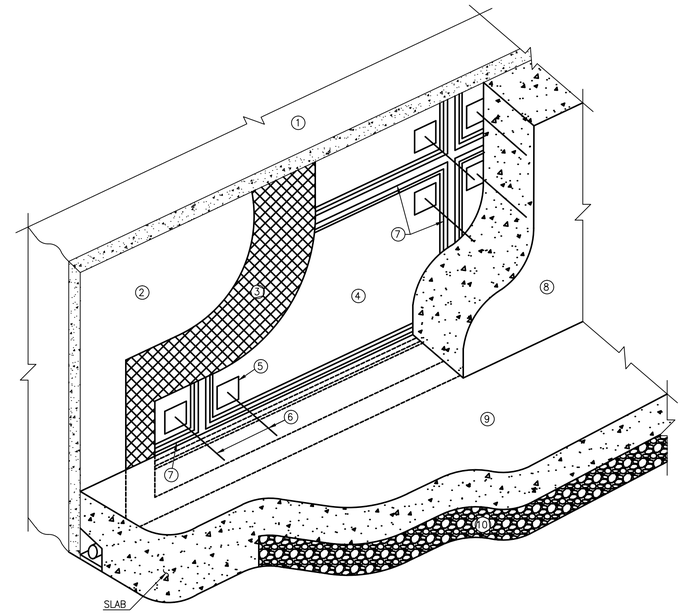
SCALE: N.T.S.



3 S-23

LINER CONTRACTION AND CONSTRUCTION JOINT DETAIL

SCALE: N.T.S.



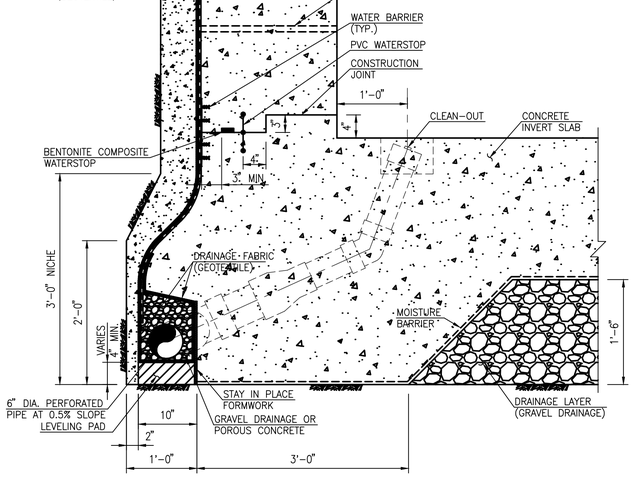
4 S-23

ISOMETRIC VIEW OF SECTIONING

SCALE: N.T.S.

NOTES:
1. SECURELY ATTACH CONTROL AND GROUTING PIPE TO STEEL REINFORCEMENT. PIPE SHALL HAVE THREADED COUPLING FOR GROUT LINE AND REMOVABLE PLUG.
2. WHERE AN EXTERNAL WATER BARRIER IS INDICATED A BENTONITE COMPOSITE WATERSTOP SHALL BE USED INSTEAD OF PVC WATERSTOP.
3. HORIZONTAL CONSTRUCTION JOINTS SHALL BE AS SHOWN.
4. INSTALL CONTACT GROUT PIERS ON A STAGGERED PATTERN, 12" FROM CENTER EACH SIDE OF CENTERLINE, 5'-0" MAX. LONGITUDINAL SPACING. PIPES SHALL HAVE THREADED COUPLINGS AND CAPS. INSTALL ADDITIONAL PIPES, AS REQUIRED.
5. LOCATIONS OF WATER BARRIERS ARE TO BE COORDINATED WITH CONSTRUCTION JOINTS. MAXIMUM SPACING OF WATER BARRIERS IS 35 FT.
6. ENSURE CONTINUITY OF WATER BARRIERS.
7. CONTROL AND GROUTING PIPES TO BE LOCATED CLEAR OF WALLS, FLOOR SLABS AND OTHER OBSTRUCTIONS.
8. SEE STRUCTURAL DRAWINGS FOR SHEAR KEY AND REINFORCEMENT DETAILS.
9. WELD CONNECTION BETWEEN MEMBRANE AND BA-ANCHOR WITH SINGLE WELD. CONTRACTOR SHALL DETERMINE OPTIMAL NUMBER AND LOCATION OF BA-ANCHORS. THE CONTRACTOR MAY PROPOSE ALTERNATIVE SYSTEM TO SUPPORT REINFORCING STEEL. CONTRACTOR SHALL SUBMIT ALTERNATIVE SYSTEM TO THE AR FOR REVIEW PRIOR TO SETTING REINFORCING STEEL.

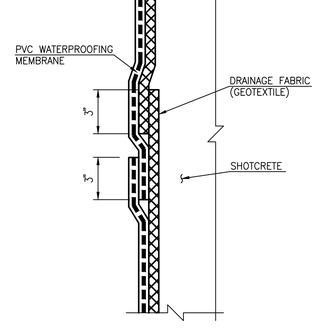
LEGEND:
1. ROCK MASS
2. SHOTCRETE
3. DRAINAGE FABRIC (GEOTEXTILE)
4. PVC WATERPROOFING MEMBRANE
5. PVC MEMBRANE PATCH
6. CONTROL AND GROUTING PIPE
7. WATER BARRIER
8. CONCRETE FINAL LINING
9. CONCRETE INVERT SLAB
10. DRAINAGE LAYER



5 S-23

SIDEWALL NICHE DRAIN DETAIL

APPLICABLE TO: ELEVATOR AND STAIR SHAFT AND SINGLE LEVEL MEZZANINE
SCALE: N.T.S.



6 S-23

WATERPROOFING SPLICING

SCALE: N.T.S.

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BETHESDA STATION - SOUTH ENTRANCE

WATERPROOFING SYSTEM DETAILS - 1

SCALE
AS NOTED

DRAWING NO.
S-23

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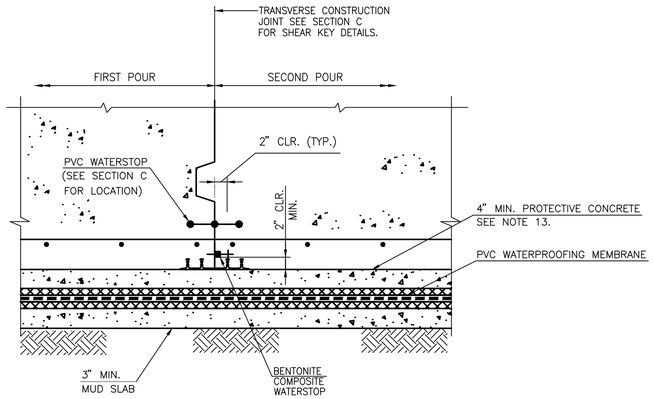
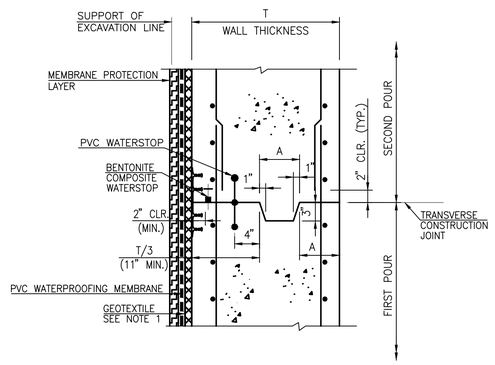


1 S-24 **SLAB SECTION**

SCALE: N.T.S.



2 S-24 **WALL SECTION**

SCALE: N.T.S.

NOTES:

1. GEOTEXTILE TYPE 1 SHALL BE 22 OZ/SY (285 MIL). GEOTEXTILE TYPE 2 SHALL BE 28 OZ/SY (400 MIL). USE TYPE I AGAINST STRUCTURE WALL AND TYPE 2 AGAINST SUPPORT OF EXCAVATION. CHAMFER 2"x2" MIN. ALL CORNERS TO WHICH WATERPROOFING IS TO BE APPLIED.
2. MEMBRANE PROTECTION LAYER SHALL BE 60 MIL PVC MEMBRANE IN CONJUNCTION WITH A LAYER OF POLYSTYRENE OR 1/2" LAYER OF PLYWOOD.
3. PVC MEMBRANE SHALL BE NON REINFORCED 2.5MM (100 MIL) THICK. WELD PATCH USING CONTINUOUS HOT WELD SEAMS TO MEMBRANE ON EVERY END. PVC MEMBRANE PATCH TO BE INSTALLED ONLY ON CORNERS.
4. WATER BARRIER TO BE INSTALLED, U.O.N., AT 2' FROM TOP OF CONCRETE MUD SLAB. HANDWELD SPLICES BY SIDE WELD SEAMS.
5. PVC CONTROL AND GROUTING PIPE SHALL BE 1" NOMINAL DIAMETER, SCHEDULE 40.
6. CONTINUE VERTICAL WATER BARRIER ON THE ROOF AT PORTIONS OF STRUCTURE THAT ARE FULLY UNDERGROUND.
7. WATERPROOFING DETAILS FOR ALL CUT AND COVER STRUCTURES TO BE CONTINUOUS ALL AROUND FOR THE ENTIRE LENGTH OF THE STRUCTURES.
8. BENTONITE COMPOSITE WATERSTOP, AND PVC WATERSTOP (DUMBBELL TYPE, CENTER BULB, 9 INCH WIDTH, 3/8 INCH STEM THICKNESS, 3/4 INCH BULBS) ARE TYPICAL FOR EXTERIOR TRANSVERSE CONSTRUCTION JOINTS IN ROOFS, WALLS AND INVERT SLABS.
9. THE MINIMUM SIZE OF BENTONITE COMPOSITE WATERSTOP SHALL BE 3/4 INCH THICK AND 1 INCH WIDE.
10. BENTONITE COMPOSITE WATERSTOP TO BE PLACED BETWEEN PVC WATERSTOP AND EXTERIOR FACE OF WALL OR SLAB, AS SHOWN. PROVIDE A MINIMUM OF 2" OF CONCRETE COVER ADJACENT TO THE WATERSTOP.
11. BENTONITE COMPOSITE WATERSTOP IN HORIZONTAL LONGITUDINAL DIRECTION SHALL BE LINED UP & ADHERED TO BENTONITE IN VERTICAL DIRECTION AT TRANSVERSE CONSTRUCTION JOINTS.
12. PVC WATERSTOP IN HORIZONTAL LONGITUDINAL DIRECTION SHALL BE LINED UP & WELDED TO VERTICAL PVC WATERSTOP AT TRANSVERSE CONSTRUCTION JOINTS.
13. PROTECTIVE CONCRETE LAYER FOR ROOF SLAB OR INVERT WATERPROOFING SHALL BE REINFORCED WITH WELDED WIRE FABRIC IF TRAFFIC AND/OR EQUIPMENT IS EXPECTED TO RUN ON TOP.

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BETHESDA STATION - SOUTH ENTRANCE

WATERPROOFING SYSTEM DETAILS - 2

SCALE AS NOTED

DRAWING NO. S-24

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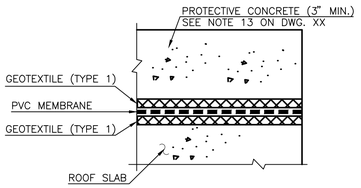
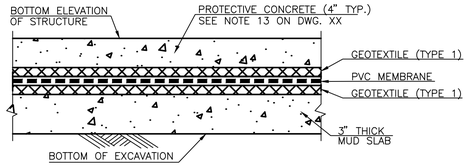


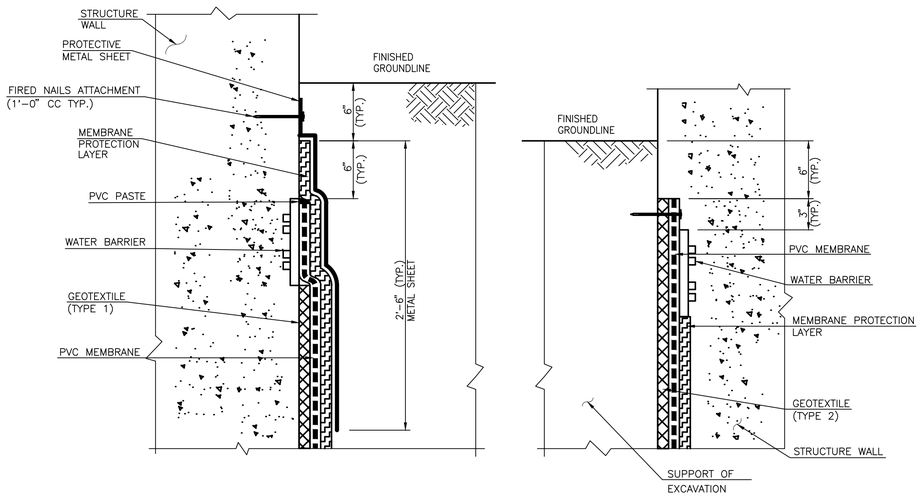
1 S-25 WATERPROOFING AT ROOF SLAB

SCALE: N.T.S.



2 S-25 INVERT WATERPROOFING DETAIL

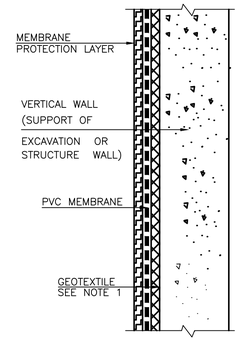
SCALE: N.T.S.



AT STRUCTURAL WALL AT SUPPORT OF EXCAVATION WALL

3 S-25 WATERPROOFING TERMINATION NEAR GROUND SURFACE DETAIL

SCALE: N.T.S.

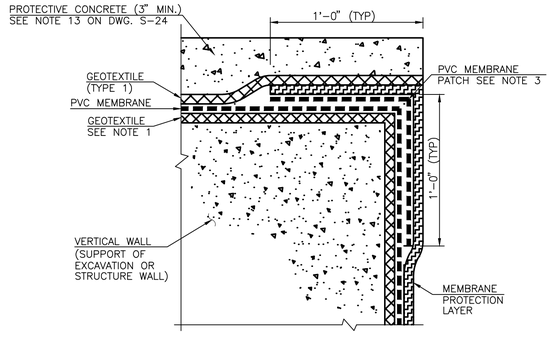


NOTES:

1. GEOTEXTILE TYPE 1 SHALL BE 22 OZ/SY (285 MIL). GEOTEXTILE TYPE 2 SHALL BE 28 OZ/SY (400 MIL). USE TYPE I AGAINST STRUCTURE WALL AND TYPE 2 AGAINST SUPPORT OF EXCAVATION. CHAMFER ALL CORNERS TO WHICH WATERPROOFING IS TO BE APPLIED.
2. MEMBRANE PROTECTION LAYER SHALL BE 60 MIL PVC MEMBRANE IN CONJUNCTION WITH A LAYER OF POLYSTYRENE OR 1/2" LAYER OF PLYWOOD.
3. PVC MEMBRANE SHALL BE NON REINFORCED 2.5MM (100 MIL) THICK. WELD PATCH USING CONTINUOUS HOT WELD SEAMS TO MEMBRANE ON EVERY END. PVC MEMBRANE PATCH TO BE INSTALLED ONLY ON CORNERS.
4. REVIEW THIS SHEET ALONG WITH DWGS. N00-NGA-S-503, N00-NGA-S-505, AND N00-NGA-S-506.
5. ALL CONCRETE CORNERS SHALL BE CHAMFERED 2 IN. x 2 IN.
6. FOR ADDITIONAL NOTES, SEE DWG. S-24.

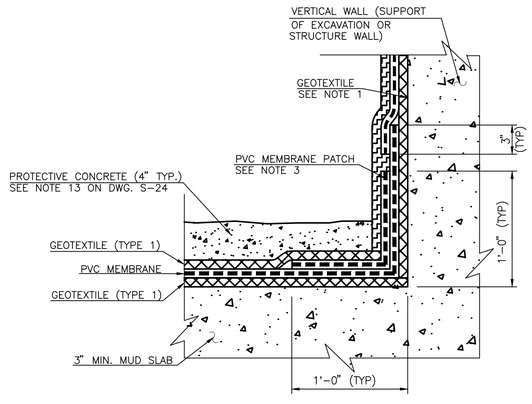
4 S-25 WATERPROOFING AT VERTICAL WALLS DETAIL

SCALE: N.T.S.



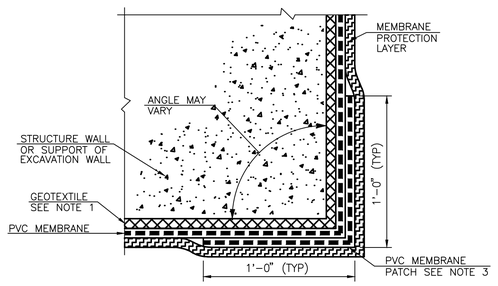
5 S-25 WATERPROOFING SLAB/WALL TRANSITION DETAIL AT OUTSIDE CORNERS

SCALE: N.T.S.



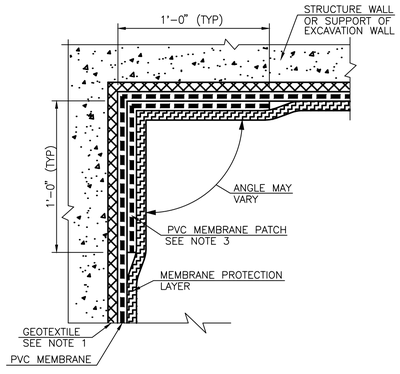
6 S-25 WATERPROOFING SLAB/WALL TRANSITION DETAIL AT INSIDE CORNERS

SCALE: N.T.S.



7 S-25 WATERPROOFING TRANSITION DETAIL AT VERTICAL OUTSIDE CORNERS

SCALE: N.T.S.



8 S-25 WATERPROOFING TRANSITION DETAIL AT VERTICAL INSIDE CORNERS

SCALE: N.T.S.

CONTRACT NO. XXXXXX

DESIGNED	DATE
DRAWN E.M. THOMPSON	DATE
CHECKED D.S. TUSING	DATE
APPROVED	DATE

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-2160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
Bar South Caroline Street, Baltimore, Maryland 21202

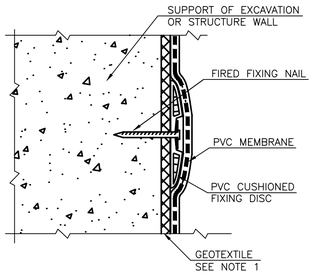
APPROVED

BETHESDA STATION - SOUTH ENTRANCE

WATERPROOFING SYSTEM DETAILS - 3

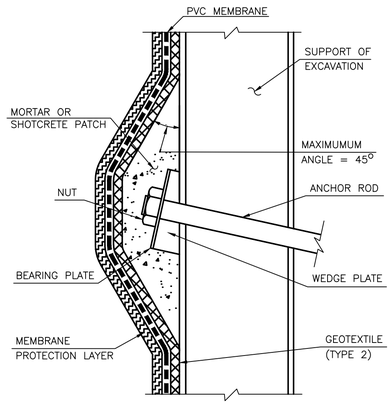
SCALE AS NOTED

DRAWING NO. S-25



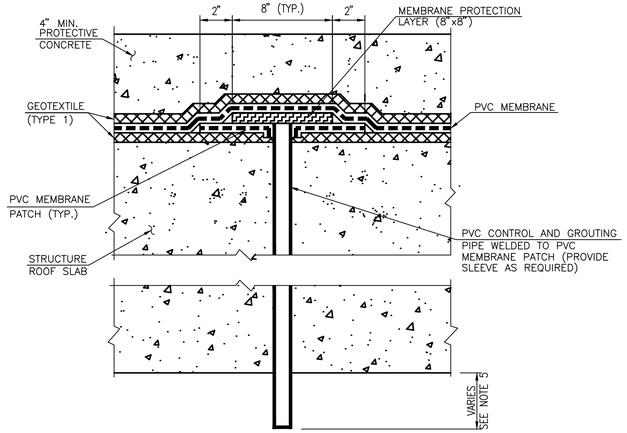
1 S-26 MEMBRANE ATTACHMENT FIRED FIXING NAIL AND STEEL WASHER

SCALE: N.T.S.



2 S-26 WATERPROOFING AT TIE BACK ANCHOR HEADS

SCALE: N.T.S.

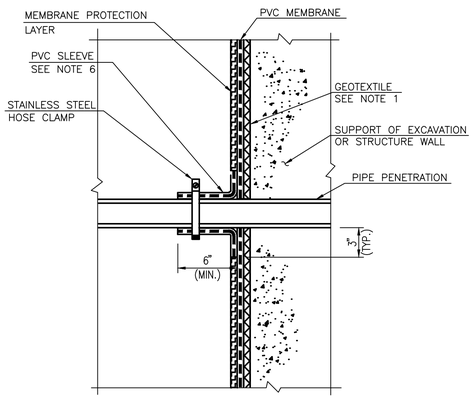


3 S-26 CONTROL AND GROUTING PIPE IN ROOF SLAB

SCALE: N.T.S.

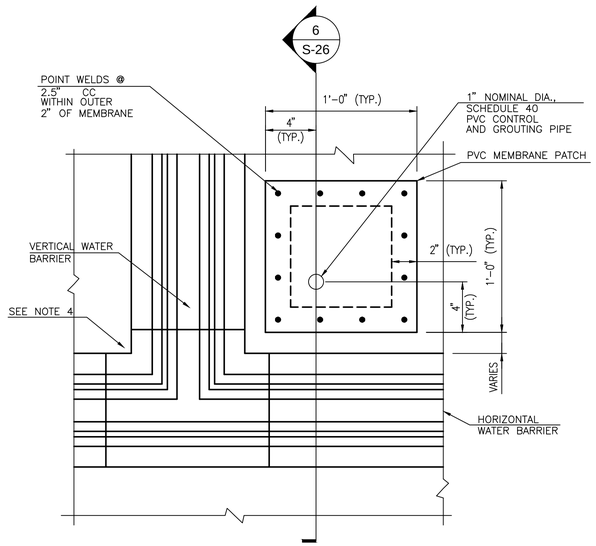
NOTES:

1. GEOTEXTILE TYPE 1 SHALL BE 22 OZ/SY (285 MIL). GEOTEXTILE TYPE 2 SHALL BE 28 OZ/SY (400 MIL). USE TYPE I AGAINST STRUCTURE WALL AND TYPE 2 AGAINST SUPPORT OF EXCAVATION. CHAMFER ALL CORNERS TO WHICH WATERPROOFING IS TO BE APPLIED.
2. MEMBRANE PROTECTION LAYER SHALL BE 60 MIL PVC MEMBRANE IN CONJUNCTION WITH A LAYER OF POLYSTYRENE OR 1/2" LAYER OF PLYWOOD.
3. PVC MEMBRANE SHALL BE NON REINFORCED 2.5MM (100 MIL) THICK. WELD PATCH USING CONTINUOUS HOT WELD SEAMS TO MEMBRANE ON EVERY END.
4. WATER BARRIER INTERSECTION TO BE PREMANUFACTURED BY MANUFACTURER OR AT WORKSHOP ON SITE. HANDWELD SPLICES BY SIDE WELD SEAMS. OTHER INTERSECTION TYPES USE SIMILAR CONNECTION.
5. WHEN VISIBLE IN PUBLIC AREAS, PROVIDE PVC PIPE WITH INSIDE THREADS AND REMOVABLE END CAP FLUSH WITH THE CONCRETE. WHEN NOT VISIBLE IN PUBLIC AREAS, PROVIDE 4" EXTENSION WITH OPEN END BEYOND CONCRETE SURFACE.
6. APPLY SILICONE PASTE OR EQUAL BETWEEN PVC PIPE AND SLEEVE.
7. FOR ADDITIONAL NOTES, SEE DWG. S-24.



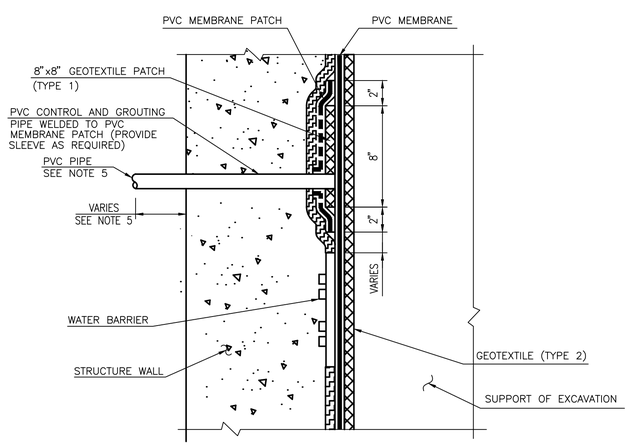
4 S-26 WATERPROOFING AT PIPE PENETRATIONS

SCALE: N.T.S.



5 S-26 WATERPROOFING AT SUPPORT OF EXCAVATION WALL ELEVATION

SCALE: N.T.S.



6 S-26 WATERPROOFING AT SUPPORT OF EXCAVATION WALL SECTION

SCALE: N.T.S.

CONTRACT NO. XXXXXX

DESIGNED		DATE
DRAWN	E.M. THOMPSON	DATE
CHECKED	D.S. TUSING	DATE
APPROVED		DATE

REVISIONS		
DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
851 South Caroline Street, Baltimore, Maryland 21231

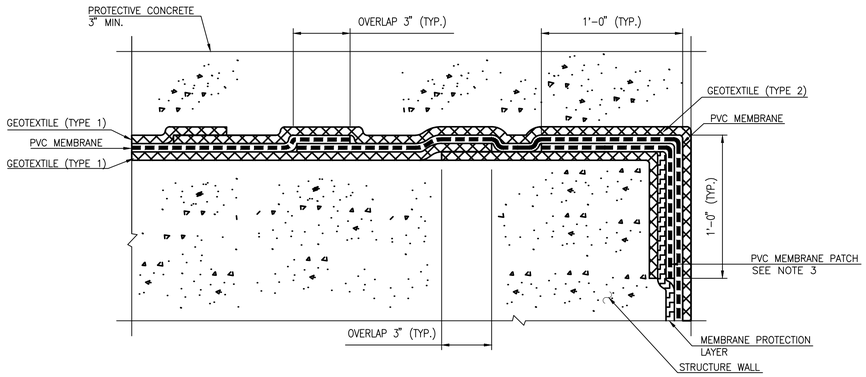
APPROVED _____

BETHESDA STATION - SOUTH ENTRANCE

WATERPROOFING SYSTEM DETAILS - 4

SCALE: AS NOTED

DRAWING NO. S-26

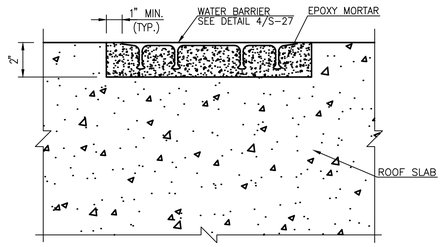


1 S-27 WATERPROOFING CONNECTION FROM SUPPORT OF EXCAVATION WALL TO STRUCTURE SLAB

SCALE: N.T.S.

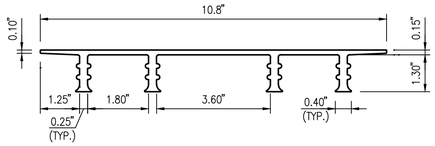
2 S-27 WATERPROOFING CONNECTION AT VERTICAL WALLS

SCALE: N.T.S.



3 S-27 WATER BARRIER INSTALLATION IN ROOF SLAB

SCALE: N.T.S.



4 S-27 TYPICAL WATER BARRIER CONFIGURATION

SCALE: N.T.S.

NOTES:

1. GEOTEXTILE TYPE 1 SHALL BE 22 OZ/SY (285 MIL). GEOTEXTILE TYPE 2 SHALL BE 28 OZ/SY (400 MIL). USE TYPE I AGAINST STRUCTURE WALL AND TYPE 2 AGAINST SUPPORT OF EXCAVATION. CHAMFER ALL CORNERS TO WHICH WATERPROOFING IS TO BE APPLIED.
2. MEMBRANE PROTECTION LAYER SHALL BE 60 MIL PVC MEMBRANE IN CONJUNCTION WITH A LAYER OF POLYSTYRENE OR 1/2" LAYER OF PLYWOOD.
3. PVC MEMBRANE SHALL BE NON REINFORCED 2.5MM (100 MIL) THICK. WELD PATCH USING CONTINUOUS HOT WELD SEAMS TO MEMBRANE ON EVERY END. PVC MEMBRANE PATCH TO BE INSTALLED AS SHOWN.
4. WATER BARRIER SPLICES TO BE HANDWELDED BY SIDE WELD SEAMS.
5. FOR ADDITIONAL NOTES, SEE DWG. S-24.

CONTRACT NO. XXXXXX

DESIGNED	DATE	REVISIONS: DATE / BY / DESCRIPTION	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DRAWN E.M. THOMPSON	DATE		DEPARTMENT OF OPERATIONS SERVICES OFFICE OF ENGINEERING SERVICE
CHECKED D.S. TUSING	DATE		SUBMITTED BY _____
APPROVED _____	DATE		APPROVED _____

Rummel, Klepper & Kahl, LLP — 81 MOSHER STREET | BALTIMORE, MD 21217 — PH: (410) 728-2900 FAX: (410) 728-3160

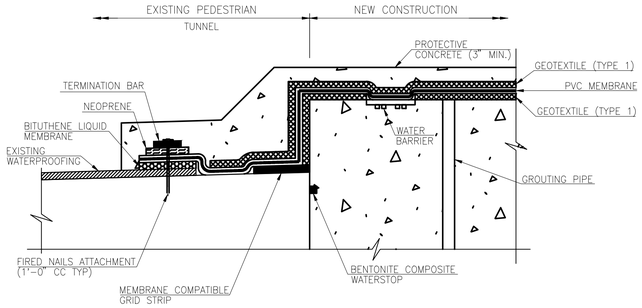
WHITMAN, REQUARDT & ASSOCIATES, LLP — 8th South Caroline Street, Baltimore, Maryland 21202

BETHESDA STATION - SOUTH ENTRANCE

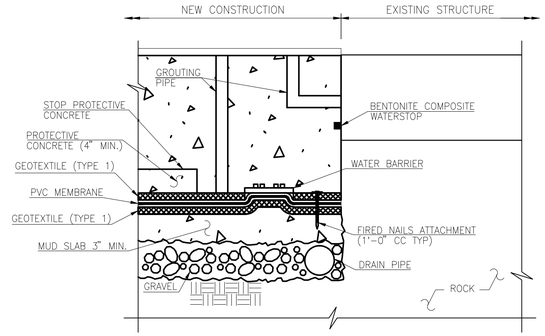
WATERPROOFING SYSTEM DETAILS - 5

SCALE: AS NOTED

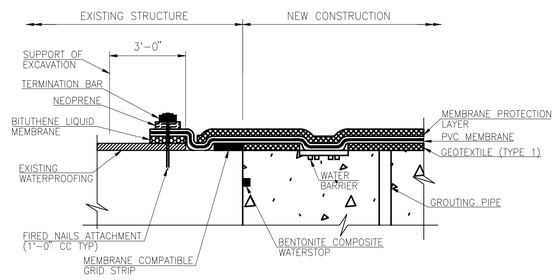
DRAWING NO. S-27



1 S-28 **DETAIL**
SCALE: N.T.S.



2 S-28 **DETAIL**
SCALE: N.T.S.



3 S-28 **DETAIL**
SCALE: N.T.S.

NOTES:

1. CONTRACTOR SHALL REMOVE EXISTING WATERPROOFING AT THE INTERFACE OF EXISTING STRUCTURES WITH NEW CONSTRUCTION TO ALLOW FOR ATTACHMENT AND TERMINATION OF NEW WATERPROOFING AS SHOWN IN THE DETAILS.
2. EXISTING CONCRETE SURFACES TO WHICH NEW WATERPROOFING IS TO BE ADHERED SHALL BE CLEANED AND PREPARED AS PER MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL PREVENT CONTACT BETWEEN THE PVC MEMBRANE AND ANY BITUMINOUS MATERIAL, INCLUDING EXISTING STRUCTURE WATERPROOFING.
4. MATERIALS FOR TERMINATION OF PVC WATERPROOFING AT EXISTING STRUCTURES, SUCH AS EPOXY ADHESIVE, BITUTHENE LIQUID MEMBRANE, NEOPRENE AND TERMINATION BAR, SHALL BE ACCORDING TO PVC MEMBRANE MANUFACTURER'S SPECIFICATIONS.
5. PROTECTIVE CONCRETE TO BE REINFORCED WITH A WELDED WIRE FABRIC IF EQUIPMENT IS EXPECTED TO RUN ON TOP.
6. FOR CORNER WATERPROOFING DETAIL, SEE DETAIL ON DWG. S-25.

CONTRACT NO. XXXXXX

DESIGNED _____ DATE
DRAWN E.M. THOMPSON DATE
CHECKED D.S. TUSING DATE
APPROVED _____ DATE

REVISIONS		
DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

RK&K Rummel, Klepper & Kahl, LLP
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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
Bar South Caroline Street, Baltimore, Maryland 21202

APPROVED _____

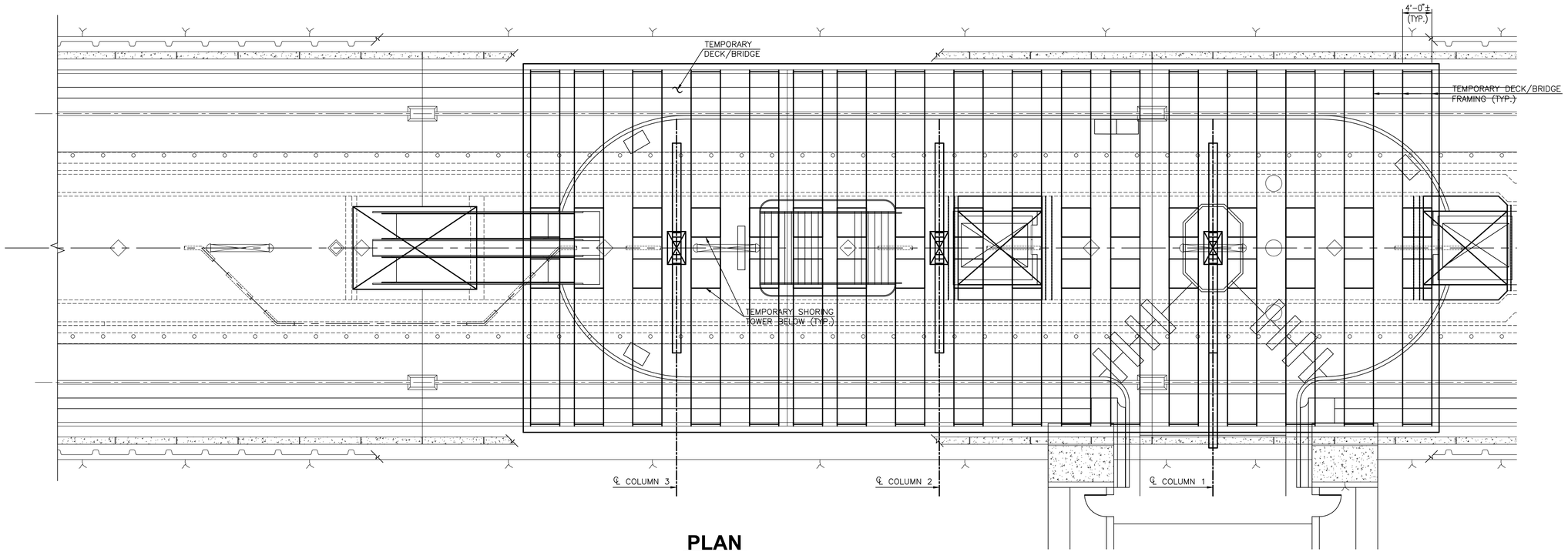
BETHESDA STATION - SOUTH ENTRANCE

WATERPROOFING SYSTEM DETAILS - 6

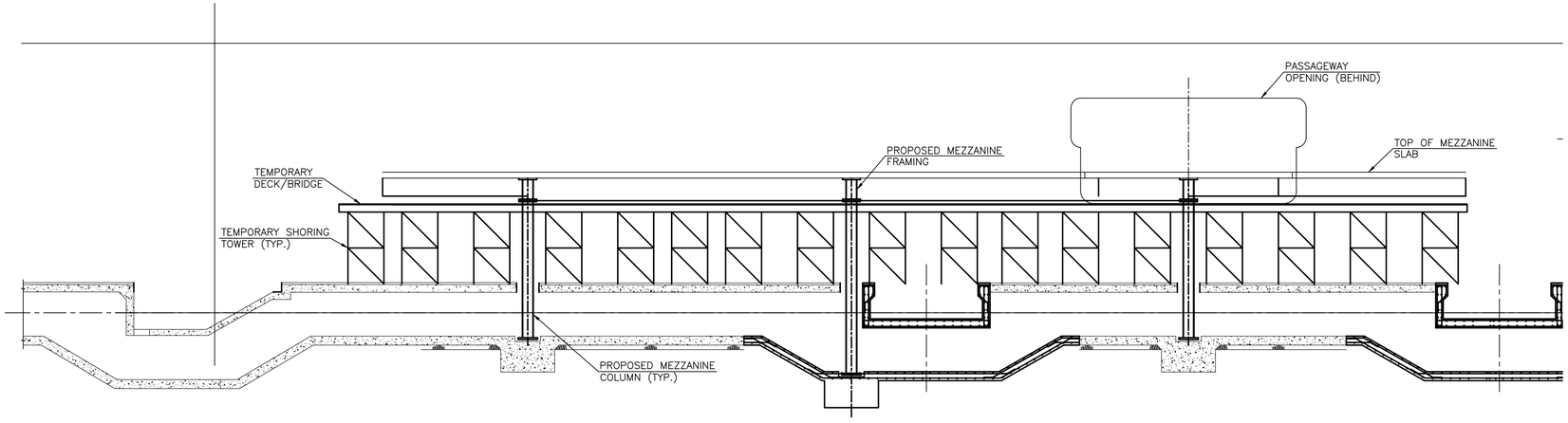
SCALE: AS NOTED

DRAWING NO. S-28

RKK22\SYS – C:\pwworking\vntagw\rkk-erik thompson\d0122585\S-28.dwg Oct 10, 2013 – 1:47pm monochrome.CTB Plot Scale 1=1 Plot By: ethompson Tab:Sheet 1 – PDF Fullsize



PLAN
SCALE: ⅛"= 1-0"



ELEVATION
SCALE: ⅛"= 1-0"

CONTRACT NO.
XXXXXX

DESIGNED	DATE		
DRAWN E.M. THOMPSON	DATE		
CHECKED D.S. TUSING	DATE		
APPROVED	DATE		

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

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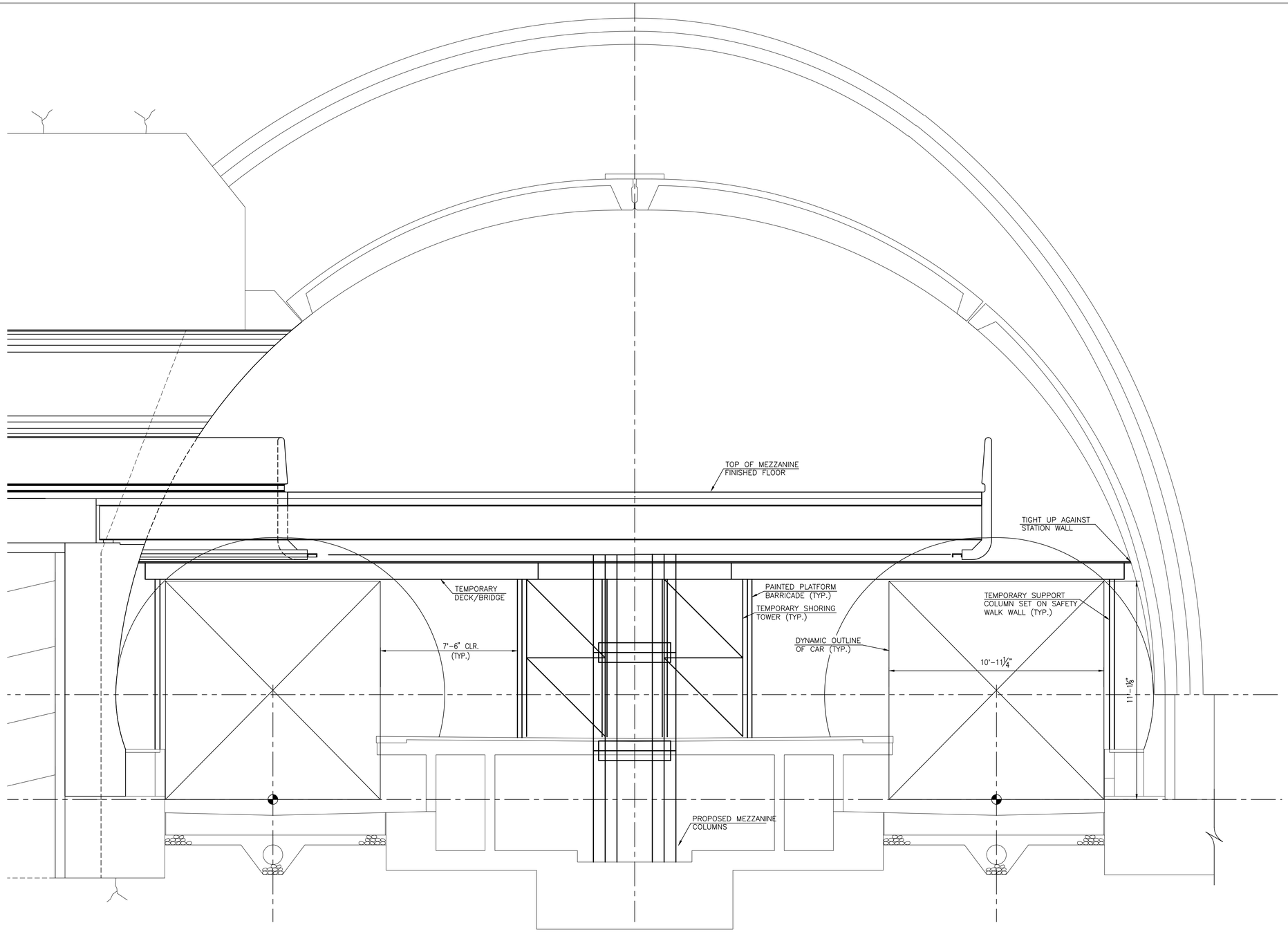
Bar South Caroline Street, Baltimore, Maryland 21202

APPROVED

BETHESDA STATION - SOUTH ENTRANCE
BETHESDA STATION TEMPORARY SUPPORT FOR MEZZANINE CONSTRUCTION
STA. 391+07 TO STA. 389+07

SCALE
AS NOTED

DRAWING NO.
S-29



X
S-X

TEMPORARY CONSTRUCTION SECTION

SCALE: 3/8"= 1-0"

CONTRACT NO.
XXXXXX

DESIGNED _____ DATE
DRAWN E.M. THOMPSON DATE
CHECKED D.S. TUSING DATE
APPROVED _____ DATE

REVISIONS		
DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

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Rummel, Klepper & Kahl, LLP
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WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
8th South Caroline Street, Baltimore, Maryland 21202

APPROVED _____

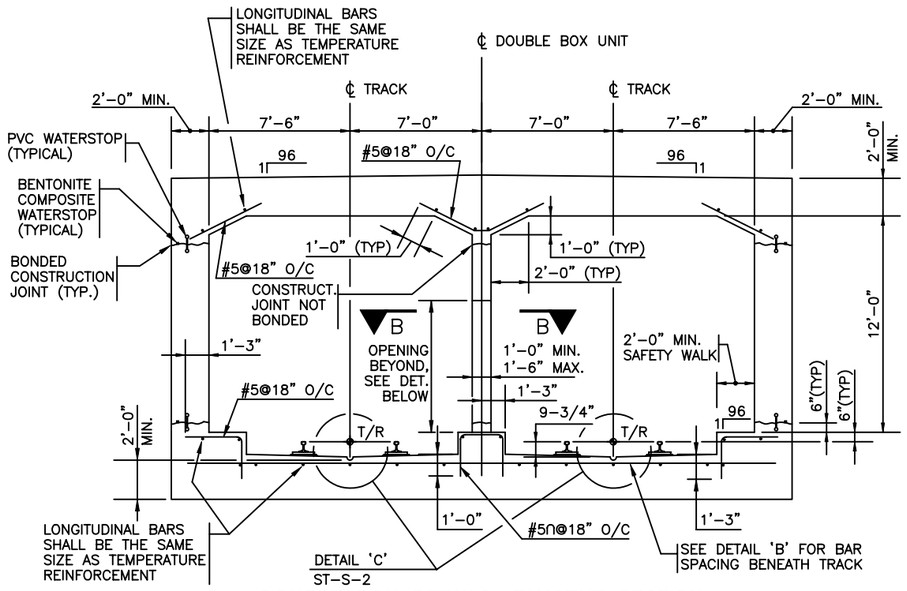
BETHESDA STATION - SOUTH ENTRANCE

TEMPORARY SUPPORT FOR MEZZANINE CONSTRUCTION - SECTION

SCALE
AS NOTED

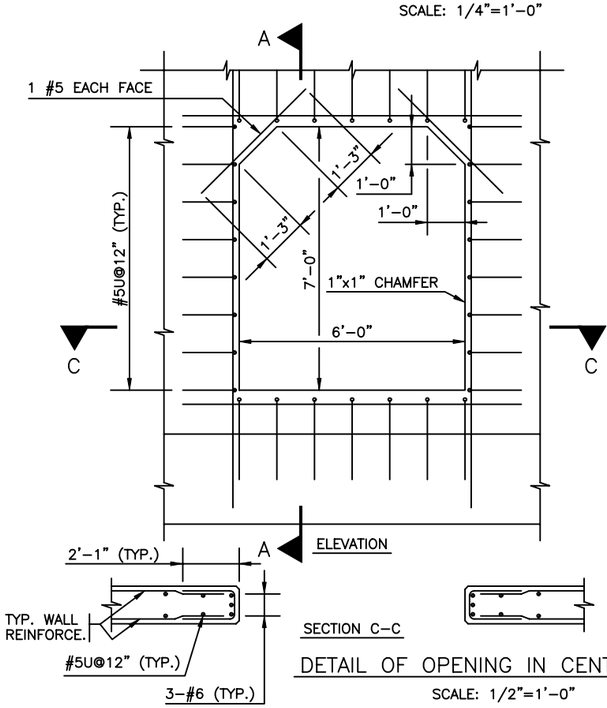
DRAWING NO.
S-30

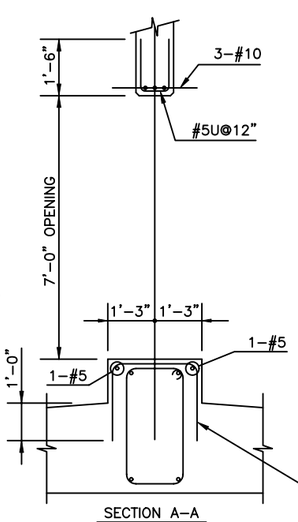
RKK22\SYS - C:\pwworking\mtapw\rkk-erik thompson\d0122585\S-30.dwg Oct 10, 2013 - 3:38pm monochrome.CTB Plot Scale 1=1 Plot By: ethompson Tab:Sheet 1 - PDF Fullsize



DOUBLE BOX DETAILS, TANGENT SECTION

SCALE: 1/4"=1'–0"

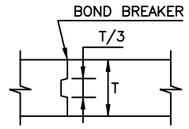




NOTE:
OPENINGS SHALL BE SPACED AT 25'–0" C/C.

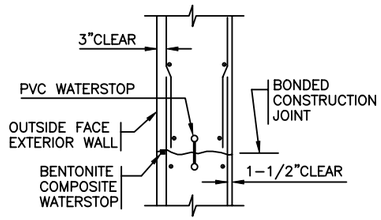
DETAIL OF OPENING IN CENTER WALL

SCALE: 1/2"=1'–0"



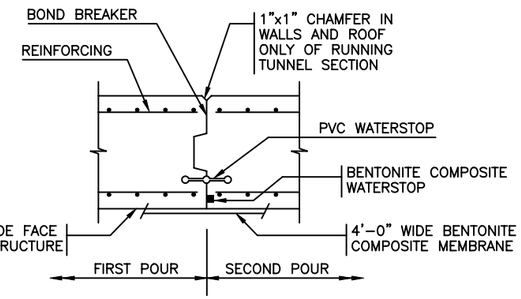
SECTION B–B

CENTER WALL
NOT TO SCALE



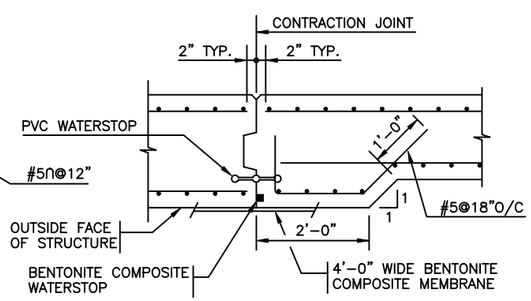
CONSTRUCTION JOINT

SCALE: 1/2"=1'–0"



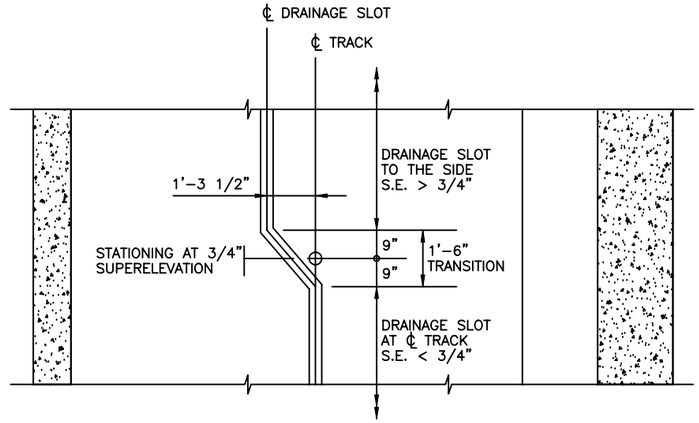
CONTRACTION JOINT

SCALE: 3/4"=1'–0"



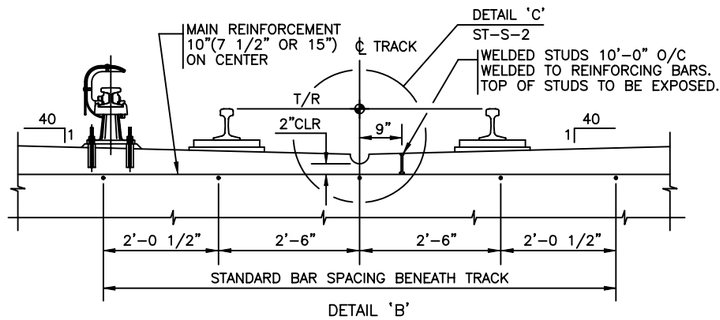
TRANSITION DETAIL

SCALE: 3/4"=1'–0"



TYPICAL INVERT TRANSITION AT 3/4" S.E.

SCALE: 1/2"=1'–0"



DETAIL 'B'

SCALE: 3/4"=1'–0"

NOTES:

1. CONCRETE COVER FOR REINFORCMENT PER ACI 318–95 UNLESS OTHERWISE NOTED.
2. THE LIMITATIONS ON THE PLACEMENT OF REINFORCING STEEL IN THE TRACKBED ARE SHOWN ON DD–TW–1.
3. THE MAXIMUM LENGTH BETWEEN TRANSVERSE CONTRACTION JOINTS, AS MEASURED ALONG THE INSIDE FACE OF THE WALL NEAREST THE CURVE CENTER, SHALL BE 50 FEET.
4. BENTONITE COMPOSITE WATERSTOP, AND PVC WATERSTOP (DUMBBELL TYPE, CENTER BULB, 9 INCH WIDTH, 1/2" STEM THICKNESS, 3/4" BULBS) ARE TYPICAL FOR EXTERIOR TRANSVERSE CONTRACTION AND CONSTRUCTION (NO CENTER BULB) JOINTS IN ROOFS, WALLS AND INVERT SLABS INCLUDE BOND BREAKER AT CONTRACTION JOINTS ONLY.
5. BENTONITE COMPOSITE WATERSTOP TO BE PLACED BETWEEN PVC WATERSTOP AND EXTERIOR FACE OF WALL OR SLAB AS SHOWN. THE MINIMUM SIZE OF BENTONITE COMPOSITE WATERSTOP SHALL BE 3/4" THICK AND 1" WIDE. THE MINIMUM CONCRETE COVERAGE OF THE BENTONITE COMPOSITE WATERSTOP SHALL BE 2" OR IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
6. FOR MEMBRANE WATERPROOFING AND PROTECTION DETAILS, SEE DRAWINGS DD–S–130 THRU DD–S–133.

DESIGNED	C. BELLAM	1–68 DATE
DRAWN	J. SOUCY	1–68 DATE
CHECKED	A.B.	2–68 DATE
APPROVED	KNIGHT	2–68 DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION
08/2001	ENGA	Revised and issued by the Authority

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

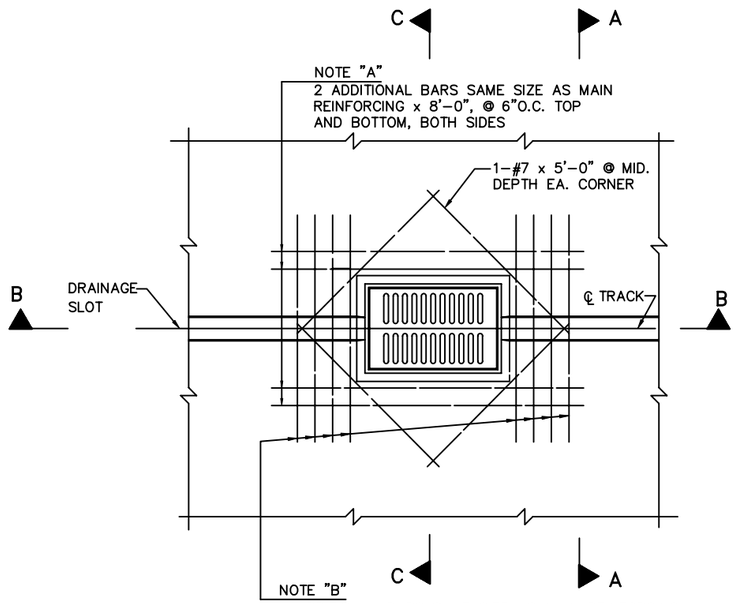
DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT
OFFICE OF ENGINEERING AND ARCHITECTURE

SUBMITTED _____ DATE

APPROVED _____ DIRECTOR May 3, 2001 DATE

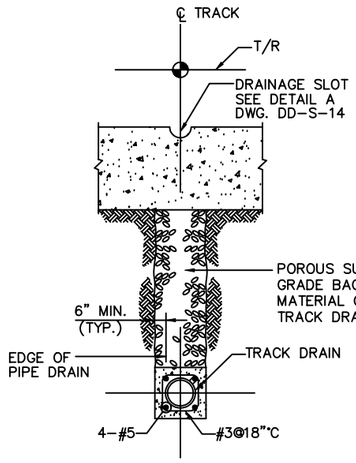
STRUCTURAL STANDARD DRAWING
CUT AND COVER SECTIONS
TYPICAL DETAILS AND REINFORCEMENT

SCALE	DRAWING NO.
AS SHOWN	ST–S–001

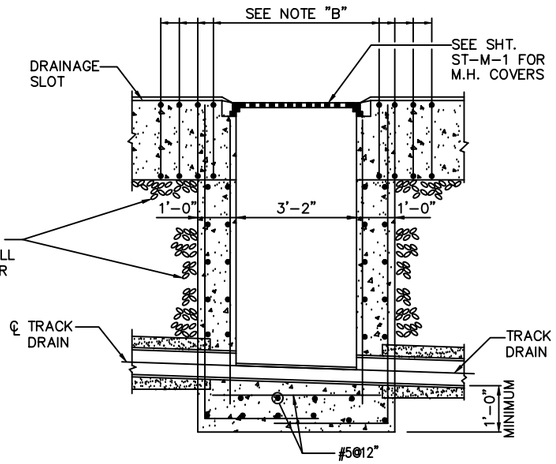


PLAN

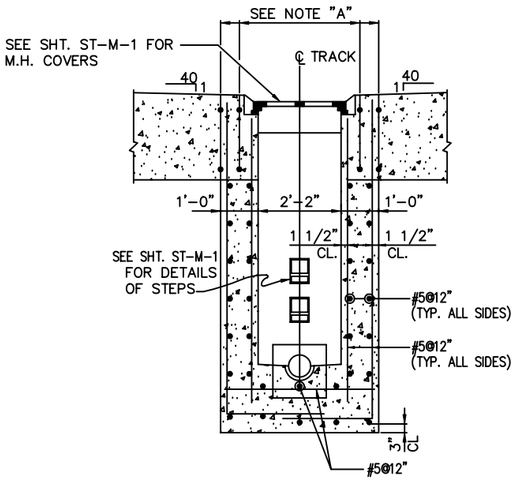
STANDARD MANHOLE REINFORCING



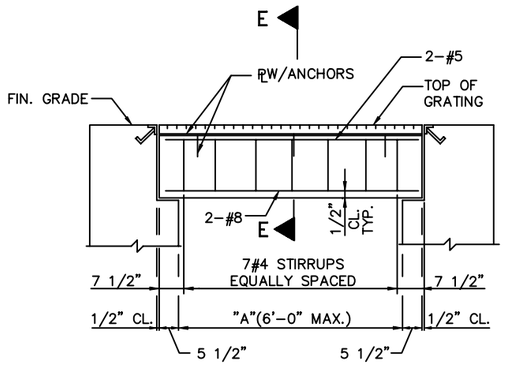
SECTION A-A



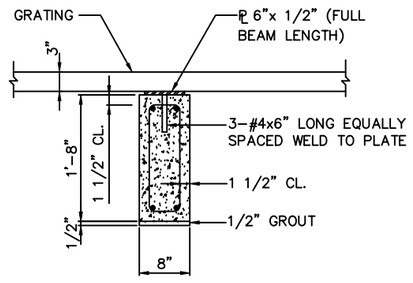
SECTION B-B



SECTION C-C



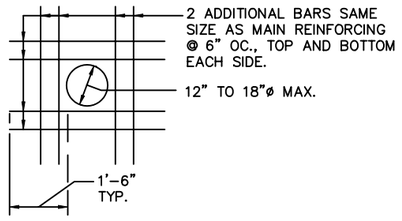
ELEVATION



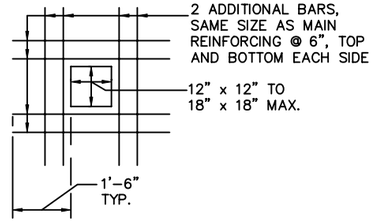
SECTION E-E

SCALE: 1" = 1'-0"

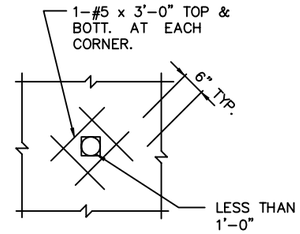
TYPICAL REMOVABLE PRECAST BEAM FOR GRATING SUPPORT AT FAN AND VENT SHAFTS MAXIMUM SPACING 3'-4" O.C.



DRAIN INLET



DRAIN INLET



SMALL OPENING

TYPICAL ADDITIONAL REINFORCING AT OPENINGS

NOTES:

1. CONCRETE PROTECTION FOR REINFORCING STEEL IS AS SHOWN ON DETAILS.
2. CONCRETE f'c = 3500 PSI.
3. STEEL REINFORCEMENT ASTM A615 GRADE 60.
4. ALL MISC. STEEL SHALL BE HOT-DIP GALVANIZED.

DESIGNED C. BELLAM 1-68 DATE
DRAWN J. SOUCY 1-68 DATE
CHECKED ____ DATE
APPROVED ____ DATE

REFERENCE DRAWINGS	
NUMBER	DESCRIPTION
DD-M-149	DRAINAGE DETAILS AND CASTING
ST-M-137	FRAMES AND GRATINGS

REVISIONS		
DATE	BY	DESCRIPTION
08/2001	ENGA	Revised and issued by the Authority

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT
OFFICE OF ENGINEERING AND ARCHITECTURE

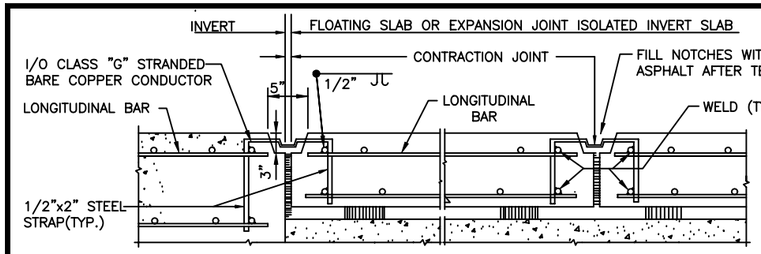
SUBMITTED ____ DATE

APPROVED ____ DIRECTOR May 3, 2001 DATE

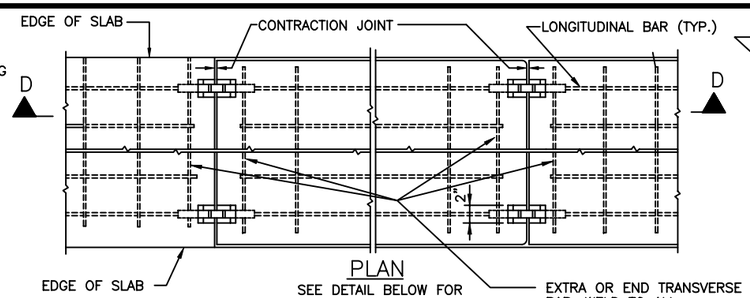
STRUCTURAL STANDARD DRAWING
DRAINAGE AND VENTILATION STRUCTURES TYPICAL DETAILS AND REINFORCEMENT

SCALE 1/2"=1'-0"

DRAWING NO. ST-S-004



SECTION D–D

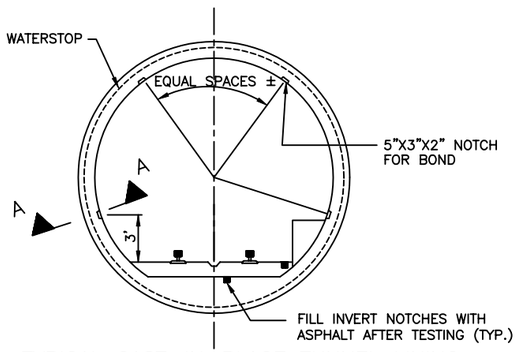


PLAN

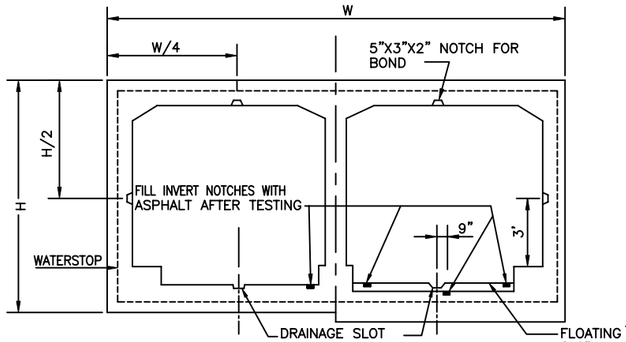
SEE DETAIL BELOW FOR WIRE FABRIC BONDING

This Drawing Reflects a WMATA standard design approach. Project specific drawings must be developed by the Contractor which reflect this Design Philosophy

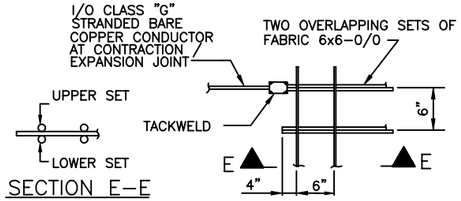
TYPICAL BONDING FOR FLOATING SLAB OR EXPANSION JOINT ISOLATED INVERT SLAB



TYPICAL CAST–IN–PLACE TUNNEL LINING



TYPICAL CUT & COVER BOX

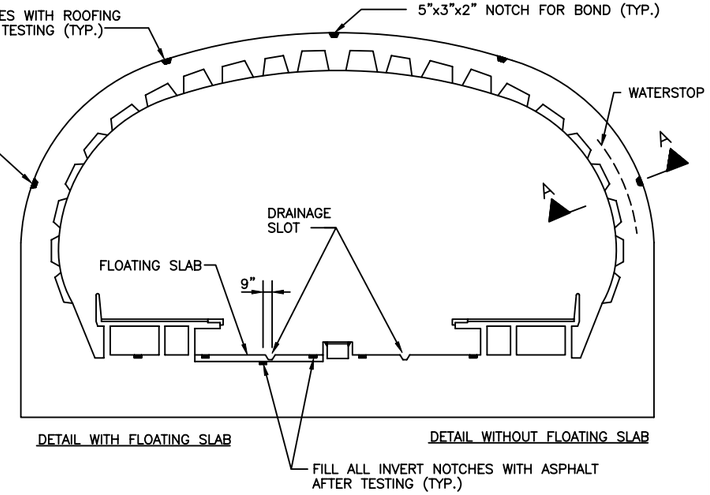


SECTION E–E

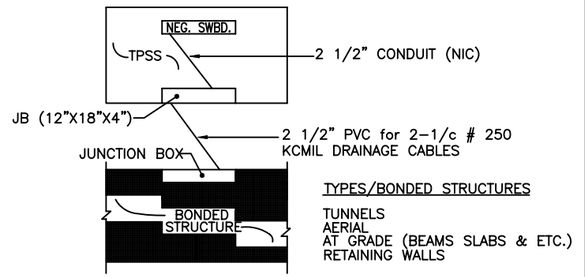
PLAN

NOTE:
TACKWELD ADJACENT MATS AT 20' MAXIMUM INTERVALS IN LENGTH.

WIRE FABRIC BONDING DETAIL

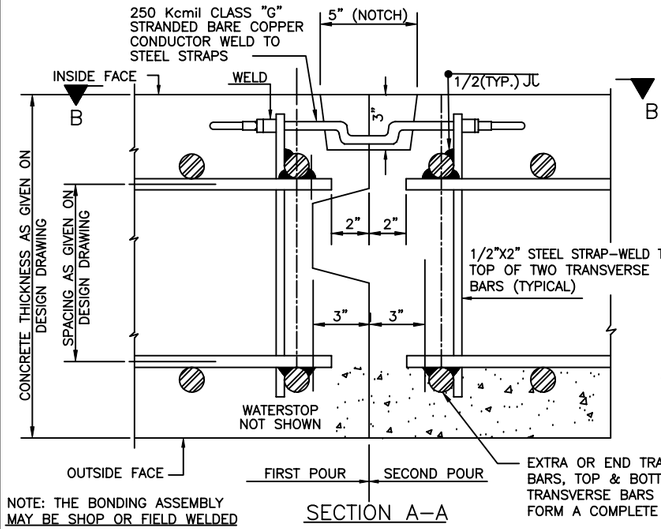


TYPICAL CUT & COVER STATION



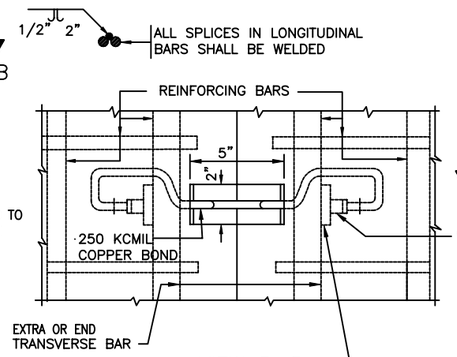
DRAINAGE CABLE ROUTING DIAGRAM

REFER TO NOTE 4

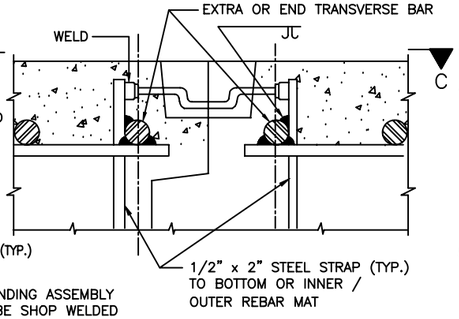


NOTE: THE BONDING ASSEMBLY MAY BE SHOP OR FIELD WELDED

SECTION A–A



VIEW B–B



NOTE:
THE BONDING ASSEMBLY SHALL BE SHOP WELDED

OPTIONAL BONDING DETAILS

TYPICAL BONDING DETAILS

NOTES

1. BONDS SHALL BE LOCATED AT THE CONTRACTION JOINT AT EACH END OF A STRUCTURAL UNIT AS SHOWN. MINIMUM ONE BOND PER TRACK IN INVERT AND/OR CEILING AND MINIMUM ONE BOND PER TWENTY FEET RISE IN WALLS STARTING AT 3 FT. ABOVE FINISHED FLOOR.
2. BOND LOCATIONS SHOWN ARE APPROXIMATE. ADJUST AS REQUIRED TO AVOID ELECTRICAL CONDUITS, ETC. LOCATE INVERT BONDS ONE FOOT FROM SAFETY WALK/WALL AND IN AN AREA WHERE IT WILL NOT INTERFERE WITH THE RAIL, RAIL FASTENERS, GROUT PADS, ETC.
3. TYPICAL BONDING DETAILS SHALL APPLY TO ROCK TUNNELS WITH CONCRETE LININGS, RETAINING WALLS, AERIAL STRUCTURES AND ALL STRUCTURES IN CONTACT WITH EARTH.
4. IN AREA OF TPSS INSTALL 2–250 KCMIL COPPER BONDS, ONE END OF EACH WELDED TO REINFORCING STEEL IN BONDED STRUCTURE, ROUTE OTHER ENDS OF BONDS INTO A JUNCTION BOX IN BONDED STRUCTURE.

   FROM JUNCTION BOX ROUTE ONE 2 1/2" PVC CONDUIT & TWO 1/C–250K KCML INSULATED CABLES TO JB IN THE DC NEGATIVE SWITCHBOARD AREA OF THE TRACTION SUBSTATION FOR FUTURE CONNECTION BY OTHERS. TAG WIRE & PROVIDE PIGTAILS SUFFICIENT IN LENGTH TO REACH NEGATIVE SWITCHBOARD VIA CABLE TRAY. SEE DIAGRAM THIS SHEET.

   JUNCTION BOXES TO BE CONVENIENTLY LOCATED FOR SIMPLEST CONDUIT ROUTING.
5. ALL STRUCTURES IN CONTACT WITH EARTH SHALL HAVE THE PERIMETER ELEMENTS BONDED BY METHODS SIMILAR TO THOSE INDICATED ON THIS DRAWING TO FORM A CONTINUOUS DOUBLE CAGE, AND ADJACENT UNITS SHALL BE BONDED TOGETHER. WHERE IT IS NECESSARY TO PLACE THE COPPER CONDUCTOR IN EARTH IT SHALL BE INSULATED.
6. ALL BONDING NOTCHES IN THE INVERTS AND WALLS SHALL BE ACCESSIBLE FOR FUTURE MONITORING AND TESTING AFTER CONSTRUCTION IS COMPLETE.
7. CONTRACTOR SHALL LEAVE A 3 FT. PIGTAIL BOND FOR FOLLOWING CONTRACT.

DESIGNED	C.A. BELLUM	7–68 DATE
DRAWN	L. RINALDI	7–68 DATE
CHECKED	A. BUMANIS	7–68 DATE
APPROVED	K.G. KNIGHT	7–68 DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
ST–S–021	ELECTRICAL BONDING OF REINFORCEING STEEL,
	SECTIONS & DETAILS SHEET 2 of 2
ST–S–022	TYPICAL ELECTRICAL BONDING FOR
	STRUCTURES
ST–S–023	ELECTRICAL BONDING DETAILS
	TYPICAL POST TENSIONED GIRDERS

REVISIONS

DATE	BY	DESCRIPTION
08/2001	ENGA	Revised and issued by the Authority

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT
OFFICE OF ENGINEERING AND ARCHITECTURE

SUBMITTED _____ DATE

APPROVED _____ DIRECTOR May 3, 2001 DATE

STRUCTURAL STANDARD DRAWING
ELECTRICAL BONDING OF REINFORCING STEEL, SECTIONS AND DETAILS SHEET 1 OF 2

SCALE	DRAWING NO.
NONE	ST–S–007

LOADS

STRUCTURES		DEAD LOADS (DL)	LIVE LOADS (LL) AND OTHER LOADS		DESIGN LOADING COMBINATIONS AND ALLOWABLE UNIT STRESSES
			VERTICAL	HORIZONTAL	
DECK STRUCTURE	DECK ELEMENTS (DECKING AND HORIZONTAL SUPPORTING FRAMEWORK)	OWN WEIGHT	ROADWAY LOADS 1. BASIC LOADING (LL) HS 25–44 APPLICABLE REFERENCES. * ART. 3.7, 3.11, 3.23 TO 3.29 2. IMPACT (I) ART. 3.8 3. NUMBER AND WIDTH TRAFFIC LANES DRAWINGS OR SPECIFIED. 4. ART. 3.12 (REDUCTION IN LOAD DOES NOT APPLY.) OPERATING LOADS FROM CONSTRUCTION EQUIPMENT (LL) WITH NOT LESS THAN 50% IMPACT. SIDEWALK AND PEDESTRIAN ISLAND LOADS (LL) 250 PSF, OR VEHICULAR LOADS, WHICHEVER ARE GREATER.	LONGITUDINAL FORCES (LF) ART. 3.9 EXCEPT REFERENCE TO ART. 3.12 WIND LOADS (W) 20 PSF ON EXPOSED AREA OF VEHICLES AND EQUIPMENT. BUT NOT LESS THAN 100 LBS. PER LINEAR FOOT OF DECK STRUCTURE APPLIED NORMAL TO THE DIRECTION IN WHICH LENGTH IS MEASURED. LATERAL EARTH (E) AND HYDROSTATIC (H) PRESSURE, SAME AS FOR EXCAVATION RETAINING STRUCTURES.	LOADING SHALL CONSIST OF THE FOLLOWING: DL + LL + I + E + H AT 100% OF UNIT STRESS –OR– DL + LL + I + E + H + LF + W AT 125% OF UNIT STRESS, WHICHEVER IS GREATER. NOTE: THE VALUE OF LL IS THE MAXIMUM TOTAL LIVE LOAD OBTAINED BY COMBINING THE VARIOUS LIVE LOADS THAT MIGHT EXIST AT ONE TIME.
		UTILITY FACILITIES TO BE SUPPORTED ARE SHOWN ON THE UTILITY PLANS.			
	RAILINGS	OWN WEIGHT	(LL) ART. 3.14.1 AND 3.14.2		
	CURBS AND SIDEWALKS		150 PSF	(LL) ART. 3.14.1 AND 3.14.2	
EXCAVATION – RETAINING STRUCTURE	WALL SYSTEM (ELEMENTS IN CONTACT WITH EARTH, EXCEPT LAGGING)	OWN WEIGHT AND REACTIONS FROM DEAD LOADS OF DECK STRUCTURE AND BRACING SYSTEM	REACTIONS FROM ALL LIVE LOADS, EXCLUDING IMPACT ON DECK STRUCTURE (LL)	LATERAL EARTH PRESSURE DUE TO WEIGHT OF SOIL AND SURCHARGE (E) HYDROSTATIC PRESSURE (H) AXIAL LOADS FROM END BULKHEAD WHERE APPLICABLE (E) AND (H)	DL + LL + E + H AT 120% OF UNIT STRESS
	BRACING SYSTEM: MAIN MEMBERS (MEMBERS CARRYING DIRECT LOADS INCLUDING STRUTS AND WALES)			SIMPLE BEAM REACTIONS FROM WALL SYSTEMS (E) AND (H) AXIAL LOADS FROM END WALLS WHERE APPLICABLE (E) AND (H)	DL + LL + E + H AT 100% OF UNIT STRESS
	BRACING SYSTEM: SECONDARY BRACING		AXIAL LOAD EQUAL TO 2% OF THE DESIGN AXIAL LOAD IN THE BRACED MAIN MEMBER		120% OF UNIT STRESS

* REFERENCES ARE TO ARTICLES IN 'THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES', SIXTEENTH EDITION OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICALS 1996.

CRITERIA

1. TEMPORARY EARTH RETAINING AND DECK STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON THIS DRAWING, ON THE DRAWING TITLED 'LATERAL PRESSURES FOR THE DESIGN OF TEMPORARY EARTH RETAINING STRUCTURES', AND APPLICABLE SPECIFICATIONS.
2. UNLESS MODIFIED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS THE STRUCTURAL DESIGN SHALL BE GOVERNED BY THE CURRENT EDITIONS OF THE FOLLOWING MANUALS, CODES OR SPECIFICATIONS.

   ROADWAY DECK: 'STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS' EXCEPT DEFLECTION DUE TO LIVE LOAD PLUS IMPACT SHALL NOT EXCEED 1/600 OF THE SPAN

   TEMPORARY RETAINING STRUCTURES AND OTHER TEMPORARY STRUCTURES:

   STEEL: 'SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS' OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION

   WELDING: 'STRUCTURAL WELDING CODE OF THE AMERICAN WELDING SOCIETY' D1.1.

   REINFORCING CONCRETE: 'BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE' OF THE AMERICAN CONCRETE INSTITUTE

   LUMBER: 'NATIONAL DESIGN SPECIFICATION FOR STRESS–GRADE LUMBER AND ITS FASTENERS' OF THE NATIONAL FOREST PRODUCTS ASSOCIATION
3. THE CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE ENGINEER COMPLETE COMPUTATIONS AND WORKING DRAWINGS FOR TEMPORARY STRUCTURES. THE DESIGN SHALL BE IN ACCORDANCE WITH THE GIVEN LOADS ON THIS SHEET AND GOOD ENGINEERING PRACTICE, AND WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. EARTH RETAINING STRUCTURES SHALL BE ANALYZED FOR THE VARIOUS CONDITIONS THAT MAY OCCUR DURING THE LIFE OF THE STRUCTURE. SUCH AS THE SEVERAL STAGES OF EXCAVATION, CONSTRUCTION, INSTALLATION, REMOVAL AND RELOCATION OF STRUTS. THE WORKING DRAWINGS SHALL SHOW CONSTRUCTION SEQUENCE AND DETAILS OF POSTING, DIAGONAL LACING, WEB STIFFENERS, ETC.
5. WHERE THE LOADING CONDITIONS ON OPPOSITE SIDES OF AN EXCAVATION ARE NOT EQUAL, THE STABILITY OF THE TEMPORARY RETAINING STRUCTURE SHALL BE ANALYZED TO TAKE THIS CONDITION INTO ACCOUNT.
6. SOLDIER BEAMS MAY BE CONSIDERED FULLY BRACED IN THE PLANE OF THE WALL.
7. THE LOADS IN WALES AND STRUTS FOR FLEXIBLE OR RIGID WALL SYSTEMS SHALL BE COMPUTED BY ASSUMING THE WALL TO BE HINGED AT A SUPPORT POINT BELOW THE BOTTOM OF THE EXCAVATION AND AT EACH STRUT EXCEPT THE TOP ONE.
8. STRUTS SHALL BE PRESTRESSED TO 50% OF THEIR MAXIMUM DESIGN LOAD.
9. ALL COMPRESSION MEMBER CONNECTIONS:
   a) SHALL BE DESIGNED FOR THE MAXIMUM COMPRESSIVE LOAD (CLD), COMBINED WITH GREATER OF THE ACTUAL SHEAR OR SHEAR EQUAL TO 10% CLD.
   b) THE CONNECTIONS SHOULD BE DESIGNED FOR THE GREATER OF ACTUAL TENSION OR TENSION EQUAL TO 10% CLD AND COMBINED WITH THE GREATER OF ACTUAL SHEAR OR SHEAR EQUAL TO 10% CLD.
10. WHERE THE BOTTOM OF THE TRACK–DRAIN TRENCH IS BELOW A 1–VERTICAL, TO 2–HORIZONTAL INFLUENCE LINE FROM THE BOTTOM OF THE INVERT AT THE SIDE OF EXCAVATION. ADEQUATE BRACING TO RESIST LATERAL PRESSURES SHALL BE INSTALLED IN THE TRACK–DRAIN TRENCH.
11. THE CONTRACTOR MAY SUBMIT ALTERNATIVE TEMPORARY EARTH–SUPPORT STRUCTURES FOR REVIEW BY THE ENGINEER.

DESIGNED A. BUMANIS 9–68 DATE
DRAWN R.L. 12–68 DATE
CHECKED A.B. 1–69 DATE
APPROVED KNIGHT 1–69 DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION
08/2001	ENGA	Revised and issued by the Authority

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT
OFFICE OF ENGINEERING AND ARCHITECTURE

SUBMITTED _____ DATE

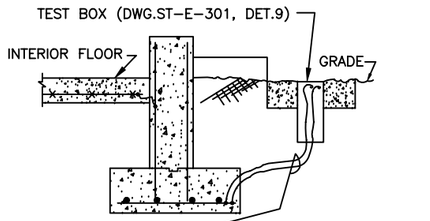
APPROVED _____ DIRECTOR May 3, 2001 DATE

STRUCTURAL STANDARD DRAWING
CRITERIA FOR THE DESIGN OF TEMPORARY STRUCTURES

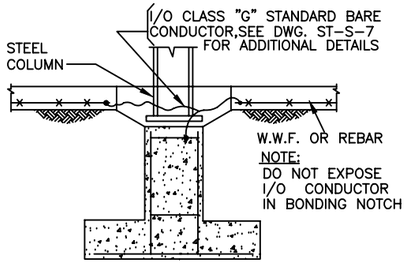
SCALE NONE

DRAWING NO. ST–S–009

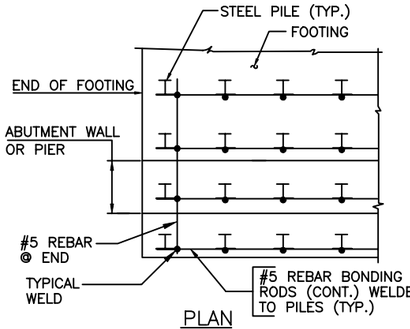
NOTE: INSTALL TEST BOX IN A 12"x12"x4" MIN. CONCRETE COLLAR



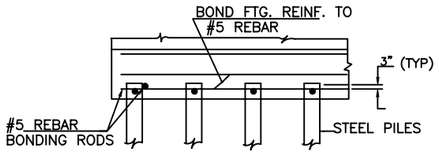
BUILDING REBAR TEST BOX



TYPICAL ELECTRICAL BONDING OF COLUMN FOOTING AND PIER TO FLOOR REINFORCING
N.T.S.

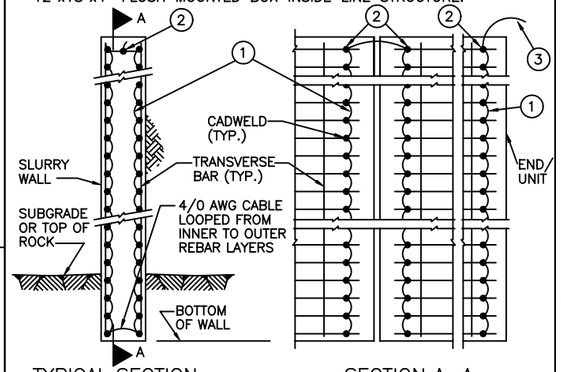


PLAN



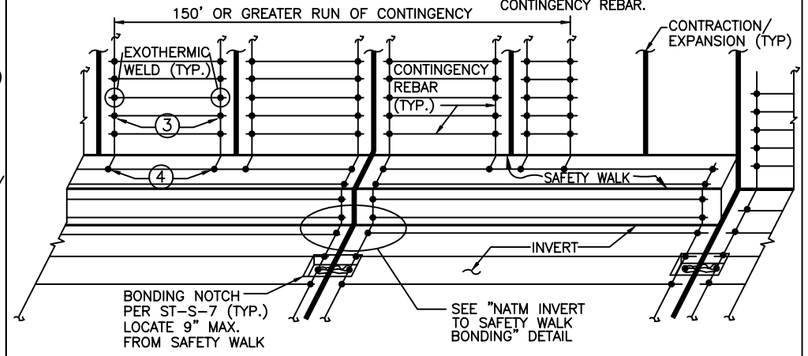
ELEVATION
TYP. BONDING OF FOOTING WITH STEEL PILES

1. AT THE END OF EACH STRUCTURAL UNIT CADWELD 4/0 AWG CABLE TO ALL LONGITUDINAL REBARS. LOOP 4/0 AWG CABLE FROM INNER TO OUTER LAYER REBAR TO INSURE THAT IT FORMS A COMPLETE CONTINUOUS DOUBLE CAGE.
2. SPLICE 4/0 AWG INSULATED CABLE TO CONTINUOUS 4/0 AWG CABLE LOOP TO ELECTRICALLY BOND INDIVIDUAL UNITS TOGETHER OR ROUTE TO TERMINATION.
3. AT EACH END OF LINE OF ELECTRICALLY BONDED SLURRY WALL UNITS, CONNECT 4/0 AWG INSULATED CONDUCTOR AND TERMINATE IT IN A 12"x18"x4" FLUSH MOUNTED BOX INSIDE LINE STRUCTURE.

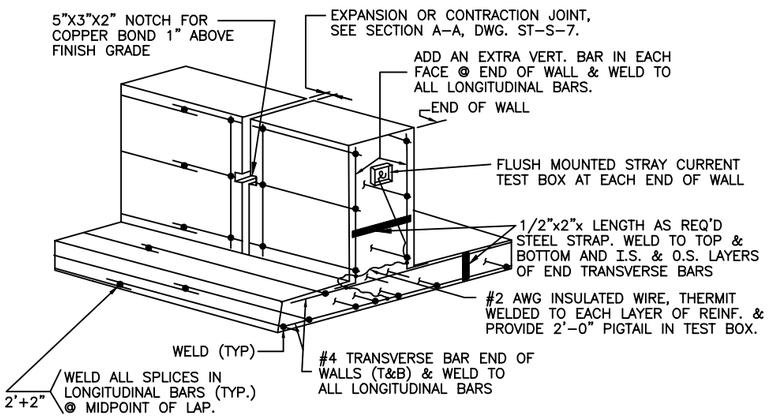


TYPICAL SECTION SECTION A-A
SLURRY WALL ELECTRICAL BONDING

NOTES:
1. ELECTRICAL BONDING OF CONTINGENCY REBAR IS REQUIRED ONLY FOR A CONTINUOUS RUN OF 150 FEET OR MORE.
2. ONLY ELECTRICALLY BONDED REBAR IS SHOWN FOR CLARITY.
3. ELECTRICALLY BOND BOTH OF THE END TRANSVERSE BARS IN EACH UNIT TO EACH LONGITUDINAL BAR AS SHOWN.
4. ELECTRICALLY BOND BOTH OF THE END TRANSVERSE CONTINGENCY BARS IN EACH UNIT TO AN ELECTRICALLY CONTINUOUS LONGITUDINAL BAR IN THE SAFETY WALK/INVERT AS SHOWN.
5. A CONTINUOUS RUN START/ENDS WITH A FOUR FOOT (4') OR GREATER BREAK IN CONTINGENCY REBAR.
6. ALL INVERT REBAR SHALL BE ELECTRICALLY BONDED PER ST-S-7.
7. WELD LONGITUDINAL SPLICES IN CONTINGENCY REBAR.

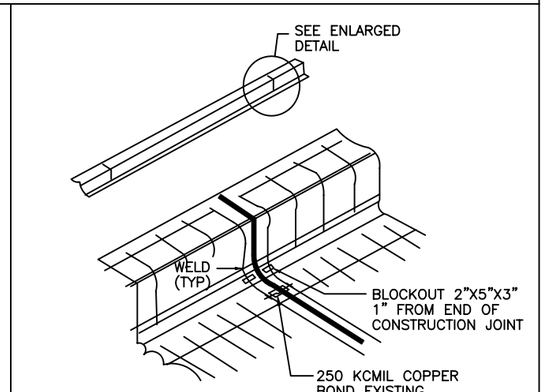


ELECTRICAL BONDING REQUIREMENTS FOR "NATM" TUNNEL REBAR
(INVERT & CONTINGENCY REBAR)
isometric nts



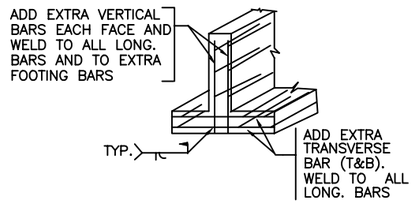
TYPICAL BONDING FOR RETAINING WALL DETAIL
NO SCALE

NOTES:
1. REINFORCING IN RETAINING WALLS, FOOTINGS, ABUTMENTS & OTHER WALLS IS TO BE BONDED AS SHOWN ON THIS DWG. BOND ALL CONTIGUOUS COMPONENTS EITHER BY DIRECT WELDING OF LAPPED REINF. STEEL AT CONSTRUCTION JOINTS OR AS PER SECTION A-A ON DWG. ST-S-7 AT EXPANSION & CONTRACTION JOINTS.
2. SHOW ALL WELDING & REINF. STEEL REQ'D FOR ELECTRICAL BONDING ON SHOP DRAWINGS.
3. INSTALL BONDING NOTCHES ON THE TRACK SIDE OF THE RETAINING WALLS AT JOINTS,..WHERE THE WALL IS 20'-0" OR LESS USE ONE BOND AT FINISHED GROUND ELEVATION. FOR WALLS GREATER THAN 20'-0" INSTALL A SECOND BOND HALFWAY BETWEEN THE FOOTING AND THE FINISHED GROUND ELEVATION.
4. PILES:
   A. REINFORCEMENT FROM PRECAST CONCRETE PILES NEED NOT BE BONDED.
   B. SOLDIER PILES SHALL BE BONDED TOGETHER USING 4/0 AWG INSULATED CONDUCTOR EXOTHERMICALLY WELDED TO PILES. AT EACH END OF PILES TERMINATE THE 4/0 CONDUCTOR IN A BOX INSIDE THE LINE STRUCTURE.
5. EPOXY COATED REBAR & WIRE MESH SHALL NOT BE ELECTRICALLY BONDED.
6. FOR ADDITIONAL BONDING NOTES SEE DWG. ST-S-7.
7. BRIDGE PIERS AND PIER PILES, AND REINFORCEMENT IN THE FOOTING AND COLUMNS SHALL NOT BE MADE ELECTRICALLY CONTINUOUS AND SHALL NOT BE BONDED TO THE SUPER STRUCTURE.

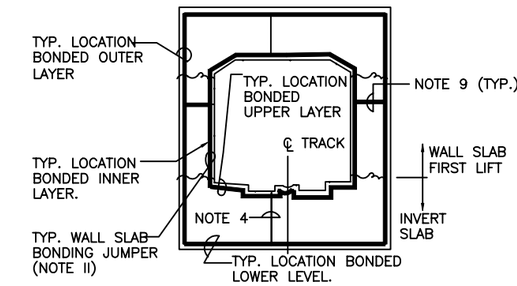


NOTES:
1. PROVIDE 2"X5"X3" BLOCKOUT EXPOSING THE REBAR WHICH BONDS THE SAFETY WALK TO THE INVERT.
2. ADJACENT TO EACH CONSTRUCTION JOINT ALIGN THE END SAFETY WALK TRANSVERSE REBARS WITH THE END INVERT REBARS AND WELD AS SHOWN.

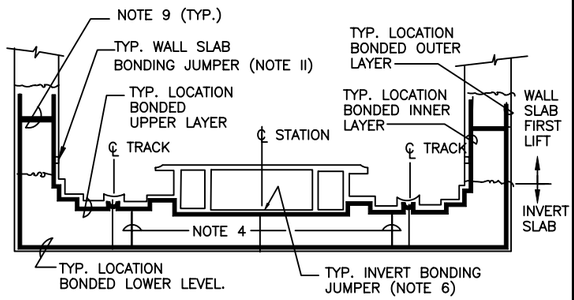
"NATM" INVERT TO SAFETY WALK BONDING



DETAIL AT JOINTS OF
RETAINING WALL AND ABUTMENT



TYPICAL TUNNEL SECTION



TYPICAL STATION SECTION

NOTES :

GENERAL
1. ALL WELDING FOR ELECTRICAL BONDING OF REINFORCING STEEL SHALL CONFORM TO ANSI/AWS D1,1-92 AND ANSI/AASHTO/AWS D1-S-88 WITH 1992, 1995 AND LATER REVISIONS, USING E70XX ELECTRODES.
2. FIELD ADJUSTMENTS TO BE AS REQUIRED TO AVOID INTERFERENCE.

INVERT SLAB
3. ALL LONGITUDINAL BARS IN UPPER AND LOWER LAYERS SHALL BE MADE ELECTRICALLY CONTINUOUS BY WELDING AT LAPS.
4. UPPER AND LOWER LAYERS SHALL BE BONDED TOGETHER BOTH SIDES OF EACH CONTRACTION JOINT.
5. TRANSVERSE BARS IN UPPER AND LOWER LAYERS BOTH SIDES OF EACH CONTRACTION JOINT SHALL BE MADE ELECTRICALLY CONTINUOUS BY WELDING LAPS. ALL LONGITUDINAL BARS SHALL BE WELDED TO THESE TRANSVERSE BARS.
6. PROVIDE BONDING JUMPER ACROSS EACH CONTRACTION AND EXPANSION JOINTS.

WALL SLAB
7. LONGITUDINAL BARS IN INNER AND OUTER LAYERS SHALL BE MADE ELECTRICALLY CONTINUOUS BY WELDING AT LAPS.
8. AT CONTRACTION OR EXPANSION JOINTS ALL LONGITUDINAL BARS SHALL BE WELDED TO THE END TRANSVERSE BAR. THE END TRANSVERSE BARS OF EACH MAT SHALL BE WELDED AT THE LAPS TO MAKE A CONTINUOUS ELECTRICAL LOOP. THE END TRANSVERSE BARS SHALL BE CONNECTED TO EACH OTHER BY JUMPER BARS WELDED TO EACH LAYER.
9. INNER AND OUTER LAYERS SHALL BE BONDED TOGETHER BOTH SIDES OF EACH CONTRACTION JOINT.
10. VERTICAL BARS IN INNER AND OUTER LAYERS BOTH SIDES OF CONTRACTION JOINT SHALL BE MADE ELECTRICALLY CONTINUOUS BY WELDINGS AT LAPS
11. PROVIDE BONDING JUMPER ACROSS EACH CONTRACTION JOINT AT A HEIGHT 1 FOOT ABOVE FINISH FLOOR OR FINISH GRADE.

ELECTRICALLY BONDED
CONTINUOUS DOUBLE CAGE
EXAMPLES & GUIDES

DESIGNED	G. G. BRADY	8-98 DATE
DRAWN	D. PRIME	8-98 DATE
CHECKED	J. BUMANIS	8-98 DATE
APPROVED	R. FENG	8-98 DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
ST-S-007	ELECTRICAL BONDING OF REINFORCING STEEL, SECTIONS & DETAILS SHEET 1 OF 2.
ST-S-022	TYPICAL ELECTRICAL BONDING FOR STRUCTURES
ST-S-023	ELECTRICAL BONDING DETAILS
	TYPICAL POST TENSIONED GIRDERS

REVISIONS

DATE	BY	DESCRIPTION
08/2001	ENGA	Revised and issued by the Authority

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT
OFFICE OF ENGINEERING AND ARCHITECTURE

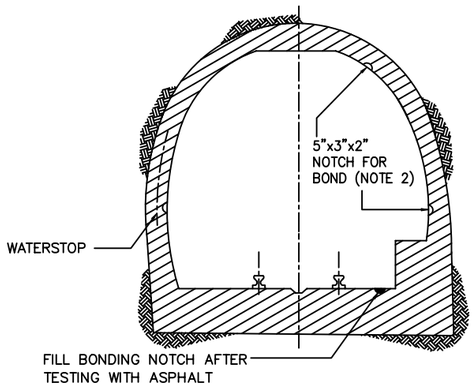
SUBMITTED _____ DATE

APPROVED _____ DIRECTOR May 3, 2001 DATE

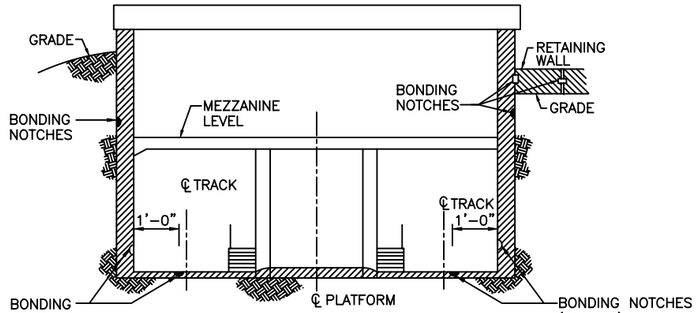
STRUCTURAL STANDARD DRAWING
ELECTRICAL BONDING OF REINFORCING STEEL SECTIONS & DETAILS, SHEET 2 OF 2

SCALE: AS NOTED

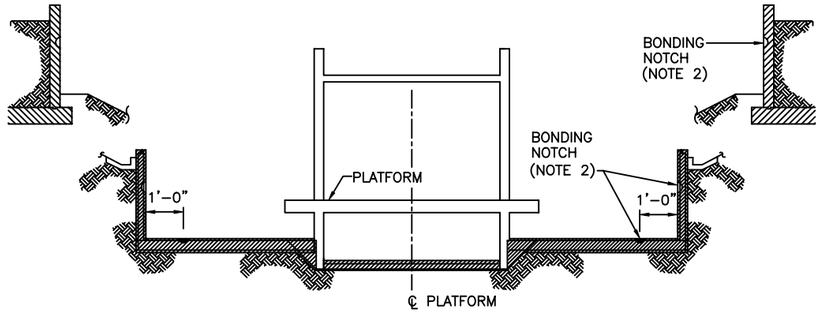
DRAWING NO.: ST-S-021



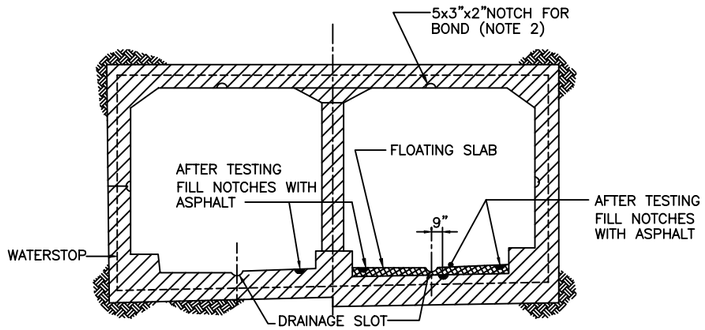
TYPICAL HORSESHOE TUNNEL LINING



TYPICAL BELOW GRADE
(NOT BURIED)



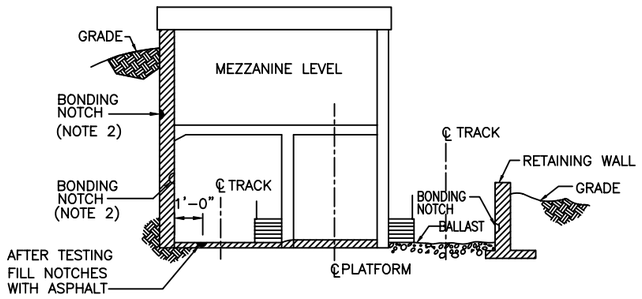
RETAINED AT–GRADE (TYP.)



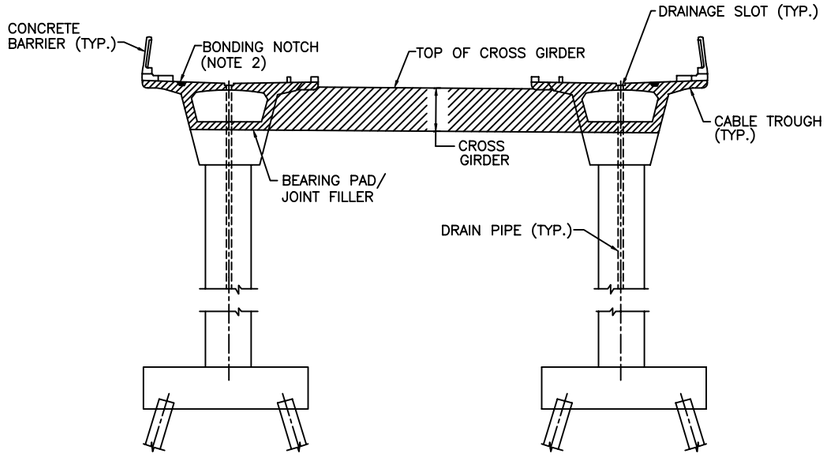
DETAIL WITHOUT FLOATING SLAB

DETAIL WITH FLOATING SLAB

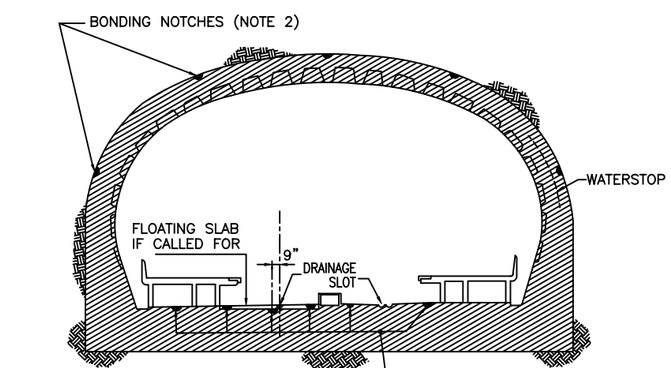
TYPICAL CUT & COVER BOX



TYPICAL PARTIAL RETAINED



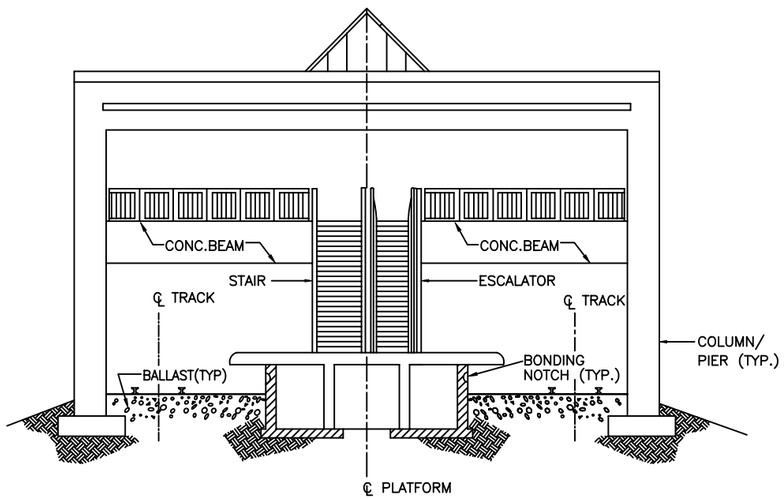
AERIAL STRUCTURE



DETAIL WITH FLOATING SLAB

DETAIL WITHOUT FLOATING SLAB

TYPICAL CUT & COVER STATION



TYPICAL AT–GRADE

NOTES:

1. UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS, ALL STRUCTURES IN CONTACT WITH THE EARTH, AND AERIAL STRUCTURES AS SHOWN ON THIS DRAWING, WILL HAVE THE PERIMETER ELEMENTS SHOWN CROSS–HATCHED, BONDED BY METHODS SIMILAR TO THOSE INDICATED ON STANDARD DRAWING ST–S–7, ST–S–21 AND ST–S–23.
2. ONLY BONDING NOTCHES IN INVERT AND THOSE EXPOSED TO BACKFILLING ARE TO BE FILLED WITH ASPHALT AFTER TESTING.

LEGEND:

ELECTRICALLY BONDED STRUCTURES

DESIGNED	G.G. BRADY	8–98 DATE
DRAWN	C. BUITRAGO	8–98 DATE
CHECKED	J. BUMANIS	8–98 DATE
APPROVED	R. FENG	8–98 DATE

REFERENCE DRAWINGS

NUMBER	DESCRIPTION
ST–S–007	ELECTRICAL BONDING OF REINFORCING STEEL, SECTIONS AND DETAILS–SHEET 1 OF 2
ST–S–021	ELECTRICAL BONDING OF REINFORCING STEEL, SECTIONS AND DETAILS–SHEET 2 OF 2
ST–S–023	ELECTRICAL BONDING DETAILS TYPICAL POST TENSIONED GIRDERS

REVISIONS

DATE	BY	DESCRIPTION
08/2001	ENGA	Revised and issued by the Authority

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF TRANSIT SYSTEM DEVELOPMENT
OFFICE OF ENGINEERING AND ARCHITECTURE

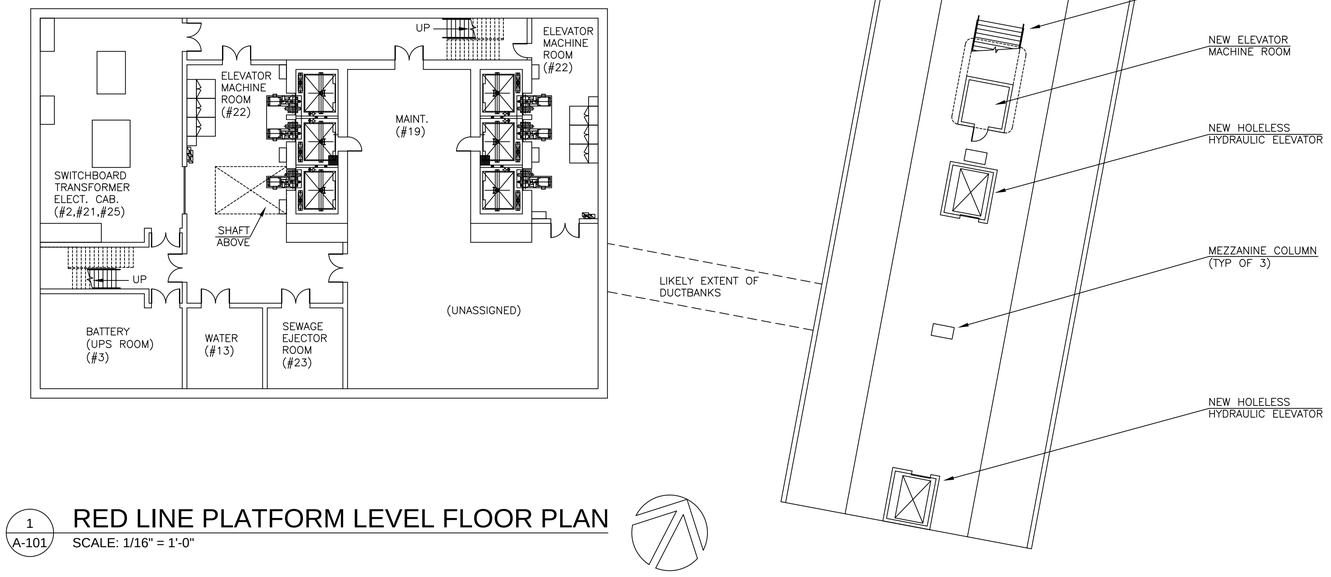
SUBMITTED _____ DATE

APPROVED _____ DIRECTOR May 3, 2001 DATE

STRUCTURAL STANDARD DRAWING
TYPICAL ELECTRICAL BONDING FOR STRUCTURES

SCALE: NOT TO SCALE

DRAWING NO.: ST–S–022



1 / A-101 RED LINE PLATFORM LEVEL FLOOR PLAN

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

CONTRACT NO. XXXXXX

DESIGNED	DATE
DRAWN	DATE
CHECKED	DATE
APPROVED	DATE

REVISIONS

DATE	BY	DESCRIPTION

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY _____

Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

WHITMAN, REQUARDT & ASSOCIATES, LLP
200 South Caroline Street, Baltimore, Maryland 21231

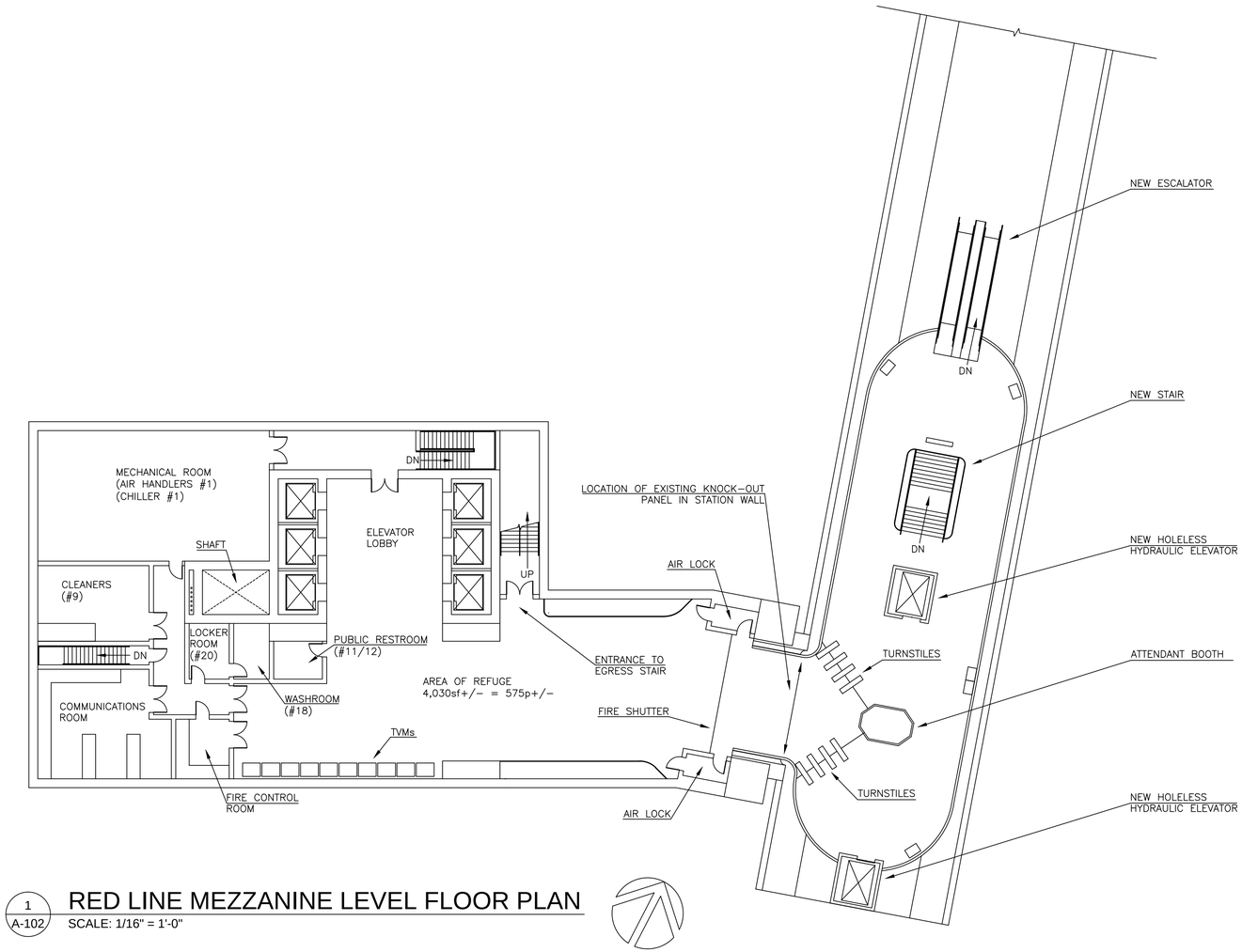
APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE

RED LINE PLATFORM LEVEL FLOOR PLAN

SCALE: AS NOTED

DRAWING NO. A–101



1 / A-102 RED LINE MEZZANINE LEVEL FLOOR PLAN

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

CONTRACT NO. XXXXXX

REVISIONS		
DATE	BY	DESCRIPTION

DESIGNED ____ DATE

DRAWN ____ DATE

CHECKED ____ DATE

APPROVED ____ DATE

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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OFFICE OF ENGINEERING SERVICE

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81 MOSHER STREET | BALTIMORE, MD 21217
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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
Bon South Carolina Street, Baltimore, Maryland 21202

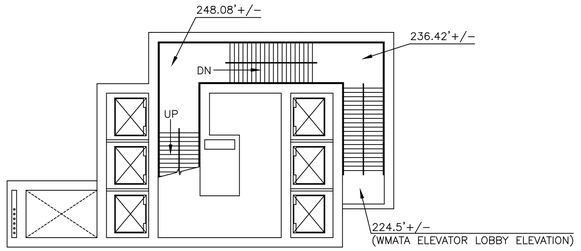
APPROVED ____

BETHESDA STATION – SOUTH ENTRANCE

RED LINE MEZZANINE LEVEL FLOOR PLAN

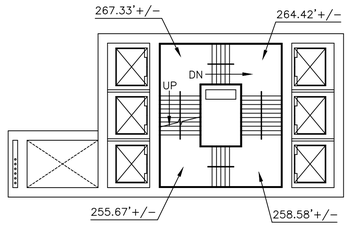
SCALE: AS NOTED

DRAWING NO. A–102



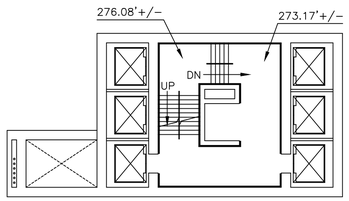
1 A-103 EMERGENCY STAIR LANDING 1 - FLOOR PLAN

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



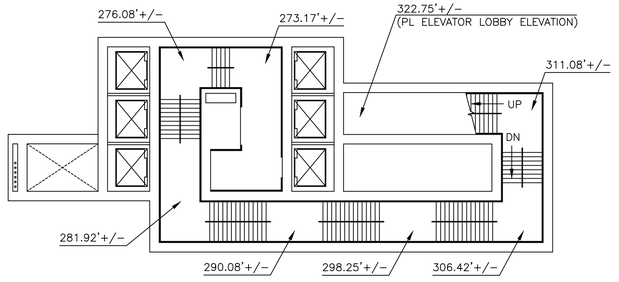
2 A-103 EMERGENCY STAIR LANDING 2 - FLOOR PLAN

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



3 A-103 EMERGENCY STAIR LANDING 3 - FLOOR PLAN

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



4 A-103 EMERGENCY STAIR LANDING 4 - FLOOR PLAN

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

CONTRACT NO. XXXXXX

REVISIONS		
DATE	BY	DESCRIPTION

DESIGNED ____ DATE

DRAWN ____ DATE

CHECKED ____ DATE

APPROVED ____ DATE

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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SUBMITTED BY ____

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
200 South Caroline Street, Baltimore, Maryland 21231

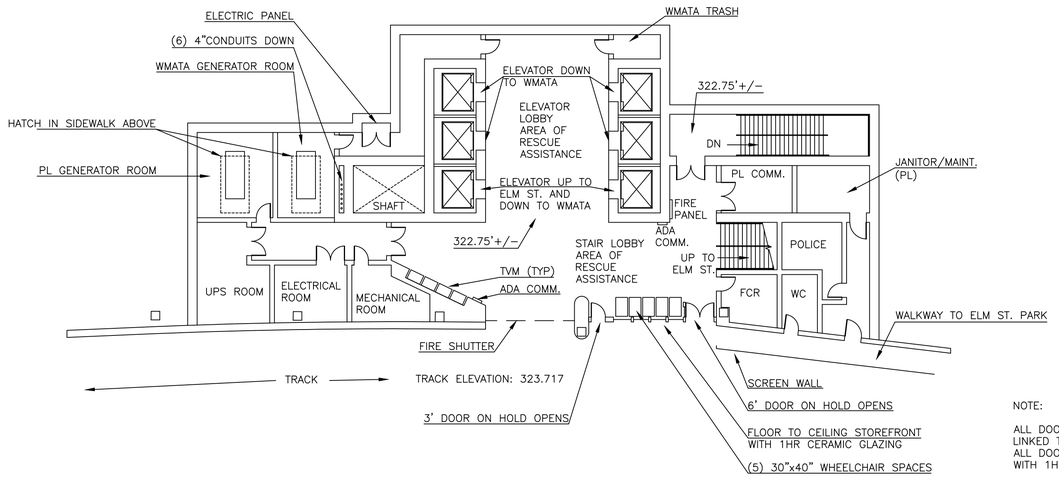
APPROVED ____

BETHESDA STATION – SOUTH ENTRANCE

EMERGENCY STAIR INTERMEDIATE LANDING FLOOR PLANS

SCALE: AS NOTED

DRAWING NO.: A–103



NOTE:

ALL DOORS ON MAGNETIC HOLD OPENS LINKED TO ALARM SYSTEM.
ALL DOORS FOR EGRESS TO BE GLAZED WITH 1HR CERAMIC GLAZING.

1 / A-104 PURPLE LINE LOBBY FLOOR PLAN

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

CONTRACT NO. XXXXXX

DESIGNED	DATE	REVISIONS	
DRAWN	DATE	DATE / BY / DESCRIPTION	
CHECKED	DATE		
APPROVED	DATE		

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
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SUBMITTED BY _____

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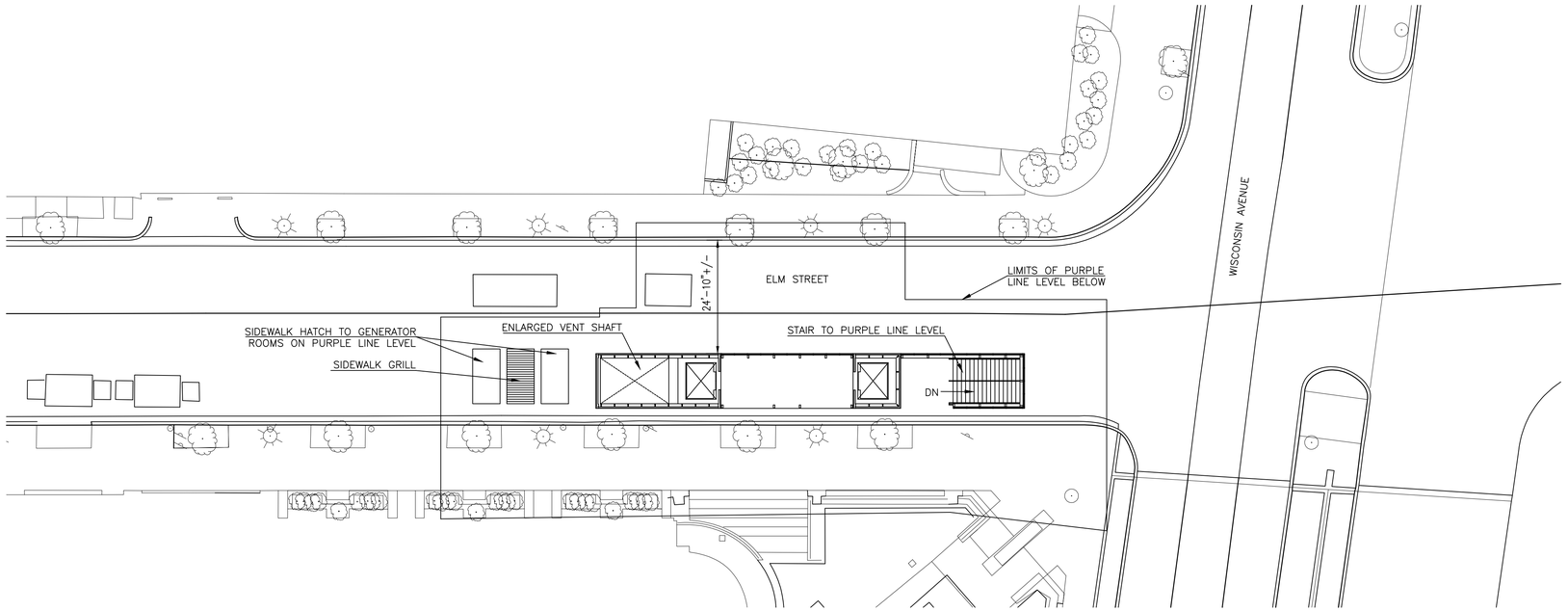
Ben South Caroline Street, Baltimore, Maryland 21202

APPROVED _____

BETHESDA STATION – SOUTH ENTRANCE

PURPLE LINE LOBBY FLOOR PLAN

SCALE	DRAWING NO.
AS NOTED	A–104



1 / A-105 ELM STREET FLOOR PLAN

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

CONTRACT NO. XXXXXX

DESIGNED	DATE
DRAWN	DATE
CHECKED	DATE
APPROVED	DATE

REVISIONS		
DATE	BY	DESCRIPTION

MONTGOMERY COUNTY 1776 MARYLAND

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

RK&K Rummel, Klepper & Kahl, LLP
81 MOSHER STREET | BALTIMORE, MD 21217
PH: (410) 728-2900 FAX: (410) 728-3160

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

APPROVED

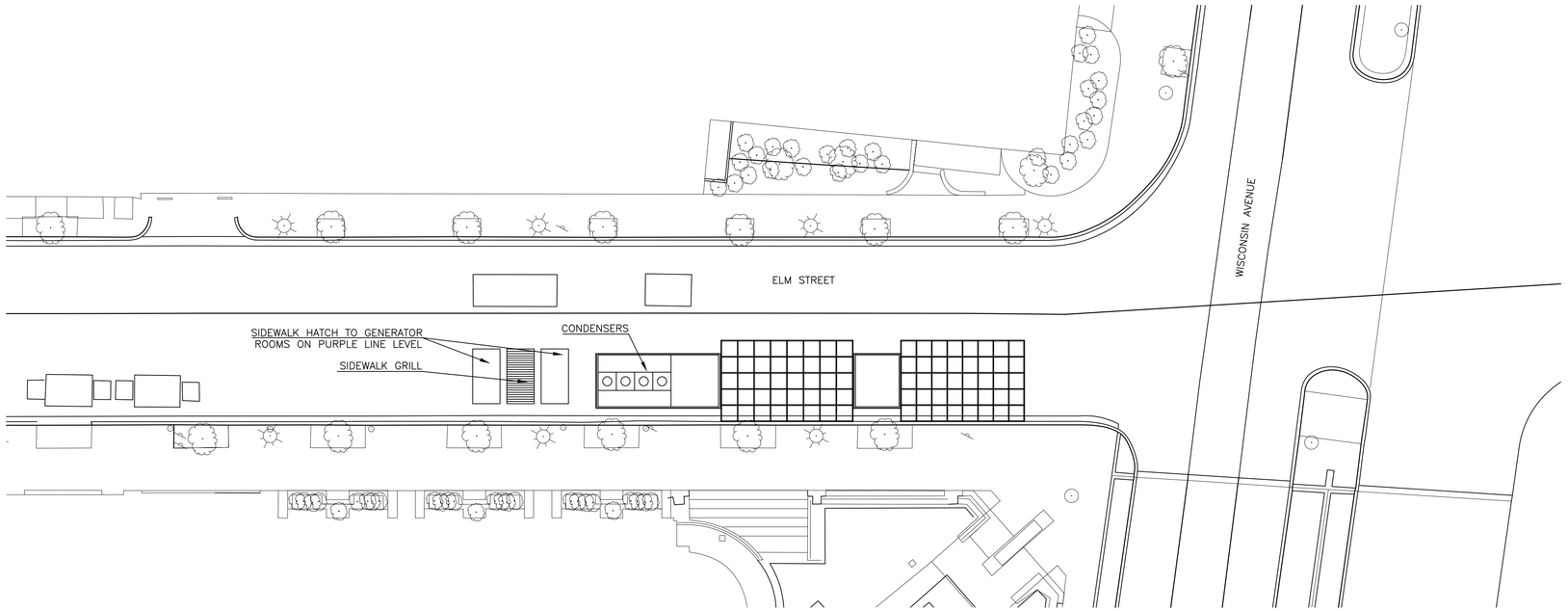
BETHESDA STATION – SOUTH ENTRANCE

ELM STREET FLOOR PLAN

SCALE: AS NOTED

DRAWING NO. A–105

RK&K\SYS – C:\pwworking\mtapw\wro--jeremy.rineer\d0122986\A-105.dwg Oct 11, 2013 – 2:25pm monochrome.CTB Plot Scale 1=1 Plot By: jrineer Tab:Sheet 1 – PDF Fullsize



1 A-106 ELM STREET ROOF PLAN
SCALE: 1/16" = 1'-0"

CONTRACT NO. XXXXXX

REVISIONS		
DATE	BY	DESCRIPTION

DESIGNED ____ DATE
DRAWN ____ DATE
CHECKED ____ DATE
APPROVED ____ DATE

MONTGOMERY COUNTY 1776 MARYLAND

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY ____

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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

APPROVED ____

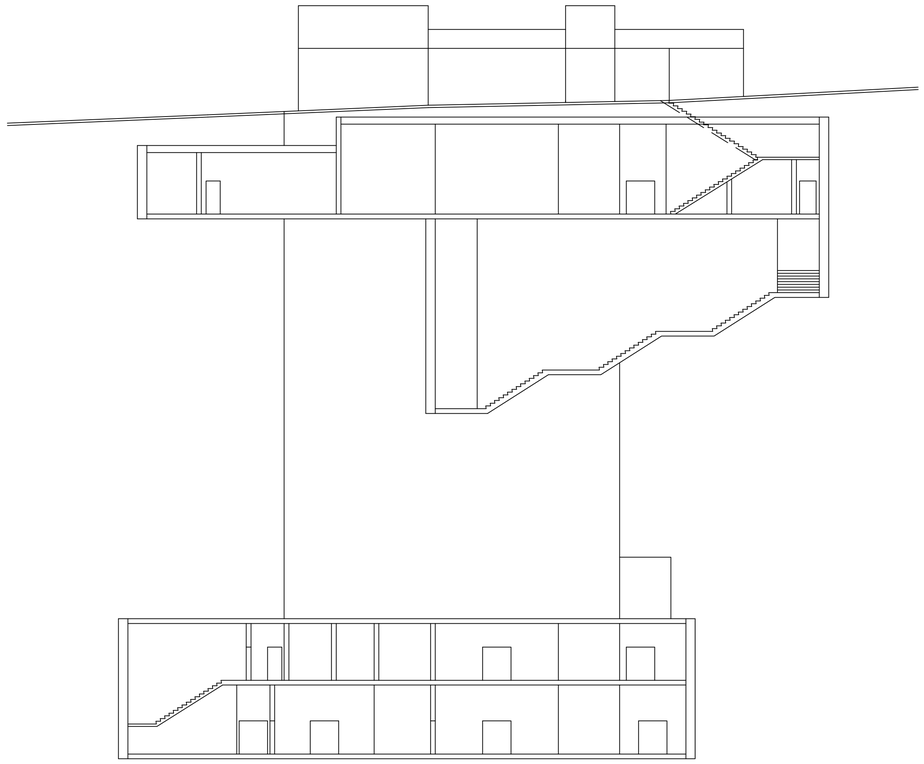
BETHESDA STATION – SOUTH ENTRANCE

ELM STREET ROOF PLAN

SCALE: AS NOTED

DRAWING NO. A–106

RK&K\SYS – C:\pwworking\mtapw\wro--jeremy rineer\d0122986\A-106.dwg Oct 11, 2013 – 2:25pm monochrome.CTB Plot Scale 1=1 Plot By: jrineer Tab:Sheet 1 – PDF Fullsize



1
A-301

SECTION

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

CONTRACT NO.
XXXXXX

DESIGNED	DATE
DRAWN	DATE
CHECKED	DATE
APPROVED	DATE

REVISIONS

DATE	BY	DESCRIPTION

MONTGOMERY COUNTY MARYLAND 1776

MTA Maryland

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS SERVICES
OFFICE OF ENGINEERING SERVICE

SUBMITTED BY

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200 South Caroline Street, Baltimore, Maryland 21231

APPROVED

BETHESDA STATION – SOUTH ENTRANCE

BUILDING SECTIONS

SCALE
AS NOTED

DRAWING NO.
A–301

RK&K\SYS – C:\pwworking\mtapw\wra-jeremy rineer\d0122586\A-301.dwg Oct 11, 2013 – 2:19pm monochrome.CTB Plot Scale 1=1 Plot By: jrineer Tab:Sheet 1 – PDF Fullsize