METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

PLAN PACKAGE INDEX / DESCRIPTION
CIVIL WEST CONSTRUCTION
VOLUME 1 - EXISTING CONDITIONS
VOLUME 2 - CIVIL
VOLUME 3 - TRACKWORK
VOLUME 4A - BRIDGES
VOLUME 4B - BRIDGES
VOLUME 5 - TUNNELS
VOLUME 6 - RETAINING WALLS
VOLUME 7 - UTILITIES
VOLUME 8 - DRAINAGE
VOLUME 9 - URBAN DESIGN / LANDSCAPE
VOLUME 10 - TRAFFIC / LIGHTING
VOLUME 11 - STATIONS
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CIVIL WEST CONSTRUCTION

VOLUME 5
TUNNELS

60% SUBMISSION
DATE : 09/28/15

THE PROPOSED SOUTHWEST LRT PROJECT IS NOT FINAL BUT IS STILL UNDER ENVIRONMENTAL REVIEW AND THE PROJECT IS SUBJECT TO CHANGE. THESE PLANS ARE NOT FINAL.

THE COUNCIL, THROUGH THE DEVELOPMENT OF THESE PLANS, DOES NOT INTEND THAT THEY WILL PREJUDICE OR COMPROMISE ANY STATE OR FEDERAL ENVIRONMENTAL REVIEW OR OTHER LEGAL REQUIREMENTS. THESE PLANS DO NOT LIMIT THE PROJECT DESIGN ALTERNATIVES OR MITIGATIVE MEASURES THAT THE COUNCIL MAY UNDERTAKE IF THE PROPOSED SWLRT PROJECT PROCEEDS TO CONSTRUCTION.

THE COUNCIL WILL NOT TAKE FINAL ACTION ON THIS MATTER UNLESS THE COUNCIL PROCEEDS WITH THE PROJECT AFTER THE FTA'S RECORD OF DECISION AND THE COUNCIL'S DETERMINATION OF ADEQUACY.

AECOM

CIVIL WEST

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV
		VOLUME 5 - TUNNELS			
1	W0-TUN-CVR-001	COVER SHEET			
2	W0-TUN-IDX - 001	VOLUME INDEX OF PLAN SHEETS			
3	W0-GEN-KEY-001	GENERAL KEY MAP			
4	W0-GEN-NTS-001	GENERAL LEGEND AND ABBREVIATIONS SHEET 1			
5	W0-GEN-NTS-002	GENERAL LEGEND AND ABBREVIATIONS SHEET 2			
6	W2-STU-TUN-TH62-GPE-KEY-001	KEY PLAN			
7	W2-STU-TUN-TH62-SUR1	TUNNEL SURVEY (1 OF 2)			
8	W2-STU-TUN-TH62-SUR2	TUNNEL SURVEY (2 OF 2)			
9	W2-STU-TUN-TH62-GPE-001	GENERAL PLAN AND ELEVATION (1 OF 2)			
10	W2-STU-TUN-TH62-GPE-002	GENERAL PLAN AND ELEVATION (2 OF 2)			
11	W2-STU-TUN-TH62-TYP-001	TYPICAL SECTION			
12	W2-STU-TUN-TH62-TYP-TTS-001	TUNNEL PORTALS - GEOMETRY			
13	W2-CIV-STG-001-NAR	STAGING PLAN - NARRATIVE AND NOTES			
14	W2-CIV-STG-001-TAB	STAGING PLAN - TEMP. ALIGNMENT TAB			
15	W2-CIV-STG-001-1	STAGING PLAN - STAGE 1			
16	W2-CIV-STG-001-2	STAGING PLAN - STAGE 1			
17	W2-CIV-STG-002-1	STAGING PLAN - STAGE 2			
18	W2-CIV-STG-002-2	STAGING PLAN - STAGE 2			
19	W2-STU-TUN-TH62-DTL-WTP-001	WATERPROOFING			
20	W2-STU-TUN-TH62-BOR-001	BORINGS (1 OF 6)			
21	W2-STU-TUN-TH62-BOR-002	BORINGS (2 OF 6)			
22	W2-STU-TUN-TH62-BOR-003	BORINGS (3 OF 6)			
23	W2-STU-TUN-TH62-BOR-004	BORINGS (4 OF 6)			
24	W2-STU-TUN-TH62-BOR-005	BORINGS (5 OF 6)			
25	W2-STU-TUN-TH62-BOR-006	BORINGS (6 OF 6)			
26	W2-STU-TUN-TH62-SOE-CRI-001	TEMPORARY EXCAVATION SUPPORT DESIGN CRITERIA			
27	W2-STU-TUN-TH62-SOE-001	SUGGESTED EXCAVATION SUPPORT PLAN AND ELEVATION (1 OF 3)			
28	W2-STU-TUN-TH62-SOE-002	SUGGESTED EXCAVATION SUPPORT PLAN AND ELEVATION (2 OF 3)			
29	W2-STU-TUN-TH62-SOE-003	SUGGESTED EXCAVATION SUPPORT PLAN AND ELEVATION (3 OF 3)			
30	W2-STU-TUN-TH62-SOE-TYP-001	SUGGESTED EXCAVATION SUPPORT SECTIONS			
31	W2-STU-TUN-TH62-SOE-DTL-001	SUGGESTED EXCAVATION SUPPORT DETAILS			
32	W2-ARC-TYP-001	CROSS PASSAGE DOORS			
33	W2-ARC-TYP-002	FENCING AND RAILING DETAILS			
34	W2-STM-TH62-NTS-001	PLUMBING GENERAL NOTES, ABBREVIATIONS & SYMBOLS			
35	W2-STM-TH62-GPE-001	TUNNEL DRAINAGE - PLAN AND PROFILE - STA. 2300+00 TO STA. 2314+00			
36	W2-STM-TUN-DTL-001	TUNNEL DRAINAGE - SECTIONS & DETAILS			
37	W2-STM-TH62-SCH-001	TUNNEL DRAINAGE - MATERIAL SCHEDULE			
38	W2-FLS-TH62-PLN-001	FIRE LIFE SAFETY STANDPIPE NICHE PLAN SHEET 1 OF 3			
39	W2-FLS-TH62-PLN-002	FIRE LIFE SAFETY STANDPIPE NICHE PLAN SHEET 2 OF 3			
40	W2-FLS-TH62-PLN-003	FIRE LIFE SAFETY STANDPIPE NICHE PLAN SHEET 3 OF 3			
41	W2-FLS-TH62-SCT-001	FIRE LIFE SAFETY TYPICAL NICHE SECTION AND DETAILS			

CIVIL WEST

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV

CIVIL WEST

SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TUNNELS
VOLUME INDEX OF PLAN SHEETS

DISCIPLINE: GENERAL

SHEET NAME: W0-TUN-IDX - 001

SHEET 2 OF 41

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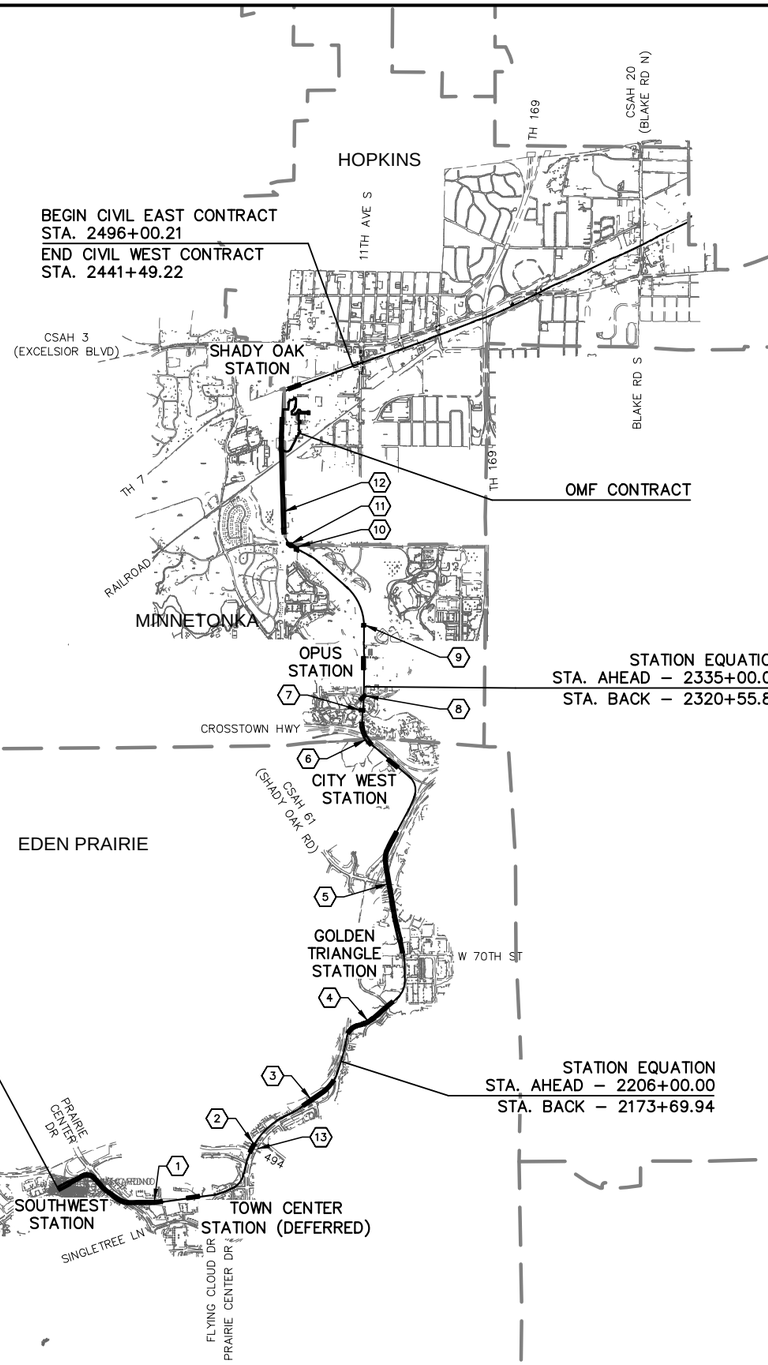

REF	BRIDGE DESCRIPTION	BRIDGE NUMBER
1	PRAIRIE CENTER DRIVE BRIDGE	27C06
2	I–494 BRIDGE	27W32
3	VALLEY VIEW RD BRIDGE	27R33
4	NINE MILE CREEK BRIDGE	27C07
5	TH 212 / SHADY OAK ROAD BRIDGE	27R34
6	HWY 62 TUNNEL	27W33
7	PEDESTRIAN UNDERPASS #2	27J63
8	PEDESTRIAN UNDERPASS #1	27J62
9	PEDESTRIAN UNDERPASS #5	R0715
10	FELTL ROAD BRIDGE	27C08
11	SMETANA ROAD BRIDGE	27C09
12	MINNETONKA / HOPKINS LRT BRIDGE	R0686
13	FLYING CLOUD DRIVE BRIDGE MODIFICATIONS	27762 BA

BA – BID ALTERNATE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
GENERAL
KEY MAP

DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-KEY - 001

SHEET 3 OF 41

Sep. 21 2015 06:58 am V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\W0-GEN-KEY.dwg By: V-KriewaMR

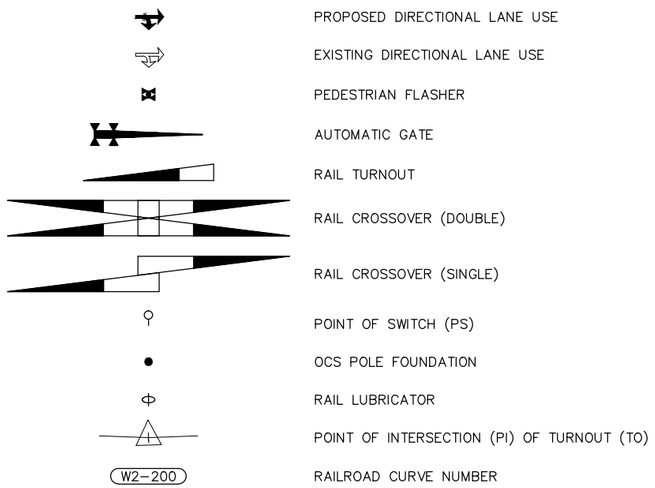
TRACK LINETYPES

- ROADWAY ℄
- TRACK ℄ (LRT)
- TRACK ℄ (FRT)
- RETAINING WALL
- BALLAST CURB
- TUNNEL WALL
- FENCE
- EX ROW
- PROP ROW
- PROP TCE
- PROP PE
- FENCE / RAILING
- ID ID INTRUSION DETECTION

CIVIL LINETYPES

- ROADWAY ℄
- TRACK ℄ (LRT)
- TRACK ℄ (FRT)
- RETAINING WALL
- BALLAST CURB
- TUNNEL WALL
- CONCRETE CURB AND GUTTER
- TRAIL
- SIDEWALK
- DRIVEWAY
- BRIDGE
- SAWCUT
- FENCE
- DELINEATED WETLAND
- WATER EDGE
- EX ROW
- PROP ROW
- PROP TCE
- PROP PE
- CROSSWALK
- STOP BAR
- MEDIAN NOSE

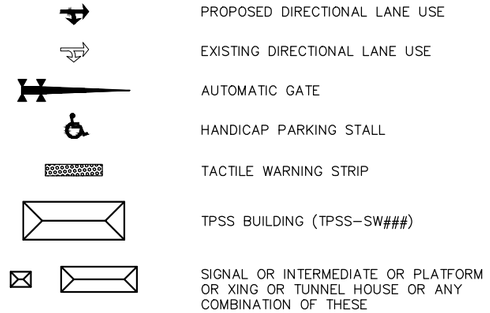
TRACK SYMBOLS



- PROPOSED DIRECTIONAL LANE USE
- EXISTING DIRECTIONAL LANE USE
- PEDESTRIAN FLASHER
- AUTOMATIC GATE
- RAIL TURNOUT
- RAIL CROSSOVER (DOUBLE)
- RAIL CROSSOVER (SINGLE)
- POINT OF SWITCH (PS)
- OCS POLE FOUNDATION
- RAIL LUBRICATOR
- POINT OF INTERSECTION (PI) OF TURNOUT (TO)
- W2-200 RAILROAD CURVE NUMBER

NOTE:
ALL TURNOUTS AND CROSSOVERS TO BE EQUIPPED WITH POWER SWITCH MACHINES AND SWITCH HEATERS

CIVIL SYMBOLS



- ACCESSIBLE PEDESTRIAN CURB RAMP (DESIGN VARIES)
- PROPOSED DIRECTIONAL LANE USE
- EXISTING DIRECTIONAL LANE USE
- AUTOMATIC GATE
- HANDICAP PARKING STALL
- TACTILE WARNING STRIP
- TPSS BUILDING (TPSS-SW###)
- SIGNAL OR INTERMEDIATE OR PLATFORM OR XING OR TUNNEL HOUSE OR ANY COMBINATION OF THESE

SURVEY NOTES

1. THE HORIZONTAL DATUM OF THIS MAP IS BASED ON THE HENNEPIN COUNTY COORDINATE SYSTEM WHICH IS RELATED TO THE MINNESOTA STATE PLANE COORDINATE SYSTEM NAD 83 (2007) ADJUSTMENT SOUTH ZONE.
2. THE PLANIMETRIC FEATURES SHOWN ON THIS MAP ARE AS PREPARED BY AERO-METRIC, INC. FROM AERIAL DATA AND IMAGERY COLLECTED IN APRIL 2012, AS SUPPLEMENTED BY FIELD SURVEYS COMPLETED BY RANI ENGINEERING.
3. HORIZONTAL POSITIONAL ACCURACY: USING THE NATIONAL STANDARD FOR SPATIAL DATA ACCURACY, THE DATA SET TESTED 0.14 FEET HORIZONTAL ACCURACY AT A 95% CONFIDENCE LEVEL.
4. VERTICAL POSITIONAL ACCURACY: USING THE NATIONAL STANDARD FOR SPATIAL DATA ACCURACY, THE DATA SET TESTED 0.10 FEET VERTICAL ACCURACY AT 95% CONFIDENCE LEVEL.

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60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
GENERAL
LEGEND AND ABBREVIATIONS
SHEET 1

DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-NTS - 001

SHEET 4 OF 41

Sep. 21 2015 06:58 am V:\3400_ADC\CAD\CAD MANAGEMENT\DRAWING LIST\W0-GEN-NTS.dwg By: V-KriewaMR

ABBREVIATIONS

AD	ALGEBRAIC DIFFERENCE
AVE	AVENUE
BGN	BEGIN
BP	BEGINNING POINT
BVCE	BEGINNING VERTICAL CURVE ELEVATION
BVCS	BEGINNING VERTICAL CURVE STATION
BLVD	BOULEVARD
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
C&G	CURB AND GUTTER
℄	CENTERLINE
CIR	CIRCLE
CP	CANADIAN PACIFIC
CPRAIL	CANADIAN PACIFIC RAILWAY
CS	CURVE TO SPIRAL
CSAH	COUNTY STATE AID HIGHWAY
D&U	DRAINAGE AND UTILITY
DF	DIRECT FIXATION
DR	DRIVE
DTL	DETAIL
DWY	DRIVEWAY
E	EAST
Ea	ACTUAL SUPERELEVATION (INCHES)
EB	EAST BOUND
EL or ELEV	ELEVATION
EP	END POINT
ESMT	EASEMENT
Eu	UNBALANCED SUPERELEVATION (INCHES)
EVCE	ENDING VERTICAL CURVE ELEVATION
EVCS	ENDING VERTICAL CURVE STATION
EX	EXISTING
HCRRA	HENNEPIN COUNTY REGIONAL RAILROAD AUTHORITY
LH	LEFT HAND
LN	LANE
LRT	LIGHT RAIL TRANSIT
L_c	CURVE LENGTH (FEET)
L_s	SPIRAL LENGTH (FEET)
MIN	MINIMUM
MPH	MILES PER HOUR
MPLS	CITY OF MINNEAPOLIS
MPRB	MINNEAPOLIS PARK AND RECREATION BOARD
N	NORTH
NB	NORTH BOUND
NIC	NOT IN CONTRACT
NO	NUMBER
OMF	OPERATIONS AND MAINTENANCE FACILITY
OCS	OVERHEAD CONTACT SYSTEM
OH	OVERHEAD
PC	POINT OF CURVE
PE	PERMANENT EASEMENT
PITO	POINT OF INTERSECTION OF TURNOUT
PKWY	PARKWAY
POT	POINT ON TANGENT
PROP	PROPOSED
PS	POINT OF SWITCH
PT	POINT OF TANGENT
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS (FEET)
RD	ROAD
RL	RAIL LUBRICATOR
r	RATE OF CHANGE VERTICAL CURVE
RH	RIGHT HAND
ROW	RIGHT OF WAY
S	SOUTH
SB	SOUTH BOUND
SC	SPIRAL TO CURVE
SIG-COMM	SIGNAL COMMUNICATION
ST	STREET
ST	SPIRAL TO TANGENT
STA	STATION
TCE	TEMPORARY CONSTRUCTION EASEMENT
TH	TRUNK HIGHWAY
THRU	THROUGH
TOR	TOP OF RAIL
TPSS	TRACTION POWER SUBSTATION
TRK	TRACK
TS	TANGENT TO SPIRAL
TYP	TYPICAL
UG	UNDERGROUND
V	DESIGN VELOCITY (MPH)
VC	VERTICAL CURVE
W	WEST
WB	WEST BOUND

TRAIL INDEX

ABBREVIATED NAME	FULL NAME / LOCATION
TRAIL 1	UNDER RED CIRCLE DR, LRT, AND YELLOW CIRCLE DR
TRAIL 2	FROM TRAIL 1 TO GREEN CIRCLE DR
TRAIL 3	OPUS STATION ACCESS FROM BREN RD E
TRAIL 4	FROM BREN RD W TO TRAIL 5
TRAIL 5	FROM OPUS STATION TO GREEN CIRCLE DR
TRAIL 6	FROM TRAIL 5 TO SMETANA RD
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL TRAIL/FROM SHADY OAK STATION TO 11TH AVE
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL TRAIL/WEST OF EXCELSIOR
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL LRT TRAIL/BETWEEN EXCELSIOR AND KENILWORTH TRAIL CONNECTION
MIDTOWN GREENWAY	MIDTOWN GREENWAY/EAST OF KENILWORTH TRAIL CONNECTION
TRAIL A	KENILWORTH TRAIL (SECONDARY)/BETWEEN CEDAR-ISLES CHANNEL AND 21ST STREET STATION
TRAIL B	KENILWORTH TRAIL (SECONDARY)/BETWEEN 21ST STREET STATION AND PENN STATION
TRAIL B	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL C	10' CONNECTOR TRAIL FROM CEDAR LAKE LRT REGIONAL TRAIL TO TYLER AVE.
TRAIL D	10' CONNECTOR TRAIL/BELTLINE STATION TO CEDAR LAKE LRT REGIONAL TRAIL
KENILWORTH TRAIL	KENILWORTH TRAIL (MAIN)/W LAKE ST TO PENN STATION
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/PENN STATION TO TH 394
TRAIL E	KENILWORTH TRAIL (SECONDARY)/EAST OF W LAKE ST
TRAIL F	KENILWORTH TRAIL (SECONDARY)/WEST OF CEDAR LAKE PKWY
TRAIL G	KENILWORTH TRAIL (SECONDARY)/WEST OF PENN STATION
TRAIL G	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL H	10' CONNECTOR TRAIL/EAST OF PENN STATION TO KENWOOD PKWY
TRAIL I	NOT USED
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/AT-GRADE CROSSING AT PENN STATION
TRAIL J	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL K	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL L	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL M	NOT USED
TRAIL N	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO EDGEBROOOK DRIVE
TRAIL O	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO W LAKE STREET
TRAIL P	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO LOUISIANA AVE
TRAIL Q	10' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO TH 7 SERVICE ROAD
TRAIL R	20' CONNECTOR TRAIL FROM VAN WHITE STATION TO CEDAR LAKE TRAIL
TRAIL S	NOT USED
TRAIL T	8' CONNECTOR TRAIL FROM VAN WHITE STATION TO VAN WHITE MEMORIAL BLVD
TRAIL U	10' TRAIL PARALLEL TO CEDAR LAKE PKWY
LUCE LINE TRAIL	LUCE LINE REGIONAL TRAIL/ON BRIDGE OVER LIGHT RAIL
TRAIL V	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL
TRAIL W	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
GENERAL
LEGEND AND ABBREVIATIONS
SHEET 2

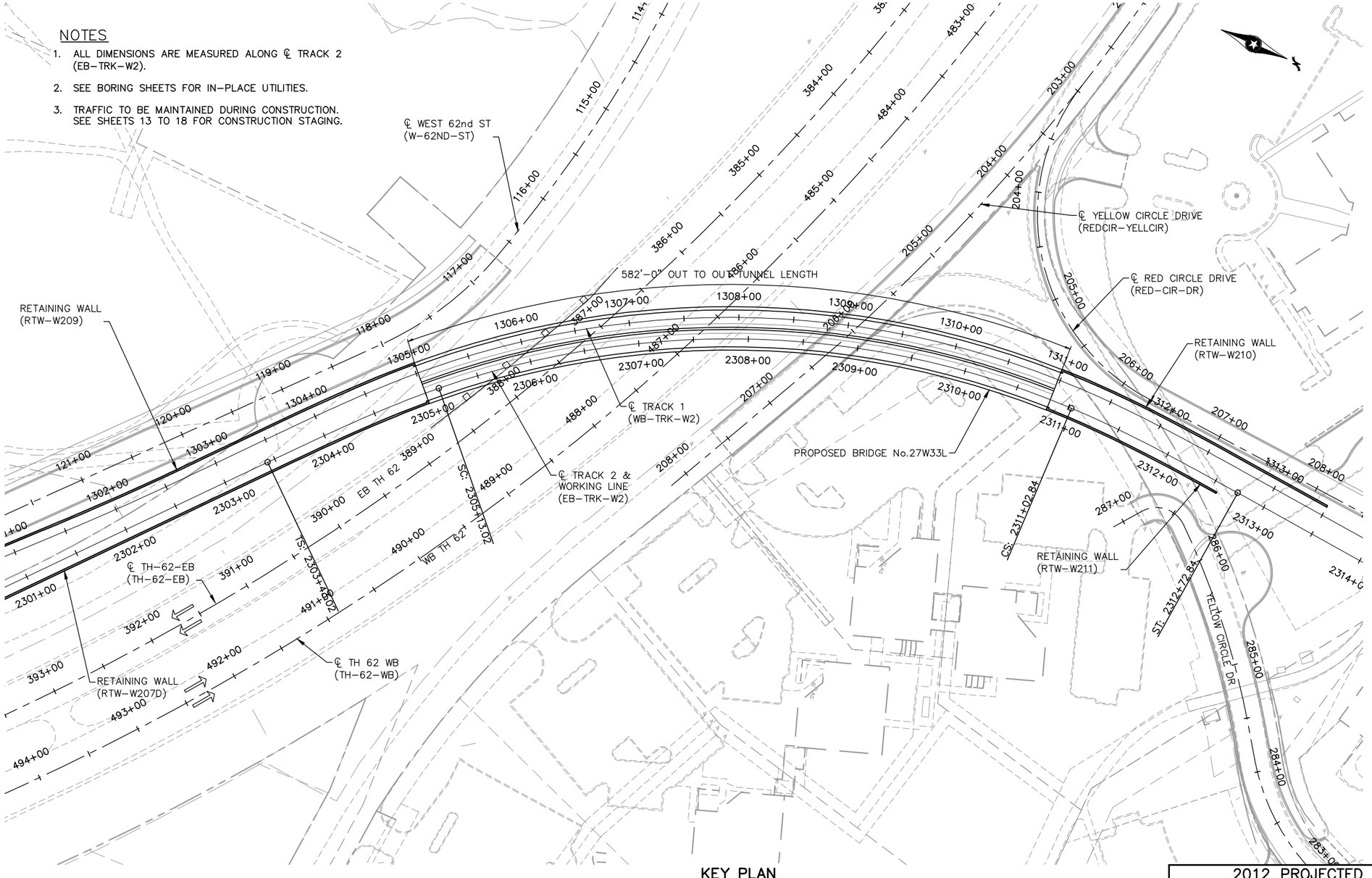
DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-NTS - 002

SHEET 5 OF 41

NOTES

1. ALL DIMENSIONS ARE MEASURED ALONG ℄ TRACK 2 (EB–TRK–W2).
2. SEE BORING SHEETS FOR IN–PLACE UTILITIES.
3. TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION. SEE SHEETS 13 TO 18 FOR CONSTRUCTION STAGING.



KEY PLAN

0 25 50 100
HORIZONTAL SCALE IN FEET

DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 7TH EDITION AND CURRENT INTERIMS

METRO LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 5000 PSI n = 8
fy = 60000 PSI
CONCRETE FOR SLAB AND WATERPROOFING PROTECTION:
f'c = 3000 PSI
DESIGN SPEED: OVER = 60 MPH (TH 62)
UNDER = N/A MPH (LRT)

LIST OF SHEETS

PROPOSED TYPE OF STRUCTURE

STRUCTURE:
TWO CELL CIP CONCRETE TUNNEL
DIRECT FIXATION TRACK

SUBSTRUCTURE:
CIP CONCRETE BASE SLAB SUPPORTED ON PREPARED SUBGRADE

DEPTH OF STRUCTURE:
17'–9" TOP OF INVERT SLAB TO BOTTOM OF ROOF SLAB

2012 PROJECTED TRAFFIC VOLUMES

ROADWAY UNDER	ROADWAY OVER
N.A.	A.D.T. 31,500 VPD
N.A.	D.H.V. _____
N.A.	A.D.T.T. _____

BRIDGE NO. 27W33

TUNNEL STRUCTURE UNDER TH 62
0.3 MI. EAST OF JCT. TH 62 AND SHADY OAK ROAD IN EDEN PRAIRIE

TWO CELL CIP CONCRETE TUNNEL
(2) 15'–9" ROADWAYS
0°–0'–0" SKEW

BRIDGE I.D. NO. 117

KEY PLAN

SEC 36 T 117 N R 22 W
CITY OF EDEN PRAIRIE HENNEPIN COUNTY

APPROVED: _____
STATE BRIDGE ENGINEER DATE

JOB NO. T9N635 STATE PROJECT NO. 9909–01 MNDOT REVIEW: DAN PRATHER

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
KEY PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-GPE-KEY-001

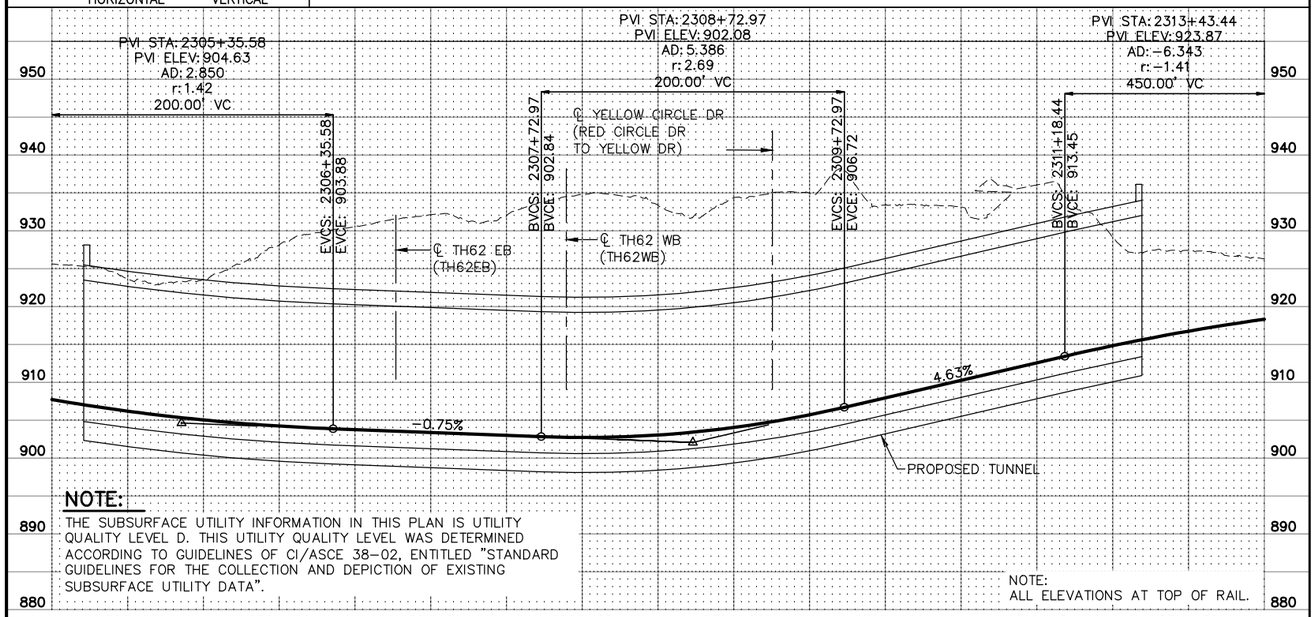
SHEET 6 OF 41

Sep. 21 2015 12:30 pm \\Nadtc2fp001\swlrt\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-GPE-KEY-001.dwg By: lofargues

CONTRACTED PROFILE

SCALE : 0 25' 50' HORIZONTAL; 0 5' 10' VERTICAL

SWLRT TRACK 2 (FG-EB-TRK-W2)

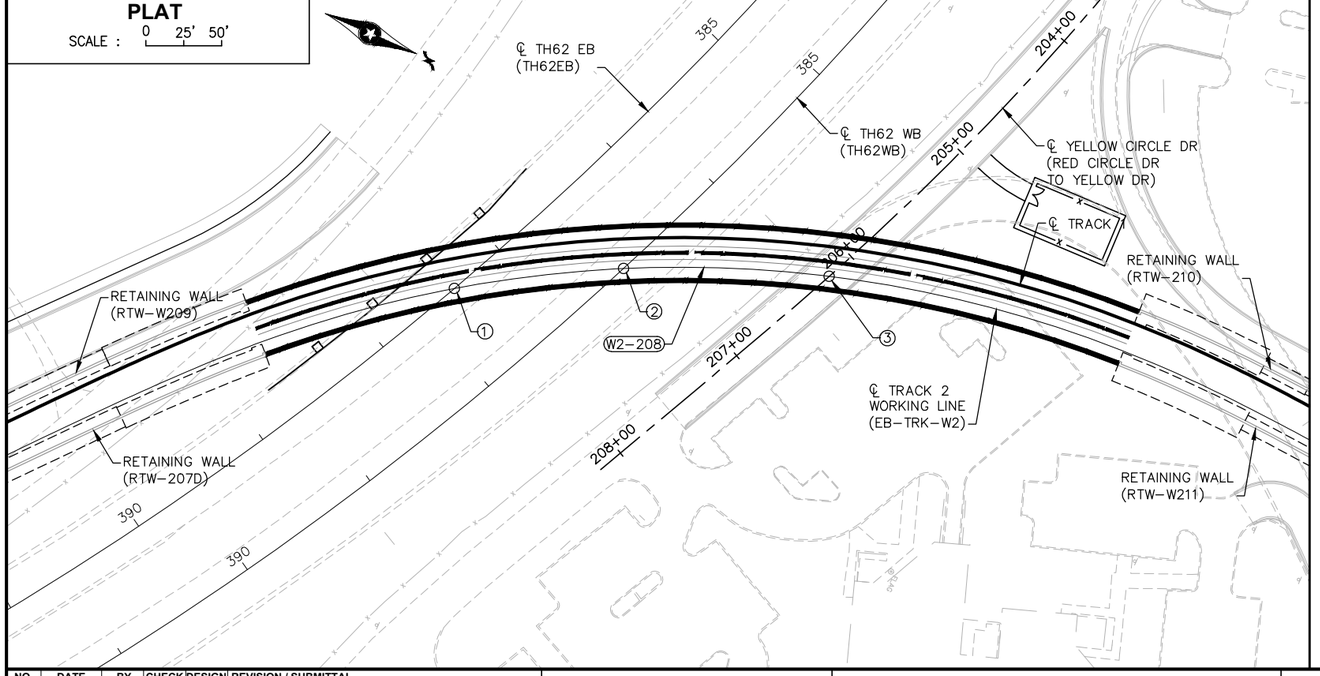


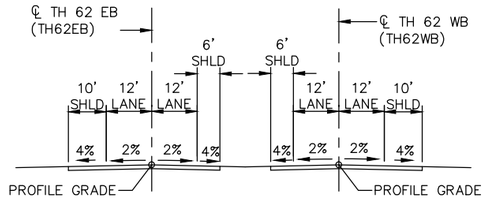
NOTE:
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

NOTE:
ALL ELEVATIONS AT TOP OF RAIL.

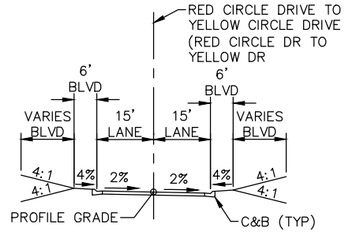
PLAT

SCALE : 0 25' 50'





EXISTING TYPICAL ROADWAY SECTION TH62



EXISTING TYPICAL ROADWAY SECTION YELLOW CIRCLE DRIVE

NOTES

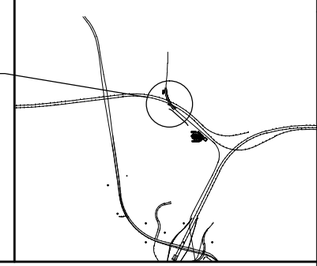
① CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.C. STA. 2306+76.88
℄ TH 62 EB (TH62EB) P.O.C. STA. 387+39.01
X = 492173.180
Y = 136871.073
ANGLE: 29°30'20.2" TTC

② CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.C. STA. 2307+89.46
℄ TH 62 WB (TH62WB) P.O.C. STA. 386+81.72
X = 492115.733
Y = 136967.784
ANGLE: 39°50'58.3"

③ CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.C. STA. 2309+25.32
℄ YELLOW CIRCLE DRIVE (RED CIRCLE DR TO YELLOW DR) P.O.C. STA. 206+19.50
X = 492065.344
Y = 137093.781
ANGLE: 48°34'34.8"

CURVE NO. W2-208
R = 800'
Lc = 589.82'
Ls = 170'
Ea = 3.50"
Eu = 2.56"
V = 35 MPH
Dc: = 7°09'43.11"

INDEX MAP



STATE PROJECT NO. 9909-01

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
2. OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY) : GIVEN LOCATION,TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
3. APPARENT HIGHWATER ELEVATION _____ OBTAINED FROM:
4. OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: XX-XX-XXXX

STREAM OR DITCH DESIGNATION: XXX

DRAINAGE AREA: XXX SQ. MI.

MAX FLOOD ON RECORD: XXX C.F.S. (XX-XX-XX)

MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.

DESIGN FLOOD (XX TR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.
TOTAL STAGE INCREASE: XX.X FT.
LOW MEMBER AT OR ABOVE ELEVATION: XXX.X FT

WATERWAY AREA REQUIRED BELOW ELEV. XXX.X = XXX SQ. FT. AT RIGHT ANGLES TO CHANNEL

BASIC FLOOD (100 YR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
TOTAL STAGE INCREASE: X.X FT.
MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.

FLOWLINE ELEVATION: XXX FT. SKEW ANGLE: XX

ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. XXX.X (500 OR OT YR.FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE: XX-XX-XXXX

TOTAL SCOUR AT PIER EL. XXX.XX (500 OR OT YR. FREQ.)
SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY = SHEETS MADE FROM 20XX XXXXXI SURVEYS

1ST BENCH MARK
MNDOT NAME: 2773 A
APPROX. NORTHING (HEN. COUNTY COORDINATES): 137082.117
APPROX. EASTING (HEN. COUNTY COORDINATES): 490527.817
BENCHMARK ELEVATION (NAVD88): 963.180

2ND BENCH MARK
MNDOT NAME: 2773 F
APPROX. NORTHING (HEN. COUNTY COORDINATES): 135659.858
APPROX. EASTING (HEN. COUNTY COORDINATES): 493993.897
BENCHMARK ELEVATION (NAVD88): 954.066

TUNNEL SURVEY

0.3 MI EAST OF THE INTERSECTION TH62 AND SHADY OAK ROAD IN EDEN PRAIRIE

SOUTHWEST LRT UNDER TH62

SEC 36 T 117 N R 22 W

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27W33

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM SRF Consulting Group, Inc. METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
TUNNEL SURVEY (1 OF 2)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-SUR1

SHEET 7 OF 41

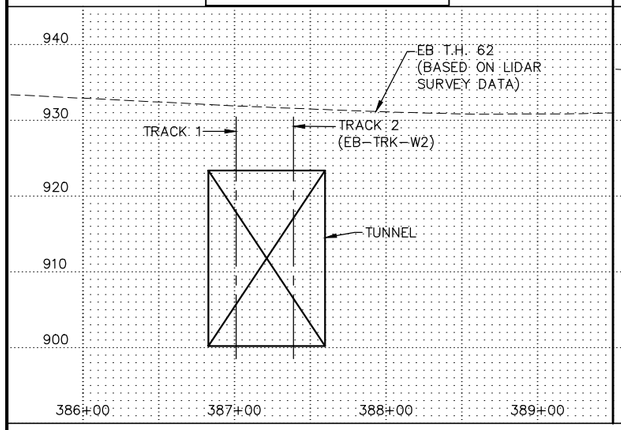
Sep. 24 2015 10:31 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-STU-TUNL-TH62-SUR1.dwg By: kmclement

CONTRACTED PROFILE

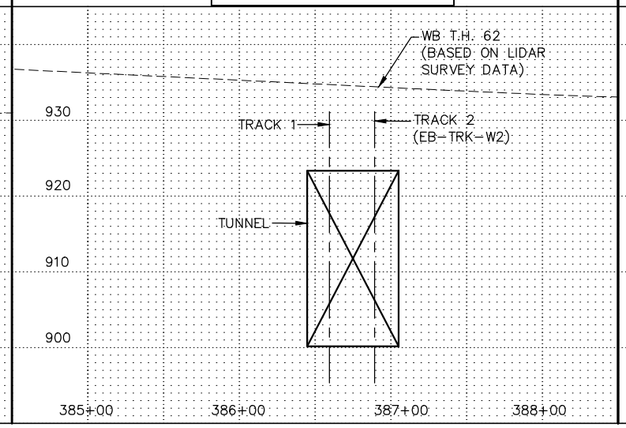
SCALE HOR: 0 50'

SCALE VER: 0 10'

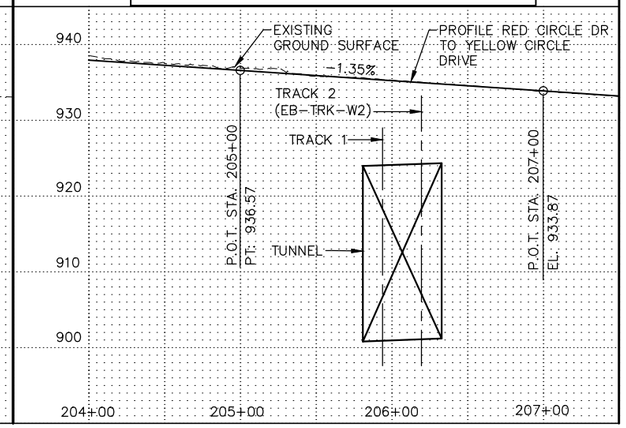
PROFILE GRADE EB T.H. 62



PROFILE GRADE WB T.H. 62



PROFILE GRADE RED CIRCLE DR TO YELLOW DR



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

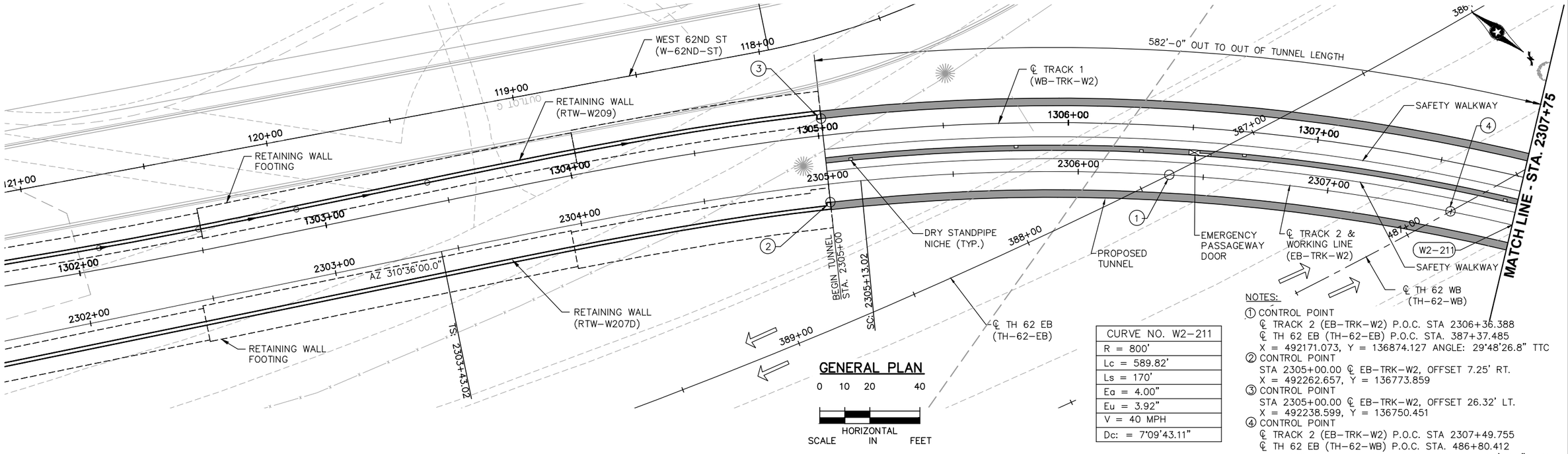
60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
TUNNEL SURVEY (2 OF 2)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-SUR2

SHEET 8 OF 41



CURVE NO. W2-211
R = 800'
Lc = 589.82'
Ls = 170'
Ea = 4.00"
Eu = 3.92"
V = 40 MPH
Dc: = 7°09'43.11"

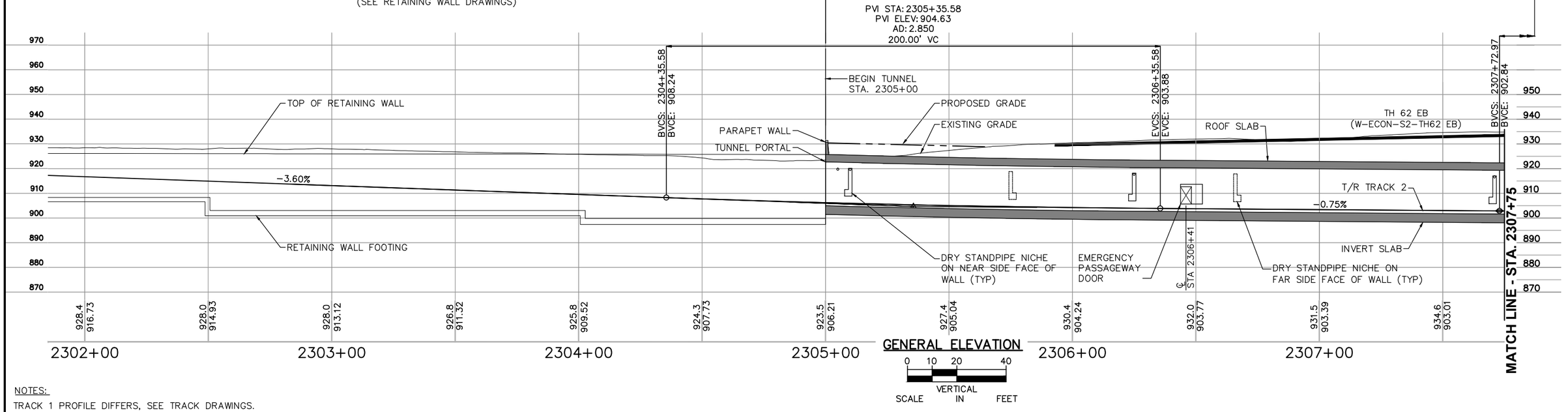
NOTES:

① CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.C. STA 2306+36.388
℄ TH 62 EB (TH-62-EB) P.O.C. STA. 387+37.485
X = 492171.073, Y = 136874.127 ANGLE: 29°48'26.8" TTC

② CONTROL POINT
STA 2305+00.00 ℄ EB-TRK-W2, OFFSET 7.25' RT.
X = 492262.657, Y = 136773.859

③ CONTROL POINT
STA 2305+00.00 ℄ EB-TRK-W2, OFFSET 26.32' LT.
X = 492238.599, Y = 136750.451

④ CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.C. STA 2307+49.755
℄ TH 62 EB (TH-62-WB) P.O.C. STA. 486+80.412
X = 492171.073, Y = 136874.127 ANGLE: 40°12'49.6" TTC



NOTES:

TRACK 1 PROFILE DIFFERS, SEE TRACK DRAWINGS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

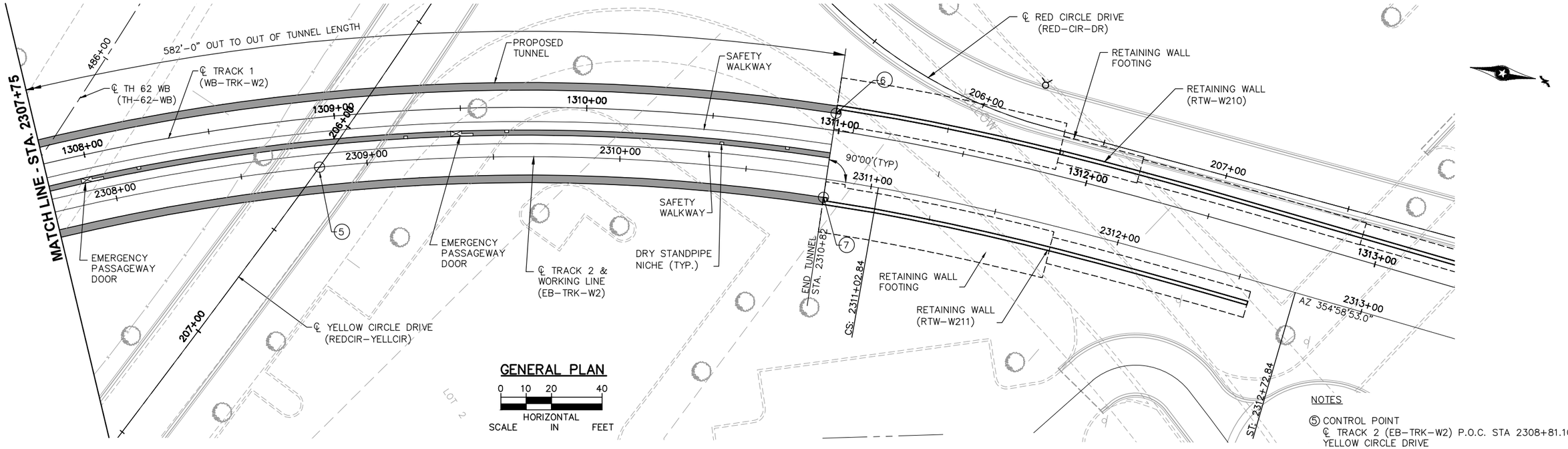
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
GENERAL PLAN AND ELEVATION
(1 OF 2)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-GPE-001

SHEET 9 OF 41

Sep, 18 2015 05:18 pm v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-GPE-001.dwg By: yub1

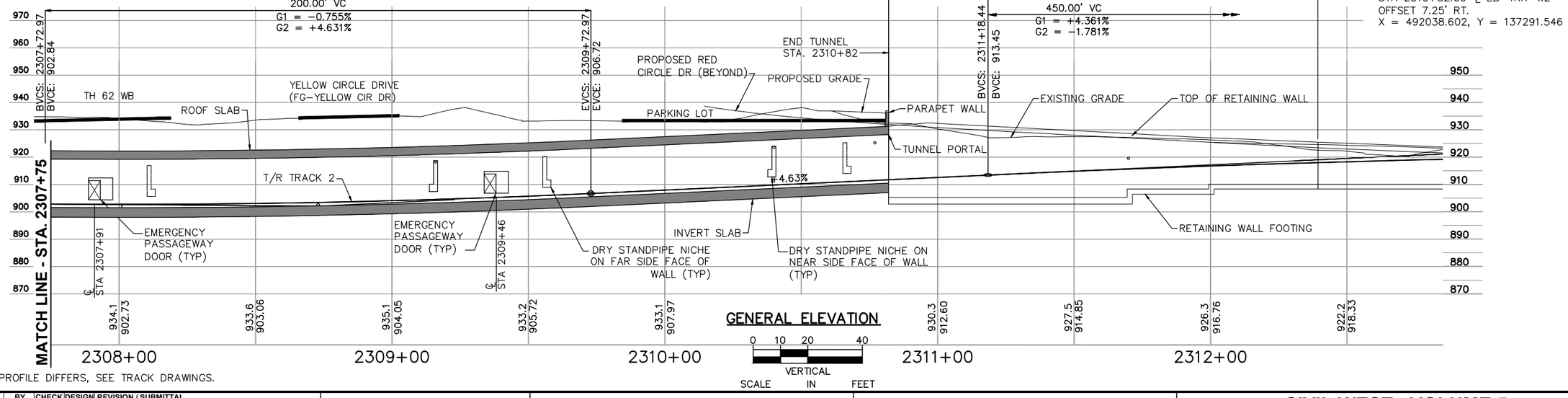


NOTES

⑤ CONTROL POINT
℄ TRACK 2 (EB-TRK-W2) P.O.C. STA 2308+81.10
YELLOW CIRCLE DRIVE
(REDCIR-YELLCIR)
P.O.C. STA 206+19.50
X = 492065.312, Y = 137093.751
ANGLE: 48°34'34.8" TTC

⑥ CONTROL POINT
STA 2310+82 ℄ EB-TRK-W2
OFFSET 26.29' LT.
X = 492005.093, Y = 137290.046

⑦ CONTROL POINT
STA 2310+82.00 ℄ EB-TRK-W2
OFFSET 7.25' RT.
X = 492038.602, Y = 137291.546



NOTES:
TRACK 1 PROFILE DIFFERS, SEE TRACK DRAWINGS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

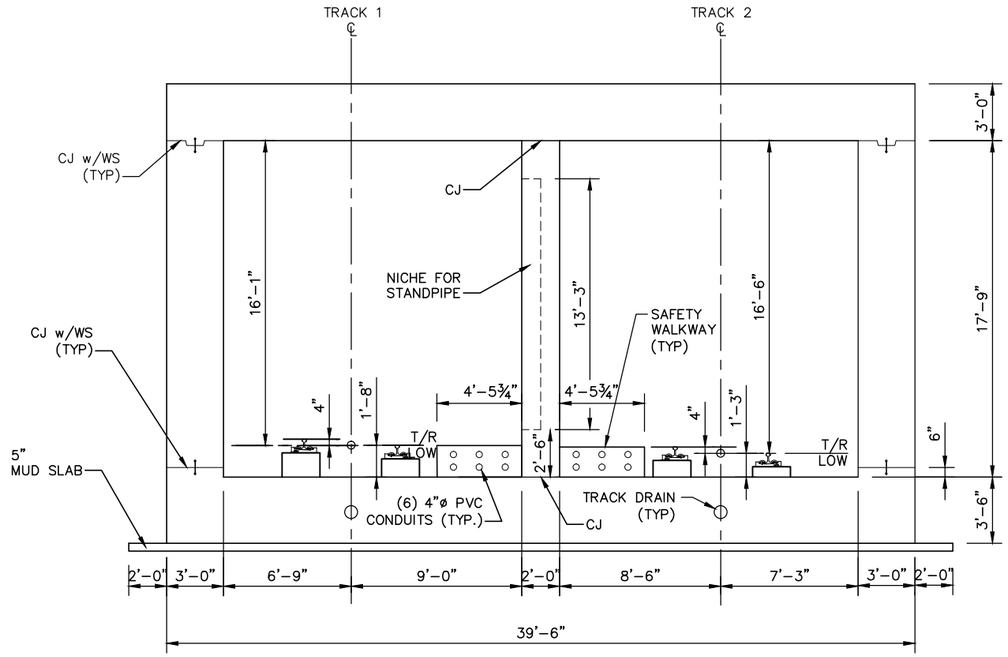
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
GENERAL PLAN AND ELEVATION (2 OF 2)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-GPE-002

SHEET 10 OF 41



TYPICAL TUNNEL CROSS SECTION LOOKING UPSTATION– GEOMETRY FROM STA. 2305+00 TO STA. 2310+82

0 2 4 8
HORIZONTAL SCALE IN FEET

NOTES:

1. FOR WATERPROOFING DETAILS, SEE WATERPROOFING DRAWINGS.
2. FOR TEMPORARY SUPPORT OF EXCAVATION, SEE SUGGESTED EXCAVATION SUPPORT DRAWINGS.
3. FOR EMBEDDED CONDUITS, SEE MEP DRAWINGS.
4. TRACK 1 AND TRACK 2 DIFFERS, SEE TRACK PLANS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
TYPICAL SECTION

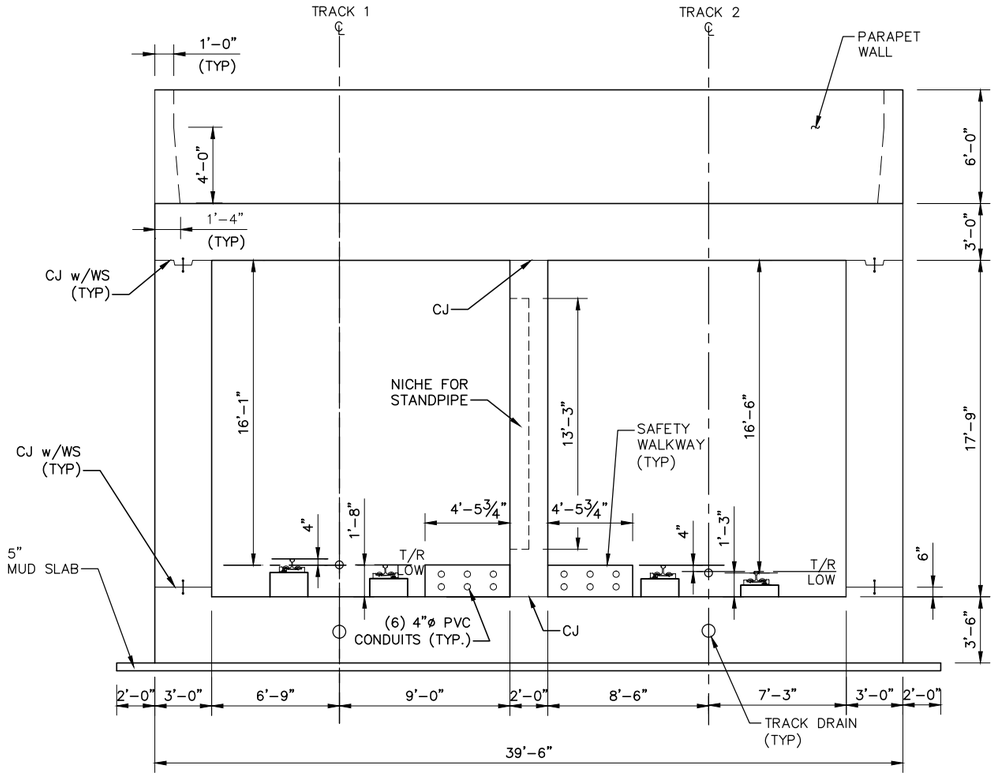
DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-TYP-001

SHEET 11 OF 41

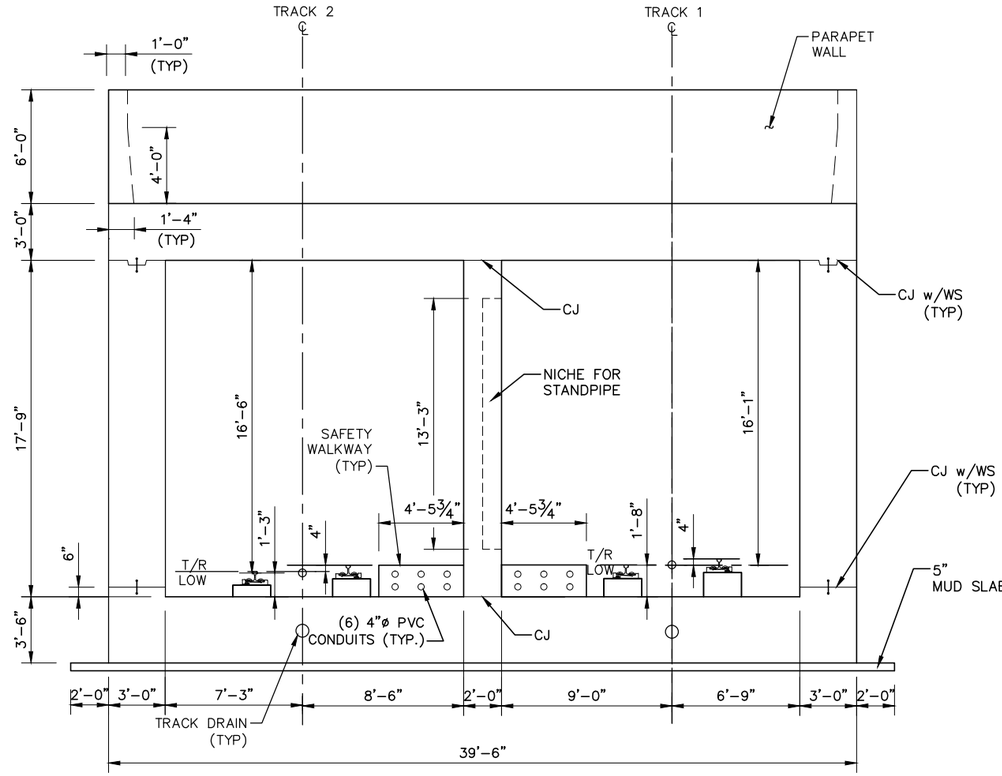
NOTES:

1. FOR WATERPROOFING DETAILS, SEE WATERPROOFING DRAWING..
2. FOR TEMPORARY SUPPORT OF EXCAVATION , SEE SUGGESTED SUPPORT OF EXCAVATION DRAWINGS.
3. FOR EMBEDDED CONDUITS, SEE MEP DRAWINGS.



SOUTH PORTAL LOOKING UPSTATION – GEOMETRY
STA. 2305+00

0 2 4 6
HORIZONTAL SCALE IN FEET



NORTH PORTAL LOOKING DOWNSTATION – GEOMETRY
STA. 2310+82

0 2 4 6
HORIZONTAL SCALE IN FEET

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST- VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
TUNNEL PORTALS
GEOMETRY

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-TYP-TTS-001

SHEET 12 OF 41

Sep. 21 2015 11:57 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-TYP-TTS-001.dwg By: BlomJ

GENERAL TRAFFIC CONTROL NOTES:

1. ALL TRAFFIC CONTROL DEVICES, TEMPORARY LANE CLOSURE ARRANGEMENTS AND PROCEDURES, SHALL CONFORM TO REQUIREMENTS OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.
2. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN, THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.
3. ALL TRAFFIC THRU LANES SHALL BE A MINIMUM OF 12 FEET IN WIDTH UNLESS NOTED OTHERWISE.
4. THE CONTRACTOR SHALL MAINTAIN A 2 FOOT MINIMUM CLEAR DISTANCE BETWEEN THE EDGE OF THE TRAVEL LANE AND THE NEAREST EDGE OF ANY ADJACENT TRAFFIC CONTROL DEVICE (PORTABLE PRECAST CONCRETE BARRIER (PPCB), DRUMS, BARRICADES, ETC.) UNLESS NOTED OTHERWISE.

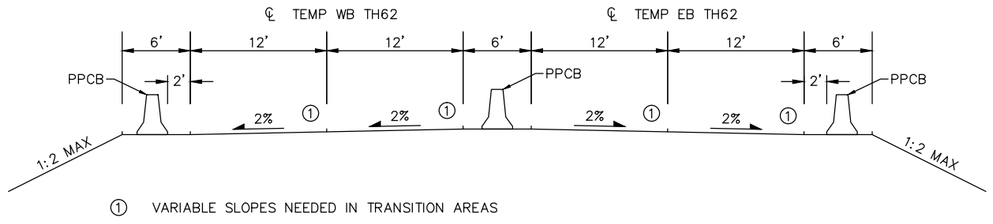
STAGING NARRATIVE:

STAGE 1

1. CONSTRUCT TEMPORARY PAVEMENT ON SOUTH SIDE OF ROADWAY. CONSTRUCT TEMPORARY PAVEMENT IN MEDIAN AREA (TO BE USED FOR BOTH STAGE 1 AND STAGE 2).
2. SHIFT EB AND WB TRAFFIC ONTO TEMPORARY PAVEMENT.
3. PLACE TEMPORARY SHORING FOR TUNNEL EXCAVATION.
4. CONSTRUCT NORTHERLY PORTION OF LRT TUNNEL.
5. INSTALL PROPOSED STORM SEWER TO THE EXTENT POSSIBLE IN STAGE 1.
6. INSTALL SANITARY SEWER LIFT STATION.
7. REPAIR PERMANENT SECTIONS OF EB AND WB TH 62.

STAGE 2

1. CONSTRUCT TEMPORARY PAVEMENT ON NORTH SIDE OF ROADWAY.
2. SHIFT EB AND WB TRAFFIC ONTO TEMPORARY PAVEMENT.
3. PLACE TEMPORARY SHORING FOR TUNNEL EXCAVATION.
4. CONSTRUCT REMAINDER OF LRT TUNNEL.
5. INSTALL REMAINDER OF PROPOSED STORM SEWER. COMPLETE REMOVALS OF PREVIOUSLY EXISTING STORM SEWER.
6. REPAIR PERMANENT SECTIONS OF EB AND WB TH 62.
7. SHIFT EB AND WB TRAFFIC ONTO PERMANENT ALIGNMENT.
8. REMOVE TEMPORARY PAVEMENT AND RESTORE DISTURBED AREAS.
9. INSTALL PERMANENT GUARDRAIL ALONG EB TH 62.



TYPICAL SECTION A–A

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METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
STAGING PLAN - NARRATIVE & NOTES

DISCIPLINE: CIVIL

SHEET NAME: W2-CIV-STG-001 - NAR

SHEET 13 OF 41

Sep. 24 2015 10:31 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-CIV-STG-001.dwg By: kmcclement

ALIGNMENT DATA
STAGE 1 – E.B. T.H. 62 (EB62–STG1)

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
C1	10+00.00	14+89.18	12+47.31		20°47'32"	4°15'01.54"	1348.00	247.31	489.18	137094.67	491317.64	136978.12	491789.98	93°27'55" 114°15'27"
L1	14+89.18	21+65.16							675.98	136978.12	491789.98	136700.40	492406.27	114°15'27"
C2	21+65.16	26+43.10	24+06.66		20°18'53"	4°15'01.54"	1348.00	241.51	477.95	136700.40	492406.27	136431.69	492798.50	114°15'27" 134°34'20"

ALIGNMENT DATA
STAGE 1 – W.B. T.H. 62 (WB62–STG1)

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
C3	110+00.00	115+84.02	112+96.67		24°49'24"	4°15'01.54"	1348.00	296.67	584.02	137163.04	491149.48	137044.09	491716.60	89°26'03" 114°15'27"
L2	115+84.02	124+54.04							870.02	137044.09	491716.60	136686.65	492509.81	114°15'27"
C4	124+54.04	129+11.14	126+84.80		19°25'43"	4°15'01.54"	1348.00	230.76	457.09	136686.65	492509.81	136432.46	492887.07	114°15'27" 133°41'09"

ALIGNMENT DATA
STAGE 2 – E.B. T.H. 62 (EB62–STG2)

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L3	60+00.00	63+88.55							388.55	137097.40	491261.10	137083.46	491649.40	92°03'18"
C5	63+88.55	74+61.49	69+55.26		45°36'17"	4°15'01.54"	1348.00	566.71	1072.94	137083.46	491649.40	136644.25	492597.45	92°03'18" 137°39'35"
L4	74+61.49	76+16.85							155.35	136644.25	492597.45	136529.42	492702.09	137°39'35"
C6	76+16.85	76+89.49	76+53.18		3°05'16"	4°15'01.54"	1348.00	36.33	72.64	136529.42	492702.09	136477.07	492752.44	137°39'35" 134°34'20"
L5	76+89.49	77+46.13							56.64	136477.07	492752.44	136437.32	492792.78	134°34'20"

ALIGNMENT DATA
STAGE 2 – W.B. T.H. 62 (WB62–STG2)

SEGMENT NUMBER	BEGINNING STATION	ENDING STATION	PI STATION	NOTES	DELTA	DEGREE	RADIUS (FT)	TANGENT (FT)	LENGTH (FT)	BEGINNING COORDINATES NORTHING	BEGINNING COORDINATES EASTING	ENDING COORDINATES NORTHING	ENDING COORDINATES EASTING	AZIMUTH
L6	160+00.00	162+98.44							298.44	137141.87	491489.66	137101.94	491785.42	97°41'17"
C7	162+98.44	171+05.36	167+13.83		33°33'03"	4°09'28.42"	1378.00	415.40	806.92	137101.94	491785.42	136772.54	492509.45	97°41'17" 131°14'21"
L7	171+05.36	174+03.79							298.44	136772.54	492509.45	136575.81	492733.86	131°14'21"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM SRF Consulting Group, Inc.

60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
STAGING PLAN - TEMP. ALIGNMENT TAB

DISCIPLINE: CIVIL

SHEET NAME: W2-CIV-STG-001 - TAB

SHEET 14 OF 41

Sep, 24 2015 10:31 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-CIV-STG-001.dwg By: kmcclement

LEGEND	
	PERMANENT CONSTRUCTION
	TEMPORARY PAVEMENT
	TRAFFIC LOCATION AND DIRECTION
	IMPACT ATTENUATOR
	EXISTING ROADWAYS
	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER / MNDOT STD. PLATE 8337
	TEMPORARY SHORING
	PROPOSED STORM SEWER CONSTRUCTION
	PROPOSED SANITARY SEWER CONSTRUCTION
	PROPOSED GUARDRAIL

GENERAL NOTE: TEMPORARY TRAFFIC SIGNS NOT SHOWN

RETAINING WALL

RED CIR DR

YELLOW CIR DR

PT: 115+84.02

PROPOSED SANITARY SEWER LIFT STATION

EXISTING 24" RCP

℄ WB62–STG1

7.03°C

C3

1:15

38.7'

12.0'

6.0'

C1

4.25°C

℄ EB62–STG1

5.64°C

BP: 10+00.00

IMPACT ATTENUATOR (60 MPH)

L2

L1

PT: 14+89.18

PROPOSED STORM SEWER LIFT STATION

RETAINING WALL

MATCH LINE - SHEET 16

0 25 50 100

NOTES:

(A) PROVIDE FULL CONTINUITY SPLICES FOR LONGITUDINAL REINFORCING STEEL AT CONSTRUCTION JOINT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
STAGING PLAN - STAGE 1

DISCIPLINE: CIVIL

SHEET NAME: W2-CIV-STG-001 - 1

SHEET 15 OF 41

Sep. 24 2015 10:31 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-CIV-STG-001.dwg By: kmcclement

MATCH LINE - SHEET 15

YELLOW CIR DR

PC: 24+54.04

TH 62 WB

TH 62 EB

W 62ND ST

C4

C2

4.25℃

4.25℃

℄ WB62–STG1

℄ EB62–STG1

EP: 129+11.14

IMPACT ATTENUATOR
(60 MPH)

PC: 21+65.16

EP: 26+43.10

RETAINING WALL

CITY WEST STATION

LEGEND	
	PERMANENT CONSTRUCTION
	TEMPORARY PAVEMENT
	TRAFFIC LOCATION AND DIRECTION
	IMPACT ATTENUATOR
	EXISTING ROADWAYS
	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER / MNDOT STD. PLATE 8337
	TEMPORARY SHORING
	PROPOSED STORM SEWER CONSTRUCTION
	PROPOSED SANITARY SEWER CONSTRUCTION
	PROPOSED GUARDRAIL

GENERAL NOTE: TEMPORARY TRAFFIC SIGNS NOT SHOWN

0 25 50 100

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
STAGING PLAN - STAGE 1

DISCIPLINE: CIVIL

SHEET NAME: W2-CIV-STG-001 - 2

SHEET 16 OF 41

Sep. 24 2015 10:31 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-CIV-STG-001.dwg By: kmcclement

LEGEND	
	PERMANENT CONSTRUCTION
	TEMPORARY PAVEMENT
	TRAFFIC LOCATION AND DIRECTION
	IMPACT ATTENUATOR
	EXISTING ROADWAYS
	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER / MNDOT STD. PLATE 8337
	TEMPORARY SHORING
	PROPOSED STORM SEWER CONSTRUCTION
	PROPOSED SANITARY SEWER CONSTRUCTION
	PROPOSED GUARDRAIL

GENERAL NOTE: TEMPORARY TRAFFIC SIGNS NOT SHOWN

RETAINING WALL

EXISTING TUNNEL CONSTRUCTED IN STAGE 1

RED CIR DR

YELLOW CIR DR

BP: 160+00.00

PC: 162+98.44

℄ WB62–STG2

L6

4.16°C

12.0'

12.0'

12.0'

12.0'

6.0'

6.0'

6.0'

C7

C5

A

4.25°C

PROPOSED SANITARY SEWER LIFT STATION

L3

IMPACT ATTENUATOR (60 MPH)

PC: 63+88.55

℄ EB62–STG2

5.73°C

BP: 60+00.00

PROPOSED STORM SEWER LIFT STATION

RETAINING WALL

0 25 50 100

NOTES:

Ⓐ PROVIDE FULL CONTINUITY SPLICES FOR LONGITUDINAL REINFORCING STEEL AT CONSTRUCTION JOINT

MATCH LINE - SHEET 18

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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SRF Consulting Group, Inc.

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

60% SUBMISSION - 09/28/15

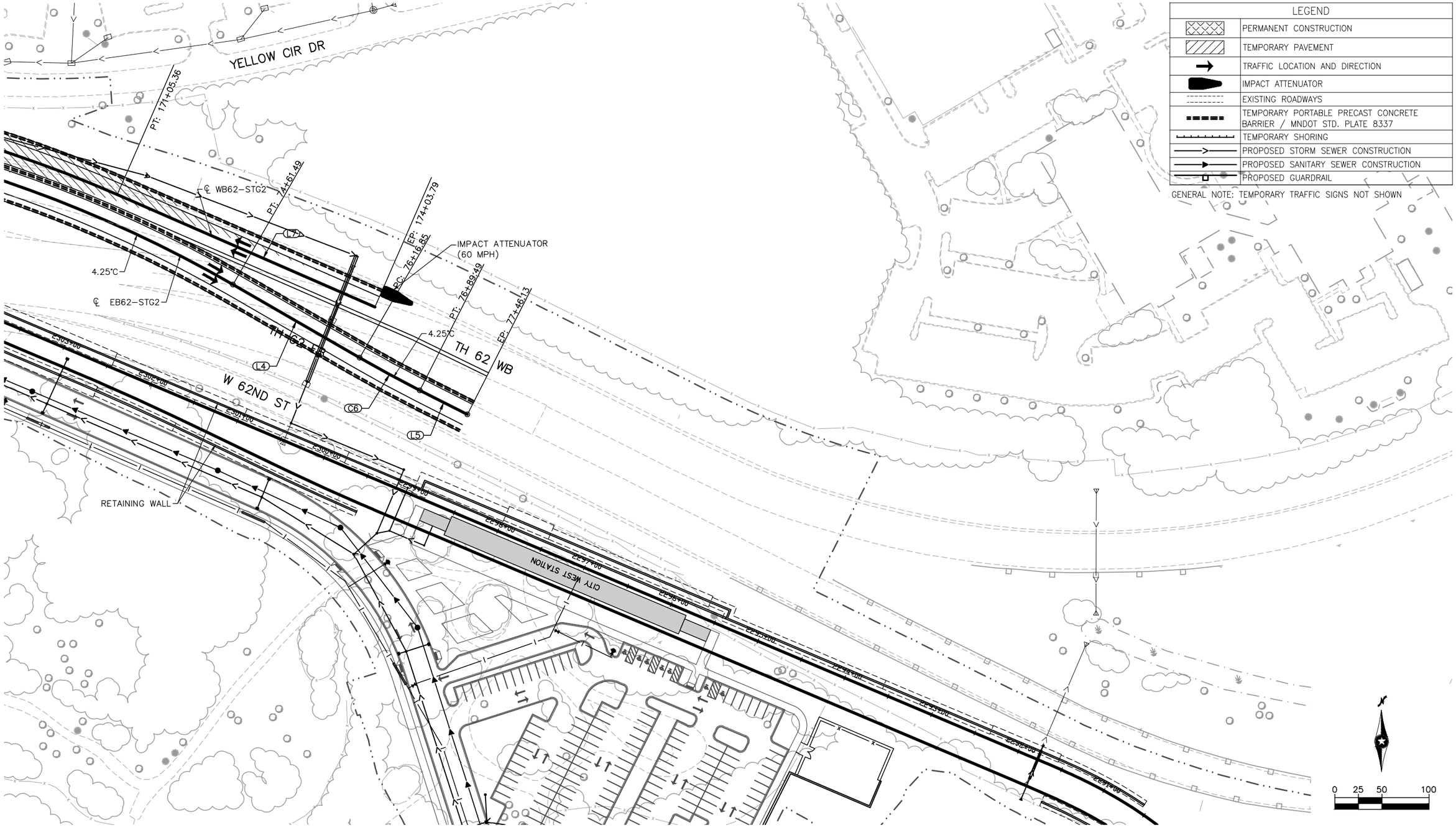
CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
STAGING PLAN - STAGE 2

DISCIPLINE: CIVIL

SHEET NAME: W2-CIV-STG-002 - 1

SHEET 17 OF 41

Sep, 24 2015 10:32 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-CIV-STG-002.dwg By: kmclement



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METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension

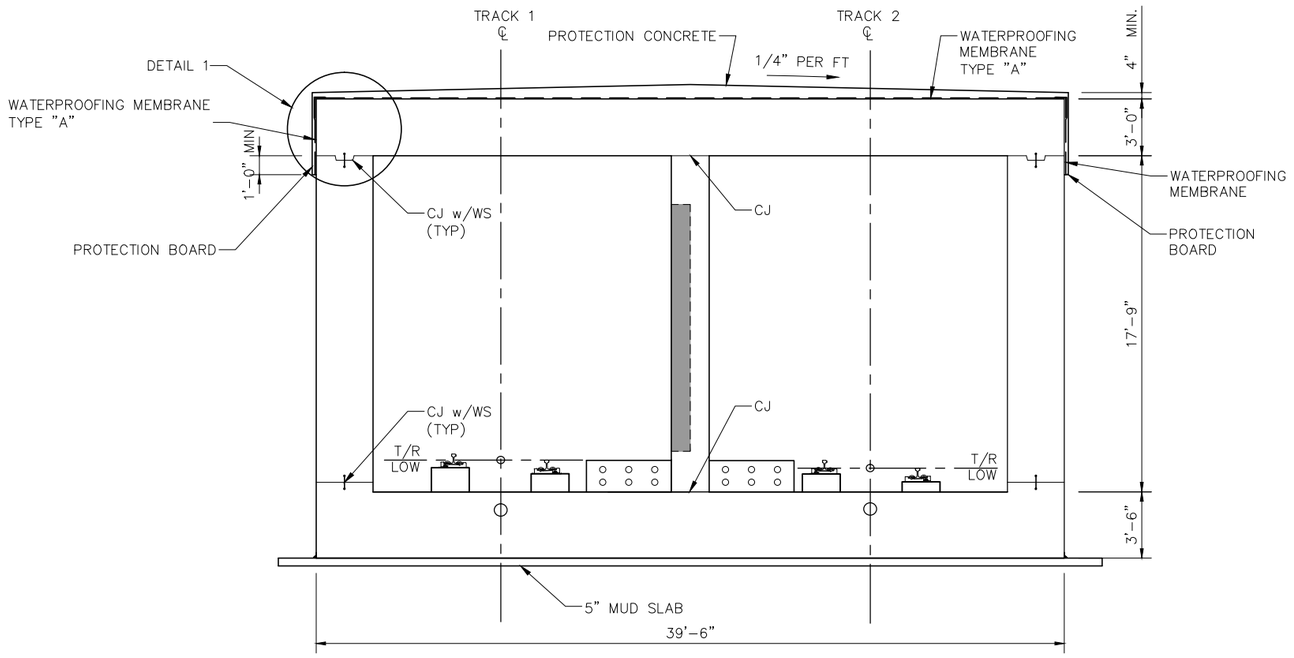
CIVIL WEST - VOLUME 5
TUNNEL UNDER TH62
BRIDGE 27W33
STAGING PLAN - STAGE 2

DISCIPLINE: CIVIL

SHEET NAME: W2-CIV-STG-002 - 2

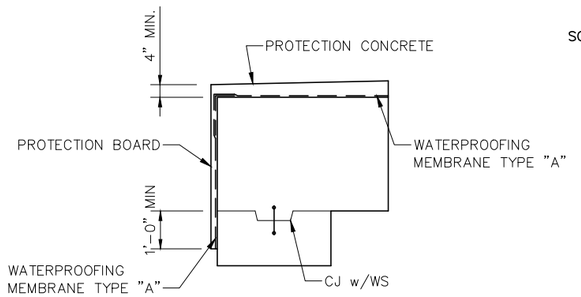
SHEET 18 OF 41

Sep, 24 2015 10:32 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\CIVIL\TH62 TUNNEL\W2-CIV-STG-002.dwg By: kmclement



TYPICAL TUNNEL SECTION – WATERPROOFING

0 2 4 6
SCALE IN FEET



DETAIL 1
TOP SLAB WATERPROOFING
NO SCALE

NOTES:

1. TYPE "A" TO BE PLACED AFTER CONCRETE POUR.
2. INSTALL PROTECTION BOARD FLUSH WITH OUTSIDE OF WATERPROOFING IN ACCORDANCE WITH MANUFACTURER'S SYSTEM.
3. WATERPROOFING MATERIALS, PROCEDURES AND CONSTRUCTION METHODS SHALL CONFORM TO THE TECHNICAL SPECIFICATIONS AND MANUFACTURER'S REQUIREMENTS.
4. PRIOR TO INSTALLATION OF WATERPROOFING SYSTEM, CONCRETE SURFACE IS TO BE PREPARED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SURFACES SHALL BE FREE OF VOIDS, SPALLED AREAS, LOOSE AGGREGATE AND SHARP PROTRUSIONS.
5. PROTECTION BOARD AS SPECIFIED IS TYPICAL FOR ALL INSTALLATIONS EXCEPT WHERE A CONCRETE SLAB IS PLACED OVER THE MEMBRANE.
6. SPLICE LENGTH AND LAP TAPE SIZE WILL VARY DEPENDING UPON PRODUCT SELECTED.

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METROPOLITAN COUNCIL

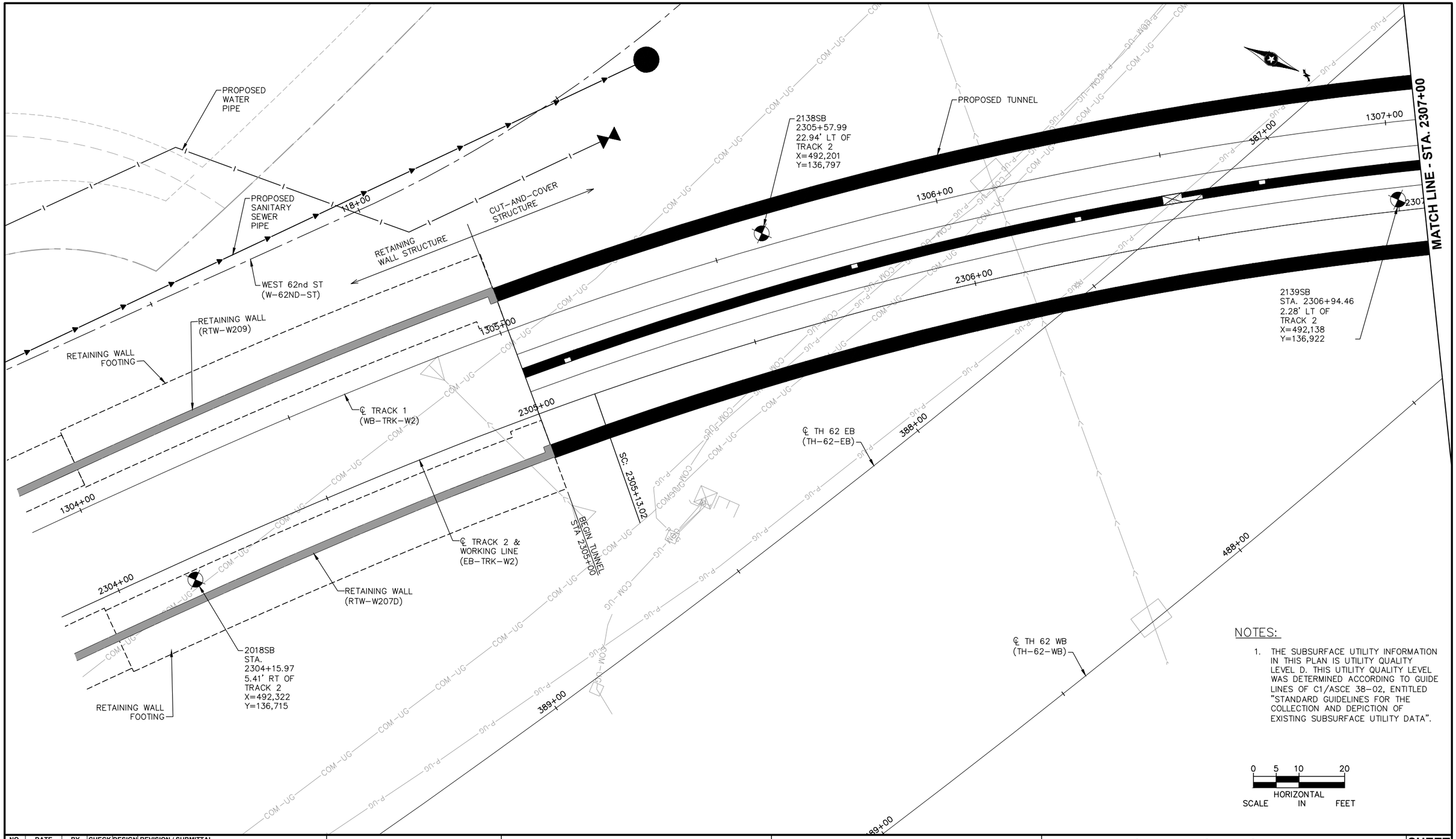
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
WATERPROOFING

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-DTL-WTP-001

SHEET 19 OF 41



NOTES:

1. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDE LINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

0 5 10 20
HORIZONTAL SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

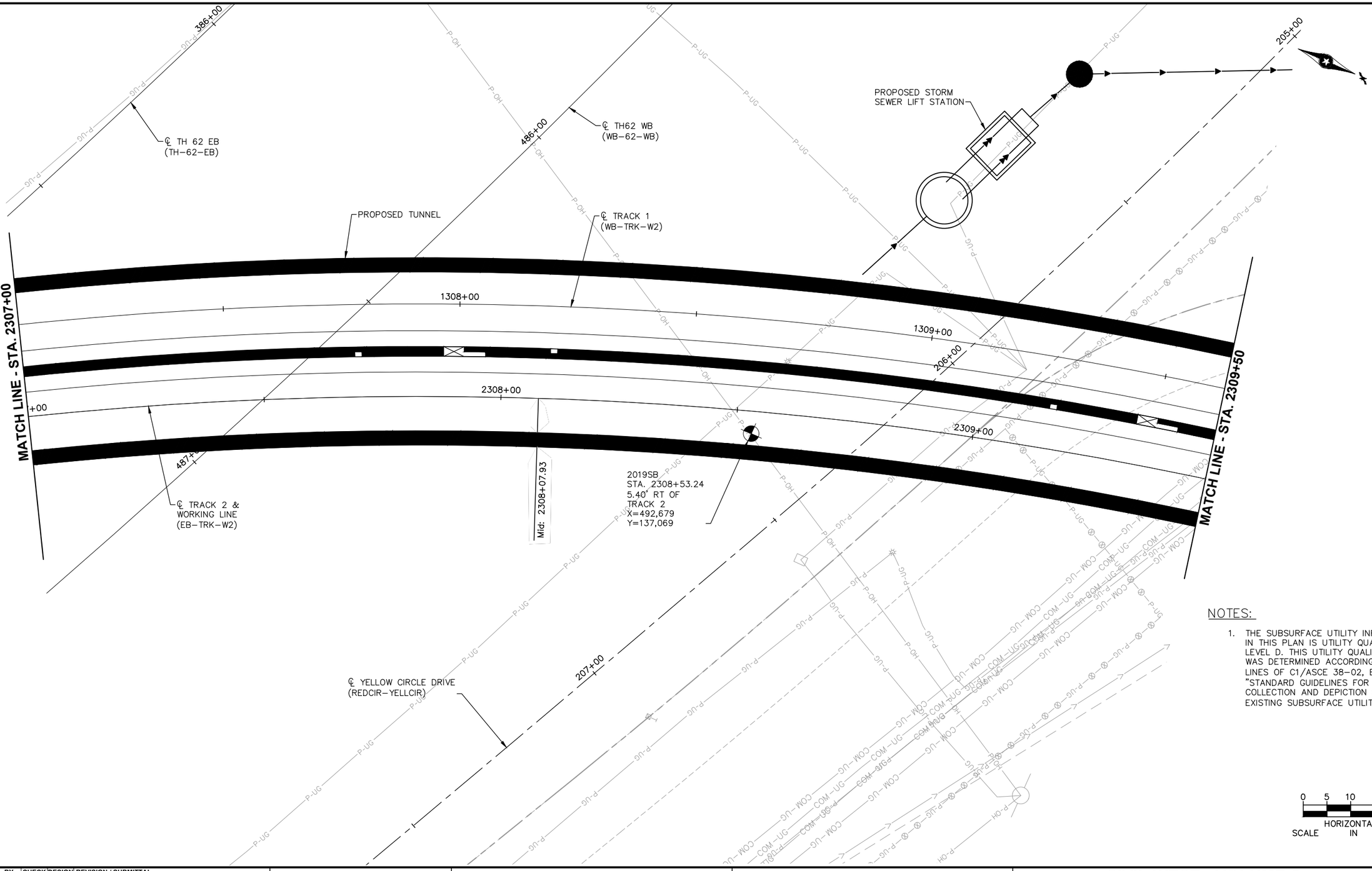
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
BORINGS
(1 OF 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-BOR-001

SHEET 20 OF 41

Sep, 21 2015 11:32 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-BOR-001.dwg By: BlomJ



NOTES:

1. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDE LINES OF C1/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

0 5 10 20
HORIZONTAL
SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
BORINGS
(2 OF 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-BOR-002

SHEET 21 OF 41

Sep, 21 2015 11:38 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-BOR-001.dwg By: BlomJ

MATCH LINE - STA. 2309+50

PROPOSED TUNNEL

1310+00

2310+00

1311+00

2311+00

1312+00

206+00

207+00

2228SB
STA 2309+56.45
1.25' RT OF
TRACK 2
X=492,048
Y=137,167

℄ TRACK 2 &
WORKING LINE
(EB–TRK–W2)

CUT–AND–COVER
STRUCTURE

RETAINING WALL
STRUCTURE

2229SB
STA 2310+86.87
28.18' LT OF
TRACK 2
X=492,003
Y=137,295

℄ RED CIRCLE DRIVE
(RED–CIR–DR)

RETAINING
WALL FOOTING

℄ TRACK 1
(WB–TRK2–W2)

RETAINING WALL
(RTW–W210)

END TUNNEL
STA 2310+82

CS: 2311+02.84

RETAINING
WALL FOOTING

RETAINING WALL
(RTW–W211)

NOTES:

1. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDE LINES OF C1/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

0 5 10 20
HORIZONTAL
SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

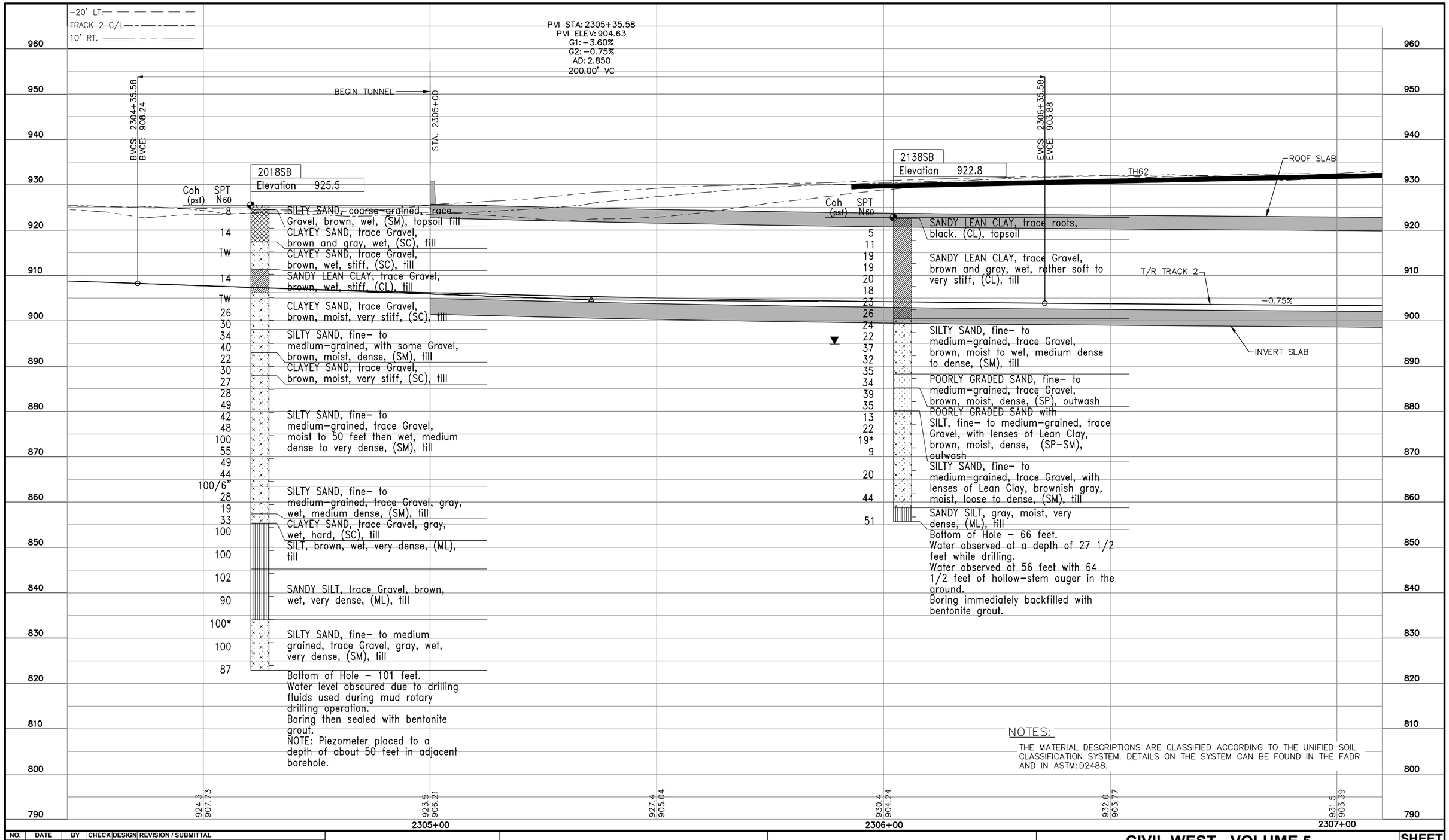
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
BORINGS
(3 OF 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-BOR-003

SHEET 22 OF 41

Sep. 21 2015 11:39 am V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-BOR-001.dwg By: BlomJ



NOTES:

THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM: D2488.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

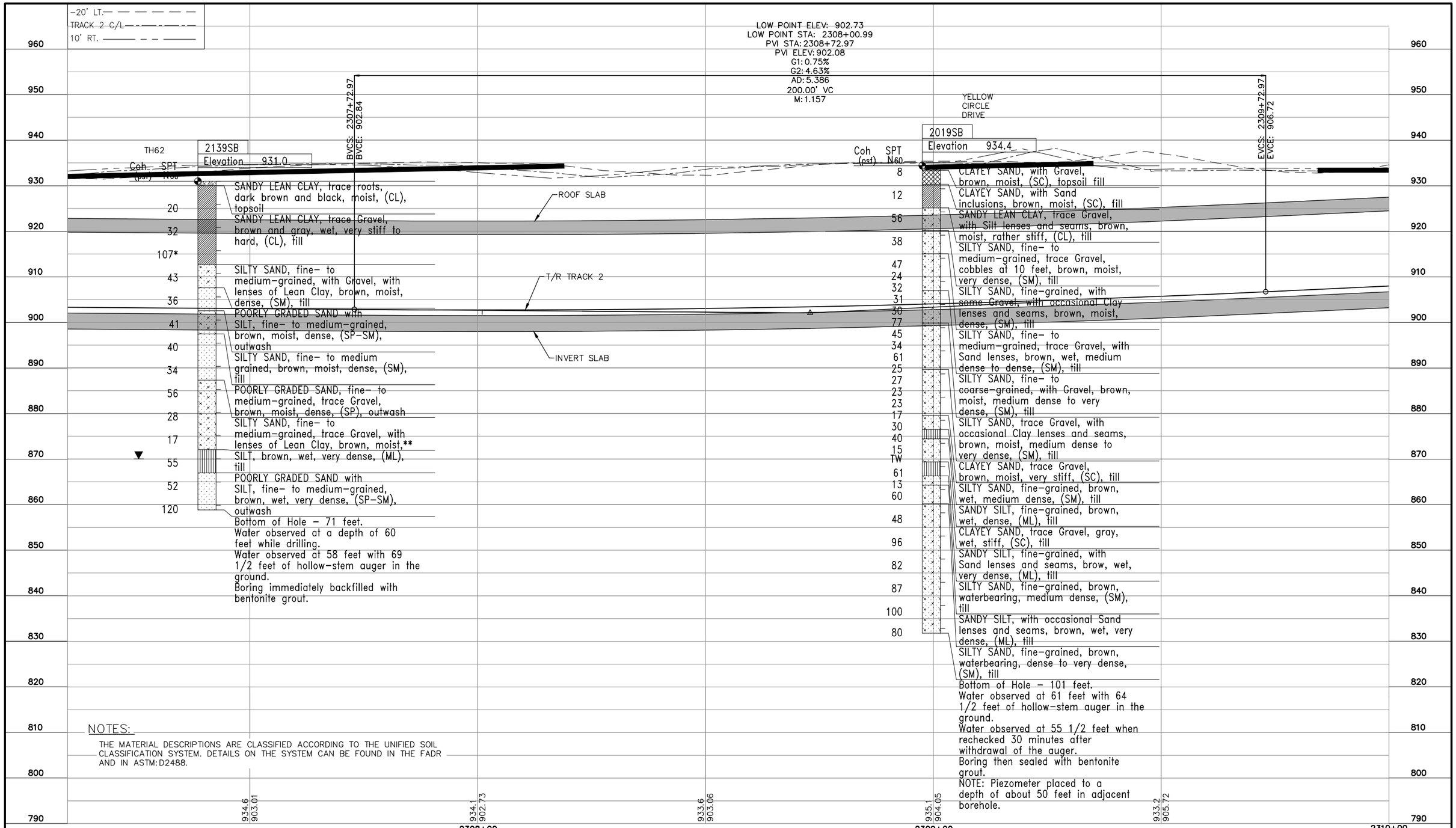
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
BORINGS
(4 OF 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-BOR-004

SHEET 23 OF 41

Sep. 18 2015 06:42 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-BOR-001.dwg By: YuB1



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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

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METROPOLITAN COUNCIL

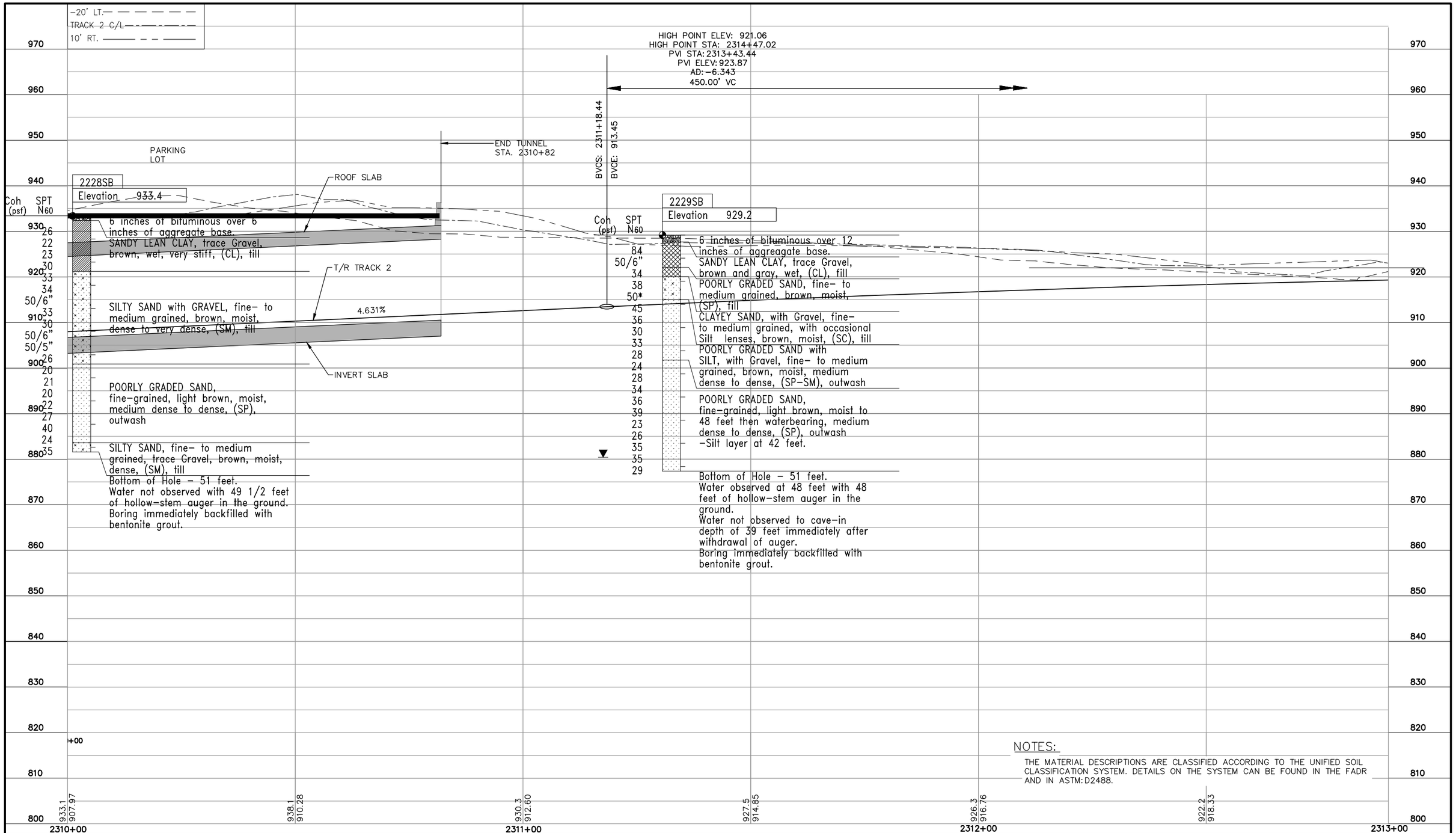
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
BORINGS
(5 OF 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-BOR-005

SHEET 24 OF 41



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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
BORINGS
(6 OF 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-BOR-006

SHEET 25 OF 41

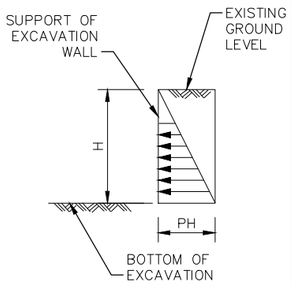
Sep. 18 2015 06:44 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-BOR-001.dwg By: YuB1

MINIMUM DESIGN LATERAL PRESSURE FOR SUPPORT OF EXCAVATION ABOVE BOTTOM OF EXCAVATION

DUE TO SOIL AND WATER

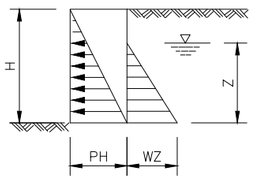
CANTILEVER WALL SYSTEMS

DEWATERED



P=45

NOT DEWATERED

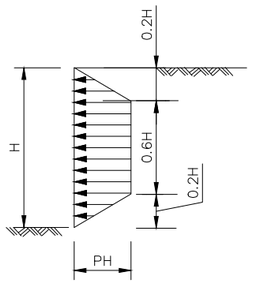


P=45

WZ=62.4

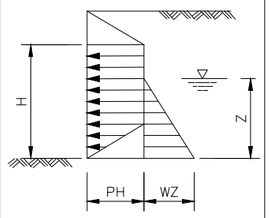
BRACED WALL SYSTEMS

DEWATERED



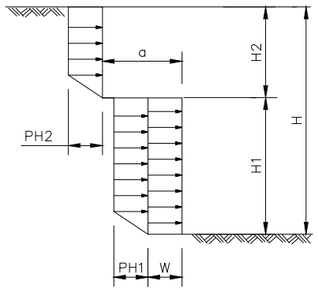
P=25

NOT DEWATERED



P=USE VALUES SPECIFIED FOR DEWATERED CASE

W=62.4



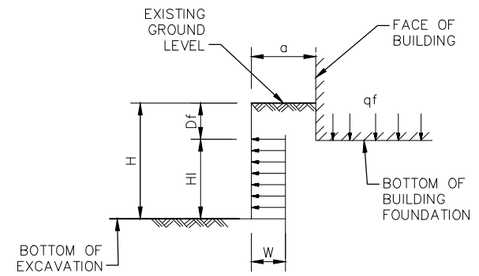
DUE TO BENCH EXCAVATION

1. THE DESIGN PRESSURE (P) TO BE DETERMINED FOR SPECIFIC CONFIGURATION.
2. THE SURCHARGE (W) FROM THE UPPER BENCH MAY BE NEGLECTED IF THE WIDTH OF THE BENCH (a) IS GREATER THAN HEIGHT OF THE LOWER EXCAVATION (H1).

GENERAL NOTES:

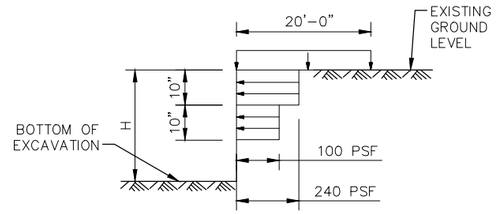
1. VALUES SHOWN FOR PRESSURE GRADIENTS P, W, Pp & Pp' ARE IN POUNDS PER SQUARE FOOT PER FOOT OF DEPTH.
2. VALUES FOR DISTANCES ARE IN FEET.
3. BRACE LEVELS ARE NOT SHOWN; THE DIAGRAMS SHOWN ABOVE "FOR SUPPORT OF EXCAVATION ABOVE BOTTOM OF EXCAVATION" ARE APPLICABLE TO MULTIPLE-BRACED SYSTEMS.
4. LATERAL SURCHARGE PRESSURE FROM TRAFFIC & CONSTRUCTION EQUIPMENT IS BASED ON AN ASSUMED TRAFFIC SURFACE SURCHARGE OF 600 PSF ACTING OVER THE TRAFFIC LANES. FOR MORE SEVERE CONSTRUCTION EQUIPMENT LOADING, SPECIAL ANALYSIS MUST BE PERFORMED.
5. ALL VALUES GIVEN FOR LATERAL PRESSURES ARE MINIMUM. INCREASE, AS REQUIRED, TO SUIT ACTUAL CONDITIONS ENCOUNTERED IN THE FIELD. INCREASED LATERAL LOAD DUE TO ADVERSE BEDDING CONDITION SHOULD BE CONSIDERED.
6. PRELOADING OF BRACED SHORING SYSTEM IS REQUIRED.

DUE TO SURCHARGE, EARTHQUAKE AND BUILDINGS

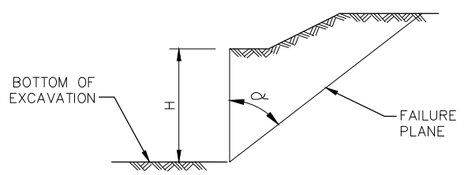


PRESSURES (W) DUE TO BUILDING FOUNDATION ARE TO BE DETERMINED BY THE CONTRACTOR ON A CASE-BY-CASE BASIS. CONTRACTOR SHALL DETERMINE BUILDING FOUNDATION PRESSURE (qf), DISTANCE FROM THE EXCAVATION (a), AND DEPTH OF FOUNDATION (Df) BY EXAMINATION OF EXISTING PLANS AND BY ON-SITE FIELD INSPECTION. PRESSURES USED FOR DESIGN SHALL BE SUBJECT TO APPROVAL BY ENGINEER.

TRAFFIC AND CONSTRUCTION EQUIPMENT



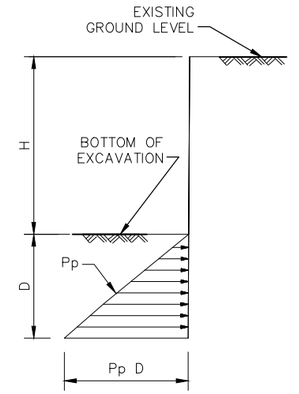
EMBANKMENT



ANGLE "α" FOR FAILURE PLANE SHALL BE DETERMINED BY THE CULMANN GRAPHICAL METHOD; SEE "SOIL MECHANICS IN ENGINEERING PRACTICE" 3RD. ED. BY TERZAGHI PECK & MASRI. ALL SURCHARGES AFFECTING AND WITHIN THE FAILURE PLANE SHALL BE CONSIDERED IN ESTIMATING LATERAL LOAD.

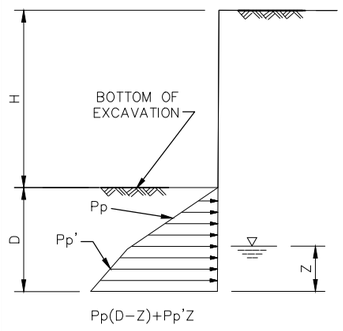
DESIGN PASSIVE RESISTANCE

RETAINED DEWATERED



Pp=300 FOR EMBEDMENT IN SOIL, 3 KSF MAXIMUM PRESSURE

RETAINED, NOT DEWATERED



Pp=300 FOR EMBEDMENT IN SOIL, 3 KSF MAXIMUM PRESSURE

Pp=210

NOTES:

A. FOR CANTILEVER SHEETING DESIGN THE PENETRATION FOUND BY USING DIAGRAMS ABOVE SHALL BE INCREASED BY 20%.

B. FOR SOLDIER PILE AND LAGGING EXCAVATION SUPPORT SYSTEMS, ACTIVE PRESSURE ABOVE THE SUBGRADE ELEVATION IS TO BE APPLIED TO THE FULL PANEL WIDTH FROM CENTER TO CENTER OF SOLDIER PILE AND BELOW SUBGRADE IT IS TO BE APPLIED TO THE WIDTH OF THE SOLDIER PILE OR ENCASEMENT PASSIVE RESISTANCE TAKEN AS ACTING ON 1.5 X DIAMETER FOR CIRCULAR SOLDIER PILE CONCRETE ENCASEMENT.

C. FOR HORIZONTALLY CONTINUOUS WALLS, BOTH ACTIVE AND PASSIVE PRESSURES AS SHOWN ON THIS DRAWING SHALL BE APPLIED ON A ONE FOOT LENGTH OF WALL BASIS.

D. MINIMUM PENETRATIONS FOR PASSIVE RESISTANCE:
VERTICAL RESISTING ELEMENTS OF SUPPORT OF EXCAVATION WALL SYSTEMS SHALL SATISFY THE MINIMUM PENETRATION DEPTH OUTLINED AS FOLLOWS UNLESS ANALYSIS SHOWS SMALLER PENETRATION CAN BE USED.

1. BELOW BOTTOM OF EXCAVATION DEEPER THAN 40 FEET
   12 FEET FOR SOLDIER PILES
   8 FEET FOR CONTINUOUS WALL SYSTEMS.
2. BELOW BOTTOM OF EXCAVATION LESS THAN 40 FEET
   10 FEET FOR SOLDIER PILES
   7 FEET FOR CONTINUOUS WALL SYSTEMS.
3. BELOW BOTTOM OF EXCAVATION LESS THAN 20 FEET
   8 FEET FOR SOLDIER PILES
   6 FEET FOR CONTINUOUS WALL SYSTEMS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

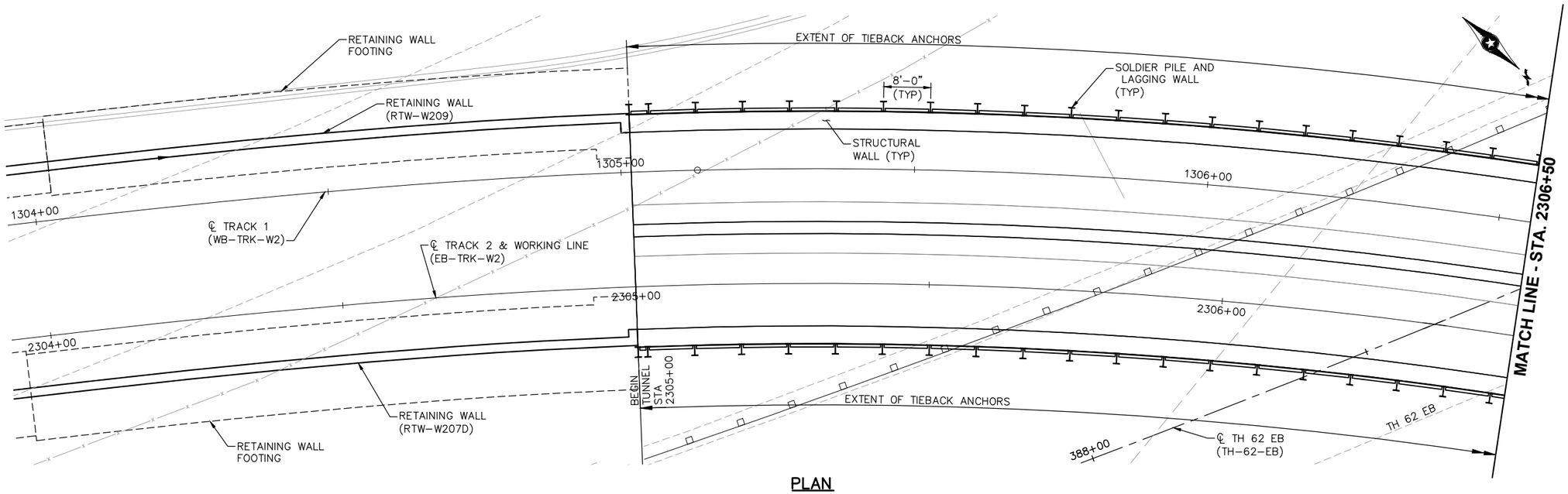
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
TEMPORARY EXCAVATION SUPPORT DESIGN CRITERIA

DISCIPLINE: STRUCTURES

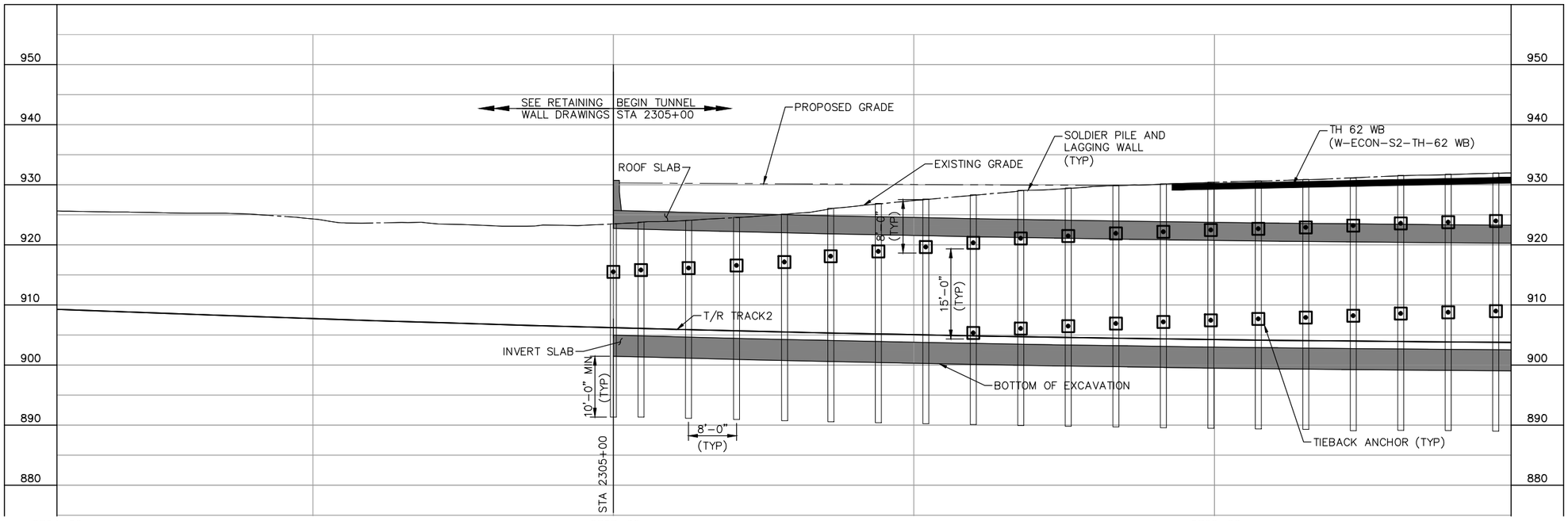
SHEET NAME: W2-STU-TUN-TH62-SOE-CRI-001

SHEET 26 OF 41

Sep, 18 2015 05:47 pm v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62



PLAN



ELEVATION

NOTES

1. SEE STAGING PLAN SHEETS FOR STAGE CONSTRUCTION.
2. TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION.

0 5 10 20
VERTICAL SCALE IN FEET

0 5 10 20
HORIZONTAL SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/21/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

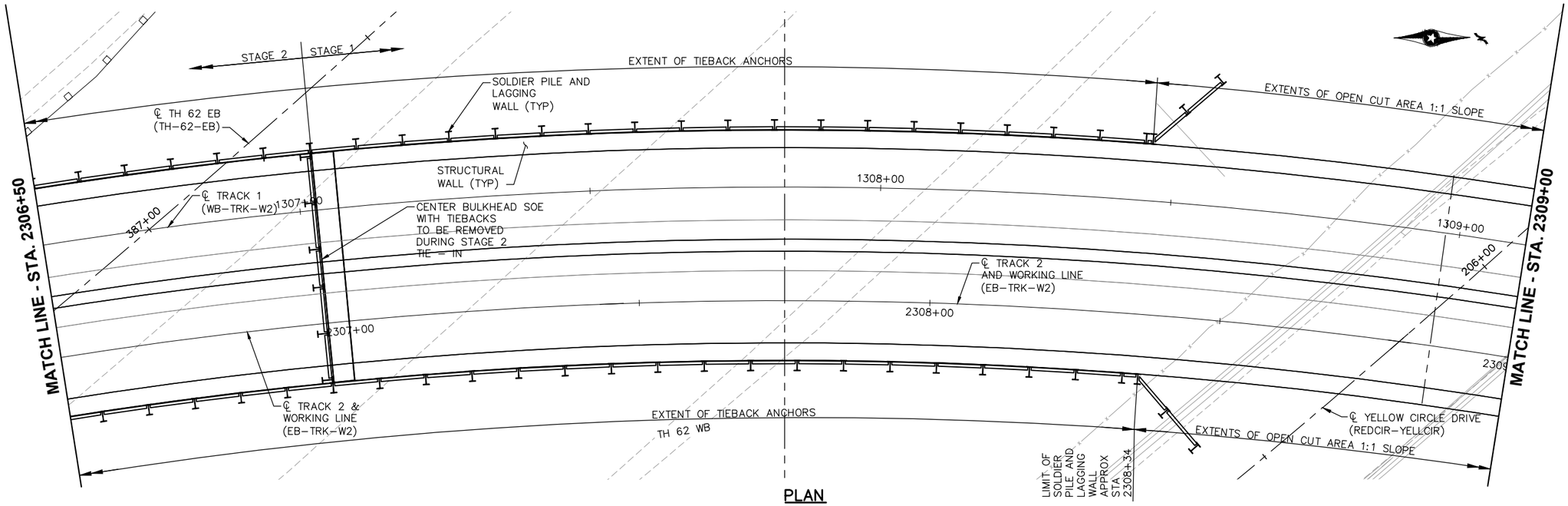
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
SUGGESTED EXCAVATION SUPPORT PLAN AND ELEVATION (1 OF 3)

DISCIPLINE: STRUCTURES

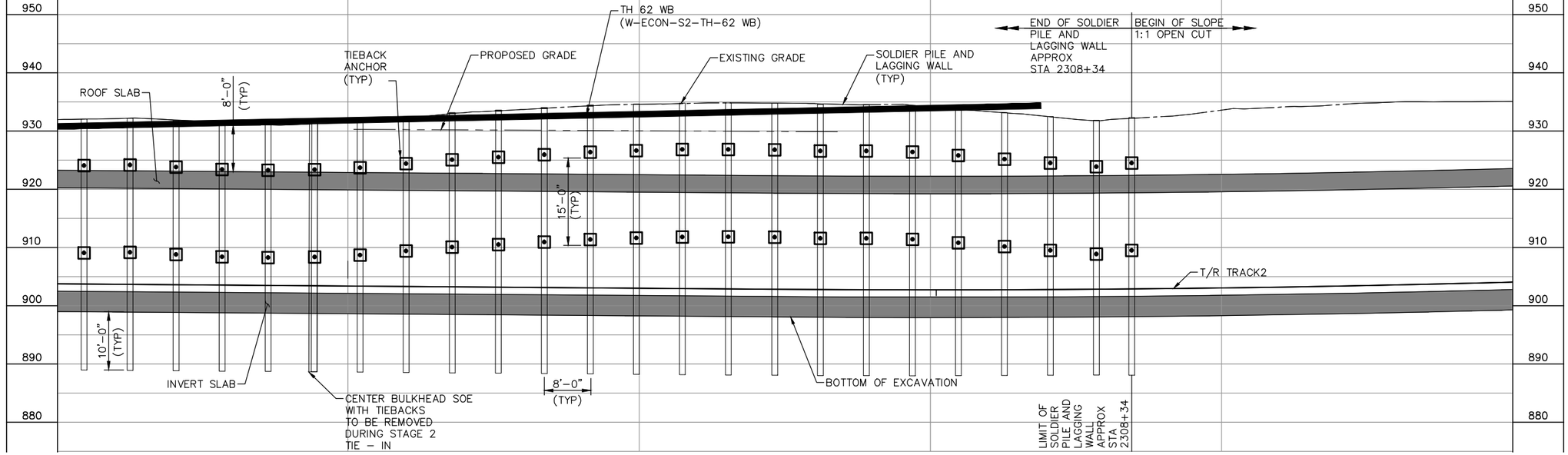
SHEET NAME: W2-STU-TUN-TH62-SOE-001

SHEET 27 OF 41

Sep. 18 2015 07:36 pm \\Nadtc2fp001\swirt\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-TUN-TH62-SOE-001.dwg By: YuB1



PLAN



ELEVATION

NOTES

1. SEE STAGING PLAN SHEETS FOR STAGE CONSTRUCTION.
2. TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION.

VERTICAL SCALE IN FEET: 0 5 10 20

HORIZONTAL SCALE IN FEET: 0 5 10 20

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/21/15

METROPOLITAN COUNCIL

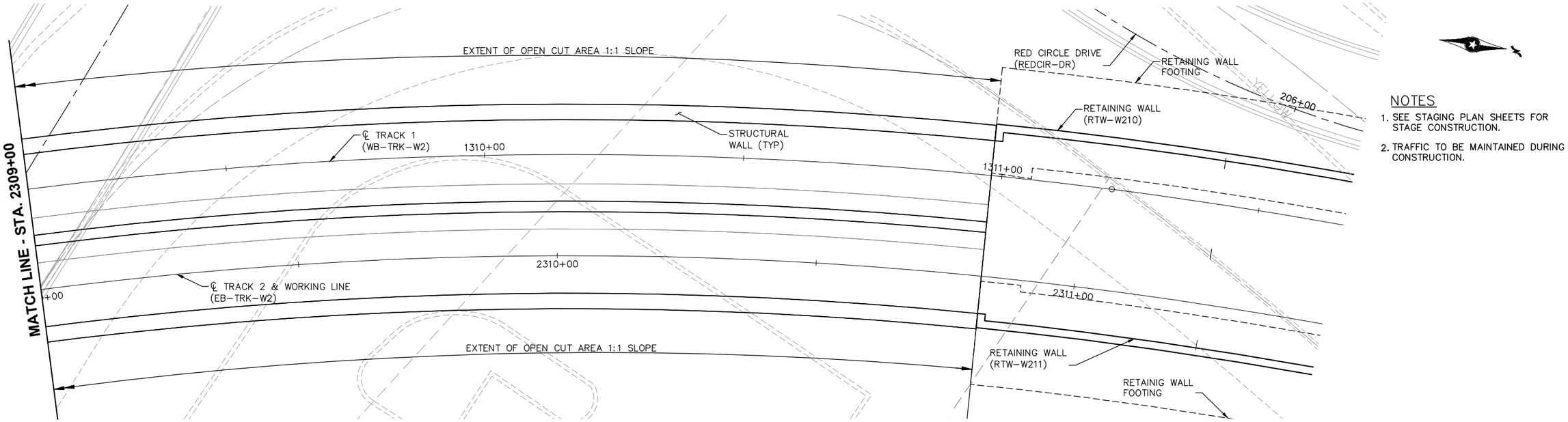
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
SUGGESTED EXCAVATION SUPPORT PLAN AND ELEVATION (2 OF 3)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-SOE-002

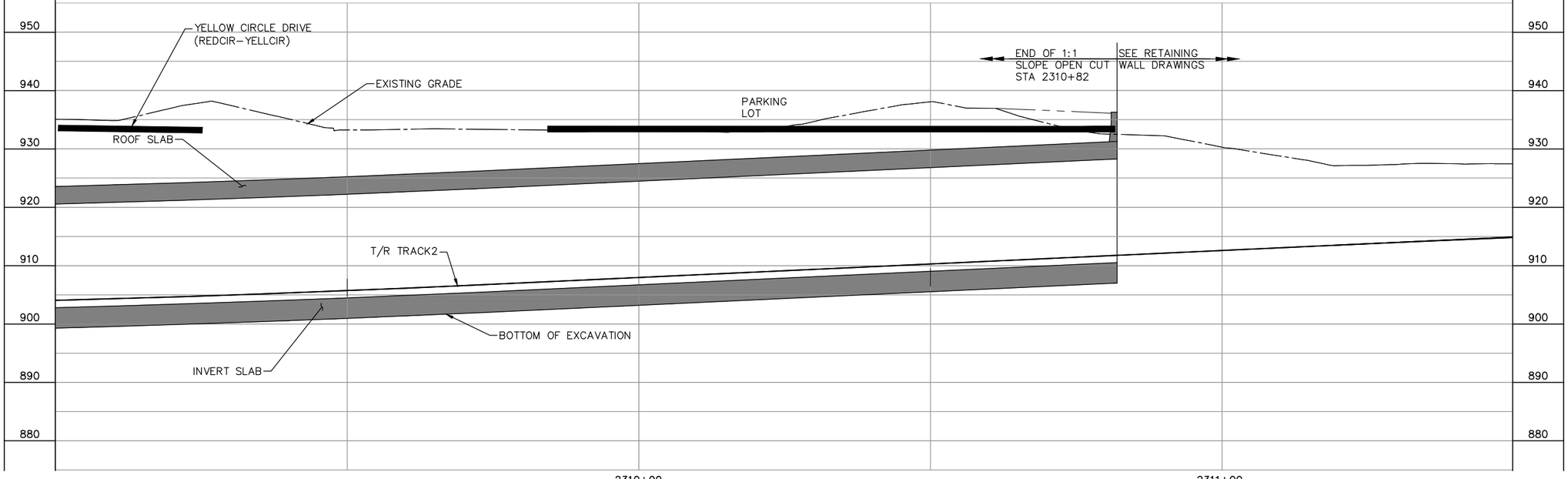
SHEET 28 OF 41



NOTES

1. SEE STAGING PLAN SHEETS FOR STAGE CONSTRUCTION.
2. TRAFFIC TO BE MAINTAINED DURING CONSTRUCTION.

PLAN



ELEVATION

0 5 10 20
VERTICAL
SCALE IN FEET

0 5 10 20
HORIZONTAL
SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
SUGGESTED EXCAVATION SUPPORT PLAN AND ELEVATION (3 OF 3)

DISCIPLINE: STRUCTURES

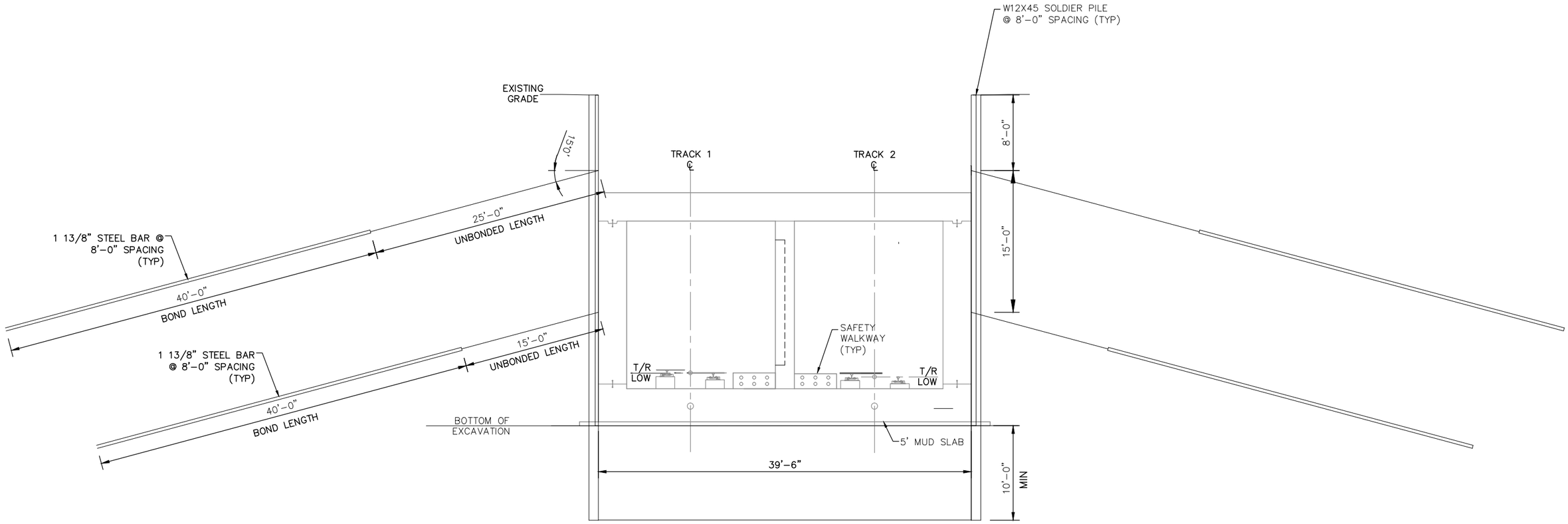
SHEET NAME: W2-STU-TUN-TH62-SOE-003

SHEET 29 OF 41

Sep. 18 2015 07:39 pm \\Nadtc2fp001\swirt\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\W2-STU-TUN-TH62\W2-STU-

NOTES

1. SOLDIER PILES TO BE CUT AT THE ROOF ELEVATION AFTER CONSTRUCTION OF THE TUNNEL.



TYPICAL TUNNEL CROSS SECTION LOOKING UPSTATION– TEMPORARY SUPPORT OF EXCAVATION

0 2 4 8
HORIZONTAL
SCALE IN FEET

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
SUGGESTED EXCAVATION SUPPORT SECTIONS

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-SOE-TYP-001

SHEET 30 OF 41

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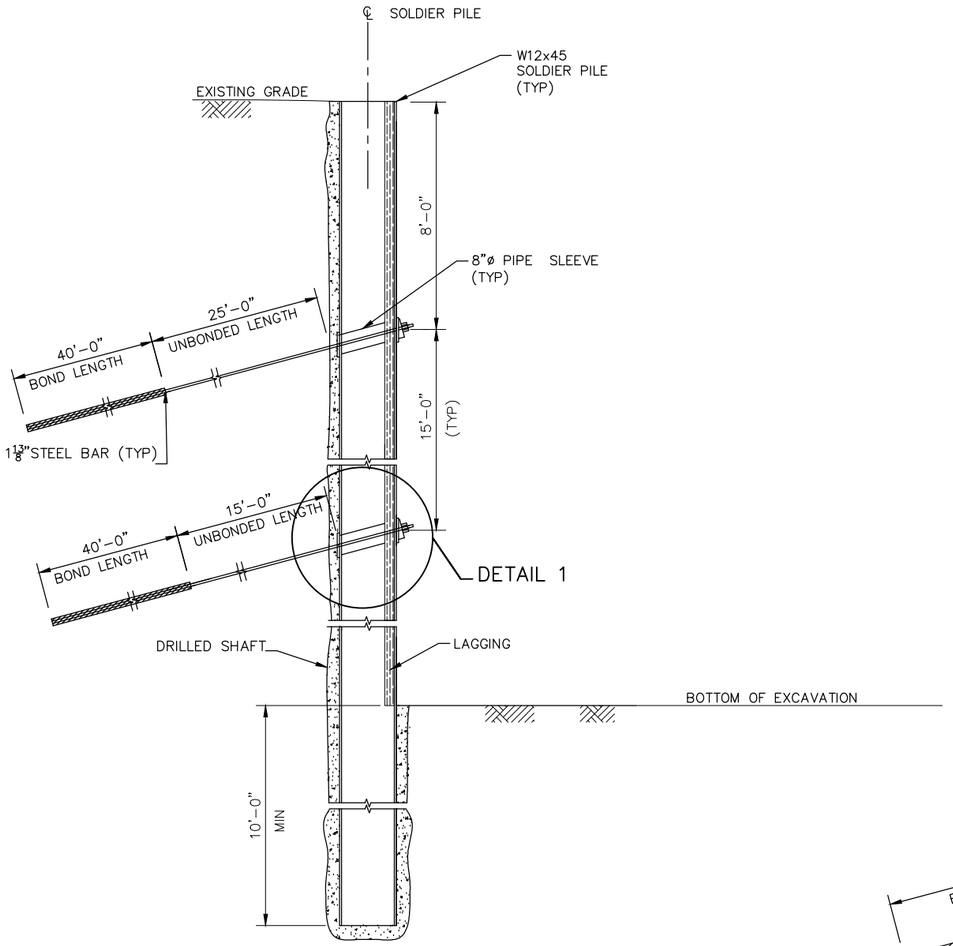
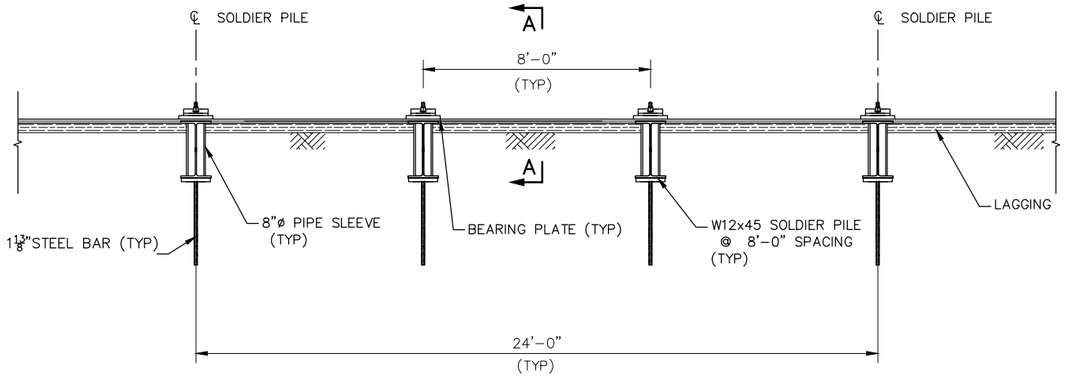


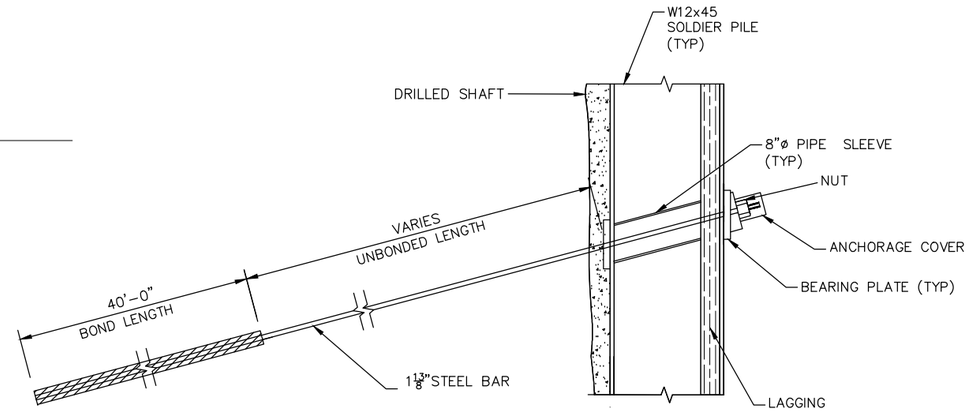
SECTION A–A

0 1 2 3 4 5
HORIZONTAL
SCALE IN FEET



PLAN – SOLDIER PILE WALL

0 1 2 3 4 5
HORIZONTAL
SCALE IN FEET



DETAIL 1

0 1 2
HORIZONTAL
SCALE IN FEET

NOTES

1. LAGGING SHALL BE TIMBER OR SHOTCRETE.

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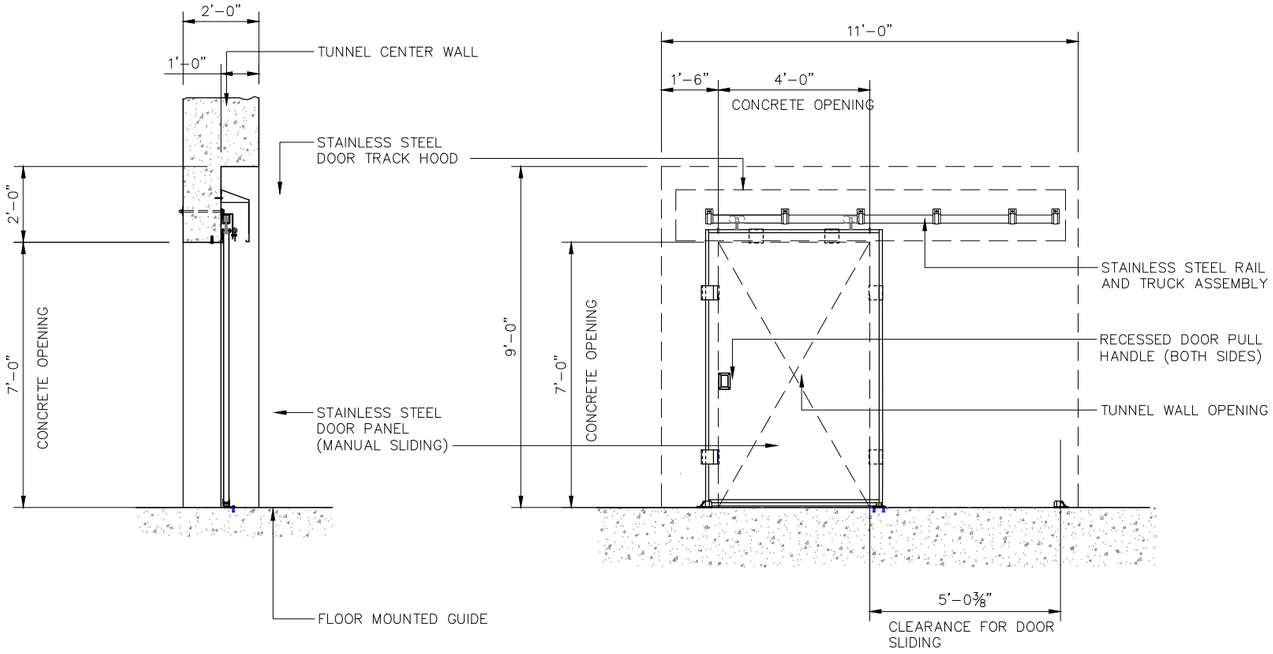
SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
SUGGESTED EXCAVATION SUPPORT DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-TUN-TH62-SOE-DTL-001

SHEET 31 OF 41



NOTES:
TYPE: 304 STAINLESS STEEL
CONSTRUCTION B LABEL UL RATED
FIRE RATED DOOR

0 1 2 4
HORIZONTAL
SCALE IN FEET

DRAFT-WORK IN PROCESS

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METROPOLITAN COUNCIL

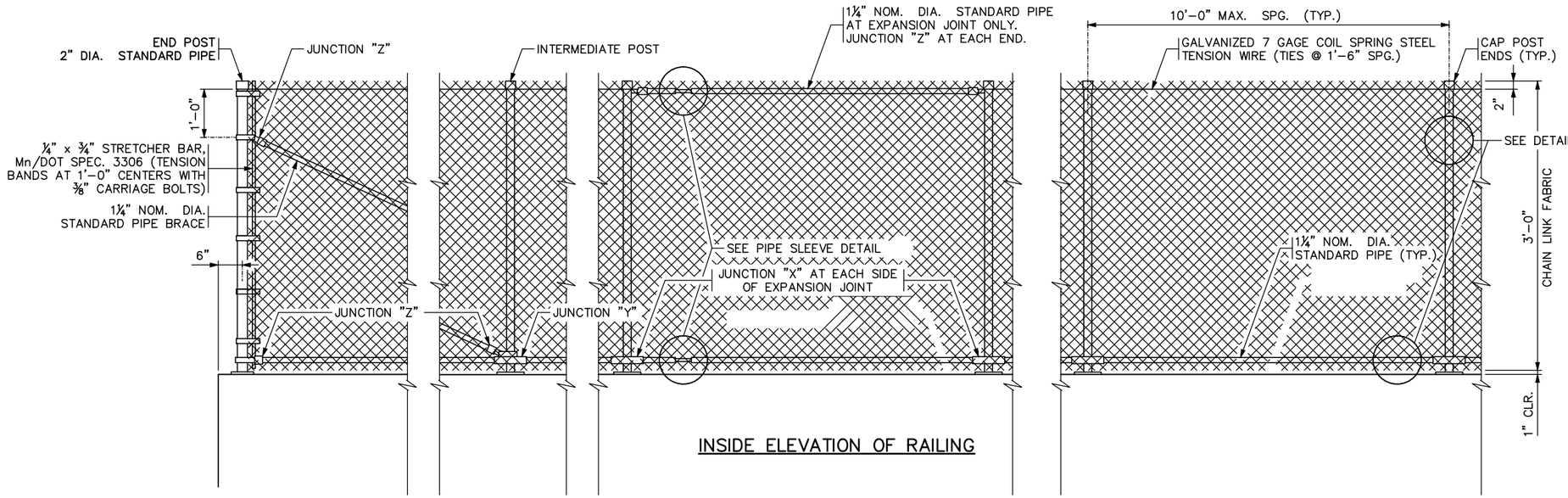
SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
CROSS PASSAGE DOORS

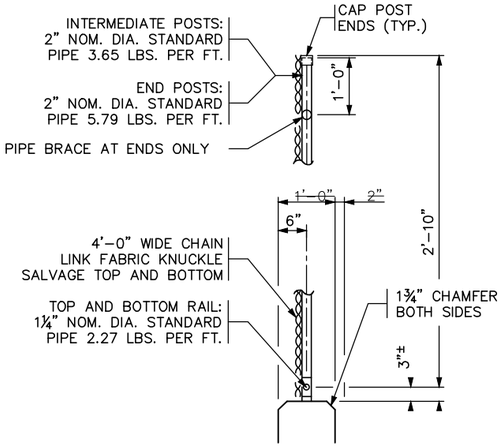
DISCIPLINE: ARCHITECTURE

SHEET NAME: W2-ARC-TYP-001

SHEET 32 OF 41

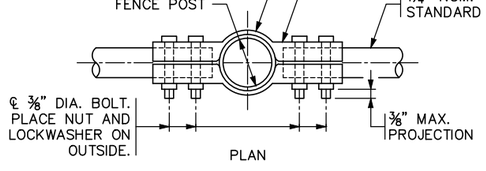


INSIDE ELEVATION OF RAILING



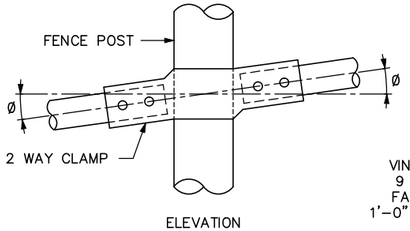
TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN



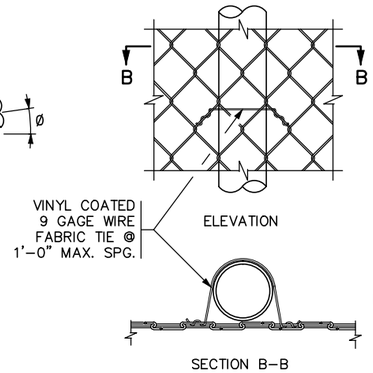
PLAN

2 WAY CLAMP BENDING TABLE	
GRADE OF FENCE	Ø
0° TO 2°	0°
2° TO 6°	4°
6° TO 10°	8°



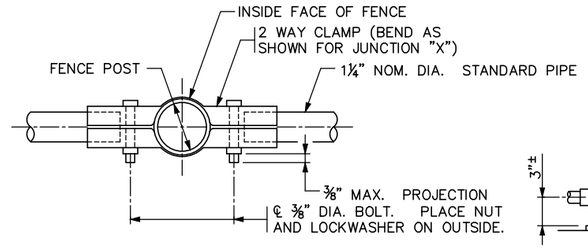
ELEVATION

JUNCTION "X"

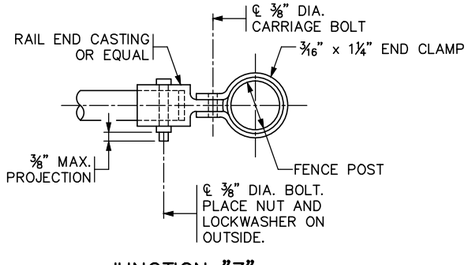


SECTION B-B

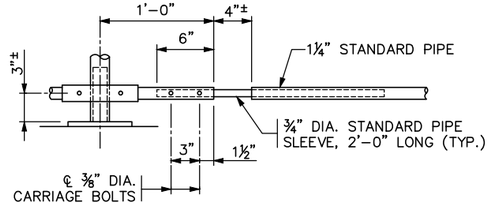
DETAIL "A"



JUNCTION "Y"



JUNCTION "Z"



PIPE SLEEVE DETAIL

GENERAL NOTES

SEE CONCRETE STRUCTURAL DRAWINGS FOR NOTES, DIMENSIONS AND LIMITS OF WORK.

FENCE POST ANCHORAGES SHALL BE TYPE A.

FENCE POSTS AND FENCE POST ANCHORAGES SHALL BE SET VERTICAL, UNLESS OTHERWISE NOTED.

℄ OF FENCE POST ANCHORAGE SHALL BE A MINIMUM OF 6" FROM JOINTS.

ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.

WIRE TIES MAY BE 9 GAGE GALVANIZED STEEL OR 0.179" MIN. ALUMINUM ALLOY CONFORMING TO A.S.T.M. B211, ALLOY 1100-H18. USE 12½ GAGE GALVANIZED HOG RINGS FOR TENSION WIRE TIES.

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
FENCING AND RAILING DETAILS

DISCIPLINE: ARCHITECTURE

SHEET NAME: W2-ARC-TYP-002

SHEET 33 OF 41

GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. MAINTAIN A MINIMUM 1'–10" COVER FOR ALL PROPOSED STORM DRAINS EMBEDDED IN THE TUNNEL SLAB.
3. INVERT OF PIPE EMBEDDED IN THE TUNNEL SLAB SHALL BE A MINIMUM 8" FROM THE BOTTOM OF SLAB.
4. HEAT TRACER WIRE SHALL BE INSTALLED IN THE TH62 TUNNEL PER THE ELECTRICAL PLANS LOCATED IN VOLUME 12, "SYSTEMS" AND PER SPECIFICATION SECTION 220533 "HEAT TRACING FOR TUNNEL DRAINAGE."

ABBREVIATIONS

AWWA	AMERICAN WATER WORKS ASSOCIATION
DI	DRAINAGE INLET
EB	EAST BOUND
EL	ELEVATION
EX/EXIST	EXISTING
IE	INVERT ELEVATION
LI	LINEAR
LT	LEFT
NTS	NOT TO SCALE
PROP	PROPOSED
STA	STATION
TOR	TOP OF RAIL
TRK	TRACK
VAR	VARIES
WB	WEST BOUND

PLAN SYMBOLS

PROPOSED STORM DRAIN

PROPOSED DRAINAGE INLET

PROPOSED CAP

GENERAL SYMBOLS

A / - SECTION NOT TO SCALE — SECTION A

1 / XXXX — DETAIL No. 1 ON XXXX = SHEET NO.

1 DETAIL SCALE: NTS — DETAIL No. 1 (WHERE INDICATED OR SHOWN)

(1) — SHEET NOTES

(XX) — KEY NOTES

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SOUTHWEST

CIVIL WEST - VOLUME 5
TH 62 TUNNEL (BRIDGE 27W33)
PLUMBING GENERAL NOTES, ABBREVIATIONS & SYMBOLS

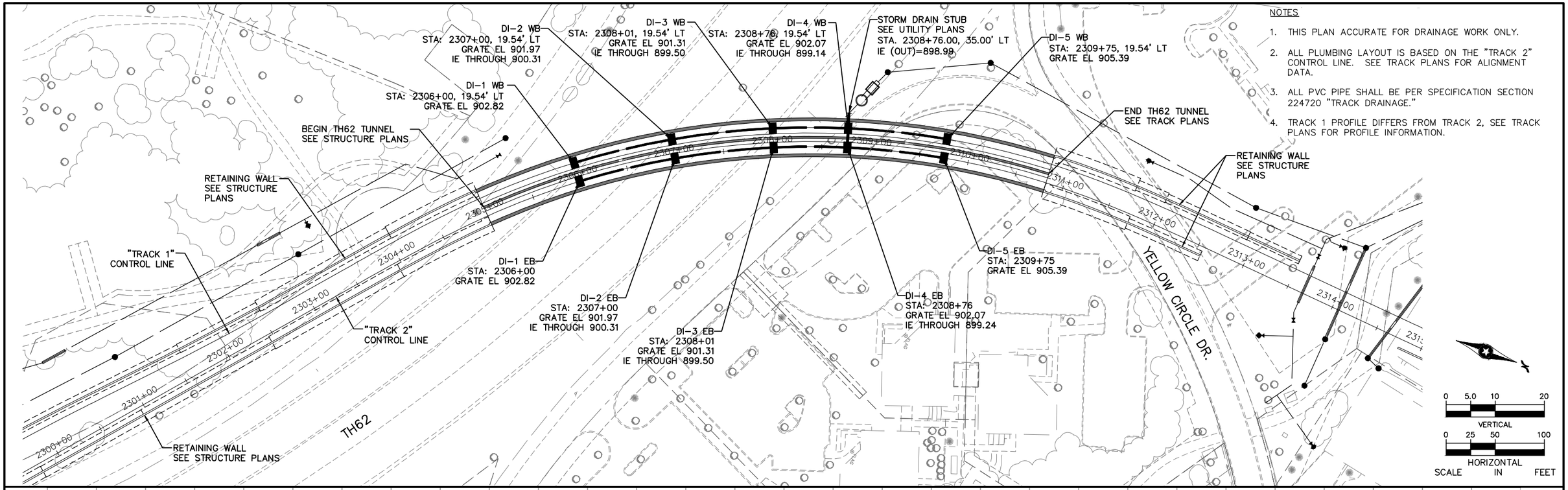
DISCIPLINE: PLUMBING

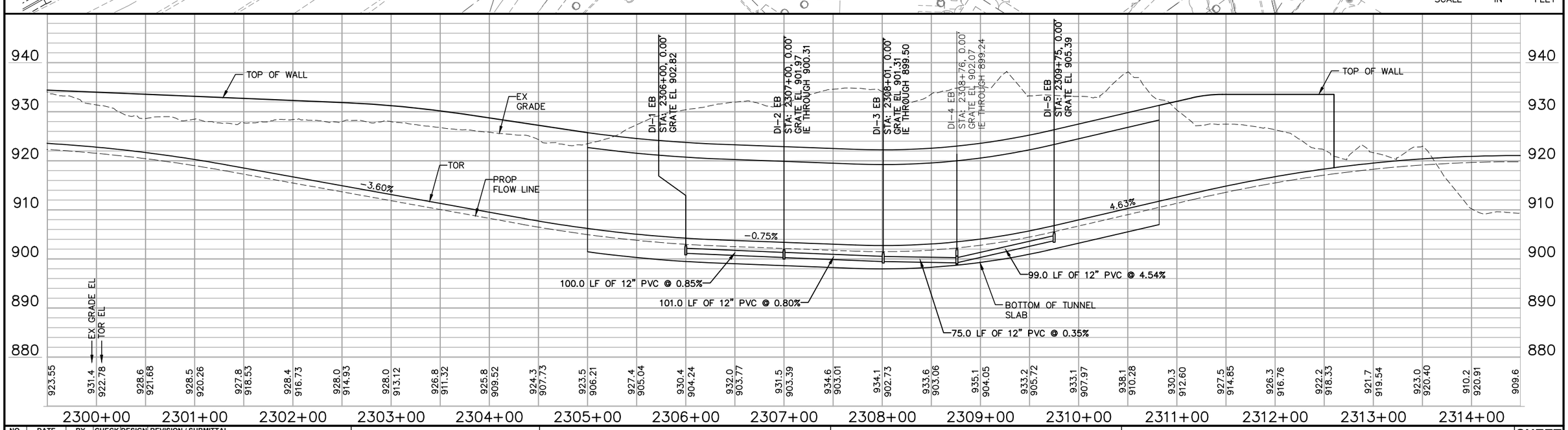
SHEET NAME: W2-STM-TH62-NTS-001

SHEET 34 OF 41

NOTES

1. THIS PLAN ACCURATE FOR DRAINAGE WORK ONLY.
2. ALL PLUMBING LAYOUT IS BASED ON THE "TRACK 2" CONTROL LINE. SEE TRACK PLANS FOR ALIGNMENT DATA.
3. ALL PVC PIPE SHALL BE PER SPECIFICATION SECTION 224720 "TRACK DRAINAGE."
4. TRACK 1 PROFILE DIFFERS FROM TRACK 2, SEE TRACK PLANS FOR PROFILE INFORMATION.





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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
TUNNEL DRAINAGE - PLAN AND PROFILE
STA. 2300+00 TO STA. 2314+00

DISCIPLINE: PLUMBING

SHEET NAME: W2-STM-TH62-GPE-001

SHEET 35 OF 41

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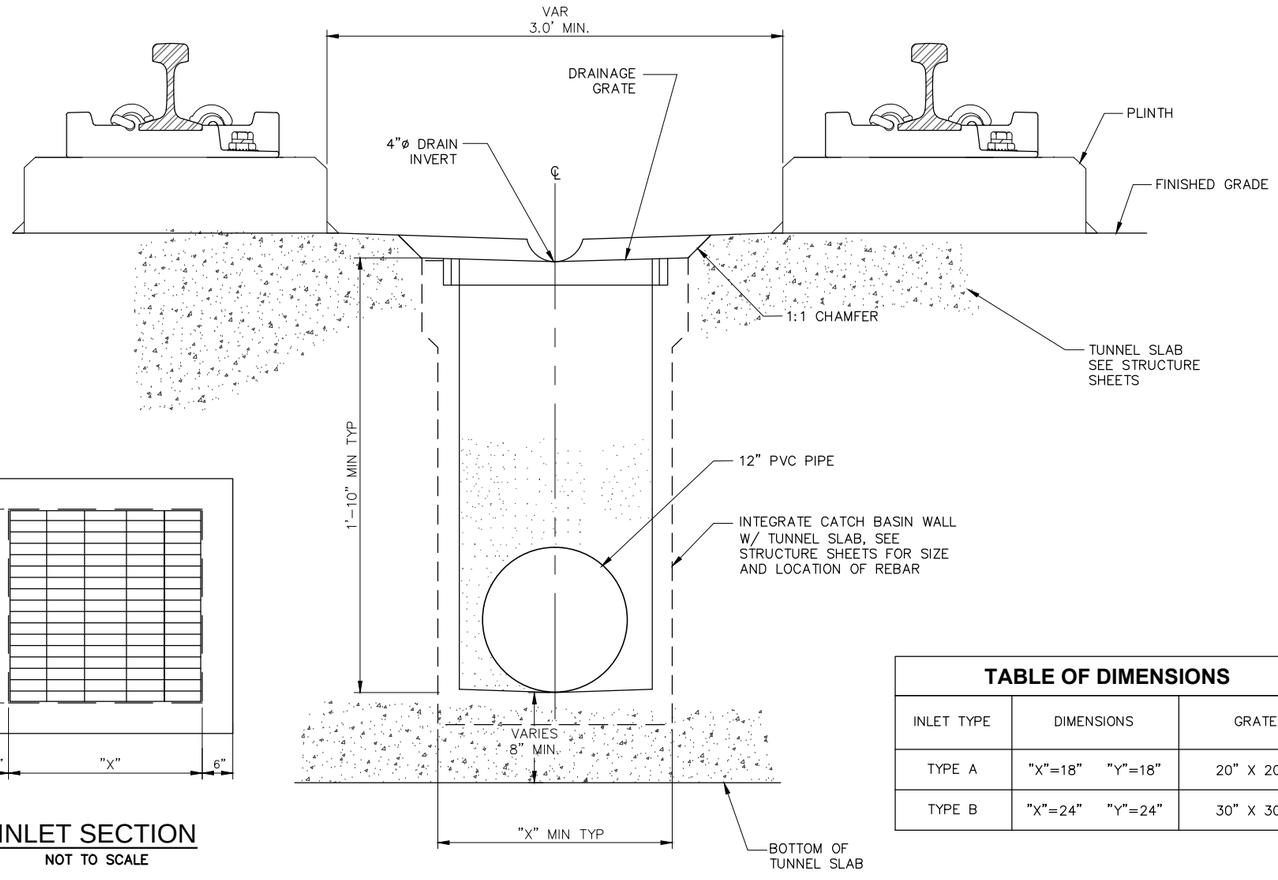

INLET SECTION
NOT TO SCALE

1 - TUNNEL DRAINAGE INLET
NOT TO SCALE

TABLE OF DIMENSIONS		
INLET TYPE	DIMENSIONS	GRATE
TYPE A	"X"=18" "Y"=18"	20" X 20"
TYPE B	"X"=24" "Y"=24"	30" X 30"

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METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH 62 TUNNEL (BRIDGE 27W33)
TUNNEL DRAINAGE
SECTIONS & DETAILS

DISCIPLINE: PLUMBING

SHEET NAME: W2-STM-TH62-DTL-001

SHEET 36 OF 41

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TH62 TUNNEL DRAINAGE INLET SCHEDULE							
Structure ID	Description	Detail No.	Inlet Type	Detail Sheet No.	Station	Grate Elevation	Sump Elevation
DI–1 EB	Tunnel Drainage inlet	1	Type A	1	2306+00.00'	902.82'	901.16
DI–1 WB	Tunnel Drainage inlet	1	Type A	1	2306+00.00'	902.82'	901.16
DI–2 EB	Tunnel Drainage inlet	1	Type A	1	2307+00.00'	901.97'	900.31
DI–2 WB	Tunnel Drainage inlet	1	Type A	1	2307+00.00'	901.97'	900.31
DI–3 EB	Tunnel Drainage inlet	1	Type A	1	2308+01.00'	901.31'	899.50
DI–3 WB	Tunnel Drainage inlet	1	Type A	1	2308+01.00'	901.31'	899.50
DI–4 EB	Tunnel Drainage inlet	1	Type B	1	2308+76.00'	902.07'	899.24
DI–4 WB	Tunnel Drainage inlet	1	Type B	1	2308+76.00'	902.07'	899.14
DI–5 EB	Tunnel Drainage inlet	1	Type A	1	2309+75.00'	905.39'	903.73
DI–5 WB	Tunnel Drainage inlet	1	Type A	1	2309+75.00'	905.39'	903.73
	TOTAL	TYPE A (18"X18" DRAINAGE INLETS) = 10EA					

TH62 TUNNEL DRAINAGE STUB SCHEDULE							
Structure ID	Description	Detail No.	Inlet Type	Detail Sheet No.	Station	Grate Elevation	Sump Elevation
CAP 2308+76	Tunnel Drain Stub	NA	NA	NA	2308+76.00'	NA	Inv El= 898.99

TH62 PIPE SCHEDULE								
Name	Start Structure	End Structure	Description	Inner Diameter	Slope	Begin Invert Elevation	End Invert Elevation	Length
D12–1 EB	DI–1 EB	DI–2 EB	12" PVC, ASTM D3034	12"	0.85%	901.16'	900.31'	100.00'
D12–2 EB	DI–2 EB	DI–3 EB	12" PVC, ASTM D3034	12"	0.80%	900.31'	899.50'	101.00'
D12–3 EB	DI–3 EB	DI–4 EB	12" PVC, ASTM D3034	12"	0.35%	899.50'	899.24'	75.00'
D12–4 EB	DI–4 EB	DI–5 EB	12" PVC, ASTM D3034	12"	4.54%	899.24'	903.73'	99.00'
D12–1 WB	DI–1 WB	DI–2 WB	12" PVC, ASTM D3034	12"	0.83%	901.16'	900.31'	102.44'
D12–2 WB	DI–2 WB	DI–3 WB	12" PVC, ASTM D3034	12"	0.78%	900.31'	899.50'	103.47'
D12–3 WB	DI–3 WB	DI–4 WB	12" PVC, ASTM D3034	12"	0.47%	899.50'	899.14'	76.83'
D12–4 WB	DI–4 WB	DI–5 WB	12" PVC, ASTM D3034	12"	4.53%	899.14'	903.73'	101.42'
D18–1 STUB	DI–4 EB	DI–4 WB	12" PVC, ASTM D3034	18"	0.50%	899.24'	899.14'	19.54'
D18–2 STUB	DI–4 WB	CAP 2308+76	12" PVC, ASTM D3034	18"	1.00%	899.14'	898.99'	15.46'
			TOTAL	12" ø PVC, ASTM D3034 = 798LF				

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METROPOLITAN COUNCIL

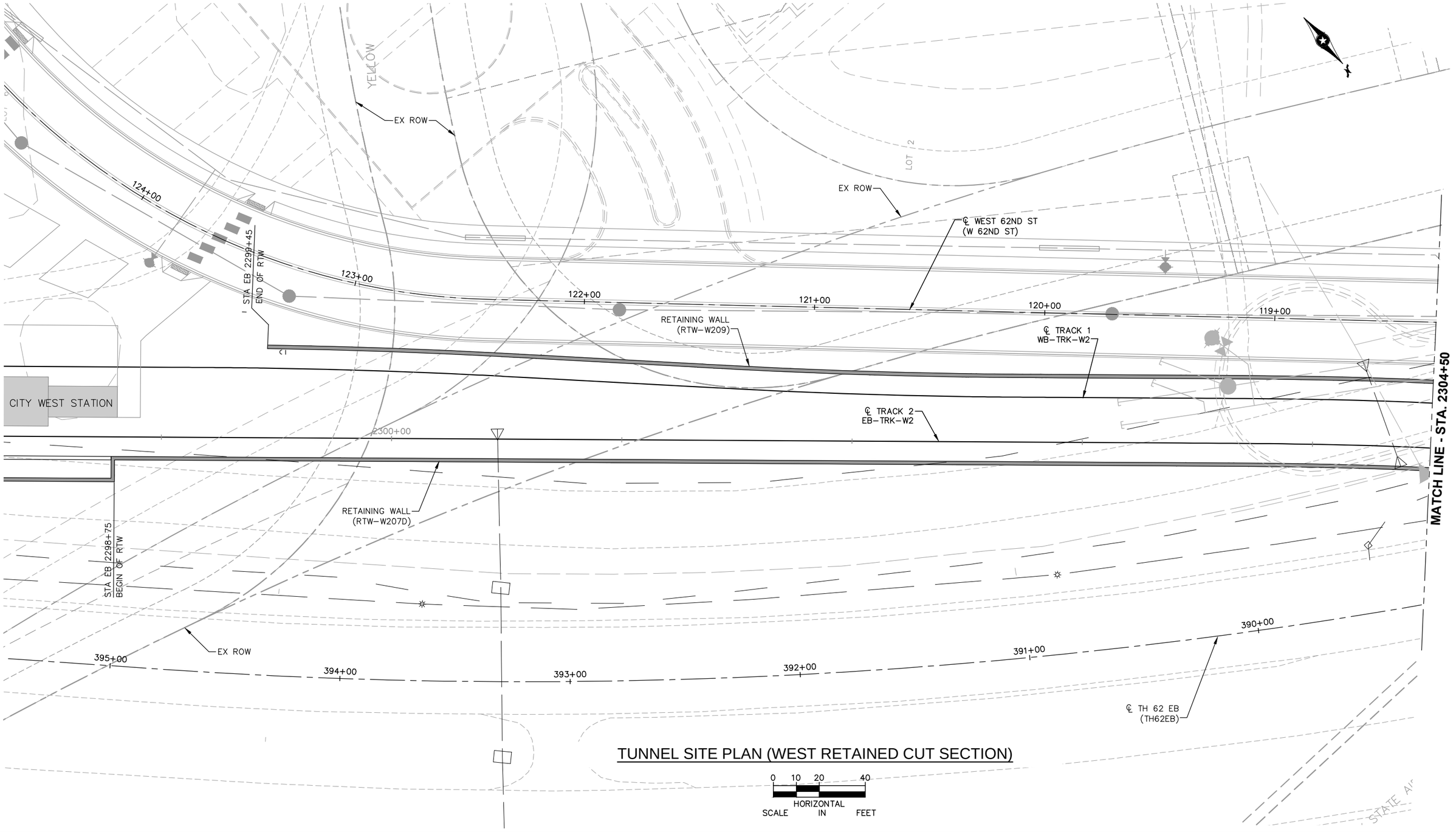
SOUTHWEST

CIVIL WEST - VOLUME 5
TH 62 TUNNEL (BRIDGE 27W33)
TUNNEL DRAINAGE
MATERIAL SCHEDULE

DISCIPLINE: PLUMBING

SHEET NAME: W2-STM-TH62-SCH-001

SHEET 37 OF 41



TUNNEL SITE PLAN (WEST RETAINED CUT SECTION)

0 10 20 40
HORIZONTAL
SCALE IN FEET

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH 62 TUNNEL (BRIDGE 27W33)
FIRE LIFE SAFETY - STANDPIPE NICHE PLAN
SHEET 1 OF 3

DISCIPLINE: MECHANICAL

SHEET NAME: W2-FLS-TH62-PLN-001

SHEET 38 OF 41

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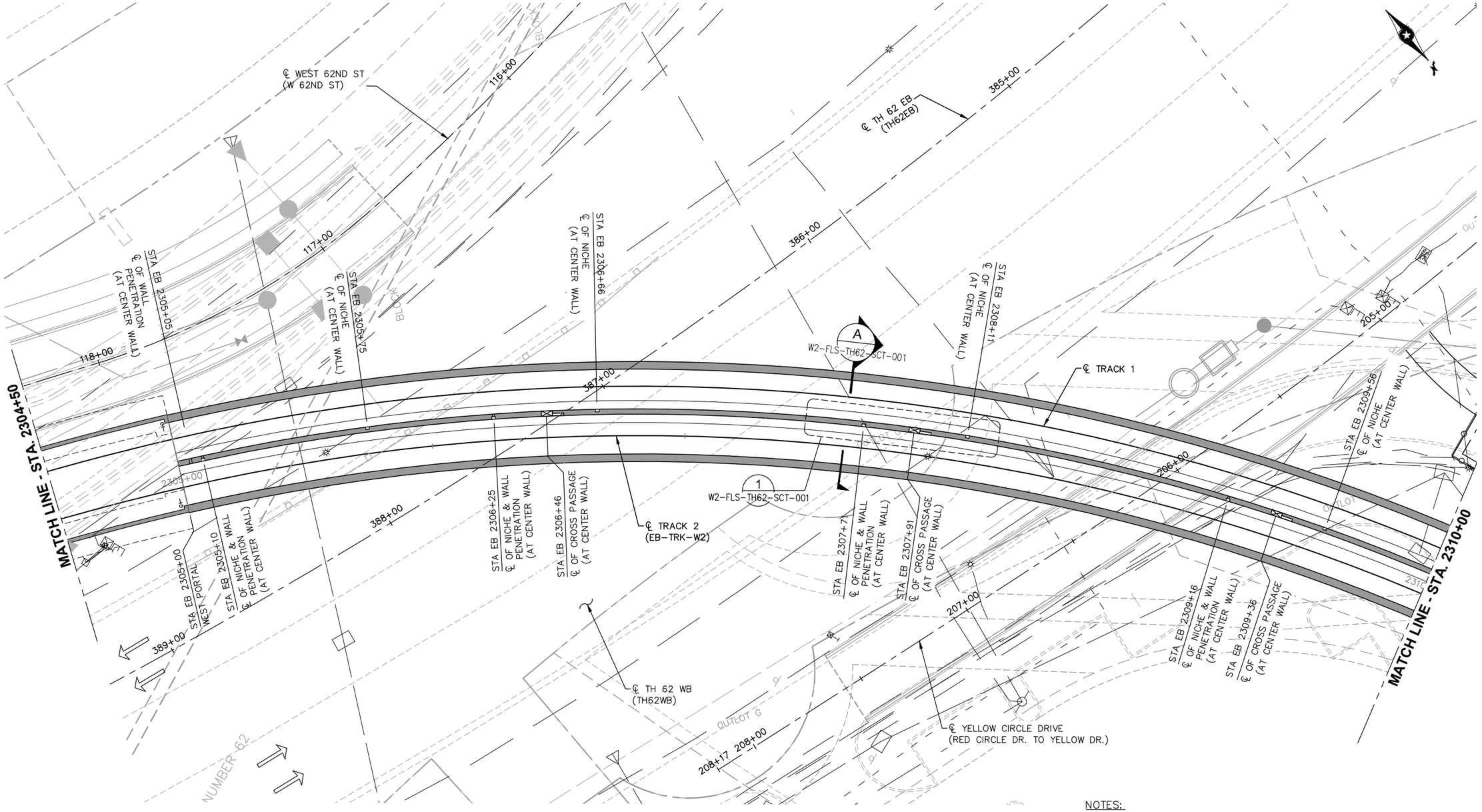

TUNNEL SITE PLAN

0 10 20 40
HORIZONTAL
SCALE IN FEET

NOTES:

1. STRUCTURE SHALL PROVIDE 12" DIAMATER SLEEVE FOR FUTURE 8" DSP, AND 10" DIAMETER SLEEVE FOR 6" FUTURE DSP, DSP PENETRATING WALL.
2. STRUCTURAL SHALL PROVIDE WALL NICHES AT ALL FHVA LOCATIONS.
3. SEE DRAWING W2-FLS-TH62-SCT-001 FOR NICHE DETAILS.

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SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH 62 TUNNEL (BRIDGE 27W33)
FIRE LIFE SAFETY - STANDPIPE NICHE PLAN SHEET 2 OF 3

DISCIPLINE: MECHANICAL

SHEET NAME: W2-FLS-TH62-PLN-002

SHEET 39 OF 41

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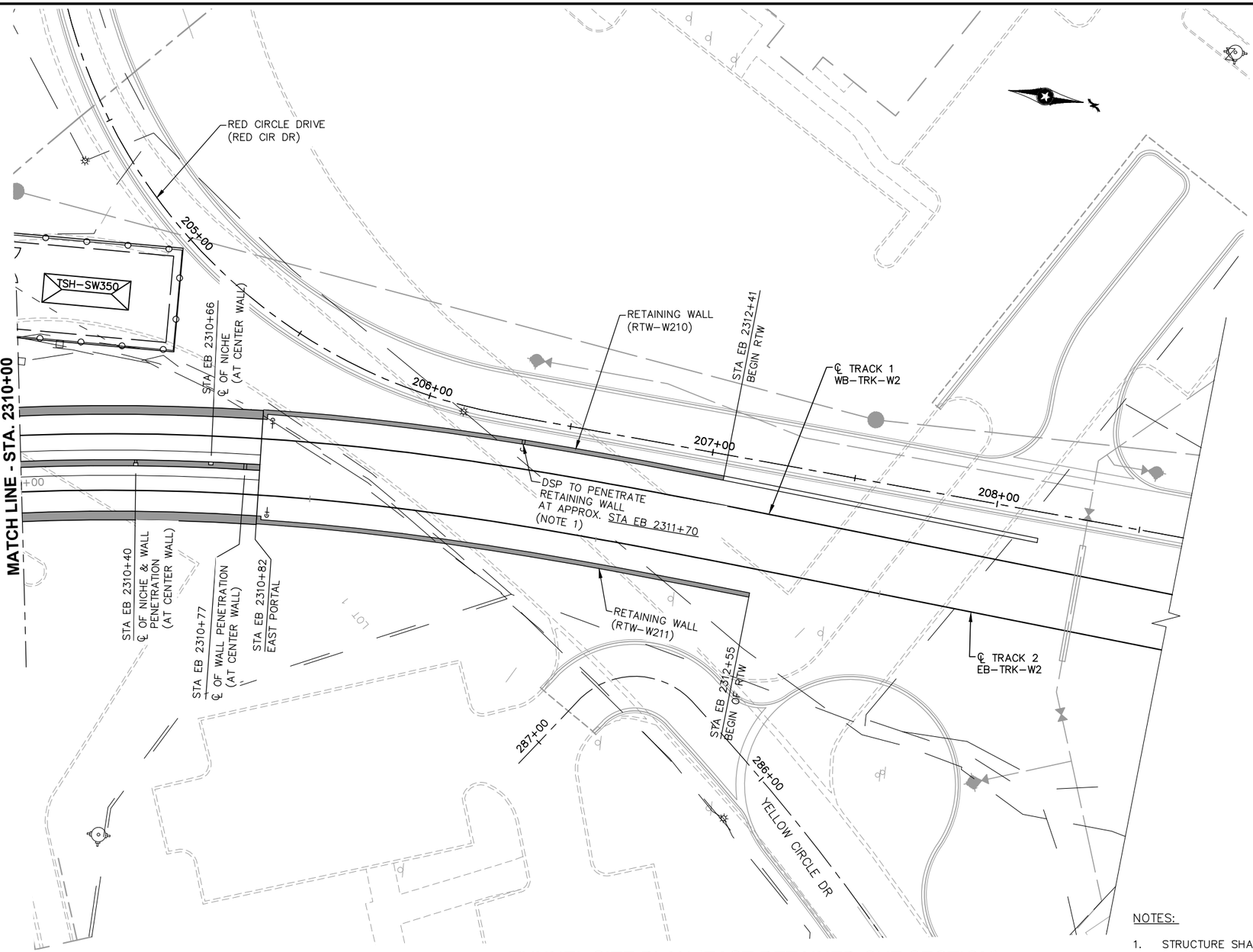


TUNNEL SITE PLAN (EAST RETAINED CUT SECTION)

0 10 20 40
HORIZONTAL
SCALE IN FEET

NOTES:

1. STRUCTURE SHALL PROVIDE 12" DIAMATER SLEEVE FOR FUTURE 8" DSP, AND 10" DIAMETER SLEEVE FOR 6" FUTURE DSP, DSP PENETRATING WALL.
2. STRUCTURAL SHALL PROVIDE WALL NICHES AT ALL FHVA LOCATIONS.
3. SEE DRAWING W2-FLS-TH62-SCT-001 FOR NICHE DETAILS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

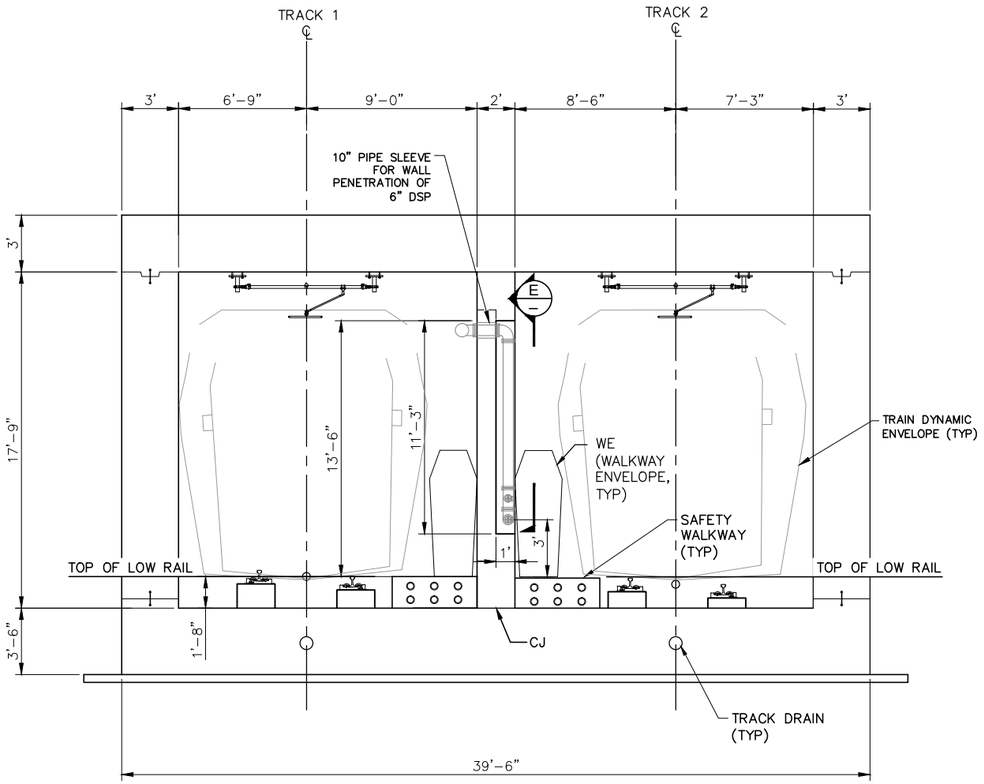
CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
FIRE LIFE SAFETY - STANDPIPE NICHE PLAN
SHEET 3 OF 3

DISCIPLINE: MECHANICAL

SHEET NAME: W2-FLS-TH62-PLN-003

SHEET 40 OF 41

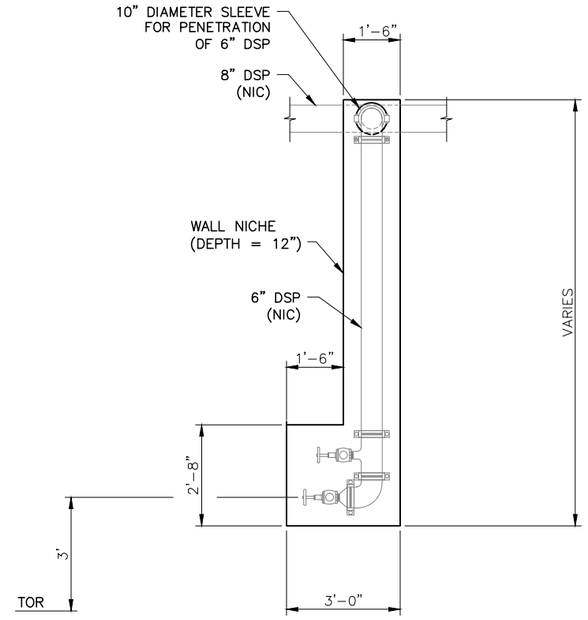
Sep. 21 2015 05:42 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\MECHANICAL\CW-W2-FLS-TH62-PLN.dwg By: tangj



A TYPICAL SECTION

0 2 4 8

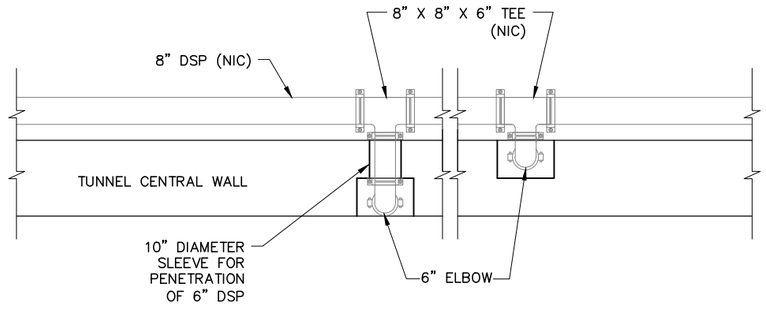
HORIZONTAL SCALE IN FEET



E SIDE VIEW / ELEVATION

0 1 2 4

HORIZONTAL SCALE IN FEET



1 ENLARGED PLAN DETAIL

NOT TO SCALE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

AECOM

60% SUBMISSION - 09/28/15

METROPOLITAN COUNCIL

SOUTHWEST Green Line LRT Extension

CIVIL WEST - VOLUME 5
TH62 TUNNEL (BRIDGE 27W33)
FIRE LIFE SAFETY - TYPICAL NICHE SECTION AND DETAILS

DISCIPLINE: MECHANICAL

SHEET NAME: W2-FLS-TH62-SCT-001

SHEET 41 OF 41

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