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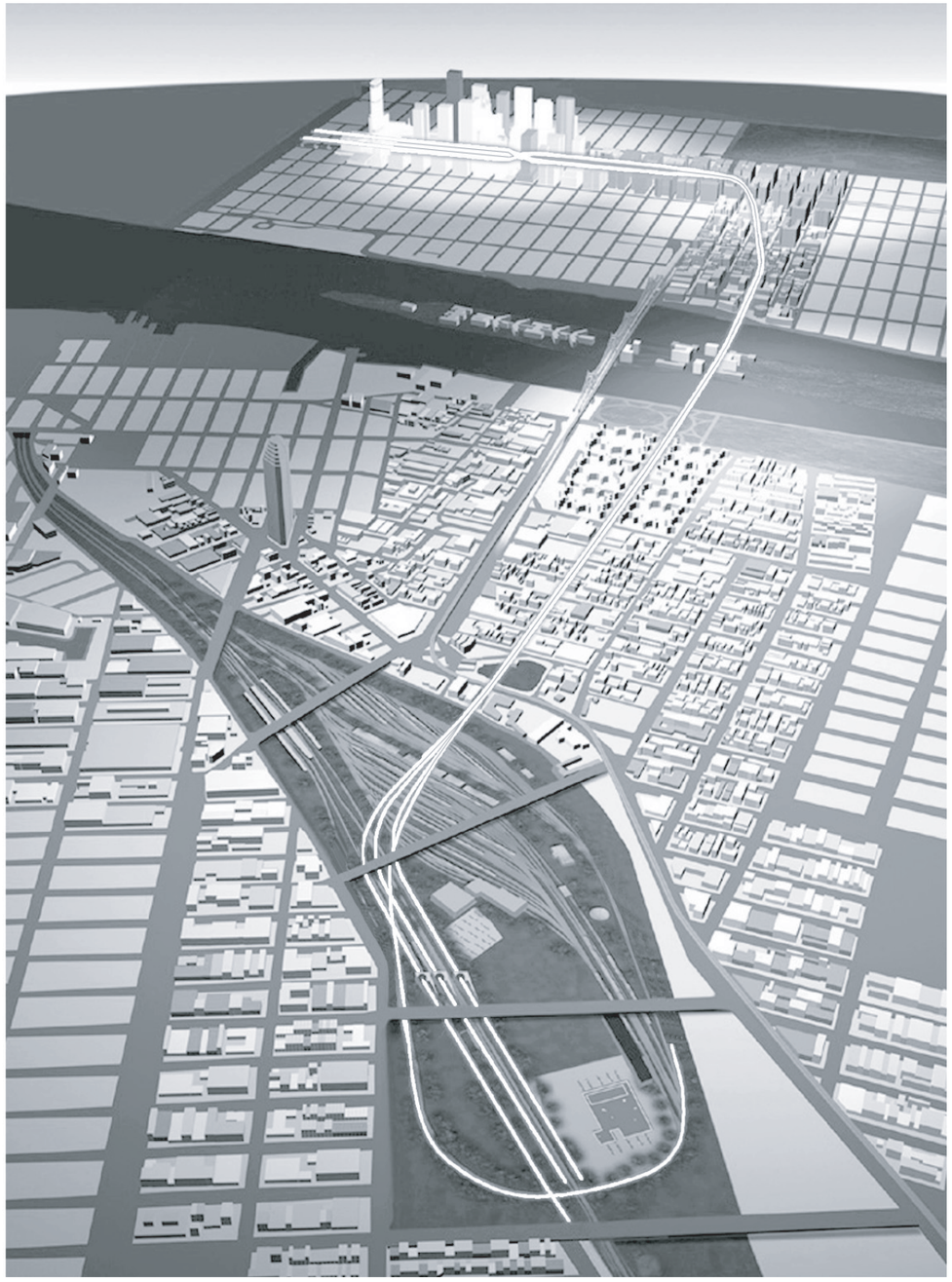

Long Island Rail Road
East Side Access

CONTRACT DOCUMENT

DRAWINGS

Contract CM009 (Re-Bid)

Manhattan Tunnels Excavation

BOOK 4 of 5

Volume 2 of 2

May 2006

CONFORMED, Addenda 1-10 Incorporated

Metropolitan Transportation Authority
Capital Construction
State of New York

CONTRACT CM009

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MANHATTAN TUNNELS EXCAVATION

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SCALE: NONE
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SHEET No.	DWG No.	REVISION No.	DESCRIPTION
			GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS
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230	CM009-GT-5202		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 2
231	CM009-GT-5203		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 3
232	CM009-GT-5204		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 4
233	CM009-GT-5205		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 5
234	CM009-GT-5206		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 6
235	CM009-GT-5207		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 7
236	CM009-GT-5208		GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS - UPPER & LOWER LEVEL PLAN - SHEET 8
237	CM009-GT-5251		GECTECHNICAL INSTRUMENTATION SCHEDULE - NEW TUNNELS
			GEOTECHNICAL INSTRUMENTATION - SECTIONS
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239	CM009-GT-5302		GEOTECHNICAL INSTRUMENTATION - SECTION B
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241	CM009-GT-5304		GEOTECHNICAL INSTRUMENTATION - SECTION D
242	CM009-GT-5305		GEOTECHNICAL INSTRUMENTATION - SECTION E
243	CM009-GT-5306		GEOTECHNICAL INSTRUMENTATION - SECTION F
244	CM009-GT-5307		GEOTECHNICAL INSTRUMENTATION - SECTION G
245	CM009-GT-5308		GEOTECHNICAL INSTRUMENTATION - SECTION H
246	CM009-GT-5309		GEOTECHNICAL INSTRUMENTATION - SECTION I
247	CM009-GT-5310		GEOTECHNICAL INSTRUMENTATION - SECTION J
248	CM009-GT-5311		GEOTECHNICAL INSTRUMENTATION - SECTION K
249	CM009-GT-5312		GEOTECHNICAL INSTRUMENTATION - SECTION L
250	CM009-GT-5313		GEOTECHNICAL INSTRUMENTATION - SECTION M
251	CM009-GT-5314		GEOTECHNICAL INSTRUMENTATION - SECTION N
			GEOTECHNICAL INSTRUMENTATION - SECTIONS (CONT'D)
252	CM009-GT-5315		GEOTECHNICAL INSTRUMENTATION - SECTION O
253	CM009-GT-5316		GEOTECHNICAL INSTRUMENTATION - SECTION P
254	CM009-GT-5317		GEOTECHNICAL INSTRUMENTATION - SECTION Q
255	CM009-GT-5318		GEOTECHNICAL INSTRUMENTATION - SECTION R
256	CM009-GT-5319		GEOTECHNICAL INSTRUMENTATION - SECTION S
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262	CM009-GT-5325		GEOTECHNICAL INSTRUMENTATION - SECTION Y
263	CM009-GT-5326		GEOTECHNICAL INSTRUMENTATION - SECTION Z
264	CM009-GT-5350		GEOTECHNICAL INSTRUMENTATION - SECTION AA
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269	CM009-GT-5355		GEOTECHNICAL INSTRUMENTATION - SECTION FF
270	CM009-GT-5356		GEOTECHNICAL INSTRUMENTATION - SECTION GG
			GEOTECHNICAL INSTRUMENTATION - DETAILS
271	CM009-GT-6101		GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS - SHEET 1
272	CM009-GT-6102		GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS - SHEET 2
273	CM009-GT-6103		GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS - SHEET 3
274	CM009-GT-6104		GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS - SHEET 4
275	CM009-GT-6105		GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS - SHEET 5
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276	CM009-GT-7101		GEOTECHNICAL INSTRUMENTATION - QUEENS OPEN-CUT - EXISTING INSTRUMENTS
			STANDARD DRAWINGS
			MANHATTAN ALIGNMENT DRAWINGS
N/A	STD-TK-0001		LOWER LEVEL ALIGNMENT-KEY PLAN
N/A	STD-TK-0100		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 1
N/A	STD-TK-0101		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 2
N/A	STD-TK-0102		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 3
N/A	STD-TK-0103		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 4
N/A	STD-TK-0104		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 5
N/A	STD-TK-0105		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 6
N/A	STD-TK-0106		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 7
N/A	STD-TK-0107		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 8
N/A	STD-TK-0108		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 9
N/A	STD-TK-0109		TRACK ALIGNMENT-LOWER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 10
N/A	STD-TK-0003		TRACK ALIGNMENT-KEY PLAN
N/A	STD-TK-0110		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 1
N/A	STD-TK-0111		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 2
N/A	STD-TK-0112		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 3
N/A	STD-TK-0113		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 4
N/A	STD-TK-0114		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 5
N/A	STD-TK-0115		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 6
N/A	STD-TK-0116		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 7
N/A	STD-TK-0117		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 8
N/A	STD-TK-0118		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 9
N/A	STD-TK-0119		TRACK ALIGNMENT-63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN-SHEET 10
N/A	STD-TK-0002		UPPER LEVEL ALIGNMENT-KEY PLAN
N/A	STD-TK-0120		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 1
N/A	STD-TK-0121		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 2
N/A	STD-TK-0122		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 3
N/A	STD-TK-0123		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 4
N/A	STD-TK-0124		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 5
N/A	STD-TK-0125		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 6

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52606	CONFORMED DRAWING	0

DESIGNED BY: M. DELLA POSTA
DRAWN BY: M. CAPONE
CHECKED BY: M. DELLA POSTA
COORDINATED BY: M. DELLA POSTA
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NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

INDEX OF DRAWINGS
SHEET 2

SCALE: NONE
DRAWING NUMBER: CM009-IN-0002
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 2 OF 276

SHEET No.	DWG No.	REVISION No.	DESCRIPTION
			STANDARD DRAWINGS (CONT'D)
N/A	STD-TK-0126		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 7
N/A	STD-TK-0127		TRACK ALIGNMENT-UPPER LEVEL COMPOSITE ALIGNMENT PLAN-SHEET 8
N/A	STD-TK-0401		ALIGNMENT CURVE DATA-SHEET 1
N/A	STD-TK-0402		ALIGNMENT CURVE DATA-SHEET 2
N/A	STD-TK-0403		ALIGNMENT CURVE DATA-SHEET 3
N/A	STD-TK-0404		ALIGNMENT CURVE DATA-SHEET 4
N/A	STD-TK-0405		ALIGNMENT CURVE DATA-SHEET 5
N/A	STD-PR-0100		TRACK ALIGNMENT-TRACK L402 PROFILE-STA L402 1+10.00 TO STA L402 7+35
N/A	STD-PR-0101		TRACK ALIGNMENT-TRACK L402 PROFILE-STA L402 7+35 TO STA L402 16+70
N/A	STD-PR-0102		TRACK ALIGNMENT-TRACK L402 & T402 PROFILES-STA L402 16+70 TO STA T402 20+97.38
N/A	STD-PR-0103		TRACK ALIGNMENT-TRACK T402 PROFILE-STA T402 20+97.38 TO STA T402 29+53.42
N/A	STD-PR-0104		TRACK ALIGNMENT-TRACK T402 AND EB2 PROFILES-STA T402 29+53.42 TO STA EB2 1048+30
N/A	STD-PR-0105		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2 1048+30 TO STA EB2 1057+20
N/A	STD-PR-0106		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2 1057+20 TO STA EB2 1064+25
N/A	STD-PR-0107		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2 1064+25 TO STA EB2 1073+40
N/A	STD-PR-0108		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2 1073+40 TO STA EB2 1081+00
N/A	STD-PR-0109		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2 1081+00 TO STA EB2a 86+90
N/A	STD-PR-0110		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2a 86+90 TO STA EB2a 94+00
N/A	STD-PR-0111		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2a 94+00 TO STA EB2a 103+60
N/A	STD-PR-0112		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2a 103+60 TO STA EB2c 112+20
N/A	STD-PR-0113		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2c 112+20 TO STA EB2d 121+40
N/A	STD-PR-0114		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2d 121+40 TO STA EB2d 130+60
N/A	STD-PR-0115		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2d 130+60 TO STA EB2e 140+25
N/A	STD-PR-0116		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2e 140+25 TO STA EB2e 149+40
N/A	STD-PR-0117		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2e 149+40 TO STA EB2f 158+50
N/A	STD-PR-0118		TRACK ALIGNMENT-TRACK EB2 PROFILE-STA EB2f 158+50 TO STA EB2f 167+70
N/A	STD-PR-0119		TRACK ALIGNMENT-TRACK EB2 & LL PROFILES-STA EB2f 167+70 TO STA LL 1172+21.71
N/A	STD-PR-0120		TRACK ALIGNMENT-TRACK L403 PROFILE-STA L403 1+10 TO STA L403 7+35
N/A	STD-PR-0121		TRACK ALIGNMENT-TRACK L403 PROFILE-STA L403 7+35 TO STA L403 16+70
N/A	STD-PR-0122		TRACK ALIGNMENT-TRACK L403 & T403 PROFILES-STA L403 16+70 TO STA T403 20+97.38
N/A	STD-PR-0123		TRACK ALIGNMENT-TRACK T403 PROFILE-STA T403 20+97.38 TO STA T403 29+53.42
N/A	STD-PR-0124		TRACK ALIGNMENT-TRACK T403 AND WB1 PROFILES-STA T403 29+53.42 TO STA WB1 1048+30
N/A	STD-PR-0125		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 1048+30 TO STA WB1 1057+20
N/A	STD-PR-0126		TRACK ALIGNMENT-TRACK WB1 PROFIIE-STA WB1 1057+20 TO STA WB1 1064+25
N/A	STD-PR-0127		TRACK ALIGNMENT-TRACK WB1 PROFIIE-STA WB1 1064+25 TO STA WB1 1073+40
N/A	STD-PR-0128		TRACK ALIGNMENT-TRACK WB1 PROFIIE-STA WB1 1073+40 TO STA WB1 1081+00
N/A	STD-PR-0129		TRACK ALIGNMENT-TRACK WB1 PROFIIE-STA WB1 1081+00 TO STA WB1 86+90
N/A	STD-PR-0130		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 86+90 TO STA WB1 94+00
N/A	STD-PR-0131		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 94+00 TO STA WB1 103+60
N/A	STD-PR-0132		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 103+60 TO STA WB1 112+20
N/A	STD-PR-0133		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 112+20 TO STA WB1 121+40
N/A	STD-PR-0134		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 121+40 TO STA WB1 130+60
N/A	STD-PR-0135		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 130+60 TO STA WB1 140+25
N/A	STD-PR-0136		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 140+25 TO STA WB1 149+40
N/A	STD-PR-0137		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 149+40 TO STA WB1 158+50
N/A	STD-PR-0138		TRACK ALIGNMENT-TRACK WB1 PROFILE-STA WB1 158+50 TO STA WB1 167+70
N/A	STD-PR-0139		TRACK ALIGNMENT-TRACK WB1 & A PROFILES-STA WB1 167+70 TO STA A 1172+21.71
N/A	STD-PR-0140		TRACK ALIGNMENT-TRACK L401 PROFILE-STA L401 12+00 TO STA L401 16+70
N/A	STD-PR-0141		TRACK ALIGNMENT-TRACK L401 & T401 PROFILES-STA L401 16+70 TO STA T401 20+97.38
N/A	STD-PR-0142		TRACK ALIGNMENT-TRACK T401 PROFILE-STA T401 20+97.38 TO STA T401 29+53.42
N/A	STD-PR-0143		TRACK ALIGNMENT-TRACK T401 PROFILE-STA T401 29+53.42 TO STA T401 34+80.65
N/A	STD-PR-0150		TRACK ALIGNMENT-TRACK L404 PROFILE-STA L404 12+00 TO STA L404 16+70
N/A	STD-PR-0151		TRACK ALIGNMENT-TRACK L404 & T404 PROFILES-STA L404 16+70 TO STA T404 20+97.38
N/A	STD-PR-0152		TRACK ALIGNMENT-TRACK T404 PROFILE-STA T404 20+97.38 TO STA T404 29+53.42
N/A	STD-PR-0153		TRACK ALIGNMENT-TRACK T404 PROFILE-STA T404 29+53.42 TO STA T404 34+80.97
N/A	STD-PR-0154		TRACK ALIGNMENT-TRACK BF3 PROFILE-STA BF3 1045+97.06 TO STA BF3 1047+97.21
N/A	STD-PR-0155		TRACK ALIGNMENT-TRACK BF4 PROFILE-STA BF4 1045+97.22 TO STA BF4 1047+97.37
N/A	STD-PR-0156		TRACK ALIGNMENT-TRACK YK1 PROFILE-STA YK1 96+87.00 TO STA YK1 102+50.53
N/A	STD-PR-0157		TRACK ALIGNMENT-TRACK YK2 PROFILE-STA YK2 96+87.00 TO STA YK2 102+50.46
N/A	STD-PR-0160		TRACK ALIGNMENT-TRACK L302 PROFILE-STA L302 1+10 TO STA L302 7+35
N/A	STD-PR-0161		TRACK ALIGNMENT-TRACK L302 PROFILE-STA L302 7+35 TO STA L302 16+70
N/A	STD-PR-0162		TRACK ALIGNMENT-TRACK L302 & T302 PROFILES-STA L302 16+70 TO STA T302 20+97.38
N/A	STD-PR-0163		TRACK ALIGNMENT-TRACK T302 PROFILE-STA T302 20+97.38 TO STA T302 29+53.42
N/A	STD-PR-0164		TRACK ALIGNMENT-TRACK T302 AND EB4 PROFILES-STA T302 29+53.42 TO STA EB4 1048+30
N/A	STD-PR-0165		TRACK ALIGNMENT-TRACK EB4 PROFILE-STA EB4 1048+30 TO STA EB4 1057+20
N/A	STD-PR-0166		TRACK ALIGNMENT-TRACK EB4 PROFIIE-STA EB4 1057+20 TO STA EB4 1064+25
N/A	STD-PR-0167		TRACK ALIGNMENT-TRACK EB4 PROFIIE-STA EB4 1064+25 TO STA EB4 1068+97.96
N/A	STD-PR-0170		TRACK ALIGNMENT-TRACK L303 PROFILE-STA L303 1+10 TO STA L303 7+35
N/A	STD-PR-0171		TRACK ALIGNMENT-TRACK L303 PROFILE-STA L303 7+35 TO STA L303 16+70
N/A	STD-PR-0172		TRACK ALIGNMENT-TRACK L303 & T303 PROFILES-STA L303 16+70 TO STA T303 20+97.38
N/A	STD-PR-0173		TRACK ALIGNMENT-TRACK T303 PROFILE-STA T303 20+97.38 TO STA T303 29+53.42
N/A	STD-PR-0174		TRACK ALIGNMENT-TRACK T303 AND WB3 PROFILES-STA T303 29+53.42 TO STA WB3 1048+30
N/A	STD-PR-0175		TRACK ALIGNMENT-TRACK WB3 PROFILE-STA WB3 1048+30 TO STA WB3 1057+20
N/A	STD-PR-0176		TRACK ALIGNMENT-TRACK WB3 PROFIIE-STA WB3 1057+20 TO STA WB3 1064+25
N/A	STD-PR-0177		TRACK ALIGNMENT-TRACK WB3 PROFIIE-STA WB3 1064+25 TO STA WB3 1069+79.27
N/A	STD-PR-0180		TRACK ALIGNMENT-TRACK L301 PROFILE-STA L301 12+00 TO STA L301 16+70
N/A	STD-PR-0181		TRACK ALIGNMENT-TRACK L301 & T301 PROFILES-STA L301 16+70 TO STA T301 20+97.38
N/A	STD-PR-0182		TRACK ALIGNMENT-TRACK T301 PROFILE-STA T301 20+97.38 TO STA T301 29+53.42
N/A	STD-PR-0183		TRACK ALIGNMENT-TRACK T301 PROFILE-STA T301 29+53.42 TO STA T301 32+96.75
N/A	STD-PR-0190		TRACK ALIGNMENT-TRACK L304 PROFILE-STA L304 12+00 TO STA L304 16+70
N/A	STD-PR-0191		TRACK ALIGNMENT-TRACK L304 & T304 PROFILES-STA L304 16+70 TO STA T304 20+97.38

SHEET No.	DWG No.	REVISION No.	DESCRIPTION
			STANDARD DRAWINGS (CONT'D)
N/A	STD-PR-0192		TRACK ALIGNMENT-TRACK T304 PROFILE-STA T304 20+97.38 TO STA T304 29+53.42
N/A	STD-PR-0193		TRACK ALIGNMENT-TRACK T304 PROFILE-STA T304 29+53.42 TO STA T304 32+97.10
N/A	STD-PR-0194		TRACK ALIGNMENT-TRACK BF1 PROFILE-STA BF1 1044+10.58 TO STA BF1 1046+10.73
N/A	STD-PR-0195		TRACK ALIGNMENT-TRACK BF2 PROFILE-STA BF2 1044+11.23 TO STA 1046+11.38
N/A	STD-PR-0250		TRACK ALIGNMENT-COMPOSITE PROFILE-STA 1+10 TO STA 1069+50
N/A	STD-PR-0251		TRACK ALIGNMENT-COMPOSITE PROFILE-STA 1069+50 TO STA 1084+20
			SURVEY OF EXISTING 63RD STREET TUNNEL
N/A	STD-CT-9001		63RD STREET TUNNEL - EXISTING CONDITIONS
N/A	STD-CT-9002		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9003		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9004		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9005		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9006		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9007		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9008		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9009		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9010		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9011		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9012		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9013		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9014		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9015		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9016		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9017		63RD STREET TUNNEL - EXISTING CONDITIONS - PLAN AND PROFILE
N/A	STD-CT-9018		63RD STREET TUNNEL - EXISTING CONDITIONS - AS-BUILT DETAILS
N/A	STD-CT-9019		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9020		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9021		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9022		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9023		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9024		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9025		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9026		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9027		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9028		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9029		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9030		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9031		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9032		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9033		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9034		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9035		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9036		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9037		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9038		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9039		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9040		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9041		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9042		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9043		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9044		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-CT-9045		63RD STREET TUNNEL - EXISTING CONDITIONS - CROSS SECTIONS
N/A	STD-GN-0005		ABBREVIATIONS FOR PUBLICATIONS, AGENCIES AND ASSOCIATIONS
N/A	STD-GN-2601		GENERAL SYMBOLS
N/A	STD-CD-1001		VEHICLE CLEARANCE DIAGRAM
N/A	STD-CT-0001		CIVIL AND UTILITY SYMBOLS
N/A	STD-CT-0003		CIVIL ABBREVIATIONS
N/A	STD-GS-0010		TRACK GEOMETRY LAYOUT AND ABBREVIATIONS
N/A	STD-GS-1007		QUEENS CONTROL - SURVEY DATA TIES - SHEET 1
N/A	STD-GS-1008		QUEENS CONTROL - SURVEY DATA TIES - SHEET 2
N/A	STD-GS-1020		QUEENS CONTROL - PROPOSED MONUMENT PLAN - SHEET 3
N/A	STD-GS-1021		QUEENS CONTROL - PROPOSED MONUMENT PLAN - SHEET 4
N/A	STD-GS-1003		MANHATTAN CONTROL MARKERS - SHEET 1 OF 4
N/A	STD-GS-1004		MANHATTAN CONTROL MARKERS - SHEET 2 OF 4
N/A	STD-GS-1005		MANHATTAN CONTROL MARKERS - SHEET 3 OF 4
N/A	STD-GS-1006		MANHATTAN CONTROL MARKERS - SHEET 4 OF 4
N/A	STD-GS-2001		CHAIN LINK FENCE DETAILS
N/A	STD-GS-2005		CONSTRUCTION AND CONTRACTION JOINTS FOR CONCRETE BASE
N/A	STD-GS-2010		PAVING AND RESTORATION MISCELLANEOUS DETAILS
N/A	STD-GS-5003		TEMPORARY CONCRETE BARRIER - SHEET 1
N/A	STD-GS-5005		TYPE III CONSTRUCTION BARRICADES - SHEET 1
N/A	STD-GS-5006		TYPE III CONSTRUCTION BARRICADES - SHEET 2
N/A	STD-GS-5004		TEMPORARY CONCRETE BARRIER - SHEET 2
N/A	STD-GS-6001		SOIL EROSION CONTROL DETAILS
N/A	STD-GS-9001		TYPICAL MONITORING WELL DETAILS
N/A	STD-GS-9002		ENVIRONMENTAL ABBREVIATIONS
N/A	STD-SS-0001		STRUCTURAL - SYMBOLS AND ABBREVIATIONS
N/A	STD-SS-0101		CONCRETE DETAILS
N/A	STD-SS-0201		WATERPROOFING DETAILS
N/A	STD-SS-1004		TYPICAL BAR BENDS AND SPLICES
N/A	STD-CC-0007		STRUCTURAL BONDING DETAILS - SHEET 1
N/A	STD-CC-0008		STRUCTURAL BONDING DETAILS - SHEET 2
N/A	STD-US-0001		UTILITY - GENERAL NOTES

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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

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ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

INDEX OF DRAWINGS
SHEET 3

SCALE: NONE
DRAWING NUMBER: CM009-IN-0003
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 183 OF 276

CONTRACT CM009

SHEET No.	DWG No.	REVISION No.	DESCRIPTION
			REFERENCE DRAWINGS
			CONSTRUCTION POWER SUBSTATION
			ARCHITECTURAL
N/A	CM009-AR-0004	1	SITE PLAN - EXISTING CONDITIONS
			CONSTRUCTION POWER
N/A	CM009-CP-0001	1	SYMBOLS, ABBREVIATIONS & GENERAL NOTES - SHEET 1
N/A	CM009-CP-0002	1	SYMBOLS, ABBREVIATIONS & GENERAL NOTES - SHEET 2
N/A	CM009-CP-0004	1	PLAN - ELECTRIC SERVICE MANHOLES
N/A	CM009-CP-0005	1	ELECTRIC SERVICE CONDUIT ROUTES - PARTIAL PLAN AND DETAILS
N/A	CM009-CP-0010	1	13.2 kV SERVICE - SINGLE LINE DIAGRAM
N/A	CM009-CP-0011	1	RELAY SINGLE LINE DIAGRAM - SHEET 1 OF 3
N/A	CM009-CP-0012	1	RELAY SINGLE LINE DIAGRAM - SHEET 1 OF 4
N/A	CM009-CP-0013	1	RELAY SINGLE LINE DIAGRAM - SHEET 1 OF 5
N/A	CM009-CP-0031	1	MEDIUM VOLTAGE SUBSTATION PLAN - SUGGESTED EQUIPMENT LAYOUT
N/A	CM009-CP-0070	1	PROPERTY LINE MANHOLE
N/A	CM009-CP-0131	1	MAINTENANCE OF TRAFFIC - 63RD STREET
			KIEWIT CONSTRUCTORS AS-BUILT DWGS-ESA CONTRACT CM016-MANHATTAN APPROACH TUNNELS EXCAVATION BY ROADHEADER
			GENERAL DRAWINGS
N/A	C-1		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 1 OF 17
N/A	C-2		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 2 OF 17
N/A	C-3		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 3 OF 17
N/A	C-4		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 4 OF 17
N/A	C-5		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 5 OF 17
N/A	C-6		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 6 OF 17
N/A	C-7		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 7 OF 17
N/A	C-8		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 8 OF 17
N/A	C-9		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 9 OF 17
N/A	C-10		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 10 OF 17
N/A	C-11		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 11 OF 17
N/A	C-12		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 12 OF 17
N/A	C-13		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 13 OF 17
N/A	C-14		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 14 OF 17
N/A	C-15		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 15 OF 17
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N/A	C-17		EXISTING 63RD STREET TUNNEL PLAN - EQUIPMENT AND UTILITY LAYOUT - SHEET 17 OF 17
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N/A	C-19		EXISTING 63RD TUNNEL EQUIPMENT LAYOUT - SECTIONS - SHEET 2 OF 3
N/A	C-20		EXISTING 63RD TUNNEL EQUIPMENT LAYOUT - SECTIONS - SHEET 3 OF 3
N/A	C-21		TEMPORARY POWER FROM EXISTING LIRR FAN CONTROL ROOM AT 2ND AVE SHAFT
N/A	C-22		QUEENS STAGING AREA AND TEMPORARY UTILITIES LAYOUT
			STRUCTURAL DRAWINGS
N/A	S-1		LIRR TUNNEL RAMP AND MUD SLAB AT BELLMOUTH OPEN CUT EXCAVATION
N/A	S-2		LIRR PORTAL DETAILS AT BELLMOUTH OPEN CUT EXCAVATION
N/A	S-3		ROADHEADER EXCAVATION IN THE EB TUNNEL OF THE 63RD STREET LIRR TUNNEL
			ELECTRICAL DRAWINGS
N/A	E-1		SINGLE LINE DIAGRAM TUNNEL LIGHTING DISTRIBUTION - 29TH STREET VENT SHAFT TO 2ND AVE VENT SHAFT
N/A	E-2		WIRING DIAGRAM FOR LOW VOLTAGE LOAD CENTERS AT 29TH STREET AND 2ND AVE VENT SHAFTS
N/A	E-3		TRIPLEX BOOSTER PUMP CONTROL PANEL AND ELECTRICAL SYSTEM WIRING DIAGRAMS FOR 8" WATER SUPPLY LINE
N/A	E-4		MAIN CONTROL PANEL LAYOUT DETAILS - GROUND WATER TREATMENT AT 2ND AVE
N/A	E-5		WIRING DIAGRAM - MAIN CONTROL PANEL GROUND WATER TREATMENT SYSTEM AT 2ND AVE SHAFT (LIRR TRACK LEVEL)
N/A	E-6		SINGLE LINE DIAGRAM - PROJECT SITE ELECTRICAL DISTRIBUTION
N/A	E-7		TEMPORARY POWER CENTER - AT 2ND AVE VENT SHAFT (LIRR TRACK LEVEL) - PLAN LAYOUT
N/A	E-8		TEMPORARY POWER CENTER - WIRING SCHEMATIC
N/A	E-9		CHROMALOX HEAT TRACE SYSTEM - PANEL LAYOUT FOR 10" DIP SUMP LINES
N/A	E-10		CHROMALOX HEAT TRACE - PANEL WIRING DIAGRAM FOR 10" DIP SUMP LINES
N/A	E-11		ACME T-2A-3500030-3S TRANSFORMER - WIRING DIAGRAM
N/A	E-12		ELECTRICAL UTILITY SUPPORT DETAIL FOR 63RD STREET LIRR TUNNELS
N/A	E-13		TUNNEL LIGHTING SUPPORT DETAIL FOR 63RD STREET LIRR TUNNELS
N/A	E-14		CHROMALOX HEAT TRACE SYSTEM - PANEL LAYOUT AND WIRING DIAGRAM FOR 8" WATER SUPPLY L.INE
N/A	E-15		DUPLEX PUMP CONTROL PANEL LAYOUT AT 2ND AVE IN 63RD STREET LIRR TUNNEL
N/A	E-16		DUPLEX CONTROL PANEL WIRING SCHEMATIC AT 2ND AVE IN 63RD STREET LIRR TUNNEL
			GEOTECHNICAL INSTRUMENTATION DRAWINGS
N/A	GI-1		GEOTECHNICAL INSTRUMENTATION AND SURFACE MONITORING LOCATIONS AT 63RD STREET AND 2ND AVE IN MANHATTAN
N/A	GI-2		GEOTECHNICAL INSTRUMENTATION AND SURFACE MONITORING SCHEDULE AND INITIAL DATA
N/A	GI-3		GEOTECHNICAL INSTRUMENTATION OF EXISTING NYCT T1 AND T2 TUNNELS SIMPLIFIED DIAGRAM OF INSTRUMENTATION LOCATIONS IN TUNNELS
N/A	GI-4		GEOTECHNICAL INSTRUMENTATION EXISTING NYCT T1 AND T2 TUNNELS INSTRUMENTATION CONTROL STATION LAYOUT AT 2ND AVE VENT SHAFT
N/A	GI-5		GEOTECHNICAL INSTRUMENTATION EXISTING NYCT T1 AND T2 TUNNELS SCHEMATIC DIAGRAM

SHEET No.	DWG No.	REVISION No.	DESCRIPTION
			SPECIFIC DETAIL DRAWINGS
N/A	SD-1		SHIPS LADDER IN LIRR TUNNEL
N/A	SD-2		EB TUNNEL GRIT CHAMBER SLAB SUPPORT AT ROOSEVELT ISLAND
N/A	SD-3		PERFORATED STEEL PLATE WITH FILTER FABRIC AT HAND HOLES IN 63RD STREET LIRR TUNNELS
N/A	SD-4		INSTALLATION DETAILS 8" WATER SUPPLY LINE IN LIRR 63RD ST TUNNELS AT CROSS PASSAGE STA 1198+25 TO 1198+75
N/A	SD-5		8" WATER SUPPLY LINE SUPPORT DETAILS 63RD STREET LIRR TUNNELS
N/A	SD-6		TYPICAL INSTALLATION DETAILS - 2 1/2" FIRE HOSE VALVE FOR 8" WATER SUPPLY LINE IN 63RD STREET LIRR TUNNELS
N/A	SD-7		DUPLEX PUMPS IN 2ND AVE GRIT CHAMBER - AT ELEVATION 196'
N/A	SD-8		SECTION A-A AND D-D FOR THE UNDERGROUND UTILITIES AT QUEENS STAGING AREA PROJECT SITE
N/A	SD-9		TYPICAL INSTALLATION OF 8" BUTTERFLY VALVES FOR THE 8" WATER SUPPLY LINE IN 63RD STREET LIRR TUNNELS
			MECHANICAL DRAWINGS
N/A	M-1		8" WATER SUPPLY LINE AND 10" DISCHARGE SUMP LINES FROM GRADE LEVEL TO LIRR TUNNEL
N/A	M-2		TRIPLEX BOOSTER PUMP SYSTEM FOR THE 8" WATER SUUPLY LINE IN A HEATED ENCLOSURE
N/A	M-3		EQUIPMENT LAYOUT PLAN - GROUND WATER TREATMENT SYSTEM AT 2ND AVE VENT SHAFT (LIRR TRACK LEVEL)
N/A	M-4		PH/OWS/SETTLEMENT TANK OUTLINE AND SECTIONS FOR GROUND WATER TREATMENT SYSTEM AT 2ND AVE SHAFT (LIRR TRACK LEVEL)
N/A	M-5		BULK SETTLEMENT TANK OUTLINE AND SECTION FOR GROUND WATER TREATMENT SYSTEM AT 2ND AVE SHAFT (LIRR TRACK LEVEL)
			COMMUNICATION DRAWINGS
N/A	CM-1		MINE PHONE AND MINE PHONE SUPPORT DETAILS FOR 63RD STREET LIRR TUNNELS
			NYCT CONTRACT C-33207-2 - REFERENCE DRAWINGS TO KIEWIT CONSTRUCTION AS-BUILTS
N/A	L-1		2ND AVENUE WATER REMEDY VENTILATION FANS - ONE LINE DIAGRAM
N/A	L-2		2ND AVENUE FAN CHAMBER FEEDER PLAN
N/A	L-3		29TH STREET WATER REMEDY VENTILATION FANS - ONE LINE DIAGRAM

$PRFNAME$ $PLOTDRV$ $REF6$
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East Side Access

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52606	CONFORMED DRAWING	0

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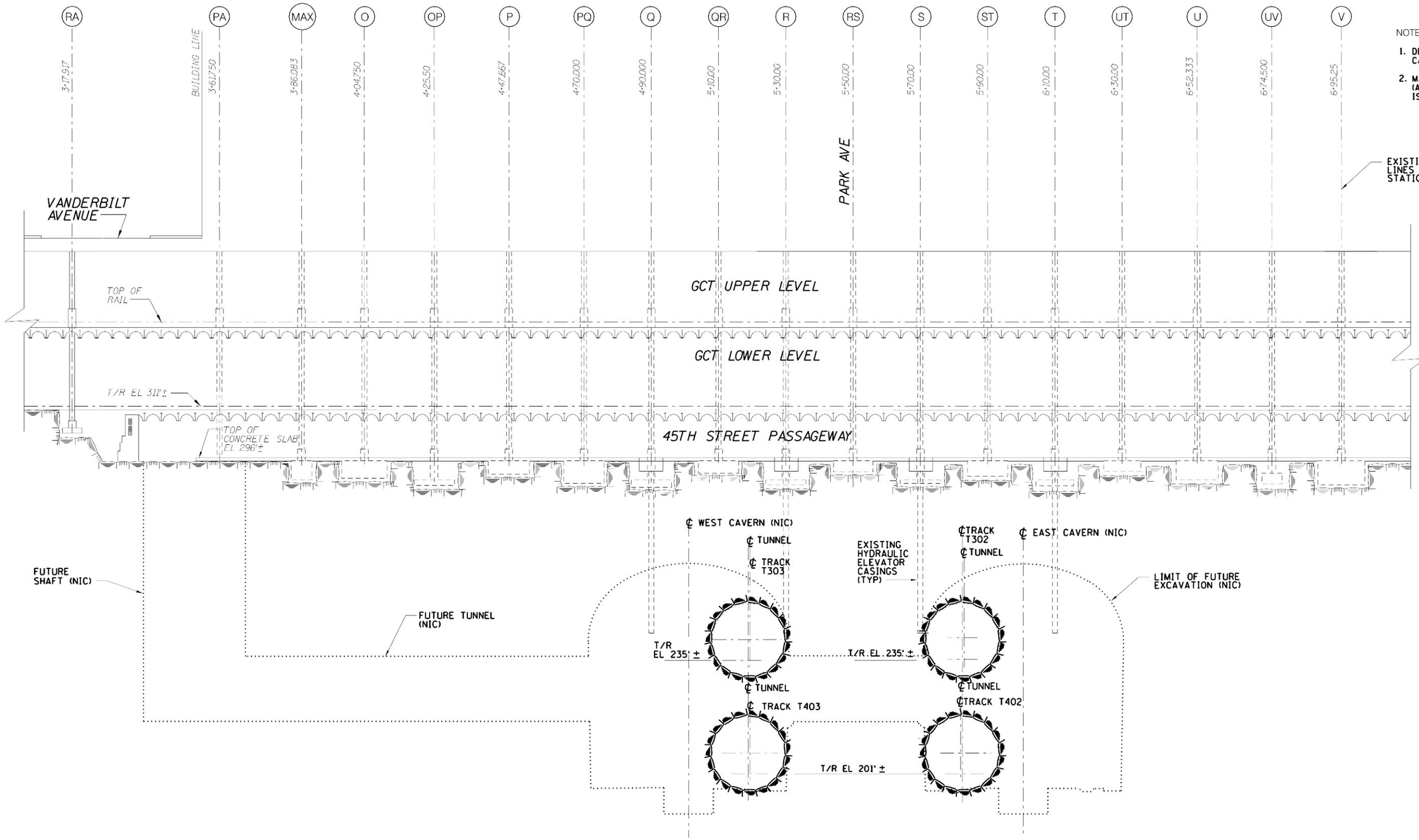
MANHATTAN TUNNELS EXCAVATION

INDEX OF DRAWINGS
SHEET 4

SCALE: NONE
DRAWING NUMBER: CM009-IN-0005
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 184 OF 276



NOTES:

1. DEPTH OF HYDRAULIC ELEVATOR CASINGS UNKNOWN.
2. MATERIAL MAKE UP OF CASING (AND PLUNGER IF PRESENT) IS UNKNOWN.

EXISTING GCT COLUMN LINES AND GRID STATIONING

SECTION @ 45TH STREET

SCALE IN FEET
15' 0 15' 30'

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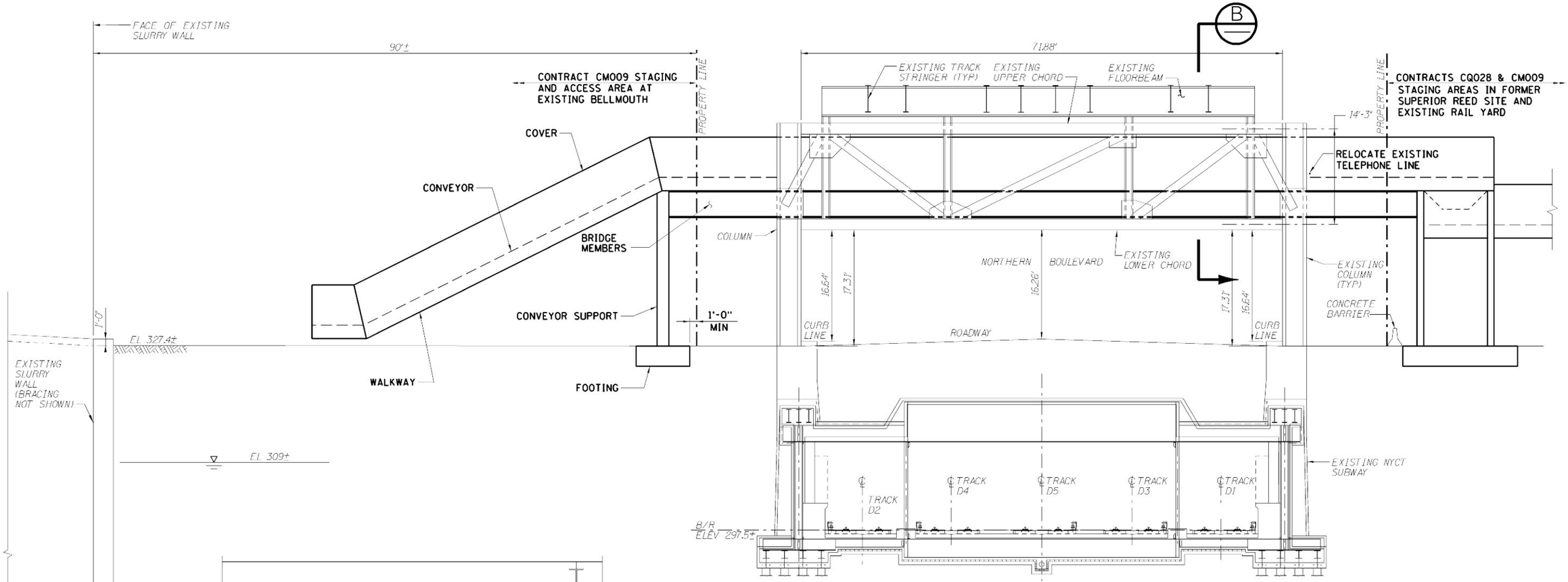
MANHATTAN TUNNELS EXCAVATION

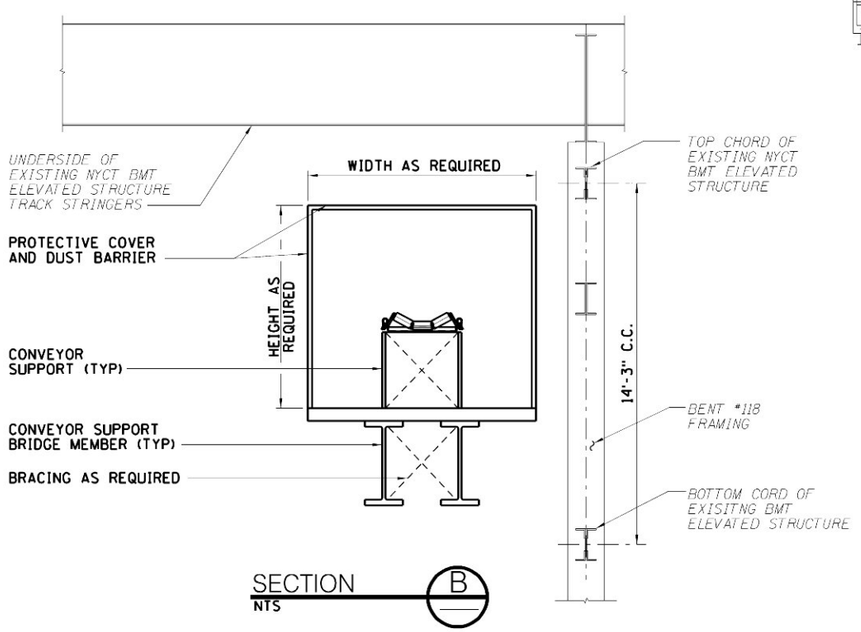
ABANDONED HYDRAULIC ELEVATOR CASINGS

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-2020
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 185 OF 276



SECTION A CT-3002

EXISTING NYCT BMT ELEVATED STRUCTURE BENT #118



SECTION B
NTS

NOTES:

1. THE INFORMATION PRESENTED IS FROM NYCT RECORD DRAWINGS AND IS APPROXIMATE. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS.
2. THE LAYOUT PRESENTED IS SUGGESTED. THE CONTRACTOR SHALL DESIGN AND SUBMIT CALCULATIONS, PLANS, ERECTION PROCEDURES, AND MAINTENANCE PROCEDURES FOR THE CONVEYOR, CONVEYOR SUPPORT SYSTEM, AND CONVEYOR PROTECTIVE COVER AND DUST BARRIER TO THE RESIDENT ENGINEER FOR REVIEW.
3. THE CONVEYOR, INCLUDING CONVEYOR SUPPORT SYSTEM COMPONENTS, SHALL NOT BE SUPPORTED BY, OR BRACED BY THE EXISTING NYCT BMT ELEVATED STRUCTURE.
4. THE CONVEYOR AND CONVEYOR SUPPORT SYSTEMS SHALL NOT EXTEND BELOW THE BOTTOM CHORD OF THE EXISTING NYCT BMT ELEVATED STRUCTURE.
5. CONVEYOR SUPPORT FOOTINGS SHALL BE PLACED 1'-0" CLEAR OF THE PROPERTY LINE ON THE WEST SIDE AND BEHIND THE CONCRETE BARRIER ON THE EAST SIDE OF NORTHERN BOULEVARD.
6. THE CONTRACTOR SHALL COORDINATE WITH ESA CONTRACT CQ028, THROUGH THE RESIDENT ENGINEER, FOR CONVEYOR STRUCTURE INSTALLATION AND MAINTENANCE.
7. ALL REQUIRED PERMITS SHALL BE OBTAINED PRIOR TO START OF WORK.
8. THE WORK SHALL BE COORDINATED WITH NYCDOT AND NYCT THROUGH THE RESIDENT ENGINEER.
9. ALL WORK REQUIRING LANE CLOSURES SHALL BE PERFORMED AT NIGHT BETWEEN 9PM AND 5AM, EXCEPT DURING HOLIDAYS AND OTHER LANE CLOSURE RESTRICTIONS DETERMINED BY NYCDOT.
10. PHASE WORK TO MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES.
11. ALL LANE AND SIDEWALK CLOSURES SHALL BE IN ACCORDANCE WITH MAINTENANCE AND PROTECTION OF TRAFFIC PLANS APPROVED BY NYCDOT AND THE RESIDENT ENGINEER.

SCALE IN FEET
8' 4' 0 8' 16'

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5/26/06	CONFORMED DRAWING	0

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MANHATTAN TUNNELS EXCAVATION

QUEENS ACCESS
SCHEMATIC ELEVATION AT CONVEYOR

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-3003
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 186 OF 276

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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

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DATE:

MANHATTAN TUNNELS EXCAVATION

TEMPORARY SEWER CONNECTION SITE PLAN

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-3051
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 187 OF 276

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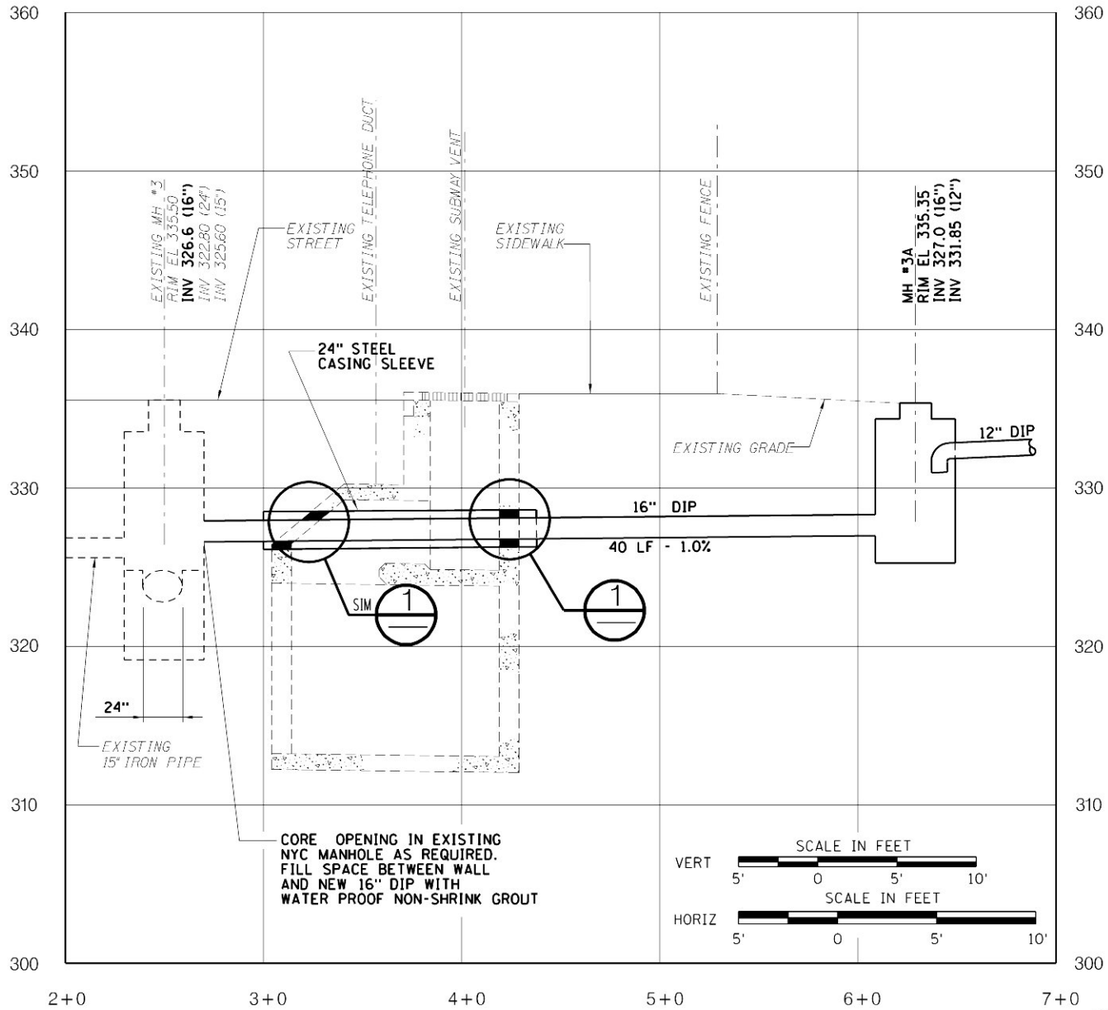

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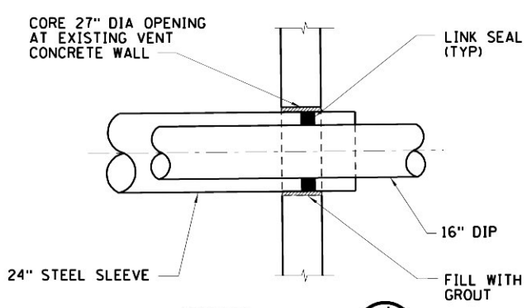
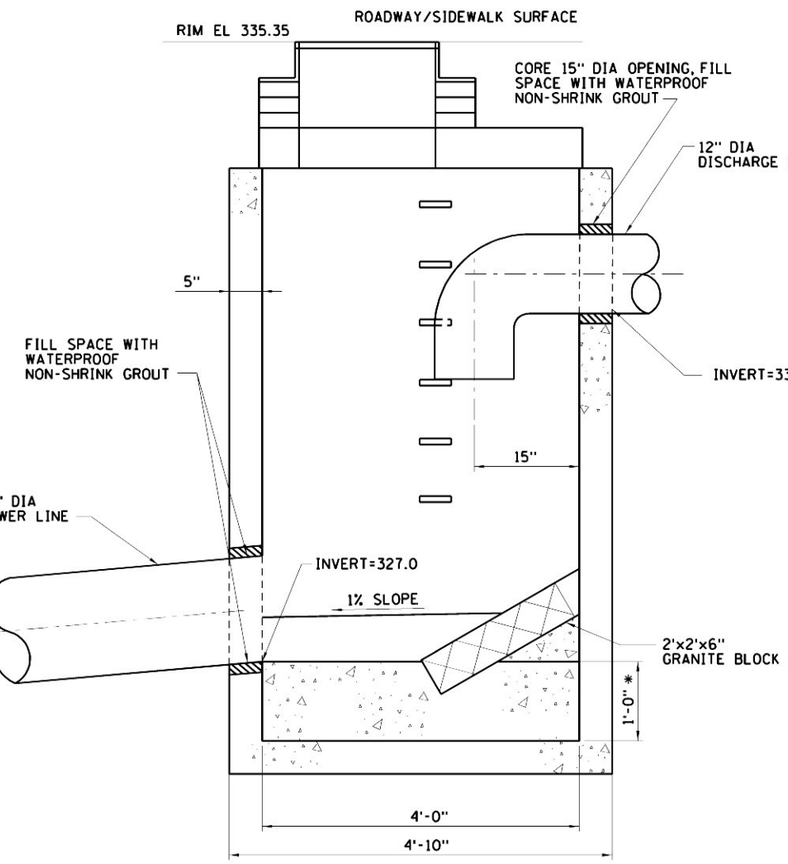
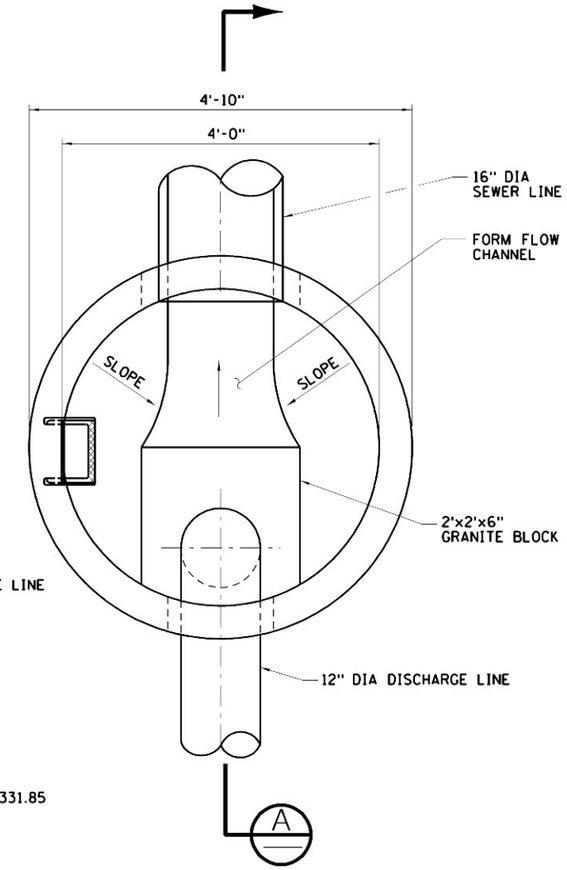


DETAIL 1
NTS



SECTION A
NTS

NOTE:
FOR MANHOLE DETAILS, SEE DEP STANDARD 4'-0" DIAMETER PRECAST MANHOLE



PLAN AT BENCH LEVEL
NTS

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52606	CONFORMED DRAWING	0

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DRAWN BY: R. TANG
CHECKED BY: D. YUE
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
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MANHATTAN TUNNELS EXCAVATION

TEMPORARY SEWER CONNECTION
PROFILE AND DETAILS

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-3052
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
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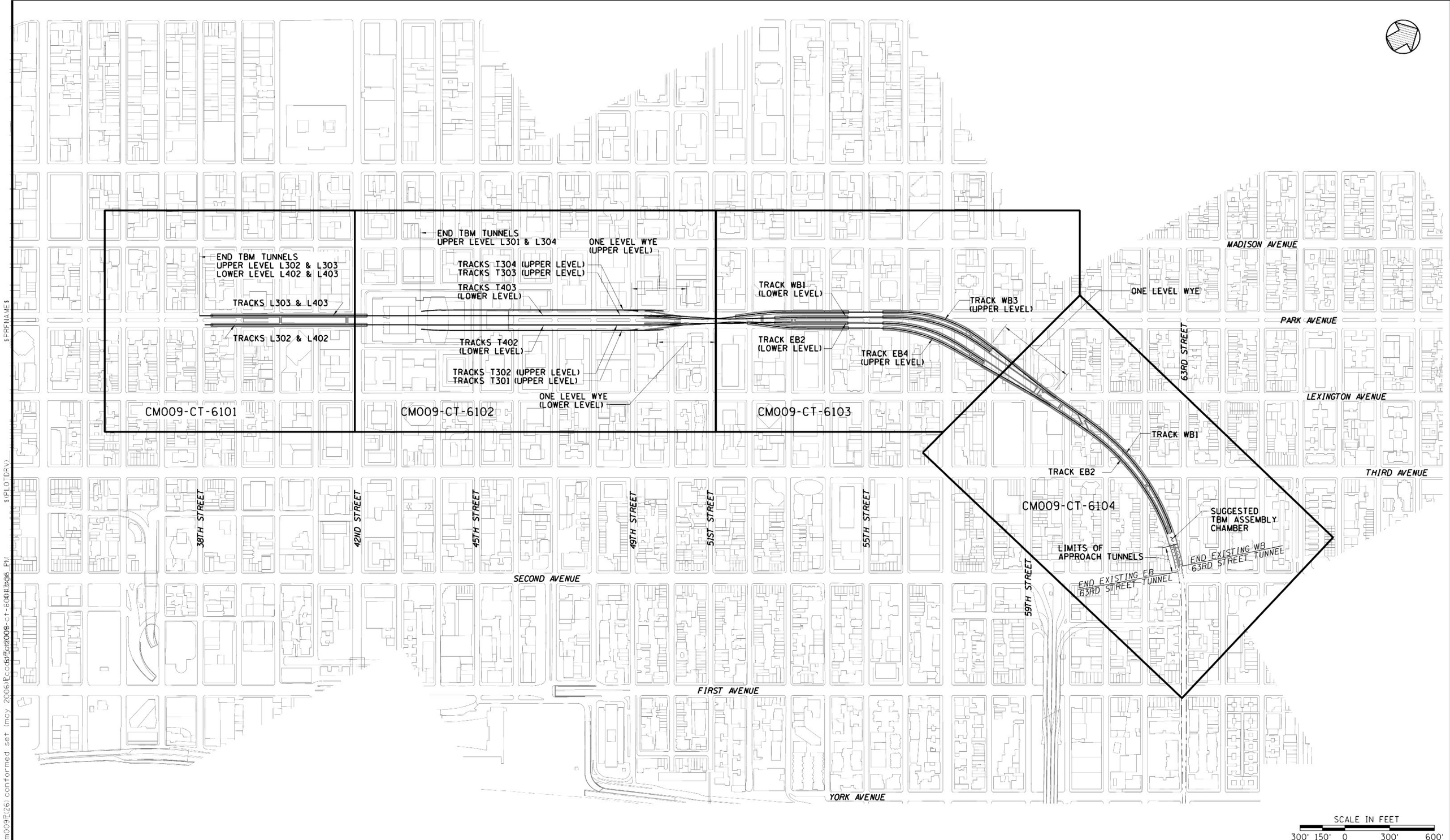

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52606	CONFORMED DRAWING	0

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APPROVED BY: J. SCHABIB

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MANHATTAN TUNNELS EXCAVATION

MANHATTAN ENVIRONMENTAL WELL LOCATIONS KEY PLAN

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-6001
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 189 OF 276

EXISTING MONITORING WELL LOCATIONS IN MANHATTAN

WELL ID	APPROX NORTHING	APPROX EASTING	LOCATION
TT-9W	212867	990087	STREET
TT-11W	212558	990156	STREET
TT-13W	212429	989854	STREET
MG-29W	213884	990524	GCT LOWER LEVEL
MG-59W	214382	990848	GCT LOWER LEVEL
MG-114W	214817	990874	GCT LOWER LEVEL
MD-16W	214792	991075	GCT LOWER LEVEL
MD-19W	214100	990860	GCT LOWER LEVEL
MA-103W	217379	993972	STREET
MA-105W	217516	993725	STREET
MA-129W	217045	992554	STREET
MA-151W	215657	991814	METRO NORTH TRACKWAY
MA-209W	216872	992736	STREET
MA-211W	217295	993592	STREET
MA-318W	217247	994575	STREET
MA-321W	217062	992938	STREET
MA-325W	216941	992617	STREET
MA-15W	217289	992550	STREET

EXISTING MONITORING WELLS WITHIN CM009 QUEENS WORK AREA TO BE PROTECTED

SEE NOTE 3

WELL ID	APPROX NORTHING	APPROX EASTING	ELEVATION
QB-106W	212654	1001984	327.5
QB-301W	212835	1001966	NA
QB-302W	212703	1001877	NA
QB-303W	212823	1002043	NA
QB-304W	212723	1002116	NA
QB-305W	212635	1002037	325.7
PO-01	212832	1001937	334.4
PO-02	212821	1001999	329.5
PO-03	212843	1002036	328.1
PO-04	212863	1001981	331.2
PO-05	212916	1001941	334.3
PO-06	212824	1002080	326.4
PO-07	212707	1001849	332.9
PO-09	212842	1002174	321.8
PO-10	212786	1002171	322.7

ABBREVIATIONS

AAS	ATOMIC ABSORPTION SPECTROMETRY
ACM	ASBESTOS CONTAINING MATERIALS
AOC	AREA OF CONCERN
APPROX	APPROXIMATE
AST	ABOVEGROUND STORAGE TANK
BF	BAG FILTER
BG	BELOW GRADE
BLDG	BUILDING
BTEX	BENZENE, TOLUENE, ETHYLBENZENE AND XYLENE
CL	CLAY
CPAH	CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS
CF	GRANULAR ACTIVATED CARBON ADSORBER
CH	INORGANIC CLAYS
CVOC	CHLORINATED-VOLATILE ORGANIC COMPOUND
CY	CUBIC YARD
DAF	DISSOLVED AIR FLOTATION
FB	FLOCCULATION BASIN
FC	FINAL CLARIFIER
FP	FILTER PRESS
FT	FEET; FLOW TOTALIZER
GA	NYSDEC CLASSIFICATION FOR DRINKING WATER SOURCE (GROUNDWATER)
GAL	GALLON
GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
GM	SILTY-SANDS, SAND-SILT MIXTURES
GP	POORLY-GRADED SANDS, GAVELLY SANDS
GPM	GALLON PER MINUTE
GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES
HUD	UNITED STATES DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
LBP	LEAD-BASED PAINT
MIN	MINIMUM
MH	INORGANIC SILTS, MICACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
MW	MONITORING WELL
ND	NOT DETECTED
NE	NO RSCO & ROD EXCEEDANCES
NWE	NO CLASS GA WATER QUALITY STANDARD EXCEEDANCES
NSDC	NO VOC/SVOC SOIL DATA COLLECTED

ABBREVIATIONS CONT'D

NGWDC	NO GROUNDWATER DATA COLLECTED
NPSH	NET POSITIVE SUCTION HEAD
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OH	ORGANIC CLAYS, ORGANIC SILTS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
PC	PRIMARY CLARIFIER
PCB	POLYCHLORINATED BIPHENYLS
PI	PRESSURE INDICATOR
PLM	POLARIZED LIGHT MICROSCOPY
PPB	PARTS PER BILLION
PPM	PARTS PER MILLION
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS
PVC	POLYVINYL CHLORIDE
RB	ION EXCHANGE RESIN BASIN
ROD	NYSDEC RECORD OF DECISION
RM	RAPID MIXING TANK
RSCO	RECOMMEND SOIL CLEANUP OBJECTIVES
SC	CLAYEY SANDS, SAND-CLAY MIXTURES
SF	SQUARE FEET
SM	SILTY-SANDS, SAND-SILT MIXTURES
SP	SAMPLE PORT; POORLY-GRADED SANDS, GRAVELLY SANDS
SVOC	SEMI-VOLATILE ORGANIC COMPOUND
SW	WELL-GRADED SANDS, GRAVELLY SANDS
TCLP	TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TEM	TRANSMISSION ELECTRON MICROSCOPE
TR	TRANSFER PUMP
UG/L	MICROGRAMS PER LITER
UST	UNDERGROUND STORAGE TANK
VOC	VOLATILE ORGANIC COMPOUND
XRF	X-RAY FLUORESCENCE

ENVIRONMENTAL GENERAL NOTES

1. CONTRACTOR SHALL ABATE LBP CONTAINING MATERIALS PRIOR TO CUTTING OR ALTERATION AS PER SPECIFICATION 13281.
2. CONTRACTOR TO PERFORM A WALK-THROUGH INSPECTION PRIOR TO START OF WORK TO CONFIRM ALL LOCATIONS.
3. ALL GROUNDWATER MONITORING WELLS AND GEOTECHNICAL OPEN-STANDPIPE PIEZOMETERS WITHIN WORK AREAS AND STAGING AND ACCESS AREAS ARE TO BE PROTECTED FROM DAMAGE. CONTRACTOR SHALL REPAIR OR REPLACE ALL WELLS DAMAGED OR DESTROYED. REFER ALSO TO SPECIFICATION SECTION 02290, DRAWING CM009-CT-6600 AND STANDARD DRAWING STD-GS-9001.
4. CONTRACTOR'S SITE-SPECIFIC SOIL EROSION & SEDIMENT CONTROL PLAN SHALL INCLUDE PROVISIONS FOR PREVENTING FLOW INTO INLETS AS DIRECTED IN CONTRACT SPECIFICATION 02372. CONTRACTOR SHALL INSTALL AND MAINTAIN CONTROL DEVICES AS NECESSARY (SEE STANDARD DWG STD-GS-6001).
5. PRIOR TO DISCHARGE TO COMBINED SEWER, GROUNDWATER ENCOUNTERED DURING CONSTRUCTION SHALL MEET THE NYCDEP DISCHARGE REQUIREMENTS.

EXISTING 63RD STREET TUNNEL:

6. REFER TO REFERENCE DOCUMENT "REVISED FINDINGS REPORT FOR THE ASBESTOS AND LEAD-BASED PAINT SURVEY OF THE EXISTING 63RD STREET TUNNEL," (MATRIX. DECEMBER, 2003).
7. REFER TO REFERENCE DOCUMENT "ASBESTOS AND LEAD PAINT INSPECTION AND MATERIAL SURVEY REPORT FOR MTA/LIRR EAST SIDE ACCESS PROJECT-63RD STREET EAST RIVER TUNNEL," (JLC. SEPTEMBER, 2001) AND "ASBESTOS AND LEAD PAINT INVESTIGATION AND MATERIAL SURVEY REPORT FOR MTA/LIRR EAST SIDE ACCESS PROJECT-MANHATTAN ALIGNMENT 63RD STREET TUNNEL," (JLC. DECEMBER, 2000).
8. CONTRACTOR IS ADVISED THAT THERE ARE AREAS CONTAINING MEASURABLE QUANTITIES OF LEAD THAT ARE BELOW HUD GUIDELINES. CONTRACTOR TO PROVIDE RESPIRATORY PROTECTION FOR THEIR WORKERS, AS PER OSHA 29CFR1926.62. REFER TO MATRIX REPORT (SEE NOTE 4) FOR INFORMATION ON ALL ITEMS THAT CONTAIN LBP, BOTH ABOVE AND BELOW HUD GUIDELINES.

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DATE	REVISIONS	No.
5-26-06	CONFORMED DRAWING	0

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CHECKED BY: M. TUMULTY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

EXISTING MONITORING WELL LOCATIONS
ENVIRONMENTAL GENERAL NOTES & ABBREVIATIONS

SCALE: NONE
DRAWING NUMBER: CM009-CT-6002
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 190 OF 276

$PRFNAME$
$PLOTDRV$
y:\ecad submissions\cm009\(26) conformed set (may 2006)\cm009-ct-6002.dwg 5/26/2006 PM
REF(s):

NOTE:
GROUNDWATER SAMPLES WERE COLLECTED AT MONITORING WELLS. REFER TO REFERENCE DOCUMENT SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION FINDINGS REPORT SUMMARY FOR CONTRACT CM009.

LEGEND:
MONITORING WELL/SOIL BORING LOCATIONS ON STREETS

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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

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COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

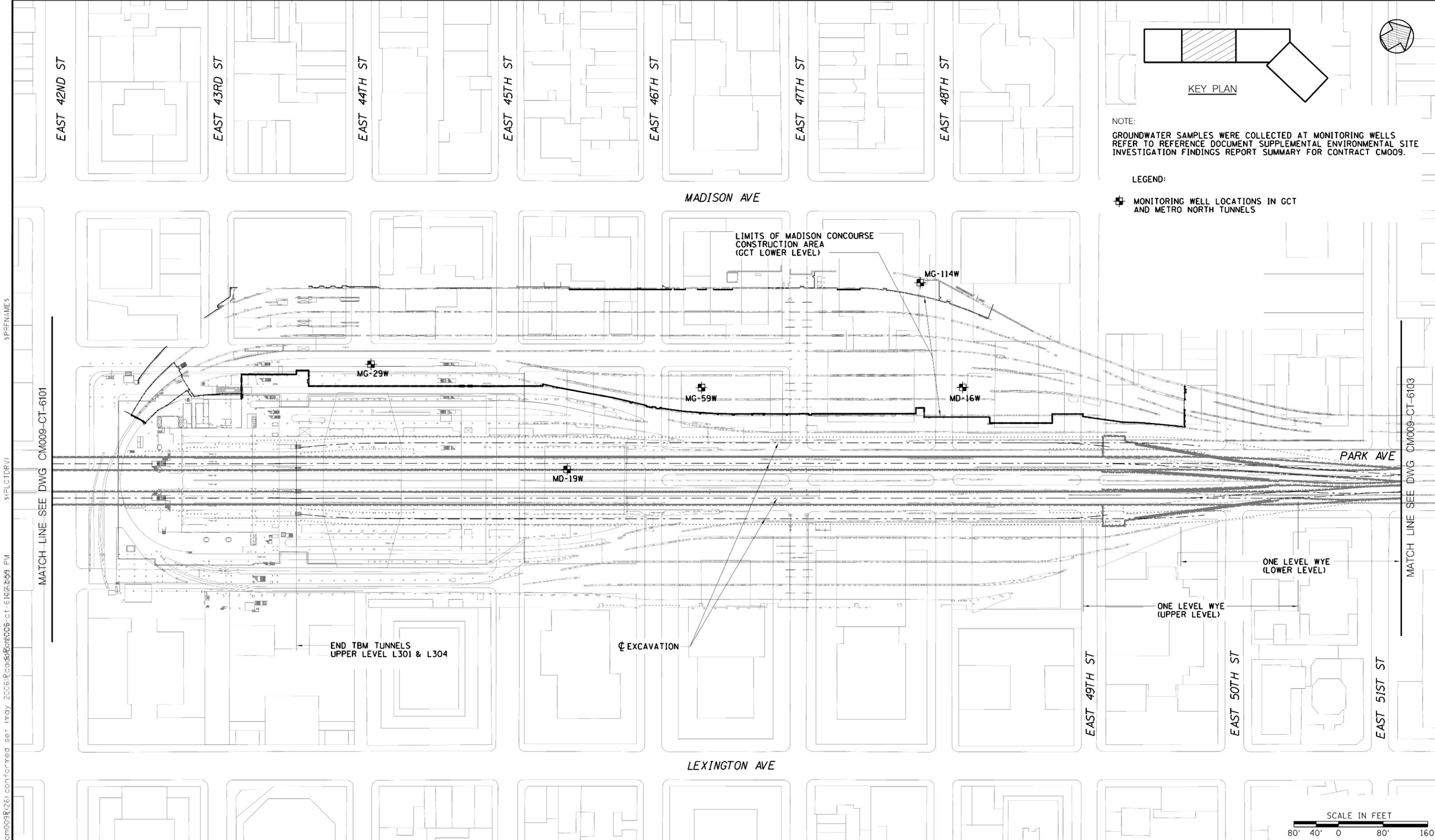
NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

ENVIRONMENTAL WELL LOCATION PLAN
EXISTING GROUNDWATER SAMPLING POINTS
SHEET 1

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-6101
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 191 OF 276



NOTE:

GROUNDWATER SAMPLES WERE COLLECTED AT MONITORING WELLS REFER TO REFERENCE DOCUMENT SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION FINDINGS REPORT SUMMARY FOR CONTRACT CM009.

LEGEND:

✠ MONITORING WELL LOCATIONS IN GCT AND METRO NORTH TUNNELS

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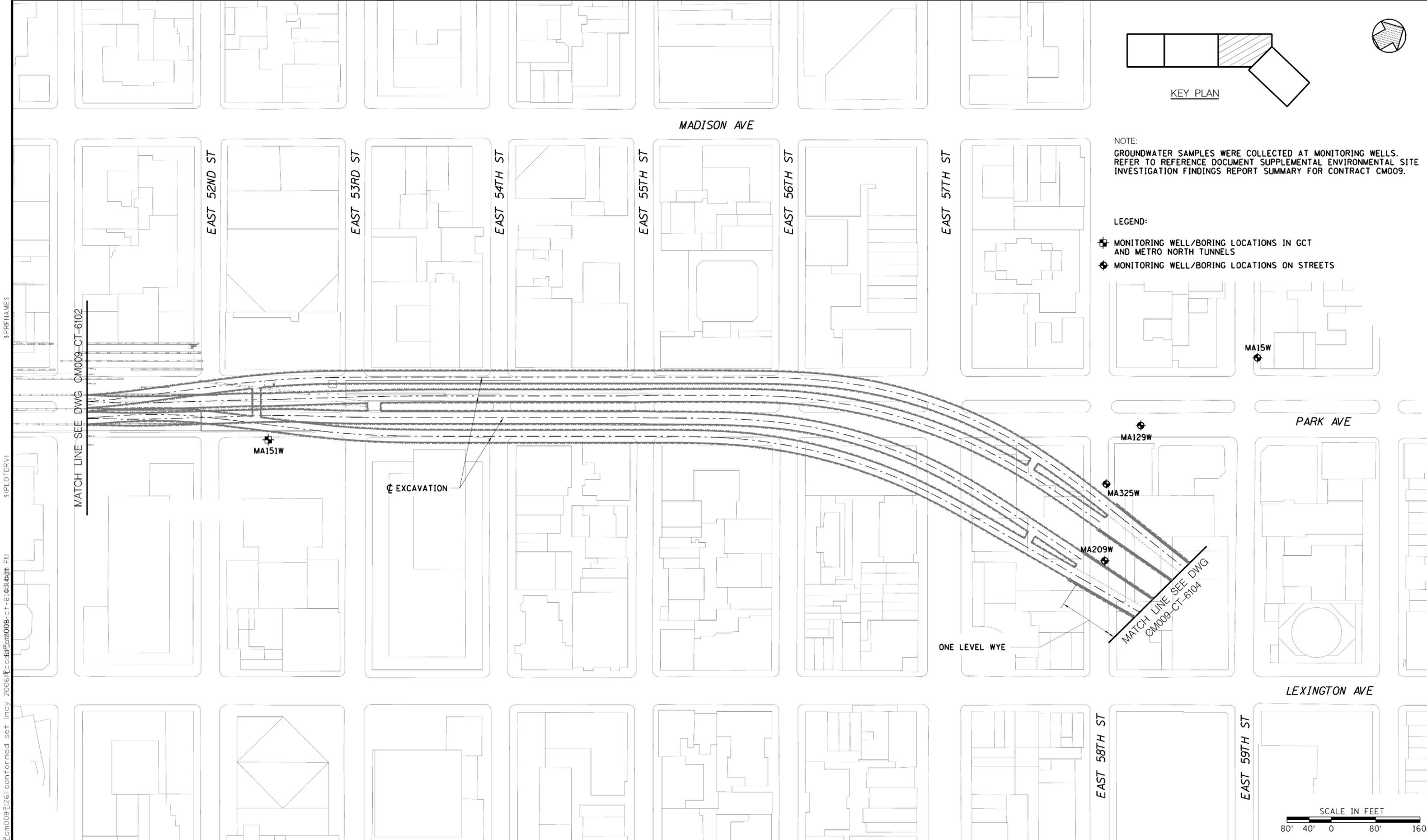
MANHATTAN TUNNELS EXCAVATION

ENVIRONMENTAL WELL LOCATION PLAN EXISTING GROUNDWATER SAMPLING POINTS

SHEET 2

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-6102
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 192 OF 276



NOTE:
GROUNDWATER SAMPLES WERE COLLECTED AT MONITORING WELLS. REFER TO REFERENCE DOCUMENT SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION FINDINGS REPORT SUMMARY FOR CONTRACT CM009.

LEGEND:
- MONITORING WELL/BORING LOCATIONS IN GCT AND METRO NORTH TUNNELS
- MONITORING WELL/BORING LOCATIONS ON STREETS

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MANHATTAN TUNNELS EXCAVATION

ENVIRONMENTAL WELL LOCATION PLAN
EXISTING GROUNDWATER SAMPLING POINTS
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-6103
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
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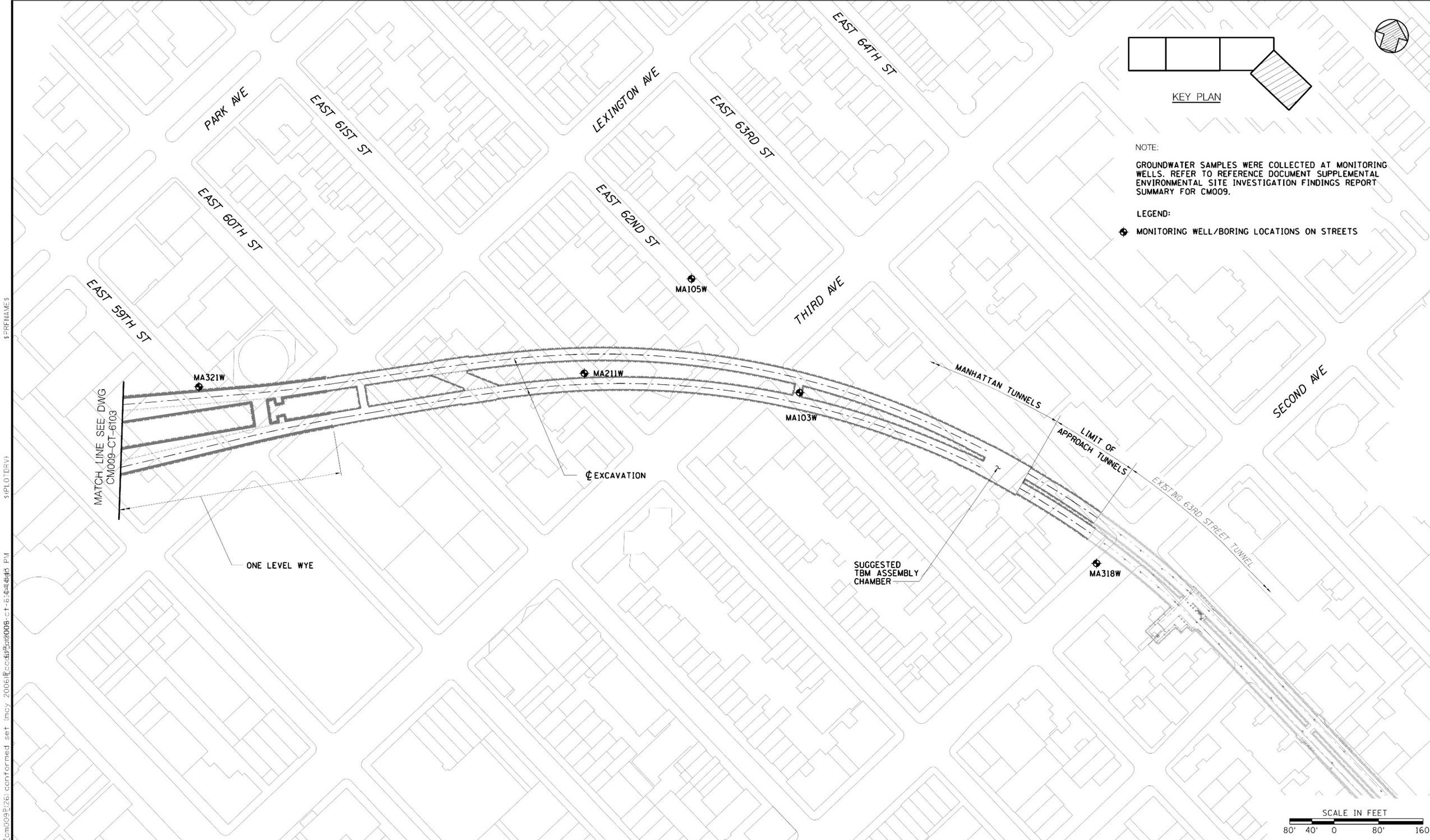

NOTE:

GROUNDWATER SAMPLES WERE COLLECTED AT MONITORING WELLS. REFER TO REFERENCE DOCUMENT SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION FINDINGS REPORT SUMMARY FOR CM009.

LEGEND:

MONITORING WELL/BORING LOCATIONS ON STREETS

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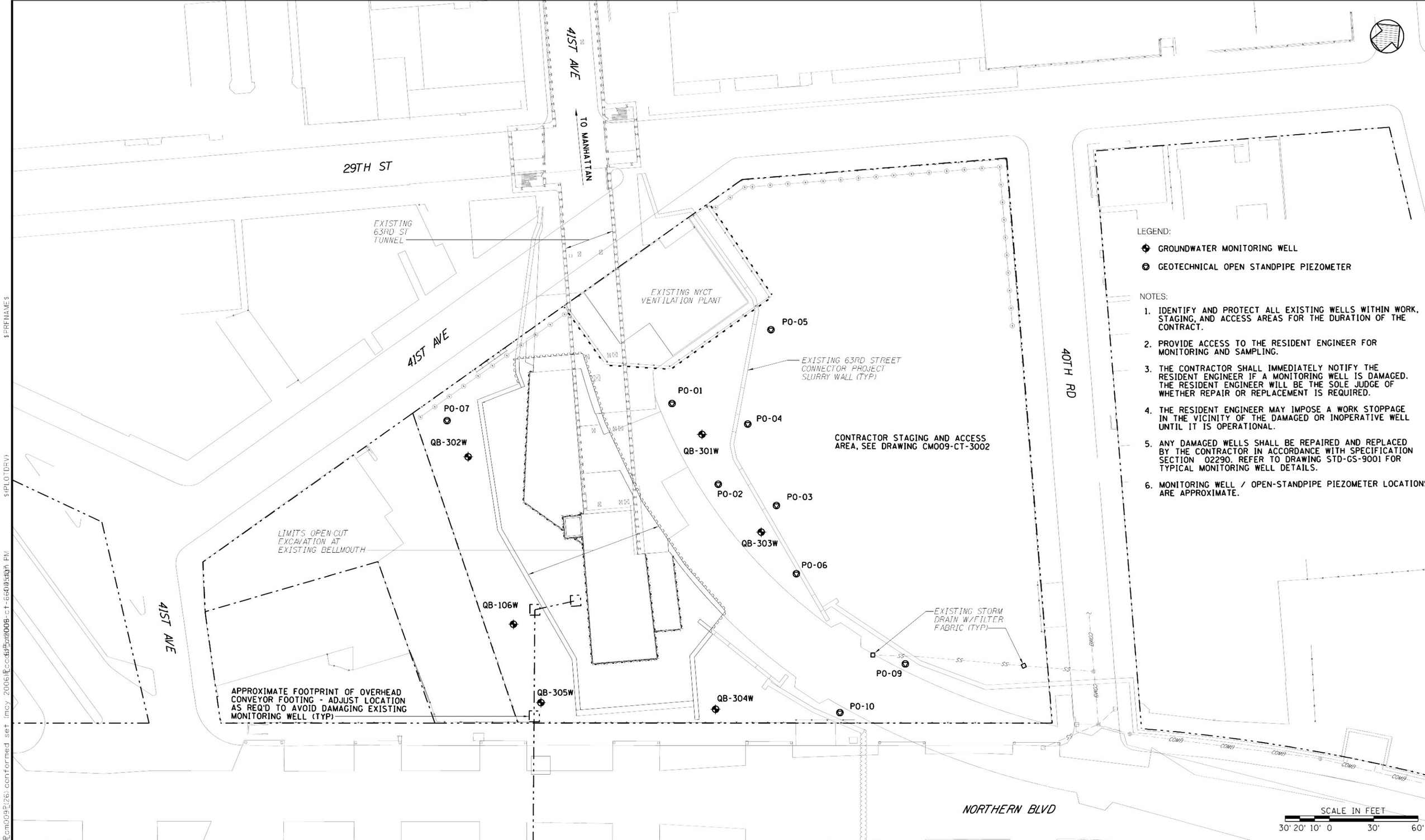
NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

ENVIRONMENTAL WELL LOCATION PLAN
EXISTING GROUNDWATER SAMPLING POINTS
SHEET 4

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-6104
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 194 OF 276



LEGEND:

- GROUNDWATER MONITORING WELL
- GEOTECHNICAL OPEN STANDPIPE PIEZOMETER

NOTES:

1. IDENTIFY AND PROTECT ALL EXISTING WELLS WITHIN WORK, STAGING, AND ACCESS AREAS FOR THE DURATION OF THE CONTRACT.
2. PROVIDE ACCESS TO THE RESIDENT ENGINEER FOR MONITORING AND SAMPLING.
3. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RESIDENT ENGINEER IF A MONITORING WELL IS DAMAGED. THE RESIDENT ENGINEER WILL BE THE SOLE JUDGE OF WHETHER REPAIR OR REPLACEMENT IS REQUIRED.
4. THE RESIDENT ENGINEER MAY IMPOSE A WORK STOPPAGE IN THE VICINITY OF THE DAMAGED OR INOPERATIVE WELL UNTIL IT IS OPERATIONAL.
5. ANY DAMAGED WELLS SHALL BE REPAIRED AND REPLACED BY THE CONTRACTOR IN ACCORDANCE WITH SPECIFICATION SECTION 02290. REFER TO DRAWING STD-GS-9001 FOR TYPICAL MONITORING WELL DETAILS.
6. MONITORING WELL / OPEN-STANDPIPE PIEZOMETER LOCATIONS ARE APPROXIMATE.

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MANHATTAN TUNNELS EXCAVATION

OPEN-CUT EXCAVATION AT EXISTING BELLMOUTH
MONITORING WELLS TO BE PROTECTED

SCALE: AS NOTED
DRAWING NUMBER: CM009-CT-6600
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 195 OF 276

GENERAL NOTES

1. ALL INSTRUMENTATION LOCATIONS SHOWN ARE APPROXIMATE, SEE INSTRUMENTATION SCHEDULES FOR PLANNED LOCATIONS.
2. FOR LOCATION OF GEOTECHNICAL INSTRUMENTATION - SURFACE, SEE DWGS CM009-GT-4001 TO CM009-GT-4017.
3. INSTRUMENTATION WITHIN GCT UPPER AND LOWER LEVELS AND WITHIN MNR TUNNELS ARE INSTALLED, MAINTAINED AND READ BY OTHERS, INSTALLATIONS SHOWN FOR INFORMATION ONLY.
4. NOT USED.
5. FOR LOCATION OF GEOTECHNICAL INSTRUMENTATION - EXISTING NYCT STRUCTURES, SEE DWGS CM009-GT-5022 TO CM009-GT-5027.
6. FOR LOCATION OF GEOTECHNICAL INSTRUMENTATION - NEW TUNNELS, SEE DWGS CM009-GT-5201 TO CM009-GT-5208.
7. FOR INSTRUMENTATION SCHEDULES, SEE DWGS CM009-GT-4101 TO CM009-GT-4108, CM009-GT-5051 AND CM009-GT-5251.
8. FOR TYPICAL INSTRUMENTATION DETAILS, SEE DWGS CM009-GT-6101 TO CM009-GT-6105.
9. SEE CM009-CT-7001 TO CM009-CT-7008 FOR OVERLYING AND ADJACENT PROPERTIES.
10. ADJUST INSTRUMENT AND MONITORING POINT LOCATIONS, ELEVATIONS, AND/OR DEPTHS AS DIRECTED AT THE TIME OF INSTALLATION TO AVOID EXISTING UTILITY LOCATIONS, EXISTING RAILS AND RAILROAD OPERATING CLEARANCES. COMPLY WITH EASEMENT REQUIREMENTS, MINIMIZE CONFLICT WITH CONSTRUCTION OPERATIONS, AND SUIT ACTUAL CONDITIONS.
11. STRUCTURE MONITORING POINTS (SP) SHOWN ON SURFACE DRAWINGS ARE TO BE MOUNTED AT EXTERNAL BUILDING FACADES AND/OR ON EXTERIOR OF STRUCTURAL ELEMENTS. CONTRACTOR TO VERIFY LOCATION. EACH (SP) LOCATION SHOWN ON THE PLAN VIEWS INCLUDES (2) VERTICALLY OFFSET SURVEY PRISMS. PRISMS ARE TO BE INSTALLED IN (2) LEVELS "A" & "B", WHERE "A" REFERS TO THE LOWER AND "B" TO THE UPPER INSTRUMENT LEVEL. LEVEL "A" SHALL BE INSTALLED 15' ABOVE GRADE. FOR BUILDINGS UP TO 6 STORIES, THE VERTICAL OFFSET BETWEEN INSTRUMENT LEVELS "A" & "B" SHALL BE 20'. FOR BUILDINGS HIGHER THAN 6 STORIES, THE VERTICAL OFFSET SHALL BE 60'. WHERE TILTMETERS (TM) ARE PAIRED WITH AN SP, THE SP SHALL BE INSTALLED AT LEVEL "A" ON THE EXTERIOR OF THE BUILDING AND THE TM SHALL BE INSTALLED ON A STRUCTURAL ELEMENT INSIDE THE BUILDING, AT LEVEL "B".
12. LOCATIONS OF FULLY AUTOMATED MOTORIZED TOTAL STATIONS AND FIXED REFERENCE POINTS NOT SHOWN ON CONTRACT DRAWINGS, LOCATIONS TO BE DEFINED BY CONTRACTOR AND SUBMITTED TO RESIDENT ENGINEER. POTENTIAL AUTOMATED TOTAL STATION INSTALLATION LOCATIONS INCLUDE BUILDING FACADES, POLES, BUILDING ROOFS.
13. DEEP BENCHMARK LOCATIONS ARE APPROXIMATE, TO BE FIELD VERIFIED BY CONTRACTOR.
14. FOR GEOTECHNICAL PROFILES, SEE DWGS CM009-GT-2001 TO CM009-GT-2014 AND CM009-GT-2101 TO CM009-GT-2114.
15. INSTRUMENTATION SHALL BE NUMBERED ACCORDING TO THE FOLLOWING SCHEME:
    AA_BBBB_CCCCCC_DD_XXX WHERE:
    - (I) AA=CONTRACT NUMBER (ie. 09 FOR CM009)
    - (II) BBBB=ZONE NUMBER
      - (TLT1 THROUGH TLT3 FOR TAILTRACKS)
      - (GCT1 THROUGH GCT3 FOR GRAND CENTRAL TERMINAL)
      - (MAT1 THROUGH MAT8 FOR MANHATTAN RUNNING TUNNELS)
    - (III) CCCCCC=LOCATION NUMBER
    - (IV) DD=INSTRUMENT TYPE
    - (V) XXX=INSTRUMENT UNIT REFERENCE NUMBER
16. NOT USED.
17. ADJUST INSTRUMENT MOUNTING DEVICES TO SUIT ACTUAL FIELD CONDITIONS.
18. THE EXISTING STRUCTURES AS SHOWN ON PLANS AND SECTIONS ARE BASED ON SEVERAL SOURCES OF INFORMATION. WHERE REQUIRED, THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND CONDITIONS OF EXISTING STRUCTURES PRIOR TO INSTRUMENTATION INSTALLATIONS.
19. TOP OF ROCK SHOWN ON THE SECTIONS WAS INTERPOLATED FROM BORINGS.
20. INSTRUMENTATION INSTALLATIONS SHOWN ON THE SECTIONS ARE SCHEMATIC ONLY AND THEIR LOCATIONS MAY NOT MATCH WITH PLAN LOCATIONS.
21. SURFACE INSTRUMENTS AND INSTRUMENTS INSTALLED WITHIN EXISTING 63RD STREET TRANSIT TUNNEL WERE INSTALLED BY OTHERS AND SHALL BE MAINTAINED AND READ BY THE CONTRACTOR. SEE KIEWIT CONSTRUCTORS, CONTRACT CM016, AS-BUILT DRAWINGS GI-1 THRU GI-5, INCLUDED IN THIS CONTRACT DRAWING VOLUME.

IDENTIFICATION SYSTEM

PAVSOP - PARK AVENUE SOUTH OVERPASS
LEXSBL - LEXINGTON AVENUE SUBWAY, SOUTH BOUND, LOCAL
LEXSBE - LEXINGTON AVENUE SUBWAY, SOUTH BOUND, EXPRESS
LEXNBE - LEXINGTON AVENUE SUBWAY, NORTH BOUND, EXPRESS
LEXNBL - LEXINGTON AVENUE SUBWAY, NORTH BOUND, LOCAL
SHUTTL - SHUTTLE
IRTFLE - IRT FLUSHING LINE NORTH BOUND
IRTFLW - IRT FLUSHING LINE SOUTH BOUND
GCTFAC - GRAND CENTRAL TERMINAL FACADE ON 42ND STREET
LEXAVE - LEXINGTON AVENUE
2NDAVE - SECOND AVENUE
38THST - 38TH STREET
39THST - 39TH STREET
40THST - 40TH STREET
42NDST - 42ND STREET
45THST - 45TH STREET
50THST - 50TH STREET
54THST - 54TH STREET
55THST - 55TH STREET
56THST - 56TH STREET
58THST - 58TH STREET
59THST - 59TH STREET
60THST - 60TH STREET
61STST - 61ST STREET
62NDST - 62ND STREET
53INDE - 53RD STREET IND LINE NORTH BOUND
53INDW - 53RD STREET IND LINE SOUTH BOUND
IRTSBE - IRT LINE SOUTH BOUND EXPRESS
IRTNBE - IRT LINE NORTH BOUND EXPRESS
BMT6OE - BMT LINE SOUTH BOUND
BMT6OW - BMT LINE NORTH BOUND
63RDST - 63RD STREET TUNNEL
TLT - TAIL TRACK
GCT - GRAND CENTRAL TERMINAL
MAT - MANHATTAN APPROACH TUNNEL

GEOTECHNICAL INSTRUMENTATION LEGEND

SYMBOL	ABBREVIATION	INSTRUMENT DESCRIPTION
●	S1	SURFACE MOVEMENT MONITORING POINT TYPE 1 IN RIGID PAVEMENT SURFACE
●	S2	SURFACE MOVEMENT MONITORING POINT TYPE 2 IN MASONRY OR CONCRETE SLAB
⊙	SP	PRISM FOR AUTOMATED MOTORIZED TOTAL STATION FOR STRUCTURAL MONITORING
⊙	SM	STRUCTURE MONITORING POINT ON VERTICAL MASONRY OR CONCRETE SURFACE OF BUILDINGS
■	DB	DEEP BENCHMARK
	LL	SENSOR FOR LIQUID LEVEL SETTLEMENT SYSTEM. ARROWS ON PLAN VIEWS INDICATE DIRECTION OF PIPE BETWEEN SENSORS.
[	TM	TILTMETER
X	AC	HIGH FREQUENCY GEOPHONE
⊢⊣	DS	DYNAMIC STRAIN GAUGE FOR VIBRATION MONITORING
⊘	IP	IN-PLACE INCLINOMETER
⊠	BX	MULTIPLE POSITION BOREHOLE EXTENSOMETER MPBX
⊠H	BX	HORIZONTAL MULTIPLE POSITION BOREHOLE EXTENSOMETER
▽	OW	EXISTING OBSERVATION WELL
▼	OS	OPEN STANDPIPE PIEZOMETER
	TD	3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING
	TL	3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING COMBINED WITH ROOF LEVELING

LINE TYPE SYMBOLS

--------- STRUCTURE BY OTHERS

-------- CONNECTIONS BETWEEN LLS

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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: J. RICCARDI
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
GENERAL NOTES & LEGEND

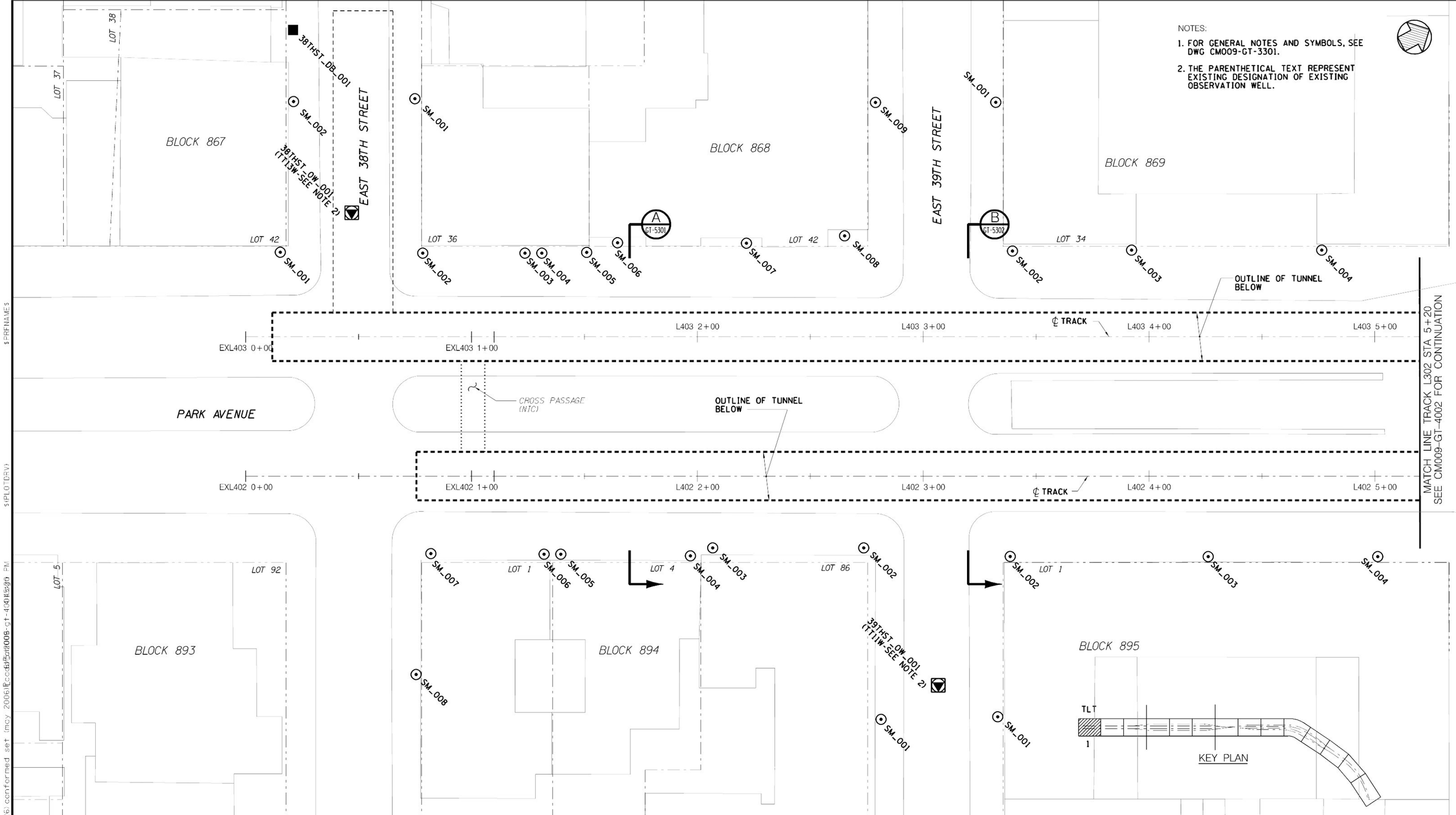
SCALE: NONE
DRAWING NUMBER: CM009-GT-3301
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 196 OF 276

$PRFNAME$ $PLOTDRV$ $REF6$ y:\ccad submissions\cm0092(26) conformed set (may 2006)\ccad\cm009-gt-3301.dwg 5/26/2006 3:34:15 PM

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS, SEE DWG CM009-GT-3301.
2. THE PARENTHETICAL TEXT REPRESENT EXISTING DESIGNATION OF EXISTING OBSERVATION WELL.



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DATE:

MANHATTAN TUNNELS EXCAVATION

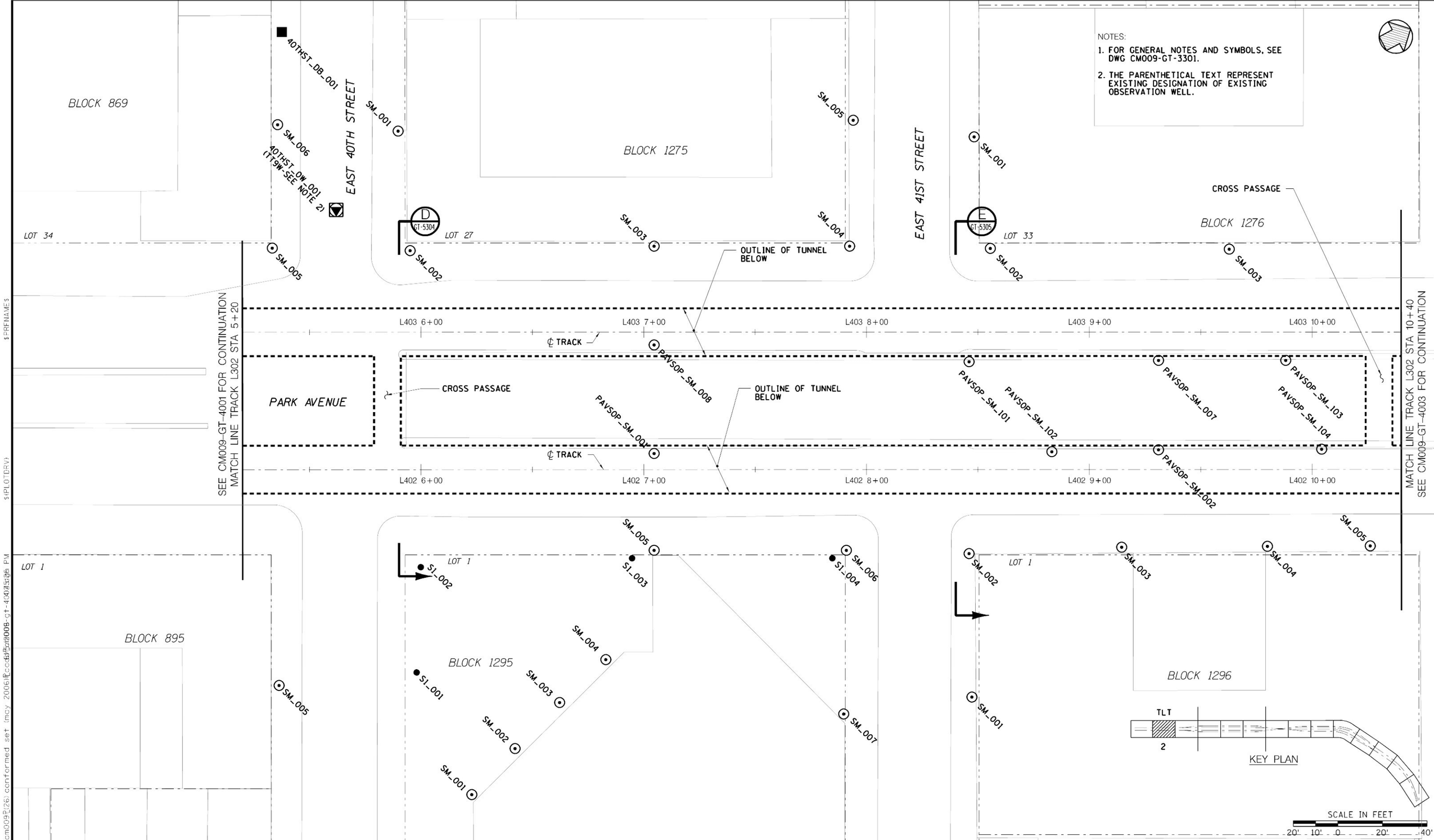
LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 1

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4001
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 197 OF 276

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS, SEE DWG CM009-GT-3301.
2. THE PARENTHETICAL TEXT REPRESENT EXISTING DESIGNATION OF EXISTING OBSERVATION WELL.



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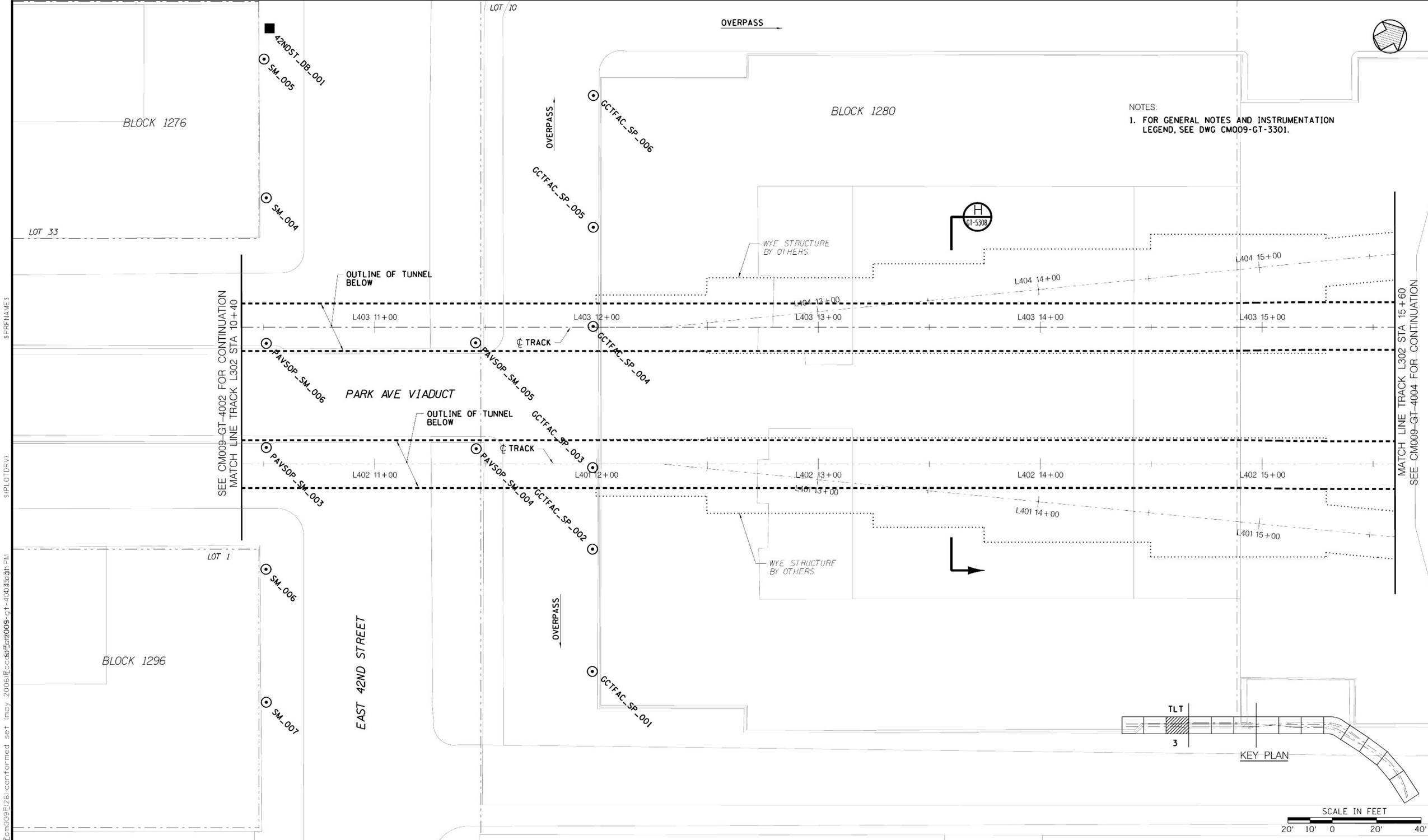
DATE:

MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 2

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4002
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 198 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.

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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

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MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

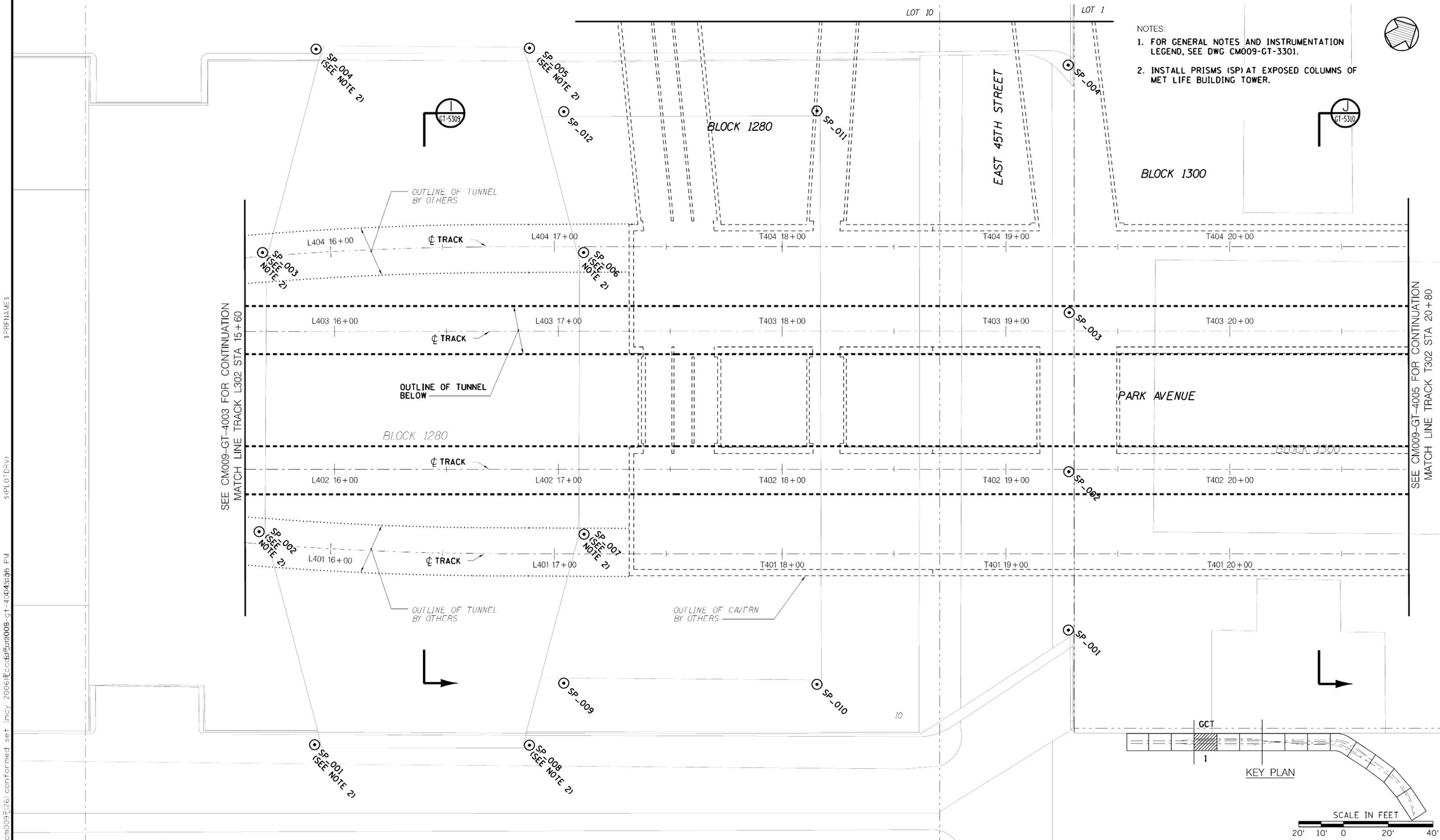
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4003
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 199 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. INSTALL PRISMS (SP) AT EXPOSED COLUMNS OF MET LIFE BUILDING TOWER.



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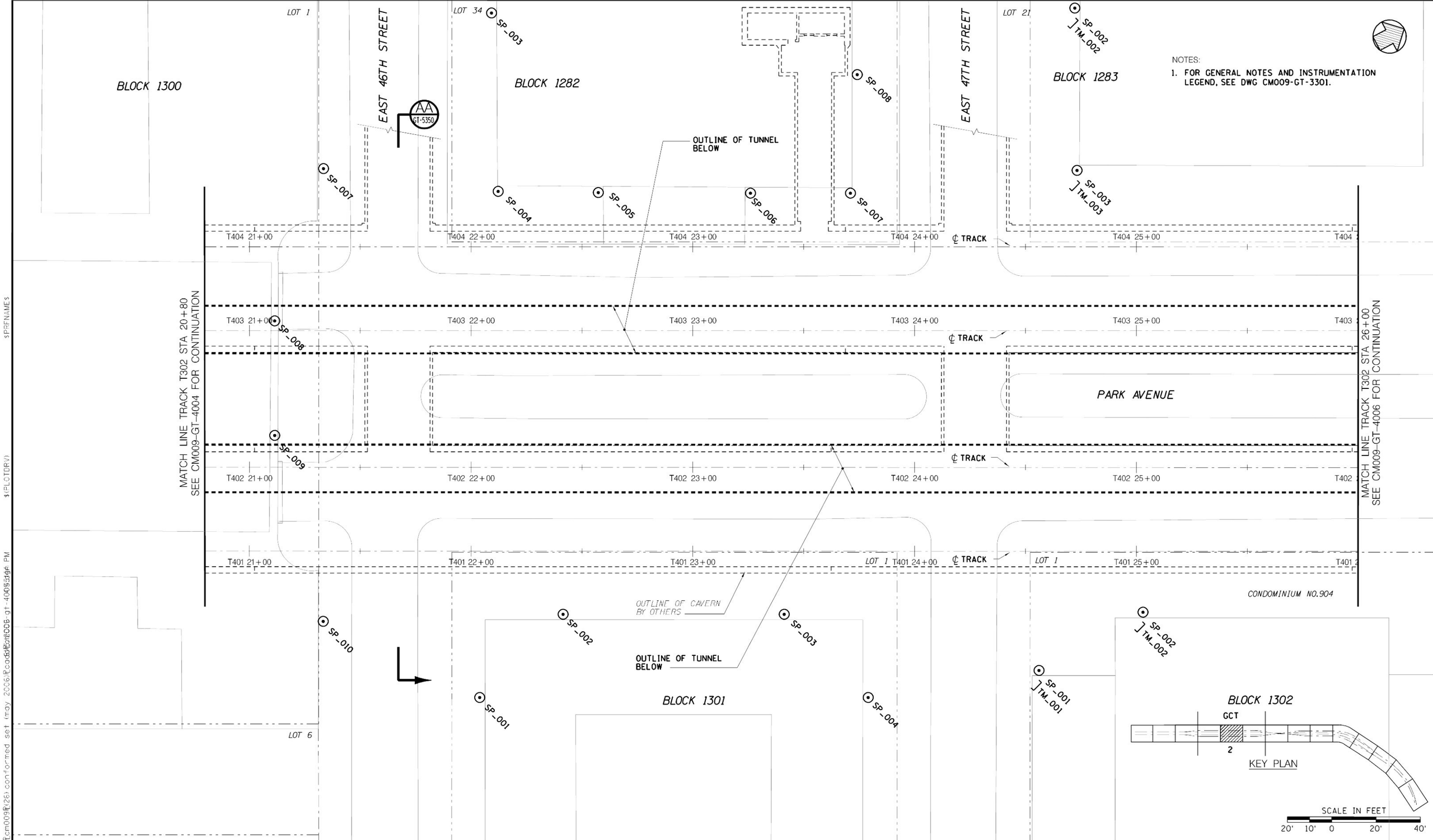
MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 4

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4004
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 200 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.

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52606	CONFORMED DRAWING	0

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MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 5

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4005
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 201 OF 276

$PRFNAME$
$(PLOTDRV)
$HEIGHT$
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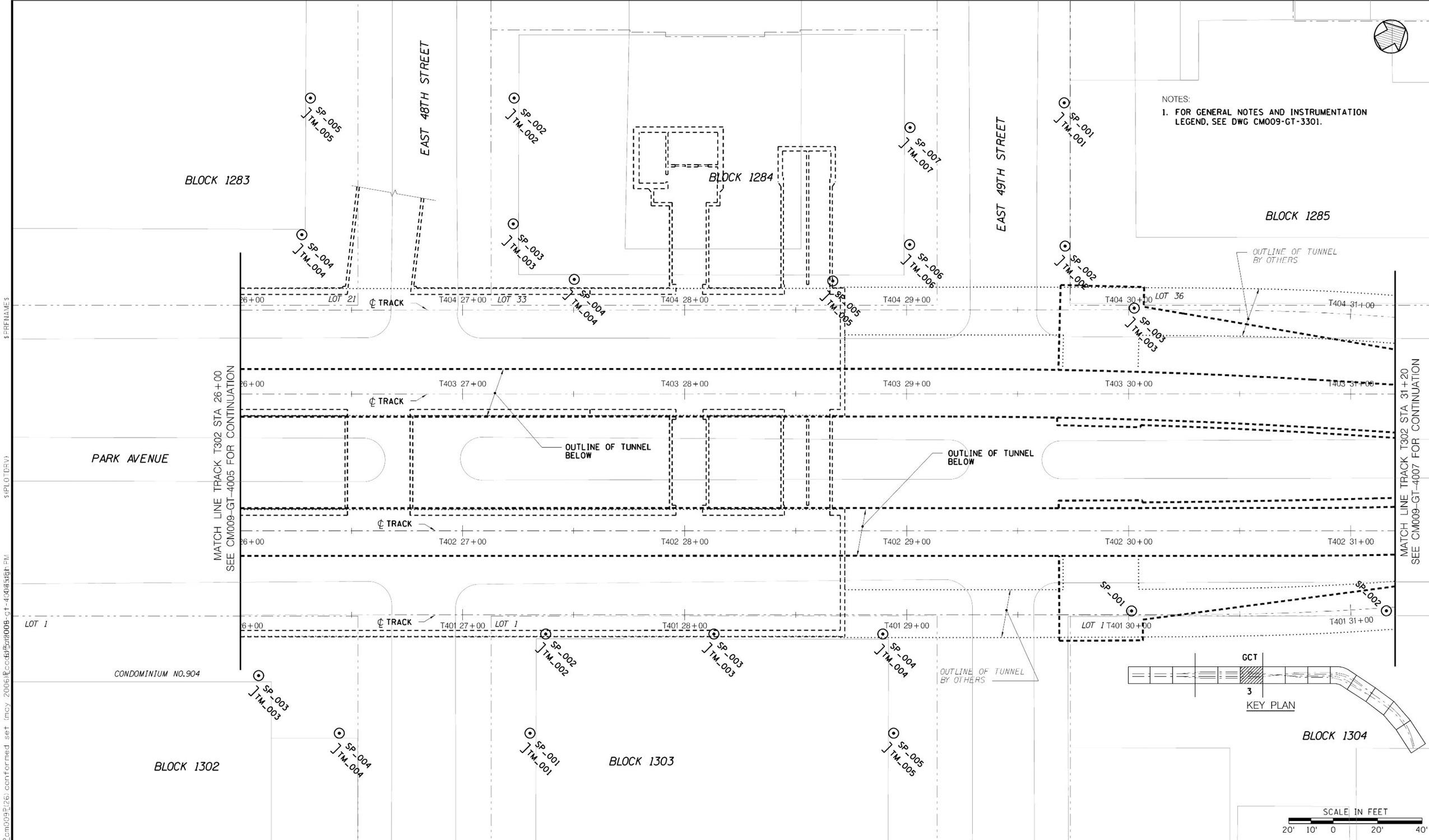

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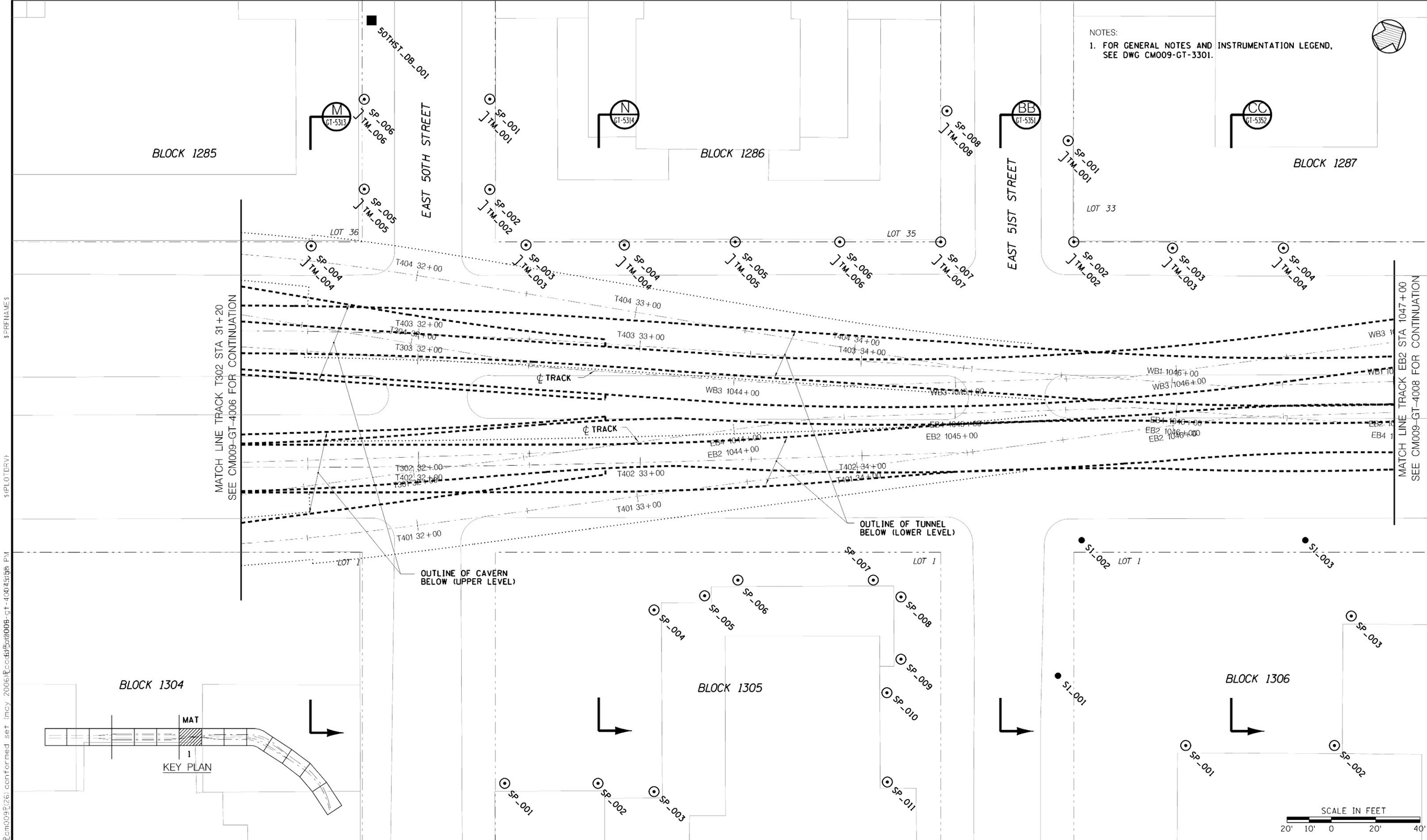
LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 6

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4006
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 202 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.



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5/26/06	CONFORMED DRAWING	0

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MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 7

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4007
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 203 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.

BLOCK 1287

BLOCK 1288

BLOCK 1289

BLOCK 1306

BLOCK 1307

BLOCK 1308

PARK AVENUE

EAST 52ND STREET

EAST 53RD STREET

LOT 33

LOT 36

LOT 1

Q GT-5317

R GT-5318

DD GT-5353

EE GT-5354

OUTLINE OF TUNNEL BELOW (LOWER LEVEL)

OUTLINE OF TUNNEL BELOW (UPPER LEVEL)

CROSS PASSAGE

DRAINAGE PUMP ROOM

℄ TRACK

WB3 1048+00

WB3 1049+00

WB3 1050+00

WB3 1051+00

WB3 1052+00

WB1 1048+00

WB1 1049+00

WB1 1050+00

WB1 1051+00

WB1 1052+00

EB2 1048+00

EB2 1049+00

EB2 1050+00

EB2 1051+00

EB2 1052+00

EB4 1048+00

EB4 1049+00

EB4 1050+00

EB4 1051+00

EB4 1052+00

MATCH LINE TRACK EB2 STA 1047+00
SEE CM009-GT-4007 FOR CONTINUATION

MATCH LINE TRACK EB2 STA 1052+20
SEE CM009-GT-4009 FOR CONTINUATION

SP_001 SP_002 SP_003 SP_004 SP_005 SP_006 SP_007 SP_008

TM_001 TM_002 TM_003 TM_005 TM_006 TM_007 TM_008

SM_002 SM_003 SM_004

SI_004

MAT

2

KEY PLAN

SCALE IN FEET

20' 10' 0 20' 40'

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5/26/06	CONFORMED DRAWING	0

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ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

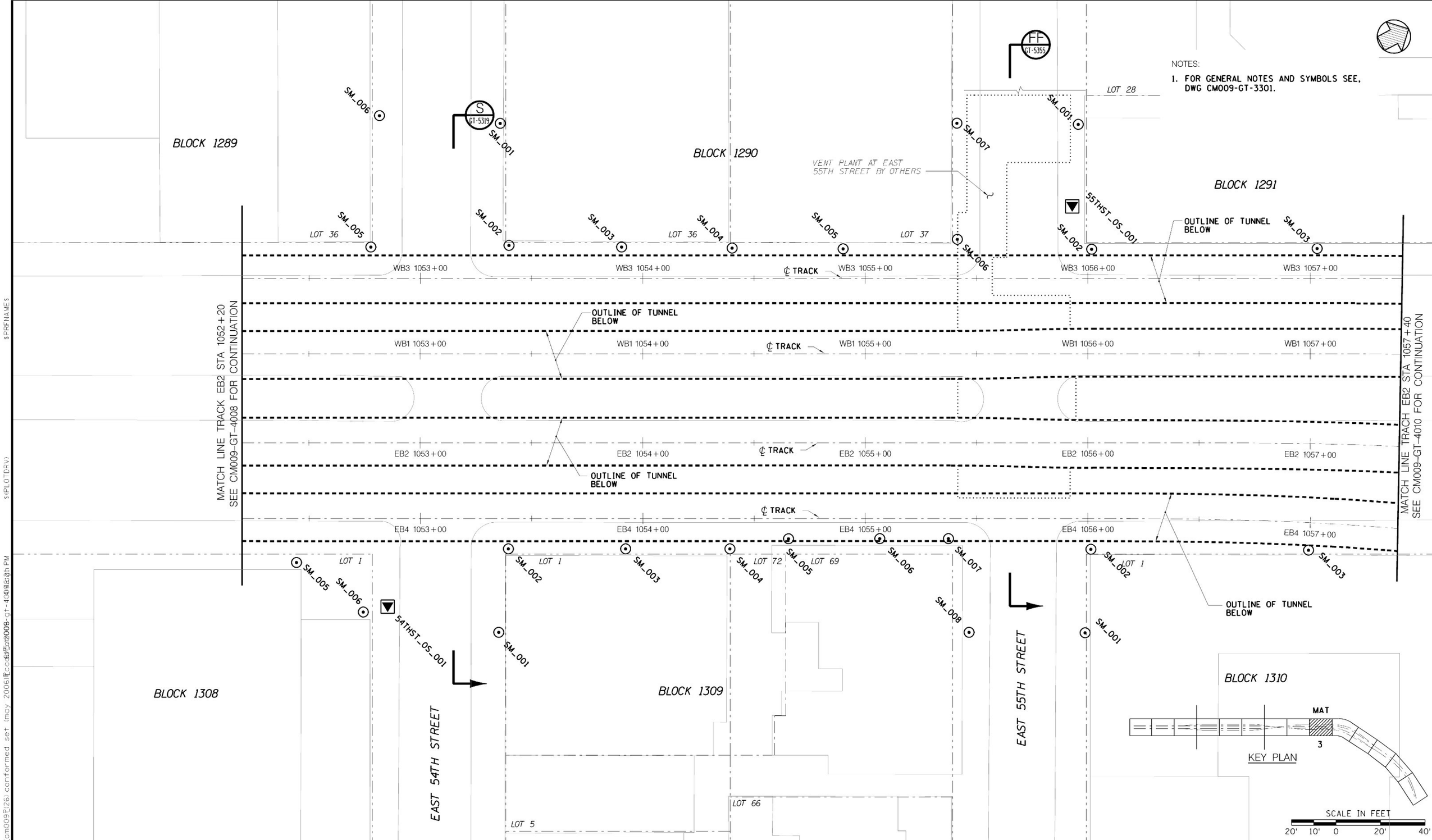
SHEET 8

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4008
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 204 OF 276

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS SEE, DWG CM009-GT-3301.



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ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 9

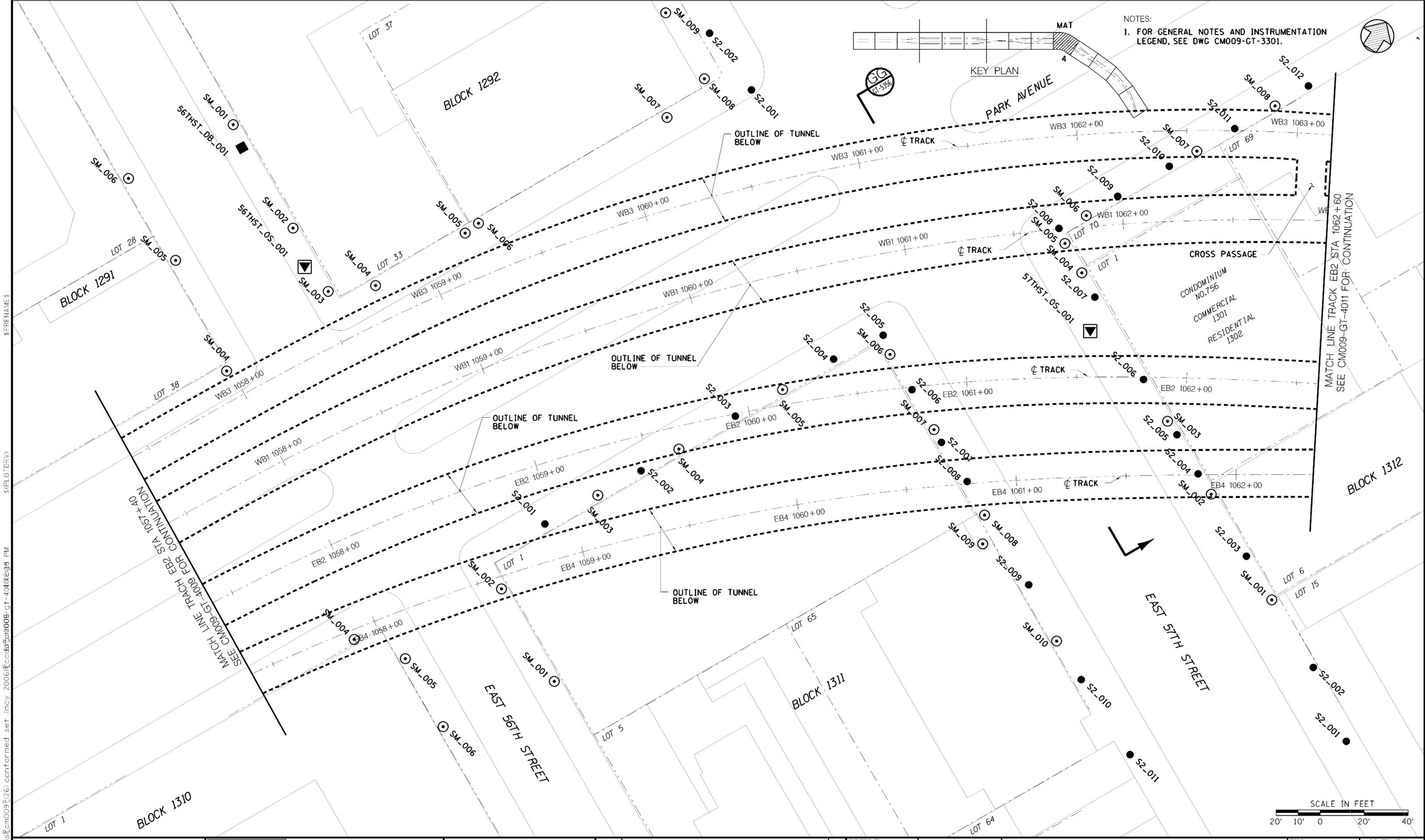
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4009
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 205 OF 276

$PRFNAMES
$PLOTDRV
$REF6$ y:\ccd submissions\cm009\26\conformed set (may 2006)\ccd\cm009-gt-4009.dwg 5/26/06 2:40 PM

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.



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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

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DRAWN BY: J. RICCARDI
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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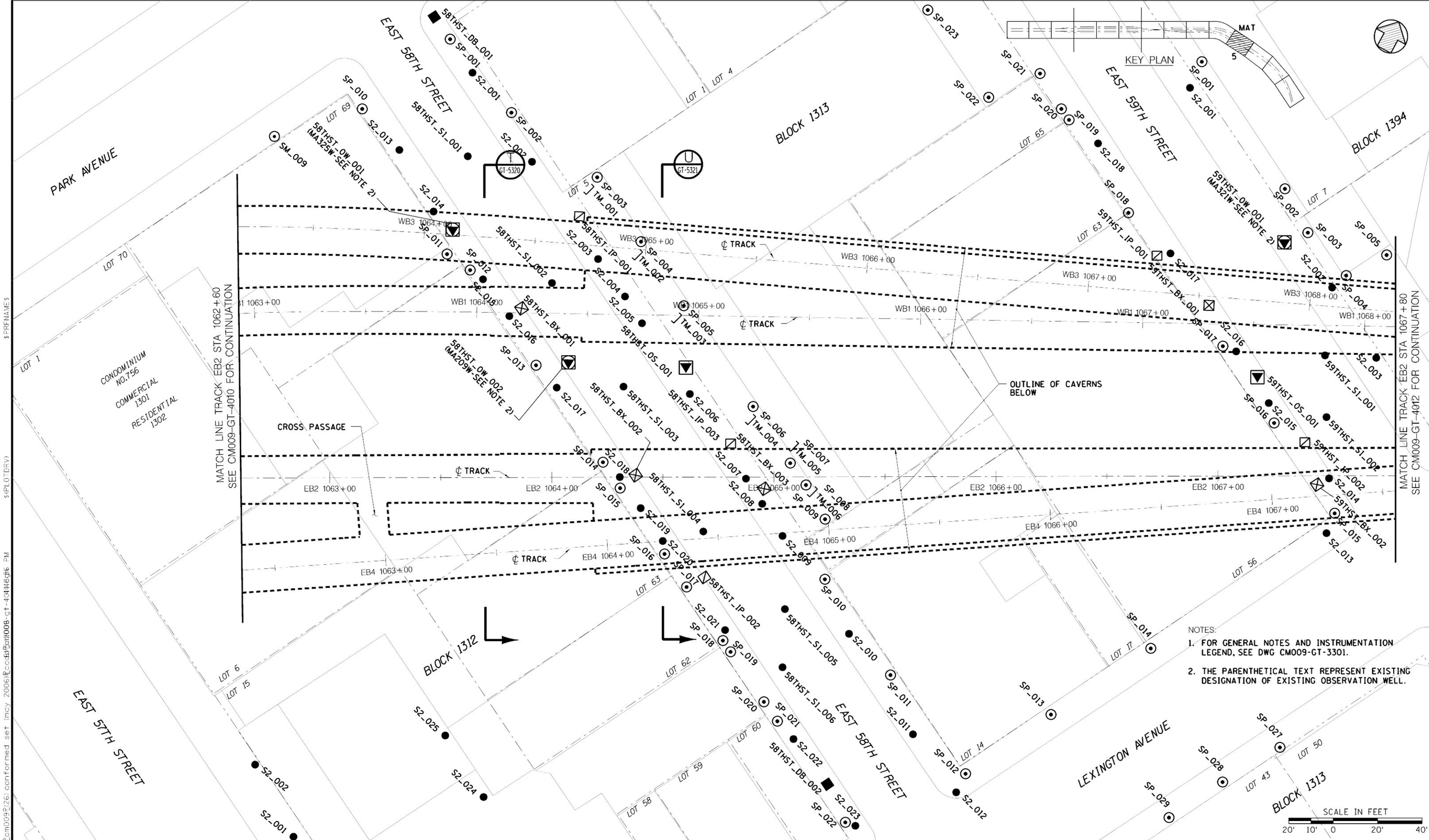
DATE:

MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 10

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4010
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 206 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. THE PARENTHETICAL TEXT REPRESENT EXISTING DESIGNATION OF EXISTING OBSERVATION WELL.

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MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 11

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4011
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 207 OF 276

NOTES:

1. FOR GENERAL NOTES AND SYMBOLS, SEE DWG CM009-GT-3301.

BLOCK 1394
BLOCK 1395
BLOCK 1313
BLOCK 1394
LEXINGTON AVENUE
EAST 59TH STREET
EAST 60TH STREET
LOT 7
LOT 13
LOT 17
LOT 20
LOT 21
LOT 23
LOT 24
LOT 25
LOT 26
LOT 29
LOT 43
LOT 44
LOT 45
LOT 46
LOT 47
LOT 50
LOT 56
LOT 120
LOT 145

GT-5322
GT-5323

OUTLINE OF TUNNEL BELOW
CROSS PASSAGES
CROSS FLUE
60THST_05_001
℄ TRACK
MATCH LINE TRACK EB2 STA 1067+80 SEE CM009-GT-4011 FOR CONTINUATION
MATCH LINE TRACK EB2 STA 1073+00 SEE CM009-GT-4013 FOR CONTINUATION

WB3 1069+00
WB1 1069+00
WB1 1070+00
WB1 1071+00
WB1 1072+00
WB1 1073+00
EB2 1068+00
EB4 1068+00
EB2 1069+00
EB2 1070+00
EB2 1071+00
EB2 1072+00

SP_005 SP_006 SP_007 SP_008 SP_009 SP_010 SP_011 SP_012 SP_013 SP_014 SP_015 SP_016 SP_017 SP_018 SP_024 SP_025 SP_026

SM_001 SM_002 SM_003 SM_004 SM_005 SM_006 SM_007 SM_008 SM_009 SM_010 SM_011 SM_012 SM_013 SM_014 SM_015 SM_016 SM_017 SM_018 SM_019 SM_020 SM_101 SM_102 SM_103 SM_104 SM_105 SM_106 SM_107 SM_108 SM_109 SM_110 SM_111 SM_112 SM_113 SM_115 SM_116 SM_117 SM_118 SM_119 SM_120 SM_121 SM_122 SM_123 SM_124

KEY PLAN
MAT
6

SCALE IN FEET
20' 10' 0 20' 40'

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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

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DATE:

MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 12

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4012
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 208 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. THE PARENTHETICAL TEXT REPRESENT EXISTING DESIGNATION OF EXISTING OBSERVATION WELL.

MATCH LINE TRACK EB2 STA 1073+00 SEE CM009-GT-4012 FOR CONTINUATION

MATCH LINE TRACK EB2 STA 1078+20 SEE CM009-GT-4014 FOR CONTINUATION

BLOCK 1395 · BLOCK 1396 · BLOCK 1397 · BLOCK 1416 · BLOCK 1417

EAST 61ST STREET · EAST 62ND STREET · THIRD AVENUE

℄ TRACK · OUTLINE OF TUNNEL BELOW · CROSS PASSAGE

61ST_OW_001 (MA-211W-SEE NOTE 2) · 61ST_DB_001

KEY PLAN

SCALE IN FEET 20' 10' 0 20' 40'

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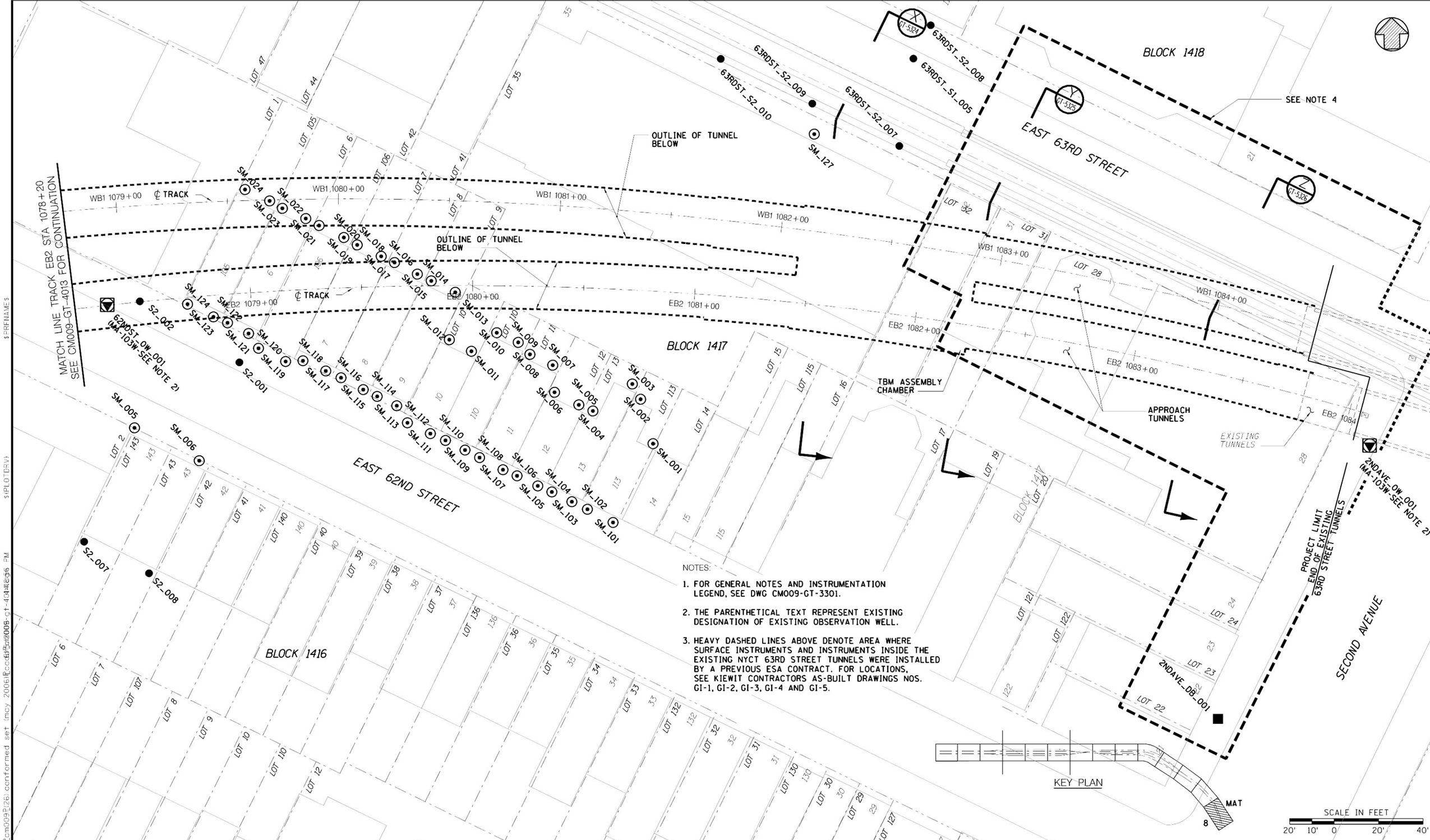
MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 13

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4013
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 209 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. THE PARENTHETICAL TEXT REPRESENT EXISTING DESIGNATION OF EXISTING OBSERVATION WELL.
3. HEAVY DASHED LINES ABOVE DENOTE AREA WHERE SURFACE INSTRUMENTS AND INSTRUMENTS INSIDE THE EXISTING NYCT 63RD STREET TUNNELS WERE INSTALLED BY A PREVIOUS ESA CONTRACT. FOR LOCATIONS, SEE KIEWIT CONTRACTORS AS-BUILT DRAWINGS NOS. GI-1, GI-2, GI-3, GI-4 AND GI-5.

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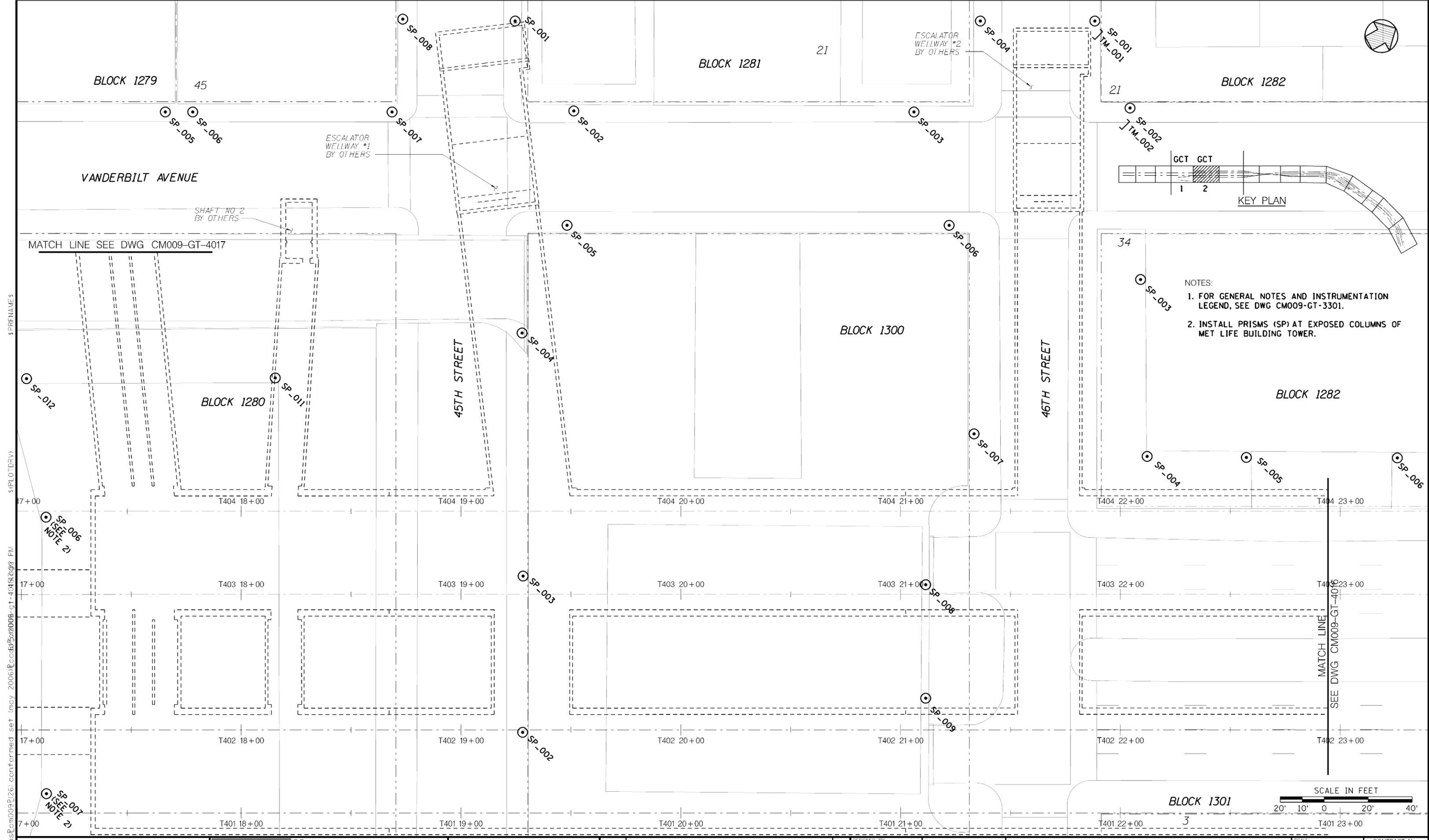
MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 14

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4014
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 210 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. INSTALL PRISMS (SP) AT EXPOSED COLUMNS OF MET LIFE BUILDING TOWER.

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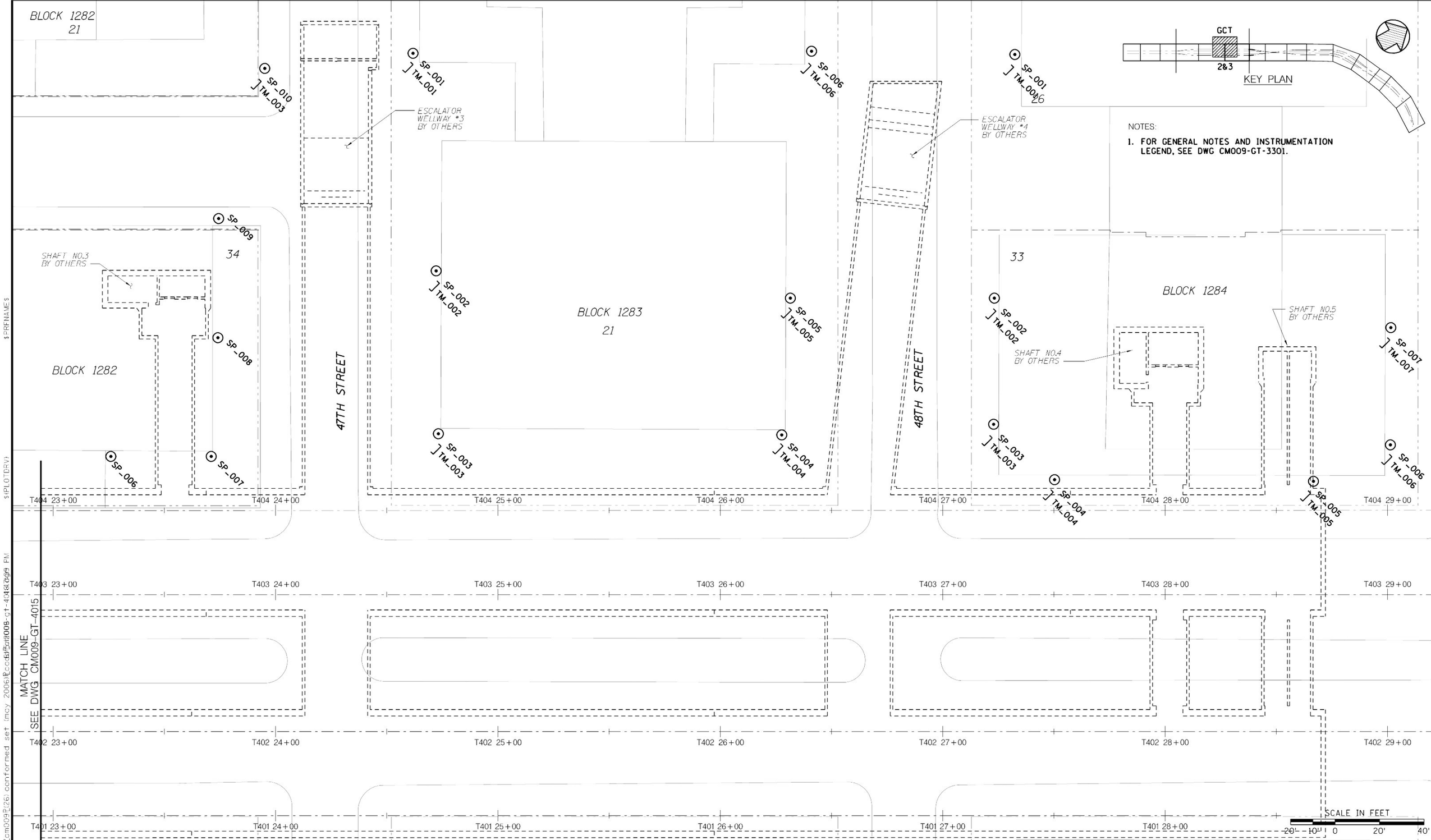
DATE:

MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 15

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4015
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 211 OF 276



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52606	CONFORMED DRAWING	0

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DATE:

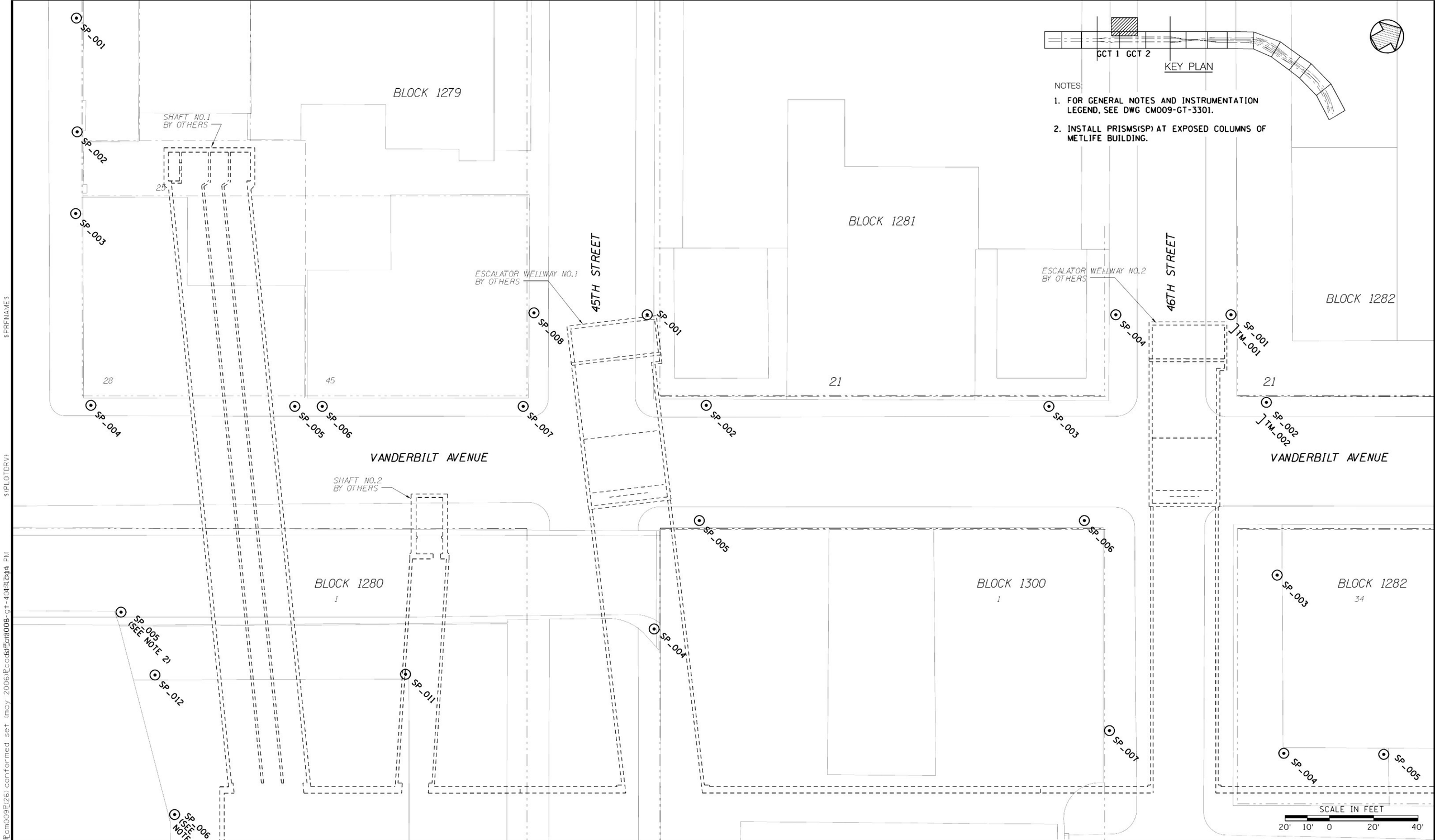
MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE

SHEET 16

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4016
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 212 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. INSTALL PRISMS(SP) AT EXPOSED COLUMNS OF METLIFE BUILDING.

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MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION SURFACE
SHEET 17

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-4017
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 213 OF 276

TILTMETER ON A VERTICAL SURFACE (TM)

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
GCT2	BL1302_TM_001	1302	1001	T301	24+56	54R		
GCT2	BL1302_TM_002	1302	1001	T301	25+03	28R		
GCT3	BL1302_TM_003	1302	1001	T301	26+08	27R		
GCT3	BL1302_TM_004	1302	1001	T301	26+44	54R		
GCT2	BL1283_TM_001	1283	21	T304	24+62	205L		
GCT2	BL1283_TM_002	1283	21	T304	24+67	107L		
GCT2	BL1283_TM_003	1283	21	T304	24+68	35L		
GCT3	BL1283_TM_004	1283	21	T304	26+28	34L		
GCT3	BL1283_TM_005	1283	21	T304	26+32	95L		
GCT3	BL1283_TM_006	1283	21	T304	26+43	205L		
GCT3	BL1284_TM_001	1284	26	T304	27+34	205L		
GCT3	BL1284_TM_002	1284	33	T304	27+24	93L		
GCT3	BL1284_TM_003	1284	33	T304	27+24	37L		
GCT3	BL1284_TM_004	1284	33	T304	27+50	12L		
GCT3	BL1284_TM_005	1284	33	T304	28+67	12L		
GCT3	BL1284_TM_006	1284	33	T304	29+02	30L		
GCT3	BL1284_TM_007	1284	33	T304	29+02	82L		
GCT3	BL1303_TM_001	1303	1	T301	27+31	54R	INTERIOR	
GCT3	BL1303_TM_002	1303	1	T301	27+37	7R	STRUCTURAL	AUTOMATIC
GCT3	BL1303_TM_003	1303	1	T301	28+08	7R	SURFACE	
GCT3	BL1303_TM_004	1303	1	T301	28+89	8R		
GCT3	BL1303_TM_005	1303	1	T301	28+95	54R		
GCT2	BL1282_TM_001	1282	34	T304	21+89	222L		
GCT2	BL1282_TM_002	1282	34	T304	22+04	183L		
GCT2	BL1282_TM_003	1282	34	T304	24+96	198L		
GCT3	BL1285_TM_001	1285	36	T304	29+59	99L		
GCT3	BL1285_TM_002	1285	36	T304	29+65	14L		
GCT3	BL1285_TM_003	1285	36	T304	30+03	39L		
MAT1	BL1285_TM_004	1285	36	T304	31+48	35L		
MAT1	BL1285_TM_005	1285	36	T304	31+67	65L		
MAT1	BL1285_TM_006	1285	36	T304	31+61	105L		
MAT1	BL1286_TM_001	1286	35	T304	32+17	115L		
MAT1	BL1286_TM_002	1286	35	T304	32+24	75L		
MAT1	BL1286_TM_003	1286	35	T304	32+43	52L		
MAT1	BL1286_TM_004	1286	35	T304	32+90	58L		
MAT1	BL1286_TM_005	1286	35	WB1	1033+47	63L		
MAT1	BL1286_TM_006	1286	35	WB1	1044+00	65L		
MAT1	BL1286_TM_007	1286	35	WB1	1044+50	62L		
MAT1	BL1286_TM_008	1286	35	WB1	1044+98	123L		
MAT1	BL1287_TM_001	1287	33	WB1	1045+58	106L		
MAT1	BL1287_TM_002	1287	33	WB1	1045+58	60L		
MAT1	BL1287_TM_003	1287	33	WB3	1046+05	55L		
MAT1	BL1287_TM_004	1287	33	WB3	1046+56	49L		
MAT2	BL1287_TM_005	1287	33	WB3	1047+09	41L		
MAT2	BL1287_TM_006	1287	33	WB3	1047+54	35L		
MAT2	BL1287_TM_007	1287	33	WB3	1047+65	51L		
MAT2	BL1287_TM_008	1287	33	WB3	1047+70	81L		

TILTMETER ON A VERTICAL SURFACE (TM) CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT2	BL1307_TM_001	1307	1	EB4	1048+63	133R		
MAT2	BL1307_TM_002	1307	1	EB4	1049+27	125R		
MAT2	BL1307_TM_003	1307	1	EB4	1049+96	118R		
MAT5	BL1313_TM_001	1313	5	WB3	1064+83	35L	INTERIOR	
MAT5	BL1313_TM_002	1313	5	WB3	1065+03	0	STRUCTURAL	AUTOMATIC
MAT5	BL1313_TM_003	1313	5	WB1	1065+00	0	SURFACE	
MAT5	BL1313_TM_004	1313	5	EB2	1064+96	35L		
MAT5	BL1313_TM_005	1313	5	EB2	1065+12	10L		
MAT5	BL1313_TM_006	1313	5	EB2	1065+20	0		

NOTES:

1. TILTMETERS (TM) TO BE INSTALLED AT LEVEL "B" INSIDE BUILDINGS.
2. WHERE BOTH PRISMS (SP) AND TILTMETERS (TM) ARE SHOWN ON A SPECIFIC BUILDING, THE PRISM SHALL BE INSTALLED AT LEVEL "A" AND THE TILTMETER AT LEVEL "B".

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DATE:	REVISIONS	No.
5-26-06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. CAPONE
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SCHEDULES
SURFACE
SHEET 1

SCALE: NONE
DRAWING NUMBER: CM009-GT-4101
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 214 OF 276

STRUCTURE MONITORING POINT (SM) ON VERTICAL MASONRY OR CONCRETE SURFACE ⊙

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT6	BL1395_SM_001	1395	25	EB2	1071+87	10L		
MAT6	BL1395_SM_002	1395		EB2	1071+79	23L		
MAT6	BL1395_SM_003	1395	24	WB1	1072+03	22R		
MAT6	BL1395_SM_004	1395	23	WB1	1071+98	15R		
MAT6	BL1395_SM_005	1395		WB1	1071+91	5R		
MAT6	BL1395_SM_006	1395	21	WB1	1071+87	0		
MAT6	BL1395_SM_007	1395		WB1	1071+79	12L		
MAT6	BL1395_SM_008	1395		WB1	1071+76	17L		
MAT6	BL1395_SM_009	1395		WB1	1071+68	29L		
MAT6	BL1395_SM_010	1395	120	WB1	1071+64	34L		
MAT6	BL1395_SM_011	1395		WB1	1071+56	45L		
MAT6	BL1395_SM_012	1395	50	WB1	1072+63	20L		
MAT6	BL1395_SM_013	1395		WB1	1072+99	4L		
MAT6	BL1395_SM_014	1395	47	EB2	1072+53	35L		
MAT6	BL1395_SM_015	1395		EB2	1072+62	22L		
MAT6	BL1395_SM_016	1395	46	EB2	1072+66	17L		
MAT6	BL1395_SM_017	1395		EB2	1072+85	15L		
MAT6	BL1395_SM_018	1395	145	EB2	1072+89	9L		
MAT6	BL1395_SM_019	1395		EB2	1072+94	0		
MAT6	BL1395_SM_020	1395	45	EB2	1072+97	3R		
MAT7	BL1395_SM_021	1395		EB2	1073+08	15R		
MAT7	BL1395_SM_022	1395	44	EB2	1073+11	23R		
MAT7	BL1395_SM_023	1395		EB2	1073+08	36R		
MAT7	BL1395_SM_024	1395	43	EB2	1073+23	33R		
MAT7	BL1395_SM_025	1395		EB2	1073+32	44R		
MAT7	BL1395_SM_026	1395	1001/2	EB2	1073+28	55R		
MAT7	BL1395_SM_027	1395		EB2	1073+50	81R		
MAT7	BL1395_SM_028	1395	41	EB2	1072+63	80R		
MAT7	BL1395_SM_029	1395		EB2	1072+56	104R		
							SURFACE	MANUAL
MAT7	BL1396_SM_001	1396	26	WB1	1074+66	70L		
MAT7	BL1396_SM_002	1396	28	WB1	1074+72	65L		
MAT7	BL1396_SM_003	1396		WB1	1074+81	55L		
MAT7	BL1396_SM_004	1396	29	WB1	1074+86	50L		
MAT7	BL1396_SM_005	1396		WB1	1074+95	40L		
MAT7	BL1396_SM_006	1396	30	WB1	1075+00	35L		
MAT7	BL1396_SM_007	1396		WB1	1075+11	25L		
MAT7	BL1396_SM_008	1396	31	WB1	1075+09	15L		
MAT7	BL1396_SM_009	1396		WB1	1075+18	5L		
MAT7	BL1396_SM_010	1396	131	WB1	1075+22	0		
MAT7	BL1396_SM_011	1396		WB1	1075+35	11R		
MAT7	BL1396_SM_012	1396	42	WB1	1075+78	70L		
MAT7	BL1396_SM_013	1396	43	WB1	1075+62	85L		
MAT8	BL1417_SM_001	1417	113	EB2	1080+87	68R		
MAT8	BL1417_SM_002	1417	-	EB2	1080+79	49R		
MAT8	BL1417_SM_003	1417	13	EB2	1080+74	42R		
MAT8	BL1417_SM_004	1417	-	EB2	1080+57	55R		
MAT8	BL1417_SM_005	1417	12	EB2	1080+51	52R		
MAT8	BL1417_SM_006	1417	-	EB2	1080+39	47R		
MAT8	BL1417_SM_007	1417	11	EB2	1080+37	35R		
MAT8	BL1417_SM_008	1417	-	EB2	1080+28	30R		
MAT8	BL1417_SM_009	1417	110	EB2	1080+22	25R		
MAT8	BL1417_SM_010	1417	-	EB2	1080+11	20R		

STRUCTURE MONITORING POINT (SM) ON VERTICAL MASONRY OR CONCRETE SURFACE CONTINUED ⊙

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT8	BL1417_SM_011	1417	10	EB2	1080+00	30R		
MAT8	BL1417_SM_012	1417	-	EB2	1079+92	25R		
MAT8	BL1417_SM_013	1417	9	EB2	1079+90	3R		
MAT8	BL1417_SM_014	1417	-	EB2	1079+82	3L		
MAT8	BL1417_SM_015	1417	8	EB2	1079+75	7L		
MAT8	BL1417_SM_016	1417	-	EB2	1079+64	10L	SURFACE	MANUAL
MAT8	BL1417_SM_017	1417	7	EB2	1079+58	14L		
MAT8	BL1417_SM_018	1417	-	EB2	1079+49	19L		
MAT8	BL1417_SM_019	1417	106	EB2	1079+42	23L		
MAT8	BL1417_SM_020	1417	-	WB1	1079+91	10R		
MAT8	BL1417_SM_021	1417	6	WB1	1079+85	8R		
MAT8	BL1417_SM_022	1417	-	WB1	1079+75	5R		
MAT8	BL1417_SM_023	1417	105	WB1	1079+70	0		
MAT8	BL1417_SM_024	1417	-	WB1	1079+58	5L		
TLT2	PAVSOP_SM_001			L302	7+05	7L		
TLT2	PAVSOP_SM_002			L302	9+32	8L		
TLT2	PAVSOP_SM_003			L302	10+50	8L		
TLT2	PAVSOP_SM_004			L302	11+46	8L		
TLT2	PAVSOP_SM_005			L303	11+46	7R		
TLT2	PAVSOP_SM_006			L303	10+50	7R		
TLT2	PAVSOP_SM_007			L303	9+32	5R		
TLT2	PAVSOP_SM_008			L303	7+05	5R		
TLT2	PAVSOP_SM_101	-	-	L303	08+47	13R		
TLT2	PAVSOP_SM_102	-	-	L302	08+89	7L		
TLT2	PAVSOP_SM_103	-	-	L303	09+87	13R		
TLT2	PAVSOP_SM_104	-	-	L302	10+05	9L		

NOTE:

1. (SM) MONITORING POINTS REFER TO STRUCTURE MONITORING POINTS TO BE INSTALLED ON BUILDINGS ON A VERTICAL SURFACE.

IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY UNLESS THAT PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL. THE LICENSED PROFESSIONAL SHALL AFFIX TO THIS DOCUMENT THE SEAL AND THE NOTATION "ALTERED BY", FOLLOWED BY THE AUTHORIZED SIGNATURE AND THE DATE OF THE ALTERATION."

DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. CAPONE
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SCHEDULES
SURFACE
SHEET 2

SCALE: NONE
DRAWING NUMBER: CM009-GT-4102
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 215 OF 276

STRUCTURE MONITORING POINT (SM) ON VERTICAL MASONRY OR CONCRETE SURFACE ⊙ CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
TLT1	BLK867_SM_001	867	42	L303	0+13	37L		
TLT1	BLK867_SM_002	867	42	L303	0+20	105L		
TLT1	BLK868_SM_001	868	36	L303	0+74	103L		
TLT1	BLK868_SM_002	868	36	L303	0+78	37L		
TLT1	BLK868_SM_003	868	36	L303	1+24	37L		
TLT1	BLK868_SM_004	868	36	L303	1+32	37L		
TLT1	BLK868_SM_005	868	36	L303	1+50	37L		
TLT1	BLK868_SM_006	868	36	L303	1+65	42L		
TLT1	BLK868_SM_007	868	36	L303	2+22	42L		
TLT1	BLK868_SM_008	868	36	L303	2+66	42L		
TLT1	BLK868_SM_009	868	36	L303	2+79	103L		
TLT1	BLK869_SM_001	869	34	L303	03+32	100L		
TLT1	BLK869_SM_002	869	34	L303	03+40	37L		
TLT1	BLK869_SM_003	869	34	L303	03+93	37L		
TLT1	BLK869_SM_004	869	34	L303	04+78	37L		
TLT2	BLK869_SM_005	869	34	L303	05+33	37L		
TLT2	BLK869_SM_006	869	34	L303	05+36	98L		
TLT1	BLK894_SM_001	894	80	L302	02+82	107R		
TLT1	BLK894_SM_002	894	80	L302	02+75	31R		
TLT1	BLK894_SM_003	894	80	L302	02+07	31R		
TLT1	BLK894_SM_004	894	1901-1947	L302	01+97	34R		
TLT1	BLK894_SM_005	894	1901-1947	L302	01+39	34R	SURFACE	MANUAL
TLT1	BLK894_SM_006	894	1	L302	01+33	34R		
TLT1	BLK894_SM_007	894	1	L302	00+82	34R		
TLT1	BLK894_SM_008	894	1	L302	00+75	87R		
TLT1	BLK895_SM_001	895	1	L302	03+33	100R		
TLT1	BLK895_SM_002	895	1	L302	03+40	37R		
TLT1	BLK895_SM_003	895	1	L302	04+26	37R		
TLT2	BLK895_SM_004	895	1	L302	05+02	37R		
TLT2	BLK895_SM_005	895	1	L302	05+36	97R		
TLT2	BL1275_SM_001	1275	27	L303	05+91	90L		
TLT2	BL1275_SM_002	1275	27	L303	05+96	38L		
TLT2	BL1275_SM_003	1275	27	L303	07+05	38L		
TLT2	BL1275_SM_004	1275	27	L303	07+87	38L		
TLT2	BL1275_SM_005	1275	27	L303	07+89	94L		
TLT2	BL1276_SM_001	1276	33	L303	08+49	88L		
TLT2	BL1276_SM_002	1276	33	L303	08+56	37L		
TLT2	BL1276_SM_003	1276	33	L303	09+63	37L		
TLT2	BL1276_SM_004	1276	33	L303	10+53	58L		
TLT2	BL1276_SM_005	1276	33	L303	10+53	122L		
TLT2	BL1295_SM_001	1295	1	L302	06+22	147R		
TLT2	BL1295_SM_002	1295	1	L302	06+42	126R		
TLT2	BL1295_SM_003	1295	1	L302	06+63	105R		
TLT2	BL1295_SM_004	1295	1	L302	06+82	85R		
TLT2	BL1295_SM_005	1295	1	L302	07+05	36R		
TLT2	BL1295_SM_006	1295	1	L302	07+90	36R		
TLT2	BL1295_SM_007	1295	1	L302	07+90	110R		
TLT2	BL1296_SM_001	1296	1	L302	08+50	102R		
TLT2	BL1296_SM_002	1296	1	L302	08+50	37R		
TLT2	BL1296_SM_003	1296	1	L302	09+15	35R		
TLT2	BL1296_SM_004	1296	1	L302	09+80	35R		

STRUCTURE MONITORING POINT (SM) ON VERTICAL MASONRY OR CONCRETE SURFACE ⊙ CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
TLT2	BL1296_SM_005	1296	1	L302	10+25	35R		
TLT3	BL1296_SM_006	1296	1	L302	10+50	45R		
TLT3	BL1296_SM_007	1296	1	L302	10+50	105R		
MAT2	BL1289_SM_003	1289	36	WB3	1051+48	15L		
MAT2	BL1289_SM_004	1289	36	WB3	1051+84	15L		
MAT3	BL1289_SM_005	1289	36	WB3	1052+77	14L		
MAT3	BL1289_SM_006	1289	36	WB3	1052+81	73L		
MAT2	BL1308_SM_002	1308	1101	EB4	1051+50	42R		
MAT2	BL1308_SM_003	1308	1101	EB4	1051+50	20R		
MAT2	BL1308_SM_004	1308	1101	EB4	1052+00	20R		
MAT3	BL1308_SM_005	1308	1101	EB4	1052+44	20R		
MAT3	BL1308_SM_006	1308	1101	EB4	1052+74	42R		
MAT3	BL1290_SM_001	1290	36	WB3	1053+37	70L		
MAT3	BL1290_SM_002	1290	36	WB3	1053+40	14L		
MAT3	BL1290_SM_003	1290	36	WB3	1053+91	12L		
MAT3	BL1290_SM_004	1290	37	WB3	1054+40	12L		
MAT3	BL1290_SM_005	1290	37	WB3	1054+91	12L		
MAT3	BL1290_SM_006	1290	37	WB3	1055+42	17L		
MAT3	BL1290_SM_007	1290	37	WB3	1055+42	70L		
MAT3	BL1291_SM_001	1291	38	WB3	1055+95	69L		
MAT3	BL1291_SM_002	1291	38	WB3	1056+01	13L		
MAT3	BL1291_SM_003	1291	38	WB3	1057+03	13L	SURFACE	MANUAL
MAT4	BL1291_SM_004	1291	38	WB3	1058+00	12L		
MAT4	BL1291_SM_005	1291	38	WB3	1058+00	68L		
MAT4	BL1291_SM_006	1291	38	WB3	1058+00	111L		
MAT3	BL1309_SM_001	1309	1	EB4	1053+35	52R		
MAT3	BL1309_SM_002	1309	1	EB4	1053+39	14R		
MAT3	BL1309_SM_003	1309	1	EB4	1053+92	12R		
MAT3	BL1309_SM_004	1309	72	EB4	1054+39	13R		
MAT3	BL1309_SM_005	1309	69	EB4	1054+65	12R		
MAT3	BL1309_SM_006	1309	69	EB4	1055+07	14R		
MAT3	BL1309_SM_007	1309	69	EB4	1055+37	15R		
MAT3	BL1309_SM_008	1309	69	EB4	1055+47	51R		
MAT3	BL1310_SM_001	1310	1	EB4	1055+95	50R		
MAT3	BL1310_SM_002	1310	1	EB4	1056+03	13R		
MAT3	BL1310_SM_003	1310	1	EB4	1057+00	11R		
MAT3	BL1310_SM_004	1310	1	EB4	1057+95	14R		
MAT4	BL1310_SM_005	1310	1	EB4	1058+08	21R		
MAT4	BL1310_SM_006	1310	1	EB4	1058+14	55R		
MAT4	BL1292_SM_001	1292	33	WB3	1058+50	110L		
MAT4	BL1292_SM_002	1292	33	WB3	1058+52	55L		
MAT4	BL1292_SM_003	1292	33	WB3	1058+54	23L		
MAT4	BL1292_SM_004	1292	33	WB3	1058+75	15L		
MAT4	BL1292_SM_005	1292	33	WB3	1059+21	22L		
MAT4	BL1292_SM_006	1292	37	WB3	1059+28	23L		
MAT4	BL1292_SM_007	1292	37	WB3	1060+21	40L		
MAT4	BL1292_SM_008	1292	37	WB3	1060+41	53L		
MAT4	BL1292_SM_009	1292	37	WB3	1060+32	85L		
MAT4	BL1311_SM_001	1311	1	EB4	1058+69	53R		
MAT4	BL1311_SM_002	1311	1	EB4	1058+59	5R		
MAT4	BL1311_SM_003	1311	1	EB4	1059+12	23L		
MAT4	BL1311_SM_004	1311	1	EB4	1059+52	35L		
MAT4	BL1311_SM_005	1311	1	EB2	1060+22	5L		

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DATE	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. CAPONE
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SCHEDULES SURFACE
SHEET 3

SCALE: NONE
DRAWING NUMBER: CM009-GT-4103
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 216 OF 276

STRUCTURE MONITORING POINT (SM) ON VERTICAL MASONRY OR CONCRETE SURFACE ⊙ CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT4	BL1311_SM_006	1311	1	EB2	1060+70	17L		
MAT4	BL1311_SM_007	1311	1	EB4	1060+59	26L		
MAT4	BL1311_SM_008	1311	65	EB4	1060+84	15R		
MAT4	BL1311_SM_009	1311	65	EB4	1060+82	28R		
MAT4	BL1311_SM_010	1311	65	EB4	1061+15	84R		
MAT4	BL1312_SM_001	1312	1001	EB4	1062+18	57R		
MAT4	BL1312_SM_002	1312	1001	EB4	1061+93	17R		
MAT4	BL1312_SM_003	1312	1301	EB4	1061+68	24L		
MAT4	BL1312_SM_004	1312	1301	WB1	1061+67	7R		
MAT4	BL1312_SM_005	1312	70	WB1	1061+79	21R		
MAT4	BL1312_SM_006	1312	70	WB1	1061+84	7R		
MAT4	BL1312_SM_007	1312	70	WB3	1062+54	8R		
MAT4	BL1312_SM_008	1312	69	WB3	1062+89	12L		
MAT5	BL1312_SM_009	1312	69	WB3	1063+31	41L		
MAT6	BL1394_SM_019	1394	23	EB2	1071+00	66R		
MAT6	BL1394_SM_020	1394	23	EB2	1071+33	114R		
MAT6	BL1395_SM_101	1395	26	EB2	1071+80	88R		
MAT6	BL1395_SM_102	1395	26	EB2	1071+62	61R		
MAT6	BL1395_SM_103	1395	26	EB2	1071+57	54R		
MAT6	BL1395_SM_104	1395	26	EB2	1071+40	40R		
MAT6	BL1395_SM_105	1395	25	EB2	1071+35	23R		
MAT6	BL1395_SM_106	1395	25	EB2	1071+29	11R	SURFACE	MANUAL
MAT6	BL1395_SM_107	1395	24	EB2	1071+25	7R		
MAT6	BL1395_SM_108	1395	24	EB2	1071+17	5L		
MAT6	BL1395_SM_109	1395	23	EB2	1071+14	10L		
MAT6	BL1395_SM_110	1395	23	EB2	1071+05	22L		
MAT6	BL1395_SM_111	1395	22	EB2	1071+05	30L		
MAT6	BL1395_SM_112	1395	22	EB2	1070+98	40L		
MAT6	BL1395_SM_113	1395	21	WB1	1071+29	15R		
MAT6	BL1395_SM_114	1395	21	WB1	1071+22	5R		
MAT6	BL1395_SM_115	1395	120	WB1	1071+17	0		
MAT6	BL1395_SM_116	1395	120	WB1	1071+10	12L		
MAT6	BL1395_SM_117	1395	20	WB1	1071+03	15L		
MAT6	BL1395_SM_118	1395	20	WB1	1070+92	38L		
MAT6	BL1395_SM_119	1395	20	WB1	1071+70	94L		
MAT6	BL1395_SM_120	1395	50	WB1	1072+23	132L		
MAT6	BL1395_SM_121	1395	50	WB1	1072+65	138L		
MAT6	BL1395_SM_122	1395	50	WB1	1073+12	77L		
MAT6	BL1395_SM_123	1395	50	WB1	1073+18	58L		
MAT6	BL1395_SM_124	1395	50	WB1	1073+34	36L		
MAT7	BL1395_SM_125	1395	47	WB1	1073+42	19L		
MAT7	BL1395_SM_126	1395	47	WB1	1073+55	8L		
MAT7	BL1395_SM_127	1395	46	WB1	1073+59	3L		
MAT7	BL1395_SM_128	1395	46	WB1	1073+68	8R		
MAT7	BL1395_SM_129	1395	145	WB1	1073+72	18R		
MAT7	BL1395_SM_130	1395	145	WB1	1073+78	22R		
MAT7	BL1395_SM_131	1395	45	WB1	1073+83	26R		
MAT7	BL1395_SM_132	1395	45	EB2	1073+52	20L		
MAT7	BL1395_SM_133	1395	44	EB2	1073+56	15L		
MAT7	BL1395_SM_134	1395	44	EB2	1073+64	6L		
MAT7	BL1395_SM_135	1395	43	EB2	1073+67	0		
MAT7	BL1395_SM_136	1395	43	EB2	1073+76	10R		
MAT7	BL1395_SM_137	1395	1001	EB2	1073+81	15R		
MAT7	BL1395_SM_138	1395	1001	EB2	1074+01	39R		
MAT7	BL1395_SM_139	1395	41	EB2	1074+10	39R		
MAT7	BL1395_SM_140	1395	41	EB2	1074+21	50R		
MAT7	BL1395_SM_141	1395	40	EB2	1074+53	85R		

STRUCTURE MONITORING POINT (SM) ON VERTICAL MASONRY OR CONCRETE SURFACE ⊙ CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT7	BL1396_SM_101	1396	26	WB1	1073+98	55L		
MAT7	BL1396_SM_102	1396	26	WB1	1074+20	27L		
MAT7	BL1396_SM_103	1396	28	WB1	1074+25	23L		
MAT7	BL1396_SM_104	1396	28	WB1	1074+34	13L		
MAT7	BL1396_SM_105	1396	29	WB1	1074+39	8L		
MAT7	BL1396_SM_106	1396	29	WB1	1074+47	3R		
MAT7	BL1396_SM_107	1396	30	WB1	1074+54	8R		
MAT7	BL1396_SM_108	1396	30	WB1	1074+64	19R		
MAT7	BL1396_SM_109	1396	31	WB1	1074+69	24R		
MAT7	BL1396_SM_110	1396	31	EB2	1074+35	22L		
MAT7	BL1396_SM_111	1396	131	EB2	1074+40	17L		
MAT7	BL1396_SM_112	1396	131	EB2	1074+50	5L		
MAT7	BL1396_SM_113	1396	33	EB2	1075+22	10R		
MAT7	BL1396_SM_114	1396	33	EB2	1075+65	24R		
MAT7	BL1396_SM_115	1396	33	EB2	1075+75	0		
MAT7	BL1396_SM_116	1396	33	WB1	1076+50	20R		
MAT7	BL1396_SM_117	1396	33	WB1	1076+75	3R		
MAT7	BL1396_SM_118	1396	33	WB1	1076+55	32L		
MAT7	BL1396_SM_119	1396	33	WB1	1075+57	2R		
MAT7	BL1396_SM_120	1396	33	WB1	1075+70	16L		
MAT7	BL1416_SM_001	1416	2	EB2	1076+78	99R		
MAT7	BL1416_SM_002	1416	2	EB2	1077+10	61R		
MAT7	BL1416_SM_003	1416	2	EB2	1077+43	19R		
MAT7	BL1416_SM_004	1416	2	EB2	1077+98	55R	SURFACE	MANUAL
MAT8	BL1416_SM_005	1416	2	EB2	1078+40	55L		
MAT8	BL1416_SM_006	1416	143	EB2	1078+57	66L		
MAT8	BL1417_SM_101	1417	113	EB2	1080+70	105R		
MAT8	BL1417_SM_102	1417	113	EB2	1080+57	100R		
MAT8	BL1417_SM_103	1417	13	EB2	1080+49	97R		
MAT8	BL1417_SM_104	1417	13	EB2	1080+39	92R		
MAT8	BL1417_SM_105	1417	12	EB2	1080+32	90R		
MAT8	BL1417_SM_106	1417	12	EB2	1080+21	86R		
MAT8	BL1417_SM_107	1417	11	EB2	1080+14	83R		
MAT8	BL1417_SM_108	1417	11	EB2	1080+04	78R		
MAT8	BL1417_SM_109	1417	110	EB2	1079+98	74R		
MAT8	BL1417_SM_110	1417	110	EB2	1079+89	70R		
MAT8	BL1417_SM_111	1417	10	EB2	1079+82	67R		
MAT8	BL1417_SM_112	1417	10	EB2	1079+71	61R		
MAT8	BL1417_SM_113	1417	9	EB2	1079+65	54R		
MAT8	BL1417_SM_114	1417	9	EB2	1079+57	49R		
MAT8	BL1417_SM_115	1417	8	EB2	1079+51	46R		
MAT8	BL1417_SM_116	1417	8	EB2	1079+40	40R		
MAT8	BL1417_SM_117	1417	7	EB2	1079+33	38R		
MAT8	BL1417_SM_118	1417	7	EB2	1079+23	32R		
MAT8	BL1417_SM_119	1417	106	EB2	1079+14	32R		
MAT8	BL1417_SM_120	1417	106	EB2	1079+03	25R		
MAT8	BL1417_SM_121	1417	6	EB2	1078+98	18R		
MAT8	BL1417_SM_122	1417	6	EB2	1078+89	13R		
MAT8	BL1417_SM_123	1417	105	EB2	1079+82	10R		
MAT8	BL1417_SM_124	1417	105	EB2	1078+70	3R		
MAT7	BL1417_SM_125	1417	1	EB2	1078+67	15R		
MAT7	BL1417_SM_126	1417	1	EB2	1078+24	15L		
MAT8	BL1417_SM_127	1417	35	WB1	1082+09	43L		

$PRFNAME$
$PLOTDRV$
$HEDS$
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DATE	REVISIONS	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. CAPONE
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SCHEDULES SURFACE
SHEET 4

SCALE: NONE
DRAWING NUMBER: CM009-GT-4104
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 217 OF 276

PRISM FOR STRUCTURE MONITORING POINT (SP)

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
GCT2	BL1279_SP_001	1279	25	T404	16+66	357L		
GCT2	BL1279_SP_002	1279	25	T404	16+66	305L		
GCT2	BL1279_SP_003	1279	28	T404	16+66	270L		
GCT2	BL1279_SP_004	1279	28	T404	16+73	180L		
GCT1	BL1279_SP_005	1279	28	T404	17+66	180L		
GCT1	BL1279_SP_006	1279	45	T404	17+79	180L		
GCT1	BL1279_SP_007	1279	45	T404	18+67	180L		
GCT1	BL1279_SP_008	1279	45	T404	18+72	223L		
TLT3	GCTFAC_SP_001	1280	10	L302	11+97	94R		
TLT3	GCTFAC_SP_002	1280	10	L302	11+97	38R		
TLT3	GCTFAC_SP_003	1280	10	L302	11+97	3R		
TLT3	GCTFAC_SP_004	1280	10	L303	11+97	0		
TLT3	GCTFAC_SP_005	1280	10	L303	11+97	46L		
TLT3	GCTFAC_SP_006	1280	10	L303	11+97	105L		
GCT1	BL1280_SP_001	1280	10	L301	15+95	88R		
GCT1	BL1280_SP_002	1280	10	L301	15+65	5L		
GCT1	BL1280_SP_003	1280	10	L304	15+68	3L		
GCT1	BL1280_SP_004	1280	10	L304	15+97	93L		
GCT1	BL1280_SP_005	1280	10	L304	16+90	90L		
GCT1	BL1280_SP_006	1280	10	L304	17+15	3R		
GCT1	BL1280_SP_007	1280	10	L301	17+15	8L		
GCT1	BL1280_SP_008	1280	10	L301	16+90	85R		
GCT1	BL1280_SP_009	1280	10	L301	17+05	58R		
GCT1	BL1280_SP_010	1280	10	L301	18+16	58R		
GCT1	BL1280_SP_011	1280	10	L304	18+16	50L		
GCT1	BL1280_SP_012	1280	10	L304	17+05	50L		
							SURFACE	AUTOMATIC
GCT1	BL1300_SP_001	1300	1	T301	19+27	34L		
GCT1	BL1300_SP_002	1300	1	T302	19+27	0		
GCT1	BL1300_SP_003	1300	1	T303	19+27	8L		
GCT1	BL1300_SP_004	1300	1	T304	19+27	81L		
GCT2	BL1300_SP_005	1300	1	T304	19+50	130L		
GCT2	BL1300_SP_006	1300	1	T303	21+23	130L		
GCT2	BL1300_SP_007	1300	1	T302	21+34	35L		
GCT2	BL1300_SP_008	1300	1	T301	21+06	4L		
GCT2	BL1300_SP_009	1300	1	T301	21+06	9L		
GCT2	BL1300_SP_010	1300	1	T301	21+35	32R		
GCT2	BL1301_SP_001	1301	1	T301	22+03	66R		
GCT2	BL1301_SP_002	1301	1	T301	22+41	29R		
GCT2	BL1301_SP_003	1301	1	T301	23+41	29R		
GCT2	BL1301_SP_004	1301	1	T301	23+79	66R		
GCT2	BL1302_SP_001	1302	1001	T301	24+56	54R		
GCT2	BL1302_SP_002	1302	1001	T301	25+03	28R		
GCT3	BL1302_SP_003	1302	1001	T301	26+08	27R		
GCT3	BL1302_SP_004	1302	1001	T301	26+44	54R		
GCT2	BL1281_SP_001	1281	21	T304	19+25	2221L		
GCT2	BL1281_SP_002	1281	21	T304	19+52	180L		
GCT2	BL1281_SP_003	1281	21	T304	21+06	180L		
GCT2	BL1281_SP_004	1281	21	T304	21+37	222L		
GCT2	BL1282_SP_001	1282	21	T304	21+89	222L		
GCT2	BL1282_SP_002	1282	21	T304	22+04	183L		
GCT2	BL1282_SP_003	1282	34	T304	22+05	105L		
GCT2	BL1282_SP_004	1282	34	T304	22+12	25L		
GCT2	BL1282_SP_005	1282	34	T304	22+57	25L		

PRISM FOR STRUCTURE MONITORING POINT (SP) CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
GCT2	BL1282_SP_006	1282	34	T304	23+25	25L		
GCT3	BL1282_SP_007	1282	34	T304	23+71	25L		
GCT3	BL1282_SP_008	1282	34	T304	23+74	73L		
GCT3	BL1282_SP_009	1282	34	T304				
GCT3	BL1282_SP_010	1282	21	T304	24+96	198L		
GCT2	BL1283_SP_001	1283	21	T304	24+62	205L		
GCT2	BL1283_SP_002	1283	21	T304	24+67	107L		
GCT2	BL1283_SP_003	1283	21	T304	24+68	35L		
GCT3	BL1283_SP_004	1283	21	T304	26+28	34L		
GCT3	BL1283_SP_005	1283	21	T304	26+32	95L		
GCT3	BL1283_SP_006	1283	21	T304	26+43	205L		
GCT3	BL1284_SP_001	1284	26	T304	27+34	205L		
GCT3	BL1284_SP_002	1284	33	T304	27+24	93L		
GCT3	BL1284_SP_003	1284	33	T304	27+24	37L		
GCT3	BL1284_SP_004	1284	33	T304	27+50	12L		
GCT3	BL1284_SP_005	1284	33	T304	28+67	12L		
GCT3	BL1284_SP_006	1284	33	T304	29+02	30L		
GCT3	BL1284_SP_007	1284	33	T304	29+02	82L		
GCT3	BL1303_SP_001	1303	1	T301	27+31	54R		
GCT3	BL1303_SP_002	1303	1	T301	27+37	7R		
GCT3	BL1303_SP_003	1303	1	T301	28+08	7R		
GCT3	BL1303_SP_004	1303	1	T301	28+89	8R		
GCT3	BL1303_SP_005	1303	1	T301	28+95	54R		
GCT3	BL1285_SP_001	1285	36	T304	29+59	99L		
GCT3	BL1285_SP_002	1285	36	T304	29+65	14L		
GCT3	BL1285_SP_003	1285	36	T304	30+03	39L		
MAT1	BL1285_SP_004	1285	36	T304	31+48	35L		
MAT1	BL1285_SP_005	1285	36	T304	31+67	65L		
MAT1	BL1285_SP_006	1285	36	T304	31+61	105L		
							SURFACE	AUTOMATIC
GCT3	BL1304_SP_001	1304	1	T301	30+00	8R		
GCT3	BL1304_SP_002	1304	1	T301	31+14	28R		
MAT1	BL1286_SP_001	1286	35	T304	32+17	115L		
MAT1	BL1286_SP_002	1286	35	T304	32+24	75L		
MAT1	BL1286_SP_003	1286	35	T304	32+43	52L		
MAT1	BL1286_SP_004	1286	35	T304	32+90	58L		
MAT1	BL1286_SP_005	1286	35	WB1	1033+47	63L		
MAT1	BL1286_SP_006	1286	35	WB1	1044+00	65L		
MAT1	BL1286_SP_007	1286	35	WB1	1044+50	62L		
MAT1	BL1286_SP_008	1286	35	WB1	1044+98	123L		
MAT1	BL1287_SP_001	1287	33	WB1	1045+58	106L		
MAT1	BL1287_SP_002	1287	33	WB1	1045+58	60L		
MAT1	BL1287_SP_003	1287	33	WB3	1046+05	55L		
MAT1	BL1287_SP_004	1287	33	WB3	1046+56	49L		
MAT2	BL1287_SP_005	1287	33	WB3	1047+09	41L		
MAT2	BL1287_SP_006	1287	33	WB3	1047+54	35L		
MAT2	BL1287_SP_007	1287	33	WB3	1047+65	51L		
MAT2	BL1287_SP_008	1287	33	WB3	1047+70	81L		
MAT1	BL1305_SP_001	1305	1	T301	32+22	143R		
MAT1	BL1305_SP_002	1305	1	T301	32+57	150R		
MAT1	BL1305_SP_003	1305	1	T301	32+89	157R		

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PRISM FOR STRUCTURE MONITORING POINT (SP) CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT1	BL1305_SP_004	1305	1	T301	33+00	75R		
MAT1	BL1305_SP_005	1305	1	T301	33+24	72R		
MAT1	BL1305_SP_006	1305	1	T301	33+40	67R		
MAT1	BL1305_SP_007	1305	1	EB2	1044+62	74R		
MAT1	BL1305_SP_008	1305	1	EB2	1044+74	82R		
MAT1	BL1305_SP_009	1305	1	EB2	1044+73	110R		
MAT1	BL1305_SP_010	1305	1	EB2	1044+67	124R		
MAT1	BL1305_SP_011	1305	1	EB2	1044+67	165R		
MAT1	BL1306_SP_001	1306	1	EB2	1046+16	150R		
MAT1	BL1306_SP_002	1306	1	EB2	1046+83	145R		
MAT1	BL1306_SP_003	1306	1	EB2	1046+87	87R		
MAT1	BL1306_SP_004	1306	1	EB4	1047+60	80R		
MAT2	BL1306_SP_005	1306	1	EB4	1047+75	138R		
MAT2	BL1288_SP_001	1288	33	WB3	1048+22	71L		
MAT2	BL1288_SP_002	1288	33	WB3	1048+22	25L		
MAT2	BL1288_SP_003	1288	33	WB3	1048+52	21L		
MAT2	BL1288_SP_004	1288	33	WB3	1049+00	16L		
MAT2	BL1288_SP_005	1288	33	WB3	1049+50	12L		
MAT2	BL1288_SP_006	1288	33	WB3	1050+00	10L		
MAT2	BL1288_SP_007	1288	33	WB3	1050+24	61L		
MAT2	BL1289_SP_001	1289	36	WB3	1050+69	60L		
MAT2	BL1289_SP_002	1289	36	WB3	1050+78	14L		
MRT2	BL1307_SP_001	1307	1	EB4	1048+63	133R	SURFACE	AUTOMATIC
MAT2	BL1307_SP_002	1307	1	EB4	1049+27	125R		
MAT2	BL1307_SP_003	1307	1	EB4	1049+96	118R		
MAT2	BL1308_SP_001	1308	1101	EB4	1050+33	43R		
MAT5	BL1312_SP_010	1312	69	WB3	1063+70	55L		
MAT5	BL1312_SP_011	1312	69	WB3	1064+11	7R		
MAT5	BL1312_SP_012	1312	1001	WB3	1064+22	15R		
MAT5	BL1312_SP_013	1312	1001	WB1	1064+26	23R		
MAT5	BL1312_SP_014	1312	1001	EB2	1064+23	8L		
MAT5	BL1312_SP_015	1312	63	EB2	1064+31	5R		
MAT5	BL1312_SP_016	1312	63	EB4	1064+25	6R		
MAT5	BL1312_SP_017	1312	62	EB4	1064+33	21R		
MAT5	BL1312_SP_018	1312	62	EB4	1064+47	47R		
MAT5	BL1312_SP_019	1312	15	EB4	1064+51	51R		
MAT5	BL1312_SP_020	1312	15	EB4	1064+66	75R		
MAT5	BL1312_SP_021	1312	60	EB4	1064+71	85R		
MAT5	BL1312_SP_022	1312	60	EB4	1064+98	132R		
MAT5	BL1313_SP_001	1313	1	WB3	1064+04	87L		
MAT5	BL1313_SP_002	1313	1	WB3	1064+35	57L		
MAT5	BL1313_SP_003	1313	1	WB3	1064+75	80L		
MAT5	BL1313_SP_004	1313	5	WB3	1064+98	4L		
MAT5	BL1313_SP_005	1313	5	WB1	1064+94	5L		
MAT5	BL1313_SP_006	1313	5	EB2	1064+90	32L		
MAT5	BL1313_SP_007	1313	5	EB2	1065+08	7L		
MAT5	BL1313_SP_008	1313	5	EB2	1065+15	3R		
MAT5	BL1313_SP_009	1313	14	EB4	1065+00	5L		
MAT5	BL1313_SP_010	1313	14	EB4	1064+98	22R		
MAT5	BL1313_SP_011	1313	14	EB4	1065+23	67R		
MAT5	BL1313_SP_012	1313	14	EB4	1065+53	114R		
MAT5	BL1313_SP_013	1313	14	EB4	1065+93	90R		

PRISM FOR STRUCTURE MONITORING POINT (SP) CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT5	BL1313_SP_014	1313	17	EB4	1066+40	60R		
MAT5	BL1313_SP_015	1313	56	EB4	1067+29	8R		
MAT5	BL1313_SP_016	1313	56	EB2	1067+25	24L		
MAT5	BL1313_SP_017	1313	56	WB1	1067+37	11R		
MAT5	BL1313_SP_018	1313	56	WB3	1067+15	35L		
MAT5	BL1313_SP_019	1313	63	WB3	1066+85	74L		
MAT5	BL1313_SP_020	1313	65	WB3	1066+81	80L		
MAT5	BL1313_SP_021	1313	65	WB3	1066+70	94L		
MAT5	BL1313_SP_022	1313	5	WB3	1066+48	81L		
MAT5	BL1313_SP_023	1313	5	WB3	1066+18	117L		
MAT6	BL1313_SP_024	1313	50	EB4	1068+07	141R		
MAT6	BL1313_SP_025	1313	50	EB4	1068+68	77R		
MAT6	BL1313_SP_026	1313	50	EB4	1068+50	77R		
MAT5	BL1313_SP_027	1313	50	EB4	1066+94	112R		
MAT5	BL1313_SP_028	1313	43	EB4	1066+67	125R		
MAT5	BL1313_SP_029	1313	43	EB4	1066+42	140R		
MAT5	BL1394_SP_001	1394	7	WB3	1067+40	107L		
MAT5	BL1394_SP_002	1394	7	WB3	1067+85	49L		
MAT5	BL1394_SP_003	1394	13	WB3	1067+96	32L		
MAT5	BL1394_SP_004	1394	13	WB3	1068+15	9L		
MAT5	BL1394_SP_005	1394	13	WB3	1068+33	25L		
MAT6	BL1394_SP_006	1394	13	WB3	1068+62	0		
MAT6	BL1394_SP_007	1394	13	WB1	1068+23	12R		
MAT6	BL1394_SP_008	1394	13	WB1	1068+42	33R		
MAT6	BL1394_SP_009	1394	13	WB1	1068+55	27R	SURFACE	AUTOMATIC
MAT6	BL1394_SP_010	1394	23	EB2	1068+95	147R		
MAT6	BL1394_SP_011	1394	23	EB4	1068+50	110R		
MAT6	BL1394_SP_012	1394	23	EB4	1068+34	85R		
MAT6	BL1394_SP_013	1394	23	EB4	1068+13	49R		
MAT6	BL1394_SP_014	1394	23	EB4	1068+36	28R		
MAT6	BL1394_SP_015	1394	23	EB2	1069+20	9L		
MAT6	BL1394_SP_016	1394	23	EB2	1069+87	53L		
MAT6	BL1394_SP_017	1394	23	EB2	1070+21	50L		
MAT6	BL1394_SP_018	1394	23	EB2	1070+58	4R		
MAT6	BL1394_SM_019	1394	23	EB2	1071+00	66R		
MAT6	BL1394_SM_020	1394	23	EB2	1071+33	114R		

NOTES:

1. PRISMS (SP) TO BE INSTALLED AT EXPOSED PART OF STRUCTURAL ELEMENTS.

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Long Island Rail Road
East Side Access

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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. CAPONE
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SCHEDULES
SURFACE
SHEET 6

SCALE: NONE
DRAWING NUMBER: CM009-GT-4106
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 219 OF 276

OPEN STANDPIPE PIEZOMETER (OS)

ZONE	INSTRUMENT NO.	BASELINE	STATION	OFFSET (FT)	SCREEN INTERVAL ELEVATION (FT)	LOCATION	READING TYPE
MAT3	54THST_OS_001	EB4	1052+85	40R	271-276	SURFACE	
MAT3	55THST_OS_001	WB3	1055+95	30L	271-276	SURFACE	
MAT4	56THST_OS_001	WB3	1058+50	40L	271-276	SURFACE	
MAT4	57THST_OS_001	EB2	1061+55	20L	264- 269	SURFACE	MANUAL
MAT5	58THST_OS_001	EB2	1064+50	45L	276-281	SURFACE	
MAT5	59THST_OS_001	WB1	1067+50	20R	276-281	SURFACE	
MAT6	60THST_OS_001	EB2	1070+40	40L	276-281	SURFACE	

NOTE:

1. TIP ELEVATIONS OF PIEZOMETERS MAY BE ADJUSTED IN THE FIELD.

EXISTING OBSERVATION WELL (OW)

ZONE	INSTRUMENT NO.	PREVIOUS OBSERVATION WELL DESIGNATION	BASELINE	STATION	OFFSET (FT)	SCREEN INTERVAL ELEVATION A TO B (FT)	LOCATION	READING TYPE
TLT1	38THST_OW_001	TT-13w	L303	0+40	60L	309.2 to 299.2	SURFACE	
TLT1	39THST_OW_001	TT-11w	L302	3+10	85R	312.9 to 302.9	SURFACE	
TLT2	40THST_OW_001	TT-9w	L302	5+60	50L	305.8 to 295.8	SURFACE	
MAT5	58THST_OW_001	MA-325W	WB3	1064+12	0	316 to 306	SURFACE	MANUAL
MAT5	58THST_OW_002	MA-209W	WB1	1064+42	20R	312 to 302	SURFACE	
MAT5	59THST_OW_001	MA-321W	WB3	1067+87	28L	304 to 294	SURFACE	
MAT7	61STST_OW_001	MA-211w	EB2	1074+20	20L	321.9 to 311.9	SURFACE	
MAT8	62NDST_OW_001	MA-103w	EB2	1078+50	0	329.4 to 309.4	SURFACE	
MAT8	2NDAVE_OW_001	MA-318w	EB3	1084+10	10R	332.5 to 322.5	SURFACE	

MULTIPLE POSITION BOREHOLE EXTENSOMETER, MPBX (BX)

ZONE	INSTRUMENT NO.	BASELINE	STATION	OFFSET (FT)	ARRAY NO. (2)	ANCHOR ELEVATION (1) (FT)	LOCATION	READING TYPE
MAT5	58THST_BX_001	WB3	1064+13	13L		238, 246, 255		
MAT5	58THST_BX_002	WB1	1064+20	2L		238, 246, 255		
MAT5	58THST_BX_003	EB2	1064+37	0		238, 246, 255	SURFACE	AUTOMATIC
MAT5	59THST_BX_001	WB1	1067+30	3R		238, 246, 255		
MAT5	59THST_BX_002	EB2	1067+45	4R		238, 246, 255		

DEEP BENCHMARKS (DB)

ZONE NO.	INSTRUMENT NO.	BASELINE	TRACK STATION	OFFSET (FT)	BOTTOM ELEVATION (FT)	LOCATION	READING TYPE
TLT1	38THST_DB_001	L303	0+20	135L	189.2	SURFACE - CONCRETE SIDEWALK	
TLT2	40THST_DB_001	L303	5+40	135L	188.8	SURFACE - CONCRETE SIDEWALK	
TLT3	42NDST_DB_001	L303	10+55	135L	189	SURFACE - CONCRETE SIDEWALK	
MAT1	50THST_DB_001	T303	31+80	150L	171.5	SURFACE - CONCRETE SIDEWALK	MANUAL
MAT4	56THST_DB_001	WB3	1058+50	100L	183.5	SURFACE - CONCRETE SIDEWALK	
MAT5	58THST_DB_001	WB3	1064+00	100L	196.8	SURFACE - CONCRETE SIDEWALK	
MAT5	58THST_DB_002	EB4	1064+95	115R	196.8	SURFACE - CONCRETE SIDEWALK	
MAT7	61STST_DB_001	EB2	1075+20	80R	209.4	SURFACE - CONCRETE SIDEWALK	
MAT8	2NDAVE_DB_001	EB2	1083+70	150R	207	SURFACE - CONCRETE SIDEWALK	

SURFACE SETTLEMENT MONITORING POINT TYPE 1 IN RIGID PAVEMENT SURFACE (S1)

ZONE	INSTRUMENT NO.	ST. ADDRESS	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT5	58THST_S1_001	58th ST. PARK & LEX.	WB3	1064+15	35L		
MAT5	58THST_S1_002	58th ST. PARK & LEX.	WB3	1064+58	12R		
MAT5	58THST_S1_003	58th ST. PARK & LEX.	EB2	1064+32	40L		
MAT5	58THST_S1_004	58th ST. PARK & LEX.	EB4	1064+45	3L		
MAT5	58THST_S1_005	58th ST. PARK & LEX.	EB4	1064+80	35R		
MAT5	58THST_S1_006	58th ST. PARK & LEX.	EB4	1064+75	60R		
MAT5	59THST_S1_001	59th ST. PARK & LEX.	WB1	1067+82	12R		
MAT5	59THST_S1_002	59th ST. PARK & LEX.	WB1	1067+82	40R		
TLT2	41STST_S1_001	41st AND PARK AVE.	L302	06+00	90R	SURFACE	MANUAL
TLT2	41STST_S1_002	41st AND PARK AVE.	L302	06+00	44R		
TLT2	41STST_S1_003	41st AND PARK AVE.	L302	06+90	40R		
TLT2	41STST_S1_004	41st AND PARK AVE.	L302	07+85	40R		
MAT1	51STST_S1_001	51st AND PARK AVE.	EB4	1045+45	120R		
MAT1	51STST_S1_002	51st AND PARK AVE.	EB4	1045+55	60R		
MAT1	51STST_S1_003	51st AND PARK AVE.	EB4	1046+65	55R		
MAT1	51STST_S1_004	51st AND PARK AVE.	EB4	1047+55	50R		

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SURFACE SETTLEMENT MONITORING POINT TYPE 2 IN MASONRY OR CONCRETE SLAB (S2)

ZONE	INSTRUMENT NO.	BLOCK	LOT	ST. ADDRESS	BUILDING NAME/ TYPE	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT4	BL1292_S2_001	1292	37	450 PARK AVE	OFFICE BLDG	WB3	1060+59	42L		
MAT4	BL1292_S2_002	1292	37	450 PARK AVE	OFFICE BLDG	WB3	1060+47	72L		
MAT4	BL1311_S2_001	1311	1	445 PARK AVE	THE MCA BUILDING	EB4	1058+87	16L		
MAT4	BL1311_S2_002	1311	1	445 PARK AVE	THE MCA BUILDING	EB2	1059+46	15R		
MAT4	BL1311_S2_003	1311	1	445 PARK AVE	THE MCA BUILDING	EB2	1059+93	0		
MAT4	BL1311_S2_004	1311	1	445 PARK AVE	THE MCA BUILDING	EB2	1060+42	17L		
MAT4	BL1311_S2_005	1311	1	445 PARK AVE	THE MCA BUILDING	EB2	1060+66	25L		
MAT4	BL1311_S2_006	1311	1	445 PARK AVE	THE MCA BUILDING	EB2	1060+76	0		
MAT4	BL1311_S2_007	1311	1	445 PARK AVE	THE MCA BUILDING	EB2	1060+88	22R		
MAT4	BL1311_S2_008	1311	65	110 E 57th ST	THE DORCHESTER	EB4	1060+78	0		
MAT4	BL1311_S2_009	1311	65	110 E 57th ST	THE DORCHESTER	EB4	1061+04	47R		
MAT4	BL1311_S2_010	1311	65	110 E 57th ST	THE DORCHESTER	EB4	1061+29	90R		
MAT4	BL1311_S2_011	1311	65	110 E 57th ST	THE DORCHESTER	EB4	1061+54	134R		
MAT5	BL1312_S2_001	1312	15	135 E 57th ST	OFFICE BLDG	EB4	1062+50	120R		
MAT5	BL1312_S2_002	1312	15	135 E 57th ST	OFFICE BLDG	EB4	1062+36	86R		
MAT4	BL1312_S2_003	1312	1001	117 E 57th ST	OFFICE BLDG	EB4	1062+09	37R		
MAT4	BL1312_S2_004	1312	1301	465 PARK AVE	BORDERS BOOKS	EB4	1061+83	0		
MAT4	BL1312_S2_005	1312	1301	465 PARK AVE	BORDERS BOOKS	EB2	1061+91	21R		
MAT4	BL1312_S2_006	1312	1301	465 PARK AVE	BORDERS BOOKS	EB2	1061+79	0		
MAT4	BL1312_S2_007	1312	1301	465 PARK AVE	BORDERS BOOKS	WB1	1061+85	33R		
MAT4	BL1312_S2_008	1312	70		BORDERS BOOKS	WB1	1061+70	0		
MAT5	BL1312_S2_009	1312	70	465 PARK AVE	RESIDENTIAL COOPERATIVE	WB3	1062+17	30R		
MAT5	BL1312_S2_010	1312	70	465 PARK AVE	RESIDENTIAL COOPERATIVE	WB3	1062+40	15R		
MAT5	BL1312_S2_011	1312	69	465 PARK AVE	RESIDENTIAL COOPERATIVE	WB3	1062+72	0		
MAT5	BL1312_S2_012	1312	69	465 PARK AVE	RESIDENTIAL COOPERATIVE	WB3	1063+05	22L		
MAT5	BL1312_S2_013	1312	15	122 E 58th ST	OFFICE	WB3	1063+91	37L	SURFACE	MANUAL
MAT5	BL1312_S2_014	1312	69	122 E 58th ST	LIBRARY/MUSEUM	WB3	1064+05	10L		
MAT5	BL1312_S2_015	1312	69	122 E 58th ST	LIBRARY/MUSEUM	WB1	1064+05	15L		
MAT5	BL1312_S2_016	1312	69	130 E 58th ST	BUILDING	WB1	1064+15	0		
MAT5	BL1312_S2_017	1312	69	720 LEX. AVE.	COMMERCIAL BUILDING	WB1	1064+37	33R		
MAT5	BL1312_S2_018	1312	63	128 E 58th ST	LIBRARY/MUSEUM	EB2	1064+30	0		
MAT5	BL1312_S2_019	1312	63	720 LEX. AVE.	COMMERCIAL BUILDING	EB2	1064+40	15R		
MAT5	BL1312_S2_020		63			EB4	1064+25	0		
MAT5	BL1312_S2_021		62	124 E 58th ST		EB4	1064+50	42R		
MAT5	BL1312_S2_022		60	720 LEX. AVE.		EB4	1064+77	92R		
MAT5	BL1312_S2_023		60			EB4	1065+05	135R		
MAT5	BL1312_S2_024		62			EB4	1063+20	80R		
MAT5	BL1312_S2_025		62			EB4	1063+37	110R		
MAT5	BL1313_S2_001	1313	1	481 PARK AVE	RESIDENTIAL COOPERATIVE	WB3	1064+18	74L		
MAT5	BL1313_S2_002	1313			RESIDENTIAL COOPERATIVE	WB3	1064+46	36L		
MAT5	BL1313_S2_003	1313	5	110 E 59th ST	OFFICE BUILDING	WB3	1064+78	7R		
MAT5	BL1313_S2_004	1313	5	110 E 59th ST	OFFICE BUILDING	WB1	1064+66	9L		
MAT5	BL1313_S2_005	1313	5	110 E 59th ST	OFFICE BUILDING	WB1	1064+75	4R		
MAT5	BL1313_S2_006	1313	5	110 E 59th ST	OFFICE BUILDING	WB1	1064+88	35R		
MAT5	BL1313_S2_007	1313	5	110 E 59th ST	OFFICE BUILDING	EB2	1064+87	0		
MAT5	BL1313_S2_008	1313	5	110 E 59th ST	OFFICE BUILDING	EB2	1064+95	13R		
MAT5	BL1313_S2_009	1313	5	110 E 59th ST	OFFICE BUILDING	EB4	1064+80	0		
MAT5	BL1313_S2_010	1313	14	11 E 58th ST	OFFICE BUILDING	EB4	1065+05	48R		
MAT5	BL1313_S2_011	1313	14	11 E 58th ST	OFFICE BUILDING	EB4	1065+26	95R		
MAT5	BL1313_S2_012	1313	14	11 E 58th ST	OFFICE BUILDING	EB4	1064+50	122R		
MAT5	BL1313_S2_013	1313	56	130 E 59th ST	OFFICE BUILDING	EB4	1067+23	15R		
MAT5	BL1313_S2_014	1313	56	130 E 59th ST	OFFICE BUILDING	EB2	1067+50	0		
MAT5	BL1313_S2_015	1313	56	130 E 59th ST	OFFICE BUILDING	WB1	1067+60	35R		
MAT5	BL1313_S2_016	1313	56	130 E 59th ST	OFFICE BUILDING	WB1	1067+40	10R		
MAT5	BL1313_S2_017	1313	56	130 E 59th ST	OFFICE BUILDING	WB3	1067+35	18L		
MAT5	BL1313_S2_018	1313	63	120 E 59th ST	COMMERCIAL BUILDING	WB3	1067+00	65L		
MAT5	BL1394_S2_001	1394	7	118 E 60th ST	RESIDENTIAL COOPERATIVE	WB3	1067+35	95L		
MAT5	BL1394_S2_002	1394	13	750 LEX. AVE.	OFFICE BUILDING	WB3	1068+10	8L		
MAT5	BL1394_S2_003					WB1	1068+05	15R		

SURFACE SETTLEMENT MONITORING POINT TYPE 2 IN MASONRY OR CONCRETE SLAB (S2) CONTINUED

ZONE	INSTRUMENT NO.	BLOCK	LOT	ST. ADDRESS	BUILDING NAME/ TYPE	BASELINE	TRACK STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT7	BL1396_S2_001	1396	33	167 E 61st ST	TRUMP PLAZA/RESIDENTUAL COOP	EB2	1075+30	80R		
MAT7	BL1396_S2_002	1396	33	167 E 61st ST	TRUMP PLAZA/RESIDENTUAL COOP	EB2	1075+77	35R		
MAT7	BL1396_S2_003	1396	33	167 E 61st ST	TRUMP PLAZA/RESIDENTUAL COOP	EB2	1076+08	0		
MAT7	BL1396_S2_004	1396	33	167 E 61st ST	TRUMP PLAZA/RESIDENTUAL COOP	WB1	1076+75	20R		
MAT7	BL1396_S2_005	1396	33	167 E 61st ST	TRUMP PLAZA/RESIDENTUAL COOP	WB1	1077+15	22L		
MAT7	BL1396_S2_006	1396	33	167 E 61st ST	TRUMP PLAZA/RESIDENTUAL COOP	WB1	1076+70	65L		
MAT7	BL1416_S2_001	1416	2	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1076+62	80R		
MAT7	BL1416_S2_002	1416	2	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1076+95	40R		
MAT7	BL1416_S2_003	1416	2	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1077+28	0		
MAT7	BL1416_S2_004	1416	2	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1077+40	18L	SURFACE	MANUAL
MAT7	BL1416_S2_005	1416	2	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1077+73	0		
MAT7	BL1416_S2_006	1416	2	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1078+15	30R		
MAT8	BL1416_S2_007	1416	43	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1078+15	105R		
MAT8	BL1416_S2_008	1416	43	1033 THIRD AVE	ELEVATOR APT BUILDING	EB2	1078+40	120R		
MAT8	BL1417_S2_001	1417	-	201 E 62nd ST	RESIDENTIAL COOPERATIVE	EB2	1078+94	25R		
MAT8	BL1417_S2_002	1417	-	201 E 62nd ST	RESIDENTIAL COOPERATIVE	EB2	1078+50	0		
MAT7	BL1417_S2_003	1417	-		RESIDENTIAL COOPERATIVE	WB1	1078+50	0		
MAT7	BL1417_S2_004	1417	-	-	RESIDENTIAL COOPERATIVE	WB1	1078+20	30L		
MAT7	BL1417_S2_005	1417	-	-	RESIDENTIAL COOPERATIVE	WB1	1078+45	75L		

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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SCHEDULES
SURFACE
SHEET 8

SCALE: NONE
DRAWING NUMBER: CM009-GT-4108
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
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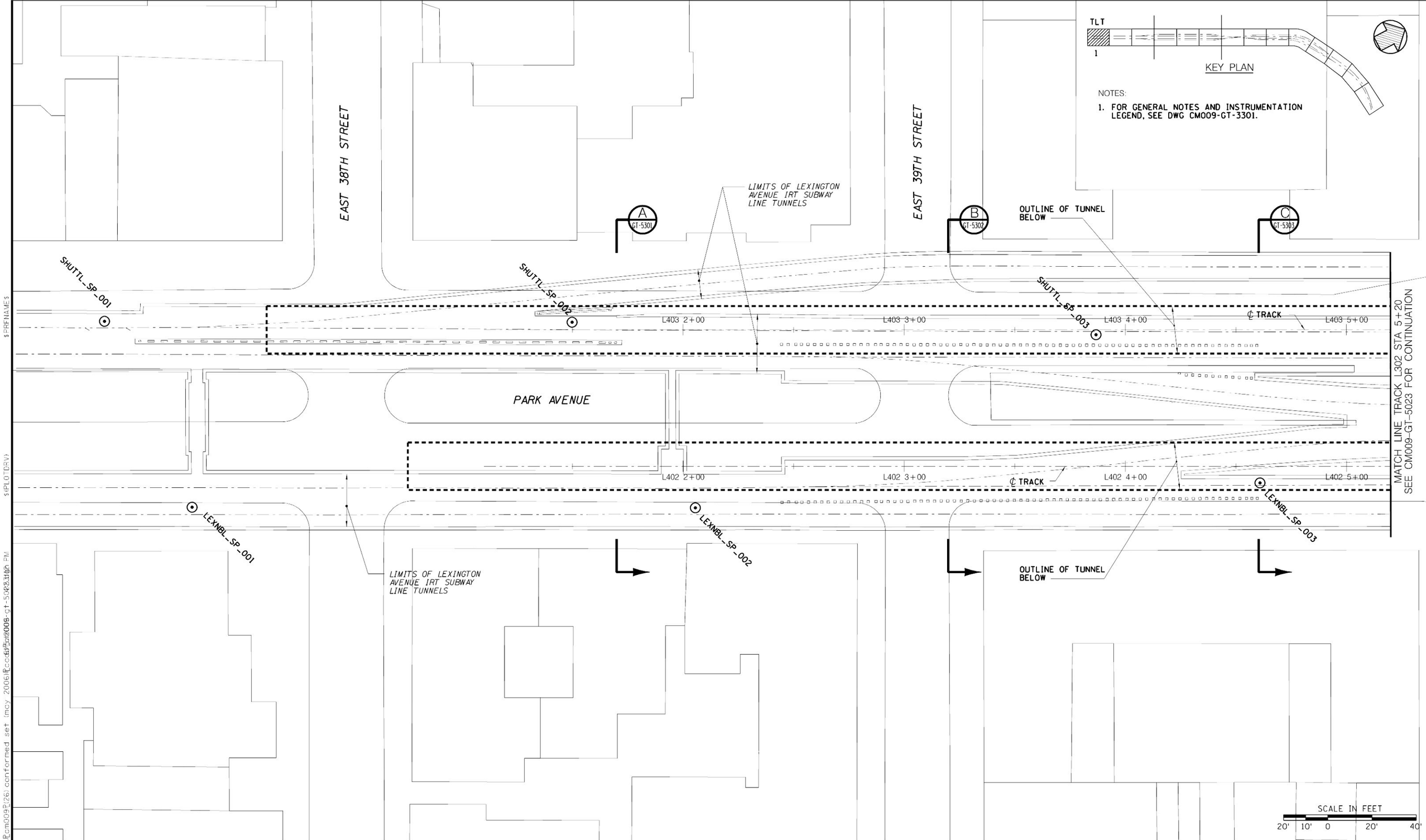
SHEET No. 221 OF 276



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LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION EXISTING TRANSIT STRUCTURES

SHEET 1

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5022
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 222 OF 276

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$PLOTDRV$
REF 6$
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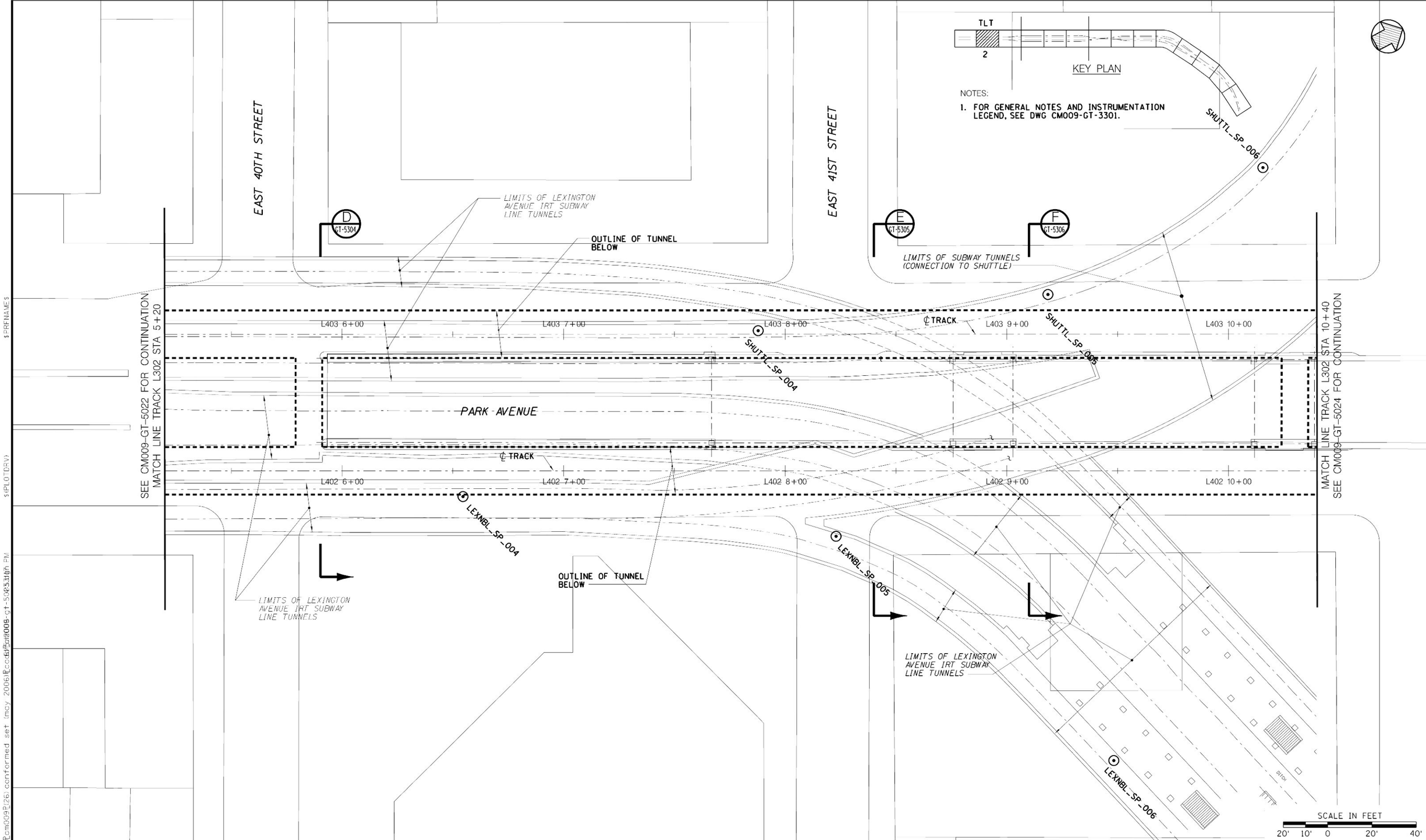

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LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION EXISTING TRANSIT STRUCTURES

SHEET 2

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5023
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REVISION NUMBER: 0

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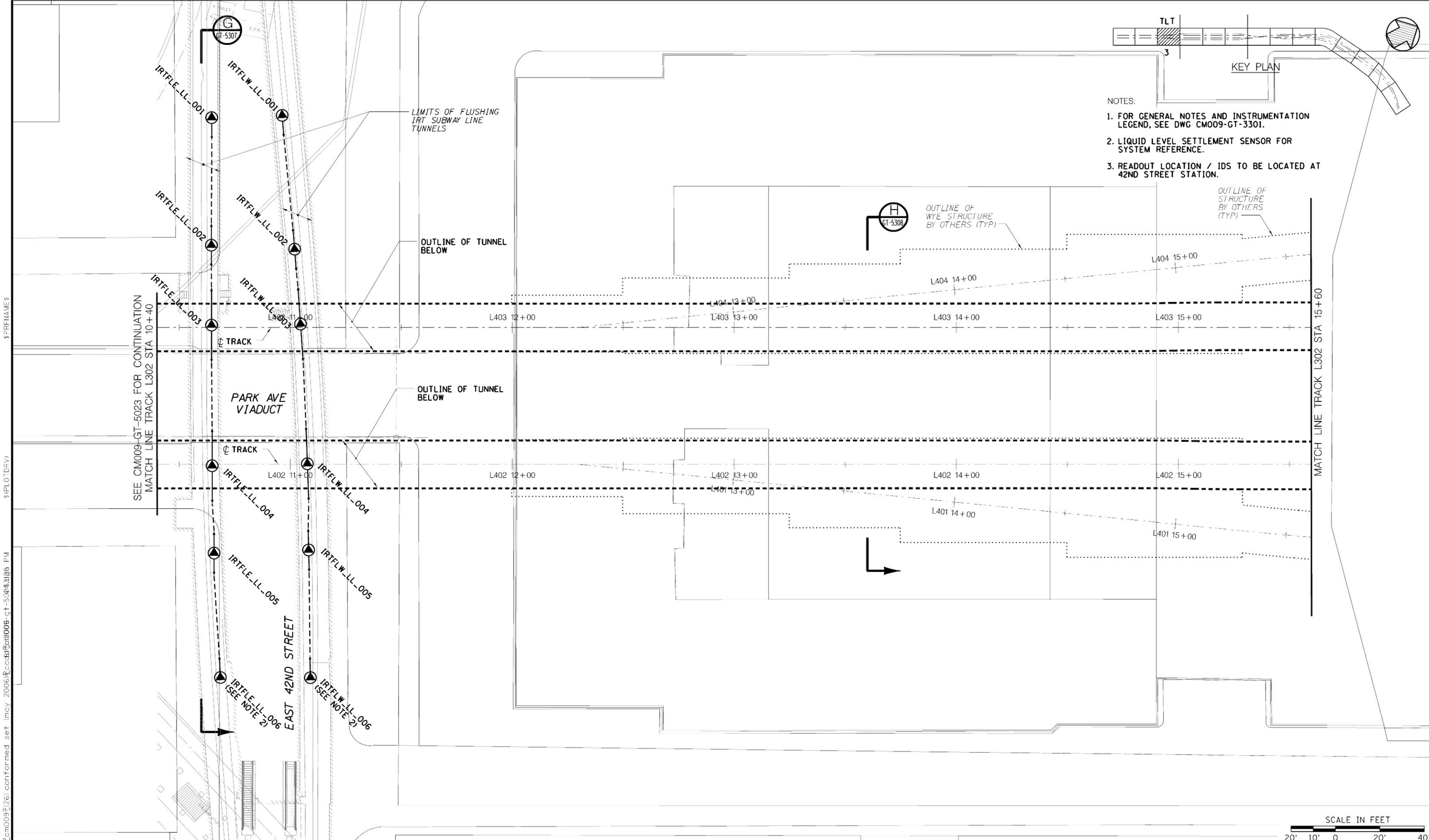

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. LIQUID LEVEL SETTLEMENT SENSOR FOR SYSTEM REFERENCE.
3. READOUT LOCATION / IDS TO BE LOCATED AT 42ND STREET STATION.

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LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION EXISTING TRANSIT STRUCTURES

SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5024
DATE: 5-26-06
REVISION NUMBER: 0

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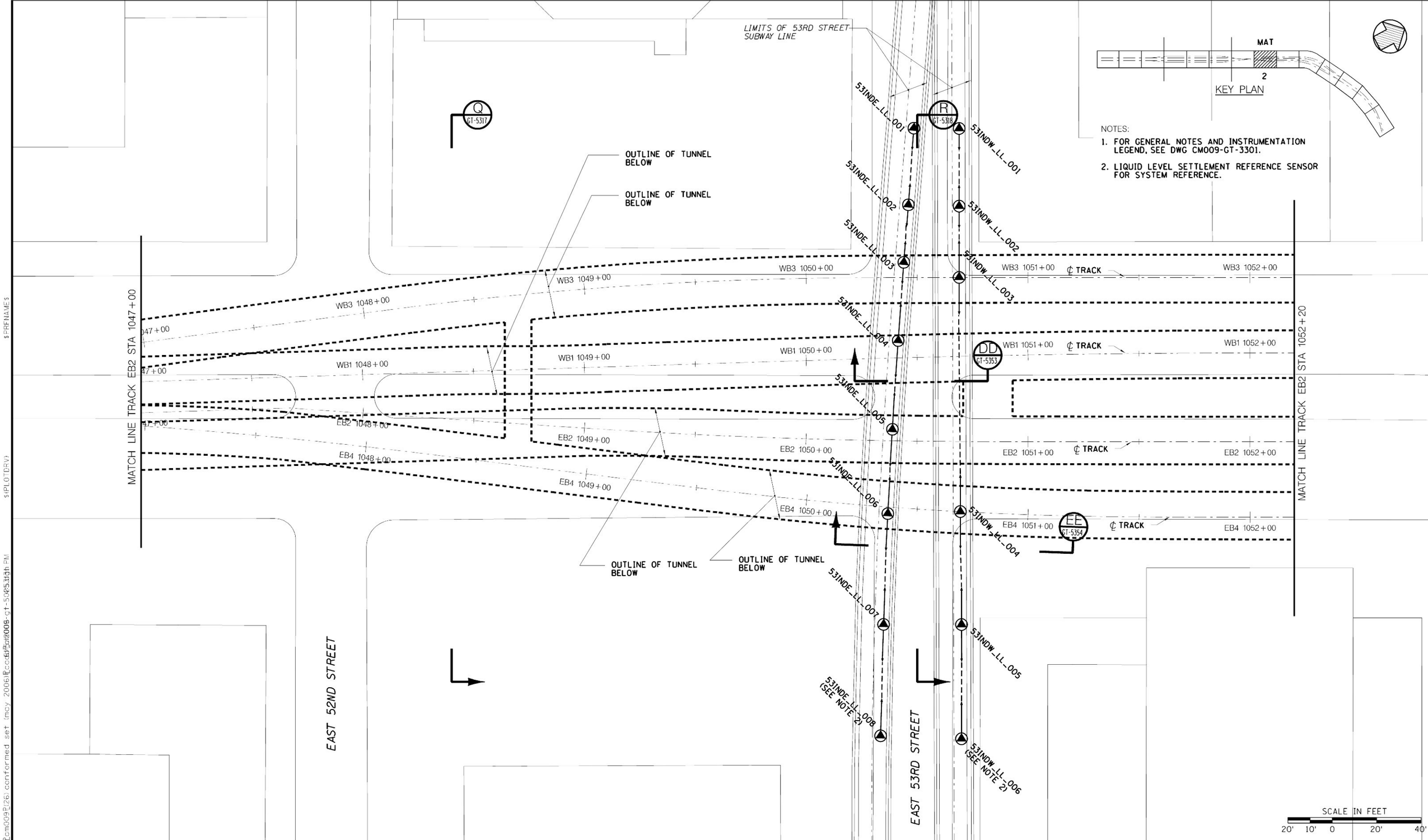
SHEET No. 224 OF 276



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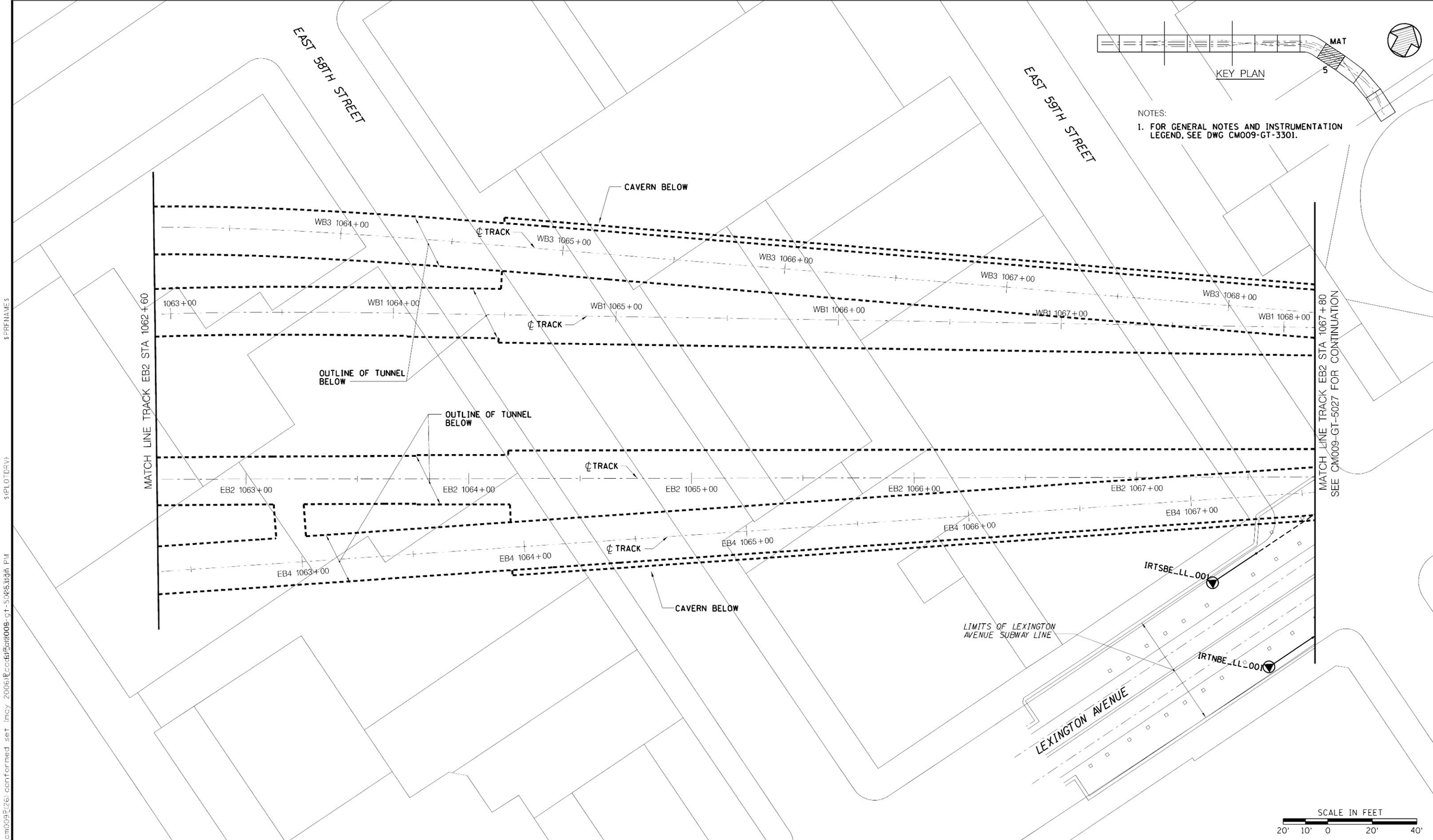
MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION EXISTING TRANSIT STRUCTURES

SHEET 4

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5025
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 225 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.

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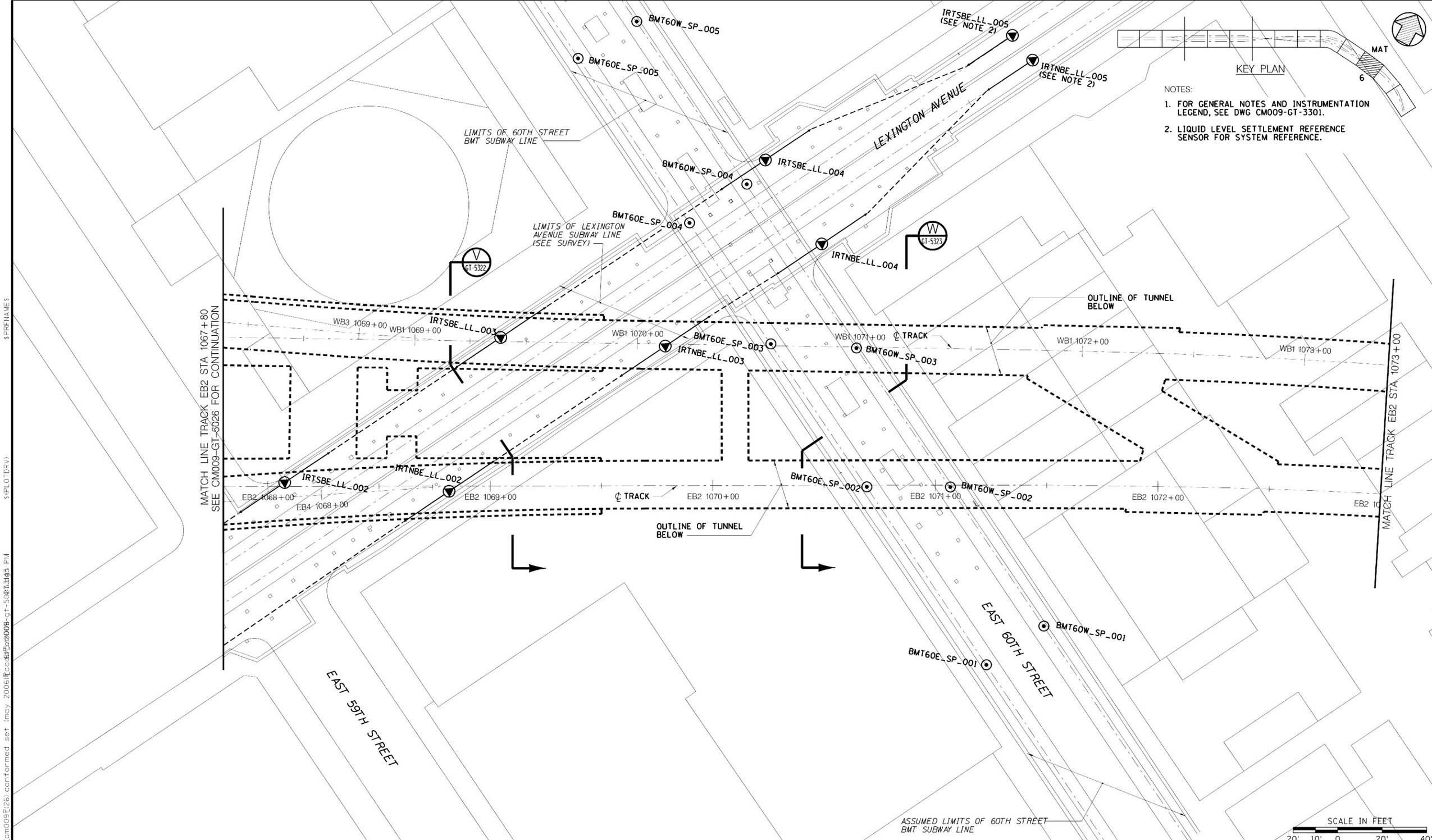
MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION EXISTING TRANSIT STRUCTURES

SHEET 5

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5026
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 226 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. LIQUID LEVEL SETTLEMENT REFERENCE SENSOR FOR SYSTEM REFERENCE.

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MANHATTAN TUNNELS EXCAVATION

LOCATION PLAN OF GEOTECHNICAL INSTRUMENTATION EXISTING TRANSIT STRUCTURES

SHEET 6

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5027
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 227 OF 276

PRISM FOR TOTAL STATION STRUCTURAL MONITORING – EXISTING TRANSIT STRUCTURES (SP)

ZONE	INSTRUMENT NO.	BASELINE	STATION	OFFSET (FT)	LOCATION	READING TYPE
TLT1	LEXNBL_SP_001	L302	0-25	17R	LEXINGTON AVE IRT SUBWAY TUNNEL (NORTHBOUND EXPRESS)	
TLT1	LEXNBL_SP_002	L302	2+05	17R		
TLT1	LEXNBL_SP_003	L302	4+60	6R		
TLT2	LEXNBL_SP_004	L302	6+55	10R		
TLT2	LEXNBL_SP_005	L302	8+22	26R		
TLT2	LEXNBL_SP_006	L302	9+50	130R		
TLT1	SHUTTL_SP_001	L303	0-60	2L	SHUTTLE CONNECTION	
TLT1	SHUTTL_SP_002	L303	1+50	2L		
TLT1	SHUTTL_SP_003	L303	3+85	2R		
TLT2	SHTUTTL_SP_004	L303	7+90	2L		
TLT2	SHTUTTL_SP_005	L303	9+20	16L		MANUAL
TLT2	SHTUTTL_SP_006	L303	10+15	70L		
MAT6	BMT60E_SP_001	EB2	1071+23	80R	60th STREET BMT SUBWAY TUNNEL (EASTBOUND EXPRESS)	
MAT6	BMT60E_SP_002	EB2	1070+70	0		
MAT6	BMT60E_SP_003	WB1	1070+60	0		
MAT6	BMT60E_SP_004	WB1	1070+20	55L		
MAT6	BMT60E_SP_005	WB1	1069+70	130L		
MAT6	BMT60W_SP_001	EB2	1071+50	63R	60th STREET BMT SUBWAY TUNNEL (WESTBOUND EXPRESS)	
MAT6	BMT60W_SP_002	EB2	1071+07	0		
MAT6	BMT60W_SP_003	WB1	1071+00	0		
MAT6	BMT60W_SP_004	WB1	1070+50	73L		
MAT6	BMT60W_SP_005	WB1	1070+00	145L		

SENSOR FOR LIQUID LEVEL SETTLEMENT SYSTEM – EXISTING TRANSIT STRUCTURES (LL)

ZONE	INSTRUMENT NO.	BASELINE	STATION	OFFSET (FT)	LOCATION	READING TYPE
MAT2	53INDE_LL_001	WB3	1050+50	67L	53rd STREET SUBWAY TUNNEL (EASTBOUND EXPRESS)	
MAT2	53INDE_LL_002	WB3	1050+45	33L		
MAT2	53INDE_LL_003	WB3	1050+42	7L		
MAT2	53INDE_LL_004	WB1	1050+40	5L		
MAT2	53INDE_LL_005	EB2	1050+38	5L		
MAT2	53INDE_LL_006	EB4	1050+36	0		
MAT2	53INDE_LL_007	EB4	1050+36	52R		
MAT2	53INDE_LL_008(1)	EB4	1050+36	104R		
MAT2	53INDW_LL_001	WB3	1050+70	67L	53rd STREET SUBWAY TUNNEL (WESTBOUND EXPRESS)	
MAT2	53INDW_LL_002	WB3	1050+70	33L		
MAT2	53INDW_LL_003	WB1	1050+70	5L		
MAT2	53INDW_LL_004	EB2	1050+70	5L		
MAT2	53INDW_LL_005	EB4	1050+70	52R		
MAT2	53INDW_LL_006(1)	EB4	1050+70	104R		
MAT5	IRTSBE_LL_001	EB4	1067+07	37R	LEXINGTON AVE BMT SUBWAY TUNNEL (SOUTHBOUND EXPRESS)	
MAT6	IRTSBE_LL_002	EB2	1068+08	0		
MAT6	IRTSBE_LL_003	WB1	1069+40	0		
MAT6	IRTSBE_LL_004	WB1	1070+60	83L		AUTOMATIC
MAT6	IRTSBE_LL_005(1)	WB1	1071+65	140L		
MAT5	IRTNBE_LL_001	EB4	1067+30	75R	LEXINGTON AVE BMT SUBWAY TUNNEL (NORTHBOUND EXPRESS)	
MAT6	IRTNBE_LL_002	EB2	1068+85	0R		
MAT6	IRTNBE_LL_003	WB1	1070+12	0R		
MAT6	IRTNBE_LL_004	WB1	1070+85	45L		
MAT6	IRTNBE_LL_005(1)	WB1	1071+75	130L		
TLT3	IRTFLE_LL_001	L403	10+65	95L	FLUSHING IRT SUBWAY TUNNEL (EASTBOUND EXPRESS)	
TLT3	IRTFLE_LL_002	L403	10+65	37L		
TLT3	IRTFLE_LL_003	L403	10+65	0L		
TLT3	IRTFLE_LL_004	L403	10+65	63R		
TLT3	IRTFLE_LL_005	L403	10+65	103R		
TLT3	IRTFLE_LL_006(1)	L403	10+65	157R		
TLT3	IRTFLW_LL_001	L303	10+96	95L	FLUSHING IRT SUBWAY TUNNEL (WESTBOUND EXPRESS)	
TLT3	IRTFLW_LL_002	L303	11+01	37L		
TLT3	IRTFLW_LL_003	L303	11+05	0L		
TLT3	IRTFLW_LL_004	L303	11+07	63R		
TLT3	IRTFLW_LL_005	L303	11+07	103R		
TLT3	IRTFLW_LL_006(1)	L303	11+07	157R		

NOTE:

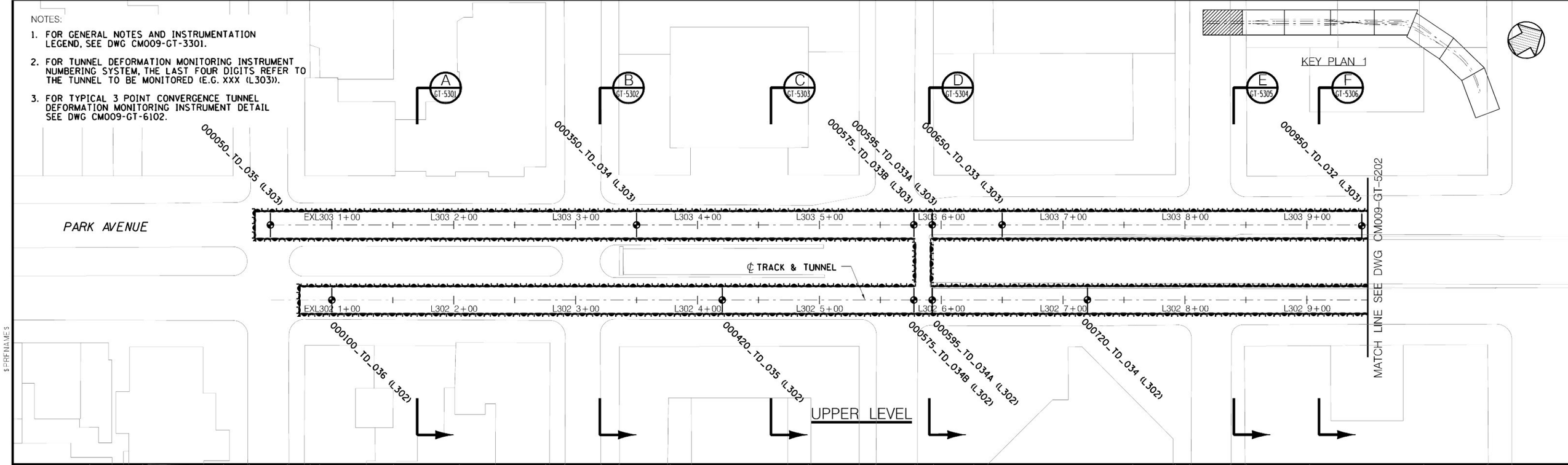
1. (1) INDICATES LIQUID LEVEL SETTLEMENT SENSOR TO BE USED FOR SYSTEM REFERENCE.

MANHATTAN TUNNELS EXCAVATION

GECTECHNICAL INSTRUMENTATION SCHEDULES EXISTING TRANSIT STRUCTURES

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.



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MANHATTAN TUNNELS EXCAVATION

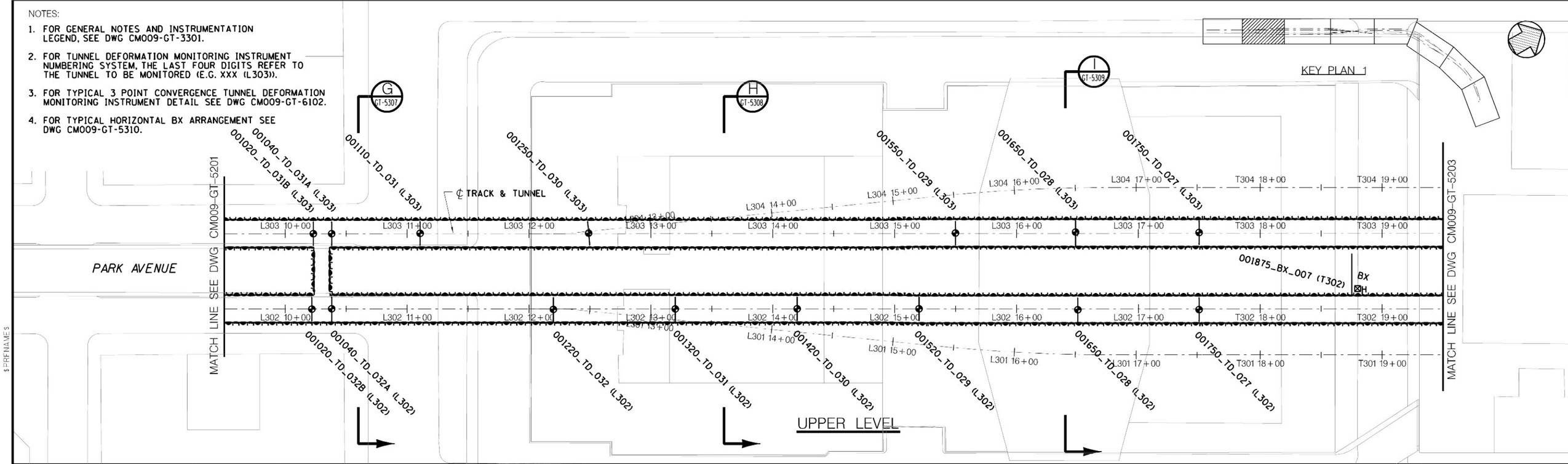
GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS
UPPER & LOWER LEVEL PLAN
SHEET 1

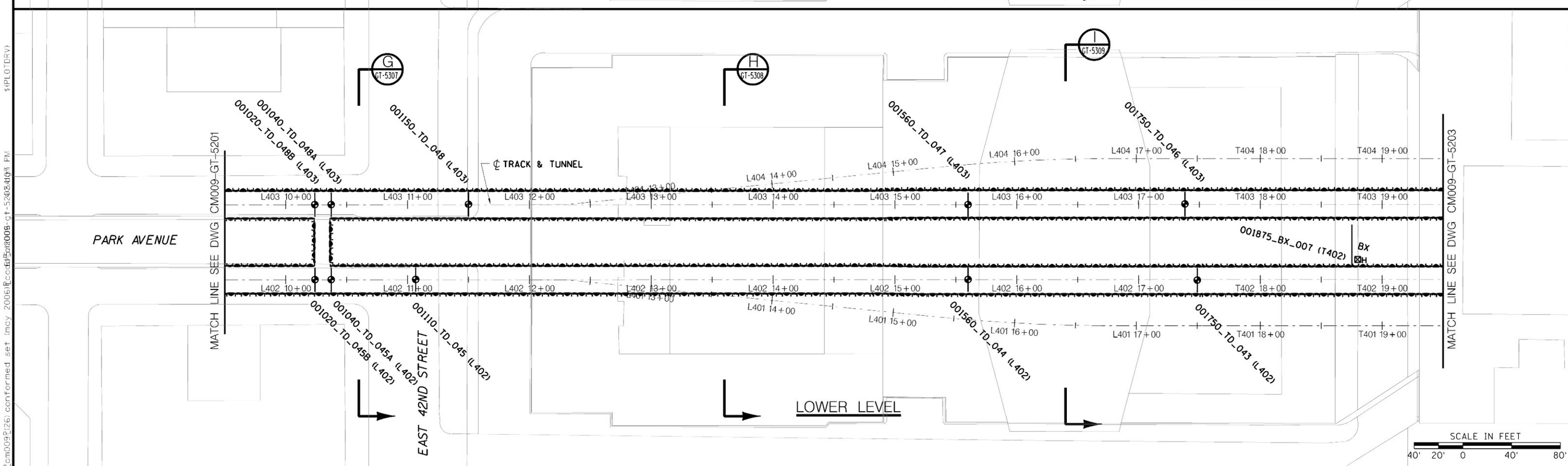
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5201
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 229 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.
4. FOR TYPICAL HORIZONTAL BX ARRANGEMENT SEE DWG CM009-GT-5310.





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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS UPPER & LOWER LEVEL PLAN

SHEET 2

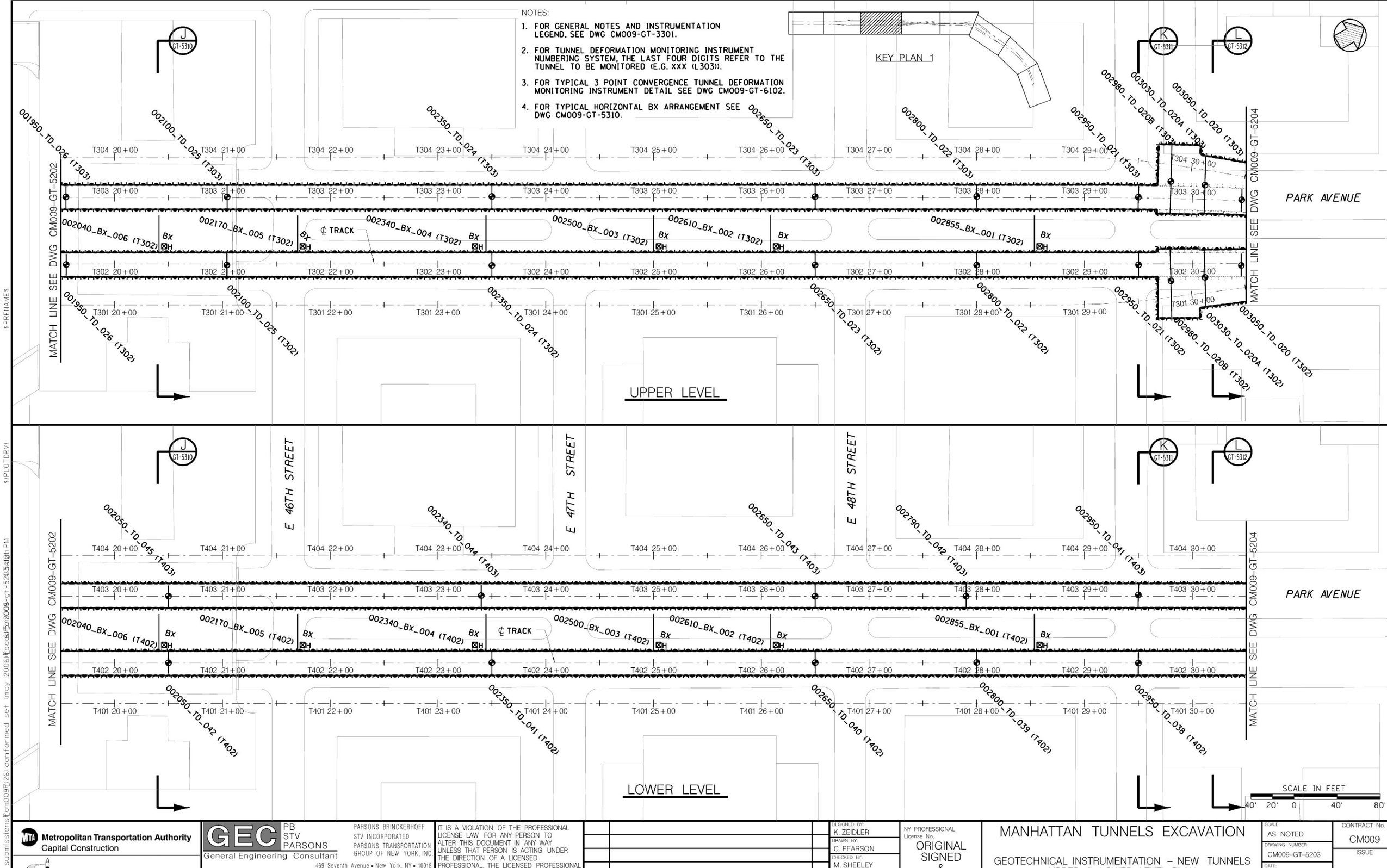
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5202
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 230 OF 276

$PRFNAME$
$PLOTDRV$
$REF6$

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.
4. FOR TYPICAL HORIZONTAL BX ARRANGEMENT SEE DWG CM009-GT-5310.



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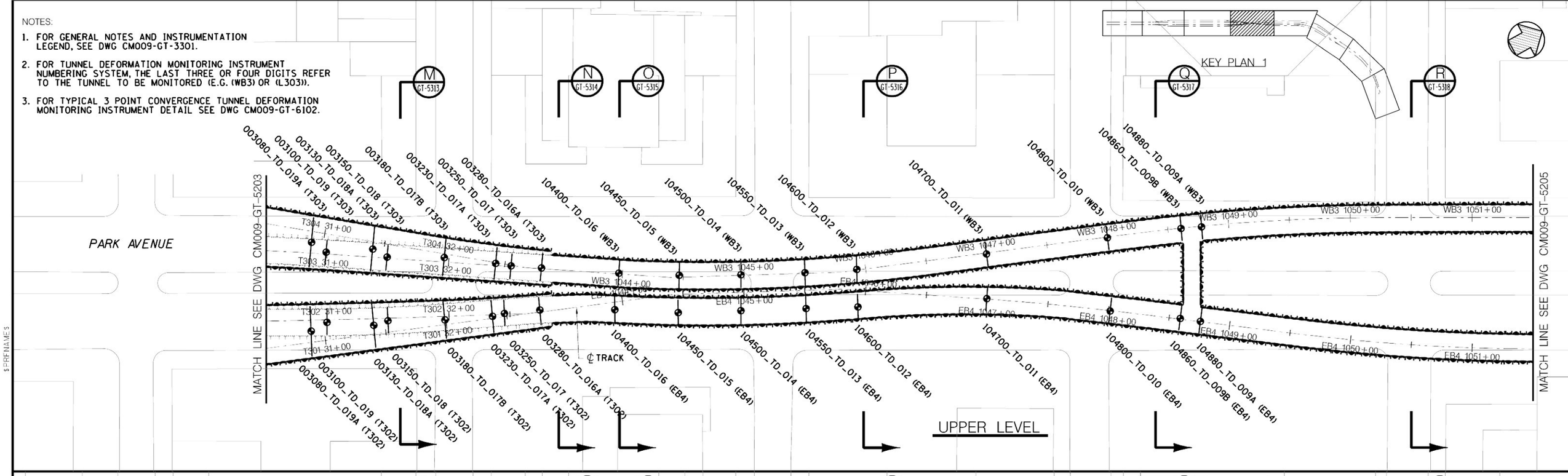
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS
UPPER & LOWER LEVEL PLAN
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5203
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 231 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST THREE OR FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. (WB3) OR (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.



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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS UPPER & LOWER LEVEL PLAN

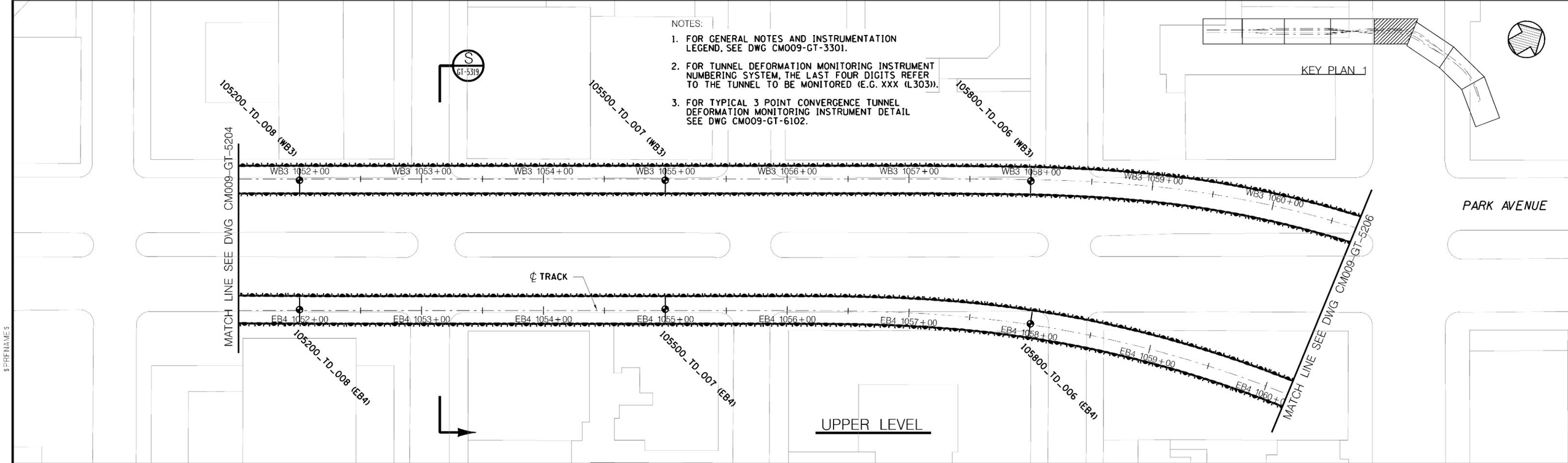
SHEET 4

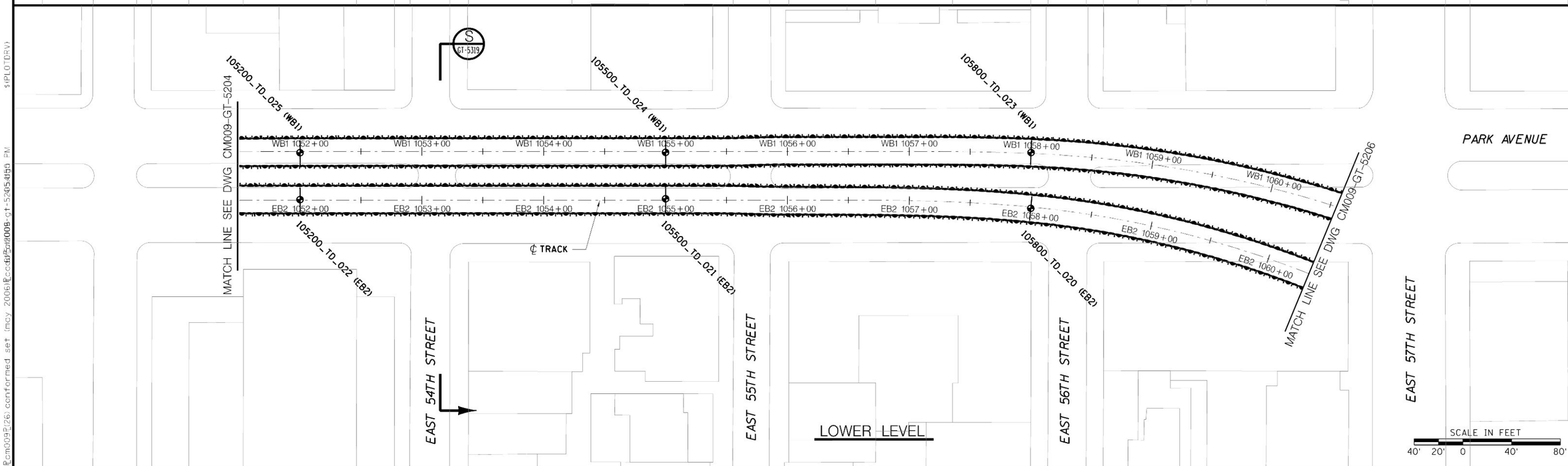
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5204
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 232 OF 276

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.





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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS
UPPER & LOWER LEVEL PLAN
SHEET 5

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5205
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REVISION NUMBER: 0

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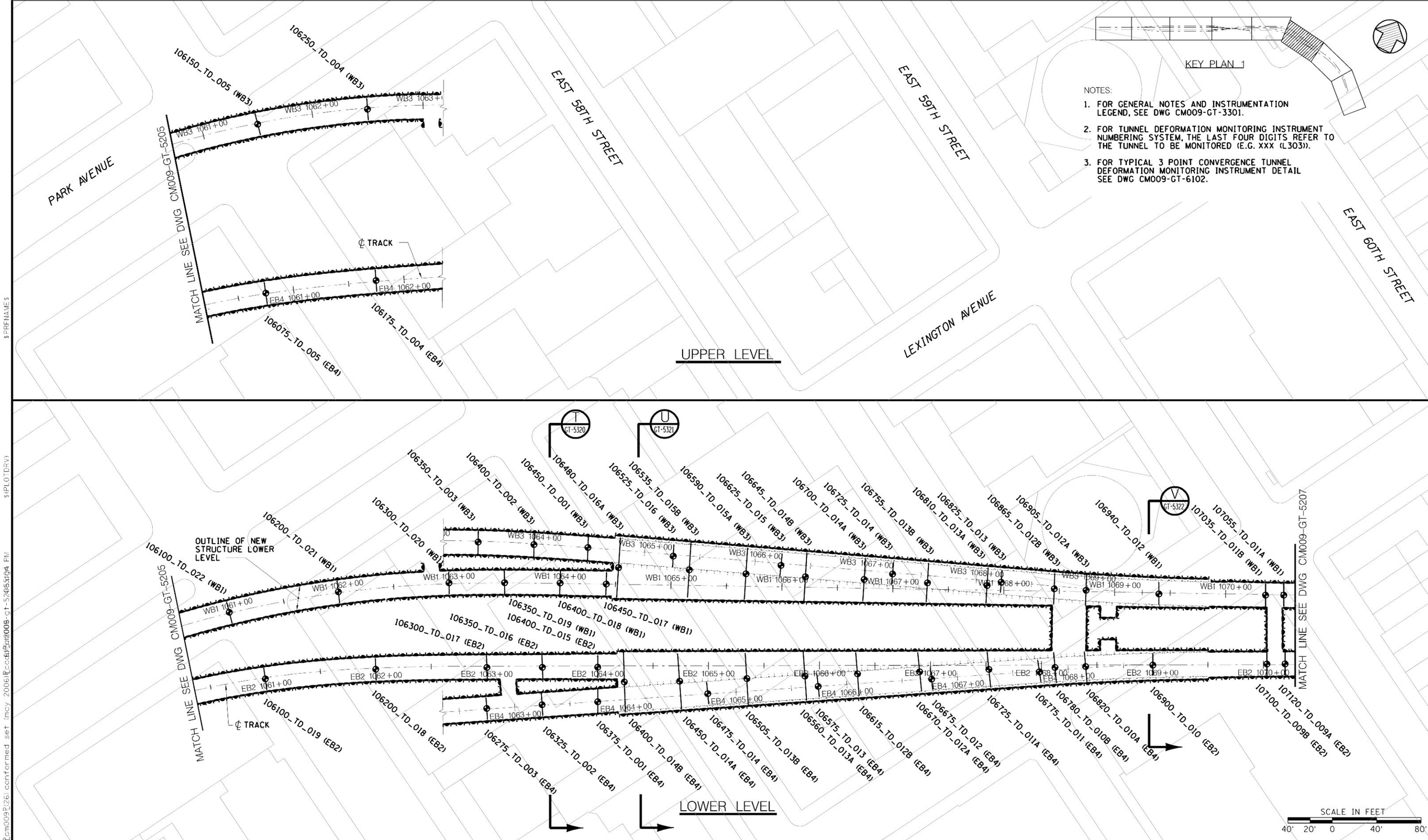
SHEET No. 233 OF 276



KEY PLAN 1

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.

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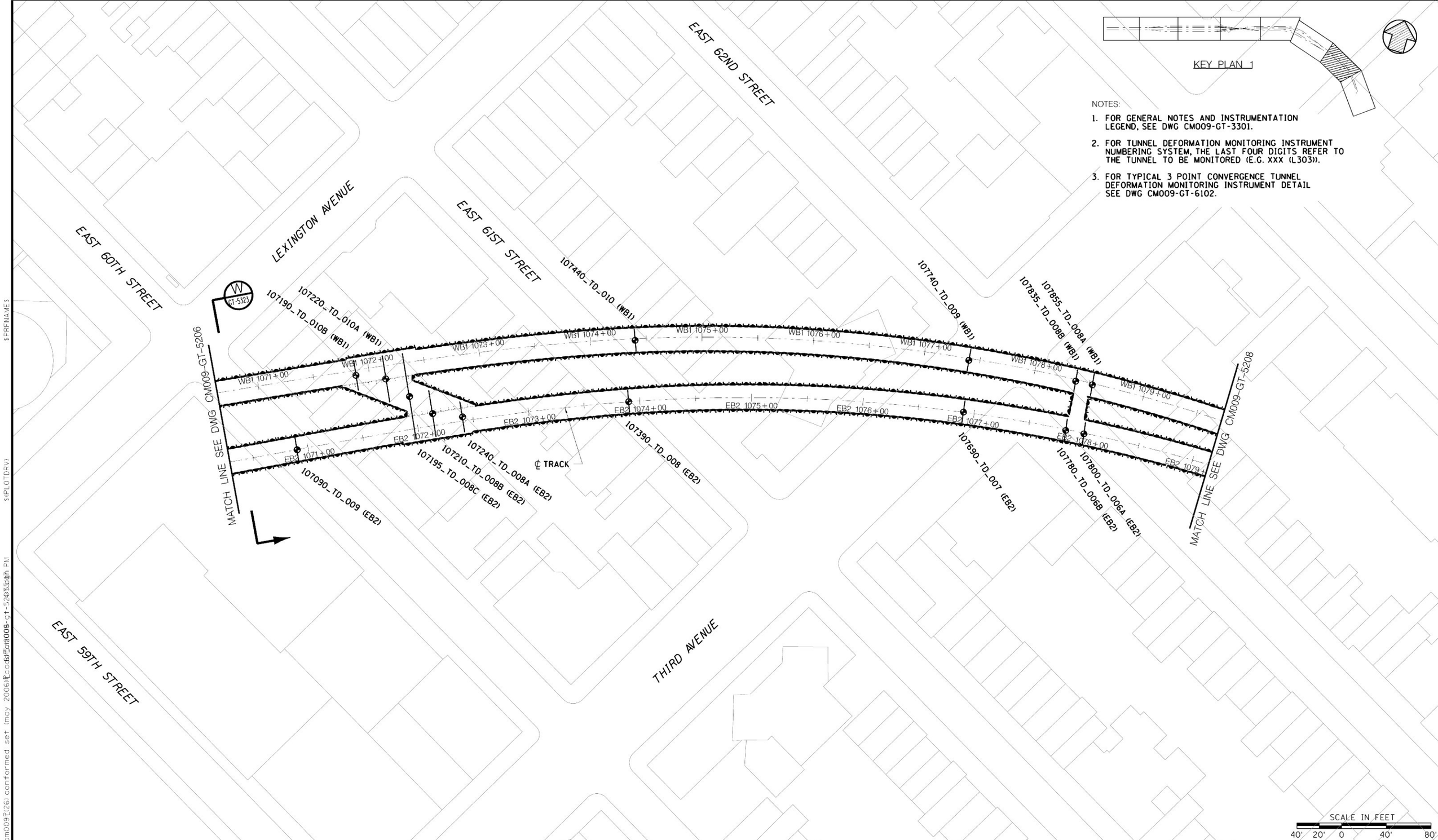
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS UPPER & LOWER LEVEL PLAN

SHEET 6

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5206
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 234 OF 276



NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.

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APPROVED BY: J. SCHABIB

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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS UPPER & LOWER LEVEL PLAN

SHEET 7

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5207
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 235 OF 276

KEY PLAN 1

NOTES:

1. FOR GENERAL NOTES AND INSTRUMENTATION LEGEND, SEE DWG CM009-GT-3301.
2. FOR TUNNEL DEFORMATION MONITORING INSTRUMENT NUMBERING SYSTEM, THE LAST FOUR DIGITS REFER TO THE TUNNEL TO BE MONITORED (E.G. XXX (L303)).
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION MONITORING INSTRUMENT DETAIL SEE DWG CM009-GT-6102.

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ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION – NEW TUNNELS
UPPER & LOWER LEVEL PLAN
SHEET 8

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5208
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 236 OF 276

3-POINT CONVERGENCE FOR TUNNEL DEFORMATION SURVEY (TD) – NEW TUNNELS

INSTRUMENT NO.	STATION	TRACK	READING TYPE
108427_TD_001	1084+27	WB-1	
108377_TD_002	1083+77		
108300_TD_003	1083+00		
108275_TD_004	1082+75		
108225_TD_005	1082+25		
108190_TD_006	1081+90		
108115_TD_007	1081+15		
108040_TD_008	1080+40		
107855_TD_008A	1078+55		
107835_TD_008B	1078+35		
107740_TD_009	1077+40		
107440_TD_010	1074+40		
107220_TD_010A	1072+20		
107190_TD_010B	1071+90		
107055_TD_011A	1070+55		
107035_TD_011B	1070+35		
106940_TD_012	1069+40		
106450_TD_017	1064+00		
106400_TD_018	1064+00		
106350_TD_019	1063+50		
106300_TD_020	1063+00		
106200_TD_021	1062+00		
106100_TD_022	1061+00		
105800_TD_023	1058+00		
105500_TD_024	1055+00		
105200_TD_025	1052+00		
105100_TD_026	1051+00		
105000_TD_027	1050+00		
104900_TD_028	1049+00		
104850_TD_029	1048+50		
104800_TD_030	1048+00		OPTICAL SURVEY
104750_TD_031	1047+50		(TAPE
104700_TD_032	1047+00		EXTENSOMETER)
104650_TD_033	1046+50		
104600_TD_034	1046+00		
104550_TD_035	1045+50		
003440_TD_036	0034+40	T403	
003390_TD_037	0033+90		
003340_TD_038	0033+40		
003250_TD_039	0032+50		
003160_TD_040	0031+60		
002950_TD_041	0029+50		
002790_TD_042	0027+90		
002650_TD_043	0026+50		
002340_TD_044	0023+50		
002050_TD_045	0020+50		
001750_TD_046	0017+40	L403	
001560_TD_047	0015+60		
001150_TD_048	0011+50		
001040_TD_048A	0010+40		
001020_TD_048B	0010+20		
000850_TD_049	0008+50		
000595_TD_049A	0005+95		
000575_TD_049B	0005+75		
000250_TD_051	0002+50		
000030_TD_052	0000+30		
108384_TD_001	1083+84	EB-2	
108330_TD_002	1083+30		
108230_TD_003	1082+30		
108140_TD_004	1081+40		
108060_TD_005	1080+60		
107990_TD_006	1079+90		
107800_TD_006A	1078+00		
107780_TD_006B	1077+80		
107690_TD_007	1076+90		
107390_TD_008	1073+90		
107240_TD_008A	1072+40		
107210_TD_008B	1072+10		

INSTRUMENT NO.	STATION	TRACK	READING TYPE
107195_TD_008C	1071+95	EB-2	
107090_TD_009	1070+90		
107120_TD_009A	1071+20		
107100_TD_009B	1071+00		
106900_TD_010	1069+00		
106400_TD_015	1064+00		
106350_TD_016	1063+50		
106300_TD_017	1063+00		
106200_TD_018	1062+00		
106100_TD_019	1061+00		
105800_TD_020	1058+00		
105500_TD_021	1055+00		
105200_TD_022	1052+00		
105100_TD_023	1051+00		
105000_TD_024	1050+00		
104900_TD_025	1049+00		
104850_TD_026	1048+50		
104800_TD_027	1048+00		
104750_TD_028	1047+50		
104700_TD_029	1047+00		
104650_TD_030	1046+50		
104600_TD_031	1046+00		
104550_TD_032	1045+50		
003440_TD_033	0034+40	T-402	
003390_TD_034	0033+90		
003340_TD_035	0033+40		
003250_TD_036	0032+50		
003160_TD_037	0031+60		
002950_TD_038	0029+50		
002800_TD_039	0028+00		
002650_TD_040	0026+50		OPTICAL SURVEY
002350_TD_041	0023+50		(TAPE
002050_TD_042	0020+50		EXTENSOMETER)
001750_TD_043	0017+50	L402	
001560_TD_044	0015+60		
001110_TD_045	0011+50		
001040_TD_045A	0010+40		
001020_TD_045B	0010+20		
000850_TD_046	0008+50		
000250_TD_048	0002+50		
000100_TD_049	0000+30		
000595_TD_050A	0005+95		
000575_TD_050B	0005+75		
106375_TD_001	1063+75	EB-4	
106325_TD_002	1063+25		
106275_TD_003	1062+75		
106175_TD_004	1061+75		
106075_TD_005	1060+75		
105800_TD_006	1058+00		
105500_TD_007	1055+00		
105200_TD_008	1052+00		
104880_TD_009A	1048+80		
104860_TD_009B	1048+60		
104800_TD_010	1048+00		
106820_TD_010A	1068+20		
106780_TD_010B	1067+80		
104700_TD_011	1047+00		
106775_TD_011	1067+75		
106725_TD_011A	1067+25		
104600_TD_012	1046+00		
106675_TD_012	1066+75		
106670_TD_012A	1066+70		
106615_TD_012B	1066+15		
104550_TD_013	1045+50		
106575_TD_013	1065+75		
106560_TD_013A	1065+60		
106505_TD_013B	1065+05		
104500_TD_014	1045+00		

INSTRUMENT NO.	STATION	TRACK	READING TYPE
106475_TD_014	1064+75	EB-4	
106450_TD_014A	1064+50		
106400_TD_014B	1064+00		
104450_TD_015	1044+50		
104400_TD_016	1044+00		
003280_TD_016A	0032+80	T-302	
003250_TD_017	0032+50		
003230_TD_017A	0032+30		
003180_TD_017B	0031+80		
003150_TD_018	0031+50		
003130_TD_018A	0031+30		
003100_TD_019	0031+00		
003080_TD_019A	0030+80		
003050_TD_020	0030+50		
003030_TD_020A	0030+30		
002980_TD_020B	0029+80		
002950_TD_021	0029+50		
002800_TD_022	0028+00		
002650_TD_023	0026+50		
002350_TD_024	0023+50		
002100_TD_025	0021+00		
001950_TD_026	0019+50		
001750_TD_027	0017+50	L302	
001650_TD_028	0016+50		
001520_TD_029	0015+50		
001420_TD_030	0014+20		
001320_TD_031	0013+20		
001220_TD_032	0012+20		
001040_TD_032A	0010+40		
001020_TD_032B	0010+20		
000720_TD_034	0007+20		OPTICAL SURVEY
000595_TD_034A	0005+95		(TAPE
000575_TD_034B	0005+75		EXTENSOMETER)
000420_TD_035	0004+20		
000100_TD_036	0001+00		
106450_TD_001	1064+50	WB3	
106400_TD_002	1064+00		
106350_TD_003	1063+50		
106250_TD_004	1062+50		
106150_TD_005	1061+50		
105800_TD_006	1058+00		
105500_TD_007	1055+00		
105200_TD_008	1052+00		
104880_TD_009A	1048+80		
104860_TD_009B	1048+60		
104800_TD_010	1048+00		
104700_TD_011	1047+00		
104600_TD_012	1046+00		
106905_TD_012A	1069+05		
106865_TD_012B	1068+65		
104550_TD_013	1045+50		
106825_TD_013	1068+25		
106810_TD_013A	1068+10		
106755_TD_013B	1067+55		
104500_TD_014	1045+00		
106725_TD_014	1067+25		
106700_TD_014A	1067+00		
106645_TD_014B	1066+45		
104450_TD_015	1044+50		
106625_TD_015	1066+25		
106590_TD_015A	1065+90		
106535_TD_015B	1065+35		
104400_TD_016	1044+00		
106525_TD_016	1065+25		
106480_TD_016A	1064+80		
003280_TD_016A	0032+80	T-303	
003250_TD_017	0032+50		
003230_TD_017A	0032+30		

INSTRUMENT NO.	STATION	TRACK	READING TYPE
003180_TD_017B	0031+80	T-303	
003150_TD_018	0031+50		
003130_TD_018A	0031+30		
003100_TD_019	0031+00		
003080_TD_019A	0030+80		
003050_TD_020	0030+50		
003030_TD_020A	0030+30		
002980_TD_020B	0029+80		
002950_TD_021	0029+50		
002800_TD_022	0028+00		
002650_TD_023	0026+50		
002350_TD_024	0023+50		
002100_TD_025	0020+00		
001950_TD_026	0019+50		OPTICAL SURVEY
001750_TD_027	0017+50	L303	(TAPE
001650_TD_028	0016+50		EXTENSOMETER)
001550_TD_029	0015+50		
001250_TD_030	0012+50		
001110_TD_031	0011+10		
001040_TD_031A	0010+40		
001020_TD_031B	0010+20		
000950_TD_032	0009+50		
000650_TD_033	0006+50		
000595_TD_033A	0005+95		
000575_TD_033B	0005+75		
000350_TD_034	0003+50		
000050_TD_035	0000+50		

NOTE:

1. THE RESIDENT ENGINEER MAY REVISE THE LOCATIONS OF INSTRUMENTS SHOWN ON THE DRAWINGS.

HORIZONTAL EXTENSOMETER (H) – NEW TUNNELS

INSTRUMENT NO.	BASELINE	STATION	OFFSET (FT)	ANCHOR ELEVATIONS (FT)	LOCATION	READING TYPE
002855_BX_001 (T402)	T402	0028+55	20.5E	5, 10, 50		
002610_BX_002 (T402)	T402	0026+10	20.5E	5, 10, 50		
002500_BX_003 (T402)	T402	0025+00	20.5E	5, 10, 50		
002340_BX_004 (T402)	T402	0023+40	20.5E	5, 10, 50		
002170_BX_005 (T402)	T402	0021+70	20.5E	5, 10, 50		
002040_BX_006 (T402)	T402	0020+40	20.5E	5, 10, 50		
001875_BX_007 (T402)	T402	0018+75	20.5E	5, 10, 50	IN-TUNNEL	MANUAL
002855_BX_001 (T302)	T302	0028+55	20.5W	5, 20, 35		
002610_BX_002 (T302)	T302	0026+10	20.5W	5, 20, 35		
002500_BX_003 (T302)	T302	0025+00	20.5W	5, 20, 35		
002340_BX_004 (T302)	T302	0023+40	20.5W	5, 20, 35		
002170_BX_005 (T302)	T302	0021+70	20.5W	5, 20, 35		
002040_BX_006 (T302)	T302	0020+40	20.5W	5, 20, 35		
001875_BX_007 (T302)	T302	0018+75	20.5W	5, 20, 35		

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: J. RICCARDI
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

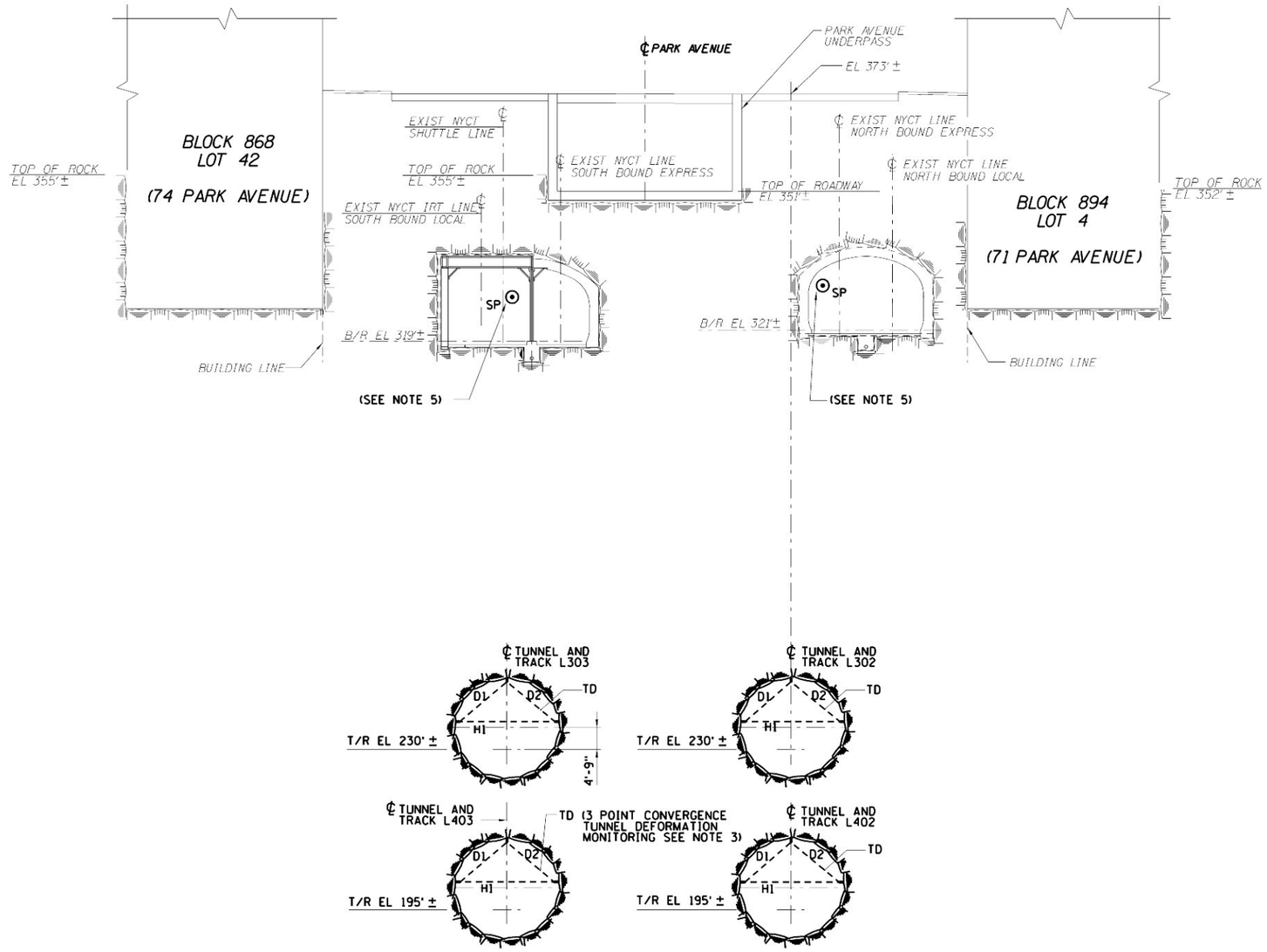
GEOTECHNICAL INSTRUMENTATION SCHEDULE
NEW TUNNELS

SCALE: NONE
DRAWING NUMBER: CM009-GT-5251
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 237 OF 276

NOTES:

1. THE EXISTING STRUCTURES AS SHOWN IN THIS SECTION ARE BASED ON SEVERAL SOURCES OF INFORMATION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND CONDITIONS OF EXISTING STRUCTURES.
2. TOP OF ROCK AS SHOWN WAS INTERPOLATED FROM BORINGS.
3. FOR TYPICAL 3 POINT CONVERGENCE TUNNEL DEFORMATION DETAIL, SEE DWG CM009-GT-6102.
4. FOR ADDITIONAL GEOTECHNICAL INSTRUMENTATION GENERAL NOTES AND LEGEND SEE DWG CM009-GT-3301.
5. INSTRUMENTATION SECTION SCHEMATIC ONLY. INSTRUMENT LOCATION MAY NOT MATCH WITH PLAN LOCATION.



SECTION @ TRACK L402 STA 1+70 (A) GT-4001 GT-5022, GT-5201, ST-1001, ST-1101

SCALE IN FEET
15' 10' 5' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
469 Seventh Avenue • New York, NY • 10018

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DATE:	REVISIONS	No.
5/31/04		
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

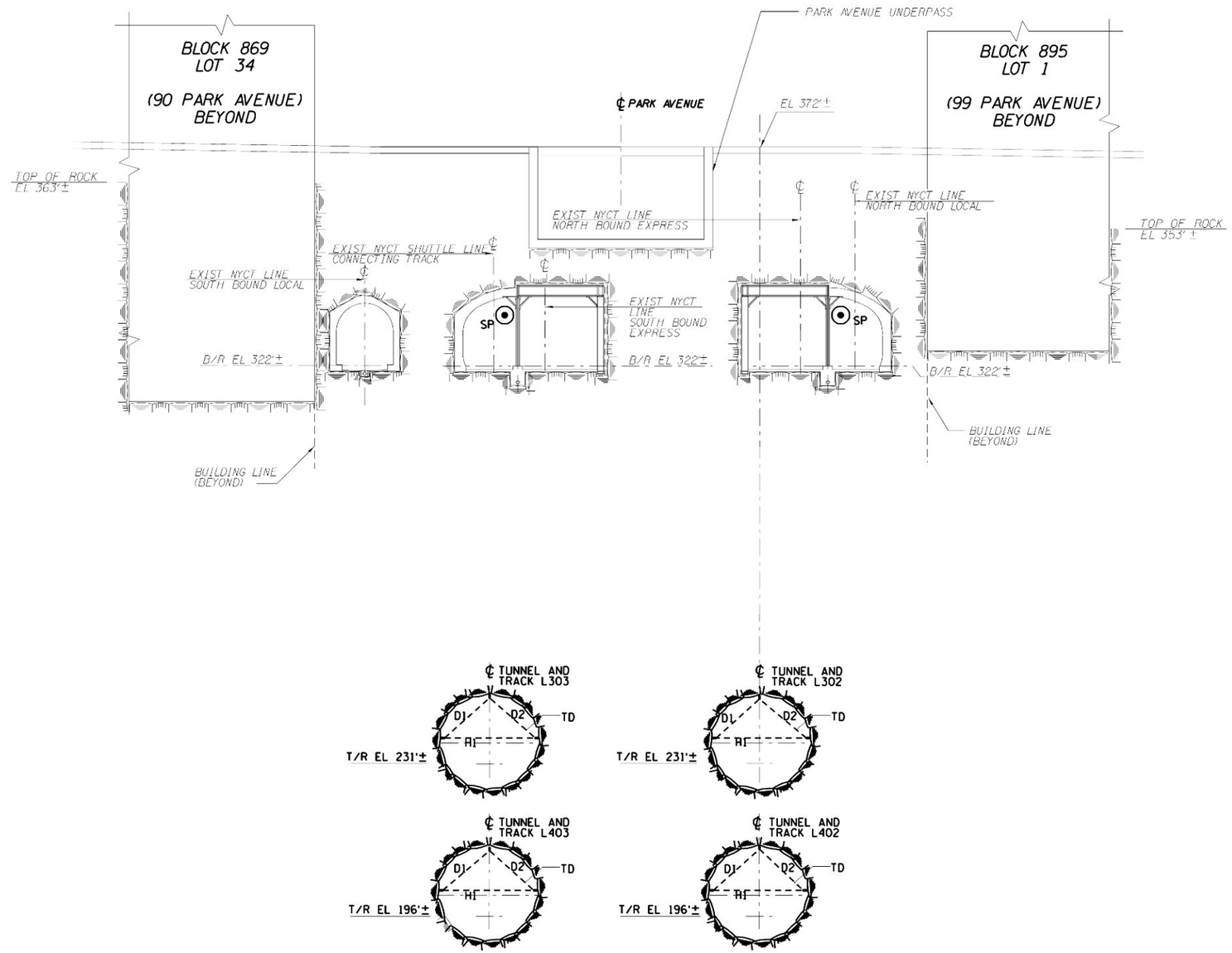
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION A

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5301
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 238 OF 276

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK L402 STA 3+20 (B) GT-4001 GT-5022, GT-5201, ST-1001, ST-1101

SCALE IN FEET
15' 10' 5' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

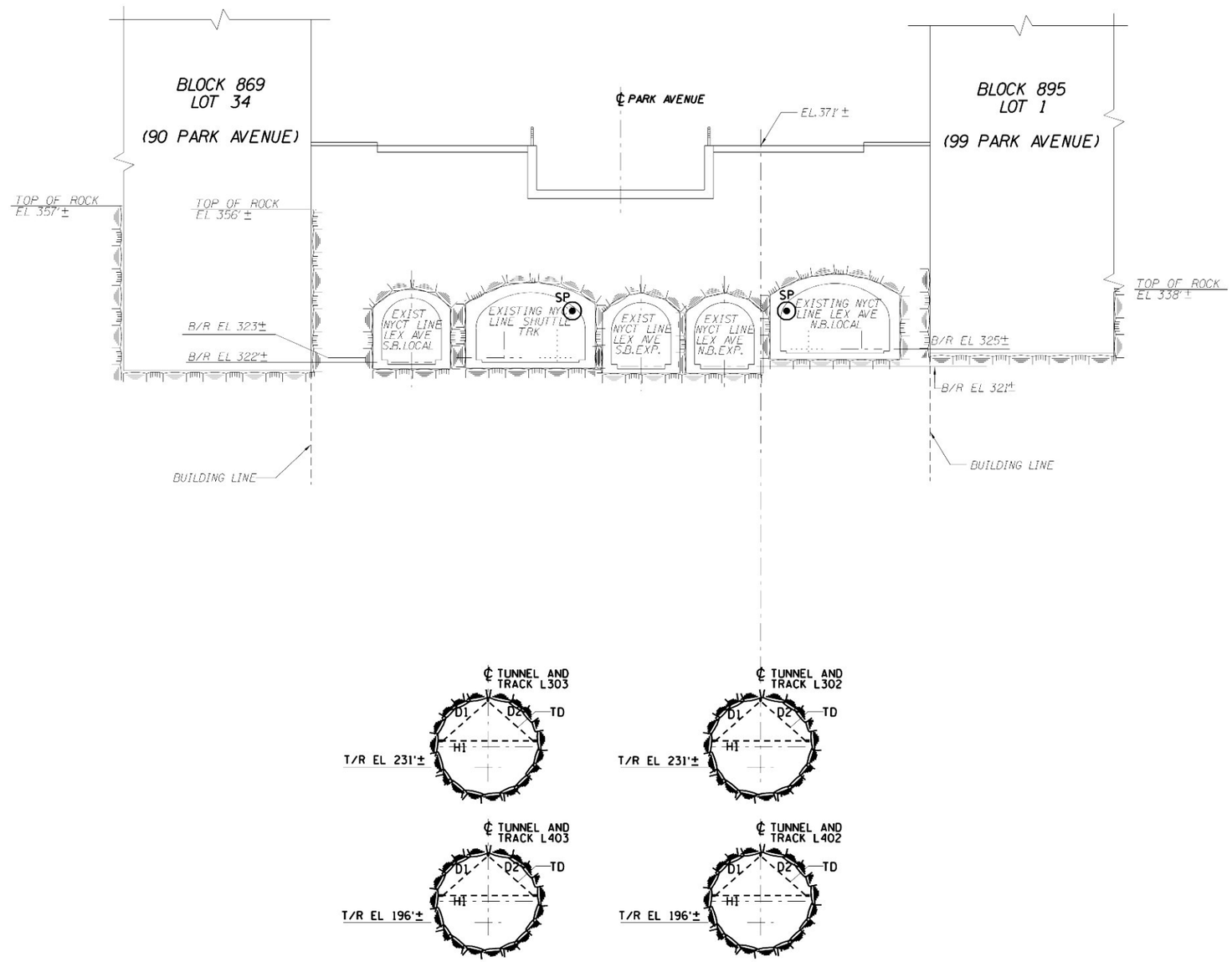
GEOTECHNICAL INSTRUMENTATION
SECTION B

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5302
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 239 OF 276

$PRFNAME$
$PLOTDRV$
$REF6$
y:\cadd submissions\cm009\26\ conformed set (may 2006)\cadd\cm009-gt-5302.dgn PM

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK L402 STA 4+60 (C) GT-5201 ST-1001, ST-1101

SCALE IN FEET
15' 10' 5' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
469 Seventh Avenue • New York, NY • 10018

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION C

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5303
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 240 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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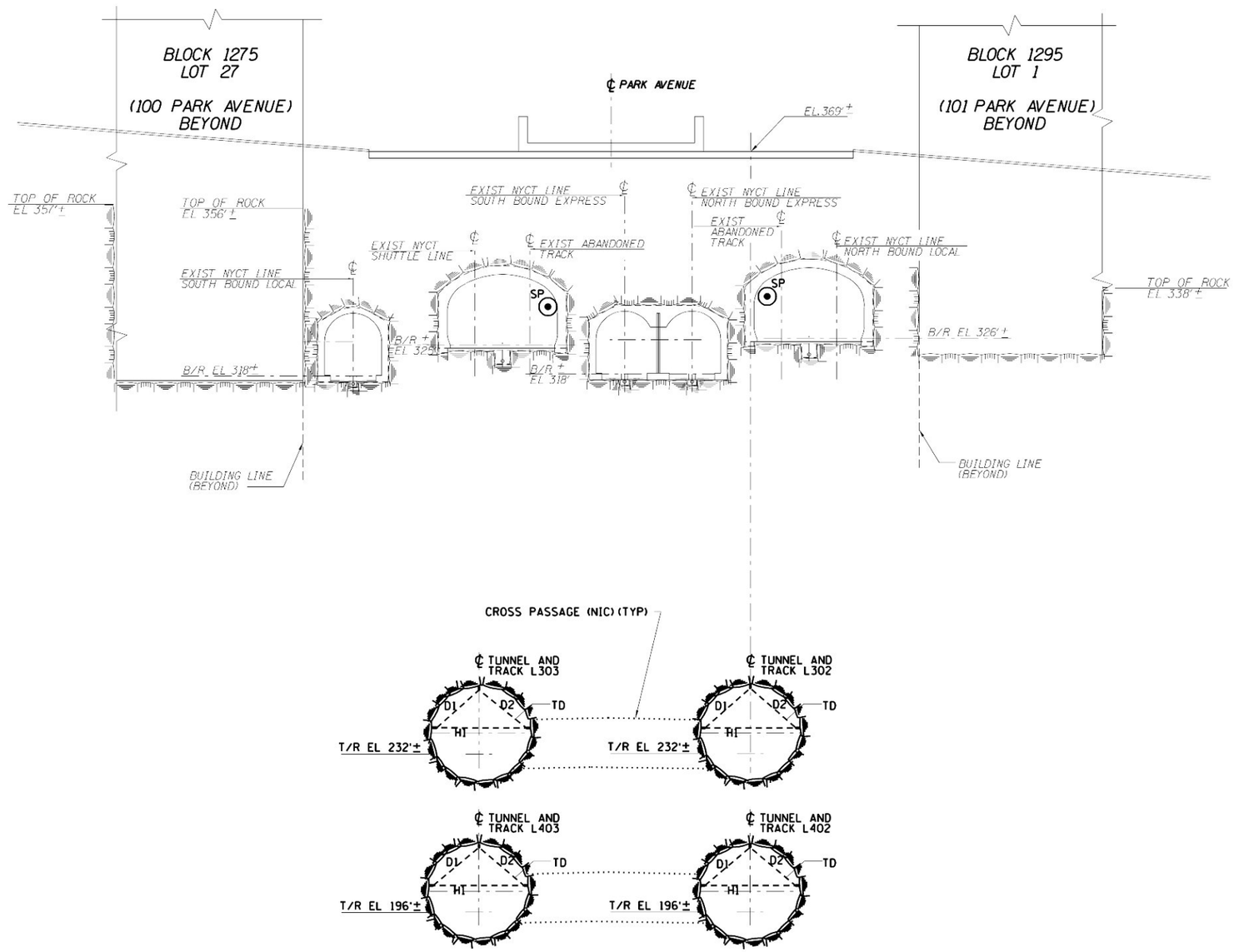
NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK L402 STA 5+90 (D) GT-4002 GT-5023, GT-5201, ST-1002, ST-1102

SCALE IN FEET
15' 10' 5' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
469 Seventh Avenue • New York, NY • 10018

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

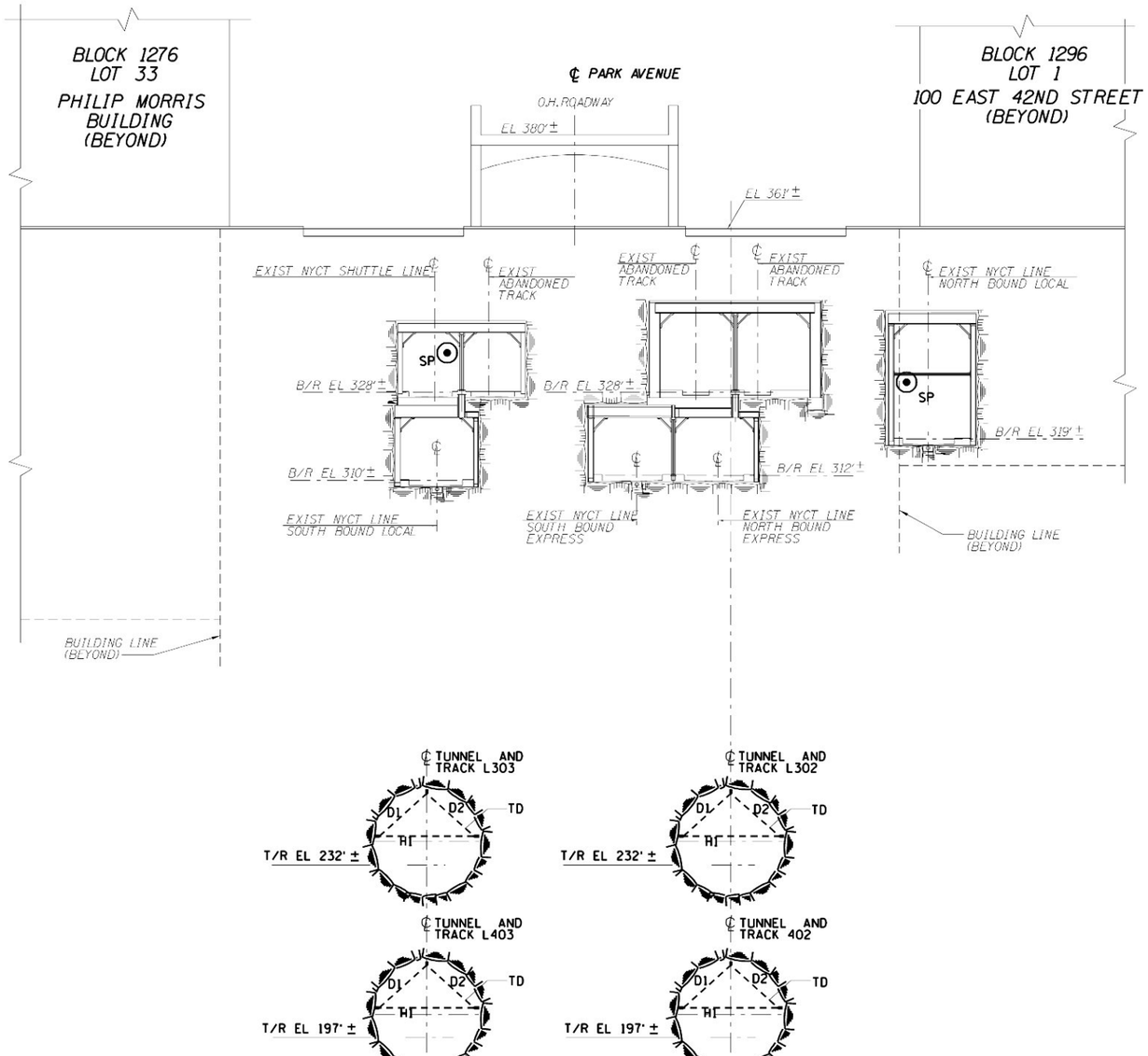
GEOTECHNICAL INSTRUMENTATION
SECTION D

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5304
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 241 OF 276

$PRFNAME$
$PLOTDRV$
$REF6$
y:\ccad submissions\cm009\26) conformed set (may 2006)\ccad\cm009-gt-5304.dgn PM

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK L402 STA 8+40 (E) GT-4002 GT-5023, GT-5201, ST-1002, ST-1102

SCALE IN FEET
15' 10' 5' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

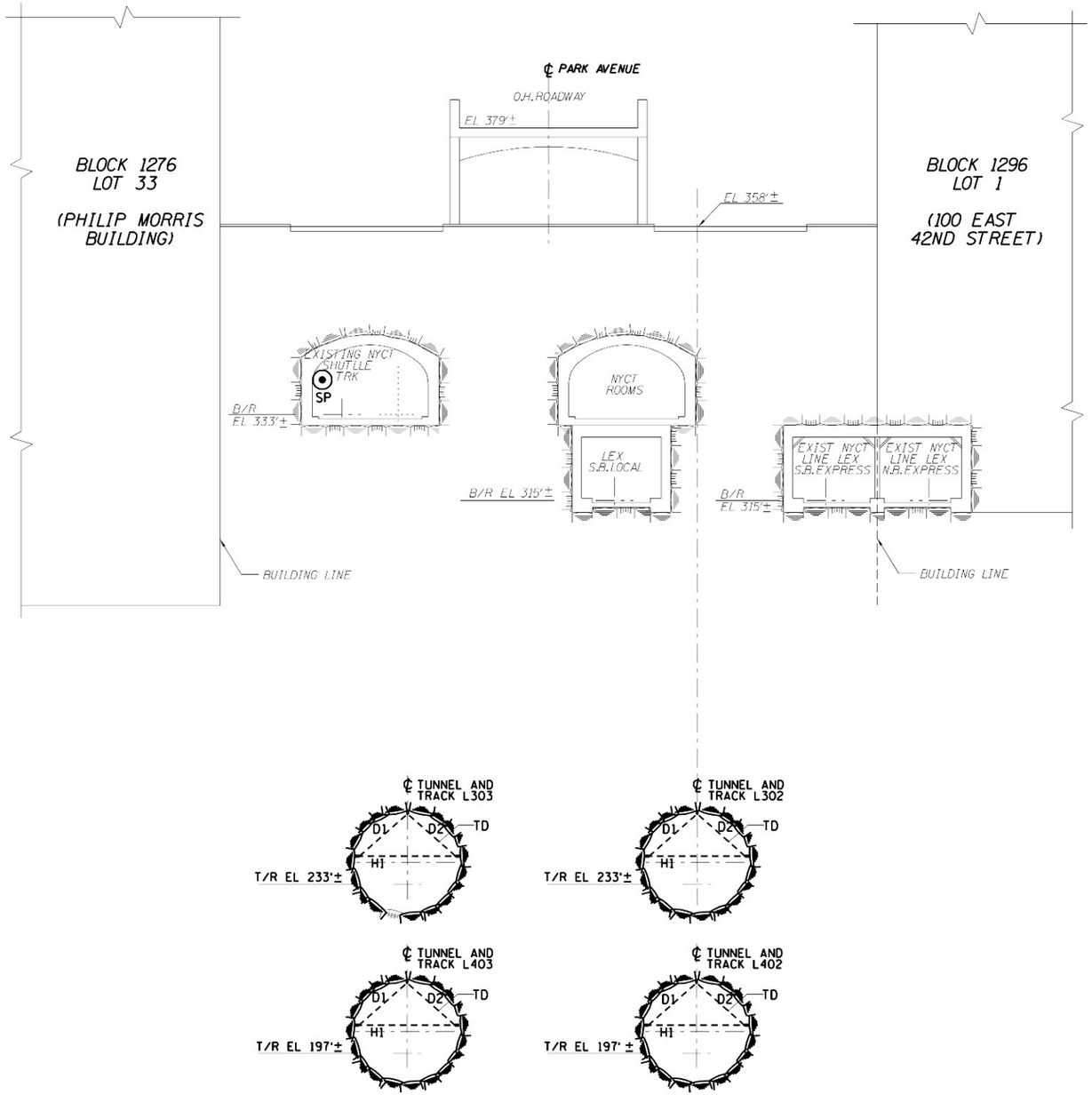
GEOTECHNICAL INSTRUMENTATION
SECTION E

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5305
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 242 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
y:\ccad submissions\cm009\(26) conformed set (may 2006)\ccad\cm009-gt-5305.dgn PM

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK L402 STA 9+10 F GT-5201 ST-1002, ST-1102

SCALE IN FEET
15' 10' 5' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

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DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION F

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5306
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 243 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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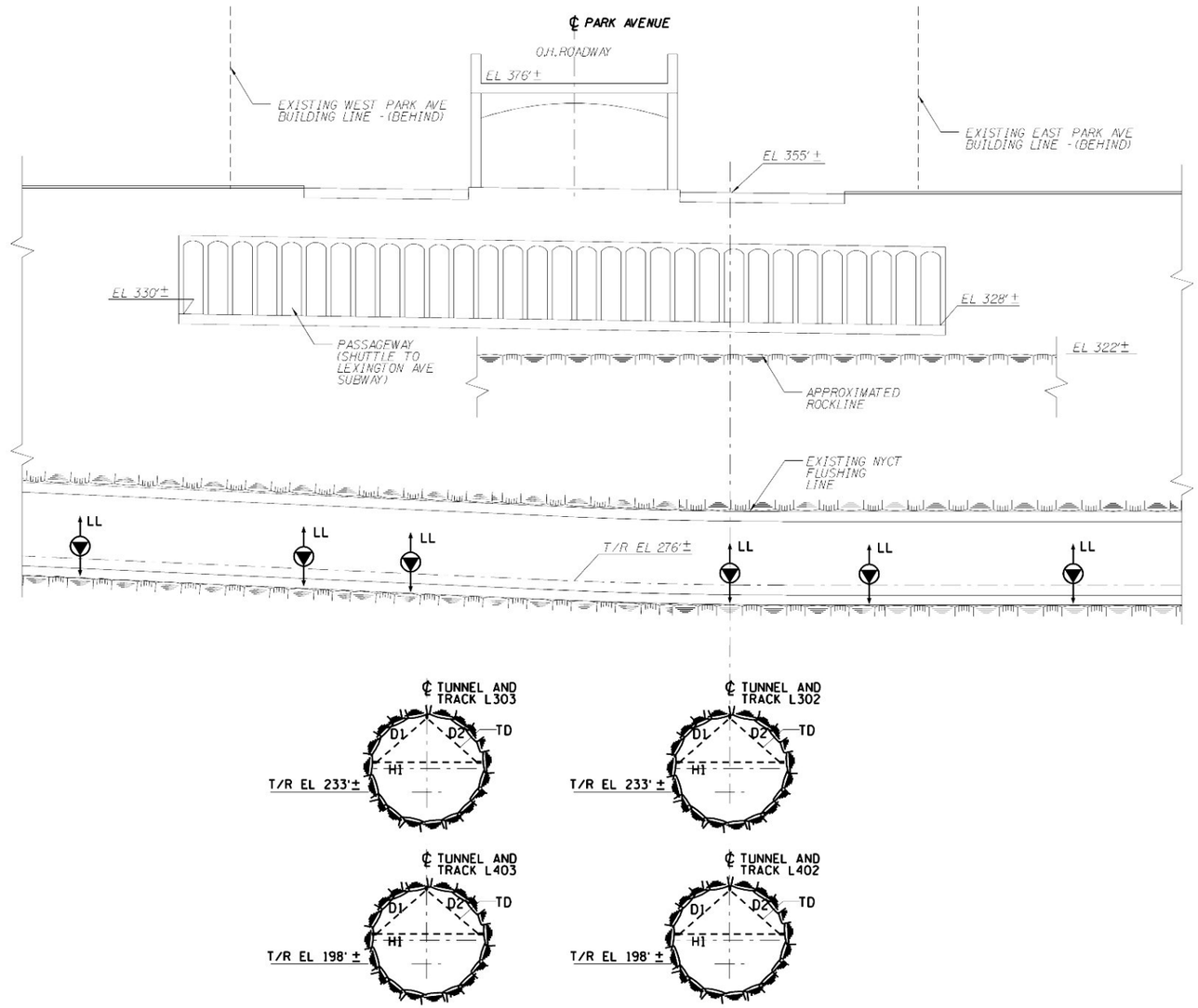
NOTE:

1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK L402 STA 10+60 (G / GT-5202) ST-1003, ST-1103

SCALE IN FEET

15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

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APPROVED BY: J. SCHABIB

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DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SECTION G

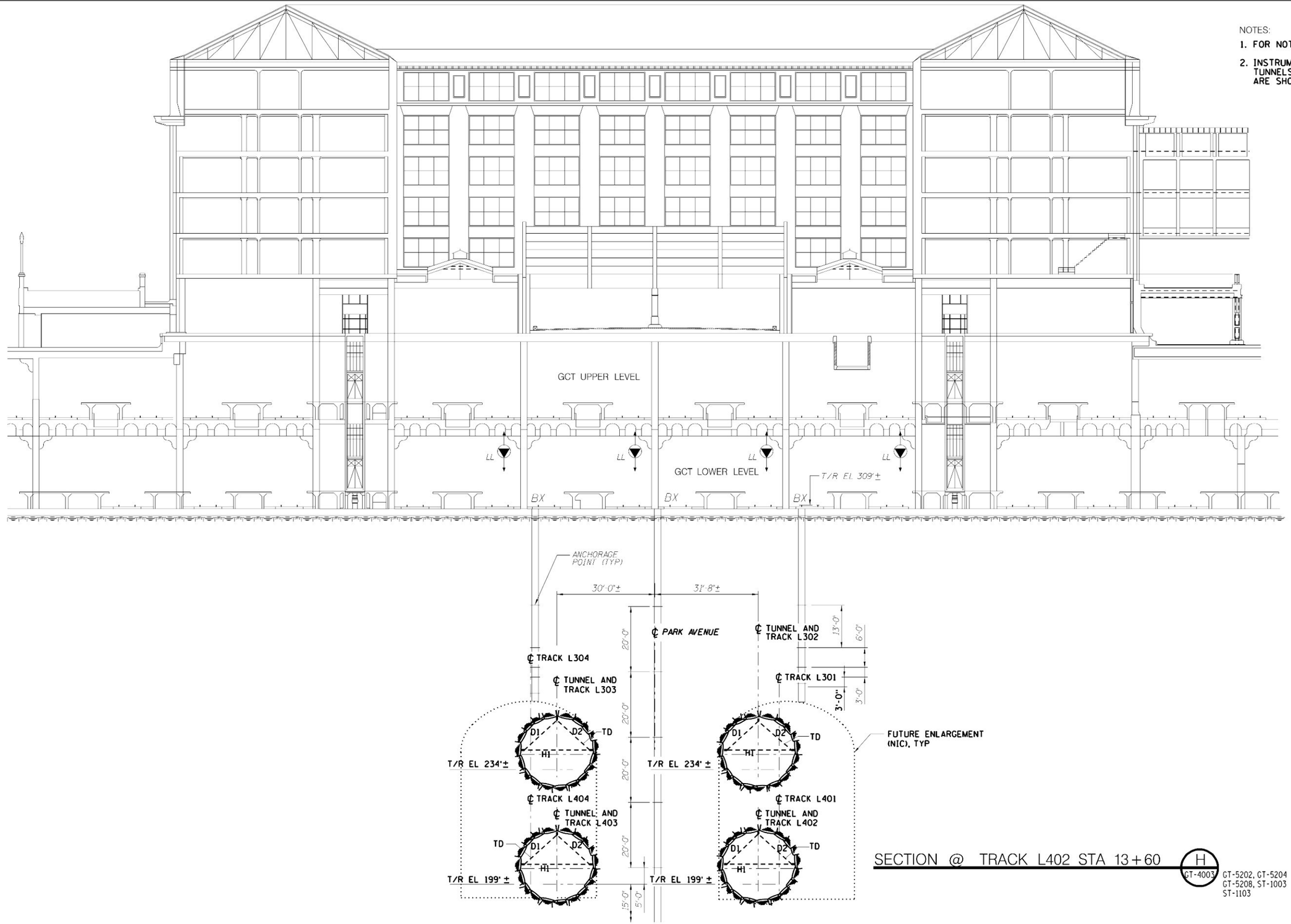
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5307
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 244 OF 276

$PRFNAMES
$PLOTDRV
REF
y:\ccad submissions\cm009\(26) conformed set (may 2006)\cc-cm009-gt-5306.dwg 5/26/06 1:46:49 PM

NOTES:

1. FOR NOTES, SEE DRAWING CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ TRACK L402 STA 13+60 (H / GT-4003)

GT-5202, GT-5204
GT-5208, ST-1003
ST-1103

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

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DATE:	REVISIONS	No.
5/31/04		
5/26/06	CONFORMED DRAWING	0

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CHECKED BY: A. GONZALEZ
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APPROVED BY: J. SCHABIB

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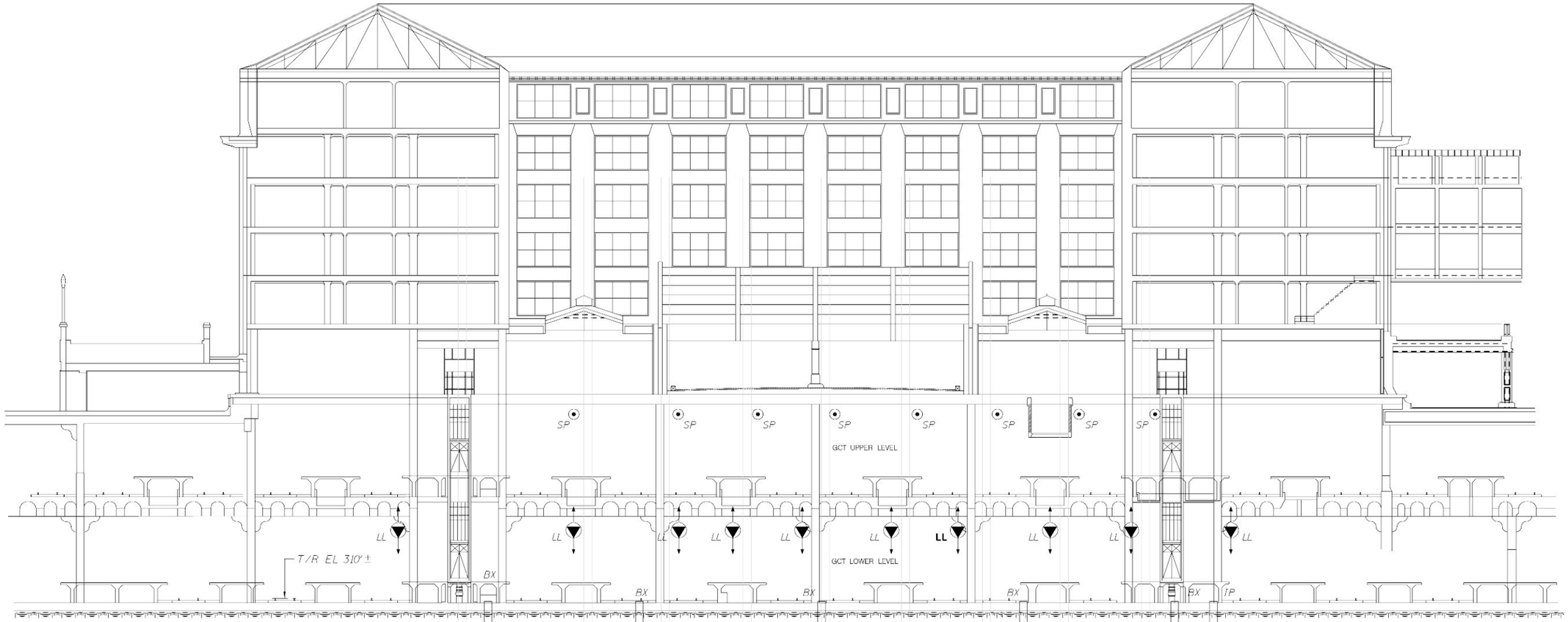
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SECTION H

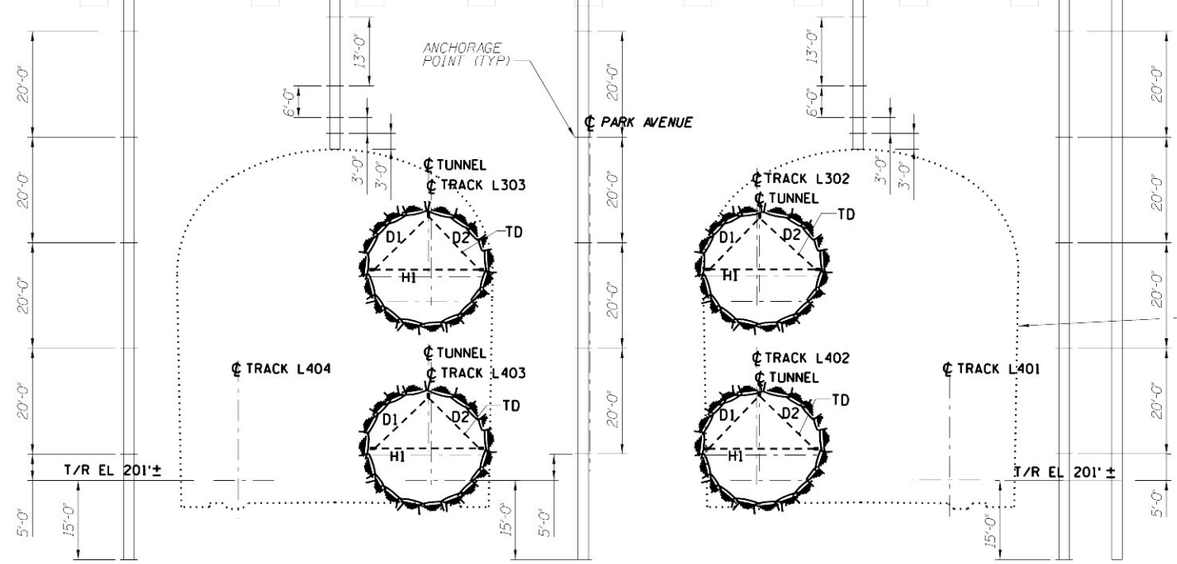
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5308
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 245 OF 276



NOTES:

1. FOR NOTES, SEE DRAWINGS CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @

TRACK L402 STA 16+40

1 / GT-4004 — GT-5202, ST-1004, ST-1104

SCALE IN FEET

15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

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DATE:	REVISIONS	No.
5/31/04		
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
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CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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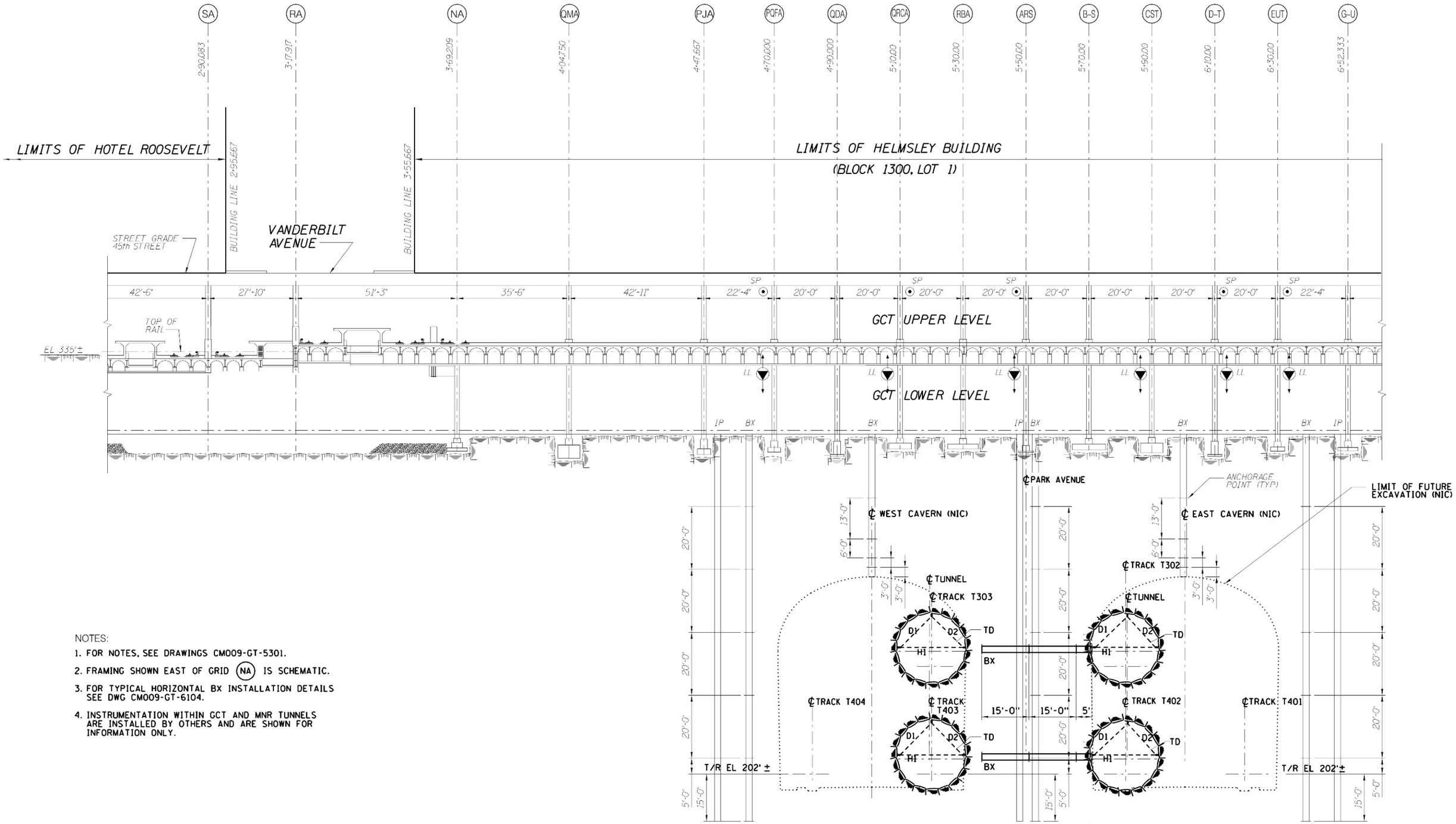
GEOTECHNICAL INSTRUMENTATION SECTION I

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5309
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 246 OF 276

$PRFNAME$
$PLOTDRV$
$SHEET$
y:\ccad submissions\cm009\(26) conformed set (may 2006)\ccad\cm009-gt-5309.dwg 5/26/06 3:43:19 PM



NOTES:

1. FOR NOTES, SEE DRAWINGS CM009-GT-5301.
2. FRAMING SHOWN EAST OF GRID (NA) IS SCHEMATIC.
3. FOR TYPICAL HORIZONTAL BX INSTALLATION DETAILS SEE DWG CM009-GT-6104.
4. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.

SECTION @ TRACK T302 STA 20+40 (J) GT-4004 GT-5203, ST-1004, ST-1104

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

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East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

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CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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GEOTECHNICAL INSTRUMENTATION
SECTION J

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5310
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 247 OF 276

$PRFNAME$
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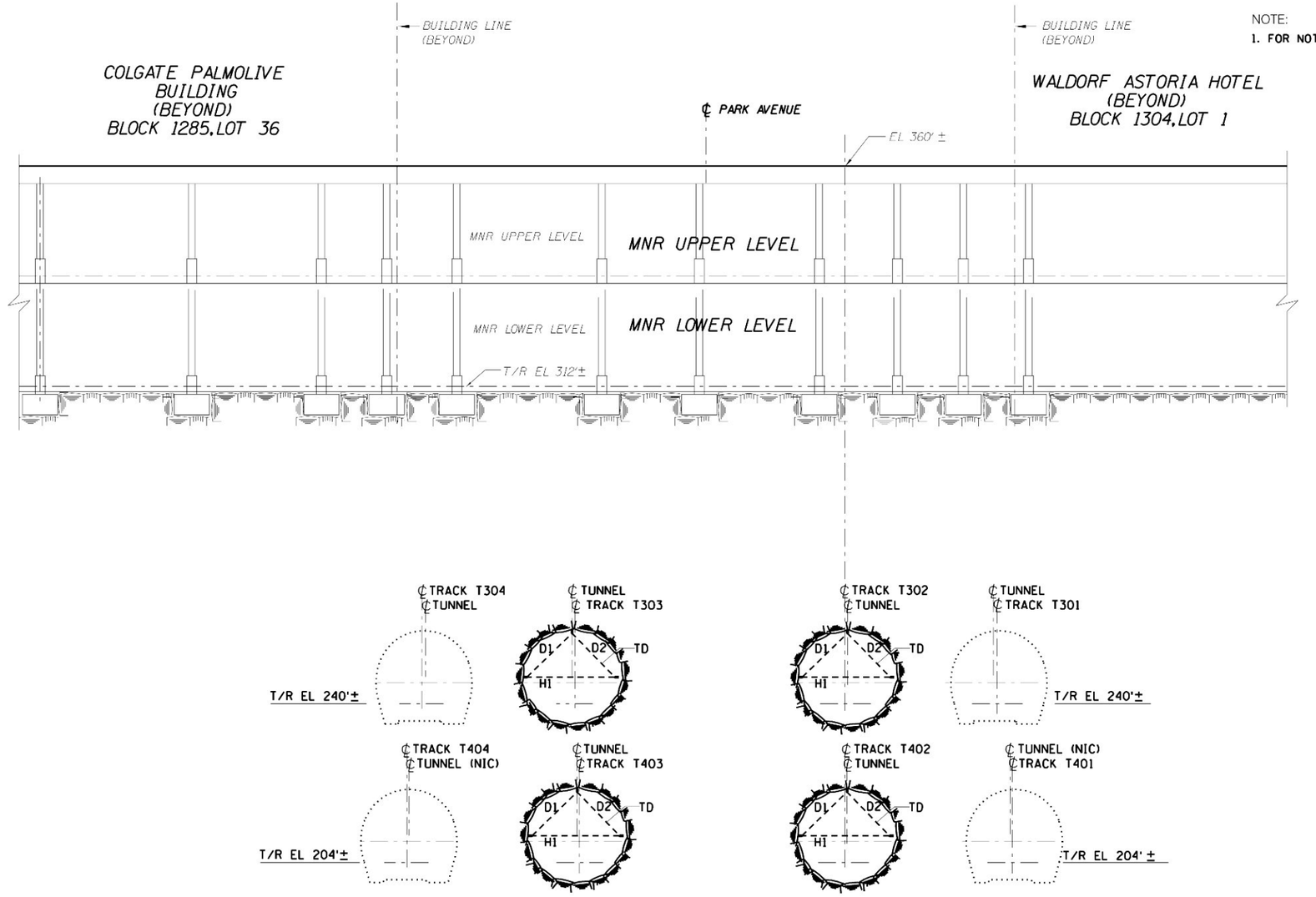
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK T302 STA 29+50 (K) GT-5203 ST-1006, ST-1106

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION K

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5311
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 248 OF 276

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$REF6$
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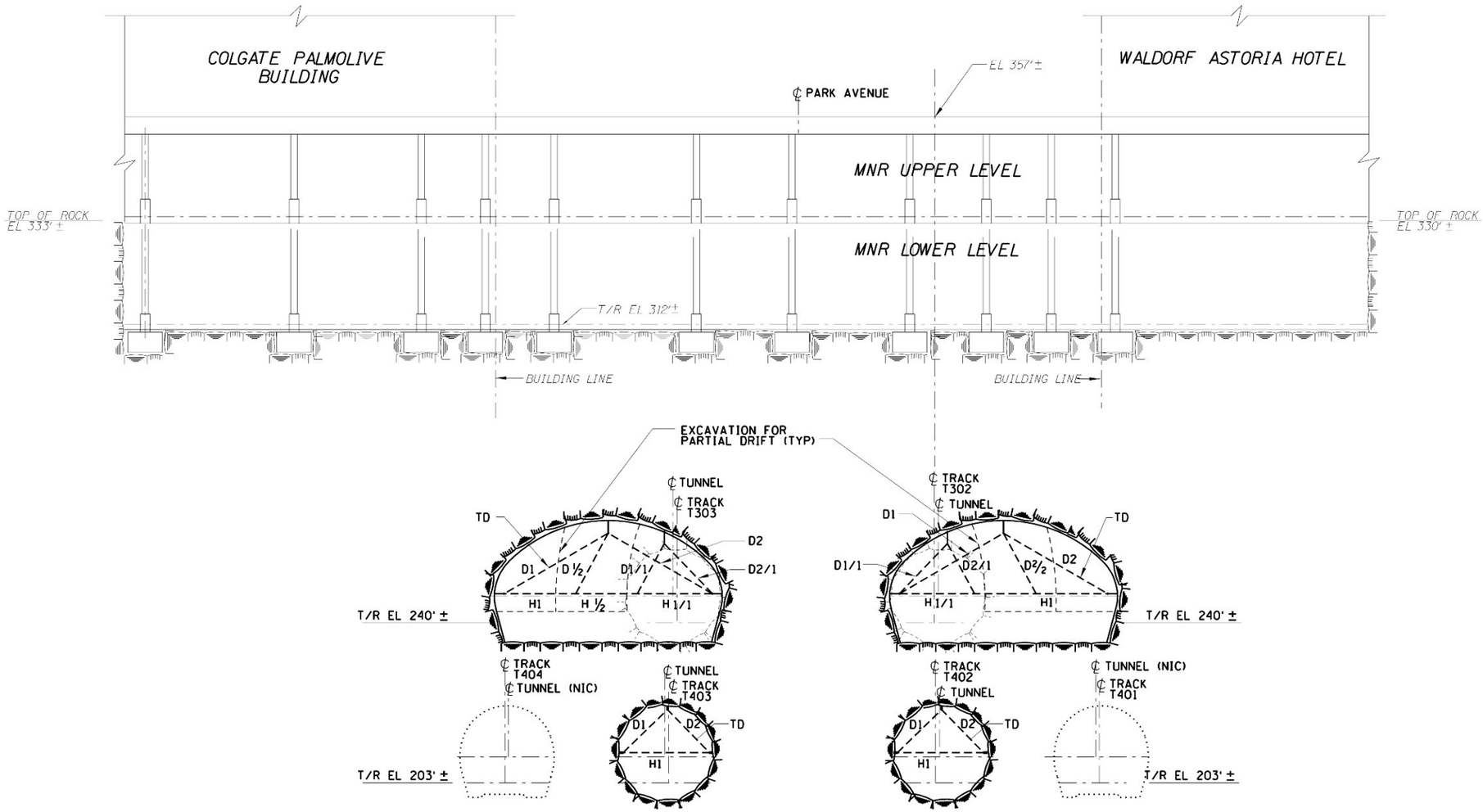
NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK T402 STA 30+20 (L / GT-5203) ST-1006, ST-1106,

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION L

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5312
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 249 OF 276

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$PLOTDRV$
$REF6$
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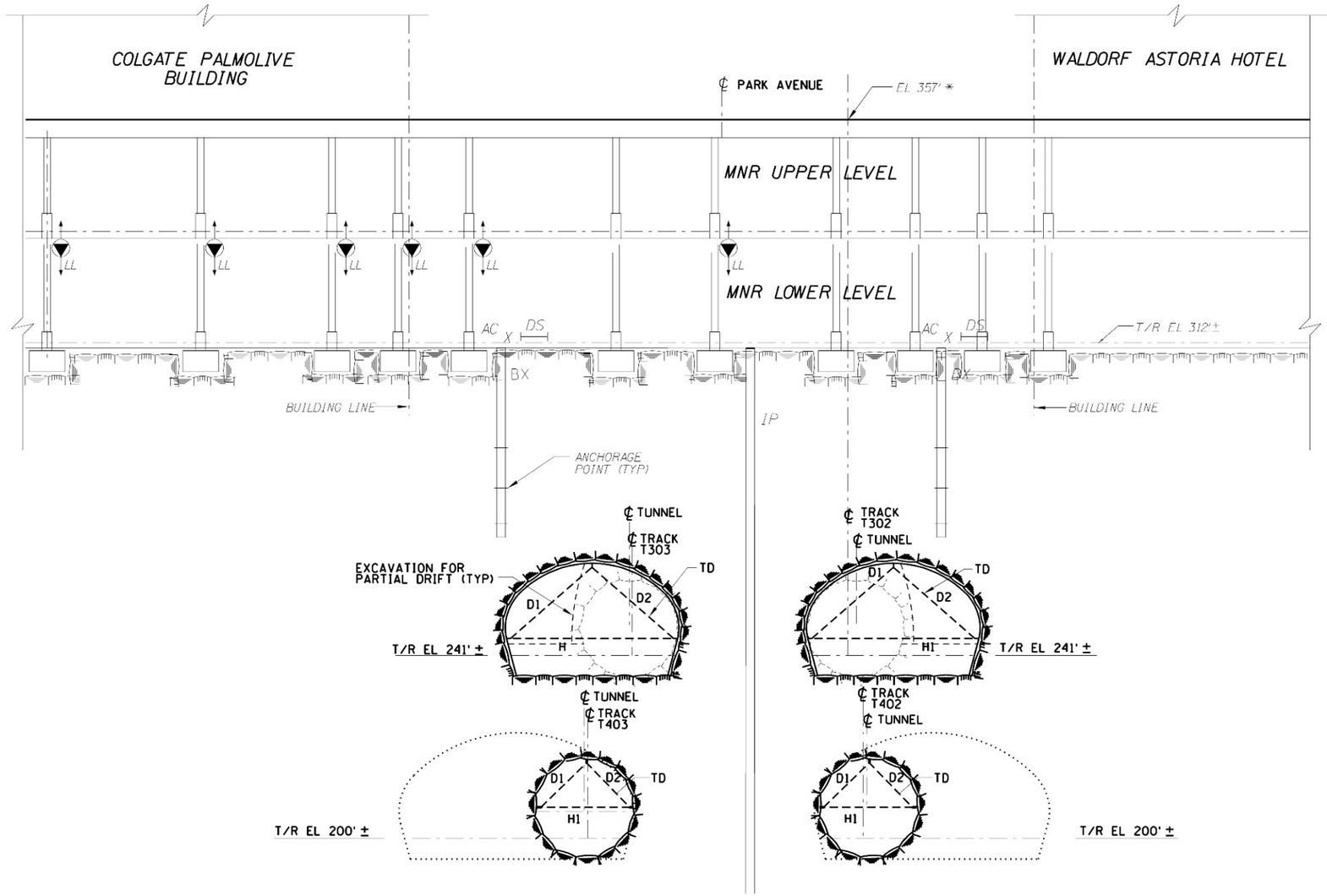
NOTE:

1. FOR NOTES, SEE DRAWINGS CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ TRACK T402 STA 31+60 (M) GT-4007 GT-5204, ST-1007, ST-1107

SCALE IN FEET

15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

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CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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GEOTECHNICAL INSTRUMENTATION
SECTION M

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5313
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 250 OF 276

$PRFNAMES
$PLOTDRV
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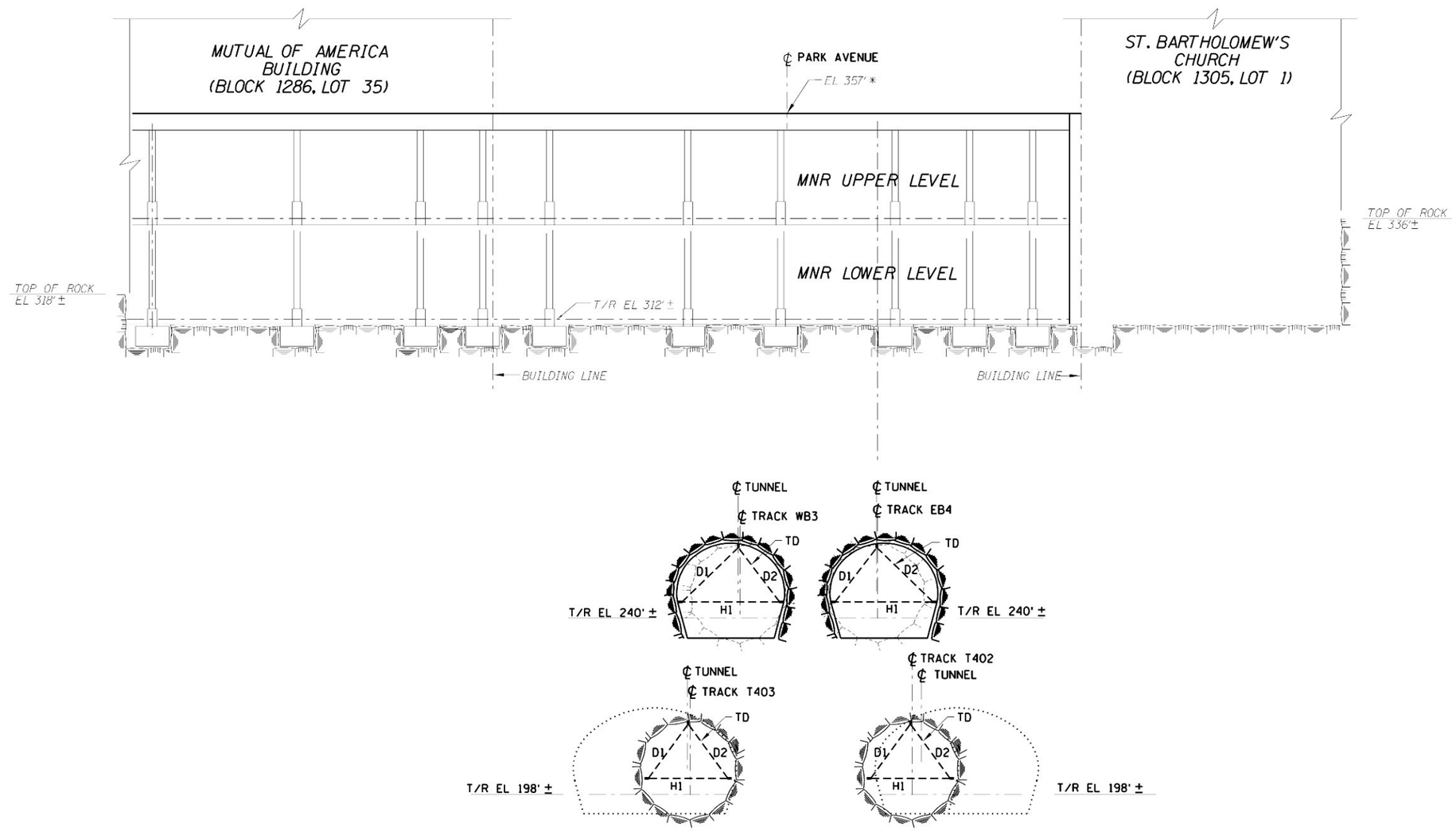
SHEETS

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK T402 STA 32+90 (N / GT-5204) ST-1007, ST-1107

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

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DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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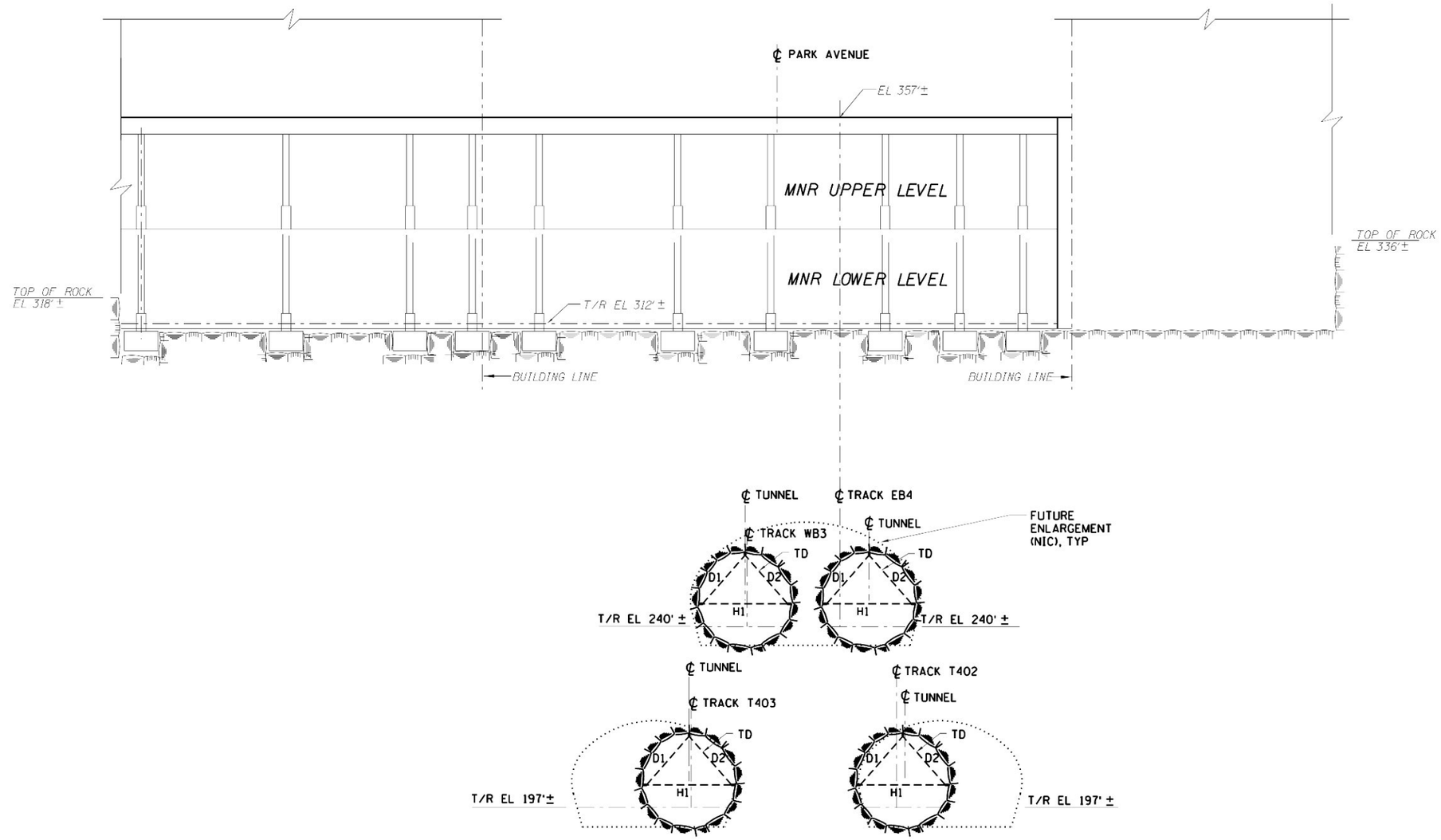
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SECTION N

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5314
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 251 OF 276

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK T402 STA 33+40 (O)
GT-5204 ST-1007, ST-1107

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

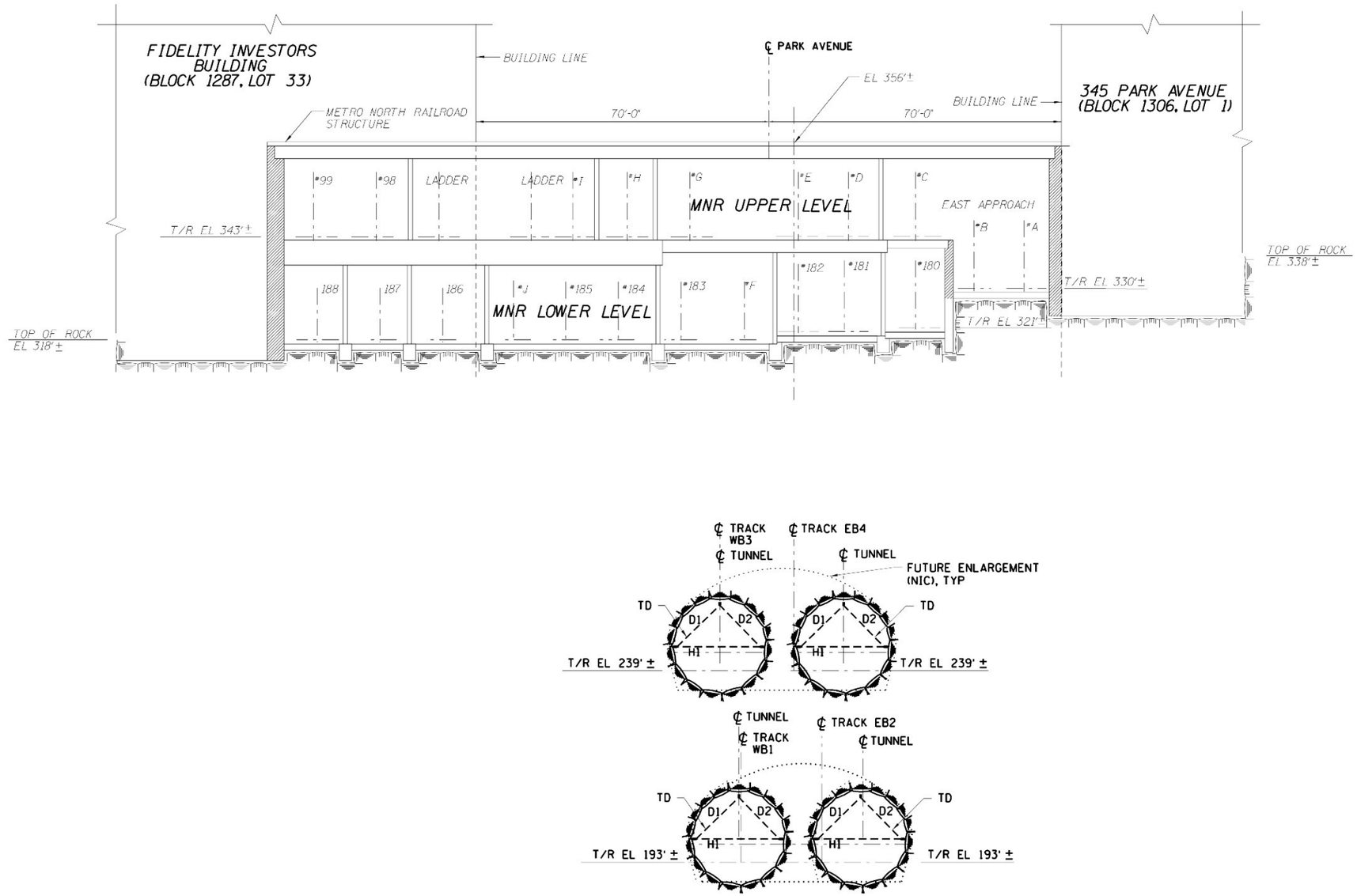
NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION SECTION O

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5315
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 252 OF 276

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK EB2 STA 1046+00 (P) GT-5204 ST-1007, ST-1107

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

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GEOTECHNICAL INSTRUMENTATION
SECTION P

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5316
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 253 OF 276

NOTE:

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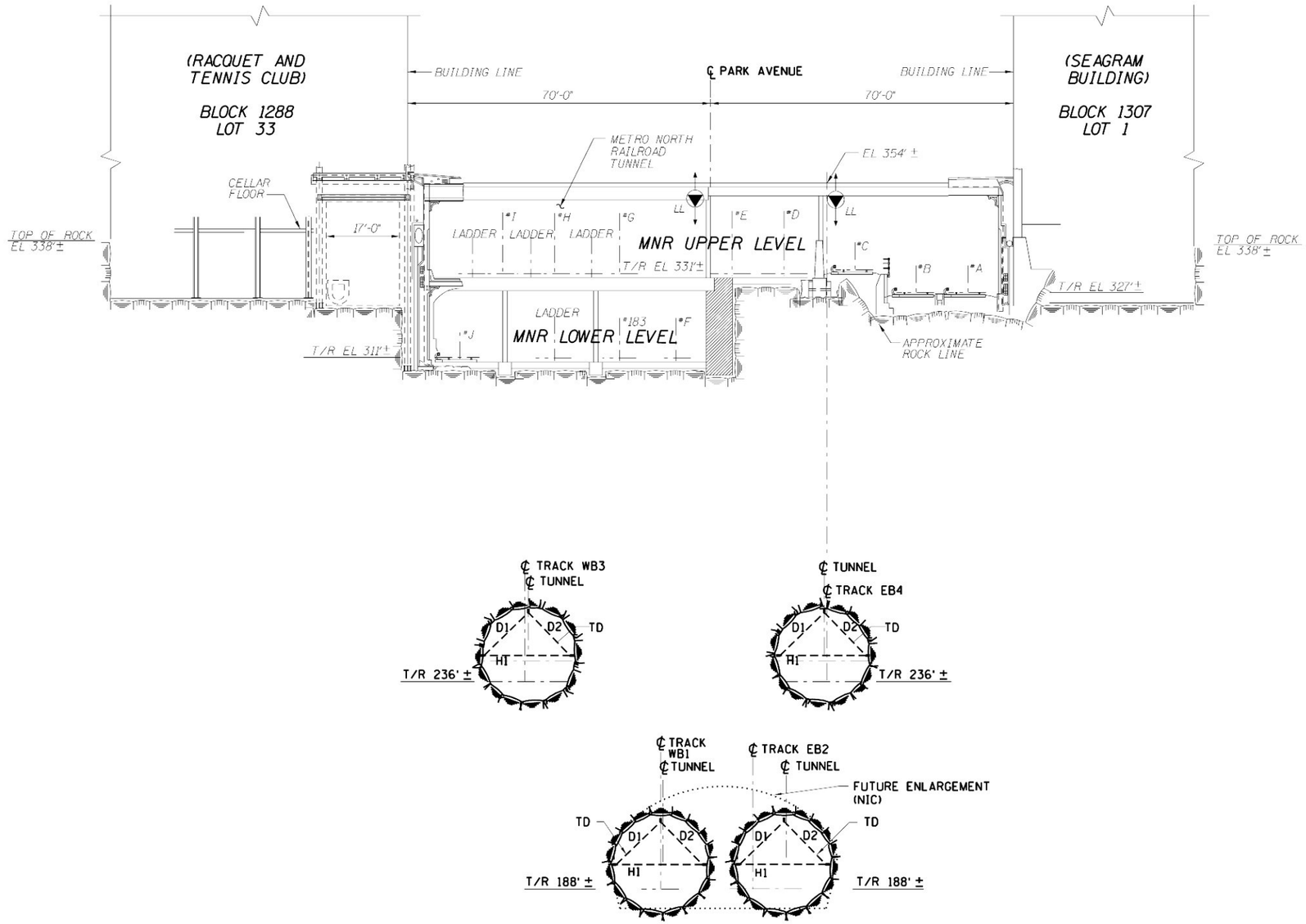
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ TRACK EB2 STA 1048+40 Q GT-4008 GT-5025, GT-5204 ST-1008, ST-1108

SCALE IN FEET
15' 0 15' 30'

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION Q

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5317
DATE: 5-26-06
REVISION NUMBER: 0

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SHEET No. 254 OF 276

NOTE:

1. FOR NOTES, SEE DRAWINGS CM009-GT-5301.
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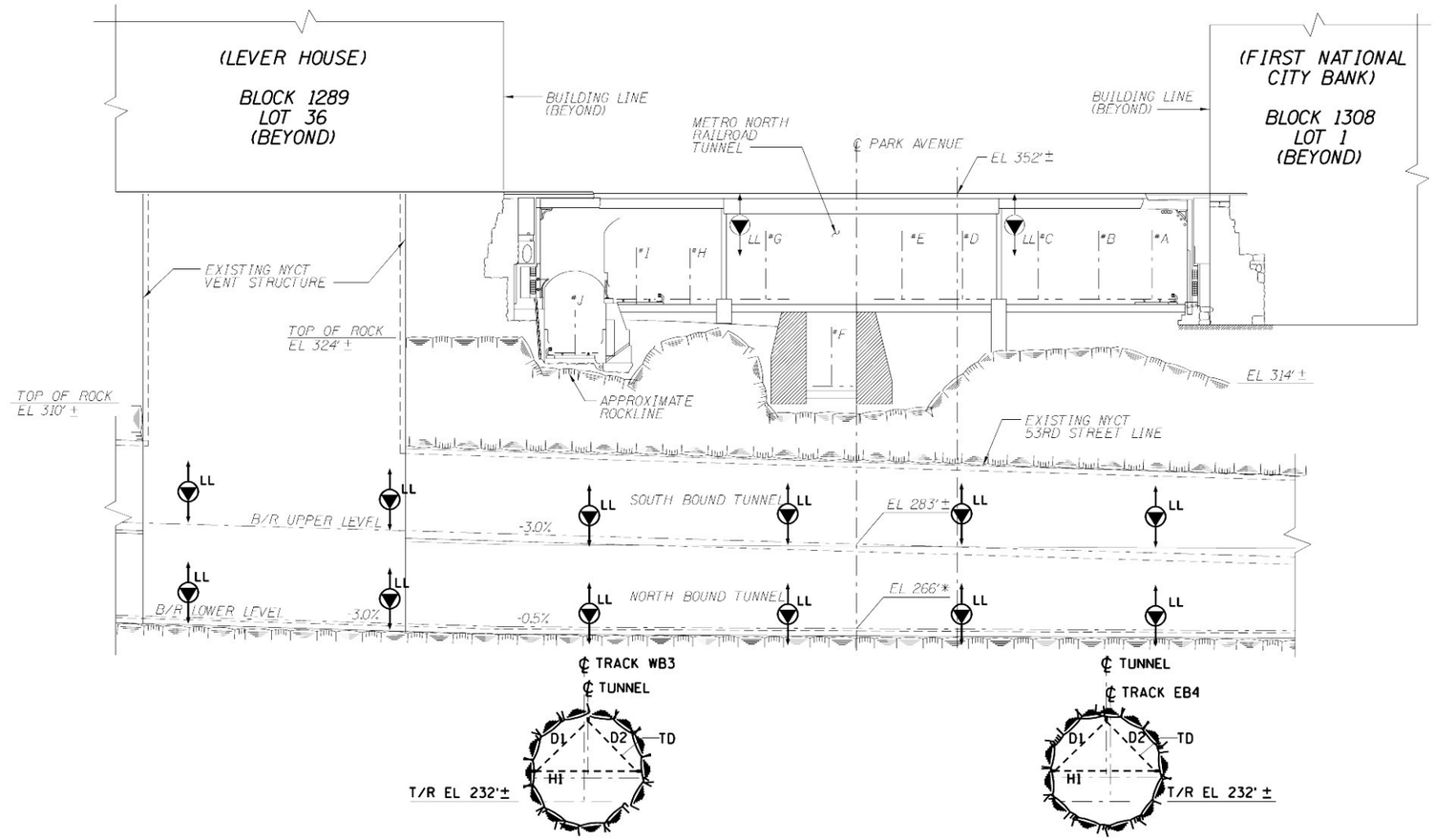

SECTION @ TRACK EB2 STA 1050+50 (R) GT-4008 GT-5025, GT-5204, ST-1008, ST-1108

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
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DATE:	REVISIONS	No.
53104		
52606	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: A. GONZALEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

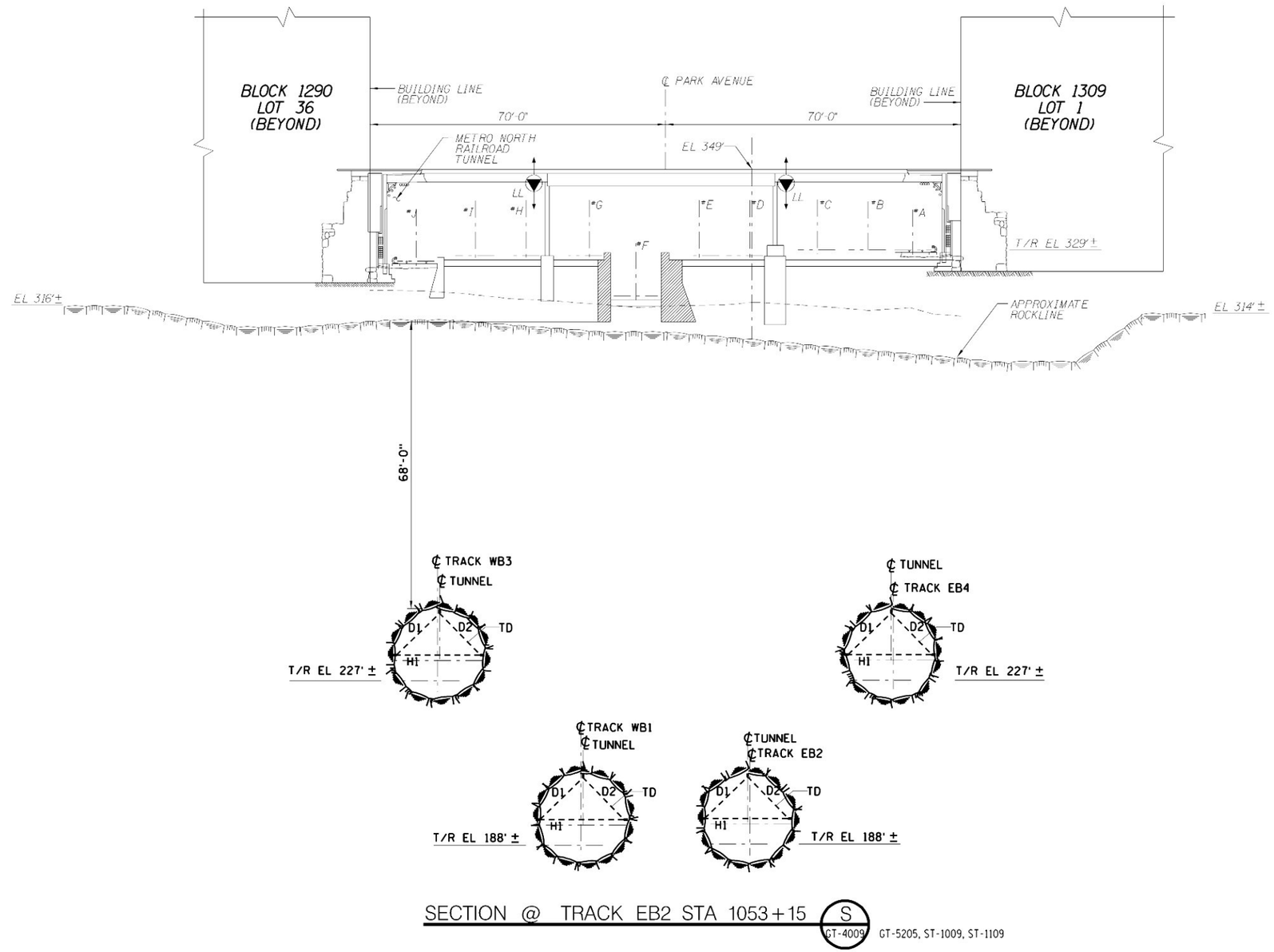
GEOTECHNICAL INSTRUMENTATION
SECTION R

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5318
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 255 OF 276

NOTE:

1. FOR NOTES, SEE DRAWING CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ TRACK EB2 STA 1053+15 S GT-4009 GT-5205, ST-1009, ST-1109

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: D. VASQUEZ
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION S

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5319
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 256 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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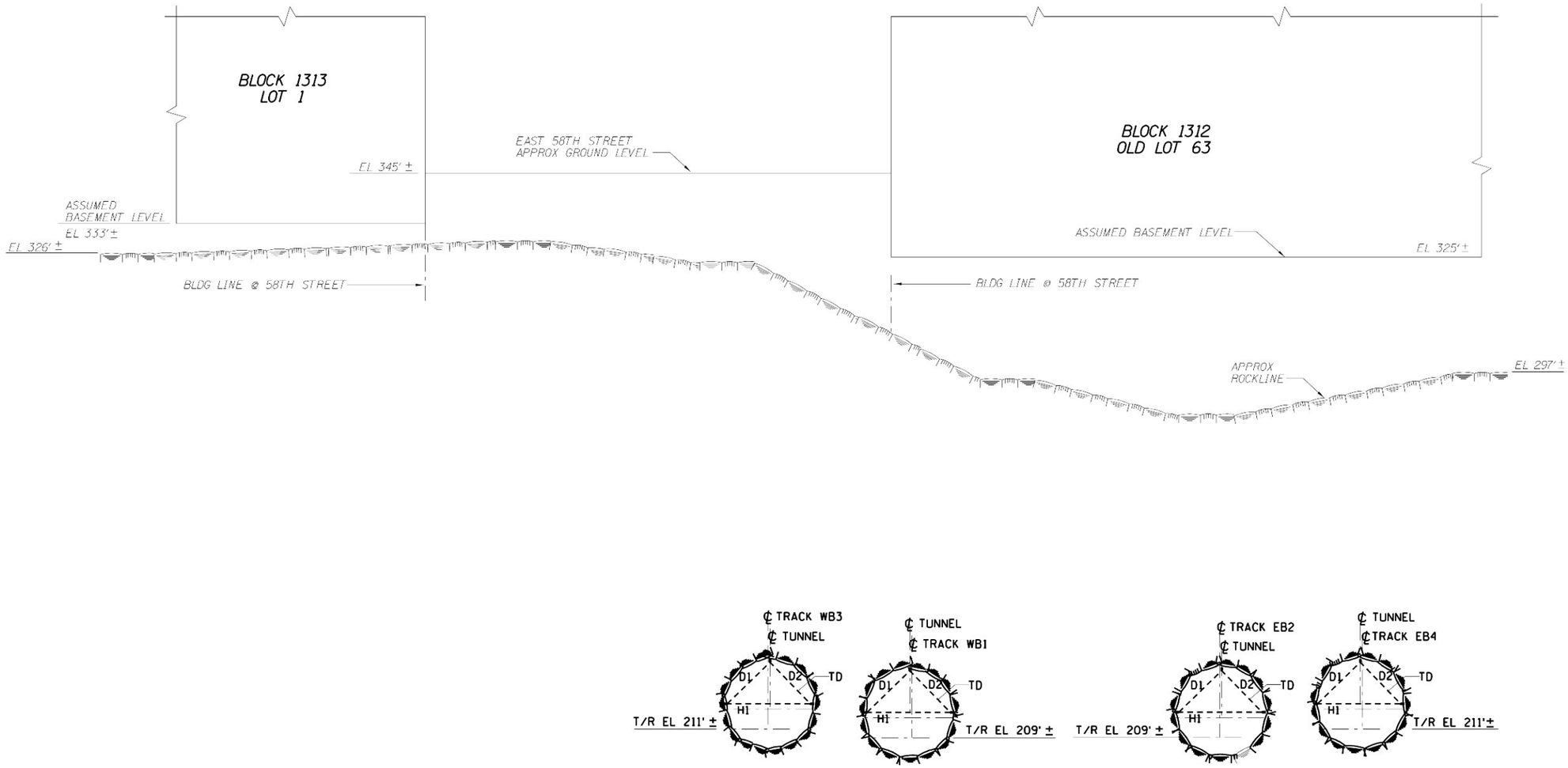
NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK EB2 STA 1063+70 T GT-5206 ST-1011

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
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STV INCORPORATED
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION T

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5320
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 257 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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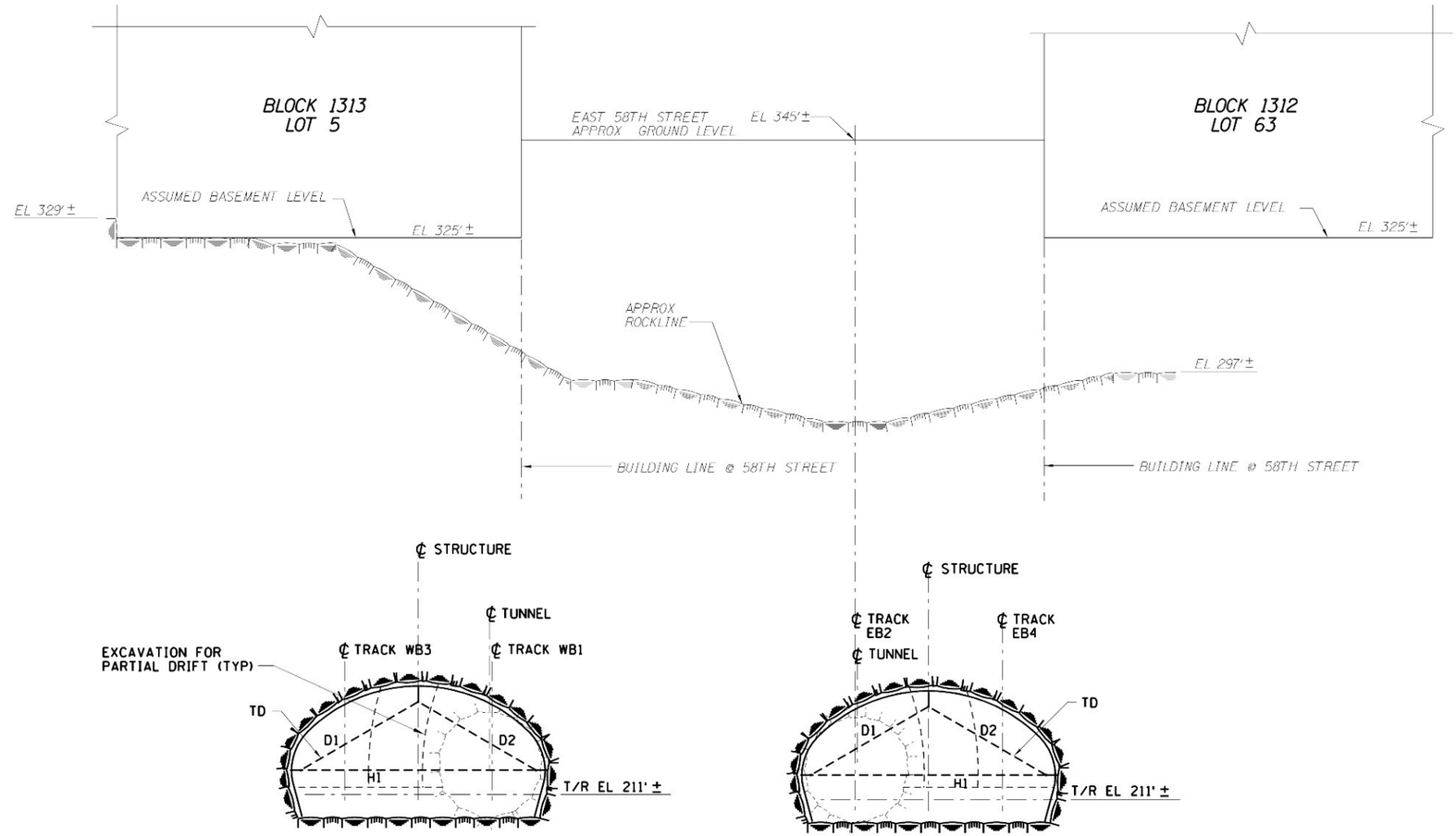
NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK EB2 STA 1064+50 (U) GT-4011 GT-5206, ST-1011

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

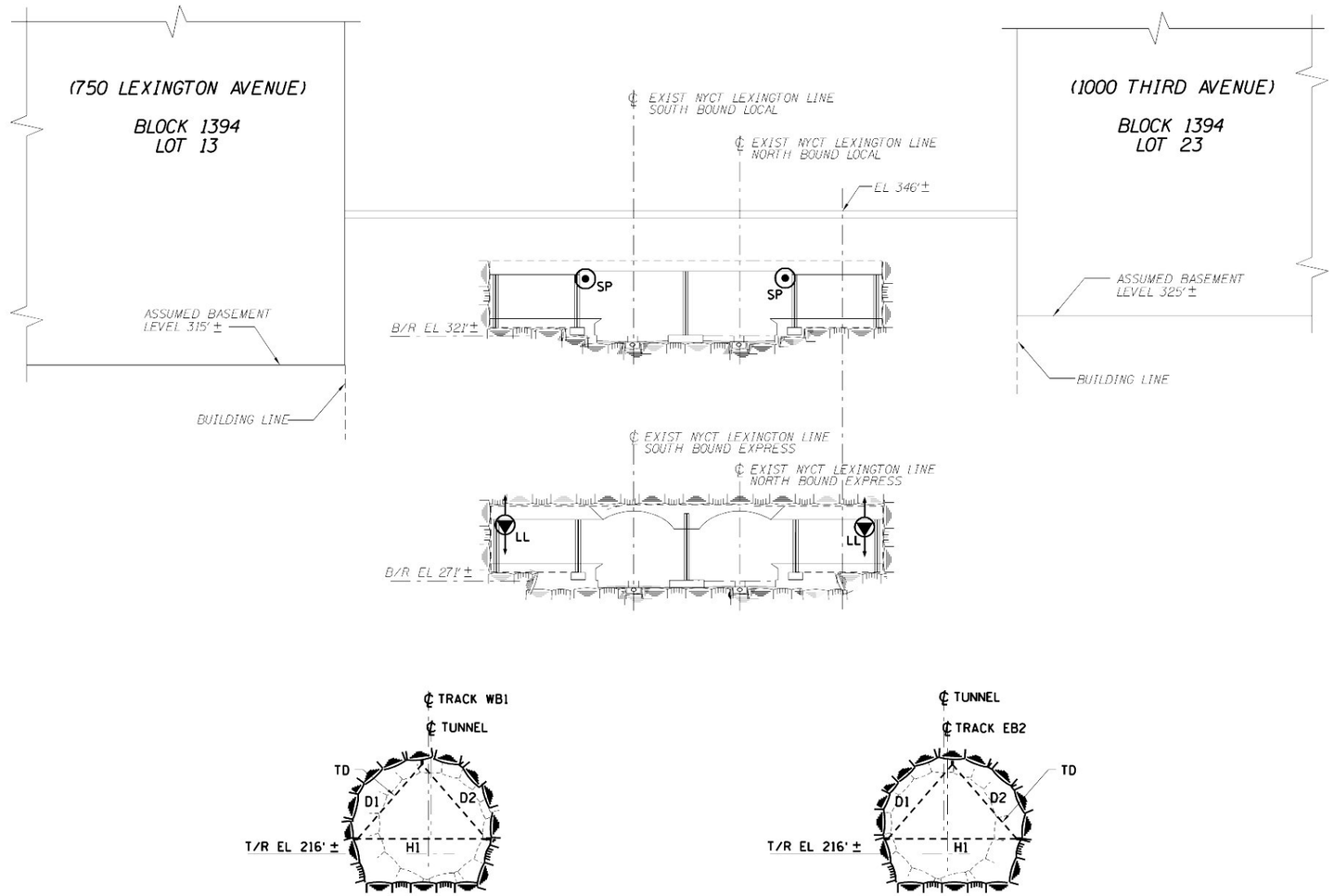
NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION U

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5321
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 258 OF 276

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK EB2 STA 1069+10 (V / GT-5206) ST-1012

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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General Engineering Consultant
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

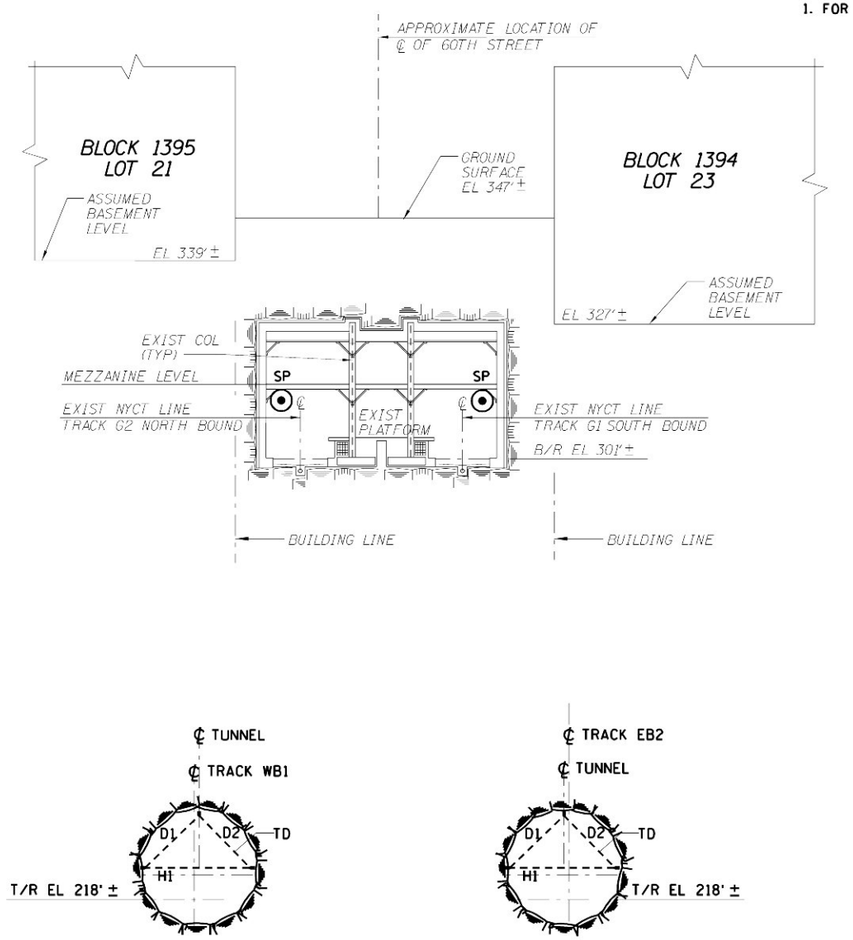
GEOTECHNICAL INSTRUMENTATION
SECTION V

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5322
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 259 OF 276

$PRFNAME$
$PLOTDRV$
$REF6$
y:\ccad submissions\cm009\26) conformed set (may 2006)\ccad\cm009-gt-5322.dgn PM

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ TRACK EB2 STA 1070+40 W GT-5207 ST-1012

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION W

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5323
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 260 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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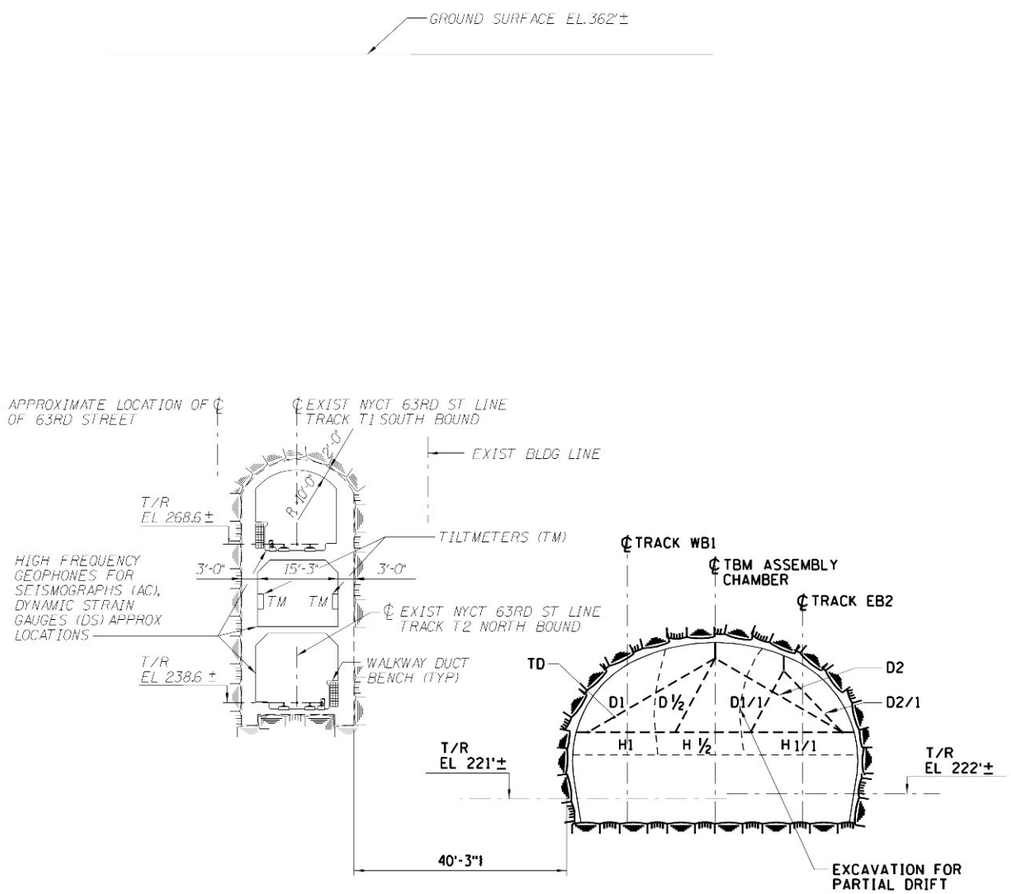
NOTE:

1. FOR GENERAL NOTES, SEE DRAWING CM009-GT-5301.
2. INSTRUMENTS IN EXISTING NYCT STRUCTURES WERE PREVIOUSLY INSTALLED, CONTRACTOR TO MAINTAIN AND READ THOSE INSTRUMENTS. SEE KIEWIT CONSTRUCTOR, CONTRACT CM016 AS-BUILT DWGS.



SECTION @ TRACK EB2 STA 1081+55 (X / GT-4014) GT-5208, ST-1014

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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General Engineering Consultant
PARSONS BRINCKERHOFF
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DATE:	REVISIONS:	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: J. RICCARDI
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

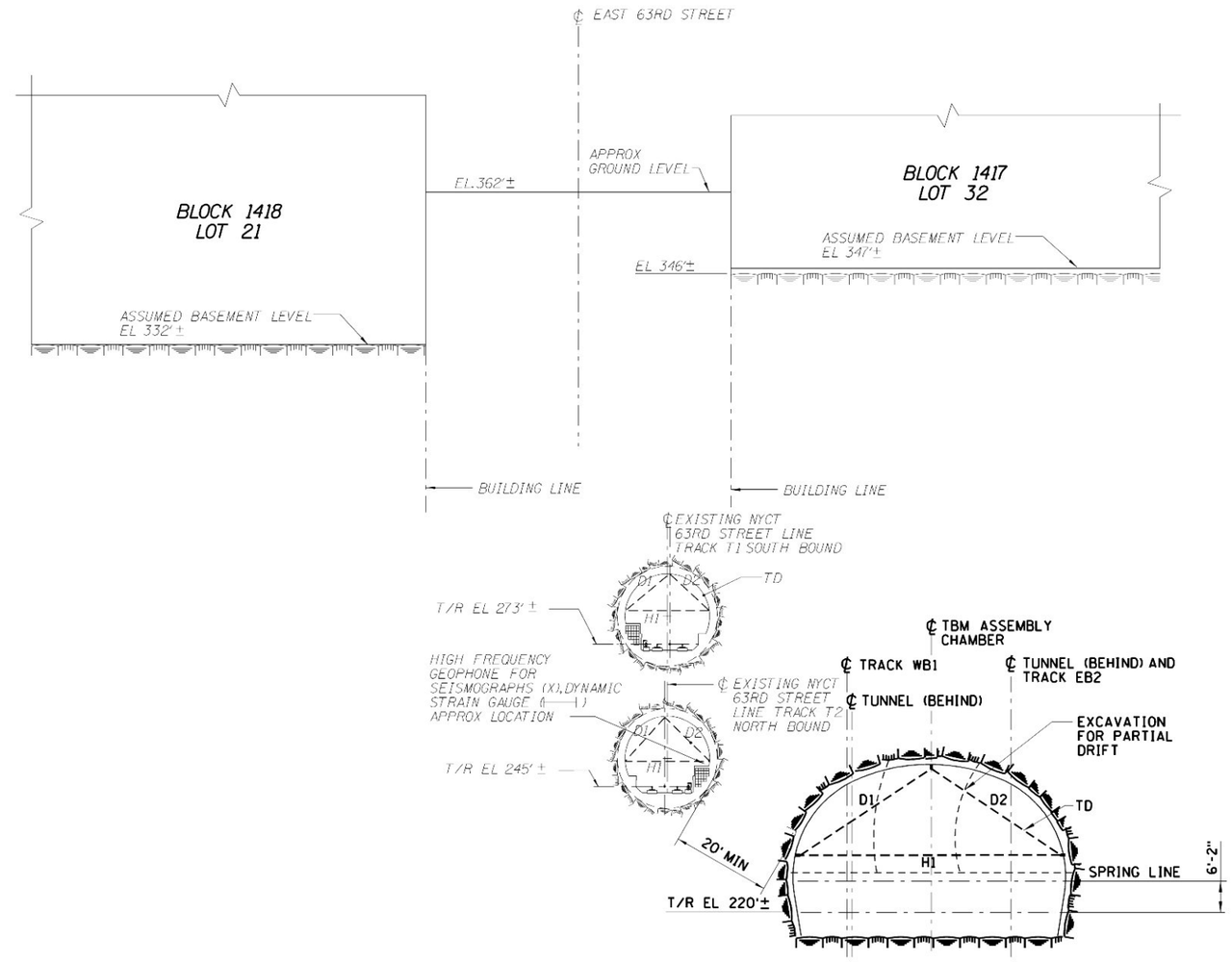
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION X

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5324
DATE: 5-26-06
REVISION NUMBER: 0
CONTRACT No. CM009
ISSUE
SHEET No. 261 OF 276

NOTES:

1. FOR NOTES, SEE DRAWING CM009-GT-5301.
2. INSTRUMENTS IN EXISTING NYCT STRUCTURES WERE PREVIOUSLY INSTALLED, CONTRACTOR TO MAINTAIN AND READ THOSE INSTRUMENTS. SEE KIEWIT CONSTRUCTOR, CONTRACT CM016 AS-BUILT DWGS.



SECTION @ TRACK EB2 STA 1082+24 (Y / GT-4014) GT-5208, ST-1014

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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General Engineering Consultant
PARSONS BRINCKERHOFF
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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION Y

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5325
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 262 OF 276

$PRFNAME$
$IPLOTDRV$
$REF6S
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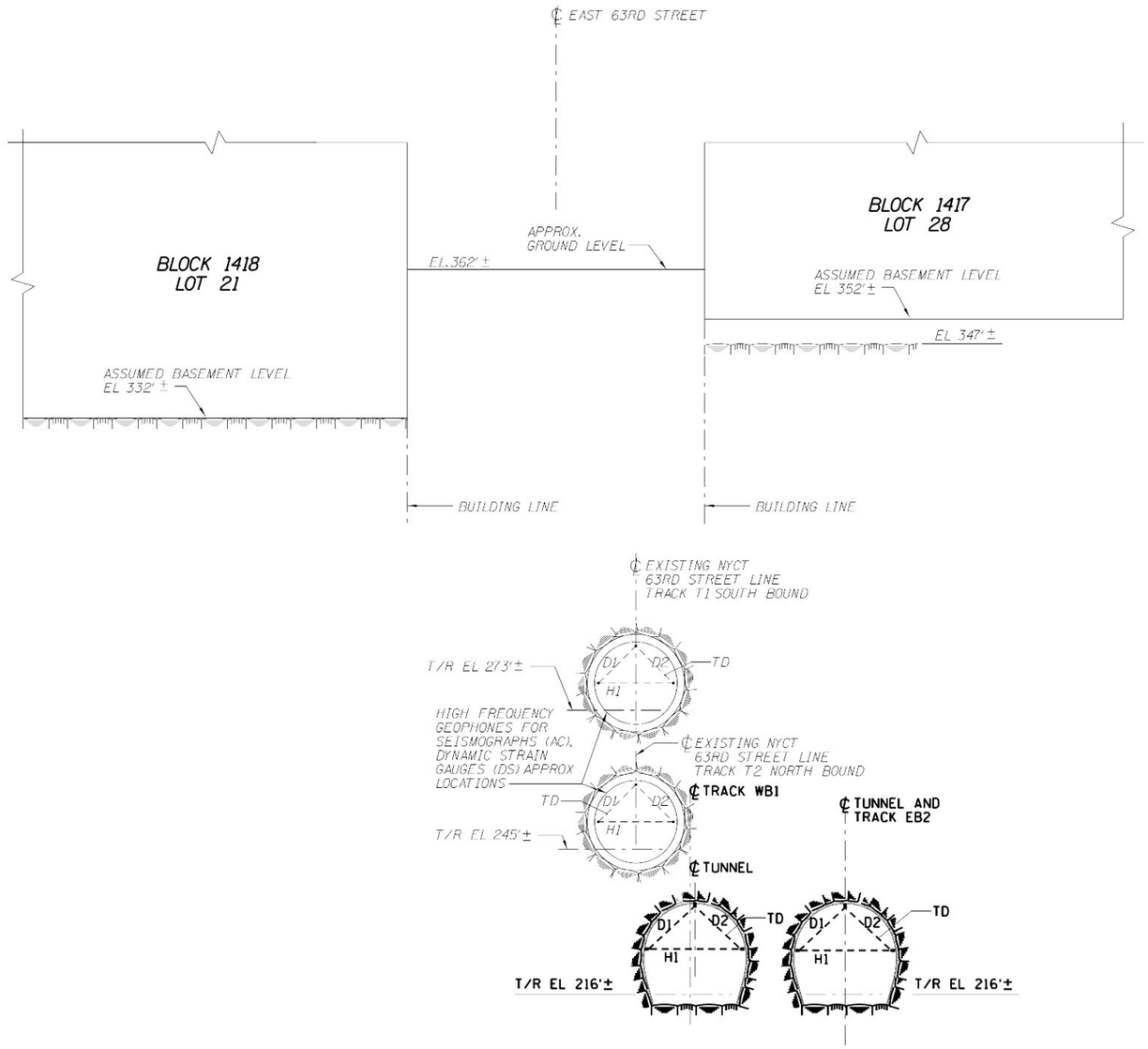
NOTES:

1. FOR NOTES, SEE DRAWING CM009-CT-5301.
2. INSTRUMENTS IN EXISTING NYCT STRUCTURES WERE PREVIOUSLY INSTALLED, CONTRACTOR TO MAINTAIN AND READ THOSE INSTRUMENTS. SEE KIEWIT CONSTRUCTOR, CONTRACT CM016 AS-BUILT DWGS.



SECTION @ TRACK EB2 STA 1083+30

EXISTING APPROACH TUNNELS

Z / CT-4014 GT-5208, ST-1014

SCALE IN FEET

15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: G. AYVAS
DRAWN BY: B. KOZELETS
CHECKED BY: A. GONZALEZ
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
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DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION Z

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5326
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 263 OF 276

$PRFNAME$
$PLOTDRV$
PREF:$
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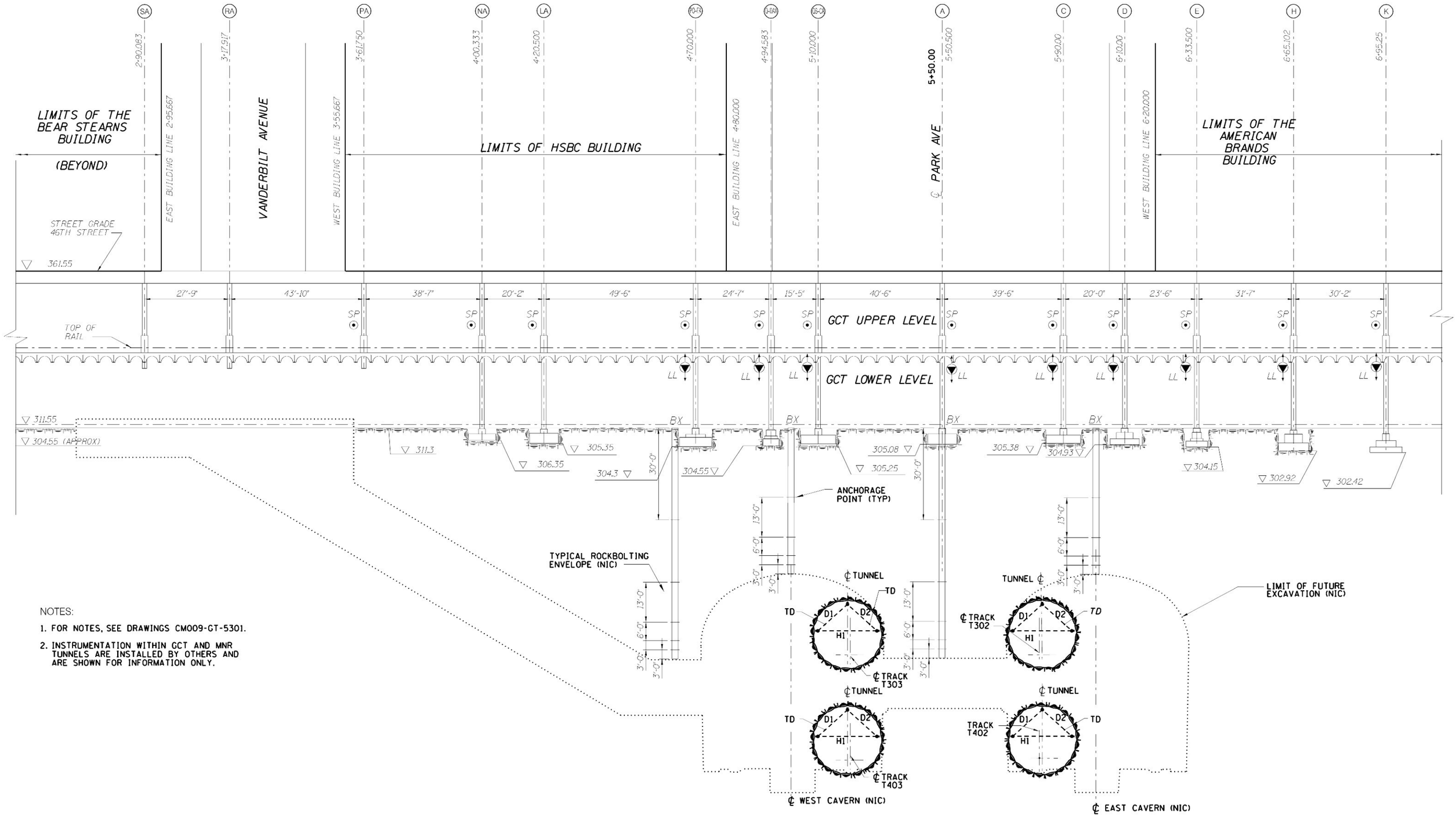

NOTES:

1. FOR NOTES, SEE DRAWINGS CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.

SECTION THROUGH FUTURE CROSS PASSAGE AT 46TH STREET
T302 STATION 21+70

AA
GT-4005

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. SPYTEK
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

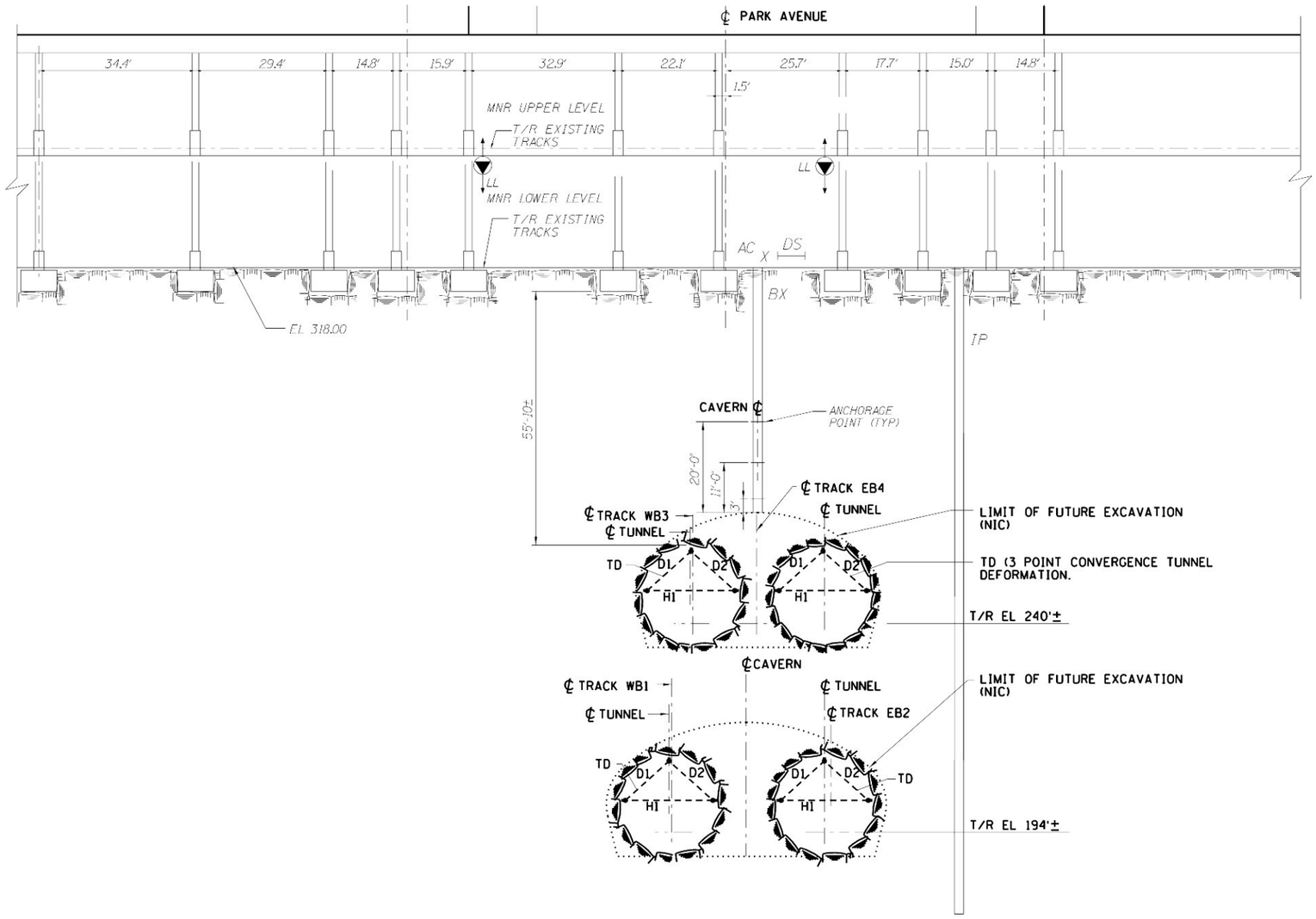
GEOTECHNICAL INSTRUMENTATION
SECTION AA

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5350
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 264 OF 276

NOTES:

1. FOR NOTES, SEE DRAWINGS CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ EAST 51ST STREET
T302 STATION 34+20

BB
GT-4007 GT-5207

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
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DATE:	REVISIONS	No.
52606	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. SPYTEK
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

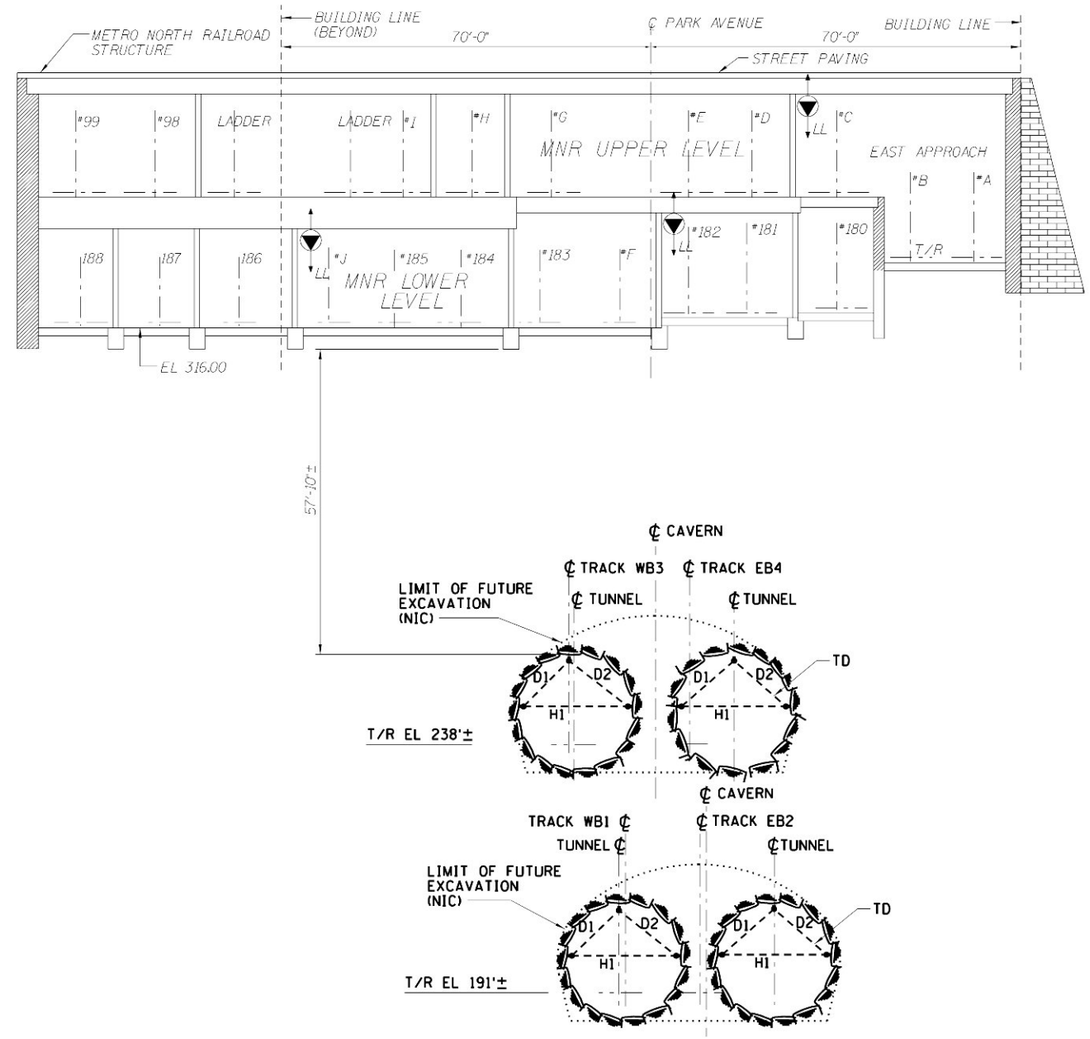
GEOTECHNICAL INSTRUMENTATION
SECTION BB

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5351
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 265 OF 276

NOTES:

1. FOR NOTES SEE DWG CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ TRACK EB2 STA 1046+20 CC GT-4007 GT-5207

SCALE IN FEET
15' 0 15' 30'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. SPYTEK
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION / STRUCTURAL SECTION CC

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5352
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 266 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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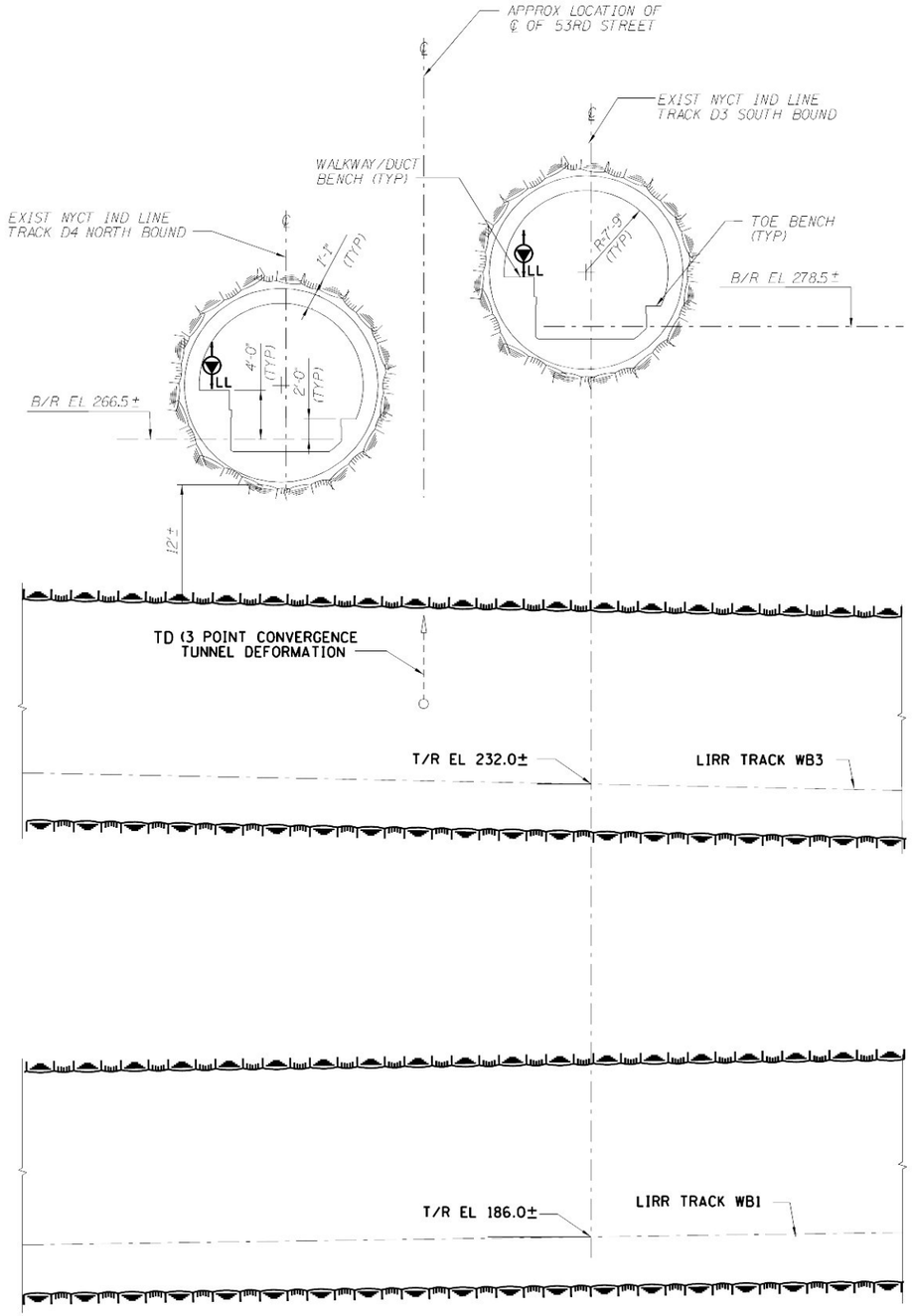
NOTES:

1. FOR NOTES SEE DWG CM009-GT-5301.



SECTION @ EAST 53RD STREET IND CROSSING

WB1 STATION 1050+50

DD GT-4008 GT-5025, GT-5208

SCALE IN FEET

8' 4' 0 8' 16'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant

PARSONS BRINCKERHOFF
STV INCORPORATED
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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: M. SPYTEK
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION DD

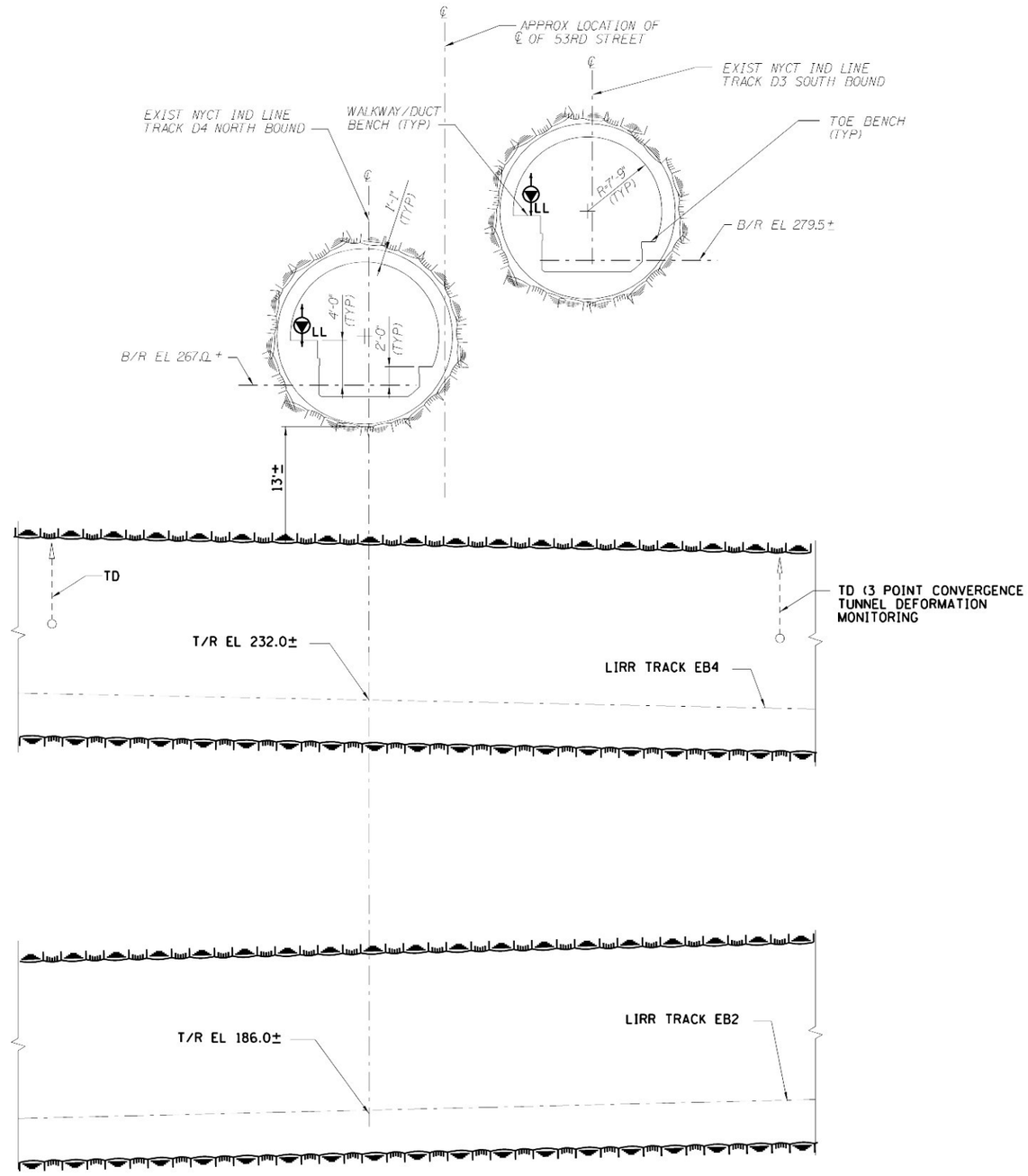
SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5353
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 267 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
y:\ccad submissions\cm009\(26) conformed set (may 2006)\ccad\cm009-gt-5353.dgn PM

NOTES:

1. FOR NOTES SEE DWG CM009-GT-5301.



SECTION EAST 53RD STREET IND CROSSING
WB1 STATION 1050+50

EE
GT-4008 GT-5025, GT-5208

SCALE IN FEET
8' 4' 0 8' 16'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
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5/26/06	CONFORMED DRAWING	0

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NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

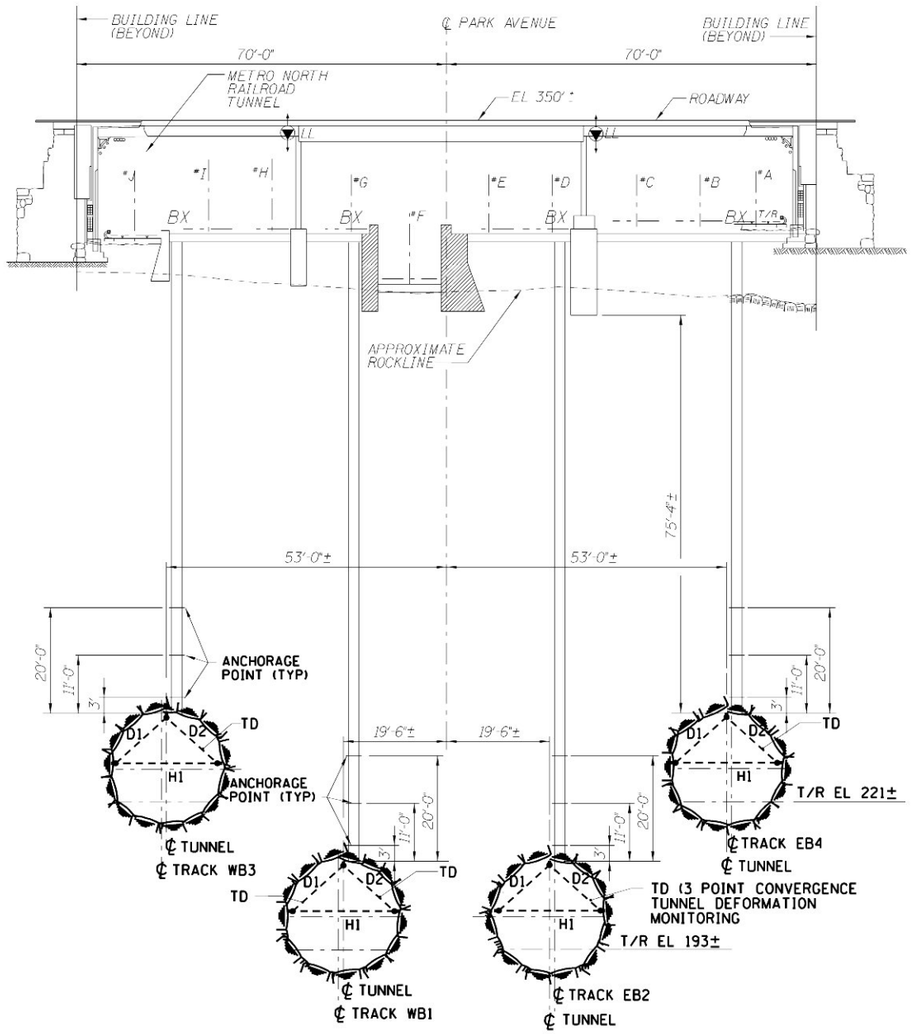
GEOTECHNICAL INSTRUMENTATION
SECTION EE

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5354
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 268 OF 276

NOTES:

1. FOR NOTES SEE DRAWING CM009-GT-5301.
2. INSTRUMENTATION WITHIN GCT AND MNR TUNNELS ARE INSTALLED BY OTHERS AND ARE SHOWN FOR INFORMATION ONLY.



SECTION @ EAST 55TH STREET
WB1 STATION 1055+60

FF
GT-4009 GT-5209

SCALE IN FEET
15' 0 15' 30'

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5/26/06	CONFORMED DRAWING	0

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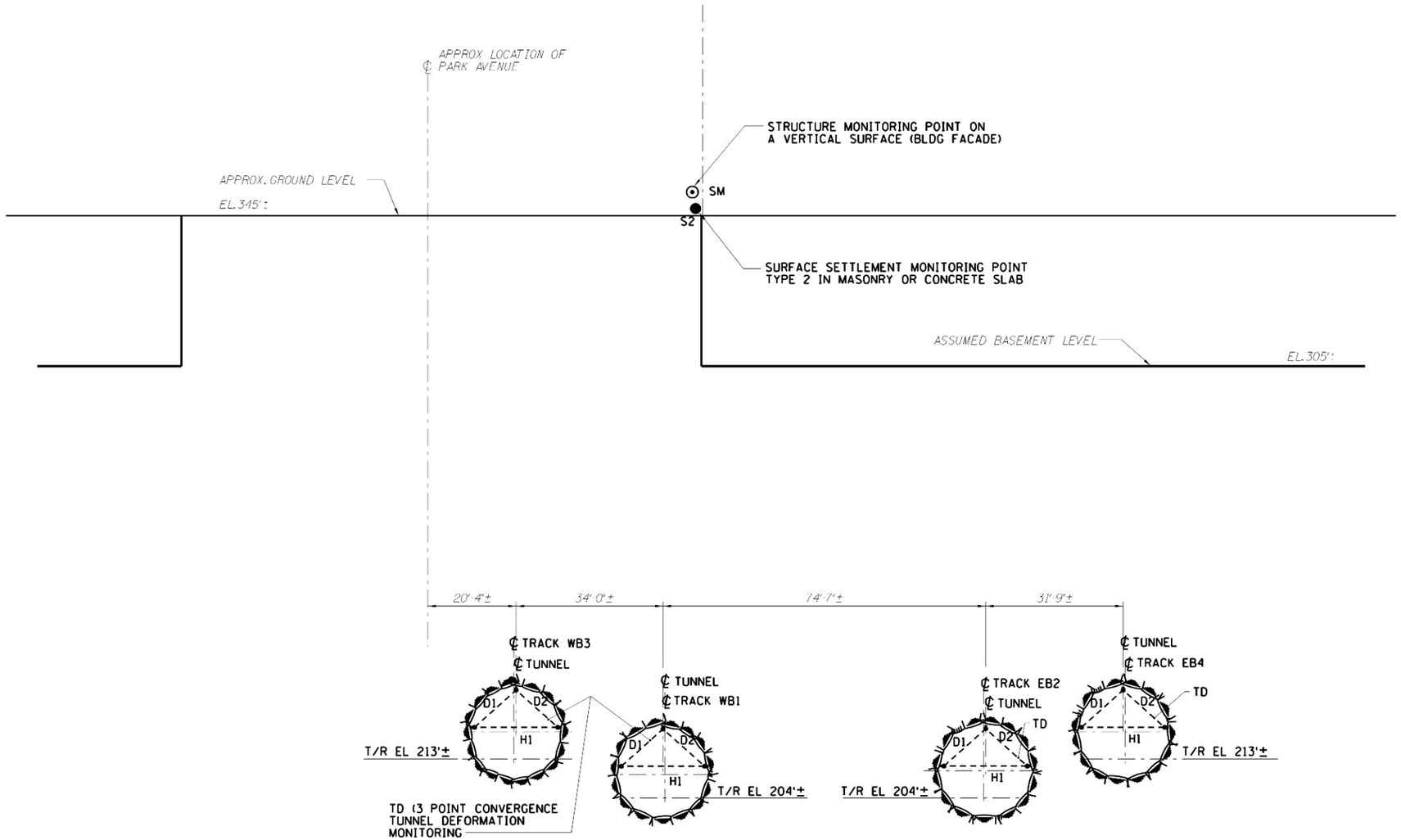
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
SECTION FF

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5355
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 269 OF 276

NOTE:
1. FOR NOTES, SEE DRAWING CM009-GT-5301.



SECTION @ 57TH STREET WB1 STATION 1061+10 GG
GT-4010 GT-5121, GT-5210

SCALE IN FEET
15' 0 15' 30'

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Capital Construction

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MANHATTAN TUNNELS EXCAVATION

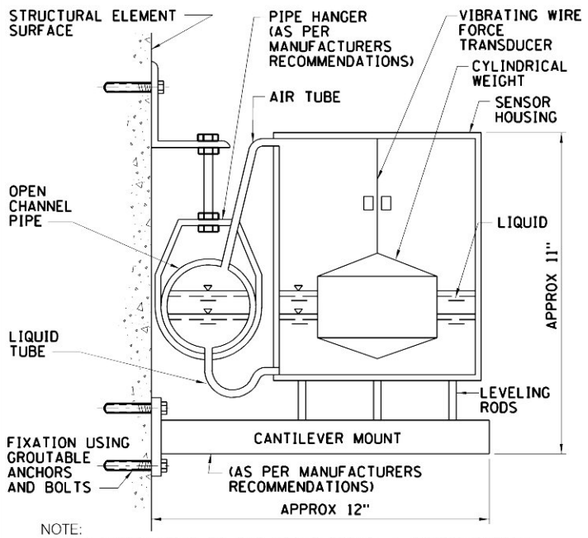
GEOTECHNICAL INSTRUMENTATION
SECTION GG

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-5356
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 270 OF 276

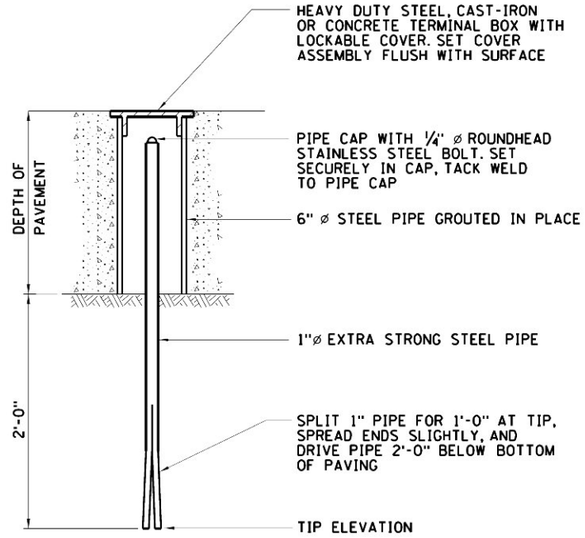
$PRFNAME$
$(PLOTDRV)
$REF6$
y:\cadd submissions\cm009\(26) conformed set (may 2006)\cadd\cm009-gt-5356.dgn PM

LIQUID LEVEL SETTLEMENT SYSTEM (LL)

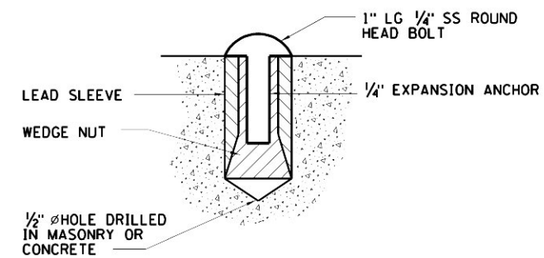


NOTE:
AS AN ALTERNATIVE TO THE ABOVE DETAIL, A CONFIGURATION WITH THE OPEN CHANNEL PIPE IN-LINE WITH THE SENSORS IS ACCEPTABLE, SUCH THAT THE HORIZONTAL DIMENSION IS REDUCED FROM 12" TO 8".

SURFACE SETTLEMENT MONITORING POINT ● TYPE 1 IN RIGID PAVEMENT SURFACE (S1)



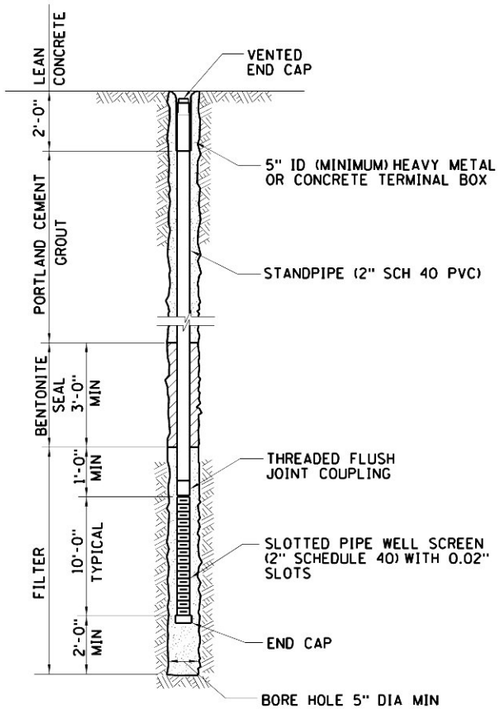
SURFACE SETTLEMENT MONITORING POINT ● TYPE 2 IN MASONRY OR CONCRETE SLAB (S2)



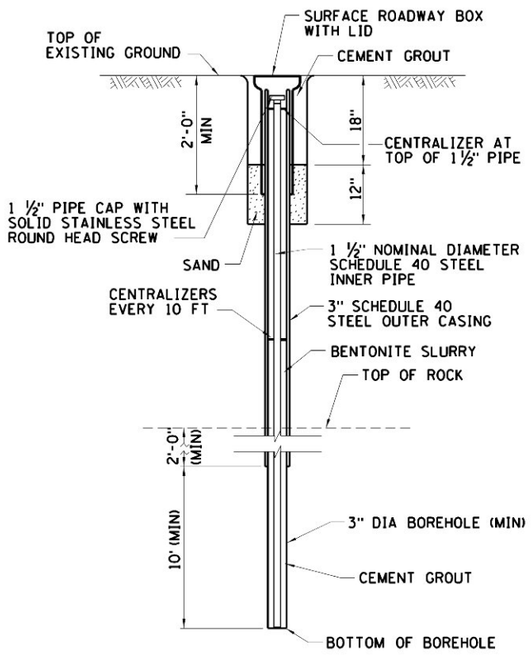
METAL IDENTIFICATION TAG

TO BE INSERTED BELOW HEAD OF BOLT

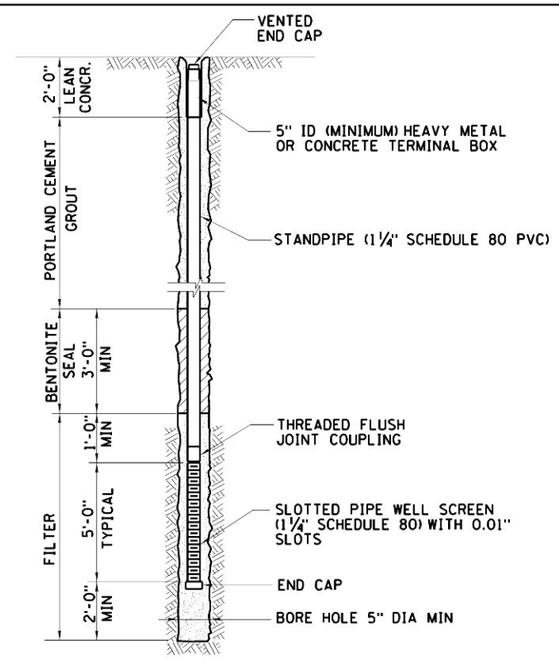
EXISTING OBSERVATION WELL (OW)



DEEP BENCH MARK (DB) ■

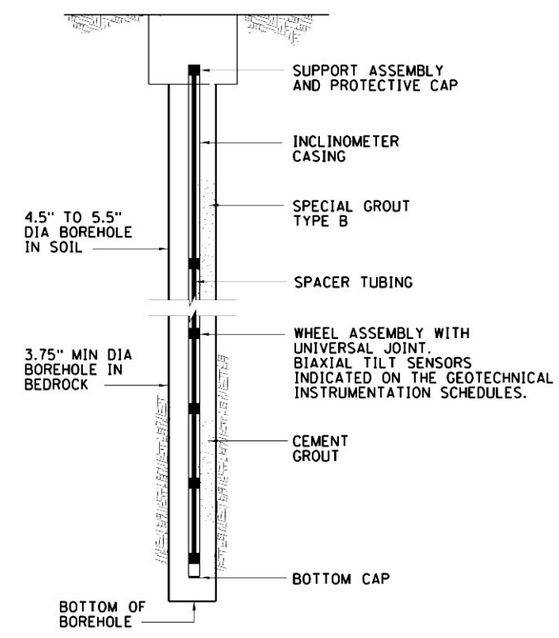


OPEN STANDPIPE PIEZOMETER (OS)



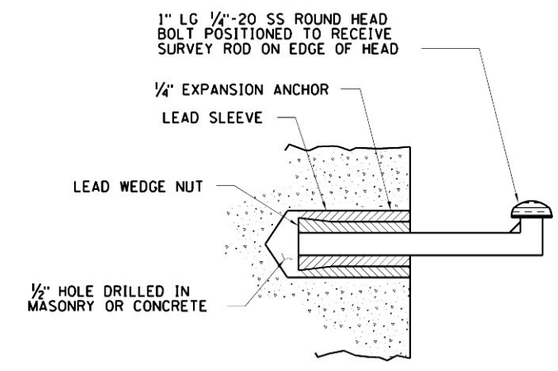
NOTE:
SURFACE ROADWAY BOX WITH LID TO BE PROVIDED.

IN-PLACE INCLINOMETER (IP)



NOTE:
SURFACE ROADWAY BOX WITH LID TO BE PROVIDED.

STRUCTURE MONITORING POINT (SM) ⊙ ON VERTICAL MASONRY OR CONCRETE SURFACE



NOTE:
SMOOTH HEMISPHERICAL HEAD BOLTS SHALL BE USED FOR LATERAL DISPLACEMENT REFERENCE POINTS.

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5/26/06	CONFORMED DRAWING	0

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APPROVED BY: J. SCHABIB

NY PROFESSIONAL License No.
ORIGINAL SIGNED & SEALED
DATE:

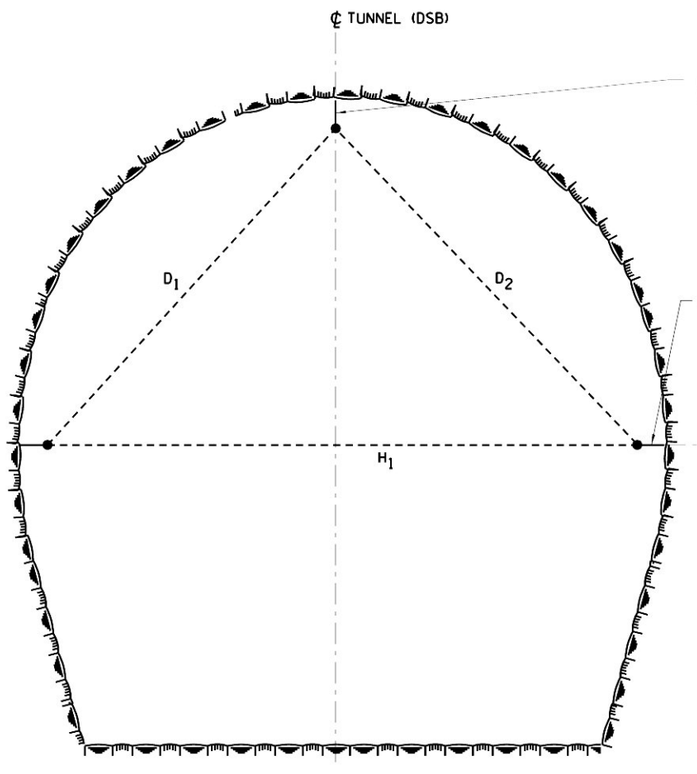
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS
SHEET 1

SCALE: NONE
DRAWING NUMBER: CM009-GT-6101
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 271 OF 276

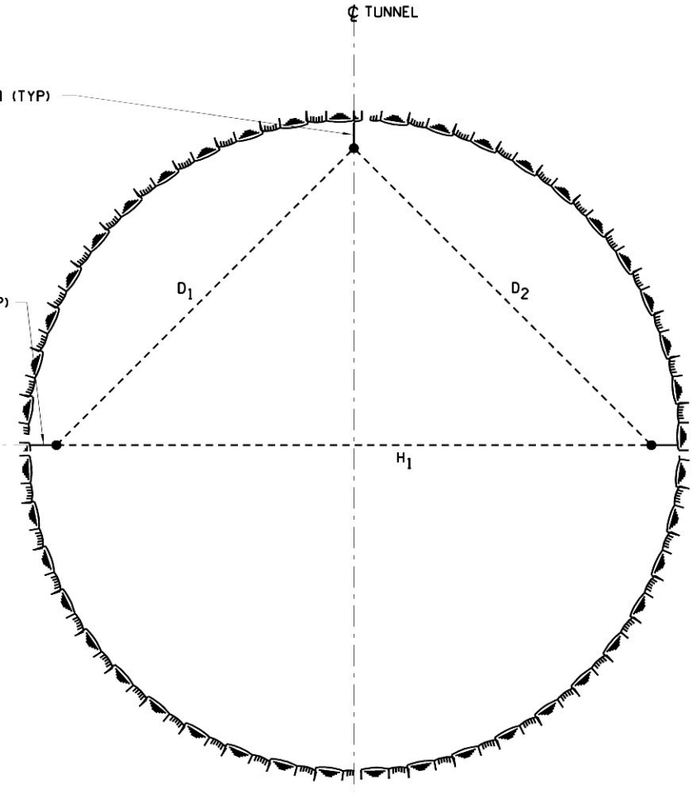
$PRFNAMES
$PLOTDRV
PREFES y:\ccd submissions\cm009\26\conformed set (may 2006)\ccd\cm009-gt-6101.dgn 5/26/06 2:45:32 PM



H_1 - HORIZONTAL DEFORMATION

D_1 D_2 - DIAGONAL DEFORMATION

TYPICAL 3-POINT CONVERGENCE TUNNEL
DEFORMATION MONITORING CROSS SECTION
DRILL & BLAST TUNNELS – (TD)



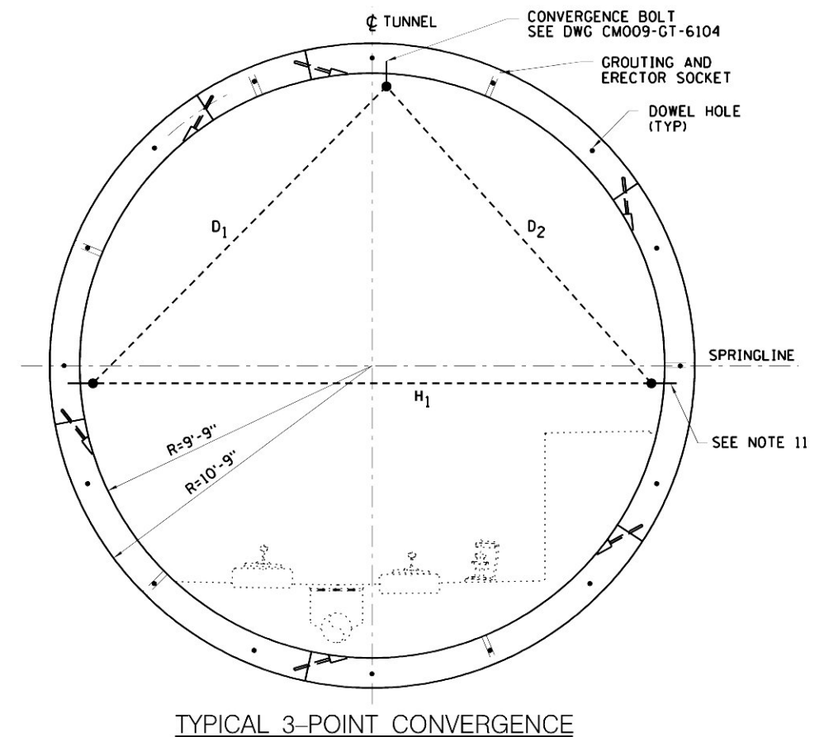
TYPICAL 3-POINT CONVERGENCE TUNNEL
DEFORMATION MONITORING CROSS SECTION
UNLINED TBM TUNNELS – (TD)

NOTE:

THE ABOVE DEFORMATION MONITORING ARRAYS SHALL ALSO BE INSTALLED IN ALL TUNNELS TO RECEIVE CAST-IN-PLACE CONCRETE LINING IN THIS CONTRACT.

NOTES:

1. INSTALL INSTRUMENT ARRAYS AS INDICATED ON DWGS CM009-GT-5201 TO CM009-GT-5208 ACTUAL LOCATION OF INSTRUMENT ARRAY MAY VARY FROM LOCATIONS INDICATED. SEEK APPROVAL FROM RESIDENT ENGINEER PRIOR TO INSTALLATION, IF ACTUAL LOCATION WILL DEVIATE MORE THAN 10FT. FROM LOCATIONS SHOWN.
2. INSTALL CONVERGENCE BOLTS SUCH THAT THEY PROTRUDE PERPENDICULAR FROM THE SURFACE.
3. ALL CONVERGENCE BOLTS TO BE PREPARED TO RECEIVE BOTH A SURVEY TARGET AND THE CONNECTOR FOR A TAPE EXTENSOMETER. THREADS OR BULLS EYES TO BE PROTECTED AGAINST DIRT AND DAMAGE.
4. INSTALL INSTRUMENTS AS EARLY AS PRACTICAL:
   -IN DRILL AND BLAST TUNNELS INSTALL CONVERGENCE BOLTS CONCURRENT WITH ROCK BOLT AND SUPPORT INSTALLATION WITHIN THE RELEVANT SECTION.
   -IN TBM TUNNELS INSTALL CONVERGENCE BOLTS IMMEDIATELY BEHIND THE CUTTER HEAD OR WITHIN FINGER SHIELD SLOTS OR IN PRECAST CONCRETE LINING AT DRILLING LOCATORS DURING THE LINING INSTALLATION.
5. IN EXPOSED ROCK TUNNELS, DRILL HOLES INTO THE ROCK MASS AND INSTALL CONVERGENCE BOLTS INTO HOLES USING FAST SETTING GROUT. IN SHOTCRETE LINED TUNNELS DRILL HOLES THROUGH SHOTCRETE INTO ROCK AND INSTALL CONVERGENCE BOLTS INTO HOLES USING FAST SETTING GROUT.
6. PERFORM INITIAL READING NOT LATER THAN 12 HOURS AFTER INSTRUMENT INSTALLATION FOR INSTRUMENTS INSTALLED IN ROCK. FOR INSTRUMENTS INSTALLED IN PRECAST SEGMENTS, INITIAL READING SHALL BE TAKEN BETWEEN 12 AND 14 HOURS AFTER BACKFILL GROUT PLACEMENT.
7. DO NOT USE CONVERGENCE BOLTS FOR SUPPORT OF ANY TEMPORARY OR PERMANENT FACILITY (e.g. PIPELINES, CABLES).
8. CONVERGENCE BOLTS TO BE LOCATED BETWEEN STEEL SETS/LATTICE GIRDERS, IF APPLICABLE.
9. FOR TYPICAL CONVERGENCE BOLT INSTALLATION AND MONITORING SCHEME SEE DWG CM009-GT-6104.
10. EXACT LOCATION OF CONVERGENCE BOLTS AT CROWN AND SPRINGLINES OF TUNNELS TO BE DETERMINED BY THE CONTRACTOR, BASED ON INSTALLATION OF SYSTEM ELEMENTS TO SUPPORT CONSTRUCTION AND TBM GRIPPER PAD LOCATION AND TO BE SUBMITTED TO RESIDENT ENGINEER FOR REVIEW.
11. CONVERGENCE BOLT DEPTHS IN PRECAST CONCRETE LINER SHALL NOT EXCEED 2 INCHES.



TYPICAL 3-POINT CONVERGENCE
DEFORMATION MONITORING CROSS SECTION
PRECAST CONCRETE LINER
TBM TUNNELS – (TD)

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Capital Construction

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CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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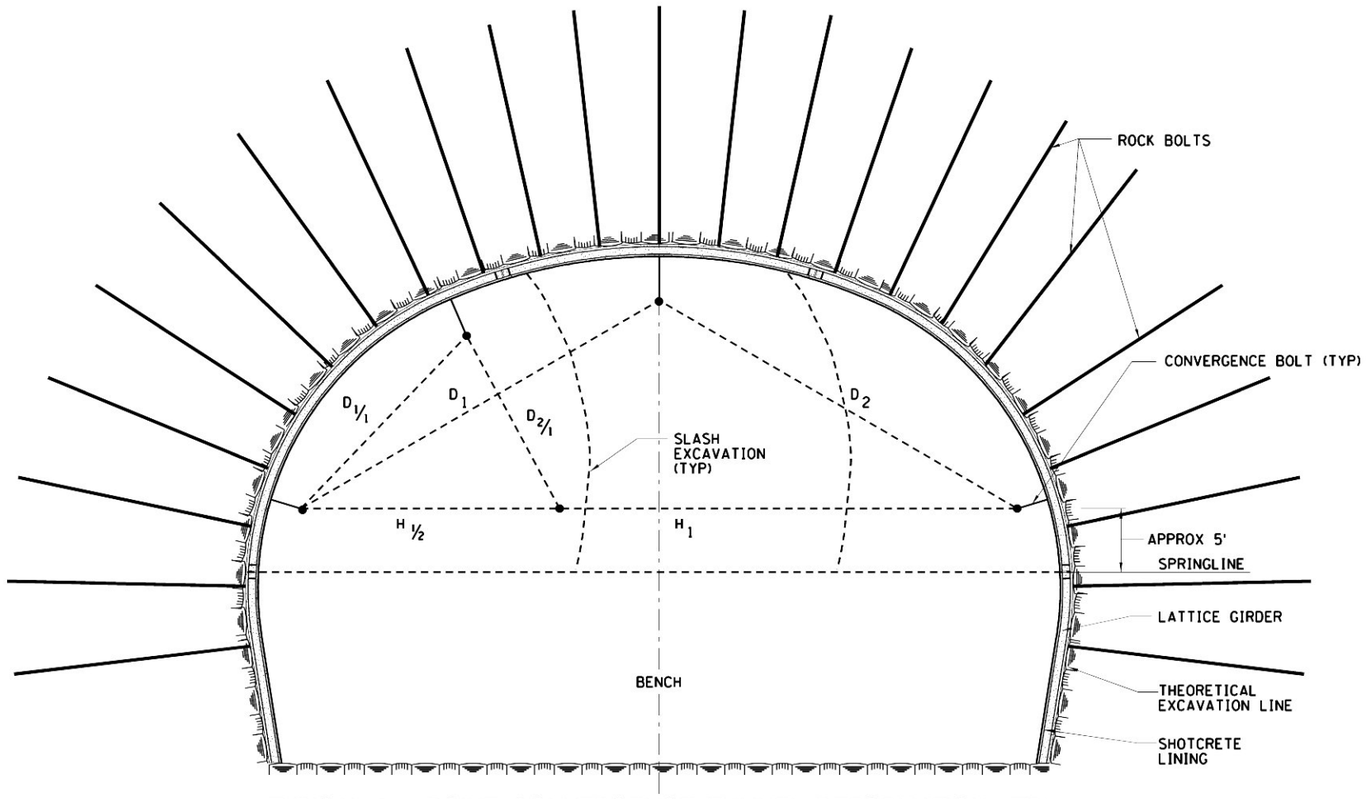
ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS
SHEET 2

SCALE: NONE
DRAWING NUMBER: CM009-GT-6102
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 272 OF 276



TYPICAL 3 – POINT CONVERGENCE TUNNEL DEFORMATION (TD) MONITORING ARRAY – CAVERNS

$H_{1/2}$ - HORIZONTAL DEFORMATION SLASH EXCAVATION

$D_{1/1}$ $D_{2/1}$ - DIAGONAL DEFORMATION SLASH EXCAVATION

H_1 - HORIZONTAL DEFORMATION FULL TUNNEL

$D_{1/1}$ $D_{2/1}$ - DIAGONAL DEFORMATION FULL TUNNEL

NOTES:

1. INSTALL INSTRUMENT ARRAYS AS INDICATED ON DWGS CM009-GT-5201 TO CM009-GT-5208 ACTUAL LOCATION OF INSTRUMENT ARRAY MAY VARY FROM LOCATIONS INDICATED. SEEK APPROVAL FROM ENGINEER PRIOR TO INSTALLATION, IF ACTUAL LOCATION WILL DEVIATE MORE THAN 10FT. FROM LOCATIONS SHOWN.
2. INSTALL CONVERGENCE BOLTS SUCH THAT THEY PROTRUDE PERPENDICULAR FROM THE SHOTCRETE LINING.
3. ALL CONVERGENCE BOLTS TO BE PREPARED TO RECEIVE BOTH A SURVEY TARGET AND THE CONNECTOR FOR A TAPE EXTENSOMETER. THREADS OR BULLS EYES TO BE PROTECTED AGAINST DIRT AND DAMAGE.
4. 3-POINT CONVERGENCE MONITORING ARRAYS SHALL BE INSTALLED WITHIN SLASH EXCAVATIONS AT LOCATIONS COINCIDING WITH THE CAVERN 3-POINT CONVERGENCE MONITORING ARRAYS LOCATIONS INDICATED ON THE NEW TUNNELS PLANS.
5. INSTALL CONVERGENCE BOLTS CONCURRENT WITH ROCK BOLT INSTALLATION.
6. DRILL HOLES IN SHOTCRETE LINING AND INSTALL CONVERGENCE BOLTS INTO HOLES USING FAST SETTING GROUT.
7. PERFORM INITIAL READING NOT LATER THAN 12 HOURS AFTER INSTRUMENT INSTALLATION.
8. DO NOT USE CONVERGENCE BOLTS FOR SUPPORT OF ANY TEMPORARY OR PERMANENT FACILITY (e.g. PIPELINES, CABLES).
9. CONVERGENCE BOLTS TO BE LOCATED BETWEEN LATTICE GIRDERS, AS APPLICABLE.
10. FOR OTHER DETAILS ON CONVERGENCE MONITORING, SEE DWG. CM009-GT-6102 (3-POINT CONVERGENCE MONITORING IN DRILL & BLAST/TBM TUNNEL).
11. DETAILS SHOWN ARE TYPICAL. CONTRACTOR TO SUBMIT DETAILS FOR THE REVIEW BY THE RESIDENT ENGINEER.
12. FOR TYPICAL CONVERGENCE BOLT INSTALLATION ARRANGEMENTS SEE DWG CM009-GT-6104.

SCALE IN FEET
4' 2' 0 4' 8' 12'

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APPROVED BY: J. SCHABIB

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DATE:

MANHATTAN TUNNELS EXCAVATION

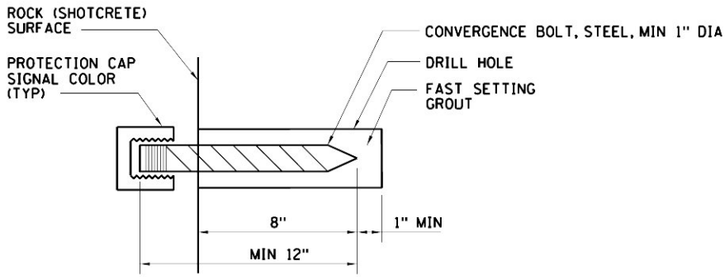
GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-6103
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 273 OF 276

NOTES:

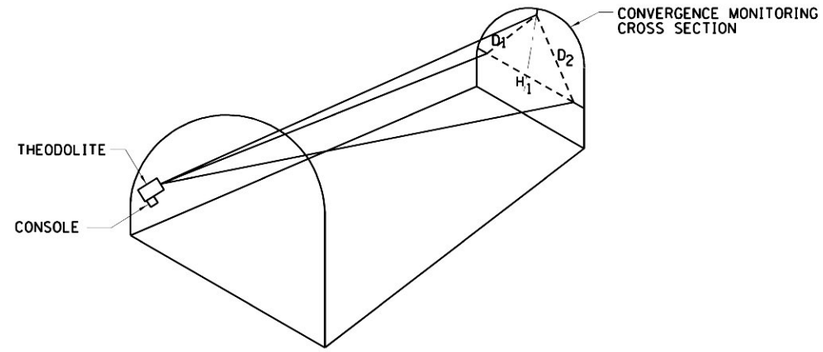
1. FOR GENERAL NOTES, SEE DWG NO. CM009-GT-6102.
2. ADJUST LOCATIONS OF INSTRUMENT MONITORING DEVICES TO SUIT ACTUAL FIELD CONDITIONS.



TYPICAL CONVERGENCE BOLT INSTALLATION ARRANGEMENT

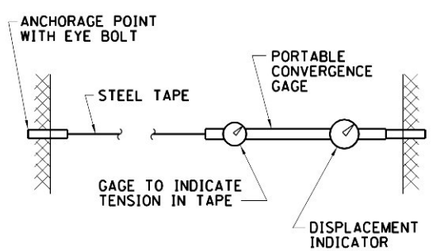
NOTES:

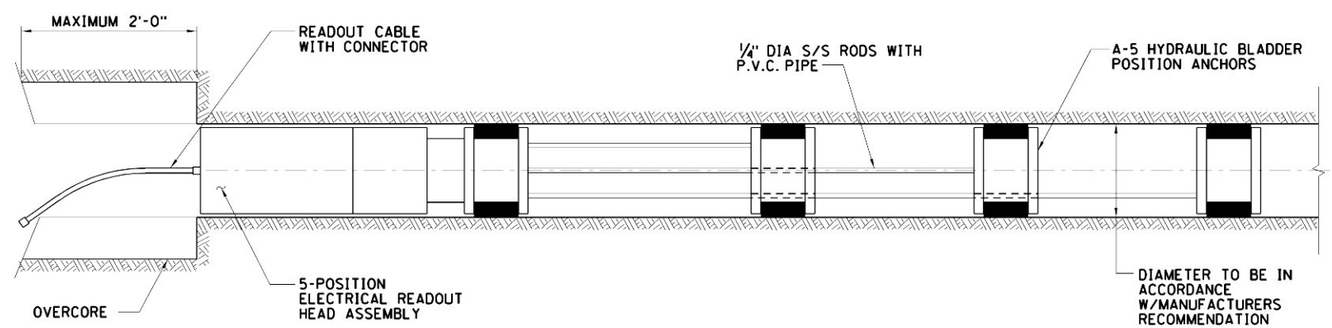
1. ABOVE DETAIL IS FOR INSTALLATION IN ALL AREAS TO LINED WITH CAST-IN-PLACE CONCRETE.
2. FOR PRE CAST CONCRETE SEE SPECIFICATION SECTION 02495.



TYPICAL CONVERGENCE MONITORING SCHEME USING THEODOLITE READING (SCHEMATIC ONLY)

TAPE EXTENSOMETER TYPICAL DETAIL





TYPICAL HORIZONTAL BOREHOLE EXTENSOMETER (BX) INSTALLATION DETAILS

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DATE:	REVISIONS	No.
5/26/06	CONFORMED DRAWING	0

DESIGNED BY: K. ZEIDLER
DRAWN BY: J. RICCARDI
CHECKED BY: M. SHEELEY
COORDINATED BY: M. DELLA POSTA
APPROVED BY: J. SCHABIB

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ORIGINAL SIGNED & SEALED
DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS
SHEET 4

SCALE: NONE
DRAWING NUMBER: CM009-GT-6104
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 274 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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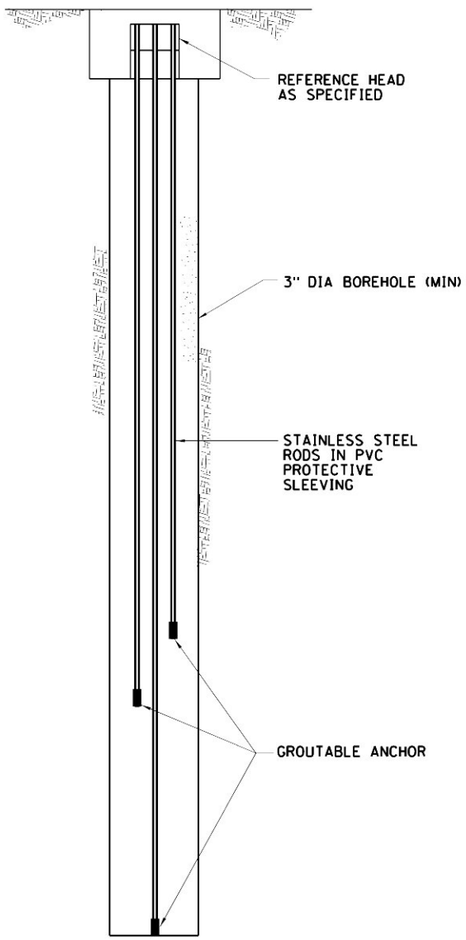
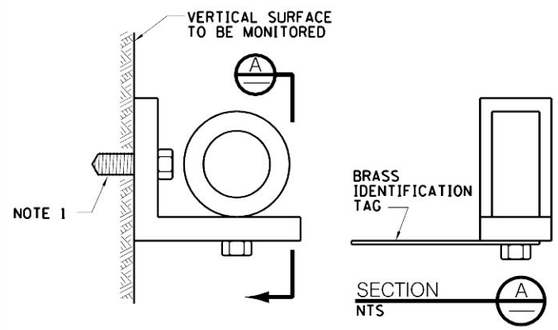
MULTIPLE POSITION BOREHOLE EXTENSOMETER (BX) ⊠ ⊠ H



NOTE:

1. SURFACE ROADWAY BOX TO BE PROVIDED.
2. HORIZONTAL BX SIMILAR, NO ROADWAY BOX REQUIRED.
3. TYPICAL ARRANGEMENT SHOWN. FOR NUMBER AND DEPTH OF ANCHORAGE POINTS SEE SCHEDULE DWG CM009-GT-4107.

PRISM FOR AUTOMATED MOTORIZED TOTAL STATION (SP) ⊙



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5/26/06	CONFORMED DRAWING	0

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DATE:

MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION TYPICAL DETAILS
SHEET 5

SCALE: NONE
DRAWING NUMBER: CM009-GT-6105
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 275 OF 276

$PRFNAME$
$(PLOTDRV)
$REF6$
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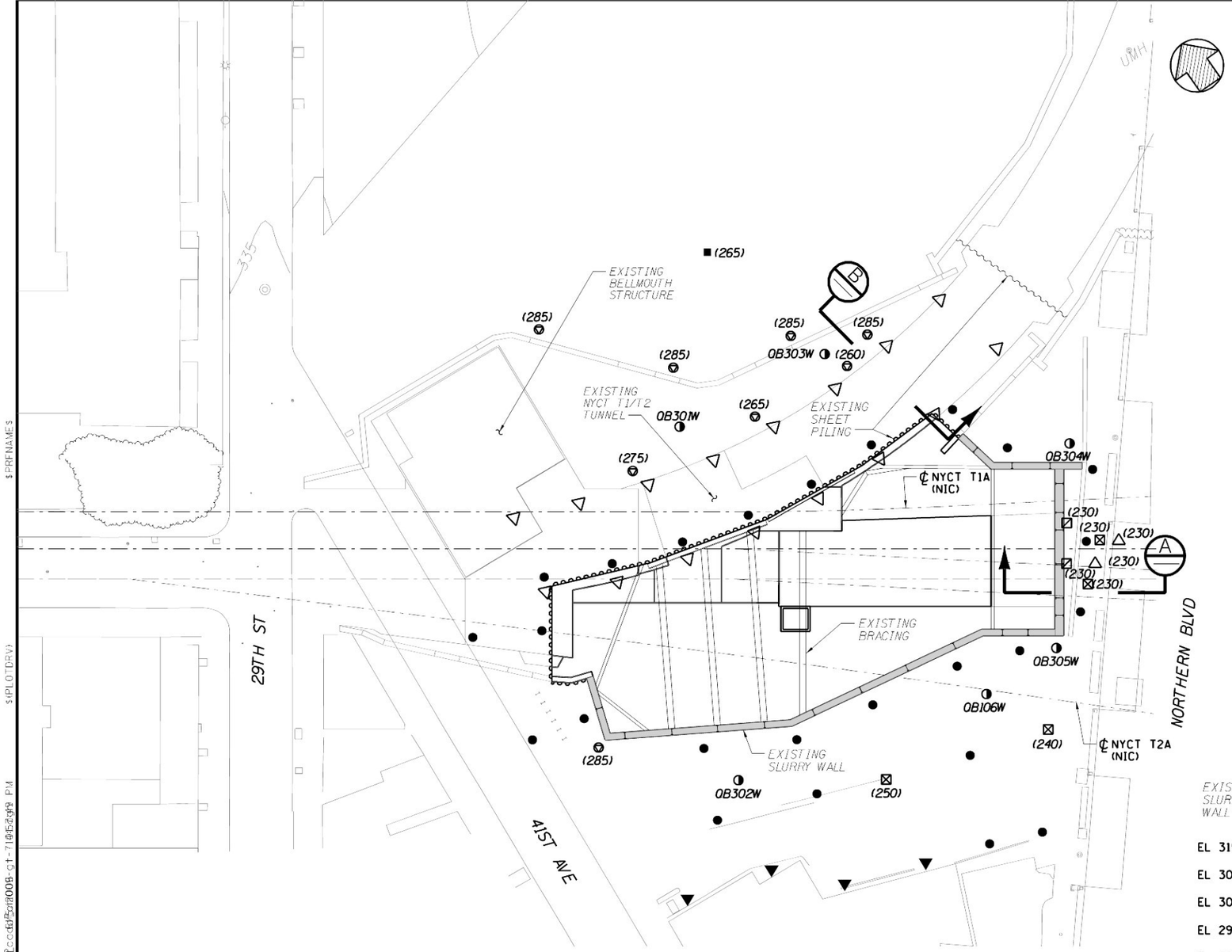


PLAN AT QUEENS OPEN CUT

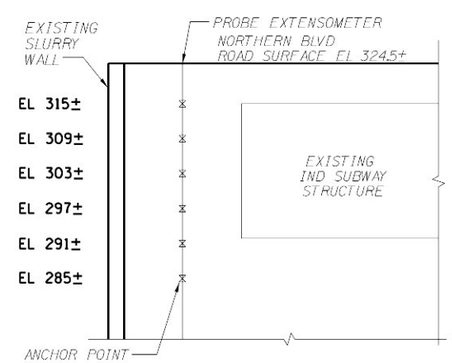
SCALE IN FEET
30' 20' 10' 0 30' 60'

NOTES:

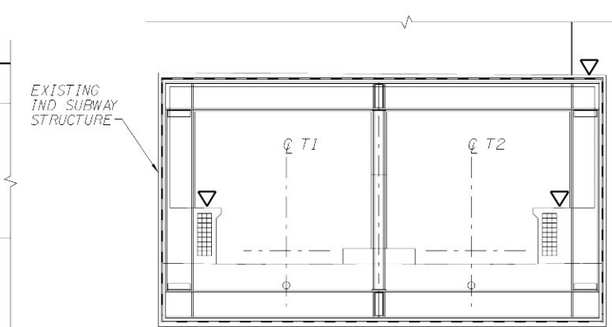
1. FOR INSTRUMENTATION GENERAL NOTES, SEE DRAWING CM009-GT-3101.
2. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE EXISTING INSTRUMENTATION. THE CONTRACTOR SHALL REPLACE INSTRUMENTS OR REFERENCE POINTS THAT ARE DAMAGED OR RENDERED INACCESSIBLE.
3. ALL INSTRUMENTATION LOCATIONS ARE APPROXIMATE. AS-BUILT INFORMATION WILL BE PROVIDED BY THE RESIDENT ENGINEER.
4. ALL INSTRUMENTATION WILL BE MONITORED BY THE RESIDENT ENGINEER.

LEGEND

●	EXISTING GROUND SURFACE MOVEMENT POINT (S1)
▽	EXISTING STRUCTURE MOVEMENT POINT (PK NAIL - S2)
▼	EXISTING COLUMN/BUILDING MOVEMENT POINT (SM)
⊡	EXISTING INCLINOMETER IN SLURRY WALL (IW)
⊠	EXISTING INCLINOMETER IN SOIL (IS)
⊙	EXISTING OPEN STANDPIPE PIEZOMETER (PO)
△	EXISTING PROBE EXTENSOMETER (XP)
◑ OB302W	EXISTING OPEN STANDPIPE PIEZOMETER
■	EXISTING DEEP BENCHMARK (DB)
(XXX)	APPROXIMATE TIP ELEVATIONS



SECTION A
NTS



SECTION B
NTS

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5/26/06	CONFORMED DRAWING	0

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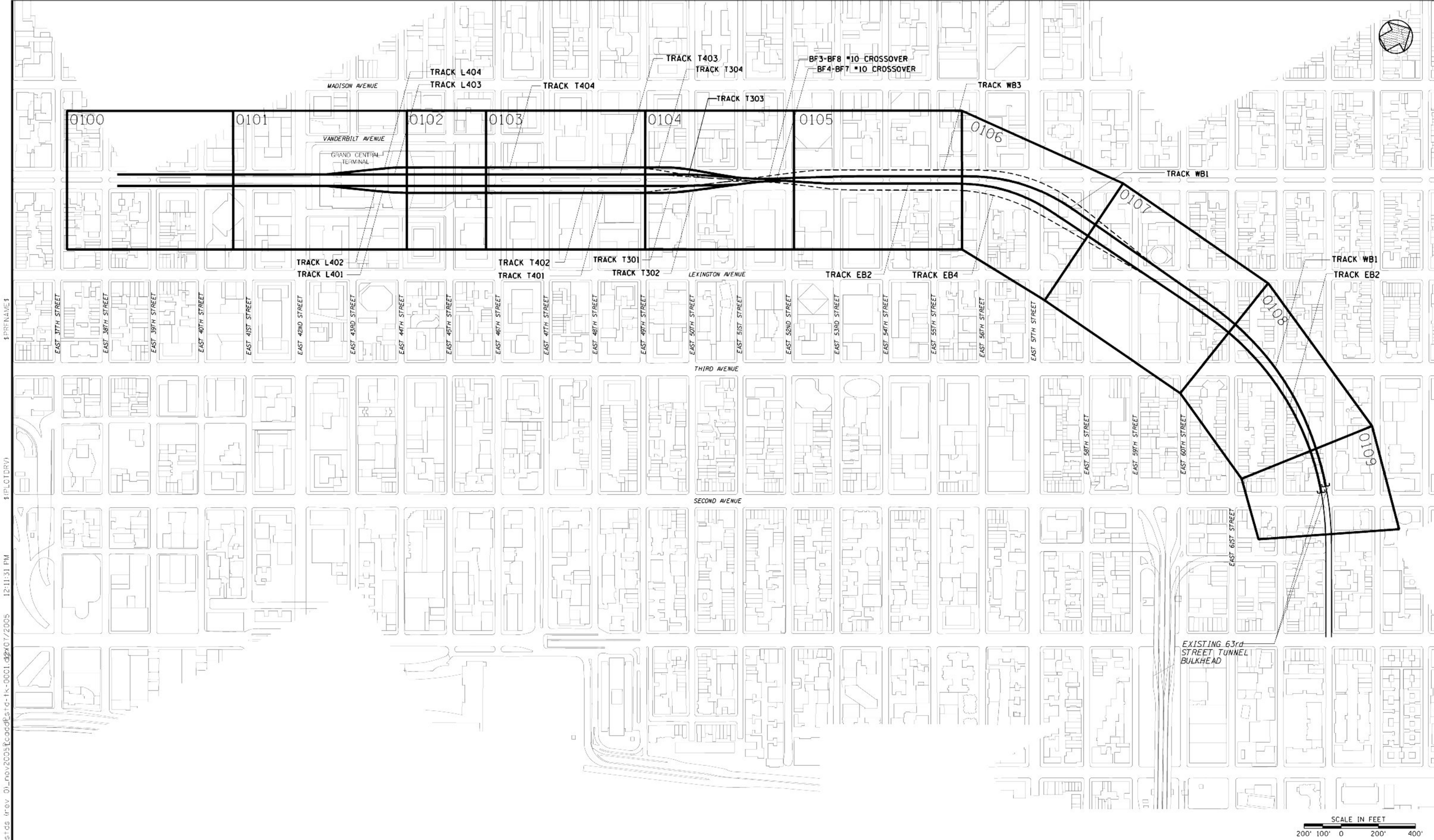
MANHATTAN TUNNELS EXCAVATION

GEOTECHNICAL INSTRUMENTATION
QUEENS OPEN CUT – EXISTING INSTRUMENTS

SCALE: AS NOTED
DRAWING NUMBER: CM009-GT-7101
DATE: 5-26-06
REVISION NUMBER: 0

CONTRACT No. CM009
ISSUE
SHEET No. 276 OF 276



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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

LOWER LEVEL ALIGNMENT KEY PLAN

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0001
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 1

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0100
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No: N/A

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SHEET 54
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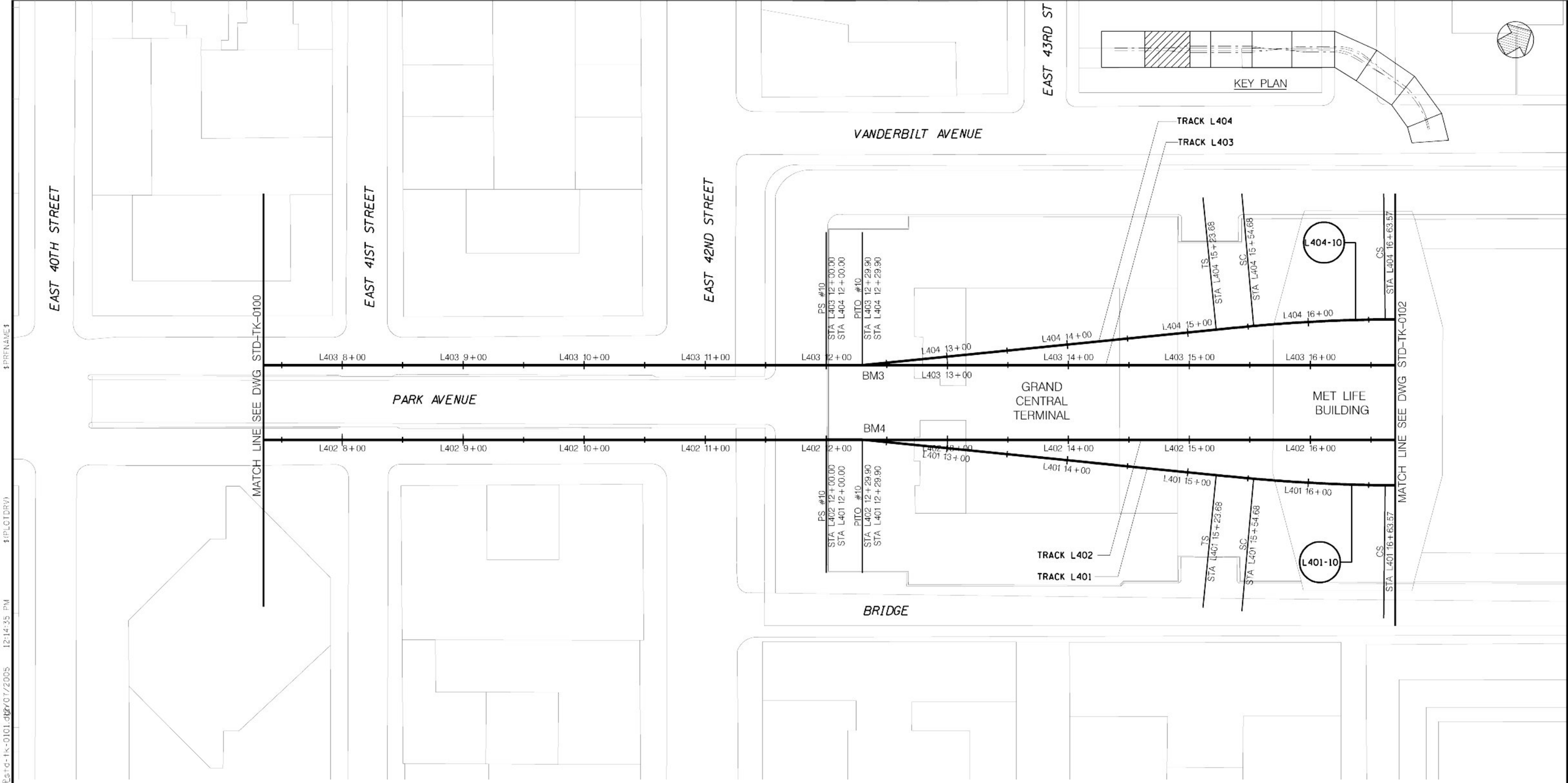

CURVE NUMBER	L401-10
D	4° 05'33.2"
R	1400'
Lc	108.88'
Ls1	31'
Ls2	31'
Ea	0.00"
Eu	0.65"
V	15 mph

CURVE NUMBER	L404-10
D	4° 05'33.2"
R	1400'
Lc	108.88'
Ls1	31'
Ls2	31'
Ea	0.00"
Eu	0.65"
V	15 mph

SCALE IN FEET
40' 20' 0 40' 80'

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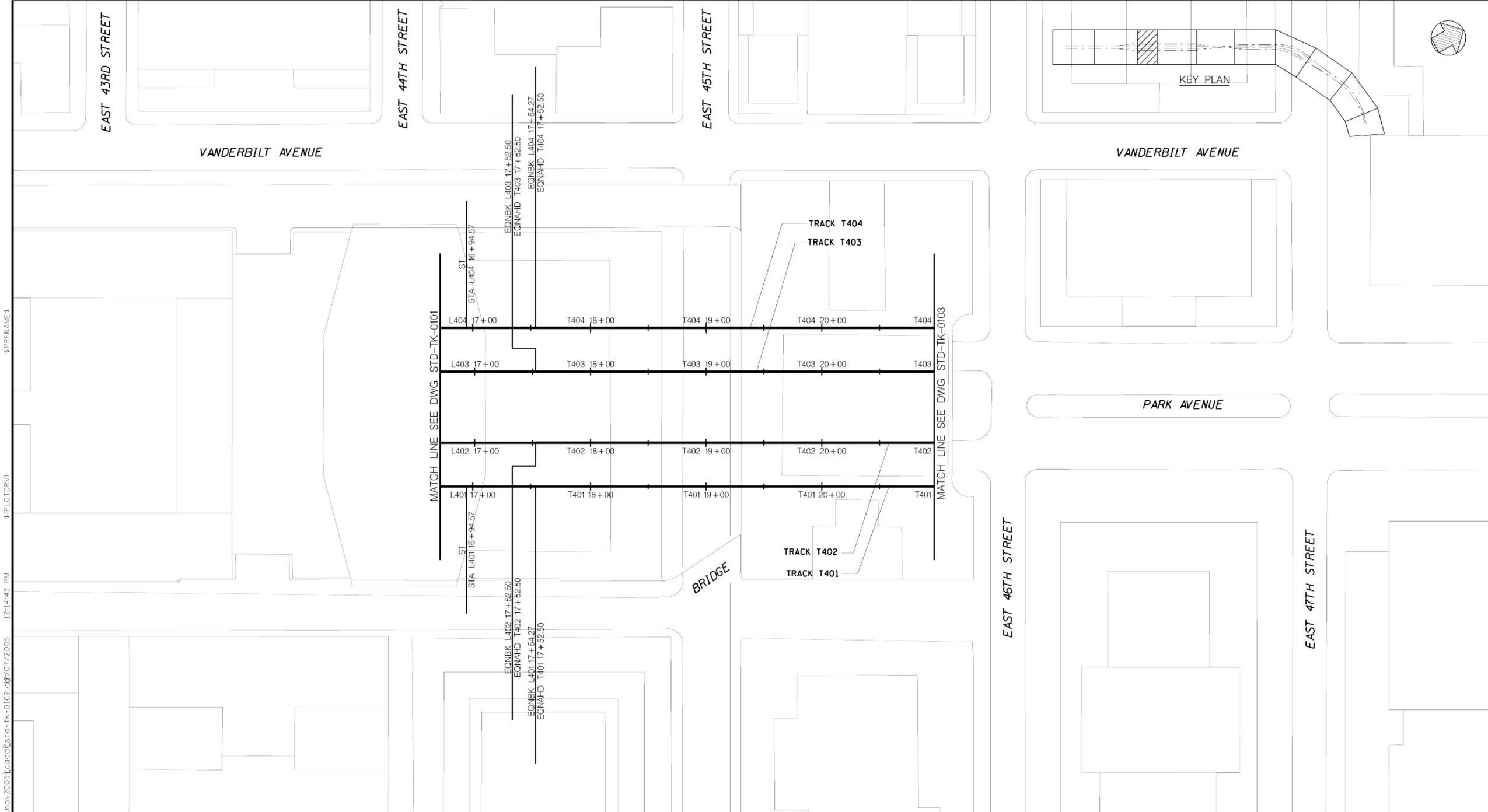
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 2

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0101
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A



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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0102
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 4

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0103
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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REF
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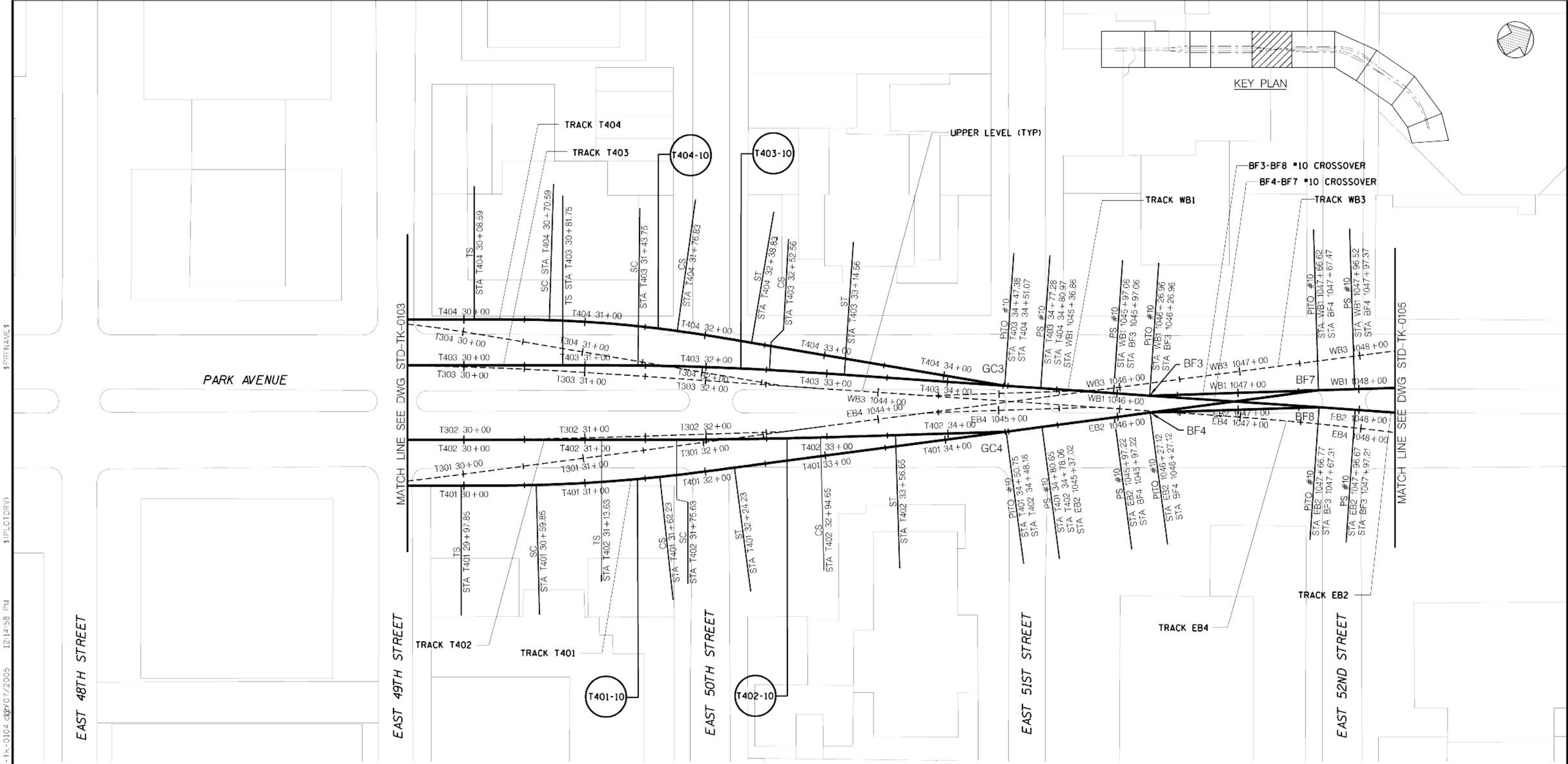

CURVE NUMBER	T401-10
D	4° 35'01.2"
R	1250'
Lc	102.39'
Ls1	62'
Ls2	62'
Ea	0"
Eu	0.73"
V	15 mph

CURVE NUMBER	T402-10
D	0° 59'59.7"
R	5730'
Lc	119.03'
Ls1	62'
Ls2	62'
Ea	0"
Eu	0.16"
V	15 mph

CURVE NUMBER	T403-10
D	2° 17'30.6"
R	2500'
Lc	108.81'
Ls1	62'
Ls2	62'
Ea	0.50"
Eu	0.95"
V	30 mph

CURVE NUMBER	T404-10
D	5° 43'46.5"
R	1000'
Lc	106.24'
Ls1	62'
Ls2	62'
Ea	0.00"
Eu	0.91"
V	15 mph

SCALE IN FEET
40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 5

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0104
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

$PRFNAME$
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$REF6$
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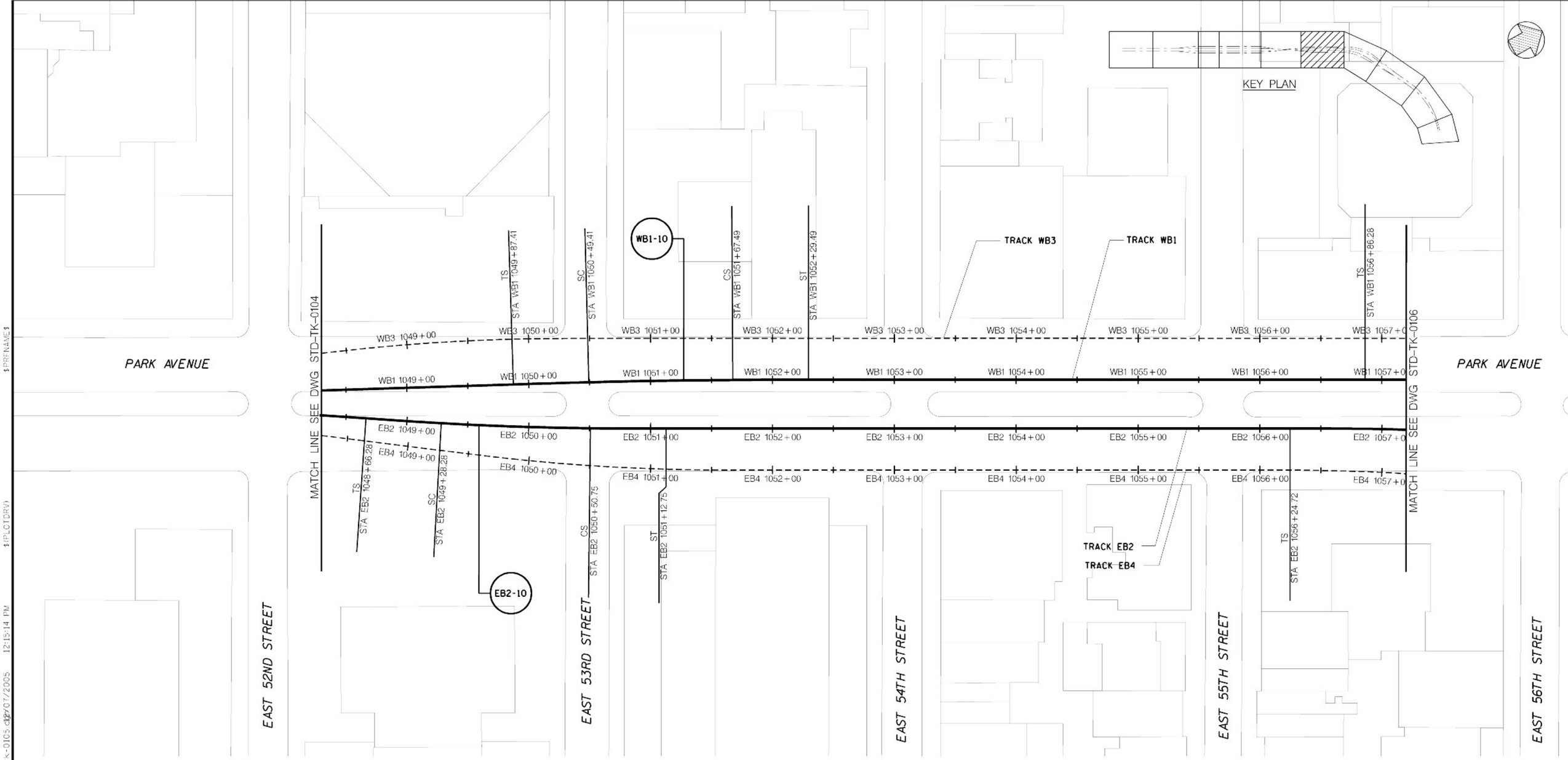

CURVE NUMBER	WB1-10
D	1° 00'18.7"
R	5700'
Lc	118.08'
Ls1	62'
Ls2	62'
Ea	0"
Eu	0.64"
V	30 mph

CURVE NUMBER	EB2-10
D	2° 07'19.4"
R	2700'
Lc	122.47'
Ls1	62'
Ls2	62'
Ea	0.50"
Eu	0.84"
V	30 mph

SCALE IN FEET
40' 20' 0 40' 80'

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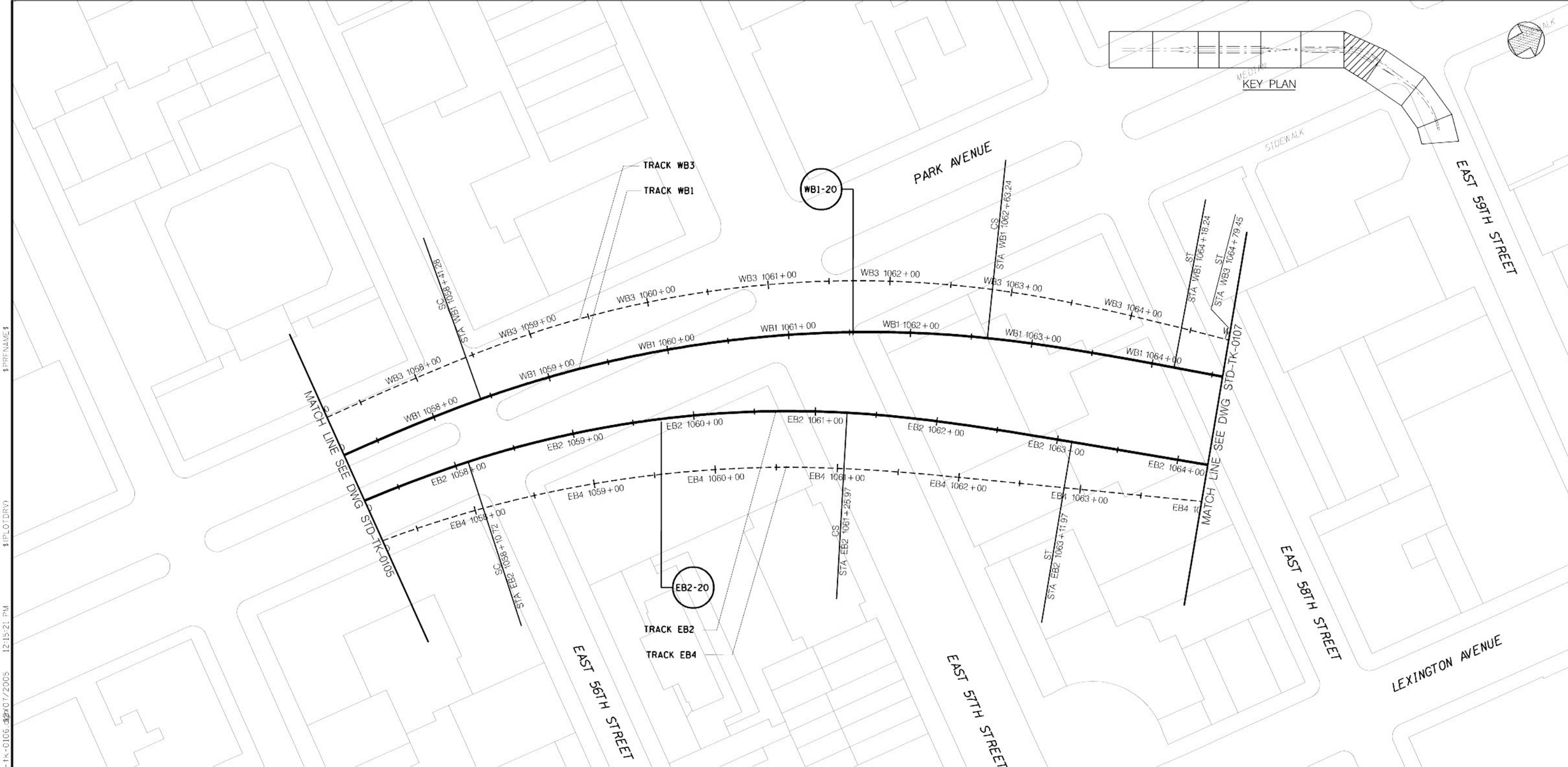
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 6

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0105
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A



CURVE NUMBER	WB1–20
D	6° 01'52.1"
R	950'
Lc	421.96'
Ls1	155'
Ls2	155'
Ea	2.50"
Eu	1.30"
V	30 mph

CURVE NUMBER	EB2–20
D	6° 44'26.5"
R	850'
Lc	315.25'
Ls1	186'
Ls2	186'
Ea	3.00"
Eu	1.25"
V	30 mph

SCALE IN FEET
40' 20' 0 40' 80'

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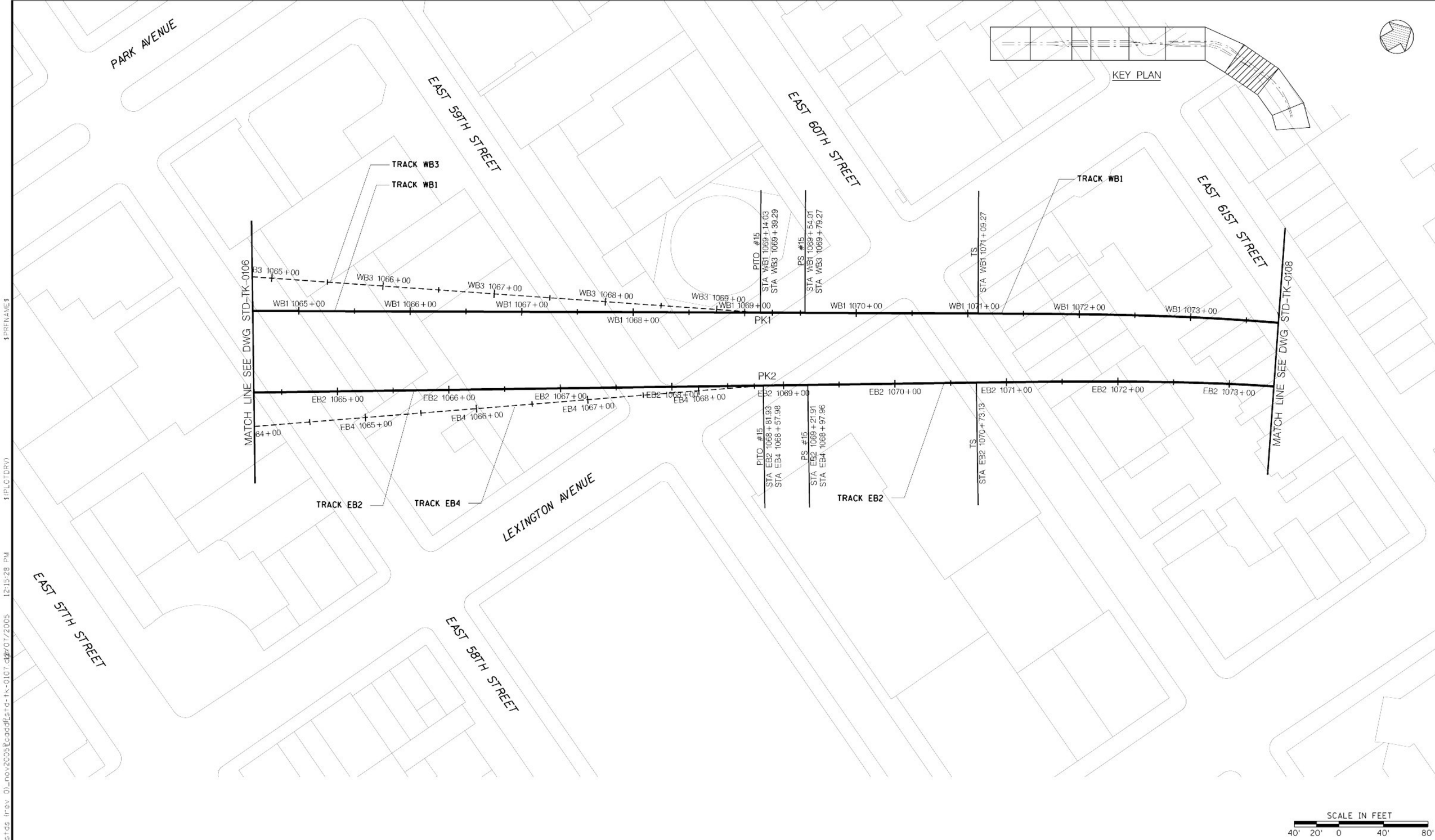
ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 7

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0106
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A



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DATE	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 8

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0107
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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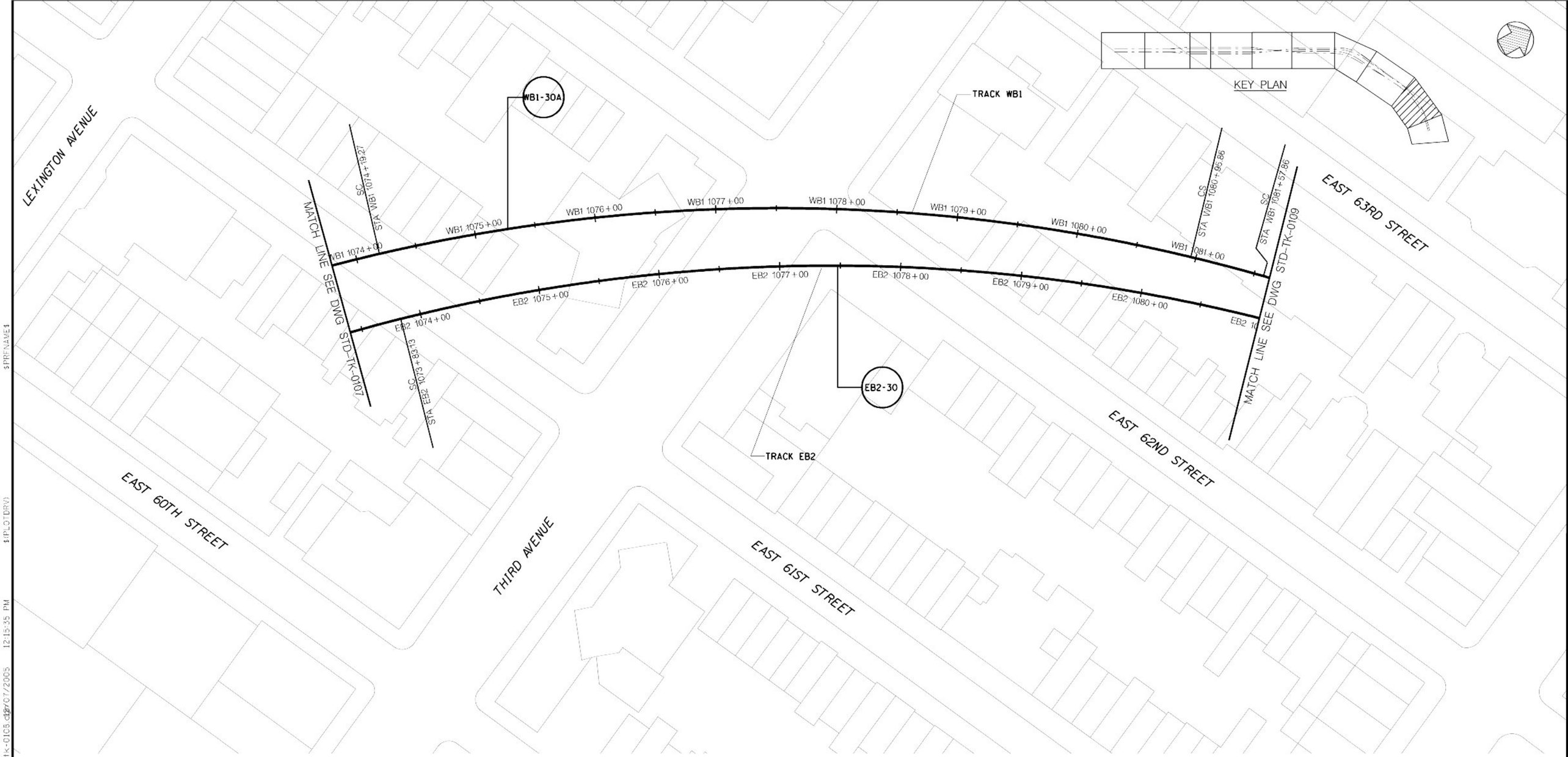

CURVE NUMBER	WB1-30A
D	3° 55'56.8"
R	1457'
Lc	676.59'
Ls1	310'
Ls2	62'
Ea	4.00"
Eu	1.58"
V	45 mph

CURVE NUMBER	EB2-30
D	3° 55'13.2"
R	1461.50'
Lc	1122.01'
Ls1	310'
Ls2	312'
Ea	4.00"
Eu	1.56"
V	45 mph

SCALE IN FEET
40' 20' 0 40' 80'

Metropolitan Transportation Authority
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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 9

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0108
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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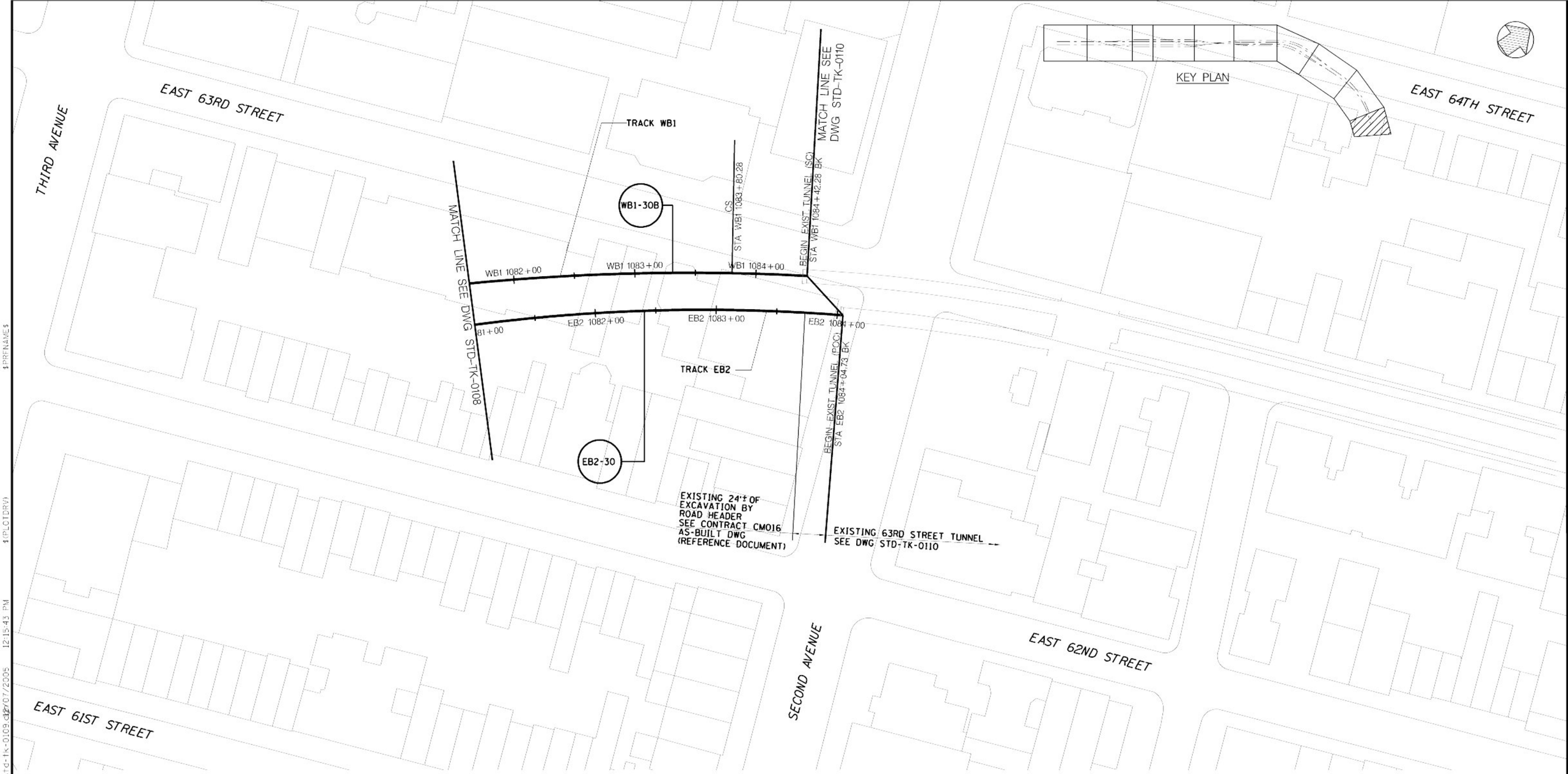

CURVE NUMBER	EB2-30
D	3° 55'13.2"
R	1461.50'
Lc	1122.01'
Ls1	310'
Ls2	312'
Ea	4.00"
Eu	1.56"
V	45 mph

CURVE NUMBER	WB1-30B
D	3° 04'19.8"
R	1865'
Lc	222.42'
Ls1	62'
Ls2	62'
Ea	3.00"
Eu	1.36"
V	45 mph

SCALE IN FEET
40' 20' 0 40' 80'

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APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
LOWER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 10

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0109
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

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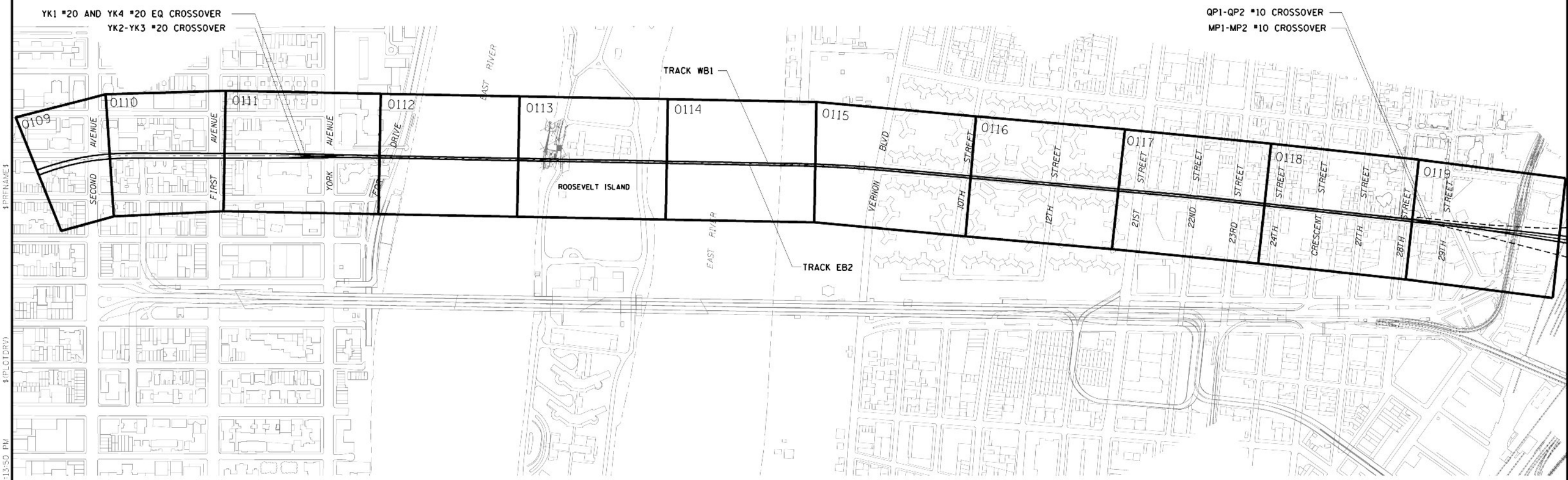
PAGE 63



SCALE IN FEET
300' 0 300' 600'

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

63RD STREET TUNNEL ALIGNMENT
KEY PLAN

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0003
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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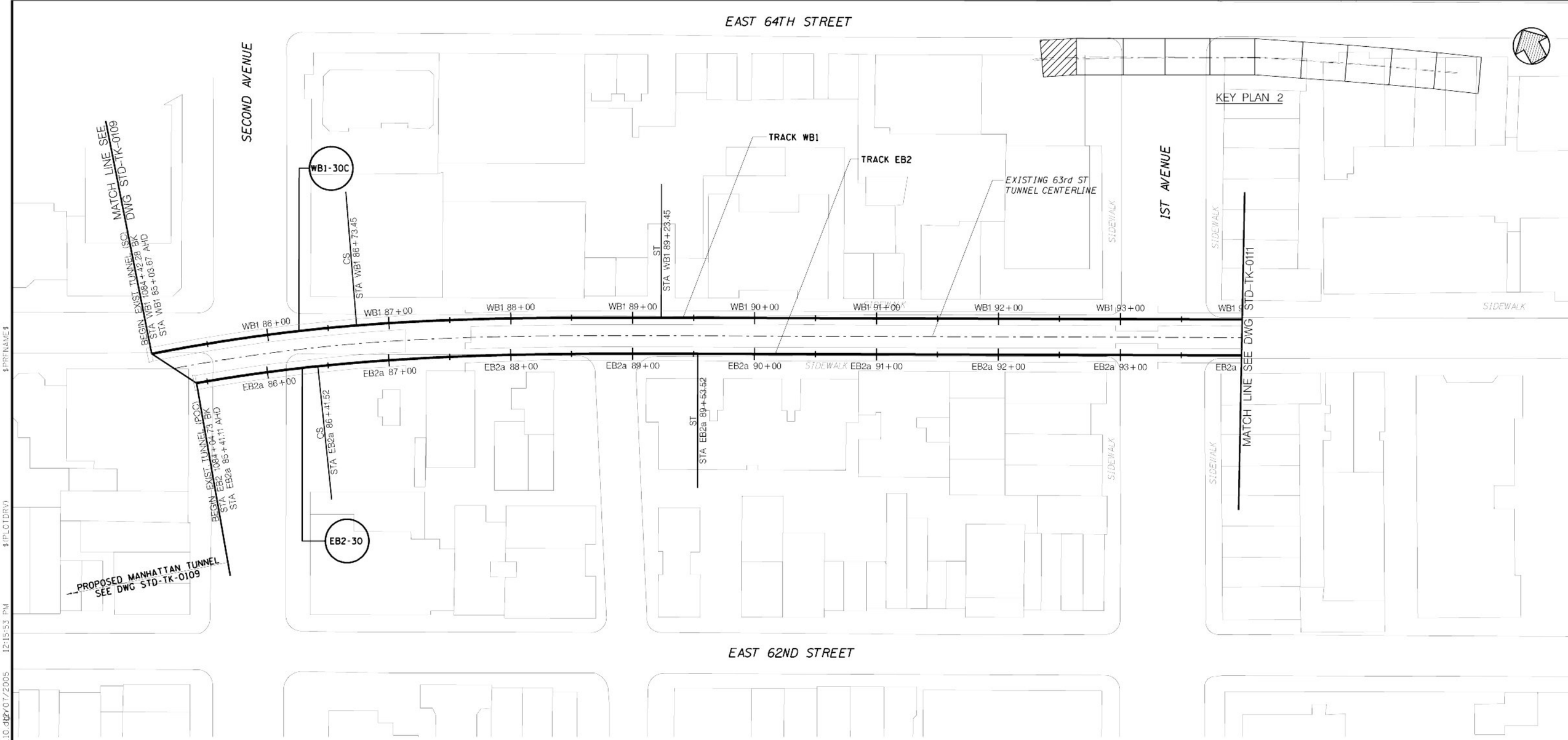

CURVE NUMBER	EB2-30
D	3° 55'13.2"
R	1461.50'
Lc	1122.01'
Ls1	310'
Ls2	312'
Ea	4.00"
Eu	1.56"
V	45 mph

CURVE NUMBER	WB1-30C
D	3° 50'24.7"
R	1492'
Lc	169.78'
Ls1	62'
Ls2	250'
Ea	4.00"
Eu	1.45"
V	45 mph

SCALE IN FEET
40' 20' 0 40' 80'

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DATE | REVISIONS | No

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ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 1

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0110
DATE: 11-14-05
REVISION NUMBER: 0

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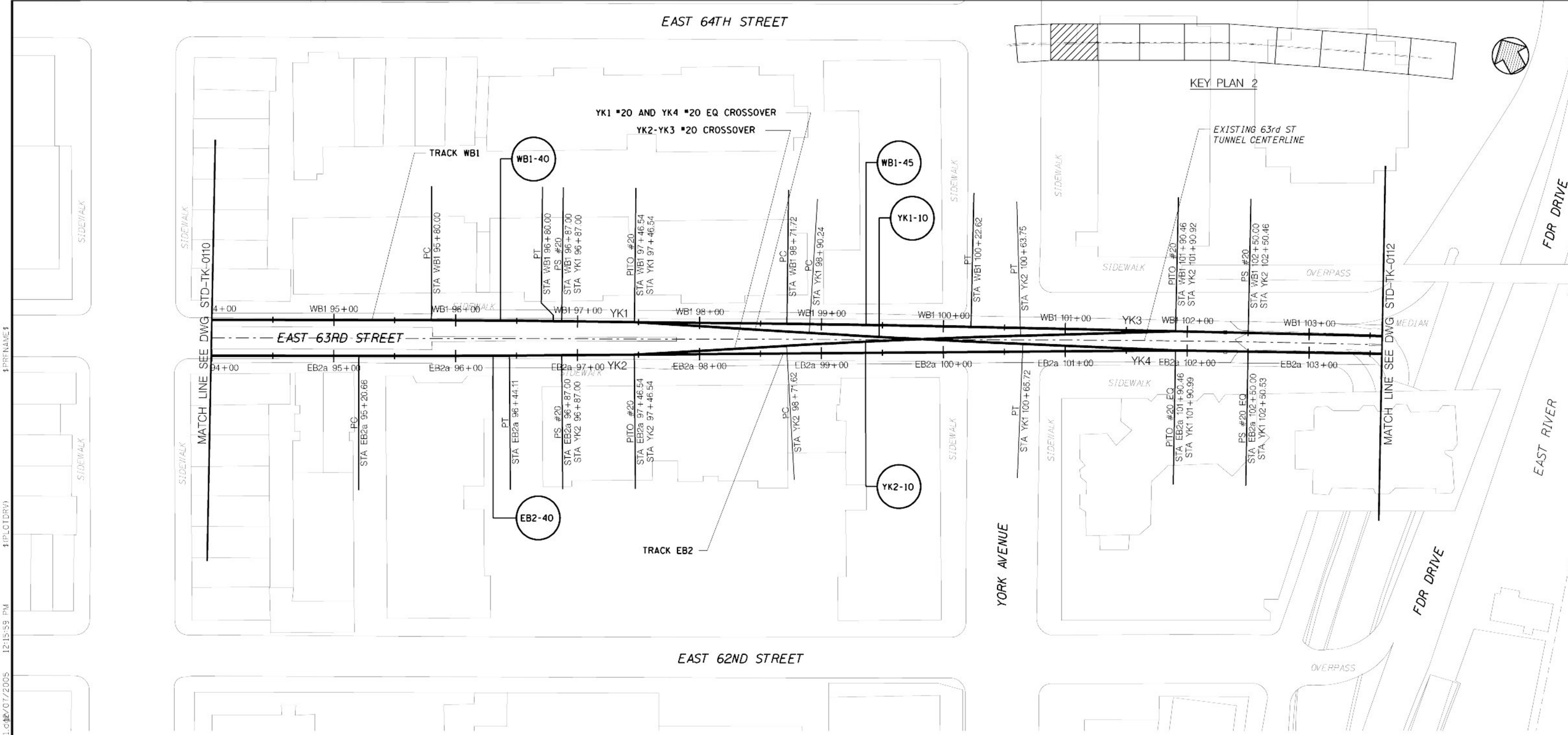
SHEET No: N/A



CURVE NUMBER	EB2-40
D	0° 29'59.9"
R	11460.00'
Lc	123.45'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	1.26"
V	60 mph

CURVE NUMBER	WB1-40
D	0° 29'59.9"
R	11460.00'
Lc	100.00'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	1.26"
V	60 mph

CURVE NUMBER	WB1-45
D	0° 22'55.1"
R	15000.00'
Lc	150.90'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.97"
V	60 mph

CURVE NUMBER	YK1-10
D	0° 38'11.8"
R	9000.00'
Lc	175.48'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.91"
V	45 mph

CURVE NUMBER	YK2-10
D	0° 52'53.3"
R	6500.00'
Lc	192.13'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	1.25"
V	45 mph

SCALE IN FEET
40' 20' 0 40' 80'

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

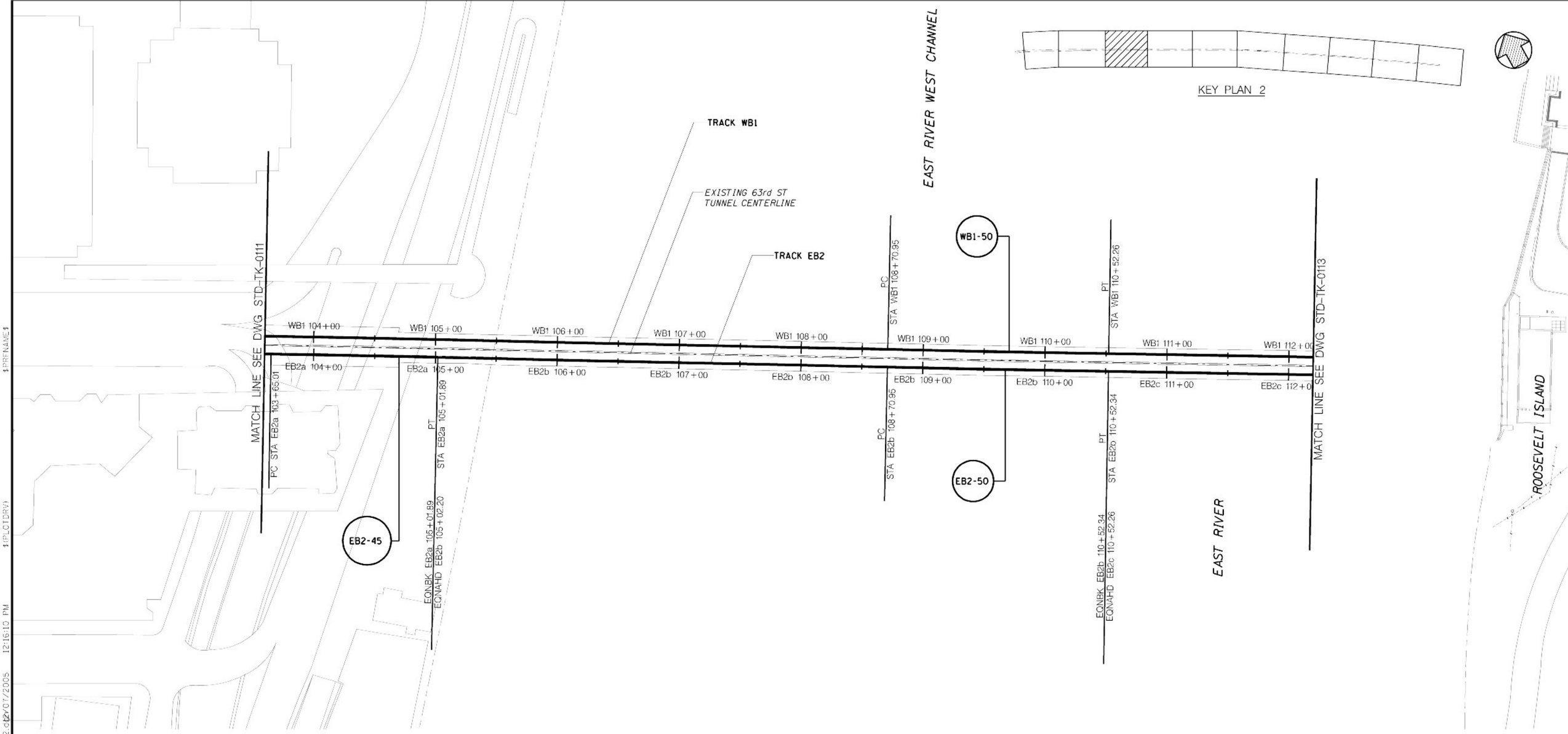
NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 2

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0111
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A



CURVE NUMBER	WB1-50
D	0° 09'33.1"
R	35992.75'
Lc	181.31'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.41"
V	60 mph

CURVE NUMBER	EB2-45
D	0° 11'27.7"
R	29992.75'
Lc	136.88'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.49"
V	60 mph

CURVE NUMBER	EB2-50
D	0° 09'32.8"
R	36007.25'
Lc	181.38'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.41"
V	60 mph

SCALE IN FEET
40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0112
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No: N/A

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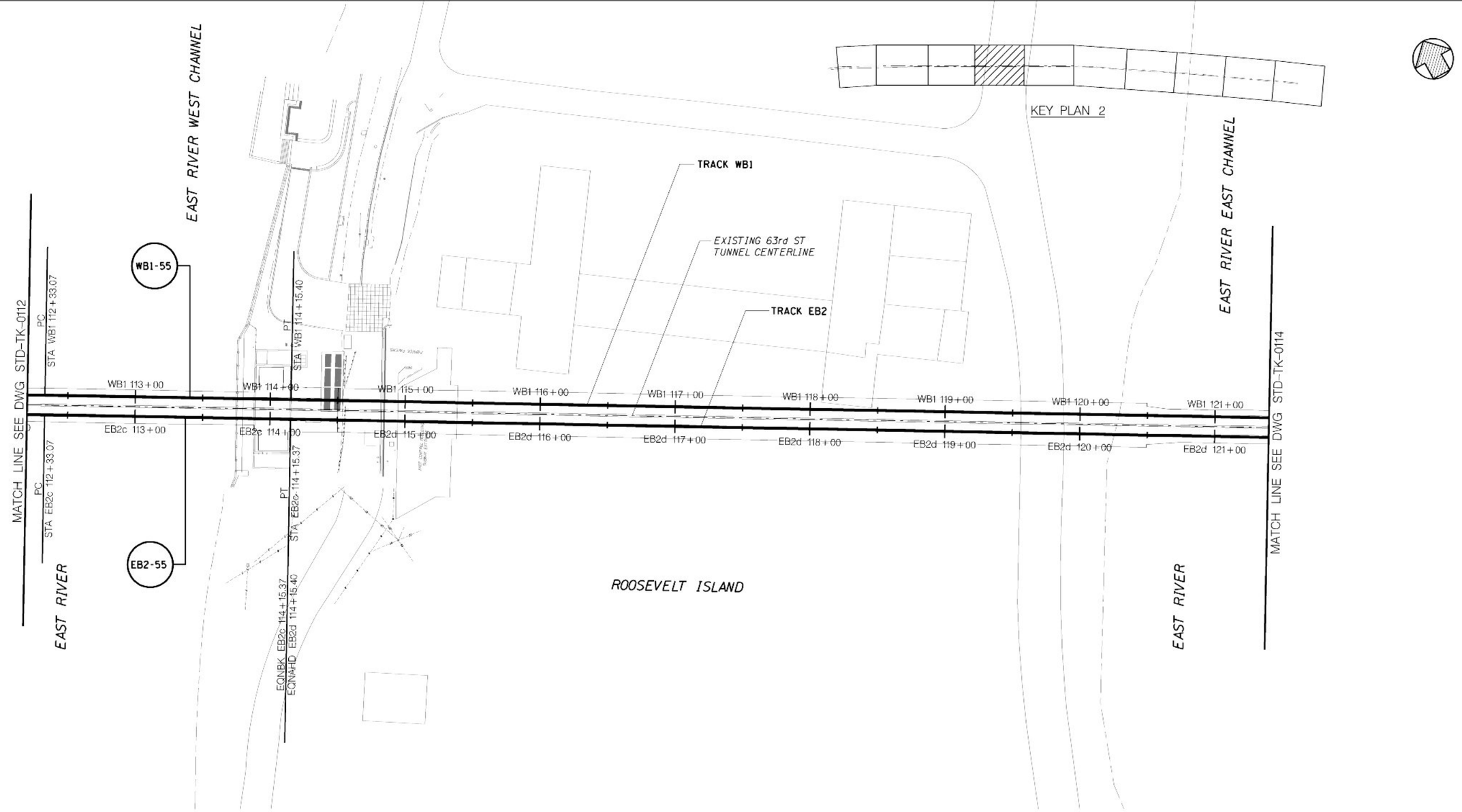

CURVE NUMBER	WB1-55
D	0° 03'49.2"
R	90007.25'
Lc	182.33'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.17"
V	60 mph

CURVE NUMBER	EB2-55
D	0° 03'49.2"
R	89992.75'
Lc	182.30'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	0.17"
V	60 mph

SCALE IN FEET
40' 20' 0 40' 80'

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APPROVED BY: M. HEDAYATI

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ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 4

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0113
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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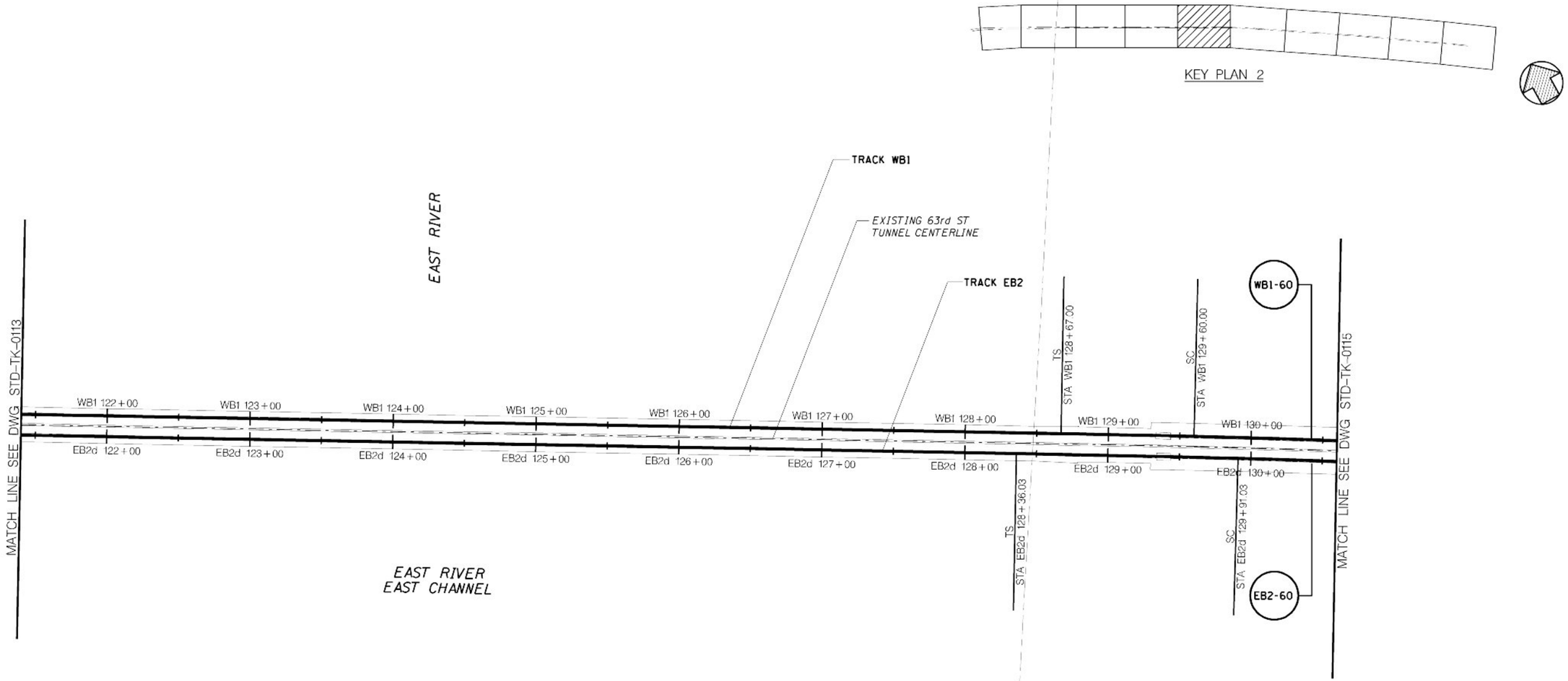

CURVE NUMBER	WB1-60
D	0° 39'56.1"
R	8608.25'
Lc	508.39'
Ls1	93'
Ls2	93'
Ea	1.00"
Eu	0.68"
V	60 mph

CURVE NUMBER	EB2-60
D	0° 40'00.5"
R	8592.75'
Lc	445.31'
Ls1	155'
Ls2	155'
Ea	1.25"
Eu	0.44"
V	60 mph

SCALE IN FEET
40' 20' 0 40' 80'

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APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 5

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0114
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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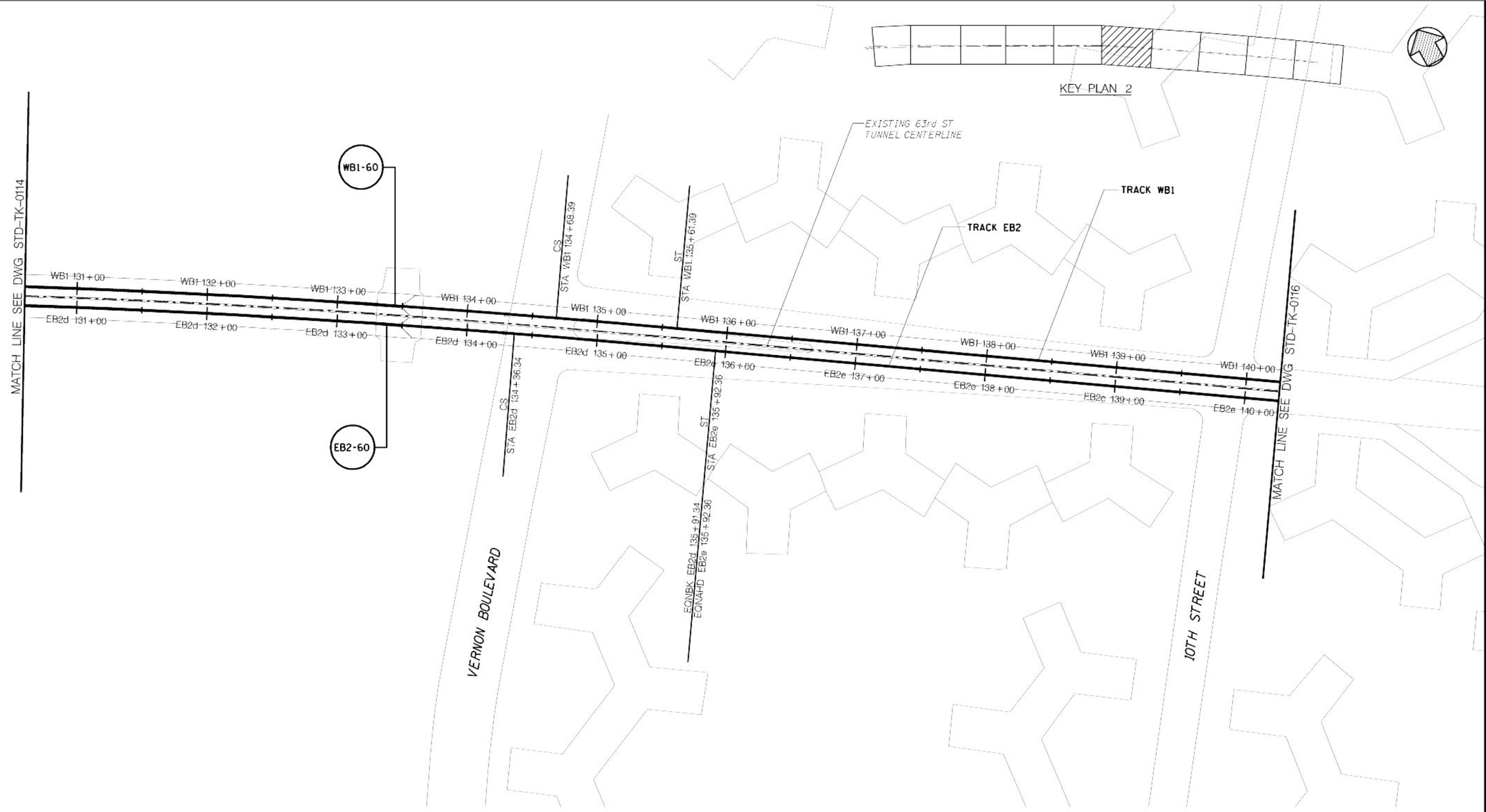

CURVE NUMBER	WB1-60
D	0° 39'56.1"
R	8608.25'
Lc	508.39'
Ls1	93'
Ls2	93'
Ea	1.00"
Eu	0.68"
V	60 mph

CURVE NUMBER	EB2-60
D	0° 40'00.5"
R	8592.75'
Lc	445.31'
Ls1	155'
Ls2	155'
Ea	1.25"
Eu	0.44"
V	60 mph

SCALE IN FEET
40' 20' 0 40' 80'

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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 6

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0115
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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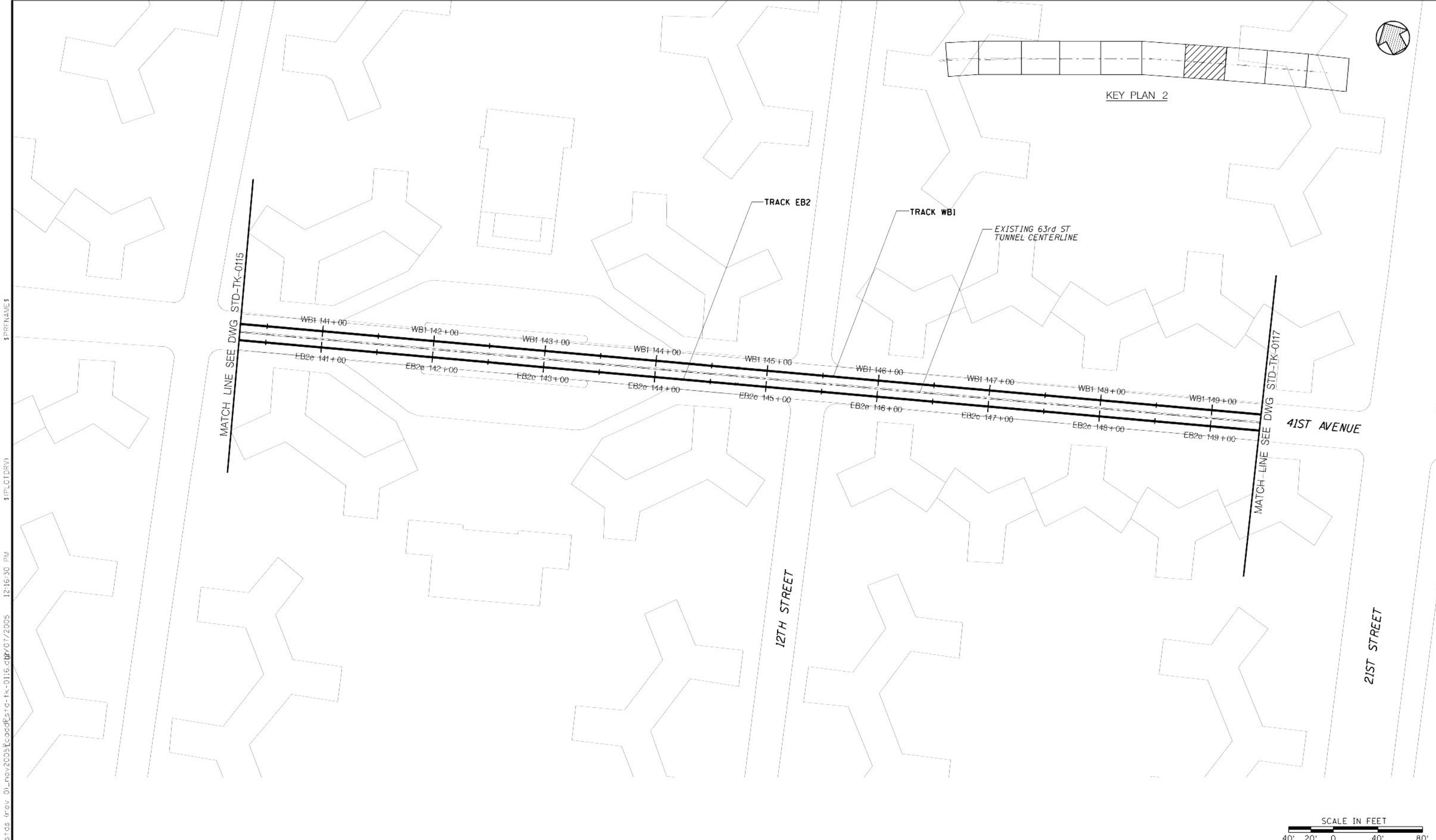

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 7

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0116
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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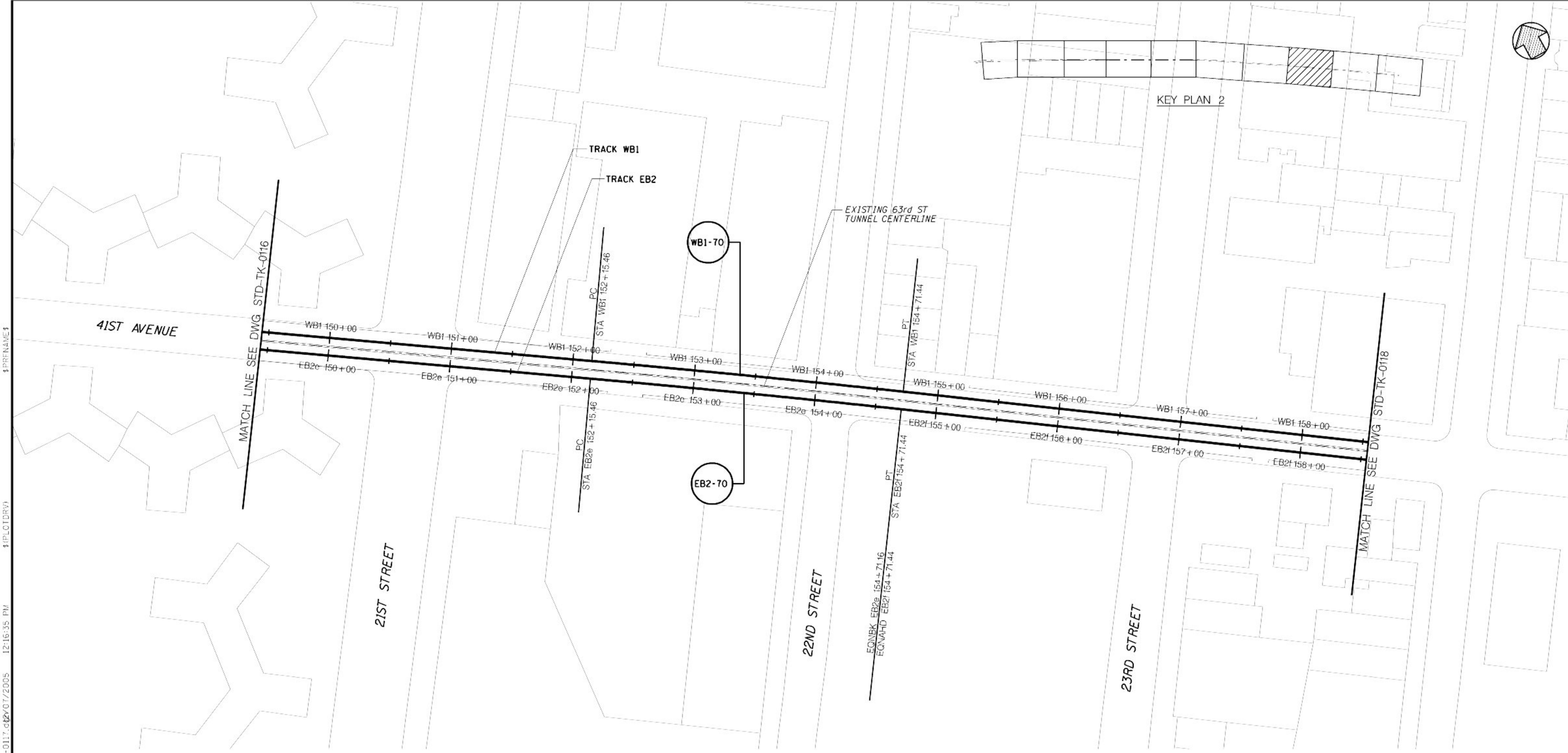

CURVE NUMBER	WB1–70
D	0° 26'13.7"
R	13107.25'
Lc	255.99'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	1.11"
V	60 mph

CURVE NUMBER	EB2–70
D	0° 26'15.4"
R	13092.75'
Lc	255.71'
Ls1	0'
Ls2	0'
Ea	0.00"
Eu	1.11"
V	60 mph

SCALE IN FEET
40' 20' 0 40' 80'

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DATE	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 8

SCALE: AS NOTED
DRAWING NUMBER: STD–TK–0117
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

SHEET 53
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ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 9

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0118
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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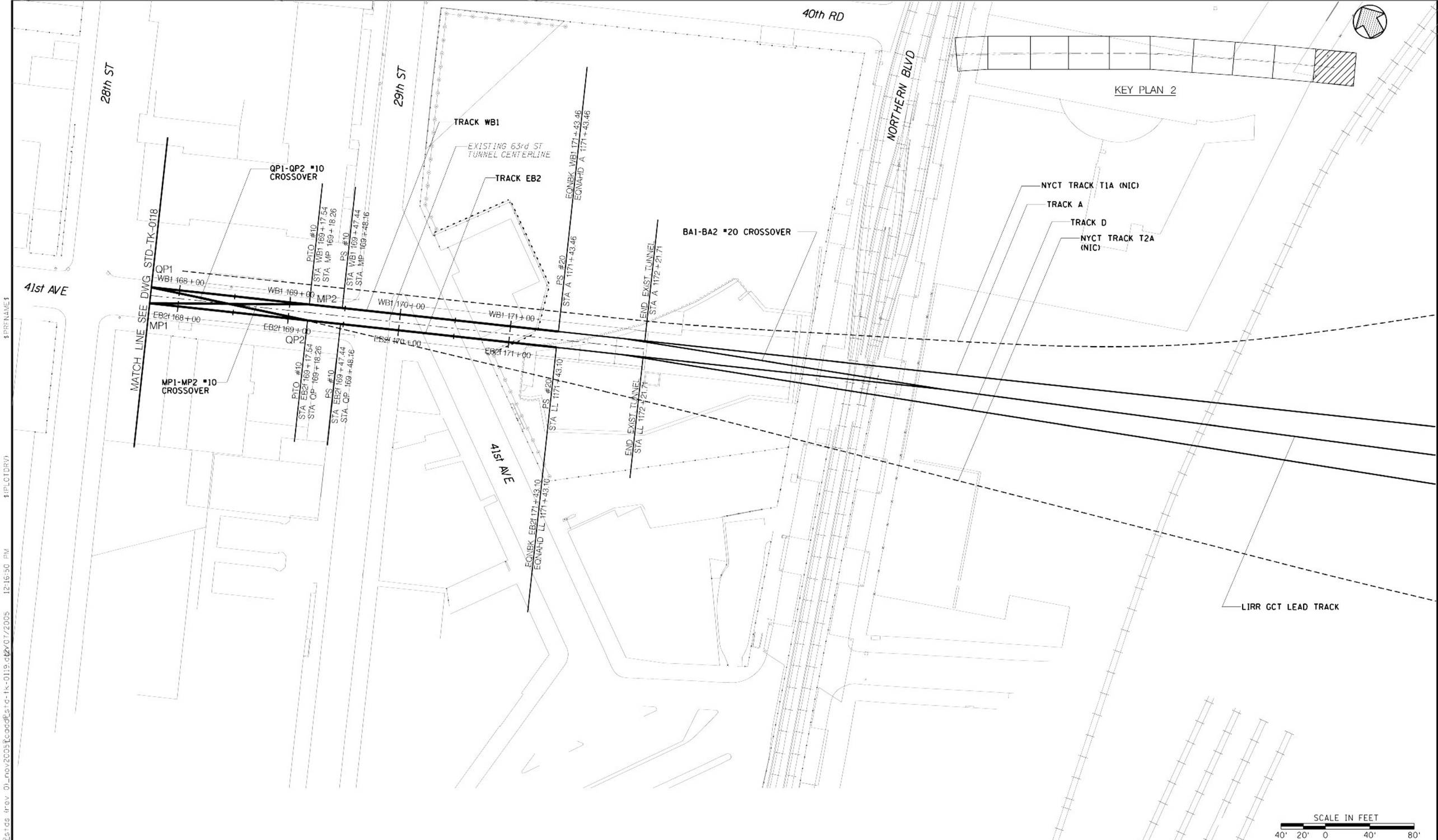

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ALIGNMENT STANDARD

TRACK ALIGNMENT
63RD STREET TUNNEL COMPOSITE ALIGNMENT PLAN
SHEET 10

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0119
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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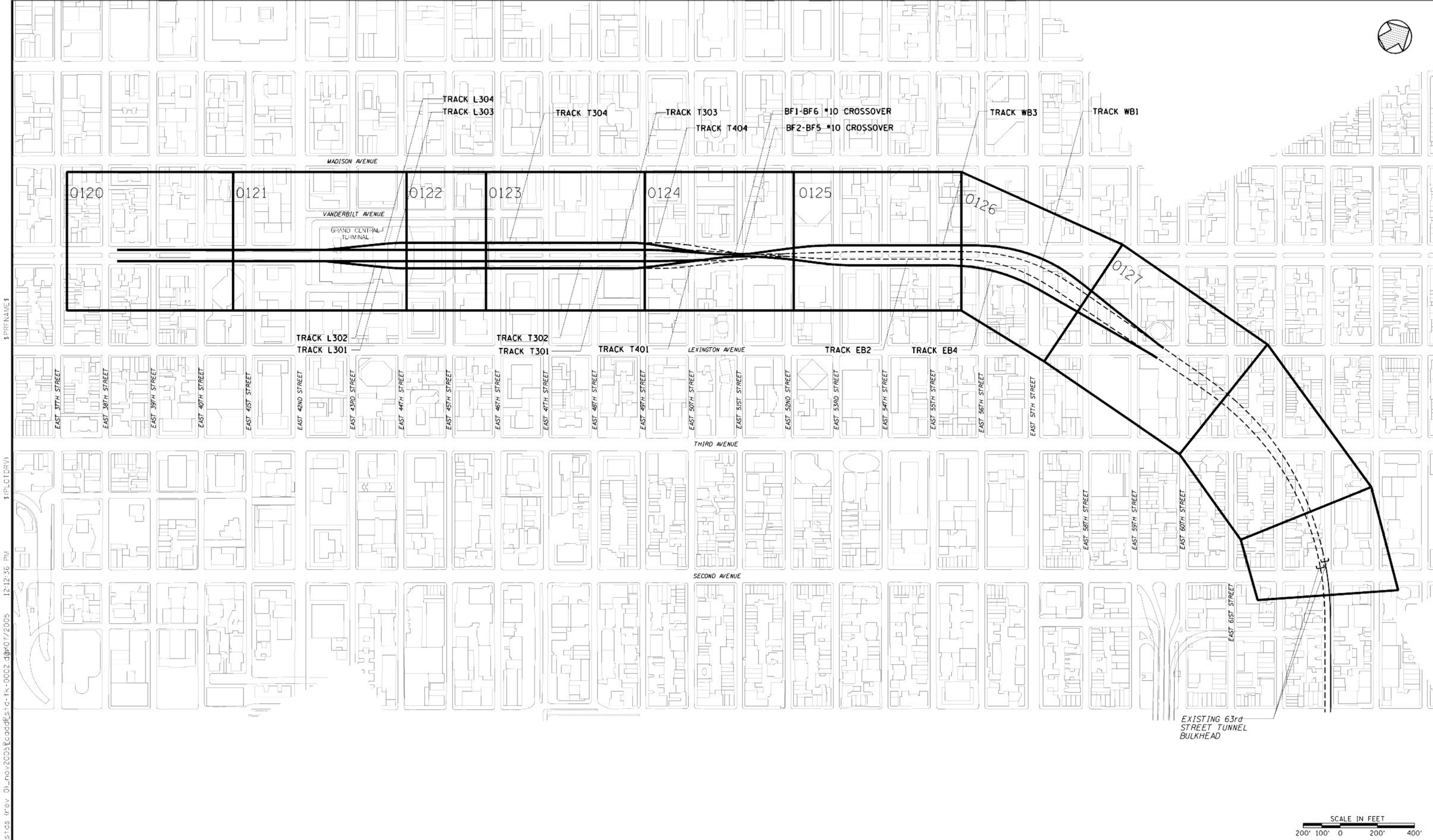

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ALIGNMENT STANDARD

UPPER LEVEL ALIGNMENT KEY PLAN

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0002
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 1

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0120
DATE: 11-14-05
REVISION NUMBER: 0

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ISSUE: —
SHEET No: N/A

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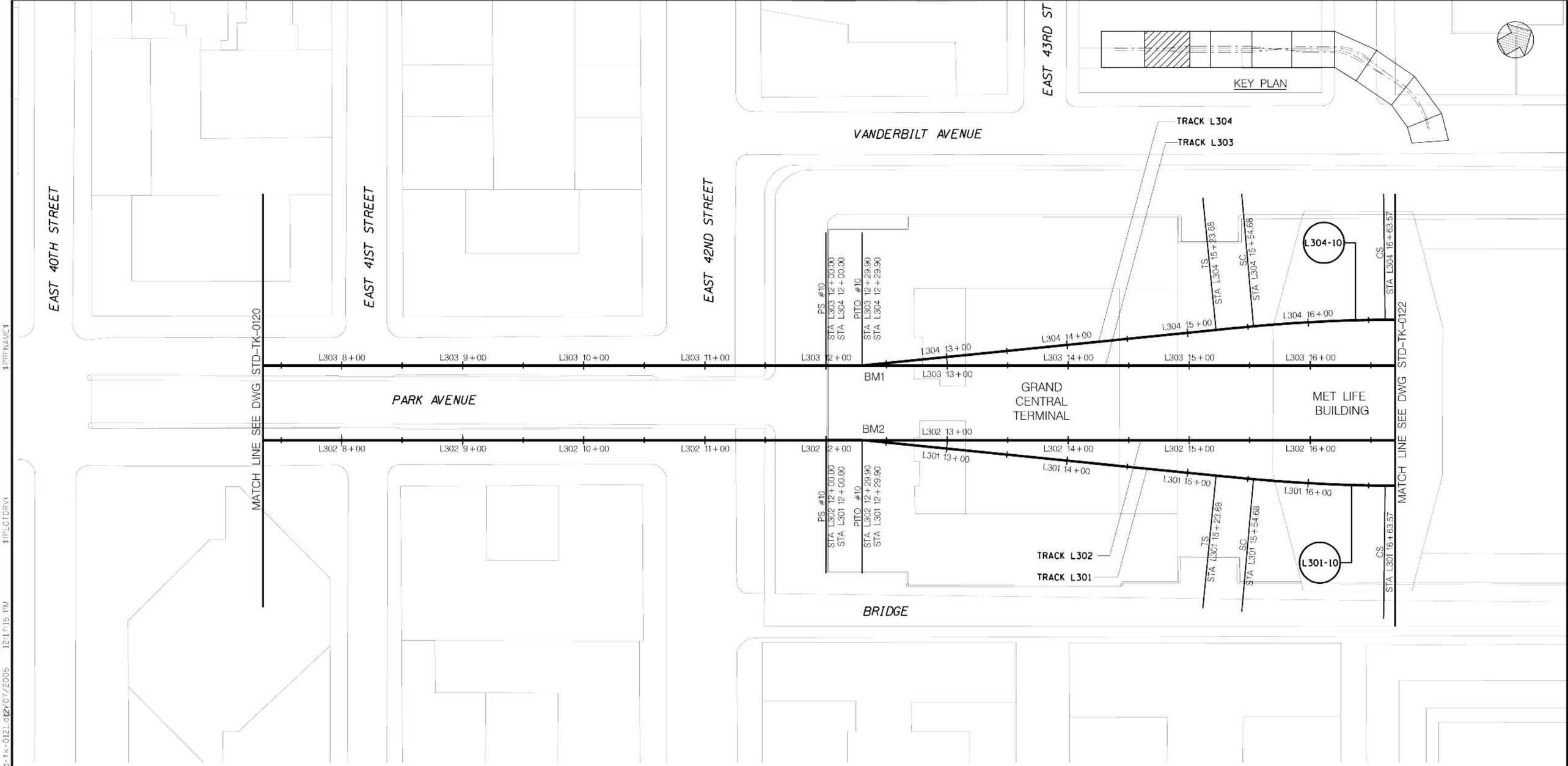

CURVE NUMBER	L301-10
D	4° 05'33.2"
R	1400'
Lc	108.88'
Ls1	31'
Ls2	31'
Ea	0.00"
Eu	0.65"
V	15 mph

CURVE NUMBER	L304-10
D	4° 05'33.2"
R	1400'
Lc	108.88'
Ls1	31'
Ls2	31'
Ea	0.00"
Eu	0.65"
V	15 mph

SCALE IN FEET
40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 2

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0121
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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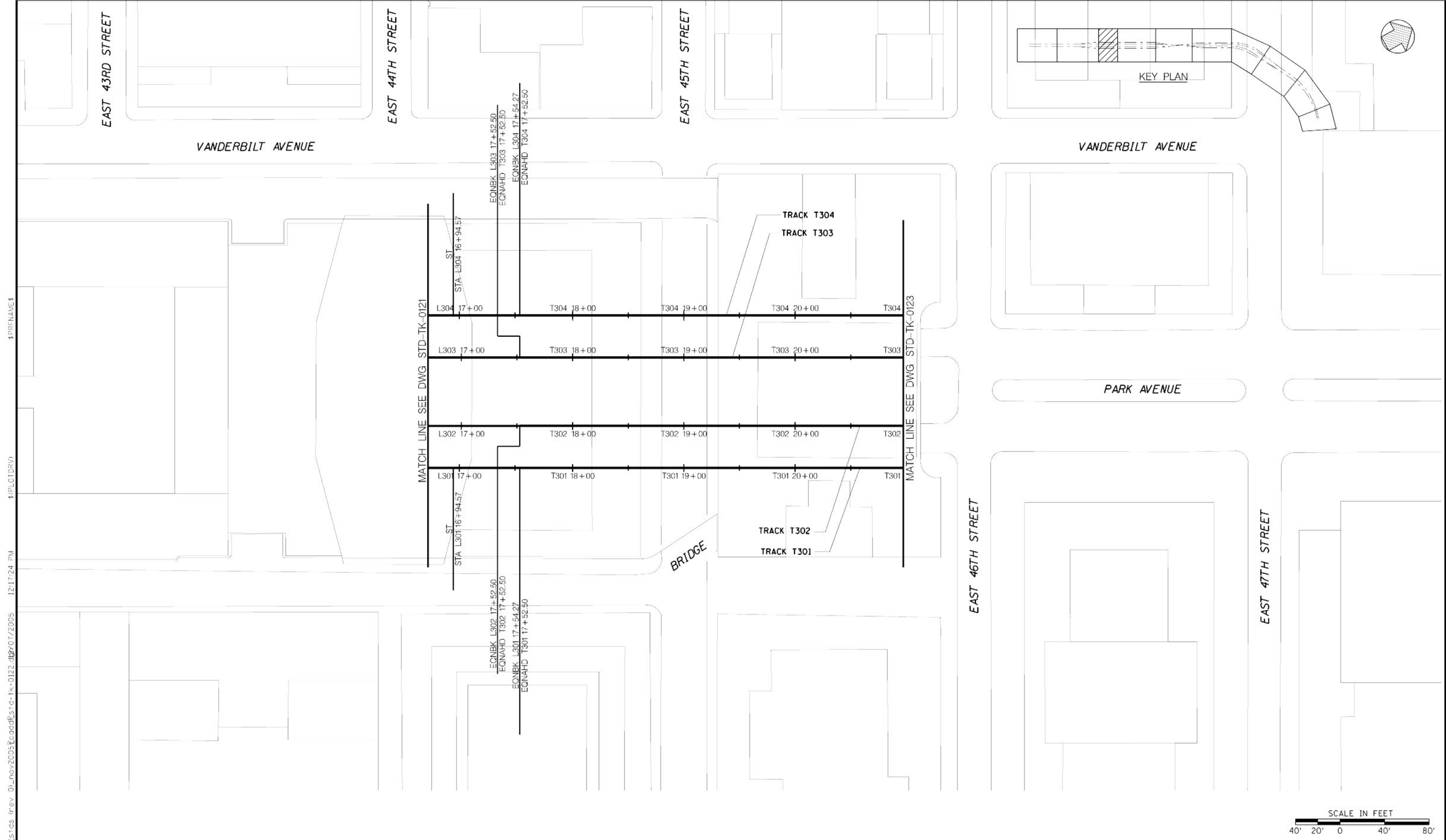

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ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 3

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0122
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No: N/A

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SHEET54
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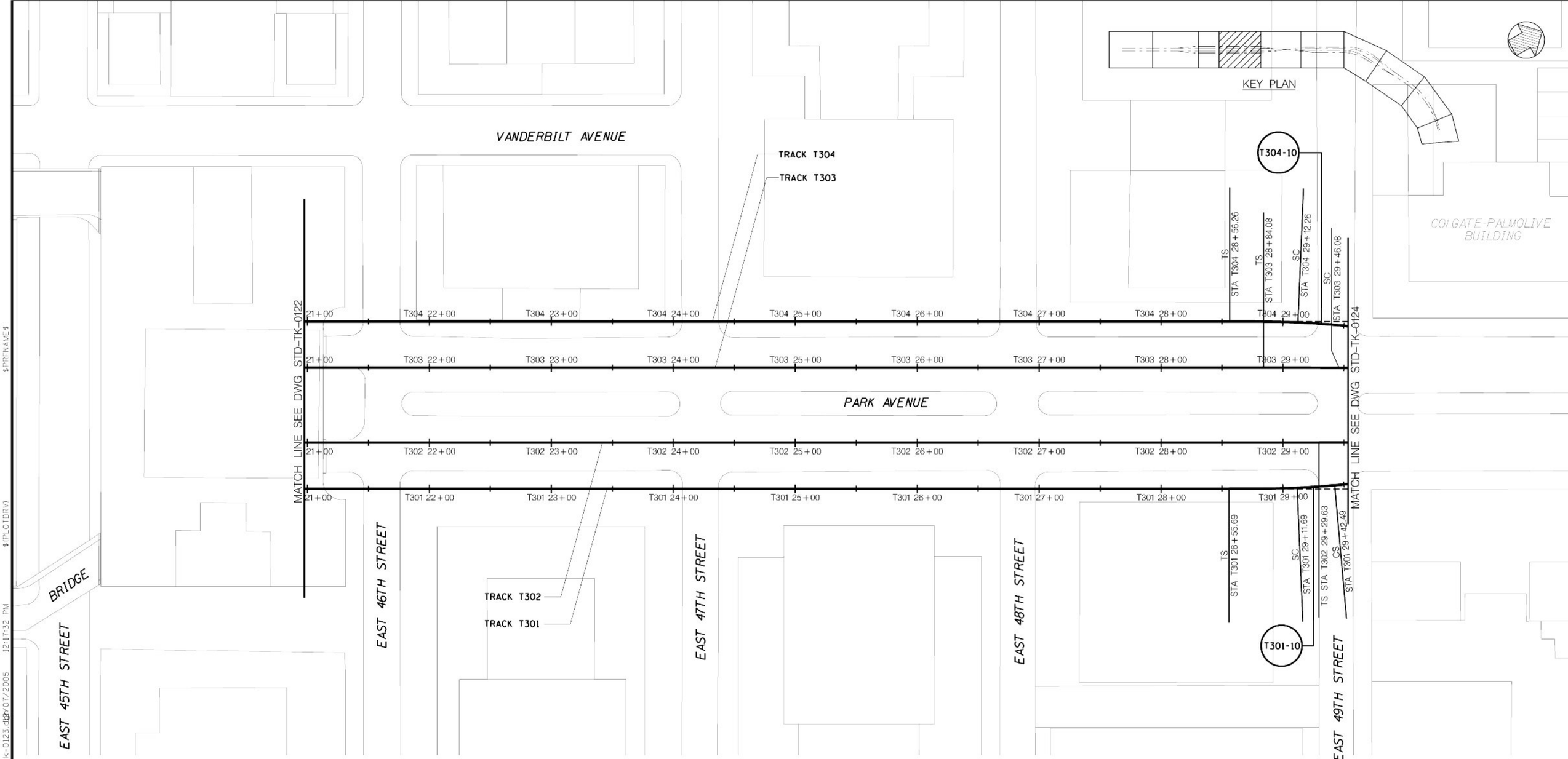

CURVE NUMBER	T301-10
D	8° 40'52.2"
R	660'
Lc	30.80'
Ls1	56'
Ls2	56'
Eo	0"
Eu	1.37"
V	15 mph

CURVE NUMBER	T304-10
D	8° 40'52.2"
R	660'
Lc	55.04'
Ls1	56'
Ls2	56'
Eo	0"
Eu	1.37"
V	15 mph

SCALE IN FEET
40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 4

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0123
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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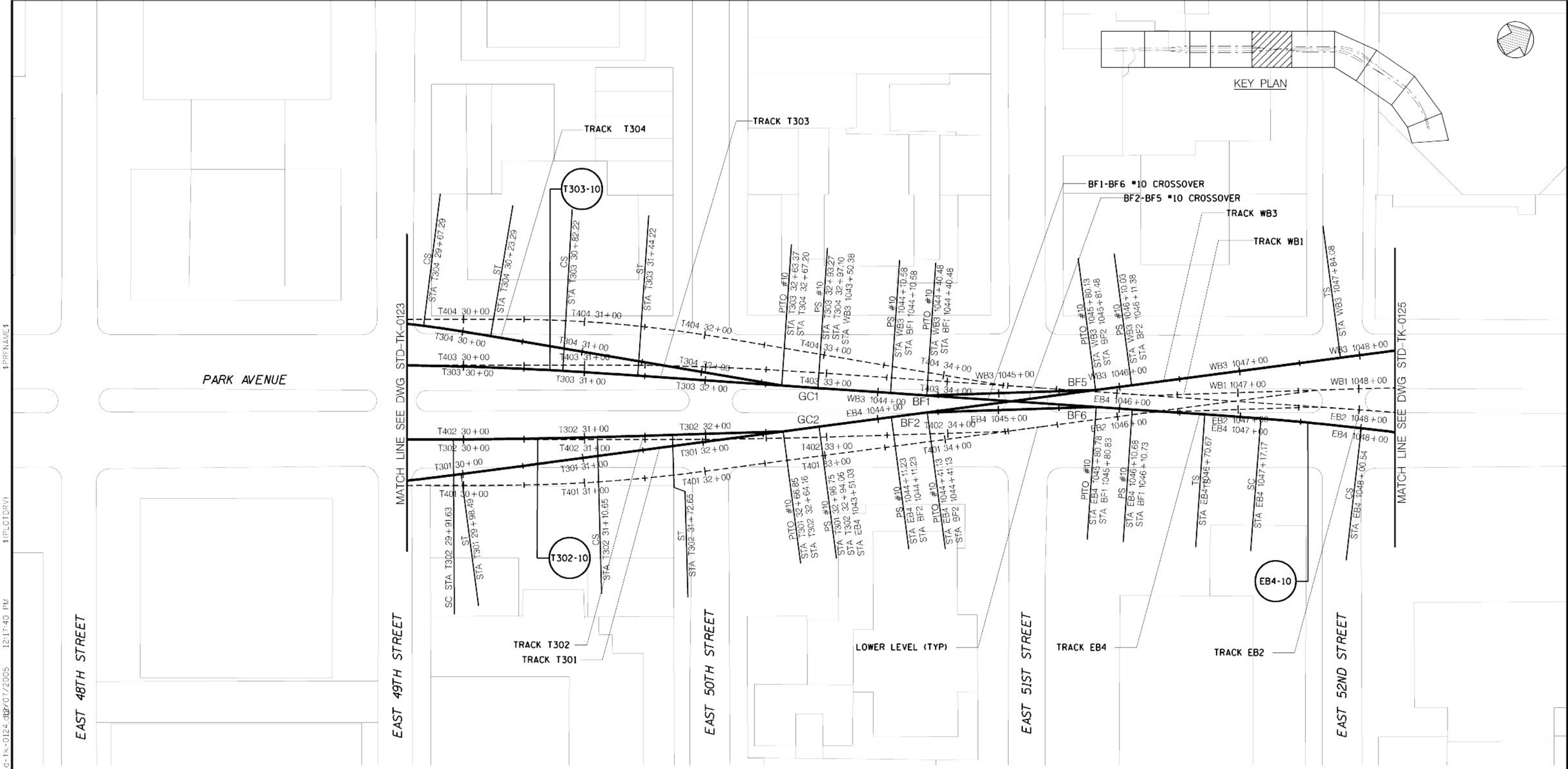

CURVE NUMBER	T302-10
D	0° 59'59.7"
R	5730'
Lc	119.03'
Ls1	62'
Ls2	62'
Ea	0"
Eu	0.16"
V	15 mph

CURVE NUMBER	T303-10
D	1° 58'32.6
R	2900'
Lc	136.13'
Ls1	62'
Ls2	62'
Ea	0.50"
Eu	0.75"
V	30 mph

CURVE NUMBER	EB4-10
D	2° 29'28.0
R	2300'
Lc	83.37'
Ls1	46.5'
Ls2	46.5'
Ea	0.75"
Eu	0.82"
V	30 mph

SCALE IN FEET
40' 20' 0 40' 80'

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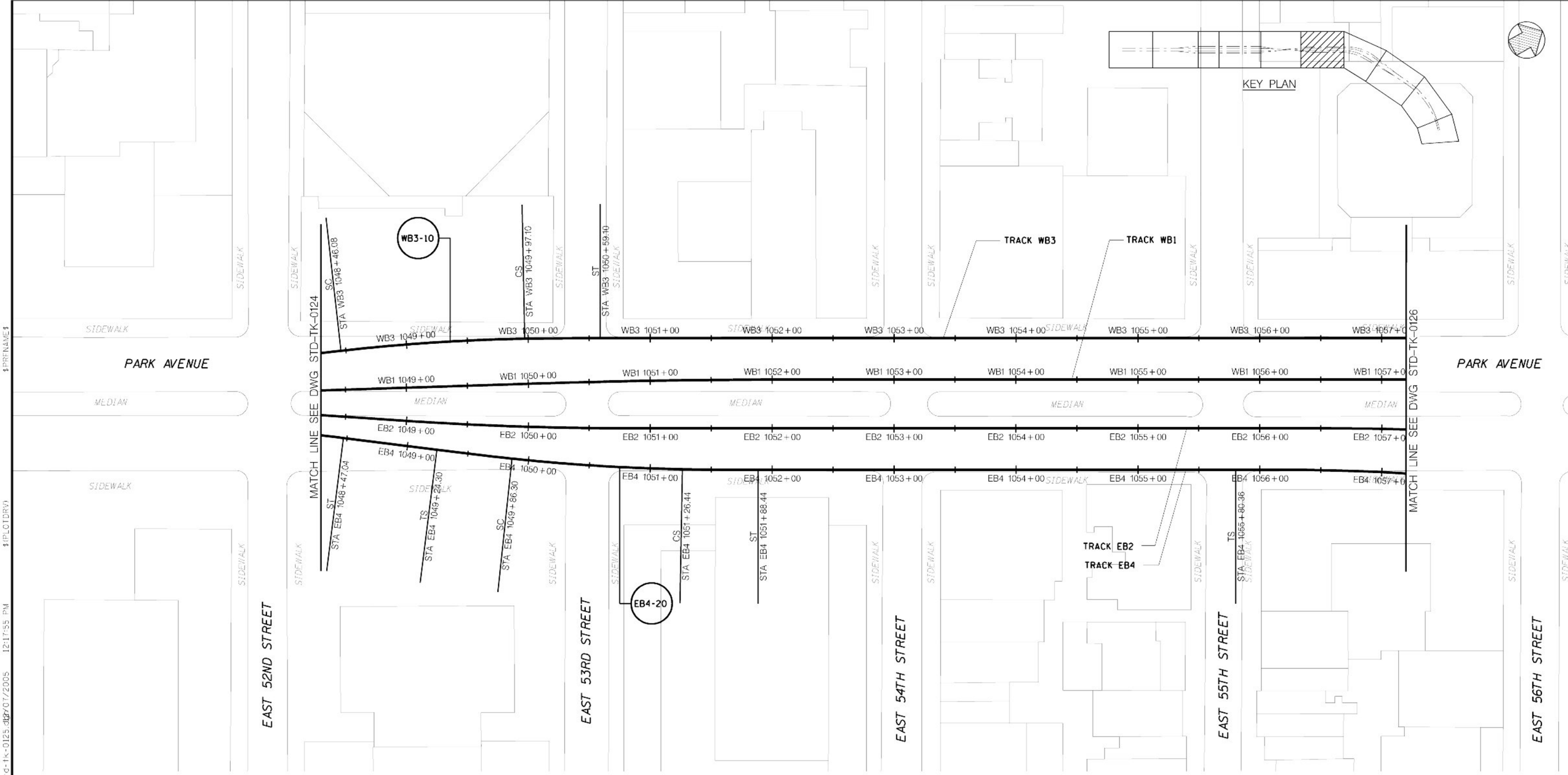
ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 5

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0124
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A



CURVE NUMBER	WB3-10
D	3° 32'12.4"
R	1620'
Lc	151.04'
Ls1	62'
Ls2	62'
Ea	1.00"
Eu	1.23"
V	30 mph

CURVE NUMBER	EB4-20
D	3° 32'12.4"
R	1620'
Lc	140.16'
Ls1	62'
Ls2	62'
Ea	1.00"
Eu	1.23"
V	30 mph

SCALE IN FEET
40' 20' 0 40' 80'

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ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 6

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0125
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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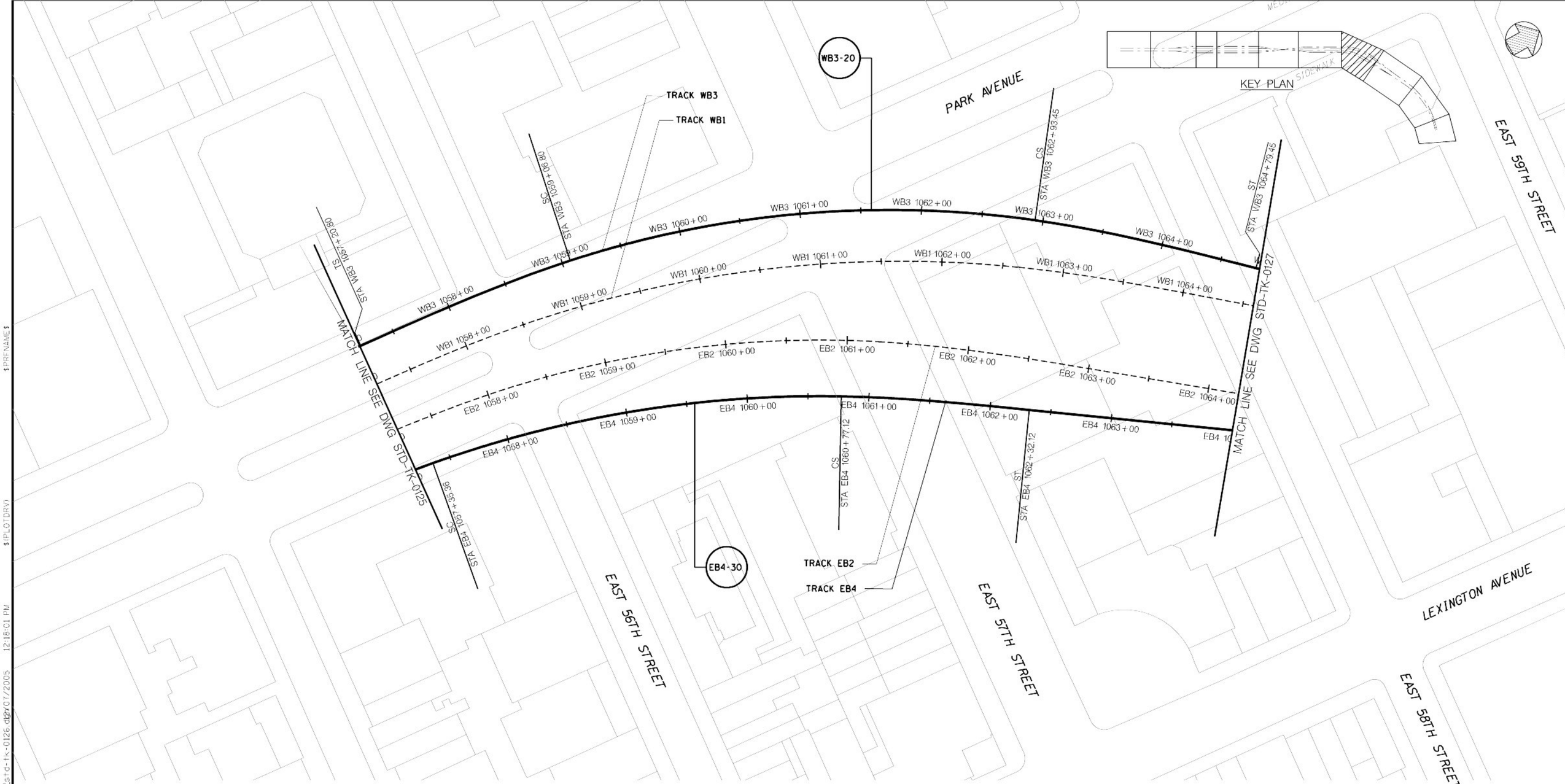

CURVE NUMBER	WB3-20
D	6° 44'26.5"
R	850'
Lc	386.87'
Ls1	186'
Ls2	186'
Ea	3.00"
Eu	1.25"
V	30 mph

CURVE NUMBER	EB4-30
D	6° 01'52.1"
R	950'
Lc	341.91'
Ls1	155'
Ls2	155'
Ea	2.50"
Eu	1.30"
V	30 mph

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 7

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0126
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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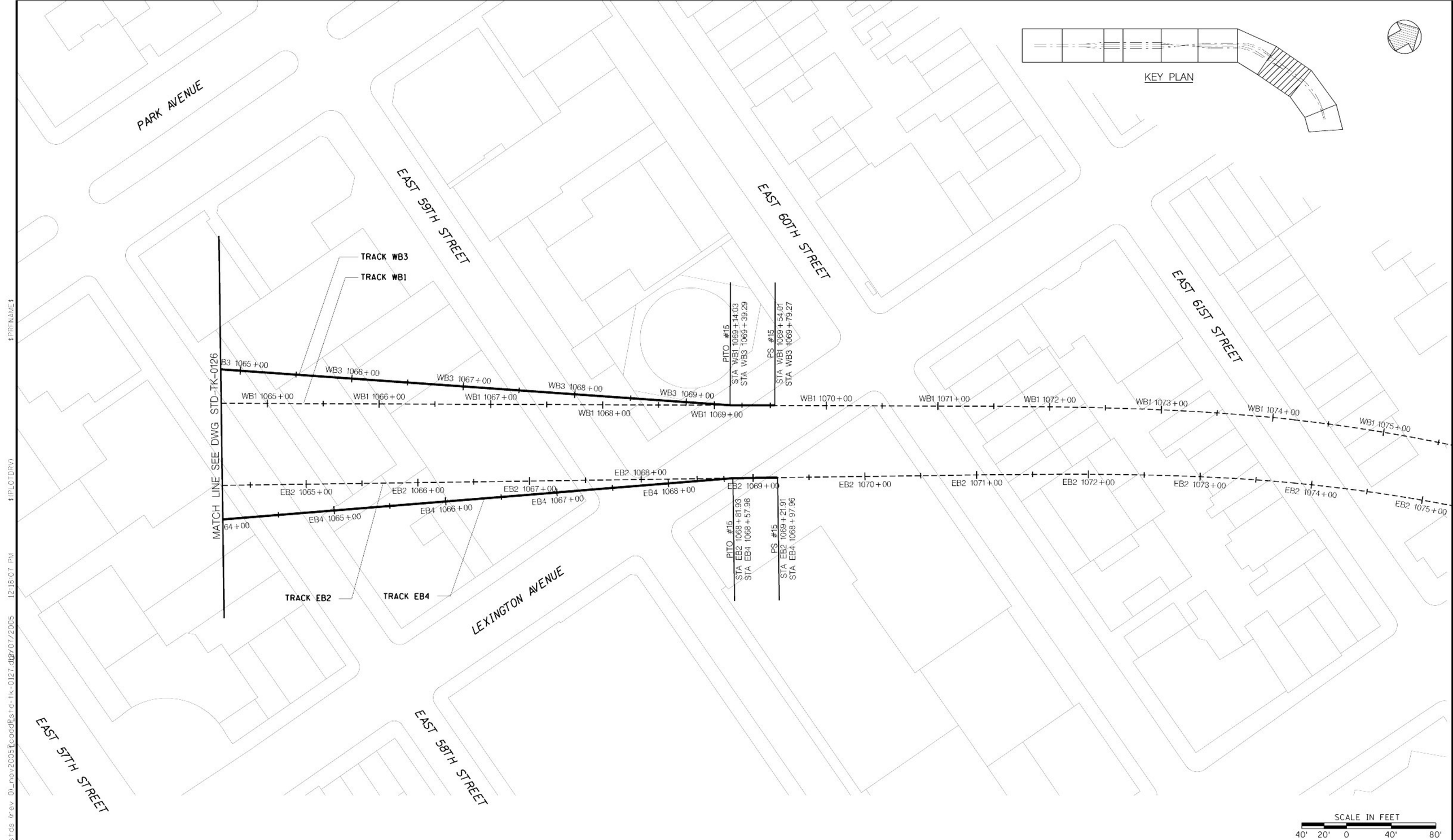

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ALIGNMENT STANDARD

TRACK ALIGNMENT
UPPER LEVEL COMPOSITE ALIGNMENT PLAN
SHEET 8

SCALE: AS NOTED
DRAWING NUMBER: STD-TK-0127
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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$PLOTDRV$
12:18:07 PM
SHEET 54
y:\ccadd\submissions\std\std trev 01_nov2005\ccadd\std-tk-0127.dgn

TRACK L402 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	L402 1+10.00	212416.6798	989986.6454	
BM4	PS ∠10	L402 12+00.00	213370.1459	990514.8522	
	PITO ∠10	L402 12+29.90	213396.3006	990529.3415	
	POE	L402 17+52.50	213853.4395	990782.5900	

TRACK T402 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T402 17+52.50	213853.4395	990782.5900	
T402-10	TS	T402 31+13.63	215044.0696	991442.1824	Δ = 1°48'36.50"
	SC	T402 31+75.63	215098.3575	991472.1292	R = 5730.00
	PI		215150.3693	991501.0709	Ls = 62.00
	CC		217847.9202	986444.9227	Lc = 119.03
	CS	T402 32+94.65	215203.3715	991528.1562	Ts = 121.52
	ST	T402 33+56.65	215258.4761	991556.5723	
GC4	PITO ∠10	T402 34+48.16	215339.8797	991598.3644	
	PS ∠10	T402 34+78.06	215367.7085	991609.2989	

TRACK EB2 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB (PS ∠10)	EB2 1045+37.02	215367.7085	991609.2989	
BF4	PS ∠10	EB2 1045+97.22	215423.7385	991631.3144	
	PITO ∠10	EB2 1046+27.12	215451.5674	991642.2490	
BF8	PITO ∠10	EB2 1047+66.77	215575.8033	991706.0310	
	PS ∠10	EB2 1047+96.67	215600.9078	991722.2721	
EB2-10	TS	EB2 1048+66.28	215659.3524	991760.0821	Δ = 3°54'52.50"
	SC	EB2 1049+28.28	215711.5367	991793.5597	R = 2700.00
	PI		215762.8543	991827.0416	Ls = 62.00
	CC		217152.0002	989509.9079	Lc = 122.47
	CS	EB2 1050+50.75	215816.5679	991856.5270	Ts = 123.27
	ST	EB2 1051+12.75	215870.6861	991886.7789	
EB2-20	TS	EB2 1056+24.72	216318.5240	992134.8748	Δ = 33°47'15.55"
	SC	EB2 1058+10.72	216477.7465	992230.8301	R = 850.00
	PI		216626.1065	992305.2712	Ls = 186.00
	CC		215987.1165	992924.9355	Lc = 315.25
	CS	EB2 1061+25.97	216695.9576	992455.8466	Ts = 351.63
	ST	EB2 1063+11.97	216786.9793	992617.9400	
PK2	PITO ∠15	EB2 1068+81.93	217047.7421	993124.7525	
	PS ∠15	EB2 1069+21.91	217066.0333	993160.3029	
EB2-30	TS	EB2 1070+73.13	217135.2184	993294.7695	Δ = 56°10'6.5"
	SC	EB2 1073+83.13	217267.1499	993575.1229	R = 1461.50
	PI		217563.6615	994127.4817	Ls1 = 310.00
	CC		215904.0984	994102.4472	Ls2 = 312.00
	POC	EB2a 85+41.11	217286.7990	994575.8602	Lc = 1122.01
	CS	EB2a 86+41.52	217251.0384	994669.6630	Ts1 = 936.47
	ST	EB2a 89+53.52	217109.8823	994947.7285	Ts2 = 937.40

TRACK EB2 COORDINATE DATA (CONTINUED)

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
EB2-40	PC	EB2a 95+20.66	216835.3410	995443.9866	Δ = 0°37'01.90"
	PI		216805.4612	995497.9971	R = 11460.00
	CC		226863.0982	1000991.5703	Lc = 123.45
	PT	EB2a 96+44.11	216776.1649	995552.3263	T = 61.72
YK2	PS ∠20	EB2a 96+87.00	216755.8069	995590.0796	
	PITO ∠20	EB2a 97+46.54	216727.5475	995642.4859	
YK4	PITO ∠20 EQ	EB2a 101+90.46	216516.8504	996033.2182	
	PS ∠20 EQ	EB2a 102+50.00	216487.2901	996084.9018	
EB2-45	PC	EB2a 103+65.01	216430.1892	996184.7378	Δ = 0°15'41.31"
	PI		216396.2114	996244.1451	R = 29992.75
	CC		190395.0021	981293.9996	Lc = 136.88
	PT	EB2a 105+01.89	216361.9628	996303.3968	T = 68.44
EB2-50	PC	EB2b 108+70.95	216177.4241	996622.6575	Δ = 0°17'19.03"
	PI		216132.0393	996701.1753	R = 36007.25
	CC		247351.5860	1014641.9160	Lc = 181.38
	PT	EB2b 110+52.34	216087.0506	996779.9207	T = 90.69
EB2-55	PC	EB2c 112+33.07	215997.3581	996936.9130	Δ = 0°06'57.83"
	PI		215952.1416	997016.0571	R = 89992.75
	CC		137858.0523	952294.5123	Lc = 182.30
	PT	EB2c 114+15.37	215906.7648	997095.1096	T = 91.15
EB2-60	TS	EB2d 128+36.03	215199.5391	998327.1927	Δ = 4°00'10.18"
	SC	EB2d 129+91.03	215121.9728	998461.3876	R = 8592.75
	PI		215011.4701	998654.8343	Ls = 155.00
	CC		207708.5556	994116.6669	Lc = 445.31
	CS	EB2d 134+36.34	214886.9594	998839.5761	Ts = 377.78
	ST	EB2d 135+91.34	214800.9887	998968.5484	
EB2-70	PC	EB2e 152+15.46	213896.6801	1000316.3838	Δ = 1°07'08.43"
	PI		213825.4443	1000422.5579	R = 13092.75
	CC		203024.3145	993021.7440	Lc = 255.71
	PT	EB2e 154+71.16	213752.1486	1000527.3206	T = 127.86
MP1	PS ∠10	EB2f 167+43.00	213023.2143	1001569.1974	
	PITO ∠10	EB2f 167+72.90	213006.0737	1001593.6966	
OP2	PITO ∠10	EB2f 169+17.54	212923.1572	1001712.2104	
	PS ∠10	EB2f 169+47.44	212906.0167	1001736.7096	
	POE (PS ∠20)	EB2f 171+43.10	212793.8521	1001897.0282	

TRACK L403 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	L403 1+10.00	212446.5630	989932.7031	
BM3	PS ∠10	L403 12+00.00	213400.0291	990460.9099	
	PITO ∠10	L403 12+29.90	213426.1838	990475.3992	
	POE	L403 17+52.50	213883.3227	990728.6477	

TRACK T403 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T403 17+52.50	213883.3227	990728.6477	
T403-10	TS	T403 30+81.75	215046.0713	991372.7940	Δ = 3°54′52.51″
	SC	T403 31+43.75	215100.1801	991403.0625	R = 2500.00
	PI		215147.9244	991429.2192	Ls = 62.00
	CC		213861.6736	993574.7212	Lc = 108.81
	CS	T403 32+52.56	215193.4933	991459.0047	Ts = 116.44
	ST	T403 33+14.56	215245.6878	991492.4663	
GC3	PITO ∠10	T403 34+47.38	215357.2075	991564.6127	
	PS ∠10	T403 34+77.28	215382.3120	991580.8538	

TRACK WB1 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB (PS ∠10)	WB1 1045+36.86	215382.3120	991580.8538	
BF3	PS ∠10	WB1 1045+97.06	215432.8569	991613.5533	
	PITO ∠10	WB1 1046+26.96	215457.9614	991629.7944	
BF7	PITO ∠10	WB1 1047+66.62	215582.1974	991693.5764	
	PS ∠10	WB1 1047+96.52	215608.7968	991707.2324	
WB1-10	TS	WB1 1049+87.41	215778.6150	991794.4161	Δ = 1°48′36.50″
	SC	WB1 1050+49.41	215833.7193	991822.8326	R = 5700.00
	PI		215886.3001	991849.7010	Ls = 62.00
	CC		213202.8725	996879.3774	Lc = 118.08
	CS	WB1 1051+67.49	215937.8971	991878.4135	Ts = 121.05
	ST	WB1 1052+29.49	215992.1853	991908.3598	
WB1-20	TS	WB1 1056+86.28	216391.7626	992129.7201	Δ = 34°47′50.17″
	SC	WB1 1058+41.28	216525.2155	992208.4673	R = 950.00
	PI		216720.2273	992311.6849	Ls = 155.00
	CC		215998.6657	992999.1918	Lc = 421.96
	CS	WB1 1062+63.24	216813.9037	992511.4553	Ts = 375.50
	ST	WB1 1064+18.24	216886.1121	992648.5565	
PK1	PITO ∠15	WB1 1069+14.03	217105.1364	993093.3414	
	PS ∠15	WB1 1069+54.01	217122.7983	993129.2086	

TRACK WB1 COORDINATE DATA (CONTINUED)

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
WB1-30	TS	WB1 1071+09.27	217191.3869	993268.4952	Δ = 55°10′09.35″
	SC	WB1 1074+19.27	217318.3267	993551.1428	Ls (in) = 310.00
	PI		217606.3694	994111.2235	R (30A) = 1457.00
	CC (30A)		215950.2553	994052.3707	Lc (30A) = 676.59
	CS	WB1 1080+95.86	217397.9327	994216.9276	Lsc1 = 62.00
	SC	WB1 1081+57.86	217389.7172	994278.3766	R (30B) = 1865.00
	CC (30B)		215545.9618	993997.6794	Lc (30B) = 222.42
	CS	WB1 1083+80.28	217343.2241	994495.7486	Lsc2 = 62.00
	SC	WB1 1084+42.28	217325.5941	994555.1859	R (30C) = 1492.00
	CC (30C)		215903.6883	994103.2479	Lc (30C) = 169.78
	CS	WB1 86+73.45	217265.0821	994713.7156	Ls (out) = 250.00
	ST	WB1 89+23.45	217150.2525	994935.6958	Ts1 = 939.36
					Ts2 = 942.23
WB1-40	PC	WB1 95+80.00	216832.4293	995510.1899	Δ = 0°29′59.9″
	PI		216808.2248	995553.9416	R = 11460.00
	CC		206804.6721	989962.6061	Lc = 100.00
	PT	WB1 96+80.00	216783.6395	995597.4805	T = 50.00
YK1	PS ∠20	WB1 96+87.00	216780.1971	995603.5767	
	PITO ∠20	WB1 97+46.54	216750.9214	995655.4220	
WB1-45	PC	WB1 98+71.72	216689.3712	995764.4231	Δ = 0°34′35.0″
	PI		216652.2725	995830.1222	R = 15000.00
	CC		203627.8955	988388.9331	Lc = 150.90
	PT	WB1 100+22.62	216614.5148	995895.4449	T = 75.45
YK3	PITO ∠20	WB1 101+90.46	216530.5205	996040.7590	
	PS ∠20	WB1 102+50.00	216500.7246	996092.3072	
WB1-50	PC	WB1 108+70.95	216189.9778	996629.9138	Δ = 0°17′19.0″
	PI		216144.6113	996708.4000	R = 35992.75
	CC		247351.5860	1014641.9160	Lc = 181.31
	PT	WB1 110+52.26	216099.6407	996787.1137	T = 90.65
WB1-55	PC	WB1 112+33.07	216009.9482	996944.1059	Δ = 0°06′57.8″
	PI		215964.7244	997023.2629	R = 90007.25
	CC		137858.0523	952294.5123	Lc = 182.33
	PT	WB1 114+15.40	215919.3404	997102.3280	T = 91.16
WB1-60	TS	WB1 128+67.00	215196.6982	998361.2685	Δ = 4°00′10.2″
	SC	WB1 129+60.00	215150.2555	998441.8418	R = 8608.25
	PI		215023.7934	998662.4922	Ls = 93.00
	CC		207707.7692	994116.1782	Lc = 508.39
	CS	WB1 134+68.39	214881.9591	998873.5900	Ts = 347.32
	ST	WB1 135+61.39	214830.2832	998950.9113	
WB1-70	PC	WB1 152+15.46	213908.7211	1000324.4625	Δ = 1°07′08.4″
	PI		213837.4064	1000430.7542	R = 13107.25
	CC		203024.3145	993021.7440	Lc = 255.99
	PT	WB1 154+71.44	213764.0295	1000535.6329	T = 128.00
OP1	PS ∠10	WB1 167+43.00	213035.0952	1001577.5097	
	PITO ∠10	WB1 167+72.90	213017.9546	1001602.0089	
MP2	PITO ∠10	WB1 169+17.54	212935.0381	1001720.5227	
	PS ∠10	WB1 169+47.44	212917.8976	1001745.0219	
	POE (PS ∠20)	WB1 171+43.46	212805.5266	1001905.6354	

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DATE | REVISIONS | No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

ALIGNMENT CURVE DATA
SHEET 2

SCALE: NONE
DRAWING NUMBER: STD-TK-0402
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

SHEET 54
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TRACK L401 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
BM4	PS ∠10	L401 12+00.00	213370.1459	990514.8522	
	PITO ∠10	L401 12+29.90	213396.3006	990529.3415	
L401-10	TS	L401 15+23.68	213637.8031	990696.6316	Δ = 5°43'29.00"
	SC	L401 15+54.68	213663.3512	990714.1897	R = 1400.00
	PI		213708.0877	990745.3181	Ls = 31.00
	CC		214447.7644	989554.5795	Lc = 108.88
	CS	L401 16+63.57	213755.8170	990771.6287	Ts = 85.50
	ST	L401 16+94.57	213782.8782	990786.7510	
	POE	L401 17+54.27	213835.1057	990815.6843	

TRACK T401 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T401 17+52.50	213835.1057	990815.6843	
T401-10	TS	T401 29+97.85	214924.4603	991419.1714	Δ = 7°32'05.50"
	SC	T401 30+59.85	214978.9392	991448.7661	R = 1250.00
	PI		215023.5850	991474.0851	Ls = 62.00
	CC		215557.3805	990340.6570	Lc = 102.39
	CS	T401 31+62.23	215071.5402	991492.3771	Ts = 113.32
	ST	T401 32+24.23	215129.0545	991515.5264	
GC4	PITO ∠10	T401 34+50.75	215339.8797	991598.3644	
	PS ∠10	T401 34+80.65	215367.7085	991609.2989	

TRACK L404 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
BM3	PS ∠10	L404 12+00.00	213400.0291	990460.9099	
	PITO ∠10	L404 12+29.90	213426.1838	990475.3992	
L404-10	TS	L404 15+23.68	213696.0881	990591.4213	Δ = 5°43'29.00"
	SC	L404 15+54.68	213724.5228	990603.7688	R = 1400.00
	PI		213774.6385	990625.1872	Ls = 31.00
	CC		213157.4260	991883.7693	Lc = 108.88
	CS	L404 16+63.57	213822.2570	990651.6980	Ts = 85.50
	ST	L404 16+94.57	213849.4290	990666.6201	
	POE	L404 17+54.27	213901.6565	990695.5534	

TRACK T404 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T404 17+52.50	213901.6565	990695.5534	
T404-10	TS	T404 30+08.59	215000.4098	991304.2473	Δ = 9°38'21.50"
	SC	T404 30+70.59	215054.3280	991334.8496	R = 1000.00
	PI		215101.2938	991360.1356	Ls = 62.00
	CC		214542.8549	992194.1488	Lc = 106.24
	CS	T404 31+76.83	215142.5627	991393.9298	Ts = 115.33
	ST	T404 32+38.83	215191.3952	991432.1274	
GC3	PITO ∠10	T404 34+51.07	215357.2075	991564.6127	
	PS ∠10	T404 34+80.97	215382.3120	991580.8538	

TRACK L302 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	L302 1+10.00	212416.6798	989986.6454	
BM2	PS ∠10	L302 12+00.00	213370.1459	990514.8522	
	PITO ∠10	L302 12+29.90	213396.3006	990529.3415	
	POE	L302 17+52.50	213853.4395	990782.5900	

TRACK T302 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T302 17+52.50	213853.4395	990782.5900	
T302-10	TS	T302 29+29.63	214883.1176	991353.0172	Δ = 1°48'36.50"
	SC	T302 29+91.63	214937.4054	991382.9641	R = 5730.00
	PI		214989.4172	991411.9057	Ls = 62.00
	CC		217686.9681	986355.7576	Lc = 119.03
	CS	T302 31+10.65	215042.4194	991438.9910	Ts = 121.52
	ST	T302 31+72.65	215097.5240	991467.4071	
GC2	PITO ∠10	T302 32+64.16	215178.9276	991509.1992	
	PS ∠10	T302 32+94.06	215206.7564	991520.1338	

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$PLOTDRV$
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SHEET 54
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DATE | REVISIONS | No

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DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

ALIGNMENT CURVE DATA
SHEET 3

SCALE: NONE
DRAWING NUMBER: STD-TK-0403
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

TRACK EB4 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB (PS ∠10)	EB4 1043+51.03	215206.7564	991520.1338	
BF2	PS ∠10	EB4 1044+11.23	215262.7864	991542.1492	
	PITO ∠10	EB4 1044+41.13	215290.6153	991553.0838	
BF6	PITO ∠10	EB4 1045+80.78	215414.8513	991616.8658	
	PS ∠10	EB4 1046+10.68	215439.9558	991633.1069	
EB4-10	TS	EB4 1046+70.67	215490.3267	991665.6938	Δ = 3°14′06.75″
	SC	EB4 1047+17.17	215529.2833	991691.0830	R = 2300.00
	PI		215564.3834	991713.6040	Ls = 46.50
	CC		214260.5110	993609.4721	Lc = 83.37
	CS	EB4 1048+00.54	215597.9717	991738.3231	Ts = 88.20
	ST	EB4 1048+47.04	215635.6182	991765.6172	
EB4-20	TS	EB4 1049+24.30	215698.0186	991811.1798	Δ = 7°08′59.25″
	SC	EB4 1049+86.30	215748.3226	991847.4204	R = 1620.00
	PI		215804.7985	991889.1468	Ls = 62.00
	CC		216678.4248	990521.0306	Lc = 140.16
	CS	EB4 1051+26.44	215866.4119	991922.8277	Ts = 132.21
	ST	EB4 1051+88.44	215920.4522	991953.2173	
EB4-30	TS	EB4 1055+80.36	216263.2874	992143.1432	Δ = 29°58′09.55″
	SC	EB4 1057+35.36	216396.7402	992221.8904	R = 950.00
	PI		216553.7393	992304.0495	Ls = 155.00
	CC		215870.1904	993012.6149	Lc = 341.91
	CS	EB4 1060+77.12	216641.4861	992457.9953	Ts = 332.04
	ST	EB4 1062+32.12	216724.9773	992588.5328	
PK2	PITO ∠15	EB4 1068+57.98	217047.7421	993124.7525	
	PS ∠15	EB4 1068+97.96	217066.0333	993160.3029	

TRACK L303 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	L303 1+10.00	212446.5630	989932.7031	
BM1	PS ∠10	L303 12+00.00	213400.0291	990460.9099	
	PITO ∠10	L303 12+29.90	213426.1838	990475.3992	
	POE	L303 17+52.50	213883.3227	990728.6477	

TRACK T303 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T303 17+52.50	213883.3227	990728.6477	
T303-10	TS	T303 28+84.08	214873.1620	991277.0047	Δ = 3°54′52.50″
	SC	T303 29+46.08	214927.2881	991307.2424	R = 2900.00
	PI		214986.9724	991340.0541	Ls = 62.00
	CC		213494.9312	993828.8200	Lc = 136.13
	CS	T303 30+82.22	215044.0373	991377.2348	Ts = 130.11
	ST	T303 31+44.22	215096.2129	991410.7261	
GC1	PITO ∠10	T303 32+63.37	215196.2555	991475.4476	
	PS ∠10	T303 32+93.27	215221.3600	991491.6887	

TRACK WB3 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB (PS ∠10)	WB3 1043+50.38	215221.3600	991491.6887	
BF1	PS ∠10	WB3 1044+10.58	215271.9049	991524.3881	
	PITO ∠10	WB3 1044+40.48	215297.0094	991540.6292	
BF5	PITO ∠10	WB3 1045+80.13	215421.2454	991604.4113	
	PS ∠10	WB3 1046+10.03	215449.0742	991615.3458	
WB3-10	TS	WB3 1047+84.08	215611.0674	991678.9966	Δ = 7°32′05.50″
	SC	WB3 1048+46.08	215668.6259	991702.0375	R = 1620.00
	PI		215739.2118	991729.3474	Ls = 62.00
	CC		215047.4414	993198.2092	Lc = 151.04
	CS	WB3 1049+97.10	215805.2237	991766.3692	Ts = 137.68
	ST	WB3 1050+59.10	215859.6472	991796.0669	
WB3-20	TS	WB3 1057+20.80	216438.4611	992116.7217	Δ = 38°36′56.17″
	SC	WB3 1059+06.80	216597.6836	992212.6770	R = 850.00
	PI		216780.7926	992306.3685	Ls = 186.00
	CC		216107.0536	992906.7823	Lc = 386.87
	CS	WB3 1062+93.45	216852.8600	992499.0167	Ts = 391.35
	ST	WB3 1064+79.45	216929.9164	992668.1956	
PK1	PITO ∠15	WB3 1069+39.29	217105.1364	993093.3414	
	PS ∠15	WB3 1069+79.27	217122.7983	993129.2086	

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DATE	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

ALIGNMENT CURVE DATA
SHEET 4

SCALE: NONE
DRAWING NUMBER: STD-TK-0404
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

SHEET 64
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TRACK L301 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
BM2	PS ∠10	L301 12+00.00	213370.1459	990514.8522	
	PITO ∠10	L301 12+29.90	213396.3006	990529.3415	
L301-10	TS	L301 15+23.68	213637.8031	990696.6316	Δ = 5°43'29.00"
	SC	L301 15+54.68	213663.3512	990714.1897	R = 1400.00
	PI		213708.0877	990745.3181	Ls = 31.00
	CC		214447.7644	989554.5795	Lc = 108.88
	CS	L301 16+63.57	213755.8170	990771.6287	Ts = 85.50
	ST	L301 16+94.57	213782.8782	990786.7510	
	POE	L301 17+54.27	213835.1057	990815.6843	

TRACK T301 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T301 17+52.50	213835.1057	990815.6843	
T301-10	TS	T301 28+55.69	214800.1138	991350.2852	Δ = 7°32'05.50"
	SC	T301 29+11.69	214849.4741	991376.7249	R = 660.00
	PI		214862.6329	991384.9199	Ls = 56.00
	CC		215144.5326	990786.3517	Lc = 30.80
	CS	T301 29+42.49	214877.3318	991389.8447	Ts = 71.47
	ST	T301 29+98.49	214929.1538	991411.0575	
GC2	PITO ∠10	T301 32+66.85	215178.9276	991509.1992	
	PS ∠10	T301 32+96.75	215206.7564	991520.1338	

TRACK L304 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
BM1	PS ∠10	L304 12+00.00	213400.0291	990460.9099	
	PITO ∠10	L304 12+29.90	213426.1838	990475.3992	
L304-10	TS	L304 15+23.68	213696.0881	990591.4213	Δ = 5°43'29.00"
	SC	L304 15+54.68	213724.5228	990603.7688	R = 1400.00
	PI		213774.6385	990625.1872	Ls = 31.00
	CC		213157.4260	991883.7693	Lc = 108.88
	CS	L304 16+63.57	213822.2570	990651.6980	Ts = 85.50
	ST	L304 16+94.57	213849.4290	990666.6201	
	POE	L304 17+54.27	213901.6565	990695.5534	

TRACK T304 COORDINATE DATA

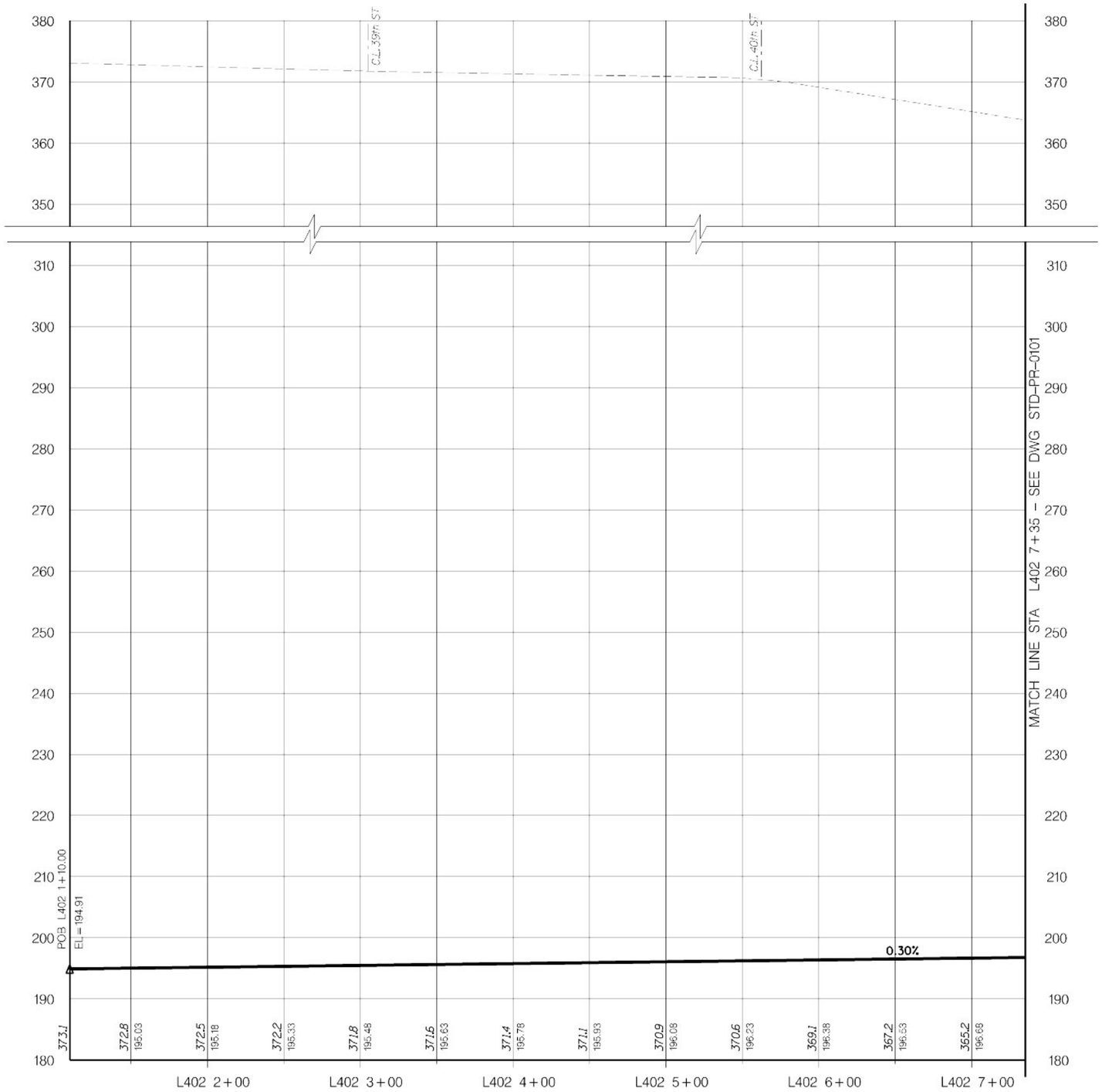
CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
	POB	T304 17+52.50	213901.6565	990695.5534	
T304-10	TS	T304 28+56.26	214867.1569	991230.4270	Δ = 9°38'21.50"
	SC	T304 29+12.26	214915.7498	991258.2520	R = 660.00
	PI		214940.3418	991270.9704	Ls = 56.00
	CC		214571.7206	991821.4961	Lc = 55.04
	CS	T304 29+67.29	214961.4684	991288.8643	Ts = 83.66
	ST	T304 30+23.29	215005.7046	991323.1958	
GC1	PITO ∠10	T304 32+67.20	215196.2555	991475.4476	
	PS ∠10	T304 32+97.10	215221.3600	991491.6887	

TRACK YK1 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
YK1	PS ∠20	YK1 96+87.00	216780.1971	995603.5767	
	PITO ∠20	YK1 97+46.54	216750.9214	995655.4220	
YK-10	PC	YK1 98+90.24	216674.0994	995776.8649	Δ = 1°07'01.8"
	PI		216627.1916	995851.0185	R = 9000.00
	CC		224280.0705	1000588.2268	Lc = 175.48
	PT	YK1 100+65.72	216581.7384	995926.0725	T = 87.74
YK4	PITO ∠20 EQ	YK1 101+90.99	216516.8504	996033.2182	
	PS ∠20 EQ	YK1 102+50.53	216487.2901	996084.9018	

TRACK YK2 COORDINATE DATA

CURVE/SWITCH	POINT	STATION	NORTHING	EASTING	CURVE DATA
YK2	PS ∠20	YK2 96+87.00	216755.8069	995590.0796	
	PITO ∠20	YK2 97+46.54	216727.5475	995642.4859	
YK-20	PC	YK2 98+71.62	216673.7555	995755.4103	Δ = 1°41'36.8"
	PI		216632.4397	995842.1435	R = 6500.00
	CC		210805.5358	992960.0574	Lc = 192.13
	PT	YK2 100+63.75	216588.5788	995927.6177	T = 96.07
YK3	PITO ∠20	YK2 101+90.92	216530.5205	996040.7590	
	PS ∠20	YK2 102+50.46	216500.7246	996092.3072	



LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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Long Island Rail Road
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DATE:	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L402 PROFILE
STA L402 1+10.00 TO STA L402 7+35

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0100
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

REF
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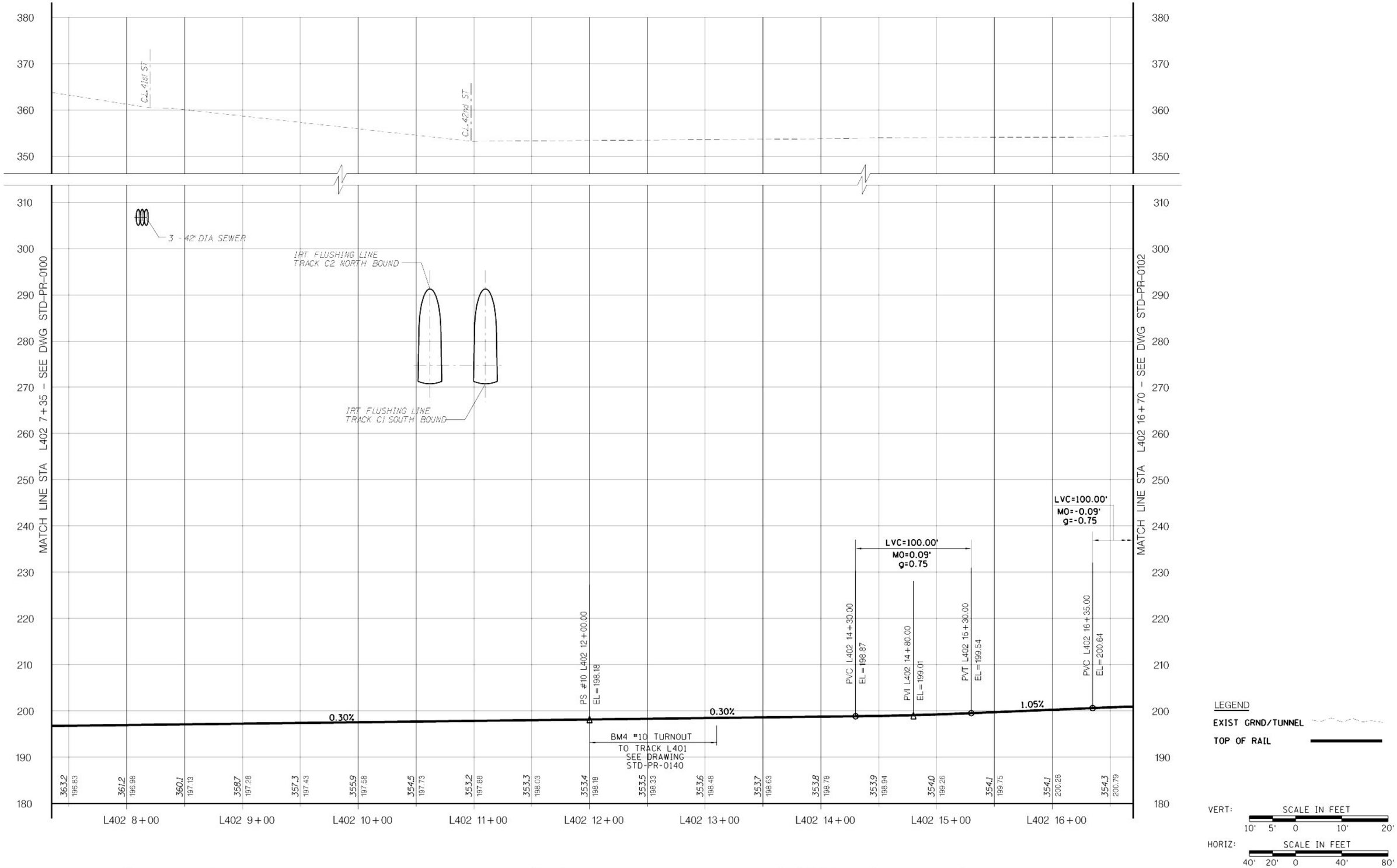

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L402 PROFILE
STA L402 7+35 TO STA L402 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0101
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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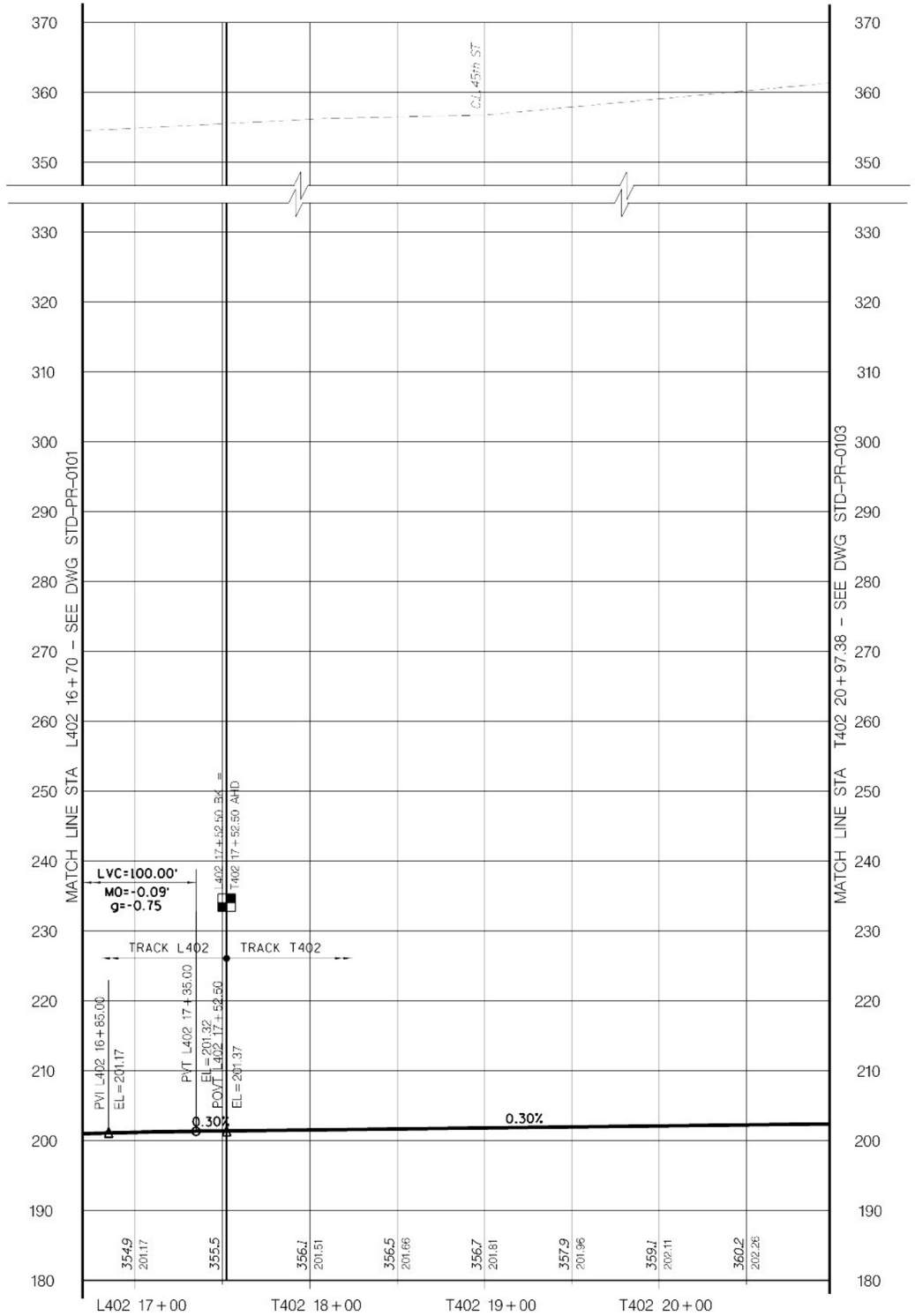

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L402 & T402 PROFILES
STA L402 16+70 TO STA T402 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0102
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
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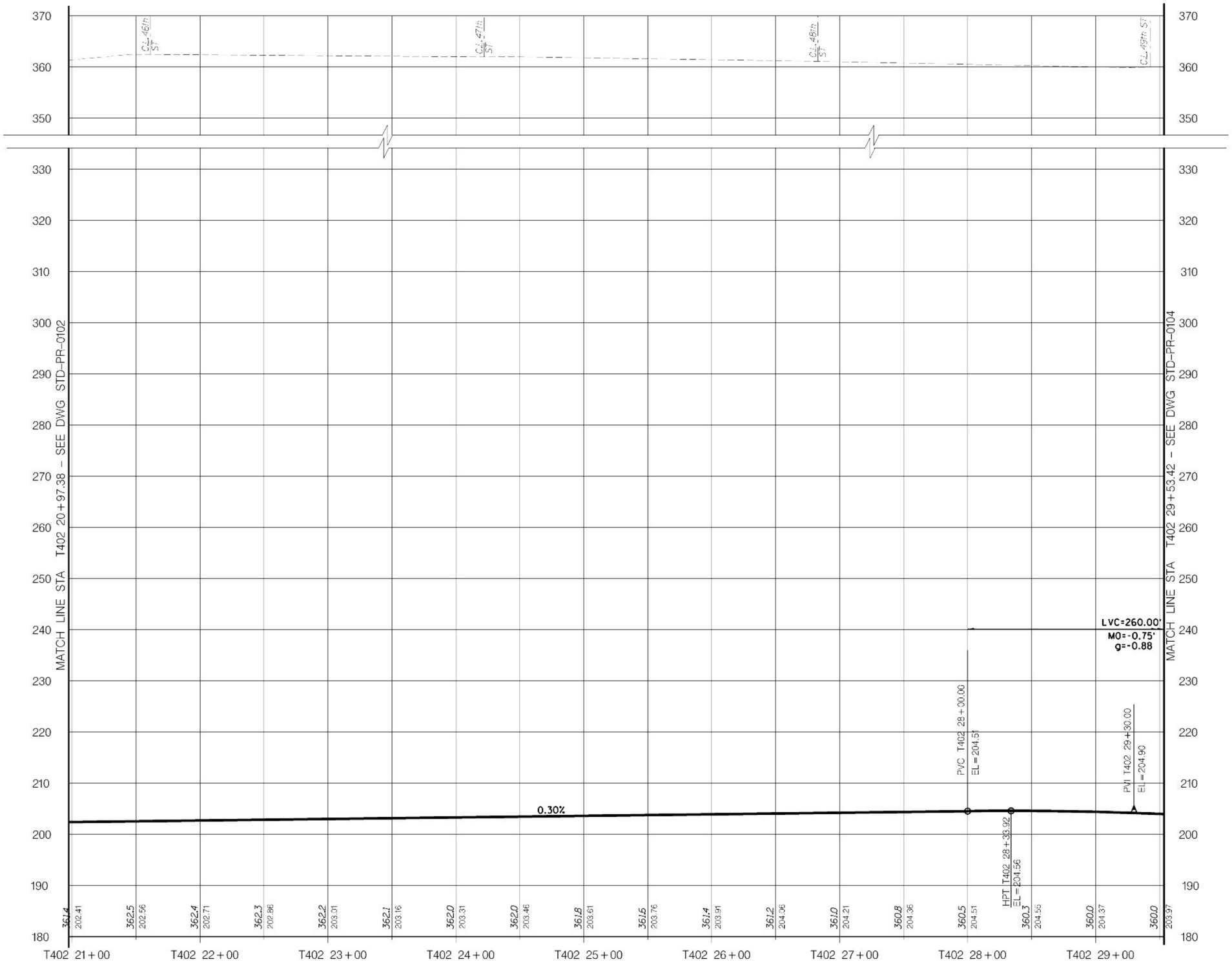

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T402 PROFILE
STA T402 20+97.38 TO STA T402 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0103
DATE: 11-14-05
REVISION NUMBER: 0

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ISSUE: —
SHEET No: N/A

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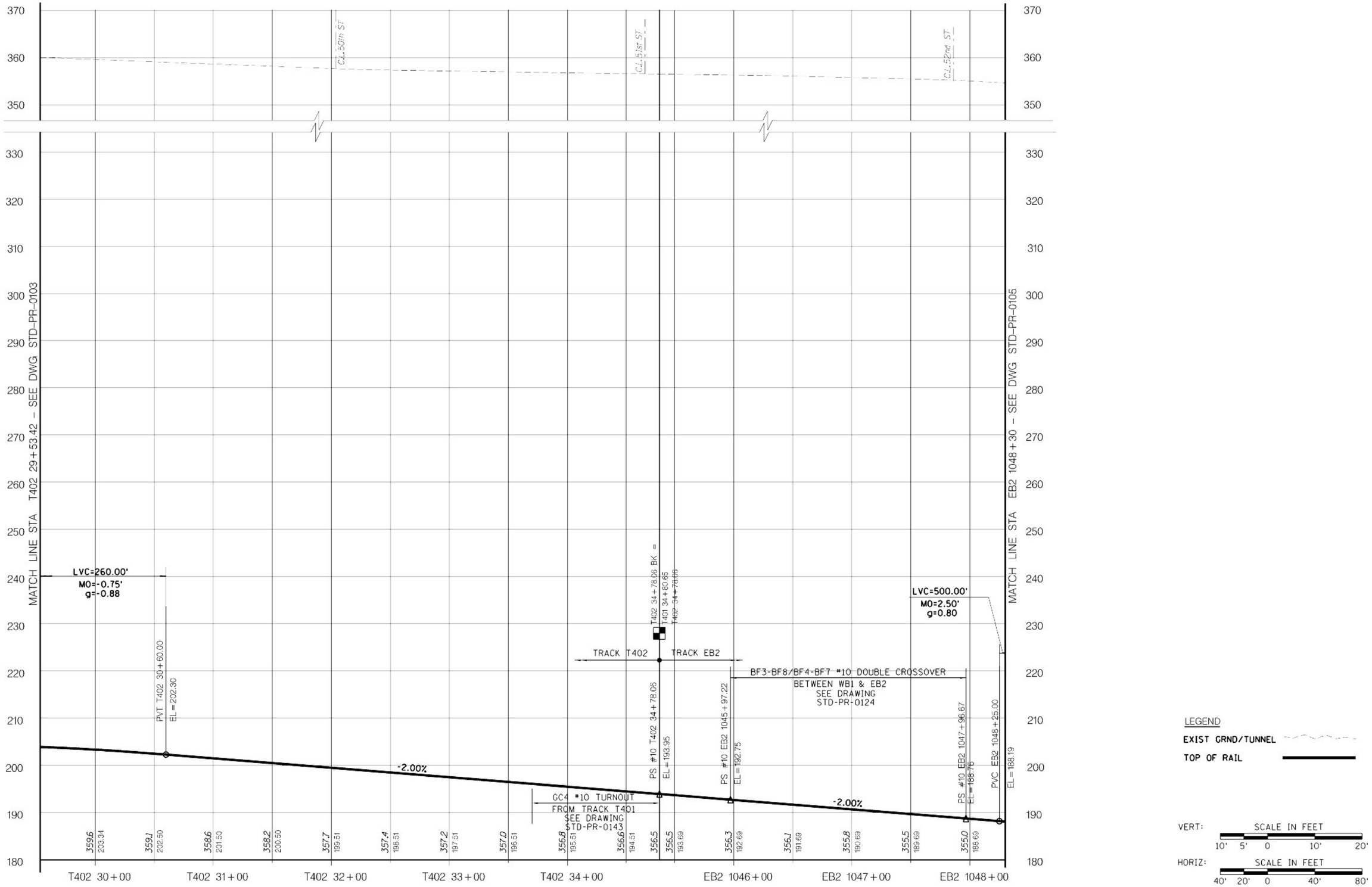

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T402 AND EB2 PROFILES
STA T402 29+53.42 TO STA EB2 1048+30

SCALE: AS NOTED
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DATE: 11-14-05
REVISION NUMBER: 0

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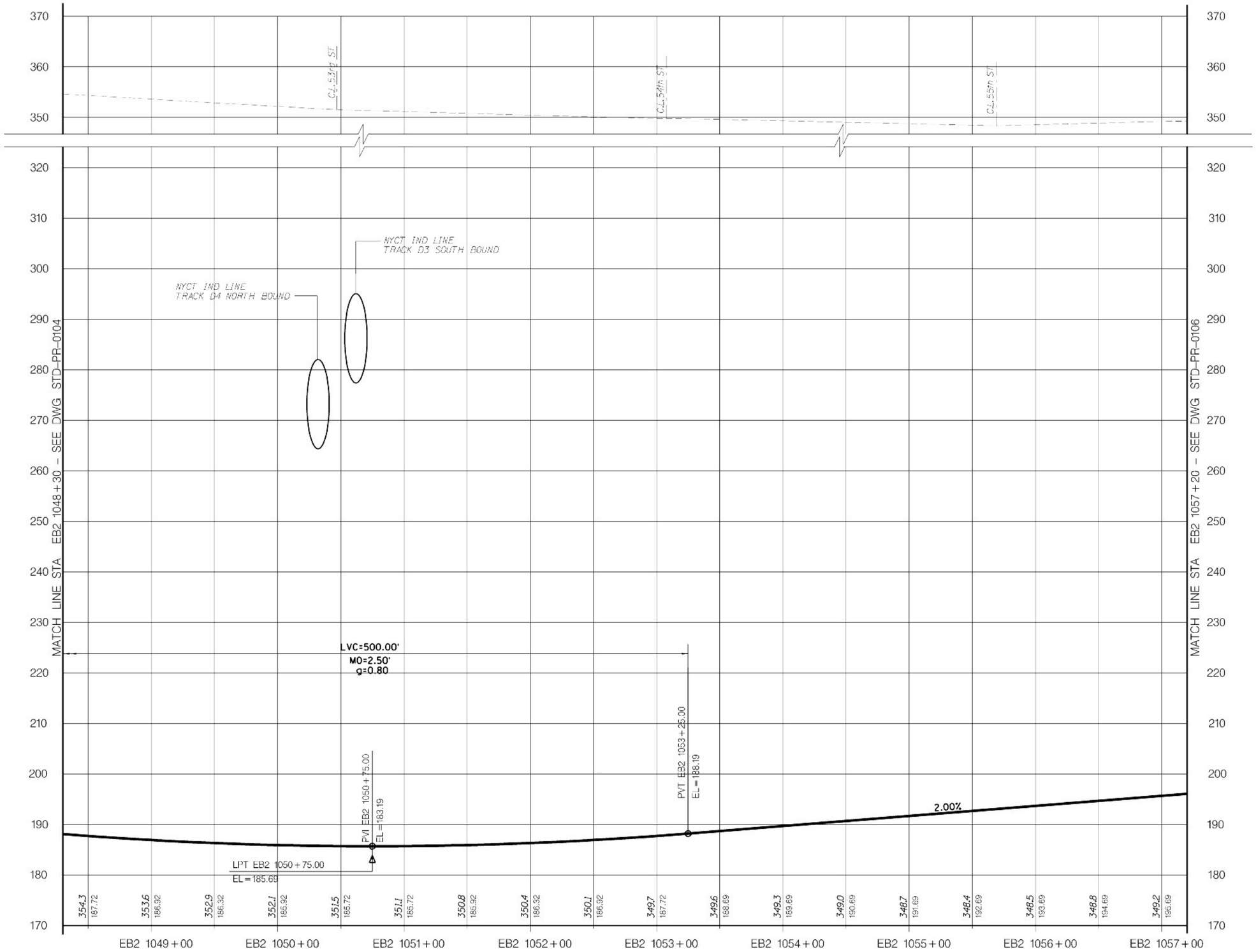
SHEET No. N/A



LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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DATE | REVISIONS | No

DESIGNED BY: P. ALBOHN
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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2 1048+30 TO STA EB2 1057+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0105
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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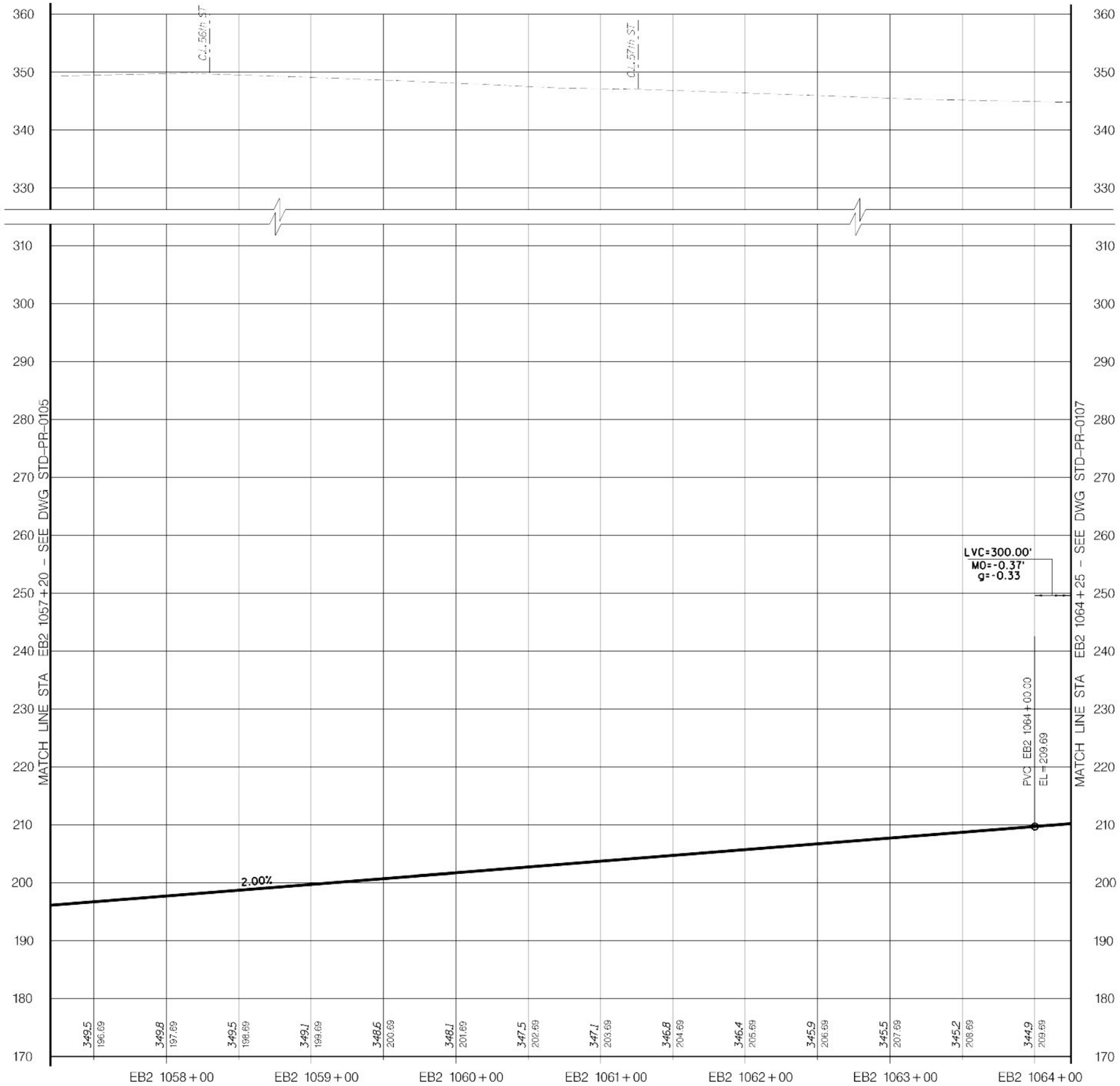

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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DATE	REVISIONS	No.

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2 1057+20 TO STA EB2 1064+25

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0106
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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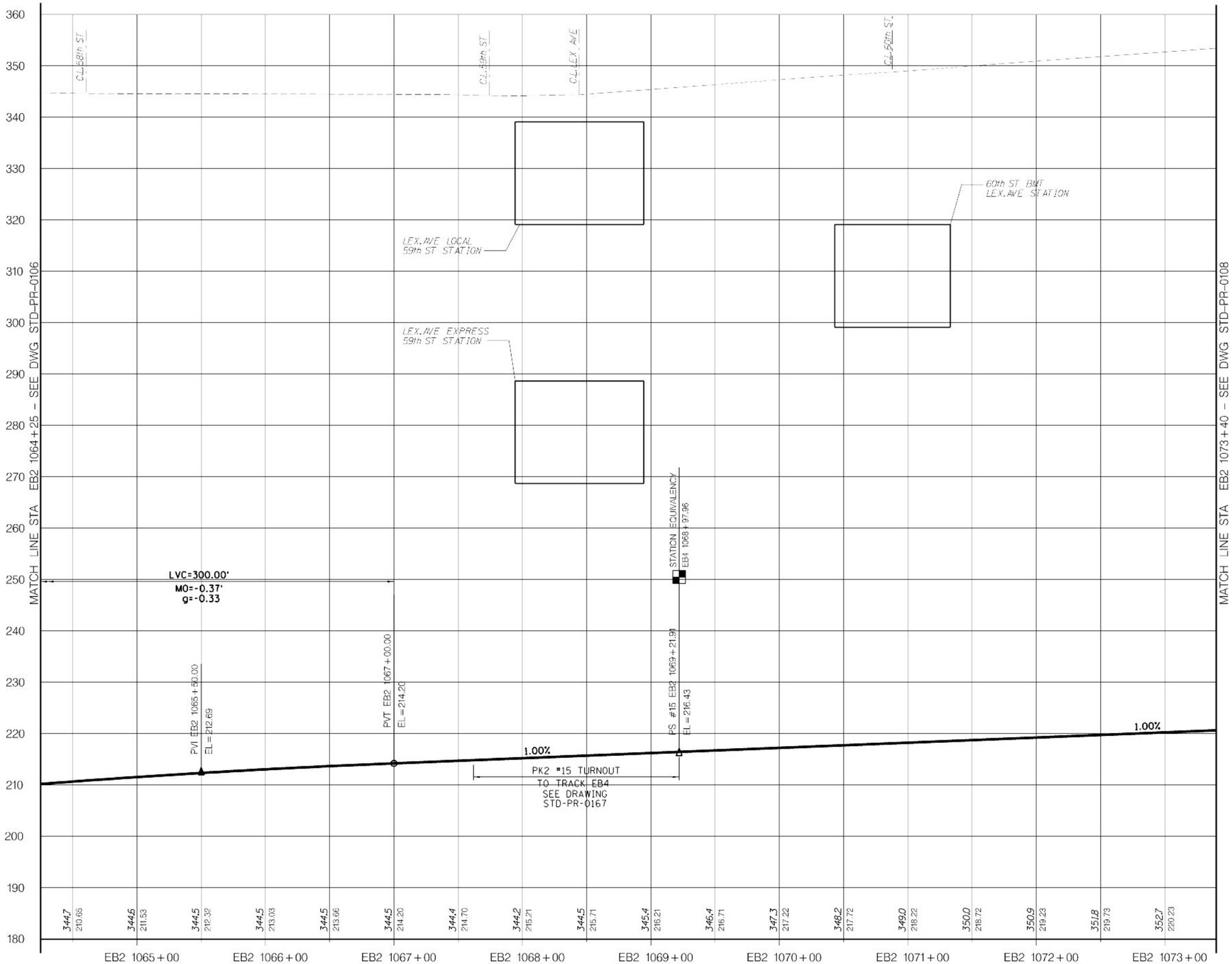

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DATE	REVISIONS	No

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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2 1064+25 TO STA EB2 1073+40

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0107
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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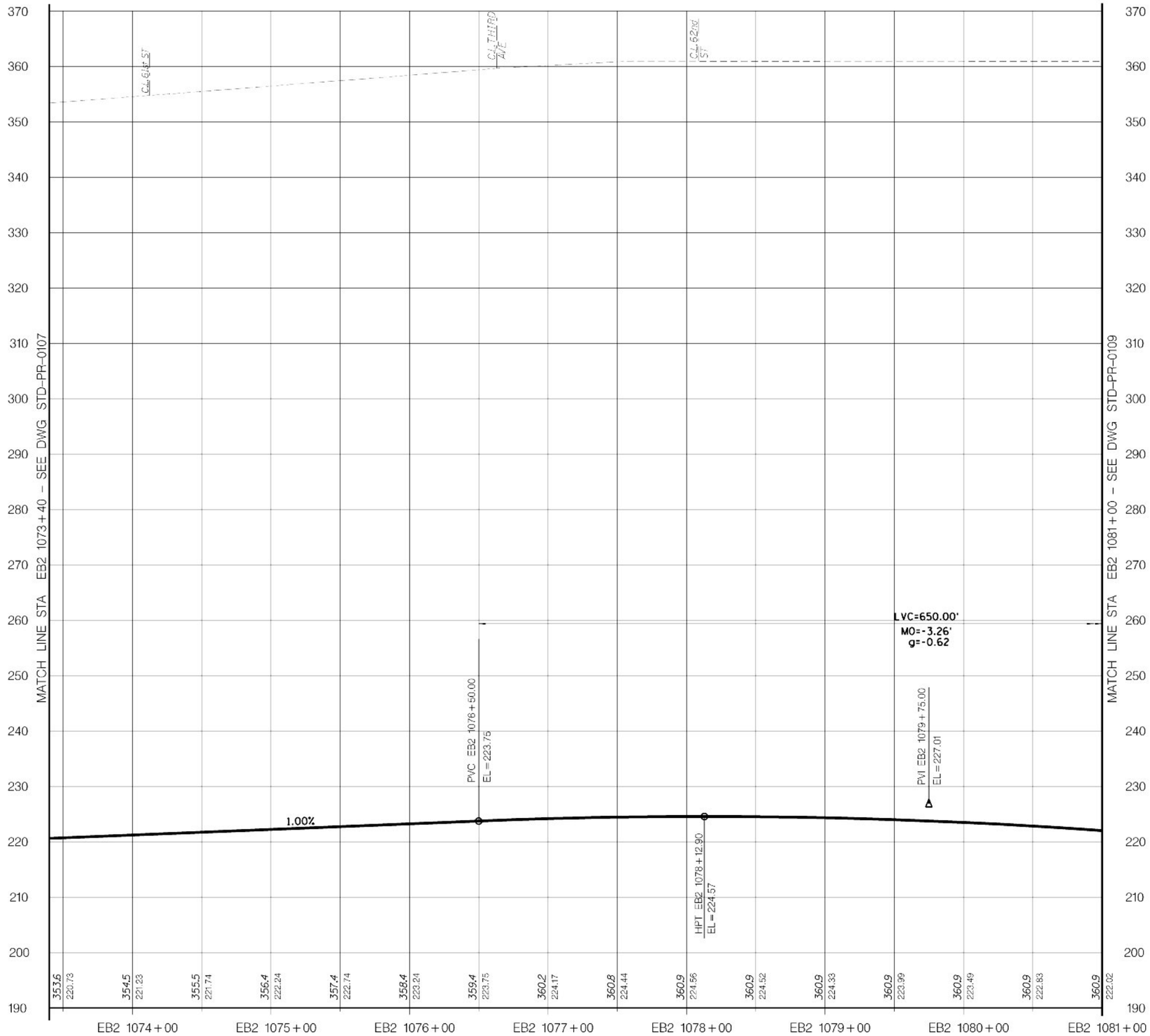

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2 1073+40 TO STA EB2 1081+00

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0108
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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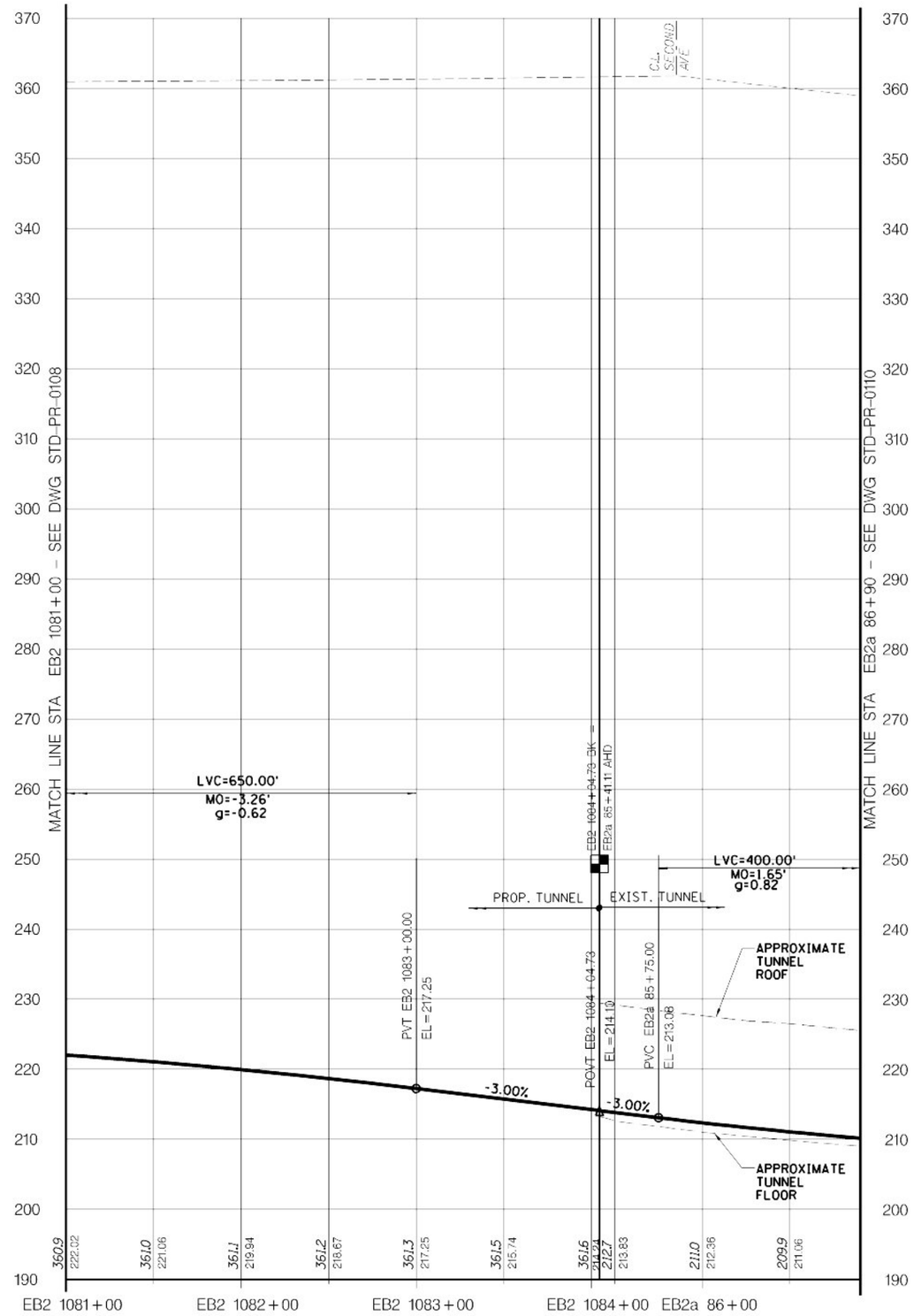

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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General Engineering Consultant

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DATE | REVISIONS | No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2 1081+00 TO STA EB2a 86+90

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0109
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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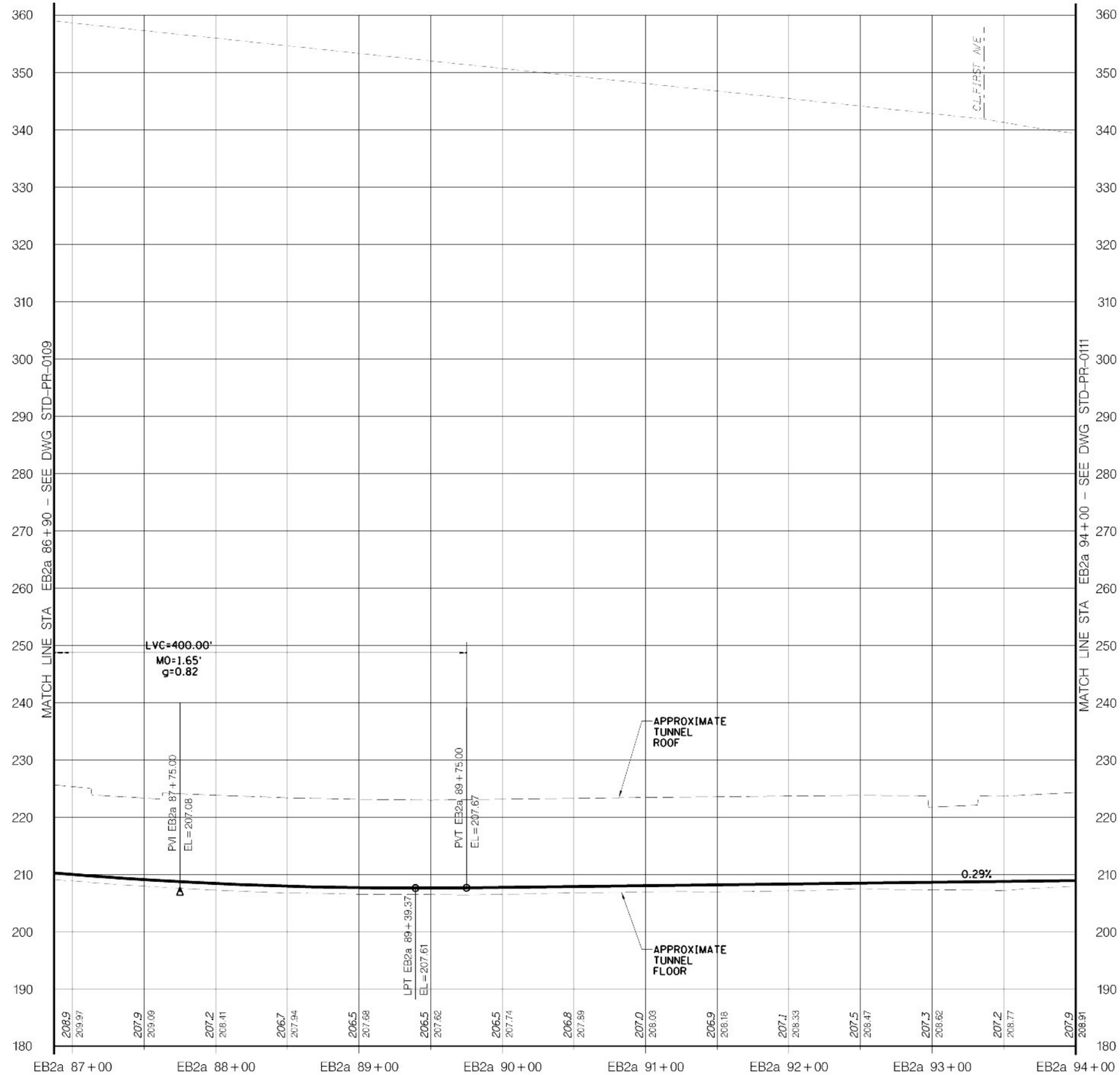

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2a 86+90 TO STA EB2a 94+00

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0110
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
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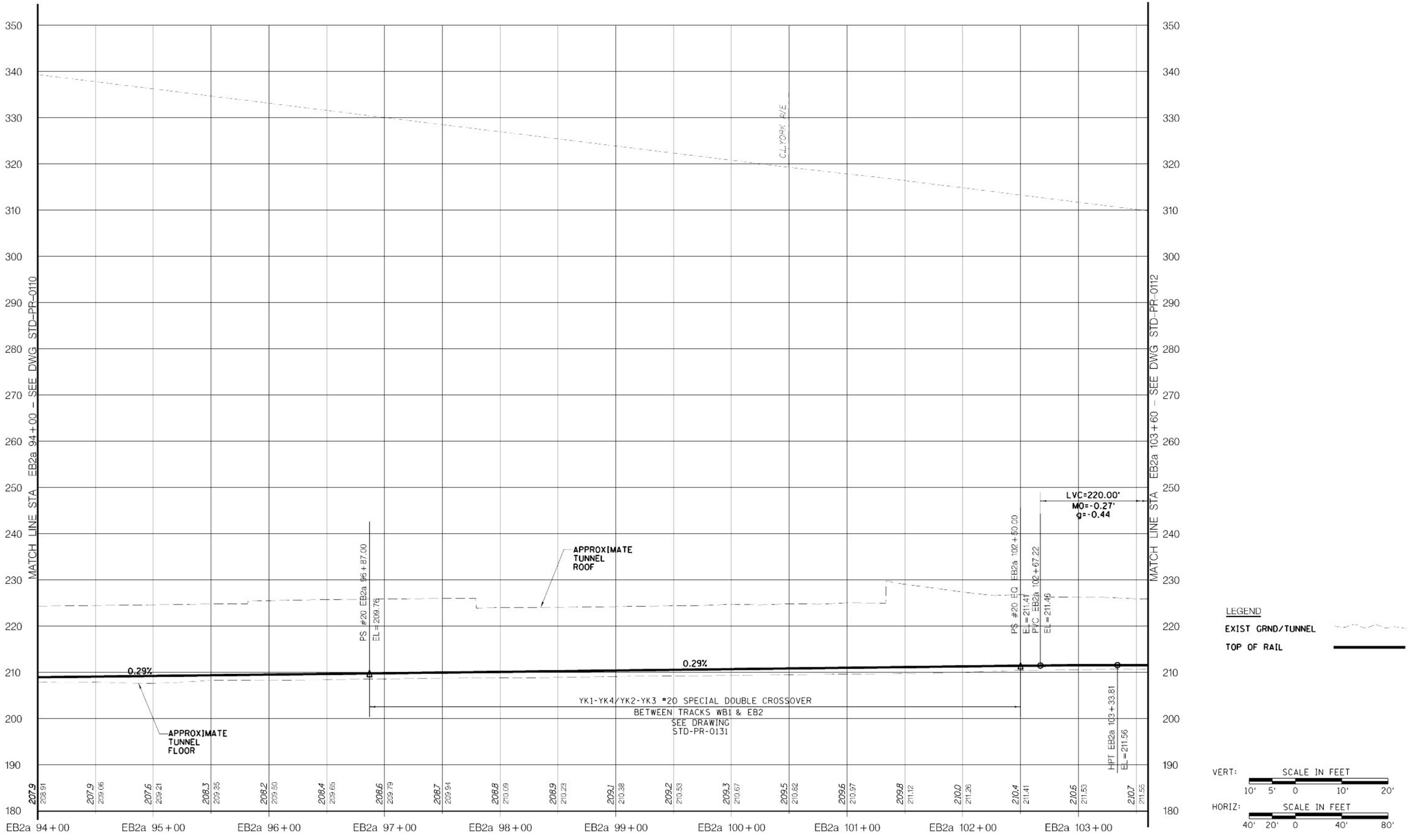

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2a 94+00 TO STA EB2a 103+60

SCALE: AS NOTED
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DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
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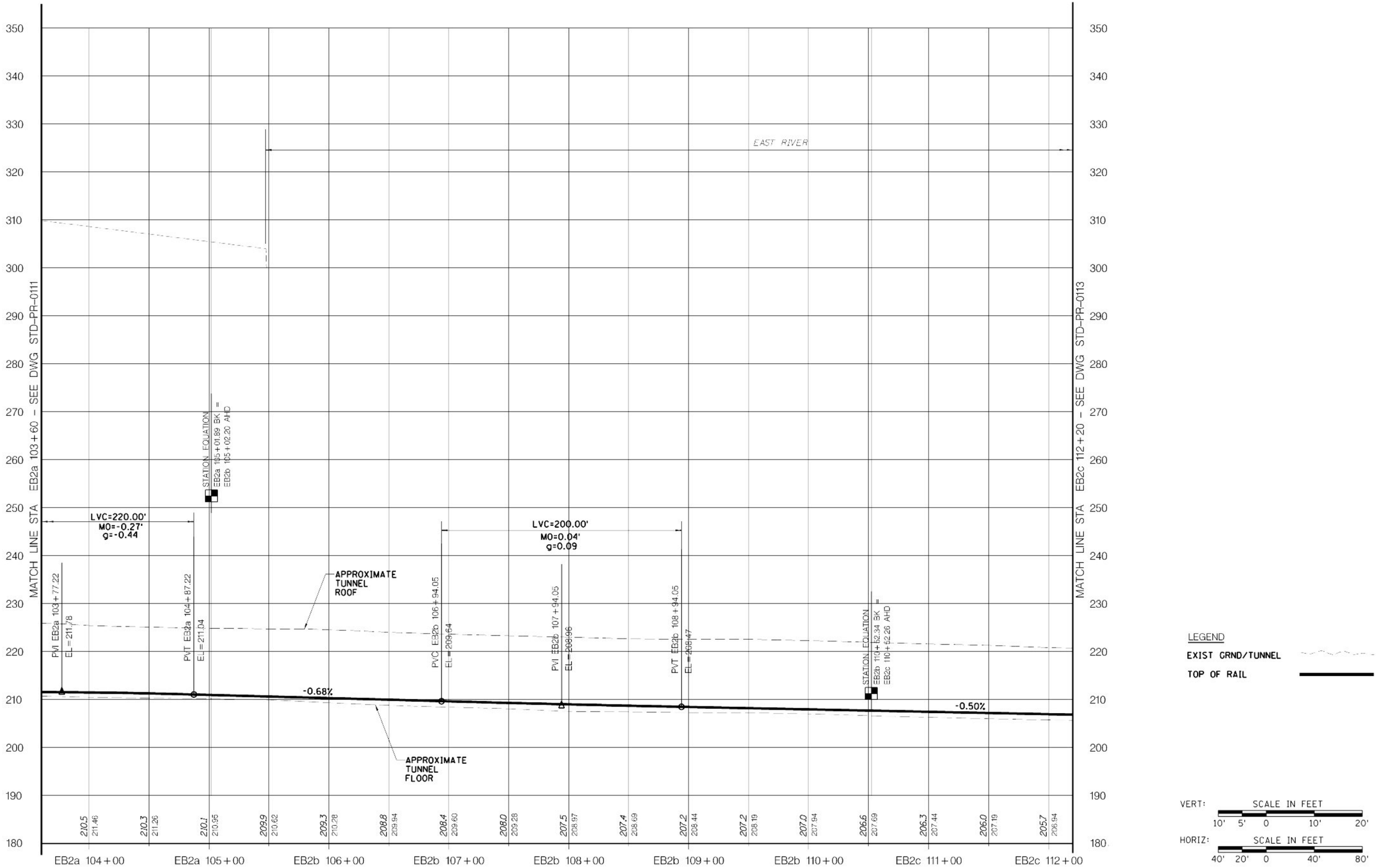
SHEET No. N/A



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NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2a 103+60 TO STA EB2c 112+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0112
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
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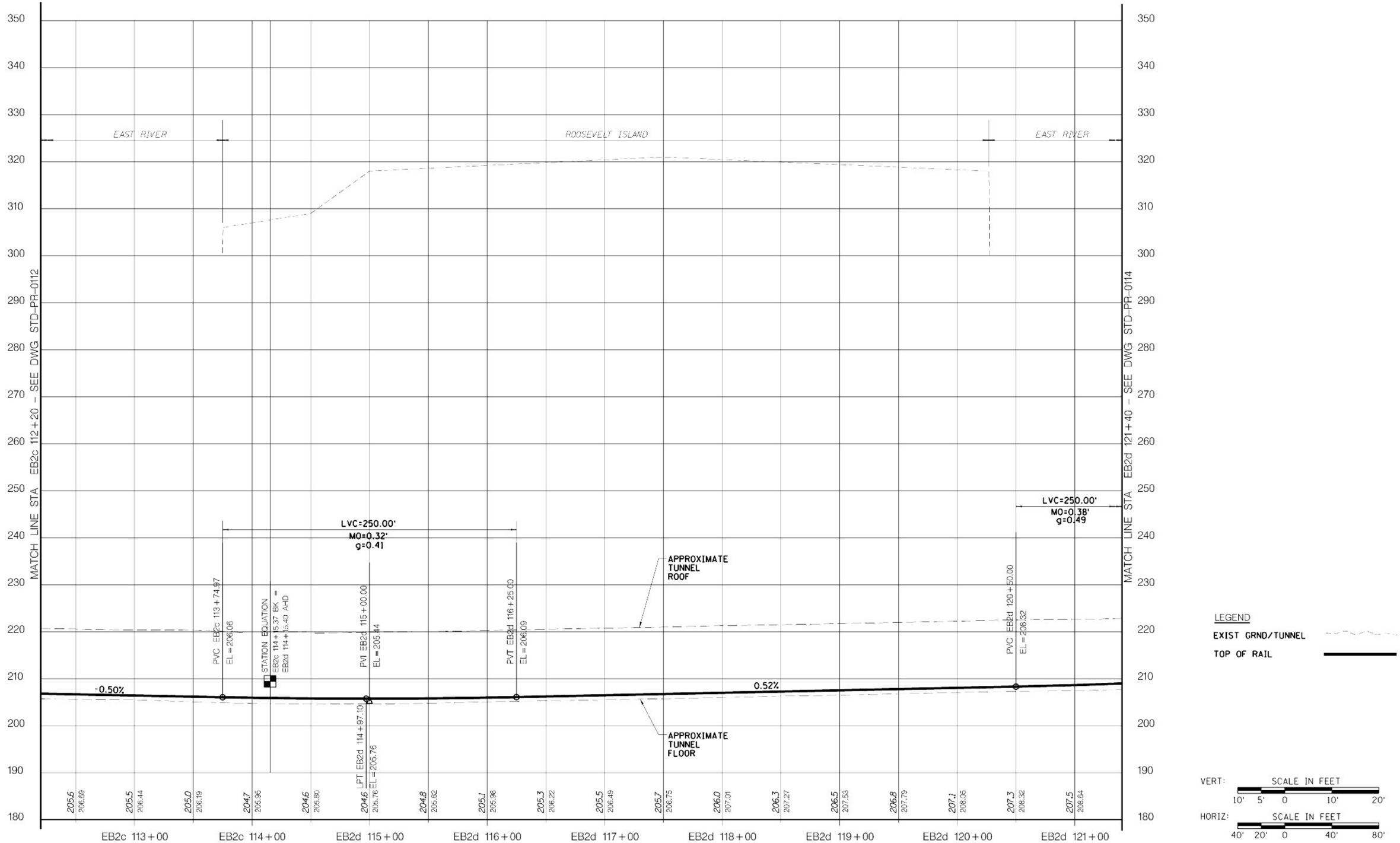
SHEET No. N/A



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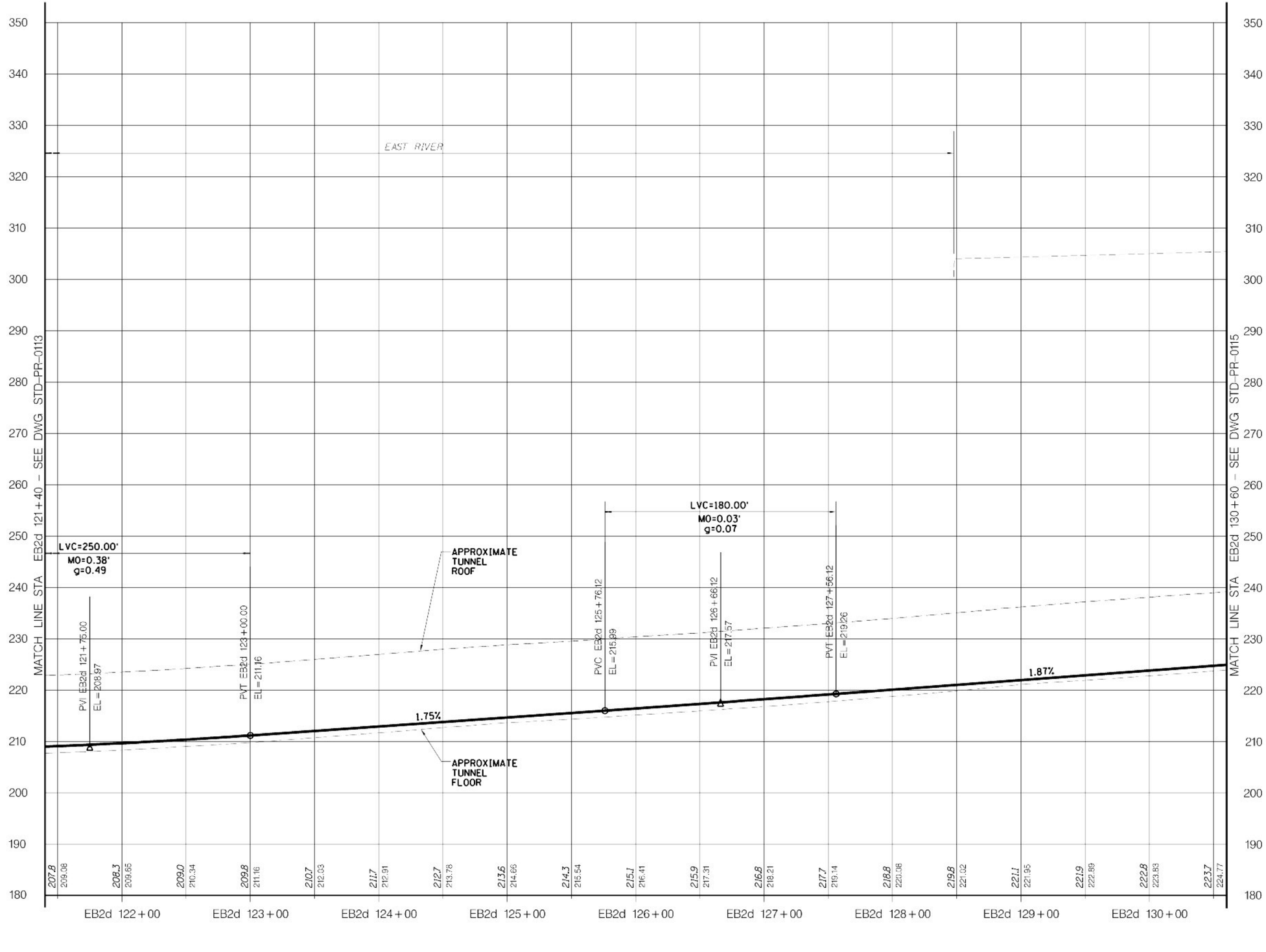
ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2c 112+20 TO STA EB2d 121+40

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0113
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A



LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2d 121+40 TO STA EB2d 130+60

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0114
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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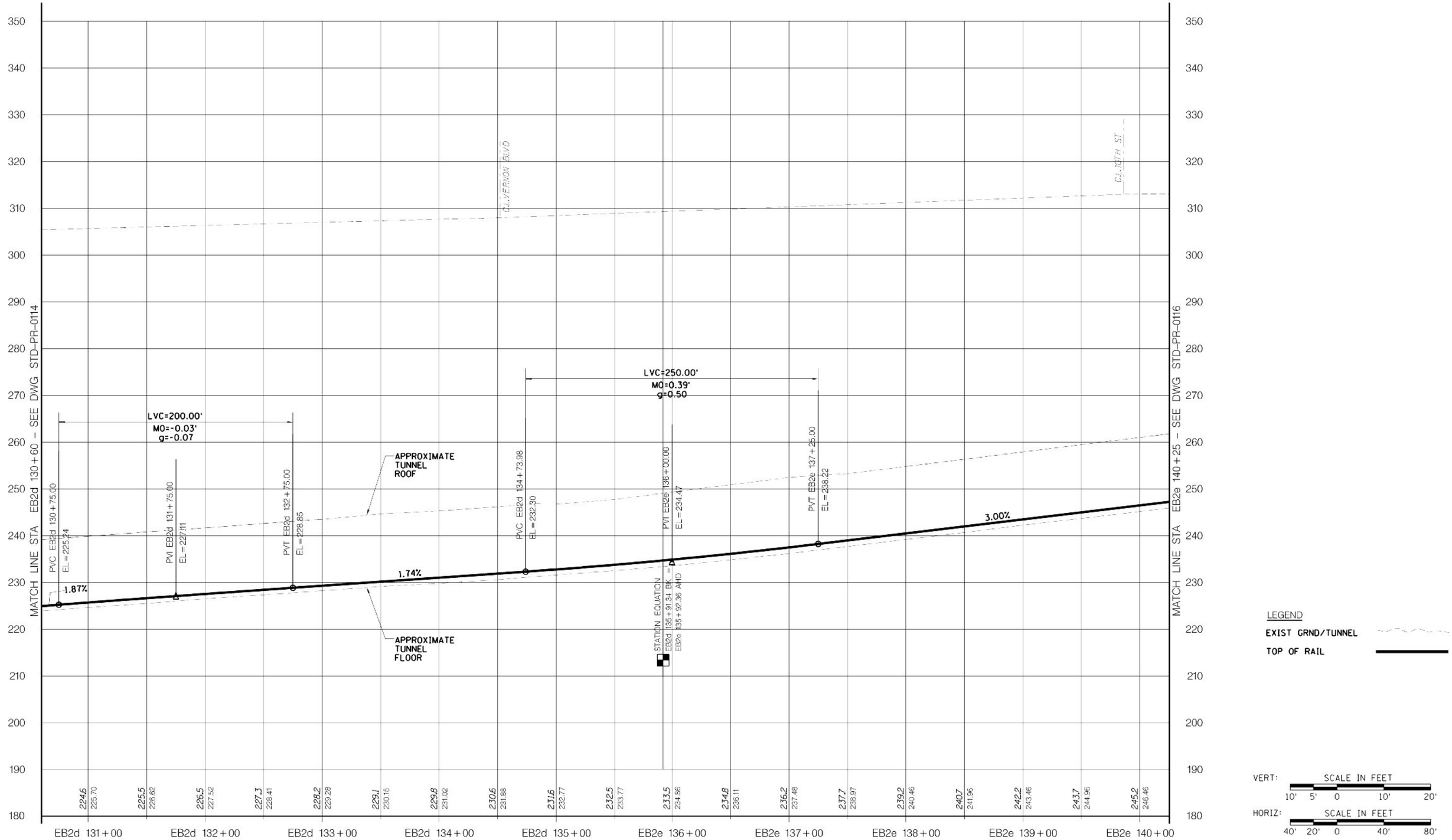

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ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2d 130+60 TO STA EB2e 140+25

SCALE: AS NOTED
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DATE: 11-14-05
REVISION NUMBER: 0

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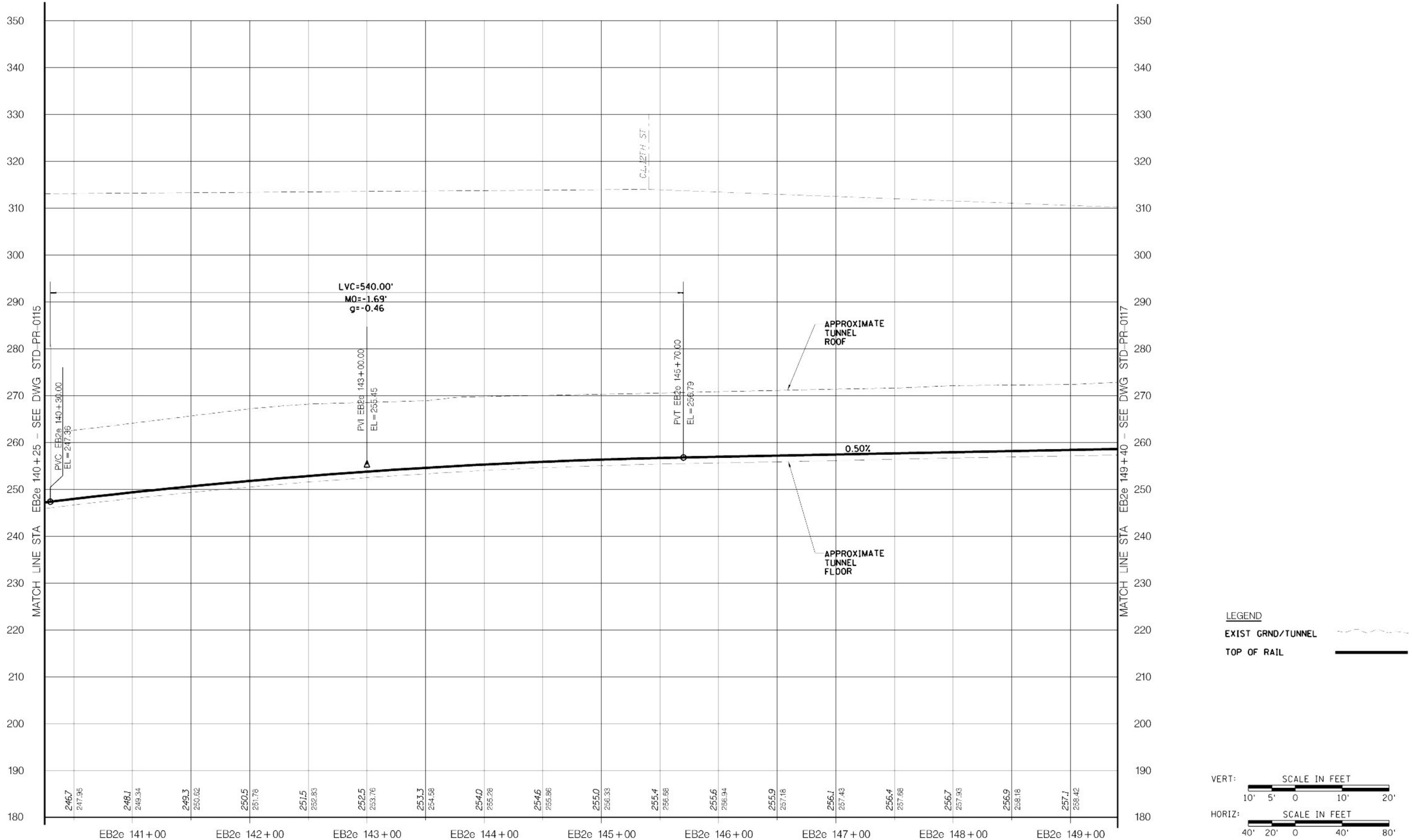
ISSUE: —
SHEET No: N/A



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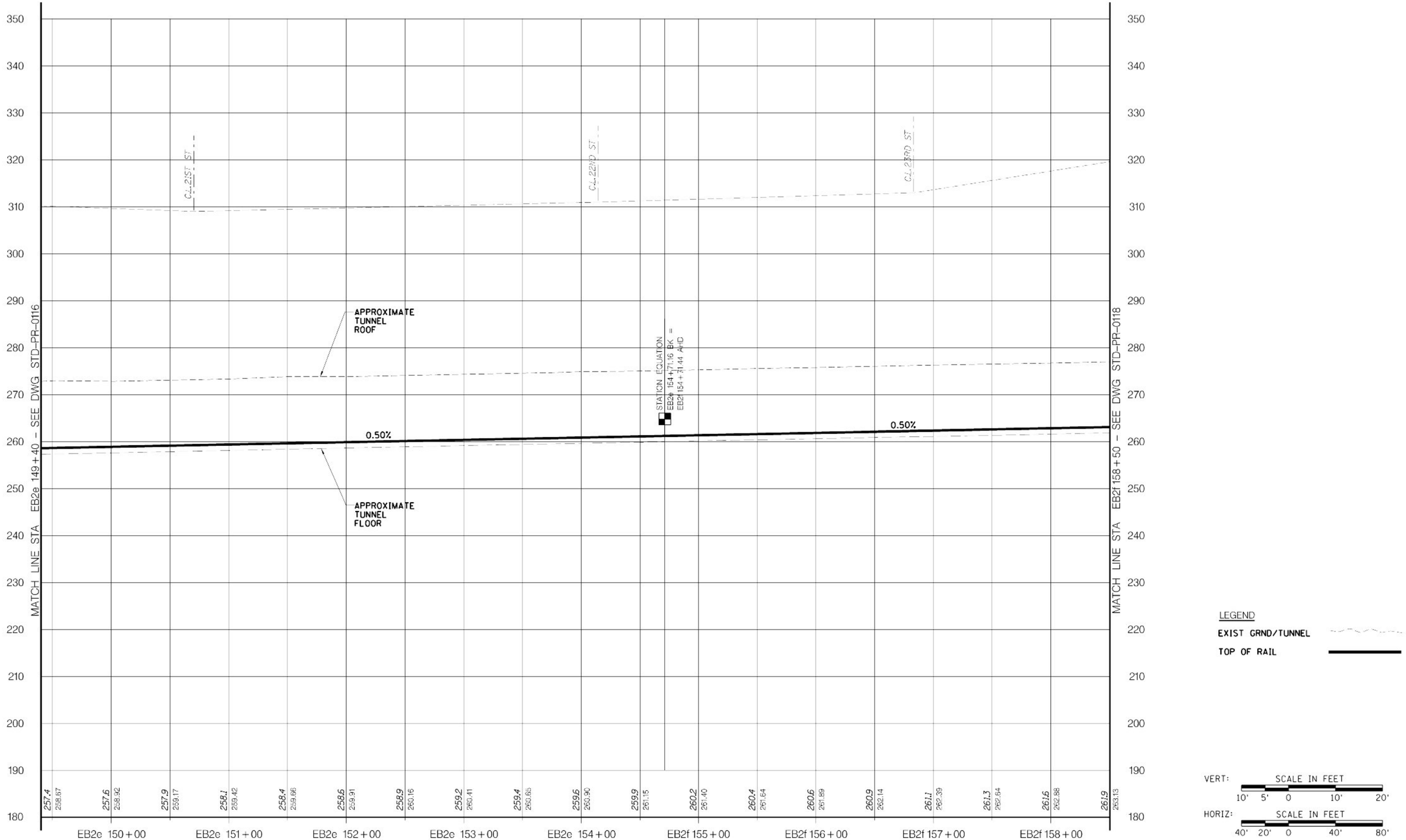
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2e 140+25 TO STA EB2e 149+40

SCALE: AS NOTED
DRAWING NUMBER: STD-PR 0116
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A



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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2e 149+40 TO STA EB2f 158+50

SCALE: AS NOTED
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DATE: 11-14-05
REVISION NUMBER: 0

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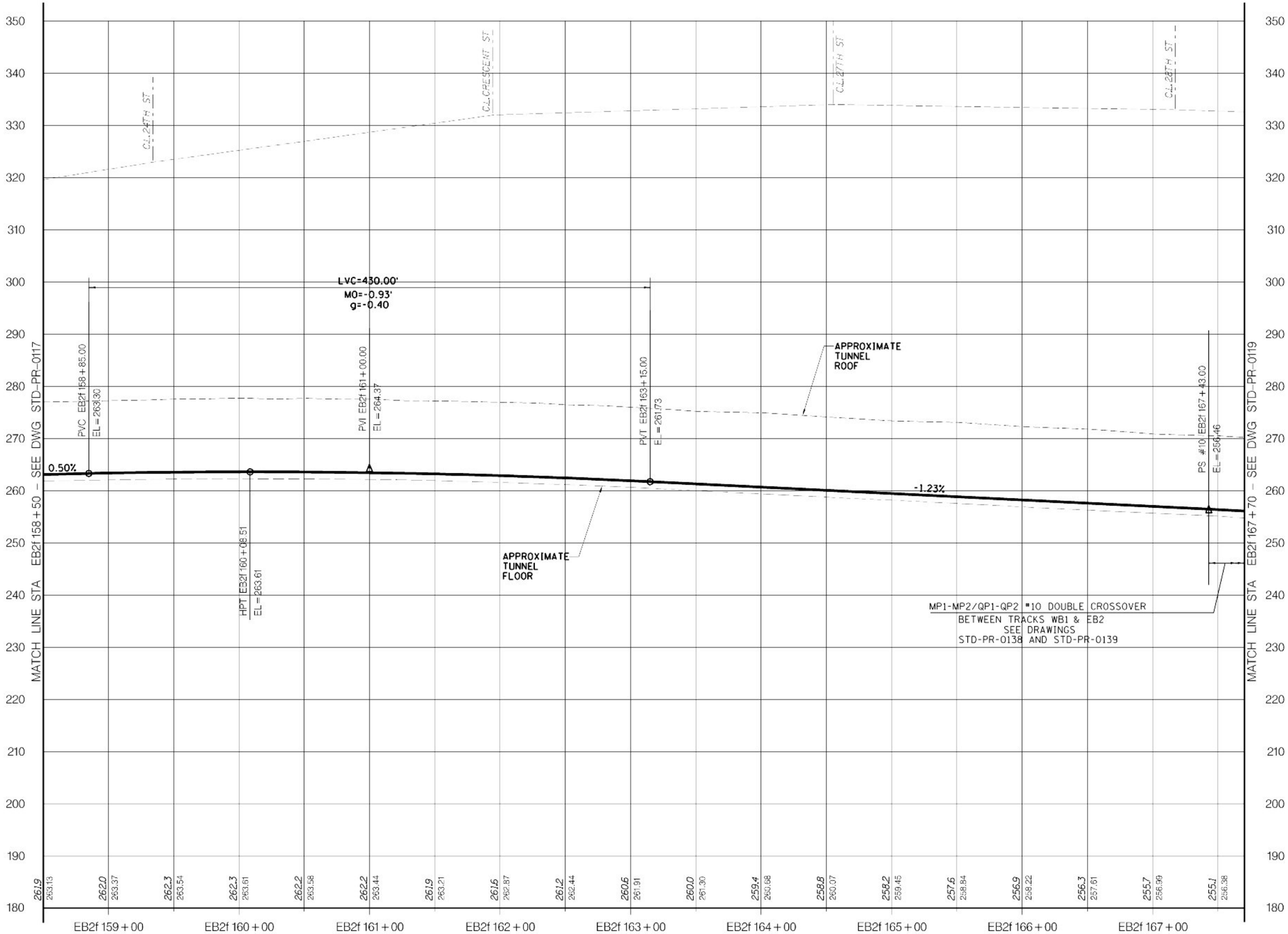

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 PROFILE
STA EB2f 158+50 TO STA EB2f 167+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0118
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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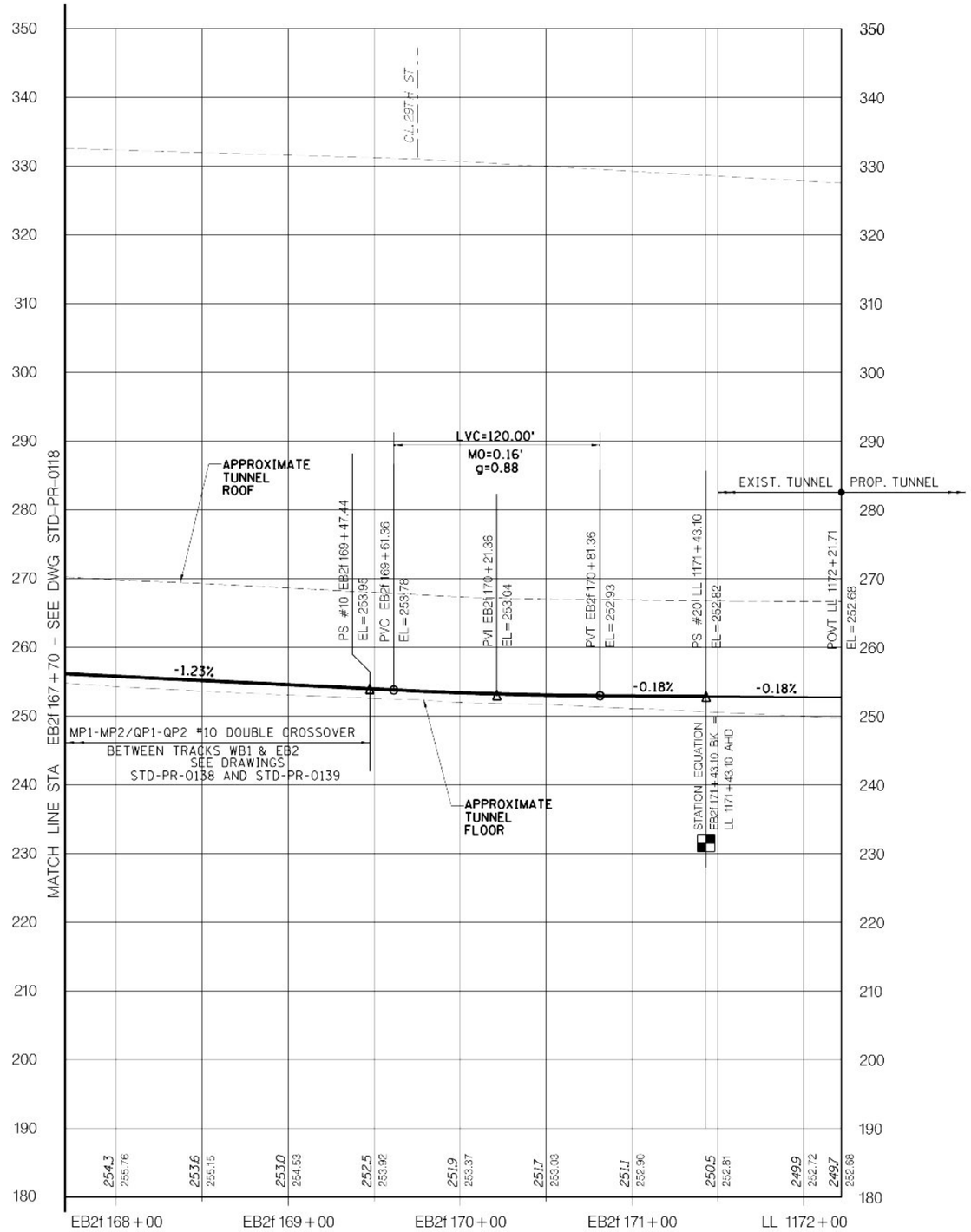

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

$PRENAME$

$(PLOTDRV)

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Metropolitan Transportation Authority
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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

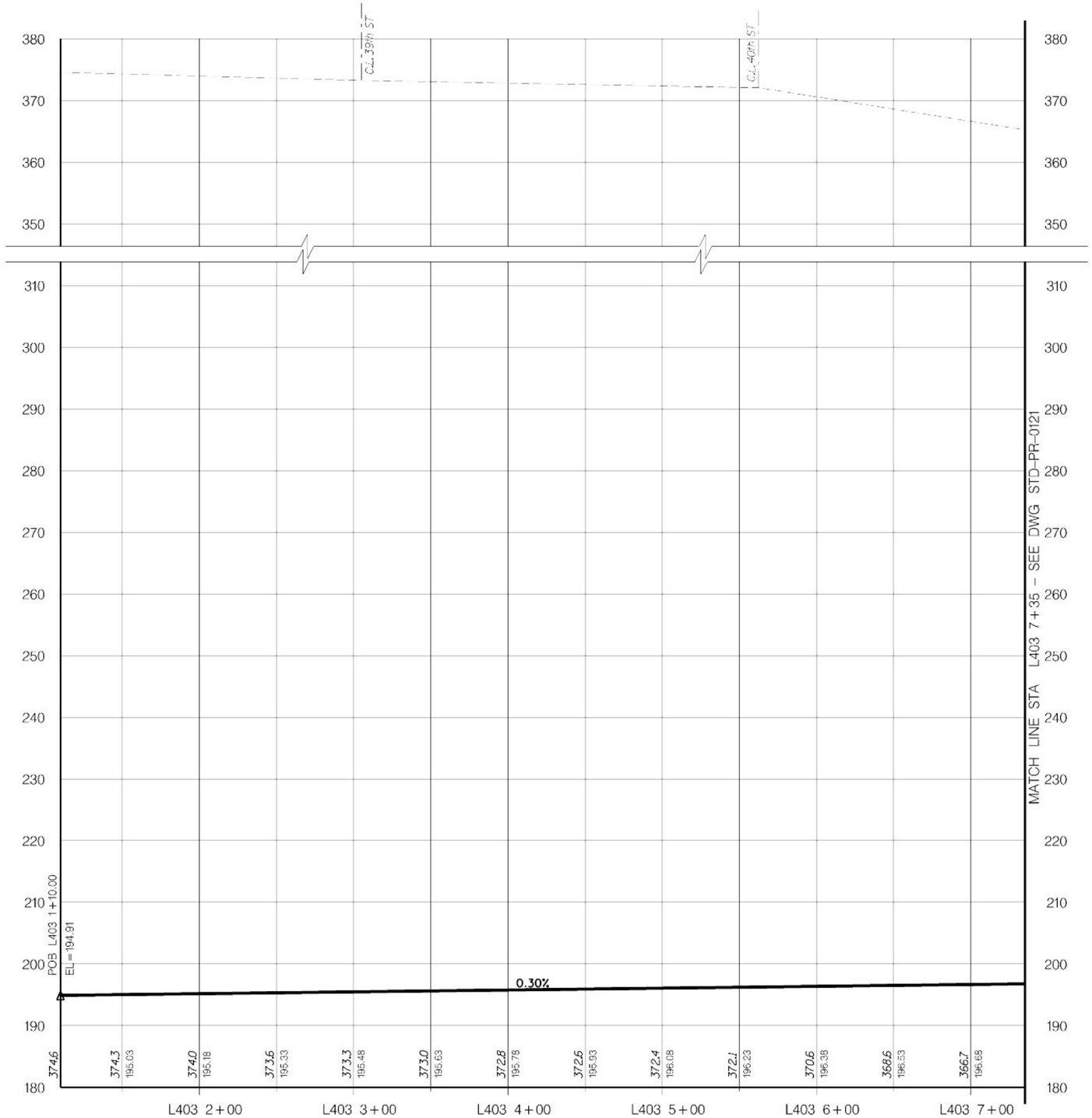
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB2 & LL PROFILES
STA EB2f 167+70 TO STA LL 1172+21.71

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0119
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A



LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L403 PROFILE
STA L403 1+10 TO STA L403 7+35

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0120
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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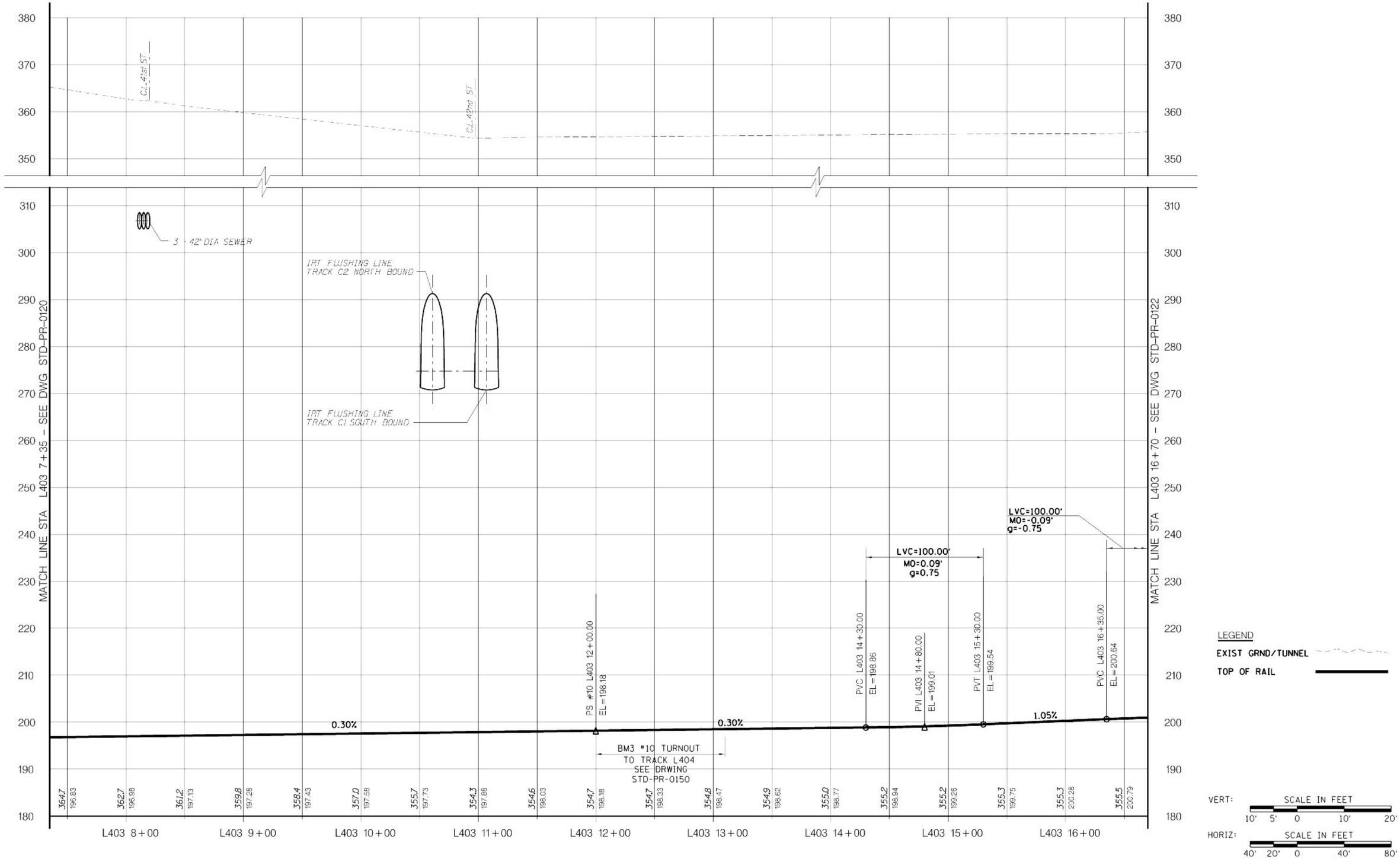

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L403 PROFILE
STA L403 7+35 TO STA L403 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0121
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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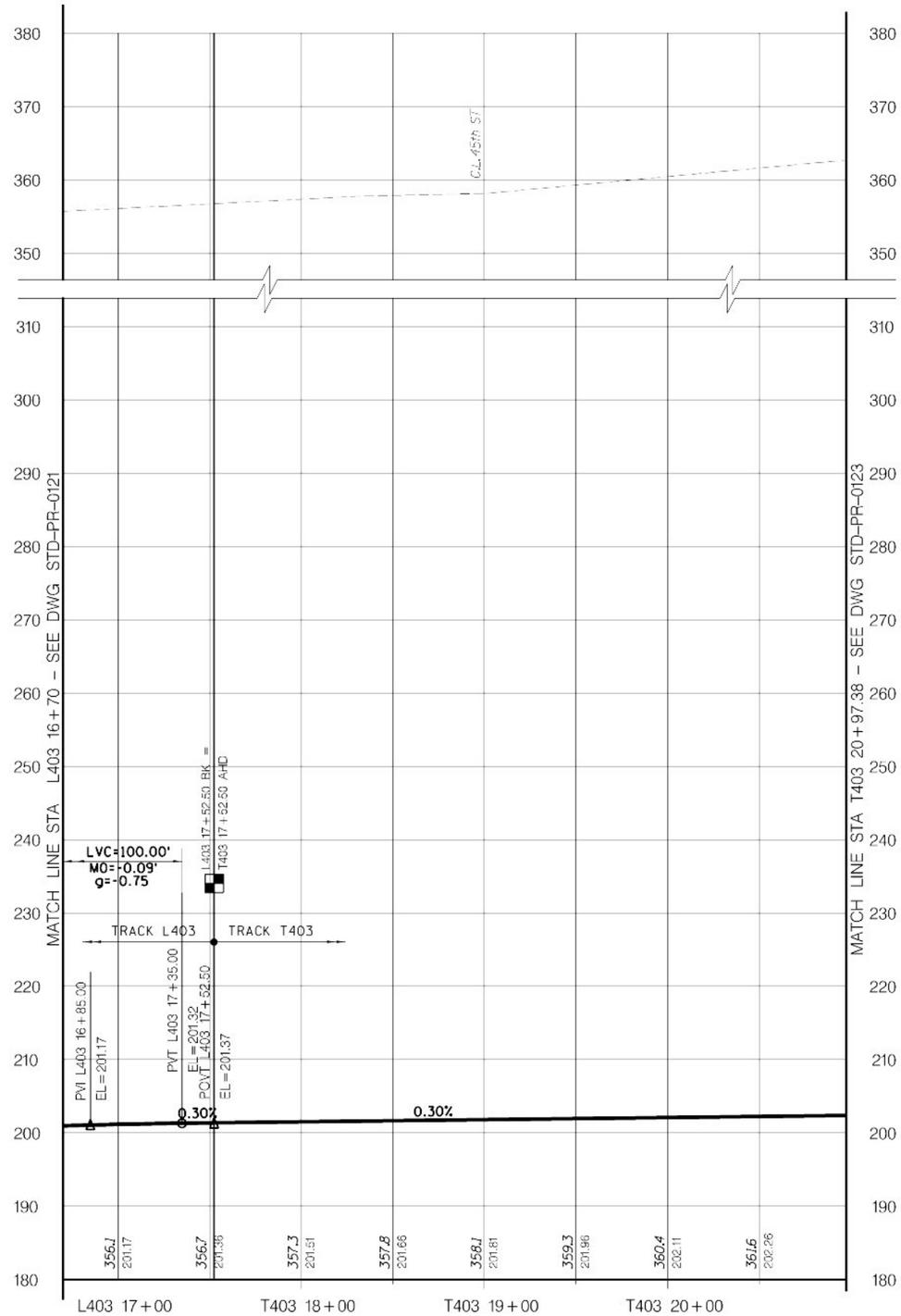

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L403 & T403 PROFILES
STA L403 16+70 TO STA T403 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0122
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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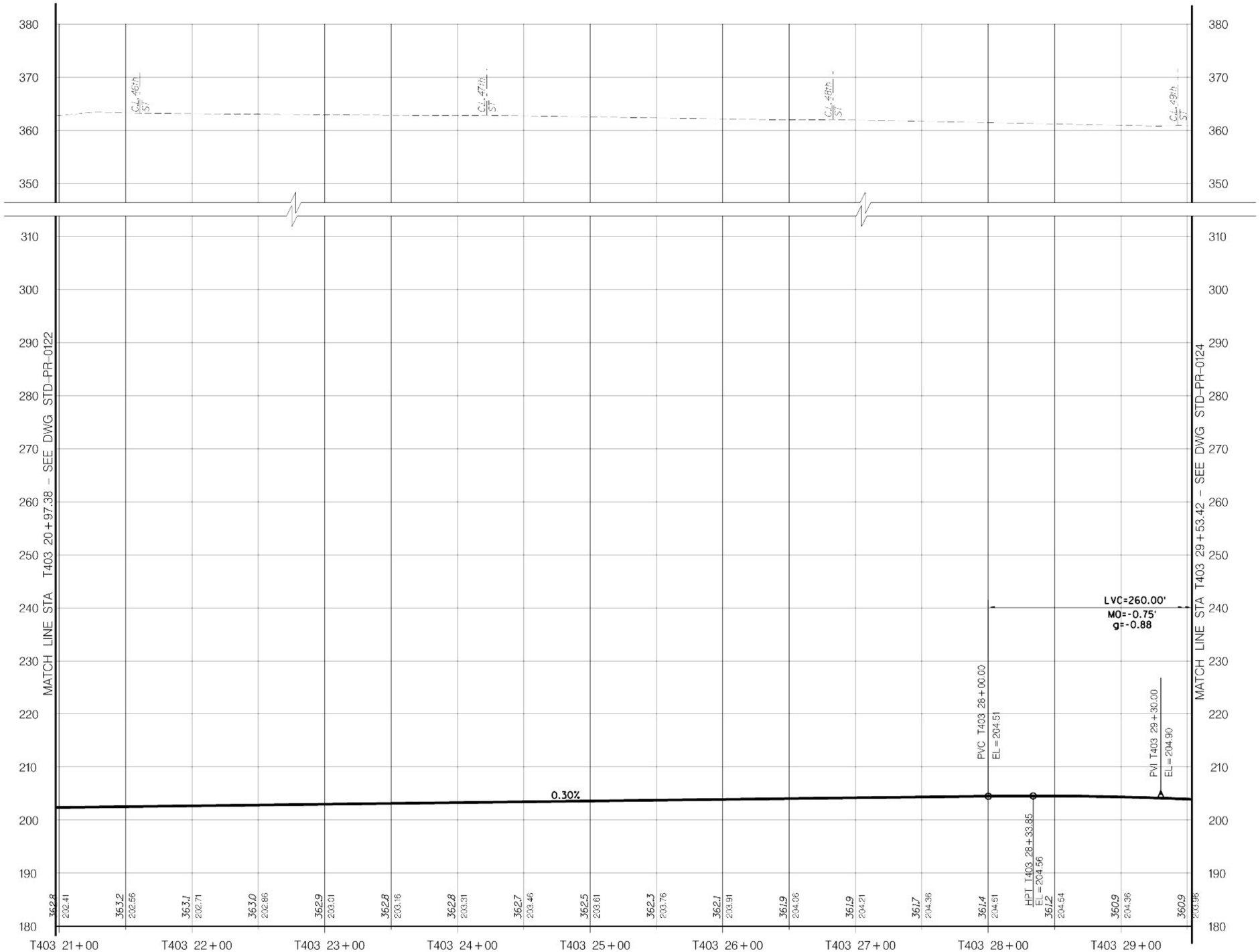

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant

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DATE	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T403 PROFILE
STA T403 20+97.38 TO STA T403 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0123
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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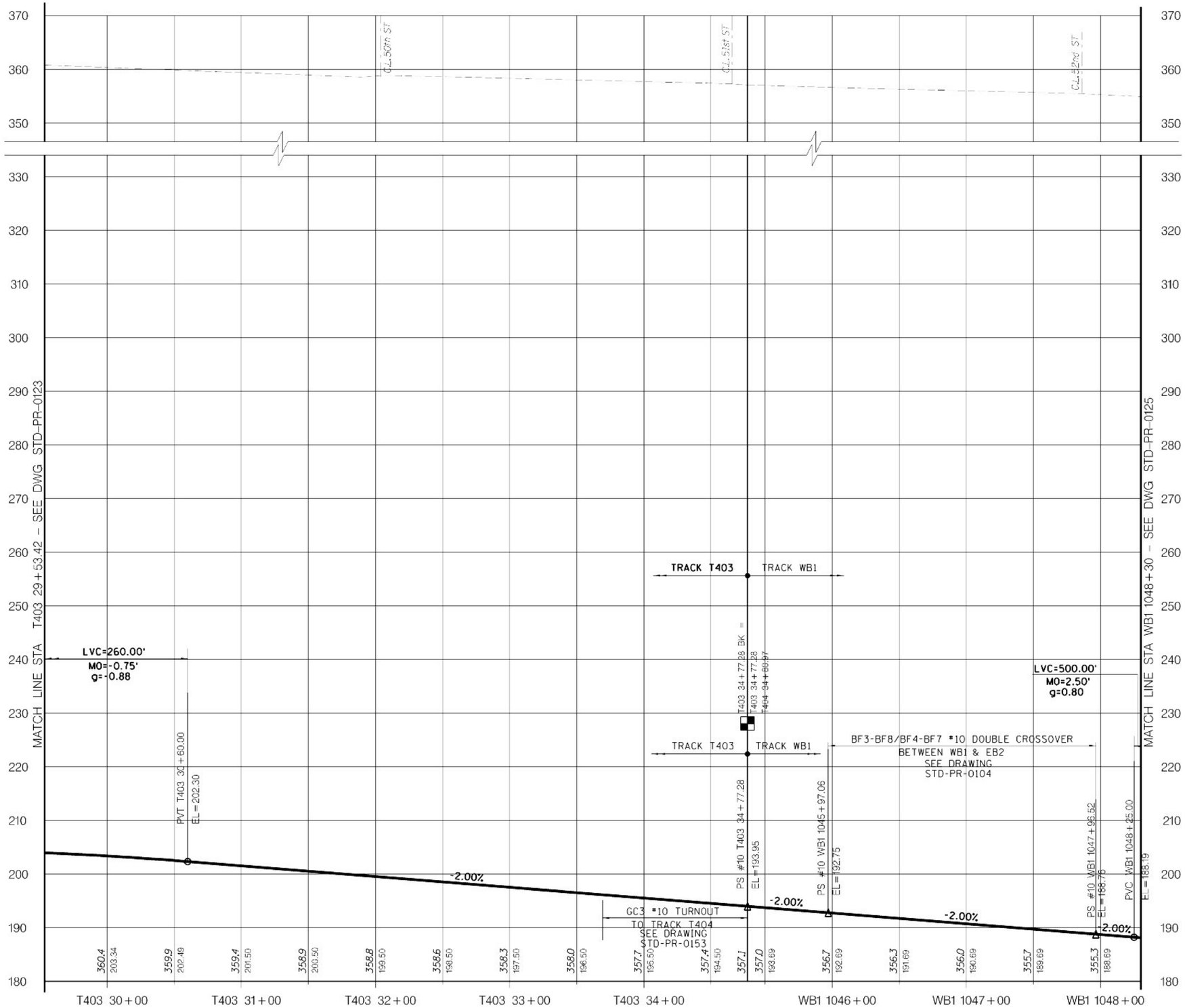

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE | REVISIONS | No

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NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T403 AND WB1 PROFILES
STA T403 29+53.42 TO STA WB1 1048+30

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0124
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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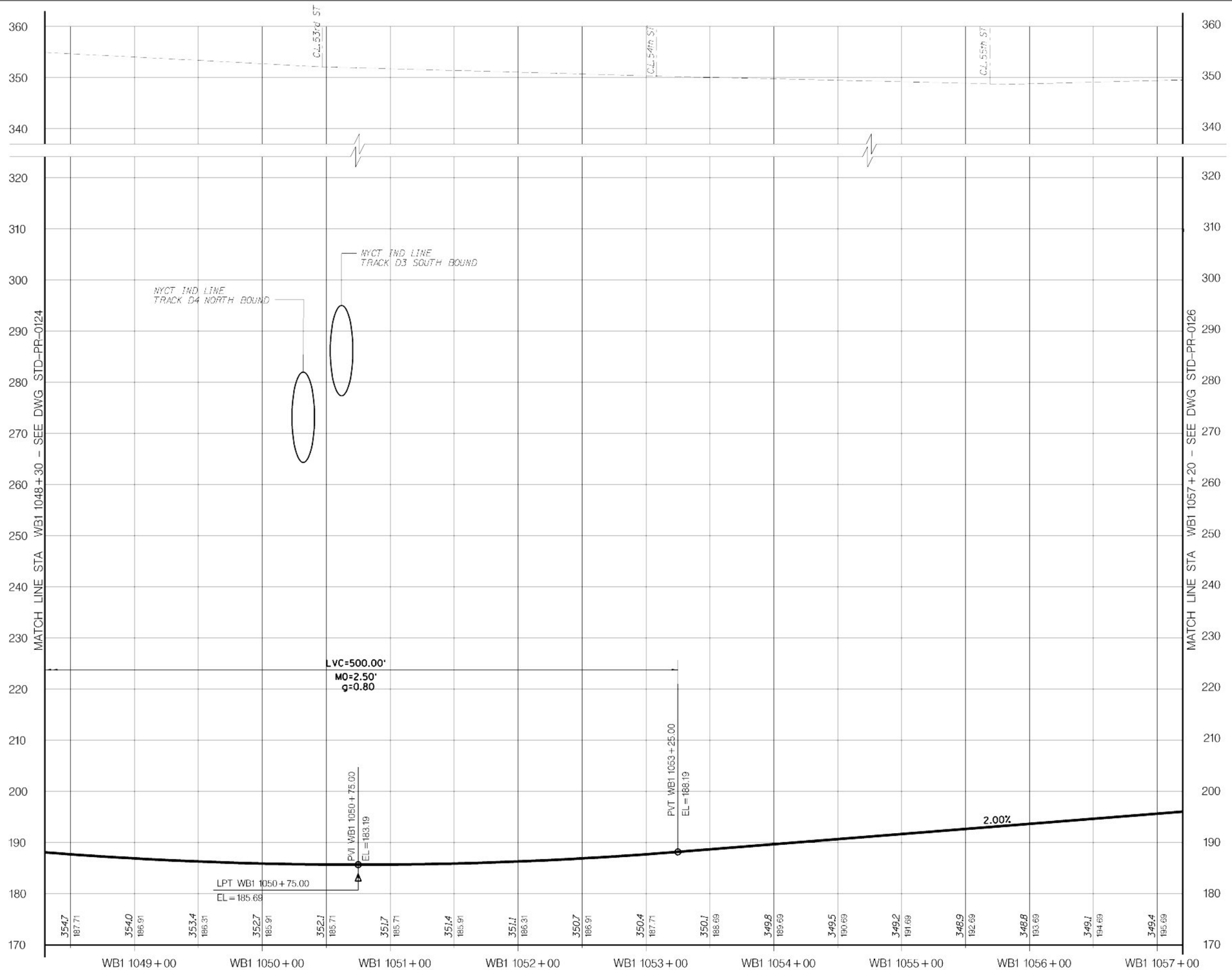

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 1048+30 TO STA WB1 1057+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0125
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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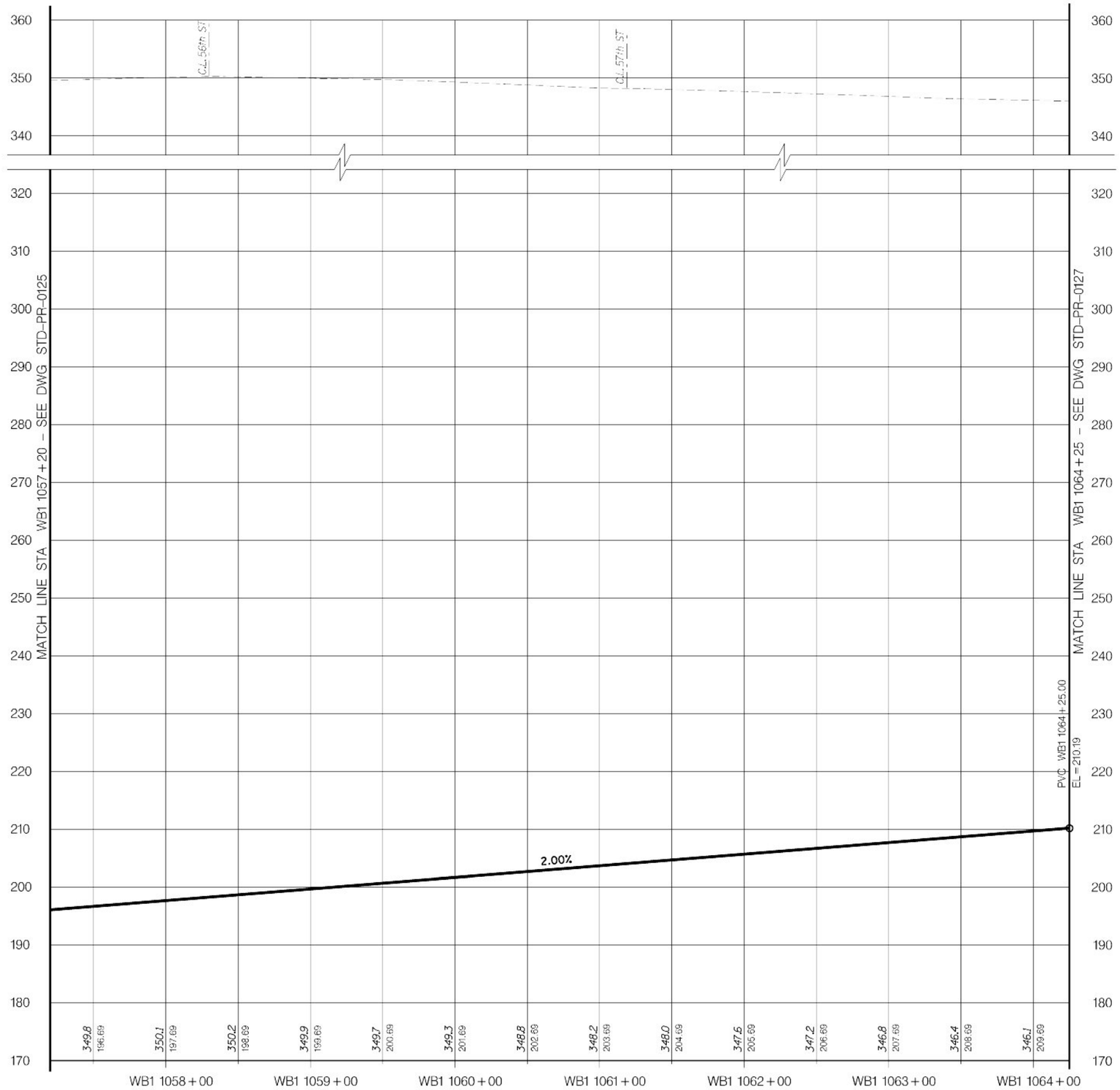

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 1057+20 TO STA WB1 1064+25

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0126
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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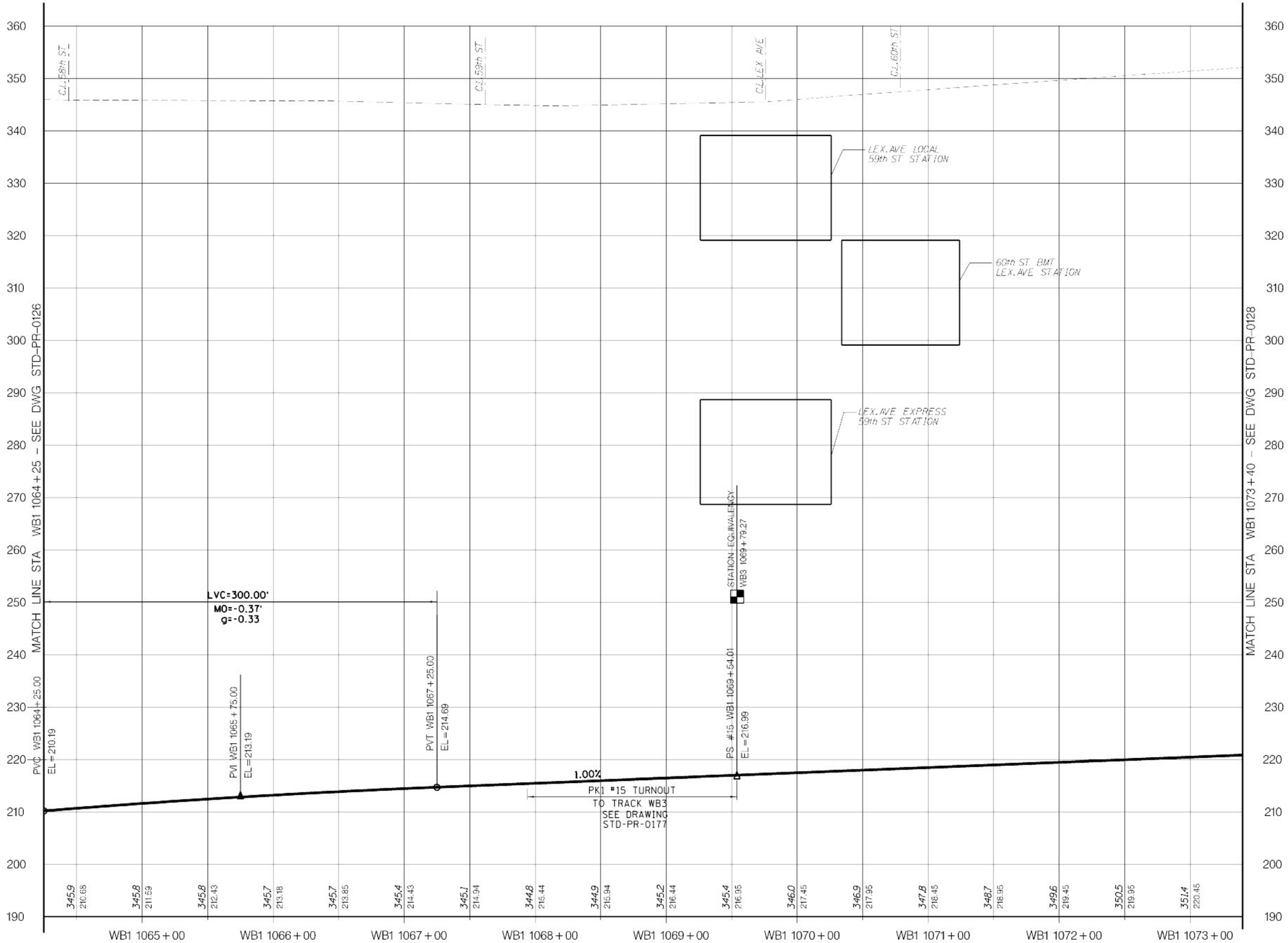

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 1064+25 TO STA WB1 1073+40

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0127
DATE: 11-14-05
REVISION NUMBER: 0

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SHEET No. N/A

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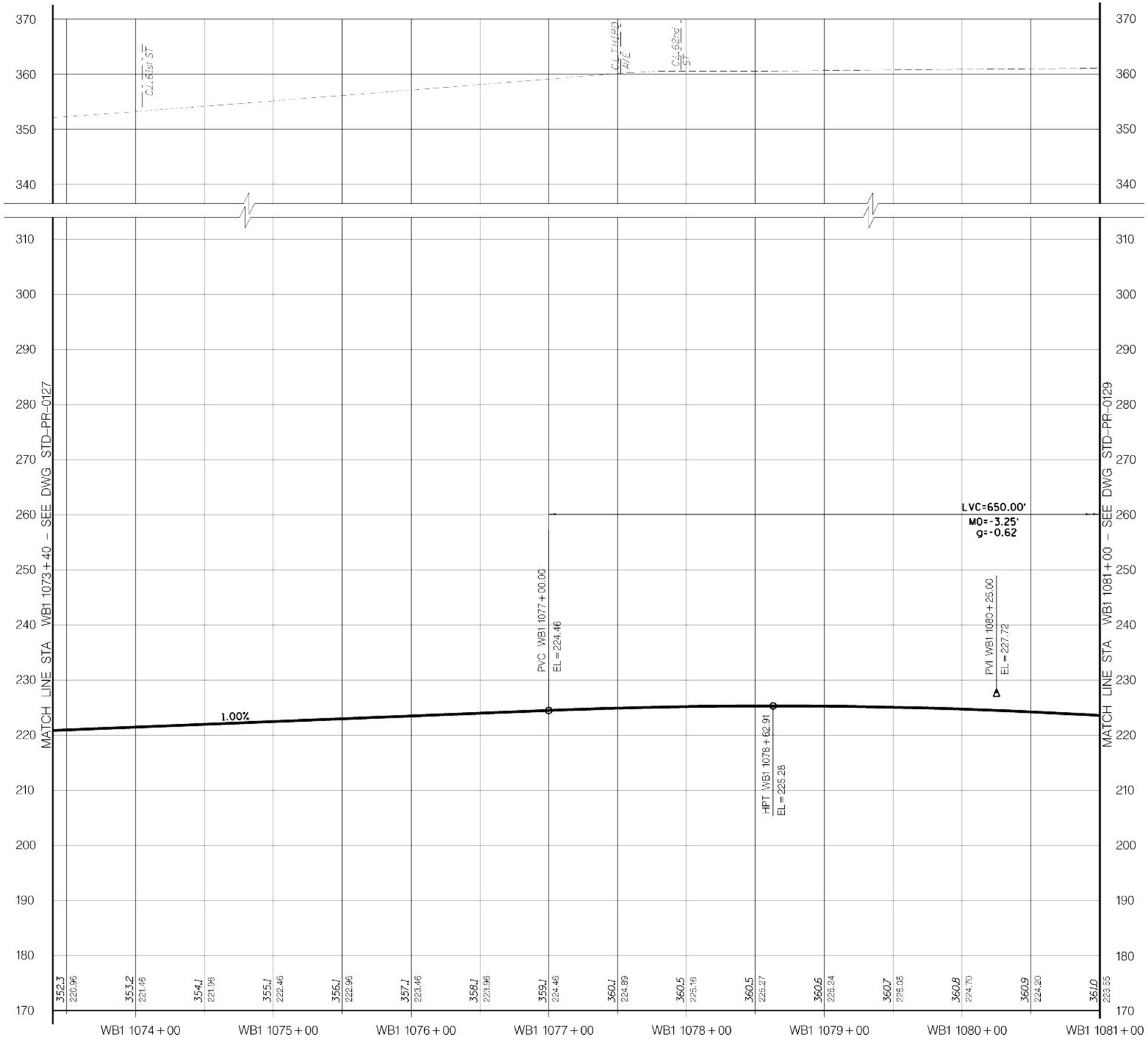

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 1073+40 TO STA WB1 1081+00

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0128
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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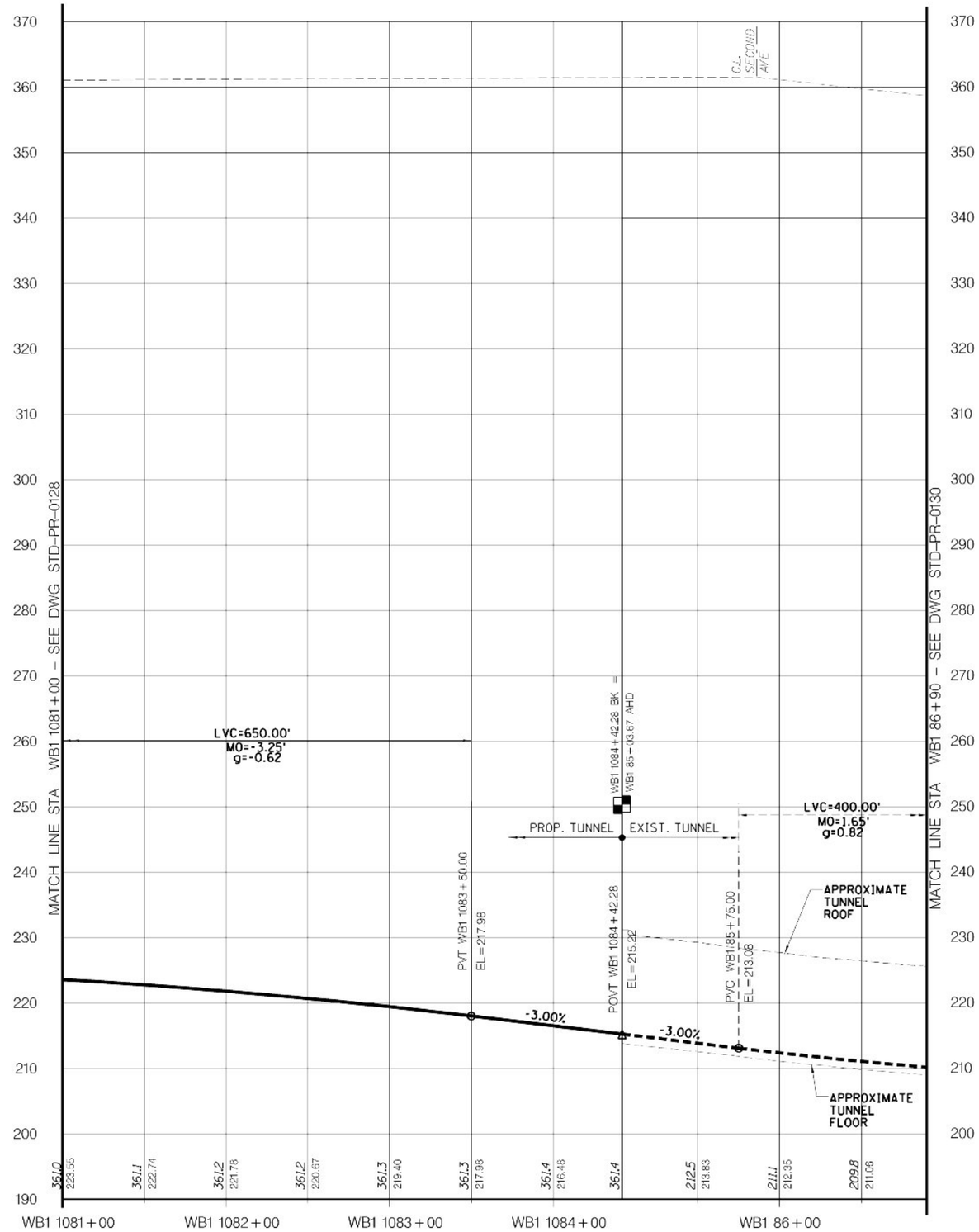

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET
10' 5' 0 10' 20'

HORIZ: SCALE IN FEET
40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 1081+00 TO STA WB1 86+90

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0129
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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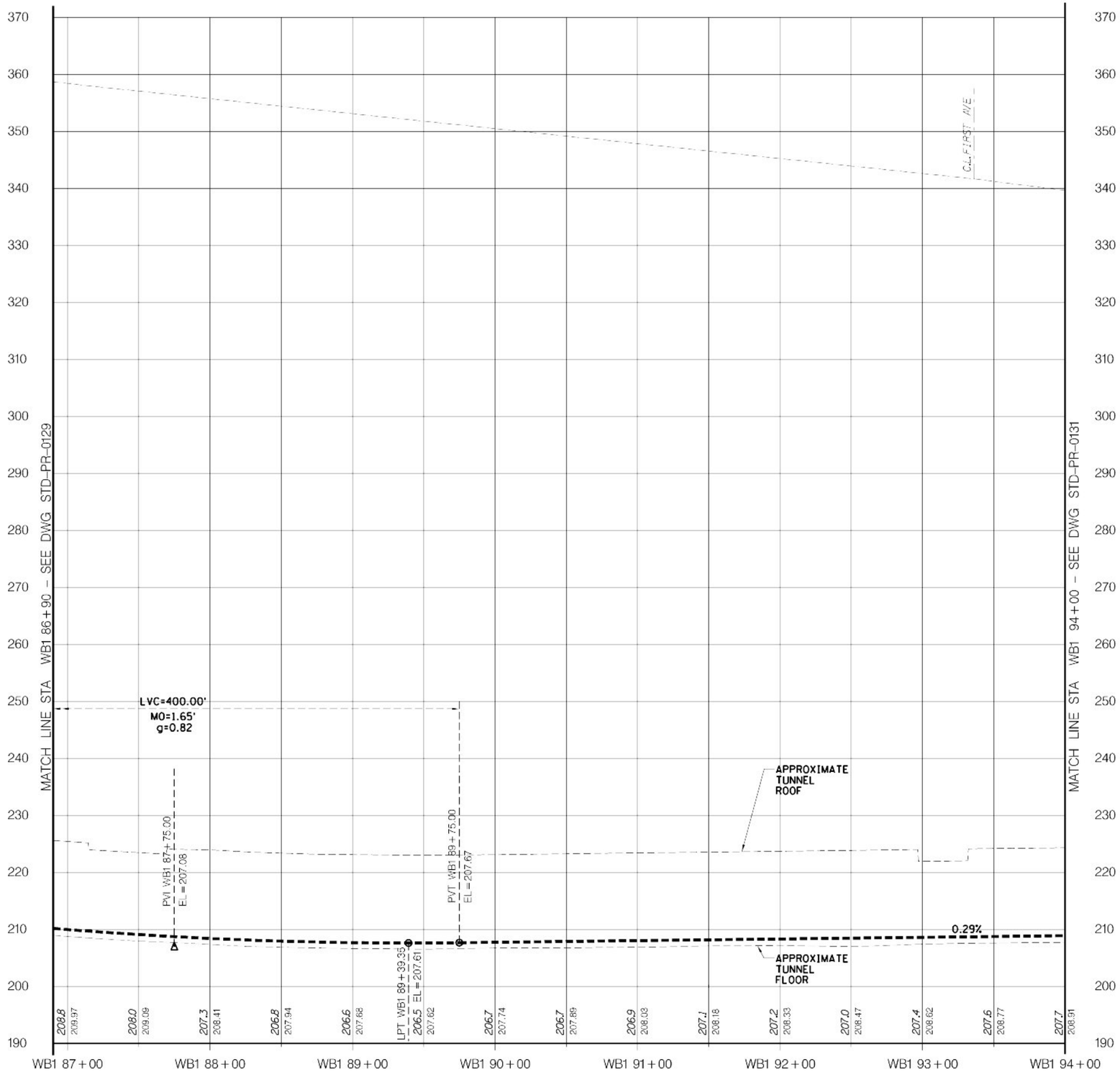

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 86+90 TO STA WB1 94+00

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0130
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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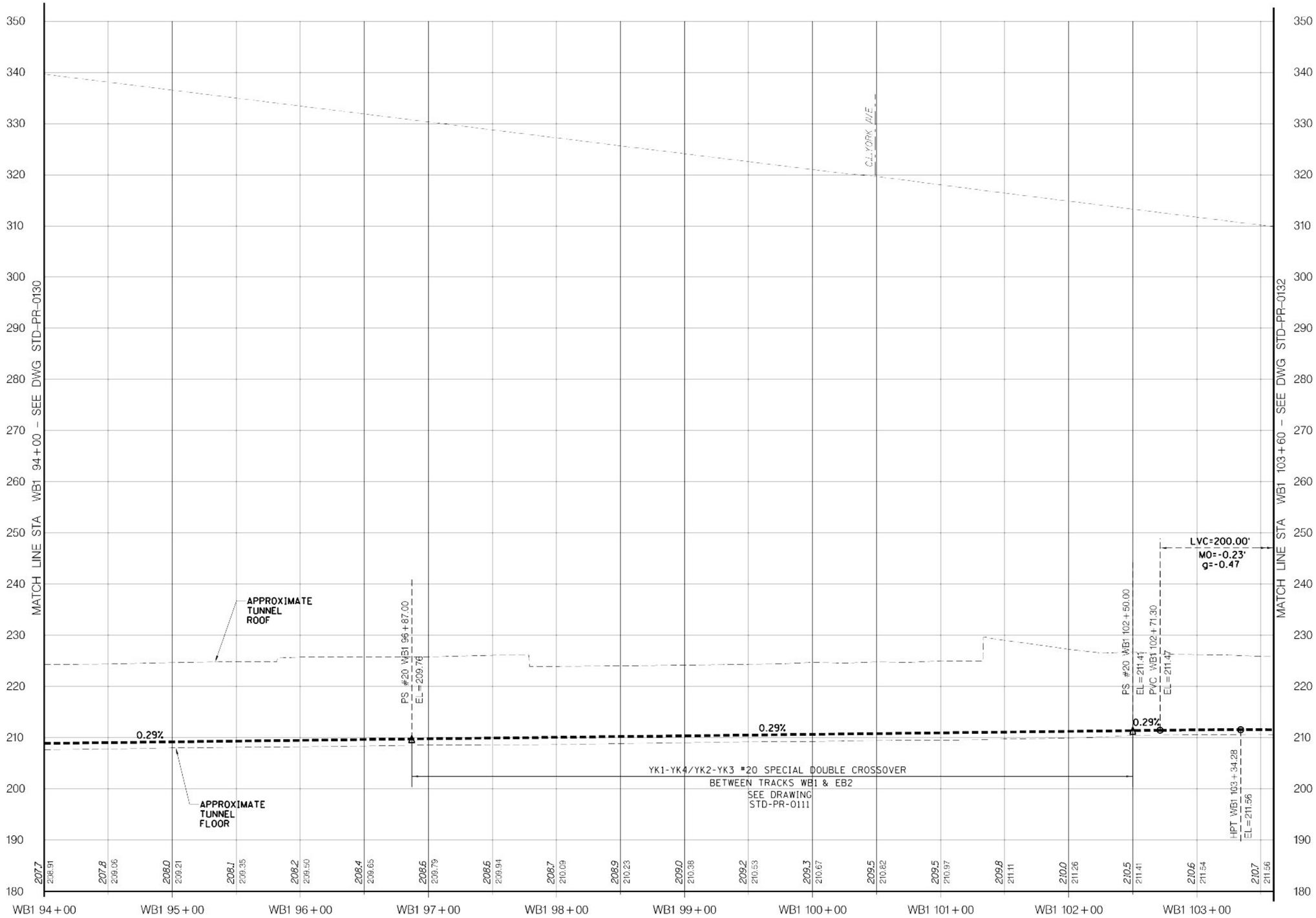

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 94+00 TO STA WB1 103+60

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0131
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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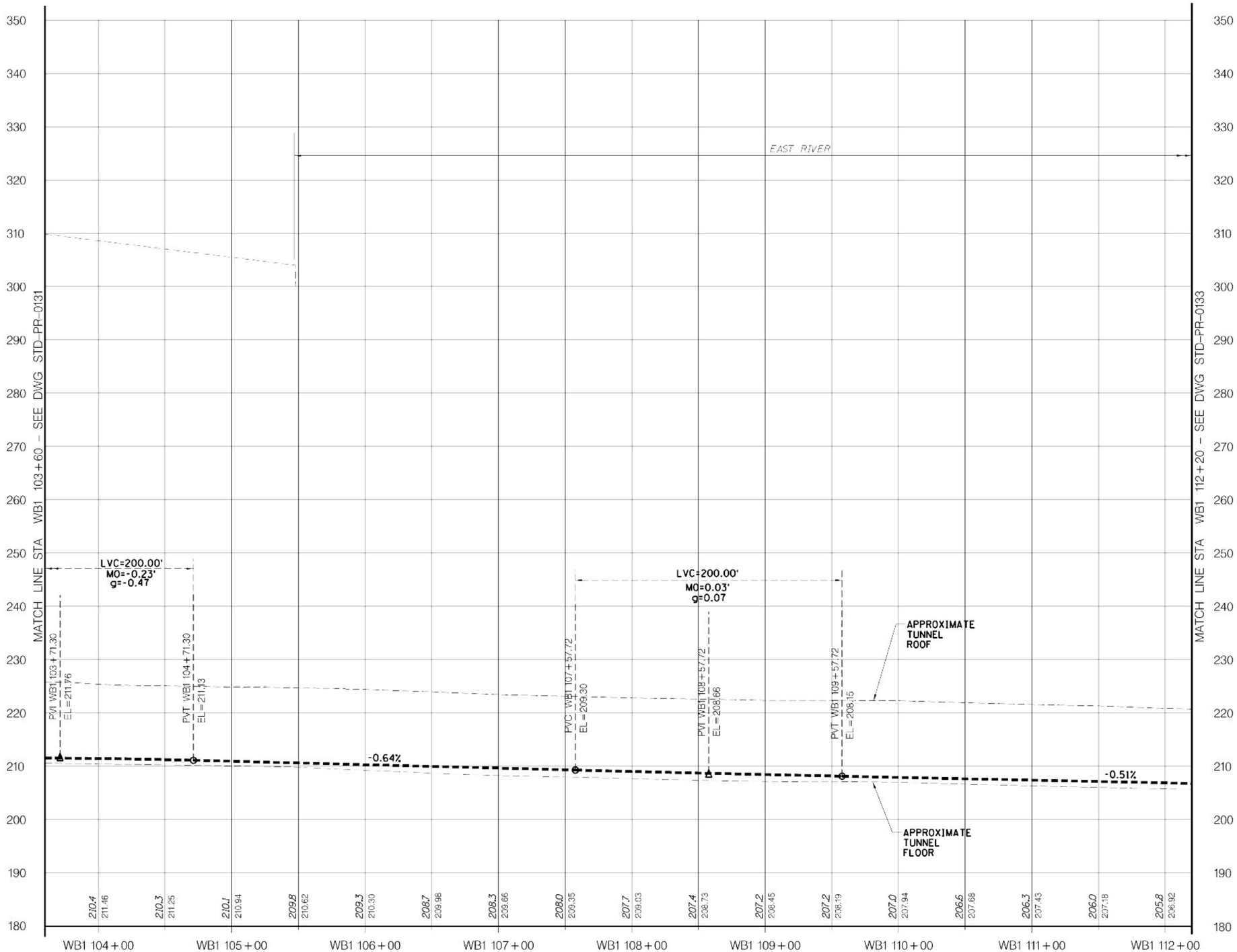

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 103+60 TO STA WB1 112+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0132
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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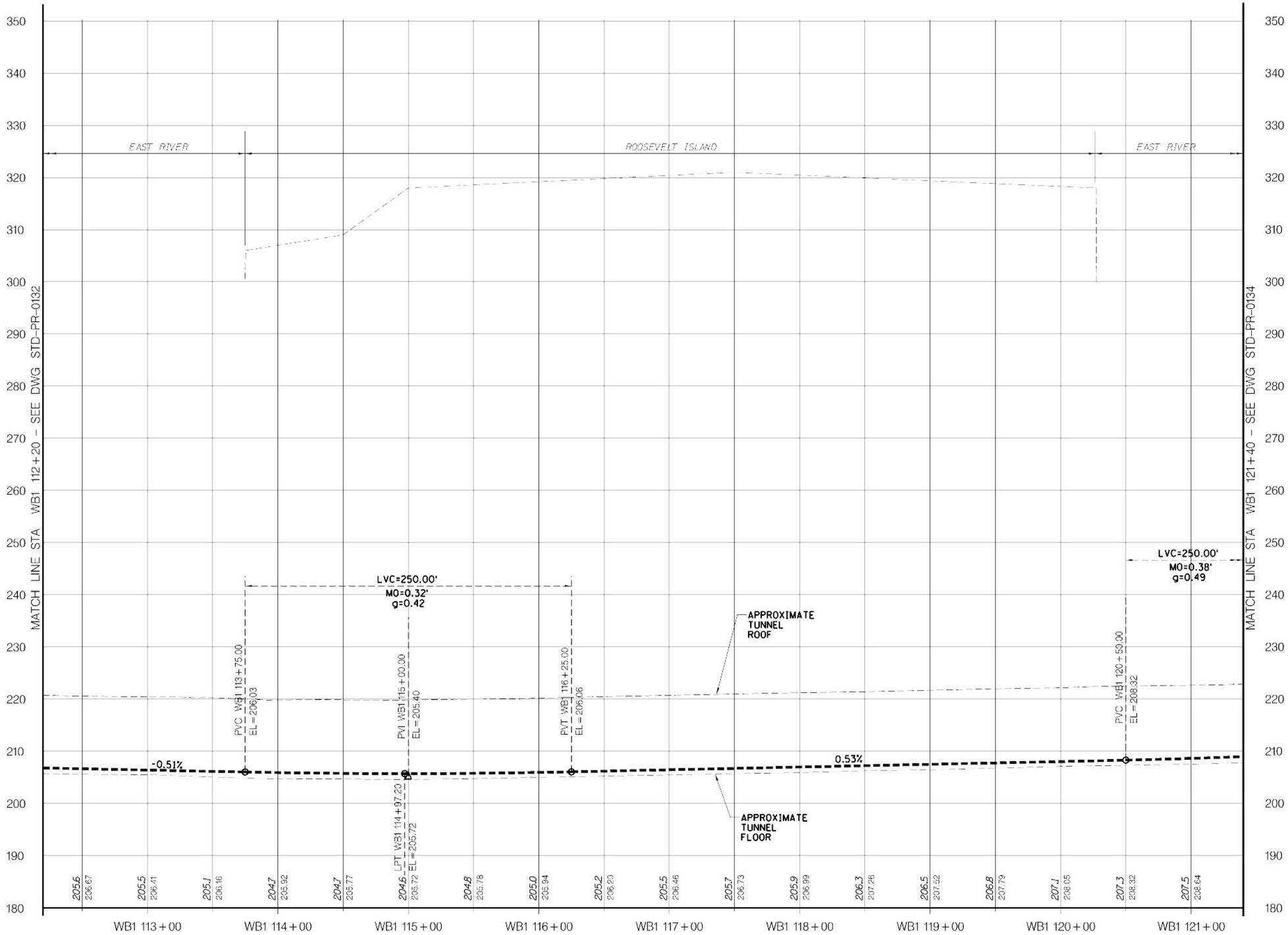

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 112+20 TO STA WB1 121+40

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0133
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

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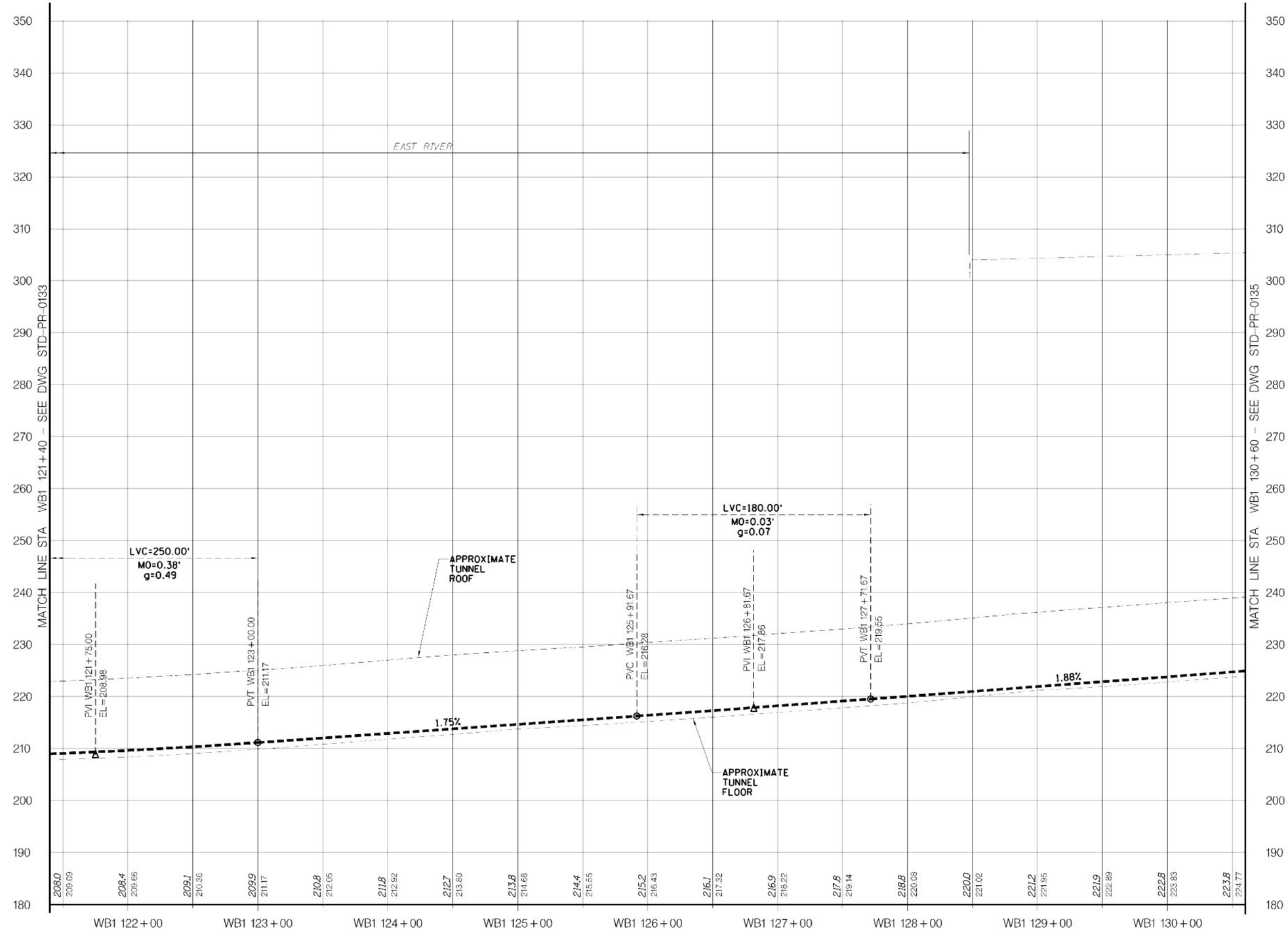

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 121+40 TO STA WB1 130+60

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0134
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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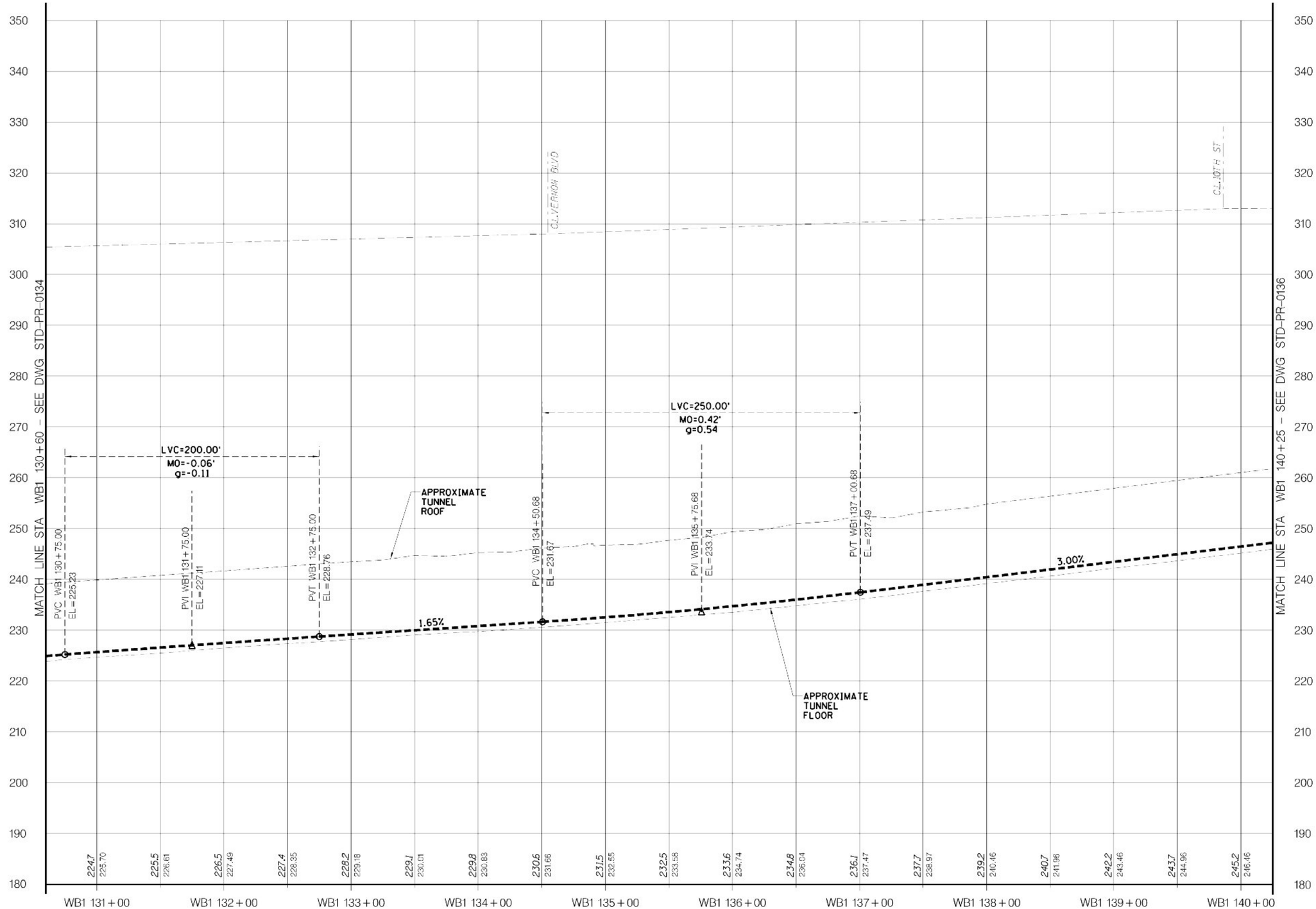

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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Capital Construction

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 130+60 TO STA WB1 140+25

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0135
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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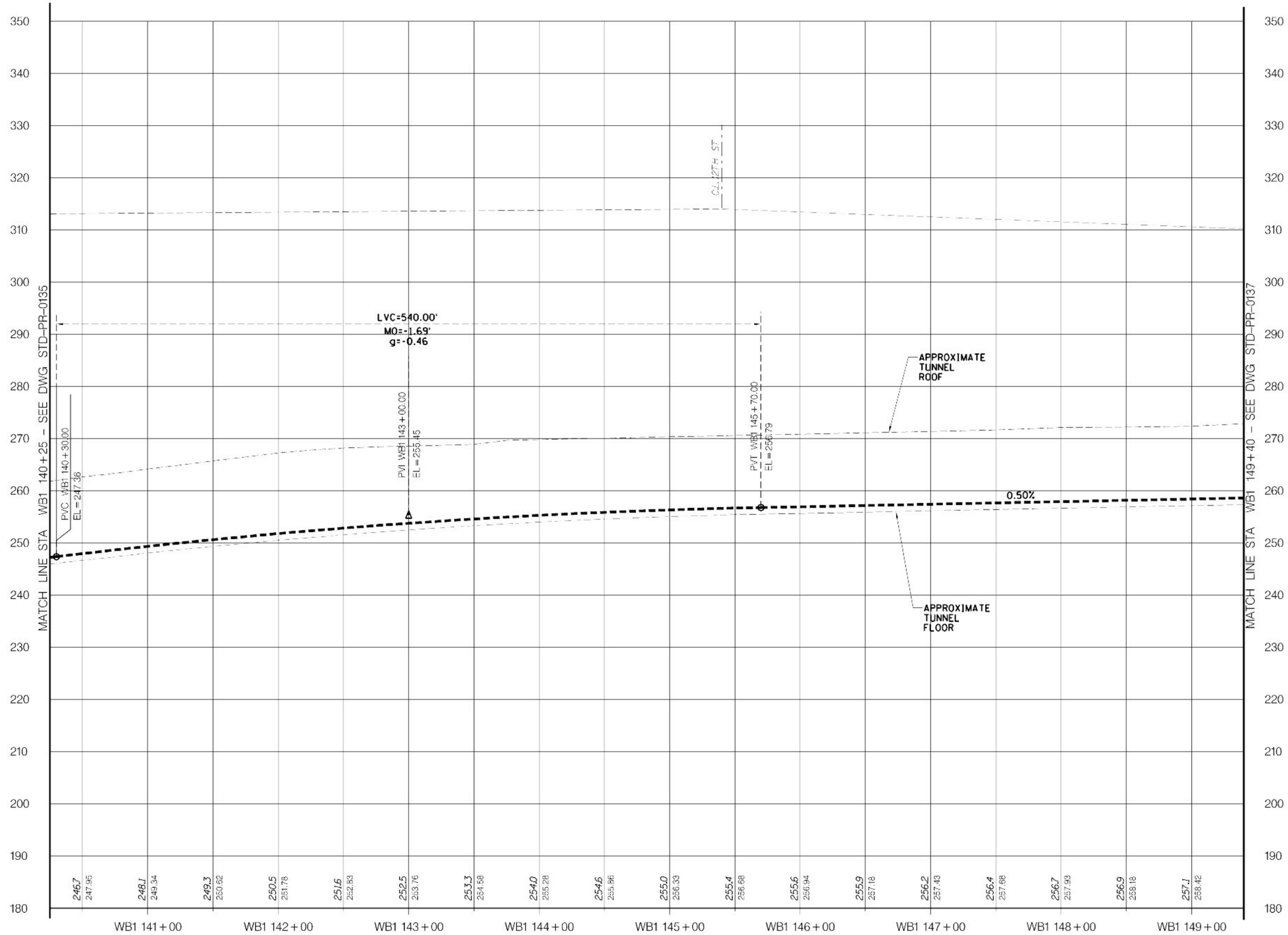

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant

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DATE:	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

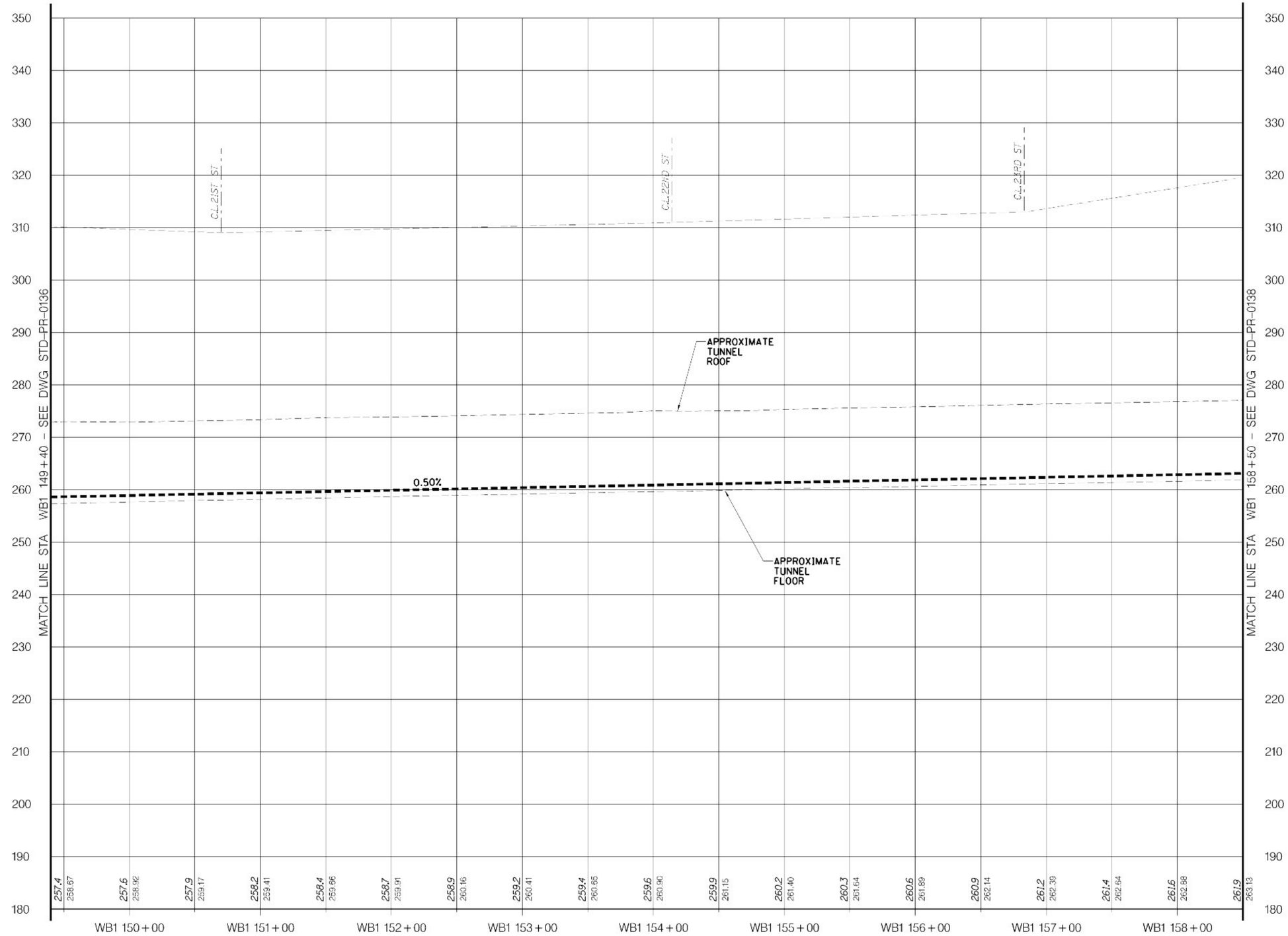
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 140+25 TO STA WB1 149+40

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0136
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A



LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 149+40 TO STA WB1 158+50

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0137
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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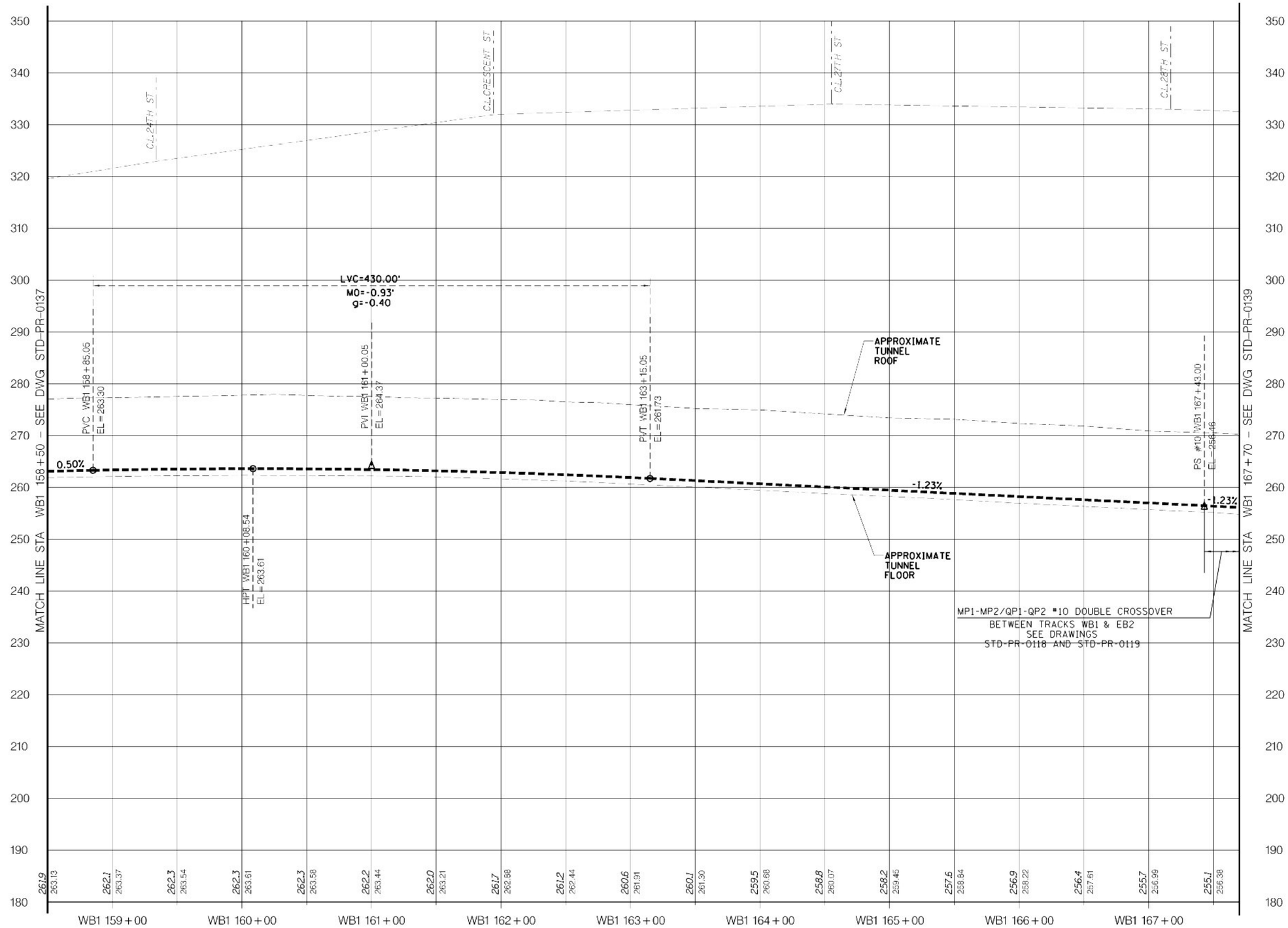

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 PROFILE
STA WB1 158+50 TO STA WB1 167+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0138
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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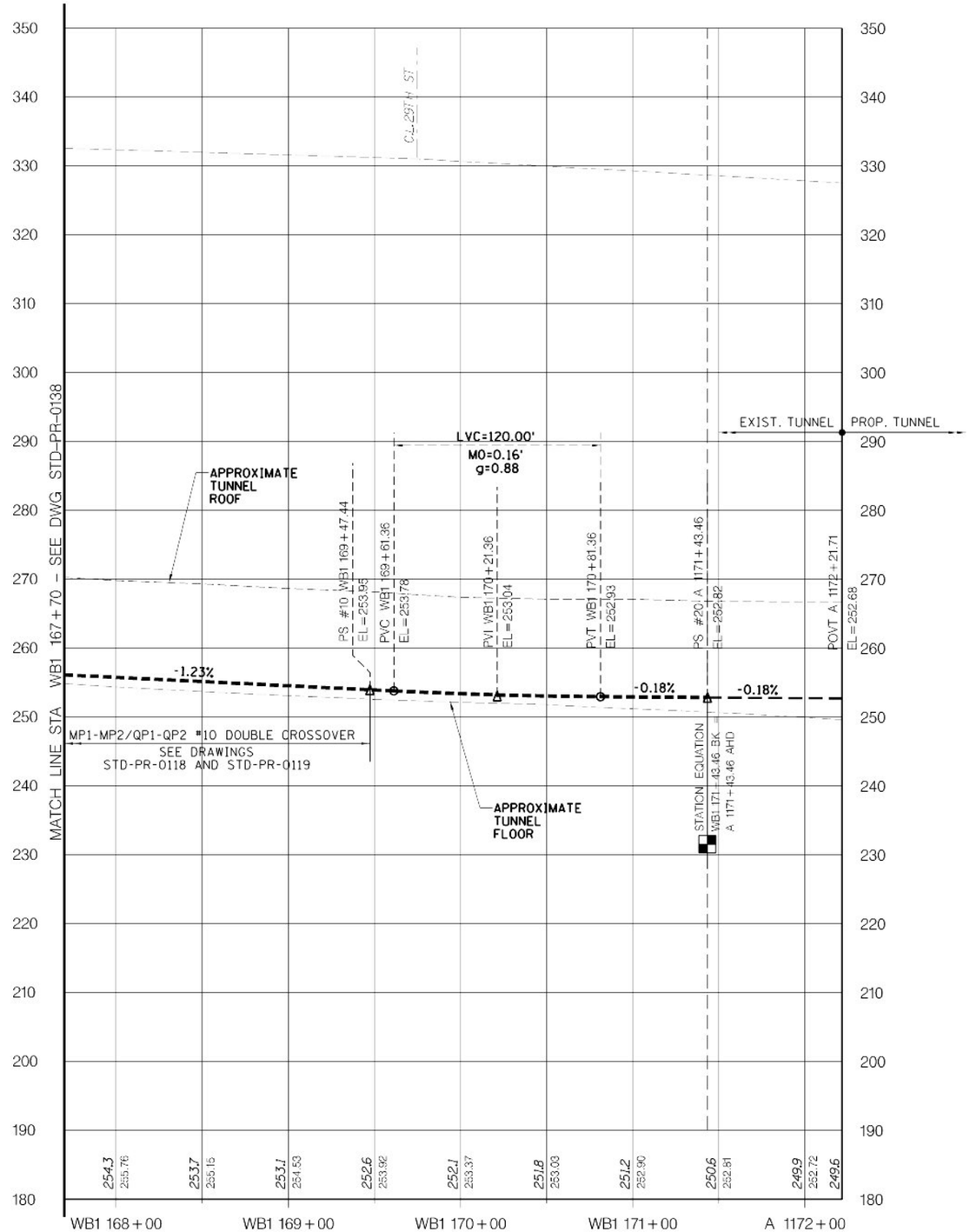

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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East Side Access

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB1 & A PROFILES
STA WB1 167+70 TO STA A 1172+21.71

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0139
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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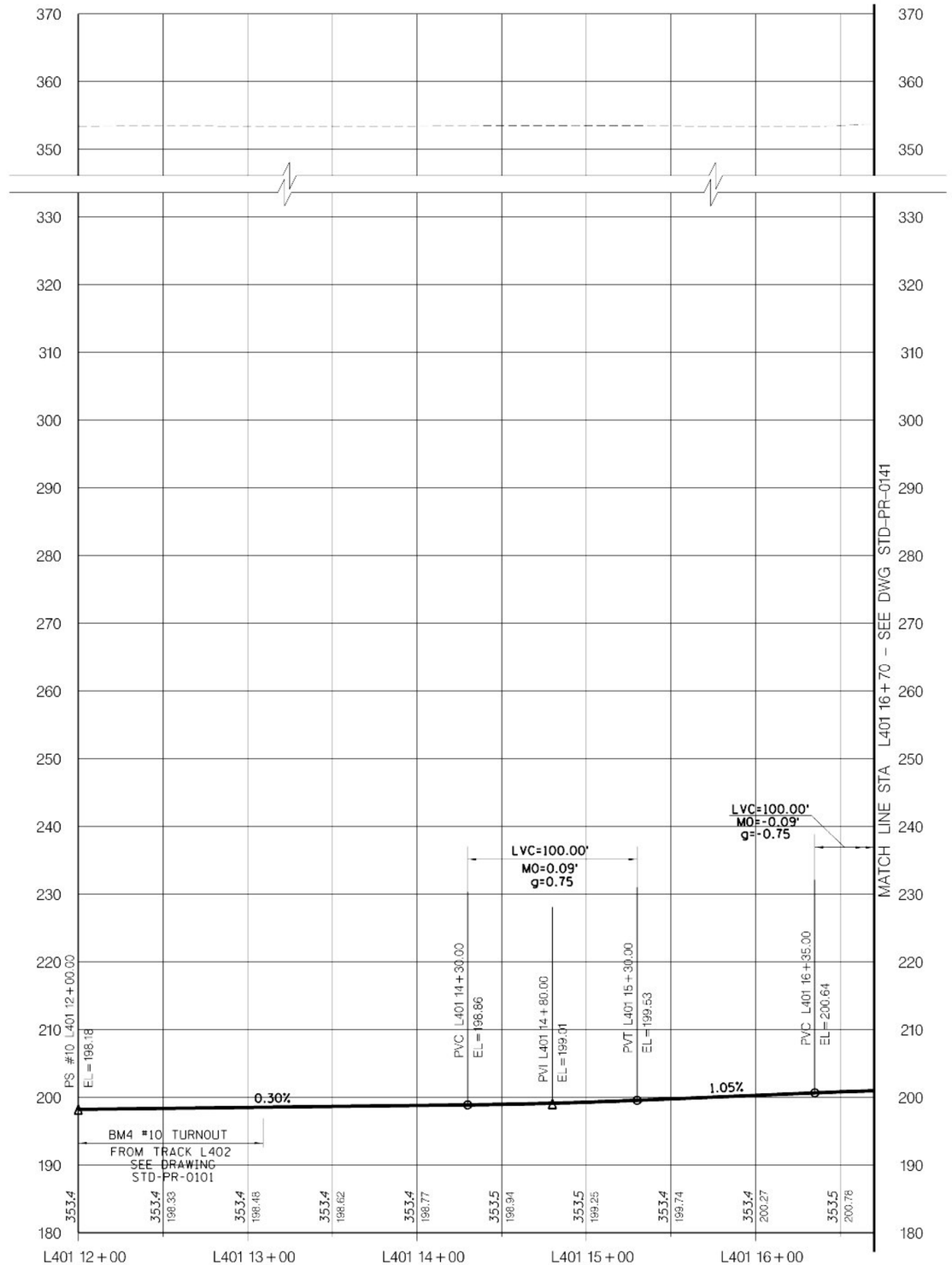

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L401 PROFILE
STA L401 12+00 TO STA L401 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0140
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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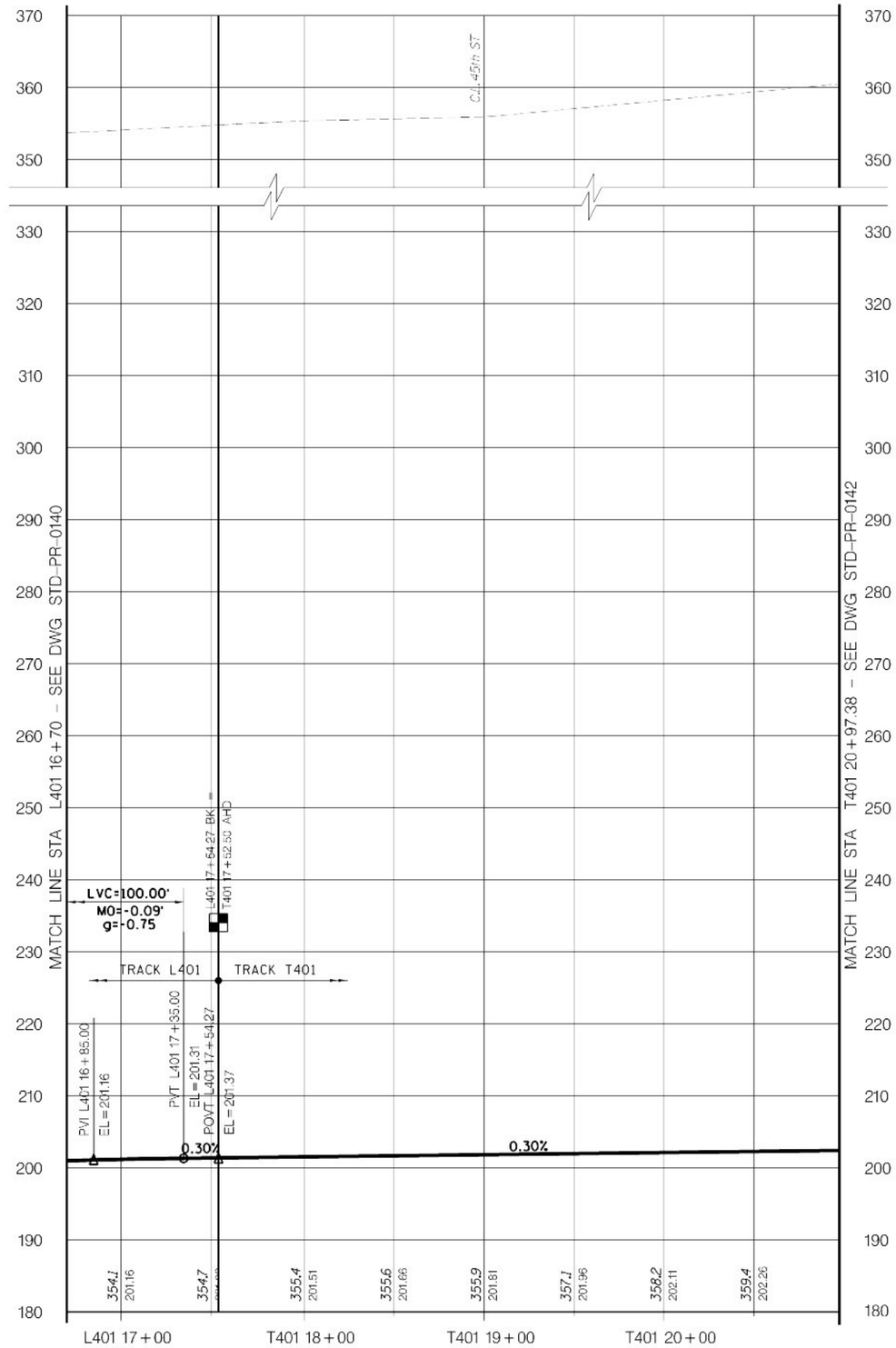

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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DESIGNED BY: P. ALBOHN
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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L401 & T401 PROFILES
STA L401 16+70 TO STA T401 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0141
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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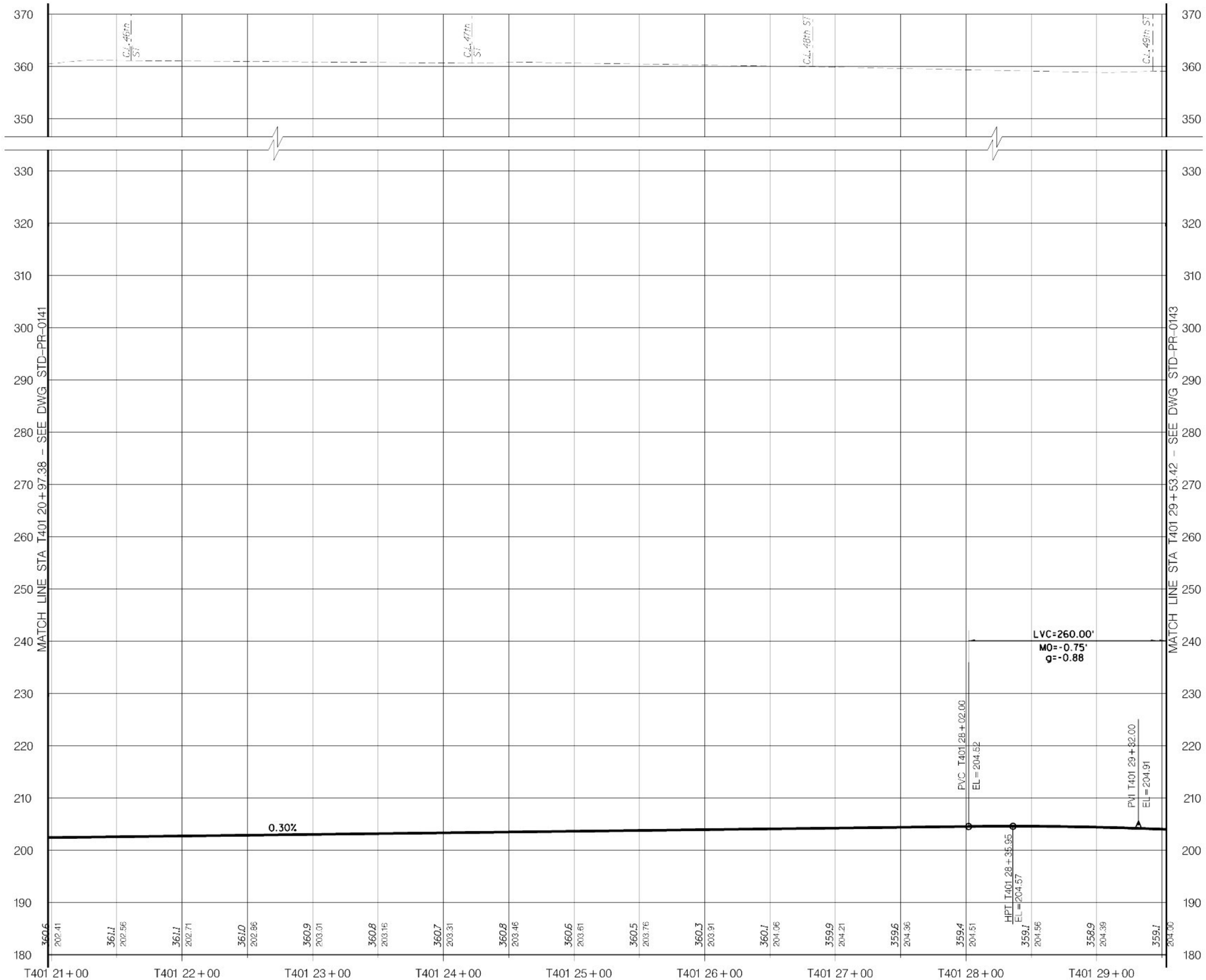

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T401 PROFILE
STA T401 20+97.38 TO STA T401 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0142
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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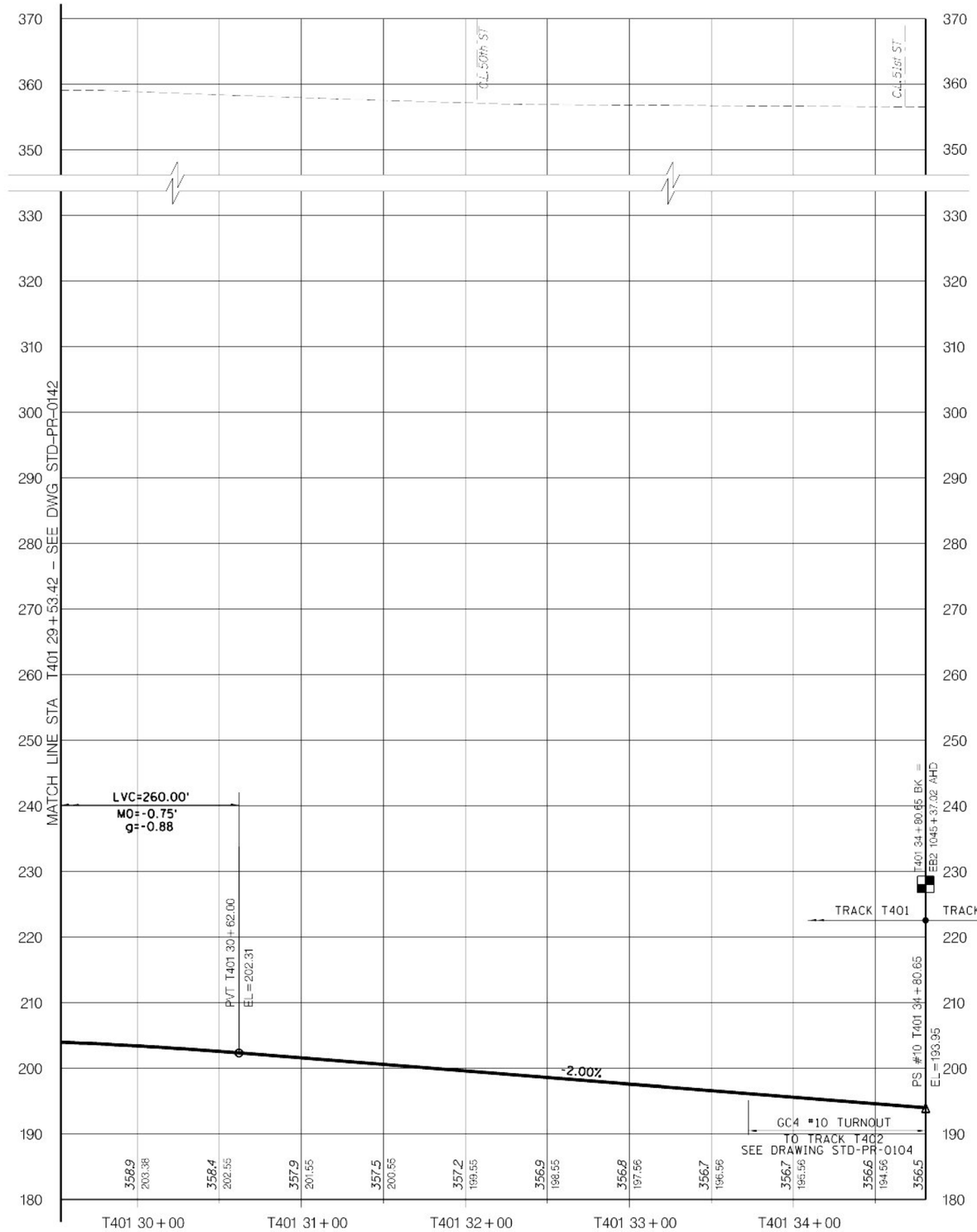

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE	REVISIONS	No.

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T401 PROFILE
STA T401 29+53.42 TO STA T401 34+80.65

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0143
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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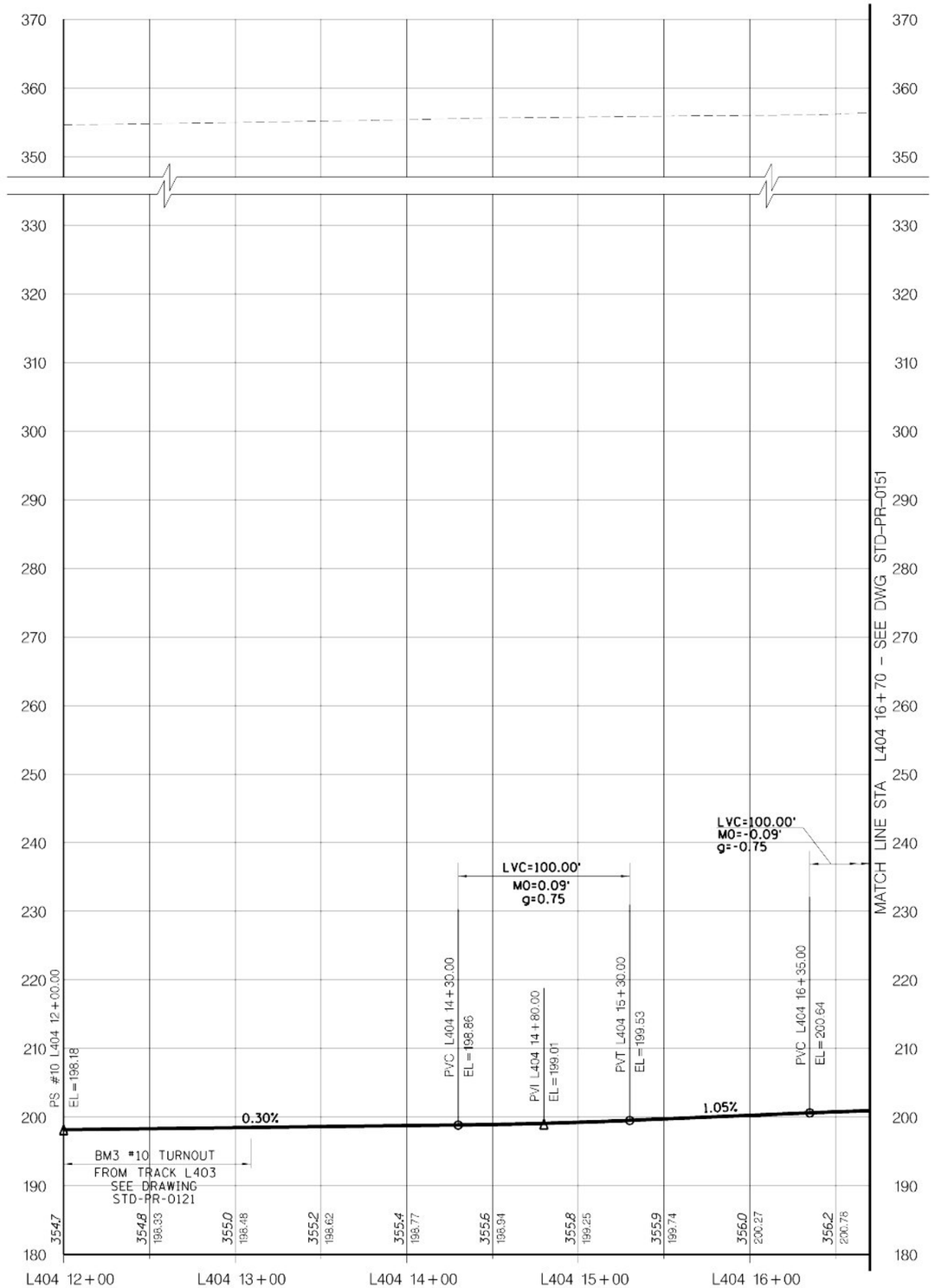

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L404 PROFILE
STA L404 12+00 TO STA L404 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0150
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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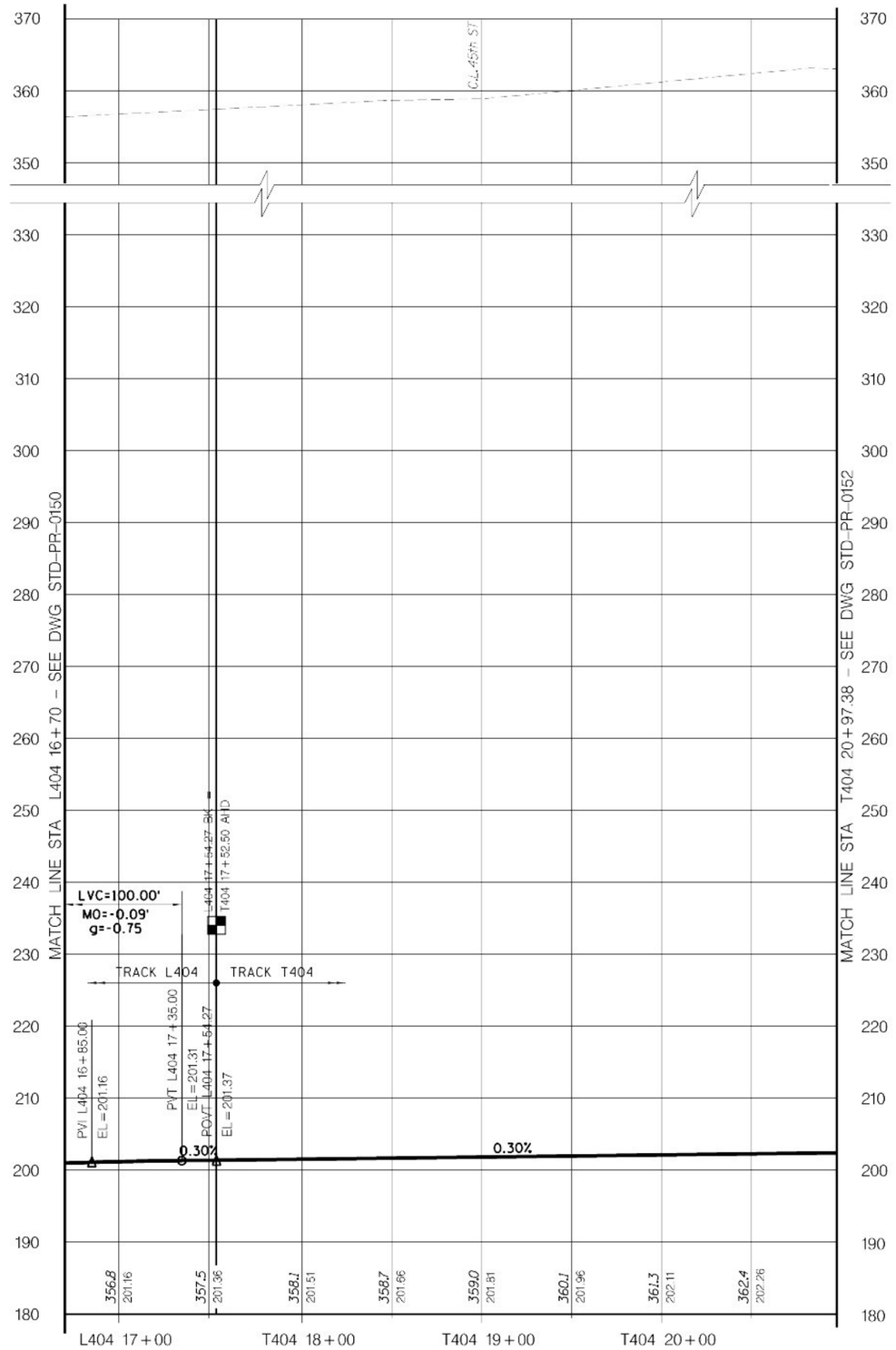

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
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DATE:	REVISIONS	No

DESIGNED BY: P. ALBOHN
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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L404 & T404 PROFILES
STA L404 16+70 TO STA T404 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0151
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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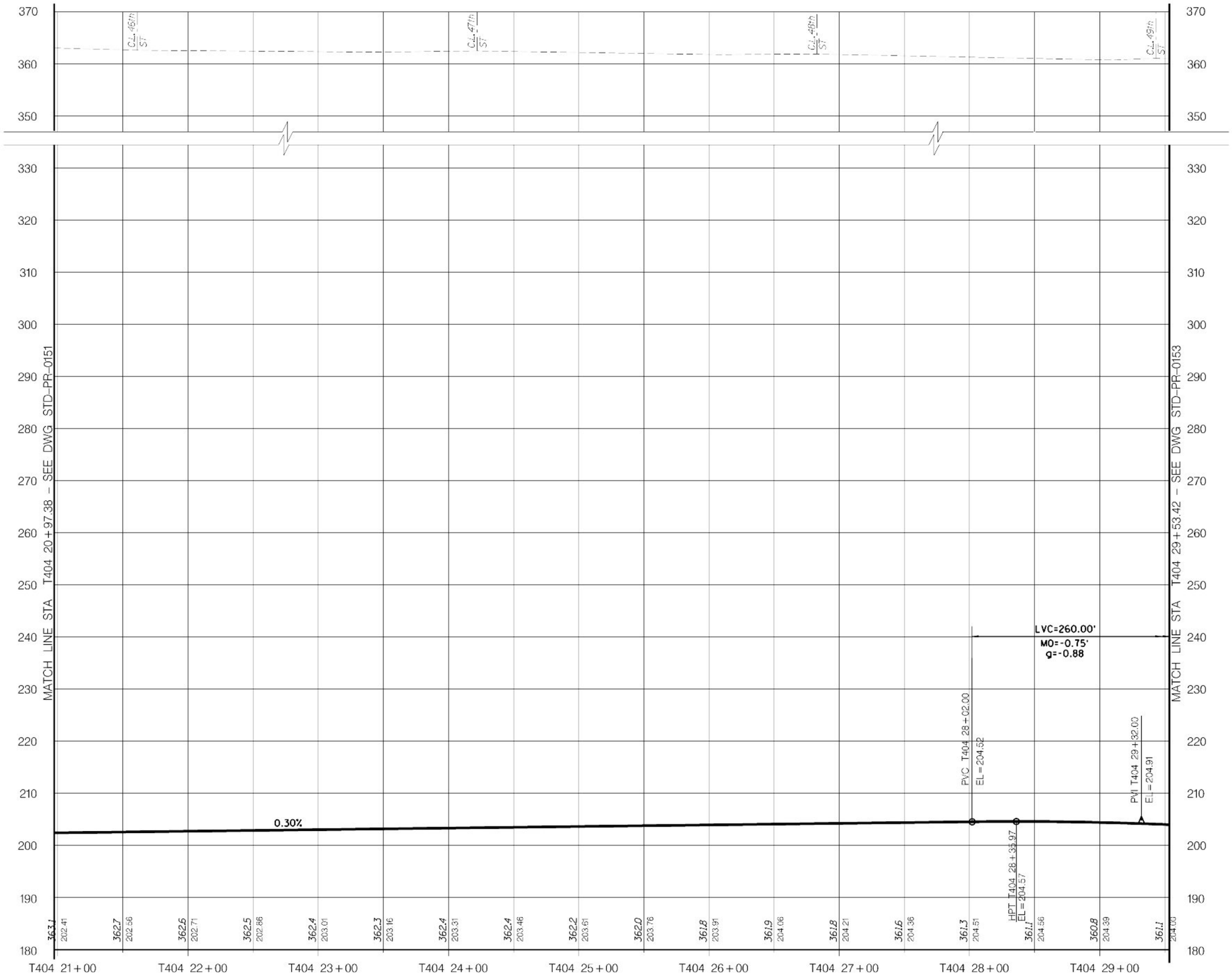

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T404 PROFILE
STA T404 20+97.38 TO STA T404 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0152
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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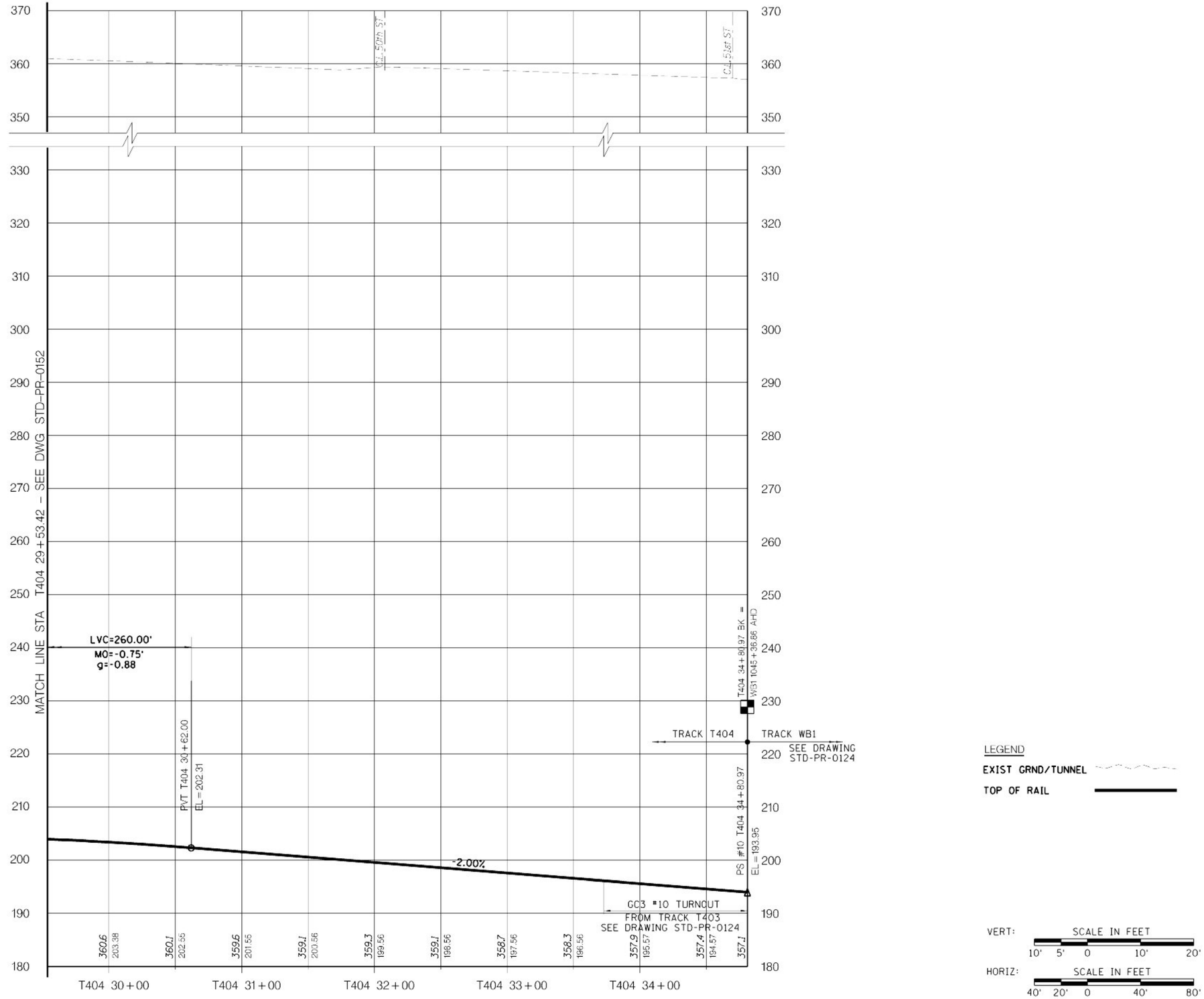

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DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T404 PROFILE
STA T404 29+53.42 TO STA T404 34+80.97

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0153
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
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SHEET No. N/A

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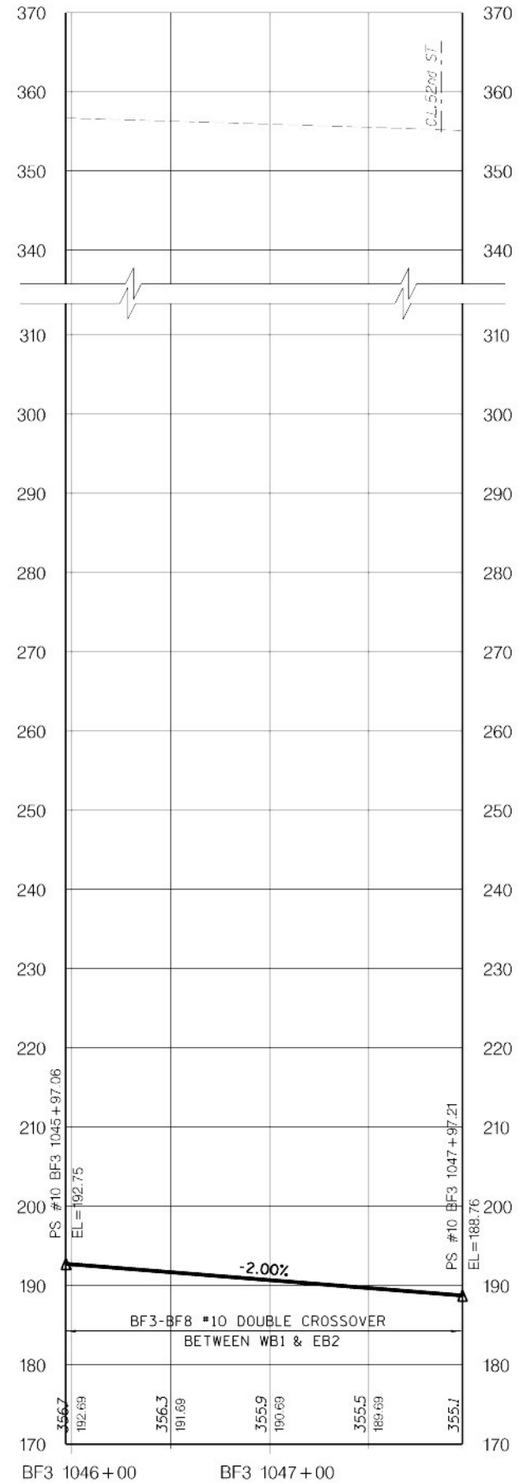

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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DATE	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK BF3 PROFILE
STA BF3 1045+97.06 TO STA BF3 1047+97.21

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0154
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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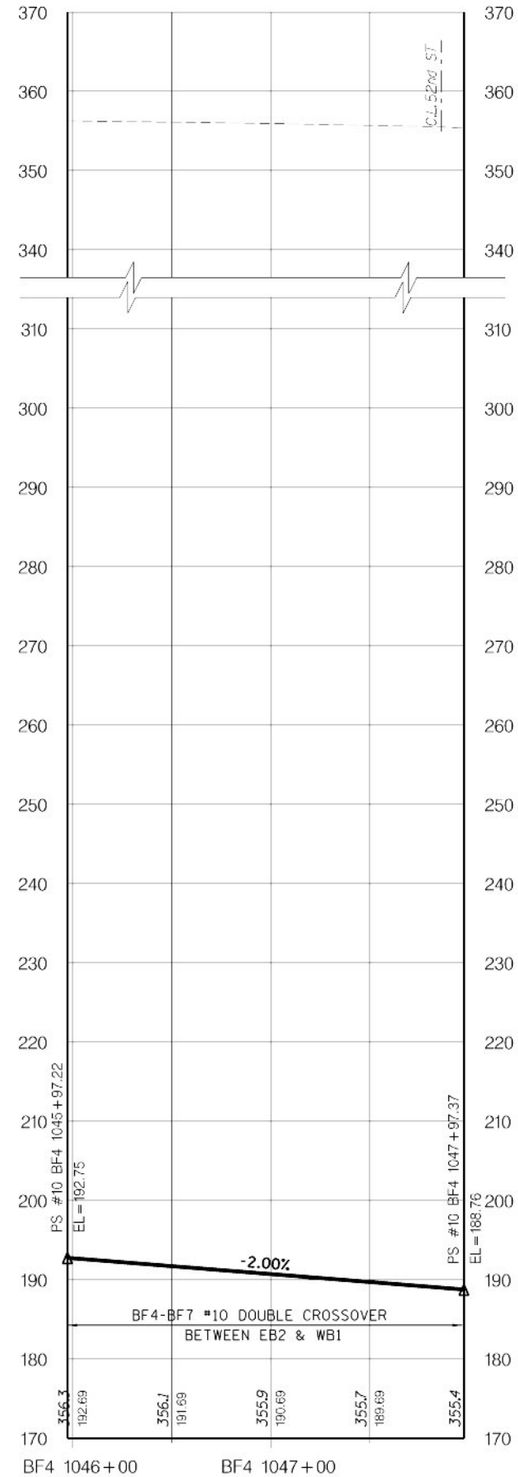

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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General Engineering Consultant

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DATE:	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK BF4 PROFILE
STA BF4 1045+97.22 TO STA BF4 1047+97.37

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0155
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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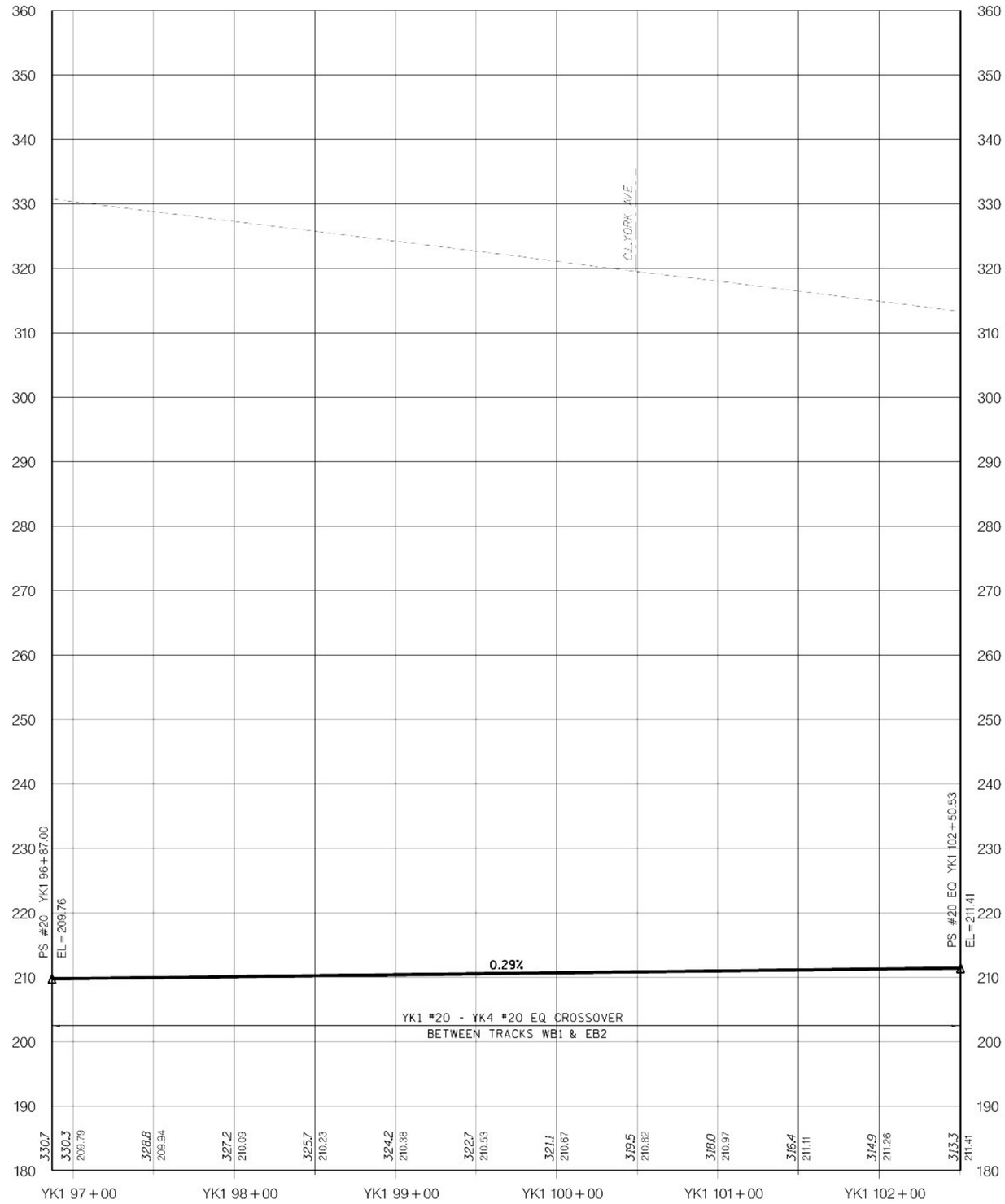

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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East Side Access

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK YK1 PROFILE
STA YK1 96+87.00 TO STA YK1 102+50.53

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0156
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

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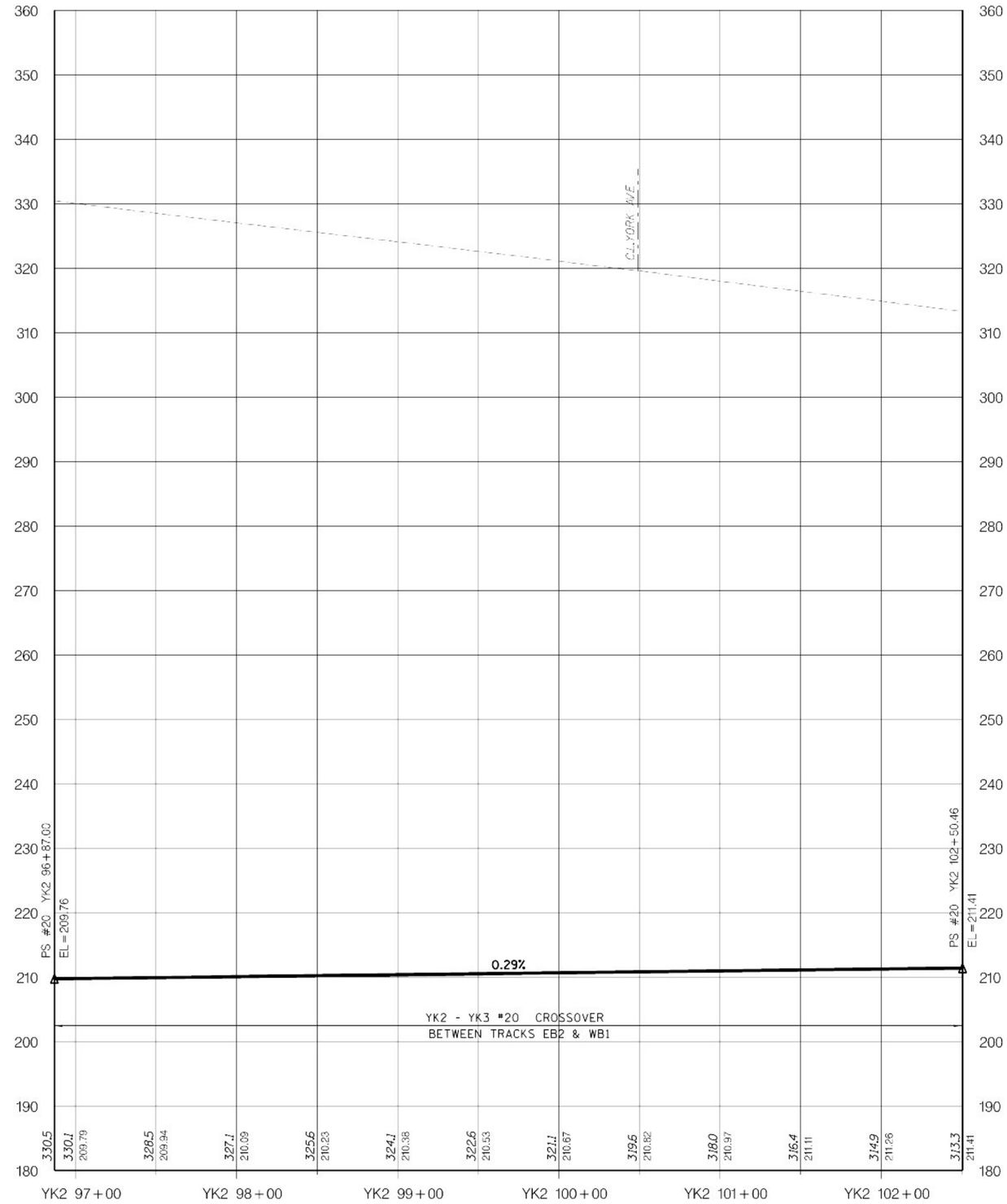

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK YK2 PROFILE
STA YK2 96+87.00 TO STA YK2 102+50.46

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0157
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

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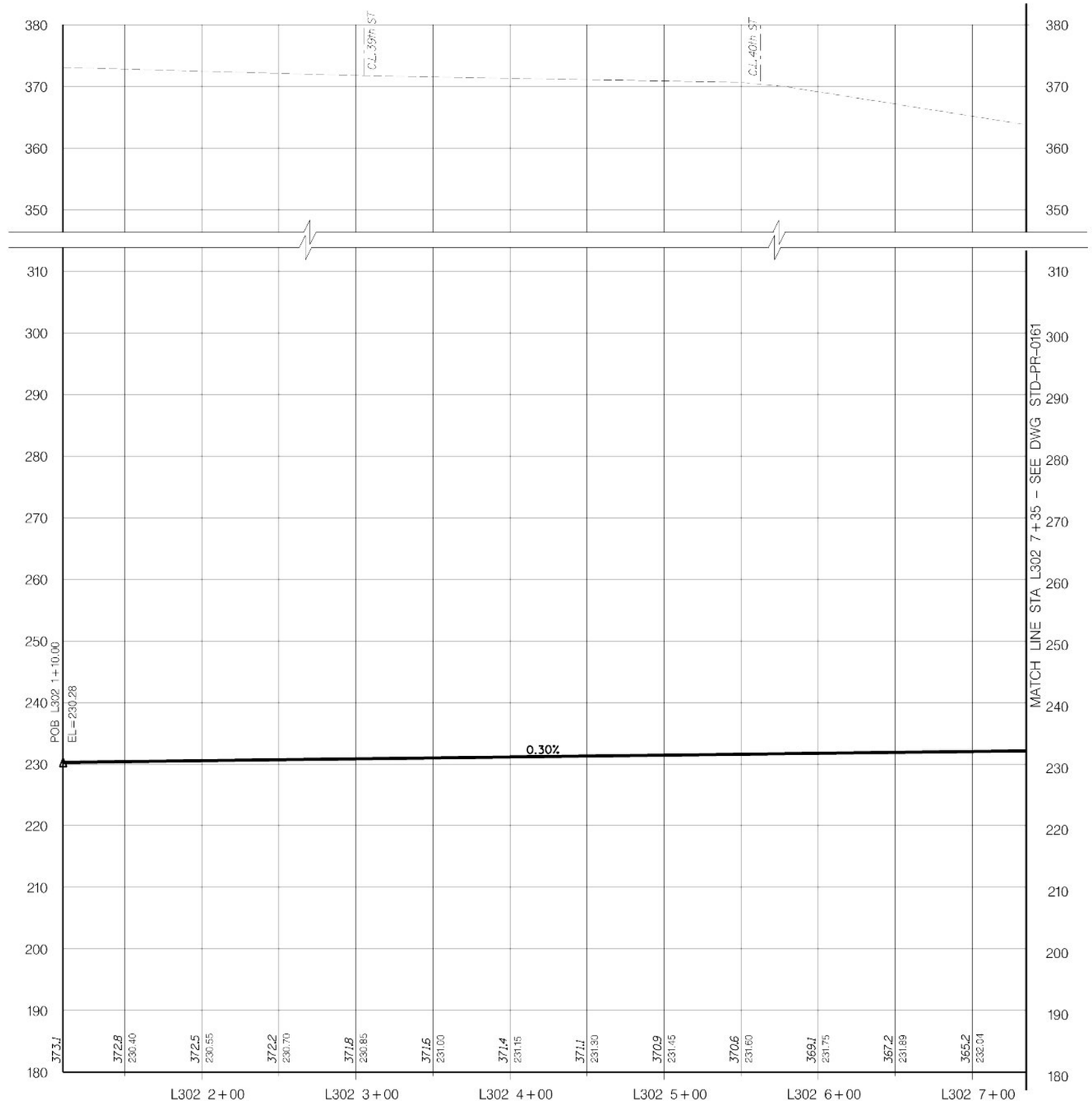

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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East Side Access

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L302 PROFILE
STA L302 1+10 TO STA L302 7+35

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0160
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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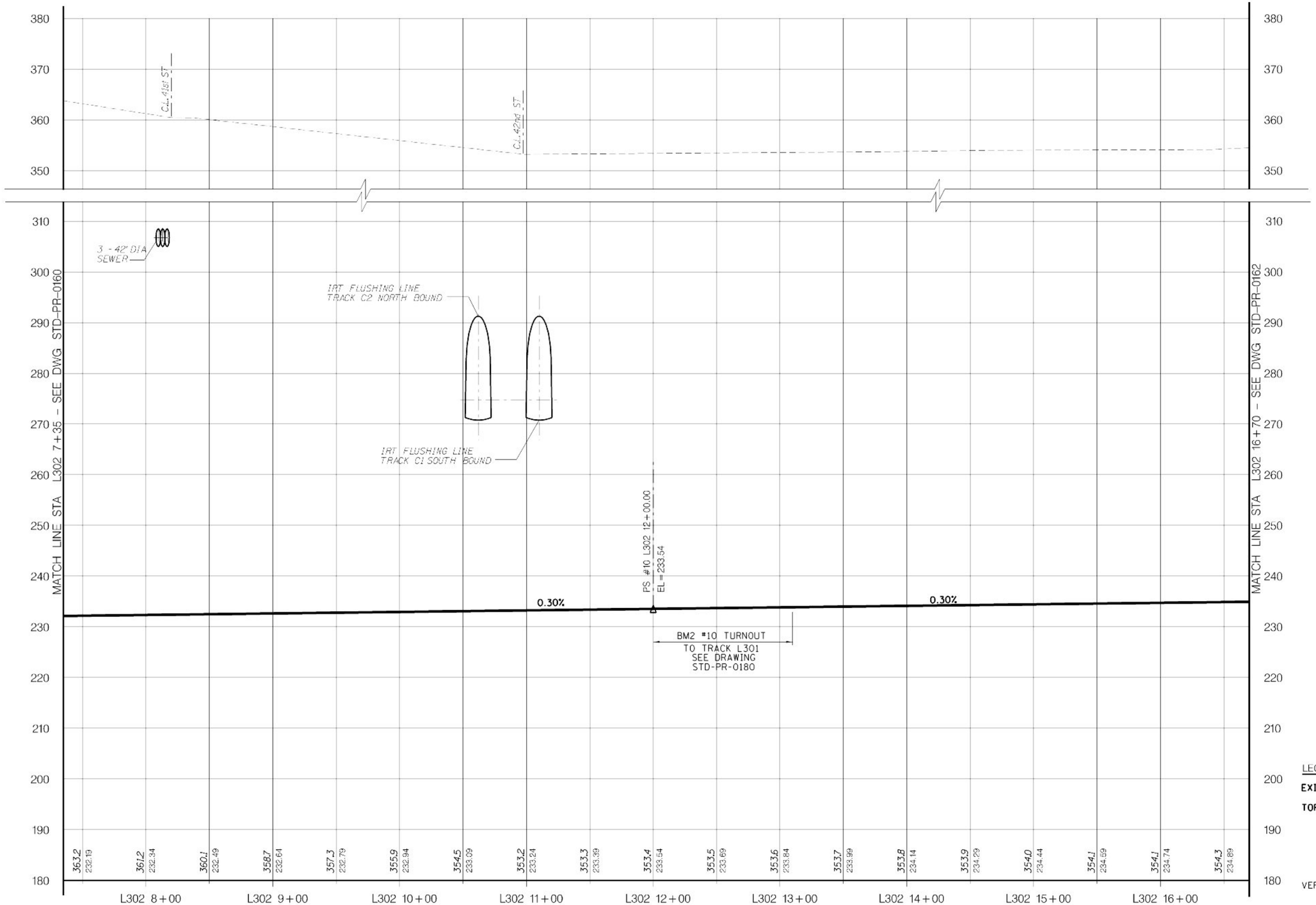

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NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L302 PROFILE
STA L302 7+35 TO STA L302 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0161
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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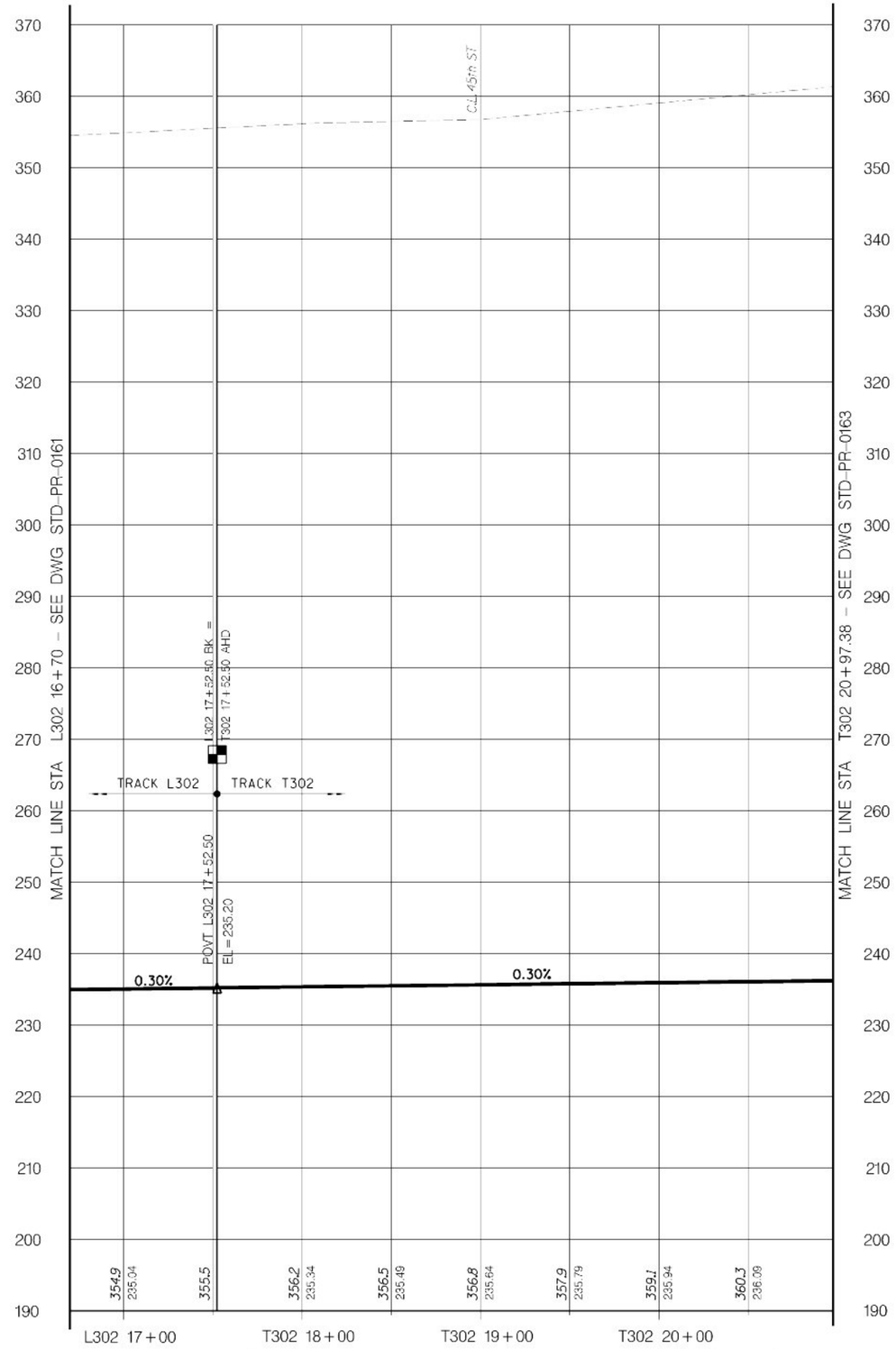

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L302 & T302 PROFILES
STA L302 16+70 TO STA T302 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0162
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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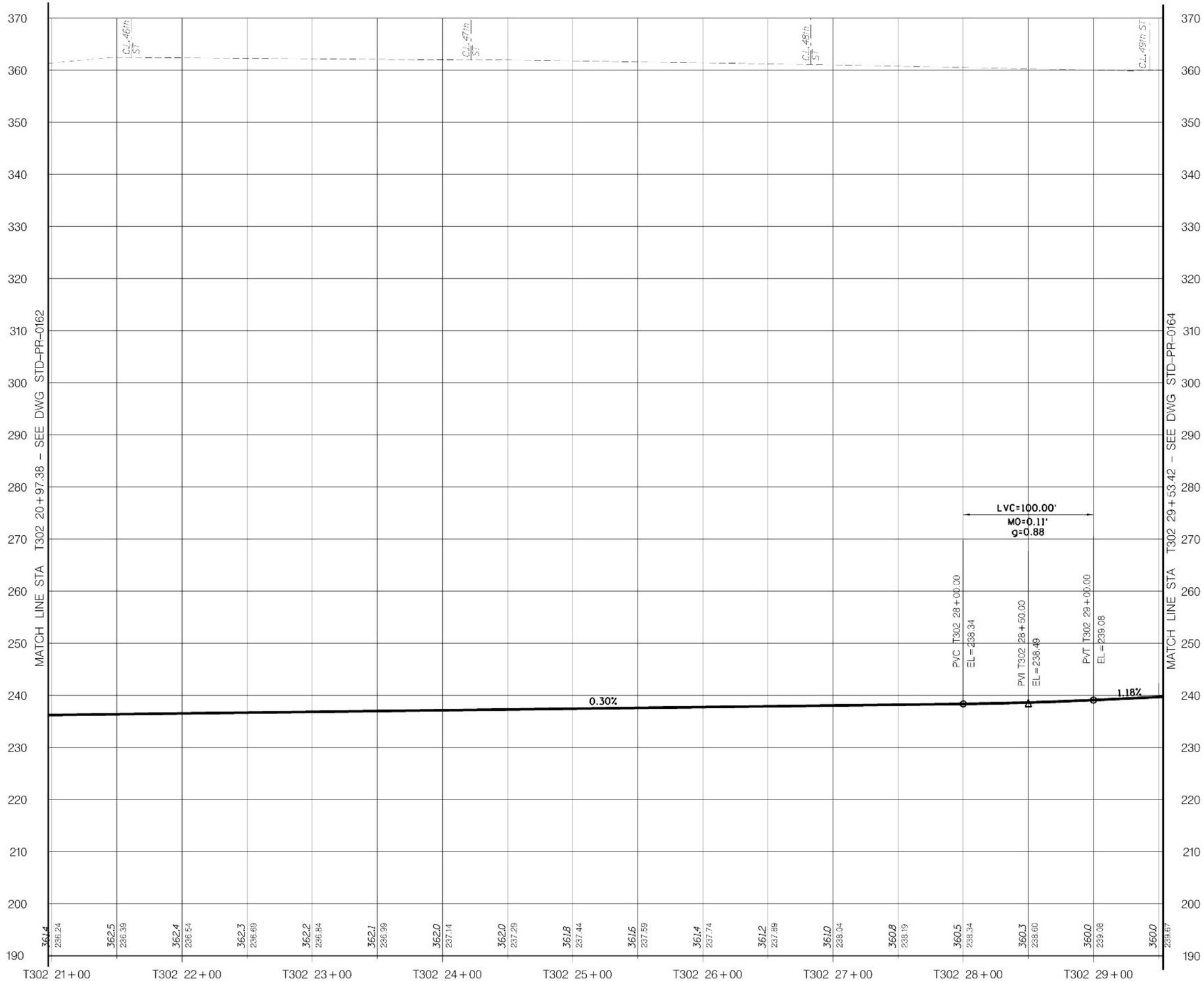

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE | REVISIONS | No

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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T302 PROFILE
STA T302 20+97.38 TO STA T302 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0163
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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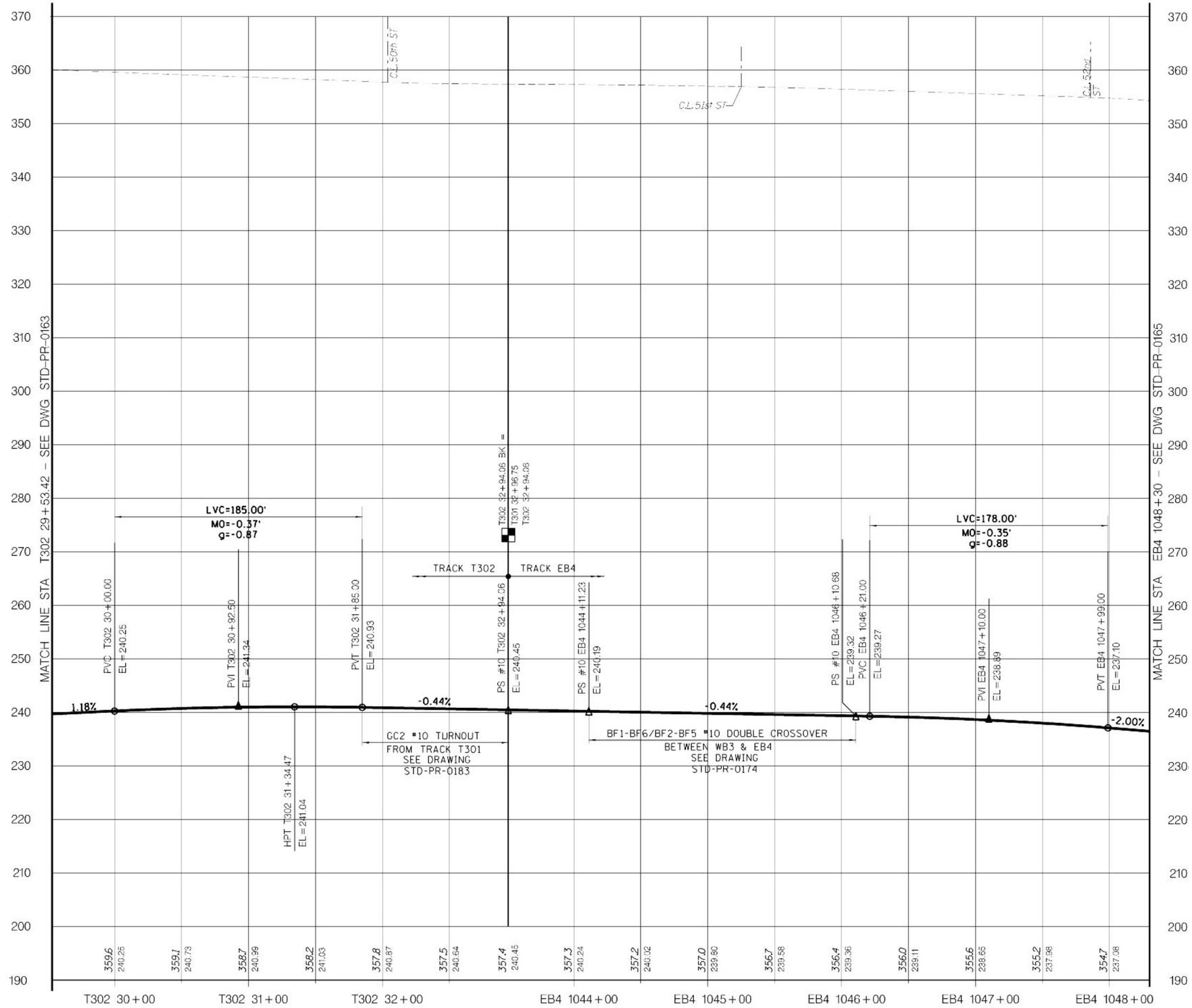

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T302 AND EB4 PROFILES
STA T302 29+53.42 TO STA EB4 1048+30

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0164
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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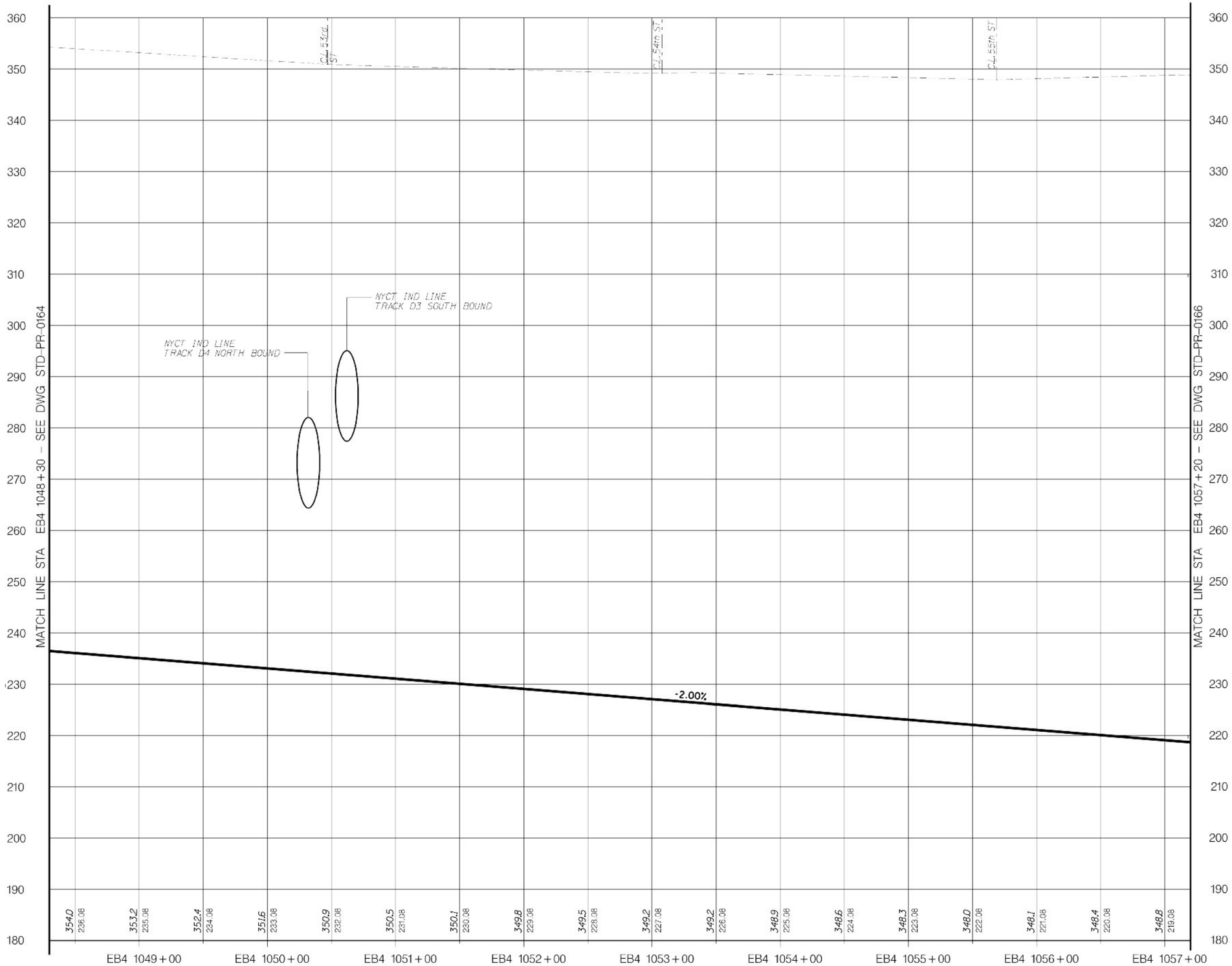

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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CHECKED BY: C.M. KAISER
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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB4 PROFILE
STA EB4 1048+30 TO STA EB4 1057+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0165
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No.: N/A

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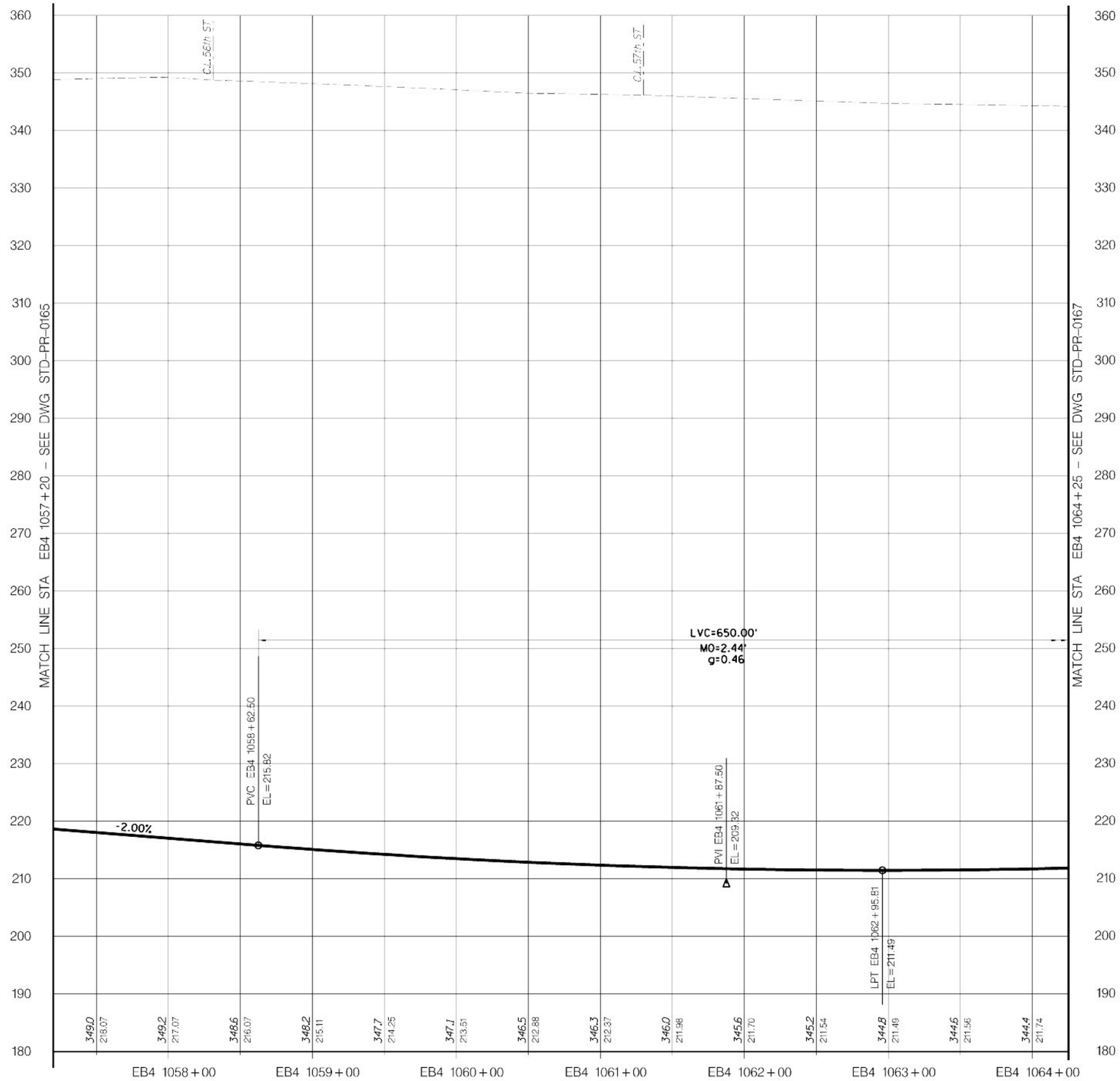

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB4 PROFILE
STA EB4 1057+20 TO STA EB4 1064+25

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0166
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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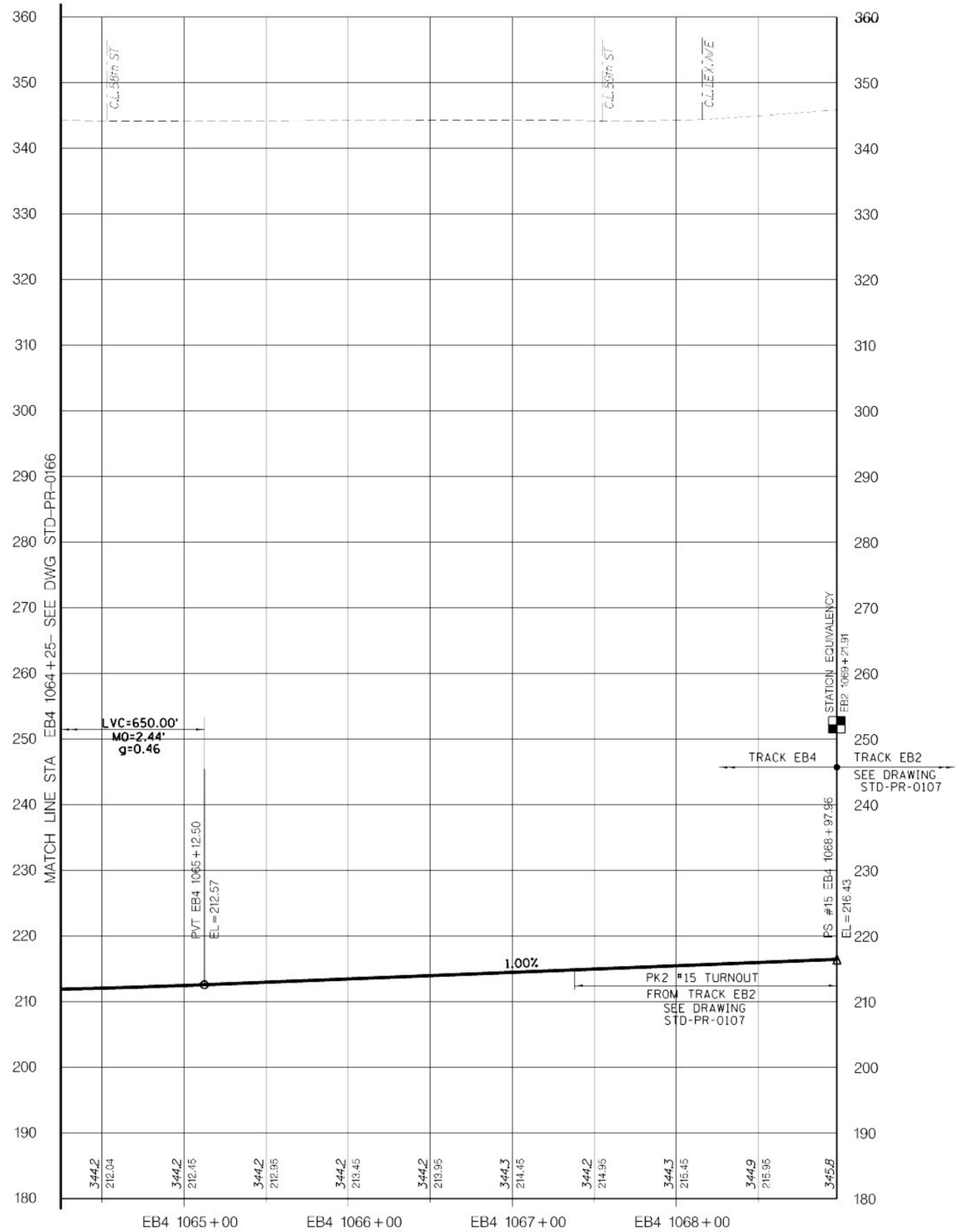

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK EB4 PROFILE
STA EB4 1064+25 TO STA EB4 1068+97.96

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0167
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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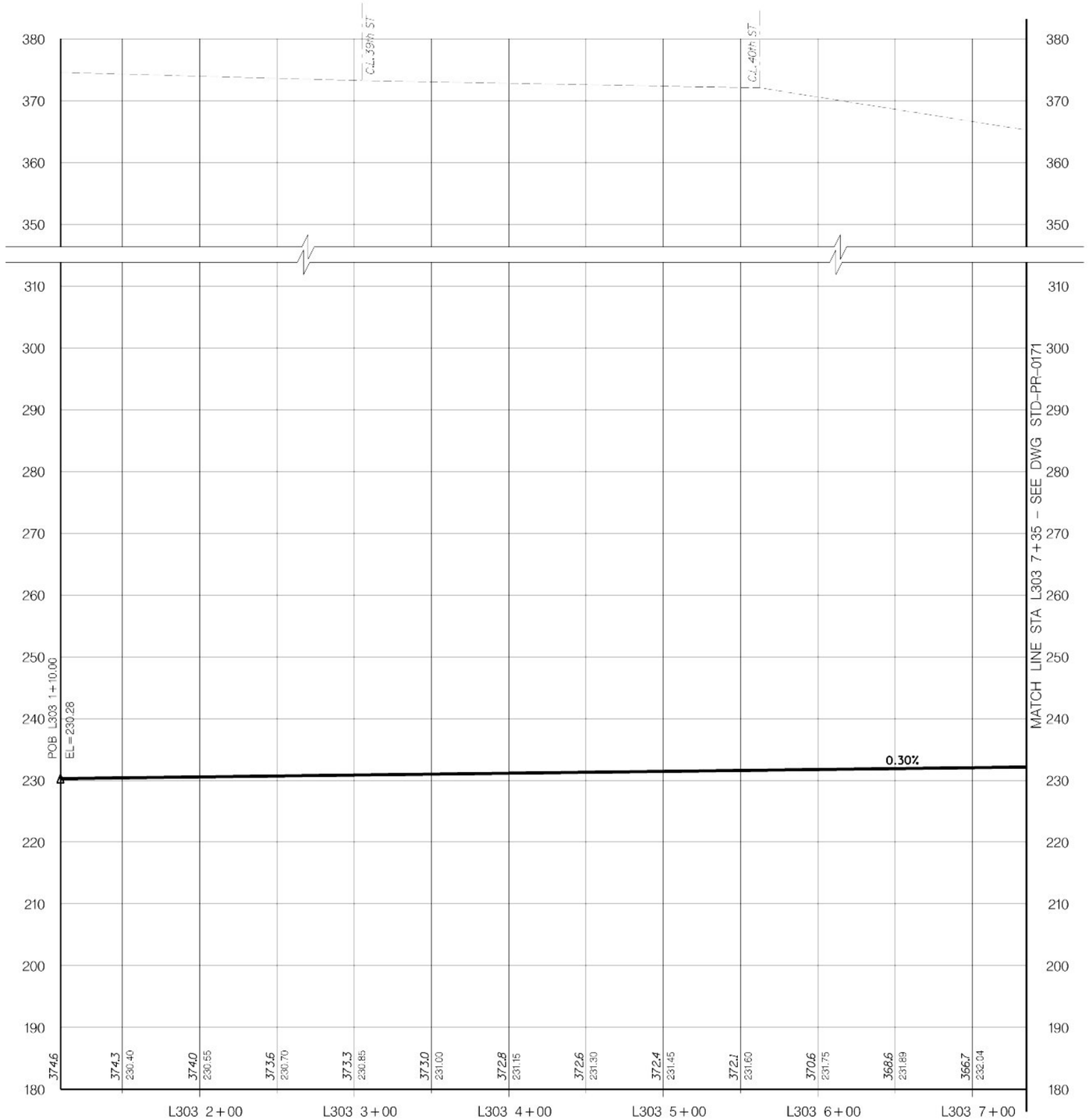

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L303 PROFILE
STA L303 1+10 TO STA L303 7+35

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0170
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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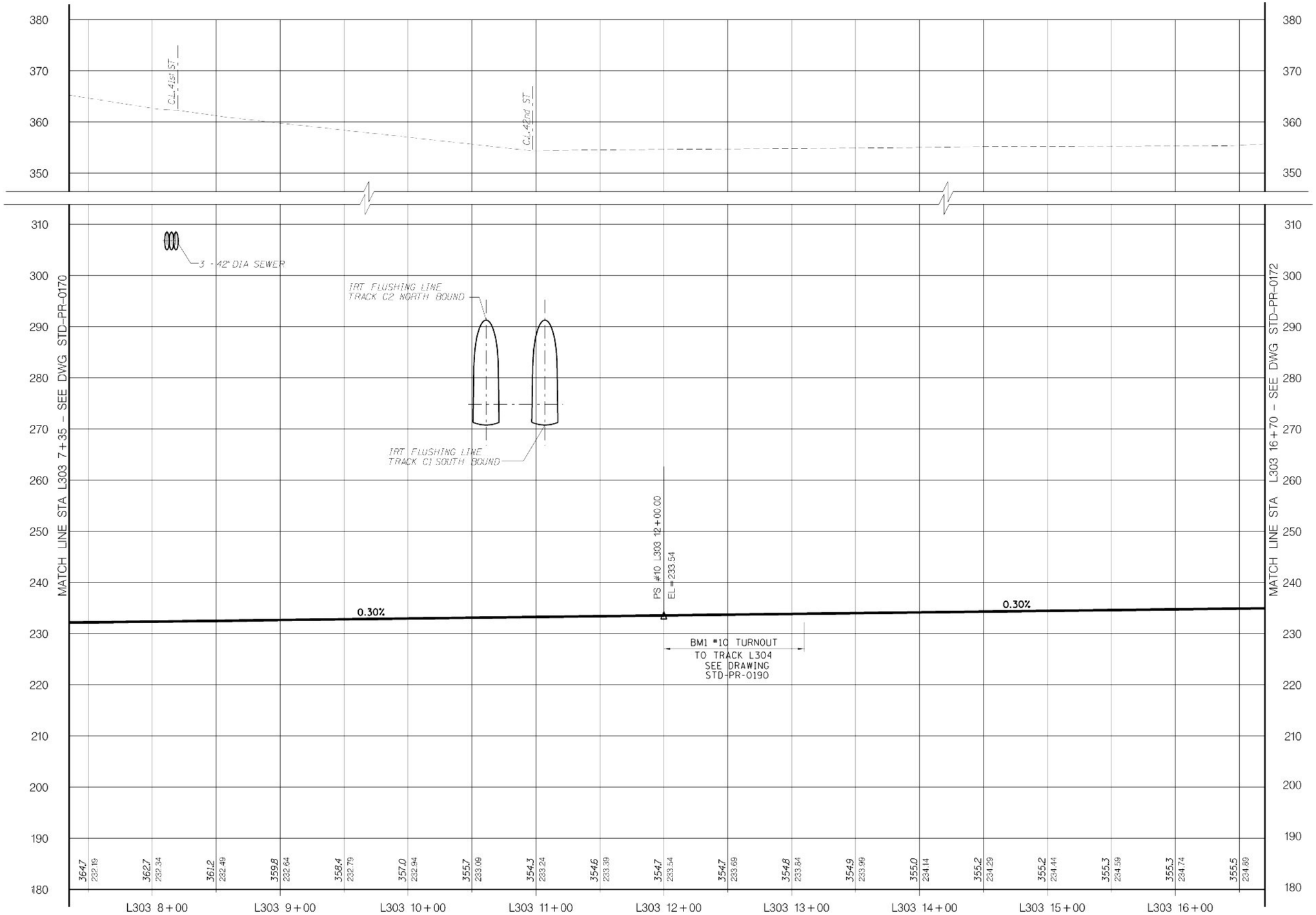

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L303 PROFILE
STA L303 7+35 TO STA L303 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0171
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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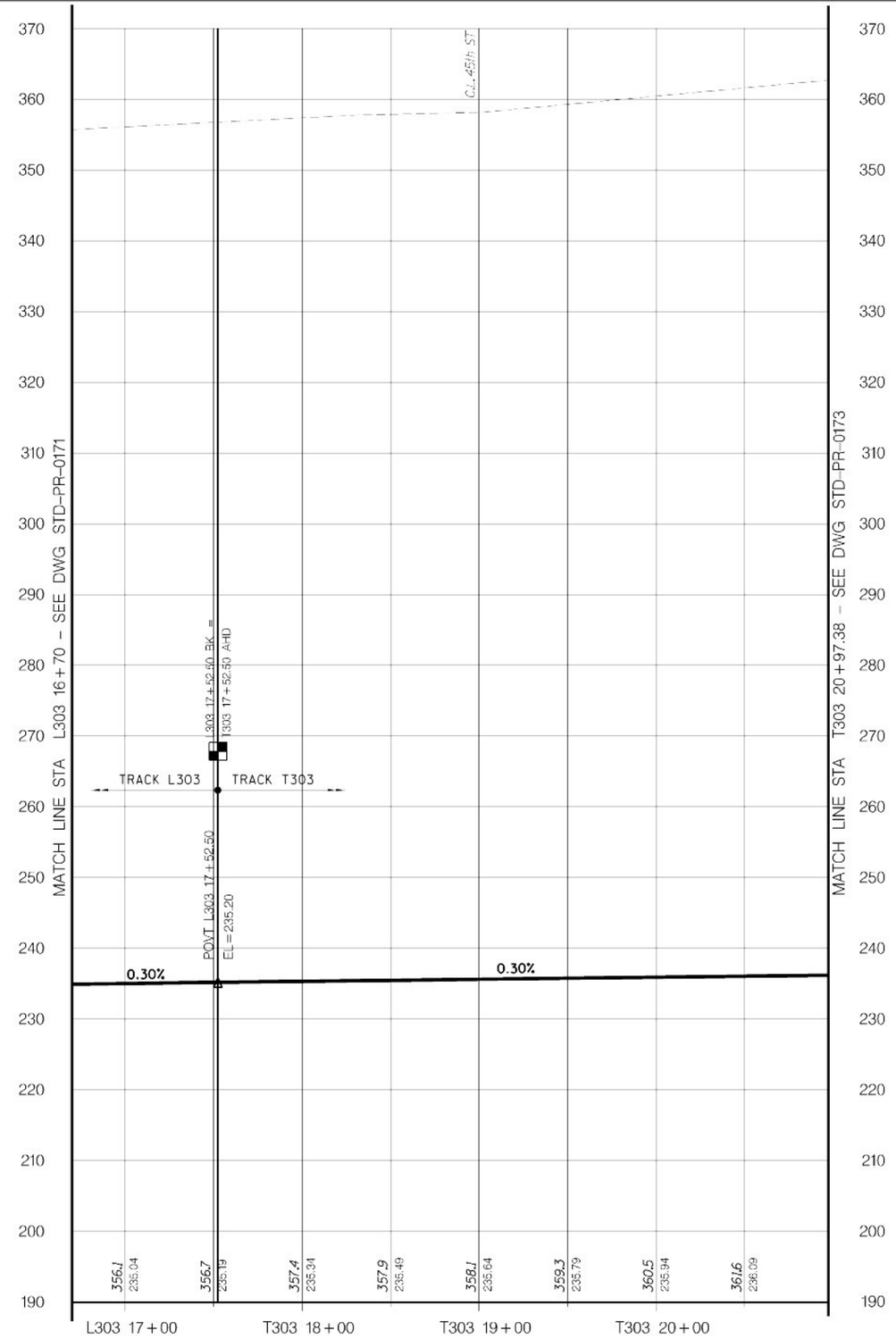

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L303 & T303 PROFILES
STA L303 16+70 TO STA T303 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0172
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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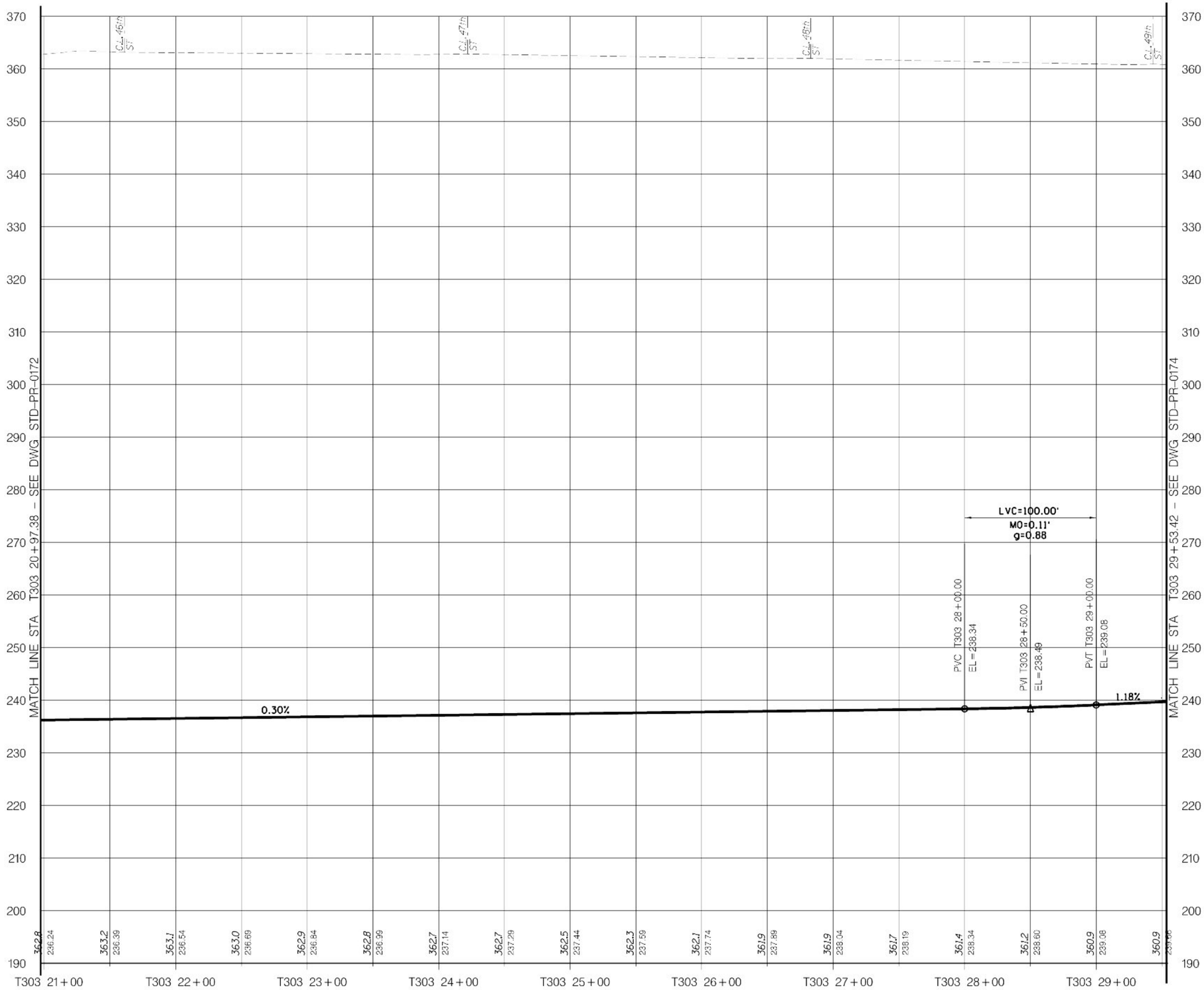

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T303 PROFILE
STA T303 20+97.38 TO STA T303 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0173
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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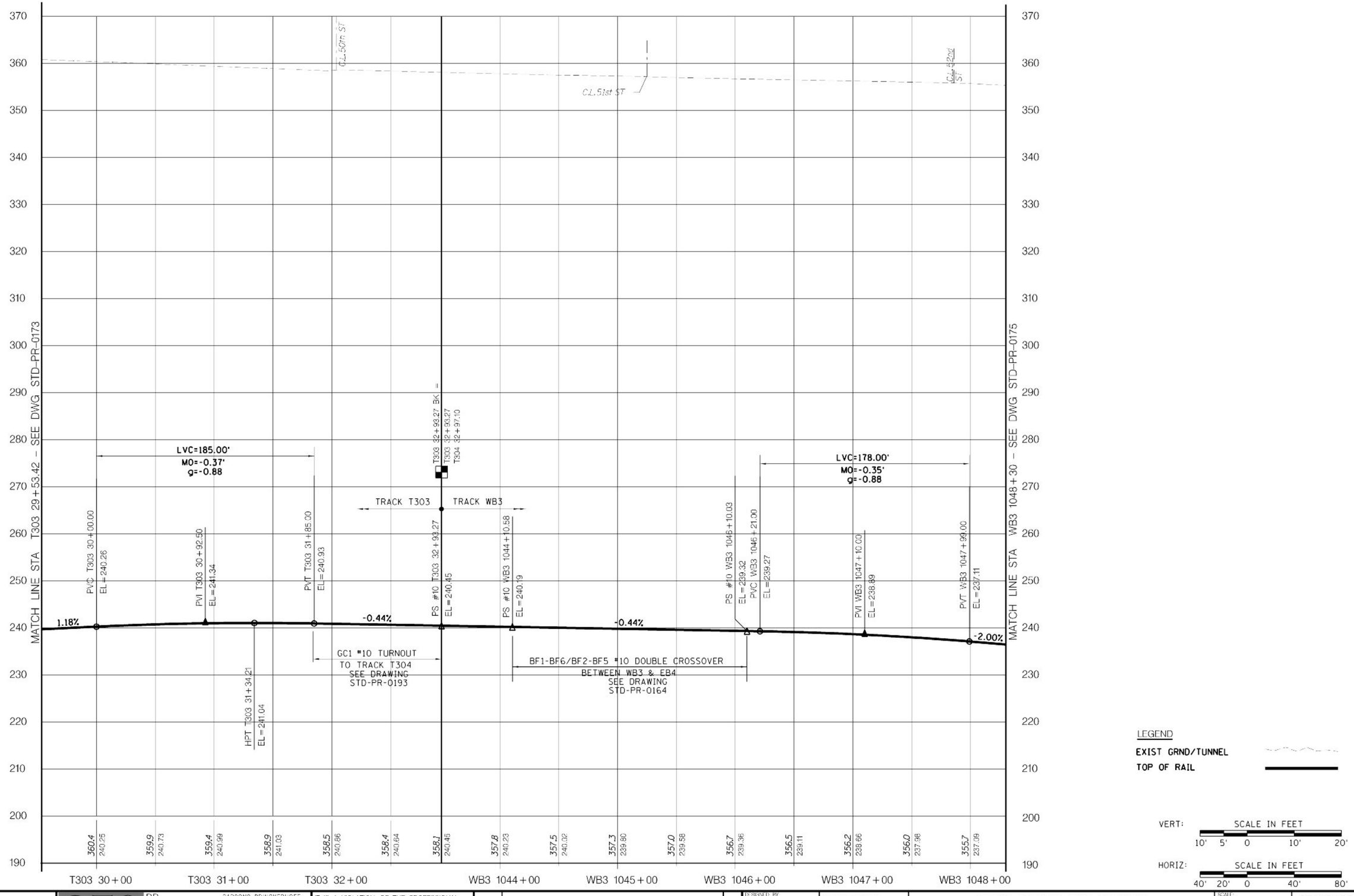

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T303 AND WB3 PROFILES
STA T303 29+53.42 TO STA WB3 1048+30

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0174
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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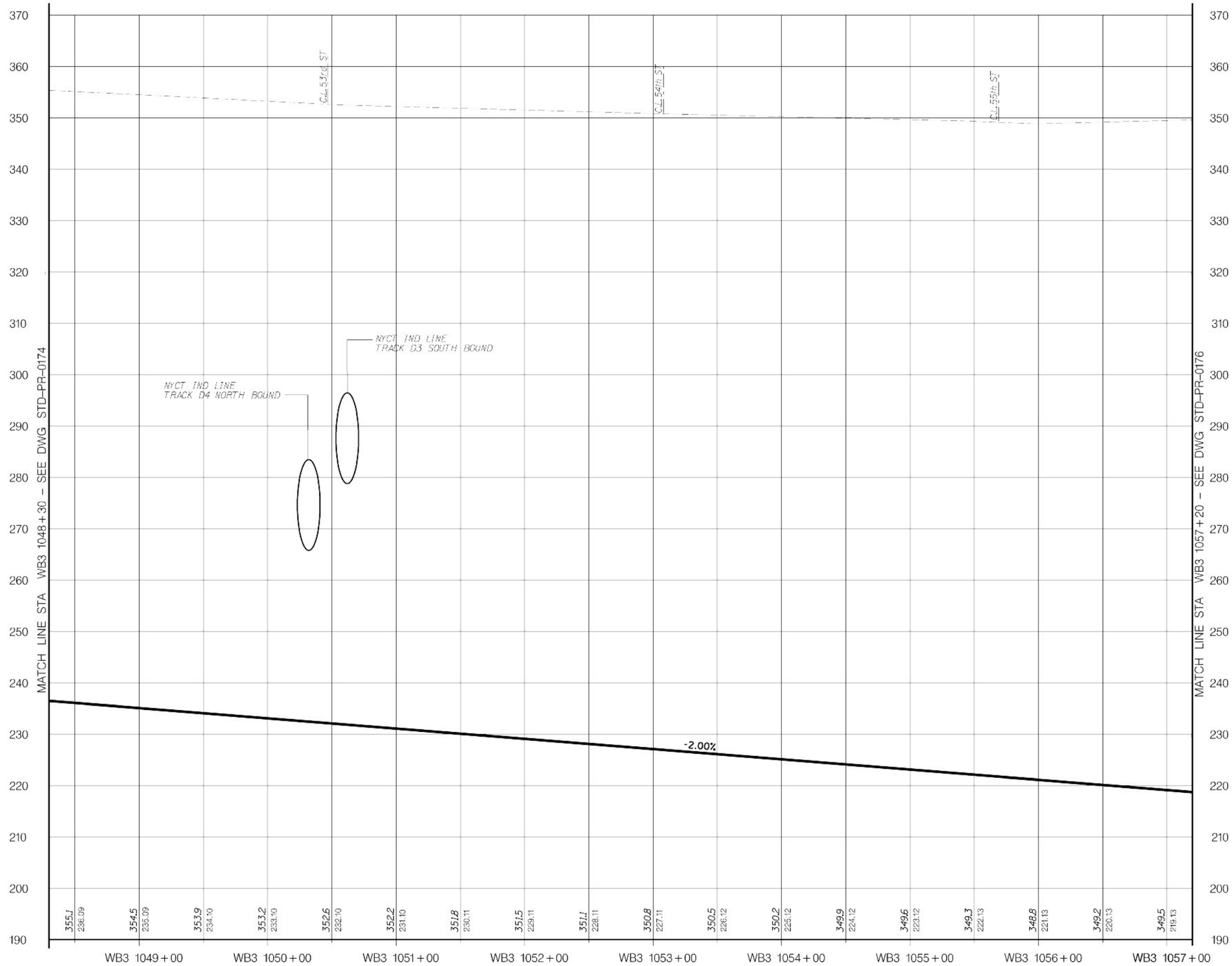

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB3 PROFILE
STA WB3 1048+30 TO STA WB3 1057+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0175
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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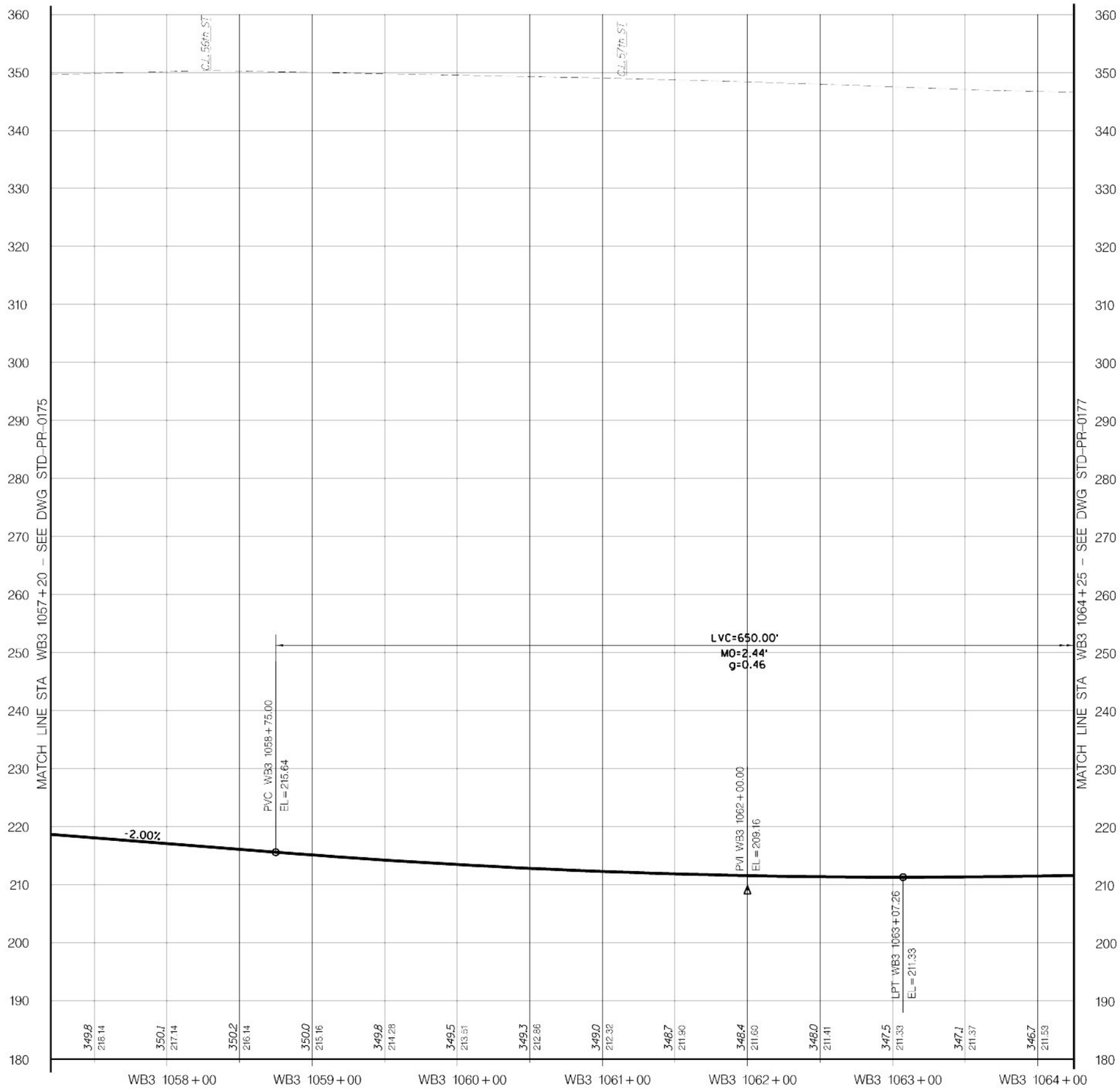

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB3 PROFILE
STA WB3 1057+20 TO STA WB3 1064+25

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0176
DATE: 11-14-05
REVISION NUMBER: 0

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SHEET No. N/A

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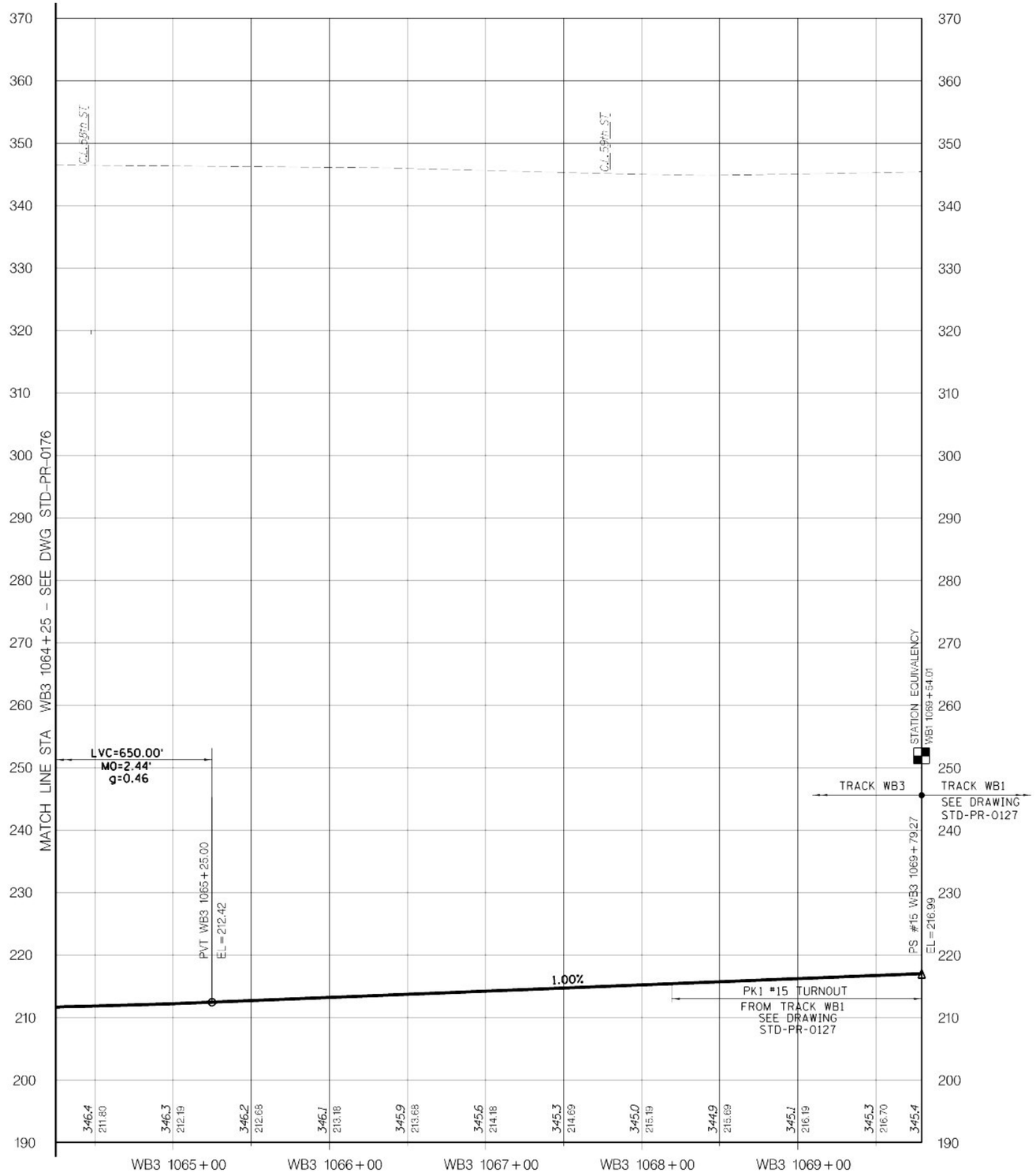

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK WB3 PROFILE
STA WB3 1064+25 TO STA WB3 1069+79.27

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0177
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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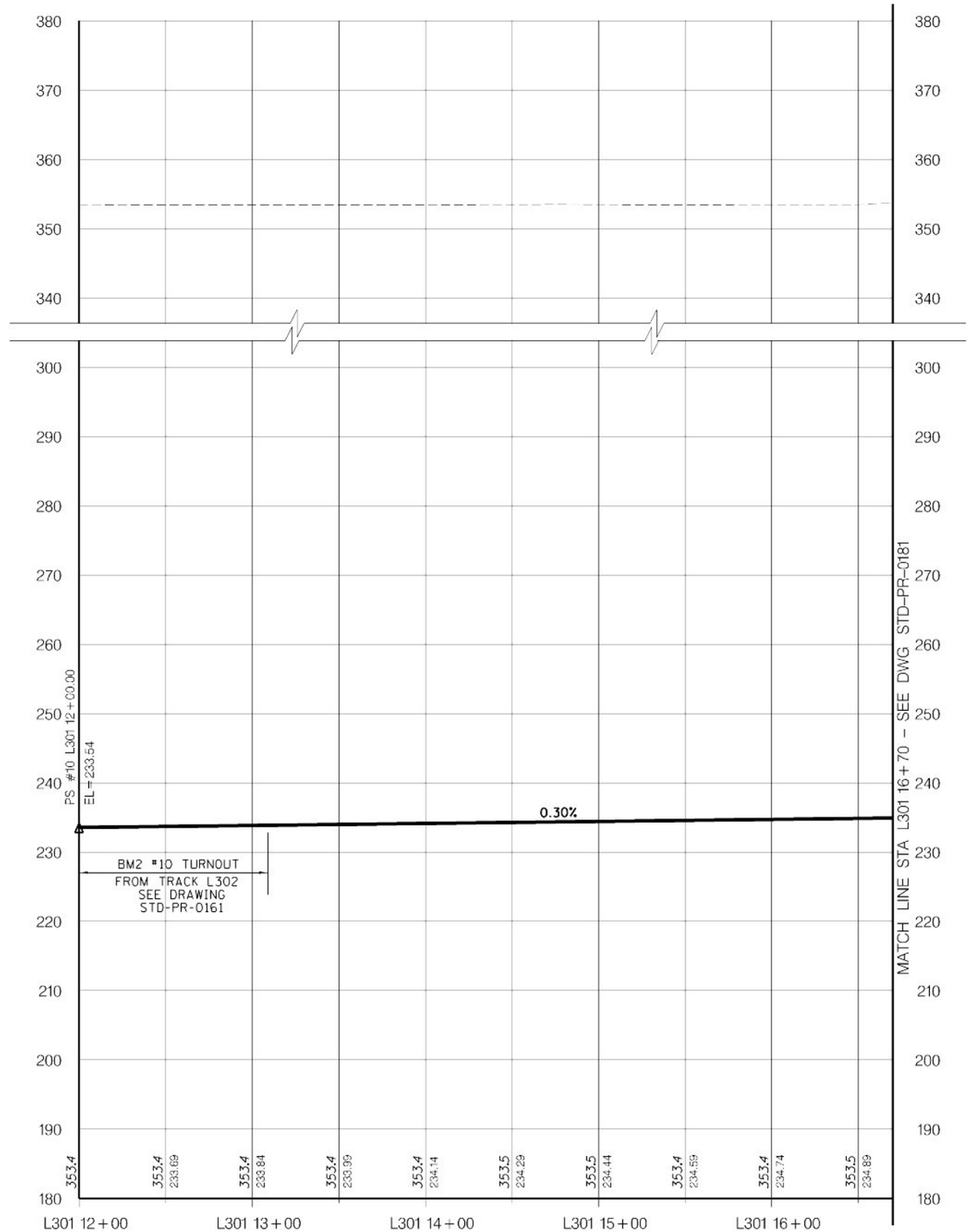

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L301 PROFILE
STA L301 12+00 TO STA L301 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0180
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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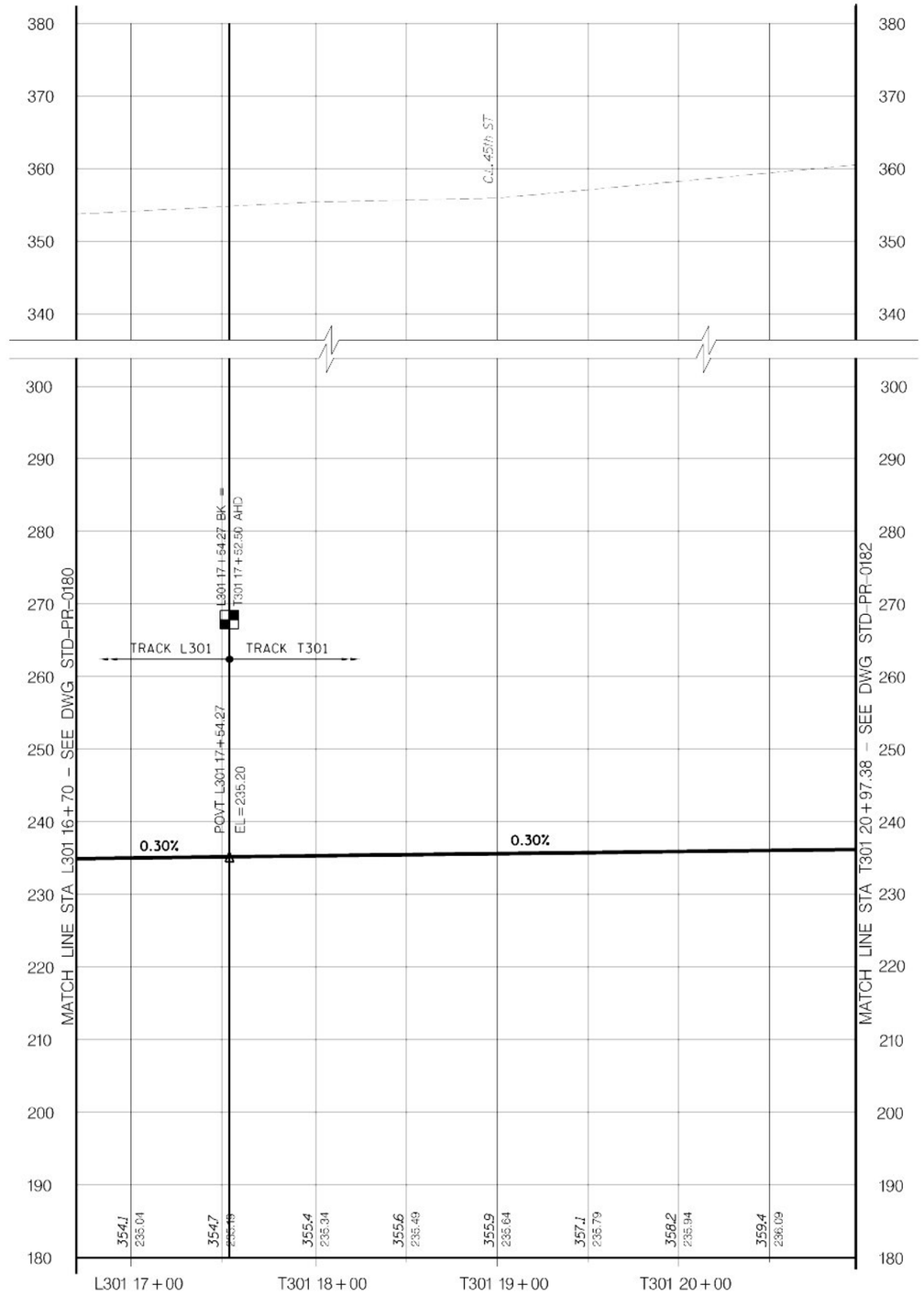

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L301 & T301 PROFILES
STA L301 16+70 TO STA T301 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0181
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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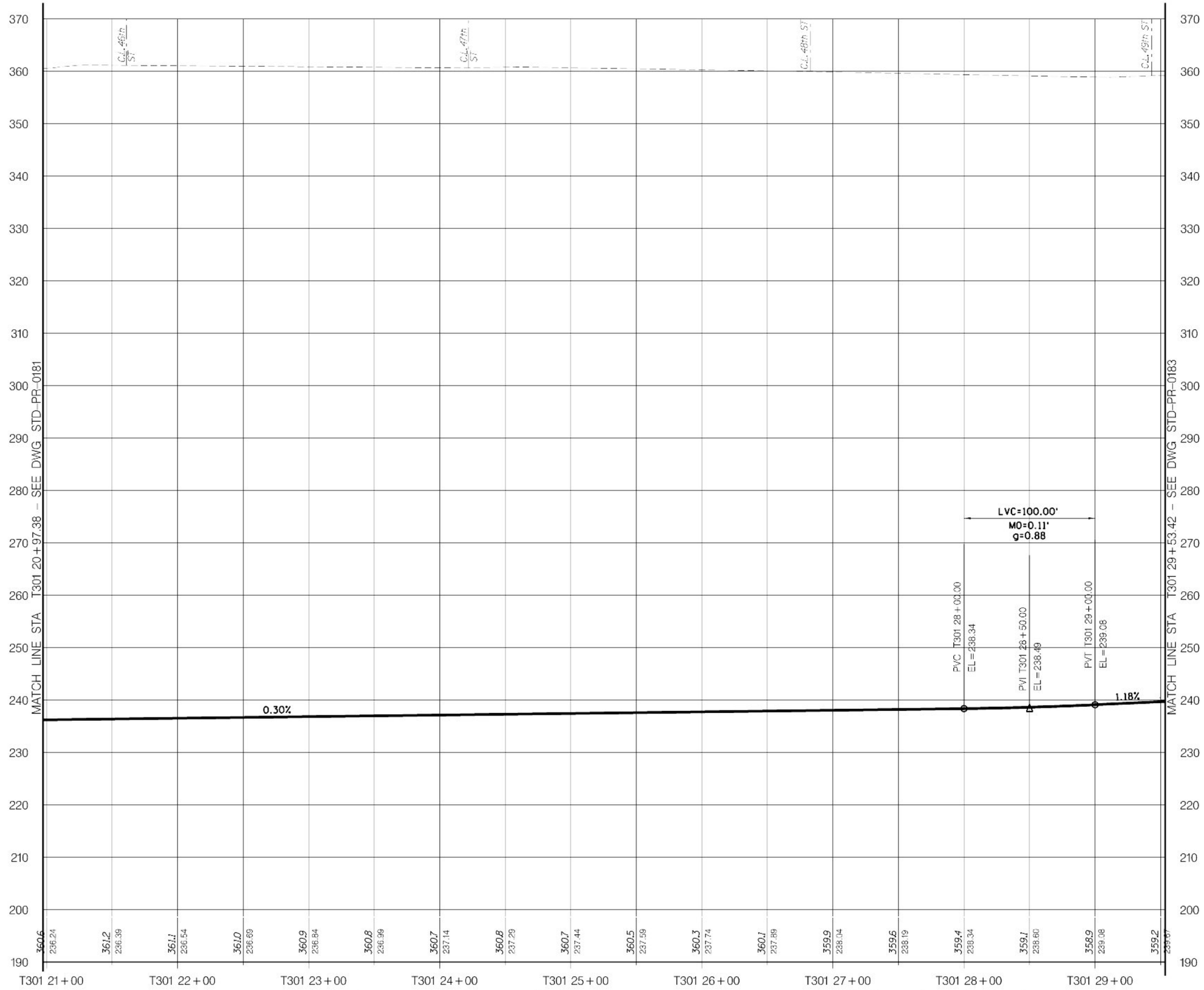

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T301 PROFILE
STA T301 20+97.38 TO STA T301 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0182
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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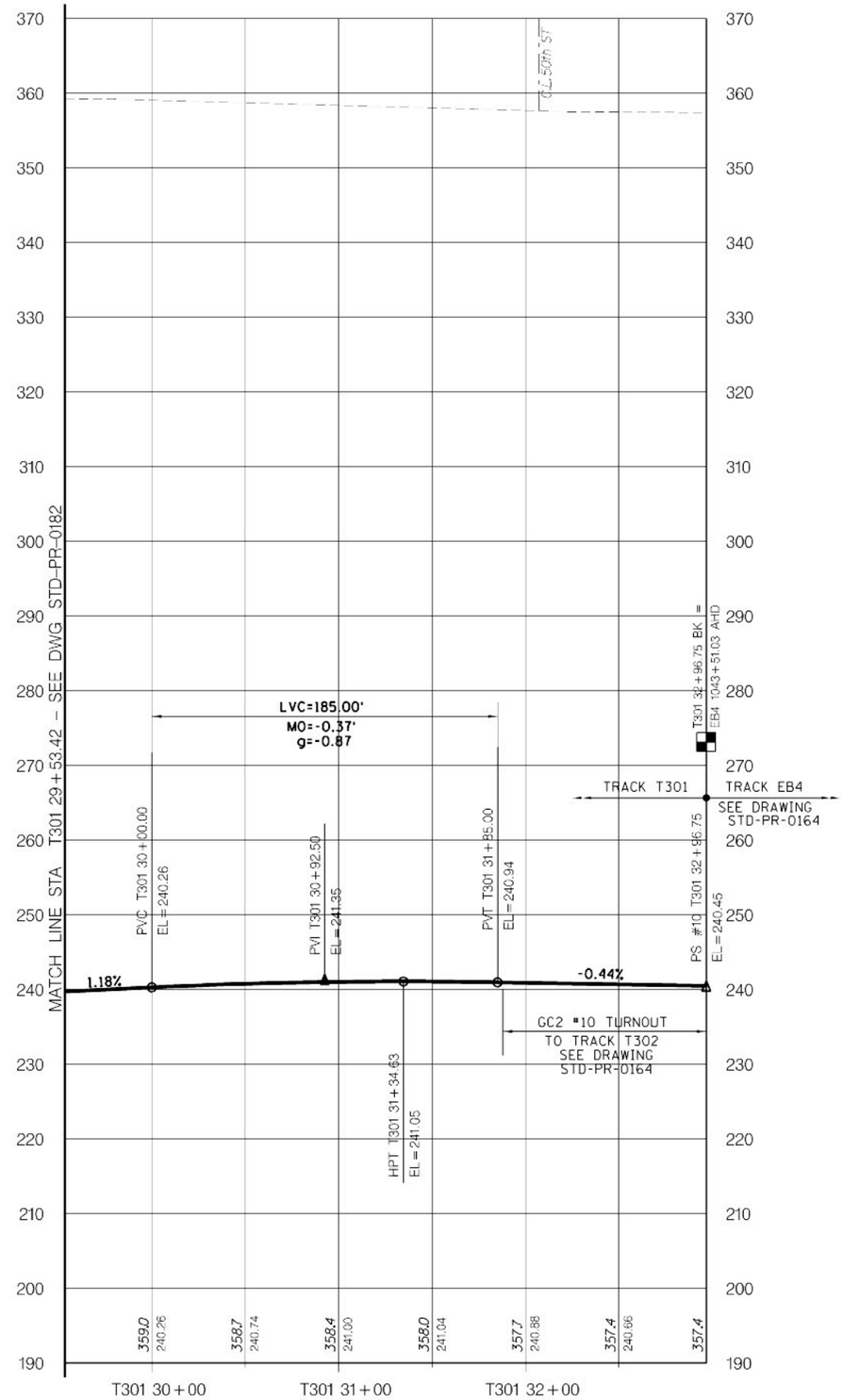

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T301 PROFILE
STA T301 29+53.42 TO STA T301 32+96.75

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0183
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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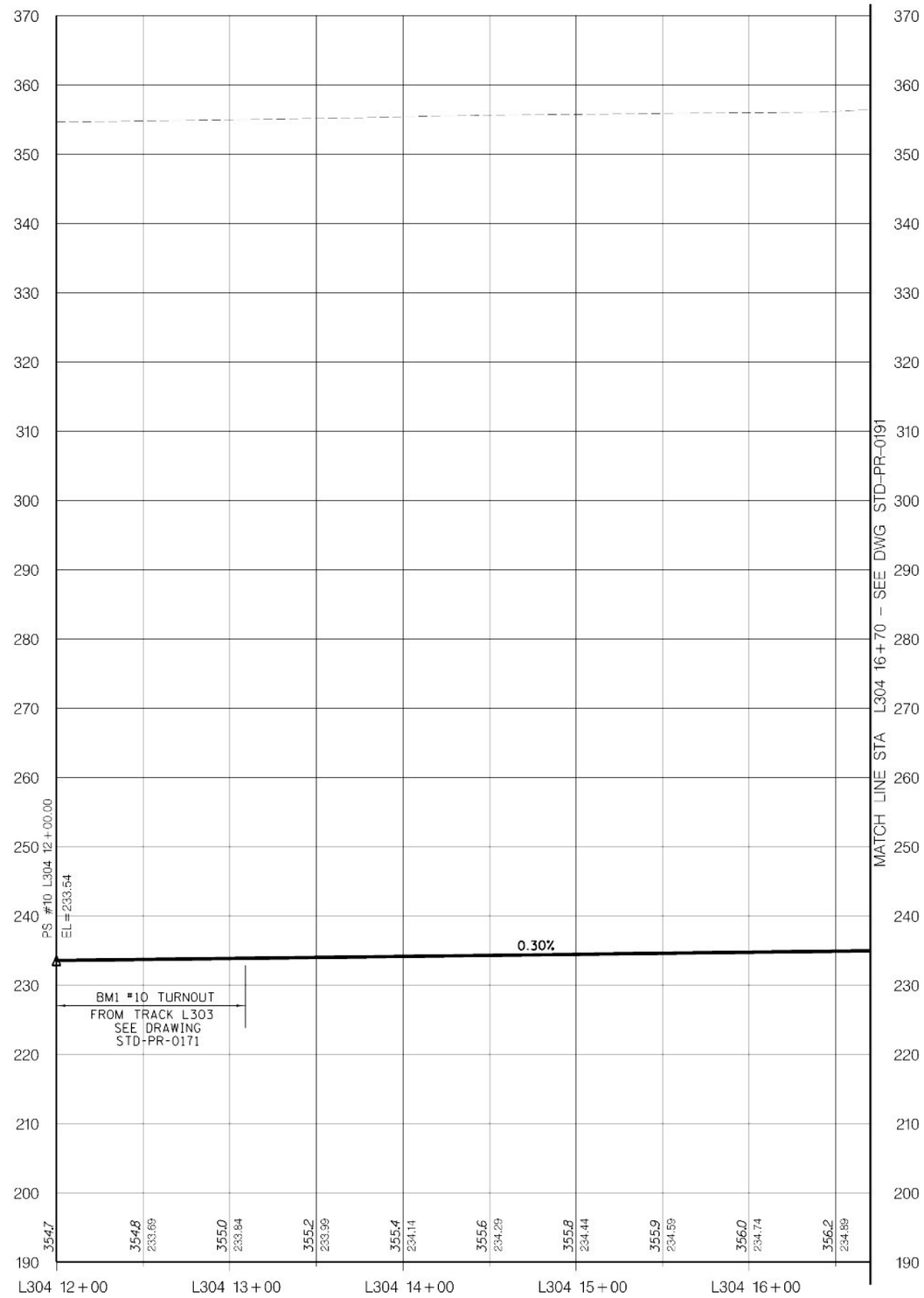

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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Capital Construction

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COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L304 PROFILE
STA L304 12+00 TO STA L304 16+70

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0190
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

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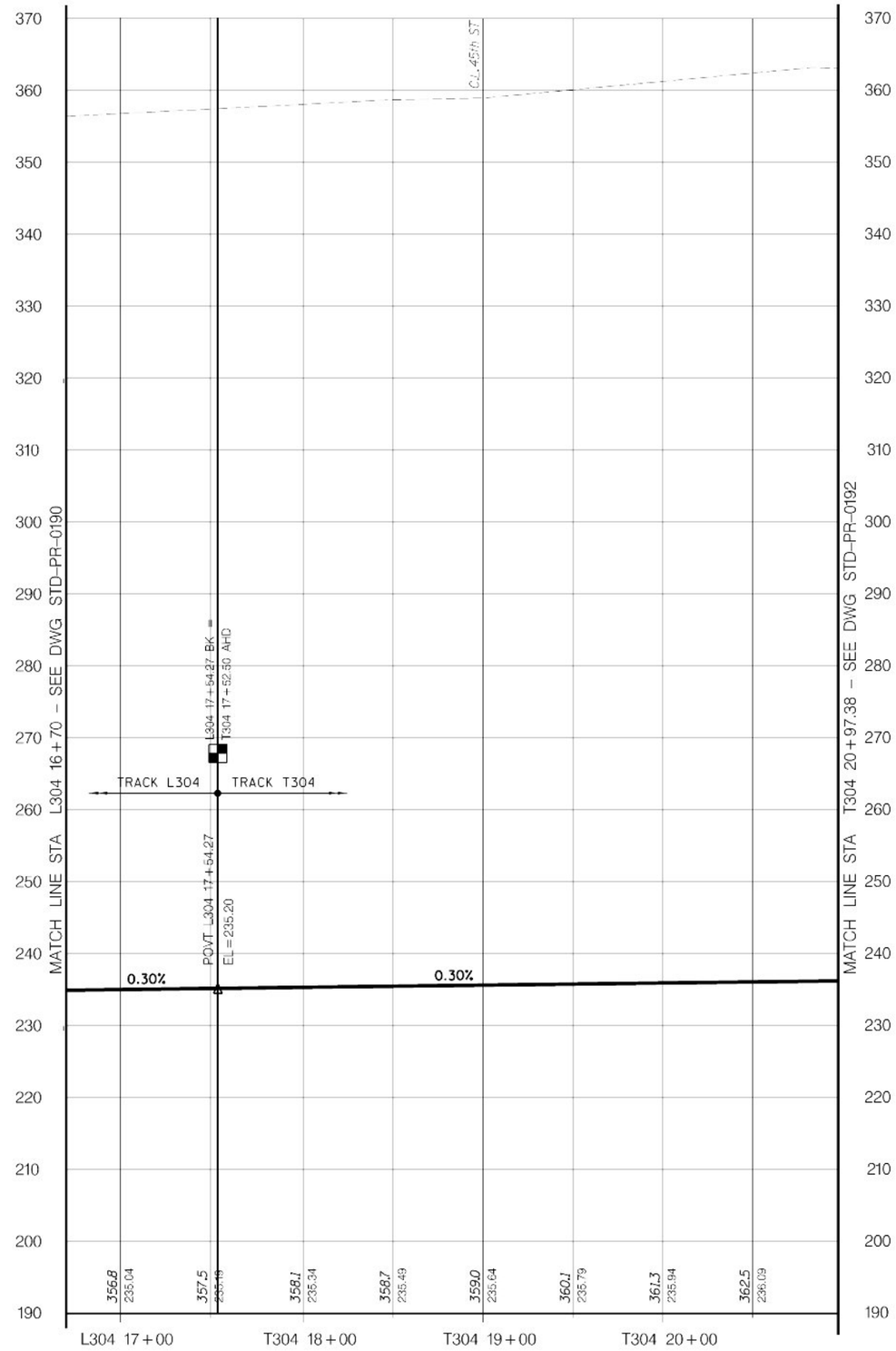

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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APPROVED BY: M. HEDAYATI

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DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK L304 & T304 PROFILES
STA L304 16+70 TO STA T304 20+97.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0191
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
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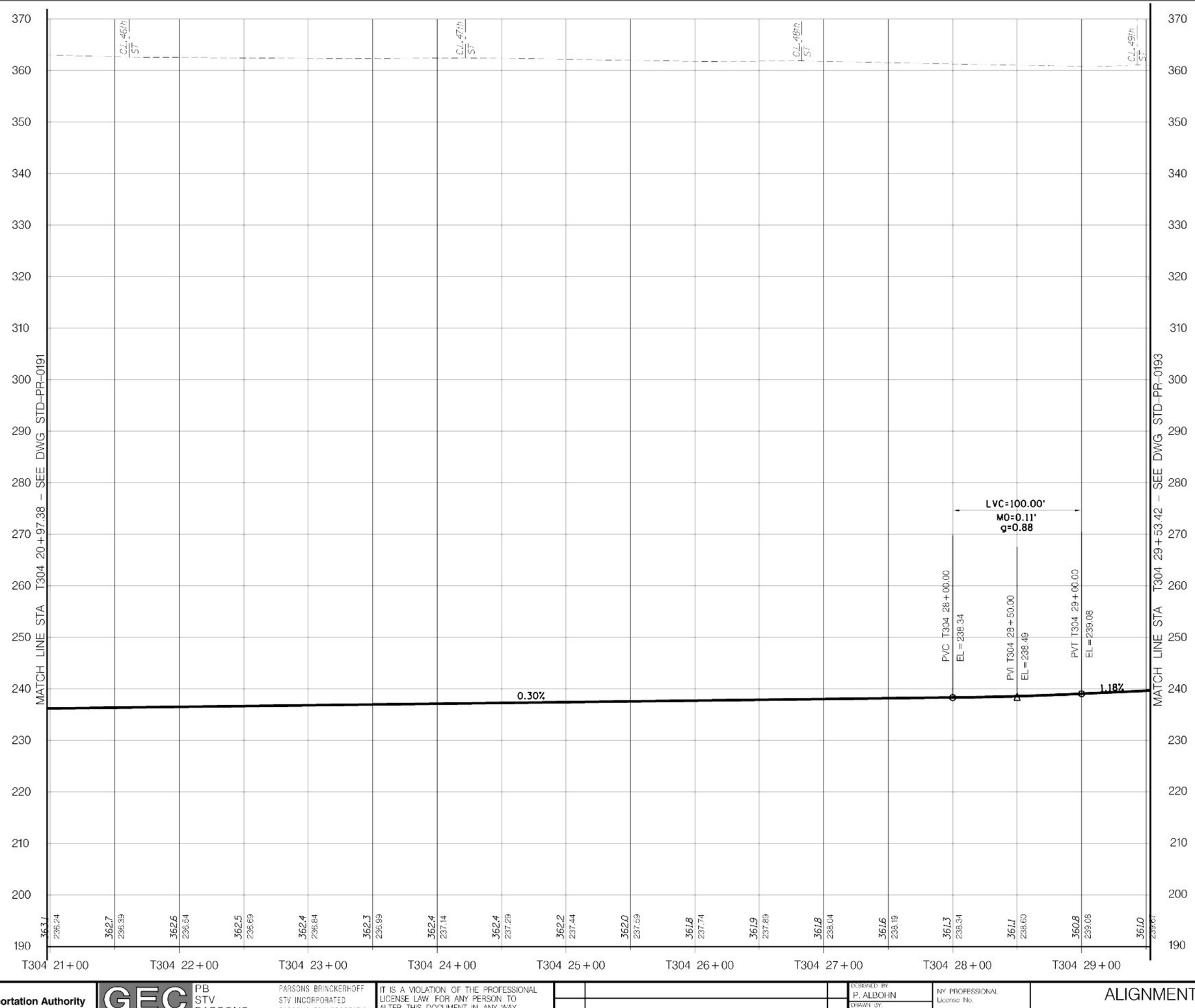

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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DATE | REVISIONS | No

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DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T304 PROFILE
STA T304 20+97.38 TO STA T304 29+53.42

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0192
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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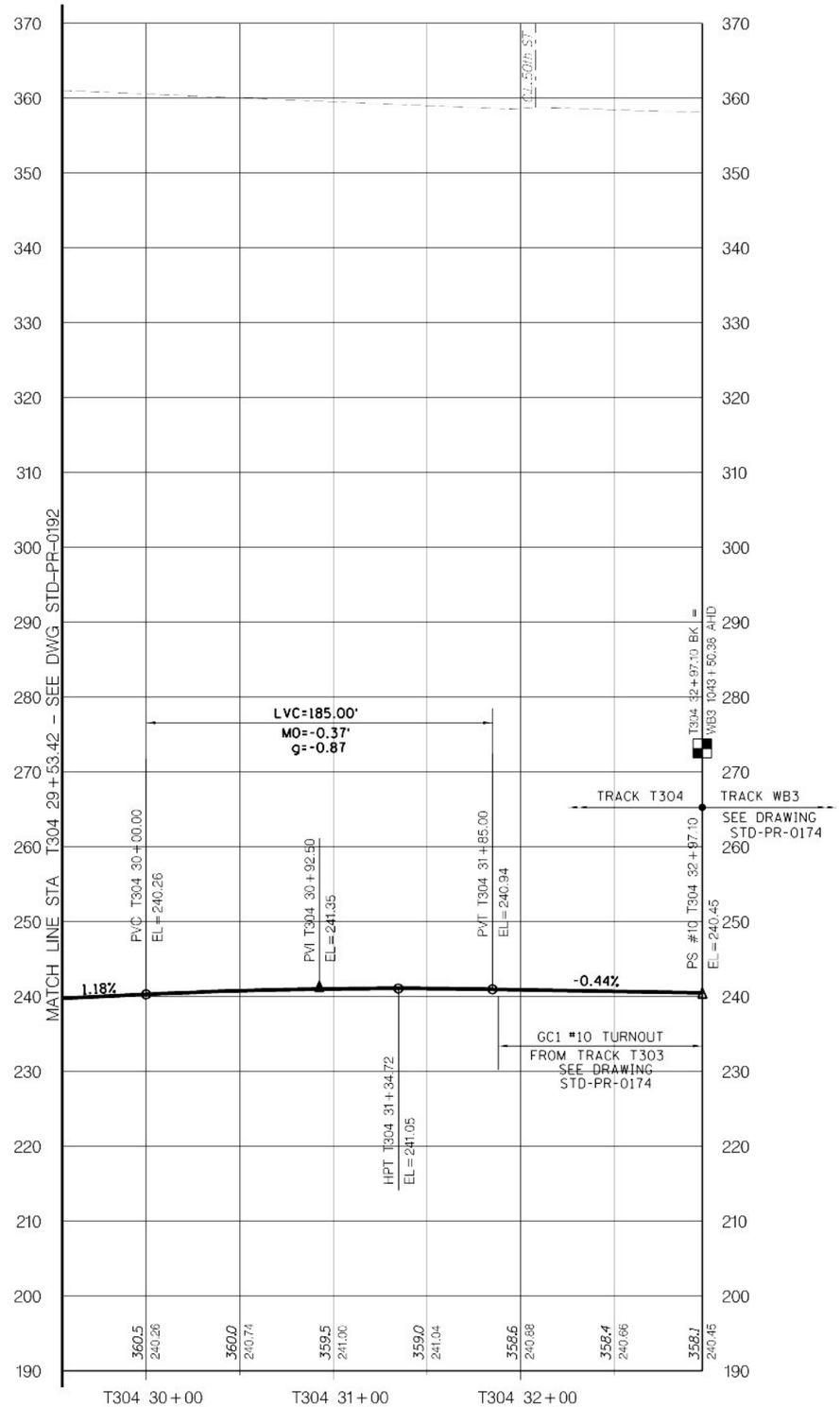

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant

PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
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DATE	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK T304 PROFILE
STA T304 29+53.42 TO STA T304 32+97.10

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0193
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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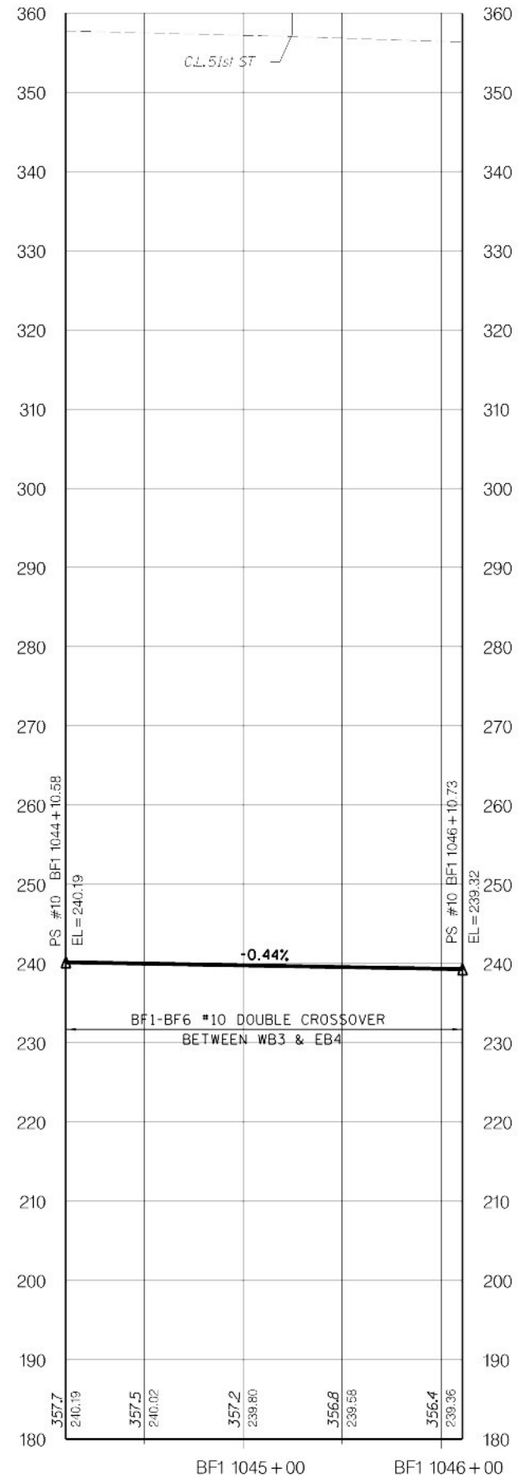

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
Capital Construction

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DATE:	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK BF1 PROFILE
STA BF1 1044+10.58 TO STA BF1 1046+10.73

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0194
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
SHEET No. N/A

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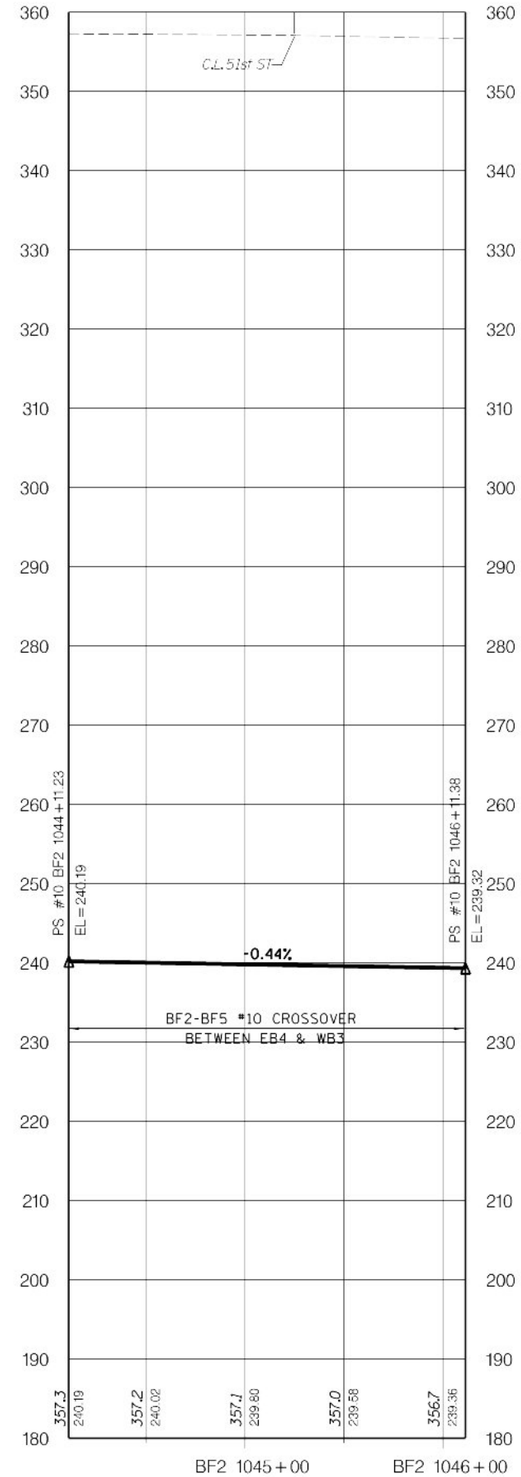

LEGEND

EXIST GRND/TUNNEL

TOP OF RAIL

VERT: SCALE IN FEET 10' 5' 0 10' 20'

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

Metropolitan Transportation Authority
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DATE	REVISIONS	No

DESIGNED BY: H. HARVEY
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
TRACK BF2 PROFILE
STA BF2 1044+11.23 TO STA 1046+11.38

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0195
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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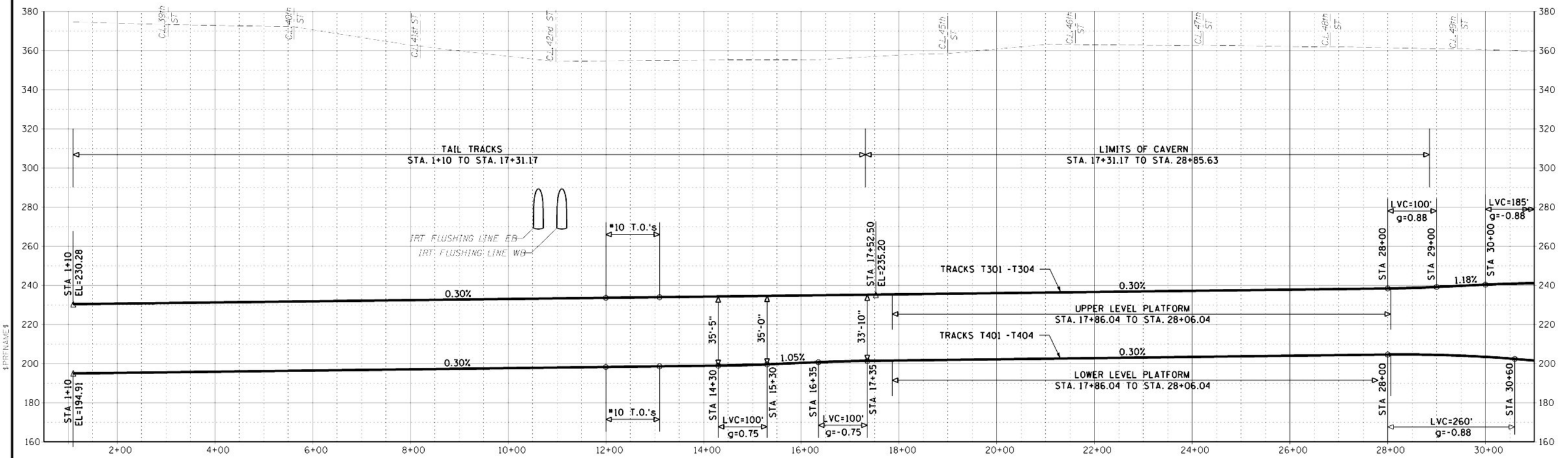

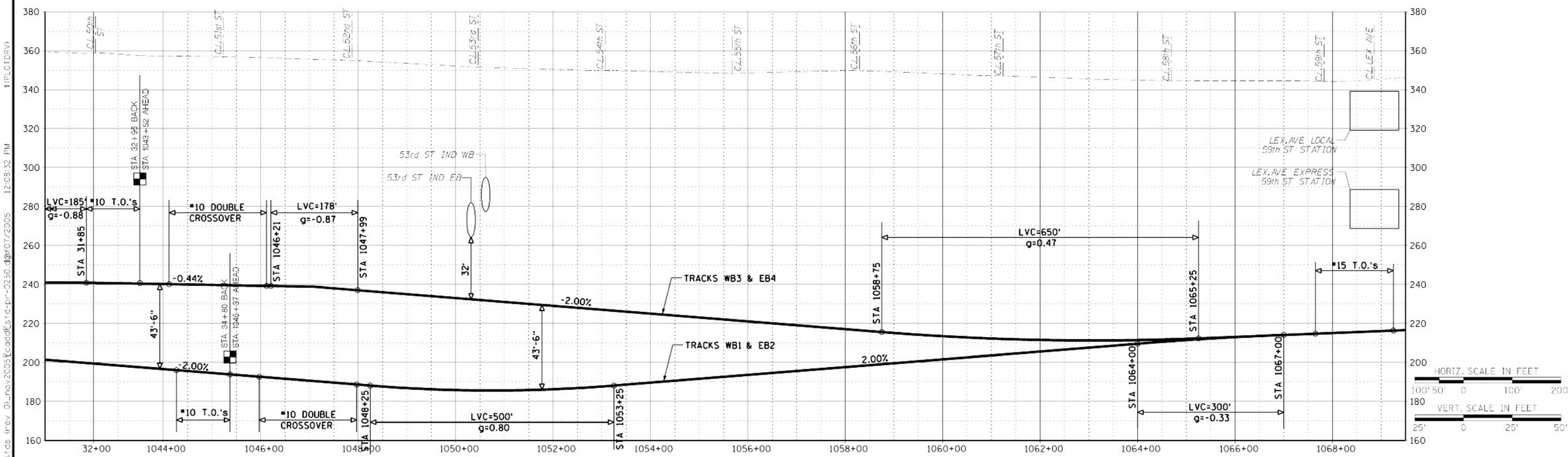

Metropolitan Transportation Authority
Capital Construction

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DATE	REVISIONS	No

DESIGNED BY: P. ALBOHN
DRAWN BY: C. OSPINA
CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
COMPOSITE PROFILE
STA 1+10 TO STA 1069+50

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0250
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No: N/A

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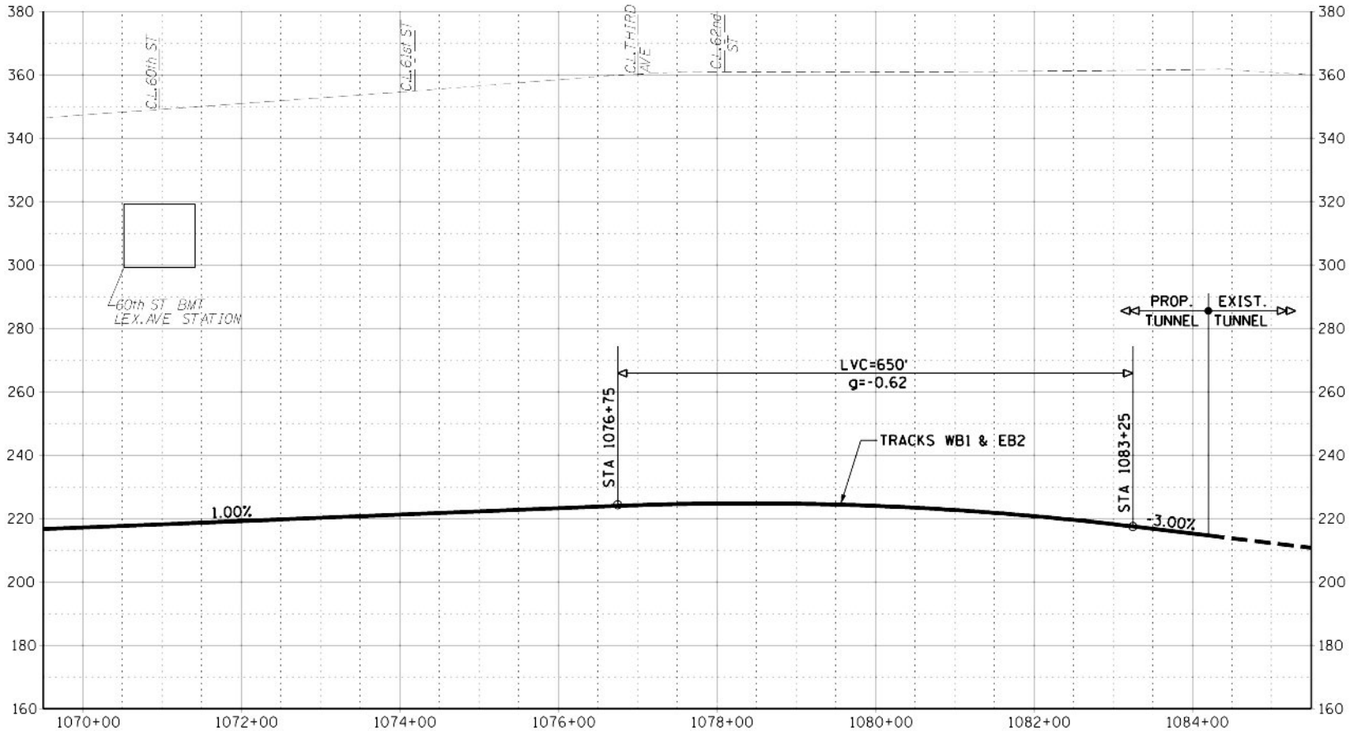

HORIZ. SCALE IN FEET

100' 50' 0 100' 200'

VERT. SCALE IN FEET

25' 0 25' 50'

Metropolitan Transportation Authority
Capital Construction

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East Side Access

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DESIGNED BY: P. ALBOHN
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CHECKED BY: C.M. KAISER
COORDINATED BY: J. CULHANE
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.

DATE:

ALIGNMENT STANDARD

TRACK ALIGNMENT
COMPOSITE PROFILE
STA 1069+50 TO STA 1084+20

SCALE: AS NOTED
DRAWING NUMBER: STD-PR-0251
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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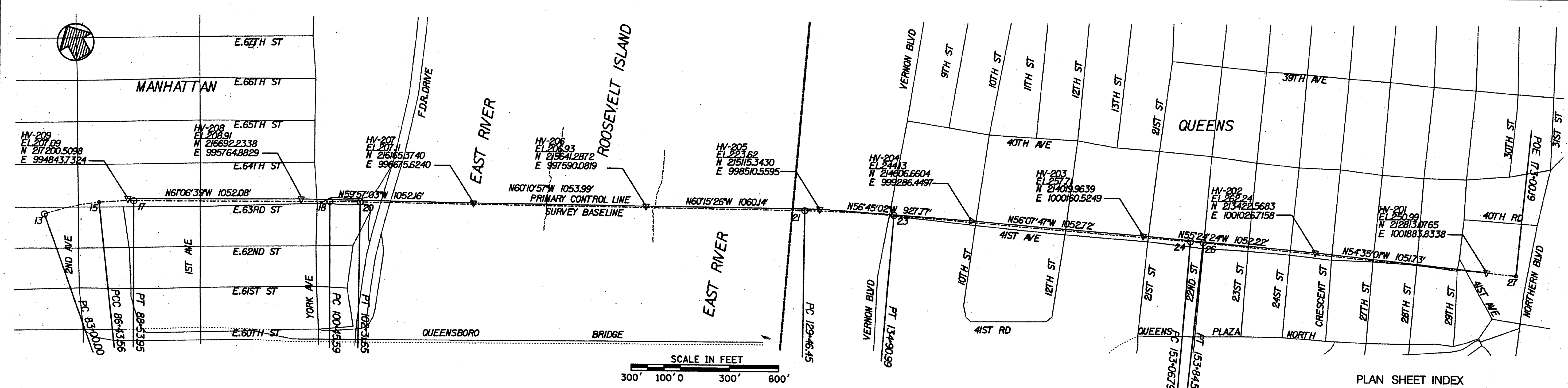

SURVEY BASELINE DATA (SEE REFERENCE NO 1 & 2)

POINT	STATION	NORTHING	EASTING	FROM	TO	RADIUS	DELTA	LENGTH	BEARING	DISTANCE
PC 13	83+00.00	217359.7591	994349.1259	PC 13	PCC 15	1476.00	13°20'11"	343.56	S 73°48'11" E	342.78
CC 14		215904.1244	994104.7830							
PCC 15	86+43.56	217264.1423	994678.3049							
PCC 15	86+43.56	217264.1423	994678.3049	PCC 15	PT 17	1967.67	6°07'35"	210.39	S 64°04'18" E	210.29
CC 16		215451.0891	993913.7373							
PT 17	88+53.95	217172.1929	994867.4286							
PT 17	88+53.95	217172.1929	994867.4286	PT 17	PC 18				S 61°00'31" E	1191.64
PC 18	100+45.59	216594.6305	995909.7422							
PC 18	100+45.59	216594.6305	995909.7422	PC 18	PT 20	12000.00	0°53'18"	186.06	S 60°33'52" E	186.06
CC 19		206098.3299	990093.5858							
PT 20	102+31.65	216503.1930	996071.7818							
PT 20	102+31.65	216503.1930	996071.7818	PT 20	PC 21				S 60°07'13" E	2714.80
PC 21	129+46.45	215150.7254	998425.7094							
PC 21	129+46.45	215150.7254	998425.7094	PC 21	PT 23	7800.00	4°00'00"	544.54	S 58°07'13" E	544.43
CC 22		208387.5632	994539.8840							
PT 23	134+90.99	214863.1890	998888.0183							
PT 23	134+90.99	214863.1890	998888.0183	PT 23	PC 24				S 56°07'13" E	1815.80
PC 24	153+06.79	213850.9677	1000395.5069							
PC 24	153+06.79	213850.9677	1000395.5069	PC 24	PT 26	4000.00	1°06'49"	77.75	S 55°33'48" E	77.75
CC 25		210530.1341	998165.6949							
PT 26	153+84.54	213807.0013	1000459.6300							
PT 26	153+84.54	213807.0013	1000459.6300	PT 26	POE 27				S 55°00'23" E	1915.65
POE 27	173+00.19	212708.4049	1002028.9660							

PRIMARY CONTROL (SEE REFERENCE NO. 3)

FROM	TO	BEARING	DISTANCE	POINT	STATION	NORTHING	EASTING
HV 201	HV 202	N 54°35'01" W	1051.73'	HV 201	0+00.00	212813.0765	1001883.8338
				HV 202	10+51.73	213422.5683	1001026.7158
HV 202	HV 203	N 55°24'24" W	1052.22'	HV 202	10+51.73	213422.5683	1001026.7158
				HV 203	21+03.95	214019.9639	1000160.5249
HV 203	HV 204	N 56°07'47" W	1052.72'	HV 203	21+03.95	214019.9639	1000160.5249
				HV 204	31+56.67	214606.6604	999286.4497
HV 204	HV 205	N 56°45'02" W	927.77'	HV 204	31+56.67	214606.6604	999286.4497
				HV 205	40+84.44	215115.3430	998510.5595
HV 205	HV 206	N 60°15'26" W	1060.14'	HV 205	40+84.44	215115.3430	998510.5595
				HV 206	51+44.58	215641.2872	997590.0819
HV 206	HV 207	N 60°10'57" W	1053.99'	HV 206	51+44.58	215641.2872	997590.0819
				HV 207	61+98.57	216165.3740	996675.6240
HV 207	HV 208	N 59°57'03" W	1052.16'	HV 207	61+98.57	216165.3740	996675.6240
				HV 208	72+50.73	216692.2338	995764.8829
HV 208	HV 209	N 61°06'39" W	1052.08'	HV 208	72+50.73	216692.2338	995764.8829
				HV 209	83+02.81	217200.5098	994843.7324

SURVEY BASELINE TIE TO PRIMARY CONTROL

SURVEY BASELINE POINT	PRIMARY CONTROL STATION	OFFSET	NORTHING	EASTING
PC 18	70+76.47	-11.95	216594.6305	995909.7422
PT 20	68+90.42	-9.96	216503.1930	996071.7818
PC 21	41+75.67	-11.37	215150.7254	998425.7094
PT 23	36+30.52	-3.92	214863.1890	998888.0183
PC 24	18+14.56	-5.71	213850.9677	1000395.5069
PT 26	17+36.82	-5.50	213807.0013	1000459.6300

PLAN SHEET INDEX

SHEET	STATION		DESCRIPTION
STD-CT-9001	83+00	173+00.19	KEY / CONTROL
STD-CT-9002	85+00	90+70	PLAN & PROFILE
STD-CT-9003	90+70	96+20	PLAN & PROFILE
STD-CT-9004	96+20	101+70	PLAN & PROFILE
STD-CT-9005	101+70	107+20	PLAN & PROFILE
STD-CT-9006	107+20	112+70	PLAN & PROFILE
STD-CT-9007	112+70	118+20	PLAN & PROFILE
STD-CT-9008	118+20	123+70	PLAN & PROFILE
STD-CT-9009	123+70	129+20	PLAN & PROFILE
STD-CT-9010	129+20	134+70	PLAN & PROFILE
STD-CT-9011	134+70	140+20	PLAN & PROFILE
STD-CT-9012	140+20	145+70	PLAN & PROFILE
STD-CT-9013	145+70	151+20	PLAN & PROFILE
STD-CT-9014	151+20	156+70	PLAN & PROFILE
STD-CT-9015	156+70	162+20	PLAN & PROFILE
STD-CT-9016	162+20	167+70	PLAN & PROFILE
STD-CT-9017	167+70	173+00	PLAN & PROFILE
STD-CT-9018			"AS-BUILT" DETAILS
STD-CT-9019	85+04	86+85	CROSS SECTIONS
STD-CT-9020	87+00	88+50	CROSS SECTIONS
STD-CT-9021	88+65	91+50	CROSS SECTIONS
STD-CT-9022	92+00	96+00	CROSS SECTIONS
STD-CT-9023	96+50	101+33	CROSS SECTIONS
STD-CT-9024	101+50	104+71	CROSS SECTIONS
STD-CT-9025	105+00	106+00	CROSS SECTIONS
STD-CT-9026	106+25	110+00	CROSS SECTIONS
STD-CT-9027	110+50	113+30	CROSS SECTIONS
STD-CT-9028	113+35	114+61	CROSS SECTIONS
STD-CT-9029	114+75	118+29	CROSS SECTIONS
STD-CT-9030	118+35	121+20	CROSS SECTIONS
STD-CT-9031	121+50	126+00	CROSS SECTIONS
STD-CT-9032	126+42	129+54	CROSS SECTIONS
STD-CT-9033	130+00	133+50	CROSS SECTIONS
STD-CT-9034	133+57	137+58	CROSS SECTIONS
STD-CT-9035	137+63	141+50	CROSS SECTIONS
STD-CT-9036	142+00	145+73	CROSS SECTIONS
STD-CT-9037	145+87	149+50	CROSS SECTIONS
STD-CT-9038	150+00	154+50	CROSS SECTIONS
STD-CT-9039	155+00	158+75	CROSS SECTIONS
STD-CT-9040	159+00	163+50	CROSS SECTIONS
STD-CT-9041	164+00	168+00	CROSS SECTIONS
STD-CT-9042	168+10	171+50	CROSS SECTIONS
STD-CT-9043	172+00	172+21	CROSS SECTIONS

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
DELTA	CENTRAL ANGLE (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
BEARING	COURSE FROM END POINTS OF LINE OR CHORD (CURVE)
DISTANCE	LENGTH FROM END POINTS OF LINE
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM = NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

NOTES /REFERENCES

1. SURVEY BASELINE STATIONING DEPICTED HEREON AS PER AN ACTUAL INSTRUMENT SURVEY OF THE CHANGES IN CONSTRUCTION OF THE EXISTING TUNNEL AS IT RELATES TO THE STATIONING DEPICTED ON PLAT ENTITLED:
   A) "CONTRACT C-33207-2 63RD STREET LINE REHABILITATION TRACK, SIGNAL AND WATER REMEDY WORK KEY PLAN-LIRR TRACKS AND ACCESS POINTS", DATED JULY 31, 1996, DRAWING NO. "C-1", PREPARED BY NEW YORK CITY TRANSIT AUTHORITY DIVISION OF DESIGNS AND ENGINEERING SERVICES STRUCTURAL ENGINEERING. THE STATIONING WAS DEVELOPED AFTER AN ANALYSIS OF THE FIELD DATA CREATED A BEST FIT TO THE STATIONING AS PER PLAN REFERENCED. MEDINA CONSULTANTS HELD THE STATIONING AS DEPICTED ON SAID PLAN AT THE EAST END AND RAN THE STATIONING TO THE WEST.

2. THE GEOMETRY OF THE SURVEY BASELINE WAS TAKEN FROM THE FOLLOWING ALIGNMENT PLANS FOR THE LONG ISLAND RAIL ROAD:
   A) "ALIGNMENT "B" NEW YORK CITY TRANSIT SYSTEM ROUTE 131-A (REMODIFIED) SECTION 5B & PART OF L.I.R.R. E. 63RD STREET LINE CONTRACT C-20198 E. 63RD STREET - 3RD AVENUE TO F.D.R. DRIVE BOROUGH OF MANHATTAN", DATED FEBRUARY 27, 1978, DRAWING NO. A-3 AND A-4;
   B) "NEW YORK CITY TRANSIT SYSTEM ROUTE 131-A SECTION 1 EAST 63 RD ST., EAST RIVER AND 41ST. AVE. YORK AVENUE TO VERNON BOULEVARD BOROUGHS OF MANHATTAN AND QUEENS CONTRACT DRAWING TRENCH METHOD", DATED SEPTEMBER 18, 1968, DRAWING NO A-1;
   C) "NEW YORK CITY TRANSIT SYSTEM ROUTE 131-A (REMODIFIED) SECTION 6 CONTRACT D20106 41ST AVENUE VERNON BOULEVARD TO 22ND STREET BOROUGH OF QUEENS", DATED MARCH 22, 1974, DRAWING NO. A-1;
   D) "NEW YORK CITY TRANSIT SYSTEM ROUTE 131-A (REMODIFIED) SECTION 7 CONTRACT D20107 41ST AVENUE 22ND STREET TO 29TH STREET BOROUGH OF QUEENS", DATED FEBRUARY 1, 1974, DRAWING NO. A-3 AND A-4.

3. THE PRIMARY CONTROL LINE WAS TAKEN FROM ["TUNNEL CONTROL SURVEY REPORT" (HORIZONTAL AND VERTICAL) FOR THE EAST SIDE ACCESS PROJECT LIRR GRAND CENTRAL CONNECTION IN QUEENS-MANHATTAN, NEW YORK PREPARED FOR PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC./STV, INCORPORATED JOINT VENTURE METROPOLITAN TRANSIT AUTHORITY AND THE LONG ISLAND RAILROAD", DATED MARCH 2001, PREPARED BY MEDINA CONSULTANTS, P.C., REVISED JULY 10, 2001.]
   A) THE INITIAL SURVEY OF TUNNEL FEATURES ACQUIRED VIA "CYRA 3D LASER SCANNING PROCESS". SAID INFORMATION WAS COLLECTED IN AN "ASSUMED DATUM" AND TRANSFORMED TO ESA PROJECT DATUM.

4. THE TUNNEL FEATURES ACQUIRED VIA "CYRA 3D LASER SCANNING PROCESS" WAS COMPILED FOR THE LENGTH OF THE TUNNEL, WHICH ENABLED DRAFTING OF THE TUNNEL BOTTOM AND ROOF. THE TUNNEL BOTTOM WAS USED TO DEPICT THE TUNNEL LIMIT IN PLAN VIEW AND THE ROOF WAS ESTABLISHED TO DEVELOP THE PGL (PROFILE GRADE LINE) ALONG THE EAST AND WESTBOUND GEOMETRY OF THE TUNNEL. THE TUNNEL BOTTOM HAD BEEN MODIFIED TO INSURE POSITIVE DRAINAGE OF ANY COLLECTED WATER AND CAN BE MODIFIED, THEREFORE WAS NOT AN IMPACTING PROFILE TO CONSIDER. A 3D ALIGNMENT WAS ESTABLISHED ALONG THE PHYSICAL HIGH POINT OF THE ROOF CENTERLINE. A SURFACE (.DTM) WAS DEVELOPED FROM THIS ALIGNMENT AND USED AS THE PROFILE FOR THE TUNNEL. ALTHOUGH THE GEOMETRY OF THE PGL IS NOT CONCENTRIC WITH THE SURVEY BASELINE, IT IS A "BEST FIT" OF THE EXISTING CONDITIONS OF THE TUNNEL AS IT HAD BEEN TAKEN FROM THE CROSS SECTION DATA PREVIOUSLY ESTABLISHED. THE PGL WAS THEN TIED TO THE SURVEY BASELINE VIA STATION / OFFSET ROUTINE, TO SHOW THE RELATIONSHIP OF EACH. THE PGL IS A PROFILE ONLY AND IS NOT REPRESENTATIVE OF AN EXISTING OR PROPOSED FIXED ALIGNMENT.

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:04 AM p:\9911003\0\dgn\82d sheet\plan-sheet01.dgn
$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction
Long Island Rail Road East Side Access

PB STV
A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/27/03	ADDITIONAL WALL OPENINGS	4
05/20/03	ADDITIONAL CROSS SECTIONS 105+15 - 105+35, PROFILE ELEVATIONS @ 104+25	3
04/10/03	ELEVATIONS @ 92+92-93+37	2
09/09/02	ELEVATIONS @ 93+00	1

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

JAMES FOSTER N.Y.S. L.S. (seal) DATE:

Overall Site Map

63rd Street Tunnel Existing Conditions

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9001
DATE: FEB-13-04
REVISION NUMBER: 0

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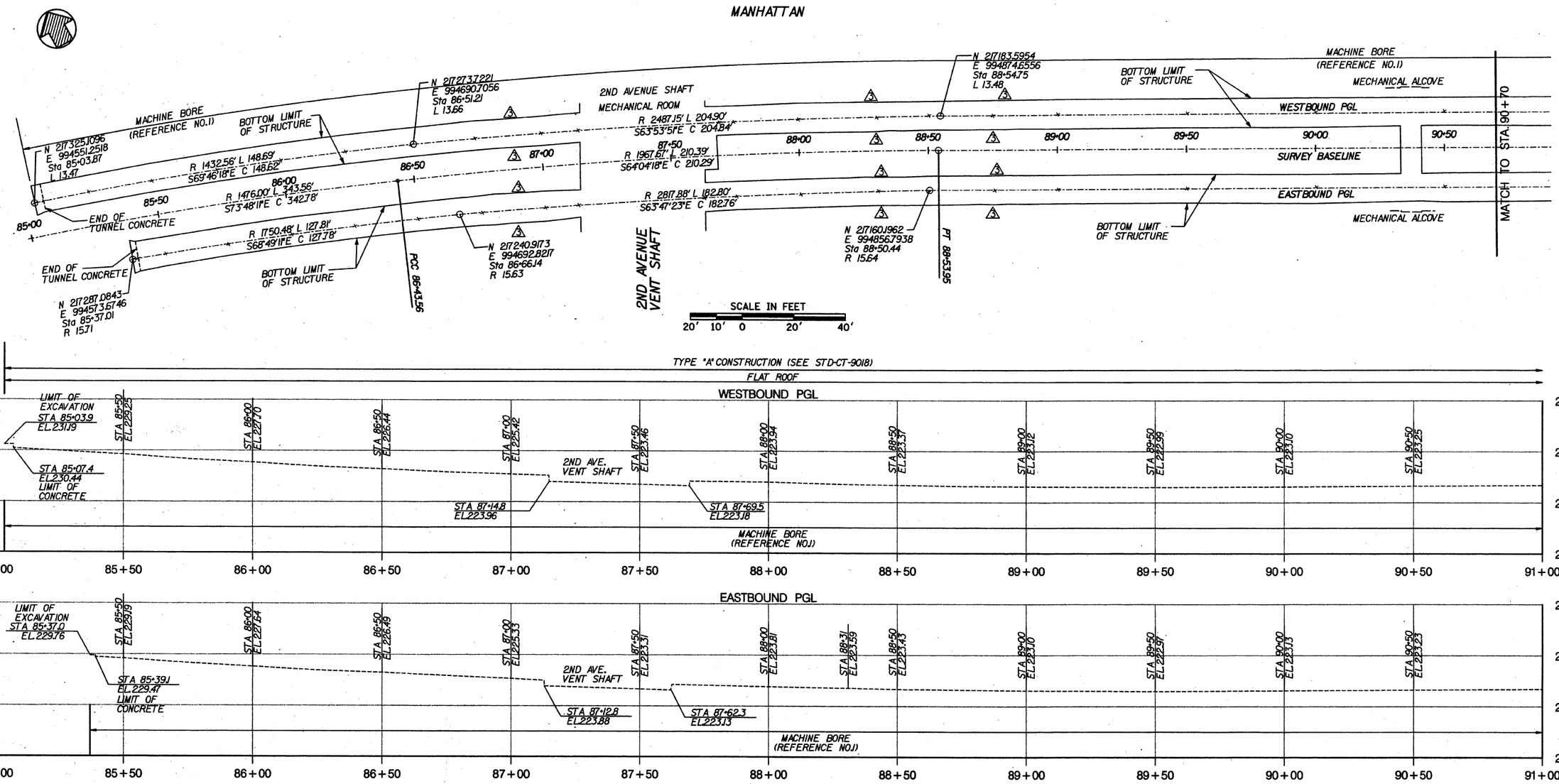
ISSUE: FINAL
SHEET No. ___ OF ___



ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road

East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS:
021904	REVISE BORDER
092303	ADDITIONAL WALL OPENINGS
052203	ADDITIONAL CROSS SECTIONS @ 88+65 - 88+85, 88+20 - 88+40, 88+65 - 88+85

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HIGGINS
DATE:

STATE OF NEW YORK LICENSED LAND SURVEYOR

Sta. 85+00 To Sta. 90+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9002
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
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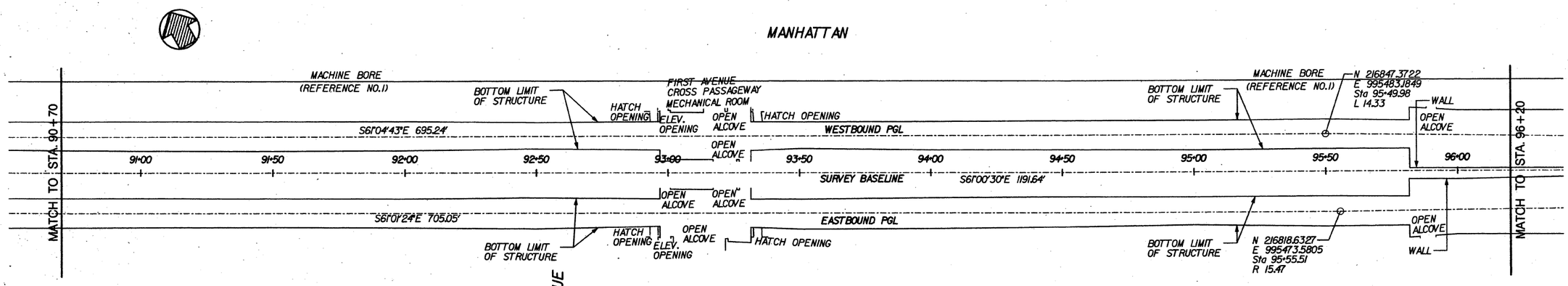

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/27/03	ADDITIONAL WALL OPENINGS	4
04/10/03	ELEVATIONS @ 92+92-93+37	2
09/05/02	ELEVATIONS @ 93+00	1

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

Sta. 90+70 To Sta. 96+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9003
DATE: FEB-13-04
REVISION NUMBER: 0

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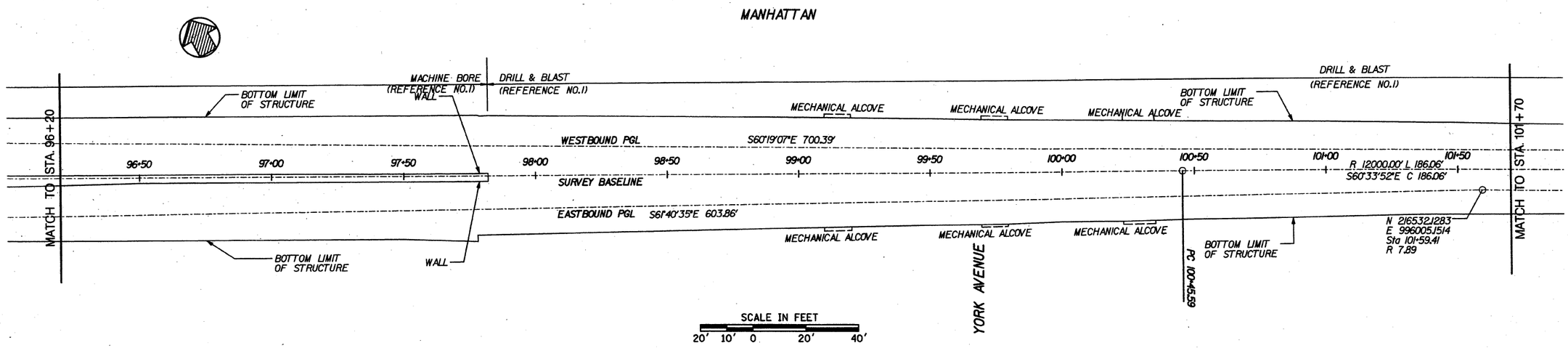

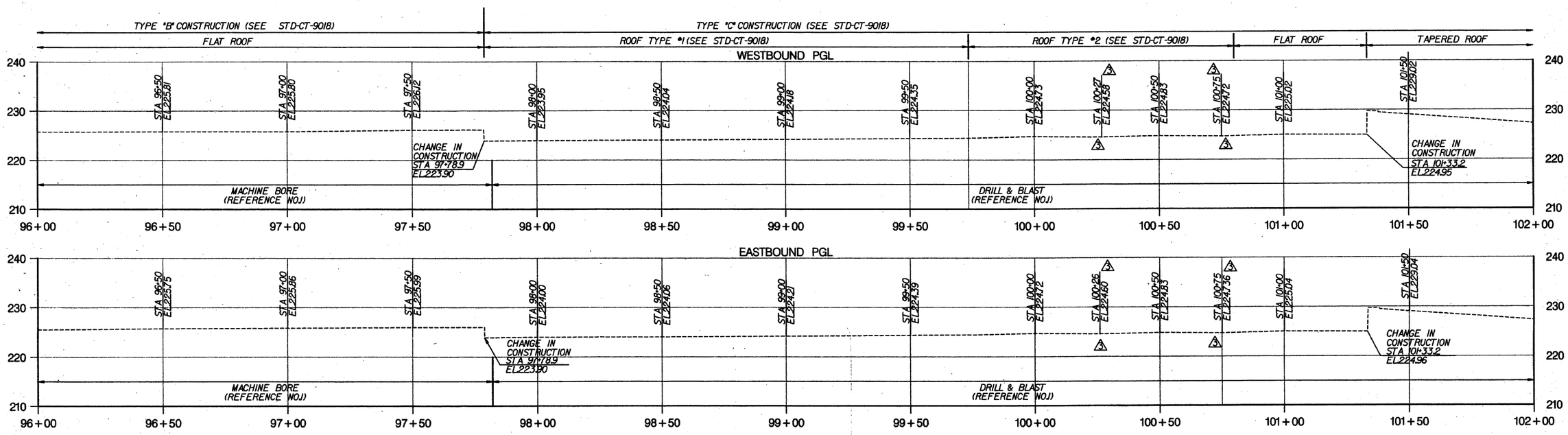

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction
Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	5
06/23/03	ADDITIONAL WALL OPENINGS	4
05/20/03	PROFILE ELEVATIONS @ 100+26, 100+75	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: MICHAEL [illegible]

STATE OF NEW YORK · MICHAEL [illegible] · LICENSED PROFESSIONAL ENGINEER · No. [illegible]
STATE OF NEW YORK · MICHAEL [illegible] · LICENSED LAND SURVEYOR · No. [illegible]
DATE: 04/12/04

Sta. 96+20 To Sta. 101+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9004
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
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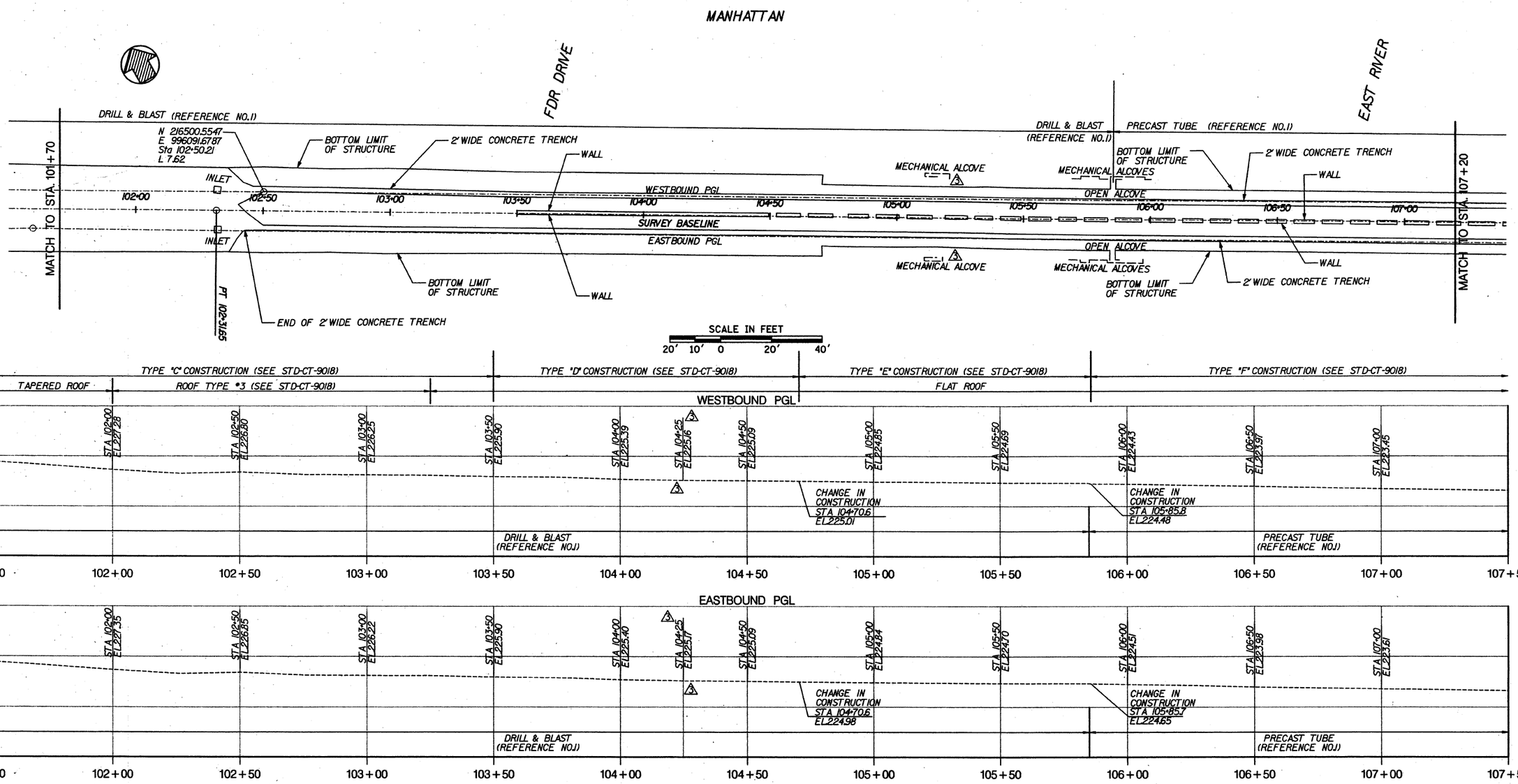

HORIZONTAL SCALE IN FEET

20' 10' 0 20' 40'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
09/22/03	ADDITIONAL WALL OPENINGS	4
05/20/03	ADDITIONAL CROSS SECTIONS 105+15 – 105+35, PROFILE ELEVATIONS @ 104+25	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
JAMES F. HEDAYATI
No. 050151
LICENSED PROFESSIONAL ENGINEER
LICENSED LAND SURVEYOR

Sta. 101+70 To Sta. 107+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9005
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
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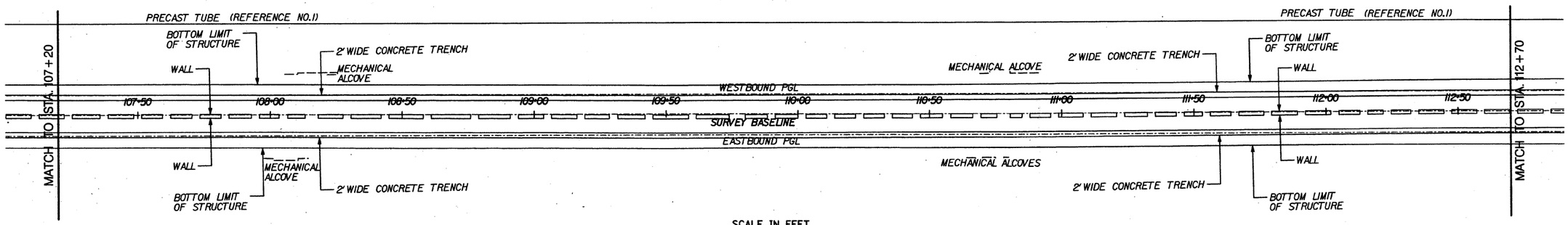
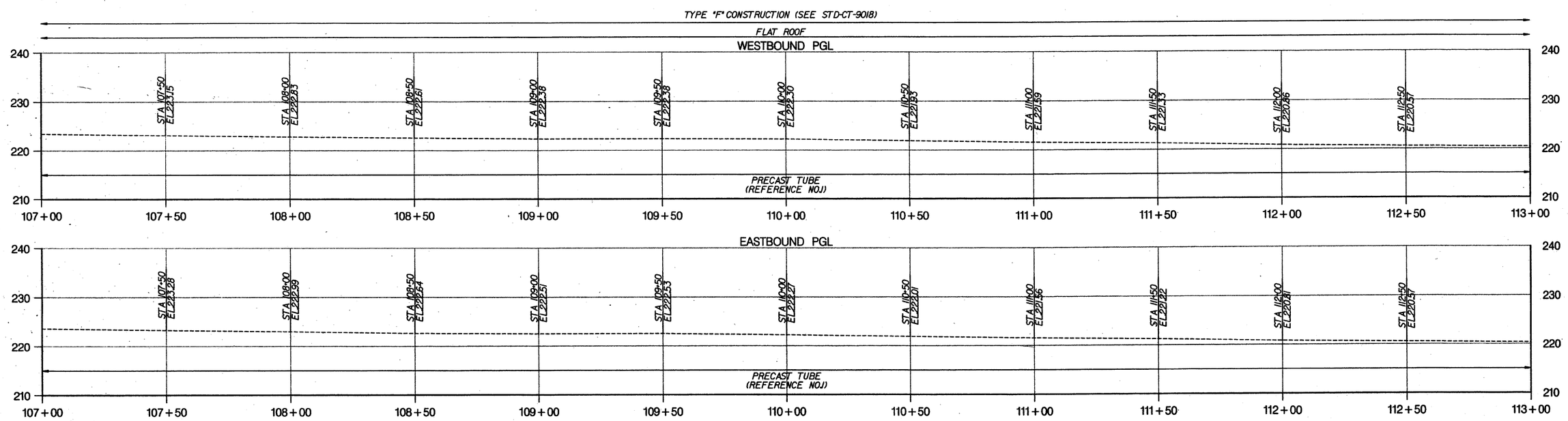
MANHATTAN

EAST RIVER



SCALE IN FEET

20' 10' 0 20' 40'



ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PCE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET

20' 10' 0 20' 40'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	5
08/27/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

JAMES E. CORRIGAN JR. STATE OF NEW YORK LICENSED PROFESSIONAL ENGINEER No. 065161 LICENSED PROFESSIONAL LAND SURVEYOR

Sta. 107+20 To Sta. 112+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9006
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
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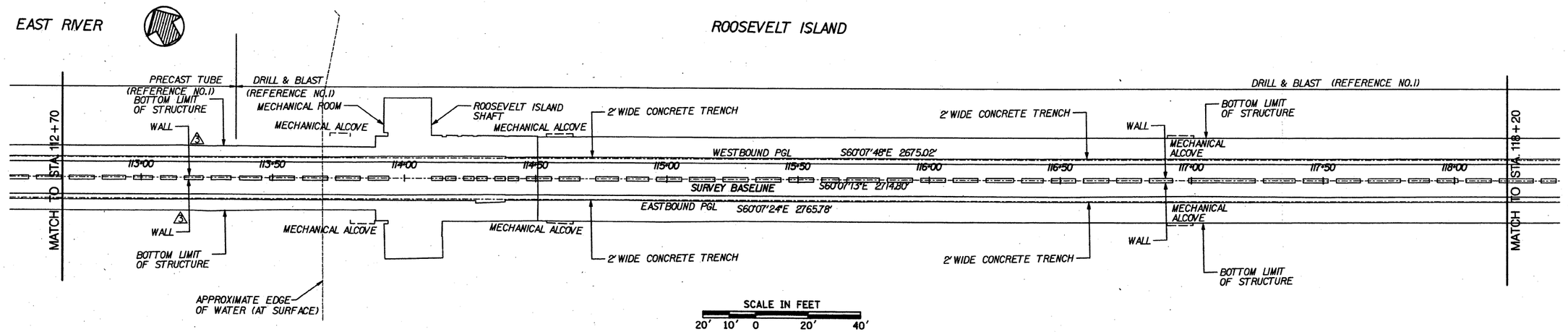

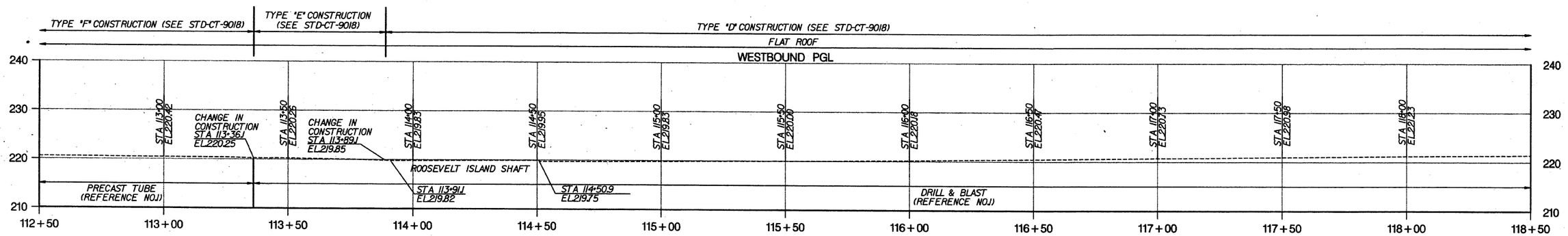

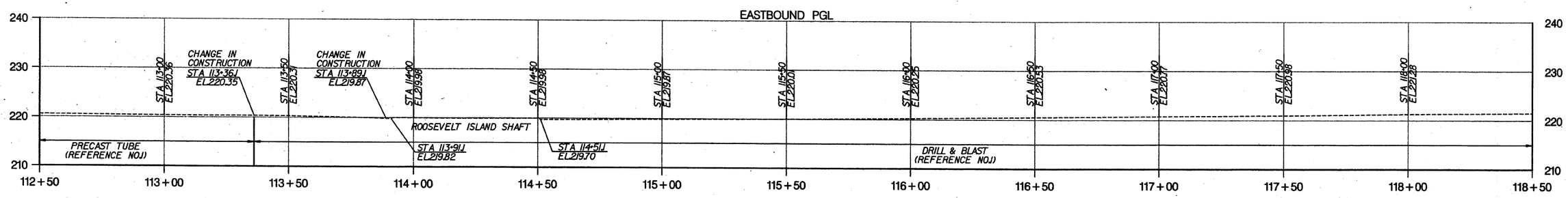

ABBREVIATIONS

PC	POINT OF CURVATURE
RPC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/23/04	REVISE BORDER	5
09/27/03	ADDITIONAL WALL OPENINGS	4
05/20/03	ADDITIONAL CROSS SECTIONS @ 113+16 - 113+35	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
LICENSED LAND SURVEYOR
FRANK B. LEONARDI
050167
DATE:

Sta. 112+70 To Sta. 118+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9007
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
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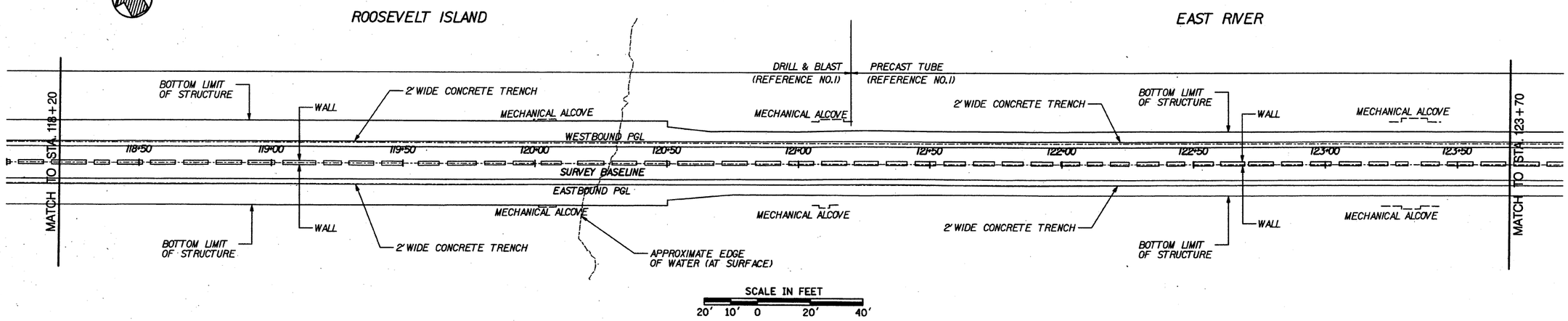

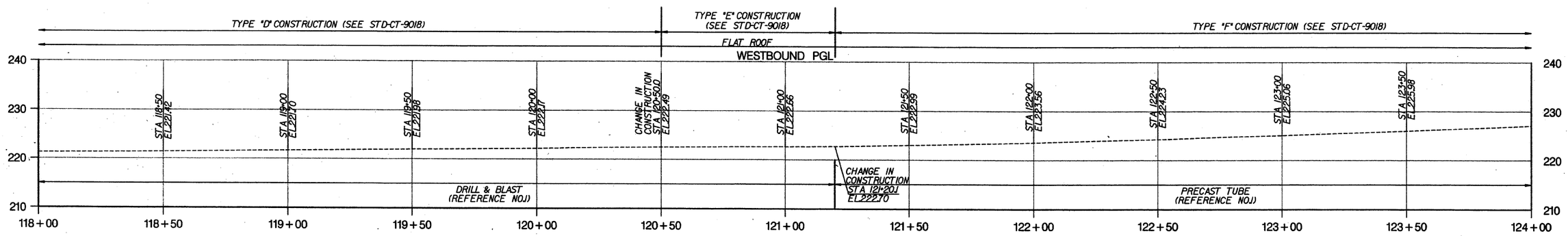

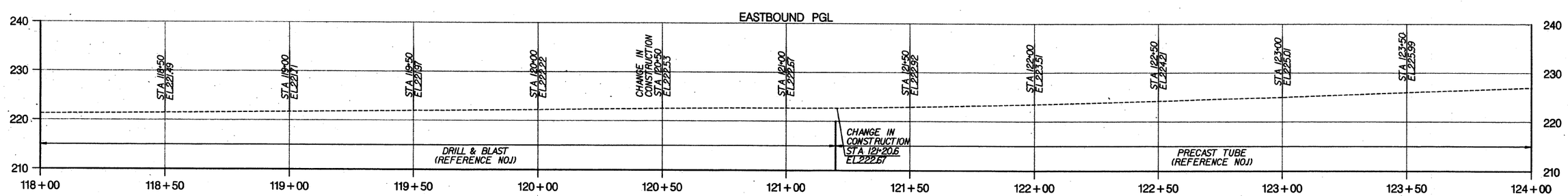

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	5
08/22/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

Sta. 118+20 To Sta. 123+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9008
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. — OF —

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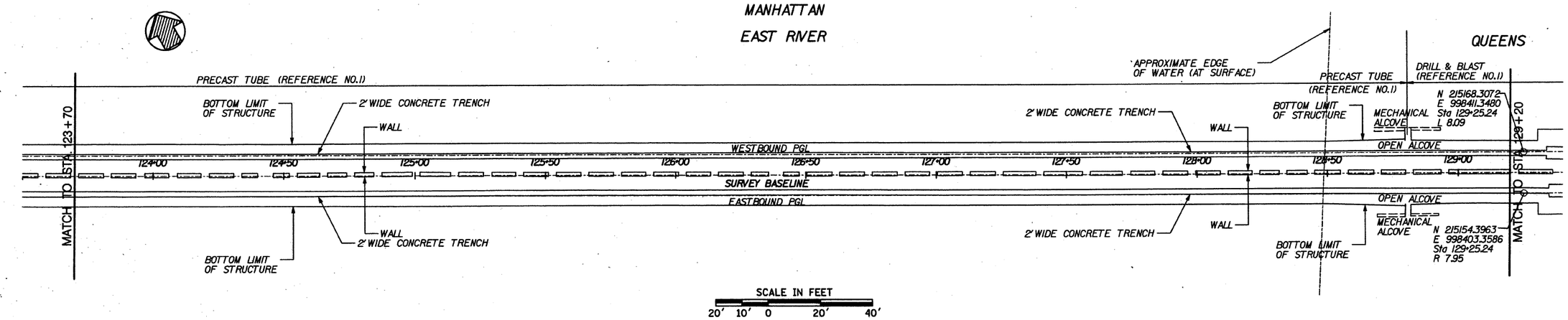
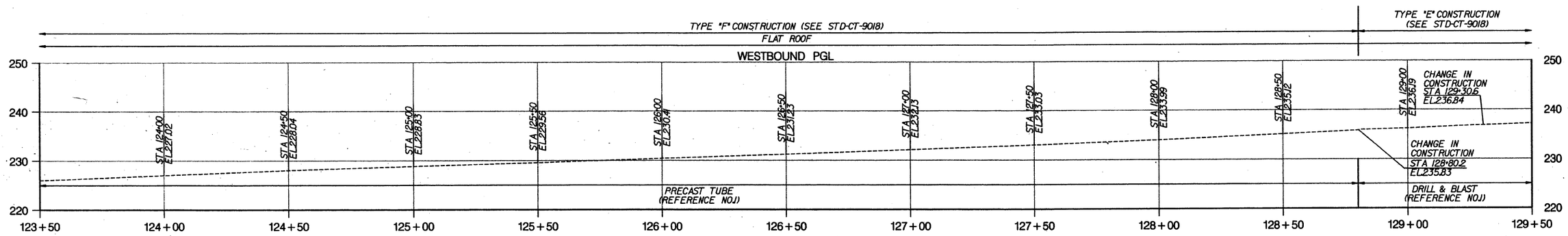
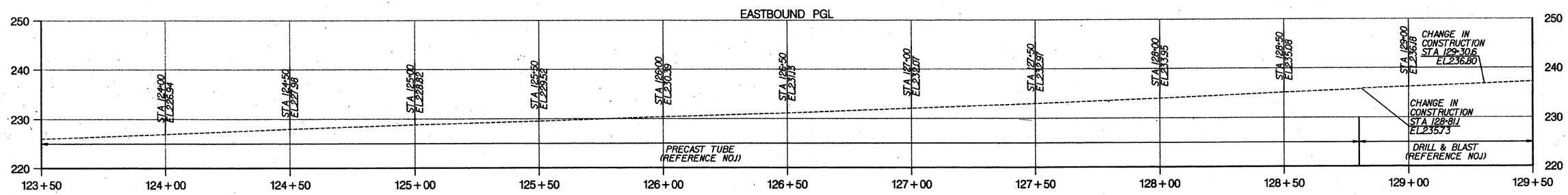


SCALE IN FEET
20' 10' 0 20' 40'





ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/27/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

Sta. 123+70 To Sta. 129+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9009
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
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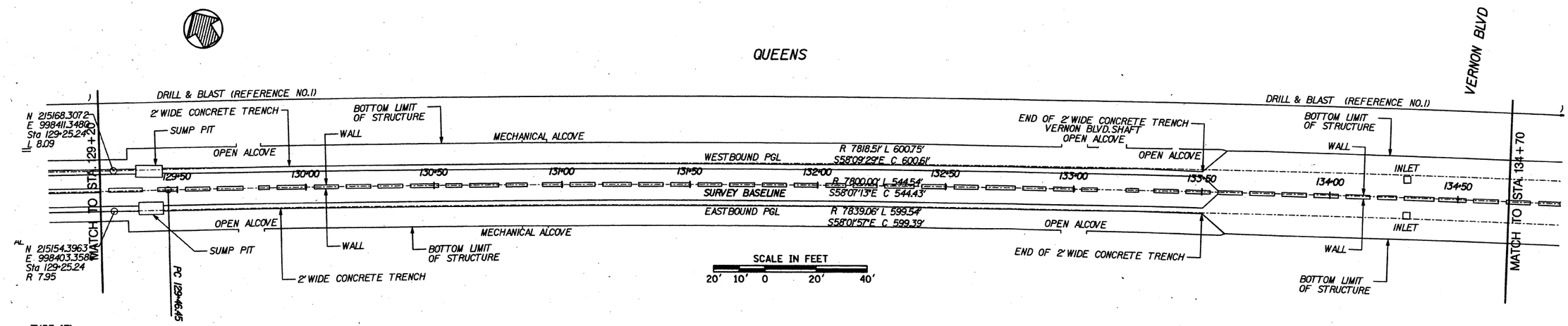

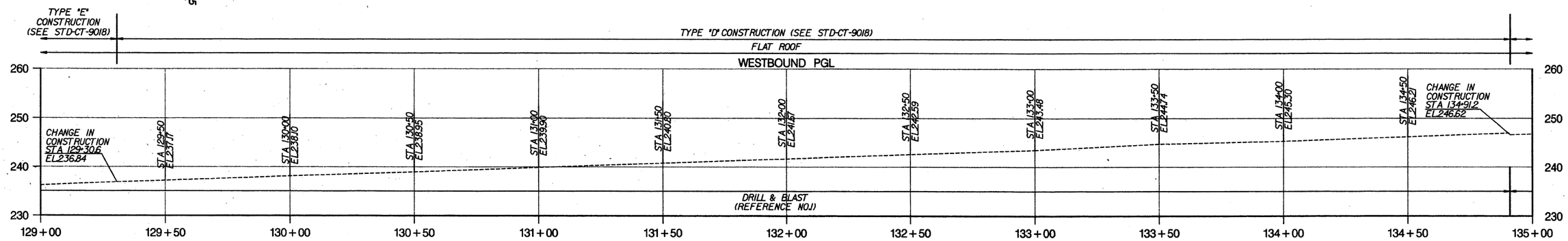

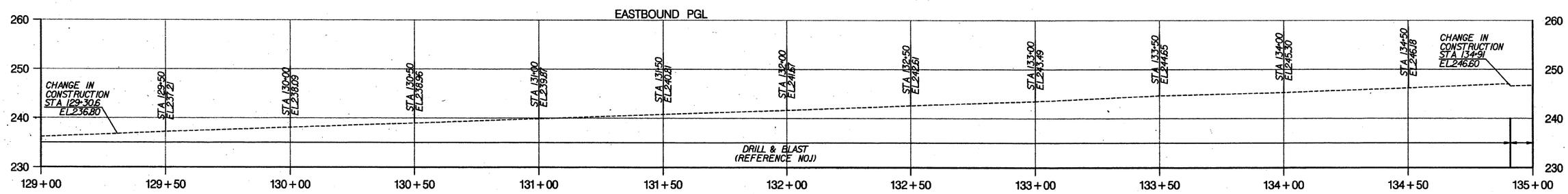

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EASY COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM = NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction
Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/5/04	REVISE BORDER	3
08/2/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

Sta. 129+20 To Sta. 137+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9010
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

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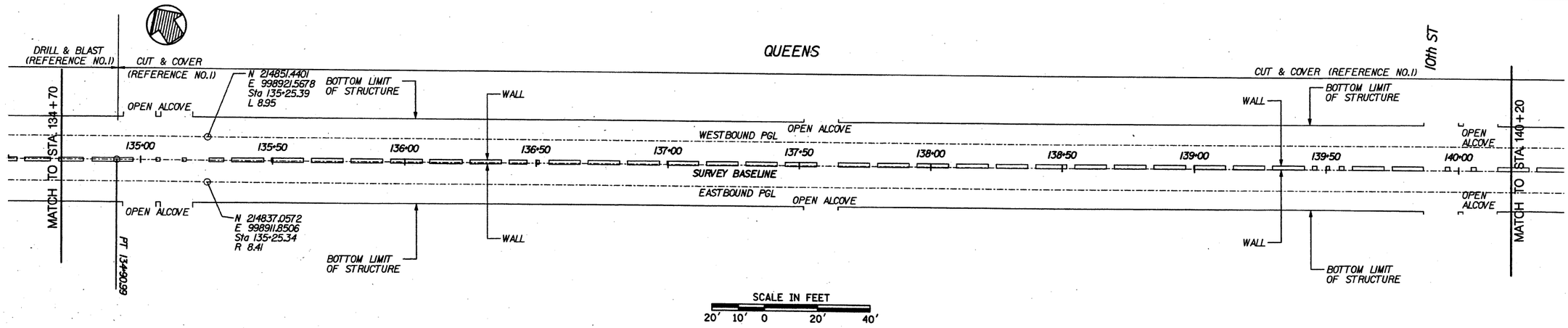

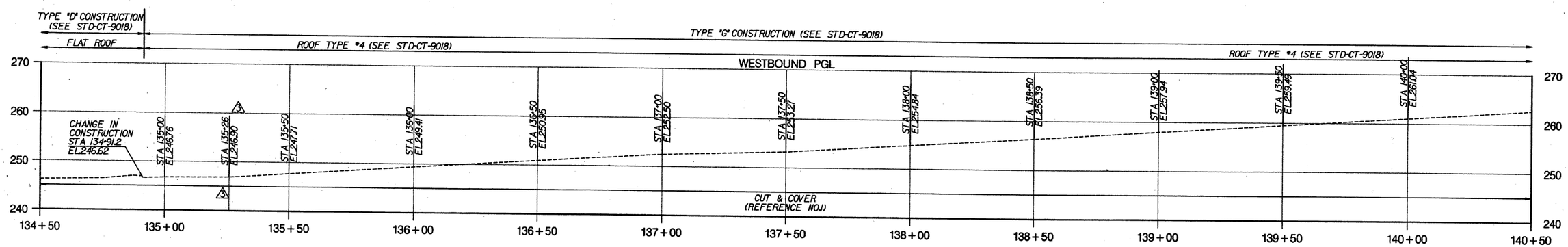

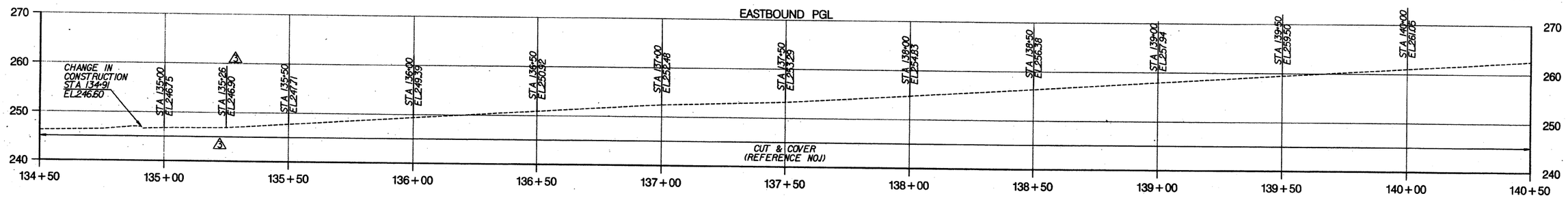

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

PBSTV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/27/03	ADDITIONAL WALL OPENINGS	4
05/20/03	PROFILE ELEVATION @ 135+26	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER · STEEL · LAND SURVEYOR

Sta. 134+70 To Sta. 140+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9011
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

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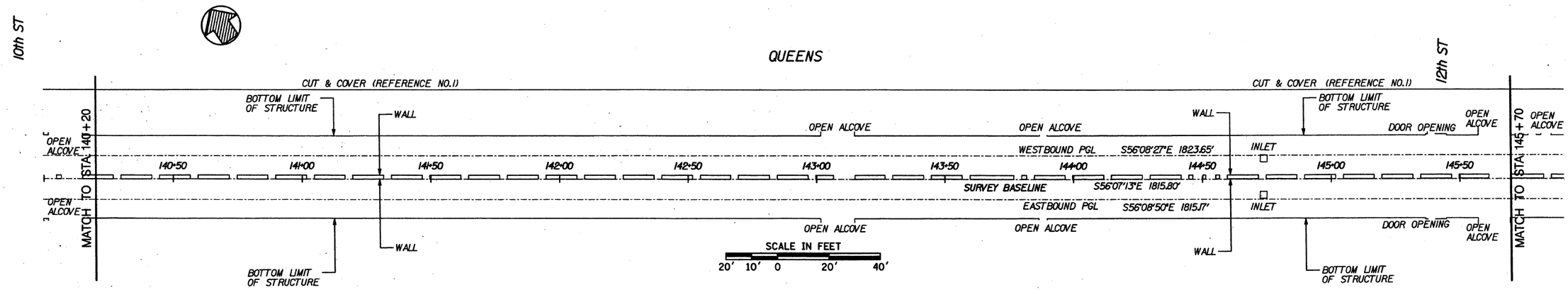

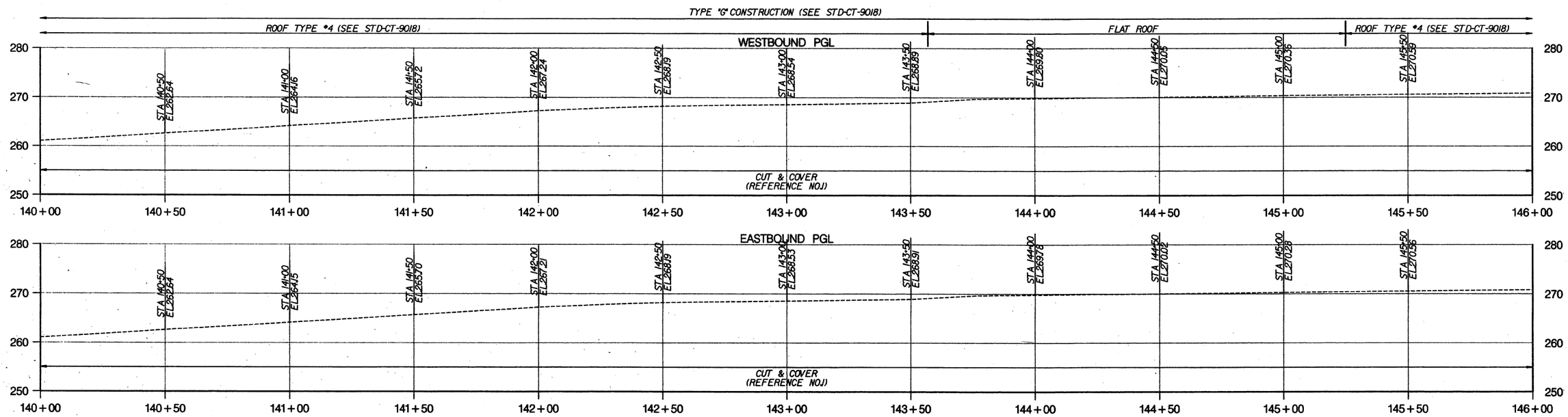

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	3
09/27/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

JAMES M. HEDAYATI
STATE OF NEW YORK
LICENSED PROFESSIONAL ENGINEER
No. 065890
LICENSED LAND SURVEYOR

Sta. 140+20 To Sta. 145+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9012
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

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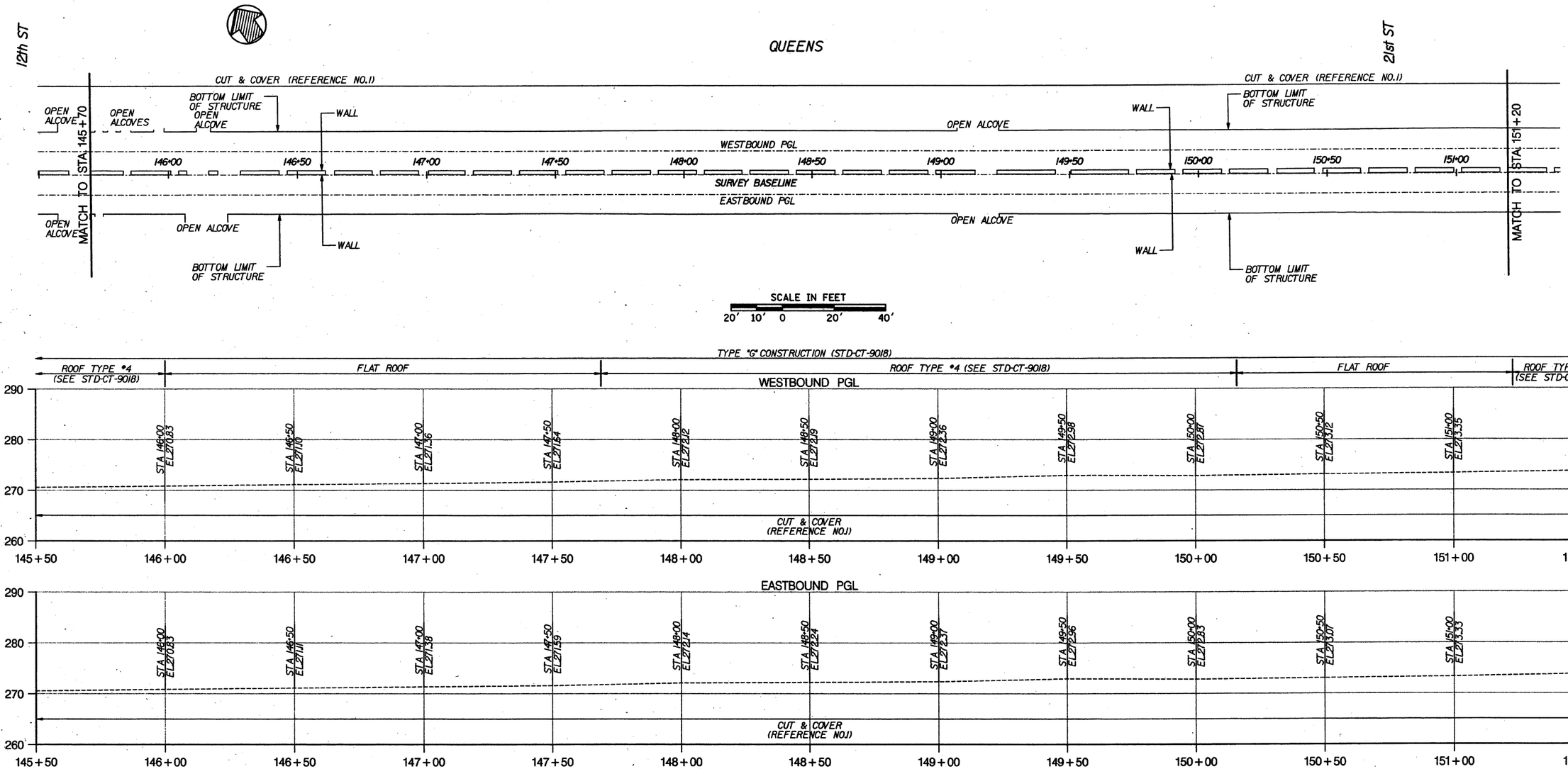

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/22/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK · LICENSED LAND SURVEYOR

Sta. 145+70 To Sta. 151+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9013
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
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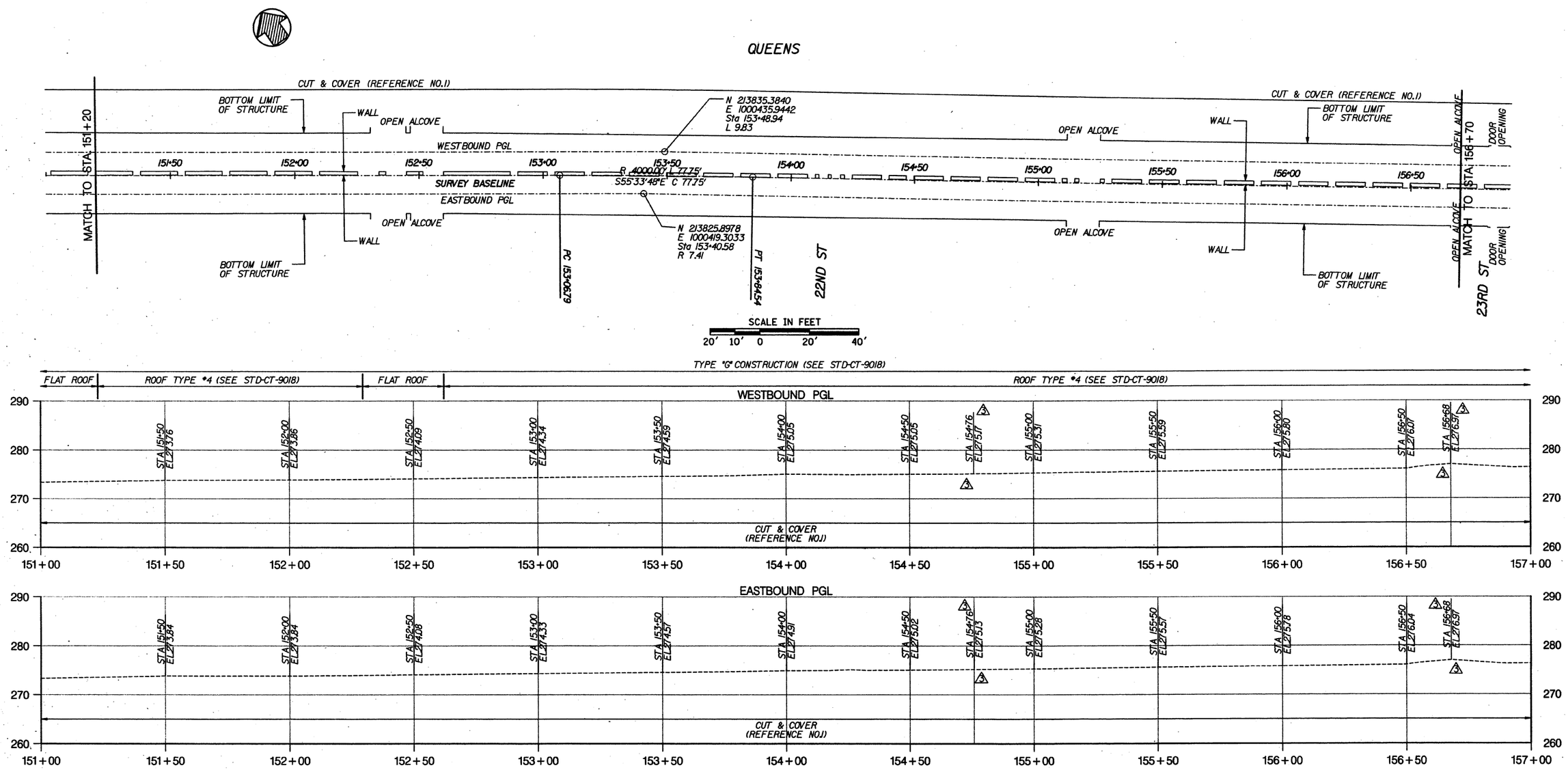

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

PBSTV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/27/03	ADDITIONAL WALL OPENINGS	4
05/20/03	PROFILE ELEVATIONS @ 154+76, 156+68	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK · LICENSED LAND SURVEYOR · DATE: 2/24/04

Sta. 151+20 To Sta. 156+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9014
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. — OF —

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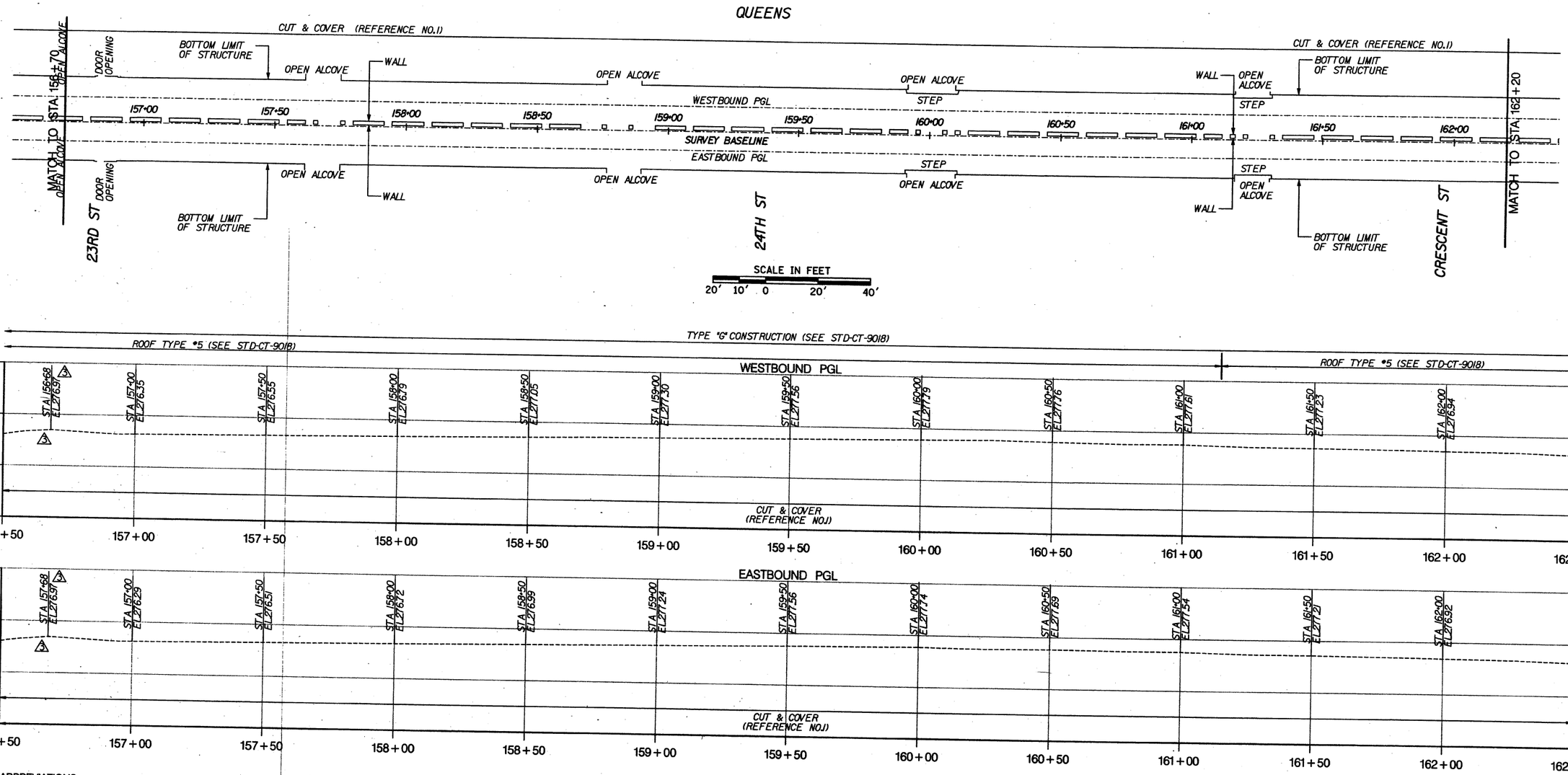

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL
SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD 188 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB ST
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
08/23/03	ADDITIONAL WALL OPENINGS	4
05/20/03	PROFILE ELEVATIONS @ 154+76, 156+68	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

STATE OF NEW YORK — FRANK BLESSETTI — Lic. No. 065076 — LICENSED PROFESSIONAL ENGINEER

Sta. 156+70 To Sta. 162+20

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9015
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
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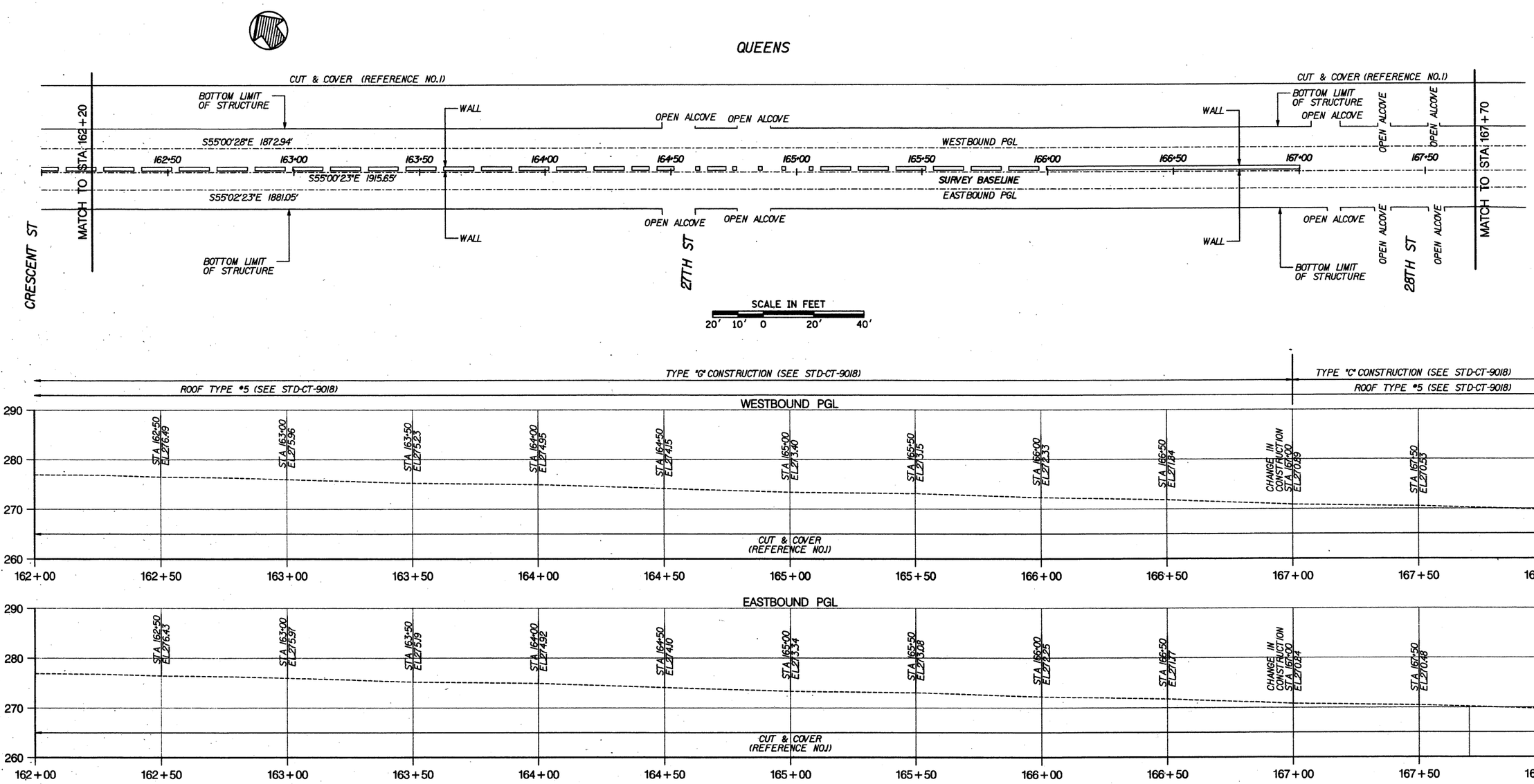

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
09/27/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

STATE OF NEW YORK
LANDS & STEERS
LICENSED LAND SURVEYOR

Sta. 162+20 To Sta. 167+70

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9016
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___

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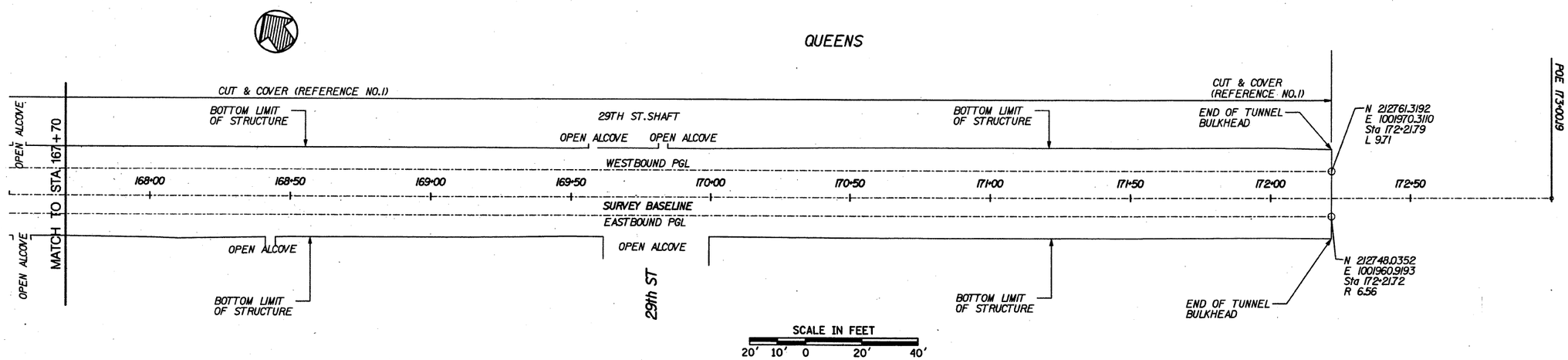

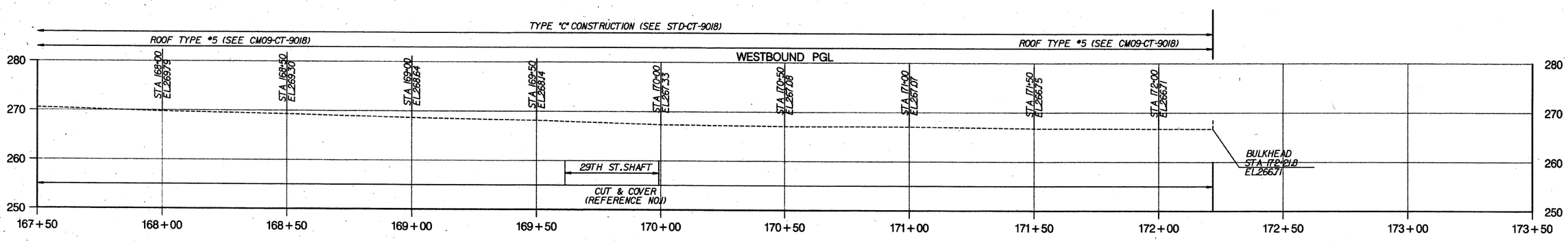

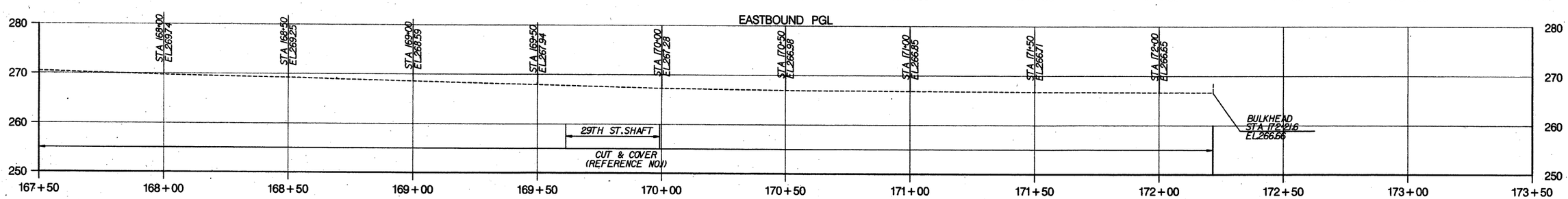

ABBREVIATIONS

PC	POINT OF CURVATURE
CC	RADIUS POINT OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
POE	POINT END OF LINE OR CURVE
HV	HORIZONTAL / VERTICAL CONTROL STATION
N	NORTH COORDINATE OF STATION
E	EAST COORDINATE OF STATION
EL.	ELEVATION OF STATION
R	RADIUS (CURVE)
L	ARC LENGTH (CURVE)
C	CHORD LENGTH (CURVE)
WB PGL	WEST BOUND PROFILE GRADE LINE
EB PGL	EAST BOUND PROFILE GRADE LINE
STA	STATION

HORIZONTAL SCALE IN FEET
20' 10' 0 20' 40'

VERTICAL SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5
06/27/03	ADDITIONAL WALL OPENINGS	4

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
JAMES F. STEERE, JR.
S.P.L.S. No. 050167
LAND SURVEYOR

Sta. 167+70 To Sta. 173+00

63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9017
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___

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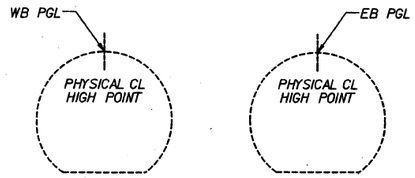
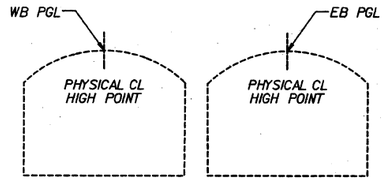
TYPE "A" CONSTRUCTION



TYPE "B" CONSTRUCTION



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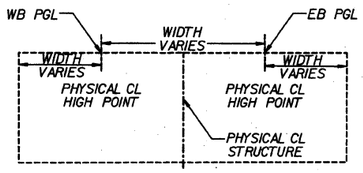

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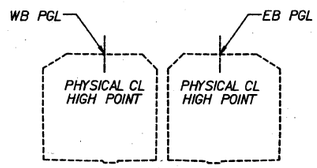

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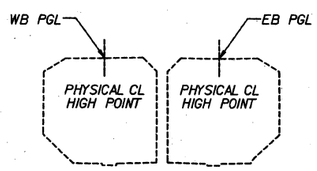

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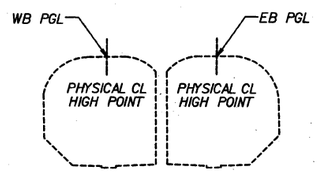

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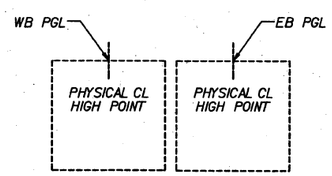

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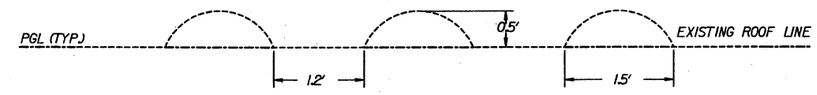

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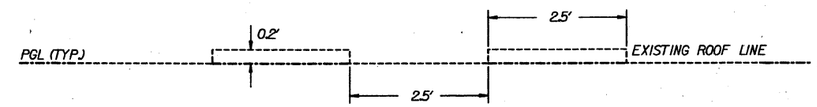

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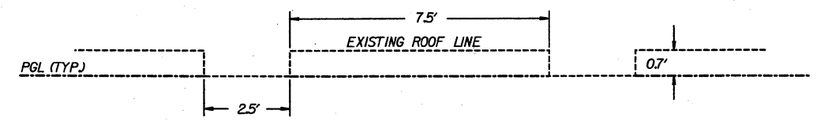

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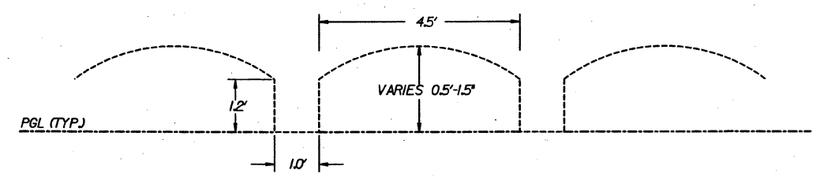

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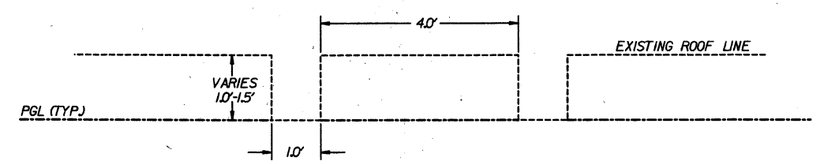

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MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
021304	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

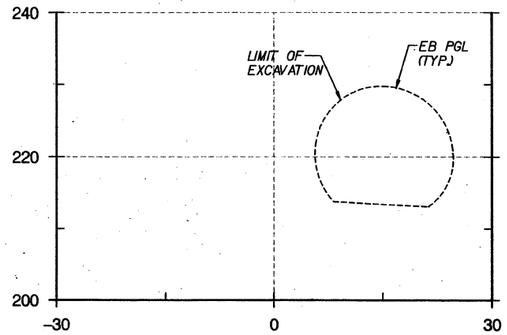
STATE OF NEW YORK · LICENSED LAND SURVEYOR

EXISTING "AS-BUILT" DETAILS

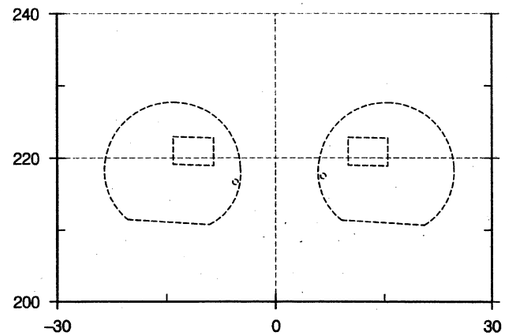
63rd Street Tunnel
Existing Conditions
Plan & Profile

SCALE: N.T.S.
DRAWING NUMBER: STD-CT-9018
DATE: FEB-13-04
REVISION NUMBER: 0

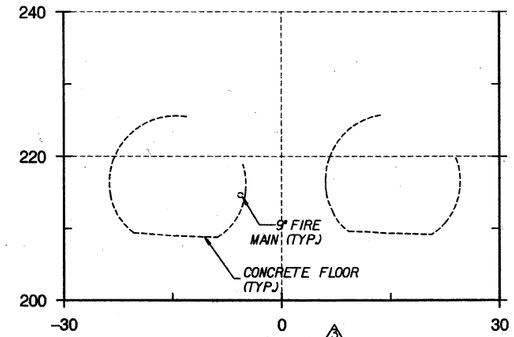
STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



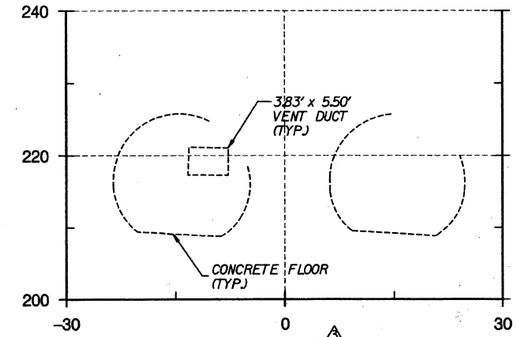
85+37



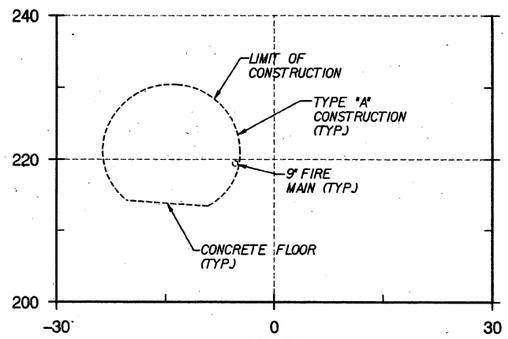
86+00



86+70 3



86+85 3



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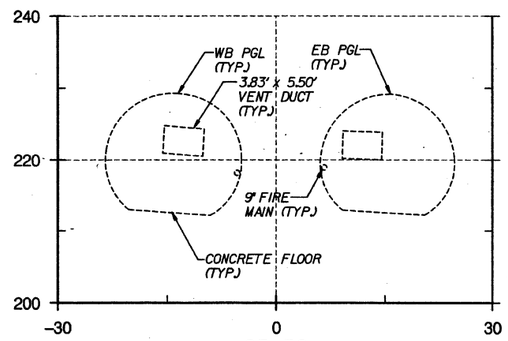
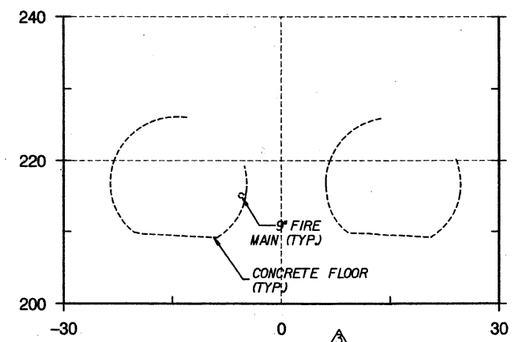
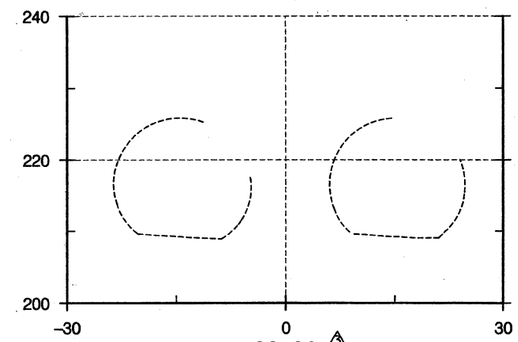


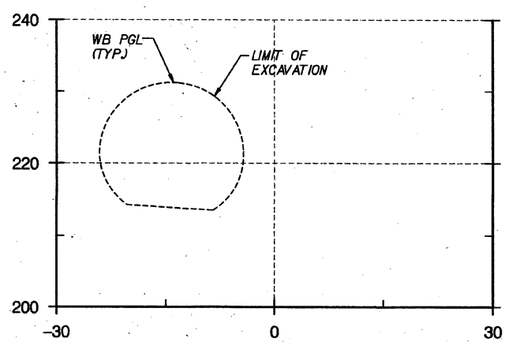
85+50



86+65 3



86+80 3



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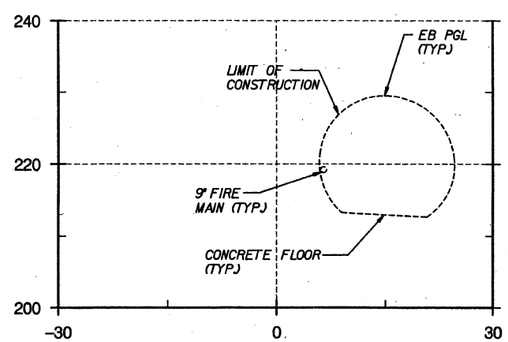
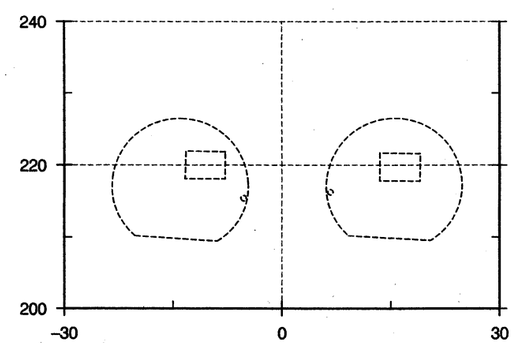
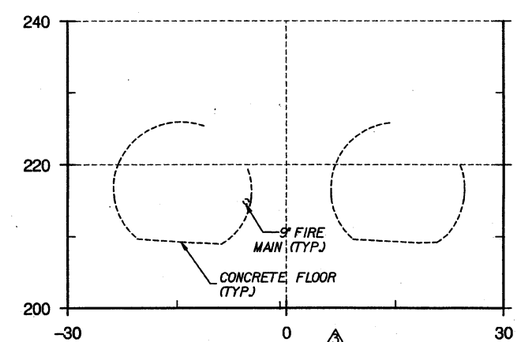


85+39



86+50



86+75 3

HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL. 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:34 AM p:\99110030\dgn\2d sheet\xsect-sheet19.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
03/12/04	REVISE BORDER	4
05/20/03	ADDITIONAL CROSS SECTIONS @ 86+65 - 86+85	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

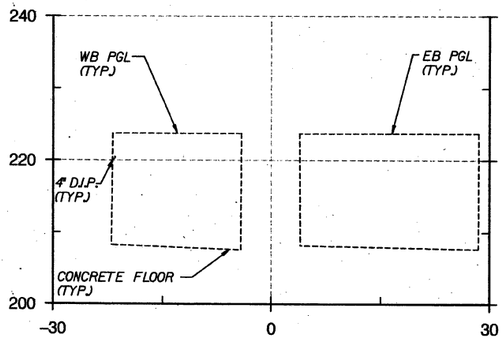
STATE OF NEW YORK
JAMES MCKENNA
LICENSED LAND SURVEYOR
DATE:

Sta. 85+04 To Sta. 86+85

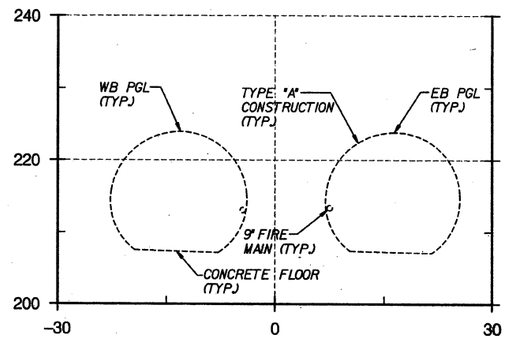
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9019
DATE: FEB-13-04
REVISION NUMBER: 0

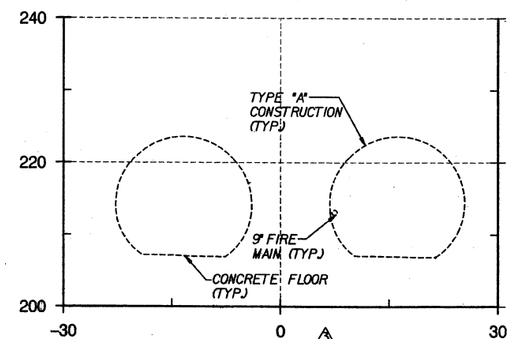
STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



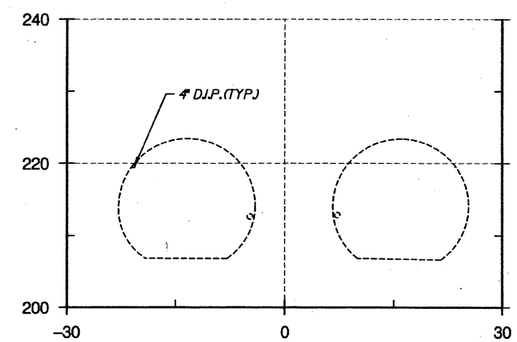
87+50



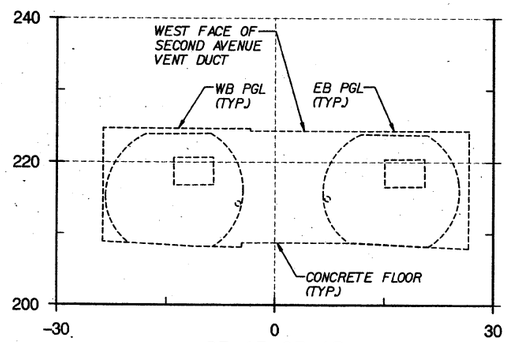
88+00



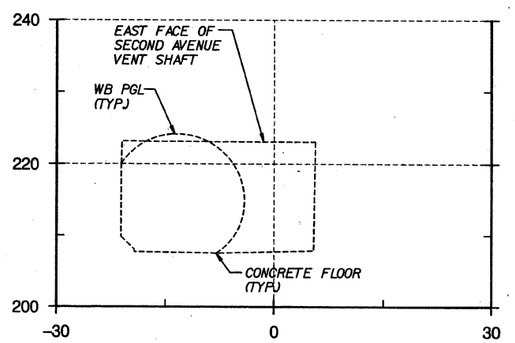
88+30 3



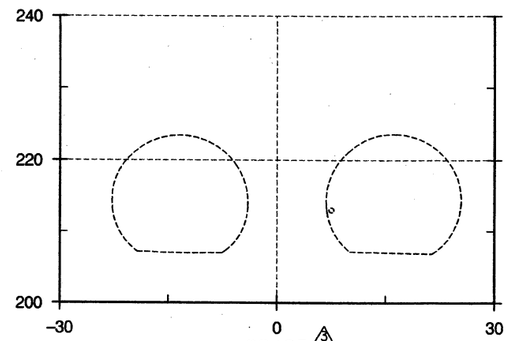
88+50



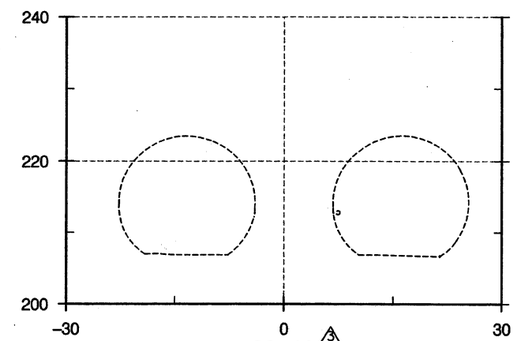
87+13-87+15



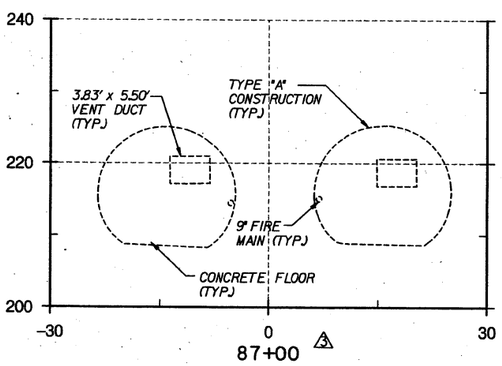
87+69



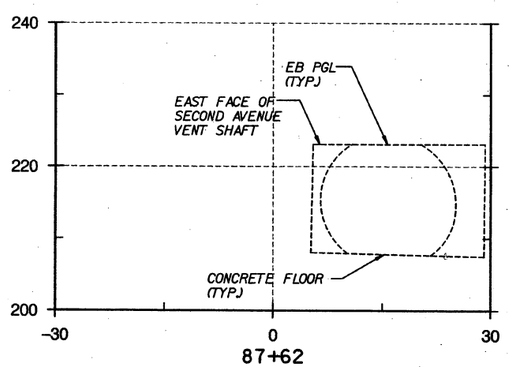
88+25 3



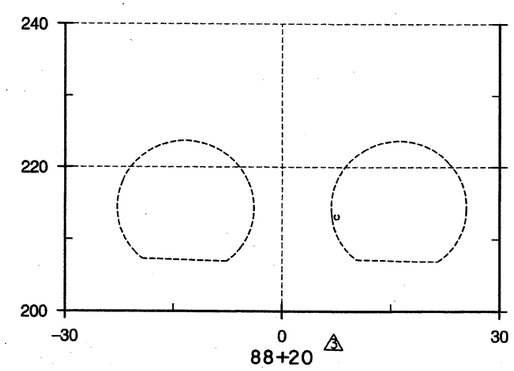
88+40 3



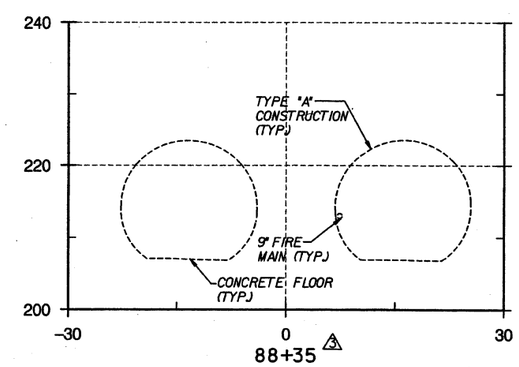
87+00 3



87+62



88+20 3



88+35 3

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:35 AM p:\391100308\dgn\2d sheet\xsect-sheet20.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road East Side Access

PBSTV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	2
05/20/03	ADDITIONAL CROSS SECTIONS @ 87+00, 88+20 - 88+40	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK — JAMES E. BOTTICELLI — LICENSED LAND SURVEYOR — 030161

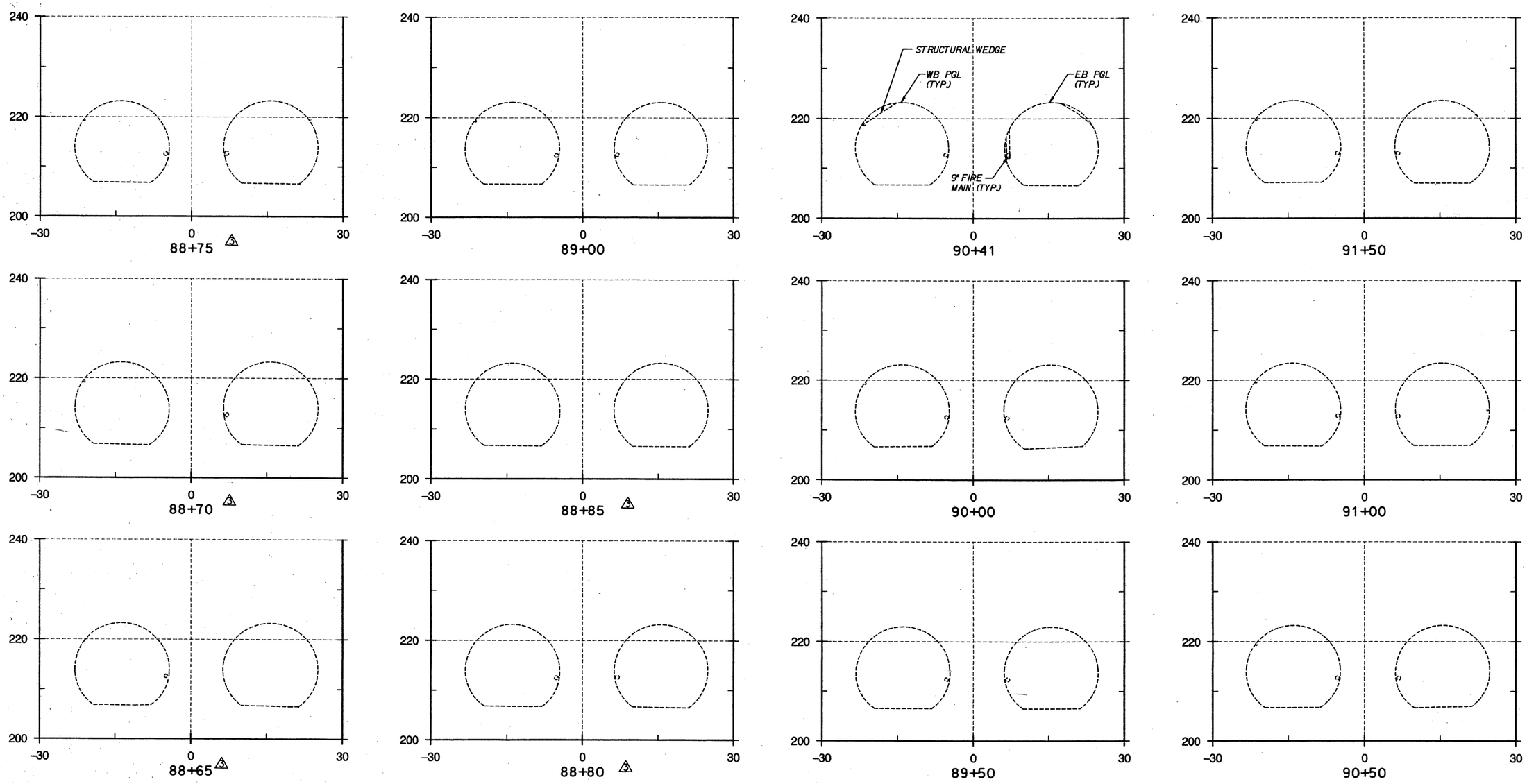
DATE: 9/13/04

Sta. 87+00 To Sta. 88+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9020
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV

A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
021304	REVISE BORDER	5
052003	ADDITIONAL CROSS SECTIONS @ 88+65 - 88+85	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

STATE OF NEW YORK
FRANCIS B. LOMBARDO
No. 049471
LICENSED PROFESSIONAL ENGINEER
LICENSED LAND SURVEYOR

Sta. 88+65 To Sta. 91+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9021
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

$PRFNAME$
$TBLNAME$
2/24/2004 10:36:36 AM
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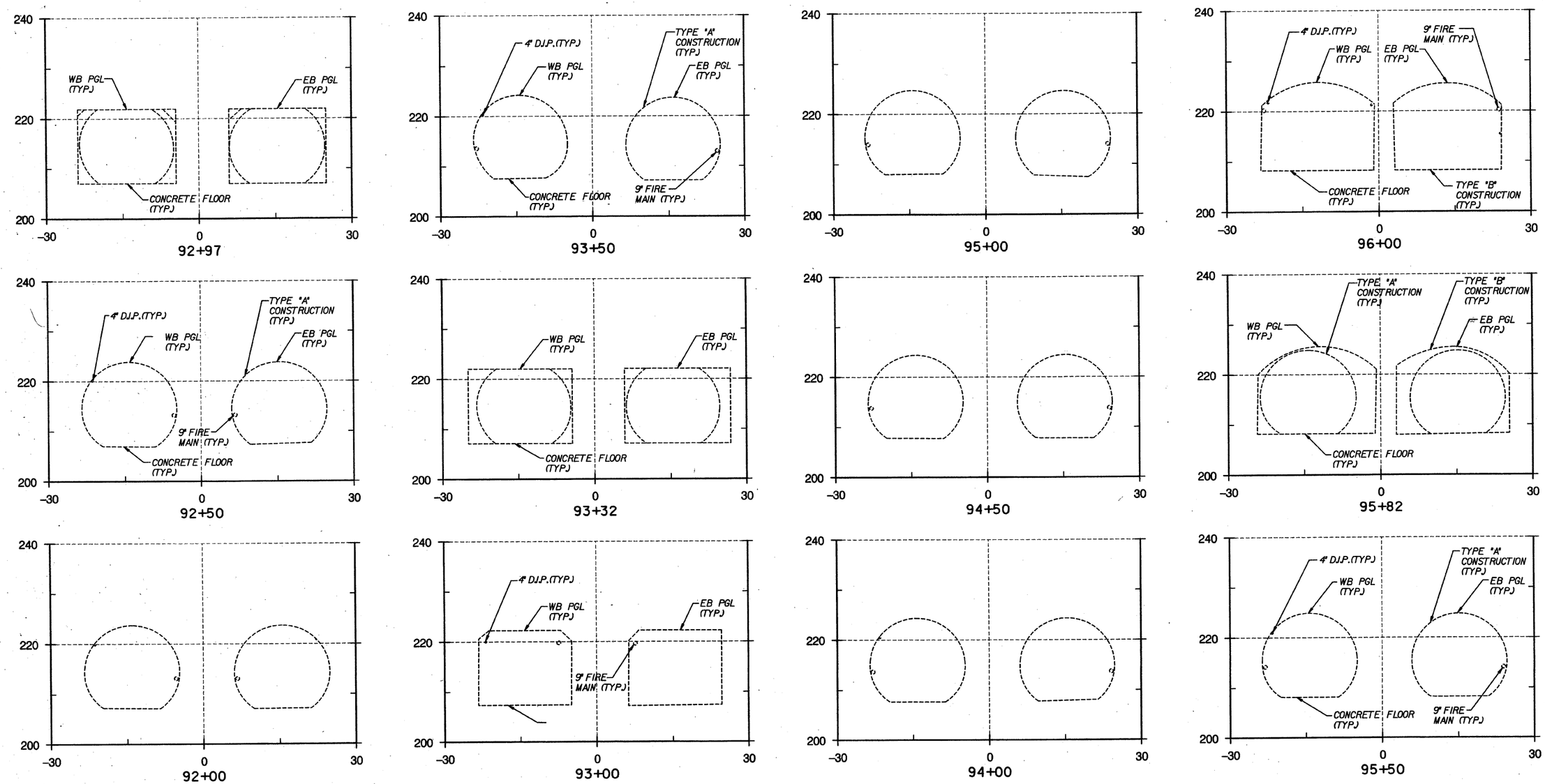
$REF6$



HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:37 AM p:\99110030\dgn\2d sheet\xsect-sheet22.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

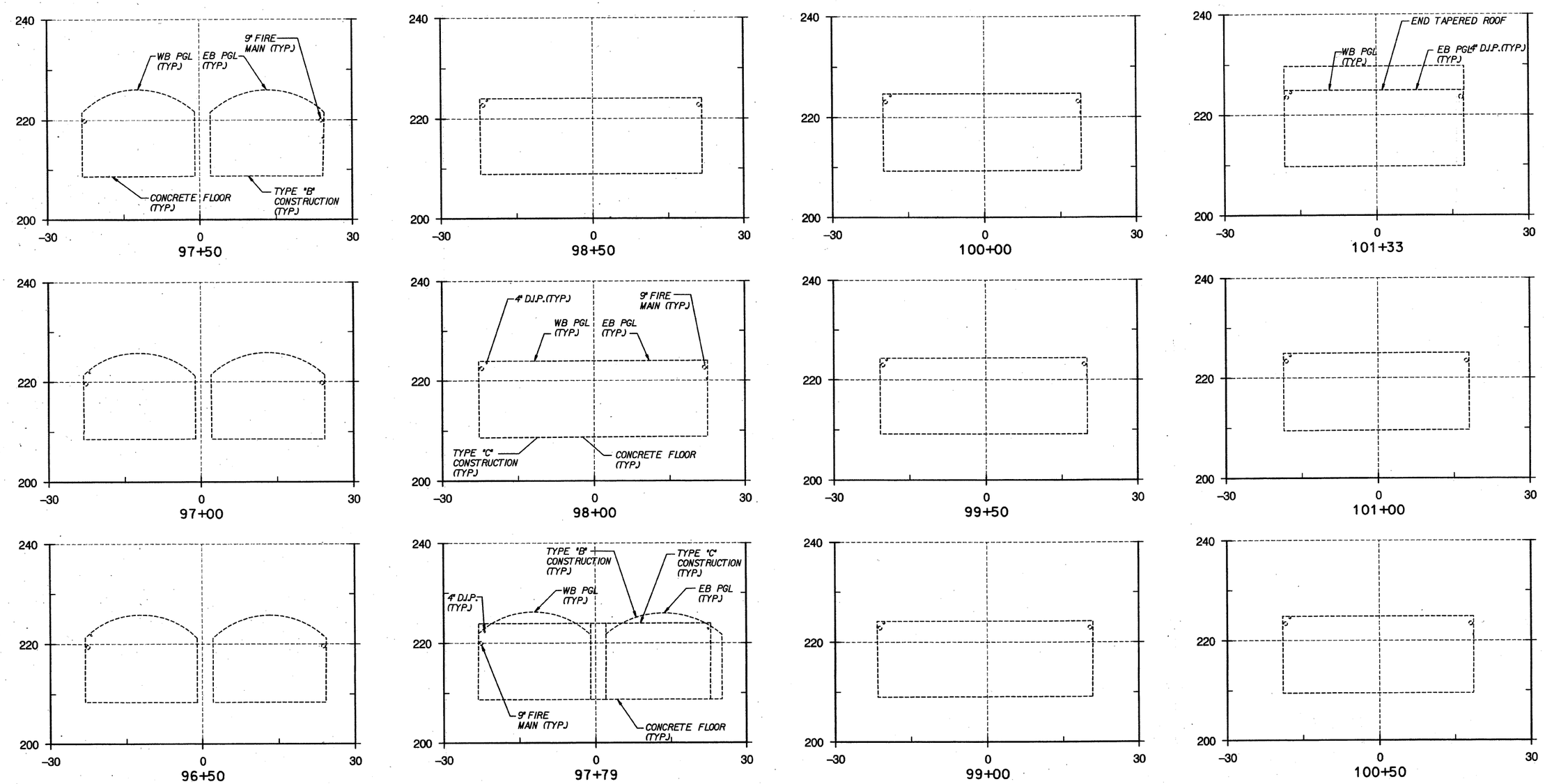
STATE OF NEW YORK · STEPHEN E. SEEBECK · LICENSED LAND SURVEYOR

Sta. 92+00 To Sta. 96+00

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9022
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:37 AM p:\99110030\dgn\2d sheet\xsect-sheet23.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

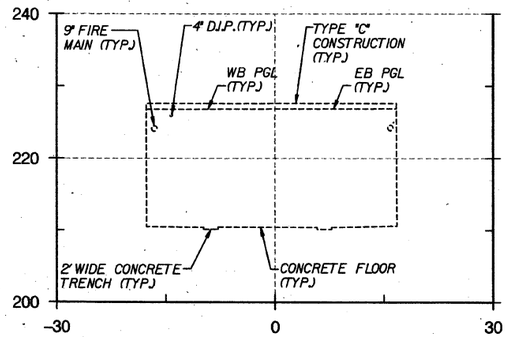
JAMES A. STEFFEN N.Y. STATE OF NEW YORK LICENSED LAND SURVEYOR

Sta. 96+50 To Sta. 101+33

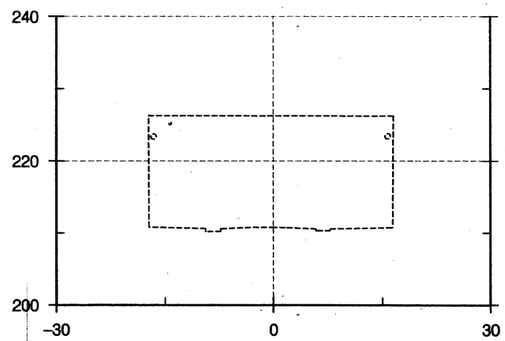
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9023
DATE: FEB-13-04
REVISION NUMBER: 0

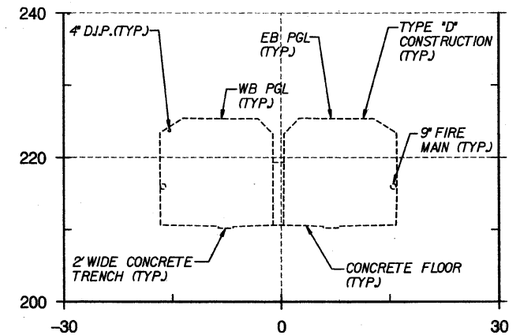
STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



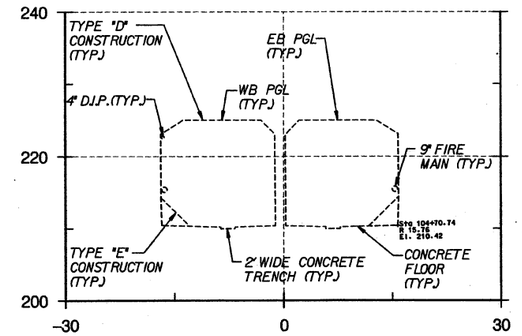
102+50



103+00



104+00



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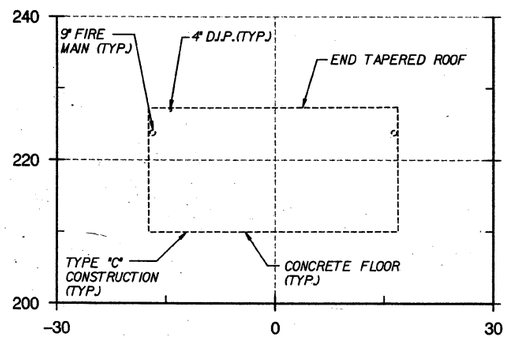
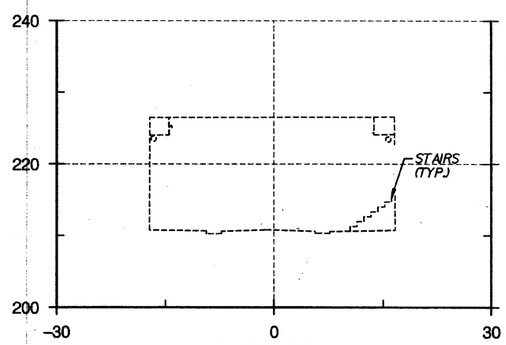
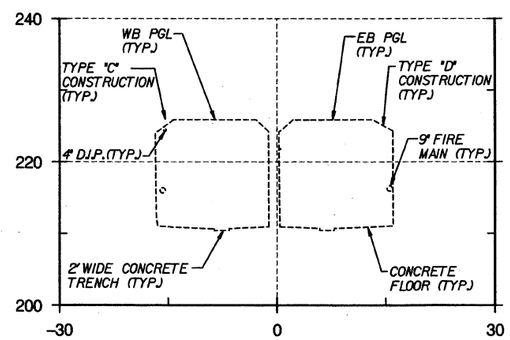


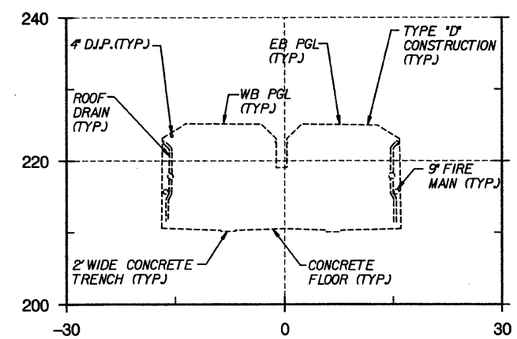
102+00



102+98



103+50



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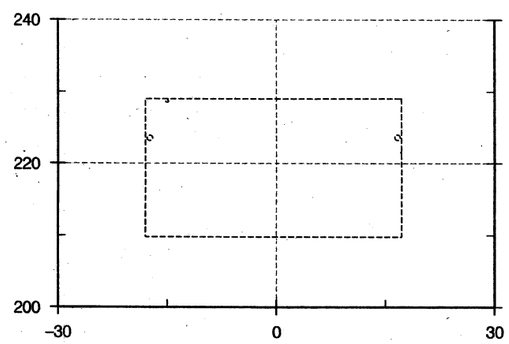
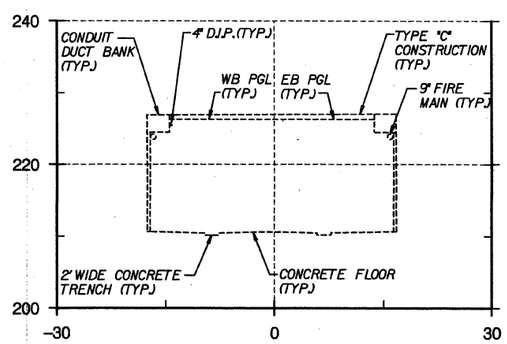


101+50



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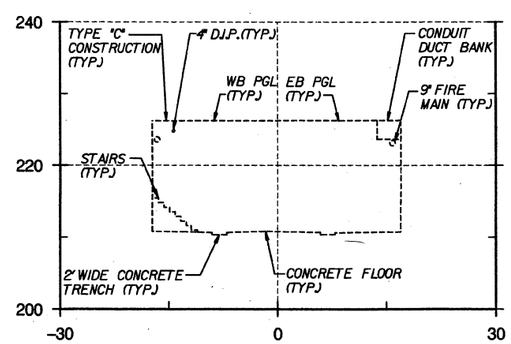
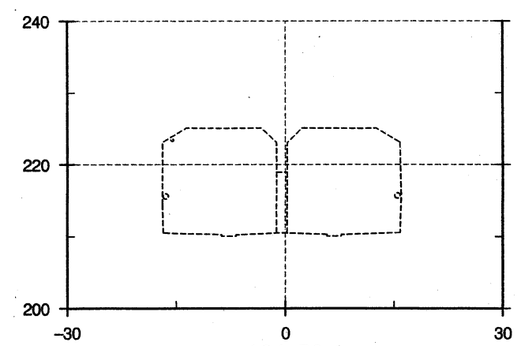


103+25



104+50

HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 El. 0.00 EQUALS ESA El. 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:38 AM
$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ p:\99110030\dgn\2d sheet+8\xsect-sheet24.dgn

Capital Construction
Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

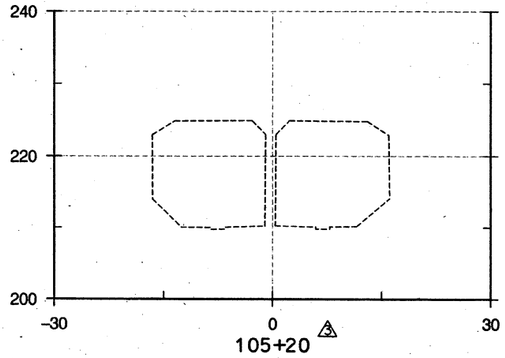
DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYAT
DATE:

Sta. 101+50 To Sta. 104+71

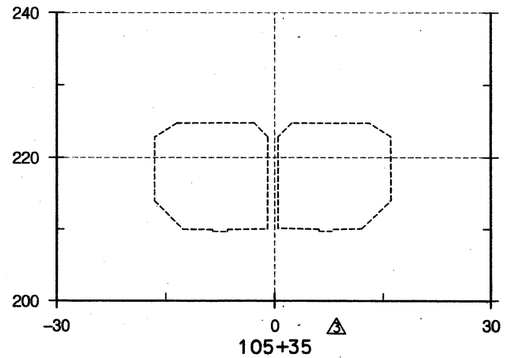
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9024
DATE: FEB-13-04
REVISION NUMBER: 0

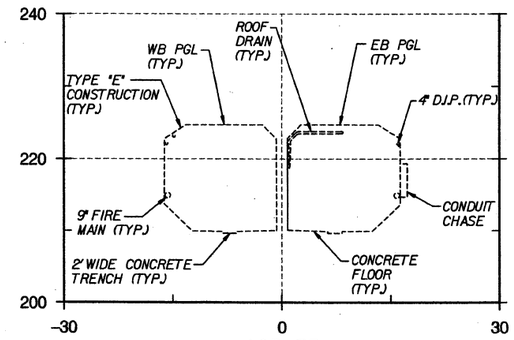
STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



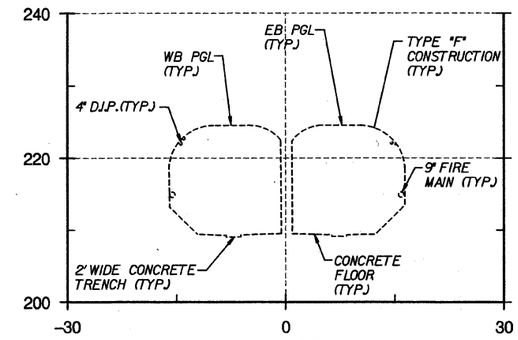
105+20 3



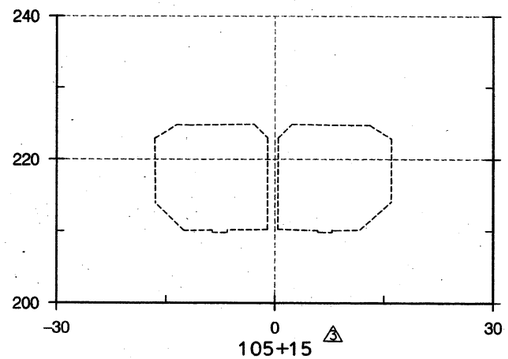
105+35 3



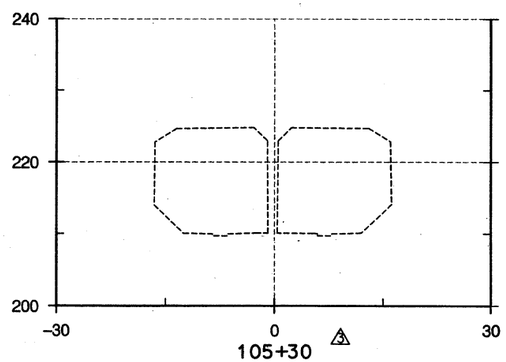
105+75



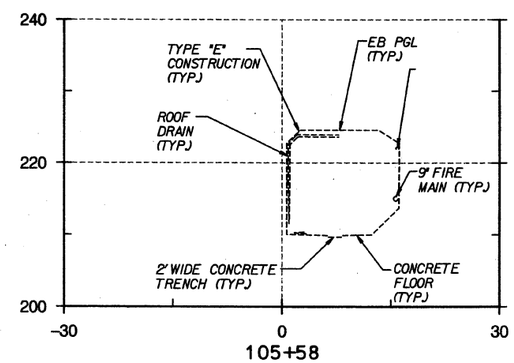
106+00



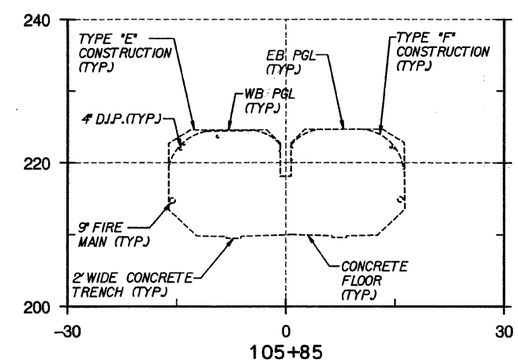
105+15 3



105+30 3



105+58



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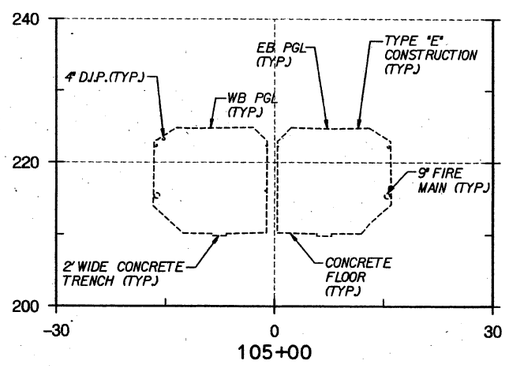
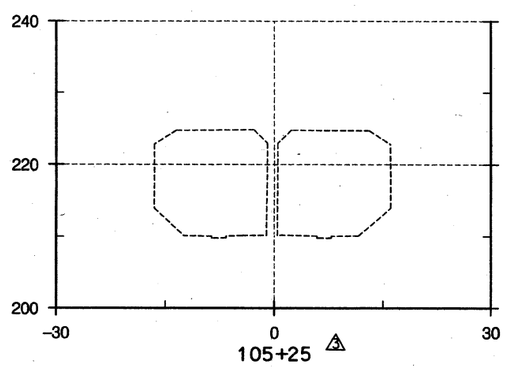
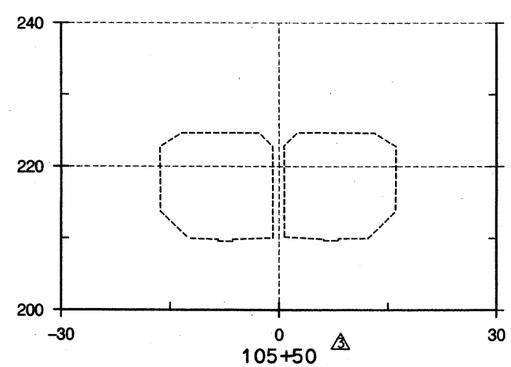


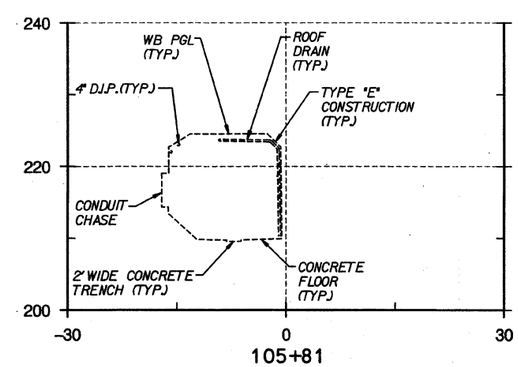
105+00



105+25 3



105+50 3



105+81

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	4
05/20/03	ADDITIONAL CROSS SECTIONS @ 105+15 - 105+35, 105+50	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK JAMES M. DEARE 050161 LICENSED LAND SURVEYOR

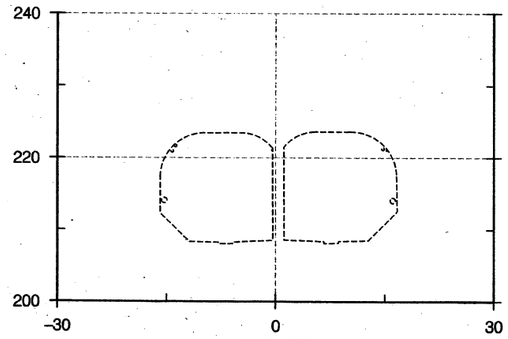
Sta. 105+00 To Sta. 106+00

63rd Street Tunnel
Existing Conditions
Cross Sections

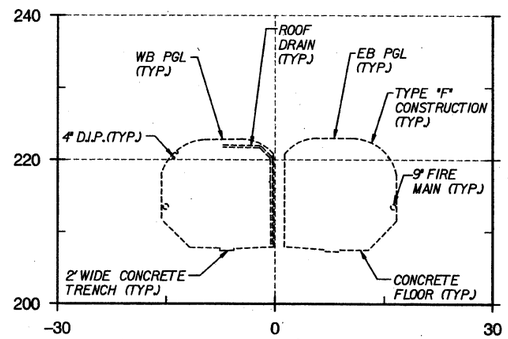
SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9025
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:39 AM
p:\99110030\dgn\2d sheet\xsect-sheet25.dgn
$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$



107+00



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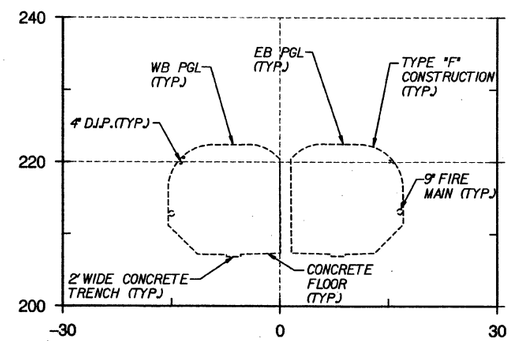

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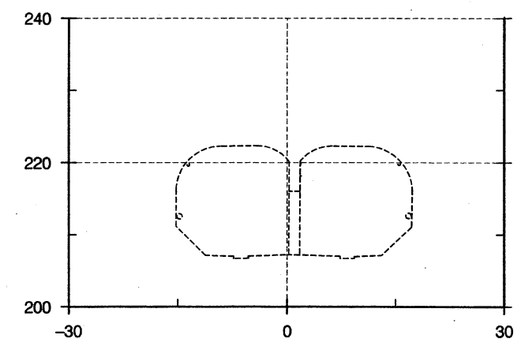
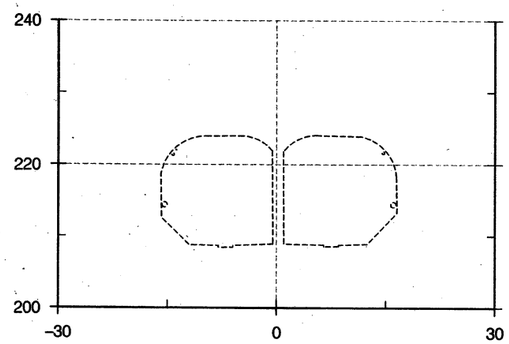


110+00



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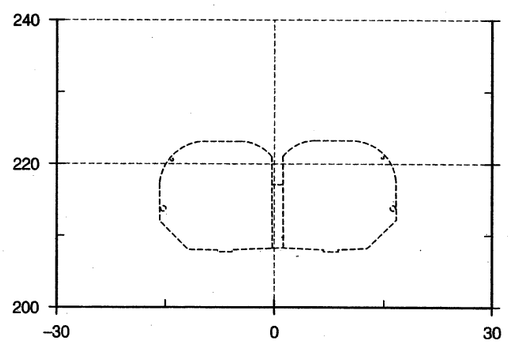
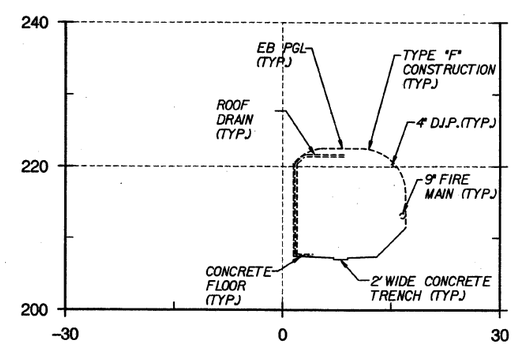


107+50



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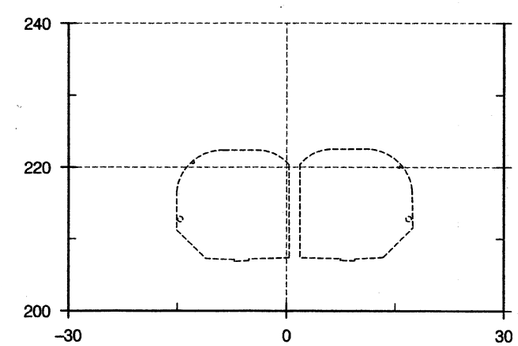

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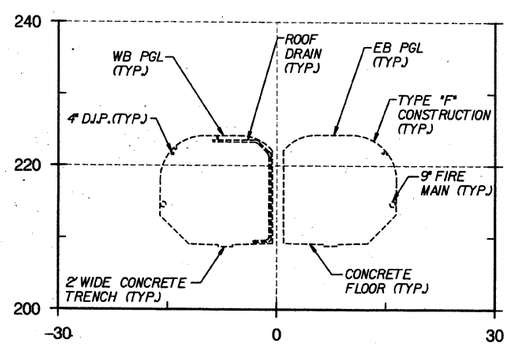

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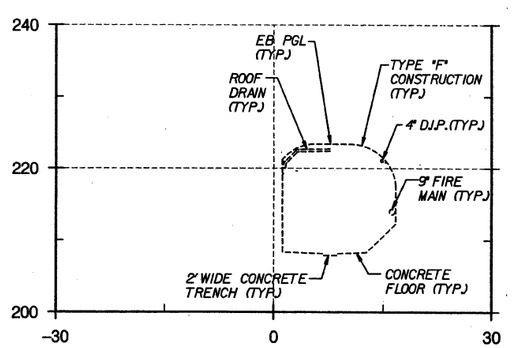

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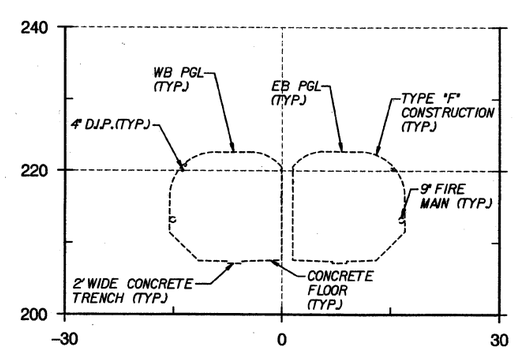
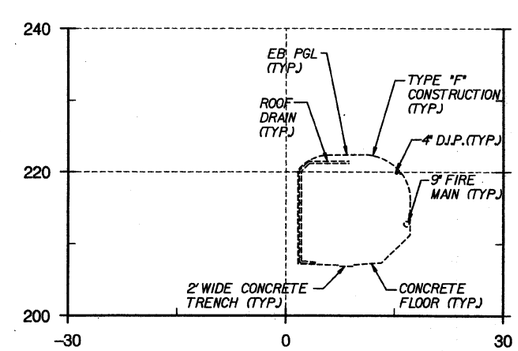


108+50



109+37

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:40 AM

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ p:\99110030\dgn\2d sheet\xsect-sheet26.dgn

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV

A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

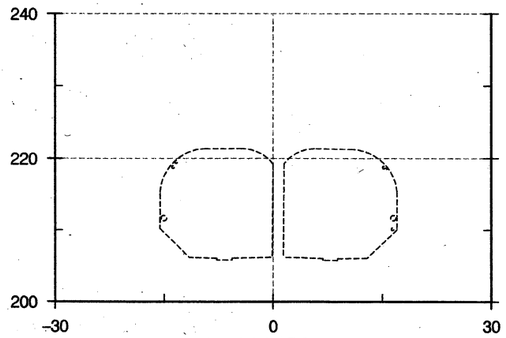
STATE OF NEW YORK
FRANK BLEVINS
050673
LICENSED LAND SURVEYOR
DATE:

Sta. 106+25 To Sta. 110+00

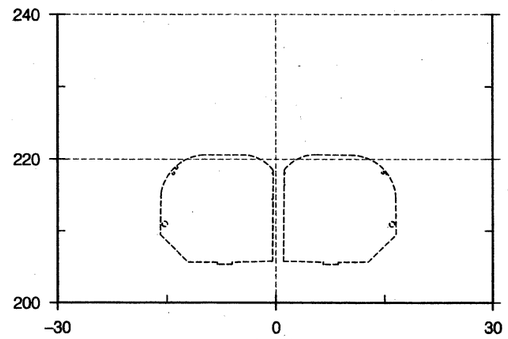
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9026
DATE: FEB-13-04
REVISION NUMBER: 0

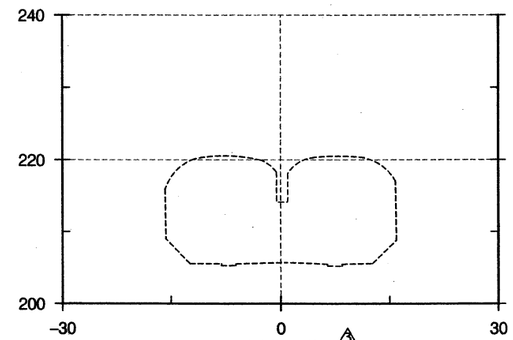
STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



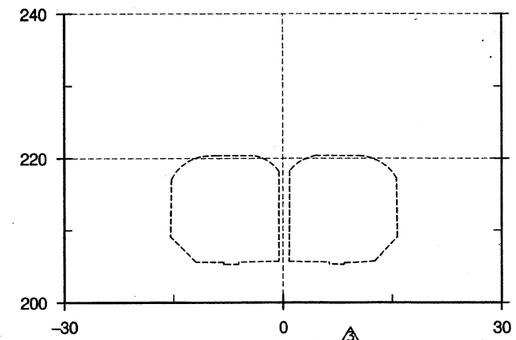
111+50



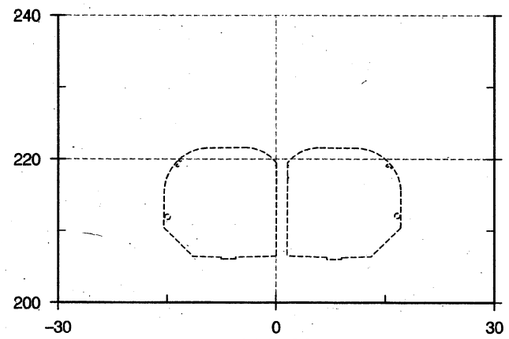
112+50



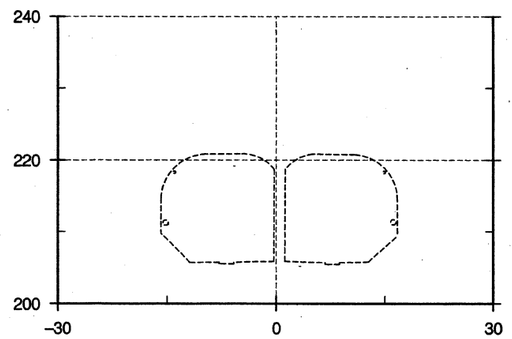
113+15 3



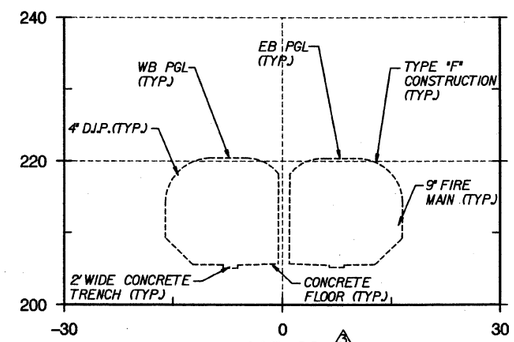
113+30 3



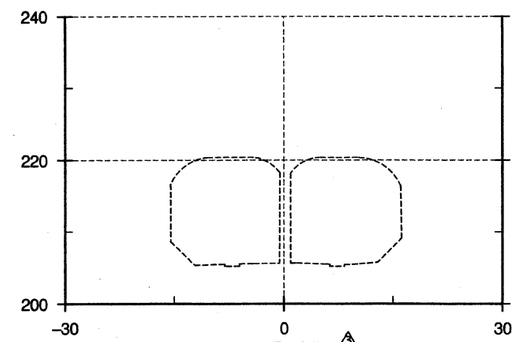
111+00



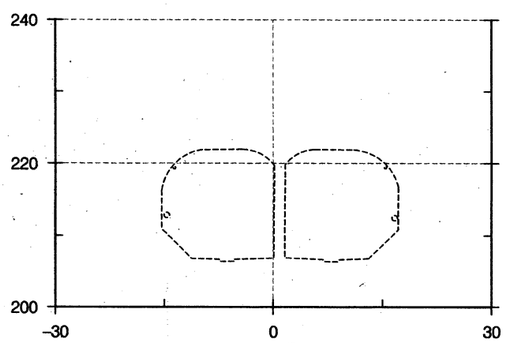
112+00



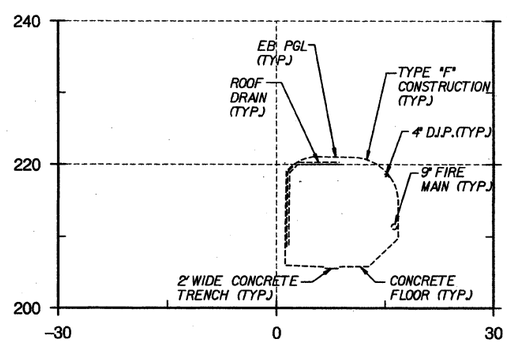
113+00 3



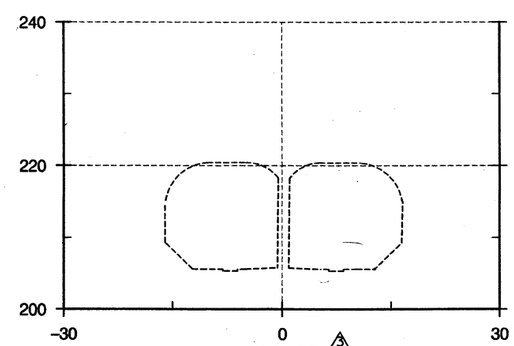
113+25 3



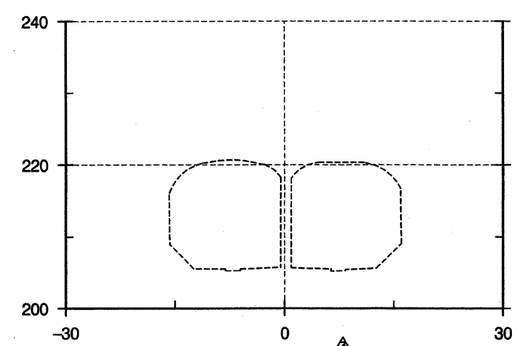
110+50



111+60



112+95 3



113+20 3

HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL. 0.00 EQUALS ESA EL. 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:41 AM

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ pw:\99110030$dgn@2d sheet$xsect-sheet27.dgn

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV

A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	3
05/2003	ADDITIONAL CROSS SECTIONS @ 112+95, 113+00, 113+15 - 113+30	3

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

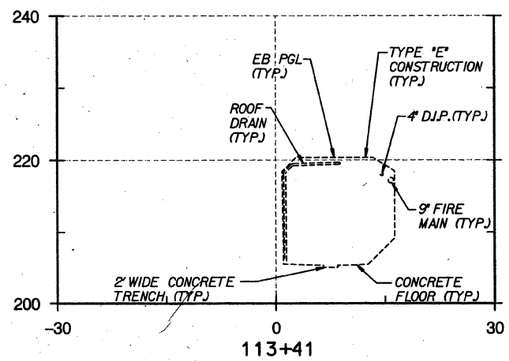
JAMES BERNARD NEWMAN JR. LICENSED LAND SURVEYOR STATE OF NEW YORK

Sta. 110+50 To Sta. 113+30

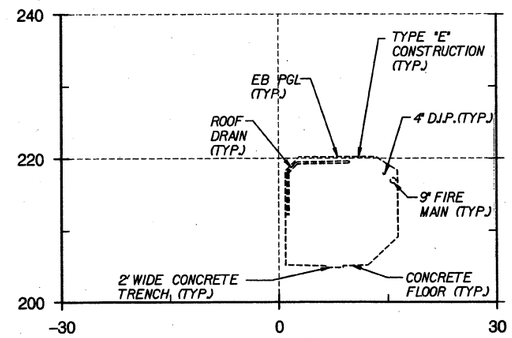
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9027
DATE: FEB-13-04
REVISION NUMBER: 0

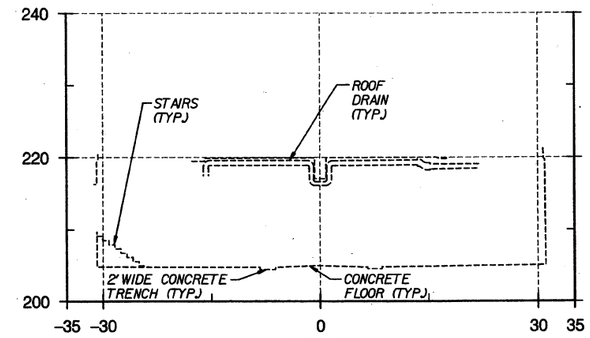
STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



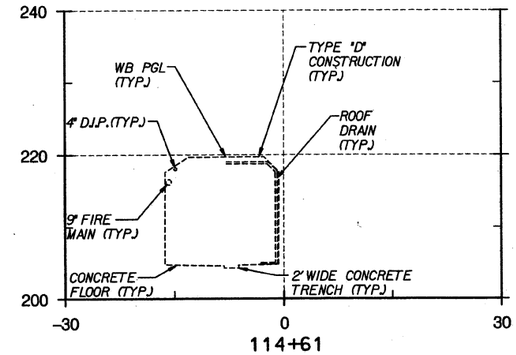
113+41



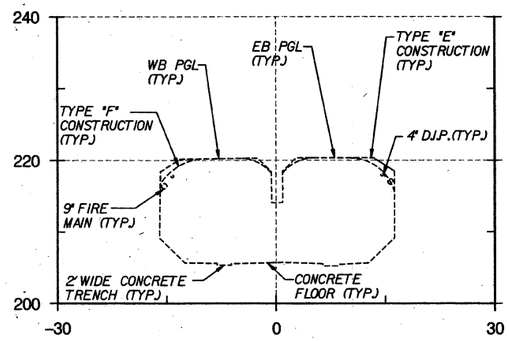
113+63



113+95



114+61



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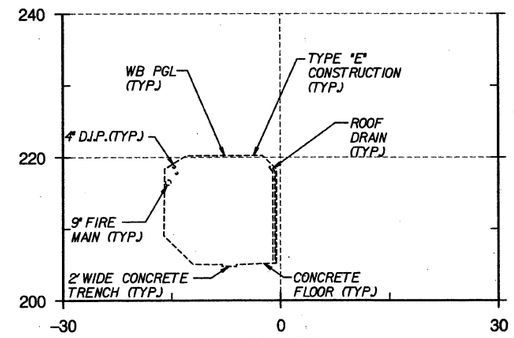

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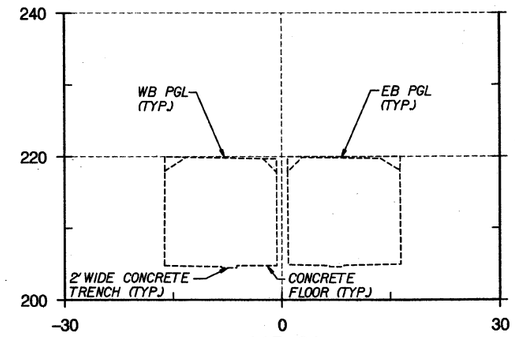
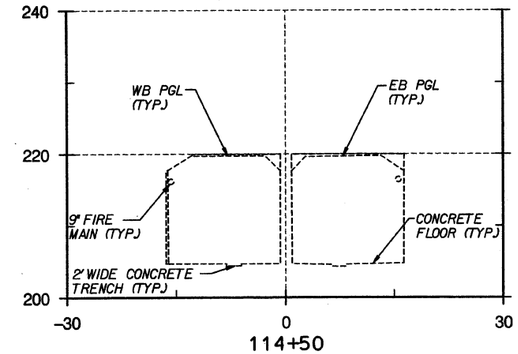
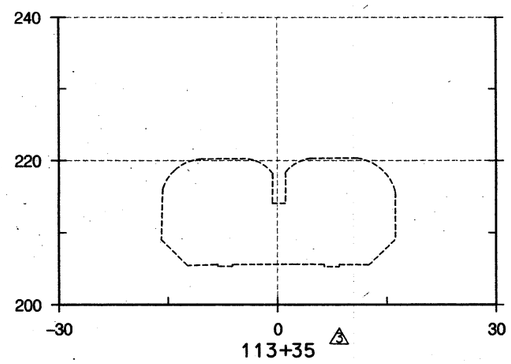


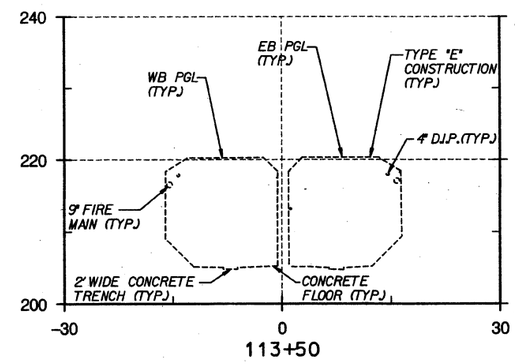
113+91



114+50



113+35 △3



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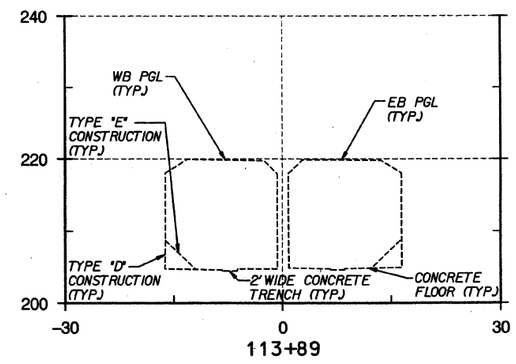
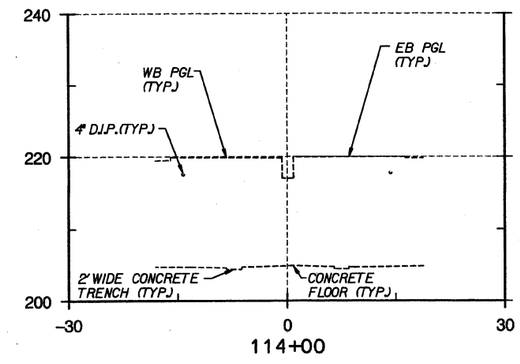


113+89



114+00

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$

$TBLNAME$

2/24/2004 10:36:42 AM

p:\99110030\dgn\02d sheet\xsect-sheet28.dgn

$REF1$
$REF2$
$REF3$
$REF4$
$REF5$
$REF6$

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC. AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	△2
05/20/03	ADDITIONAL CROSS SECTION @ 113+35	△3

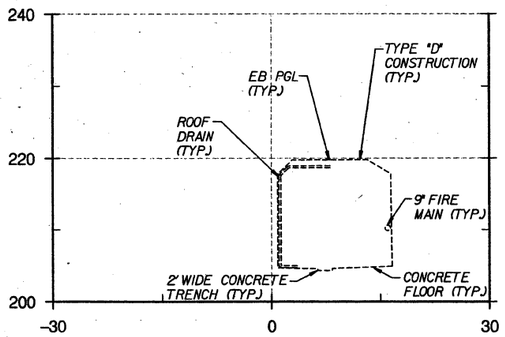
DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

Sta. 113+35 To Sta. 114+61

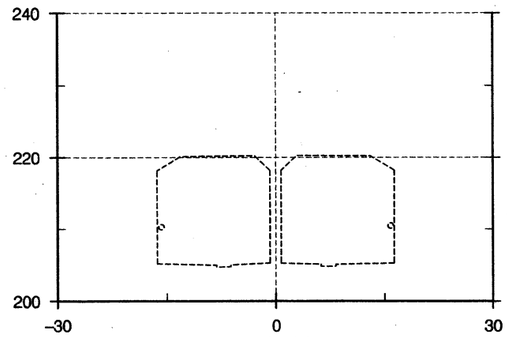
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9028
DATE: FEB-13-04
REVISION NUMBER: 0

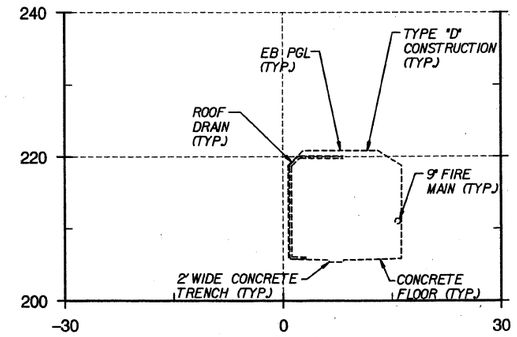
STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



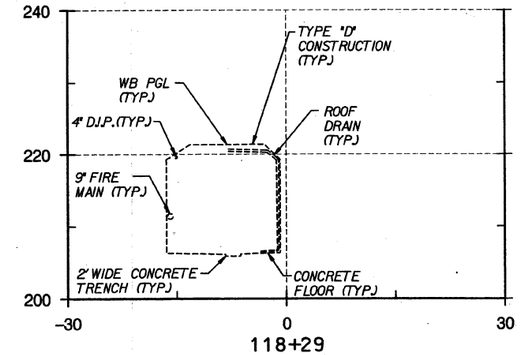
114+79



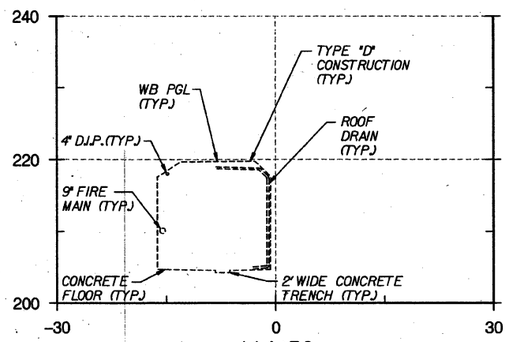
116+00



117+18



118+29



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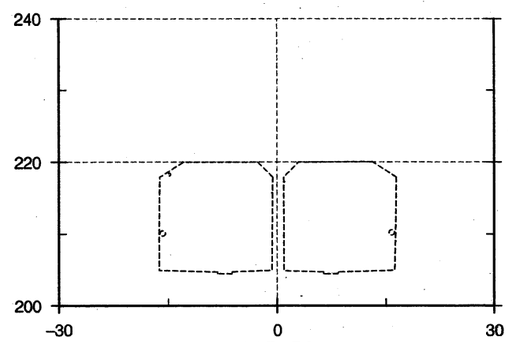
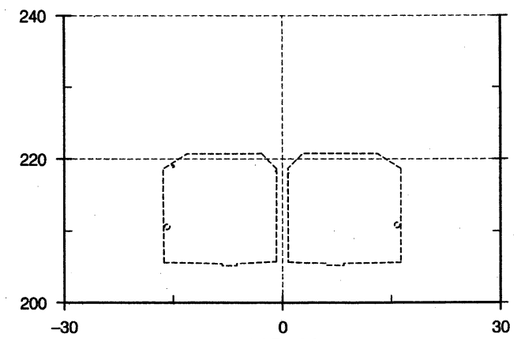
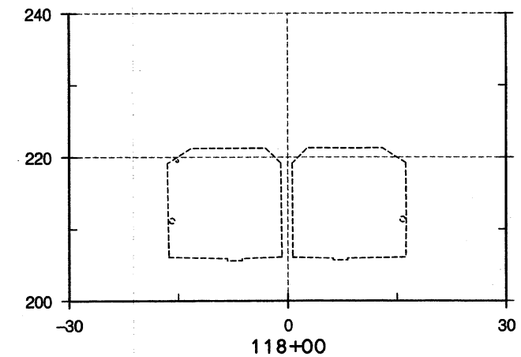


115+50



117+00



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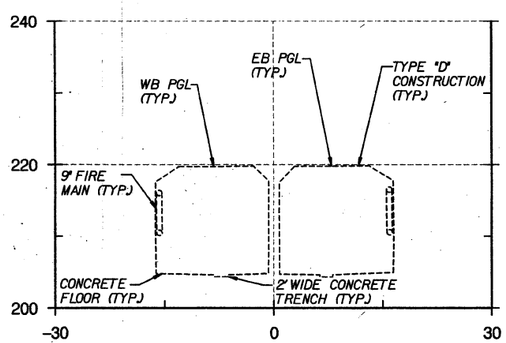

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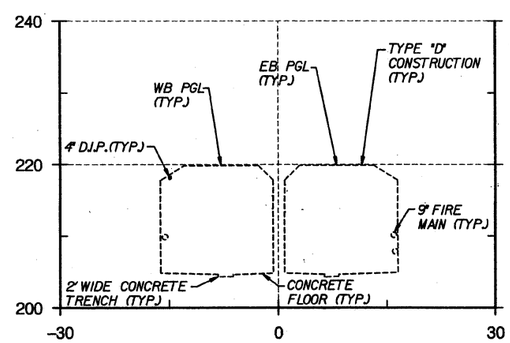
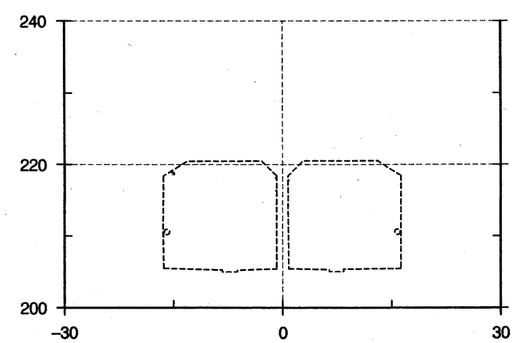
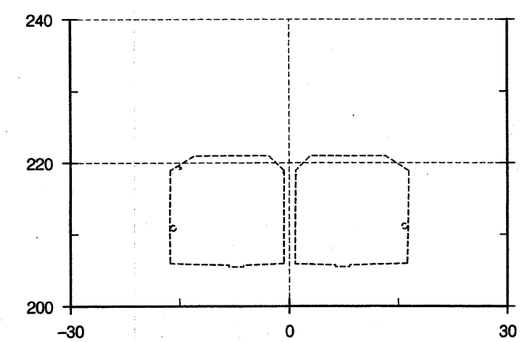


115+00



116+50



117+50

HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM = NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:43 AM

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ P:\B99110030\dgn\02d sheet8\xsect-sheet29.dgn

MTA Capital Construction

Long Island Rail Road
East Side Access

PB ST
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

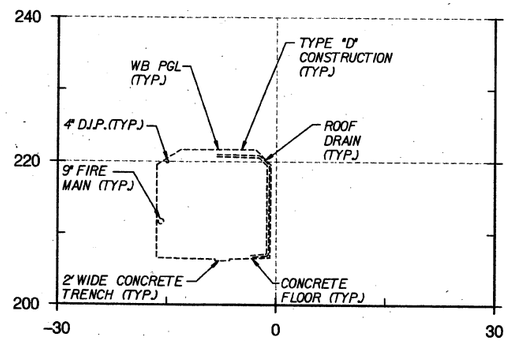
STATE OF NEW YORK
DATE: 02/13/04

Sta. 114+75 To Sta. 118+29

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9029
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



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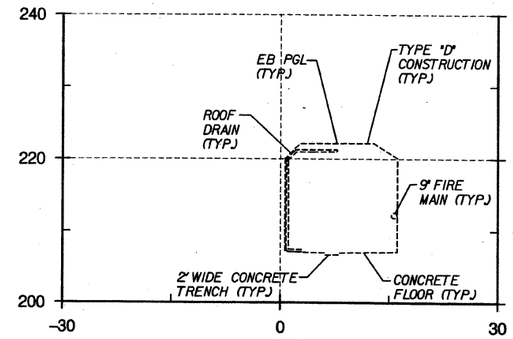
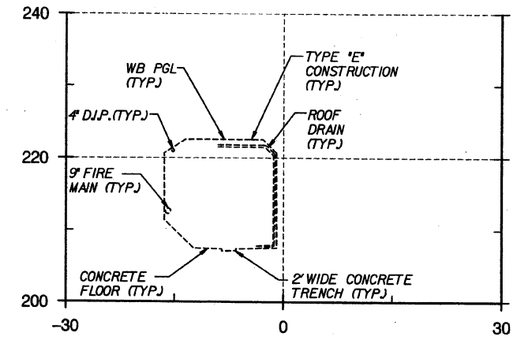
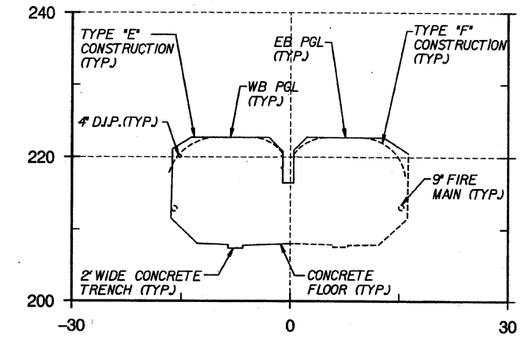


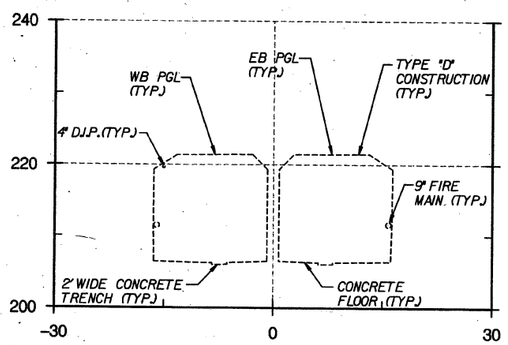
119+82



120+67



121+20



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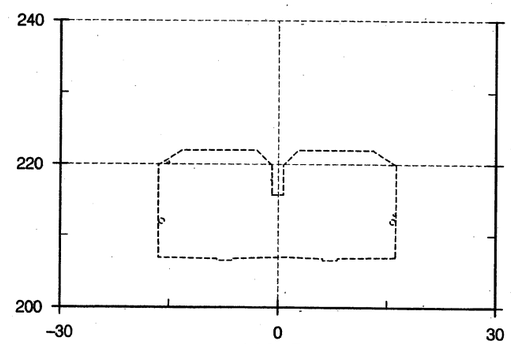
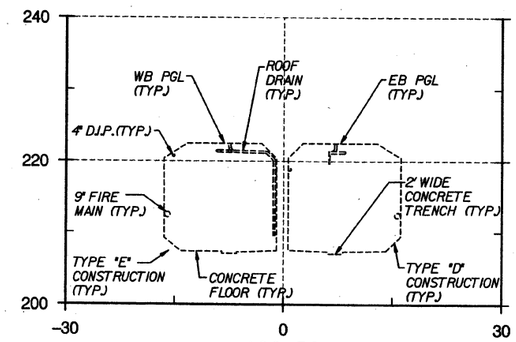
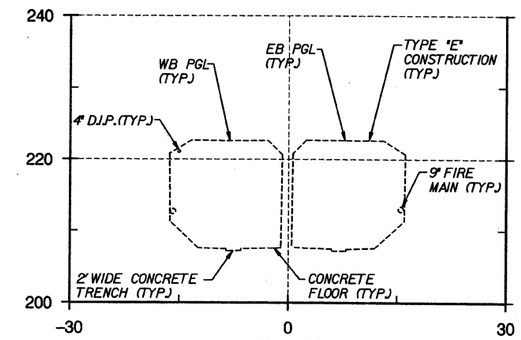


119+50



120+50



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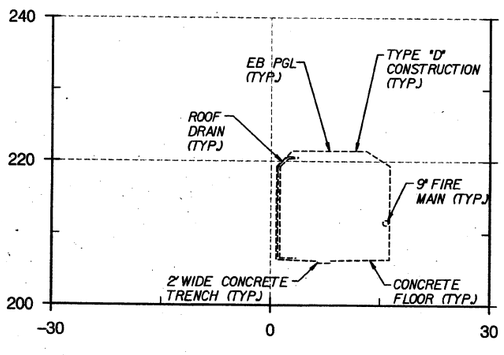
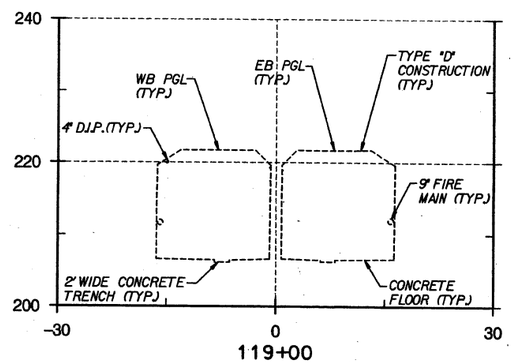
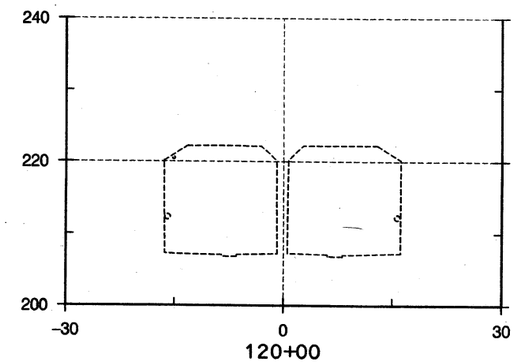
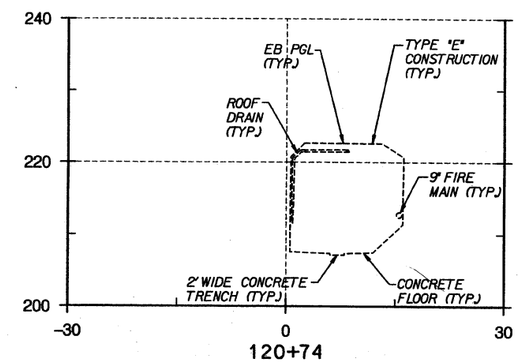




119+00



120+00



120+74

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM = NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
MICHAEL J. HEDAYATI
No. 049171
LICENSED PROFESSIONAL ENGINEER
DATE

Sta. 118+35 To Sta. 121+60

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9030
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:43 AM p:\8991\10030\dgn\82d sheet8\xsect-sheet30.dgn
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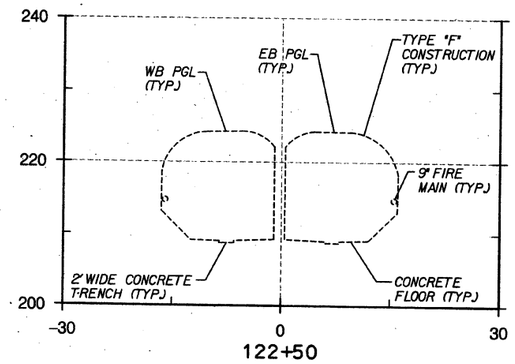
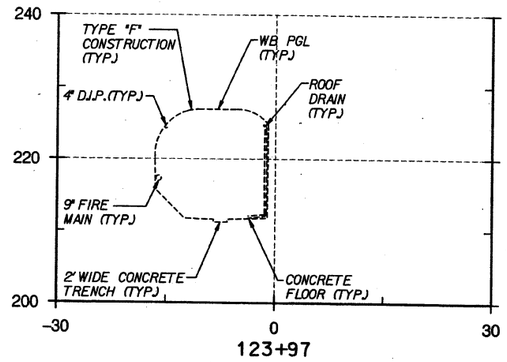
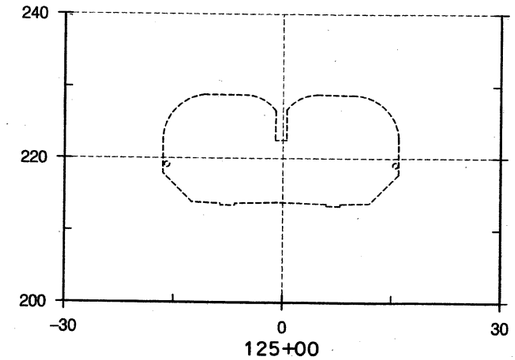


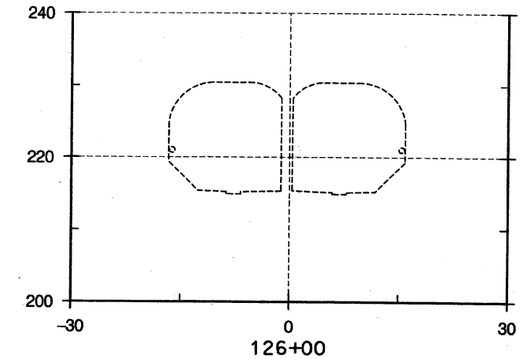
122+50



123+97



125+00



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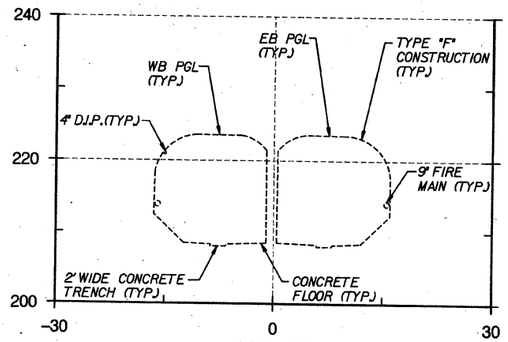

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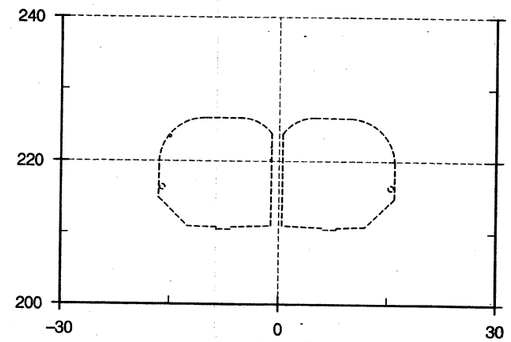

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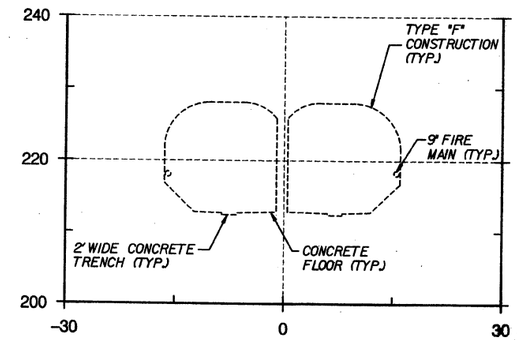

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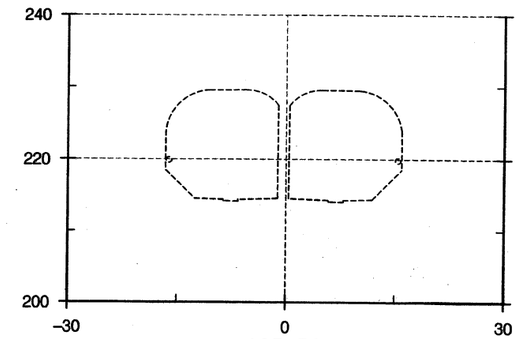

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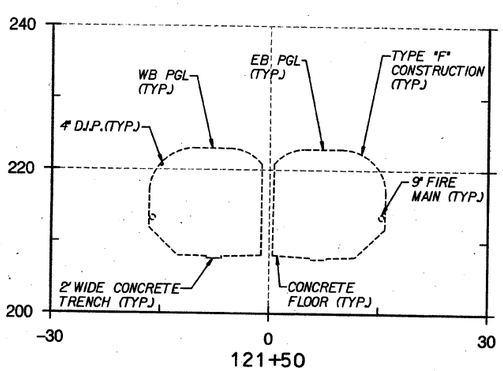

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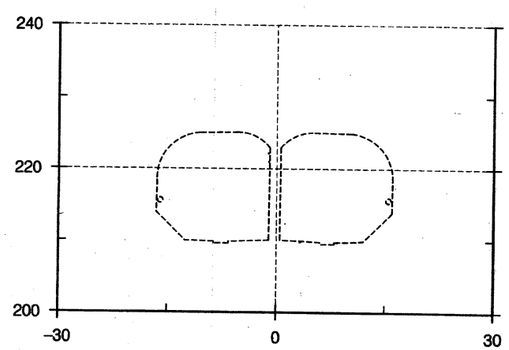

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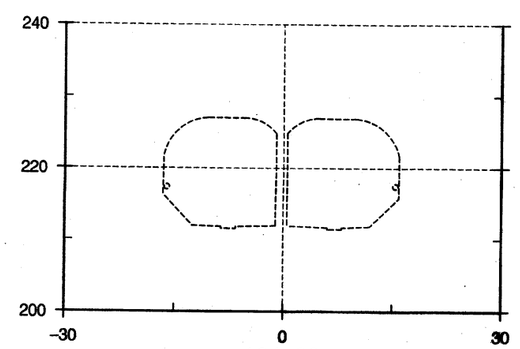

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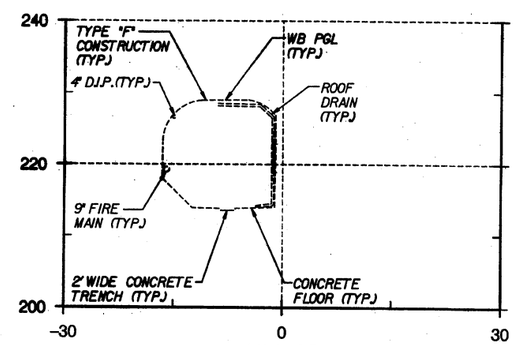

125+12

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD 88 [illegible] 300.00 FT (NAVD '88 EL [illegible] 300.00)
HORIZONTAL DATUM - [illegible] STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$

$TBLNAME$

2/24/2004 10:36:44 AM

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$REF5$
$REF6$
p:\99110030\dgn\2d

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

No.	REVISIONS	DATE
2	REVISE BORDER	02/13/04

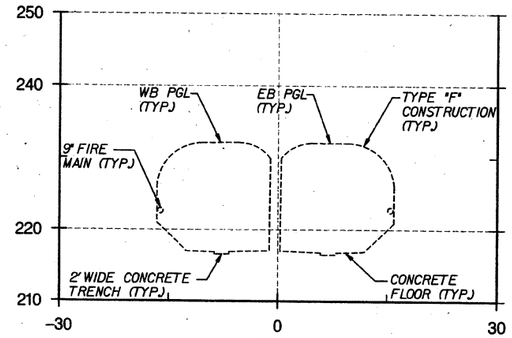
DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE: 02/12/04

Sta. 121+50 To Sta. 126+00

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9031
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



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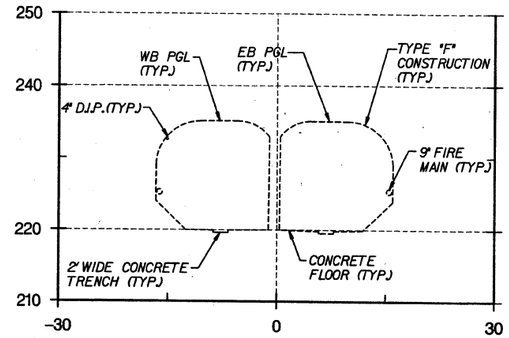

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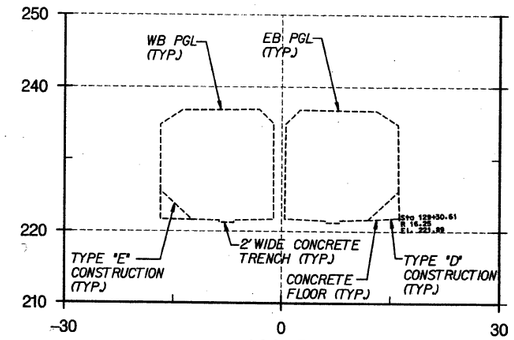

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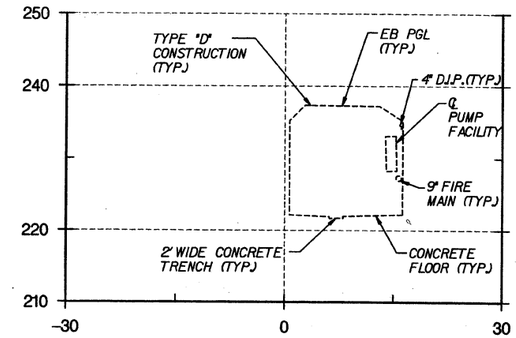

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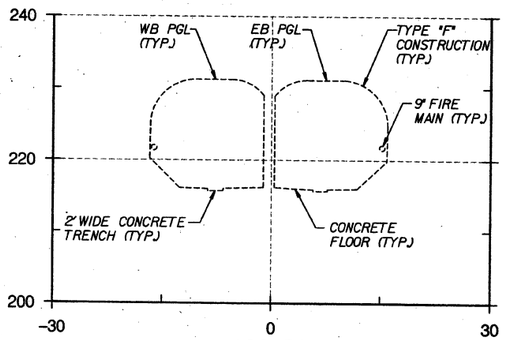

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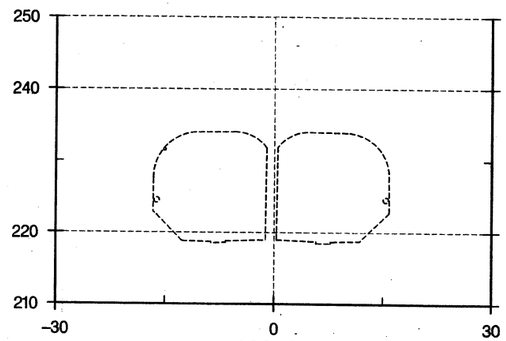

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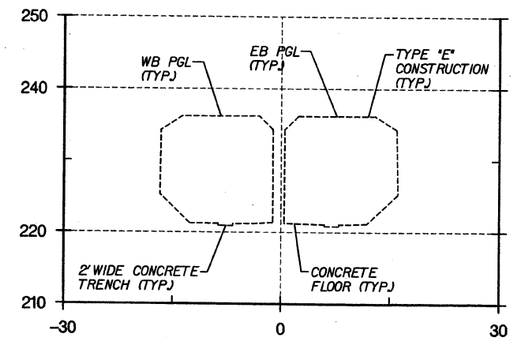
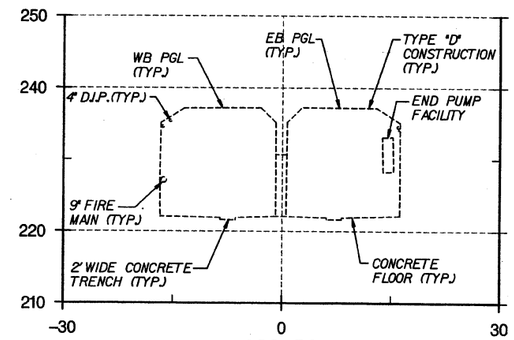
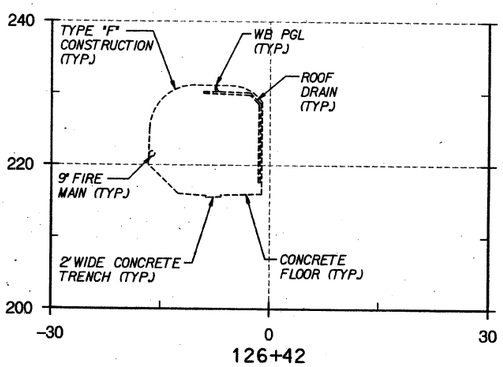


129+00



129+50



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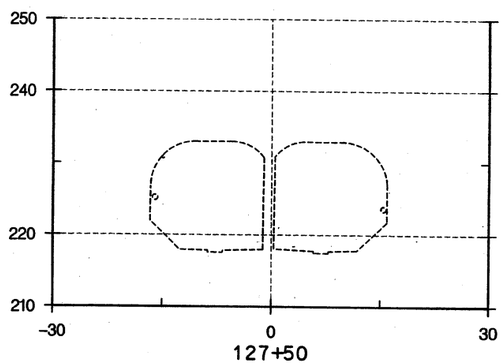

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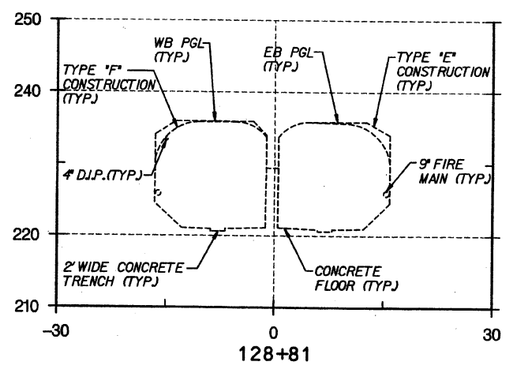

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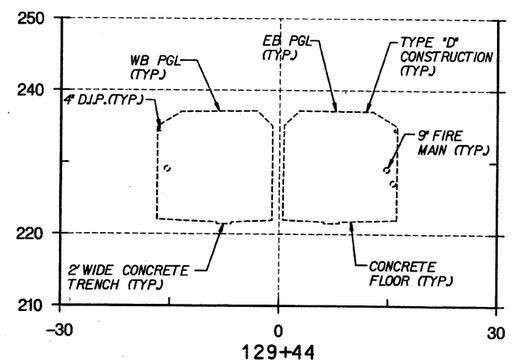

129+44

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
021304	REVISE BORDER	5

DESIGNED BY: -
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

DATE:

Sta. 126+42 To Sta. 129+54

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9032
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___

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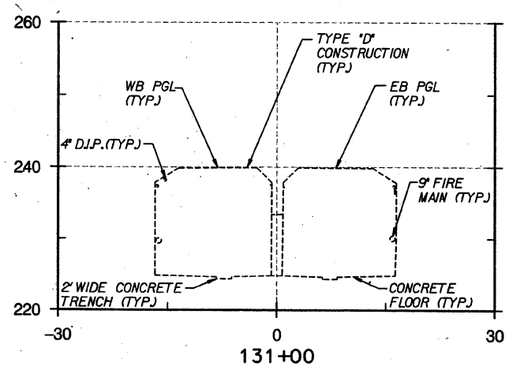

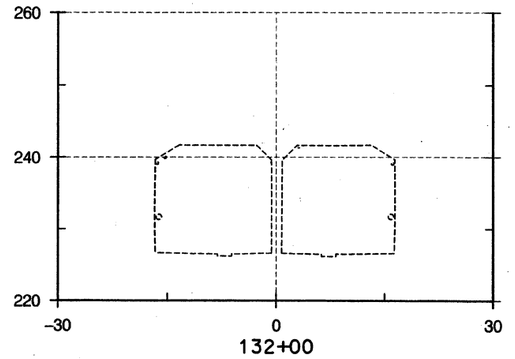

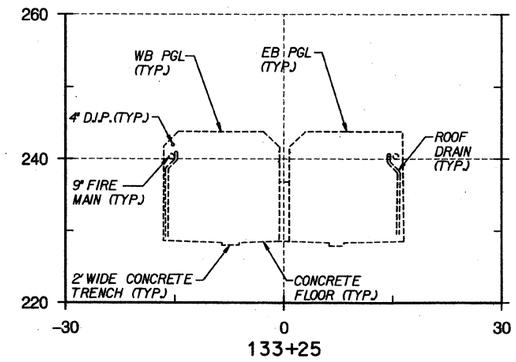

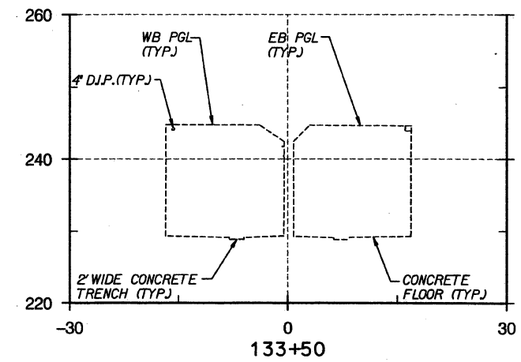

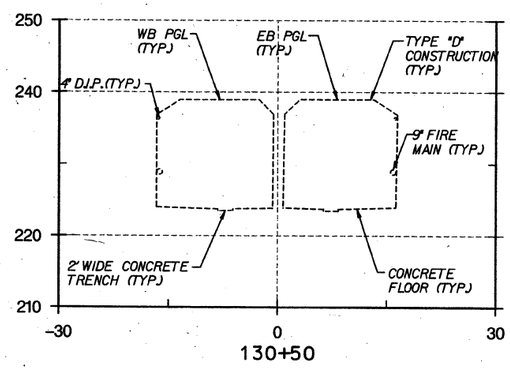

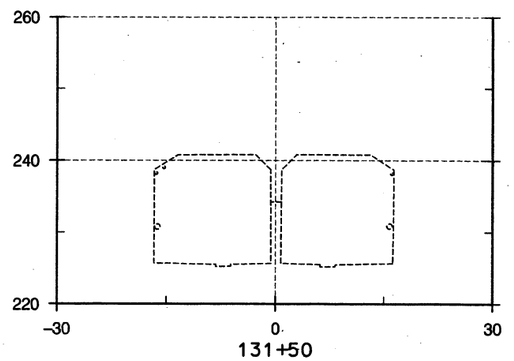

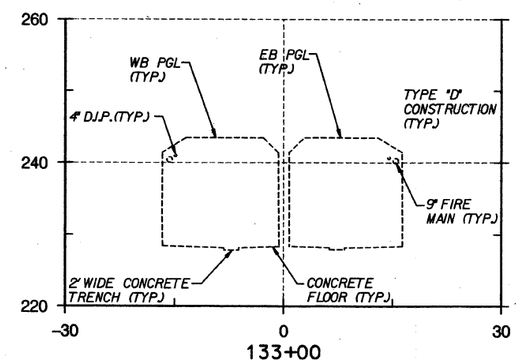

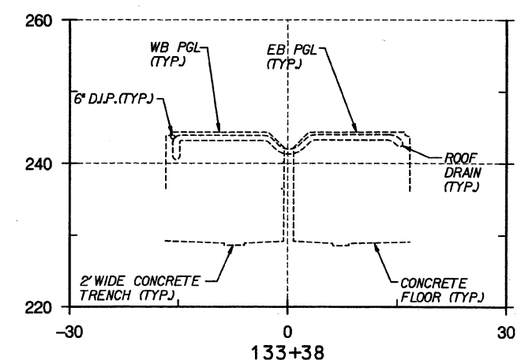

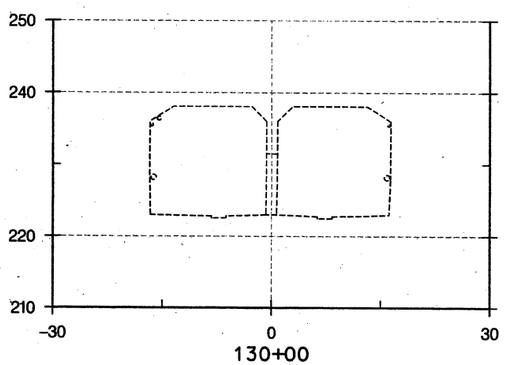

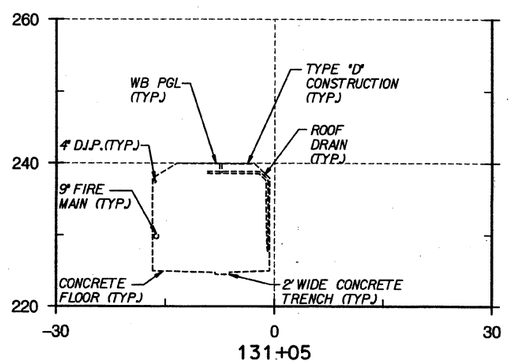

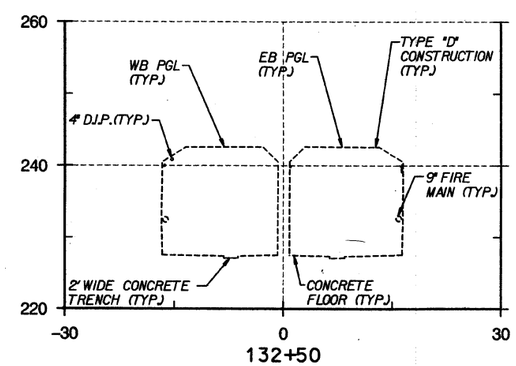

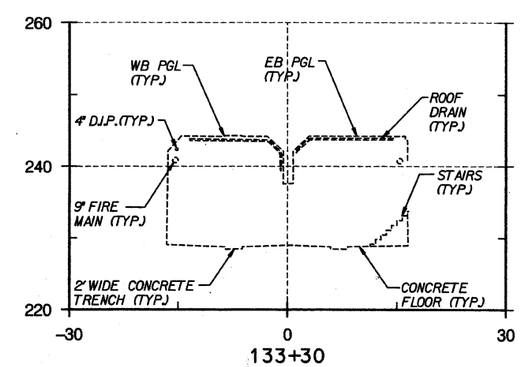

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

JAMES M. DUFFY, STATE OF NEW YORK, LICENSED LAND SURVEYOR, 049916
DATE:

Sta. 130+00 To Sta. 133+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9033
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:46 AM
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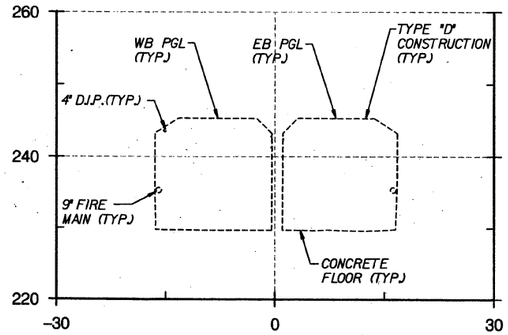

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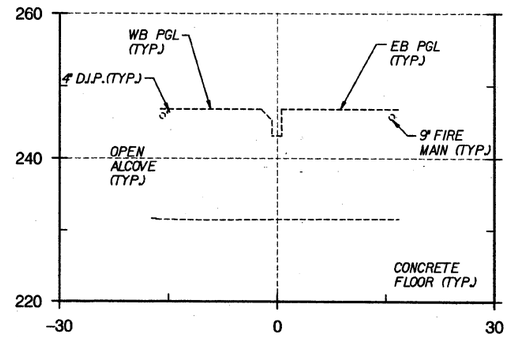

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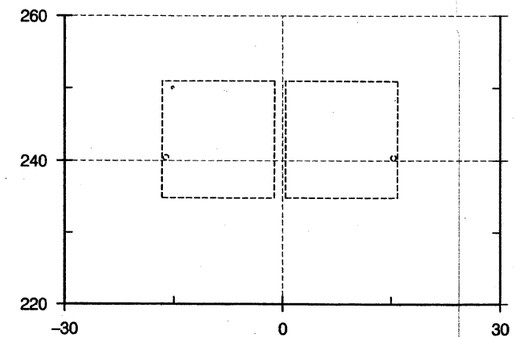

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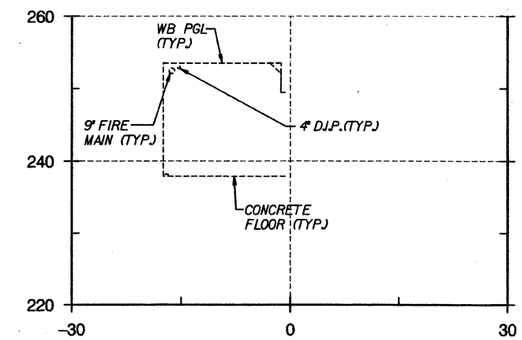

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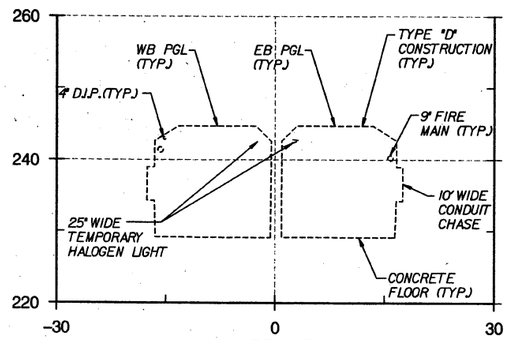

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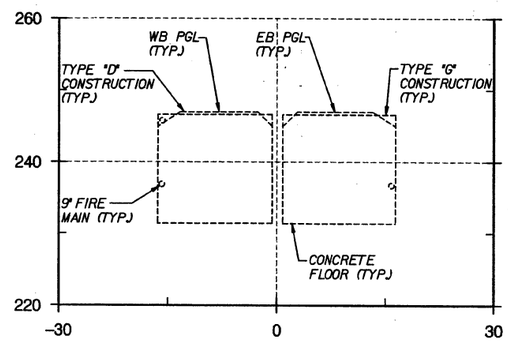

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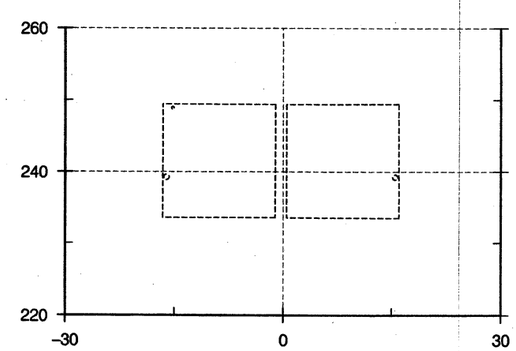
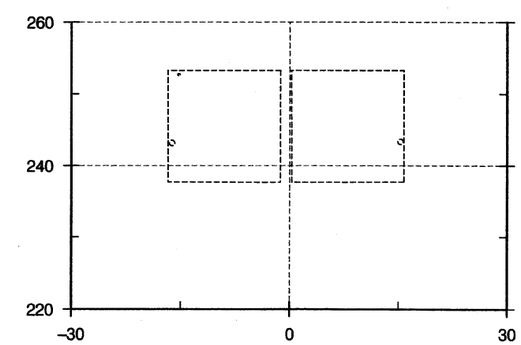


136+00



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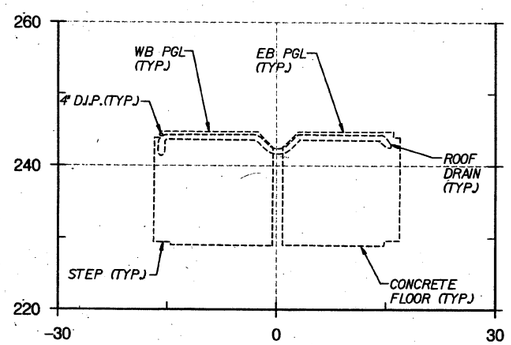
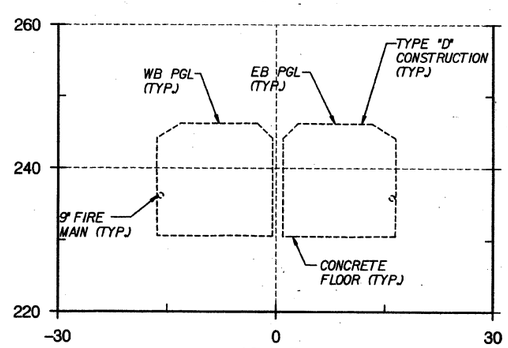


133+57



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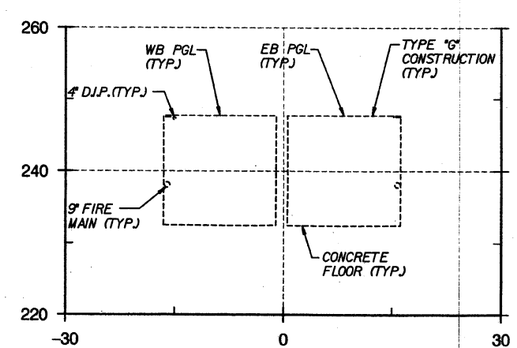
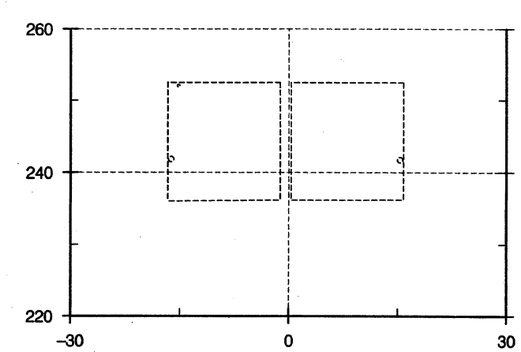


135+50



137+00

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:47 AM

p:\99110030\dgn\2d sheet\xsect-sheet34.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	1

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK · JAMES M. HEDAYATI · 065167 · LICENSED PROFESSIONAL ENGINEER

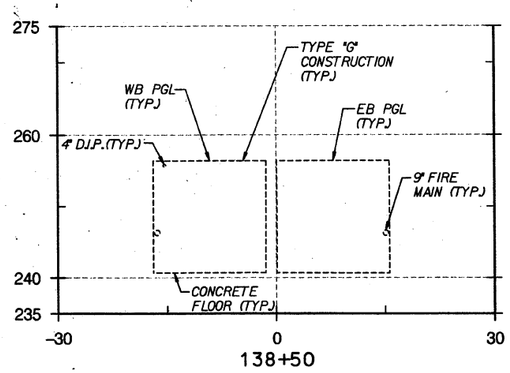
DATE:

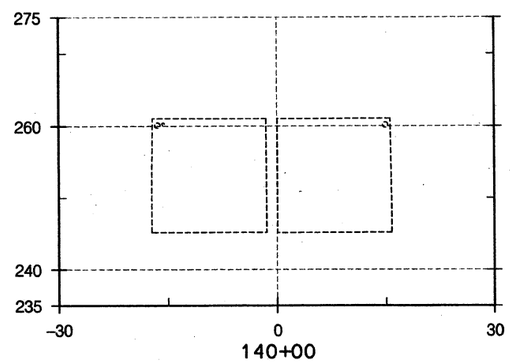
Sta. 133+57 To Sta. 137+58

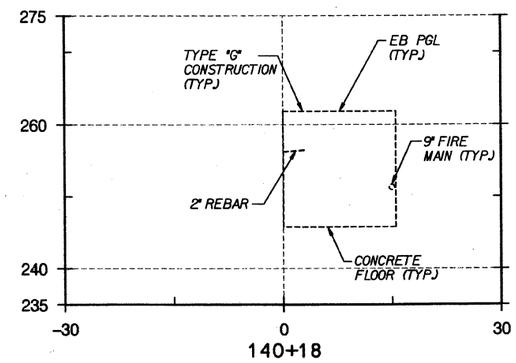
63rd Street Tunnel
Existing Conditions
Cross Sections

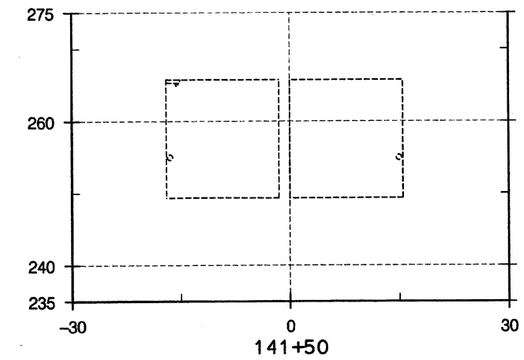
SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9034
DATE: FEB-13-04
REVISION NUMBER: 0

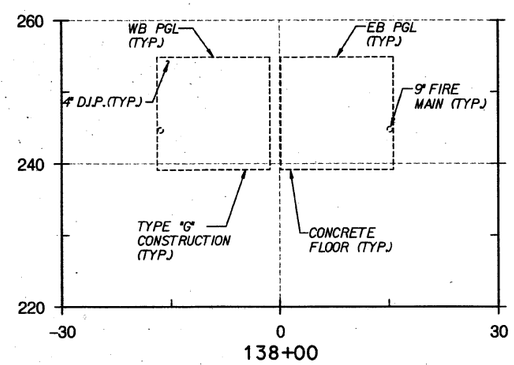
STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

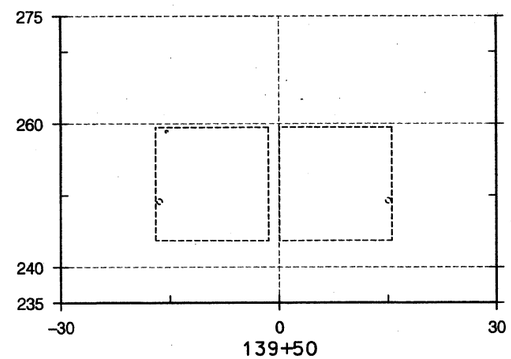


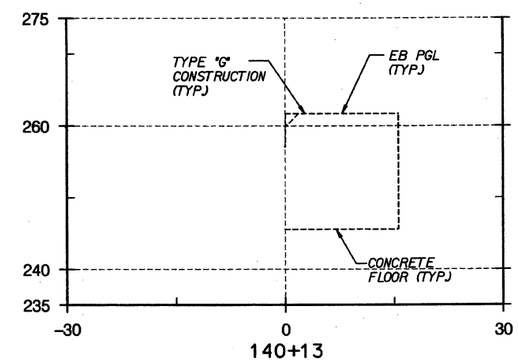


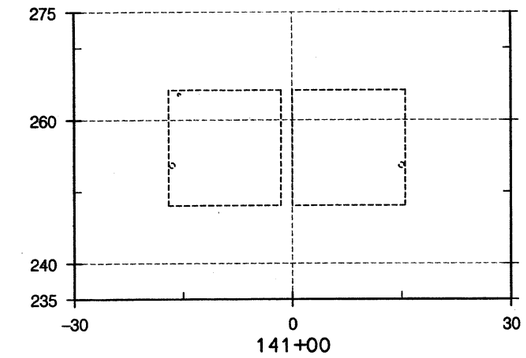


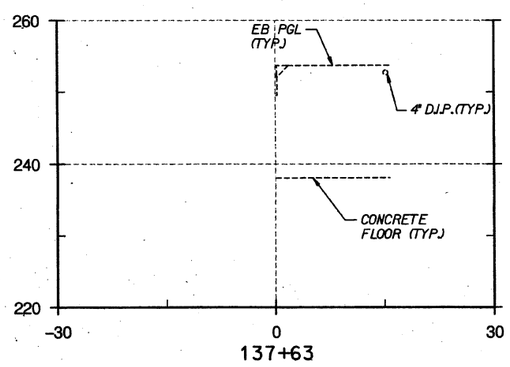


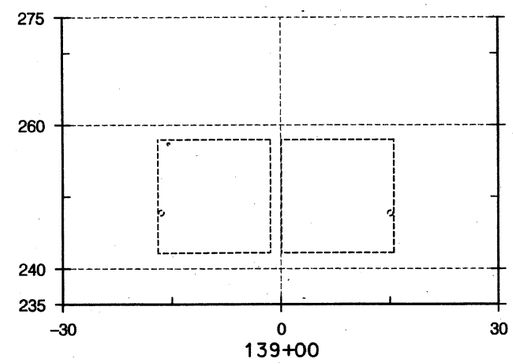


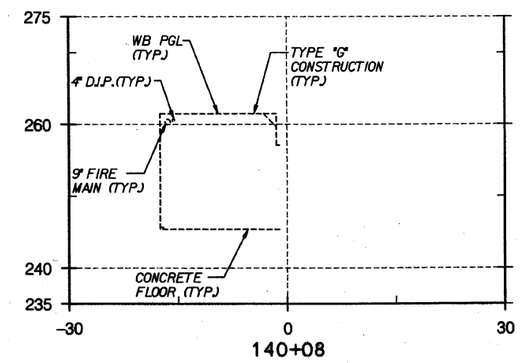


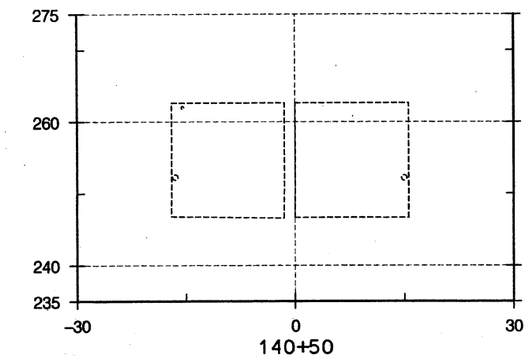












HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM = NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:47 AM

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ $REF6$1 D:\9911003\0\dgn\02d sheet\xsect-sheet35.dgn

MTA Capital Construction

Long Island Rail Road East Side Access

PB ST

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK LICENSED LAND SURVEYOR

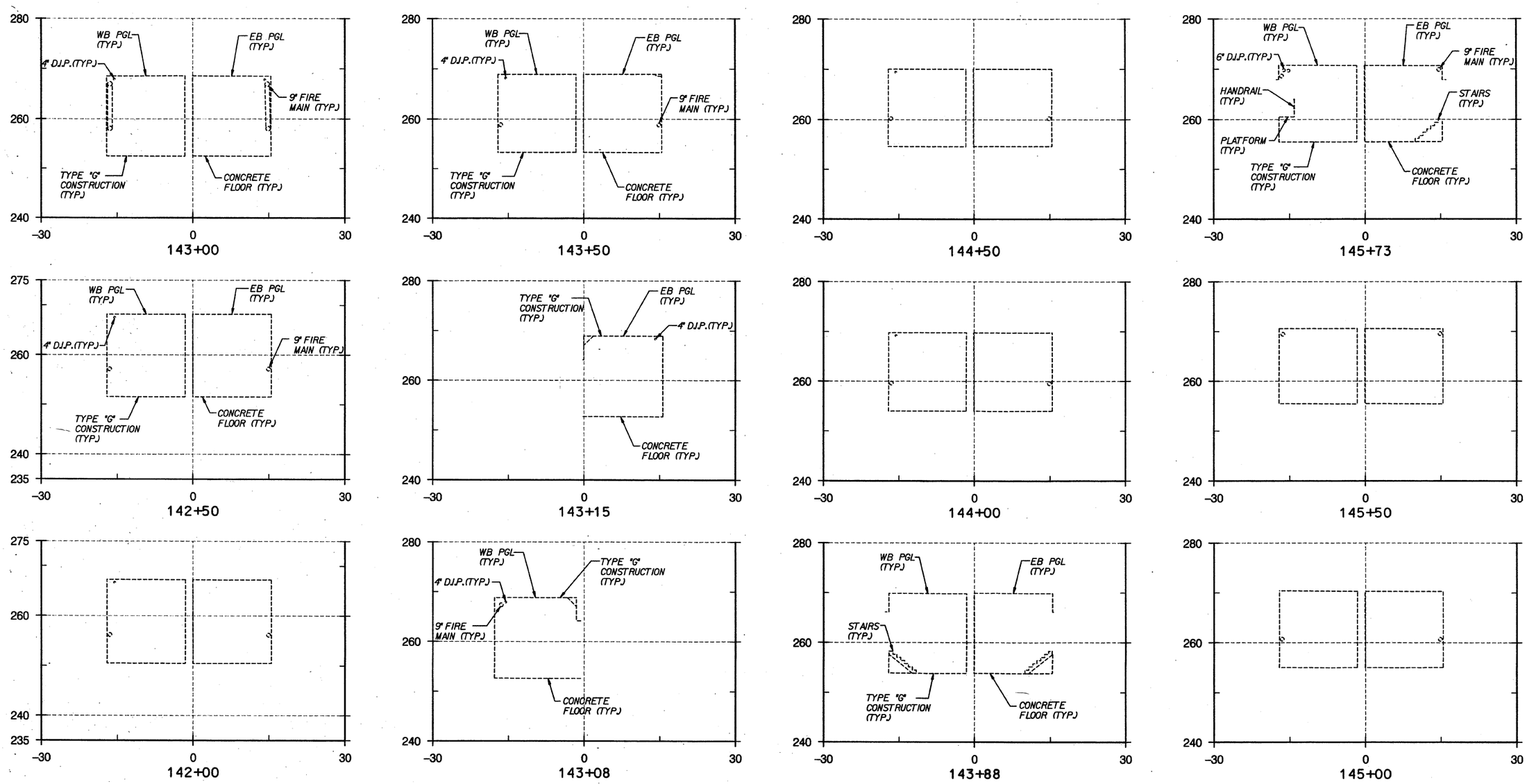
DATE:

Sta. 137+63 To Sta. 141+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9035
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:48 AM $REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ p:\99110030\dgn\2d sheet\xsect-sheet36.dgn

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
021304	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

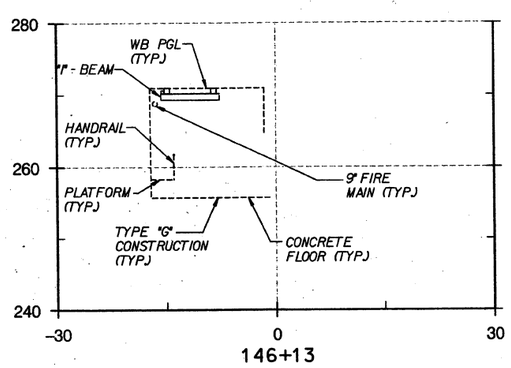
STATE OF NEW YORK
LICENSED LAND SURVEYOR
DATE:

Sta. 142+00 To Sta. 145+73

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9036
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE
FINAL
SHEET No.
___ OF ___



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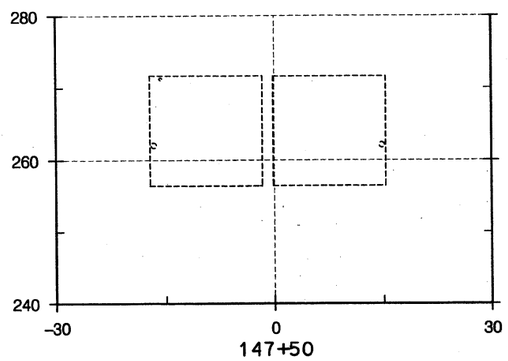
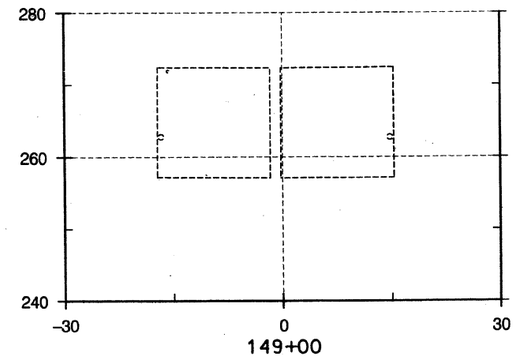
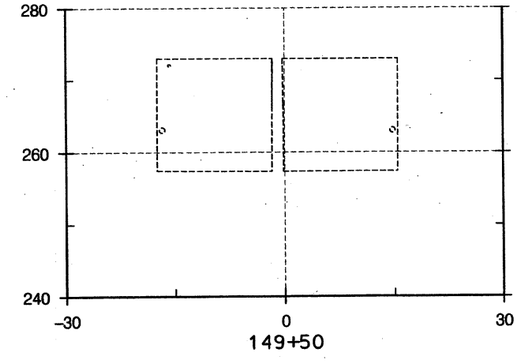


147+50



149+00



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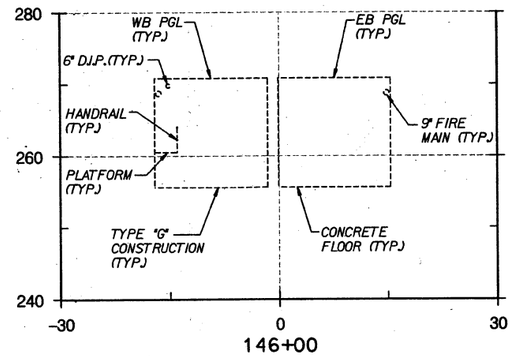
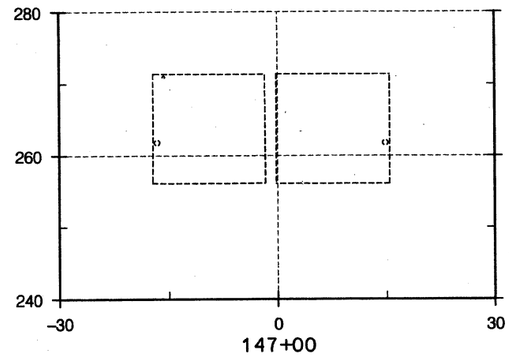


146+00



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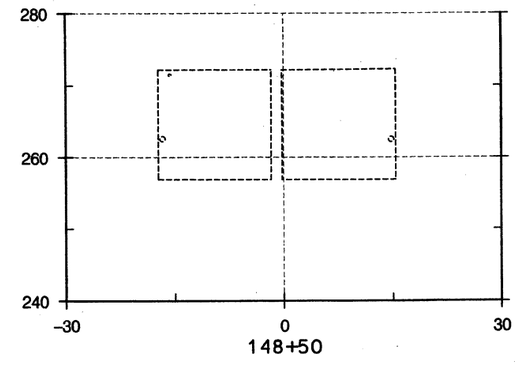
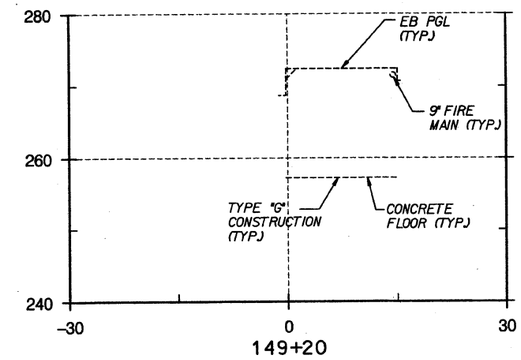
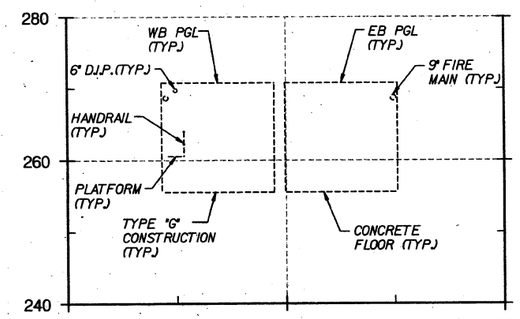


148+50



149+20



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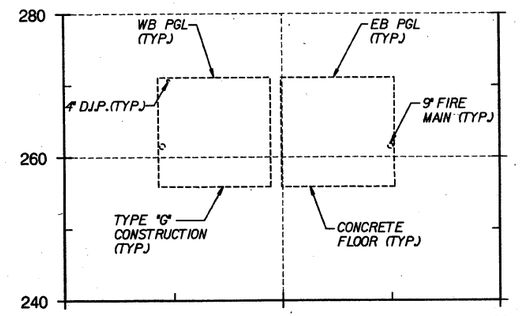
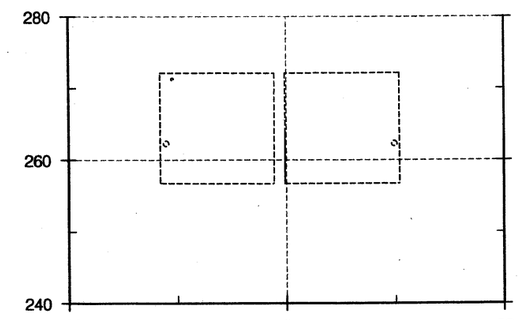


146+50



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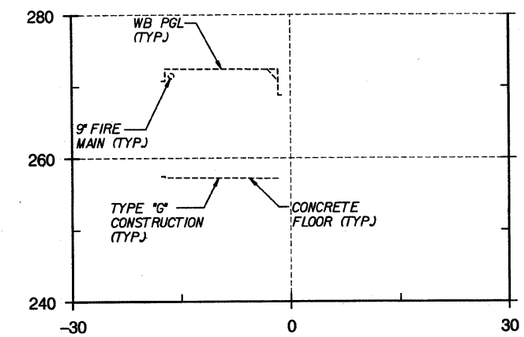

149+14

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	2

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK LICENSED PROFESSIONAL ENGINEER FRANK B. LEONARDI 50167-1 LICENSED LAND SURVEYOR

DATE:

Sta. 145+87 To Sta. 149+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9037
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:49 AM
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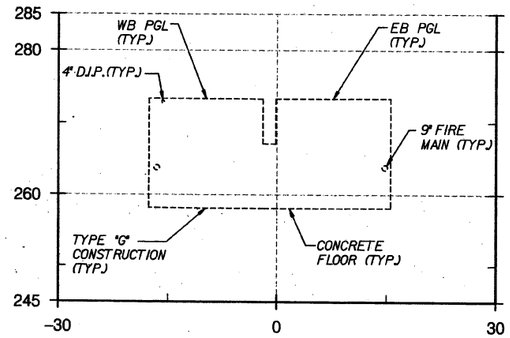
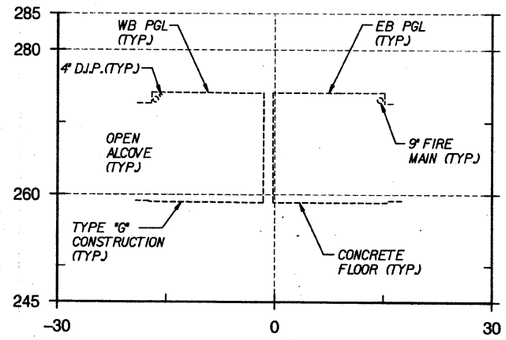


151+00



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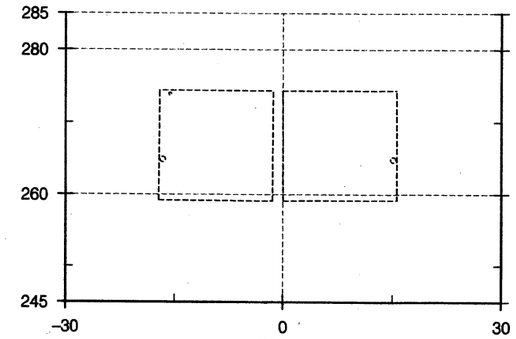

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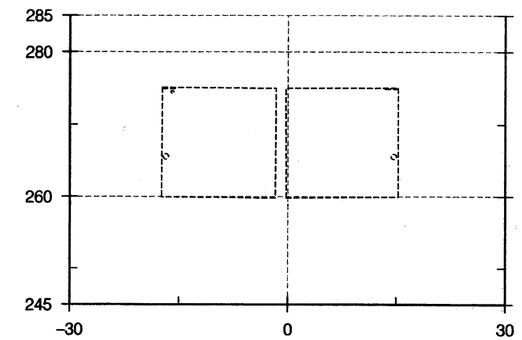

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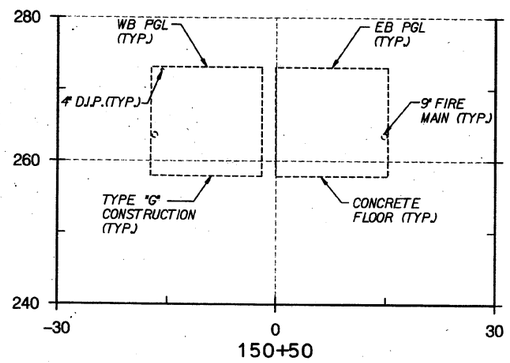

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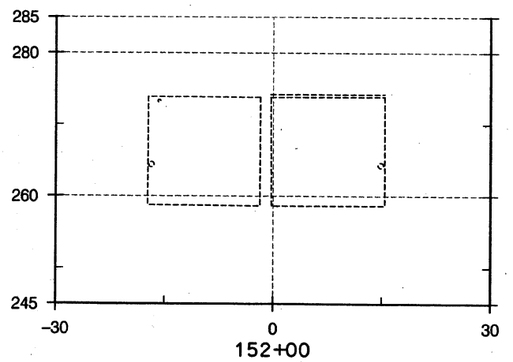
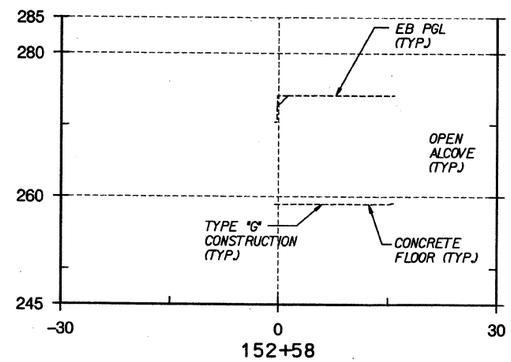


152+00



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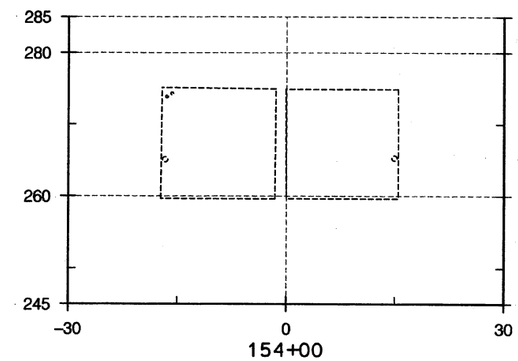

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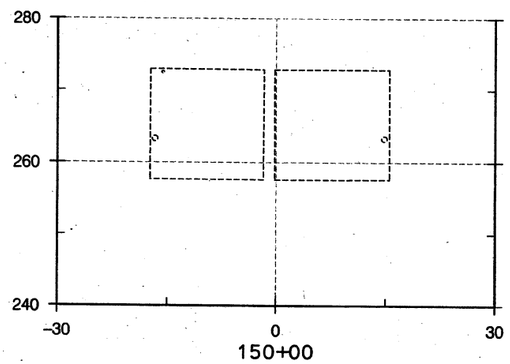
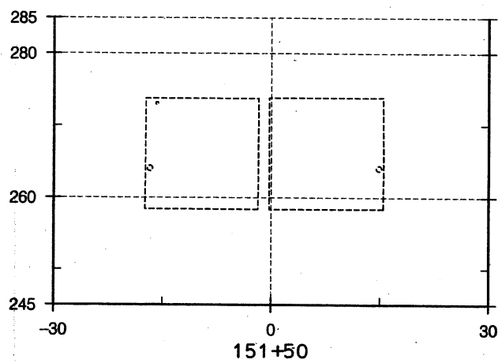


150+00



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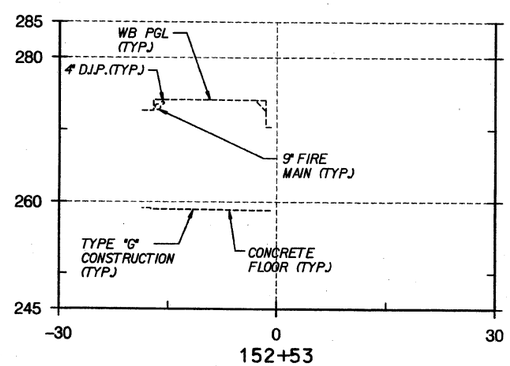
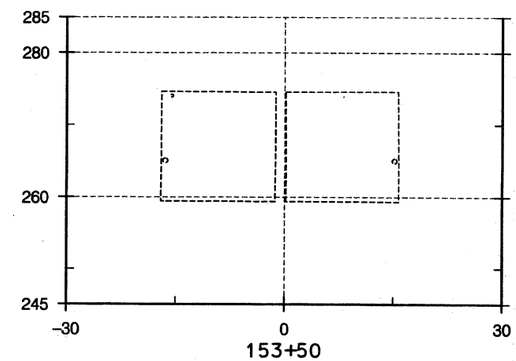


152+53



153+50

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:50 AM p:\99110030\dgn\2d sheet\xsect-sheet38.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK · LICENSE SEAL · N.Y.S. P.L.S. No. 050847 · LICENSED LAND SURVEYOR

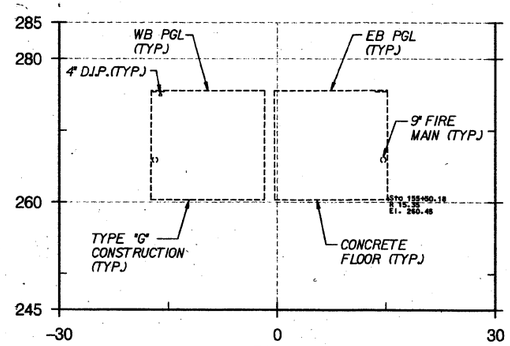
DATE: 2/13/04

Sta. 150+00 To Sta. 154+50

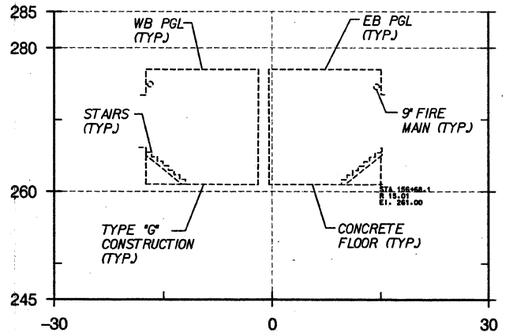
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9038
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___



155+50



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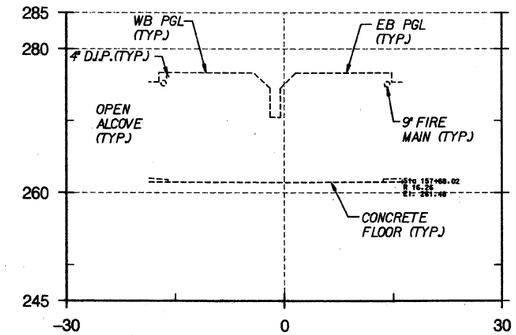

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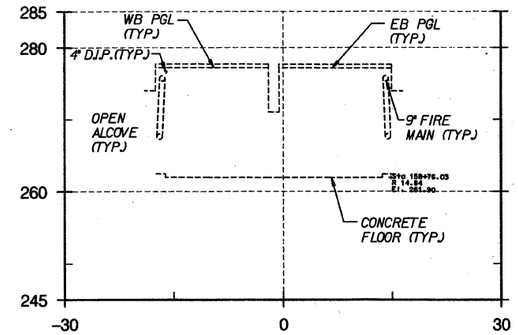

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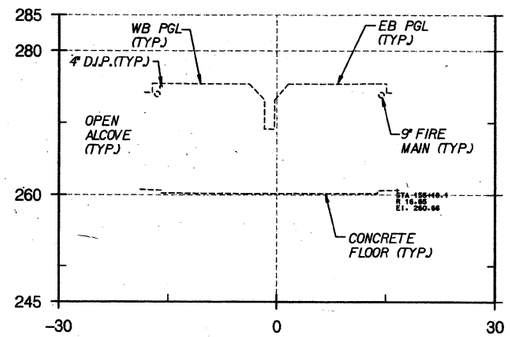

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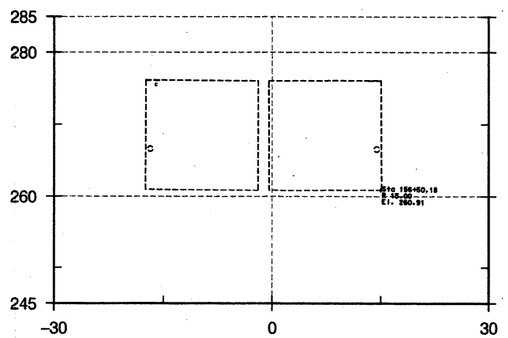
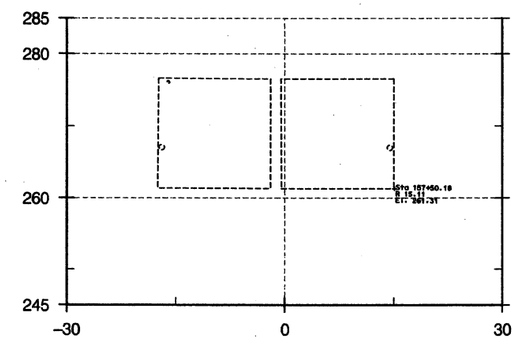


156+50



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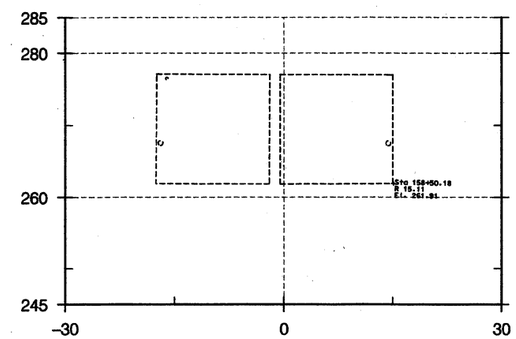

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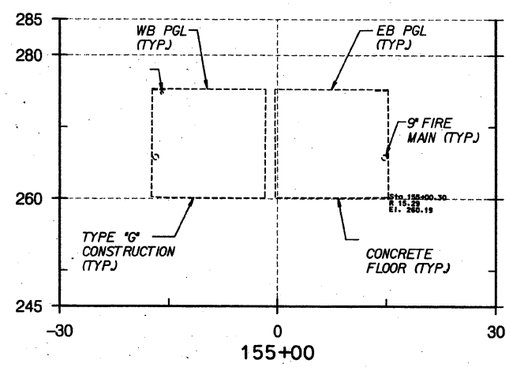

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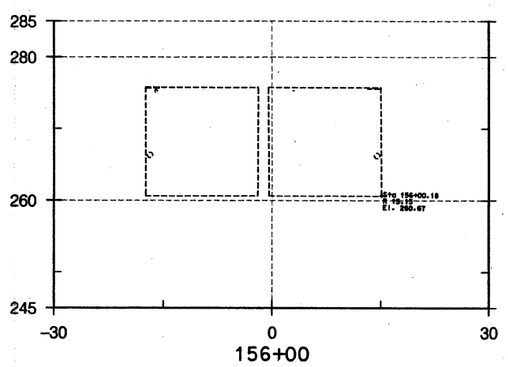

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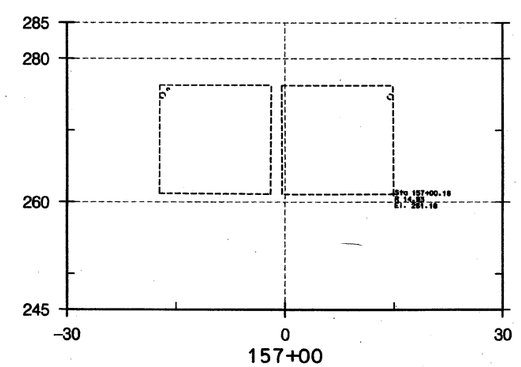

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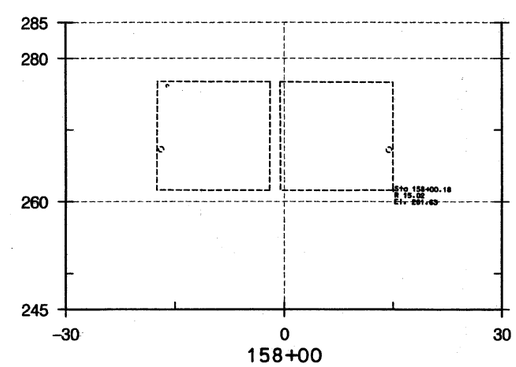


158+00

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$RFENAME$ $TBLNAME$ 2/24/2004 10:36:51 AM pr:B99110030.dgn@2d sheet@xsect-sheet39.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	1

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

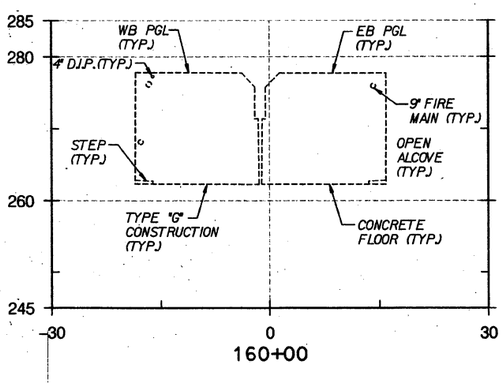
STATE OF NEW YORK · JAMES E. STEGER · LICENSED PROFESSIONAL ENGINEER · 063 · LICENSED LAND SURVEYOR

Sta. 155+00 To Sta. 158+75

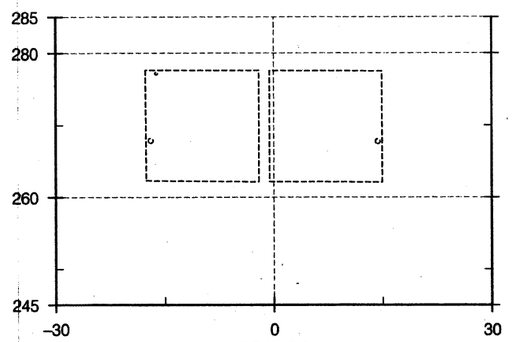
63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9039
DATE: FEB-13-04
REVISION NUMBER: 0

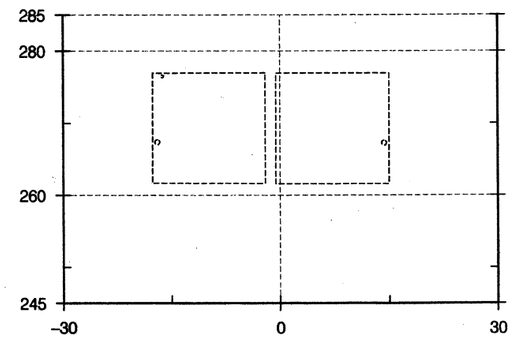
STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



160+00



161+00



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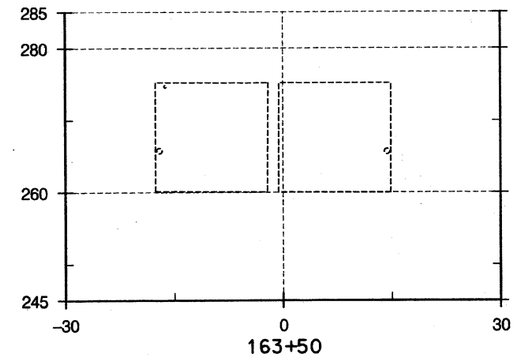

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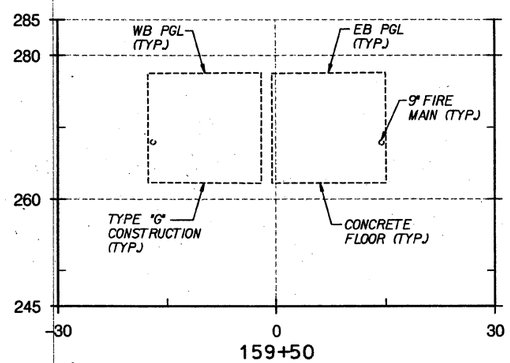

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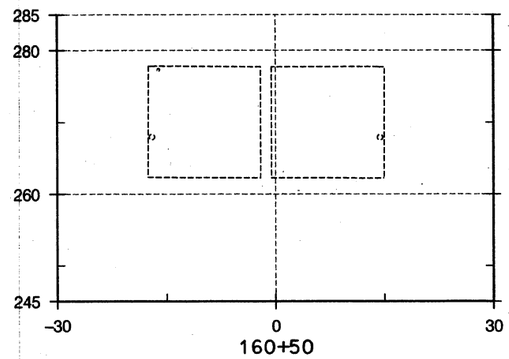

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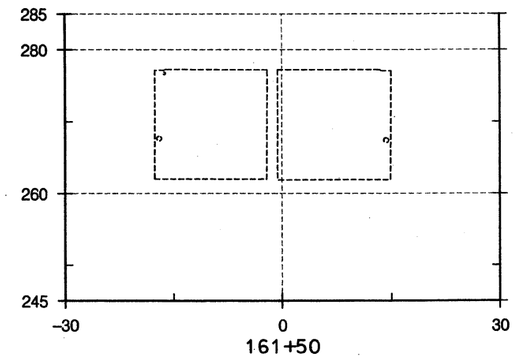

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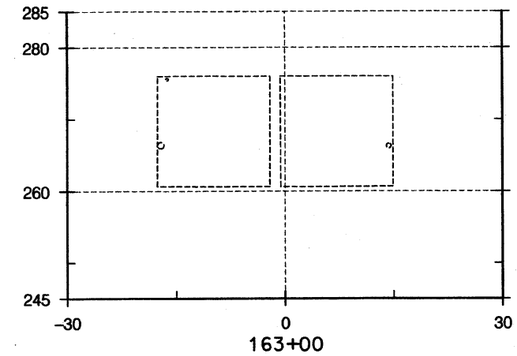

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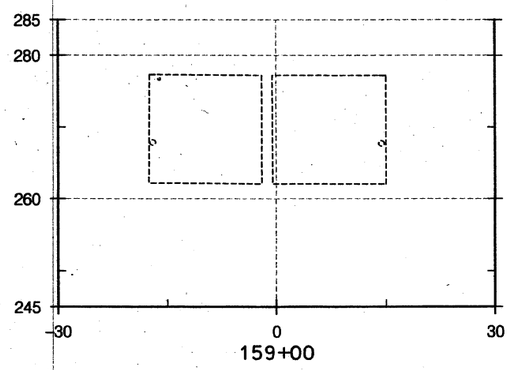

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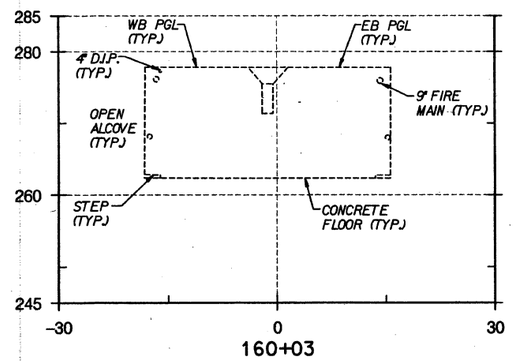

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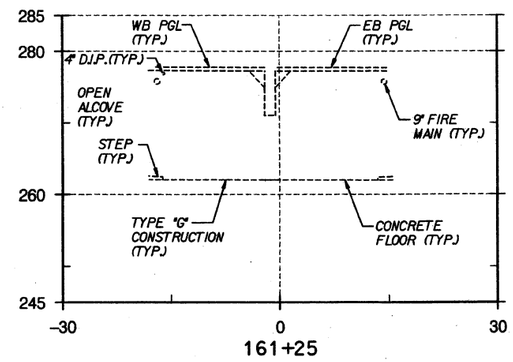

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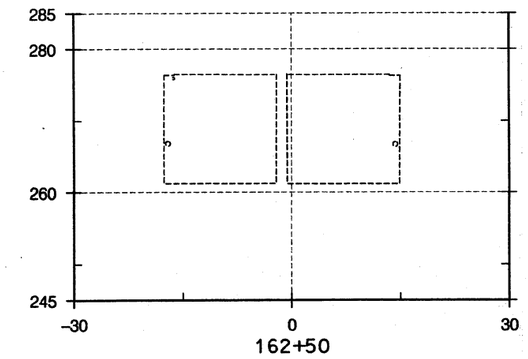


162+50

HORIZONTAL
SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$
$TBLNAME$
2/24/2004 10:36:52 AM
p:\99110030\dgn\2d sheet\xsect-sheet40.dgn
$REF1$
$REF2$
$REF3$
$REF4$
$REF5$
$REF6$

MTA Capital Construction
Long Island Rail Road
East Side Access

PB ST
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE:

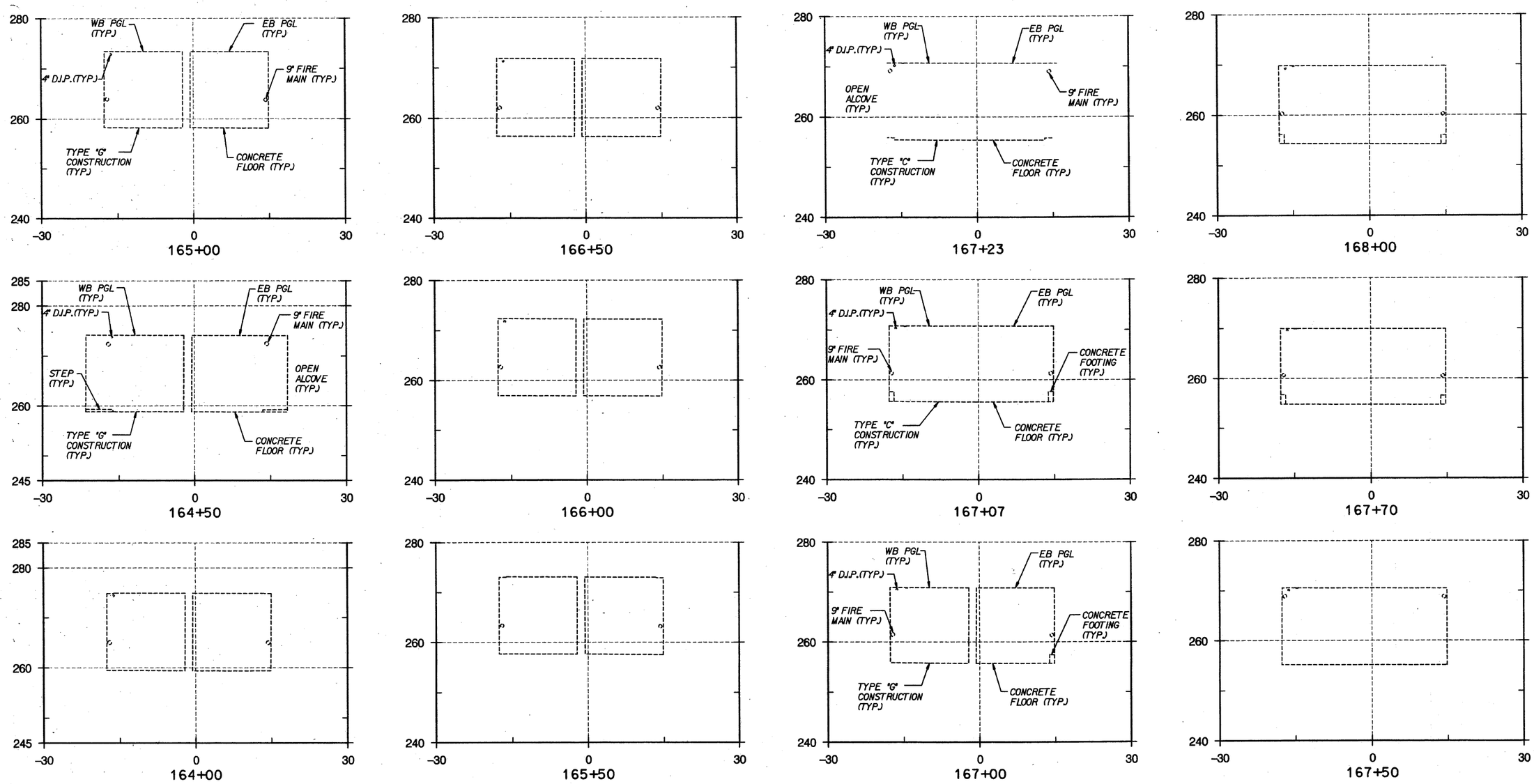
STATE OF NEW YORK
FRANK BLEIER
LICENSED PROFESSIONAL ENGINEER
No. 065076
LICENSED LAND SURVEYOR

Sta. 159+00 To Sta. 163+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9040
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:53 AM $REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$ p:\99110030\dgn\2d sheet\xsect-sheet41.dgn

MTA Capital Construction

Long Island Rail Road East Side Access

PB STV

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE	REVISIONS	No.
03/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

JAMES F. STEERE III N.Y. STATE LIC. NO. 050167-1

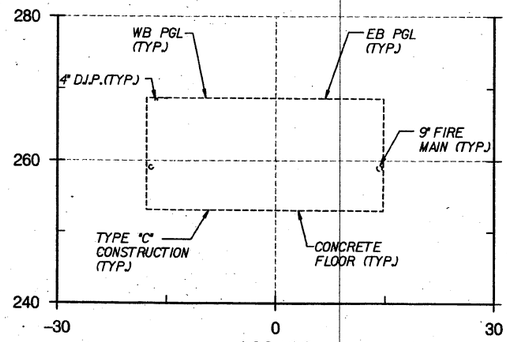
STATE OF NEW YORK JAMES F. STEERE 050167-1 LICENSED LAND SURVEYOR

Sta. 164+00 To Sta. 168+00

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9041
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



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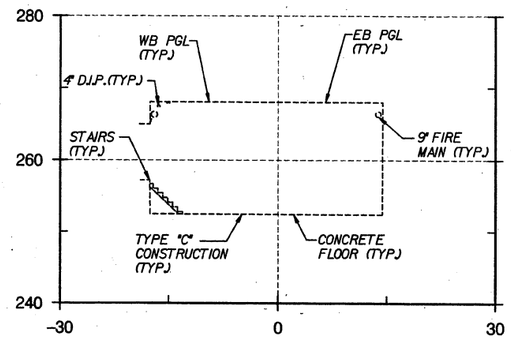

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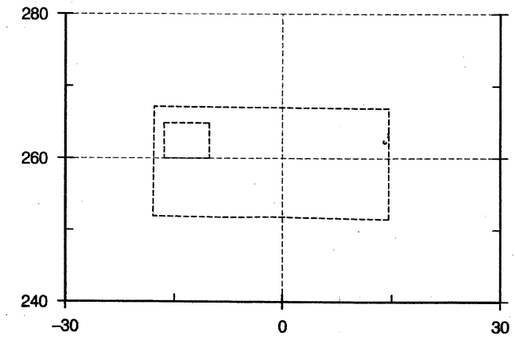

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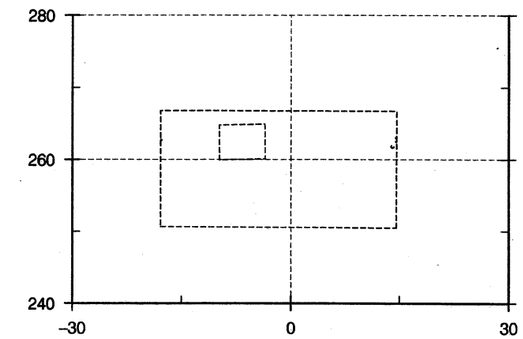

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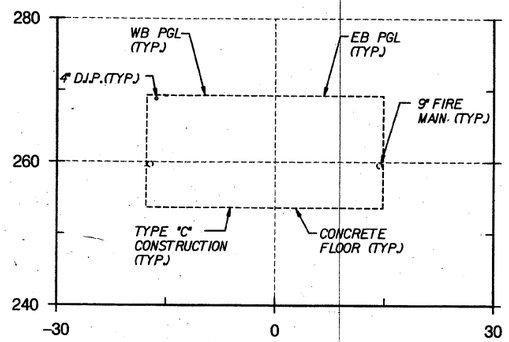

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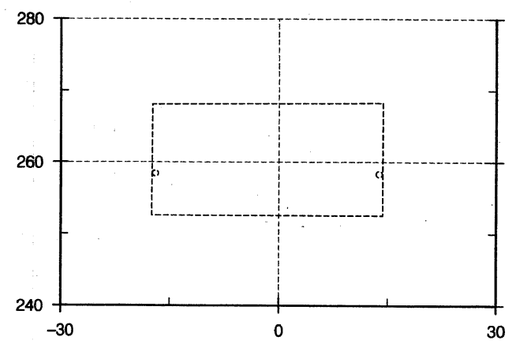

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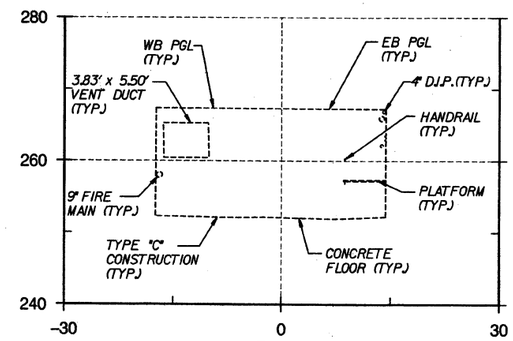

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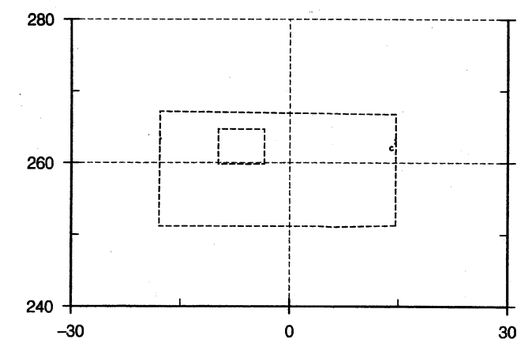

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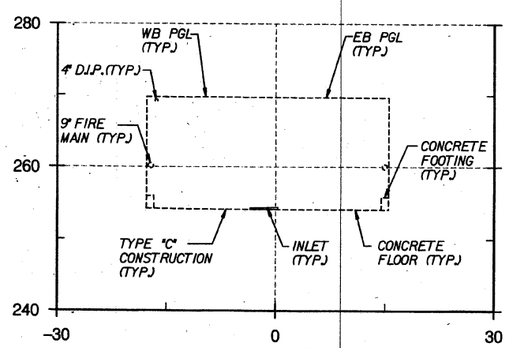

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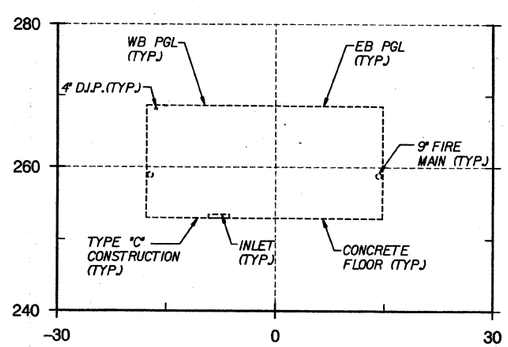

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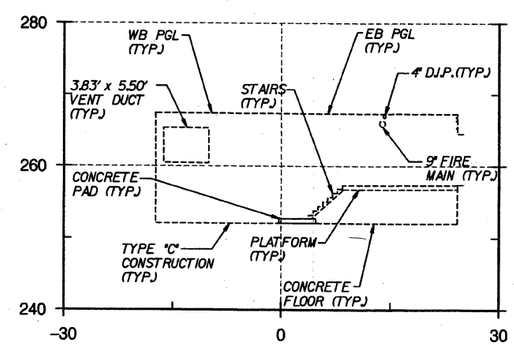

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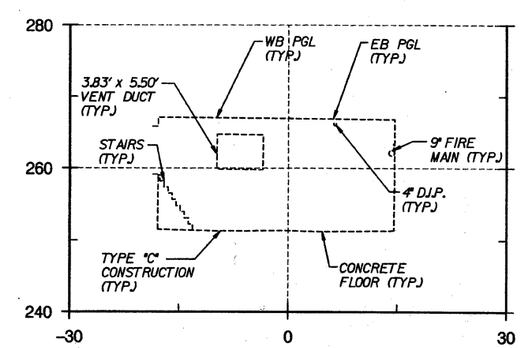


170+88

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM BASED ON NAVD '88 DATUM MINUS 300.00 FT (NAVD '88 EL 0.00 EQUALS ESA EL 300.00) HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE

$PRFNAME$ $TBLNAME$ 2/24/2004 10:36:54 AM p:\99110030\dgn\2d sheet\xsect-sheet42.dgn

$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

MTA Capital Construction

Long Island Rail Road East Side Access

A JOINT VENTURE BETWEEN: PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC. AND STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.

Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
021304	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK — JAMES E. MEDINA — LICENSED PROFESSIONAL ENGINEER — 050164 — LICENSED LAND SURVEYOR

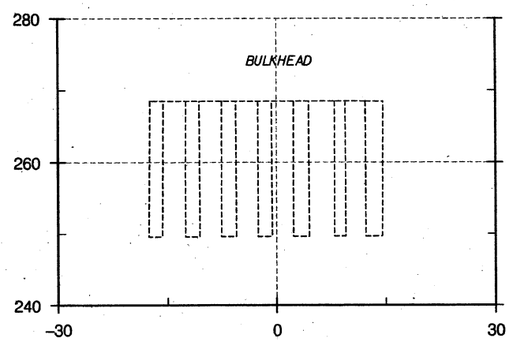
DATE:

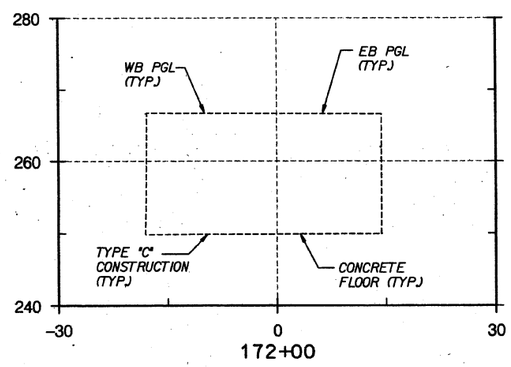
Sta. 168+10 To Sta. 171+50

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9042
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___





HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM
BASED ON NAVD '88 DATUM MINUS 300.00 FT
(NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE
SYSTEM, LONG ISLAND ZONE

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MTA Capital Construction
Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
021304	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: KJM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

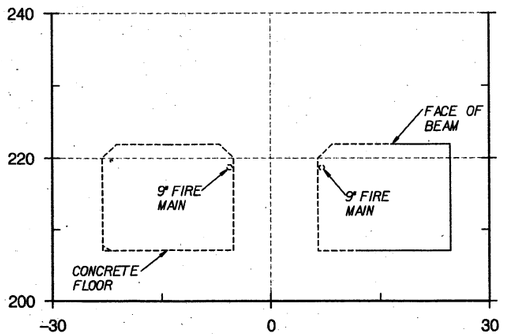
STATE OF NEW YORK
MARGARET REGAN
LICENSED LAND SURVEYOR
DATE:

Sta. 172+00 To Sta. 172+21

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9043
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___



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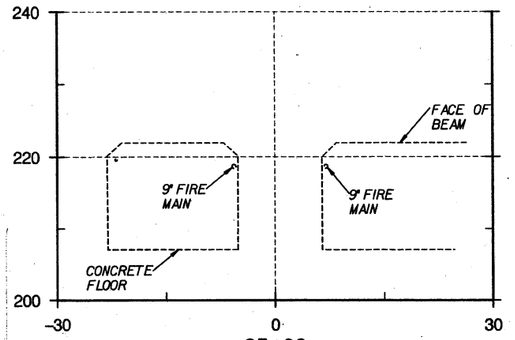

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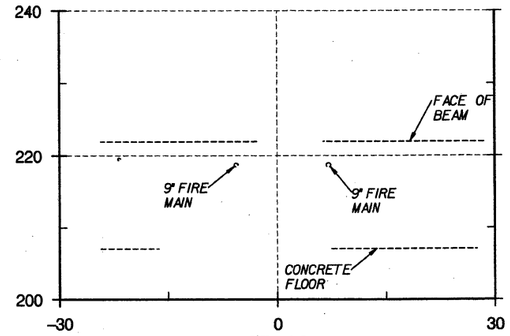

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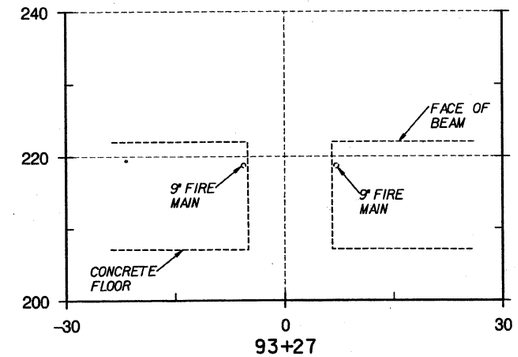

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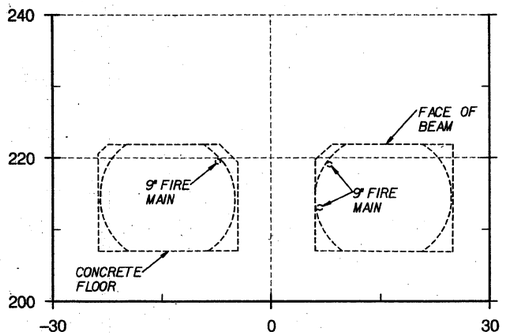

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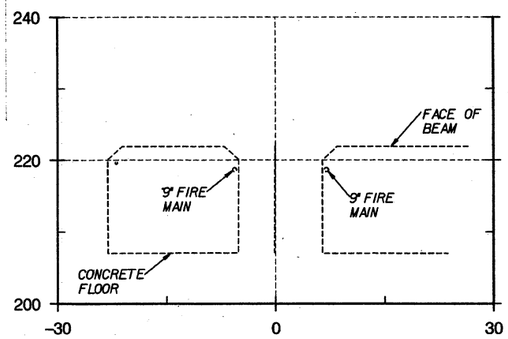

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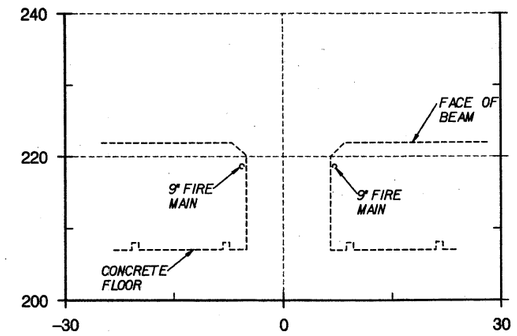

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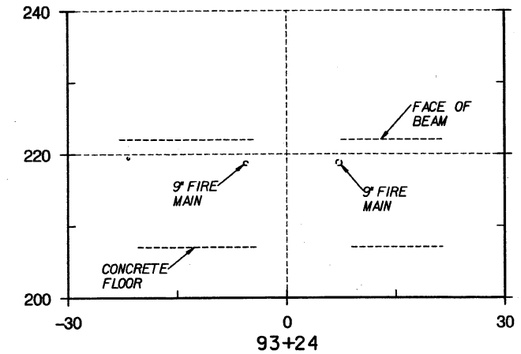

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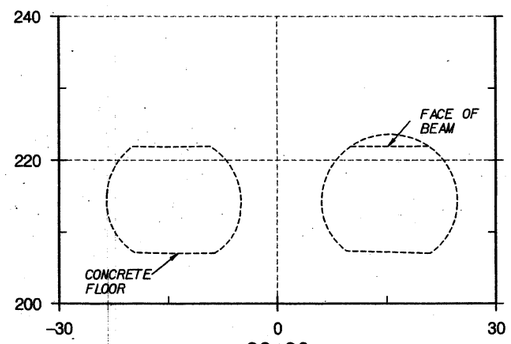

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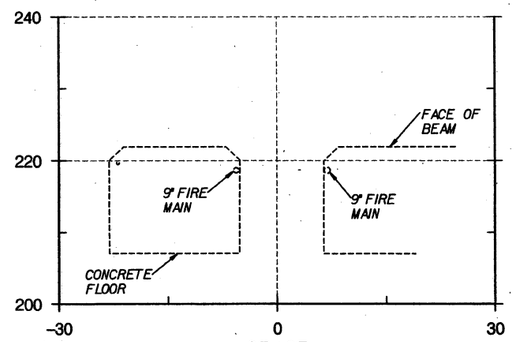

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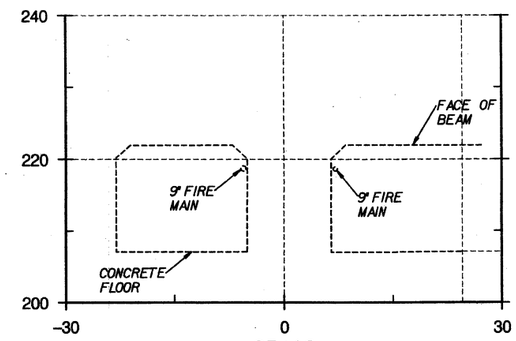

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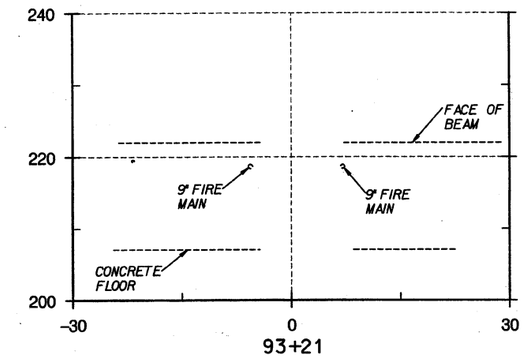

93+21

HORIZONTAL SCALE IN FEET

10' 5' 0 10' 20'

VERTICAL SCALE IN FEET

10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM
BASED ON NAVD '88 DATUM MINUS 300.00 FT
(NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE
SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV

A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: TGM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
JAMES E. SEEBER
LICENSED PROFESSIONAL ENGINEER
No. 065161
LICENSED LAND SURVEYOR
DATE: 9/13/04

Sta.92+92 To Sta. 93+27

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9044
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

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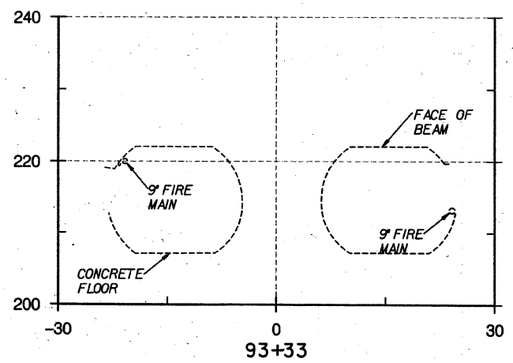

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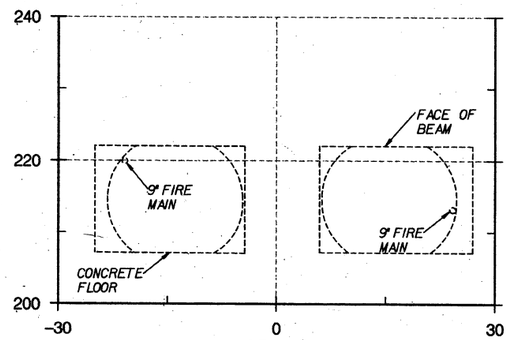

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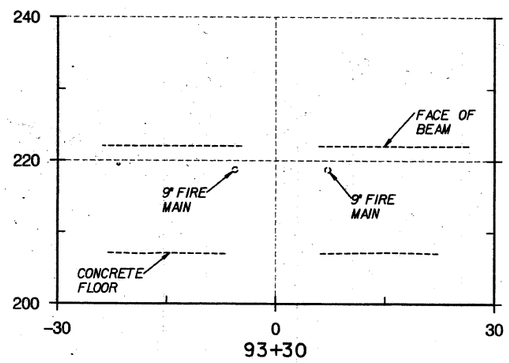

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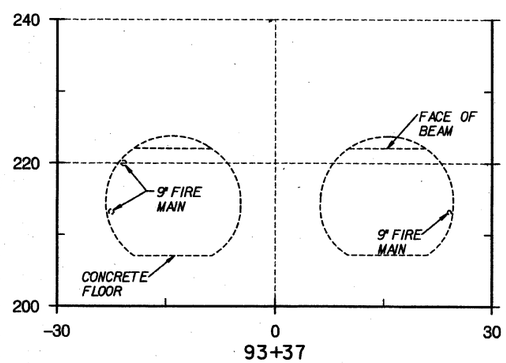

93+37

HORIZONTAL
SCALE IN FEET
10' 5' 0 10' 20'

VERTICAL
SCALE IN FEET
10' 5' 0 10' 20'

EAST SIDE ACCESS (ESA) PROJECT VERTICAL DATUM
BASED ON NAVD '88 DATUM MINUS 300.00 FT
(NAVD '88 EL 0.00 EQUALS ESA EL 300.00)
HORIZONTAL DATUM - NAD 83 STATE PLANE COORDINATE
SYSTEM, LONG ISLAND ZONE

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE
BETWEEN:
PARSONS BRINCKERHOFF
QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	5

DESIGNED BY:
DRAWN BY: TGM
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
MICHAEL HEDAYATI
No. 069101
LICENSED PROFESSIONAL ENGINEER
LICENSED LAND SURVEYOR
DATE:

Sta.93+30 To Sta. 93+37

63rd Street Tunnel
Existing Conditions
Cross Sections

SCALE: AS SHOWN
DRAWING NUMBER: STD-CT-9045
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___

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GENERAL NOTES

1. ALL COORDINATES AND BEARINGS SHOWN ON THE CONTRACT DRAWINGS ARE IN FEET.
   THE PROJECT HORIZONTAL CONTROL DATUM IS THE NAD 83, STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE.
2. THE ESA PROJECT VERTICAL DATUM IS BASED ON NAVD-88 DATUM MINUS 300.00 FT
   (NAVD-88 EL 0.00 EQUALS ESA EL 300.00).

PUBLICATIONS

AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
BCNYS	BUILDING CODE OF NEW YORK STATE
CFR	UNITED STATES CODE OF FEDERAL REGULATIONS
ECCCNYS	ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE
ECMD	ELECTRIC CONSTRUCTION MATERIALS DIRECTORY
EPACT	ENERGY POLICY ACT
FCNYS	FIRE CODE OF NEW YORK STATE
FGCNYS	FUEL GAS CODE OF NEW YORK STATE
FS	FEDERAL SPECIFICATIONS
MCNYS	MECHANICAL CODE OF NEW YORK STATE
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
NEBC	NETWORK EQUIPMENT - BUILDING STANDARD
NEC	NATIONAL ELECTRICAL CODE
NESC	NATIONAL ELECTRICAL SAFETY CODE
NYCBC	NEW YORK CITY BUILDING CODE
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, RULES AND REGULATIONS
NYCRR	NEW YORK CODES, RULES AND REGULATIONS
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGULATIONS
NYSDH	NEW YORK STATE DEPARTMENT OF HEALTH REGULATIONS
NYSDOL	NEW YORK STATE DEPARTMENT OF LABOR REGULATIONS - INDUSTRIAL CODE - RULE 56 - ASBESTOS
NYSECCC	NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE
PCNYS	PLUMBING CODE OF NEW YORK STATE
PMCNYS	PROPERTY MAINTENANCE CODE OF NEW YORK STATE
RCNYS	RESIDENTIAL CODE OF NEW YORK STATE
SEOM	SIGNAL ENGINEERING AND OPERATIONS MANUAL

GOVERNMENTAL AGENCIES – UTILITIES OWNERS AND RAILROAD

ACOE	UNITED STATES ARMY CORPS OF ENGINEERS
AMTRAK	NATIONAL RAILROAD PASSENGER CORPORATION
AT&T	AMERICAN TELEPHONE & TELEGRAPH CO.
BMT	NEW YORK CITY TRANSIT BMT DIVISION
BU	BROOKLYN UNION GAS
CON ED	CONSOLIDATED EDISON CO. OF NEW YORK, INC
COE	US ARMY CORPS OF ENGINEERS
DOT	UNITED STATES DEPARTMENT OF TRANSPORTATION
ECS	EMPIRE CITY SUBWAY
FCC	FEDERAL COMMUNICATIONS COMMISSION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FRA	FEDERAL RAILWAY ADMINISTRATION
FTA	FEDERAL TRANSIT ADMINISTRATION, UNITED STATES DEPARTMENT OF TRANSPORTATION
IND	NEW YORK CITY TRANSIT IND DIVISION
IRT	NEW YORK CITY TRANSIT IRT DIVISION
LIRR	LONG ISLAND RAIL ROAD
MCI	MCI TELECOMMUNICATIONS CORPORATION
MIL	MILITARY SPECIFICATIONS
MNR	METRO-NORTH RAILROAD
MTA	METROPOLITAN TRANSPORTATION AUTHORITY
MTCCC	NEW YORK CITY OFFICE OF THE MAYOR TRAFFIC CONSTRUCTION COORDINATION COUNCIL
NBS	NATIONAL BUREAU OF STANDARDS
NJT	NEW JERSEY TRANSIT CORPORATION
NWS	NATIONAL WEATHER SERVICE
NYAR	NEW YORK AND ATLANTIC RAILWAY
NYCBWS	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF WATER SUPPLY
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NYCDOT	NEW YORK CITY DEPARTMENT OF TRANSPORTATION
NYCDPR	NEW YORK CITY DEPARTMENT OF PARKS AND RECREATION
NYCEC	NEW YORK CITY DEPARTMENT OF GENERAL SERVICES, BUREAU OF ELECTRIC CONTROL
NYCFD	NEW YORK CITY FIRE DEPARTMENT,BUREAU OF FIRE COMMUNICATION
NYCPD	NEW YORK CITY POLICE DEPARTMENT, COMMUNICATION DIVISION
NYCT	NEW YORK CITY TRANSIT
NYCTR	NEW YORK CITY DEPARTMENT OF TRANSPORTATION, BUREAU OF TRAFFIC OPERATIONS
NYSBC	BUILDING CODE OF THE STATE OF NEW YORK
NYSDOT	NEW YORK STATE DEPARTMENT OF TRANSPORTATION
NYSEO	NEW YORK STATE ENERGY OFFICE REGULATIONS
NYSFC	FIRE CODE OF NEW YORK STATE
OCMC	OFFICE OF CONSTRUCTION MITIGATION AND COORDINATION
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, UNITED STATES DEPARTMENT OF LABOR
PCTC	PENN CENTRAL TRANSPORTATION COMPANY
SCS	SOIL CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE
USBM	UNITED STATES BUREAU OF MINES
USC&GS	UNITED STATES COAST AND GEODETIC SURVEY
USDOT	UNITED STATES DEPARTMENT OF TRANSPORTATION
USEPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UULS	UNDERGROUND UTILITY LOCATION SERVICE
VERIZON	VERIZON TELEPHONE
WPCF	WATER POLLUTION CONTROL FEDERATION

ASSOCIATIONS

AA	THE ALUMINUM ASSOCIATION, INCORPORATED
AABC	ASSOCIATED AIR BALANCE COUNCIL
AAMA	AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION
AAN	AMERICAN ASSOCIATION OF NURSERYMEN, INC.
AAR	ASSOCIATION OF AMERICAN RAILROADS
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABMA	AMERICAN BOILER MANUFACTURERS ASSOCIATION
ACI	AMERICAN CONCRETE INSTITUTE
ADC	AIR DIFFUSION COUNCIL
AFPA	AMERICAN FOREST AND PAPER ASSOCIATION
AFSI	AMERICAN FABRIC STRUCTURES INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
AMCA	AIR MOVEMENT & CONTROL ASSOCIATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE, INC.
APA	AMERICAN PLYWOOD ASSOCIATION
API	AMERICAN PETROLEUM INSTITUTE
APTA	AMERICAN PUBLIC TRANSIT ASSOCIATION
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION
ASA	AMERICAN STANDARDS ASSOCIATION
ARI	AIR-CONDITIONING AND REFRIGERATION INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS, INC.
ASIS	AMERICAN SOCIETY FOR INDUSTRIAL SECURITY
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASPRS	AMERICAN SOCIETY OF PHOTOGRAMMETRY AND REMOTE SENSING
ASSE	AMERICAN SOCIETY OF SANITARY ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATA	AIR TRANSPORTATION ASSOCIATION
ATC	APPLIED TECHNOLOGY COUNCIL
AWPA	AMERICAN WOOD PRESERVERS' ASSOCIATION
AWPI	AMERICAN WOOD PRESERVERS INSTITUTE
AWS	AMERICAN WELDING SOCIETY, INC.
AWWA	AMERICAN WATER WORKS ASSOCIATION
BIA	BRICK INSTITUTE OF AMERICA
CISPI	CAST IRON SOIL PIPE INSTITUTE
CGA	COMPRESSED GAS ASSOCIATED
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CSI	CONSTRUCTION SPECIFICATIONS INSTITUTE
EEI	EDISON ELECTRIC INSTITUTE
EIA	ELECTRONIC INDUSTRIES ASSOCIATION
EJMA	EXPANSION JOINT MANUFACTURERS ASSOCIATION
FGMA	FLAT GLASS MARKETING ASSOCIATION
FM	FACTORY MUTUAL SYSTEM
FMERC	FACTORY MUTUAL ENGINEERING & RESEARCH CORPORATION
GA	GYPSUM ASSOCIATION
HI	HYDRAULIC INSTITUTE
HYDI	HYDRONICS INSTITUTE
ICEA	INSULATED CABLE ENGINEERS ASSOCIATION, INC.
ICRP	INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.
IESNA	ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA
IMSA	INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION
IPC	THE INSTITUTE FOR INTERCONNECTING AND PACKAGING ELECTRONIC CIRCUITS
IRI	INDUSTRIAL RISK INSURERS
ISO	INTERNATIONAL STANDARDS ORGANIZATION
ITE	INSTITUTE OF TRANSPORTATION ENGINEERS
JIC	JOINT INDUSTRIAL COUNCIL
LPI	LIGHTNING PROTECTION INSTITUTE
MBMA	METAL BUILDINGS MANUFACTURER'S ASSOCIATION
MPEG	MOTION PICTURE EXPERTS GROUP
MSS	MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC.
NAAMM	NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
NACE	NATIONAL ASSOCIATION OF CORROSION ENGINEERS
NAPHCC	NATIONAL ASSOCIATION OF PLUMBING, HEATING, COOLING CONTRACTORS
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, INC.
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIST	NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
NLMA	NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION
NMAS	NATIONAL MAP ACCURACY STANDARDS
PCA	PORTLAND CEMENT ASSOCIATION
PCI	PRESTRESSED CONCRETE INSTITUTE
PDI	PLUMBING & DRAINAGE INSTITUTE
PPI	PLASTICS PIPE INSTITUTE
PTI	POST TENSIONING INSTITUTE
RCSCEF	RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION PUBLICATIONS
SAE	SOCIETY OF AUTOMOTIVE ENGINEERS, INC.
SDI	STEEL DECK INSTITUTE OR STEEL DOOR INSTITUTE
SEI	SOFTWARE ENGINEERING INSTITUTE
SJI	STEEL JOIST INSTITUTE
SMACNA	SHEET METAL AND AIR-CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
SSPC	STEEL STRUCTURES PAINTING COUNCIL
TCA	TILE COUNCIL OF AMERICA, INC.
TIA	TELECOMMUNICATIONS INDUSTRIES ASSOCIATION
TMS	THE MASONRY SOCIETY
TPI	TRUSS PLATE INSTITUTE
UL	UNDERWRITERS LABORATORIES INC.
WEF	WATER ENVIRONMENT FEDERATION

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC — PB / STV / PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
469 Seventh Avenue • New York, NY • 10018

"IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY UNLESS THAT PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL. THE LICENSED PROFESSIONAL SHALL AFFIX TO THIS DOCUMENT THE SEAL AND THE NOTATION "ALTERED BY", FOLLOWED BY THE AUTHORIZED SIGNATURE AND THE DATE OF THE ALTERATION."

DATE:	REVISIONS	No.

DESIGNED BY: M. CAPONE
DRAWN BY: J. RICCARDI
CHECKED BY: J. CULHANE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License No.
STATE OF NEW YORK — MAJID HEDAYATI — LICENSED PROFESSIONAL ENGINEER
DATE: 11-19-05

GENERAL STANDARD

ABBREVIATIONS FOR PUBLICATIONS, AGENCIES AND ASSOCIATIONS

SCALE: NONE
DRAWING NUMBER: STD-GN-0005
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
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SHEET No. N/A

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GENERAL SYMBOLS

- BREAK LINE
- CENTERLINE
- COLUMN LINE
- CONTRACT LIMIT
- FUTURE WORK
- HIDDEN LINE
- LINE BREAK
- LINE CONTINUATION
- FLOOR EL 310.21' — GRADE LINE
- EXISTING ELEVATION 206.5 — PROPOSED ELEVATION 207.68
- NORTH ARROW
- PLAN — PLAN TITLE
- PROFILE — PROFILE TITLE
- REVISION CLOUD
- A — REVISION LETTER FOR BID AND AWARD PHASES
- 1 — REVISION NUMBER DURING CONSTRUCTION PHASE
- TOP OF FEATURE
- WATER LEVEL

DRAWING REFERENCING CONVENTION

DETAIL DESIGNATION (NUMBER)
DETAIL 1 XX-XXXX
DRAWING NUMBER WHERE DETAIL IS TAKEN

DETAIL TITLE WHERE SHOWN

SCALE IN FEET
1' ½ 0 1' 2'

SECTION DESIGNATION (LETTER)
SECTION A XX-XXXX
DRAWING NUMBER WHERE SECTION IS TAKEN

SECTION TITLE WHERE SHOWN

SCALE IN FEET
1' ½ 0 1' 2'

ELEVATION DESIGNATION (NUMBER)
ELEVATION 1 XX-XXXX
DRAWING NUMBER WHERE ELEVATION IS TAKEN

ELEVATION TITLE WHERE SHOWN

SCALE IN FEET
1' ½ 0 1' 2'

PART PLAN DESIGNATION (NUMBER)
PART PLAN 1 XX-XXXX
DRAWING NUMBER ON WHICH THE PART PLAN IS TAKEN

PART PLAN TITLE WHERE SHOWN

SCALE IN FEET
1' ½ 0 1' 2'

PARCEL NUMBER — 10
LOT NUMBER — LOT 400
BLOCK 240 — BLOCK NUMBER

PARCEL TITLE

DETAIL OR PART PLAN DESIGNATION (NUMBER)
1 XX-XXXX
ENCIRCLES AREA THAT IS DETAILED
DRAWING NUMBER WHERE DETAIL IS SHOWN
DASH BLOCK AREAS THAT DON'T FIT IN CIRCLES (TYP)

DETAIL OR PART PLAN WHERE TAKEN

SECTION DESIGNATION (LETTER)
A XX-XXXX
DRAWING NUMBER WHERE SECTION IS SHOWN

SECTION WHERE TAKEN

ELEVATION DESIGNATION (NUMBER)
1 XX-XXXX
DRAWING NUMBER WHERE SECTION IS SHOWN

ELEVATION VIEW WHERE TAKEN

XXX 1

TYPICAL LAYOUT
SECTION, DETAIL OR ELEVATION
WHERE TAKEN AND SHOWN ON SAME DRAWING

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$REF4$
$REF5$
$REF6$

Metropolitan Transportation Authority
Capital Construction
Long Island Rail Road
East Side Access

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DATE: REVISIONS No.

DESIGNED BY: M. CAPONE
DRAWN BY: J. RICCARDI
CHECKED BY: J. CULHANE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

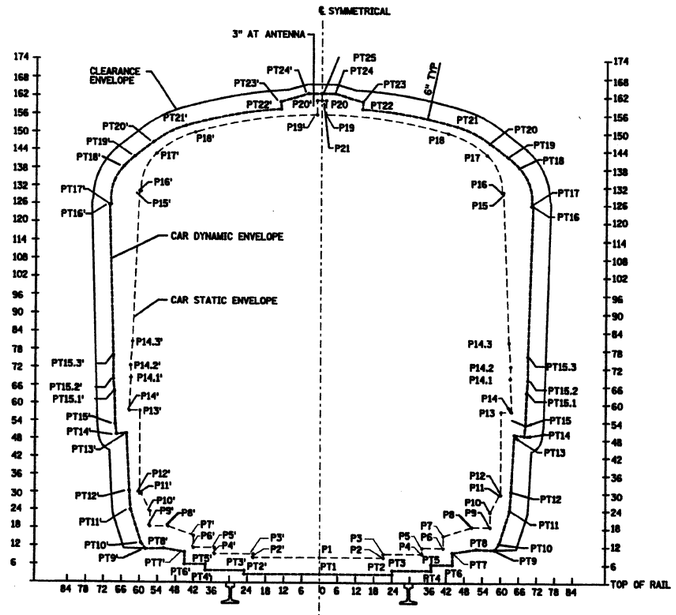
NY PROFESSIONAL LICENSED ENGINEER STATE OF NEW YORK MAJID HEDAYATI
DATE: 12-19-05

GENERAL STANDARD

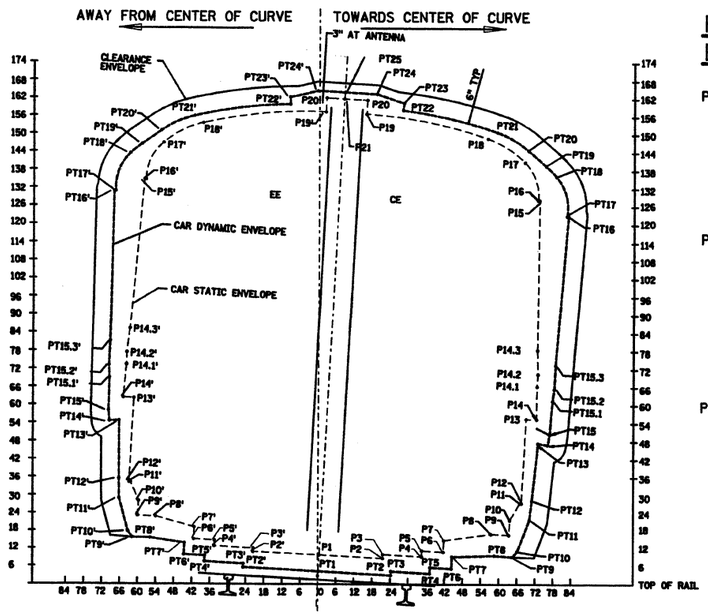
GENERAL SYMBOLS

SCALE: NONE
DRAWING NUMBER: STD-GN-2601
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A



CLEARANCE DIAGRAM FOR TANGENT TRACK



CLEARANCE DIAGRAM FOR CURVED TRACK

TANGENT STATIC ENVELOPE COORDINATES

POINT	HORIZONTAL FROM ℄ INCHES	VERTICAL FROM TOR INCHES	POINT	HORIZONTAL FROM ℄ INCHES	VERTICAL FROM TOR INCHES
P1	0.00	8.25	P1'	0.00	8.25
P2	28.50	8.25	P2'	-28.50	8.25
P3	28.50	9.50	P3'	-28.50	9.50
P4	41.50	9.50	P4'	-41.50	9.50
P5	41.50	11.50	P5'	-41.50	11.50
P6	48.50	11.50	P6'	-48.50	11.50
P7	48.50	15.50	P7'	-48.50	15.50
P8	50.50	18.50	P8'	-50.50	18.50
P9	56.50	18.50	P9'	-56.50	18.50
P10	56.50	23.50	P10'	-56.50	23.50
P11	59.50	29.50	P11'	-59.50	29.50
P12	60.00	29.50	P12'	-60.00	29.50
P13	60.00	57.50	P13'	-60.00	57.50
P14	63.50	57.50	P14'	-63.50	57.50
P14.1	63.04	68.51	P14.1'	-63.04	68.51
P14.2	63.15	72.61	P14.2'	-63.15	72.61
P14.3	62.54	80.56	P14.3'	-62.54	80.56
P15	60.48	130.20	P15'	-60.48	130.20
P16	59.98	130.20	P16'	-59.98	130.20
P17	54.87	142.74	P17'	-54.87	142.74
P18	42.11	149.96	P18'	-42.11	149.96
P19	1.50	155.99	P19'	-1.50	155.99
P20	1.50	160.68	P20'	-1.50	160.68
P21	0.00	160.68	P21'	0.00	160.68

TANGENT DYNAMIC ENVELOPE COORDINATES

POINT	HORIZONTAL FROM ℄ X+ [INCHES]	VERTICAL FROM TOR Y+ [INCHES]	POINT	HORIZONTAL FROM ℄ X+ [INCHES]	VERTICAL FROM TOR Y+ [INCHES]
PT1	0.00	2.75	PT1'	0.00	2.75
PT2	31.50	2.75	PT2'	-31.50	2.75
PT3	31.50	4.00	PT3'	-31.50	4.00
PT4	44.50	4.00	PT4'	-44.50	4.00
PT5	44.50	6.00	PT5'	-44.50	6.00
PT6	51.50	6.00	PT6'	-51.50	6.00
PT7	51.50	10.00	PT7'	-51.50	10.00
PT8	51.98	11.20	PT8'	-51.98	11.20
PT9	57.97	11.02	PT9'	-57.97	11.02
PT10	59.50	13.00	PT10'	-59.50	13.00
PT11	63.00	24.00	PT11'	-63.00	24.00
PT12	63.44	30.52	PT12'	-63.44	30.52
PT13	64.42	49.66	PT13'	-64.42	49.66
PT14	67.74	49.42	PT14'	-67.74	49.42
PT15	68.16	52.91	PT15'	-68.16	52.91
PT15.1	68.50	63.92	PT15.1'	-68.50	63.92
PT15.2	68.41	68.03	PT15.2'	-68.41	68.03
PT15.3	68.86	75.98	PT15.3'	-68.86	75.98
PT16	70.36	125.64	PT16'	-70.36	125.64
PT17	69.86	125.67	PT17'	-69.86	125.67
PT18	65.66	138.54	PT18'	-65.66	138.54
PT19	62.01	141.87	PT19'	-62.01	141.87
PT20	55.85	146.69	PT20'	-55.85	146.69
PT21	45.11	152.21	PT21'	-45.11	152.21
PT22	13.55	157.88	PT22'	-13.55	157.88
PT23	13.72	160.26	PT23'	-13.72	160.26
PT24	4.50	162.93	PT24'	-4.50	162.93
PT25	0.00	162.93	PT25'	0.00	162.93

FORMULAE FOR DETERMINATION OF DYNAMIC ENVELOPE COORDINATES ON CURVED TRACK

POINTS PT1-PT7 & PT1'-PT7' (POINTS ON TRUCK)

$$X' = (Xt - 28.25)\cos\left[\sin^{-1}\left(Ea/56.5\right)\right] + Yt\left(Ea/56.5\right) + 28.25$$

$$Y' = Yt\cos\left[\sin^{-1}\left(Ea/56.5\right)\right] - (Xt - 28.25)\left(Ea/56.5\right)$$

POINTS PT8-PT25 (TOWARDS CENTER OF CURVE)

$$X' = \left\{Xt + \left[R - \left(R^2 - 127{,}449\right)^{1/2}\right] - 28.25\right\}\cos\left[\sin^{-1}\left(Ea/56.5\right)\right] + Yt\left(Ea/56.5\right) + 28.25$$

$$Y' = Yt\cos\left[\sin^{-1}\left(Ea/56.5\right)\right] - \left\{Xt + \left[R - \left(R^2 - 127{,}449\right)^{1/2}\right] - 28.25\right\}\left(Ea/56.5\right)$$

POINTS PT8'-PT25' (AWAY FROM CENTER OF CURVE)

$$X' = \left[Xt - \left\{\left[\left(64 + \left[R^2 - 127{,}449\right]^{1/2}\right)^2 + 245{,}025\right]^{1/2} - R - 64\right\} - 28.25\right]\cos\left[\sin^{-1}\left(Ea/56.5\right)\right] + Yt\left(Ea/56.5\right) + 28.25$$

$$Y' = Yt\cos\left[\sin^{-1}\left(Ea/56.5\right)\right] - \left[Xt - \left\{\left[\left(64 + \left[R^2 - 127{,}449\right]^{1/2}\right)^2 + 245{,}025\right]^{1/2} - R - 64\right\} - 28.25\right]\left(Ea/56.5\right)$$

INPUT VARIABLES
- X+ = X-COORDINATE OF PT OR PT', SEE TABLE ABOVE
- Y+ = Y-COORDINATE OF PT OR PT', SEE TABLE ABOVE
- R = RADIUS OF CURVE, SEE TRACK ALIGNMENT DRAWINGS
- Ea = ACTUAL SUPERELEVATION, SEE TRACK ALIGNMENT DRAWINGS

RESULTS
- X' = X-COORDINATE OF PT OR PT' ON CURVED TRACK
- Y' = Y-COORDINATE OF PT OR PT' ON CURVED TRACK

NOTES:

1. THE VEHICLE CLEARANCE INFORMATION PRESENTED ON THIS DRAWING IS APPLICABLE TO THE LIRR M-1, M-3, & M-7 CAR SIZES ONLY.
2. THE 6 INCH RUNNING CLEARANCE BETWEEN THE CAR DYNAMIC ENVELOPE AND THE CLEARANCE ENVELOPE IS TYPICAL, EXCEPT AT THE FOLLOWING LOCATIONS:
   a. 3 INCHES AT THE CAR'S ANTENNA.
   b. 2 INCHES TO THE EDGE OF THE SAFETYWALK/DUCT BENCH. (NOT SHOWN)

SCALE IN FEET
1' ½ 0 1' 2'

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DATE:	REVISIONS	No.

DESIGNED BY: G. AYVAS
DRAWN BY: J. RICCARDI
CHECKED BY: M. DELLA POSTA
COORDINATED BY: J.SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL ENGINEER License No. 065 STATE OF NEW YORK JESUS SCHABIB LICENSED PROFESSIONAL ENGINEER
DATE: 11-14-05

CIVIL STANDARD

VEHICLE CLEARANCE DIAGRAM

SCALE: AS NOTED
DRAWING NUMBER: STD-CD-1001
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

$PRENAME$
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41

CIVIL SYMBOLS

EXISTING		PROPOSED
	RIGHT-OF-WAY LINE	
	PROPERTY LINE	
	EASEMENT LINE	
	WETLAND LINE	
315	INDEX CONTOUR	315
	INTERMEDIATE CONTOUR	
10+00 11+00	CENTER OR BASE LINE	10+00 11+00
	MATCH LINE OR SECTION LINE	
	TRACK CENTER LINE	
	FENCE LINE	
	DIRECTION OF FLOW	
	HIGH POINT	
	LOW POINT	
	TROUGH DRAIN	TD
	INLET FILTER	
	HAY BALES	
x 322.5	SPOT ELEVATIONS	x 322.5
	SURVEY CONTROL MONUMENT	
	CURB LINE	
	BEAM GUIDE RAIL	
	HAND RAIL	
	TEMPORARY PLASTIC FENCE	
	SILT FENCE	
	TWP, CITY, COUNTY LINES	
	TOP OF CUT	TOP OF CUT
	TOE OF CUT	TOE OF CUT
	TOP OF FILL	TOP OF FILL
	TOE OF FILL	TOE OF FILL
	R/W PARCEL NUMBER	P-
	FUTURE WORK	

EXISTING SURVEY SYMBOLS

	TREE / SHRUB		TOWER FOOTING
	AIR SWITCH		TRIP BOX
	CATENARY POLE WITH GUY WIRE		TRACKS

MPT SYMBOLS

- TIMBER CURB
- SIGN (SHOWN FACING LEFT)
- TRAFFIC DRUM
- TYPE III CONSTRUCTION BARRICADE
- WARNING LIGHT ON BARRICADE/CURB/BARRIER
- TRAFFIC CONE
- FLASHING ARROW BOARD
- TEMPORARY CONCRETE BARRIER
- FLAGGER
- PAVEMENT STRIPING TO BE REMOVED
- WORK ZONE
- DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT
- SAND BARREL IMPACT ATTENUATOR (NUMBER OF BARREL MAY VARY)

UTILITIES SYMBOLS

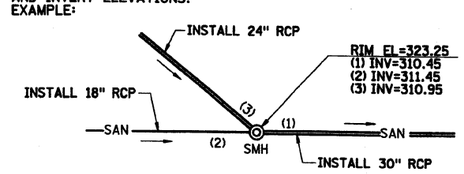
EXISTING		PROPOSED
	UTILITY FACILITY (LESS THAN 24" IN PLAN VIEW)	
	UTILITY FACILITY (24" OR LARGER IN PLAN VIEW) (SHOWN TO SCALE)	
	ABANDONED FACILITY	
	FACILITY TO BE ABANDONED	
	FACILITY TO BE REMOVED	
FM	FORCE MAIN	FM
PD	PRESSURE DISCHARGE LINE	PD
OPL	OIL PRESSURE LINE	
	DIRECTION OF FLOW	
CO SAN 15" VCP SMH	SANITARY SEWER LINE, CLEANOUT & MANHOLE	CO SAN 15"VCP SMH
SS 18" RCP SSMH	STORM SEWER LINE AND MANHOLE	SS 18" RCP SSMH
COMB 18"RCP SMH	COMBINED SEWER LINE AND MANHOLE	COMB 18"RCP SMH
SS 18" CMP	INLET OR CATCH BASIN	SS 18" CMP
SS 3'x6'	HEADWALLS, ENDWALLS, CULVERT FLARED ENDS AND APRON	SS 3' X 6'
W WM WMH FH 8"DIPL WV	WATER LINE REDUCER, WATER METER, WATER VALVE, FIRE HYDRANT, WATER MANHOLE AND CAP	W WM WMH FH 8"DIP WV
ST ST MH	STEAM LINE & MANHOLE	ST ST MH
GV G GM 8"PVC	GAS LINE REDUCER, GAS VALVE (OR VAULT), GAS METER	G GM 8"PVC
TMH T 4-PD	TELEPHONE LINE, MANHOLE OR VAULT PULL BOX OR SPLICING CHAMBER TYPE & NUMBER OF DUCTS	T T-FO 8 PD
TMH T-FO 4-PD	LARGE TELEPHONE MANHOLE OR VAULT, TYPE & NUMBER OF DUCTS	T-FO 4-PD TMH
EMH E 4-PD	ELECTRIC LINE, MANHOLE OR VAULT PULL BOX OR SPLICING CHAMBER TYPE & NUMBER OF DUCTS	E E 8 PD
EMH E 4-PD	LARGE ELECTRIC MANHOLE OR VAULT TO SCALE, TYPE & NUMBER OF DUCTS	E 8 PD EMH
EMH COMM-FO 4-PD	MANHOLE, PULLBOX TYPE & NUMBER OF DUCTS	E COMM-FO 4-PD
UV	PRIVATE VAULT TO SCALE	UV
PCB PD	FIRE ALARM BOX, POLICE CALL BOX, TYPE & NUMBER OF DUCTS	PCB 1-PD

UTILITIES SYMBOLS

EXISTING		PROPOSED
TV OH	UTILITY POLE & AERIAL CABLE	TV OH
OH	STREET LIGHT POLE, TRAFFIC LIGHT POLE WITH AERIAL CABLE	SL OH
E OH UP GUY	ELECTRIC POLE, GUY LINE AND ANCHOR	E OH GUY
T OH UP GUY	TELEPHONE POLE, GUY LINE AND ANCHOR	T OH GUY
FP PM	FLAG POLE, PARKING METER	FP PM
	CORROSION CONTROL TEST STATION	
T-PD	PUBLIC TELEPHONE	T T-PD
TCB	TRAFFIC SIGNAL CONTROL BOX	TCB
	TRANSFORMER PAD MOUNTED	
FMH	FIRE DEPARTMENT MANHOLE CABLE & CONDUIT	
TAMH	NEW YORK CITY TRANSIT MANHOLE	
	WATER SPRINKLER	
WSP	FIRE SERVICE STAND PIPE	WSP

UTILITY LINE EXAMPLES

1. UTILITY LINES ARE DELINEATED BY TYPE, SIZE OR NUMBER OF DUCTS, MATERIAL, SPECIAL CONDITION AND OWNER.
   EXAMPLE:
   A. G-6" CIP MJ-HP
      GAS-6" CAST IRON PIPE MECHANICAL JOINT HIGH PRESSURE.
   B. E-12-3½" D(3x4)
      ELECTRICAL 12 -3½" DUCTS-ARRANGED 3 WIDE AND 4 HIGH
   C. T-4 SCWD
      TELEPHONE - 4 SINGLE CREOSOTED WOOD DUCTS.
2. ELLIPTICAL SEWERS, MULTIPLE CONDUIT DUCT BANKS, ETC. ARE DELINEATED BY WIDTH THEN HEIGHT.
   EXAMPLE:
   A. SAN - 3'x4'6" OBP
      SANITARY SEWER - 3' WIDE BY 4'6" HIGH OVAL BRICK PIPE
3. MANHOLE DATA IS INDICATED BY ARROWED LEADER GIVING TOP AND INVERT ELEVATIONS.
   EXAMPLE:



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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: J. RICCARDI
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL Licensed Architect STATE OF NEW YORK MAJID HEDAYATI
DATE: 11/10/05

CIVIL STANDARD

CIVIL AND UTILITY SYMBOLS

SCALE: NONE
DRAWING NUMBER: STD-CT-0001
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

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CIVIL ABBREVIATIONS

A/G	AT GRADE
AB	ANCHOR BOLT
ABD	ABANDONED
ABUT	ABUTMENT
ACD	ASBESTOS CEMENT DUCT
ACP	ASBESTOS CEMENT PIPE
ADDL	ADDITIONAL
ADR	AREA DRAIN
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGB	AGGREGATE BASE
AGGSB	AGGREGATE SUBBASE
ALT	ALTERNATE
ALUM	ALUMINUM
APP	APPROACH
APPROX	APPROXIMATE, APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURE, ARCHITECTURAL
ASPH	ASPHALT
ASPHC	ASPHALT CONCRETE
ATR	ABOVE TOP OF RAIL
AVE	AVENUE
AVG	AVERAGE
B	BASE MATERIAL
B/C	BACK OF CURB
B/F, BF	BOTH FACES
B/R	BASE OF RAIL
BC	BOTTOM OF CURB
BCR	BEGIN CURB RETURN
BD	BOTTOM ELEVATION OF DITCH
BEV	BEVEL
BFP	BACKFLOW PREVENTER
BFV	BUTTERFY VALVE
BIT	BITUMINOUS
BJF	BITUMINOUS JOINT FILLER
BKF	BACKFILL
BL	BUILDING LINE
BLDG	BUILDING
BLST	BALLAST
BLVD	BOULEVARD
BM	BENCHMARK
BO	BY OTHERS
BOE	BOTTOM OF EXCAVATION
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BR	BRIDGE
BRG	BEARING
BRG PL	BEARING PLATE
BS	BOTTOM OF SLOPE
BSMT	BASEMENT
BTWN	BETWEEN
BV	BALL VALVE
BW	BOTTOM OF WALL
C to C, C/C	CENTER TO CENTER
C & C	CUT AND COVER
C/L	CURB LINE
CA	COMPRESSED AIR
CAT	CATENARY
CATV	CABLE TELEVISION
CB	CATCH BASIN
CE	CONSTRUCTION EASEMENT
CED	CONCRETE ENCASED DUCTBANK
CF	CUBIC FEET
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CIL	CENTRAL INSTRUMENT LOCATION
CIP	CAST IRON PIPE, CAST IN PLACE
CIPL	CAST IRON PIPE (CEMENT LINED)
CIR	CENTRAL INSTRUMENT ROOM
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLF	CHAIN LINK FENCE
CLR	CLEARANCE, CLEAR
CMH	COMMUNICATIONS MANHOLE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMB	COMBINED SEWER
COMM	COMMUNICATION
CONC	CONCRETE
COND	CONDUIT
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE
COV	COVER
CP	CONTROL POINT
CTJ	CONTRACTION JOINT
CTR	CENTER
CTRL	CONTROL
CU	CUBIC
CF, CU FT	CUBIC FEET

CU IN	CUBIC INCH
CU YD	CUBIC YARD
CULV	CULVERT
CVOC	CHLORINATED VOLATILE ORGANIC COMPOUND
CWR	CONTINUOUS WELDED RAIL
DC	DROP CURB
DCV	DOUBLE CHECK VALVE
DEG	DEGREE
DEL	DELETE
DET	DETAIL
DF	DIRECT FIXATION
DI	DROP INLET, DRAIN INLET
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIPL	DUCTILE IRON PIPE (CEMENT LINED)
DIPLMJ	DUCTILE IRON PIPE (CEMENT LINED MECHANICAL JOINT)
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DOC	DEGREE OF CURVATURE
DRAIN	DRAINAGE
DWG, DWGS, DWG(S)	DRAWING, DRAWINGS, DRAWING(S)
DWLS	DOWELS
(E)	EXISTING TO REMAIN
(ER)	EXISTING RELOCATED
EXIST	EXISTING
E	EAST
EA	EACH
EB	EASTBOUND
ECR	END CURB RETURN
ED	EJECTOR DISCHARGE PIPING
EF	EACH FACE
EJ, EXP JT	EXPANSION JOINT
EL, ELEV	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRIC, ELECTRICAL
EMERG	EMERGENCY
EMH	ELECTRIC MANHOLE
ENGR	ENGINEER, ENGINEERING
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQ T/O	EQUILATERAL TURNOUT
EQUIP	EQUIPMENT
ES	EACH SIDE
ESA	EAST SIDE ACCESS
ESI	ENVIRONMENTAL SITE INVESTIGATION
ESMT	EASEMENT
EU	UNBALANCED TRACK SUPERELEVATION IN INCHES
EVC	END VERTICAL CURVE
EXP	EXPANSION
EXT	EXTERNAL, EXTERIOR
FA	FIRE ALARM
FABX	FIRE ALARM BOX
FACP	FIRE ALARM CONTROL PANEL
FAI	FRESH AIR INTAKE
FC	FACE OF CURB, ALLOWABLE CONCRETE COMPRESSIVE STRESS
f'c	28-DAY CONCRETE COMPRESSIVE STRENGTH
FD	FLOOR DRAIN
FDN, FOUND	FOUNDATION
FF	FINISHED FLOOR, FAR FACE
FH	FIRE HYDRANT
FIN	FINISHED, FINISH
FIX	FIXED
FL	FLOOR
FLG	FLANGE
FMP	FIBERGLASS MORTAR PIPE
FOC	FIBER OPTIC CABLE
FOS	FACE OF STEEL
FP	FLAG POLE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FREQ	FREQUENCY
FRT	FREIGHT
FT	FOOT, FEET
FTG	FOOTING
FW	FIELD WELD
G	GAS
G/R	GUIDE RAIL
GA	GAGE, GAUGE
GAL	GALLONS
GALV	GALVANIZED
GCT	GRAND CENTRAL TERMINAL
GFI	GROUND FAULT INTERRUPTER
GFRG	GLASS FIBER REINFORCED GYPSUM
GLV	GLOBE VALVE
GM	GAS METER
GND	GROUND
GPM	GALLONS PER MINUTE

GR	GRADE
GRTG	GRATING
GUY	GUY LINE
GV	GAS VALVE
H	HEIGHT
HB	HOSE BIBB
HC	HANDICAPPED
HDPE	HIGH DENSITY POLYETHYLENE
HEX	HEXAGONAL
HH	HAND HOLE
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HANDICAP RAMP
HS	HIGH STRENGTH
HTR	HEATER
HWY	HIGHWAY
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HZ	HERTZ
I/O	INPUT/OUTPUT
I	IMPACT LOAD
IB	INBOUND
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH, INCHES
INCL	INCLUDING
INFO	INFORMATION
INST	INSTALL
INSUL	INSULATION, INSULATED
INT	INTERIOR
INV	INVERT
JT	JOINT
K	KIP
KF	KIP-FOOT
KLF	KIPS PER LINEAR FOOT
KO	KNOCK-OUT
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
KV	KILOVOLT
KW	KILOWATT
L	STRUCTURAL ANGLE
LB	POUND
LB/FT	POUNDS PER FOOT
LBF	POUNDS FORCE
LBP	LEAD BASED PAINT
LBS	POUNDS
LF	LINEAR FOOT
LG	LENGTH, LONG
LGT	LIGHT
LIC	LONG ISLAND CITY
LIN	LINEAR
LIRR	LONG ISLAND RAIL ROAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW PRESSURE
LPT	LOW POINT
LSL	LONG SLOTTED HOLES
LT	LEFT
LTBD	LOCATION TO BE DETERMINED
LVC	LENGTH VERTICAL CURVE
LVL	LEVEL
M/L	MAINLINE
MAINT	MAINTENANCE
MATL	MATERIAL, OR MATERIALS
MAX	MAXIMUM
MB	MAILBOX
ML1	MAINLINE TRACK 1
ML2	MAINLINE TRACK 2
ML3	MAINLINE TRACK 3
ML4	MAINLINE TRACK 4
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MG	MAGNESIUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MON	MONUMENT
MPH	MILES PER HOUR
MPT	MAINTAINANCE AND PROTECTION OF TRAFFIC
MSL	MEAN SEA LEVEL
MTA	METROPOLITAN TRANSPORTATION AUTHORITY
MTL	METAL
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
M2P	EXISTING MAINLINE TRACK 2

M4P	EXISTING MAINLINE TRACK 4
N	NORTH
N/A	NOT APPLICABLE
NB	NORTHBOUND
NE	NORTHEAST
NEG	NEGATIVE
NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NO., #	NUMBER
NOM	NOMINAL
NOS	NUMBERS
NS	NEAR SIDE
NTS	NOT TO SCALE
NYAR	NEW YORK AND ATLANTIC RAILWAY
NYC	NEW YORK CITY
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NYCT	NEW YORK CITY TRANSIT
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NW	NORTHWEST
O	OIL
OB	OUTBOUND
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OVERHEAD
OP	OIL PIPELINE
OPNG	OPENING
OPP	OPPOSITE
OR	OUTSIDE RADIUS
OVS	OVER SIZED HOLES
OZ	OUNCES
PC	POINT OF CURVATURE
PCB	POLICE CALL BOX, POLYCHLORINATED BIPHENYL
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PCF	POUNDS PER CUBIC FOOT
PE	PRELIMINARY ENGINEERING, PROFESSIONAL ENGINEER
PED	PEDESTRIAN
PERF	PERFORATED
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION OF TWO TANGENTS
PKG	PACKAGE
PL	PLATE, PROPERTY LINE
P/L	PROPERTY LINE
PLAT	PLATFORM
PLF	POUNDS PER LINEAR FOOT
PM	PARKING METER
PNL	PANEL
POB	POINT OF BEGINNING
POC	POINT OF CONNECTION, POINT OF CIRCULAR CURVE
POE	POINT OF END
PROP	PROPOSED
PREFAB	PREBAFRICATED
PRV	PRESSURE REDUCING VALVE
PS	POINT OF SWITCH
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAGE
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PWR	POWER
QTY	QUANTITY
QUAD	QUADRANT
R	RADIUS
R/W, ROW	RIGHT OF WAY
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
REC	RECESSED
RECT	RECTANGULAR
REF	REFERENCE
REINF	REINFORCED, REINFORCEMENT
RELOC	RELOCATED
REQD	REQUIRED
REV	REVISED, REVISION
RH	RIGHT HAND
RJ	RESTRAINED JOINT
RM	ROOM
RR, R/R	RAILROAD
RTE	ROUTE
S	SOUTH
SAN	SANITARY, SANITARY SEWER
SB	SOUTHBOUND

SCH, SCHED	SCHEDULE
SD	SCUPPER DRAIN
SE	SOUTHEAST
SEC	SECOND
SECT	SECTION
SERV	SERVICE
SHT	SHEET
SIM	SIMILAR
SL	SLAB, STREET LIGHT
SMH	SANITARY SEWER MANHOLE
SP, SPA	SPACES, SPACING, SPACED
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SQ FT	SQUARE FOOT, SQUARE FEET
SQ IN	SQUARE INCH
SS	STAINLESS STEEL, STORM SEWER
SSMH	STORM SEWER MANHOLE
STA	STATION, STATIONING
STD	STANDARD
STL	STEEL
STM	STEAM LINE, PIPE
STN	STONE
STOR	STORAGE
STR	STRINGER
STRUCT	STRUCTURAL, STRUCTURE
SUB	SUBSTATION
SUPP	SUPPORT
SURF	SURFACE
SW	SIDEWALK, SOUTHWEST
SWR	SEWER
SYM	SYMMETRICAL
SYS	SYSTEM
T	TANGENT
T&B	TOP & BOTTOM
T, TEL	TELEPHONE
T/	TOP OF
T/C	TANGENT CENTER LINE
T/F	TOP OF FOOTING
T/G	TOP OF GRADE
T/R, TOR	TOP OF RAIL
TBD	TO BE DETERMINED
TC	TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPORARY
TF	TRAFFIC LIGHT
THK	THICK, THICKNESS
THRD	THREADED
TJB	TRAFFIC JUNCTION BOX
TK	TRACK
TL	TRAFFIC LIGHT
TMH	TELEPHONE MANHOLE
TO	TURNOUT, TOP OF
TOC	TOP OF CURB
TOG	TOP OF GROUNDLINE
TOP	TOP OF PIPE
TOS	TOP OF SLAB, TOP OF STEEL
TP	TRACTION POWER
TPVMT	TOP OF PAVEMENT
TS	TOP OF SLOPE
TSF	TONS PER SQUARE FOOT
TUN	TUNNEL
TV	CABLE TELEVISION
TYP	TYPICAL
U/S	UNDERSIDE
UD	UNDER DRAIN
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UP	UTILITY POLE
UTIL	UTILITY
UV	UTILITY VAULT
V	DESIGN VELOCITY, VOLTS
VAR	VARIABLE
VCD	VITRIFIED CLAY DUCT, CONDUIT
VCP	VITRIFIED CLAY PIPE
VENT	VENTILATION
VERT	VERTICAL
VIF	VERIFY IN FIELD
VMS	VARIABLE MASSAGE SIGNS
VOC	VOLATILE ORGANIC COMPOUND
VOL	VOLUME
W	WEST, WIDE, WIDTH, WIDE FLANGE STRUCTURAL SHAPE
W/	WITH
W/O	WITHOUT
WB	WESTBOUND
WM	WATER METER
WMH	WATER MANHOLE
WP	WORK POINT, WATERPROOFING, WEATHER PROOF
WS	WATERSTOP
WSP	WELDED STEEL PIPE
WSSY	WESTSIDE STORAGE YARD
WT	STRUCTURAL SHAPE TEE, WEIGHT
WV	WATER VALVE
WW	WINGWALL
WWD	DEFORMED WELDED WIRE FABRIC
WWF	WELDED WIRE FABRIC
X-ING	CROSSING
X-OVER	CROSSOVER
X-PASS	CROSS PASSAGE
X-SECT	CROSS SECTION
XS	EXTRA STRONG
YD	YARD
YL	YARD LEAD
YR	YEAR

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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: J. RICCARDI
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL LICENSE OF NEW YORK — MAJID HEDAYATI — LICENSED PROFESSIONAL ENGINEER
DATE: 12-14-05

CIVIL STANDARD

ABBREVIATIONS

SCALE: NONE
DRAWING NUMBER: STD-CT-0003
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

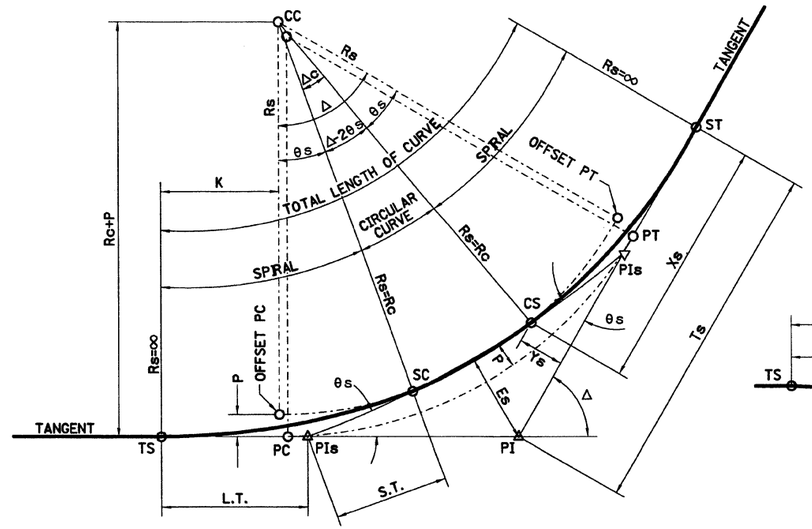
ABBREVIATIONS

HORIZONTAL ALIGNMENT

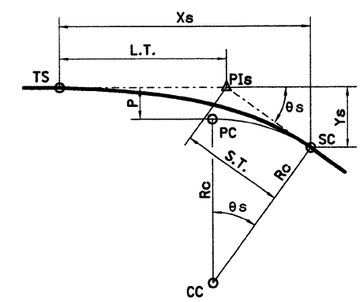
BSO	BEARING OF TANGENT AT SPO
CC	CENTER OF CIRCULAR CURVE
CS	POINT OF CHANGE FROM CIRCULAR CURVE TO SPIRAL
CS_1	POINT OF CHANGE FROM FIRST CIRCULAR CURVE TO COMPOUND SPIRAL
CS_2	POINT OF CHANGE FROM SECOND CIRCULAR CURVE TO LAST SPIRAL
Dc	DEGREE OF CIRCULAR CURVE
K	TANGENT DISTANCE FROM TS OR ST TO PC OR PT OF THE EXTENDED CIRCULAR CURVE OF A SPIRALIZED CURVE
ELT	END OF LONG TIMBERS
Ea	ACTUAL TRACK SUPERELEVATION IN INCHES
Ec	EXTERNAL DISTANCE FROM PI TO MIDPOINT OF CIRCULAR CURVE
Es	EXTERNAL DISTANCE FROM PI TO MIDPOINT OF SPIRALIZED CURVE
Eu	UNBALANCED TRACK SUPERELEVATION IN INCHES
Lc	TOTAL LENGTH OF CIRCULAR CURVE
Ls	TOTAL LENGTH OF SPIRAL
LSC	LENGTH OF COMPOUND SPIRAL (FROM CS_1 TO SC_2)
L_{S1}	SUFFIX (1) AT THE SYMBOL DENOTES THE DATA FOR THE FIRST SPIRAL IN AN UNSYMETRICAL SPIRALIZED CURVE
L_{S2}	SUFFIX (2) SAME AS ABOVE - SECOND SPIRAL
LST	TOTAL LENGTH OF COMPOUND SPIRAL (FROM SPO TO SC)
P	OFFSET FROM THE TANGENT TO THE PC OR PT OF THE EXTENDED CIRCULAR CURVE OF A SPIRALIZED CURVE
PC	POINT OF CHANGE FROM TANGENT TO CIRCULAR CURVE
PCC	POINT OF COMPOUND CIRCULAR CURVATURE
PF	POINT OF FROG
PI	POINT OF INTERSECTION OF TWO TANGENTS
PITO	POINT OF INTERSECTION OF TURNOUT
POC	POINT ON CIRCULAR CURVE
POS	POINT ON SPIRAL
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CIRCULAR CURVES
PS	POINT OF SWITCH
PT	POINT OF CHANGE FROM CIRCULAR CURVE TO TANGENT
Rc	RADIUS OF CIRCULAR CURVE
SC	POINT OF CHANGE FROM SPIRAL TO CIRCULAR CURVE
SC_1	POINT OF CHANGE FROM FIRST SPIRAL TO FIRST CIRCULAR CURVE
SC_2	POINT OF CHANGE FROM COMPOUND SPIRAL TO SECOND CIRCULAR CURVE
SPO	POINT OF ORIGIN OF COMPOUND SPIRAL
ST	POINT OF CHANGE FROM SPIRAL TO TANGENT
TS	POINT OF CHANGE FROM TANGENT TO SPIRAL
Ts	TANGENT DISTANCE FROM TS OR ST TO PI
V	DESIGN VELOCITY IN MILES PER HOUR
Xs	TANGENT DISTANCE FROM TS TO SC OR ST TO CS
Ys	TANGENT OFFSET AT SC OR CS
Δ	TOTAL CENTRAL ANGLE OF SPIRAL AND CIRCULAR CURVES
Δc	CENTRAL ANGLE OF CIRCULAR CURVE
Δ_{C1}	SUFFIX (1) AT THE SYMBOL DENOTES DATA FOR THE FIRST CIRCULAR CURVE OF A COMPOUND CURVE
Δ_{C2}	SUFFIX (2) SAME AS ABOVE - SECOND CIRCULAR CURVE
θs	CENTRAL ANGLE OF SPIRAL OR SPIRAL ANGLE
θ_{SAC}	CENTRAL ANGLE OF COMPOUND SPIRAL OR COMPOUND SPIRAL ANGLE (FROM CS_1 TO SC_2)
θ_{SAT}	TOTAL CENTRAL ANGLE OF COMPOUND SPIRAL OR TOTAL COMPOUND SPIRAL ANGLE (FROM SPO TO SC_2)

VERTICAL ALIGNMENT

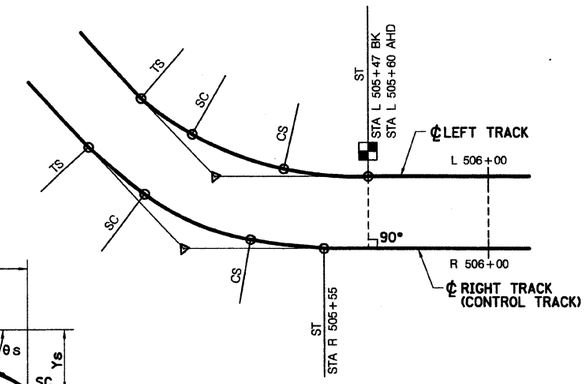
EL	ELEVATION OF THE LOW RAIL OF THE TRACK
g	RATE OF CHANGE OF PROFILE GRADE
G	GRADE
LVC	LENGTH OF VERTICAL CURVE (PVC TO PVT)
MO	MIDDLE ORDINATE
POVC	POINT ON VERTICAL CURVE
POVT	POINT ON VERTICAL TANGENT
PVC	POINT OF VERTICAL CURVE
PVCC	POINT OF VERTICAL COMPOUND CURVE
PVI	POINT OF VERTICAL INTERSECTION OF TWO VERTICAL TANGENTS
PVT	POINT OF VERTICAL TANGENT
VC	VERTICAL CURVE
LPT	LOW POINT
HPT	HIGH POINT

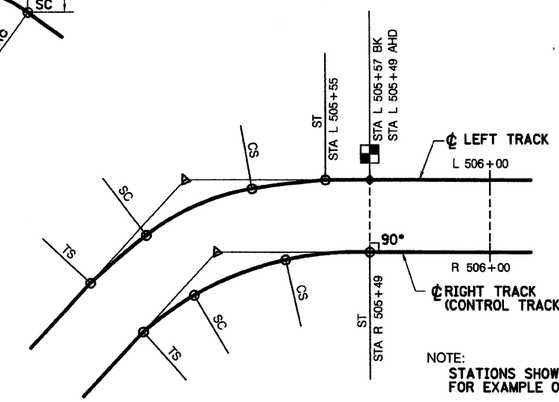


CIRCULAR CURVE WITH SPIRALS



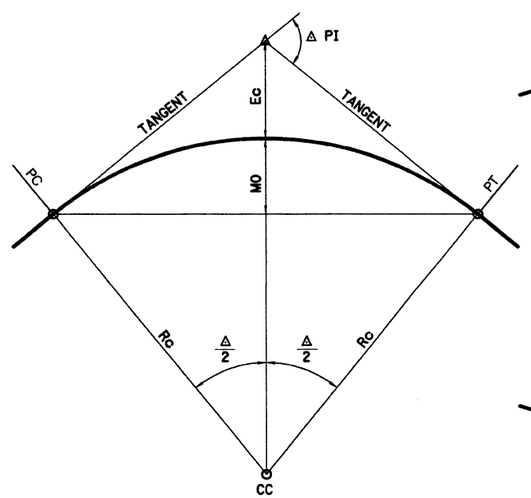
SIMPLE SPIRAL



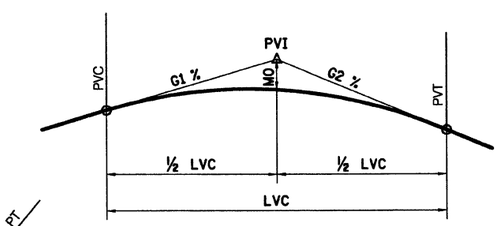


NOTE:
STATIONS SHOWN ARE FOR EXAMPLE ONLY.

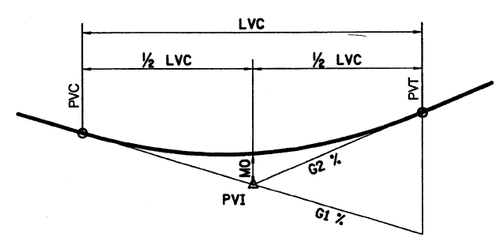
STATION EQUATION DEVELOPMENT



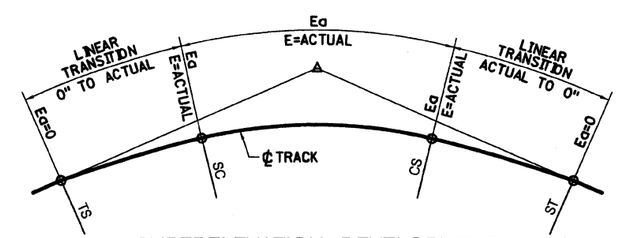
SIMPLE CIRCULAR CURVE



CREST VERTICAL CURVE



SAG VERTICAL CURVE



SUPERELEVATION DEVELOPMENT

NOTE:
ALL HORIZONTAL AND VERTICAL DISTANCES ARE IN FEET AND/OR DECIMALS OF A FOOT EXCEPT AS NOTED OTHERWISE ON PLANS.

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DATE:	REVISIONS	No.

DESIGNED BY: P. ALBOHN
DRAWN BY: K. V. LA GRECA
CHECKED BY: C. M. KAISER
COORDINATED BY:
APPROVED BY:
NY PROFESSIONAL License No. MARIO HEDAYAT STATE OF NEW YORK LICENSED PROFESSIONAL ENGINEER
DATE: 11-14-05

CIVIL STANDARD

TRACK GEOMETRY LAYOUT AND ABBREVIATIONS

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-0010
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: ——
SHEET No. N/A

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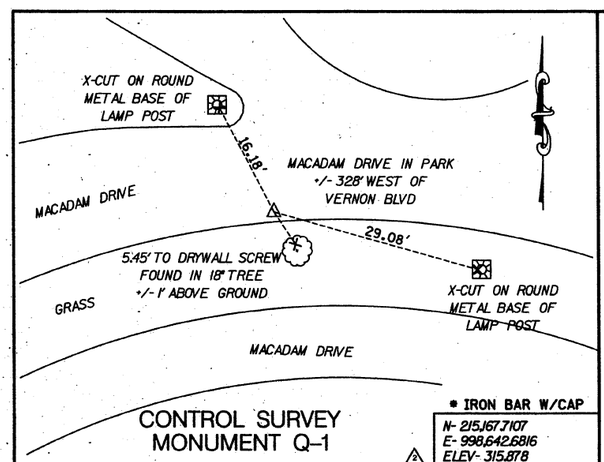
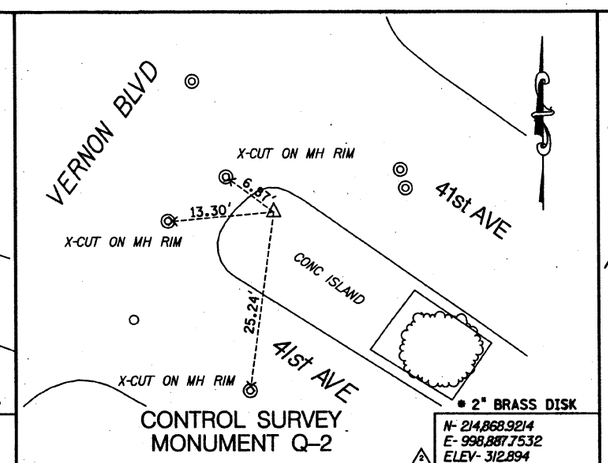


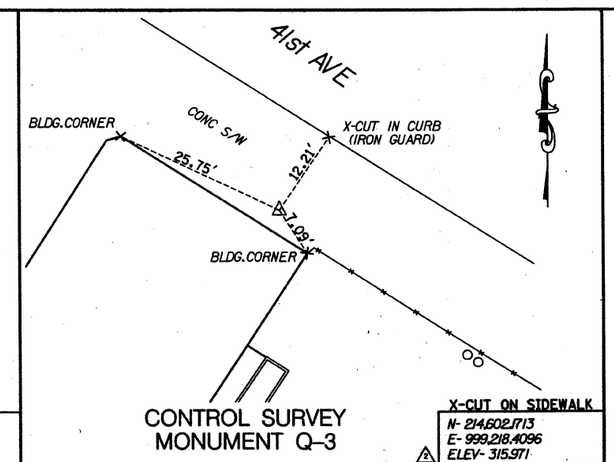
CONTROL SURVEY MONUMENT Q-1

* IRON BAR W/CAP
N- 215,167.7107
E- 998,642.6816
ELEV- 315.878



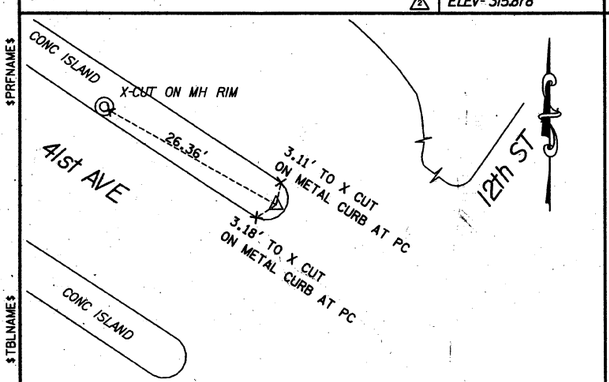
CONTROL SURVEY MONUMENT Q-2

* 2" BRASS DISK
N- 214,868.9214
E- 998,887.7532
ELEV- 312.894



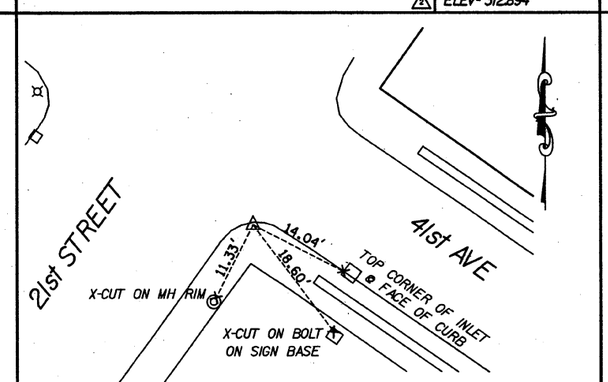
CONTROL SURVEY MONUMENT Q-3

X-CUT ON SIDEWALK
N- 214,602.7713
E- 999,218.4096
ELEV- 315.971



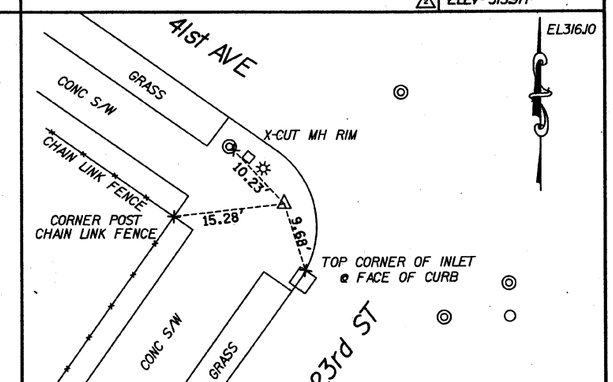
CONTROL SURVEY MONUMENT Q-4

* 2" BRASS DISK
N- 214,409.8954
E- 999,600.4319
ELEV- 323.592



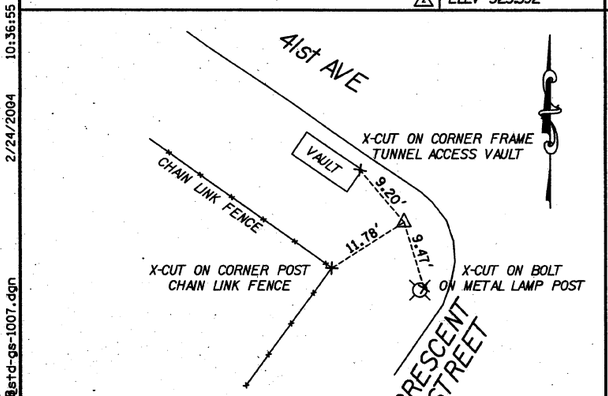
CONTROL SURVEY MONUMENT Q-5

* 2" BRASS DISK
N- 213,948.1904
E- 1,000,216.9892
ELEV- 312.562



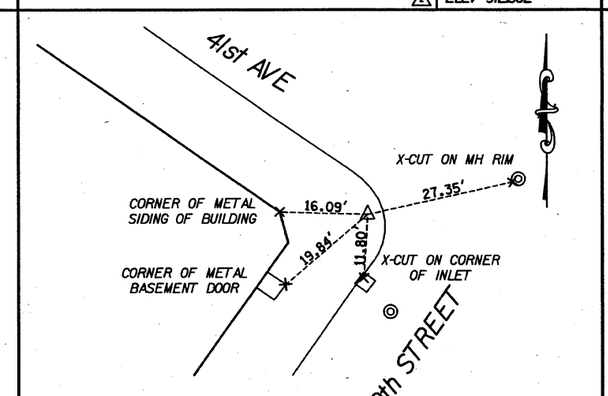
CONTROL SURVEY MONUMENT Q-6

* 2" BRASS DISK
N- 213,630.8737
E- 1,000,668.4668
ELEV- 316.469



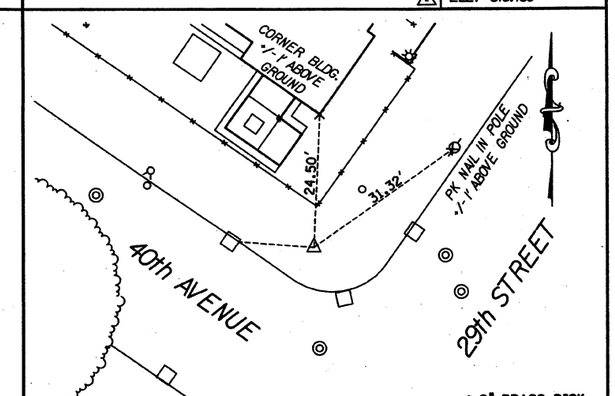
CONTROL SURVEY MONUMENT Q-7

N- 213,334.0133
E- 1,001,092.2151
ELEV- 337.507



CONTROL SURVEY MONUMENT Q-8

N- 212,885.9639
E- 1,001,732.7901
ELEV- 336.298



CONTROL SURVEY MONUMENT Q-9

* 2" BRASS DISK
N- 213,385.4777
E- 1,002,073.5971
ELEV- 336.391

CONTROL MARKER DISK DETAIL
NOT TO SCALE

* UNLESS OTHERWISE NOTED

NOTES:

1. HORIZONTAL COORDINATE SYSTEM BASED ON NAD 83.
2. ESA PROJECT VERTICAL DATUM BASED ON NAVD-88 DATUM MINUS 300.00 FT (NAVD-88 EL 0.00 EQUALS ESA EL 300.00).
3. CONTROL SURVEY DATA SKETCHES NOT TO SCALE.
4. FOR ADDITIONAL DATA SEE "PRIMARY CONTROL REPORT" HORIZONTAL AND VERTICAL PREPARED BY MEDINA CONSULTANTS, P.C., DATED AUGUST, 2000.
5. SURVEY TIE AND BEARING AND DISTANCE INFORMATION OBTAINED FROM " PRIMARY CONTROL SURVEY REPORT (HORIZONTAL AND VERTICAL) FOR THE EAST SIDE ACCESS PROJECT PREPARED BY MEDINA CONSULTANTS, P.C.
6. UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

CONTROL SURVEY STATION FROM	CONTROL SURVEY STATION TO	DISTANCE	BEARING
1 Q-1	Q-2	386.439'	S39°21'32.9"E
1 Q-2	Q-3	424.840'	S51°06'21.2"E
1 Q-3	Q-4	427.681'	S63°17'00.2"E
1 Q-4	Q-5	770.269'	S53°10'21.1"E
1 Q-5	Q-6	551.835'	S54°53'56.0"E
1 Q-6	Q-7	517.386'	S54°59'11.5"E
1 Q-7	Q-8	781.719'	S55°01'45.1"E
1 Q-8	Q-9	604.701'	N34°18'17.4"E

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
09/13/04	REVISE BORDER	4
04/11/03	REVISED DRAWING NUMBER	3
04/04/03	REVISED ELEVATIONS	2
12/12/02	REVISED BEARINGS	1

DESIGNED BY:
DRAWN BY: RW
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI
DATE: 12/12/04

STATE OF NEW YORK
FRANK BRUNO LICENSED LAND SURVEYOR
No. 050772

EAST SIDE ACCESS

QUEENS CONTROL SURVEY DATA TIES
SHEET 1

SCALE: NONE
DRAWING NUMBER: 3 STD-GS-1007
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. — OF —

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p:\99110027\dgn\2003control\std-gs-1007.dgn
$REF13 $REF23 $REF33 $REF43 $REF53 $REF63

-NOT YET SET-

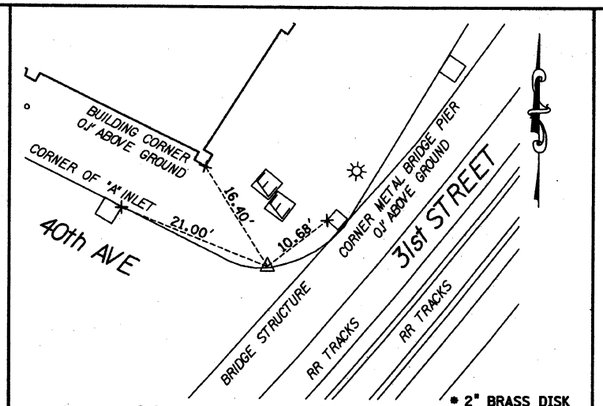
CONTROL SURVEY
MONUMENT Q-10

N-
E-
ELEV-

-NOT YET SET-

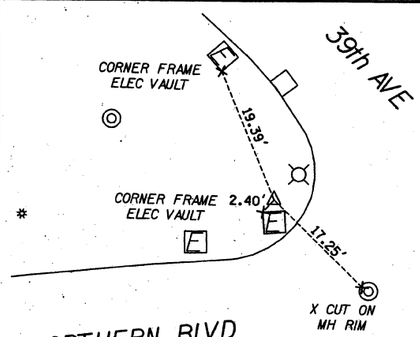
CONTROL SURVEY
MONUMENT Q-11

N-
E-
ELEV-



CONTROL SURVEY
MONUMENT Q-12

* 2" BRASS DISK
N- 213,427.371
E- 1,002,570.3269
ELEV- 319.653



CONTROL SURVEY
MONUMENT Q-13

* 2" BRASS DISK
N- 213,291.7055
E- 1,003,084.7960
ELEV- 319.183

-NOT YET SET-

CONTROL SURVEY
MONUMENT Q-14

N-
E-
ELEV-

-NOT YET SET-

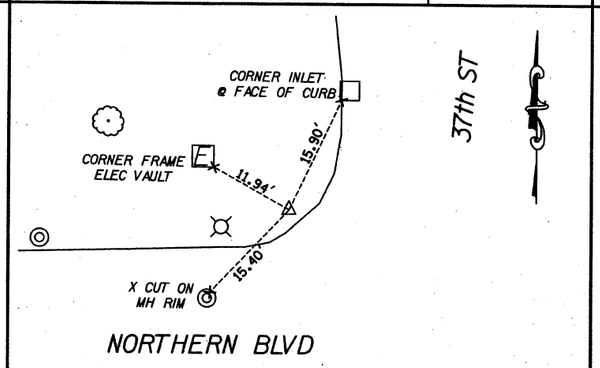
CONTROL SURVEY
MONUMENT Q-15

N-
E-
ELEV-

-NOT YET SET-

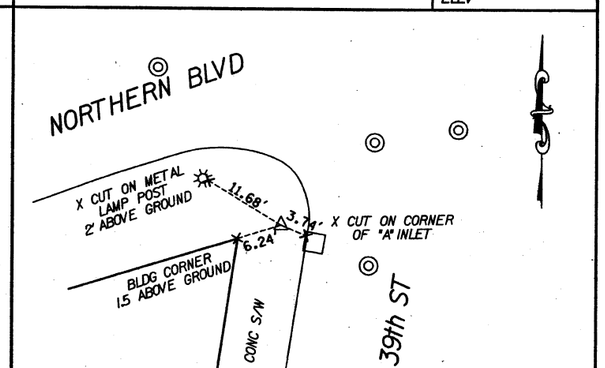
CONTROL SURVEY
MONUMENT Q-16

N-
E-
ELEV-



CONTROL SURVEY
MONUMENT Q-17

* 2" BRASS DISK
N- 213,325.3954
E- 1,004,591.3754
ELEV- 329.042



CONTROL SURVEY
MONUMENT Q-18

* 2" BRASS DISK
N- 213,341.9199
E- 1,005,367.844
ELEV- 333.022

CONTROL MARKER DISK DETAIL
NOT TO SCALE
* UNLESS OTHERWISE NOTED

NOTES:

1. HORIZONTAL COORDINATE SYSTEM BASED ON NAD 83.
2. ESA PROJECT VERTICAL DATUM BASED ON NAVD-88 DATUM MINUS 300.00 FT (NAVD-88 EL 0.00 EQUALS ESA EL 300.00).
3. CONTROL SURVEY DATA SKETCHES NOT TO SCALE.
4. FOR ADDITIONAL DATA SEE "PRIMARY CONTROL REPORT" HORIZONTAL AND VERTICAL PREPARED BY MEDINA CONSULTANTS, P.C., DATED AUGUST, 2000.
5. SURVEY TIE AND BEARING AND DISTANCE INFORMATION OBTAINED FROM " PRIMARY CONTROL SURVEY REPORT (HORIZONTAL AND VERTICAL) FOR THE EAST SIDE ACCESS PROJECT PREPARED BY MEDINA CONSULTANTS, P.C.
6. UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

CONTROL SURVEY STATION FROM	CONTROL SURVEY STATION TO	DISTANCE	BEARING
△1 Q-9	Q-12	552.868'	S63°57'22.6"E
△1 Q-12	Q-13	535.602'	N73°51'04.4"E
Q-13	Q-87		
△1 Q-13	Q-88	879.919'	N88°24'00.4"E
Q-8	Q-10		
Q-10	Q-11		
Q-11	Q-16		
Q-11	Q-15		
Q-15	Q-14		
△1 Q-88	Q-17	627.069'	N89°09'59.1"E
△1 Q-17	Q-18	545.659'	N88°15'52.6"E
△1 Q-18	Q-53	1122.187'	S08°30'39.5"W
△1 Q-18	Q-23	1578.202'	N70°17'33.0"E

MTA Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
02/13/04	REVISE BORDER	△4
04/11/03	REVISED DRAWING NUMBER	△3
04/04/03	REVISED ELEVATIONS	△2
12/17/02	REVISED BEARINGS	△1

DESIGNED BY:
DRAWN BY: RW
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
JAMES F. BRENNAN
LICENSED LAND SURVEYOR
050162
DATE:

EAST SIDE ACCESS

QUEENS CONTROL
SURVEY DATA TIES
SHEET 2

SCALE: NONE
DRAWING NUMBER: △3 STD-GS-1008
DATE: FEB-13-04
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

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$REF4$
$REF5$
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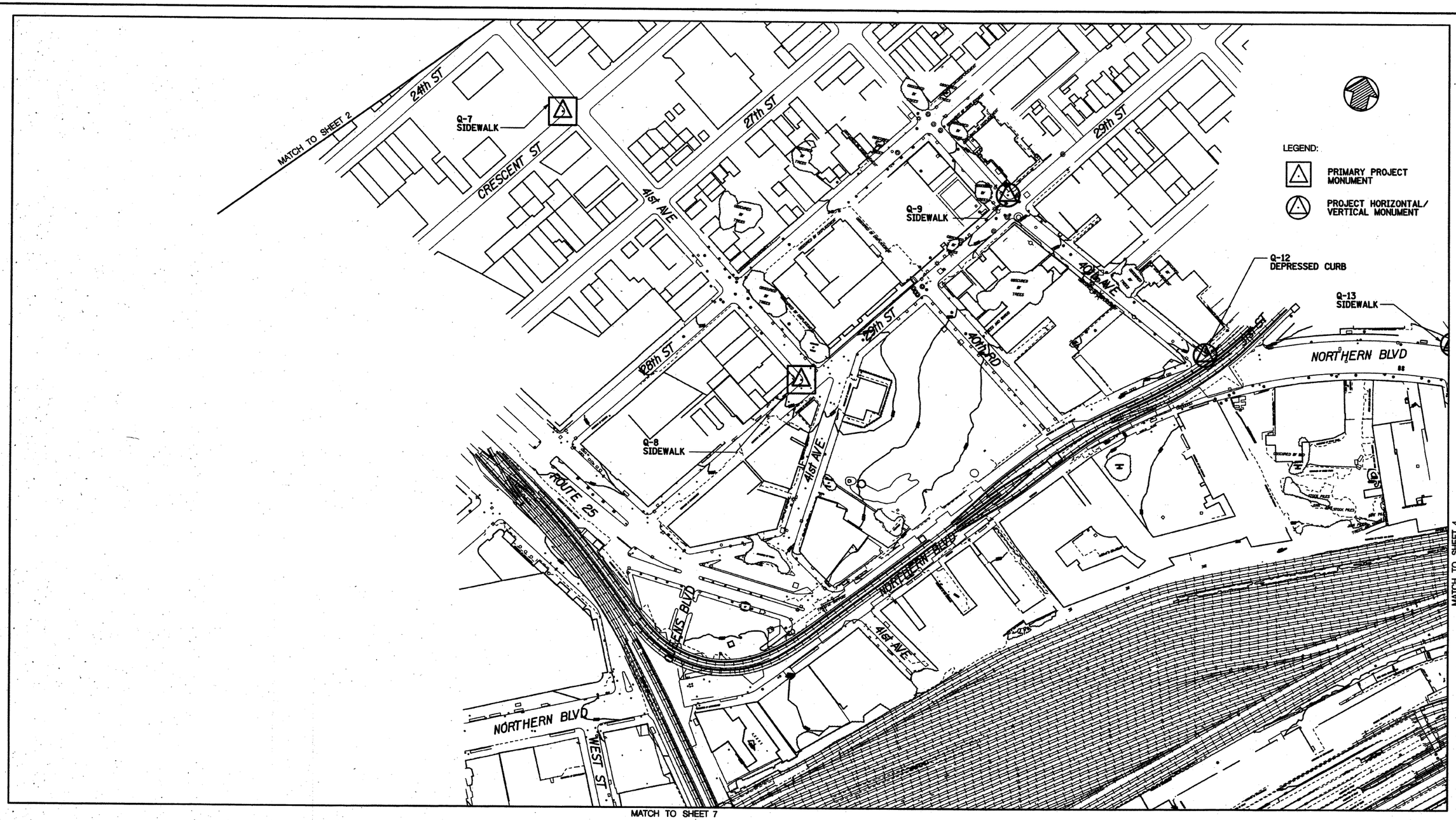

SCALE IN FEET

100' 50' 0 100' 200'

MTA Capital Construction

Long Island Rail Road
East Side Access

A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
04/11/03	REVISED DRAWING NUMBER	1

DESIGNED BY:
DRAWN BY: RW
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

DATE:

EAST SIDE ACCESS

QUEENS CONTROL MONUMENT PLAN
SHEET 3

SCALE: AS SHOWN
DRAWING NUMBER: 1 STD-GS-1020
DATE: NOVEMBER 27, 2002
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE FINAL
SHEET No. ___ OF ___

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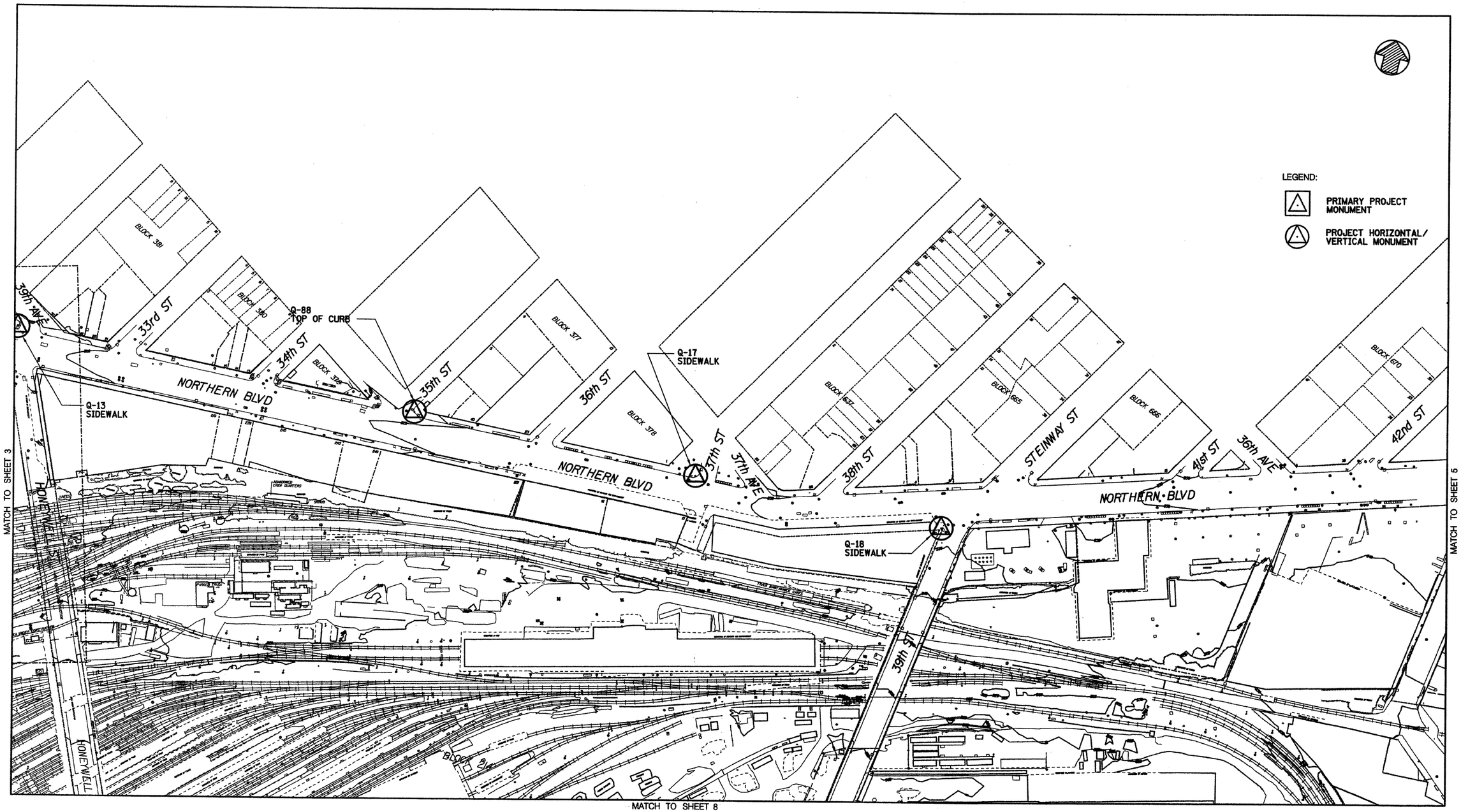

SCALE IN FEET
100′ 50′ 0 100′ 200′

Capital Construction

Long Island Rail Road
East Side Access

PB STV
A JOINT VENTURE BETWEEN:
PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC
AND
STV INCORPORATED

UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LAND SURVEY SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Medina Consultants, P.C.
Civil Engineers and Land Surveyors

DATE:	REVISIONS	No.
04/1/03	REVISED DRAWING NUMBER	1

DESIGNED BY:
DRAWN BY: RW
CHECKED BY: FBL
COORDINATED BY:
APPROVED BY: M. HEDAYATI

STATE OF NEW YORK
FRANCIS F. STEFFENS
N.Y.S.P.L.S. No. 050167
LICENSED LAND SURVEYOR
DATE: 04/1/2003

EAST SIDE ACCESS

QUEENS CONTROL MONUMENT PLAN
SHEET 4

SCALE: AS SHOWN
DRAWING NUMBER: 1 STD-GS-1021
DATE: NOVEMBER 27, 2002
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. ___ OF ___

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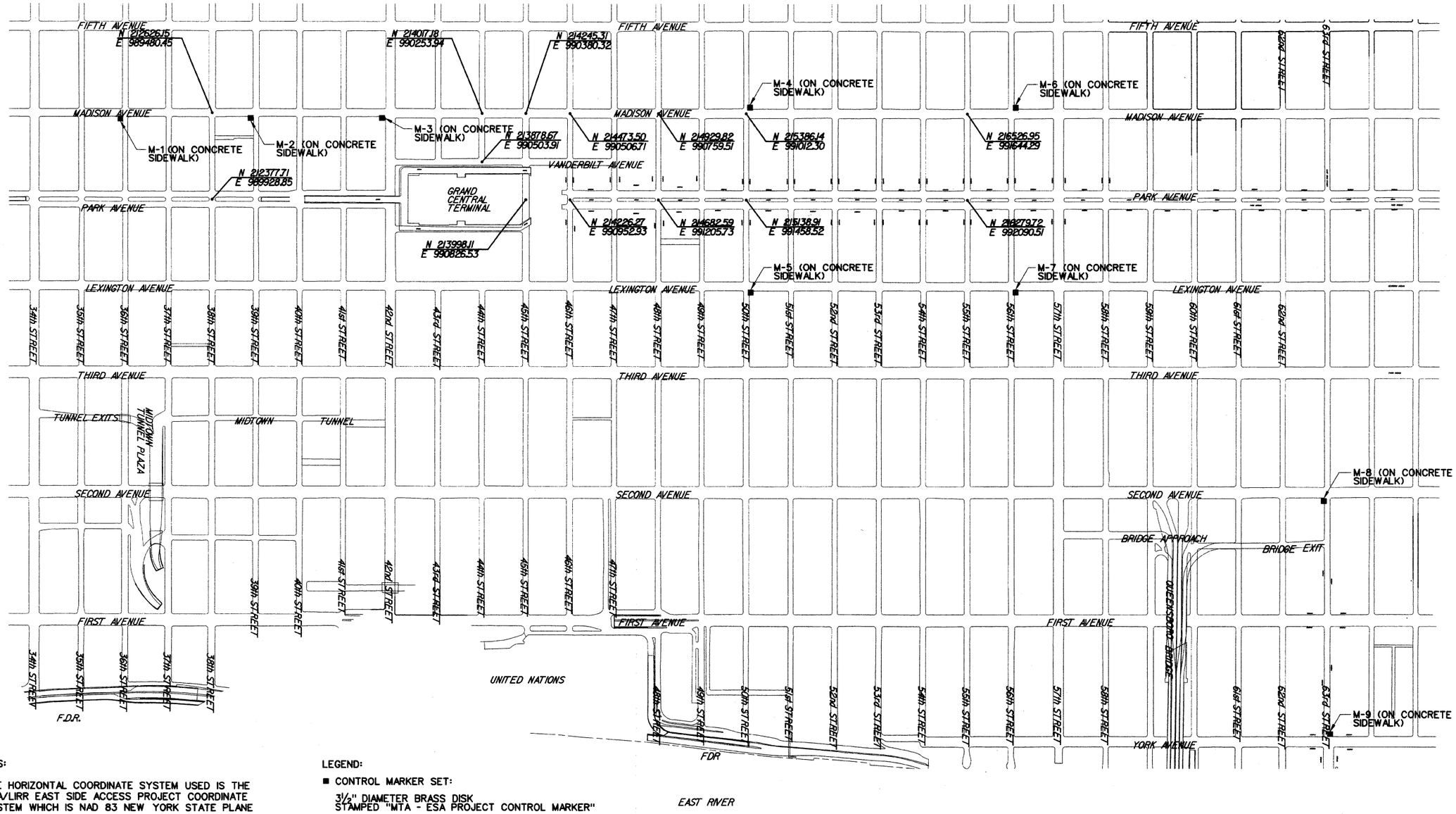

NOTES:

1. THE HORIZONTAL COORDINATE SYSTEM USED IS THE MTA/LIRR EAST SIDE ACCESS PROJECT COORDINATE SYSTEM WHICH IS NAD 83 NEW YORK STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE NO.3104.

2. COORDINATES SHOWN ARE THE CENTERLINE OF RIGHT OF WAY INTERSECTION

LEGEND:

■ CONTROL MARKER SET:

3½" DIAMETER BRASS DISK
STAMPED "MTA - ESA PROJECT CONTROL MARKER"

SCALE IN FEET

300' 150' 0 300' 600'

Metropolitan Transportation Authority
Capital Construction Company

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant

PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK

469 Seventh Avenue • New York, NY • 10018

NPi NAIK - PRASAD, Inc.
1430 Broadway, Suite 300
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DATE:	REVISIONS	No.

DESIGNED BY: J.M. BOTAS
DRAWN BY: P. THEODOSIADIS
CHECKED BY: T. HENNESSY
COORDINATED BY: D. RUPNARAIN
APPROVED BY: W.A. EASTERBROOK

WILLIAM A. EASTERBROOK
N.Y.S. REG. NO. 49157
STATE OF NEW YORK
DATE:

CIVIL STANDARD

MANHATTAN CONTROL MARKERS AT STREET LEVEL

SHEET 1 OF 4

SCALE: 1" = 300'
DRAWING NUMBER: STD-GS-1003
DATE: JUNE 2004
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. 1 OF 4

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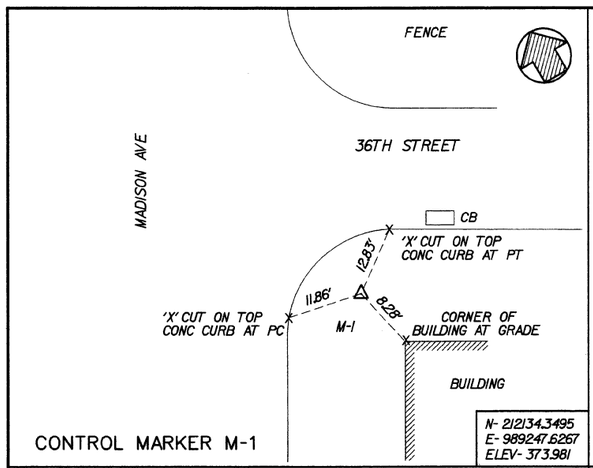
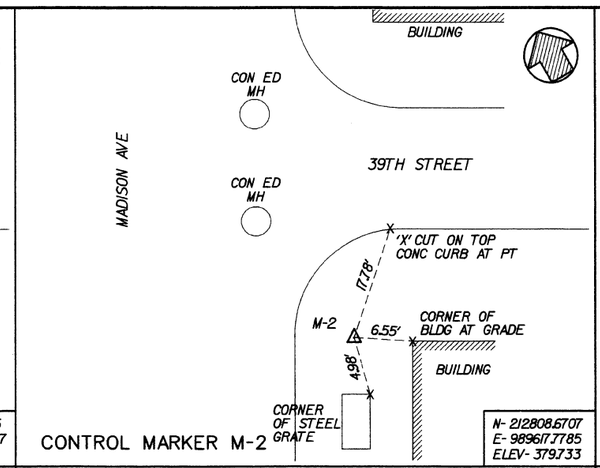
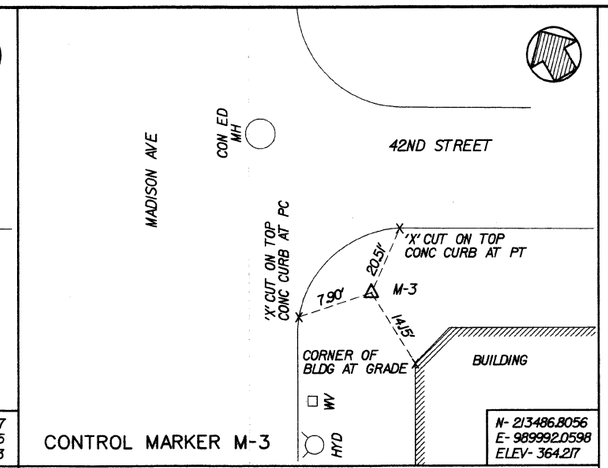


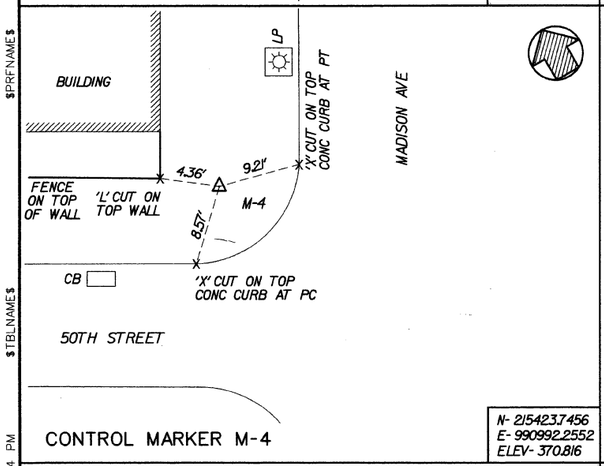
CONTROL MARKER M-1



CONTROL MARKER M-2



CONTROL MARKER M-3



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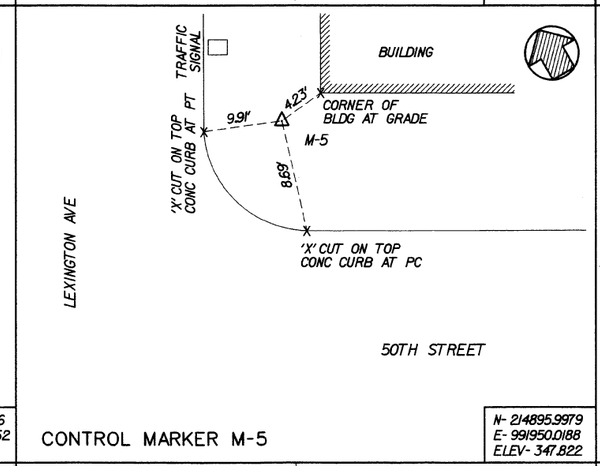
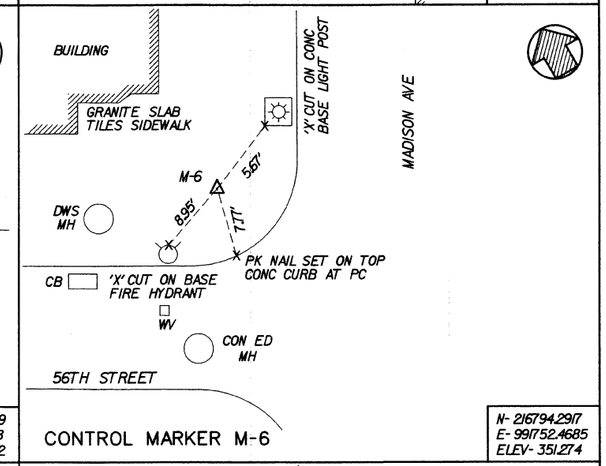
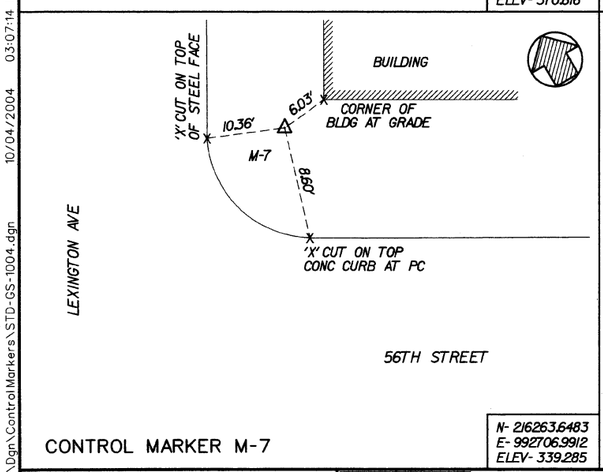


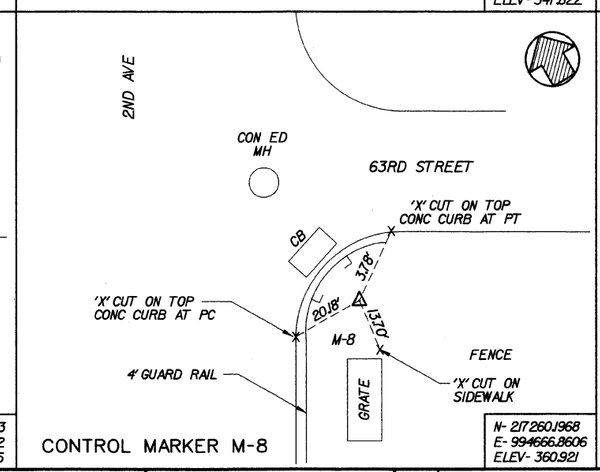
CONTROL MARKER M-5



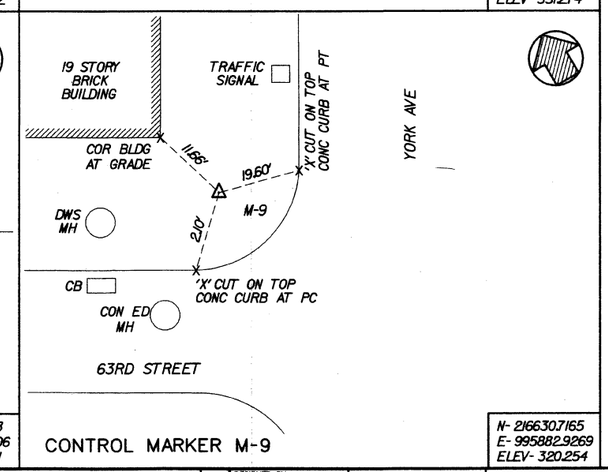
CONTROL MARKER M-6



CONTROL MARKER M-7



CONTROL MARKER M-8



CONTROL MARKER M-9

CONTROL STATION	NORTHING (FT)	EASTING (FT)	ELEVATION (FT)	DISTANCE (FT)	BEARING
M-1	212134.3495	989247.6267	373.981		
				769.234	N28° 45'48.6"E
M-2	212808.6707	989617.7785	379.733		
				774.567	N28° 53'43.9"E
M-3	213486.8056	989992.0598	364.217		
				2179.937	N27° 18'39.2"E
M-4	215423.7456	990992.2552	370.816		
				1567.265	N29° 00'58.4"E
M-6	216794.2917	991752.4685	351.274		
				1092.106	S60° 55'45.2"E
M-7	216263.6483	992706.9912	339.285		
				1563.162	S28° 57'49.7"W
M-5	214895.9979	991950.0188	347.822		
				1093.540	N61° 08'39.5"W
M-4	215423.7456	990992.2552	370.816		
				-----	-----
M-8	217260.1968	994666.8606	360.921		
				1369.329	S62° 37'56.2"E
M-9	216630.7165	995882.9269	320.254		

CONTROL STATION	GCT GRID STATION NORTH	GCT GRID STATION EAST	ELEVATION (FT)	DISTANCE (FT)	BEARING
M-1	-16+42.931	0+72.034	373.981		
				769.234	N00° 13'21"W
M-2	-8+73.703	0+69.048	379.733		
				774.567	N00° 05'25"W
M-3	-0+99.137	0+67.827	364.217		
				2179.937	N01° 40'30"W
M-4	20+79.869	0+04.109	370.816		
				1567.265	N00° 01'49"E
M-6	36+47.134	0+04.940	351.274		
				1092.106	S89° 54'54"E
M-7	36+45.515	10+97.045	339.285		
				1563.162	S00° 01'19"E
M-5	20+82.353	10+97.646	347.822		
				1093.540	-----
M-4	---	---	370.816		
				-----	-----
M-8	54+66.975	23+28.500	360.921		
				1369.329	N88° 22'55"E
M-9	55+05.641	36+97.283	320.254		

NOTES:

1. THE HORIZONTAL COORDINATE SYSTEM USED IS THE MTA/LIRR EAST SIDE ACCESS PROJECT COORDINATE SYSTEM WHICH IS NORTH AMERICAN DATUM 83 NEW YORK STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE NO.3104.
2. ESA PROJECT VERTICAL DATUM BASED ON NORTH AMERICAN VERTICAL DATUM 88 MINUS 300.00 FT (NORTH AMERICAN VERTICAL DATUM 88 EL 0.00 EQUALS ESA EL 300.00).
3. CONTROL MARKER TIE SKETCHES NOT TO SCALE.
4. UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Metropolitan Transportation Authority
Capital Construction Company

Long Island Rail Road
East Side Access

GEC
General Engineering Consultant
PB
STV
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PARSONS BRINCKERHOFF
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DATE: REVISIONS No.

DESIGNED BY: J.M. BOTAS
DRAWN BY: P. THEODOSIADIS
CHECKED BY: T. HENNESSY
COORDINATED BY: D. RUPNARAIN
APPROVED BY: W.A. EASTERBROOK

WILLIAM A. EASTERBROOK
N.Y.S.P.E. NO. 49157
DATE:

CIVIL STANDARD

MANHATTAN CONTROL AT STREET LEVEL
CONTROL MARKER TIE SHEET
SHEET 2 OF 4

SCALE: NONE
DRAWING NUMBER: STD-GS-1004
DATE: JUNE 2004
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. 2 OF 4

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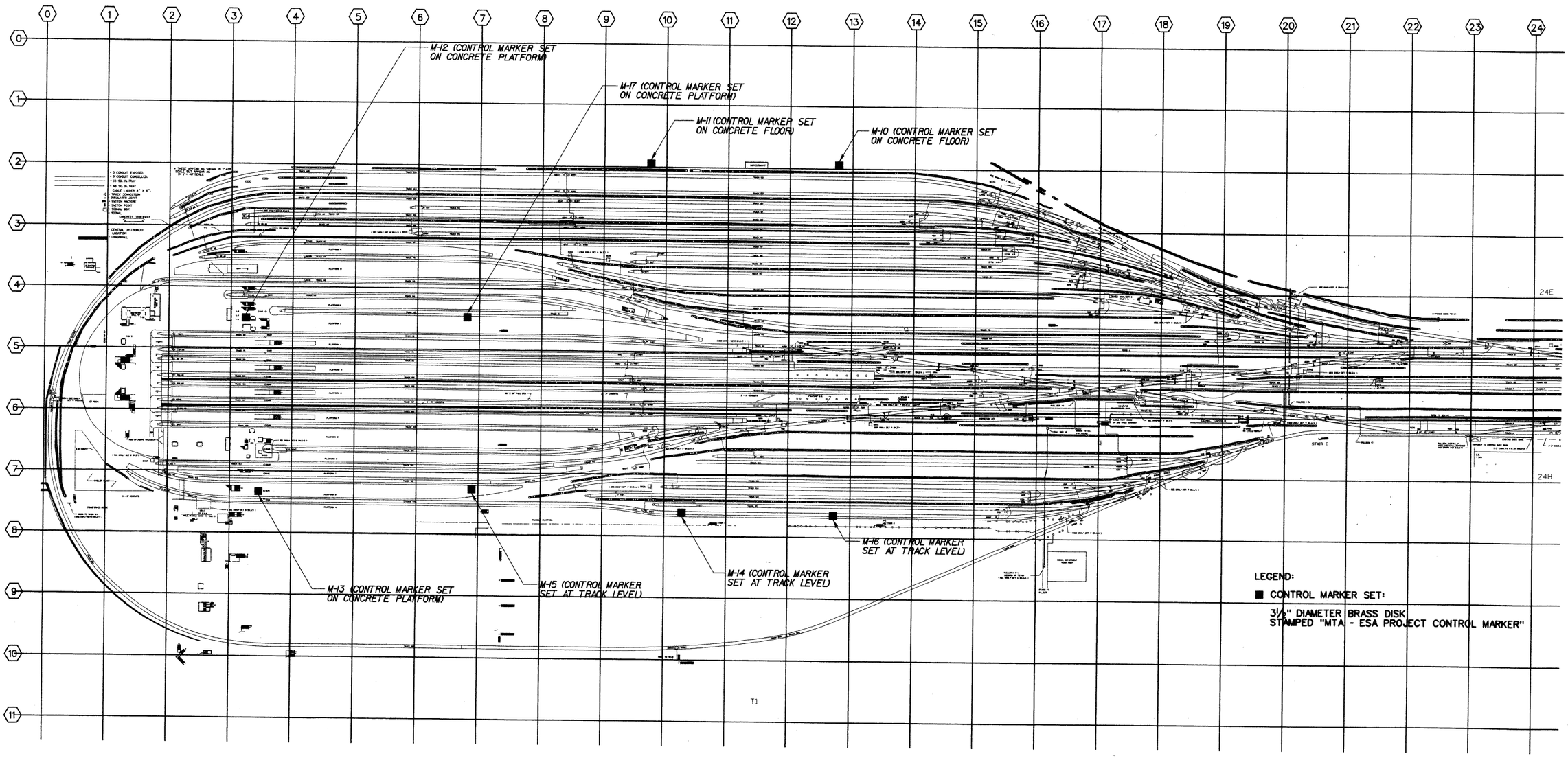

GCT SUBURBAN LEVEL CONTROL MARKERS WITH GCT GRID

SCALE IN FEET
80' 40' 0 80' 160'

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$TBLNAME$
04 OCT 2004 14:40:23
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$REF6$
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Metropolitan Transportation Authority
Capital Construction Company

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK
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1430 Broadway, Suite 300
New York, NY 10018

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DATE:	REVISIONS	No.

DESIGNED BY: J.M. BOTAS
DRAWN BY: P. THEODOSIADIS
CHECKED BY: T. HENNESSY
COORDINATED BY: D. RUPNARAIN
APPROVED BY: W.A. EASTERBROOK

WILLIAM A. EASTERBROOK
N.Y.S.P.L.S. No. 49157
STATE OF NEW YORK
WILLIAM A. EASTERBROOK
LICENSED LAND SURVEYOR
DATE:

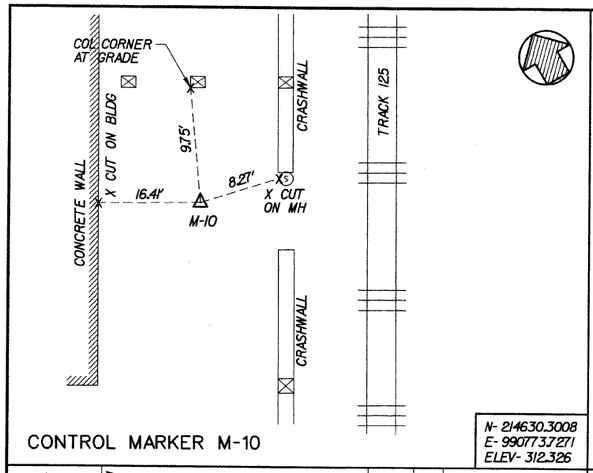
CIVIL STANDARD

MANHATTAN CONTROL MARKERS AT GCT SUBURBAN LEVEL

SHEET 3 OF 4

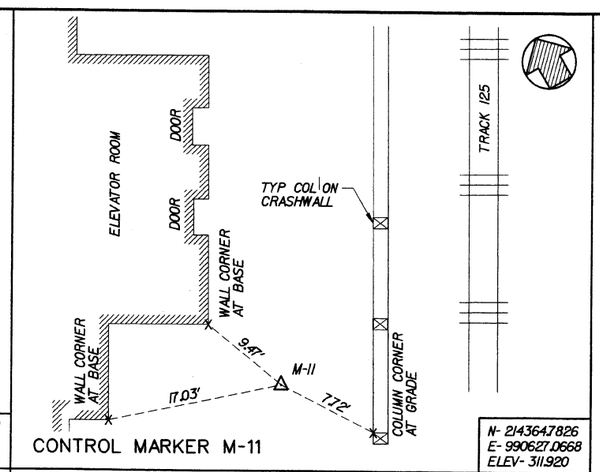
SCALE: 1" = 80'
DRAWING NUMBER: STD-GS-1005
DATE: JUNE 2004
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. 3 OF 4



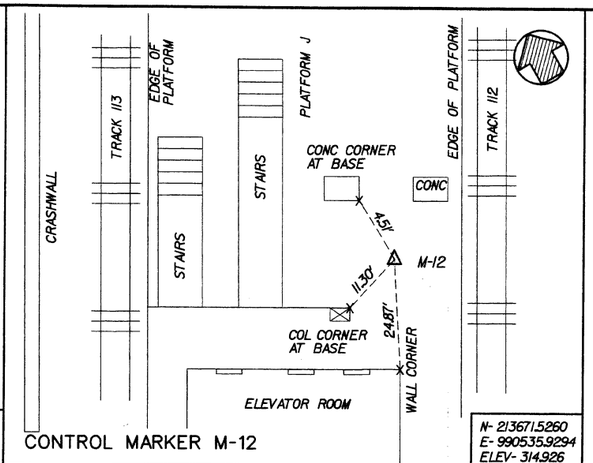
CONTROL MARKER M-10

N- 214630.3008
E- 990773.7271
ELEV- 312.326



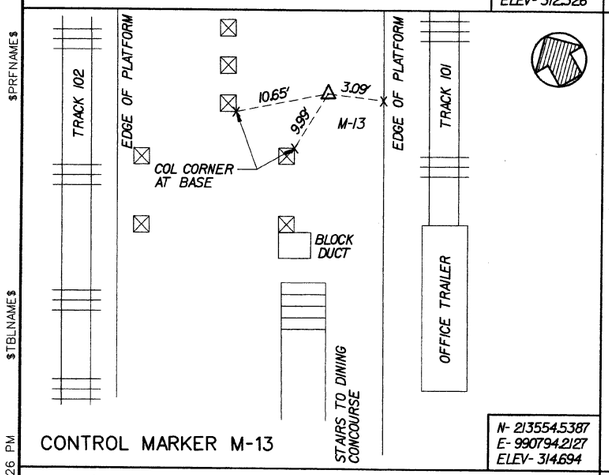
CONTROL MARKER M-11

N- 214364.7826
E- 990627.0668
ELEV- 311.920



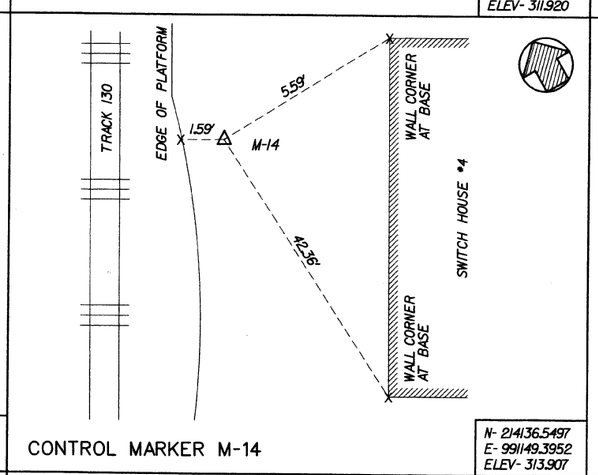
CONTROL MARKER M-12

N- 213671.5260
E- 990535.9294
ELEV- 314.926



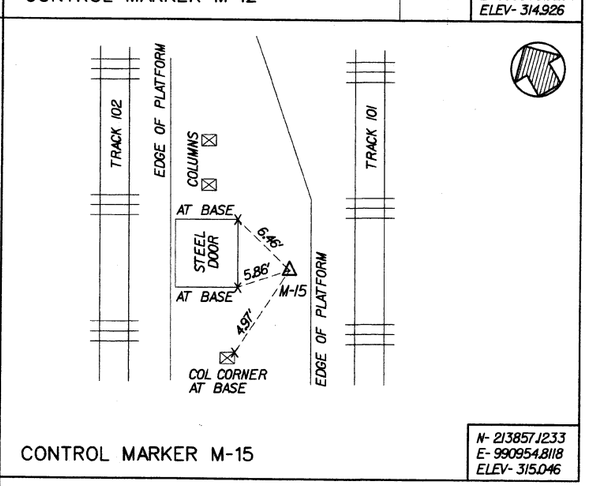
CONTROL MARKER M-13

N- 213554.5387
E- 990794.2127
ELEV- 314.694



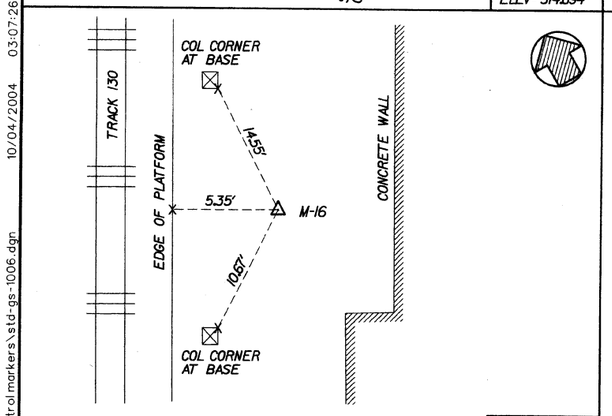
CONTROL MARKER M-14

N- 214136.5497
E- 991149.3952
ELEV- 313.907



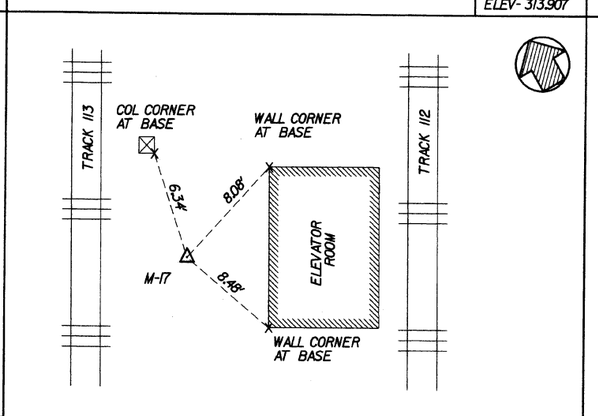
CONTROL MARKER M-15

N- 213857.1233
E- 990954.8118
ELEV- 315.046



CONTROL MARKER M-16

N- 214349.4255
E- 991270.4956
ELEV- 314.029



CONTROL MARKER M-17

N- 213984.6598
E- 990705.3902
ELEV- 315.283

CONTROL STATION	NORTHING (FT)	EASTING (FT)	ELEVATION (FT)	DISTANCE (FT)	BEARING
M-10	214630.3008	990773.7271	312.326		
				303.330	S28° 54'51.4"W
M-11	214364.7826	990627.0668	311.920		
				-----	-----
M-12	213671.5260	990535.9294	314.926		
				356.047	N28° 25'16.4"E
M-17	213984.6598	990705.3902	315.283		
				-----	-----
M-13	213554.5387	990794.2127	314.694		
				342.563	N27° 57'26.9"E
M-15	213857.1233	990954.8118	315.046		
				340.502	N34° 51'07.6"E
M-14	214136.5497	991149.3952	313.907		
				244.911	N29° 38'04.5"E
M-16	214349.4255	991270.4956	314.029		

CONTROL STATION	GCT GRID STATION NORTH	GCT GRID STATION EAST	ELEVATION (FT)	DISTANCE (FT)	BEARING
M-10	12+79.914	1+97.452	312.326		
				303.330	S00° 04'18"E
M-11	9+76.584	1+97.831	311.920		
				-----	-----
M-12	3+26.001	4+54.057	314.926		
				356.047	N00° 33'52"W
M-17	6+82.031	4+50.549	315.283		
				-----	-----
M-13	3+48.830	7+36.679	314.694		
				342.563	N01° 01'42"W
M-15	6+91.338	7+30.531	315.046		
				340.502	N05° 51'59"E
M-14	10+30.057	7+65.333	313.907		
				244.911	N00° 38'55"E
M-16	12+74.952	7+68.106	314.029		

CONTROL MARKER DISK DETAIL

NOT TO SCALE

NOTES:

1. THE HORIZONTAL COORDINATE SYSTEM USED IS THE MTA/LIRR EAST SIDE ACCESS PROJECT COORDINATE SYSTEM WHICH IS NORTH AMERICAN DATUM 83 NEW YORK STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE NO.3104.
2. ESA PROJECT VERTICAL DATUM BASED ON NORTH AMERICAN VERTICAL DATUM 88 MINUS 300.00 FT (NORTH AMERICAN VERTICAL DATUM 88 EL 0.00 EQUALS ESA EL 300.00).
3. CONTROL MARKER TIE SKETCHES NOT TO SCALE.
4. UNAUTHORIZED ALTERATIONS OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

Metropolitan Transportation Authority
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1430 Broadway, Suite 300
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DATE | REVISIONS | No.

DESIGNED BY: J.M. BOTAS
DRAWN BY: P. THEODOSIADIS
CHECKED BY: T. HENNESSY
COORDINATED BY: D. RUPNARAIN
APPROVED BY: W.A. EASTERBROOK

WILLIAM A. EASTERBROOK N.Y.S. LICENSE NO. 49137
DATE:

CIVIL STANDARD
MANHATTAN CONTROL AT GCT SUBURBAN LEVEL
CONTROL MARKER TIE SHEET
SHEET 4 OF 4

SCALE: NONE
DRAWING NUMBER: STD-GS-1006
DATE: JUNE 2004
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: FINAL
SHEET No. 4 OF 4

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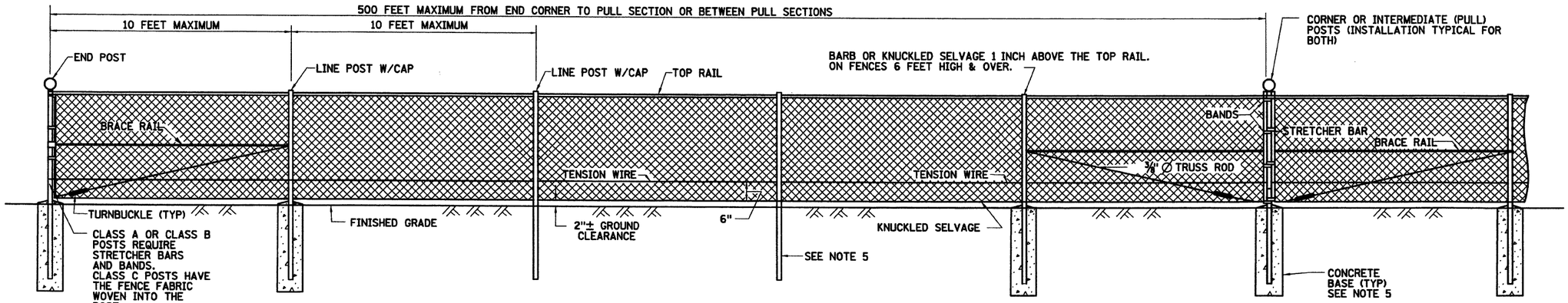
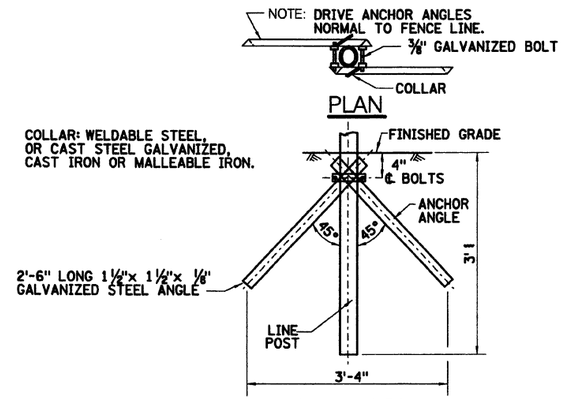


TERMINAL SECTION

LINE SECTION

PULL OR CORNER SECTION



ELEVATION

DRIVE ANCHOR

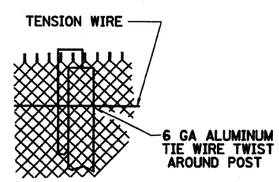
NOTES:

1. POSTS SHALL BE SET INSIDE THE ROW LINE SO THAT FENCING PLACED ON THE ROW SIDE OF POSTS WILL BE AS NEARLY ON THE ROW LINE AS POSSIBLE. WHEN DIRECTED BY THE RESIDENT ENGINEER, THE FABRIC SHALL BE PLACED ON THE OPPOSITE SIDE OF THE POSTS SO THAT THE FABRIC CAN BE PULLED TIGHT AGAINST THE POST.
2. CORNER POSTS SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADE, AND CHANGES IN HORIZONTAL ALIGNMENT OF 15° AND OVER. PULL POSTS SHALL BE USED EVERY 500 FEET ON STRAIGHT RUNS OF CHAIN LINK FENCE OR AS DIRECTED BY THE RESIDENT ENGINEER.
3. THE CONTRACTOR SHALL SUBMIT THE SHOP DRAWING DETAILS FOR THE CHAIN LINK FENCE TO THE RESIDENT ENGINEER. NO FENCE SHALL BE ERECTED PRIOR TO THE APPROVAL OF THE VARIOUS DETAILS.
4. STEEL PIPES AND SHAPES SHALL WEIGH AT LEAST 95% OF THE WEIGHT SPECIFIED ON THIS SHEET. THEY MAY EXCEED THE SPECIFIED WEIGHT.
5. THE CONTRACTOR SHALL HAVE THE OPTION OF SETTING THE LINE POSTS IN 10 INCHES DIAMETER BY 3 FEET DEEP CONCRETE BASES WITH THE POSTS EMBEDDED 30 INCHES OR USING METHODS OF DRIVING AND ANCHORING SPECIFIED BY THE MANUFACTURER EXCEPT THAT THE LINE POSTS WITH TRUSS RODS ATTACHED AND ALL END, CORNER AND INTERMEDIATE POSTS SHALL BE SET IN CONCRETE BASES. THE CONCRETE BASES SHALL BE A MINIMUM OF 12 INCHES DIAMETER BY 3.5 FEET DEEP WITH THE POST EMBEDDED 3 FEET FOR FENCES OVER 6 FEET HIGH.

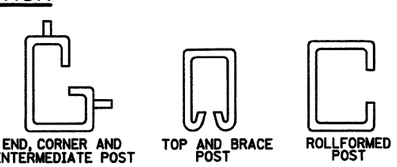
POST AND RAIL SCHEDULE

USE	SECTION	STEEL NPS DESIGNATOR	STEEL ROLLFORMED & H POSTS (IN)	STEEL OD (IN)	STEEL WEIGHT LB/FT	ALUMINUM NPS DESIGNATOR	ALUMINUM H POSTS (IN)	ALUMINUM OD (IN)	ALUMINUM WEIGHT LB/FT
END, CORNER AND INTERMEDIATE POSTS FOR 8 FOOT FENCES	CLASS A SCH 40 PIPE	2 1/2	—	2 7/8	5.80	2 1/2	—	2 7/8	2.00
	CLASS B STL TUBING	2 1/2	—	2 7/8	4.64	—	—	—	—
	CLASS C ROLLFORMED *	—	3 1/2 x 3 1/2	—	5.10	—	—	—	—
BRACE RAILS FOR 8 FOOT FENCES	CLASS A SCH 40 PIPE	1 1/4	—	1 11/16	2.28	1 1/4	—	1 11/16	0.79
	CLASS B STL TUBING	1 1/4	—	1 11/16	1.83	—	—	—	—
	CLASS C ROLLFORMED	—	1 5/8 x 1 1/4	—	1.35	—	—	—	—
TOP RAIL	CLASS A SCH 40 PIPE	1 1/4	—	1 11/16	2.28	1 1/4	—	1 11/16	0.79
	CLASS B STL TUBING	1 1/4	—	1 11/16	1.83	—	—	—	—
	CLASS C ROLLFORMED	—	1 5/8 x 1 1/4	—	1.35	—	—	—	—
LINE POSTS FOR 8 FOOT FENCES	CLASS A SCH 40 PIPE	2	—	2 3/8	3.66	2	—	2 3/8	1.26
	CLASS B STL TUBING	2	—	2 3/8	3.12	—	—	—	—
	CLASS C ROLLFORMED	—	1 7/8 x 1 5/8	—	2.40	—	—	—	—
	H POSTS	—	2 1/4 x 1 11/16	—	3.43	—	1 7/8 x 1 9/16	—	0.91
	———	—	—	—	—	—	2 1/4 x 2	—	1.22

*DO NOT USE 3.5"x3.5" ROLLFORMED POST ON FENCES OVER 8 FOOT



SUGGESTED METHOD OF TYING TENSION WIRE TO LINE POST



CLASS "C" ROLLFORMED SECTIONS (SEE POST AND RAIL SCHEDULE FOR DIMENSIONS)

ACCESSORY	STL	ALUMINUM
FABRIC TIES FOR TOP AND BRACE RAILS	6 GA ALUMINUM WIRE AT 24" CC MAX	0.192" Ø ALUMINUM WIRE AT 24" CC MAX
FABRIC TIES FOR LINE POSTS	6 GA ALUMINUM WIRE AT 14" CC MAX	0.192" Ø ALUMINUM WIRE AT 14" CC MAX OR 1.7" x 0.06" CLIPS AT 14" CC MAX
FABRIC TIES FOR TENSION WIRE	11 GA ALUMINUM WIRE AT 12" OC	0.125" Ø ALUMINUM WIRE AT 12" CC
BOTTOM TENSION WIRE	7 GA GALVANIZED STL	0.192" Ø ALUMINUM WIRE

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DATE	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: A. BEKKER
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL Licensed Architect NAJID HEDAYATI STATE OF NEW YORK
DATE: 12-19-05

CIVIL STANDARD

CHAIN LINK FENCE DETAILS

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-2001
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

48

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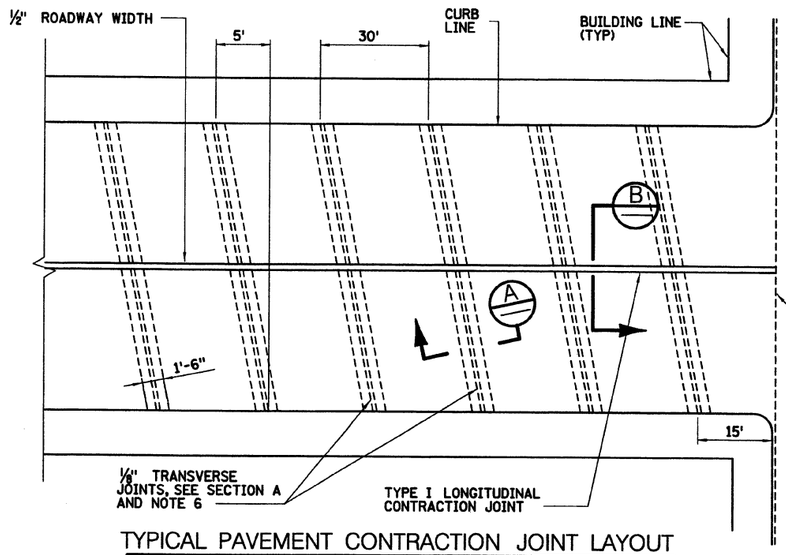
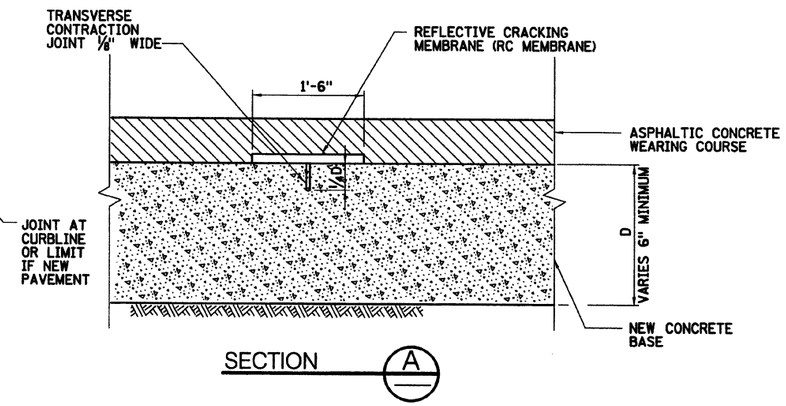


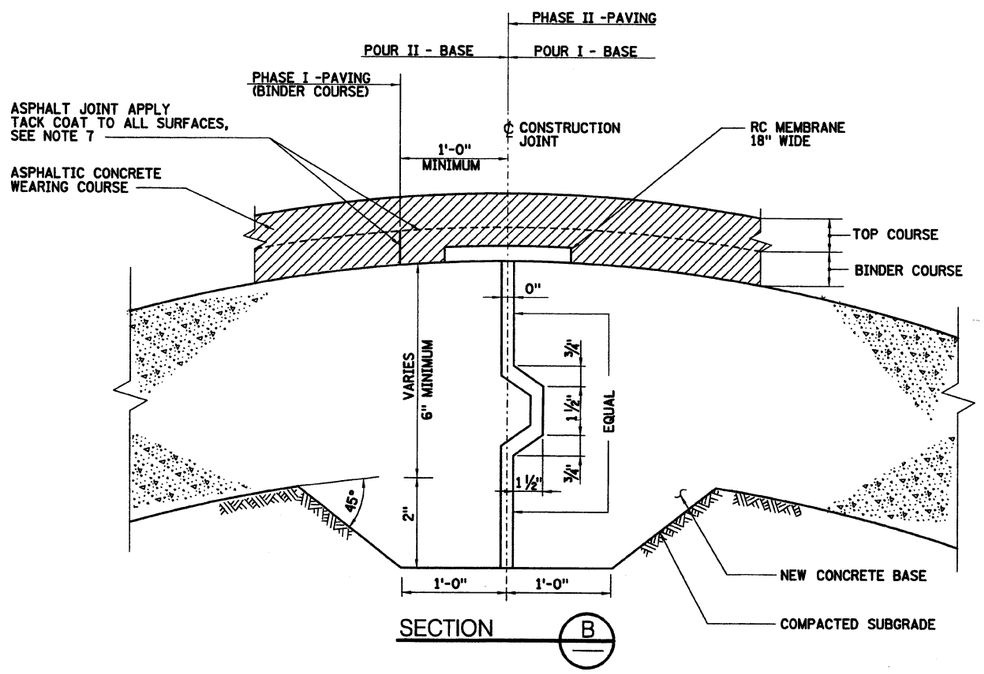
TYPICAL PAVEMENT CONTRACTION JOINT LAYOUT



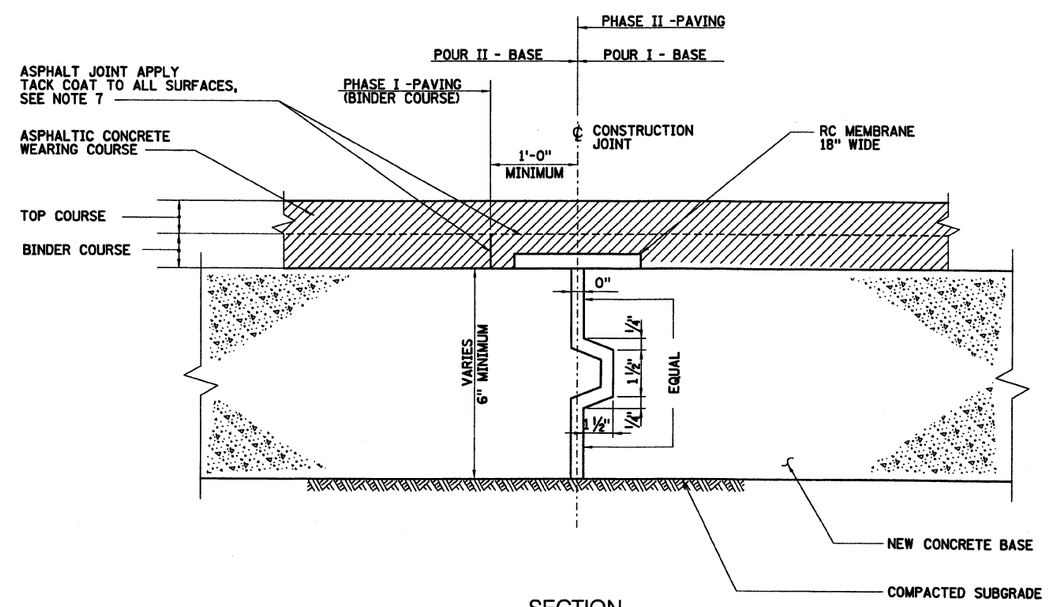
TYPICAL TRANSVERSE CONTRACTION JOINT

NOTES:

1. TYPE I CONSTRUCTION JOINTS TO BE INSTALLED ON ALL LONGITUDINAL ROADWAY JOINTS.
2. TRANSVERSE CONTRACTION JOINTS TO BE SAW CUT WITHIN 24 HOURS OF POURING OF CONCRETE. TRANSVERSE JOINTS SHALL BE 5' FT SKEWED AND SHALL BE PROVIDED AT 30 FT CENTERS. SEE TYPICAL LAYOUT AND SECTION A FOR DETAILS (1/8" WIDE).
3. AN 18 INCH WIDTH OF RC MEMBRANE IS TO BE APPLIED OVER TRANSVERSE AND LONGITUDINAL JOINTS TO PREVENT REFLECTIVE CRACKING. RC MEMBRANE TO BE SUBMITTED FOR REVIEW BY THE RESIDENT ENGINEER.
4. RC MEMBRANE TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS.
5. CONTRACTOR WILL BE PERMITTED TO INSTALL ALTERNATE COLD JOINT FOR TRANSVERSE SECTIONS, SUBJECT TO THE DIRECTION OF THE RESIDENT ENGINEER.
6. TYPE II CONSTRUCTION JOINT SHALL BE INSTALLED ON ALL TRANSVERSE ROADWAY JOINTS.
7. ALL VERTICAL ASPHALT JOINTS SHALL BE SAWCUT FULL DEPTH, TACK COAT TO BE APPLIED TO ALL SURFACES. JOINT SHALL BE PARALLEL TO CURBLINE OR AS OTHERWISE DIRECTED BY THE RESIDENT ENGINEER.



TYPE I CONSTRUCTION JOINT



SECTION

TYPE II CONSTRUCTION JOINT

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$REF1$ $REF2$ $REF3$ $REF4$ $REF5$ $REF6$

49

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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: A. BEKKER
CHECKED BY: D. YUE
COORDINATED BY: J. SCHBIB
APPROVED BY: M. HEDAYATI

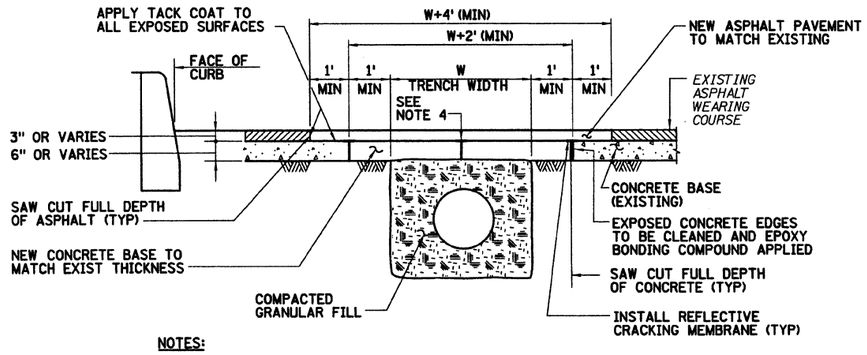
NY PROFESSIONAL Licensed NY NEW YORK MAJID HEDAYATI
DATE: 11-14-05

CIVIL STANDARD

CONSTRUCTION AND CONTRACTION JOINTS FOR CONCRETE BASE

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-2005
DATE: 11-14-05
REVISION NUMBER: 0

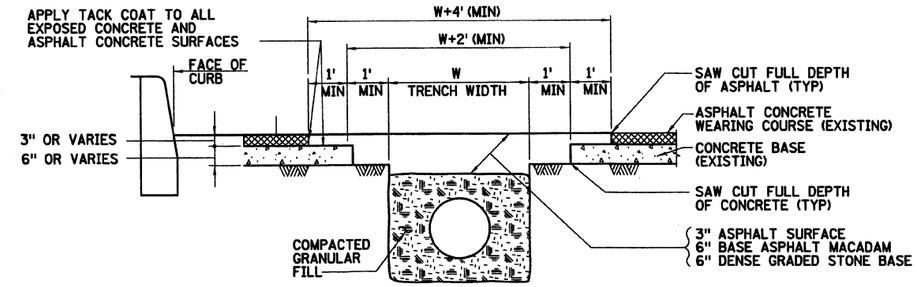
STANDARD DRAWING
ISSUE: —
SHEET No. N/A



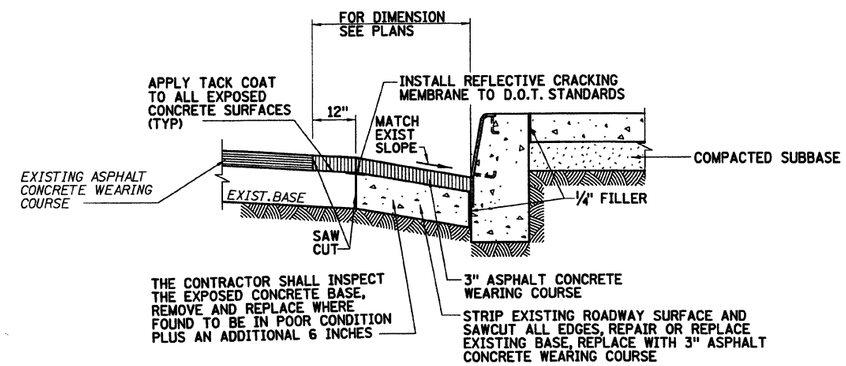
NOTES:

1. ALL TRENCHES SHALL BE BACKFILLED WITH SUITABLE FILL.
2. BACKFILL MATERIAL SHALL BE DEPOSITED IN HORIZONTAL LAYERS NOT EXCEEDING 12" IN THICKNESS PRIOR TO COMPACTION. A MINIMUM OF 95% OF STANDARD MAXIMUM DENSITY SHALL BE REQUIRED. WHEN PLACING BACKFILL AROUND PIPES, LAYERS SHALL BE DEPOSITED TO PROGRESSIVELY BURY THE UTILITY TO EQUAL DEPTHS ON BOTH SIDES. COMPACTION SHALL BE ACHIEVED BY THE USE OF IMPACT HAMMERS, PLATE OR SMALL DRUM VIBRATORS OR PNEUMATIC BUTTON HEAD COMPACTION EQUIPMENT. HAND TAMPING IS NOT PERMITTED EXCEPT IN THE IMMEDIATE AREA OF THE UNDERGROUND FACILITY.
3. THE OUTLINE OF THE PATCH SHALL BE CUT SQUARE BY SAW CUTTING TO A DEPTH AS SHOWN IN DETAIL AND AT A MINIMUM DISTANCE OF 1'-0" FROM ALL EDGES OF THE EXCAVATION. THE BREAKUP WITH PNEUMATIC HAMMER IS TO BEGIN AT THE CENTER OF THE PATCH AREA, NOT AT THE SAW CUTS. IF THE CONTRACTOR SPALLS THE CONCRETE DURING THE REMOVAL, A NEW SAW CUT MUST BE MADE OUTSIDE THE SAWED AREA AND THE CONCRETE REMOVED AT HIS OWN EXPENSE.
4. MATCH EXISTING LONGITUDINAL & TRANSVERSE JOINTS

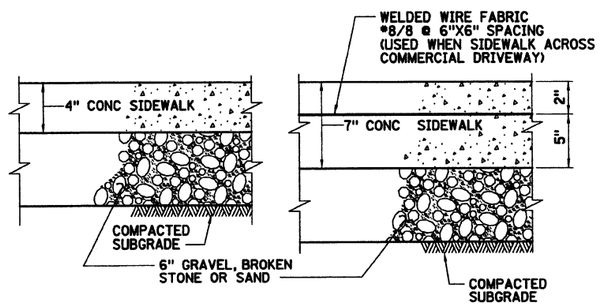
TRENCH RESTORATION DETAIL (PERMANENT)



PAVEMENT RESTORATION DETAIL (TEMPORARY)

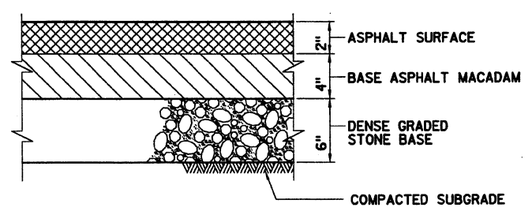


PAVEMENT RESTORATION DETAIL (PERMANENT)

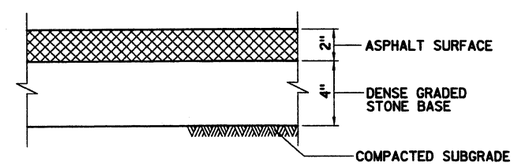


4" SIDEWALK

7" SIDEWALK



ASPHALT DRIVEWAY PAVEMENT



TEMPORARY SIDEWALK PAVEMENT

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$REF2$
$REF3$
$REF4$
$REF5$
$REF6$

53

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

GEC PB STV PARSONS
General Engineering Consultant
PARSONS BRINCKERHOFF
STV INCORPORATED
PARSONS TRANSPORTATION GROUP OF NEW YORK, INC.
469 Seventh Avenue • New York, NY • 10018

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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: C. KOFMAN
CHECKED BY: D. YUE
COORDINATED BY: J. SCHBIB
APPROVED BY: M. HEDAYATI

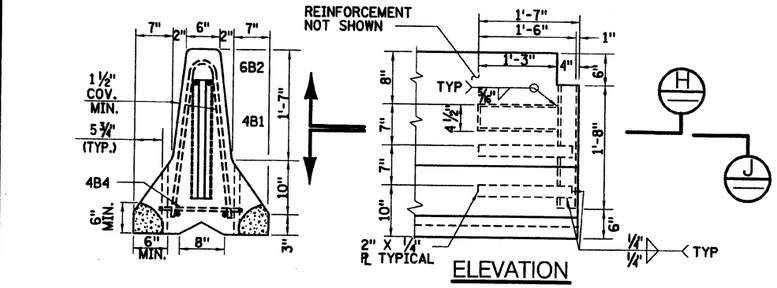
NY PROFESSIONAL ENGINEER LICENSE NO. 065270 STATE OF NEW YORK MAJID HEDAYATI
DATE: 11-14-05

CIVIL STANDARD

PAVING AND RESTORATION MISCELLANEOUS DETAILS SHEET 2

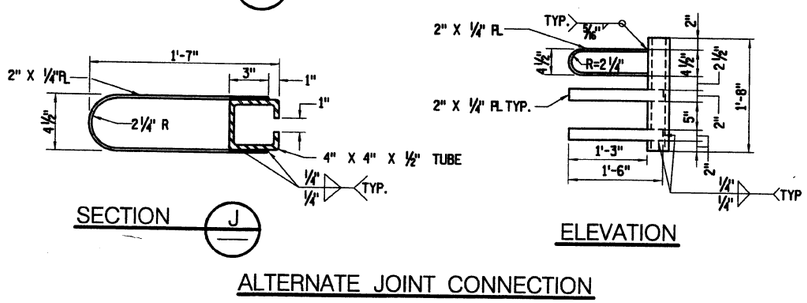
SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-2010
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

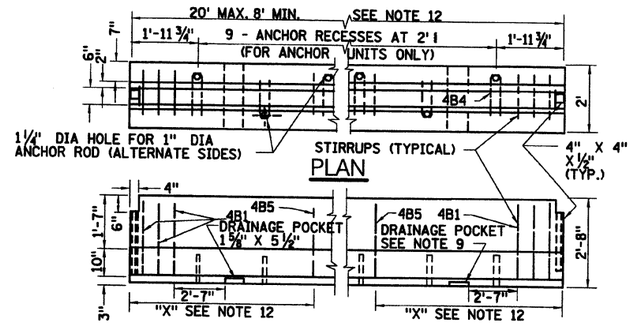


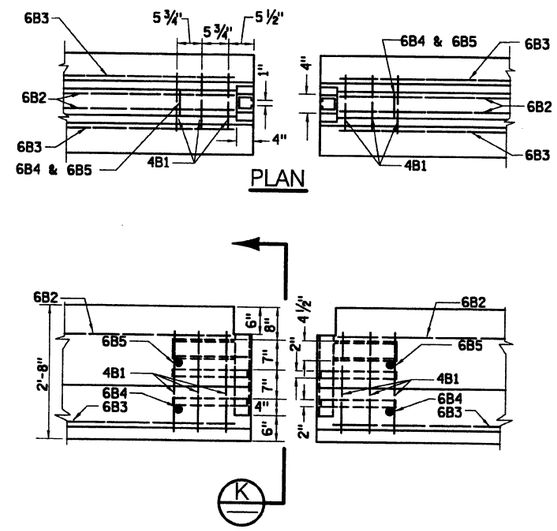
PLACE MORTAR IN SHADED AREAS WHEN SHOWN ON THE PLANS, WHEN REQUIRED BY THE TABLE OF JOINT TREATMENT, OR WHERE DIRECTED BY THE ENGINEER.

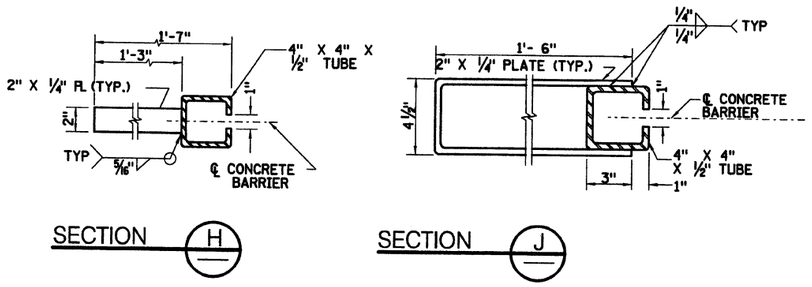
SECTION K



ALTERNATE JOINT CONNECTION







TEMPORARY CONCRETE BARRIER JOINT CONNECTION DETAILS

NOTE:

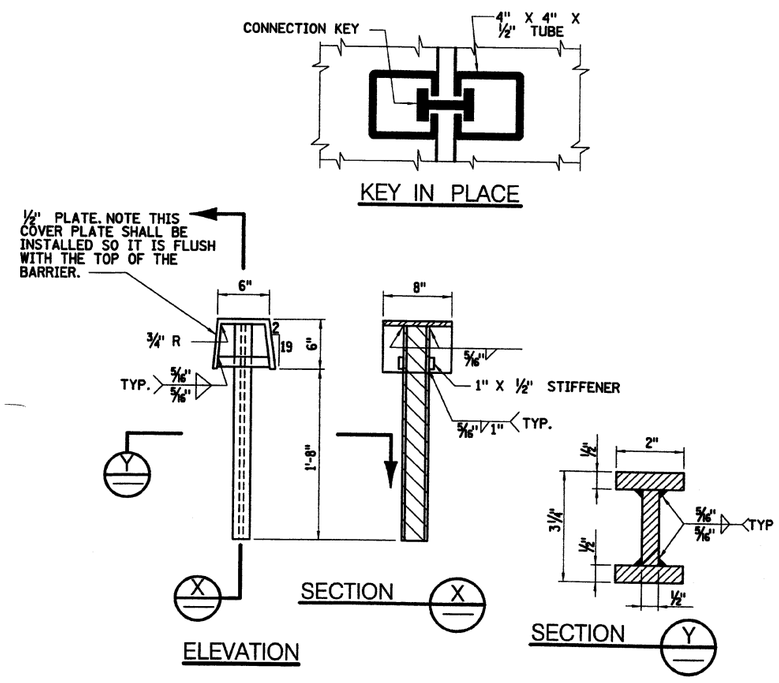
AFTER REMOVAL OF THE BARRIER, THE HOLES IN THE SURFACE ON WHICH THE BARRIER SAT WHICH WERE USED TO ANCHOR THE SYSTEM SHALL BE FILLED. THE ONLY EXCEPTION IS WHEN THE HOLES ARE IN AN AREA WHICH IS TO BE REMOVED. HOLES IN FLEXIBLE PAVEMENT, OR UNPAVED AREAS SHALL BE FILLED WITH MATERIAL CONSISTENT WITH THE WEARING SURFACE, BASE AND SUBBASE MATERIAL, HOLES IN PORTLAND CEMENT CONCRETE PAVEMENTS, OR STRUCTURAL DECKS, SHALL BE FILLED WITH GROUT MATERIAL MEETING THE REQUIREMENTS OF THE SPECIFICATIONS.
TOLERANCES SHALL BE SHOWN ON THE VARIOUS DETAILS; WHERE NOT SPECIFIED AS FOLLOWS: CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN ¼" . LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSION BY MORE THAN ¼" PER 10' OF BARRIER SECTION. LOCATION OF ANCHORING DEVICES SHALL NOT VARY BY MORE THAN ½" SURFACE STRAIGHTNESS, WHEN CHECKED WITH A 10' STRAIGHT EDGE SHALL NOT EXHIBIT IRREGULARITIES EXCEEDING ¼".

NOTE:

ALL WELDING SHALL BE PERFORMED BY A WELDER QUALIFIED IN ACCORDANCE WITH SECTION 8 OF N.Y.S. STEEL CONSTRUCTION MANUAL. SURFACES TO BE WELDED SHALL BE FREE OF SCALE, SLAG, RUST, MOISTURE, GREASE, OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONAL FUMES. WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32" ø E7018 ELECTRODES, CONFORMING TO THE REQUIREMENT OF SECTION 7 OF N.Y.S. STEEL CONSTRUCTION MANUAL.

CONCRETE BARRIER NOTES

1. STEEL PLATE SHALL BE ASTM A36, A572, GRADE 50 OR A588.
2. REINFORCING BARS SHALL BE A615 GRADE 60.
3. CONCRETE SHALL BE AIR ENTRAINED AND HAVE A MINIMUM AIR CONTENT OF 5% AND A MAXIMUM AIR CONTENT OF 9% W/ A MINIMUM COMPRESSION STRENGTH OF 3,000 PSI.
4. CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1½" (MIN) EXCEPT WHERE OTHERWISE SPECIFIED.
5. A MINIMUM OF (2) TWO RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION. EACH LIFTING DEVICE SHALL HAVE A MINIMUM CAPACITY OF 12,000 LB.
6. TUBE STEEL SHALL BE ASTM A500 GRADE B OR C.
7. ANCHOR RODS SHALL BE 1" DIA ASTM A36.
8. ANCHOR RODS ARE NOT REQUIRED IN EVERY UNIT. SEE "TABLE OF JOINT AND ANCHORAGE TREATMENTS" ON DWG STD-GS-5004.
9. 1⅝" × 5½" DRAINAGE POCKETS - ONE REQUIRED FOR 8' AND 10' LENGTHS, TWO OTHERWISE.
10. AFTER A BARRIER UNIT HAS BEEN PLACED AND THE CONNECTION KEY INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE UNIT IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
11. THE DETAILS SHOWN FOR THE END SECTIONS ON THIS SHEET ARE FOR APPROACH ENDS, WHICH ARE TO BE LOCATED TO THE LEFT OF THE TRAFFIC FLOW ON ONE-WAY OPERATIONS OR BETWEEN OPPOSING FLOWS OF TRAFFIC ON TWO-WAY OPERATIONS. WHEN AN APPROACH END IS TO BE LOCATED TO THE RIGHT OF THE TRAFFIC FLOW, THE END SECTION SHALL BE CONSTRUCTED SO THAT IT IS OPPOSITE-HAND (REVERSED IN ALL CROSS SECTIONAL CONFIGURATIONS, ANCHOR HOLE LOCATIONS AND REINFORCEMENT).
12. THE TEMPORARY CONCRETE BARRIER SHALL BE PRECAST UNITS OF ONE OF THE FOLLOWING NOMINAL LENGTHS 8', 10', 12', 14', 16', 18', AND 20'. THE NUMBER AND PLACEMENT OF THE 4B4 AND 4B5 BARS WILL VARY WITH THE LENGTH OF THE BARRIER UNIT AS SHOWN ON THE TABLE OF VARIABLE BARS ON DWG STD-GS-5004. THE 6B2 & 6B3 BARS SHALL BE 1' SHORTER THAN THE NOMINAL LENGTH OF THE BARRIER UNITS.
13. TEMPORARY CONCRETE BARRIER SHALL BE PRECAST IN STEEL FORMS. THE BARRIER UNITS SHALL HAVE A SMOOTH FINISH, NO RUBBING, BROOMING OR OTHER WORKING SHALL BE PERMITTED AFTER THE FORMS ARE REMOVED EXCEPT FOR NECESSARY REPAIRS WHICH SHALL BE FINISHED TO MATCH THE SURROUNDING SURFACE.



CONCRETE KEY

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DESIGNED BY: C. NARAIN
DRAWN BY: A. BEKKER
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI
DATE: 12-14-05

CIVIL STANDARD

TEMPORARY CONCRETE BARRIER
SHEET 1

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-5003
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

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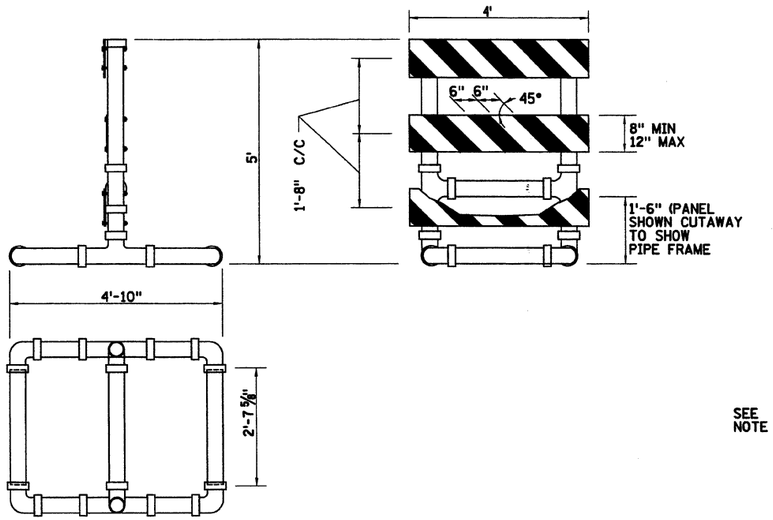
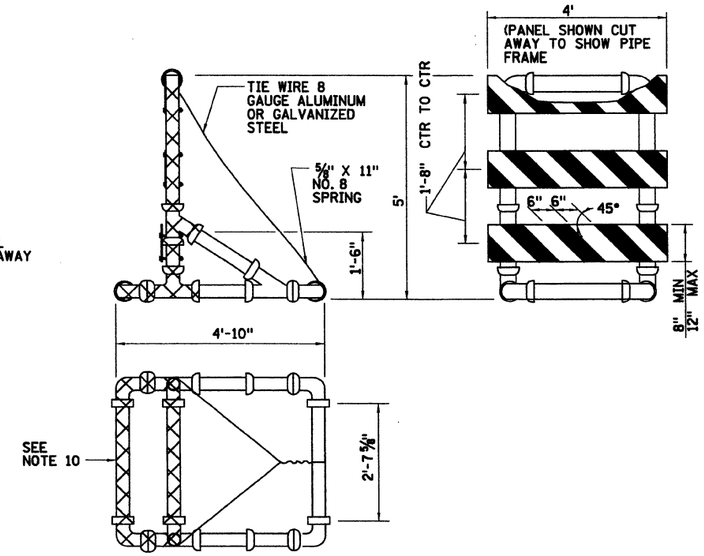


TYPICAL TYPE III CONSTRUCTION BARRICADE
ALTERNATE "A"



TYPICAL TYPE III CONSTRUCTION BARRICADE
ALTERNATE "B"

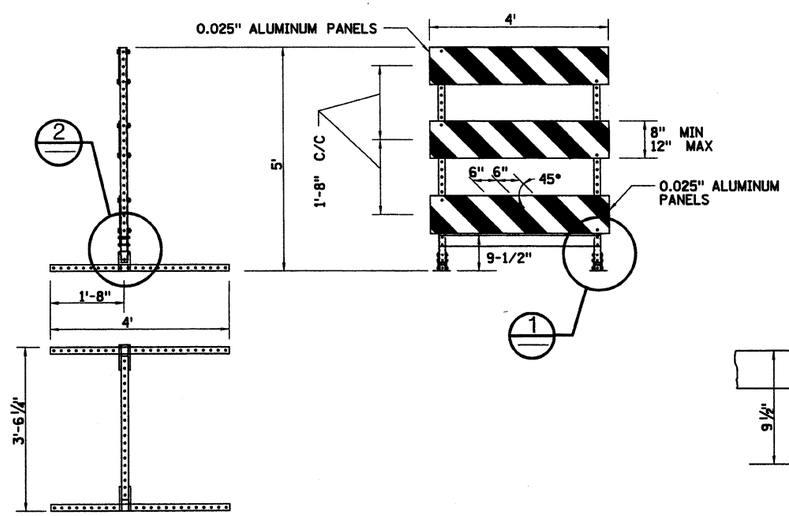
NOTES:

1. THE DETAILS AND MATERIALS FOR TYPE III CONSTRUCTION BARRICADES ARE SUGGESTED DESIGNS. IN THE EVENT THE CONTRACTOR ELECTS TO SUBSTITUTE ANY MATERIAL NOT LISTED IN THE SPECIFICATIONS THE CONTRACTOR SHALL SUBMIT EVIDENCE ACCEPTABLE TO THE RESIDENT ENGINEER THAT BARRICADES FABRICATED OF THIS MATERIAL ARE FRANGIBLE. IF THE CONTRACTOR ELECTS TO USE AN ALTERNATE DESIGN THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS. THE SHOP DRAWINGS FOR THE ALTERNATIVE DESIGN AND/OR EVIDENCE THAT BARRICADES FABRICATED FROM OTHER MATERIALS ARE FRANGIBLE SHALL BE SUBMITTED TO THE RESIDENT ENGINEER FOR APPROVAL. THE ALTERNATE DESIGNS OR SUBSTITUTE MATERIALS SHALL NOT BE USED PRIOR TO WRITTEN APPROVAL.
2. THE ALTERNATES SHOWN ON THIS SHEET ARE EQUALLY ACCEPTABLE AND THE CONTRACTOR MAY USE ANY ONE OR A MIXTURE OF TYPES UNLESS ANY TYPE, OR INTERMIXING OF TYPES IS PROHIBITED IN THE CONTRACT DOCUMENTS.
3. PANELS SHALL HAVE 6" WIDE REFLECTORIZED ORANGE AND WHITE DIAGONAL STRIPES SLOPING AT AN ANGLE OF 45°. THE STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS. THE REFLECTIVE SHEETING, FOR THE STRIPES, SHALL CONFORM TO THE REQUIREMENTS OF NYS DOT STANDARD SPECIFICATION SUBSECTION 730-05 "REFLECTIVE SHEETING CLASS A" (MATERIALS DESIGNATION 730-05.01).
4. A FIXED FRANGIBLE PAVEMENT CONNECTION IS PREFERRED. HOWEVER, FOUR (4) SAND BAGS WEIGHING 65 ± 5 LB. EACH MAY BE PLACED ON THE BASE MEMBERS OF THE BARRICADE, ONE ON EACH CORNER.
5. ALUMINUM FACE PANELS FOR RAILS OR SIGNS MOUNTED ON THE BARRICADE SHALL BE 0.025" THICK AND CONFORM TO THE REQUIREMENTS OF NYS DOT STANDARD SPECIFICATION SUBSECTION 730-01 "ALUMINUM SIGN PANELS".
6. BATTERY PACKS FOR LIGHTING CONSTRUCTION BARRICADES SHALL BE MOUNTED AT THE BOTTOM OF THE BARRICADE.
7. IF SIGN PANELS ARE ADDED TO THE BARRICADES REQUIRING ADDITIONAL HEIGHT THE UPRIGHTS SHALL BE EXTENDED AS FOLLOWS: ALTERNATE "A" OR "B" SHALL BE EXTENDED WITH P.V.C. PIPE. ALTERNATE "M" BARRICADES SHALL BE EXTENDED WITH INTERNAL SPLICE MEMBERS. THE INTERNAL SPLICE MEMBERS SHALL BE ONE 1' LONG LENGTHS OF SQUARE STEEL TUBING INSERTED 6" INTO EACH UPRIGHT. THE EXTENSION SHALL THEN BE PLACED OVER THE TOP OF THE INTERNAL SPLICE MEMBERS. THE EXTENSION AND INTERNAL SPLICE MEMBERS SHALL BE HELD IN PLACE WITH 3/8" X 3" BOLTS WITH NUTS AND WASHERS PLACED 4" ± 1" ABOVE AND BELOW THE JOINT FORMED BY THE EXTENSION. THE INTERNAL SPLICE MEMBERS SHALL BE ONE OF THE FOLLOWING SIZES DEPENDING ON THE TUBING USED TO FABRICATE THE BARRICADE:

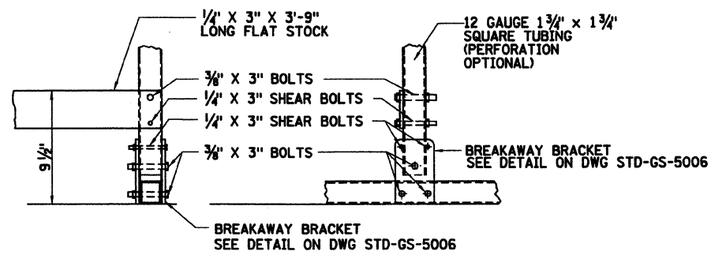
BARRICADE MEMBERS	INTERNAL SPLICE MEMBERS
12 GAUGE 1 3/4" X 1 3/4"	12 GAUGE 1 1/2" X 1 1/2"
14 GAUGE 1 3/4" X 1 3/4"	14 GAUGE 1 1/2" X 1 1/2"
12 GAUGE 1 1/2" X 1 1/2"	12 GAUGE 1 1/4" X 1 1/4"

OTHER METHODS, AS APPROVED BY THE RESIDENT ENGINEER, MAY BE USED

8. ALL PIPES SHOULD BE WHITE. WHITE FITTINGS ARE PREFERRED, BLACK MAY BE USED.
9. ALL JOINTS IN ALTERNATE "A" SHALL BE GLUED WITH A SOLVENT CEMENT COMPATIBLE WITH THE PVC PIPE CHOSEN BY THE CONTRACTOR.
10. ALL JOINTS IN ALTERNATE "B" SHALL BE FREE TO SEPARATE UPON VEHICLE IMPACT. SHADED PIPES AND FITTINGS SHALL BE TIED TOGETHER WITH A 3/16" NO. 6 SOLID BRAIDED NYLON ROPE, OR EQUIVALENT ROPE THREADED INTO THE PIPE AND FITTING INTERIOR.
11. GAUGES FOR SQUARE TUBES SHALL BE UNITED STATES STANDARD GAUGE. GAUGES FOR WIRE SHALL BE THE UNITED STATES STEEL WIRE GAUGE.
12. FOR ALTERNATE BRACKET DETAILS, SEE DWG STD-GS-5006.



TYPICAL TYPE III CONSTRUCTION BARRICADE
ALTERNATE "M"



DETAIL 1

DETAIL 2

Metropolitan Transportation Authority
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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: A. BEKKER
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL ENGINEER License No. 065 STATE OF NEW YORK MAJID HEDAYATI
DATE: 11-14-05

CIVIL STANDARD

TYPE III CONSTRUCTION BARRICADES
SHEET 1

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-5005
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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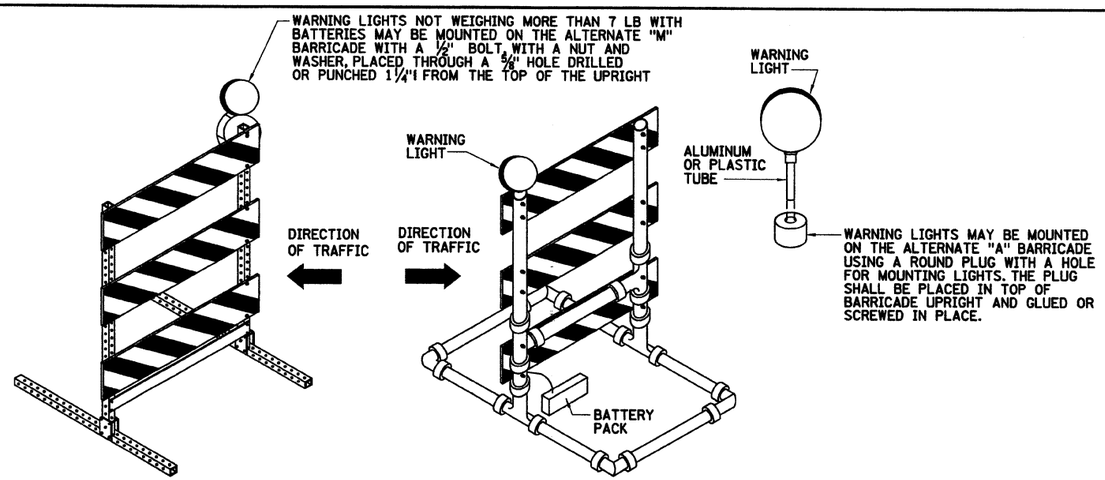
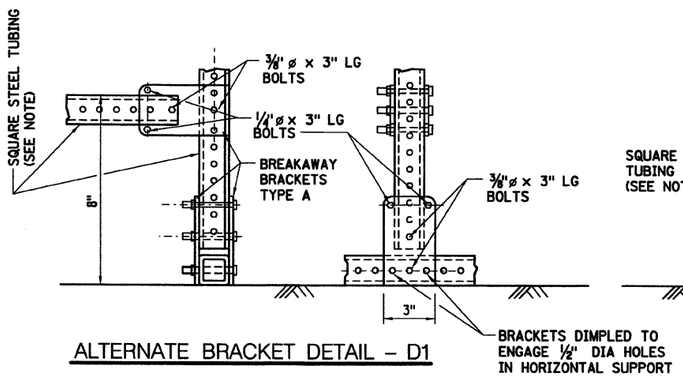
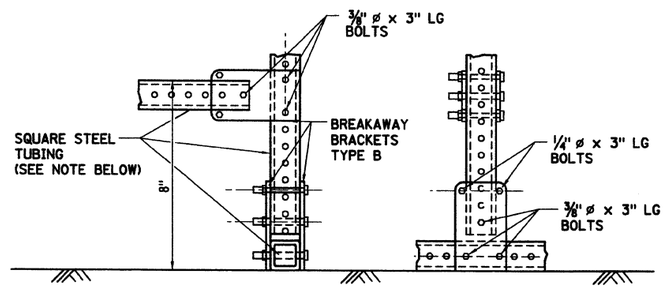


SUGGESTED DETAILS FOR FASTENING LIGHTS ON TOP OF BARRICADE



ALTERNATE BRACKET DETAIL – D1



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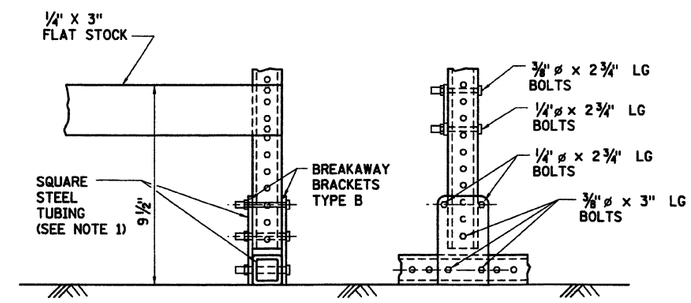
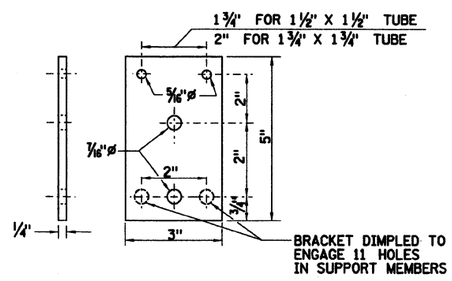
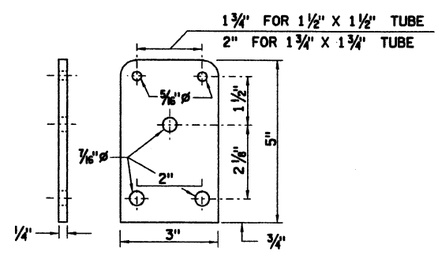


ALTERNATE BRACKET DETAIL – D3



BREAKAWAY BRACKET (FOR ALTERNATIVE 'M') TYPE A



BREAKAWAY BRACKET (FOR ALTERNATIVE 'M') TYPE B

NOTES:

1. SQUARE STEEL TUBING SHALL MEET ONE OF THE FOLLOWING SIZE AND MATERIAL REQUIREMENTS
   - 12 GAGE 1¾" X 1¾", ASTM A446 GRADE A
   - 12 GAGE 1½" X 1½", ASTM A446 GRADE A
   - 14 GAGE 1¾" X 1¾", ASTM A570 GRADE 50
2. SEE DWG STD-GS-5005 FOR ADDITIONAL NOTES.

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APPROVED BY: M. HEDAYATI

NY PROFESSIONAL Licensed Seal — STATE OF NEW YORK — MAJID HEDAYATI
DATE:

CIVIL STANDARD

TYPE III CONSTRUCTION BARRICADES
SHEET 2

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-5006
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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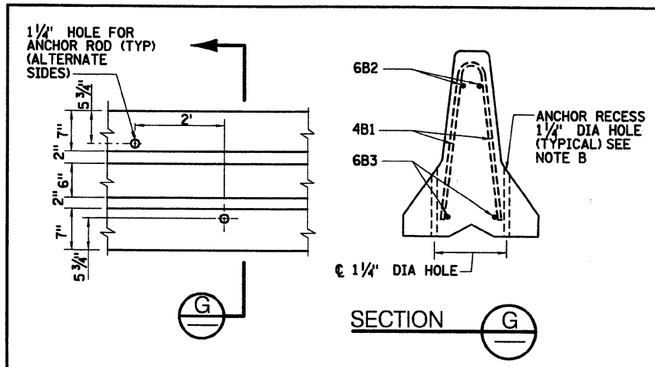
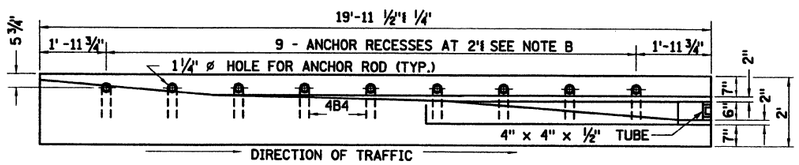
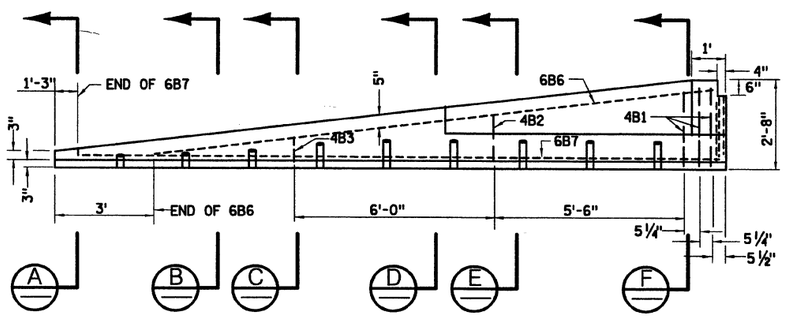


PLAN – ANCHOR RECESS

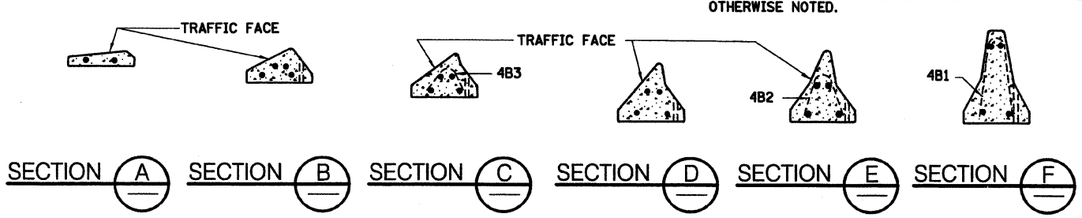


PLAN



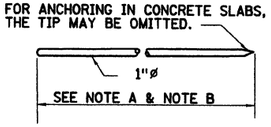
ELEVATION: END SECTION – TAPERED

NOTE:
ALL CORNERS ON THE TOP OF THE SECTION SHALL BE ROUNDED TO A 1" RADIUS. THE UNIT SHALL HAVE A SMOOTH TRANSITION FROM THE STANDARD SHAPE TO THE 6" END OF SECTION HEIGHT. ALL END SECTIONS SHALL BE PINNED UNLESS OTHERWISE NOTED.



TRANSITION SECTIONS

FOR ANCHORING IN CONCRETE SLABS, THE TIP MAY BE OMITTED.



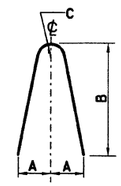
ANCHOR ROD

NOTE A
THE LENGTH OF THE ANCHOR RODS SHALL BE SUCH THAT THE FOLLOWING EMBEDMENT LENGTHS ARE OBTAINED

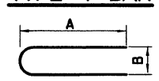
(A) INTO BRIDGE DECKS AND PORTLAND CEMENT CONCRETE PAVEMENT 5".
(B) INTO FLEXIBLE PAVEMENT 1'-6".
(C) INTO UNPAVED AREA 2'-6".

WHEN ANCHOR RODS ARE IN PLACE, THEY SHALL NOT PROJECT ABOVE PLANE OF THE CONCRETE SURFACE OF THE BARRIER. HOLES IN BRIDGE DECK SHALL BE 1½" ø MAXIMUM AND MADE WITH A CORE DRILL OR ANY OTHER APPROVED ROTARY DRILLING DEVICE THAT DOES NOT IMPART AN IMPACT FORCE.

NOTE B
IN UNITS THAT ARE TO BE ANCHORED PINS SHALL BE REQUIRED IN EVERY ANCHOR RECESS.



TYPE "I" BAR



TYPE "II" BAR

TABLE OF VARIABLE BARS

NOMINAL LENGTH OF BARRIER UNIT	MARK	X	NO. EACH SECTION
20'	4B4	N.A.	9
20'	4B5	6'-11"	2
18'	4B4	N.A.	8
18'	4B5	6'-5"	2
16'	4B4	N.A.	7
16'	4B5	5'-11"	2
14'	4B4	N.A.	6
14'	4B5	7'-0"	1
12'	4B4	N.A.	5
12'	4B5	6'-0"	1
10'	4B4	N.A.	4
10'	4B5	5'-0"	1
8'	4B4	N.A.	3
8'	4B5	—	0

"X" DISTANCE FROM END OF BARRIER TO 4B5 BAR

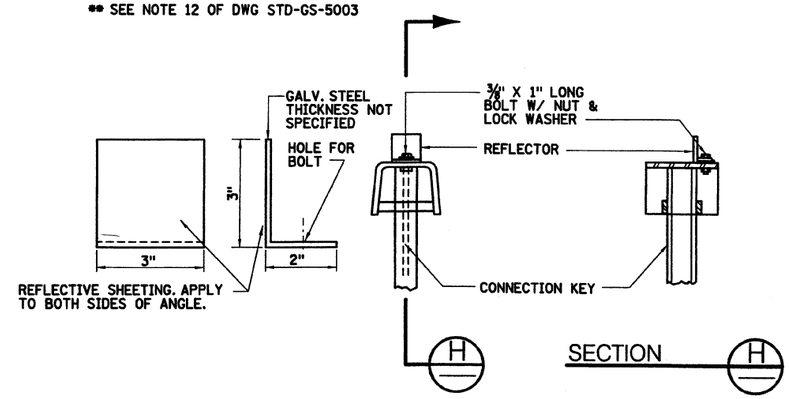
TABLE OF JOINT AND ANCHORAGE TREATMENTS

ALLOWABLE MOVEMENT	JOINT TREATMENT
OVER 16"	CONNECTION KEY ONLY
11" TO 16"	CONNECTION KEY & GROUT
LESS THAN 11"	CONNECTION KEY & MORTAR, IN EVERY JOINT & PIN EVERY OTHER UNIT. IN UNITS THAT ARE TO BE ANCHORED PINS SHALL BE REQUIRED IN EVERY ANCHOR RECESS.

BAR LIST (EACH BARRIER SECTION)

MARK	SIZE	NUMBER IN EACH SECTION	LENGTH	TYPE	A	B	C	LOCATION
4B1	#4	6*	4'-11"	I	5"	2'-2"	2"	STIRRUPS * ONLY 3 IN END SECTION
4B2	#4	1	3'-3"	I	5"	1'-6"	2"	STIRRUPS - END SECTION
4B3	#4	1	1'-8"	I	5"	8"	2"	STIRRUPS - END SECTION
4B4	#4	**	3'-1"	II	15½	4"	—	STIRRUPS - ANCHOR UNITS & END SECTIONS
4B5	#4	**	4'-11"	I	5"	2'-2"	2"	STIRRUPS - ANCHOR UNITS & END SECTIONS
6B2	#6	2	SEE NOTE 12	STR.				LONGITUDINAL (TOP) NORMAL SECTION
6B3	#6	2	SEE NOTE 12	STR.				LONGITUDINAL (BOTTOM) NORMAL SECTION
6B4	#6	2	1'-2"	STR.				TRANSVERSE (BOTTOM) NORMAL SECTION
6B5	#6	2	0'-6"	STR.				TRANSVERSE (TOP) NORMAL SECTION
6B6	#6	2	16'-7"	STR.				LONGITUDINAL (TOP) END SECTION
6B7	#6	2	18'-2"	STR.				LONGITUDINAL (BOTTOM) END SECTION

** SEE NOTE 12 OF DWG STD-GS-5003



REFLECTOR AND CONNECTION KEY DETAIL

NOTES:

1. THIS DETAIL IS SUGGESTED, ALTERNATE DESIGNS MAY BE SUBMITTED TO THE RESIDENT ENGINEER FOR APPROVAL. REFLECTOR SHALL CONFORM TO THE REQUIREMENTS FOR SPACING AND COLOR FOR DELINEATORS IN THE N.Y.S. M.U.T.C.D.
2. SEE DWG STD-GS-5003 FOR BARRIER CONNECTION DETAIL.

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59

Metropolitan Transportation Authority
Capital Construction
Long Island Rail Road
East Side Access

GEC PB STV PARSONS
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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: A. BEKKER
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

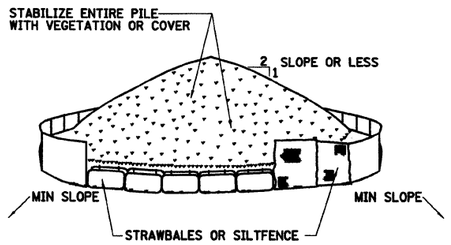
NY LICENSED PROFESSIONAL ENGINEER MAHMOUD HEDAYATI
DATE: 12-14-05

CIVIL STANDARD

TEMPORARY CONCRETE BARRIER
SHEET 2

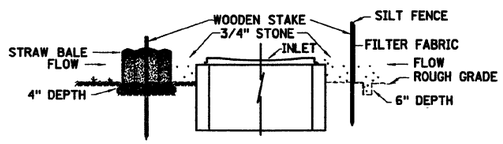
SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-5004
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A



1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAWBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
4. FOR HAZARDOUS MATERIALS, NON-HAZARDOUS, NON-PETROLEUM CONTAMINATED MATERIALS AND PETROLEUM CONTAMINATED MATERIALS LINE AND COVER WITH 4-MIL POLYETHYLENE SHEETING.

SOIL STOCKPILING



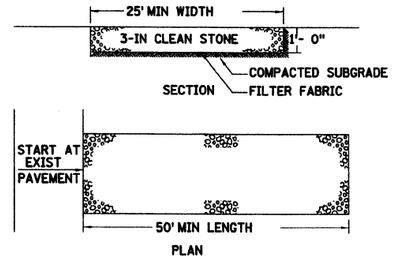
INLET PROTECTION

SILT FENCE INSTALLATION NOTES:

1. EXCAVATE A 6 INCH BY 6 INCH TRENCH, OFFSET APPROXIMATELY 2 FEET FROM THE INLET PERIMETER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM DIRECTION OF FLOW).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS APPROXIMATELY 2 INCHES FROM THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL STEEPER SLOPES REQUIRE AN INTERCEPT TRENCH.
5. JOIN SECTIONS AS SHOWN ABOVE. SUPPLEMENT WITH GRAVEL, PILED AGAINST THE FENCE.

STRAWBALES INSTALLATION NOTES:

1. PLACE BALES OF STRAW WITH ENDS TIGHTLY ABUTTING OTHER BALES TO SURROUND THE INLET. WHERE SLOPE AND SPACE PERMIT, ESTABLISH THE LINE OF BALES 2 TO 10 FEET AWAY FROM THE INLET. ANCHOR BALES IN PLACE BY DRIVING REBARS OR 2" BY 2" STAKES THROUGH THE BALES. SUPPLEMENT WITH GRAVEL, PILED AGAINST THE BALES.
2. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ½ THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMIZED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



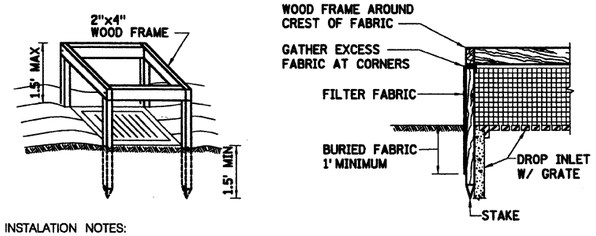
1. STONE SIZE - USE 3-IN STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT

   LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET.

   THICKNESS - NOT LESS THAN SIX (6) INCHES.
2. WIDTH - 25 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCUR.
3. FILTER FABRIC - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACEMENT OF STONE.
4. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
5. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT OF WAY MUST BE REMOVED IMMEDIATELY.
6. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAINFALL EVENT.

STABILIZED CONSTRUCTION ENTRANCE

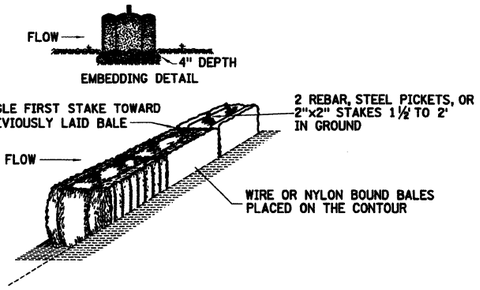
NTS



INSTALATION NOTES:

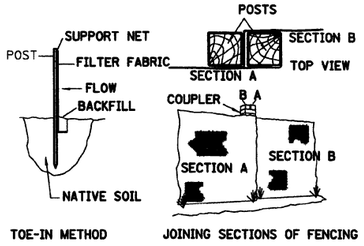
1. FILTER FABRIC SHALL HAVE AN EQUIVALENT OPENING SIZE OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY SHALL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIAL SHALL BE STANDARD 2"x4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET 3 FEET APART AND DRIVE A MINIMUM 18-INCH DEEP. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GROUND AND BACK FILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2"x4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.

FILTER FABRIC DROP INLET PROTECTION



1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBAR DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD THE PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STRAWBALE SEDIMENT BARRIER



INSTALATION NOTES:

1. EXCAVATE A 4 INCH BY 4 INCH TRENCH ALONG THE LOWER PERIMETER OF THE SITE.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM DIRECTION OF FLOW).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS APPROXIMATELY 2 INCHES FROM THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. STEEPER SLOPES REQUIRE AN INTERCEPT TRENCH.
5. JOIN SECTIONS AS SHOWN ABOVE.

SILT FENCE

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DATE:	REVISIONS	No.

DESIGNED BY: C. NARAIN
DRAWN BY: J. BATTLE
CHECKED BY: D. YUE
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL Licensed Architect STATE OF NEW YORK MAJID HEDAYATI
DATE: 11-14-05

CIVIL STANDARD

SOIL EROSION CONTROL DETAILS

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-6001
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

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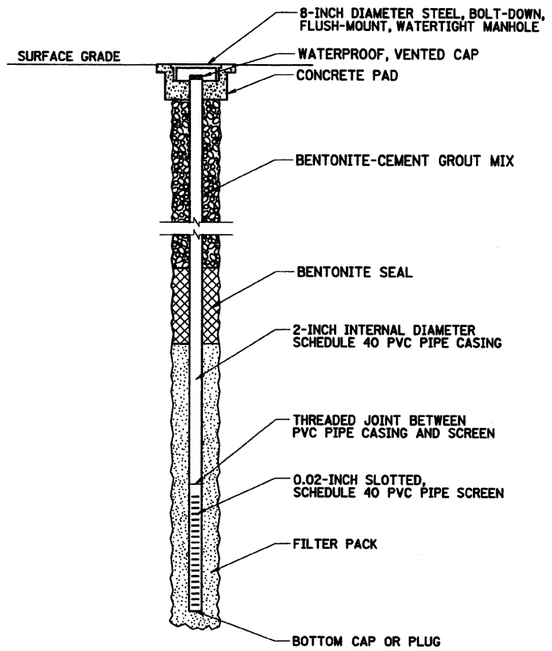
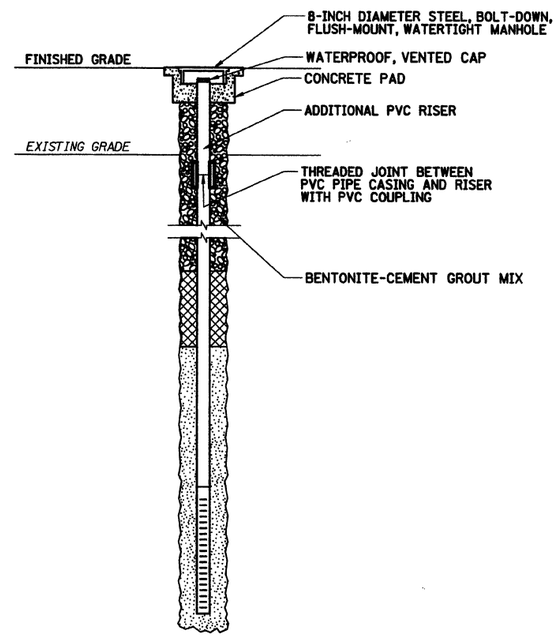
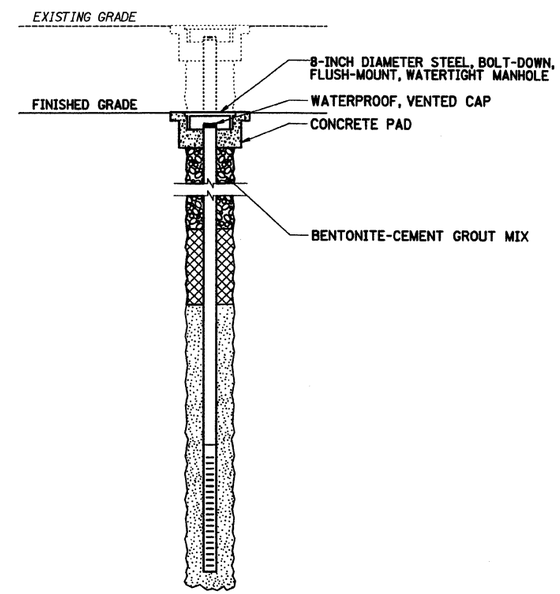


TYPICAL CONSTRUCTION



EXTENSION MODIFICATION



REDUCTION MODIFICATION

TYPICAL MONITORING WELL CONSTRUCTION, MODIFICATION AND PROTECTION DURING CONSTRUCTION

NOTES:

1. MONITORING WELLS SHALL BE PROTECTED FROM DAMAGE DURING ALL CONSTRUCTION ACTIVITIES.
2. MONITORING WELLS WITH ABOVE-GROUND COMPLETIONS OR "STICK-UP" WELLS (NOT ILLUSTRATED) SHALL BE REPLACED BY NEW FLUSH-MOUNTED, WATERTIGHT MANHOLES AT THE FINISHED SURFACE GRADE.
3. ALL WELL COVERS SHALL BE FURNISHED WITH LOCKS, KEYS AND PERMANENT IDENTIFICATION NUMBERS AS SHOWN ON THE CONTRACT DRAWINGS.
4. IMPACTS TO A BENTONITE SEAL DURING MONITORING WELL REDUCTION MODIFICATIONS SHALL BE MITIGATED BY THE RESTORATION OF THE BENTONITE SEAL. A TYPICAL WELL INCLUDES A BENTONITE SEAL INSTALLED IN THE ANNULAR SPACE ABOVE THE TOP OF THE PVC SLOTTED PIPE.

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DATE:	REVISIONS	No.

DESIGNED BY: R. NAROZNIK
DRAWN BY: J. BATTLE
CHECKED BY: M. TUMULTY
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL ENGINEER LICENSE NO. 065890 MAJID HEDAYATI
DATE: 11-14-05

ENVIRONMENTAL STANDARD

TYPICAL MONITORING WELL DETAILS

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-GS-9001
DATE: 11-14-05
REVISION NUMBER: 0
STANDARD DRAWING
ISSUE: —
SHEET No. N/A

72

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ENVIRONMENTAL ABBREVIATIONS

AAS	ATOMIC ABSORPTION SPECTROMETRY
ACM	ASBESTOS CONTAINING MATERIALS
AOC	AREA OF CONCERN
AST	ABOVEGROUND STORAGE TANK
BF	BAG FILTER
BG	BELOW GRADE
BLDG	BUILDING
BTEX	BENZENE, TOLUENE, ETHYLBENZENE AND XYLENE
CL	CLAY
CPAH	CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS
CF	GRANULAR ACTIVATED CARBON ADSORBER
CH	INORGANIC CLAYS
CVOC	CHLORINATED-VOLATILE ORGANIC COMPOUND
CY	CUBIC YARD
DAF	DISSOLVED AIR FLOTATION
FB	FLOCCULATION BASIN
FC	FINAL CLARIFIER
FP	FILTER PRESS
FT	FEET: FLOW TOTALIZER
GA	NYSDEC CLASSIFICATION FOR DRINKING WATER SOURCE (GROUNDWATER)
GAL	GALLON
GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
GM	SILTY-SANDS, SAND-SILT MIXTURES
GP	POORLY-GRADED SANDS, GAVELLY SANDS
GPM	GALLON PER MINUTE
GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES
HUD	UNITED STATES DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
LBP	LEAD-BASED PAINT
MIN	MINIMUM
MH	INORGANIC SILTS, MICACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
MW	MONITORING WELL
ND	NOT DETECTED
NE	NO RSCO & ROD EXCEEDANCES
NWE	NO CLASS GA WATER QUALITY STANDARD EXCEEDANCES
NSDC	NO VOC/SVOC SOIL DATA COLLECTED
NGWDC	NO GROUNDWATER DATA COLLECTED
NPSH	NET POSITIVE SUCTION HEAD
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OH	ORGANIC CLAYS, ORGANIC SILTS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
PC	PRIMARY CLARIFIER
PCB	POLYCHLORINATED BIPHENYLS
PI	PRESSURE INDICATOR
PLM	POLARIZED LIGHT MICROSCOPY
PPB	PARTS PER BILLION
PPM	PARTS PER MILLION
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS
PVC	POLYVINYL CHLORIDE
RB	ION EXCHANGE RESIN BASIN
ROD	NYSDEC RECORD OF DECISION
RM	RAPID MIXING TANK
RSCO	RECOMMEND SOIL CLEANUP OBJECTIVES
SC	CLAYEY SANDS, SAND-CLAY MIXTURES
SF	SQUARE FEET
SM	SILTY-SANDS, SAND-SILT MIXTURES
SP	SAMPLE PORT: POORLY-GRADED SANDS, GRAVELLY SANDS
SVOC	SEMI-VOLATILE ORGANIC COMPOUND
SW	WELL-GRADED SANDS, GRAVELLY SANDS
TEM	TRANSMISSION ELECTRON MICROSCOPE
TR	TRANSFER PUMP
UG/L	MICROGRAMS PER LITER
UST	UNDERGROUND STORAGE TANK
VOC	VOLATILE ORGANIC COMPOUND
XRF	X-RAY FLUORESCENCE

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73

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DATE:	REVISIONS	No.

DESIGNED BY: R. NAROZNIK
DRAWN BY: J. BATTLE
CHECKED BY: M. TUMULTY
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL LICENSE NO. 065 STATE OF NEW YORK MAJID HEDAYATI LICENSED PROFESSIONAL ENGINEER
DATE: 11-14-05

ENVIRONMENTAL STANDARD

ABBREVIATIONS

SCALE: NONE
DRAWING NUMBER: STD-GS-9002
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

STRUCTURAL SYMBOLS

PROPOSED WORK

EXISTING ELEMENTS

CENTERLINE

FUTURE WORK (NIC)

ABOVE / BEYOND

BELOW (STRUCTURAL)

WATERPROOFING MEMBRANE

STAIR DIRECTION — UP

SLOPE — 10:1 OR -0.1% OR 1/10

SPOT ELEVATIONS — EL=40.00 PROPOSED; (EL=152.00) EXISTING

GROUND CHANGE IN ELEVATION — OR

GROUND CHANGE IN SLOPE — OR

CONSTRUCTION JOINT (BONDED)

CONSTRUCTION JOINT (KEYED)

EXISTING CONTOURS — 255

NEW INDEX CONTOURS — 255

NEW INTERMEDIATE CONTOURS

PREFORMED EXPANSION JOINT

REINFORCEMENT

ROCK ANCHOR

RUBBLE WALL

TEST BORING

TIE BACK

TO BE REMOVED

WATERSTOP

OBSERVED GROUND WATER ELEVATION

WELDED WIRE FABRIC — X — X

STRUCTURAL ABBREVIATIONS

AB	ANCHOR BOLT
ADDL	ADDITIONAL
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
ALT	ALTERNATE
ALUM	ALUMINUM
APP	APPROACH
APPROX	APPROXIMATE, APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURE, ARCHITECTURAL
ASPH	ASPHALT
AVE	AVENUE
AVG	AVERAGE
B/B	BACK-TO-BACK
B/F, BF	BOTH FACES
B/R	BASE OF RAIL
BIT	BITUMINOUS
BJF	BITUMINOUS JOINT FILLER
BL	BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
BM	BEAM
BOE	BOTTOM OF EXCAVATION
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BR	BRIDGE
BRG	BEARING
BRG PL	BEARING PLATE
BS	BOTH SIDES
BSMT	BASEMENT
BTWN	BETWEEN
C to C, C/C	CENTER TO CENTER
C&C	CUT AND COVER
C/L	CURB LINE
CE	CONSTRUCTION EASEMENT
CED	CONCRETE ENCASED DUCTBANK
CG	CENTER OF GRAVITY
CI	CAST IRON
CIL	CENTRAL INSTRUMENT LOCATION
CIP	CAST IN PLACE
CIR	CENTRAL INSTRUMENT ROOM
CJ	CONSTRUCTION JOINT
CL, ℄	CENTER LINE
CLF	CHAIN LINK FENCE
CLR	CLEARANCE, CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CP	CONTROL POINT
CTJ	CONTRACTION JOINT
CTR	CENTER
CTRL	CONTROL
CF, CU FT	CUBIC FEET
CU IN	CUBIC INCH
CU YD	CUBIC YARD
DEG	DEGREE
DET	DETAIL
DF	DIRECT FIXATION
DIA	DIAMETER
DL	DEAD LOAD
DWG, DWGS, DWG(S)	DRAWING, DRAWINGS, DRAWING(S)
DWLS	DOWELS
E	EAST
EA	EACH
EB	EASTBOUND
EF	EACH FACE
EJ, EXP JT	EXPANSION JOINT
EL, ELEV	ELEVATION
EMERG	EMERGENCY
ENGR	ENGINEER, ENGINEERING
EQ	EQUAL
EQUIP	EQUIPMENT
ESA	EAST SIDE ACCESS
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
F TO F	FACE TO FACE
FC	FACE OF CURB, ALLOWABLE CONCRETE COMPRESSIVE STRESS
f'c	28-DAY CONCRETE COMPRESSIVE STRENGTH
FDN	FOUNDATION
FF	FAR FACE
FIN	FINISHED, FINISH
FIX	FIXED
FL	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FREQ	FREQUENCY
FS	FAR SIDE
FT	FOOT, FEET
FTG	FOOTING
GA	GAGE, GAUGE
GAL	GALLONS
GALV	GALVANIZED
GCT	GRAND CENTRAL TERMINAL
GFRG	GLASS FIBER REINFORCED GYPSUM
GND	GROUND
GPM	GALLONS PER MINUTE
GR	GRADE
GRTG	GRATING
H, HT	HEIGHT
HDPE	HIGH DENSITY POLYETHYLENE
HEX	HEXAGONAL
HORIZ	HORIZONTAL
HS	HIGH STRENGTH
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWY	HIGHWAY
I	IMPACT LOAD
I/O	INPUT / OUTPUT MODULE
IB	IN BOUND
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH, INCHES
INFO	INFORMATION
INSUL	INSULATION, INSULATED
INV	INVERT
JT	JOINT
K	KIP
KF	KIP-FOOT
KLF	KIPS PER LINEAR FOOT
KO	KNOCK-OUT
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
L	LENGTH, STRUCTURAL SHAPE ANGLE
LB	POUND
LB/FT	POUNDS PER FOOT
LBF	POUNDS FORCE
LBP	LEAD BASED PAINT
LBS	POUNDS
LF	LINEAR FOOT
LG	LENGTH, LONG
LIC	LONG ISLAND CITY
LIN	LINEAR
LIRR	LONG ISLAND RAIL ROAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LONG	LONGITUDINAL
LSL	LONG-SLOTTED HOLES
LVL	LEVEL
MAINT	MAINTENANCE
MATL	MATERIAL, OR MATERIALS
MAX	MAXIMUM
ML1	MAINLINE TRACK 1
ML2	MAINLINE TRACK 2
ML3	MAINLINE TRACK 3
ML4	MAINLINE TRACK 4
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MPH	MILES PER HOUR
MPT	MAINTAINANCE AND PROTECTION OF TRAFFIC
MSL	MEAN SEA LEVEL
MTA	METROPOLITAN TRANSPORTATION AUTHORITY
MTL	METAL
M2P	EXISTING MAINLINE TRACK 2
M4P	EXISTING MAINLINE TRACK 4
N	NORTH
N/A	NOT APPLICABLE
NB	NORTH BOUND
NE	NORTH EAST
NEG	NEGATIVE
NEUT	NEUTRAL
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO., #	NUMBER
NOM	NOMINAL
NOS	NUMBERS
NS	NEAR SIDE
NTS	NOT TO SCALE
NYAR	NEW YORK AND ATLANTIC RAILWAY
NYC	NEW YORK CITY
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NYCT	NEW YORK CITY TRANSIT
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NW	NORTH WEST
OB	OUTBOUND
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
OR	OUTSIDE RADIUS
OVS	OVER SIZED HOLES
OX	CROSSOVER TRACK FROM LINE 4 TO LINE 2
OZ	OUNCES
P/C	PRECAST
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PCF	POUNDS PER CUBIC FOOT
PE	PRELIMINARY ENGINEERING, PROFESSIONAL ENGINEER
PGL	PROFILE GRADE LINE
PKG	PACKAGE
PLF	POUNDS PER LINEAR FOOT
PNL	PANEL
PP	PANEL POINT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAGE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PWR	POWER
QTY	QUANTITY
QUAD	QUADRANT
R	RADIUS
R/W, ROW	RIGHT OF WAY
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
REF	REFERENCE
REINF	REINFORCED, REINFORCEMENT
RELOC	RELOCATED
REQD	REQUIRED
REV	REVISED, REVISION
RH	RIGHT HAND
RM	ROOM
S	SOUTH
SA	SOUND ATTENUATOR
SB	SOUTH BOUND
SC	SLIP CRITICAL BOLTED CONNECTION
SCH, SCHED	SCHEDULE
SE	SOUTH EAST
SECT	SECTION
SERV	SERVICE
SF	SQUARE FOOT, SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SP, SPA	SPACES, SPACING, SPACED
SPEC	SPECIFICATION
SQ	SQUARE
SQ FT	SQUARE FOOT, SQUARE FEET
SQ IN	SQUARE INCH
SQHD	SQUARE HEAD
SS	STAINLESS STEEL
SSL	SHORT-SLOTTED HOLES
STA	STATION, STATIONING
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRINGER
STRUCT	STRUCTURAL, STRUCTURE
SUB	SUBSTATION
SUPP	SUPPORT
SWR	SEWER
SYM	SYMMETRICAL
SYS	SYSTEM
T&B	TOP & BOTTOM
T, TEL	TELEPHONE
T/	TOP OF
T/F	TOP OF FOOTING
T/FDN, TOF	TOP OF FOUNDATION
T/R, TOR	TOP OF RAIL
TBD	TO BE DETERMINED
TBM	TUNNEL BORING MACHINE
TEMP	TEMPERATURE, TEMPORARY
THK	THICK, THICKNESS
THRD	THREADED
TO	TURNOUT, TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CURB
TOS	TOP OF SLAB, TOP OF STEEL
TS	TUBE STEEL
TSF	TONS PER SQUARE FOOT
TUN	TUNNEL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	DESIGN VELOCITY
VAR	VARIABLE
VENT	VENTILATION
VERT	VERTICAL
VIF	VERIFY IN FIELD
VOL	VOLUME
W	WEST, WIDE, WIDTH, WIDE FLANGE STRUCTURAL SHAPE
W/	WITH
W/O	WITHOUT
WB	WESTBOUND
WP	WORK POINT, WATERPROOFING, WEATHER PROOF
WS	WATERSTOP
WSP	WELDED STEEL PIPE
WSSY	WESTSIDE STORAGE YARD
WT	STRUCTURAL SHAPE TEE, WEIGHT
WWD	DEFORMED WELDED WIRE FABRIC
WWF	WELDED WIRE FABRIC
X-ING	CROSSING
X-OVER	CROSSOVER
X-PASS	CROSS PASSAGE
XS	EXTRA STRONG
YD	YARD
YL	YARD LEAD
YR	YEAR

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DATE:	REVISIONS	No.

DESIGNED BY: J.L. RICE
DRAWN BY: M. CAPONE
CHECKED BY: M. DELLA POSTA
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License: STATE OF NEW YORK — JESUS SCHABIB — LICENSED PROFESSIONAL ENGINEER
DATE: 11/18/05

STRUCTURAL STANDARD

SYMBOLS AND ABBREVIATIONS

SCALE: NONE
DRAWING NUMBER: STD-SS-0001
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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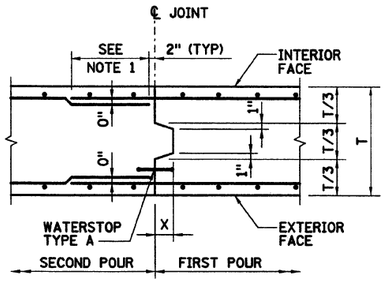
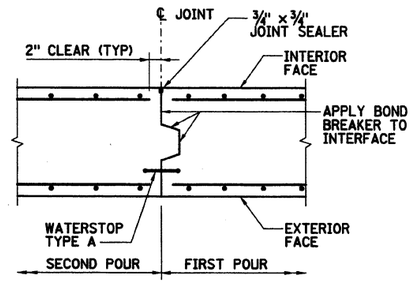
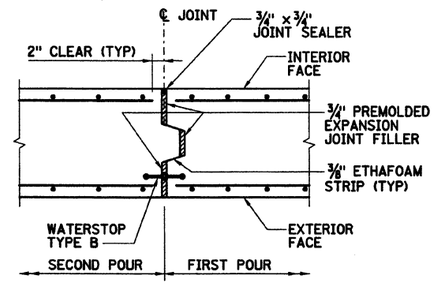


CONSTRUCTION JOINT



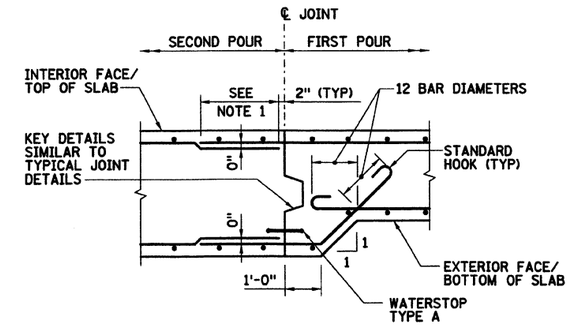
CONTRACTION JOINT



EXPANSION JOINT

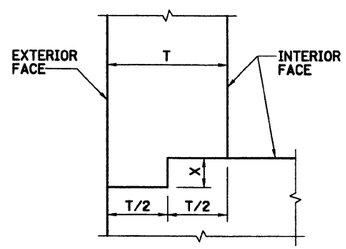
TYPICAL JOINT DETAILS FOR EXTERIOR SLABS AND WALLS

WATERPROOFING & PROTECTION, EXCAVATION SUPPORT, AND MUD SLABS NOT SHOWN

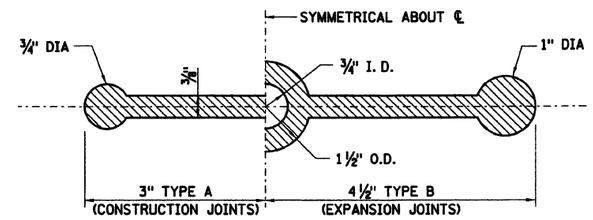


STEPPED CONSTRUCTION JOINT DETAILS FOR EXTERIOR SLABS AND WALLS

KEY DEPTH	
T	X
TO 4'-0"	3"
OVER 4'-0"	6"



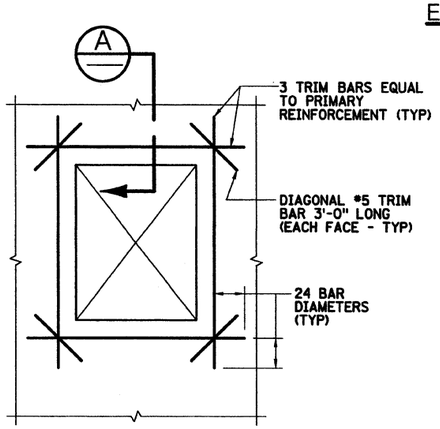
KEYWAY DETAIL FOR JOINTS BETWEEN EXTERIOR WALLS AND SLABS



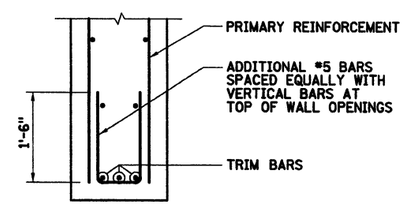
WATERSTOP DETAIL

NOTES:

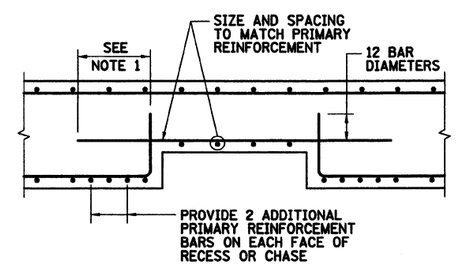
1. SEE BAR SPLICE AND EMBEDMENT DETAILS ON DRAWING STD-SS-1004.
2. ALL KEYS SHALL BEGIN AND END 1'-0" FROM EDGE OF SLAB OR WALL.
3. FOR WATERPROOFING DETAILS, SEE DRAWING STD-SS-0201.



TYPICAL SLAB OR WALL OPENING



SECTION A



REINFORCEMENT DETAILS AT RECESSES AND CHASES

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DATE:	REVISIONS	No.

DESIGNED BY: J. L. RICE
DRAWN BY: M. CAPONE
CHECKED BY: S. DIMITRAKIS
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL License OF NEW YORK
DATE: 05

STRUCTURAL STANDARD

CONCRETE DETAILS

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-SS-0101
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE: —
SHEET No. N/A

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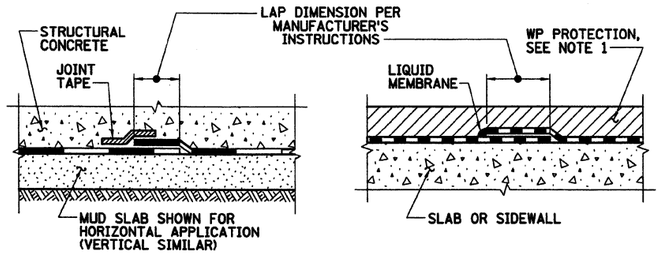
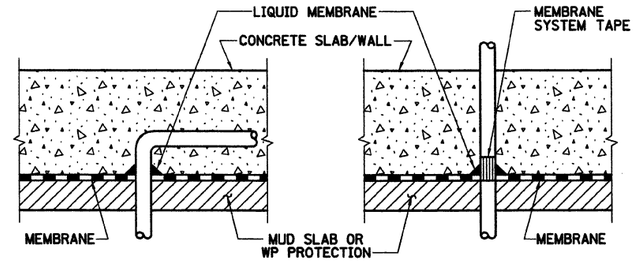


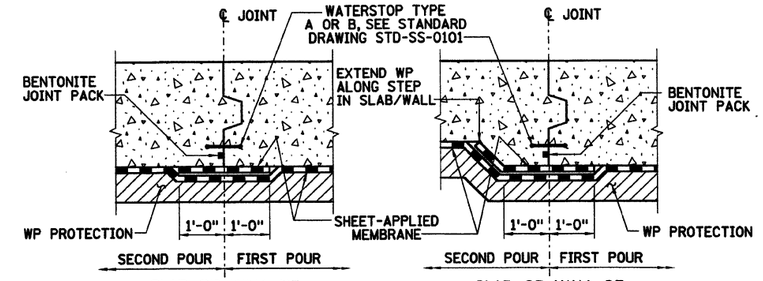
BLIND SIDE MEMBRANE — SHEET-APPLIED MEMBRANE

END LAP DETAILS



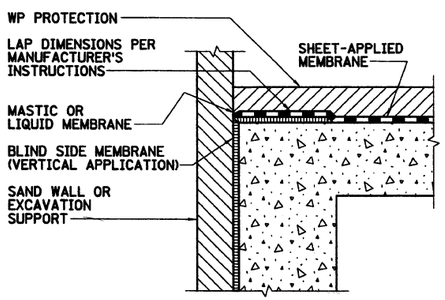
PARTIAL PENETRATION — THROUGH PENETRATION

SLAB AND SIDEWALL PENETRATIONS

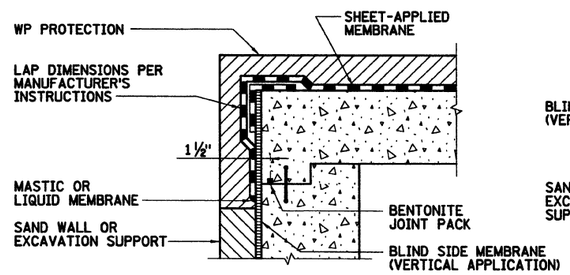


SLAB OR WALL OF EQUAL THICKNESS — SLAB OR WALL OF UNEQUAL THICKNESS

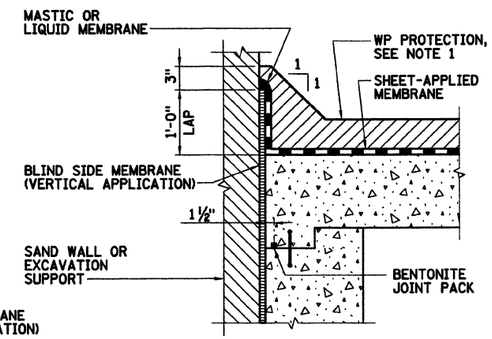
SHEET-APPLIED MEMBRANE LAP DETAILS AT CONCRETE JOINTS IN EXTERIOR SLABS AND WALLS



BLIND SIDE TO SHEET-APPLIED TRANSITION AT WALL CORNER



ROOF ABOVE EXCAVATION

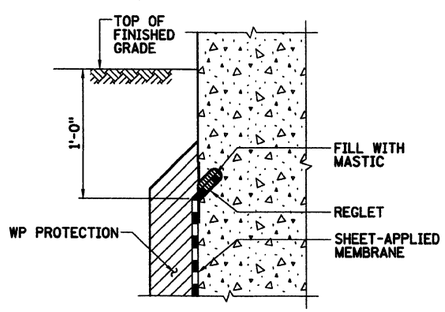


ROOF WITHIN EXCAVATION

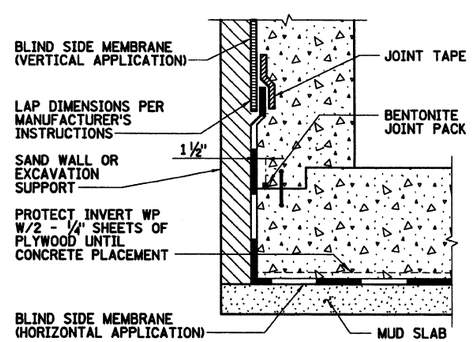
ROOF-SIDEWALL INTERFACE

NOTES:

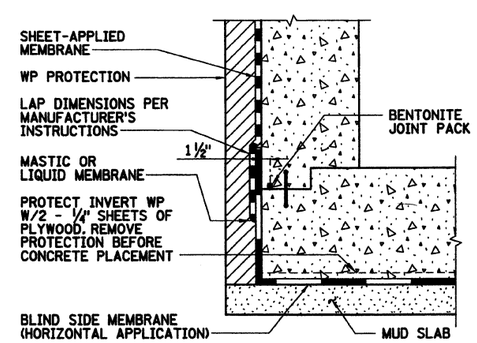
1. WATERPROOFING PROTECTION SHALL BE AS INDICATED ON THE CONTRACT STRUCTURAL DRAWINGS.
2. SEE STANDARD DRAWING STD-SS-0101 FOR TYPICAL WATERSTOP AND CONCRETE JOINT DETAILS.



SHEET-APPLIED MEMBRANE TERMINATION REGLET DETAIL



BLIND SIDE MEMBRANE



SHEET-APPLIED MEMBRANE

INVERT-SIDEWALL INTERFACE

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DATE:	REVISIONS	No.

DESIGNED BY: J.L. RICE
DRAWN BY: M. CAPONE
CHECKED BY: C.J. CICILEO
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI
NY PROFESSIONAL Licensed STATE OF NEW YORK JESUS SOTARIO LICENSED PROFESSIONAL ENGINEER
DATE: 11-14-05

STRUCTURAL STANDARD

WATERPROOFING DETAILS
STRUCTURES IN SOFT GROUND

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-SS-0201
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

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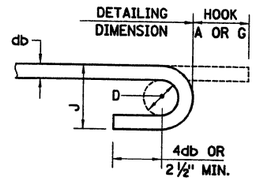
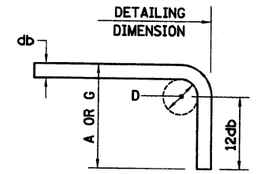
$REF6$
158

END HOOKS BENDS ALL GRADES D=FINISHED BEND DIAMETER				
		180° HOOKS		90° HOOKS
BAR SIZES	D	A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	1'-0"
#7	5 1/4"	10"	7"	1'-2"
#8	6"	11"	8"	1'-4"
#9	9 1/2"	1'-3"	11 3/4"	1'-7"
#10	10 3/4"	1'-5"	1'-1 1/4"	1'-10"
#11	12"	1'-7"	1'-2 3/4"	2'-0"



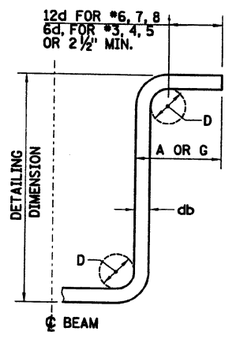
180°



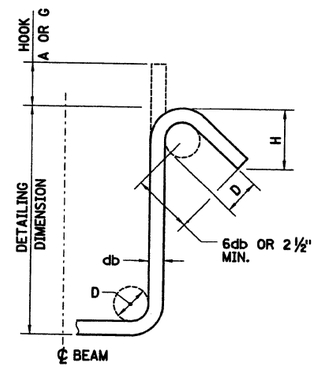
90°

END HOOKS

STIRRUPS (TIES SIMILAR) STIRRUP AND TIE HOOK DIMENSIONS GRADES 40-50-60 ksi				
BAR SIZES	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	H APPROX.
#3	1 1/2"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	1'-0"	7 3/4"	4 1/2"
#7	5 1/2"	1'-2"	9"	5 1/4"
#8	6"	1'-4"	10 1/4"	6"



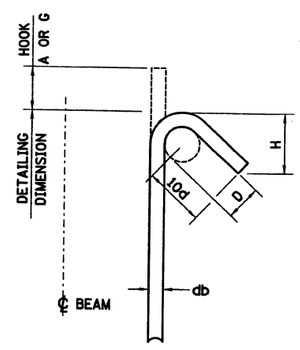
90°



135°

STIRRUP AND TIE HOOKS

135° SEISMIC STIRRUPS /TIE HOOK DIMENSIONS GRADES 40-50-60 ksi			
BAR SIZES	D (IN.)	135° HOOK	
		HOOK A OR G	H APPROX
#3	1 1/2"	5"	3 1/2"
#4	2"	6 1/2"	4 1/2"
#5	2 1/2"	8"	5 1/2"
#6	4 1/2"	10 3/4"	6 1/2"
#7	5 1/4"	1'-0 1/2"	7 3/4"
#8	6"	1'-2 1/4"	9"



SEISMIC STIRRUP /TIE HOOKS

REINFORCING STEEL TENSION DEVELOPMENT AND SPLICE LENGTHS ℓd= TENSION DEVELOPMENT LENGTH ℓs = TENSION LAP SPLICE LENGTH													
BAR SIZES	DEVELOPMENT AND LAP LENGTHS	CONCRETE COVER = 1.5 IN				CONCRETE COVER = 2 IN				CONCRETE COVER = 3 IN			
		UNCOATED		EPOXY COATED		UNCOATED		EPOXY COATED		UNCOATED		EPOXY COATED	
		TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER
# 3	ℓd	1'-0"	1'-0"	1'-2"	1'-0"	1'-0"	1'-0"	1'-2"	1'-0"	1'-0"	1'-0"	1'-2"	1'-0"
	ℓs	1'-4"	1'-4"	1'-6"	1'-4"	1'-4"	1'-4"	1'-6"	1'-4"	1'-4"	1'-4"	1'-6"	1'-4"
# 4	ℓd	1'-3"	1'-0"	1'-6"	1'-2"	1'-3"	1'-0"	1'-6"	1'-2"	1'-3"	1'-0"	1'-6"	1'-2"
	ℓs	1'-8"	1'-4"	2'-0"	1'-6"	1'-8"	1'-4"	2'-0"	1'-6"	1'-8"	1'-4"	2'-0"	1'-6"
# 5	ℓd	1'-7"	1'-3"	2'-1"	1'-10"	1'-7"	1'-3"	1'-11"	1'-6"	1'-7"	1'-3"	1'-11"	1'-6"
	ℓs	2'-1"	1'-7"	2'-8"	2'-4"	2'-1"	1'-7"	2'-5"	1'-11"	2'-1"	1'-7"	2'-5"	1'-11"
# 6	ℓd	1'-11"	1'-6"	2'-6"	2'-2"	1'-11"	1'-6"	2'-6"	2'-2"	1'-11"	1'-6"	2'-3"	1'-9"
	ℓs	2'-5"	1'-11"	3'-2"	2'-10"	2'-5"	1'-11"	3'-2"	2'-10"	2'-5"	1'-11"	2'-11"	2'-3"
# 7	ℓd	3'-1"	2'-5"	4'-0"	3'-7"	2'-9"	2'-1"	3'-7"	3'-2"	2'-9"	2'-1"	3'-7"	3'-2"
	ℓs	4'-0"	3'-1"	5'-3"	4'-7"	3'-7"	2'-9"	4'-8"	4'-1"	3'-7"	2'-9"	4'-8"	4'-1"
# 8	ℓd	3'-11"	3'-0"	5'-1"	4'-6"	3'-1"	2'-5"	4'-1"	3'-7"	3'-1"	2'-5"	4'-1"	3'-7"
	ℓs	5'-1"	3'-11"	6'-7"	5'-10"	4'-1"	3'-1"	5'-3"	4'-8"	4'-1"	3'-1"	5'-3"	4'-8"
# 9	ℓd	4'-10"	3'-8"	6'-3"	5'-6"	3'-10"	3'-0"	5'-1"	4'-5"	3'-6"	2'-9"	4'-7"	4'-1"
	ℓs	6'-3"	4'-10"	8'-1"	7'-2"	5'-0"	3'-10"	6'-7"	5'-9"	4'-7"	3'-6"	5'-11"	5'-3"
# 10	ℓd	5'-10"	4'-6"	7'-8"	6'-9"	4'-9"	3'-8"	6'-3"	5'-6"	4'-2"	3'-3"	5'-6"	4'-10"
	ℓs	7'-7"	5'-10"	9'-11"	8'-9"	6'-2"	4'-9"	8'-1"	7'-1"	5'-5"	4'-2"	7'-1"	6'-3"
# 11	ℓd	7'-0"	5'-5"	9'-2"	8'-1"	5'-8"	4'-5"	7'-5"	6'-7"	5'-2"	4'-0"	6'-9"	5'-11"
	ℓs	9'-1"	7'-0"	11'-10"	10'-6"	7'-5"	5'-8"	9'-8"	8'-6"	6'-8"	5'-2"	8'-9"	7'-8"

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT, 4000 PSI CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318-99.
3. THE TABULATED VALUES ARE FOR BARS SPACED AT 6" OR GREATER. FOR SMALLER BAR SPACING THE LENGTHS SHALL BE CALCULATED PER ACI-318 99.
4. FOR 3" CONCRETE COVER THE TABULATED VALUES FOR #7 TO #11 BARS ARE FOR 6" SPACING ONLY. FOR OTHER BAR SPACING, THESE LENGTHS SHALL BE CALCULATED AS PER ACI 318-99.
5. DEVELOPMENT AND SPLICE LENGTH FOR REINFORCING STEEL IN COMPRESSION SHALL BE PER ACI 319-99

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$REF43
$REF53
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$REF73

160

Metropolitan Transportation Authority
Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.

DESIGNED BY: S. DIMITRAKIS
DRAWN BY: M. CAPONE
CHECKED BY: G. AYVAS
COORDINATED BY: J. SCHABIB
APPROVED BY: M. HEDAYATI

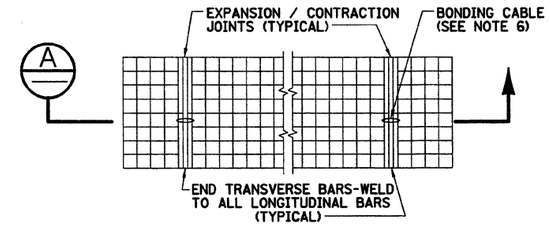
NY PROFESSIONAL ENGINEER License No. STATE OF NEW YORK JOSUE SCHABIB 044444 LICENSED PROFESSIONAL ENGINEER
DATE: 11/14/05

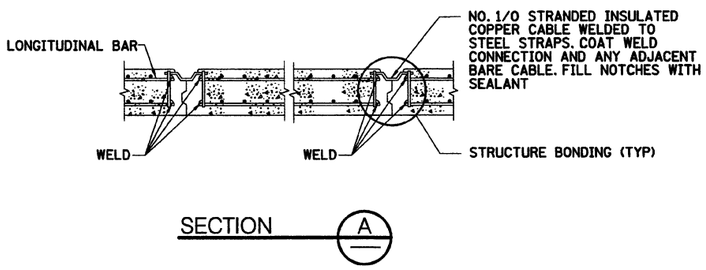
STRUCTURAL STANDARD

TYPICAL BAR BENDS AND SPLICES

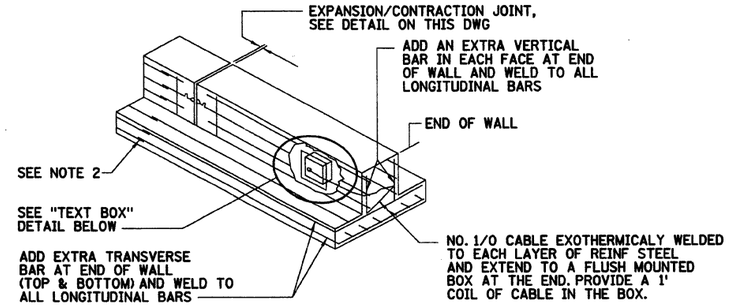
SCALE: NONE
DRAWING NUMBER: STD-SS-1004
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE ——
SHEET No. N/A

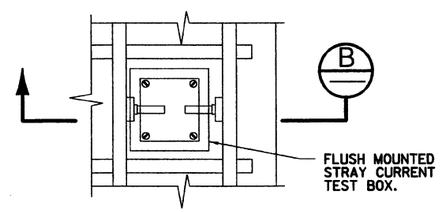




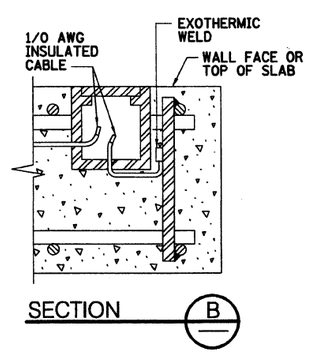
TYPICAL BONDING OF REINFORCING BARS AT EXPANSION /CONTRACTION JOINTS PLAN



RETAINING WALL, WINGWALL, ABUTMENT BONDING METHOD

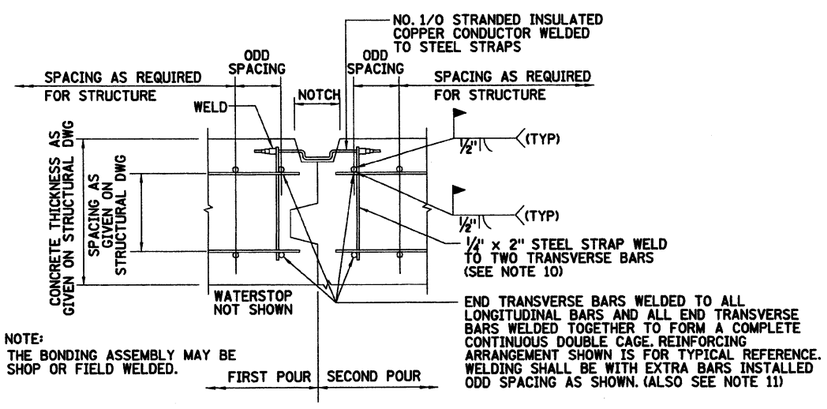


TEST BOX



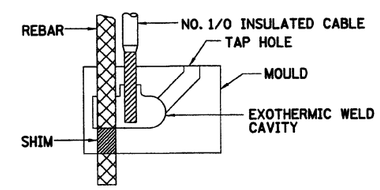
NOTES:

1. UNLESS NOTED OTHERWISE ON THE CONTRACT DRAWINGS REINFORCING IN RETAINING WALLS, WINGWALLS AND ABUTMENTS SHALL BE BONDED IN THE MANNER SHOWN ON THIS DRAWING. ALL CONTIGUOUS COMPONENTS SHALL BE BONDED TOGETHER, EITHER BY DIRECT WELDING OF LAPPED REINFORCING OR AT EXPANSION/ CONTRACTION JOINTS.
2. ALL LONGITUDINAL REINFORCING BARS MUST BE FULLY BONDED. TRANSVERSE BARS ARE TO BE BONDED AT THE JOINTS TO ELECTRICALLY TIE LONGITUDINAL BARS TOGETHER.
3. AT ENDS OF EACH RUN AT 200' SPACING OF WALL, A NO. 1/0 CABLE IS TO BE WELDED TO THE REINFORCING STEEL AND EXTENDED TO A FLUSH MOUNTED BOX ON THE WALL END. INSTALL FLUSH MOUNTED BOX 1' TO 4' ABOVE FINISHED GRADE.
4. ALL WELDING AND EXTRA STEEL FOR BONDING SHALL BE SHOWN ON THE REINFORCING SHOP DRAWINGS.
5. THERMIT WELDS OF CABLES TO REBAR SHALL BE PAINTED WITH COAL TAR COATING.
6. BONDS SHALL BE LOCATED AT THE EXPANSION/CONTRACTION JOINT AT EACH END OF A STRUCTURAL UNIT.
7. BOND LOCATIONS SHOWN ARE APPROXIMATE. ADJUST AS REQUIRED TO AVOID ELECTRICAL CONDUITS, ETC.
8. BOND CABLE AND STEEL STRAP SHALL BE INSTALLED AT LAST TRANSVERSE BAR AT ENDS OF CONTRACTURAL SECTIONS FOR FUTURE ELECTRICAL CONTINUATION, OR IF ADJACENT MAT IS TO BE COMPLETED AT A LATER DATE.
9. COPPER BOND CABLES SHALL BE INSULATED.
10. STRAP SHALL BE OF SUFFICIENT LENGTH TO FACILITATE WELDING TO TOP AND BOTTOM OF REBAR CAGE.
11. ALL OVERLAPS IN LONGITUDINAL REINFORCING BARS SHALL BE WELDED FOR ELECTRICAL CONTINUITY INCLUDING CONSTRUCTION JOINTS.
12. ALL BOND CABLE CONNECTIONS SHALL BE EXOTHERMICALLY WELDED.

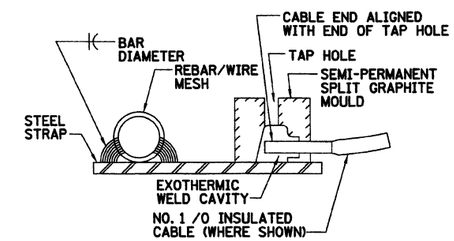


NOTE:
THE BONDING ASSEMBLY MAY BE SHOP OR FIELD WELDED.

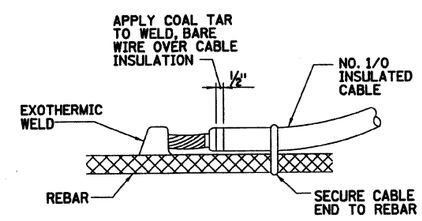
TYPICAL STRUCTURE BONDING



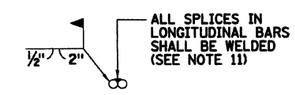
CABLE TO VERTICAL REINFORCING



STEEL STRAP TO REINFORCING



CABLE TO HORIZONTAL REINFORCING DETAIL BONDING OF CABLE TO REINFORCING BAR



LONGITUDINAL REBAR SPLICE WELD

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DATE:	REVISIONS	No.

DESIGNED BY: M. BERMAN
DRAWN BY: J. RICCARDI
CHECKED BY: H. ZWILLING
COORDINATED BY: H. ZWILLING
APPROVED BY: M. HEDAYATI
NY PROFESSIONAL Licensed Not S. Zwilling
DATE: 12/13/05

CORROSION CONTROL STANDARD

STRUCTURAL BONDING DETAILS
SHEET 1

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-CC-0007
DATE: 11-14-05
REVISION NUMBER: 0
STANDARD DRAWING
ISSUE: —
SHEET No. N/A

37

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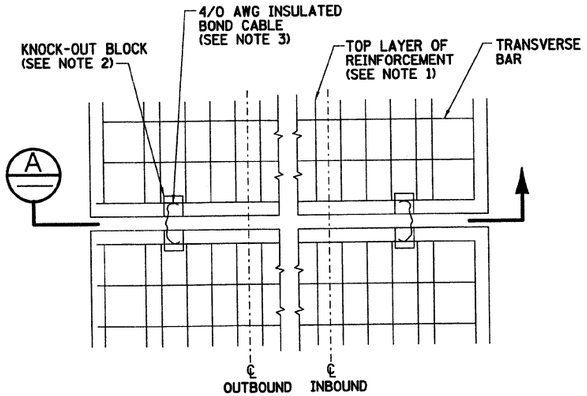
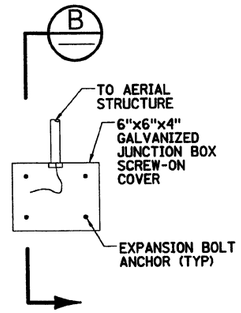
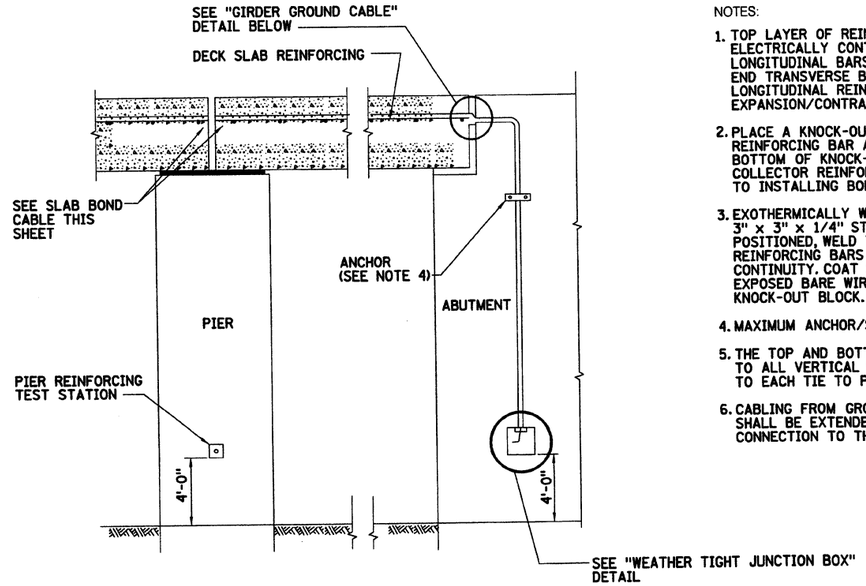


SLAB BOND CABLE PLAN



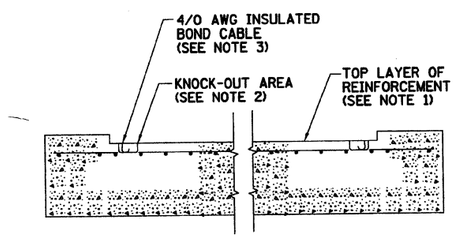
WEATHER TIGHT JUNCTION BOX



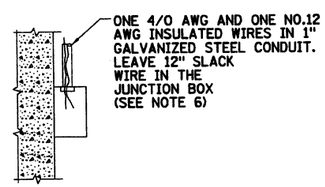
TYPICAL AERIAL STRUCTURE BONDING AND GROUNDING ELEVATION

NOTES:

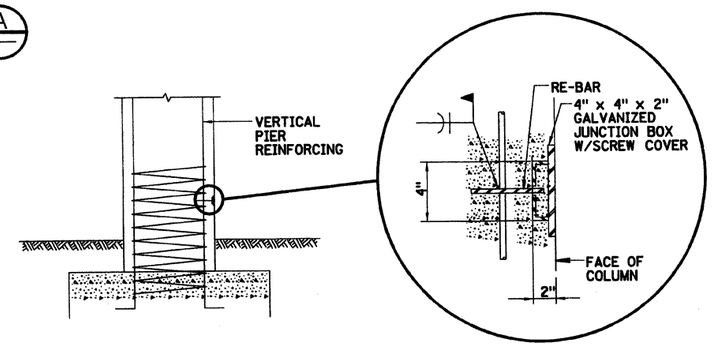
1. TOP LAYER OF REINFORCEMENT IN THE SLAB SHALL BE MADE ELECTRICALLY CONTINUOUS BY WELDING OVERLAPS IN LONGITUDINAL BARS INCLUDING AT CONSTRUCTION JOINTS. END TRANSVERSE BARS SHALL BE WELDED TO THE LONGITUDINAL REINFORCEMENT AT STRUCTURAL ENDS AND EXPANSION/CONTRACTION JOINTS.
2. PLACE A KNOCK-OUT BLOCK OVER THE END TRANSVERSE REINFORCING BAR AS SHOWN PRIOR TO POURING CONCRETE. BOTTOM OF KNOCK-OUT SHALL BE ADJACENT TO BOTTOM OF COLLECTOR REINFORCING BARS. REMOVE KNOCK-OUT PRIOR TO INSTALLING BOND CABLE.
3. EXOTHERMICALLY WELD 4/0 AWG INSULATED BOND CABLE TO A 3" x 3" x 1/4" STEEL COUPON. AFTER GIRDERS HAVE BEEN POSITIONED, WELD THE COUPON TO EXPOSED END TRANSVERSE REINFORCING BARS AS SHOWN IN ORDER TO ACHIEVE ELECTRICAL CONTINUITY. COAT STEEL COUPON, EXOTHERMIC WELD AND ANY EXPOSED BARE WIRE WITH COAL TAR EPOXY. SET CABLE IN KNOCK-OUT BLOCK.
4. MAXIMUM ANCHOR/STRAP SPACING SHALL BE 3 FEET.
5. THE TOP AND BOTTOM REINFORCING TIE SHALL BE FIELD WELDED TO ALL VERTICAL BARS AND ONE VERTICAL BAR SHALL BE WELDED TO EACH TIE TO PROVIDE ELECTRICAL CONTINUITY.
6. CABLING FROM GROUND RODS (SHOWN ON GROUNDING DRAWINGS) SHALL BE EXTENDED INTO THIS BOX FOR POSSIBLE FUTURE CONNECTION TO THE DECK SLAB CABLES.



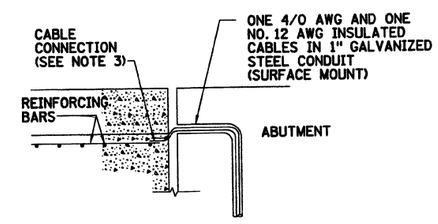
SECTION A



SECTION B



ELEVATION
PIER REINFORCING TEST STATION (TYPICAL)



GIRDER GROUND CABLE DETAIL

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Capital Construction

Long Island Rail Road
East Side Access

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DATE:	REVISIONS	No.

DESIGNED BY: M. BERMAN
DRAWN BY: J. RICCARDI
CHECKED BY: H. ZWILLING
COORDINATED BY: H. ZWILLING
APPROVED BY: M. HEDAYATI

NY PROFESSIONAL ENGINEER License No. 065 HOWARD ZWILLING
DATE: 12/15/05

CORROSION CONTROL STANDARD

STRUCTURAL BONDING DETAILS
SHEET 2

SCALE: NOT TO SCALE
DRAWING NUMBER: STD-CC-0008
DATE: 11-14-05
REVISION NUMBER: 0

STANDARD DRAWING
ISSUE —
SHEET No. N/A

38

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GENERAL UTILITY NOTES

1. FOR ALL UTILITIES, DRAWINGS AND CALCULATIONS FOR TEMPORARY SUPPORTS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK, AND SHALL BE SUBMITTED TO THE RESIDENT ENGINEER FOR REVIEW.
2. CONTRACTOR SHALL SUBMIT DETAILED SHOP AND/OR WORKING DRAWINGS FOR ALL UTILITY WORK.
3. THE LOCATION OF PROPOSED UTILITIES IS APPROXIMATE AND MAY BE CHANGED TO SUIT FIELD CONDITIONS SUBJECT TO THE DIRECTION OF THE RESIDENT ENGINEER.
4. ABANDONED UTILITY PIPES ARE TO BE PLUGGED AND CUT DOWN TWO (2) FEET BELOW SUBGRADE AND FILLED WITH CLEAN COMPACTED SAND OR LEAN CONCRETE. OPEN ENDS SHALL BE PLUGGED WITH CONCRETE FOR THE FULL CROSS-SECTIONAL AREA OF PIPE. THICKNESS OF CONCRETE FILL SHALL BE ONE-HALF THE NOMINAL DIAMETER OF THE PIPE, BUT NOT LESS THAN 8 INCHES, UNLESS NOTED OTHERWISE.
5. AT UTILITY STREET TRENCH LOCATIONS WHERE THE TRENCH WORK SITE MUST BE OPENED TO TRAFFIC, THE OPENING IN THE STREET SHALL BE COVERED WITH DECKING, OR IF THE OPEN TRENCH WIDTH IS LESS THAN 5'-0", AN APPROVED STEEL PLATE, WITH A MINIMUM 1 INCH THICKNESS. ENDS OF PLATES SHALL BE SPIKED OR OTHERWISE FASTENED TO PREVENT SLIPPING. SPIKE HEADS SHALL BE FLUSH WITH STEEL TO PREVENT PUNCTURING VEHICLE TIRES.

STEAM

1. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT AND PERFORM ALL OPERATIONS NECESSARY FOR EXCAVATION AND BACKFILLING OF TRENCHES AND OPENINGS FOR STEAM PIPES AS INDICATED. ALL OTHER STEAM WORK WILL BE DONE BY THE CONSOLIDATED EDISON COMPANY OF NEW YORK CON EDISON.
2. THE CONTRACTOR SHALL COORDINATE THROUGH RESIDENT ENGINEER THE WORK PERFORMED BY THE CONTRACTOR AND THE WORK PERFORMED BY CON EDISON.

ELECTRIC

1. THE CONTRACTOR SHALL COORDINATE THE ELECTRIC WORK TO BE PERFORMED BY THE CONTRACTOR WITH CON EDISON.

GAS

1. THE CONTRACTOR SHALL COORDINATE THE GAS WORK TO BE PERFORMED BY THE CONTRACTOR WITH CON EDISON.

TELEPHONE

1. THE CONTRACTOR SHALL COORDINATE THE COMMUNICATIONS WORK TO BE PERFORMED BY THE CONTRACTOR WITH VERIZON AND EMPIRE CITY SUBWAY.

SEWER

1. ALL PROPOSED DRAINAGE WORK SHALL BE DONE IN CONFORMANCE WITH THE LATEST STANDARDS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (NYCDEP)
2. ALL EXISTING SEWER MANHOLES TO BE RETAINED WITHIN THE CONTRACT LIMITS SHALL BE ADJUSTED AS NECESSARY, SO THAT THEY WILL BE FLUSH WITH THE FINISHED GRADES AFTER COMPLETION OF THE WORK. ANY OF THESE MANHOLES WHICH HAVE BEEN DAMAGED, WORN, OR HAVE NON-STANDARD FRAMES AND COVERS SHALL BE PROVIDED WITH NEW 27" CASTINGS IN ACCORDANCE WITH THE LATEST STANDARDS OF NYCDEP, INCLUDING ANY NECESSARY MODIFICATIONS OF THE MANHOLE MASONRY. ANY DAMAGE TO THE MANHOLES CAUSED BY THIS WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AS DIRECTED BY THE RESIDENT ENGINEER, AND AT NO COST TO THE MTA.
3. CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING SEWER DURING CONSTRUCTION. ANY DAMAGE CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED BY THE CONTRACTOR AS DIRECTED BY THE RESIDENT ENGINEER.
4. WHERE THE HEIGHT OF AN EXISTING MANHOLE PERMITS MORE THAN ONE BASIN CONNECTION TO BE MADE ON THE SAME WALL, SPECIAL PRECAUTIONS SHALL BE TAKEN TO PROTECT THE STRUCTURAL INTEGRITY OF THE MANHOLE. THE MINIMUM CLEARANCE BETWEEN THE OUTSIDE WALLS OF ANY TWO BASIN CONNECTIONS OR BETWEEN A BASIN CONNECTION AND A SEWER, VERTICALLY OR HORIZONTALLY, SHALL BE 12 INCHES.
5. THE COST OF RAISING OR LOWERING CITY OWNED MANHOLES, BASINS, AND INLET HEADS TO PROPOSED GRADES WILL BE DEEMED INCLUDED IN THE PRICES BID FOR ALL THE SCHEDULED ITEMS WHEN THE VERTICAL UPWARD MOVEMENT OF ALL HEADS IS TWENTY FOUR (24) INCHES OR LESS, WHEN THE VERTICAL DOWNWARD MOVEMENT OF MANHOLE HEADS IS SIX (6) INCHES OR LESS AND WHEN THE VERTICAL DOWNWARD MOVEMENT OF BASIN OR INLET HEADS IS THREE (3) INCHES OR LESS, UNLESS OTHERWISE PROVIDED OR DIRECTED, AND WHERE THE ADJUSTMENT IS WITHIN THE BRICK WORK LIMIT. WHEN THE EXISTING STRUCTURE CONSISTS OF A BRICK CHIMNEY OR CONCRETE ROOF SLAB OR BRICK ON CONCRETE WALLS, THE MAXIMUM ALLOWABLE HEIGHT OF BRICK AFTER ADJUSTMENT SHALL BE TWENTY FOUR (24) INCHES. ALL OTHER ADJUSTMENTS WILL BE PAID FOR UNDER THE APPROPRIATE MANHOLE, BASIN, OR INLET MODIFICATION ITEMS.
6. ALL EXISTING INLETS, BASINS, AND CONNECTIONS WITHIN THE LIMITS OF THIS CONTRACT AND CONTIGUOUS THERETO ARE TO BE CLEANED, FLUSHED, AND OTHERWISE MADE OPERABLE TO THE SATISFACTION OF THE RESIDENT ENGINEER. WHERE THE EXISTING BASIN CONNECTIONS ARE FOUND TO BE DAMAGED OR IN DETERIORATING CONDITION, THEY SHALL BE REPLACED WITH NEW 12" DUCTILE IRON PIPE, CLASS 56, IN ACCORDANCE WITH THE LATEST NYCDEP STANDARDS. DAMAGED AND NON-STANDARD CASTINGS SHALL BE REPLACED WITH NEW STANDARD CASTINGS. EXISTING NON-STANDARD BASINS AT LOCATIONS WHERE BASINS ARE REQUIRED SHALL BE REPLACED WITH NEW STANDARD BASINS. THE COST IS TO BE INCLUDED IN THE RESPECTIVE ITEMS.
7. ALL ABANDONED BASINS, INLETS, AND DRAINAGE STRUCTURES AS SHOWN ON THE CONTRACT PLANS ARE TO BE BULKHEADED AND CUT DOWN TO TWO (2) FEET BELOW THE SUBGRADE AND FILLED WITH COMPACTED CLEAN SAND. BASIN CONNECTIONS NOT REQUIRED SHALL BE PLUGGED AT BOTH ENDS. COST FOR THIS WORK SHALL BE DEEMED INCLUDED IN PRICES BID FOR ALL SCHEDULED ITEMS.
8. CATCH BASINS SHALL NOT, UNDER ANY CIRCUMSTANCES, BE CONNECTED TO SANITARY SEWERS.
9. ALL NEW CATCH BASIN CONNECTIONS SHALL BE CONNECTED TO EXISTING SEWERS AT MANHOLES, WITH 12" DUCTILE IRON PIPE, CLASS 56, WITH INTERNALLY LOCKED "PUSH-ON" JOINTS LAID ON 6" OF BROKEN STONE FOR THE ENTIRE WIDTH OF THE TRENCH AND FOR ONE-HALF THE PIPE DIAMETER. THE BROKEN STONE SHALL BE HARD UNWEATHERED STONE UNIFORMLY GRADED FROM 1/4" TO 3/4". IT SHALL CONFORM TO COMMERCIAL 1/4" TO 3/4" STONE. ALL NEW CATCH BASINS SHALL HAVE A HOOD ON THE OUTSETTING PIPE.
10. SLOPE ON ALL NEW CATCH BASIN CONNECTIONS SHALL BE A MINIMUM OF 1/2 PERCENT AND A MAXIMUM OF 4 PERCENT PROVIDED THE TOTAL DROP BETWEEN THE BASIN AND THE BASIN MANHOLE IS AT LEAST 6 INCHES.
11. CATCH BASINS SHALL NOT BE LOCATED WITHIN PEDESTRIAN CROSSWALK LIMITS. CATCH BASINS NEAR BUS STOP PADS SHALL BE LOCATED ENTIRELY WITHIN OR OUTSIDE OF BUS STOP PADS.
12. CATCH BASINS IN THE PROJECT AREA SHALL BE MAINTAINED OPERABLE AT ALL TIMES. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO AVOID FILLING THE CATCH BASIN WITH DEBRIS WITHIN THE CONTRACT LIMITS DURING THE CONTRACT OPERATIONS. IF, AS A RESULT OF CONSTRUCTION, A FLOODING CONDITION OCCURS OR IF THE CONTRACTOR'S OPERATIONS DAMAGE OR BLOCK THE DRAINAGE SYSTEM, THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR RESTORE THE DRAINAGE SYSTEM AS DIRECTED BY THE RESIDENT ENGINEER AT NO COST TO THE MTA.
13. ALL CASTINGS AND HARDWARE FROM THE EXISTING MANHOLES AND BASINS WHENEVER FOUND TO BE IN GOOD CONDITION, UPON EXAMINATION BY THE RESIDENT ENGINEER, SHALL REMAIN THE PROPERTY OF THE CITY AND SHALL BE DELIVERED BY THE CONTRACTOR TO A DESIGNATED CITY OF NEW YORK OWNED YARD.
14. CONTRACTOR SHALL PROVIDE TEMPORARY MEANS (PIPES, PUMPS, ETC) TO DRAIN ANY STORM WATER WHICH MAY COLLECT WITHIN THE PROJECT LIMITS FOR THE DURATION OF CONSTRUCTION. CONTRACTOR SHALL SUBMIT A DRAINAGE SCHEME WHICH SHALL BE SUBMITTED TO THE RESIDENT ENGINEER FOR REVIEW, PRIOR TO THE START OF EACH CONSTRUCTION STAGE. COST OF THIS WORK WILL BE DEEMED TO HAVE BEEN INCLUDED IN THE BID PRICE FOR ALL SCHEDULED ITEMS.
15. ALL EXISTING SEWERS AND SEWER HOUSE CONNECTIONS SHALL BE CONTINUOUSLY MAINTAINED DURING CONSTRUCTION. IF ANY SEWER OR SEWER HOUSE CONNECTION IS TO BE DISCONNECTED FOR CONSTRUCTION PURPOSES, FLOW SHALL BE MAINTAINED BY FLUMING OR OTHER SUITABLE MEANS AS DIRECTED BY THE RESIDENT ENGINEER AND IN SUCH A MANNER THAT NO BACK-UPS OCCUR. EXISTING SEWERS, HOUSE CONNECTIONS, OR OTHER SEWER APPURTENANCES WHICH ARE TO REMAIN, AND WHICH MIGHT BE DISTURBED FOR CONSTRUCTION PURPOSES, SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AFTER COMPLETION OF WORK, AND DAMAGE DONE AS A RESULT OF THE WORK SHALL BE REPAIRED AT NO COST TO THE MTA.
16. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL DETERMINE BY TEST PITS, TELEVISION INSPECTION, OR ANY OTHER MEANS NECESSARY, FOR EACH AND EVERY HOUSE WITHIN THE LIMITS OF THE PROPOSED CONSTRUCTION, THE LOCATION AND ELEVATION OF THE HOUSE TRAPS, HOUSE CONNECTION, ETC, AND THE LOCATION OF THE EXISTING SEWER TO WHICH THEY ARE CONNECTED. BASED ON THE FINDINGS, THE CONTRACTOR SHALL INFORM THE RESIDENT ENGINEER IN WRITING OF ANY ANTICIPATED DIFFICULTIES THAT MAY BE ENCOUNTERED IN RECONNECTING THESE EXISTING HOUSE CONNECTIONS TO THE PROPOSED AND EXISTING SEWER AND THE PROPOSED REMEDIAL ACTION.

WATER

1. ALL WATER MAIN WORK AND MATERIALS SHALL CONFORM TO THE LATEST STANDARDS, SPECIFICATIONS, AND REQUIREMENTS OF THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION (NYCDEP). ALL MATERIAL SHALL BE IN ACCORDANCE WITH NYCDEP SPECIFICATIONS.
2. THE CONTRACTOR SHALL SUBMIT DETAILS AND/OR SHOP DRAWINGS TO THE BUREAU OF WATER AND SEWER OPERATIONS FOR APPROVAL AND TO RESIDENT ENGINEER FOR REVIEW ONE MONTH PRIOR TO START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL MAINTAIN ACCESS FROM THE STREET TO ALL WATER SUPPLY VALVES THROUGH THE CONSTRUCTION AREA.
4. THE DUCTILE IRON PIPE SHALL COMPLY WITH BWS SPECIFICATIONS FOR DUCTILE IRON PIPE WITH PUSH ON JOINTS AND GRAY-IRON AND DUCTILE IRON FITTINGS WITH MECHANICAL JOINTS, THE LATEST REVISION.
5. ALL FITTINGS SUPPLIED BY THE CONTRACTOR SHALL BE MECHANICAL JOINT OR RESTRAINED JOINT FITTINGS, AS SPECIFIED.
6. BELL-JOINT CLAMPS SHALL BE FURNISHED AND INSTALLED ON LEADED JOINTS, AS DIRECTED BY THE RESIDENT ENGINEER.
7. ALL NEW DUCTILE IRON PIPE WATER MAINS SIZED 12" DIA. OR LESS SHALL BE CEMENT-LINED CLASS 56 WITH RESTRAINED JOINTS. RESTRAINED JOINTS SUCH AS "FIELD-LOK", "TR FLEX" INCLUDING "GRIPPER RINGS" SHALL BE AS MANUFACTURED BY US PIPE CO., BIRMINGHAM, ALABAMA OR APPROVED EQUAL. EXISTING WATER MAINS SHALL BE REPLACED WITH "FIELD-LOK" GASKETS OR APPROVED EQUAL.
8. THE DUCTILE IRON SHALL BE GRADE 60-42-10 AND COMPLY WITH THE FOLLOWING CLASS REQUIREMENTS:

DIAMETER (INCHES)	CLASS
6,8,12	56
16,20,24	54
30,36,48	53

9. THE LENGTH OF EXISTING WATER MAIN TO BE REPLACED SHALL BE THAT INCLUDED BETWEEN POINTS LOCATED FIVE FEET BEYOND THE INFLUENCE LINES ON EITHER SIDE OF THE EXCAVATION LIMITS. THE INFLUENCE LINES SHALL BE CONSIDERED TO BE THE INTERSECTION OF THE WATER MAIN WITH DIAGONAL LINES DRAWN AT A 45 DEGREE ANGLE FROM VERTICAL, STARTING AT THE BOTTOM OF THE EXCAVATION AND AT THE OUTSIDE SHEETING LINE. SHEETING LINE TO BE DETERMINED FROM STRUCTURAL DRAWINGS AND OTHER PERTINENT INFORMATION.
10. WATER MAIN WORK SHALL BE EXTENDED UP TO THE NEXT EXISTING PIPE JOINT. REPLACEMENT OF EXISTING CAST IRON MAINS SHALL BE WITHIN THE NET LINES OF CONSTRUCTION, INCLUDING THE EXTENSION OF SUCH PIPE CROSSING THE PROPOSED STRUCTURE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION PLUS FIVE FEET AT EACH END.
11. ALL CONNECTIONS TO EXISTING WATER PIPE SHALL BE PROVIDED WITH RESTRAINED JOINTS BY FIELD INSTALLATION OF RETAINER GLANDS AND RODDING BANDS WITH BOLTS AND SET-SCREWS, AS APPLICABLE.
12. ALL WATER MAINS AND HOUSE SERVICES AFFECTED BY THE CONSTRUCTION SHALL BE PROTECTED AGAINST FREEZING. ALL SERVICES SHALL BE MAINTAINED OR RESTORED WITH SERVICE PERPENDICULAR TO THE DISTRIBUTION MAIN DURING CONSTRUCTION. SUFFICIENT HYDRANTS SHALL BE KEPT IN SERVICE DURING CONSTRUCTION TO SATISFY THE FIRE DEPARTMENT REQUIREMENTS.
13. EXISTING WATER MAINS, VALVES, HYDRANT BRANCHES, AND BUILDING SERVICES SHALL BE REPLACED WITHIN THE EXCAVATION LIMITS AS DEFINED BY THE INFLUENCE LINES. THE EXACT LOCATION AT WHICH THE PIPE, VALVES, HYDRANTS, AND OTHER APPURTENANCES SHALL BE SET, WILL BE DETERMINED BY THE ENGINEER AS THE WORK PROGRESSES.
14. EXISTING BUILDING SERVICES SHALL BE RECONNECTED TO THE NEW MAIN AS DIRECTED BY THE RESIDENT ENGINEER UTILIZING NEW TAPS AND TAIL PIECES, NEW GOOSE NECKS AND NEW EXTENSION PIPING AS REQUIRED.
15. ALL NEW WATER MAINS, BUILDING SERVICES, AND HYDRANT BRANCHES TO REMAIN IN PLACE DURING CONSTRUCTION SHALL BE ADEQUATELY SUPPORTED AND PROTECTED AS APPROVED BY THE BUREAU OF WATER AND SEWER OPERATIONS.
16. ALL EXCAVATION SHALL BE DONE BY HAND WITHIN ONE FOOT OF EXISTING HOUSE CONNECTION DRAINS AND OTHER UTILITIES.
17. OPEN ENDS OF ALL ABANDONED WATER MAINS SHALL BE PLUGGED WITH CONCRETE FOR A MINIMUM LENGTH OF THREE FEET.
18. THE LOCATIONS OF EXISTING HYDRANTS TO BE REMOVED AND NEW HYDRANTS TO BE INSTALLED WHICH ARE NOT SHOWN ON THE DRAWINGS ARE TO BE AS DIRECTED BY THE RESIDENT ENGINEER.
19. THE INSTALLATION OF WATER MAIN SHALL CONFORM TO APPLICABLE METHOD, AND STANDARDS AS SHOWN ON THE FOLLOWING NYCDEP BUREAU OF WATER AND SEWER OPERATIONS DRAWINGS:
   A) NO. 45700-W TITLED "STANDARD SUPPORTS FOR WATER MAINS INSTALLED NEAR/AT SUBWAY STRUCTURES AND/OR IN EXTREMELY YIELDING SOIL. WHEN THE NEW DUCTILE IRON WATER MAIN CROSSES OVER A SUBWAY STRUCTURE OR PARALLEL WITH SUBWAY STRUCTURE.
   B) NO. 44292-A-Z TITLED "GRAVEL OR BROKEN STONE BEDDING AND FILTER FABRIC INSTALLATION FOR DUCTILE IRON PIPES."
   C) FOR ADDITIONAL DETAILS, SEE THE BUREAU OF WATER SUPPLY STANDARD DRAWINGS NOS 31050-2 AND 45161-Z-A.
20. PIPE SHALL BE RODDED/RESTRAINED ON BOTH SIDES OF VALVE PER NYCDEP STANDARDS.
21. ALL RELOCATED OR NEW HYDRANTS ARE TO BE BREAKAWAY TYPE AS DESIGNATED IN THE DEP SPECIFICATIONS. REMOVED HYDRANTS TO BE RETURNED TO THE NYCDEP YARD.
22. THE CONTRACTOR SHALL PROVIDE AND INSTALL HYDRANT FENDERS (2) AT ALL HYDRANTS WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH THE NYCDEP STANDARDS. AFTER INSTALLATION, HYDRANT FENDERS SHALL BE PAINTED WITH GREEN GLOSS, FEDERAL COLOR *14056, PAINT.
24. IN CASES WHERE THE WATER MAINS ARE TO BE OFFSET OVER THE NEW SEWER DISCHARGE PIPES LEAVING A SHALLOW COVER (LESS THAN 2'-6") OVER THE WATER MAIN, THE METHOD SHOWN ON BWS STANDARD DRAWING NO. 42063-Y SHALL BE UTILIZED. FLANGED DUCTILE IRON PIPE FITTINGS MAY BE USED IN LIEU OF THE FLANGED STEEL PIPE CALLED FOR IN THIS DRAWING.
23. THROUGHOUT THE PROJECT WHERE DUCTILE IRON PIPE IS USED FOR SEWERS, IT IS RECOMMENDED THAT THE SEWER PIPE BE SO IDENTIFIED BY USE OF COLORED PLASTIC TAPE, SPIRALLY AROUND THE DUCTILE IRON SEWER PIPE. THIS WILL AVOID ANY DIFFICULTIES IN FUTURE IDENTIFICATION.

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Capital Construction

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UTILITIES STANDARD

GENERAL NOTES

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