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KANSAS CITY AREA TRANSPORTATION AUTHORITY WITH CITY OF KANSAS CITY, MISSOURI KANSAS CITY STREETCAR AUTHORITY PORT AUTHORITY OF KANSAS CITY, MO



KANSAS CITY STREETCAR RIVERFRONT EXTENSION FTA FAIN # MO-2022-002-00

KCATA PROJECT No.: 2021-SC-3P01

KCMO PROJECT No.: 89022015

ISSUED FOR BID

DECEMBER 2022

(T49N, R33W)

APPROVED BY

KCATA PROJECT MANAGER

KCATA CHIEF ENGINEER

KCMO DIRECTOR OF TRANSPORTATION

KCMO CITY ENGINEER

KCMO DIRECTOR OF PUBLIC WORKS

KANSAS CITY STREETCAR AUTHORITY

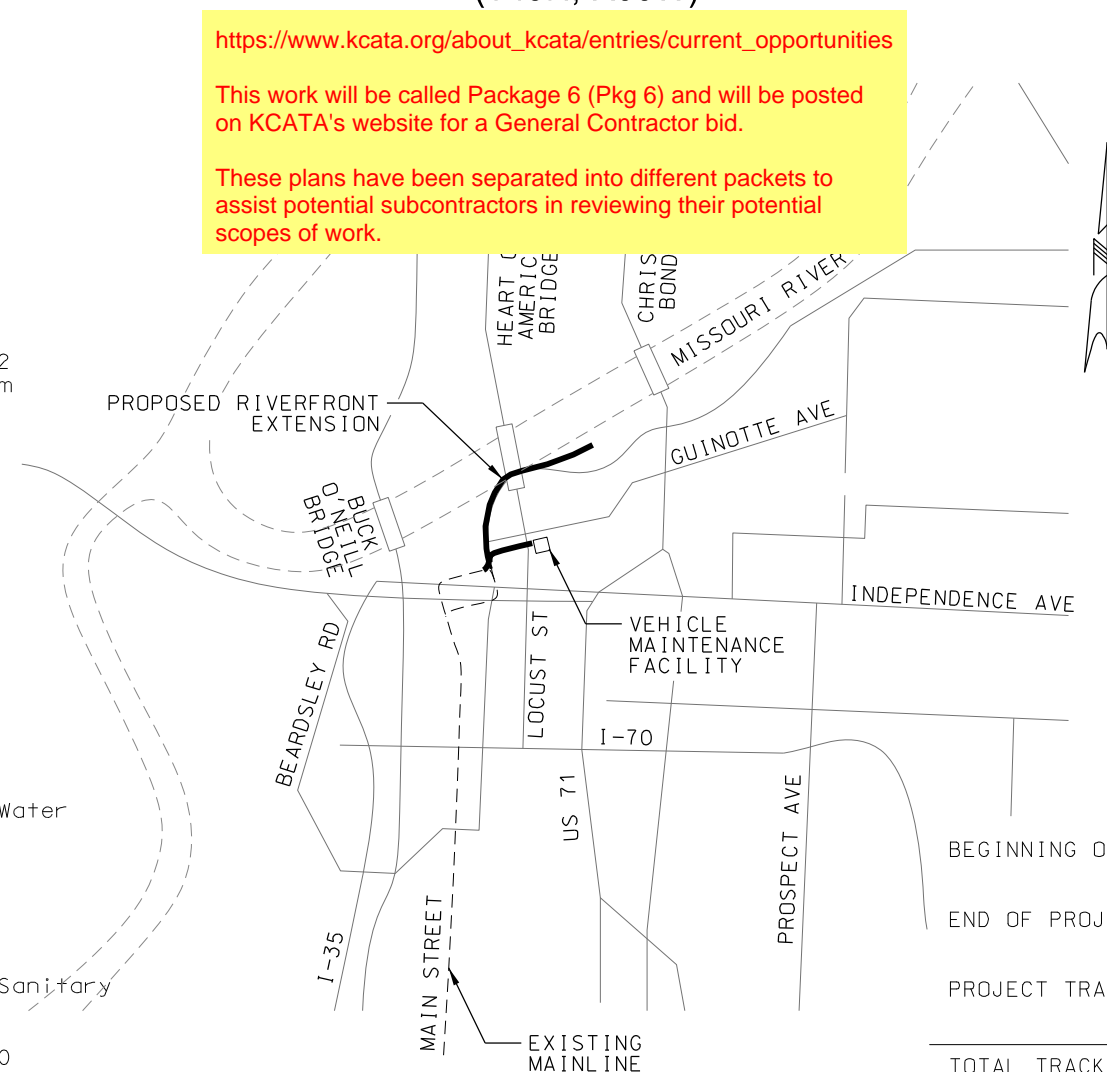
PORT AUTHORITY OF KANSAS CITY, MISSOURI
(PORT KC)

ENTRY NO.

C.D. NO. 4

LENGTH OF PROJECT

| | |
|----------------------|---------------------------|
| BEGINNING OF PROJECT | STA 113+00.00 NB MAINLINE |
| | STA 199+89.24 SB MAINLINE |
| END OF PROJECT | STA 150+82.51 NB MAINLINE |
| | STA 236+48.29 SB MAINLINE |
| PROJECT TRACK LENGTH | 3,783 TF NB |
| | 3,659 TF SB |
| TOTAL TRACK LENGTH | 7,442 TF (1.4 MILES) |



This set of plans is
not for
construction.
These plans are
intended to build
interest in bidding
the project.



10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

| | |
|------------------------------------|-----------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: G001.dgn | |
| CONTRACT NO.: CONTRACT NO. *** | |
| VOLUME: | |
| DRAWING NO.: G001 | SHEET NO.: 1 |



| # | dwg | TITLE | DESCRIPTION | # | dwg | TITLE | DESCRIPTION |
|-------------------------|-------|---|---|------------------------|-------|--|-----------------------------|
| GENERAL SHEETS | | | | | | | |
| 1 | G001 | TITLE SHEET AND LOCATION MAP | | 60 | K304A | SOUTHBOUND 115RE TRACK PROFILE | SB STA 211+00 TO STA 215+00 |
| 2 | G010 | INDEX OF DRAWINGS | SHEET 1 | 61 | K305 | NORTHBOUND 115RE TRACK PLAN AND PROFILE | NB STA 125+00 TO STA 129+00 |
| 3 | G011 | INDEX OF DRAWINGS | SHEET 2 | 62 | K305A | SOUTHBOUND 115RE TRACK PROFILE | SB STA 215+00 TO STA 219+00 |
| 4 | G012 | INDEX OF DRAWINGS | SHEET 3 | 63 | K306 | NORTHBOUND 115RE TRACK PLAN AND PROFILE | NB STA 129+00 TO STA 133+00 |
| 5 | G013 | INDEX OF DRAWINGS | SHEET 4 | 64 | K306A | SOUTHBOUND 115RE TRACK PROFILE | SB STA 219+00 TO STA 223+00 |
| 6 | G030 | STANDARD ABBREVIATIONS | SHEET 1 OF 2 | TRACK DETAILS | | | |
| 7 | G031 | STANDARD ABBREVIATIONS | SHEET 2 OF 2 | 65 | K901 | TRACK SLAB DETAILS | DETAIL SHEET 1 OF 5 |
| 8 | G032 | DCS GENERAL SYMBOLS AND ABBREVIATIONS | | 66 | K902 | TRACK SLAB DETAILS | DETAIL SHEET 2 OF 5 |
| 9 | G035 | STANDARD SYMBOLS | | 67 | K903 | TRACK SLAB DETAILS | DETAIL SHEET 3 OF 5 |
| 10 | G036 | TRACTION POWER SYMBOLS | | 68 | K904 | TRACK SLAB DETAILS | DETAIL SHEET 4 OF 5 |
| 11 | G037 | TRACTION POWER ABBREVIATIONS | | 69 | K905 | TRACK SLAB DETAILS | DETAIL SHEET 5 OF 5 |
| 12 | G038 | SYSTEMWIDE ELECTRICAL ABBREVIATIONS AND SYMBOLS | | 70 | K906 | 115 RE AND 112 TRAM RAIL SECTIONS | |
| 13 | G040 | GENERAL NOTES | | 71 | K907 | TRANSITION RAIL | |
| 14 | G041 | DCS GENERAL NOTES | | 72 | K908 | 25M/25M EQUILATERAL CONTINUOUSLY CURVED FROG TURNOUT | |
| 15 | G042 | DCS STRUCTURAL STEEL AND CONCRET NOTES | | 73 | K909 | 25M CONTINUOUSLY CURVED FROG TURNOUT | |
| 16 | G043 | TRACTION POWER GENERAL NOTES | | 74 | K910 | 25M CONTINUOUSLY CURVED FROG TURNOUT | |
| SURVEY CONTROL | | | | 75 | K911 | 25M STRAIGHT FROG TURNOUT | |
| 17 | SV001 | SURVEY CONTROL | SHEET 1 OF 2 | 76 | K912 | TURNOUT ENCAPSULATION AND SECTION DETAILS | |
| 18 | SV002 | SURVEY CONTROL | SHEET 2 OF 2 | 77 | K913 | MANHOLE REBAR DETAIL | DETAIL SHEET 1 OF 2 |
| DEMOLITION PLANS | | | | 78 | K914 | MANHOLE REBAR DETAIL | DETAIL SHEET 2 OF 2 |
| 19 | C501 | DEMOLITION PLAN | NB STA BEGIN TO STA 113+00 | 79 | K915 | TRACK DRAIN DETAILS | |
| 20 | C502 | DEMOLITION PLAN | NB STA 113+00 TO STA 117+92 | 80 | K916 | HORIZONTAL PRECURVED RAIL LOCATION MAP | |
| 21 | C503 | DEMOLITION PLAN | NB STA 117+92 TO STA 121+00 | 81 | K917 | HORIZONTAL PRECURVED RAIL DETAILS | |
| 22 | C504 | DEMOLITION PLAN | NB STA 121+00 TO STA 125+00 | 82 | K918 | RESTRAINING RAIL | |
| 23 | C505 | DEMOLITION PLAN | NB STA 125+00 TO STA 129+00 | 83 | K919 | INSULATED JOINT 115 RE RAIL | |
| 24 | C506 | DEMOLITION PLAN | NB STA 129+00 TO STA 133+00 | 84 | K920 | TRACK SLAB JOINTS | |
| 25 | C507 | DEMOLITION PLAN | NB STA 133+00 TO STA 135+50 | 85 | K921 | END OF LINE CURB STOP | |
| 26 | C508 | DEMOLITION PLAN | NB STA 135+50 TO STA 139+50 | 86 | K922 | TRACK SLAB INFILL GRADING DETAIL | |
| 27 | C509 | DEMOLITION PLAN | NB STA 139+50 TO STA 143+50 | 87 | K923 | 112 TRAM RAIL EXPANSION JOINTS | |
| 28 | C510 | DEMOLITION PLAN | NB STA 143+50 TO STA 147+50 | 88 | K923A | 115 RE RAIL EXPANSION JOINTS | |
| 29 | C511 | DEMOLITION PLAN | NB STA 147+50 TO END | 89 | K924 | NO. 4 STRAIGHT FROG CROSSOVER | |
| 30 | C512 | DEMOLITION PLAN | 2ND STREET TO VMF | CIVIL DETAILS | | | |
| TRACK PLAN AND PROFILES | | | | 90 | C001 | TYPICAL SECTIONS 1 | |
| 31 | K001 | TRACK KEY MAP | | 91 | C002 | TYPICAL SECTIONS 2 | |
| 32 | K101 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA BEGIN TO STA 113+50 | 92 | C003 | TYPICAL SECTIONS 3 | |
| 33 | K101A | EXISTING TRACK TIE-IN PROFILE STA -1+00 TO STA 2+50 | SB TRACK PROFILE STA 199+00 TO STA 203+00 | 93 | C004 | TYPICAL DRIVEWAY DETAILS | |
| 34 | K102 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 113+50 TO STA 117+00 | 94 | C005 | TYPICAL CURB DETAILS | |
| 35 | K102A | VMF LEAD PROFILE STA -0+50 TO STA 3+00 | SB TRACK PROFILE STA 203+00 TO STA 207+00 | 95 | C006 | MISCELLANEDUS CIVIL DETAILS | |
| 36 | K103 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 117+00 TO STA 121+00 | CIVIL PLANS | | | |
| 37 | K103A | SOUTHBOUND TRACK PROFILE | SB STA 207+00 TO STA 211+00 | 96 | C101 | CIVIL PLAN | NB STA BEGIN TO STA 113+00 |
| 38 | K104 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 121+00 TO STA 125+00 | 97 | C102 | CIVIL PLAN | NB STA 113+00 TO STA 117+00 |
| 39 | K104A | SOUTHBOUND TRACK PROFILE | SB STA 211+00 TO STA 215+00 | 98 | C103 | CIVIL PLAN | NB STA 117+00 TO STA 121+00 |
| 40 | K105 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 125+00 TO STA 129+00 | 99 | C104 | CIVIL PLAN | NB STA 121+00 TO STA 125+00 |
| 41 | K105A | SOUTHBOUND TRACK PROFILE | SB STA 215+00 TO STA 219+00 | 100 | C105 | CIVIL PLAN | NB STA 125+00 TO STA 129+00 |
| 42 | K106 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 129+00 TO STA 133+00 | 101 | C106 | CIVIL PLAN | NB STA 129+00 TO STA 133+00 |
| 43 | K106A | SOUTHBOUND TRACK PROFILE | SB STA 219+00 TO STA 223+00 | 102 | C107 | CIVIL PLAN | NB STA 133+00 TO STA 135+50 |
| 44 | K107 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 133+00 TO STA 135+50 | 103 | C108 | CIVIL PLAN | NB STA 135+50 TO STA 139+50 |
| 45 | K107A | SOUTHBOUND TRACK PROFILE | SB STA 223+00 TO STA 225+50 | 104 | C109 | CIVIL PLAN | NB STA 139+50 TO STA 143+50 |
| 46 | K108 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 135+50 TO STA 139+50 | 105 | C110 | CIVIL PLAN | NB STA 143+50 TO STA 147+50 |
| 47 | K108A | SOUTHBOUND TRACK PROFILE | SB STA 225+50 TO STA 229+50 | 106 | C111 | CIVIL PLAN | NB STA 147+50 TO END |
| 48 | K109 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 139+50 TO STA 143+50 | 107 | C112 | CIVIL PLAN | 2ND STREET TO VMF |
| 49 | K109A | SOUTHBOUND TRACK PROFILE | SB STA 229+50 TO STA 233+50 | STREETCAR STOP DETAILS | | | |
| 50 | K110 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 143+50 TO STA 147+50 | 108 | C201 | STREETCAR STOP | NB "RIVER MARKET NORTH" |
| 51 | K110A | SOUTHBOUND TRACK PROFILE | SB STA 233+50 TO STA 237+50 | 109 | C202 | STREETCAR STOP | NB/SB "RIVERFRONT" |
| 52 | K111 | NORTHBOUND TRACK PLAN AND PROFILE | NB STA 147+50 TO STA 150+83 | ADA PLANS | | | |
| 53 | K112 | NORTHBOUND TRACK PLAN AND PROFILE | 2ND STREET TO VMF | 110 | C301 | ADA CURB RAMPS LAYOUT PLAN | RAMP NOTES AND DETAILS |
| 54 | K113 | NORTHBOUND TRACK PLAN AND PROFILE | 2ND STREET TO VMF | 111 | C302 | ADA CURB RAMP STANDARD DETAILS | SHEET 1 OF 2 |
| TRACK ALIGNMENT TABLES | | | | 112 | C303 | ADA RAMP STANDARD DETAILS | SHEET 2 OF 2 |
| 55 | K200 | TRACK ALIGNMENT TABULATION | | 113 | C304 | 3RD STREET AND GRAND BOULEVARD | GRADING PLAN |
| 56 | K201 | TRACK ALIGNMENT TABULATION | | 114 | C305 | 2ND STREET AND GRAND BOULEVARD | GRADING PLAN |
| TRACK PLANS 115RE | | | | 115 | C306 | GRADING LAYOUT PLANS | 2ND STREET TO VMF |
| 57 | K303 | NORTHBOUND 115RE TRACK PLAN AND PROFILE | NB STA 117+00 TO STA 121+00 | 116 | C307 | GRADING LAYOUT PLANS | |
| 58 | K303A | SOUTHBOUND 115RE TRACK PROFILE | SB STA 207+00 TO STA 211+00 | 117 | C308 | GRADING LAYOUT PLANS | |
| 59 | K304 | NORTHBOUND 115RE TRACK PLAN AND PROFILE | NB STA 121+00 TO STA 125+00 | 118 | C309 | GRADING LAYOUT PLANS | |
| | | | | 119 | C310 | GRADING LAYOUT PLANS | |

| | | | | | | | | | | | | |
|---------------------|------|-------------|-------------|-----|--|--|---|----------------------|---|------------------------------|------------------------------------|------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | MMO |  |  <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUED FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | INDEX OF DRAWINGS SHEET 1 | SCALE FOR 22"x34": NOT TO SCALE | |
| | | | CHECKED BY | JWR | | |  <p>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</p> | NOT FOR CONSTRUCTION | | | FILENAME: | G010.dgn |
| | | | DRAWN BY | MMO | | | | | | | CONTRACT NO.: | CONTRACT NO. *** |
| | | | CHECKED BY | JWR | | | | | | | VOLUME: | 1 |
| | | | APPROVED BY | NKS | | | | | | | DRAWING NO.: | SHEET NO.: |
| PLOT DATE: \$DATE\$ | | | \$TIME\$ | | DATE | 12-23-2022 | | | G010 | 2 | | |

| # | dwg | TITLE | DESCRIPTION | # | dwg | TITLE | DESCRIPTION |
|----------------|------|----------------------------------|---|-----------------------------|-------|---|---|
| 120 | C311 | GRADING LAYOUT PLANS | | 181 | P310 | "TYPE B" SHELTER | PLANS AND ELEVATIONS |
| 121 | C312 | GRADING LAYOUT PLANS | | 182 | P311 | "TYPE B" SHELTER | SHELTER ROOF PLAN AND RCP |
| 122 | C313 | GRADING LAYOUT PLANS | | 183 | P312 | "TYPE B" SHELTER | SHELTER ENLARGED PLANS |
| 123 | C314 | GRADING LAYOUT PLANS | | 184 | P313 | "TYPE B" SHELTER | ENLARGED ELEVATION AND SECTION |
| 124 | C315 | POINT TABLES | | 185 | P361 | SHELTER DETAILS | |
| 125 | C316 | POINT TABLES | | 186 | P362 | SHELTER DETAILS | |
| TPSS PLANS | | | | 187 | P363 | "TYPE B" SHELTER DETAILS | ADD ALTERNATE |
| 126 | C401 | TRACTION POWER SUBSTATION (TPSS) | RIVERFRONT GRADING PLAN | 188 | P371 | MARKER SECTION AND DETAILS | |
| 127 | C402 | TRACTION POWER SUBSTATION (TPSS) | RIVERFRONT DUCTBANK PLAN | 189 | P372 | MARKER SECTION AND DETAILS | |
| 128 | C403 | TRACTION POWER SUBSTATION (TPSS) | RIVERFRONT DUCTBANK PRDFILE 1 | 190 | P380 | ELECTRICAL LIGHTING PLANS AND FIXTURE SCHEDULE | |
| 129 | C404 | TRACTION POWER AND SCADA SYSTEM | TYPICAL DUCTBANK SECTIONS | 191 | P401 | PLATFORM ITS AND ELECTRICAL GENERAL NOTES | |
| 130 | C405 | TRACTION POWER SUBSTATION (TPSS) | DUCTBANK SPECIAL DETAILS | 192 | P402 | PLATFORM ROADSIDE ITS 343 CABINET DIAGRAM | |
| 131 | C406 | TRACTION POWER SUBSTATION (TPSS) | TYPICAL LOW VOLTAGE 5'x7' MANHOLE DETAILS | 193 | P403 | CCTV ATTACHMENT ON OCS AND LIGHT POLE DETAILS | |
| 132 | C407 | TRACTION POWER SUBSTATION (TPSS) | COMMUNICATIONS AND STRAY CURRENT PULLBOX TYPICAL DETAILS | 194 | P404 | STREETCAR STOP "RIVER MARKET NORTH" | ELECTRICAL AND ITS PLAN |
| 133 | C408 | TRACTION POWER SUBSTATION (TPSS) | TYPICAL NEGATIVE RETURN DETAIL TRACK BLOCKOUT DETAIL AND TYPICAL CONDUIT STUB-UP DETAIL | 195 | P405 | STREETCAR STOP "RIVERFRONT" | ELECTRICAL AND ITS PLAN |
| 134 | C409 | TRACTION POWER SUBSTATION (TPSS) | TYPICAL NEGATIVE RETURN DETAIL TRACK BLOCKOUT DETAIL AND TYPICAL CONDUIT STUB-UP DETAIL | 196 | P406 | ITS TYPICAL DRAWING | TYPICAL STOP ELECTRICAL SCHEDULES AND DETAILS |
| TPSS DETAILS | | | | PLATFORM STRUCTURAL | | | |
| 135 | J101 | TRACTION POWER SYSTEM | MASTER SINGLE LINE DIAGRAM RIVERFRONT EXTENSION | 197 | PS001 | STRUCTURAL GENERAL NOTES | |
| 136 | J610 | TRACTION POWER | TYPICAL MAINLINE TPSS SINGLE LINE SINGLE LINE DIAGRAM | 198 | PS002 | INSPECTION - IBC 2018 | |
| 137 | J620 | TRACTION POWER | TYPICAL PREFABRICATED TPSS PLAN EQUIPMENT LAYOUT PLAN | 199 | PS101 | "TYPE A" SHELTER - FOUNDATION AND FRAMING PLANS | |
| 138 | J621 | TRACTION POWER | TYPICAL PREFABRICATED TPSS - EXTERIOR ELEVATIONS ELEVATION VIEW | 200 | PS102 | "TYPE B" SHELTER - FOUNDATION AND FRAMING PLANS | |
| 139 | J622 | TRACTION POWER | TYPICAL PREFABRICATED TPSS INTERIOR ELEVATIONS INTERIOR ELEVATIONS | 201 | PS201 | "TYPE A" SHELTER - SECTIONS AND ELEVATIONS | |
| 140 | J623 | TRACTION POWER | TYPICAL SURGER ARRESTER INTERIOR ELEVATIONS | 202 | PS202 | "TYPE B" SHELTER - SECTIONS AND ELEVATIONS | |
| 141 | J630 | TRACTION POWER | TPSS D1 SITE RACEWAY LAYOUT | 203 | PS301 | TYPICAL CONCRETE DETAILS | |
| 142 | J632 | TRACTION POWER | TPSS D1 GROUND GRID LAYOUT | 204 | PS302 | "TYPE A" SHELTER CONCRETE DETAILS | |
| 143 | J640 | TRACTION POWER | TYPICAL DISCONNECT SWITCH ARRANGEMENT | 205 | PS303 | "TYPE B" SHELTER CONCRETE DETAILS | |
| 144 | J642 | TRACTION POWER | 120/208V AC PANEL ADP PANEL SCHEDULE | 206 | PS501 | TYPICAL STEEL SECTIONS AND DETAILS | |
| 145 | J643 | TRACTION POWER | 125V DC PANEL DDP PANEL SCHEDULE | PLATFORM ELEVATION PLANS | | | |
| 146 | J644 | TRACTION POWER | TYPICAL TPSS LIGHTING SCHEMATIC | 207 | PS01 | "RIVER MARKET NORTH" PLATFORM | SIGNAGE LOCATION ELEVATION |
| 147 | J645 | TRACTION POWER | TYPICAL TPSS RECEPTACLES AND SMOKE DETECTOR SCHEMATIC | 208 | PS02 | "RIVERFRONT" PLATFORM | SIGNAGE LOCATION ELEVATION |
| 148 | J646 | TRACTION POWER | TYPICAL TPSS HVAC AND VENTILATION SCHEMATIC | 209 | PS03 | SIGNAGE TYPES OVERVIEW | |
| 149 | J648 | TRACTION POWER | LOGIC DIAGRAMS SYMBOLS AND LEGEND | 210 | PS04 | SIGNAGE TYPES OVERVIEW | |
| 150 | J649 | TRACTION POWER | SUBSTATION LOCKOUT AND ALARM LOGIC DIAGRAM | 211 | PS05 | SIGNAGE TYPES OVERVIEW | |
| 151 | J650 | TRACTION POWER | AC SWITCHGEAR INCOMING CUBICLE LOGIC DIAGRAM | 212 | PS06 | SIGNAGE TYPES OVERVIEW | |
| 152 | J652 | TRACTION POWER | TYPICAL DC FEEDER CUBICLE LOGIC DIAGRAM SHEET 1 OF 2 | 213 | PS07 | "RIVER MARKET NORTH" PLATFORM | WAYFINDING PLAN |
| 153 | J653 | TRACTION POWER | TYPICAL DC FEEDER CUBICLE LOGIC DIAGRAM SHEET 2 OF 2 | TRAFFIC SIGNAL LAYOUT PLANS | | | |
| 154 | J654 | TRACTION POWER | NEGATIVE AND POSITIVE DISCONNECT SWITCH LOGIC DIAGRAM | 214 | T100 | TRAFFIC SIGNAL GENERAL NOTES | |
| 155 | J660 | TRACTION POWER | STATION CONTROL CABINET TYPICAL LAYOUT | 215 | T101 | TRAFFIC SIGNAL LAYOUT PLAN | 3RD STREET AND GRAND BOULEVARD |
| 156 | J661 | TRACTION POWER | RAIL TO GROUND (R2G) CABINET TYPICAL LAYOUT | 216 | T101A | TRAFFIC SIGNAL LAYOUT PLAN | 3RD STREET AND GRAND BOULEVARD |
| 157 | J665 | TRACTION POWER | TPSS COMMUNICATIONS BLOCK DIAGRAM | 217 | T101B | TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING | 3RD STREET AND GRAND BOULEVARD |
| 158 | J673 | TRACTION POWER | TYPICAL GROUNDING DETAILS | 218 | T101C | TRAFFIC SIGNAL SUMMARY OF QUANTITIES | 3RD STREET AND GRAND BOULEVARD |
| 159 | J680 | TRACTION POWER | D1 CONDUCTOR SCHEDULE | 219 | T102 | TRAFFIC SIGNAL LAYOUT PLAN | 2ND STREET AND GRAND BOULEVARD |
| 160 | J690 | TRACTION POWER | TYPICAL TPSS HMI ALARM SCREEN LAYOUT | 220 | T102A | TRAFFIC SIGNAL LAYOUT PLAN | 2ND STREET AND GRAND BOULEVARD |
| 161 | J691 | TRACTION POWER | TYPICAL TPSS HMI CONTROL SCREEN LAYOUT | 221 | T102B | TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING | 2ND STREET AND GRAND BOULEVARD |
| 162 | J692 | TRACTION POWER | TYPICAL TPSS HMI EVENT LOG SCREEN LAYOUT | 222 | T102C | TRAFFIC SIGNAL SUMMARY OF QUANTITIES | 2ND STREET AND GRAND BOULEVARD |
| 163 | J693 | TRACTION POWER | TYPICAL TPSS HMI NETWORK STATUS SCREEN LAYOUT | 223 | T103 | TRAFFIC SIGNAL LAYOUT PLAN | BERKLEY PARKWAY / RIVERFRONT DRIVE |
| 164 | J694 | TRACTION POWER | TYPICAL SUBSTATION FOUNDATION DETAIL | 224 | T103B | TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING | BERKLEY PARKWAY / RIVERFRONT DRIVE |
| 165 | J695 | TRACTION POWER | TYPICAL PAD MOUNTED DISCONNECT SWITCH FOUNDATION DETAILS | 225 | T103C | TRAFFIC SIGNAL SUMMARY OF QUANTITIES | BERKLEY PARKWAY / RIVERFRONT DRIVE |
| DRAINAGE PLANS | | | | TRAFFIC SIGNAL DETAILS | | | |
| 166 | D101 | DRAINAGE PLAN | NB STA BEGIN TO STA 113+00 | 226 | T201 | TRAFFIC SIGNAL DETAILS | CROSS SPAN JOINT USE TRAFFIC/OCS POLE |
| 167 | D102 | DRAINAGE PLAN | NB STA 113+00 TO STA 117+00 | 227 | T202 | TRAFFIC SIGNAL DETAILS | AUXILIARY CABINET MOUNTING DETAIL |
| 168 | D103 | DRAINAGE PLAN | NB STA 117+00 TO STA 121+00 | 228 | T203 | TRAFFIC SIGNAL DETAILS | TRAFFIC SIGNAL SYMBOLS |
| 169 | D106 | DRAINAGE PLAN | NB STA 129+00 TO STA 133+00 | 229 | T204 | TRAFFIC SIGNAL DETAILS | SIGNAL HEAD DETAILS |
| 170 | D109 | DRAINAGE PLAN | NB STA 139+50 TO STA 143+50 | 230 | T205 | TRAFFIC SIGNAL DETAILS | SIGNAL MAST ARM DETAILS |
| 171 | D110 | DRAINAGE PLAN | NB STA 143+50 TO STA 147+50 | 231 | T206 | TRAFFIC SIGNAL DETAILS | SIGNAL CONCRETE BASE DETAILS |
| 172 | D111 | DRAINAGE PLAN | NB STA 147+50 TO END | 232 | T207 | TRAFFIC SIGNAL DETAILS | SIGNAL PULL BOX DETAILS |
| 173 | D301 | MISCELLANEOUS DRAINAGE DETAILS | | 233 | T208 | TRAFFIC SIGNAL DETAILS | SIGNAL PULL BOX DETAILS |
| PLATFORMS | | | | 234 | T209 | TRAFFIC SIGNAL DETAILS | SIGNAL PTZ CAMERA INSTALL DETAILS |
| 174 | P101 | "RIVER MARKET NORTH" | PLATFORM PLAN | 235 | T210 | TRAFFIC SIGNAL DETAILS | PEDESTRIAN PUSHBUTTON POLE DETAILS |
| 175 | P102 | "RIVERFRONT" | PLATFORM PLAN | 236 | T211 | TRAFFIC SIGNAL DETAILS | PEDESTRIAN PUSHBUTTON POLE DETAILS |
| 176 | P201 | "RIVER MARKET NORTH" | PLATFORM ELEVATION | SIGNING AND STRIPING PLANS | | | |
| 177 | P202 | "RIVERFRONT" | PLATFORM ELEVATION | 237 | S001 | SIGNING AND STRIPING | GENERAL NOTES |
| 178 | P203 | PLATFORM SITE DETAILS | | 238 | S100 | SIGNING AND STRIPING PLAN | 5TH TO 3RD STREET |
| 179 | P204 | PLATFORM SEAT WALL DETAILS | | 239 | S101 | SIGNING AND STRIPING PLAN | NB STA BEGIN TO STA 113+00 |
| 180 | P302 | "TYPE A" SHELTER | PLANS AND ELEVATIONS | 240 | S102 | SIGNING AND STRIPING PLAN | NB STA 113+00 TO STA 117+00 |
| | | | | 241 | S103 | SIGNING AND STRIPING PLAN | NB STA 117+00 TO STA 121+00 |

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|---------------------|------|-------------|-------------|----------|--|--|---|----------------------|------------------|---|------------------------------------|-----------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | MMO |  |  <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUED FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": NOT TO SCALE | | |
| | | | CHECKED BY | JWR | | |  <div>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> | NOT FOR CONSTRUCTION | | | INDEX OF DRAWINGS SHEET 2 | FILENAME: G011.dgn | |
| | | | DRAWN BY | MMO | | | | | | | | CONTRACT NO.: | |
| | | | CHECKED BY | JWR | | | | | | | | CONTRACT NO. *** | |
| | | | APPROVED BY | NKS | | | | | | | | VOLUME: | |
| PLOT DATE: \$DATE\$ | | | | \$TIME\$ | DATE | 12-23-2022 | | | | DRAWING NO.: | SHEET NO.: | | |
| | | | | | | | | | | G011 | 3 | | |

| # | dwg | TITLE | DESCRIPTION | # | dwg | TITLE | DESCRIPTION |
|----------------------------|-------|---|-----------------------------|-----------------------|-------|--|-----------------------------|
| 242 | S104 | SIGNING AND STRIPING PLAN | NB STA 121+00 TO STA 125+00 | 302 | ST308 | BID ALTERNATE - 115RE JOINTS FINGER JOINT MODIFICATION PLAN - PIER 8 | |
| 243 | S105 | SIGNING AND STRIPING PLAN | NB STA 125+00 TO STA 129+00 | 303 | ST309 | BID ALTERNATE - 115RE JOINTS FINGER JOINT MODIFICATION DETAILS | |
| 244 | S106 | SIGNING AND STRIPING PLAN | NB STA 129+00 TO STA 133+00 | 304 | ST310 | BID ALTERNATE - 115RE JOINTS STRIP SEAL REMOVAL AND REPLACEMENT PLAN - PIERS 11 & 12 | |
| 245 | S107 | SIGNING AND STRIPING PLAN | NB STA 133+00 TO STA 135+50 | 305 | ST311 | BID ALTERNATE - 115RE JOINTS STRIP SEAL DETAILS | |
| 246 | S108 | SIGNING AND STRIPING PLAN | NB STA 135+50 TO STA 139+50 | 306 | ST312 | BID ALTERNATE - 115RE JOINTS TYPICAL SLAB SECTIONS AND DETAILS | |
| 247 | S109 | SIGNING AND STRIPING PLAN | NB STA 139+50 TO STA 143+50 | 307 | ST313 | BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 2 | |
| 248 | S110 | SIGNING AND STRIPING PLAN | NB STA 143+50 TO STA 147+50 | 308 | ST314 | BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 5 | |
| 249 | S111 | SIGNING AND STRIPING PLAN | NB STA 147+50 TO END | 309 | ST315 | BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 8 | |
| 250 | S112 | SIGNING AND STRIPING PLAN | 2ND STREET TO VMF | 310 | ST316 | BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 11 | |
| 251 | S113 | PAVEMENT MARKING TABULATION | | 311 | ST317 | BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 12 | |
| 252 | S114 | SIGN REMOVAL TABULATION | | 312 | ST318 | BID ALTERNATE - 115RE JOINTS BILL OF REINFORCING STEEL (SLAB) | |
| 253 | S115 | SIGN PANEL DETAILS | | 313 | ST319 | BID ALTERNATE - 115RE JOINTS BILL OF REINFORCING STEEL (SLAB) | |
| LIGHTING PLANS | | | | 314 | ST320 | BID ALTERNATE - 115RE JOINTS BILL OF REINFORCING STEEL (SLAB) | |
| 254 | L001 | GENERAL LIGHTING NOTES AND SYMBOL LEGEND | | 315 | ST321 | BID ALTERNATE - 115RE JOINTS EAST BARRIER RAIL AT PIER 2, 5 & 8 | |
| 255 | L101 | LIGHTING PLAN | NB STA BEGIN TO STA 113+00 | 316 | ST322 | BID ALTERNATE - 115RE JOINTS EAST BARRIER RAIL AT PIER 11 & 12 | |
| 256 | L102 | LIGHTING PLAN | NB STA 113+00 TO STA 117+00 | 317 | ST323 | BID ALTERNATE - 115RE JOINTS EAST BARRIER DETAILS | |
| 257 | L103 | LIGHTING PLAN | NB STA 117+00 TO STA 121+00 | 318 | ST324 | BID ALTERNATE - 115RE JOINTS WEST BARRIER RAIL AT PIER 2, 5 & 8 | |
| 258 | L104 | LIGHTING PLAN | NB STA 121+00 TO STA 125+00 | 319 | ST325 | BID ALTERNATE - 115RE JOINTS WEST BARRIER RAIL AT PIER 11 & 12 | |
| 259 | L105 | LIGHTING PLAN | NB STA 125+00 TO STA 129+00 | 320 | ST326 | BID ALTERNATE - 115RE JOINTS WEST BARRIER DETAILS | |
| 260 | L106 | LIGHTING PLAN | NB STA 129+00 TO STA 133+00 | 321 | ST328 | BID ALTERNATE - 115RE JOINTS BARRIER DETAILS 1 | |
| 261 | L107 | LIGHTING PLAN | NB STA 133+00 TO STA 135+50 | 322 | ST329 | BID ALTERNATE - 115RE JOINTS BARRIER DETAILS 2 | |
| 262 | L108 | LIGHTING PLAN | NB STA 135+50 TO STA 139+50 | 323 | ST330 | BID ALTERNATE - 115RE JOINTS BARRIER DETAILS 3 | |
| 263 | L109 | LIGHTING PLAN | NB STA 139+50 TO STA 143+50 | 324 | ST331 | BID ALTERNATE - 115RE JOINTS EAST BARRIER BAR LIST | |
| 264 | L110 | LIGHTING PLAN | NB STA 143+50 TO STA 147+50 | 325 | ST332 | BID ALTERNATE - 115RE JOINTS WEST BARRIER BAR LIST | |
| 265 | L111 | LIGHTING PLAN | NB STA 147+50 TO END | EROSION CONTROL PLANS | | | |
| 266 | L112 | LIGHTING PLAN | 2ND STREET TO VMF | 326 | EC101 | EROSION CONTROL PLAN | NB STA 135+50 TO STA 139+50 |
| LIGHTING DETAILS | | | | 327 | EC102 | EROSION CONTROL PLAN | NB STA 139+50 TO STA 143+50 |
| 267 | L300 | STREET LIGHTING DETAILS | | 328 | EC103 | EROSION CONTROL PLAN | NB STA 143+50 TO STA 147+50 |
| 268 | L301 | STREET LIGHTING DETAILS | | 329 | EC104 | EROSION CONTROL PLAN | NB STA 147+50 TO END |
| 269 | L302 | POWER AND LIGHTING DETAILS | | OCS TECHNICAL SHEETS | | | |
| 270 | L303 | POWER AND LIGHTING DETAILS | | 330 | Y004 | TECHNICAL SHEETS CONDUCTOR PARTICULARS | |
| 271 | L304 | STREET LIGHTING SCHEDULES | | 331 | Y005 | TECHNICAL SHEETS VERTICAL ELECTRICAL CLEARANCE REQUIREMENTS | |
| 272 | L305 | STREET LIGHTING SCHEDULES | | 332 | Y006 | TECHNICAL SHEETS PANTOGRAPH SECURITY | |
| 273 | L306 | WIRING SCHEMATIC DETAILS | | 333 | Y007 | TECHNICAL SHEETS TYPICAL OFFSET AND STAGGER DETAILS | |
| 274 | L307 | WIRING SCHEMATIC DETAILS | | 334 | Y008 | TECHNICAL SHEETS INSTALLATION TENSION CHART | |
| LANDSCAPE PLANS | | | | 335 | Y009 | TECHNICAL SHEETS ALONG TRACK MOVEMENT CHART | |
| 275 | LS101 | LANDSCAPE PLAN | BERKLEY PARK - 1 | 336 | Y010 | TECHNICAL SHEETS VERTICAL AND RADIAL LOADS | |
| 276 | LS102 | LANDSCAPE PLAN | BERKLEY PARK - 2 | 337 | Y011 | TYPICAL ARRANGEMENTS TYPICAL OVERLAP ARRANGEMENT | |
| 277 | LS103 | LANDSCAPE PLAN | BERKLEY PARK - 3 | 338 | Y012 | TYPICAL ARRANGEMENTS AT GRAND BOULEVARD VIADUCT | |
| 278 | LS104 | LANDSCAPE PLAN | GRAND BOULEVARD | 339 | Y013 | TYPICAL ARRANGEMENTS AT APPROACH STRUCTURES | |
| 279 | LS201 | LANDSCAPE DETAILS | | 340 | Y021 | STRUCTURAL DETAILS TYPICAL POLE DETAIL | |
| BRIDGE DETAILS 112TRAM | | | | 341 | Y023 | STRUCTURAL DETAILS STREETLIGHT POLE DETAIL | |
| 280 | ST100 | BASE BID - 112TRAM JOINTS GENERAL NOTES | | 342 | Y025 | STRUCTURAL DETAILS DOWN GUY ASSEMBLY | |
| 281 | ST101 | BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS | 1 OF 3 | 343 | Y031 | STRUCTURAL DETAILS TYPICAL FOUNDATION DETAIL | |
| 282 | ST102 | BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS | 2 OF 3 | 344 | Y033 | STRUCTURAL DETAILS STREETLIGHT POLE FOUNDATION DETAIL | |
| 283 | ST103 | BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS | 3 OF 3 | 345 | Y034 | STRUCTURAL DETAILS 2 FT DIAMETER FOUNDATION DETAIL | |
| 284 | ST104 | BASE BID - 112TRAM JOINTS MODIFIED FINGER JOINT PLAN | PIERS 2 AND 5 | 346 | Y035 | STRUCTURAL DETAILS ROCK SOCKET AND DOWN GUY FOUNDATION DETAILS | |
| 285 | ST105 | BASE BID - 112TRAM JOINTS MODIFIED FINGER JOINT PLAN | PIER 8 | 347 | Y036 | STRUCTURE DETAIL TYPICAL SPREAD FOOTING FOUNDATION DETAIL | |
| 286 | ST106 | BASE BID - 112TRAM JOINTS FINGER JOINT MODIFICATION DETAILS | | 348 | Y037 | POLE INSTALLATION DETAILS AT GRAND BOULEVARD VIADUCT | SHEET 1 OF 2 |
| 287 | ST107 | BASE BID - 112TRAM JOINTS STRIP SEAL PLAN | PIERS 11 AND 12 | 349 | Y038 | POLE INSTALLATION DETAILS AT GRAND BOULEVARD VIADUCT | SHEET 2 OF 2 |
| 288 | ST108 | BASE BID - 112TRAM JOINTS STRIP SEAL DETAILS | | 350 | Y039 | STRUCTURAL DETAILS ANCHOR BOLT DETAIL | |
| 289 | ST109 | BASE BID - 112TRAM JOINTS BRIDGE TYPICAL SECTIONS | | 351 | Y041 | BRACKET ARM ASSEMBLIES SINGLE PIPE BRACKET ARM | |
| BRIDGE TRACK DRAIN DETAILS | | | | 352 | Y042 | BRACKET ARM ASSEMBLIES DOUBLE PIPE BRACKET ARM | |
| 290 | ST201 | PLAN VIEW - ABUTMENT 2 - TRACK DRAIN | | 353 | Y043 | BRACKET ARM ASSEMBLIES OVERLAP SINGLE PIPE BRACKET ARM | |
| 291 | ST202 | APPROACH SLAB EXPANSION JOINT DRAIN DETAIL | | 354 | Y044 | BRACKET ARM ASSEMBLIES POLE CLAMP DETAILS | |
| 292 | ST203 | EXISTING MSE WALLS | | 355 | Y045 | BRACKET ARM ASSEMBLIES BRACKET ARM POLE SOCKET | |
| 293 | ST204 | TRACK SLAB DETAIL - OVER UTILITY VAULT | | 356 | Y046 | BRACKET ARM ASSEMBLIES OVERLAP BRACKET ARM MOUNTING BRACKET DETAIL | |
| BRIDGE DETAILS 115RE | | | | 357 | Y047 | BRACKET ARM ASSEMBLIES SECTION INSULATOR SUPPORT | |
| 294 | ST300 | BID ALTERNATE - 115RE JOINTS GENERAL NOTES | | 358 | Y051 | SPAN WIRE ARRANGEMENTS CROSS SPAN DETAILS | |
| 295 | ST301 | BID ALTERNATE - 115RE JOINTS MILL AND OVERLAY LIMITS - ABUT 1 | | 359 | Y052 | SPAN WIRE ARRANGEMENTS HEADSPAN ASSEMBLY | |
| 296 | ST302 | BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 2 | | 360 | Y056 | REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES | SHEET 1 OF 2 |
| 297 | ST303 | BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 5 | | 361 | Y057 | REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES | SHEET 2 OF 2 |
| 298 | ST304 | BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 8 | | 362 | Y058 | REGISTRATION ASSEMBLIES PENDULUM SUSPENSION ASSEMBLIES | |
| 299 | ST305 | BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 11 | | 363 | Y059 | REGISTRATION ASSEMBLIES SUSPENSION ASSEMBLIES | |
| 300 | ST306 | BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 12 | | | | | |
| 301 | ST307 | BID ALTERNATE - 115RE JOINTS FINGER JOINT MODIFICATION PLAN - PIERS 2 & 5 | | | | | |

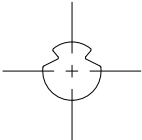
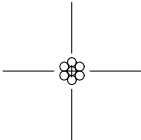
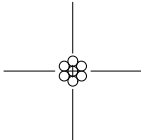
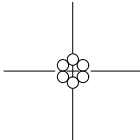
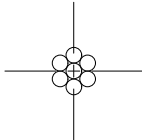
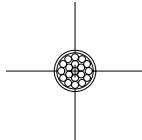
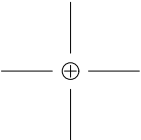
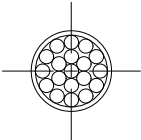
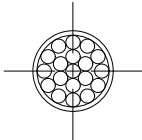
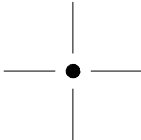
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| | | | CHECKED BY | JWR | | |  <div>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> | | INDEX OF DRAWINGS SHEET 3 | | | | | | FILENAME: G012.dgn | |
| | | | DRAWN BY | MMO | | | | | | | | | | | CONTRACT NO.: | |
| | | | CHECKED BY | JWR | | | | | | | | | | | CONTRACT NO.*** | |
| | | | APPROVED BY | NKS | | | | | | | | | | | | VOLUME: 1 |
| PLOT DATE: \$DATE\$ | | | \$TIME\$ | | DATE | 12-23-2022 | | | | | | | DRAWING NO.: | SHEET NO.: | G012 4 | |

| # | dwg | TITLE | DESCRIPTION | # | dwg | TITLE | DESCRIPTION |
|-------------------------|------|--|---|---------------------------------|-------|---|--|
| 364 | Y061 | IN-SPAN ASSEMBLIES JUMPER ASSEMBLIES | | 427 | Z618 | COMMUNICATIONS DETAILS | RING DIAGRAM SHEET 4 |
| 365 | Y062 | IN-SPAN ASSEMBLIES SECTION INSULATOR ASSEMBLY | | 428 | Z619 | COMMUNICATIONS DETAILS | RING DIAGRAM SHEET 5 |
| 366 | Y063 | IN-SPAN ASSEMBLIES TYPICAL SPLICE DETAILS | | 429 | Z620 | COMMUNICATIONS DETAILS | 3RD ST SPLICE |
| 367 | Y064 | IN-SPAN ASSEMBLIES SPAN SPACER AND CROSS CONTACT WIRE CLAMP ASSEMBLIES | | 430 | Z621 | COMMUNICATIONS DETAILS | 3RD ST SPLICE INSET |
| 368 | Y065 | IN-SPAN ASSEMBLIES CONTACT WIRE PROTECTION BOARD | | 431 | Z622 | COMMUNICATIONS DETAILS | 2ND ST SPLICE |
| 369 | Y066 | SWITCHING AND FEEDER ASSEMBLIES FEEDER TAP DETAILS | | 432 | Z623 | COMMUNICATIONS DETAILS | SUB STATION SPLICE |
| 370 | Y067 | SWITCHING AND FEEDER ASSEMBLIES SURGE ARRESTER DETAILS | | 433 | Z624 | COMMUNICATIONS DETAILS | BERKLEY PKWY SPLICE |
| 371 | Y068 | SECTIONALIZING DIAGRAM | | 434 | Z625 | COMMUNICATIONS DETAILS | RIVERFRONT SPLICE DIAGRAM |
| 372 | Y069 | POLE GROUND WIRE INSTALLATION GRAND BOULEVARD VIADUCT PIERS | | 435 | Z626 | COMMUNICATIONS DETAILS | RIVERFRONT STATION SPLICE |
| 373 | Y070 | SWITCHING FEEDER ASSEMBLIES FEEDER TAP DETAILS | | 436 | Z627 | ITS CONDUIT HANGER DETAILS | |
| 374 | Y071 | TERMINATION ASSEMBLIES FIXED TERMINATION ASSEMBLY | | 437 | Z628 | CONDUIT TRANSITION DETAIL | |
| 375 | Y072 | TERMINATION ASSEMBLIES SPRING TENSIONER TERMINATION ASSEMBLY | | 438 | Z629 | ITS CONDUIT TRANSITION BOX DETAIL | |
| 376 | Y081 | MISCELLANEOUS POLE NUMBERING DETAIL | | 439 | Z630 | ITS CONDUIT EXPANSION/DEFLECTION POINT | |
| 377 | Y092 | CROSS SECTION HEART OF AMERICA BRIDGE | | 440 | Z631 | ITS CONDUIT RISER | |
| 378 | Y093 | PROFILES HEART OF AMERICA | SHEET 1 OF 2 | TRAIN CONTROL PLANS | | | |
| 379 | Y094 | PROFILES HEART OF AMERICA | SHEET 2 OF 2 | 441 | N101 | TRAIN CONTROL PLAN | 3RD & GRAND |
| 380 | Y097 | CROSS SECTION OCS FEEDING POINT | | 442 | N102 | TRAIN CONTROL PLAN | 2ND & GRAND |
| 381 | Y111 | STRUCTURE SCHEDULE POLE AND FOUNDATION SCHEDULE | SHEET 1 OF 2 | 443 | N103 | TRAIN CONTROL PLAN | FRONT & BERKLEY |
| 382 | Y112 | STRUCTURE SCHEDULE POLE AND FOUNDATION SCHEDULE | SHEET 2 OF 2 | 444 | N104 | TRAIN CONTROL PLAN | RIVERFRONT |
| OCS LAYOUT PLANS | | | | 445 | N105 | TRAIN CONTROL PLAN | VMF |
| 383 | Y198 | KEY MAP | | TRAIN SIGNALING | | | |
| 384 | Y199 | MASTER OVERLAP CHART | | 446 | N600 | TRAIN CONTROL TRACK AND CABLE PLAN | 3RD & GRAND |
| 385 | Y201 | PCS LAYOUT PLAN | NB STA BEGIN TO STA 113+00 | 447 | N601 | TRAIN CONTROL TRACK AND CABLE PLAN | 2ND & GRAND |
| 386 | Y202 | PCS LAYOUT PLAN | NB STA 113+00 TO STA 117+00 | 448 | N602 | TRAIN CONTROL TRACK AND CABLE PLAN | FRONT STREET |
| 387 | Y203 | PCS LAYOUT PLAN | NB STA 117+00 TO STA 121+00 | 449 | N603 | TRAIN CONTROL TRACK AND CABLE PLAN | RIVERFRONT |
| 388 | Y204 | PCS LAYOUT PLAN | NB STA 121+00 TO STA 125+00 | 450 | N604 | TRAIN CONTROL ROUTE AND ASPECT CHART | 3RD & GRAND |
| 389 | Y205 | PCS LAYOUT PLAN | NB STA 125+00 TO STA 129+00 | 451 | N605 | TRAIN CONTROL ROUTE AND ASPECT CHART | 2ND & GRAND |
| 390 | Y206 | PCS LAYOUT PLAN | NB STA 129+00 TO STA 133+00 | 452 | N606 | TRAIN CONTROL ROUTE AND ASPECT CHART | RIVERFRONT |
| 391 | Y207 | PCS LAYOUT PLAN | NB STA 133+00 TO STA 135+50 | 453 | N607 | TRAIN CONTROL TURNOUT BONDING | |
| 392 | Y208 | PCS LAYOUT PLAN | NB STA 135+50 TO STA 139+50 | 454 | N608 | TRAIN CONTROL | TYPICAL SIGNAL CASE LAYOUT RELAY CASE |
| 393 | Y209 | PCS LAYOUT PLAN | NB STA 139+50 TO STA 143+50 | 455 | N609 | TRAIN CONTROL | TYPICAL SIGNAL CASE FOUNDATION AND GROUNDING DETAILS |
| 394 | Y210 | PCS LAYOUT PLAN | NB STA 143+50 TO STA 147+50 | 456 | N610 | TRAIN CONTROL | TYPICAL TWC LOOP INSTALLATION EMBEDDED TRACK |
| 395 | Y211 | PCS LAYOUT PLAN | NB STA 147+50 TO END | 457 | N611 | TRAIN CONTROL | CABLE / CONDUIT SCHEDULE |
| 396 | Y212 | PCS BRIDGE GROUNDING LAYOUT PLAN | STA 117+00 TO STA 121+00 | 458 | N612 | TRAIN CONTROL | CABLE / CONDUIT SCHEDULE |
| 397 | Y213 | PCS BRIDGE GROUNDING LAYOUT PLAN | STA 121+00 TO STA 125+00 | 459 | N613 | TRAIN CONTROL | CABLE / CONDUIT SCHEDULE |
| 398 | Y214 | PCS BRIDGE GROUNDING LAYOUT PLAN | STA 125+00 TO STA 129+00 | RIGHT OF WAY PLANS | | | |
| 399 | Y215 | PCS BRIDGE GROUNDING LAYOUT PLAN | STA 129+00 TO STA 133+00 | 460 | RW001 | RIGHT OF WAY KEY MAP | |
| 400 | Y216 | PCS LAYOUT PLAN | 2ND STREET TO VMF | 461 | RW101 | RIGHT OF WAY PLAN | 100 GRAND BLVD |
| 401 | Y217 | PCS LAYOUT PLAN | ENLARGED VIEW | 462 | RW102 | RIGHT OF WAY PLAN | 101 GRAND BLVD |
| COMMUNICATION SCHEDULES | | | | 463 | RW103 | RIGHT OF WAY PLAN | 599 E RIVERFRONT ROAD - SHEET 1 |
| 402 | Z001 | COMMUNICATION SCHEDULE | | 464 | RW104 | RIGHT OF WAY PLAN | 599 E RIVERFRONT ROAD - SHEET 2 |
| COMMUNICATION PLANS | | | | 465 | RW105 | RIGHT OF WAY PLAN | 599 E RIVERFRONT ROAD - SHEET 3 |
| 403 | Z101 | COMMUNICATIONS PLAN | NB STA BEGIN TO STA 113+00 | 466 | RW106 | RIGHT OF WAY PLAN | 599 E RIVERFRONT ROAD - SHEET 4 |
| 404 | Z102 | COMMUNICATIONS PLAN | NB STA 113+00 TO STA 117+00 | DETOUR PLAN | | | |
| 405 | Z103 | COMMUNICATIONS PLAN | NB STA 117+00 TO STA 121+00 | 467 | DT101 | DETOUR PLAN | |
| 406 | Z104 | COMMUNICATIONS PLAN | NB STA 121+00 TO STA 125+00 | MILL AND OVERLAY PLANS | | | |
| 407 | Z105 | COMMUNICATIONS PLAN | NB STA 125+00 TO STA 129+00 | 468 | R101 | ROADWAY MILL AND OVERLAY PLAN AND PROFILE | STA 0+00 TO STA 4+00 |
| 408 | Z106 | COMMUNICATIONS PLAN | NB STA 129+00 TO STA 133+00 | 469 | R102 | ROADWAY MILL AND OVERLAY PLAN AND PROFILE | STA 4+00 TO STA 8+00 |
| 409 | Z107 | COMMUNICATIONS PLAN | NB STA 133+00 TO STA 135+50 | 470 | R103 | ROADWAY MILL AND OVERLAY PLAN AND PROFILE | STA 19+00 TO STA 23+00 |
| 410 | Z108 | COMMUNICATIONS PLAN | NB STA 135+50 TO STA 139+50 | 471 | R104 | ROADWAY MILL AND OVERLAY PLAN AND PROFILE | STA 23+00 TO STA 28+00 |
| 411 | Z109 | COMMUNICATIONS PLAN | NB STA 139+50 TO STA 143+50 | 472 | R105 | ROADWAY MILL AND OVERLAY PLAN AND PROFILE | 2ND STREET TO VMF |
| 412 | Z110 | COMMUNICATIONS PLAN | NB STA 143+50 TO STA 147+50 | 473 | R201 | ROADWAY MILL AND OVERLAY | ALIGNMENT TABLE GRAND BOULEVARD & BERKLEY PARKWAY |
| 413 | Z111 | COMMUNICATIONS PLAN | NB STA 147+50 TO END | MILL AND OVERLAY CROSS SECTIONS | | | |
| 414 | Z112 | COMMUNICATIONS PLAN | 2ND STREET TO VMF | 474 | XS01 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | GRAND BOULEVARD |
| COMMUNICATION DETAILS | | | | 475 | XS02 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | GRAND BOULEVARD |
| 415 | Z601 | SYSTEMWIDE ELECTRICAL | TYPICAL MANHOLE DETAILS | 476 | XS03 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | GRAND BOULEVARD |
| 416 | Z602 | SYSTEMWIDE ELECTRICAL | MANHOLE INSTALLATION AND SWITCH HEATER/TRACK CIRCUIT BLOCKOUT DETAILS | 477 | XS04 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | GRAND BOULEVARD |
| 417 | Z603 | SYSTEMWIDE ELECTRICAL | FIBER OPTIC SPLICE VAULT | 478 | XS05 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | GRAND BOULEVARD |
| 418 | Z604 | SYSTEMWIDE ELECTRICAL | HANDHOLE DETAILS | 479 | XS06 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | GRAND BOULEVARD |
| 419 | Z606 | SYSTEMWIDE ELECTRICAL | TYPICAL TRACK CIRCUIT BLOCKOUT DETAIL | 480 | XS07 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | BERKLEY PARKWAY |
| 420 | Z607 | SYSTEMWIDE ELECTRICAL | TRACK TURNOUT BLOCKOUT DETAIL | 481 | XS08 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | BERKLEY PARKWAY |
| 421 | Z608 | SYSTEMWIDE ELECTRICAL | TYPICAL DUCTBANK INSTALLATION MANHOLE AND CONDUIT LABELING AND CONDUIT STUB-UP DETAIL | 482 | XS09 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | BERKLEY PARKWAY |
| 422 | Z609 | SYSTEMWIDE ELECTRICAL | COMMUNICATION CONDUIT TYPICAL SECTIONS | 483 | XS10 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | 2ND STREET |
| 423 | Z614 | COMMUNICATIONS DETAILS | NETWORK DIAGRAM | 484 | XS11 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | 2ND STREET |
| 424 | Z615 | COMMUNICATIONS DETAILS | RING DIAGRAM SHEET 1 | 485 | XS12 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | 2ND STREET |
| 425 | Z616 | COMMUNICATIONS DETAILS | RING DIAGRAM SHEET 2 | 486 | XS13 | ROADWAY MILL AND OVERLAY CROSS SECTIONS | 2ND STREET |
| 426 | Z617 | COMMUNICATIONS DETAILS | RING DIAGRAM SHEET 3 | | | | |

| | | | | | | | | | | | |
|---------------------|------|-------------|-------------|-----|---|---|----------------------|---|--------------|--------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | MMO |  <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUED FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": | |
| | | | CHECKED BY | JWR | |  <div>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> | NOT FOR CONSTRUCTION | | | NOT TO SCALE | |
| | | | DRAWN BY | MMO | | | | | | FILENAME: | |
| | | | CHECKED BY | JWR | | | | | | G013.dgn | |
| | | | APPROVED BY | NKS | | | | | | CONTRACT NO.: | |
| | | | | | | | | | | CONTRACT NO. *** | |
| PLOT DATE: \$DATE\$ | | | \$TIME\$ | | DATE | 12-23-2022 | INDEX OF DRAWINGS | | VOLUME: | | |
| | | | | | | | SHEET 4 | | 1 | | |
| | | | | | | | | | DRAWING NO.: | SHEET NO.: | |
| | | | | | | | | | G013 | 5 | |

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FEEDER CABLES AND JUMPER WIRES TO BE INSULATED FOR 2,000 VOLTS AND TO OPERATE AT 90°C.
3. 4mm SOLID WIRE TO BE USED FOR INCLINED PENDULUM HANGERS AND CURVE PENDULUM HANGERS (PULLOVERS).
5. ALL GUY WIRE SHALL CONFORM TO ASTM A475 AND HAVE A CLASS C COAT OF GALVANIZING.
6. ALL ENDS OF PHILLYSTRAN SYNTHETIC ROPE TO HAVE SEALING CAP TO PREVENT WATER INTRUSION.

| CONDUCTORS | CONTACT WIRE | SPAN WIRE | | | | STITCH ROPE | SOLID HANGER WIRE | FEED TAP WIRE | SUPPLEMENTARY FEEDER CABLE | FLEXIBLE HANGER WIRE |
|--------------------------------------|---|---|--|---|---|---|---|---|---|---|
| SIZE | 350 KCMIL | 1/4 | 5/16 | 3/8 | 1/2 | 11 MM | 4 MM | 250 KCMIL | 350 KCMIL | 3/16 |
| MATERIAL | COPPER | GALVANIZED STEEL | GALVANIZED STEEL | GALVANIZED STEEL | GALVANIZED STEEL | PHILLYSTRAN | STAINLESS STEEL | COPPER | COPPER | BRONZE |
| MAKE-UP/ DESCRIPTION | SOLID GROOVED TROLLEY WIRE | 7 WIRE STRAND | 7 WIRE STRAND | 7 WIRE STRAND | 7 WIRE STRAND | BONDED JACKET TO SYNTHETIC ROPE | SOLID | 61 WIRE | 37 WIRE | 7X7 CONCENTRIC STAND CLASS G STRANDING |
| TYPE | HARD DRAWN | SIEMENS-MARTIN | EHS | EHS | EHS | HPTG 11200I | --- | --- | --- | ALLOY 80 BRONZE |
| STRAND DIAMETER (IN) | N/A | 0.080 | 0.109 | 0.120 | 0.165 | --- | --- | --- | --- | 0.1875 |
| OVERALL DIAMETER (IN) | 0.620 | 0.250 | 0.3125 | 0.375 | 0.500 | 0.433 | 0.157 (4mm) | 0.576 | 0.941 | 0.1875 |
| CROSS SECTIONAL AREA (IN²) | 0.2758 | 0.038 | 0.065 | 0.079 | 0.150 | 0.147 | 0.019 | 0.235 | 0.665 | --- |
| ASTM STANDARD | B47 | A475 | A475 | A475 | A475 | --- | --- | B8, B33 | B3, B496 | B173 |
| INSULATION | --- | --- | --- | --- | --- | POLYURETHANE | --- | 0.109" EPR / 0.06" CROSS-LINKED POLYOLEFIN | 0.075" EPR 0.065" LSZH JACKET | --- |
| WEIGHT - NO ICE (LBS/FT) | 1.063 | 0.121 | 0.205 | 0.273 | 0.517 | 0.07 | 0.057 | 0.772 | 1.286 | 0.081 |
| BREAKING LOAD (LBS) | 11,800 | 3,150 | 11,200 | 15,400 | 26,700 | 11,200 | 1,123 | 7,940 | 7,669 | 1,400 |
| MODULUS OF ELASTICITY (PSI) | 16 x 10 ⁶ | 29 x 10 ⁶ | 29 x 10 ⁶ | 29 x 10 ⁶ | 29 x 10 ⁶ | --- | 28 x 10 ⁶ | 16 x 10 ⁶ | 16 x 10 ⁶ | 16 x 10 ⁶ |
| THERMAL COEFFICIENT (1/°F) | 9.4 x 10 ⁻⁶ | 6.7 x 10 ⁻⁶ | 6.7 x 10 ⁻⁶ | 6.7 x 10 ⁻⁶ | 6.7 x 10 ⁻⁶ | --- | 17.3 x 10 ⁻⁶ | 9.4 x 10 ⁻⁶ | 9.4 x 10 ⁻⁶ | 9.4 x 10 ⁻⁶ |
| NORMAL TENSION @ 60°F - NO WIND | 2480 | --- | --- | --- | --- | --- | --- | --- | 1550 | --- |
| WEIGHT WITH 1/2" RADIAL ICE (LBS/FT) | 1.760 | 0.589 | 0.7128 | 0.819 | 1.142 | 0.653 | 0.467 | 1.444 | 2.895 | 0.510 |
| TYPICAL SECTION |  |  |  |  |  |  |  |  |  |  |

REV

DATE

DESCRIPTION

DESIGNED BY

PFW

CHECKED BY

BP

DRAWN BY

PFW

CHECKED BY

BP

APPROVED BY

NKS

PLOT DATE:

12/21/2022

1:11:58 PM

DATE

12/23/2022



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

DATE: 12-23-2022



HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856



The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
CONDUCTOR PARTICULARS

SCALE FOR 22"x34":
NO SCALE

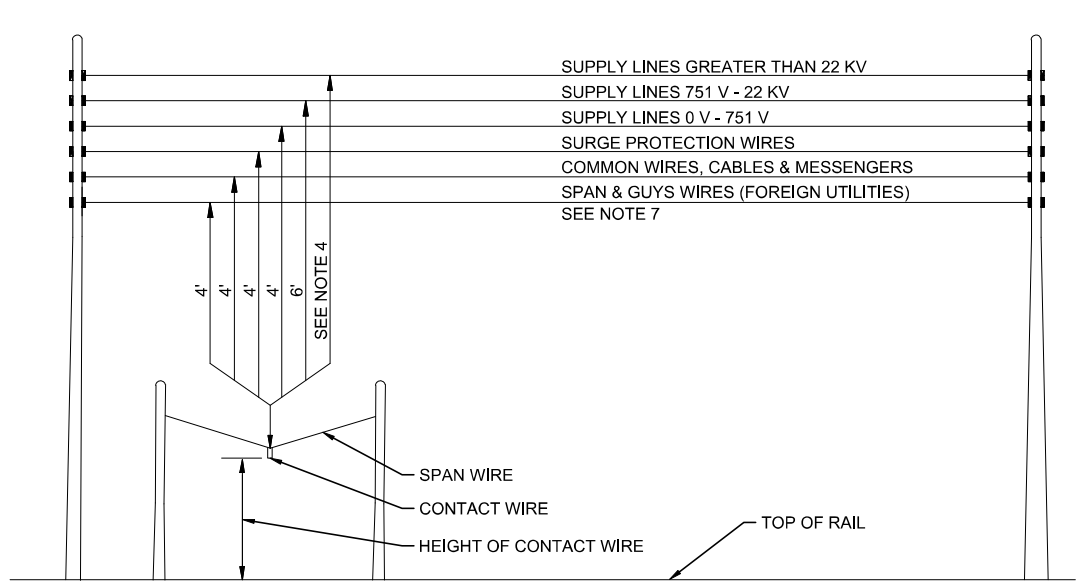
FILENAME:
Y004.dwg

CONTRACT NO.:
CONTRACT NO. ###

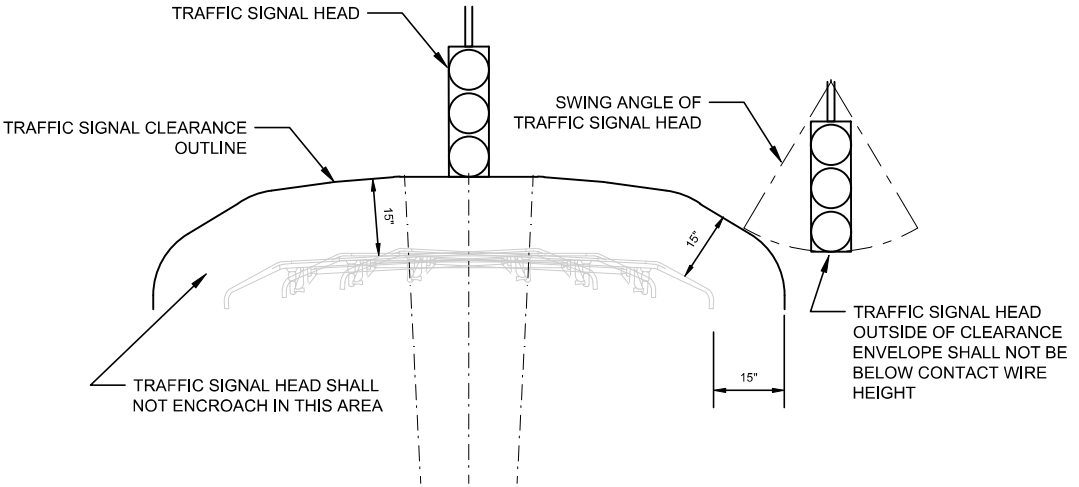
VOLUME:
1

DRAWING NO.:
Y004

SHEET NO.:
330



NON-OCS CONDUCTOR CLEARANCES
ABOVE CONTACT WIRE
PER NESC

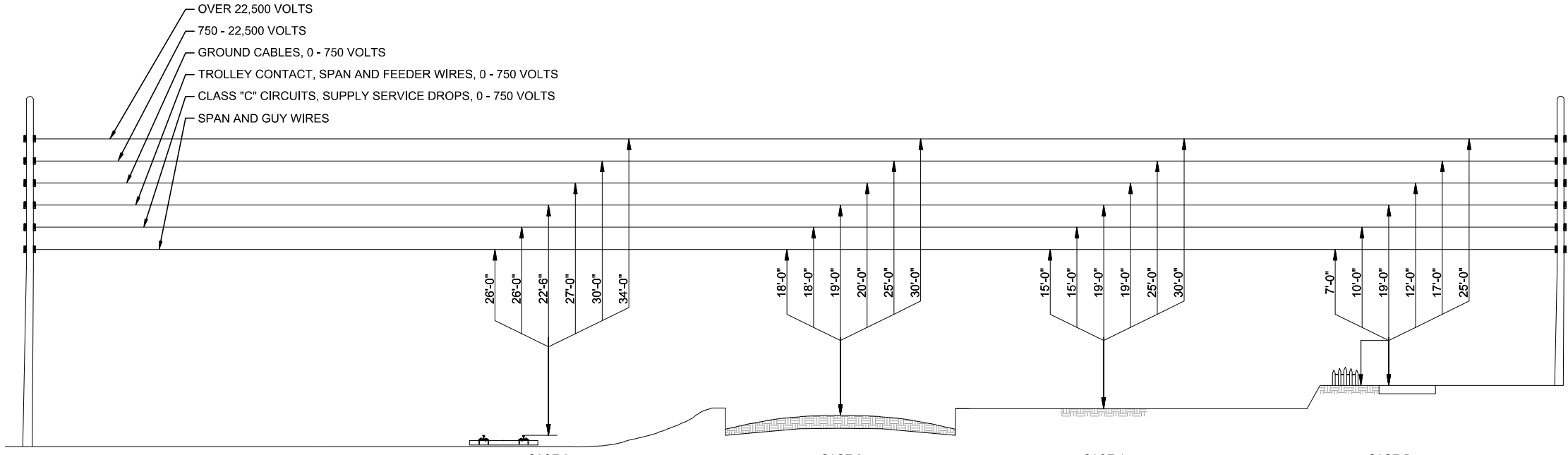


TRAFFIC SIGNAL CLEARANCE

NOTE: CLEARANCE ENVELOPE DISTANCE OF 15 INCHES IS BASED ON A CONTACT WIRE HEIGHT OF 20'-6" PLUS A VERTICAL UPLIFT FROM THE PANTOGRAPH PRESSURE OF 2 INCHES.

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- ALL CLEARANCES SHALL CONFORM TO NATIONAL ELECTRICAL SAFETY CODE (NESC) UNLESS INDICATED OTHERWISE.
- ALL CLEARANCES ARE MINIMUM VALUES.
- VERTICAL CLEARANCES ABOVE GROUND OR RAILS, SHALL APPLY TO CONTACT WIRES UNDER THE FOLLOWING CONDITIONS:
 - CONDUCTOR TEMPERATURE OF 0°F AND 120°F, ICE, NO WIND, WITH FINAL SAG IN THE WIRE
 - SPAN LENGTHS NOT GREATER THAN 120 FT FOR SINGLE CONTACT SYSTEMS
 - REFER TO NESC RULE 233. C. VERTICAL CLEARANCE, 2. VOLTAGES EXCEEDING 22
- CLEARANCE UNDER OVERHEAD STRUCTURES SHALL, AT A MINIMUM, PROVIDE FOR THE NORMAL ELECTRICAL PASSING CLEARANCE OF 7-1/2 INCHES, UNDER PANTOGRAPH UPLIFT CONDITIONS, AND INCORPORATING ALL CONSTRUCTION TOLERANCES FOR THE TRACK, OCS, AND OVERHEAD STRUCTURES. IF CONTACT WIRE CLEARANCE TO BRIDGE UNDERSIDE IS 12" OR LESS, ADD CONTACT WIRE PROTECTION BOARD. IF LESS THAN 7-1/2" TAKE DIRECTION FROM THE ENGINEER.
- SPAN WIRES ASSOCIATED WITH THE OCS THAT MAY BE CLOSE TO THE CONTACT WIRE OF 6" OR LESS SHALL BE PROTECTED FROM ACCIDENTAL ENERGIZATION WITH SPAN SPACERS, INSULATION, OR USE OF SPAN ROPE IN LIEU OF STEEL GUY WIRE.
- WHERE MINIMUM CLEARANCE CANNOT BE OBTAINED, CONTRACTOR SHALL TAKE DIRECTION FROM ENGINEER.
- TRAFFIC SIGNAL CLEARANCE MINIMUM OF 15 INCHES FROM PANTOGRAPH SHALL BE MAINTAINED, DISTANCE SHALL BE FIGURED ON 2 INCH VERTICAL UPLIFT OF CONTACT WIRE, 3 DEGREE VEHICLE SWAY, TRAFFIC SIGNAL WIND DISPLACEMENT, AND ANY NATIONAL OR LOCAL CODE REQUIREMENTS.



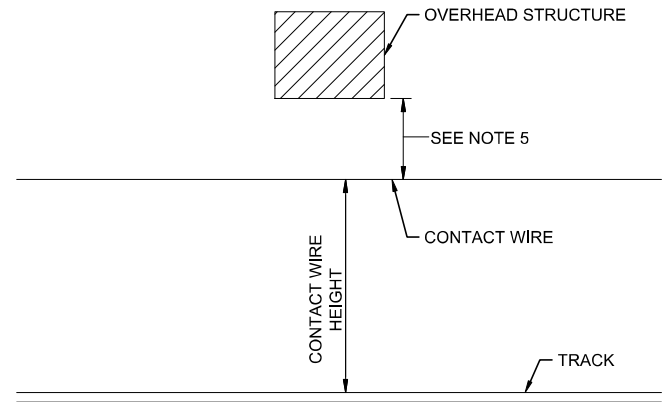
CASE 2
CLEARANCES AT CROSSING OF TRACKS
OR ALONG AND ABOVE TRACKS OR
SURFACE OF STREETS OF RAILROADS
OPERATED BY OVERHEAD TROLLEY
CONTACT WIRES

CASE 3
CLEARANCES ALONG
THOROUGHFARES IN URBAN
DISTRICTS OR CROSSING
THOROUGHFARES IN RURAL
DISTRICTS

CASE 4
CLEARANCES ABOVE GROUND ALONG
THOROUGHFARES IN RURAL DISTRICTS
OR ACROSS OTHER AREAS CAPABLE OF
BEING TRAVERSED BY VEHICLES OR
AGRICULTURAL EQUIPMENT

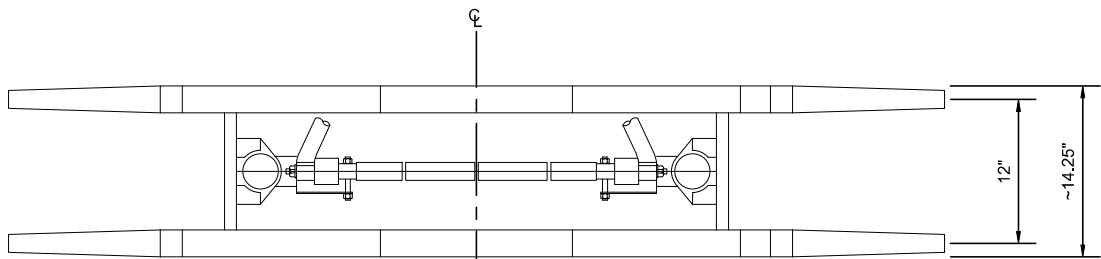
CASE 5
CLEARANCES ABOVE
GROUND IN AREAS
ACCESSIBLE TO
PEDESTRIANS ONLY

OCS WIRE CLEARANCES ABOVE GROUND OR RAILS

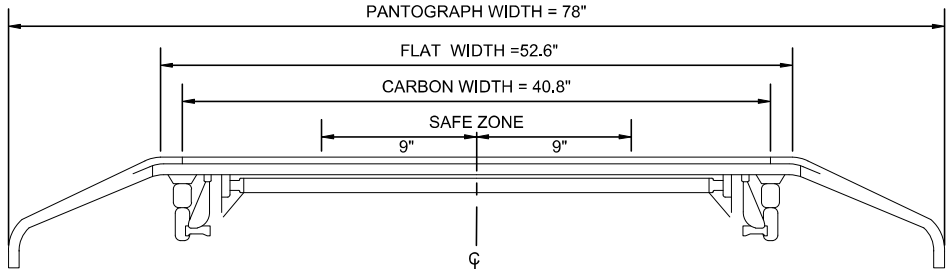


OCS CLEARANCE BELOW OVERPASS

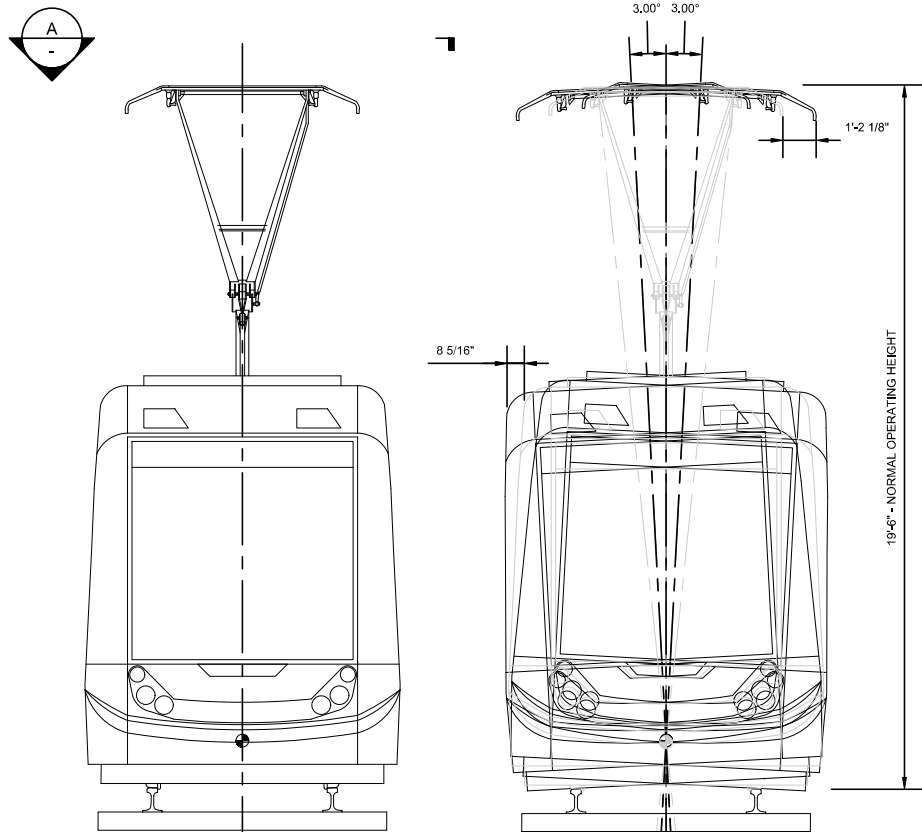
| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|---|---|---|--|------------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS VERTICAL ELECTRICAL CLEARANCE REQUIREMENTS | SCALE FOR 22"x34": NOT TO SCALE |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | FILENAME: Y005.dwg |
| | | | DRAWN BY | PFW | | | | | | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | | | | DRAWING NO.: Y005 |
| PLOT DATE: 12/21/2022 | | | 2:56:59 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | |



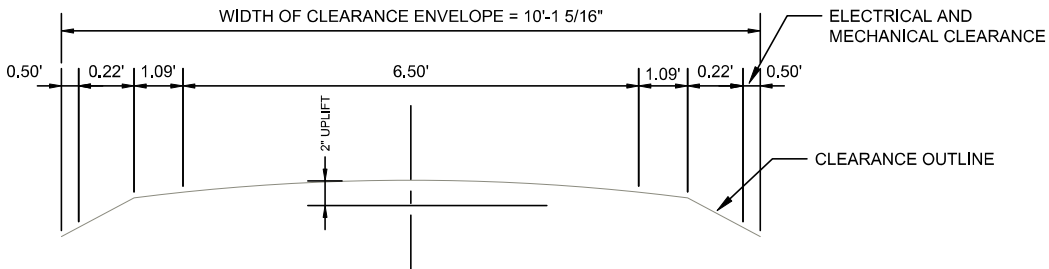
A PLAN VIEW PAN HEAD
SCALE: NTS



SIDE VIEW PAN HEAD
SCALE: NTS



END VIEW STREETCAR STATIC/DYNAMIC POSITION
SCALE: NTS



PANTOGRAPH CLEARANCE OUTLINE
SCALE: NTS

NOTES:

- VALUES SHOWN ARE CONSERVATIVE AND BASED ON INDUSTRY PRACTICE.
- SAFE OPERATING ZONE ON PANTOGRAPH HEAD IS BASED ON VEHICLE ROLL OF 3° AND 55 MPH WINDS WITH 10 MPH GUST BLOWOFF FOR A CONSTANT TENSIONED CONTACT WIRE WITH 2,480 LBS. TENSION.
- BLOWOFF IS BASED ON A SPAN LENGTH OF 125 FEET. MAXIMUM TYPICAL SPAN LENGTH IS 120 FEET.
- MAXIMUM STAGGER TO BE 9 INCHES. MAXIMUM MID-ORDINATE TO BE 18 INCHES WITH A 9 INCH OFFSET AT PULLOVERS, PROVIDING 9" STAGGER AT MID-ORDINATE.
- PANTOGRAPH CENTER IS LOCATED DIRECTLY OVER THE TRUCK KING PIN AND RIDES ALONG THE TRACK CENTER LINE.
- ELECTRICAL AND MECHANICAL CLEARANCE TO BE ADHERED TO. IF UNABLE TO MEET REQUIREMENTS, TAKE DIRECTION FROM THE ENGINEER.

| KANSAS CITY STREETCAR PANTOGRAPH SECURITY | | | |
|---|----------|--------|-----------|
| SINGLE CONTACT WIRE | | | |
| TRACK PARAMETERS | | | |
| ALIGNMENT | | 0.50 | IN |
| GAGE TOLERANCE | | 0.50 | IN |
| RAIL WEAR | | 0.38 | IN |
| WHEEL FL WEAR | | 0.36 | IN |
| WHEEL/RAIL CLEARANCE | | 0.24 | IN |
| CROSS LEVEL EFFECT | | | |
| CROSS LEVEL TOLERANCE | | 0.50 | IN |
| TRACK GAGE | | 56.50 | IN |
| RAIL HEAD WIDTH | | 2.71 | IN |
| TOTAL CROSS LEVEL EFFECT | | 2.48 | IN |
| PANTOGRAPH PARAMETERS | | | |
| WIDTH OVER HORNS | | 78.00 | IN |
| WIDTH ON FLAT | | 52.60 | IN |
| CARBON WIDTH | | 40.80 | IN |
| PANTO SWAY | | 1.50 | IN |
| HORIZ HORN LENGTH | | 12.70 | IN |
| MAX OPERATING HEIGHT | | 20.50 | FT |
| MIN OPERATING HEIGHT | | 13.50 | FT |
| VEHICLE PARAMETERS | | | |
| ROLL AT: | | 3.00 | DEGREES |
| | | 10.95 | IN |
| ROLL POINT ABOVE TOR | | 25.00 | IN |
| LATERAL MOVEMENT | | 2.00 | IN |
| TOTAL VEHICLE/PANTOGRAPH MOVEMENT | | | |
| TOTAL MOVEMENT | | 11.69 | IN |
| 50% REDUCTION INTO WIND (PER AREMA) | | 5.85 | IN |
| WIRE PARAMETERS | | | |
| | DIAM. IN | WT/FT | TENSION # |
| CW | 0.62 | 1.06 | 2480 |
| | | | |
| CW HEIGHT FT | | 19.50 | |
| SPAN LENGTH (TANGENT) | | 125.00 | |
| WIND @ OPERATING CONDITION | | 55 | MPH |
| MAX WIND (W/ 10% GUST) | | 60.50 | MPH |
| | | | |
| ALLOWABLE MOVEMENT BEFORE HORN | | 26.30 | IN |
| | | | |
| TOTAL WIRE MOVEMENT | | | |
| FROM PANTO CL | | 10.42 | IN |
| | | | |
| FINAL LOCATION OF WIRE (BLOWOFF + VEHICLE SWAY) | | 15.88 | IN |
| | | | |
| ALLOWABLE STAGGER | | 20.00 | IN |
| ASSIGNED STAGGER | | 9.00 | IN |

| BLOW OFF CALCULATION | |
|--------------------------|-------------|
| ARRANGEMENT | SINGLE WIRE |
| TYPE | CW |
| DIAMETER (IN) | 0.62 |
| WEIGHT (LBS/FT) | 1.06 |
| HANGER WT (LBS/FT) | 0 |
| SYSTEM WT (LBS/FT) | 1.06 |
| TENSION (LBS) | 2480 |
| SPAN (FT) | 125 |
| SYSTEM HEIGHT (FT) | N/A |
| WIND SPEED (MPH) | 60.5 |
| WIND PRESSURE (LBS/SQFT) | 9.370 |
| WIND FORCE (LBS) | 0.48 |
| HANGER TENSION (LBS) | N/A |
| BLOW OFF (FT) | 0.38 |
| BLOW OFF (IN) | 4.58 |

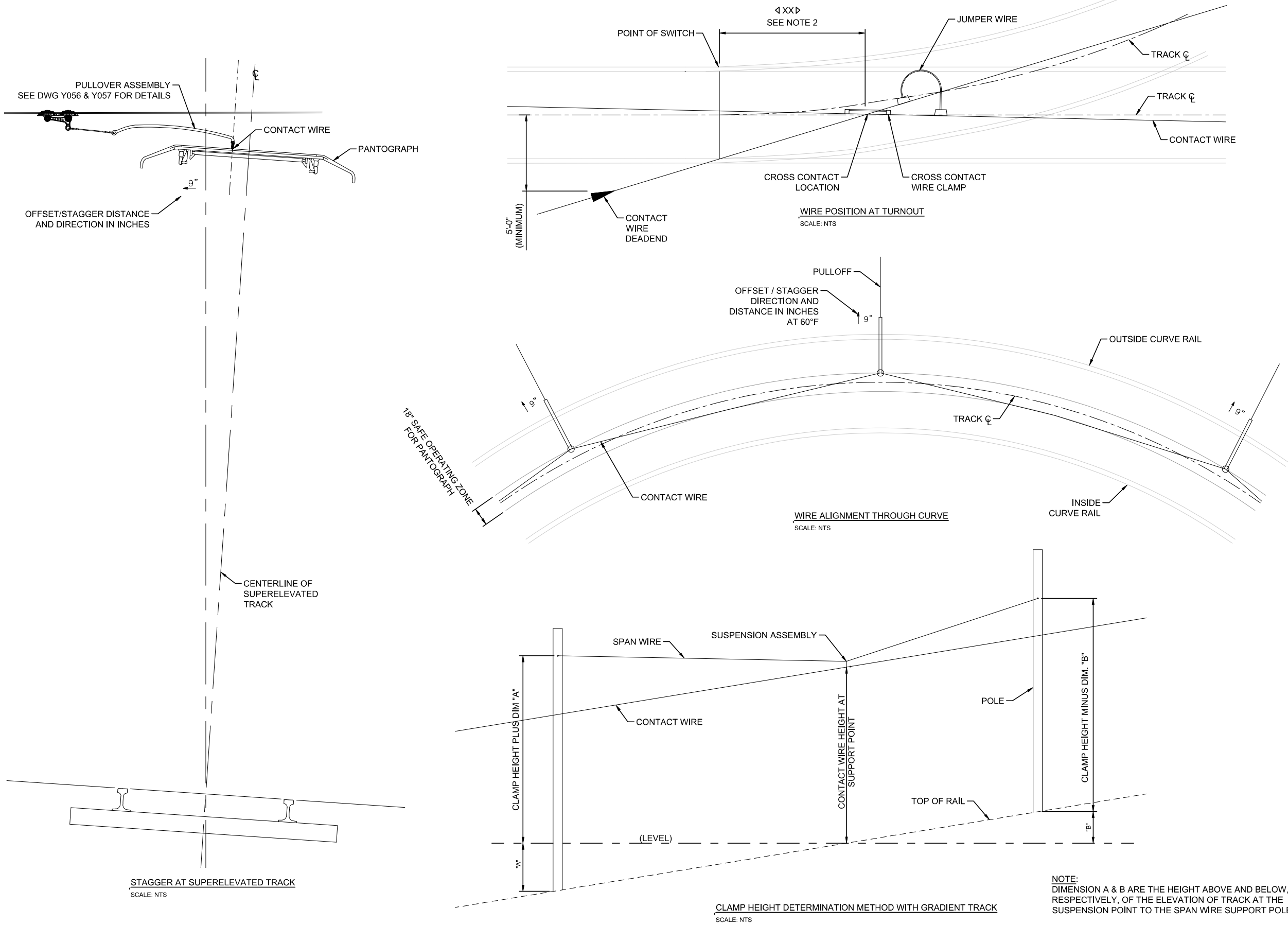
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



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|---|--|--|
| HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | | |

| KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": NOT TO SCALE |
|--|--|---|
| OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS PANTOGRAPH SECURITY | | FILENAME: Y006.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y006 SHEET NO.: 332 |



NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- CROSS CONTACT WIRE CLAMP TO BE POSITIONED AT A DISTANCE FROM THE POINT OF SWITCH AS INDICATED ON LAYOUT DRAWINGS. CONTRACTOR TO CONFIRM LOCATION OF CLAMP ALLOWS CONTACT WIRES TO RIDE ON THE SAFE ZONE OF THE PANTOGRAPH.
- FINAL INSTALLATION AND STAGGER OF CONTACT WIRE SHALL ENSURE THAT CONTACT WIRE REMAINS WITHIN THE SAFE ZONE OF THE PANTOGRAPH AT ALL LOCATIONS DURING NORMAL OPERATING CONDITIONS.
- JUMPERS SHALL BE POSITIONED SO THAT MOVEMENT OF CONTACT WIRES WILL NOT RESULT IN FOULING OF THE CROSS CONTACT WIRE CLAMP.
- PULLOVER / STEADY ARM TO BE LOCATED AT REQUIRED STAGGER THAT IS REFERENCED FROM SUPERELEVATED TRACK CENTERLINE.
- PULLOVER OFFSETS ARE SHOWN WITH ARROWS IN LAYOUT DRAWINGS AND SHOW DISTANCE AND DIRECTION OF CONTACT WIRE FROM CENTER OF TRACK TOWARDS OUTSIDE OR INSIDE OF CURVE TRACK. DIMENSIONS ARE IN INCHES.
- FOR CROSS LEVEL TRACK, PULLOVERS AND STEADY ARMS TO BE OFFSET FROM PERPENDICULAR TRACK CENTERLINE.
- STAGGER AND OFFSET VALUES VARY AND ARE INDICATED ON THE LAYOUT PLANS. TYPICAL OFFSET FOR PULLOVERS ON CURVES IS 9 INCHES AND FOR TANGENT STAGGERS IS 9 INCHES.
- PULLOVER SPACING FOR CURVES IS SHOWN ON THE OCS LAYOUT DRAWINGS AND SHALL NOT EXCEED A SPACING WHERE THE CONTACT WIRE EXCEEDS THE PANTOGRAPH SAFE OPERATING ZONE OF +/- 9 INCHES.
- CROSS CONTACT WIRE CLAMPS TO BE PLACED ON WIRE ACCORDING TO TEMPERATURE AND MOVEMENT OF MAIN LINE WIRE. REFER TO SHEET Y008 FOR POSITIONING TABLE.

| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



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| NOT FOR CONSTRUCTION | | |

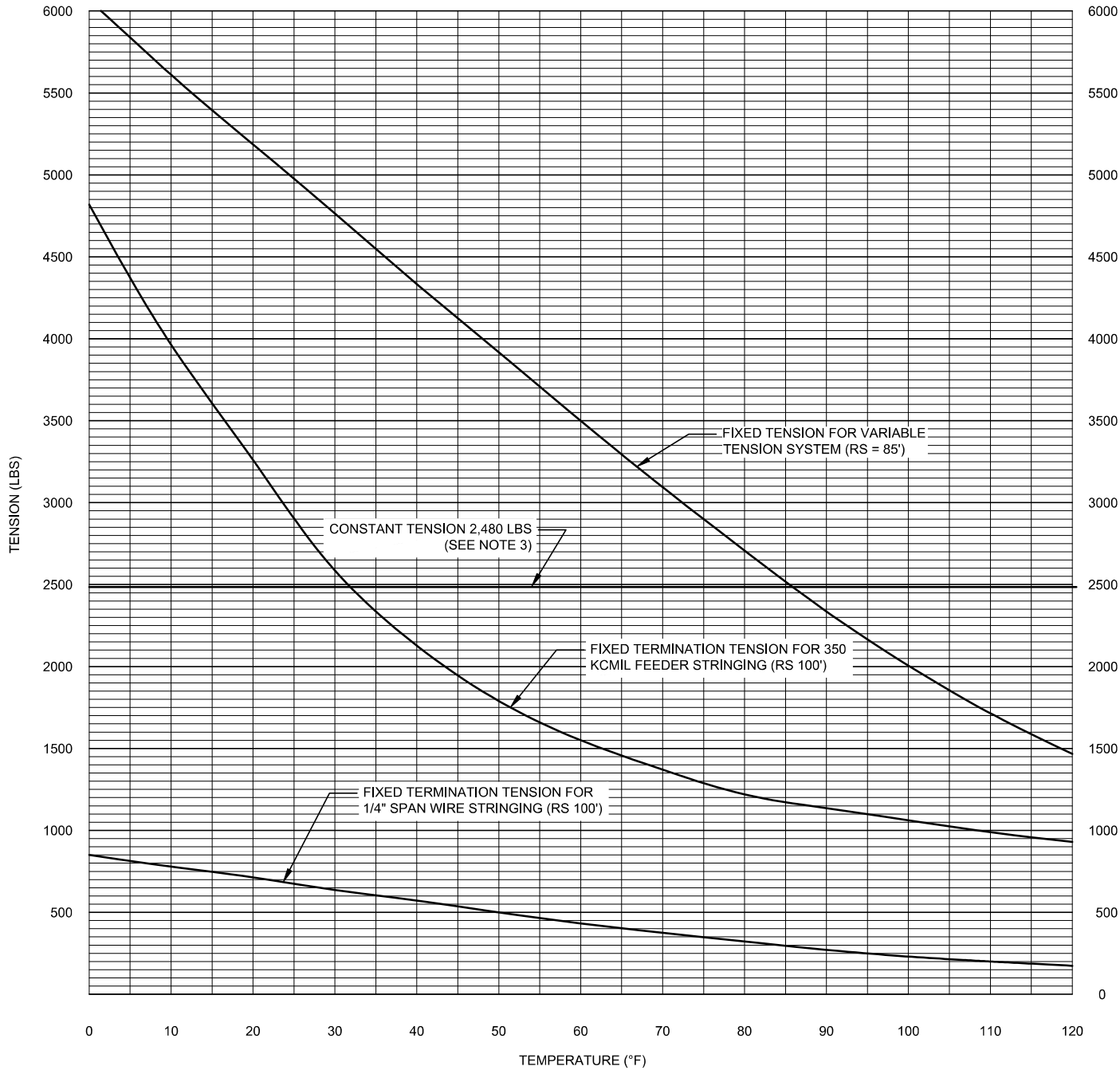
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
TYPICAL OFFSET AND STAGGER DETAILS

| | |
|------------------------------------|-------------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y007.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y007 | SHEET NO.: 333 |

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FIXED TENSION VALUES CORRESPOND TO CONTACT WIRES NOT SUBJECTED TO WIND OR ICE.
3. RUN CONTACT WIRE FROM DEADEND TO DEADEND POLE, PRESTRESS, TO A TENSION OF 2,855 LBS, AND THEN CONNECT CONTACT WIRES TO THEIR RESPECTIVE TERMINATION ASSEMBLIES.
4. INITIAL TENSION VALUE OF 2,480 LBS AT 60°F WAS USED IN CALCULATING CONTACT WIRE INSTALLATION TENSIONS BEFORE ATTACHMENT TO SPRINGS.
5. TENSION CHART BASED ON TENSOREX SPRING WITH WIRE MOVEMENT OF 27.0 INCHES.



| TENSION INSTALLATION CHART | | | | | | | |
|----------------------------|--------------------------|-----------------------------------|-----------|-----------|--|-----------|-----------|
| TEMP °F | VARIABLE TENSION (LB) | 1/4" BRACKET ARM GUY WIRE (LB) | | | 350 KCMIL SUPPLEMENTARY FEEDER CABLE (LB) | | |
| | RS = 85' | RS = 80' | RS = 100' | RS = 120' | RS = 80' | RS = 100' | RS = 120' |
| 0 | 6058 | 858 | 852 | 844 | 5739 | 4814 | 3863 |
| 5 | 5841 | 821 | 815 | 808 | 5266 | 4380 | 3512 |
| 10 | 5624 | 785 | 780 | 773 | 4800 | 3965 | 3192 |
| 15 | 5408 | 749 | 744 | 737 | 4345 | 3573 | 2906 |
| 20 | 5192 | 713 | 708 | 702 | 3904 | 3210 | 2654 |
| 25 | 4977 | 677 | 673 | 668 | 3483 | 2881 | 2436 |
| 30 | 4762 | 641 | 637 | 633 | 3089 | 2591 | 2247 |
| 35 | 4549 | 605 | 602 | 599 | 2728 | 2339 | 2085 |
| 40 | 4336 | 570 | 568 | 565 | 2407 | 2124 | 1945 |
| 45 | 4125 | 535 | 534 | 532 | 2131 | 1942 | 1825 |
| 50 | 3915 | 500 | 500 | 500 | 1899 | 1789 | 1721 |
| 55 | 3706 | 466 | 467 | 468 | 1707 | 1660 | 1630 |
| 60 | 3500 | 432 | 435 | 438 | 1550 | 1550 | 1550 |
| 65 | 3296 | 399 | 404 | 409 | 1421 | 1456 | 1479 |
| 70 | 3095 | 367 | 374 | 380 | 1314 | 1375 | 1417 |
| 75 | 2898 | 336 | 345 | 354 | 1225 | 1305 | 1360 |
| 80 | 2706 | 307 | 318 | 329 | 1149 | 1243 | 1310 |
| 85 | 2519 | 279 | 293 | 306 | 1085 | 1189 | 1264 |
| 90 | 2339 | 254 | 270 | 285 | 1029 | 1140 | 1222 |
| 95 | 2167 | 231 | 249 | 266 | 980 | 1096 | 1184 |
| 100 | 2004 | 211 | 230 | 249 | 937 | 1057 | 1149 |
| 105 | 1851 | 193 | 214 | 233 | 899 | 1022 | 1117 |
| 110 | 1710 | 177 | 199 | 219 | 865 | 989 | 1087 |
| 115 | 1582 | 164 | 186 | 207 | 834 | 960 | 1060 |
| 120 | 1466 | 152 | 175 | 196 | 807 | 932 | 1034 |

INSTALLATION TENSION CHART
120' RULING SPAN (350 KCMIL HARD DRAWN COPPER CONTACT WIRE)

| REV | DATE | DESCRIPTION |
|-----|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |

PLOT DATE: 12/21/2022

1:14:27 PM

DATE 12/23/2022

DESIGNED BY PFW

CHECKED BY BP

DRAWN BY PFW

CHECKED BY BP

APPROVED BY NKS

This set of plans is not for construction. These plans are intended to build interest in bidding the project.

22

ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.

10450 Holmes Road

Suite 600

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

The HNTB COMPANIES

INFRASTRUCTURE SOLUTIONS

300 Apollo Drive

Chelmsford, MA 01824

Phone: 978-905-4000

Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM

TECHNICAL SHEETS

INSTALLATION TENSION CHART

SCALE FOR 22"x34": NO SCALE

FILENAME: Y008.dwg

CONTRACT NO.: CONTRACT NO. ###

VOLUME: 1

DRAWING NO.: Y008

SHEET NO.: 334

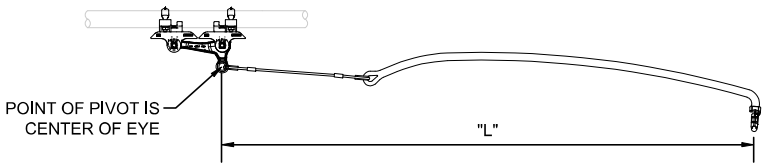
303166

| TOTAL ALONG TRACK MOVEMENT - "ATM" (IN) | | | | | | | | | | | | | | | | | |
|---|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| TEMP (°F) | DISTANCE FROM MID-POINT/FIXED TERMINATION (FT)/MOVEMENT IN INCHES | | | | | | | | | | | | | | | | |
| | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 |
| -20 | -1.58 | -2.37 | -3.16 | -3.95 | -4.74 | -5.53 | -6.32 | -7.11 | -7.90 | -8.69 | -9.48 | -10.26 | -11.05 | -11.84 | -12.63 | - | - |
| -10 | -1.35 | -2.03 | -2.71 | -3.38 | -4.06 | -4.74 | -5.41 | -6.09 | -6.77 | -7.44 | -8.12 | -8.80 | -9.48 | -10.15 | -10.83 | -11.51 | -12.18 |
| 0 | -1.13 | -1.69 | -2.26 | -2.82 | -3.38 | -3.95 | -4.51 | -5.08 | -5.64 | -6.20 | -6.77 | -7.33 | -7.90 | -8.46 | -9.02 | -9.59 | -10.15 |
| 10 | -0.90 | -1.35 | -1.80 | -2.26 | -2.71 | -3.16 | -3.61 | -4.06 | -4.51 | -4.96 | -5.41 | -5.87 | -6.32 | -6.77 | -7.22 | -7.67 | -8.12 |
| 20 | -0.68 | -1.02 | -1.35 | -1.69 | -2.03 | -2.37 | -2.71 | -3.05 | -3.38 | -3.72 | -4.06 | -4.40 | -4.74 | -5.08 | -5.41 | -5.75 | -6.09 |
| 30 | -0.45 | -0.68 | -0.90 | -1.13 | -1.35 | -1.58 | -1.80 | -2.03 | -2.26 | -2.48 | -2.71 | -2.93 | -3.16 | -3.38 | -3.61 | -3.84 | -4.06 |
| 40 | -0.23 | -0.34 | -0.45 | -0.56 | -0.68 | -0.79 | -0.90 | -1.02 | -1.13 | -1.24 | -1.35 | -1.47 | -1.58 | -1.69 | -1.80 | -1.92 | -2.03 |
| 50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60 | 0.23 | 0.34 | 0.45 | 0.56 | 0.68 | 0.79 | 0.90 | 1.02 | 1.13 | 1.24 | 1.35 | 1.47 | 1.58 | 1.69 | 1.80 | 1.92 | 2.03 |
| 70 | 0.45 | 0.68 | 0.90 | 1.13 | 1.35 | 1.58 | 1.80 | 2.03 | 2.26 | 2.48 | 2.71 | 2.93 | 3.16 | 3.38 | 3.61 | 3.84 | 4.06 |
| 80 | 0.68 | 1.02 | 1.35 | 1.69 | 2.03 | 2.37 | 2.71 | 3.05 | 3.38 | 3.72 | 4.06 | 4.40 | 4.74 | 5.08 | 5.41 | 5.75 | 6.09 |
| 90 | 0.90 | 1.35 | 1.80 | 2.26 | 2.71 | 3.16 | 3.61 | 4.06 | 4.51 | 4.96 | 5.41 | 5.87 | 6.32 | 6.77 | 7.22 | 7.67 | 8.12 |
| 100 | 1.13 | 1.69 | 2.26 | 2.82 | 3.38 | 3.95 | 4.51 | 5.08 | 5.64 | 6.20 | 6.77 | 7.33 | 7.90 | 8.46 | 9.02 | 9.59 | 10.15 |
| 110 | 1.35 | 2.03 | 2.71 | 3.38 | 4.06 | 4.74 | 5.41 | 6.09 | 6.77 | 7.44 | 8.12 | 8.80 | 9.48 | 10.15 | 10.83 | 11.51 | 12.18 |
| 120 | 1.58 | 2.37 | 3.16 | 3.95 | 4.74 | 5.53 | 6.32 | 7.11 | 7.90 | 8.69 | 9.48 | 10.26 | 11.05 | 11.84 | 12.63 | - | - |

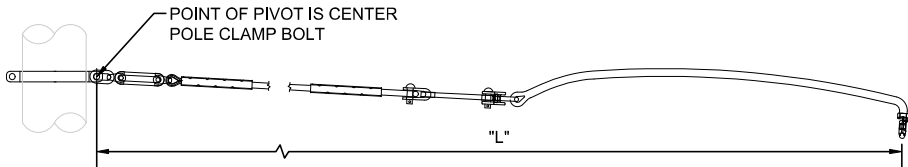
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- NEUTRAL POSITION IS AT 50°F.
- STAGGER CHANGE "X" IS LIMITED BY PANTOGRAPH SECURITY.
- STAGGER CHANGE "X" IS FOR BRACKET ARM SUPPORT.
- ALONG TRACK MOVEMENT IS FOR SINGLE CONTACT WIRE.
- FOR PULLOVER ASSEMBLY DETAILS, SEE DRAWINGS Y056 AND Y057.

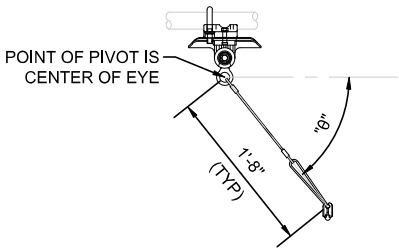
| STAGGER CHANGE - "X" (IN) | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|------|------|------|--|------|------|------|------|------|---|------|------|------|------|------|------|------|------|------|------|------|------|--|
| ATM (IN) | LENGTH OF "PO" ASSEMBLIES - "L" (FT) | | | | LENGTH OF "FPO" ASSEMBLIES - "L" (FT) | | | | | | ANGLE OF "TYPE P" ASSEMBLIES - "Ø" (°) | | | | | | | | | | | | | |
| | 2.0 | 4.0 | 4.5 | 5.0 | 10.0 | 12.0 | 14.0 | 16.0 | 18.0 | 20.0 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | |
| 1 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | |
| 2 | 0.08 | 0.04 | 0.04 | 0.03 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.08 | 0.08 | 0.07 | 0.07 | 0.06 | 0.06 | 0.05 | 0.05 | 0.04 | 0.03 | 0.02 | 0.02 | 0.01 | |
| 3 | 0.19 | 0.09 | 0.08 | 0.08 | 0.04 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.19 | 0.18 | 0.17 | 0.16 | 0.15 | 0.13 | 0.12 | 0.10 | 0.09 | 0.07 | 0.05 | 0.04 | 0.02 | |
| 4 | 0.34 | 0.17 | 0.15 | 0.13 | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 | 0.03 | 0.33 | 0.32 | 0.30 | 0.28 | 0.26 | 0.24 | 0.21 | 0.18 | 0.15 | 0.13 | 0.09 | 0.06 | 0.03 | |
| 5 | 0.53 | 0.26 | 0.23 | 0.21 | 0.10 | 0.09 | 0.07 | 0.07 | 0.06 | 0.05 | 0.52 | 0.50 | 0.47 | 0.44 | 0.41 | 0.37 | 0.33 | 0.29 | 0.24 | 0.20 | 0.15 | 0.10 | 0.05 | |
| 6 | 0.76 | 0.38 | 0.33 | 0.30 | 0.15 | 0.13 | 0.11 | 0.09 | 0.08 | 0.08 | 0.76 | 0.72 | 0.68 | 0.64 | 0.59 | 0.54 | 0.48 | 0.42 | 0.35 | 0.29 | 0.22 | 0.14 | 0.07 | |
| 7 | 1.04 | 0.51 | 0.46 | 0.41 | 0.20 | 0.17 | 0.15 | 0.13 | 0.11 | 0.10 | 1.04 | 0.99 | 0.94 | 0.88 | 0.81 | 0.73 | 0.66 | 0.57 | 0.48 | 0.39 | 0.30 | 0.20 | 0.10 | |
| 8 | 1.37 | 0.67 | 0.60 | 0.54 | 0.27 | 0.22 | 0.19 | 0.17 | 0.15 | 0.13 | 1.36 | 1.30 | 1.23 | 1.15 | 1.06 | 0.97 | 0.86 | 0.75 | 0.64 | 0.52 | 0.39 | 0.26 | 0.13 | |
| 9 | 1.75 | 0.85 | 0.76 | 0.68 | 0.34 | 0.28 | 0.24 | 0.21 | 0.19 | 0.17 | 1.74 | 1.67 | 1.58 | 1.47 | 1.36 | 1.24 | 1.10 | 0.96 | 0.81 | 0.66 | 0.50 | 0.33 | 0.17 | |
| 10 | 2.18 | 1.05 | 0.93 | 0.84 | 0.42 | 0.35 | 0.30 | 0.26 | 0.23 | 0.21 | 2.18 | 2.08 | 1.97 | 1.84 | 1.70 | 1.55 | 1.38 | 1.20 | 1.02 | 0.82 | 0.62 | 0.42 | 0.21 | |
| 11 | 2.67 | 1.28 | 1.13 | 1.02 | 0.51 | 0.42 | 0.36 | 0.32 | 0.28 | 0.25 | 2.67 | 2.55 | 2.41 | 2.26 | 2.08 | 1.89 | 1.69 | 1.47 | 1.25 | 1.01 | 0.76 | 0.51 | 0.26 | |
| 12 | 3.22 | 1.52 | 1.35 | 1.21 | 0.60 | 0.50 | 0.43 | 0.38 | 0.33 | 0.30 | 3.23 | 3.08 | 2.92 | 2.73 | 2.52 | 2.29 | 2.04 | 1.78 | 1.50 | 1.22 | 0.92 | 0.62 | 0.31 | |



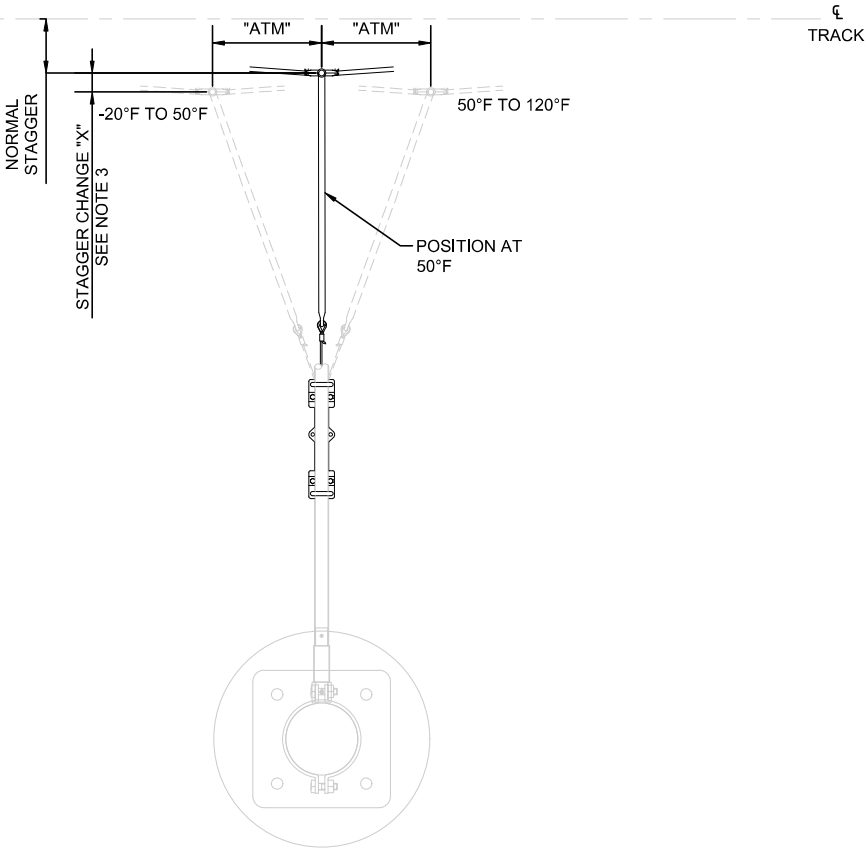
1 "PO" ASSEMBLIES
SCALE: NTS



2 "FPO" ASSEMBLIES
SCALE: NTS



3 "TYPE P" ASSEMBLIES
SCALE: NTS



CW REGISTRATION MOVEMENT & STAGGER CHANGE
SCALE: NTS

| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|----------------------|-----|--|--|---------------|------------------|---|---|---|------------------------------------|---|-----------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": NOT TO SCALE | | |
| | | | CHECKED BY | BP | | | | | | | | | OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS ALONG TRACK MOVEMENT CHART | FILENAME: Y009.dwg |
| | | | DRAWN BY | PFW | | | | | | | | | | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | | | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | | | | | | | | DRAWING NO.: Y009 |
| PLOT DATE: 12/21/2022 | | | 1:15:37 PM | | | | | | | | | | | SHEET NO.: 335 |
| DATE 12/23/2022 | | | NOT FOR CONSTRUCTION | | | | | | | | | | | |

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. TABLES PROVIDE LOADINGS FOR VARIOUS SPAN LENGTHS AND ARE PRESENTED FOR REFERENCE. TENSION AND BLOW OFF PROVIDED ARE BASED ON A RULING SPAN OF 100 FEET.
3. PER NESC CODE, RULE 251 B, A CONSTANT COMPONENT OF 0.3 LB/FT SHALL BE ADDED TO THE RESULTANT LOAD BETWEEN THE VERTICAL LOAD AND WIND LOAD.
4. BLOWOFF IS CONSIDERED AT MID-SPAN.

| VERTICAL AND WIND LOADS | | | | | | | | | | | | | |
|-------------------------|--------------------|-------------|------------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| SPAN "L" (FT) | VERTICAL LOAD (LB) | | WIND LOAD (LB) | | | | | | | | | | |
| | | | PARAMETER | OC - 1 | OC - 2 | OC - 3 | OC - 4 | OC - 5 | OC - 6 | NOC - 1 | NOC - 2 | NOC - 3 | NOC - 4 |
| | 1.063 | 1.759 | WIND SPEED (MPH) | 0 | 0 | 40 | 0 | 40 | 40 | 40 | 55 | 90 | 90 |
| | W/O ICE | W/ 1/2" ICE | RADIAL ICE (IN) | 0 | 0 | 0 | 0 | 0.5 | 0 | 0.5 | 0.5 | 0 | 0 |
| 30 | 32 | 53 | | 0 | 0 | 6 | 0 | 16 | 6 | 16 | 29 | 30 | 30 |
| 35 | 37 | 62 | | 0 | 0 | 7 | 0 | 19 | 7 | 19 | 34 | 35 | 35 |
| 40 | 43 | 70 | | 0 | 0 | 8 | 0 | 22 | 8 | 22 | 39 | 40 | 40 |
| 45 | 48 | 79 | | 0 | 0 | 9 | 0 | 24 | 9 | 24 | 44 | 45 | 45 |
| 50 | 53 | 88 | | 0 | 0 | 10 | 0 | 27 | 10 | 27 | 49 | 50 | 50 |
| 55 | 58 | 97 | | 0 | 0 | 11 | 0 | 30 | 11 | 30 | 53 | 55 | 55 |
| 60 | 64 | 106 | | 0 | 0 | 12 | 0 | 32 | 12 | 32 | 58 | 60 | 60 |
| 65 | 69 | 114 | | 0 | 0 | 13 | 0 | 35 | 13 | 35 | 63 | 65 | 65 |
| 70 | 74 | 123 | | 0 | 0 | 14 | 0 | 38 | 14 | 38 | 68 | 70 | 70 |
| 75 | 80 | 132 | | 0 | 0 | 16 | 0 | 41 | 16 | 41 | 73 | 75 | 75 |
| 80 | 85 | 141 | | 0 | 0 | 17 | 0 | 43 | 17 | 43 | 78 | 80 | 80 |
| 85 | 90 | 150 | | 0 | 0 | 18 | 0 | 46 | 18 | 46 | 83 | 85 | 85 |
| 90 | 96 | 158 | | 0 | 0 | 19 | 0 | 49 | 19 | 49 | 87 | 90 | 90 |
| 95 | 101 | 167 | | 0 | 0 | 20 | 0 | 51 | 20 | 51 | 92 | 95 | 95 |
| 100 | 106 | 176 | | 0 | 0 | 21 | 0 | 54 | 21 | 54 | 97 | 100 | 100 |
| 105 | 112 | 185 | | 0 | 0 | 22 | 0 | 57 | 22 | 57 | 102 | 105 | 105 |
| 110 | 117 | 193 | | 0 | 0 | 23 | 0 | 59 | 23 | 59 | 107 | 110 | 110 |
| 115 | 122 | 202 | | 0 | 0 | 24 | 0 | 62 | 24 | 62 | 112 | 115 | 115 |
| 120 | 128 | 211 | | 0 | 0 | 25 | 0 | 65 | 25 | 65 | 117 | 120 | 120 |

WIND AND VERTICAL LOADING

| LOADING CONDITIONS | | | | | | |
|--------------------------|------------|------------|-----------------|-----------------|---------------|---------------------|
| OPERATING CONDITIONS | TEMP (DEG) | WIND (MPH) | RADIAL ICE (IN) | TENSION CW (LB) | BLOW-OFF (IN) | BASIS |
| OC - 1 | 50 | 0 | 0 | 2480 | 0 | NORMAL |
| OC - 2 | 120 | 0 | 0 | 2480 | 0 | CONDUCTOR SAG |
| OC - 3 | 120 | 40 | 0 | 2480 | 1.30 | BLOW-OFF |
| OC - 4 | 32 | 0 | 0 | 2480 | 0 | PRE-ICE |
| OC - 5 | 32 | 40 | 0.5 | 2480 | 3.34 | ICE |
| OC - 6 | -20 | 40 | 0 | 2480 | 1.30 | LOW TEMPERATURE |
| NON OPERATING CONDITIONS | | | | | | |
| NOC - 1 | -20 | 40 | 0.5 | 2760 | N/A | NESC |
| NOC - 2 | -20 | 55 | 0.5 | 2860 | N/A | STRUCTURAL/CW FOS |
| NOC - 3 | 0 | 90 | 0 | 2480 | N/A | LOW TEMP HIGH WIND |
| NOC - 4 | 100 | 90 | 0 | 2480 | N/A | CONDUCTOR CLEARANCE |

LOADING CONDITIONS-OPERATING AND NON-OPERATING

| RADIAL LOADS BY ANGLE | | |
|-------------------------|------------------|-------------------|
| ANGLE "A" DEGREES | OPERATING | NON-OPERATING |
| | TENSION (NORMAL) | TENSION (MAXIMUM) |
| | CW | CW |
| | 2480 | 2860 |
| 1 | 43 | 50 |
| 2 | 87 | 100 |
| 3 | 130 | 150 |
| 4 | 173 | 200 |
| 5 | 216 | 250 |
| 6 | 260 | 299 |
| 7 | 303 | 349 |
| 8 | 346 | 399 |
| 9 | 389 | 449 |
| 10 | 432 | 499 |
| 11 | 475 | 548 |
| 12 | 518 | 598 |
| 13 | 561 | 648 |
| 14 | 604 | 697 |
| 15 | 647 | 747 |
| 16 | 690 | 796 |

RADIAL LOAD DUE TO CONTACT WIRE ANGLE

REV

DATE

DESCRIPTION

DESIGNED BY

PFW

CHECKED BY

BP

DRAWN BY

PFW

CHECKED BY

BP

APPROVED BY

NKS

PLOT DATE:

12/21/2022

1:17:05 PM

DATE

12/23/2022

RideKC

STREETCAR

This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

HNTB

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS

300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
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NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
VERTICAL AND RADIAL LOADS

SCALE FOR 22"x34":
NO SCALE

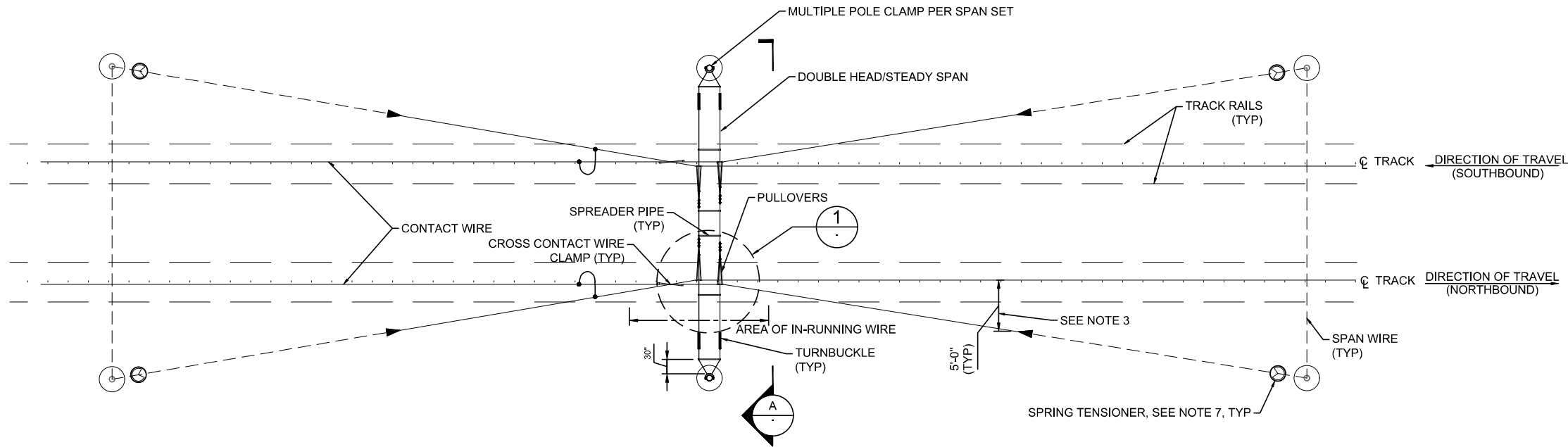
FILENAME:
Y010.dwg

CONTRACT NO.:
CONTRACT NO. ###

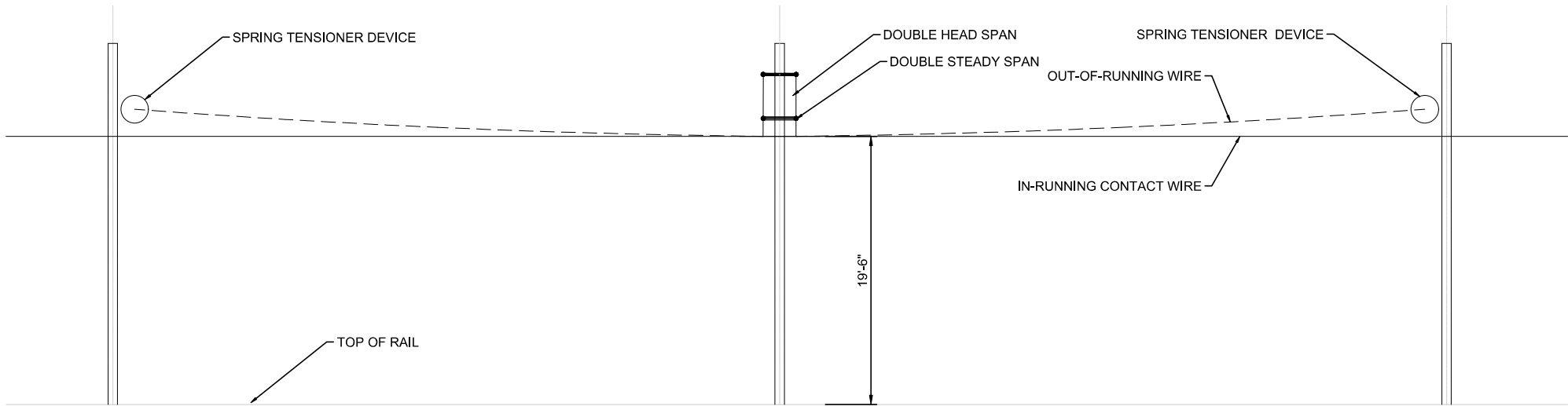
VOLUME:
1

DRAWING NO.:
Y010

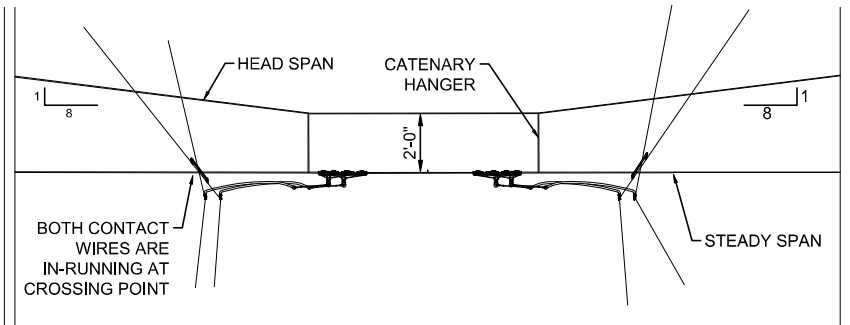
SHEET NO.:
336



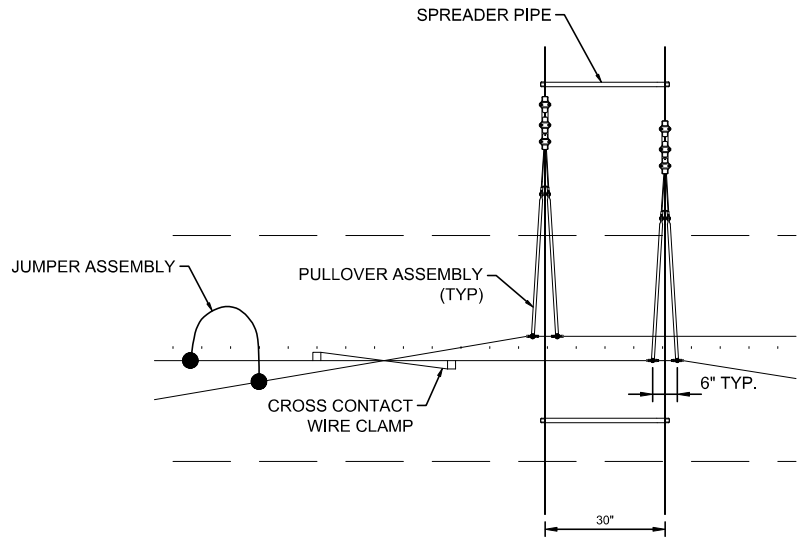
SINGLE CONTACT WIRE - TYPICAL OVERLAP PLAN, OLP-1
SCALE: NTS



SINGLE CONTACT WIRE - TYPICAL OVERLAP ELEVATION
SCALE: NTS



A SECTION
SCALE: NO SCALE

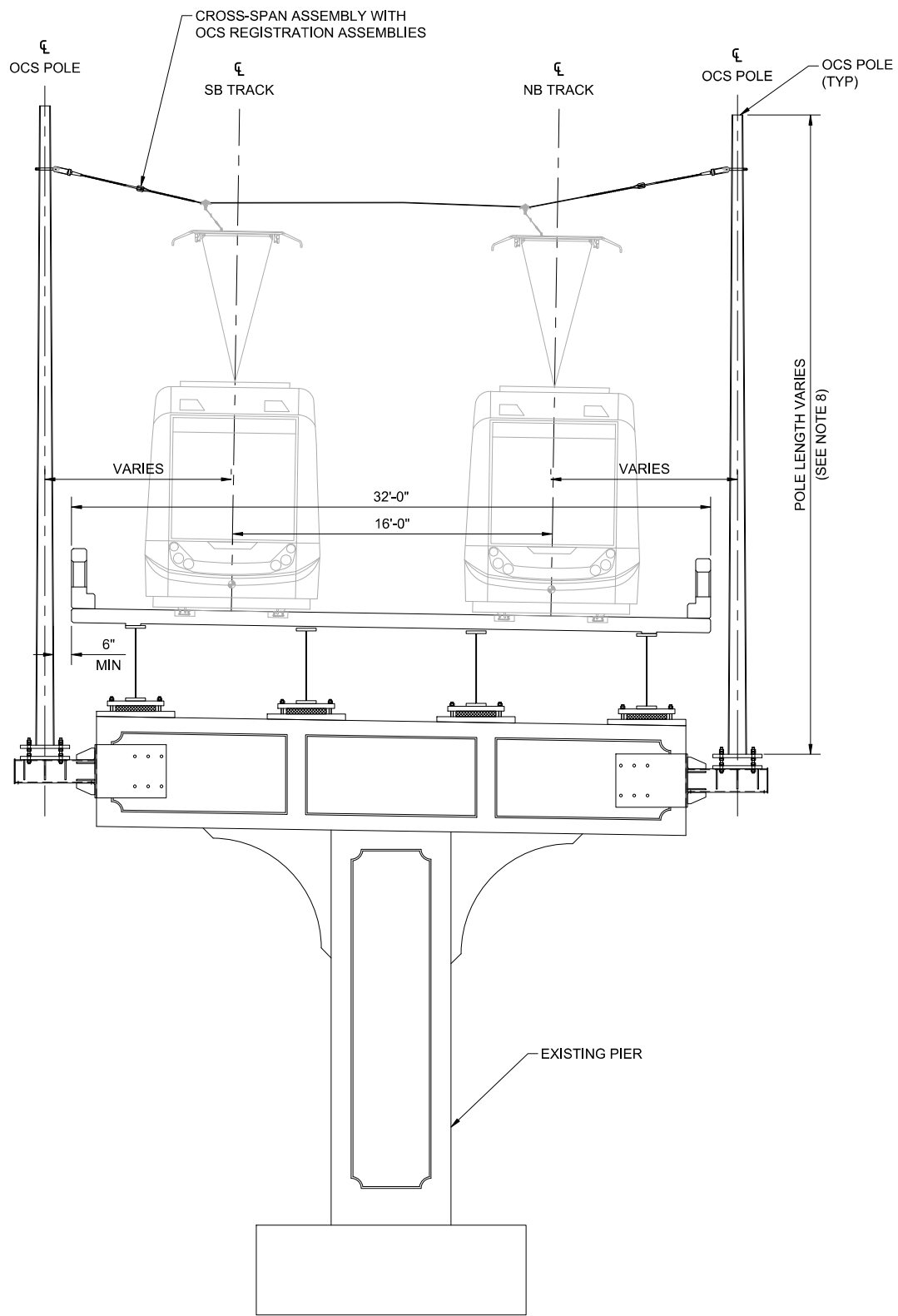


1 DETAIL - CROSS-CONTACT WIRE CLAMP
SCALE: NTS

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- OVERLAP SHOWN IS FOR TYPICAL ARRANGEMENT FOR SINGLE CONTACT WIRE SYSTEM AND MAY VARY. SPAN LENGTHS, HANGER SPACING, AND WIRE ELEVATIONS MAY VARY ACCORDING TO LOCATION.
- IN-SPAN INSULATORS AND TERMINATION DEVICES TO BE A MINIMUM OF 5'-0" FROM CENTER LINE OF TRACK. THIS DIMENSION SHALL BE INCREASED ALONG SEGMENTS OF SUPER ELEVATED TRACK IN ORDER TO MAINTAIN PANTOGRAPH CLEARANCE.
- POLE AND HANGER SPACING VARY ACCORDING TO OVERLAP LOCATION. REFER TO OCS LAYOUT DRAWINGS AND / OR OCS PROFILE DRAWINGS FOR ADDITIONAL INFORMATION.
- IF NOT OTHERWISE NOTED ON LAYOUT PLAN, USE A RISE OF 1:100 TO DETERMINE POLE CLAMP HEIGHT FOR PULLOVERS.
- STEADY SPAN TO BE TENSIONED TO 1,000 LBS AND HAVE TURNBUCKLES AT EACH POLE AS SHOWN ON DRAWING Y052.
- OMIT SPRING TENSIONER WHERE A FIXED CONTACT WIRE DEAD END IS SHOWN ON LAYOUT.
- FOR OVERLAP BRACKET ARM DETAILS, SEE DRAWING Y046.

| | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|---|---|--|--|---|------|---|-----------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM TYPICAL ARRANGEMENTS TYPICAL OVERLAP ARRANGEMENT | | SCALE FOR 22"x34": NOT TO SCALE | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS | FILENAME: Y011.dwg | | | | |
| | | | DRAWN BY | PFW | | | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | | 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | | | | | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | | | | | | DRAWING NO.: | SHEET NO.: |
| PLOT DATE: 12/21/2022 | | | 1:18:14 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | Y011 | 337 | |



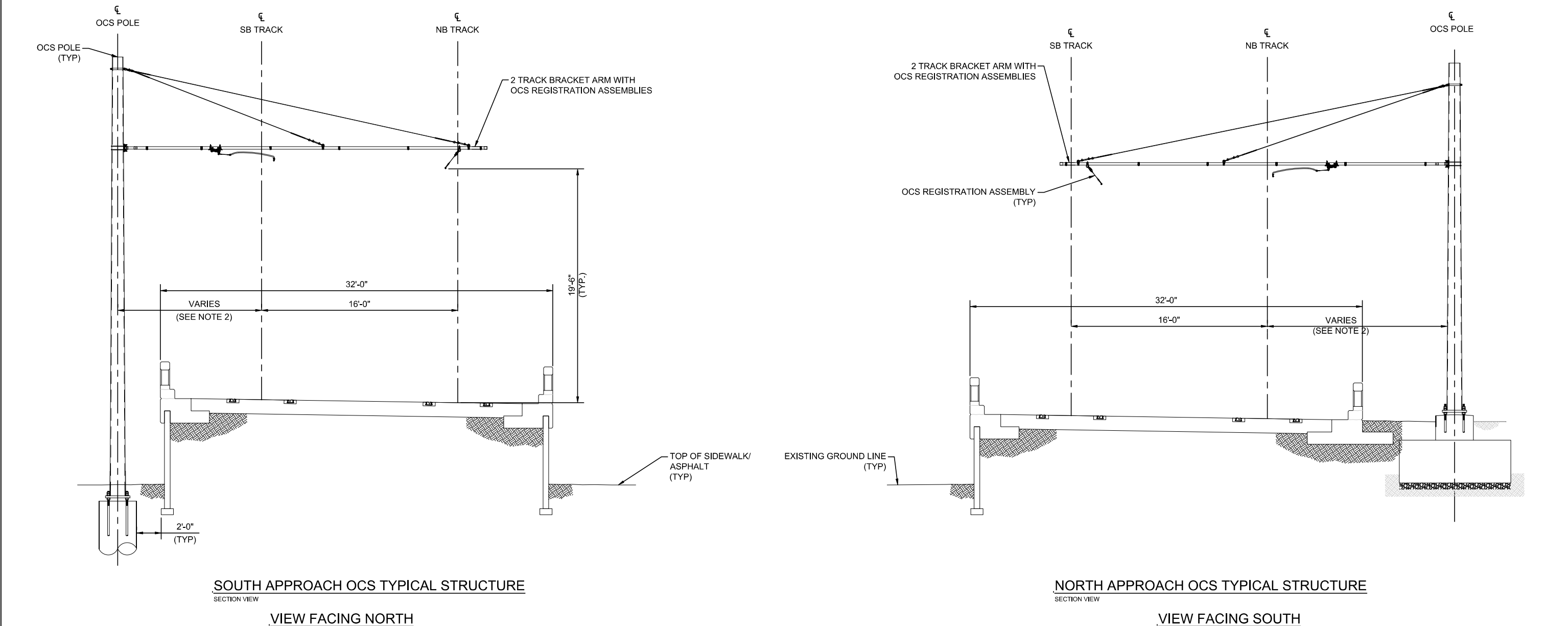
VIADUCT OCS TYPICAL STRUCTURE
SECTION VIEW

NOTES:

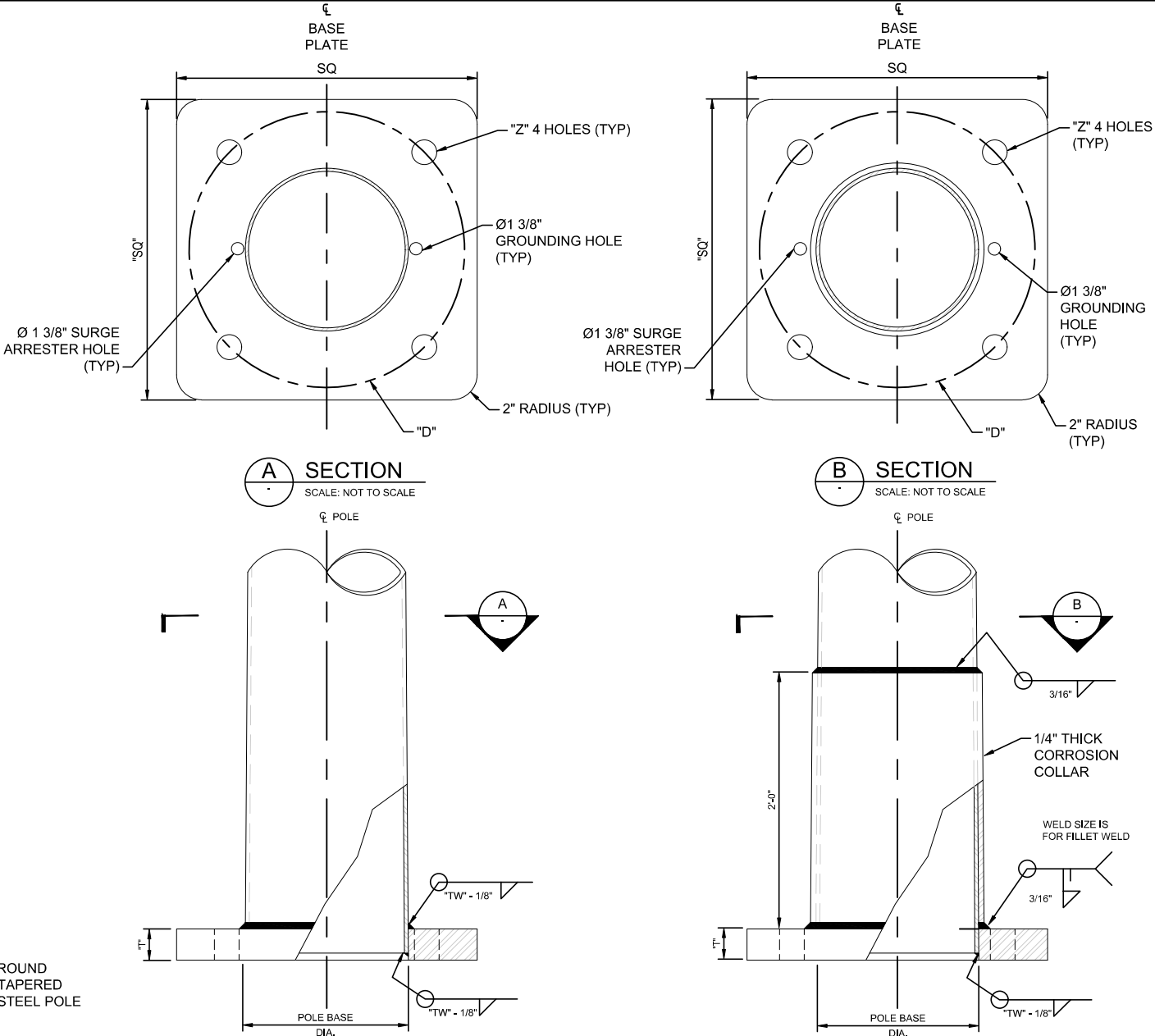
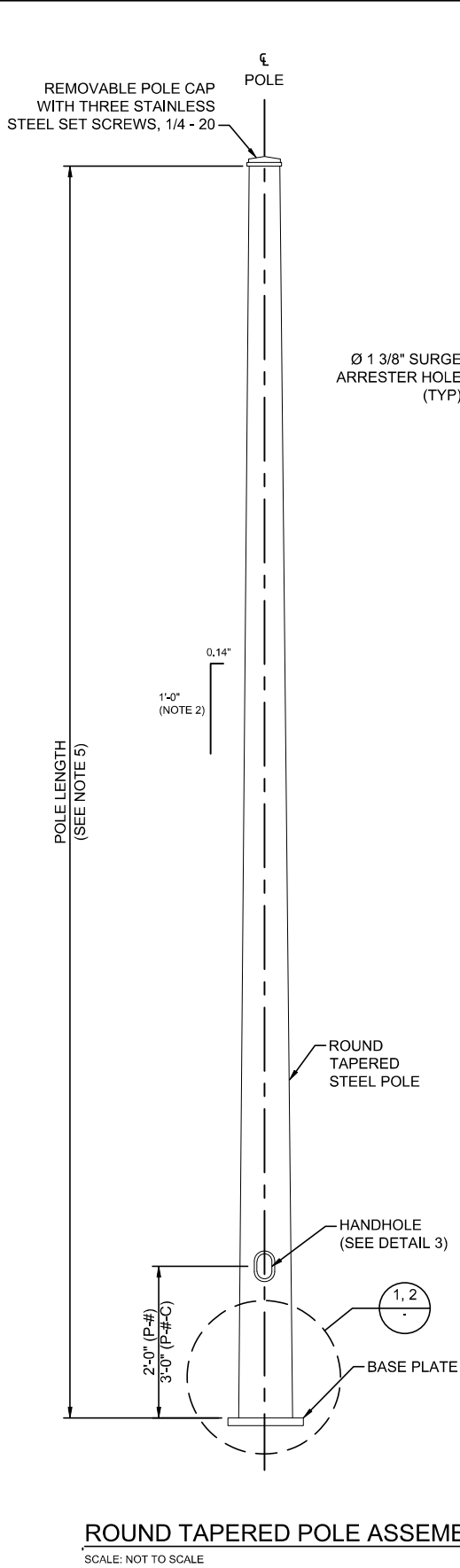
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- FOR PIER CAP ATTACHMENT DETAILS REFER TO DWG Y038.
- PIER CAP WIDTH OF 4'-6" AND REINFORCEMENT SPACING, "A", ARE BASED ON AS-BUILT DRAWINGS, GRAND BOULEVARD VIADUCT REPLACEMENT, LATEST REVISION DATES 06/09/2000. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF THE PIER CAP ATTACHMENT ASSEMBLIES.
- ANCHOR BOLTS SHALL BE ANCHORED INTO EXISTING PIER USING CEMENTITIOUS GROUT IN CORED HOLES, GROUT SHALL BE 5000 PSI.
- WHERE DRAIN PIPES INTERFERE WITH PLACEMENT OF OCS POLE BRACKETS, CONTRACTOR TO MOVE, ADJUST, OR CHANGE SUPPORTS OF DRAINS TO ALLOW BRACKET PLACEMENT.
- WHERE ELECTRICAL CONDUITS AND JUNCTION BOXES INTERFERE WITH PLACEMENT OF OCS POLE BRACKETS, CONTRACTOR TO MOVE, ADJUST, OR CHANGE LOCATION OF CONDUITS AND BOXES TO ALLOW OCS POLE BRACKET PLACEMENT.
- WHERE CHANGES TO DRAINS AND ELECTRICAL EQUIPMENT IS REQUIRED, CONTRACTOR SHALL PROPOSE NEW ARRANGEMENT TO THE ENGINEER FOR APPROVAL.
- FOR POLE HEIGHTS REFER TO POLE & FOUNDATION SCHEDULE ON DRAWINGS Y111 AND Y112.

| | | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|--|--|---|--|--|--------------|--|--------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | GK |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | | DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | | SCALE FOR 22"x34": | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. | |  The HNTB COMPANIES | | | | | NOT TO SCALE | |
| | | | DRAWN BY | GK | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | FILENAME: Y012.dwg | | | | |
| | | | CHECKED BY | BP | | | | | | | CONTRACT NO.: | | | | |
| | | | APPROVED BY | NKS | | | | | | | CONTRACT NO. ### | | | | |
| PLOT DATE: 12/21/2022 | | | 1:19:42 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | DRAWING NO.: | | SHEET NO.: | |
| | | | | | | | | | | | | Y012 | | 338 | |

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - FOR POLE TYPE, LENGTH, AND OFFSET AT SPECIFIC LOCATIONS REFER TO POLE AND FOUNDATION SCHEDULE DRAWINGS Y111 TO Y112.



| | | | | | | | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|---|---|--|---|--|--|--|--|--|--|--|--|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | GK |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | OVERHEAD CONTACT SYSTEM TYPICAL ARRANGEMENTS AT APPROACH STRUCTURES | | SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y013.dwg CONTRACT NO.: CONTRACT NO. ## VOLUME: 1 DRAWING NO.: SHEET NO.: Y013 339 | | | | | | | |
| | | | CHECKED BY | BP | | |  <div>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> |  <div>The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div> | | | | | | | | | | | | |
| | | | DRAWN BY | GK | | | | | | | | | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | | | | | | | | | |
| PLOT DATE: 12/22/2022 | | | 7:50:48 AM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | | | | | | | | | |



1 BASE PLATE FOR STANDARD POLE - P-#

SCALE: NOT TO SCALE

2 BASE PLATE - POLE WITH CORROSION COLLAR - P-#-C

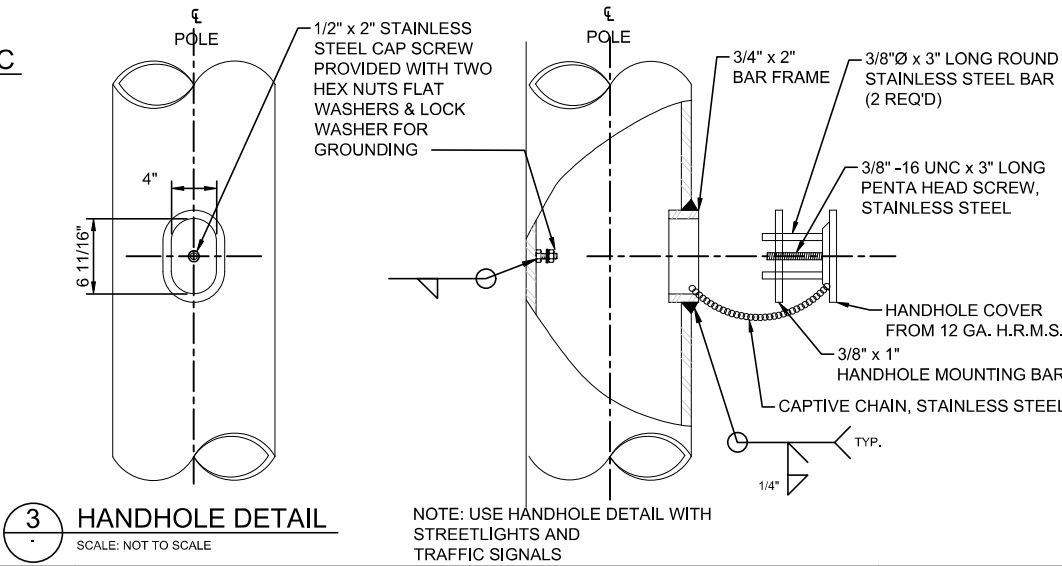
SCALE: NOT TO SCALE


| POLE TYPE | POLE BASE OUTSIDE DIAMETER (IN) | WALL THICKNESS "TW" (IN) | POLE BASE | | | | ANCHOR BOLT DIA. ("A") (IN) | ALLOWABLE BENDING MOMENT (FT-LBS) |
|-------------|---------------------------------|--------------------------|------------------|----------------------|--------------------|---------------------------|-----------------------------|-----------------------------------|
| | | | SQUARE "SQ" (IN) | BOLT CIRCLE "D" (IN) | THICKNESS "T" (IN) | ANCHOR BOLT HOLE "Z" (IN) | | |
| P-1 / P-1-C | 11 | 0.3750 | 20 | 17 | 2 | 1 13/16 | 1 1/2 | 71,250 |
| P-1B | 11 | 0.3750 | 29 1/2 | 27 | 2 | 1 13/16 | 1 1/2 | 71,250 |
| P-2 / P-2-C | 10 | 0.5000 | 19 | 16 | 2 | 2 5/16 | 2 | 90,000 |
| P-2B | 10 | 0.5000 | 29 1/2 | 27 | 2 | 2 5/16 | 2 | 90,000 |
| P-3 / P-3-C | 11 | 0.5000 | 20 | 17 | 2 | 2 5/16 | 2 | 112,500 |
| P-3B | 11 | 0.5000 | 29 1/2 | 27 | 2 | 2 5/16 | 2 | 112,500 |
| P-4 / P-4-C | 13 | 0.6250 | 23 | 20 | 2 | 2 13/16 | 2 1/2 | 195,000 |
| P-4B | 13 | 0.6250 | 29 1/2 | 27 | 2 | 2 13/16 | 2 1/2 | 195,000 |
| P-5 / P-5-C | 16 | 0.6250 | 26 | 23 | 2 1/2 | 2 13/16 | 2 1/2 | 303,750 |
| P-5B | 16 | 0.6250 | 29 1/2 | 27 | 2 1/2 | 2 13/16 | 2 1/2 | 303,750 |

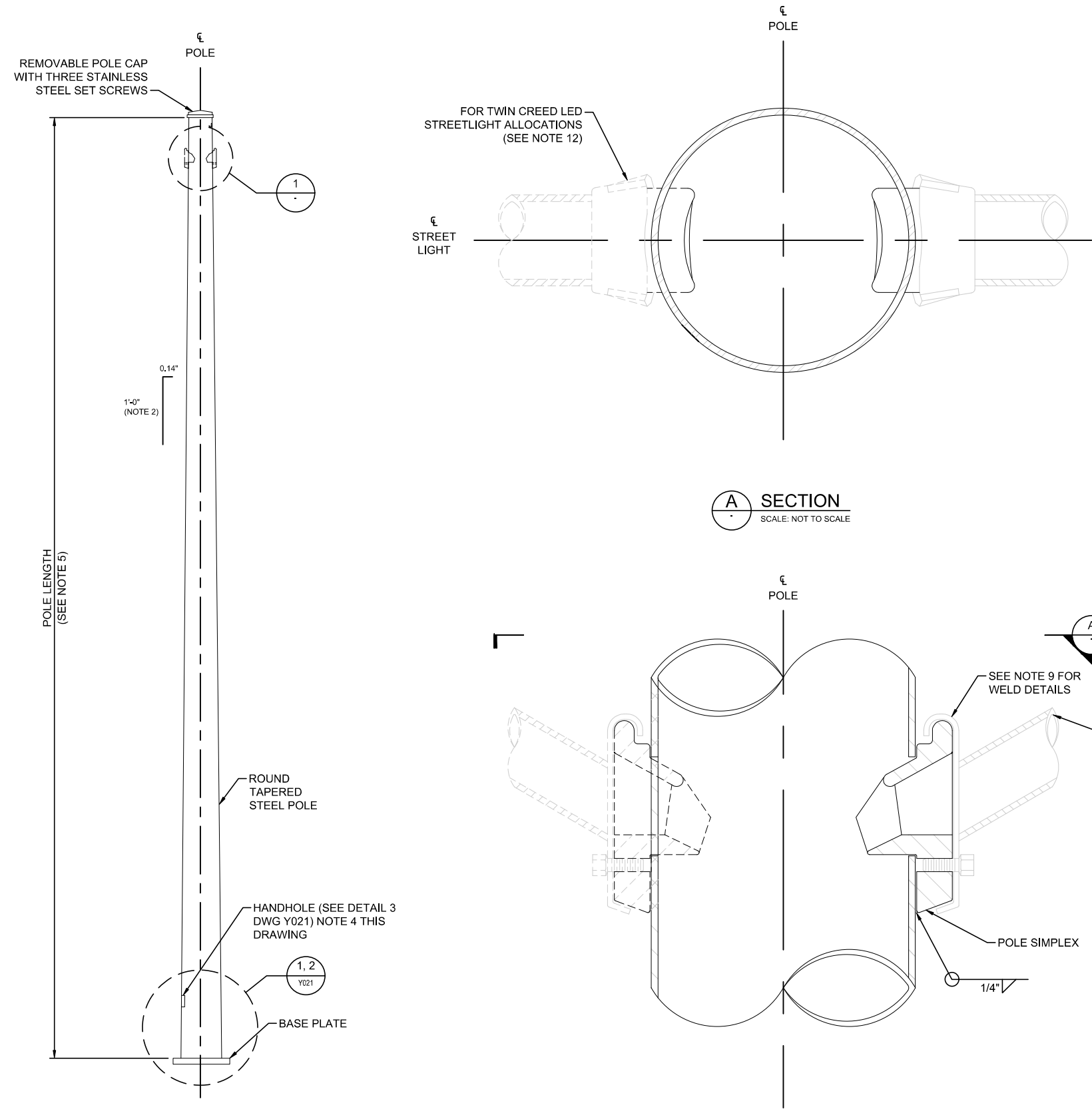
* POLE BASE DIAMETER IS MEASURED AT BASE PLATE MINUS THICKNESS OF CORROSION COLLAR.

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- THE FABRICATION OF POLE ASSEMBLY SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF THE STRUCTURAL STEEL OF BUILDINGS AND IEEE STANDARD 1630, LATEST EDITION. POLES MAY BE OF MULTIPLE PLYS TO OBTAIN WALL THICKNESS.
- POLE SHALL HAVE A UNIFORM TAPER OF FOURTEEN HUNDREDTHS (0.14) OF AN INCH PER LINEAR FOOT. THE 0.14" : 1' SLOPE IS THE REDUCTION RATE IN DIAMETER.
- WELDING SHALL BE IN CONFORMANCE WITH THE AWS D1.1 SPECIFICATIONS OF LATEST EDITION. SIZE OF WELD FOR BASE PLATE AND HANDHOLES DETERMINED BY MANUFACTURER.
- FOR POLE LENGTH AND TYPE, REFER TO POLE SCHEDULE DRAWINGS Y111 AND Y112.
- FOR POLE TAG DETAILS, REFER TO DRAWING Y081.
- SURGE ARRESTER HOLE IS ONLY NECESSARY FOR POLES WITH SURGE ARRESTER ATTACHED AS SHOWN IN DRAWING Y067.
- POLE FABRICATOR SHALL PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MISSOURI.
- IF POLE IS MADE OF FORMED PLATE AND WELDED, WELD SHALL BE FLUSH WITH OUTER SURFACE OF POLE.
- EACH POLE SHALL BE PROVIDED WITH A POLE CAP.
- GROUNDING AND ARRESTER HOLES TO CLEAR WELD AND ACCOMMODATE INSERTION OF A 3/4" IPS FRE CONDUIT FOR GROUNDING WIRE.
- THE POLE MANUFACTURER SHALL PROVIDE A PLATE TAG TO EACH POLE. THE PLATE TAG SHALL BE ENGRAVED OR CAST WITH THE FOLLOWING INFORMATION: MANUFACTURER'S NAME, POLE SIZE, DATE MANUFACTURED, SECTION MODULUS OF BUTT SECTION (INCHES CUBED), AND STRENGTH OF STEEL (PSI). PLATE TAG SHALL BE 1/4" THICK, GRADE 304 STAINLESS STEEL WELDED TO POLE BUTT ALL AROUND EDGES TO PLATE TAG WITH STAINLESS STEEL WELDING ROD. LETTERING SHALL BE OF SUFFICIENT DEPTH IF ENGRAVED OR SUFFICIENT HEIGHT IF CAST THAT THE FINISH OF THE POLE SHALL NOT OBSCURE THE LETTERING. SEE DRAWING Y081 FOR POLE PLATE INFORMATION DETAIL.
- HANDHOLE SHOWN ON DETAIL 3 TO BE 24" ABOVE SIDEWALK FOR EMBEDDED BASE PLATES.
- ALL DIMENSIONS FOR POLES AND ANCHOR BOLTS AND POLE DESIGNATION TABLE TO BE VERIFIED BY THE POLE MANUFACTURER AND CALCULATIONS CHECKED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI. ULTIMATE DESIGN OF THE POLE SHALL BE BY THE POLE MANUFACTURER.
- SEE DRAWINGS Y031 - Y036 FOR POLE FOUNDATIONS.
- POLES SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. POLES REQUIRE PAINTING SHALL BE PAINTED AS STATED IN THE SPECIFICATIONS. COLORS SHALL CONFORM TO CITY OF KANSAS STANDARDS. PAINTED POLES SHALL NOT BE GALVANIZED. POLE CLAMPS AND OTHER ATTACHMENTS TO PAINTED POLES SHALL BE PAINTED WITH THE SAME COLOR AS THE POLE.
- IF POLE EXTENSIONS ARE NEEDED, LENGTH SHALL BE DETERMINED BY THE CONTRACTOR TO MEET THE HEIGHT ABOVE THE OVERALL REQUIRED POLE LENGTH PROVIDED IN THE CONTRACT PLAN POLE SCHEDULE (DRAWINGS Y111 AND Y112). THIS WILL BE FOR ALL POLES REQUIRING AN EXTENSION WHETHER STREET LIGHT, FEEDER POLE TYPE, OR OCS TYPE. THE POLE EXTENSION SHALL BE OF THE SAME MATERIAL, STRENGTH, AND FINISH AS THE OCS POLE TO WHICH IT WILL BE PLACED OVER. THICKNESS OF THE EXTENSION WALL SHALL BE THE SAME AS THE POLE. MANUFACTURER SHALL SUBMIT EXTENSION CONNECTION DETAILS FOR ENGINEER REVIEW. CONNECTION SHALL BE FLUSH WITH BASE POLE.
- POLE EXTENSIONS SHALL NOT BE USED TO MEET THE REQUIRED POLE LENGTH STATED IN THE POLE SCHEDULE BUT FOR SITUATIONS WHERE UNFORESEEN EXTENSIONS ARE REQUIRED.
- FOR BASE PLATE DETAIL FOR POLES ON BRIDGE, POLE TYPES P-#B, REFER TO DRAWING Y038.






| | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|--|---|---|-------------------------|---|---------------------------------|------------------|------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | | DATE: 12-23-2022 | <div>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</div> | SCALE FOR 22"x34": NOT TO SCALE | | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | OVERHEAD CONTACT SYSTEM | | FILENAME: | Y021.dwg | |
| | | | DRAWN BY | PFW | | | | | STRUCTURAL DETAILS | | CONTRACT NO.: | CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | | | TYPICAL POLE DETAIL | | VOLUME: | 1 | |
| | | | APPROVED BY | NKS | | | | | | | DRAWING NO.: | SHEET NO.: | |
| PLOT DATE: 12/22/2022 | | | 7:45:35 AM | | | | | | DATE: 12/23/2022 | | NOT FOR CONSTRUCTION | | Y021 |

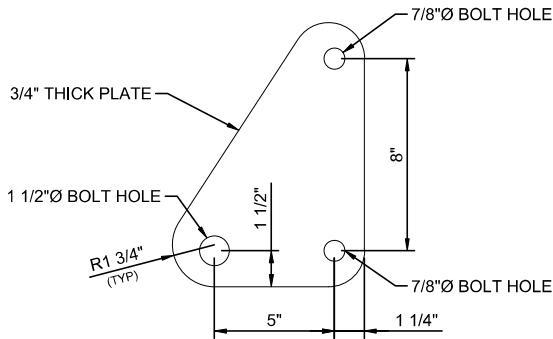


- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - THE FABRICATION OF POLE ASSEMBLY SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF THE STRUCTURAL STEEL OF BUILDINGS AND IEEE STANDARD 1630, LATEST EDITION.
 - POLE SHALL HAVE A UNIFORM TAPER OF FOURTEEN HUNDREDTHS (0.14) OF AN INCH PER LINEAR FOOT. THE 0.14" : 1' SLOPE IS THE REDUCTION RATE IN DIAMETER.
 - WELDING SHALL BE IN CONFORMANCE WITH THE AWS D1.1 SPECIFICATIONS OF LATEST EDITION. SIZE OF WELD FOR BASE PLATE AND HAND HOLES DETERMINED BY MANUFACTURER.
 - IF POLE FOUNDATION IS ABOVE GRADE, HAND HOLE TO BE 2'-0" ABOVE BASE PLATE. IF POLE IS EMBEDDED, HAND HOLE TO BE 3'-0" ABOVE BASE PLATE BUT SHALL CLEAR CORROSION COLLAR.
 - FOR POLE LENGTH AND TYPE, REFER TO POLE SCHEDULE DRAWINGS Y111 AND Y112.
 - FOR POLE TAG DETAILS, REFER TO DRAWING Y081.
 - SURGE ARRESTER HOLE IS ONLY NECESSARY FOR POLES WITH SURGE ARRESTOR ATTACHED AS SHOWN IN DRAWING Y067.
 - POLE FABRICATOR SHALL PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MISSOURI.
 - WELD DESIGN TO BE PROVIDED BY POLE MANUFACTURER PER CITY STANDARDS.
 - POLE EXTENSIONS SHALL NOT BE USED TO MEET THE REQUIRED POLE LENGTH STATED IN THE POLE SCHEDULE BUT FOR SITUATIONS WHERE UNFORESEEN EXTENSIONS ARE REQUIRED.
 - REFER TO LIGHTING PLANS FOR LIGHT FIXTURE DETAILS AND LIGHT FIXTURE ALLOCATION TYPE.

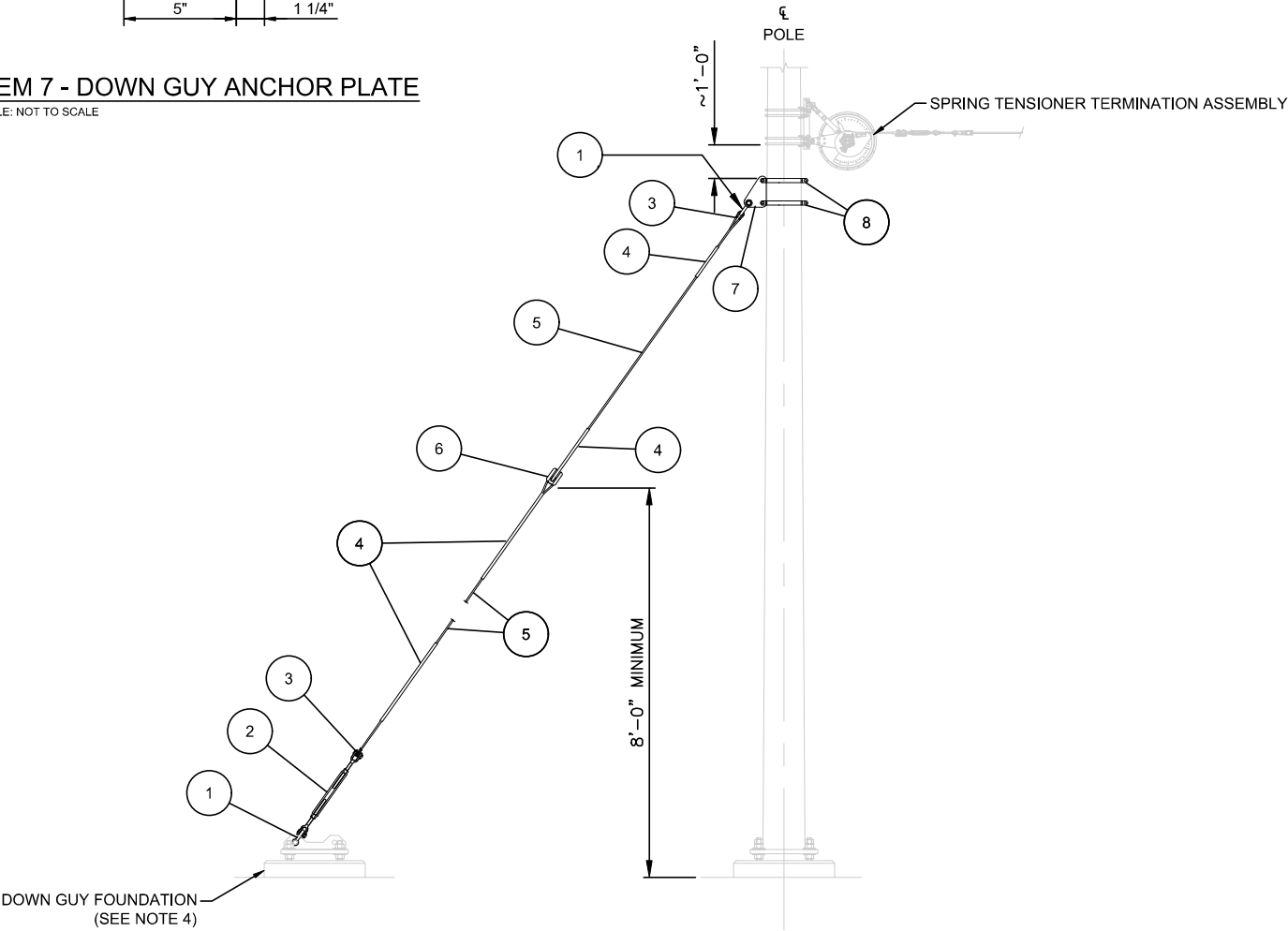
| POLE TYPE | POLE BASE OUTSIDE DIAMETER (IN) | WALL THICKNESS "TW" (IN) | POLE BASE | | | | ANCHOR BOLT DIA. ("A") (IN) | ALLOWABLE BENDING MOMENT (FT-LBS) |
|---------------|---------------------------------|--------------------------|------------------|----------------------|--------------------|---------------------------|-----------------------------|-----------------------------------|
| | | | SQUARE "SQ" (IN) | BOLT CIRCLE "D" (IN) | THICKNESS "T" (IN) | ANCHOR BOLT HOLE "Z" (IN) | | |
| P-1L / P-1L-C | 11 | 0.3750 | 20 | 17 | 2 | 1 13/16 | 1 1/2 | 71,250 |
| P-2L / P-2L-C | 10 | 0.5000 | 19 | 16 | 2 | 2 5/16 | 2 | 90,000 |
| P-3L / P-3L-C | 11 | 0.5000 | 20 | 17 | 2 | 2 5/16 | 2 | 112,500 |
| P-4L / P-4L-C | 13 | 0.6250 | 23 | 20 | 2 | 2 13/16 | 2 1/2 | 195,000 |
| P-5L / P-5L-C | 16 | 0.6250 | 26 | 23 | 2 1/2 | 2 13/16 | 2 1/2 | 303,750 |

"C" DENOTES THE USE OF A CORROSION COLLAR AT THE BASE OF THE POLE. POLE IS TYPICALLY EMBEDDED. SEE DRAWING Y021 FOR CORROSION COLLAR DETAILS.

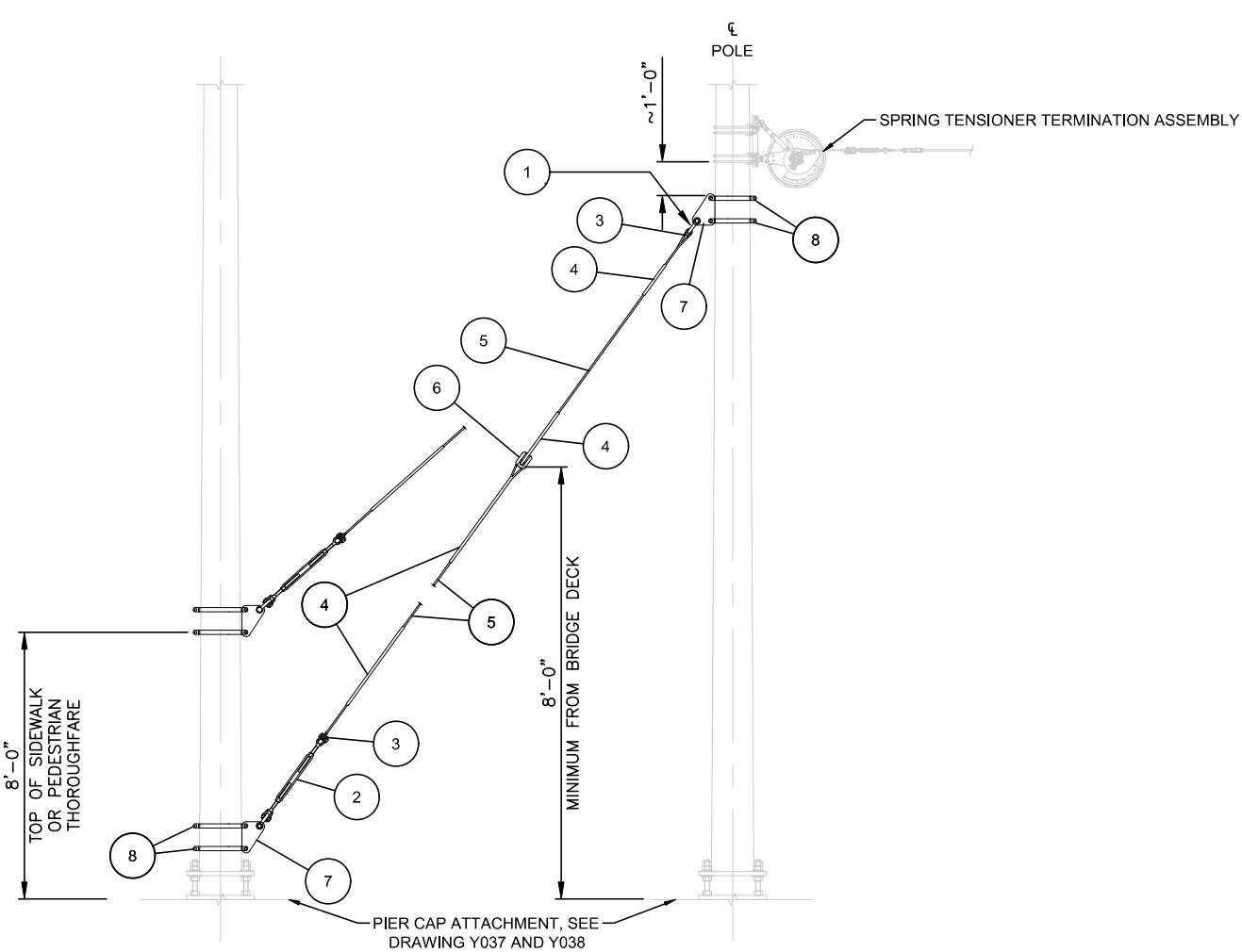
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": NOT TO SCALE | |
|-----------------------|------|-------------|--------------|-----|--|--|---|--|--|--|--|--|---------------------------------|--|
| | | | CHECKED BY | BP | | |  | |  | | OVERHEAD CONTACT SYSTEM | | FILENAME: Y023.dwg | |
| | | | DRAWN BY | PFW | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 | | The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 | | STRUCTURAL DETAILS | | CONTRACT NO.: CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | 816-360-2700 | | Phone: 978-905-4000 | | STREET LIGHT POLE DETAIL | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | Certificate of Authority: 000856 | | Certificate of Authority: 001270 | | | | DRAWING NO.: SHEET NO.: | |
| PLOT DATE: 12/22/2022 | | | 7: 47: 44 AM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | Y023 | | 341 | |



ITEM 7 - DOWN GUY ANCHOR PLATE
SCALE: NOT TO SCALE



DOWN GUY ASSEMBLY - DGA-01
SCALE: NOT TO SCALE



DOWN GUY ASSEMBLY - DGA-02
SCALE: NOT TO SCALE

| BILL OF MATERIALS | | | | | |
|-------------------|--------|--------|------------------------------------|-------------------------|---------------|
| ITEM | DGA-01 | DGA-02 | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | 4 | 4 | SHACKLE, 1" DIA, BOLT TYPE | CROSBY | 1019551 |
| 2 | 2 | 2 | TURNBUCKLE, 1"X18" C+C | CROSBY | 1032830 |
| 3 | 4 | 4 | THIMBLE | CROSBY | 1037595 |
| 4 | 8 | 8 | PREFORMED END FITTING, 1/2" STRAND | PREFORMED LINE PRODUCTS | BG-2115 |
| 5 | A/R | A/R | SPAN WIRE, 1/2" EHS | - | ASTM A475 |
| 6 | 2 | 2 | JB PORCELAIN INSULATOR | MACLEAN | L506 |
| 7 | 1 | 2 | DOWN GUY ANCHOR PLATE | - | - |
| 8 | 4 | 6 | POLE CLAMP | MAC | SEE DWG. Y044 |

| REV | DATE | DESCRIPTION | DESIGNED BY | GK |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | GK |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

| ISSUE FOR BID | | DATE: 12-23-2022 |
|---|--|--|
| HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | | |

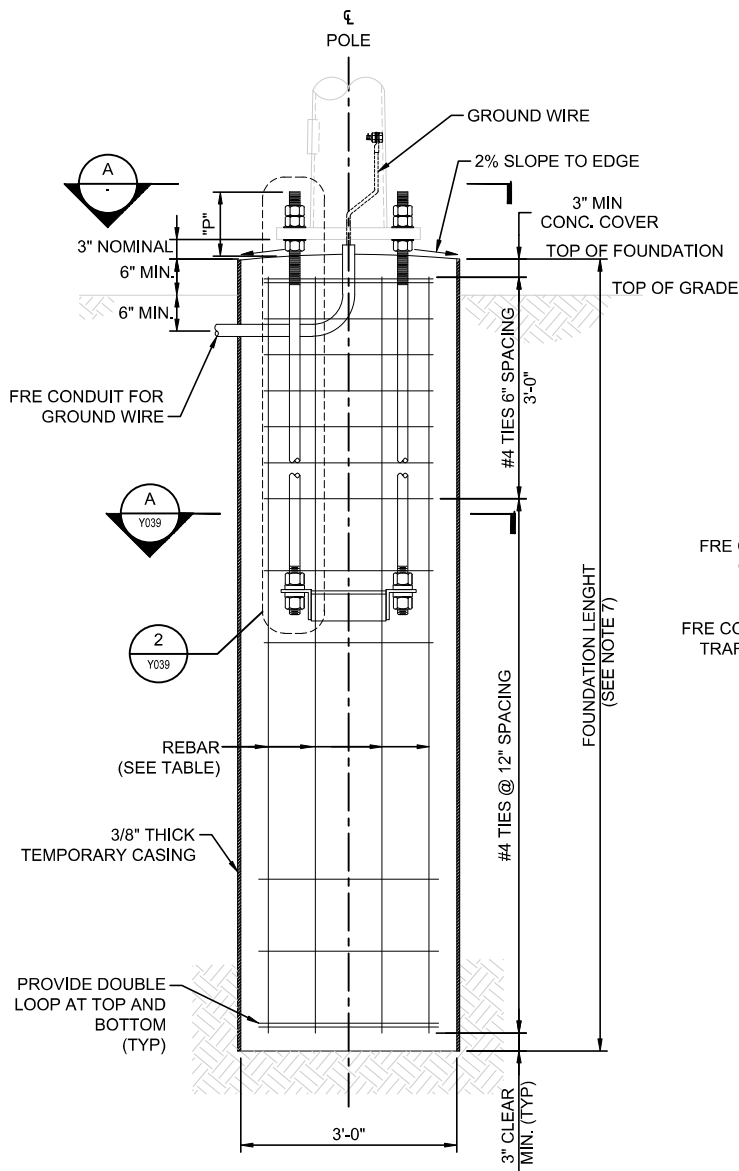
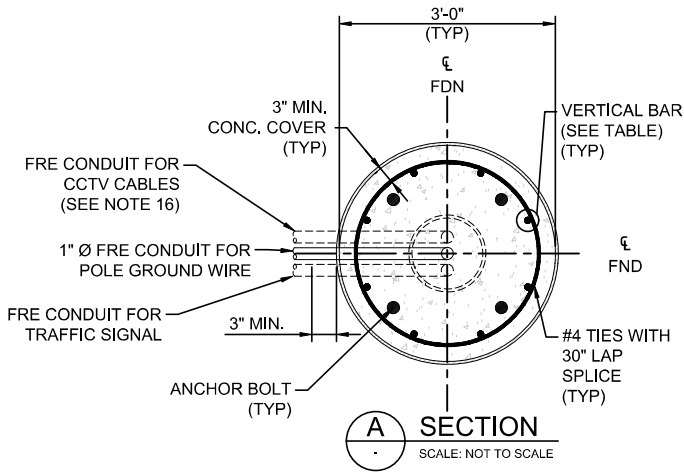
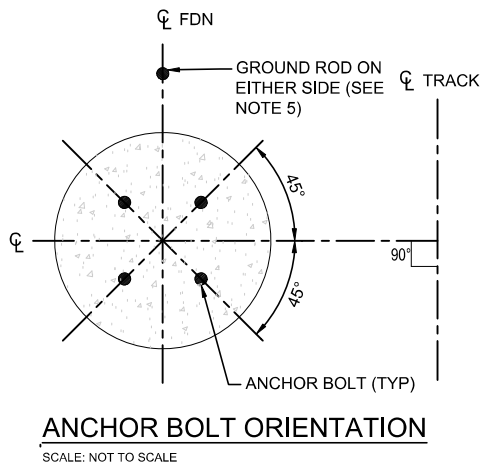
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAILS
DOWN GUY ASSEMBLY

| SCALE FOR 22"x34": NOT TO SCALE | |
|------------------------------------|-------------------|
| FILENAME: Y025.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y025 | SHEET NO.: 342 |

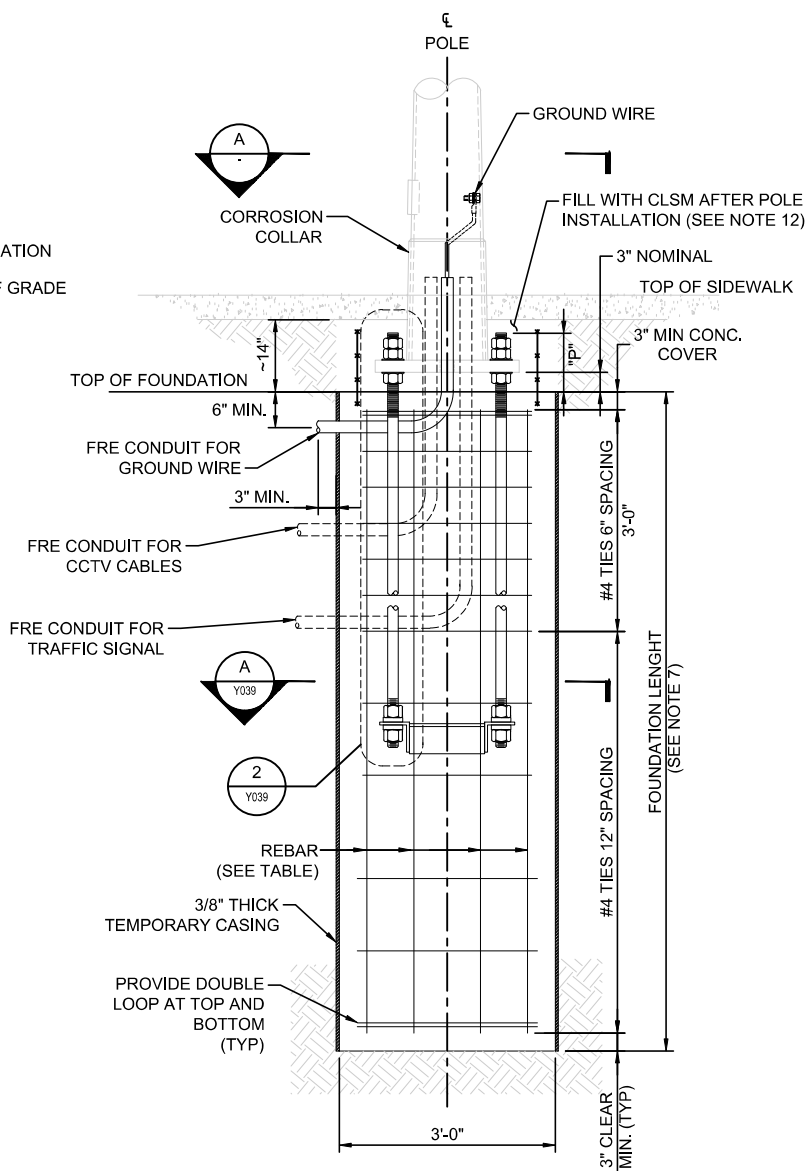
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- STRUCTURAL STEEL PLATE TO CONFORM TO ASTM A572.
- ALL STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL CONFORM TO ASTM A123 AND ASTM 153.
- FOR DOWN GUY FOUNDATION DETAILS SEE DRAWING Y035.
- FOR DISTANCE OF DOWN GUY FOUNDATION FROM POLE, SEE LAYOUT DRAWINGS.



ROUND POLE FOUNDATION - FD-1#
BASE PLATE ABOVE GRADE

SCALE: NOT TO SCALE



ROUND POLE FOUNDATION - FD-2#
BASE PLATE BELOW GRADE

SCALE: NOT TO SCALE

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, WITH THE EXCEPTION FOR FOUNDATIONS FD-1E AND FD-2E WHICH SHALL CONFORM TO ASTM F1544 GRADE 105. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
- PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION AND CONCRETE POUR. COAT BOLTS AND NUTS WITH GREASE FOR FACILITATION OF FUTURE CONCRETE REMOVAL
- CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
- GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY. IF STEEL DRILLING CAISSON REMAINS IN PLACE, OMIT GROUND RODS AND USE CAISSON AS GROUNDING ELECTRODE.
- GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS, AT 68°F.
- FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 AND Y112.
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE SIZE.
- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
- IF CONSTRUCTION OF FD-2# IS NOT POSSIBLE DUE TO UNFORESEEN RESTRICTIONS, CONTRACTOR MAY USE FD-1# AND SHALL INFORM THE ENGINEER BEFORE DOING SO.
- WHERE POLE FOUNDATIONS ARE IN LANDSCAPE AREAS, USE FOUNDATION FD-1#. FOR ALL PAVED AND SIDEWALK AREAS, USE FOUNDATION FD-2#.
- FOR FOUNDATIONS FD-2#, APPLY GREASE ON ALL EMBEDDED BOLTS THREADS AND NUTS, SUCH THAT IT WILL PREVENT CONCRETE FROM STICKING, AND FILL VOID BELOW SIDEWALK TO TOP OF CONCRETE WITH FLOWABLE FILL CONCRETE (CONTROLLED LOW STRENGTH CONCRETE PER ACI 229R. COMPRESSIVE STRENGTH SHALL BE 150-200 PSI.
- SEAL ALL CONDUIT OPENINGS WITH DUCT PLUGS, DUCT SEAL, OR OTHER SEALING METHOD TO BE APPROVED BY THE ENGINEER.
- FACE OF POLE TO FACE OF CURB DISTANCE TO BE NO LESS THAN 18" UNLESS STATED OTHERWISE AT INDIVIDUAL POLE LOCATIONS. DISTANCE MAY BE GREATER DEPENDENT UPON LOCATION WHERE STATED.
- DEPTH OF CAISSON BELOW ROAD PAVING TO BE DETERMINED BY THE CONTRACTOR AT THE TIME OF INSTALLATION AND/OR BY DIRECTION OF THE ENGINEER.
- FOUNDATION DESIGNATIONS HAVE AN ALPHABETICAL LETTER SIGNIFYING THE TYPE OF POLE AND ITS BOLT HOLE CIRCLE AS FOLLOWS:
A - POLE TYPE P1
B - POLE TYPE P2
C - POLE TYPE P3
D - POLE TYPE P4
E - POLE TYPE P5

| FOUNDATION/ ANCHOR BOLT TABLE | | | | | | |
|-------------------------------|----------------|-------|----------------------|---------------------------|---------------------------------|-----------------------------|
| FDN. TYPE | FOUNDATION | | ANCHOR BOLT | | | |
| | VERTICAL REBAR | | BOLT CIRCLE "B" (IN) | ANCHOR BOLT DIA. "A" (IN) | ANCHOR BOLT PROJECTION "P" (IN) | ANCHOR BOLT LENGTH "C" (IN) |
| | SIZE | TOTAL | | | | |
| FD-1A | #9 | 8 | 15 | 1 1/2 | 10 | 72 |
| FD-1B | #9 | 8 | 16 | 2 | 12 | 72 |
| FD-1C | #9 | 8 | 17 | 2 | 12 | 72 |
| FD-1D | #9 | 10 | 20 | 2 1/2 | 14 | 74 |
| FD-1E | #9 | 10 | 23 | 2 1/2* | 14 | 74 |
| FD-2A | #9 | 8 | 15 | 1 1/2 | 10 | 72 |
| FD-2B | #9 | 8 | 16 | 2 | 12 | 72 |
| FD-2C | #9 | 8 | 17 | 2 | 12 | 72 |
| FD-2D | #9 | 10 | 20 | 2 1/2 | 14 | 74 |
| FD-2E | #9 | 10 | 23 | 2 1/2* | 14 | 74 |

* ANCHOR BOLTS FOR FOUNDATIONS FD-1E AND FD-2E ARE TO BE COLOR CODED IN THE ANCHOR ROD BODY, SUCH THAT THEY ARE DISTINGUISHABLE FROM ALL OTHER ANCHORS.

| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | CA |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/22/2022 | | | DATE | 12/23/2022 |



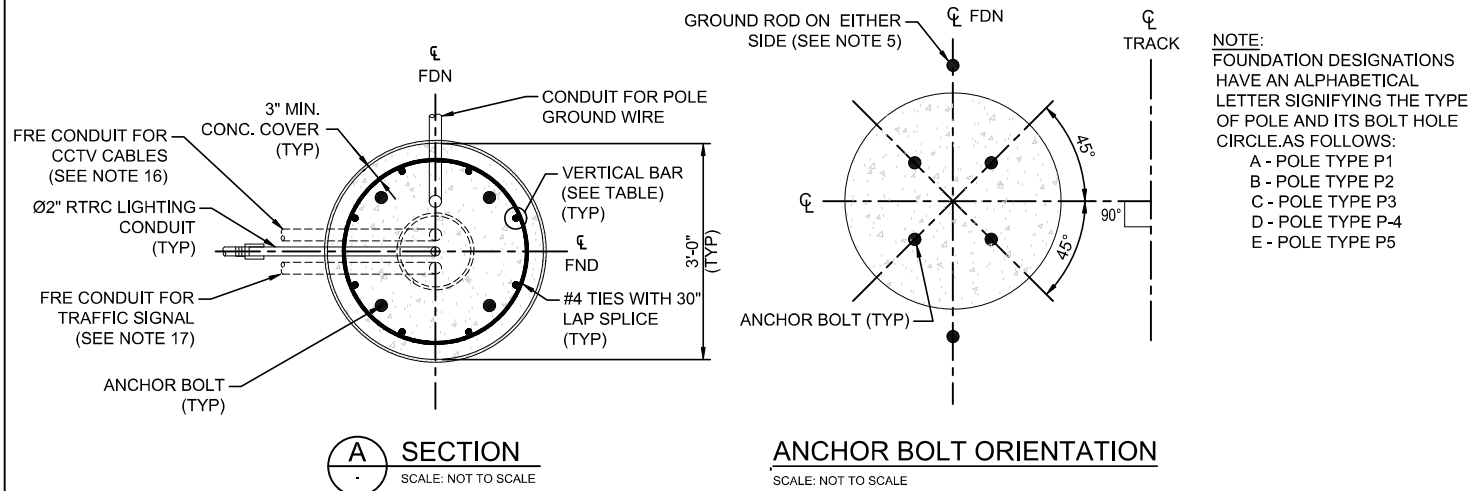
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| | |
|---|--|
| ISSUE FOR BID | DATE: 12-23-2022 |
| HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | |

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAILS
TYPICAL FOUNDATION DETAIL

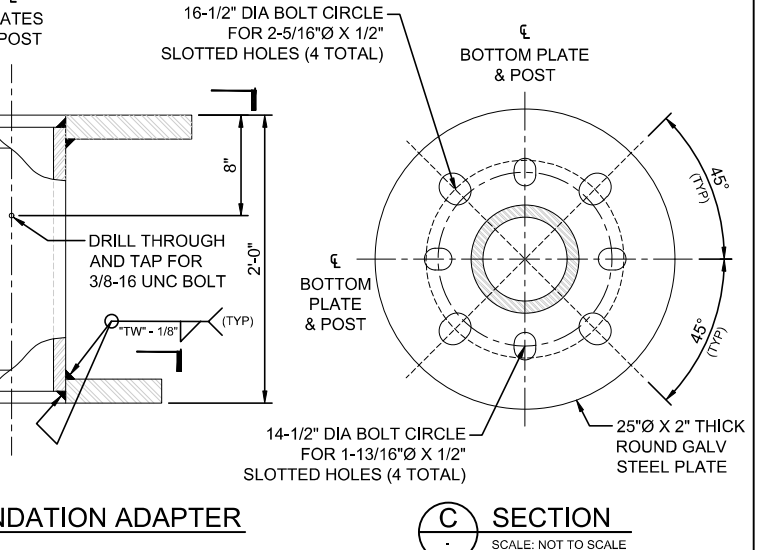
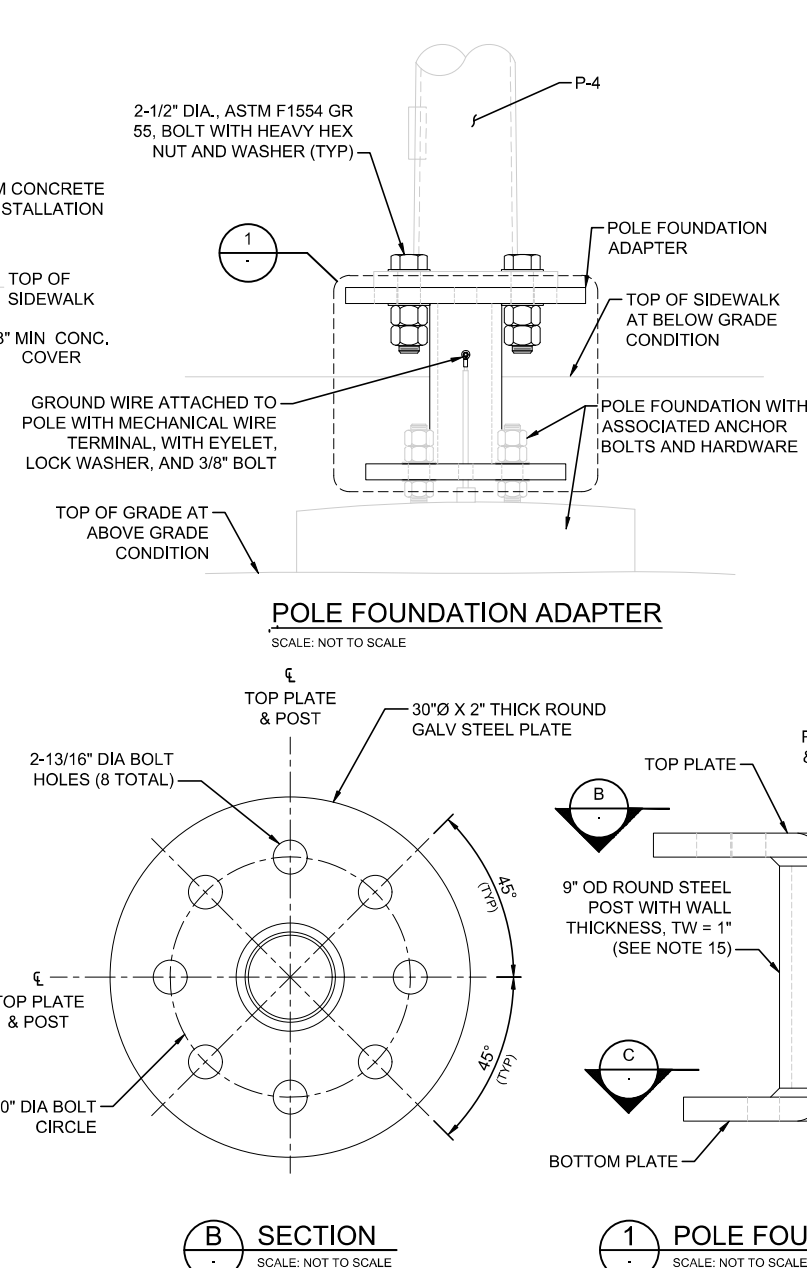
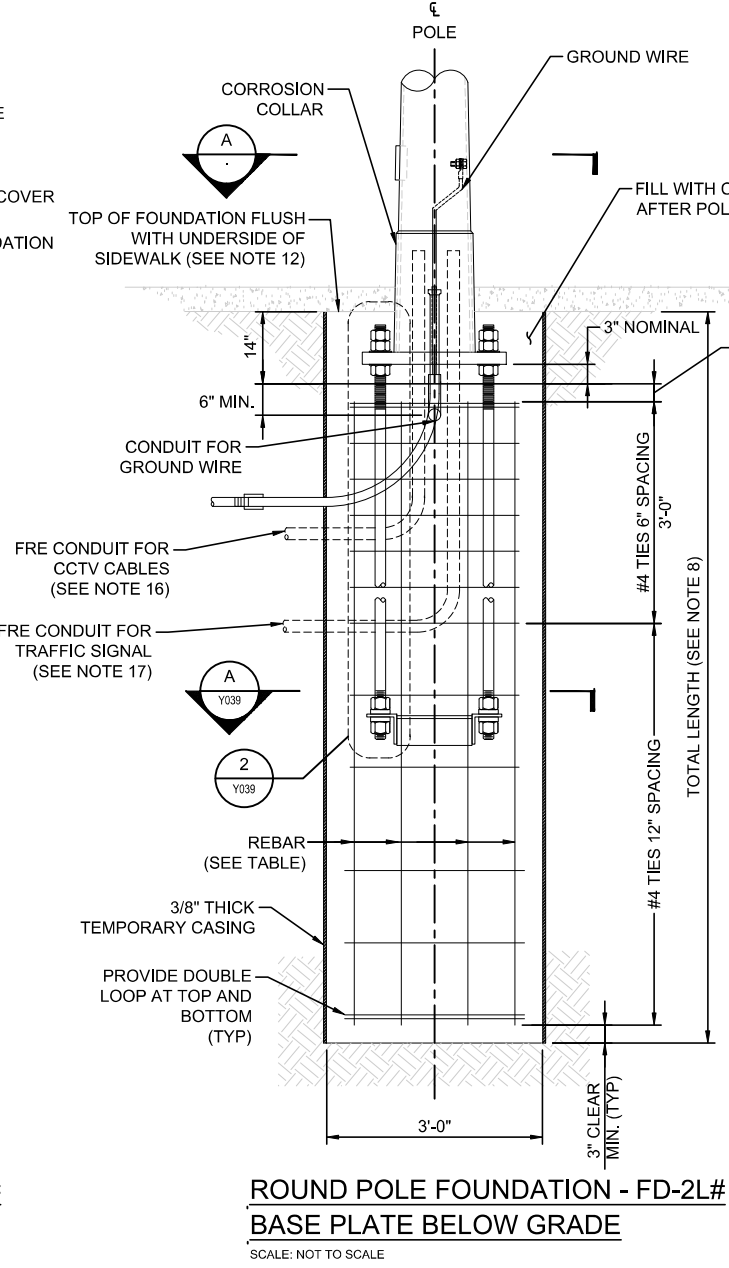
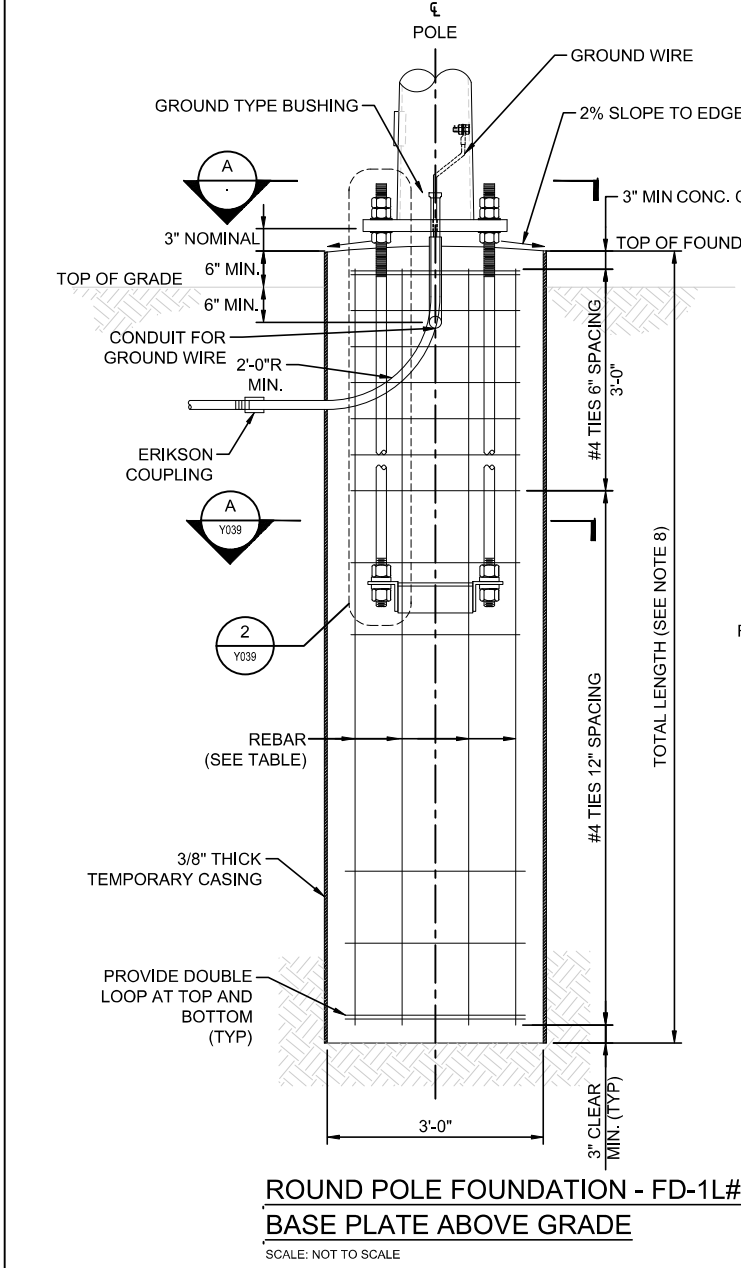
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| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y031.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y031 | SHEET NO.: 343 |



| FOUNDATION/ ANCHOR BOLT TABLE | | | | | | |
|-------------------------------|------------|-------|----------------------|---------------------------|---------------------------------|-----------------------------|
| FDN. TYPE | FOUNDATION | | ANCHOR BOLT | | | |
| | SIZE | TOTAL | BOLT CIRCLE "B" (IN) | ANCHOR BOLT DIA. "A" (IN) | ANCHOR BOLT PROJECTION "P" (IN) | ANCHOR BOLT LENGTH "C" (IN) |
| FD-1LA | #9 | 8 | 15 | 1 1/2 | 10 | 72 |
| FD-1LB | #9 | 8 | 16 | 2 | 12 | 72 |
| FD-1LC | #9 | 8 | 17 | 2 | 12 | 72 |
| FD-1LD | #9 | 10 | 20 | 2 1/2 | 14 | 74 |
| FD-1LE | #9 | 10 | 23 | 2 1/2* | 14 | 74 |
| FD-2LA | #9 | 8 | 15 | 1 1/2 | 10 | 72 |
| FD-2LB | #9 | 8 | 16 | 2 | 12 | 72 |
| FD-2LC | #9 | 8 | 17 | 2 | 12 | 72 |
| FD-2LD | #9 | 10 | 20 | 2 1/2 | 14 | 74 |
| FD-2LE | #9 | 10 | 23 | 2 1/2* | 14 | 74 |

* ANCHOR BOLTS FOR FOUNDATIONS FD-1LE AND FD-2LE TO BE COLOR CODED IN THE ANCHOR ROD BODY, SUCH THAT THEY ARE DISTINGUISHABLE FROM ALL OTHER ANCHORS.

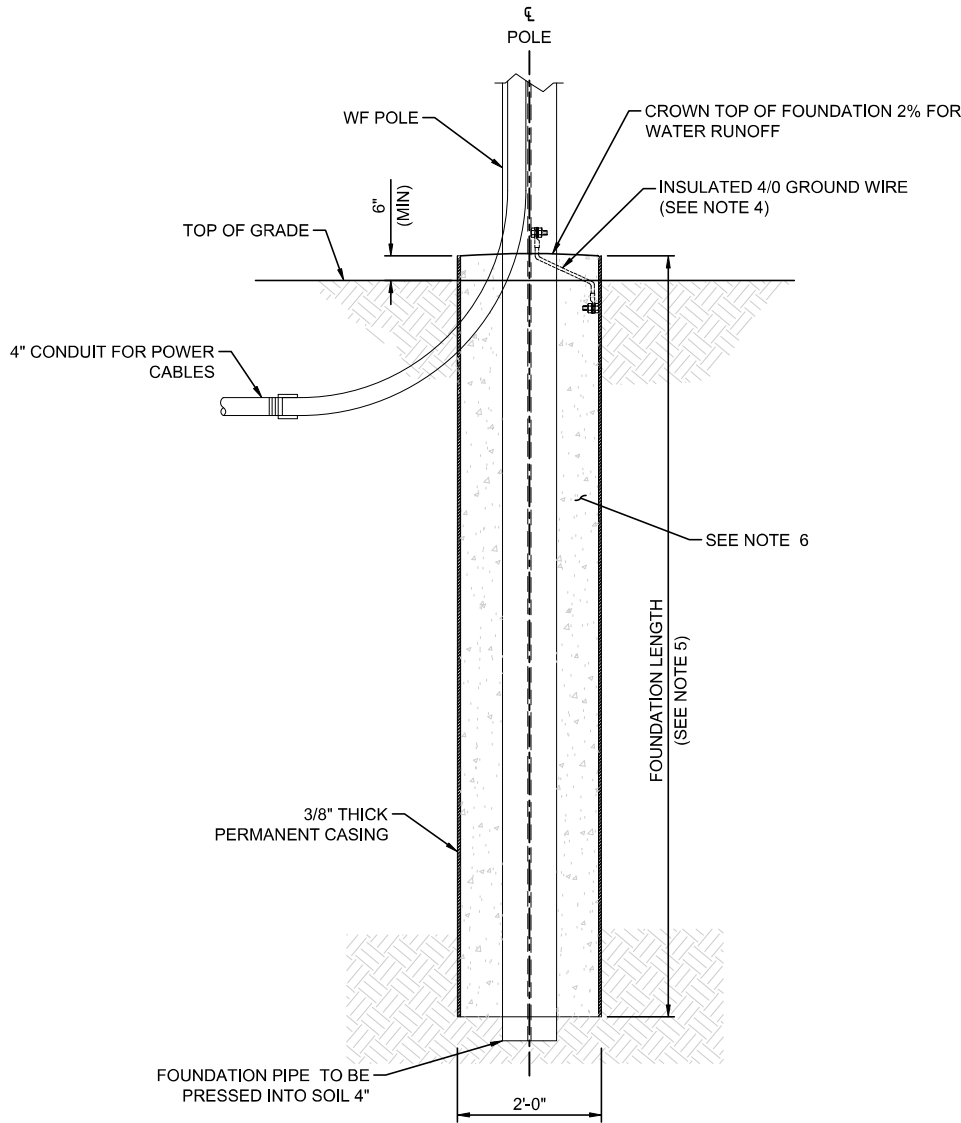
- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, WITH THE EXCEPTION FOR FOUNDATIONS FD-1LE, AND FD-2LE WHICH SHALL CONFORM TO ASTM F1544 GRADE 105. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
 - PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION.
 - CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
 - GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE INSTALLER SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY. IF STEEL DRILLING CAISSON REMAINS IN PLACE, OMIT GROUND RODS AND USE CAISSON AS GROUNDING ELECTRODE.
 - GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.
 - FOR FOUNDATIONS LOCATED IN LANDSCAPE AREA, TOP OF FOUNDATIONS SHOULD BE LEVEL WITH TOP OF FINISH GRADE.
 - FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 AND Y112.
 - CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE.
 - REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
 - WHEN EMBEDDING THE BASE PLATE IN THE FOUNDATION IS NOT POSSIBLE, CONTRACTOR SHALL REFERENCE THE BASE PLATE ABOVE FOUNDATION DETAIL.
 - FOR FOUNDATIONS FD-2#, APPLY GREASE ON ALL EMBEDDED BOLTS THREADS AND NUTS, SUCH THAT IT WILL PREVENT CONCRETE FROM STICKING, AND FILL VOID BELOW SIDEWALK TO TOP OF CONCRETE WITH FLOWABLE FILL CONCRETE (CONTROLLED LOW STRENGTH CONCRETE PER ACI 229R. COMPRESSIVE STRENGTH SHALL BE 150-200 PSI.
 - WHERE ROUND POLE FOUNDATIONS ARE IN LANDSCAPE AREAS, USE FOUNDATION FD-1L. FOR ALL PAVED AND SIDEWALK AREAS, USE FOUNDATION FD-2L.
 - FACE OF POLE TO FACE OF CURB DISTANCE TO BE NO LESS THAN 18" UNLESS STATED OTHERWISE AT INDIVIDUAL POLE LOCATIONS. DISTANCE MAY BE GREATER DEPENDENT UPON LOCATION WHERE STATED.
 - POST MAY BE OF MULTIPLE PLYS TO ACHIEVE SPECIFIED WALL THICKNESS. EACH PLY SHALL HAVE A MINIMUM YIELD STRENGTH OF 55 KSI.
 - FOR LOCATION OF CCTV CAMERAS SEE DRAWINGS Y111 THROUGH Y112. SEE DRAWING P403 FOR CCTV CONDUIT ARRANGEMENT AND DETAILS.
 - FOR LOCATION OF TRAFFIC SIGNALS SEE DRAWINGS Y111 AND Y112. REFER TO TRAFFIC SIGNAL DRAWINGS FOR CONDUIT ARRANGEMENT AND DETAILS.




| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|------------------|--|--|--|---|---|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | <p>SCALE FOR 22"x34": NOT TO SCALE</p> <p>FILENAME: Y033.dwg</p> <p>CONTRACT NO.: CONTRACT NO. ###</p> <p>VOLUME: 1</p> <p>DRAWING NO.: SHEET NO.: Y033 344</p> |
| | | | CHECKED BY | BP | | | | | | |
| | | | DRAWN BY | CA | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | |
| | | | CHECKED BY | BP | | | | | | |
| | | | APPROVED BY | NKS | | | | | | |
| PLOT DATE: 12/22/2022 | | | 8:09:43 AM | | DATE: 12/23/2022 | | NOT FOR CONSTRUCTION | | | |

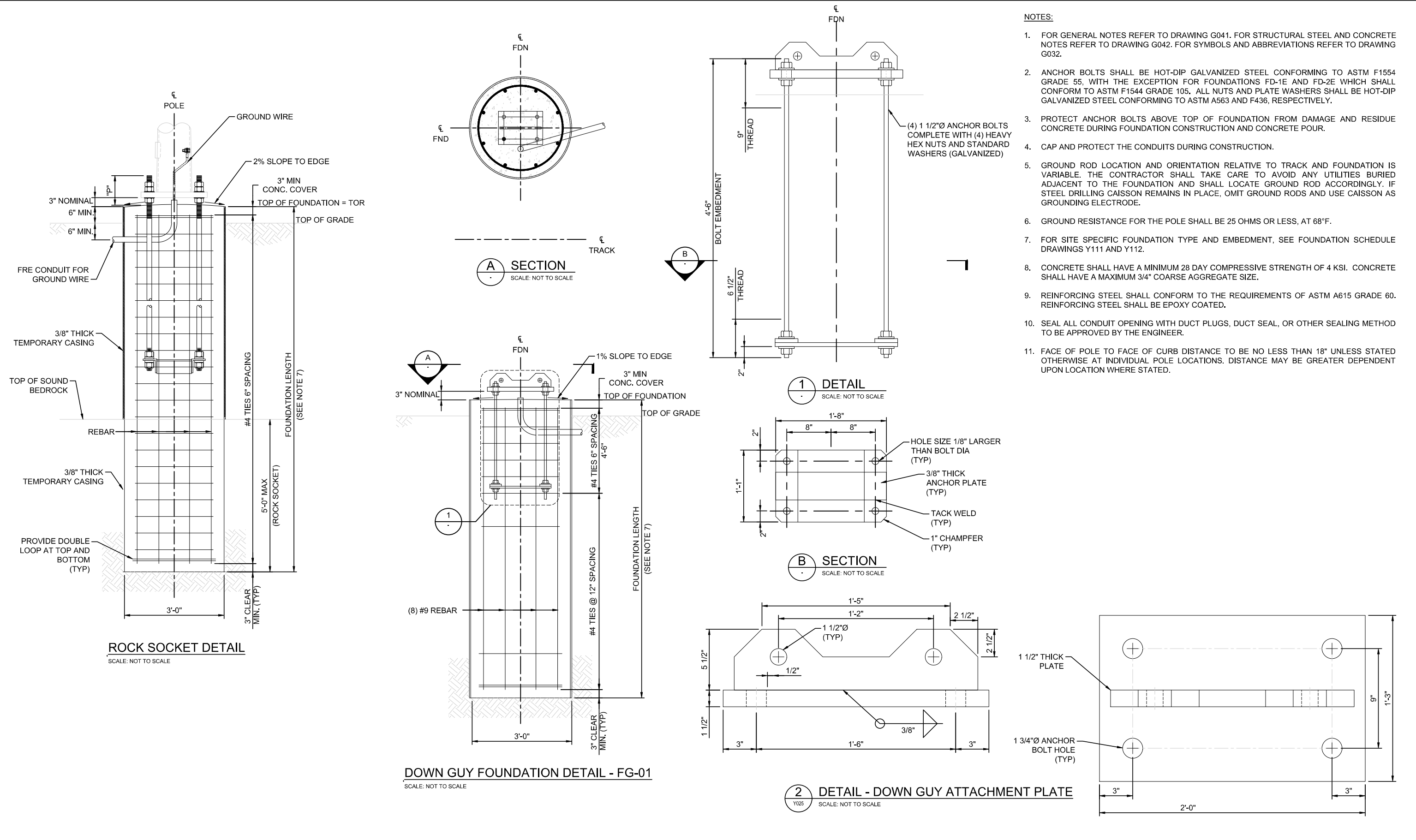
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY.
- GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.
- POLE TO BE PRESSED INTO SOIL IN BOTTOM OF HOLE 6". IF ELECTRICAL RESISTANCE MEASUREMENT IS GREATER THAN 25 OHMS AT 68°F, USE STEEL CAISSON AS GROUNDING ELECTRODE AND CONNECT TO POLE AS SHOWN WITH EXOTHERMIC WELDS.
- FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE POLE AND FOUNDATION SCHEDULE ON DRAWINGS Y111 AND Y112.
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE.
- SEAL ALL CONDUIT OPENING WITH DUCT PLUGS, DUCT SEAL, OR OTHER SEALING METHOD TO BE APPROVED BY THE ENGINEER.

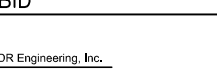


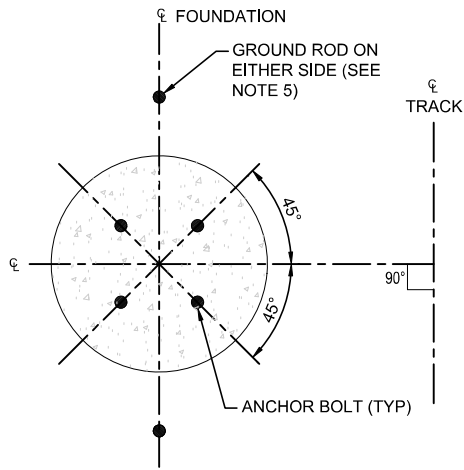
POLE FOUNDATION - FD-3#
SCALE: NOT TO SCALE

| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|---|---|------------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM STRUCTURAL DETAILS 2 FT DIAMETER FOUNDATION DETAIL | SCALE FOR 22"x34": NOT TO SCALE |
| | | | CHECKED BY | BP | | |  <div>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> |  <div>The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div> | | FILENAME: Y034.dwg |
| | | | DRAWN BY | CA | | | | | | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | | | | DRAWING NO.: |
| PLOT DATE: 12/21/2022 | | | 1:30:02 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | Y034 | 345 |

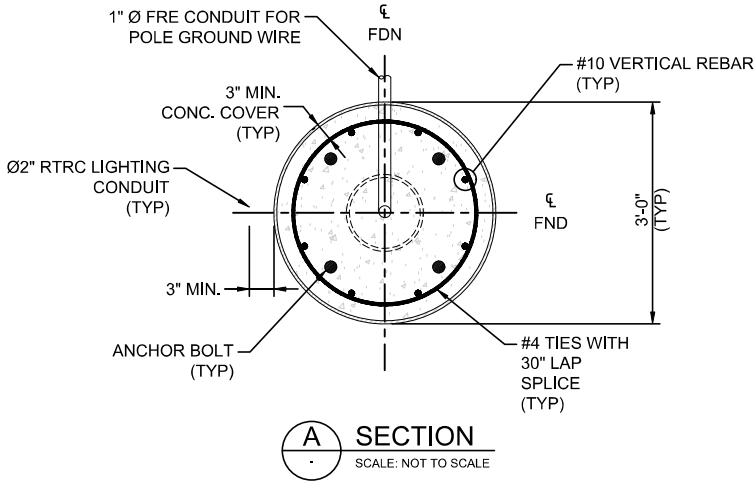


- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, WITH THE EXCEPTION FOR FOUNDATIONS FD-1E AND FD-2E WHICH SHALL CONFORM TO ASTM F1544 GRADE 105. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
 - PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION AND CONCRETE POUR.
 - CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
 - GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY. IF STEEL DRILLING CAISSON REMAINS IN PLACE, OMIT GROUND RODS AND USE CAISSON AS GROUNDING ELECTRODE.
 - GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS, AT 68°F.
 - FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 AND Y112.
 - CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE SIZE.
 - REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
 - SEAL ALL CONDUIT OPENING WITH DUCT PLUGS, DUCT SEAL, OR OTHER SEALING METHOD TO BE APPROVED BY THE ENGINEER.
 - FACE OF POLE TO FACE OF CURB DISTANCE TO BE NO LESS THAN 18" UNLESS STATED OTHERWISE AT INDIVIDUAL POLE LOCATIONS. DISTANCE MAY BE GREATER DEPENDENT UPON LOCATION WHERE STATED.

| | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|------------|---|---|---|---|---|-------------------------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | OK |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22" x34": NOT TO SCALE | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | FILENAME: Y035.dwg | |
| | | | DRAWN BY | OK | | | | | | OVERHEAD CONTACT SYSTEM | CONTRACT NO.: |
| | | | CHECKED BY | BP | | | | | | STRUCTURAL DETAILS | CONTRACT NO. ### |
| | | | APPROVED BY | NKS | | | | | | ROCK SOCKET AND DOWN GUY | VOLUME: |
| PLOT DATE: 12/21/2022 | | 2:58:40 PM | DATE | 12/23/2022 | | | NOT FOR CONSTRUCTION | | FOUNDATION DETAILS | DRAWING NO.: Y035 | SHEET NO.: 346 |

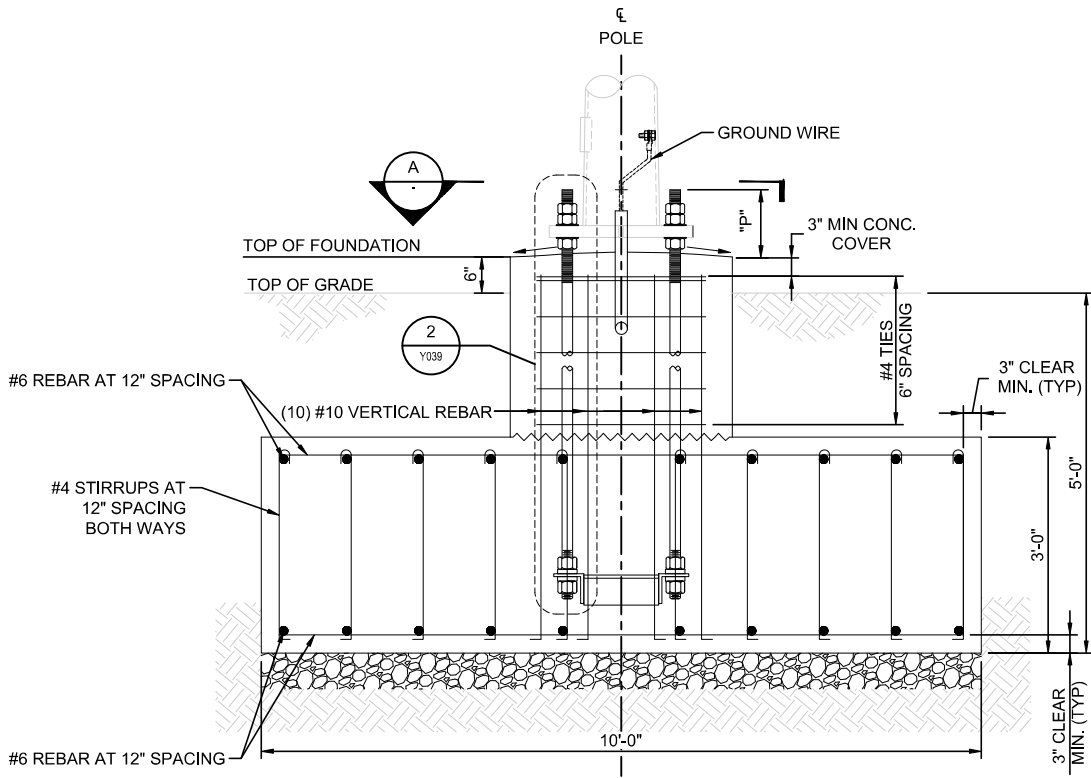


ANCHOR BOLT ORIENTATION
SCALE: NOT TO SCALE

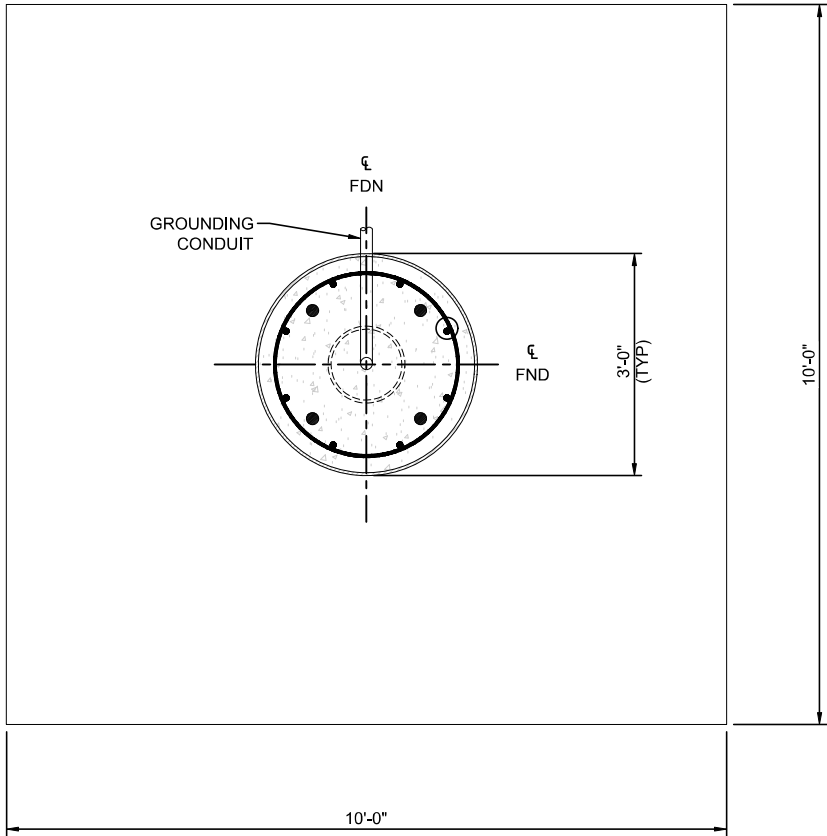


NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G020. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G022.
- ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
- PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION.
- CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
- GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE INSTALLER SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY.
- GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.
- FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 THROUGH Y112.
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI. CONCRETE SHALL HAVE A MAXIMUM 3/8" COARSE AGGREGATE.
- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
- FOUNDATION SHALL BE BACK FILLED WITH STRUCTURAL FILL, WITH 6 INCHES OF CRUSH STONE AT THE BOTTOM OF FOUNDATION.



SPREAD FOOTING FOUNDATION - TYPE FD-4#
SCALE: NOT TO SCALE



PLAN VIEW - SPREAD FOOTING FOUNDATION

| FOUNDATION/ ANCHOR BOLT TABLE | | | | | |
|-------------------------------|---------------|-------|----------------------|---------------------------|---------------------------------|
| FDN. TYPE | FOUNDATION | | ANCHOR BOLT | | |
| | REINFORCEMENT | | BOLT CIRCLE "B" (IN) | ANCHOR BOLT DIA. "A" (IN) | ANCHOR BOLT PROJECTION "P" (IN) |
| | SIZE | TOTAL | | | |
| FD-4A | AS NOTED | | 17 | 1 1/2 | 10 |
| FD-4B | AS NOTED | | 16 | 2 | 12 |
| FD-4C | AS NOTED | | 17 | 2 | 12 |
| FD-4D | AS NOTED | | 20 | 2 1/2 | 14 |

| REV | DATE | DESCRIPTION | DESIGNED BY | AMA |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | GK |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | 1:31:57 PM | DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

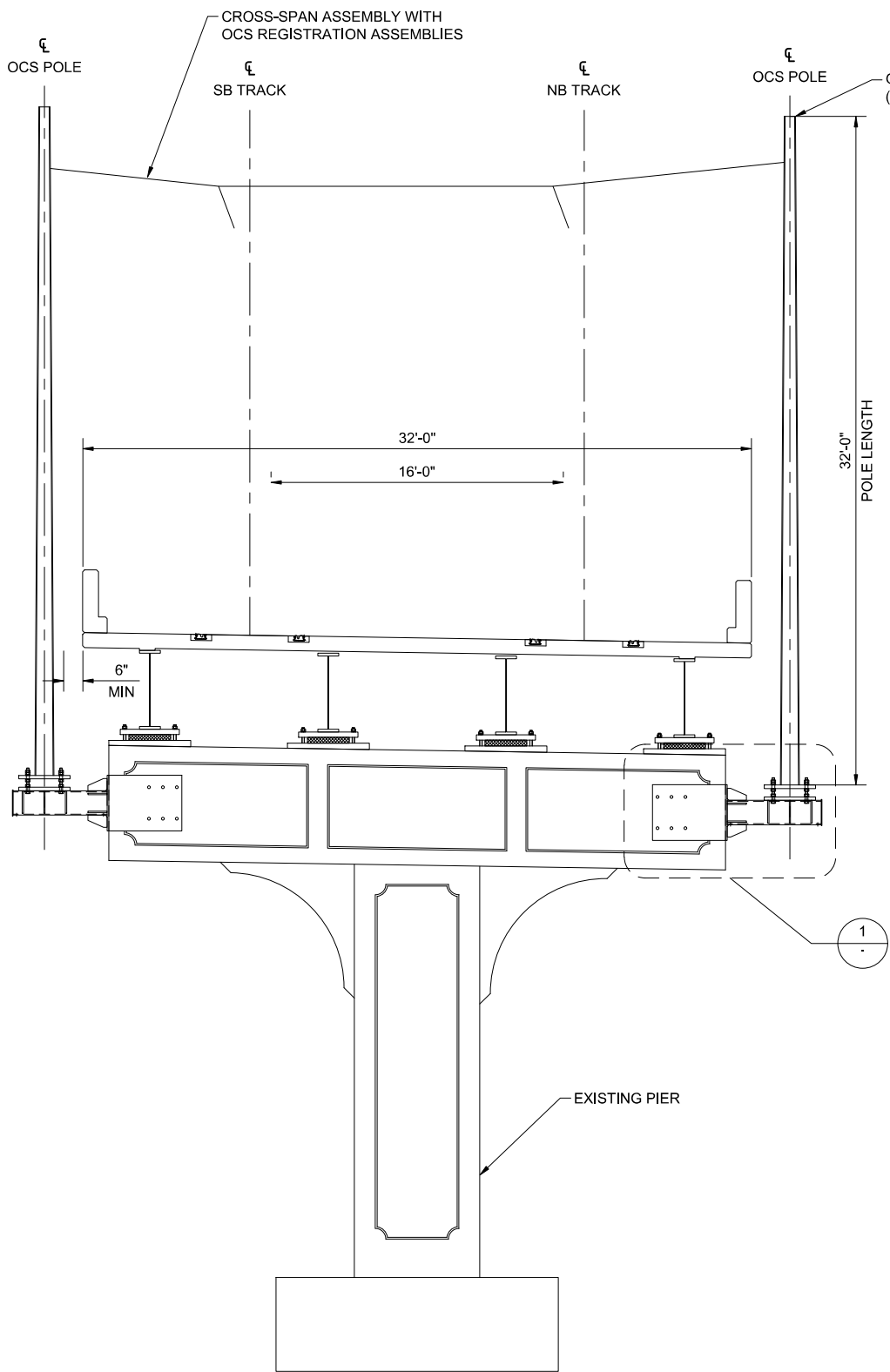
OVERHEAD CONTACT SYSTEM

STRUCTURAL DETAIL

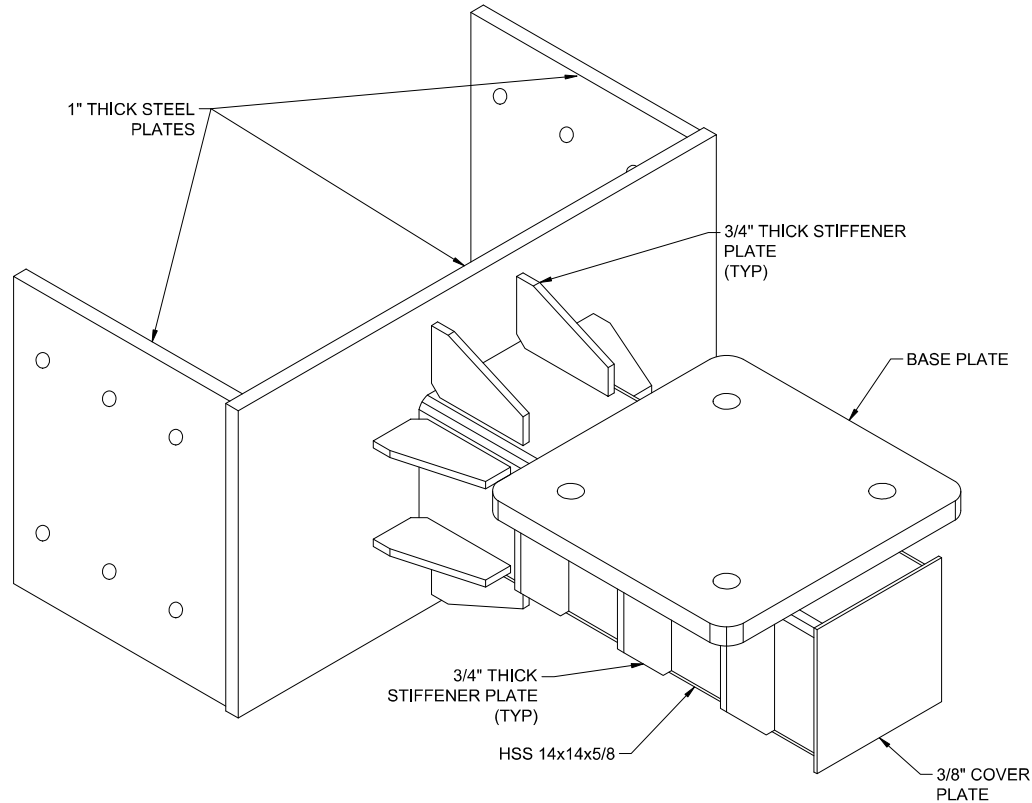
TYPICAL SPREAD FOOTING

FOUNDATION DETAIL

| | |
|------------------------------------|-------------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y036.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y036 | SHEET NO.: 347 |

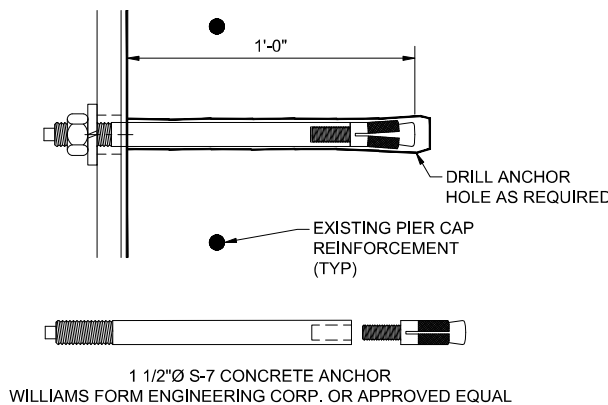


VIADUCT OCS TYPICAL STRUCTURE
SECTION VIEW

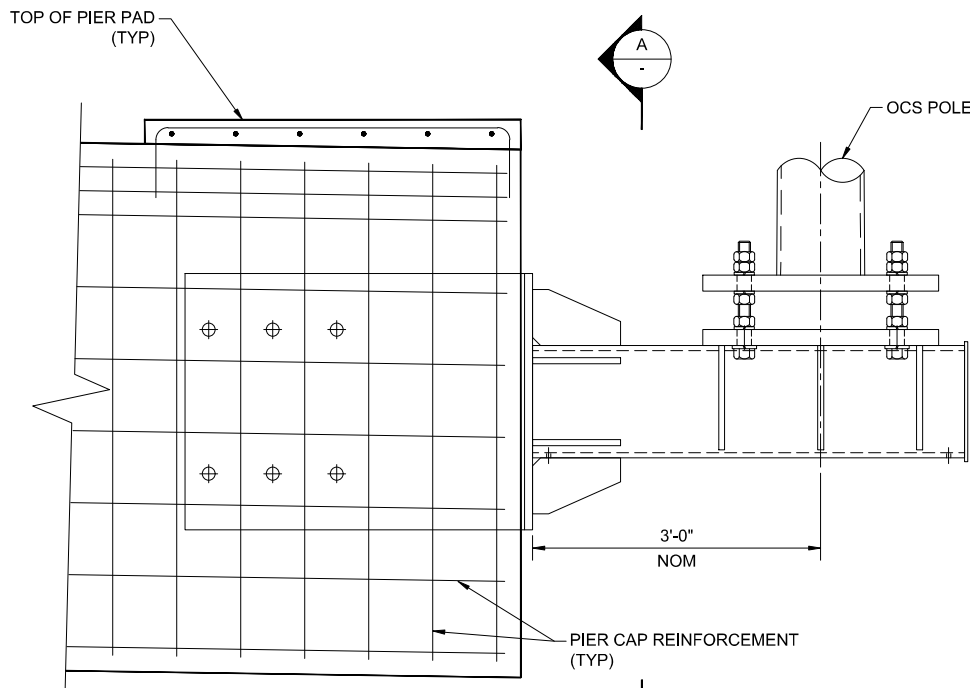


PIER CAP ATTACHMENT (CAP-#) - 3D RENDERING
NO SCALE

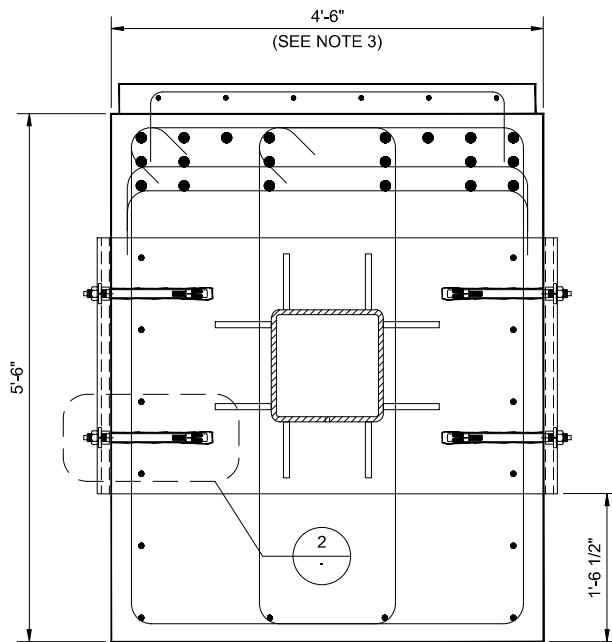
- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - FOR PIER CAP ATTACHMENT DETAILS REFER TO DWG Y038.
 - PIER CAP WIDTH OF 4'-6" AND REINFORCEMENT SPACING, "A", ARE BASED ON AS-BUILT DRAWINGS, GRAND BOULEVARD VIADUCT REPLACEMENT, LATEST REVISION DATES 06/09/2000. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF THE PIER CAP ATTACHMENT ASSEMBLIES.
 - ANCHOR BOLTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 - CONTRACTOR TO SCAN CONCRETE FOR RE-BAR LOCATIONS BEFORE DRILLING.



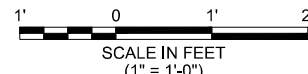
2
DETAIL
SCALE: 3" = 1'-0"



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



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



| REV | DATE | DESCRIPTION | DESIGNED BY | GK |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | GK |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |

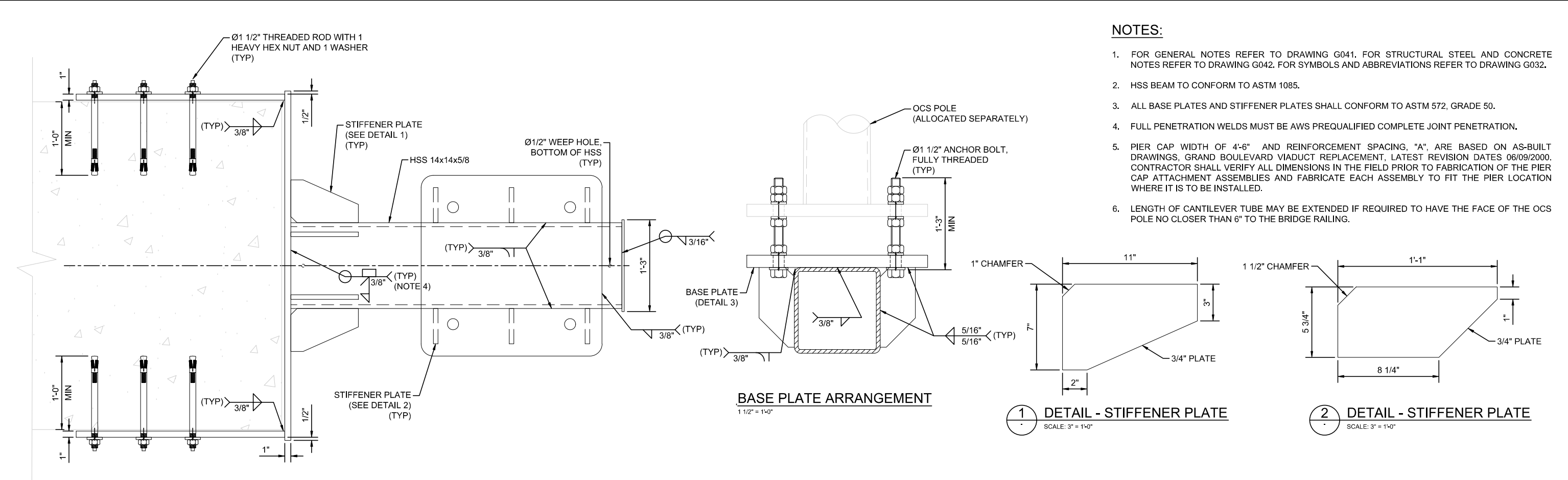


This set of plans is not for construction. These plans are intended to build interest in bidding the project.

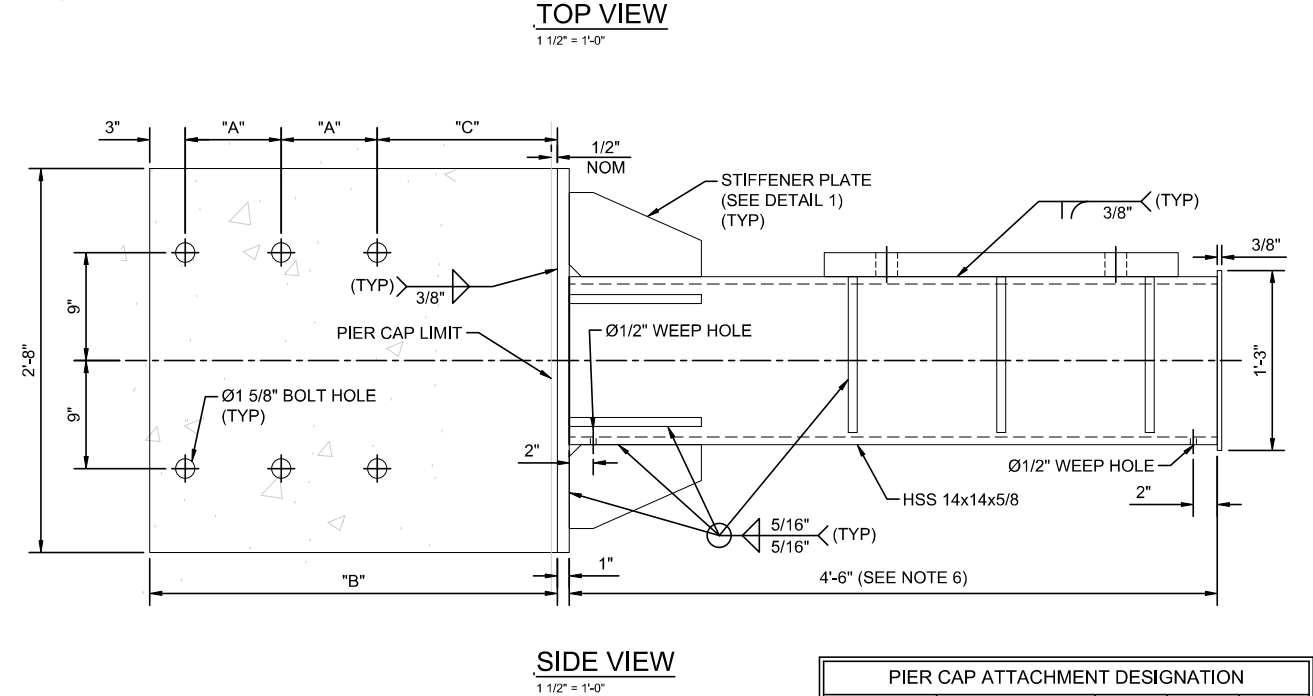
| ISSUE FOR BID | DATE: 12-23-2022 |
|---|--|
| HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | |

| KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | |
|--|--|
| OVERHEAD CONTACT SYSTEM POLE INSTALLATION DETAILS AT GRAND BOULEVARD VIADUCT (SHEET 1 OF 2) | |

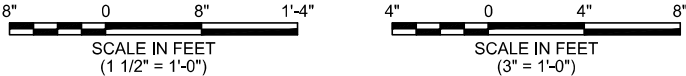
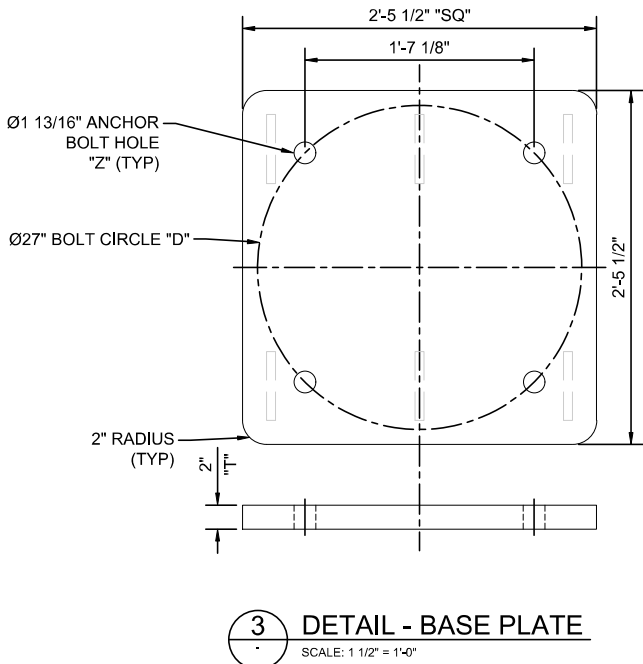
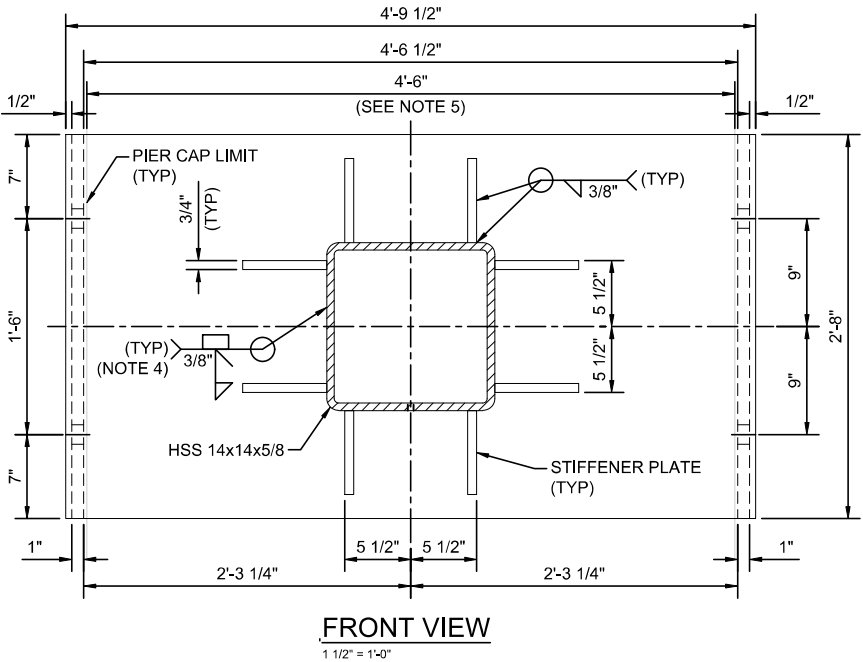
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| SCALE FOR 22"x34": AS SHOWN | |
| FILENAME: Y037.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y037 | SHEET NO.: 348 |



- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - HSS BEAM TO CONFORM TO ASTM 1085.
 - ALL BASE PLATES AND STIFFENER PLATES SHALL CONFORM TO ASTM 572, GRADE 50.
 - FULL PENETRATION WELDS MUST BE AWS PREQUALIFIED COMPLETE JOINT PENETRATION.
 - PIER CAP WIDTH OF 4'-6" AND REINFORCEMENT SPACING, "A", ARE BASED ON AS-BUILT DRAWINGS, GRAND BOULEVARD VIADUCT REPLACEMENT, LATEST REVISION DATES 06/09/2000. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF THE PIER CAP ATTACHMENT ASSEMBLIES AND FABRICATE EACH ASSEMBLY TO FIT THE PIER LOCATION WHERE IT IS TO BE INSTALLED.
 - LENGTH OF CANTILEVER TUBE MAY BE EXTENDED IF REQUIRED TO HAVE THE FACE OF THE OCS POLE NO CLOSER THAN 6" TO THE BRIDGE RAILING.



| PIER CAP ATTACHMENT DESIGNATION | | | | |
|---------------------------------|----------------|-------------|-------------|-------------|
| ASSEMBLY | VIADUCT PIER # | "A" (IN) | "B" (IN) | "C" (IN) |
| CAP-1 | 1, 4, 7, 8, 10 | 8.0 | 42.5 | 23.5 |
| CAP-2 | 3, 9 | 9.0 | 47.0 | 26.0 |
| CAP-3 | 2, 5, 6 | 10.0 | 51.5 | 28.5 |
| CAP-4 | 11, 12, 13, 14 | 11.0 | 45.0 | 20.0 |



REV

DATE

DESCRIPTION

DESIGNED BY

CHECKED BY

DRAWN BY

CHECKED BY

APPROVED BY

GK

BP

GK

BP

NKS

10450 Holmes Road

Suite 600

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

DATE: 12-23-2022

ISSUE FOR BID

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM

POLE INSTALLATION DETAILS

AT GRAND BOULEVARD VIADUCT

(SHEET 2 OF 2)

SCALE FOR 22"x34":

AS SHOWN

FILENAME:

Y038.dwg

CONTRACT NO.:

CONTRACT NO. ###

VOLUME:

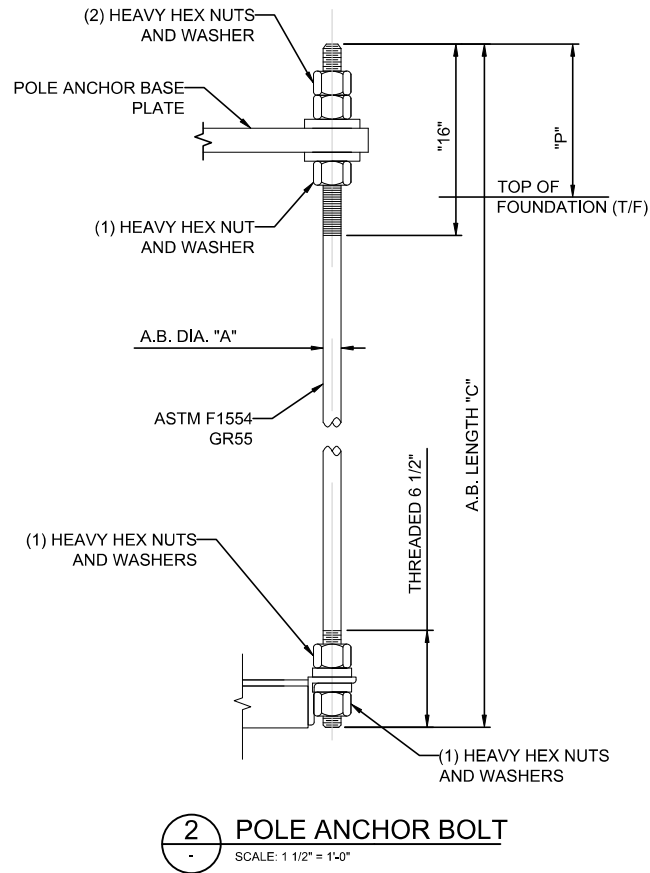
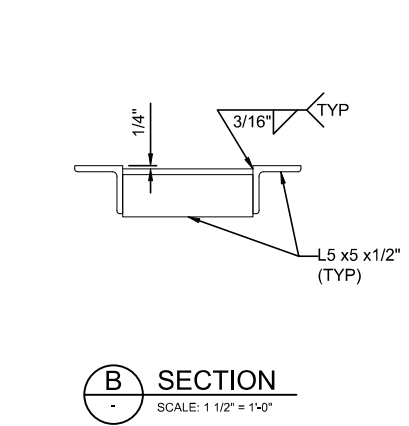
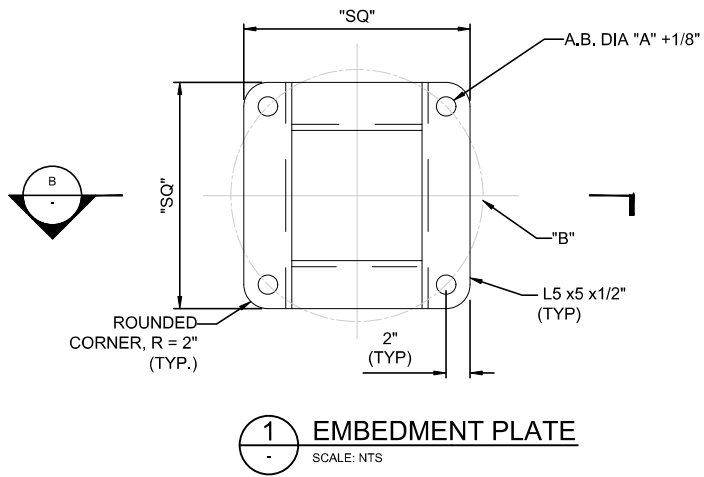
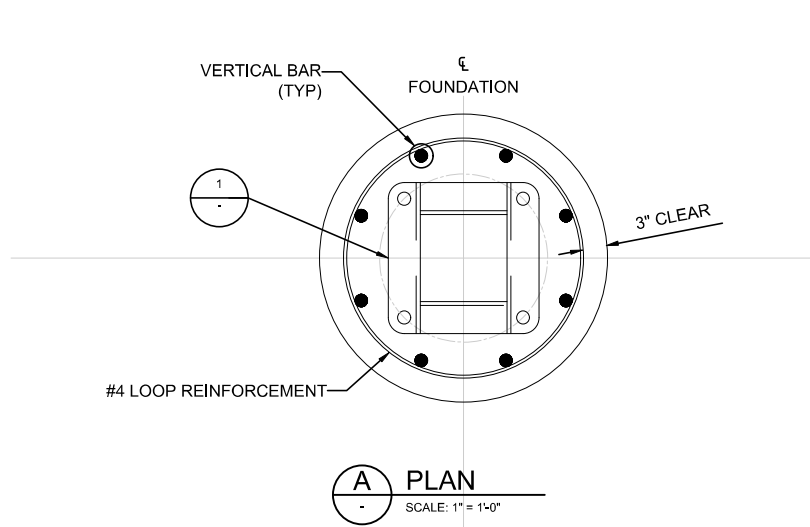
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DRAWING NO.:

SHEET NO.:

Y038

349





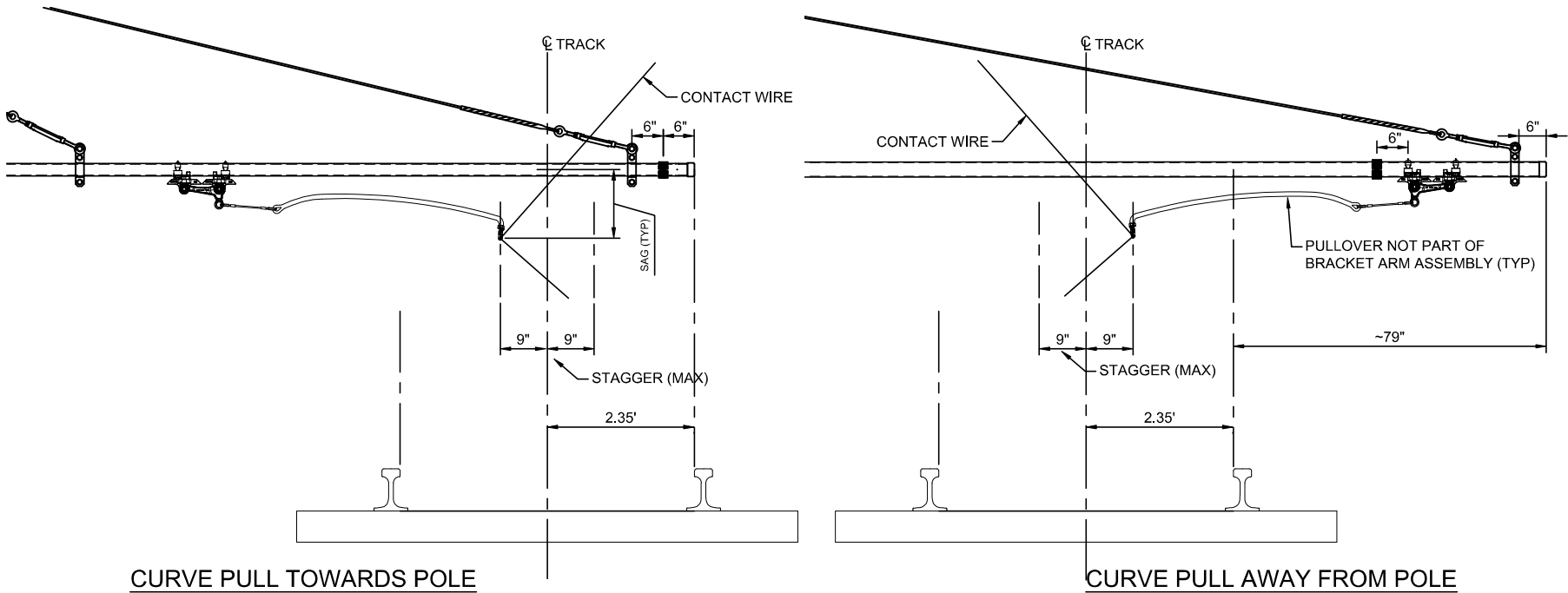
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- FOR POLE ANCHOR BASE PLATE DETAILS REFER TO DRAWING Y021.
- FOR FOUNDATION TYPE AND EMBEDMENT LENGTH, REFER TO POLE AND FOUNDATION SCHEDULE ON DRAWINGS Y111 AND Y112.
- SLOPE CONCRETE AWAY FROM ANCHOR BOLTS FOR WATER RUNOFF.
- FOR ADDITIONAL GROUNDING DETAIL, REFER TO DRAWING Y067.
- ANCHOR BOLTS, NUTS, AND FLAT WASHERS TO BE HOT DIPPED GALVANIZED PER ASTM F2329 WITH A COATING THICKNESS OF 0.0020 INCHES.

| FOUNDATION/ ANCHOR BOLT TABLE | | | | | |
|-------------------------------|-------------|----------------------|---------------------------|---------------------------------|-----------------------------|
| FOUNDATION | | ANCHOR BOLT | | | |
| FDN. TYPE | SQUARE "SQ" | BOLT CIRCLE "B" (IN) | ANCHOR BOLT DIA. "A" (IN) | ANCHOR BOLT PROJECTION "P" (IN) | ANCHOR BOLT LENGTH "C" (IN) |
| FD-##A | 18 | 15 | 1 1/2 | 10 | 72 |
| FD-##B | 19 | 16 | 2 | 12 | 72 |
| FD-##C | 20 | 17 | 2 | 12 | 72 |
| FD-##D | 23 | 20 | 2 1/2 | 14 | 74 |
| FD-##E | 25 | 22 | 2 1/2* | 14 | 74 |

* ANCHOR BOLTS FOR FOUNDATIONS FD-1FE AND FD-2FE MUST CONFORM TO ASTM F1554, GRADE 105. THESE ANCHORS TO BE COLOR CODED IN THE ANCHOR ROD BODY, SUCH THAT THEY ARE DISTINGUISHABLE FROM ALL OTHER ANCHORS.

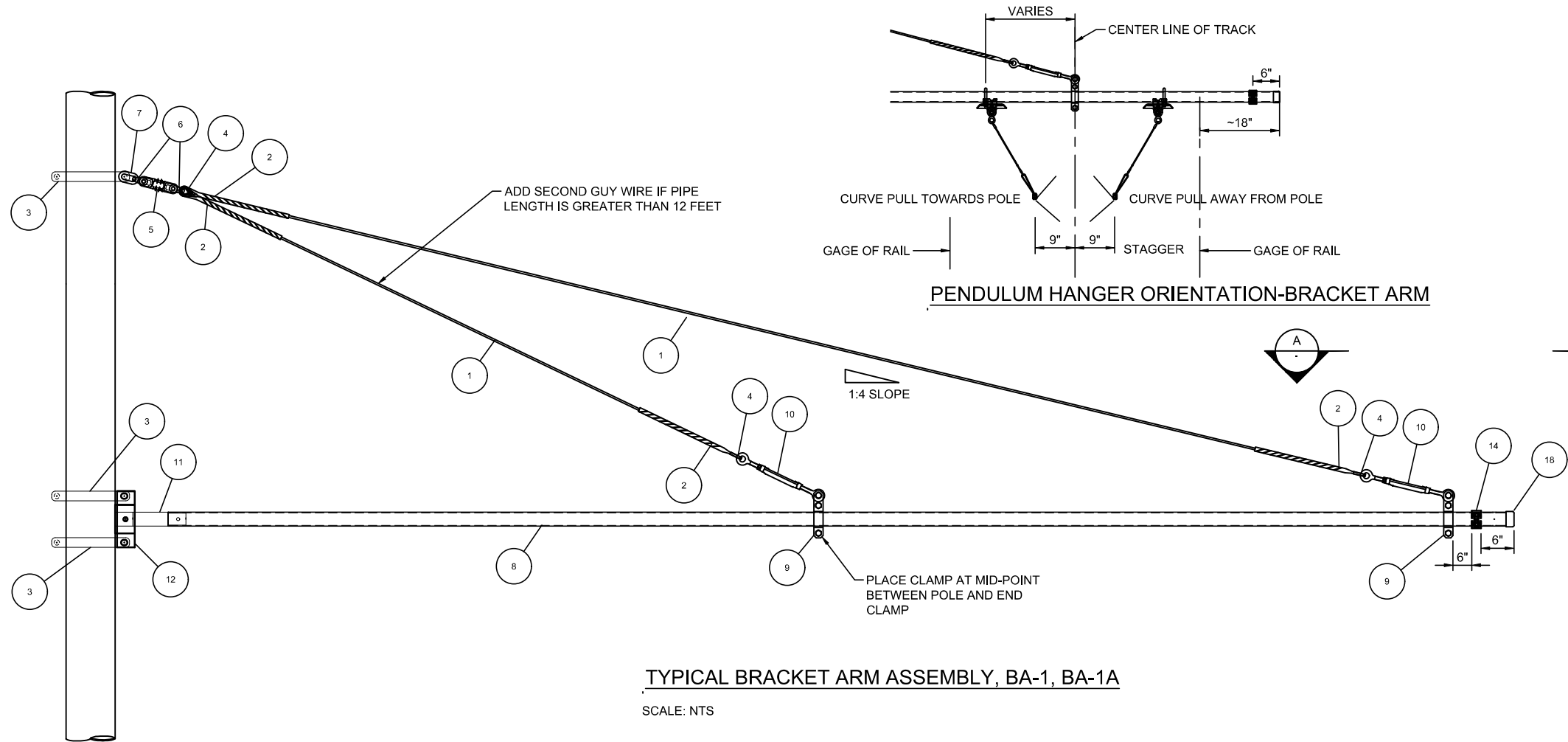
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|-----------------------|------|-------------|-------------|-----|--|--|---|--|---|--|--|--|-----------------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": AS SHOWN | |
| | | | CHECKED BY | BP | | |  | |  | | | | OVERHEAD CONTACT SYSTEM | |
| | | | DRAWN BY | PFW | | | <p>10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</p> | | <p>The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</p> | | STRUCTURAL DETAILS | | CONTRACT NO.: | |
| | | | CHECKED BY | BP | | | | | | | | | CONTRACT NO. ### | |
| | | | APPROVED BY | NKS | | | | | | | | | VOLUME: | |
| | | | | | | | | | | | | | 1 | |
| PLOT DATE: 12/21/2022 | | | 1:36:04 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | DRAWING NO.: | | SHEET NO.: | |
| | | | | | | | | | | | Y039 | | 350 | |



CURVE PULL TOWARDS POLE

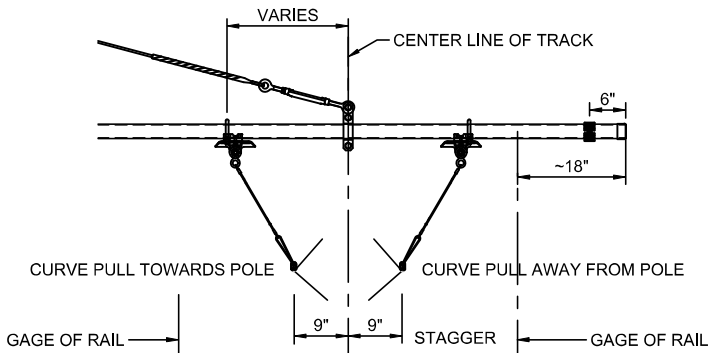
PULLOVER ORIENTATION-BRACKET ARM

CURVE PULL AWAY FROM POLE



TYPICAL BRACKET ARM ASSEMBLY, BA-1, BA-1A

SCALE: NTS

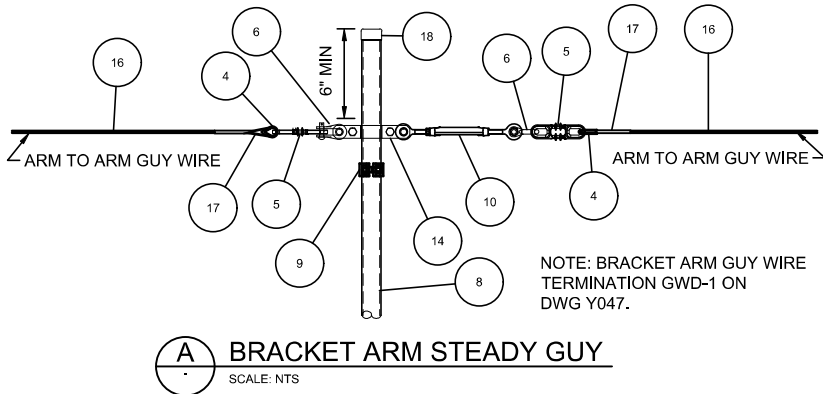


PENDULUM HANGER ORIENTATION-BRACKET ARM

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G020. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G021. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
 - CONTACT WIRE SUSPENSION ASSEMBLY ALLOCATED SEPARATELY AND INDICATED ON LAYOUT PLANS.
 - SIZE OF POLE CLAMP DEPENDANT UPON POLE SIZE.
 - BRACKET ARM GUY WIRE AT END OF ARM TO BE CLAMPED TO OCS POLE AT A MINIMUM 1:4 SLOPE.
 - USE INSIDE GUY WIRE WHEN BRACKET ARM PIPE IS GREATER THAN 12 FEET LONG.
 - FOR BRACKET ARMS UP TO 20 FEET LONG, USE 2 INCH SCHEDULE 80 PIPE (BA-1). FOR BRACKET ARMS BETWEEN 20 FEET AND 25 FEET LONG USE 2-1/2 INCH SCHEDULE 80 PIPE (BA-1A).
 - CONTRACTOR TO FURNISH PIPE END CAP FOR APPROVAL BY KC STREETCAR. PIPE END CAP TO FIT OVER OUTSIDE OF PIPE AND BE SECURED USING A 1/4 INCH SQUARE HEAD SET SCREW.
 - CONTRACTOR SHALL ONLY USE HOT FORGE STEEL PIPE CLAMPS AND POLE CLAMPS.
 - MAXIMUM LENGTH OF BRACKET ARM BA-1A IS 25 FEET. FOR LENGTHS OVER 25 FEET, USE BA-2 ARM.
 - PULLOVER AND PENDULUM ASSEMBLIES ALLOCATED SEPARATELY.
 - BRACKET ARM LENGTHS DETERMINED BY CONTRACTOR.
 - MOUNTING HEIGHT OF BRACKET ARM TO COMPENSATE SAG OF CONTACT WIRE. CONTRACTOR TO DETERMINE FINAL HEIGHT.
 - ITEM NUMBERS 9, 11, AND 14 FOR BA-1A SHALL BE SIZED ACCORDINGLY.

| BILL OF MATERIAL | | | |
|------------------|--------------------------------------|------------------|----------|
| ITEM NO. | ITEM NO. | ITEM NO. | ITEM NO. |
| 1 | WIRE, SPAN, 5/16", EHS | ASTM A475 | - |
| 2 | PREFORM, SPAN WIRE, 5/16" | PREFORM | GDE-2106 |
| 3 | POLE CLAMP DETAILS | SEE DRAWING Y044 | |
| 4 | THIMBLE, 5/16", STL HDG | MAC | E0492-01 |
| 5 | LOOP INSULATOR | MAC | D4069-01 |
| 6 | SHACKLE FOR LOOP INSULATOR | MAC | E0928-02 |
| 7 | CHAIN LINK | MAC | E0159-01 |
| 8 | PIPE, STEEL, 2 IN., HDG, SCHEDULE 80 | ASTM A1085 | - |
| 9 | PIPE CLEVIS TWO PIECE G2.0" | MAC | C0145-02 |
| 10 | TURNBUCKLE, EYE & EYE | MAC | D0138-01 |
| 11 | STRUT INSULATOR 2" SCHEDULE 80 PIPE | MAC | KMA-675 |
| 12 | BRACKET ARM POLE SOCKET | SEE DRAWING Y045 | |
| 14 | PIPE CLEVIS TWO PIECE G2.0" | MAC | V9350 |
| 16 | WIRE, SPAN, 1/4", SIEMENS-MARTIN | ASTM A475 | - |
| 17 | PREFORM, 1/4" SPAN WIRE | PREFORM | GDE-2104 |
| 18 | PIPE END CAP* | - | - |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL WITH APPROVAL OF THE ENGINEER.



BRACKET ARM STEADY GUY

SCALE: NTS

NOTE: BRACKET ARM GUY WIRE TERMINATION GWD-1 ON DWG Y047.

| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

| ISSUE FOR BID | | DATE: 12-23-2022 |
|---|--|--|
| HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | | |

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

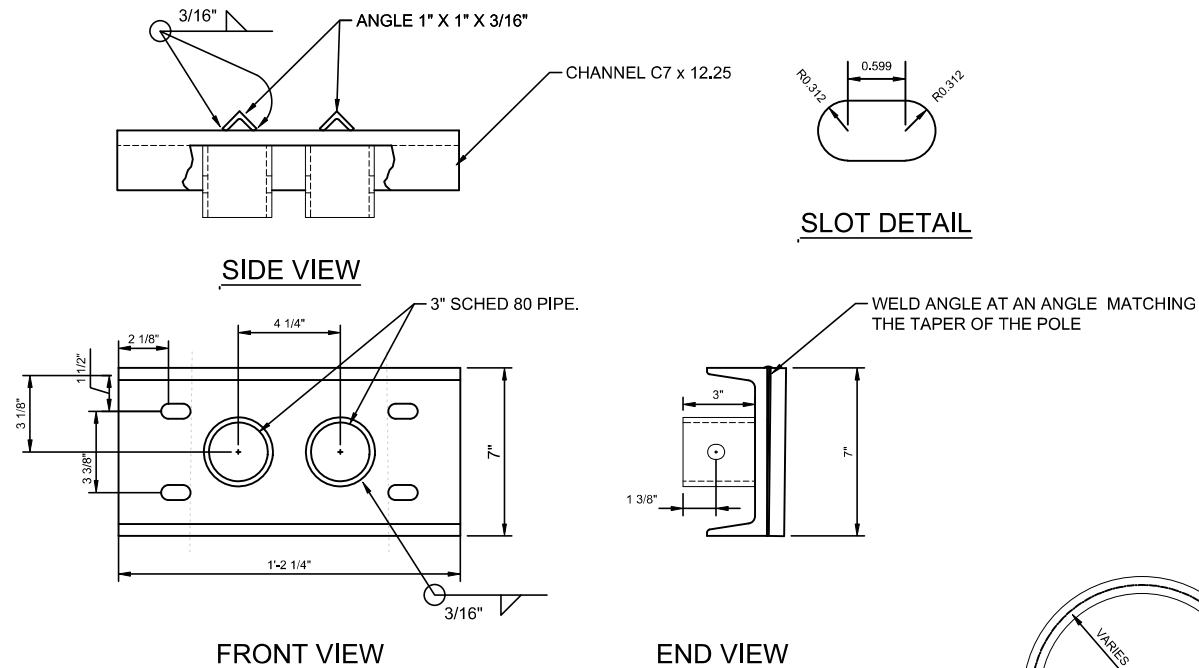
OVERHEAD CONTACT SYSTEM
BRACKET ARM ASSEMBLIES
SINGLE PIPE BRACKET ARM

| | |
|------------------------------------|-------------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y041.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y041 | SHEET NO.: 351 |

| BILL OF MATERIALS | | | |
|-------------------|--|----------------------------|-------------|
| ITEM NO. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | WIRE, SPAN, 5/16", EHS | ASTM A475 | - |
| 2 | PREFORM, SPAN WIRE, 5/16" | PREFORM | GDE-2106 |
| 3 | POLE CLAMP DETAILS | SEE DRAWING Y044 | |
| 4 | THIMBLE, 5/16", STL HDG | MAC | E0492-01 |
| 5 | LOOP INSULATOR | MAC | D4069-01 |
| 6 | SHACKLE FOR LOOP INSULATOR | MAC | E0928-02 |
| 7 | CHAIN LINK | MAC | E0159-01 |
| 8 | PIPE, STEEL, 2-1/2 IN., HDG, SCHEDULE 80 | - | - |
| 9 | NOT USED | | |
| 10 | TURNBUCKLE, CLEVIS & EYE | MAC | D0138-01 |
| 11 | STRUT INSULATOR 2-1/2" SCHEDULE 80 PIPE | MAC | KMA-675 |
| 12 | PIPE SOCKET CHANNEL ASSEM | - | - |
| 13 | 1/2" Ø CLEVIS PIN WITH COTTER KEY | - | - |
| 14 | EYE NUT, 5/8" | CHANCE | |
| 15 | PIPE CLEVIS TWO PIECE G2.5" | MAC | C0145-02* |
| 16 | WIRE, SPAN, 1/4" | - | - |
| 17 | PREFORM, 1/4" | PREFORM | GDE-2104 |
| 18 | PIPE CLEVIS TWO PIECE WITH EYE G2.5" | SEE THIS DRAWING, DETAIL 2 | |
| 19 | PIPE CAP | - | - |

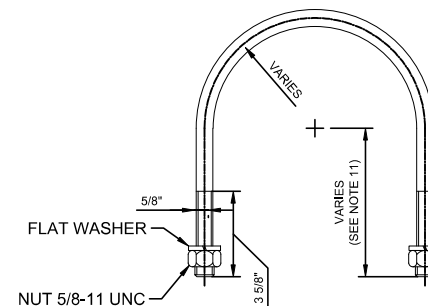
NOTE: PARTS LISTED ABOVE ARE FOR REFERENCE

*PART TO BE MODIFIED AS SHOWN ON DRAWING DETAIL USING PART NO. C0245-01 FOR 2" SCHED 80 PIPE AS THE MODEL



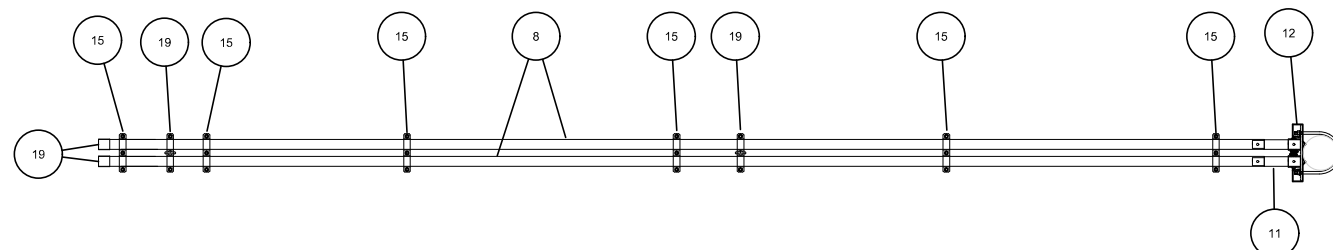
POLE BRACKET ASSEMBLY FOR BA-2

SCALE: NTS



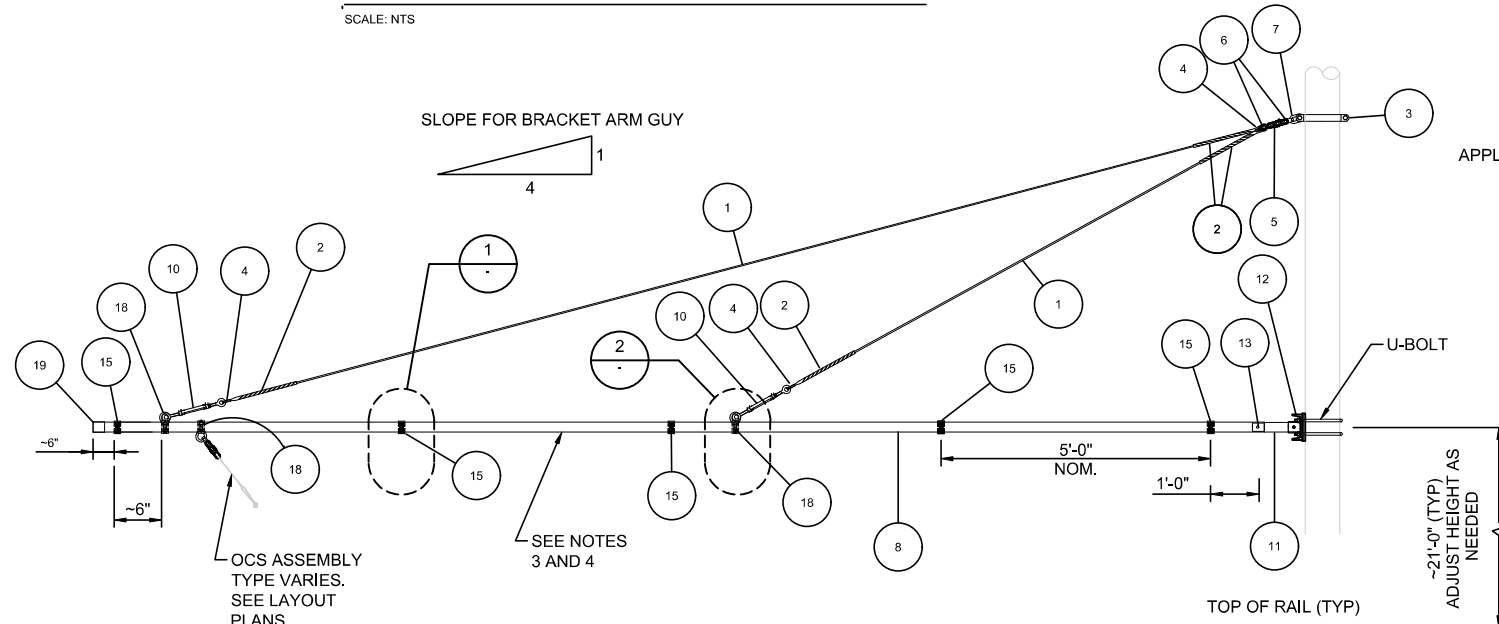
U-BOLT

SCALE: NTS



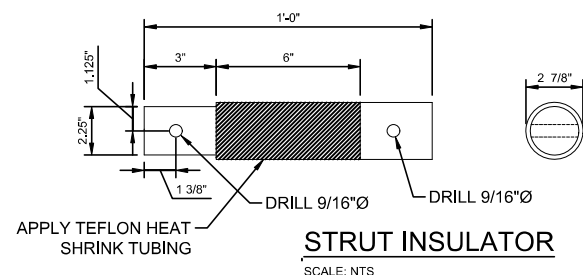
PLAN VIEW BRACKET ARM ASSEMBLY BA-2

SCALE: NTS



SIDE VIEW BRACKET ARM ASSEMBLY, BA-2, BA-2A

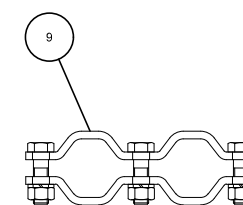
SCALE: NTS



STRUT INSULATOR

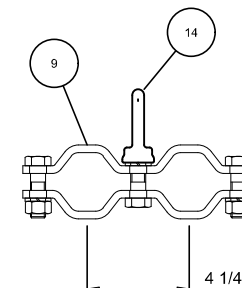
SCALE: NTS

NOTE: STRUT INSULATOR FABRICATED FROM G10 EPOXY FIBERGLASS. ALSO USE FOR 2" SCHED 80 PIPE AND MAKE ADJUSTMENTS.



1 PIPE CLEVIS TWO PIECE

SCALE: 1" = 4'



② PIPE CLEVIS TWO PIECE W/ EYE

SCALE: 1" = 4'

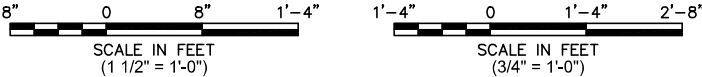
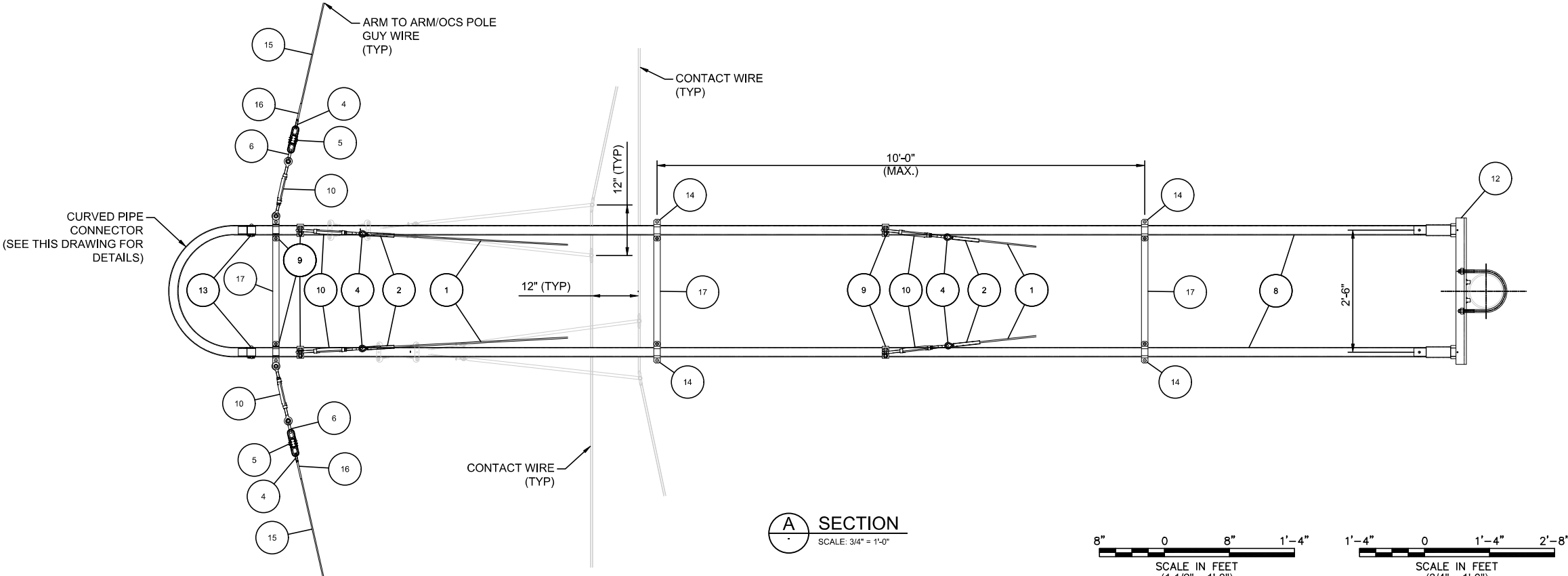
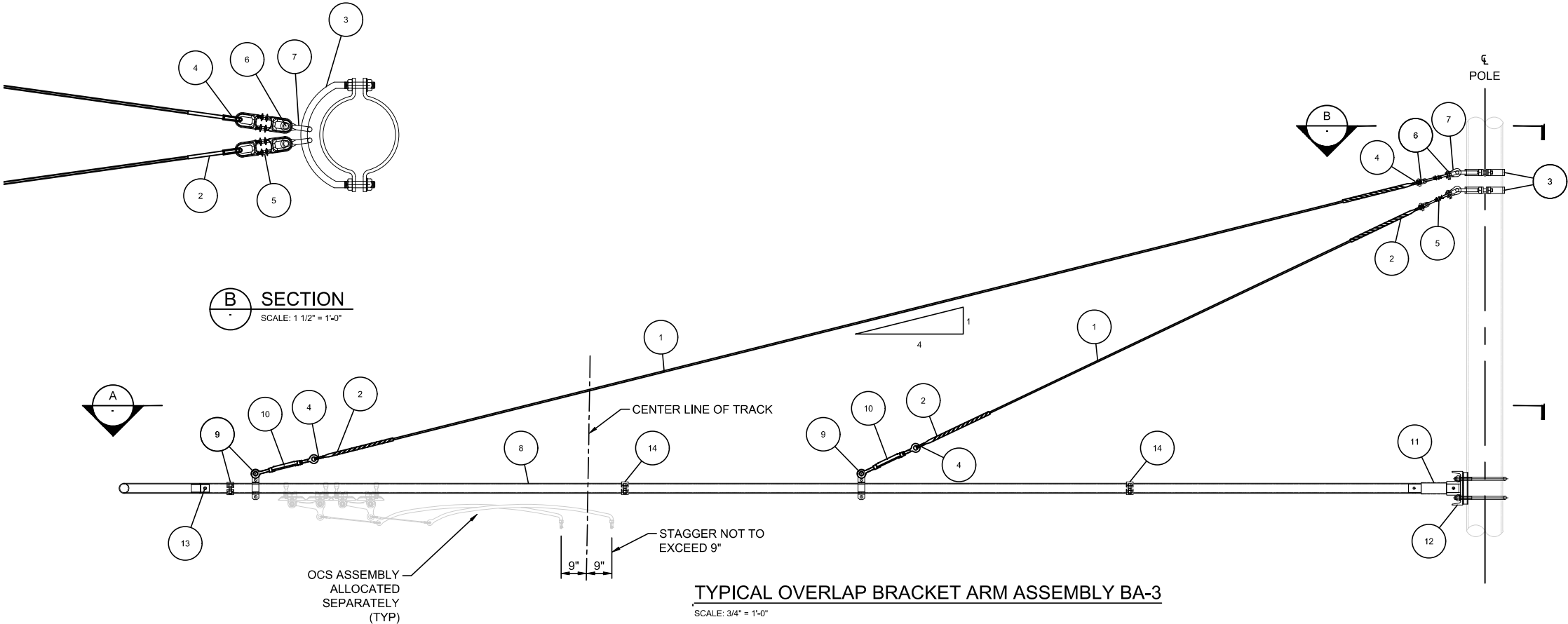
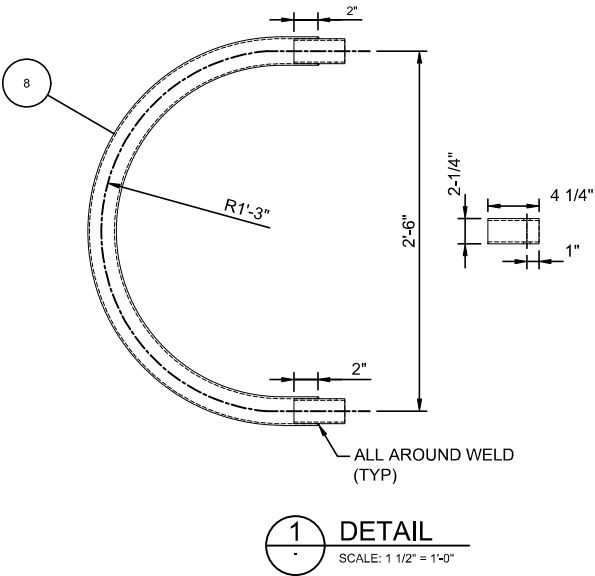
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|----------------------------------|------|-------------|--------------------|--|---|-----------------------------|---|---|-----------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY PFW |  <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES DOUBLE PIPE BRACKET ARM | SCALE FOR 22"x34": AS SHOWN | |
| | | | CHECKED BY BP | |  HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | NOT FOR CONSTRUCTION | | FILENAME: Y042.dwg | |
| | | | DRAWN BY PFW | | | | | 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-505-4000 Certificate of Authority: 001270 | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY BP | | | | | | VOLUME: 1 |
| | | | APPROVED BY NKS | | | | | | DRAWING NO.: Y042 |
| | | | DATE 12/23/2022 | | | | | | SHEET NO.: 352 |
| PLOT DATE: 12/21/2022 1:40:20 PM | | | | | | | | | |

| BASIS OF DESIGN | | | |
|-----------------|--|------------------|-------------|
| ITEM NO. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | WIRE, SPAN, 5/16", EHS | ASTM A475 | - |
| 2 | PREFORM, END FITTING, 5/16" | PREFORM | GDE-2106 |
| 3 | CLAMP FOR POLE, MULTIPLE SPAN | SEE DRAWING Y044 | |
| 4 | THIMBLE, 5/16", STL HDG | MAC | KMA-140-4 |
| 5 | LOOP INSULATOR | MAC | D2864-01 |
| 6 | SHACKLE FOR LOOP INSULATOR | MAC | KMA-010-3 |
| 7 | SHACKLE | MAC | D0231-01 |
| 8 | PIPE, STEEL, 2-1/2 IN., HDG, SCHEDULE 80 | - | - |
| 9 | PIPE CLAMP FOR 2" PIPE, SINGLE CLEVIS | MAC | C0145-03 |
| 10 | TURNBUCKLE, EYE & EYE | MAC | D0138-01 |
| 11 | STRUT INSULATOR 2-1/2" SCHEDULE 80 PIPE | MAC | KMA-675 |
| 12 | MOUNTING BRACKET | SEE DRAWING Y046 | |
| 13 | 1/2" Ø CLEVIS PIN WITH COTTER KEY | - | - |
| 14 | PIPE CLAMP FOR 2" PIPE | MAC | C-2055-03 |
| 15 | WIRE, SPAN, 1/4" | - | - |
| 16 | PREFORM, 1/4" SPAN WIRE | PREFORM | GDE-2104 |
| 17 | STEEL STRAP, 1/2" THICK BY 1 5/8" WIDE | - | - |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL AS APPROVED BY THE ENGINEER..

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
- BRACKET ARMS SHALL BE HORIZONTAL WITH RESPECT TO HORIZON.
- ASSEMBLY TYPE SUSPENDED FROM BRACKET ARM VARIES AND IS INDICATED ON LAYOUT PLANS.
- MAXIMUM LENGTH OF BRACKET ARM TO START OF CURVE PIPES IS 30 FEET.



| REV | DATE | DESCRIPTION |
|-----------------------|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| PLOT DATE: 12/21/2022 | | 2:59:57 PM |

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|-------------|------------|
| DESIGNED BY | PFW |
| CHECKED BY | BP |
| DRAWN BY | PFW |
| CHECKED BY | BP |
| APPROVED BY | NKS |
| DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

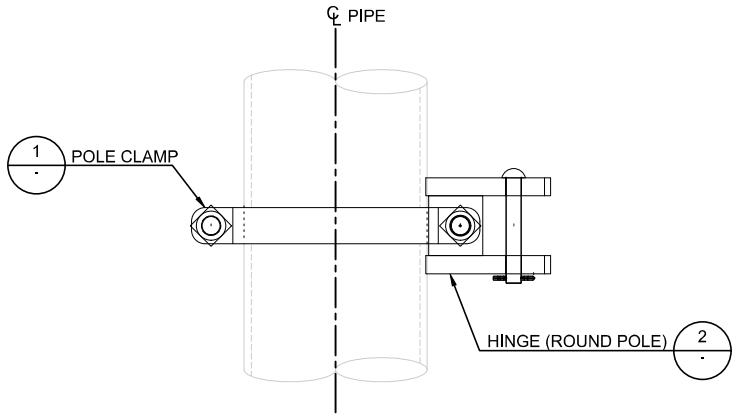
The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

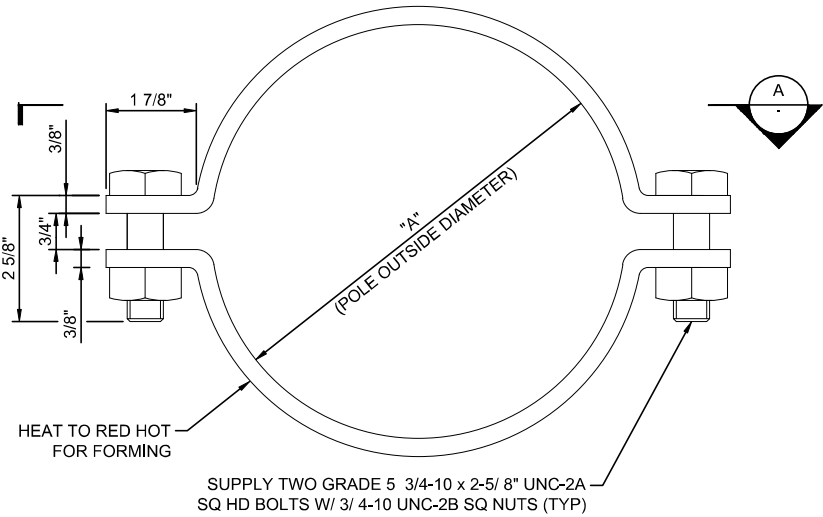
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
BRACKET ARM ASSEMBLIES
OVERLAP SINGLE PIPE BRACKET ARM

| | |
|--------------------------------|----------------|
| SCALE FOR 22"x34": AS SHOWN | |
| FILENAME: Y043.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y043 | SHEET NO.: 353 |



4 DETAIL - HINGE MOUNTING ON POLE
SCALE: 3" = 1'-0"



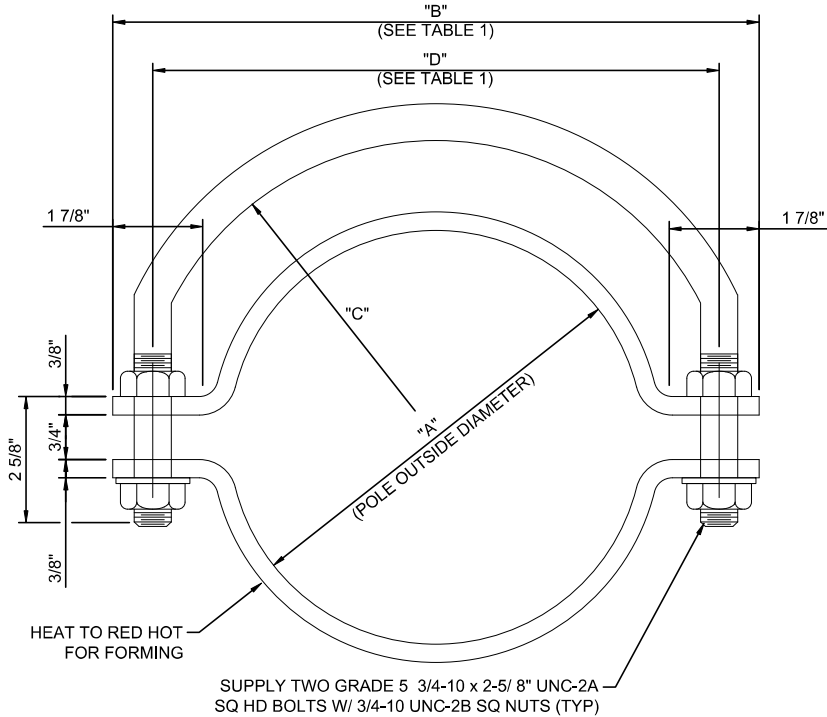
MAXIMUM LOAD ON BOLT NOT TO EXCEED 7,000 LBS.

1 DETAIL - POLE CLAMP
SCALE: 6" = 1'-0"

NOTES:

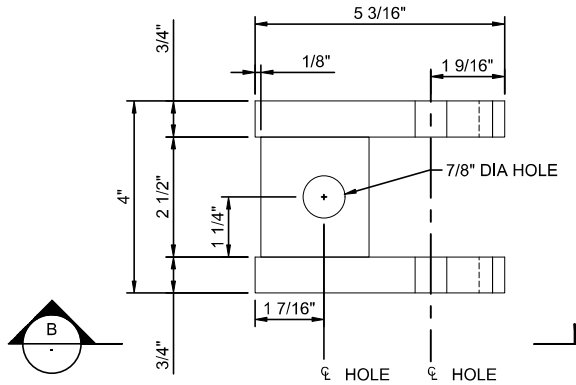
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- BEAM CLAMP ROD TO BE STEEL, ASTM A572, GRADE 65 HOT FORGED FOR BENDING. CLAMPS SHALL BE CAST STEEL PER ASTM A216. PARTS SHALL BE HOT DIPPED GALVANIZED PER ASTM A153 FOR ROD AND ASTM A385.
- NUTS SHALL BE HEAVY HEX HEAD, CONFORMING TO ASTM A385 AND HOT DIPPED GALVANIZED PER ASTM A15 FOR ROD.
- BOLTS AND NUTS TO BE GRADE 5, HOT DIP GALVANIZED TO ASTM A153, CLASS C.
- USE HINGE MOUNTING FOR BRACKET ARMS BEING MODIFIED OR INSTALLED AT POLES ON THE STARTER SYSTEM WHERE THE ARM NEEDS TO HAVE AN ALONG TRACK MOVEMENT.

| TABLE 1 | | | | |
|---------|---------|----------|----------|---------|
| SIZE | "A" | "B" | "C" | "D" |
| 1 | 3-1/2" | 8" | 3-1/8" | 6-3/8" |
| 2 | 4-1/2" | 9" | 3-5/8" | 7-3/8" |
| 3 | 5-9/16" | 10-1/16" | 4-5/32" | 8-7/16" |
| 4 | 6-5/8" | 11-1/8" | 4-11/16" | 9-1/2" |
| 5 | 7-5/8" | 12-1/8" | 5-3/16" | 10-1/2" |
| 6 | 8-5/8" | 13-1/8" | 5-11/16" | 11-1/2" |
| 7 | 9-5/8" | 14-1/8" | 6-3/16" | 12-1/2" |
| 8 | 10-3/4" | 15-1/4" | 6-3/4" | 13-5/8" |
| 9 | 11-3/4" | 16-1/4" | 7-1/4" | 14-5/8" |

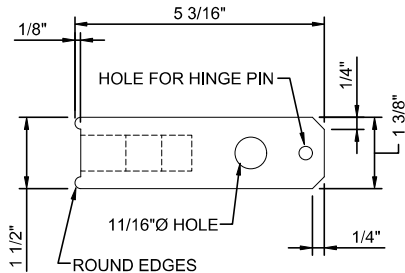


MAXIMUM LOAD ON BOLT NOT TO EXCEED 7,000 LBS.

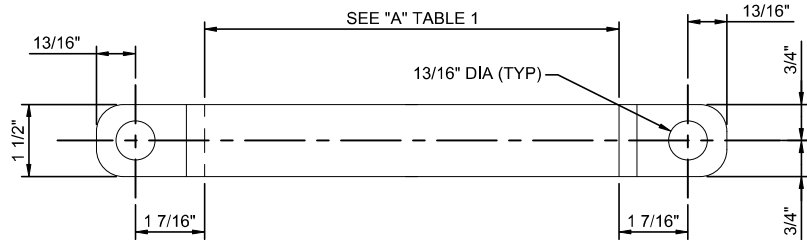
3 DETAIL - MULTIPLE POLE CLAMP
SCALE: 6" = 1'-0"



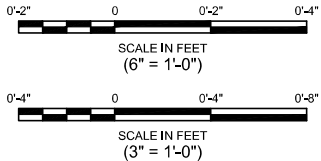
2 DETAIL - HINGE (ROUND POLE)
SCALE: 6" = 1'-0"



B PLAN VIEW
SCALE: 6" = 1'-0"





A SECTION
SCALE: 6" = 1'-0"



| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



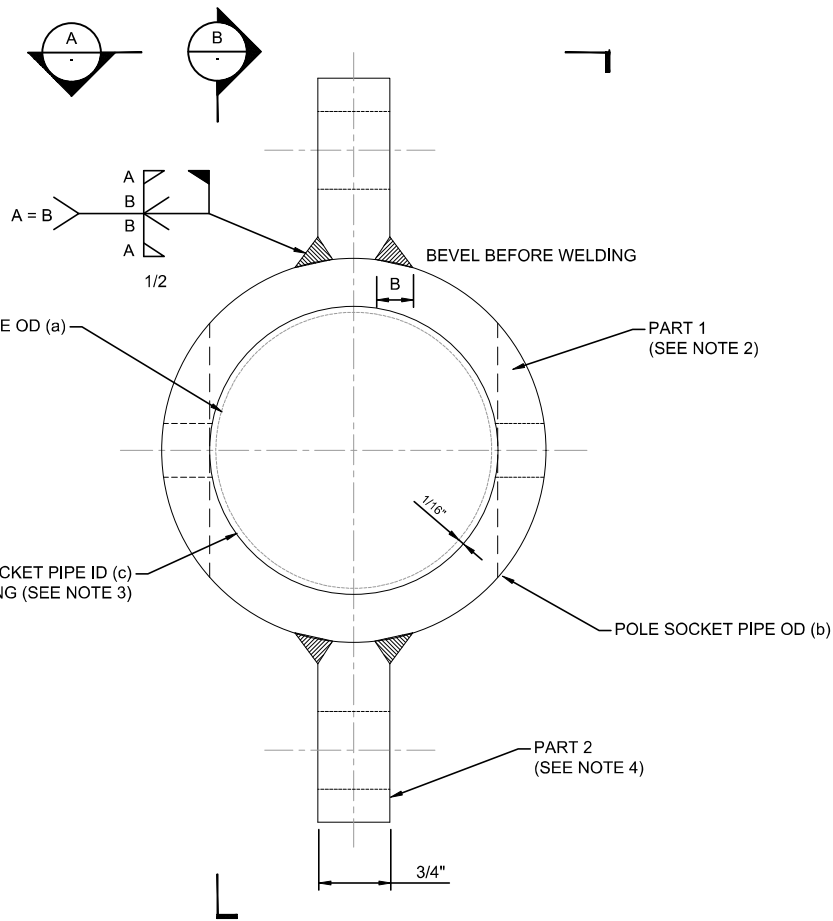
This set of plans is not for construction. These plans are intended to build interest in bidding the project.

| | | | |
|--|--|---|--|
| ISSUE FOR BID | | DATE: 12-23-2022 | |
|  HDR Engineering, Inc. | |  The HNTB COMPANIES | |
| 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | |
| NOT FOR CONSTRUCTION | | | |

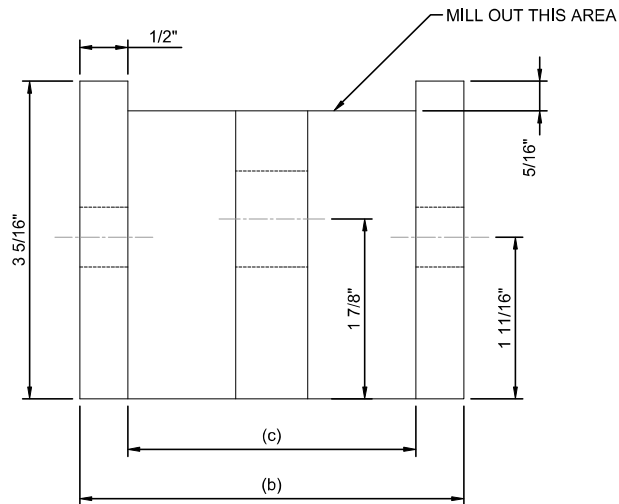
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
BRACKET ARM ASSEMBLIES
POLE CLAMP DETAILS

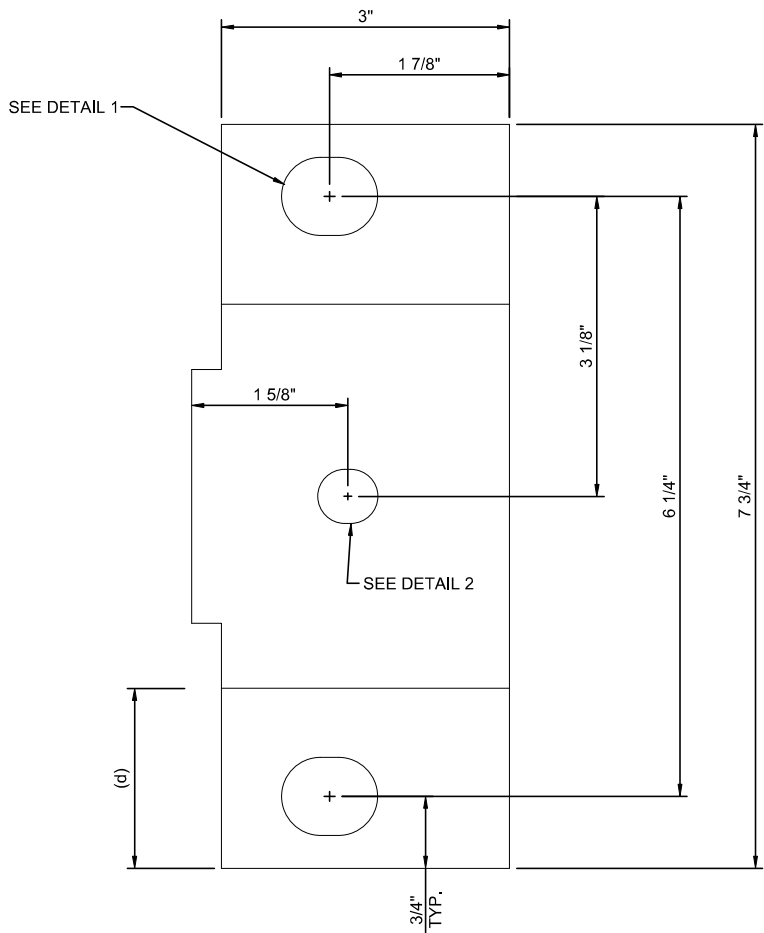
| | |
|-----------------------------------|-------------------|
| SCALE FOR 22"x34": AS SHOWN | |
| FILENAME: Y044.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y044 | SHEET NO.: 354 |



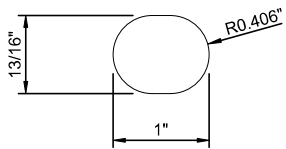
BRACKET ARM POLE SOCKET
SCALE: 6" = 1'-0"



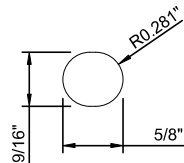
A PLAN VIEW
SCALE: 6" = 1'-0"



B SIDE VIEW
SCALE: 6" = 1'-0"



1 DETAIL
SCALE: 6" = 1'-0"

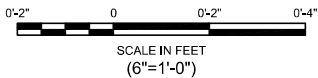


2 DETAIL
SCALE: 6" = 1'-0"

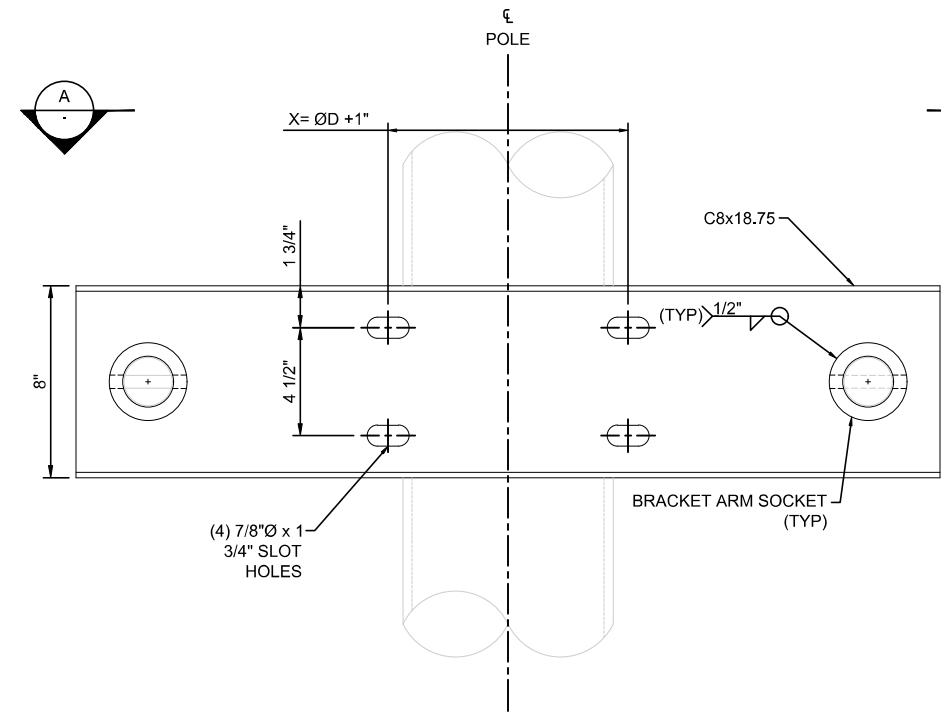
NOTES:

- 1FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. MAKE PART 1 FROM DOUBLE EXTRA HEAVY STEEL PIPE, ASTM A53, TYPE "S", GRADE "B" (SEE TABLE 1 FOR POLE SOCKET PIPE SIZE).
3. MILL POLE SOCKET PIPE INSIDE DIAMETER TO PROVIDE 1/16" CLEARANCE AROUND BRACKET ARM PIPE WHEN INSERTED (SEE DIMENSION (c) IN TABLE).
4. PART 2 TO BE MADE FROM A36 STEEL.
5. COMPLETED UNIT TO BE HOT DIP GALVANIZED PER ASTM A153.
6. TOLERANCES $\pm 5/32$ INCHES.
7. ALL DIMENSIONS IN INCHES.
8. GRIND SHARP EDGES.
9. SUPPLY WITH 1/2"-12 X 4-1/4" LONG BOLT WITH NUT AND LOCKWASHER, ALL GALVANIZED.
10. CHECK FIT WITH PIPE AND/OR INSULATOR PRIOR TO GALVANIZING. POLE SOCKET TO FIT WITH POLE CLAMP AND 2" PIPE. MAKE ALTERNATIONS AS NEEDED.
11. SOCKET IS MAC PRODUCTS PART NO. KMA-344.

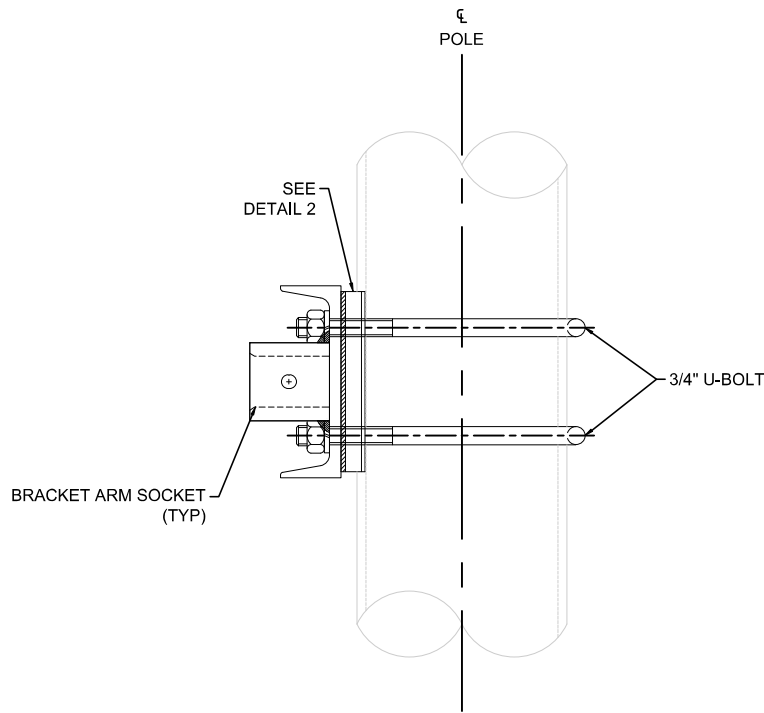
| TABLE 1 | | | | | |
|-----------------------|--------|-----------------------|--------|--------|--------|
| BRACKET ARM PIPE SIZE | (a) | POLE SOCKET PIPE SIZE | (b) | (c) | (d) |
| 2" | 2 3/8" | 3" | 3 1/2" | 2 1/2" | 2 1/8" |
| 2 1/2" | 2 7/8" | 3 1/2" | 4" | 3" | 1 7/8" |



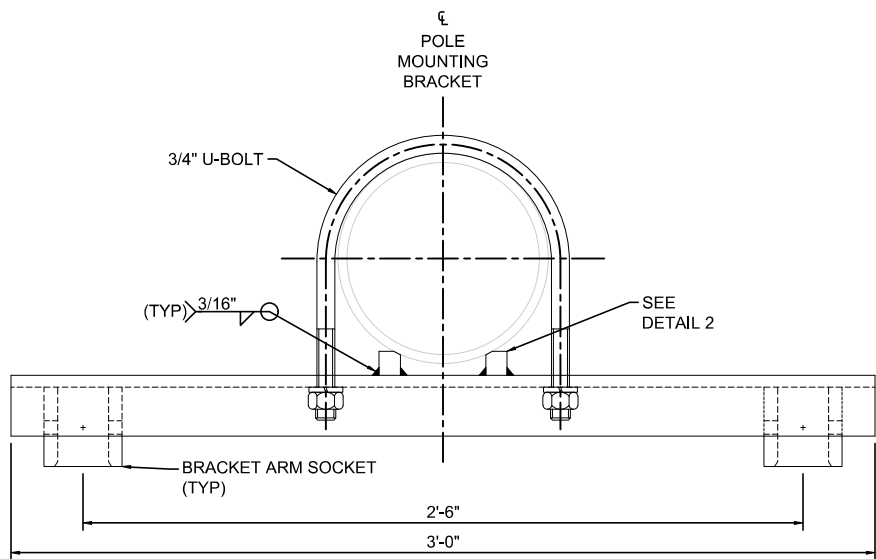
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": 6" = 1'-0" | |
|-----------------------|------|-------------|-------------|-----|------|--|--|--|---|--|--|--|-----------------------------------|-----|
| | | | CHECKED BY | BP | | | | | | | OVERHEAD CONTACT SYSTEM | | FILENAME: Y045.dwg | |
| | | | DRAWN BY | PFW | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | BRACKET ARM ASSEMBLIES | | CONTRACT NO.: CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | | | | | BRACKET ARM POLE SOCKET | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | | | | | | | DRAWING NO.: SHEET NO.: | |
| PLOT DATE: 12/21/2022 | | | 1:43:06 PM | | DATE | 12/23/2022 | | | NOT FOR CONSTRUCTION | | | | Y045 | 355 |



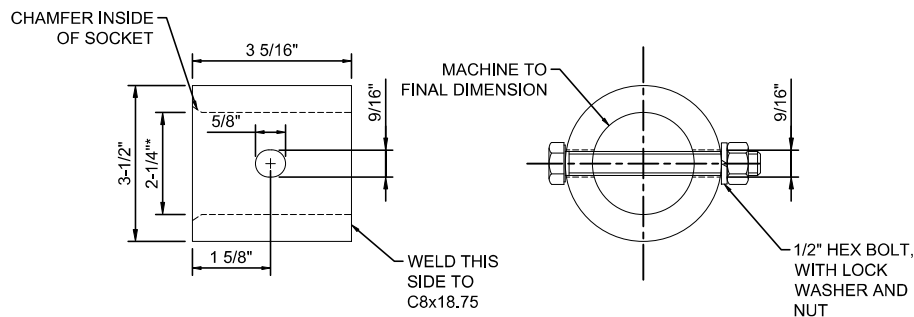
DOUBLE BRACKET ARM MOUNTING BRACKET
SCALE: 3" = 1'-0"



B VIEW
SCALE: 3" = 1'-0"

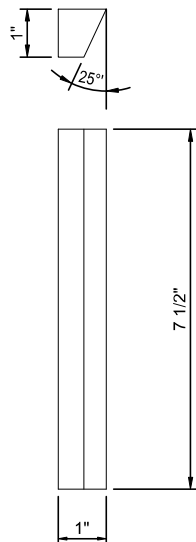


A VIEW
SCALE: 3" = 1'-0"

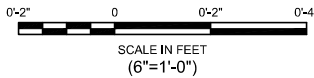
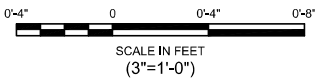


1 BRACKET ARM SOCKET DETAIL
SCALE: 6" = 1'-0"

*VERIFY DIMENSION FOR ACCOMMODATING GALVANIZED FINISH ON SOCKET AND PIPE




2 DETAIL
SCALE: 6" = 1'-0"



NOTES:

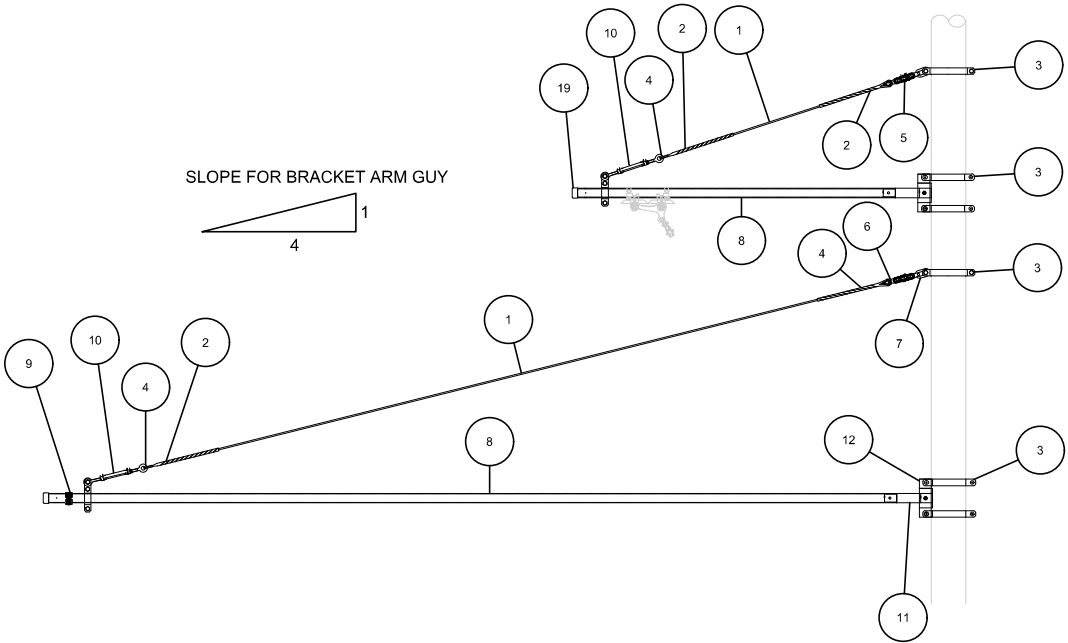
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032..
- BOLTS AND CLEVIS PINS SHALL BE STEEL CONFORMING TO ASTM A325, TYPE 1, AND GALVANIZED IN CONFORMANCE WITH ASTM A153, CLASS C.
- NUTS SHALL BE STEEL CONFORMING TO ASTM A563, GRADE DH, AND GALVANIZED IN CONFORMANCE WITH ASTM 153, CLASS C.
- WASHERS SHALL BE FLAT AND GALVANIZED HARDENED STEEL FOR USE WITH FASTENERS TO ASTM A325.
- POLE SOCKET TO HAVE 2-1/2" SCHEDULE 80 PIPE INSERTED INTO IT.
- FOR LOCATION OF DOUBLE BRACKET ARMS REFER TO LAYOUT PLANS.
- DOUBLE BRACKET BEAM USED FOR OVERLAPS.

| | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|---|---|---|--------------------------------|------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES OVERLAP BRACKET ARM MOUNTING BRACKET DETAIL | SCALE FOR 22"x34": AS SHOWN | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | | FILENAME: | |
| | | | DRAWN BY | PFW | | | | | | | Y046.dwg | |
| | | | CHECKED BY | BP | | | | | | | CONTRACT NO.: | |
| | | | APPROVED BY | NKS | | | | | | | CONTRACT NO. ### | |
| PLOT DATE: 12/21/2022 | | | 1:45:17 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | VOLUME: | | DRAWING NO.: | SHEET NO.: |
| | | | | | | | | | 1 | | Y046 | 356 |

| BILL OF MATERIALS | | | |
|-------------------|--------------------------------------|----------------------------|-------------|
| ITEM NO. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | WIRE, SPAN, 5/16", EHS | ASTM A475 | - |
| 2 | TERMINATION, SPAN WIRE, 5/16" | MAC | E0493-01 |
| 3 | POLE CLAMP DETAILS | SEE DRAWING Y044 | |
| 4 | THIMBLE, 5/16", STL HDG | MAC | E0492-01 |
| 5 | LOOP INSULATOR | MAC | D4069-01 |
| 6 | SHACKLE FOR LOOP INSULATOR | MAC | E0928-02 |
| 7 | CHAIN LINK | MAC | E0159-01 |
| 8 | PIPE, STEEL, 2 IN., HDG, SCHEDULE 80 | - | - |
| 9 | PIPE CLEVIS TWO PIECE G2.0" | MAC | C0145-02 |
| 10 | TURNBUCKLE, EYE & EYE | MAC | D0138-01 |
| 11 | STRUT INSULATOR 2" SCHEDULE 80 PIPE | IMPULSE | 056909-3002 |
| 12 | BRACKET ARM POLE SOCKET | SEE DRAWING Y045 | |
| 13 | 1/2" Ø CLEVIS PIN WITH COTTER KEY | - | - |
| 14 | PIPE CLEVIS TWO PIECE G2.0" | MAC | V9350 |
| 15 | PIPE CLEVIS TWO PIECE G2.0" | MAC | C2055-02 |
| 16 | WIRE, SPAN, 1/4" | - | - |
| 17 | SLEEVE, NICOPRESS | NICOPRESS | 188-8-VF6 |
| 18 | STEEL STRAP | SEE THIS DRAWING, DETAIL 2 | |
| 19 | PIPE END CAP | - | - |
| 20 | PIPE CONNECTOR WITH TONGUE | MAC | D2351-01 |
| 21 | WIRE, SPAN, 1/4", SIEMENS-MARTIN | ASTM A475 | - |
| 22 | STRANDVISE, 1/4" | MACLEAN | 5200 |
| 23 | THIMBLE, OPEN PATTERN, 5/8" | CROSBY | 1037611 |
| 24 | PREFORM, 1/4" | PREFORM | GDE-2104 |
| 25 | PORCELAIN STRAIN INSULATOR | MACLEAN | L502 |

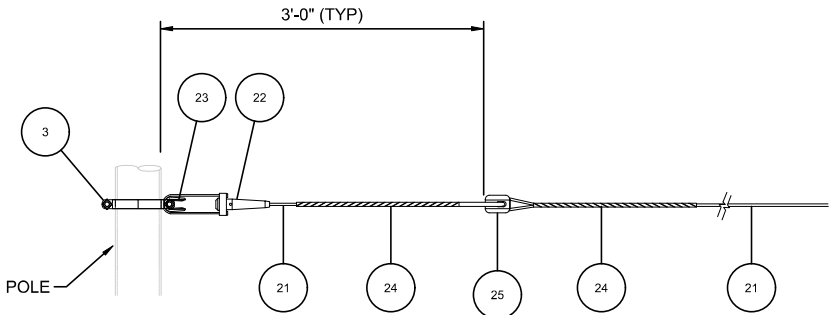
NOTES:

- FOR GENERAL NOTES REFER TO DRAWINGS G020 AND G021. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
- ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
- BRACKET ARMS SHALL BE HORIZONTAL WITH RESPECT TO HORIZON.
- ASSEMBLY TYPE SUSPENDED FROM BRACKET ARM VARIES AND IS INDICATED ON LAYOUT PLANS.
- FOR TYPICAL BRACKET ARM ASSEMBLY BA-1 DETAILS REFER TO DRAWING Y041.



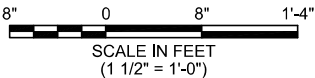
BRACKET ARM ASSEMBLY

SCALE: NTS
(USE AT POLES 331 AND 332)



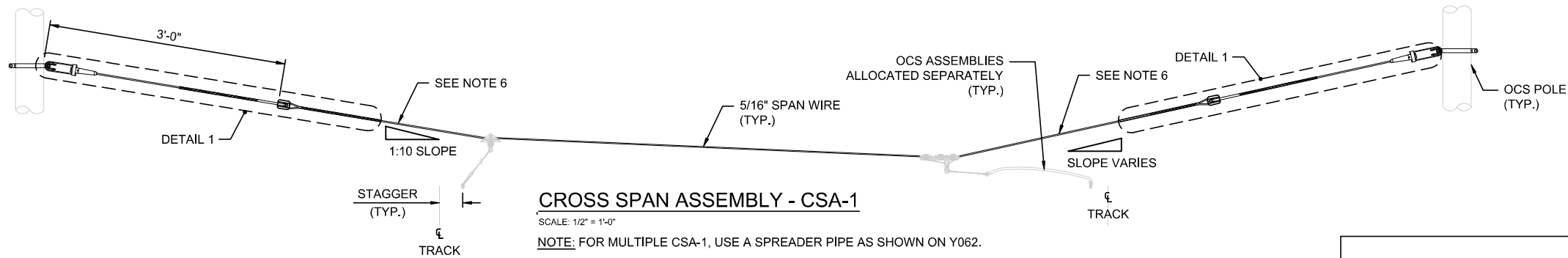
BRACKET ARM GUY WIRE DEADEND-GWD-1

SCALE: NTS



SCALE IN FEET
(1 1/2" = 1'-0")

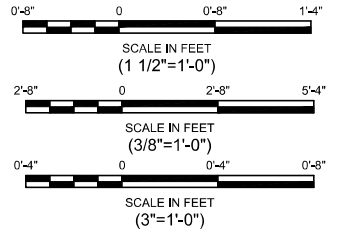
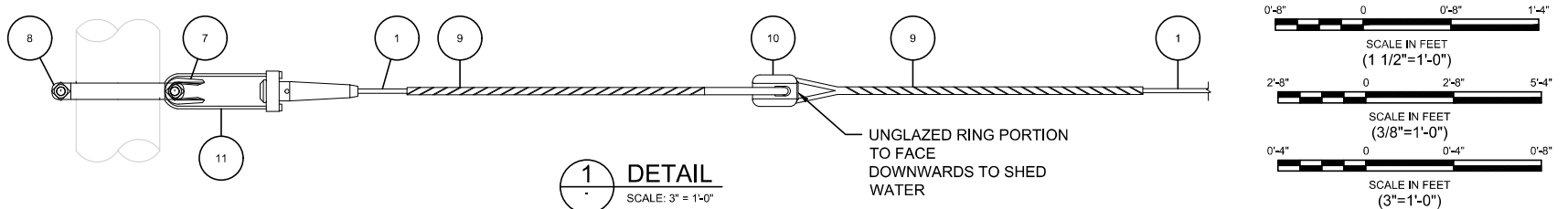
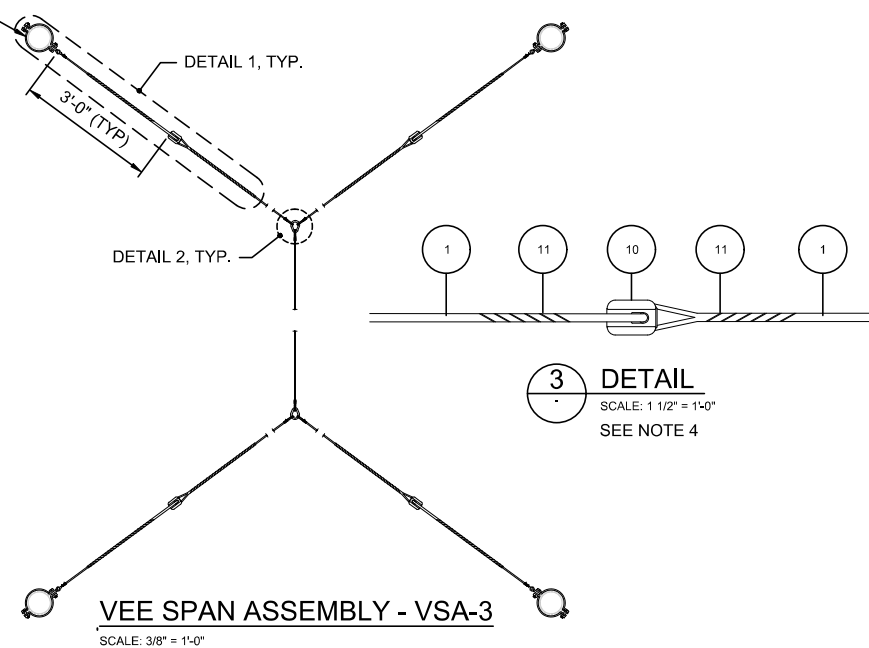
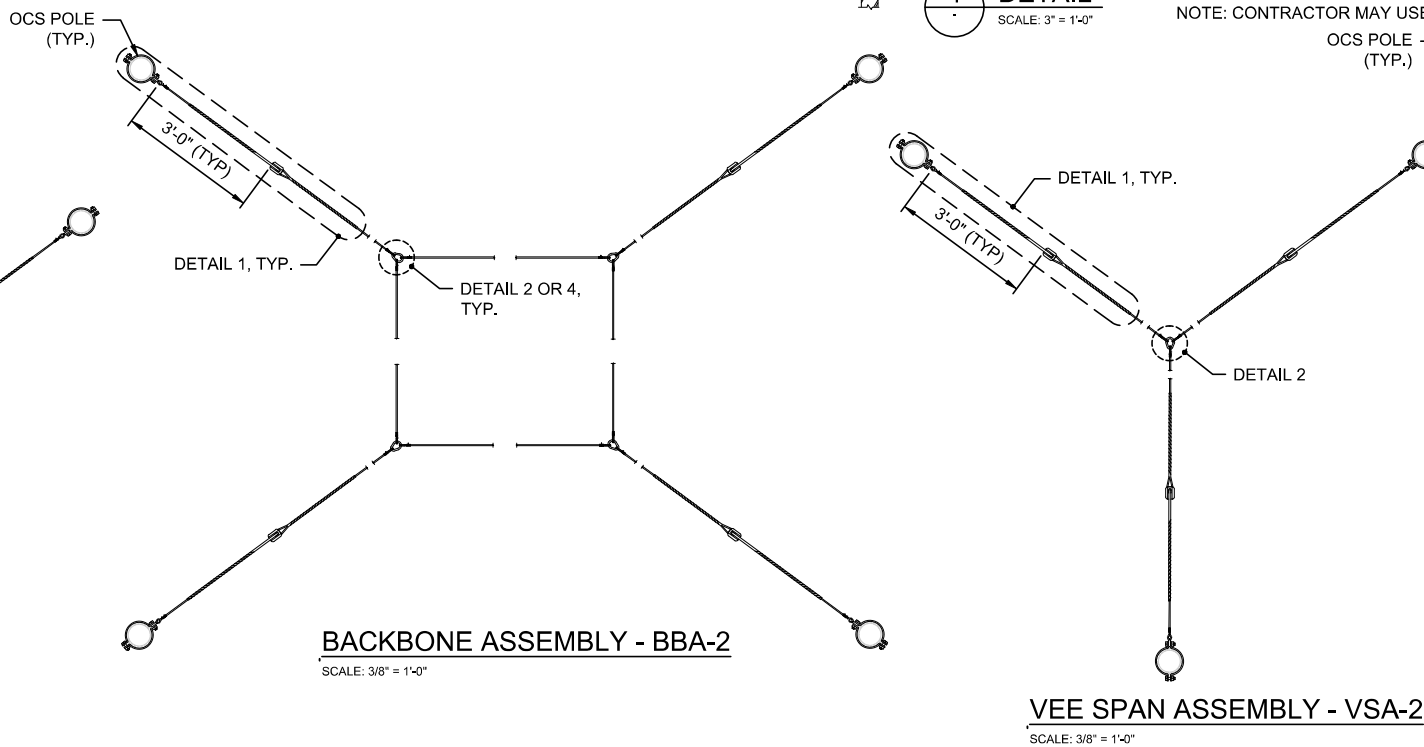
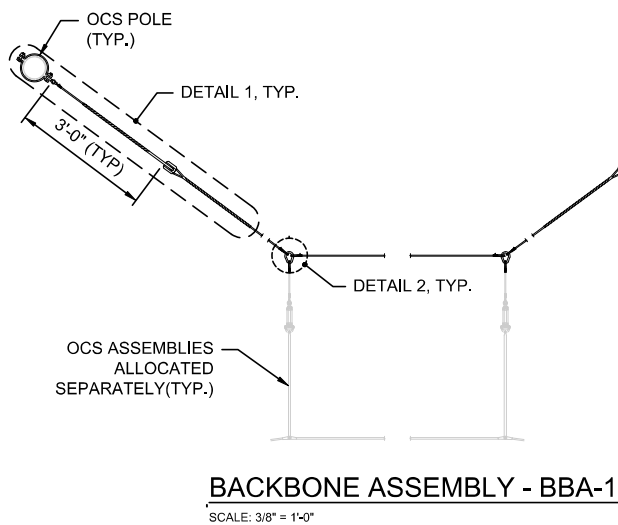
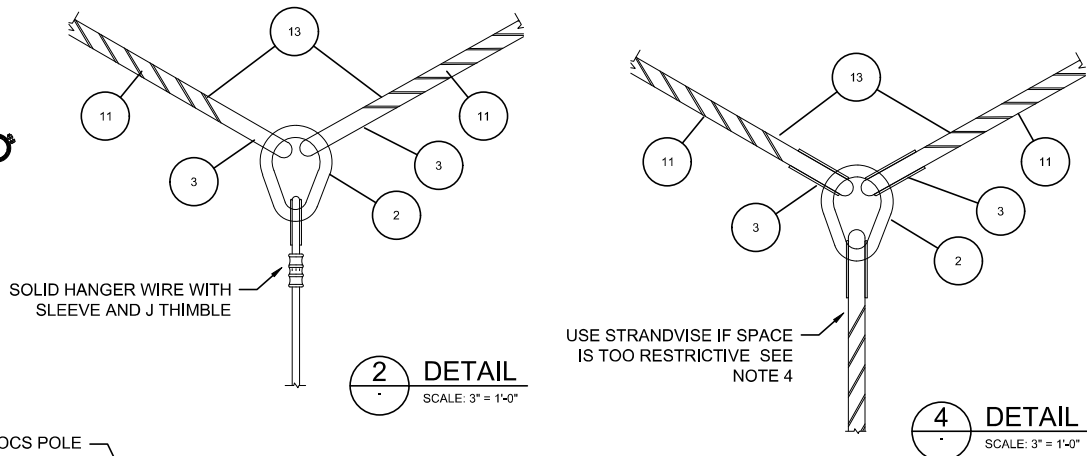
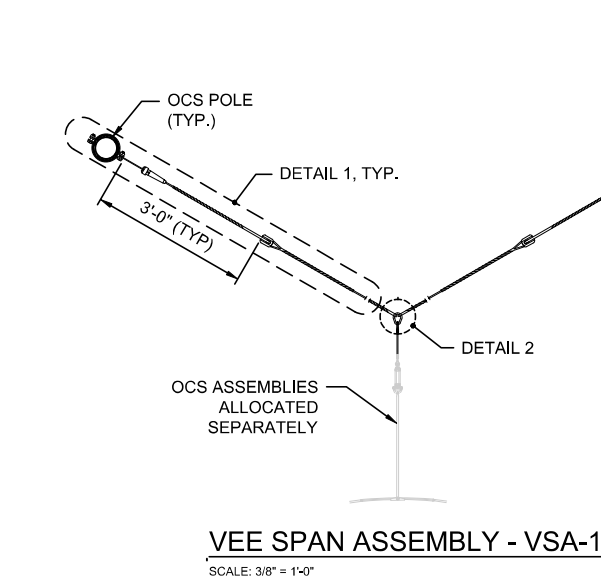
| | | | | | | | | | | | |
|-----------------------|------|-------------|--------------|-----|--|---|---|--|---|--------------------|---------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | GK |  | <div><p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p></div> | ISSUE FOR BID | DATE: 12-23-2022 | <div><h1>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</h1><div>OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES SECTION INSULATOR SUPPORT</div></div> | SCALE FOR 22"x34": | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. |  The HNTB COMPANIES | | SCALE | FILENAME: |
| | | | DRAWN BY | GK | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 | INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 | | Y047.dwg | CONTRACT NO.: |
| | | | CHECKED BY | BP | | | 816-360-2700 | Phone: 978-905-4000 | | CONTRACT NO. ### | VOLUME: |
| | | | APPROVED BY | NKS | | | Certificate of Authority: 000856 | Certificate of Authority: 001270 | | 1 | DRAWING NO.: |
| PLOT DATE: 12/21/2022 | | | 1: 47: 04 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | Y047 | SHEET NO.: 357 | |



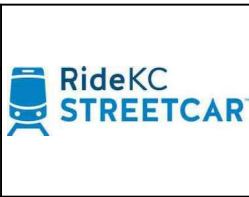
- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - REFER TO LAYOUT PLANS FOR CROSS SPAN LOCATIONS.
 - CONTRACTOR TO DETERMINE CORRECT POLE CLAMP SIZE.
 - IF INADEQUATE SPACE PREVENTS USE OF PREFORMED END FITTING USE STRANDWISE CONNECTION.
 - IF CRIMP SLEEVE IS USED FOR FORMING A LOOP WITH SPAN WIRE, FORM THE LOOP WITH A SPECIAL TOOL FOR FORMING, MAC PRODUCTS WD1868-01 AND APPLY COMPRESSION SLEEVE.
 - CROSS SPAN WIRE SLOPE SHALL BE A MAXIMUM OF 1:10 FOR POLE INSIDE OF CURVE. SLOPE AT THE OPPOSITE END OF CROSS SPAN WIRE WILL VARY.

| BASIS OF DESIGN | | | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------------------------------|-------------------------|---------------|
| ITEM | QTY. | | | | | | | DESCRIPTION | SUPPLIER | PART NO. |
| | KSR-1 | CSA-1 | VSA-1 | VSA-2 | VSA-3 | BBA-1 | BBA-2 | | | |
| 1 | - | A/R | A/R | A/R | A/R | A/R | A/R | STEEL SPAN WIRE, 5/16" | ASTM A475 | - |
| 2 | - | - | 1 | 1 | 2 | 2 | 4 | 1/2" WELDLESS SLING LINK | CROSBY | 1013913 |
| 3 | - | - | 3 | 3 | 6 | 6 | 12 | THIMBLE, 5/16" | CROSBY | 1037559 |
| 4 | A/R | - | - | - | - | - | - | SPAN ROPE, KEVLAR 11MM | PHILYSTRAN | HPTG 11200I |
| 7 | - | 2 | 2 | 3 | 4 | 2 | 4 | THIMBLE | CROSBY | 1037559 |
| 8 | - | 2 | 2 | 3 | 4 | 2 | 4 | POLE CLAMP | - | SEE DWG. Y044 |
| 9 | - | 4 | 4 | 6 | 8 | 4 | 8 | PREFORM BIG-GRIP-5/16" | PREFORMED LINE PRODUCTS | GDE-2106 |
| 10 | - | 2 | 2 | 3 | 4 | 2 | 4 | JB PORCELAIN INSULATOR | MACLEAN | DP54-3 |
| 11 | - | 2 | 2 | 3 | 4 | 2 | 4 | STRANDWISE, 5/16" | MACLEAN | 5251 |
| 12 | - | - | - | - | - | - | - | - | - | - |
| 13 | - | - | - | - | - | - | - | — | — | — |
| 15 | - | - | - | - | - | - | - | EYE PLATE FOR BUILDING | MAC | E1234-01 |
| 16 | - | - | - | - | - | - | - | END TERMINATION, 11MMØ KEVLAR | PHILLYSTRAN | ESA 5112 |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

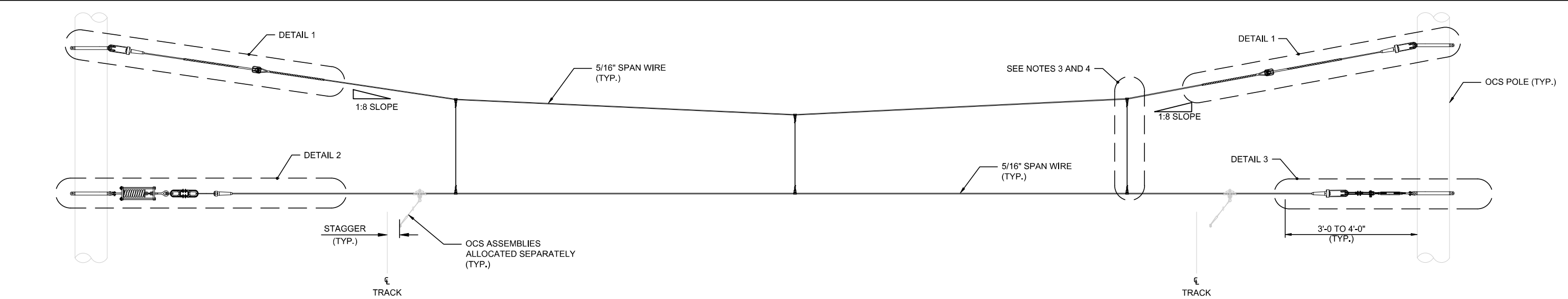
The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

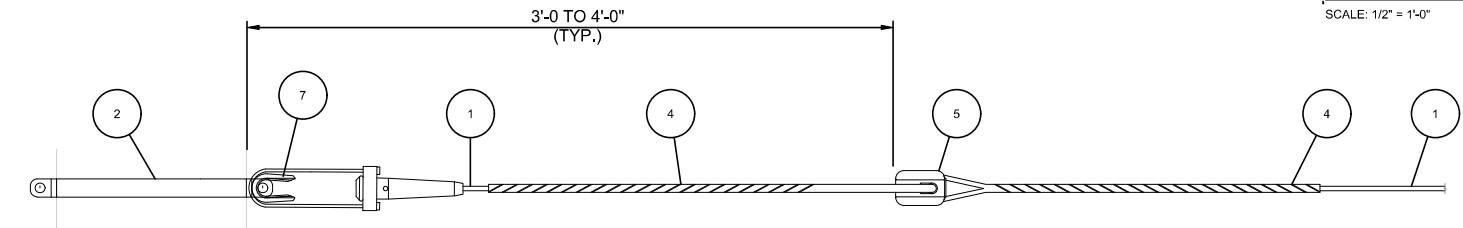
OVERHEAD CONTACT SYSTEM
SPAN WIRE ARRANGEMENTS
CROSS SPAN DETAILS

| | |
|--------------------------------|----------------|
| SCALE FOR 22"x34": AS SHOWN | |
| FILENAME: Y051.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y051 | SHEET NO.: 358 |



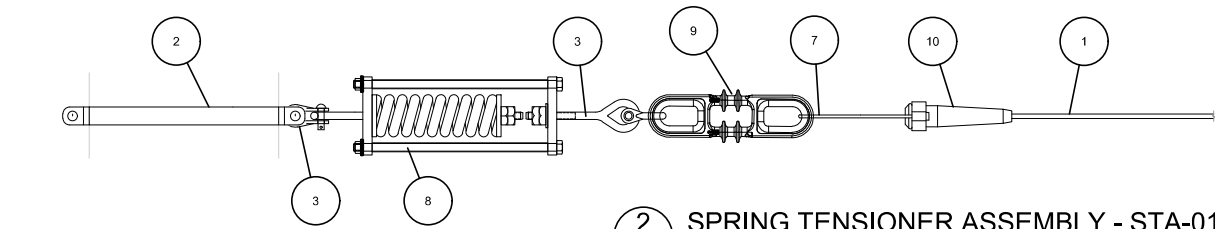
HEAD SPAN ASSEMBLY - HSA-1

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



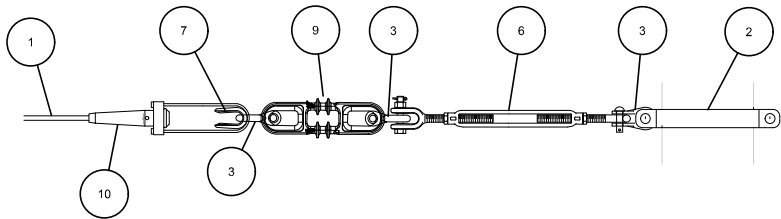
1 TAIL PIECE ASSEMBLY - TP-01

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



2 SPRING TENSIONER ASSEMBLY - STA-01

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



3 TAIL PIECE ASSEMBLY - TP-03

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

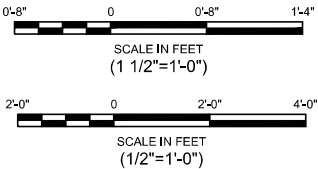
NOTE: TO BE USED IN LIEU OF DETAIL 1 WHERE A MINIMUM 3'-0" CLEARANCE FROM FACE OF POLE TO INSULATOR CANNOT BE ACHIEVED

| BASIS OF DESIGN | | | |
|-----------------|---|-------------------------|---------------|
| ITEM | DESCRIPTION | SUPPLIER | PART NO. |
| 1 | STEEL SPAN WIRE, 5/16", UTILITIES GRADE | ASTM A475 | - |
| 2 | POLE CLAMP | MAC | SEE DWG. Y044 |
| 3 | SHACKLE, TYPE 2 | MAC | D0231-02 |
| 4 | PREFORMED BIG-GRIP-5/16" | PREFORMED LINE PRODUCTS | GDE-2106 |
| 5 | JB PORCELAIN INSULATOR | MACLEAN | DP54-3 |
| 6 | HG-227 JAW & EYE TURNBUCKLE | CROSBY | 1031975 |
| 7 | THIMBLE, 5/16" | CROSBY | 1037559 |
| 8 | SPRING, CROSS SPAN | SIEMENS | 8WL1080 |
| 9 | INSULATOR, LOOP | MAC | D2864-01 |
| 10 | STRANDWISE, 5/16" | MACLEAN | 5201 |

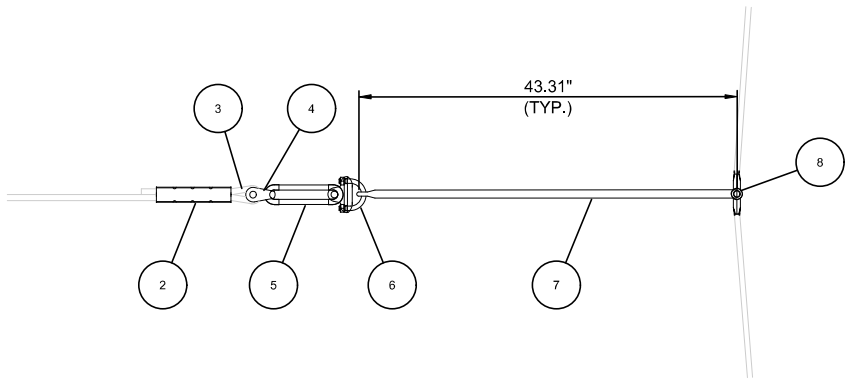
NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.

NOTES:

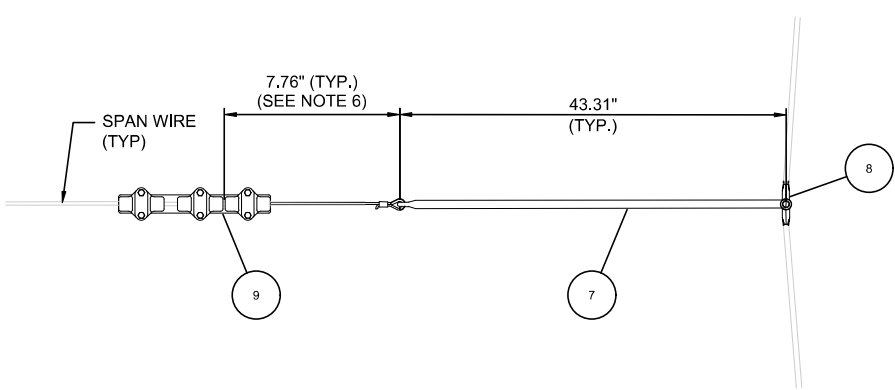
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- INSTALL SPRING ON INSIDE OF CURVE PULL. TENSION SPAN WIRE TO 1,000 LBS. AT 60° F.
- HEAD SPANS TO BE USED FOR MULTIPLE TRACKS OR LOCATIONS REQUIRING ADDITIONAL SUPPORT FOR THE CROSS SPAN WIRE.
- FOR HEAD SPAN HANGER ASSEMBLY DETAIL, REFER TO DRAWING Y059.



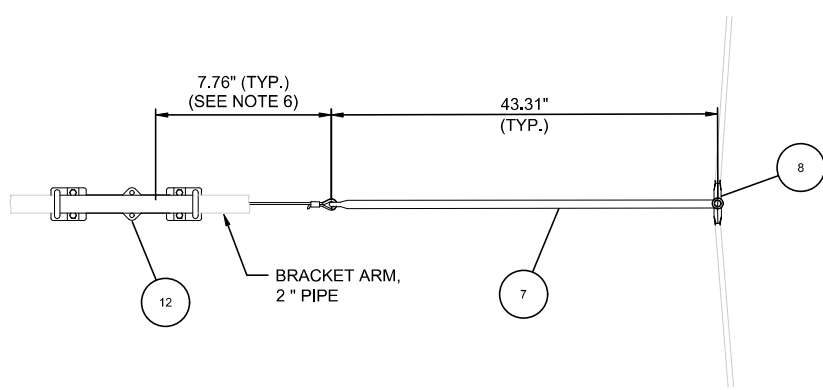
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|-----------------------|------|-------------|-------------|-----|--|---|---|---|---|---|------|---|---------------|------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": AS SHOWN | | |
| | | | CHECKED BY | BP | | |  | HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  | | | The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | FILENAME: | Y052.dwg |
| | | | DRAWN BY | PFW | | | | | | | | | CONTRACT NO.: | ### |
| | | | CHECKED BY | BP | | | | | | | | | VOLUME: | 1 |
| | | | APPROVED BY | NKS | | | | | | | | | DRAWING NO.: | SHEET NO.: |
| PLOT DATE: 12/21/2022 | | | 1:51:18 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | Y052 | 359 | | |



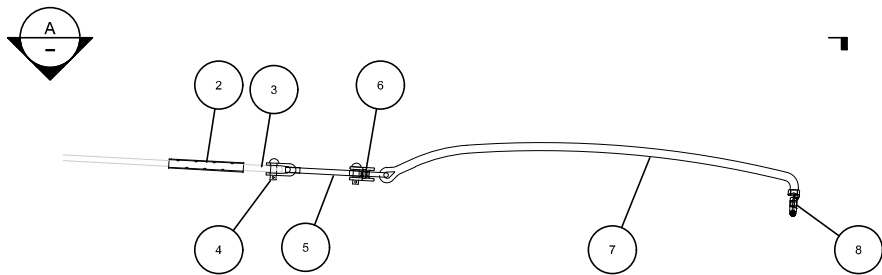
A PLAN VIEW
SCALE: NTS



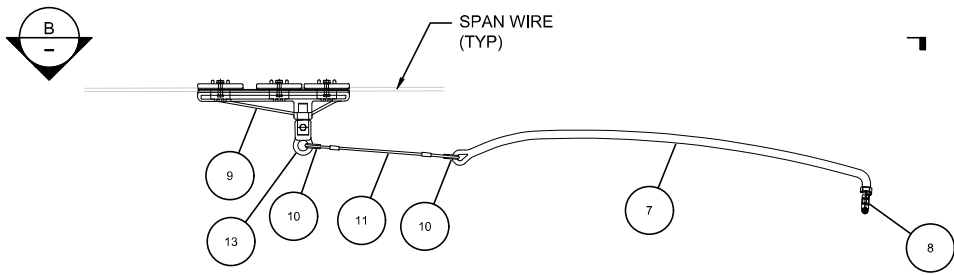
B PLAN VIEW
SCALE: NTS



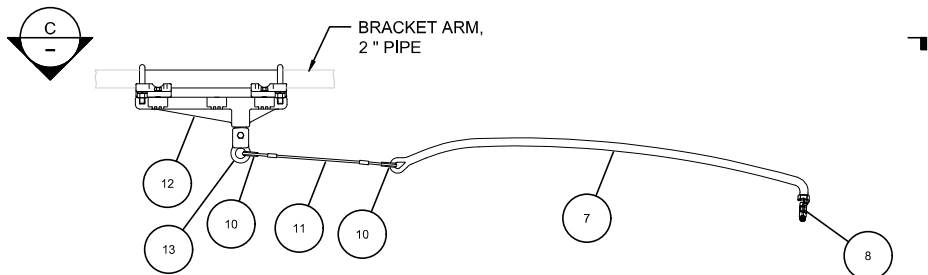
C PLAN VIEW
SCALE: NTS



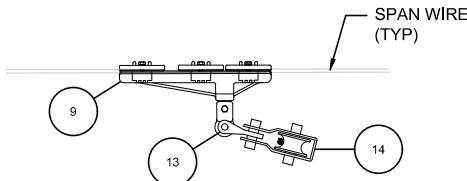
**FPO-1
FLYING PULLOVER**
SCALE: NTS
(LINE ANGLE < 8°)
ASSEMBLY WEIGHT: 6.895 LBS



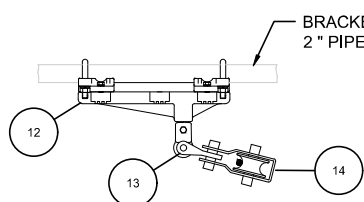
**PO-1
PULLOVER**
SCALE: NTS
(LINE ANGLE < 8°)
ASSEMBLY WEIGHT: 15.406 LBS



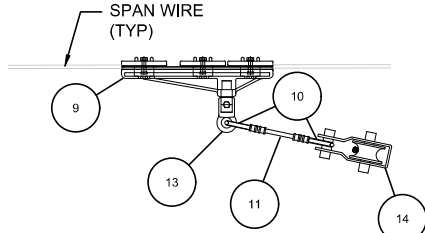
**PO-1A
PULLOVER**
SCALE: NTS
(LINE ANGLE < 8°)
ASSEMBLY WEIGHT: 11.501 LBS



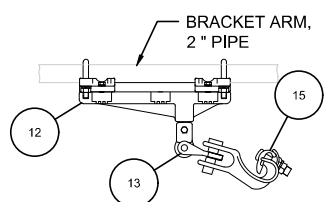
**CWP-1
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 4.908 LBS



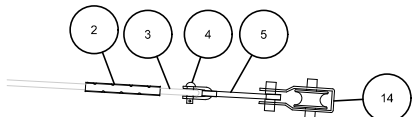
**CWP-1A
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 6.892 LBS



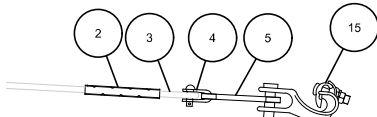
**CWP-1B
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 4.788 LBS



**CWP-1C
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 6.892 LBS



**CWP-2
CONTACT WIRE FLYING
PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 1.571 LBS



**CWP-3
CONTACT WIRE FLYING
PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 2.191 LBS

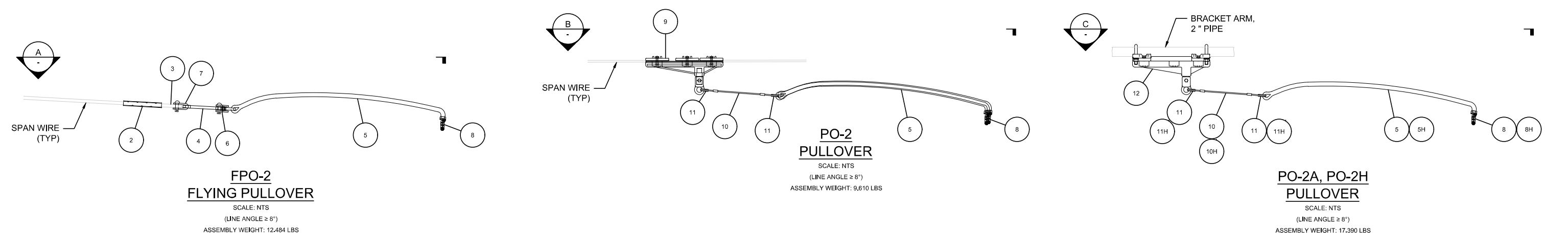
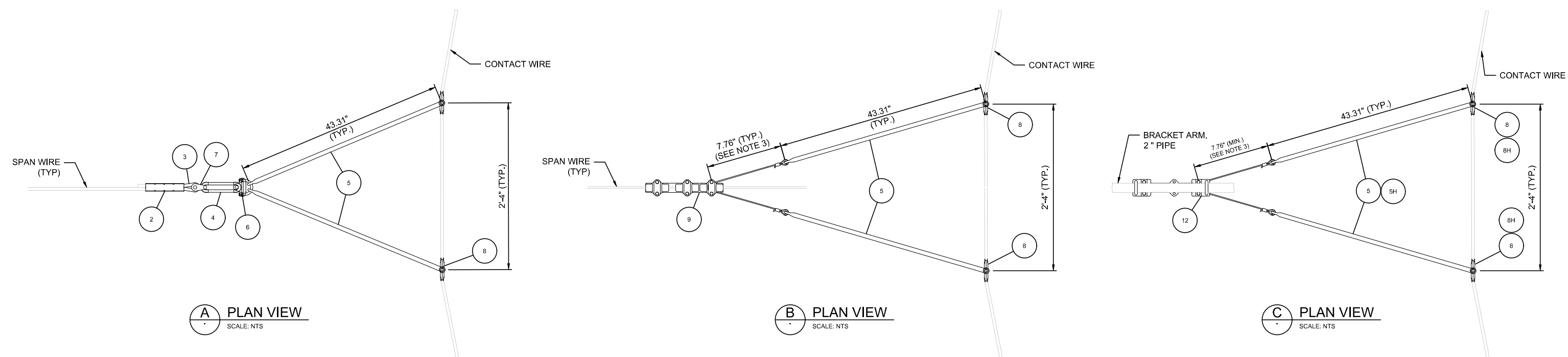
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- GUY WIRE LENGTH FOR FLYING PULLOVERS MAY VARY. USE OF 4 mm HANGER WIRE FOR SHORT RUNS MAY BE SUBSTITUTED. IF LENGTH IS 3 FEET OR LESS.
- USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER, SEE DRAWING Y064 FOR DETAILS.
- WHEN CONNECTING TO CANTILEVER PIPE, SUBSTITUTE LINE INSULATOR, ITEM 9, WITH G2 SYNTHETIC FOR PIPE, ITEM 12, AS SHOWN ON THIS DRAWING.
- MAXIMUM LOADING ON SINGLE PULLOVER IS 450 LBS. PULLOVER RODS TO BE ONE PIECE UNITS HOT FORGED AND FORMED.
- HANGER WIRE, ITEM 11 FOR ASSEMBLY PO-1 AND PO-1A, LENGTHS IS TYPICALLY 7.76". LENGTH MAY BE INCREASED TO SUIT CONDITIONS. MAXIMUM LENGTH IS 15 3/4".

| BASIS OF DESIGN | | | | | | | | | | | |
|-----------------|-------|------|-------|-------|---------|---------|-------|-------|---------------------------------------|----------|-----------|
| ITEM | QTY. | | | | | | | | DESCRIPTION | SUPPLIER | PART NO. |
| | FPO-1 | PO-1 | PO-1A | CWP-1 | CWP-1 A | CWP-1 B | CWP-2 | CWP-3 | | | |
| 2 | 1 | - | - | - | - | - | 1 | 1 | TERMINATION, SPAN WIRE 5/16" | MAC | E0493-01 |
| 3 | 1 | - | - | - | - | - | 1 | 1 | THIMBLE OPEN PATTERN, 5/16" G-408 | CROSBY | 1037559 |
| 4 | 1 | - | - | - | - | - | 1 | 1 | SHACKLE FOR LOOP INSULATOR | MAC | E0928-02 |
| 5 | 1 | - | - | - | - | - | 1 | 1 | LOOP INSULATOR | MAC | D2864-01 |
| 6 | 1 | - | - | - | - | - | - | - | CONNECTION FORK W/ U-BOLT | MAC | E1225-01 |
| 7 | 1 | 1 | 1 | - | - | - | - | - | STEADY ARM ROD, 3.61 FT | MAC | C1813-07 |
| 8 | 1 | 1 | 1 | - | - | - | - | - | CLAMP, CONTACT WIRE | MAC | B0348-01 |
| 9 | - | 1 | - | 1 | - | 1 | - | - | LINE INSULATOR, G2 SYNTHETIC | MAC | C1673-01 |
| 10 | - | 2 | 2 | - | - | 2 | - | - | THIMBLE, J SYNTHETIC | MAC | D0719-01 |
| 11 | - | 1 | 1 | - | - | 1 | - | - | HANGER WIRE WITH TWO LOOP, 7.76" LONG | MAC | D1340-04 |
| 12 | - | - | 1 | - | 1 | - | - | - | G2 SYNTHETIC, FOR PIPE | MAC | C1685-05 |
| 13 | - | 1 | 1 | 1 | 1 | 1 | - | - | CLEVIS TONGUE | MAC | E0112-01 |
| 14 | - | - | - | 1 | 1 | 1 | 1 | - | PULLEY | MAC | 300221 |
| 15 | - | - | - | - | - | - | - | 1 | SUSPENSION ANGLE CLAMP | MAC | 95-LC1057 |

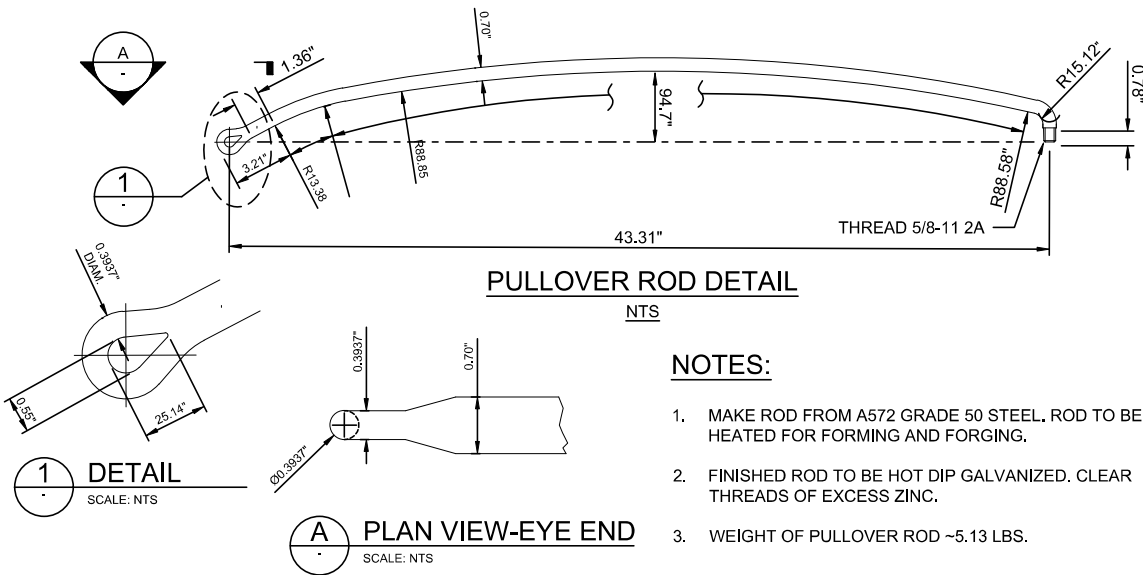
NOTES: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL. ITEM 2 CAN BE SUBSTITUTED WITH A 5/16" PREFORMED END FITTING IF SPACE PERMITS (PREFORM GDE-2106).

| | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|------|--|--|---|---|--|------------------------------------|----------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | <div>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</div> <div>OVERHEAD CONTACT SYSTEM REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES (SHEET 1 OF 2)</div> | SCALE FOR 22"x34": NOT TO SCALE | |
| | | | CHECKED BY | BP | | | <div> HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> | <div> The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div> | | FILENAME: Y056.dwg | |
| | | | DRAWN BY | PFW | | | | | | CONTRACT NO.: CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | | | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | | | | DRAWING NO.: Y056 | SHEET NO.: 360 |
| PLOT DATE: 12/21/2022 | | 1:54:00 PM | | DATE | | | | | | 12/23/2022 | NOT FOR CONSTRUCTION |



| BASIS OF DESIGN | | | | | | |
|-----------------|-------|------|-------|-------|--|----------------|
| ITEM | QTY. | | | | DESCRIPTION | PART NO. |
| | FPO-2 | PO-2 | PO-2A | PO-2H | | |
| 2 | 1 | - | - | - | TERMINATION, SPAN WIRE 5/16" | MAC E0493-01 |
| 3 | 1 | - | - | - | THIMBLE OPEN PATTERN, 5/16" G-408 | CROSBY 1037559 |
| 4 | 1 | - | - | - | LOOP INSULATOR | MAC D2864-01 |
| 5 | 2 | 2 | 2 | - | STEADY ARM ROD, 3.61 FT | MAC C1813-07 |
| 5H | - | - | - | 2 | STEADY ARM ROD, 3.61 FT | MAC D2580-02 |
| 6 | 1 | - | - | - | CONNECTION FORK W/ U-BOLT | MAC E1225-01 |
| 7 | 1 | - | - | - | SHACKLE FOR LOOP INSULATOR | MAC E0928-02 |
| 8 | 2 | 2 | 2 | - | CLAMP, CONTACT WIRE | MAC B0348-01 |
| 8H | - | - | - | 2 | CLAMP, CONTACT WIRE | MAC D1081-01 |
| 9 | - | 1 | - | - | LINE INSULATOR, G2 SYNTHETIC | MAC C1673-01 |
| 10 | - | 2 | 2 | - | HANGER WIRE, 4mmØ WITH TWO LOOPS, 7.76" LONG | MAC D1340-04 |
| 10H | - | - | - | 2 | HANGER WIRE, 1/4" STAINLESS STEEL | - |
| 11 | - | 4 | 4 | - | THIMBLE, J SYNTHETIC | MAC D0719-01 |
| 11H | - | - | - | 4 | THIMBLE, FOR 1/4" SS HANGER WIRE | - |
| 12 | - | - | 1 | 1 | LINE INSULATOR, G2 SYNTHETIC, FOR PIPE | MAC C1685-01 |

NOTES: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL. ITEM 2 CAN BE SUBSTITUTED WITH A 5/16" PREFORMED END FITTING IF SPACE PERMITS (PREFORM GDE-2106).



NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER. SEE DRAWING Y064 FOR DETAILS.
- HANGER WIRE, ITEM 10 FOR ASSEMBLY PO-2 AND PO-2A, LENGTHS IS TYPICALLY 7.76". LENGTH MAY BE INCREASED TO SUIT CONDITIONS. MAXIMUM LENGTH IS 15 3/4".
- MAXIMUM LOADING FOR A DOUBLE PULLOVER ASSEMBLY IS 900 LBS.
- PULLOVER RODS TO BE ONE PIECE UNITS HOT FORGED AND FORMED.

REV

DATE

DESCRIPTION

DESIGNED BY

CHECKED BY

DRAWN BY

CHECKED BY

APPROVED BY

PFW

BP

PFW

BP

NKS

RideKC

STREETCAR

This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856

HNTB

The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES (SHEET 2 OF 2)

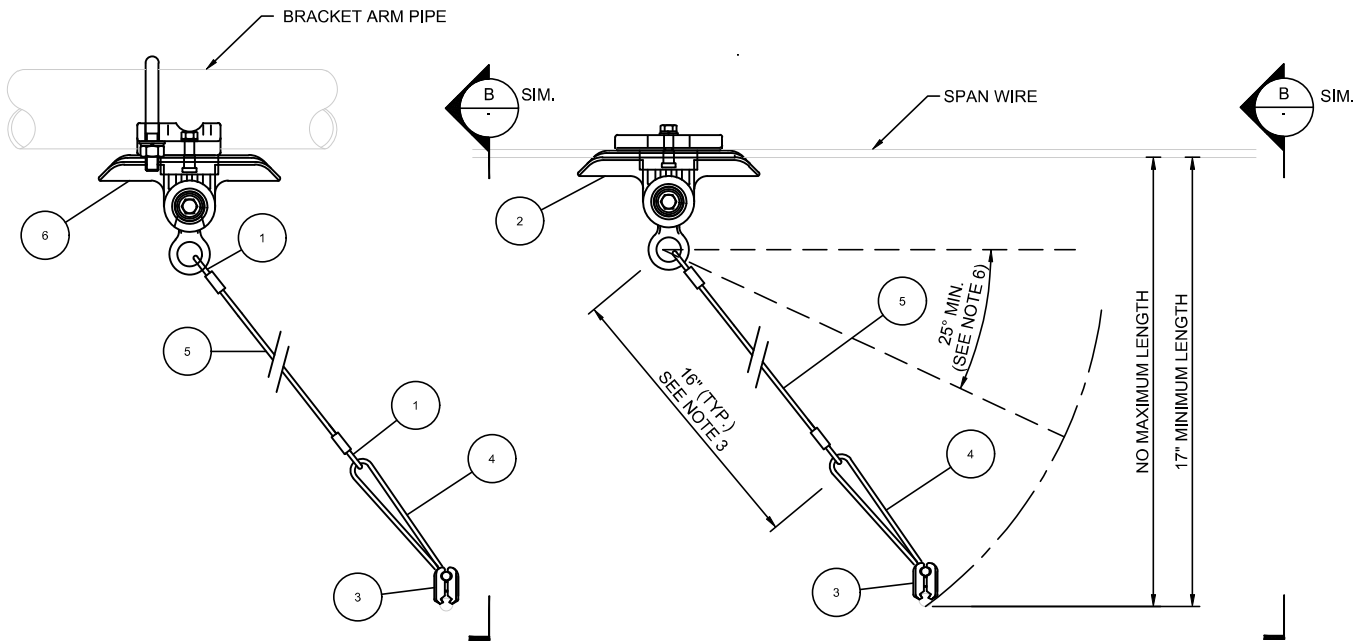
SCALE FOR 22"x34": NOT TO SCALE

FILENAME: Y057.dwg

CONTRACT NO.: CONTRACT NO. ###

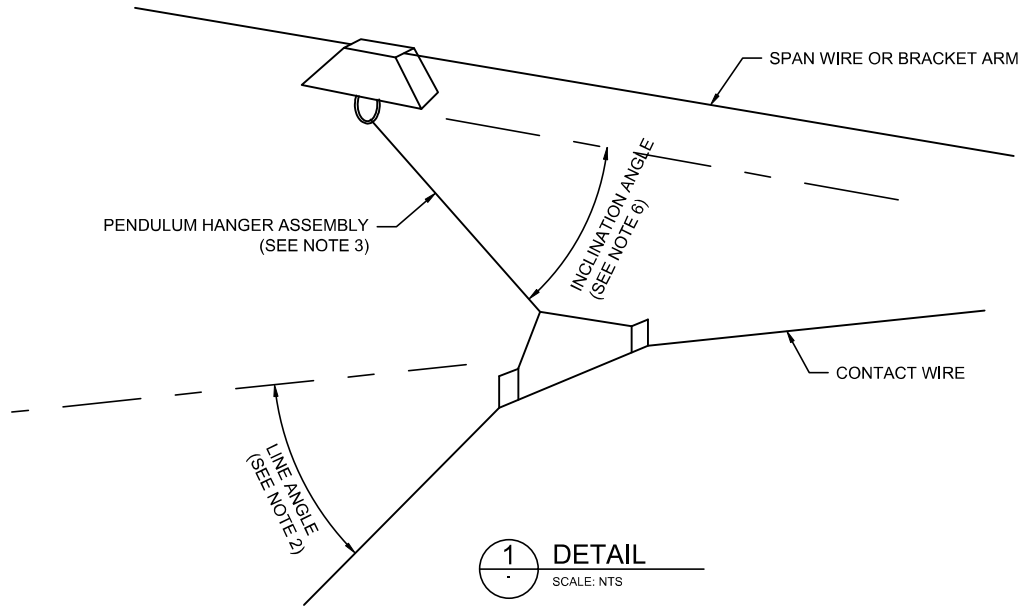
VOLUME: 1

DRAWING NO.: SHEET NO.: Y057 361

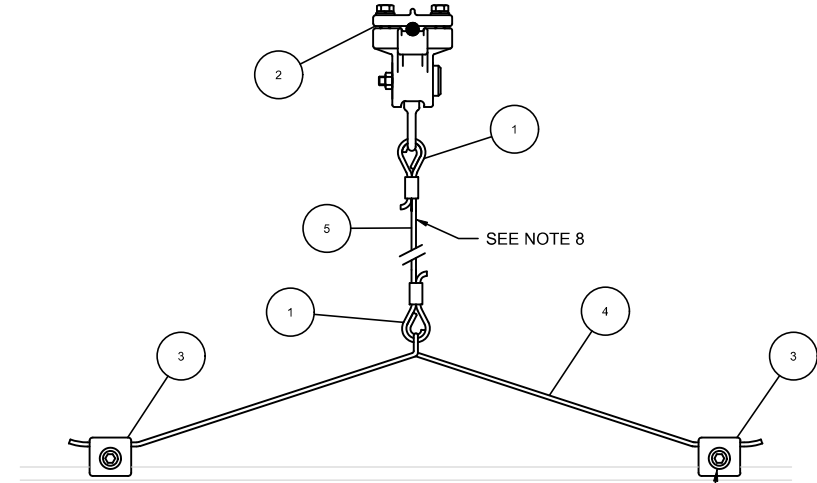


PENDULUM - P-1
SCALE: NTS
ASSEMBLY WEIGHT: 4.537 LBS

PENDULUM - P-1A
SCALE: NTS
ASSEMBLY WEIGHT: 3.721 LBS

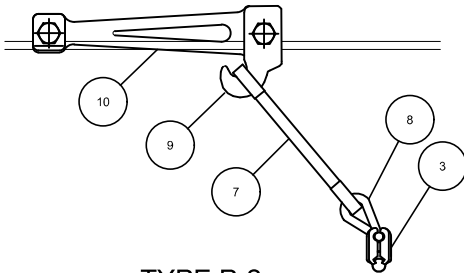


1 DETAIL
SCALE: NTS

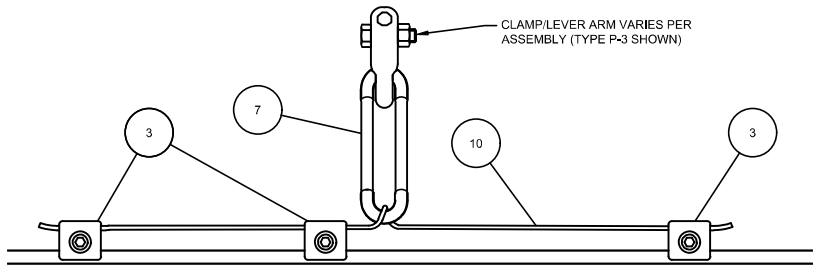


B VIEW
SCALE: NTS

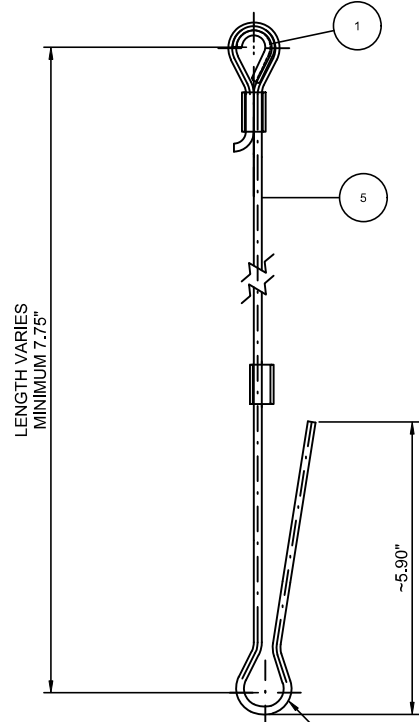
HOLLOW HEX SCREW TO BE FLAT HEAD
M14 x 1.5, 0.59" LONG, STAINLESS
STEEL WITH 5/16" HEX BROACH (TYP)



TYPE P-2
SCALE: NO SCALE



A VIEW
SCALE: NO SCALE



HANGER WIRE MAKE UP

- HANGER WIRE IS SOLID AND NOT STRANDED.
- MEASURE LENGTH REQUIRED FROM LINE INSULATOR TO HANGER BOW.
- IF USING STRAIGHT WIRE WITH NO LOOP, FORM ONE LOOP AND PLACE IN BENDING TOOL. THIS DEVICE HAS A RULER AS PART OF IT FOR MEASURING REQUIRED LENGTH TO FORM THE SECOND LOOP. DISTANCE MEASURED IS LOOP TO LOOP.
- OPERATE THE BENDING TOOL LEVER PER MANUFACTURER'S DIRECTIONS TO FORM THE FIRST BEND AND THEN THE LOOP AND THEN THE LAST BEND.
- INSERT HANGER WIRE WITH BENDS INTO ASSEMBLIES AND INSERT THE NON-CONDUCTING J THIMBLE INTO THE WIRE LOOP. PRESS THE TAIL END OF THE HANGER WIRE LOOP TO THE STRAIGHT PIECE AND SLIDE THE SLEEVE OVER THE TWO WIRES TO THE BEND OF THE LOOP.
- BEND THE TAIL PIECE BACK AGAINST THE SLEEVE ABOUT 90° TO LOCK THE SLEEVE AGAINST THE LOOP AND CUT OFF AS SHOWN ON DETAIL.
- EACH HANGER WIRE LOOP TO HAVE AN INSULATED J THIMBLE.
- MINIMUM LENGTH LOOP TO LOOP IS 7.75".
- HANGER WIRE SHOWN IS USED WITH PO TYPE ASSEMBLIES AS WELL AS TYPE P ASSEMBLIES.

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- MAXIMUM LINE ANGLE FOR P-1 PENDULUM IS 4.5 DEGREES, SEE DETAIL 1.
- HANGER WIRE, ITEM 5 FOR ASSEMBLY P-1 AND P-1A, LENGTHS IS TYPICALLY 16". LENGTH MAY BE INCREASED TO SUIT CONDITIONS.
- LENGTH OF HANGER WIRE FOR SINGLE PENDULUM HANGER TO BE MEASURED IN THE FIELD SO THAT THE CONTACT WIRE HANGS AT THE REQUIRED HEIGHT +/-2". USE HANGER WIRE BENDING TOOL MAC PRODUCTS WC1528-01 TO FORM LOOPS.
- CONTACT WIRE CLAMP TO BE VERTICAL AFTER FINAL INSTALLATION.
- INCLINATION ANGLE NOT TO BE LESS THAN 25°. IF ANGLE IS LESS THAN 25°, USE A PO-01 STYLE PULLOVER. IF INCLINATION ANGLE IS BETWEEN 85° AND 90°, USE A STRAIGHT LINE HANGER SUPPORT ASSEMBLY. SEE DETAIL FOR ASSEMBLY FH-1 AND FH-1A ON DRAWING Y059.
- ALONG TRACK POSITION OF PENDULUM DUE TO CONTACT WIRE TEMPERATURE MOVEMENT TO BE SET ACCORDING TO CONTACT WIRE LENGTH CHANGE TABLE ON DRAWING Y009.
- HANGER WIRE CONSISTS OF A SOLID S.S. STEEL WIRE, 4mmØ AS INDICATED ON ITEM 5, WITH TWO NON-CONDUCTING J THIMBLES ITEM 1, AND TWO SLIDING SLEEVES. LOOPS (PART OF THE HANGER WIRE ASSEMBLY) ARE FORMED AT EACH END WITH A BENDING TOOL DESIGNED FOR THE LOOPS AND THE SLEEVES ARE SLID UP THE THE LOOP. THE TAIL PIECE IS BENT BACK AGAINST THE SLEEVE ~180° AND CUT OFF.
- ALL CONTACT WIRE CLAMPS FOR ALL DEVICES AND ASSEMBLIES, UNLESS NOTED SHALL HAVE HOLLOW HEX SCREWS, FLAT HEAD M14 x 1.5, LENGTH TO SUIT, STAINLESS STEEL WITH 5/16" HEX BROACH (TYP). WHEN COMPLETELY TIGHTENED, THREADED END OF SCREW SHALL BE FLUSH WITH CLAMP.
- SHORT PENDULUM HANGER ASSEMBLY P-2 TO BE USED UNDER THE HEART OF AMERICA BRIDGE.

| BASIS OF DESIGN | | | | | | |
|-----------------|------|------|-----|----------------------------------|----------|-------------|
| ITEM | QTY. | | | DESCRIPTION | SUPPLIER | PART NUMBER |
| | P-1 | P-1A | P-2 | | | |
| 1 | 2 | 2 | - | THIMBLE, J SYNTHETIC | MAC | D0719-01 |
| 2 | 1 | - | - | LINE INSULATOR, G1 FOR SPAN WIRE | MAC | C2368-01 |
| 3 | 2 | 2 | 3 | CLAMP FOR CONTACT WIRE | MAC | D1618-02 |
| 4 | 1 | 1 | - | PULLOFF BOW, TYPE 2 | MAC | D0916-02 |
| 5 | 1 | 1 | - | HANGER WIRE | MAC | D1340-05 |
| 6 | - | 1 | - | LINE INSULATOR, G1, FOR 2" PIPE | MAC | C2369-02 |
| 7 | | | | LOOP INSULATOR | MAC | D4069-01 |
| 8 | | | | PULLOFF BOW, SHORT PENDULUM | MAC | D0916-01 |
| 9 | | | | HOOK PLATE | MAC | E1112-02 |
| 10 | - | 1 | | LEVER ARM RIGID | MAC | D0427-01 |

| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

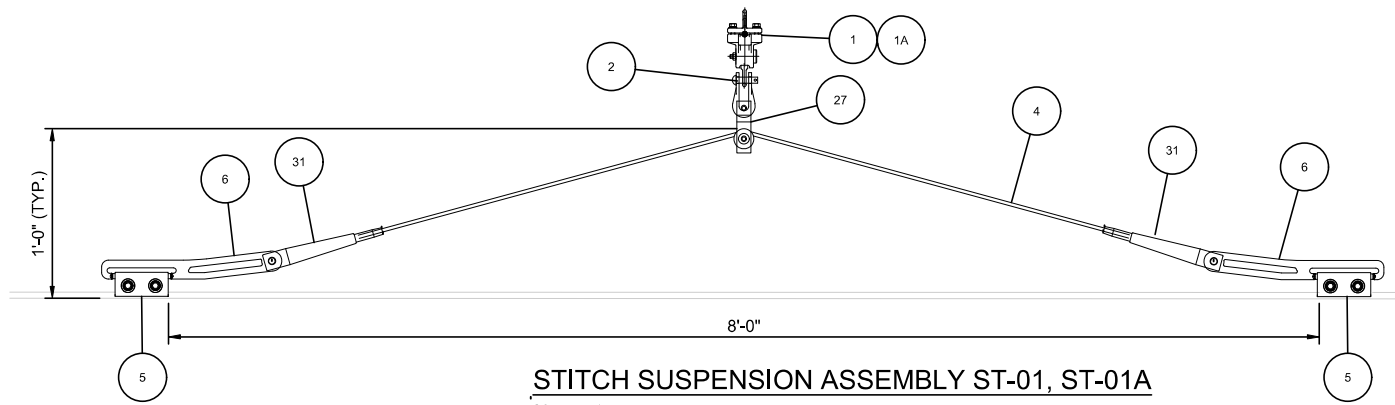
DATE: 12-23-2022

HNTB
The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

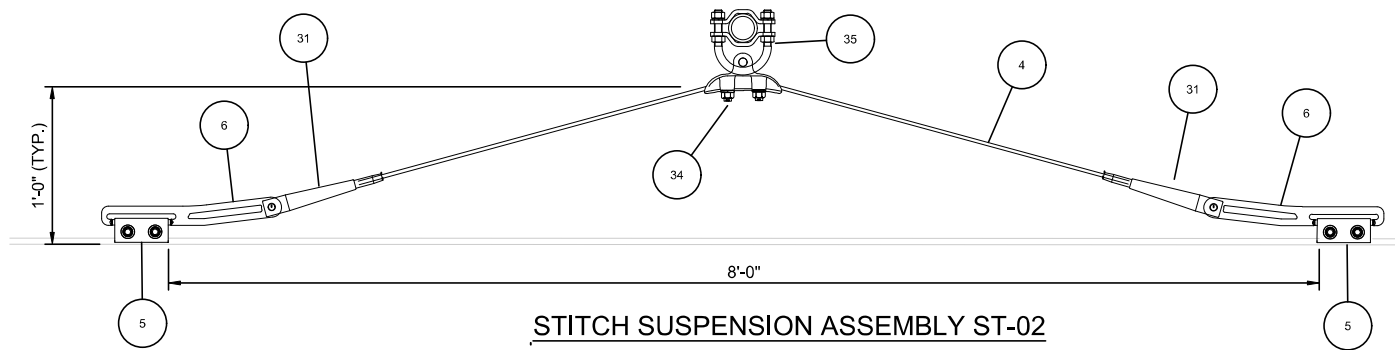
OVERHEAD CONTACT SYSTEM REGISTRATION ASSEMBLIES PENDULUM SUSPENSION ASSEMBLIES

| | |
|------------------------------------|-------------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y058.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y058 | SHEET NO.: 362 |



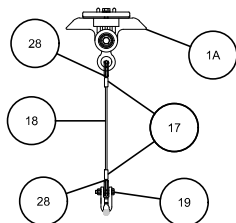
STITCH SUSPENSION ASSEMBLY ST-01, ST-01A

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



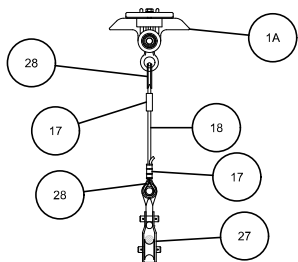
STITCH SUSPENSION ASSEMBLY ST-02

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



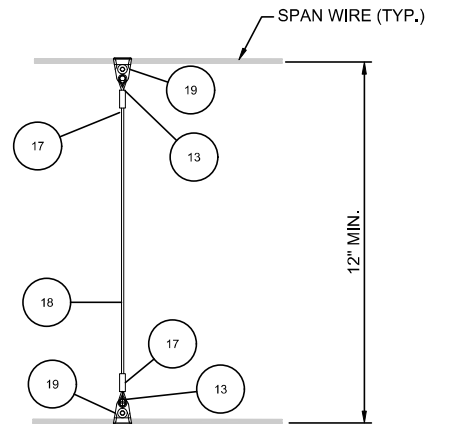
STRAIGHT LINE HANGER FH-1

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



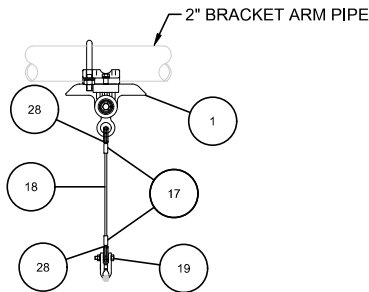
STRAIGHT LINE HANGER FH-2

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



HEAD SPAN HANGER ASSEMBLY

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



STRAIGHT LINE HANGER FH-1A

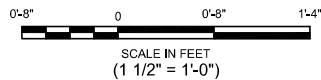
SCALE: 1-1/2" = 1'-0"

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- STITCH SUSPENSION ST-02 TO BE USED FOR THE MID-POINT ANCHOR AND OFFSET FROM CENTERLINE OF TRACK TO ESTABLISH AN INCLINATION TO PREVENT A HARD SPOT.

| BASIS OF DESIGN | | | |
|-----------------|--|-------------|-------------|
| ITEM NO. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | LINE INSULATOR, TYPE G1 FOR 2" PIPE | MAC | C1682-02 |
| 1A | LINE INSULATOR, TYPE G1 FOR SPAN WIRE | MAC | C1670-01 |
| 2 | SHACKLE, TYPE 1 | MAC | D0231-01 |
| 4 | STITCH ROPE, 11MMØ KEVLAR | PHILLYSTRAN | HPTG11200I |
| 5 | CONTACT WIRE CLAMP FOR DELTA SUSP. | MAC | D1618-01 |
| 6 | PULLOFF BRACKET FOR DELTA SUSP. | MAC | D3289-01 |
| 7 | U-BOLT | MAC | D2340-05 |
| 13 | THIMBLE, J SYNTHETIC | K+M | D0719-01 |
| 17 | CRIMP SLEEVE, 3/16" WIRE | NICOPRESS | 18-6-X |
| 18 | WIRE ROPE, 3/16" BRONZE | --- | --- |
| 19 | CLAMP, CATENARY HANGER | MAC | KMA-238 |
| 21 | WASHER, FLAT, SS, FOR Ø8MM BOLT | --- | --- |
| 25 | WASHER, SPLIT LOCK, SS, FOR Ø12MM BOLT | --- | --- |
| 26 | NUT, SS, FOR Ø12MM BOLT | --- | --- |
| 27 | PULLEY | MAC | 300221 |
| 27A | SUSPENSION ANGLE CLAMP | | |
| 28 | THIMBLE, 3/16", S.S. | --- | --- |
| 30 | MESSANGER CABLE INSULATOR, ROTATABLE | MAC | D2363-01 |
| 31 | END TERMINATION FOR KEVLAR ROPE | PHYLLISTRAN | ESA 5112 |
| 32 | LOOP INSULATOR | MAC | D2864-01 |
| 33 | BEAM CLAMP | --- | --- |
| 34 | SUSPENSION CLAMP | HABBELL | MS60N |
| 35 | 2" PIPE CLAMP WITH HALF RING | MAC | D2055-00 |

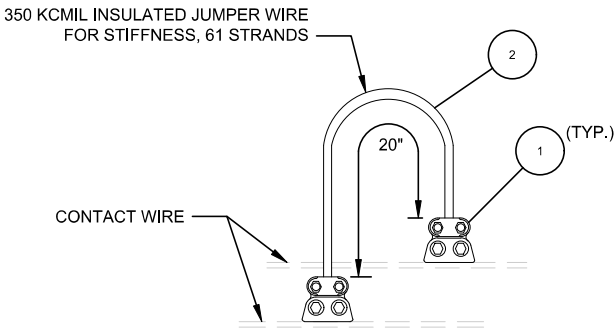
NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|--|------------|--|--|--|--|-----------------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | | DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": AS SHOWN | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. | |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS | | | | FILENAME: Y059.dwg | |
| | | | DRAWN BY | PFW | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | CONTRACT NO.: CONTRACT NO. ### | | | |
| | | | CHECKED BY | BP | | | NOT FOR CONSTRUCTION | | | | | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | | | | | | | DRAWING NO.: Y059 | |
| PLOT DATE: 12/21/2022 | | | 1:55:26 PM | | | | DATE | 12/23/2022 | | | | | | |

NOTES:

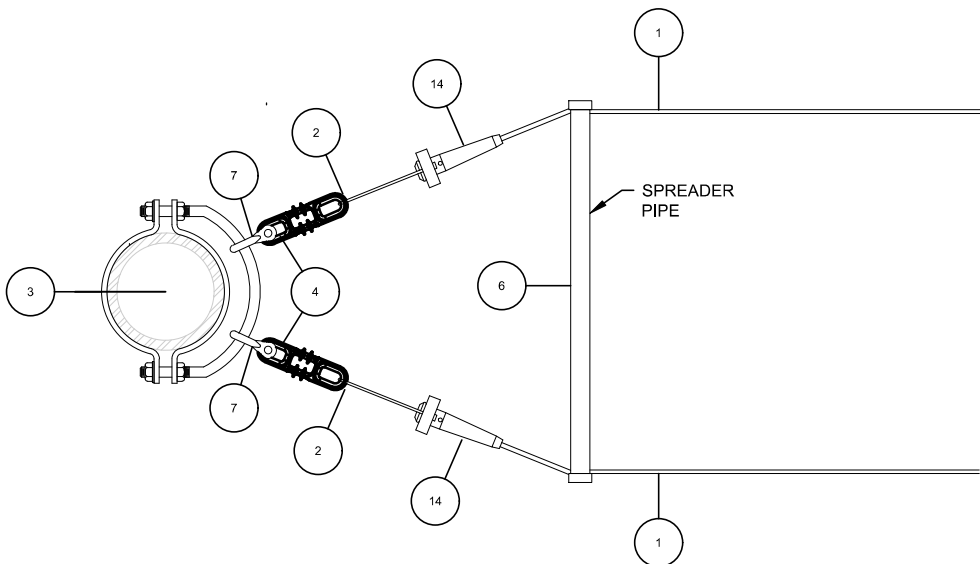
- 1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- 2. JUMPER CABLES ATTACHED TO SINGLE CONTACT WIRES SHALL BE INSULATED.
- 3. CONTACT WIRE CLAMPS TO BE TOP ENTRY.



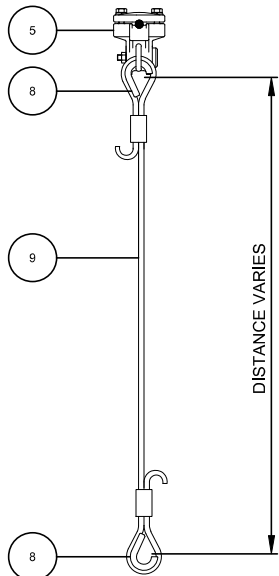
JUMPER ASSEMBLY - JRA-1
SCALE: NTS

| BASIS OF DESIGN | | | | |
|-----------------|-------|----------------------------------|----------|-------------|
| ITEM | QTY. | DESCRIPTION | SUPPLIER | PART NUMBER |
| | JRA-1 | | | |
| 1 | 2 | FEED TAP CLAMP EAR | MAC | D0445-01 |
| 2 | A/R | 350 KCMIL INSULATED FEEDER CABLE | - | 2,000 V |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



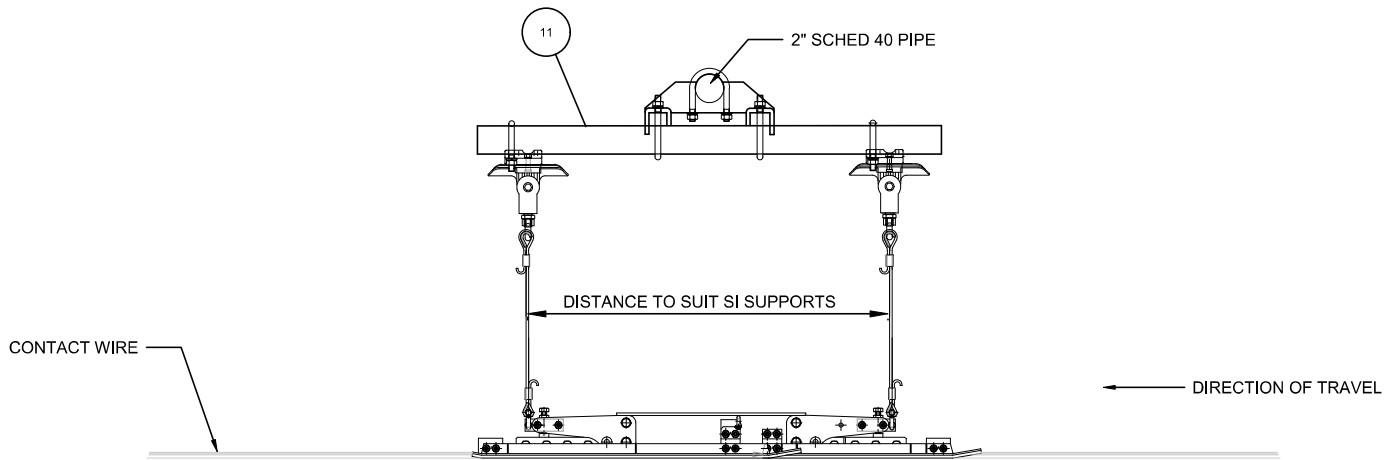
3 SPAN WIRE TRAPEZE - PLAN VIEW
SCALE: NTS



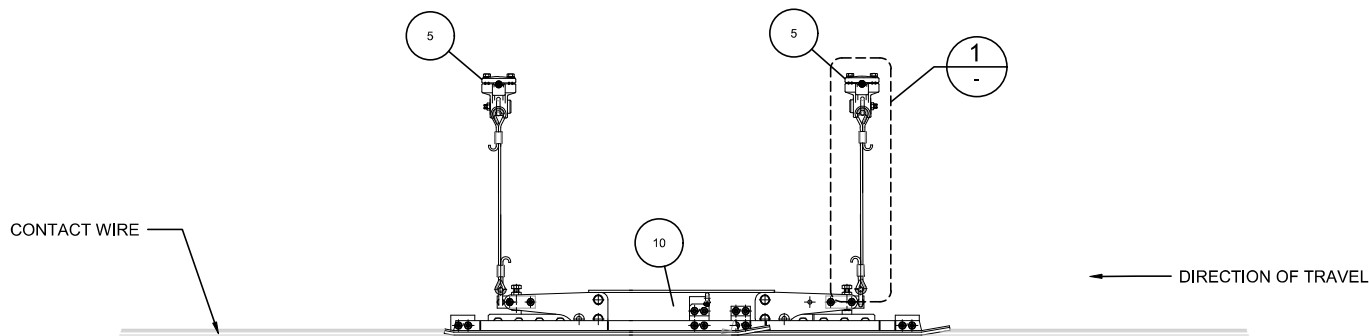
1 DETAIL
SCALE: NTS

NOTES:

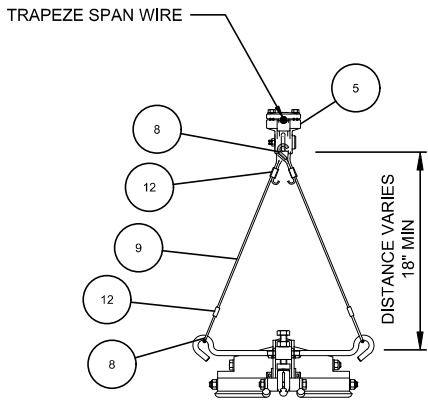
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- FOR LOCATION AND TYPE OF SUSPENSION FOR SECTIONNER REFER TO LAYOUT DRAWINGS.
- SECTION INSULATOR TO BE SUSPENDED WITH TRIANGULAR SUSPENSION WIRES AS INDICTED.
- LINE ANGLE FOR SECTION INSULATOR TO BE 0 DEGREES IN A 120 FOOT SPAN. HANGER WIRE ANGLE SHALL ALLOW THE PLANE OF THE si TO BE PARALLEL WITH THE TRACK.
- CROSS SPAN SUSPENSION TO BE TIGHT WITH MINIMAL SAG.
- SECTION INSULATOR TO BE CENTERED ON TRACK CENTERLINE.
- RUNNER PLANE OF SECTION INSULATOR TO BE PARALLEL WITH TRACK PLANE. ADJUST LINE INSULATOR HANGER WIRES AS NEEDED.
- INSTALL AND ADJUST SECTION INSULATOR AND SUSPENSION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- INSTALL LOOP INSULATORS IN DOUBLE SPAN WIRES AS SHOWN ON DTHIS DRAWING.
- SUSPENSION OF SECTION INSULATOR AT TRACK STATION S 236+59 CROSSOVER IS FROM A SPAN WIRE MESSENGER AND WILL REQUIRE A TRIANGULAR SUSPENSION WITH FLEXIBLE 3/16" WIRE ROPE.
- SECTION INSULATOR TO BE SIEMENS, SAME MODEL AS USED ON THE STARTER LINE.



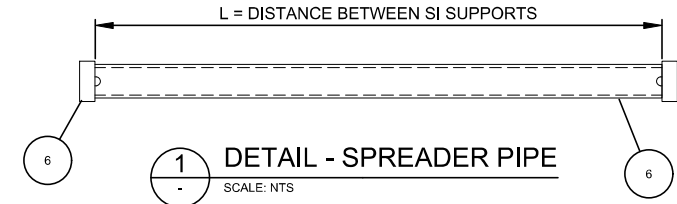
1 SECTION INSULATOR SUSPENSION FROM PIPE, SI-2
SCALE: NTS



2 SECTION INSULATOR SUSPENSION FROM TRAPEZE, SI-1
SCALE: NTS



4 SECTION INSULATOR - END VIEW
SCALE: NTS



1 DETAIL - SPREADER PIPE
SCALE: NTS

| BASIS OF DESIGN | | | |
|-----------------|---|------------------|----------|
| ITEM | DESCRIPTION | SUPPLIER | PART NO. |
| 1 | WIRE, SPAN, 5/16" | - | - |
| 2 | TERMINATION, SPAN WIRE, 5/16", COMPRESSION SLEEVE | - | - |
| 3 | CLAMP FOR POLE, MULTIPLE SPANS | SEE DRAWING Y044 | |
| 4 | THIMBLE, 5/16", STL HDG | - | - |
| 5 | LINE INSULATOR, TYPE G1 SYNTHETIC, SPAN WIRE, OR PIPE | - | - |
| 6 | PIPE, SPREADING, 3/4" SCHED. 80 STEEL | MAC | E0114-00 |
| 7 | SHACKLE | - | - |
| 8 | THIMBLE, INSULATED J | - | - |
| 9 | HANGER WIRE 3/16" S.S 7X19 WIRE ROPE | - | - |
| 10 | SECTION INSULATOR - SIEMENS | - | - |
| 11 | SUPPORT X BRACKET FOR SECTION INSULATOR | - | - |
| 12 | SLEEVE, CRIMP FOR 3/16" WIRE ROPE | - | - |
| 13 | SCREW CAP FOR PIPE | - | - |
| 14 | STRANDVISE 5/16" | - | - |

| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
|-----------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | PFW |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | DATE | 12/23/2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

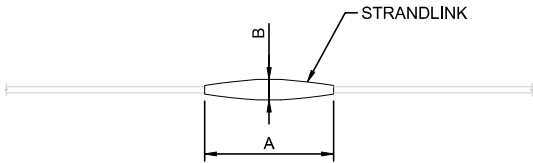
| ISSUE FOR BID | | DATE: 12-23-2022 |
|--|--|---|
| | | |
| 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | | |

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
IN-SPAN ASSEMBLIES
SECTION INSULATOR ASSEMBLY

| | |
|------------------------------------|-------------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y062.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y062 | SHEET NO.: 365 |

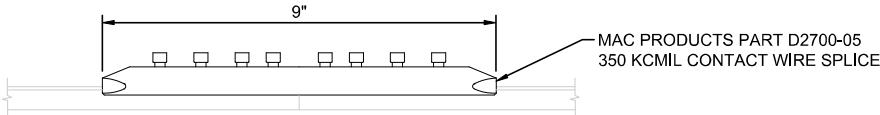
- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - CONTACT WIRE SPLICE TO BE LOCATED NO FURTHER THAN 10' FROM REGISTRATION OR STEADY ARM.



SPAN WIRE SPLICE

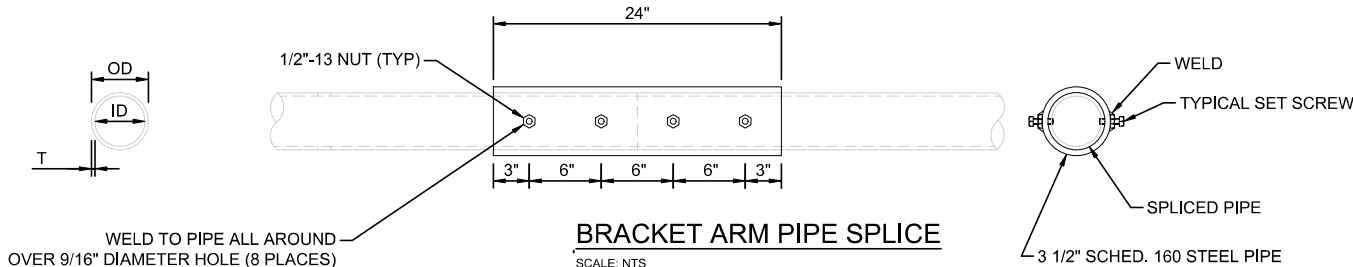
SCALE: NTS

| STRANDLINK (UNIVERSAL GRADE) | | | | |
|------------------------------|----------------|------------------|------------------|-----------------|
| WIRE SIZE | RANGE (INCHES) | DIM 'A' (INCHES) | DIM 'B' (INCHES) | MACLEAN CAT NO. |
| 1/4" | 0.215-0.270 | 7.62 | 1.13 | 5040 |
| 5/16" | 0.270-0.315 | 9.28 | 1.26 | 5041 |
| 3/8" | 0.325-0.392 | 10.62 | 1.45 | 5042 |
| 1/2" | 0.455-0.520 | 10.75 | 1.70 | 5044 |



CONTACT WIRE SPLICE

SCALE: NTS



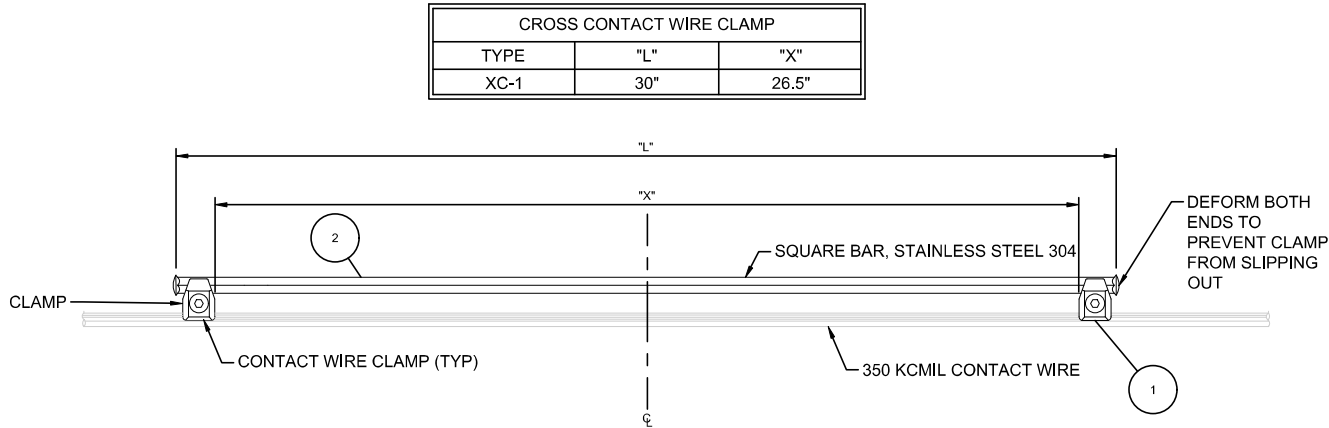
BRACKET ARM PIPE SPLICE

SCALE: NTS

*PROVIDE 8 1/2 -13 SS STEEL 304 SET SCREWS. ASSEMBLY TO BE HDG, CHASE THREADS AFTER GALVANIZING.

| PIPE SPLICE | | | |
|---------------------|--------|--------|--------|
| SIZE OF PIPE JOINED | OD | ID | T |
| 2" PIPE (SCHED. 40) | 2.375" | 2.067" | 0.154" |
| 2" PIPE (SCHED. 80) | 2.375' | 1.939" | 0.218" |
| 3 1/2 " PIPE | 4" | 2.728" | 0.636" |

| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|--|---|--|-----------------------------------|---------------------------------|----------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": NOT TO SCALE | | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES TYPICAL SPLICE DETAILS | FILENAME: Y063.dwg | CONTRACT NO.: CONTRACT NO. ### | VOLUME: 1 | DRAWING NO.: Y063 | SHEET NO.: 366 |
| | | | DRAWN BY | PFW | | | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| PLOT DATE: 12/21/2022 | | | 1:58:23 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | | | |

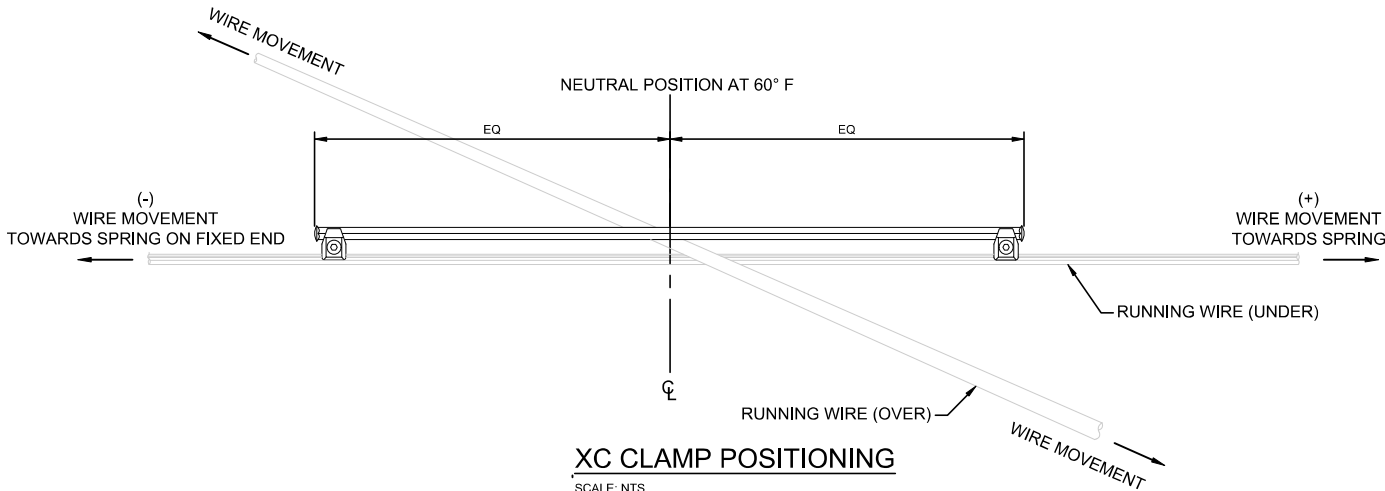


CROSS CONTACT WIRE CLAMP XC-1

SCALE: NTS

| BASIS OF DESIGN | | | | |
|-----------------|-----|----------------------------|----------|-------------|
| ITEM NO. | QTY | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | 2 | TROLLEY WIRE CLAMP, BRONZE | MAC | D0134-01 |
| 2 | 1 | SQUARE BAR, 7/16" SS 316 | - | - |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



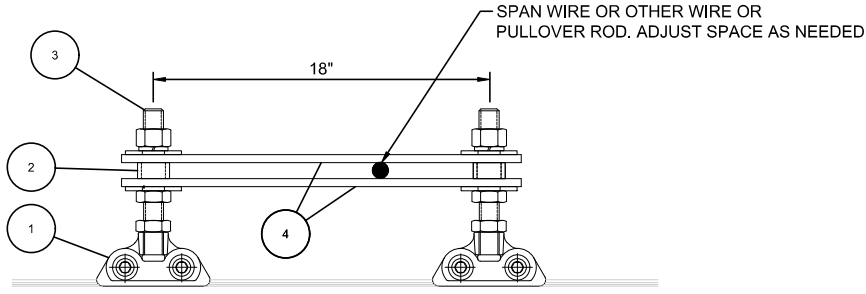
SCALE: NTS

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- CROSS CONTACT WIRE CLAMPS TO BE POSITIONED ON UNDER RUNNING WIRES AFTER BOTH SETS OF CONTACT WIRES ARE PROPERLY TENSIONED AND TERMINATED.
- CROSS CONTACT WIRE CLAMP TO BE ATTACHED TO UNDER RUNNING WIRE WITH CENTER POSITION DIRECTLY OVER CROSSING WIRE AFTER INSTALLATION OF UNDER RUNNING CONTACT WIRE. IN CONSTANT TENSIONED SECTIONS, RELEASE OF WEIGHTS AFTER WIRE STRINGING WILL AUTOMATICALLY POSITION THE CROSS CONTACT WIRE CLAMP.
- USE POSITION CHART TO CHECK CLAMP POSITION AFTER CONTACT WIRE STRINGING PROCESS IS COMPLETE. MAKE ADJUSTMENTS AS REQUIRED.
- FOR ALONG TRACK MOVEMENT, REFER TO DRAWING Y009.
- SPAN SPACER TO BE USED WHERE SPAN WIRES OR OUT OF RUNNING CONTACT WIRES CROSS IN-RUNNING CONTACT WIRES 6" OR LESS. THEY SHALL ALSO BE USED WHERE PULLOVER RODS CROSS OVER IN-RUNNING CONTACT WIRES AND UPLIFT SPACING BETWEEN THE TWO IS 6" OR LESS.

| BASIS OF DESIGN | | | | |
|-----------------|-----|--|----------|-------------|
| ITEM NO. | QTY | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | 2 | CW CLAMP, ETB, WITH 5/8" THREAD, FOR 350 KCMIL CW | MAC | B0348-01 |
| 2 | 2 | GLASTIC SPACER, GRADE 1130 | MAC | KMA-672 |
| 3 | 2 | 5/8" THREADED ROD 7" LONG, WITH 2 NUTS, 2 LOCK WASHERS, 1 WASHER | - | - |
| 4 | 2 | GLASTIC BAR, GRADE 1130, 14" x 1.5" x 1/4" | MAC | KMA-673 |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



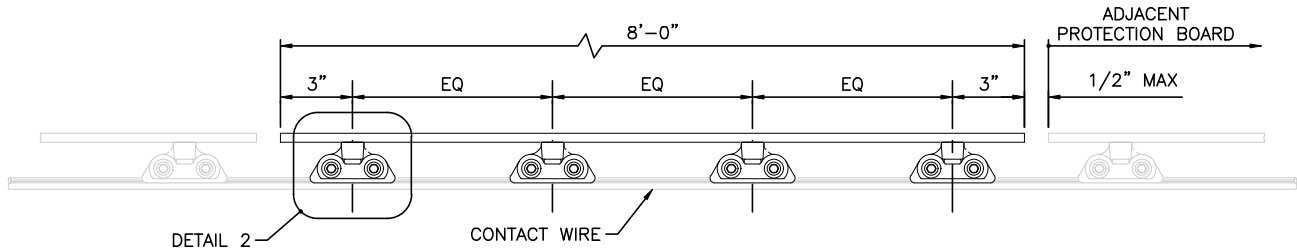
SPAN SPACER ASSEMBLY SS-1

SCALE: NTS

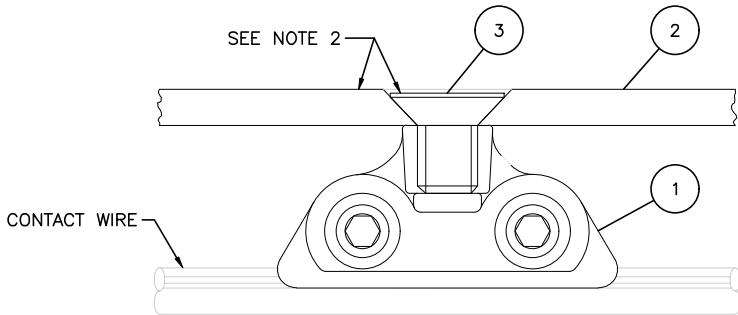
| | | | | | | | | | | | | | |
|-----------------------|------|-------------|--------------|-----|---|--|---|--|---|---|--|-------------------------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | | DATE: 12-23-2022 | <div>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</div> <div>OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES SPAN SPACER AND CROSS CONTACT WIRE CLAMP ASSEMBLIES</div> | | SCALE FOR 22" x34": NOT TO SCALE | |
| | | | CHECKED BY | BP | | | <div> HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> | | <div> The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div> | | | FILENAME: Y064.dwg | |
| | | | DRAWN BY | PFW | | | | | | | | CONTRACT NO.: CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | | | | | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | | | | | | DRAWING NO.: Y064 | SHEET NO.: 367 |
| PLOT DATE: 12/21/2022 | | | 2: 00: 04 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | | |

| BASIS OF DESIGN (PB-1) | | | |
|------------------------|--|----------|----------|
| ITEM | DESCRIPTION | SUPPLIER | PART NO. |
| 1 | CONTACT WIRE CLAMP, ETB | MAC | B0348-01 |
| 2 | 8'-0" x 0'-2" x 3/8" THICK FIBERGLASS (G10) BOARD | --- | --- |
| 3 | 5/8" x 5/8" FULLY THREADED FIBERGLASS FLAT HEAD HEX SOCKET SCREW | --- | --- |

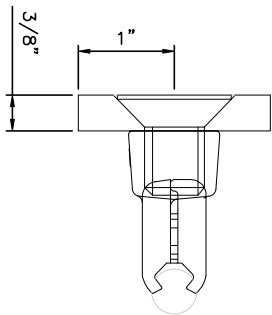
NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



1 CONTACT WIRE PROTECTION BOARD
SCALE: 1 1/2" = 1'-0"



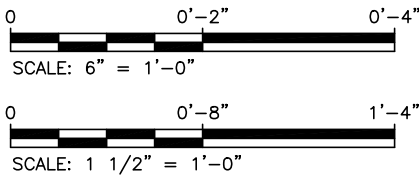
2 PROTECTION BOARD CLAMP DETAIL-PB-1
SCALE: 6" = 1'-0"



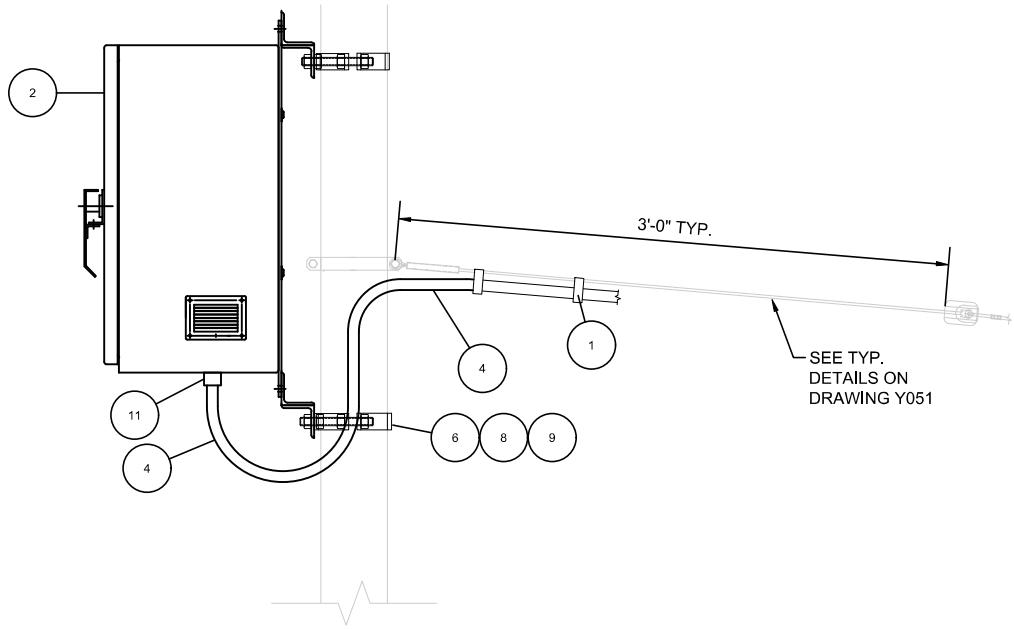
END VIEW

NOTES:

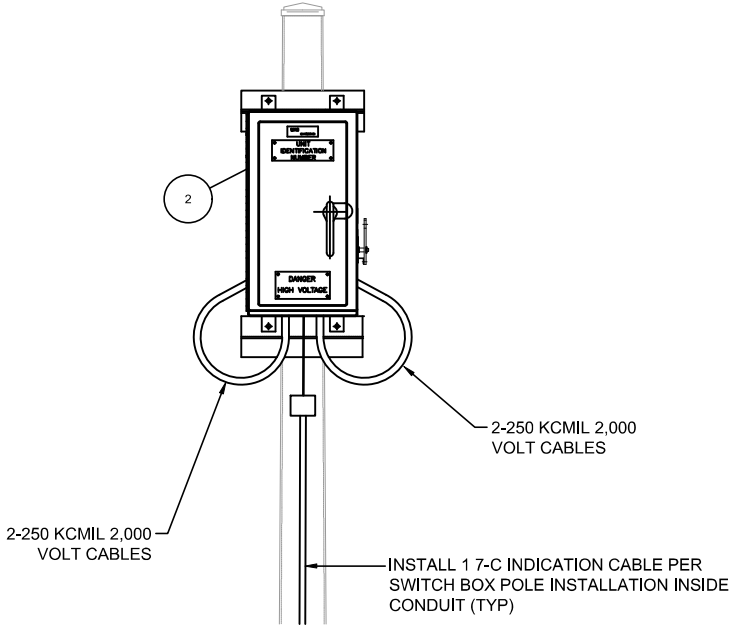
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- COUNTERSINK BOLT HOLE SO THAT TOP OF SCREW IS FLUSH WITH TOP OF FIBERGLASS BOARD.
- APPLY LOCTITE 242 TO SCREW THREADS.
- USE COVER BOARD WHEN DISTANCE BETWEEN TOP OF TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS.
- WHEN INSTALLED BELOW AN OVERHEAD BRIDGE, THE CONTRACTOR SHALL EXTEND COVER BOARD BEYOND THE EXTENT OF THE BRIDGE LIMITS IN THE AMOUNT OF TWICE THE ATM FOR SPECIFIC WIRE RUN THE BOARD IS BEING INSTALLED ON.



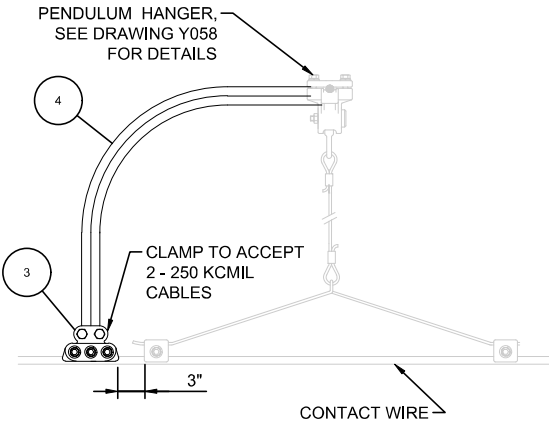
| | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|---|------------------|---|------|--------------------------------|-----|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES CONTACT WIRE PROTECTION BOARD | | SCALE FOR 22"x34": AS SHOWN | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  | FILENAME: | | | | |
| | | | DRAWN BY | PFW | | | | | Y065.dwg | | | | |
| | | | CHECKED BY | BP | | | | | CONTRACT NO.: | | | | |
| | | | APPROVED BY | NKS | | | | | CONTRACT NO. ### | | | | |
| PLOT DATE: 12/21/2022 | | | 2:01:45 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | DRAWING NO.: | Y065 | SHEET NO.: | 368 |



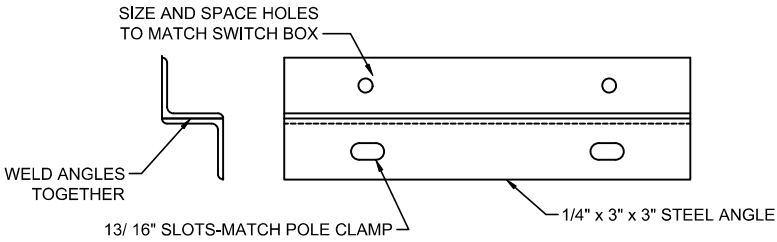
FEEDER TAP ASSEMBLY AT SPAN WIRE - FTA-1
SCALE: NTS



SWITCH BOX ARRANGEMENT SINGLE
NO JUMPER SWITCH - FTA-1



1 FEEDER TAP TO CONTACT WIRE
SCALE: NTS



SWITCH BOX MOUNTING BRACKET
SCALE: NTS

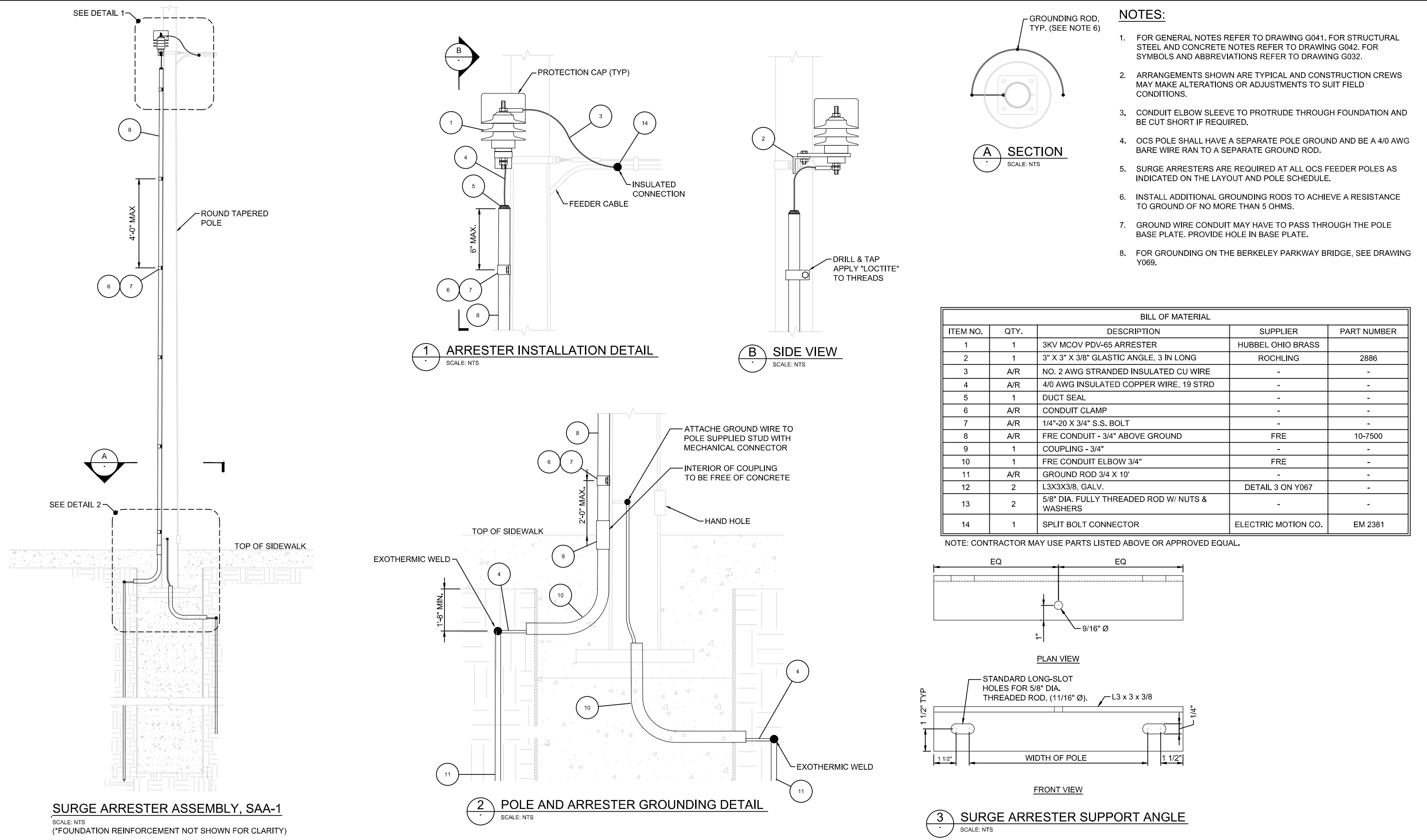
NOTES

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
- LASHING TIE TO HAVE HOOK PLACED OVER SPAN WIRE AND BENT TIGHT. LOOP END FOR FEEDER CABLE PLACED IN LOOP TO BE BE PULLED UP TIGHT.
- INSULATE CABLE AT POLE IF CABLE TOUCHES POLE.
- REFER TO LAYOUT DRAWINGS FOR ARRANGEMENT OF DISCONNECT SWITCHES.
- DISCONNECT SWITCH TO BE 2,000 AMP KNIFE SWITCH. HINGE AND JAW TO HAVE TERMINAL FOR DUAL 250 KCMIL CABLES. SWITCH TO BE HOOK STICK OPERATED AND ENCLOSED IN A NON-CONDUCTING UV RESISTANT ENCLOSURE. BLADE TO OPEN 180°. COLOR OF BOX TO BE LIGHT GRAY.
- EACH SWITCH TO HAVE TWO PAIR OF AUXILIARY CONTACTS FOR INDICATION. REFER TO TRACTION POWER DRAWINGS AND SPECIFICATIONS FOR DETAILS.
- SWITCH BOXES SHOWN STANDING ON SIDEWALK FACING STREET. FOR CENTER POLES, SWITCH BOXES TO BE PARALLEL TO TRACKS.
- SWITCH AND BOX DIMENSIONS TO BE AS SMALL AS POSSIBLE. CONTRACTOR TO SUBMIT DESIGN OF SWITCH FOR APPROVAL BEFORE ORDERING.

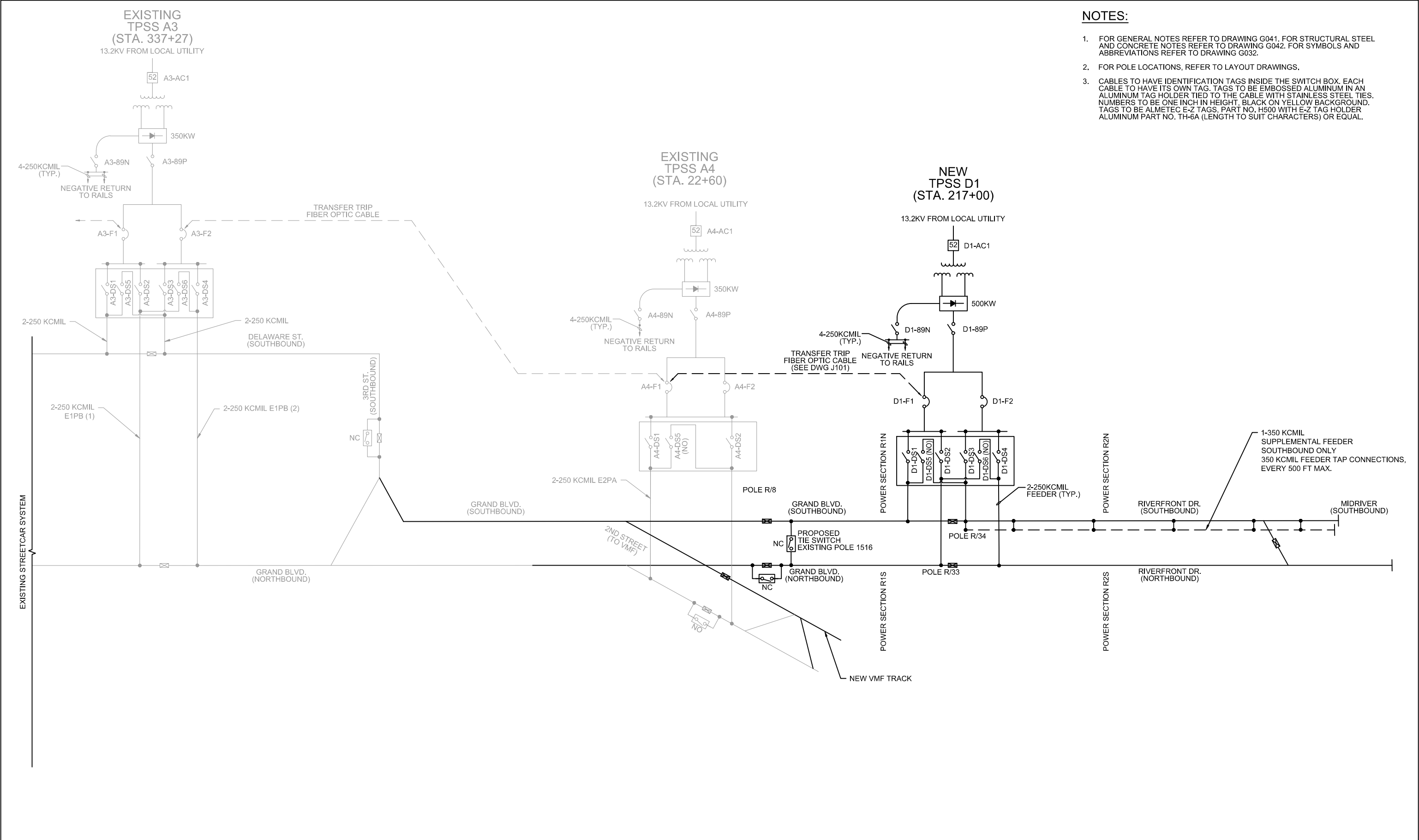
| BASIS OF DESIGN | | | | |
|-----------------|------|----------------------------------|----------|-------------|
| ITEM NO. | QTY. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | A/R | MESSENGER HANGER LASHING TIE | T & B | TYM5418X |
| 2 | A/R | DISCONNECT SWITCH, POLE MOUNT | MAC | XXX |
| 3 | A/R | CLAMP EAR FOR FEEDER TAP CABLE | MAC | D0445-01 |
| 4 | A/R | 250 KCMIL INSULATED FEEDER CABLE | - | 2,000 V |
| 6 | A/R | POLE CLAMP | MAC | XXX |
| 8 | AR | THREADED ROD, 5/8" X 11" LONG | - | - |
| 9 | AR | HEX NUT, 5/8", WITH LOCKWASHER | - | - |
| 11 | AR | CABLE BUSHING NON-CONDUCTIVE | - | - |

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.


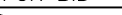

| | | | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|----------------------|------------------|--|---|--|--|--|--|------------------------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 |  <p>The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS</p> <p>10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</p> <p>300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</p> | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | | OVERHEAD CONTACT SYSTEM SWITCHING AND FEEDER ASSEMBLIES FEEDER TAP DETAILS | | SCALE FOR 22"x34": NOT TO SCALE | |
| | | | CHECKED BY | BP | | | | | | | | | | | FILENAME: Y066.dwg | |
| | | | DRAWN BY | PFW | | | | | | | | | | | CONTRACT NO.: CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | | | | | | | | | VOLUME: 1 | |
| | | | APPROVED BY | NKS | | | | | | | | | | | DRAWING NO.: Y066 | SHEET NO.: 369 |
| PLOT DATE: 12/21/2022 | | | 2:07:07 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | | | | | |

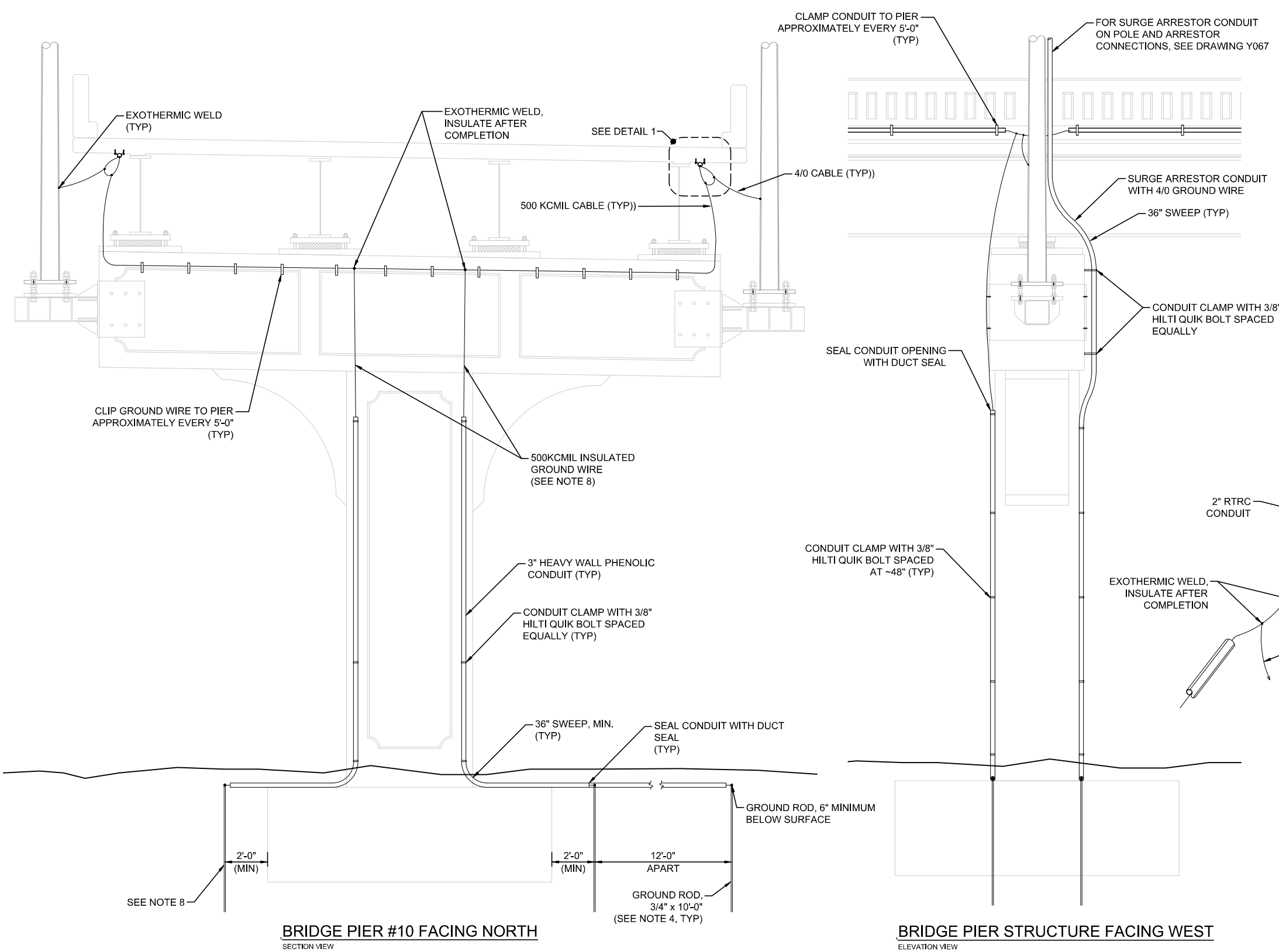


| | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|---|---|---|---|--|------------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | OVERHEAD CONTACT SYSTEM SWITCHING AND FEEDER ASSEMBLIES SURGE ARRESTER DETAILS | SCALE FOR 22"x34": NOT TO SCALE |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | | FILENAME: Y067.dwg |
| | | | DRAWN BY | PFW | | | | | | | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | | | | | DRAWING NO.: Y067 |
| PLOT DATE: 12/21/2022 | | | 3:01:21 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | |



- NOTES:**
- 1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - 2. FOR POLE LOCATIONS, REFER TO LAYOUT DRAWINGS.
 - 3. CABLES TO HAVE IDENTIFICATION TAGS INSIDE THE SWITCH BOX. EACH CABLE TO HAVE ITS OWN TAG. TAGS TO BE EMBOSSED ALUMINUM IN AN ALUMINUM TAG HOLDER TIED TO THE CABLE WITH STAINLESS STEEL TIES. NUMBERS TO BE ONE INCH IN HEIGHT, BLACK ON YELLOW BACKGROUND. TAGS TO BE ALMETEC E-Z TAGS, PART NO. H500 WITH E-Z TAG HOLDER ALUMINUM PART NO. TH-6A (LENGTH TO SUIT CHARACTERS) OR EQUAL.

| | | | | | | | | | | |
|-----------------|------|-------------|-----------------|-----|--|--|---|--|---|------------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | DC |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | <div>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</div> <div>OVERHEAD CONTACT SYSTEM SECTIONALIZING DIAGRAM</div> | SCALE FOR 22"x34": NOT TO SCALE |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. |  The HNTB COMPANIES | | FILENAME: Y068.dwg |
| | | | DRAWN BY | DC | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 | INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 | | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | 816-360-2700 | Phone: 978-905-4000 | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | Certificate of Authority: 000856 | Certificate of Authority: 001270 | | DRAWING NO.: SHEET NO.: |
| PLOT DATE: ---- | | | DATE 12/23/2022 | | | | NOT FOR CONSTRUCTION | | | Y068 371 |



NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- BRIDGE POLE GROUND WIRE TO BE 7 STRAND 4/0 TINNED COPPER WIRE WITH LOW SMOKE EPR INSULATION AND POLYOLEFIN JACKET. CABLE RATED FOR 2,000 VOLTS.
- POLE GROUND WIRE SHALL BE SEPARATE FROM ARRESTOR GROUND WIRE AND RUN INDEPENDENTLY TO ITS OWN GROUND ROD. CABLE SHALL BE PROTECTED IN HEAVY WALL PHENOLIC CONDUIT AS SHOWN.
- ALL CONNECTIONS TO BE EXOTHERMICALLY WELDED. JOINTS TO BE FULLY INSULATED. POLE SUPPORT PLATE TO HAVE GALVANIZE COATING GRIND OFF TO BARE METAL FOR WELDING GROUND WIRE. SURFACES OF WELD AND PLATE TO BE CLEANED AND COATED WITH ZINC RICH PAINT.
- EXACT POSITIONING OF GROUND ROD MAY VARY DUE TO FIELD CONDITIONS.
- IF GROUND RESISTANCE FROM POLE SUPPORT TO EARTH MEASURES 25 OHMS OR LESS (AT 68° F), OMIT GROUND WIRE PIGTAIL FROM POLE BASE TO PIER PLATE.
- CONTRACTOR TO FIELD VERIFY LOCATION OF REINFORCEMENT PRIOR TO INSTALLATION OF THREADED BOLTS.
- PROVIDE ENOUGH SLACK AT EXPANSION JOINTS (PIER 2, 5, 8, 11 AND PIER 12) TO ACCOMMODATE BRIDGE DECK MOVEMENTS.
- GROUNDING INCLUDES REDUNDANT GROUND WIRE AND GROUND ROD IN CASE OF AN ELECTRICAL FAILURE.
- SUPPORT 500 KCMIL INSULATED GROUND CABLE TO THE CONCRETE FACE WITH WIRE CLIPS EVERY 3 FEET.
- COORDINATE INSTALLATION OF SURGE ARRESTOR GROUND WIRE WITH OTHER CABLES AND WIRES AT PIER LOCATION FOR BEST FIT.
- ALL BOLTING AND SUPPORT HARDWARE TO BE STAINLESS STEEL.

1 DETAIL
SCALE: NOT TO SCALE
(SEE NOTE 7)

2 DETAIL
SCALE: NOT TO SCALE

| REV | DATE | DESCRIPTION | DESIGNED BY | GK |
|----------------------------------|------|-------------|-------------|------------|
| | | | CHECKED BY | BP |
| | | | DRAWN BY | GK |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 3:02:06 PM | | | DATE | 12/23/2022 |



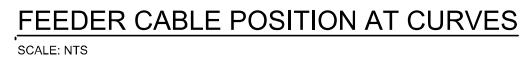
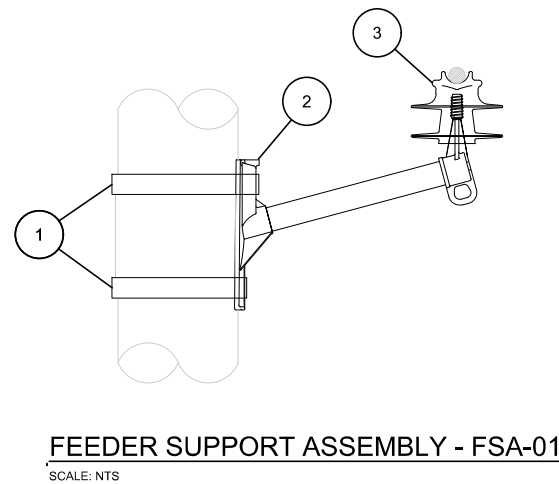
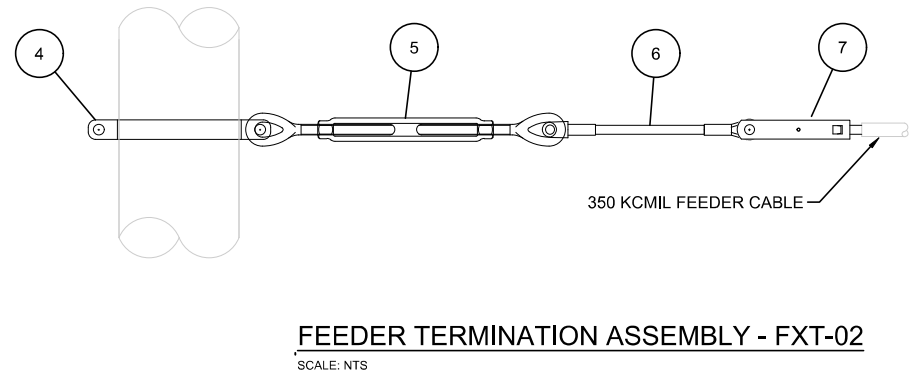
This set of plans is not for construction. These plans are intended to build interest in bidding the project.

| ISSUE FOR BID | | DATE: 12-23-2022 |
|--|--|---|
| | | |
| 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | | |

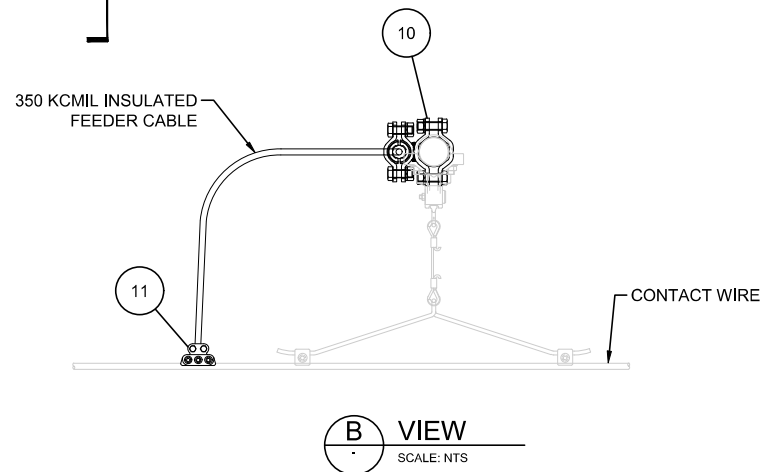
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
POLE GROUND WIRE INSTALLATION
GRAND BOULEVARD VIADUCT PIERS

| | |
|------------------------------------|-------------------|
| SCALE FOR 22"x34": NOT TO SCALE | |
| FILENAME: Y069.dwg | |
| CONTRACT NO.: CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: Y069 | SHEET NO.: 372 |



| BILL OF MATERIALS | | | |
|-------------------|--|-------------------------|-------------|
| ITEM NO. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | POLE BAND, 1" X 0.044", SS TYPE 201, WITH BUCKLE | BAND-IT | G43199 |
| 2 | STANDOFF BRACKET | HUBBLE | 1SBH18V1 |
| 3 | INSULATOR | HENDRIX | HPI-25J-02 |
| 4 | POLE CLAMP | SEE DRAWING Y044 | |
| 5 | TURNBUCKLE, 7/8 X 12 | CROSBY | HG-226 |
| 6 | FIBERGLASS ROD STRAIN INSULATOR (CLEVIS AND EYE AT 90°) | MACLEAN POWER SYSTEM | GCTE15/18 |
| 7 | FORKED COLLAR SOCKET FOR 350 KCMIL CABLE | TRANSTECH/AF | 102016 |
| 8 | CONNECTOR, 350 KCMIL TO 350 KCMIL | FARGO | GC-5035 |
| 9 | 350 INSULATED FEEDER TAP CABLE, 2 KV | - | - |
| 10 | INSULATED PIPE-WIRE CLAMP | MAC | D3040-01 |
| 11 | CLAMP EAR FOR FEEDER TAP CABLE | MAC | D0445-01 |



- NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FEEDER CABLES SHALL BE SECURED TO THE INSULATORS WITH #6 SOFT ANNEALED INSULATED TIE WIRES. FOR CABLES SITTING ON TOP OF INSULATORS, THE BRIDLE TOP GROOVE TIE SHALL BE USED. FOR CABLES ON CURVES SITTING ON THE SIDE INSULATOR, THE LOOPED WESTERN UNION SIDE GROOVE TIE SHALL BE USED.

| | | | | |
|-----------------------|------|-------------|-------------|-----------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |
| | | | CHECKED BY | BP |
| | | | DRAWN BY | GK |
| | | | CHECKED BY | BP |
| | | | APPROVED BY | NKS |
| PLOT DATE: 12/21/2022 | | | 3:45:24 PM | DATE 12-23-2023 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

| |
|---------------|
| ISSUE FOR BID |
|---------------|

HDR HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

DATE: 12-23-2022

HNTB

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

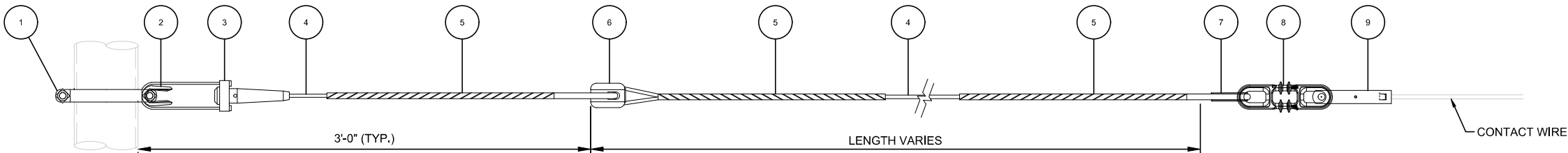
OVERHEAD CONTACT SYSTEM SWITCHING AND FEEDER ASSEMBLIES FEEDER TAP DETAILS

| | |
|--------------------|-----------|
| SCALE FOR 22"x34": | |
| SCALE | |
| FILENAME: | |
| Y070.dwg | |
| CONTRACT NO.: | |
| CONTRACT NO. ### | |
| VOLUME: | |
| 1 | |
| DRAWING NO.: | SHEET NO. |
| Y070 | 373 |

NOTES:


1.
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2.
- WHERE CLEARANCE RESTRICTIONS DON'T ALLOW THE USE OF MULTIPLE PREFORMS, SUBSTITUTE WITH A STRANDVISE.

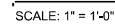
| BILL OF MATERIALS | | | | |
|-------------------|------|------------------------------|-------------------------|---------------|
| ITEM | QTY. | DESCRIPTION | SUPPLIER | PART NUMBER |
| 1 | 1 | POLE CLAMP | MAC | SEE DWG. Y044 |
| 2 | 1 | THIMBLE, 5/8" OPEN PATTERN | CROSBY | 1037611 |
| 3 | 1 | STRANDVISE | MCLEAN | 5201 |
| 4 | A/R | 5/16" STEEL SPAN WIRE | ASTM A475 | EHS |
| 5 | 3 | 5/16" PREFORMED END FITTING | PREFORMED LINE PRODUCTS | GDE-2106 |
| 6 | 1 | JB PORCELAIN INSULATOR | MACLEAN | DP54-3 |
| 7 | 1 | 5/16" THIMBLE | CROSBY | 103738 |
| 8 | 1 | INSULATOR - LOOP | MAC | D4069-01 |
| 9 | 1 | DEADEND CLAMP FOR GROOVED CW | FLURY | 610.047.000 |



FIXED TERMINATION ASSEMBLY FXT-1

SCALE: NTS

| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|---|---|------------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": NOT TO SCALE |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270 | | FILENAME: Y071.dwg |
| | | | DRAWN BY | PFW | | | | | | CONTRACT NO.: CONTRACT NO. ### |
| | | | CHECKED BY | BP | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | | | | DRAWING NO.: Y071 |
| PLOT DATE: 12/21/2022 | | | 4:26:30 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | |



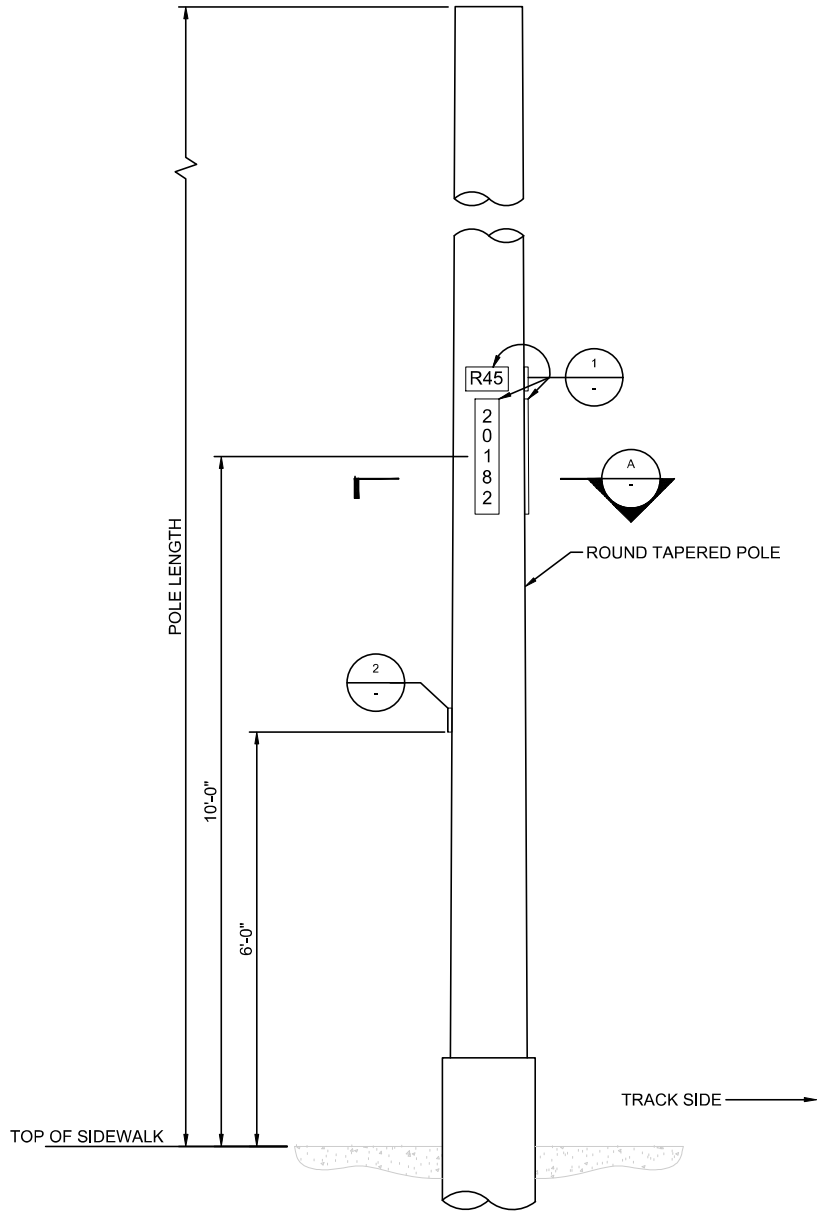
*CONTRACTOR TO DETERMINE DIAMETER REQUIREMENTS

-
- 1'-0" 0 1'-0" 2'-0"
- SCALE IN FEET
(1" = 1'-0")

| | |
|----------------------------------|------------|
| SCALE FOR 22"x34": 1" = 1'-0" | |
| FILENAME: Y072.dwg | |
| CONTRACT NO.: | |
| CONTRACT NO. ### | |
| VOLUME: 1 | |
| DRAWING NO.: | SHEET NO.: |
| Y072 | 375 |

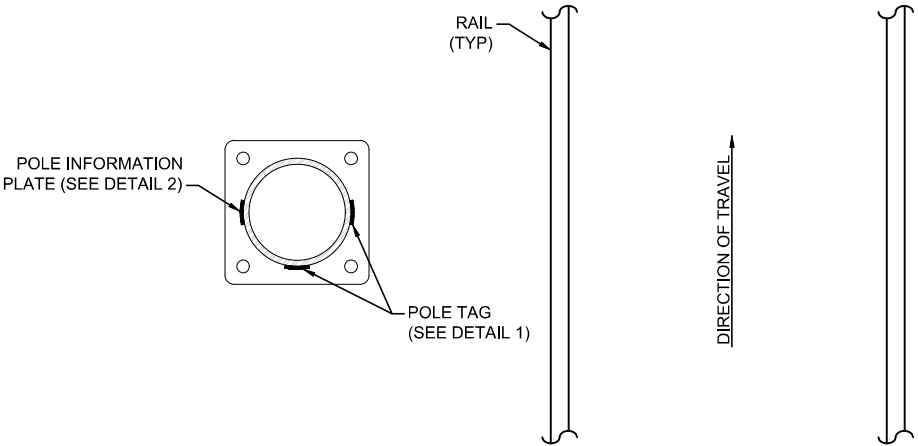
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- POLE TAGS SHALL BE REFLECTIVE SELF ADHESIVE MARKERS, BLACK LETTERS ON WHITE BACKGROUND. NUMBERS TO BE 2' HIGH AND TEXT TO BE HELVETICA MEDIUM.
- SIDE POLES TO HAVE NUMBERS FACING THE TRACK AND DIRECTION OF TRAFFIC.
- CENTER POLES IN LOCATIONS WITH TRACKS ON EACH SIDE TO HAVE TWO SETS OF NUMBERS, EACH FACING THEIR RESPECTIVE TRACK.
- FOR POLE NUMBERS, REFER TO THE POLE SCHEDULE ON DRAWINGS Y111 THRU Y112 AND OCS LAYOUTS ON DRAWINGS Y201 THROUGH Y211. NUMBERS WITH R REFER TO NUMERICAL POLE NUMBERS FOR THE RIVERFRONT EXTENSION.
- FOR POLE LENGTHS AND TYPES, REFER TO THE POLE SCHEDULE ON DRAWINGS Y111 THRU Y112 AND OCS LAYOUTS ON DRAWINGS Y201 THROUGH Y211.
- THE PLATE SHALL BE ENGRAVED OR CAST WITH THE FOLLOWING INFORMATION, MANUFACTURER'S NAME, POLE SIZE, DATE MANUFACTURED, SECTION MODULUS OF BUTT SECTION (INCHES CUBED), AND STRENGTH OF STEEL (PSI). TAG SHALL BE 1/4" THICK, GRADE 304 STAINLESS STEEL WELDED TO POLE BUTT ALL AROUND EDGES OF TAG WITH STAINLESS STEEL WELDING ROD. LETTERING SHALL BE OF SUFFICIENT DEPTH, IF ENGRAVED, OR SUFFICIENT HEIGHT, IF CAST, SO THAT THE FINISH OF THE POLE SHALL NOT OBSCURE THE LETTERING.
- BASE DIAMETER OF POLE FOR POLE TAG SHALL NOT INCLUDE CORROSION COLLAR DIMENSION.



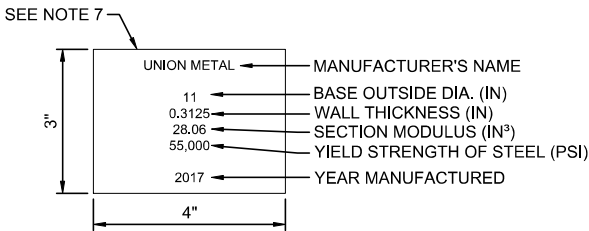
ROUND TUBULAR POLE TAG ARRANGEMENT

SCALE: 1" = 1'-0"



A TAG ARRANGMENT - PLAN VIEW

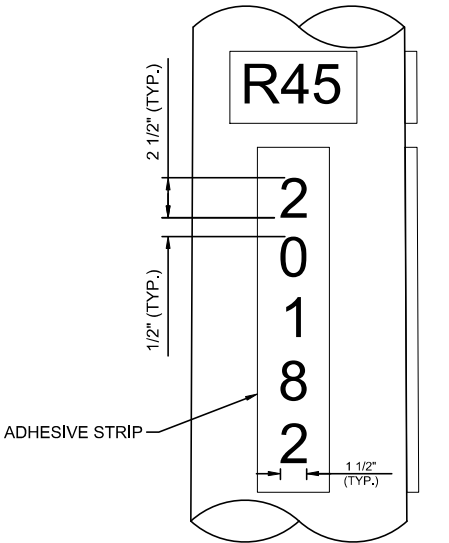
SCALE: 1" = 1'-0"



NOTE: TAG TO CONFORM TO IEEE STANDARD 1630-2012

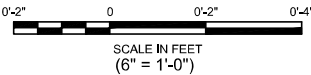
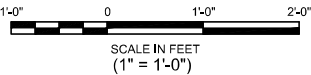
2 POLE INFORMATION PLATE

SCALE: 6" = 1'-0"



1 POLE TAG DETAIL

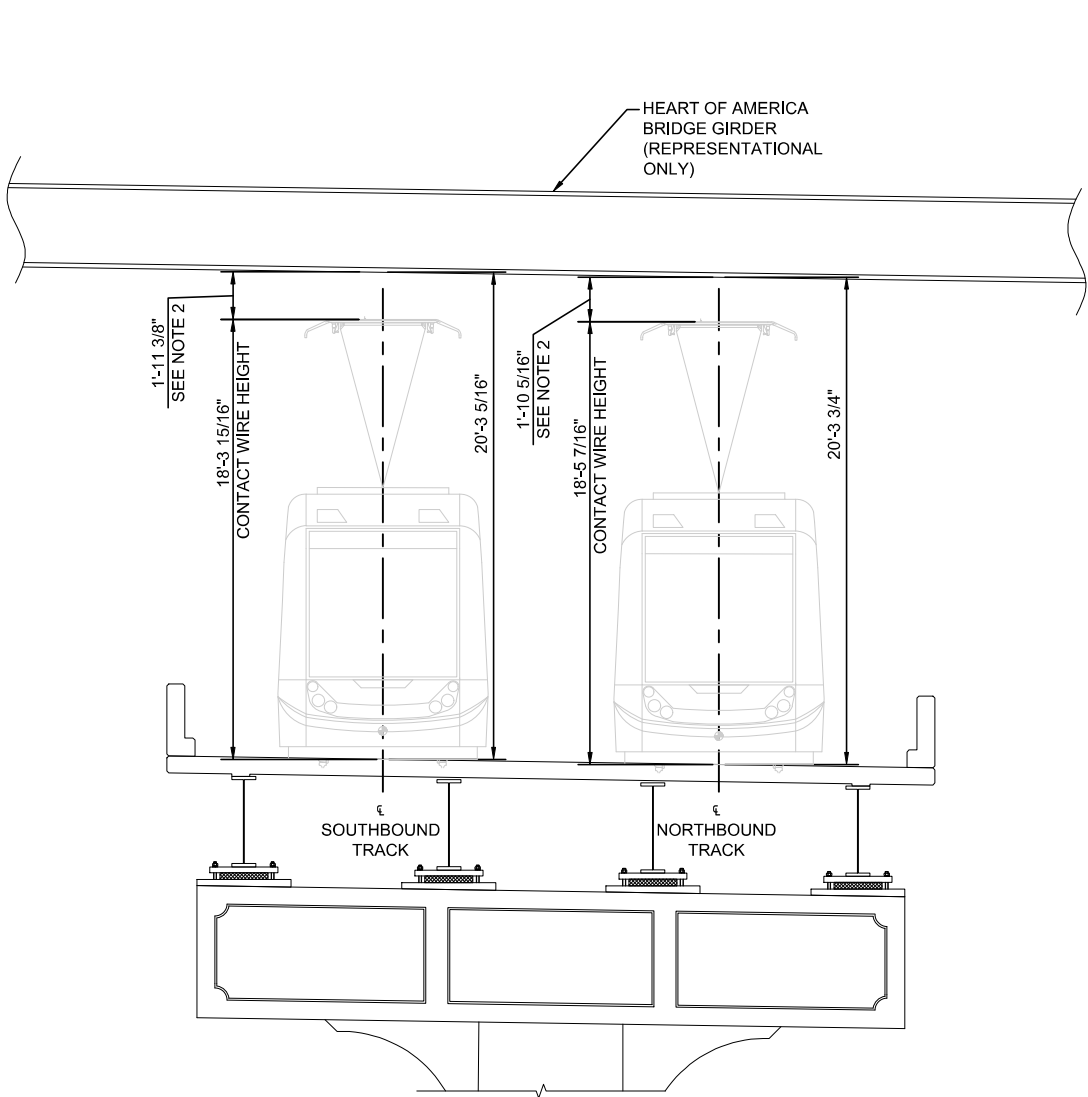
SCALE: NTS



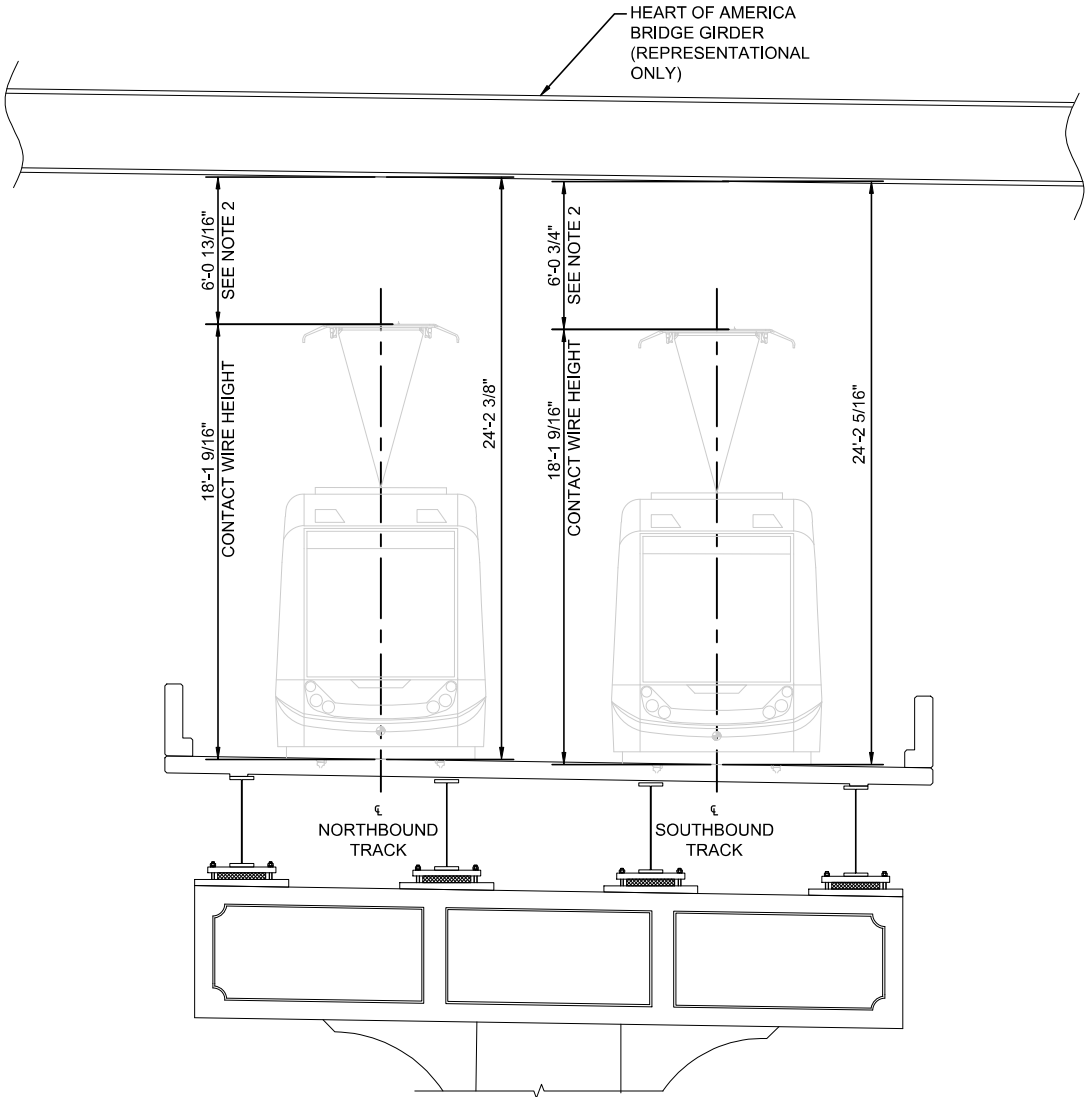
| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----------------------|--|--|----------------------|------------------|---|---|--|---|--------------------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | <div><div>HDR Engineering, Inc.</div><div>10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div></div> | <div><div>The HNTB COMPANIES</div><div>INFRASTRUCTURE SOLUTIONS</div><div>300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div></div> | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | OVERHEAD CONTACT SYSTEM MISCELLANEOUS POLE NUMBERING DETAIL | SCALE FOR 22"x34": AS SHOWN | |
| | | | | FILENAME: Y081.dwg | | | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | | CONTRACT NO.: | |
| | | | DRAWN BY | PFW | | | | | | | | | CONTRACT NO. ### | |
| | | | CHECKED BY | BP | | | | | | | | | VOLUME: | |
| | | | APPROVED BY | NKS | 1 | | | | | | | | | |
| PLOT DATE: 12/21/2022 | | | 2:08:23 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | DRAWING NO.: | SHEET NO.: | | |
| | | | | | | | | | | | Y081 | 376 | | |

NOTES:

1.
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2.
- USE PROTECTION BOARD WHEN DISTANCE BETWEEN TOP OF TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS. REFER TO DRAWING Y065 FOR PROTECTION BOARD DETAILS.

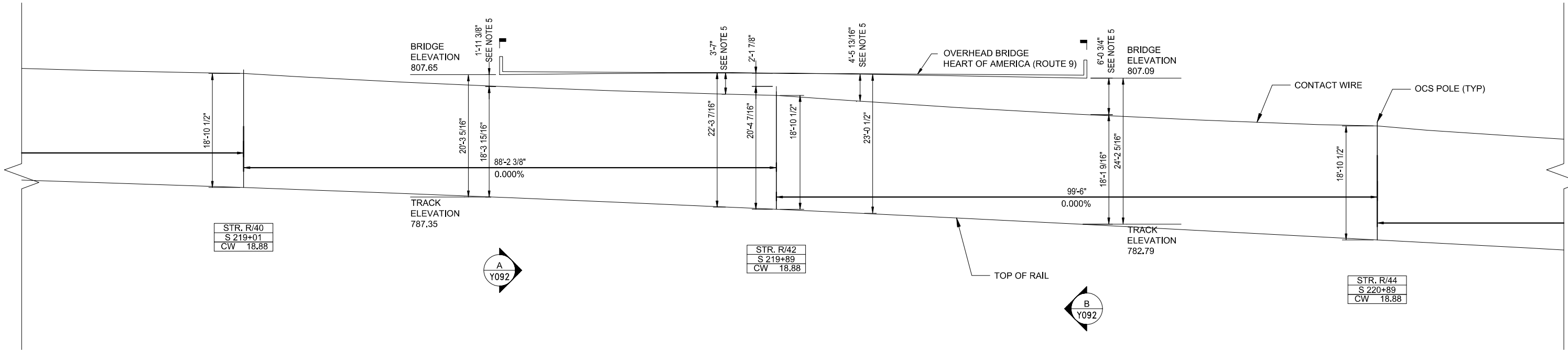


A HEART OF AMERICA BRIDGE STA. N 129+51
SECTION VIEW

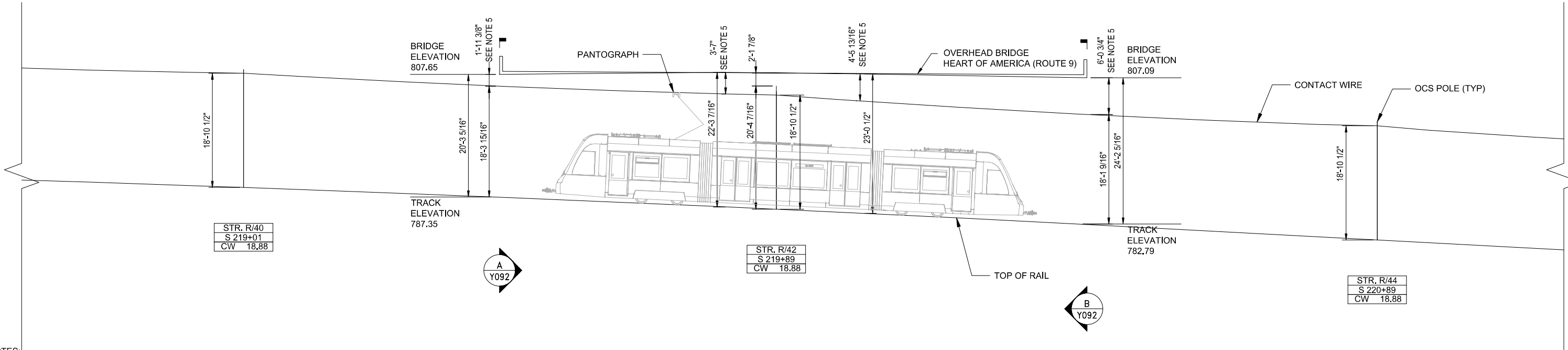


B HEART OF AMERICA BRIDGE STA. N 130+50
SECTION VIEW

| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|--|----------------------|------------------|--|--|---|------------------------------------|----------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | DC |  | <div><div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div><div>22</div></div> | ISSUE FOR BID | DATE: 12-23-2022 | <div><div><div>HDR</div><div>HDR Engineering, Inc.</div><div>10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div></div><div><div>HNTB</div><div>The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div></div></div> | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | OVERHEAD CONTACT SYSTEM CROSS SECTION HEART OF AMERICA BRIDGE | SCALE FOR 22"x34": NOT TO SCALE | DRAWING NO.: Y092 | SHEET NO.: 377 |
| | | | CHECKED BY | BP | | | | | | | | | | |
| | | | DRAWN BY | DC | | | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | | | |
| PLOT DATE: 12/21/2022 | | | 2:10:29 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | | | |




SOUTH BOUND WIRE RUN SBT-2
WITHOUT STREETCAR

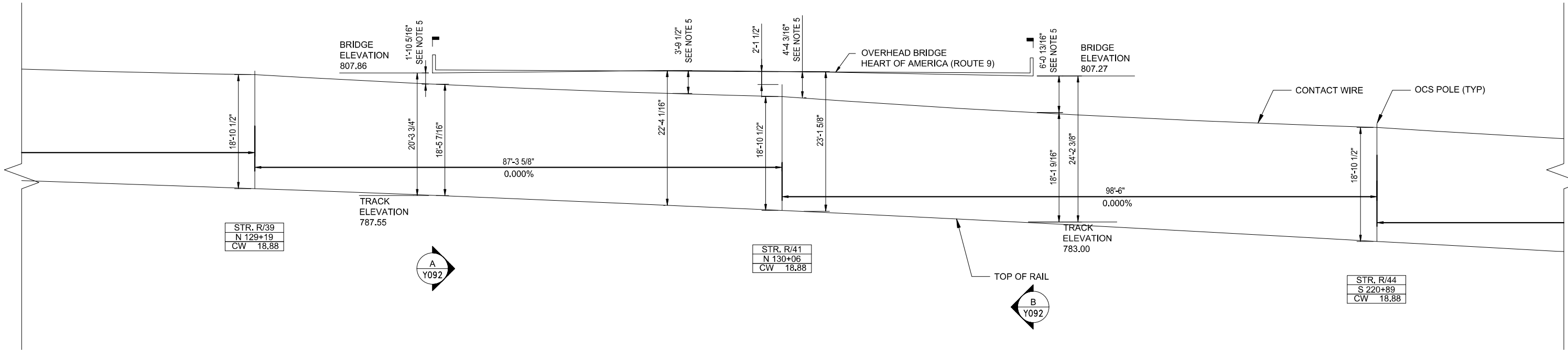


SOUTH BOUND WIRE RUN SBT-2
WITH STREETCAR

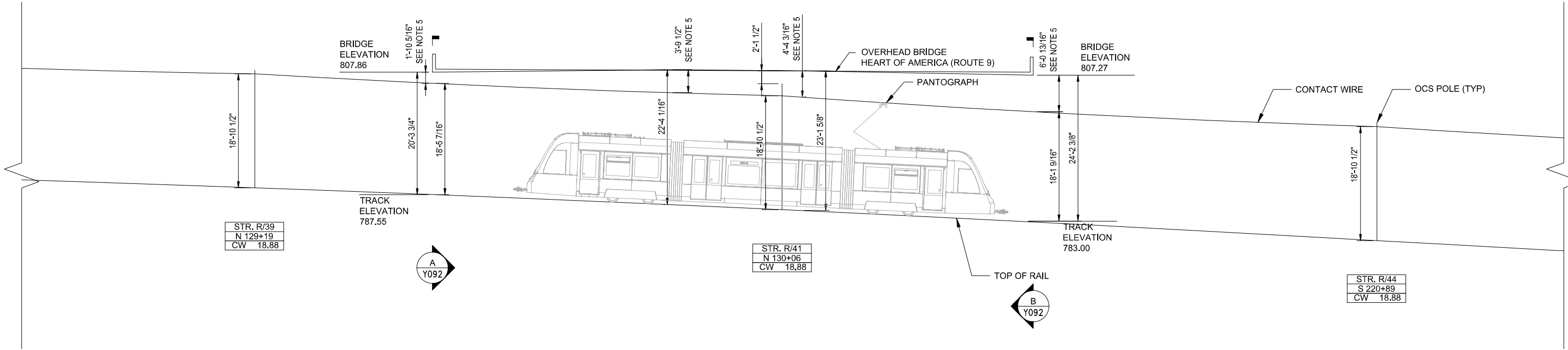
NOTES:

- FOR GENERAL NOTES REFER TO DRAWINGS G020 AND G021.
FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
- ALL CONTACT WIRE HEIGHTS ARE LISTED IN FEET.
- TRACK AND BRIDGE ELEVATION OBTAINED FROM TRACK
PROFILE DRAWINGS.
- IF CONTACT WIRE PROTECTION IS REQUIRED, REFER TO
DRAWING Y065 FOR DETAIL.
- USE PROTECTION BOARD WHEN DISTANCE BETWEEN TOP OF
TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS.
REFER TO DRAWING Y065 FOR PROTECTION BOARD DETAILS.

| | | | | | | | | | | |
|-----------------------|------|-------------|------------------|-----|--|--|-----------------------|------------------|---|------------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | DC |  | <div><div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div><div>12/23/2022</div></div> | ISSUE FOR BID | DATE: 12-23-2022 | <div><div>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</div><div>OVERHEAD CONTACT SYSTEM PROFILES HEART OF AMERICA (1 OF 2)</div></div> | SCALE FOR 22"x34": NOT TO SCALE |
| | | | CHECKED BY | BP | | | FILENAME: Y093.dwg | | | |
| | | | DRAWN BY | DC | | | CONTRACT NO.: | | | |
| | | | CHECKED BY | BP | | | CONTRACT NO. ### | | | |
| | | | APPROVED BY | NKS | | | VOLUME: 1 | | | |
| PLOT DATE: 12/22/2022 | | | DATE: 12/23/2022 | | NOT FOR CONSTRUCTION | | DRAWING NO.: Y093 | | SHEET NO.: 378 | |




NORTH BOUND WIRE RUN NBT-2
WITHOUT STREETCAR

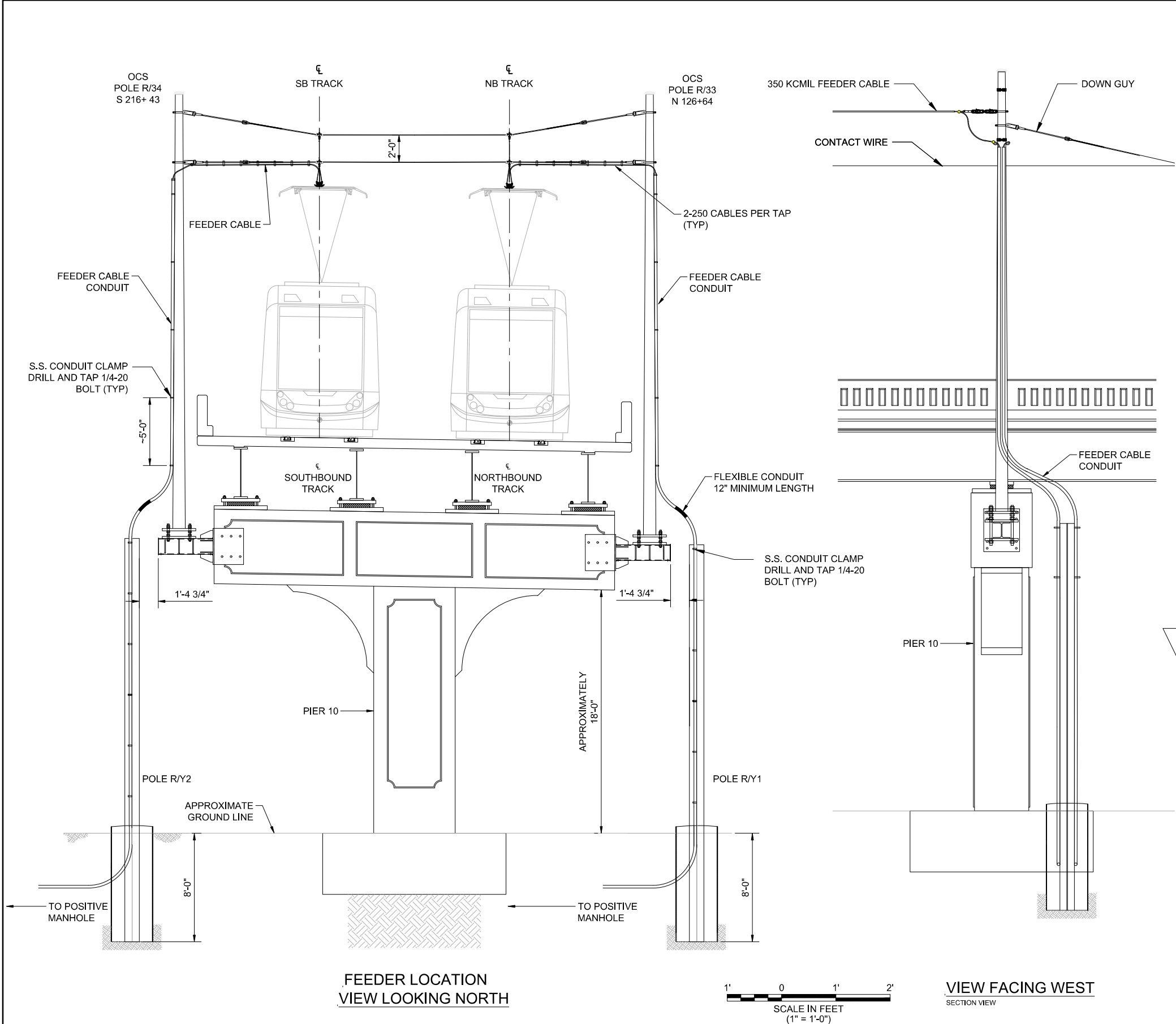


NORTH BOUND WIRE RUN NBT-2
WITH STREETCAR

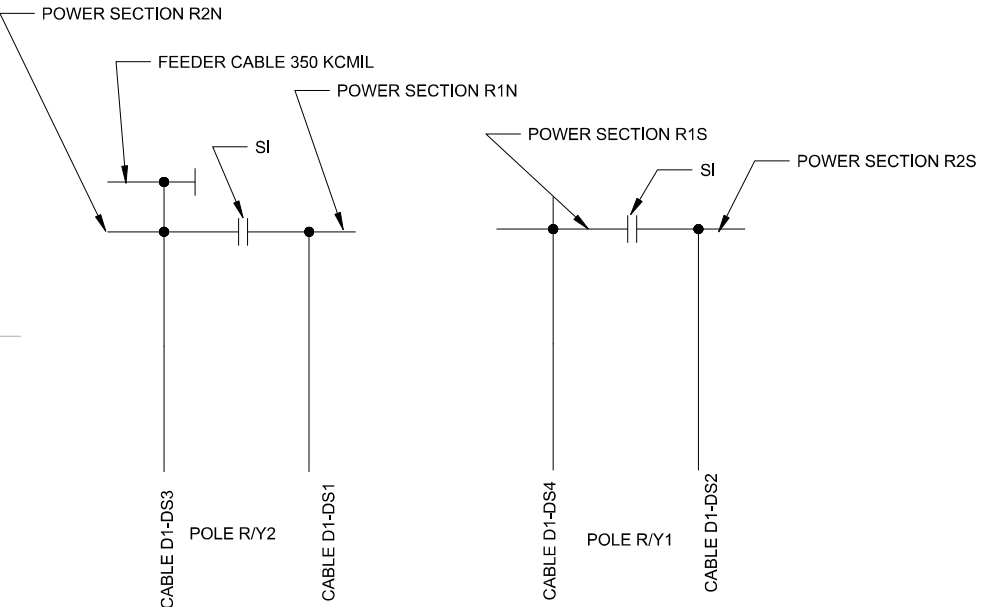
NOTES:

- FOR GENERAL NOTES REFER TO DRAWINGS G020 AND G021.
FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
- ALL CONTACT WIRE HEIGHTS ARE LISTED IN FEET.
- TRACK AND BRIDGE ELEVATION OBTAINED FROM TRACK
PROFILE DRAWINGS.
- IF CONTACT WIRE PROTECTION IS REQUIRED, REFER TO
DRAWING Y065 FOR DETAIL.
- USE PROTECTION BOARD WHEN DISTANCE BETWEEN TOP OF
TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS.
REFER TO DRAWING Y065 FOR PROTECTION BOARD DETAILS.

| | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|---|--|--|--|-------------------|------------------------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | DC |  | <div><p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p></div> | <div><p>ISSUE FOR BID</p><p>DATE: 12-23-2022</p><div><div><div>HDR Engineering, Inc.</div></div><div><div>10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700</div><div>Certificate of Authority: 000856</div></div></div><div><div><div>The HNTB COMPANIES</div>INFRASTRUCTURE SOLUTIONS</div><div><div>300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000</div><div>Certificate of Authority: 001270</div></div></div><td colspan="3">KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</td><td colspan="2">SCALE FOR 22"x34": NOT TO SCALE</td></div> | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | | SCALE FOR 22"x34": NOT TO SCALE | |
| | | | CHECKED BY | BP | | | | FILENAME: Y094.dwg | | | | |
| | | | DRAWN BY | DC | | | | CONTRACT NO.: CONTRACT NO. ### | | | | |
| | | | CHECKED BY | BP | | | | VOLUME: 1 | | | | |
| | | | APPROVED BY | NKS | | | | DRAWING NO.: Y094 | | | | |
| PLOT DATE: 12/22/2022 | | | DATE | | 12/23/2022 | | NOT FOR CONSTRUCTION | | | SHEET NO.: 379 | | |
| | | | | | | | | OVERHEAD CONTACT SYSTEM PROFILES HEART OF AMERICA (2 OF 2) | | | | |



- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - CONDUITS TO BE 4" RTRC EXTERIOR GRADE HEAVY WALL TYPE. COUPLINGS TO BE EPOXY SLEEVES.
 - CONDUITS TO HAVE A FLEXIBLE CONNECTION BETWEEN POLES TO FACILITATE VIBRATION.
 - CABLE TO BE RUN FROM TOP OF CONDUIT RUN AND PULLED DOWN INTO CONDUITS TO DECREASE TENSION AND SIDEWALL PRESSURE.
 - RELOCATE ANY DRAIN PIPES OR ELECTRICAL CONDUIT AND WIRING WHERE OCS POLE SUPPORT IS MOUNTED ON THE BRIDGE PIER.
 - POLES TO WHICH CONDUITS ARE MOUNTED ARE TO BE 12 x 65 WIDE FLANGE BEAMS, HDG, SET DIRECTLY IN THE EARTH. CONDUITS TO BE FITTED INTO FOUNDATION BEFORE CONCRETE POUR.
 - DIMENSIONS ARE APPROXIMATE AND CONTRACTOR TO DETERMINE BEST FIT IN THE FIELD AND ADJUST AS REQUIRED.
 - REFER TO LAYOUT DRAWINGS FOR SPAN WIRE AND FEEDER CABLE ATTACHMENT HEIGHTS ON POLES.
 - ALL CONDUIT OPENINGS TO BE SEALED WITH ROXTEC RS SEAL. CONDUIT SUPPORT DETAILS TO BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL. ALL MOUNTING MATERIAL INCLUDING BOLTS, NUTS, WASHERS, AND LOCKWASHERS TO BE STAINLESS STEEL.
 - EACH FEEDER CABLE TO BE EQUIPPED WITH SURGE ARRESTORS AT THE TOP OF THE BRIDGE POLE. GROUND WIRE TO BE RUN DOWN POLES IN PHENOLIC CONDUIT TO SEPARATE GROUND ROD.



FEEDER LOCATION
VIEW LOOKING NORTH

VIEW FACING WEST
SECTION VIEW

ELECTRICAL SCHEMATIC
NORTHBOUND TRACK

ELECTRICAL SCHEMATIC
SOUTHBOUND TRACK

| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---|--|--|--|------------------|--|--------------------|------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | | SCALE FOR 22"x34": | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. | |  The HNTB COMPANIES | | | | AS NOTED | |
| | | | DRAWN BY | PFW | | | 10450 Holmes Road | | INFRASTRUCTURE SOLUTIONS | | FILENAME: | | | |
| | | | CHECKED BY | BP | | | Suite 600 | | 300 Apollo Drive | | CONTRACT NO.: | | | |
| | | | APPROVED BY | NKS | | | Kansas City, MO 64131-3471 | | Chelmsford, MA 01824 | | CONTRACT NO. ### | | | |
| PLOT DATE: 12/21/2022 | | | 2:15:40 PM | | DATE | 12/23/2022 | 816-360-2700 | | Phone: 978-905-4000 | | VOLUME: | | DRAWING NO.: | SHEET NO.: |
| | | | | | Certificate of Authority: 000856 | | Certificate of Authority: 001270 | | | | 1 | | Y097 | 380 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| POLE & FOUNDATION INSTALLATION SCHEDULE | | | | | | | | | | | | | | |
|---|-----------|------------|------------|----------------|----------------|-------------|-------------|----------------|-----------|------------------|-----------------|-----------------------------|------------|---------------|
| POLE NO. | ALIGNMENT | STATION SB | STATION NB | OFFSET SB (FT) | OFFSET NB (FT) | EASTING | NORTHING | STRUCTURE TYPE | POLE TYPE | POLE LENGTH (FT) | FOUNDATION TYPE | FOUNDATION EMBEDMENT LENGTH | POLE COLOR | MISCELLANEOUS |
| 51792A | SB | 517+92 | - | - | - | - | - | EXIST | P-3 | 30.0 | EXIST | | - | |
| 51792B | NB | 517+92 | - | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | | - | |
| 51883A | SB | 518+83 | - | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | 24'-0" | - | |
| 51883B | NB | - | 518+83 | - | - | - | - | EXIST | P-3 | 30.0 | EXIST | 18'-0" | - | |
| 51973A | SB | 519+73 | - | - | - | - | - | EXIST | P-3 | 30.0 | EXIST | 18'-0" | - | |
| 51973B | NB | - | 519+73 | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | 24'-0" | - | |
| 52036 | SB | 520+36 | - | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | 24'-0" | - | |
| 1075 | NB | - | 10+75 | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | 24'-0" | - | |
| R/1 | VMF | - | 111+07 | - | 26.14 | 2765755.94 | 1071903.22 | OCS + SL + T | P-5L-C | 32.0 | FD-2LE | 27'-0" | GALV. | |
| R/2 | SB | 199+82 | - | 9.87 | - | 2765640.16 | 1071828.75 | OCS | P-1-C | 24.0 | FD-2A | 16'-6" | GALV. | |
| 61977 | SB | 619+77 | - | - | - | - | - | EXIST | P-1 | 33.0 | EXIST | 18'-0" | - | |
| 52110A | SB | 521+10 | - | - | - | - | - | EXIST | P-4 | 33.0 | EXIST | 24'-0" | - | |
| 52110B | SB | 521+10 | - | - | - | - | - | EXIST | P-2 | 33.0 | EXIST | 14'-0" | - | |
| R/4 | SB | 200+46 | - | 18.96 | - | 2765697.29 | 1071870.91 | OCS + T | P-4-C | 26.0 | FD-2D | 27'-0" | GALV. | |
| R/6 | SB | 201+12 | | 14.06 | | 2765687.19 | 1071927.68 | OCS + SL | P-2-C | 32.0 | FD-2B | 16'-6" | GALV. | |
| 1195B | NB | - | 11+95 | | - | - | - | EXIST | P-3 | 30.0 | EXIST | 18'-0" | - | |
| R/3 | NB | - | 0+92.15 | - | 23.28 | 2765726.74 | 1072008.68 | OCS | P-1-C | 28.0 | FD-2A | 16'-6" | GALV. | |
| 1260 | SB | 12+06 | - | - | - | - | - | EXIST | P-3 | 30.0 | EXIST | 18'-0" | - | |
| 1306A | SB | 13+06 | - | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | 16'-6" | - | |
| R/3A | NB | - | 1+36 | - | 23.56 | 2765719.83 | 1072046.39 | OCS | P-2-C | 30.0 | FD-2B | 16'-6" | GALV. | |
| R/6AA | SB | 202+95 | - | 7.31 | - | 2765684.153 | 1072113.436 | OCS | P-4-C | 28.0 | FD-2D | 22'-6" | GALV. | |
| R/5 | NB | - | 113+25 | - | 25.93 | 2765730.71 | 1072105.50 | OCS | P-1-C | 28.0 | FD-2A | 16'-6" | GALV. | |
| R/5A | NB | - | 114+10 | - | 24.61 | 2765745.32 | 1072188.71 | OCS | P-4-C | 28.0 | FD-2D | 22'-6" | GALV. | |
| R/6A | SB | 203+67 | - | 19.86 | - | 2765685.42 | 1072186.78 | OCS + T | P-4-C | 28.0 | FD-2D | 27'-0" | GALV. | |
| R/6B | SB | 204+21 | - | 20.27 | - | 2765695.04 | 1072239.14 | OCS + T | P-5-C | 28.0 | FD-2E | 27'-0" | GALV. | |
| 1410 | NB | - | 14+40 | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | EXIST | GALV. | |
| R/5B | NB | - | 1+14 | - | 8.62 | 2765784.80 | 1072211.00 | OCS | P-2-C | 28.0 | FD-2B | 16'-6" | GALV. | |
| 1516 | NB | - | 15+16 | - | - | - | - | EXIST | P-4 | 30.0 | EXIST | | - | |
| R/5C | NB | - | 1+58 | - | 8.40 | 2765839.70 | 1072224.88 | OCS | P-2L-C | 28.0 | FD-2B | 19'-6" | GALV. | |
| R/8 | SB | 205+02 | - | 18.45 | - | 2765712.29 | 1072318.84 | OCS | P-5-C | 28.0 | FD-2A | 27'-0" | GALV. | |
| R/7 | NB | - | 115+31 | - | 26.03 | 2765769.51 | 1072307.43 | OCS | P-2-C | 28.0 | FD-2B | 22'-6" | GALV. | |
| R/10 | SB | 205+61 | - | 22.91 | - | 2765719.01 | 1072377.98 | OCS | P-3-C | 34.0 | FD-2C | 16'-6" | DK. BRZ. | |
| R/12 | SB | 206+32 | - | 22.34 | - | 2765733.83 | 1072447.22 | OCS | P-3-C | 38.0 | FD-2C | 16'-6" | DK. BRZ. | |
| R/6C | SB | 1+69 | - | 34.44 | - | 2765826.13 | 1072278.82 | OCS + SL | P-2L-C | 32.0 | FD-2LB | 16'-6" | GALV. | |
| R/6D | SB | 2+64 | - | 29.43 | - | 2765918.93 | 1072297.06 | OCS + SL | P-4L-C | 32.0 | FD-2LD | 19'-6" | GALV. | |
| R/5D | NB | - | 2+53 | - | 9.11 | 2765932.00 | 1072247.57 | OCS | P-3-C | 28.0 | FD-2C | 19'-6" | - | |
| R/6E | SB | 3+27 | - | 14.77 | - | 2765979.65 | 1072302.37 | OCS + SL | P-5L-C | 32.0 | FD-2LA | 12'-0" | GALV. | |
| R/6F | SB | 3+62 | - | 11.64 | - | 2766013.71 | 1072314.76 | OCS | P-1-C | 28.0 | FD-2A | 12'-0" | GALV. | |
| Y1 | T1 | - | 17+68 | - | - | - | - | EXIST | P-3 | 30.0 | EXIST | 15'-0" | - | |
| R/6G | SB | 4+08 | - | 8.50 | - | 2766057.65 | 1072330.75 | OCS | P-2L-C | 28.0 | FD-2LB | 19.50 | GALV. | |
| Y5 | T1 | 18+83 | - | - | - | - | - | EXIST | P-1 | 30.0 | EXIST | EXIST | - | |
| Y6 | T5 | 50+96 | - | - | - | - | - | EXIST | P-2 | 30.0 | EXIST | 18'-0" | - | |
| Y8 | T5 | 51+66 | - | - | - | - | - | EXIST | P-1 | 30.0 | EXIST | 9'-0" | - | |
| Y9 | T1 | 19+96 | - | - | - | - | - | EXIST | P-1 | 30.0 | EXIST | 10'-6" | - | |
| Y13 | T1 | 20+51 | - | - | - | - | - | EXIST | P-3 | 30.0 | EXIST | 15'-0" | - | |
| R/14 | SB | 207+31 | - | 9.12 | - | 2765768.83 | 1072541.68 | OCS | P-3-C | 42.0 | FD-2C | 16'-6" | DK. BRZ. | |
| R/16 | SB | 208+36 | - | 10.25 | - | - | - | OCS | P-4B | 30.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/15 | NB | - | 118+65 | - | 10.45 | - | - | OCS | P-4B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/18 | SB | 209+00 | - | 10.16 | - | - | - | OCS | P-1B | 34.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/17 | NB | - | 119+41 | - | 10.25 | - | - | OCS | P-1B | 34.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/20 | SB | 209+74 | - | 10.31 | - | - | - | OCS | P-4B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/19 | NB | - | 120+14 | - | 9.91 | - | - | OCS | P-4B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/22 | SB | 210+95 | - | 10.02 | - | - | - | OCS | P-2B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/21 | NB | - | 121+37 | - | 10.11 | - | - | OCS | P-2B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/24 | SB | 211+89 | - | 9.73 | - | - | - | OCS | P-2B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/23 | NB | - | 122+31 | - | 10.30 | - | - | OCS | P-1B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/26 | SB | 212+84 | - | 10.02 | - | - | - | OCS | P-2B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FOR POLE DETAILS SEE DRAWINGS Y021 TO Y023.
3. FOR FOUNDATION DETAILS SEE DRAWINGS Y031 TO Y036.
4. FOR TRAFFIC SIGNAL CONDUIT AND MAST ARM DETAILS SEE TRAFFIC SIGNAL DRAWINGS.
5. FOR DISCONNECT SWITCH ARRANGEMENT SEE DWG Y066. FOR SECTIONALIZING DIAGRAM SEE DWG Y068.
6. FOR POLE NUMBER TAG DETAILS, SEE DRAWING Y081.
7. FOR RAKE DIRECTION, REFER TO BASE MOMENT ARROWS SHOWN ON OCS LAYOUT PLANS.
8. IN CASE DISCREPANCIES ARE FOUND BETWEEN THE POLE SCHEDULE ON DRAWINGS Y111 AND Y112 AND THE LAYOUT PLANS, THE POLE SCHEDULE TAKES PRECEDENCE.

STRUCTURE TYPE LEGEND:

| | |
|-----|----------------------------|
| OCS | OCS POLES |
| FD | FEEDER POLES |
| SL | STREETLIGHTS |
| T | TRAFFIC SIGNALS |
| PT | PEDESTRIAN TRAFFIC SIGNALS |
| C | CCTV CAMERAS |

| | | | | | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|---------------|------------------|---|---|--|-----------------------------------|------------|----------------------|--|--|--|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | DATE: 12-23-2022 | <div> HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> | <div> The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</div> | <div>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM STRUCTURE SCHEDULE POLE AND FOUNDATION SCHEDULE (SHEET 1 OF 2)</div> | SCALE FOR 22"x34": NO SCALE | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | FILENAME: Y111-112.dwg | | | | | | |
| | | | DRAWN BY | CA | | | | | | | | CONTRACT NO.: CONTRACT NO. ### | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | VOLUME: 1 | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | DRAWING NO.: | SHEET NO.: | | | | | |
| PLOT DATE: 12/22/2022 | | | 11:22:17 AM | | | | | | | | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | |
| | | | | | | | | | | | | Y111 | 381 | | | | | |

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FOR POLE DETAILS SEE DRAWINGS Y021 TO Y023.
3. FOR FOUNDATION DETAILS SEE DRAWINGS Y031 TO Y036.
4. FOR TRAFFIC SIGNAL CONDUIT AND MAST ARM DETAILS SEE TRAFFIC SIGNAL DRAWINGS.
5. FOR DISCONNECT SWITCH ARRANGEMENT SEE DWG Y066. FOR SECTIONALIZING DIAGRAM SEE DWG Y068.
6. FOR POLE NUMBER TAG DETAILS, SEE DRAWING Y081.
7. FOR RAKE DIRECTION, REFER TO BASE MOMENT ARROWS SHOWN ON OCS LAYOUT PLANS.
8. IN CASE DISCREPANCIES ARE FOUND BETWEEN THE POLE SCHEDULE ON DRAWINGS Y111 AND Y112 AND THE LAYOUT PLANS, THE POLE SCHEDULE TAKES PRECEDENCE.

| POLE & FOUNDATION INSTALLATION SCHEDULE | | | | | | | | | | | | | | |
|---|-----------|------------|------------|----------------|----------------|-------------|-------------|----------------|-----------|------------------|-----------------|-----------------------------|------------|---------------|
| POLE NO. | ALIGNMENT | STATION SB | STATION NB | OFFSET SB (FT) | OFFSET NB (FT) | EASTING | NORTHING | STRUCTURE TYPE | POLE TYPE | POLE LENGTH (FT) | FOUNDATION TYPE | FOUNDATION EMBEDMENT LENGTH | POLE COLOR | MISCELLANEOUS |
| R/25 | NB | - | 123+08 | - | 10.27 | - | - | OCS | P-1B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/28 | SB | 213+86 | - | 9.92 | - | - | - | OCS | P-1B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/27 | NB | - | 123+92 | - | 10.17 | - | - | OCS | P-1B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/30 | SB | 214+57 | - | 9.72 | - | - | - | OCS | P-3B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/29 | NB | - | 124+62 | - | 10.25 | - | - | OCS | P-1B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/32 | SB | 215+26 | - | 9.99 | - | - | - | OCS | P-3B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/31 | NB | - | 125+47 | - | 10.44 | - | - | OCS | P-3B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/34 | SB | 216+43 | - | 10.44 | - | - | - | OCS + FD | P-5B | 34.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/33 | NB | - | 126+64 | - | 10.00 | - | - | OCS + FD | P-5B | 34.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| RY1 | | - | - | - | - | 2766194.77 | 1073323.88 | OCS + FD | W 12x65 | 30.0 | FD-3FA | 12'-0" | GALV. | |
| RY2 | | - | - | - | - | 2766165.04 | 1073351.91 | OCS + FD | W 12x65 | 30.0 | FD-3FA | 12'-0" | GALV. | |
| R/36 | SB | 217+35 | - | 10.60 | - | - | - | OCS | P-4B | 34.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/35 | NB | - | 127+50 | - | 10.28 | - | - | OCS | P-4B | 34.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/38 | SB | 218+19 | - | 10.70 | - | - | - | OCS | P-4B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/37 | NB | - | 128+33 | - | 10.48 | - | - | OCS | P-2B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/40 | SB | 219+01 | - | 10.01 | - | - | - | OCS | P-3B | 32.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/39 | NB | - | 129+19 | - | 10.78 | - | - | OCS | P-3B | 30.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/42 | SB | 219+89 | - | 10.61 | - | - | - | OCS | P-2B | 30.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/41 | NB | - | 130+06 | - | 10.45 | - | - | OCS | P-2B | 30.0 | - | - | DK. BRZ. | OCS ON BRIDGE |
| R/44 | SB | 220+89 | - | 16.43 | - | 2766509.75 | 1073644.96 | OCS | P-4 | 54.0 | FD-4D | - | DK. BRZ. | |
| R/46 | SB | 221+89 | - | 16.80 | - | 2766597.32 | 1073696.16 | OCS | P-4 | 48.0 | FD-4D | - | DK. BRZ. | |
| R/48 | SB | 222+90 | - | 16.78 | - | 2766687.96 | 1073741.43 | OCS | P-3 | 44.0 | FD-4C | - | DK. BRZ. | |
| R/50 | SB | 223+79 | - | 16.79 | - | 2766771.05 | 1073777.03 | OCS | P-3 | 42.0 | FD-4C | - | DK. BRZ. | |
| R/52 | SB | 224+80 | - | 16.43 | - | 2766866.48 | 1073811.03 | OCS | P-3 | 40.0 | FD-4C | - | DK. BRZ. | |
| R/54 | SB | 225+81 | - | 15.00 | - | 2766964.16 | 1073839.31 | OCS | P-1 | 26.0 | FD-1A | 9'-0" | GALV. | |
| R/53 | NB | - | 135+91 | - | 11.22 | 2766974.81 | 1073798.43 | OCS + SL | P-1L | 34.0 | FD-1LA | 10'-6" | GALV. | |
| R/56 | SB | 226+47 | - | 18.58 | - | 2767015.23 | 1073869.92 | OCS | P-1 | 26.0 | FD-1A | 10'-6" | GALV. | |
| R/55 | NB | - | 136+31 | - | 16.36 | 2767015.93 | 1073809.40 | OCS | P-1 | 24.0 | FD-1A | 9'-0" | GALV. | |
| R/57 | NB | - | 136+66 | - | 41.18 | 2767063.90 | 1073812.01 | OCS | P-1 | 26.0 | FD-1A | 10'-6" | GALV. | |
| R/58 | SB | 226+87 | - | 9.00 | - | 2767049.19 | 1073889.09 | OCS + SL | P-3L | 34.0 | FD-2LC | 10'-6" | GALV. | |
| R/59 | NB | - | 137+06 | - | 12.00 | 2767074.00 | 1073862.48 | OCS + T | P-4 | 26.0 | FD-1D | 12'-0" | GALV. | |
| R/60 | SB | 227+37 | - | 29.87 | - | 2767080.36 | 1073939.48 | OCS | P-1 | 26.0 | FD-1A | 9'-0" | GALV. | |
| R/61 | NB | - | 137+69 | - | 7.21 | 2767114.77 | 1073915.25 | OCS + T | P-4 | 28.0 | FD-1D | 12'-0" | GALV. | |
| R/61-DG | NB | - | 137+47 | - | 7.21 | 2767095.30 | 1073905.00 | - | - | - | FG-01 | 12'-0" | GALV. | |
| R/62 | SB | 228+20 | - | 7.21 | - | 2767175.59 | 1073934.29 | OCS + SL | P-1L | 34.0 | FD-1LA | 9'-0" | GALV. | |
| R/63 | SB | 229+08 | - | 7.00 | - | 2767260.07 | 1073958.01 | OCS | P-1 | 28.0 | FD-1A | 9'-0" | GALV. | |
| R/63-DG | SB | 229+30 | - | 7.00 | - | 2767281.25 | 1073963.95 | - | - | - | FG-01 | 12'-0" | GALV. | |
| R/64 | SB | 230+02 | - | 7.00 | | 2767350.68 | 1073983.45 | OCS + SL | P-1L | 34.0 | FD-1LA | 9'-0" | GALV. | |
| R/65 | SB | 231+02 | | 7.00 | | 2767446.97 | 1074010.48 | OCS | P-1 | 28.0 | FD-1A | 9'-0" | GALV. | |
| R/66 | SB | 232+02 | - | 7.00 | - | 2767543.24 | 1074037.51 | OCS + SL | P-1L | 34.0 | FD-1LA | 9'-0" | GALV. | |
| R/67 | SB | 233+02 | - | 7.00 | - | 2767639.66 | 1074064.60 | OCS | P-1 | 28.0 | FD-1A | 9'-0" | GALV. | |
| R/68 | SB | 233+87 | - | 7.00 | - | 2767720.99 | 1074090.09 | OCS + SL | P-2L | 34.0 | FD-2LB | 10'-6" | GALV. | |
| R/69 | SB | 234+72 | - | 7.00 | - | 2767800.72 | 1074120.38 | OCS | P-2 | 28.0 | FD-1B | 10'-6" | GALV. | |
| R/70 | SB | 235+69 | - | 7.00 | - | 2767889.37 | 1074159.32 | OCS + SL | P-2L | 34.0 | FD-2LB | 10'-6" | GALV. | |
| R/71 | SB | 236+49 | - | 7.00 | - | 2767962.28 | 1074191.83 | OCS | P-2 | 28.0 | FD-1B | 10'-6" | GALV. | |
| R/72 | NB | - | 147+44 | - | 7.24 | 2768036.14 | 1074225.04 | OCS + SL | P-5L | 34.0 | FD-1LC | 12'-6" | GALV. | |
| R/72-DG | NB | - | 147+71 | - | 7.24 | 2768060.42 | 1074236.85 | - | - | - | FG-01 | 10'-6" | GALV. | |
| R/73 | NB | - | 148+32 | - | 11.64 | 2768114.08 | 1074265.91 | OCS | P-1 | 26.0 | FD-1A | 10'-6" | GALV. | |
| R/74 | NB | - | 149+24 | - | 12.30 | 2768193.39 | 1074310.21 | OCS + SL | P-1L | 34.0 | FD-1LA | 9'-0" | GALV. | |
| R/75 | NB | - | 150+41 | - | 12.27 | 2768295.91 | 1074367.25 | OCS + SL | P-1L | 34.0 | FD-1LA | 9'-0" | GALV. | |
| R/76 | NB | - | 151+32 | - | 12.27 | 2768375.22 | 1074411.35 | OCS | P-1 | 26.0 | FD-1A | 9'-0" | GALV. | |
| R/77 | NB | - | 152+32 | - | 12.27 | 2768462.61 | 1074459.98 | OCS | P-1 | 24.0 | FD-1A | 10'-6" | GALV. | |
| R/77-DG | NB | - | 152+53 | | 12.27 | 2768480.519 | 1074469.948 | - | - | - | FG-01 | 10'-6" | GALV. | |

STRUCTURE TYPE LEGEND:

- OCSOCS POLES
- FDFEEDER POLES
- SLSTREETLIGHTS
- TTRAFFIC SIGNALS
- PTPEDESTRIAN TRAFFIC SIGNALS
- CCTV CAMERAS

REV

DATE

DESCRIPTION

DESIGNED BY

PFW

CHECKED BY

BP

DRAWN BY

CA

CHECKED BY

BP

APPROVED BY

NKS

PLOT DATE:

12/22/2022

11:25:23 AM

DATE

12/23/2022

This set of plans is not for construction. These plans are intended to build interest in bidding the project.

RideKC

STREETCAR

ISSUE FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road

Suite 600

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

HNTB

The HNTB COMPANIES

INFRASTRUCTURE SOLUTIONS

300 Apollo Drive

Chelmsford, MA 01824

Phone: 978-905-4000

Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM

STRUCTURE SCHEDULE

POLE AND FOUNDATION SCHEDULE

(SHEET 2 OF 2)

SCALE FOR 22"x34":

NO SCALE

FILENAME:

Y111-112.dwg

CONTRACT NO.:

CONTRACT NO. ###

VOLUME:

1

DRAWING NO.:

Y112

SHEET NO.:

382

303214



| REV | DATE | DESCRIPTION |
|-----------------------|------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| PLOT DATE: 12/22/2022 | | 1:12:08 PM |

| | |
|-------------|------------|
| DESIGNED BY | PFW |
| CHECKED BY | BP |
| DRAWN BY | DC |
| CHECKED BY | BP |
| APPROVED BY | NKS |
| DATE | 12-23-2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

| | |
|---|---|
| ISSUE FOR BID | DATE: 12-23-2022 |
| HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 |
| NOT FOR CONSTRUCTION | |

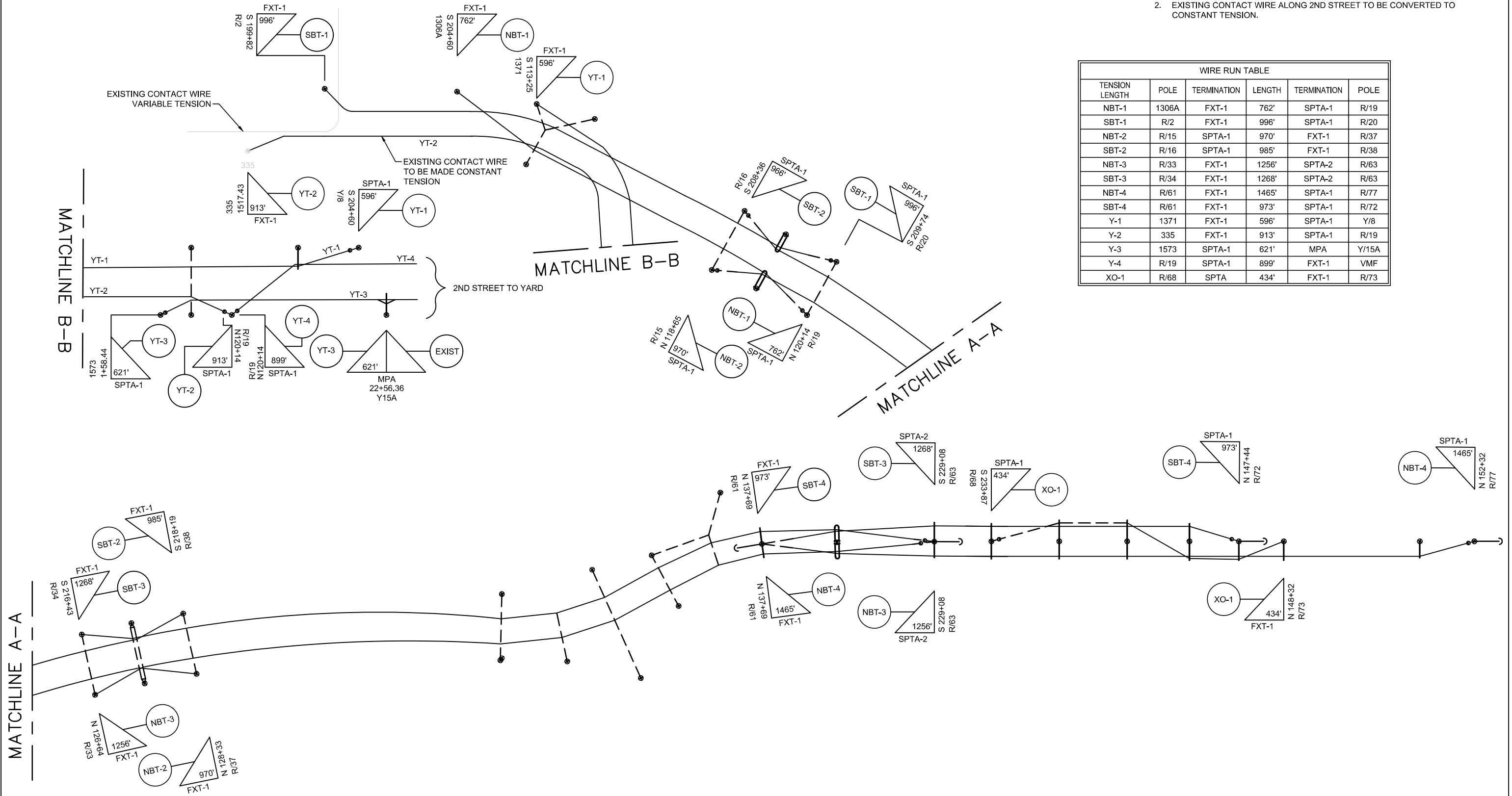
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OCS LAYOUT PLAN
KEY MAP

| | |
|---------------------------------|-------------------------|
| SCALE FOR 22"x34": 1" = 150' | FILENAME: |
| \$FILES\$ | CONTRACT NO.: |
| \$CONTRACT\$ | VOLUME: |
| \$VOLUME\$ | DRAWING NO.: SHEET NO.: |
| Y198 | 383 |

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - EXISTING CONTACT WIRE ALONG 2ND STREET TO BE CONVERTED TO CONSTANT TENSION.

| WIRE RUN TABLE | | | | | |
|----------------|-------|-------------|--------|-------------|-------|
| TENSION LENGTH | POLE | TERMINATION | LENGTH | TERMINATION | POLE |
| NBT-1 | 1306A | FXT-1 | 762' | SPTA-1 | R/19 |
| SBT-1 | R/2 | FXT-1 | 996' | SPTA-1 | R/20 |
| NBT-2 | R/15 | SPTA-1 | 970' | FXT-1 | R/37 |
| SBT-2 | R/16 | SPTA-1 | 985' | FXT-1 | R/38 |
| NBT-3 | R/33 | FXT-1 | 1256' | SPTA-2 | R/63 |
| SBT-3 | R/34 | FXT-1 | 1268' | SPTA-2 | R/63 |
| NBT-4 | R/61 | FXT-1 | 1465' | SPTA-1 | R/77 |
| SBT-4 | R/61 | FXT-1 | 973' | SPTA-1 | R/72 |
| Y-1 | 1371 | FXT-1 | 596' | SPTA-1 | Y/8 |
| Y-2 | 335 | FXT-1 | 913' | SPTA-1 | R/19 |
| Y-3 | 1573 | SPTA-1 | 621' | MPA | Y/15A |
| Y-4 | R/19 | SPTA-1 | 899' | FXT-1 | VMF |
| XO-1 | R/68 | SPTA | 434' | FXT-1 | R/73 |

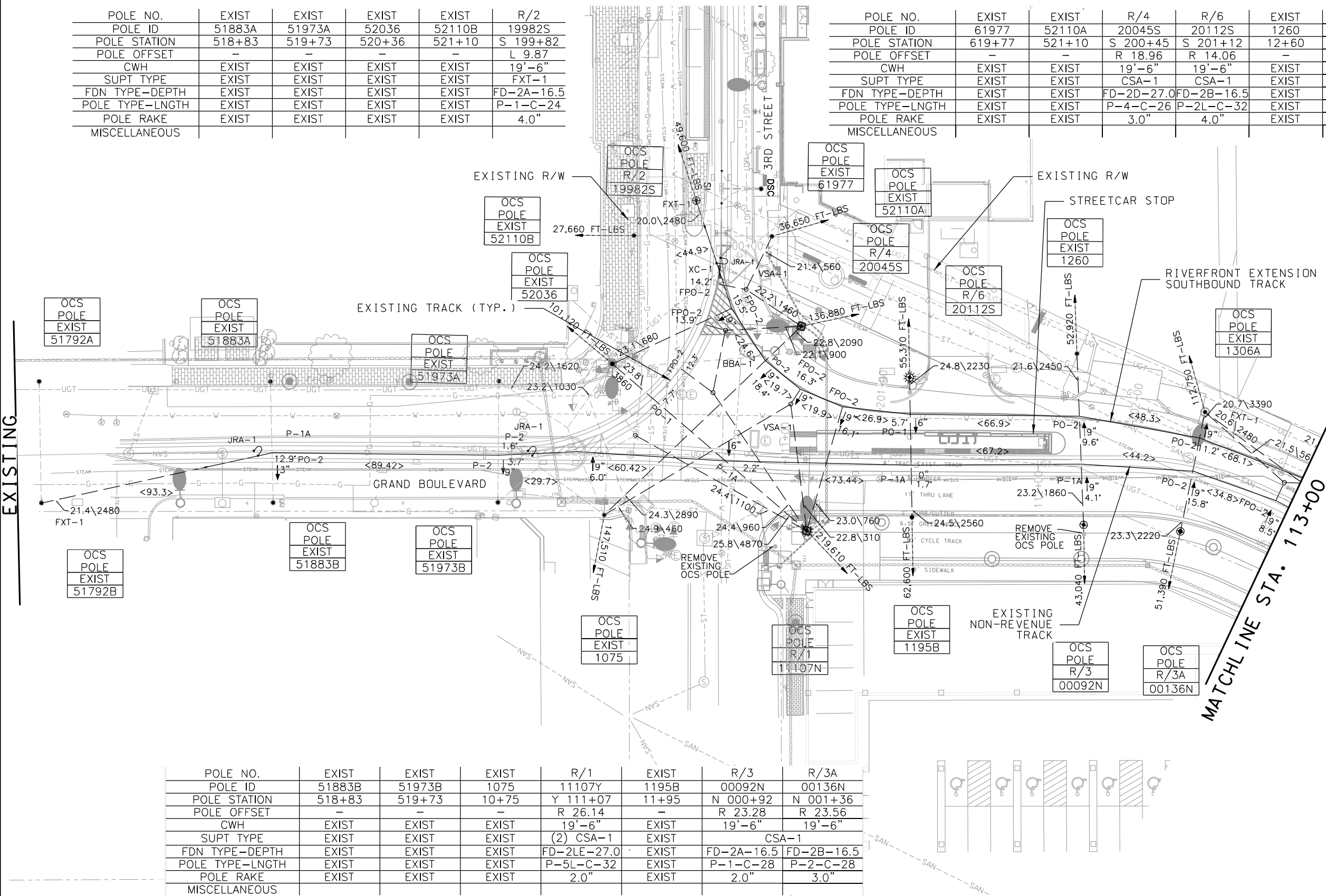


| | | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|------|--|----------------------|------------------|--|---|---|--|---------------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | | <p>The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270</p> | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | <p>SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y199.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y199</p> | <p>SHEET NO.: 384</p> | |
| | | | CHECKED BY | BP | | | | | | | | | | |
| | | | DRAWN BY | CA | | | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | | | |
| PLOT DATE: 12/21/2022 | | | 2:22:04 PM | | DATE | 12/23/2022 | NOT FOR CONSTRUCTION | | | | | | | |

| | | | | | |
|-----------------|--------|--------|--------|--------|------------|
| POLE NO. | EXIST | EXIST | EXIST | EXIST | R/2 |
| POLE ID | 51883A | 51973A | 52036 | 52110B | 19982S |
| POLE STATION | 518+83 | 519+73 | 520+36 | 521+10 | S 199+82 |
| POLE OFFSET | - | - | - | - | L 9.87 |
| CWH | EXIST | EXIST | EXIST | EXIST | 19'-6" |
| SUPT TYPE | EXIST | EXIST | EXIST | EXIST | FXT-1 |
| FDN TYPE-DEPTH | EXIST | EXIST | EXIST | EXIST | FD-2A-16.5 |
| POLE TYPE-LNGTH | EXIST | EXIST | EXIST | EXIST | P-1-C-24 |
| POLE RAKE | EXIST | EXIST | EXIST | EXIST | 4.0" |
| MISCELLANEOUS | | | | | |

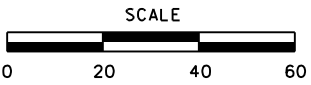
| | | | | | | |
|-----------------|--------|--------|------------|------------|-------|-------|
| POLE NO. | EXIST | EXIST | R/4 | R/6 | EXIST | EXIST |
| POLE ID | 61977 | 52110A | 20045S | 20112S | 1260 | 1306A |
| POLE STATION | 619+77 | 521+10 | S 200+45 | S 201+12 | 12+60 | 13+06 |
| POLE OFFSET | - | - | R 18.96 | R 14.06 | - | - |
| CWH | EXIST | EXIST | 19'-6" | 19'-6" | EXIST | EXIST |
| SUPT TYPE | EXIST | EXIST | CSA-1 | CSA-1 | EXIST | FXT-1 |
| FDN TYPE-DEPTH | EXIST | EXIST | FD-2D-27.0 | FD-2B-16.5 | EXIST | EXIST |
| POLE TYPE-LNGTH | EXIST | EXIST | P-4-C-26 | P-2L-C-32 | EXIST | EXIST |
| POLE RAKE | EXIST | EXIST | 3.0" | 4.0" | EXIST | EXIST |
| MISCELLANEOUS | | | | | | |

EXISTING



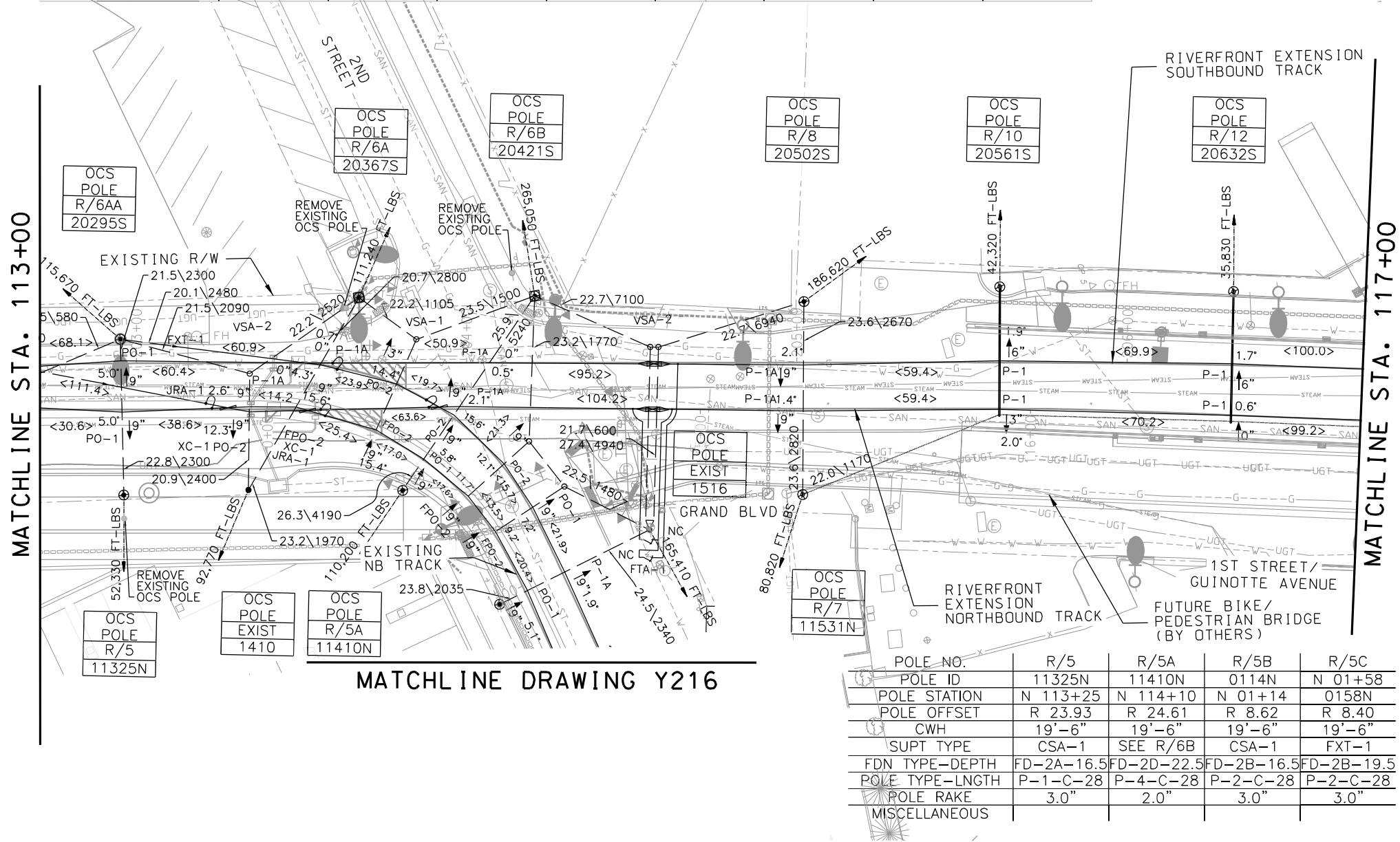
- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. OCS POLES R/1, R/3 AND R/5 ARE TO BE INSTALLED IN CONTAMINATED SOIL LOCATION. CONTAMINATED SOIL SHALL BE REMOVE IN ACCORDANCE WITH ALL STATE AND FEDERAL REGULATIONS BY CONTRACTOR .
 4. REMOVAL OF EXISTING OCS POLES TO BE DONE AFTER THE EXISTING AND PROPOSED OCS HAS BEEN FULLY SUPPORTED AS PER DESIGN DRAWINGS AS PART OF THIS CONTRACT. AFTER REMOVAL OF OCS POLES, EXISTING OCS FOUNDATIONS TO BE DEMOLISHED TO AT LEAST 3 FEET BELOW GRADE. CONTRACTOR TO COORDINATE REMOVAL AND DEMO OF EXISTING OCS POLES AND FOUNDATIONS WITH ALL IMPACTED DISCIPLINES.
 5. CONTRACTOR MAY USE EXISTING OCS ASSEMBLIES FOR THE EXISTING ALIGNMENT. ALLOCATED OCS ASSEMBLIES AT THESE LOCATIONS TO BE USED WHEN EXISTING ASSEMBLIES ARE NO LONGER VIABLE DUE TO THE PROPOSED WORK.
 6. INTERFACE WITH THE EXISTING SYSTEM HAS BEEN DESIGN BASED ON EXISTING POLE DATA FROM "KANSAS CITY DOWNTOWN STREETCAR PROJECT - VOLUME 4 - SYSTEMS" DATED MARCH 2014. POLE AND FOUNDATIONS SIZES HAVE NOT BEEN CONFIRMED BY HNTB.

| | | | | | | | |
|-----------------|--------|--------|-------|-------------|-------|------------|------------|
| POLE NO. | EXIST | EXIST | EXIST | R/1 | EXIST | R/3 | R/3A |
| POLE ID | 51883B | 51973B | 1075 | 11107Y | 1195B | 00092N | 00136N |
| POLE STATION | 518+83 | 519+73 | 10+75 | Y 111+07 | 11+95 | N 000+92 | N 001+36 |
| POLE OFFSET | - | - | - | R 26.14 | - | R 23.28 | R 23.56 |
| CWH | EXIST | EXIST | EXIST | 19'-6" | EXIST | 19'-6" | 19'-6" |
| SUPT TYPE | EXIST | EXIST | EXIST | (2) CSA-1 | EXIST | CSA-1 | |
| FDN TYPE-DEPTH | EXIST | EXIST | EXIST | FD-2LE-27.0 | EXIST | FD-2A-16.5 | FD-2B-16.5 |
| POLE TYPE-LNGTH | EXIST | EXIST | EXIST | P-5L-C-32 | EXIST | P-1-C-28 | P-2-C-28 |
| POLE RAKE | EXIST | EXIST | EXIST | 2.0" | EXIST | 2.0" | 3.0" |
| MISCELLANEOUS | | | | | | | |



| | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|------|--|---|--|--|--|--|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | | <p>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</p> | <p>OCS LAYOUT PLAN STA BEGIN TO STA 113+00</p> | <p>SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y201.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: Y201 385</p> |
| | | | CHECKED BY | BP | | | HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | <p>The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270</p> | | | | |
| | | | DRAWN BY | DC | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:00:10 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | | | | |

| | | | | | | | | |
|-----------------|------------|------------|------------|-------|------------|------------|------------|------------|
| POLE NO. | R/6AA | R/6A | R/6B | EXIST | R/8 | R/7 | R/10 | R/12 |
| POLE ID | 20295S | 20367S | 20421S | 1516 | 20502S | 11531N | 20561S | 20632S |
| POLE STATION | S 202+95 | S 203+67 | S 204+21 | 1516 | S 205+02 | N 115+31 | S 205+61 | S 206+32 |
| POLE OFFSET | R 7.31 | R 19.86 | R 20.27 | EXIST | R 18.45 | R 26.03 | R 22.91 | R 22.34 |
| CWH | EXIST | 19'-6" | 19'-6" | - | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | FXT-1 | CSA-1 | CSA-1 | - | CSA-1 | BA-2 | BA-2 | BA-2 |
| FDN TYPE-DEPTH | FD-2D-22.5 | FD-2D-27.0 | FD-2E-27.0 | EXIST | FD-2E-27.0 | FD-2B-22.5 | FD-2C-16.5 | FD-2C-16.5 |
| POLE TYPE-LNGTH | P-4-C-28 | P-4-C-28 | P-5-C-28 | EXIST | P-5-C-28 | P-2-C-28 | P-3-C-34 | P-3-C-38 |
| POLE RAKE | 2.0" | 5.0" | 7.0" | EXIST | 1.0" | 5.0" | 5.0" | 6.0" |
| MISCELLANEOUS | | | | | | | | |

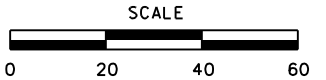


MATCHLINE DRAWING Y216

NOTES:

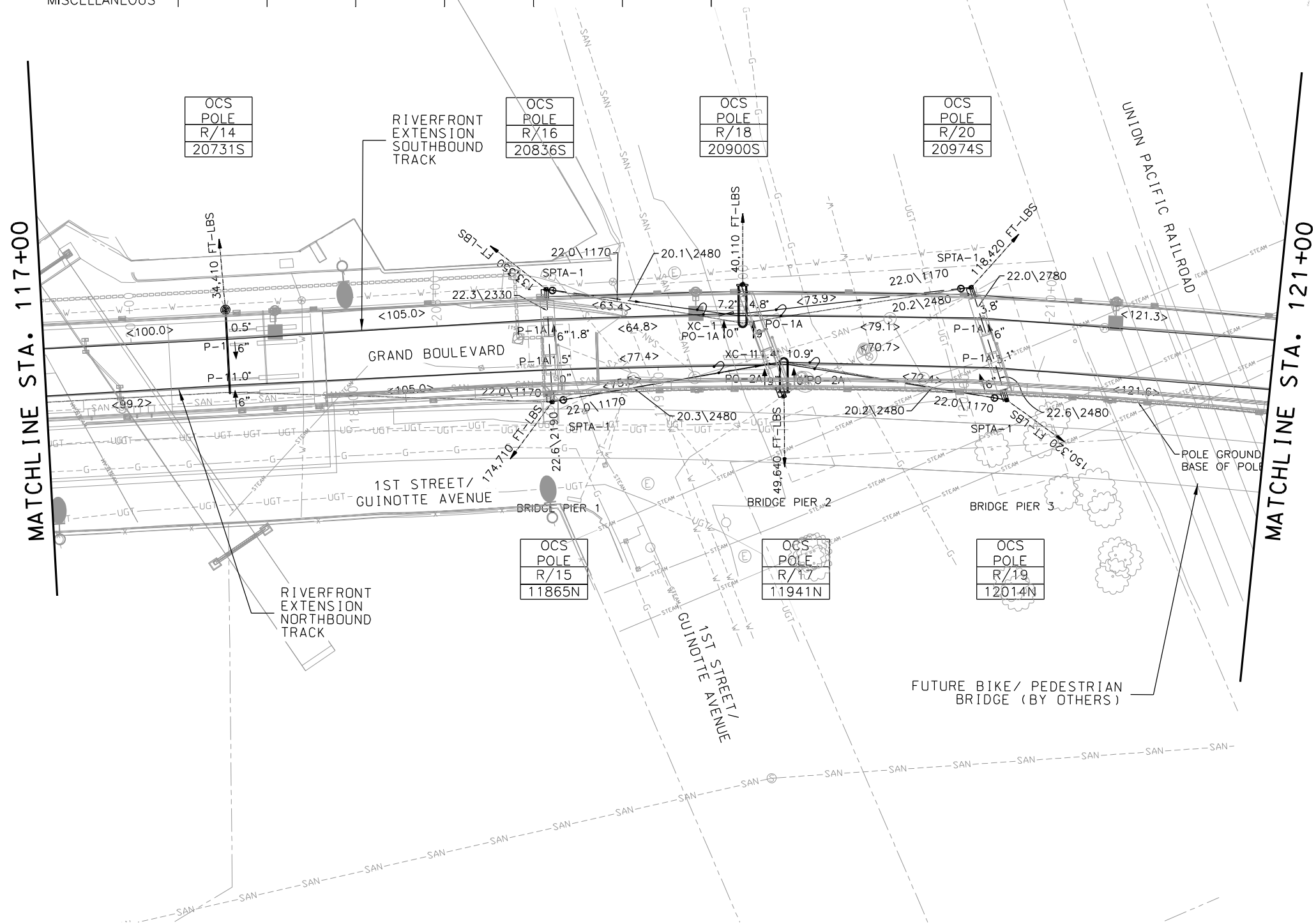
- FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
- POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
- OCS POLES R/1, R/3 AND R/5 ARE TO BE INSTALLED IN CONTAMINATED SOIL LOCATION. CONTAMINATED SOIL SHALL BE REMOVE IN ACCORDANCE WITH ALL STATE AND FEDERAL REGULATIONS BY CONTRACTOR .
- REMOVAL OF EXISTING OCS POLES TO BE DONE AFTER THE EXISTING AND PROPOSED OCS HAS BEEN FULLY SUPPORTED AS PER DESIGN DRAWINGS AS PART OF THIS CONTRACT. AFTER REMOVAL OF OCS POLES, EXISTING OCS FOUNDATIONS TO BE DEMOLISHED TO AT LEAST 3 FEET BELOW GRADE. CONTRACTOR TO COORDINATE REMOVAL AND DEMO OF EXISTING OCS POLES AND FOUNDATIONS WITH ALL IMPACTED DISCIPLINES.
- INTERFACE WITH THE EXISTING SYSTEM HAS BEEN DESIGN BASED ON EXISTING POLE DATA FROM "KANSAS CITY DOWNTOWN STREETCAR PROJECT - VOLUME 4 - SYSTEMS" DATED MARCH 2014. POLE AND FOUNDATIONS SIZES SHALL BE CONFIRMED IN FIELD BY CONTRACTOR.
- SEE DRAWING Y217 FOR LARGER SCALE PLAN.

| | | | | |
|-----------------|------------|------------|------------|------------|
| POLE NO. | R/5 | R/5A | R/5B | R/5C |
| POLE ID | 11325N | 11410N | 0114N | N 01+58 |
| POLE STATION | N 113+25 | N 114+10 | N 01+14 | 0158N |
| POLE OFFSET | R 23.93 | R 24.61 | R 8.62 | R 8.40 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | CSA-1 | SEE R/6B | CSA-1 | FXT-1 |
| FDN TYPE-DEPTH | FD-2A-16.5 | FD-2D-22.5 | FD-2B-16.5 | FD-2B-19.5 |
| POLE TYPE-LNGTH | P-1-C-28 | P-4-C-28 | P-2-C-28 | P-2-C-28 |
| POLE RAKE | 3.0" | 2.0" | 3.0" | 3.0" |
| MISCELLANEOUS | | | | |

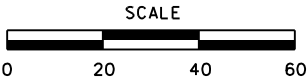


| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|------|--|--|---|---|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y202.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: Y202 386 |
| | | | CHECKED BY | BP | | | | HNTB | | |
| | | | DRAWN BY | DC | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | |
| | | | CHECKED BY | BP | | | | | | |
| | | | APPROVED BY | NKS | | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:00:24 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | | |

| | | | | | | | |
|-----------------|------------|-------------------|----------|----------|----------|-------------------|----------|
| POLE NO. | R/14 | R/16 | R/15 | R/18 | R/17 | R/20 | R/19 |
| POLE ID | 20731S | 20836S | 11865N | 20900S | 11941N | 20974S | 12014N |
| POLE STATION | S 207+31 | S 208+36 | N 118+65 | S 209+00 | N 119+41 | S 209+74 | N 120+14 |
| POLE OFFSET | R 9.12 | R 10.25 | R 10.45 | R 10.16 | R 10.25 | R 10.31 | R 9.91 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-9" | 19'-9" |
| SUPT TYPE | BA-2 | CSA-1; SPTA-1 (2) | | BA-3 | BA-3 | CSA-1; SPTA-1 (2) | |
| FDN TYPE-DEPTH | FD-2C-16.5 | - | - | - | - | - | - |
| POLE TYPE-LNGTH | P-3-C-42 | P-4B-32 | P-4B-32 | P-1B-34 | P-1B-34 | P-4B-32 | P-4B-32 |
| POLE RAKE | 6.0" | 5.0" | 4.0" | 2.0" | 3.0" | 5.0" | 4.0" |
| MISCELLANEOUS | | | | | | | |

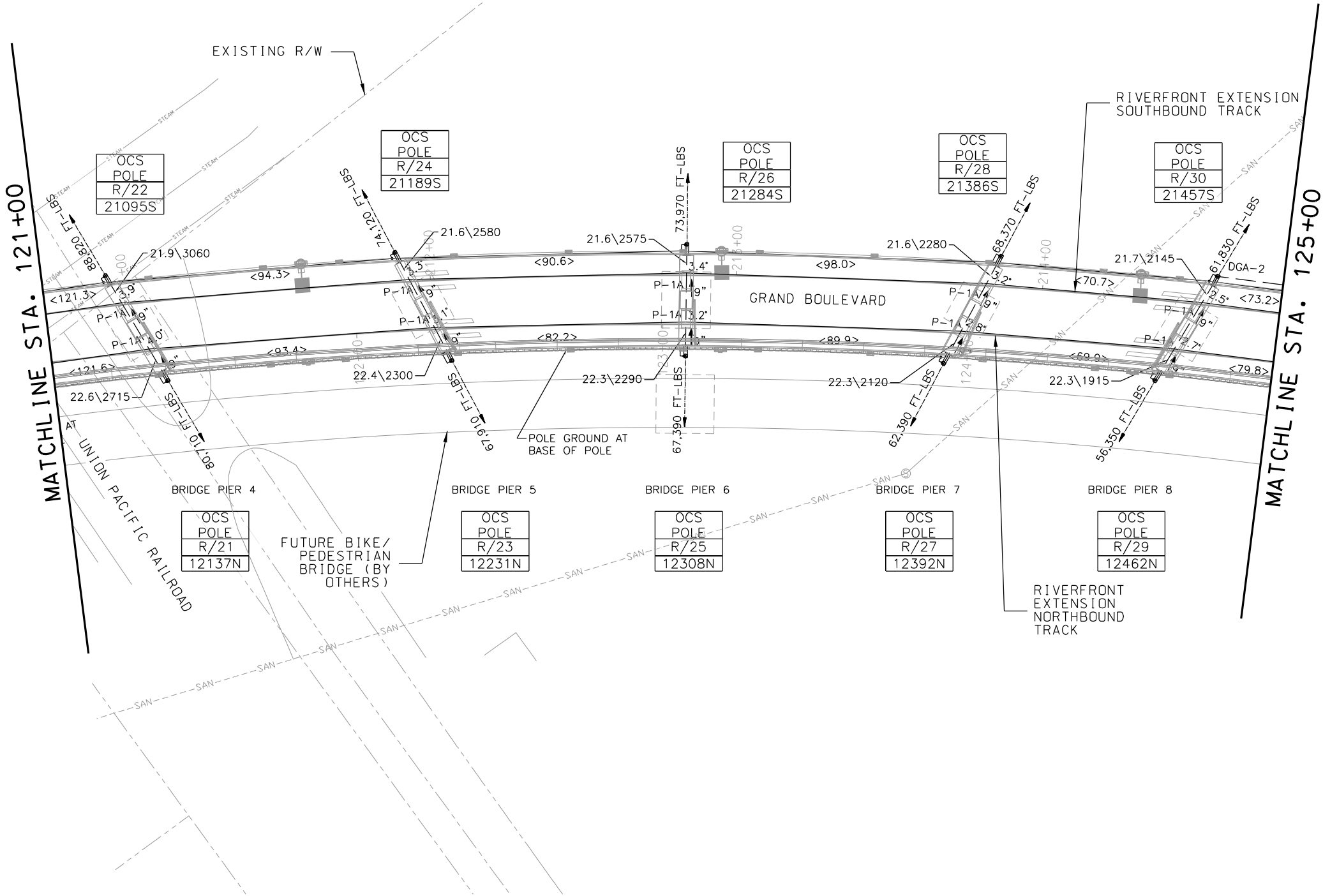
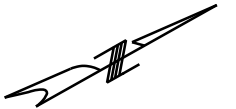


- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.

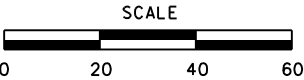


| | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|---|---|--|---|---|-----------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": H: 1" = 20' | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64105 816-360-2700 Certificate of Authority: 000856 |  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | OCS LAYOUT PLAN STA 117+00 TO STA 121+00 | FILENAME: Y203.dgn |
| | | | DRAWN BY | DC | | | | | | | CONTRACT NO.: *** |
| | | | CHECKED BY | BP | | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | DRAWING NO.: Y203 | SHEET NO.: 387 | | | |
| PLOT DATE: 12/22/2022 | | | 2:00:36 PM | | DATE | | 12-23-2022 | | | NOT FOR CONSTRUCTION | |

| | | | | | | | | | | |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| POLE NO. | R/22 | R/21 | R/24 | R/23 | R/26 | R/25 | R/28 | R/27 | R/30 | R/29 |
| POLE ID | 21095S | 12137N | 21189S | 12231N | 21284S | 12308N | 21386S | 12392N | 21457S | 12462N |
| POLE STATION | S 210+95 | N 121+37 | S 221+89 | N 122+31 | S 212+84 | N 123+08 | S 213+86 | N 123+92 | S 214+57 | N 124+62 |
| POLE OFFSET | R 10.02 | R 10.11 | R 9.73 | R 10.30 | R 10.02 | R 10.27 | R 9.92 | R 10.17 | R 9.72 | R 10.25 |
| CWH | 19'-9" | 19'-9" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | CSA-1 | | CSA-1 | | CSA-1 | | CSA-1 | | CSA-1 | |
| FDN TYPE-DEPTH | - | - | - | - | - | - | - | - | - | - |
| POLE TYPE-LNGTH | P-2B-32 | P-2B-32 | P-2B-32 | P-1B-32 | P-2B-32 | P-1B-32 | P-1B-32 | P-1B-32 | P-3B-32 | P-1B-32 |
| POLE RAKE | 5.0" | 4.0" | 4.0" | 3.0" | 4.0" | 3.0" | 4.0" | 3.0" | 3.0" | 3.0" |
| MISCELLANEOUS | | | | | | | | | | |

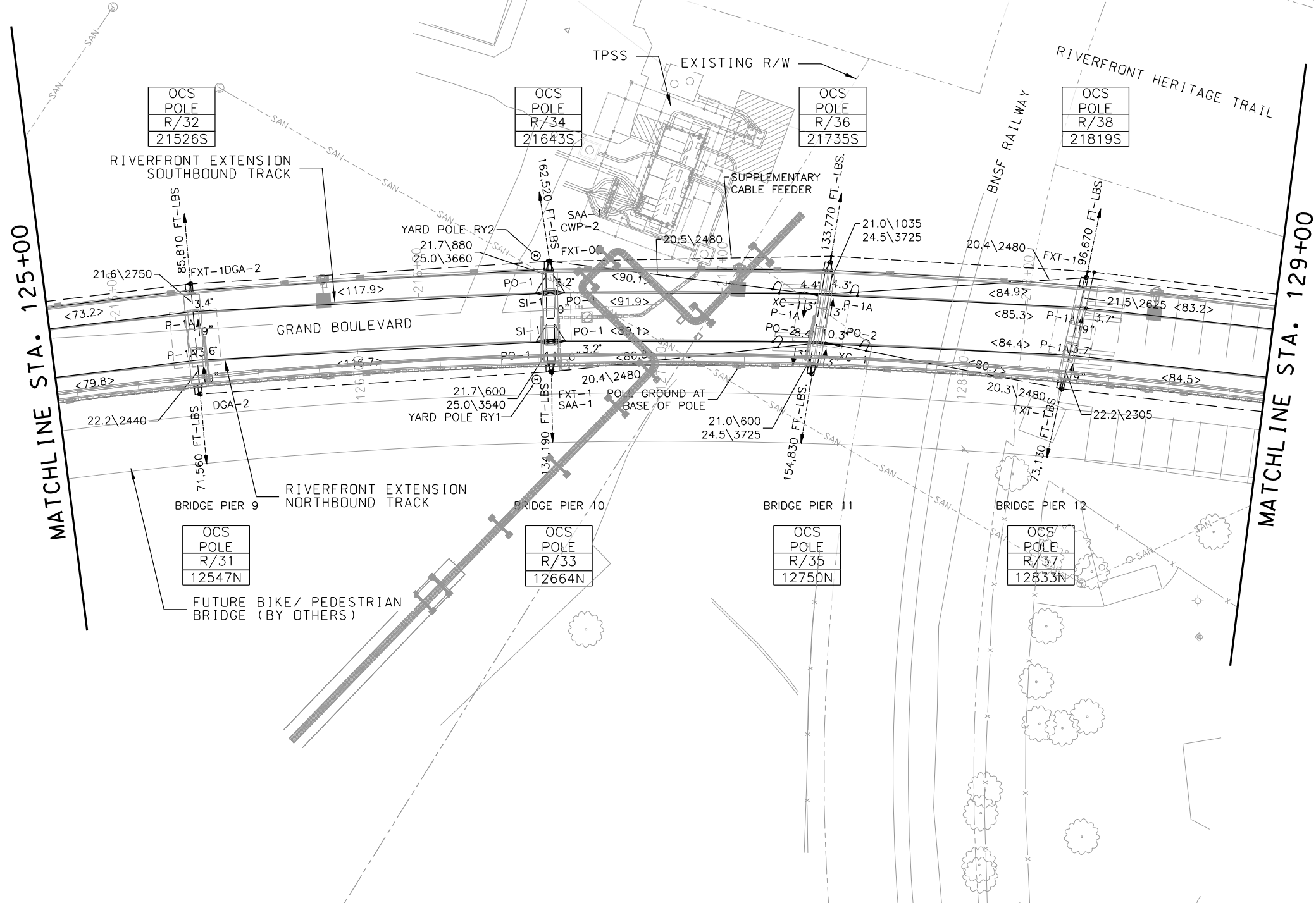


- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.

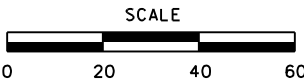


| | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|---|----------------------|--|------------------|---|--|---|--------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | | DATE: 12-23-2022 |  HNTB The HNTB Companies 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  HNTB The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": |
| | | | CHECKED BY | BP | | | | | H: 1" = 20' | | | | |
| | | | DRAWN BY | DC | | | | | FILENAME: | | | | |
| | | | CHECKED BY | BP | | | | | Y204.dgn | | | | |
| | | | APPROVED BY | NKS | | | | | CONTRACT NO.: | | | | |
| PLOT DATE: 12/22/2022 | | | 2:00:47 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | | | OCS LAYOUT PLAN STA 121+00 TO STA 125+00 | CONTRACT NO. *** | |
| | | | | | | | | | | | VOLUME: 1 | DRAWING NO.: Y204 | SHEET NO.: 388 |

| | | | | | | | | | | |
|-----------------|----------|----------|-----------|--------------------------|----------|-----------|----------|----------|------------------|----------|
| POLE NO. | R/32 | R/31 | RY1 | R/34 | R/33 | RY2 | R/36 | R/35 | R/38 | R/37 |
| POLE ID | 21526S | 12547N | RY1 | 21643S | 12664N | RY2 | 21735S | 12750N | 21819S | 12833N |
| POLE STATION | S 215+26 | N 125+47 | - | S 216+43 | N 126+64 | - | S 217+35 | N 127+50 | S 218+19 | N 128+33 |
| POLE OFFSET | R 9.99 | R 10.44 | - | R 10.44 | R 10.00 | - | R 10.60 | R 10.28 | R 10.70 | R 10.48 |
| CWH | 19'-6" | 19'-6" | - | 19'-6" | 19'-6" | - | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | CSA-1 | | - | HSA-1 (2); FXT-1; FXT-02 | | - | OLP-1 | | CSA-1; FXT-1 (2) | |
| FDN TYPE-DEPTH | - | - | FD-3FA-12 | - | - | FD-3FA-12 | - | - | - | - |
| POLE TYPE-LNGTH | P-3B-32 | P-3B-32 | W 12 X 65 | P-5B-34 | P-5B-34 | W 12 X 65 | P-4B-34 | P-4B-34 | P-3B-32 | P-2B-32 |
| POLE RAKE | 4.0" | 3.0" | - | 3.0" | 3.0" | - | 4.0" | 3.0" | 2.0" | 4.0" |
| SFH (FSA-01) | - | - | - | 22'-6" | - | - | 22'-0" | - | 21'-6" | - |

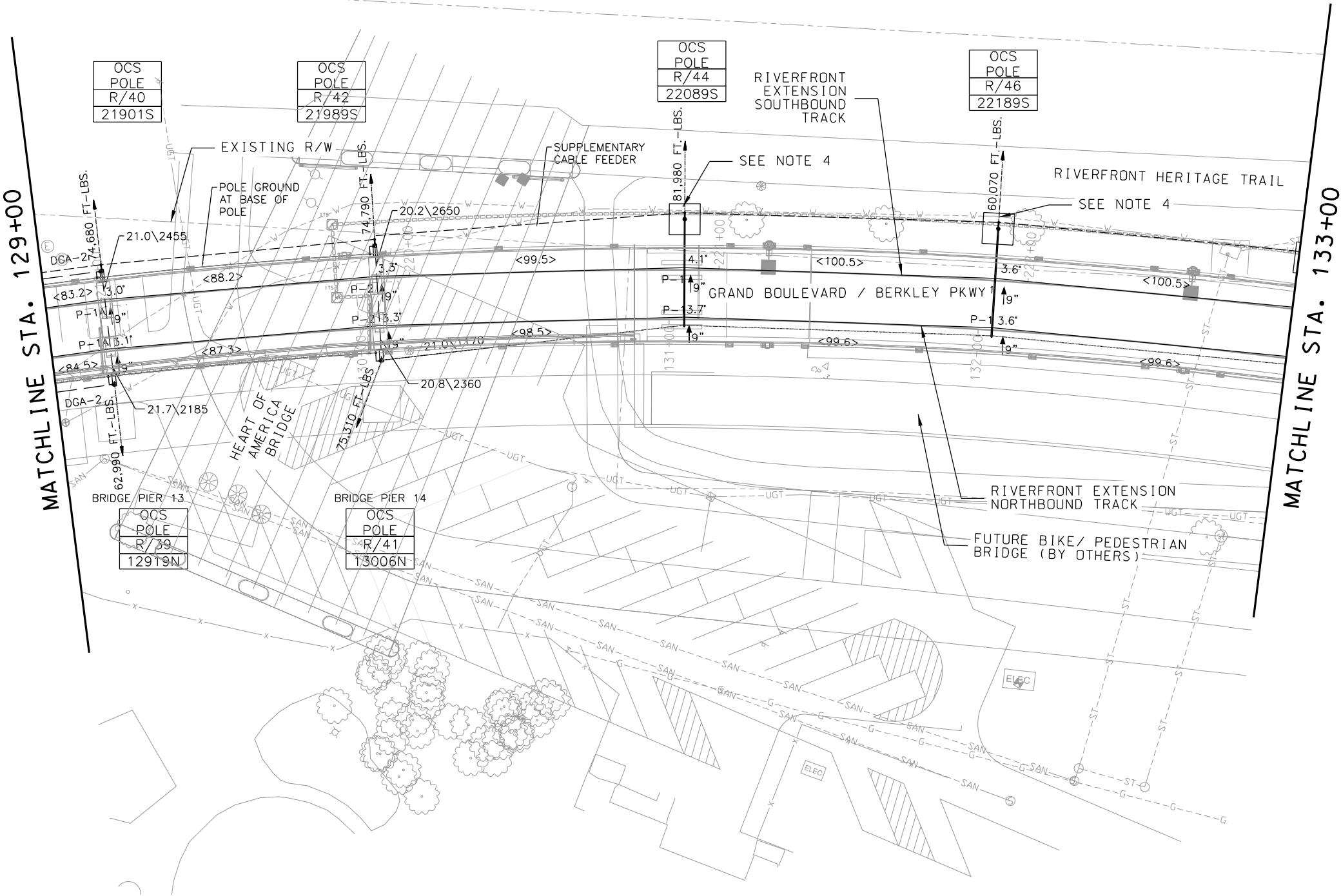


- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.

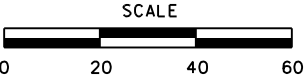


| | | | | | | | | | | | |
|----------------------------------|------|-------------|-------------|------------|---|---|--|--|---|---|-----------------------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": H: 1" = 20' | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | OCS LAYOUT PLAN STA 125+00 TO STA 129+00 | FILENAME: Y205.dgn |
| | | | DRAWN BY | DC | | | | | | | CONTRACT NO.: CONTRACT NO. *** |
| | | | CHECKED BY | BP | | | | | | | VOLUME: 1 |
| | | | APPROVED BY | NKS | | | | | | | DRAWING NO.: Y205 |
| PLOT DATE: 12/22/2022 2:00:58 PM | | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | | | | | |

| | | | | | | |
|-----------------|-------------|----------|-------------|-------------|-------------|----------|
| POLE NO. | R/40 | R/39 | R/42 | R/41 | R/44 | R/46 |
| POLE ID | 21901S | 12919N | 21989S | 13006N | 22089S | 22189S |
| POLE STATION | S 219+01 | N 129+19 | S 219+89 | N 130+06 | S 220+89 | S 221+89 |
| POLE OFFSET | R 10.01 | R 10.78 | R 10.61 | R 10.45 | R 16.43 | R 16.80 |
| CWH | 18'-10 1/2" | 19'-6" | 18'-10 1/2" | 18'-10 1/2" | 18'-10 1/2" | 19'-0" |
| SUPT TYPE | CSA-1 | | CSA-1 | | BA-2 | BA-2 |
| FDN TYPE-DEPTH | - | - | - | - | FD-4D | FD-4D |
| POLE TYPE-LNGTH | P-3B-32 | P-3B-30 | P-2B-30 | P-2B-30 | P-4-54 | P-4-48 |
| POLE RAKE | 3.0" | 2.0" | 4.0" | 4.0" | 2.0" | 3.0" |
| SFH (FSA-01) | 21'-0" | - | 20'-6" | - | 21'-3" | 22'-0" |

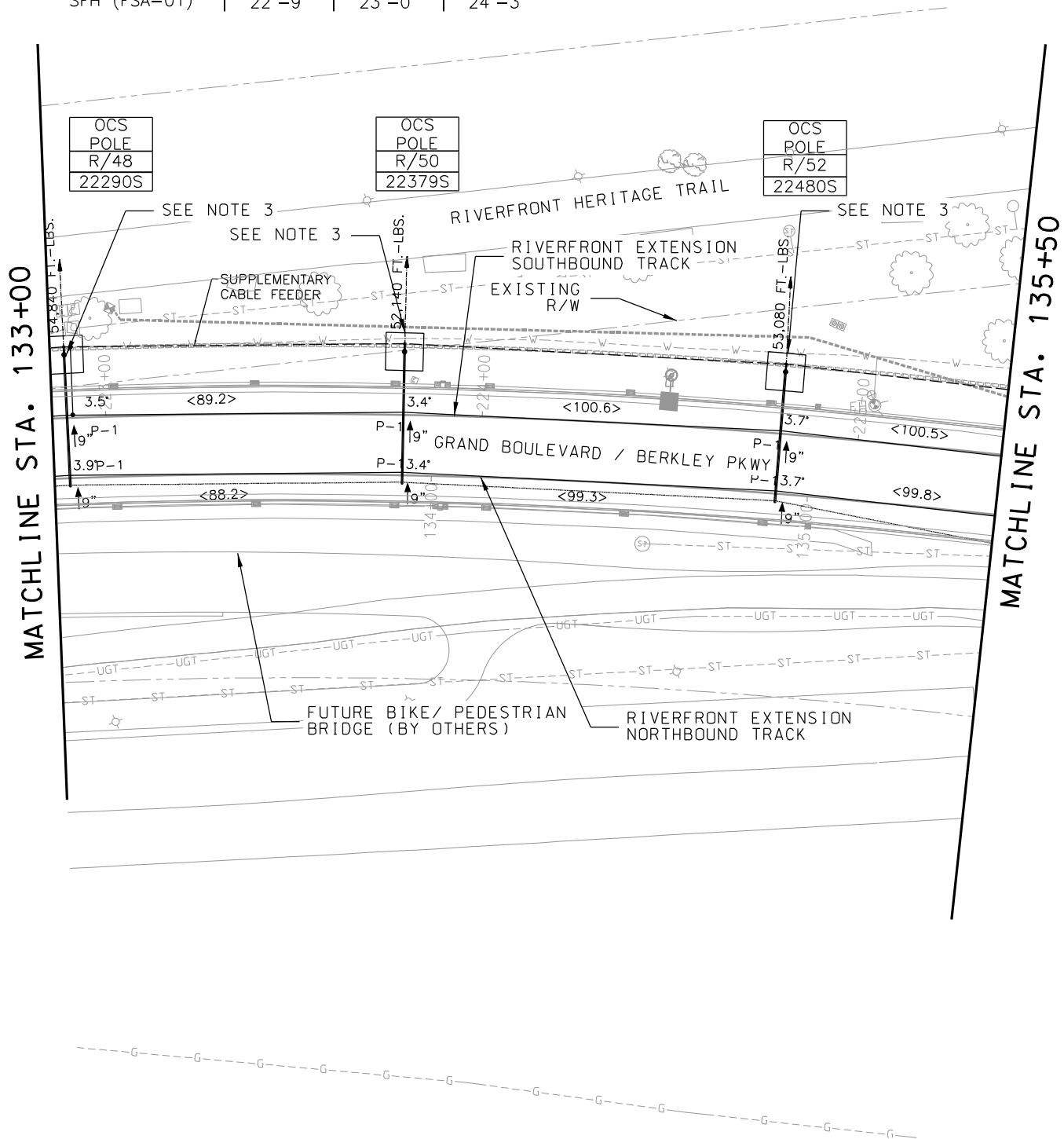


- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR BRIDGE ATTACHMENT DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. CONTRACTOR SHALL PROVIDE SHORING FOR FOOTING EXCAVATIONS ON POLES ADJACENT TO MSE BRIDGE APPROACH.

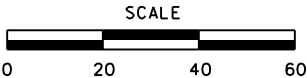


| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|---|---|--|--|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | <p>ISSUE FOR BID</p> <div><p>HDR Engineering, Inc.</p><p>10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</p></div> <div><p>The HNTB Companies</p><p>715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270</p></div> | <p>DATE: 12-23-2022</p> <p>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</p> | <p>OCS LAYOUT PLAN</p> <p>STA 129+00 TO STA 133+00</p> | <p>SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y206.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: Y206 390</p> |
| | | | CHECKED BY | BP | | | | | | |
| | | | DRAWN BY | DC | | | | | | |
| | | | CHECKED BY | BP | | | | | | |
| | | | APPROVED BY | NKS | | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:01:07 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | | |

| | | | |
|-----------------|----------|----------|----------|
| POLE NO. | R/48 | R/50 | R/52 |
| POLE ID | 22290S | 22379S | 22480S |
| POLE STATION | S 222+90 | S 223+79 | S 224+80 |
| POLE OFFSET | R 16.78 | R 16.79 | R 16.43 |
| CWH | 19'-3" | 19'-3" | 19'-6" |
| SUPT TYPE | BA-2 | BA-2 | BA-2 |
| FDN TYPE-DEPTH | FD-4C | FD-4C | FD-4C |
| POLE TYPE-LNGTH | P-3-44 | P-3-42 | P-3-40 |
| POLE RAKE | 6.0" | 5.0" | 4.0" |
| SFH (FSA-01) | 22'-9" | 23'-0" | 24'-3" |



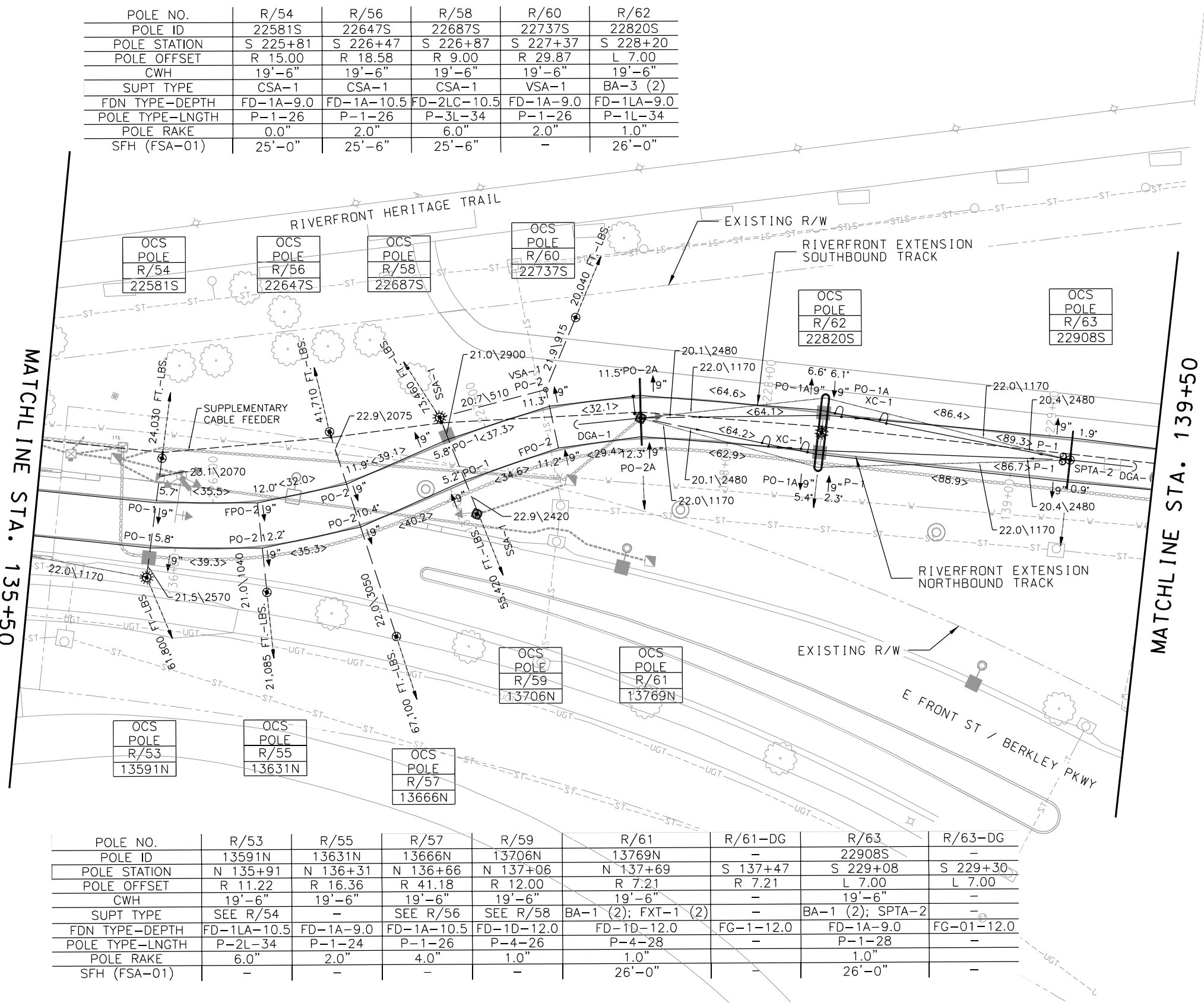
- NOTES:**
- 1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 - 3. CONTRACTOR SHALL PROVIDE SHORING FOR FOOTING EXCAVATIONS ON POLES ADJACENT TO MSE BRIDGE APPROACH.



| | | | | | | | | | | |
|----------------------------------|------|-------------|--------------------|---|---|---|--|---|-----------------------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": H: 1" = 20' | |
| | | | CHECKED BY BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64105 816-360-2700 Certificate of Authority: 000856 |  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | FILENAME: Y207.dgn | |
| | | | DRAWN BY DC | | | | | | CONTRACT NO.: | |
| | | | CHECKED BY BP | | | | | | CONTRACT NO. *** | |
| | | | APPROVED BY NKS | | | | | | VOLUME: 1 | |
| PLOT DATE: 12/22/2022 2:01:16 PM | | | DATE 12-23-2022 | NOT FOR CONSTRUCTION | | | OCS LAYOUT PLAN STA 133+00 TO STA 135+50 | | DRAWING NO.: Y207 | SHEET NO.: 391 |

| | | | | | |
|-----------------|-----------|------------|-------------|-----------|------------|
| POLE NO. | R/54 | R/56 | R/58 | R/60 | R/62 |
| POLE ID | 22581S | 22647S | 22687S | 22737S | 22820S |
| POLE STATION | S 225+81 | S 226+47 | S 226+87 | S 227+37 | S 228+20 |
| POLE OFFSET | R 15.00 | R 18.58 | R 9.00 | R 29.87 | L 7.00 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | CSA-1 | CSA-1 | CSA-1 | VSA-1 | BA-3 (2) |
| FDN TYPE-DEPTH | FD-1A-9.0 | FD-1A-10.5 | FD-2LC-10.5 | FD-1A-9.0 | FD-1LA-9.0 |
| POLE TYPE-LNGTH | P-1-26 | P-1-26 | P-3L-34 | P-1-26 | P-1L-34 |
| POLE RAKE | 0.0" | 2.0" | 6.0" | 2.0" | 1.0" |
| SFH (FSA-01) | 25'-0" | 25'-6" | 25'-6" | - | 26'-0" |

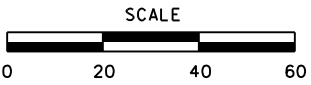
MATCHLINE STA. 135+50



MATCHLINE STA. 139+50

- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.

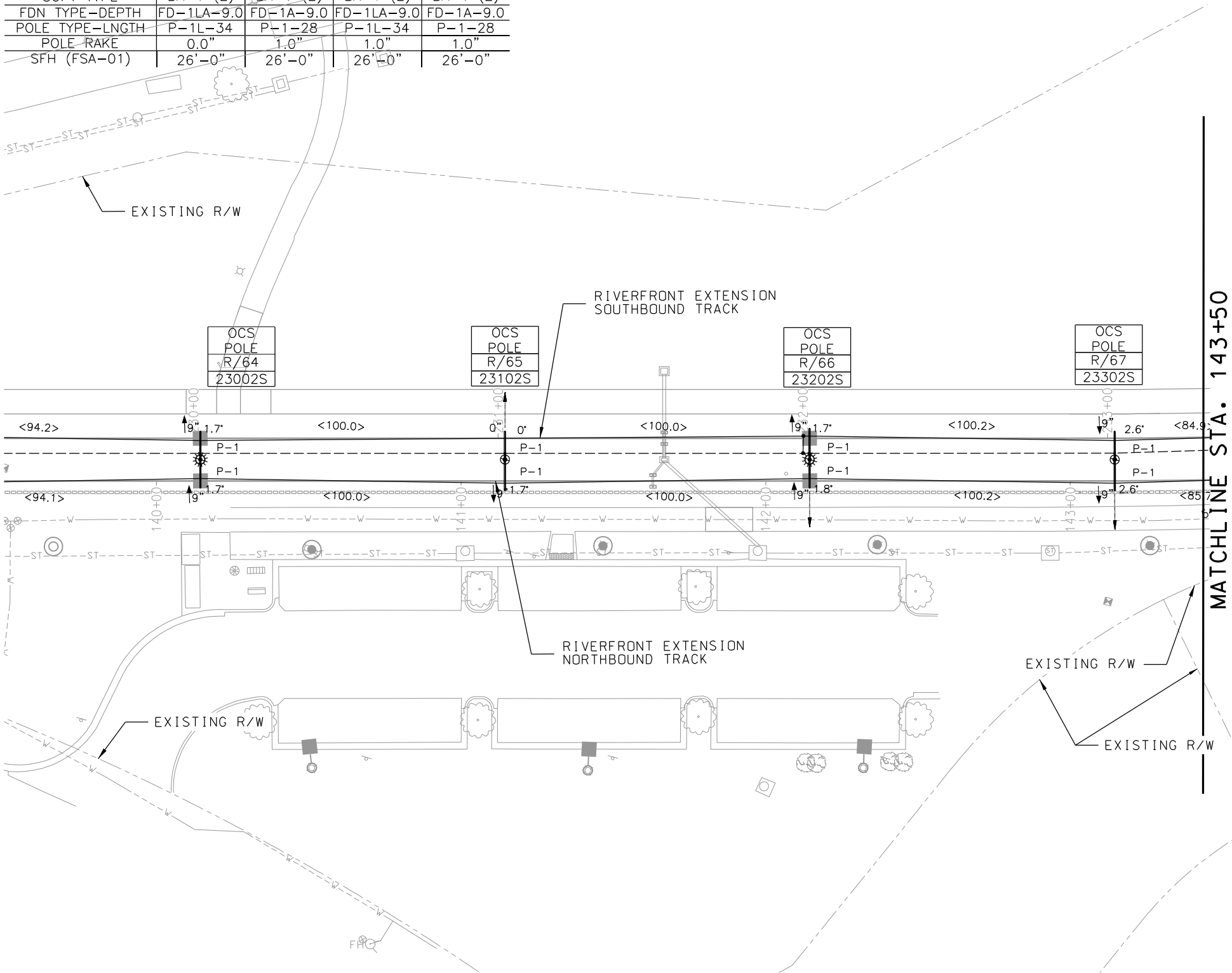
| | | | | | | | | |
|-----------------|-------------|-----------|------------|------------|---------------------|-----------|------------------|------------|
| POLE NO. | R/53 | R/55 | R/57 | R/59 | R/61 | R/61-DG | R/63 | R/63-DG |
| POLE ID | 13591N | 13631N | 13666N | 13706N | 13769N | - | 22908S | - |
| POLE STATION | N 135+91 | N 136+31 | N 136+66 | N 137+06 | N 137+69 | S 137+47 | S 229+08 | S 229+30 |
| POLE OFFSET | R 11.22 | R 16.36 | R 41.18 | R 12.00 | R 7.21 | R 7.21 | L 7.00 | L 7.00 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | - | 19'-6" | - |
| SUPT TYPE | SEE R/54 | - | SEE R/56 | SEE R/58 | BA-1 (2); FXT-1 (2) | - | BA-1 (2); SPTA-2 | - |
| FDN TYPE-DEPTH | FD-1LA-10.5 | FD-1A-9.0 | FD-1A-10.5 | FD-1D-12.0 | FD-1D-12.0 | FC-1-12.0 | FD-1A-9.0 | FG-01-12.0 |
| POLE TYPE-LNGTH | P-2L-34 | P-1-24 | P-1-26 | P-4-26 | P-4-28 | - | P-1-28 | - |
| POLE RAKE | 6.0" | 2.0" | 4.0" | 1.0" | 1.0" | - | 1.0" | - |
| SFH (FSA-01) | - | - | - | - | 26'-0" | - | 26'-0" | - |



| | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|------------------|--|----------------------|------------------|--|--|---|--|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | | <p>The HNTB Companies 10450 Holmes Road Suite 800 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</p> | <p>KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</p> | <p>SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y208.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: Y208 392</p> | |
| | | | CHECKED BY | BP | | | | | | | | | |
| | | | DRAWN BY | DC | | | | | | | | | |
| | | | CHECKED BY | BP | | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:01:25 PM | | DATE: 12-23-2022 | | NOT FOR CONSTRUCTION | | | | | | |

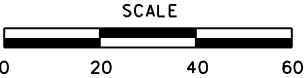
| | | | | |
|-----------------|------------|-----------|------------|-----------|
| POLE NO. | R/64 | R/65 | R/66 | R/67 |
| POLE ID | 23002S | 23102S | 23202S | 23302S |
| POLE STATION | S 230+02 | S 231+02 | S 232+02 | S 233+02 |
| POLE OFFSET | L 7.00 | L 7.00 | L 7.00 | L 7.00 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | BA-1 (2) | BA-1 (2) | BA-1 (2) | BA-1 (2) |
| FDN TYPE-DEPTH | FD-1LA-9.0 | FD-1A-9.0 | FD-1LA-9.0 | FD-1A-9.0 |
| POLE TYPE-LNGTH | P-1L-34 | P-1-28 | P-1L-34 | P-1-28 |
| POLE RAKE | 0.0" | 1.0" | 1.0" | 1.0" |
| SFH (FSA-01) | 26'-0" | 26'-0" | 26'-0" | 26'-0" |

MATCHLINE STA. 139+50



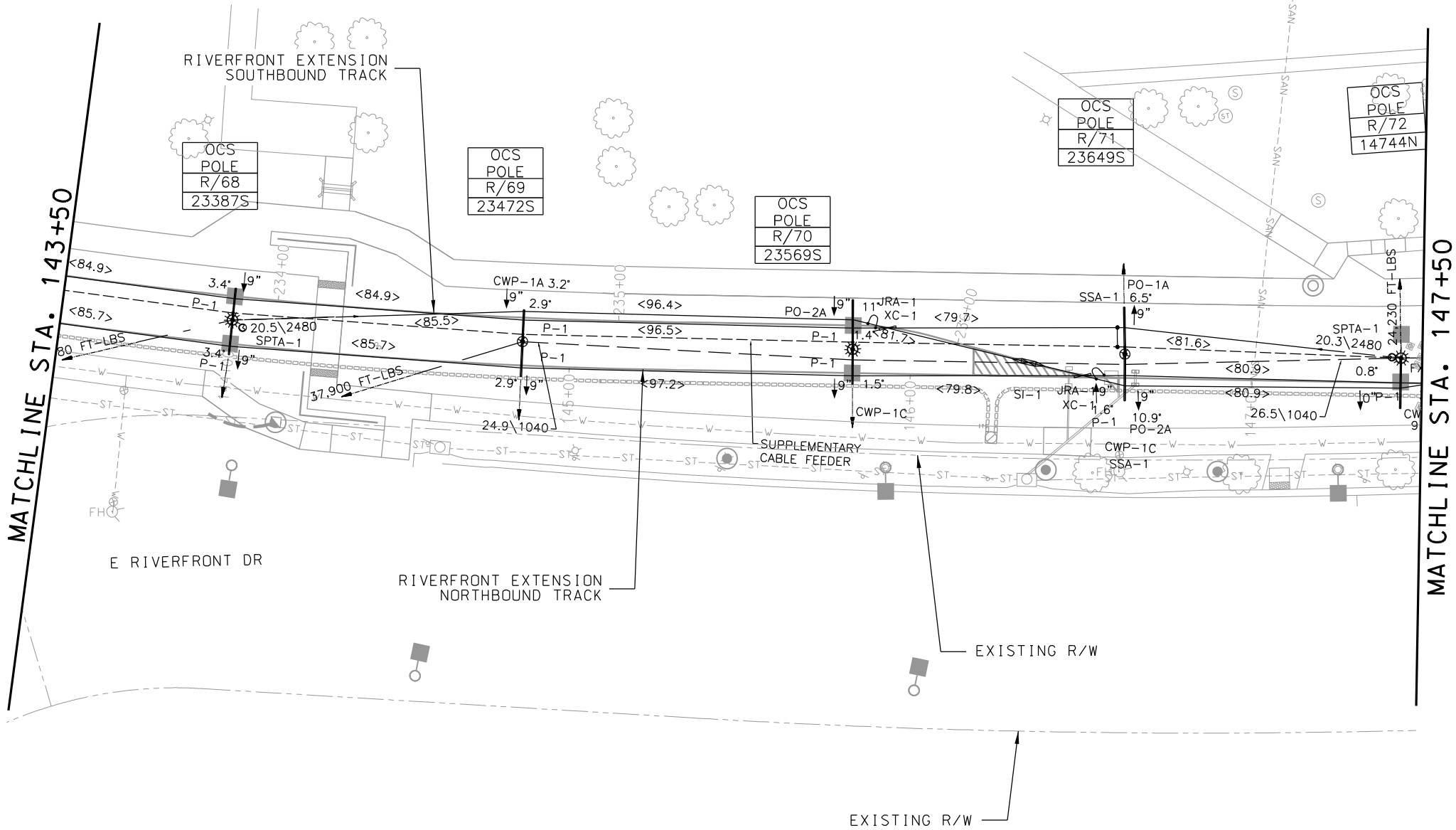
MATCHLINE STA. 143+50

- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.

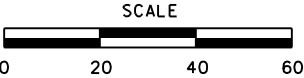


| | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|---|----------------------|------------------|--|--|---|--------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": |
| | | | CHECKED BY | BP | | | FILENAME: | | | | | |
| | | | DRAWN BY | DC | | | Y209.dgn | | | | | |
| | | | CHECKED BY | BP | | | CONTRACT NO.: | | | | | |
| | | | APPROVED BY | NKS | | | CONTRACT NO. *** | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:01:34 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | OCS LAYOUT PLAN STA 139+50 TO STA 143+50 | | DRAWING NO.: | SHEET NO.: |
| | | | | | | | | | | | Y209 | 393 |

| | | | | | | |
|-----------------|------------------|---------------|---------------|---------------|----------------------|------------|
| POLE NO. | R/68 | R/69 | R/70 | R/71 | R/72 | R/72-DG |
| POLE ID | 23387S | 23472S | 23569S | 23649S | 14744N | 14771N |
| POLE STATION | S 233+87 | S 234+72 | S 235+69 | S 236+49 | N 147+44 | N 147+71 |
| POLE OFFSET | L 7.00 | L 7.00 | L 7.00 | L 7.00 | L 7.24 | L 7.24 |
| CWH | 19'-6" | 19'-6"/20'-6" | 19'-6"/19'-7" | 19'-6"/19'-7" | 19'-6"/20'-6" | - |
| SUPT TYPE | BA-1 (2); SPTA-1 | BA-1 (2) | BA-1,(2) BA-1 | BA-1,(2) BA-1 | BA-1; SPTA-1; FXT-02 | DGA-1 |
| FDN TYPE-DEPTH | FD-2LB-10.5 | FD-1LB-10.5 | FD-2LB-10.5 | FD-1B-10.5 | FD-1LC-12.5 | FG-01-10.5 |
| POLE TYPE-LNGTH | P-2L-34 | P-2-28 | P-2L-34 | P-2-28 | P-5L-34 | - |
| POLE RAKE | 1.0" | 1.0" | 1.0" | 1.0" | 0.0" | - |
| SFH (FSA-01) | 26'-0" | 26'-0" | 27'-0" | 27'-0" | 27'-0" | - |



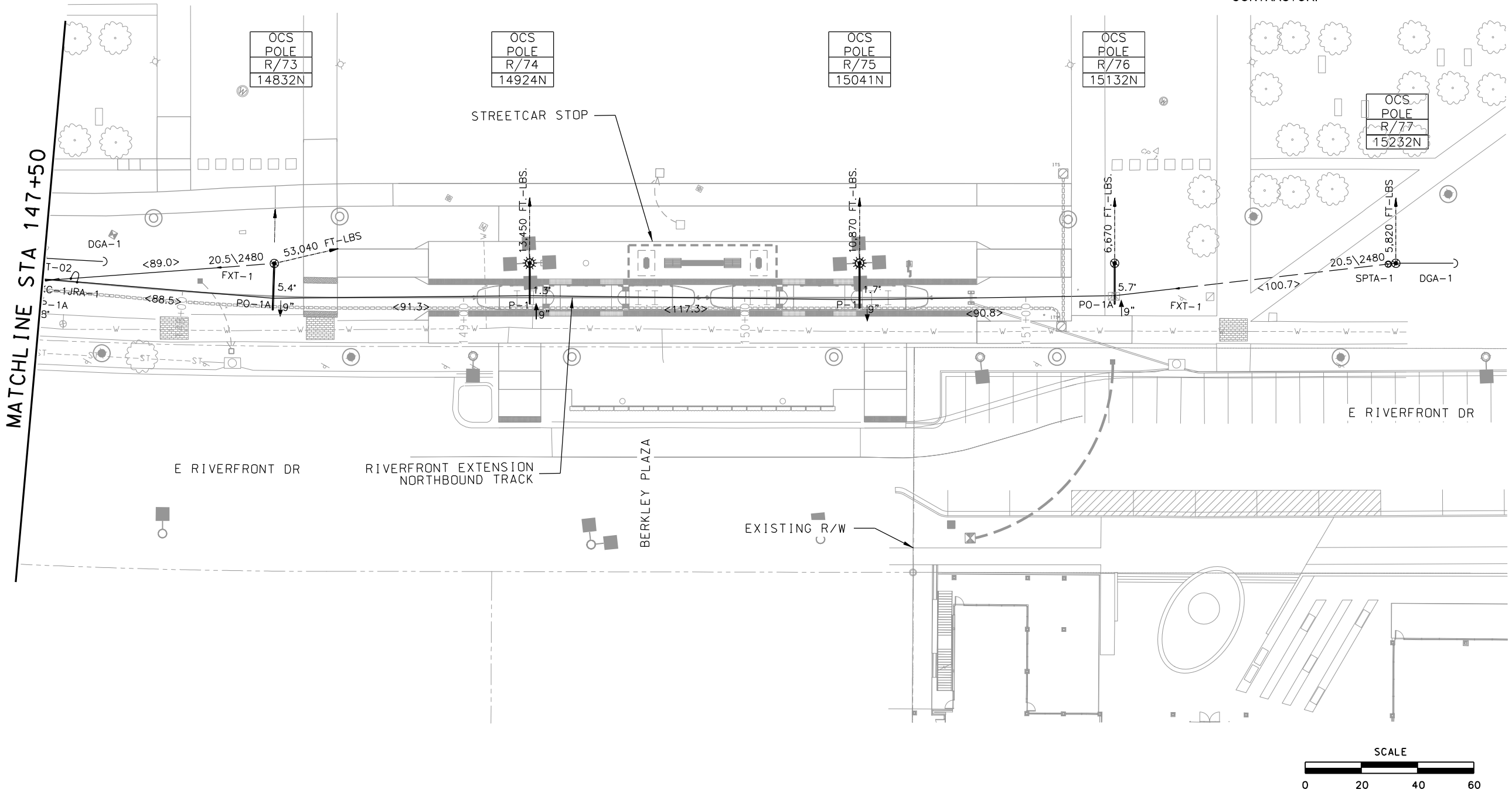
- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.



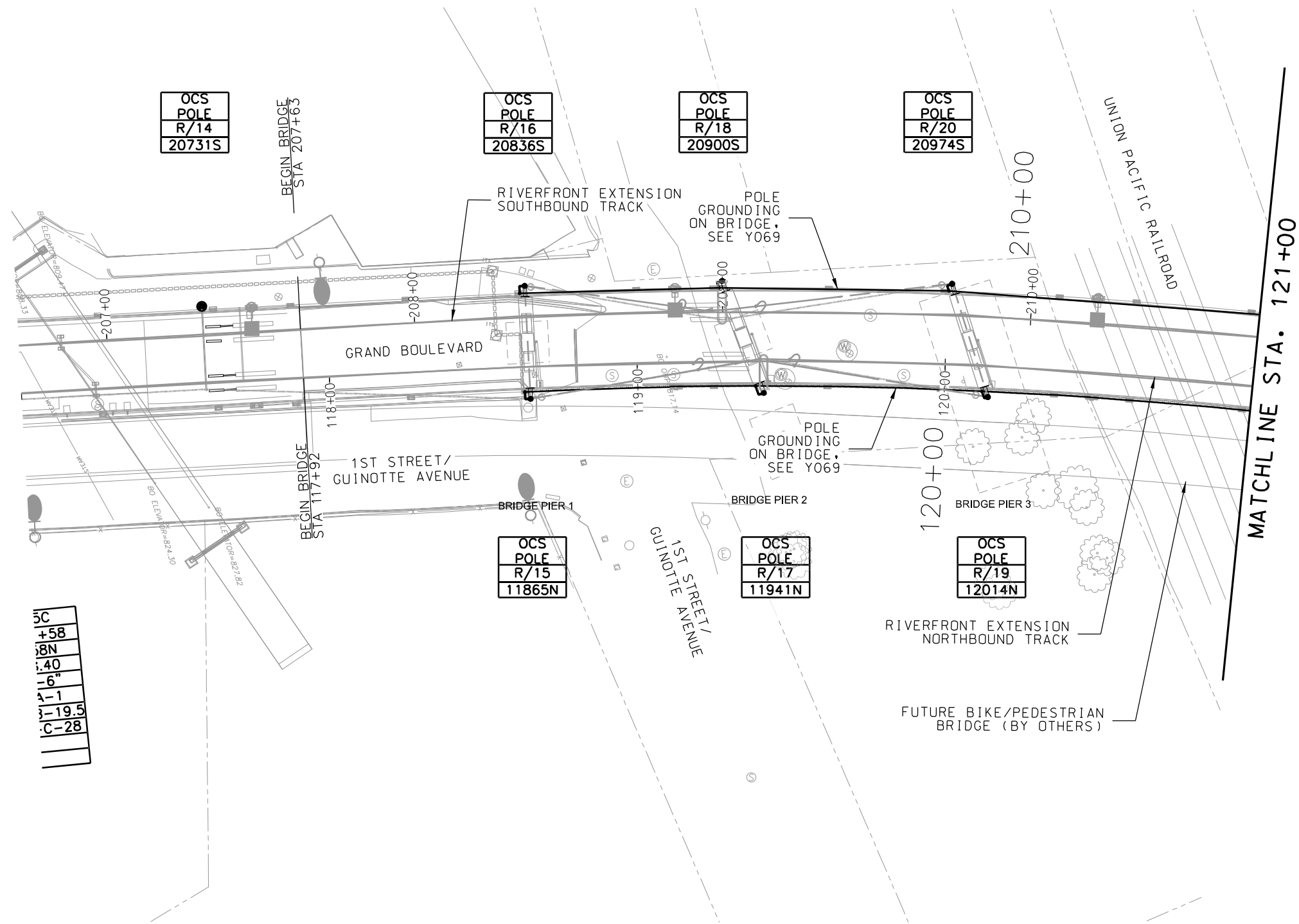
| | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|---|---|---|--|---|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  |  | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | <div>SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y210.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: Y210 394</div> |
| | | | CHECKED BY | BP | | |  <div>HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</div> |  <div>The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270</div> | | |
| | | | DRAWN BY | DC | | | | | | |
| | | | CHECKED BY | BP | | | | | | |
| | | | APPROVED BY | NKS | | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:01:43 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | OCS LAYOUT PLAN STA 143+50 TO STA 147+50 | |

| | | | | | | |
|-----------------|-------------|------------|------------|-----------|------------|------------|
| POLE NO. | R/73 | R/74 | R/75 | R/76 | R/77 | R/77-DG |
| POLE ID | 14832N | 14924N | 15041N | 15132N | 15232N | - |
| POLE STATION | N 148+32 | N 149+24 | N 150+41 | N 151+32 | N 152+32 | N 153+53 |
| POLE OFFSET | L 11.64 | L 12.30 | L 12.27 | L 12.27 | L 12.27 | L 12.27 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | - |
| SUPT TYPE | BA-1; FXT-1 | BA-1 | BA-1 | BA-1 | - | - |
| FDN TYPE-DEPTH | FD-1A-10.5 | FD-1LA-9.0 | FD-1LA-9.0 | FD-1A-9.0 | FD-1A-10.5 | FG-01-10.5 |
| POLE TYPE-LNGTH | P-1-26 | P-1L-34 | P-1L-34 | P-1-26 | P-1-24 | - |
| POLE RAKE | 1.0" | 2.0" | 2.0" | 1.0" | 1.0" | - |
| MISCELLANEOUS | | | | | | |

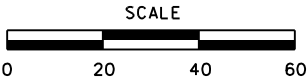
- NOTES:
- FOR GENERAL NOTES, REFER TO DRAWING G020. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G022.
 - POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.



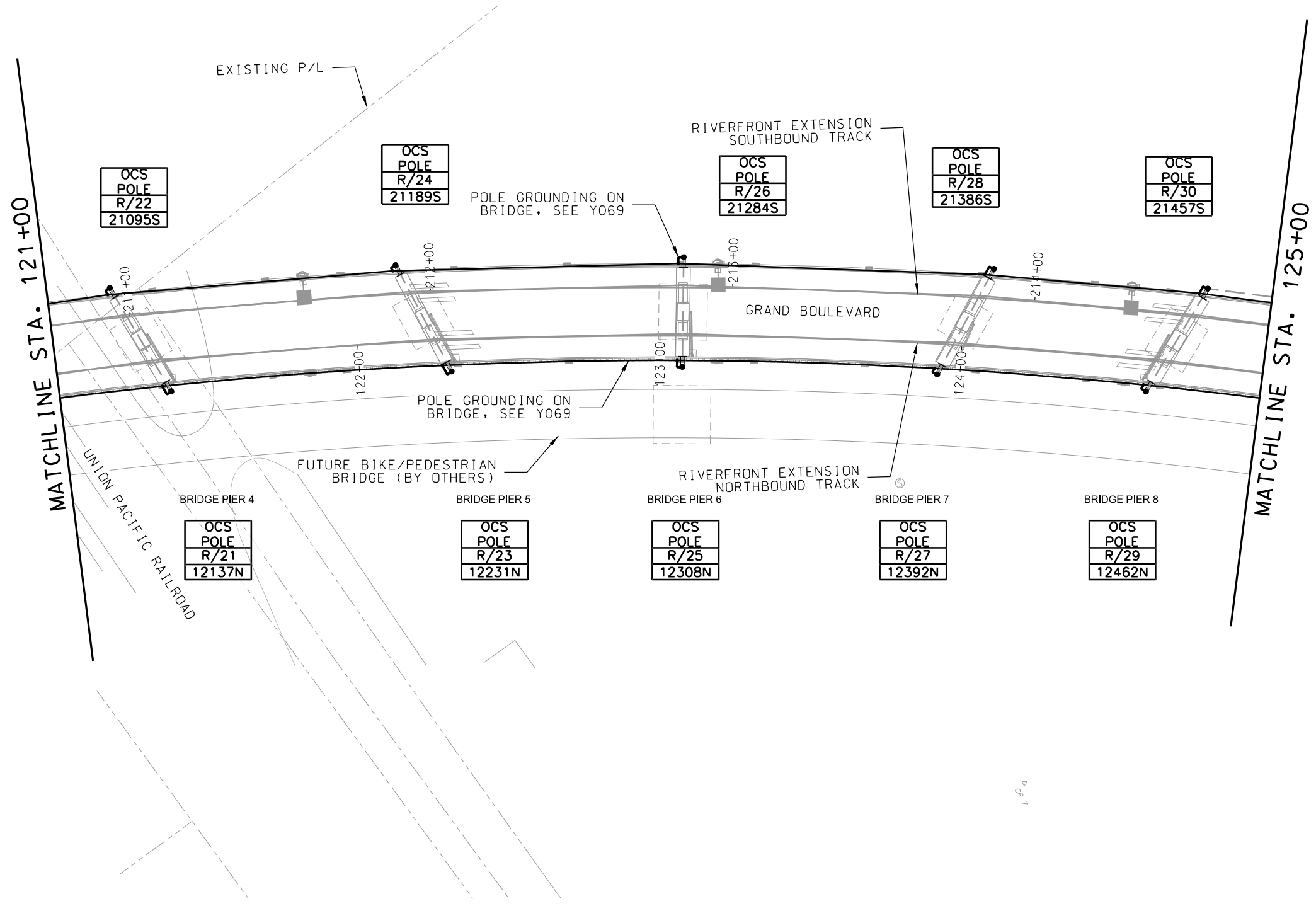
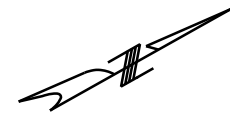
| | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|------|--|--|-----------------------|---|--|--|---|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | <p>SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y211.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: Y211 395</p> | | |
| | | | CHECKED BY | BP | | | | HDR Engineering, Inc. | | | | The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-360-2700 Certificate of Authority: 001270 |
| | | | DRAWN BY | DC | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | | | | |
| | | | CHECKED BY | BP | | | | | | | | |
| | | | APPROVED BY | NKS | | | | | | | | |
| PLOT DATE: 12/22/2022 | | | 2:01:51 PM | | DATE | 12-23-2022 | NOT FOR CONSTRUCTION | | | OCS LAYOUT PLAN STA 147+50 TO END | | |



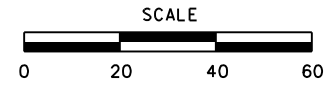
- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.



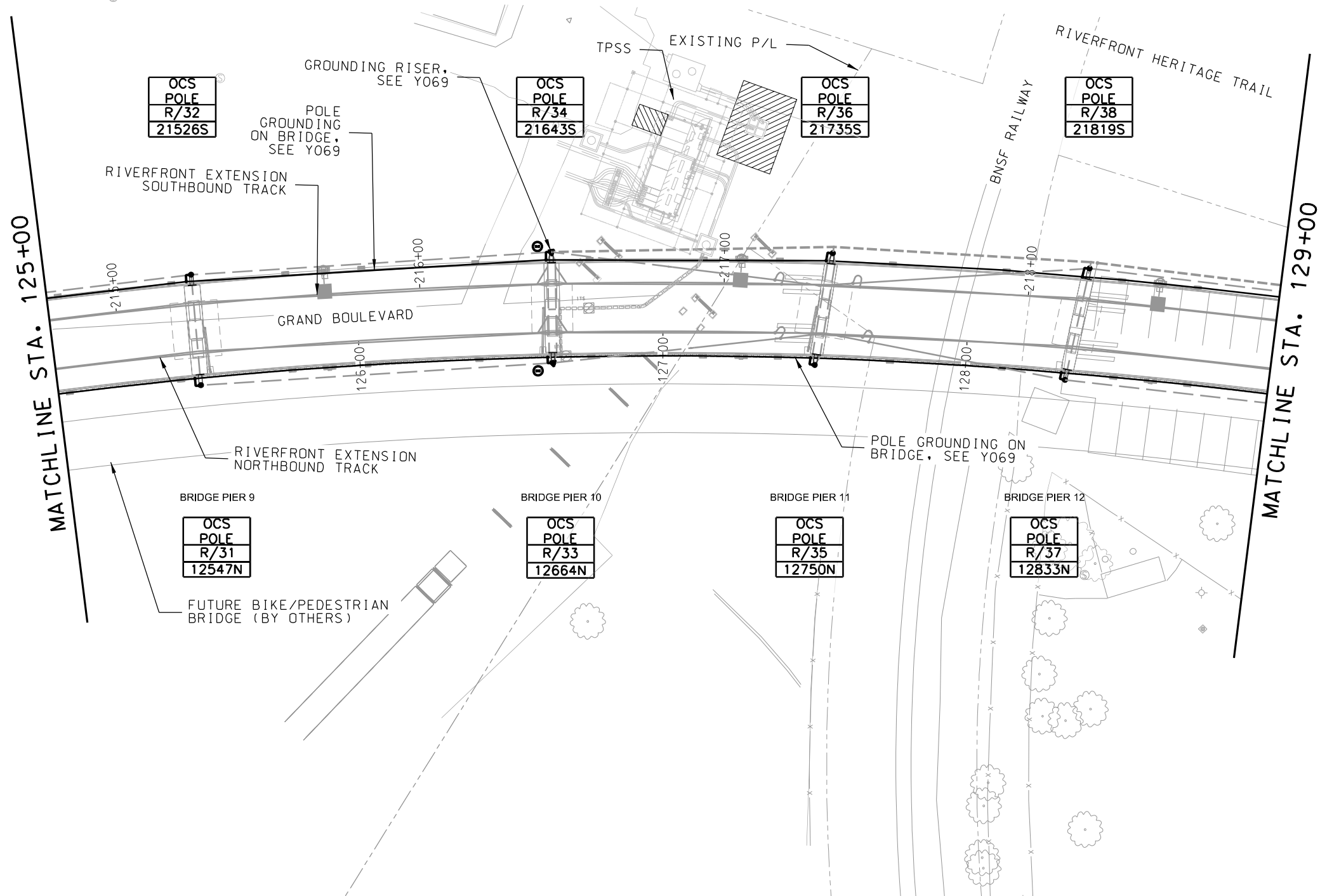
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|-----------------------|--|--|-------------|-------------|-------------|-----|--|--|----------------------|--|------------------|--|--|---|--------------------------------|------------|
| REV | | | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID | | DATE: 12-23-2022 |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | SCALE FOR 22"x34": 1" = 20' | |
| | | | | | CHECKED BY | BP | | | | | | | | | FILENAME: Y212.dgn | |
| | | | | | DRAWN BY | DC | | | | | | | | | CONTRACT NO.: | |
| | | | | | CHECKED BY | BP | | | | | | | | | CONTRACT NO. *** | |
| | | | | | APPROVED BY | NKS | | | | | | | | | VOLUME: | |
| PLOT DATE: 12/22/2022 | | | 12:14:05 PM | DATE | 12-23-2022 | | | | NOT FOR CONSTRUCTION | | | | | | DRAWING NO.: | SHEET NO.: |
| | | | | | | | | | | | | | | | Y212 | 396 |



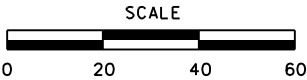
- NOTES:**
- 1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 - 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 - 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.



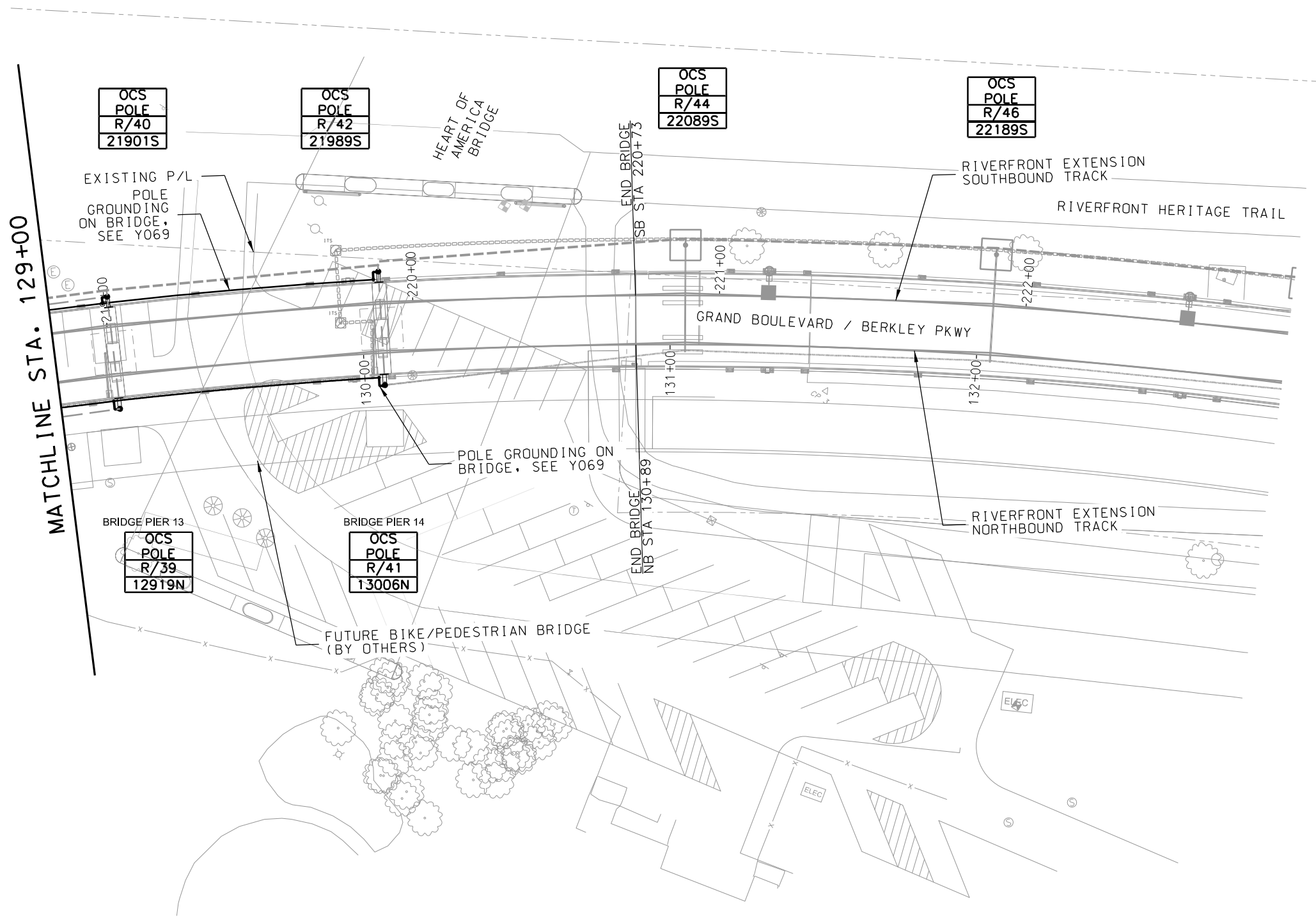
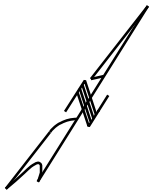
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|--|--|--|------------------------|--|--|---|--|--|---|--|---------------------------------------|--|
| REV DATE DESCRIPTION | | | DESIGNED BY PFW | | | <p>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</p> | ISSUE FOR BID DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34"=: | |
| | | | CHECKED BY BP | | | | | | | | H: 1" = 20' | |
| | | | DRAWN BY DC | | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | FILENAME: | |
| | | | CHECKED BY BP | | | | NOT FOR CONSTRUCTION | | | | CONTRACT NO.: | |
| | | | APPROVED BY NKS | | | | | | | | CONTRACT NO. *** | |
| PLOT DATE: 12/22/2022 DATE: 12-23-2022 | | | | | | | | | VOLUME: | | DRAWING NO.: SHEET NO.: | |
| | | | | | | | | | 1 | | Y213 397 | |



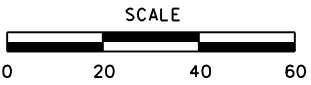
- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.



| | | | | | | | | | | | | | |
|-----------------------|------|-------------|-------------|-----|--|--|--|--|--|--|-----------------------------------|-----------------------------------|-------------------|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": H: 1" = 20' | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. | |  The HNTB Companies | | | FILENAME: Y214.dgn | |
| | | | DRAWN BY | DC | | | 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | CONTRACT NO.: CONTRACT NO. ... | | |
| | | | CHECKED BY | BP | | | NOT FOR CONSTRUCTION | | | | VOLUME: 1 | | |
| | | | APPROVED BY | NKS | | | | | | | DRAWING NO.: Y214 | | SHEET NO.: 398 |
| PLOT DATE: 12/22/2022 | | | 12:14:25 PM | | DATE | | 12-23-2022 | | | | | | |



- NOTES:**
- 1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 - 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 - 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.



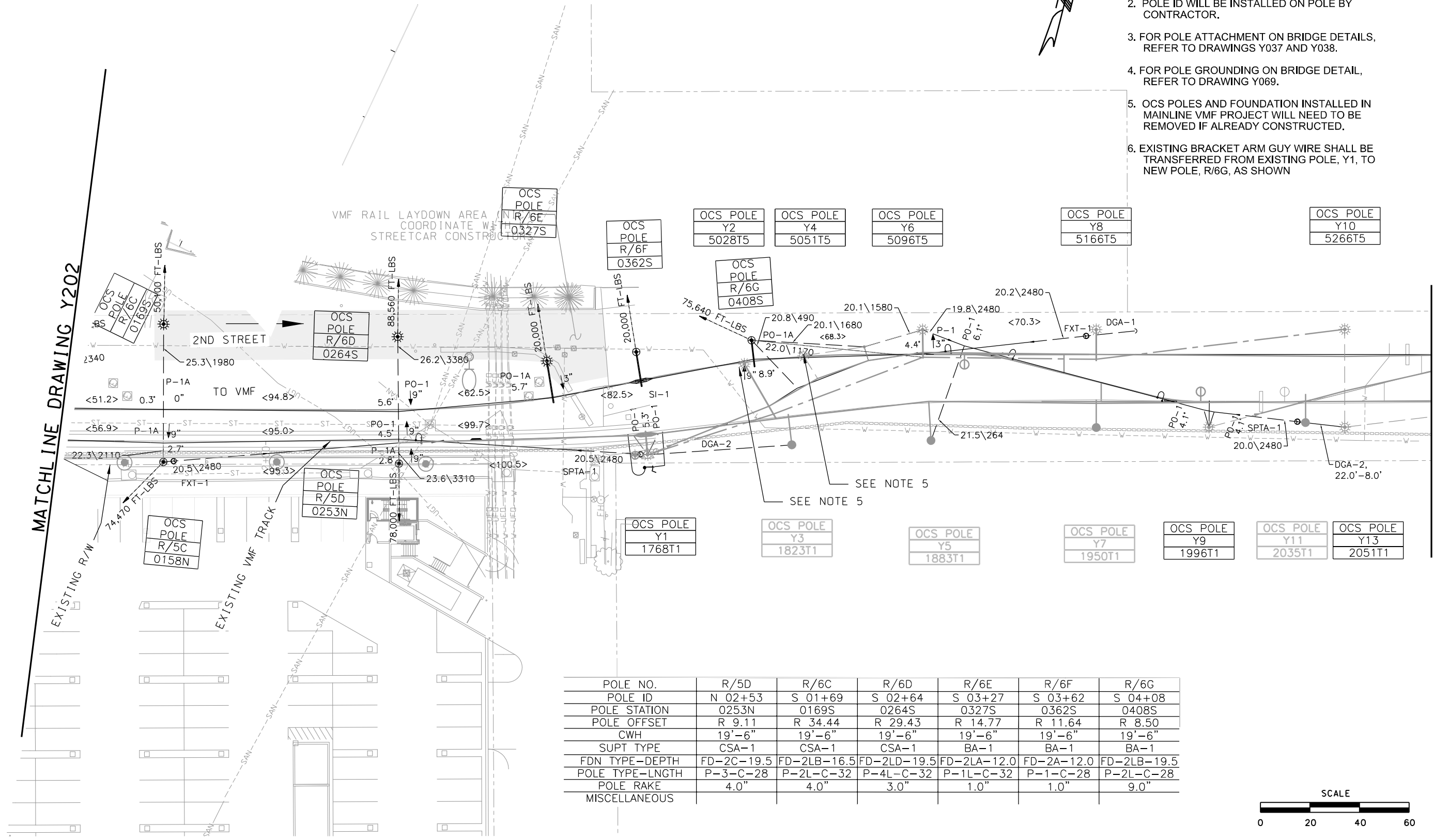
| | | | | | | | | | | | | | |
|-----------------------|------|-------------|------------------|-----|--|--|--|--|--|--|-----------------------|--------------------|--|
| REV | DATE | DESCRIPTION | DESIGNED BY | PFW |  | <div>This set of plans is not for construction. These plans are intended to build interest in bidding the project.</div> | ISSUE FOR BID | | DATE: 12-23-2022 | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": | |
| | | | CHECKED BY | BP | | |  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 |  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | OCS BRIDGE GROUNDING LAYOUT PLAN STA 129+00 TO STA 133+00 | | | H: 1" = 20' | |
| | | | DRAWN BY | DC | | | | | | | FILENAME: Y215.dgn | | |
| | | | CHECKED BY | BP | | | | | | | CONTRACT NO.: | | |
| | | | APPROVED BY | NKS | | | | | | | CONTRACT NO. *** | | |
| PLOT DATE: 12/22/2022 | | | DATE: 12-23-2022 | | NOT FOR CONSTRUCTION | | DRAWING NO.: Y215 | | SHEET NO.: 399 | | VOLUME: 1 | | |

NOTES:

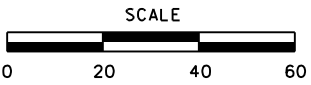
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.
5. OCS POLES AND FOUNDATION INSTALLED IN MAINLINE VMF PROJECT WILL NEED TO BE REMOVED IF ALREADY CONSTRUCTED.
6. EXISTING BRACKET ARM GUY WIRE SHALL BE TRANSFERRED FROM EXISTING POLE, Y1, TO NEW POLE, R/6G, AS SHOWN

MATCHLINE DRAWING Y202

EXISTING



| POLE NO. | R/5D | R/6C | R/6D | R/6E | R/6F | R/6G |
|-----------------|------------|-------------|-------------|-------------|------------|-------------|
| POLE ID | N 02+53 | S 01+69 | S 02+64 | S 03+27 | S 03+62 | S 04+08 |
| POLE STATION | 0253N | 0169S | 0264S | 0327S | 0362S | 0408S |
| POLE OFFSET | R 9.11 | R 34.44 | R 29.43 | R 14.77 | R 11.64 | R 8.50 |
| CWH | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" | 19'-6" |
| SUPT TYPE | CSA-1 | CSA-1 | CSA-1 | BA-1 | BA-1 | BA-1 |
| FDN TYPE-DEPTH | FD-2C-19.5 | FD-2LB-16.5 | FD-2LD-19.5 | FD-2LA-12.0 | FD-2A-12.0 | FD-2LB-19.5 |
| POLE TYPE-LNGTH | P-3-C-28 | P-2L-C-32 | P-4L-C-32 | P-1L-C-32 | P-1-C-28 | P-2L-C-28 |
| POLE RAKE | 4.0" | 4.0" | 3.0" | 1.0" | 1.0" | 9.0" |
| MISCELLANEOUS | | | | | | |



| REV | DATE | DESCRIPTION |
|-----|------|-------------|
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| | | |

PLOT DATE: 12/23/2022 9:48:21 AM

| | |
|-------------|------------|
| DESIGNED BY | PFW |
| CHECKED BY | BP |
| DRAWN BY | DC |
| CHECKED BY | BP |
| APPROVED BY | NKS |
| DATE | 12-23-2022 |



This set of plans is not for construction. These plans are intended to build interest in bidding the project.

ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

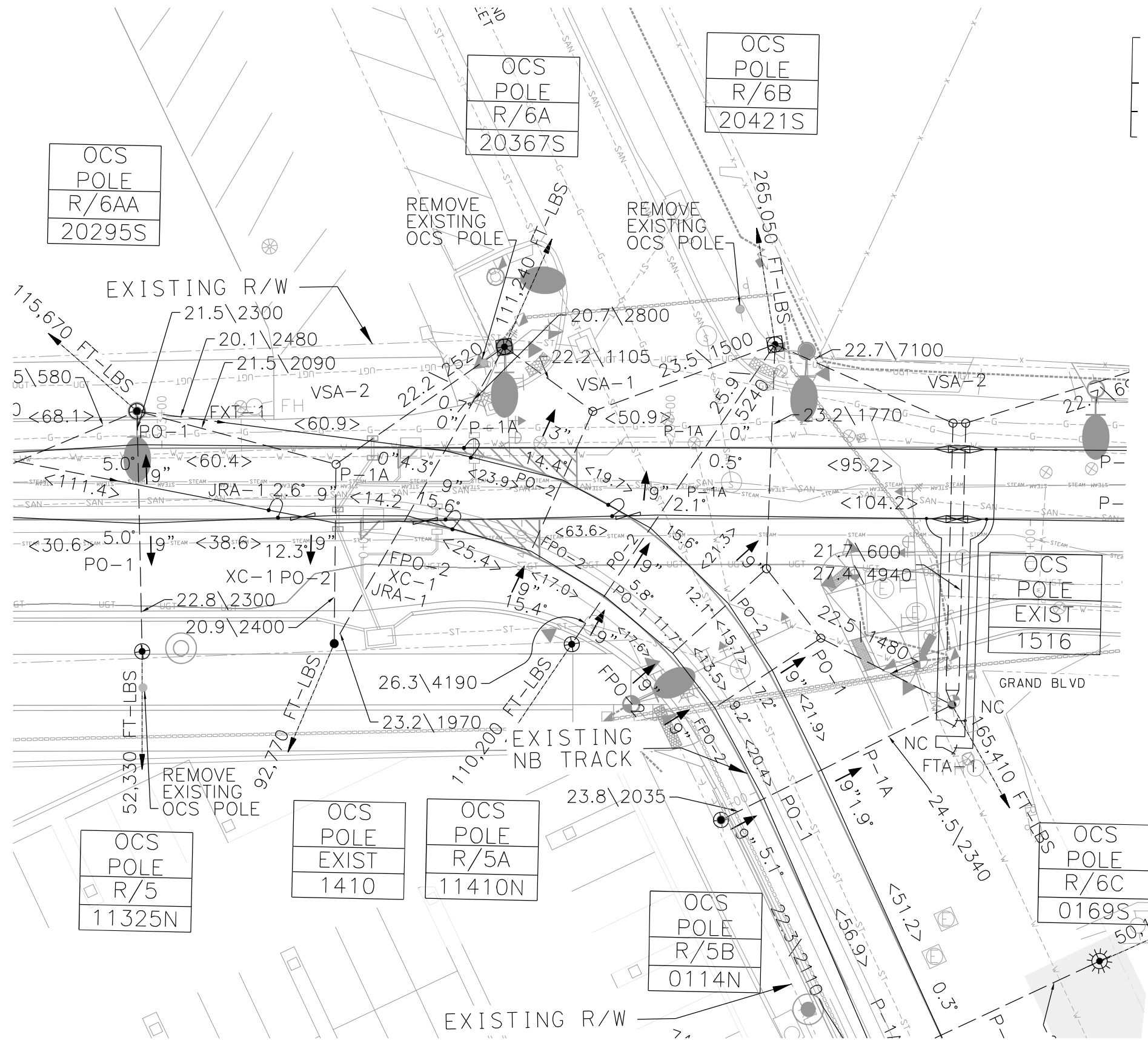
The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

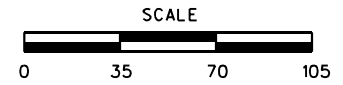
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OCS LAYOUT PLAN
2ND STREET TO VMF

SCALE FOR 22"x34":
H: 1" = 20'
FILENAME:
FILES:
CONTRACT NO.:
CONTRACT \$:
VOLUME:
DRAWING NO.: Y216
SHEET NO.: 400



- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. OCS POLES R/1, R/3 AND R/5 ARE TO BE INSTALLED IN CONTAMINATED SOIL LOCATION. CONTAMINATED SOIL SHALL BE REMOVE IN ACCORDANCE WITH ALL STATE AND FEDERAL REGULATIONS BY CONTRACTOR .
 4. REMOVAL OF EXISTING OCS POLES TO BE DONE AFTER THE EXISTING AND PROPOSED OCS HAS BEEN FULLY SUPPORTED AS PER DESIGN DRAWINGS AS PART OF THIS CONTRACT. AFTER REMOVAL OF OCS POLES, EXISTING OCS FOUNDATIONS TO BE DEMOLISHED TO AT LEAST 3 FEET BELOW GRADE. CONTRACTOR TO COORDINATE REMOVAL AND DEMO OF EXISTING OCS POLES AND FOUNDATIONS WITH ALL IMPACTED DISCIPLINES.
 5. CONTRACTOR MAY USE EXISTING OCS ASSEMBLIES FOR THE EXISTING ALIGNMENT. ALLOCATED OCS ASSEMBLIES AT THESE LOCATIONS TO BE USED WHEN EXISTING ASSEMBLIES ARE NO LONGER VIALBE DUE TO THE PROPOSED WORK.
 6. INTERFACE WITH THE EXISTING SYSTEM HAS BEEN DESIGN BASED ON EXISTING POLE DATA FROM "KANSAS CITY DOWNTOWN STREETCAR PROJECT - VOLUME 4 - SYSTEMS" DATED MARCH 2014. POLE AND FOUNDATIONS SIZES HAVE NOT BEEN CONFIRMED BY HNTB.



| | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|---|--|---|--|---|--|--|--|
| REV DATE DESCRIPTION | | | DESIGNED BY PFW | | | This set of plans is not for construction. These plans are intended to build interest in bidding the project. | ISSUE FOR BID | | DATE: 12-23-2022 | | KANSAS CITY STREETCAR - RIVERFRONT EXTENSION | | SCALE FOR 22"x34": H: 1" = 35' FILENAME: FILES: CONTRACT NO.: CONTRACT \$: VOLUME: \$VOLUME: DRAWING NO.: SHEET NO.: Y217 401 | |
| | | | CHECKED BY BP | | | | HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 | | The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 | | | | | |
| | | | DRAWN BY DC | | | | NOT FOR CONSTRUCTION | | OCS LAYOUT PLAN LARGE SCALE | | | | | |
| | | | CHECKED BY BP APPROVED BY NKS | | | | | | | | | | | |
| PLOT DATE: 12/22/2022 2:09:32 PM | | | DATE 12-23-2022 | | | | | | | | | | | |