# CITY OF KANSAS CITY, MISSOURI

## GRAND BOULEVARD BRIDGE
## BIKE/PEDESTRIAN ACCOMMODATIONS
## (2ND STREET TO RIVERFRONT)
## KCMO PROJECT NO. 89005595

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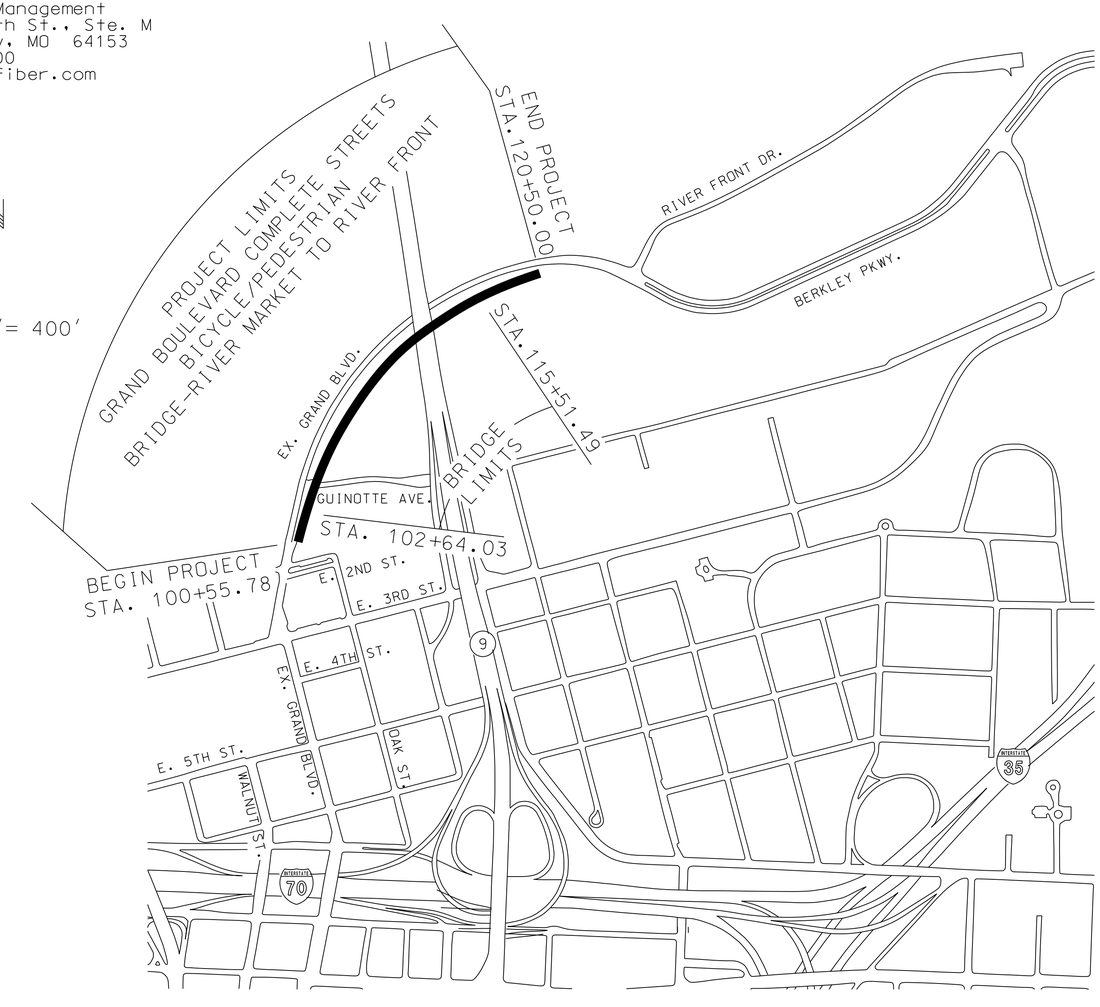
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SCALE 1"= 400'




APPROVED BY _____
KANSAS CITY AREA TRANSPORTATION AUTHORITY

_____
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 100+55.78 |
| END OF PROJECT | STA 120+50.00 |
| APPARENT LENGTH | .38 MILES |
| LENGTH ON STRUCTURE | .24 MILES |
| NET LENGTH OF PROJECT | 1994.22 FEET |

SHEET NO. 1 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**TITLE SHEET**

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User:douglasc1
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# CONVENTIONAL SYMBOLS (USED IN PLANS)

| | EXISTING | NEW |
|---|---|---|
| R/W LINE | ——— | ——— |
| PERMANENT EASEMENT | — — — — | ····· |
| TEMPORARY EASEMENT | | ---------- |
| CONSTRUCTION LIMITS | | ---------- |
| CONTROL POINT | △ CP 1 | |
| BENCHMARK | ◔ BM 1 | |
| BORE HOLE | BH ⊗ | |
| UTILITY EASEMENT | — — — — | U/E |
| RIGHT-OF-WAY | | R/W |
| ELECTRIC EASEMENT | | E/E |
| WATER LINE EASEMENT | | W/E |
| FENCE | X | X |
| GAS LINE | G | G |
| OVERHEAD COMM. LINE | OT | OT |
| UNDERGROUND COMM./FIBER LINE | UT | UT |
| OVERHEAD POWER LINE | OE | OE |
| UNDERGROUND POWER LINE | UE | UE |
| SANITARY SEWER LINE | S | S |
| STORM SEWER | SS | SS |
| WATER LINE | W | W |
| TELEPHONE PEDISTAL | ⊠ TELE PED | PED △ T&C |
| TELEPHONE POLE | ○ TP | ○ |
| CABLE TV PEDESTAL | ▲ CATV PED | CATV PED. ○ |
| OVERHEAD CONTACT SYSTEM | OCS | |
| GAS METER | G GV | GM ◔ GV |
| GAS VALVE | G GV | |
| PULL BOX | PB | P TRANS |
| ELECTRIC TRANSFORMER | TRANS | P METER |
| ELECTRIC METER | E EM | PP |
| POWER POLE | PP | GUY ○ |
| GUY ANCHOR | GUY | HYD |
| FIRE HYDRANT | FH | WM |
| MATER METER | M WM | WV |
| WATER VALVE | WV | MH |
| WATER VAULT/MANHOLE | W WATER MH | |
| TREE-SCALE TO FIT DRIPLINE | 12" | 12" |
| PINE TREE (DIA.) | 12" | |
| BUSH | | 12" |
| TRAFFIC SIGNAL POLE | PS,TS,TRAIN | |
| TRAFFIC MAST | | |
| SIGN | | SIGN |
| LIGHT POLE | LP | |
| MAIL BOX | MB | |
| CURB STOP | CS | CURB STOP |
| GUARD POST | GP | |
| GUARD RAIL | | |
| SPRINKLER CONTROL BOX | SCB | |
| TRASH CAN | | TRASH |

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# GENERAL NOTES

1. CITY OF KANSAS CITY, MISSOURI PUBLIC WORKS DESIGN & CONSTRUCTION STANDARDS - LATEST EDITION, SHALL BE APPLIED TO CONSTRUCTION UNLESS NOTED OTHERWISE.
2. THE CONTRACTOR SHALL THOROUGHLY REVIEW AND BECOME FAMILIAR WITH THE SPECIFICATIONS AND SPECIAL CONDITIONS OF THE CONTRACT DOCUMENTS PRIOR TO BEGINNING CONSTRUCTION OF THIS PROJECT.
3. ALL WORK SHALL BE CONFINED WITHIN THE EASEMENTS AND/OR CONSTRUCTION LIMITS AS DIRECTED BY THE ENGINEER.
4. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS A MINIMUM 48 HOURS IN ADVANCE OF ALL WORK PERTAINING TO THEIR ENTRANCES.
5. POLICE, FIRE, EMERGENCY MEDICAL SERVICES, TRANSIT AGENCIES, AND SCHOOL BUS COMPANIES SHALL BE NOTIFIED PRIOR TO CLOSING ANY STREET WITH THE APPROVAL OF THE ENGINEER.
6. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL BY CITY PERSONNEL OR THEIR REPRESENTATIVES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNERS AND SECTION CORNERS. ANY PROPERTY CORNER AND/OR SECTION CORNER DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE RESET BY A REGISTERED LAND SURVEYOR LICENSED IN THE STATE OF MISSOURI, AT THE CONTRACTOR'S EXPENSE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY AND INTEGRITY OF THE EXISTING MSE WALLS AT ALL TIMES DURING THE PROJECT.
9. ALL EXCAVATION SHALL BE UNCLASSIFIED. NO SEPARATE OR ADDITIONAL PAYMENT WILL BE MADE FOR ANY ROCK EXCAVATION REQUIRED FOR THESE IMPROVEMENTS. TRENCH EXCAVATION SHALL BE SUBSIDIARY TO OTHER ITEMS OF WORK.
10. THE LATEST EDITION OF THE MUTCD - "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" SHALL BE CONFORMED TO FOR ALL SIGNAGE.
11. THE REMOVAL OF EXISTING SIGNS AND INSTALLATION OF NEW SIGNS SHALL BE SUBSIDIARY TO THE PROPOSED WORK.
12. ALL EXISTING CURB, SIDEWALK, AND PAVEMENT SHALL BE REMOVED TO THE NEAREST JOINT, AND ANY EXTENSION REQUIRED BEYOND PLAN QUANTITY SHALL BE SUBSIDIARY TO THAT ITEM.
13. THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE, THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES FOR FIELD LOCATION OF ALL UNDERGROUND UTILITY LINES PRIOR TO ANY EXCAVATION AND FOR MAKING THEIR OWN VERIFICATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
14. ALL UTILITY RECONNECTIONS AND RELOCATIONS SHALL BE COORDINATED AND PERFORMED CONCURRENTLY OR PRIOR TO CONSTRUCTION ACTIVITIES. IT IS REQUIRED THAT THE CONTRACTOR COORDINATE WITH UTILITY RELOCATION COMPANIES FOR ANY REQUIRED RELOCATIONS.
15. ALL VEGETATION WITHIN THE LIMITS OF CONSTRUCTION FOR THIS PROJECT SHALL BE REMOVED AS NECESSARY BY THE CONTRACTOR - UNLESS SHOWN AS "DO NOT DISTURB" PER PLAN.
16. ALL VEGETATION ADJACENT TO THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED BY THE CONTRACTOR.
17. ALL DISTURBED AREAS INSIDE OF CONSTRUCTION LIMITS OF EXPOSED SOIL SHALL HAVE PERMANENT SOD PLACED AT THE END OF CONSTRUCTION ACTIVITIES. PRIOR TO PLACEMENT OF PERMANENT SOD, ALL EXPOSED EARTH SHALL BE SUBJECT TO TEMPORARY SEEDING AND OTHER REQUIREMENTS IN THE PROJECT SWPPP.
18. ALL WASTE AND DEBRIS ASSOCIATED WITH THIS PROJECT SHALL BE REMOVED AND DISPOSED OF IMMEDIATELY AT A SITE THAT SHALL BE FURNISHED BY THE CONTRACTOR.
19. THE CONTRACTOR SHALL AT NO TIME LEAVE EQUIPMENT, MATERIALS, OR DEBRIS AT LOCATIONS THAT COULD OBSTRUCT INTERSECTION SIGHT DISTANCE, OBSTRUCT ANY EXISTING CAPACITY OF STORM SEWER SYSTEMS, OR CAUSE FLOODING OR EROSION.
20. ALL WORK NOT CLASSIFIED AS A PAY ITEM SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION AND THE COST OF WHICH SHALL BE INCLUDED IN THE COST OF THE OTHER BID ITEMS.
21. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE PROTECTED TO A STANDARD SET FORTH BY THE CITY OF KANSAS CITY. MISSOURI EROSION CONTROL STANDARDS. THE CONSTRUCTION SITE FOR THIS PROJECT WILL BE MAINTAINED AS SAFE, CLEAN, AND ORDERLY THROUGHOUT CONSTRUCTION.
22. LONGITUDINAL AND TRANSVERSE CONCRETE JOINTS SHALL COMPLY WITH TYPICAL SECTIONS AND JOINT DETAILS SHOWN IN PLANS, OTHERWISE TRANSVERSE JOINTS SHALL BE 1-1.25 X WIDTH BETWEEN LONGITUDINAL JOINTS. SEE SHT NO. 61
23. CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN - KCMO WILL REQUIRE CONTRACTOR TO DEVELOP AND IMPLEMENT A CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN TO BE APPROVED BY THE ENGINEER.
24. THE DECORATIVE FENCE OF ALL HEIGHTS SHALL BE AN AEGIS II MAJESTIC STEEL 3 RAIL IN GRAY COLORWAY FENCE BY AMERISTAR OR APPROVED EQUAL. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY THE ENGINEER BEFORE PURCHASING MATERIALS OR BEGINNING CONSTRUCTION.
25. MAINTENANCE AND OTHER NECESSARY MATERIALS ASSOCIATED WITH THE SWPPP AND EROSION CONTROL STANDARDS SHALL BE SUBSIDIARY TO THE EROSION CONTROL BID ITEMS.

# CONSTRUCTION SEQUENCING / TRAFFIC CONTROL NOTES

1. THE LATEST EDITION OF THE MUTCD- "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" SHALL BE CONFORMED TO FOR ALL SIGNAGE, TRAFFIC CONTROL DEVICES, AND APPLICATION PRINCIPLES.
2. THE CONTRACTOR SHALL CLOSE GUINOTTE AVE. WITHIN THE PROJECT LIMITS DURING CONSTRUCTION. THE CONTRACTOR SHALL NOT DISTURB TRAFFIC OPERATIONS ON ANY OTHER ROADWAY.
3. THE CONTRACTOR SHALL MAINTAIN ACCESS TO LOCAL BUSINESSES AND RESIDENCES.
4. THE CONTRACTOR SHALL CLOSE EXISTING TRAIL ACCESS WITHIN THE PROJECT LIMITS DURING CONSTRUCTION. APPLICABLE CONTROL DEVICES AND DETOUR SIGNING SHALL BE USED. THE DETOUR SHALL UTILIZE EXISTING PEDESTRIAN FACILITIES ON RIVER FRONT RD. AND AT THE INTERSECTION OF EX. GRAND BLVD. AND RIVER FRONT RD.
5. CONTRACTOR SHALL COORDINATE CONSTRUCTION OF NORTHEAST TRAIL WITH ADJACENT BUILDING DEVELOPMENT. CONSTRUCTION OF RIVERFRONT HERITAGE TRAIL CONECTOR SHALL NOT BEGIN WITHOUT THE APPROVAL OF THE ENGINEER.
6. CONTRACTOR SHALL COORDINATE CONSTRUCTION OF MSE WALL ON SOUTH APPROACH WITH ADJACENT STREET CAR PROJECT.

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SHEET NO. 2 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
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414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**GENERAL NOTES**

## SUMMARY OF ROADWAY QUANTITIES

| BID ITEM | UNIT | TOTAL | SPECIFICATION |
|---|---|---|---|
| MOBILIZATION | LUMP SUM | 1 | Div. 1. 01520 |
| DEMOLITION | LUMP SUM | 1 | Div. 2. 02111 |
| CLEARING AND GRUBBING | LUMP SUM | 1 | Div. 2. 02120 |
| SURVEYING AND CONSTRUCTION STAKING | LUMP SUM | 1 | Div. 1. 01722 |
| TRAFFIC CONTROL | LUMP SUM | 1 | Div. 1. 01700 |
| UNCLASSIFIED EXCAVATION | CU YD | 967 | Div. 2. 02121 |
| COMPACTING EMBANKMENT | CU YD | 1,536 | Div. 2. 02121 |
| EMBANKMENT, CONTRACTOR FURNISHED | CU YD | 569 | Div. 2. 02121 |
| 4 IN. UNTREATED COMPACTED AGGREGATE | CU YD | 128 | Div. 2. 02060 |
| CONCRETE SIDEWALK, 12 IN., REINFORCED | SQ FT | 2,129 | Div. 2. 02775 |
| CONCRETE SIDEWALK, 8 IN., REINFORCED | SQ FT | 3,203 | Div. 2. 02775 |
| CONCRETE SIDEWALK, 6 IN. | SQ FT | 9,887 | Div. 2. 02775 |
| FULL DEPTH PAVEMENT PATCH | SQ YD | 52 | Div. 2. 02740 |
| MECHANICALLY STABILIZED EARTH WALL SYSTEM | SQ FT | 3,266 | MoDOT 720 |
| SELECT GRANULAR BACKFILL FOR STRUCTURAL SYSTEMS | CU YD | 2,102 | MoDOT 720 |
| CONCRETE TRAFFIC BARRIER (SPECIAL) | LF | 355 | MoDOT 617 |
| DECORATIVE FENCE (3') | LF | 810 | Div. 5. 05607 |
| DECORATIVE FENCE (5') | LF | 52 | Div. 5. 05607 |
| DOUBLE GRATE INLET | EA | 3 | Div. 2. 02630 |
| GRATE INLET (SPECIAL) | EA | 4 | Div. 2. 02630 |
| JUNCTION BOX (5 X 4) | EA | 1 | Div. 2. 02630 |
| JUNCTION BOX (6 X 5), SPECIAL | EA | 2 | Div. 2. 02630 |
| STD WPB STEEL PIPE, 5 IN. | LF | 5 | Div. 2. 02630 |
| REINFORCED CONCRETE PIPE, 15 IN. | LF | 274 | Div. 2. 02630 |
| PAVEMENT MARKING, EPOXY - 4" INTERMITTENT YELLOW | LF | 494 | Div. 2. 02316 |
| SH-FLAT SHEET | SQ FT | 7 | MoDOT 902 |
| 2 IN. PSST POST - 12 GA. | LF | 23 | MoDOT 903 |
| DRIVEN POST ANCHOR FOR 2 IN PSST - 12 GA. | EA | 1 | MoDOT 903 |
| INLET PROTECTION | EA | 8 | Div. 1. 01570 |
| DITCH CHECK | EA | 2 | Div. 1. 01570 |
| WATTLE/LOG/BERM | LF | 842 | Div. 1. 01570 |
| SEDIMENT FENCE | LF | 836 | Div. 1. 01570 |
| SEDIMENT TRAP | EA | 1 | Div. 1. 01570 |
| DEWATERING | EA | 1 | Div. 1. 01570 |
| TEMPORARY SEEDING AND MULCHING | ACRE | 1.0 | Div. 1. 01570 |
| SOD | SQ YD | 2,257 | Div. 2. 02410 |
| ALTERNATE BID ITEMS | | | |
| SH-FLAT SHEET | SQ FT | 8 | MoDOT 902 |
| 2 IN. PSST POST - 12 GA. | LF | 38 | MoDOT 903 |
| DRIVEN POST ANCHOR FOR 2 IN. PSST - 12 GA. | EA | 4 | MoDOT 903 |

## REMOVAL OF IMPROVEMENTS

| FROM STATION | TO STATION | OFFSET | DESCRIPTION | AMOUNT | REMARKS |
|---|---|---|---|---|---|
| 100+55.78 | 102+69.70 | CL | EXISITNG PAVEMENT | 495 SQ YD | |
| 115+32.41 | 120+50.00 | LT & RT | EXISITNG TRAIL | 532 SQ YD | |

## SUMMARY OF PERMANENT SIGNAGE

| SIGN NO. | SIZE | DESCRIPTION | TOTAL |
|---|---|---|---|
| R9-6 | 12" X 18" | BICYCLE (SYMBOL) YIELD TO PEDS | 3 |
| W3-3 | 18" X 18" | SIGNAL (SYMBOL) | 1 |
| SP-1 | 48" X 12" | RIVERFRONT RIGHT ARROW (SYMBOL) (ALTERNATE BID ITEM) | 1 |
| SP-2 | 48" X 12" | LEFT ARROW (SYMBOL) RIVERFRONT (ALTERNATE BID ITEM) | 1 |

## SUMMARY OF EROSION CONTROL

| STATION | OFFSET | DESCRIPTION | QUANTITY | UNIT |
|---|---|---|---|---|
| 101+60.00 | 4.90' RT. | INLET PROTECTION | 1 | EA |
| 101+90.50 | 4.90' RT. | INLET PROTECTION | 1 | EA |
| 102+72.00 | 9.80' LT. | INLET PROTECTION | 1 | EA |
| 102+70.40 TO 102+83.52 | | WATTLE/LOG/BERM | 46.67 | LF |
| 103+40.00 | 9.50' LT. | INLET PROTECTION | 1 | EA |
| 103+44.95 | 20.76' RT. | INLET PROTECTION | 1 | EA |
| 104+07.68 TO 104+24.55 | | WATTLE/LOG/BERM | 83.34 | LF |
| 104+89.05 TO 104+99.71 | | WATTLE/LOG/BERM | 45.59 | LF |
| 106+14.37 TO 106+27.40 | | WATTLE/LOG/BERM | 55.42 | LF |
| 106+92.78 TO 107+04.98 | | WATTLE/LOG/BERM | 69.77 | LF |
| 107+64.98 TO 107+67.24 | | WATTLE/LOG/BERM | 88.51 | LF |
| 108+88.81 TO 109+44.26 | | WATTLE/LOG/BERM | 77.19 | LF |
| 110+23.42 TO 110+48.65 | | WATTLE/LOG/BERM | 87.51 | LF |
| 111+82.82 TO 111+97.49 | | WATTLE/LOG/BERM | 79.90 | LF |
| 112+86.24 TO 113+24.86 | | WATTLE/LOG/BERM | 70.79 | LF |
| 114+15.32 TO 114+66.59 | | WATTLE/LOG/BERM | 85.39 | LF |
| 115+17.96 TO 115+59.01 | | WATTLE/LOG/BERM | 51.55 | LF |
| 115+29.42 TO 116+02.97 | | SEDIMENT FENCE | 128.00 | LF |
| 116+19.04 TO 120+51.47 | | SEDIMENT FENCE | 448.11 | LF |
| 115+54.95 TO 118+13.02 | | SEDIMENT FENCE | 259.53 | LF |
| 116+19.04 | 16.53' RT. | DITCH CHECK | 1 | EA |
| 117+33.00 | 42.60' RT. | INLET PROTECTION | 1 | EA |
| 117+32.13 | 34.72' RT. | DITCH CHECK | 1 | EA |
| 117+42.00 | 5.50' RT. | INLET PROTECTION | 1 | EA |
| 119+80.00 | 13.00' RT. | INLET PROTECTION | 1 | EA |

## SUMMARY OF BRIDGE QUANTITIES

| BID ITEM | UNIT | SUBSTR. | SUPERSTR. | TOTAL | SPECIFICATION |
|---|---|---|---|---|---|
| CLASS 1 EXCAVATION | CU YD | 644.1 | - | 644.1 | MoDOT 206 |
| BRIDGE APPROACH SLAB (MINOR) | SQ YD | - | 72.7 | 72.7 | MoDOT 503 |
| DECORATIVE FENCE (8') (STRUCTURES) | LF | - | 516 | 516 | Div. 5. 05607 |
| DECORATIVE FENCE (3') (STRUCTURES) | LF | - | 2,084 | 2,084 | Div. 5. 05607 |
| CHAIN-LINK FENCE (8')(STRUCTURES) | LF | - | 516 | 516 | Div. 5. 05607 |
| CONCRETE TRAFFIC BARRIER, SPECIAL (STRUCTURES) | LF | - | 2,641 | 2,641 | MoDOT 617 |
| DRILLED SHAFTS (3 FT. 0 IN. DIA.) | LF | 1,097 | - | 1,097 | MoDOT 701 |
| ROCK SOCKETS (3 FT. 0 IN. DIA.) | LF | 200 | - | 200 | MoDOT 701 |
| HELICAL PILE | LF | 1,596 | - | 1,596 | MoDOT 702 |
| VIDEO CAMERA INSPECTION | EACH | 75 | - | 75 | MoDOT 701 |
| FOUNDATION INSPECTION HOLES | LF | 750 | - | 750 | MoDOT 701 |
| SONIC LOGGING TESTING | EACH | 25 | - | 25 | MoDOT 701 |
| STRUCTURAL STEEL PILES (12 IN) | LF | 2,739 | - | 2,739 | MoDOT 702 |
| PRE-BORE FOR PILING | LF | 145 | - | 145 | MoDOT 702 |
| CLASS B-1 CONCRETE (SUBSTRUCTURE) | CU YD | 528.2 | - | 528.2 | MoDOT 703 |
| SLAB ON CONCRETE NU-GIRDER | SQ YD | - | 2,288 | 2,288 | MoDOT 703 |
| NU 53, PRESTRESSED CONCRETE NU-GIRDER | LF | - | 2,551 | 2,551 | MoDOT 705 |
| REINFORCING STEEL (BRIDGES) | LB | 114,980 | - | 114,980 | MoDOT 706 |
| CONDUIT SYSTEM ON STRUCTURE | LUMP SUM | - | 1 | 1 | MoDOT 707 |
| STEEL INTERMEDIATE DIAPHRAGM FOR P/S CONCRETE GIRDERS | EACH | - | 19 | 19 | MoDOT 712 |
| SLAB DRAIN (SPECIAL) | EACH | - | 52 | 52 | MoDOT 712 |
| DRAINAGE SYSTEM (ON STRUCTURE) | LUMP SUM | - | 1 | 1 | MoDOT 712 |
| LAMINATED NEOPRENE BEARING PAD (TAPERED) | EACH | - | 16 | 16 | MoDOT 716 |
| LAMINATED NEOPRENE BEARING PAD ASSEMBLY | EACH | - | 22 | 22 | MoDOT 716 |
| TYPE N PTFE BEARING | EACH | - | 10 | 10 | MoDOT 716 |
| STRIP SEAL EXPANSION JOINT SYSTEM | LF | - | 54 | 54 | MoDOT 717 |
| PILE POINT REINFORCEMENT | EACH | 35 | - | 35 | MoDOT 702 |
| BRIDGE LIGHTING | LUMP SUM | - | 1 | 1 | Div. 16. 16511 |
| LIGHT STANDARD (BRIDGE) | EACH | - | 17 | 17 | Div. 16. 16511 |
| EXCAVATION PREPARATION FOR PILE INTEGRITY TESTING | LUMP SUM | - | - | 1 | JSP |
| PILE INTEGRITY TESTING | LUMP SUM | - | - | 1 | JSP |
| SEISMIC REFRACTION | LUMP SUM | - | - | 1 | JSP |
| PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE | LUMP SUM | 1 | - | 1 | MoDOT 216 |
| RAILROAD INSPECTION AND COORDINATION | LUMP SUM | - | - | 1 | Div. 1. 01307 |
| RAILROAD FLAGGING | LUMP SUM | - | - | 1 | Div. 1. 01307 |
| ALTERNATE BID ITEMS | | | | | |
| CLASS 1 EXCAVATION | CU YD | 195.1 | - | 195.1 | MoDOT 206 |
| DRILLED SHAFTS (3 FT. 0 IN. DIA.) | LF | 205 | - | 205 | MoDOT 701 |
| ROCK SOCKETS (3 FT. 0 IN. DIA.) | LF | 60 | - | 60 | MoDOT 701 |
| VIDEO CAMERA INSPECTION | EA | 30 | - | 30 | MoDOT 701 |
| FOUNDATION INSPECTION HOLES | LF | 300 | - | 300 | MoDOT 701 |
| SONIC LOGGING TESTING | EA | 10 | - | 10 | MoDOT 701 |
| CLASS B-1 CONCRETE (SUBSTRUCTURE) | CU YD | 116.4 | - | 116.4 | MoDOT 703 |
| REINFORCING STEEL (BRIDGES) | LB | 12,820 | - | 12,820 | MoDOT 706 |
| PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE | LUMP SUM | 1 | - | 1 | MoDOT 216 |

## SUMMARY OF LIGHTING

| DESCRIPTION | NOTE | UNIT | TOTAL |
|---|---|---|---|
| CONTROLLER LIGHTING EQUIPMENT ENCLOSURE | 2CKT | EA | 1 |
| CONTROLLER PEDESTAL FOUNDATION | | CU YD | 1 |
| 3/4" X 8' COPPERWELD ROD | | EA | 1 |
| UNFUSED KIT FOR GROUND WIRE | | EA | 17 |
| FUSE HOLDERS | | EA | 34 |
| IDENTIFICATION TAGS (LUMINAIRE POLES) | | EA | 17 |
| DECORATIVE LUMINAIRE | SL1 | EA | 17 |
| POLE 14' SENTRY ELECTRIC ALUMINUM | SP1 | EA | 17 |
| #10 1-CONDUCTOR RHH/RHW/USE COPPER | STLT CKT IN POLE | LF | 670 |
| #8 1-CONDUCTOR RHH/RHW/USE COPPER | STLT CKT | LF | 4220 |
| #2 1-CONDUCTOR RHH/RHW/USE COPPER | TO XFMR | LF | 370 |
| BRIDGE JUNCTION BOX | | EA | 17 |
| INGRADE JUNCTION BOX PREFORMED CLASS II | | EA | 1 |
| TRENCHING AND BACKFILL | | LF | 250 |
| 3" PVC SCHEDULE 40 CONDUIT | SERVICE | LF | 180 |
| 2" PVC SCHEDULE 40 CONDUIT | STLT CKT | LF | 1320 |

NOTE: WHERE AN ITEM REFERS TO A MoDOT SPECIFICATION, EXCEPT AS OTHERWISE INDICATED ON THE DRAWINGS, THE ITEM SHALL CONFORM TO THE LISTED SECTION OF THE LISTED SECTION OF THE MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.

SHEET NO. 3 | TOTAL SHEETS 187

DATE PREPARED 11/18/2024

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# QUANTITIES AND REMOVALS

11:12:59 AM
User:douglasc1
c:\Users\douglasc1\Documents\wspcoDMS\wsp-pb-us-pw-02\wd034959\w30900661_Quantities_Summary.dgn

# ITEMIZED QUANTITY SCHEDULE

| ROADWAY ASSEMBLY NUMBER RA# (RE: PLANS) | | KCMO POLE NUMBER | DESCRIPTION OF NEW WORK | INGRADE PULLBOX | | BRIDGE PULLBOX | | STLT CTL | | **SL1** LUMINAIRE DECORATIVE LED NATURAL | | | **SP1** LIGHTING POLE ASSEMBLY ALUM | **SI1** IDENTIF TAGS (EA) | | | **SF1** FUSE HOLDERS (EA) | | | **SG1** UNFUSED KIT FOR GND WIRE (EA) | | | **SR1** CABLE RETAINER (EA) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ETR | NEW | ETR | NEW | 2CKT | 4CKT | ETR | RELO | NEW | NEW | ETR | RELO | NEW | ETR | RELO | NEW | ETR | RELO | NEW | ETR | RELO | NEW |
| | | GRAND BOULEVARD BRIDGE | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 2 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 3 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 4 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 5 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 6 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 7 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 8 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 9 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 10 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 11 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 12 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 13 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 14 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 15 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 16 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 17 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | CONT A | NE | | | | | 1 | | | | | | | | | | | | | | | | | |
| | | JB18 | NE | | 1 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | **TOTAL** | | | 1 | | 17 | 1 | | | | 17 | 17 | | | 17 | | | 34 | | | 17 | | | 17 |

# EQUIPMENT LIST

EQUIPMENT LIST

| SYMBOL | MANUFACTURER | MODEL # | LAMP | COLOR TEMP | WATTS | VOLTAGE | FINISH | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CONTROLLERS | | | | | | | | | |
| CONT2 | PACIFIC UTILITY PRODUCTS<br><br>EQUAL:<br>MYERS OR MILBANK | #MHPD-KCMO-33-120/240VAC, 1PH, 3W, 100A (2CKT CONTROLLER) | N/A | N/A | | 120/240V | NATURAL | SERVICE EQUIPMENT ENCLOSURE, 120/240VAC, 1PH, 3W, 100A WITH A 10,000A SCCR RATING, 4-JAW METER SOCKET WITH 5TH CLIP, SURGE ARRESTER, TEST SWITCH, PE RECEPTACLE, BONDED AND INSULATED NEUTRAL, RAINPROOF TYPE NEMA 3R ENCLOSURE WITH ALUMINUM FINISH, TERMINAL BLOCK, 60A CLASS "J" FUSES, (2) 30A-WP CIRCUIT BREAKERS, 15A-1P CIRCUIT BREAKER AND (2) 30A SIEMENS ELECTRICALLY HELD CONTACTORS. | REFER TO MOST CURRENT KCPL + KCMO STANDARDS AND SPECS FOR DETAILS. |
| LUMINAIRES | | | | | | | | | |
| SL1 | SENTRY ELECTRIC OR APPROVED EQUIVALENT | SBP-NB-LEDV29B-1.05A-830-DR-KHT2-BK | LED | 3000K | 58W | 120-277V | BLACK | DECORATIVE LED PEDESTRIAN FIXTURE WITHCAST ALUMINUM HOUSING AND TYPE 2 REFLECTOR. PROVIDE INTEGRAL LED, 0-10V DIMMABLE DRIVER WITH UNIVERSAL VOLTAGE. PROVIDE 20kv/20kA SPD, 7 PIN PHOTOCONTROL RECEPTACLE AND RECEPTACLE FOR SHORTING CAP. PROVIDE FACTORY INSTALLED, ANSI C126.15 COMPLIANT, NEMA LABEL. | |
| POLES | | | | | | | | | |
| 14FT PEDESTRIAN | | | | | | | | | |
| SP1 | SENTRY ELECTRIC OR APPROVED EQUIVALENT | SAL-6R4.5-14'-BK | N/A | N/A | N/A | N/A | BLACK | ROUND TAPERED EXTRUDED ALUMINUM. POLE HEIGHT SHALL ALLOW FOR 14FT MOUNTING HEIGHT OF LUMINAIRE. POLE SHALL BE DESIGNED TO WITHSTAND 90MPH WINDS WITH A FIXTURE WEIGHTING UP TO 55LBS. PROVIDE ACCESS DOOR LOCATION ON SIDE OF POLE THAT IS ALONG BRIDGE. REFER TO IMPROVEMENT SCHEDULES FOR LUMINAIRE TYPE FOR THIS ASSEMBLY. | |
| ACCESSORIES | | | | | | | | | |
| SF1 | BUSSMAN OR APPROVED EQUAL | #HEB -JW-RYC AND #HEB-JW-RLC-J (LAST POLE) | | | | | | SINGLE-POLE, SET SCREW, IN-LINE BREAKAWAY FUSE HOLDERS. FOR THE (2) "HOT" BREAKAWAY CONDUCTORS, PLACE A 10 AMP KTK FUSE IN EACH BREAKAWAY FUSEHOLDER. | |
| SG1 | BUSSMAN OR APPROVED EQUAL | #HEB -JW-RYC AND #HEB-JW-RLC-J (LAST POLE) | | | | | | SINGLE-POLE, SET SCREW, IN-LINE BREAKAWAY FUSE HOLDERS. PLACE A NNB COPPER SLUG IN THE SYSTEM GROUND FUSEHOLDER. | |
| SR1 | PELCO OR APPROVED EQUAL | #SP-6224-GLV | | | | | | GALVANIZED STEEL CABLE RETAINER ASSEMBLY | RE: BRIDGE LIGHTING DETAILS |

GENERAL NOTES:

# ELECTRICAL IMPROVEMENTS SCHEDULE

| FROM | TO | C-C DIST | STREETLIGHT CONDUIT RIGID IN TRENCH 1" (LF) | 1-1/2" (LF) | 2" (LF) | 3" (LF) | STREETLT CONT. NO. | STREETLT CIRCUIT NO. | STREETLIGHT CABLE 8 AWG, 1 CONDUCTOR COND QTY | WIRE LENGTH | ADJUST 5% C.C | ADJUST 6FT PB | BID TOTAL | IN POLE CABLE 10 AWG, 1 COND WIRE LENGTH | ADJUST 5%/CON | BID TOTAL | BORING (LF) | TRENCHING (LF) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 | 0 | 0 | 0 | | | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 |
| GRAND BOULEVARD BRIDGE | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 2 | 3 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 3 | 4 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 4 | 5 | 73.00 | | | 73 | | A | 1 | 3 | 219 | 11 | | 233 | 37 | 2 | 39 | | |
| 5 | 6 | 76.00 | | | 76 | | A | 1 | 3 | 228 | 11 | | 242 | 37 | 2 | 39 | | |
| 6 | 7 | 76.00 | | | 76 | | A | 1 | 3 | 228 | 11 | | 242 | 37 | 2 | 39 | | |
| 7 | 8 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 8 | 9 | 73.00 | | | 73 | | A | 1 | 3 | 219 | 11 | | 233 | 37 | 2 | 39 | | |
| 9 | 10 | 72.00 | | | 72 | | A | 1 | 3 | 216 | 11 | | 230 | 37 | 2 | 39 | | |
| 10 | 11 | 78.00 | | | 78 | | A | 1 | 3 | 234 | 12 | | 249 | 37 | 2 | 39 | | |
| 11 | 12 | 78.00 | | | 78 | | A | 1 | 3 | 234 | 12 | | 249 | 37 | 2 | 39 | | |
| 12 | 13 | 76.00 | | | 76 | | A | 1 | 3 | 228 | 11 | | 242 | 37 | 2 | 39 | | |
| 13 | 14 | 77.00 | | | 77 | | A | 1 | 3 | 231 | 12 | | 246 | 37 | 2 | 39 | | |
| 14 | 15 | 82.00 | | | 82 | | A | 1 | 3 | 246 | 12 | | 261 | 37 | 2 | 39 | | |
| 15 | 16 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 16 | 17 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 17 | JB | 39.00 | | | 39 | | A | 1 | 3 | 117 | 6 | | 126 | 37 | 2 | 39 | | |
| JB | CONT A | 70.00 | | | 70 | | A | 1 | 3 | 210 | 11 | | 224 | | | | | 70 |
| CONT A | UTILITY | 180.00 | | | | 180 | | | | | | | | | | | | 180 |
| ALS W/ADJUSTMENT (SUM OF COLUMNS): | | | 0 | 0 | 1320 | 180 | | | | | | | 4212 | | | 660 | | 250 |
| **BID TOTAL (TO NEAREST 10):** | | | **0** | **0** | **1320** | **180** | | | | | | | **4220** | | | **670** | **0** | **250** |

# VOLTAGE DROP SCHEDULE

GRAND BOULEVARD BRIDGE: CIRCUIT A-1

**VOLTAGE DROP**

| POLE NO. FROM (#) | POLE NO. TO (#) | CABLE LENGTH (FT) | CURRENT DRAW (AMP) | AMPxFT. x2 (AMP-FT) | VOLTAGE DROP (VOLTS) | CUMUL. VOLTAGE DROP (VOLTS) | WIRE SIZE |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 75.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8CU |
| 2 | 3 | 75.00 | 0.48 | 72.30 | 0.06 | 0.06 | 8CU |
| 3 | 4 | 75.00 | 0.72 | 108.45 | 0.08 | 0.14 | 8CU |
| 4 | 5 | 73.00 | 0.96 | 140.74 | 0.11 | 0.25 | 8CU |
| 5 | 6 | 76.00 | 1.21 | 183.16 | 0.14 | 0.39 | 8CU |
| 6 | 7 | 76.00 | 1.45 | 219.79 | 0.17 | 0.56 | 8CU |
| 7 | 8 | 75.00 | 1.69 | 253.05 | 0.20 | 0.76 | 8CU |
| 8 | 9 | 73.00 | 1.93 | 281.49 | 0.22 | 0.98 | 8CU |
| 9 | 10 | 72.00 | 2.17 | 312.34 | 0.24 | 1.22 | 8CU |
| 10 | 11 | 78.00 | 2.41 | 375.96 | 0.29 | 1.51 | 8CU |
| 11 | 12 | 78.00 | 2.65 | 413.56 | 0.32 | 1.83 | 8CU |
| 12 | 13 | 76.00 | 2.89 | 439.58 | 0.34 | 2.17 | 8CU |
| 13 | 14 | 77.00 | 3.13 | 482.48 | 0.37 | 2.55 | 8CU |
| 14 | 15 | 82.00 | 3.37 | 553.34 | 0.43 | 2.97 | 8CU |
| 15 | 16 | 75.00 | 3.62 | 542.25 | 0.42 | 3.39 | 8CU |
| 16 | 17 | 75.00 | 3.86 | 578.40 | 0.45 | 3.84 | 8CU |
| 17 | JB | 39.00 | 4.10 | 319.57 | 0.25 | 4.09 | 8CU |
| JB | CNTL A | 70.00 | 4.10 | 573.58 | 0.44 | 4.54 | 8CU |
| | | | 0.00 | 0.00 | 0.00 | 0.00 | 8CU |
| | | 1320.00 | NGEST RUN | **TOTAL DROP** | 4.54 | | |
| | 0 | 0.00 | 0.00 | 0.00 | 0.00 | | 1CU |

**VOLTAGE DROP SUMMARY**

| | | |
|---|---|---|
| **TRANSFORMER VOLTAGE** | **240** | **VOLTS** |
| **CONTROLER VOLTAGE** | **240.00** | **VOLTS** |
| **END OF LONGEST CIRCUIT** | **235.46** | **VOLTS** |
| **MAXIMUM VOLTAGE DRO** | **4.54** | **VOLTS** |
| **MAXIMUM % VOLTAGE DR** | **1.89** | **%** |

SHEET NO. 4 | TOTAL SHEETS 187

DATE PREPARED 5/24/23

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI · KATHI S. LANDES · NUMBER E-2000147833 · REGISTERED PROFESSIONAL ENGINEER · 5/24/2023

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| DATE | DESCRIPTION |
|---|---|
| . | . |

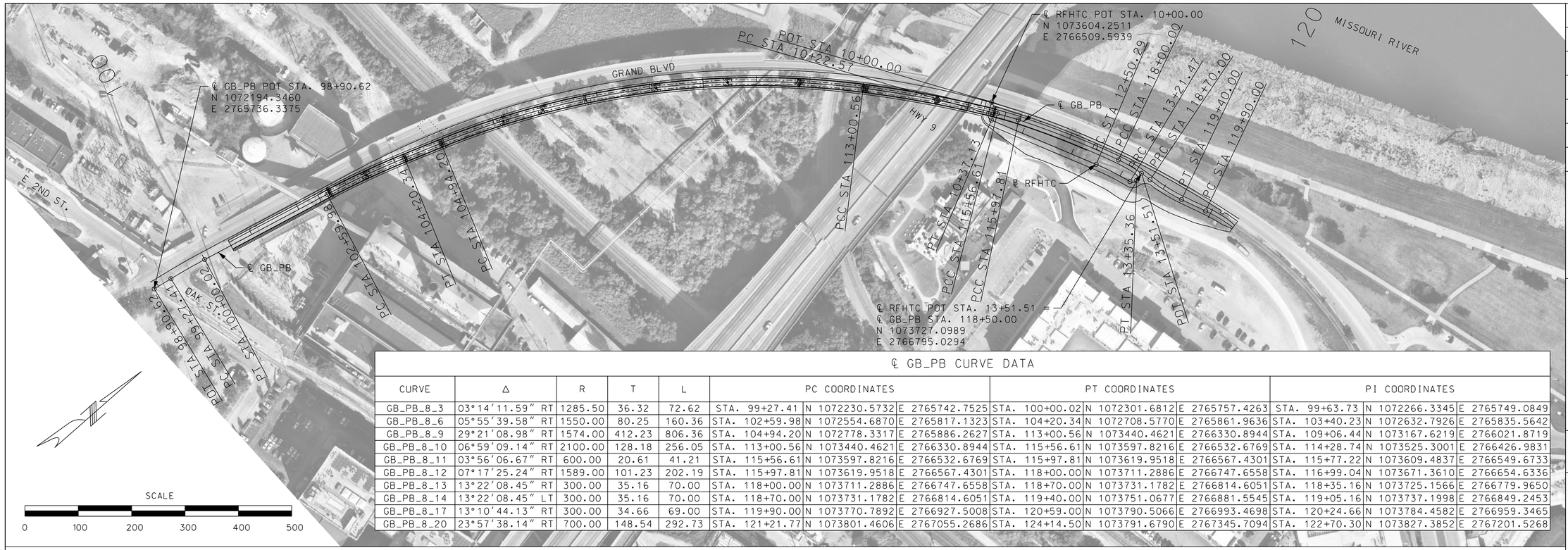
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 W'YANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BRIDGE LIGHTING SCHEDULES**

$TIME$
$USER$
$FILE$




| ℄ GB_PB CURVE DATA | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CURVE | Δ | R | T | L | PC COORDINATES | | | PT COORDINATES | | | PI COORDINATES | | |
| GB_PB_8_3 | 03°14′11.59″ RT | 1285.50 | 36.32 | 72.62 | STA. 99+27.41 | N 1072230.5732 | E 2765742.7525 | STA. 100+00.02 | N 1072301.6812 | E 2765757.4263 | STA. 99+63.73 | N 1072266.3345 | E 2765749.0849 |
| GB_PB_8_6 | 05°55′39.58″ RT | 1550.00 | 80.25 | 160.36 | STA. 102+59.98 | N 1072554.6870 | E 2765817.1323 | STA. 104+20.34 | N 1072708.5770 | E 2765861.9636 | STA. 103+40.23 | N 1072632.7926 | E 2765835.5642 |
| GB_PB_8_9 | 29°21′08.98″ RT | 1574.00 | 412.23 | 806.36 | STA. 104+94.20 | N 1072778.3317 | E 2765886.2627 | STA. 113+00.56 | N 1073440.4621 | E 2766330.8944 | STA. 109+06.44 | N 1073167.6219 | E 2766021.8719 |
| GB_PB_8_10 | 06°59′09.14″ RT | 2100.00 | 128.18 | 256.05 | STA. 113+00.56 | N 1073440.4621 | E 2766330.8944 | STA. 115+56.61 | N 1073597.8216 | E 2766532.6769 | STA. 114+28.74 | N 1073525.3001 | E 2766426.9831 |
| GB_PB_8_11 | 03°56′06.67″ RT | 600.00 | 20.61 | 41.21 | STA. 115+56.61 | N 1073597.8216 | E 2766532.6769 | STA. 115+97.81 | N 1073619.9518 | E 2766567.4301 | STA. 115+77.22 | N 1073609.4837 | E 2766549.6733 |
| GB_PB_8_12 | 07°17′25.24″ RT | 1589.00 | 101.23 | 202.19 | STA. 115+97.81 | N 1073619.9518 | E 2766567.4301 | STA. 118+00.00 | N 1073711.2886 | E 2766747.6558 | STA. 116+99.04 | N 1073671.3610 | E 2766654.6336 |
| GB_PB_8_13 | 13°22′08.45″ RT | 300.00 | 35.16 | 70.00 | STA. 118+00.00 | N 1073711.2886 | E 2766747.6558 | STA. 118+70.00 | N 1073731.1782 | E 2766814.6051 | STA. 118+35.16 | N 1073725.1566 | E 2766779.9650 |
| GB_PB_8_14 | 13°22′08.45″ LT | 300.00 | 35.16 | 70.00 | STA. 118+70.00 | N 1073731.1782 | E 2766814.6051 | STA. 119+40.00 | N 1073751.0677 | E 2766881.5545 | STA. 119+05.16 | N 1073737.1998 | E 2766849.2453 |
| GB_PB_8_17 | 13°10′44.13″ RT | 300.00 | 34.66 | 69.00 | STA. 119+90.00 | N 1073770.7892 | E 2766927.5008 | STA. 120+59.00 | N 1073790.5066 | E 2766993.4698 | STA. 120+24.66 | N 1073784.4582 | E 2766959.3465 |
| GB_PB_8_20 | 23°57′38.14″ RT | 700.00 | 148.54 | 292.73 | STA. 121+21.77 | N 1073801.4606 | E 2767055.2686 | STA. 124+14.50 | N 1073791.6790 | E 2767345.7094 | STA. 122+70.30 | N 1073827.3852 | E 2767201.5268 |

SURVEY CONTROL:

1. STATE PLANE GRID COORDINATES SHOWN HEREON ARE BASED ON THE MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83.

2. VERTICAL DATUM IS NAVD 88 AND ALL IS SHOWN IN U.S. SURVEY FEET.

BENCHMARKS:

1. BM #1 SET CHIS. "+" ON TOP OF NW BOLT OF OCS POLE @ NE CORNER OF 2ND AND GRAND AVE. ELEVATION 796.29

2. BM #2 SET CHIS. "+" ON NE BONNET BOLT OF FIRE HYDRANT N. SIDE OF GRAND AVE. +/- 50' WEST OF END OF CONCRETE BARRIER. ELEVATION 767.97

3. BM #3 SET SQUARE CUT IN SOUTHWEST CORNER OF RETAINING WALL ALONG RIVERFRONT HERITAGE TRAIL, +/- 175' WEST OF BNSF RR TRACKS AND +/- 140' SOUTH OF GRAND BLVD. BRIDGE. ELEVATION 757.99

| RIVERFRONT HERITAGE TRAIL CONNECTOR CURVE DATA | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CURVE | Δ | R | T | L | PC COORDINATES | | | PT COORDINATES | | | PI COORDINATES | | |
| RFHTC_8_3 | 83°24′39.71″ LT | 10.00 | 8.91 | 14.56 | STA. 10+22.57 | N 1073585.1921 | E 2766521.6795 | STA. 10+37.13 | N 1073581.5435 | E 2766534.4755 | STA. 10+31.48 | N 1073577.6663 | E 2766526.4518 |
| RFHTC_8_6 | 08°09′25.29″ RT | 500.00 | 35.65 | 71.18 | STA. 12+50.29 | N 1073674.2867 | E 2766726.4044 | STA. 13+21.47 | N 1073700.6071 | E 2766792.4783 | STA. 12+85.94 | N 1073689.8026 | E 2766758.5030 |
| RFHTC_8_7 | 88°26′38.76″ LT | 9.00 | 8.76 | 13.89 | STA. 13+21.47 | N 1073700.6071 | E 2766792.4783 | STA. 13+35.36 | N 1073711.4175 | E 2766798.8608 | STA. 13+30.23 | N 1073702.9066 | E 2766800.9300 |

ABBREVIATIONS:

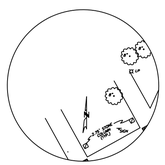
DND = DO NOT DISTURB

P.G. - PROFILE GRADE LINE

RFHTC = RIVERFRONT HERITAGE TRAIL CONNECTOR

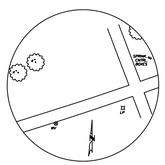
## CONTROL POINTS

CP #1
N = 1074453.540
E = 2768368.796
ELEVATION 765.13



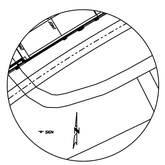
SET 5/8" IRON BAR W/ CONTROL CAP, 75' NORTH OF NORTH BACK OF CURB ALONG GRAND BETWEEN SIDEWALK @ EAST MOST STONE PERGOLA OF THREE

CP #2
N = 1074096.361
E = 2767720.550
ELEVATION 761.69



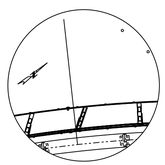
SET 5/8" IRON BAR W/ CONTROL CAP, 60' NORTH OF NORTH BACK OF CURB ALONG GRAND, 100' EAST OF WEST BUILDING LINE FOR NEW APARTMENTS

CP #3
N = 1073628.990
E = 2766573.708
ELEVATION 775.91



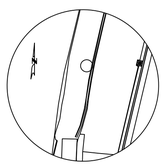
SET 5/8" IRON BAR W/ CONTROL CAP ALONG TOP OF DIRT BANK ON SOUTH SIDE OF GRAND BOULEVARD @ EAST END OF BRIDGE

CP #4
N = 1073259.341
E = 2765947.218
ELEVATION 757.23



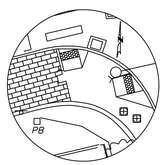
SET 5/8" IRON BAR W/ CONTROL POINT CAP IN FIELD NORTHWEST OF GRAND BRIDGE, WEST OF RAILROAD TRACKS/ASB BRIDGE, SOUTH OF RIVER TRAIL

CP #5
N = 1072405.548
E = 2765723.928
ELEVATION 787.82



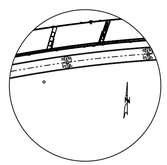
SET MAG NAIL IN SIDEWALK ON WEST SIDE OF GRAND BOULEVARD

CP #6
N = 1071815.249
E = 2765704.854
ELEVATION 800.08




SET MAG NAIL IN SW. CORNER OF INTERSECTION WITH 3RD STREET AND GRAND BOULEVARD.

CP #7
N = 1073074.457
E = 2766164.691
ELEVATION 756.23



SET 1/2" IRON BAR +/- 100' SOUTHEAST OF GRAND BLVD. BRIDGE.

SHEET NO. 5 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

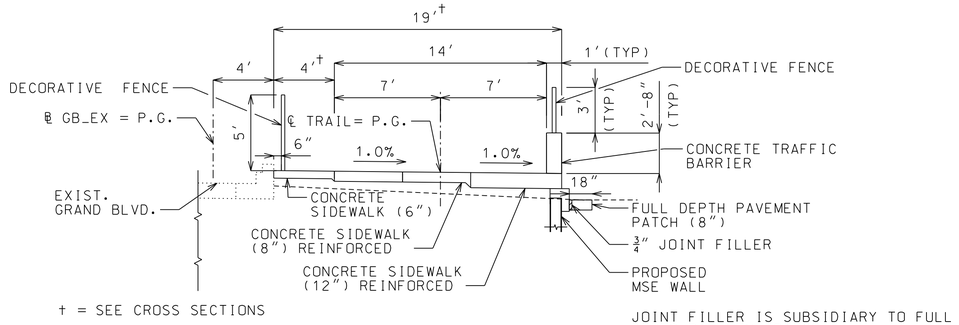
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

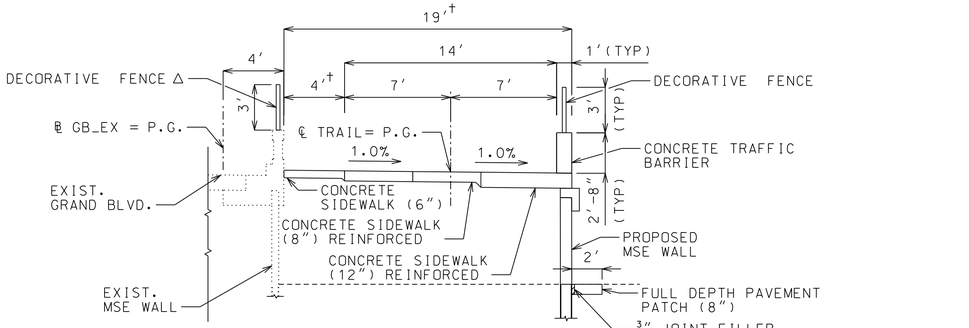
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

GENERAL LAYOUT

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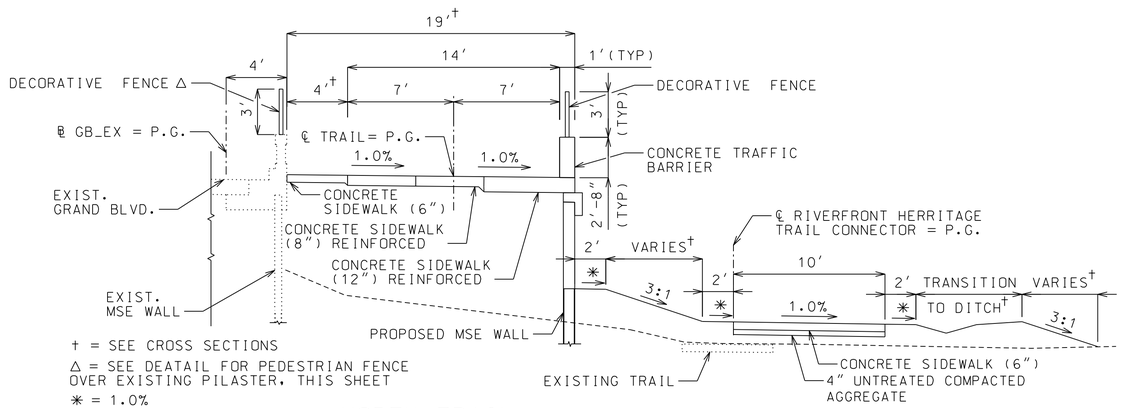



SOUTH TRAIL
STA 100+55.78 TO 101+01.60



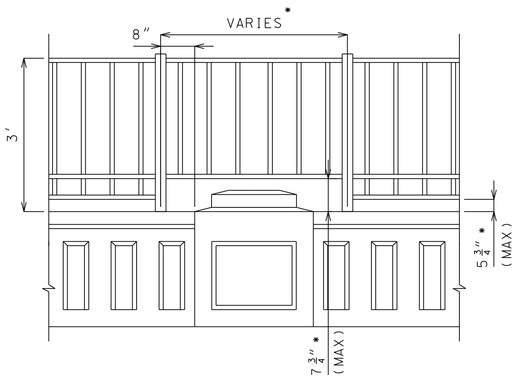

SOUTH TRAIL
STA 101+01.60 TO 102+64.03

BRIDGE APPROACH SLAB THICKNESS = 1′
STA. 102+44.03 TO STA. 102+64.03




NORTH TRAIL
STA 115+51.49 TO 115+99.70

BRIDGE APPROACH SLAB THICKNESS = 1′
STA. 115+51.49 TO STA. 115+71.49




DECORATIVE FENCE (3′)
OVER EXISTING PILASTER

*CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR LENGTHS AND CLEARANCES OVER EACH EXISTING PILASTER.

CONTRACTOR SHALL FIELD CHECK DIMENSIONS OF PEDESTRIAN FENCE OVER EXISTING PILASTER AT EACH PILASTER LOCATION.

PEDESTRIAN FENCE OVER EXISTING PILASTER WILL BE PAID AS PEDESTRIAN FENCE (36″) AND ANY ASSOCIATED FABRICATION FOR PEDESTRIAN FENCE OVER EXISTING PILASTER WILL BE SUBSIDIARY TO THE PEDESTRIAN FENCE (36″) BID ITEM.

SEE SHT NO. 20 - 23 FOR GEOMETRIC DETAILS
SEE SHT NO. 57 - 60 FOR RETAINING WALL DETAILS
SEE SHT NO. 61 - 62 FOR CONCRETE BARRIER AND MOMENT SLAB DETAIL
SEE SHT NO. 155 - 156 FOR PEDESTRIAN FENCE DETAIL

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SHEET NO. 6 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

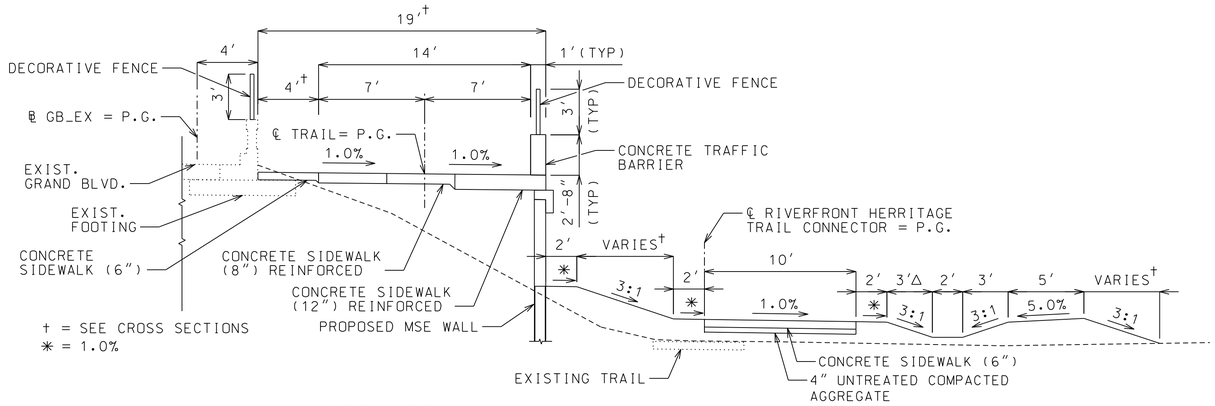
| DATE | DESCRIPTION |
|---|---|
| | |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

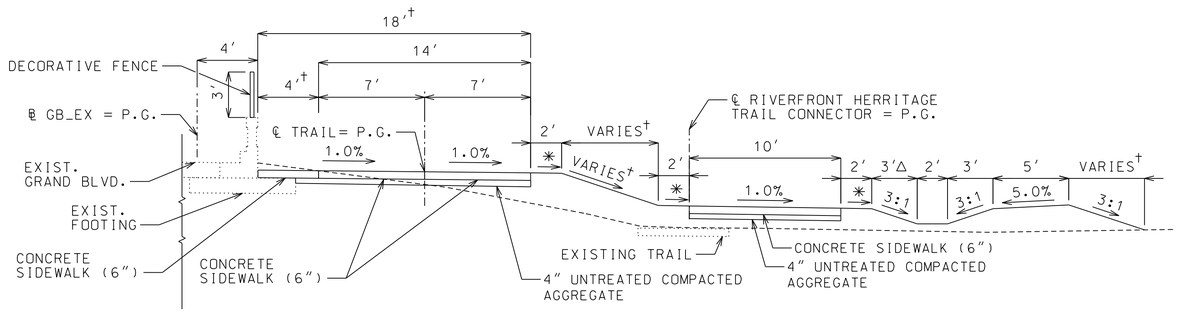
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

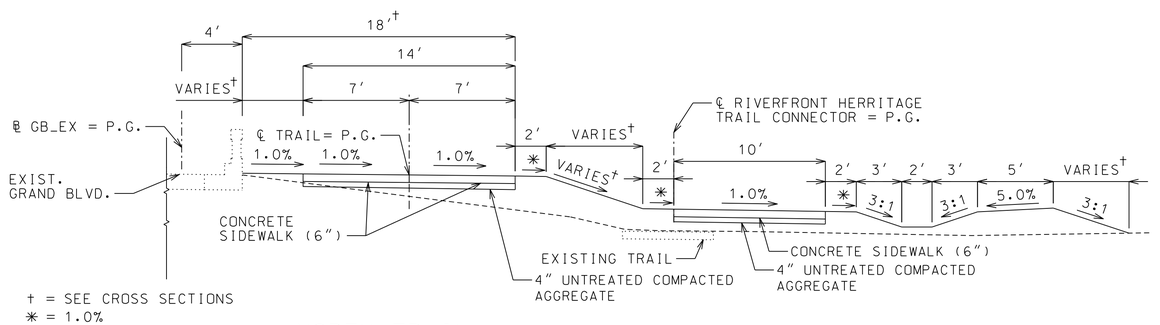
**TRAIL TYPICAL SECTIONS**




NORTH TRAIL
STA 115+99.70 TO 117+38.82




NORTH TRAIL
STA 117+38.85 TO 118+29.00




NORTH TRAIL
STA 118+29.00 TO 118+50.00

| HORIZONTAL DITCH ADJUSTMENT Δ | | |
|---|---|---|
| GBPB STA. TO STA. | RFHTC STA. TO STA. | FORESLOPE WIDTH |
| 117+08.17 TO 117+33.83 | 11+94.25 TO 12+19.25 | 3' TO 4', 25' TRANSITION |
| 117+33.83 TO 117+44.10 | 12+19.25 TO 12+29.25 | 4' |
| 117+44.10 TO 117+69.62 | 12+29.25 TO 12+54.25 | 4' TO 3', 25' TRANSITION |

(SEE CROSS SECTIONS)

SEE SHT NO. 20 - 23 FOR GEOMETRIC DETAILS
SEE SHT NO. 57 - 60 FOR RETAINING WALL DETAILS
SEE SHT NO. 61 - 62 FOR CONCRETE BARRIER AND MOMENT SLAB DETAIL
SEE SHT NO. 155 - 156 FOR PEDESTRIAN FENCE DETAIL

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User:douglasc1
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SHEET NO. 7 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

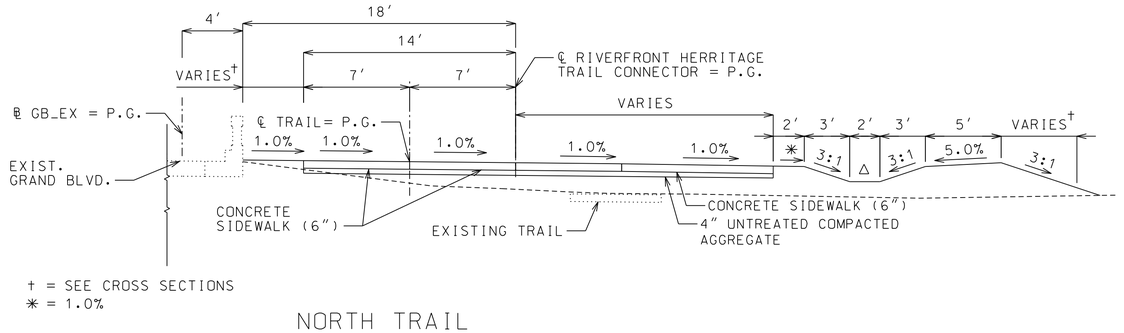
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

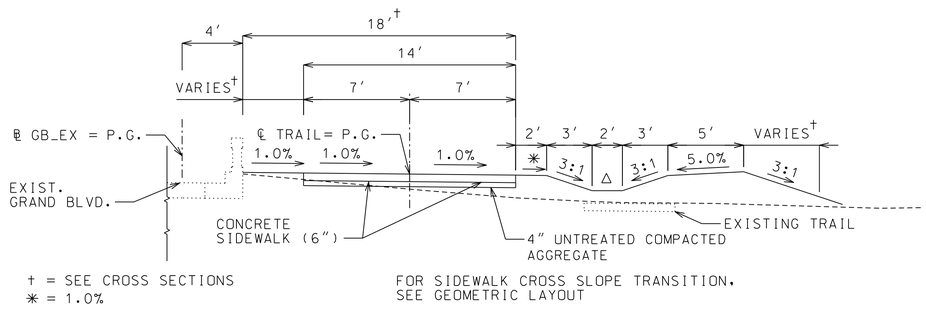

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

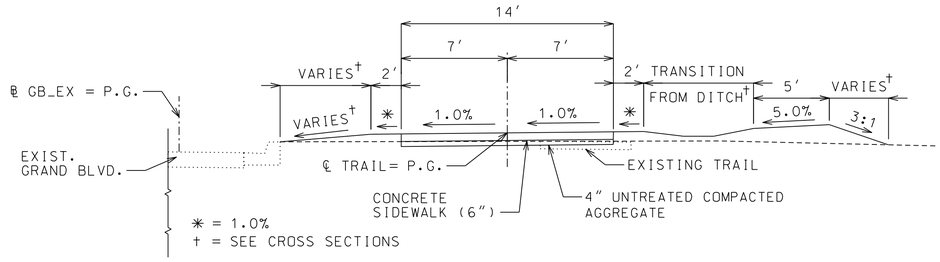

# TRAIL TYPICAL SECTIONS



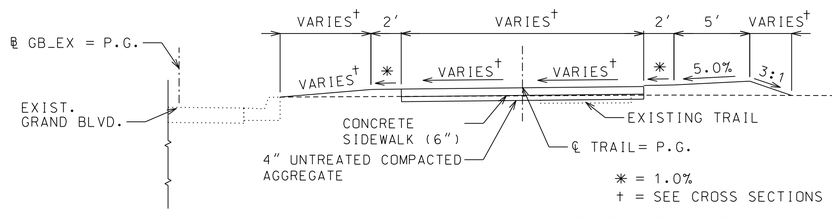

NORTH TRAIL
STA 118+50.00 TO 118+60.00




NORTH TRAIL
STA 118+60.00 TO 120+06.65




NORTH TRAIL
STA 120+06.65 TO 120+30.00




NORTH TRAIL – TIE TO EXISTING
STA 120+30.00 TO 120+50.00

SEE SHT NO. 20 – 23 FOR GEOMETRIC DETAILS
SEE SHT NO. 57 – 60 FOR RETAINING WALL DETAILS
SEE SHT NO. 61 – 62 FOR CONCRETE BARRIER AND MOMENT SLAB DETAIL
SEE SHT NO. 155 – 156 FOR PEDESTRIAN FENCE DETAIL

| HORIZONTAL DITCH ADJUSTMENT △ | | |
|---|---|---|
| GBPB STA. TO STA. | RFHTC STA. TO STA. | DITCH WIDTH |
| 118+40.74 TO 118+65.02 | 13+21.14 TO 13+32.56 | 2′ TO 0′, 30′ TRANSITION |
| 118+65.02 TO 118+79.13 | – | 0′ TO 2′, 25′ TRANSITION |
| 119+80.00 TO 120+05.00 | – | 2′ TO 0′, 25′ TRANSITION |

(SEE CROSS SECTIONS)

SHEET NO. 8 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

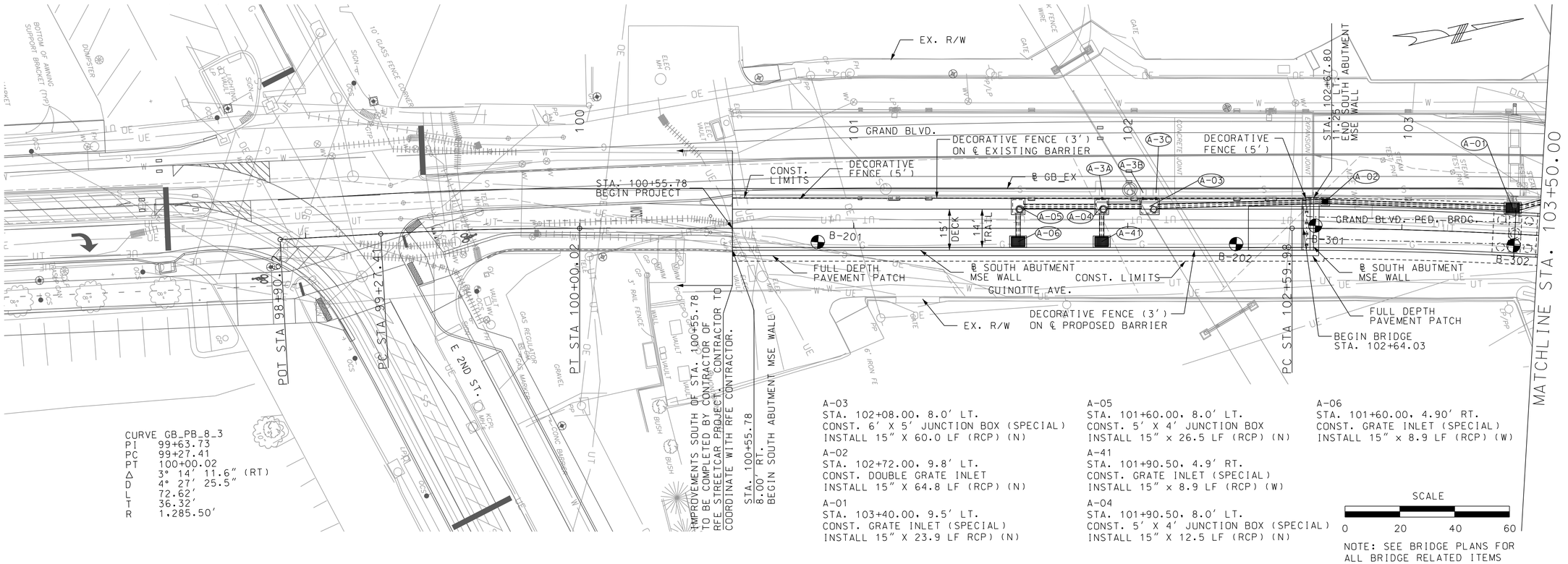
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# TRAIL TYPICAL SECTIONS

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B.M. #1 - STA. 99+62.15, 21.68' RT., ELEV. 796.29, "+" ON TOP OF NW BOLT OF OCS POLE
B.M. #2 - STA. 119+72.43, 51.18' LT., ELEV. 767.97, "+" ON NE BONNET BOLT OF FIRE HYDRANT
B.M. #3 - STA. 111+29.37, 194.17' LT., ELEV. 757.99 , SQUARE CUT IN SW CORNER OF RETAINING WALL




A-03
STA. 102+08.00, 8.0' LT.
CONST. 6' X 5' JUNCTION BOX (SPECIAL)
INSTALL 15" X 60.0 LF (RCP) (N)

A-02
STA. 102+72.00, 9.8' LT.
CONST. DOUBLE GRATE INLET
INSTALL 15" X 64.8 LF (RCP) (N)

A-01
STA. 103+40.00, 9.5' LT.
CONST. GRATE INLET (SPECIAL)
INSTALL 15" X 23.9 LF RCP) (N)

A-05
STA. 101+60.00, 8.0' LT.
CONST. 5' X 4' JUNCTION BOX
INSTALL 15" x 26.5 LF (RCP) (N)

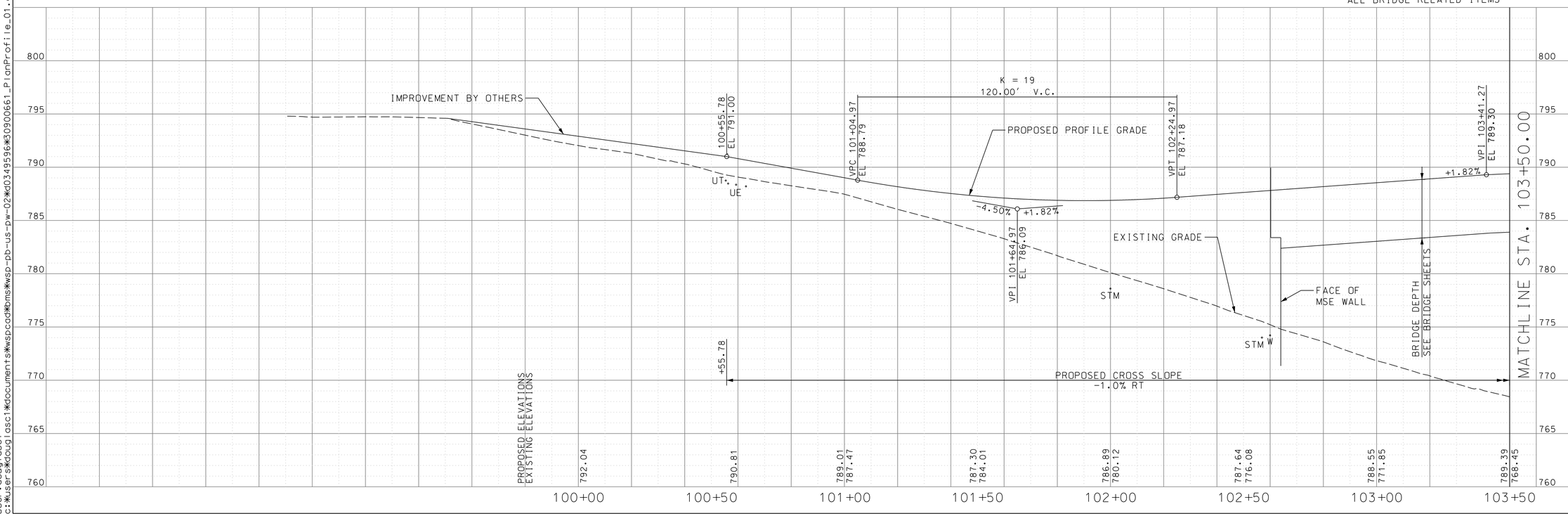
A-41
STA. 101+90.50, 4.9' RT.
CONST. GRATE INLET (SPECIAL)
INSTALL 15" x 8.9 LF (RCP) (W)

A-04
STA. 101+90.50, 8.0' LT.
CONST. 5' X 4' JUNCTION BOX (SPECIAL)
INSTALL 15" X 12.5 LF (RCP) (N)

A-06
STA. 101+60.00, 4.90' RT.
CONST. GRATE INLET (SPECIAL)
INSTALL 15" x 8.9 LF (RCP) (W)

SCALE
0 20 40 60

NOTE: SEE BRIDGE PLANS FOR ALL BRIDGE RELATED ITEMS




SHEET NO. 9 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

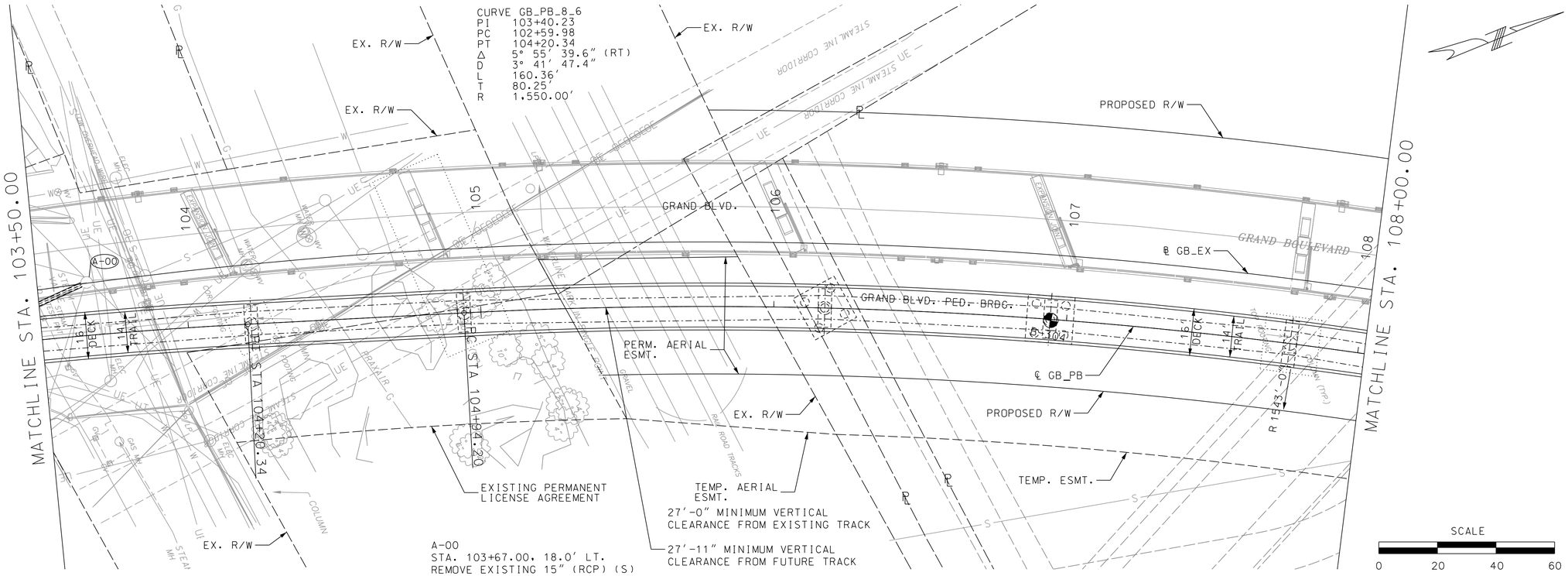
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PLAN AND PROFILE**
**STA. 100+55.78 TO STA. 103+50.00**

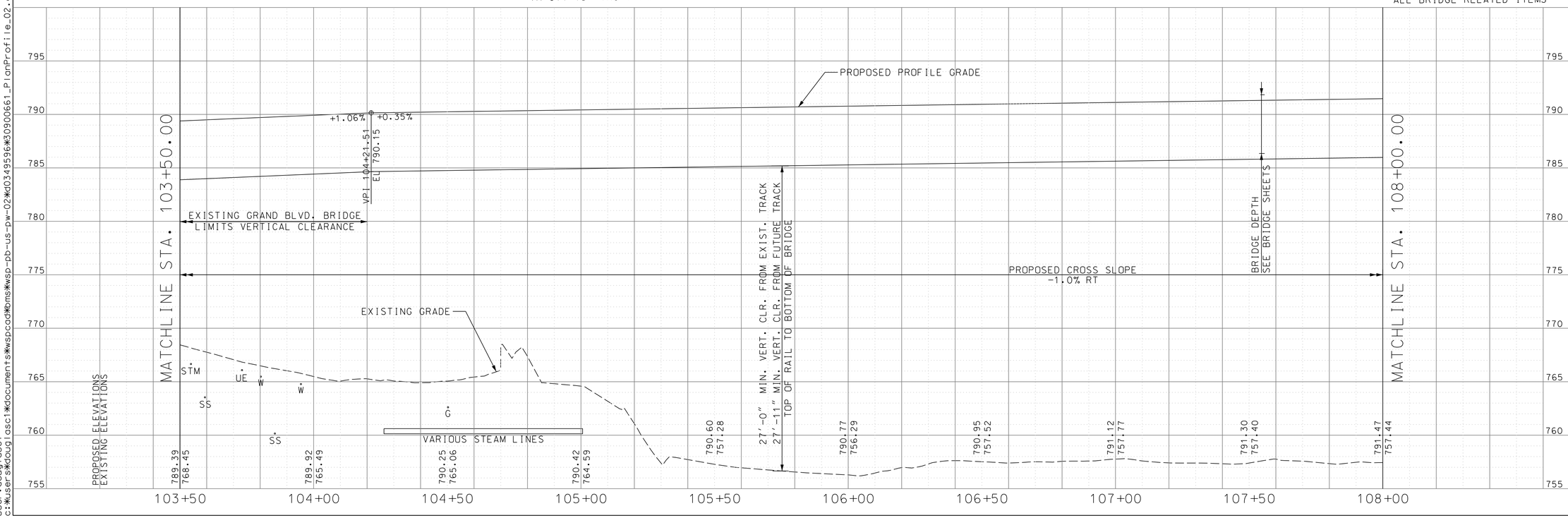
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B.M. #1 - STA. 99+62.15, 21.68' RT., ELEV. 796.29, "+" ON TOP OF NW BOLT OF OCS POLE
B.M. #2 - STA. 119+72.43, 51.18' LT., ELEV. 767.97, "+" ON NE BONNET BOLT OF FIRE HYDRANT
B.M. #3 - STA. 111+29.37, 194.17' LT., ELEV. 757.99, SQUARE CUT IN SW CORNER OF RETAINING WALL




SCALE
0 20 40 60

NOTE: SEE BRIDGE PLANS FOR ALL BRIDGE RELATED ITEMS




| SHEET NO. | TOTAL SHEETS |
|---|---|
| 10 | 187 |

DATE PREPARED
1/2/2025

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

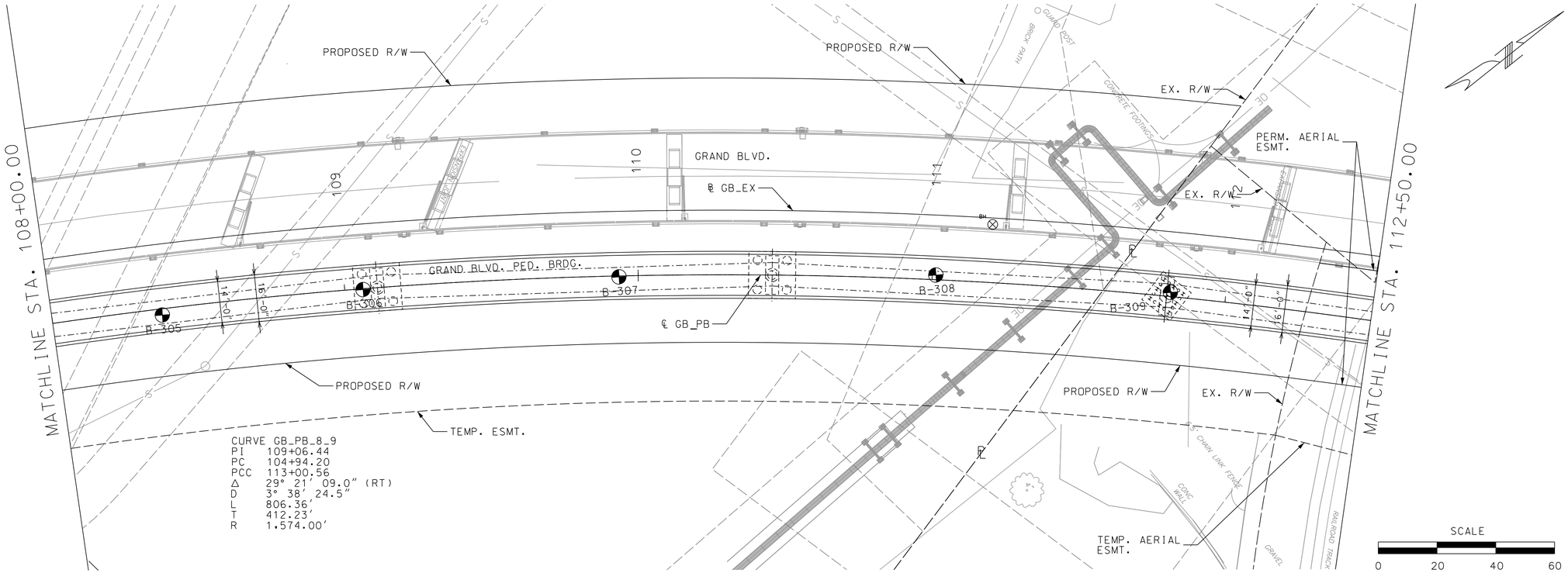
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PLAN AND PROFILE**
**STA. 103+50.00 TO STA. 108+00.00**

12:12:29 PM
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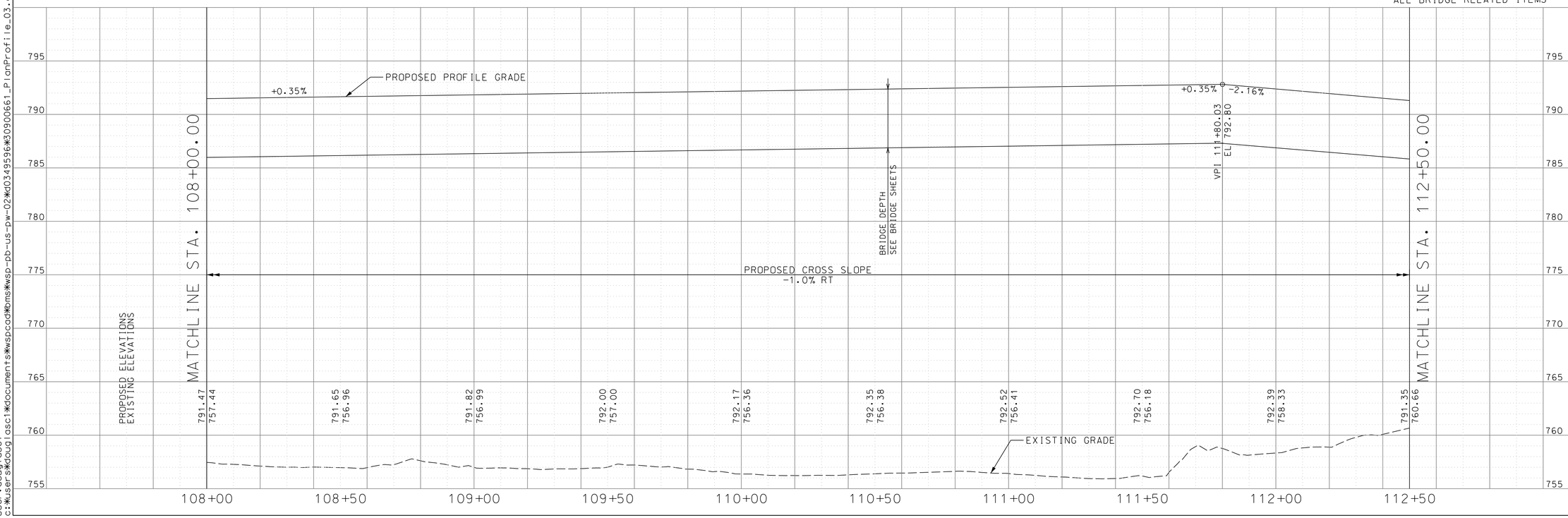
B.M. #1 - STA. 99+62.15, 21.68' RT., ELEV. 796.29, "+" ON TOP OF NW BOLT OF OCS POLE
B.M. #2 - STA. 119+72.43, 51.18' LT., ELEV. 767.97, "+" ON NE BONNET BOLT OF FIRE HYDRANT
B.M. #3 - STA. 111+29.37, 194.17' LT., ELEV. 757.99, SQUARE CUT IN SW CORNER OF RETAINING WALL




CURVE GB_PB_8_9
PI 109+06.44
PC 104+94.20
PCC 113+00.56
Δ 29° 21' 09.0" (RT)
D 3° 38' 24.5"
L 806.36'
T 412.23'
R 1,574.00'

SCALE
0 20 40 60

NOTE: SEE BRIDGE PLANS FOR ALL BRIDGE RELATED ITEMS




**PLAN AND PROFILE**
**STA. 108+00.00 TO STA. 112+50.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 11 | 187 |

DATE PREPARED
11/13/2024
STATE
MISSOURI
ROUTE
GRAND BLVD.
CITY
KANSAS CITY
COUNTY
JACKSON
PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

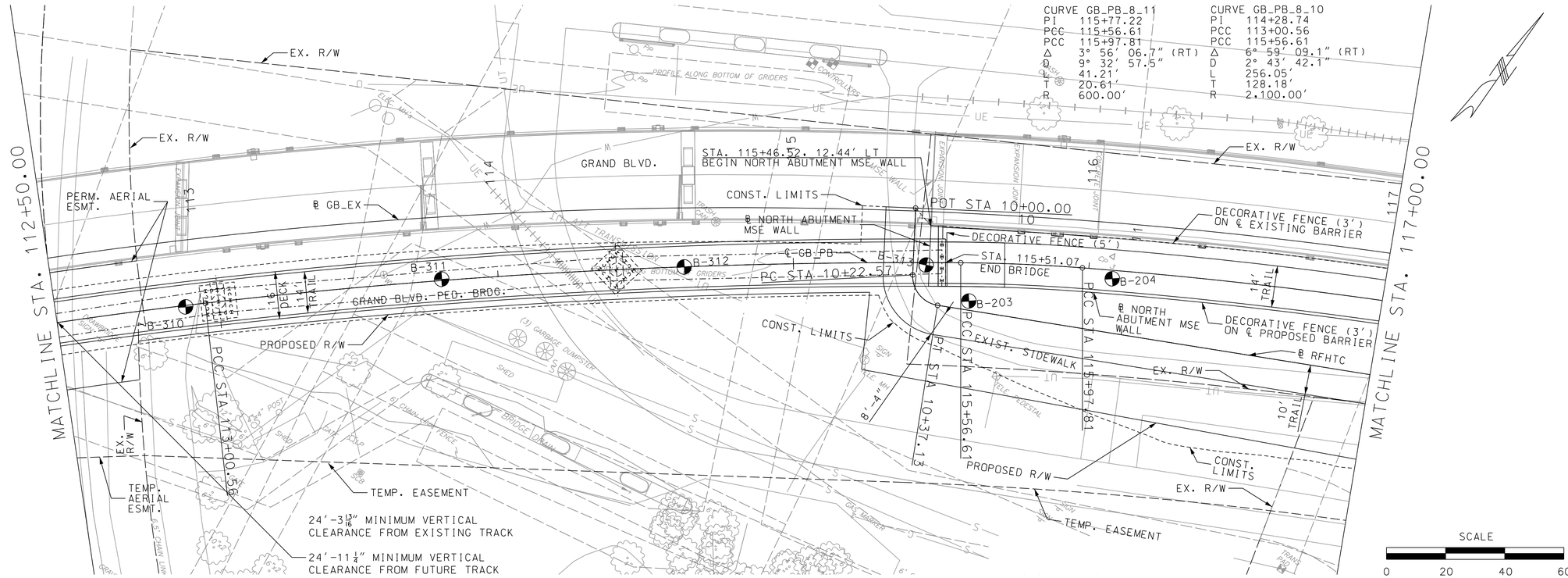
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

10:14:15 AM
User: douglasc1
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B.M. #1 - STA. 99+62.15, 21.68' RT., ELEV. 796.29, "+" ON TOP OF NW BOLT OF OCS POLE
B.M. #2 - STA. 119+72.43, 51.18' LT., ELEV. 767.97, "+" ON NE BONNET BOLT OF FIRE HYDRANT
B.M. #3 - STA. 111+29.37, 194.17' LT., ELEV. 757.99, SQUARE CUT IN SW CORNER OF RETAINING WALL

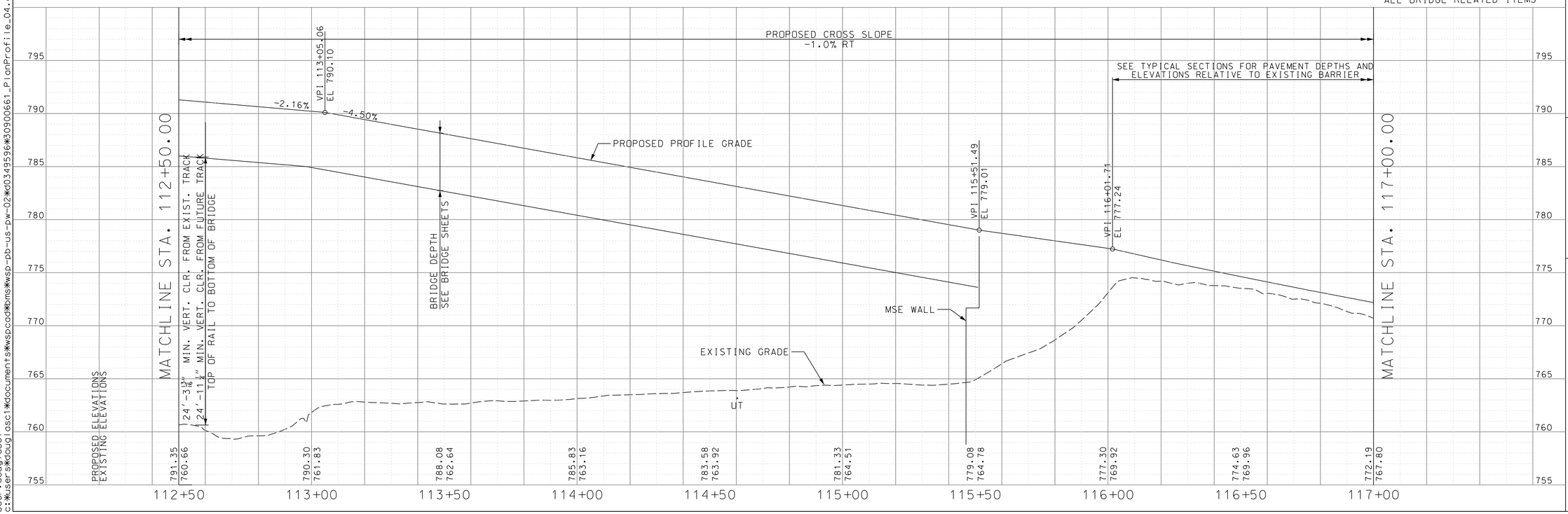



CURVE GB_PB_8_11
PI 115+77.22
PCC 115+56.61
PCC 115+97.81
Δ 3° 56' 06.7" (RT)
D 9° 32' 57.5"
L 41.21'
T 20.61'
R 600.00'

CURVE GB_PB_8_10
PI 114+28.74
PCC 113+00.56
PCC 115+56.61
Δ 6° 59' 09.1" (RT)
D 2° 43' 42.1"
L 256.05'
T 128.18'
R 2,100.00'

SCALE
0 20 40 60

NOTE: SEE BRIDGE PLANS FOR ALL BRIDGE RELATED ITEMS




SHEET NO. 12 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER
12/31/2025

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

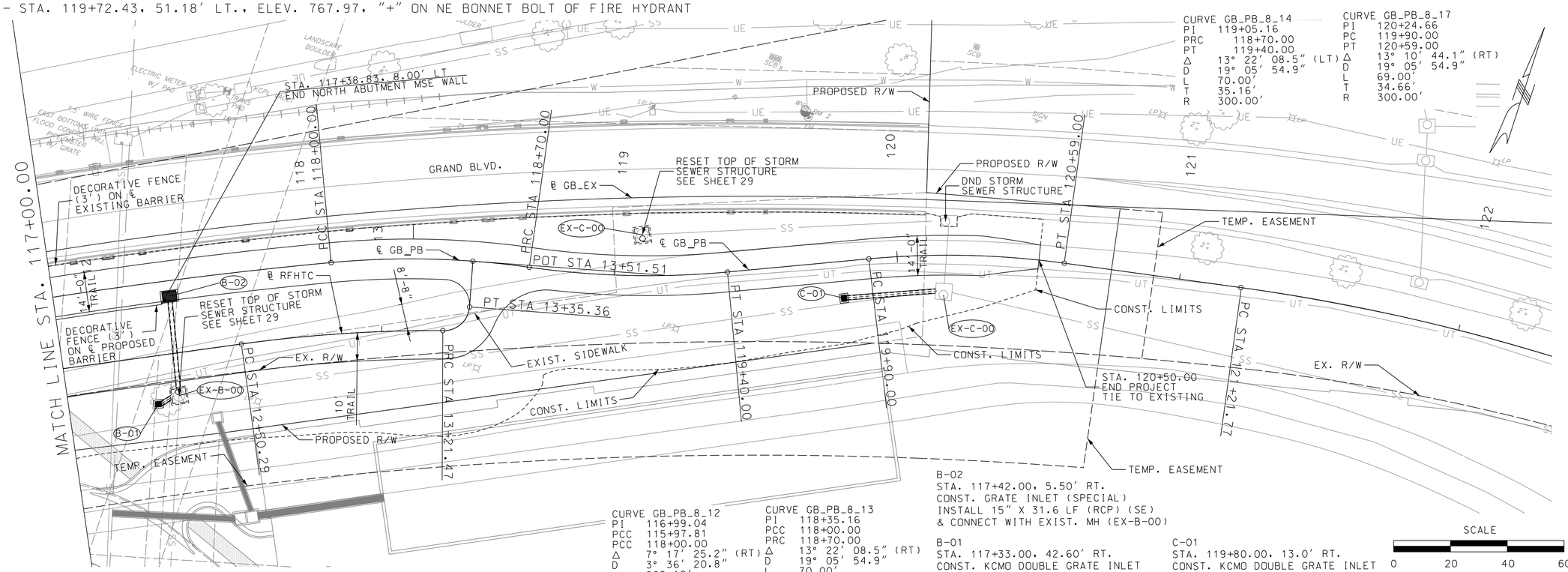
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PLAN AND PROFILE**
**STA. 112+50.00 TO STA. 117+00.00**

10:14:28 AM
User:dougl.asc1
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B.M. #1 - STA. 99+62.15, 21.68' RT., ELEV. 796.29, "+" ON TOP OF NW BOLT OF OCS POLE
B.M. #2 - STA. 119+72.43, 51.18' LT., ELEV. 767.97, "+" ON NE BONNET BOLT OF FIRE HYDRANT
B.M. #3 - STA. 111+29.37, 194.17' LT., ELEV. 757.99, SQUARE CUT IN SW CORNER OF RETAINING WALL




CURVE GB_PB_8_12
PI 116+99.04
PCC 115+97.81
PCC 118+00.00
Δ 7° 17' 25.2" (RT)
D 3° 36' 20.8"
L 202.19'
T 101.23'
R 1,589.00'

CURVE GB_PB_8_13
PI 118+35.16
PCC 118+00.00
PRC 118+70.00
Δ 13° 22' 08.5" (RT)
D 19° 05' 54.9"
L 70.00'
T 35.16'
R 300.00'

CURVE GB_PB_8_14
PI 119+05.16
PRC 118+70.00
PT 119+40.00
Δ 13° 22' 08.5" (LT)
D 19° 05' 54.9"
L 70.00'
T 35.16'
R 300.00'

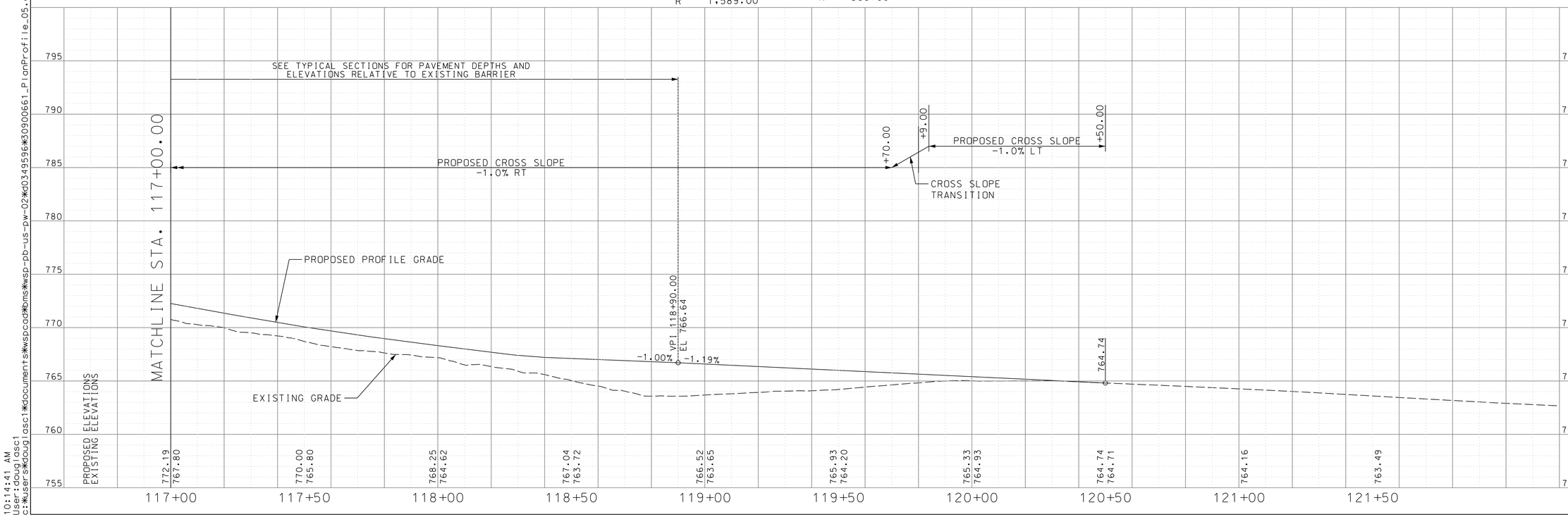
CURVE GB_PB_8_17
PI 120+24.66
PC 119+90.00
PT 120+59.00
Δ 13° 10' 44.1" (RT)
D 19° 05' 54.9"
L 69.00'
T 34.66'
R 300.00'

B-02
STA. 117+42.00, 5.50' RT.
CONST. GRATE INLET (SPECIAL)
INSTALL 15" X 31.6 LF (RCP) (SE)
& CONNECT WITH EXIST. MH (EX-B-00)

B-01
STA. 117+33.00, 42.60' RT.
CONST. KCMO DOUBLE GRATE INLET
INSTALL 15" X 5.0 LF (RCP) (NE)
& CONNECT WITH EXIST. MH (EX-B-00)

C-01
STA. 119+80.00, 13.0' RT.
CONST. KCMO DOUBLE GRATE INLET
INSTALL 15" X 31.9 LF (RCP) (NE)
& CONNECT WITH EXIST. MH (EX-C-00)

SCALE 0 20 40 60




SHEET NO. 13 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER
12/13/2024

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

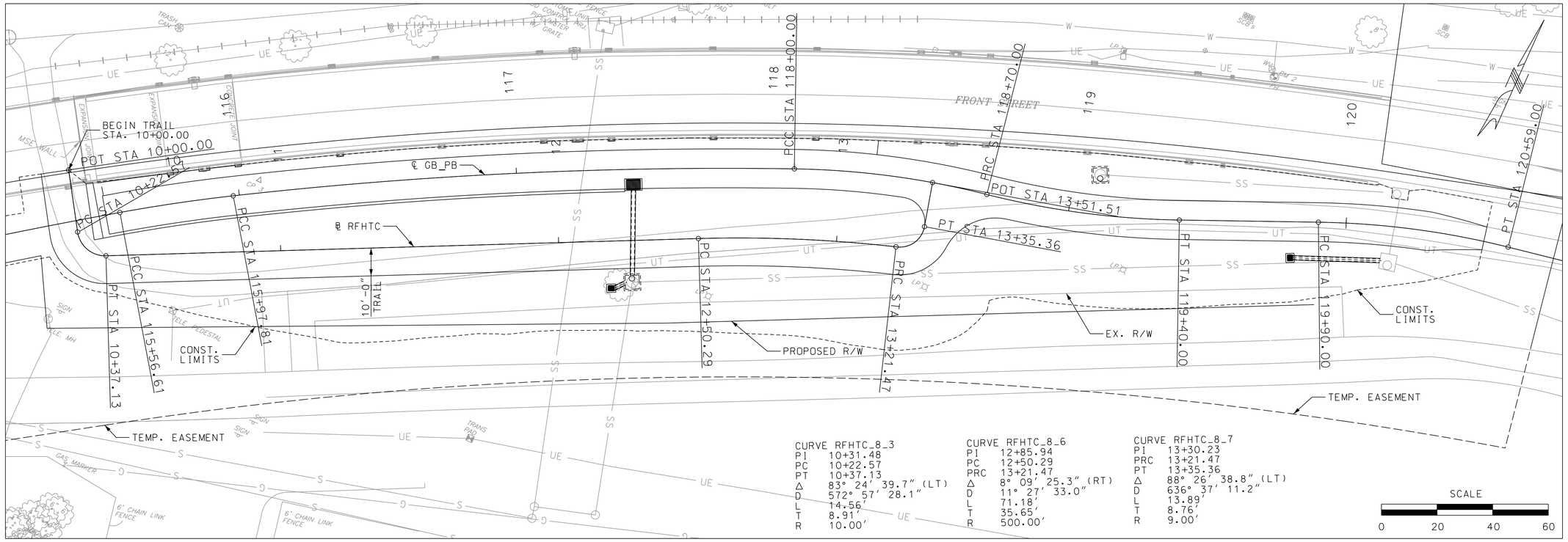
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PLAN AND PROFILE**
**STA. 117+00.00 TO STA. 120+50.00**

10:14:41 AM
User:douglasc1
c:\Users\douglasc1\documents\wspcad\bms\wsp-pb-us-pw-02\d0349596\30900661_PlanProfile_05.dgn

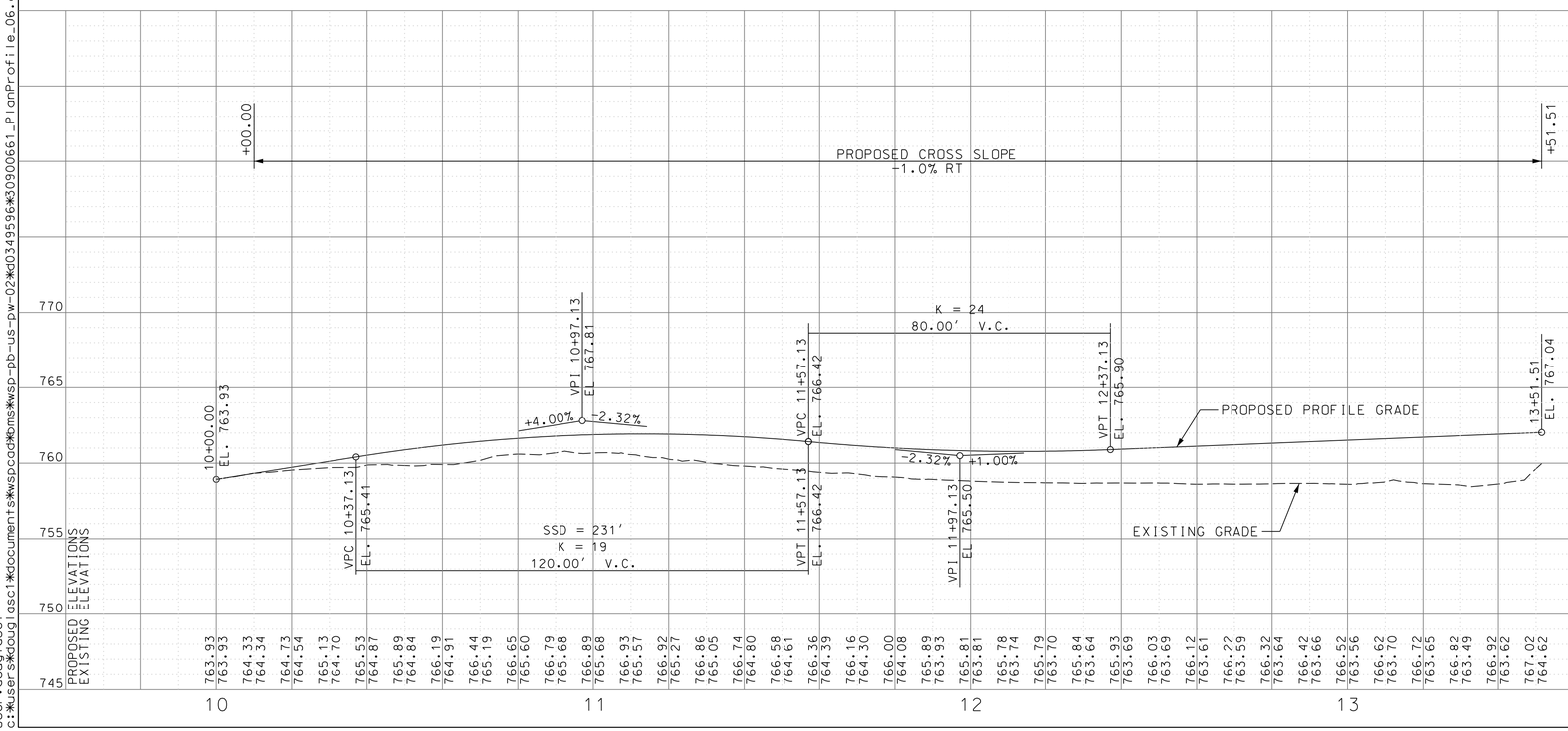
B.M. #1 - STA. 99+62.15, 21.68' RT., ELEV. 796.29, "+" ON TOP OF NW BOLT OF OCS POLE
B.M. #2 - STA. 119+72.43, 51.18' LT., ELEV. 767.97, "+" ON NE BONNET BOLT OF FIRE HYDRANT
B.M. #3 - STA. 111+29.37, 194.17' LT., ELEV. 757.99, SQUARE CUT IN SW CORNER OF RETAINING WALL




CURVE RFHTC_8_3
PI 10+31.48
PC 10+22.57
PT 10+37.13
Δ 83° 24' 39.7" (LT)
D 572° 57' 28.1"
L 14.56'
T 8.91'
R 10.00'

CURVE RFHTC_8_6
PI 12+85.94
PC 12+50.29
PRC 13+21.47
Δ 8° 09' 25.3" (RT)
D 11° 27' 33.0"
L 71.18'
T 35.65'
R 500.00'

CURVE RFHTC_8_7
PI 13+30.23
PRC 13+21.47
PT 13+35.36
Δ 88° 26' 38.8" (LT)
D 636° 37' 11.2"
L 13.89'
T 8.76'
R 9.00'




| SHEET NO. | TOTAL SHEETS |
|---|---|
| 14 | 187 |

DATE PREPARED
11/13/2024
STATE
MISSOURI
ROUTE
GRAND BLVD.
CITY
KANSAS CITY
COUNTY
JACKSON
PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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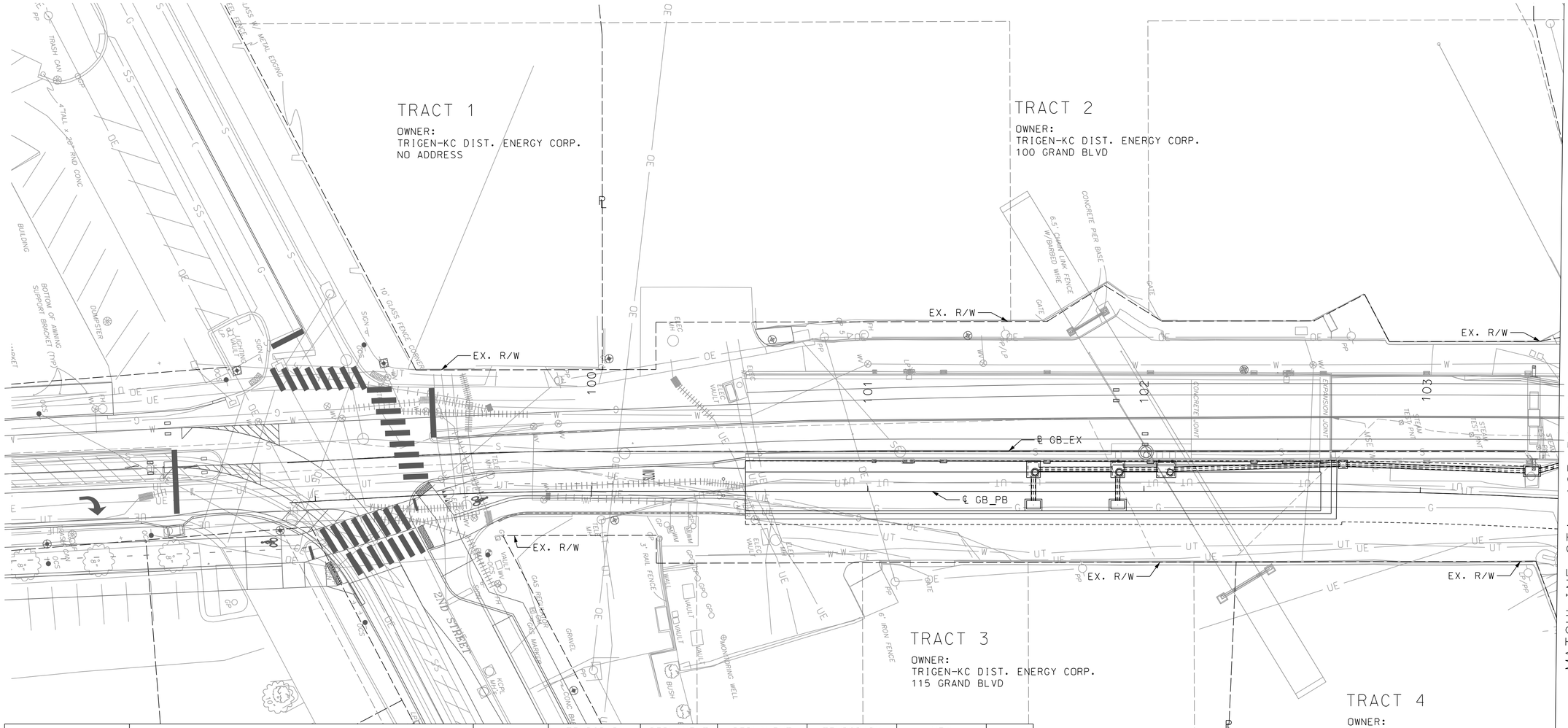
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PLAN AND PROFILE**
**RIVERFRONT HERITAGE TRAIL CONNECTOR**

10:14:55 AM
User:douglasc1
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| TRACT NUMBER | OWNER | TOTAL TRACT AREA (SF) | TEMPORARY CONSTRUCTION EASEMENT (SF) | PERMANENT EASEMENT (SF) | PERMANENT AERIAL EASEMENT (SF) | TEMPORARY AERIAL EASEMENT (SF) | NEW RIGHT-OF-WAY (SF) | SHEET NUMBER |
|---|---|---|---|---|---|---|---|---|
| 1 | TRIGEN-KC DIST. ENERGY CORP. | - | - | - | - | - | - | 15 |
| 2 | TRIGEN-KC DIST. ENERGY CORP. | - | - | - | - | - | - | 15 |
| 3 | TRIGEN-KC DIST. ENERGY CORP. | - | - | - | - | - | - | 15 |
| 4 | TRIGEN-KC DIST. ENERGY CORP. | - | - | - | - | - | - | 15 |
| 5 | TRIGEN-KC DIST. ENERGY CORP. | - | - | - | - | - | - | 16 |
| 6 | KANSAS CITY TERMINAL RAILWAY COMPANY | - | - | - | - | - | - | 16 |
| 7 | UNION PACIFIC RAILROAD/KANSAS CITY TERMINAL RAILWAY | 8641.0 | - | - | - | - | - | 16 |
| 8 | UNION PACIFIC RAILROAD | 221599.7 | 259.0 | - | - | - | 889.7 | 16 |
| 9 | PORT AUTHORITY OF KANSAS CITY | 38069.1 | 352.0 | - | - | - | 1231.9 | 16 |
| 10 | PORT AUTHORITY OF KANSAS CITY | 386573.7 | - | - | - | - | 633.6 | 16 |
| 11 | PORT AUTHORITY OF KANSAS CITY | 1941429.0 | 9582.5 | - | - | - | 50342.7 | 17 |
| 12 | PORT AUTHORITY OF KANSAS CITY | 72772.1 | 1694.8 | - | - | - | 4100.8 | 17 |
| 13 | CHAOTIC BONGOS LLC. | 132621.8 | 9930.0 | - | - | - | 28975.5 | 18 |
| 14 | PORT AUTHORITY OF KANSAS CITY | 94742.6 | 10818.3 | - | - | - | 4485.9 | 19 |
| 15 | PORT AUTHORITY OF KANSAS CITY | 280994.3 | 778.3 | - | - | - | 43675.7 | 19 |
| | | | | | | | | |
| 16 | CITY OF KANSAS CITY | - | - | - | 13.4 | - | - | 17 |
| | | | | | | | | |
| RAILROAD CROSSING | UNION PACIFIC RAILROAD | - | - | - | 2717.0 | 1222.0 | - | 16 |
| RAILROAD CROSSING | BNSF RAILWAY | - | - | - | 2008.2 | 1139.6 | - | 17 |

SHEET NO. 15 | TOTAL SHEETS 187

DATE PREPARED 1/2/2025

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

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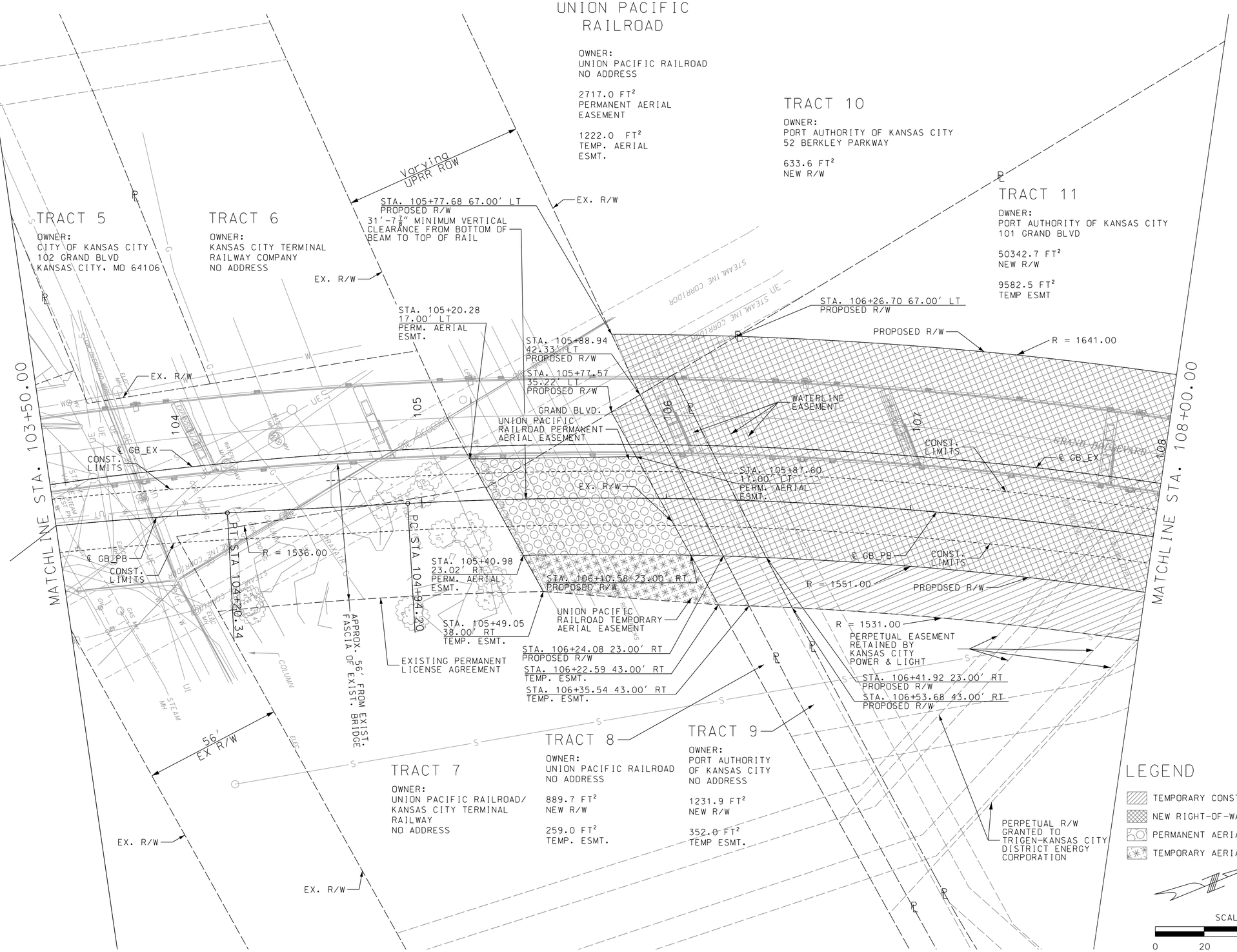
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**RIGHT OF WAY**
**STA. 100+55.78 TO STA. 103+50.00**

12:13:37 PM
User: douglasc1
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SHEET NO. 16 | TOTAL SHEETS 187
DATE PREPARED 1/2/2025
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

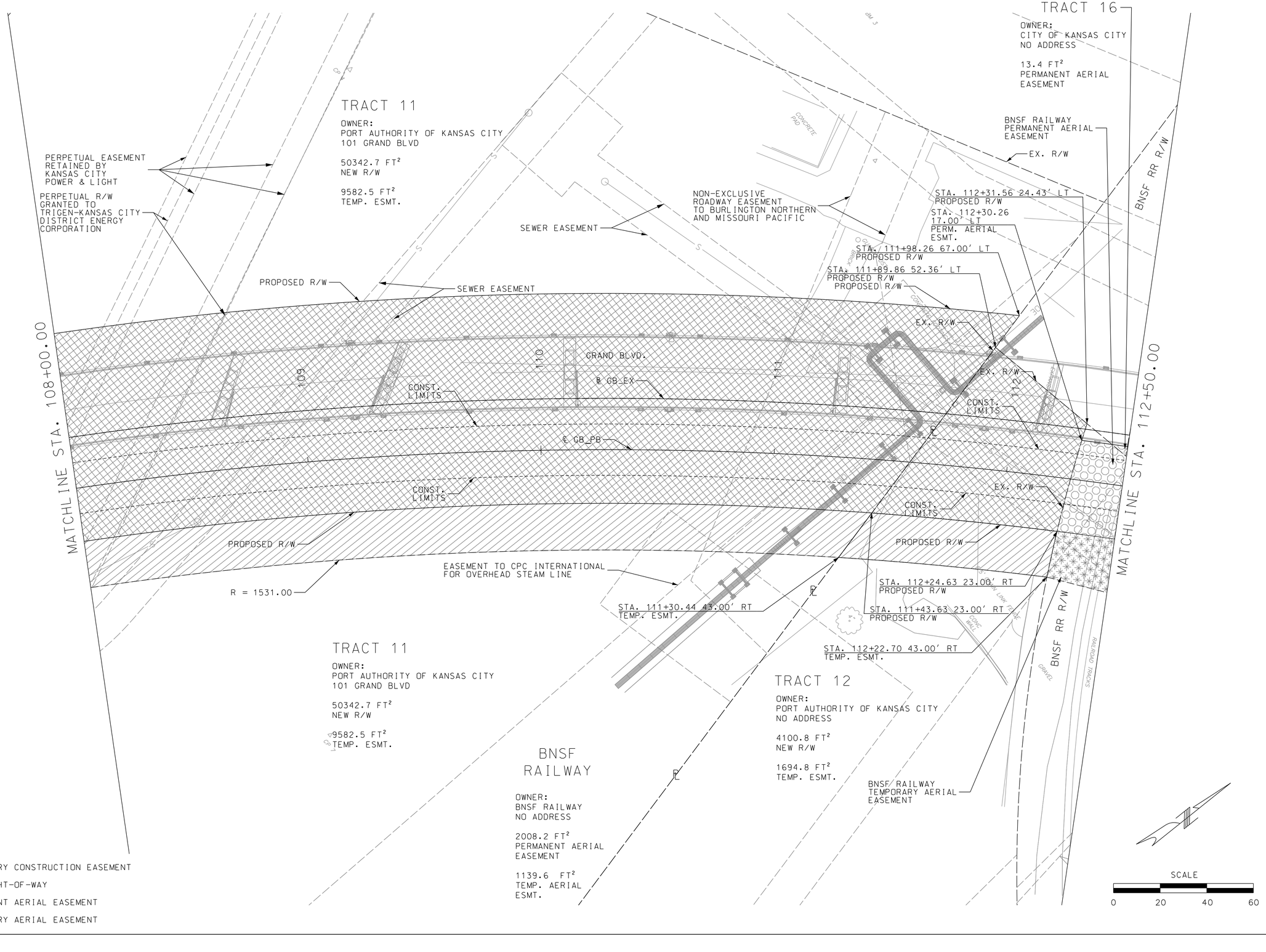
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**RIGHT OF WAY**
**STA. 103+50.00 TO 108+00.00**

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User:doug.esc1
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 17 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**RIGHT OF WAY**
**STA. 108+00.00 TO STA. 112+50.00**

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BNSF
RAILWAY

OWNER:
BNSF RAILWAY
NO ADDRESS

2008.2 FT²
PERMANENT AERIAL
EASEMENT

1139.6 FT²
TEMP. AERIAL
ESMT.

BNSF RAILWAY
PERMANENT AERIAL
EASEMENT

STA. 112+86.11
88.18' LT
PROPOSED R/W

STA. 112+79.44
17.00' LT
PERM. AERIAL
ESMT.

EX. R/W

SEWER EASEMENT

BNSF RR R/W

GRAND BLVD.

℄ GB_EX

CONST.
LIMITS

EX.
R/W

℄ GB_PB

MATCHLINE STA. 112+50.00

R = 1564.00

CONST.
LIMITS

SEWER
EASEMENT

PROPOSED R/W

STA. 113+00.56 10.00' RT
PROPOSED R/W

EX. R/W

BNSF RR R/W

SEWER
EASEMENT

TEMPORARY
CONSTRUCTION
EASEMENT

STA. 112+76.50
10.00' RT
TEMP. ESMT.

STA. 112+75.19
23.00' RT
PERM. AERIAL
ESMT.

STA. 112+73.42
48.60' RT
TEMP. ESMT.

27'-5" MINIMUM VERTICAL
CLEARANCE FROM BOTTOM OF
BEAM TO TOP OF RAIL

BNSF RAILWAY
TEMPORARY AERIAL
EASEMENT

PROFILE ALONG BOTTOM OF GIRDERS

CONTROLLERS

TRASH CAN

SIGN

R = 2090.00

STA. 115+25.76
10.00' RT
PROPOSED R/W

CONST.
LIMITS

STA. 115+22.77
36.07' RT
PROPOSED R/W

STA. 115+36.81
74.27 RT
TEMP. ESMT.

TEMPORARY
CONSTRUCTION
EASEMENT

SEWER EASEMENT

R = 1498.00

STA. 116+71.06
75.39' RT
TEMP. ESMT.

EX. R/W

CONST.
LIMITS

℄ GB_EX

℄ GB_PB

EX. R/W

PROPOSED R/W

EX. R/W

℄ RFHTC

EX. R/W

MATCHLINE STA. 117+00.00

TRACT 13

OWNER:
CHAOTIC BONGOS LLC
501 BERKLEY PARKWAY

28975.5 FT²
NEW R/W
9930.0 FT²
TEMP. ESMT.

TRACT 14

OWNER:
PORT AUTHORITY OF KANSAS CITY
599 E RIVERFRONT RD

4485.9 FT²
NEW R/W
10818.3 FT²
TEMP. ESMT.

LEGEND

- TEMPORARY CONSTRUCTION EASEMENT
- NEW RIGHT-OF-WAY
- PERMANENT AERIAL EASEMENT
- TEMPORARY AERIAL EASEMENT

SCALE
0 20 40 60

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user: douglasc1
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 18 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
PROFESSIONAL ENGINEER
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229

| DATE | DESCRIPTION |
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**RIGHT OF WAY**
**STA. 112+50.00 TO STA. 117+00.00**

MATCHLINE STA. 117+00.00

WATER TUNNEL RIGHT OF WAY

SEWER EASEMENT

CONST. LIMITS

℄ GB_PB

℄ RF/HTC

℄ GB_EX

PROPOSED R/W

EX. R/W

PC STA 118+00.00

PRC STA 118+70.00

PRC STA 13+51.51

PT STA 13+35.36

PC STA 13+21.47

PRC STA 116+40.00

PC STA 119+90.00

PRC STA 120+59.00

PT STA 120+59.00

PC STA 121+21.77

R = 1498.00

TEMPORARY CONSTRUCTION EASEMENT

STA. 117+53.63
55.56 RT
PROPOSED R/W

STA. 119+88.88
29.70 RT
PROPOSED R/W

STA. 120+13.55
85.90 RT
PROPOSED R/W

STA. 120+10.93
22.13 RT
PROPOSED R/W

STA. 120+75.88
21.65 RT
PROPOSED R/W & TEMP. ESMT.

STA. 120+90.86
22.45 RT
TEMP. ESMT.

STA. 120+90.66
29.53 RT
TEMP. ESMT.

STA. 120+75.68
30.34 RT
TEMP. ESMT.

STA. 120+75.53
70.42 RT
TEMP. ESMT.

STA. 120+04.02
71.24 RT
TEMP. ESMT.

UTILITY & ACCESS EASEMENT RETAINED BY CITY

TRACT 15

OWNER:
PORT AUTHORITY OF KANSAS CITY
1001 E. RIVERFRONT RD.

43675.7 FT²
NEW R/W
778.3 FT²
TEMP. ESMT.

TRACT 14

OWNER:
PORT AUTHORITY OF KANSAS CITY
599 E RIVERFRONT RD
KANSAS CITY, MO 64106

4485.89 FT²
NEW R/W
10818.48 FT²
TEMP. ESMT.

SEWER EASEMENT

CONST. LIMITS

EX. R/W

PROPOSED R/W

LEGEND

TEMPORARY CONSTRUCTION EASEMENT

NEW RIGHT-OF-WAY

SCALE

0 20 40 60

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 19 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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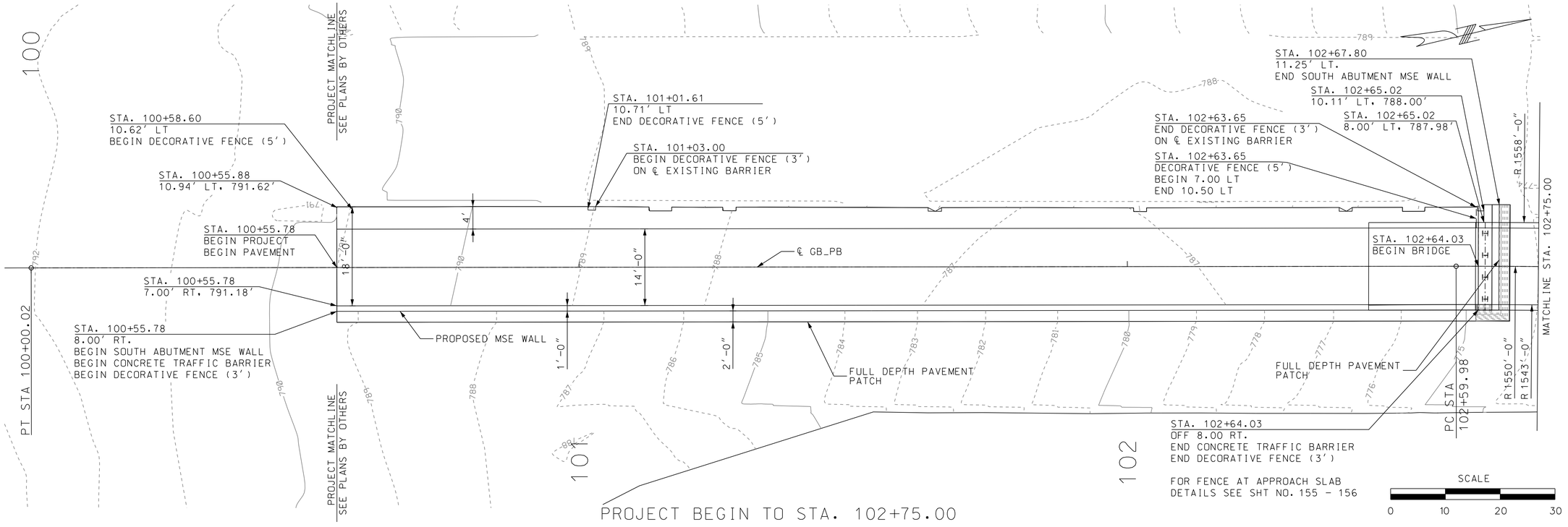
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

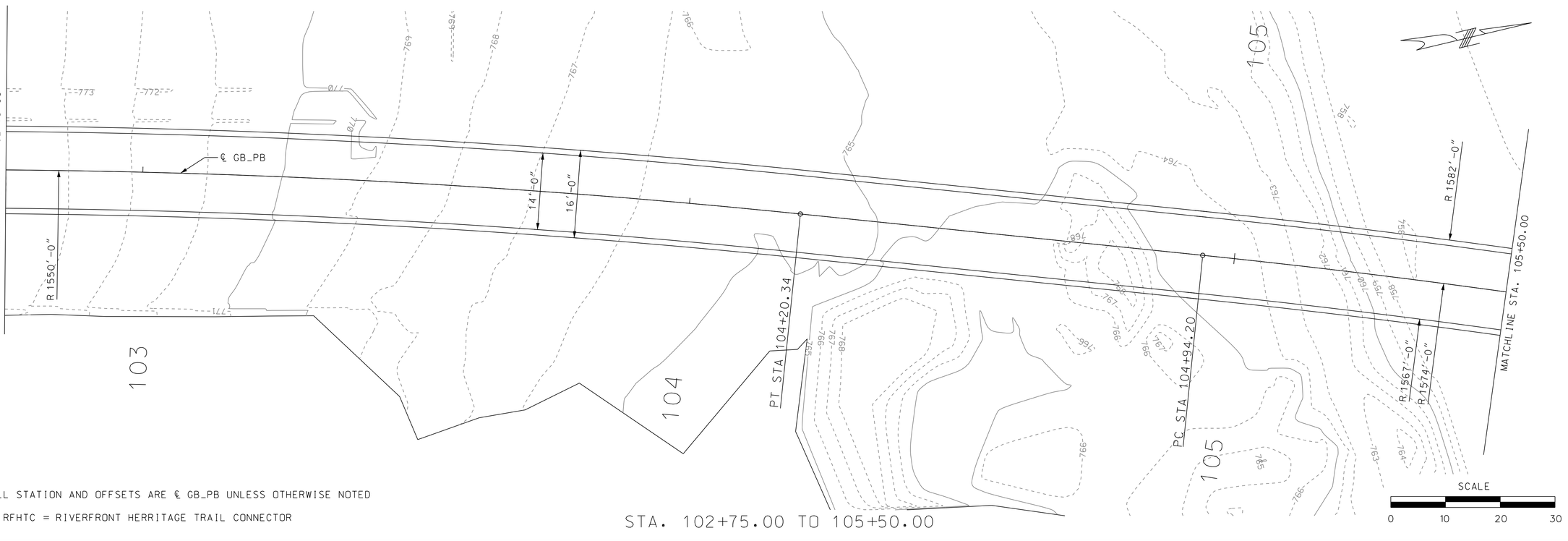
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**RIGHT OF WAY SHEET**
**STA. 117+00.00 TO STA. 120+90.86**

4:46:37 PM
User:douglasc1
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 20 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**GEOMETRIC LAYOUT**
**STA. 100+55.78 TO 105+50.00**

10:16:22 AM
User:dougl.asc1
C:\Users\dougl.asc1\Documents\wspcodeDems\wsp-pw-02\wd0349596\30900661_Intersection_Detail_01.dgn

STA. 105+50.00 TO STA. 108+25.00




STA. 108+25.00 TO 111+00.00

ALL STATION AND OFFSETS ARE ℄ GB_PB UNLESS OTHERWISE NOTED

℄ RFHTC = RIVERFRONT HERRITAGE TRAIL CONNECTOR

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 21 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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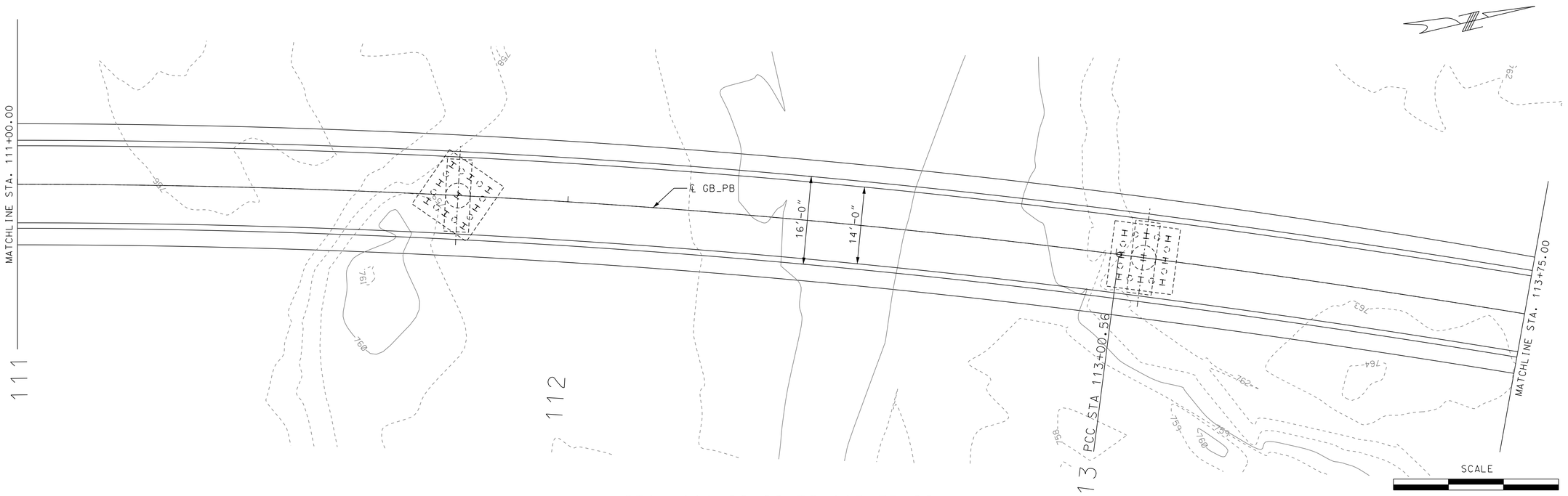
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

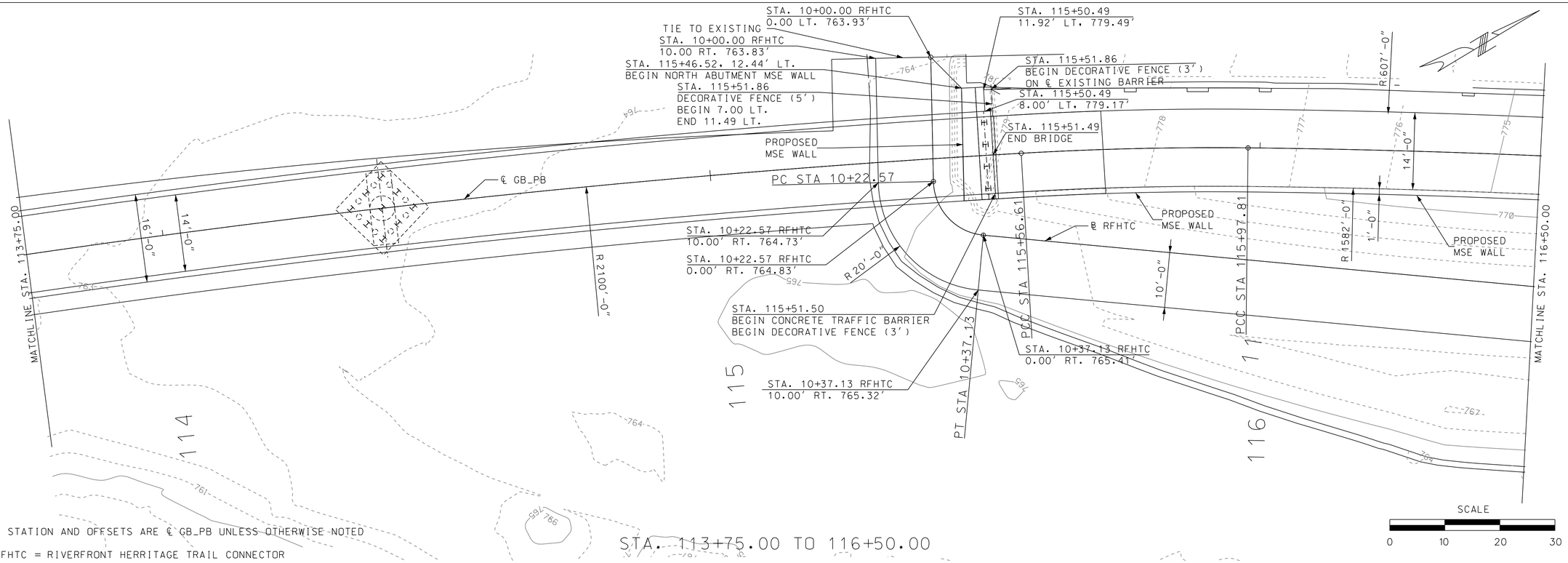
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

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STA. 111+00.00 TO 113+75.00




STA. 113+75.00 TO 116+50.00

ALL STATION AND OFFSETS ARE ℄ GB_PB UNLESS OTHERWISE NOTED

℄ RFHTC = RIVERFRONT HERRITAGE TRAIL CONNECTOR

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 22 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |
| . | . |
| . | . |
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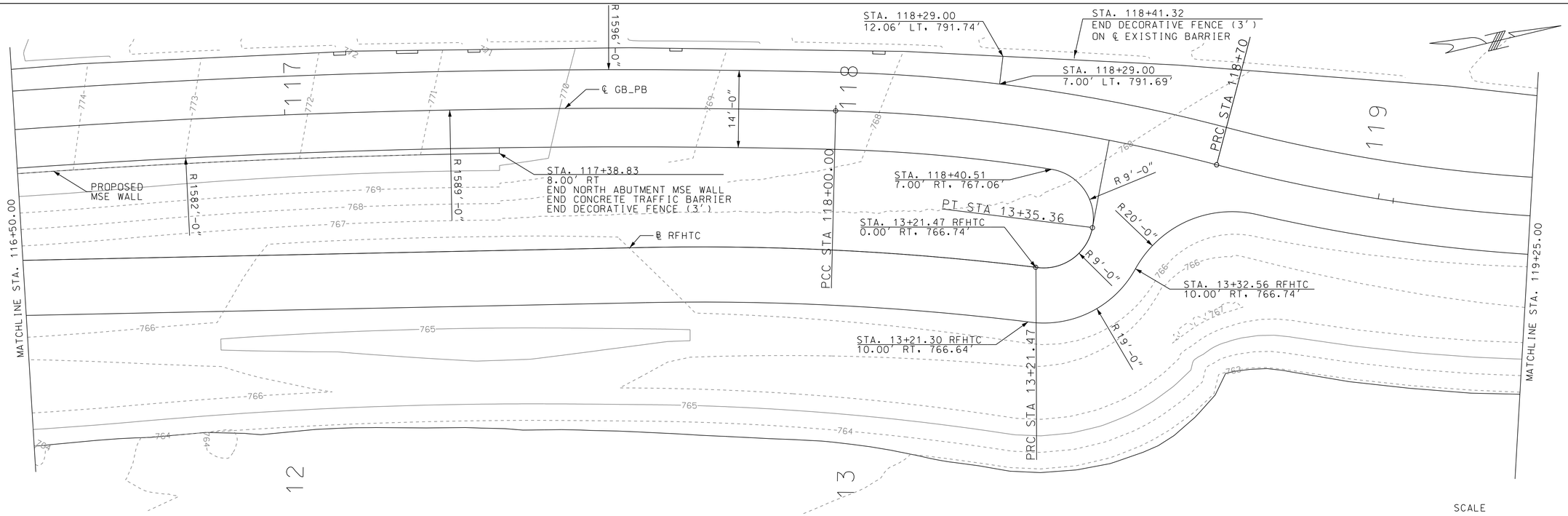
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

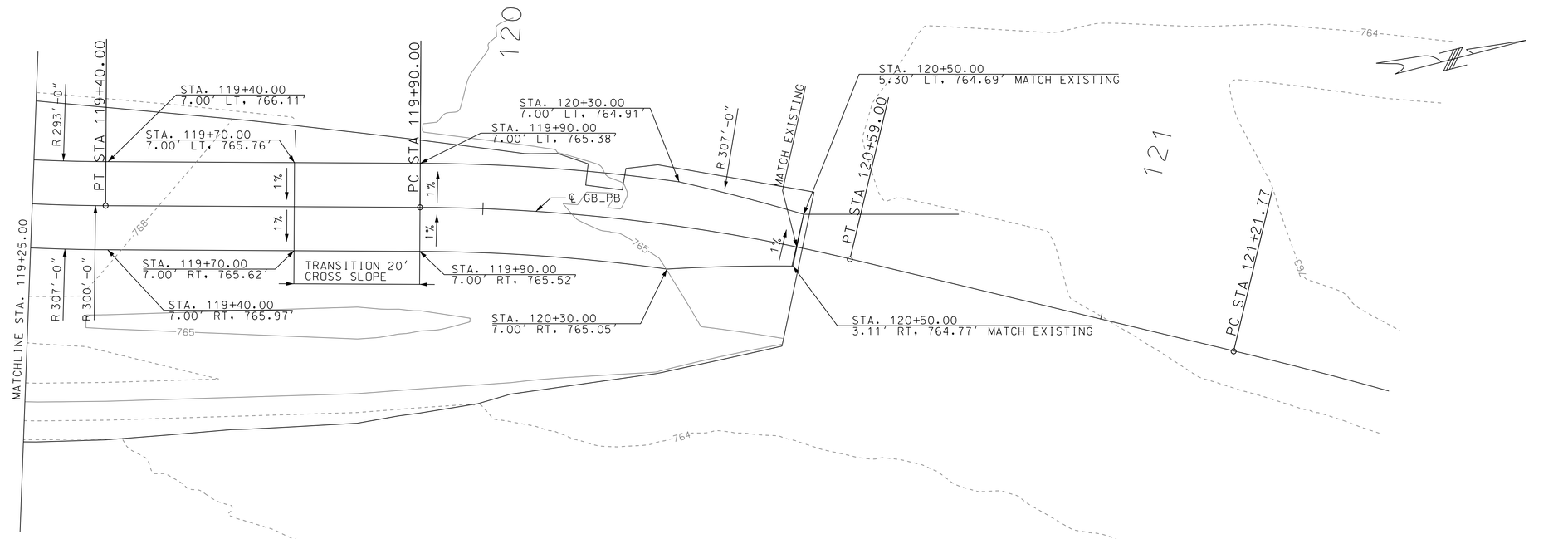
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

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**STA. 111+00.00 TO 116+50.00**

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STA. 116+50.00 TO STA. 119+25.00




ALL STATION AND OFFSETS ARE ℄ GB_PB UNLESS OTHERWISE NOTED

℄ RFHTC = RIVERFRONT HERRITAGE TRAIL CONNECTOR

STA. 119+25.00 TO END OF PROJECT

SHEET NO. 23 | TOTAL SHEETS 187

DATE PREPARED 11/13/2024

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

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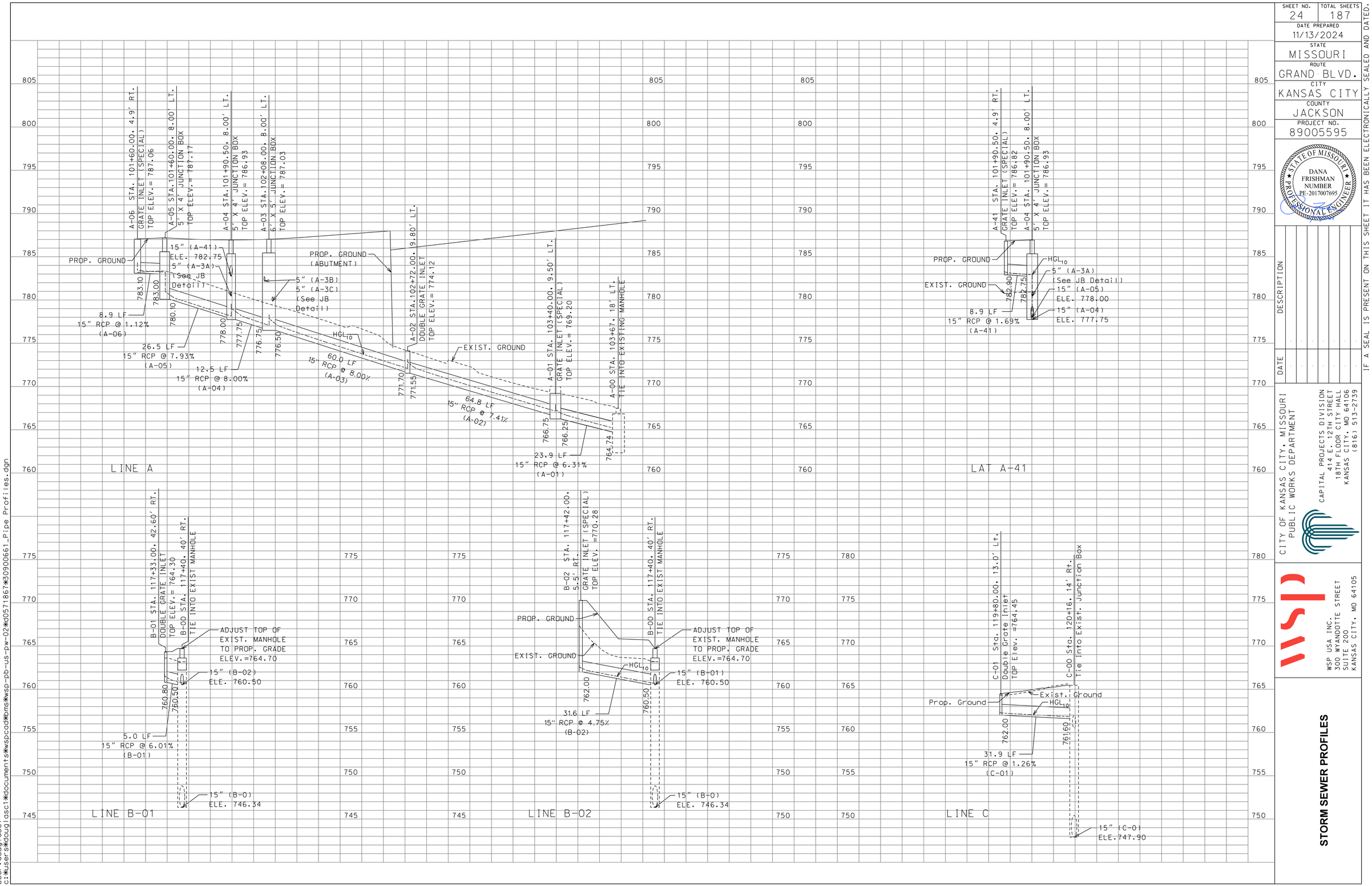
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**GEOMETRIC LAYOUT**
**STA. 116+50.00 TO 120+50.00**

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SHEET NO. 24 | TOTAL SHEETS 187

DATE PREPARED 11/13/2024

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

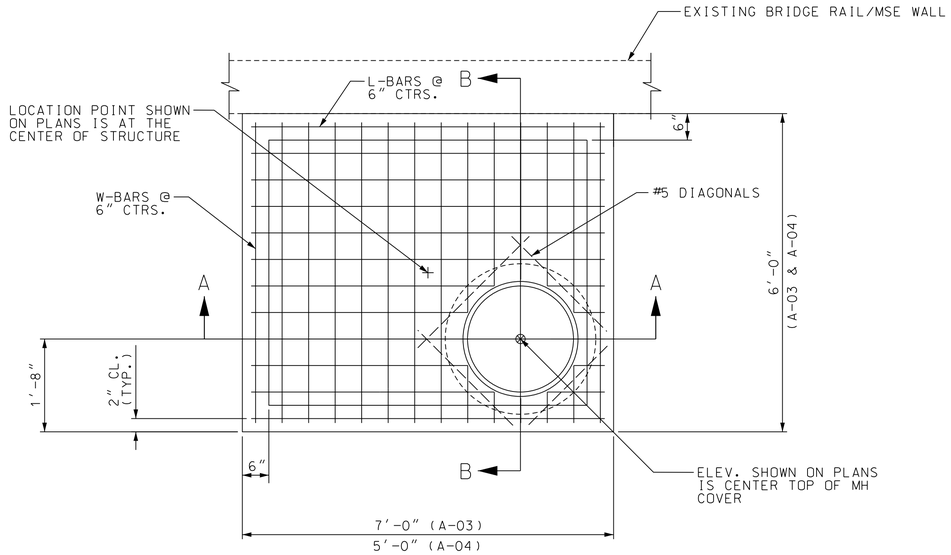
CITY OF KANSAS CITY, MISSOURI
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414 E. 12TH STREET
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(816) 513-2739

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# STORM SEWER PROFILES

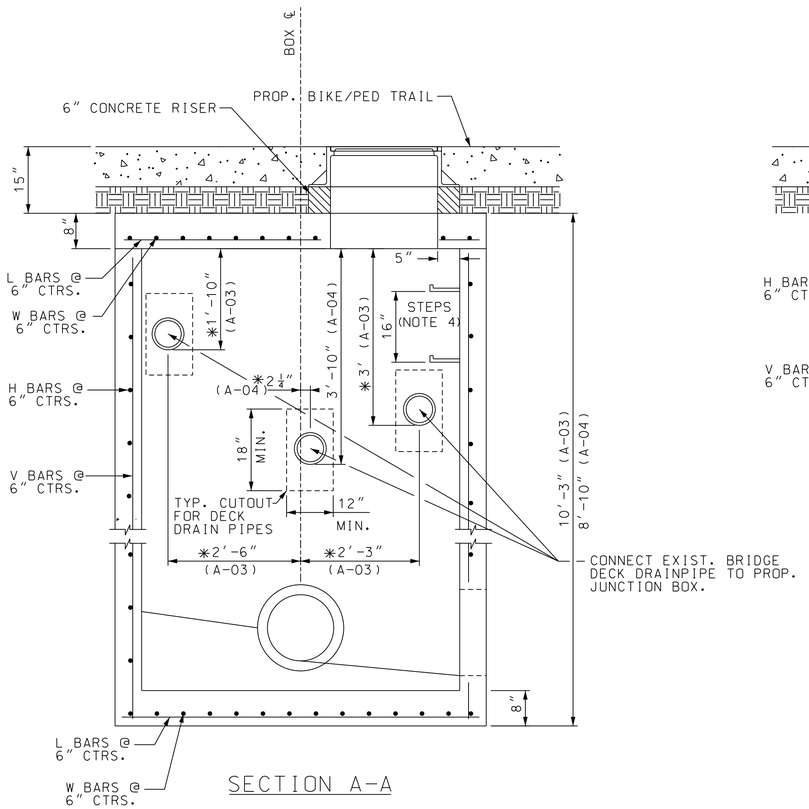
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PLAN

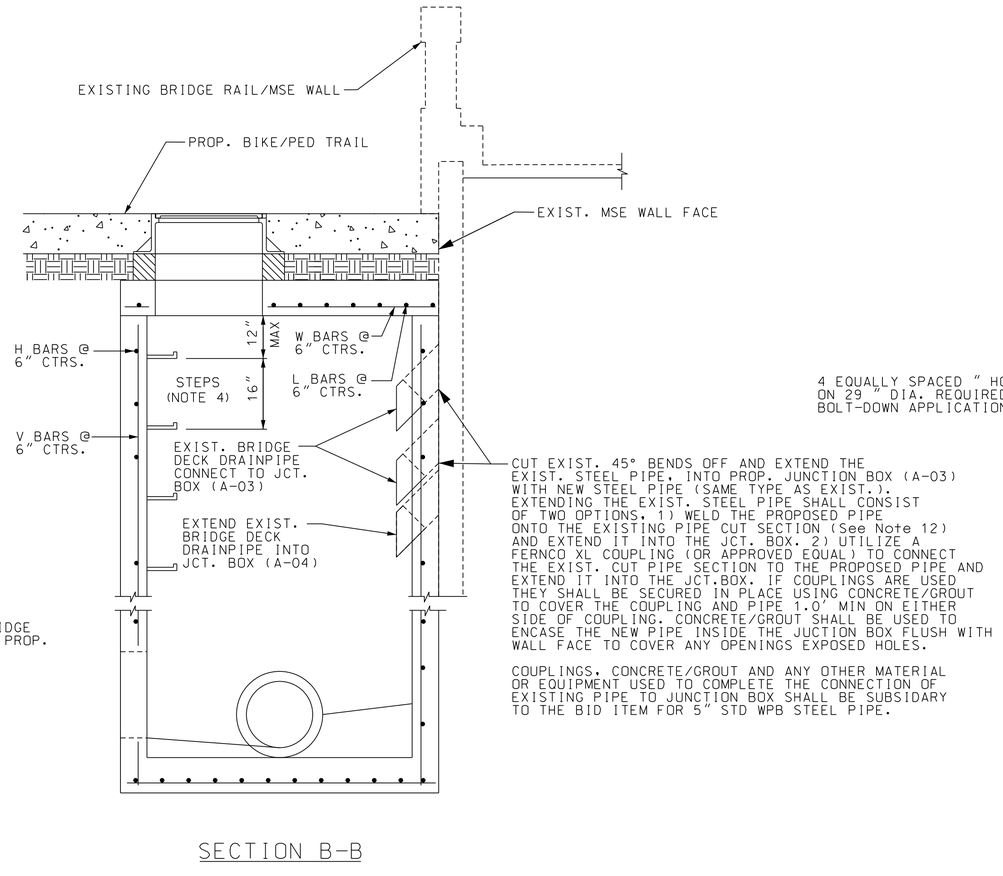
## GENERAL NOTES:

1. LOCATE RING AND COVER OVER OUTLET.
2. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 2600 APWA.
3. USE $\frac{3}{4}$" CHAMFER STRIP OR $\frac{1}{2}$" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4'.
5. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE AND THE MINIMUM DISTANCE BETWEEN BOXOUTS IS 6" WITH 1 CORNER BAR.
6. THE MINIMUM REINFORCING SHALL BE 1 H-BAR OVER A CAST-IN PLACE PIPE AND 2 H-BARS OVER A PRECAST BOXOUT.
7. SHOW FIELD INLET ORIENTATION ON PLANS PLUS NUMBER AND SIZE OF OPENINGS LOCATING POINT AT CENTER OF STRUCTURE.
8. O.R. = ONE HALF OUTSIDE PIPE DIAMETER (O.D.).
9. REINFORCING OF COVERS IN STREETS REQUIRE SPECIAL DESIGN.
10. USE KCMO STANDARD MH-RC TYPE 3 RING AND COVER.
11. ALL RE-BAR REINFORCMENT ARE #4 BARS UNLESS OTHERWISE NOTED.
12. EXISTING STEEL DRAINAGE PIPE IS LISTED AS "5 STD WPB". THE CONTRACTOR SHALL VERIFY AND MATCH THE TYPE AND SIZE OF THIS PIPE BEFORE CONSTRUCTION. CONNECTION TO EXTISING STEEL PIPE SHALL BE FIELD WELDED OR APPROVED EQUAL. FIELD WELDING SHALL CONFORM TO ASTM A53 STANDARDS. ZINC/GALVANIZED COATING SHALL BE APPLIED TO EXPOSED METAL SURFACES AND WELD UPON COMPLETION OF PIPE CONNECTION. THE ZINC/GALVANIZED COATING SHALL CONFORM TO ASTM B6 OR OTHER ENGINEER APPROVED METHODS OF ZINC/GALVANIZATION APPLICATIONS.




SECTION A-A

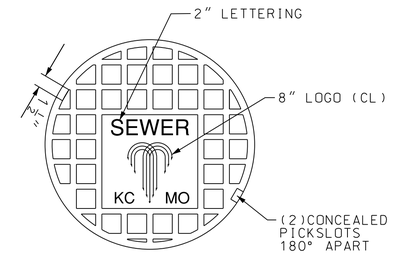
*DIMENSIONS ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING DRAINPIPES PRIOR TO JUNCTION BOX CONSTRUCTION.



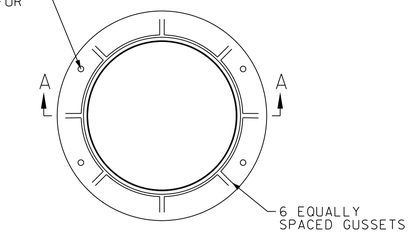

SECTION B-B

CUT EXIST. 45° BENDS OFF AND EXTEND THE EXIST. STEEL PIPE, INTO PROP. JUNCTION BOX (A-03) WITH NEW STEEL PIPE (SAME TYPE AS EXIST.). EXTENDING THE EXIST. STEEL PIPE SHALL CONSIST OF TWO OPTIONS, 1) WELD THE PROPOSED PIPE ONTO THE EXISTING PIPE CUT SECTION (See Note 12) AND EXTEND IT INTO THE JCT. BOX. 2) UTILIZE A FERNCO XL COUPLING (OR APPROVED EQUAL) TO CONNECT THE EXIST. CUT PIPE SECTION TO THE PROPOSED PIPE AND EXTEND IT INTO THE JCT.BOX. IF COUPLINGS ARE USED THEY SHALL BE SECURED IN PLACE USING CONCRETE/GROUT TO COVER THE COUPLING AND PIPE 1.0' MIN ON EITHER SIDE OF COUPLING. CONCRETE/GROUT SHALL BE USED TO ENCASE THE NEW PIPE INSIDE THE JUCTION BOX FLUSH WITH WALL FACE TO COVER ANY OPENINGS EXPOSED HOLES.

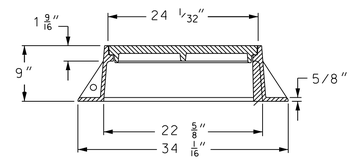
COUPLINGS, CONCRETE/GROUT AND ANY OTHER MATERIAL OR EQUIPMENT USED TO COMPLETE THE CONNECTION OF EXISTING PIPE TO JUNCTION BOX SHALL BE SUBSIDARY TO THE BID ITEM FOR 5" STD WPB STEEL PIPE.




COVER PLAN




RING PLAN




SECTION A-A

TYPE R3

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 25 | 187 |

DATE PREPARED: 11/13/2024
STATE: MISSOURI
ROUTE: GRAND BLVD.
CITY: KANSAS CITY
COUNTY: JACKSON
PROJECT NO.: 89005595

STATE OF MISSOURI · DANA FRISHMAN · NUMBER PE-2017007695 · PROFESSIONAL ENGINEER

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

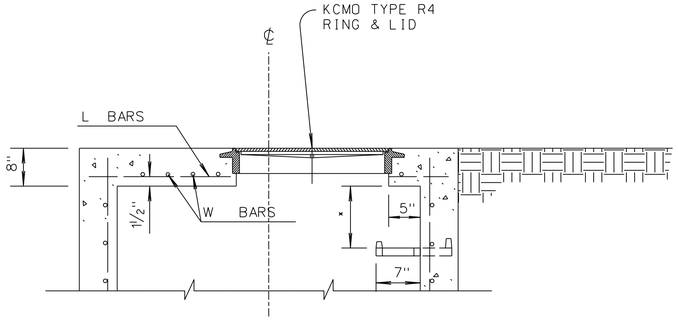
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

# JUNCTION BOX (SPECIAL) DETAILS

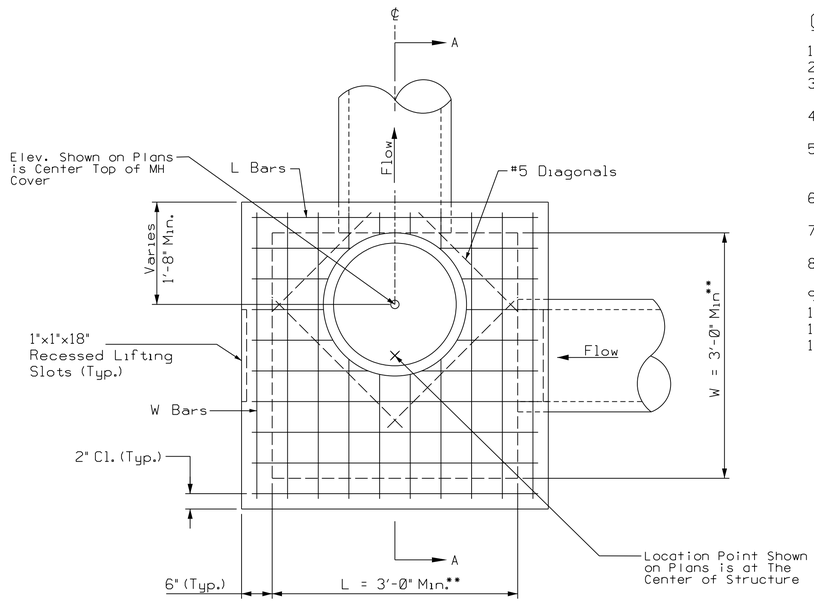
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## REINFORCING

| Bars | Bar Size | Spacing (Inches) |
|---|---|---|
| H | 4 | 6 |
| V | 4 | 6 |
| L | 5 | 6 |
| W | 5 | 6 |




SLAB TOP ALTERNATE FOR
JUNCTION BOX (SHALLOW)

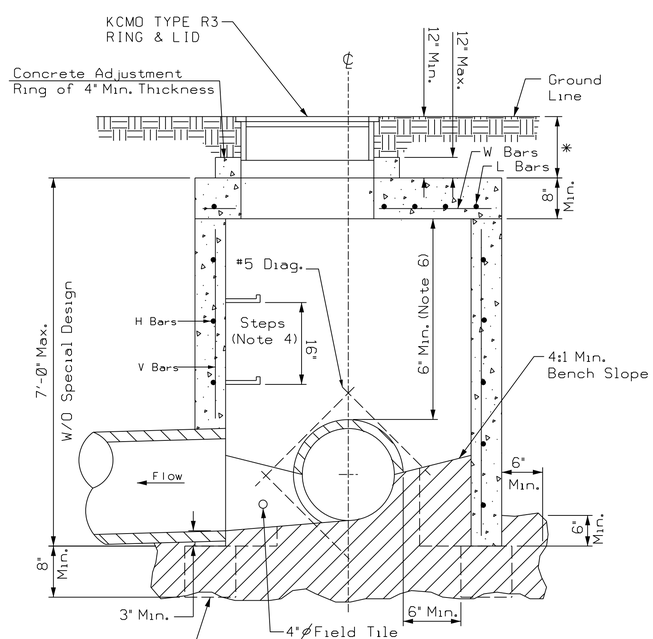



PLAN

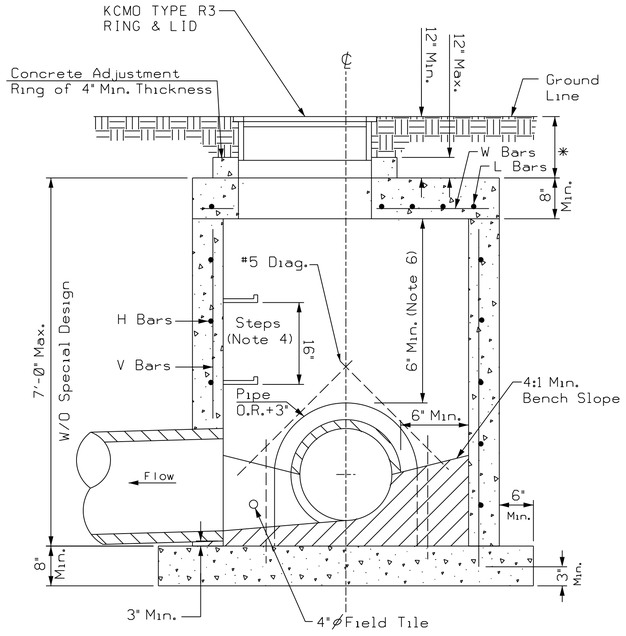
** Increase In Multiples Of 6"
(7'-0" Maximum Without Special Design)

## GENERAL NOTES:

1. Locate Ring and Cover Over Outlet.
2. All Work and Materials shall Conform to Section 2600 APWA.
3. Use ¾" Chamfer Strip or ½" R Edger Tool on All Exposed Concrete Corners.
4. Steps Required at 16" O.C. when Depth from Top of Casting to Invert Exceeds 4'.
5. Boxouts will Not be Allowed to Project Through the Corners of the Structure and the Minimum Distance between Boxouts is 6" with 1 Corner Bar.
6. The Minimum Reinforcing shall be 1 H-bar Over a Cast-In Place Pipe and 2 H-Bars Over a Precast Boxout.
7. Limit Opening Height to 6" with No.5 Galvanized Bars Extending to Corner Rebars.
8. Show Field Inlet Orientation on Plans Plus Number and Size of Openings Locating Point at Center of Structure.
9. O.R. = One Half Outside Pipe Diameter (O.D.).
10. Reinforcing of Covers in Streets Require Special Design.
11. Use KCMO Standard MH-RC Type 3 Ring and Cover.
12. 4" Field Tiles shall be Located at Entering Pipes. These 4" Tiles Shall be Capped with ¼" Galvanized Wire Mesh on the Outside of the Structure and Clear The Invert and Base Concrete

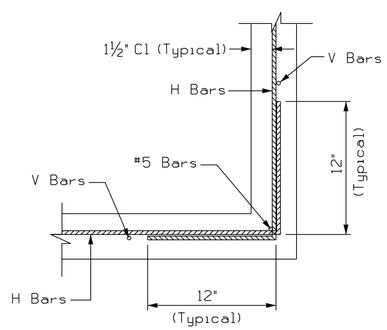



SECTION A-A
(Cast-In-Place)




SECTION A-A
(Precast)

* Height = 19" When Junction Box is Under Trail Moment Slab See Junction Box (Special) Details for Ring & Riser Configurations.




CORNER DETAIL

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 26 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

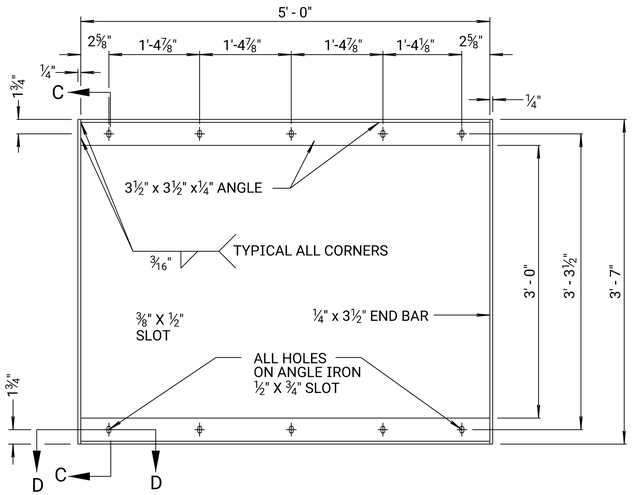
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

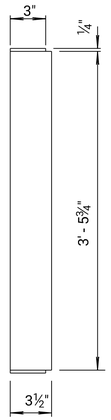
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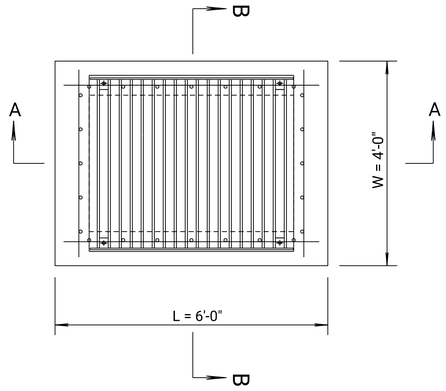
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PLAN

BEARING PLATE




PLAN

GENERAL NOTES:

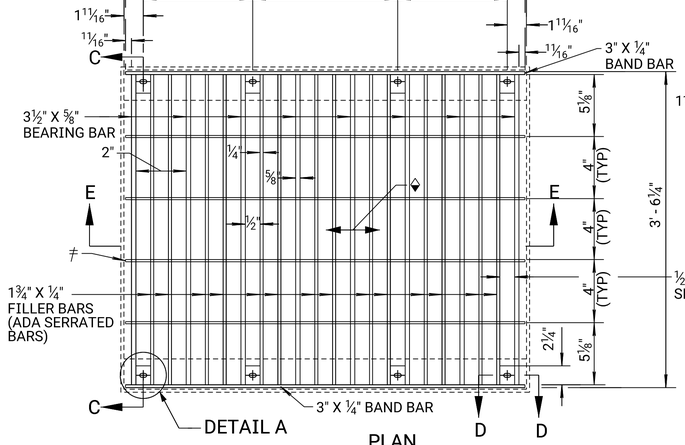
WHEN BOLTS ARE CUT IN THE FIELD, THREADS MUST BE CLEANED TO PERMIT THE FINAL NUT TO RUN FREELY ON THE BOLT.

THE STEEL USED TO FABRICATE THE GRATE SHALL BE EITHER ASTM GRADE A-36 WITH HOT DIP GALVANIZED FINISH (ASTM A123) OR GRADE 50 CARBON STEEL. THE WELDING REQUIREMENTS SHOWN ON THIS DRAWING ARE FOR PAINTED GRATES AND BEARING PLATES. IF GALVANIZED, ALL TIGHTLY CONTACTING SURFACES SHALL BE COMPLETELY SEALED, ON ALL SIDES BY WELDING, PRIOR TO GALVANIZING.

THE SURFACE OF THE GRATE SHALL BE SPRAYED WITH ONGRIP®SPRAY TRACTION SURFACE OR APPROVED EQUAL TO MEET ADA SLIP GUIDELINES.

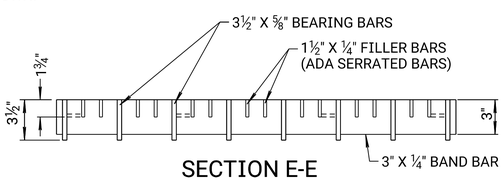
THE GRATE SHALL BE FABRICATED SUCH THAT ADA GRATE SPACING FOR PEDESTRIAN TRAFFIC AND AASHTO H20/H15 LOADING STANDARDS ARE MET. ALTERNATE GRATE CONFIGURATIONS CAN BE USED AS LONG AS THE GRATE MEETS OR EXCEEDS THE ADA GRATE SPACING AND AASHTO H20/H15 LOADING STANDARDS AND THE DETAIL SHALL BE APPROVED BY THE ENGINEER.

≠ 1" X ¼" CROSS BARS OR APPROVED EQUAL




PLAN

◆ GRATE IS TO BE ORIENTATED SUCH THAT THE DIRECTION OF PEDESTRIAN TRAFFIC IS PERPENDICULAR TO THE GRATE AS SHOWN.




SECTION E-E

GRATE

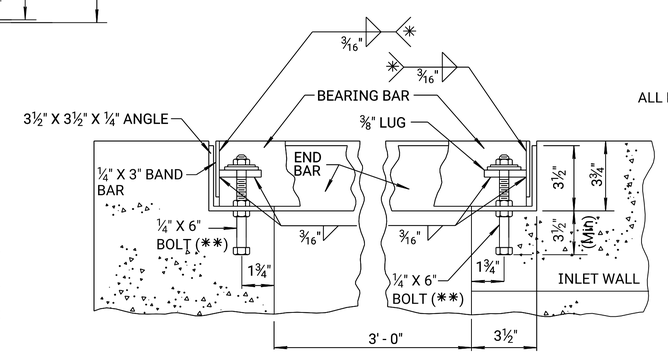
NOTE: ALL REINFORCING BARS ARE #4 BARS ON 9" CENTERS UNLESS OTHERWISE NOTED.



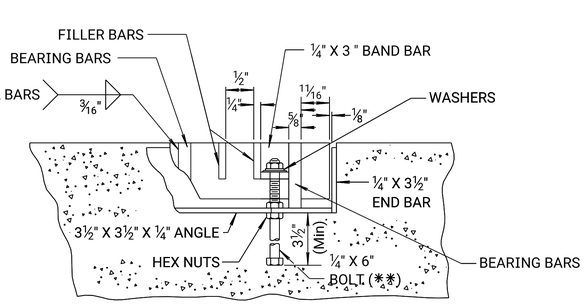

SECTION A-A




SECTION B-B



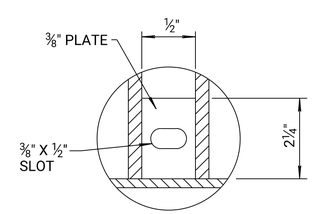

SECTION C-C




* FULL DEPTH OF BAR SAME FOR ALL BARS

(**) ¼" DIA. ASTM F1554, GRADE 36 ANCHOR BOLTS.

SECTION D-D




DETAIL A

SHEET NO. 27 | TOTAL SHEETS 187

DATE PREPARED 11/13/2024

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

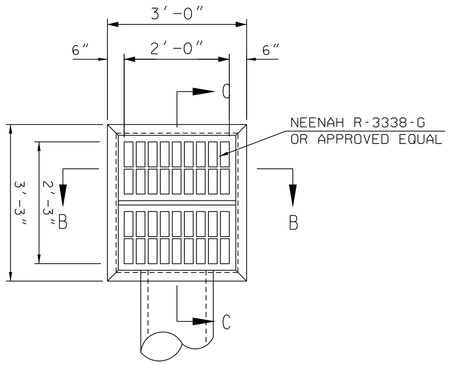
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# GRATE INLET (SPECIAL) DETAILS

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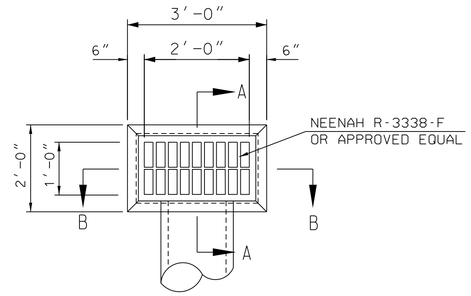
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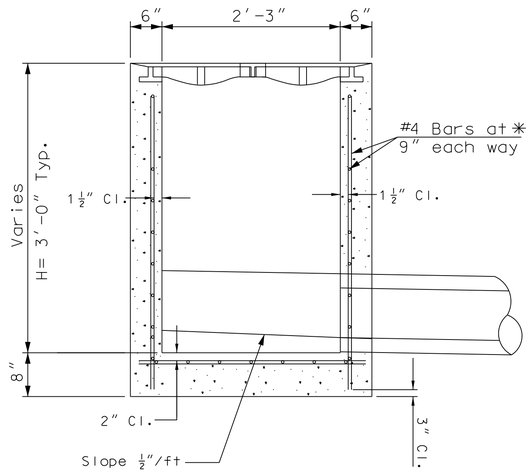

PLAN

NOTES:

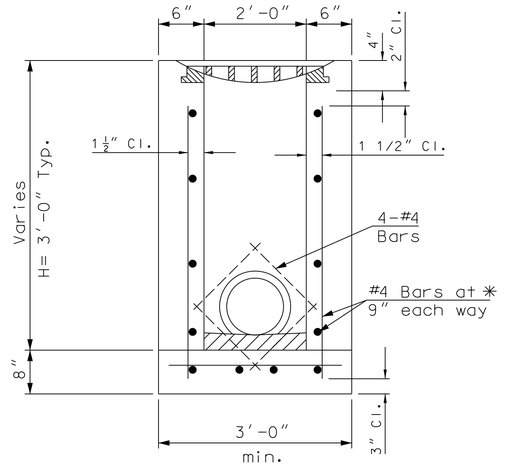
1. Location point at center of inlet.
2. A separate top slab may be utilized.
3. All work shall conform to APWA Section 2600.
4. Pour base and invert monolithic for precast inlets.
5. Provide holes in grate inlet for pipe underdrains as shown in plans. See sheets 37 and 38 for locations.



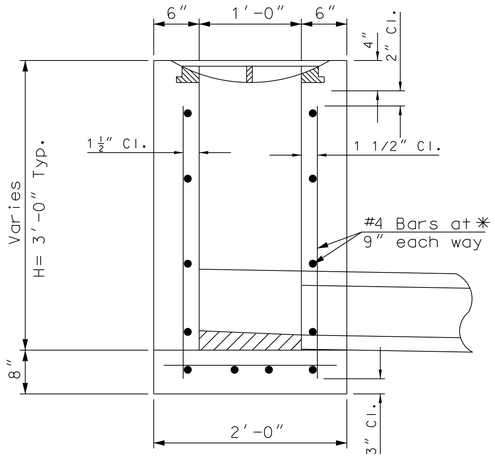

PLAN




SECTION C-C




SECTION B-B




SECTION A-A

## DOUBLE GRATE INLET DETAILS

✳NOTE: When H > 3′ Use #4 bars @ 6″ ctrs. Each Way

## SINGLE GRATE INLET DETAILS

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 28 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA
FRISHMAN
NUMBER
PE-2017007695
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**KCMO GRATE INLET DETAILS**

11:23:49 AM
User:douglasc1
C:\Users\douglasc1\documents\wspcad\oms\wsp-pb-us-pw-02\d0571867\30900661_Grate_Inlet_Detail_02.dgn

## ADJUSTMENT OF EXISTING STRUCTURES

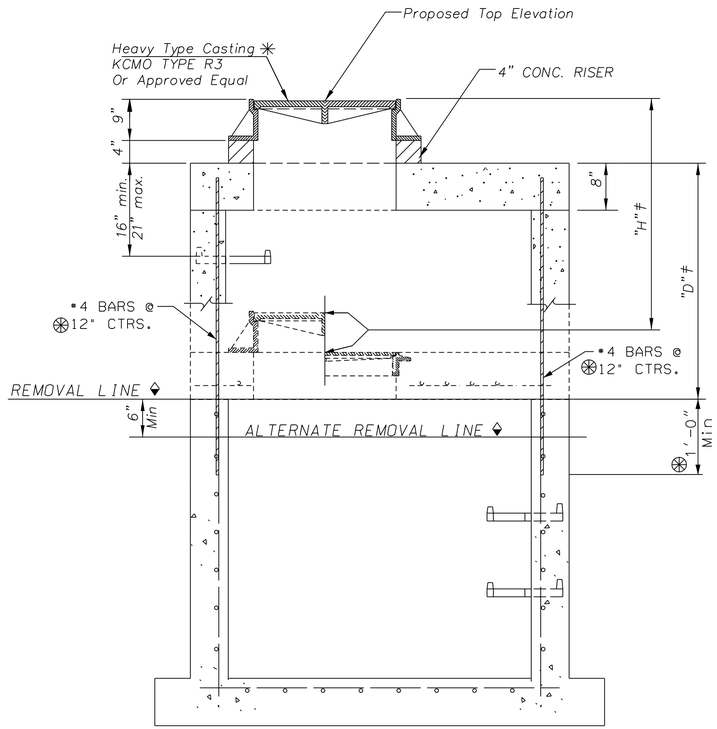
| STRUCTURE # | STRUCTURE TYPE | LOCATION | STA. | OFFSET | EXIST. TOP ELEV. | PROP. TOP ELEV. | CASTING TYPE | ADJUSTED HEIGHT "H" (ft.) | CONSTRUCTION HEIGHT "D" (ft.) | PROPOSED SURFACE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-B-00 | MANHOLE | GRAND BLVD. TRAIL | 117+39.9 | 31.9 RT. | 762.88 | 765.00 | KCMO TYPE R3 | 2.12' | 1.54' | TRAIL | ADJUST MANHOLE TOP TO TRAIL |
| EX-C-00 | MANHOLE | GRAND BLVD. TRAIL | 119+07.6 | 14.6' LT. | 766.23 | 767.25 | KCMO TYPE R3 | 1.02' | 1.68 | GRASS | ADJUST MANHOLE TOP TO GRADING |
| | | | | | | | | | | | |

⬨ REMOVAL LINE IS LOCATED AT JOINT OF THE TOP SLAB, REMOVE AND DISCARD THAT PORTION ABOVE REMOVAL LINE. IF TOP SLAB IS MONOLITHIC OR IS NOT ABLE TO BE REMOVED, SAW CUT A MINIMUM OF 6" BELOW THE TOP SLAB JOINT AROUND THE PERIMETER OF STRUCTURE AND REMOVE.

≠ ADJUSTED HEIGHT "H" IS ACTUAL DIFFERENCE IN PRE & POST TOP ELEVATIONS. CONSTRUCTION HEIGHT "D" IS ACTUAL BOX HEIGHT THAT IS TO BE CONSTRUCTED AND INCLUDES TOP SLAB THICKNESS BUT DOES NOT INCLUDE HEAVY 9" CASTING & RISERS. DIMENSIONS SHOWN FOR "H" & "D" ARE APPROXAMATE, CONTRACTOR TO VERIFY ACTUAL DIMENSIONS PRIOR TO CONSTRUCTION.

⊛ AFTER REMOVAL OF TOP, DRILL EQUALLY APACED HOLES (12" DEEP MINIMUM) INTO EXIST. MANHOLE BASE AND PLACE #4 REBAR @ 12" CTRS. AROUND THE PARIMETER OF THE STRUCTURE. LENGHT OF REBAR = "D" + 0.75'

✳ ORIENTATE MANHOLE RING & COVER TO LINE UP WITH EXISTING STEPS WITHIN THE MANHOLE AND ADJUST THE TOP ELEVATION TO MATCH PROPOSED GRADE. ADD STEPS AS NEEDED TO MEET THE MIN./MAX STEP SPACING REQUIREMENT.



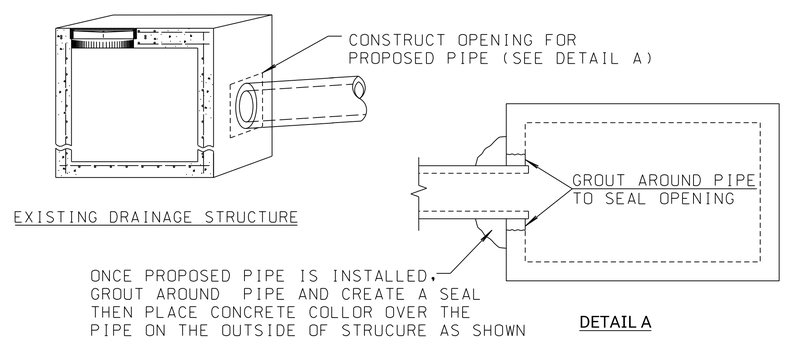

ADJUSTMENT OF EXISTING STRUCTURES

GENERAL NOTE (CONNECT TO EXISTING STRUCTURES)

CONNECTIONS TO AN EXISTING STRUCTURE SHALL BE MADE BY MAKING A HOLE SLIGHTLY LARGER THAN THE OUTSIDE DIAMETER OF THE STORM SEWER PIPE, INSERFING THE PIPE INTO THE HOLE AND SATISFACTORILY GROWLING THE CONNECFION WITH NONSHRINK MORTAR GROUT. WHEN SO DIRECTED BY THE ENGINEER, ANY PORTION OF PIPE PROJECTING UNNE CESSARILY INFO THE EXISTING STRUCTURE SHALL BE REMOVED TO MAKE A PROPER FLUSH FIFIING.

CARE MUST BE TAKEN TO PREVENT DEBRIS FROM ENTERING THE STRUCTURE DUE TO THE CREATION OF OPENING. IF THE EXISTING STRUCTURE IS DAMAGED IN MAKING THE CONNECTION OPENING OR THE CONNECTION PROCESS THE CONTRACTOR SHALL REPAIR THE DAMAGE SHALL BE SATISFACFORILY RE PAIRED OR REPLACED AT THE CONTRACFOR S EXPENSE.

THE WORK OF MAKING CONNECTIONS BETWEEN EXISTING DRAINAGE STRUCTURES, SUCH AS UTILIFY ACCESS, INTAKE OR STORM SEWER LINE, AND A PROPOSED STORM SEWER SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCIDENTAL TO THE WORK OF CONSFRUCFING STORM SEWER AND CONSIDERED INCLUDED WITLN THE PRICE BID FOR STORM SEWER.




CONNECT WITH EXISTING STRUCTURES

SHEET NO. 29 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
DANA FRISHMAN NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

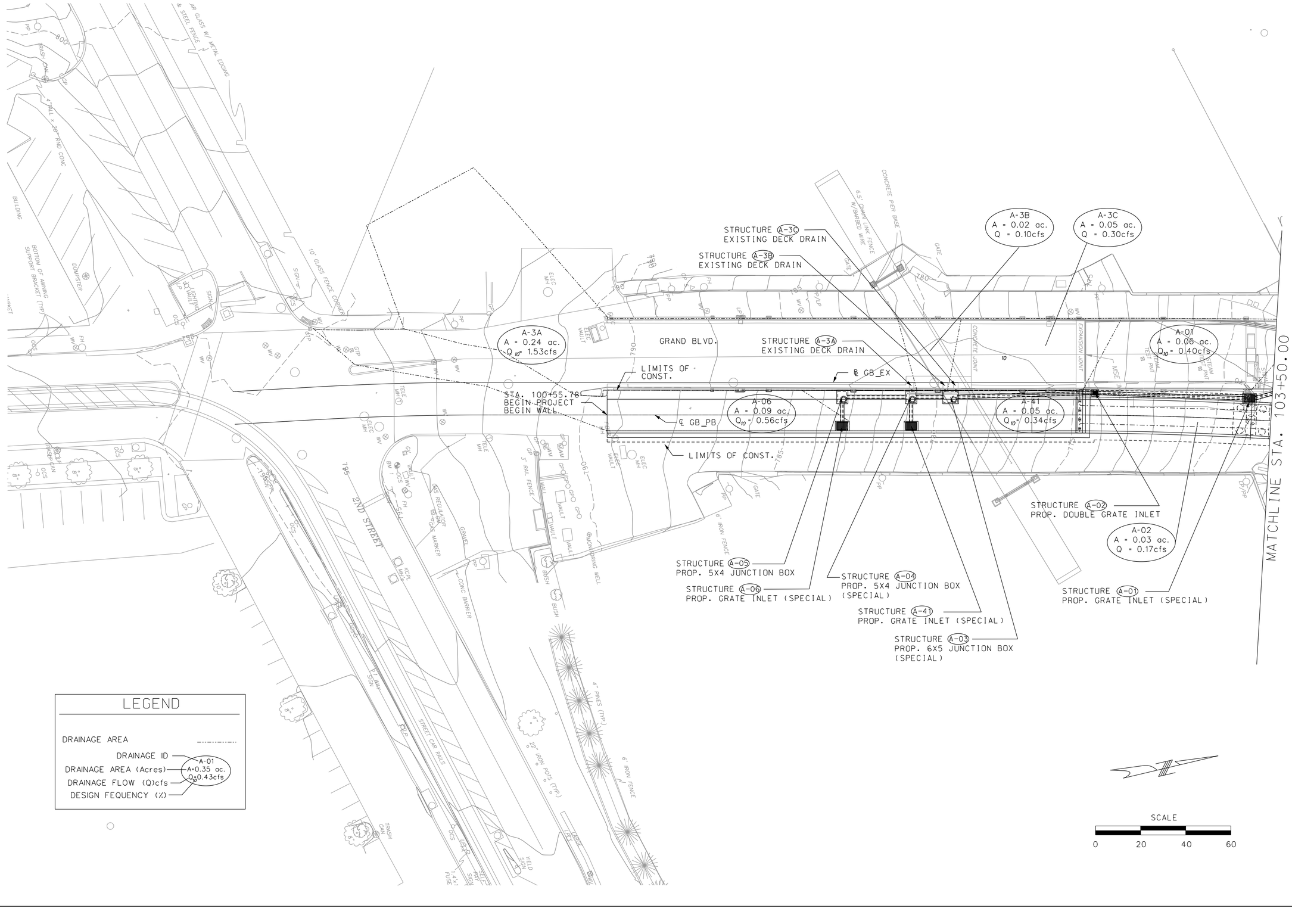
CITY OF KANSAS CITY, MISSOURI
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KANSAS CITY, MO 64106
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SUITE 200
KANSAS CITY, MO 64105

**MISCELLANEOUS DETAILS**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

11:24:02 AM
User:doug.asc1
C:\Users\doug.asc1\documents\wspcad\oms\wsp-pb-us-pw-02\d0571867\30900661_Misc_Details.dgn




## LEGEND

DRAINAGE AREA

DRAINAGE ID — A-01

DRAINAGE AREA (Acres) — A=0.35 ac.

DRAINAGE FLOW (Q)cfs — Q10=0.43cfs

DESIGN FEQUENCY (%)

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 30 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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KANSAS CITY, MO 64106
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SUITE 200
KANSAS CITY, MO 64105

**DRAINAGE AREA MAP**
**STA. 99+44.68 TO STA. 103+50.00**

11:24:15 AM
User: doug.osc1
C:\Users\doug.osc1\Documents\wspcad\dms\wsp-pd-us-pw-02\d05718673\30900661_Drainage Area Map_01.dgn

## LEGEND

DRAINAGE AREA .....

DRAINAGE ID — A-01

DRAINAGE AREA (Acres) — A=0.35 ac.

DRAINAGE FLOW (Q)cfs — $Q_{10}$=0.43cfs

DESIGN FEQUENCY (%)

SCALE

0 20 40 60

**DRAINAGE AREA MAP**
**STA. 103+50.00 TO STA. 108+00.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 31 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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PUBLIC WORKS DEPARTMENT

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KANSAS CITY, MO 64106
(816) 513-2739

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SUITE 200
KANSAS CITY, MO 64105

11:24:28 AM
User:doug.losc1
C:\Users\doug.losc1\Documents\wspcad\oms\wsp-pb-us-pw-02\d0571867\30900661_Drainage Area Map_02.dgn

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 32 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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(816) 513-2739

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SUITE 200
KANSAS CITY, MO 64105

**DRAINAGE AREA MAP**
**STA. 108+00.00 TO STA. 112+50.00**

11:24:40 AM
User:doug.lasc1
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 33 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

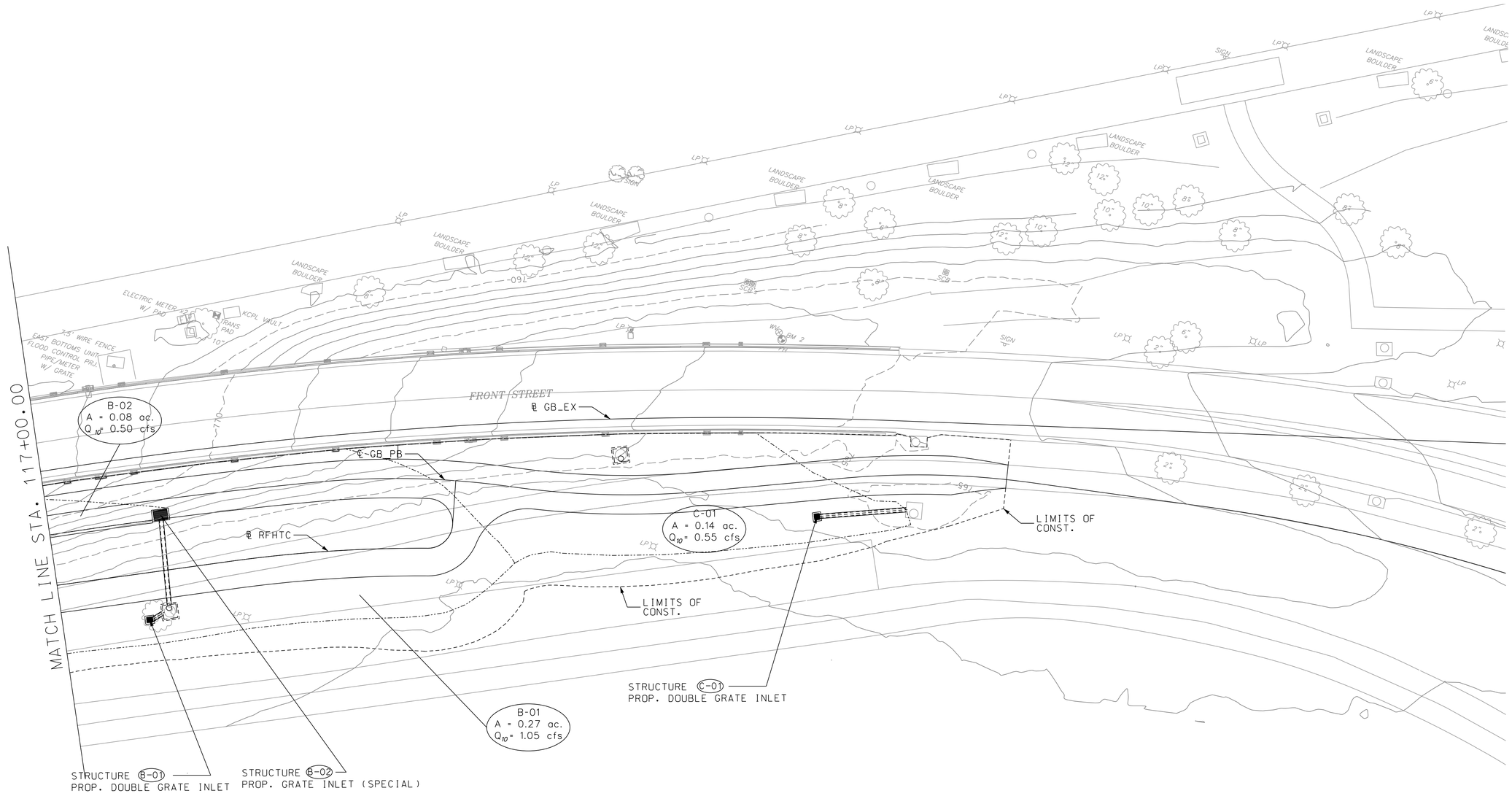
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

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300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# DRAINAGE AREA MAP
## STA. 112+50.00 TO STA. 117+00.00

11:24:53 AM
User:douglasc1
c:\Users\douglasc1\Documents\wspcad\dms\wsp-pb-us-pw-02\kd0571867\30900661_Drainage_Area_Map_04.dgn




## LEGEND

DRAINAGE AREA .....

DRAINAGE ID — A-01

DRAINAGE AREA (Acres) — A=0.35 ac.

DRAINAGE FLOW (Q)cfs — $Q_{10}$=0.43cfs

DESIGN FEQUENCY (%)

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 34 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
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| DATE | DESCRIPTION |
|---|---|

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PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# DRAINAGE AREA MAP
## STA. 117+00.00 TO STA. 120+50.00

11:25:06 AM
User:douglasc1
C:\Users\douglasc1\Documents\wspcad\oms\wsp-pb-us-pw-02\d0571867\30900661_Drainage_Area_Map_05.dgn

| SITE DATA | | | | | HYDROLOGY | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DRAINAGE STRUCTURE NUMBER | DRAINAGE LOCATION | DRAINAGE AREA NUMBER | DRAINAGE AREA ACREAGE | RECURRENCE INTERVAL YEARS | METHOD | DATA | | | | | REMARKS |
| | | | | | | Tc (min) | C | I (in/hr) | A (Ac.) | $Q_{cfs}$ | |
| A-01 | 103+40.00 | A-01 | 0.06 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.06 | 0.40 | Grate Inlet (Special) |
| A-02 | 102+72.00 | A-02 | 0.03 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.03 | 0.17 | Double Grate Inlet |
| A-41 | 101+90.50 | A-41 | 0.05 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.05 | 0.34 | Grate Inlet (Special) |
| A-06 | 101+60.00 | A-06 | 0.09 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.09 | 0.56 | Grate Inlet (Special) |
| B-01 | 117+33.00 | B-01 | 0.27 | 10 Yr | Rational | 6.3 | 0.56 | 6.88 | 0.27 | 1.05 | Double Grate Inlet |
| B-02 | 117+42.00 | B-02 | 0.08 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.08 | 0.50 | Grate Inlet (Special) |
| C-01 | 119+80.00 | C-01 | 0.14 | 10 Yr | Rational | 5.0 | 0.55 | 7.26 | 0.14 | 0.55 | Double Grate Inlet |
| | | | | | | | | | | | |
| A-3A | 101+90.50 | A-3A | 0.24 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.24 | 1.53 | To 5' x 4' Junction Box Via Deck Drain/Steel Pipe |
| A-3B | 102+05.50 | A-3B | 0.02 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.02 | 0.10 | To 6' x 5' Junction Box Via Deck Drain/Steel Pipe |
| A-3C | 102+10.25 | A-3C | 0.05 | 10 Yr | Rational | 5.0 | 0.90 | 7.26 | 0.05 | 0.31 | To 6' x 5' Junction Box Via Deck Drain/Steel Pipe |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

## SCHEDULE OF INLETS & MANHOLES

| STORM SEWER STRUCTURES | | | | | | | | | STORM SEWER PIPE | | | | | | STRUCTURE SUMMARY | | | | CONDUIT SUMMARY | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATIONS OF STRUCTURES | | | | | ELEVATIONS | | ROUTING SEQUENCE | | CONSTRUCT OR INSTALL | | | | | | | | | | NPS | | RCP | | |
| Structure ID | Structure | Location | Station | Offset LT./RT. | TOP | FLOOR | From | To | CONDUIT PROP. Size | Type | Length (Ft.) | INVERT ELEV. Up | Down | Pipe Slope % | DOUBLE GRATE INLET | GRATE INLET (SPECIAL) | JUNCTION BOX (SPECIAL) | JUNCTION BOX | 5" (FT.) | 12" (FT.) | 15" (FT.) | 18" (FT.) | |
| A-01 | Grate Inlet (Special) | Grand Blvd. Ped. Bridge | 103+40.00 | 9.50' Lt. | 769.20 | 765.87 | A-01 | A-00 | 15'' | RCP | 23.9 | 766.25 | 764.74 | 6.31 | | 1 | | | | | 23.9 | | |
| A-02 | Double Grate Inlet | Grand Blvd. Ped. Bridge | 102+72.00 | 9.80' Lt. | 774.12 | 770.29 | A-02 | A-01 | 15'' | RCP | 64.8 | 771.54 | 766.74 | 7.41 | 1 | | | | | | 64.8 | | |
| A-03 | 6x5 Junction Box (Special) | Grand Blvd. Ped. Bridge | 102+08.00 | 8.00' Lt. | 787.03 | 773.45 | A-03 | A-02 | 15'' | RCP | 60.0 | 776.50 | 771.70 | 8.00 | | | 1 | | | | 60.0 | | |
| A-04 | 5x4 Junction Box (Special) | Grand Blvd. Ped. Bridge | 101+90.50 | 8.00' Lt. | 786.93 | 774.35 | A-04 | A-03 | 15'' | RCP | 12.5 | 777.75 | 776.75 | 8.00 | | | 1 | | | | 12.5 | | |
| A-41 | Grate Inlet (Special) | Grand Blvd. Ped. Bridge | 101+90.50 | 4.90' Rt. | 786.82 | 782.49 | A-41 | A-04 | 15'' | RCP | 8.9 | 782.90 | 782.75 | 1.69 | | 1 | | | | | 8.9 | | |
| A-05 | 5x4 Junction Box | Grand Blvd. Ped. Bridge | 101+60.00 | 8.00' Lt. | 787.17 | 774.84 | A-05 | A-04 | 15'' | RCP | 26.5 | 780.10 | 778.00 | 7.93 | | | | 1 | | | 26.5 | | |
| A-06 | Grate Inlet (Special) | Grand Blvd. Ped. Bridge | 101+60.00 | 4.90' Rt. | 787.06 | 782.73 | A-06 | A-05 | 15'' | RCP | 8.9 | 783.10 | 783.00 | 1.12 | | 1 | | | | | 8.9 | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| B-01 | Double Grate Inlet | Grand Blvd. Ped. Bridge | 117+33.00 | 42.60' Rt. | 764.30 | 760.22 | B-01 | B-00 | 15'' | RCP | 5.0 | 760.80 | 760.50 | 6.01 | 1 | | | | | | 5.0 | | |
| B-02 | Grate Inlet (Special) | Grand Blvd. Ped. Bridge | 117+42.00 | 5.50' Rt. | 770.28 | 761.70 | B-02 | B-00 | 15'' | RCP | 31.6 | 762.00 | 760.50 | 4.75 | | 1 | | | | | 31.6 | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| C-01 | Double Grate Inlet | Grand Blvd. Ped. Bridge | 119+80.00 | 13.00' Rt. | 764.45 | 761.62 | C-01 | C-00 | 15'' | RCP | 31.9 | 762.00 | 761.60 | 1.26 | 1 | | | | | | 31.9 | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| A-3A | Ex. 5'' STD WPB Steel Pipe | Grand Blvd. Ped. Bridge | 101+90.50 | 10.50' Lt. | - | - | A-3A | A-04 | 5'' | STD WPB | 1.5 | 780.50* | 780.25* | - | | | | | 1.5 | | | | See Junction Box Details |
| A-3B | Ex. 5'' STD WPB Steel Pipe | Grand Blvd. Ped. Bridge | 102+05.50 | 10.50' Lt. | - | - | A-3B | A-03 | 5'' | STD WPB | 1.5 | 867.50* | 866.90* | - | | | | | 1.5 | | | | See Junction Box Details |
| A-3C | Ex. 5'' STD WPB Steel Pipe | Grand Blvd. Ped. Bridge | 102+10.25 | 10.50' Lt. | - | - | A-3C | A-03 | 5'' | STD WPB | 1.5 | 866.60* | 865.95* | - | | | | | 1.5 | | | | See Junction Box Details |
| | | | | | | | | | | | | | | | | | | | | | | | * See SHT 25 for Details and Flowlines of Structures and Pipes |
| | | | | | | | | | | | | | | TOTAL | 3 | 4 | 2 | 1 | 4.5 | 0 | 274 | 0 | |

SHEET NO. 35 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

DATE | DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

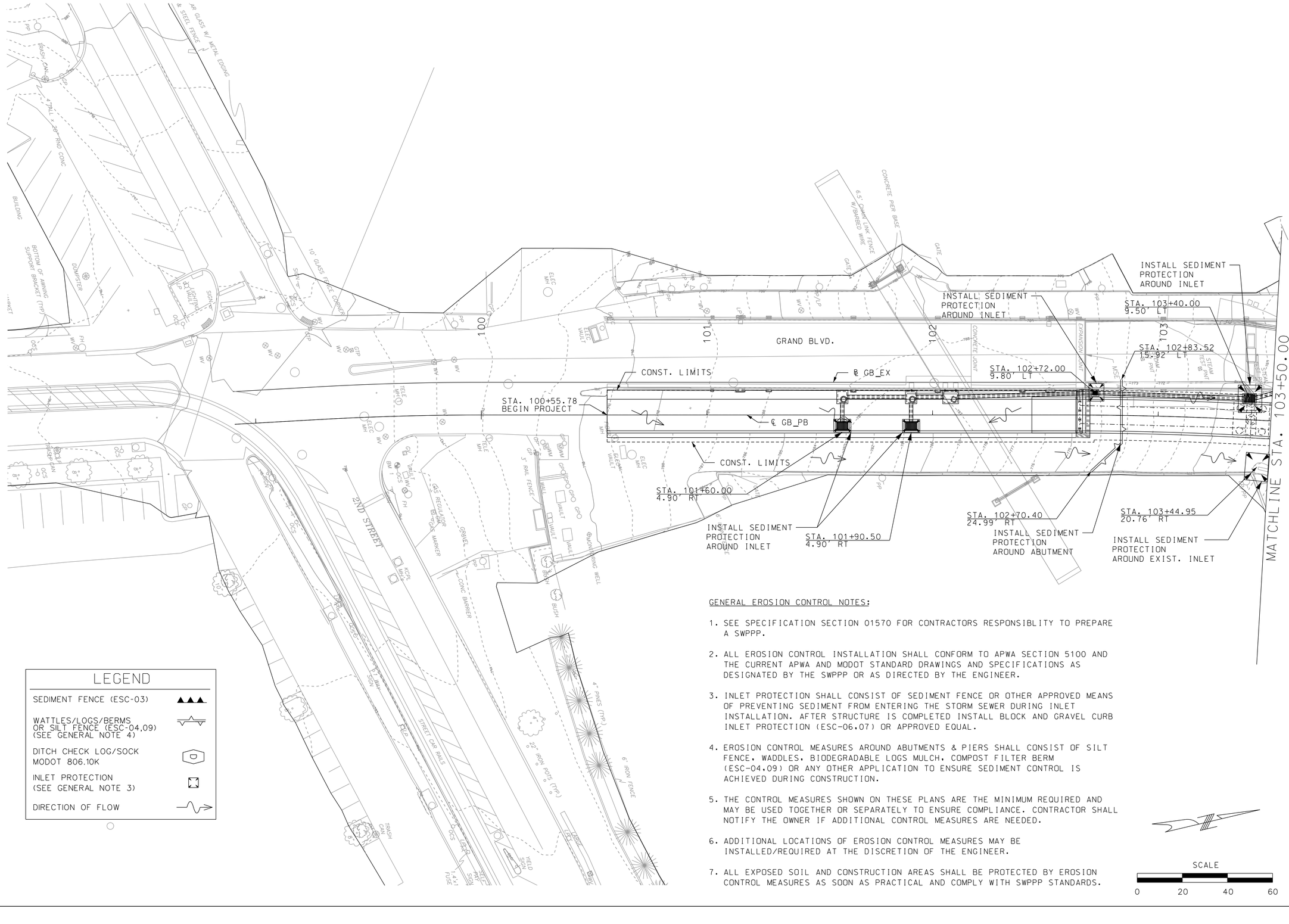
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**DRAINAGE DATA AND SUMMARY**

11:25:19 AM
User:douglasc1
C:\Users\douglasc1\Documents\wspcad\oms\wsp-pb-us-pw-02\d05718674\30900661_Drainage_Tables_01.dgn




## LEGEND

- SEDIMENT FENCE (ESC-03)
- WATTLES/LOGS/BERMS OR SILT FENCE (ESC-04,09) (SEE GENERAL NOTE 4)
- DITCH CHECK LOG/SOCK MODOT 806.10K
- INLET PROTECTION (SEE GENERAL NOTE 3)
- DIRECTION OF FLOW

GENERAL EROSION CONTROL NOTES:

1. SEE SPECIFICATION SECTION 01570 FOR CONTRACTORS RESPONSIBLITY TO PREPARE A SWPPP.
2. ALL EROSION CONTROL INSTALLATION SHALL CONFORM TO APWA SECTION 5100 AND THE CURRENT APWA AND MODOT STANDARD DRAWINGS AND SPECIFICATIONS AS DESIGNATED BY THE SWPPP OR AS DIRECTED BY THE ENGINEER.
3. INLET PROTECTION SHALL CONSIST OF SEDIMENT FENCE OR OTHER APPROVED MEANS OF PREVENTING SEDIMENT FROM ENTERING THE STORM SEWER DURING INLET INSTALLATION. AFTER STRUCTURE IS COMPLETED INSTALL BLOCK AND GRAVEL CURB INLET PROTECTION (ESC-06,07) OR APPROVED EQUAL.
4. EROSION CONTROL MEASURES AROUND ABUTMENTS & PIERS SHALL CONSIST OF SILT FENCE, WADDLES, BIODEGRADABLE LOGS MULCH, COMPOST FILTER BERM (ESC-04,09) OR ANY OTHER APPLICATION TO ENSURE SEDIMENT CONTROL IS ACHIEVED DURING CONSTRUCTION.
5. THE CONTROL MEASURES SHOWN ON THESE PLANS ARE THE MINIMUM REQUIRED AND MAY BE USED TOGETHER OR SEPARATELY TO ENSURE COMPLIANCE. CONTRACTOR SHALL NOTIFY THE OWNER IF ADDITIONAL CONTROL MEASURES ARE NEEDED.
6. ADDITIONAL LOCATIONS OF EROSION CONTROL MEASURES MAY BE INSTALLED/REQUIRED AT THE DISCRETION OF THE ENGINEER.
7. ALL EXPOSED SOIL AND CONSTRUCTION AREAS SHALL BE PROTECTED BY EROSION CONTROL MEASURES AS SOON AS PRACTICAL AND COMPLY WITH SWPPP STANDARDS.

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 36 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

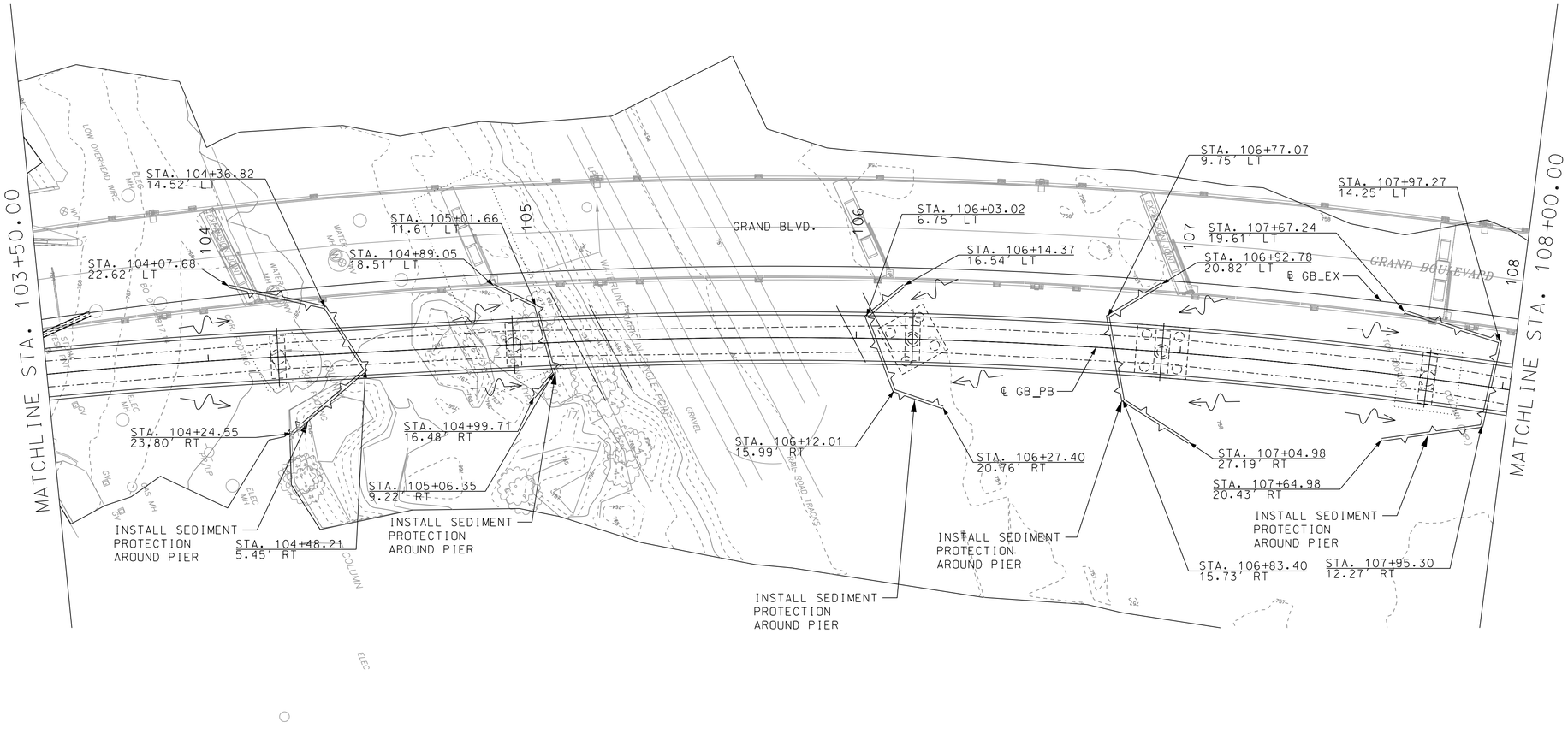
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.


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KANSAS CITY, MO 64105


# EROSION CONTROL SHEET
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## LEGEND

- SEDIMENT FENCE (ESC-03)
- WATTLES/LOGS/BERMS OR SILT FENCE (ESC-04,09) (SEE GENERAL NOTE 4)
- DITCH CHECK LOG/SOCK MODOT 806.10K
- INLET PROTECTION (SEE GENERAL NOTE 3)
- DIRECTION OF FLOW

SCALE
0 20 40 60

**EROSION CONTROL SHEET**
**STA. 103+50.00 TO STA. 108+00.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 37 | 187 |

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STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

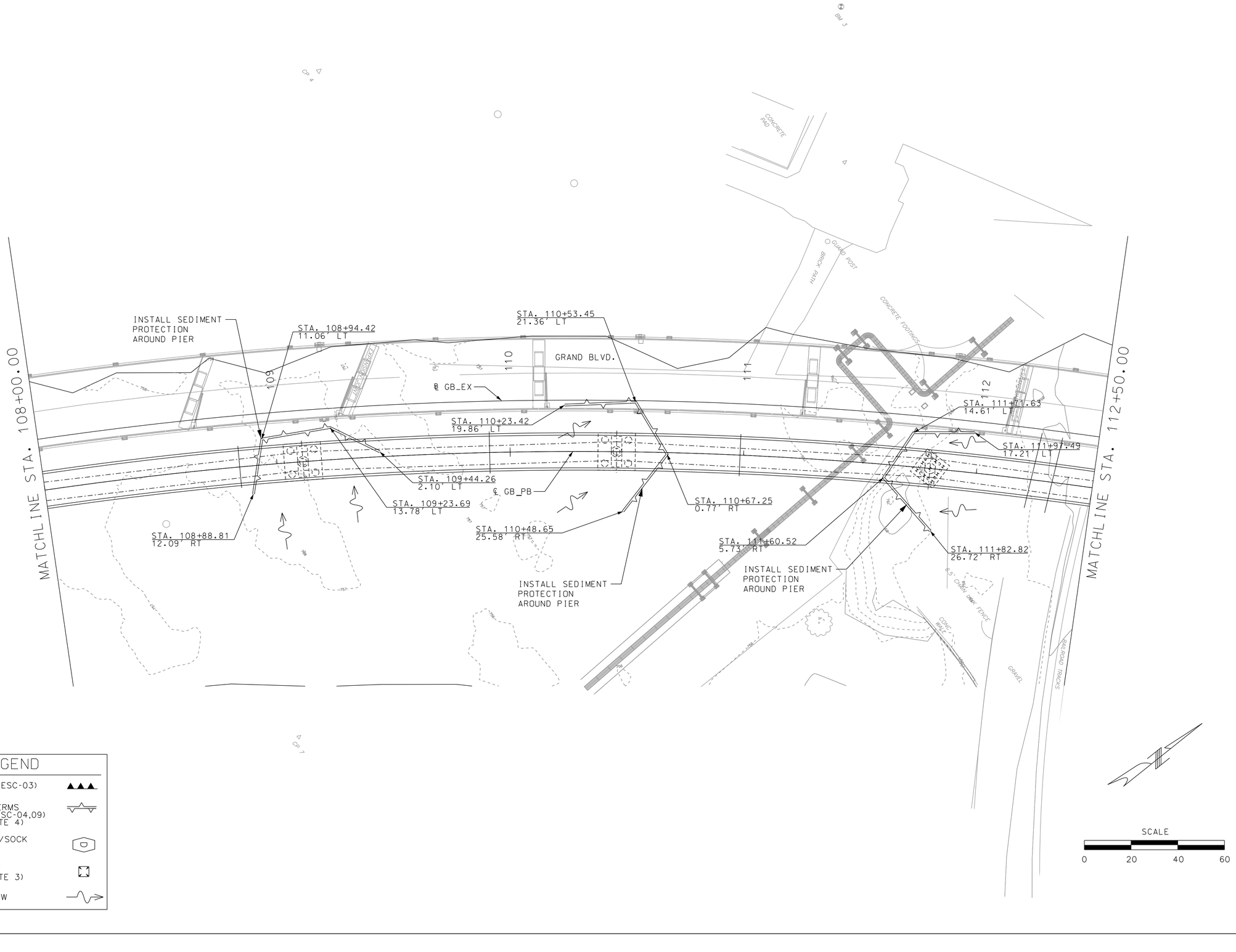
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 38 | 187 |

DATE PREPARED
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STATE
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CITY
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COUNTY
JACKSON

PROJECT NO.
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STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

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300 WYANDOTTE STREET
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KANSAS CITY, MO 64105

# EROSION CONTROL SHEET
# STA. 108+00.00 TO STA. 112+50.00

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INSTALL SEDIMENT PROTECTION

STA. 115+24.64
54.44' LT

STA. 115+52.35
53.22' LT

STA. 115+17.96
45.59' LT

STA. 115+59.01
43.53' LT

INSTALL SEDIMENT PROTECTION AROUND PIER

STA. 113+14.84
12.75' LT

INSTALL SEDIMENT PROTECTION AROUND PIER

STA. 114+53.99
12.28' LT

GRAND BLVD.

STA. 112+92.18
14.07' LT

CONST. LIMITS

℄ GB_EX

STA. 115+29.42
19.51' LT

MATCHLINE STA. 112+50.00

STA. 115+54.95
8.22' RT

STA. 114+15.32
13.20' RT

STA. 114+66.59
14.59' RT

STA. 116+04.15
34.54' RT

STA. 116+19.04
16.53' RT

STA. 113+24.86
10.17' RT

STA. 115+26.63
17.93' RT

STA. 116+19.74
35.42' RT

STA. 112+86.24
8.04' RT

STA. 115+41.20
27.16' RT

STA. 116+02.97
46.94' RT

CONST. LIMITS

STA. 116+19.04
47.40' RT

INSTALL SEDIMENT FENCE

MATCHLINE STA. 117+00.00

## LEGEND

| | |
|---|---|
| SEDIMENT FENCE (ESC-03) | ▲▲▲ |
| WATTLES/LOGS/BERMS OR SILT FENCE (ESC-04,09) (SEE GENERAL NOTE 4) | |
| DITCH CHECK LOG/SOCK MODOT 806.10K | |
| INLET PROTECTION (SEE GENERAL NOTE 3) | |
| DIRECTION OF FLOW | |

SCALE
0 20 40 60

**EROSION CONTROL SHEET**
**STA. 112+50.00 TO STA. 117+00.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 39 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

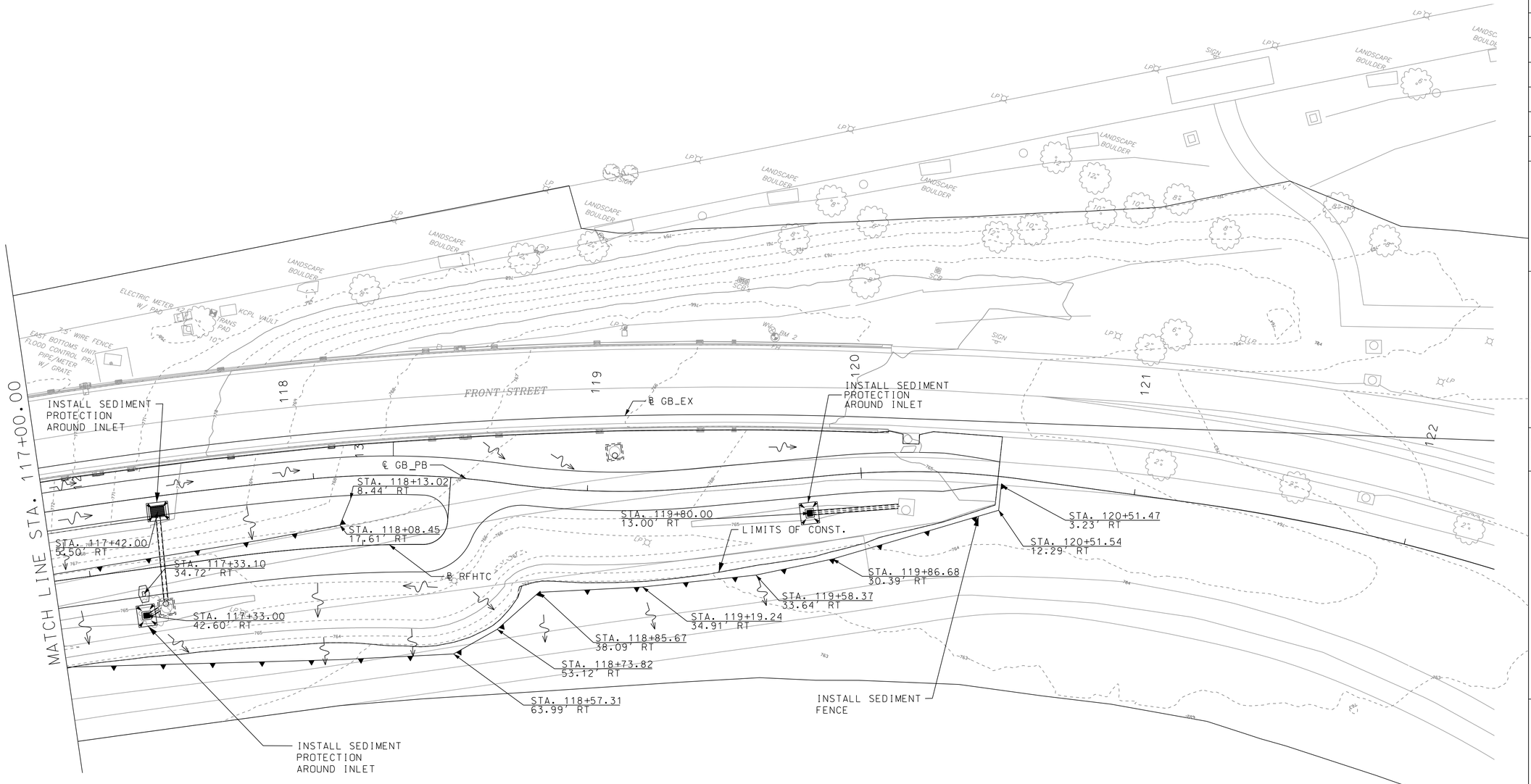
IF A SEAL IS PRESENT ON THIS SHEET IT HAS been ELECTRONICALLY SEALED AND DATED.

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(816) 513-2739

WSP USA INC.
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SUITE 200
KANSAS CITY, MO 64105

11:26:10 AM
User:doug.lasc1
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FOR INFORMATION ONLY

## SUMMARY OF EROSION CONTROL

| STATION | OFFSET | DESCRIPTION | QUANTITY | UNIT |
|---|---|---|---|---|
| 101+60.00 | 4.90' RT. | INLET PROTECTION | 1 | EA |
| 101+90.50 | 4.90' RT. | INLET PROTECTION | 1 | EA |
| 102+72.00 | 9.80' LT. | INLET PROTECTION | 1 | EA |
| 102+70.40 TO 102+83.52 | | WATTLE/LOG/BERM | 46.67 | LF |
| 103+40.00 | 9.50' LT. | INLET PROTECTION | 1 | EA |
| 103+44.95 | 20.76' RT. | INLET PROTECTION | 1 | EA |
| 104+07.68 TO 104+24.55 | | WATTLE/LOG/BERM | 83.34 | LF |
| 104+89.05 TO 104+99.71 | | WATTLE/LOG/BERM | 45.59 | LF |
| 106+14.37 TO 106+27.40 | | WATTLE/LOG/BERM | 55.42 | LF |
| 106+92.78 TO 107+04.98 | | WATTLE/LOG/BERM | 69.77 | LF |
| 107+64.98 TO 107+67.24 | | WATTLE/LOG/BERM | 88.51 | LF |
| 108+88.81 TO 109+44.26 | | WATTLE/LOG/BERM | 77.19 | LF |
| 110+23.42 TO 110+48.65 | | WATTLE/LOG/BERM | 87.51 | LF |

## SUMMARY OF EROSION CONTROL

| STATION | OFFSET | DESCRIPTION | QUANTITY | UNIT |
|---|---|---|---|---|
| 111+82.82 TO 111+97.49 | | WATTLE/LOG/BERM | 79.90 | LF |
| 112+86.24 TO 113+24.86 | | WATTLE/LOG/BERM | 70.79 | LF |
| 114+15.32 TO 114+66.59 | | WATTLE/LOG/BERM | 85.39 | LF |
| 115+17.96 TO 115+59.01 | | WATTLE/LOG/BERM | 51.55 | LF |
| 115+29.42 TO 116+02.97 | | SEDIMENT FENCE | 128.00 | LF |
| 116+19.04 TO 120+51.47 | | SEDIMENT FENCE | 448.11 | LF |
| 115+54.95 TO 118+13.02 | | SEDIMENT FENCE | 259.53 | LF |
| 116+19.04 | 16.53' RT. | DITCH CHECK | 1 | EA |
| 117+33.00 | 42.60' RT. | INLET PROTECTION | 1 | EA |
| 117+32.13 | 34.72' RT. | DITCH CHECK | 1 | EA |
| 117+42.00 | 5.50' RT. | INLET PROTECTION | 1 | EA |
| 119+80.00 | 13.00' RT. | INLET PROTECTION | 1 | EA |

## LEGEND

- SEDIMENT FENCE (ESC-03)
- WATTLES/LOGS/BERMS OR SILT FENCE (ESC-04,09) (SEE GENERAL NOTE 4)
- DITCH CHECK LOG/SOCK MODOT 806.10K
- INLET PROTECTION (SEE GENERAL NOTE 3)
- DIRECTION OF FLOW

SCALE
0 20 40 60

SHEET NO. 40 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
DANA FRISHMAN
NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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

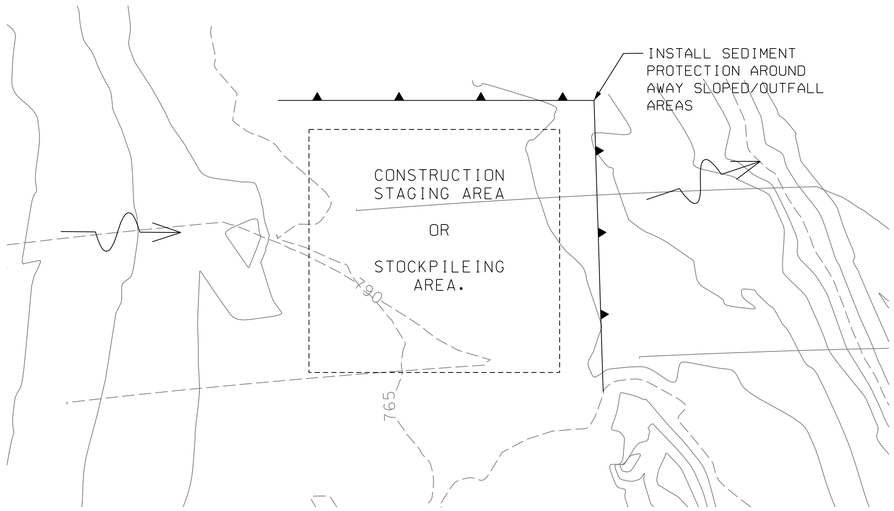
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KANSAS CITY, MO 64106
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WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


# EROSION CONTROL SHEET
# STA. 117+00.00 TO STA. 120+50.00


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GENERAL STAGING/STOCKPILING EROSION CONTOL

## CONSTRUCTION STAGING

CONTRACTOR IS RESPONSIBLE FOR SELECTING A SUITABLE STAGING AREA FOR CONSTRUCTION WITHIN THE PROJECT LIMITS /RIGHT-OF-WAY. CONSTRUCTION STAGING AREAS SHALL INCLUDE EROSION CONTROL MEASSURES AROUND THE STAGING AREA WHERE GROUND IS SLOPING AWAY FROM THE AREA AND ANYWHERE THE RUNOFF FROM THE STAGING AREA IS LIKLEY TO DRAIN TO ADJACENT GROUND. CONTRACTOR SHALL UTILIZE WHATEVER EROSION CONTROL METHODS NEEDED TO ENSURE THE STAGING SITE AREA RUNOFF IS CONTAINED WITHIN THE LIMITS OF THE STAGING AREA.

## CONSTRUCTION STOCKPILING

THE SAME NOTE ABOVE APPLIES TO ANY AREA THE CONTRACTOR CHOOSES FOR STOCKPILING. STOCKPILED AREAS THAT CONTAIN FILL MATERIAL SHALL BE COVERED TO PREVENT UNESSESARY EROSION FROM THE SITE.

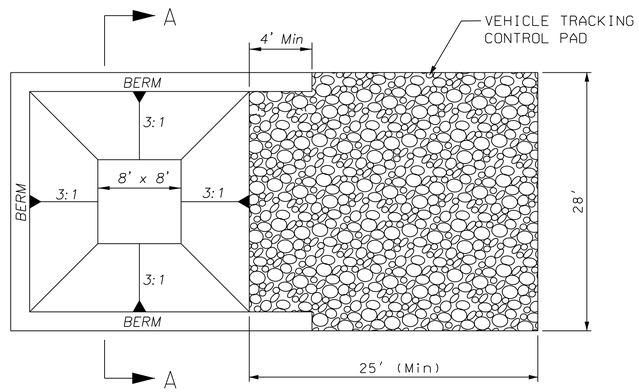
THE CONTRACTOR SHALL PROVIDE A CONCRETE WASHOUT AREA TO CONTAIN CONCRETE OR OTHER WASHOUT MATERIAL AND ENSURE THAT THE MATERIAL CONTAINED DOES NOT LEAVE THE BASIN AREA. THE CONCRETE WASHOUT AREA MUST BE LINED WITH AN IMPERMIABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES WHEN THE WASHOUT AREA IS WITHIN 400' OF ANY NATRUAL DRAINAGE PATHWAY OR WATERBODY. OTHER WASHOUT METHODS MUST BE PRE-APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

## CONCRETE WASHOUT AREA

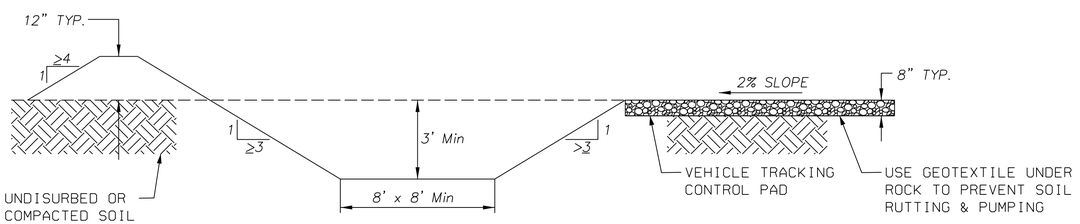
CONCRETE WASHOUT WATER, PIECES OF CONCRETE AND ALL OTHER DEBRIS IN BASIN SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER TIGHT CONTAINER AND PROPERLY DISPOSED OF. THE CONCRETE WASHOUT AREAS SHALL REMAIN IN PLACE UNTIL ALL THE CONCRETE FOR THE PROJECT HAS BEEN PLACED. WHEN THE USE OF THE CONCRETE WASH AREA HAS BEEN COMPLETED COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED MANNER APPROVED BY THE ENGINEER.

## DE-WATERING AREA

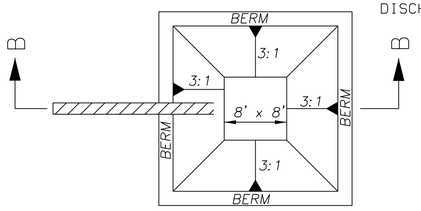
IF THE CONTRACTOR SHOULD ENGAGE IN DE-WATERING ACTIVITIES THE CONTRACTOR SHALL PROVIDE A DE-WATERING BASIN, DE-WATERING FILTER BAG OR OTHER DE-WATERING METHODS APPROVED BY THE ENGINEER PRIOR TO DE-WATERING WORK. DE-WATERING ACTIVITIES SHALL FOLLOW THE MoDOT SWPPP 806.8. WHEN THE USE OF THE BASIN OR FILTER HAS BEEN COMPLETED COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED MANNER APPROVED BY THE ENGINEER.

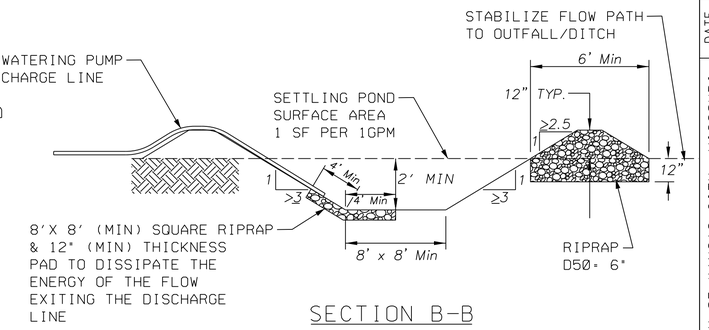



CONCRETE WASHOUT AREA (PLAN)



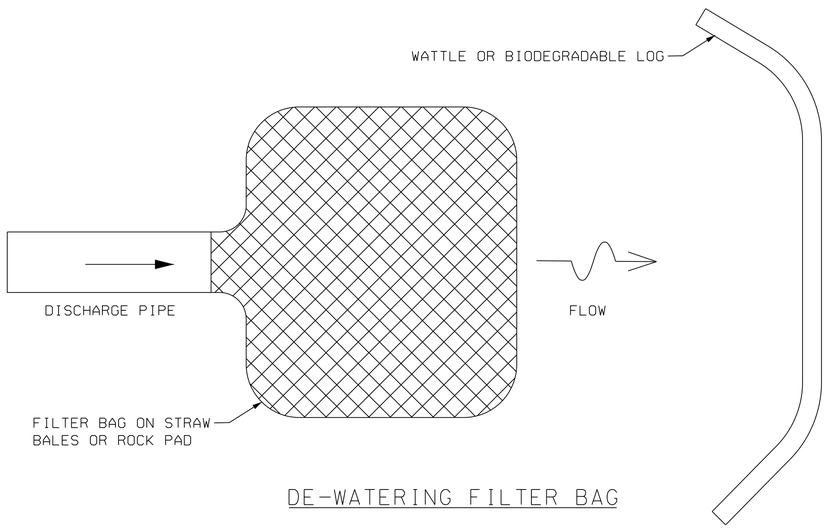

SECTION A-A




SECTION B-B

DE-WATERING DISCHARGE SETTLING BASIN




DE-WATERING FILTER BAG

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 41 | 187 |

DATE PREPARED
11/13/2024

STATE
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PROJECT NO.
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STATE OF MISSOURI
DANA FRISHMAN NUMBER PE-2017007695
PROFESSIONAL ENGINEER

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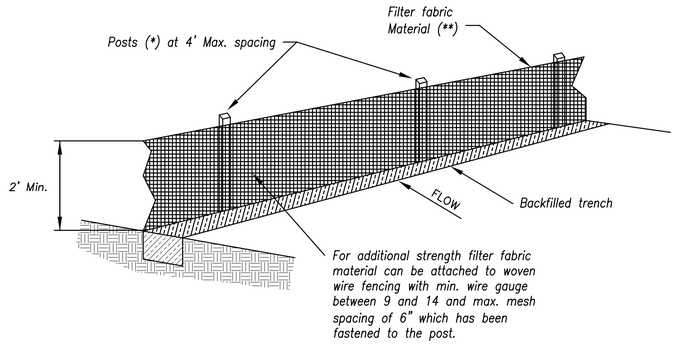
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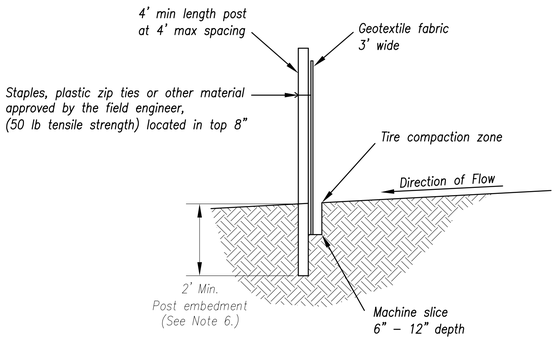
CITY OF KANSAS CITY, MISSOURI
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**EROSION CONTROL MISCELLANEOUS DETAILS**

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(*) POSTS

- MIN, LENGTH 4'
- HARDWOOD 1 3/16" x 1 3/16"
- NO.2 SOUTHERN PINE 2 5/8" x 2 5/8"
- STEEL 1.33 LB/FT

(**) – Geotextile Fabric shall meet the requirements of AASHTO M288

## SILT FENCE DETAILS

Not to Scale

### Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

### Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ⅓ the height of silt fence.
2. Repair as necessary to maintain function and structure.

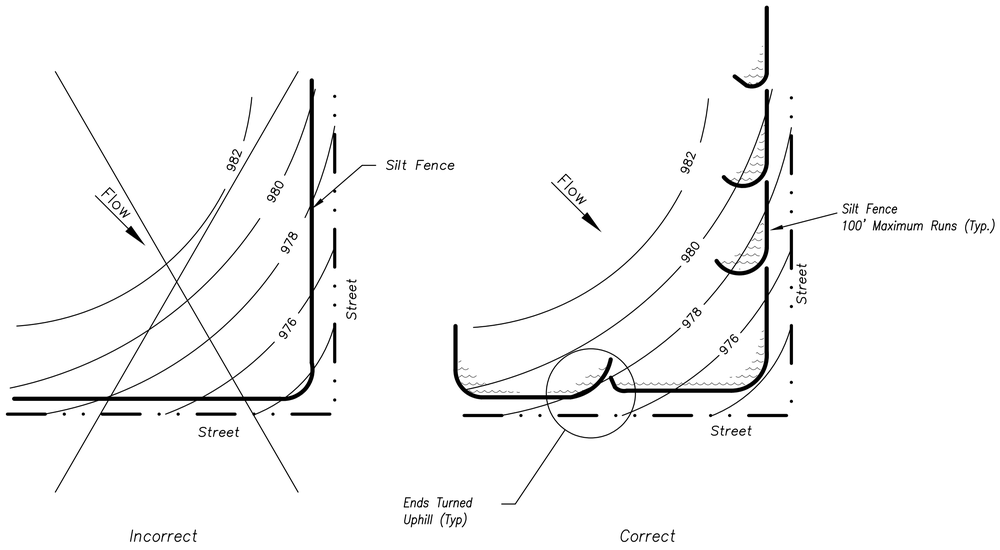
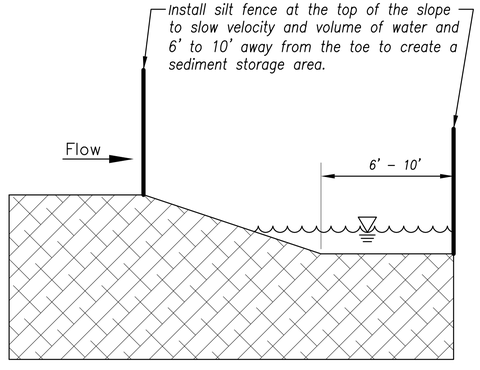
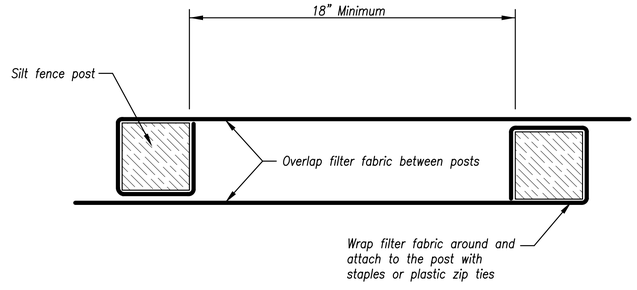



Figure A

## SILT FENCE LAYOUT

Not to Scale




## JOINING FENCE SECTIONS

Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

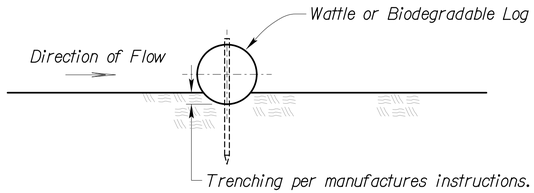
AMERICAN PUBLIC WORKS ASSOCIATION

KANSAS CITY METRO CHAPTER

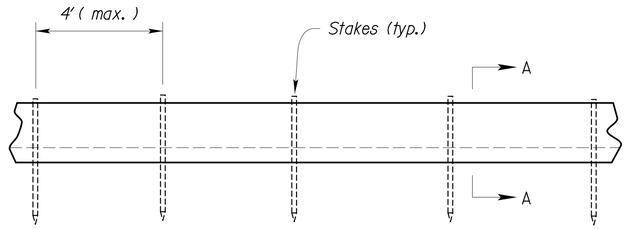
SILT FENCE

STANDARD DRAWING NUMBER ESC-03

ADOPTED: 10/24/2016




Section A–A




Typical Elevation

## WATTLES AND BIODEGRADABLE LOG

Notes for Wattles and Biodegradable Log Slope Protection:

1. The Slope barriers shall be placed along contour lines, with a short section turned upgrade at each end of the barrier. The maximum length of the slope barrier shall not exceed 250 feet, and the barrier ends need to be staggered.
2. Install wattles and biodegradable logs per manufacturer's instructions.
3. Spacing of stakes per manufacturer's instructions with 4' max. spacing. Length of stakes shall be a minimum of 2 times the diameter of the log with minimum of 24".

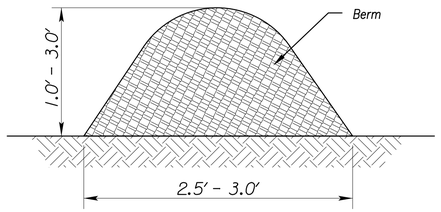



Figure 1
(Perimeter Control)

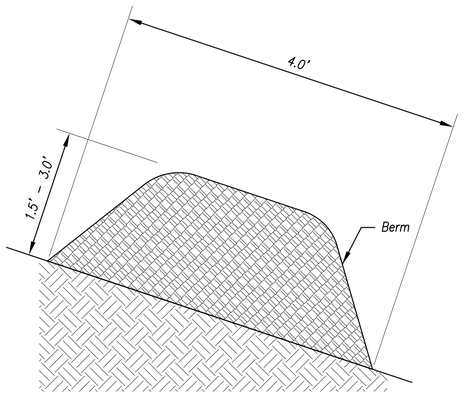



Figure 2
(Steep Slopes)

## MULCH OR COMPOST FILTER BERMS

Notes for Mulch and Compost Filter Beam:

1. The sediment control berm shall be placed uncompacted in a windrow at locations shown on the plans or as directed by the engineer.
2. Parallel to the base of the slope, or around the perimeter of other affected areas, construct a 1 to 3 foot high by 2.5 to 3 foot wide berm (see Figure 1). For maximum water treatment ability or for steep slopes, construct a 1.5 to 3 foot high trapezoidal berm that is a minimum of 4 feet wide at the base (see Figure 2). In extreme conditions, or where specified by the engineer, a second berm shall be constructed at the top of the slope. Engineer will specify berm requirements.
3. If berm is to be left as permanent or part of the natural landscape, the compost berm may be seeded during application for permanent vegetation.
4. Do not use compost or wood mulch berms in any runoff channels or concentrated flow areas.
5. Wood mulch shall consist of tree and shrub debris resulting from clearing and grubbing and shall be ground by the mechanical means such as a chipper, hammermill, tub grinder or other approved method. Mulch sizing varies with a maximum width of 2" and a maximum length of 10".

Maintenance for Mulch and Compost Filter Beam:

1. Berm shall be reshaped and material added as necessary to maintain function and dimensions.
2. Breaches in the berm shall be repaired promptly.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

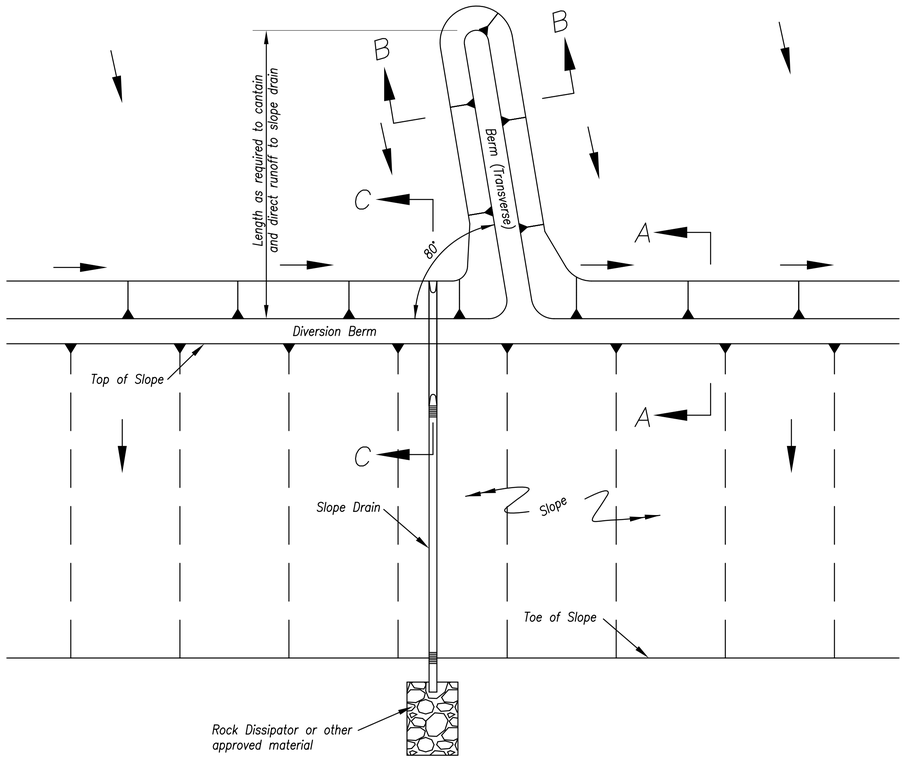
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KANSAS CITY METRO CHAPTER

WATTLES/BIODEGRADABLE LOG AND MULCH/COMPOST FILTER BERM

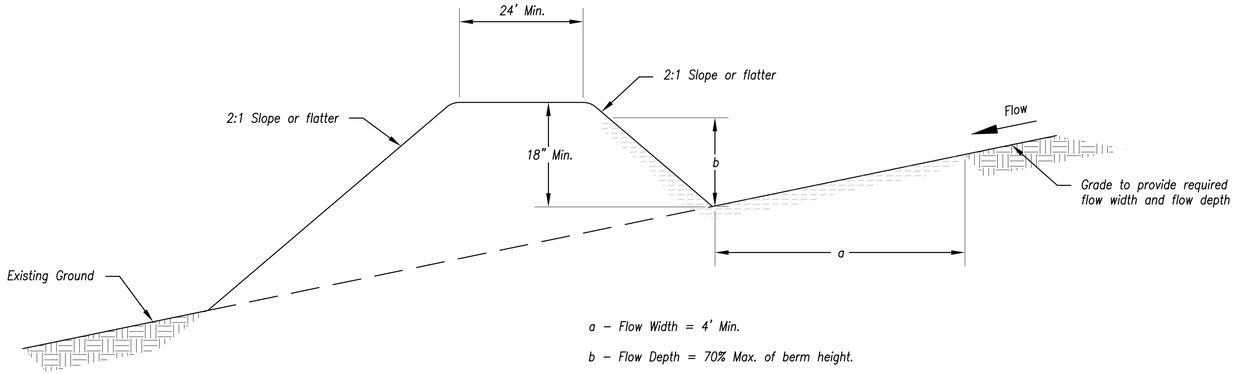
STANDARD DRAWING NUMBER ESC-04

ADOPTED: 10/24/2016




## TYPICAL PROFILE OF DIVERSION BEAM

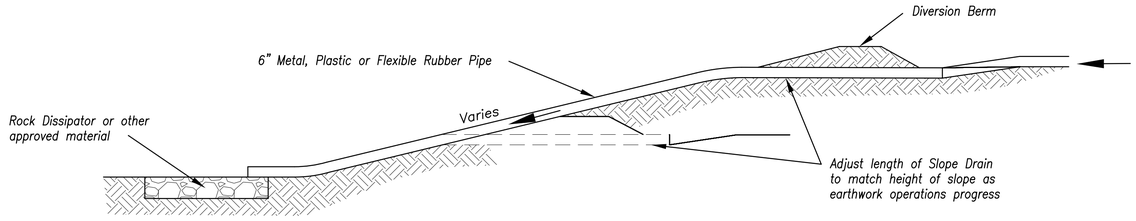
Not to Scale

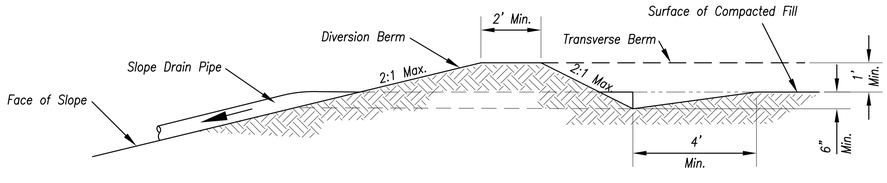



a – Flow Width = 4' Min.

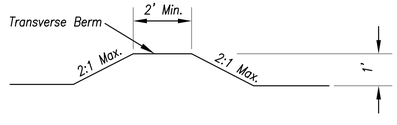
b – Flow Depth = 70% Max. of berm height.

## TYPICAL PROFILE OF DIVERSION BERM




Section C–C




Section B–B

## TYPICAL PROFILE OF DIVERSION BERM WITH SLOPE DRAIN

## TYPICAL PLAN VIEW OF DIVERSION BERM AND SLOPE DRAIN

### Notes for Diversion Berm:

1. Slope drains are optional, but may be required by the engineer if the berm is at the top of a steep slope.
2. Diversion berms must be installed as a first step in the land–disturbing activity and must be functional prior to upslope land disturbance.
3. The berm should be adequately compacted to prevent failure.
4. Temporary or permanent seeding and mulch shall be applied to the berm immediately following its construction.
5. Place the berm so to minimize damages by construction operations and traffic.
6. The berm must discharge to a temporary sediment trap or stabilized area.
7. All trees, brush, stumps, obstructions and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of diversion.
8. The diversion shall be excavated or shaped to line, grade and cross–section as required to meet the criteria specified herein, free of irregularities which will impede flow.
9. Fills shall be compacted as needed to prevent unequal settlement that would cause damage in the completed diversion. Fill shall be composed of soil which is free from excessive organic debris, rocks or other objectionable materials.

### Maintenance:

1. Berm shall be reshaped, compacted, and stabilized as necessary to maintain its function.
2. Breaches in the berm shall be repaired immediately.

### Notes for Slope Drain:

1. Slope Drain and Diversion Berm may be used on either project foreslopes or project backslopes.
2. Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.
3. Pipe shall be secured in place as approved by Engineer.

### Maintenance:

1. Accumulation of any visible sediment at the inlet and outlet shall be removed promptly.
2. Outlet conditions shall be repaired if scour is observed. Leaking or damaged section of pipe shall be repaired immediately.
3. Barriers directing water to the inlet shall be monitored for continuity and effectiveness.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

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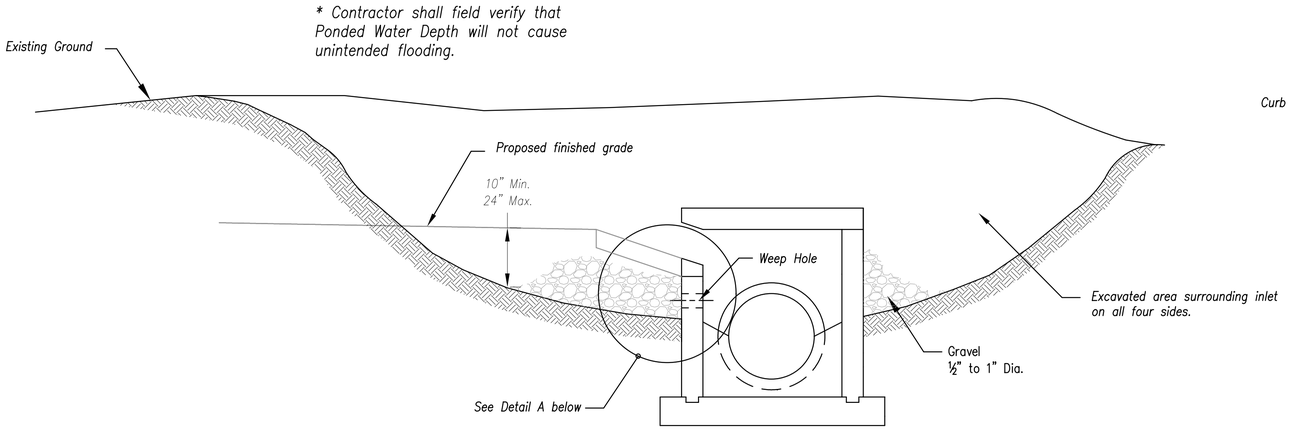
Kansas City Metro Chapter APWA American Public Works Association

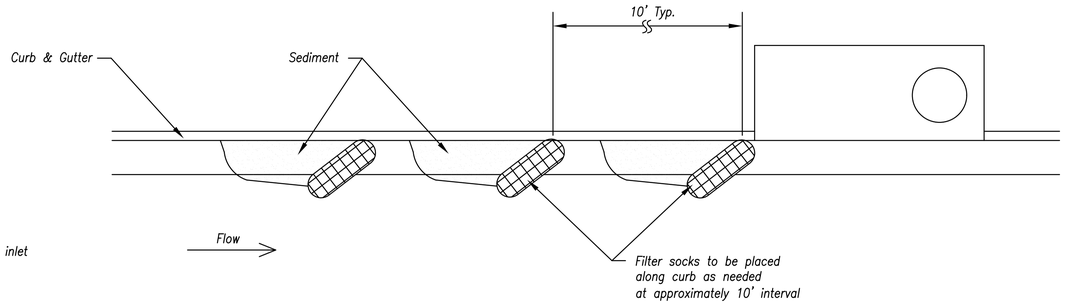
KANSAS CITY METRO CHAPTER

DIVERSION BERMS AND SLOPE DRAINS

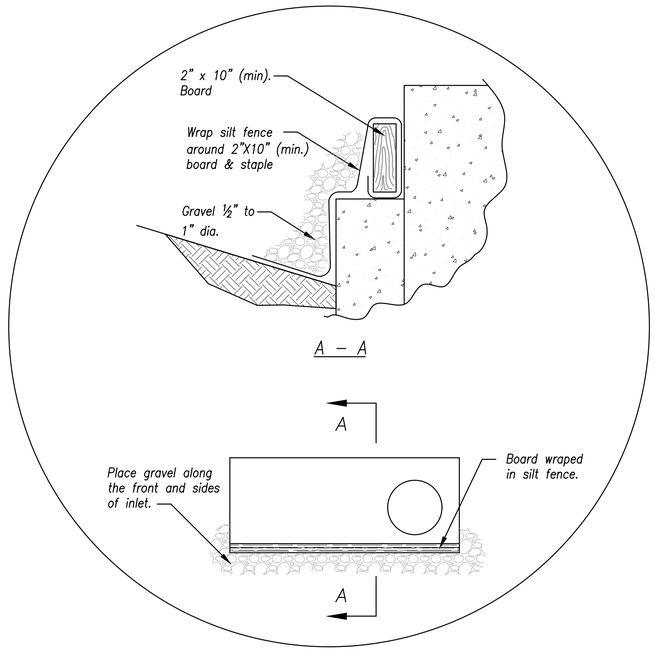
STANDARD DRAWING NUMBER ESC-05

ADOPTED: 10/24/2016




On Grade Curb Inlet Protection




Detail A

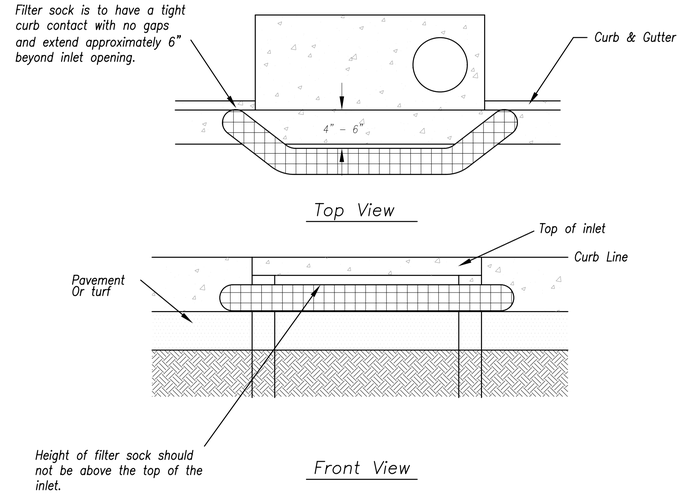
EARLY STAGE CURB INLET
(Open Box and Prior to Pouring Curb and Inlet Throat)

Notes:

1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" X 10" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When inlet is completed and curb poured, filter socks or approved equal should be used (Late Stage Curb Inlet). Straw wattles are not approved for curb inlet use.
3. Contractor to field verify ponding water shall not create a traffic hazard.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.




Sump Inlet Sediment Filter

LATE STAGE CURB INLET
(After Pouring Curb and Inlet Throat)

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

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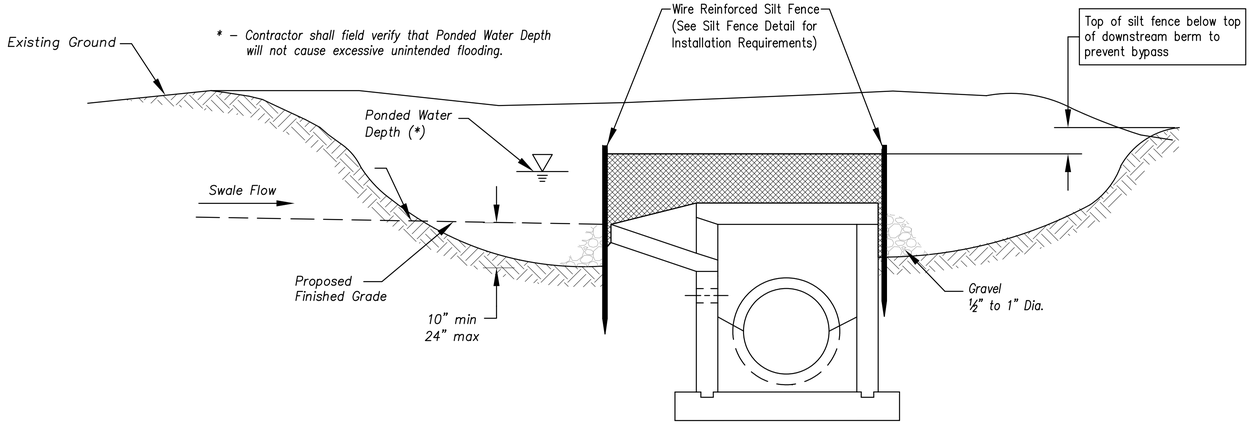
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CURB INLET PROTECTION

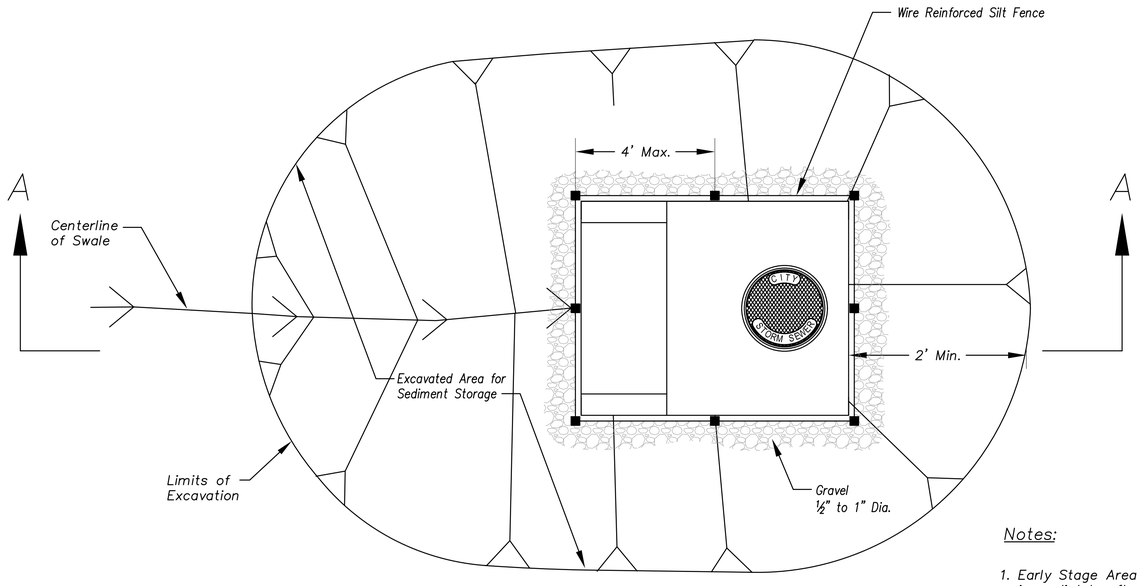
STANDARD DRAWING NUMBER ESC-06

ADOPTED: 10/24/2016




Section A–A

Not to Scale

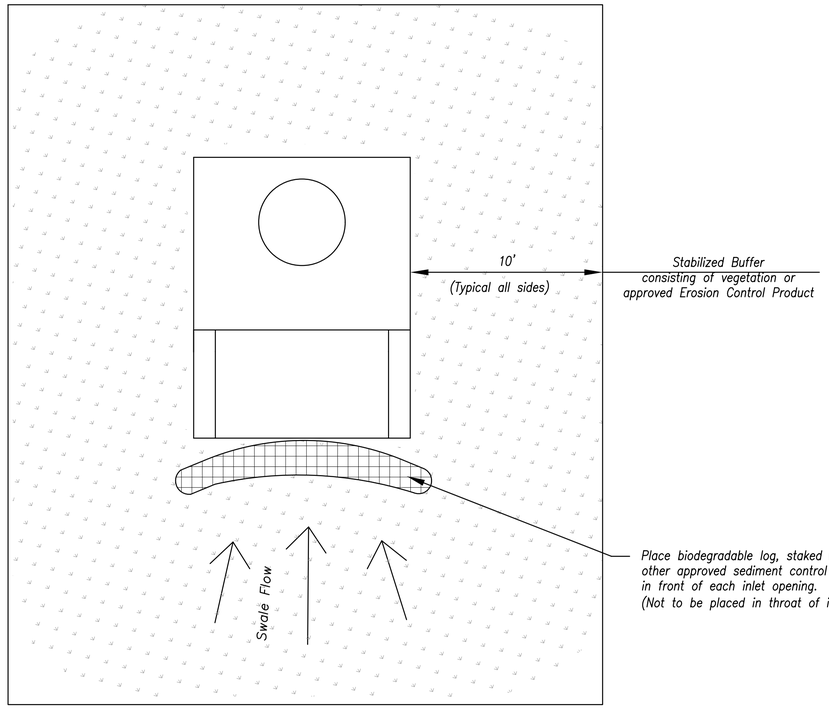



Plan

Not to Scale

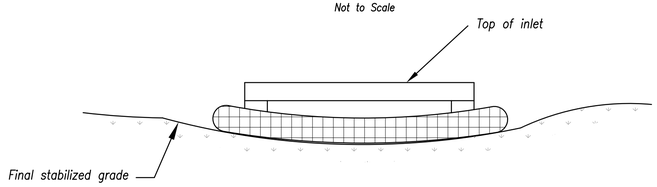
**EARLY STAGE AREA INLET**

**(All open boxes and inlets not at final grade)**




Plan

Not to Scale




Front View

**LATE STAGE AREA INLET**

**(Area inlets at final grade and existing inlets)**

Notes:

1. Early Stage Area Inlet Sediment Barrier to be installed immediately after inlet or junction box is constructed.
2. Silt fence shall remain in place until excavated area is removed and Late Stage Area Inlet is being installed.
3. Backfill excavated area ONLY after final grading of the site. Stabilization of the site is to immediately follow.
4. Wire reinforced silt fence may be used in place of silt fence attached to wood frame.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

*Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.*

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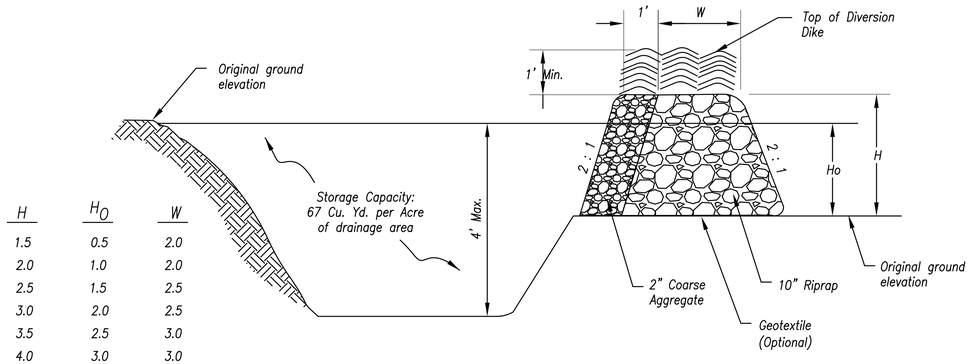
Kansas City Metro Chapter APWA AMERICAN PUBLIC WORKS ASSOCIATION

KANSAS CITY METRO CHAPTER

AREA INLET AND JUNCTION BOX PROTECTION

STANDARD DRAWING NUMBER ESC-07

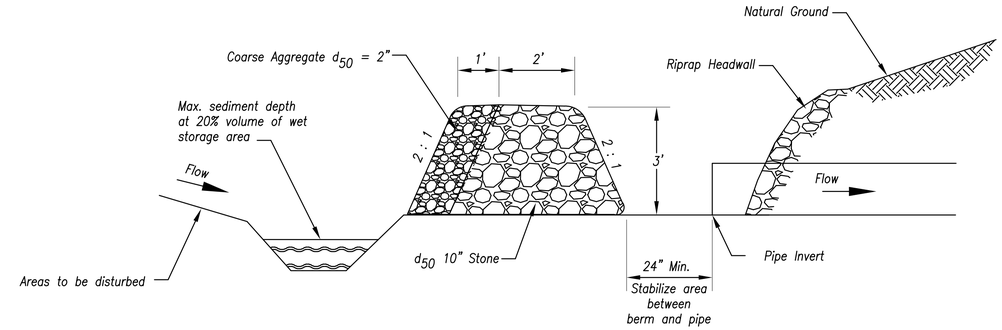
ADOPTED: 10/24/2016




| H | $H_O$ | W |
|---|---|---|
| 1.5 | 0.5 | 2.0 |
| 2.0 | 1.0 | 2.0 |
| 2.5 | 1.5 | 2.5 |
| 3.0 | 2.0 | 2.5 |
| 3.5 | 2.5 | 3.0 |
| 4.0 | 3.0 | 3.0 |
| 4.5 | 3.5 | 4.0 |
| 5.0 | 4.0 | 4.5 |

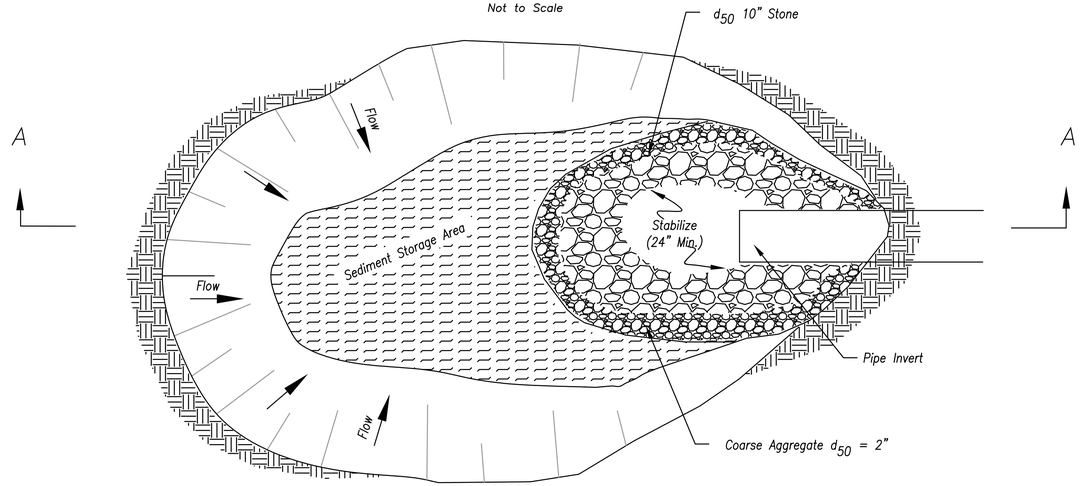
## (*) Cross Section of Outlet

Not to Scale



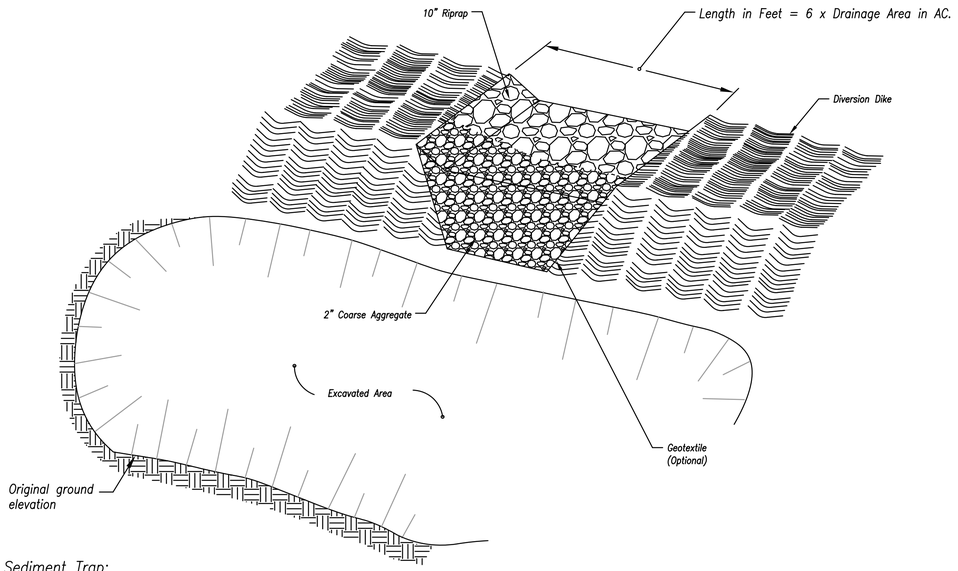

## Section A–A

Not to Scale




## Plan View

Not to Scale




## (*) Perspective View of Outlet

Not to Scale

(*) – The perspective view and cross section are schematic in nature. Construction plans must provide specific site construction arrangements.

### Notes for Sediment Trap:

1. The area under the embankment shall be cleared, grubbed, and stripped of any vegetation and root mat.
2. Fill material for the embankment shall be free of roots or other woody vegetation, organic material, large stones, and other objectionable material. The embankment should be compacted in 6–inch layers by traversing with construction equipment.
3. The earthen embankment shall be stabilized immediately after installation.
4. Construction operations shall be carried out to minimize erosion and water pollution.
5. The structure shall be removed and the area stabilized when the upslope drainage area has been stabilized.
6. All cut and fill slopes shall be 2H : 1V or flatter, except for excavated, wet storage areas which may be at a maximum 1H : 1V grade.

### Maintenance for Sediment Trap:

1. Check sediment traps after periods of significant runoff.
2. Remove sediment and restore the trap to its original dimensions when sediment accumulates to 20% of the storage capacity.
3. Immediately repair any erosion damage to the embankment and outlet.
4. Keep outlet and pool area free of all trash and other debris.

## SEDIMENT TRAP

### Notes for Sediment Trap at Culvert Opening:

1. The inlet protection device shall be constructed in a manner that will facilitate clean–out and disposal of trapped sediment and minimize interference with construction activities.
2. The inlet protection devices shall be constructed in such manner that any resultant ponding stormwater will not cause excessive inconvenience or damage to adjacent areas or structures.
3. Geometry of the design will be a horseshoe shape around the culvert inlet.
4. The toe of the riprap shall be no closer than 24" from the culvert opening to provide an acceptable emergency outlet for flows from larger storm events.
5. Storage requirements equivalent to that of temporary sediment trap.
6. 67 C.Y./Acre wet storage below base of stone.
7. 67 C.Y./Acre dry storage from base of stone to top of stone berm.

### Maintenance for Sediment Trap at Culvert Opening:

1. Check sediment traps after periods of significant runoff.
2. Remove sediment and restore the trap to its original dimensions when sediment accumulates to 20% of the storage capacity.
3. Immediately repair any erosion damage to the embankment and outlet.
4. Keep outlet and pool area free of all trash and other debris.

## SEDIMENT TRAP AT CULVERT OPENING

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

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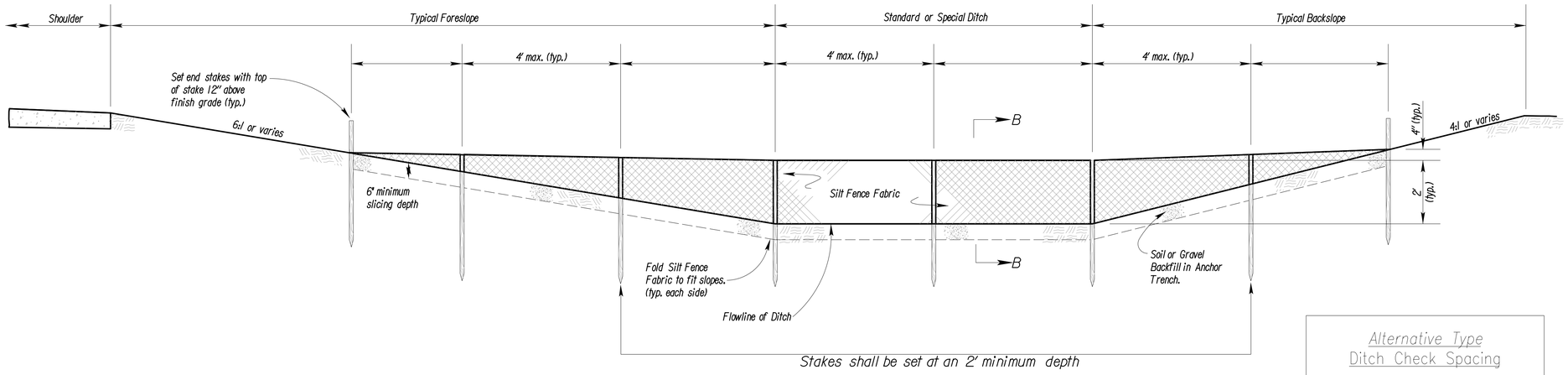
SEDIMENT TRAPS

STANDARD DRAWING NUMBER ESC-08

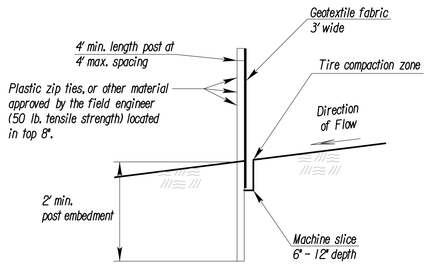
ADOPTED: 10/24/2016

## Notes for Silt Fence Ditch Check:

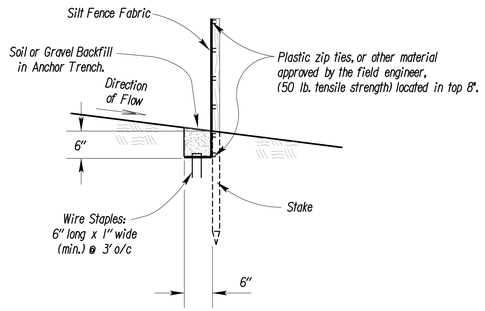
1. Stakes shall be 4' (min.) long and one of the following materials:
   a. Hardwood – 1 3/16" x 1 3/16";
   b. Southern Pine (No. 2) – 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section – .95 lbs. per 1'–0";
   d. Synthetic – same strength as wood stakes.
2. Cross pieces shall be of same material as stakes.
3. Attach fence fabric securely on 6" centers (max.).
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.
6. Use support fencing when tributary area is greater than 2.4 acres or when ditch gradient is greater than 2 percent.
7. Silt fence sliced in to a 6" minimum depth.
8. Elevation at tie in points shall be a minimum of 4" higher than the center.




TYPICAL ELEVATION



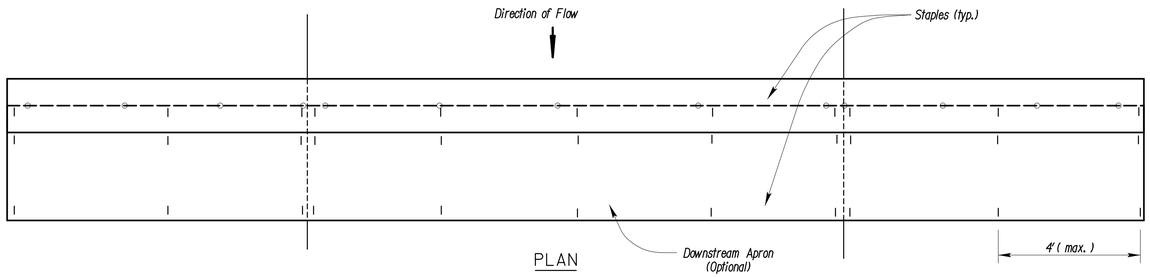

SECTION B-B



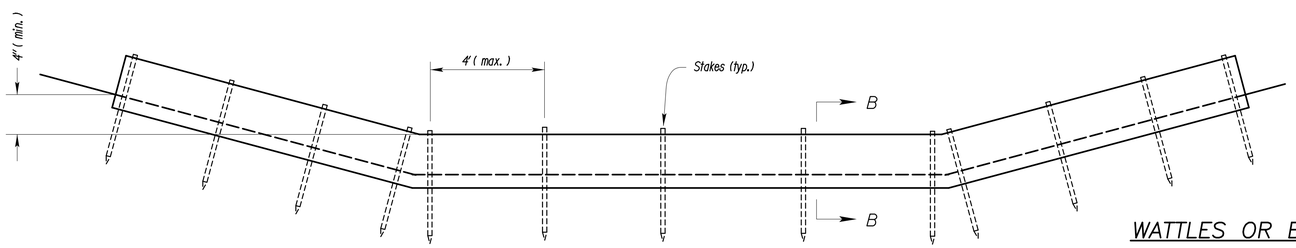

| Alternative Type Ditch Check Spacing | |
|---|---|
| Ditch Centerline Slope ( % ) | Spacing Interval (Feet) |
| 1.0 | 200 |
| 2.0 | 100 |
| 3.0 | 65 |
| 4.0 | 50 |
| 5.0 | 40 |
| 6.0 | 33 |
| Note: Use this spacing for all except Rock Ditch Checks. | |

## SILT FENCE DITCH CHECK

NO SCALE



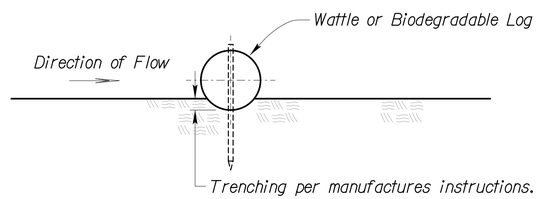

PLAN




TYPICAL ELEVATION

## Notes for Wattles and Biodegradable Log Ditch Check:

1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18"
3. Stakes shall be per manufacturer's instructions. Length of stakes shall be a minimum of 2 times the diameter of the log or 24" minimum.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when directed by the Engineer.
5. Use 9" diameter logs when used with Erosion Control (Class 2) (Any Type) channel lining. Smaller diameter logs may be used with Erosion Control (Class 2) (Any Type) channel lining as directed by the Engineer.




SECTION B - B

## WATTLES OR BIODEGRADABLE LOG DITCH CHECKS

OR Filter Sock Ditch Check

NO SCALE

Modified from Kansas Department of Transportation Standard Details for Erosion Control and Sediment Control.

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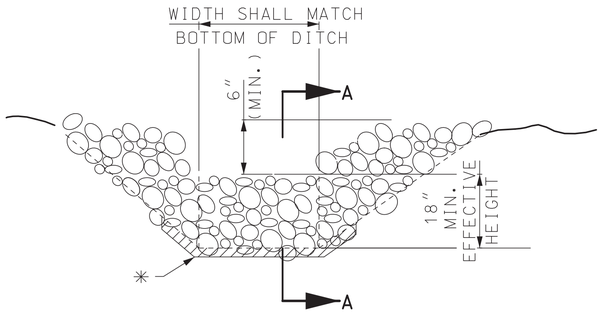
KANSAS CITY METRO CHAPTER

SILT FENCE AND WATTLE/ BIODEGRADABLE LOG DITCH CHECKS

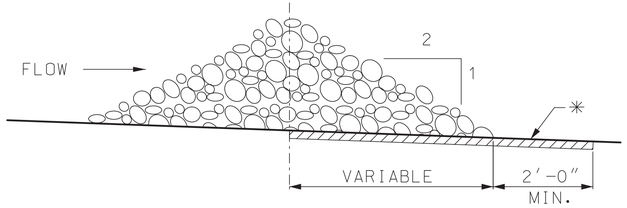
STANDARD DRAWING NUMBER ESC-09

ADOPTED: 10/24/2016

## ROCK DITCH CHECK




END VIEW




SECTION A-A

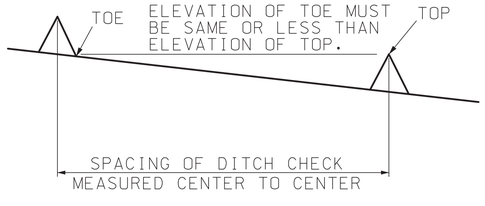
✳ GEOTEXTILE LINING MAY BE INSTALLED AS REQUIRED BY THE ENGINEER.

NOTE:

ROCK DITCH CHECK IN THE CLEAR ZONE SHALL BE REMOVED OR LEVELED (IF ALLOWABLE) AFTER THE VEGETATION HAS SUFFICIENTLY MATURED TO PROTECT THE DITCH OR SWALE.

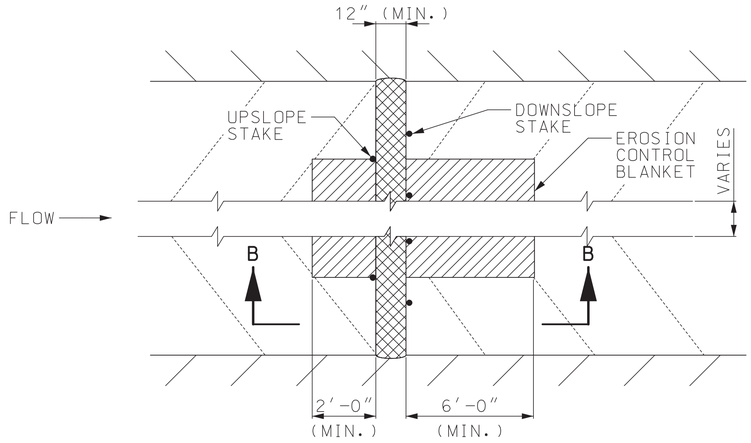
**EXAMPLE DITCH CHECK SPACING FOR STANDARD HEIGHTS**
(FT.)

| DITCH ℄ SLOPE % | SPACING FOR 9" EFF. HEIGHT | SPACING FOR 18" EFF. HEIGHT |
|---|---|---|
| 0.5 | 150 | 300 |
| 1.0 | 75 | 150 |
| 1.5 | 50 | 100 |
| 2.0 | 37 | 75 |
| 2.5 | 30 | 60 |
| 3.0 | 25 | 50 |
| 3.5 | 21 | 43 |
| 4.0 | 19 | 38 |
| 4.5 | 16 | 33 |
| 5.0 | 15 | 30 |
| 5.5 | 13 | 27 |
| 6.0 | 12 | 25 |
| 6.5 | 11 | 23 |
| 7.0 | 10 | 21 |
| 7.5 | 10 | 20 |
| 8.0 | 9 | 19 |
| 8.5 | 9 | 18 |
| 9.0 | 8 | 17 |
| 9.5 | 8 | 16 |
| 10.0 | 7 | 15 |

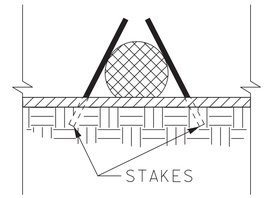



**MINIMUM DITCH CHECK SPACING**

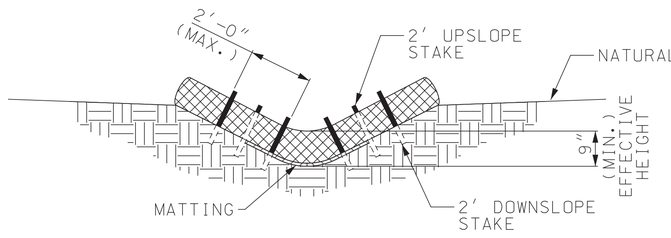
## ALTERNATE DITCH CHECK



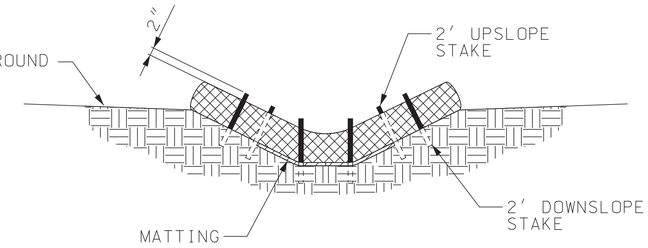

PLAN VIEW




SECTION B-B




TYPICAL SECTION
VEE DITCH




TYPICAL SECTION
TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER LOG/SOCK.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL LOG/SOCK TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND LOG/SOCK AND SCOUR DITCH SLOPES OR AS DIRECTED BY ENGINEER.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE LOG/SOCK TO BOTTOM OF DITCH.

EROSION CONTROL BLANKET SHALL BE ANCHORED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

GENERAL NOTES:

OTHER PROPRIETARY DITCH CHECKS MAY BE SUBSTITUTED IN ACCORDANCE WITH SEC 806 OR AS DIRECTED BY THE ENGINEER.

INSTALLATION OF PROPRIETARY DITCH CHECKS SHALL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

# TEMPORARY EROSION CONTROL MEASURES

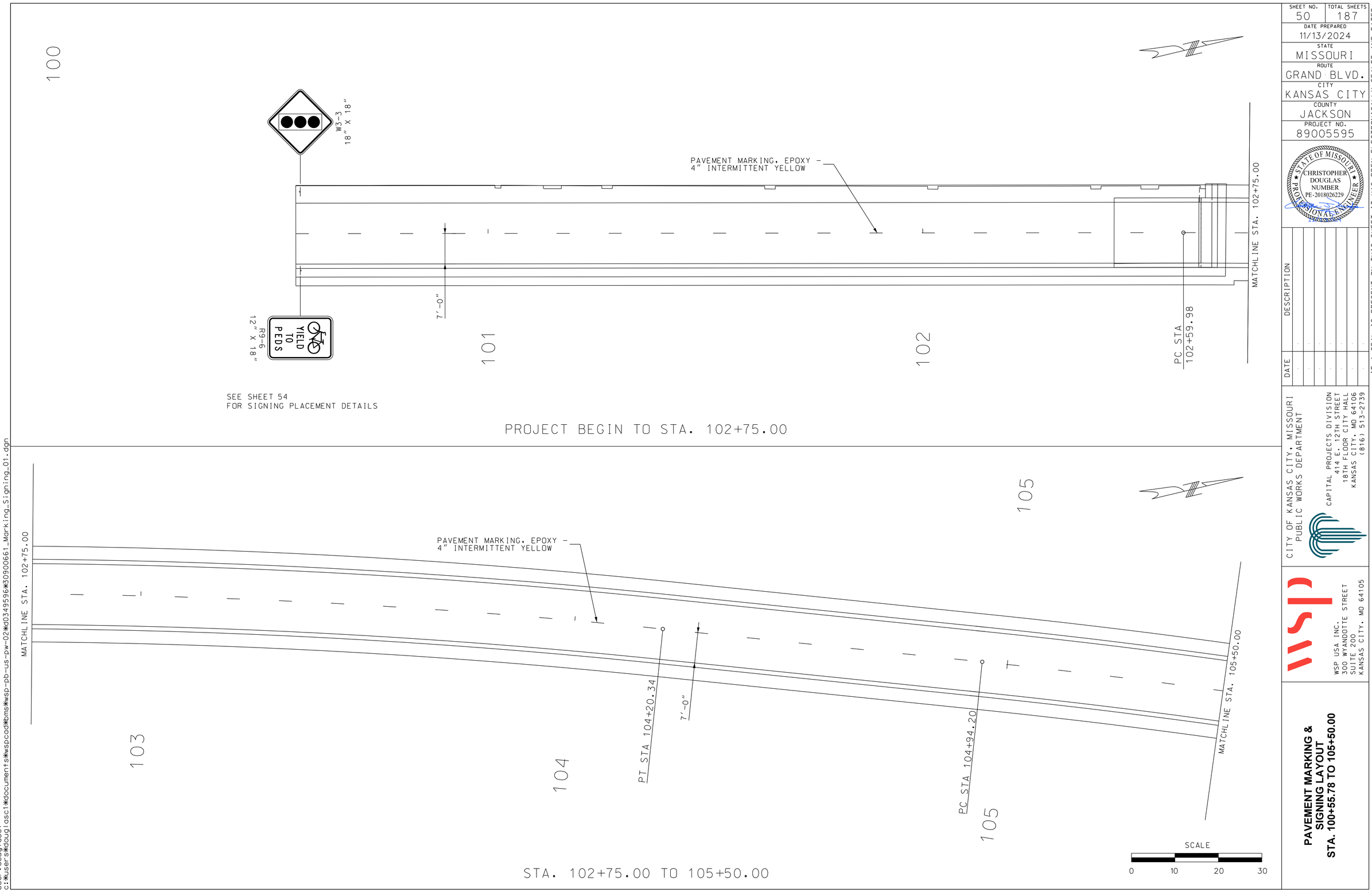
## TEMPORARY DITCH CHECKS

DATE EFFECTIVE: 01/01/2023
DATE PREPARED: 10/11/2022

806.10K

SHEET NO. 1 OF 6

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




SHEET NO. 50 | TOTAL SHEETS 187

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PAVEMENT MARKING & SIGNING LAYOUT**
**STA. 100+55.78 TO 105+50.00**

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STA. 105+50.00 TO STA. 108+25.00




STA. 108+25.00 TO 111+00.00

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 51 | 187 |

DATE PREPARED
11/13/2024

STATE
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**GEOMETRIC LAYOUT**
**STA. 105+50.00 TO 111+00.00**

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STA. 111+00.00 TO 113+75.00

SCALE
0 10 20 30




STA. 113+75.00 TO 116+50.00

115

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 52 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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300 WYANDOTTE STREET
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KANSAS CITY, MO 64105

**GEOMETRIC LAYOUT**
**STA. 111+00.00 TO 113+75.00**

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STA. 116+50.00 TO STA. 119+25.00

SEE SHEET 54
FOR SIGNING PLACEMENT DETAILS




STA. 119+25.00 TO END OF PROJECT

SEE SHEET 54
FOR SIGNING PLACEMENT DETAILS

SCALE
0 10 20 30

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 53 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

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CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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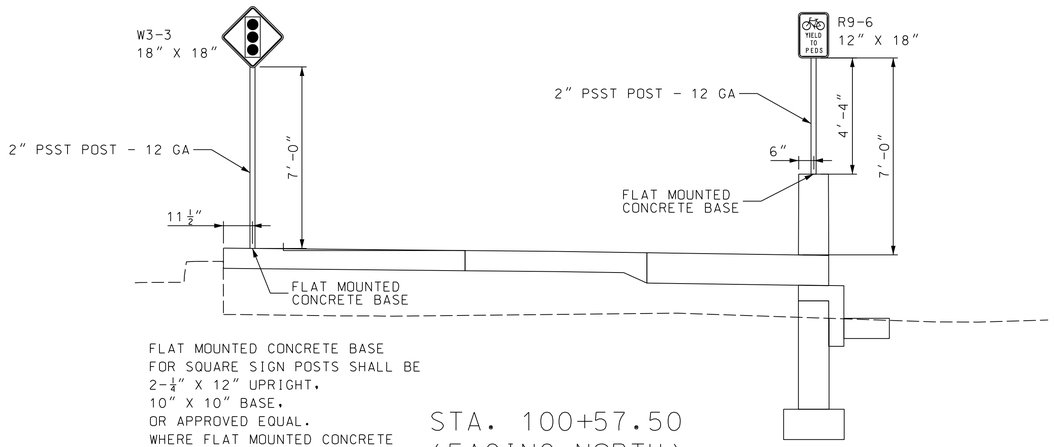
CITY OF KANSAS CITY, MISSOURI
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CAPITAL PROJECTS DIVISION
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

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300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# GEOMETRIC LAYOUT
# STA. 116+50.00 TO 120+50

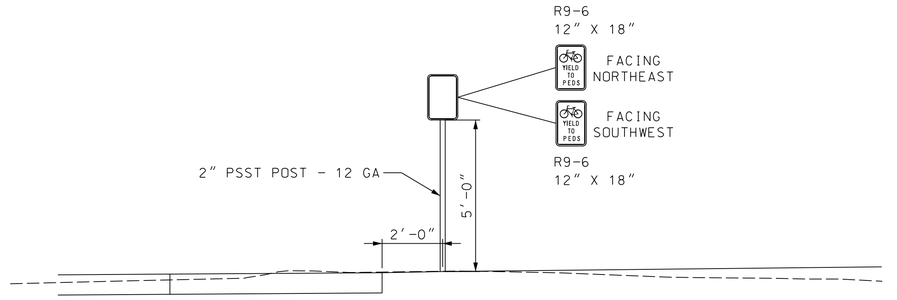
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FLAT MOUNTED CONCRETE BASE
FOR SQUARE SIGN POSTS SHALL BE
2-¼" X 12" UPRIGHT,
10" X 10" BASE,
OR APPROVED EQUAL.
WHERE FLAT MOUNTED CONCRETE
BASES ARE NECESSARY THEY ARE
A SUBSIDIARY QUANTITY TO THE
SIGN BEING PLACED.
FLAT MOUNTED CONCRETE BASES
SHALL REQUIRE A SHOP DRAWING
BY THE ENGINEER.

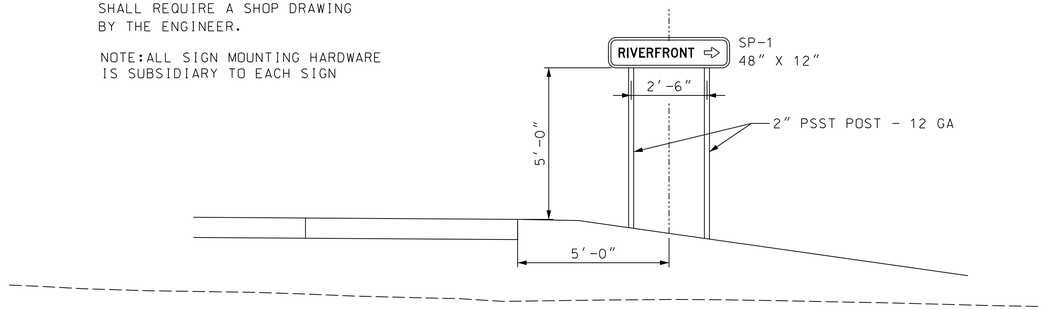
NOTE:ALL SIGN MOUNTING HARDWARE
IS SUBSIDIARY TO EACH SIGN

STA. 100+57.50
(FACING NORTH)



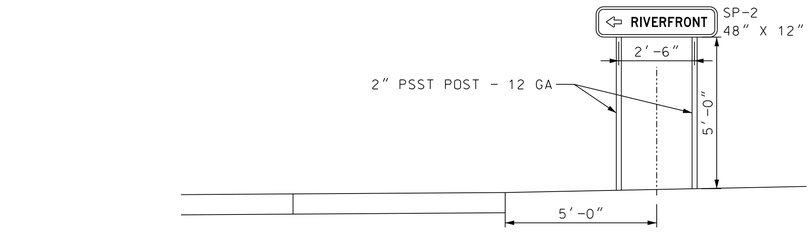

STA. 120+30.00
DOUBLE SIDED
(FACING SOUTHWEST)

NOTE:ALL SIGN MOUNTING HARDWARE
IS SUBSIDIARY TO EACH SIGN



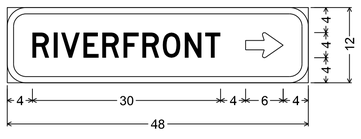

NOTE: SP-1 IS AN ALTERNATE BID ITEM
NOTE: ALL SIGN MOUNTING HARDWARE
IS SUBSIDIARY TO EACH SIGN

STA. 118+29.00
(FACING NORTH)



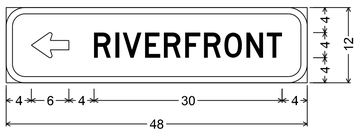

NOTE: SP-2 IS AN ALTERNATE BID ITEM
NOTE: ALL SIGN MOUNTING HARDWARE
IS SUBSIDIARY TO EACH SIGN

STA. 118+90.00
(FACING SOUTH)




SP-1/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, White on Green;
"RIVERFRONT", D specified length;
Standard Arrow Custom 6.0" X 4.0" 0°;
Table of letter and object lefts

| R | I | V | E | R | F | R | O | N | T | ⇨ |
|---|---|---|---|---|---|---|---|---|---|---|
| 4.0 | 7.4 | 8.6 | 12.1 | 15.1 | 18.5 | 21.5 | 24.8 | 28.3 | 31.6 | 38.0 |




SP-2/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, White on Green;
Standard Arrow Custom 6.0" X 4.0" 180°;
"RIVERFRONT", D specified length;
Table of letter and object lefts

| ⇦ | R | I | V | E | R | F | R | O | N | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 4.0 | 14.0 | 17.4 | 18.6 | 22.1 | 25.1 | 28.5 | 31.5 | 34.8 | 38.3 | 41.6 |

SPECIAL SIGN DETAILS
SP-1 & SP-2 ARE ALTERNATE BID ITEMS

SHEET NO. 54 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

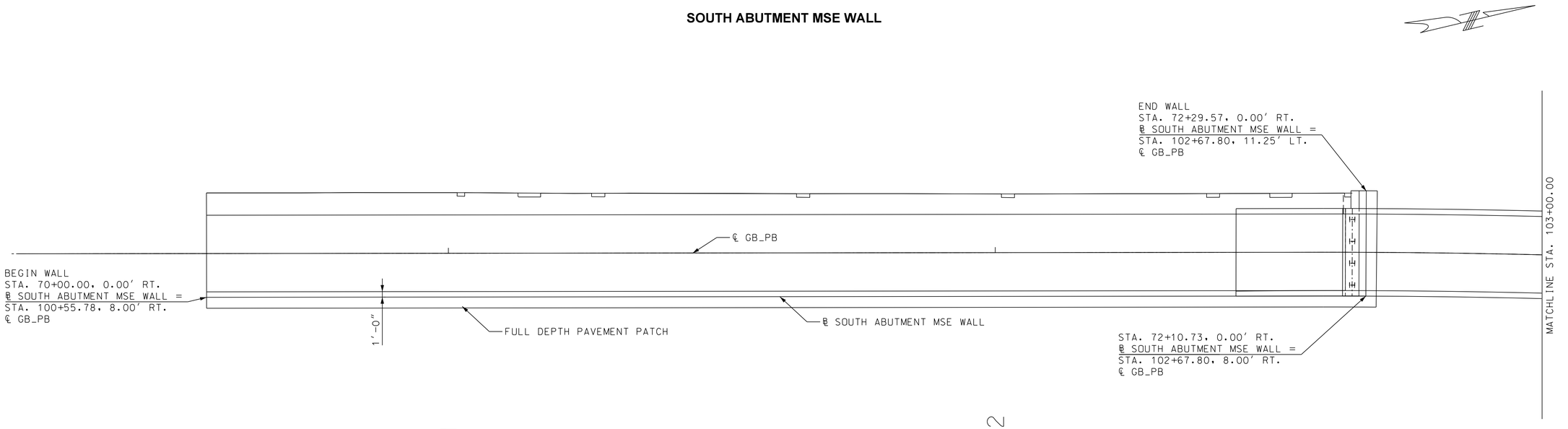
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

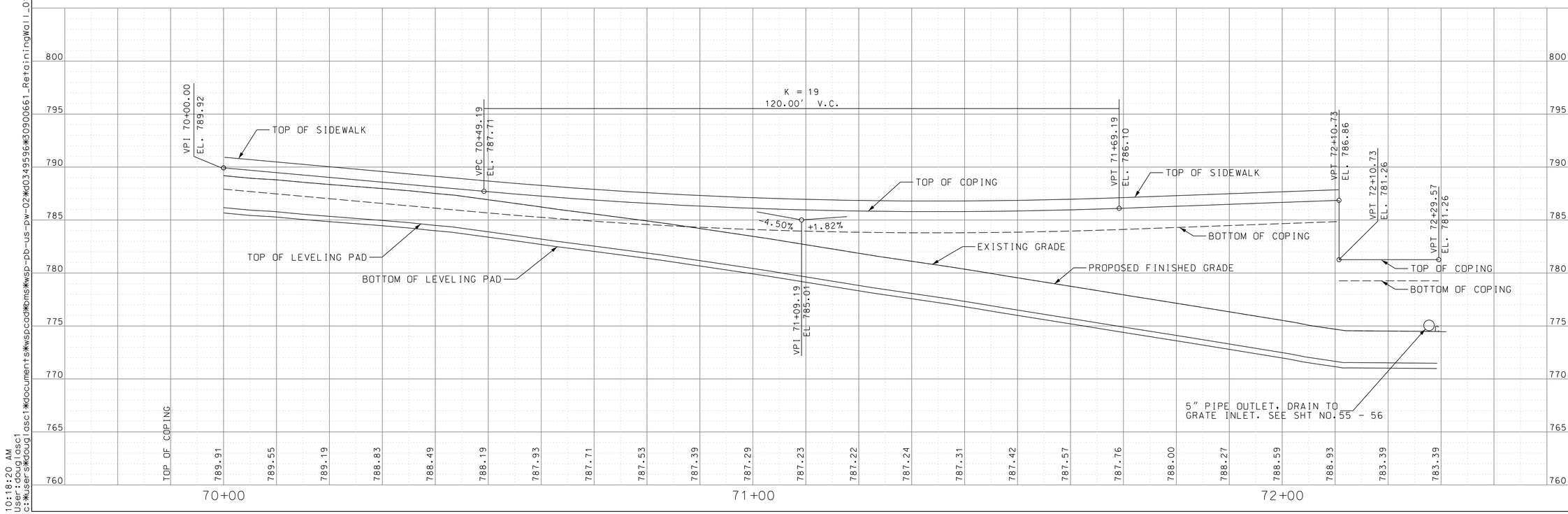
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SIGNING DETAIL**

10:18:07 AM
User:douglasc1
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## SOUTH ABUTMENT MSE WALL




| SHEET NO. | TOTAL SHEETS |
|---|---|
| 55 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
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| | |

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

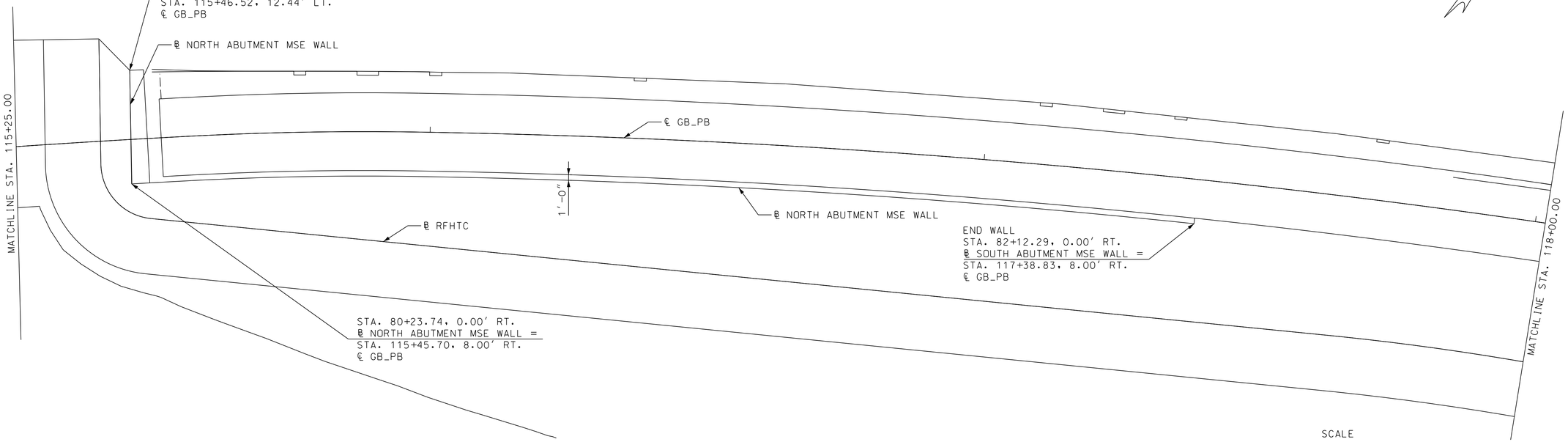
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KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

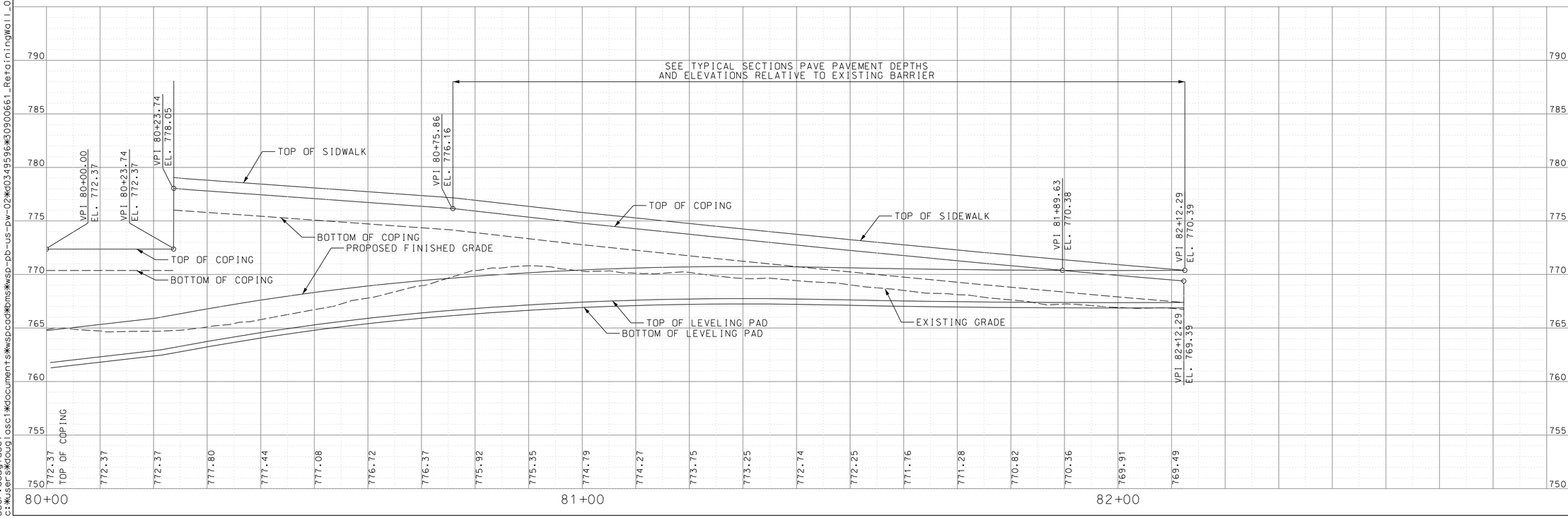
## RETAINING WALL PLAN PROFILE
## SOUTH ABUTMENT MSE WALL

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User:doug.osc1
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## NORTH ABUTMENT MSE WALL




SCALE
0 10 20 30




| SHEET NO. | TOTAL SHEETS |
|---|---|
| 56 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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KANSAS CITY, MO 64106
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300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# RETAINING WALL PLAN PROFILE
# NORTH ABUTMENT MSE WALL

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# GENERAL NOTES FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL SYSTEM

## DESIGN SPECIFICATIONS:

2002 AASHTO LFD (17TH ED.) STANDARD SPECIFICATIONS (SECTION 5 ASD DESIGN)
SEISMIC PERFORMANCE CATEGORY = A
ACCELERATION COEFFICIENT = TBD

## DESIGN LOADINGS:

$\Phi_b$ = 34° AND UNIT WEIGHT, $\gamma_b$ = 130 PCF FOR RETAINED BACKFILL MATERIAL TO BE RETAINED BY THE MECHANICALLY STABILIZED EARTH WALL SYSTEM.

$\Phi_f$ = 18° FOR UNIMPROVED FOUNDATION GROUND WHERE WALL IS TO BEAR.
$\Phi_f$ = 34° FOR IMPROVED FOUNDATION GROUND WHERE WALL IS TO BEAR.

FOR UNIMPROVED FOUNDATION GROUND, THE ALLOWABLE BEARING PRESSURE IS 0.5 KSF.
FOR IMPROVED FOUNDATION GROUND, THE ALLOWABLE BEARING PRESSURE IS 0.5 KSF.

THE MAXIMUM APPLIED BEARING PRESSURE FOR THE CONTROLLING DESIGN CASE AT THE FOUNDATION LEVEL SHALL BE SHOWN ON THE SHOP DRAWINGS AND SHALL BE LESS THAN THE ALLOWABLE BEARING PRESSURE FOR FOUNDATION GROUND PROVIDED HEREIN. FOR SEISMIC DESIGN THE MAXIMUM APPLIED BEARING PRESSURE SHALL BE LESS THAN TWO TIMES THE ALLOWABLE BEARING PRESSURE.

ALLOWABLE BEARING PRESSURE AND LIMITS OF IMPROVED FOUNDATION GROUND SHALL NOT BE ADJUSTED FROM THAT AS SHOWN ON THE PLANS.

CONTRACTOR SHALL INCLUDE DESIGN $\Phi_r$ (ACTUAL $\Phi_r \geq 34°$) AND THE TOTAL UNIT WEIGHT, $\gamma_r$, FOR THE SELECT GRANULAR BACKFILL (REINFORCED BACKFILL AND WEDGE AREA BACKFILL) FOR STRUCTURAL SYSTEMS ON SHOP DRAWINGS. CONTRACTOR SHALL IDENTIFY SOURCE OF SELECT GRANULAR BACKFILL MATERIAL, SUBMIT PROCTOR IN ACCORDANCE WITH AASHTO T 99 (ASTM D698) AND GRADATION WITH THE SHOP DRAWINGS. WHEN BACKFILL MATERIAL IS TOO COARSE TO DEVELOP A PROCTOR CURVE THE CONTRACTOR SHALL DETERMINE THE MAXIMUM DRY DENSITY (RELATIVE DENSITY) IN ACCORDANCE WITH ASTM D4253 AND ASTM D4254 AND ASSUME PERCENT PASSING THE 200 SIEVE FOR OPTIMUM WATER CONTENT.

TOTAL UNIT WEIGHT, $\gamma_r$ = (95% COMPACTION) X (MAXIMUM DRY DENSITY) X (1 + OPTIMUM WATER CONTENT)

DESIGN $\Phi_r$ = 34° FOR THE SELECT GRANULAR BACKFILL (REINFORCED BACKFILL) ONLY FOR STRUCTURAL SYSTEMS.

FACTOR OF SAFETY SHALL BE 2.0 FOR OVERTURNING AND 1.5 FOR SLIDING.

FOR SEISMIC DESIGN THE FACTOR OF SAFETY SHALL BE 1.5 FOR OVERTURNING AND 1.1 FOR SLIDING.

USE DEFAULT VALUES FOR THE PULLOUT FRICTION FACTOR, F*, IN ACCORDANCE WITH AASHTO FIGURE 5.8.5.2A UNLESS MODOT HAS PRE-APPROVED A HIGHER VALUE FOR A SPECIFIC PRODUCT. FOR APPROVED STEEL STRIPS NOT SHOWN IN AASHTO FIGURE 5.8.5.2A, USE F* ≤ 2.0 AT ZERO DEPTH AND F* ≤ TAN $\Phi_r$ AT 20 FEET DEPTH AND $\Phi_r$ DESIGN = 34°. F* VALUES SHALL BE SHOWN ON THE SHOP DRAWINGS.

## DESIGN UNIT STRESSES:

ALL CONCRETE FOR LEVELING PAD AND COPING SHALL BE CLASS B OR B-1 WITH F'C = 4000 PSI.

THE MINIMUM COMPRESSIVE STRENGTH OF CONCRETE FOR PRECAST PANEL SHALL BE 4,000 PSI IN ACCORDANCE WITH MODOT SEC 1052.

## MISCELLANEOUS:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY AND INTEGRITY OF THE EXISTING MSE WALLS AT ALL TIMES DURING THE PROJECT.

EXISTING MSE WALL DRAINAGE SYSTEMS SHALL BE EXTENDED TO PROPOSED DRAINAGE SYSTEMS.

THE MSE WALL SYSTEM SHALL BE BUILT VERTICAL.

THE MSE WALL SYSTEM SHALL BE BUILT IN ACCORDANCE WITH MODOT SEC 720.

THE MSE WALL SYSTEM SHALL BE A LARGE BLOCK WALL SYSTEM.

THE COST OF JOINT FILLER AND JOINT SEAL WILL BE CONSIDERED COVERED BY THE CONTRACT UNIT PRICE FOR CONCRETE TRAFFIC BARRIER. SEE ROADWAY PLANS.

CONCRETE BLOCK AND COPING (OR CAPSTONE) REINFORCEMENT SHALL BE EPOXY COATED.

FILTER FABRIC MEETING THE REQUIREMENTS FOR AN AASHTO CLASS 1 GEOTEXTILE PER MODOT SECTION 1011 SHALL BE PLACED BETWEEN THE SELECT GRANULAR BACKFILL FOR STRUCTURAL SYSTEMS AND THE BACKFILL RETAINED BY THE MECHANICALLY STABILIZED EARTH WALL SYSTEM.

COPING SHALL BE REQUIRED ON THIS STRUCTURE. WHEN CIP COPING SECTIONS EXTEND BEYOND THE LIMITS OF A SINGLE PANEL, BOND BREAKER (ROOFING FELT OR OTHER APPROVED ALTERNATE) SHALL BE PROVIDED BETWEEN WALL PANEL AND COPING. COPING JOINTS SHALL USE 3/4-INCH CHAMFERS AND SHALL BE SEALED WITH 3/4-INCH JOINT FILLER. COPING REINFORCEMENT SHALL TERMINATE 1 1/2-INCH MINIMUM FROM FACE OF COPING JOINT.

## MISCELLANEOUS (CONT):

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO COORDINATE CONSTRUCTION OF THE WALL WITH BRIDGE AND ROADWAY CONSTRUCTION AND ENSURE THAT THE BRIDGE AND ROADWAY CONSTRUCTION, RESULTING OR EXISTING OBSTRUCTIONS, SHALL NOT IMPACT THE CONSTRUCTION OR PERFORMANCE OF THE WALL. SOIL REINFORCEMENT SHALL BE DESIGNED AND PLACED TO AVOID DAMAGE BY PILE DRIVING, GUARDRAIL POST INSTALLATION, UTILITY AND SIGN FOUNDATIONS. (SEE ROADWAY AND BRIDGE PLANS)

MINIMUM 18" WIDE GEOTEXTILE STRIPS SHALL BE CENTERED AT VERTICAL AND HORIZONTAL JOINTS OF PANEL. GEOTEXTILE MATERIAL SHALL BE ADHERED TO THE BACK FACE OF EACH PANEL USING AN ADHESIVE COMPOUND SUPPLIED BY THE MANUFACTURER. ALL EDGES OF EACH FABRIC STRIP SHALL PROVIDE A POSITIVE SEAL. A MINIMUM 18" OVERLAP SHALL BE PROVIDED BETWEEN SPLICED FILTER FABRIC.

ALUMINIZED SOIL REINFORCEMENT SHALL HAVE EDGES COATED WITH COATING MATERIAL PER MANUFACTURER.

SOIL REINFORCEMENT SHALL BE SPACED TO AVOID ROADWAY DROP INLET BEHIND WALL.

ALL STEEL SOIL REINFORCEMENTS SHALL BE SEPARATED FROM OTHER METALLIC ELEMENTS BY AT LEAST 3 INCHES.

THE SPLAY ANGLE SHOULD BE LESS THAN 15° AND TENSILE CAPACITY OF SPLAYED REINFORCEMENT SHALL BE REDUCED BY THE COSINE OF THE SPLAY ANGLE. SOIL REINFORCEMENT SHALL CLEAR THE OBSTRUCTION BY AT LEAST 3 INCHES.

NO REINFORCEMENT SHALL BE LEFT UNCONNECTED TO THE WALL FACE OR ARBITRARILY CUT/BENT IN THE FIELD TO AVOID THE OBSTRUCTION.

WHERE INTERFERENCE BETWEEN THE VERTICAL OBSTRUCTION AND THE SOIL REINFORCEMENT IS UNAVOIDABLE, DESIGN OF THE WALL NEAR THE OBSTRUCTION MAY BE MODIFIED USING ONE OF THE ALTERNATIVES IN FHWA-NHI-10-24, SECTION 5.4.2. SHOW DETAIL LAYOUT ON THE DRAWINGS. FOR WALL DESIGNS WITH HORIZONTAL OBSTRUCTIONS IN REINFORCED SOIL MASS, SEE FHWA-NHI-10-024, SECTION 5.4.3.

## EXCAVATION:

EXCAVATION QUANTITIES AND PAY ITEMS ARE GIVEN ON THE ROADWAY PLANS. EXCAVATION QUANTITIES ARE BASED ON A SOIL REINFORCEMENT LENGTH OF APPROXIMATELY 18 FT. THE SOIL REINFORCEMENT LENGTH MAY VARY BASED UPON THE WALL DESIGN SELECTED BY THE CONTRACTOR. PLAN EXCAVATION QUANTITIES WILL BE PAID REGARDLESS OF ANY ACTUAL QUANTITIES REMOVED BASED ON THE SOIL REINFORCEMENT LENGTH AND DESIGN SELECTED.

## DETAIL NOTES:

(1) INVERTED U-SHAPE REINFORCED CAPSTONE MAY BE USED IN LIEU OF COPING. PANEL DOWELS FOR LEVEL-UP CONCRETE SHALL BE REQUIRED AND PROVIDED BY MANUFACTURER. THE DOWELS SHALL BE FIELD TRIMMED TO CLEAR THE CAPSTONE BY A MINIMUM OF 1 1/2 INCHES AND A MAXIMUM OF 2 1/2 INCHES.

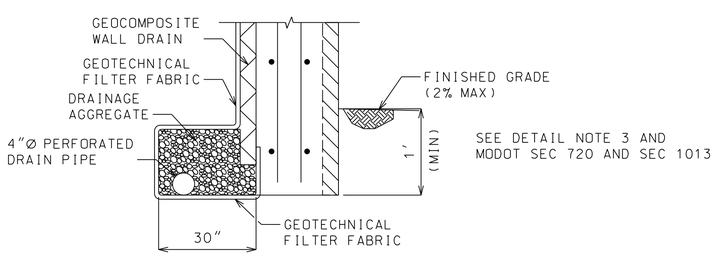
(2) TOPMOST LAYER OF REINFORCEMENT SHALL BE FULLY COVERED WITH SELECT GRANULAR BACKFILL FOR STRUCTURAL SYSTEMS, AS APPROVED BY THE WALL MANUFACTURER, BEFORE PLACEMENT OF THE SEPARATION GEOMEMBRANE.

(3) MINIMUM 5" DIAMETER PERFORATED PVC OR POLYETHYLENE PIPE WITH A MINIMUM SLOPE OF 0.5%. SEE SHT NO. 55 - 56 FOR OUTLET LOCATION.

MANUFACTURER SHALL SHOW DRAIN DETAILS ON DESIGN PLANS TO BE SUBMITTED AS SHOWN ON MSE WALL PLANS AND/OR ROADWAY PLANS.

CONTRACTOR SHALL MODIFY THE DRAIN DETAILS AS SHOWN IF IT WILL IMPROVE FLOW AS MAY BE THE CASE FOR STEPPED LEVELING PAD, AND FOR AN UNEVEN GROUND LINE (APPROVAL OF THE ENGINEER REQUIRED).

(4) SELECT GRANULAR BACKFILL SHALL EXTEND A MINIMUM OF 12" BEYOND THE END OF ALL SOIL REINFORCEMENT. WHERE THE ANGLE, θ, BETWEEN THE RETAINED BACKFILL EXCAVATION/FILL LINE AND HORIZONTAL IS LESS THAN 90°, THE WEDGE AREA BETWEEN θ AND 90° SHALL BE FILLED WITH SELECT GRANULAR BACKFILL FOR STRUCTURAL SYSTEMS MEETING THE REQUIREMENTS OF SECTION 1010.




DETAIL "A"
DRAINAGE SYSTEM

## BACKFILL:

FOR (45° + $\Phi_b$/3) < θ ≤ 90°, PROPERTIES FOR RETAINED BACKFILL SHALL BE USED FOR ACTIVE FORCE COMPUTATIONS.

FOR θ ≤ (45° + $\Phi_b$/3), CONTRACTOR SHALL HAVE THE OPTION TO USE SELECT GRANULAR BACKFILL, $\Phi_r$, OR BETTER AGGREGATE MATERIAL, $\Phi_w$ FOR ACTIVE FORCE COMPUTATIONS IN THE WEDGE AREA BACKFILL. FOR ACTIVE FORCE COMPUTATIONS, THE ANGLE OF INTERNAL FRICTION FOR WEDGE AREA BACKFILL MATERIAL, $\Phi_r$ OR $\Phi_w$, SHALL BE LIMITED TO 34° UNLESS DETERMINED OTHERWISE IN ACCORDANCE WITH SECTION 1010. IF $\Phi_r$ OR $\Phi_w$ > 34° IS DESIRED FOR WEDGE AREA BACKFILL THEN TEST REPORT SHALL BE SUBMITTED WITH SHOP DRAWINGS. $\Phi_r$ OR $\Phi_w$ SHALL NOT BE GREATER THAN 40° FOR COMPUTATIONS.

FINAL CONFIGURATION OF THIS OPTION SHALL BE SENT TO THE ENGINEER FOR A NEW OVERALL GLOBAL STABILITY ANALYSIS. DESIGN SHALL BE SHOWN ON THE SHOP DRAWINGS IF USED.

## SHOP DRAWINGS:

WALL CONTRACTOR SHALL SHOW THE FOLLOWING ITEMS ON THE DESIGN DRAWINGS AND/OR ON THE FABRICATOR SHOP DRAWINGS.

- LEVELING PAD HORIZONTAL.
- LEVELING PAD LENGTH AND STEP ELEVATIONS SHALL BE BASED ON WALL MANUFACTURER'S RECOMMENDATION. TOP OF LEVELING PAD ELEVATIONS SHALL NOT BE HIGHER THAN THEORETICAL TOP OF LEVELING PAD ELEVATIONS SHOWN ON THESE PLANS.
- WALL AND COPING TRANSITION DETAILS AT BRIDGE ADBUTMENTS.
- CONNECTION DETAILS TO EXISTING MSE WALL
- MATERIAL PROPERTIES USED IN DESIGN TABLE.

| MATERIAL PROPERTIES USED IN DESIGN | | | | |
|---|---|---|---|---|
| REINF. FILL/SELECT GRANULAR BACKFILL | | ACTIVE FORCE COMPUTATIONS | | FOUNDATION |
| $\Phi$° | $\gamma$ (pcf) | $\Phi$° | $\gamma$ (pcf) | $\Phi$° |
| | | | | |

MSE WALL DESIGNER SHALL INCLUDE TABLE ON SHOP DRAWINGS AND PROVIDE VALUES USED IN THE DESIGN COMPUTATIONS. EFFECTS OF COHESION SHALL BE IGNORED UNLESS APPROVED BY THE ENGINEER.

SHOW RANGE OF ACCEPTABLE THETA (θ) ANGLE ON SHOP DRAWINGS WHICH MUST BE CONSISTENT WITH DESIGN COMPUTATIONS AND PROPOSED CONSTRUCTION OF WALL. SHOW ACTIVE FORCE COMPUTATION PROPERTIES ON SHOP DRAWINGS AND IN DESIGN COMPUTATIONS. COORDINATION BETWEEN WALL DESIGNER (MANUFACTURER) AND CONTRACTOR IS REQUIRED BEFORE SHOP DRAWING SUBMITTAL.

SHEET NO. 57 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. $\Phi$8P9005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**GENERAL NOTES FOR MSE WALL**

10:18:47 AM
User:douglasc1
C:\Users\douglasc1\Documents\wspcad\dms\wsp-pb-us-pw-02\wd0349596\30900661_RetainingWall_Detail_01.dgn

# GENERAL NOTES FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL SYSTEM (CONTINUED)

## PAYMENT:

PAYMENT FOR RETAINING WALL SHALL BE BASED ON THE NOMINAL AREAS LISTED IN THE ESTIMATED QUANTITIES TABLE ON SHT. NO. 59 - 60. THE NOMINAL WALL AREAS ARE CALUCLATED FROM THE TOP OF WALL TO THE TOP OF LEVELING PAD AS DETAILED ON THESE PLANS.

WALL ELEVATIONS SHOWN ON PLAN & PROFILE SHEETS ARE PRESENTED TO ESABLISH LIMITS OF PAY QUANTITIES (WITHOUT COPING). TOP OF WALL AND TOP OF FOOTING ELEVATIONS VARY TO ACCOMODATE THE SPECIFIC REQUIREMETNS OF THE VARIOUS WALL SYSTEMS. NO ADDITIONAL PAYMENT WILL BE MADE FOR SUCH VARIATIONS.

THE BID PRICE PER SQUARE FEET FOR THE APPROVED MSE SYSTEM SHALL INCLUDE ALL COSTS FOR ENGINEERING DESIGN, CONSTRUCTION STAKING, FOUNDATION PREPARATION, GEOMEMBRANE, GEOTEXTILE FABRIC, PAVEMENT SUBGRADE DRAIN PIPE, CONCRETE GUTTERS, WALL PANELS, FORM LINER, SOIL REINFORCING ELEMENTS, LEVELING PAD, COPING, COPING REINFORCING STEEL (GRADE 60)(EPOXY), JOINT PROTECTION, EXCAVATION, TRENCH DRAIN AND OUTLET PIPE, DEWATERING, SHORING, BACKFILLING AND ALL INCIDENTALS NECESSARY TO CONSTRUCT THE WALL, EXCEPT SELECT GRANULAR BACKFILL MATERIAL. ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS REQUIRED TO CONSTRUCT THE RETAINING WALL SYSTEM SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FEET OF RETAINING WALL BASED ON THE NOMINAL WALL AREA AS SHOWN IN THE PLANS.

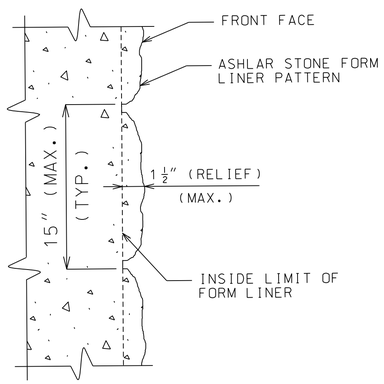
## FORM LINER:

THE COST OF FORM LINERS FOR MSE WALL SYSTEMS, COMPLETE IN PLACE, WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR MECHANICALLY STABILIZED EARTH WALL SYSTEM.

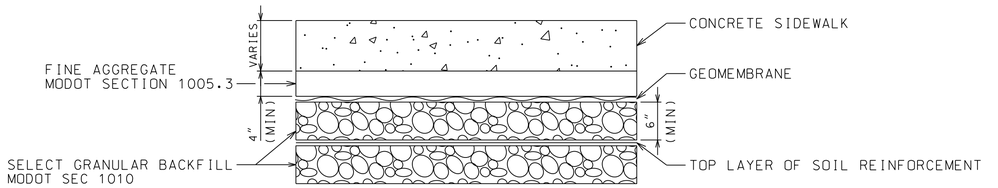
FORM LINER SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIAL PROVISIONS.

THE FOLLOWING IS A LIST OF FORM LINER MANUFACTURERS AND TYPES WHICH MAY BE USED. DEPTH OF RELIEF FOR ALL FORM LINER PATTERN'S SHALL VARY UP TO 1 1/2". THE HEIGHT OF ANY SINGLE 'STONE' SHALL BE 15" MAXIMUM.

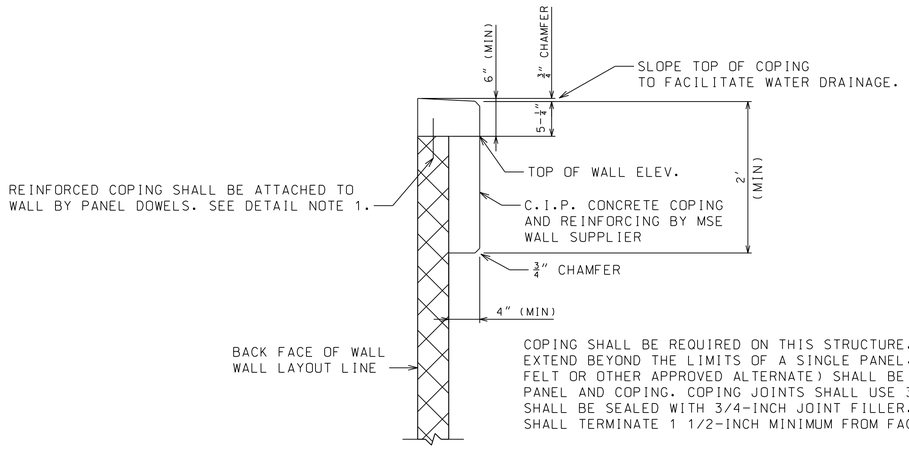
- SCOTT SYSTEM, INC.: FORM LINER PATTERN #167 "ASHLAR STONE"
- FITZGERALD FORMLINERS: FORM LINER PATTERN #16986 "ASHLAR STONE"
- GREENSTREAK: FORM LINER PATTERN #330 "ASHLAR STONE"
- SPEC FORMLINERS: FORM LINER PATTERN #1515 "ASHLAR STONE"
- CUSTOMROCK: FORM LINER PATTERN #12020 "TOLLWAY ASHLAR"
- AN APPROVED EQUAL




FORM LINER DETAIL
(LARGE BLOCK WALL)

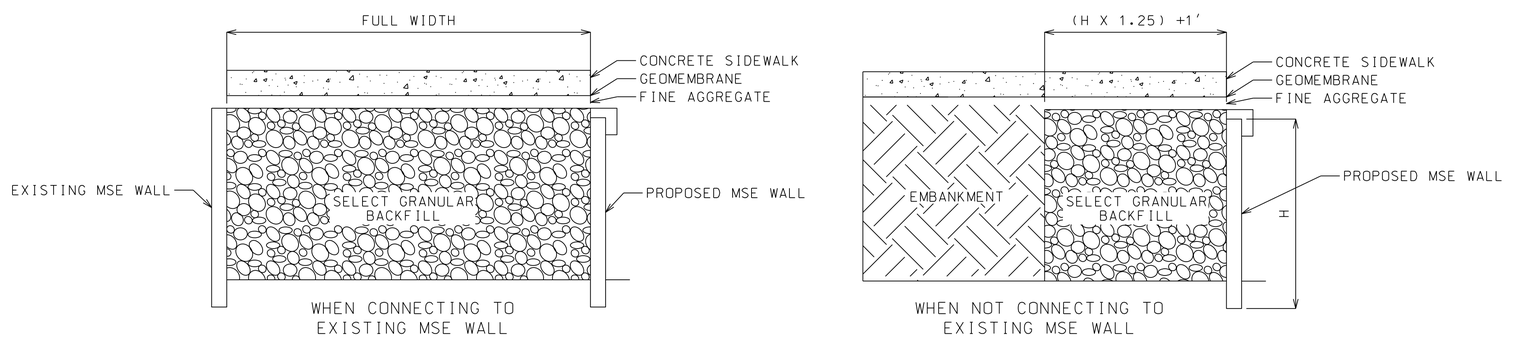



DETAIL "B" SEE DETAIL NOTE 2




COPING SHALL BE REQUIRED ON THIS STRUCTURE. WHEN CIP COPING SECTIONS EXTEND BEYOND THE LIMITS OF A SINGLE PANEL, BOND BREAKER (ROOFING FELT OR OTHER APPROVED ALTERNATE) SHALL BE PROVIDED BETWEEN WALL PANEL AND COPING. COPING JOINTS SHALL USE 3/4-INCH CHAMFERS AND SHALL BE SEALED WITH 3/4-INCH JOINT FILLER. COPING REINFORCEMENT SHALL TERMINATE 1 1/2-INCH MINIMUM FROM FACE OF COPING JOINT.

DETAIL "C"




DETERMINATION OF SELECT GRANULAR BACKFILL FOR STRUCTURAL SYSTEMS

SHEET NO. 58 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

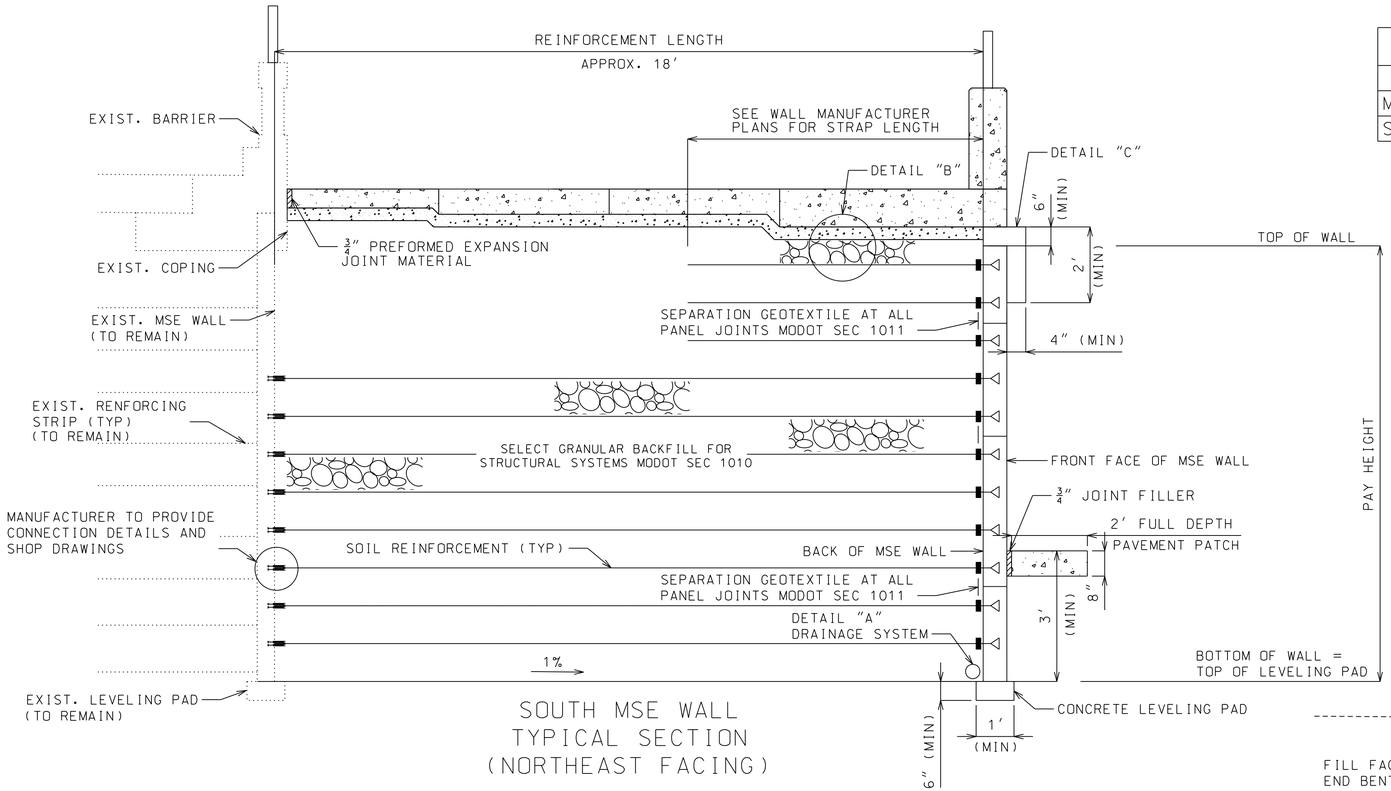
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PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**GENERAL NOTES FOR MSE WALL**

10:19:01 AM
User:douglasc1
C:\Users\douglasc1\Documents\wspcad\dms\wsp-pd-us-pw-02\d03495963\30900661_RetainingWall_Detail_01B.dgn




SOUTH MSE WALL
TYPICAL SECTION
(NORTHEAST FACING)

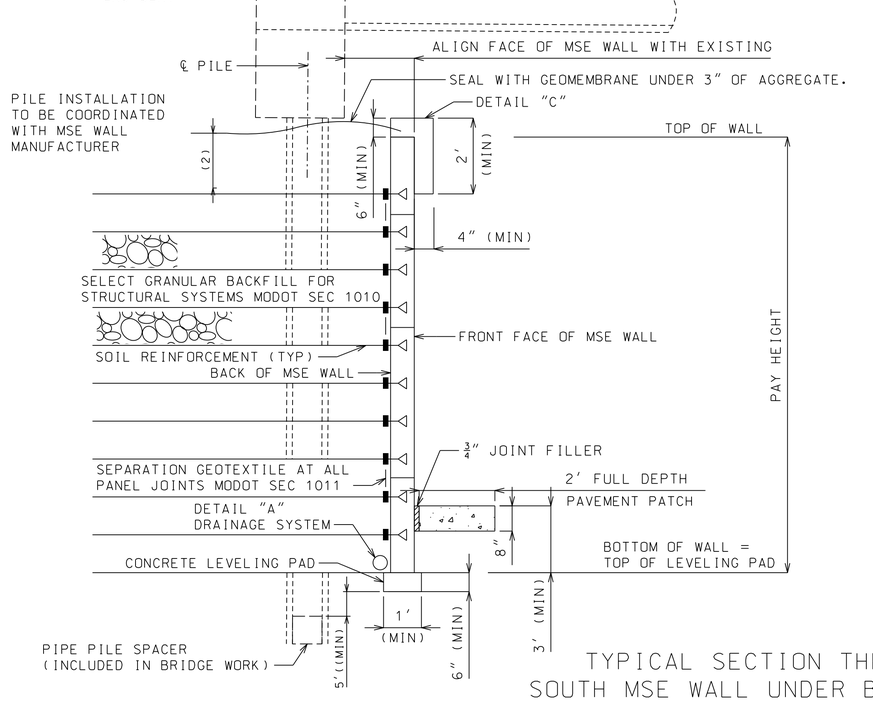
## ESTIMATED QUANTITIES

| ITEM | | TOTAL |
|---|---|---|
| MECHANICALLY STABILIZED EARTH WALL SYSTEMS | SQ. FOOT | 1706 |
| SELECT GRANULAR BACKFILL | CU. YARD | 1533 |

## MSE WALL SYSTEMS DATA TABLE

| PROPRIETARY WALL SYSTEMS | | COMBINATION WALL SYSTEMS | | | |
|---|---|---|---|---|---|
| MANUFACTURER | SYSTEM | FACING UNIT MANUFACTURER | FACING UNIT | GEOGRID MANUFACTURER | GEOGRID |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

MSE WALL SYSTEMS DATA TABLE IS TO BE COMPLETED BY THE ENGINEER TO RECORD THE MANUFACTURER OF THE PROPRIETARY WALL SYSTEM OR THE MANUFACTURERS OF THE COMBINATION WALL SYSTEM THAT WAS USED FOR CONSTRUCTING THE MSE WALL.




TYPICAL SECTION THRU
SOUTH MSE WALL UNDER BRIDGE
(NORTHWEST FACING)

SHEET NO. 59 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

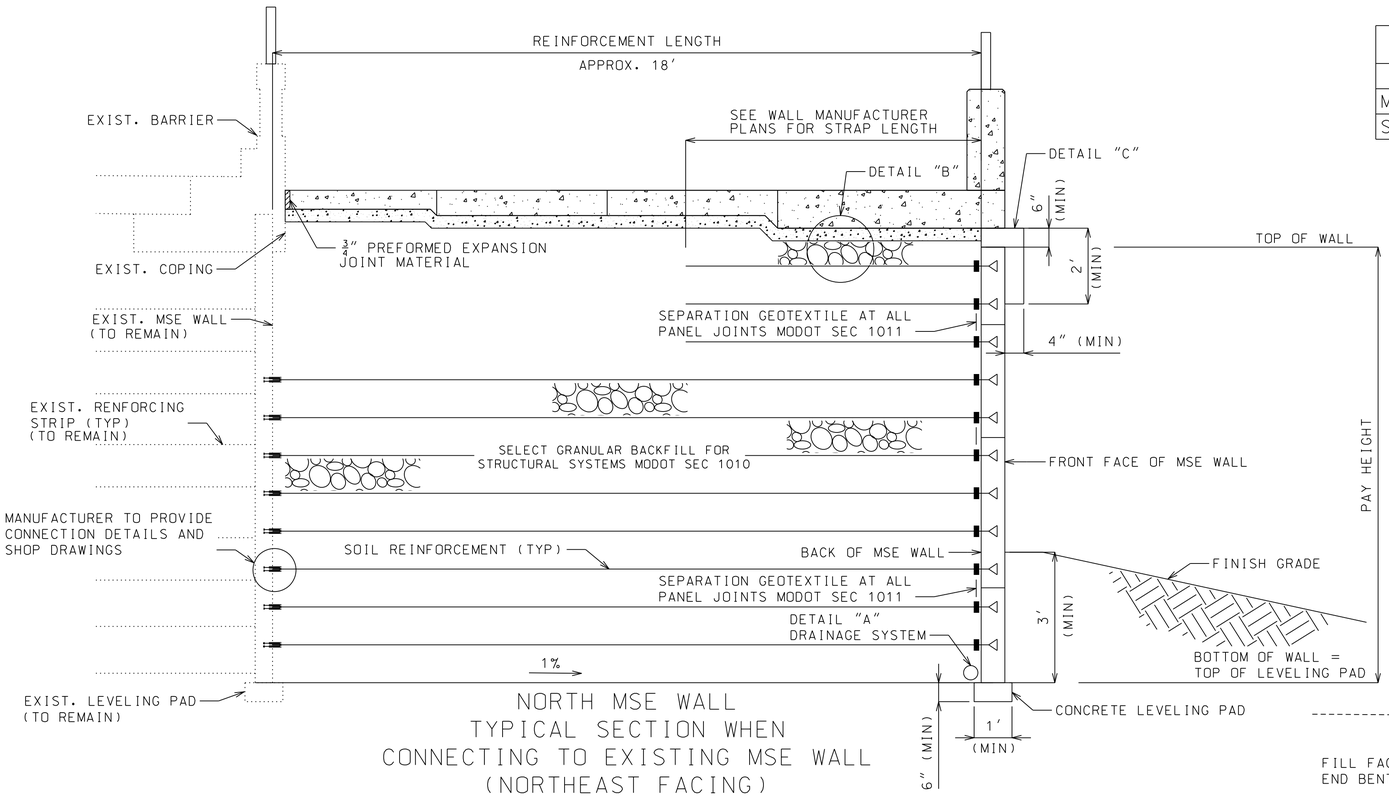
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SOUTH MSE WALL DETAILS**

10:19:15 AM
User:douglasc1
C:\Users\douglasc1\Documents\wspcad\doms\wsp-pd-us-pw-02\d0349596\30900661_RetainingWall_Detail_02.dgn




NORTH MSE WALL
TYPICAL SECTION WHEN
CONNECTING TO EXISTING MSE WALL
(NORTHEAST FACING)

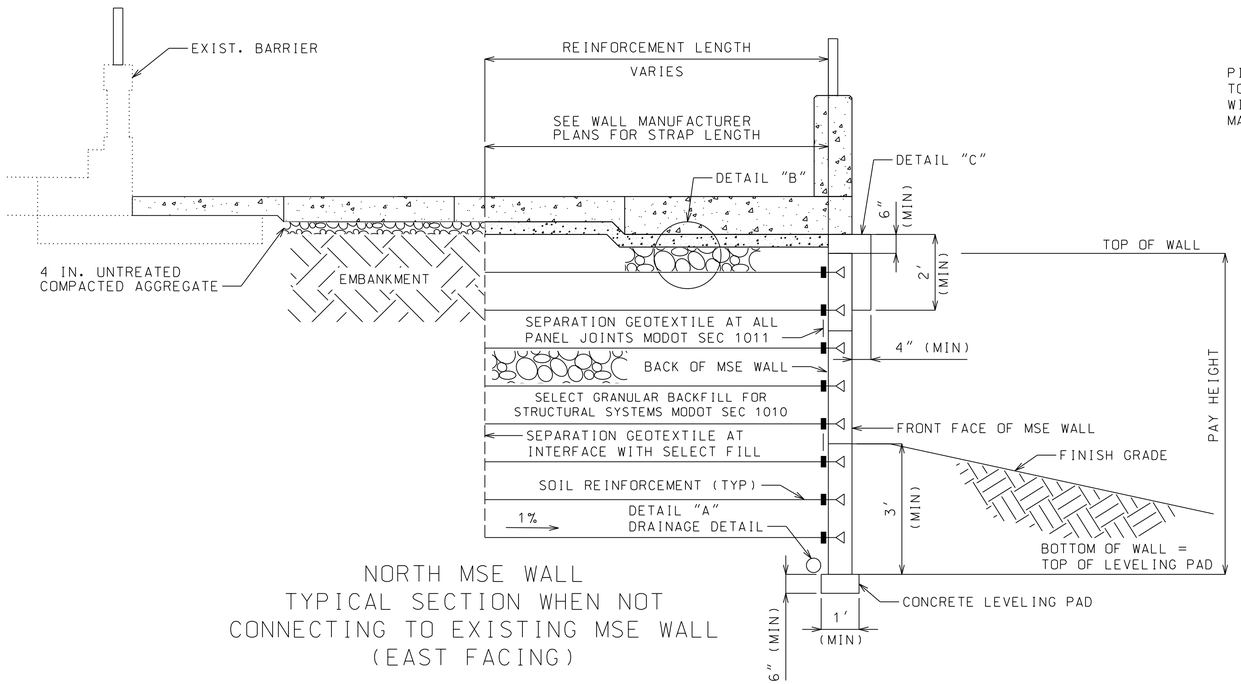
## ESTIMATED QUANTITIES

| ITEM | | TOTAL |
|---|---|---|
| MECHANICALLY STABILIZED EARTH WALL SYSTEMS | SQ. FOOT | 1016 |
| SELECT GRANULAR BACKFILL | CU. YARD | 565 |

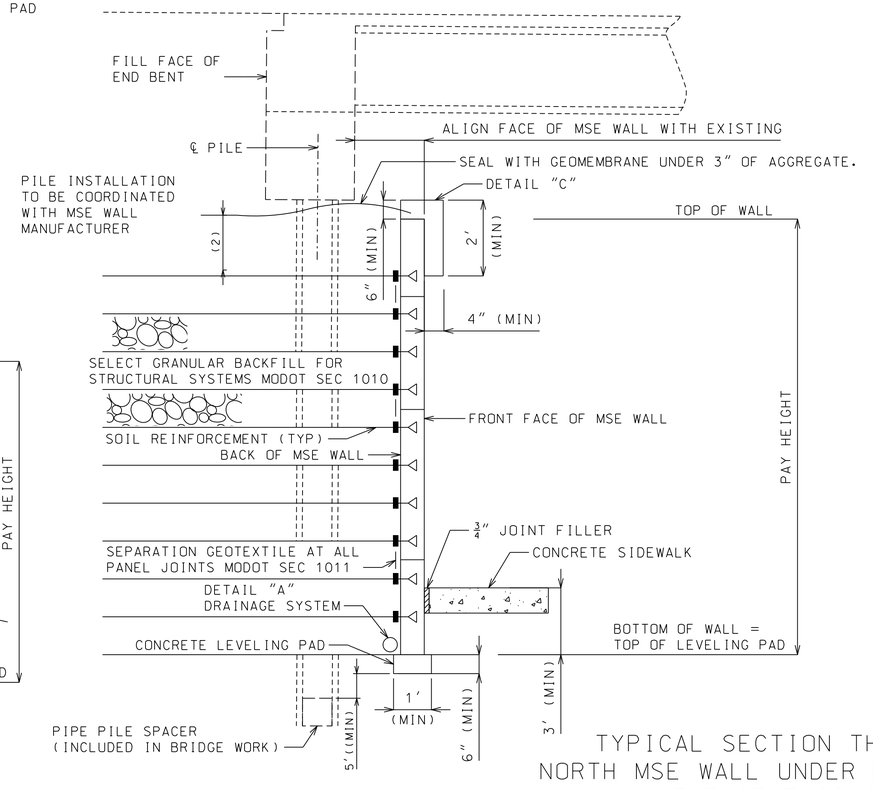
## MSE WALL SYSTEMS DATA TABLE

| PROPRIETARY WALL SYSTEMS | | COMBINATION WALL SYSTEMS | | | |
|---|---|---|---|---|---|
| MANUFACTURER | SYSTEM | FACING UNIT MANUFACTURER | FACING UNIT | GEOGRID MANUFACTURER | GEOGRID |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

MSE WALL SYSTEMS DATA TABLE IS TO BE COMPLETED BY THE ENGINEER TO RECORD THE MANUFACTURER OF THE PROPRIETARY WALL SYSTEM OR THE MANUFACTURERS OF THE COMBINATION WALL SYSTEM THAT WAS USED FOR CONSTRUCTING THE MSE WALL.




NORTH MSE WALL
TYPICAL SECTION WHEN NOT
CONNECTING TO EXISTING MSE WALL
(EAST FACING)




TYPICAL SECTION THRU
NORTH MSE WALL UNDER BRIDGE
(SOUTHEAST FACING)

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 60 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

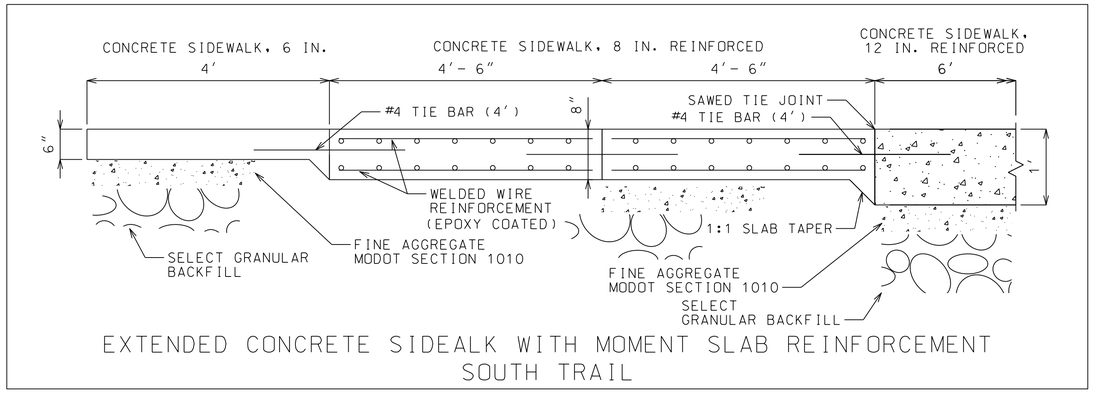

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PUBLIC WORKS DEPARTMENT

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414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

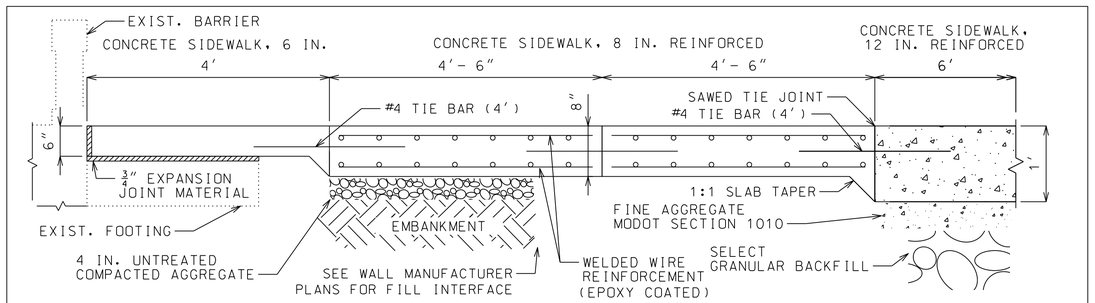
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**NORTH MSE WALL DETAILS**

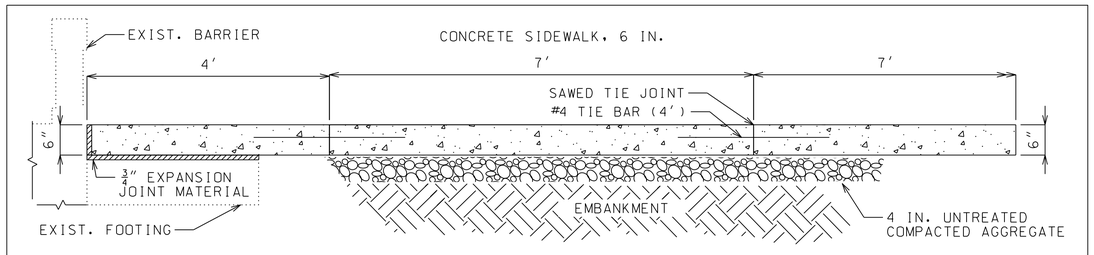

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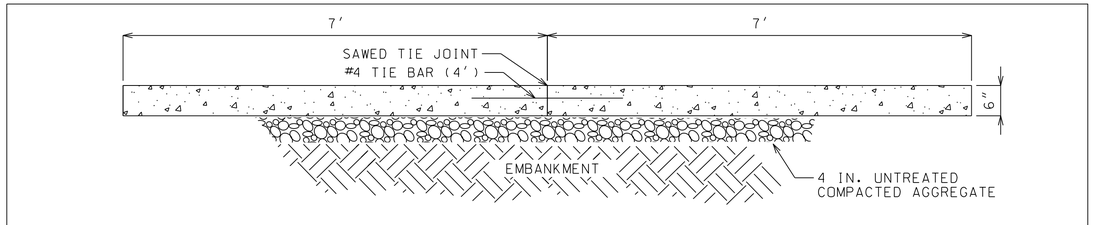

EXTENDED CONCRETE SIDEALK WITH MOMENT SLAB REINFORCEMENT
SOUTH TRAIL



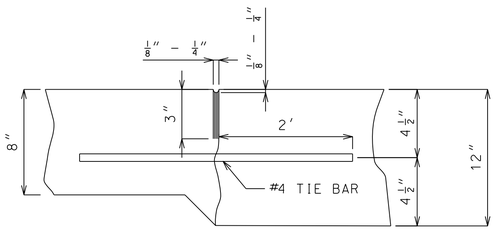

EXTENDED CONCRETE SIDEALK WITH MOMENT SLAB REINFORCEMENT
NORTH TRAIL



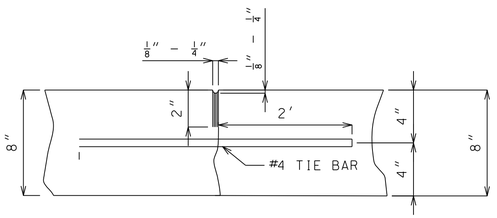

EXTENDED CONCRETE SIDEWALK
NORTH TRAIL



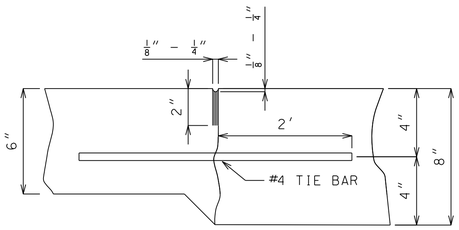

CONCRETE SIDEWALK
NORTH TRAIL



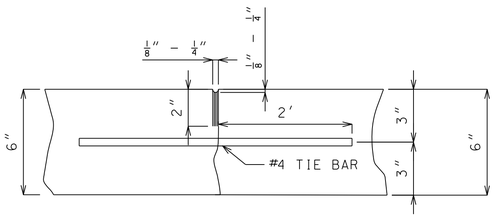

SAWED TIE JOINT FOR
CONCRETE SIDEWALK, 12 IN.
REINFORCED TRANSITION




SAWED TIE JOINT FOR
CONCRETE SIDEWALK, 8 IN.
REINFORCED



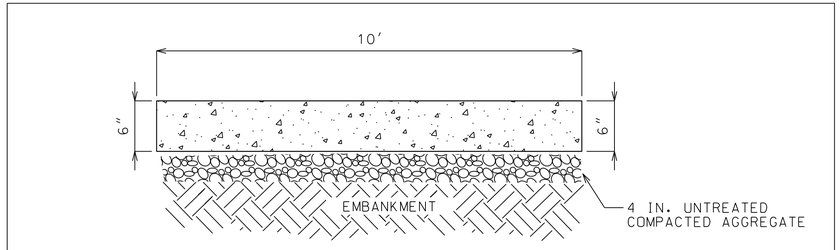

SAWED TIE JOINT FOR
CONCRETE SIDEWALK, 12 IN.
REINFORCED TRANSITION




SAWED TIE JOINT FOR
CONCRETE SIDEWALK, 6 IN.

## GENERAL NOTES:

1. ALL PAVEMENT FROM STA. 100+55.78 TO 117+38.83 SHALL HAVE 5 FT. TRANSVERSE JOINT SPACING.
2. ALL PAVEMENT FROM STA. 117+38.83 TO 120+50.00 SHALL HAVE 7 FT. TRANSVERSE JOINT SPACING.
3. ALL PAVEMENT FROM STA. 10+00.00 TO 13+44.51 SHALL HAVE 10 FT. TRANSVERSE JOINT SPACING.
4. TRANSVERSE EXPANSION JOINTS SHALL BE USED WHEN THERE IS A CHANGE IN TRANSVERSE JOINT SPCING.
4. SEE SHT NO. 62 FOR MOMENT SLAB REINFORCEMENT.
5. WELDED WIRE REINFORCEMENT SHALL BE 8" 6X6-W4XW4.
6. TIE BAR AND OTHER STEEL REINFORCING FOR ANY PAVEMENT SHALL BE SUBSIDIARY TO THE PAVEMENT BID ITEM.




CONCRETE SIDEWALK
RFHTC TRAIL

SHEET NO. 61 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

CHRISTOPHER DOUGLAS NUMBER PE-2018026229 PROFESSIONAL ENGINEER STATE OF MISSOURI

| DATE | DESCRIPTION |
|---|---|
| . | . |

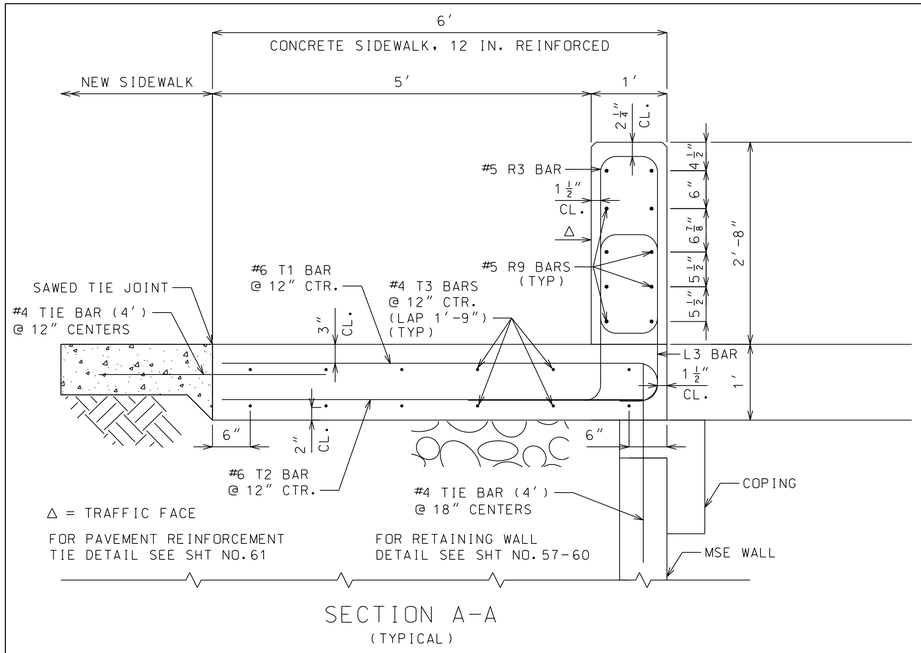
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

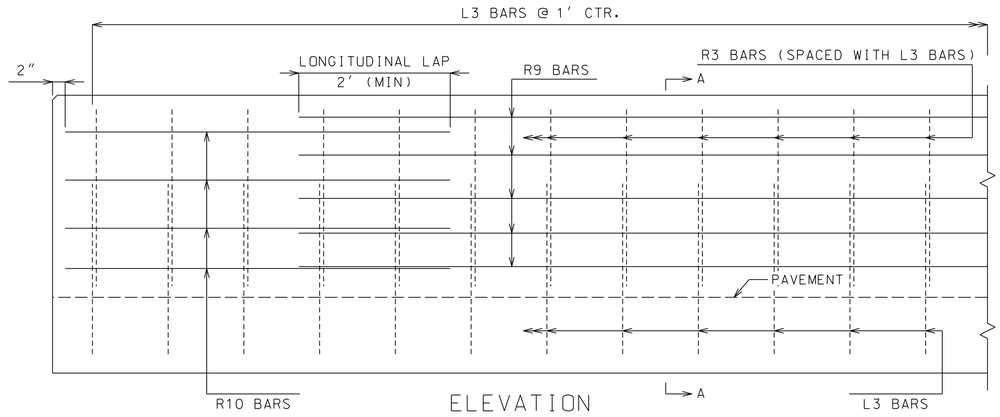
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**PAVEMENT DETAILS**

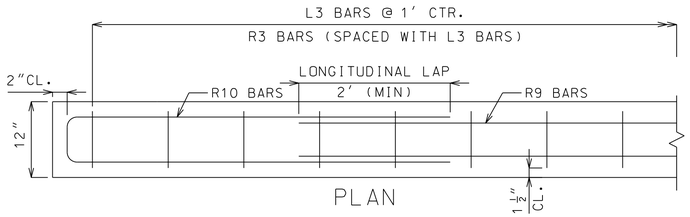
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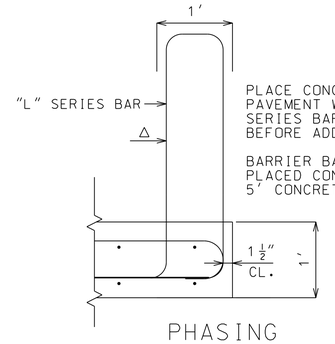

SECTION A-A
(TYPICAL)




ELEVATION




PLAN




PHASING

PLACE CONCRETE PAVEMENT WITH "L" SERIES BARS AND CURE BEFORE ADDING BARRIER.

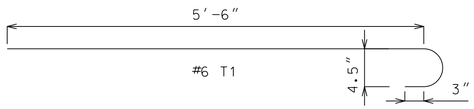
BARRIER BASE (1′-0″) PLACED CONGRUENT WITH 5′ CONCRETE PAVEMENT.

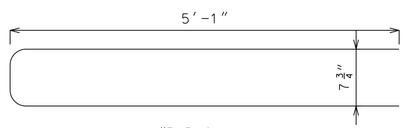
| BAR SCHEDULE | | |
|---|---|---|
| BAR | BAR SIZE | SHAPE |
| L3 | #5 | |
| L4 | | |
| R3 | #5 | |
| R9 | #5 | |
| R10 | #5 | |
| T1 | #6 | |
| T2 | #6 | |
| T3 | #4 | |

Φ = SPECIAL BARRIER BEGIN

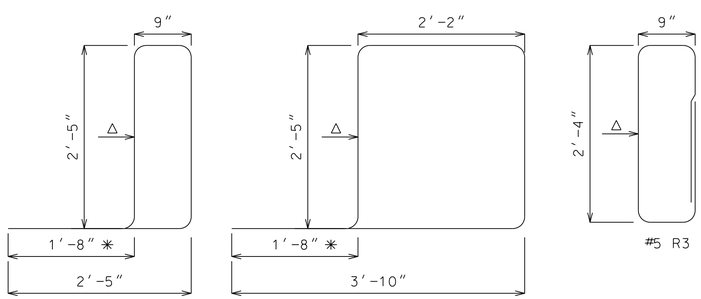
STA. 101+01.60, 10.45′ LEFT TO
STA. 101+02.98, 10.41′ LEFT

BUILD TO EXISING BARRIER PILLAR




#5 R10




BENDING DIAGRAMS

ALL DIMENSIONS ARE OUT TO OUT OF BARS. ALL RADIUS BENDS ARE 2½″.

NOTES:

ALL REINFORCEMENT SHALL BE GRADE 60 EPOXY COATED.

NO DIRECT PAYMENT WILL BE MADE FOR REINFORCING STEEL.

BAR SPLICES SHALL BE A MINIMUM OF 24 TIMES THE NOMINAL DIAMETER OF THE BAR.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 11#2″ UNLESS OTHERWISE SHOWN.

BEVEL ALL EXPOSED EDGES WITH A 3#4″ TRIANGULAR MOLDING.

SAWED JOINTS SHALL BE LOCATED AT PAVEMENT TRANSVERSE JOINTS.

PLACE JOINT MATERIAL (NONEXTRUDING, TYPE B) WHERE SHOWN FOR STRUCTURES AND AT THE END OF DAY CONSTRUCTION JOINT.

CONCRETE TRAFFIC BARRIER (SPECIAL) ARE CAST IN PLACE OR SLIP FORMED CONSTRUCTION ONLY. PRECAST BARRIERS ARE NOT PERMITTED.

THIS BARRIER SHALL NOT BE USED FOR BRIDGE ROADWAY APPLICATIONS.

FOR CONCRETE TRAFFIC BARRIER DELINEATION DETAILS SEE STD PLAN 903.03.

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SEALED BY A P.E. LICENSED IN THE STATE OF MISSOURI FOR APPROVAL BY THE ENGINEER PRIOR TO ANY CONSTRUCTION.

✳ = OVERLAP
△ = TRAFFIC FACE

SHEET NO. 62 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**CONCRETE TRAFFIC BARRIER (SPECIAL) (ON MSE WALL)**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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CONSTRUCTION PHASING NOTES:

1. CONSTRUCT PEDESTRIAN BRIDGE, RETAINING WALLS, TRAIL, AND DRAINAGE WITHOUT IMPACT TO GRAND BOULEVARD TRAFFIC.
2. USE FLAGGER CONTROL DURING ANY WORK ON THE NORTHBOUND LANE OF GRAND BOULEVARD. FLAGGER CONTROL SHALL BE PER THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CLOSURE OF ONE LANE ON A TWO LANE ROAD.

CONSTRUCTION PHASING GENERAL NOTES:

1. CONTRACTOR SHALL COORDINATE BRIDGE CONSTRUCTION WITH UPRR AND BNSF TO AVOID CONFLICT WITH TRAINS PER PROJECT SPECIFICATIONS.SEE SHEET 83 FOR INFORMATION WORKING NEAR RAILROADS.
2. ACCESS TO ADJACENT PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
3. ALL TRAFFIC CONTROL SHALL BE DESIGNED USING THE TRAFFIC CONTROL DEVICES AND APPLICATION PRINCIPLES CONTAINED IN THE LATEST VERSION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

MATCHLINE STA. 103+50.00

℄ GB_PB

2ND STREET

LEGEND

- DIRECTION OF TRAFFIC
- TRIM-LINE CHANNELIZER
- TYPE III BARRICADE
- UNDER CONSTRUCTION
- WORK AREA

SCALE 0 20 40 60

**TRAFFIC CONTROL PLAN**
**STA. 100+55.78 TO STA. 103+50.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 63 | 187 |

DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI · PROFESSIONAL ENGINEER
CHRISTOPHER DOUGLAS NUMBER PE-2018026229

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
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CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

10:20:09 AM
User:douglasc1
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MATCHLINE STA. 103+50.00

MATCHLINE STA. 108+00.00

EX. R/W

EX. R/W

EX. R/W

EX. R/W

EX. R/W

EX. R/W

℄ GB_PB

℄ GB_PB

GRAND BLVD.

GRAND BOULEVARD

FIRST STREET

STEAM LINE CORRIDOR

STEAM LINE CORRIDOR

PERM. AERIAL ESMT.

TEMP. AERIAL ESMT.

104

105

106

107

108

COLUMN

STEAM MH

ELEC MH

WATER MH

## LEGEND

- DIRECTION OF TRAFFIC
- TRIM-LINE CHANNELIZER
- TYPE III BARRICADE
- UNDER CONSTRUCTION
- WORK AREA

SCALE

0 20 40 60

**TRAFFIC CONTROL PLAN**
**STA. 103+50.00 TO 108+00.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 64 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
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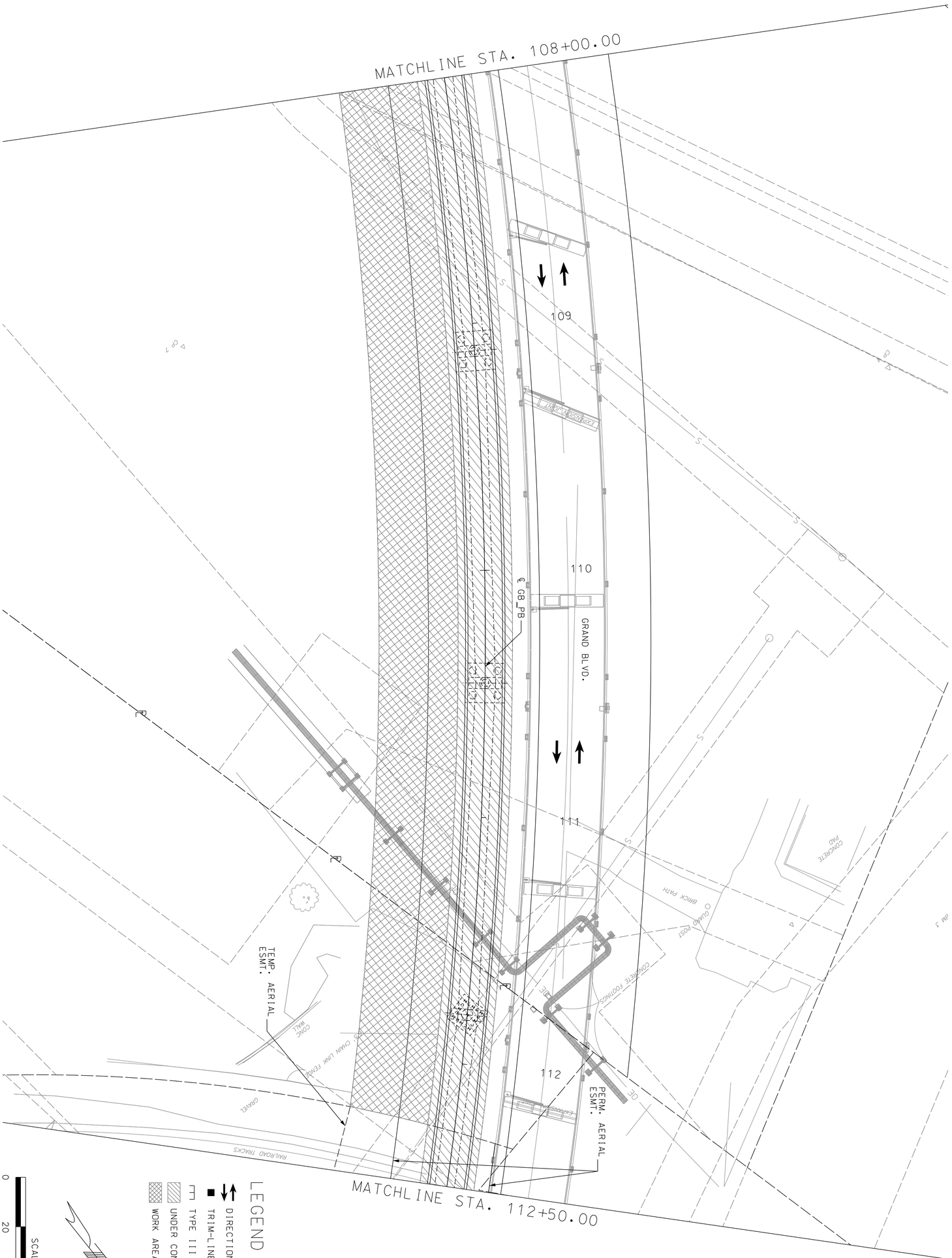
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

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**TRAFFIC CONTROL PLAN**
**STA. 108+00.00 TO STA. 112+50.00**


WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
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KANSAS CITY, MO 64106
(816) 513-2739


| DATE | DESCRIPTION |
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STATE OF MISSOURI
PROFESSIONAL ENGINEER
CHRISTOPHER DOUGLAS
NUMBER PE-2010020229

PROJECT NO. 89005595
COUNTY JACKSON
CITY KANSAS CITY
ROUTE GRAND BLVD.
STATE MISSOURI
DATE PREPARED 11/15/2024
TOTAL SHEETS 187
SHEET NO. 65

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**TRAFFIC CONTROL PLAN**
**STA. 112+50.00 TO STA. 117+00.00**


WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

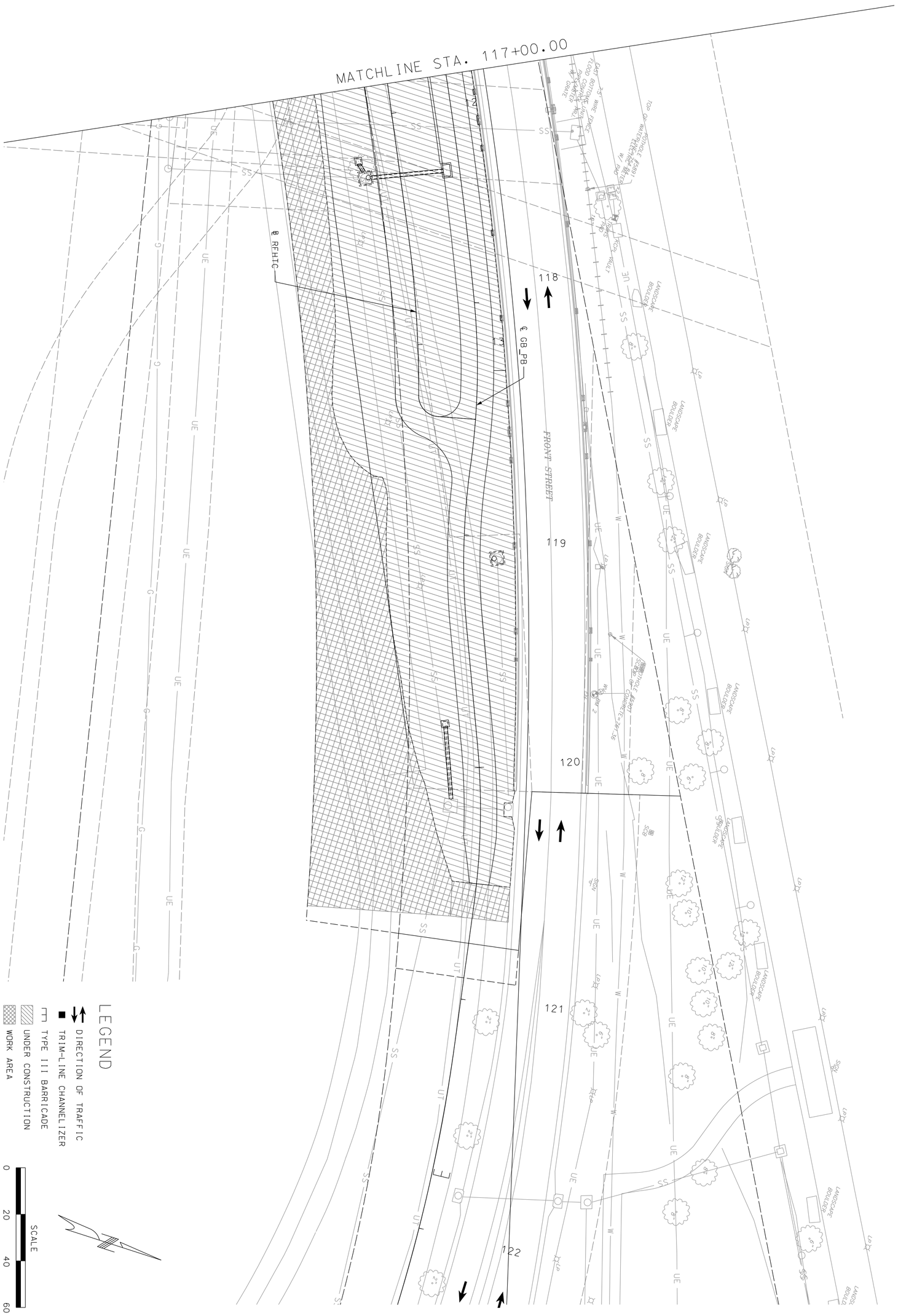

| DATE | DESCRIPTION |
|---|---|
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STATE OF MISSOURI
PROFESSIONAL ENGINEER
CHRISTOPHER DOUGLAS
NUMBER PE-2010020229

PROJECT NO. 89005595
COUNTY JACKSON
CITY KANSAS CITY
ROUTE GRAND BLVD.
STATE MISSOURI
DATE PREPARED 11/15/2024
TOTAL SHEETS 187
SHEET NO. 66

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**TRAFFIC CONTROL PLAN**
**STA. 117+00.00 TO STA. 120+50.00**


WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

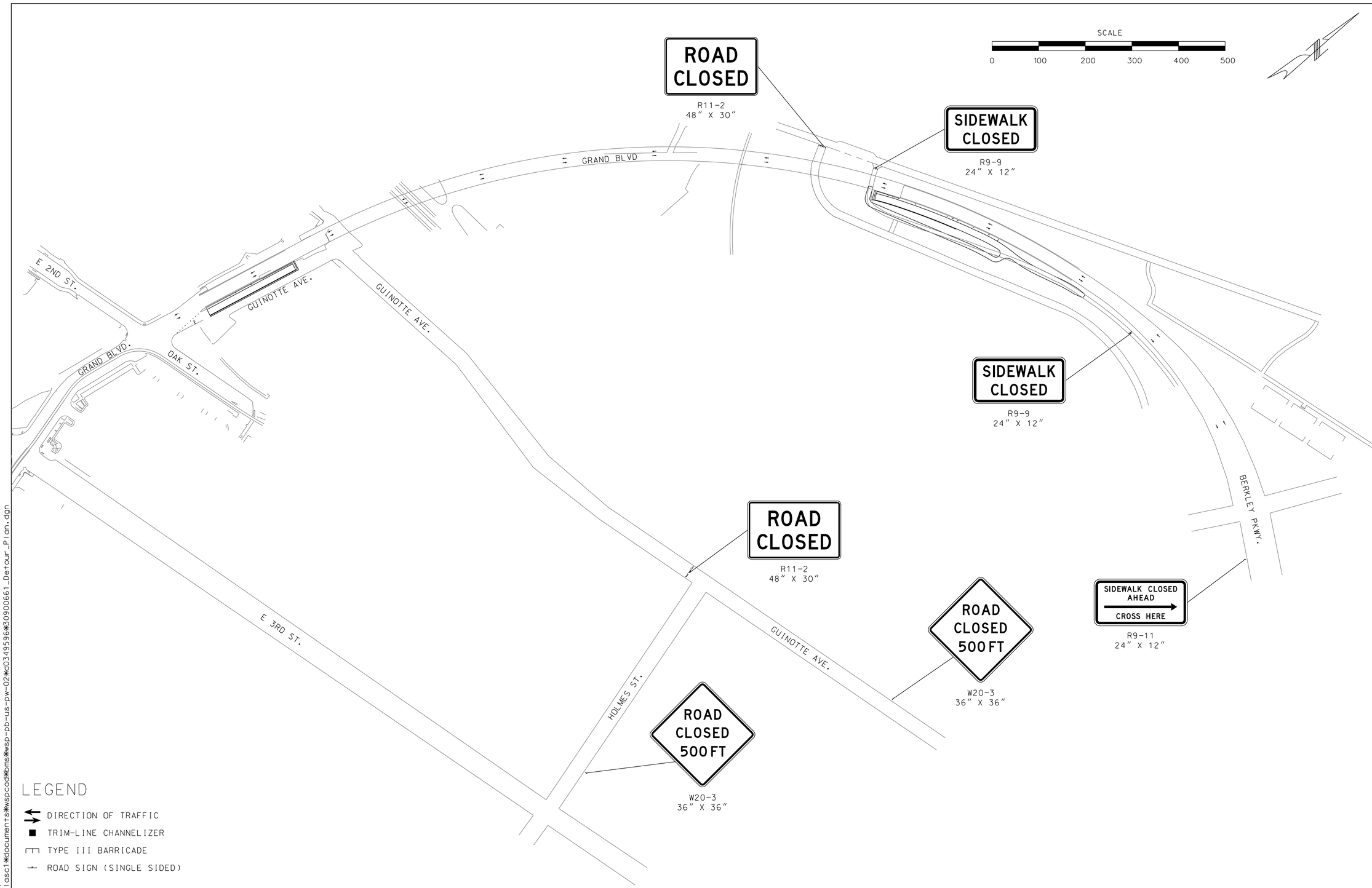
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739


| DATE | DESCRIPTION |
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STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2010020229
PROFESSIONAL ENGINEER

PROJECT NO. 89005595
COUNTY JACKSON
CITY KANSAS CITY
ROUTE GRAND BLVD.
STATE MISSOURI
DATE PREPARED 11/15/2024
SHEET NO. 67
TOTAL SHEETS 187

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




## LEGEND

- DIRECTION OF TRAFFIC
- TRIM-LINE CHANNELIZER
- TYPE III BARRICADE
- ROAD SIGN (SINGLE SIDED)

DETOUR NOTES:

1. MAINTAIN TRAFFIC ON GRAND BOULEVARD FROM 2ND STREET INTERSECTION TO BERKLEY PARKWAY AT THE EAST END OF THE PROJECT.
2. CLOSE GUINOTTE AVENUE AT HOLMES STREET EXCEPT FOR LOCAL TRAFFIC INCLUDING VICINITY AND EVERGY OPERATIONS FOR THE DURATION OF CONSTRUCTION.

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SHEET NO. 68 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229
PROFESSIONAL ENGINEER

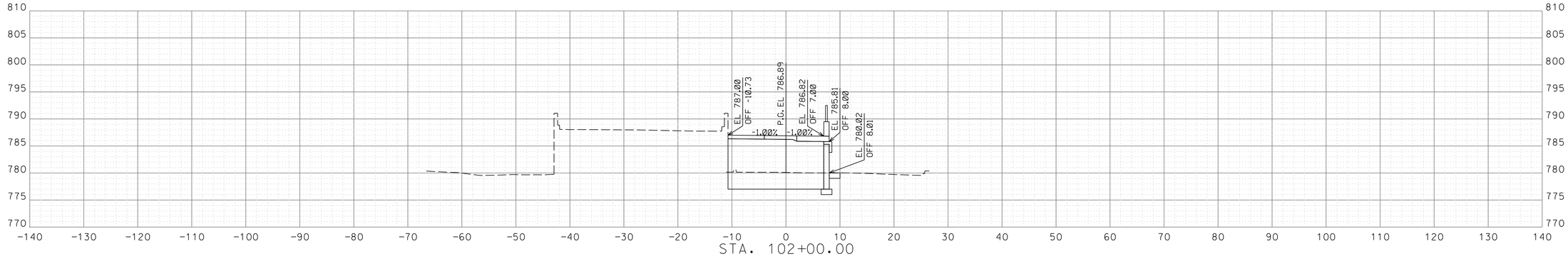
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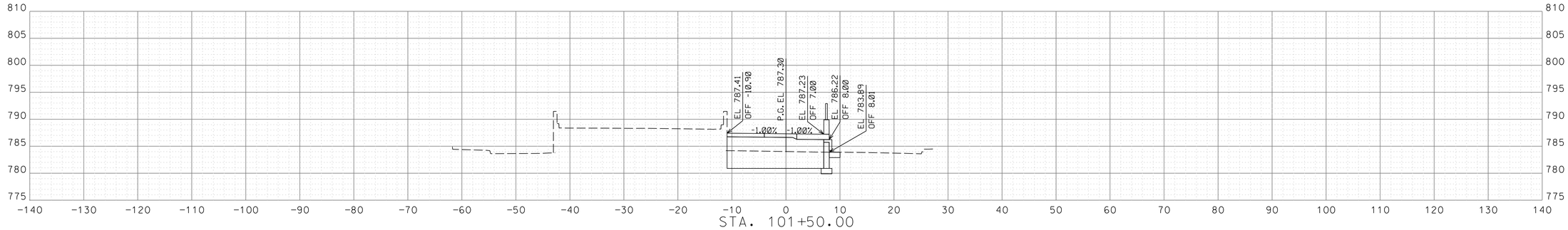

CITY OF KANSAS CITY, MISSOURI
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CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

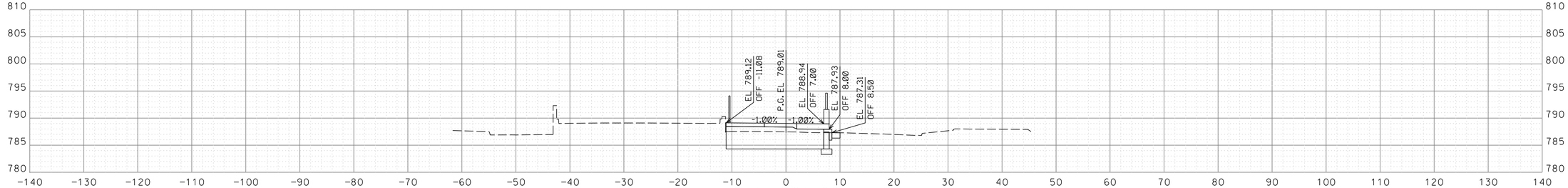

# DETOUR PLAN



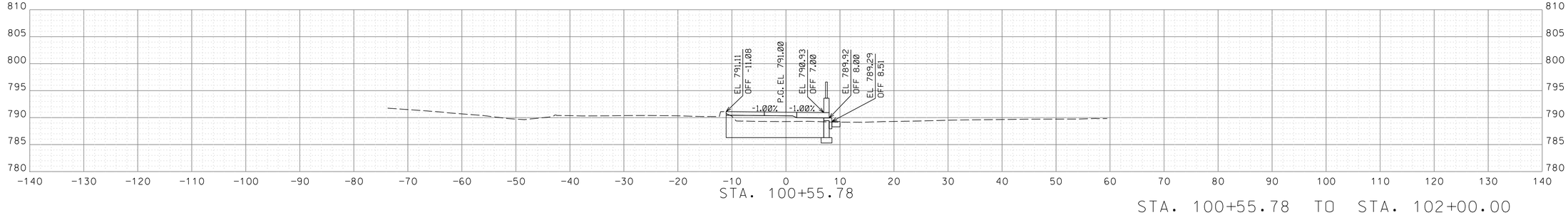

STA. 102+00.00




STA. 101+50.00




STA. 101+00




STA. 100+55.78

STA. 100+55.78 TO STA. 102+00.00

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 69 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS
NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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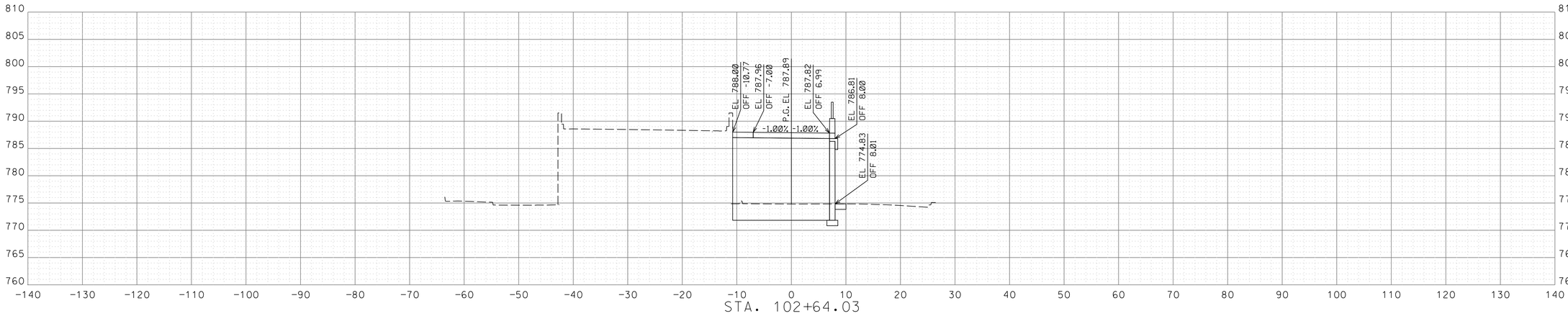

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

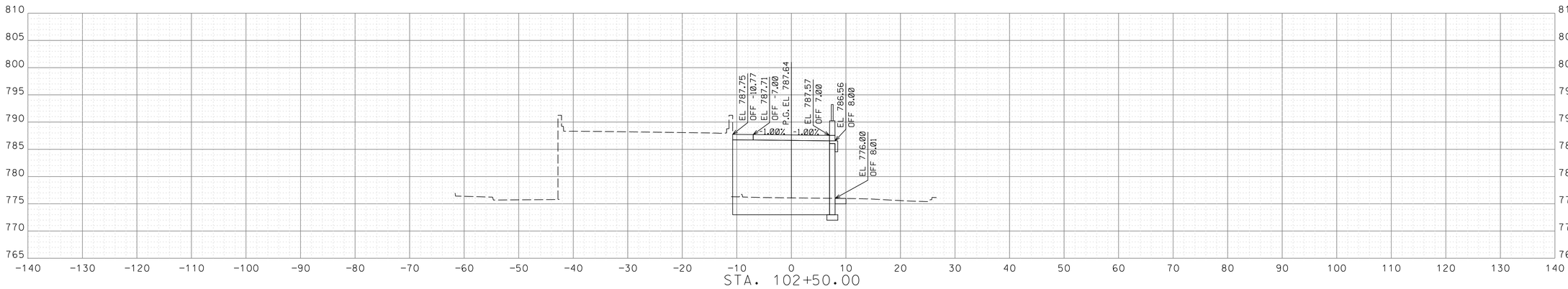
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

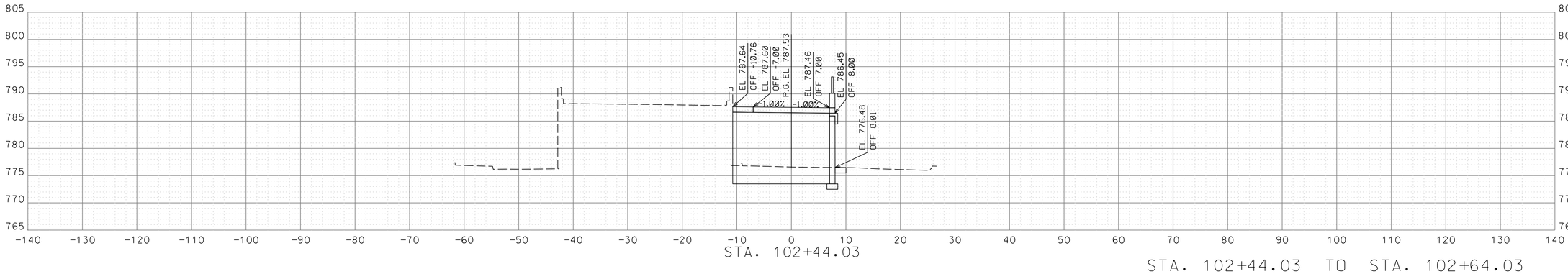
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**CROSS SECTIONS**
**STA. 100+55.78 TO STA. 102+00.00**


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STA. 102+44.03 TO STA. 102+64.03

**CROSS SECTIONS**
**STA. 102+44.03 TO STA. 102+64.03**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 70 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

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CITY
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JACKSON

PROJECT NO.
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STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

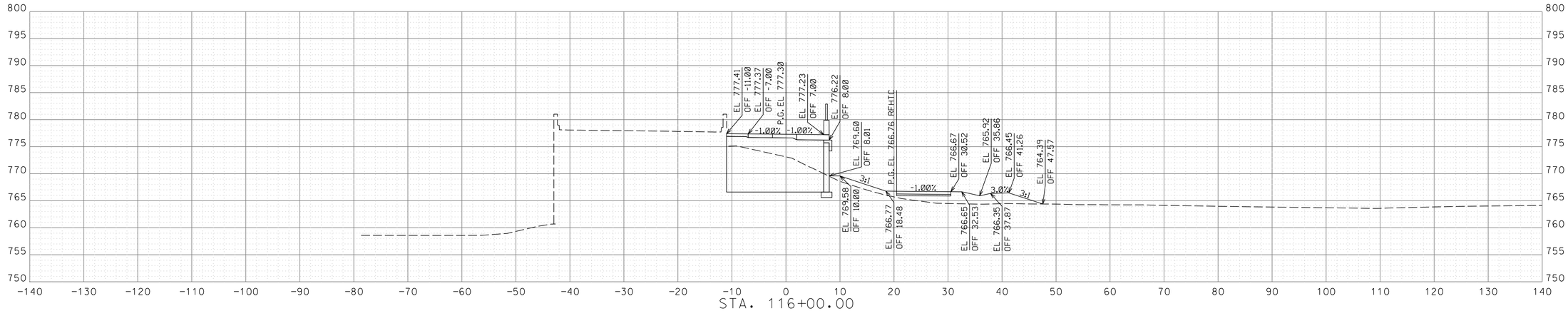

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

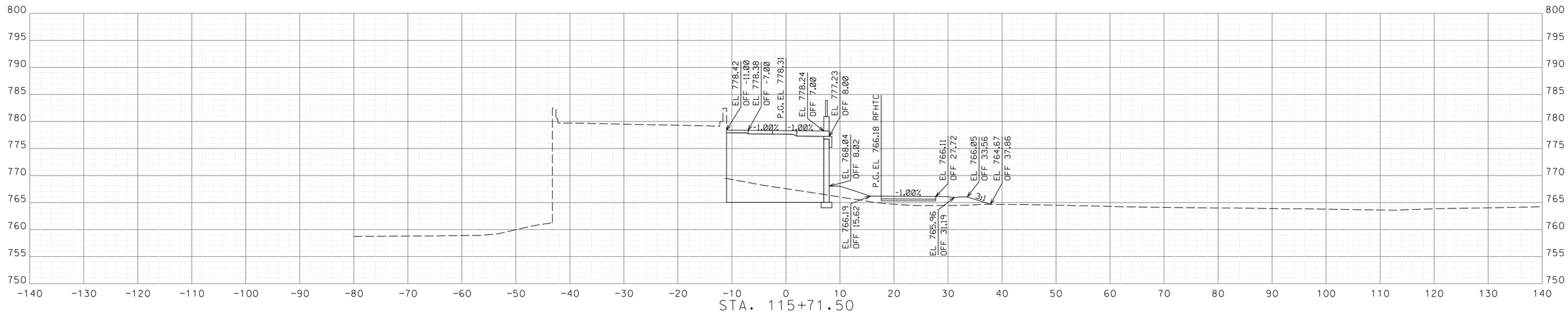
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

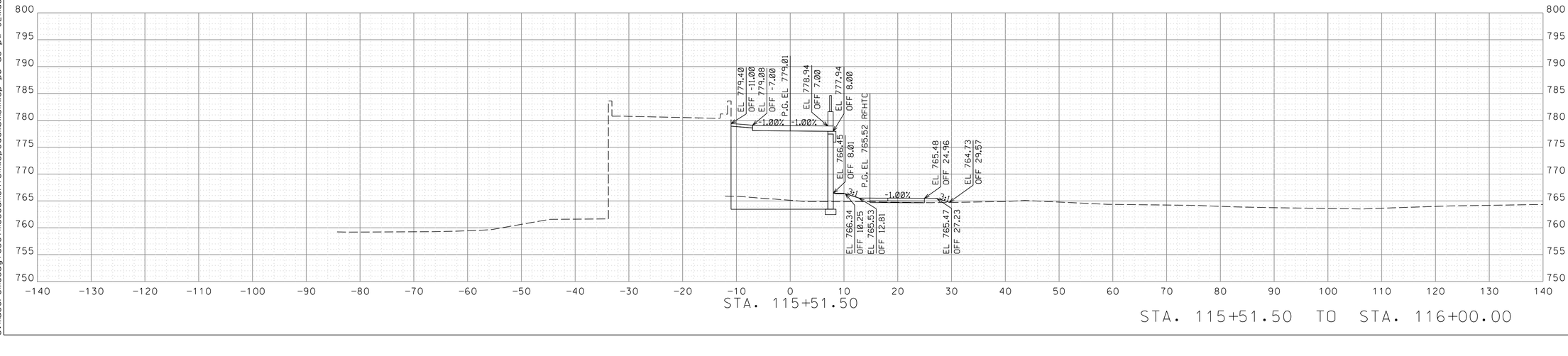
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105



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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 71 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

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CITY
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PROJECT NO.
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CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

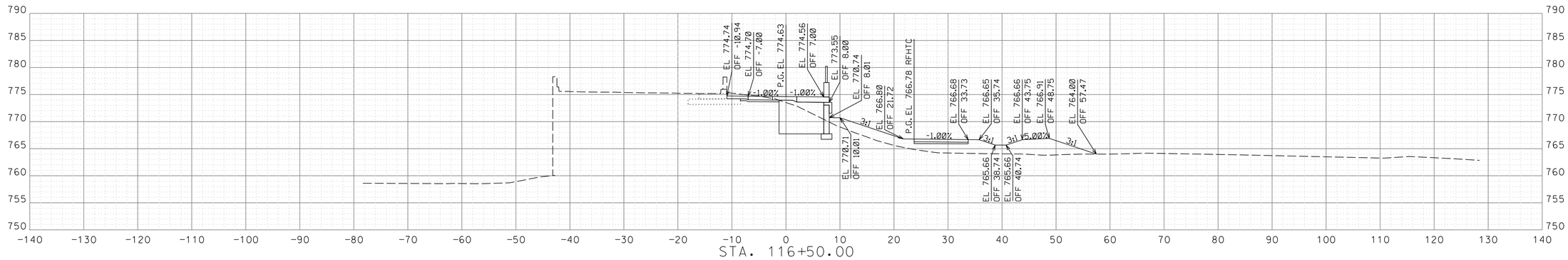
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
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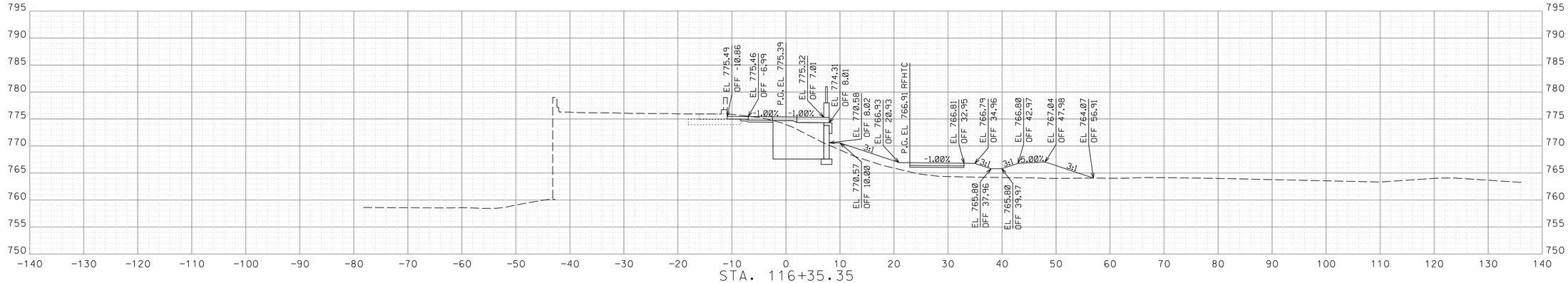
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

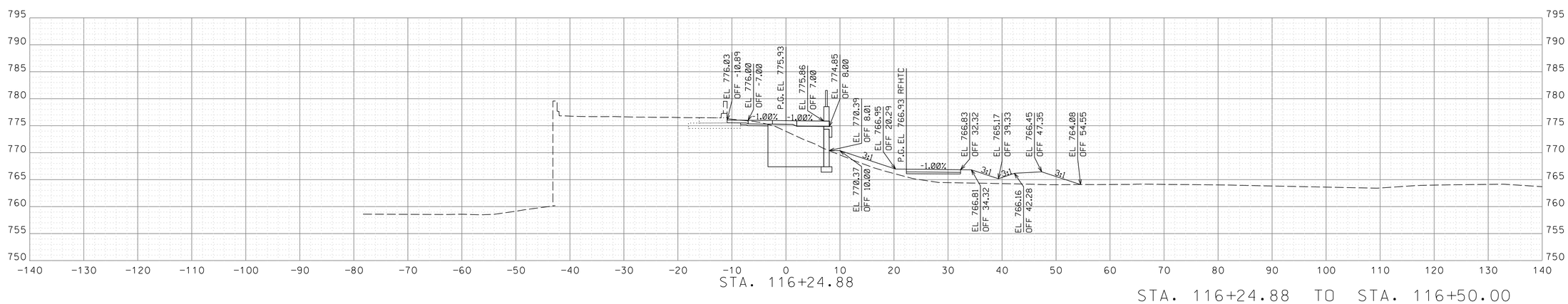
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**STA. 115+51.50 TO STA. 116+00.00**

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STA. 116+24.88 TO STA. 116+50.00

**CROSS SECTIONS**
**STA. 116+24.88 TO STA. 116+50.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 72 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
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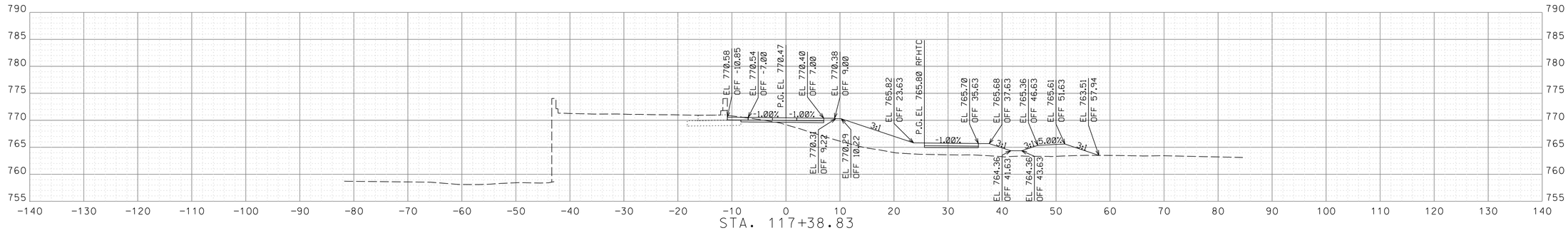
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PUBLIC WORKS DEPARTMENT

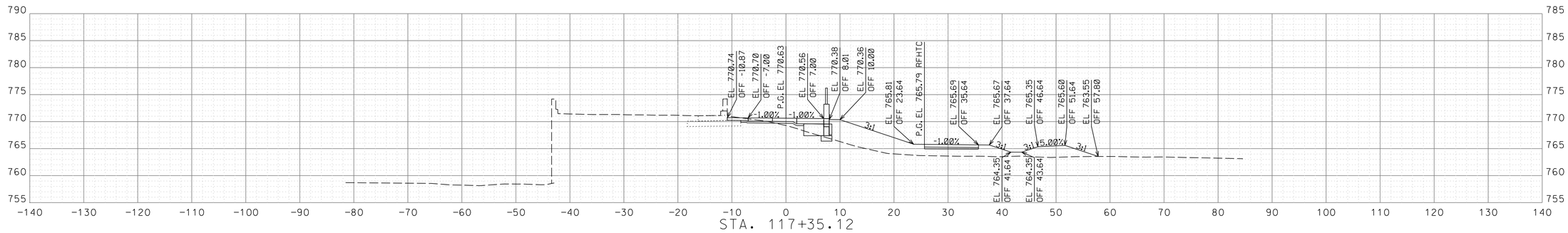
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

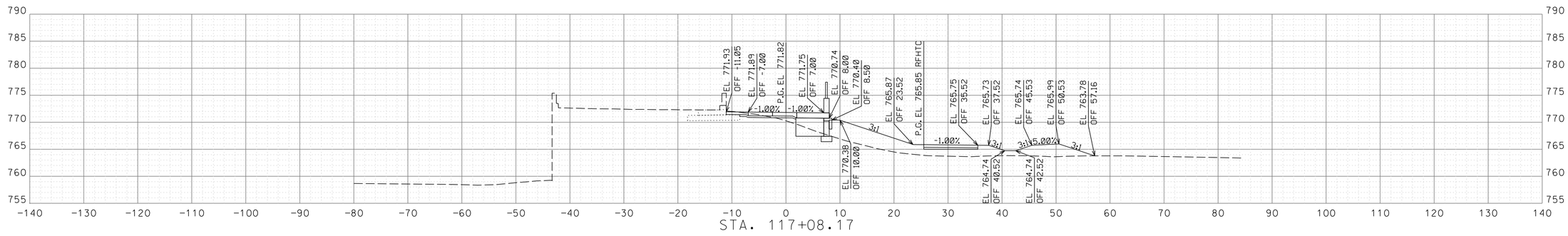
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

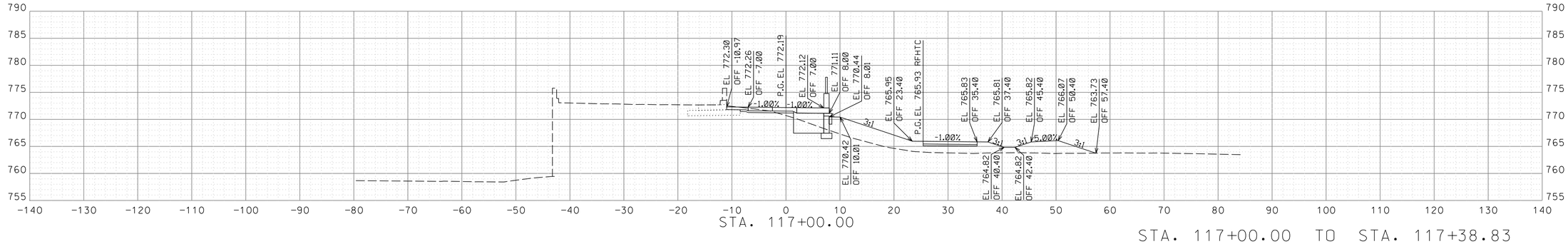
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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User:douglasc1
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STA. 117+00.00 TO STA. 117+38.83

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 73 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

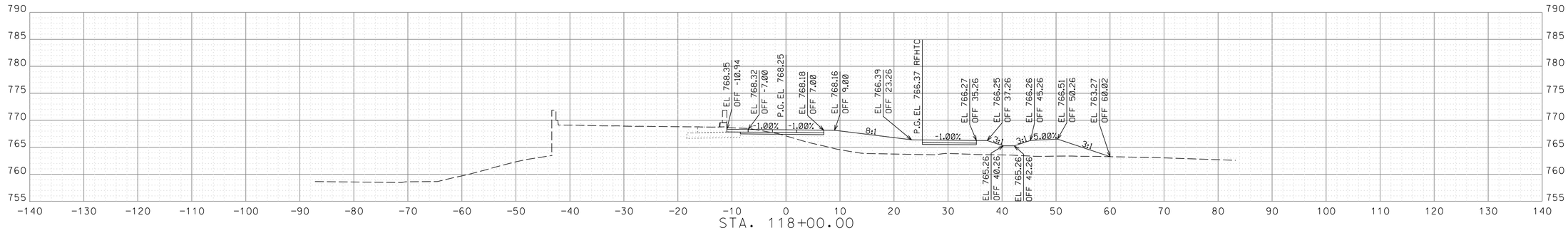
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

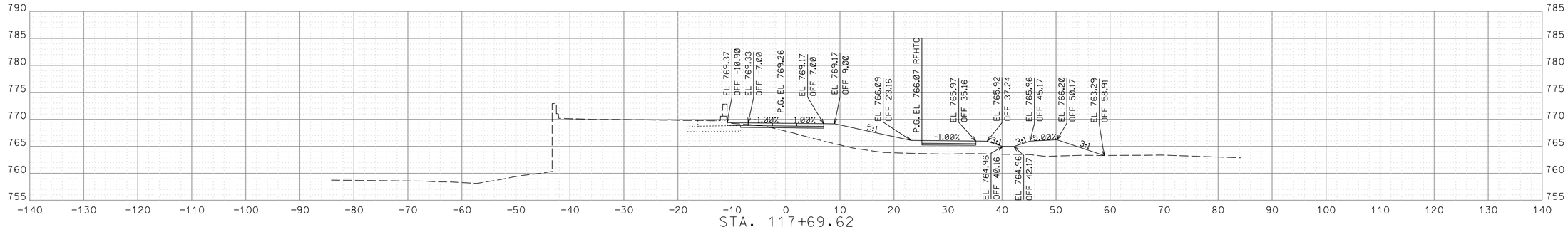
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

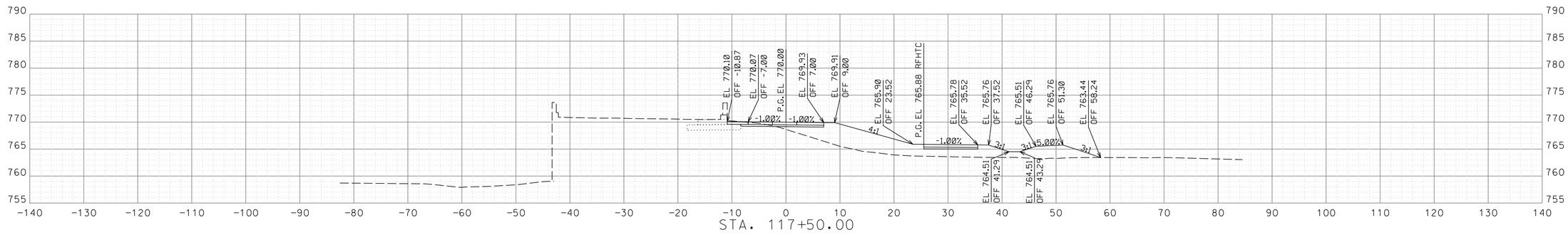
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**STA. 117+00.00 TO STA. 117+38.83**

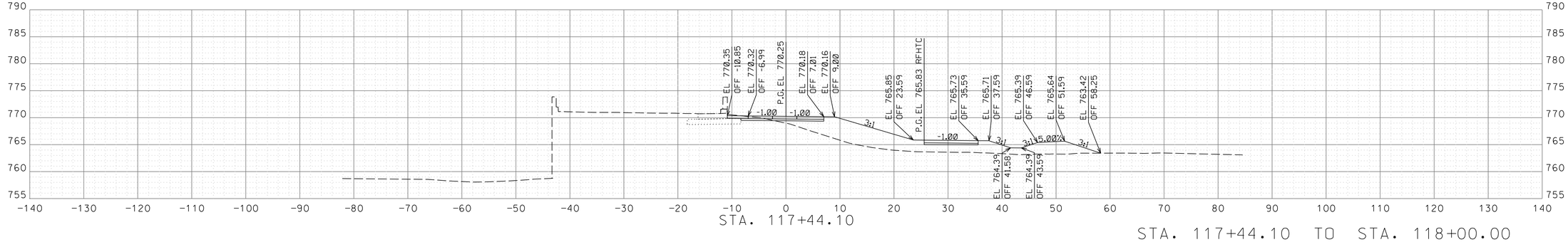
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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STA. 117+44.10 TO STA. 118+00.00

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 74 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

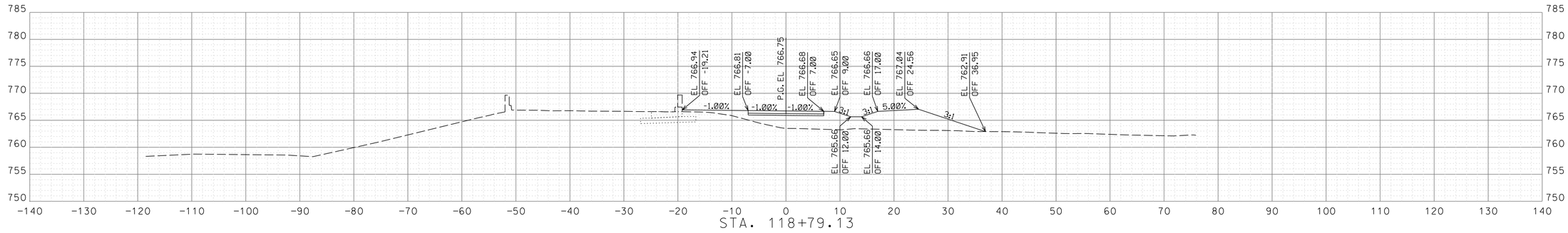
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

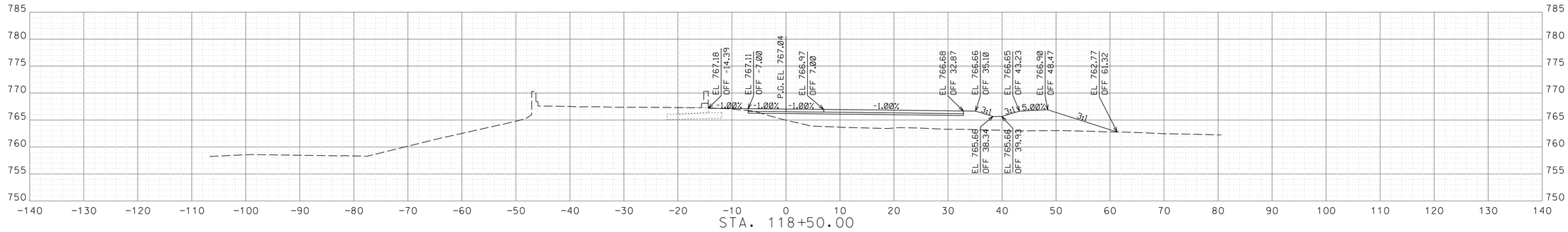
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**CROSS SECTIONS**
**STA. 117+44.10 TO STA. 118+00.00**

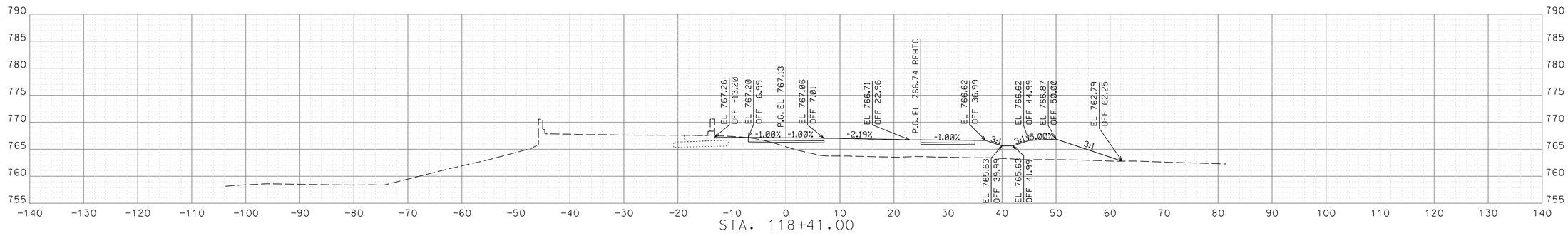
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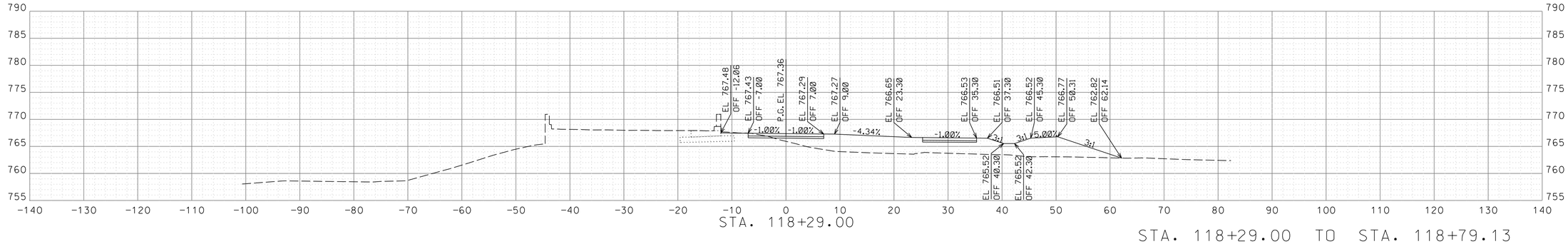

STA. 118+79.13




STA. 118+50.00




STA. 118+41.00




STA. 118+29.00

STA. 118+29.00 TO STA. 118+79.13

**CROSS SECTIONS**
**STA. 118+29.00 TO 118+79.13**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 75 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

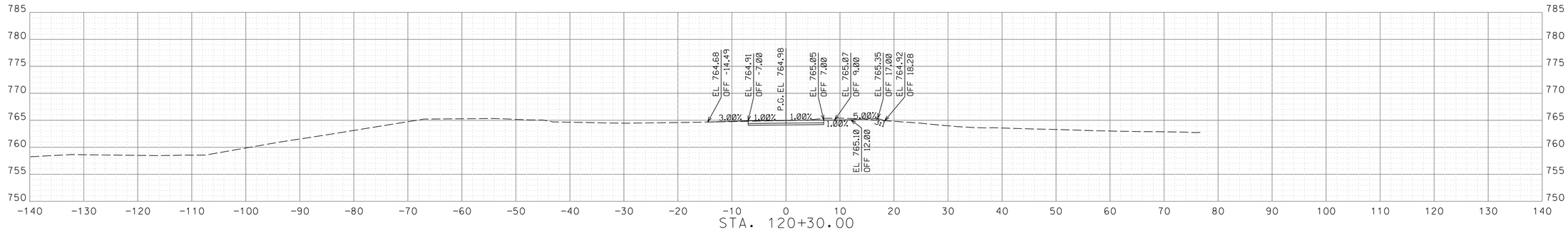

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

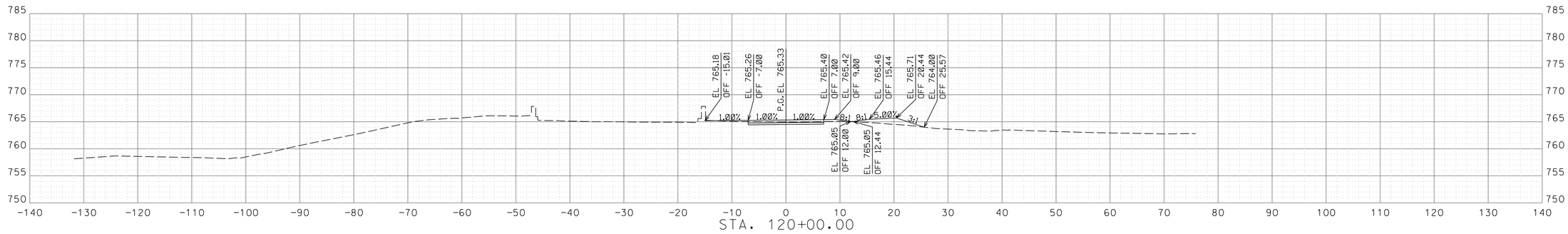
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

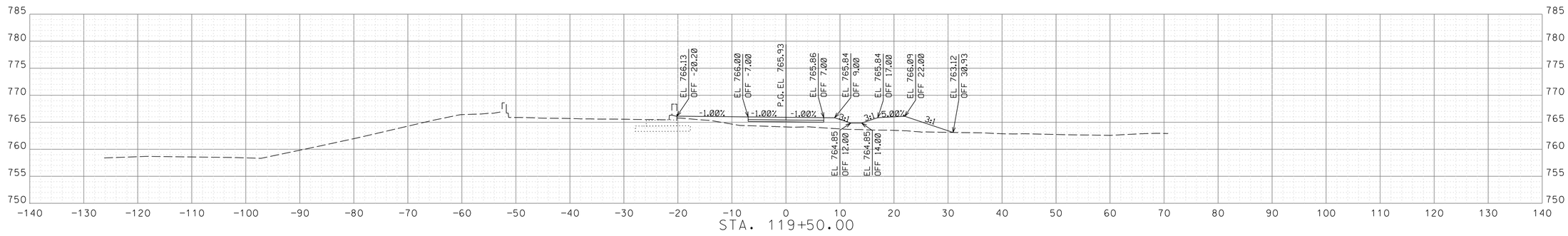
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

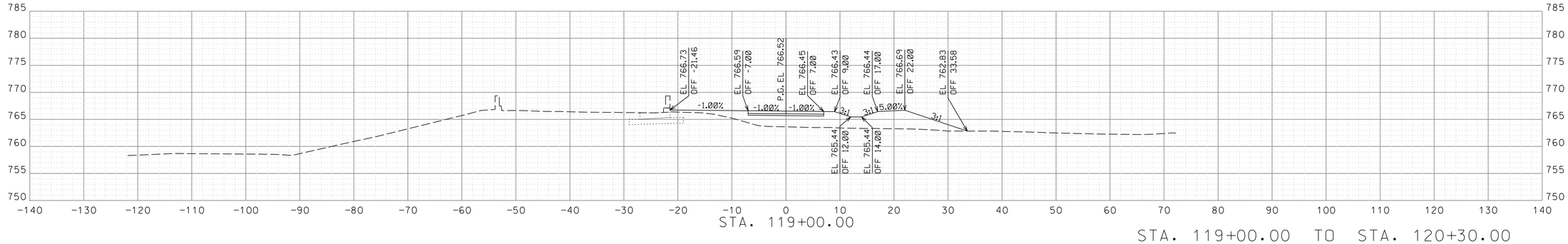


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STA. 119+00.00 TO STA. 120+30.00

**CROSS SECTIONS**
**STA. 119+00.00 TO 120+30.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 76 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER PE-2018026229
PROFESSIONAL ENGINEER

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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**CROSS SECTIONS**
**STA. 120+50.00**

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 77 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
CHRISTOPHER DOUGLAS NUMBER
PE-2018026229
PROFESSIONAL ENGINEER

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

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

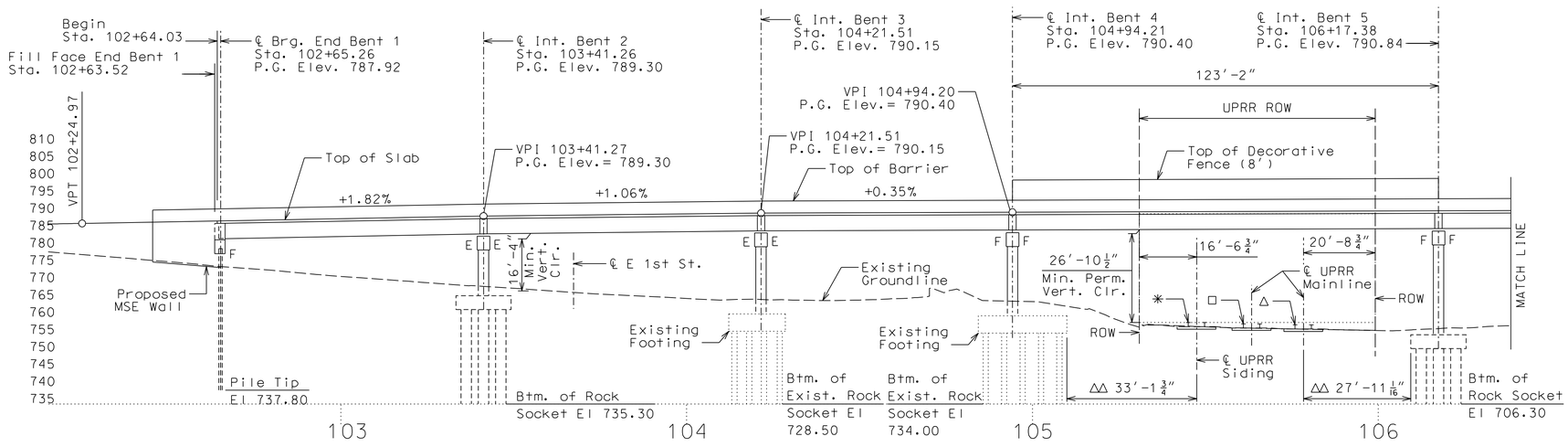
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


11:11:22 AM
User:douglasc1
c:\users\douglasc1\documents\wspcode\dms\wsp-pb-us-pw-02\wd0349596\30900661_XS_Sheets.dgn

B.M. #1 - Sta. 99+62.12, 21.68' RT., Elev. 796.29, "+" on Top of NW Bolt of OCS Pole @ NE Corner of 2nd and Grand Ave.
B.M. #2 - Sta. 119+72.43, 51.18' LT., Elev. 767.97, "+" on NE Bonnet Bolt of Fire Hydrant. N. Side of Grand Ave.+/- 50' West of end of concrete barrier.

SEC/SUR 32 TWP 50 N RGE 33 W

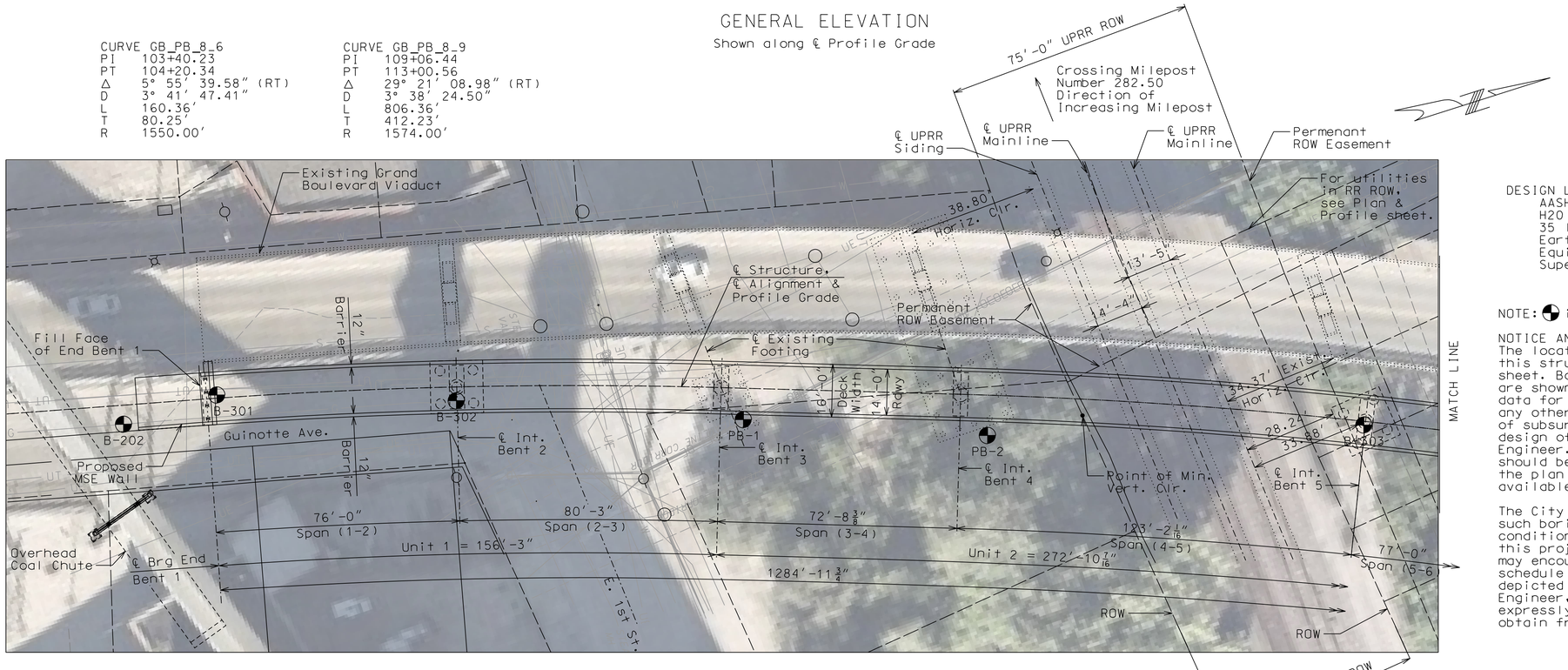
# (76'-80')(73'-123'-77')(82'-135'-135'-135')(125'-135'-110')
# CONTINUOUS PRESTRESSED CONCRETE NU-GIRDER SPANS



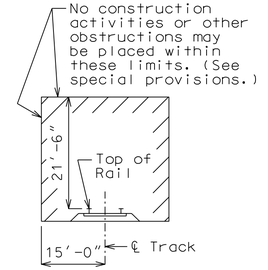

## GENERAL ELEVATION
Shown along ℄ Profile Grade

CURVE GB_PB_8_6
PI 103+40.23
PT 104+20.34
△ 5° 55' 39.58" (RT)
D 3° 41' 47.41"
L 160.36'
T 80.25'
R 1550.00'

CURVE GB_PB_8_9
PI 109+06.44
PT 113+00.56
△ 29° 21' 08.98" (RT)
D 3° 38' 24.50"
L 806.36'
T 412.23'
R 1574.00'




## PLAN




## MINIMUM CONSTRUCTION CLEARANCES
(Normal to railroad)
(Not to scale)

△△ Minimum distance at right angle between centerline of track to face of foundation below grade.

| UPRR TRACK ELEVATIONS | |
|---|---|
| ✳ UPRR Siding | 758.00 |
| □ UPRR Mainline | 757.62 |
| △ UPRR Mainline | 757.31 |

DESIGN LOADING:
AASHTO Pedestrian Loading (90 psf)
H20 Design Truck
35 lb/sf Future Wearing Surface
Earth 120 lb/cf
Equivalent Fluid Pressure 45 lb/cf
Superstructure: Simply-Supported, Non-Composite for dead load.

NOTE: ⊕ indicates location of borings.

NOTICE AND DISCLAIMER REGARDING BORING LOG DATA
The locations of all subsurface borings for this structure ar shown on the bridge plan sheet. Boring data for the numbered locations are shown on sheets No.164 thru177 . The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations for the design of this project, are available from the Engineer. No greater significance or weight should be given to the boring data depicted on the plan sheets than to subsurface data available from the Engineer or elsewhere.

The City does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A Contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the Engineer, or on any other documentation not expressly warranted, which the Contractor may obtain from the Engineer.

# BRIDGE: S028B32 GRAND BLVD. BIKE/PED. OVER BNSF, UPRR & CITY STREETS

GRAND BLVD NB FROM RIVER MARKET TO RIVERFRONT
ABOUT 0.1 MILES EAST OF MO ROUTE 9
BEGINNING STA. 102+64.03

STD. 706.35

Designed PRY 6/2022
Detailed DDE 7/2022
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 78 TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

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

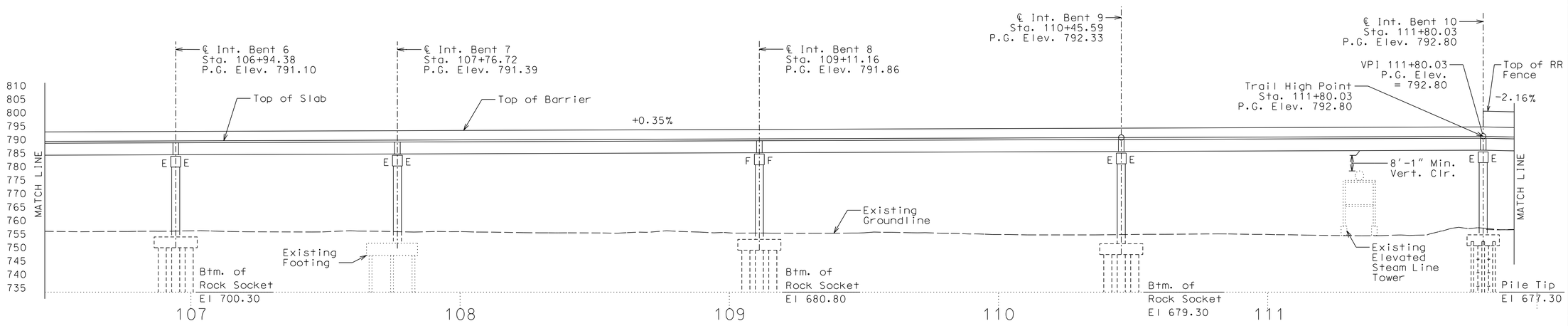
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

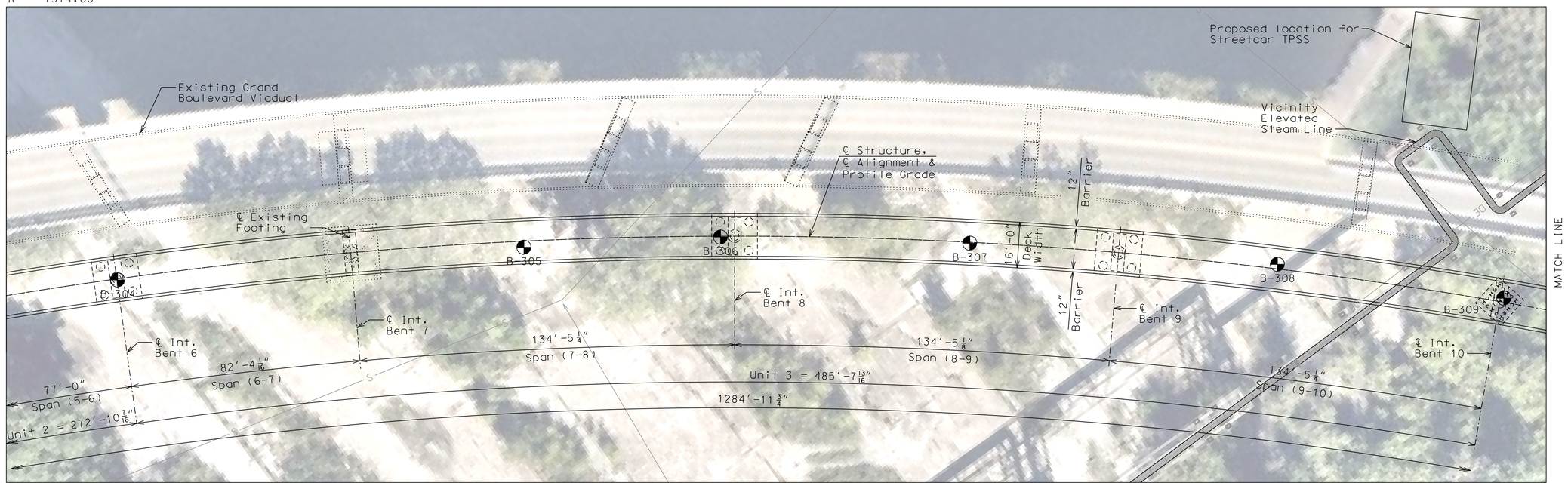
**PLAN AND ELEVATION UNITS 1 & 2**

B.M. #1 - Sta. 99+62.12, 21.68' RT., Elev. 796.29, "+" on Top of NW Bolt of OCS Pole @ NE Corner of 2nd and Grand Ave.
B.M. #2 - Sta. 119+72.43, 51.18' LT., Elev. 767.97, "+" on NE Bonnet Bolt of Fire Hydrant. N. Side of Grand Ave.+/- 50' West of end of concrete barrier.




GENERAL ELEVATION
Shown along ℄ Profile Grade

CURVE GB_PB_8_9
PI 109+06.44
PT 113+00.56
Δ 29° 21' 08.98" (RT)
D 3° 38' 24.50"
L 806.36'
T 412.23'
R 1574.00'




PLAN

Detailed DDE 7/2022
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 79 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

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

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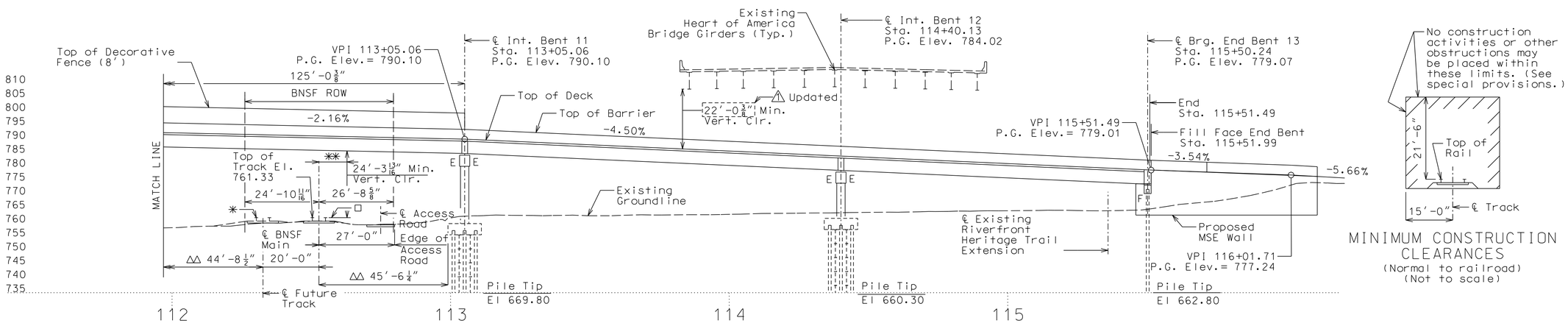

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**PLAN AND ELEVATION**
**UNITS 2 & 3**

B.M. #1 - Sta. 99+62.12, 21.68' RT., Elev. 796.29, "+" on Top of NW Bolt of OCS Pole @ NE Corner of 2nd and Grand Ave.
B.M. #2 - Sta. 119+72.43, 51.18' LT., Elev. 767.97, "+" on NE Bonnet Bolt of Fire Hydrant. N. Side of Grand Ave.+/- 50' West of end of concrete barrier.




GENERAL ELEVATION
Shown along ℄ Profile Grade



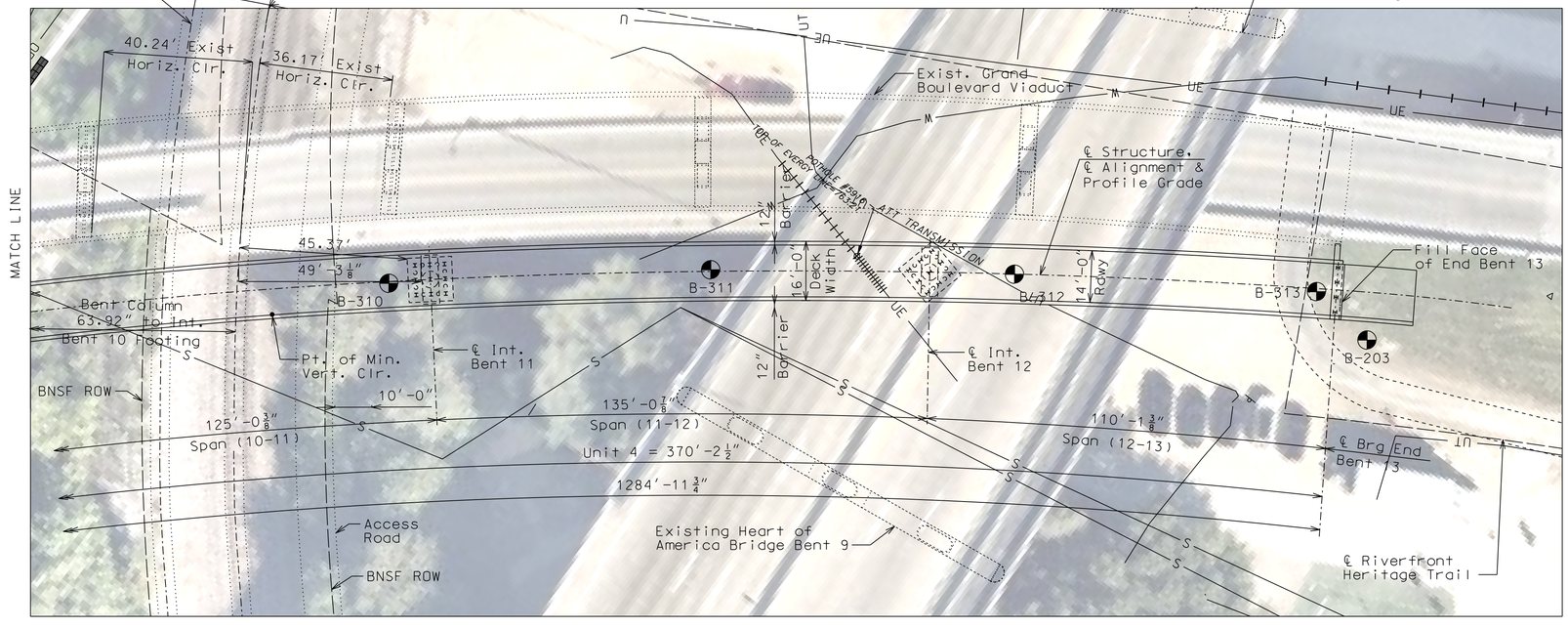

MINIMUM CONSTRUCTION CLEARANCES
(Normal to railroad)
(Not to scale)

△△ Minimum distance at right angle between centerline of track to face of foundation below grade.

✱✱ 9'-6" from ℄ Track

| TRACK VERTICAL CLEARANCE | |
|---|---|
| ✱ Future Track | 24'-11 1/4" |
| □ BNSF Mainline | 24'-3 13/16" |

CURVE GB_PB_8_9
PI 109+06.44
PT 113+00.56
△ 29° 21' 08.98" (RT)
D 3° 38' 24.50"
L 806.36'
T 412.23'
R 1574.00'




PLAN

BNSF Railroad Information:
Division - Heartland
Subdivision - St. Joseph
Line Segment - 1108
Milepost - 0.542
Latitude - 39.1147200
Longitude - -94.5791000

Detailed DDE 7/2022
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 80 | 187 |

DATE PREPARED
11/13/2024
STATE
MISSOURI
ROUTE
GRAND BLVD.
CITY
KANSAS CITY
COUNTY
JACKSON
PROJECT NO.
89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
11/7/24

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

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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

# PLAN AND ELEVATION UNIT 4

## ESTIMATED QUANTITIES

| | BID ITEM | UNIT | SUBSTR. | SUPERSTR. | TOTAL |
|---|---|---|---|---|---|
| △ | CLASS 1 EXCAVATION | CU YD | 644.1 | - | 644.1 |
| | BRIDGE APPROACH SLAB (MINOR) | SQ YD | - | 72.7 | 72.7 |
| | DECORATIVE FENCE (8') (STRUCTURES) | LF | - | 516 | 516 |
| | DECORATIVE FENCE (3') (STRUCTURES) | LF | - | 2,084 | 2,084 |
| | CHAIN-LINK FENCE (8')(STRUCTURES) | LF | - | 497 | 516 |
| | CONCRETE TRAFFIC BARRIER, SPECIAL (STRUCTURES) | LF | - | 2,641 | 2,641 |
| △ | DRILLED SHAFTS (3 FT. 0 IN. DIA.) | LF | 1,097 | - | 1,097 |
| △ | ROCK SOCKETS (3 FT. 0 IN. DIA.) | LF | 200 | - | 200 |
| | HELICAL PILE | LF | 1,596 | - | 1,596 |
| △ | VIDEO CAMERA INSPECTION | EACH | 75 | - | 75 |
| △ | FOUNDATION INSPECTION HOLES | LF | 750 | - | 750 |
| △ | SONIC LOGGING TESTING | EACH | 25 | - | 25 |
| (1) | STRUCTURAL STEEL PILES (12 IN) | LF | 2,739 | - | 2,739 |
| | PRE-BORE FOR PILING | LF | 145 | - | 145 |
| △ | CLASS B-1 CONCRETE (SUBSTRUCTURE) | CU YD | 528.2 | - | 528.2 |
| | SLAB ON CONCRETE NU-GIRDER | SQ YD | - | 2,288 | 2,288 |
| | NU 53, PRESTRESSED CONCRETE NU-GIRDER | LF | - | 2,551 | 2,551 |
| △ | REINFORCING STEEL (BRIDGES) | LB | 114,980 | - | 114,980 |
| | CONDUIT SYSTEM ON STRUCTURE | LUMP SUM | - | 1 | 1 |
| | STEEL INTERMEDIATE DIAPHRAGM FOR P/S CONCRETE GIRDERS | EACH | - | 19 | 19 |
| | SLAB DRAIN (SPECIAL) | EACH | - | 52 | 52 |
| | DRAINAGE SYSTEM (ON STRUCTURE) | LUMP SUM | - | 1 | 1 |
| | LAMINATED NEOPRENE BEARING PAD (TAPERED) | EACH | - | 16 | 16 |
| | LAMINATED NEOPRENE BEARING PAD ASSEMBLY | EACH | - | 22 | 22 |
| | TYPE N PTFE BEARING | EACH | - | 10 | 10 |
| | STRIP SEAL EXPANSION JOINT SYSTEM | LF | - | 54 | 54 |
| | PILE POINT REINFORCEMENT | EACH | 35 | - | 35 |
| | BRIDGE LIGHTING | LUMP SUM | - | 1 | 1 |
| | LIGHT STANDARD (BRIDGE) | EACH | - | 17 | 17 |
| | EXCAVATION PREPARATION FOR PILE INTEGRITY TESTING | LUMP SUM | - | - | 1 |
| | PILE INTEGRITY TESTING | LUMP SUM | - | - | 1 |
| | SEISMIC REFRACTION | LUMP SUM | - | - | 1 |
| △ | PARTIAL REMOVAL OF SUBSTRUCTURE CONCRETE | LUMP SUM | 1 | - | 1 |

All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Conrete NU-Girder.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete NU-Girder.

Steel Piles:

HP piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702.

Drilled Shafts:

Thickness of permanent steel casing shall be as shown on the plans and in accordance with Sec 701.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

Miscellaneous:

Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:

▭ Constant Joint Filler
▭ Variable Joint Filler

Joint Filler:

All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted. Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

Detailed PRY 3/2023
Checked SAB 3/2023

## General Notes:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
Seismic Performance Category A

Design Loading:

Pedestrian = 90 psf
Vehicle: H20
Future Wearing Surface = 35 lb/sf (Min.)
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf
Superstructure: Simply-Supported, Non-Composite for dead load.
Continuous Composite for live load.

Construction Specifications:

2020 Missouri Standard Specifications for Highway Construction

Design Unit Stresses:

Class B-1 Concrete (Substructure) f'c = 4,000 psi

Special Aggregate Concrete (Superstructure and Barrier, except Prestressed Girders) f'c = 4,000 psi

Reinforcing Steel (Grade 60) fy = 60,000 psi

Structural Steel HP Pile (ASTM A709 Grade 50S) fy = 50,000 psi

For precast prestressed panel stresses, see Sheet No.128.
For prestressed girder stresses, see Sheets No.101-122.

(1) Cost of L4x4 ASTM A709 Grade 36 HP pile anchors and 3/4-inch diameter ASTM F3125 Grade A325 Type 1 Plain bolts, complete in place, will be considered completely covered by the contract unit price for Structural Steel Piles (12 in.).

△ Items will be repeated in Add Alternate bid based on results of Pile Integrity Testing (See Sht. Nos. 88- 89) for Bents 3 & 4.

Environmental

This project is covered by the Documeted Categorical Exclusion for the Riverfront Extension Streetcar project.

The Contractor shall develop and implement a construction noise and vibration management plan and include vibration performance specifications and best management practices.

Should construction activities that involve excavations to depths greater than 18 inches reveal the presence of hazardous materials near the nine Environmental Data Registry sites identified, mitigation and clean up measures would be defined in conjunction with the Missouri Department of Natural Resources(MDNR). Any work within the area of the Riverfront Park Development site should follow the Soil Disturbance Contingency Plan for the site and may require coordination with the MDNR's Brownfields/Voluntary Cleanup Section due to activity and use limitations (AULs) as described in the Streetcar Federal Transit Authority Documented Categorical Exclusion Attachment E- Hazardous Materials.

A Secretary Of Interior qualified archaeologist will monitor excavations during construction activities of the bicycle/pedestrian structure, and immediately notify Federal Transit Authority and the Missouri State Historical Preservation Office of any unanticipated discoveries.

Neoprene Pads:

Neoprene bearing pads shall be 60 durometer except for Type N PTFE and shall be in accordance with Sec 716.

Neoprene bearing pads shall be 70 durometer for Type N PTFE.

Neoprene bearing pad manufacturer shall submit shop drawings before fabrication.

Excavation

All substructure excavation limits shall follow MoDOT Standard Specifications for Highway Construction - Section 206, and shall be 18" wider than the plan dimensions. The bottom of substructure excavation shall not extend below the plan elevation shown in these plans.

### Estimated Quantities for Slab on Concrete NU-Girder

| Item | | Total |
|---|---|---|
| Special Aggregate Concrete | cu. yard | 854.4 |
| Reinforcing Steel (Epoxy Coated) | pound | 188,840 |
| Prestressed Concrete Panels | sq. yard | 622.3 |

The table of Estimated Quantities for Slab on Concrete NU-Girder represents the quantities used by the Designer in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for prestressed panels, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

Contractor shall survey top of girder elevations at locations shown in the Theoretical Slab Haunching Diagrams. Elevations shall be submitted to the Engineer for acceptance 1 week prior to pouring any slab or diaphragm concrete.

The Estimated Quantities for Slab on Concrete NU-Girder are based on skewed precast prestressed end panels.

Special Aggregate Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.

Bridge deck surface may be finished with a vibratory screed.

Bridge deck surface shall be finished in accordance with Specification 703.3.5.5, except that finishing shall extend to within 6 inches of the inside face of the barrier.

SHEET NO. 81 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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

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PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

GENERAL NOTES AND QUANTITIES

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## Foundation Data

| Type | Design Data | Bent Number 1 | 2 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Bearing Pile | Pile Type and Size | HP 12x74[1] | – | – | – | – | – | HP 12x74[1] | HP 12x74[1] | HP 12x74[1] | HP 12x74[1] |
| | Number ea | 4 | – | – | – | – | – | 9 | 9 | 9 | 4 |
| | Approximate Length Per Each ft | 38 | – | – | – | – | – | 69 | 80 | 91 | 104 |
| | End Bearing Material | Limestone | – | – | – | – | – | Shale | Shale | Shale | Shale |
| | Pile Point Reinforcement | All | – | – | – | – | – | All | All | All | All |
| | Min. Galvanized Penetration (Elev.) ft | – | – | – | – | – | – | – | – | – | – |
| | Pile Driving Verification Method | DF[2] | – | – | – | – | – | DT[3] | DT[3] | DT[3] | DF[2] |
| | Resistance Factor | 0.4 | – | – | – | – | – | 0.5 | 0.5 | 0.5 | 0.4 |
| | Minimum Nominal Axial Compressive Resistance kip | 125 | – | – | – | – | – | 500 | 500 | 500 | – |
| Helical Pile | Shaft Type and Shaft Size | – | – | – | – | – | – | SS225[4] | SS225[4] | SS225[4] | – |
| | Helix Configuration | – | – | – | – | – | – | Quad-Helix[5] | Quad-Helix[5] | Quad-Helix[5] | – |
| | Number ea | – | – | – | – | – | – | 8 | 8 | 8 | – |
| | Bearing Material | – | – | – | – | – | – | Medium Dense Sand | Medium Dense Sand | Medium Dense Sand | – |
| | Installation Torque Rating ft-lb | – | – | – | – | – | – | 21,000 | 21,000 | 21,000 | – |
| | Minimum Nominal Uplift Resistance (Ea.) kip | – | – | – | – | – | – | 140 | 140 | 140 | – |
| Drilled Shaft | Number ea | – | 5 | 5 | 5 | 5 | 5 | – | – | – | – |
| | Diameter in | – | 36 | 36 | 36 | 36 | 36 | – | – | – | – |
| | End Bearing Material | – | Limestone | Shale | Shale | Shale | Shale | – | – | – | – |
| | Approximate Rock Socket Length/Pile ft | – | 6 | 9 | 9 | 8 | 8 | – | – | – | – |
| | Approximate Length per Pile ft | – | 27 | 43 | 49 | 68 | 70 | – | – | – | – |
| | Minimum Nominal Side Resistance ksf | – | 10 | 5 | ✳ | 5 | 5 | – | – | – | – |
| | Minimum Nominal Tip Resistance ksf | – | 150 | 45 | 45 | 45 | 45 | – | – | – | – |

## Add Alternate Foundation Data

| Bent Number 3 | 4 |
|---|---|
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| – | – |
| 5 | 5 |
| 36 | 36 |
| Limestone | Limestone |
| 6 | 6 |
| 27 | 27 |
| 10 | 10 |
| 150 | 150 |

1 HP Piles shall be drive to refusal to 240 blows/ft
2 DF = FHWA-Modified Gates Synamic Pile Formula
3 DT = Dynamic Testing
4 SS225= 2¼ inch Solid Round Cornered-Square Steel Shaft
5 Quad-helix configurations with helix diameters of 10"-12"-14"-14"

Load Bearing Piles:

$$\text{Minimum Nominal Axial Compressive Resistance} = \frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$$

Rock Sockets:

$$\text{Minimum Nominal Axial Compressive Resistance (Side Resistance + Tip Resistance)} = \frac{\text{Maximum Factored Loads}}{\text{Resistance Factors}}$$

Excavation and Backfill:

Missouri River elevation shall be monitored while substructure excavation procedures are ongoing and before excavation backfill has been completed. If the Missouri River elevation reaches a height within 10 ft. of the bottom of the excavation, then the emergency procedure plan to backfill the excavation shall be followed and shall be completed within 12 hours of the river rising to maintain the stability of the adjacent levee. All excavation processes and backfill operations shall be in compliance with current OSHA requirements.

Detailed PRY 3/2023
Checked SAB 3/2023

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SHEET NO. 82 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 A PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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

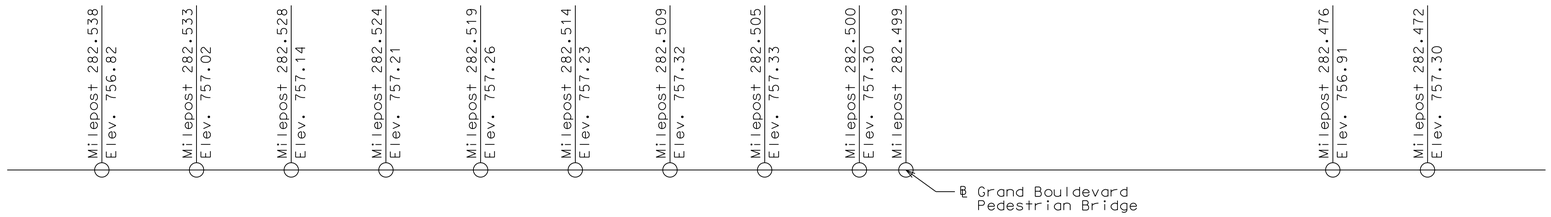
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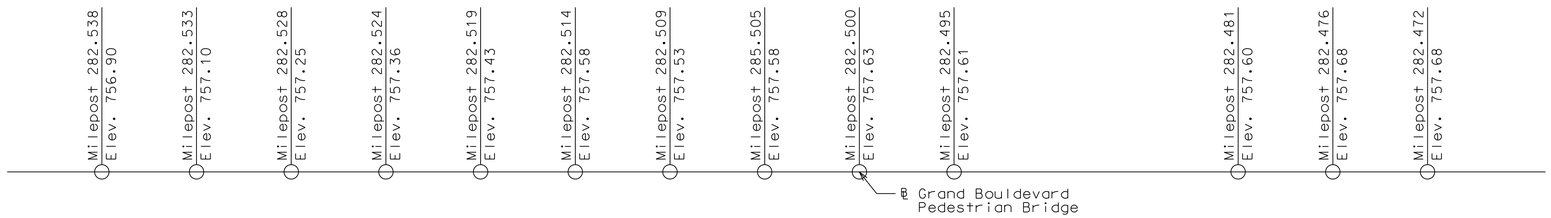
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KANSAS CITY, MO 64106
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300 WYANDOTTE STREET
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KANSAS CITY, MO 64105

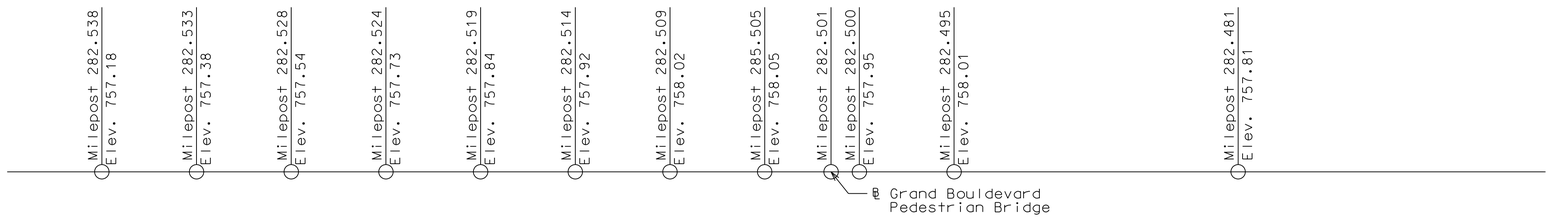
**FOUNDATION DATA TABLE**



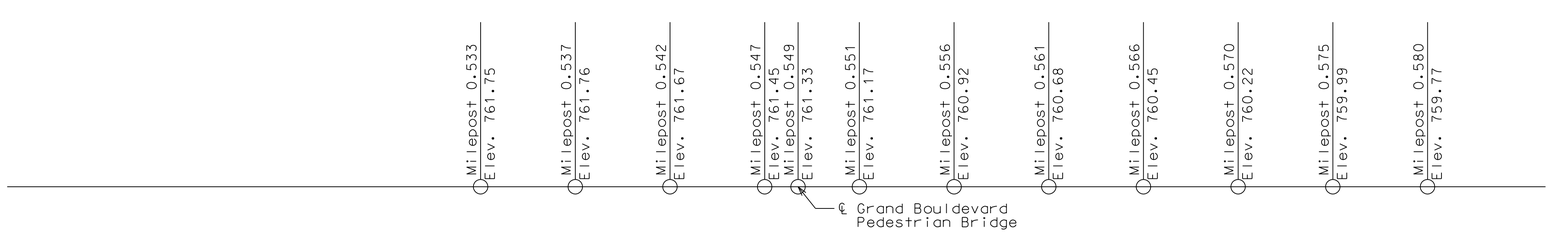

UNION PACIFIC RAILROAD PROFILE GRADE
(North Mainline)




UNION PACIFIC RAILROAD PROFILE GRADE
(South Mainline)




UNION PACIFIC RAILROAD PROFILE GRADE
(Siding)




BNSF RAILROAD PROFILE GRADE
(Mainline)

# RAILROAD PROFILE GRADE

Note: This drawing is not to scale. Follow dimensions.

OVERHEAD STRUCTURE CONSTRUCTION NOTES

1. The proposed project shall not increase the quantity and/or characteristics of the flow in the Railroad's ditches and/or drainage structures.

2. The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the Railroad prior to construction.

3. The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad.

4. All shoring systems that impact the Railroad's operations and/or supports the Railroad's embankment shall be designed and constructed per current Railroad Guidelines for Temporary Shoring. The method of shoring permissible is dependent upon the availability of track windows, if any.

5. All demolitions within the Railroad's right-of-way and/or demolition that may impact the Railroad's tracks or operations shall be in compliance with the Railroad's Demolition Guidelines. Demolition activities shall be designed to cause no interruption to the Railroad's operation, enabling the track(s) to remain open to traffic per the Railroad's requirements. The method of demolition permissible is dependent upon the availability of track windows, if any.

6. Erection over the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operation, enabling the track(s) to remain open to traffic per the Railroad's requirements. The method of erection permissible is dependent upon the availability of track windows, if any.

7. Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment.

8. False-work clearances shall comply with the Railroad Minimum Construction Clearances.

9. All permanent clearances shall be verified before project closing. All discrepancies shall be brought to the attention of the Railroad.

10. Call Before You Dig. Prior to excavation, disrupting, or working on the Railroad property the contractor shall locate and protect UPRR facilities by calling the UPRR "Call Before You Dig"(CBYD) phone number: 1-800-336-9193. For BNSF Signal/Telecommunications Engineering, "Call Before You Dig", call 1-800-533-2891.

Milepost for proposed BNSF railroad crossing is 0.542.

Minimum vertical clearance from Top of Rail for BNSF cooridor to proposed low structure is 24′-3 13/16″.

Milepost for proposed UP railroad crossing is 282.50.

Minimum vertical clearance from Top of Rail for UPRR cooridor to proposed low structure is 26′-10 1/2″.

Detailed PRY 5/2022
Checked JEJ 5/2022

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SHEET NO. 83 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

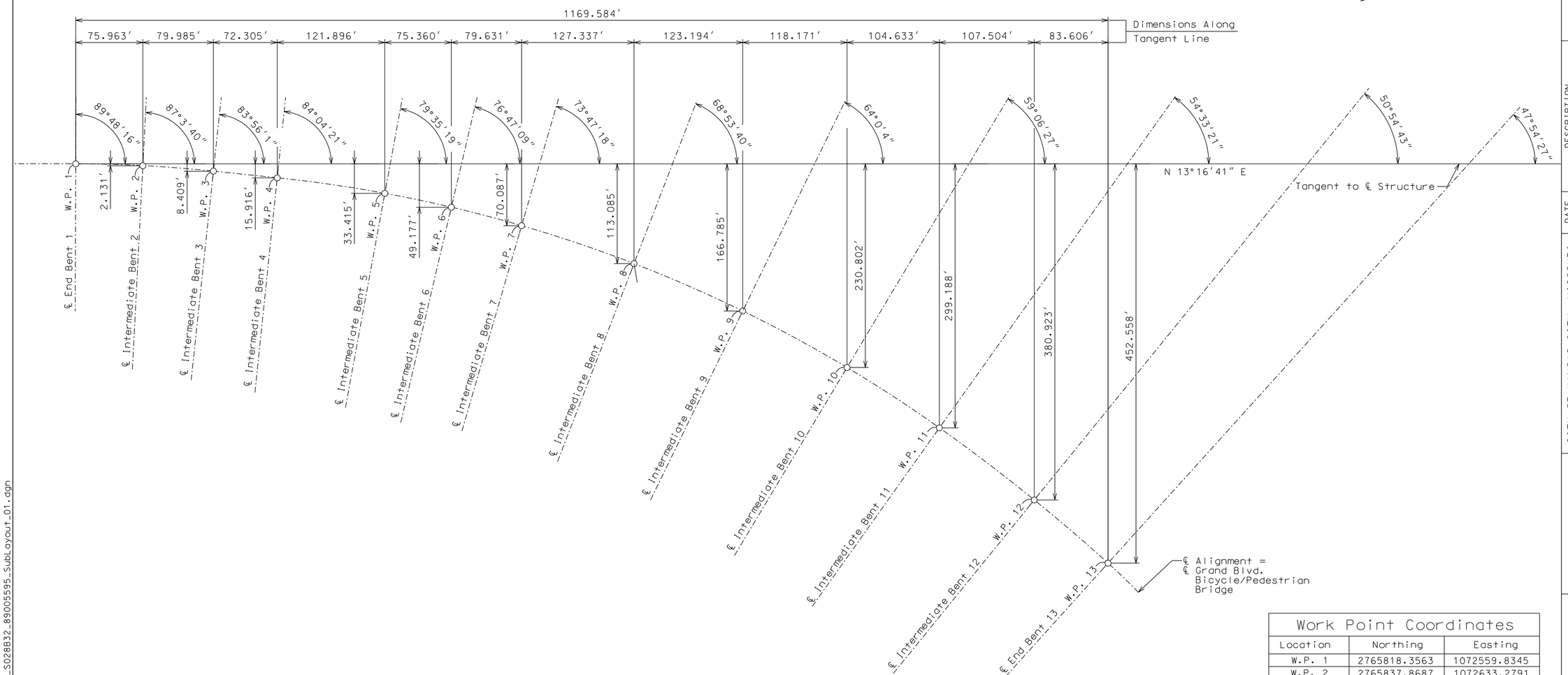
PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

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KANSAS CITY, MO 64105

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SUBSTRUCTURE LAYOUT

| Work Point Coordinates | | |
|---|---|---|
| Location | Northing | Easting |
| W.P. 1 | 2765818.3563 | 1072559.8345 |
| W.P. 2 | 2765837.8687 | 1072633.2791 |
| W.P. 3 | 2765862.3493 | 1072709.6842 |
| W.P. 4 | 2765886.2615 | 1072778.3284 |
| W.P. 5 | 2765931.2910 | 1072892.9494 |
| W.P. 6 | 2765963.9392 | 1072962.6745 |
| W.P. 7 | 2766002.5799 | 1073035.3743 |
| W.P. 8 | 2766073.6753 | 1073149.4313 |
| W.P. 9 | 2766154.2345 | 1073256.9984 |
| W.P. 10 | 2766243.6814 | 1073357.3072 |
| W.P. 11 | 2766334.2722 | 1073443.4368 |
| W.P. 12 | 2766438.5128 | 1073529.2949 |
| W.P. 13 | 2766527.4353 | 1073594.2134 |

Detailed PRY 7/2022
Checked SAB 3/2023

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SHEET NO. 84 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

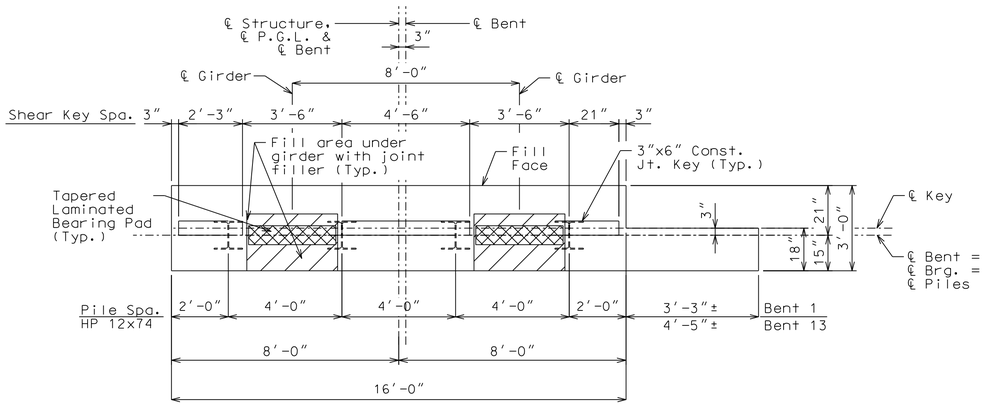
| DATE | DESCRIPTION |
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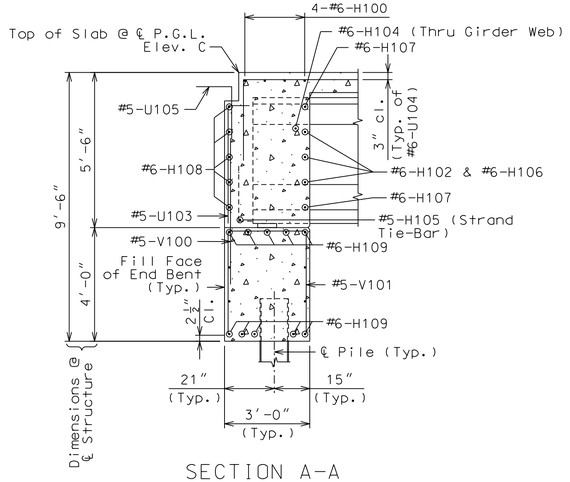
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SUBSTRUCTURE LAYOUT**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

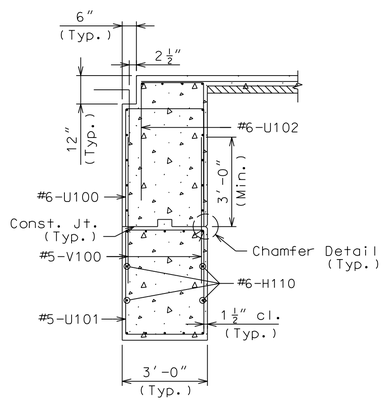



PLAN OF BEAM



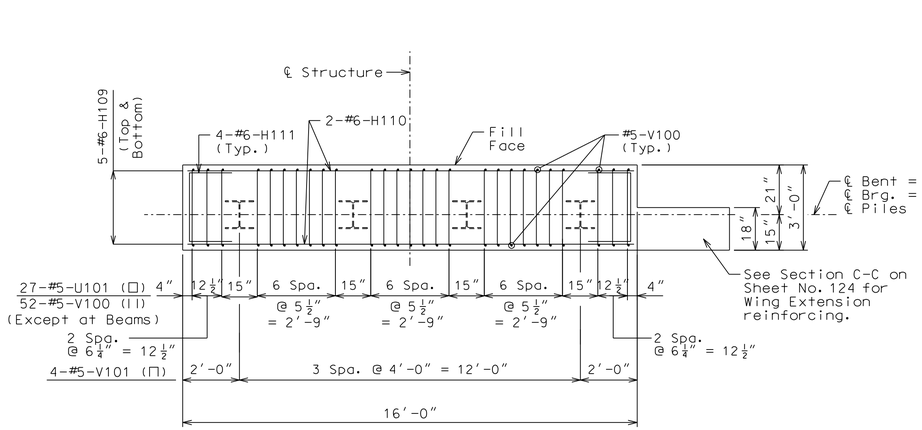

SECTION A-A

See Sheet No. 124 for Section Location

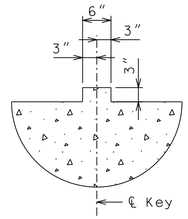



SECTION B-B

See Sheet No. 124 for Section Location




PLAN SHOWING BEAM REINFORCEMENT




TYPICAL SECTION THRU KEY



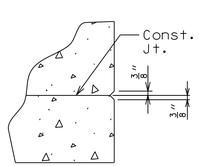

LAMINATED NEOPRENE BEARING PAD (TAPERED)

(End Bent 1, 2 Req'd.)

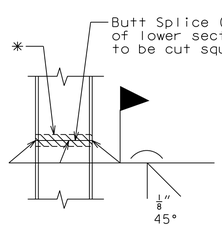



LAMINATED NEOPRENE BEARING PAD (TAPERED)

(End Bent 13, 2 Req'd.)




CHAMFER DETAIL




STEEL PILE SPLICE

(If required)

* Galvanizing material shall be omitted or removed 1 inch clear of weld locations. See special provisions.

| Estimated Quantities | | | |
|---|---|---|---|
| Item | | Quantity | |
| | | Bent No. 1 | Bent No. 13 |
| Structural Steel Piles (12 in.) | linear foot | 168 | 432 |
| Pile Point Reinforcement | each | 4 | 4 |
| Class B-1 Concrete (Substructure) | cu. yard | 7.7 | 7.9 |
| Reinforcing Steel (Bridges) | pound | 1,489 | 1,457 |
| | | | |

Notes:

These quantities are included in the estimated quantities table on Sheet No. 81.

All concrete in the end bent above top of bearing beam and below top of slab shall be Special Aggregate Concrete, concrete and reinforcing is included in the bid item "Slab on Concrete NU-Girder".

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".

General Notes:

Work this sheet with Sheet No. 124.

EF = Each Face
FF = Far Face
NF = Near Face

Detailed PRY 11/2022
Checked SAB 11/2022

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 85 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

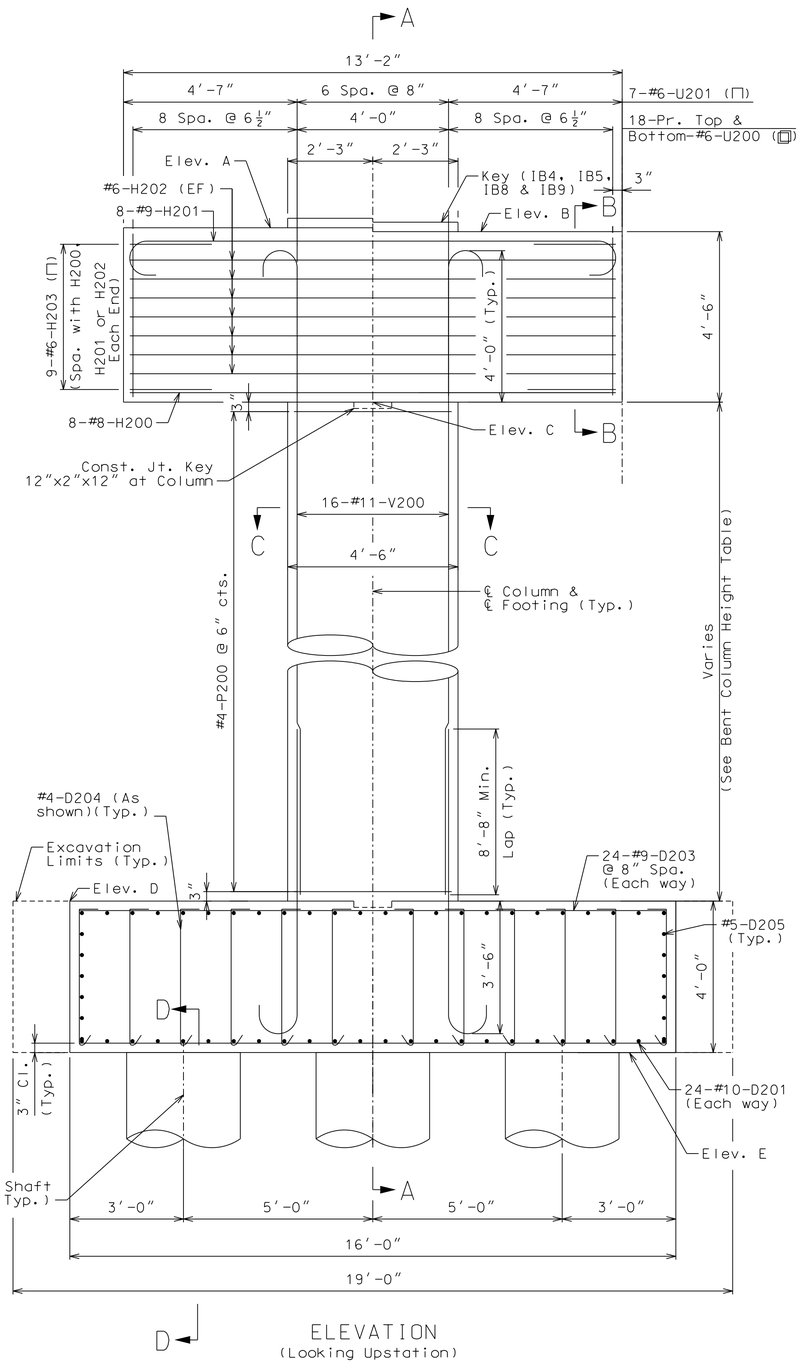
| DATE | DESCRIPTION |
|---|---|
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(816) 513-2739

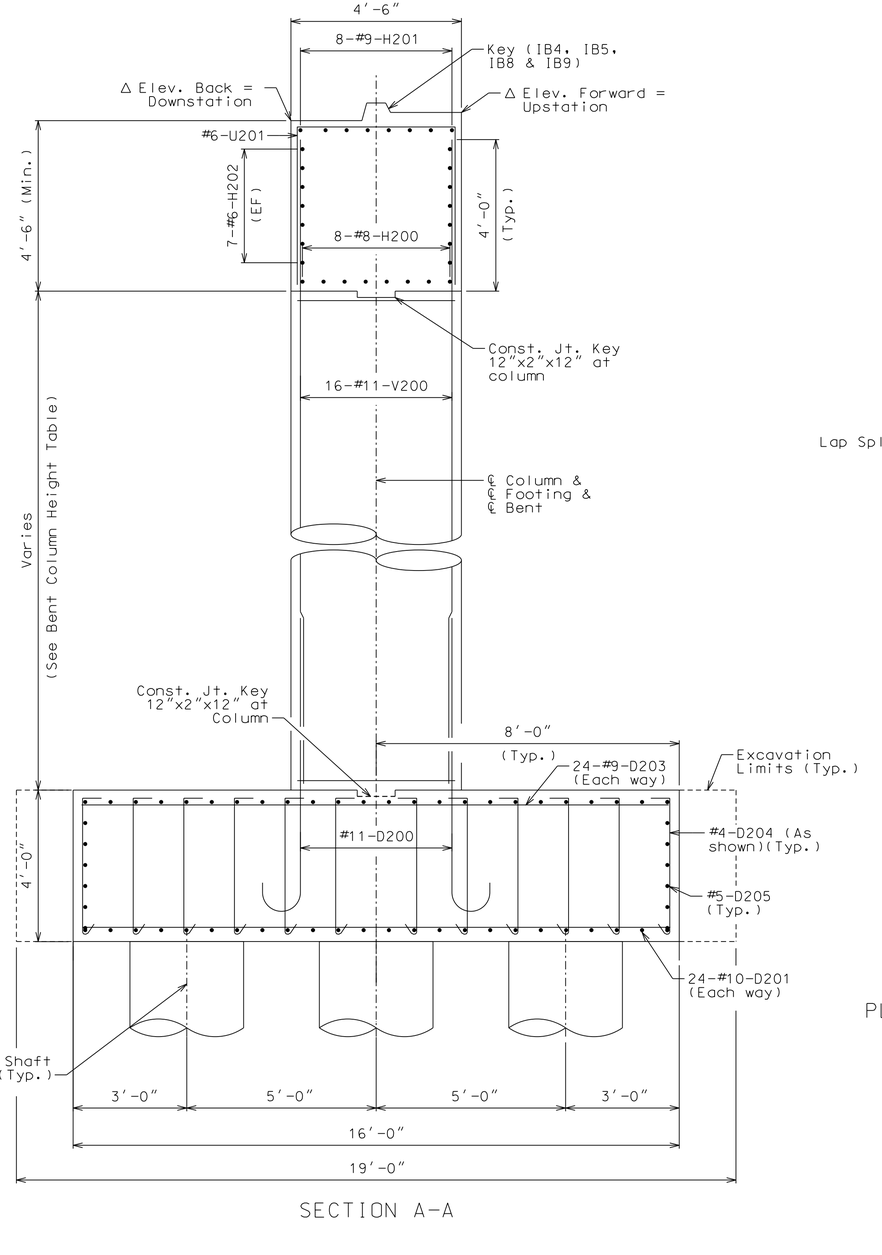
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

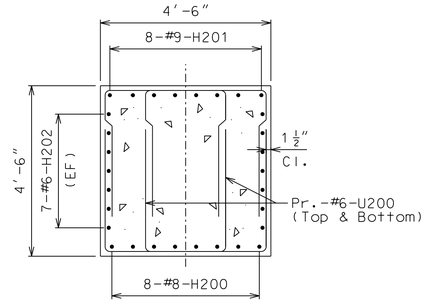
**DETAILS OF END BENT NO. 1 & 13**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

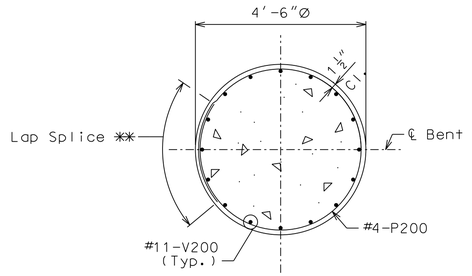



Δ - See elevations in table on Sheet No.87



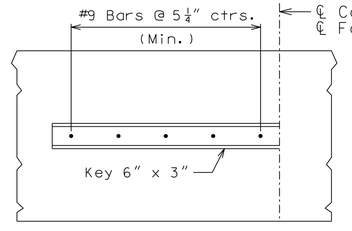




SECTION B-B

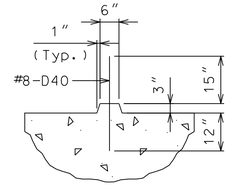



** Minimum lap 2′-9″ (Stagger adjacent bar splices)

SECTION C-C
(Except Int. Bents 3, 4 & 7)
(See Detail of Existing Intermediate Bent sheets for Int. Bents 3, 4 & 7)




PLAN OF BEAM SHOWING SHEAR KEY




SECTION THRU KEY
Adjust shear key height to maintain 3″ Min. above highest step.

NOTES:
See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

NOTES:
For details of Pile Splice, see Sheet No. 85 .
For Substructure Quantity Table, see Sheet No. 81 .
For bearing pad details, see Sheet Nos. 96 & 97 .
For elevations, see Sheet No. 87 .
For Section D-D, see Sheet No. 87 .

NOTES:
EF = Each Face
FF = Far Face
NF = Near Face

# DETAILS OF INTERMEDIATE BENT NO. 2, 6, 8 & 9

(Bent 5 & 11 footing reinforcing is similar. Footings are rotated. See Sheet No. 90)

Note: This drawing is not to scale. Follow dimensions.

Detailed QYF 7/2022
Checked SAB 11/2022

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 86 | 187 |

DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — A — 11/7/24

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

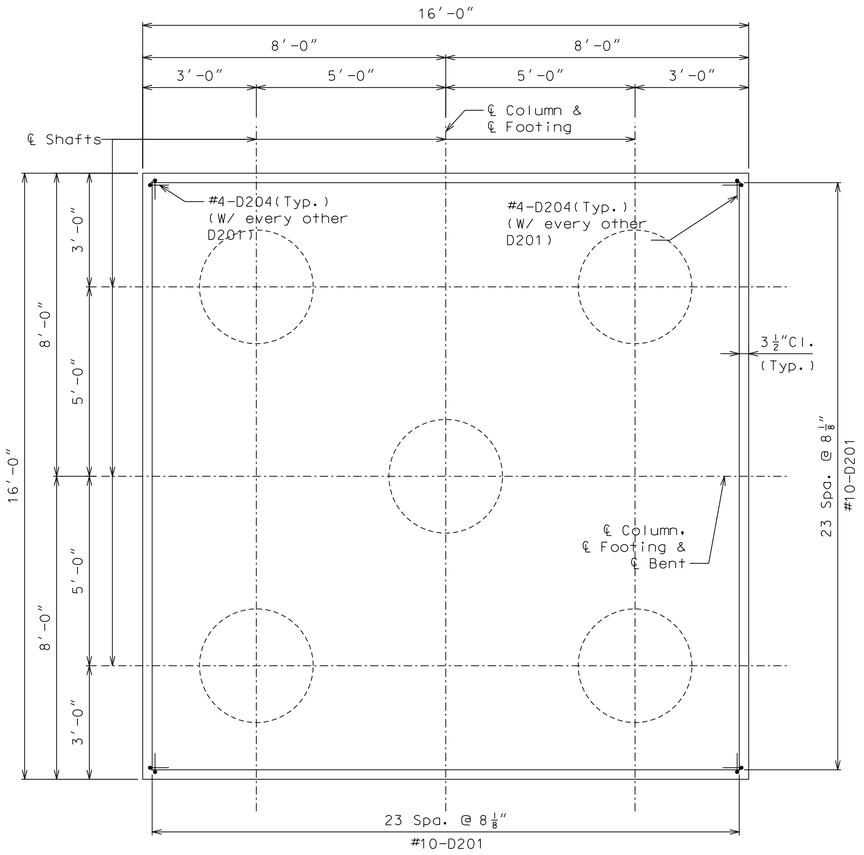
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**DETAILS OF INTERMEDIATE BENT NO. 2, 6, 8 & 9**

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## PLAN OF FOOTING

(Bottom Reinforcing)
Field adjust D201 to miss shaft reinforcing

| Bent No. | Column Height (ft-in) |
|---|---|
| 2 | 13′-0″ |
| △ 3 | 18′-9 13/16″ |
| △ 4 | 16′-5½″ |
| 5 | 27′-0″ |
| 6 | 26′-0″ |
| △ 7 | 32′-1 3/16″ |
| 8 | 27′-6″ |
| 9 | 29′-0″ |
| 10 | 27′-0″ |
| 11 | 20′-0″ |
| 12 | 13′-0″ |

| Bent No. | Elev. A Back | Elev. A Forward | Elev. B Back | Elev. B Forward | Elev. C | Elev. D | Elev. E | Elev. F | Elev. G |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 783.66 | 783.66 | 783.53 | 783.53 | 779.06 | 766.06 | 762.06 | 741.30 | 735.30 |
| 3 | 784.51 | 784.47 | 784.39 | 784.34 | 779.87 | 761.05 | 756.05 | 734.50 | 728.50 |
| 4 | 785.01 | 784.92 | 784.88 | 784.80 | 780.32 | 763.86 | 759.36 | 740.00 | 734.00 |
| 5 | 785.36 | 785.48 | 785.23 | 785.35 | 780.75 | 753.75 | 749.75 | 715.30 | 706.30 |
| 6 | 785.47 | 785.33 | 785.34 | 785.21 | 780.73 | 754.73 | 750.73 | 709.30 | 700.30 |
| 7 | 785.72 | 785.61 | 785.59 | 785.48 | 781.01 | 748.91 | 744.41 | – | – |
| 8 | 786.08 | 786.04 | 785.95 | 785.91 | 781.44 | 753.94 | 749.94 | 688.80 | 680.80 |
| 9 | 786.83 | 786.79 | 786.71 | 786.66 | 782.16 | 753.16 | 749.16 | 687.30 | 679.30 |
| 10 | 787.26 | 787.30 | 787.13 | 787.18 | 782.66 | 755.66 | 751.16 | 680.30 | – |
| 11 | 784.32 | 784.19 | 784.19 | 784.06 | 779.58 | 759.58 | 755.08 | 672.80 | – |
| 12 | 778.11 | 778.11 | 777.98 | 777.98 | 773.48 | 760.48 | 755.98 | 663.30 | – |

△ Bents 3,4 & 7 Elevations are based off of Existing Plans and may vary in the field.

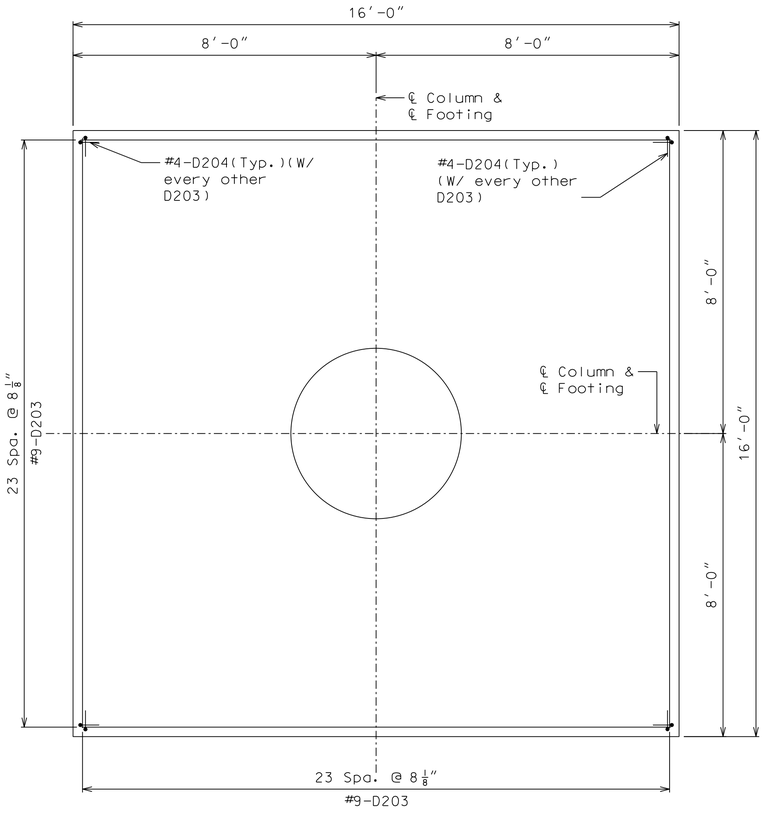
| Bent No. | Elev. H | Pile Tip Elev. |
|---|---|---|
| 10 | 753.16 | 677.30 |
| 11 | 757.08 | 669.80 |
| 12 | 757.98 | 660.30 |

Excavation

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

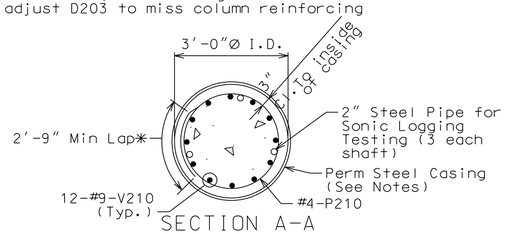
| Bent No. | Drilled Shaft Length (ft-in) | Min. Rock Socket Length (ft) |
|---|---|---|
| 2 | 24′-9″ | 6 |
| ✻✻ 3 | 26′-7″ | 6 |
| ✻✻ 4 | 23′-10″ | 6 |
| 5 | 38′-5″ | 9 |
| 6 | 45′-5″ | 9 |
| 8 | 65′-2″ | 8 |
| 9 | 65′-11″ | 8 |

✻✻ - Drilled Shaft and Rock Socket lengths only necessary if Non-Destructive Testing (noted on Sht.88-89) is determined to be inadequate. This additional work shall be included in the Add Alternate bid.




## PLAN OF FOOTING

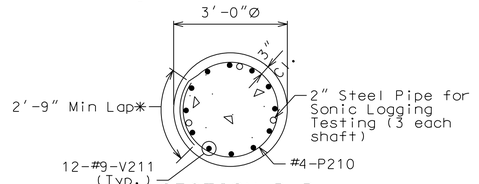
(Top Reinforcing)
Field adjust D203 to miss column reinforcing




SECTION A-A
(DRILLED SHAFT)

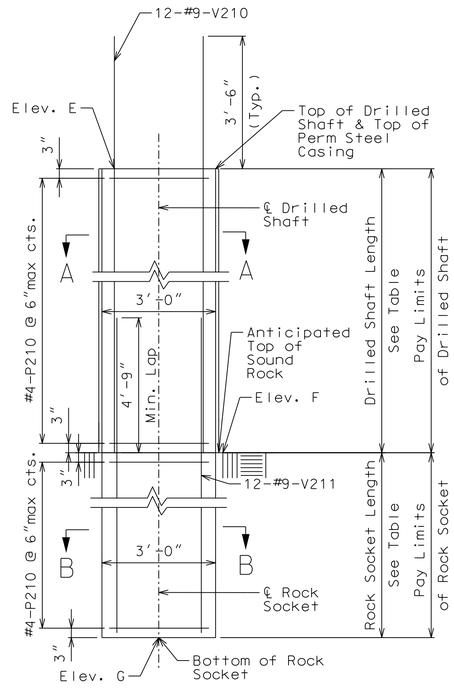
NOTES:
Drilled Shaft longer than 80ft shall have a min permanent casing thickness of ½inch.

Unless shafts can be constructed without casing or using temporary casing, drilled shafts shall have permanent casing.




SECTION B-B
(ROCK SOCKET)

✻ Stagger adjacent bar splices




SECTION D-D

Detailed QYF 7/2022
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 87 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

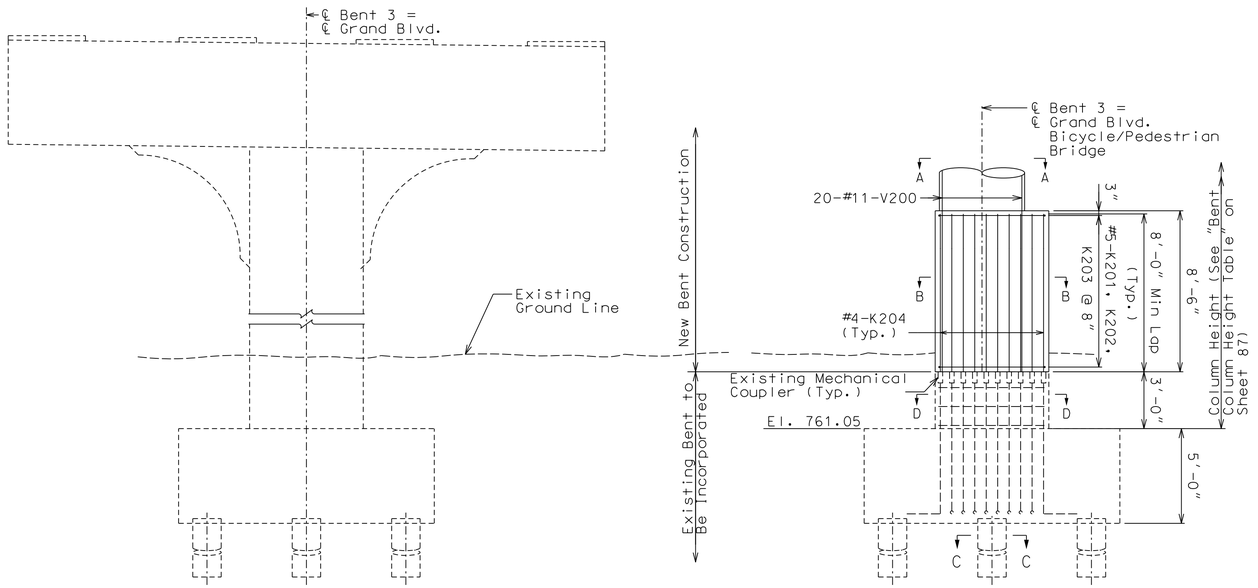
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

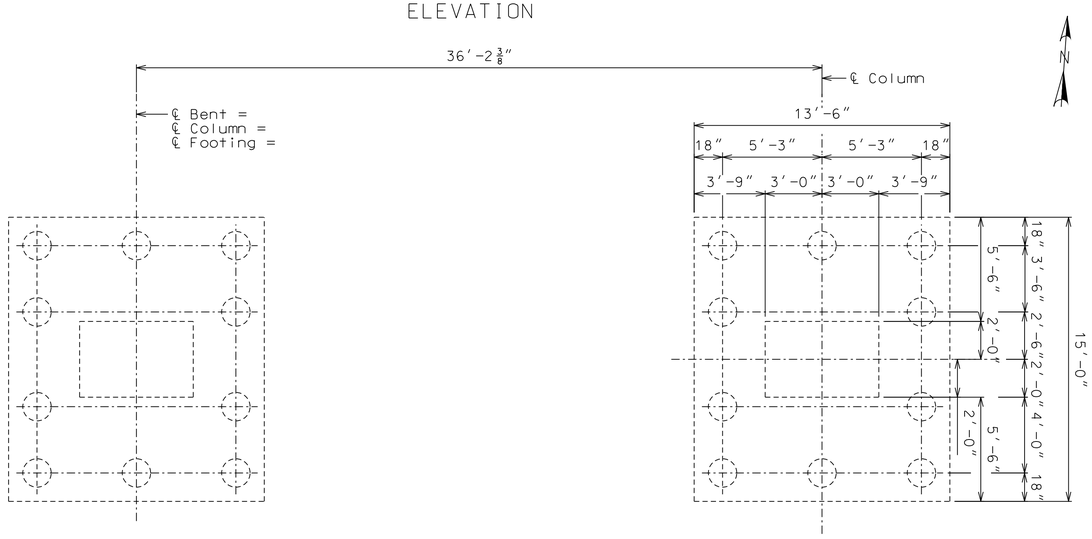
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**DETAILS OF INTERMEDIATE BENT NO. 2, 5, 6, 8, & 9**

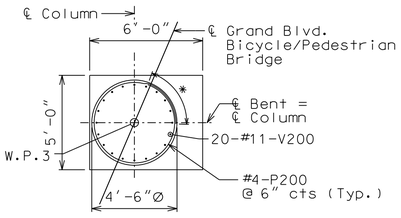
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




ELEVATION

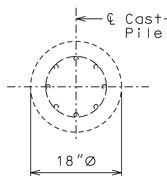



FOOTING PLAN

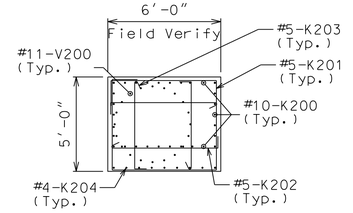



SECTION A-A

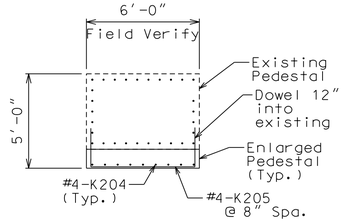
* Minimum Lap 2'-9"
(Stagger adjacent bar splices) (See Intermediate Bent sheet for Bent Cap details)




SECTION C-C




SECTION B-B




SECTION D-D

NOTE TO CONTRACTOR:
Reuse of this existing foundation is contingent upon Pile Integrity Testing verification that existing concrete drilled shafts are embedded in competent bedrock. If the additional testing shows adequate shaft lengths, then this sheet shall be worked with Sheet Nos. 86- 87. If testing shows inadequate shaft lengths, the existing footing is to be removed and reconstructed as shown on Sheet Nos. 86- 87.

NOTES:

Drill & Grout #4 bar emebedment: 12" min.

Contractor shall verify all dimensions in field before ordering materials in coordination with existing footing construction.

Expected Class 1 Excavation limits assumed to expose 7'-6" diameter area around existing column extension.

Contractor shall chip and uncover Existing Mechanical Couplers for K204 bars before ordering reinforcing.

Cost to excavate the north, east and south faces of the foundations to allow instruments for the testing to be attached/embedded to the drilled shafts. The Construction Contractor work for excavation and personnel protection in the exaction, and other work needed will be a separate Lump Sum under the bid item "Excavation Preparation for Pile Integrity Testing".

The Testing Firm's work for Pile Integrity Testing will include all labor, materials and expenses (travel, lodging and per diem) to mobilize the site. The cost will be a separate Lump Sum under the bid item "Pile Integrity Testing".

The Testing Firm's work for Seismic Refraction will include all labor, materials and expenses (lodging and per diem) to mobilize the site. Travel to the site is anticipated to be included in the lump sum for Pile Integrity Testing. The cost will be a separate Lump Sum under bid item "Seismic Refraction".

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

# EXISTING FOOTING DETAILS INTERMEDIATE BENT NO. 3

Detailed QYF 8/2022
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 88 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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

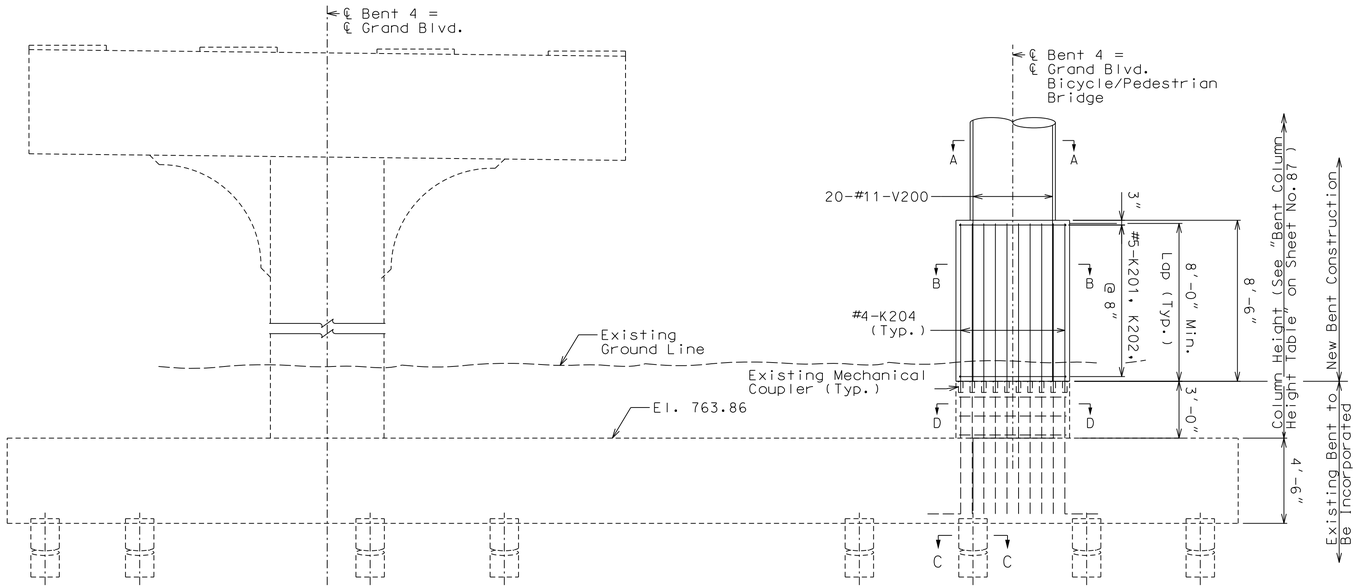
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

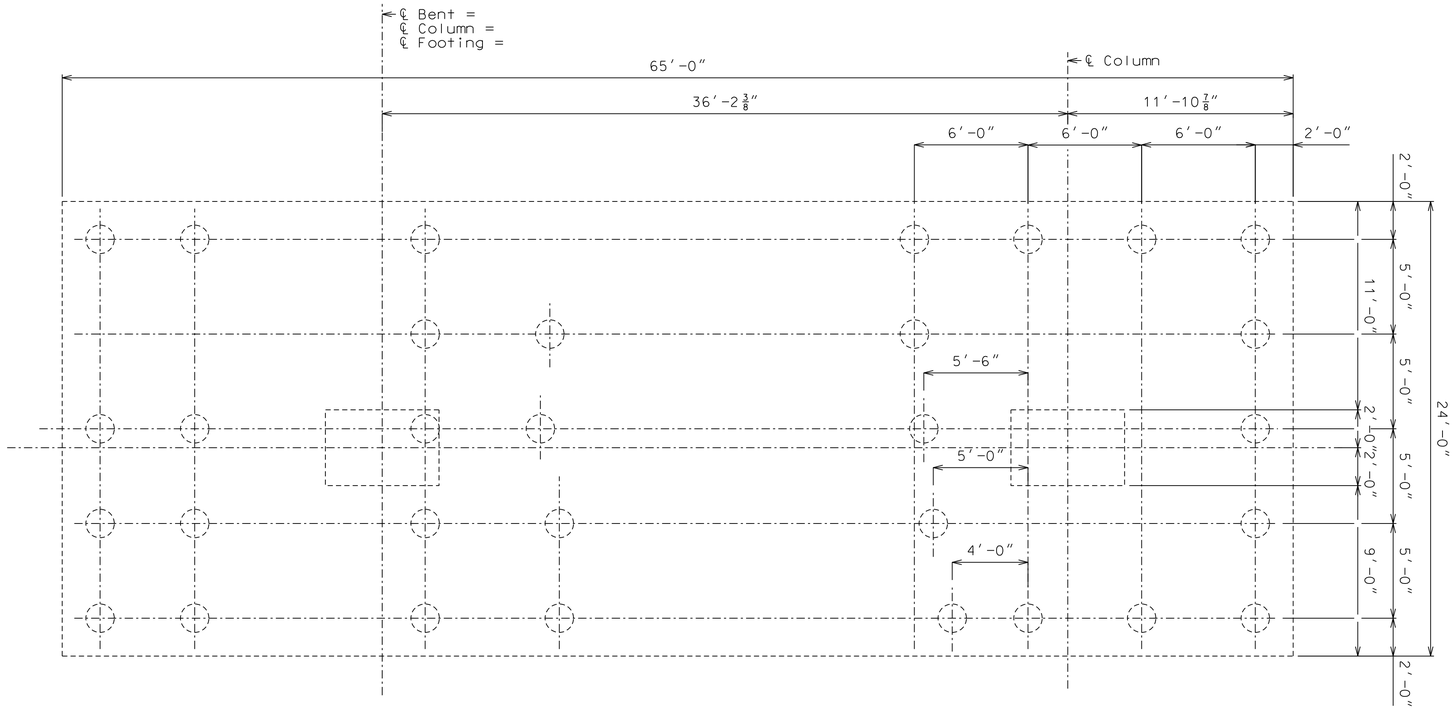
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

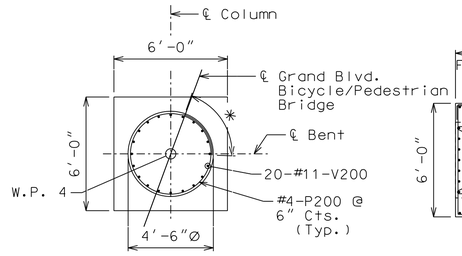
**EXISTING FOOTING RETROFIT DETAILS**
**INTERMEDIATE BENT 3**




ELEVATION

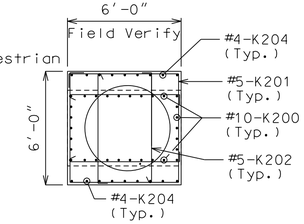



FOOTING PLAN

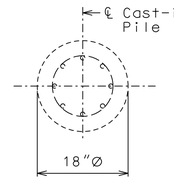



SECTION A-A

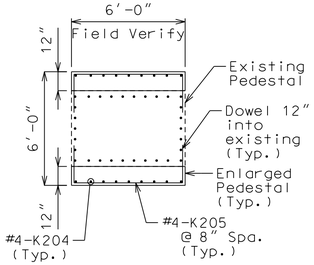
* Minimum Lap 2'-9" (Stagger adjacent bar splices) (See Intermediate Bent sheet for Bent Cap details)




SECTION B-B




SECTION C-C




SECTION D-D

N

NOTE TO CONTRACTOR:
Reuse of this existing foundation is contingent upon Pile Integrity Testing verification that existing concrete drilled shafts are embedded in competent bedrock. If the additional testing shows adequate shaft lengths, then this sheet shall be worked with Sheet Nos. 86- 87. If testing shows inadequate shaft lengths, the existing footing is to be removed and reconstructed as shown on Sheet Nos. 86- 87.

NOTES:

Drill & Grout #4 bar emebedment: 12" min.

Contractor shall verify all dimensions in field before ordering materials in coordination with existing footing construction.

Expected Class 1 Excavation limits assumed to expose 7'-6" diameter area around existing column extension.

Contractor shall chip and uncover Existing Mechanical Couplers for K204 bars before ordering reinforcing.

Cost to excavate the north, east and south faces of the foundations to allow instruments for the testing to be attached/embedded to the drilled shafts. The Construction Contractor work for excavation and personnel protection in the exaction, and other work needed will be a separate Lump Sum under the bid item "Excavation Preparation for Pile Integrity Testing".

The Testing Firm's work for Pile Integrity Testing will include all labor, materials and expenses (travel, lodging and per diem) to mobilize the site. The cost will be a separate Lump Sum under the bid item "Pile Integrity Testing".

The Testing Firm's work for Seismic Refraction will include all labor, materials and expenses (lodging and per diem) to mobilize the site. Travel to the site is anticipated to be included in the lump sum for Pile Integrity Testing. The cost will be a separate Lump Sum under bid item "Seismic Refraction".

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

# EXISTING FOOTING DETAILS INTERMEDIATE BENT NO. 4

Note: This drawing is not to scale. Follow dimensions.

Detailed QYF 8/2022
Checked SAB 3/2023

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User:USJF744954
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 89 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
STATE OF MISSOURI
11/7/24

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

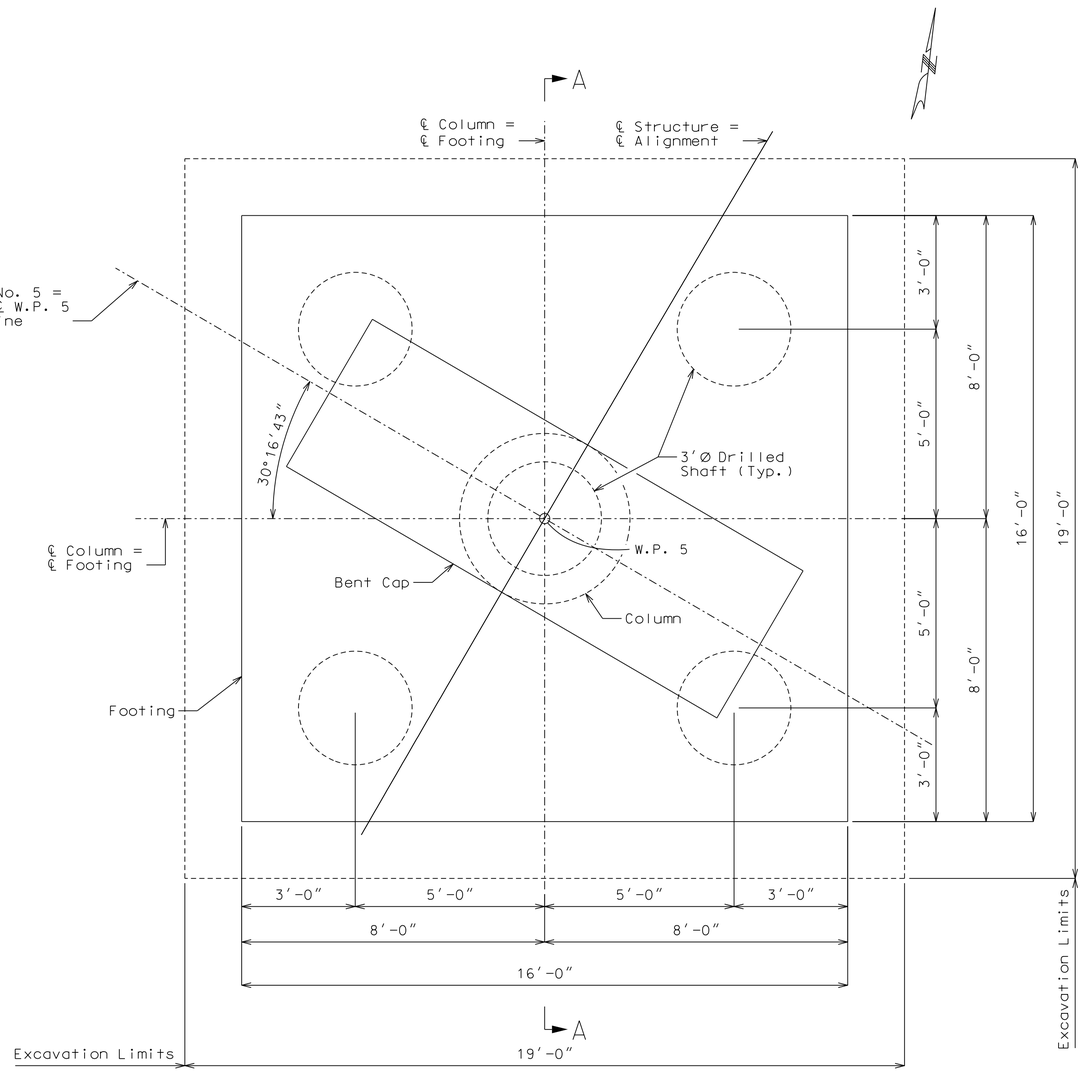
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

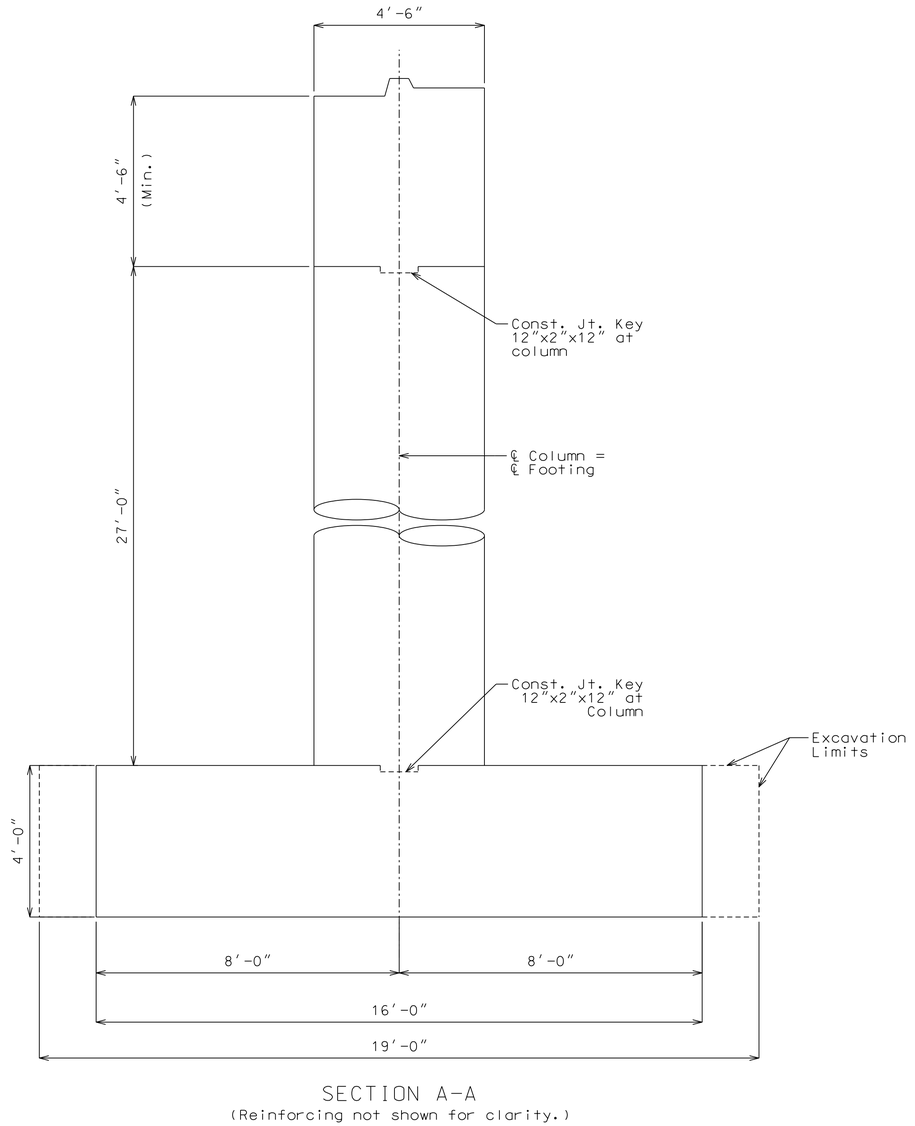
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**EXISTING FOOTING RETROFIT DETAILS**
**INTERMEDIATE BENT 4**




PLAN




SECTION A-A
(Reinforcing not shown for clarity.)

Excavation

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

All dimensions are out to out.

Concrete for intermediate bent footings shall be Class B-1.

For location of Substructure Layout and Working Points, see Sheet No. 84.

For Cap, Column, and Footing reinforcing details, see Sheet No. 86 & 87.

For additional Bent details, see Sheet No. 87.

# INTERMEDIATE BENT NO. 5 DETAILS

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 90 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
STATE OF MISSOURI
11/13/24

| DATE | DESCRIPTION |
|---|---|
| . | . |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

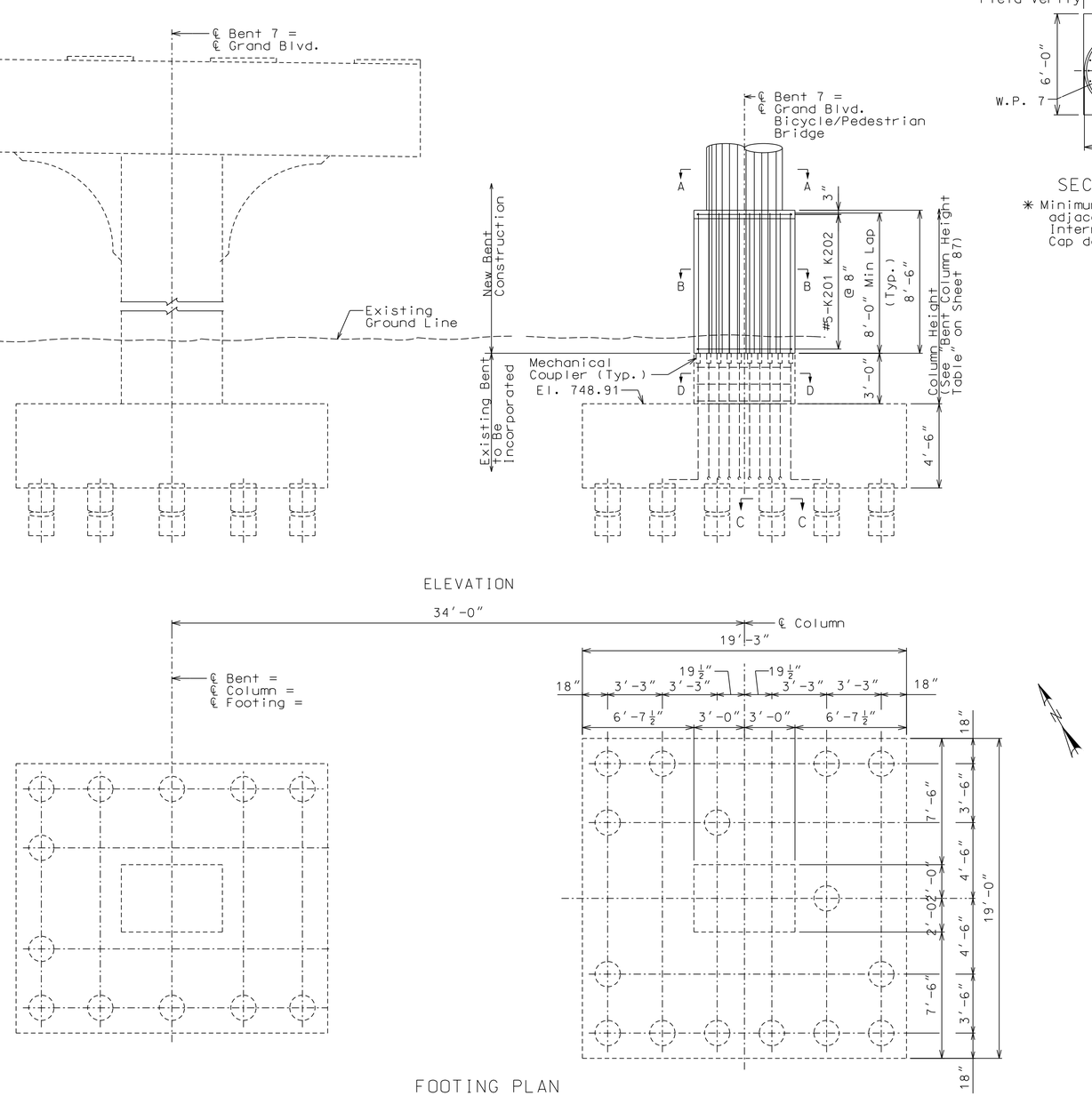

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

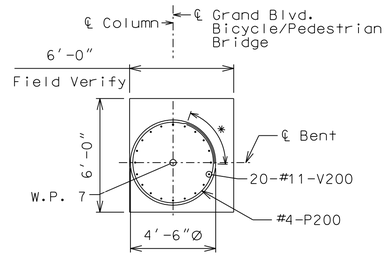

**INTERMEDIATE BENT NO. 5 DETAILS**


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ELEVATION

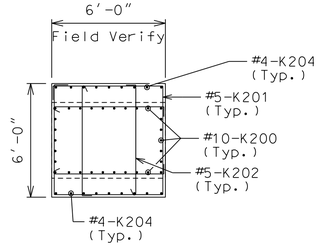



FOOTING PLAN

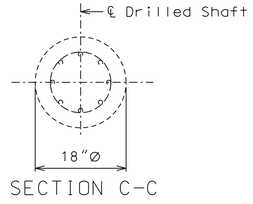



SECTION A-A

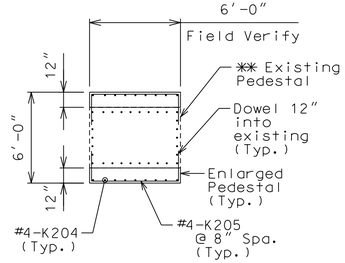
✳ Minimum Lap 2'-9" (Stagger adjacent bar splices) (See Intermediate Bent for Bent Cap details)




SECTION B-B




SECTION C-C




SECTION D-D

✳✳ Field verify before construction, notify Engineer of Record if the difference is greater than 2".

NOTE TO CONTRACTOR:
For elevations, column/dowel reinforcing, and bent bap reinforcing not shown on this sheet, work this sheet with Sheet Nos. 86 - 87 details above the footing.

NOTES:

Drill & Grout #4 bar emebedment:
12" min.

Contractor shall verify all dimensions in field before ordering materials in coordination with existing footing construction.

Expected Class 1 Excavation limits assumed to expose 7'-6" diameter area around existing column extension.

For location of Substructure Layout and Working Points, see Sheet No. 84.

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

# EXISTING FOOTING DETAILS INTERMEDIATE BENT NO. 7

Detailed QYF 8/2022
Checked sab 3/2023

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 91 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

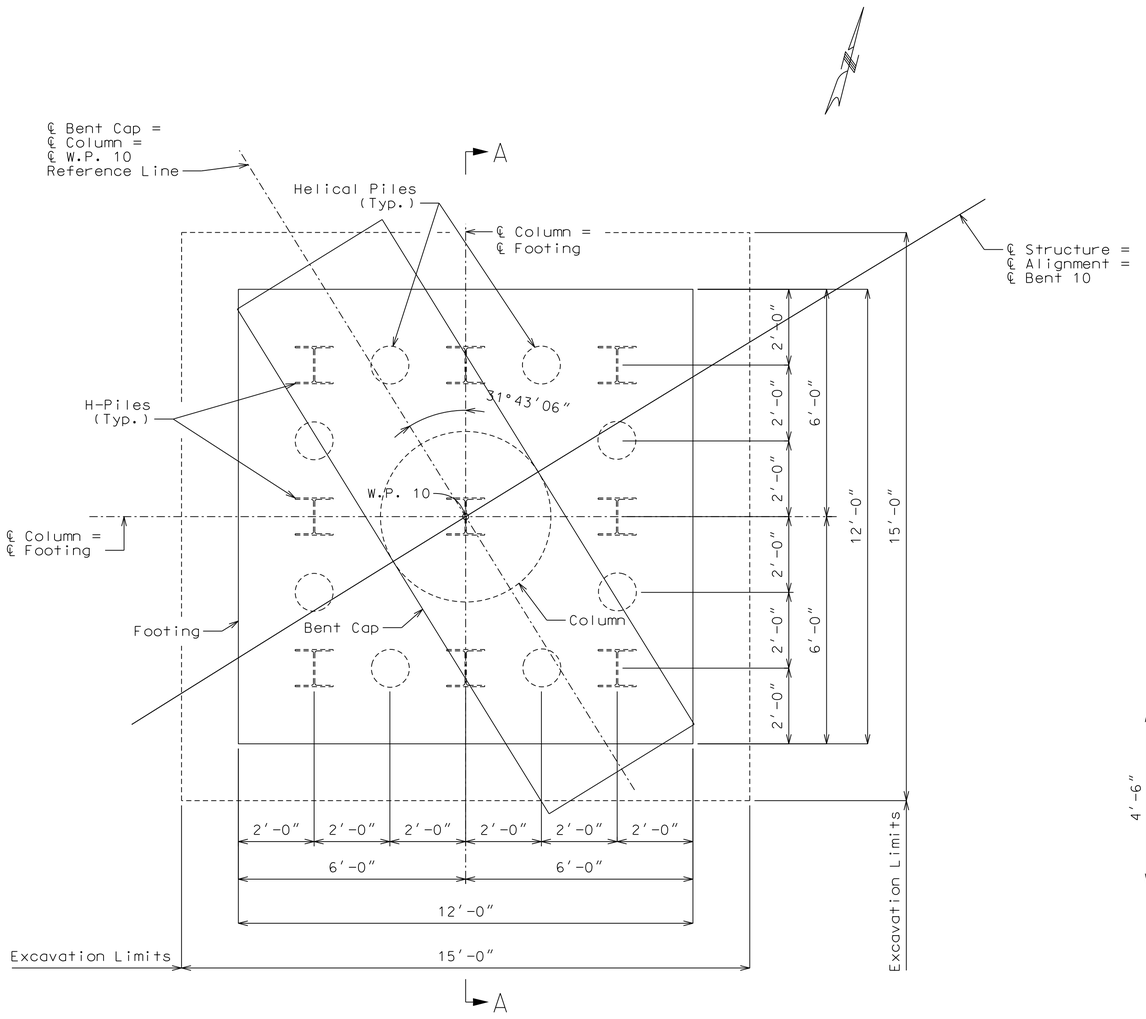
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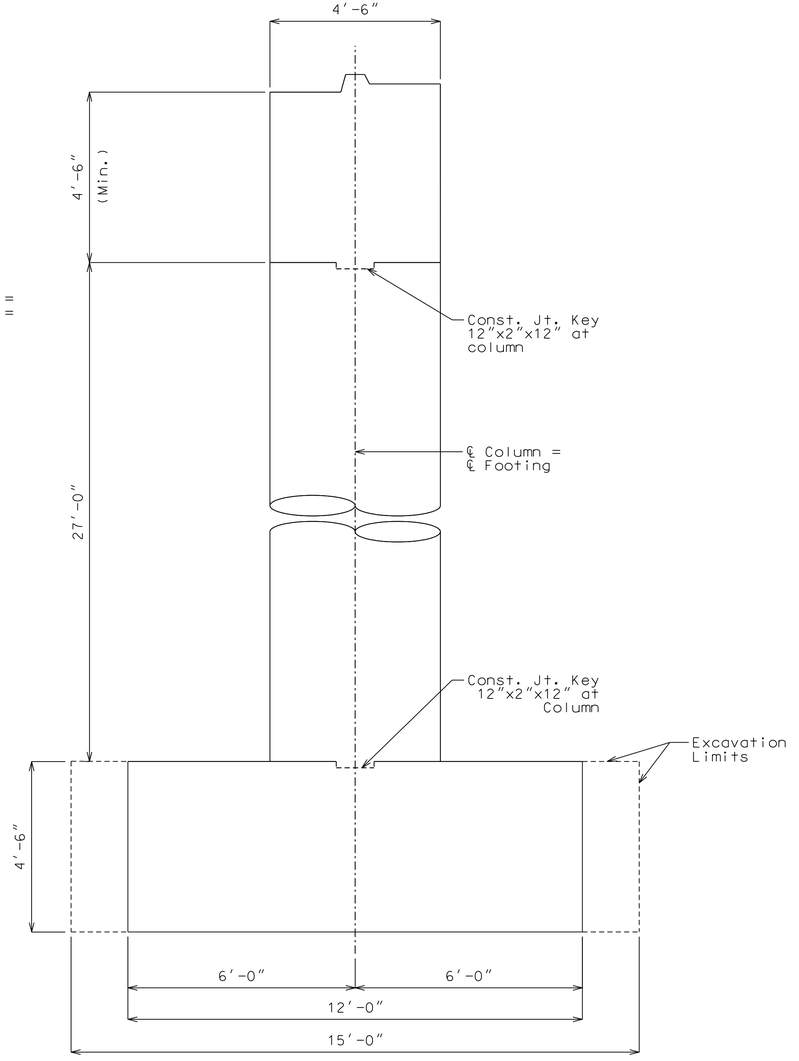
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**EXISTING FOOTING DETAILS INTERMEDIATE BENT 7**




SECTION A-A
(Reinforcing not shown for clarity.)

Excavation

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

All dimensions are out to out.

Concrete for intermediate bent footings shall be Class B-1.

For location of Substructure Layout and Working Points, see Sheet No. 84.

For Bent Cap and Column reinforcing details, see Sheet No. 86.

For Footing reinforcing details, see Sheet No. 94.

For additional Bent details, see Sheet No. 87.

# INTERMEDIATE BENT NO. 10 DETAILS

Note: This drawing is not to scale. Follow dimensions.

Detailed QYF 7/2022
Checked SAB 3/2023

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SHEET NO. 92 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
STATE OF MISSOURI
11/13/24

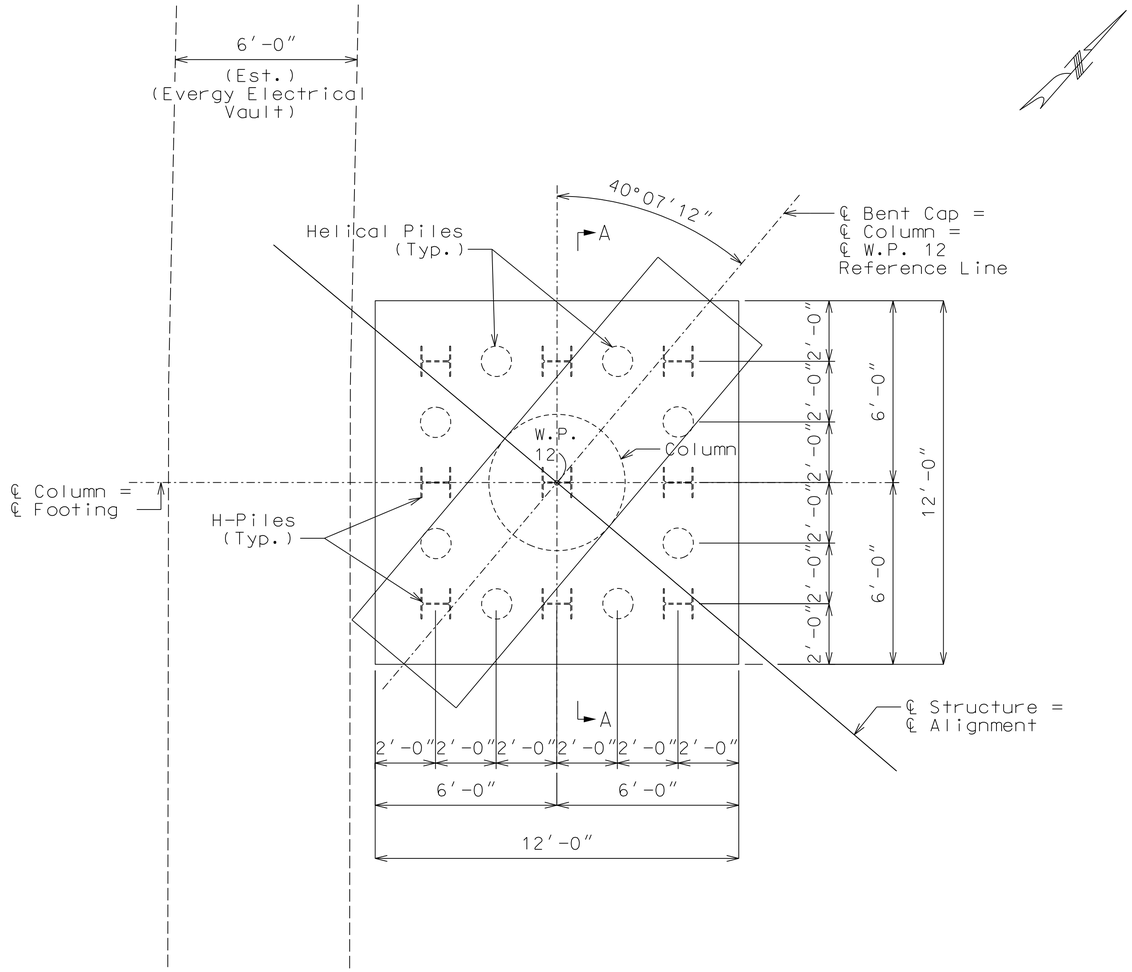
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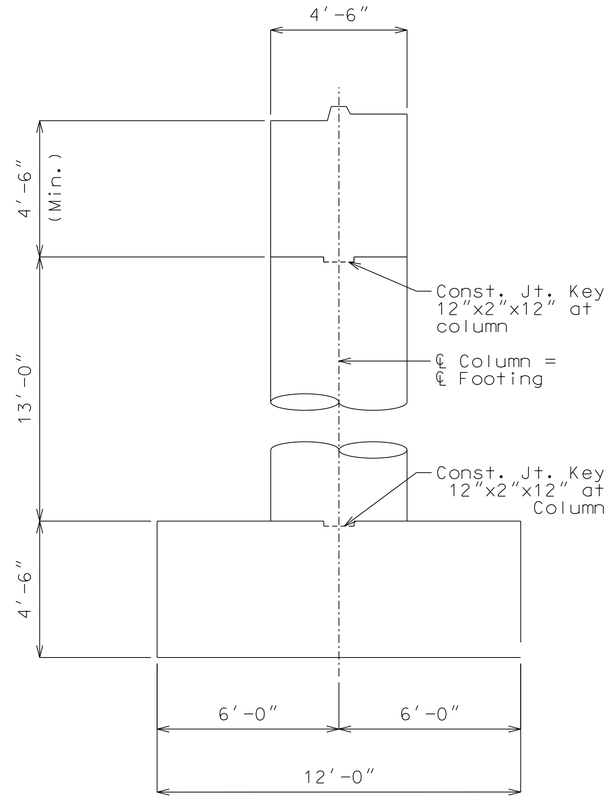
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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SUITE 200
KANSAS CITY, MO 64105

**INTERMEDIATE BENT NO. 10 DETAILS**




SECTION A-A
(Reinforcing not shown for clarity.)

All dimensions are out to out.

Concrete for intermediate bent footings shall be Class B-1.

For location of Substructure Layout and Working Points, see Sheet No. 84.

For Bent Cap and Column reinforcing details, see Sheet No. 86.

For Footing reinforcing details, see Sheet No. 94.

For additional Bent details, see Sheet No. 87.

# INTERMEDIATE BENT NO. 12 DETAILS

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 10/2022
Checked SAB 3/2023

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 93 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
STATE OF MISSOURI
11/13/24

| DATE | DESCRIPTION |
|---|---|
| . | . |

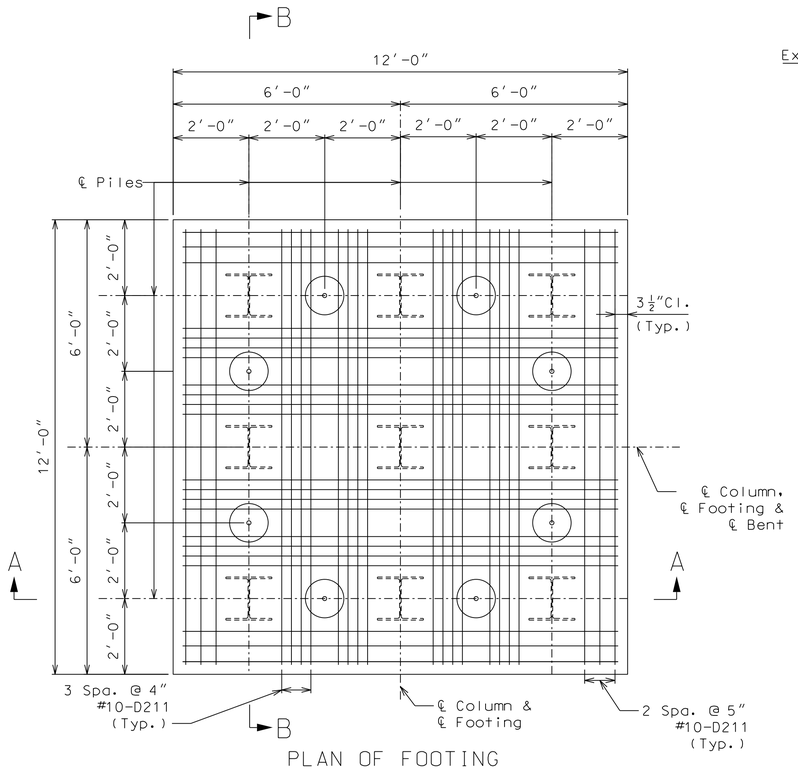
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

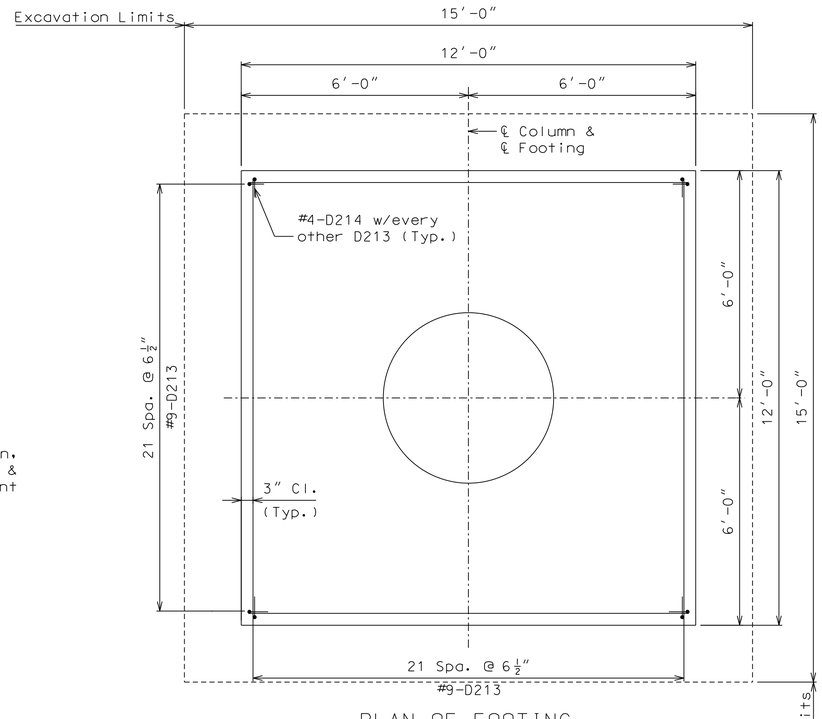
CAPITAL PROJECTS DIVISION
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

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SUITE 200
KANSAS CITY, MO 64105

**INTERMEDIATE BENT NO. 12 DETAILS**




PLAN OF FOOTING
(Bottom Reinforcing)



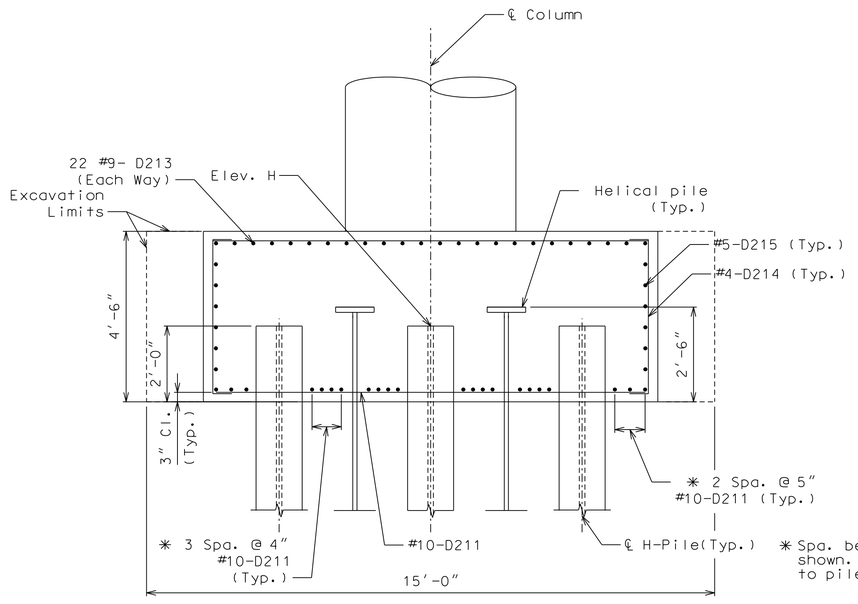

PLAN OF FOOTING
(Top Reinforcing)
Field adjust D213 to miss column reinforcing

NOTES:
For elevations, column/dowel reinforcing, and bent cap reinforcing not shown on this sheet, work this sheet with Sheet Nos.86-87 details above the footing.

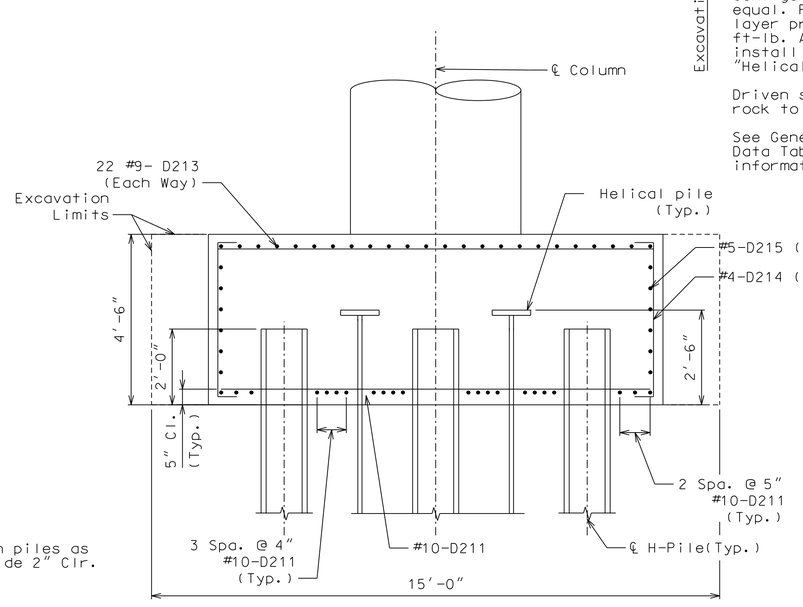
All helical piles shall be with quad helix configuration, Chance SS225 Helical Pile or approved equal. Piles shall be installed into a dense sand layer providing installation torque rating at 21,000 ft-lb. All materials and installation necessary to install helical pile shall be covered by the bid item "Helical Pile".

Driven steel pile pay lengths assume 3' embedment into rock to achieve practical refusal.

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.




SECTION A-A




SECTION B-B

✳Spa. between piles as shown. Provide 2" Clr. to piles.

# DETAILS OF INTERMEDIATE BENT NO. 10-12

Note: This drawing is not to scale. Follow dimensions.

Detailed OYF 7/2022
Checked SAB 11/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 94 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

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

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PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**INTERMEDIATE BENTS 10-12 DETAILS**

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 2 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 93.3 |
| Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 104 |
| Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 30 |
| Video Camera Inspection | each | 15 |
| Foundation Inspection Holes | linear foot | 150 |
| Sonic Logging Testing | each | 5 |
| Class B-1 Concrete (Substructure) | cu. yard | 55.5 |
| Reinforcing Steel (Bridges) | pound | 20,870 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 3 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 7.3 |
| Class B-1 Concrete (Substructure) | cu. yard | 21.0 |
| Reinforcing Steel (Bridges) | pound | 6,850 |
| △ Class 1 Excavation | cu. yard | 126.4 |
| △ Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 108 |
| △ Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 30 |
| △ Video Camera Inspection | each | 15 |
| △ Foundation Inspection Holes | linear foot | 150 |
| △ Sonic Logging Testing | each | 5 |
| △ Class B-1 Concrete (Substructure) | cu. yard | 58.9 |
| △ Reinforcing Steel (Bridges) | pound | 13,326 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 4 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 1.1 |
| Class B-1 Concrete (Substructure) | cu. yard | 19.6 |
| Reinforcing Steel (Bridges) | pound | 6,700 |
| △ Class 1 Excavation | cu. yard | 68.7 |
| △ Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 97 |
| △ Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 30 |
| △ Video Camera Inspection | each | 15 |
| △ Foundation Inspection Holes | linear foot | 150 |
| △ Sonic Logging Testing | each | 5 |
| △ Class B-1 Concrete (Substructure) | cu. yard | 57.5 |
| △ Reinforcing Steel (Bridges) | pound | 13,040 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 5 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 96.7 |
| Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 172 |
| Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 45 |
| Video Camera Inspection | each | 15 |
| Foundation Inspection Holes | linear foot | 150 |
| Sonic Logging Testing | each | 5 |
| Class B-1 Concrete (Substructure) | cu. yard | 63.7 |
| Reinforcing Steel (Bridges) | pound | 26,700 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 6 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 87.8 |
| Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 207 |
| Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 45 |
| Video Camera Inspection | each | 15 |
| Foundation Inspection Holes | linear foot | 150 |
| Sonic Logging Testing | each | 5 |
| Class B-1 Concrete (Substructure) | cu. yard | 63.1 |
| Reinforcing Steel (Bridges) | pound | 16,687 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 7 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 13.2 |
| Class B-1 Concrete (Substructure) | cu. yard | 28.8 |
| Reinforcing Steel (Bridges) | pound | 7,640 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 8 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 88.1 |
| Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 305 |
| Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 40 |
| Video Camera Inspection | each | 15 |
| Foundation Inspection Holes | linear foot | 150 |
| Sonic Logging Testing | each | 5 |
| Class B-1 Concrete (Substructure) | cu. yard | 64.0 |
| Reinforcing Steel (Bridges) | pound | 34,210 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 9 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 90.7 |
| Drilled Shafts (3 Ft. 0 In. Dia.) | linear foot | 309 |
| Rock Socket (3 Ft. 0 In. Dia.) | linear foot | 40 |
| Video Camera Inspection | each | 15 |
| Foundation Inspection Holes | linear foot | 150 |
| Sonic Logging Testing | each | 5 |
| Class B-1 Concrete (Substructure) | cu. yard | 64.9 |
| Reinforcing Steel (Bridges) | pound | 33,470 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 10 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 55.9 |
| Structural Steel Pile (12 in.) | linear foot | 670 |
| Helical Pile | linear foot | 484 |
| Class B-1 Concrete (Substructure) | cu. yard | 47.1 |
| Reinforcing Steel (Bridges) | pound | 11,920 |
| Pile Point Reinforcement | each | 9 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 11 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 53.5 |
| Structural Steel Pile (12 in.) | linear foot | 772 |
| Helical Pile | linear foot | 516 |
| Class B-1 Concrete (Substructure) | cu. yard | 43.0 |
| Reinforcing Steel (Bridges) | pound | 11,180 |
| Pile Point Reinforcement | each | 9 |

| SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 12 | | |
|---|---|---|
| Item | | Quantity |
| Class 1 Excavation | cu. yard | 56.5 |
| Structural Steel Pile (12 in.) | linear foot | 866 |
| Helical Pile | linear foot | 596 |
| Class B-1 Concrete (Substructure) | cu. yard | 38.9 |
| Reinforcing Steel (Bridges) | pound | 10,430 |
| Pile Point Reinforcement | each | 9 |

Notes:

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

△ Quantity includes footing, column, and bent cap to be used only for Add Alternate bid based on results of Non-Destructive Testing. See Sht. Nos. 88 - 89 for Bents 3 & 4.

See General Notes and Quantities sheet and Foundation Data Table sheet for additional excavation information.

SHEET NO. 95 | TOTAL SHEETS 187

DATE PREPARED 11/13/2024

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER

11/7/24

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

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PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

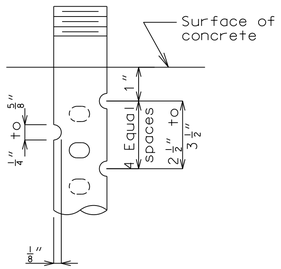
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


# INTERMEDIATE BENT QUANTITIES

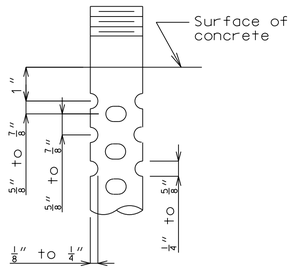

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Detailed PRY 3/2023
Checked SAB 3/2023


Note: This drawing is not to scale. Follow dimensions.

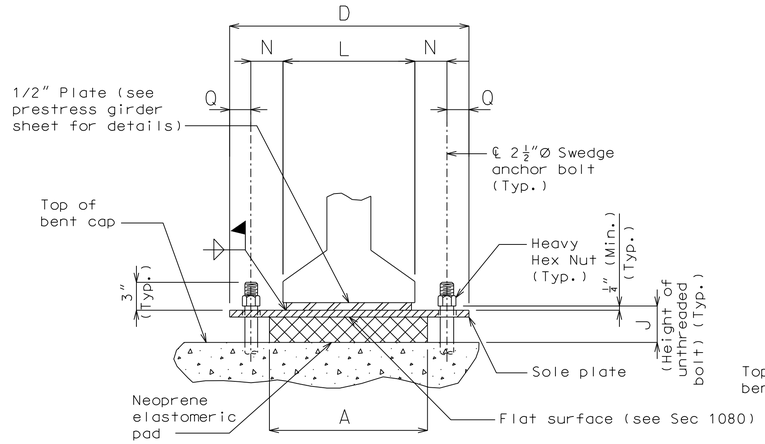



DETAIL FOR 2 1/2"Ø ANCHOR BOLTS

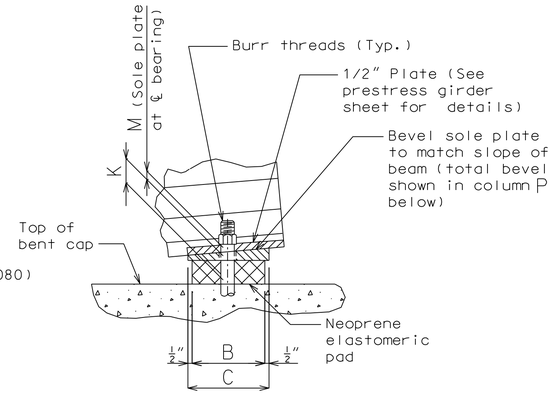



OPTIONAL DETAIL FOR 2 1/2"Ø ANCHOR BOLTS

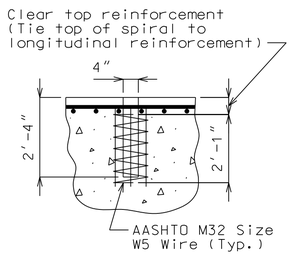
SWEDGE ANCHOR BOLT DETAILS

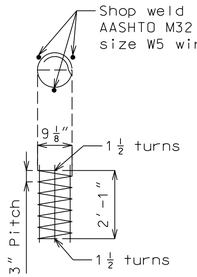



END VIEW

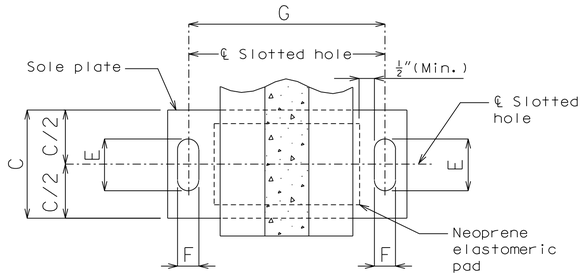



SIDE VIEW

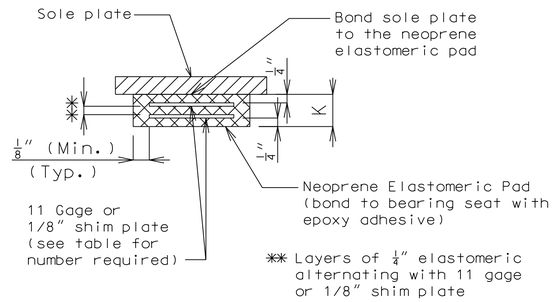



ANCHOR BOLT WELLS




PART PLAN VIEW




NEOPRENE ELASTOMERIC PAD

## EXPANSION BEARINGS

| BENT NO. | A | B | C | D | E | F | G | J | K | L | M | N | P | Q | R | NUMBER OF SHIM PLATES ✳ | NUMBER REQUIRED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IB2 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 1/8" | 3 3/4" | 0.04" | 8 | 2 |
| IB2 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 1/16" | 3 3/4" | 0.04" | 8 | 2 |
| IB3 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 1/16" | 3 3/4" | 0.09" | 8 | 2 |
| IB3 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.11" | 8 | 2 |
| IB6 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.13" | 8 | 2 |
| IB7 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.14" | 8 | 2 |
| IB7 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.14" | 8 | 2 |
| IB9 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.14" | 8 | 2 |
| IB9 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.14" | 8 | 2 |
| IB12 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 3/8" | 3 3/4" | 0.10" | 8 | 2 |
| IB12 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 5" | 3 1/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 3/8" | 3 3/4" | 0.10" | 8 | 2 |
| | | | | | | | | | | | | | | | | TOTAL BEARINGS | 22 |

✳ The required shim plate shall be placed between layers of elastomeric and molded together to form an integral unit.

## GENERAL NOTES:

Anchor bolts shall be 2½"Ø ASTM F1554 Grade 105 swedged bolts and shall extend 1'-3" into the concrete with ASTM A563 Grade A Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor bolt shall be at the ℄ of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

Anchor bolts and heavy hex nuts shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with Sec 1081.

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils mimimum, 6 mils maximum.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

# LAMINATED NEOPRENE BEARING PAD ASSEMBLY

Detailed QYF 7/2022
Checked KS 3/2023

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 96 | TOTAL SHEETS 187
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STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

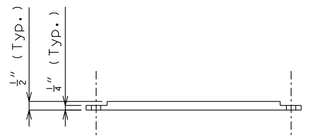
PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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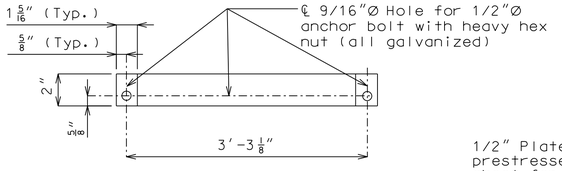
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(816) 513-2739

WSP USA INC.
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SUITE 200
KANSAS CITY, MO 64105

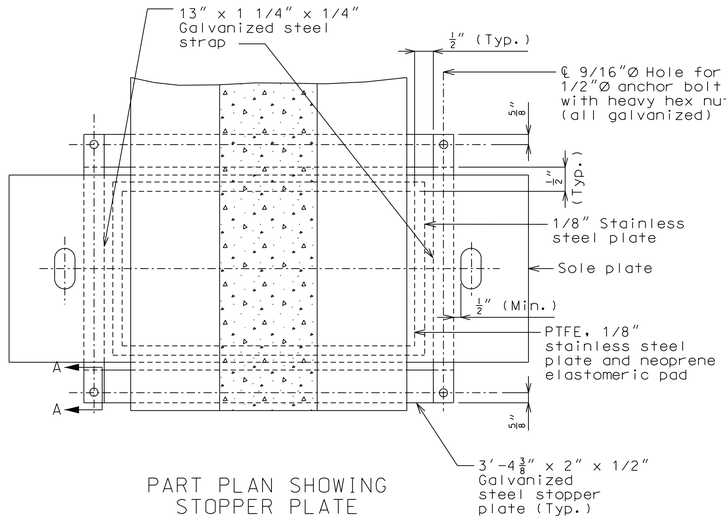
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ELEVATION OF GALVANIZED STEEL STOPPER PLATE



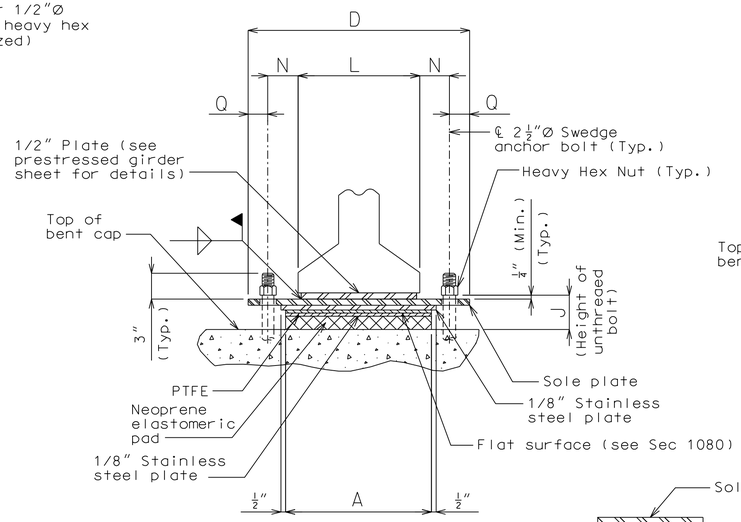

PLAN OF GALVANIZED STEEL STOPPER PLATE



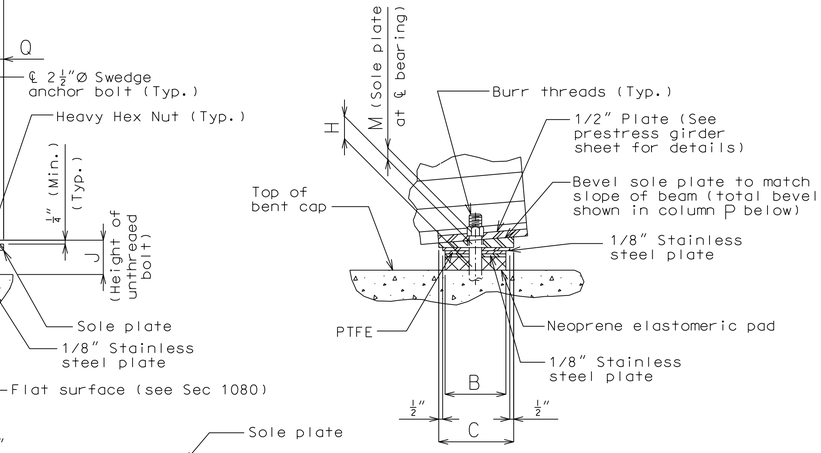

PART PLAN SHOWING STOPPER PLATE

Stopper plates and straps shall be provided to prevent loss of support due to creeping of PTFE bearings. Payment for fabricating and installing the stopper plates and straps will be considered completely covered by the contract unit price for Type N PTFE Bearing.

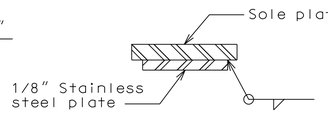
The bottom face of the 1/8" stainless steel plate that is welded to the sole plate shall be lubricated with a lubricant that is approved by the bearing manufacturer.

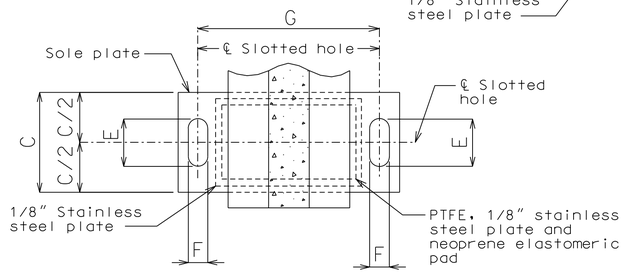



END VIEW

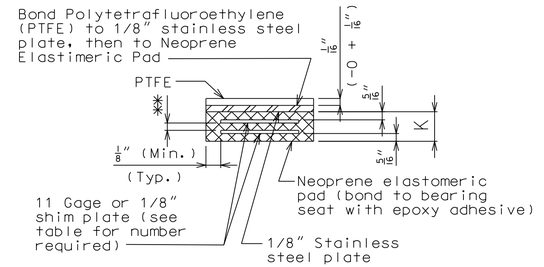



SIDE VIEW




PART PLAN

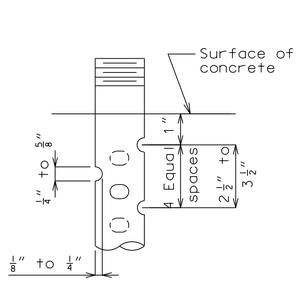



** Layers of 1/4" elastomeric alternating with 11 gage or 1/8" shim plate

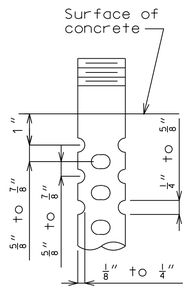
NEOPRENE ELASTOMERIC PAD

| EXPANSION BEARINGS | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BENT NO. | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | NUMBER OF SHIM PLATES * | NUMBER REQUIRED |
| IB6 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 3 15/16" | 5 11/16" | 3 3/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.21" | 9 | 2 |
| IB10 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 3 15/16" | 5 11/16" | 3 3/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 0" | 3 3/4" | 0.21" | 9 | 2 |
| IB10 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 3 15/16" | 5 11/16" | 3 3/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 3/16" | 3 3/4" | 0.31" | 9 | 2 |
| IB11 Bk | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 3 15/16" | 5 11/16" | 3 3/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 3/16" | 3 3/4" | 0.21" | 9 | 2 |
| IB11 Fwd | 3'-0 7/8" | 8" | 9" | 4'-3 1/8" | 6" | 2 5/8" | 3'-7 5/8" | 3 15/16" | 5 11/16" | 3 3/4" | 3'-2 3/8" | 1 1/2" | 2 5/8" | 3/8" | 3 3/4" | 0.21" | 9 | 2 |
| | | | | | | | | | | | | | | | | | TOTAL BEARINGS | 10 |

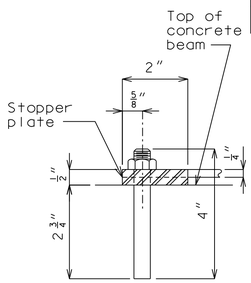
* The required shim plate shall be placed between layers of elastomeric and molded together to form an integral unit.




DETAIL FOR 2 1/2"Ø ANCHOR BOLTS




OPTIONAL DETAIL FOR 2 1/2"Ø ANCHOR BOLTS




SECTION A-A

SWEDGE ANCHOR BOLT DETAILS

## GENERAL NOTES:

Design coefficient of friction equals 0.06.

Anchor bolts shall be 2 1/2"Ø ASTM F1554 Grade 105 swedged bolts and shall extend 1'-3" into the concrete with ASTM A563 Grade A Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor bolt shall be at the ℄ of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

Anchor bolts and heavy hex nuts shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with Sec 1081.

Neoprene Elastomeric Pads shall be 70 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum. The stainless steel plate shall be protected from any coating.

Type N PTFE Bearings shall be in accordance with Sec 716.

PTFE surface shall be fabricated as a single piece. Splicing will not be permitted.

# TYPE N PTFE BEARINGS DETAILS

Detailed QYF 7/2022
Checked KS 3/2023

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 97 | TOTAL SHEETS 187
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ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

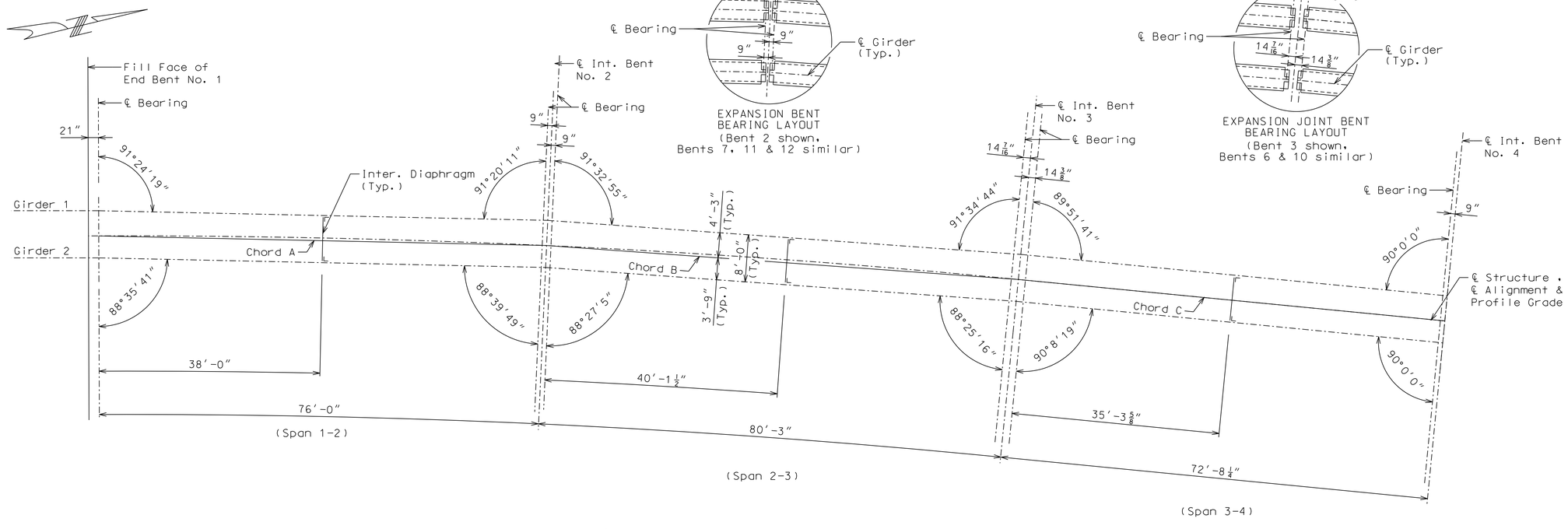
STATE OF MISSOURI ★ PROFESSIONAL ENGINEER ★ PETER YOUNG NUMBER PE-2010017701 IA PROFESSIONAL ENGINEER
11/7/24

| DATE | DESCRIPTION |
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WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105




# GIRDER LAYOUT

Note: This drawing is not to scale. Follow dimensions.

Note:
Working Points shown on Substructure Layout sheet are the basis for Chord dimensions shown on this sheet.

Detailed PRY 2/2023
Checked SAB 3/2023

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| SHEET NO. | TOTAL SHEETS |
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DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
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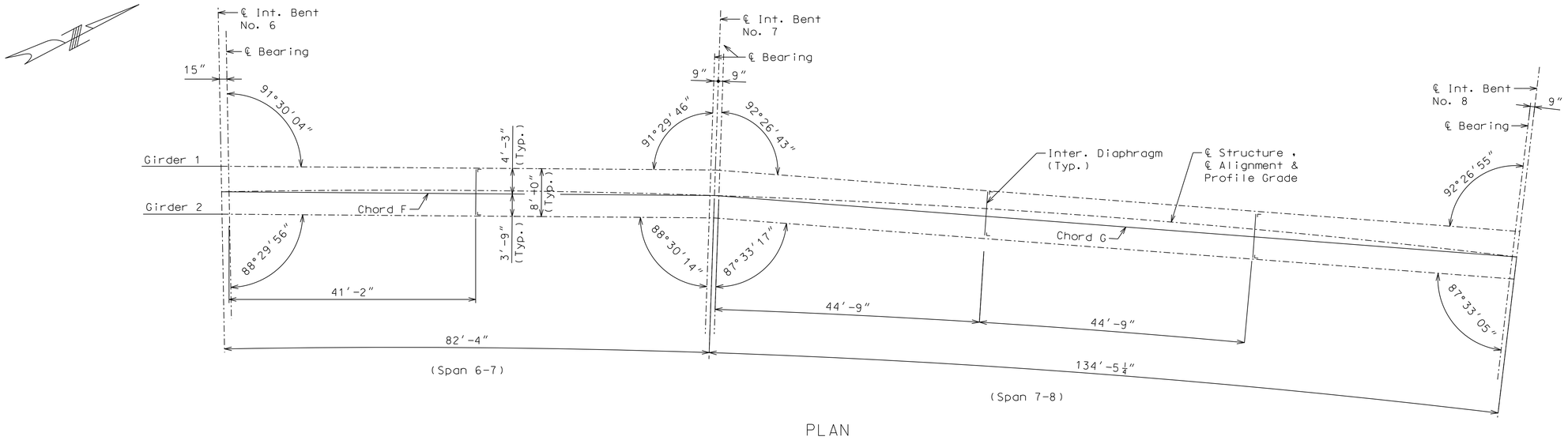
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

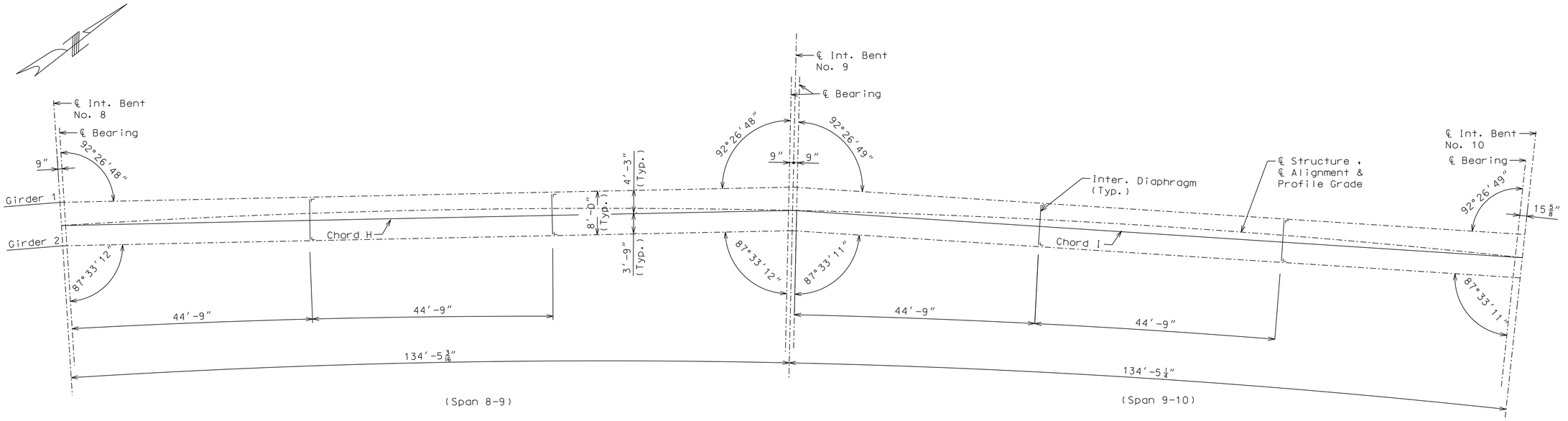
CAPITAL PROJECTS DIVISION
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18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
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300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**GIRDER LAYOUT 1**




PLAN




PLAN

# GIRDER LAYOUT

Note: This drawing is not to scale. Follow dimensions.

Note:
Working Points shown on Substructure Layout sheet are the basis for Chord dimensions shown on this sheet.

Detailed PRY 2/2023
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SHEET NO. 99 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 A STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

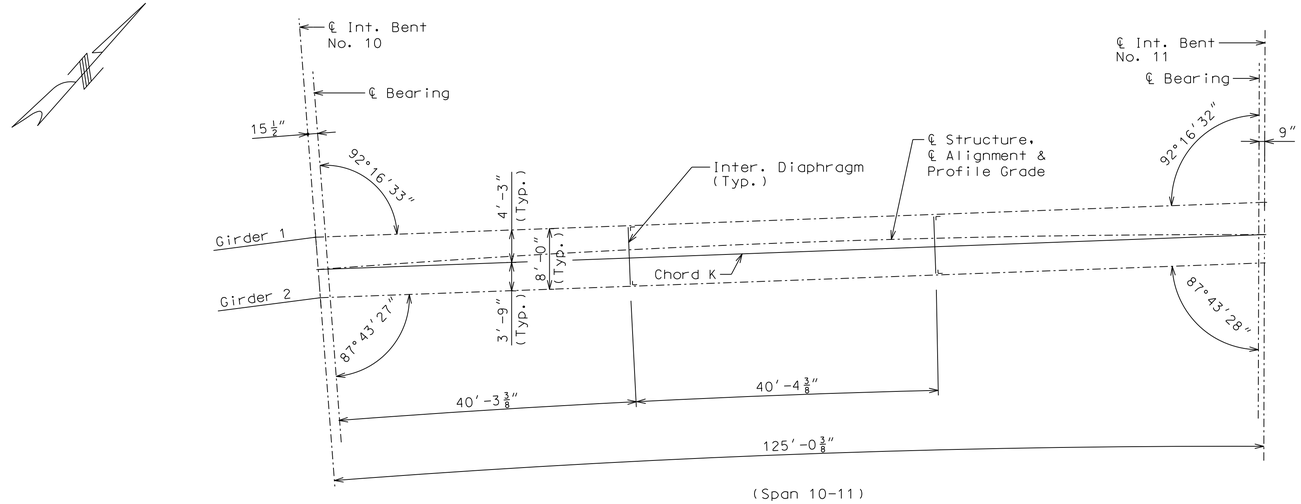
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SUITE 200
KANSAS CITY, MO 64105

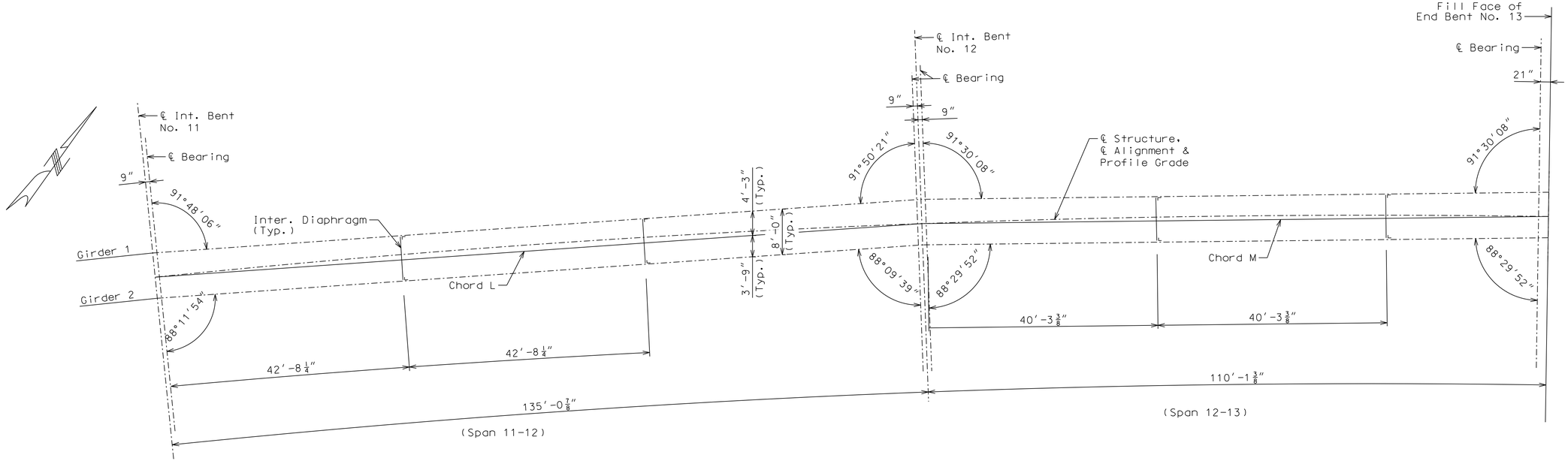
**GIRDER LAYOUT 2**

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(Span 10-11)

PLAN




(Span 11-12)

(Span 12-13)

PLAN

# GIRDER LAYOUT

Note: This drawing is not to scale. Follow dimensions.

Note:
Working Points shown on Substructure Layout sheet are the basis for Chord dimensions shown on this sheet.

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PROJECT NO.
89005595

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11/7/24

| DATE | DESCRIPTION |
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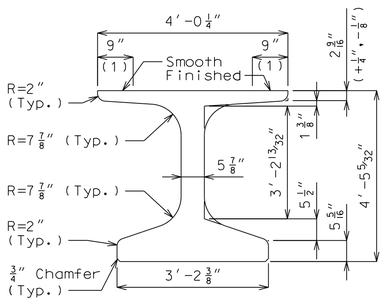
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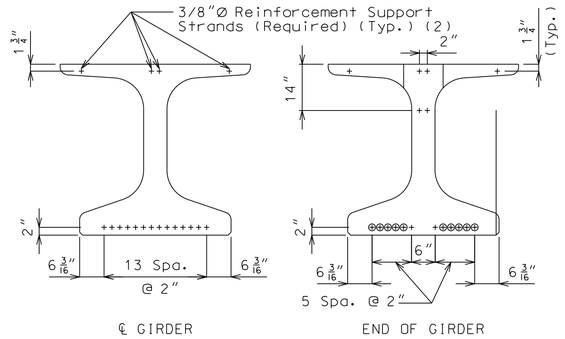
**GIRDER LAYOUT 3**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

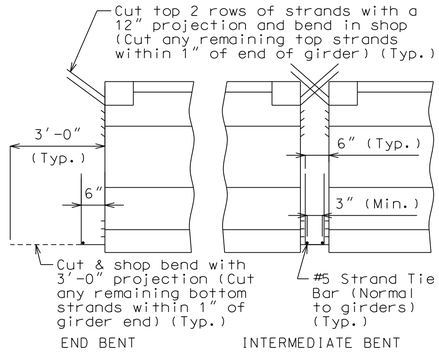
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



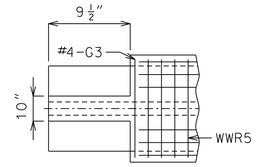

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

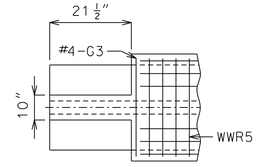
o Indicates cut & shop bend with 3′-0″ projection.




STRANDS AT GIRDER ENDS




GIRDERS AT INTERMEDIATE BENT

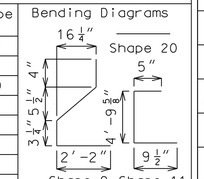



GIRDERS AT END BENT

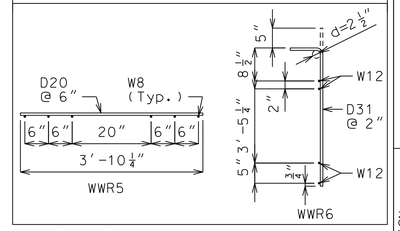
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 268 | 4 B1 | 5′-10″ | 11 |
| 288 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

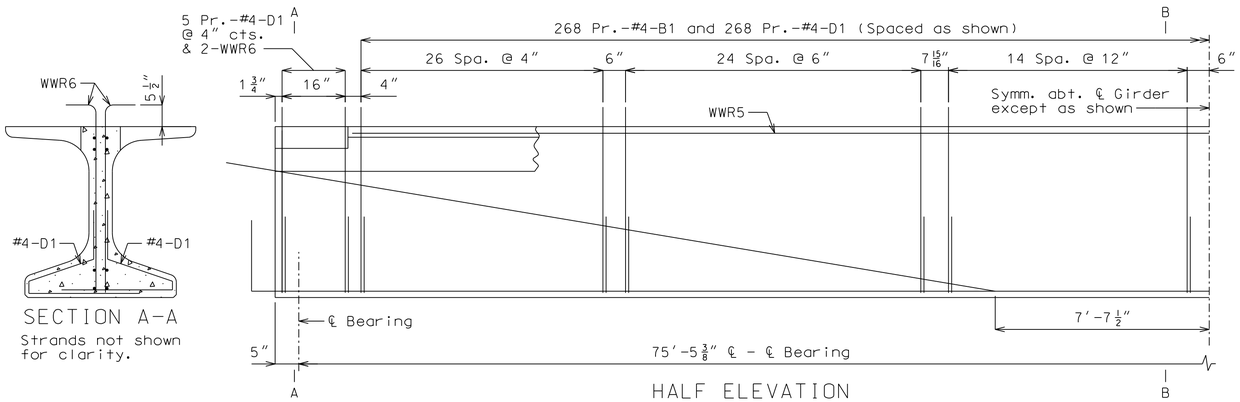
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

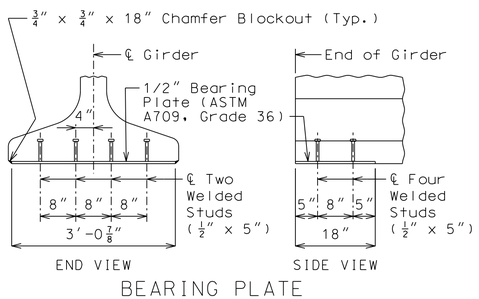
The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No.133.

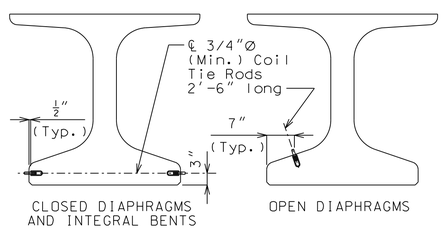
For location of coil ties at integral bents, see Sheet No. 85.




Reinforcement support strands not shown for clarity.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (1-2) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 101 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

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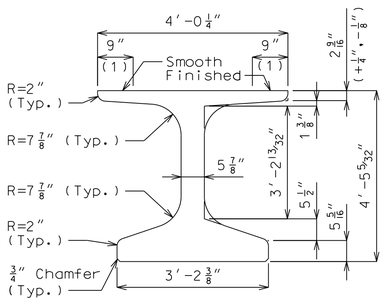
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

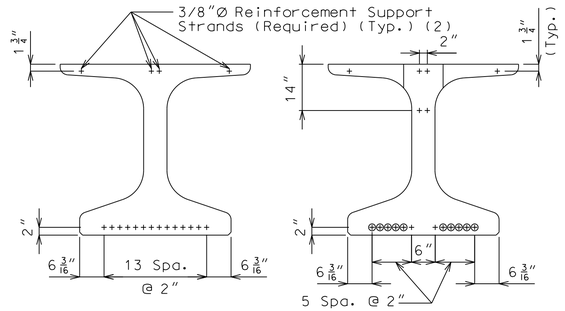
**NU-GIRDERS - SPAN (1-2)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

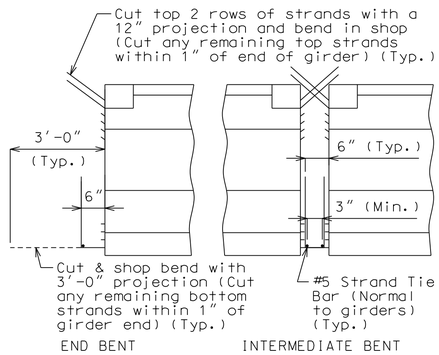
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



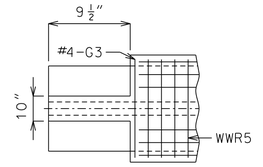

STRAND ARRANGEMENT

+ Indicates prestressing strand.

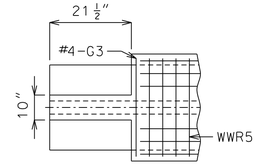
o Indicates cut & shop bend with 3′-0″ projection.




STRANDS AT GIRDER ENDS




GIRDERS AT INTERMEDIATE BENT

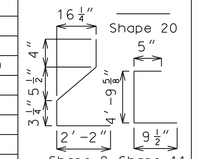



GIRDERS AT END BENT

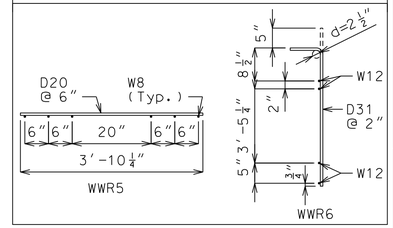
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 264 | 4 B1 | 5′-10″ | 11 |
| 284 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

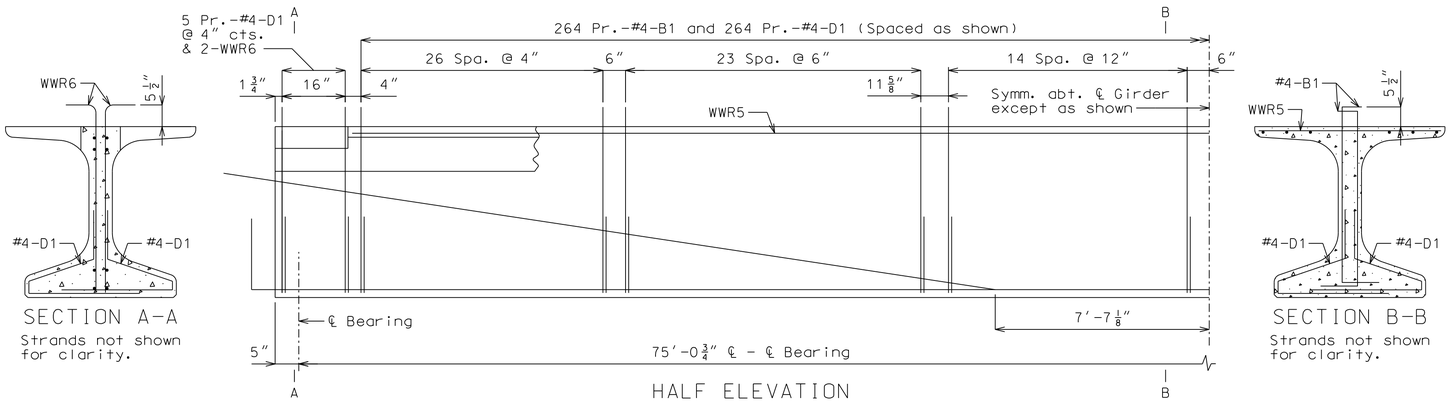
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No.133.

For location of coil ties at integral bents, see Sheet No. 85 .



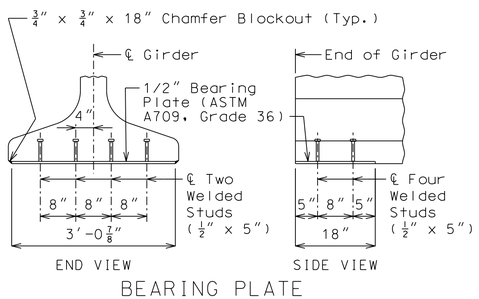

SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

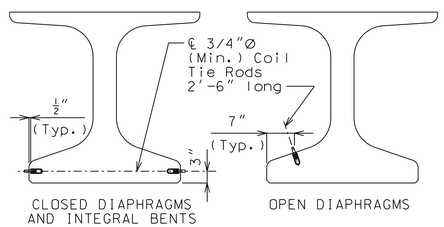
SECTION B-B
Strands not shown for clarity.



B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (1-2) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

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DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

| DESCRIPTION | DATE |
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

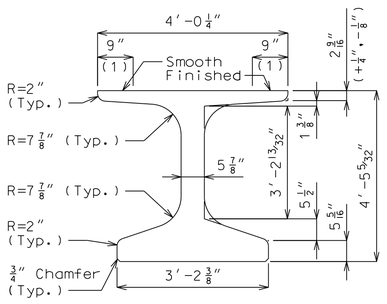
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**NU-GIRDERS - SPAN (1-2)**
**GIRDER - 2**

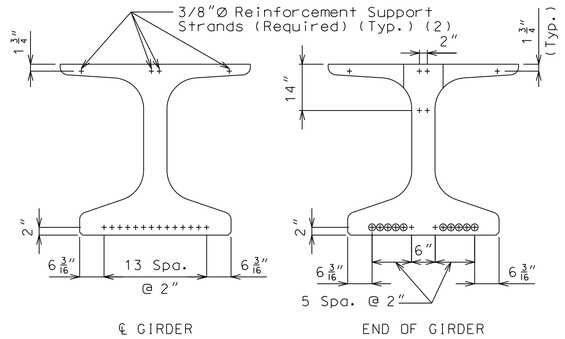
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(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

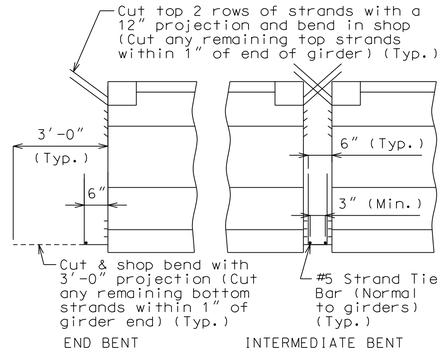
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



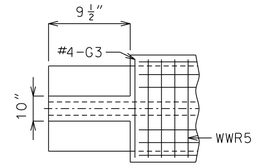

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

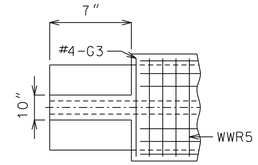
o Indicates cut & shop bend with 3′-0″ projection.




STRANDS AT GIRDER ENDS




GIRDERS AT INTERMEDIATE BENT 2

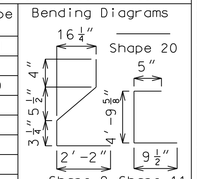



GIRDERS AT INTERMEDIATE BENT 3

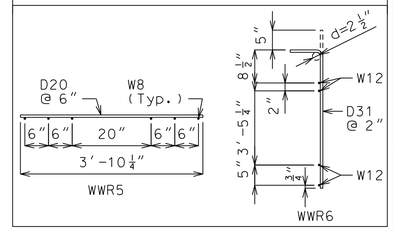
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 276 | 4 B1 | 5′-10″ | 11 |
| 296 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

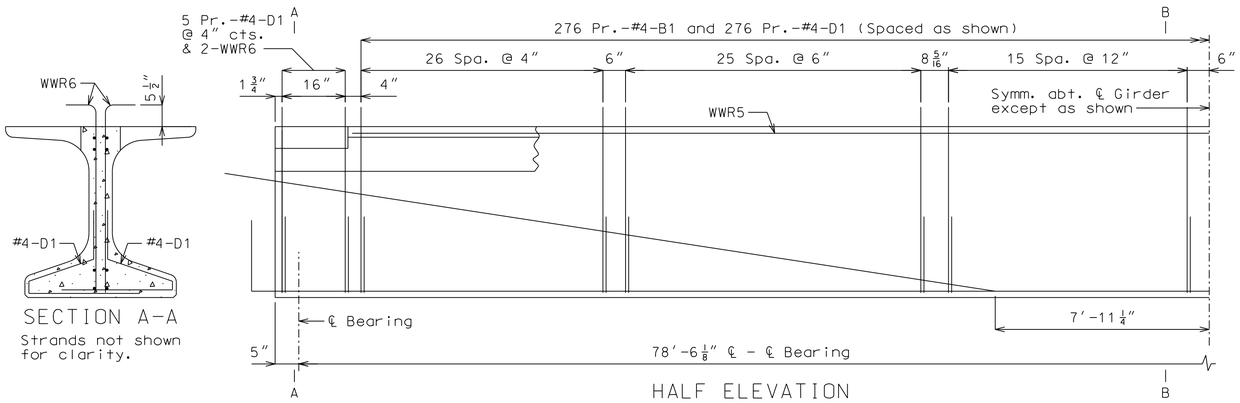
Fabricator shall be responsible for location and design of lifting devices.

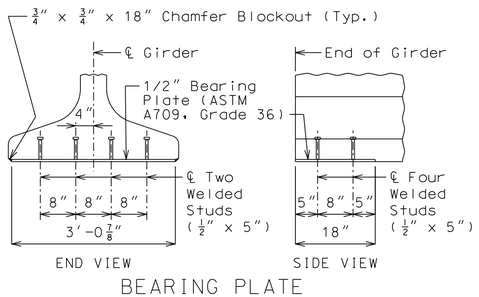
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

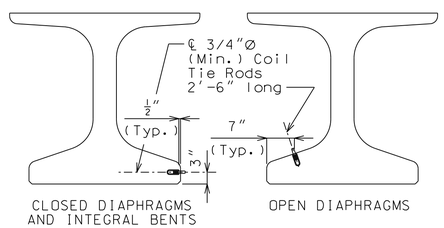
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (2-3) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 103 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — A — 11/7/24

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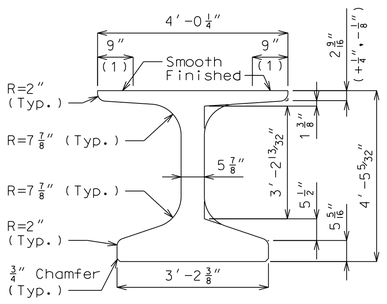
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

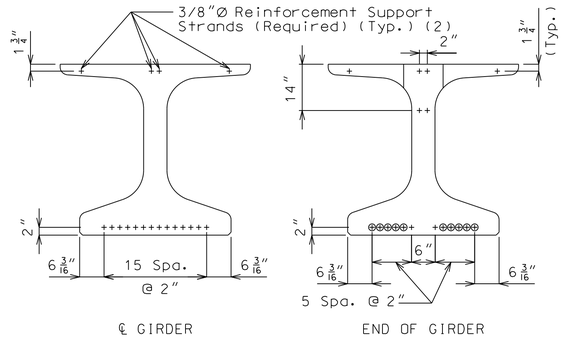
**NU - GIRDERS - SPAN (2-3)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

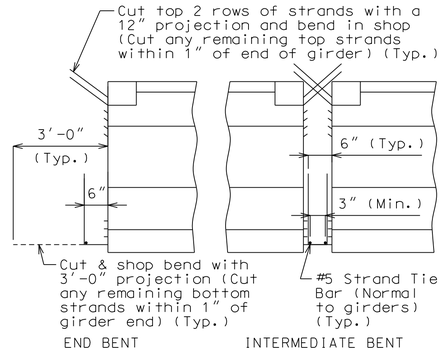
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



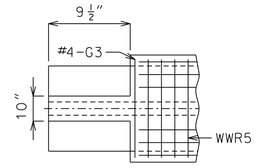

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

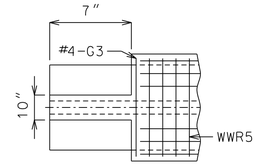
o Indicates cut & shop bend with 3′-0″ projection.




STRANDS AT GIRDER ENDS



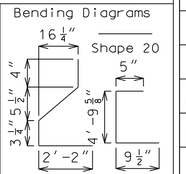

GIRDERS AT INTERMEDIATE BENT 2



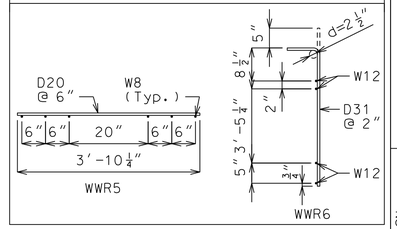

GIRDERS AT INTERMEDIATE BENT 3

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 274 | 4 B1 | 5′-10″ | 11 | |
| 294 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |
| 2 | 4 G5 | 2′-8⅛″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

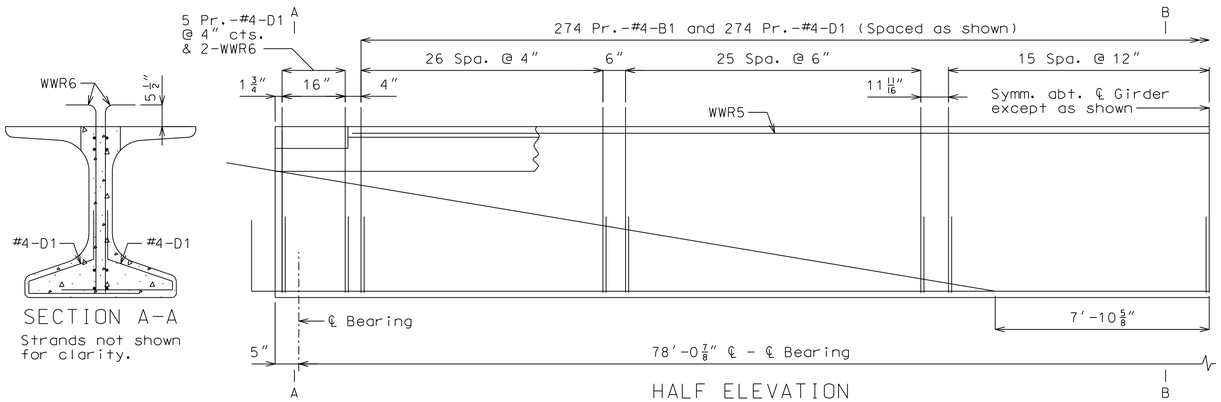
Fabricator shall be responsible for location and design of lifting devices.

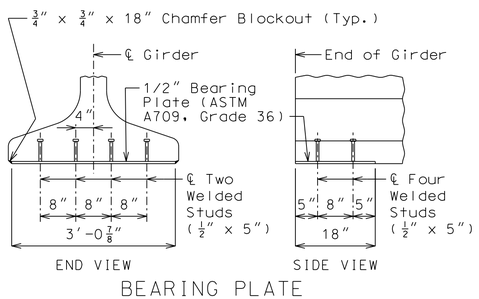
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

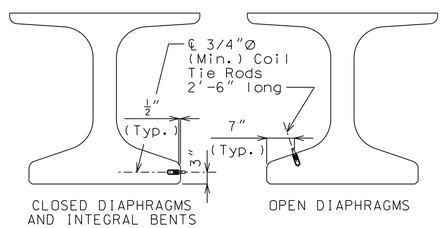
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

Detailed PRY 6/2022
Checked SAB 8/2022

Note: This drawing is not to scale. Follow dimensions.

# NU-GIRDERS - SPAN (2-3) (Girder 2)


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SHEET NO. 104 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

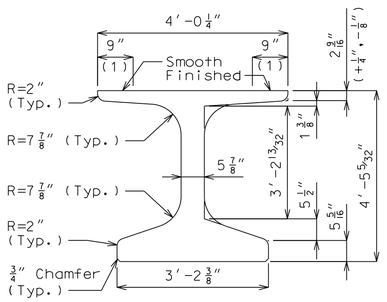
| DESCRIPTION | DATE |
|---|---|


CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

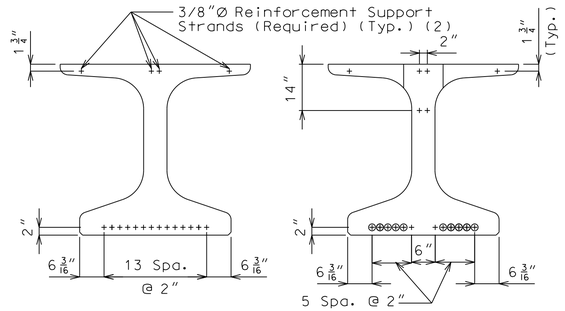

NU-GIRDERS - SPAN (2-3)
GIRDER - 2

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

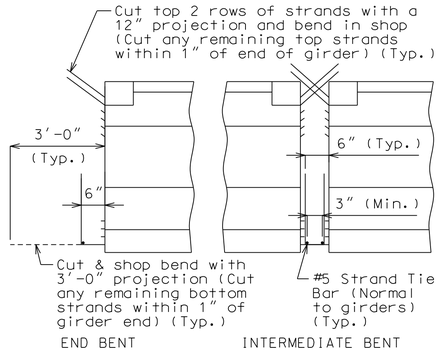
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



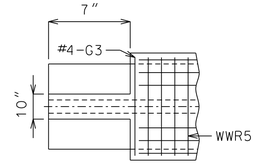

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

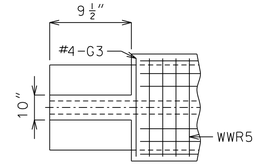
o Indicates cut & shop bend with 3′-0″ projection.




STRANDS AT GIRDER ENDS




GIRDERS AT INTERMEDIATE BENT 3

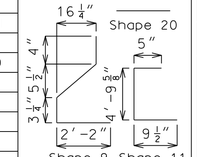



GIRDERS AT INTERMEDIATE BENT 4

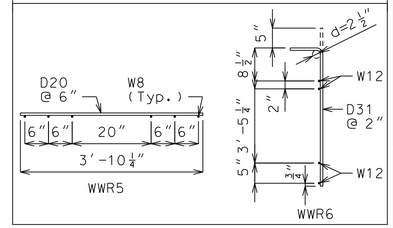
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 304 | 4 B1 | 5′-10″ | 11 |
| 324 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

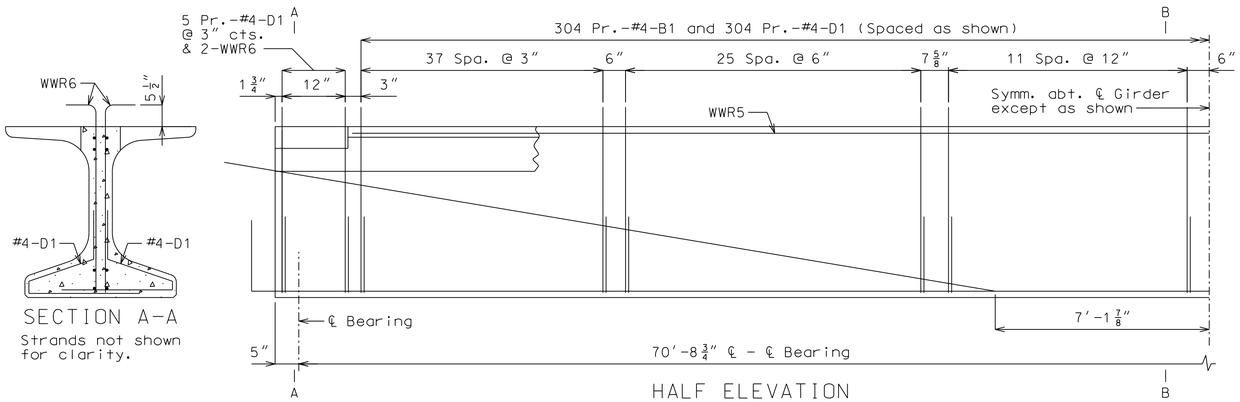
Fabricator shall be responsible for location and design of lifting devices.

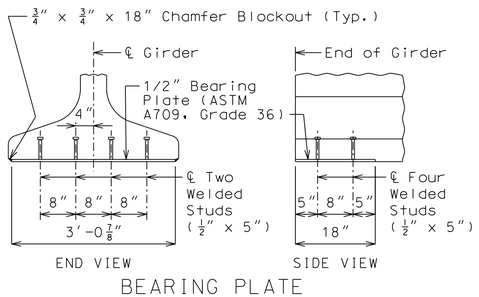
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

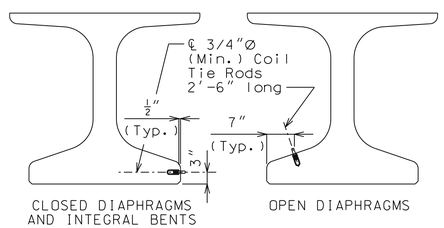
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (3-4) (Girders 1 & 2)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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| SHEET NO. | TOTAL SHEETS |
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| 105 | 187 |

DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — JA — JOURNEYMAN
11/7/24

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

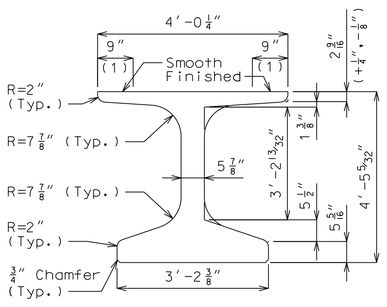
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

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300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**NU-GIRDERS - SPAN (3-4)**
**GIRDERS - 1 & 2**

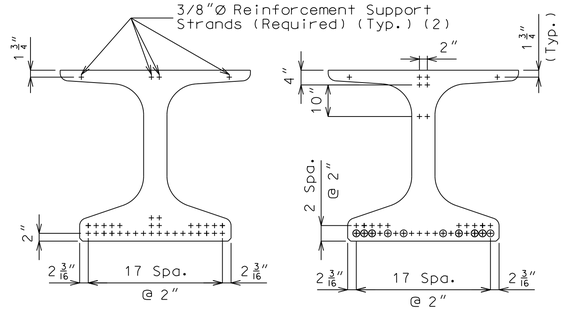
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

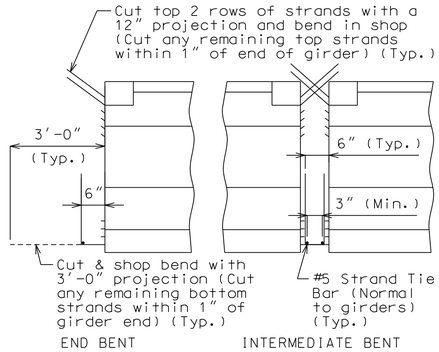



℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

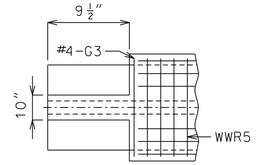
\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.




END BENT INTERMEDIATE BENT

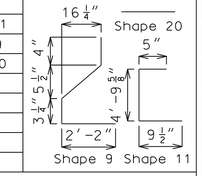
STRANDS AT GIRDER ENDS



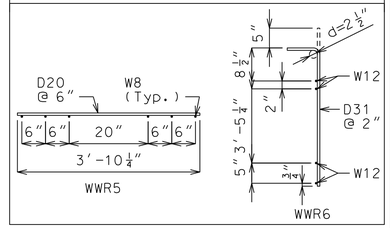

GIRDERS AT INTERMEDIATE BENTS

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 406 | 4 B1 | 5′-10″ | 11 | |
| 426 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1406 kips.

Pretensioned members shall be in accordance with Sec 1029.

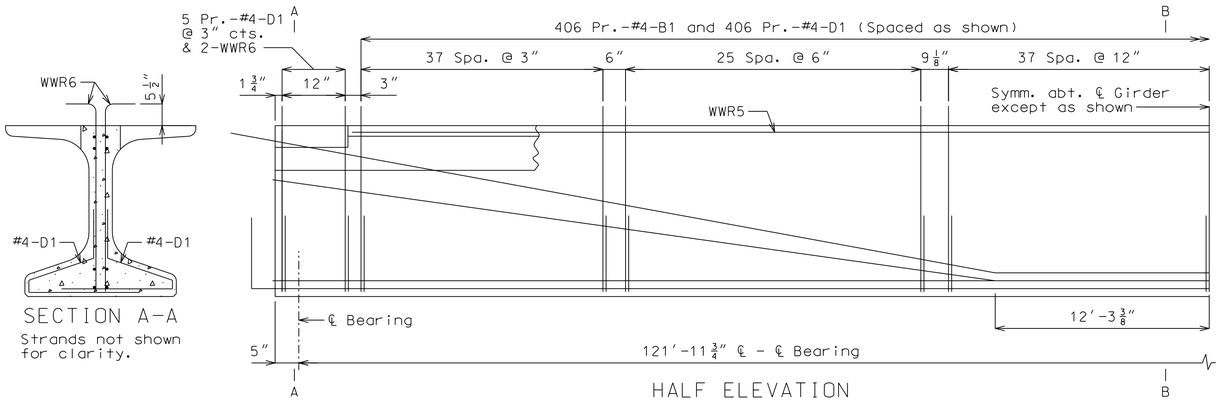
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

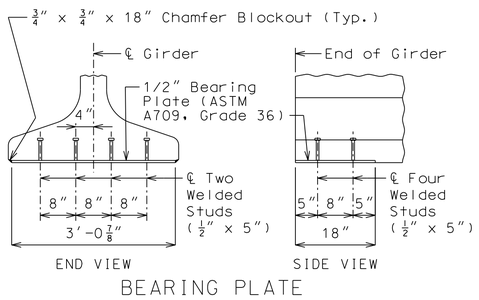



SECTION A-A
Strands not shown for clarity.

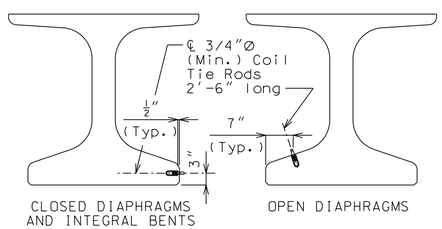
HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (4-5) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 106 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

| DATE | DESCRIPTION |
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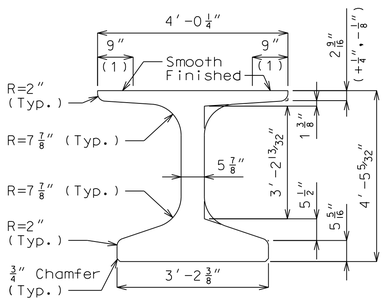
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

NU-GIRDERS - SPAN (4-5)
GIRDER - 1

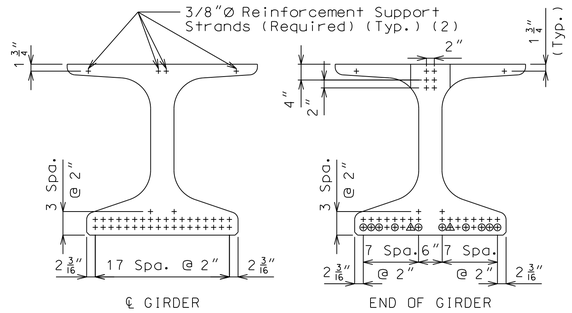
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

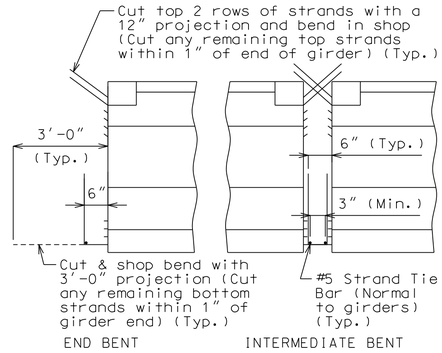



STRAND ARRANGEMENT

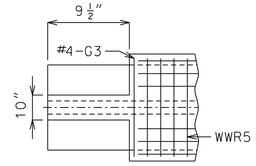
+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.

△ Indicates debonding of strand for 5′-0″ at ends.




STRANDS AT GIRDER ENDS

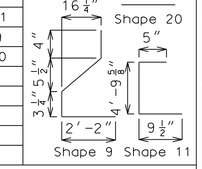



GIRDERS AT INTERMEDIATE BENTS

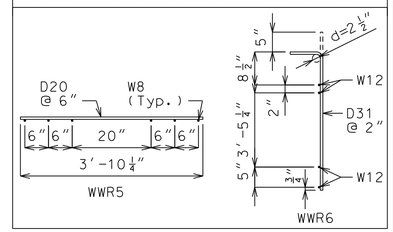
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 404 | 4 B1 | 5′-10″ | 11 |
| 424 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




| Welded Wire Reinforcement - Each Girder |
|---|




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1670 kips.

Pretensioned members shall be in accordance with Sec 1029.

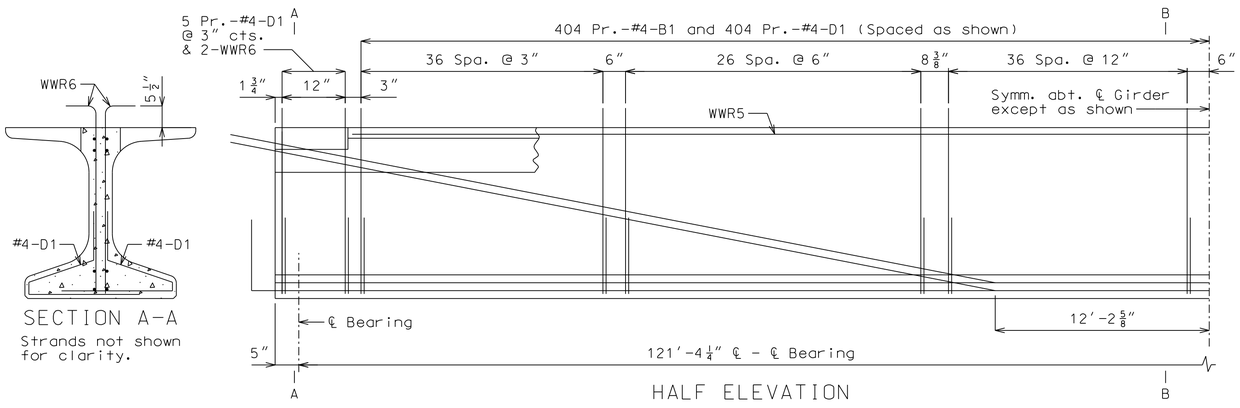
Fabricator shall be responsible for location and design of lifting devices.

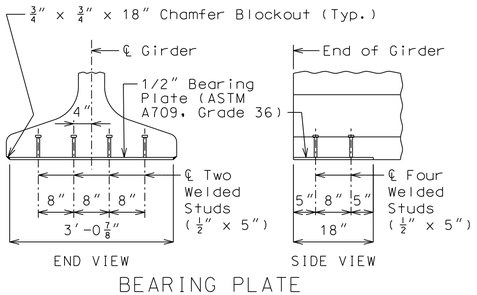
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

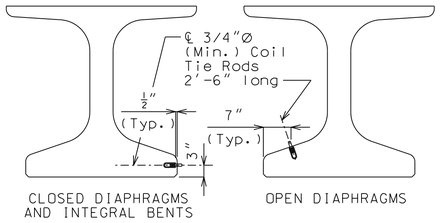
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (4-5) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

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Checked SAB 8/2022

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SHEET NO. 107 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

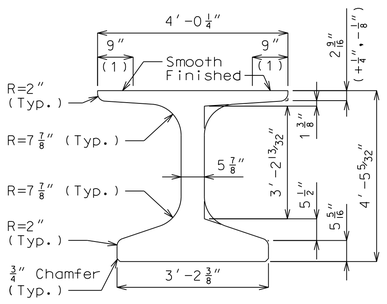
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

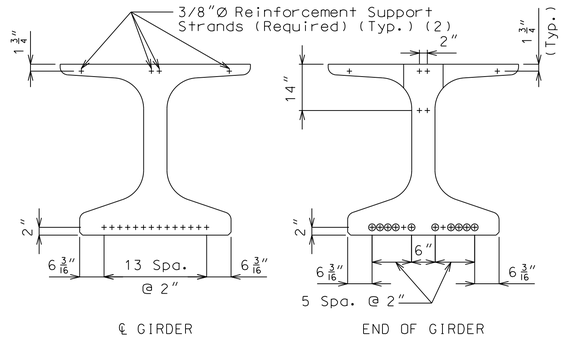
NU-GIRDERS - SPAN (4-5)
GIRDER - 2

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

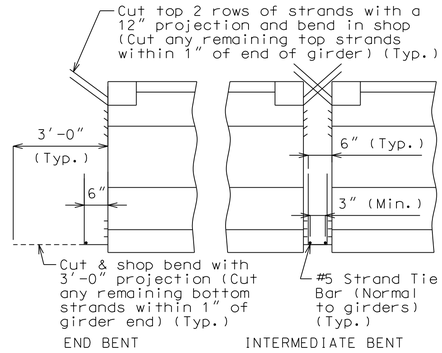
(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



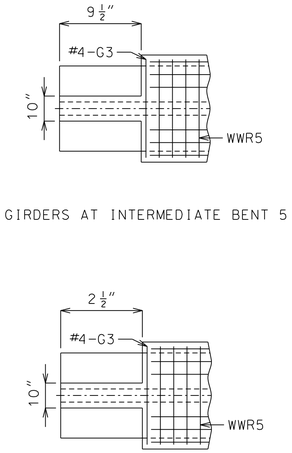

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.

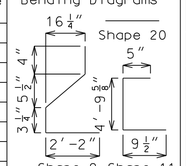



STRANDS AT GIRDER ENDS

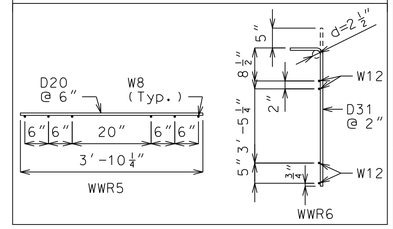



TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 270 | 4 B1 | 5′-10″ | 11 | |
| 290 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




| Welded Wire Reinforcement - Each Girder |
|---|




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

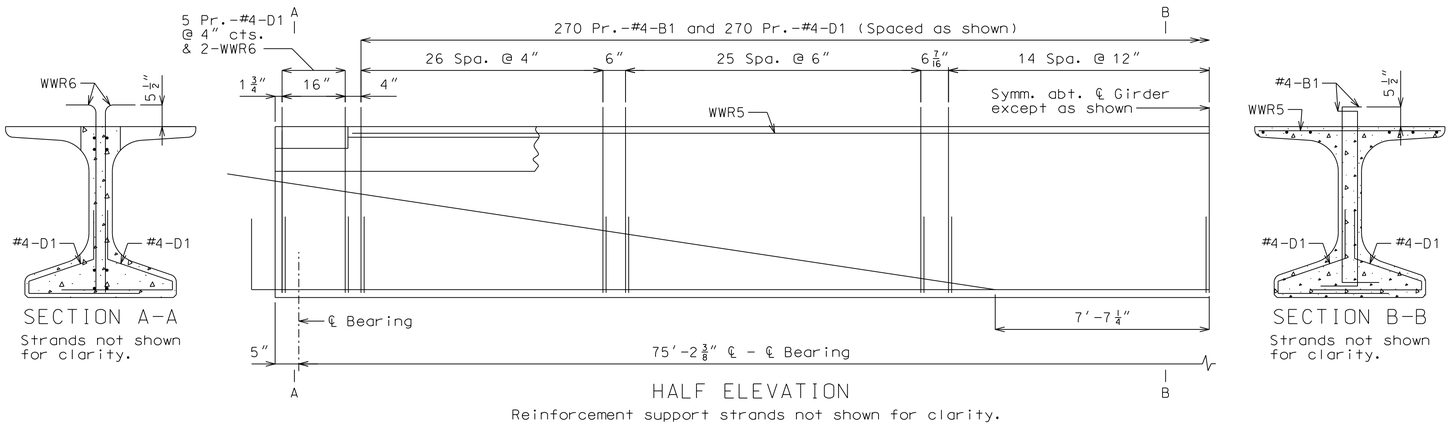
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

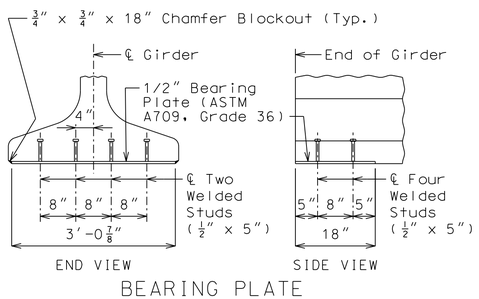



SECTION A-A
Strands not shown for clarity.

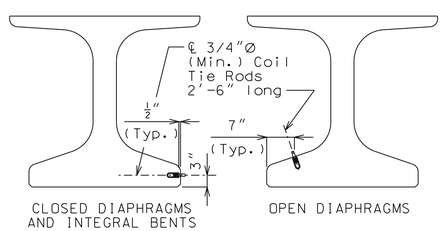
HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (5-6) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

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Checked SAB 8/2022

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SHEET NO. 108 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — A — 11/7/24

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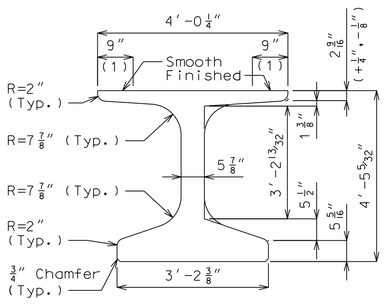
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

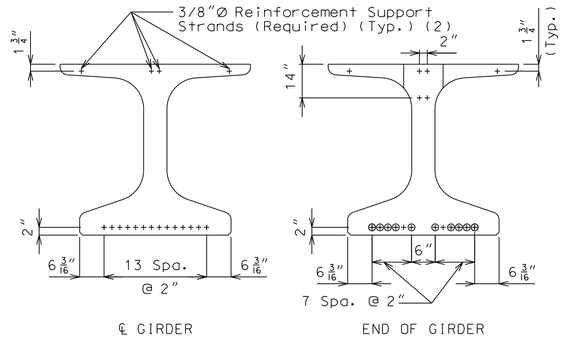
**NU-GIRDERS - SPAN (5-6)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

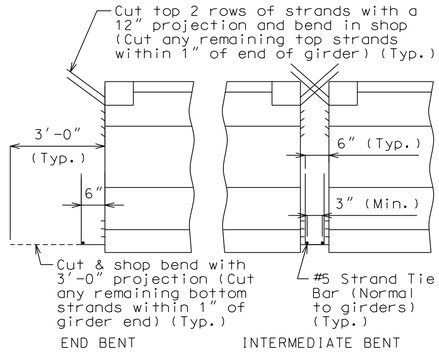



℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

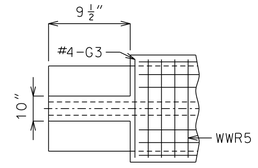
\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.

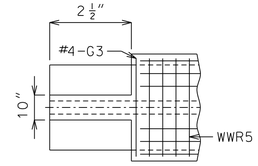



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



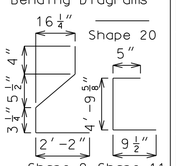

GIRDERS AT INTERMEDIATE BENT 5



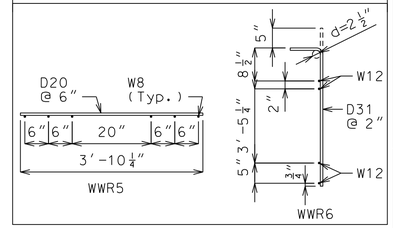

GIRDERS AT INTERMEDIATE BENT 6

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 270 | 4 B1 | 5′-10″ | 11 | |
| 290 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 615 kips.

Pretensioned members shall be in accordance with Sec 1029.

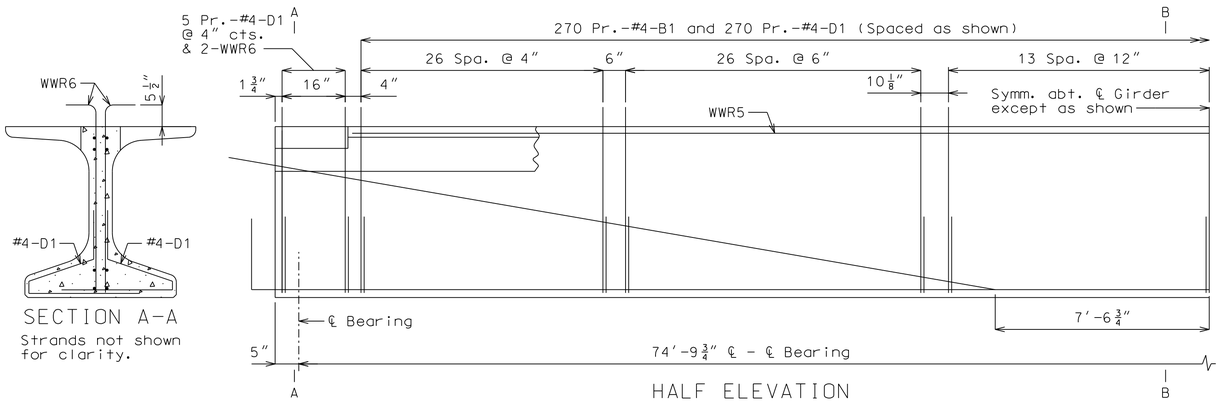
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

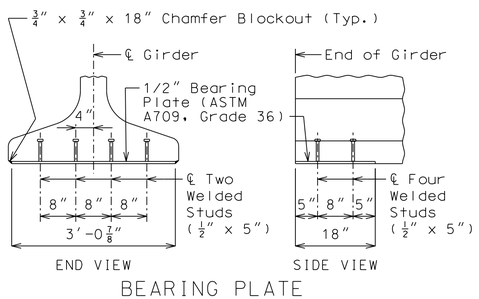



SECTION A-A
Strands not shown for clarity.

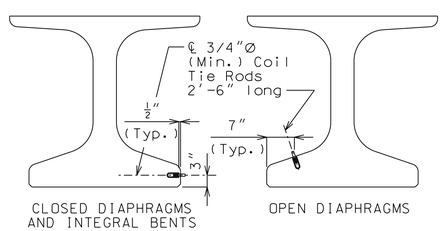
SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE

HALF ELEVATION
Reinforcement support strands not shown for clarity.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (5-6) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

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Checked SAB 8/2022

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SHEET NO. 109 TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — A — 11/7/24

| DESCRIPTION | DATE |
|---|---|
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

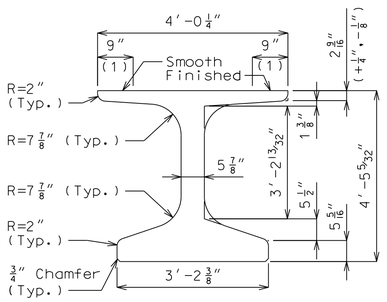
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
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SUITE 200
KANSAS CITY, MO 64105

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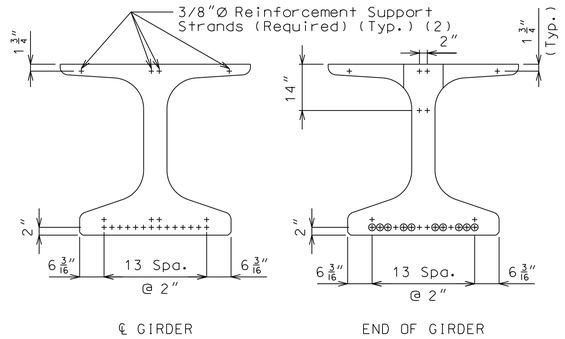
**NU-GIRDERS - SPAN (5-6)**
**GIRDER - 2**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

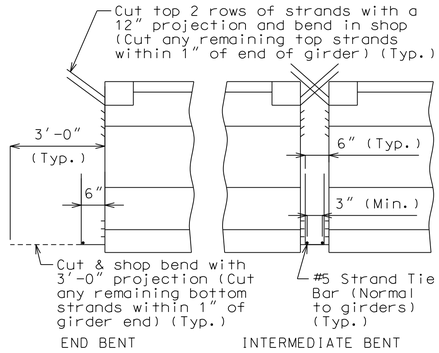



℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

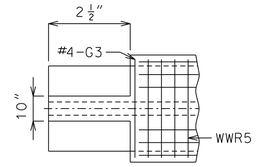
\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.

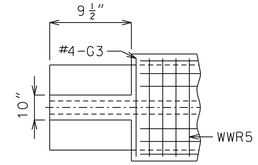



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



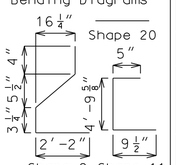

GIRDERS AT INTERMEDIATE BENT 6



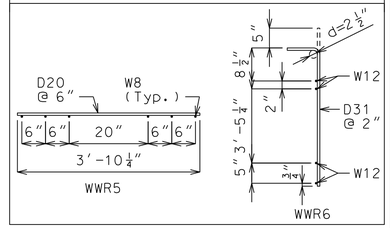

GIRDERS AT INTERMEDIATE BENT 7

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 278 | 4 B1 | 5′-10″ | 11 | |
| 298 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 D3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 791 kips.

Pretensioned members shall be in accordance with Sec 1029.

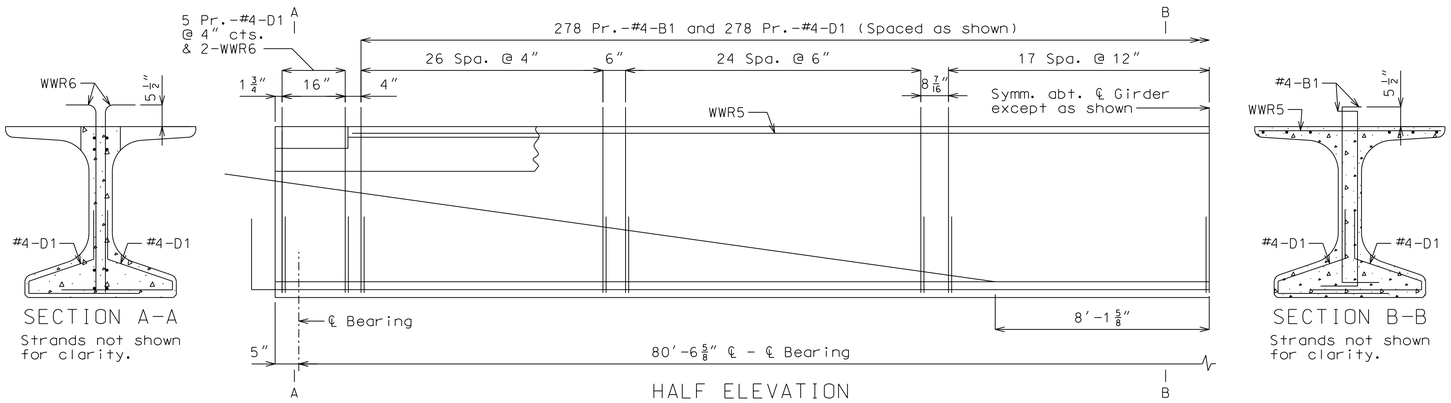
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

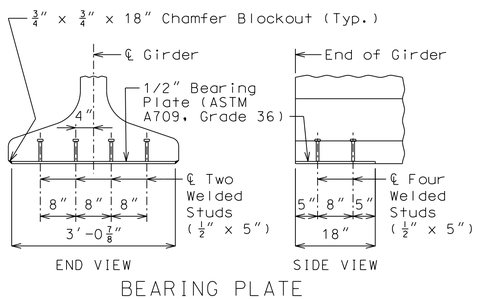



SECTION A-A
Strands not shown for clarity.

HALF ELEVATION
Reinforcement support strands not shown for clarity.

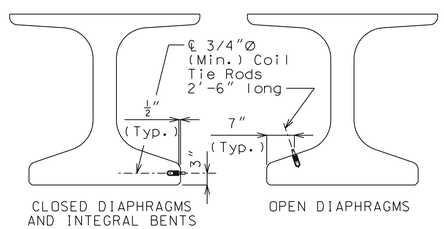
SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE




END VIEW SIDE VIEW

BEARING PLATE




CLOSED DIAPHRAGMS AND INTEGRAL BENTS OPEN DIAPHRAGMS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (6-7) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 110 TOTAL SHEETS 187
DATE PREPARED 11/13/2024
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CITY KANSAS CITY
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| DESCRIPTION | DATE |
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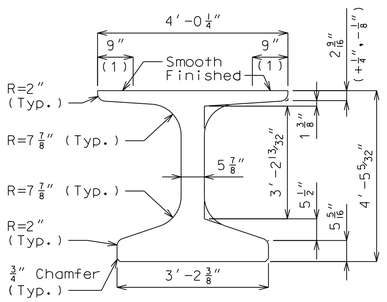
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

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(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
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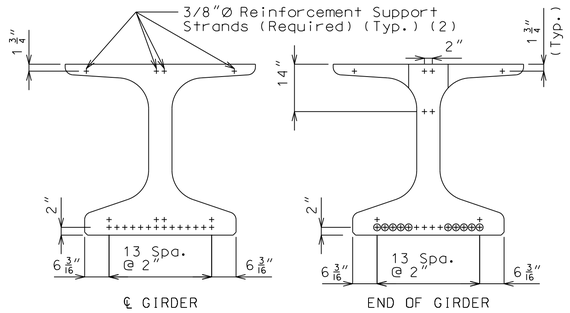
**NU-GIRDERS - SPAN (6-7)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

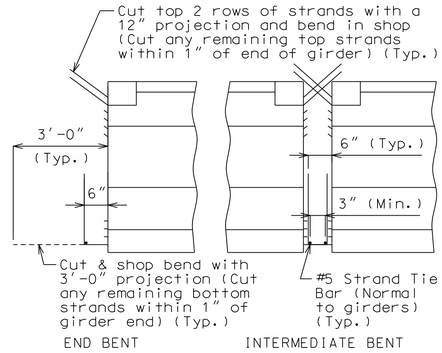



℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

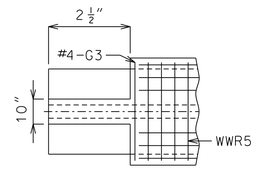
\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.

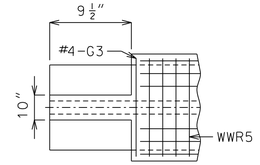



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



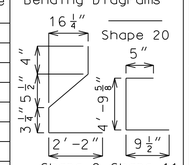

GIRDERS AT INTERMEDIATE BENT 6



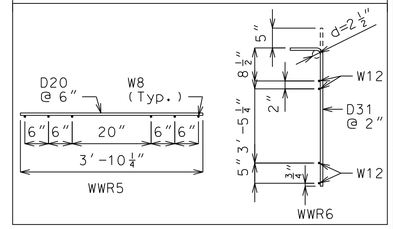

GIRDERS AT INTERMEDIATE BENT 7

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 326 | 4 B1 | 5′-10″ | 11 | |
| 346 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 D3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 791ips.

Pretensioned members shall be in accordance with Sec 1029.

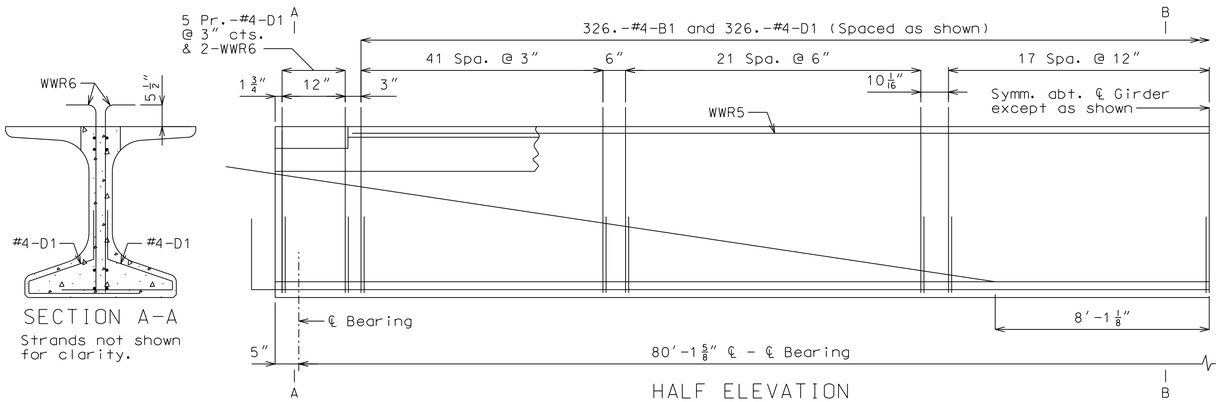
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

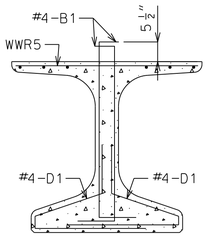
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

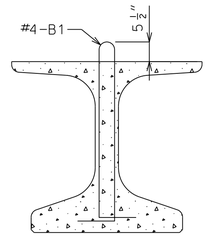



SECTION A-A
Strands not shown for clarity.

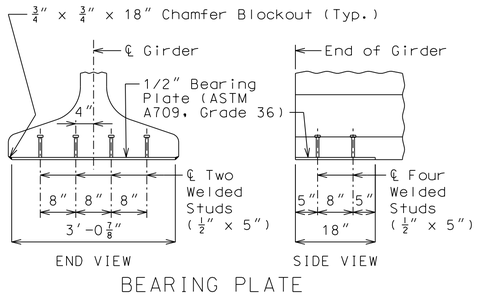
HALF ELEVATION
Reinforcement support strands not shown for clarity.



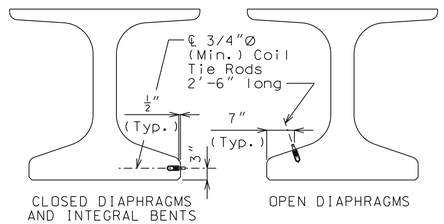

SECTION B-B
Strands not shown for clarity.




B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (6-7) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

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Checked SAB 8/2022

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SHEET NO. 111 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

| DESCRIPTION | DATE |
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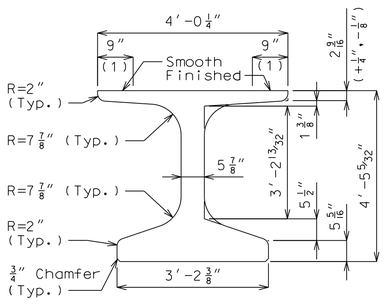
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

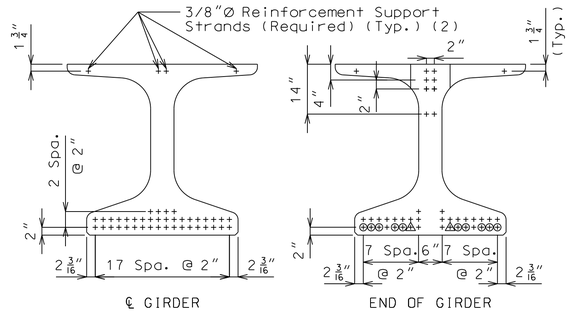
**NU-GIRDERS - SPAN (6-7)**
**GIRDER - 2**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



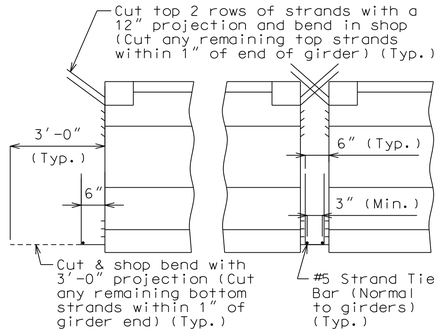

℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

+ Indicates prestressing strand.

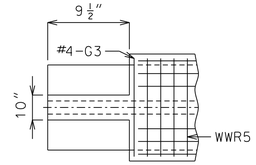
△ Indicates debonding of strand for 5′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.




END BENT INTERMEDIATE BENT

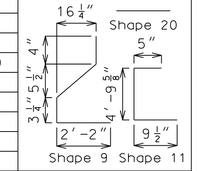
STRANDS AT GIRDER ENDS



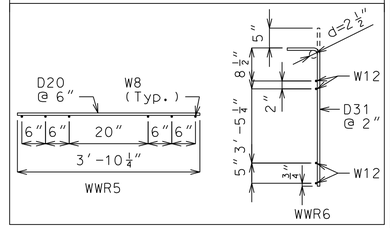

GIRDERS AT INTERMEDIATE BENTS

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 452 | 4 B1 | 5′-10″ | 11 | |
| 472 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

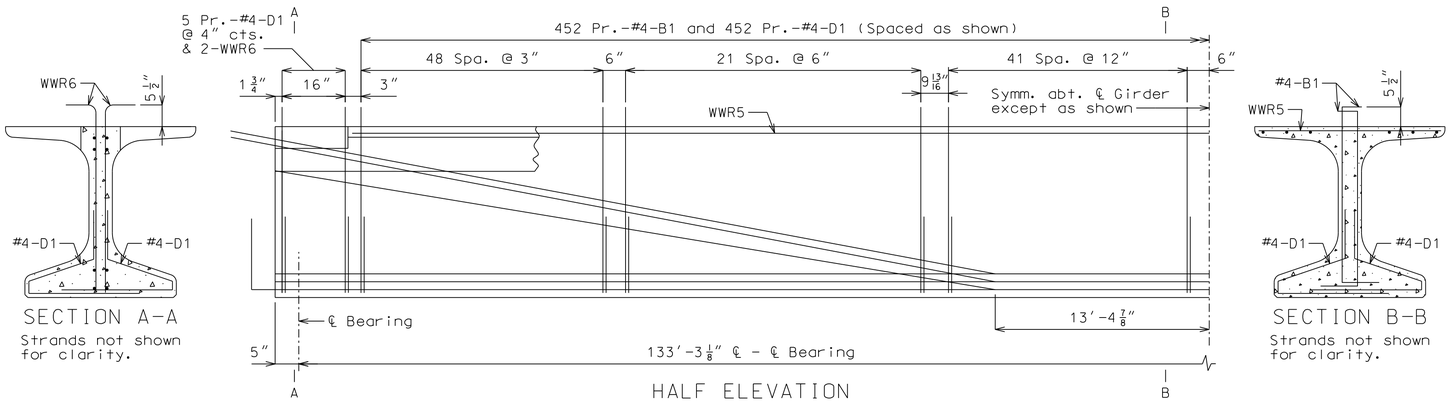
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

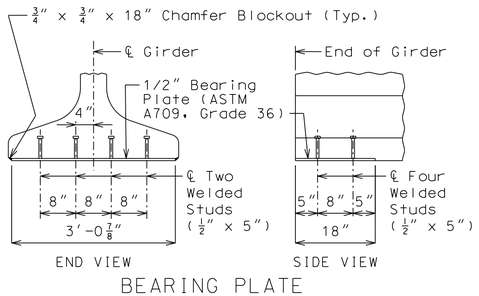



SECTION A-A
Strands not shown for clarity.

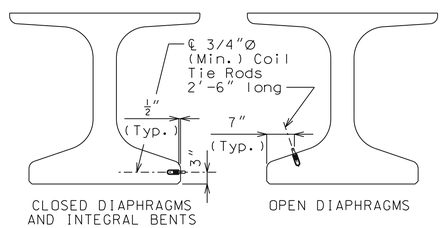
HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (7-8) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

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Checked SAB 8/2022

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SHEET NO. 112 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

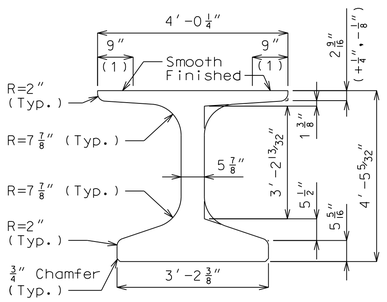
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

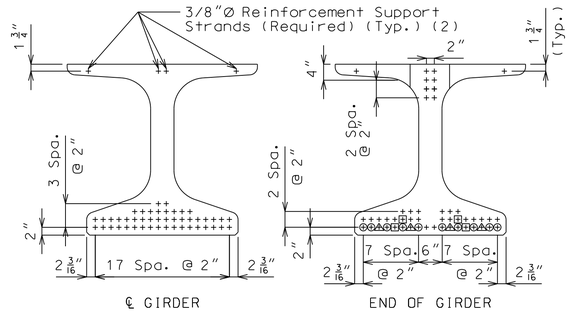
**NU-GIRDERS - SPAN (7-8)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.




℄ GIRDER END OF GIRDER

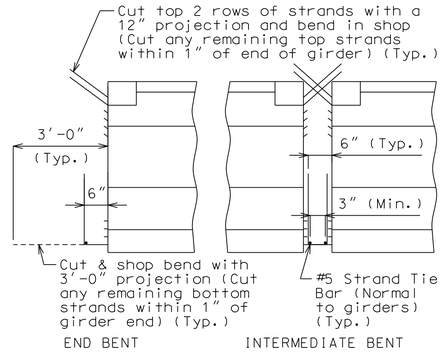
STRAND ARRANGEMENT

+ Indicates prestressing strand.

△ Indicates debonding of strand for 5′-0″ at ends.

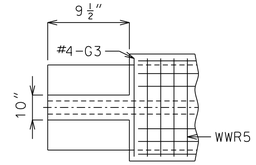
o Indicates cut & shop bend with 3′-0″ projection.

□ Indicates debonding of strand for 10′-0″ at ends.




END BENT INTERMEDIATE BENT

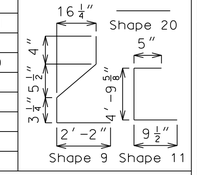
STRANDS AT GIRDER ENDS



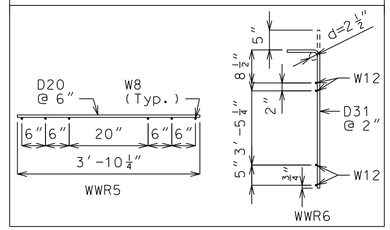

GIRDERS AT INTERMEDIATE BENTS

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 452 | 4 B1 | 5′-10″ | 11 | |
| 472 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 2021 kips.

Pretensioned members shall be in accordance with Sec 1029.

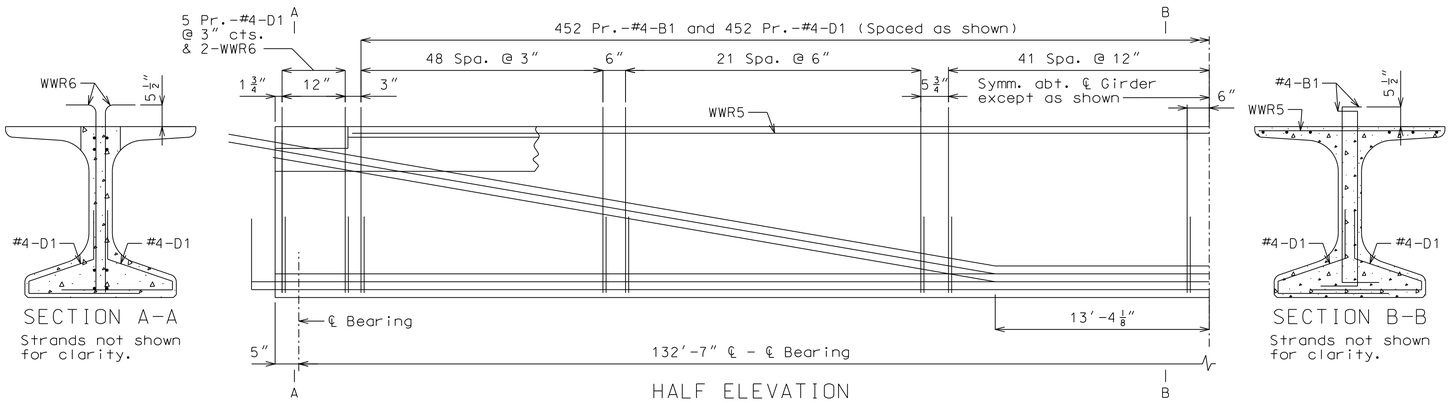
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

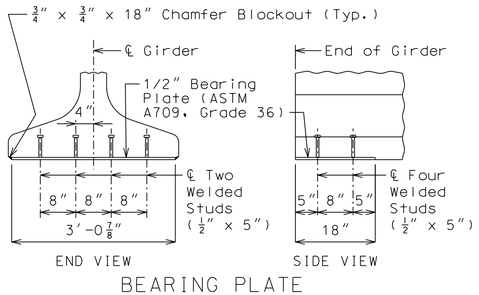



SECTION A-A
Strands not shown for clarity.

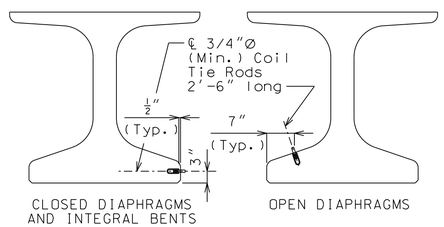
HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPANS (7-8) & (8-9) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

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Checked SAB 8/2022

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| SHEET NO. | TOTAL SHEETS |
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| 113 | 187 |

DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

| DESCRIPTION | DATE |
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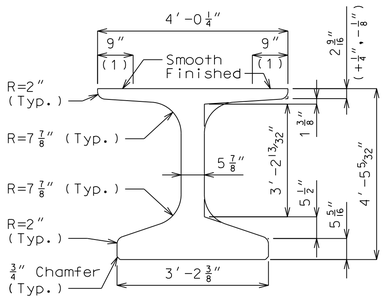
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**NU-GIRDERS - SPANS (7-8) & (8-9)**
**GIRDER - 2**

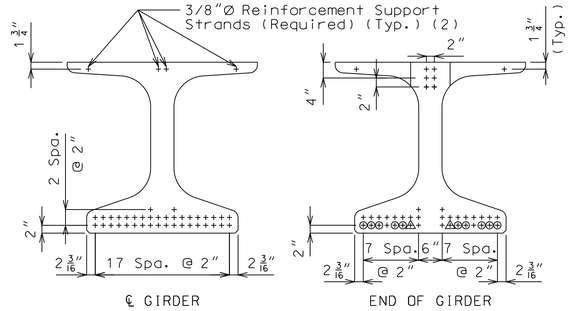
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



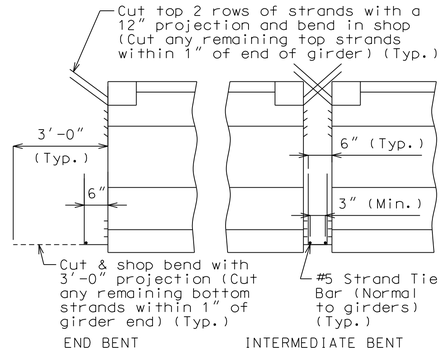

℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

+ Indicates prestressing strand.

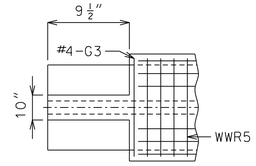
△ Indicates debonding of strand for 5′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.




END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS

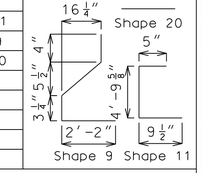



GIRDERS AT INTERMEDIATE BENTS

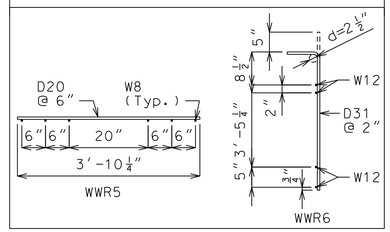
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 452 | 4 B1 | 5′-10″ | 11 |
| 472 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1670 kips.

Pretensioned members shall be in accordance with Sec 1029.

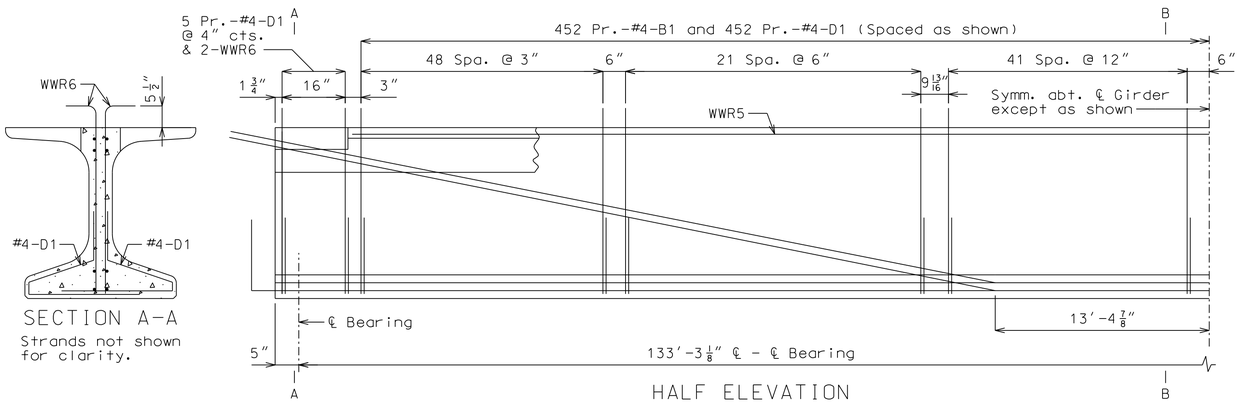
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

For location of coil inserts at slab drains, see Sheet No. 133.

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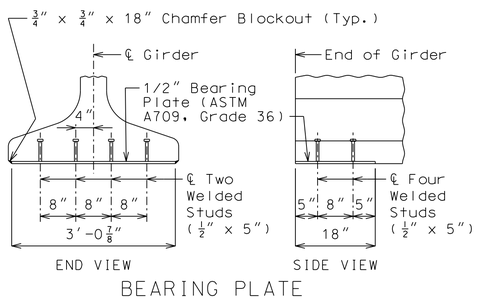



SECTION A-A
Strands not shown for clarity.

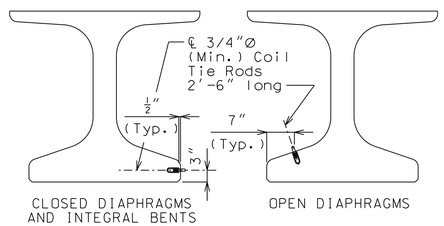
HALF ELEVATION
Reinforcement support strands not shown for clarity.

SECTION B-B
Strands not shown for clarity.

B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

SHEET NO. 114 | TOTAL SHEETS 187

DATE PREPARED 11/13/2024

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI

11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION

DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**NU-GIRDERS - SPAN (8-9)**
**GIRDER - 1**

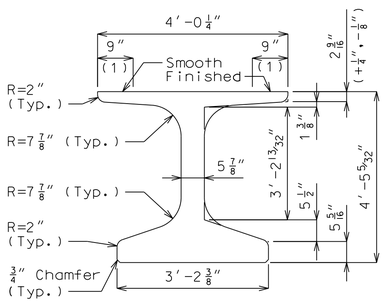
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Detailed PRY 6/2022
Checked SAB 8/2022

# NU-GIRDERS - SPAN (8-9) (Girder 1)

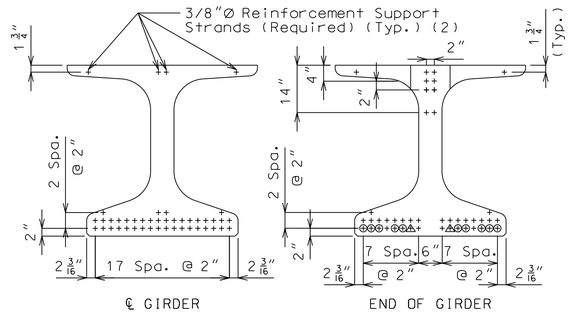
Note: This drawing is not to scale. Follow dimensions.

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

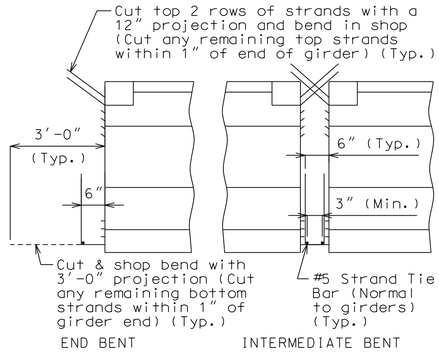



STRAND ARRANGEMENT

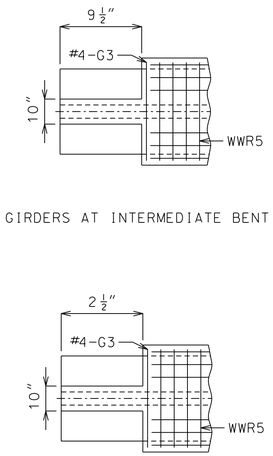
+ Indicates prestressing strand.

△ Indicates debonding of strand for end 5′-0″.

o Indicates cut & shop bend with 3′-0″ projection.

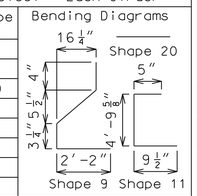



STRANDS AT GIRDER ENDS

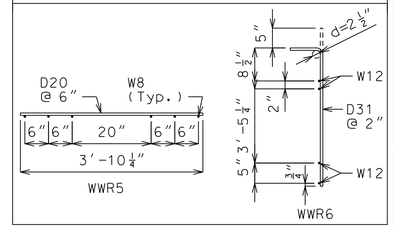



TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 450 | 4 B1 | 5′-10″ | 11 | |
| 470 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




| Welded Wire Reinforcement - Each Girder |
|---|




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

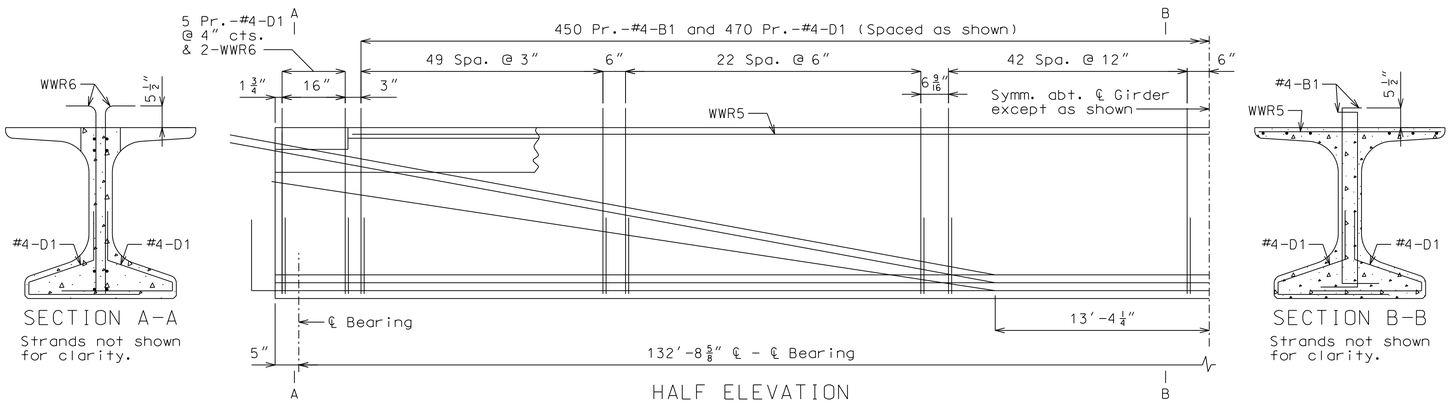
Fabricator shall be responsible for location and design of lifting devices.

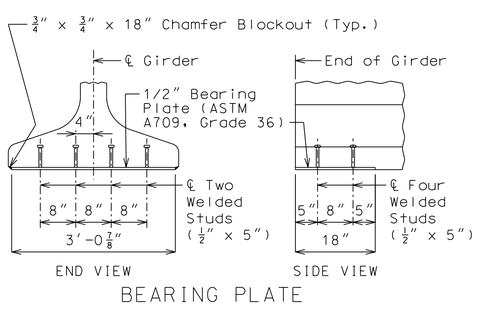
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

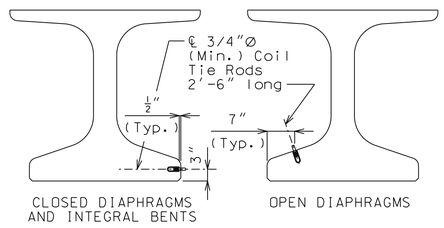
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (9-10) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 115 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER
PETER YOUNG
NUMBER PE-2010017701
STATE OF MISSOURI
11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

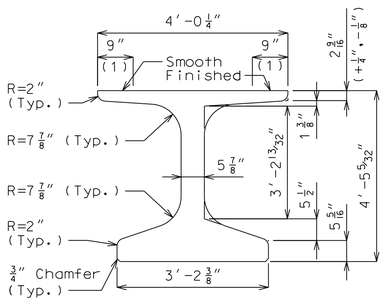
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

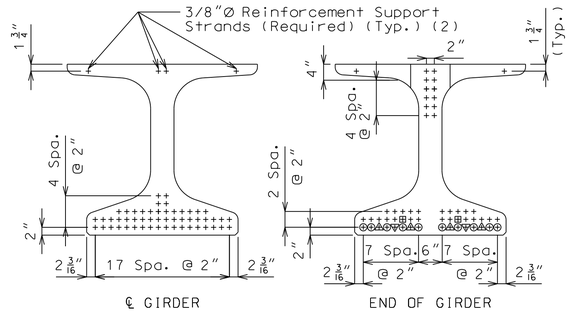
**NU-GIRDERS - SPAN (9-10)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.




STRAND ARRANGEMENT

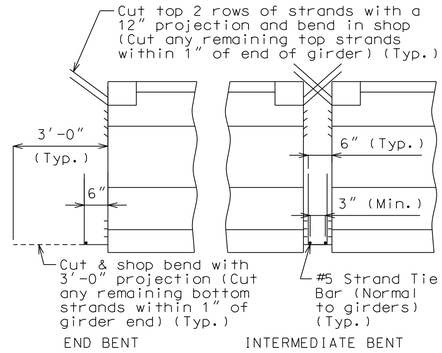
+ Indicates prestressing strand.

△ Indicates debonding of strand for 5′-0″ at ends.

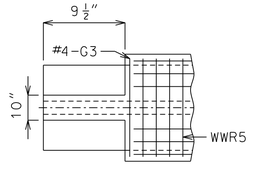
▽ Indicates debonding of strand for 20′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.

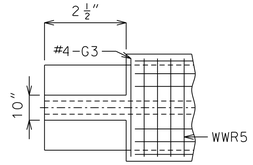
□ Indicates debonding of strand for 10′-0″ at ends.




STRANDS AT GIRDER ENDS



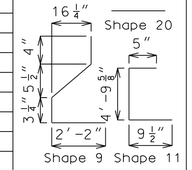

GIRDERS AT INTERMEDIATE BENT 9



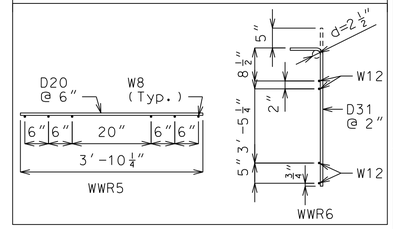

GIRDERS AT INTERMEDIATE BENT 10

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 450 | 4 B1 | 5′-10″ | 11 | |
| 470 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 2285 kips.

Pretensioned members shall be in accordance with Sec 1029.

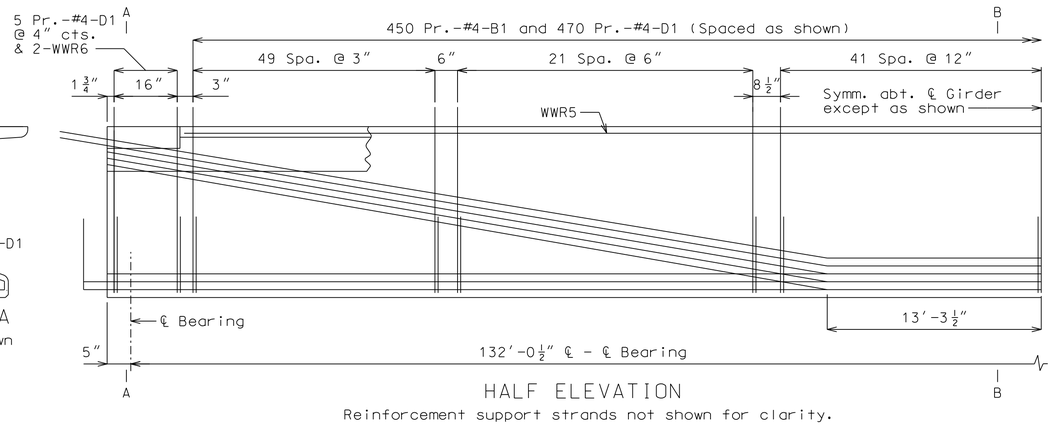
Fabricator shall be responsible for location and design of lifting devices.

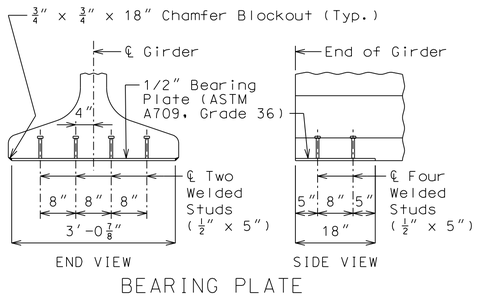
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

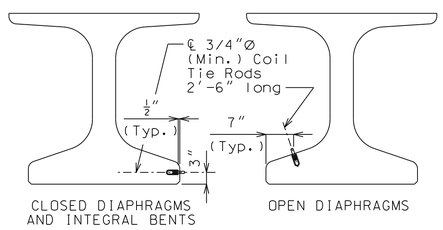
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPANS (9-10) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 116 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

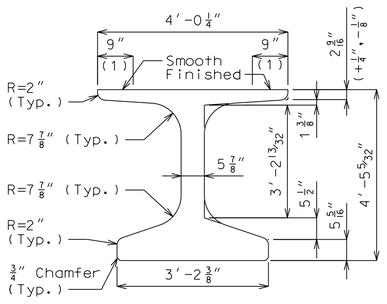
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

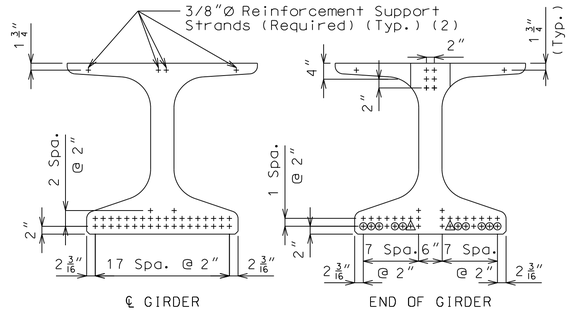
**NU-GIRDERS - SPANS (9-10)**
**GIRDER - 2**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

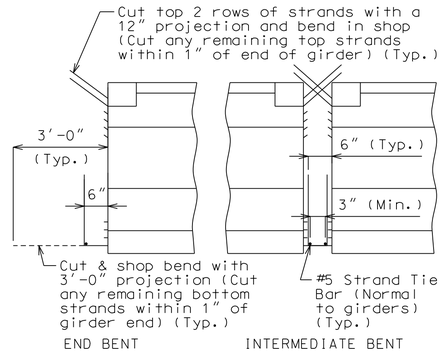



STRAND ARRANGEMENT

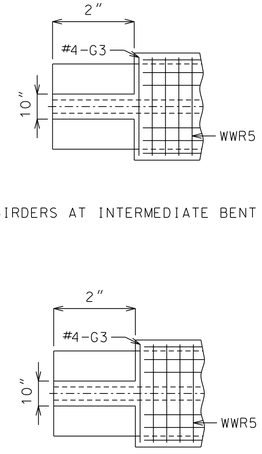
+ Indicates prestressing strand.

△ Indicates debonding of strand for 5′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.



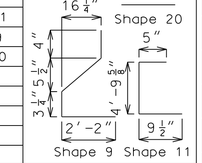

STRANDS AT GIRDER ENDS



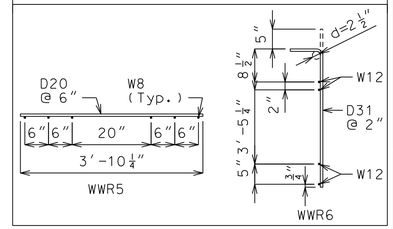

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 408 | 4 B1 | 5′-10″ | 11 |
| 428 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1670 kips.

Pretensioned members shall be in accordance with Sec 1029.

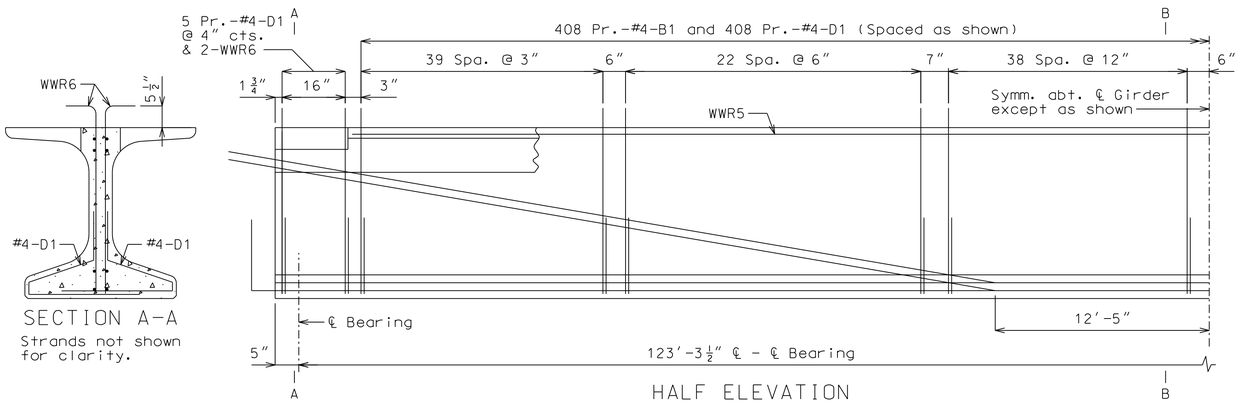
Fabricator shall be responsible for location and design of lifting devices.

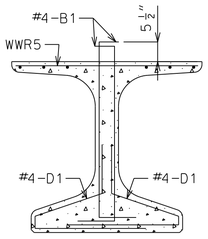
For Girder Camber Diagram, see Sheet No. 137 and 138.

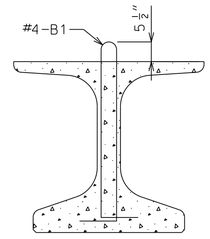
The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

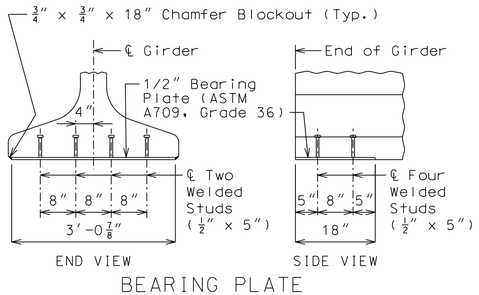
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

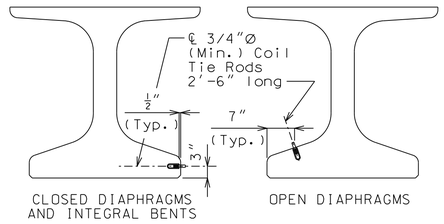



BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (10-11) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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1:59:52 PM
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SHEET NO. 117 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
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STATE OF MISSOURI · PROFESSIONAL ENGINEER · PETER YOUNG NUMBER PE-2010017701 · PROFESSIONAL ENGINEER
11/7/24

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

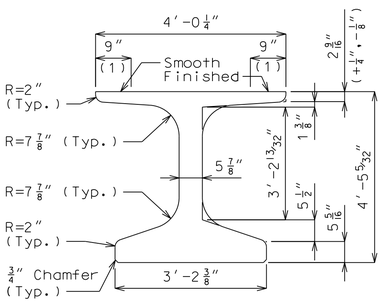
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
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WSP USA INC.
300 WYANDOTTE STREET
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KANSAS CITY, MO 64105

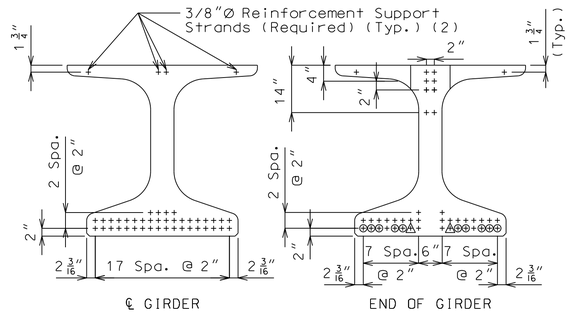
**NU-GIRDERS - SPAN (10-11)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



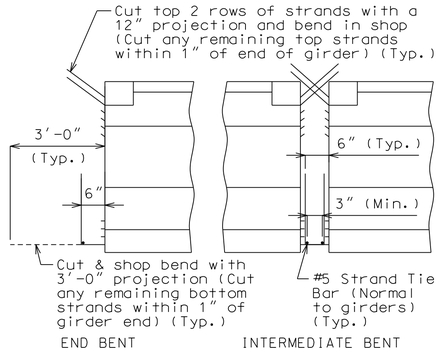

℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

+ Indicates prestressing strand.

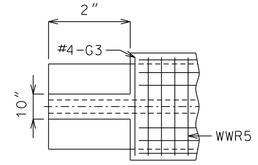
Δ Indicates debonding of strand for 5′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.

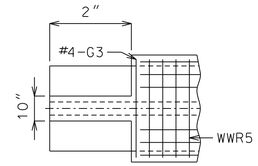



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS



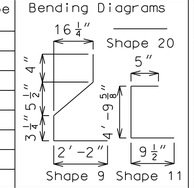

GIRDERS AT INTERMEDIATE BENT 10



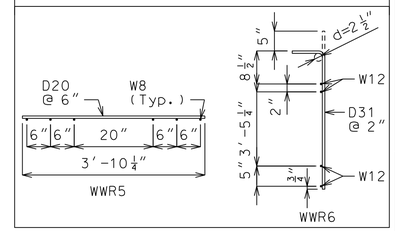

GIRDERS AT INTERMEDIATE BENT 11

TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 406 | 4 B1 | 5′-10″ | 11 | |
| 426 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1758 kips.

Pretensioned members shall be in accordance with Sec 1029.

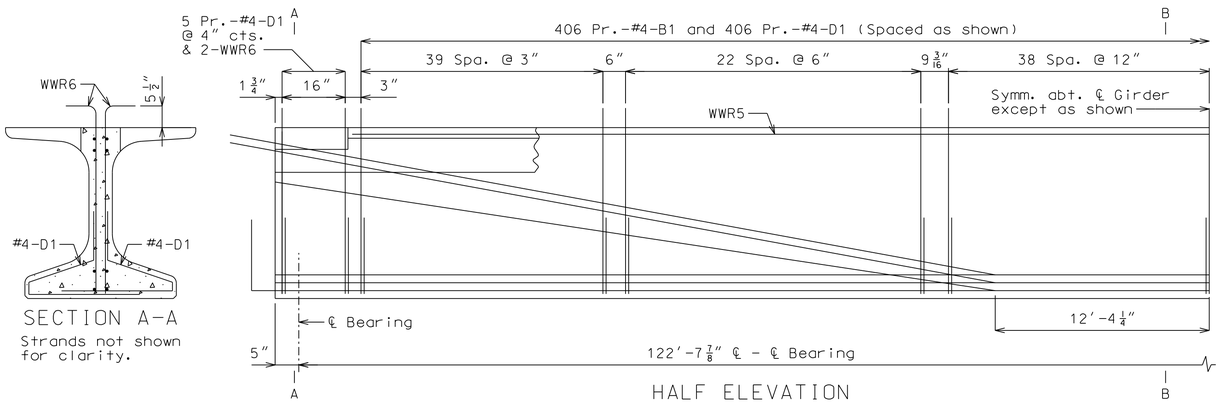
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

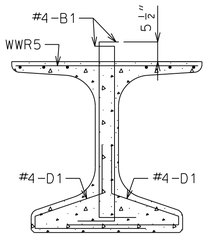
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

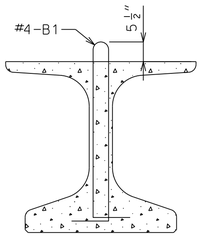



SECTION A-A
Strands not shown for clarity.

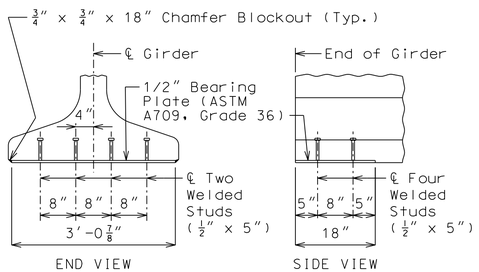
HALF ELEVATION
Reinforcement support strands not shown for clarity.




SECTION B-B
Strands not shown for clarity.

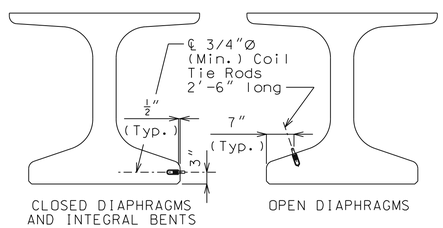



B1 BAR PERMISSIBLE ALTERNATE SHAPE




END VIEW SIDE VIEW

BEARING PLATE




CLOSED DIAPHRAGMS AND INTEGRAL BENTS OPEN DIAPHRAGMS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (10-11) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 118 TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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

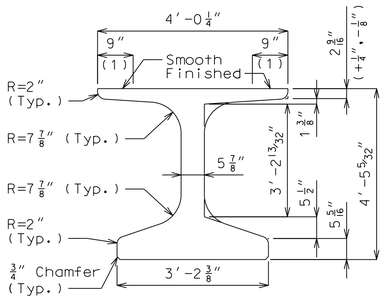
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

NU-GIRDERS - SPAN (10-11)
GIRDER - 2

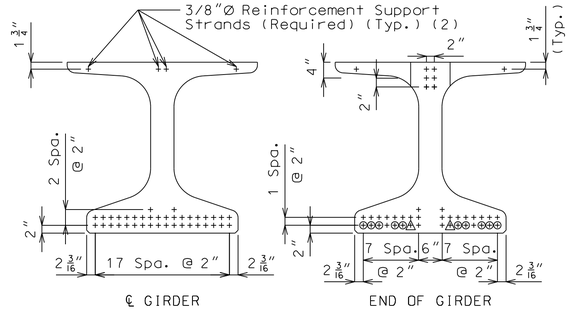
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

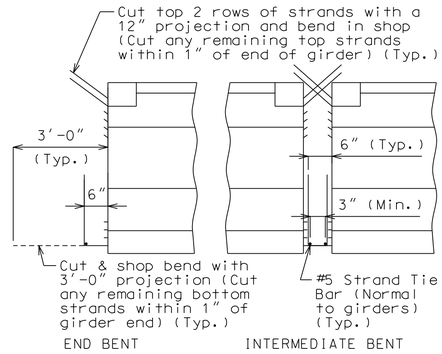



STRAND ARRANGEMENT

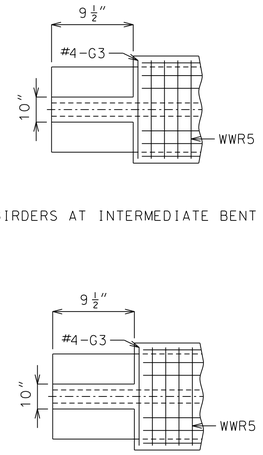
+ Indicates prestressing strand.

△ Indicates debonding of strand for 5′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.

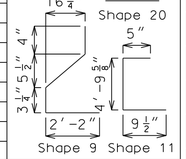



STRANDS AT GIRDER ENDS

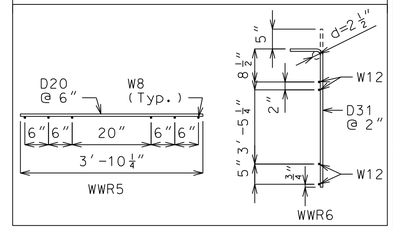



TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 454 | 4 B1 | 5′-10″ | 11 | |
| 474 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1670 kips.

Pretensioned members shall be in accordance with Sec 1029.

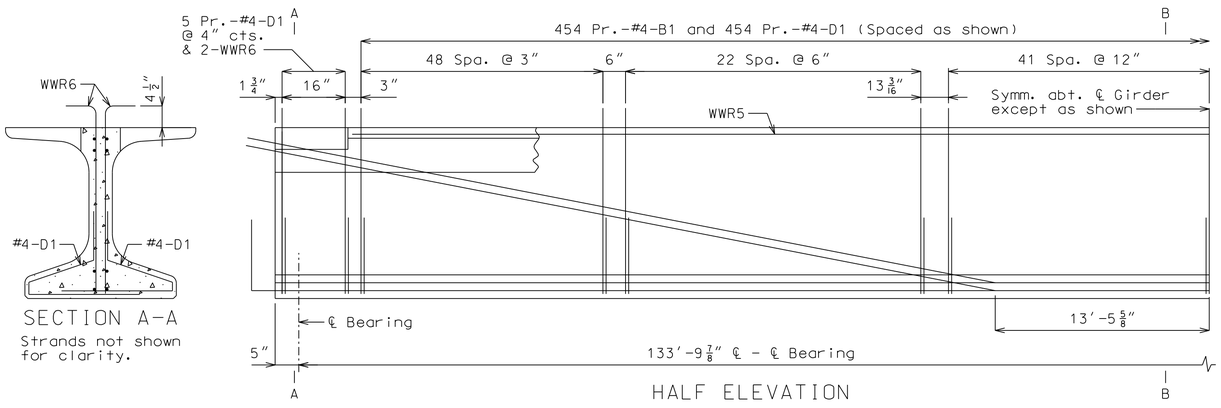
Fabricator shall be responsible for location and design of lifting devices.

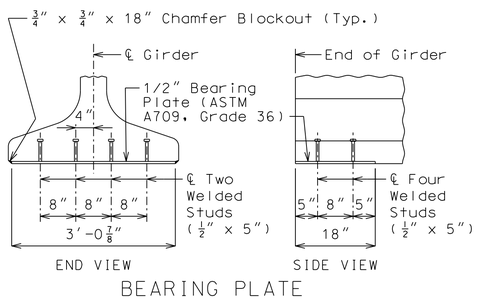
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

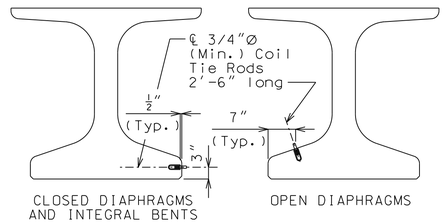
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (11-12) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

2:00:16 PM
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SHEET NO. 119 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER · STATE OF MISSOURI · PETER YOUNG NUMBER PE-2010017701 · 11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

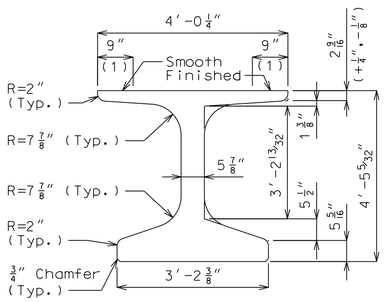
DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

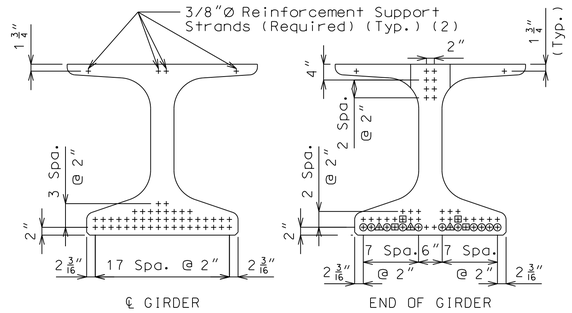
NU-GIRDERS - SPAN (11-12)
GIRDER - 1

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



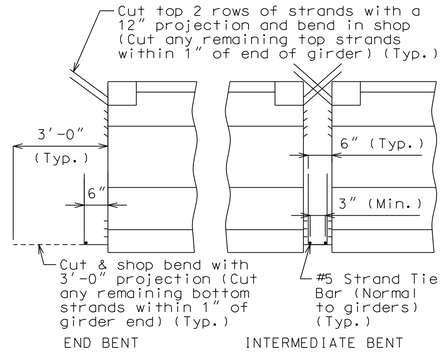

STRAND ARRANGEMENT

\+ Indicates prestressing strand.

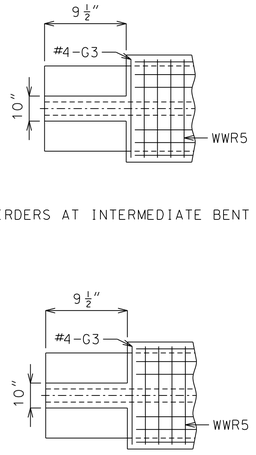
△ Indicates debonding of strand for 5′-0″ at ends.

o Indicates cut & shop bend with 3′-0″ projection.

□ Indicates debonding of strand for 10′-0″ at ends.




STRANDS AT GIRDER ENDS

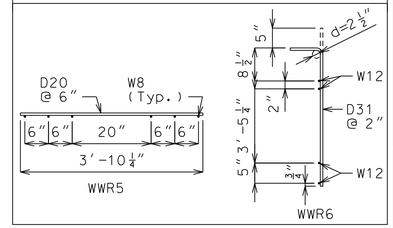



TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | | |
|---|---|---|---|---|
| No. | Size/ Mark | Length | Shape | Bending Diagrams |
| 454 | 4 B1 | 5′-10″ | 11 | |
| 474 | 4 D1 | 4′-0″ | 9 | |
| 2 | 4 G3 | 3′-10¼″ | 20 | |

Shape 20: 16¼″, 5″, 4″, 3¼″, 5½″, 4′-9 5/8″
Shape 9: 2′-2″
Shape 11: 9½″

Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 2021 kips.

Pretensioned members shall be in accordance with Sec 1029.

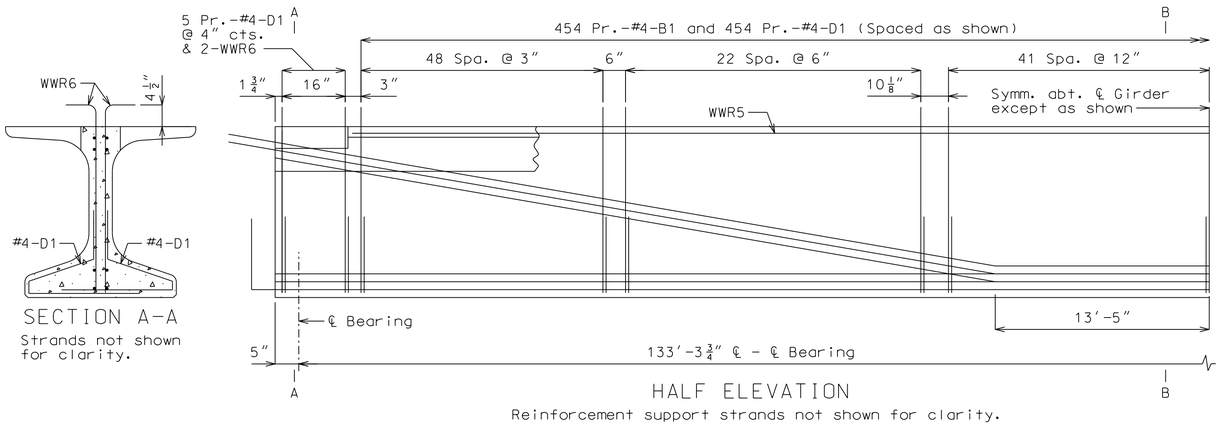
Fabricator shall be responsible for location and design of lifting devices.

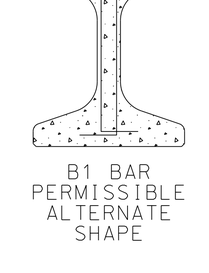
For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

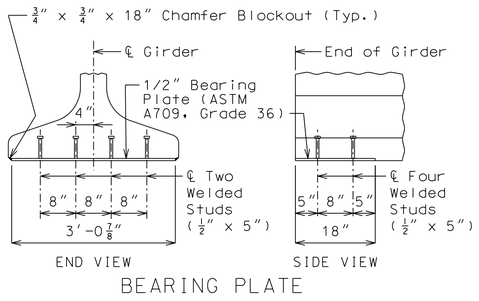
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

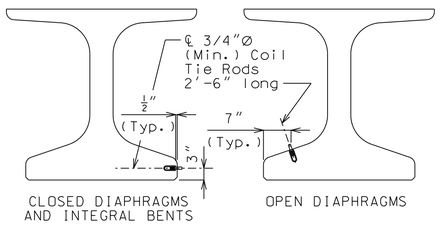



B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (11-12) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 120 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER — STATE OF MISSOURI — PETER YOUNG NUMBER PE-2010017701 — 11/7/24

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

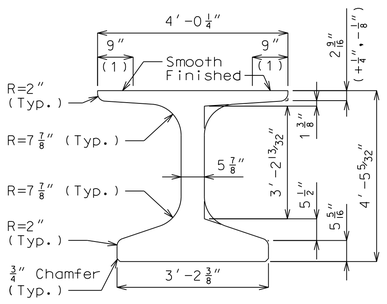
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

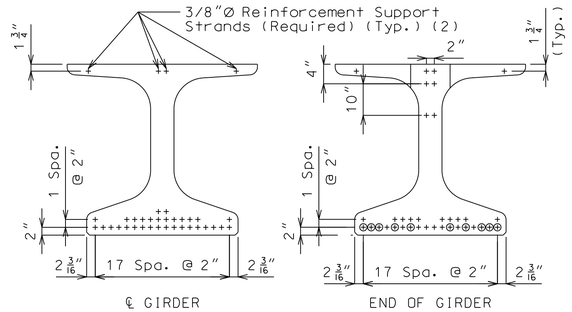
**NU-GIRDERS - SPAN (11-12)**
**GIRDER - 2**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.

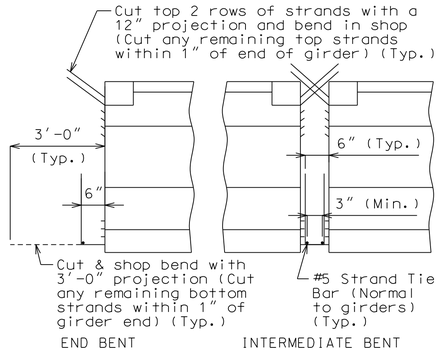



℄ GIRDER — END OF GIRDER

STRAND ARRANGEMENT

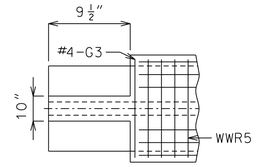
\+ Indicates prestressing strand.

o Indicates cut & shop bend with 3′-0″ projection.

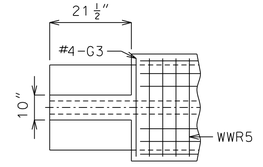



END BENT — INTERMEDIATE BENT

STRANDS AT GIRDER ENDS




GIRDERS AT INTERMEDIATE BENT

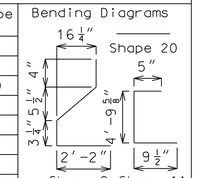



GIRDERS AT END BENT

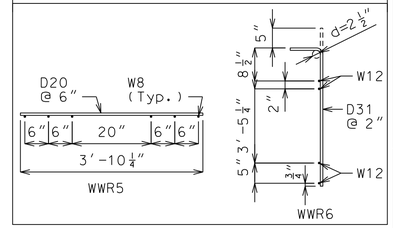
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 334 | 4 B1 | 5′-10″ | 11 |
| 354 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1406 kips.

Pretensioned members shall be in accordance with Sec 1029.

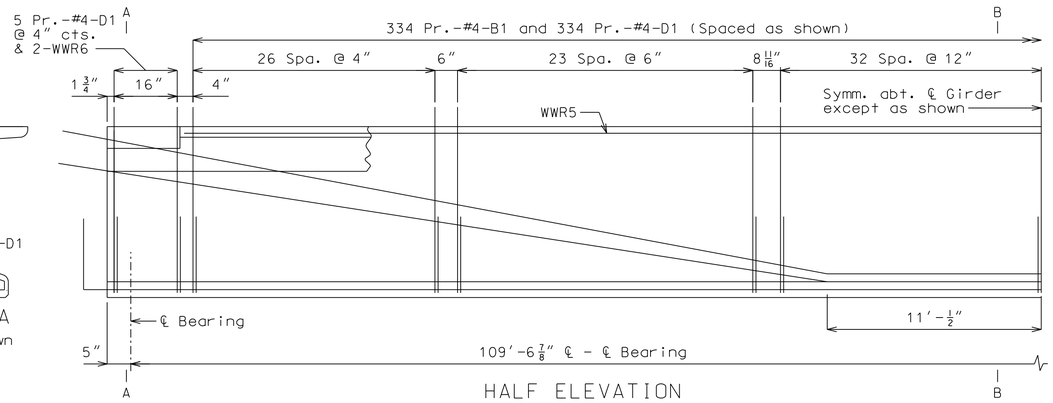
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

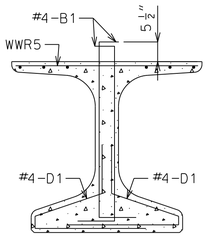
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

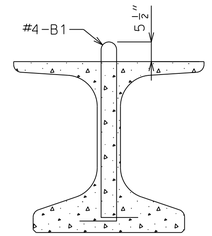



SECTION A-A
Strands not shown for clarity.

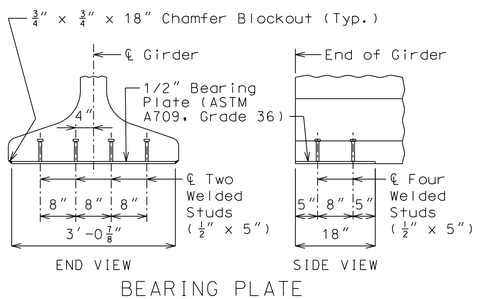
HALF ELEVATION
Reinforcement support strands not shown for clarity.



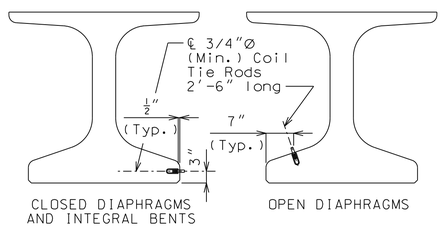

SECTION B-B
Strands not shown for clarity.




B1 BAR PERMISSIBLE ALTERNATE SHAPE




BEARING PLATE




COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (12-13) (Girder 1)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 121 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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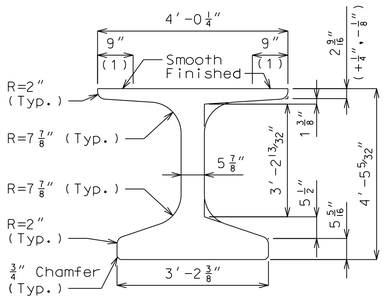
| DESCRIPTION | DATE |
|---|---|

CITY OF KANSAS CITY, MISSOURI
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CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

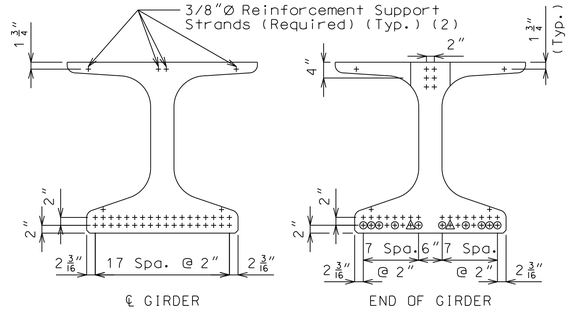
**NU-GIRDERS - SPAN (12-13)**
**GIRDER - 1**

(1) Fabricator shall apply a bond breaker to this region.




DIMENSIONS

(2) Outer strands tensioned to 2.02 kips/strand and inner strands to 8 kips/strand. Placed symmetrical about ℄ Girder. May be moved laterally in pairs.



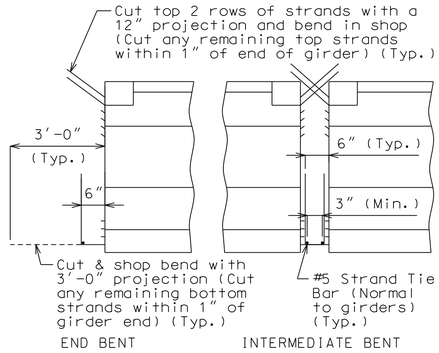

℄ GIRDER END OF GIRDER

STRAND ARRANGEMENT

+ Indicates prestressing strand.

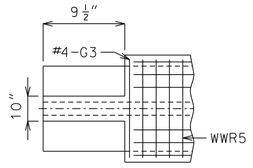
o Indicates cut & shop bend with 3′-0″ projection.

△ Indicates debonding of strand for 5′-0″ at ends.

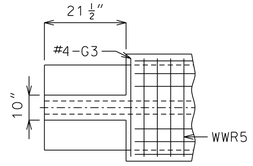



END BENT INTERMEDIATE BENT

STRANDS AT GIRDER ENDS




GIRDERS AT INTERMEDIATE BENT

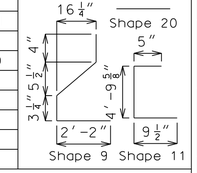



GIRDERS AT END BENT

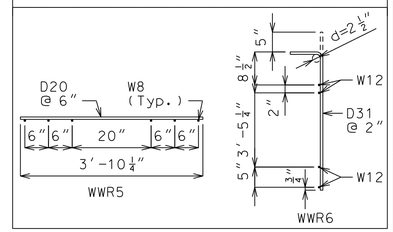
TOP FLANGE BLOCKOUT

| Bill of Reinforcing Steel - Each Girder | | | |
|---|---|---|---|
| No. | Size/ Mark | Length | Shape |
| 334 | 4 B1 | 5′-10″ | 11 |
| 354 | 4 D1 | 4′-0″ | 9 |
| 2 | 4 G3 | 3′-10¼″ | 20 |

Bending Diagrams




Welded Wire Reinforcement - Each Girder




All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1″.

All bar reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

G3 and G6 not required for exterior girders of intermediate spans. Half no. of G3, and G4 not required for ext. girders of end spans.

## General Notes:

Concrete for prestressed girders shall be Class A-1 with f′c = 9000 psi and f′ci = 6700 psi.

Use 0.6″Ø Grade 270 strands with an initial prestress force of 1670 kips.

Pretensioned members shall be in accordance with Sec 1029.

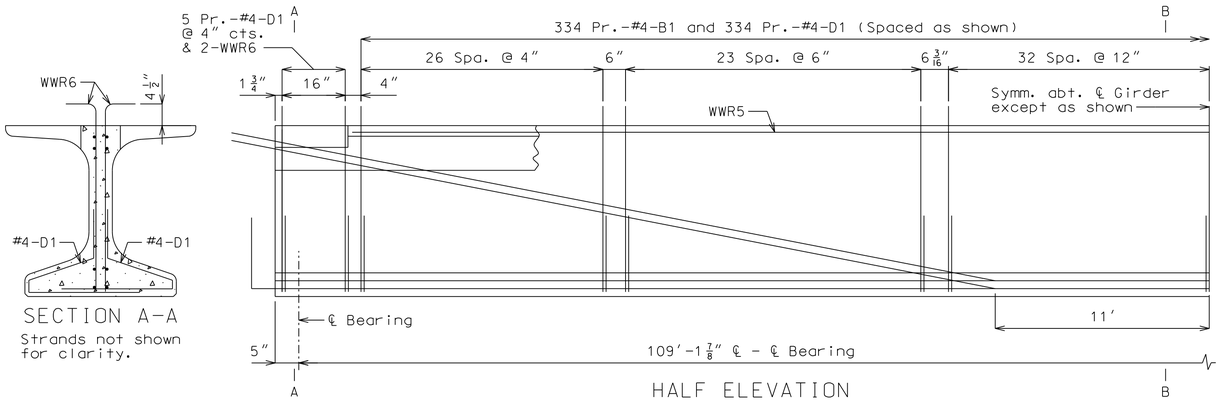
Fabricator shall be responsible for location and design of lifting devices.

For Girder Camber Diagram, see Sheet No. 137 and 138.

The 1 1/2″Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 123.

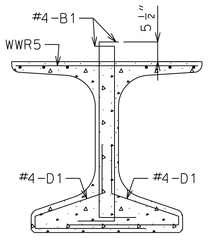
For location of coil inserts at slab drains, see Sheet No. 133.

For location of coil ties at integral bents, see Sheet No. 85.

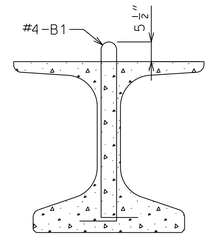



SECTION A-A
Strands not shown for clarity.

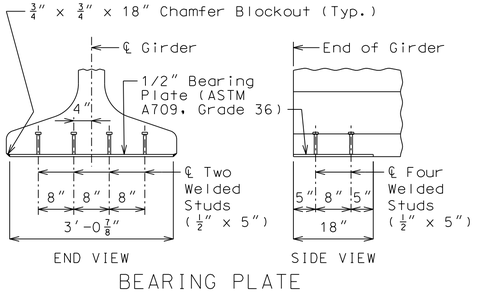
HALF ELEVATION
Reinforcement support strands not shown for clarity.




SECTION B-B
Strands not shown for clarity.

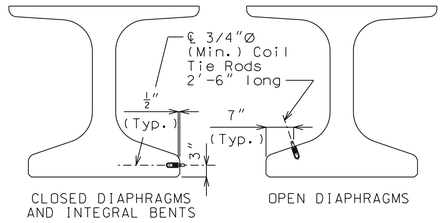



B1 BAR PERMISSIBLE ALTERNATE SHAPE




END VIEW SIDE VIEW

BEARING PLATE




CLOSED DIAPHRAGMS AND INTEGRAL BENTS

OPEN DIAPHRAGMS

COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.

# NU-GIRDERS - SPAN (12-13) (Girder 2)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 6/2022
Checked SAB 8/2022

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SHEET NO. 122 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER · STATE OF MISSOURI · PETER YOUNG NUMBER PE-2010017701 · 11/7/24

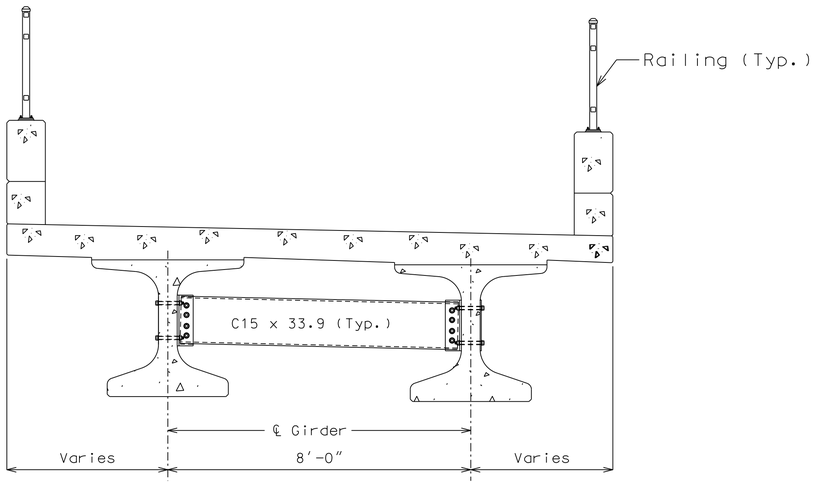
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DESCRIPTION | DATE

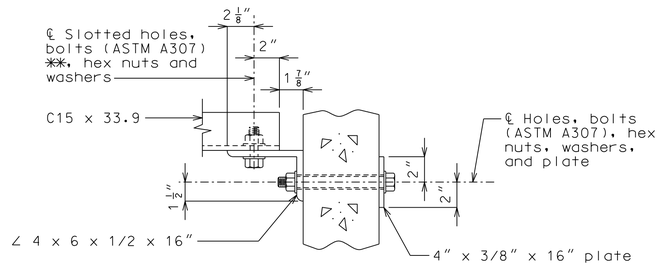
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

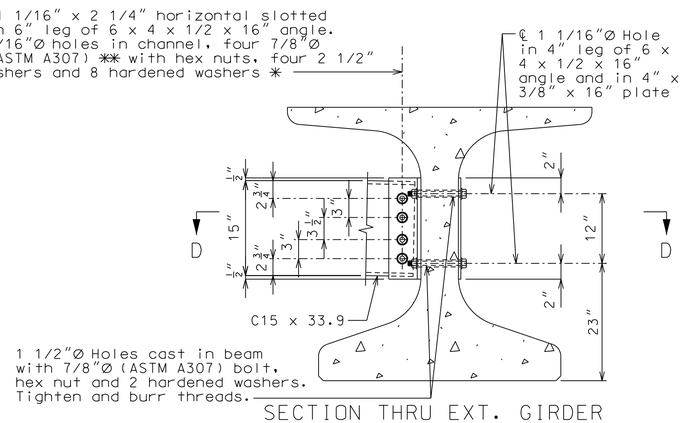
NU-GIRDERS - SPAN (12-13)
GIRDER - 2




PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS




SECTION D-D




SECTION THRU EXT. GIRDER
AT DIAPHRAGM

## STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.

For location of intermediate diaphragms, see Sheet No. 98 ,99 and100.

Shop drawings showing the location of the holes for the intermediate diaphragms are required and shall be approved by the Engineer prior to fabrication of the girders.

# STEEL INTERMEDIATE DIAPHRAGMS

Detailed QYF 7/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

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| SHEET NO. | TOTAL SHEETS |
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| 123 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
STATE OF MISSOURI
11/7/24

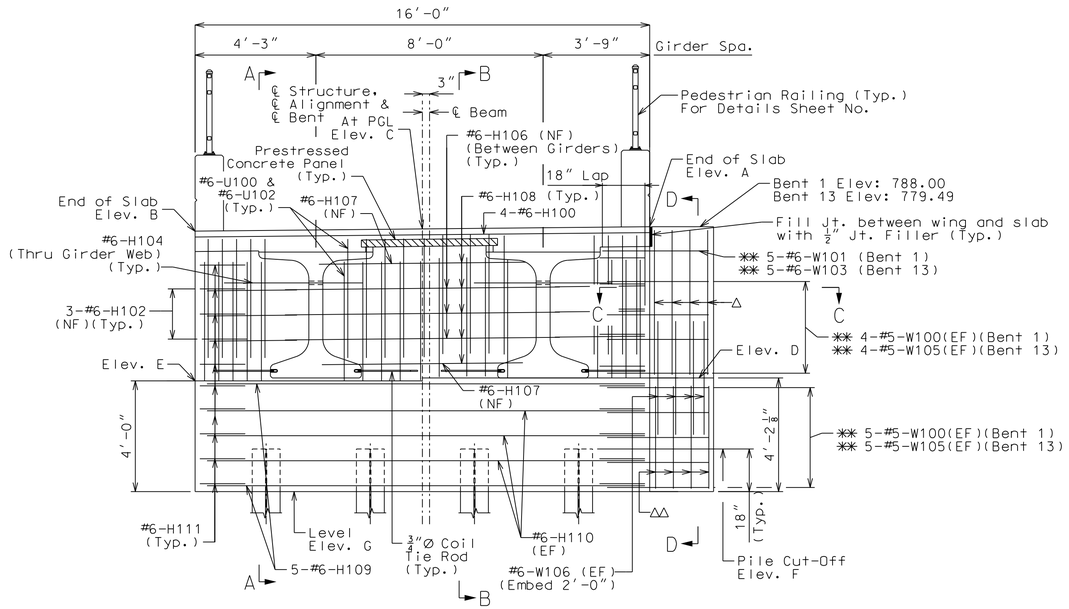
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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WSP USA INC.
300 WYANDOTTE STREET
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KANSAS CITY, MO 64105

STEEL INTERMEDIATE DIAPHRAGMS

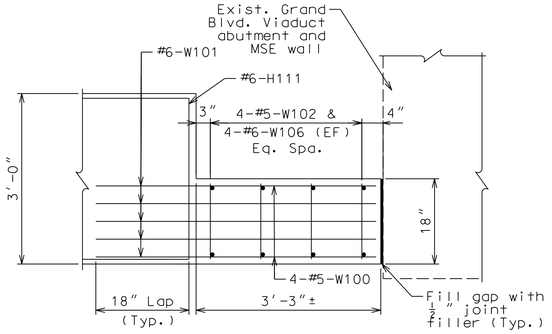



SECTION NEAR END BENT
(End Bent 1 shown, End Bent 13 similar)
(Looking Backstation)

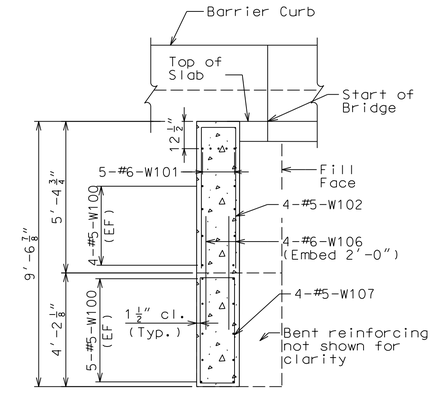
✻✻ Space with #6-H111 as shown.

△ 4-#5-W102 (Bent 1)
5-#5-W104 (Bent 13)

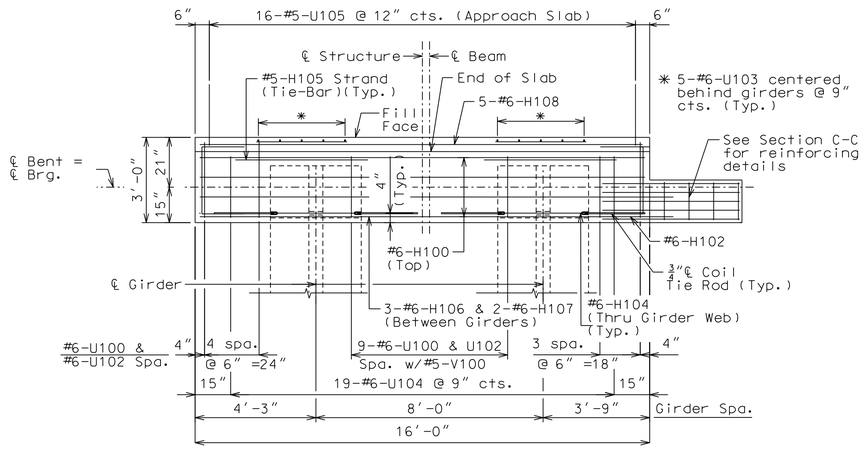
△△ 4-#5-W107 (Bent 1)
5-#5-W108 (Bent 13)



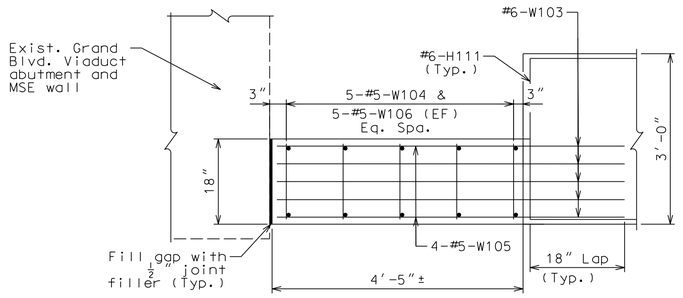

SECTION C-C
(End Bent 1)



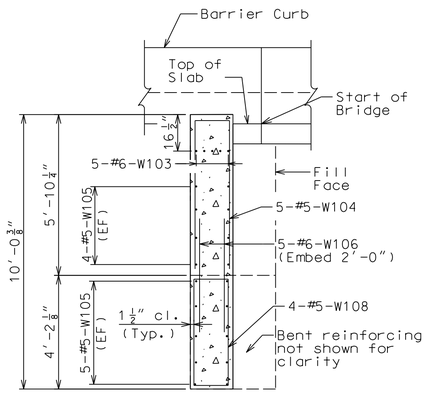

SECTION D-D
(End Bent 1)




PART PLAN
(End Bent 1 shown, End Bent 13 similar)




SECTION C-C
(End Bent 13)




SECTION D-D
(End Bent 13)

| Elevation Table | | | | | | | |
|---|---|---|---|---|---|---|---|
| Bent | Elev. A | Elev. B | Elev. C | Elev. D | Elev. E | Elev. F | Elev. G |
| No. 1 | 788.00 | 787.84 | 787.92 | 782.63 | 782.47 | 779.97 | 778.47 |
| No. 13 | 779.15 | 778.99 | 779.07 | 773.60 | 773.44 | 770.94 | 769.44 |

General Notes:
Work this sheet with Sheet No. 85.
See Sheet No. 85 for Elevation Table.
For Section A-A and Section B-B see Sheet No. 85.

EF = Each Face
FF = Far Face
NF = Near Face

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 11/2022
Checked SAB 11/2022

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SHEET NO. 124 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 A STATE OF MISSOURI PROFESSIONAL ENGINEER
11/13/24

| DATE | DESCRIPTION |
|---|---|
| . | . |

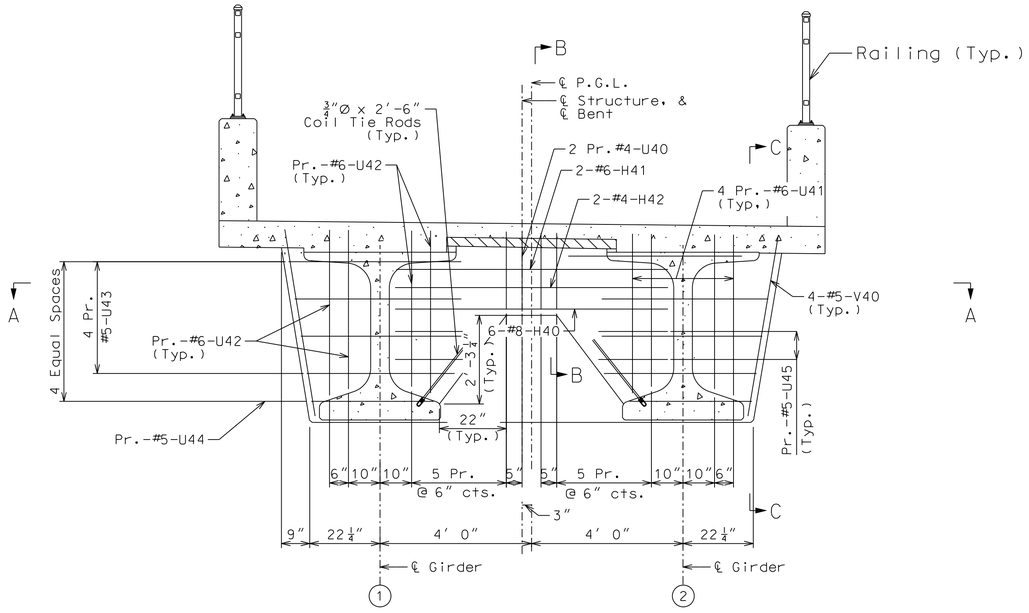
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

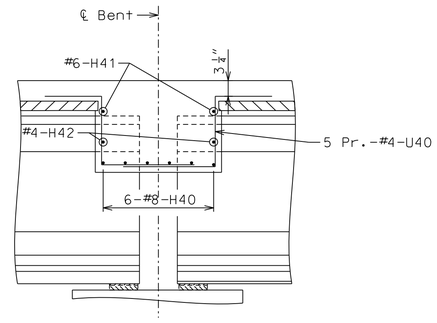
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

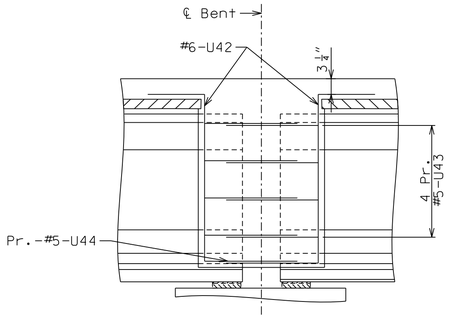
**DETAILS OF END BENT NO. 1 & 13 DIAPHRAGM**



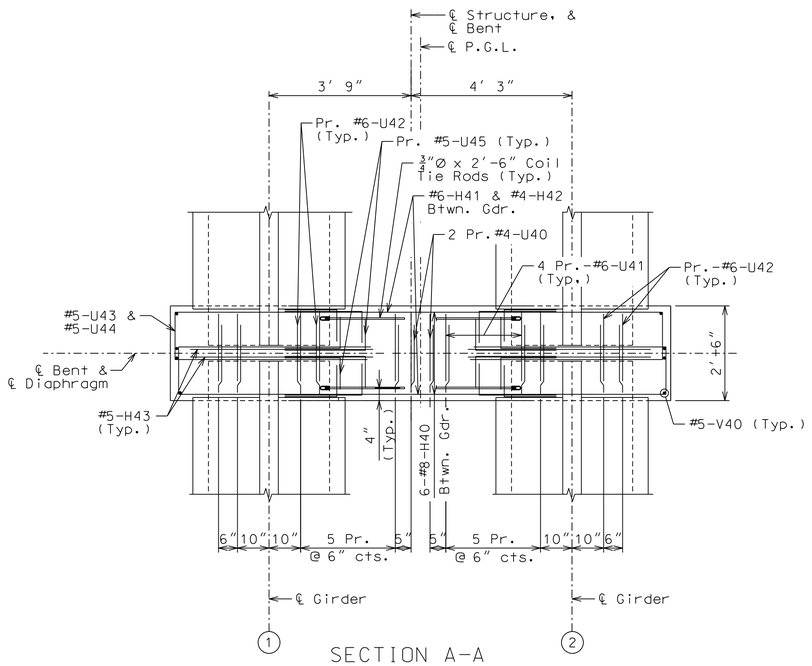

TYPICAL SECTION NEAR INTERMEDIATE BENT



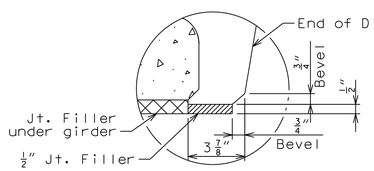

SECTION B-B



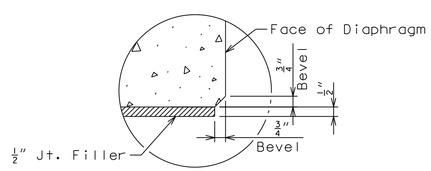

SECTION C-C




SECTION A-A




END DETAIL
(NU Girders)




EDGE DETAIL
(Expansion Bent)

Note:
See Sheet No.145 for deck and reinforcing details.

EF = Each Face
FF = Far Face
NF = Near Face

# OPEN CONCRETE INTERMEDIATE DIAPHRAGM

(Intermediate Bents 2, 7, 9, 11 & 12)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 11/2022
Checked SAB 11/2022

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SHEET NO. 125 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

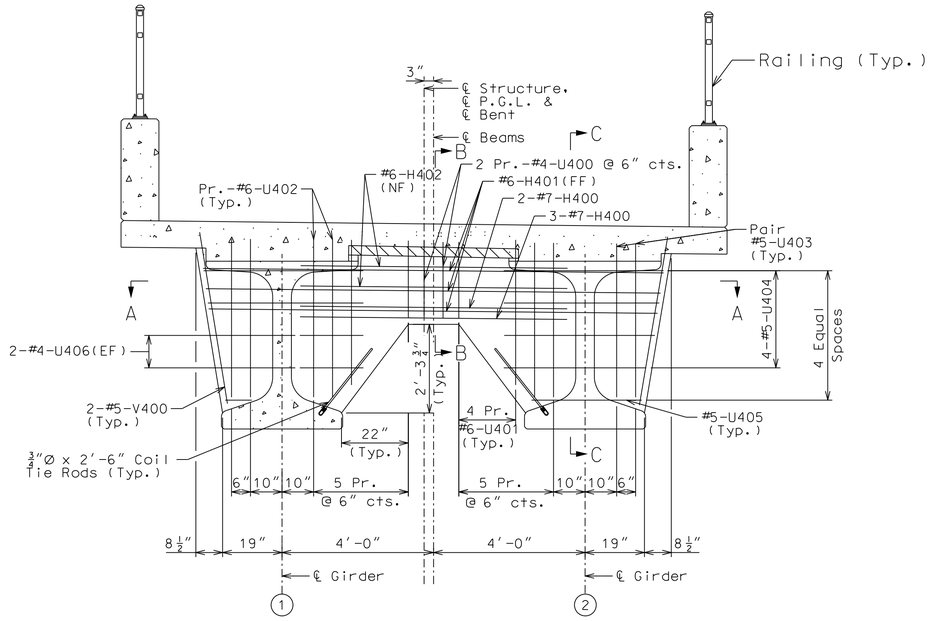
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| DATE | DESCRIPTION |
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

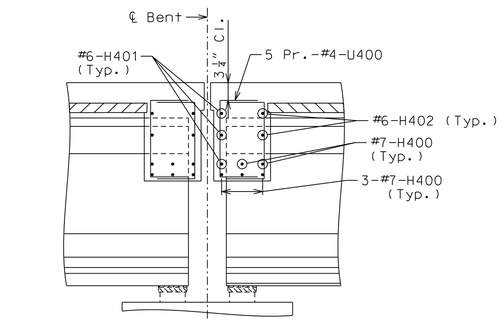
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**OPEN CONCRETE INTERMEDIATE DIAPHRAGM**

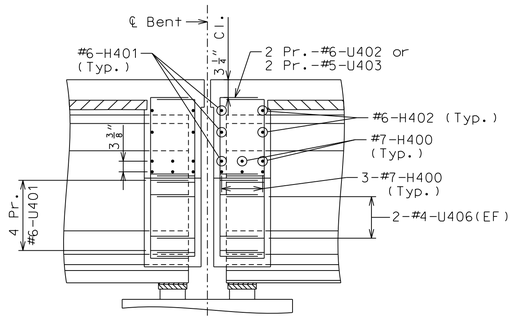



TYPICAL SECTION NEAR INTERMEDIATE BENT

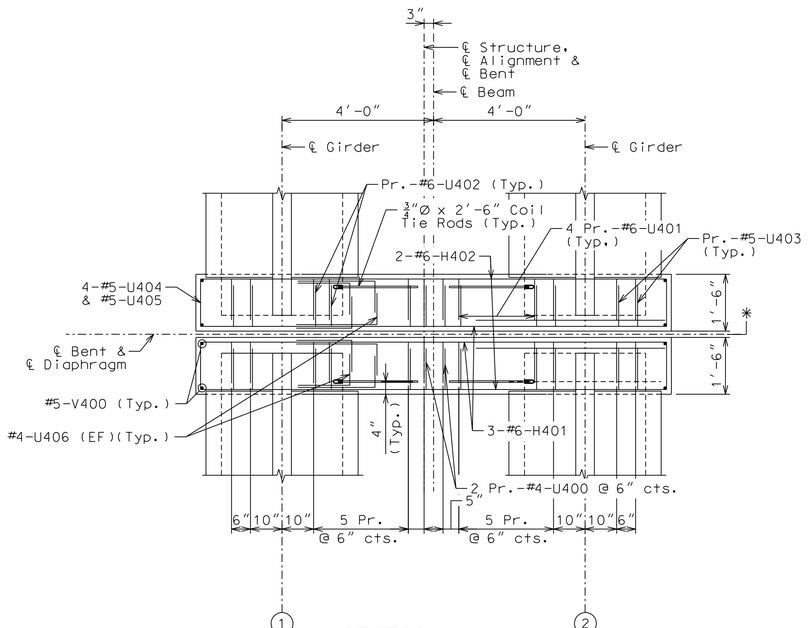
(Looking Upstation)




SECTION B-B




SECTION C-C




SECTION A-A

✳ Intermediate Bent 3: 2"
Intermediate Bent 6: 3"
Intermediate Bent 10: 4"

Note:
See Sheet No.145 for deck and reinforcing details.

EF = Each Face
FF = Far Face
NF = Near Face

# END CONCRETE INTERMEDIATE DIAPHRAGM

(Intermediate Bents 3, 6, & 10)

Note: This drawing is not to scale. Follow dimensions.

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| SHEET NO. | TOTAL SHEETS |
| 126 | 187 |
| DATE PREPARED | 11/13/2024 |
| STATE | MISSOURI |
| ROUTE | GRAND BLVD. |
| CITY | KANSAS CITY |
| COUNTY | JACKSON |
| PROJECT NO. | 89005595 |

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
11/7/24

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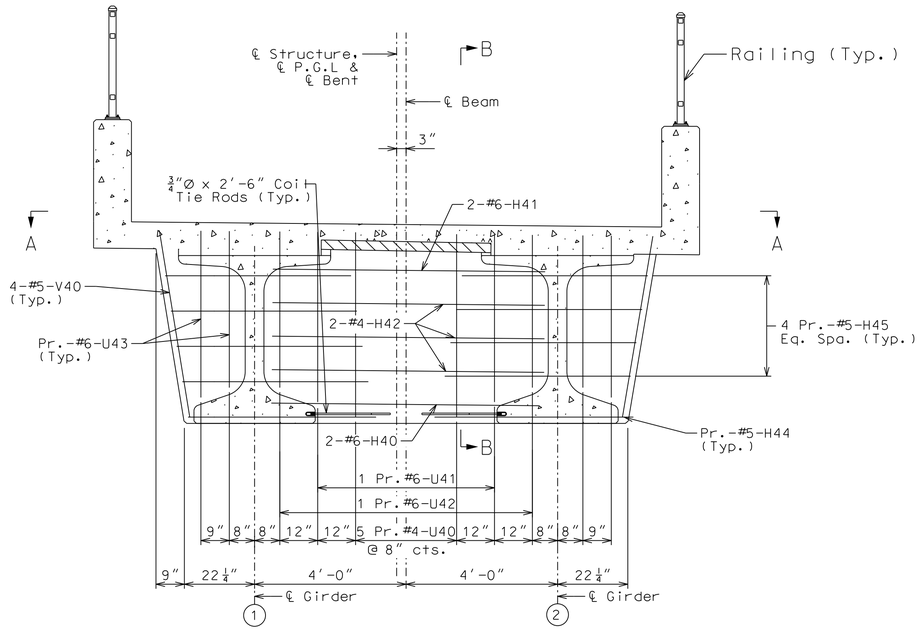
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

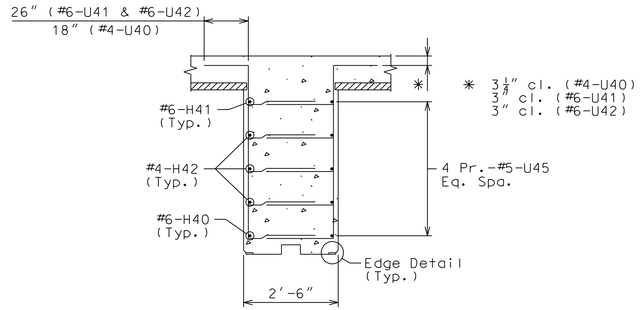
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

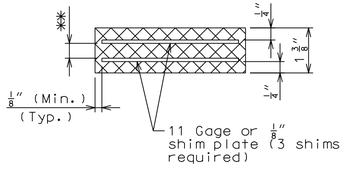
**OPEN CONCRETE INTERMEDIATE DIAPHRAGM**




ELEVATION

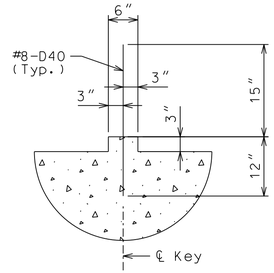



SECTION B-B

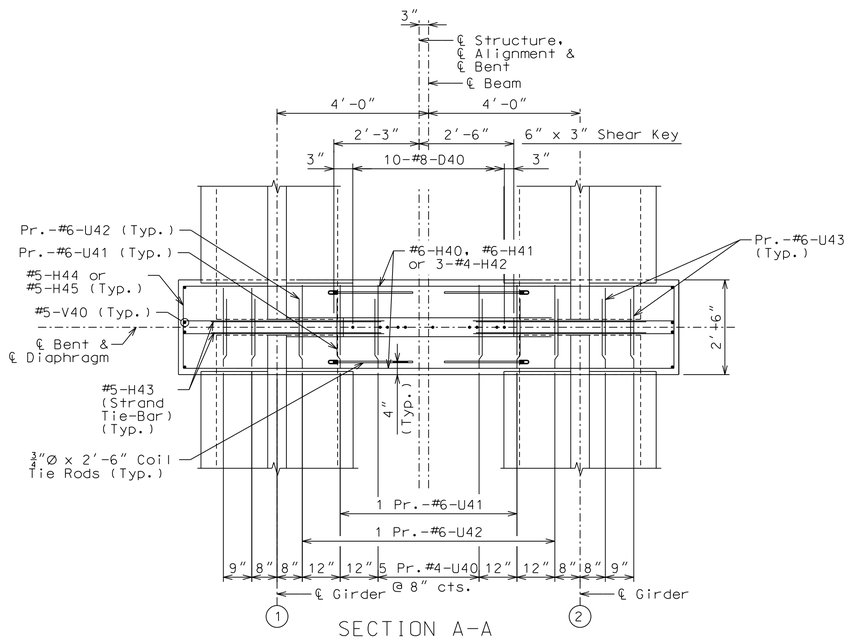



NEOPRENE ELASTOMERIC PAD
(Int. Bent 4, 5 & 8, 12 required)

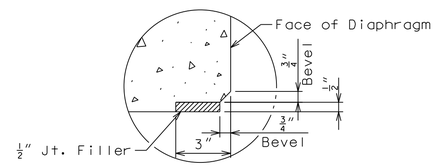
** Layers of ¼" elastomeric alternating with 11 gage or ⅛" shim plate




TYPICAL SECTION
THRU KEY




SECTION A-A




EDGE DETAIL
(Fixed Bent)

Note:
See Sheet No.145for deck and reinforcing details.

EF = Each Face
FF = Far Face
NF = Near Face

# CLOSED CONCRETE INTERMEDIATE DIAPHRAGM

(Intermediate Bents 4, 5, & 8)

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 11/2022
Checked SAB 11/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 127 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

| DATE | DESCRIPTION |
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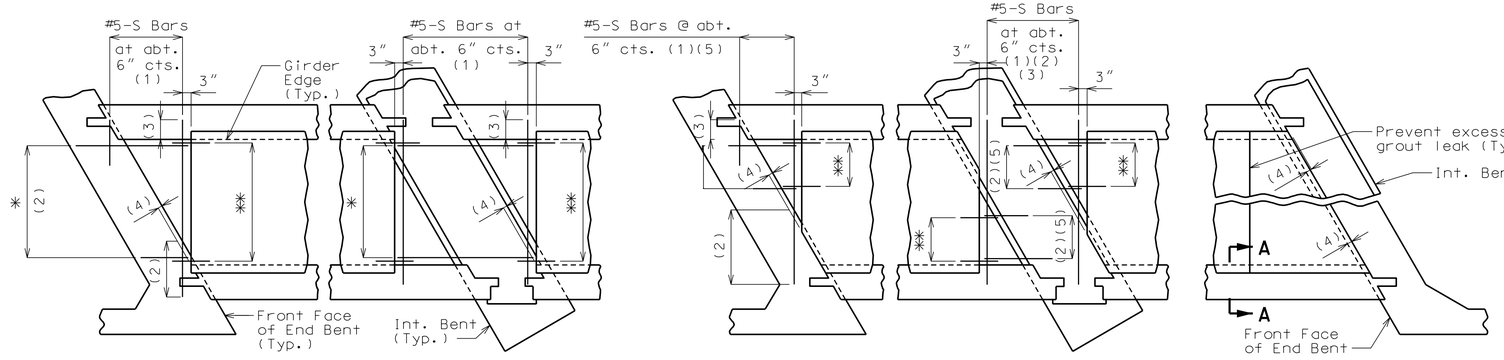
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PUBLIC WORKS DEPARTMENT

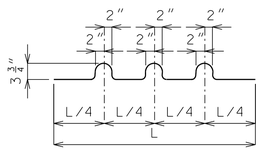
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

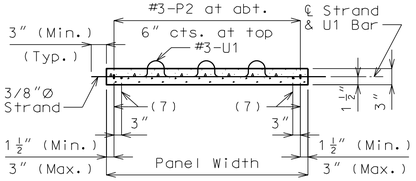
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**CLOSED CONCRETE INTERMEDIATE DIAPHRAGM**



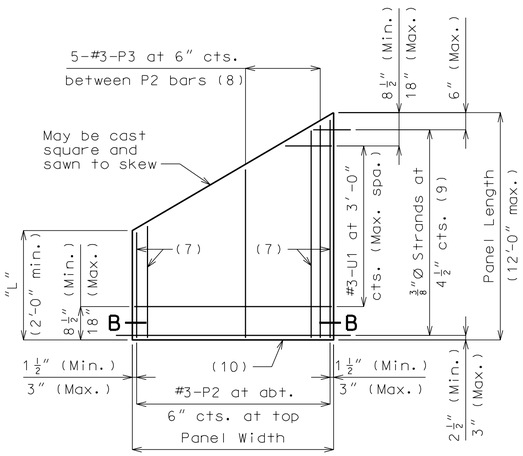

SQUARED END PANELS OR TRUNCATED END PANELS



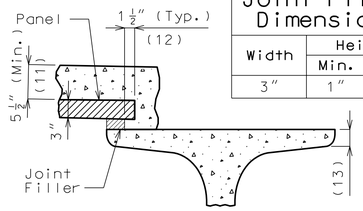

PLAN SHOWING PANELS PLACEMENT

✱ #5-S Bars at abt. 9" cts. (1)
✱✱ #3-P1 at 12" cts. (End panels only)




SKEWED END PANELS

| Joint Filler Dimensions | | |
|---|---|---|
| Width | Height | |
| | Min. | Max. |
| 3" | 1" | 4" |




## Reference Notes:

**Plan of Panels Placement:**

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

**Plans of Panels:**

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

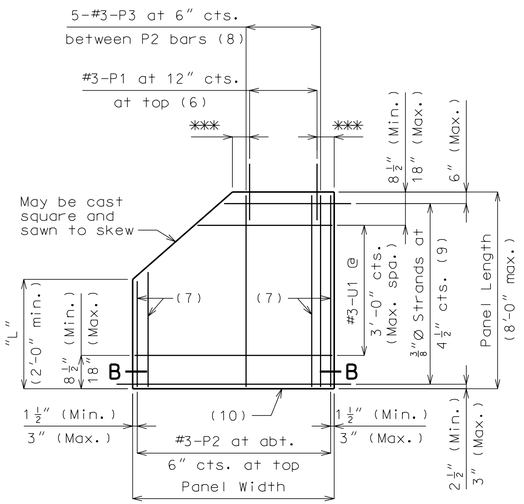
(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

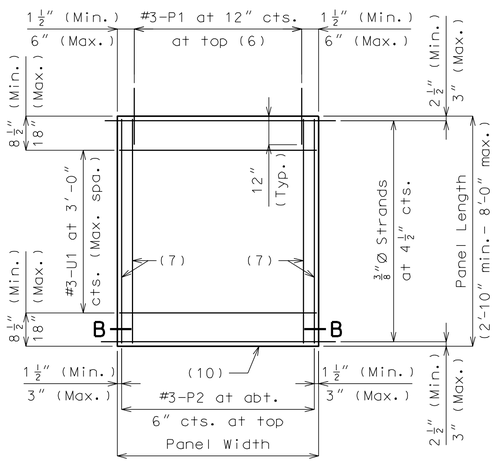
**Section A-A:**

(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.




# DETAILS OF PRESTRESSED PANELS

Note: This drawing is not to scale. Follow dimensions.

## General Notes:

**Prestressed Panels:**

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 4,000 psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

**Reinforcing Steel:**

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

**Joint Filler:**

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet Nos. 135-136 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the girder. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

SHEET NO. 128 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI · TERENCE A. KOKOR · NUMBER 2024 · PE-2014030530 · PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
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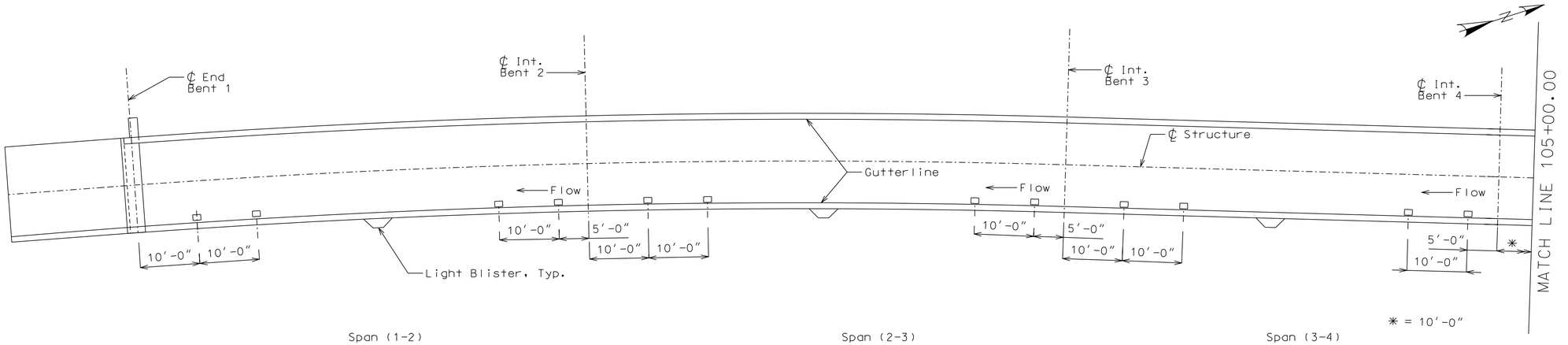
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

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KANSAS CITY, MO 64105

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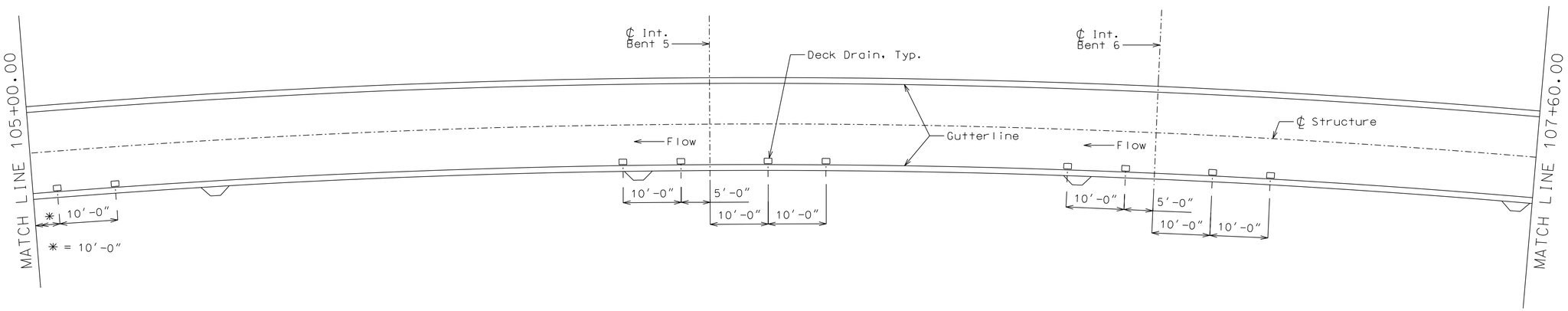
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Span (1-2) Span (2-3) Span (3-4)

PLAN UNIT 1 AND 2




Span (4-5) Span (5-6) Span (6-7)

PLAN UNIT 2 AND 3

Note: Deck drain locations are measured along the outside face of the bridge deck.

# SLAB DRAIN AND LIGHT BLISTER LOCATIONS

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 129 | 187 |

DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A HOOD
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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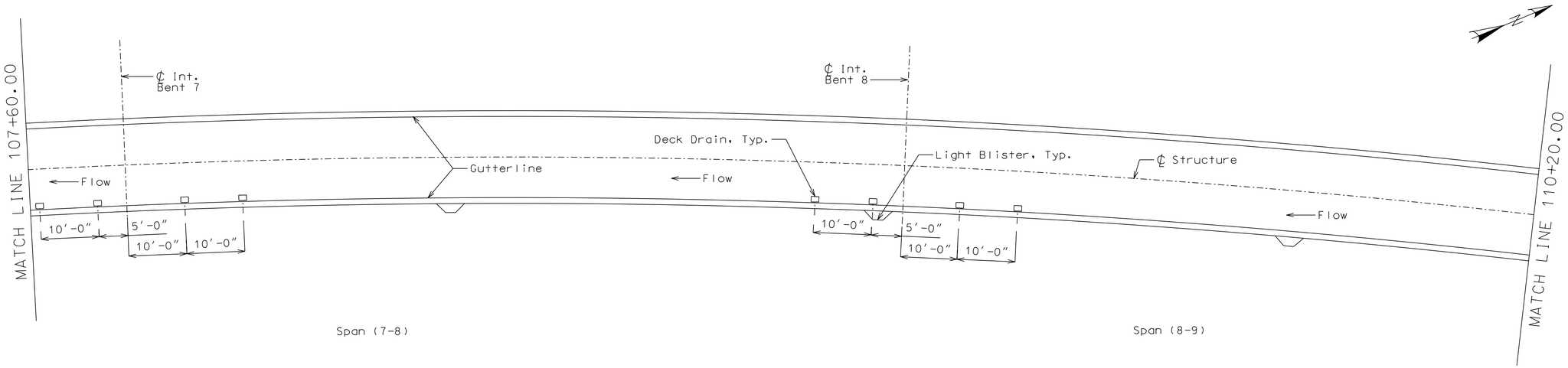
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PUBLIC WORKS DEPARTMENT

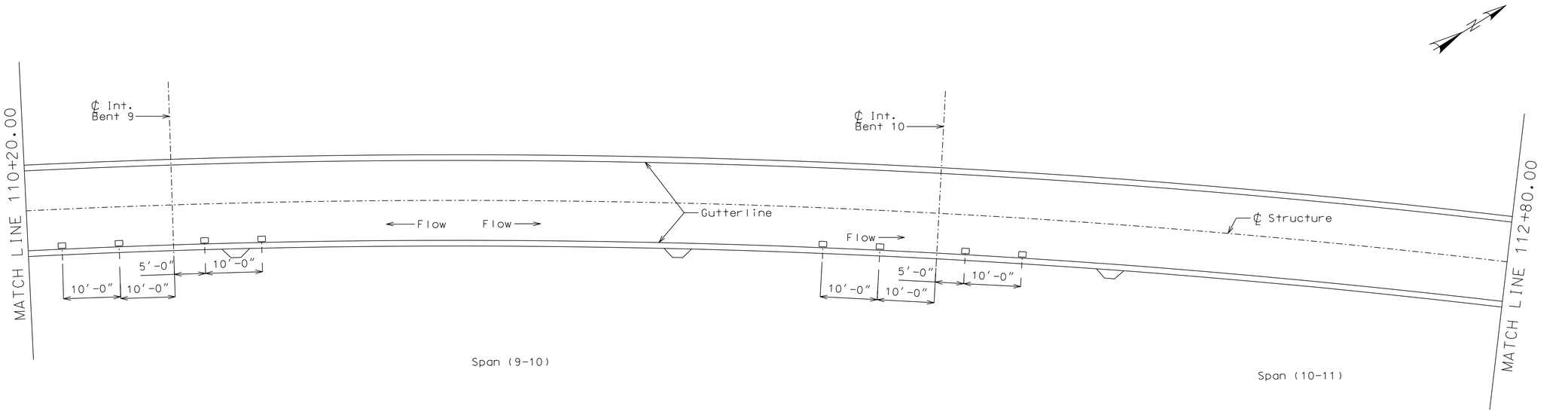
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB DRAIN AND LIGHT BLISTER LOCATIONS**




PLAN UNIT 2 AND 3




PLAN UNIT 3 AND 4

Note: Deck drain locations are measured along the outside face of the bridge deck.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

# SLAB DRAIN AND LIGHT BLISTER LOCATIONS

Note: This drawing is not to scale. Follow dimensions.

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 130 | 187 |

DATE PREPARED
5/19/2023

STATE
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CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. FORD
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
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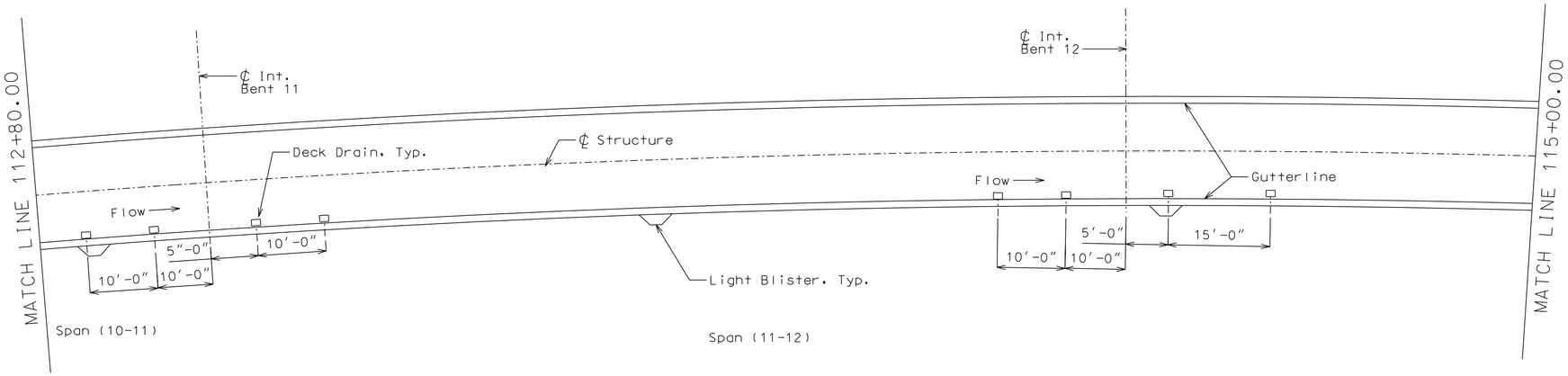
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

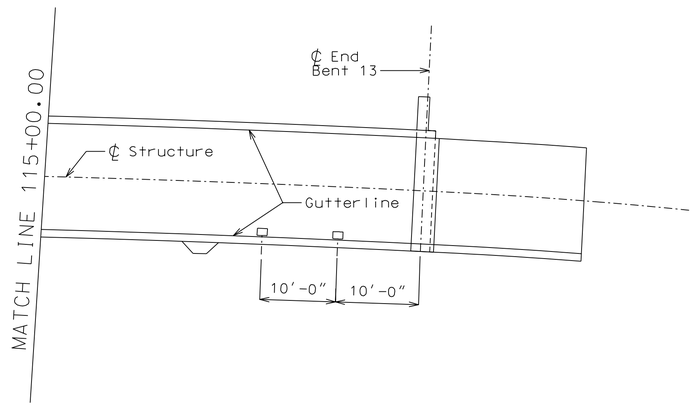
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

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PLAN UNIT 4




Span (12-13)

Note: Deck drain locations are measured along the outside face of the bridge deck.

PLAN UNIT 4

# SLAB DRAIN AND LIGHT BLISTER LOCATIONS

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 131 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. WOOD
NUMBER PE-2014020630
PROFESSIONAL ENGINEER
Terence J. Wood
11 MARCH 2024

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

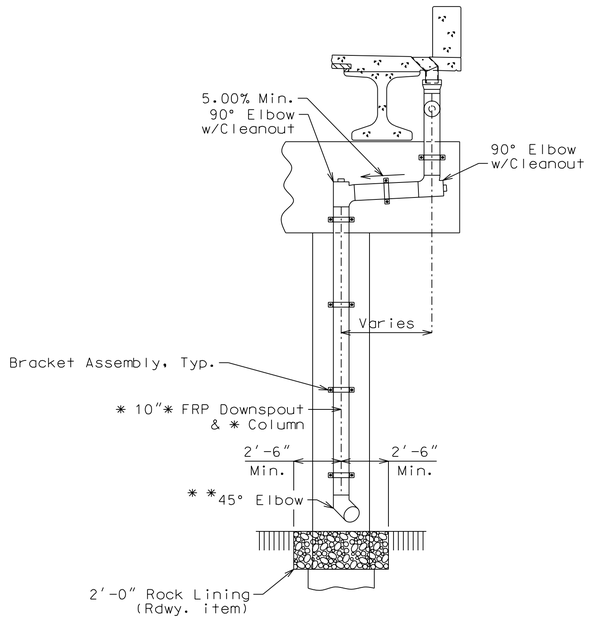
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB DRAIN AND LIGHT BLISTER LOCATIONS**

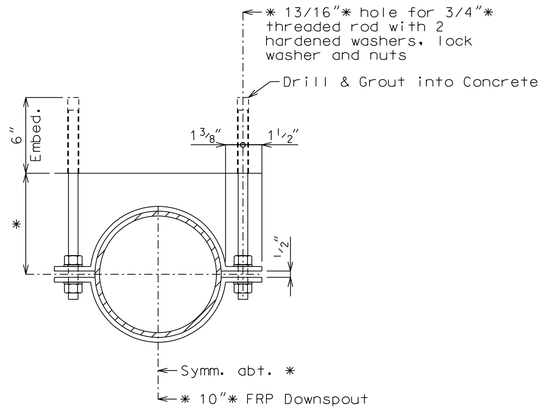



## PART ELEVATION AT DOWNSPOUTS

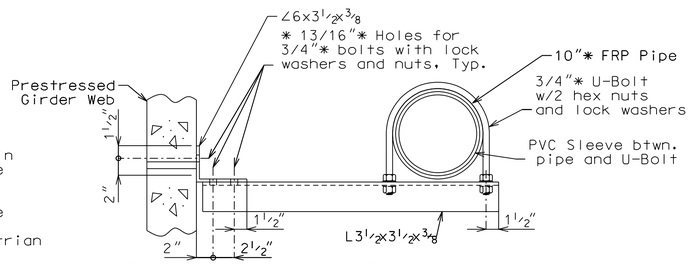
* * Extend downspouts west to drain into the existing Grand Boulevard Bridge downspout drain inlets located at the piers. Horizontal pipe shall have a minimum 5.00% slope. If existing drain inlets are not available, construct the rock lining shown.

Downspouts shall not discharge drainage toward railroad right-of-way at spans (4-5) or (10-11) of the proposed pedestrian bridge.

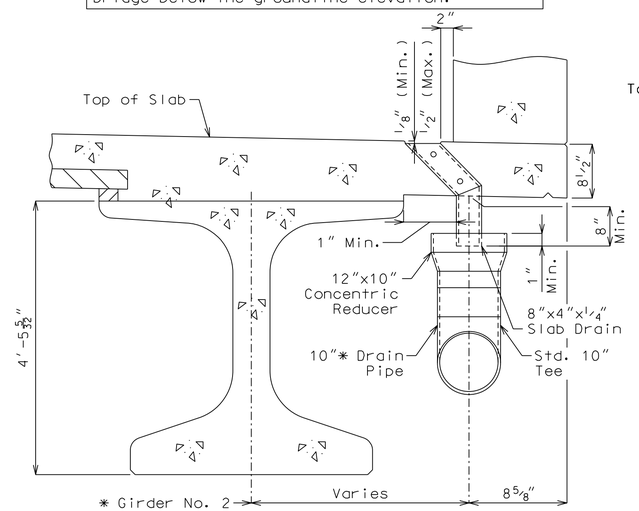
At Bents 4, 5, 10,& 11 downspouts are to be routed to connect to bridge drainage collection system used by adjacent Grand Blvd roadway bridge below the groundline elevation.



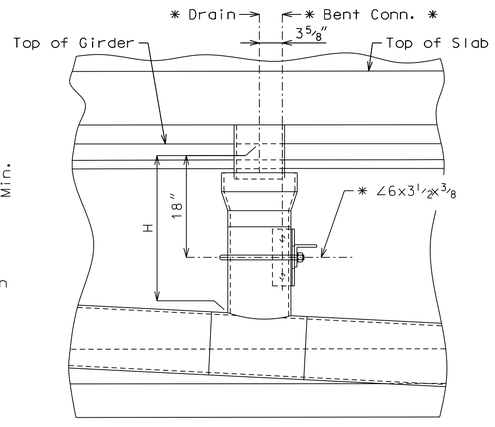

## BRACKET ASSEMBLY



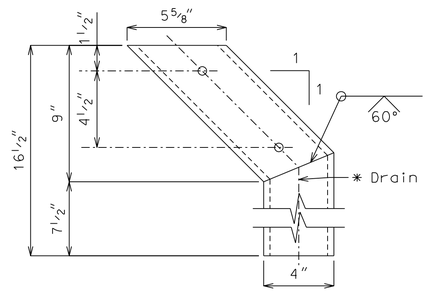

## SECTION SHOWING BRACKET ASSEMBLY



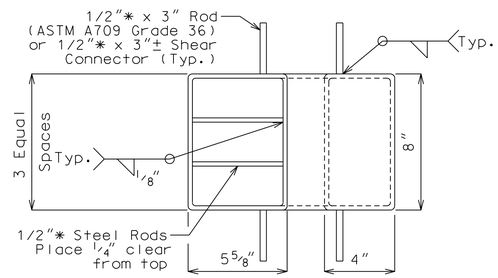

## PART SECTION NEAR DRAIN



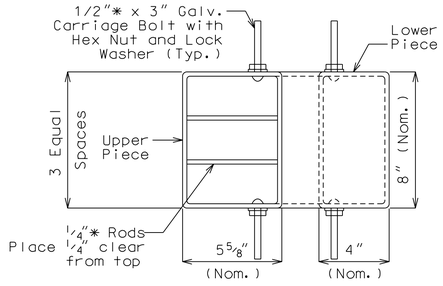

## CONNECTION PLATE DETAIL AT DRAINS



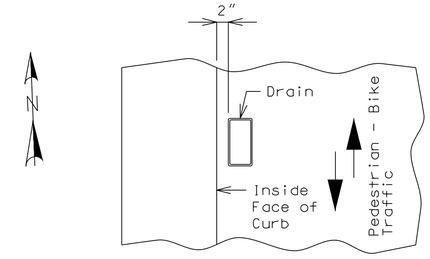

## ELEVATION OF DRAIN




## PLAN OF STEEL DRAIN OPTION




## PLAN OF FRP DRAIN OPTION




## PART PLAN OF SLAB AT DRAIN

Notes:
Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type. All pipe shall be 10" diameter FRP.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by dimensions shown in the Partial Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

The bracket assmebly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M232 (ASTM A153), Class C.

The bolt holes for the bracket assembly attachment shall be located on the prestessed girder shop drawings.

Shop drawings will not be required for the slab drains and the bracket assembly.

Notes for Steel Drain:
Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:
Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

The color of the slab drain shall be gray (Federal Standard 26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be as recommended by the manufacturer to ensure a smooth, chip free cut.

Both upper and lower drain pieces shall be rigidly connected to each other. Drain flow shall not be obstructed. Approval of the engineer is required.

Note:
Work this sheet with Sheet No. 131.

# SLAB DRAIN DETAILS

Note: This drawing is not to scale. Follow dimensions.

Detailed BJW 08/2022
Checked SJF 11/2022

SHEET NO. 132 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. KOCH
NUMBER 2024
PE-2014030530
PROFESSIONAL ENGINEER

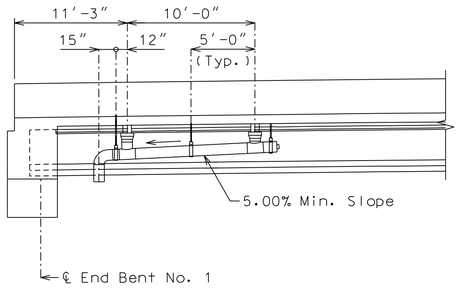
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| DATE | DESCRIPTION |
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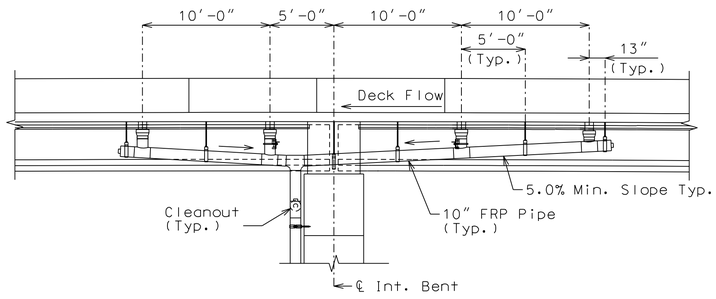
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

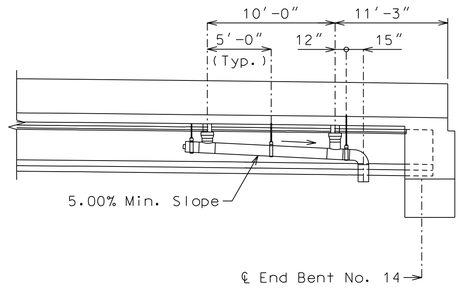
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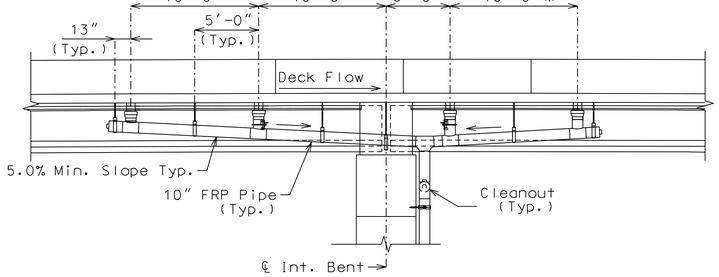

ELEVATION AT END BENT NO. 1



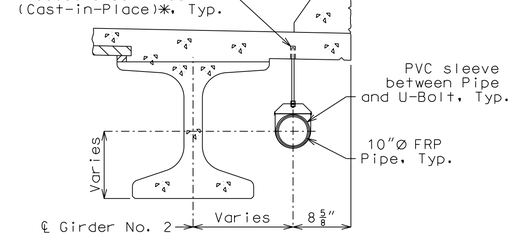

ELEVATION AT INTERMEDIATE BENT
(Looking West)
(Typical for Intermediate Bents
2 thru 9)




ELEVATION AT END BENT NO. 13

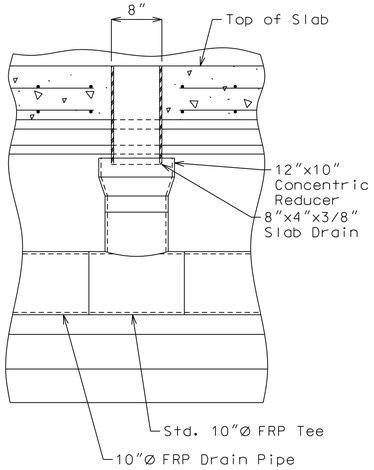



ELEVATION AT INTERMEDIATE BENT
(Looking West)
(Intermediate Bents 10 thru 12)
✳ 15′-0″ at Int. Bent 12. Use 2 pipe hangers at 5′-0″ spacing at this location.




PIPE HANGER DETAIL

✳ Pipe hanger assemblies shall be composed of a galvanized heavy duty clevis hanger (Cooper B-Line 3100-8 or equal) supported by a 3/4″Ø A36 galvanized threaded steel rod and a galvanized threaded insert cast into the bottom of concrete slab. The cast-in-place insert shall have a minimum safe working tensile capacity of 4000 pounds. The hanger assemblies shall be located as indicated in the Plans, with a maximum spacing of 10′-0″ horizontal centers. Galvanizing shall be in accordance with ASTM A153 and ASTM A123, as appropriate.




TYPICAL DRAIN PIPE CONNECTION

Notes:

For Deck Drain details and locations, see Slab Drain and Light Blister Locations Sheets and Slab Drain Details Sheet.

SLAB DRAINAGE SYSTEM DETAILS

Designed TJW 11/2022
Detailed BJS 11/2022
Checked SJF 11/2022

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 133 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE J. WOOD
NUMBER PE-2010030301
PROFESSIONAL ENGINEER
11/30/24

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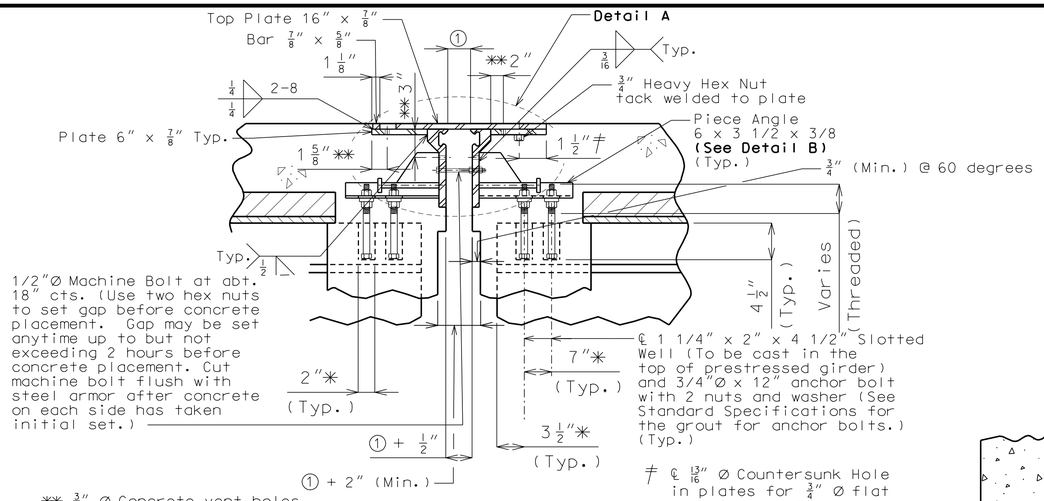
| DATE | DESCRIPTION |
|---|---|

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414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB DRAINAGE SYSTEM ELEVATION**

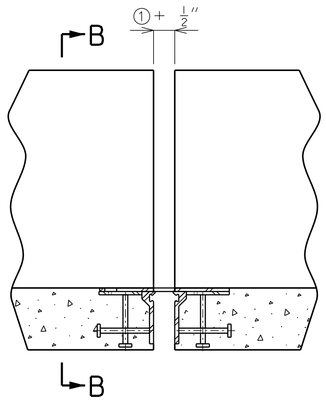



** 3/4" Ø Concrete vent holes @ about 12" cts.

# SECTION A-A

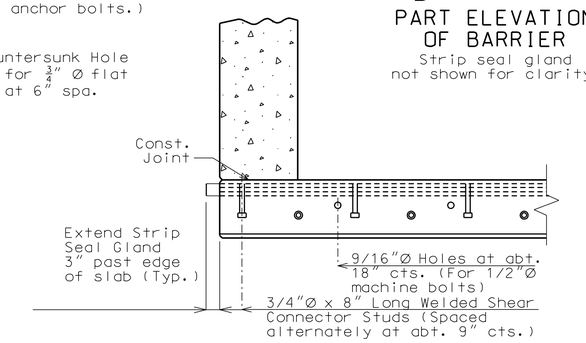
Note: Strip seal gland not shown for clarity.
* Dimension along ℄ Girder

# Ⓐ 13/16" Ø Countersunk Hole in plates for 3/4" Ø flat head bolt at 6" spa.

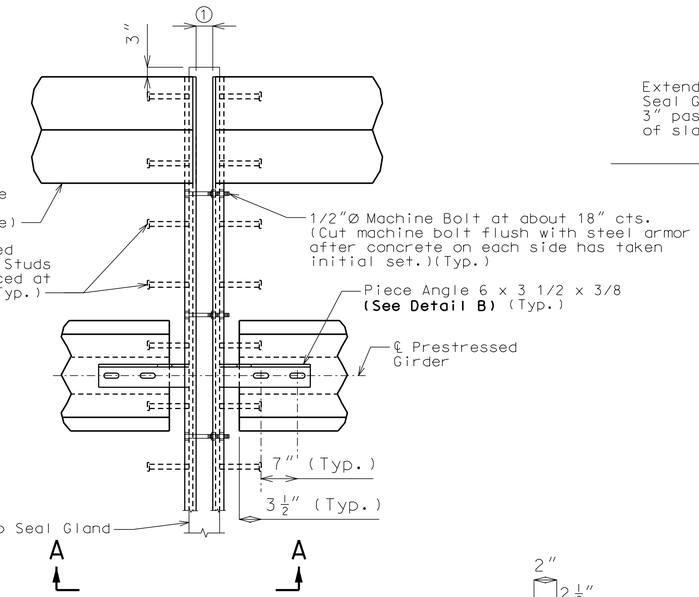



# PART ELEVATION OF BARRIER

Strip seal gland not shown for clarity.

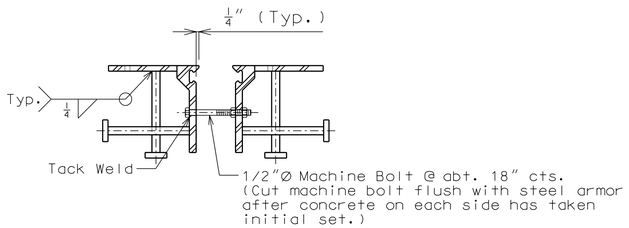



# PART SECTION B-B

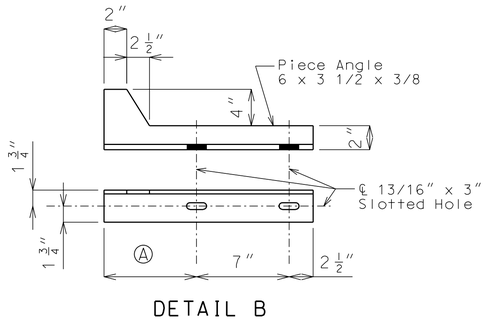



# PART PLAN

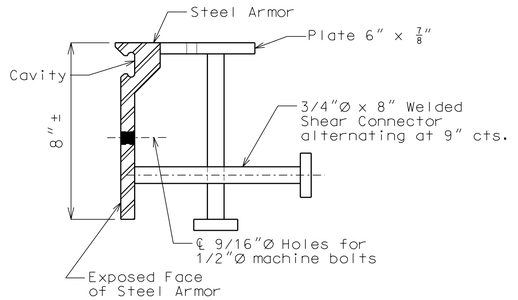
Note: Top plates not shown for clarity.



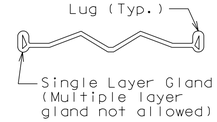

# DETAIL A




# DETAIL B




# DETAIL OF JOINT ARMOR




# DETAIL OF GLAND

## GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway. The strip seal gland shall be installed before the sliding top plate.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

## Table of Allowed Transverse Strip Seal Expansion Joint System

| Manufacturer | Strip Seal System (Designated Name) | Movement Parallel to RDWY | ① Normal to Joint at RDWY Surface @ Air/Surface Temperature ② | | | | | | ③ |
|---|---|---|---|---|---|---|---|---|---|
| | | | @ 40°F | @ 50°F | @ 60°F | @ 70°F | @ 80°F | @ 90°F | |
| D S Brown | Strip seal L2-400 | 1 3/4" | 2 3/8" | 2 1/4" | 2" | 1 3/4" | 1 5/8" | 1 3/8" | ☐ |
| D S Brown | Strip seal L2-500 | 1 3/4" | 2 3/8" | 2 1/4" | 2" | 1 3/4" | 1 5/8" | 1 3/8" | ☐ |
| Watson Bowman Acme (Wabo) | Strip seal SE-300 | 1 3/4" | 2 3/8" | 2 1/4" | 2" | 1 3/4" | 1 5/8" | 1 3/8" | ☐ |
| Watson Bowman Acme (Wabo) | Strip seal SE-400 | 1 3/4" | 2 3/8" | 2 1/4" | 2" | 1 3/4" | 1 5/8" | 1 3/8" | ☐ |
| Watson Bowman Acme (Wabo) | Strip seal SE-500 | 1 3/4" | 2 3/8" | 2 1/4" | 2" | 1 3/4" | 1 5/8" | 1 3/8" | ☐ |

Detailed NOV. 2022
Checked NOV. 2022

# STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO. 3

Note: This drawing is not to scale. Follow dimensions.

SHEET NO. 134 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. KOOP
NUMBER 2024
PE-2014035030
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

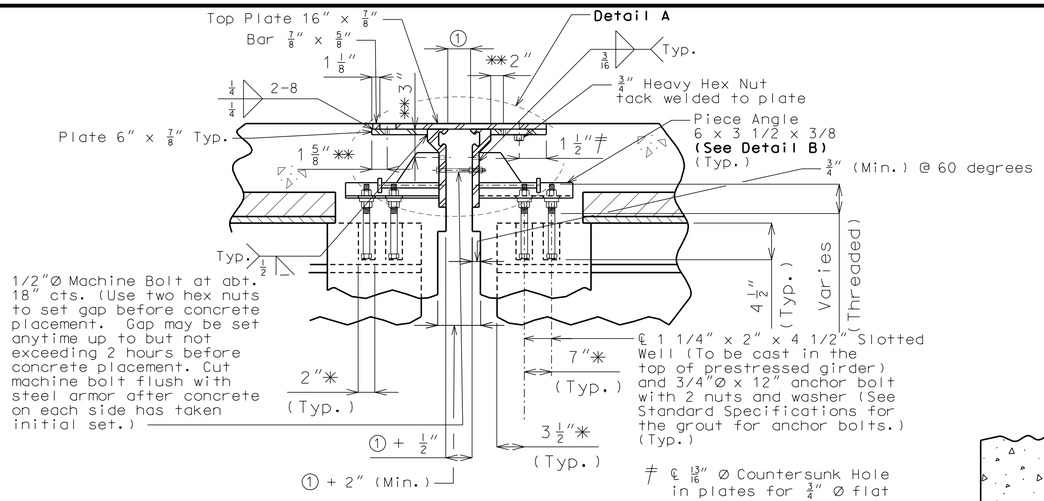
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414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO.3

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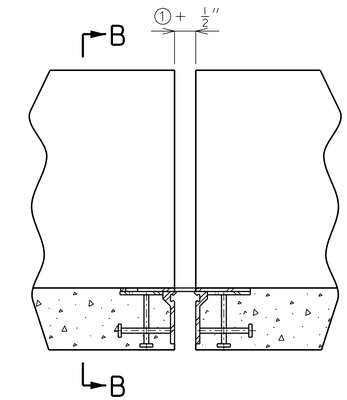



SECTION A-A

2" Ø Concrete vent holes @ about 12" cts.

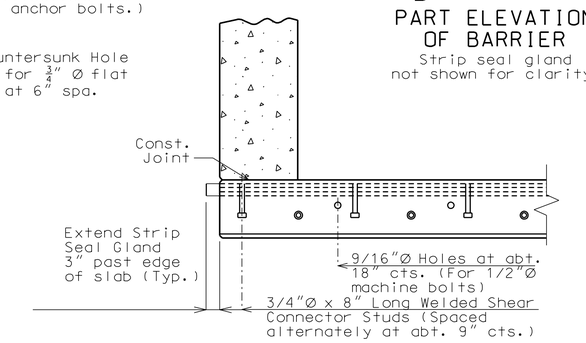
Note: Strip seal gland not shown for clarity.
Dimension along ℄ Girder

# Detail B

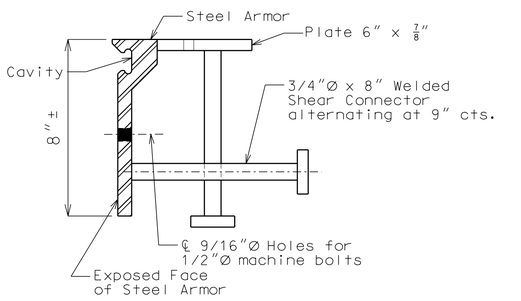



PART ELEVATION OF BARRIER

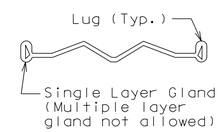
Strip seal gland not shown for clarity.



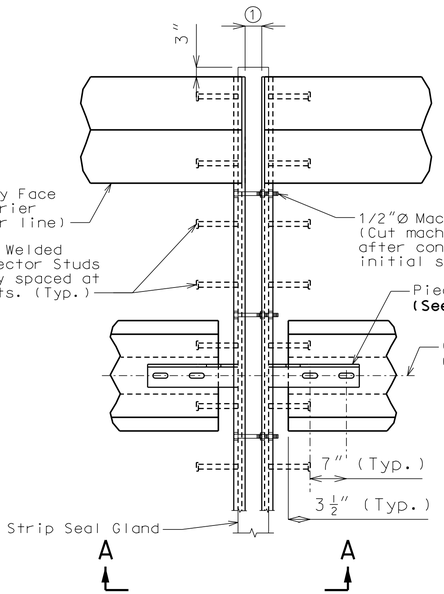

PART SECTION B-B




DETAIL OF JOINT ARMOR

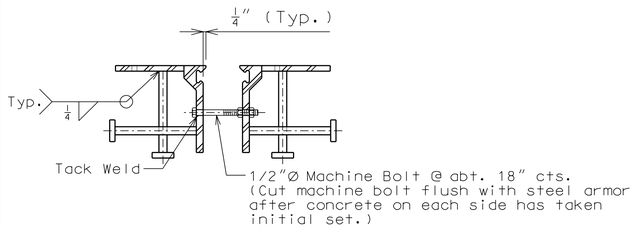



DETAIL OF GLAND

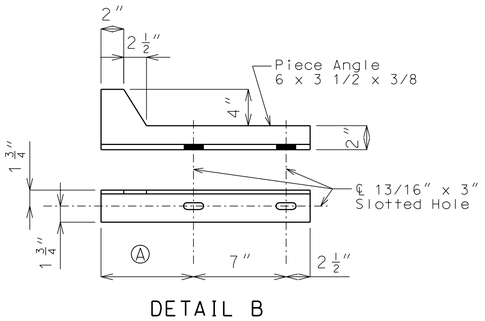



PART PLAN

Note: Top plates not shown for clarity.




DETAIL A




DETAIL B

## GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway. The strip seal gland shall be installed before the sliding top plate.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

Table of Allowed Transverse Strip Seal Expansion Joint System

| Manufacturer | Strip Seal System (Designated Name) | Movement Parallel to RDWY | ① Normal to Joint at RDWY Surface @ Air/Surface Temperature ② | | | | | | ③ |
|---|---|---|---|---|---|---|---|---|---|
| | | | @ 40°F | @ 50°F | @ 60°F | @ 70°F | @ 80°F | @ 90°F | |
| D S Brown | Strip seal L2-400 | 2 3/4" | 2 7/8" | 2 5/8" | 2 3/8" | 2" | 1 3/4" | 1 1/2" | □ |
| D S Brown | Strip seal L2-500 | 2 3/4" | 2 7/8" | 2 5/8" | 2 3/8" | 2" | 1 3/4" | 1 1/2" | □ |
| Watson Bowman Acme (Wabo) | Strip seal SE-300 | 2 3/4" | 2 7/8" | 2 5/8" | 2 3/8" | 2" | 1 3/4" | 1 1/2" | □ |
| Watson Bowman Acme (Wabo) | Strip seal SE-400 | 2 3/4" | 2 7/8" | 2 5/8" | 2 3/8" | 2" | 1 3/4" | 1 1/2" | □ |
| Watson Bowman Acme (Wabo) | Strip seal SE-500 | 2 3/4" | 2 7/8" | 2 5/8" | 2 3/8" | 2" | 1 3/4" | 1 1/2" | □ |

# STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO. 6

Note: This drawing is not to scale. Follow dimensions.

Detailed NOV. 2022
Checked NOV. 2022

SHEET NO. 135 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. KOCH
NUMBER 2024
PE-2014035030
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

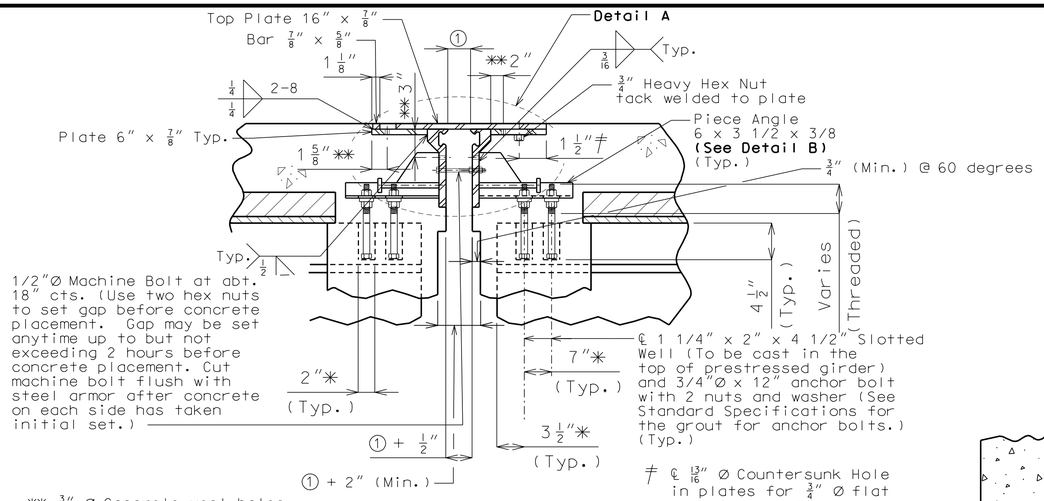
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO.6

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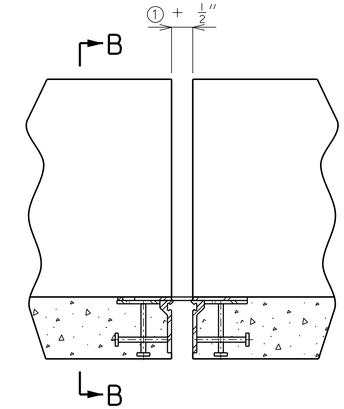



2" Ø Concrete vent holes @ about 12" cts.

℄ 13/16" Ø Countersunk Hole in plates for 3/4" Ø flat head bolt at 6" spa.

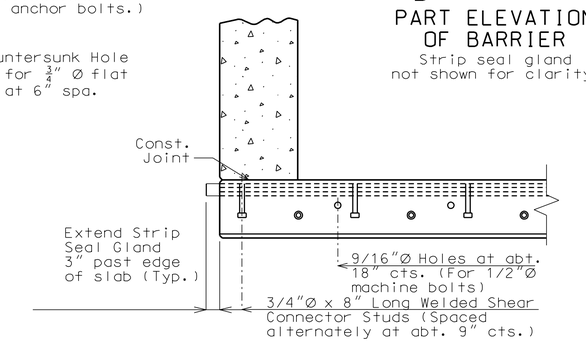
## SECTION A-A

Note: Strip seal gland not shown for clarity.
Dimension along ℄ Girder

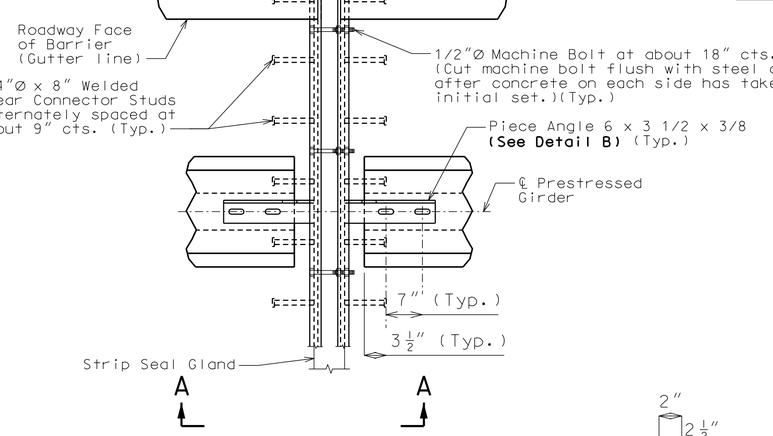



## PART ELEVATION OF BARRIER

Strip seal gland not shown for clarity.

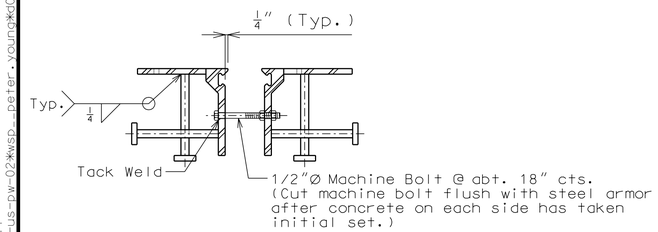



## PART SECTION B-B

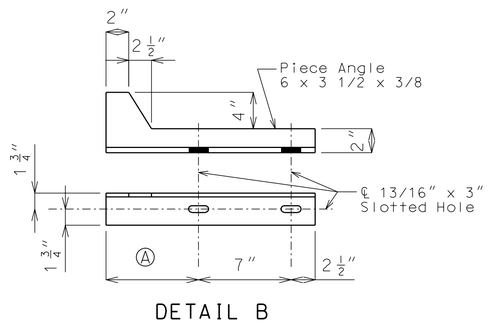



## PART PLAN

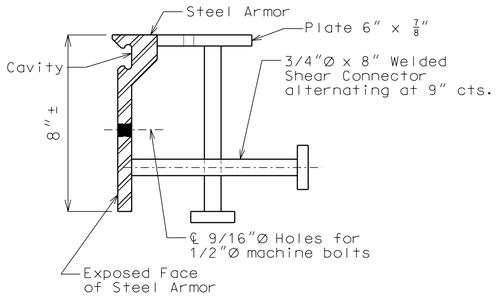
Note: Top plates not shown for clarity.



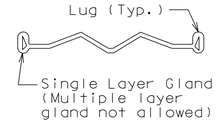

## DETAIL A




## DETAIL B




## DETAIL OF JOINT ARMOR




## DETAIL OF GLAND

## GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway. The strip seal gland shall be installed before the sliding top plate.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

Table of Allowed Transverse Strip Seal Expansion Joint System

| Manufacturer | Strip Seal System (Designated Name) | Movement Parallel to RDWY | ① Normal to Joint at RDWY Surface @ Air/Surface Temperature ② | | | | | | ③ |
|---|---|---|---|---|---|---|---|---|---|
| | | | @ 40°F | @ 50°F | @ 60°F | @ 70°F | @ 80°F | @ 90°F | |
| D S Brown | Strip seal L2-400 | 4" | 4 1/8" | 3 5/8" | 3 1/4" | 2 3/4" | 2 3/8" | 1 7/8" | ☐ |
| D S Brown | Strip seal L2-500 | 4" | 4 1/8" | 3 5/8" | 3 1/4" | 2 3/4" | 2 3/8" | 1 7/8" | ☐ |
| Watson Bowman Acme (Wabo) | Strip seal SE-300 | 4" | 4 1/8" | 3 5/8" | 3 1/4" | 2 3/4" | 2 3/8" | 1 7/8" | ☐ |
| Watson Bowman Acme (Wabo) | Strip seal SE-400 | 4" | 4 1/8" | 3 5/8" | 3 1/4" | 2 3/4" | 2 3/8" | 1 7/8" | ☐ |
| Watson Bowman Acme (Wabo) | Strip seal SE-500 | 4" | 4 1/8" | 3 5/8" | 3 1/4" | 2 3/4" | 2 3/8" | 1 7/8" | ☐ |

# STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO. 10

Note: This drawing is not to scale. Follow dimensions.

Detailed NOV. 2022
Checked NOV. 2022

SHEET NO. 136 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. KOCH
NUMBER 2024
PE-2014035030
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
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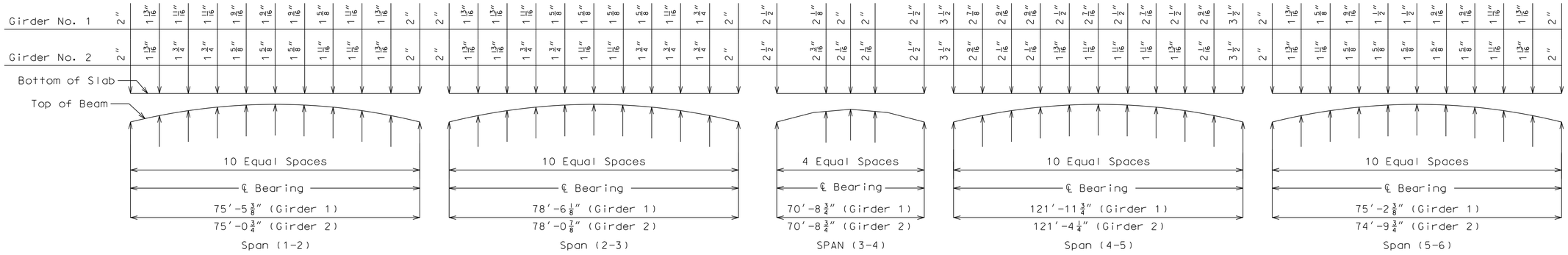
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENT NO. 10

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## THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete Beam.

### Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

| Girder Number | Span (1-2) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 787.25 | 787.40 | 787.54 | 787.68 | 787.83 | 787.97 | 788.10 | 788.23 | 788.36 | 788.49 | 788.62 |
| 2 | 787.17 | 787.32 | 787.47 | 787.60 | 787.75 | 787.89 | 788.03 | 788.16 | 788.29 | 788.41 | 788.54 |

| Girder Number | Span (2-3) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 788.64 | 788.74 | 788.82 | 788.91 | 789.00 | 789.09 | 789.18 | 789.26 | 789.34 | 789.41 | 789.47 |
| 2 | 788.56 | 788.66 | 788.74 | 788.84 | 788.93 | 789.02 | 789.11 | 789.19 | 789.26 | 789.34 | 789.39 |

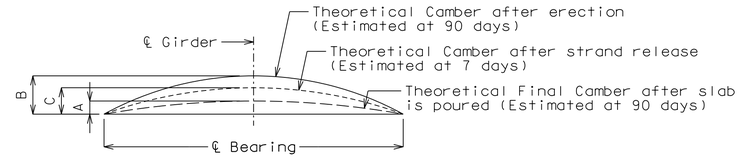
| Girder Number | Span (3-4) (℄ Brg. - ℄ Brg.) | | | | |
|---|---|---|---|---|---|
| | ℄ Brg. | .25 | .50 | .75 | ℄ Brg. |
| 1 | 789.49 | 789.56 | 789.63 | 789.69 | 789.74 |
| 2 | 789.41 | 789.49 | 789.56 | 789.62 | 789.66 |

Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.

### Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

| Girder Number | Span (4-5) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 789.74 | 789.85 | 789.95 | 790.00 | 790.09 | 790.16 | 790.21 | 790.25 | 790.26 | 790.25 | 790.17 |
| 2 | 789.66 | 789.78 | 789.90 | 789.94 | 790.05 | 790.13 | 790.18 | 790.21 | 790.22 | 790.20 | 790.09 |

| Girder Number | Span (5-6) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 790.17 | 790.21 | 790.24 | 790.27 | 790.31 | 790.33 | 790.36 | 790.38 | 790.40 | 790.42 | 790.43 |
| 2 | 790.09 | 790.13 | 790.16 | 790.20 | 790.23 | 790.26 | 790.28 | 790.31 | 790.32 | 790.34 | 790.35 |




| Girder | Span (1-2) | | | Span (2-3) | | | Span (3-4) | | | Span (4-5) | | | Span (5-6) | | | Span (6-7) | | | Span (7-8) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| 1 | 1/2″ | 7/8″ | 1/2″ | 3/8″ | 3/4″ | 1/2″ | 1/2″ | 3/4″ | 1/2″ | 1″ | 3 1/2″ | 2″ | 1/2″ | 7/8″ | 1/2″ | 7/8″ | 1 3/8″ | 3/4″ | 1 1/2″ | 5 1/8″ | 3″ |
| 2 | 3/8″ | 7/8″ | 1/2″ | 1/4″ | 3/4″ | 1/2″ | 1/2″ | 3/4″ | 1/2″ | 1 3/4″ | 4 7/8″ | 2 3/4″ | 3/8″ | 7/8″ | 1/2″ | 3/4″ | 1 3/8″ | 3/4″ | 2 1/8″ | 6 5/8″ | 3 3/4″ |

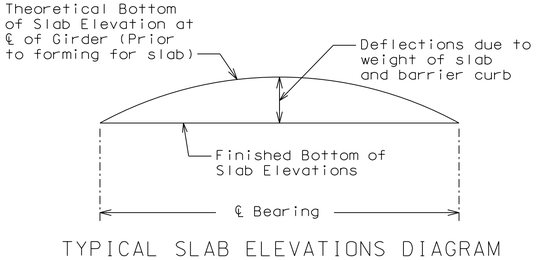
| Girder | Span (8-9) | | | Span (9-10) | | | Span (10-11) | | | Span (11-12) | | | Span (12-13) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| 1 | 1 3/8″ | 4 7/8″ | 2 7/8″ | 1 3/8″ | 5 1/8″ | 3″ | 2 1/4″ | 5″ | 2 7/8″ | 1 1/4″ | 4 7/8″ | 2 7/8″ | 2″ | 3 5/8″ | 2 1/8″ |
| 2 | 2 1/4″ | 6 5/8″ | 3 3/4″ | 2 3/4″ | 7 3/8″ | 4 1/4″ | 1 7/8″ | 5 1/4″ | 3″ | 2 3/4″ | 4 3/4″ | 2 3/4″ | 2 3/4″ | 4 3/4″ | 2 3/4″ |

## GIRDER CAMBER DIAGRAM

Conversion Factors for Girder Camber (Estimated at 90 days):

0.1 pt. = 0.314 x 0.5 pt.
0.2 pt. = 0.593 x 0.5 pt.
0.3 pt. = 0.813 x 0.5 pt.
0.4 pt. = 0.952 x 0.5 pt.

0.25 pt. = 0.7125 x 0.5 pt.




## TYPICAL SLAB ELEVATIONS DIAGRAM

Detailed PRY 7/2022
Checked SAB 8/2022

Note: This drawing is not to scale. Follow dimensions.

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SHEET NO. 137 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/13/24

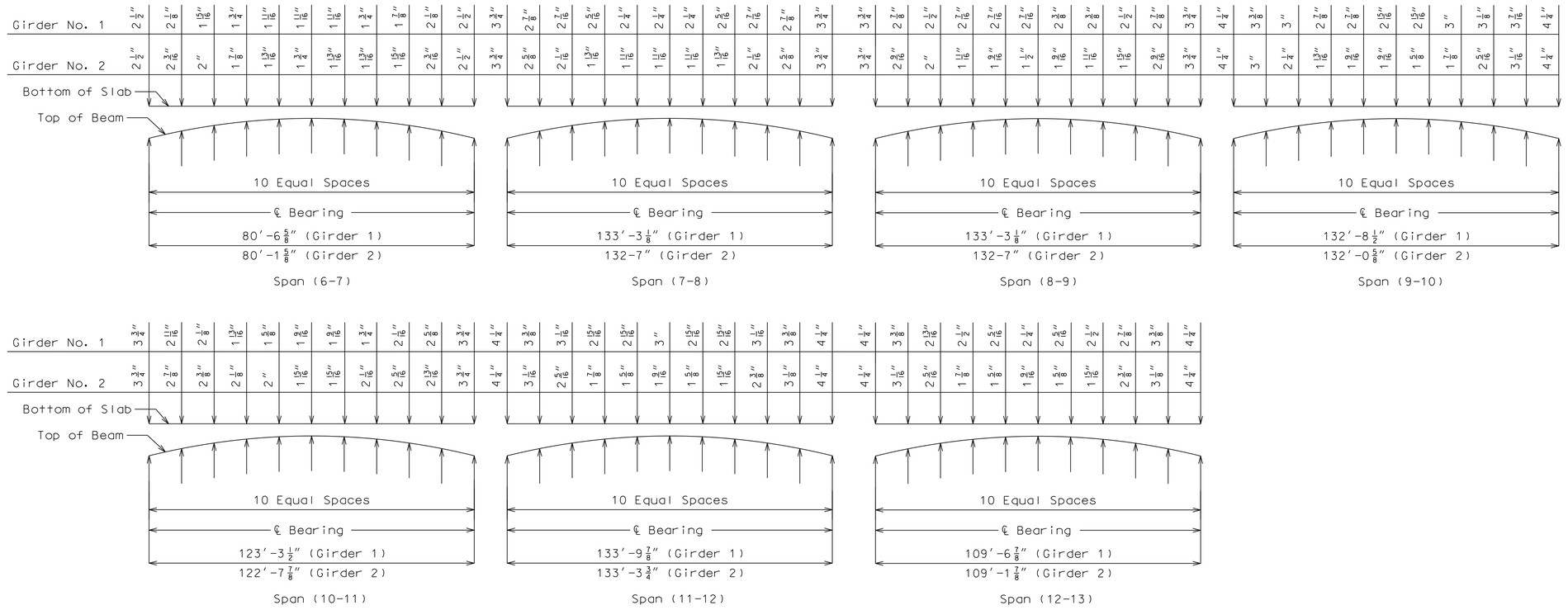
| DATE | DESCRIPTION |
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| | |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**CAMBER, HAUNCHING, AND SLAB ELEVATION 1**




THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

Theoretical Bottom of Slab Elevations at Centerline of Beam
(Prior to forming for slab) (Estimated at 90 days)

| Beam Number | Span (6-7) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 790.44 | 790.48 | 790.52 | 790.56 | 790.59 | 790.62 | 790.65 | 790.67 | 790.69 | 790.71 | 790.72 |
| 2 | 790.36 | 790.41 | 790.45 | 790.49 | 790.52 | 790.55 | 790.58 | 790.60 | 790.62 | 790.63 | 790.64 |
| Beam Number | Span (7-8) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 790.73 | 790.87 | 791.00 | 791.12 | 791.21 | 791.27 | 791.30 | 791.30 | 791.28 | 791.24 | 791.19 |
| 2 | 790.65 | 790.81 | 790.96 | 791.09 | 791.19 | 791.26 | 791.28 | 791.28 | 791.24 | 791.18 | 791.11 |
| Beam Number | Span (8-9) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 791.20 | 791.34 | 791.47 | 791.58 | 791.67 | 791.73 | 791.76 | 791.77 | 791.74 | 791.71 | 791.67 |
| 2 | 791.12 | 791.28 | 791.43 | 791.55 | 791.65 | 791.72 | 791.74 | 791.74 | 791.70 | 791.65 | 791.59 |
| Beam Number | Span (9-10) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 791.67 | 791.81 | 791.95 | 792.07 | 792.16 | 792.22 | 792.26 | 792.26 | 792.23 | 792.19 | 792.13 |
| 2 | 791.59 | 791.75 | 791.91 | 792.04 | 792.14 | 792.21 | 792.24 | 792.23 | 792.19 | 792.13 | 792.05 |

Theoretical Bottom of Slab Elevations at Centerline of Beam
(Prior to forming for slab) (Estimated at 90 days)

| Beam Number | Span (10-11) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 792.11 | 791.92 | 791.72 | 791.51 | 791.27 | 791.02 | 790.74 | 790.44 | 790.12 | 789.79 | 789.45 |
| 2 | 792.03 | 791.85 | 791.67 | 791.47 | 791.24 | 790.99 | 790.71 | 790.40 | 790.07 | 789.72 | 789.37 |
| Beam Number | Span (11-12) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 789.40 | 788.89 | 788.38 | 787.84 | 787.29 | 786.70 | 786.08 | 785.44 | 784.77 | 784.08 | 783.39 |
| 2 | 789.32 | 788.83 | 788.34 | 787.82 | 787.27 | 786.69 | 786.07 | 785.41 | 784.73 | 784.03 | 783.31 |
| Beam Number | Span (12-13) (℄ Brg. - ℄ Brg.) | | | | | | | | | | |
| | ℄ Brg. | .10 | .20 | .30 | .40 | .50 | .60 | .70 | .80 | .90 | ℄ Brg. |
| 1 | 783.14 | 782.71 | 782.28 | 781.84 | 781.38 | 780.92 | 780.44 | 779.95 | 779.44 | 778.93 | 778.41 |
| 2 | 783.06 | 782.64 | 782.21 | 781.78 | 781.33 | 780.86 | 780.38 | 779.88 | 779.37 | 778.85 | 778.32 |

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 7/2022
Checked SAB 8/2022

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User:USACE-LWF7449544
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SHEET NO. 138 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/13/24

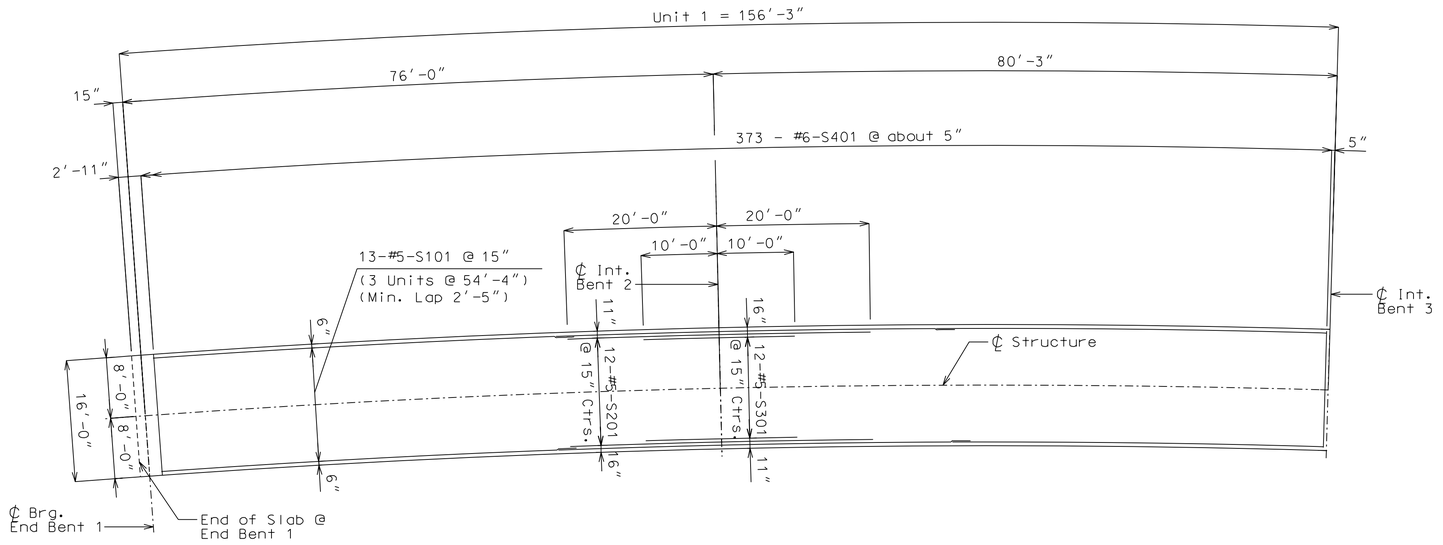
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

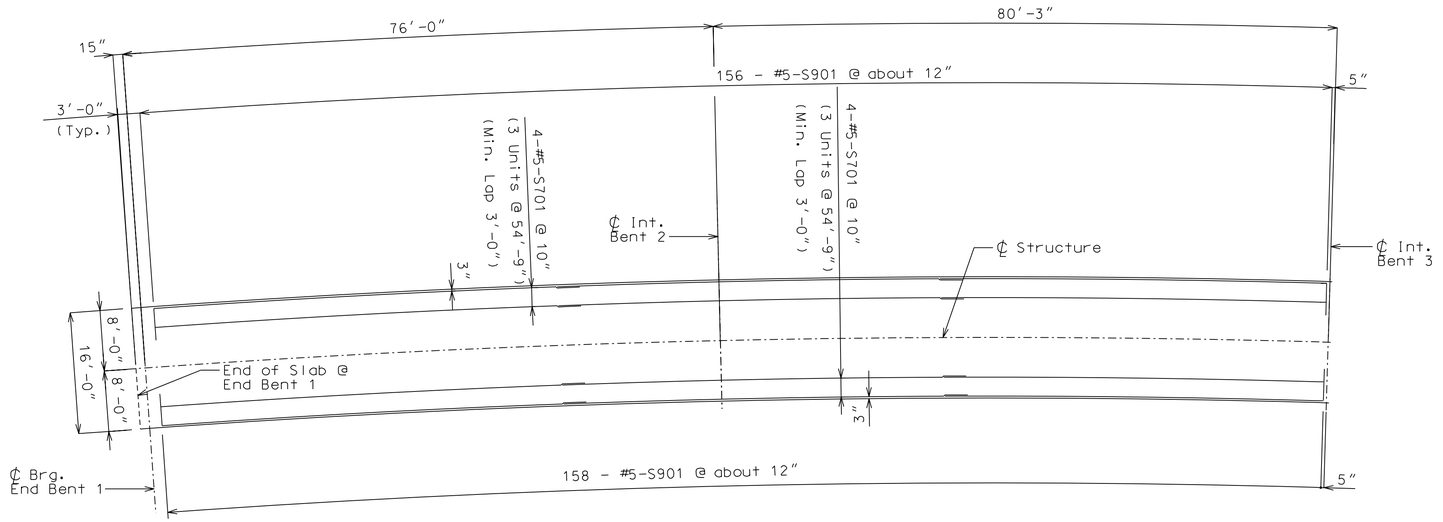
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**CAMBER, HAUNCHING, AND SLAB ELEVATION 2**




TOP REINFORCING




BOTTOM REINFORCING

# SLAB PLAN UNIT 1 REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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User:USKT705318
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 139 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. SHORT
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

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

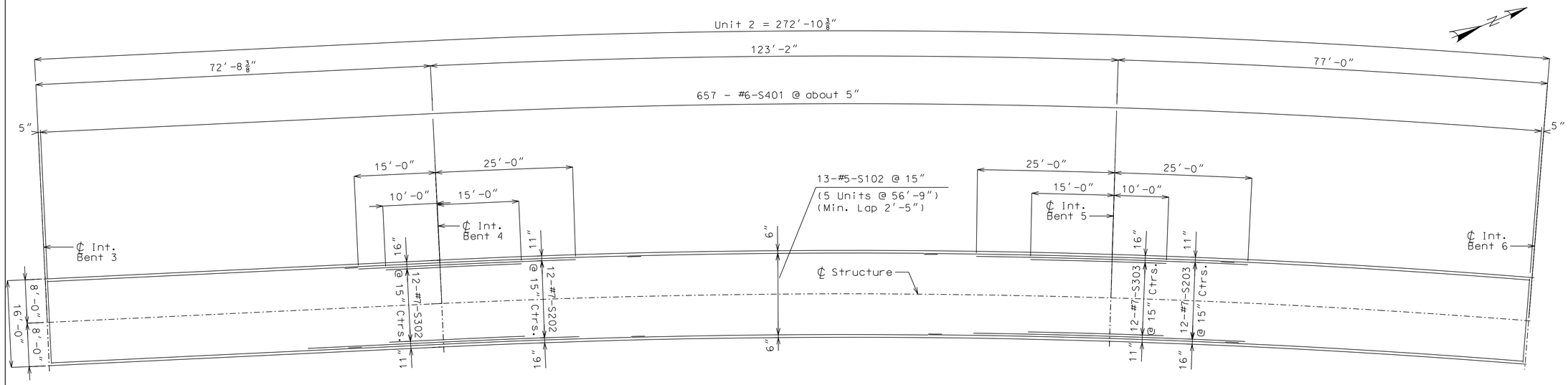
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

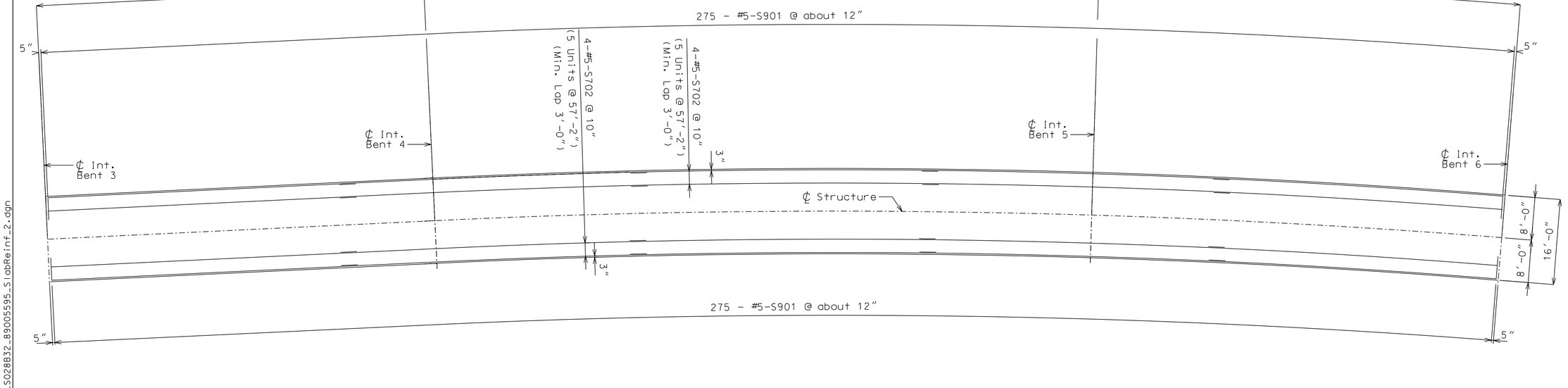
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB PLAN REINFORCING**




TOP REINFORCING




BOTTOM REINFORCING

# SLAB PLAN UNIT 2 REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 140 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. MOORE
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

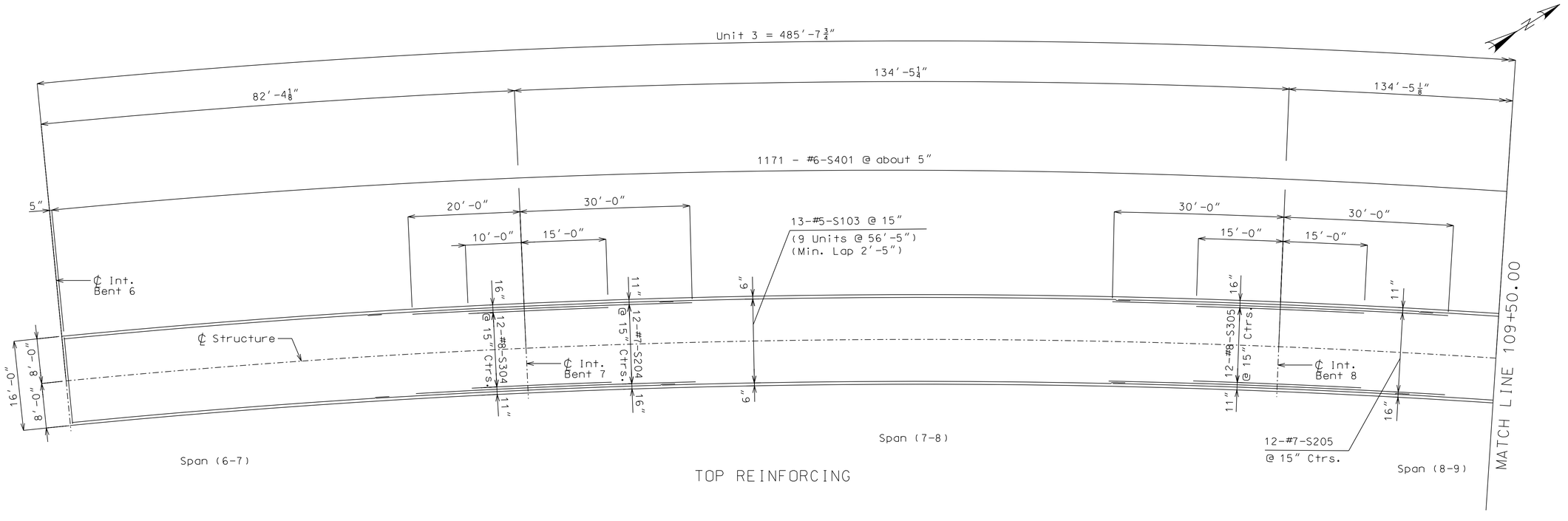
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

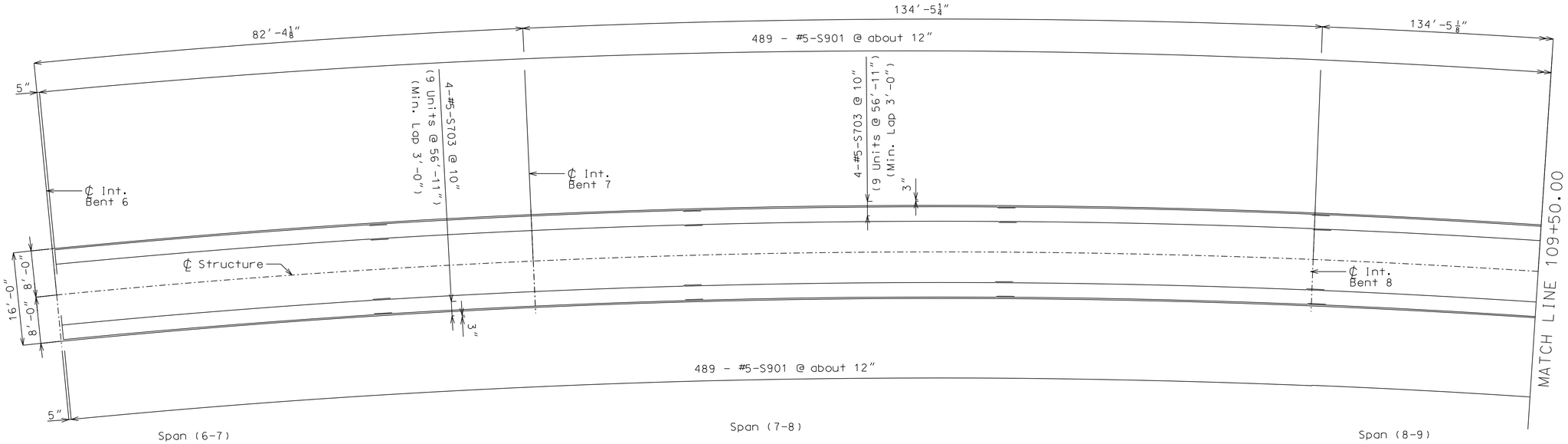
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB PLAN REINFORCING**




TOP REINFORCING




BOTTOM REINFORCING

# SLAB PLAN UNIT 3 REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 141 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. KOCH
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

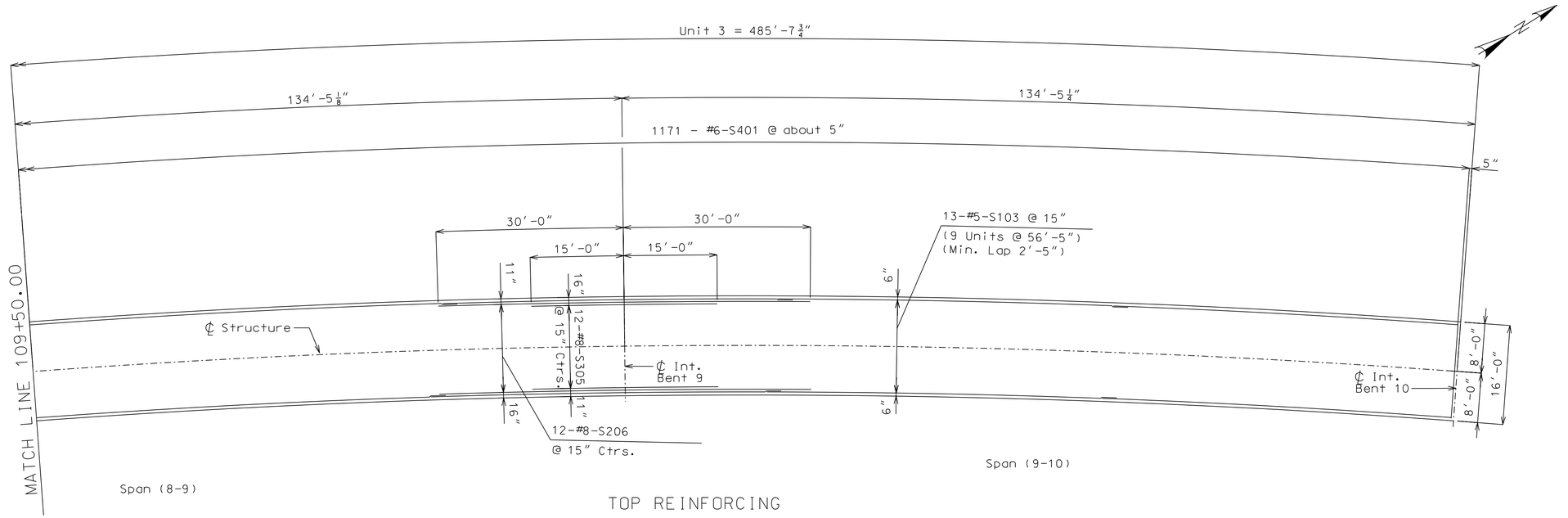
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

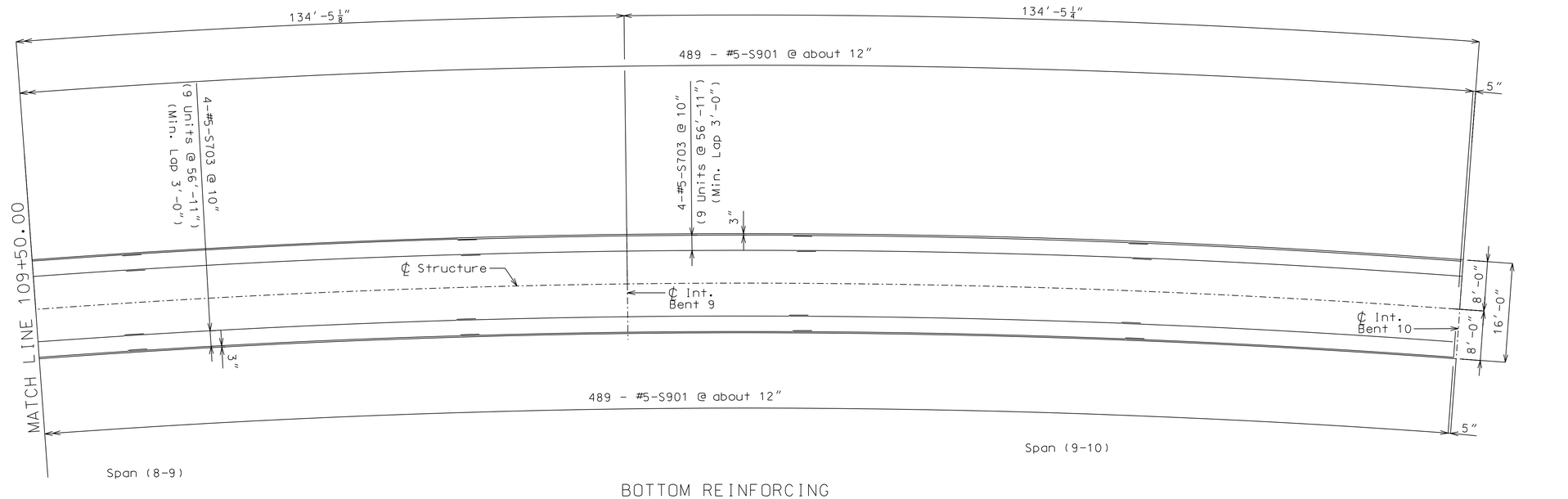
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB PLAN REINFORCING**




TOP REINFORCING




BOTTOM REINFORCING

# SLAB PLAN UNIT 3 REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 142 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. FLANAGAN
NUMBER 2024
PE-2014020030
PROFESSIONAL ENGINEER

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

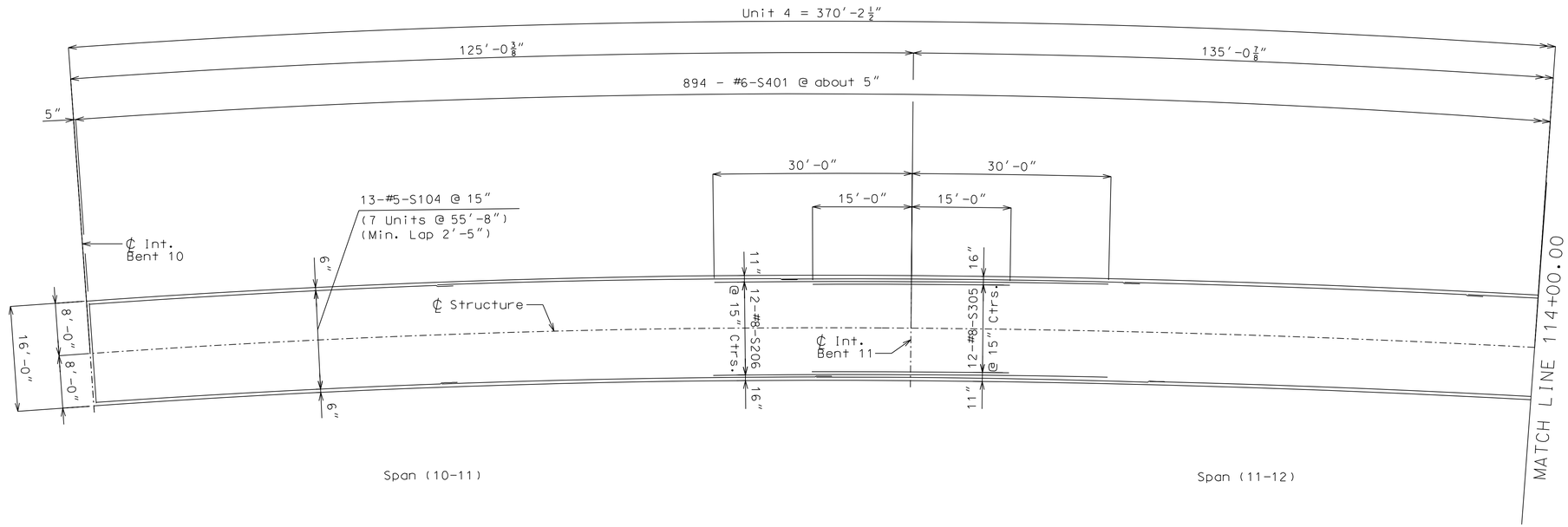
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

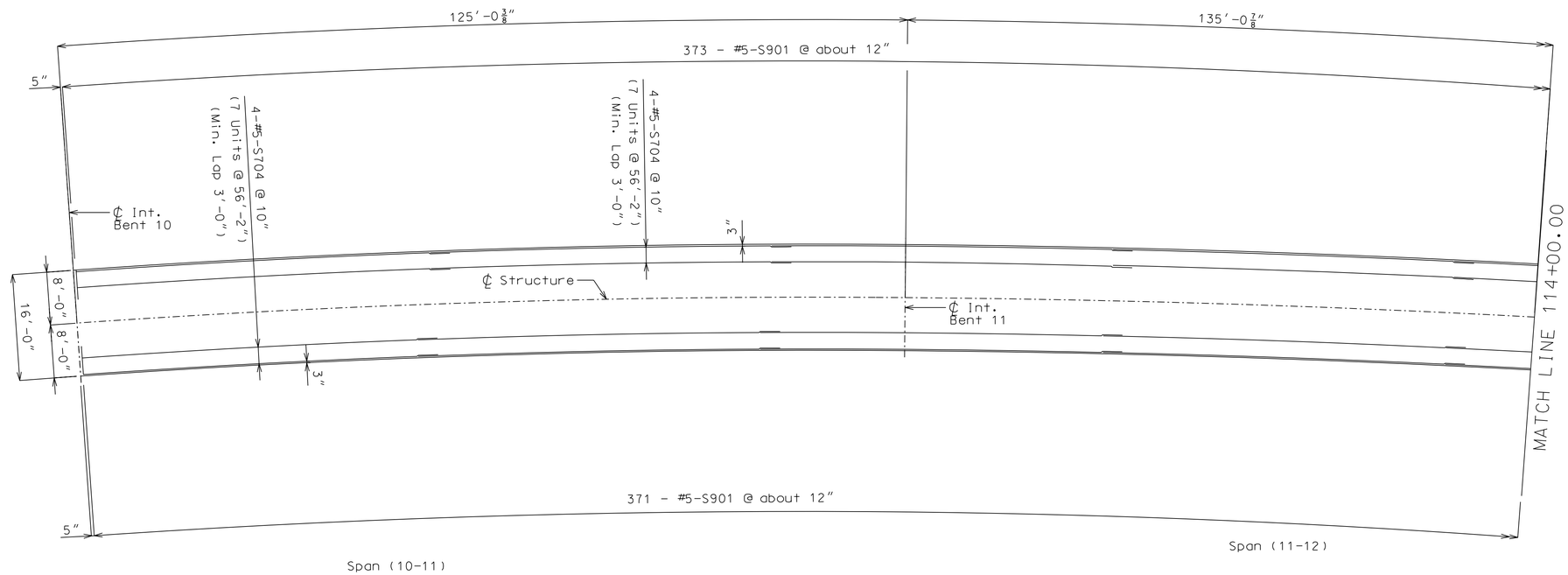
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB PLAN REINFORCING**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




TOP REINFORCING




BOTTOM REINFORCING

# SLAB PLAN UNIT 4 REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 143 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. WOOD
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

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

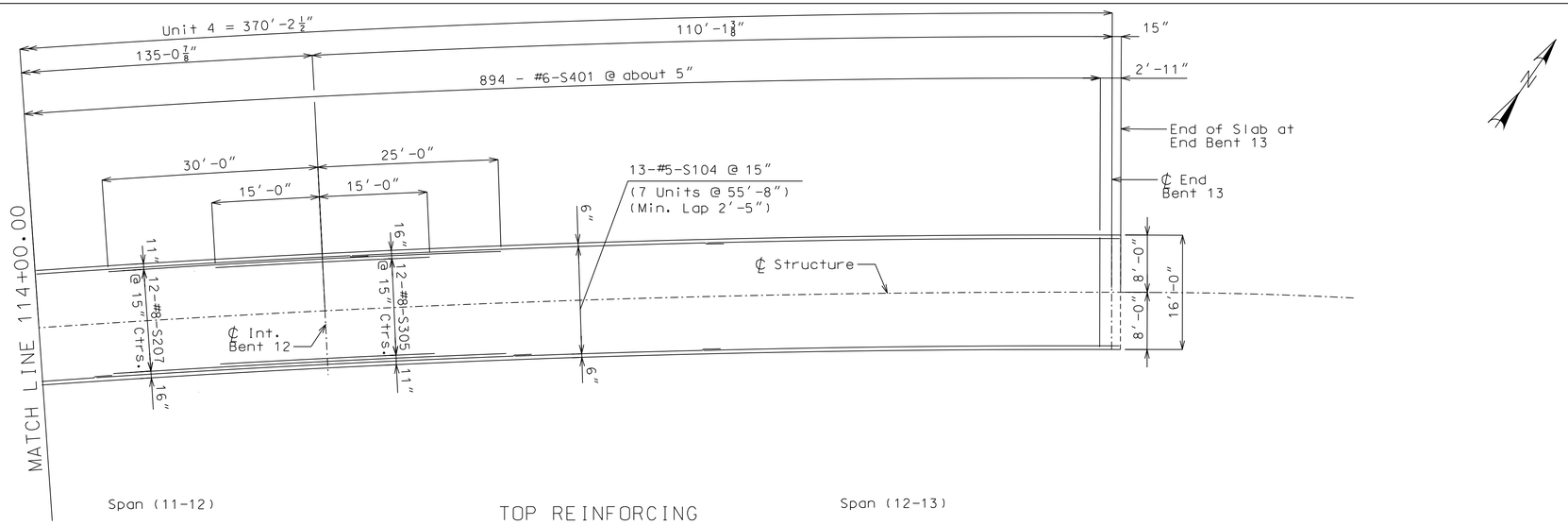
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

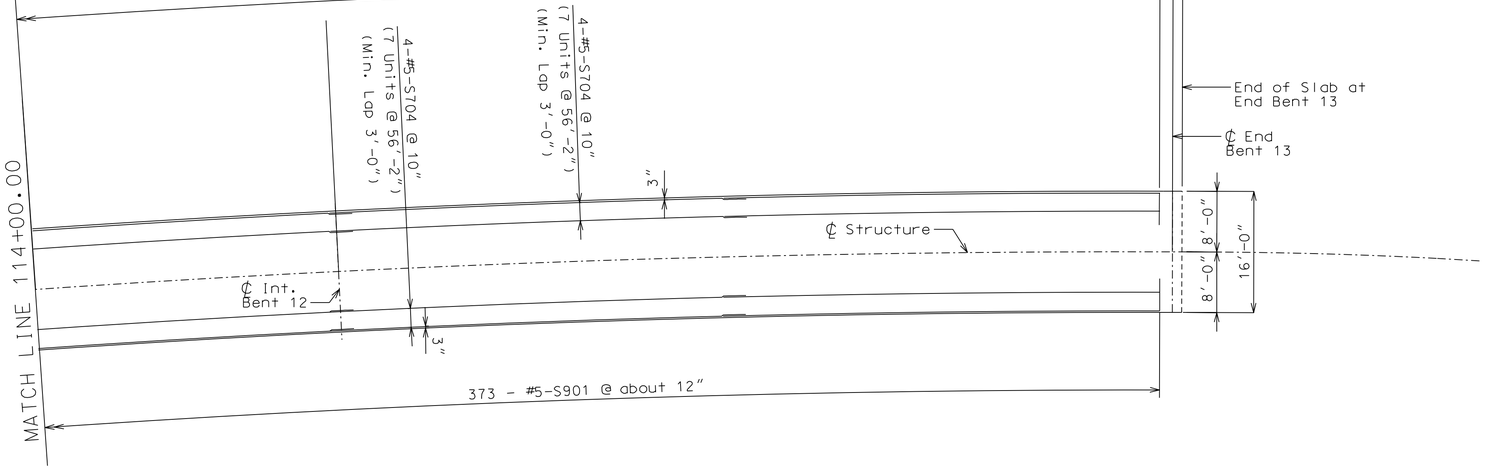
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB PLAN REINFORCING**




TOP REINFORCING




BOTTOM REINFORCING

# SLAB PLAN UNIT 4 REINFORCING

Note: This drawing is not to scale. Follow dimensions.

Designed TJW 10/2022
Detailed BJS 10/2022
Checked SJF 10/2022

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SHEET NO. 144 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE J. FORD
NUMBER 2014030630
PE
PROFESSIONAL ENGINEER

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

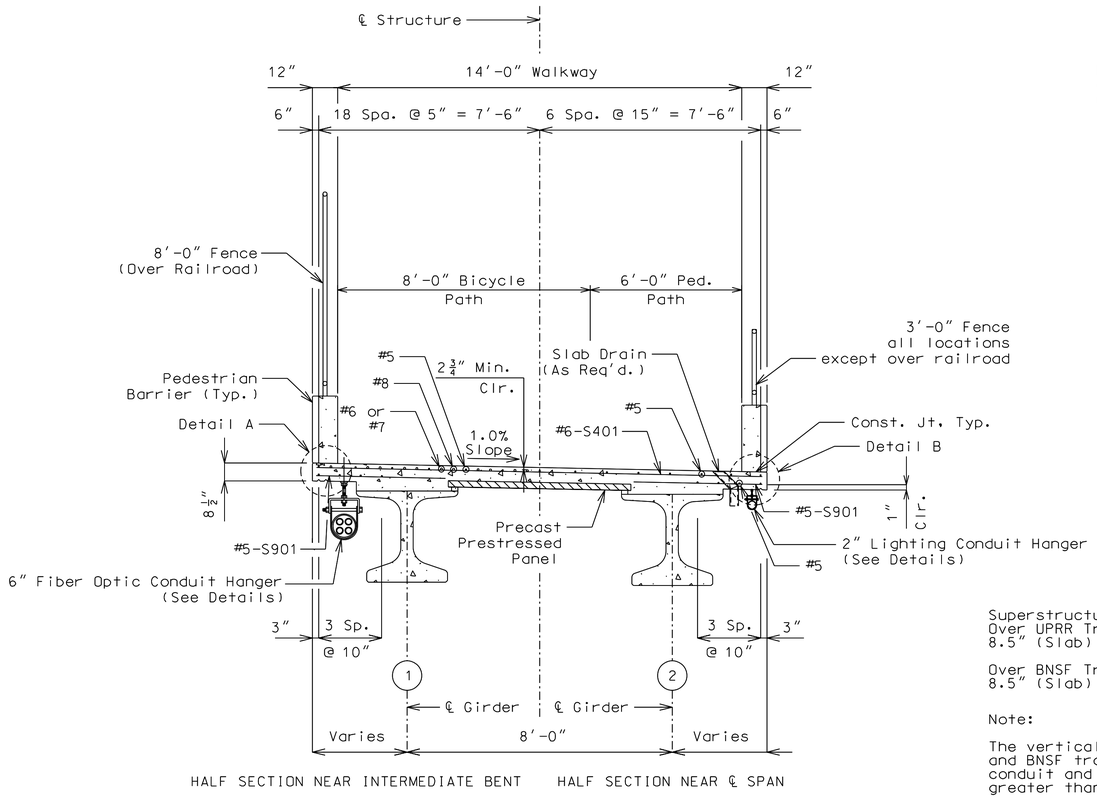
| DATE | DESCRIPTION |
|---|---|
| | |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
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WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB PLAN REINFORCING**




HALF SECTION NEAR INTERMEDIATE BENT  HALF SECTION NEAR ℄ SPAN

TYPICAL SECTION THRU SLAB

Superstructure Depth:
Over UPRR Track = 53.16" (Girder) + 8.5" (Slab) + $1\frac{5}{8}$" (Haunch) = 5'-$3\frac{21}{32}$"

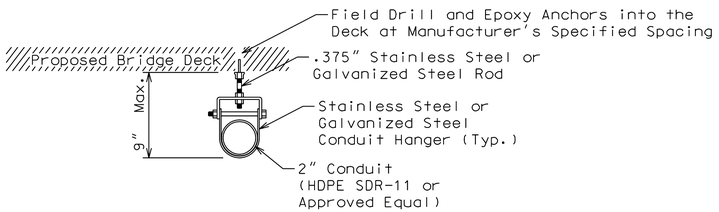
Over BNSF Track = 53.16" (Girder) + 8.5" (Slab) + $1\frac{5}{8}$" (Haunch) = 5'-$3\frac{21}{32}$"

Note:

The vertical clearances from the UPRR and BNSF tracks to the lighting conduit and fiber optic cable are greater than 27'-0".




6" Fiber Optic Conduit Hanger




2" Lighting Conduit Hanger

Notes:

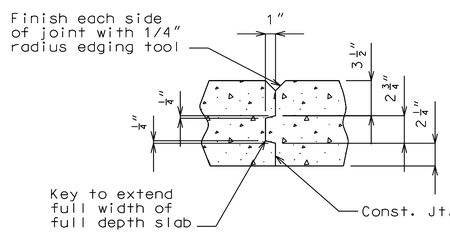
1. Contractor to submit shop drawings for all conduit hangers to be approved by the Engineer.
2. 6" Conduit Hanger to be: Clevis Hanger: Electro-Galvanized Steel, For 6 in Pipe, For 3/4 in Threaded Rod - or approved equal.
3. 2" Conduit Hanger to be: Clevis Hanger: Electro-Galvanized Steel, For 2 in Pipe, For 3/8 in Threaded Rod - or approved equal.

HANGER DETAILS

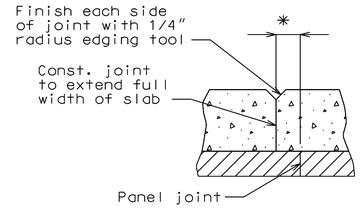
SLAB CROSS SECTION

Note: This drawing is not to scale. Follow dimensions.

* Adjust the construction joint to a clearance of 6 inches minimum from the panel joint.

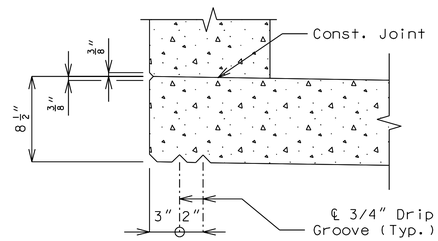



(Full Depth Slab)

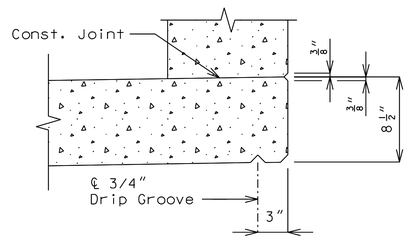



(Slab on Precast Panels)

SLAB CONSTRUCTION JOINT DETAILS




DETAIL A




DETAIL B

Notes:

For Deck Drain details and locations, see Sheet Nos. 129 thru 133.

For details and reinforcement of pedestrian barriers not shown, see Sheets No. 150 thru 153.

For Theoretical Slab Haunching Diagram and Theoretical Bottom of Slab Elevations, see Sheet Nos. 137 -138

For Plan of Slab Showing Reinforcement, see Sheet Nos. 139 - 144

For Curved Pedestrian Fence details and locations, see Sheet Nos. 147 - 149

Concrete to be used in bridge deck, barriers and light blisters shall be Special Aggregate Concrete.

⚠ REVISED 11-14-2023

Designed TJW 09/2022
Detailed BJS 09/2022
Checked SJF 09/2022

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 145 | 187 |

DATE PREPARED 1/6/2025
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A HOOD
NUMBER PE-2010030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| 11/14/23 | BNSF REVIEW UPDATES |

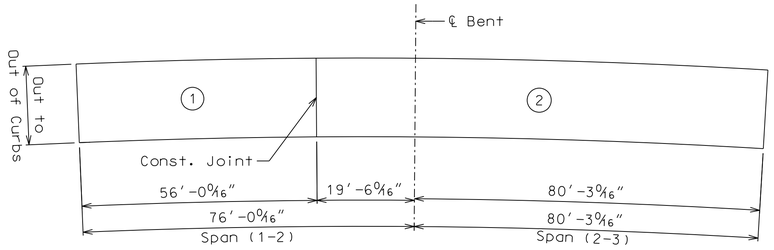
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

SLAB CROSS SECTION

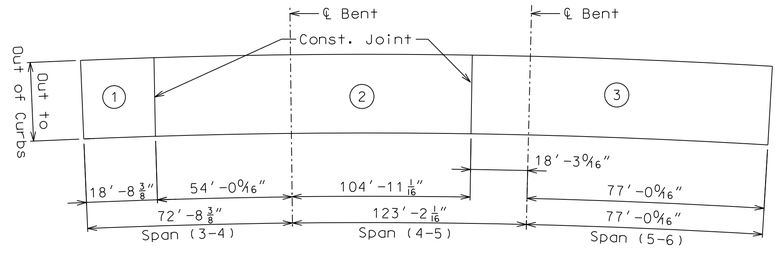
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| | Sequence of Pours | | Min. Rate of Pour Cu. Yds./Hr. |
|---|---|---|---|
| | Direction | | With Retarder |
| Basic Sequence | 1<br>End to 2 | 2<br>1 to End | 25 |
| Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703. | | | |
| Alternate A Pours | 1 + 2<br>End to End | | 25 |

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

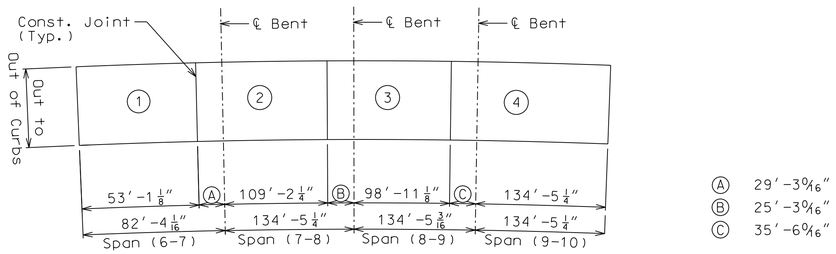
SLAB POURING SEQUENCE - UNIT 1




| | Sequence of Pours | | | Min. Rate of Pour Cu. Yds./Hr. |
|---|---|---|---|---|
| | Direction | | | With Retarder |
| Basic Sequence | 1<br>End to 2 | 2<br>1 to 3 | 3<br>2 to End | 25 |
| Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703. | | | | |
| Alternate A Pours | 1 + 2<br>End to 3 | 3 + 2<br>2 to End | | 25 |
| Alternate B Pours | 1 + 2 + 3<br>End to End | | | 34 |

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

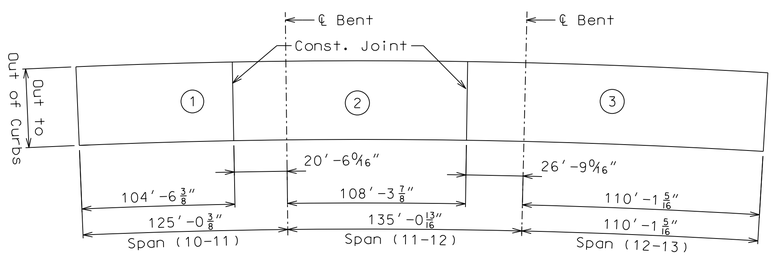
SLAB POURING SEQUENCE - UNIT 2




| | Sequence of Pours | | | | | Min. Rate of Pour Cu. Yds./Hr. |
|---|---|---|---|---|---|---|
| | Direction | | | | | With Retarder |
| Basic Sequence | 1<br>End to 2 | 2<br>1 to 3 | 3<br>2 to 4 | 4<br>3 to End | | 25 |
| Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703. | | | | | | |
| Alternate A Pours | 1 + 2<br>End to 3 | | 3<br>2 to 4 | 4<br>3 to End | | 25 |
| Alternate B Pours | 1 + 2<br>End to 3 | | | 3 + 4<br>2 to End | | 37 |
| Alternate C Pours | 1 + 2 + 3 + 4<br>End to End | | | | | 61 |

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE - UNIT 3




| | Sequence of Pours | | | Min. Rate of Pour Cu. Yds./Hr. |
|---|---|---|---|---|
| | Direction | | | With Retarder |
| Basic Sequence | 1<br>End to 2 | 2<br>1 to 3 | 3<br>2 to End | 25 |
| Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703. | | | | |
| Alternate A Pours | 1 + 2<br>End to 3 | 3<br>2 to End | | 29 |
| Alternate B Pours | 1 + 2 + 3<br>End to End | | | 47 |

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE - UNIT 4

# SLAB POURING SEQUENCE

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 7/2022
Checked SAB 8/2022

2:10:15 PM
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SHEET NO. 146 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 A PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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

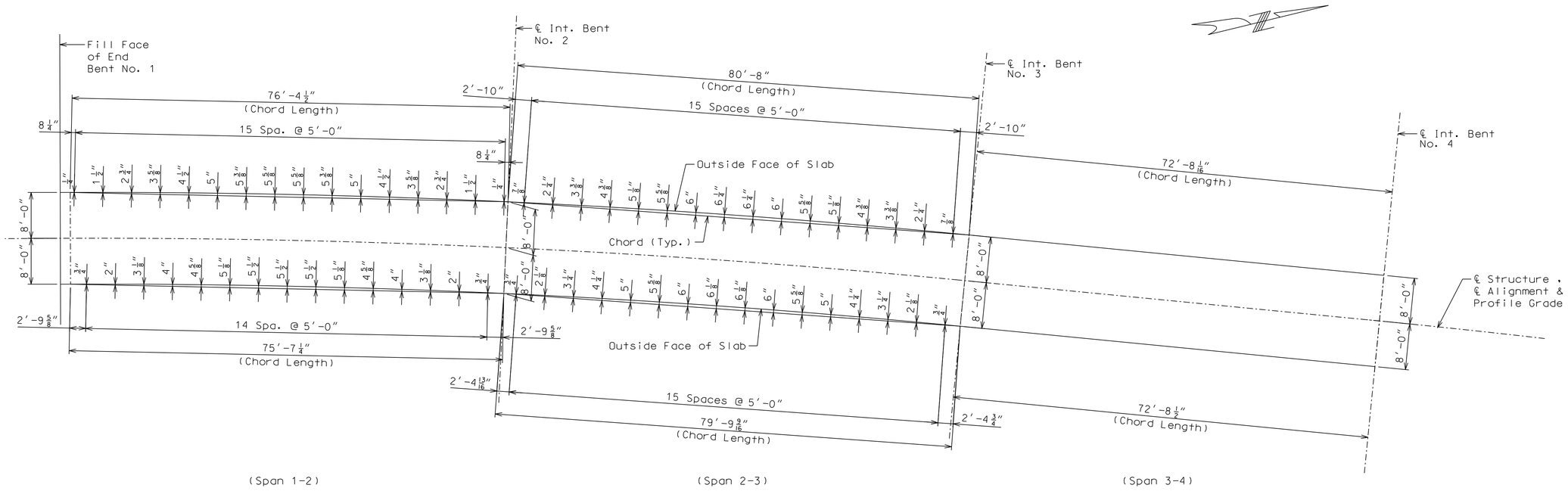
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

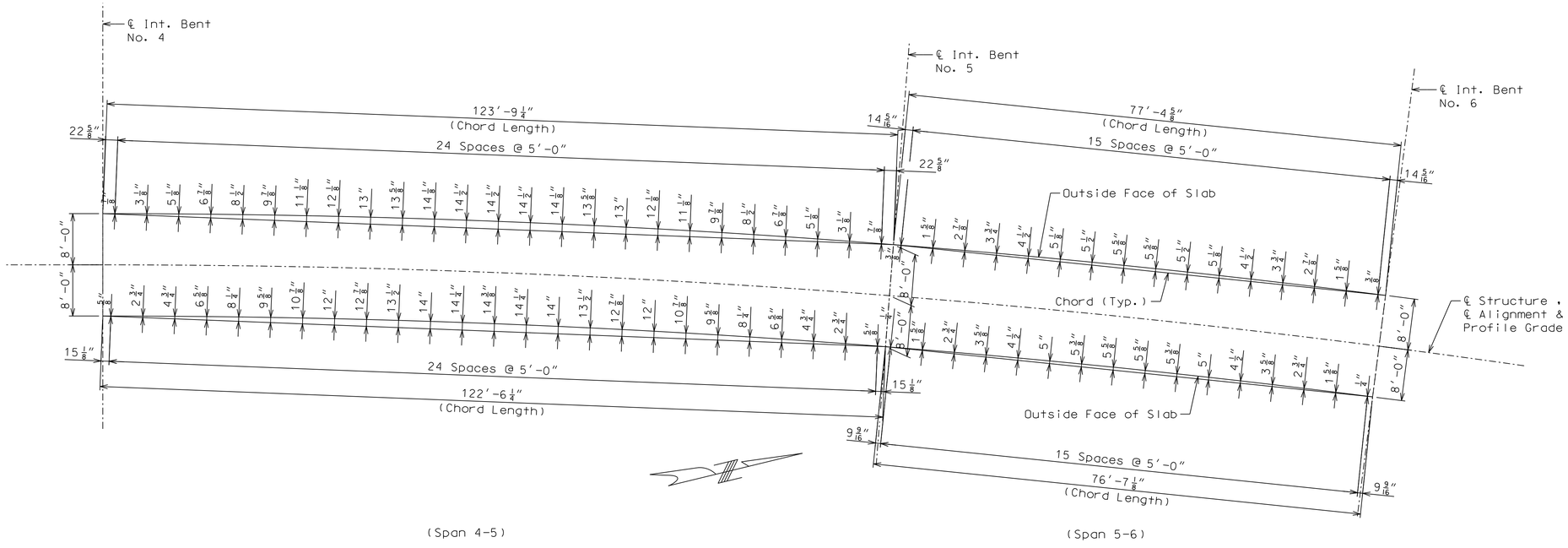
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB POURING SEQUENCE 2**




PLAN




PLAN

# SLAB CURVE ORDINATES

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 7/2022
Checked SAB 3/2023

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User:JSF7744954
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 147 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

| DATE | DESCRIPTION |
|---|---|
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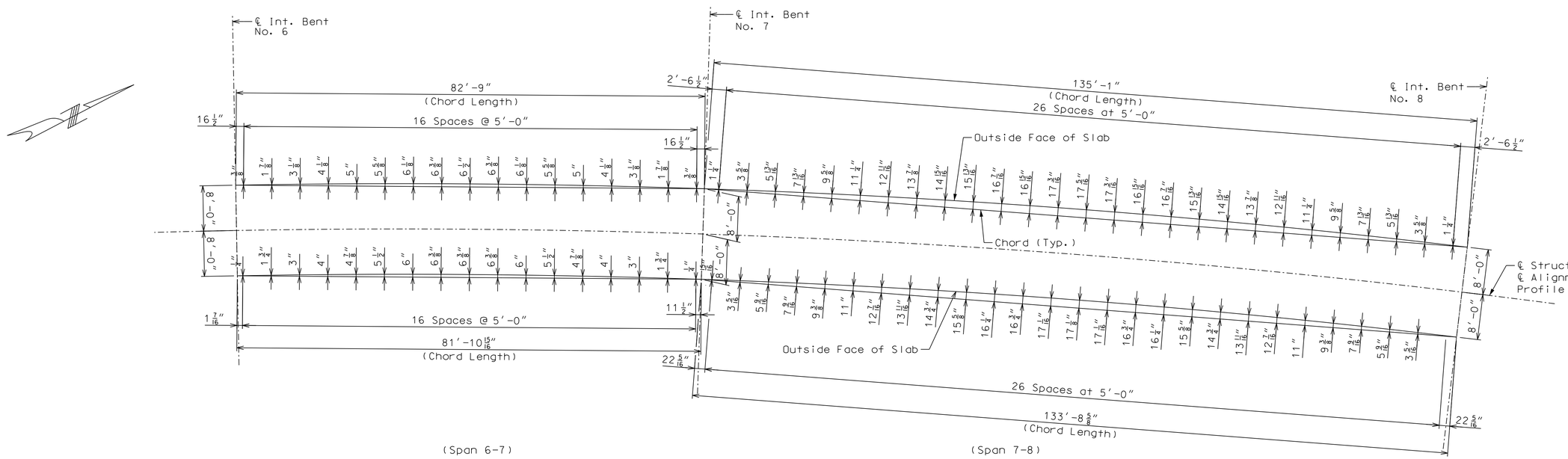
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

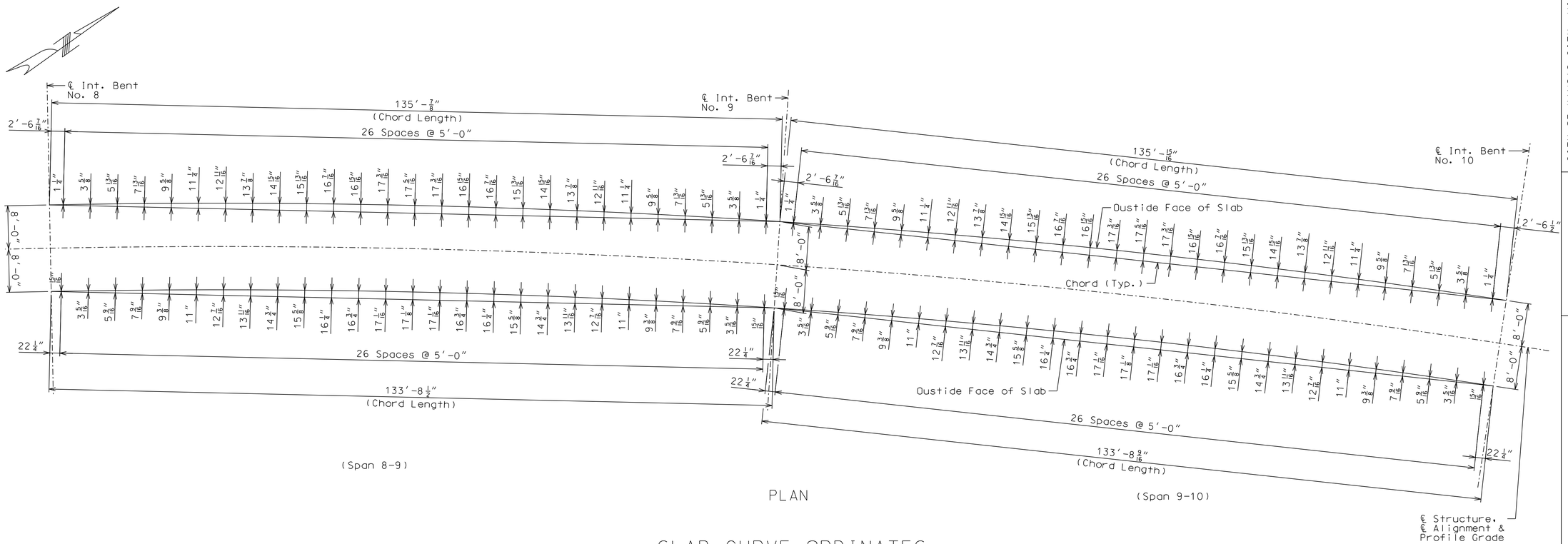
WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB CURVE ORDINATES 1**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.




PLAN




PLAN

# SLAB CURVE ORDINATES

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 7/2022
Checked SAB 3/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 148 | 187 |

DATE PREPARED: 11/13/2024
STATE: MISSOURI
ROUTE: GRAND BLVD.
CITY: KANSAS CITY
COUNTY: JACKSON
PROJECT NO.: 89005595

PETER YOUNG NUMBER PE-2010017701 A PROFESSIONAL ENGINEER — STATE OF MISSOURI
11/7/24

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

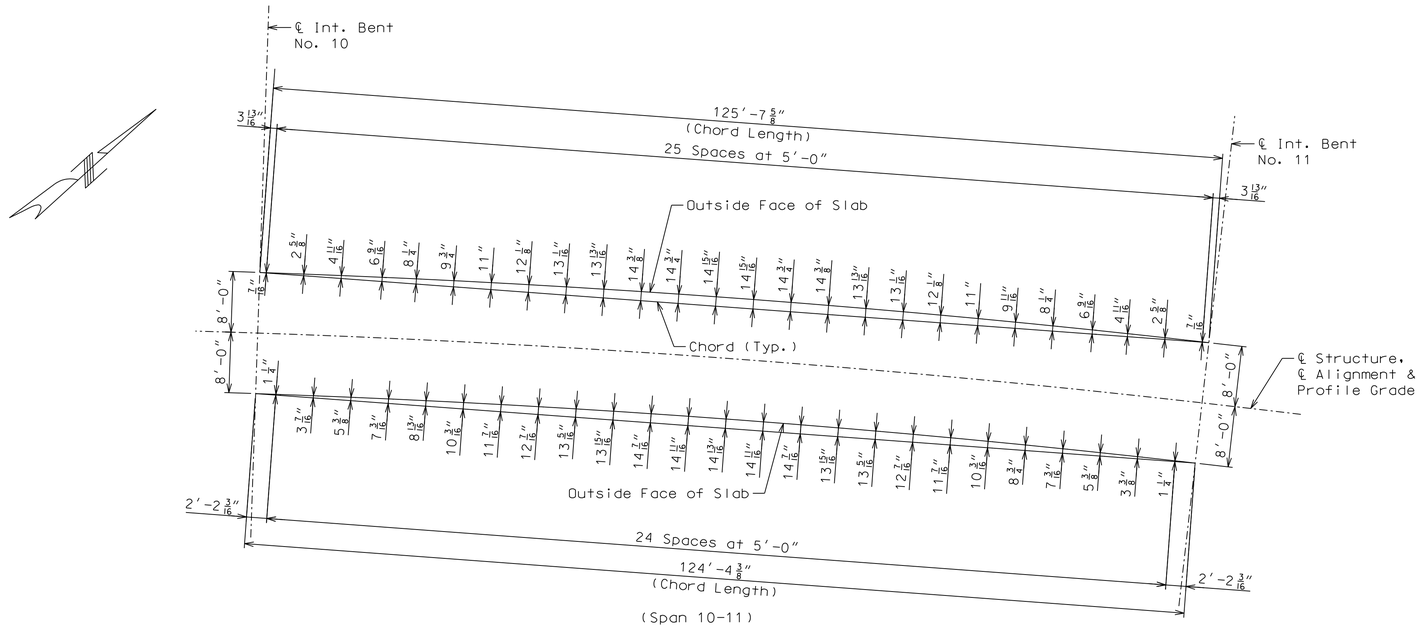
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**SLAB CURVE ORDINATES 2**




# SLAB CURVE ORDINATES

Note: This drawing is not to scale. Follow dimensions.

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 149 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
11/7/24

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

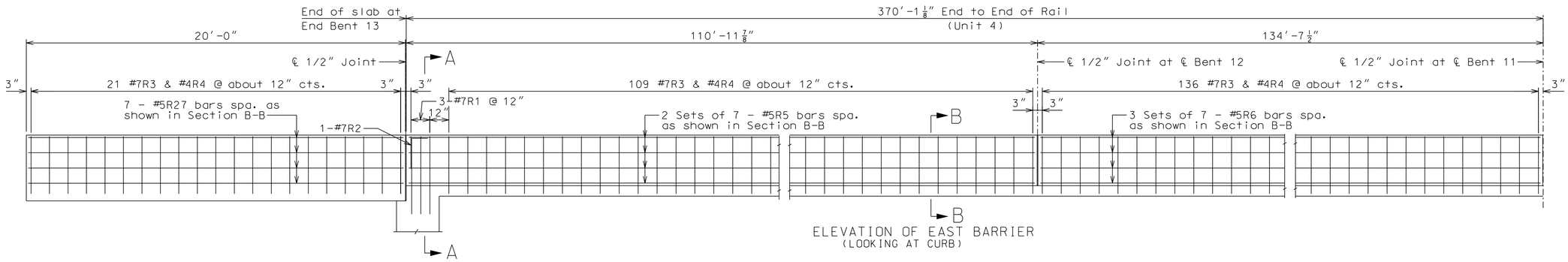
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

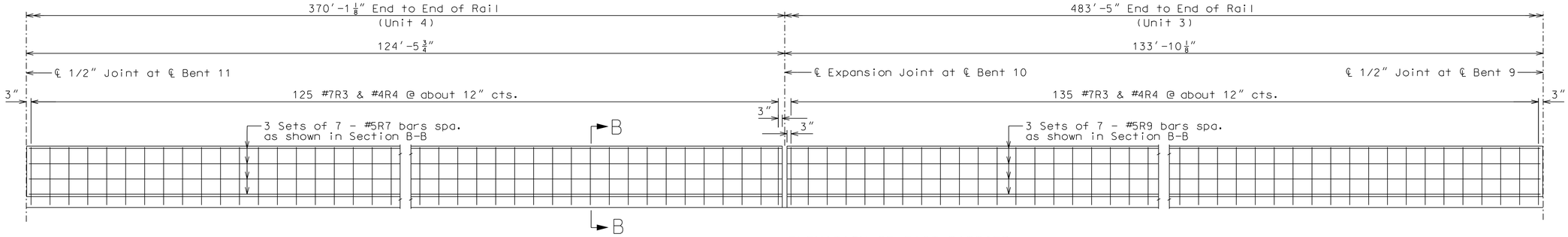
**SLAB CURVE ORDINATES 3**

Detailed PRY 7/2022
Checked SAB 3/2023

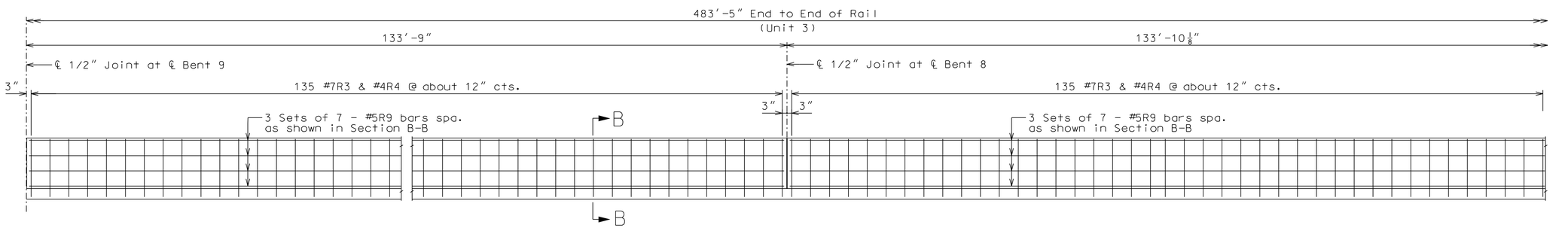
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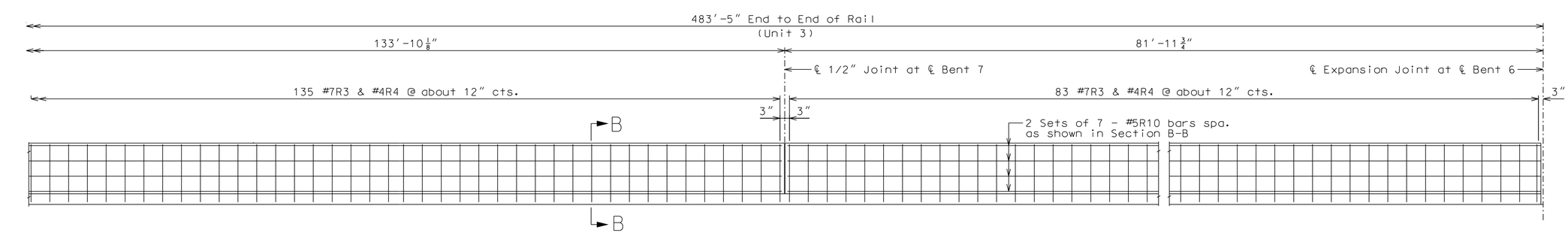

ELEVATION OF EAST BARRIER
(LOOKING AT CURB)




ELEVATION OF EAST BARRIER
(LOOKING AT CURB)




ELEVATION OF EAST BARRIER
(LOOKING AT CURB)




ELEVATION OF EAST BARRIER
(LOOKING AT CURB)

Notes:

See sheet 150 for notes and details.

Designed TJW 10/2022
Detailed BJW 10/2022
Checked SJF 10/2022

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SHEET NO. 150 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE J. WOOD
PE-2014030630
PROFESSIONAL ENGINEER
March 29, 2024

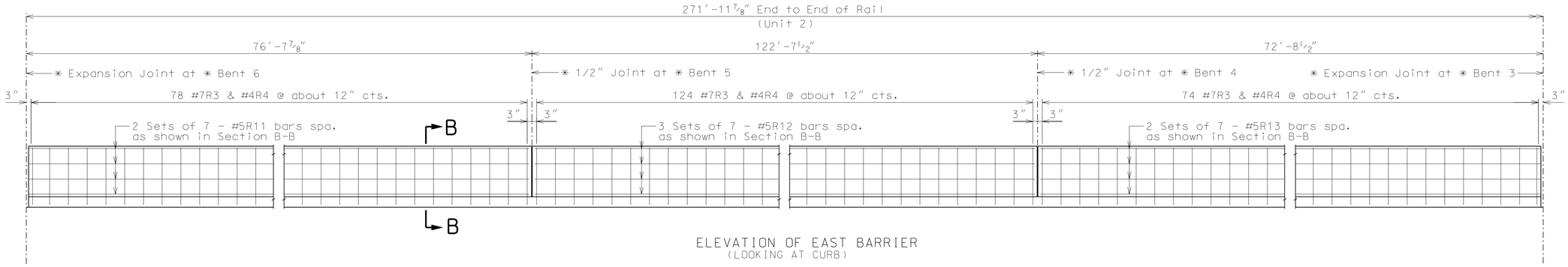
| DATE | DESCRIPTION |
|---|---|

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

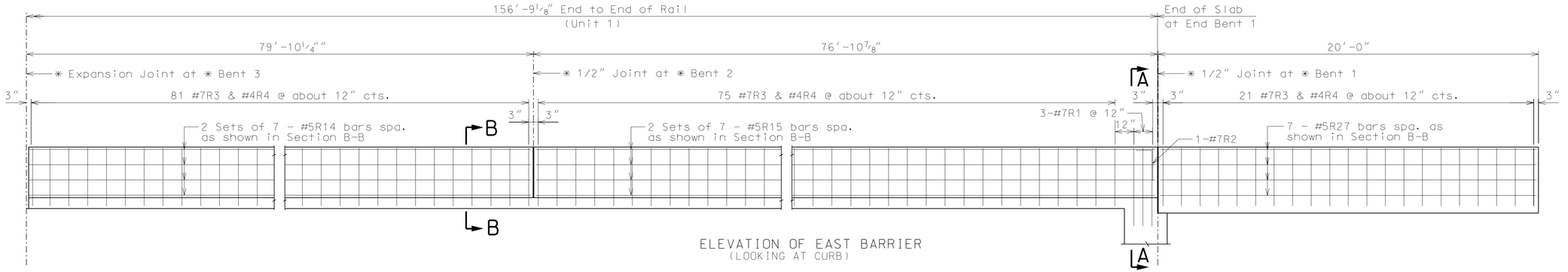
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

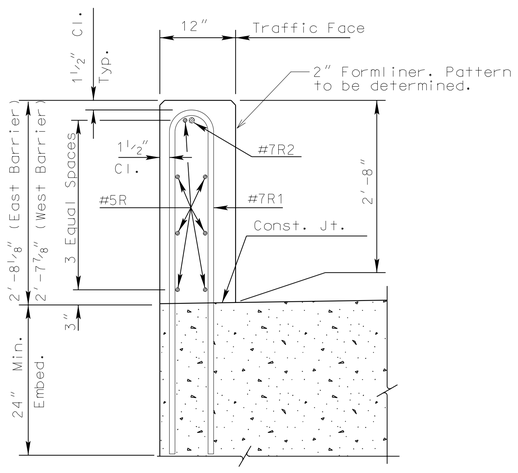
# EAST BARRIER CURB DETAILS



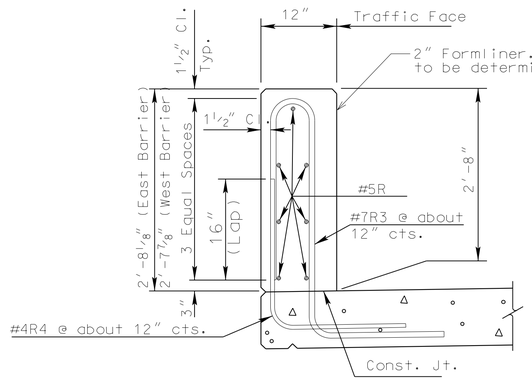

ELEVATION OF EAST BARRIER
(LOOKING AT CURB)




ELEVATION OF EAST BARRIER
(LOOKING AT CURB)




SECTION A-A




SECTION B-B

Notes:

Top of barrier shall be built parallel to grade and barrier joints normal to grade.

All exposed edges of barrier shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Concrete in barrier shall be Special Aggregate Concrete.

Measurement of barrier is to the nearest linear foot, measured along the outside top of slab from end of slab to end of slab.

Lap #5R longitudinal bars 3′-1″ minimum.

Formliners shall be placed on the traffic face of the barrier. Contractor shall coordinate with thge City's chosen artist on the formliner pattern. The formliner shall be approved by the Engineer.

All dimensions shown are along outside face of barrier.

All materials and work necessary to construct this Barrier Curb shall be paid for by the bid item "Concrete Traffic Barrier, Special".

Designed TJW 10/2022
Detailed BJW 10/2022
Checked SJF 10/2022

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SHEET NO. 151 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. JOCOY
NUMBER 2024
PE-2014000630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

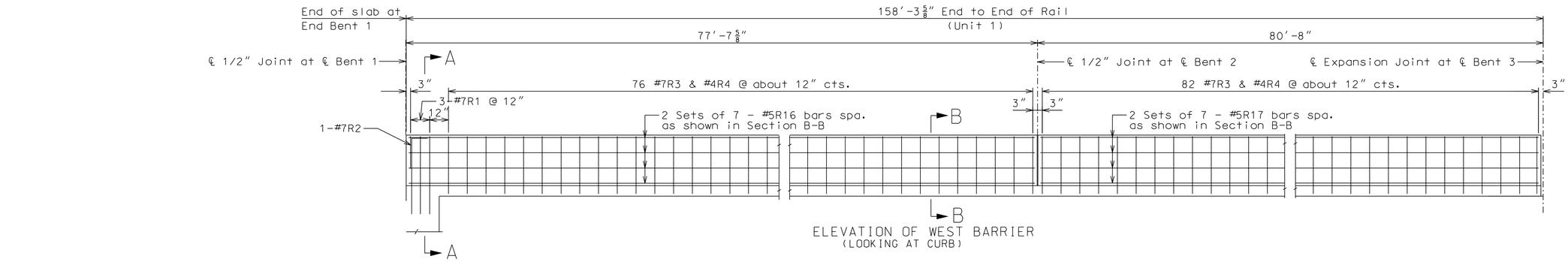
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

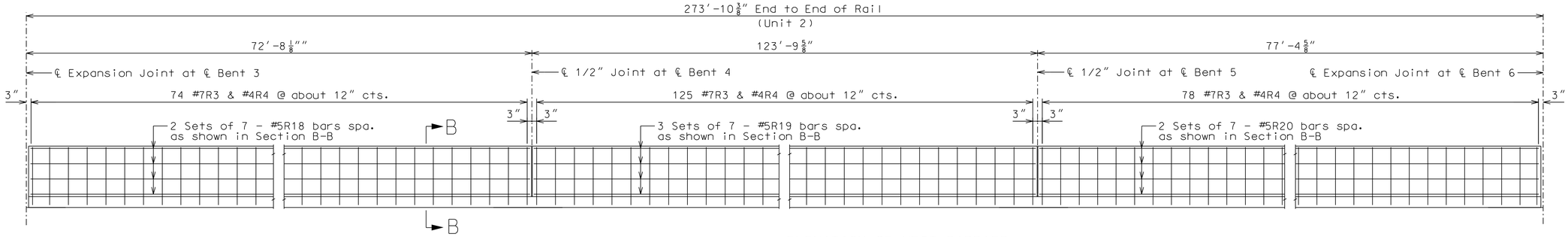
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

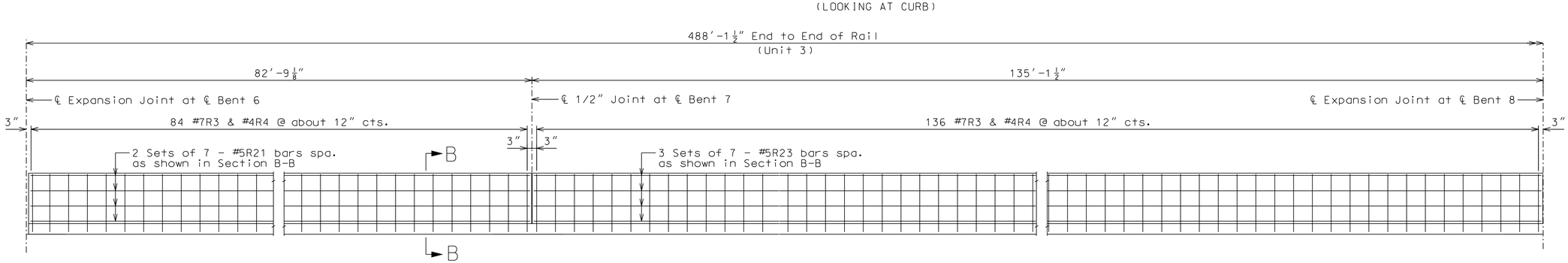
# EAST BARRIER CURB DETAILS



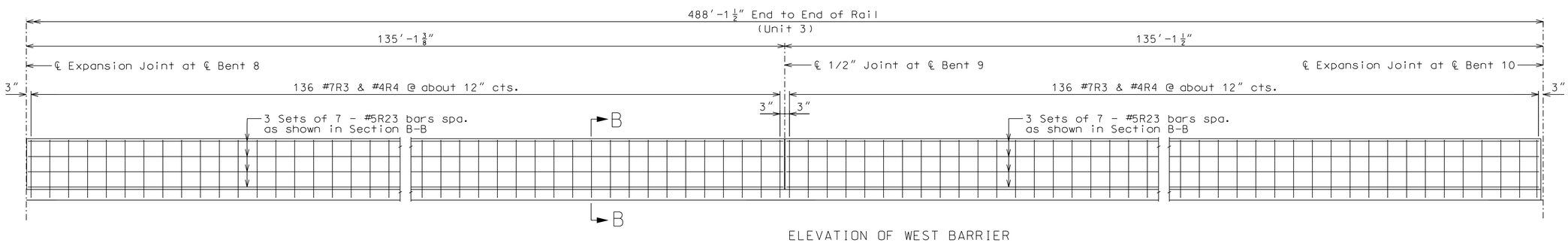

ELEVATION OF WEST BARRIER
(LOOKING AT CURB)




ELEVATION OF WEST BARRIER
(LOOKING AT CURB)




ELEVATION OF WEST BARRIER
(LOOKING AT CURB)




ELEVATION OF WEST BARRIER
(LOOKING AT CURB)

Notes:

See sheet 152 for notes and details.

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Detailed BJW 10/2022
Checked SJF 10/2022

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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 152 | 187 |

DATE PREPARED
5/19/2023

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE J. KOOP
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

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

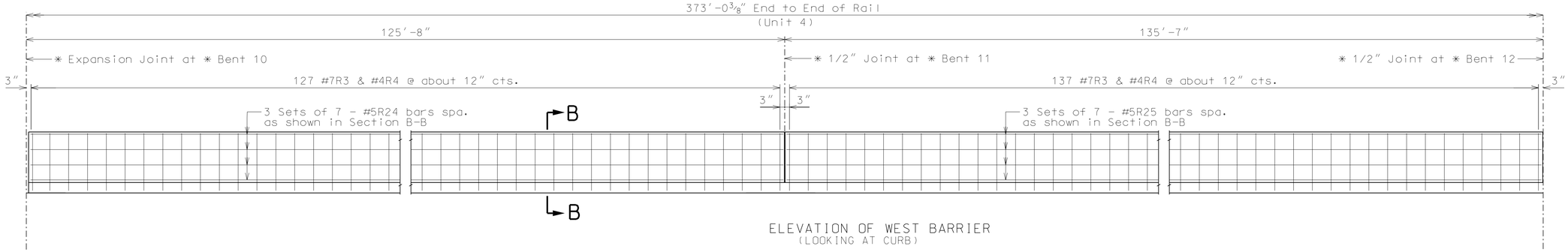
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

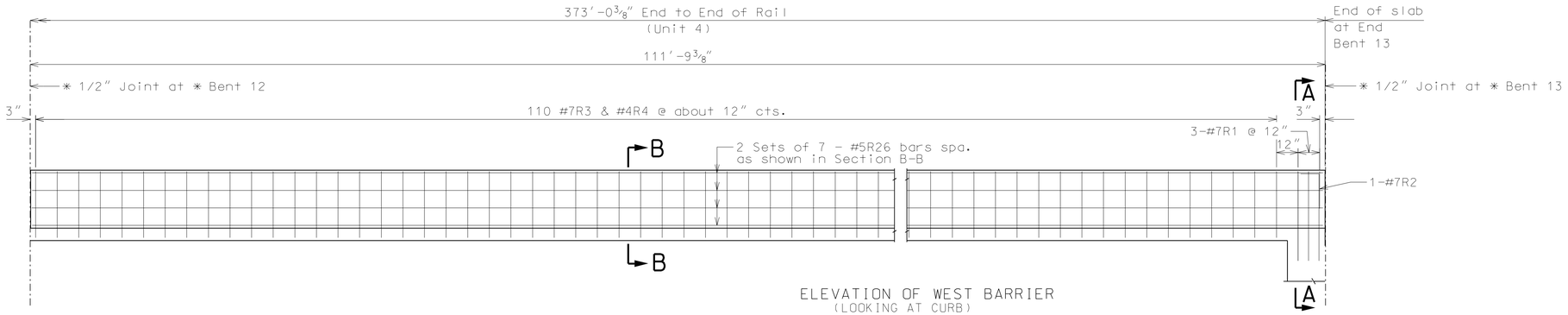
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

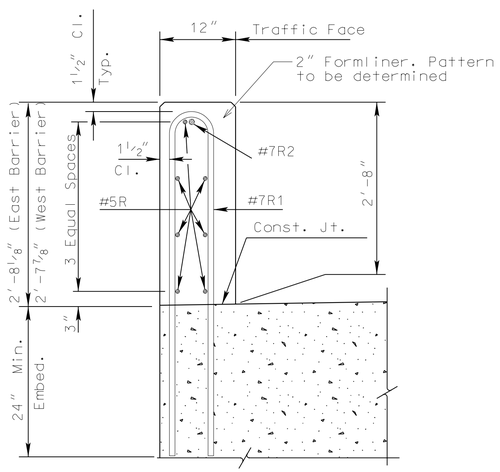
# WEST BARRIER CURB DETAILS



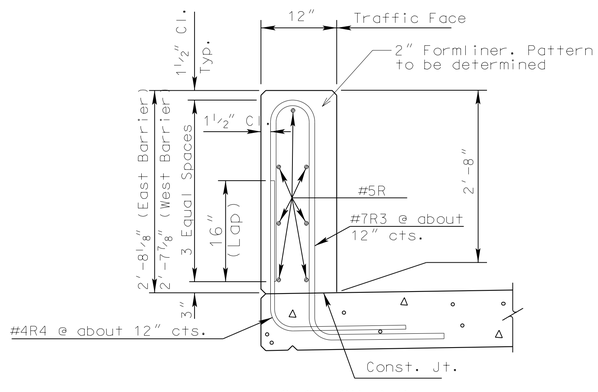

ELEVATION OF WEST BARRIER
(LOOKING AT CURB)




ELEVATION OF WEST BARRIER
(LOOKING AT CURB)




SECTION A-A




SECTION B-B

Notes:

Top of barrier shall be built parallel to grade and barrier joints normal to grade.

All exposed edges of barrier shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Concrete in barrier shall be Special Aggregate Concrete.

Measurement of barrier is to the nearest linear foot, measured along the outside top of slab from end of slab to end of slab.

Lap #5R longitudinal bars 3′-1″ minimum.

Formliners shall be placed on the traffic face of the barrier. Contractor shall coordinate with the City's chosen artist on the formliner pattern. The formliner shall be approved by the Engineer.

All dimensions shown are along outside face of barrier.

All materials and work necessary to construct this Barrier Curb shall be paid for by the bid item "Concrete Traffic Barrier, Special".

Designed TJW 10/2022
Detailed BJW 10/2022
Checked SJF 10/2022

2:34:22 PM
11/25/2024
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| SHEET NO. | TOTAL SHEETS |
|---|---|
| 153 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE A. HOGAN
NUMBER PE-2014020630
PROFESSIONAL ENGINEER
11/25/2024

| DATE | DESCRIPTION |
|---|---|
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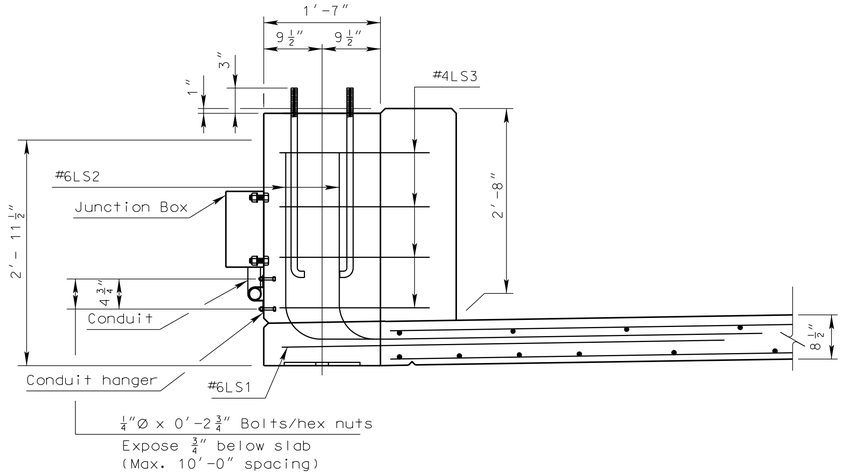
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

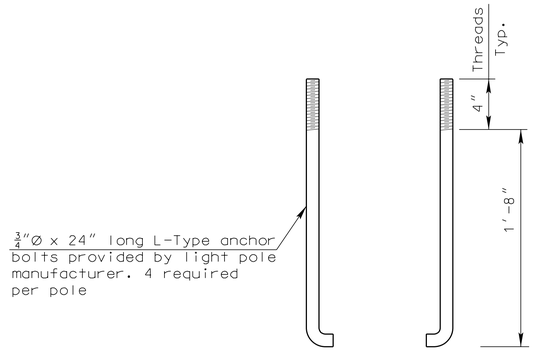
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

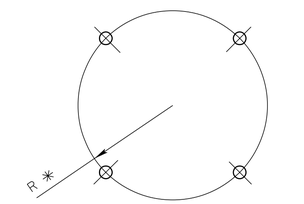
# WEST BARRIER CURB DETAILS




SECTION THRU HANDRAIL & SLAB AT LIGHT STANDARD




ELEVATION




* - Per light pole manufacturer

PLAN

ANCHOR BOLT

## GENERAL NOTES

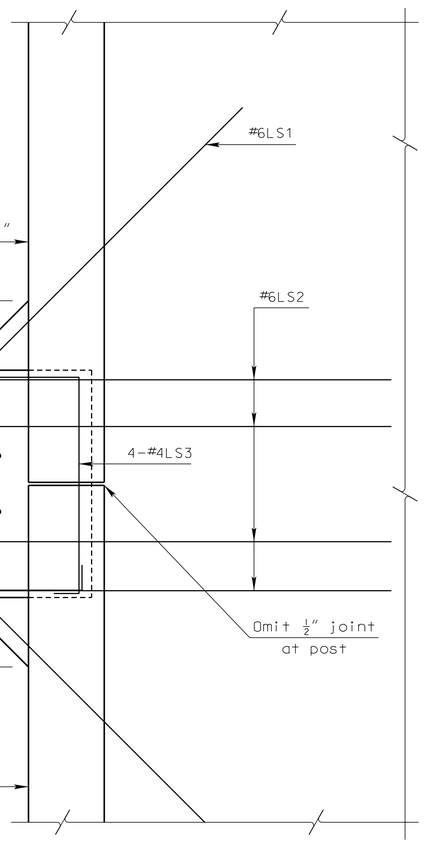
CONCRETE: Use the same concrete as used in the deck slab. Form exposed edges with a ¾" triangular molding unless otherwise noted. The quantities shown are included in the Summary of Quantities.

REINFORCING: All reinforcing steel shall be Grade 60 (Epoxy coated). Dimensions shall be to ℄ of bar, unless otherwise noted.

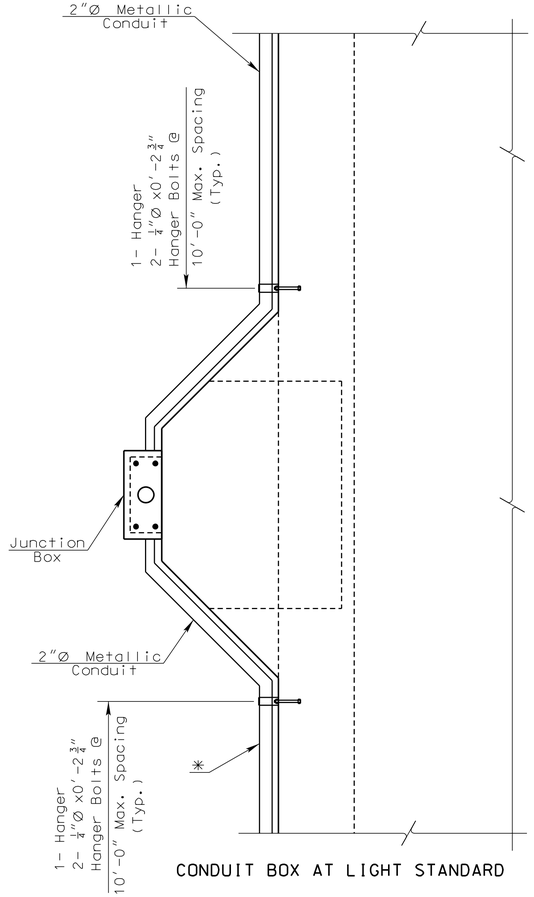
ANCHOR BOLTS: Anchor bolt assemblies shall be hot-dip galvanized in accordance with ASTM A153 after fabrication. Anchor bolt assemblies, bolts, nuts and washers shall be furnished and installed by the Bridge Contractor. The cost of these items shall not be paid for directly, but shall be included in the unit price bid for "Concrete Barrier Curb". Anchor bolts shall be installed vertical.

DIMENSION VERIFICATION: The Contractor shall verify the bolt spacings shown on the plans are correct for the conduit hangers and junction boxes that will be furnished.

See Lighting Plans for schedule of lights.




LIGHT STANDARD AT HANDRAIL POST
(Junction box and conduit not shown)




CONDUIT BOX AT LIGHT STANDARD

SHEET NO. 154 | TOTAL SHEETS 187
DATE PREPARED 5/19/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. HOOD
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |
| . | . |
| . | . |
| . | . |
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

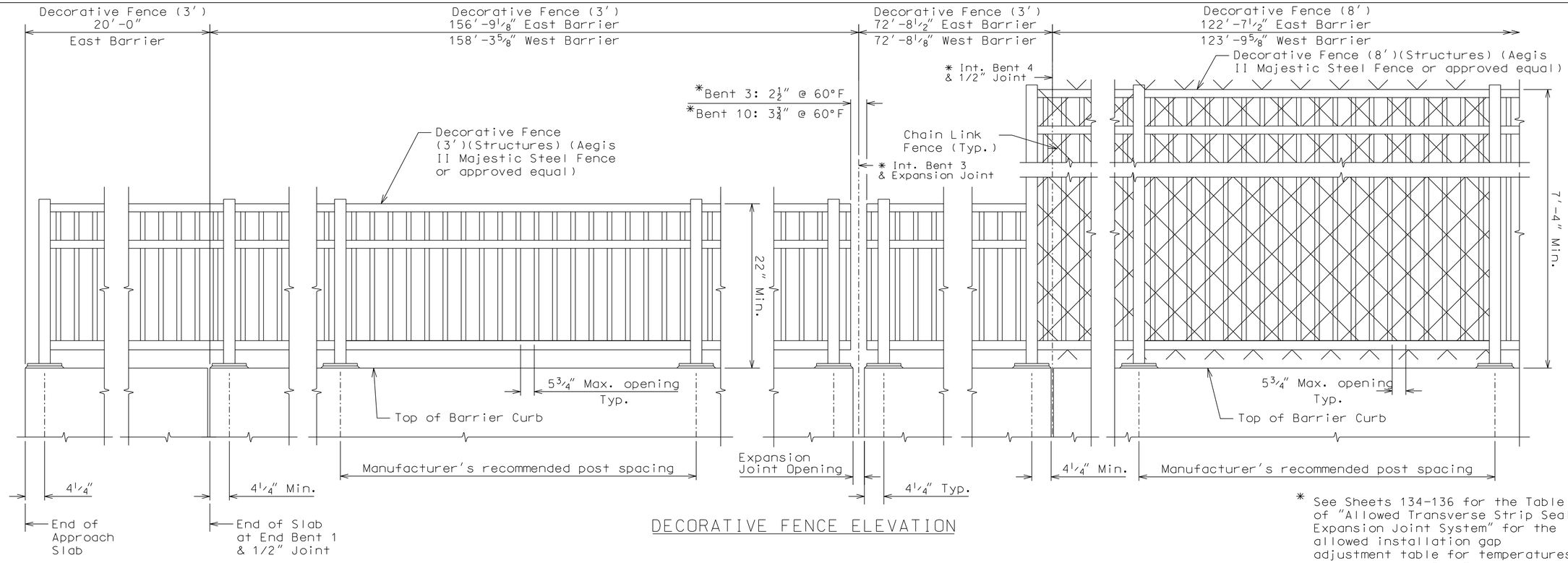
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

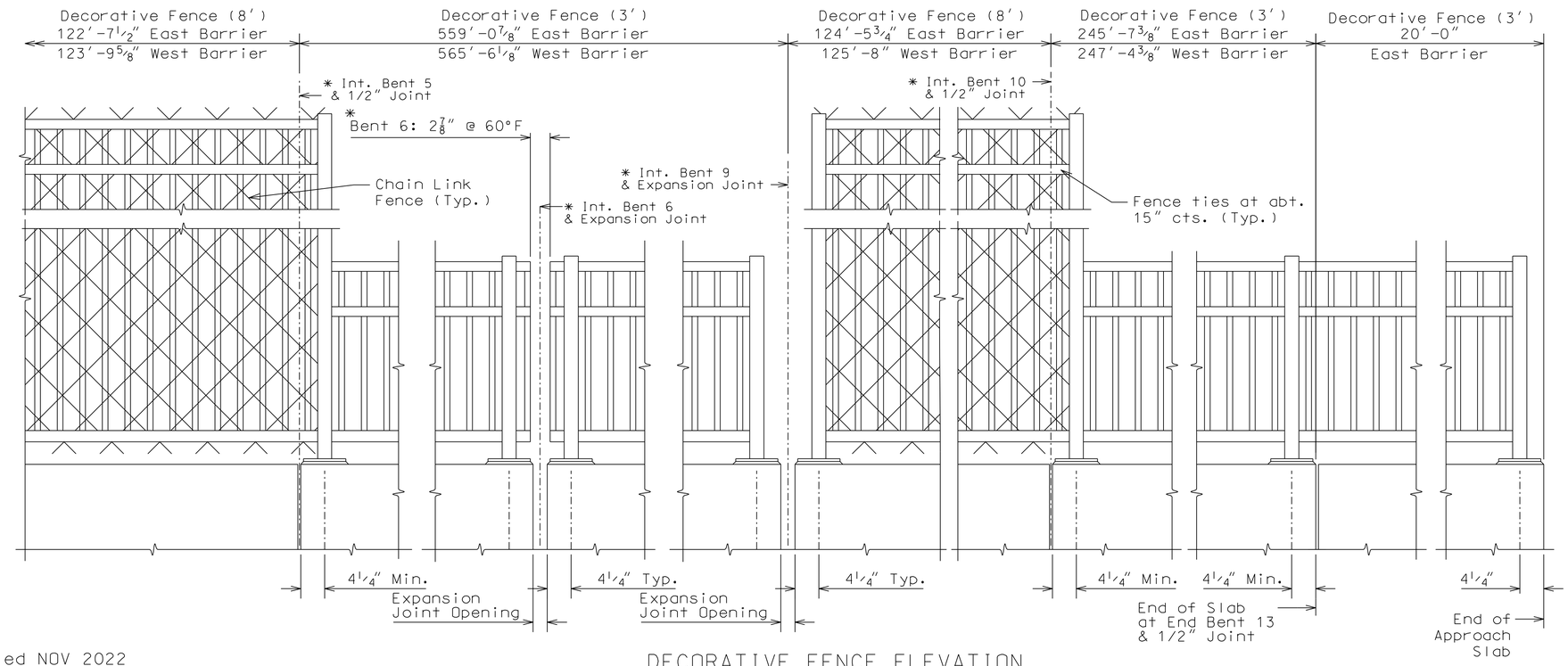
**LIGHT BLISTER DETAILS**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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User:USKT05318
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DECORATIVE FENCE ELEVATION




DECORATIVE FENCE ELEVATION

* See Sheets 134-136 for the Table of "Allowed Transverse Strip Seal Expansion Joint System" for the allowed installation gap adjustment table for temperatures other than 60° F. The gap is measured perpendicular to the expansion joint.

Provide a maximum gap of 5 3/4″ in the fence openings at any point along the fence length.

General Notes:

All chain link shall have the top and bottom edges knuckled.

Payment for furnishing and applying chain link fence and ties will be considered completely covered by the contract unit price for Decorative Fence (8′)(Structures) per linear foot.

Core wire size for wire chain link shall be 6 gage minimum.

Maximum chain link opening shall be 2″ max.

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 155 | 187 |

DATE PREPARED
11/13/2024

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
TERENCE A. HOEY
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

| DATE | DESCRIPTION |
|---|---|
| . | . |

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

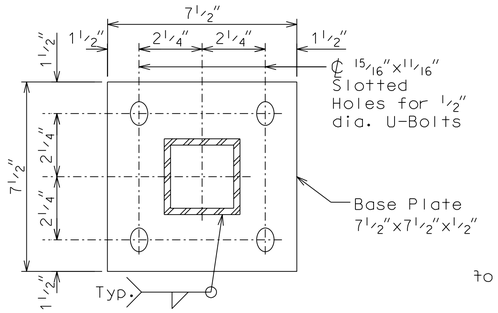
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

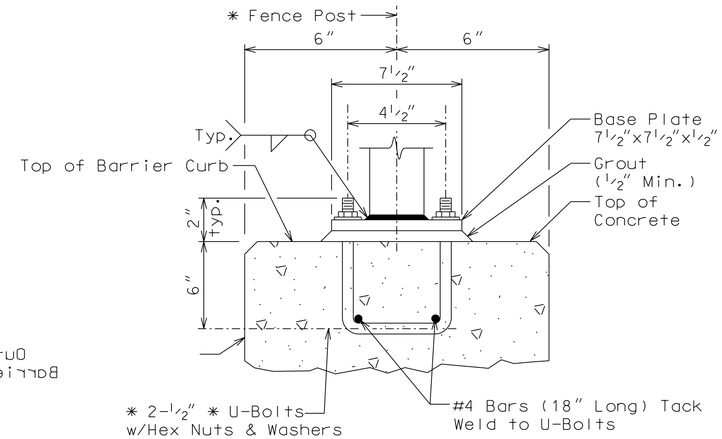
**DECORATIVE FENCE ELEVATION**

Detailed NOV 2022
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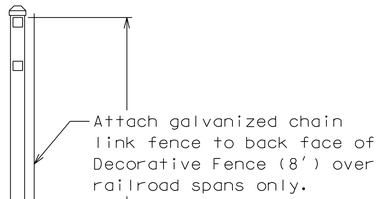


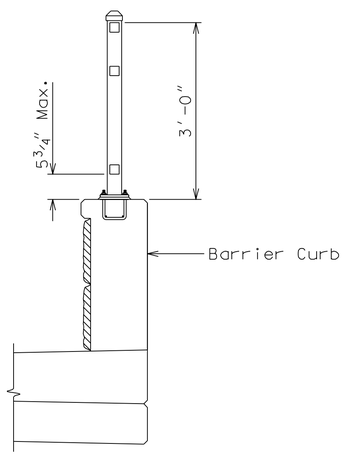

PLAN OF BASE PLATE




POST CONNECTION

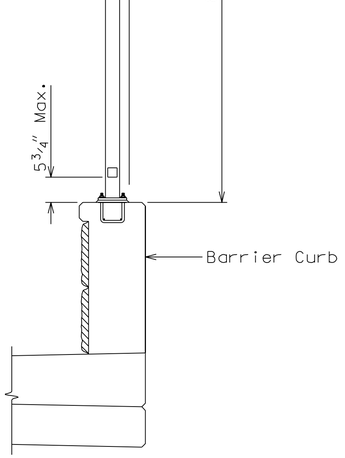
Outside face of Barrier Curb




TYPICAL SECTION
DECORATIVE FENCE
(3'-0")

Typical for all spans except (4-5) and (10-11)




TYPICAL SECTION
DECORATIVE FENCE
(8'-0")

Spans (4-5) and (10-11) only

Provide a maximum gap of 5¾" in the fence openings at any point along the fence length.

Notes:

All Fence Posts Shall be Vertical. Set all horizontal rails parallel to top of barrier. Grout of ½" Minimum Thickness Shall be Placed Under Base Plates to Provide for Vertical Alignment of Fence Posts.

The Contract Unit Price per Linear Foot for Decorative Fence (8') (Structures) and Decorative Fence (3') (Structures) Shall Include Furnishing and Erecting the Handrail and Fence Complete with Galvanized U-bolts, Hex Nuts and Washers.

Measurement of Decorative Fence (8') (Structures) and Decorative Fence (3') (Structures) for payment Shall be Taken Parallel to Grade Through the Centerline of Posts. Plan dimensions are measured horizontally.

All Fabricated Structural Steel Shall be A.S.T.M. A36.

The Decorative Fence (8') (Structures) and Decorative Fence (3') (Structures) shall be an Aegis II Majestic Steel Fence in Gray (or update per City artist recomendation) colorway by Ameristar or approved equal.The Contractor shall submit cut sheets for approval before purchasing materials or beginning construction or erection.

The chain link fence shall be painted to match the Decorative Fence (8') colorway with the same material.

The Decorative Fence (3')(Structures) and Decorative Fence (8')( Structures) shall meet the design requirements of the American Association of State Highway and Transportation Officials, AASHTO, LRFD Bridge Design Specifications, 9th Edition, 2020.

Detailed NOV 2022
Checked NOV 2022

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SHEET NO. 156 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
TERENCE A. KLOCK
NUMBER 2024
PE-2014030630
PROFESSIONAL ENGINEER

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

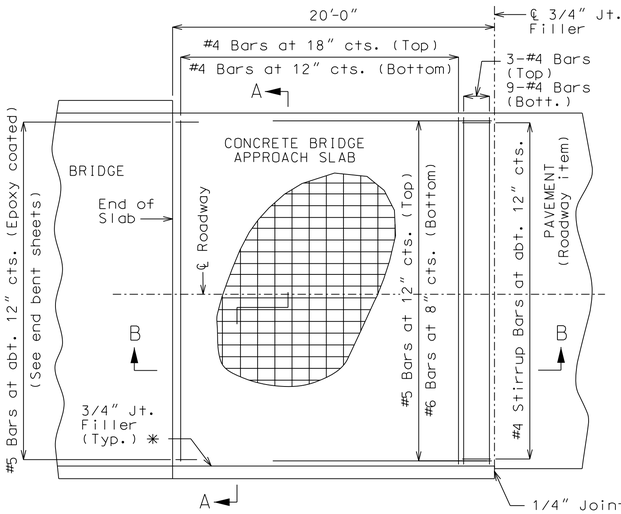
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

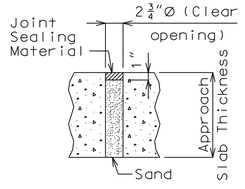
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

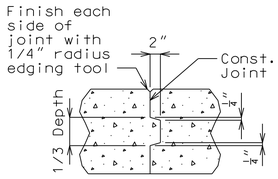
**DECORATIVE FENCE AND DECORATIVE FENCE ON BARRIER CURB DETAILS**



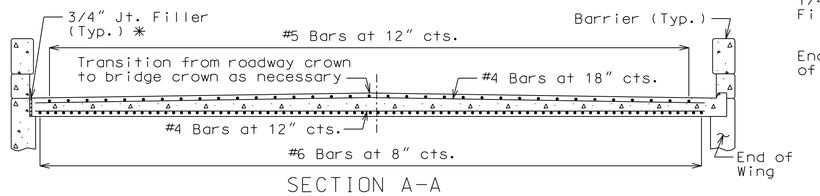

PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)




UNDERSEAL ACCESS HOLE DETAIL
(If required)

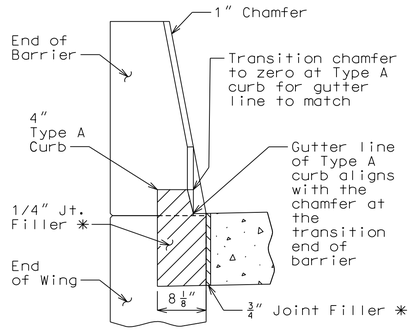



CONSTRUCTION JOINT DETAIL

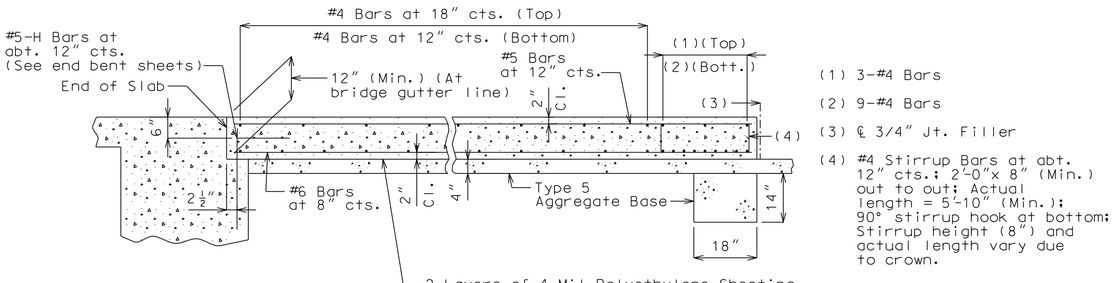



SECTION A-A

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.




SECTION BETWEEN CURB AND BARRIER



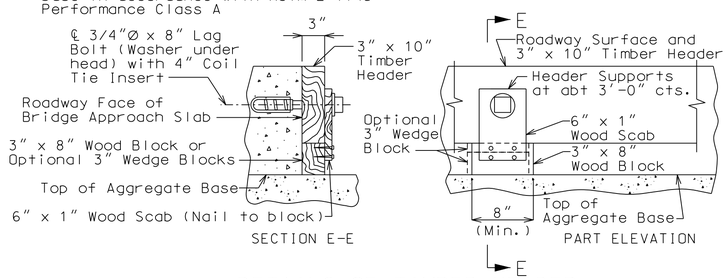

SECTION B-B
(Integral end bent)

(1) 3-#4 Bars

(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.




DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

## Notes For Concrete Slab:

All concrete for the bridge approach slab shall be in Special Aggregate Concrete (f'c = 4,000 psi).

The reinforcing steel in the bridge approach slab shall be epoxy coated Grade 60 with fy = 60,000 psi.

Longitudinal construction joints in bridge approach slab shall be aligned with longitudinal construction joints in bridge slab.

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 bars 29" or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, underdrain, Type 5 aggregate base, joint filler, and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor) per square yard.

See Missouri Standard Plan 609.00 for details of Type A curb.

✱ Seal joint between vertical face of approach slab and MSE with sealant in accordance with Sec 1057 for silicone joint sealant for saw cut and formed joints.

## General Notes:

The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.

# BRIDGE APPROACH SLAB (MINOR)

(Integral End Bents shown)

Detailed PRY 11/2022
Checked SAB 12/2022

SHEET NO. 157 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BRIDGE APPROACH SLAB**

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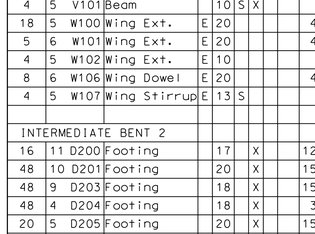
barbill_i Effective: May 2016 Supersedes: Aug. 2008

# BILL OF REINFORCING STEEL

| NO. REQ'D. | MARK NO. SIZE | MARK NO. MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUBSTRUCTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| END BENT 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 6 | H100 | Diaphragm | E | 20 | | | | | 15 | 8.000 | | | | | | | | | | | | | 15 | 8 | 15 | 8 | 94 |
| 6 | 6 | H102 | Diaphragm | E | 20 | | | | | 3 | 4.000 | | | | | | | | | | | | | 3 | 4 | 3 | 4 | 30 |
| 2 | 6 | H104 | Thru Web | E | 20 | | | | | 4 | 0.000 | | | | | | | | | | | | | 4 | 0 | 4 | 0 | 12 |
| 2 | 5 | H105 | Strand Tie | E | 20 | | | | | 6 | 0.000 | | | | | | | | | | | | | 6 | 0 | 6 | 0 | 13 |
| 3 | 6 | H106 | Diaphragm | E | 20 | | | | | 7 | 2.000 | | | | | | | | | | | | | 7 | 2 | 7 | 2 | 32 |
| 2 | 6 | H107 | Diaphragm | E | 20 | | | | | 4 | 5.625 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 14 |
| 5 | 6 | H108 | Diaphragm | E | 20 | | | | | 15 | 9.000 | | | | | | | | | | | | | 15 | 9 | 15 | 9 | 118 |
| 10 | 6 | H109 | Beam | | 20 | | X | | | 15 | 8.000 | | | | | | | | | | | | | 15 | 8 | 15 | 8 | 235 |
| 4 | 6 | H110 | Beam | | 20 | | X | | | 15 | 8.000 | | | | | | | | | | | | | 15 | 8 | 15 | 8 | 94 |
| 18 | 6 | H111 | Beam & Dia. | | 10 | | X | | | | | 2 | 0.000 | 2 | 9.000 | | | | | | | | | 6 | 9 | 6 | 5 | 173 |
| 19 | 6 | U100 | Diaphragm | E | 10 | | | | | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | 11 | 3 | 10 | 11 | 312 |
| 27 | 5 | U101 | Beam | | 13 | S | X | | | 2 | 9.000 | 3 | 8.000 | 2 | 9.000 | 3 | 8.000 | | | | | | | 13 | 9 | 13 | 5 | 378 |
| 19 | 6 | U102 | Diaphragm | E | 10 | | | | | | | 3 | 8.000 | 2 | 3.000 | | | | | | | | | 9 | 7 | 9 | 3 | 264 |
| 10 | 6 | U103 | Diaphragm | E | 19 | | | | | 4 | 3.000 | | 12.000 | | | | | | | | | | | 5 | 3 | 5 | 1 | 76 |
| 19 | 6 | U104 | Diaphragm | E | 19 | | | | | 2 | 11.000 | 4 | 6.500 | | | | | | | | | | | 7 | 6 | 7 | 4 | 209 |
| 16 | 5 | U105 | Appr. Tie | E | 19 | | | | | 2 | 0.000 | | 15.000 | | | | | | | | | | | 3 | 3 | 3 | 1 | 51 |
| 54 | 5 | V100 | Beam | E | 20 | | X | | | 5 | 0.000 | | | | | | | | | | | | | 5 | 0 | 5 | 0 | 282 |
| 4 | 5 | V101 | Beam | | 10 | S | X | | | | | 3 | 8.000 | 2 | 9.000 | | | | | | | | | 10 | 1 | 9 | 10 | 41 |
| 18 | 5 | W100 | Wing Ext. | E | 20 | | | | | 4 | 9.000 | | | | | | | | | | | | | 4 | 9 | 4 | 9 | 89 |
| 5 | 6 | W101 | Wing Ext. | E | 20 | | | | | 4 | 9.000 | | | | | | | | | | | | | 4 | 9 | 4 | 9 | 36 |
| 4 | 5 | W102 | Wing Ext. | E | 10 | | | | | | | 5 | 0.750 | | 15.000 | | | | | | | | | 11 | 5 | 11 | 1 | 46 |
| 8 | 6 | W106 | Wing Dowel | E | 20 | | | | | 4 | 0.000 | | | | | | | | | | | | | 4 | 0 | 4 | 0 | 48 |
| 4 | 5 | W107 | Wing Stirrup | E | 13 | S | | | | | 15.000 | 3 | 10.125 | | 15.000 | 3 | 10.125 | | | | | | | 11 | 1 | 10 | 9 | 45 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INTERMEDIATE BENT 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 48 | 10 | D201 | Footing | | 20 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 15 | 6 | 15 | 6 | 3201 |
| 48 | 9 | D203 | Footing | | 18 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 18 | 0 | 18 | 0 | 2938 |
| 48 | 4 | D204 | Footing | | 18 | | X | | | 3 | 6.000 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 144 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 15 | 5.000 | | | | | | | | | | | | | 15 | 5 | 15 | 5 | 322 |
| 6 | 8 | H40 | Diaphragm | E | 20 | | | | | 7 | 1.500 | | | | | | | | | | | | | 7 | 2 | 7 | 2 | 115 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 6 | 9.500 | | | | | | | | | | | | | 6 | 10 | 6 | 10 | 21 |
| 2 | 4 | H42 | Diaphragm | E | 20 | | | | | 6 | 9.500 | | | | | | | | | | | | | 6 | 10 | 6 | 10 | 9 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 8 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 417 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 4 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 26 | 4 | P200 | Column | | 16 | S | X | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | | | 16 | 1 | 16 | 0 | 278 |
| 267 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | 9.000 | | | | | | | | | | | 10 | 7 | 10 | 6 | 1873 |
| 10 | 4 | U40 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 2 | 3.000 | | 18.000 | | | | | | | 5 | 10 | 5 | 7 | 37 |
| 16 | 6 | U41 | Diaphragm | E | 28 | | | V | 4 | | | 2 | 1.000 | 2 | 3.000 | 2 | 2.000 | | | | | | | 6 | 6 | 6 | 2 | 148 |
| | | | Increment= | | | | | | | | | 2 | 1.000 | 4 | 3.000 | 2 | 2.000 | | | | | | | | | | | |
| | | | 8.000 Inch | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 2.000 | 2 | 2.000 | | | | | | | 8 | 5 | 8 | 1 | 194 |
| 16 | 5 | U43 | Diaphragm | E | 28 | | | | | | | | 16.500 | 4 | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 90 |
| 4 | 5 | U44 | Diaphragm | E | 28 | | | | | | 20.000 | | 16.500 | 4 | 4.000 | | | | | | | | | 7 | 4 | 7 | 0 | 29 |
| 16 | 5 | U45 | Diaphragm | E | 28 | | | | | | | | 12.000 | | 23.000 | | | | | | | | | 2 | 11 | 2 | 8 | 45 |
| 36 | 6 | U200 | Cap | | 10 | S | X | | | 4 | 2.500 | 3 | 4.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 617 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | 3 | 9.000 | 4 | 3.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 4 | 11.000 | | | | | | | | | | | | | 4 | 11 | 4 | 11 | 41 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 17 | 0.000 | | | | | | | | | | | | | 17 | 0 | 17 | 0 | 1445 |
| 60 | 9 | V210 | Drill Shaft | | 20 | | X | | | 27 | 0.000 | | | | | | | | | | | | | 27 | 0 | 27 | 0 | 5508 |
| 60 | 9 | V211 | Rock Socket | | 20 | | X | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 1989 |

# BILL OF REINFORCING STEEL

| NO. REQ'D. | MARK NO. SIZE | MARK NO. MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE BENT 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 10 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | 3 | | | 4 | | | | | | | | | 15 | 4 | 15 | 4 | 521 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 0.000 | | 3.000 | | | | | | | | | 10 | 5 | 10 | 5 | 282 |
| 10 | 7 | H400 | Diaphragm | E | 20 | | | | | 7 | 3.125 | | | | | | | | | | | | | 7 | 3 | 7 | 3 | 148 |
| 6 | 6 | H401 | Diaphragm | E | 20 | | | | | 12 | 0.250 | | | | | | | | | | | | | 12 | 0 | 12 | 0 | 108 |
| 4 | 6 | H402 | Diaphragm | E | 20 | | | | | 7 | 3.125 | 5 | | | 4 | | 5 8.000 | | | | | | | 7 | 3 | 7 | 3 | 44 |
| * 30 | 10 | K200 | Column Ext. | | 20 | | X | | | 8 | 5.000 | | | | | | | | | | | | | 8 | 5 | 8 | 5 | 1087 |
| 13 | 5 | K201 | Column Ext. | | 13 | S | X | | | 4 | 8.000 | | 8.000 | | 8.000 | | | | | | | | | 21 | 7 | 21 | 3 | 288 |
| 26 | 5 | K202 | Column Ext. | | 18 | | X | | | 5 | 8.000 | | | | | | | | | | | | | 6 | 10 | 6 | 10 | 185 |
| 26 | 5 | K203 | Column Ext. | | 18 | | X | | | 4 | 8.000 | | | | 5 | | | | | | | | | 5 | 10 | 5 | 10 | 158 |
| 9 | 4 | K204 | Column Ext. | | 20 | | X | | | 8 | 2.000 | 2 | | | | | | | | | | | | 8 | 2 | 8 | 2 | 49 |
| 5 | 4 | K205 | Column Ext. | | 10 | | X | | | | | | 4 | 22.000 | 3 | 8.000 | | | | | | | | 9 | 4 | 9 | 1 | 30 |
| 38 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 3 | 9.000 | 4 | | | | | | | | | | 16 | 1 | 16 | 0 | 406 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | | | | 2.500 | 2 | 4.000 | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | | | | 9.000 | 2 | 3.000 | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 4 | U400 | Diaphragm | E | 10 | | | | | | | | 13.000 | 4 | 3.000 | | | | | | | | | 4 | 5 | 4 | 2 | 22 |
| 32 | 6 | U401 | Diaphragm | E | 10 | | | V | 4 | | | | 13.000 | | 3.000 | | | | | | | | | 4 | 5 | 4 | 1 | 244 |
| | | | Increment= | | | | | | | | | | 13.000 | 4 | 3.000 | | | | | | | | | 6 | 5 | 6 | 1 | |
| | | | 8.000 Inch | | | | | | | | | | | | 4 | | | | | | | | | | | | | |
| 16 | 6 | U402 | Diaphragm | E | 10 | | | | | | | | 13.000 | | 2.000 | | | | | | | | | 6 | 4 | 6 | 0 | 144 |
| 16 | 5 | U403 | Diaphragm | E | 10 | | | | | | | | 13.000 | | 2.000 | | | | | | | | | 6 | 4 | 6 | 1 | 102 |
| 16 | 5 | U404 | Diaphragm | E | 6 | | | | | 4 | 3.000 | | 15.000 | 2 | 16.000 | | | | | | | | | 6 | 10 | 6 | 7 | 110 |
| 4 | 5 | U405 | Diaphragm | E | 6 | | | | | 4 | 3.000 | | 15.000 | | 9.000 | | | | | | | | | 6 | 3 | 6 | 0 | 25 |
| 16 | 4 | U406 | Diaphragm | E | 28 | | | | | | | | 13.000 | | 0.000 | | | | | | | | | 3 | 1 | 2 | 10 | 30 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 22 | 9.500 | | | | | | | | | | | | | 22 | 10 | 22 | 10 | 1941 |
| 8 | 5 | V400 | Diaphragm | E | 20 | | | | | 4 | 5.000 | | | | | | | | | | | | | 4 | 5 | 4 | 5 | 37 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INTERMEDIATE BENT 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 9 | D40 | Diaph. Dowel | E | 20 | | | | | 2 | 6.000 | | | | | | | | | | | | | 2 | 6 | 2 | 6 | 85 |
| 2 | 6 | H40 | Diaphragm | E | 20 | | | | | 7 | 0.000 | | | | | | | | | | | | | 7 | 0 | 7 | 0 | 21 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 7 | 9.000 | | | | | | | | | | | | | 7 | 9 | 7 | 9 | 23 |
| 6 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | 4 | | | | | | | | | 9 | 9 | 9 | 9 | 39 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | 4 | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 4 | 5 | H44 | Diaphragm | E | 28 | | | | | | | | 16.500 | | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 23 |
| 16 | 5 | H45 | Diaphragm | E | 28 | | | | | | 18.000 | | 16.500 | | 4.000 | | | | | | | | | 7 | 2 | 6 | 10 | 114 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 10 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | 3 | | | 4 | | | | | | | | | 15 | 4 | 15 | 4 | 521 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 5 | 3.000 | 4 | 3.000 | 5 | 8.000 | | | | | | | 10 | 9 | 10 | 5 | 282 |
| * 30 | 10 | K200 | Column Ext. | | 20 | | X | | | 8 | 5.000 | | | | | | | | | | | | | 8 | 5 | 8 | 5 | 1087 |
| 13 | 5 | K201 | Column Ext. | | 13 | S | X | | | 4 | 8.000 | | 8.000 | | 8.000 | | | | | | | | | 21 | 7 | 21 | 3 | 288 |
| 52 | 5 | K202 | Column Ext. | | 18 | | X | | | 5 | 8.000 | | | | 5 | | | | | | | | | 6 | 10 | 6 | 10 | 371 |
| 18 | 4 | K204 | Column Ext. | | 20 | | X | | | 8 | 2.000 | 2 | | | | | | | | | | | | 8 | 2 | 8 | 2 | 98 |
| 10 | 4 | K205 | Column Ext. | | 10 | | X | | | | | | 2 | 22.000 | 5 | 8.000 | 18.000 | | | | | | | 9 | 4 | 9 | 1 | 61 |
| 33 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | 5 | | 2 | 2.000 | | | | | | | 16 | 1 | 16 | 0 | 353 |
| 12 | 4 | U40 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 0.000 | 2 | 2.000 | | | | | | | 8 | 7 | 8 | 4 | 67 |
| 4 | 6 | U41 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 0.000 | 2 | 2.000 | | | | | | | 9 | 3 | 8 | 11 | 54 |
| 4 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 4 | 1.000 | 3 | 4.000 | | | | | | | | | 8 | 7 | 8 | 3 | 50 |
| 8 | 6 | U43 | Diaphragm | E | 28 | | | | | | | 3 | 1.000 | 4 | 4.000 | | | | | | | | | 8 | 7 | 8 | 3 | 99 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | | | | 2.500 | | 4.000 | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | | | | 9.000 | | 3.000 | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 4 | 5.000 | | | | | | | | | | | | | 5 | 4 | 5 | 4 | 45 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 20 | 5.625 | | | | | | | | | | | | | 20 | 6 | 20 | 6 | 1743 |

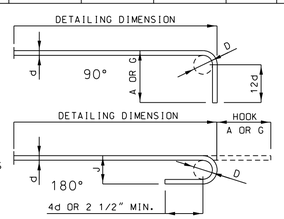



## STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

| BAR SIZE | D (IN.) | 90° HOOK HOOK A OR G | 135° HOOK HOOK A OR G | 135° HOOK APPROX. H |
|---|---|---|---|---|
| #4 | 2" | 4 1/2" | 4 1/2" | 3" |
| #5 | 2 1/2" | 6" | 5 1/2" | 3 3/4" |
| #6 | 4 1/2" | 12" | 8" | 4 1/2" |

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.




## END HOOK DIMENSIONS

| BAR SIZE | D (IN.) | ALL GRADES 180° HOOKS A OR G | 180° HOOKS J | 90° HOOKS A OR G |
|---|---|---|---|---|
| #3 | 2 1/4" | 5" | 3" | 6" |
| #4 | 3" | 6" | 4" | 8" |
| #5 | 3 3/4" | 7" | 5" | 10" |
| #6 | 4 1/2" | 8" | 6" | 12" |
| #7 | 5 1/4" | 10" | 7" | 14" |
| #8 | 6" | 11" | 8" | 16" |
| #9 | 9 1/2" | 15" | 11 3/4" | 19" |
| #10 | 10 3/4" | 17" | 13 1/4" | 22" |
| #11 | 12" | 19" | 14 3/4" | 2'-0" |
| #14 | 18 1/4" | 2'-3" | 21 3/4" | 2'-7" |

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

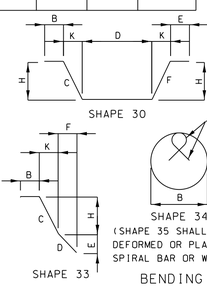
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

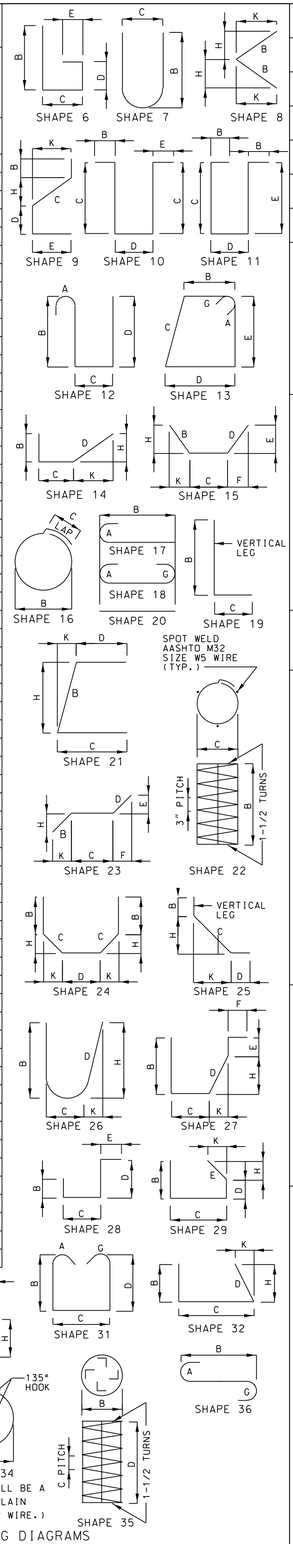
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

* LENTON MECHANICAL BAR SPLICE




BENDING DIAGRAMS




SHEET NO. 158 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/7/24

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BILL OF REINFORCING STEEL 1**

Detailed PRY 3/2023
Checked FG 3/2023

Note: This drawing is not to scale. Follow dimensions.

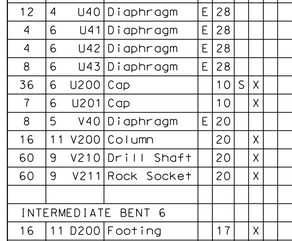
2:14:07 PM
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U:\PROJ*WSP-US_pw-02*d0349595*MD_S028B32_89005595_BOR1.dgn

# BILL OF REINFORCING STEEL

| NO. REQ'D. | MARK NO. SIZE | MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE BENT 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 9 | D40 | Diaph. Dowel | E | 20 | | | | | 2 | 6.000 | | | | | | | | | | | | | 2 | 6 | 2 | 6 | 85 |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 48 | 10 | D201 | Footing | | 20 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 15 | 6 | 15 | 6 | 3201 |
| 48 | 9 | D203 | Footing | | 18 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 18 | 0 | 18 | 0 | 2938 |
| 48 | 4 | D204 | Footing | | 18 | | X | | | 3 | 6.000 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 144 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 15 | 5.000 | | | | | | | | | | | | | 15 | 5 | 15 | 5 | 322 |
| 2 | 6 | H40 | Diaphragm | E | 20 | | | | | 7 | 0.000 | | | | | | | | | | | | | 7 | 0 | 7 | 0 | 21 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 7 | 9.000 | | | | | | | | | | | | | 7 | 9 | 7 | 9 | 23 |
| 6 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 39 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 4 | 5 | H44 | Diaphragm | E | 28 | | | | | | | 16.500 | | 4 | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 23 |
| 16 | 5 | H45 | Diaphragm | E | 28 | | | | | | 18.000 | | 16.500 | 4 | 4.000 | | | | | | | | | 7 | 2 | 6 | 10 | 114 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 10 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 521 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 4 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 10 | 7 | H400 | Diaphragm | E | 20 | | | | | 9 | 9.125 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 199 |
| 6 | 6 | H401 | Diaphragm | E | 20 | | | | | 14 | 3.000 | | | | | | | | | | | | | 14 | 3 | 14 | 3 | 128 |
| 4 | 6 | H402 | Diaphragm | E | 20 | | | | | 9 | 5.000 | | | | | | | | | | | | | 9 | 5 | 9 | 5 | 57 |
| 52 | 4 | P200 | Column | | 16 | S | X | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | | | 16 | 1 | 16 | 0 | 556 |
| 505 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | 9.000 | | | | | | | | | | | 10 | 7 | 10 | 6 | 3542 |
| 96 | 6 | U200 | Cap | | 10 | S | X | V | 4 | | | 4 | 2.500 | 3 | 4.000 | | | | | | | | | 11 | 9 | 11 | 5 | 1646 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | 3 | 9.000 | 4 | 3.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 4 | U400 | Diaphragm | E | 10 | | | | | | | 13.000 | | 2 | 3.000 | | | | | | | | | 4 | 5 | 4 | 2 | 22 |
| 40 | 6 | U401 | Diaphragm | E | 10 | | | | | | | 13.000 | | 2 | 3.000 | | | | | | | | | 4 | 5 | 4 | 1 | 305 |
| | | | Increment= | | | | | | | | | 13.000 | | 4 | 3.000 | | | | | | | | | 6 | 5 | 6 | 1 | |
| | | | 8.000 Inch | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 6 | U402 | Diaphragm | E | 10 | | | | | | | 13.000 | | 4 | 2.000 | | | | | | | | | 6 | 4 | 6 | 0 | 144 |
| 16 | 5 | U403 | Diaphragm | E | 10 | | | | | | | 13.000 | | 4 | 2.000 | | | | | | | | | 6 | 4 | 6 | 1 | 102 |
| 16 | 5 | U404 | Diaphragm | E | 6 | | | | | 4 | 3.000 | | 15.000 | | | | | | | | | | | 6 | 10 | 6 | 7 | 110 |
| 4 | 5 | U405 | Diaphragm | E | 6 | | | | | 4 | 3.000 | | 15.000 | | 9.000 | | | | | | | | | 6 | 3 | 6 | 0 | 25 |
| 16 | 4 | U406 | Diaphragm | E | 28 | | | | | | | 13.000 | | 2 | 0.000 | | | | | | | | | 3 | 1 | 2 | 10 | 30 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 30 | 9.000 | | | | | | | | | | | | | 30 | 9 | 30 | 9 | 2614 |
| 8 | 5 | V400 | Diaphragm | E | 20 | | | | | 4 | 5.000 | | | | | | | | | | | | | 4 | 5 | 4 | 5 | 37 |
| 60 | 9 | V210 | Drill Shaft | | 20 | | X | | | 45 | 0.000 | | | | | | | | | | | | | 45 | 0 | 45 | 0 | 9180 |
| 60 | 9 | V211 | Rock Socket | | 20 | | X | | | 13 | 9.000 | | | | | | | | | | | | | 13 | 9 | 13 | 9 | 2805 |

# BILL OF REINFORCING STEEL

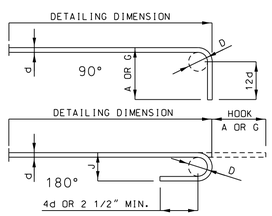
| NO. REQ'D. | MARK NO. SIZE | MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE BENT 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 8 | H40 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 156 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 9 | 5.000 | | | | | | | | | | | | | 9 | 5 | 9 | 5 | 28 |
| 2 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 13 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 8 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 417 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 4 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 2 | 6 | H40 | Diaphragm | E | 20 | | | | | 7 | 0.000 | | | | | | | | | | | | | 7 | 0 | 7 | 0 | 21 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 7 | 9.000 | | | | | | | | | | | | | 7 | 9 | 7 | 9 | 23 |
| 6 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 39 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 4 | 5 | H44 | Diaphragm | E | 28 | | | | | | | 16.500 | | 4 | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 23 |
| 16 | 5 | H45 | Diaphragm | E | 28 | | | | | | 18.000 | | 16.500 | 4 | 4.000 | | | | | | | | | 7 | 2 | 6 | 10 | 114 |
| 55 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | | | 16 | 1 | 16 | 0 | 588 |
| 690 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | 9.000 | | | | | | | | | | | 10 | 7 | 10 | 6 | 4840 |
| 12 | 4 | U40 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 5 | 0.000 | | 18.000 | | | | | | | 8 | 7 | 8 | 4 | 67 |
| 4 | 6 | U41 | Diaphragm | E | 28 | | | V | 4 | | | 2 | 1.000 | 5 | 0.000 | 2 | 2.000 | | | | | | | 9 | 3 | 8 | 11 | 54 |
| | | | Increment= | | | | | | | | | 2 | 1.000 | 4 | 3.000 | 2 | 2.000 | | | | | | | | | | | |
| | | | 8.000 Inch | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 2.000 | 2 | 2.000 | | | | | | | 8 | 5 | 8 | 1 | 194 |
| 16 | 5 | U43 | Diaphragm | E | 28 | | | | | | | | 16.500 | 4 | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 90 |
| 4 | 5 | U44 | Diaphragm | E | 28 | | | | | | 20.000 | | 16.500 | 4 | 4.000 | | | | | | | | | 7 | 4 | 7 | 0 | 29 |
| 16 | 5 | U45 | Diaphragm | E | 28 | | | | | | | | 12.000 | | 23.000 | | | | | | | | | 2 | 11 | 2 | 8 | 45 |
| 36 | 6 | U200 | Cap | | 10 | S | X | | | 4 | 2.500 | 3 | 4.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 617 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | 3 | 9.000 | 4 | 3.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 4 | 11.000 | | | | | | | | | | | | | 4 | 11 | 4 | 11 | 41 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 36 | 0.625 | | | | | | | | | | | | | 36 | 1 | 36 | 1 | 3067 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INTERMEDIATE BENT 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 9 | D40 | Diaph. Dowel | E | 20 | | | | | 2 | 6.000 | | | | | | | | | | | | | 2 | 6 | 2 | 6 | 85 |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 48 | 10 | D201 | Footing | | 20 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 15 | 6 | 15 | 6 | 3201 |
| 48 | 9 | D203 | Footing | | 18 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 18 | 0 | 18 | 0 | 2938 |
| 48 | 4 | D204 | Footing | | 18 | | X | | | 3 | 6.000 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 144 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 15 | 5.000 | | | | | | | | | | | | | 15 | 5 | 15 | 5 | 322 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 8 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 417 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 4 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 2 | 6 | H40 | Diaphragm | E | 20 | | | | | 7 | 0.000 | | | | | | | | | | | | | 7 | 0 | 7 | 0 | 21 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 7 | 9.000 | | | | | | | | | | | | | 7 | 9 | 7 | 9 | 23 |
| 6 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 39 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 4 | 5 | H44 | Diaphragm | E | 28 | | | | | | | 16.500 | | 4 | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 23 |
| 16 | 5 | H45 | Diaphragm | E | 28 | | | | | | 18.000 | | 16.500 | 4 | 4.000 | | | | | | | | | 7 | 2 | 6 | 10 | 114 |
| 55 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | | | 16 | 1 | 16 | 0 | 588 |
| 690 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | 9.000 | | | | | | | | | | | 10 | 7 | 10 | 6 | 4840 |
| 12 | 4 | U40 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 5 | 0.000 | | 18.000 | | | | | | | 8 | 7 | 8 | 4 | 67 |
| 4 | 6 | U41 | Diaphragm | E | 28 | | | V | 4 | | | 2 | 1.000 | 5 | 0.000 | 2 | 2.000 | | | | | | | 9 | 3 | 8 | 11 | 54 |
| | | | Increment= | | | | | | | | | 2 | 1.000 | 4 | 3.000 | 2 | 2.000 | | | | | | | | | | | |
| | | | 8.000 Inch | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 4.000 | 2 | 2.000 | | | | | | | 8 | 7 | 8 | 3 | 50 |
| 8 | 6 | U43 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 4.000 | 2 | 2.000 | | | | | | | 8 | 7 | 8 | 3 | 99 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | 4 | 2.500 | 3 | 4.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | 3 | 9.000 | 4 | 3.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 5 | 4.000 | | | | | | | | | | | | | 5 | 4 | 5 | 4 | 45 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 32 | 0.000 | | | | | | | | | | | | | 32 | 0 | 32 | 0 | 2720 |
| 60 | 9 | V210 | Drill Shaft | | 20 | | X | | | 64 | 8.000 | | | | | | | | | | | | | 64 | 8 | 64 | 8 | 13192 |
| 60 | 9 | V211 | Rock Socket | | 20 | | X | | | 12 | 9.000 | | | | | | | | | | | | | 12 | 9 | 12 | 9 | 2601 |




90° STIRRUP 135° STIRRUP

| STIRRUP HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| GRADES 40 - 50 - 60 KSI | | | | |
| BAR SIZE | D (IN.) | 90° HOOK | 135° HOOK | |
| | | HOOK A OR G | HOOK A OR G | APPROX. H |
| #4 | 2" | 4 1/2" | 4 1/2" | 3" |
| #5 | 2 1/2" | 6" | 5 1/2" | 3 3/4" |
| #6 | 4 1/2" | 12" | 8" | 4 1/2" |

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.




| END HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| BAR SIZE | D (IN.) | ALL GRADES | | |
| | | 180° HOOKS | | 90° HOOKS |
| | | A OR G | J | A OR G |
| #3 | 2 1/4" | 5" | 3" | 6" |
| #4 | 3" | 6" | 4" | 8" |
| #5 | 3 3/4" | 7" | 5" | 10" |
| #6 | 4 1/2" | 8" | 6" | 12" |
| #7 | 5 1/4" | 10" | 7" | 14" |
| #8 | 6" | 11" | 8" | 16" |
| #9 | 9 1/2" | 15" | 11 3/4" | 19" |
| #10 | 10 3/4" | 17" | 13 1/4" | 22" |
| #11 | 12" | 19" | 14 3/4" | 2'-0" |
| #14 | 18 1/4" | 2'-3" | 21 3/4" | 2'-7" |

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

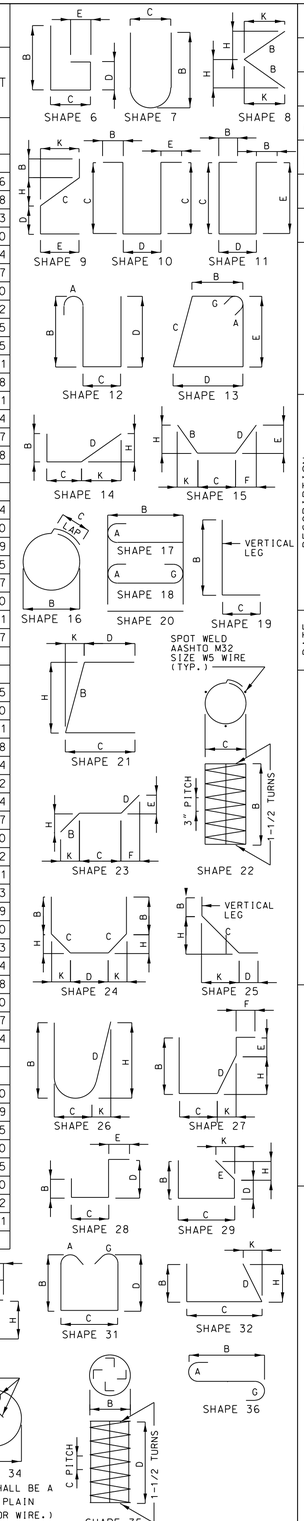
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.

* LENTON MECHANICAL BAR SPLICE




BENDING DIAGRAMS

SHEET NO. 159 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 STATE OF MISSOURI PROFESSIONAL ENGINEER
11/7/24

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BILL OF REINFORCING STEEL 2**

2:14:20 PM
User:SWF744954
U:\MO\MS\wsp-us-pw-02#d0349595#MD_S028B32_89005595_BOR2.dgn

Detailed PRY 3/2023
Checked FG 3/2023

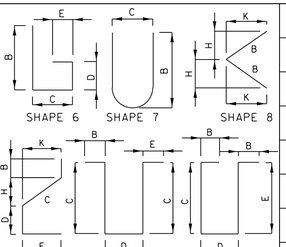
Note: This drawing is not to scale. Follow dimensions.

# BILL OF REINFORCING STEEL

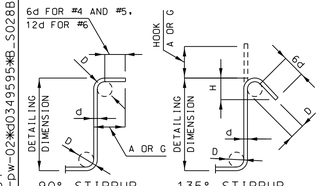
| NO. REQ'D. | MARK NO. SIZE | MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE BENT 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 10 | D201 | Footing | | 20 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 15 | 6 | 15 | 6 | 3201 |
| 48 | 9 | D203 | Footing | | 18 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 18 | 0 | 18 | 0 | 2938 |
| 48 | 4 | D204 | Footing | | 18 | | X | | | 3 | 6.000 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 144 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 15 | 5.000 | | | | | | | | | | | | | 15 | 5 | 15 | 5 | 322 |
| 6 | 8 | H40 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 156 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 9 | 5.000 | | | | | | | | | | | | | 9 | 5 | 9 | 5 | 28 |
| 2 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 13 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 8 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 417 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 4 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 58 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | | | 16 | 1 | 16 | 0 | 620 |
| 695 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | 9.000 | | | | | | | | | | | 10 | 7 | 10 | 6 | 4875 |
| 10 | 4 | U40 | Diaphragm | E | 28 | | | V | 4 | | | 2 | 1.000 | 2 | 3.000 | | 18.000 | | | | | | | 5 | 10 | 5 | 7 | 37 |
| 16 | 6 | U41 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 2 | 3.000 | 2 | 2.000 | | | | | | | 6 | 6 | 6 | 2 | 148 |
| | | | Increment= | | | | | | | | | 2 | 1.000 | 4 | 3.000 | 2 | 2.000 | | | | | | | | | | | |
| | | | 8.000 Inch | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 2.000 | 2 | 2.000 | | | | | | | 8 | 5 | 8 | 1 | 194 |
| 16 | 5 | U43 | Diaphragm | E | 28 | | | | | | | | 16.500 | 4 | 4.000 | | | | | | | | | 5 | 8 | 5 | 5 | 90 |
| 4 | 5 | U44 | Diaphragm | E | 28 | | | | | | 20.000 | | 16.500 | 4 | 4.000 | | | | | | | | | 7 | 4 | 7 | 0 | 29 |
| 16 | 5 | U45 | Diaphragm | E | 28 | | | | | | | | 12.000 | | 23.000 | | | | | | | | | 2 | 11 | 2 | 8 | 45 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | | | 4 | 2.500 | 3 | 4.000 | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | | | 3 | 9.000 | 4 | 3.000 | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 4 | 11.000 | | | | | | | | | | | | | 4 | 11 | 4 | 11 | 41 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 33 | 3.000 | | | | | | | | | | | | | 33 | 3 | 33 | 3 | 2827 |
| 60 | 9 | V210 | Drill Shaft | | 20 | | X | | | 65 | 5.000 | | | | | | | | | | | | | 65 | 5 | 65 | 5 | 13345 |
| 60 | 9 | V211 | Rock Socket | | 20 | | X | | | 12 | 9.000 | | | | | | | | | | | | | 12 | 9 | 12 | 9 | 2601 |
| INTERMEDIATE BENT 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 11 | 5.000 | | | | | | | | | | | | | 11 | 5 | 11 | 5 | 238 |
| 44 | 10 | D211 | Footing | | 20 | | X | | | 11 | 6.000 | | | | | | | | | | | | | 11 | 6 | 11 | 6 | 2177 |
| 44 | 9 | D213 | Footing | | 18 | | X | | | 11 | 6.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 2094 |
| 88 | 4 | D214 | Footing | | 18 | | X | | | 4 | 3.000 | | | | | | | | | | | | | 5 | 3 | 5 | 3 | 309 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 10 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 521 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 4 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 10 | 7 | H400 | Diaphragm | E | 20 | | | | | 9 | 9.125 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 199 |
| 6 | 6 | H401 | Diaphragm | E | 20 | | | | | 14 | 3.000 | | | | | | | | | | | | | 14 | 3 | 14 | 3 | 128 |
| 4 | 6 | H402 | Diaphragm | E | 20 | | | | | 9 | 5.000 | | | | | | | | | | | | | 9 | 5 | 9 | 5 | 57 |
| 54 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | | | 16 | 1 | 16 | 0 | 577 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | | | 4 | 2.500 | 3 | 4.000 | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | | | 3 | 9.000 | 4 | 3.000 | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 20 | 4 | U400 | Diaphragm | E | 10 | | | | | | | | 13.000 | 2 | 3.000 | | | | | | | | | 4 | 5 | 4 | 2 | 56 |
| 32 | 6 | U401 | Diaphragm | E | 10 | | | V | 4 | | | | 13.000 | 2 | 3.000 | | | | | | | | | 4 | 5 | 4 | 1 | 244 |
| | | | Increment= | | | | | | | | | | 13.000 | 4 | 3.000 | | | | | | | | | 6 | 5 | 6 | 1 | |
| | | | 8.000 Inch | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 6 | U402 | Diaphragm | E | 10 | | | | | | | | 13.000 | 4 | 2.000 | | | | | | | | | 6 | 4 | 6 | 0 | 144 |
| 16 | 5 | U403 | Diaphragm | E | 10 | | | | | | | | 13.000 | 4 | 2.000 | | | | | | | | | 6 | 4 | 6 | 1 | 102 |
| 16 | 5 | U404 | Diaphragm | E | 6 | | | | | 4 | 3.000 | | 15.000 | | 16.000 | | | | | | | | | 6 | 10 | 6 | 7 | 110 |
| 4 | 5 | U405 | Diaphragm | E | 6 | | | | | 4 | 3.000 | | 15.000 | | 9.000 | | | | | | | | | 6 | 3 | 6 | 0 | 25 |
| 16 | 4 | U406 | Diaphragm | E | 28 | | | | | | | | 13.000 | 2 | 0.000 | | | | | | | | | 3 | 1 | 2 | 10 | 30 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 31 | 0.000 | | | | | | | | | | | | | 31 | 0 | 31 | 0 | 2635 |
| 8 | 5 | V400 | Diaphragm | E | 20 | | | | | 4 | 5.000 | | | | | | | | | | | | | 4 | 5 | 4 | 5 | 37 |

# BILL OF REINFORCING STEEL

| NO. REQ'D. | MARK NO. SIZE | MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INTERMEDIATE BENT 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 11 | 5.000 | | | | | | | | | | | | | 11 | 5 | 11 | 5 | 238 |
| 44 | 10 | D211 | Footing | | 20 | | X | | | 11 | 6.000 | | | | | | | | | | | | | 11 | 6 | 11 | 6 | 2177 |
| 44 | 9 | D213 | Footing | | 18 | | X | | | 11 | 6.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 2094 |
| 88 | 4 | D214 | Footing | | 18 | | X | | | 4 | 3.000 | | | | | | | | | | | | | 5 | 3 | 5 | 3 | 309 |
| 6 | 8 | H40 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 156 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 9 | 5.000 | | | | | | | | | | | | | 9 | 5 | 9 | 5 | 28 |
| 2 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 13 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 10 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 521 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 2 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 40 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | 2 | 3.000 | | 18.000 | | | | | | | 16 | 1 | 16 | 0 | 428 |
| 10 | 4 | U40 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 3.000 | 2 | 2.000 | | | | | | | 5 | 10 | 5 | 7 | 37 |
| 16 | 6 | U41 | Diaphragm | E | 28 | | | V | 4 | | | 2 | 1.000 | | | 2 | 2.000 | | | | | | | 6 | 6 | 6 | 2 | 148 |
| | | | Increment= | | | | | | | | | 2 | 1.000 | 4 | 2.000 | | | | | | | | | | | | | |
| | | | 8.000 Inch | | | | | | | | | | | 4 | 4.000 | 2 | 2.000 | | | | | | | | | | | |
| 16 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 4.000 | | | | | | | | | 8 | 5 | 8 | 1 | 194 |
| 16 | 5 | U43 | Diaphragm | E | 28 | | | | | | | | 16.500 | | 23.000 | | | | | | | | | 5 | 8 | 5 | 5 | 90 |
| 4 | 5 | U44 | Diaphragm | E | 28 | | | | | | 20.000 | | 16.500 | 3 | 4.000 | | | | | | | | | 7 | 4 | 7 | 0 | 29 |
| 16 | 5 | U45 | Diaphragm | E | 28 | | | | | | | | 12.000 | 4 | 3.000 | | | | | | | | | 2 | 11 | 2 | 8 | 45 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | | | 4 | 2.500 | | | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | | | 3 | 9.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 4 | 11.000 | | | | | | | | | | | | | 4 | 11 | 4 | 11 | 41 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 24 | 0.000 | | | | | | | | | | | | | 24 | 0 | 24 | 0 | 2040 |
| INTERMEDIATE BENT 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 11 | 5.000 | | | | | | | | | | | | | 11 | 5 | 11 | 5 | 238 |
| 44 | 10 | D211 | Footing | | 20 | | X | | | 11 | 6.000 | | | | | | | | | | | | | 11 | 6 | 11 | 6 | 2177 |
| 44 | 9 | D213 | Footing | | 18 | | X | | | 11 | 6.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 2094 |
| 88 | 4 | D214 | Footing | | 18 | | X | | | 4 | 3.000 | | | | | | | | | | | | | 5 | 3 | 5 | 3 | 309 |
| 6 | 8 | H40 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 156 |
| 2 | 6 | H41 | Diaphragm | E | 20 | | | | | 9 | 5.000 | | | | | | | | | | | | | 9 | 5 | 9 | 5 | 28 |
| 2 | 4 | H42 | Diaphragm | E | 20 | | | | | 9 | 9.000 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 13 |
| 4 | 5 | H43 | Strand Tie | E | 20 | | | | | 4 | 10.000 | | | | | | | | | | | | | 4 | 10 | 4 | 10 | 20 |
| 8 | 8 | H200 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 274 |
| 10 | 9 | H201 | Cap | | 18 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 15 | 4 | 15 | 4 | 521 |
| 14 | 6 | H202 | Cap | | 20 | | X | | | 12 | 10.000 | | | | | | | | | | | | | 12 | 10 | 12 | 10 | 270 |
| 18 | 6 | H203 | Cap | | 10 | | X | | | | | 3 | 3.000 | 2 | 3.000 | | | | | | | | | 10 | 9 | 10 | 5 | 282 |
| 26 | 4 | P200 | Column | | 16 | | X | | | 4 | 3.000 | 2 | 9.000 | 2 | 3.000 | | 18.000 | | | | | | | 16 | 1 | 16 | 0 | 278 |
| 10 | 4 | U40 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 3.000 | 2 | 2.000 | | | | | | | 5 | 10 | 5 | 7 | 37 |
| 16 | 6 | U41 | Diaphragm | E | 28 | | | V | 4 | | | 2 | 1.000 | | | 2 | 2.000 | | | | | | | 6 | 6 | 6 | 2 | 148 |
| | | | Increment= | | | | | | | | | 2 | 1.000 | 4 | 2.000 | | | | | | | | | | | | | |
| | | | 8.000 Inch | | | | | | | | | | | 4 | 4.000 | 2 | 2.000 | | | | | | | | | | | |
| 16 | 6 | U42 | Diaphragm | E | 28 | | | | | | | 2 | 1.000 | 4 | 4.000 | | | | | | | | | 8 | 5 | 8 | 1 | 194 |
| 16 | 5 | U43 | Diaphragm | E | 28 | | | | | | | | 16.500 | | 23.000 | | | | | | | | | 5 | 8 | 5 | 5 | 90 |
| 4 | 5 | U44 | Diaphragm | E | 28 | | | | | | 20.000 | | 16.500 | 3 | 4.000 | | | | | | | | | 7 | 4 | 7 | 0 | 29 |
| 16 | 5 | U45 | Diaphragm | E | 28 | | | | | | | | 12.000 | 4 | 3.000 | | | | | | | | | 2 | 11 | 2 | 8 | 45 |
| 72 | 6 | U200 | Cap | | 10 | S | X | | | | | 4 | 2.500 | | | | | | | | | | | 11 | 9 | 11 | 5 | 1235 |
| 7 | 6 | U201 | Cap | | 10 | | X | | | | | 3 | 9.000 | | | | | | | | | | | 11 | 9 | 11 | 5 | 120 |
| 8 | 5 | V40 | Diaphragm | E | 20 | | | | | 4 | 11.000 | | | | | | | | | | | | | 4 | 11 | 4 | 11 | 41 |
| 16 | 11 | V200 | Column | | 20 | | X | | | 17 | 0.000 | | | | | | | | | | | | | 17 | 0 | 17 | 0 | 1445 |

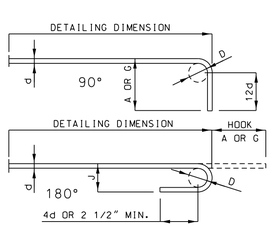



BENDING DIAGRAMS




| STIRRUP HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| GRADES 40 - 50 - 60 KSI | | | | |
| BAR SIZE | D (IN.) | 90° HOOK | 135° HOOK | |
| | | HOOK A OR G | HOOK A OR G | APPROX. H |
| #4 | 2" | 4 1/2" | 4 1/2" | 3" |
| #5 | 2 1/2" | 6" | 5 1/2" | 3 3/4" |
| #6 | 4 1/2" | 12" | 8" | 4 1/2" |

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.




| END HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| BAR SIZE | D (IN.) | ALL GRADES | | |
| | | 180° HOOKS | | 90° HOOKS |
| | | A OR G | J | A OR G |
| #3 | 2 1/4" | 5" | 3" | 6" |
| #4 | 3" | 6" | 4" | 8" |
| #5 | 3 3/4" | 7" | 5" | 10" |
| #6 | 4 1/2" | 8" | 6" | 12" |
| #7 | 5 1/4" | 10" | 7" | 14" |
| #8 | 6" | 11" | 8" | 16" |
| #9 | 9 1/2" | 15" | 11 3/4" | 19" |
| #10 | 10 3/4" | 17" | 13 1/4" | 22" |
| #11 | 12" | 19" | 14 3/4" | 2'-0" |
| #14 | 18 1/4" | 2'-3" | 21 3/4" | 2'-7" |

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.

Note: This drawing is not to scale. Follow dimensions.

Detailed PRY 3/2023
Checked FG 11/2023

3:10:37 PM
User:SWF744954
C:\MDNS\wsp-us-pw-02#d0349595#D_S028B32_89005595_BOR3.dgn

SHEET NO. 168 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/13/24

| DATE | DESCRIPTION |
|---|---|
| . . . . . | . . . . . |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

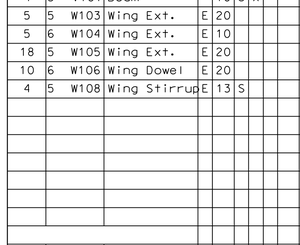
**BILL OF REINFORCING STEEL 3**

# BILL OF REINFORCING STEEL

| NO. REQ'D. | MARK NO. SIZE | MARK NO. MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | DIMENSIONS B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| END BENT 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 6 | H100 | Diaphragm | E | 20 | | | | | 15 | 8.000 | | | | | | | | | | | | | 15 | 8 | 15 | 8 | 94 |
| 6 | 6 | H102 | Diaphragm | E | 20 | | | | | 3 | 4.000 | | | | | | | | | | | | | 3 | 4 | 3 | 4 | 30 |
| 2 | 6 | H104 | Thru Web | E | 20 | | | | | 4 | 0.000 | | | | | | | | | | | | | 4 | 0 | 4 | 0 | 12 |
| 2 | 5 | H105 | Strand Tie | E | 20 | | | | | 6 | 0.000 | | | | | | | | | | | | | 6 | 0 | 6 | 0 | 13 |
| 3 | 6 | H106 | Diaphragm | E | 20 | | | | | 7 | 2.000 | | | | | | | | | | | | | 7 | 2 | 7 | 2 | 32 |
| 2 | 6 | H107 | Diaphragm | E | 20 | | | | | 4 | 5.625 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 14 |
| 5 | 6 | H108 | Diaphragm | E | 20 | | | | | 15 | 9.000 | | | | | | | | | | | | | 15 | 9 | 15 | 9 | 118 |
| 10 | 6 | H109 | Beam | | 20 | | X | | | 15 | 8.000 | | | | | | | | | | | | | 15 | 8 | 15 | 8 | 235 |
| 4 | 6 | H110 | Beam | | 20 | | X | | | 15 | 8.000 | | | 2 | 9.000 | | | | | | | | | 15 | 8 | 15 | 8 | 94 |
| 18 | 6 | H111 | Beam & Dia. | | 10 | | X | | | | | 2 | 0.000 | 2 | 9.000 | | | | | | | | | 6 | 9 | 6 | 5 | 173 |
| 19 | 6 | U100 | Diaphragm | E | 10 | | | | | | | 4 | 3.000 | 2 | 9.000 | | | | | | | | | 11 | 3 | 10 | 11 | 312 |
| 27 | 5 | U101 | Beam | | 13 | S | X | | | 2 | 9.000 | 3 | 8.000 | 2 | 3.000 | 3 | 8.000 | | | | | | | 13 | 9 | 13 | 5 | 378 |
| 19 | 6 | U102 | Diaphragm | E | 10 | | | | | | | 3 | 8.000 | | | | | | | | | | | 9 | 7 | 9 | 3 | 264 |
| 10 | 6 | U103 | Diaphragm | E | 19 | | | | | 4 | 3.000 | | 12.000 | | | | | | | | | | | 5 | 3 | 5 | 1 | 76 |
| 19 | 6 | U104 | Diaphragm | E | 19 | | | | | 2 | 11.000 | 4 | 6.500 | | | | | | | | | | | 7 | 6 | 7 | 4 | 209 |
| 16 | 5 | U105 | Appr. Tie | E | 19 | | | | | 2 | 0.000 | | 15.000 | | | | | | | | | | | 3 | 3 | 3 | 1 | 51 |
| 52 | 5 | V100 | Beam | E | 20 | | X | | | 5 | 0.000 | | | 2 | 9.000 | | | | | | | | | 5 | 0 | 5 | 0 | 271 |
| 4 | 5 | V101 | Beam | | 10 | S | X | | | | | 3 | 8.000 | | | | | | | | | | | 10 | 1 | 9 | 10 | 41 |
| 5 | 5 | W103 | Wing Ext. | E | 20 | | | | | 5 | 11.000 | | | | 15.000 | | | | | | | | | 5 | 11 | 5 | 11 | 31 |
| 5 | 6 | W104 | Wing Ext. | E | 10 | | | | | | | 5 | 6.250 | | | | | | | | | | | 12 | 4 | 12 | 0 | 90 |
| 18 | 5 | W105 | Wing Ext. | E | 20 | | | | | 5 | 11.000 | | | | | | | | | | | | | 5 | 11 | 5 | 11 | 111 |
| 10 | 6 | W106 | Wing Dowel | E | 20 | | | | | 4 | 0.000 | | | | 15.000 | | | | | | | | | 4 | 0 | 4 | 0 | 60 |
| 4 | 5 | W108 | Wing Stirrup | E | 13 | S | | | | | 15.000 | 3 | 10.125 | | | 3 | 10.125 | | | | | | | 11 | 1 | 10 | 9 | 45 |

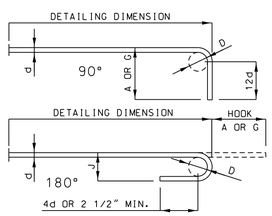
# BILL OF REINFORCING STEEL

| NO. REQ'D. | MARK NO. SIZE | MARK NO. MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | DIMENSIONS B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUPERSTRUCTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SLAB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | 5 | S101 | Top Long | E | 20 | | | | | 54 | 4.000 | | | | | | | | | | | | | 54 | 4 | 54 | 4 | 2210 |
| 65 | 5 | S102 | Top Long | E | 20 | | | | | 56 | 9.000 | | | | | | | | | | | | | 56 | 9 | 56 | 9 | 3847 |
| 117 | 5 | S103 | Top Long | E | 20 | | | | | 56 | 5.000 | | | | | | | | | | | | | 56 | 5 | 56 | 5 | 6885 |
| 91 | 5 | S104 | Top Long | E | 20 | | | | | 55 | 8.000 | | | | | | | | | | | | | 55 | 8 | 55 | 8 | 5283 |
| 12 | 7 | S201 | Top Long | E | 20 | | | | | 40 | 0.000 | | | | | | | | | | | | | 40 | 0 | 40 | 0 | 981 |
| 12 | 7 | S202 | Top Long | E | 20 | | | | | 40 | 0.000 | | | | | | | | | | | | | 40 | 0 | 40 | 0 | 981 |
| 12 | 7 | S203 | Top Long | E | 20 | | | | | 50 | 0.000 | | | | | | | | | | | | | 50 | 0 | 50 | 0 | 1226 |
| 12 | 7 | S204 | Top Long | E | 20 | | | | | 50 | 0.000 | | | | | | | | | | | | | 50 | 0 | 50 | 0 | 1226 |
| 12 | 7 | S205 | Top Long | E | 20 | | | | | 60 | 0.000 | | | | | | | | | | | | | 60 | 0 | 60 | 0 | 1472 |
| 24 | 8 | S206 | Top Long | E | 20 | | | | | 60 | 0.000 | | | | | | | | | | | | | 60 | 0 | 60 | 0 | 3845 |
| 12 | 8 | S207 | Top Long | E | 20 | | | | | 55 | 0.000 | | | | | | | | | | | | | 55 | 0 | 55 | 0 | 1762 |
| 12 | 5 | S301 | Top Long | E | 20 | | | | | 20 | 0.000 | | | | | | | | | | | | | 20 | 0 | 20 | 0 | 250 |
| 12 | 7 | S302 | Top Long | E | 20 | | | | | 25 | 0.000 | | | | | | | | | | | | | 25 | 0 | 25 | 0 | 613 |
| 12 | 7 | S303 | Top Long | E | 20 | | | | | 25 | 0.000 | | | | | | | | | | | | | 25 | 0 | 25 | 0 | 613 |
| 12 | 8 | S304 | Top Long | E | 20 | | | | | 25 | 0.000 | | | | | | | | | | | | | 25 | 0 | 25 | 0 | 801 |
| 48 | 8 | S305 | Top Long | E | 20 | | | | | 30 | 0.000 | | | | | | | | | | | | | 30 | 0 | 30 | 0 | 3845 |
| 3095 | 6 | S401 | Top Long | E | 20 | | | | | 15 | 8.000 | | | | | | | | | | | | | 15 | 8 | 15 | 8 | 72829 |
| 24 | 5 | S701 | Bott. Long | E | 20 | | | | | 54 | 9.000 | | | | | | | | | | | | | 54 | 9 | 54 | 9 | 1371 |
| 40 | 5 | S702 | Bott. Long | E | 20 | | | | | 57 | 2.000 | | | | | | | | | | | | | 57 | 2 | 57 | 2 | 2385 |
| 72 | 5 | S703 | Bott. Long | E | 20 | | | | | 56 | 11.000 | | | | | | | | | | | | | 56 | 11 | 56 | 11 | 4274 |
| 56 | 5 | S704 | Bott. Long | E | 20 | | | | | 56 | 2.000 | | | | | | | | | | | | | 56 | 2 | 56 | 2 | 3281 |
| 2590 | 5 | S901 | Bott Trans | E | 20 | | | | | 5 | 9.000 | | | | | | | | | | | | | 5 | 9 | 5 | 9 | 15533 |
| BARRIER CURB | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 7 | R1 | Vertical | E | 7 | | | | | 4 | 7.000 | 7.000 | | | | | | | | | | | | 9 | 6 | 9 | 5 | 231 |
| 4 | 7 | R2 | Vertical | E | 19 | | | | | 4 | 7.000 | 14.000 | | | | | | | | | | | | 5 | 9 | 5 | 7 | 46 |
| 2633 | 7 | R3 | Vertical | E | SP1 | | | | | 2 | 3.000 | 7.000 | | 2 | 1.500 | 2 | 0.000 | | | | | | | 7 | 11 | 7 | 5 | 39915 |
| 2633 | 4 | R4 | Vertical | E | 19 | | | | | 2 | 2.000 | 22.000 | | | | | | | | | | | | 4 | 0 | 3 | 11 | 6889 |
| 14 | 5 | R5 | Horizontal | E | 20 | | | | | 56 | 11.000 | | | | | | | | | | | | | 56 | 11 | 56 | 11 | 831 |
| 21 | 5 | R6 | Horizontal | E | 20 | | | | | 46 | 11.000 | | | | | | | | | | | | | 46 | 11 | 46 | 11 | 1028 |
| 21 | 5 | R7 | Horizontal | E | 20 | | | | | 43 | 6.000 | | | | | | | | | | | | | 43 | 6 | 43 | 6 | 953 |
| 63 | 5 | R9 | Horizontal | E | 20 | | | | | 46 | 8.000 | | | | | | | | | | | | | 46 | 8 | 46 | 8 | 3066 |
| 14 | 5 | R10 | Horizontal | E | 20 | | | | | 42 | 5.000 | | | | | | | | | | | | | 42 | 5 | 42 | 5 | 619 |
| 14 | 5 | R11 | Horizontal | E | 20 | | | | | 39 | 11.000 | | | | | | | | | | | | | 39 | 11 | 39 | 11 | 583 |
| 21 | 5 | R12 | Horizontal | E | 20 | | | | | 42 | 11.000 | | | | | | | | | | | | | 42 | 11 | 42 | 11 | 940 |
| 14 | 5 | R13 | Horizontal | E | 20 | | | | | 37 | 10.000 | | | | | | | | | | | | | 37 | 10 | 37 | 10 | 552 |
| 14 | 5 | R14 | Horizontal | E | 20 | | | | | 41 | 5.000 | | | | | | | | | | | | | 41 | 5 | 41 | 5 | 605 |
| 14 | 5 | R15 | Horizontal | E | 20 | | | | | 39 | 11.000 | | | | | | | | | | | | | 39 | 11 | 39 | 11 | 583 |
| 14 | 5 | R16 | Horizontal | E | 20 | | | | | 40 | 3.000 | | | | | | | | | | | | | 40 | 3 | 40 | 3 | 588 |
| 14 | 5 | R17 | Horizontal | E | 20 | | | | | 41 | 9.000 | | | | | | | | | | | | | 41 | 9 | 41 | 9 | 610 |
| 14 | 5 | R18 | Horizontal | E | 20 | | | | | 37 | 9.000 | | | | | | | | | | | | | 37 | 9 | 37 | 9 | 551 |
| 21 | 5 | R19 | Horizontal | E | 20 | | | | | 43 | 3.000 | | | | | | | | | | | | | 43 | 3 | 43 | 3 | 947 |
| 14 | 5 | R20 | Horizontal | E | 20 | | | | | 40 | 2.000 | | | | | | | | | | | | | 40 | 2 | 40 | 2 | 587 |
| 14 | 5 | R21 | Horizontal | E | 20 | | | | | 42 | 10.000 | | | | | | | | | | | | | 42 | 10 | 42 | 10 | 625 |
| 63 | 5 | R23 | Horizontal | E | 20 | | | | | 47 | 1.000 | | | | | | | | | | | | | 47 | 1 | 47 | 1 | 3094 |
| 21 | 5 | R24 | Horizontal | E | 20 | | | | | 43 | 10.000 | | | | | | | | | | | | | 43 | 10 | 43 | 10 | 960 |
| 21 | 5 | R25 | Horizontal | E | 20 | | | | | 47 | 2.000 | | | | | | | | | | | | | 47 | 2 | 47 | 2 | 1033 |
| 14 | 5 | R26 | Horizontal | E | 20 | | | | | 57 | 4.000 | | | | | | | | | | | | | 57 | 4 | 57 | 4 | 837 |
| 14 | 5 | R27 | Horizontal | E | 20 | | | | | 19 | 9.000 | | | | | | | | | | | | | 19 | 9 | 19 | 9 | 288 |
| 17 | 6 | LS1 | Barr. Blist. | E | 15 | | | | | 6 | 0.125 | 19.000 | | 6 | 0.125 | 4 | 3.000 | 4 | 3.000 | 4 | 3.000 | 4 | 3.000 | 13 | 7 | 13 | 6 | 345 |
| 136 | 6 | LS2 | Barr. Blist. | E | 19 | | | | | 2 | 9.000 | 5 | 0.000 | | | | | | | | | | | 7 | 9 | 7 | 7 | 1549 |
| 68 | 3 | LS3 | Barr. Blist. | E | SP2 | S | | | | 2 | 8.000 | 19.000 | | 19.000 | | 9.000 | | | | 6.375 | | 6.375 | | 9 | 7 | 9 | 3 | 237 |




| STIRRUP HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| GRADES 40 - 50 - 60 KSI | | | | |
| BAR SIZE | D (IN.) | 90° HOOK HOOK A OR G | 135° HOOK HOOK A OR G | 135° HOOK APPROX. H |
| #4 | 2" | 4 1/2" | 4 1/2" | 3" |
| #5 | 2 1/2" | 6" | 5 1/2" | 3 3/4" |
| #6 | 4 1/2" | 12" | 8" | 4 1/2" |

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.




| END HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| | | ALL GRADES | | |
| BAR SIZE | D (IN.) | 180° HOOKS A OR G | 180° HOOKS J | 90° HOOKS A OR G |
| #3 | 2 1/4" | 5" | 3" | 6" |
| #4 | 3" | 6" | 4" | 8" |
| #5 | 3 3/4" | 7" | 5" | 10" |
| #6 | 4 1/2" | 8" | 6" | 12" |
| #7 | 5 1/4" | 10" | 7" | 14" |
| #8 | 6" | 11" | 8" | 16" |
| #9 | 9 1/2" | 15" | 11 3/4" | 19" |
| #10 | 10 3/4" | 17" | 13 1/4" | 22" |
| #11 | 12" | 19" | 14 3/4" | 2'-0" |
| #14 | 18 1/4" | 2'-3" | 21 3/4" | 2'-7" |

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

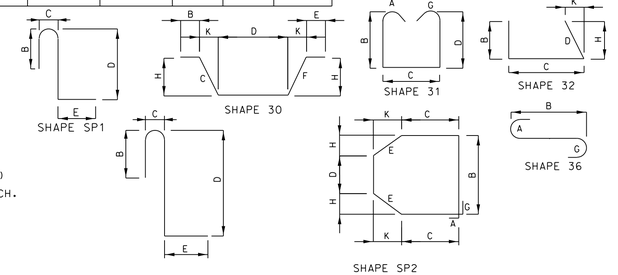
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

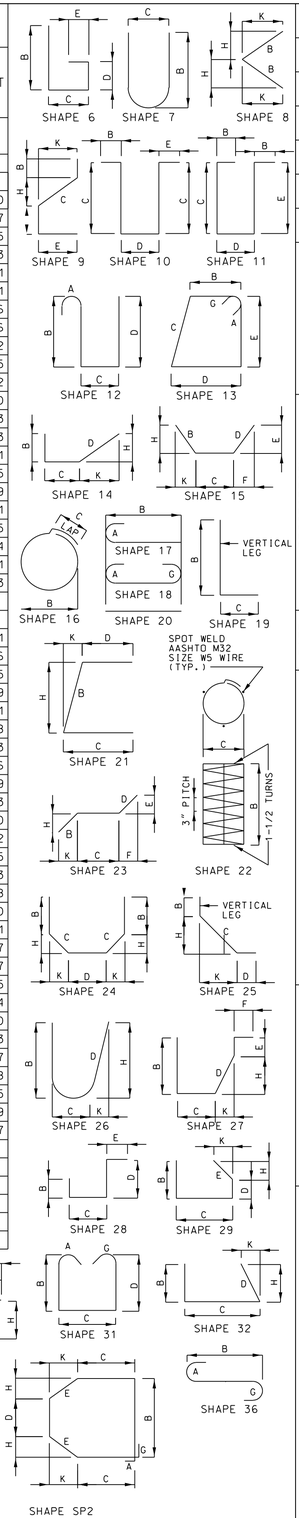
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.




BENDING DIAGRAMS




SHEET NO. 161 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER
STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
11/7/24

| DATE | DESCRIPTION |
|---|---|
| . | . |

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BILL OF REINFORCING STEEL 4**

3:07:36 PM
User:SWF744954
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Detailed PRY 3/2023
Checked FG 3/2023

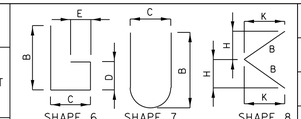
Note: This drawing is not to scale. Follow dimensions.

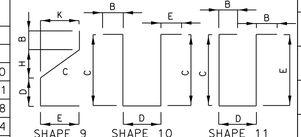
# BILL OF REINFORCING STEEL

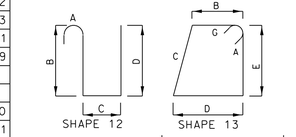
| NO. REQ'D. | MARK NO. SIZE | MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | DIMENSIONS B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 237 |
| | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 26.455 |
| | 4 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 7.643 |
| | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 5.782 |
| | 5 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 68.816 |
| | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 20.538 |
| | 6 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 81.610 |
| | 7 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 47.850 |
| | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | 3.014 |
| | 8 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 10.992 |
| | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | 96.717 |
| | 9 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 255 |
| | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | 32.177 |
| | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | 35.822 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | 220.505 |
| | | | TOTAL | E | | | | | | | | | | | | | | | | | | | | | | | | 217.403 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SLAB ON BEAM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 754 |
| | 5 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 48.016 |
| | 6 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 79.482 |
| | 7 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 7.658 |
| | 8 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 10.992 |
| | 9 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 255 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TOTAL | E | | | | | | | | | | | | | | | | | | | | | | | | 147.157 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REINFORCING STEEL (BRIDGES) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 26.455 |
| | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 5.782 |
| | 5 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 920 |
| | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 20.538 |
| | 6 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 234 |
| | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | 3.014 |
| | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | 96.717 |
| | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | 32.177 |
| | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | 35.822 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | 220.505 |
| | | | TOTAL | E | | | | | | | | | | | | | | | | | | | | | | | | 1.154 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BARRIER | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 237 |
| | 4 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 6.889 |
| | 5 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 19.880 |
| | 6 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 1.894 |
| | 7 | | | E | | | | | | | | | | | | | | | | | | | | | | | | 40.192 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TOTAL | E | | | | | | | | | | | | | | | | | | | | | | | | 69.092 |

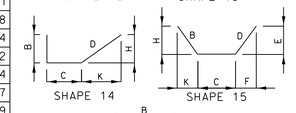
# BILL OF REINFORCING STEEL

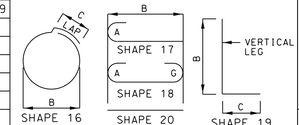
| NO. REQ'D. | MARK NO. SIZE | MARK | LOCATION | EPOXY (E) | SHAPE NO. | STIRRUP (S) | SUBSTR. (X) | VARIES (V) | NO. EACH | DIMENSIONS B FT. | B IN. | C FT. | C IN. | D FT. | D IN. | E FT. | E IN. | F FT. | F IN. | H FT. | H IN. | K FT. | K IN. | NOMINAL LENGTH FT. | NOMINAL LENGTH IN. | ACTUAL LENGTH FT. | ACTUAL LENGTH IN. | WEIGHT LBS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADD ALTERNATE REINFORCING | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INTERMEDIATE BENT 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 48 | 10 | D201 | Footing | | 20 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 15 | 6 | 15 | 6 | 3201 |
| 48 | 9 | D203 | Footing | | 18 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 18 | 0 | 18 | 0 | 2938 |
| 48 | 4 | D204 | Footing | | 18 | | X | | | 3 | 6.000 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 144 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 15 | 5.000 | | 9.000 | | | | | | | | | | | 15 | 5 | 15 | 5 | 322 |
| 36 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | | | | | | | | | | | | 10 | 7 | 10 | 6 | 253 |
| 12 | 9 | V210 | Drill Shaft | | 20 | | X | | | 21 | 7.000 | | | | | | | | | | | | | 21 | 7 | 21 | 7 | 881 |
| 12 | 9 | V211 | Rock Sckt | | 20 | | X | | | 10 | 9.000 | | | | | | | | | | | | | 10 | 9 | 10 | 9 | 439 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INTERMEDIATE BENT 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 11 | D200 | Footing | | 17 | | X | | | 12 | 5.000 | | | | | | | | | | | | | 14 | 0 | 14 | 0 | 1190 |
| 48 | 10 | D201 | Footing | | 20 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 15 | 6 | 15 | 6 | 3201 |
| 48 | 9 | D203 | Footing | | 18 | | X | | | 15 | 6.000 | | | | | | | | | | | | | 18 | 0 | 18 | 0 | 2938 |
| 48 | 4 | D204 | Footing | | 18 | | X | | | 3 | 6.000 | | | | | | | | | | | | | 4 | 6 | 4 | 6 | 144 |
| 20 | 5 | D205 | Footing | | 20 | | X | | | 15 | 5.000 | | 9.000 | | | | | | | | | | | 15 | 5 | 15 | 5 | 322 |
| 49 | 4 | P210 | Drill Shaft | | 16 | S | X | | | 2 | 6.000 | 2 | | | | | | | | | | | | 10 | 7 | 10 | 6 | 344 |
| 12 | 9 | V210 | Drill Shaft | | 20 | | X | | | 24 | 11.000 | | | | | | | | | | | | | 24 | 11 | 24 | 11 | 1017 |
| 12 | 9 | V211 | Rock Sckt | | 20 | | X | | | 10 | 9.000 | | | | | | | | | | | | | 10 | 9 | 10 | 9 | 439 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ADD ALTERNATE TOTALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 885 |
| | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 643 |
| | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | 8.650 |
| | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | 6.403 |
| | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | 2.380 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | 18.961 |

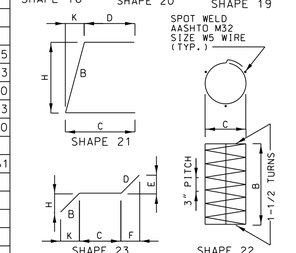


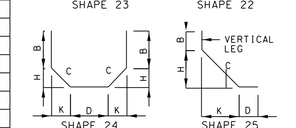



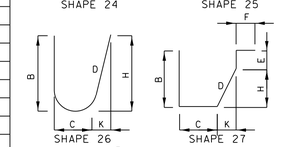



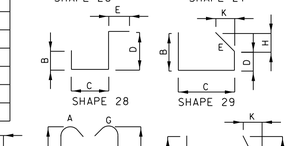



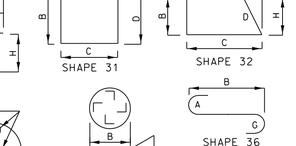



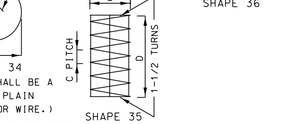



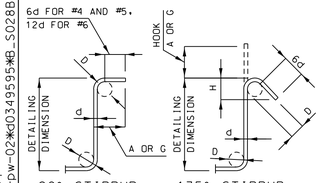



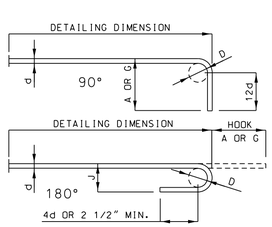




BENDING DIAGRAMS




| STIRRUP HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| GRADES 40 - 50 - 60 KSI | | | | |
| BAR SIZE | D (IN.) | 90° HOOK HOOK A OR G | 135° HOOK HOOK A OR G | 135° HOOK APPROX. H |
| #4 | 2" | 4 1/2" | 4 1/2" | 3" |
| #5 | 2 1/2" | 6" | 5 1/2" | 3 3/4" |
| #6 | 4 1/2" | 12" | 8" | 4 1/2" |

NOTE: UNLESS OTHERWISE NOTED, DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.




| END HOOK DIMENSIONS | | | | |
|---|---|---|---|---|
| BAR SIZE | D (IN.) | ALL GRADES 180° HOOKS A OR G | 180° HOOKS J | 90° HOOKS A OR G |
| #3 | 2 1/4" | 5" | 3" | 6" |
| #4 | 3" | 6" | 4" | 8" |
| #5 | 3 3/4" | 7" | 5" | 10" |
| #6 | 4 1/2" | 8" | 6" | 12" |
| #7 | 5 1/4" | 10" | 7" | 14" |
| #8 | 6" | 11" | 8" | 16" |
| #9 | 9 1/2" | 15" | 11 3/4" | 19" |
| #10 | 10 3/4" | 17" | 13 1/4" | 22" |
| #11 | 12" | 19" | 14 3/4" | 2'-0" |
| #14 | 18 1/4" | 2'-3" | 21 3/4" | 2'-7" |

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.

Detailed PRY 3/2023
Checked FG 3/2023

Note: This drawing is not to scale. Follow dimensions.

SHEET NO. 162 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
11/13/24

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

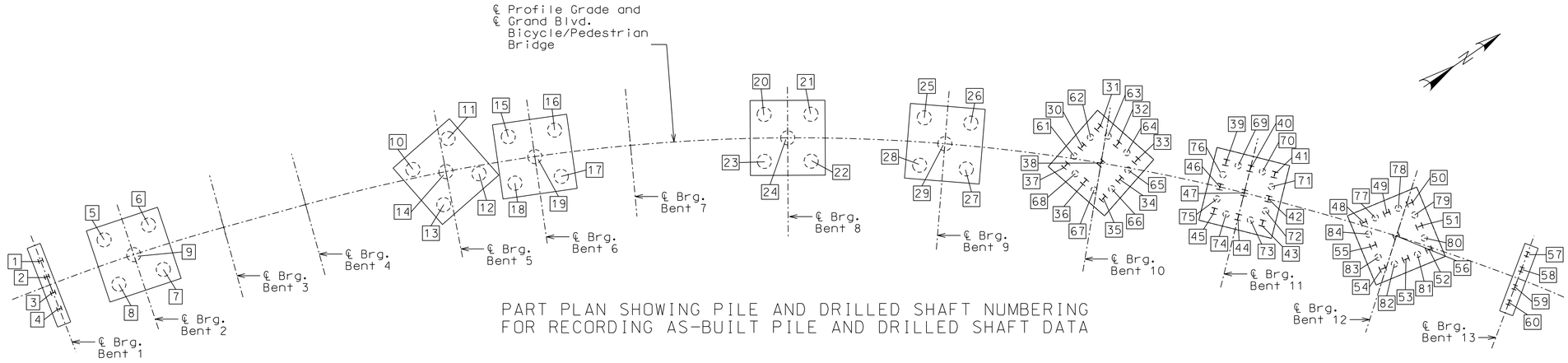
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BILL OF REINFORCING STEEL TOTALS**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

3:12:45 PM
User:USWF744954
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PART PLAN SHOWING PILE AND DRILLED SHAFT NUMBERING
FOR RECORDING AS-BUILT PILE AND DRILLED SHAFT DATA

## As-Built H-Pile Data

| Pile No. | Length in Place (ft) | Computed Nominal Axial Compressive Resistance (kips) | Remarks |
|---|---|---|---|
| End Bent No. 1 | | | |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| End Bent No. 10 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | | |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| End Bent No. 11 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |
| 42 | | | |
| 43 | | | |
| 44 | | | |
| 45 | | | |
| 46 | | | |
| 47 | | | |
| End Bent No. 12 | | | |
| 48 | | | |
| 49 | | | |
| 50 | | | |
| 51 | | | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | | |

## As-Built Drilled Shaft Data

| Shaft No. | Top of Sound Rock (Elev.) | Tip of Casing (Elev.) | Bottom of Rock Socket (Elev.) | Remarks |
|---|---|---|---|---|
| Int. Bent No. 2 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| Int. Bent No. 5 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| Int. Bent No. 6 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| Int. Bent No. 8 | | | | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| Int. Bent No. 9 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |

Note:

This sheet to be completed by construction inspection personnel.

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal

## As-Built Helical Pile Data

| Pile No. | Length in Place (ft) | Remarks |
|---|---|---|
| Int. Bent No. 10 | | |
| 61 | | |
| 62 | | |
| 63 | | |
| 64 | | |
| 65 | | |
| 66 | | |
| 67 | | |
| 68 | | |
| Int. Bent No. 11 | | |
| 69 | | |
| 70 | | |
| 71 | | |
| 72 | | |
| 73 | | |
| 74 | | |
| 75 | | |
| 76 | | |
| Int. Bent No. 12 | | |
| 77 | | |
| 78 | | |
| 79 | | |
| 80 | | |
| 81 | | |
| 82 | | |
| 83 | | |
| 84 | | |

## As-Built H-Pile Data

| Pile No. | Length in Place (ft) | Computed Nominal Axial Compressive Resistance (kips) | Remarks |
|---|---|---|---|
| End Bent No. 13 | | | |
| 57 | | | |
| 58 | | | |
| 59 | | | |
| 60 | | | |

Detailed PRY 3/2023
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

2:15:08 PM
User:USACE-LWF744954
C:\Users\wsp-us-pw-02\d0349595\B_S028B32_89005595_AsBuiltPileDS.dgn

SHEET NO. 163 | TOTAL SHEETS 187
DATE PREPARED 11/13/2024
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PROFESSIONAL ENGINEER ★ STATE OF MISSOURI ★ PETER YOUNG NUMBER PE-2010017701 IN NATIONAL ENGINEER
11/7/24

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**AS-BUILT PILE AND DRILLED SHAFT DATA**

# BORING LOG NO. B-201

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
MSE Wall
Latitude: 39.1118° Longitude: -94.5808°
Station: 8+40
Approximate Surface Elev.: 63 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.0 | 62+/- | | | | | | | | |
| 1 | | **12" ASPHALT**<br>**FILL - LEAN CLAY**, with sand and gravel, light brown | | | | | 14 | 8-10-8<br>N=18 | 22.4 | | |
| | | | | | | | 16 | 5-4-2<br>N=6 | 22.9 | 38-18-20 | |
| | | 8.5 | 54.5+/- | 5 | | | 14 | 4-4-5<br>N=9 | 23.2 | | |
| | | **FILL - LEAN CLAY**, trace silt and sand, light brown | | | | | 12 | 4-5-6<br>N=11 | 22.9 | | |
| | | | | 10 | | | | | | | |
| | | | | 15 | | | 16 | 2-3-4<br>N=7 | 28.1 | 34-20-14 | |
| | | | | 20 | | | 18 | 3-2-2<br>N=4 | 27.3 | | |
| | | | | 25 | | | 13 | 2-3-2<br>N=5 | 26.2 | | |
| | | | | 30 | | | 15 | 2-2-2<br>N=4 | 25.9 | | |
| | | | | 35 | | | 18 | 1-1-2<br>N=3 | 23.6 | | |
| | | 38.0 | 25+/- | 40 | | | | | | | |
| | | **VOID** | | | | | | | | | |
| | | 43.0 | 20+/- | 45 | | | 16 | 0-1-1<br>N=2 | | | |
| 3 | | **LEAN CLAY (CL)**, trace silt, light brown, very soft | | | | | | | | | |
| | | 48.5 | 14.5+/- | | | | 0 | 50/1" | | | |
| | | apparent limestone bedrock at 48 feet | | | | | | | | | |
| | | ***Boring Terminated at 48.5 Feet*** | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-5': solid-stem flight augers
below 5': mud rotary

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface Capped with Asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

*Groundwater not encountered during auger drilling*

Terracon
15620 W 113th St
Lenexa, KS

| | |
|---|---|
| Boring Started: 07-12-2021 | Boring Completed: 07-12-2021 |
| Drill Rig: 556 | Driller: SF |
| Project No.: 02205298 | |

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-202

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
MSE Wall
Latitude: 39.1122° Longitude: -94.5807°
Station: 9+80
Approximate Surface Elev.: 53 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.3 | 52.5+/- | | | | | | | | |
| | | **3" ASPHALT** | | | | | 14 | 2-2-3<br>N=5 | 5.1 | | |
| | | 0.9 | 52+/- | | | | 13 | 2-2-3<br>N=5 | 11.9 | | |
| 1 | | **8" CONCRETE**<br>**FILL - LEAN CLAY**, trace silt and sand | | 5 | | | 9 | 4-3-3<br>N=6 | 22.2 | | |
| | | | | | | | 10 | 4-3-4<br>N=7 | 23.3 | | |
| | | | | 10 | | | | | | | |
| | | | | 15 | | | 12 | 0-4-1<br>N=5 | 23.1 | | |
| | | | | 20 | | | 10 | 1-0-1<br>N=1 | 24.0 | | |
| | | | | 25 | | | 18 | 0-0-1<br>N=1 | 25.5 | | |
| | | | | 30 | | | 16 | 1-1-2<br>N=3 | 25.6 | | |
| | | | | 35 | | | 13 | 6-50/4" | 25.1 | | |
| | | 34.0 | 19+/- | | | | | | | | |
| 7 | | **LIMESTONE**, gray, highly weathered | | | | | 0 | 50/1" | | | |
| | | 38.5 | 14.5+/- | | | | | | | | |
| | | ***Boring Terminated at 38.5 Feet*** | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-5': solid-stem flight augers
below 5': mud rotary

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface capped with concrete

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

*Groundwater not encountered during auger drilling*

Terracon
15620 W 113th St
Lenexa, KS

| | |
|---|---|
| Boring Started: 07-12-2021 | Boring Completed: 07-12-2021 |
| Drill Rig: 556 | Driller: SF |
| Project No.: 02205298 | |

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 164 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI · PROFESSIONAL ENGINEER
PETER YOUNG NUMBER PE-2016017701
5/24/23

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

7:51:43 PM
User:USPY6181677
C:\Work\wsp-pb-us-pw-02\wsp...peter.young\d0349595\B_S028B32_89005595_BORING_01.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-203

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
MSE Wall
Latitude: 39.1151° Longitude: -94.5782°
Station: 23+00
Approximate Surface Elev.: 41 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.5 | 40.5+/- | **6" ROOT ZONE** | | | | | | | |
| 1 | | | | **FILL - FAT CLAY WITH BRICK AND CONCRETE FRAGMENTS** | | | 12 | 4-5-10 N=15 | 12.5 | | |
| | | | | | | | 12 | 8-6-11 N=17 | 73.0 | | |
| | | | | | | | 15 | 14-5-6 N=11 | 21.3 | | |
| | | | | | | | 15 | 6-13-14 N=27 | 16.1 | | |
| | | 18.5 | 22.5+/- | | | | | | | | |
| 5 | | | | **SILTY SAND (SM)**, fine grained, brown and gray, loose to medium dense | | | 0 | 7-10-7 N=17 | | | |
| | | | | | | | 15 | 3-4-8 N=12 | 5.3 | | |
| | | | | | | | 9 | 2-2-6 N=8 | 13.4 | | 21 |
| | | | | | | | 15 | 3-6-4 N=10 | 21.6 | | |
| | | | | | | | 15 | 3-3-3 N=6 | 15.1 | | |
| | | 40.0 | 1+/- | very loose at 38.5 feet | | | 18 | 3-2-1 N=3 | 29.2 | | |
| | | | | ***Boring Terminated at 40 Feet*** | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-stem flight augers

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface capped with concrete

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

39 feet while drilling

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-21-2021 | Boring Completed: 06-21-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-204

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
MSE Wall
Latitude: 39.1152° Longitude: -94.5780°
Station: 23+80
Approximate Surface Elev.: 41 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.5 | 40.5+/- | **6" ROOT ZONE** | | | | | | | |
| 2 | | | | **FILL - CONCRETE FRAGMENTS** | | | 3 | 50/3" | 7.0 | | |
| | | 6.5 | 34.5+/- | | | | 18 | 21-8-5 N=13 | 49.9 | | |
| 1 | | | | **FILL - LEAN CLAY WITH SAND**, trace concrete fragments, dark brown | | | 10 | 9-6-8 N=14 | 22.7 | | |
| | | | | | | | 10 | 8-8-7 N=15 | 11.7 | | |
| | | 18.5 | 22.5+/- | | | | | | | | |
| 2 | | | | **FILL - SAND**, with brick fragments, fine to medium grained, brown | | | 24 | | 4.8 | | |
| | | | | | | | 12 | 2-2-5 N=7 | 10.3 | | 16 |
| | | 28.5 | 12.5+/- | | | | 12 | 7-7-7 N=14 | 3.0 | | |
| 5 | | | | **SILTY SAND (SM)**, fine grained, gray, very loose | | | 18 | 3-1-1 N=2 | 21.5 | | |
| | | | | | | | 12 | 2-3-3 N=6 | 21.4 | | |
| | | 40.0 | 1+/- | | | | 16 | 2-1-2 N=3 | 32.8 | | |
| | | | | ***Boring Terminated at 40 Feet*** | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-stem flight augers

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite
Surface capped with concrete

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

*Groundwater not encountered*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-18-2021 | Boring Completed: 06-18-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 165 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

DATE | DESCRIPTION

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BORING DATA**

7:53:15 PM
User:USPY6081677
C:\Users\wsp_pb_us_pw_02\wsp_peter.young\03495595\B_S028B32_89005595_BORING_02.dgn

Detailed OYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-301

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Abutment 1
Latitude: 39.1123° Longitude: -94.5807°
Station: 10+00
Approximate Surface Elev.: 52 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.3 | 51.5+/- | | | | | | | | |
| 2 | | 0.8 | 51+/- | | | | | | | | |
| | | | **3" ASPHALT** | | | | | | | | |
| | | | **6" CONCRETE** | | | | | | | | |
| | | 3.5 | 48.5+/- | | | | | | | | |
| 1 | | | **FILL - CONCRETE FRAGMENTS AND LEAN CLAY**, light brown | | | | | | | | |
| | | | **FILL - LEAN CLAY**, trace concrete fragments, light brown | | | | | | | | |
| | | 8.5 | 43.5+/- | | | | | | | | |
| | | | **LEAN CLAY (CL)**, with silt, light brown and gray, medium stiff | | | | 9 | 2-2-2 N=4 | 15.2 | | |
| | | | | | | | 12 | 2-1-2 N=3 | 17.3 | | |
| | | | | 5 | | | 10 | 2-3-2 N=5 | 24.3 | | |
| | | | | | | | 8 | 2-2-3 N=5 | 25.4 | | |
| | | | | 10 | | | | | | | |
| | | | | | | | 9 | 3-3-3 N=6 | 25.9 | | |
| | | | | 15 | | | | | | | |
| 3 | | | soft at 18.5 feet | | | | 13 | 2-1-2 N=3 | 25.9 | | |
| | | | | 20 | | | | | | | |
| | | | | | | | 14 | 2-3-2 N=5 | 24.2 | | |
| | | | | 25 | | | | | | | |
| | | | very soft at 28.5 feet | | | | 12 | 2-1-1 N=2 | 22.5 | | |
| | | 33.5 | 18.5+/- | 30 | | | | | | | |
| | | | **LIMESTONE**, gray, highly weathered | | | | 0 | 50/1" | | | |
| | | | | 35 | | | | | | | |
| | | | | | | | 0 | 50/1" | | | |
| 7 | | | | 40 | | | | | | | |
| | | | | | | | 0 | 50/1" | | | |
| | | | | 45 | | | | | | | |
| | | 48.0 | 4+/- | | | | | | | | |
| 8 | | 48.5 | 3.5+/- | | | | 4 | 50/2" | 13.8 | | |
| | | | **SHALE**, black, moderately weathered | | | | | | | | |
| | | | ***Boring Terminated at 48.5 Feet*** | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

| | | | |
|---|---|---|---|
| Advancement Method:<br>0'-5': solid-stem flight augers<br>below 5': mud rotary | See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).<br>See Supporting Information for explanation of symbols and abbreviations.<br>Elevations were interpolated from a topographic site plan and converted to KCMO datum | Notes: | |
| Abandonment Method:<br>Boring backfilled with Auger Cuttings and/or Bentonite | | | |
| **WATER LEVEL OBSERVATIONS**<br>*Groundwater not encountered during auger drilling* | Terracon<br>15620 W 113th St<br>Lenexa, KS | Boring Started: 07-13-2021 | Boring Completed: 07-13-2021 |
| | | Drill Rig: 556 | Driller: SF |
| | | Project No.: 02205298 | |

# BORING LOG NO. B-302

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 1
Latitude: 39.1125° Longitude: -94.5806°
Station: 10+76
Approximate Surface Elev.: 47 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.2 | 47+/- | | | | | | | | |
| | | | **2" ASPHALT** | | | | | | | | |
| | | 1.0 | 46+/- | | | | | | | | |
| | | | **10" CONCRETE** | | | | | | | | |
| | | | **LEAN CLAY WITH BRICK AND CONCRETE FRAGMENTS**, trace silt, light brown | | | | 8 | 4-4-3 N=7 | 11.4 | | |
| | | | | | | | 6 | 6-50/3" | 11.4 | | |
| | | | | 5 | | | 13 | 2-2-2 N=4 | 28.0 | | |
| | | | | | | | 12 | 0-1-1 N=2 | 27.1 | | |
| | | | | 10 | | | | | | | |
| 1 | | | | | | | 9 | 0-0-1 N=1 | 26.7 | | |
| | | | | 15 | | | | | | | |
| | | | | | | | 7 | 1-1-1 N=2 | 33.7 | | |
| | | | | 20 | | | | | | | |
| | | | | | | | 10 | 1-2-2 N=4 | 26.5 | | |
| | | | | 25 | | | | | | | |
| | | 28.0 | 19+/- | | | | | | | | |
| 7 | | 28.5 | 18.5+/- | | | | 0 | 50/1" | | | |
| | | | **LIMESTONE**, gray | | | | | | | | |
| | | | ***Boring Terminated at 28.5 Feet*** | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

| | | | |
|---|---|---|---|
| Advancement Method:<br>0'-5': solid-stem flight augers<br>below 5': mud rotary | See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).<br>See Supporting Information for explanation of symbols and abbreviations.<br>Elevations were interpolated from a topographic site plan and converted to KCMO datum | Notes: | |
| Abandonment Method:<br>Boring backfilled with cement-bentonite grout upon completion. | | | |
| **WATER LEVEL OBSERVATIONS**<br>*Groundwater not encountered during auger drilling* | Terracon<br>15620 W 113th St<br>Lenexa, KS | Boring Started: 07-13-2021 | Boring Completed: 07-13-2021 |
| | | Drill Rig: 556 | Driller: SF |
| | | Project No.: 02205298 | |

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 166 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

DATE | DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

7:54:34 PM
User: SPY6081677
C:\Roms\wsp-pb-us-pw-02\wsp_peter.young\D0349595\B_S028B32_89005595_BORING_01_1.dgn

Detailed OYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

Surface Elevation 764.5 Datum NAVD88 Completion Date: 1/24/23

| DEPTH IN FEET | DESCRIPTION OF MATERIAL | GRAPHIC LOG | DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD | SAMPLES | SHEAR STRENGTH, tsf (Δ - UU/2, ○ - QU/2, □ - PP/2) 0.5 1.0 1.5 2.0 2.5 / STANDARD PENETRATION RESISTANCE (ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT) / WATER CONTENT, % PL 10 20 30 40 50 LL |
|---|---|---|---|---|---|
| | FILL - black lean and fat clay, trace gravel and slag with concrete and ashpalt the size of cobbles and boulders on the surface | | | | |
| 5 | | | 3-5-6 | SS1 | |
| | CLAY - brown, stiff to soft, lean - CL | | | | |
| 10 | | | 4-6-4 | SS2 | |
| | | | | ST3 | |
| 15 | | | | | |
| | | | 0-2-2 | SS4 | |
| 20 | | | | | |
| | WEATHERED LIMESTONE | | 50/2" | SS5 | |
| 25 | Boring terminated at auger refusal at 24.5 feet. | | | | |
| 30 | | | | | |

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

**GROUNDWATER DATA**

X FREE WATER NOT ENCOUNTERED DURING DRILLING

**DRILLING DATA**

__ AUGER 3.75" HOLLOW STEM
WASHBORING FROM __ FEET
DJT DRILLER RAW LOGGER
Diedrich D-50 DRILL RIG
HAMMER TYPE Auto

**REMARKS:** Boring Location: 39.112908, -94.580310

Drawn by: RAW Date: 1/25/23 | Check by: SDG Date: 1/27/23 | App'vd by: SDG Date: 1/27/23

GEOTECHNOLOGY
A Universal Engineering Sciences Company

**Pedestrian Bridge**
**Grand Boulevard**
**Kansas City, Missouri**

**LOG OF BORING: PB-1**

**Project No. J042651.01**

Surface Elevation 765.0 Datum NAVD88 Completion Date: 1/24/23

| DEPTH IN FEET | DESCRIPTION OF MATERIAL | GRAPHIC LOG | DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD | SAMPLES | SHEAR STRENGTH, tsf (Δ - UU/2, ○ - QU/2, □ - PP/2) 0.5 1.0 1.5 2.0 2.5 / STANDARD PENETRATION RESISTANCE (ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT) / WATER CONTENT, % PL 10 20 30 40 50 LL |
|---|---|---|---|---|---|
| | FILL - crushed stone | | | | |
| | FILL - black lean and fat clay, trace gravel | | | | |
| 5 | | | 2-2-1 | SS1 | |
| | CLAY - brown grading to brown-gray, lean, medium stiff to soft - CL | | | | |
| 10 | | | 6-4-3 | SS2 | |
| | | | | | |
| 15 | | | 2-1-2 | SS3 | |
| | | | | | |
| 20 | | | 0-0-0 | SS4 | |
| | | | | | |
| 25 | | | 0-1-2 | SS5 | |
| | | ▽ | | | |
| 30 | trace rock fragments | | 1-3-12 | SS6 | |
| | Boring terminated at auger refusal at 31 feet. | | | | |

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

**GROUNDWATER DATA**

ENCOUNTERED AT 28 FEET ▽

**DRILLING DATA**

__ AUGER 3.75" HOLLOW STEM
WASHBORING FROM __ FEET
DJT DRILLER RAW LOGGER
Diedrich D-50 DRILL RIG
HAMMER TYPE Auto

**REMARKS:** Boring Location: 39.112695, -94.580338

Drawn by: RAW Date: 1/25/23 | Check by: SDG Date: 1/27/23 | App'vd by: SDG Date: 1/27/23

GEOTECHNOLOGY
A Universal Engineering Sciences Company

**Pedestrian Bridge**
**Grand Boulevard**
**Kansas City, Missouri**

**LOG OF BORING: PB-2**

**Project No. J042651.01**

SHEET NO. 167 TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2016017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
5/24/23

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BORING DATA**

3:51:38 PM
User:SJK705318
c:\Work\wsp-us-pw-02\wd0349595\B_S028B32_89005595_BORING_14.dgn

Detailed PRY 3/2023
Checked SAB 3/2023

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-303

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 4
Latitude: 39.1132° Longitude: -94.5803°
Station: 13+51
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | | | | 6 | 3-3-4 N=7 | 20.3 | | |
| | | | | | | 12 | 4-3-3 N=6 | 19.5 | | |
| | | 5 | | | | 18 | 2-3-4 N=7 | 20.3 | | |
| | | 10 | | | | 16 | 2-3-3 N=6 | 21.0 | | |
| | | | 13.5 21.5+/- | | | | | | | |
| | | 15 | | | | 13 | 4-4-5 N=9 | 27.0 | | |
| | | 20 | | | | 18 | 1-1-1 N=2 | 30.2 | | |
| | | | 25.0 10+/- | | | | | | | |
| | | 25 | | | | 18 | 1-1-3 N=4 | 33.5 | | |

**FILL - LEAN CLAY WITH BRICK FRAGMENTS**, brown and dark brown

**LEAN CLAY WITH SAND (CL)**, light gray, stiff

very soft to soft below 18.5 feet

***Boring Terminated at 25 Feet***

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-stem flight augers

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *18 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-28-2021 | Boring Completed: 06-28-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-304

Page 1 of 1

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 5
Latitude: 39.1134° Longitude: -94.5802°
Station: 14+43
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0.2 35+/- | | | 14 | 3-8-9 N=17 | 15.9 | | |
| | | | | | | 12 | 2-4-2 N=6 | 18.4 | | |
| | | 5 | | | | 10 | 5-7-8 N=15 | 22.0 | | |
| | | 10 | | | | 16 | 2-3-4 N=7 | 19.8 | | |
| | | 15 | | | | 15 | 1-1-1 N=2 | 25.4 | | |
| | | 20 | | | | 6 | 0-1-1 N=2 | 31.4 | | |
| | | 25 | | | | 18 | 1-2-2 N=4 | 30.4 | | |
| | | 30 | | ▽ | | 18 | 2-1-1 N=2 | 29.6 | | |
| | | 35 | | | | 16 | 1-2-2 N=4 | 28.9 | | |
| | | 40 | | | | 18 | 1-1-1 N=2 | 33.5 | | |
| | | 45 | | | | 8 | 4-6-8 N=14 | 24.2 | | |
| 4 | | | 24.0 11+/- | | | | | | | |
| 6 | | | 43.5 -8.5+/- | | | 12 | 24-50/6" | 15.6 | | |
| 8 | | | 48.5 -13.5+/- 49.5 -14.5+/- | | | | | | | |

**2" ASPHALT**

**FILL - LEAN CLAY WITH BRICK FRAGMENTS**, trace wood, dark brown and gray

**LEAN CLAY WITH SAND (CL)**, gray, very soft to soft

**SAND (SP)**, fine grained, gray, medium dense

**SHALE**, gray, moderately weathered

***Boring Terminated at 49.5 Feet***

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-35': hollow-stem flight augers
below 35': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *34 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-25-2021 | Boring Completed: 06-25-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 168 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BORING DATA**

7:57:10 PM
User:USPY681677
C:\Users\usp-pw-02\wsp...peter.young\KD349595\B_SO28B32_89005595_BORING_04.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-305



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 7
Latitude: 39.1138° Longitude: -94.5799°
Station: 15+88
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DESCRIPTION | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.4 | 34.5+/- | **5" CONCRETE** | | | | | | | | |
| | | | | **FILL - LEAN CLAY WITH BRICK AND CONCRETE FRAGMENTS**, dark brown | | | | 10 | 4-5-6 N=11 | 20.1 | | |
| | | | | | 5 | | | 13 | 2-3-3 N=6 | 15.0 | | |
| | | | | | | | | 18 | 1-2-2 N=4 | 9.7 | | |
| | | | | | 10 | | | 16 | 2-2-3 N=5 | 8.5 | | |
| | | 13.5 | 21.5+/- | | | | | | | | | |
| 2 | | | | **FILL - SAND AND LEAN CLAY**, dark brown | 15 | | | 12 | 4-4-6 N=10 | 5.9 | | |
| | | | | | | | | 10 | 4-4-5 N=9 | 4.8 | | |
| | | | | with wood below 23.5 feet | 20 | | | | | | | |
| | | | | | | | | 10 | 2-3-4 N=7 | 21.2 | | |
| | | 28.5 | 6.5+/- | | 25 | | | | | | | |
| 4 | | | | **LEAN CLAY WITH SAND (CL)**, trace silt, brown, very soft to soft | | ▽ | | 18 | 1-1-1 N=2 | 34.4 | | |
| | | | | | 30 | | | | | | | |
| | | | | medium stiff at 33.5 feet | | | | 8 | 2-3-2 N=5 | 27.3 | | |
| | | | | | 35 | | | | | | | |
| | | | | | | | | 10 | 2-2-2 N=4 | 27.3 | | |
| | | 43.5 | -8.5+/- | | 40 | | | | | | | |
| 6 | | | | **SAND (SP)**, fine to coarse grained, gray, medium dense | | | | 2 | 4-5-6 N=11 | | | |
| | | | | | 45 | | | | | | | |
| | | | | very loose to loose below 48.5 feet | | | | 18 | 5-2-2 N=4 | | | |
| | | | | | 50 | | | | | | | |
| | | | | | | | | 18 | 5-4-2 N=6 | | | |
| | | | | | 55 | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *29 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-01-2021 | Boring Completed: 07-01-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-305



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 7
Latitude: 39.1138° Longitude: -94.5799°
Station: 15+88
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DESCRIPTION | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | | 58.5 | 23.5+/- | **LIMESTONE**, gray, highly weathered | 60 | | | 13 | 12-25-50/4" | | | |
| | | 63.0 | -28+/- | | | | | | | | | |
| 8 | | 64.0 | -29+/- | **SHALE**, dark gray, moderately weathered | | | | 8 | 50/5" | 14.1 | | |
| | | | | ***Boring Terminated at 64 Feet*** | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *29 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-01-2021 | Boring Completed: 07-01-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 169 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2010017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
5/24/23

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

7:58:27 PM
User:JSPY6181677
C:\Noms\wsp-pb-us-pw-02\wsp_peter.young\0349595\B_S028B32_89005595_BORING_05.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-306



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 8
Latitude: 39.1140° Longitude: -94.5798°
Station: 16+58
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 | 34.5+/- | | | | | | | | |
| | | | **4" CONCRETE** | | | | | | | | |
| | | | **FILL - LEAN CLAY WITH BRICK AND CONCRETE FRAGMENTS**, trace wood, dark gray and brown | | | | 16 | 3-4-5 N=9 | 19.8 | | |
| | | | | 5 | | | 17 | 3-4-4 N=8 | 20.0 | | |
| | | | | | | | 15 | 1-2-1 N=3 | 21.2 | | |
| | | | | 10 | | | 11 | 2-3-4 N=7 | 21.3 | | |
| | | | with wood below 13.5 feet | | | | 13 | 2-2-3 N=5 | 20.6 | | |
| | | 18.5 | 16.5+/- | 15 | | | | | | | |
| | | | **FILL - LEAN CLAY**, trace silt, gray | | | | 16 | 1-1-2 N=3 | 20.6 | | |
| | | | | 20 | | | | | | | |
| | | | | | | | 18 | 1-2-2 N=4 | 30.3 | | |
| | | | | 25 | | | | | | | |
| | | | | | | | 18 | 2-2-2 N=4 | | | |
| | | | | 30 | | | | | | | |
| | | | | | | | 18 | 0-1-1 N=2 | | | |
| | | | with brick and concrete fragments below 38.5 feet | 35 | | | | | | | |
| | | | | | | | 9 | 3-4-6 N=10 | | | |
| | | | | 40 | | | | | | | |
| | | 43.5 | -8.5+/- | | | | | | | | |
| 6 | | | **SAND (SP)**, fine grained, gray, medium dense | 45 | | | 6 | 6-9-9 N=18 | | | |
| | | | | | | | 16 | 7-6-7 N=13 | | | |
| | | | very loose and silty below 53.5 feet | 50 | | | | | | | |
| | | | | | | | 12 | 0-1-1 N=2 | | | |
| | | | | 55 | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum.

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *39 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-06-2021 | Boring Completed: 07-06-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-306



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 8
Latitude: 39.1140° Longitude: -94.5798°
Station: 16+58
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | | | **SAND (SP)**, fine grained, gray, medium dense *(continued)* | 60 | | | 13 | 1-1-1 N=2 | | | |
| | | 63.5 | -28.5+/- | | | | | | | | |
| 7 | | | **LIMESTONE**, gray, highly weathered | 65 | | | 3 | 50/5" | | | |
| 8 | | 68.5 | -33.5+/- | | | | | | | | |
| | | 69.0 | -34+/- | | | | 6 | 50/6" | 13.0 | | |
| | | | **SHALE**, dark gray, moderately weathered | | | | | | | | |
| | | | ***Boring Terminated at 69 Feet*** | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum.

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *39 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-06-2021 | Boring Completed: 07-06-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 170 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BORING DATA**

7:59:45 PM
User:USPY6181677
C:\Work\wsp-pb-us-pw-02\wsp_peter.young\d0349595\B_S028B32_89005595_BORING_06.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-307



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 9
Latitude: 39.1141° Longitude: -94.5796°
Station: 17+48
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.3 | 34.5+/- | | | | | | | | |
| | | **3" ASPHALT** | | | | | | | | | |
| | | 2.5 | 32.5+/- | | | | | | | | |
| | | **CONCRETE**, with rebar | | | | | | | | | |
| 1 | | **FILL - LEAN CLAY**, trace concrete fragments, brick fragments, and wood, dark gray and gray | | | | | 0 | | | | |
| | | | | 5 | | | 13 | 1-1-2 N=3 | 21.8 | | |
| | | | | | | | 16 | 1-2-2 N=4 | 32.9 | | |
| | | | | 10 | | | 18 | 2-1-1 N=2 | 93.8 | | |
| | | | | | | | 10 | 2-1-2 N=3 | 28.1 | | |
| | | | | 15 | | | | | | | |
| | | | | | | | 18 | 2-3-2 N=5 | 23.4 | | |
| | | with brick fragments at 23.5 feet | | 20 | | | | | | | |
| | | | | | | | 14 | 5-5-6 N=11 | 19.4 | | |
| | | 28.5 | 6.5+/- | 25 | | | | | | | |
| 4 | | **LEAN CLAY WITH SAND (CL)**, dark gray, medium stiff | | | | | 18 | 1-2-3 N=5 | 32.2 | | |
| | | | | 30 | | | | | | | |
| | | | | | | | 10 | 3-4-4 N=8 | 27.4 | | |
| | | | | 35 | ▽ | | | | | | |
| | | | | | | | 9 | 4-4-4 N=8 | | | |
| | | stiff at 43.5 feet | | 40 | | | | | | | |
| | | | | | | | 4 | 3-4-5 N=9 | | | |
| | | 48.5 | -13.5+/- | 45 | | | | | | | |
| 6 | | **SAND (SP)**, fine to coarse grained, gray, medium dense to dense | | | | | 8 | 7-8-9 N=17 | | | |
| | | | | 50 | | | | | | | |
| | | | | | | | 15 | 13-14-20 N=34 | | | |
| | | | | 55 | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *36 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-07-2021 | Boring Completed: 07-07-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-307



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 9
Latitude: 39.1141° Longitude: -94.5796°
Station: 17+48
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | | **SAND (SP)**, fine to coarse grained, gray, medium dense to dense *(continued)* | | 60 | | | 4 | 15-17-25 N=42 | | | |
| | | | | 65 | | | 15 | 23-25-14 N=39 | | | |
| | | 67.0 | -32+/- | | | | | | | | |
| 7 | | **LIMESTONE**, gray, highly weathered | | | | | | | | | |
| | | 70.0 | -35+/- | 70 | | | 14 | 28-31-50/4" | | | |
| | | ***Boring Terminated at 70 Feet*** | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *36 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-07-2021 | Boring Completed: 07-07-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 171 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

8:00:59 PM
User: SPY6081677
C:\Noms\wsp-pb-us-pw-02\wsp_peter.young\03495\B_S028B32_89005595_BORING_07.dgn

Detailed OYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-308



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 10
Latitude: 39.1144° Longitude: -94.5794°
Station: 18+62
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DESCRIPTION | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.7 | 34.5+/- | **8" CONCRETE** | | | | | | | | |
| | | | | **FILL - LEAN CLAY WITH BRICK AND CONCRETE FRAGMENTS**, trace wood, brown and gray | | | | 16 | 3-4-5 N=9 | 19.7 | | |
| | | | | | 5 | | | 9 | 1-2-4 N=6 | 22.9 | | |
| | | 8.5 | 26.5+/- | | | | | 13 | 3-3-2 N=5 | 25.7 | | |
| | | | | **FILL - LEAN CLAY**, trace wood and brick fragments, gray | 10 | | | 15 | 2-3-2 N=5 | 24.0 | | |
| | | | | | 15 | | | 11 | 2-2-2 N=4 | 108.9 | | |
| | | 23.5 | 11.5+/- | | 20 | | | 8 | 1-2-1 N=3 | 37.5 | | |
| 5 | | | | **SAND (SP)**, fine to coarse grained, gray, very loose | | ▽ | | 16 | 2-2-1 N=3 | | | |
| | | | | | 25 | | | 15 | 1-2-2 N=4 | | | |
| | | | | | 30 | | | 18 | 2-1-2 N=3 | | | |
| | | | | | 35 | | | 14 | 2-2-2 N=4 | | | |
| | | | | medium dense from 53.5 feet to 63.5 feet | 40 | | | 5 | 3-2-1 N=3 | 31.7 | | |
| | | | | | 45 | | | 7 | 5-4-5 N=9 | | | |
| | | | | | 50 | | | 3 | 10-9-8 N=17 | | | |
| | | | | | 55 | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *23.5 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-07-2021 | Boring Completed: 07-07-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-308



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 10
Latitude: 39.1144° Longitude: -94.5794°
Station: 18+62
Approximate Surface Elev.: 35 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH | ELEVATION (Ft.) | DESCRIPTION | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | | | **SAND (SP)**, fine to coarse grained, gray, very loose *(continued)* | 60 | | | 7 | 10-9-9 N=18 | | | |
| | | | | loose at 63.5 feet | 65 | | | 6 | 3-4-4 N=8 | | | |
| | | | | medium dense to dense below 68.5 feet | 70 | | | 8 | 12-13-16 N=29 | | | |
| | | 75.0 | -40+/- | | 75 | | | 13 | 31-24-25 N=49 | | | |
| | | | | ***Boring Terminated at 75 Feet*** | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *23.5 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-07-2021 | Boring Completed: 07-07-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 172 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2010017701
PROFESSIONAL ENGINEER
5/24/23

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

8:02:33 PM
User:USPY6181677
C:\Mons\wsp-pb-us-pw-02\wsp_peter.young\d0349595\B_S028B32_89005595_BORING_08.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-309



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 11
Latitude: 39.1146° Longitude: -94.5791°
Station: 19+43
Approximate Surface Elev.: 36 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) / ELEVATION (Ft.) | DESCRIPTION | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 / 36 | **FILL - LEAN CLAY WITH BRICK AND CONCRETE FRAGMENTS**, trace wood, gray and brown | | | | | | | |
| | | | | | | 13 | 4-4-3 N=7 | 20.7 | | |
| | | 5 | | | | 12 | 4-3-2 N=5 | 23.4 | | |
| | | | | | | 6 | 3-3-2 N=5 | 23.9 | | |
| | | 10 | | | | 5 | 4-5-6 N=11 | 23.6 | | |
| | | 15 | | | | 13 | 2-1-2 N=3 | 24.1 | | |
| | | 20 | | | | 10 | 2-2-2 N=4 | 36.1 | | |
| | | 25 | | | | 8 | 0-0-1 N=1 | 41.6 | | |
| | | 30 | | | | 18 | 1-1-1 N=2 | 169.2 | | |
| | | | | | | 18 | 1-2-2 N=4 | | | |
| | | 35 | | | | 18 | 0-1-1 N=2 | | | |
| | | 40 | | | | 10 | 5-5-5 N=10 | | | |
| | | 45 | | | | 5 | 5-7-7 N=14 | | | |
| | | 50 | | | | 6 | 3-3-5 N=8 | | | |
| | | 55 | | | | | | | | |
| | | 32.0 / 4+/- | | | | | | | | |
| 5 | | | **SAND (SP)**, fine to coarse grained, gray and brown, loose to very loose | | | | | | | |
| | | | medium dense from 43.5 feet to 53.5 feet | | | | | | | |
| | | | loose at 53.5 feet | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *32 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-08-2021 | Boring Completed: 07-08-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-309



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 11
Latitude: 39.1146° Longitude: -94.5791°
Station: 19+43
Approximate Surface Elev.: 36 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) / ELEVATION (Ft.) | DESCRIPTION | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | 60 | **SAND (SP)**, fine to coarse grained, gray and brown, loose to very loose *(continued)* medium dense to dense below 58.5 feet | | | 9 | 6-7-12 N=19 | | | |
| | | 65 | | | | 6 | 5-5-7 N=12 | | | |
| | | 70 | | | | 4 | 10-12-21 N=33 | | | |
| | | 75 | | | | 4 | 11-11-15 N=26 | | | |
| R | | 78.0 / -42+/- | | | | | | | | |
| | | 78.5 / -42.5+/- | **SHALE**, gray, highly weathered | | | 3 | 50/2" | 14.5 | | |
| | | | ***Boring Terminated at 79 Feet*** | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *32 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-08-2021 | Boring Completed: 07-08-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 173 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2016017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
5/24/23

DATE | DESCRIPTION

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BORING DATA**

8:03:53 PM
User:SPY6081677
C:\Noms\wsp-pb-us-pw-02\wsp_peter.young\03495595\B_S028B32_89005595_BORING_09.dgn

Detailed OYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-310

Page 1 of 2

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 12
Latitude: 39.1147° Longitude: -94.5789°
Station: 20+25
Approximate Surface Elev.: 37 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | 0 | | **FILL - LIMESTONE FRAGMENTS WITH SAND**, gray | | | 3 | 50/3" | 3.5 | | |
| | | 6.5 | 30.5+/- | | | | 6 | 4-8-9 N=17 | 11.4 | | |
| 1 | | | | **FILL - LEAN CLAY**, trace sand and brick fragments, dark gray and brown | | | 16 | 3-4-4 N=8 | 23.7 | | |
| | | | | | | | 12 | 3-3-5 N=8 | 17.0 | | |
| | | | | | | | 18 | 3-3-4 N=7 | 14.8 | | |
| | | | | | | | 14 | 4-4-3 N=7 | 2.6 | | |
| | | | | | | | 16 | 4-5-7 N=12 | 20.4 | | |
| | | | | with limestone fragments below 28.5 feet | | | 10 | 4-3-4 N=7 | 27.9 | | |
| | | 33.5 | 3.5+/- | | | | 12 | 4-2-2 N=4 | 26.0 | | |
| 5 | | | | **SILTY SAND (SM)**, gray and brown, very loose to loose | | | 0 | 0-1-1 N=2 | | | |
| | | 43.5 | -6.5+/- | | | | 15 | 4-7-8 N=15 | 26.4 | | |
| 6 | | | | **SAND (SP)**, fine to coarse grained, gray, medium dense | | | 0 | 7-6-7 N=13 | | | |
| | | | | | | | 3 | 9-10-11 N=21 | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-35': hollow-stem flight augers
below 35': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *34.5 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-15-2021 | Boring Completed: 06-15-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-310

Page 2 of 2

**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 12
Latitude: 39.1147° Longitude: -94.5789°
Station: 20+25
Approximate Surface Elev.: 37 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | | 60 | | **SAND (SP)**, fine to coarse grained, gray, medium dense *(continued)* | | | 0 | 8-7-6 N=13 | | | |
| | | 65 | | | | | 6 | 6-8-11 N=19 | | | |
| | | 70 | | dense at 68.5 feet | | | 10 | 25-15-19 N=34 | | | |
| | | 75 | | | | | 3 | 9-6-5 N=11 | | | |
| | | 80 | | | | | 2 | 7-6-6 N=12 | | | |
| | | 85 | | | | | 18 | 7-8-12 N=20 | | | |
| | | | | | | | 3 | 50/3" | 14.3 | | |
| 8 | | 86.5 | -49.5+/- | **SHALE**, gray, highly to moderately weathered | | | | | | | |
| | | 89.0 | -52+/- | ***Boring Terminated at 89 Feet*** | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-35': hollow-stem flight augers
below 35': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *34.5 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-15-2021 | Boring Completed: 06-15-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 174 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

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

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

8:05:05 PM
User: USPY6081677
C:\Noms\wsp-pb-us-pw-02\wsp_peter.young\d0349595\B_S028B32_89005595_BORING_10.dgn

Detailed OYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-311



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 13
Latitude: 39.1149° Longitude: -94.5787°
Station: 21+15
Approximate Surface Elev.: 39 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) / ELEVATION (Ft.) | | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | 0 | **FILL - CONCRETE FRAGMENTS WITH WOOD AND BRICK FRAGMENTS** | | | | | | |
| | | | | | 8 | 3-50/2" | 29.0 | | |
| | | 5 | | | 6 | 50/6" | 12.2 | | |
| | | | | | 13 | 9-11-15 N=26 | 10.2 | | |
| | | 10 | | | 18 | 5-6-8 N=14 | 11.4 | | |
| | | 13.5 | 25.5+/- | | | | | | |
| 1 | | | **FILL - LEAN CLAY WITH BRICK FRAGMENTS**, brown and dark gray | | 8 | 4-8-11 N=19 | 10.4 | | |
| | | 15 | | | | | | | |
| | | 18.5 | 20.5+/- | | | | | | |
| 5 | | | **SAND (SP)**, trace silt, fine to coarse grained, gray, loose | | 6 | 3-3-3 N=6 | 16.6 | | |
| | | 20 | | | | | | | |
| | | | | | 6 | 5-4-5 N=9 | 7.9 | | |
| | | 25 | | | | | | | |
| | | | | | 15 | 1-2-2 N=4 | 93.5 | | |
| | | 30 | medium dense at 33.5 feet | | | | | | |
| | | | | | 10 | 4-6-5 N=11 | 14.6 | | |
| | | 35 | | | | | | | |
| | | | very loose at 38.5 feet | | 18 | 1-0-0 | 31.6 | | |
| | | 40 | | ▽ | | | | | |
| | | | | | 18 | 1-3-3 N=6 | 43.2 | | |
| | | 45 | | | | | | | |
| | | | medium dense to dense below 48.5 feet | | 15 | 5-6-7 N=13 | | | |
| | | 50 | | | | | | | |
| | | | | | 6 | 7-12-13 N=25 | | | |
| | | 55 | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *40 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-17-2021 | Boring Completed: 06-17-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-311



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 13
Latitude: 39.1149° Longitude: -94.5787°
Station: 21+15
Approximate Surface Elev.: 39 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) / ELEVATION (Ft.) | | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|
| 5 | | 60 | **SAND (SP)**, trace silt, fine to coarse grained, gray, loose *(continued)* | | 6 | 8-10-12 N=22 | | | |
| | | 65 | | | 6 | 7-11-13 N=24 | | | |
| | | 70 | | | 8 | 8-11-15 N=26 | | | |
| | | 75 | | | 12 | 7-9-14 N=23 | | | |
| | | 80 | | | 18 | 8-12-19 N=31 | | | |
| | | 85 | | | 15 | 9-16-17 N=33 | | | |
| | | 88.5 | -49.5+/- | | | | | | |
| 8 | | 90 | **SHALE**, gray, moderately to slightly weathered | | 3 | 50/4" | 18.4 | | |
| | | 95 | | | 2 | 50/2" | 26.1 | | |
| | | 100 | | | 3 | 50/3" | 17.7 | | |
| | | 103.5 | -64.5+/- | | | | | | |
| | | | ***Boring Terminated at 103.5 Feet*** | | 2 | 50/2" | 20.5 | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *40 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-17-2021 | Boring Completed: 06-17-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 175 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

8:06:59 PM
User:PRY6811677
K:\Kansas\pd-us-pw-02\wsp__peter_young\d0349595\28_S028B32_89005595_BORING_11.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-312



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 14
Latitude: 39.1150° Longitude: -94.5784°
Station: 22+01
Approximate Surface Elev.: 36 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | DESCRIPTION | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | | 0.1 | 36+/- | **1" GRAVEL** | | | | | | | |
| | | | | **FILL - CONCRETE FRAGMENTS WITH CLAY, SAND, AND BRICK FRAGMENTS**, brown and dark brown | | | 16 | 5-6-14 N=20 | 15.3 | | |
| | | | | | | | 18 | 3-2-16 N=18 | 81.5 | | |
| | | | | | | | 5 | 6-30-3 N=33 | 11.3 | | |
| | | | | | | | 15 | 5-7-8 N=15 | 17.9 | | |
| | | 13.5 | 22.5+/- | | | | | | | | |
| | | | | **FILL - SAND WITH BRICK FRAGMENTS**, brown | | | 15 | 3-3-3 N=6 | 7.7 | | |
| | | | | | | | 15 | 4-5-6 N=11 | 3.1 | | |
| | | 25.0 | 11+/- | | | | | | | | |
| 5 | | | | **SAND (SP)**, trace silt, fine to coarse grained, gray, loose | | | 8 | 3-3-4 N=7 | 5.3 | | |
| | | | | | | | 18 | 2-3-4 N=7 | 4.6 | | |
| | | | | very loose at 43.5 feet | | | 18 | 4-2-4 N=6 | 4.1 | | |
| | | | | | ▽ | | 15 | 5-5-4 N=9 | 3.6 | | |
| | | | | | | | 18 | 1-2-1 N=3 | | | |
| | | | | | | | 18 | 3-2-2 N=4 | | | |
| | | | | | | | 8 | 2-3-4 N=7 | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *39 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-23-2021 | Boring Completed: 06-23-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-312



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Pier 14
Latitude: 39.1150° Longitude: -94.5784°
Station: 22+01
Approximate Surface Elev.: 36 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | ELEVATION (Ft.) | DESCRIPTION | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | | | **SAND (SP)**, trace silt, fine to coarse grained, gray, loose *(continued)* | | | 8 | 4-4-5 N=9 | | | |
| | | | | medium dense to dense below 63.5 feet | | | 12 | 15-17-25 N=42 | | | |
| | | | | | | | 14 | 3-3-10 N=13 | | | |
| | | | | | | | 0 | 6-7-9 N=16 | | | |
| | | | | | | | 12 | 15-31-30 N=61 | | | |
| | | | | | | | 10 | 13-13-7 N=20 | | | |
| | | | | trace gravel below 88.5 feet | | | 8 | 23-23-12 N=35 | | | |
| | | 95.0 | -59+/- | | | | | 31-30-35 N=65 | | | |
| | | | | ***Boring Terminated at 95 Feet*** | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *39 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-23-2021 | Boring Completed: 06-23-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 176 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

PETER YOUNG NUMBER PE-2016017701 PROFESSIONAL ENGINEER STATE OF MISSOURI
5/24/23

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BORING DATA**

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

8:08:31 PM
User:USPY681677
U:\KCMO\wsp_pd-us_pw-02\wsp__peter.young\d0349595\B_S028B32_89005595_BORING_12.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# BORING LOG NO. B-313



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Abutment 2
Latitude: 39.1151° Longitude: -94.5782°
Station: 22+85
Approximate Surface Elev.: 40 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | DEPTH / ELEVATION (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0.3 / 39.5+/- **3" ROOT ZONE** | | | | | | | |
| | | | **FILL - LEAN CLAY WITH BRICK AND CONCRETE FRAGMENTS**, brown and gray | | SS | 15 | 5-4-6 N=10 | 16.1 | | |
| | | 5 | | | SS | 15 | 2-2-2 N=4 | 20.0 | | |
| | | | | | SS | 10 | 16-8-15 N=23 | 14.3 | | |
| | | 10 | | | SS | 14 | 2-3-7 N=10 | 22.5 | | |
| | | | 13.5 / 26.5+/- | | | | | | | |
| 2 | | 15 | **FILL - SAND**, trace brick fragments, brown and gray | | SS | 14 | 3-4-5 N=9 | 4.7 | | |
| | | 20 | | | SS | 12 | 3-3-5 N=8 | 6.9 | | |
| | | | clayey below 23.5 feet | | SS | 18 | 3-4-5 N=9 | 22.8 | | |
| | | 25 | | | | | | | | |
| | | | 30.0 / 10+/- | | | | | | | |
| 5 | | 30 | **SILTY SAND (SM)**, fine grained, gray, very loose to loose | | SS | 15 | 3-4-5 N=9 | 24.2 | | |
| | | 35 | | | SS | 10 | 2-2-2 N=4 | 15.3 | | |
| | | | | ▽ | SS | 5 | 2-2-3 N=5 | 23.4 | | |
| | | 40 | | | SS | 18 | 1-1-3 N=4 | 40.8 | | |
| | | 45 | | | | | | | | |
| | | | 48.5 / -8.5+/- | | | | | | | |
| 6 | | 50 | **SAND (SP)**, fine to coarse grained, gray, medium dense | | SS | 15 | 6-7-8 N=15 | 29.6 | | |
| | | 55 | | | SS | 10 | 7-8-9 N=17 | | | |

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *40 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-21-2021 | Boring Completed: 06-22-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

# BORING LOG NO. B-313



**PROJECT:** Bike and Pedestrian Bridge

**CLIENT:** WSP USA, Inc.
Kansas City, Missouri

**SITE:** Grand Blvd from E 2nd St to Oak St
Kansas City, Missouri

LOCATION See Exploration Plan
Abutment 2
Latitude: 39.1151° Longitude: -94.5782°
Station: 22+85
Approximate Surface Elev.: 40 (Ft.) +/-

| MODEL LAYER | GRAPHIC LOG | DEPTH (Ft.) | DEPTH / ELEVATION (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (in.) | FIELD TEST RESULTS | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | | | **SAND (SP)**, fine to coarse grained, gray, medium dense *(continued)* | | | | | | | |
| | | 60 | | | SS | 5 | 4-4-6 N=10 | | | |
| | | 65 | | | SS | 7 | 4-4-6 N=10 | | | |
| | | | dense at 68.5 feet | | SS | 15 | 11-16-17 N=33 | | | |
| | | 70 | | | SS | 10 | 9-8-6 N=14 | | | |
| | | 75 | | | | | | | | |
| | | | | | SS | 8 | 17-13-13 N=26 | | | |
| | | 80 | | | SS | 8 | 11-12-13 N=25 | | | |
| | | 85 | | | | | | | | |
| | | | | | SS | 8 | 12-13-8 N=21 | | | |
| | | 90 | | | SS | 14 | 18-9-25 N=34 | | | |
| | | 95 | dense, trace gravel below 93.5 feet | | | | | | | |
| | | | 96.5 / -56.5+/- | | | | | | | |
| 8 | | 100 | **SHALE**, gray, highly to moderately weathered | | SS | 2 | 50/2" | 14.7 | | |
| | | 105 | | | SS | 2 | 50/2" | 13.9 | | |
| | | | 108.5 / -68.5+/- | | | | | | | |
| | | | ***Boring Terminated at 108.5 Feet*** | | SS | 0 | 50/1" | | | |

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
0'-40' hollow-stem flight augers
below 40': mud rotary

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan and converted to KCMO datum

Notes:

**WATER LEVEL OBSERVATIONS**

▽ *40 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-21-2021 | Boring Completed: 06-22-2021
Drill Rig: 556 | Driller: SF
Project No.: 02205298

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02205298 STREETCAR BIKEPE.GPJ TERRACON_DATATEMPLATE.GDT 10/20/21

SHEET NO. 177 | TOTAL SHEETS 187
DATE PREPARED 5/24/2023
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
PETER YOUNG
NUMBER PE-2016017701
PROFESSIONAL ENGINEER
5/24/23

DESCRIPTION | DATE

CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

**BORING DATA**

8:10:07 PM
User: PRY8816777
C:\Users\pry8816777\Documents\wsp_pw-02.wsp.pw_peter.young\d0349595\D_S028B32_89005595_BORING_13.dgn

Detailed QYF 8/2022
Checked PRY 8/2022

Note: This drawing is not to scale. Follow dimensions.

# LIGHTING IMPROVEMENTS FOR
# GRAND BOULEVARD BRIDGE

# CITY OF KANSAS CITY, MISSOURI

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| A | AMPERES, AIR (COMPRESSED) | OC | ON CENTER |
| AF | AMPERE FUSE | N/A | NOT APPLICABLE |
| AFF | ABOVE FINISHED FLOOR | N/C | NORMALLY CLOSED |
| AFG | ABOVE FINISHED GRADE | NIC | NOT IN CONTRACT |
| AIC | AMPERE INTERRUPTING CURRENT | N/O | NORMALLY OPEN |
| AL | ALUMINUM | PH, Ø | PHASE |
| AWG | AMERICAN WIRE GAUGE | PNL | PANEL |
| BKR | BREAKER | PROVIDE | FURNISH AND INSTALL |
| C | CONDUIT | QTY | QUANTITY |
| CD | CANDELA | REV | REVISION |
| CKT | CIRCUIT | U/G | UNDERGROUND |
| DN | DOWN | UL | UNDERWRITERS LABORATORIES, INC. |
| ETR | EXISTING TO REMAIN | UNO | UNLESS NOTED OTHERWISE |
| FLA | FULL LOAD AMPS | V | VOLT(S) |
| GC | GENERAL CONTRACTOR | W | WIRE |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER | W/ | WITH |
| G, GND | GROUND | W/O | WITHOUT |
| GRS | GALVANIZED RIGID STEEL | WP | WEATHERPROOF |
| JB, J-BOX | JUNCTION BOX | XFMR | TRANSFORMER |
| kcmil | 1000 CIRCULAR MILS | XL | EQUIPMENT LOCATION TO BE |
| kV | KILOVOLT | | RELOCATED. RE: NEW PLANS |
| kVA | KILOVOLT-AMPS | XN | NEW LOCATION OF RELOCATED |
| kW | KILOWATT | | EQUIPMENT |
| LF | LINEAR FEET | XR | EQUIPMENT TO BE REMOVED. |
| MAX | MAXIMUM | | |
| MCB | MAIN CIRCUIT BREAKER | | |
| MDP | MAIN DISTRIBUTION PANEL | | |
| MFR | MANUFACTURER | | |
| MIN | MINIMUM | | |
| MLO | MAIN LUGS ONLY | | |
| MOCP | MAXIMUM OVERCURRENT PROTECTION | | |
| MTD | MOUNTED | | |

## ROADWAY LIGHTING LEGEND

EXISTING POLE, BASE, ARM, AND LUMINAIRE. REFER TO NOTES AND SCHEDULES.

XR — DEMOLITION NOTE
KCMO# — EXISTING POLE NUMBER
CKT# — EXISTING CIRCUIT NUMBER (IF APPLICABLE)

EXISTING POLE, BASE, ARM, AND LUMINAIRE. REFER TO NOTES AND SCHEDULES.

XR — DEMOLITION NOTE
KCMO# — EXISTING POLE NUMBER
CKT# — EXISTING CIRCUIT NUMBER (IF APPLICABLE)

NEW DECORATIVE PEDESTRIAN LIGHTING POLE LOCATION.
RE: PLANS AND SCHEDULES.

# — NEW FIXTURE NUMBER
# — LUMINAIRE/POLE ASSEMBLY
CKT# — NEW CIRCUIT NUMBER

NEW LIGHTING CONTROLLER

JX NEW INGRADE JUNCTION BOX. SECOND LETTER INDICATES J-BOX TAG

NEW EXPOSED CONDUIT AND WIRE.

NEW UNDERGROUND CONDUIT AND WIRE.

ETR — CONDUIT AND WIRE, EXISTING TO REMAIN

HOMERUN TO PANELBOARD, ARROWS INDICATE NUMBER OF CIRCUITS, HASH MARKS INDICATE NUMBER OF CONDUCTORS. INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD.
P1-3,5,7

EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION OR BARE)

## SUMMARY OF QUANTITIES - PEDESTRIAN LIGHTING

| ITEM NUMBER | | ITEM DESCRIPTION | NOTE | MATERIAL UNIT | PROPOSED QUANTITY | AS BUILT QUANTITY |
|---|---|---|---|---|---|---|
| APWA | | CONTROLLER LIGHTING EQUIPMENT ENCLOSURE | 2CKT | EA | 1 | |
| APWA | | CONTROLLER PEDESTAL FOUNDATION | | CY | 1 | |
| APWA | | 3/4" X 8FT COPPERWELD ROD | | EA | 1 | |
| APWA | | UNFUSED KIT FOR GROUND WIRE | | EA | 17 | |
| APWA | | FUSE HOLDERS | | EA | 34 | |
| APWA | | IDENTIFICATION TAGS (LUMINAIRE POLES) | | EA | 17 | |
| APWA | | CABLE RETAINER ASSEMBLY - PEDESTRIAN | | EA | 17 | |
| APWA | | DECORATIVE LUMINAIRE | SL1 | EA | 17 | |
| APWA | | POLE 14 FT SENTRY ELECTRIC ALUMINUM | SP1 | EA | 17 | |
| APWA | 1 | #10 1-CONDUCTOR RHH/RHW/USE COPPER | STLT CKT IN POLE | LF | 670 | |
| APWA | 1 | #8 1-CONDUCTOR RHH/RHW/USE COPPER | STLT CKT | LF | 4220 | |
| APWA | | BRIDGE JUNCTION BOX | | EA | 17 | |
| APWA | | INGRADE JUNCTION BOX PREFORMED CLASS II | | EA | 1 | |
| APWA | | TRENCHING AND BACKFILL | | LF | 250 | |
| APWA | 1 | 3" PVC SCHEDULE 40 CONDUIT | SERVICE | LF | 180 | |
| APWA | 1 | 2" PVC SCHEDULE 40 CONDUIT | STLT CKT | LF | 1320 | |

## CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE KANSAS CITY, MO, DEPARTMENT OF PUBLIC WORKS STANDARD CONSTRUCTION AND MATERIALS SPECIFICATION, DIVISION II / SECTION 2800, DIVISION V / SECTION 5800, SUPPLEMENTAL CHANGES AND OTHER APWA SECTIONS REQUIRED TO RESTORE THE CITY'S "RIGHT OF WAY" TO IT'S ORIGINAL CONDITION.
2. THE LIGHTING ON GRAND BOULEVARD BRIDGE WAS DESIGNED PER ANSI/IES RP-8-18, TABLE 16-1 (RECOMMENDED VALUES FOR HIGH PEDESTRIAN ACTIVITY AREAS) WITH A LLF-.68. THE LAYOUT WAS BASED ON SENTRY ELECTRIC LUMINAIRE: SBP-NB-LEDV29B-1.05A-830-DR-KHT2-BK, TYPE II OPTICS 58WATT (3000K), MULTI-VOLT, 7-PIN RECEPTACLE WITH SHORTING CAP, IP66 RATED AND BLACK IN COLOR PER SPECS , UNLESS NOTED OTHERWISE ON PLANS. ALL LUMINAIRES SHALL BE INSTALLED, ORIENTED, AND LEVELED PER MANUFACTURER'S RECOMMENDATIONS.
3. THE NEW POLES SAL-6R4.5-14'-BK SHALL HAVE A FINISH TO MATCH THE LUMINAIRES. LUMINAIRE MOUNTING HEIGHTS SHALL BE 16.5FT ABOVE BRIDGE DECK, UNLESS NOTED OTHERWISE ON THE PLANS. THE ALUMINIUM POLE, AND ALL INCIDENTAL PARTS SHALL BE FINISHED WITH HOT DIP GALVANIZING IN ACCORDANCE WITH ASTM A123. ALL COLOR FINISHES FOR NEW INSTALLATIONS, AS REQUIRED BY PLANS, MUST BE APPLIED BY THE MANUFACTURER AFTER GALVANIZING. ALL FASTENERS SHALL BE OF 300 SERIES STAINLESS STEEL PER ASTM A276 OR OF CARBON STEEL GALVANIZED IN ACCORDANCE WITH ASTM A153.
4. ALL DISTRIBUTION CABLE SHALL BE INSTALLED IN SCHEDULE 40, 2" PVC CONDUIT UNLESS NOTED OTHERWISE IN PLANS AND SCHEDULES.
5. CABLE USED WITHIN POLES SHALL BE 3-#10, TYPE RHW/USE, 600VOLTS RATED, COPPER STRANDED, U.L. LISTED AND COLOR CODED RED, BLACK AND GREEN ACCORDING TO THE NEC FOR A GROUNDED 240V SYSTEM (SINGLE PHASE).
6. ALL WIRING AND OTHER COMPONENTS OF THE ELECTRICAL SYSTEM CONSTRUCTION SHALL MEET OR EXCEED THE LATEST REVISION OF NATIONAL ELECTRICAL CODE (NEC) AND NATIONAL ELECTRICAL SAFETY CODE (NESC) STANDARDS.
7. REFER TO SCHEDULES FOR DISTRIBUTION CABLE SIZE, TYPE RHH/RHW/USE, 600 VOLT, COPPER STRANDED AND COLOR CODED RED, BLACK AND GREEN (APWA 2802.8). THE LIGHTING SYSTEM SHALL OPERATE AT 240 VOLTS (SINGLE PHASE).
8. PROVIDE AND INSTALL IN EACH POLE BASE, 3 SINGLE-POLE, SET SCREW, IN-LINE, BREAKAWAY FUSE HOLDERS. USE BUSSMAN (OR APPROVED EQUAL) MODEL NO. HEB-JW-RYC AND HEB-JW-RLC-J (LAST POLE). FOR THE 2 'HOT' BREAKAWAY CONDUCTORS, PLACE A 10 AMP KTK FUSE IN EACH BREAKAWAY FUSEHOLDER AND A NNB COPPER SLUG IN THE SYSTEM GROUND FUSEHOLDER.
9. INDIVIDUAL AND SYSTEM GROUNDS SHALL BE INSTALLED ON ALL CIRCUITS (POLE GROUNDING RODS AND A GROUND WIRE FROM POLE TO POLE). GROUNDING SHALL COMPLY WITH SECTION 2808 OF STANDARDS NOTED ABOVE AND WITH THE MOST CURRENT EDITION OF THE NEC.
10. ALL CONDUIT CROSSINGS SHALL BE INDICATED WITH AN ALUMINUM MARKER IN THE TOP OF CURB. ALUMINUM MARKERS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR. RE: ELECTRICAL DETAILS.
11. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND PIPE LINES, CONDUITS, STRUCTURES AND OVERHEAD LINES BY CONTACTING THE OWNERS OF THE UTILITIES. THE UTILITIES AS SHOWN ON THIS DRAWING WERE DEVELOPED FROM THE INFORMATION AVAILABLE. THIS IS NOT IMPLIED NOR INTENDED TO BE THE COMPLETE INVENTORY OF THE UTILITIES IN THIS AREA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES (WHETHER SHOWN OR NOT) AND PROTECT SAID UTILITIES FROM ANY DAMAGE. CONTRACTOR SHALL CALL 1-800-DIG-SAFE PRIOR TO PROJECT EXCAVATION. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED BY THE RESPECTIVE UTILITY OWNERS PRIOR TO ANY ON-SITE EXCAVATION. KEY LOCATIONS AS NOTED SHALL BE LOCATED VERTICALLY BY UTILITY OWNERS AND/OR UTILITY OWNER SHALL BE PRESENT ON-SITE FOR LOCATION PRIOR TO EXCAVATION. CONTRACTOR SHALL COORDINATE ANY UTILITY CONFLICTS WITH RESPECTIVE UTILITY COMPANY, THE CITY, AND THE ENGINEER. REQUIRED RELOCATES WILL BE PAID BY THE CONTRACTOR.
12. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO INSPECTION AND APPROVAL OF THE KANSAS CITY, MISSOURI, STREETLIGHTING, PUBLIC WORKS DEPARTMENT. COORDINATE A FINAL JOINT INSPECTION WITH THE MAINTENANCE SUPERVISOR, BRYAN CARTER AT (816) 513-9857.
13. PRIOR TO ORDERING STRUCTURES, SHOP DRAWINGS SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL. UPON APPROVAL, THESE DRAWINGS SHALL BE SUBMITTED TO THE CONSTRUCTION SECTION OF PUBLIC WORKS STREETLIGHTING FOR REVIEW.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED PERMITS, PAYMENTS OF ALL FEES AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
15. ALL CONSTRUCTION OF IMPROVEMENTS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF KANSAS CITY, MISSOURI, AND OF THE KANSAS CITY METROPOLITAN CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION OF THE CONSTRUCTION SITE TO CITY SPECIFICATIONS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ANY DAMAGE, INCLUDING BUT NOT LIMITED TO, LANDSCAPING, SPRINKLER SYSTEMS, WATER, SEWER, CURBS AND SIDEWALK, GAS MAIN, ETC. CAUSED BY THE CONSTRUCTION.
17. CONTRACTOR SHALL FIELD CHECK ALL DIMENSIONS, COORDINATES AND ELEVATIONS BEFORE PROCEEDING WITH NEW WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES IMMEDIATELY. NO NEW CONSTRUCTION SHOULD BE PERFORMED BY 'SCALING' FROM THE PLANS.
18. ALL NEW LIGHTING EQUIPMENT INSTALLED BELOW OVERHEAD POWER LINES SHALL HAVE A 5FT MINIMUM CLEARANCE BETWEEN EQUIPMENT AND POWER LINE. COORDINATE ALL REQUIREMENTS WITH KCP&L PRIOR TO INSTALLATION.
19. LUMINAIRE AND CONTROLLER CABINET LABELS: THE LABELS SHALL BE KCMO-2X16-ADDS, OR EQUAL. CONTACT WILLIAM FRICK & COMPANY AT (847) 918-3700. THE CONTRACTOR SHALL FURNISH AND INSTALL LUMINAIRE AND CONTROLLER CABINET IDENTIFICATION LABELS ACCORDING TO THE CONSTRUCTION PLANS. IDENTIFICATION LABELS SHALL CONSIST OF THREE LETTERS AND FOUR NUMERALS IN VERTICAL ORIENTATION WITH THE LETTERS AT THE TOP SO AS TO READ DOWNWARD. LEGEND SHALL BE 2 INCH SERIES "C" UPPER CASE BLACK CHARACTERS ON SILVER RETRO-REFLECTIVE SHEETING WITH PRESSURE SENSITIVE ADHESIVE BACKING, AS PRESCRIBED FOR USE ON STANDARD HIGHWAY SIGNS IN THE FHWA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. LABELS FOR DECORATIVE POLES MUST BE COORDINATED WITH THE STREETLIGHTING SECTION AT 816.513.9500. STEEL POLES SHALL BE LABELED BY AFFIXING SELF-ADHESIVE DECAL DIRECTLY ON THE POLE. THE LABEL SHALL BE POSITIONED ON THE VERTICAL AXIS OF THE POLE FACING THE STREET AND 8-10FT ABOVE THE PAVEMENT SURFACE. LABELS ON CABINETS SHALL BE POSITIONED NEAR THE TOP OF THE DOOR ADJACENT TO THE DOOR HINGE.
20. THE CONTRACTOR SHALL INSTALL A CABLE RETAINER ASSEMBLY MOUNTED BETWEEN A LUMINAIRE TYPE POLE AND FOUNDATION ANCHOR. THE RETAINER IS DESIGNED TO SECURE THE ELECTRICAL CONDUCTORS TO PREVENT CONDUCTOR THEFT. RE: ELECTRICAL DETAILS.
21. PULL AND JUNCTION BOXES SHALL BE PLACED AS SHOWN ON THE APPROVED PLANS, SPECIAL PROVISIONS, STANDARD DRAWINGS AND CONTRACT DOCUMENTS. BOXES SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. PULL AND JUNCTION BOXES SHALL BE EITHER 18"L X 11"W X 12"D OR 12"L X 12"W X 12"D AND MEET THE FILL AND BENDING RADIUS REQUIREMENTS OF THE NFPA 70 (NEC). PULL AND JUNCTION BOXES SHALL BE HEAVY DUTY, PRECAST POLYMER CONCRETE, AND SHALL MEET THE LATEST REVISION OF ANSI/SCTE77 WITH TIER 8 PERFORMANCE SPECIFICATION REQUIREMENTS FOR BOTH BOX AND COVER. COVERS FOR PULL BOXES SHALL HAVE TEXT STATING 'STREET LIGHTING' AND INDICATE THE TIER DESIGNATION OF THE BOX. IN JOINT USE BOXES, CONDUCTORS SHALL BE CLEARLY AND PERMANENTLY TAGGED AS STREETLIGHT CONDUCTORS. ADDITIONAL PULL BOXES MY BE INSTALLED WHEN APPROVED BY THE CITY. PULL AND JUNCTION BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS, SIDEWALKS OR OTHER AREAS WHERE THEY WILL BE SURROUNDED BY CONCRETE OR ASPHALT. TO AVOID CONDUCTOR THEFT, A CONDUCTOR RUN SHALL NOT TERMINATE IN A PULL OR JUNCTION BOX AT BOTH ENDS. COVERS SHALL BE SECURED WITH VANDAL-RESISTANT BOLTS.
22. DURING THE PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE THE CITY OF KANSAS CITY, MISSOURI, THE CONTRACTOR IS RESPONSIBLE FOR MAKING ANY NECESSARY REPAIRS ARISING OUT OF DEFECTIVE WORKMANSHIP OR MATERIALS. THE CONTRACTOR SHALL CONDUCT AN INSPECTION OF THIS PROJECT 11 MONTHS AFTER THE PROJECT HAS BEEN ACCEPTED TO DETERMINE WHAT REPAIRS NEED TO BE MADE.
23. CONTRACTOR SHALL GIVE NOTICE TO THE CITY, POLICE, AND UTILITY DEPARTMENTS 48 HOURS IN ADVANCE OF BEGINNING CONSTRUCTION WORK ON ANY EXISTING STREET. NO EXCAVATION SHALL BE LEFT UNATTENDED AND UNPROTECTED.
24. CONTRACTOR SHALL NOT REMOVE ANY TREE OR FENCE UNLESS OTHERWISE MARKED FOR REMOVAL ON THE PLANS WITHOUT PRIOR APPROVAL.
25. WHERE PIPE IS TO BE INSTALLED IN AREAS OF FILL, SOIL SHALL BE COMPACTED TO 90% OF STANDARD PROCTOR TO A MINIMUM OF 18" ABOVE THE TOP OF THE PIPE PRIOR TO EXCAVATION OF TRENCH.
26. NO STONES GREATER THAN 1 FOOT ALONG THE LONGEST AXIS WILL BE ALLOWED IN TRENCH BACKFILL.

## INDEX TO SHEETS


E001 LIGHTING GENERAL NOTES
E002 BRIDGE LIGHTING SCHEDULES
E200 BRIDGE LIGHTING NEW PLAN 1
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E202 BRIDGE LIGHTING NEW PLAN 3
E300 BRIDGE LIGHTING DETAILS
E301 BRIDGE LIGHTING DETAILS
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E402 BRIDGE LIGHTING PHOTOMETRIC PLAN 3


## UTILITES

THE NAME AND NUMBER OF UTILITY COMPANIES, IF EVEN REMOTELY INVOLVED WITH THIS PROJECT ARE AS FOLLOWS:

| | |
|---|---|
| MISSOURI ONE-CALL SYSTEM | 1-800-344-7483 |
| AT&T | 1-800-246-8464 |
| EVERGY | 816-472-5275 |
| MISSOURI PUBLIC SERVICE/ENERGYONE | 816-353-5000 |
| KANSAS CITY PUBLIC WORKS. | 816-513-2627 |
| MISSOURI GAS ENERGY. | 1-800-582-0000 |
| KANSAS CITY WATER SERVICES DEPARTMENT. | 816-513-1313 |

CALL BEFORE YOU DIG - DRILL - BLAST
1-800-344-7483
(TOLL FREE)
MISSOURI ONE CALL SYSTEM, INC.

## OWNER'S CERTIFICATE

I have reviewed these plans and understand what is proposed. The work will be accomplished in 1 contract with a work breakdown as follows:

1. Grand Boulevard Pedestrian Bridge Lighting Installation

Any incidental work not specifically permitted (i.e. final cleanup) will be completed by the Contractor.

Owner/Developer: _____ Date _____

## ENGINEER

I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN DESIGNED, AND THESE PLANS PREPARED, IN ACCORDANCE WITH THE DESIGN CRITERIA OF KANSAS CITY, MISSOURI, IN CURRENT

EXCEPTIONS: NONE

KATHI S. VANDEL
MISSOURI PROFESSIONAL ENGINEER
NO. E-2000147833

5.24.23
DATE

## REVIEWED FOR CODE COMPLIANCE
## CITY OF KANSAS CITY, MISSOURI

BY (REVIEWER): _____

DATE: _____

DEPARTMENT OF CITY PLANNING AND DEVELOPMENT

CONSTRUCTION PERMIT MUST BE SECURED WITHIN ONE YEAR OF REVIEW.

☒ NOT FOR CONSTRUCTION
☐ REVIEWED FOR CONSTRUCTION

CITY PROJECT NUMBER: 89005595

SHEET NO. 178 | TOTAL SHEETS 187
DATE PREPARED 5/24/23
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
KATHI S. VANDEL
NUMBER E-2000147833
REGISTERED PROFESSIONAL ENGINEER
5/24/2023

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

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.


CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 WYANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**LIGHTING GENERAL NOTES**

TIMES SHEET FILES

# ITEMIZED QUANTITY SCHEDULE

| ROADWAY ASSEMBLY NUMBER RA# (RE: PLANS) | | KCMO POLE NUMBER | DESCRIPTION OF NEW WORK | INGRADE PULLBOX | | BRIDGE PULLBOX | | STLT CTL | | **SL1** LUMINAIRE DECORATIVE LED NATURAL | | | **SP1** LIGHTING POLE ASSEMBLY ALUM | **SI1** IDENTIF TAGS (EA) | | | **SF1** FUSE HOLDERS (EA) | | | **SG1** UNFUSED KIT FOR GND WIRE (EA) | | | **SR1** CABLE RETAINER (EA) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ETR | NEW | ETR | NEW | 2CKT | 4CKT | ETR | RELO | NEW | NEW | ETR | RELO | NEW | ETR | RELO | NEW | ETR | RELO | NEW | ETR | RELO | NEW |
| | | GRAND BOULEVARD BRIDGE | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 2 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 3 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 4 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 5 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 6 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 7 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 8 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 9 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 10 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 11 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 12 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 13 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 14 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 15 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 16 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | 17 | NP | | | | 1 | | | | | 1 | 1 | | | 1 | | | 2 | | | 1 | | | 1 |
| | | CONT A | NE | | | | | 1 | | | | | | | | | | | | | | | | | |
| | | JB18 | NE | | 1 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | **TOTAL** | | | 1 | | 17 | 1 | | | | 17 | 17 | | | 17 | | | 34 | | | 17 | | | 17 |

# EQUIPMENT LIST

EQUIPMENT LIST

| SYMBOL | MANUFACTURER | MODEL # | LAMP | COLOR TEMP | WATTS | VOLTAGE | FINISH | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CONTROLLERS | | | | | | | | | |
| CONT2 | PACIFIC UTILITY PRODUCTS<br><br>EQUAL:<br>MYERS OR MILBANK | #MHPD-KCMO-33-120/240VAC, 1PH, 3W, 100A (2CKT CONTROLLER) | N/A | N/A | | 120/240V | NATURAL | SERVICE EQUIPMENT ENCLOSURE, 120/240VAC, 1PH, 3W, 100A WITH A 10,000A SCCR RATING, 4-JAW METER SOCKET WITH 5TH CLIP, SURGE ARRESTER, TEST SWITCH, PE RECEPTACLE, BONDED AND INSULATED NEUTRAL, RAINPROOF TYPE NEMA 3R ENCLOSURE WITH ALUMINUM FINISH, TERMINAL BLOCK, 60A CLASS "J" FUSES, (2) 30A-WP CIRCUIT BREAKERS, 15A-1P CIRCUIT BREAKER AND (2) 30A SIEMENS ELECTRICALLY HELD CONTACTORS. | REFER TO MOST CURRENT KCPL + KCMO STANDARDS AND SPECS FOR DETAILS. |
| LUMINAIRES | | | | | | | | | |
| SL1 | SENTRY ELECTRIC OR APPROVED EQUIVALENT | SBP-NB-LEDV29B-1.05A-830-DR-KHT2-BK | LED | 3000K | 58W | 120-277V | BLACK | DECORATIVE LED PEDESTRIAN FIXTURE WITHCAST ALUMINUM HOUSING AND TYPE 2 REFLECTOR. PROVIDE INTEGRAL LED, 0-10V DIMMABLE DRIVER WITH UNIVERSAL VOLTAGE. PROVIDE 20kV/20kA SPD, 7 PIN PHOTOCONTROL RECEPTACLE AND RECEPTACLE FOR SHORTING CAP. PROVIDE FACTORY INSTALLED, ANSI C126.15 COMPLIANT, NEMA LABEL. | |
| POLES | | | | | | | | | |
| 14FT PEDESTRIAN | | | | | | | | | |
| SP1 | SENTRY ELECTRIC OR APPROVED EQUIVALENT | SAL-6R4.5-14'-BK | N/A | N/A | N/A | N/A | BLACK | ROUND TAPERED EXTRUDED ALUMINUM. POLE HEIGHT SHALL ALLOW FOR 14FT MOUNTING HEIGHT OF LUMINAIRE. POLE SHALL BE DESIGNED TO WITHSTAND 90MPH WINDS WITH A FIXTURE WEIGHTING UP TO 55LBS. PROVIDE ACCESS DOOR LOCATION ON SIDE OF POLE THAT IS ALONG BRIDGE. REFER TO IMPROVEMENT SCHEDULES FOR LUMINAIRE TYPE FOR THIS ASSEMBLY. | |
| ACCESSORIES | | | | | | | | | |
| SF1 | BUSSMAN OR APPROVED EQUAL | #HEB -JW-RYC AND #HEB-JW-RLC-J (LAST POLE) | | | | | | SINGLE-POLE, SET SCREW, IN-LINE BREAKAWAY FUSE HOLDERS. FOR THE (2) "HOT" BREAKAWAY CONDUCTORS, PLACE A 10 AMP KTK FUSE IN EACH BREAKAWAY FUSEHOLDER. | |
| SG1 | BUSSMAN OR APPROVED EQUAL | #HEB -JW-RYC AND #HEB-JW-RLC-J (LAST POLE) | | | | | | SINGLE-POLE, SET SCREW, IN-LINE BREAKAWAY FUSE HOLDERS. PLACE A NNB COPPER SLUG IN THE SYSTEM GROUND FUSEHOLDER. | |
| SR1 | PELCO OR APPROVED EQUAL | #SP-6224-GLV | | | | | | GALVANIZED STEEL CABLE RETAINER ASSEMBLY | RE: BRIDGE LIGHTING DETAILS |

GENERAL NOTES:

# ELECTRICAL IMPROVEMENTS SCHEDULE

| FROM | TO | C-C DIST | STREETLIGHT CONDUIT RIGID IN TRENCH | | | | STREETLT CONT. NO. | STREETLT CIRCUIT NO. | STREETLIGHT CABLE 8 AWG, 1 CONDUCTOR | | | | | IN POLE CABLE 10 AWG, 1 COND | | | BORING | TRENCHING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1" (LF) | 1-1/2" (LF) | 2" (LF) | 3" (LF) | | | COND QTY | WIRE LENGTH | ADJUST 5% C.C | ADJUST 6FT PB | BID TOTAL | WIRE LENGTH | ADJUST 5%/CON | BID TOTAL | (LF) | (LF) |
| | | | 0 | 0 | 0 | 0 | | | | 0 | 0 | | 0 | | 0 | 0 | 0 | 0 |
| GRAND BOULEVARD BRIDGE | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 2 | 3 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 3 | 4 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 4 | 5 | 73.00 | | | 73 | | A | 1 | 3 | 219 | 11 | | 233 | 37 | 2 | 39 | | |
| 5 | 6 | 76.00 | | | 76 | | A | 1 | 3 | 228 | 11 | | 242 | 37 | 2 | 39 | | |
| 6 | 7 | 76.00 | | | 76 | | A | 1 | 3 | 228 | 11 | | 242 | 37 | 2 | 39 | | |
| 7 | 8 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 8 | 9 | 73.00 | | | 73 | | A | 1 | 3 | 219 | 11 | | 233 | 37 | 2 | 39 | | |
| 9 | 10 | 72.00 | | | 72 | | A | 1 | 3 | 216 | 11 | | 230 | 37 | 2 | 39 | | |
| 10 | 11 | 78.00 | | | 78 | | A | 1 | 3 | 234 | 12 | | 249 | 37 | 2 | 39 | | |
| 11 | 12 | 78.00 | | | 78 | | A | 1 | 3 | 234 | 12 | | 249 | 37 | 2 | 39 | | |
| 12 | 13 | 76.00 | | | 76 | | A | 1 | 3 | 228 | 11 | | 242 | 37 | 2 | 39 | | |
| 13 | 14 | 77.00 | | | 77 | | A | 1 | 3 | 231 | 12 | | 246 | 37 | 2 | 39 | | |
| 14 | 15 | 82.00 | | | 82 | | A | 1 | 3 | 246 | 12 | | 261 | 37 | 2 | 39 | | |
| 15 | 16 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 16 | 17 | 75.00 | | | 75 | | A | 1 | 3 | 225 | 11 | | 239 | 37 | 2 | 39 | | |
| 17 | JB | 39.00 | | | 39 | | A | 1 | 3 | 117 | 6 | | 126 | 37 | 2 | 39 | | |
| JB | CONT A | 70.00 | | | 70 | | A | 1 | 3 | 210 | 11 | | 224 | | | | | 70 |
| CONT A | UTILITY | 180.00 | | | | 180 | | | | | | | | | | | | 180 |
| ALS W/ADJUSTMENT (SUM OF COLUMNS): | | | 0 | 0 | 1320 | 180 | | | | | | | 4212 | | | 660 | | 250 |
| **BID TOTAL (TO NEAREST 10):** | | | **0** | **0** | **1320** | **180** | | | | | | | **4220** | | | **670** | **0** | **250** |

# VOLTAGE DROP SCHEDULE

GRAND BOULEVARD BRIDGE: CIRCUIT A-1

**VOLTAGE DROP**

| POLE NO. FROM (#) | POLE NO. TO (#) | CABLE LENGTH (FT) | CURRENT DRAW (AMP) | AMPxFT. x2 (AMP-FT) | VOLTAGE DROP (VOLTS) | CUMUL. VOLTAGE DROP (VOLTS) | WIRE SIZE |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 75.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8CU |
| 2 | 3 | 75.00 | 0.48 | 72.30 | 0.06 | 0.06 | 8CU |
| 3 | 4 | 75.00 | 0.72 | 108.45 | 0.08 | 0.14 | 8CU |
| 4 | 5 | 73.00 | 0.96 | 140.74 | 0.11 | 0.25 | 8CU |
| 5 | 6 | 76.00 | 1.21 | 183.16 | 0.14 | 0.39 | 8CU |
| 6 | 7 | 76.00 | 1.45 | 219.79 | 0.17 | 0.56 | 8CU |
| 7 | 8 | 75.00 | 1.69 | 253.05 | 0.20 | 0.76 | 8CU |
| 8 | 9 | 73.00 | 1.93 | 281.49 | 0.22 | 0.98 | 8CU |
| 9 | 10 | 72.00 | 2.17 | 312.34 | 0.24 | 1.22 | 8CU |
| 10 | 11 | 78.00 | 2.41 | 375.96 | 0.29 | 1.51 | 8CU |
| 11 | 12 | 78.00 | 2.65 | 413.56 | 0.32 | 1.83 | 8CU |
| 12 | 13 | 76.00 | 2.89 | 439.58 | 0.34 | 2.17 | 8CU |
| 13 | 14 | 77.00 | 3.13 | 482.48 | 0.37 | 2.55 | 8CU |
| 14 | 15 | 82.00 | 3.37 | 553.34 | 0.43 | 2.97 | 8CU |
| 15 | 16 | 75.00 | 3.62 | 542.25 | 0.42 | 3.39 | 8CU |
| 16 | 17 | 75.00 | 3.86 | 578.40 | 0.45 | 3.84 | 8CU |
| 17 | JB | 39.00 | 4.10 | 319.57 | 0.25 | 4.09 | 8CU |
| JB | CNTL A | 70.00 | 4.10 | 573.58 | 0.44 | 4.54 | 8CU |
| | | | 0.00 | 0.00 | 0.00 | 0.00 | 8CU |
| | | 1320.00 | NGEST RUN | **TOTAL DROP** | 4.54 | | |
| | 0 | 0.00 | 0.00 | 0.00 | 0.00 | | 1CU |

**VOLTAGE DROP SUMMARY**

| | | |
|---|---|---|
| **TRANSFORMER VOLTAGE** | **240** | **VOLTS** |
| **CONTROLER VOLTAGE** | **240.00** | **VOLTS** |
| **END OF LONGEST CIRCUIT** | **235.46** | **VOLTS** |
| **MAXIMUM VOLTAGE DRO** | **4.54** | **VOLTS** |
| **MAXIMUM % VOLTAGE DR** | **1.89** | **%** |

SHEET NO. 179 | TOTAL SHEETS 187

DATE PREPARED 5/24/23

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI KATHI S. LANDES NUMBER PE-2009018833 REGISTERED PROFESSIONAL ENGINEER 5/24/2023

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

| DATE | DESCRIPTION |
|---|---|
| . | . |

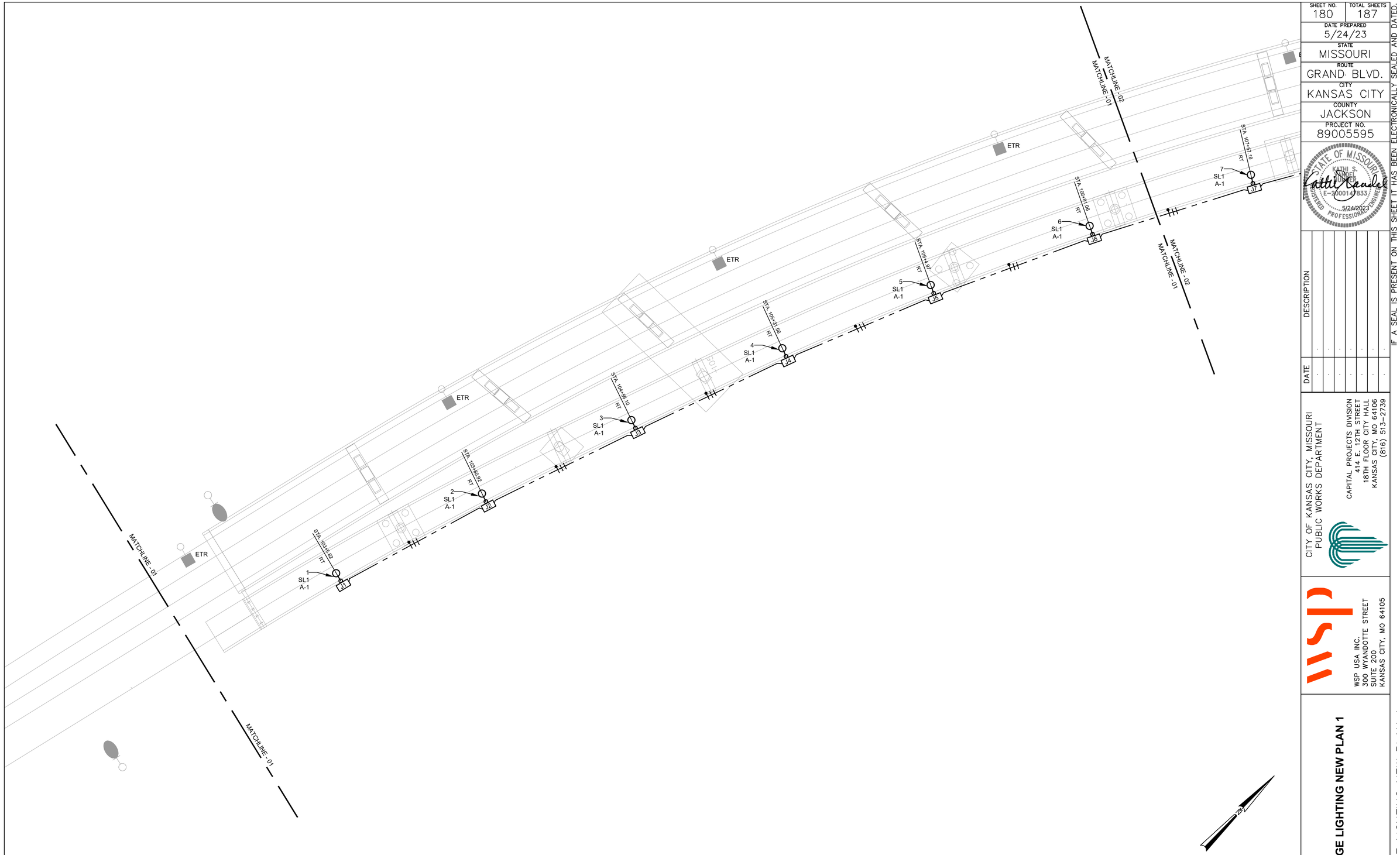
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
18TH FLOOR CITY HALL
KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 W ANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105

**BRIDGE LIGHTING SCHEDULES**

$TIME$
$USER$
$FILE$




| 1 | GRAND BOULEVARD BRIDGE - PARTIAL NEW LIGHTING PLAN |
|---|---|

0 10' 20' 30' 40' SCALE: 1" = 20'-0"

$TIME$
$USER$
$FILE$

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 180 | 187 |

DATE PREPARED
5/24/23

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
KATHI S. KINDEL
NUMBER
E-20001A833
REGISTERED PROFESSIONAL ENGINEER
5/24/2023

| DATE | DESCRIPTION |
|---|---|
| . | . |

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300 WYANDOTTE STREET
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**BRIDGE LIGHTING NEW PLAN 1**

1 GRAND BOULEVARD BRIDGE - PARTIAL NEW LIGHTING PLAN

0 10' 20' 30' 40' SCALE: 1" = 20'-0"

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 181 | 187 |

DATE PREPARED
5/24/23

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595

STATE OF MISSOURI
KATHI S. KINDEL
NUMBER E-20001 7833
REGISTERED PROFESSIONAL ENGINEER
5/24/2023

| DATE | DESCRIPTION |
|---|---|
| . | . |
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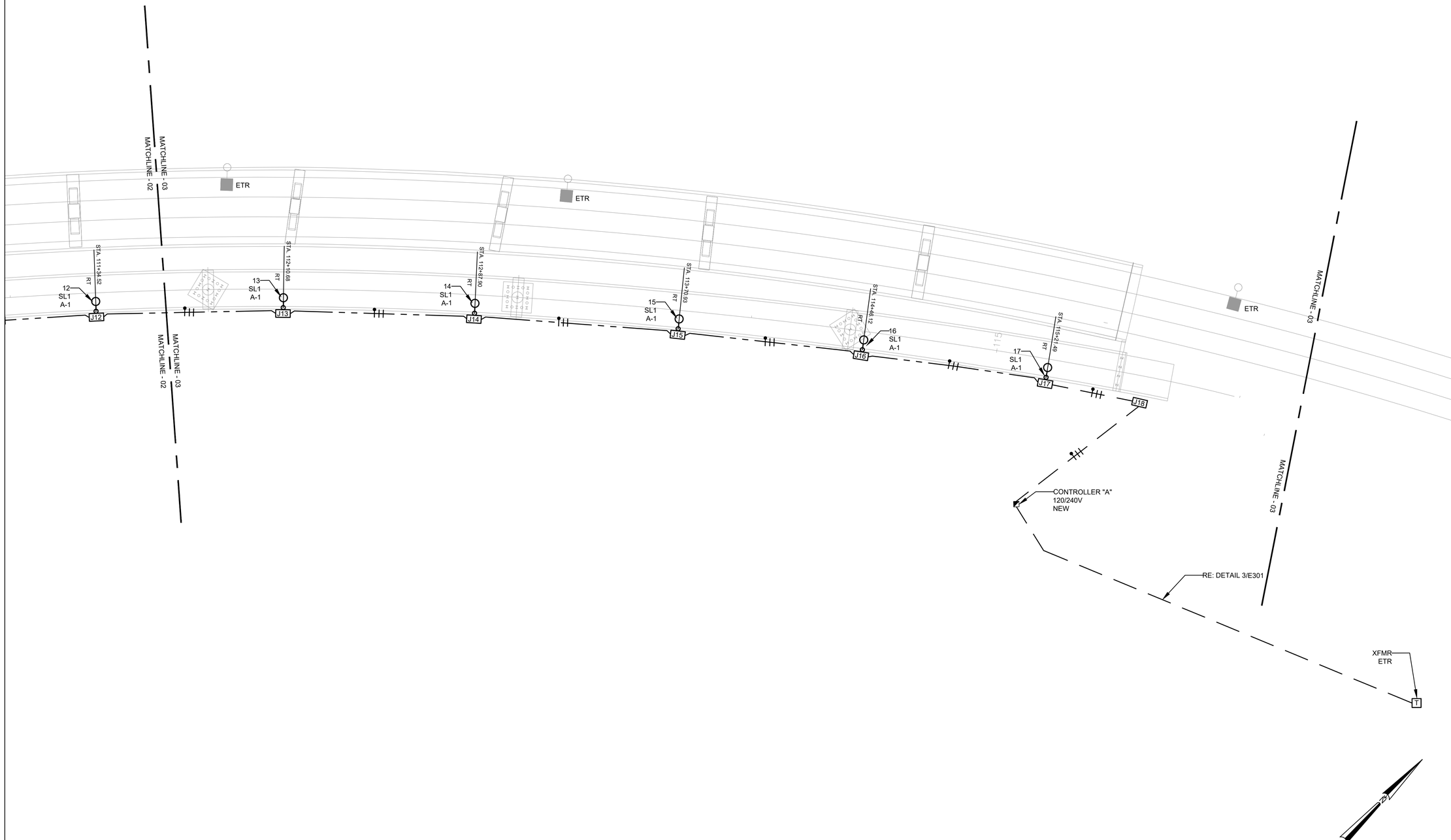
CITY OF KANSAS CITY, MISSOURI
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**BRIDGE LIGHTING NEW PLAN 2**

$TIME$
$USER$
$FILE$




1 GRAND BOULEVARD BRIDGE - PARTIAL NEW LIGHTING PLAN

0 10' 20' 30' 40' SCALE: 1" = 20'-0"

$TIME$
$USER$
$FILE$

SHEET NO. 182 | TOTAL SHEETS 187

DATE PREPARED 5/24/23

STATE MISSOURI

ROUTE GRAND BLVD.

CITY KANSAS CITY

COUNTY JACKSON

PROJECT NO. 89005595

STATE OF MISSOURI
KATHI S. KINDEL
NUMBER
E-2000147833
REGISTERED PROFESSIONAL ENGINEER
5/24/2023

| DATE | DESCRIPTION |
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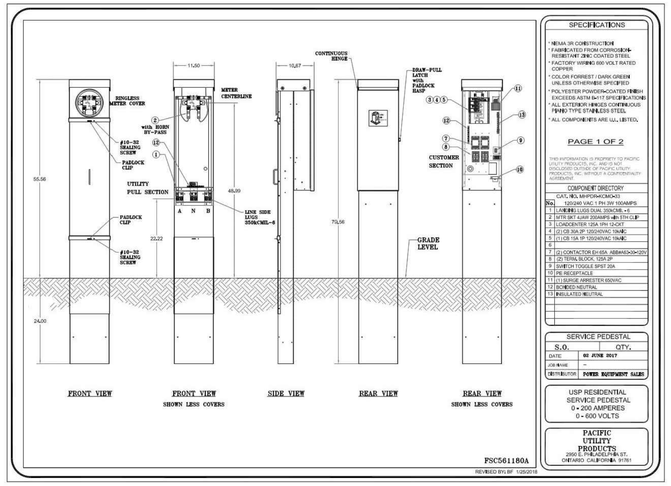
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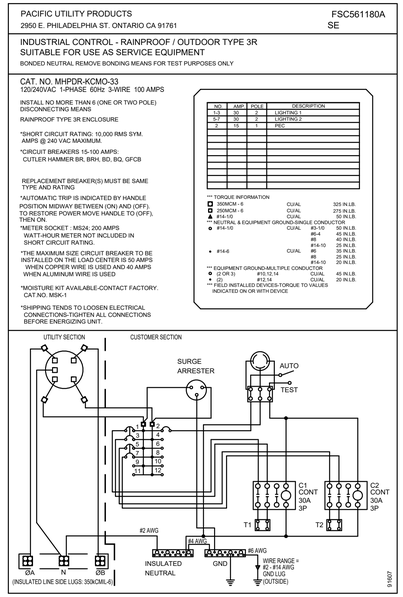
CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT

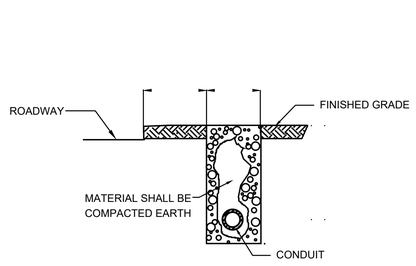
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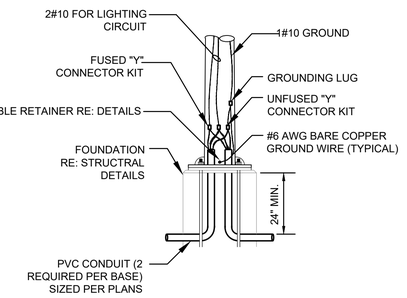
**BRIDGE LIGHTING NEW PLAN 3**




FOR TRENCHING IN STREET, REFER TO STANDARD KCMO DETAIL SR-1.




NOTES:
1. POLE WIRING SHALL BE STRANDED COPPER #10, 600V, COLOR PER NEC AND SPECIFICATIONS. TYPE RHH/RHW/USE.

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 183 | 187 |

DATE PREPARED
5/24/23

STATE
MISSOURI

ROUTE
GRAND BLVD.

CITY
KANSAS CITY

COUNTY
JACKSON

PROJECT NO.
89005595




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| DATE | DESCRIPTION |
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PUBLIC WORKS DEPARTMENT
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**BRIDGE LIGHTING DETAILS**

## 6 BRIDGE LIGHTING CONTROLLER DETAILS

SCALE: NO SCALE

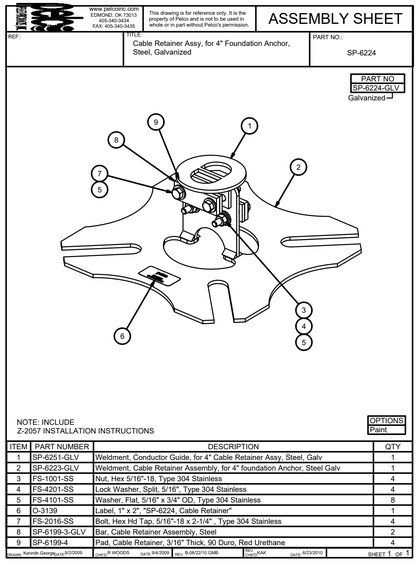
| NAME | A | POWER SUPPLY DISCONNECT | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LOCATION | GRAND BOULEVARD BRIDGE | | | | | | | |
| TYPE | NEW | | CABINET | CONTROL | MAIN BREAKER | METER | SERVICE BY UTILITY COMPANY | LIGHTING BREAKER | CIRCUIT LOAD |
| CIRCUIT | EXISTING LABEL | NEW LABEL | VOLTAGE | BREAKER | | | | | |
| | N/A | | 240, 1P | 15A | 100A, 2P | NO | NEW | 2-CKT | (MAX. 3840EA) |
| A-1 | N/A | BRIDGE PEDESTRIAN LIGHTS | | | | | | 30A, 2P | 1229 |
| A-2 | N/A | SPARE | | | | | | 30A, 2P | 0 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | TOTAL (VA) | 1229 |
| | | | | | | | | TOTAL (A) | 5.1 |

## 5 BRIDGE LIGHTING CONTROLLER SCHEDULE

SCALE: NO SCALE

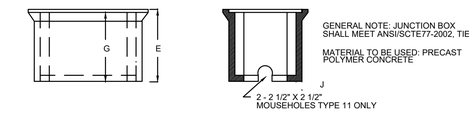
## 4 TRENCH DETAIL

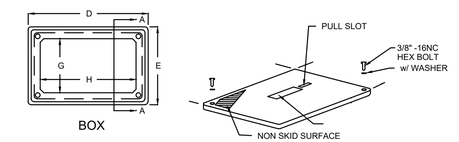
SCALE: NO SCALE




## 3 CABLE RETAINER DETAIL

SCALE: NO SCALE




| TYPE | DIMENSIONS (IN.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | J | K |
| II | 18 1/2 | 11 1/2 | 3/4 | 20 1/2 | 13 1/2 | 12 | 10 1/4 | 17 1/4 | 3/8 | 11 1/4 |

PULL BOX

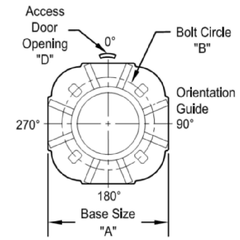
PULL OR JUNCTION BOXES: PULL AND JUNCTION BOXES SHALL BE PLACED AS SHOWN ON THE APPROVED PLANS, SPECIAL PROVISIONS, STANDARD DRAWINGS AND CONTRACT DOCUMENTS. BOXES SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. PULL AND JUNCTION BOXES SHALL BE EITHER 20 1/2" L X 13 1/2" W X 10 1/4" D OR 12" L X 12" W X 12" D AND MEET THE FILL AND BENDING RADIUS REQUIREMENTS OF NFPA 70 (NEC). PULL AND JUNCTION BOXES SHALL BE HEAVY DUTY, PRECAST POLYMER CONCRETE, AND SHALL MEET THE LATEST REVISION OF ANSI/SCTE77 WITH TIER 8 PERFORMANCE SPECIFICATION REQUIREMENTS FOR BOTH BOX AND COVER. COVERS FOR PULL BOXES SHALL HAVE TEXT STATING 'STREET LIGHTING' AND INDICATE THE TIER DESIGNATION OF THE BOX. IN JOINT USE BOXES, CONDUCTORS SHALL BE CLEARLY AND PERMANENTLY TAGGED AS STREETLIGHT CONDUCTORS. ADDITIONAL PULL BOXES MAY BE INSTALLED WHEN APPROVED BY THE CITY. IT IS NOT RECOMMENDED PULL AND JUNCTION BOXES BE INSTALLED IN DRIVEWAYS, SIDEWALKS OR OTHER AREAS WHERE SURROUNDED BY CONCRETE, ASPHALT, OR ON A DRIVE ABLE SURFACE. PULL AND JUNCTION BOXES INSTALLED IN THESE AREAS SHALL BE RATED FOR TRAFFIC USE.

## 1 INGRADE PULLBOX DETAIL

SCALE: NO SCALE

$TIME$
$USER$
$FILE$

Anchor Base for 6R4.5 and 8R4.5 Shafts




| Model | Base Size "A" | Bolt Circle "B" | Anchor Bolts * "C" | Access Door "D" |
|---|---|---|---|---|
| SAL-6R4.5 | 10 1/4" SQ | Ø9" - Ø10" | (4) Ø1" x 36" | (1) 4" x 6" |

## 2 SP1 BOLT CIRCLE DETAIL

SCALE: NO SCALE



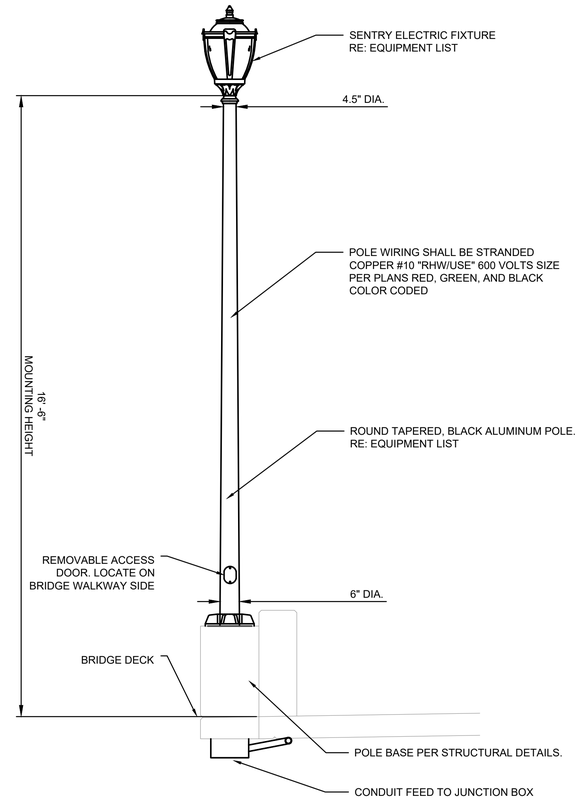

GENERAL NOTES

A. COORDINATE ALL REQUIREMENTS WITH EVERGY PRIOR TO INSTALLATION. CONTACT MARK VITT AT MARK.VITT@EVERGY.COM

B. CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE NFPA 70e STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE. E.C. SHALL PERFORM ARC FLASH HAZARD ANALYSIS, PREPARE AND SUBMIT WRITTEN REPORT TO OWNER AND INSTALL LABELING IN COMPLIANCE WITH ARTICLE 120 OF NFPA 70e.

## 3 UTILITY CONNECTION DETAIL

SCALE: NO SCALE




## 1 PEDESTRIAN LIGHT POLE ASSEMBLY DETAIL

SCALE: NO SCALE

SHEET NO. 184 | TOTAL SHEETS 187
DATE PREPARED 5/24/23
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
KATHI S. KINDEL
NUMBER E-2000147833
REGISTERED PROFESSIONAL ENGINEER
5/24/2023

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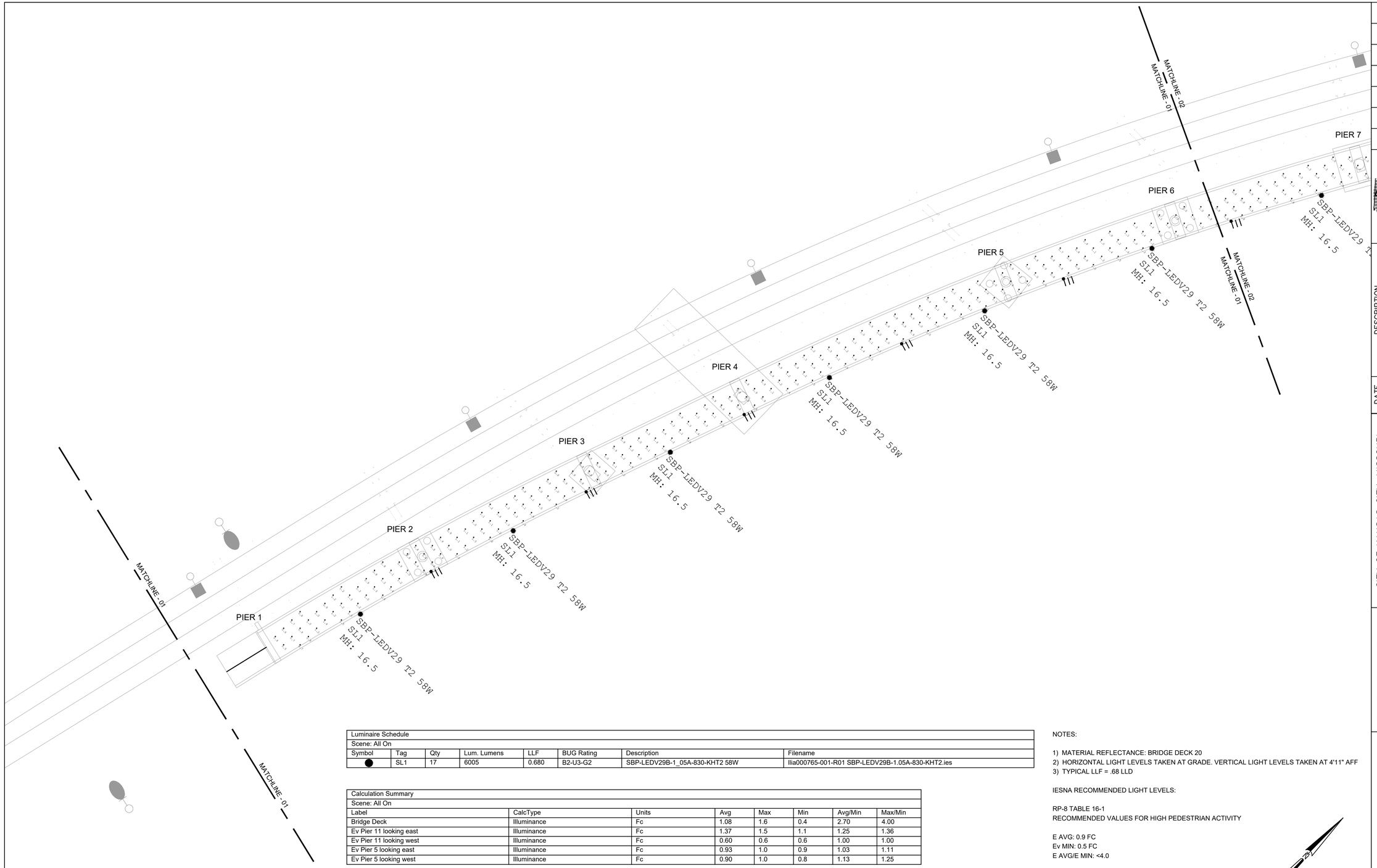
| DATE | DESCRIPTION |
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CITY OF KANSAS CITY, MISSOURI
PUBLIC WORKS DEPARTMENT
CAPITAL PROJECTS DIVISION
414 E. 12TH STREET
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KANSAS CITY, MO 64106
(816) 513-2739

WSP USA INC.
300 W ANDOTTE STREET
SUITE 200
KANSAS CITY, MO 64105


**BRIDGE LIGHTING DETAILS**

$TIME$
$USER$
$FILE$




| Luminaire Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scene: All On | | | | | | | |
| Symbol | Tag | Qty | Lum. Lumens | LLF | BUG Rating | Description | Filename |
| ● | SL1 | 17 | 6005 | 0.680 | B2-U3-G2 | SBP-LEDV29B-1_05A-830-KHT2 58W | Ilia000765-001-R01 SBP-LEDV29B-1.05A-830-KHT2.ies |

| Calculation Summary | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scene: All On | | | | | | | |
| Label | CalcType | Units | Avg | Max | Min | Avg/Min | Max/Min |
| Bridge Deck | Illuminance | Fc | 1.08 | 1.6 | 0.4 | 2.70 | 4.00 |
| Ev Pier 11 looking east | Illuminance | Fc | 1.37 | 1.5 | 1.1 | 1.25 | 1.36 |
| Ev Pier 11 looking west | Illuminance | Fc | 0.60 | 0.6 | 0.6 | 1.00 | 1.00 |
| Ev Pier 5 looking east | Illuminance | Fc | 0.93 | 1.0 | 0.9 | 1.03 | 1.11 |
| Ev Pier 5 looking west | Illuminance | Fc | 0.90 | 1.0 | 0.8 | 1.13 | 1.25 |

NOTES:

1) MATERIAL REFLECTANCE: BRIDGE DECK 20
2) HORIZONTAL LIGHT LEVELS TAKEN AT GRADE. VERTICAL LIGHT LEVELS TAKEN AT 4'11" AFF
3) TYPICAL LLF = .68 LLD

IESNA RECOMMENDED LIGHT LEVELS:

RP-8 TABLE 16-1
RECOMMENDED VALUES FOR HIGH PEDESTRIAN ACTIVITY

E AVG: 0.9 FC
Ev MIN: 0.5 FC
E AVG/E MIN: <4.0

1 GRAND BOULEVARD BRIDGE - PARTIAL LIGHTING PHOTOMETRIC PLAN

0 10' 20' 30' 40' SCALE: 1" = 20'-0"

TIME$
USER$
FILE$

SHEET NO. 185 | TOTAL SHEETS 187
DATE PREPARED 5/24/23
STATE MISSOURI
ROUTE GRAND BLVD.
CITY KANSAS CITY
COUNTY JACKSON
PROJECT NO. 89005595

STATE OF MISSOURI
KATHI S. KINDEL
NUMBER E-20001A833
REGISTERED PROFESSIONAL ENGINEER
5/24/2023

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**BRIDGE LIGHTING PHOTOMETRIC PLAN 1**

PIER 6
PIER 7
PIER 8
PIER 9
PIER 10
PIER 11
MATCHLINE - 01
MATCHLINE - 02
MATCHLINE - 03
SBP-LEDV29 T2 58W
SLL
MH: 16.5

1 GRAND BOULEVARD BRIDGE - PARTIAL LIGHTING PHOTOMETRIC PLAN

0 10' 20' 30' 40' SCALE: 1" = 20'-0"

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 186 | 187 |

DATE PREPARED
5/24/23

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**BRIDGE LIGHTING PHOTOMETRIC PLAN 2**

$TIME$
$USER$
$FILE$

1 GRAND BOULEVARD BRIDGE - PARTIAL LIGHTING PHOTOMETRIC PLAN

0 10' 20' 30' 40' SCALE: 1" = 20'-0"

$TIME$
$USER$
$FILE$

| SHEET NO. | TOTAL SHEETS |
|---|---|
| 187 | 187 |

DATE PREPARED
5/24/23

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CITY
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PROJECT NO.
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STATE OF MISSOURI
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| | |

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**BRIDGE LIGHTING PHOTOMETRIC PLAN 3**