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**DATE: 08-28-2019**

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**DRAWING NO.:** 08/28/2019

**PLOT DATE:** 08/26/2019

**DATE:** 08-28-2019

**REV:** HP02

**PRELIMINARY PLANS - 30%**

**CONTRACT NO.:** MMQ

**CHECKED BY:** JWR

**DESIGNED BY:** NKS

**APPROVED BY:** RPB

**HDR Engineering, Inc.**

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**DATE:** 08-28-2019

**SCALE FOR 22"X34":**

**Certificate of Authority:** 000856

**Contractor:** 816-360-2700

**Kansas City, MO 64131-3471**

**Suite 600**

**10450 Holmes Road**

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<td>Ground inlet</td>
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**Notes:**
- ANSI = American National Standards Institute
- ASME = American Society of Mechanical Engineers
- ASTM = American Society for Testing and Materials
- BNSF = Burlington Northern Santa Fe Railroad
- CORR = Corrugated Metal Pipe
- CIP = Concrete Pipe
- CIP = Concrete Pipe
- CRI = Corrugated Iron Pipe
- CIV = Concrete Interceptor Valve
- CIP = Concrete Interceptor Valve
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1. ALL MATERIALS AND WORK REQUIRED FOR THE PROJECT SHALL CONFORM TO THE KANSAS CITY METRO CHAPTER APWA STANDARD
   SPECIFICATIONS (AND SUPPLEMENTS) AND DESIGN CRITERIA, AS REVISED, ADOPTED AND PROVIDED BY KCMO ON THE

2. RIGHT-OF-WAY LINES SHOWN ARE BASED ON RECORDED SURVEY INFORMATION ON RECORD WITH THE CITY OF KANSAS CITY AND
   JACKSON COUNTY.

3. CONTRACTOR TO VERIFY VERTICAL CLEARANCES FROM THE PROPOSED TRACKS TO OVERHEAD FACILITIES (ELECTRIC, CABLE,
   TELEPHONE).

4. ALL GRADIENTS ARE IN PERCENT UNLESS NOTED OTHERWISE.

5. THE KANSAS CITY STREETCAR TRACK IS DESIGNED PER THE KANSAS CITY STREETCAR DESIGN CRITERIA.

6. STATIONING SHOWN ON TYPICAL SECTIONS IS APPROXIMATE. ALL STATIONING REFERS TO SOUTHBOUND TRACK, UNLESS NOTED
   OTHERWISE.

7. GUIDELINES FROM THE AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION'S (AREMA) "MANUAL FOR
   TRACK ENGINEERING" - LATEST EDITION, ARE USED FOR VARIOUS ASPECTS OF THE DESIGN.

8. GUIDELINES FROM THE FHWA "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), 2009 EDITION, AND KANSAS CITY
   PUBLIC WORKS STANDARD DRAWINGS, LATEST REVISION, ARE USED FOR VARIOUS ASPECTS OF THE DESIGN.

9. TRACK PROFILES REPRESENT TOP OF RAIL PROFILE UNLESS NOTED OTHERWISE. WHERE APPLICABLE, SIDING TOP OF RAIL
   PROFILE SIMILAR.

10. THE RAIL PROFILE IS ALWAYS CARRIED ON THE LOW RAIL THROUGH SUPERELEVATED HORIZONTAL CURVES AND SPIRALS.

11. SUPERELEVATION IS ACCOMPLISHED BY MAINTAINING TOP OF INSIDE (LOW) RAIL AT PROFILE GRADE AND BY RAISING
    OUTSIDE (HIGH) RAIL AN AMOUNT EQUAL TO THE SUPERELEVATION.

12. UTILITIES SHOWN ON THE PLAN SHEETS ARE BASED ON INFORMATION RECEIVED FROM MUNICIPALITIES, AGENCIES, AND
    PRIVATE COMPANIES. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION THROUGH
    POTHOLING AND FIELD SURVEY.

13. TRACKS ON PLAN AND PROFILE DRAWINGS ARE INDICATED BY CENTERLINE OF TRACK. EXCEPT WHERE INDICATED, OFFSET
    DISTANCES FROM TRACK TO OTHER FACILITIES ARE MEASURED FROM CENTERLINE OF TRACK.

14. DISTANCES FROM TRACK TO OTHER FACILITIES ARE MEASURED FROM CENTERLINE OF TRACK. EXCEPT WHERE INDICATED, OFFSET
    DISTANCES FROM TRACK TO OTHER FACILITIES ARE MEASURED FROM CENTERLINE OF TRACK.

15. CONFLICT SUPERCEDE THESE GENERAL NOTES.

16. THESE GENERAL NOTES ARE GENERAL IN NATURE AND PROJECTWIDE. ANY NOTES ON SPECIFIC SHEETS THAT ARE IN
    CONFLICT SUPERCEDE THESE GENERAL NOTES.
KANSAS CITY STREETCAR MAIN STREET EXTENSION

PRELIMINARY PLANS - 30%

DATE: 08-28-2019

DESTRUCTION PLAN

SOUTHBOUND AND NORTHBOUND TRACK

STA 1021+00 TO STA 1025+00

STA 1025+00 TO STA 1029+00

NOT FOR CONSTRUCTION

FILENAME:
DRAWING NO.:
SHEET NO.:
DEMO STA 1021+00 - 1029+00

REFERENCES:

CONSTRUCTION NOTES

SCALE

60
40
20
0

C504
12
KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND AND NORTHBOUND TRACK
DEMO PLAN
STA 173+00 TO STA 1165+00
STA 1165+00 TO STA 1169+00

SCALE FOR 22"x34":

MATCHLINE ABOVE
MATCHLINE BELOW

MAIN STREET

EXISTING R/W
SACUT LINE

EXISTING R/W

MATCHLINE STA. 1165+00
MATCHLINE STA. 1169+00
MATCHLINE STA. 1173+00

CONSTRUCTION NOTES

DEMOLITION PLAN

DATE: 08-28-2019
CONSTRUCTION NOTES

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAIL INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINISH TOP OF RAIL ELEVATION.

5. PROFILES SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND TRACK
PLAN AND PROFILE
51ST STREET
SB STA BEGIN TO STA 1001+00

DATE: 08-28-2019

NOT FOR CONSTRUCTION
CONSTRUCTION NOTES

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRACKING, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND TRACK
PLAN AND PROFILE
SB STA 1001+00 TO STA 1005+00

DATE: 08-28-2019

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

DRAWN BY
CERTIFICATE OF AUTHORITY: 000856
816-360-2700
KANSAS CITY, MO 64131-3471
SUITE 600
10450 HOLMES ROAD

APPROVED BY

DESIGNED BY

CHECKED BY

PRELIMINARY PLANS - 30%

CONSTRUCTION NOTES

SCALE FOR 22"X34":

1/35

DATE:

DRAWING NO.

REVIEW SHEET:

CONTRACT NO.

FILE NAME:

K102

1001+00 - 1005+00

NOT FOR CONSTRUCTION
1. See discipline-specific drawings for detailed information on civil, traffic, geometric, signal control, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
KANSAS CITY STREETCAR MAIN STREET EXTENSION

NORTHBOUND TRACK

PROFILE

NB STA 2005+00 TO STA 2009+00

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRACK, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

TRACK SECTION

DATE: 08-28-2019

FILENAME: DRAWING NO.: SHEET NO.:
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAIL INFORMATION ON CIVIL, TRACK, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTH-bound TRACK
PROFILE
49TH STREET
NB STA 2009+00 TO STA 2013+00
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRACK, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
### GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, traffic, mechanical, and electrical systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
1. See discipline specific drawings for detailed information on civil, structural, electrical, mechanical, traffic, and drainage systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
### GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

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### PLATFORMS AND SPECIAL TRACKWORK

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<th>Station</th>
<th>Location</th>
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<td>NB STA 2026+00</td>
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<td>NB STA 2028+00</td>
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<td>NB STA 2029+00</td>
<td>844</td>
<td>175.00 VC</td>
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### PROFILE

- **NORTHBOUND TRACK PROFILE**

- **EMANUEL CLEAVER II BLVD**

- **DATE:** 08-28-2019

---

**NOT FOR CONSTRUCTION**
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL, SYSTEMS, AND OILE DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
46TH STREET
SB STA 1029+00 TO STA 1033+00
1. See discipline specific drawings for defined inspection on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
CONSTRUCTION NOTES

SOUTHBOUND TRACK
PLAN AND PROFILE
SB STA 1041+00 TO STA 1045+00

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAIL INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
PRELIMINARY PLANS - 30%
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, traffic, structural, and drainage systems, and other features.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All profiles shown are based on the final top of rail Elevation.

4. Profiles are designed to finalize the trackwork.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
44TH STREET
SB STA 1045+00 TO STA 1049+00
GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, traffic, electrical, mechanical, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profiles shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
**CONSTRUCTION NOTES**

**GENERAL NOTES**

1. See discipline specific drawings for detailed information on civil, structural, traffic, systems, and drainage structures.

2. All Elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

**SCALE**

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

**KEY**

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<tr>
<th>DATE</th>
<th>SB STA 1049+00 TO STA 1053+00</th>
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<td>DATE: 08-28-2019</td>
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KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
43RD STREET
NB STA 2049+00 TO STA 2053+00

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR
DETAILED INFORMATION ON CIVIL, TRAFFIC,
SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE
IN FEET UNLESS OTHERWISE
NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL
ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY
INTENDED TO ILLUSTRATE THE EXISTING STREET
GRADES AND TO CONFIRM THE LOCATIONS OF THE
PLATFORMS AND SPECIAL TRACKWORK.

NB STA 2049+00 TO STA 2053+00
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
43RD STREET
NB STA 2053+00 TO STA 2057+00
DATE: 08-28-2019
PRELIMINARY PLANS - 30%
**CONSTRUCTION NOTES**

**GENERAL NOTES**

1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

---

**Northbound Track**

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**DATE:** 08-28-2019

**PROFILE**

**VIETNAM VETERANS MEMORIAL DRIVE**

**NB STA 2057+00 TO STA 2061+00**
1. See discipline specific drawings for detailed information on civil, traffic, structural, and drainage systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
### General Notes

1. See discipline specific drawings for detailed information on civil, traffic, drainage, and other systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

### Construction Notes

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>NB STA 2061+00 TO STA 2065+00</td>
<td>08-28-2019</td>
</tr>
</tbody>
</table>

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**Northbound Track**

**Profile**

41ST STREET

NB STA 2061+00 TO STA 2065+00
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAIL INFORMATION OR CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN EL 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
40TH WAY
SB STA 1065+00 TO STA 1069+00

DATE: 08-28-2019
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KEY

- DATE: 08-28-2019
- PRELIMINARY PLANS - 30%
- NB STA 2065+00 TO STA 2069+00
- NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK PROFILE
40TH WAY
NB STA 2065+00 TO STA 2069+00
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DEPICTION OF INCLUDING EXISTING SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
39TH STREET
NB STA 2077+00 TO STA 2081+00
KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND TRACK
PLAN AND PROFILE
SB STA 1081+00 TO STA 1085+00

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
KANSAS CITY STREETCAR MAIN STREET EXTENSION

NORTHBOUND TRACK
PROFILE
NB STA 2081+00 TO STA 2085+00

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

NORTHBOUND TRACK
PROFILE
NB STA 2081+00 TO STA 2085+00

NOT FOR CONSTRUCTION

K122A  76
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
38TH STREET
SB STA 1085+00 TO STA 1089+00

DATE: 08-28-2019

PLOT DATE: 08/27/2019

FILENAME: SB P_P STA 1085+00 - 1089+00
DRAWING NO.: PLOT DATE: 08/27/2019
DRAWN BY: HDR Engineering, Inc.
PRELIMINARY PLANS - 30%
Certificate of Authority: 000856
816-360-2700
Kansas City, MO 64131-3471
Suite 600
10450 Holmes Road

SCALE FOR 22"x34": 60
H: 1"=20'   V: 1"=2'

SB STA 1085+00 TO STA 1089+00

EXISTING R/W

MAIN STREET

E NORTHBOUND TRACK

E SOUTHBOUND TRACK

38TH STREET

SCALE: 60
20
40
60

EXISTING R/W

P V C  1086+95.02
E L E V  932.28

P V I  1087+45.02
E L E V  931.63

P V T  1087+95.02
E L E V  930.40

P V C  1088+82.09
E L E V  928.25

P V I  1088+94.59
E L E V  927.94

-1.29 %

25.00 VC

K = 74.71

2.47 %

100.00 VC

K = 84.54
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
38TH STREET
NB STA 2085+00 TO STA 2089+00

NOT FOR CONSTRUCTION
### GENERAL NOTES

1. See discipline-specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

### TABLE

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<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Date</th>
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<tbody>
<tr>
<td>SB STA 1089+00</td>
<td>KANSAS CITY STREETCAR MAIN STREET EXTENSION</td>
<td>08-28-2019</td>
</tr>
<tr>
<td>SB STA 1093+00</td>
<td>SOUTHBOUND TRACK PLAN AND PROFILE 37TH STREET</td>
<td>08-28-2019</td>
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<tr>
<td>SB STA 1089+00 TO STA 1093+00</td>
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</table>
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET SYSTEMS, AND DRAINAGE STRUCTURES.

DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

NORTHBOUND TRACK
PROFILE
37TH STREET
NB STA 2089+00 TO STA 2093+00

DATE: 08-28-2019

K124A 80
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

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**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**NORTHBOUND TRACK PROFILE**

36TH STREET

NB STA 2093+00 TO STA 2097+00

DATE: 08-28-2019
GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
36TH STREET
NB STA 2097+00 TO STA 2101+00
SB STA 1101+00 TO STA 1105+00

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, MECHANICAL, ELECTRICAL, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR
   Detailed information on civil, traffic,
   systems, and drainage structures.

2. All elevations and dimensions given are
   in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail
   elevation.

5. Profile shown is at 30% level and is only
   intended to illustrate the existing street
   grades and to confirm the locations of the
   platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
ARMOUR BOULEVARD
SB STA 1105+00 TO STA 1109+00
GENERAL NOTES

1. See discipline specific drawings for detailed information on civil, structural, mechanical, and electrical systems and equipment.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate transitions in grades and to confirm the locations of the platforms and special trackwork.

NB STA 2105+00 TO STA 2109+00

ARMOUR BOULEVARD

KANSAS CITY STREETCAR MAIN STREET EXTENSION

NORTHBOUND TRACK PROFILE

DATE: 08-28-2019

DRAWN BY
APPROVED BY
DESIGNED BY
CHECKED BY

SCALE FOR 22"x34":

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

PLOT DATE: 08/27/2019

FILENAME:
DRAWING NO.:
SHEET NO.
CONTRACT NO.

VOLUME:

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

PRELIMINARY PLANS - 30%
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
34TH WAY
SB STA 1109+00 TO STA 1113+00

EXISTING R/W
E. SOUTHBOUND TRACK
E. NORTHBOUND TRACK
E. 34TH STREET
MATCHLINE STA. 1109+00
MATCHLINE STA. 1113+00

M A I N S T R E E T

R = 1800.00'
R = 1425.00'

DATE: 08-28-2019
KANSAS CITY STREETCAR MAIN STREET EXTENSION

NORTHBOUND TRACK
PROFILE
34TH WAY
NB STA 2109+00 TO STA 2113+00

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADATIONS AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
1. See discipline-specific drawings for detailed information on civil, traffic, structural, and other systems and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
1. See discipline-specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown elevation level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND TRACK

PLAN AND PROFILE

SB STA 1117+00 TO STA 1121+00

DATE: 08-28-2019
1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRACK, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
LINWOOD BOULEVARD
NB STA 2121+00 TO STA 2125+00
1. See discipline specific drawings for detailed information on civil, traffic, drainage, and structural systems.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% ELEVATION AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
31ST STREET
NB STA 2129+00 TO STA 2133+00

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
SB STA 1133+00 TO STA 1137+00

GENERAL NOTES
1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

SB STA 1133+00 TO STA 1137+00

EXISTING
GROUND

EXISTING
R/W

EXISTING
R/W

1133+00
1136+00
1135+00
1134+00
1137+00

980
982
984
986
988
990
992
994
996

5.06%
3.58%
25.00 VC
K = 48.69
180.00 VC
K = 25.35

P V C 1133+32.50
E L E V 984.30
P V I 1133+45.00
E L E V 984.75
P V T 1133+57.50
E L E V 985.13

P V I 1136+90.00
E L E V 995.31

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

K135
101
1. See discipline specific drawings for detailed information on civil, traffic, utilities, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
30TH STREET
NB STA 2137+00 TO STA 2141+00
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
WARWICK TRAFFICWAY
NB STA 2141+00 TO STA 2145+00
**GENERAL NOTES**

1. See discipline specific drawings for detailed information on civil, traffic, electrical, mechanical, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on ARC definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAIL INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
### General Notes

1. See discipline specific drawings for detailed information on civil, traffic, structural, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street cross-sections and to confirm the locations of the platforms and special trackwork.

### Matchline STA 1149+00 - 1153+00

**Ground**

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<tr>
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**Profile Showing Southbound Track**

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**Profile Showing Northbound Track**

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**Profile Showing Existing R/W**

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**Profile Showing Existing R/W and E Southbound Track**

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**Profile Showing E Northbound Track**

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**Profile Showing Existing R/W and E Northbound Track**

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<tr>
<td>1153+00</td>
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</table>
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK PROFILE
MEMORIAL DRIVE
NB STA 2153+00 TO STA 2157+00

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRACK, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
GENERAL NOTES

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KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
27TH STREET
NB STA 2157+00 TO STA 2161+00

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STOP LOCATION

PVC 2157+10.00
ELEV 894.33

PVI 2157+40.00
ELEV 892.57

PVT 2157+70.00
ELEV 891.36

-4.01%

50.00 VC
K = 31.95

-5.89%

GROUND EXISTING

BEGIN STA 2158+76.63

114
K141A

END STA 2160+90.13

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986
988
990
992
994
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998
1000

H: 1"=20'   V: 1"=2'
1. See discipline-specific drawings for detailed information on civil, structural, systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

**GENERAL NOTES**

**SOUTHBOUND TRACK**

**PLAN AND PROFILE**

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**SB STA 1161+00 TO STA 1165+00**

**DATE: 08-28-2019**

**FILE: SB STA 1161+00 - 1165+00**

**FILE: PRELIMINARY PLANS - 30%**

**NOT FOR CONSTRUCTION**
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**NORTHBOUND TRACK PROFILE**

NB STA 2165+00 TO STA 2169+00
### General Notes

1. See discipline specific drawings for detailed information on civil, traffic, structural, and drainage systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.

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### Construction Notes

- **SB STA 1169+00 to STA 1173+00**

#### Plan and Profile

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<tr>
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### Drawing Details

- **Scale for 22"x34":**
  - 1" = 20' for horizontal distances
  - 1" = 2' for vertical distances

- **Drawing No.:**
  - SB STA 1169+00 - 1173+00

- **Contract No.:**
  - HDR Engineering, Inc.

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

- **Designated Office:**
  - HDR Engineering, Inc.

- **Not for Construction:**
  - SB STA 1169+00 to STA 1173+00

---

### Plan Details

- **EXISTING R/W:**
  - Northbound Track
  - Southbound Track
  - Existing Mobility Lane

- **MOBILITY LANE:**
  - Northbound Track
  - Southbound Track

- **MAIN STREET:**
  - Northbound Track
  - Southbound Track

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### Profile Details

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**GENERAL NOTES**

1. **SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES**.
   
2. **ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED**.
   
3. **ALL CURVES ARE BASED ON ARC DEFINITION**.
   
4. **PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION**.
   
5. **PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK**.
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

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3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

NORTHBOUND TRACK PROFILE
NB STA 2173+00 TO STA 2177+00

DRAWN BY:
APPROVED BY:
DESIGNED BY:
CHECKED BY:

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

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, STRUCTURAL, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN IS AT 30% LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND TRACK
PLAN AND PROFILE
PERSHING ROAD
SB STA 1177+00 TO STA 1181+00

DATE: 08-28-2019

K146 123
1. See discipline specific drawings for detailed information on civil, traffic, systems, and drainage structures.
2. All elevations and dimensions given are in feet unless otherwise noted.
3. All curves are based on arc definition.
4. Profiles designed to final top of rail elevation.
5. Profile shown is at 30% level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
1. See discipline-specific drawings for detailed information on civil, traffic, systems, and drainage structures.

2. All elevations and dimensions given are in feet unless otherwise noted.

3. All curves are based on arc definition.

4. Profiles designed to final top of rail elevation.

5. Profile shown elevation level and is only intended to illustrate the existing street grades and to confirm the locations of the platforms and special trackwork.
KANSAS CITY STREETCAR MAIN STREET EXTENSION
NORTHBOUND TRACK
PROFILE
NB STA 2181+00 TO STA 2185+00

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILLED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.

2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.

3. ALL CURVES ARE BASED ON ARC DEFINITION.

4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

5. PROFILE SHOWN ELEVATION LEVEL AND IS ONLY INTENDED TO ILLUSTRATE THE EXISTING STREET GRADES AND TO CONFIRM THE LOCATIONS OF THE PLATFORMS AND SPECIAL TRACKWORK.
NOTES:

1. SEE CIVIL DRAWINGS FOR SA WCUT AND PAVING LEVELS.

2. TRACK EDGE CROSS-SLOPE (TEX) ARE SHOWN ON DRAWINGS AND SHALL BE FIELD ADJUSTED TO MINIMUMS. BARRIERS REQUIRED. SUPPORT TIE, STEEL CHANNEL SPACED 8'-0" O.C.; 5 FT IN CURVED TRACK.

3. CONTRACTOR TO SUBMIT TRACK APPURTENANCES (GAUGE TIE, BOOT, FASTENERS, ETC.) FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO EXECUTION.

4. ALL TRACK SMALL HAVE ZERO CANT UNLESS OTHERWISE SPECIFIED.

5. REFER TO PROJECT GEOTECHNICAL REPORT FOR ENGINEERING RECOMMENDATIONS REGARDING SUBGRADE MATERIALS SUBMIT OVER EXCAVATION BACKFILL MATERIAL FOR REVIEW AND APPROVAL BY ENGINEER.

6. RESTRAINING RAIL REQUIRED FOR ALL CURVING. HORIZONTAL CURVES WITH A RADIUS LESS THAN 400' FOR 115 RE TRACK.

7. SEE SYSTEM WIDE ELECTRICAL PLANS FOR THE REQUIRED SYSTEM ELEMENTS INCLUDING (SEE NOTE 10) INSULATED JOINTS, CROSS BONDING, NEGATIVE RETURN, AND OTHER SYSTEM APPLIANCES THAT INTERFACE WITH TRACK/CIVIL WORK.

8. "E" IS THE CROSS SLOPE BETWEEN THE RAILS. 0% (TYP). SEE K101 TO K148 DRAWINGS FOR "E" VALUE.

9. TIE NEEDS TO HAVE ADEQUATE WEEP HOLES. CONTRACTOR TO USE EXTRA CARE IN DRIVING BELOW THE TIE TO ENSURE THERE IS FULL CONCRETE CONSOLIDATION ALL AROUND THE TIE.

10. SUBGRADE REQUIRED TO MEET COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.

11. WHERE ADJACENT TO CONCRETE PAVEMENT CONTRACTOR MAY POUR ROADWAY PAVEMENT CONCRETIONALLY WITH TRACK SLAB.

12. CONTRACTOR MAY USE GRADE 80 HELD WIRE FABRIC IN LIEU OF MODOT TYPE 5 AGGREGATE NO. xxx FOR CONCRETE TRACK SLAB DETAILS.

13. CONTRACTOR MAY POUR ROADWAY PAVEMENT ADJACENT TO EXISTING TRACK SLAB.

14. HEIGHT OUTSIDE OF LEVEL ENGINEERING REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.

15. WHERE ADJACENT TO CONCRETE PAVEMENT CONTRACTOR MAY POUR ROADWAY PAVEMENT MONOLITHICALLY WITH TRACK SLAB.
NOTES:

1. DIMENSIONS AND MINIMUM CLEARANCES NOTED ON DETAIL ARE APPROXIMATE AND SHOULD BE UPDATED IN FINAL APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION.

2. TRACK GAUGE IS MEASURED AT 1/4" BELOW TOP OF RAIL AND FROM THE GAUGE FACE TO GAUGE FACE.

3. SHALLOW GAUGE TIE SHOULD BE RIGID ENOUGH TO MAINTAIN LINE, GRADE, AND GAUGE OF THE RAIL. GAUGE TIE SHALL BE NO GREATER THAN 3/8" THICK AND 3" WIDE.

4. CONTRACTOR TO SUBMIT INSTALLATION PLAN FOR HOLDING GAUGE IN ELASTOMERIC GROUT TROUGH TO ENGINEER FOR REVIEW AND APPROVAL.

5. TRACK SLAB LIMITS ON STRUCTURE SHOWN FOR PAY LIMITS. CONTRACTOR MAY POUR BRIDGE PAVEMENT MONOLITHICALLY WITH TRACK SLAB.

6. PRE-GROUTED RAIL SHALL BE INSTALLED PER MANUFACTURER REQUIREMENTS. MINIMUM DEPTH OF GROUT TO BE VERIFIED BY MANUFACTURER PRIOR TO INSTALLATION AND APPROVED BY ENGINEER.
1. Contractor to submit shop drawings for review and approval by engineer prior to manufacturing transition rail.

2. A minimum of 1" concrete depth below elastomeric grout required.

3. Contractor to follow elastomeric grout manufacturer's recommendation for installation.

NOTES:

OVERLAP RAIL BOOT AND FLANGEWAY FORMER WITH ELASTOMERIC GROUT (6" MIN)

HELDO TRANSITION ONTO 115 RE

RUBBER RAIL BOOT AND FLANGEWAY FORMER

TRANSITION RAIL PLAN AND ELEVATION

SECTION B

SECTION C

SECTION D

NOT TO SCALE

FLANGEWAY FORMER WITH OVERLAP RAIL BOOT AND RUBBER BOOT

KANSAS CITY STREETCAR MAIN STREET EXTENSION

PRELIMINARY PLANS - 30%

DATE: 08-28-2019

TRANSITION RAIL

NOT FOR CONSTRUCTION

K904

130
NOTES:

1. The switch will be powered or manual (see systems plans) with accommodation for point detection. The switch must be available with a spring and return mechanism for other approved mechanisms. Switch mechanism and earth box shall be insulated for signaling circuits.

2. All joints and connections to be field welded unless noted otherwise.

3. All dimensions are in feet and inches.

4. Turnout to be fully insulated for electrical isolation provided through encapsulation per manufacturer and material supplier specifications and approved by engineer. Insulation shall satisfy resistivity requirements per specifications.

5. Switch machine shall be centered between tongue switches after geometry dimensions and tolerances have been satisfied.

6. All gauge rods shall be drilled and secured to turnout after geometry dimensions and tolerances have been satisfied.

7. Switch box drain to be connected to overall drainage network. Provide powered connections for switch heaters and power switches.

8. Earthbox machine and switch heater boxes shall be designed for HS20 loading.

9. Left-hand turnout shown, right-hand is mirror image.

10. Flog shall be flange bearing welded boltless manganese.

11. See train control drawings for insulated joint location and layout.

All dimensions are in feet and inches.

All joints and connections to be field welded unless noted otherwise.

Swing and return mechanism for other approved mechanisms. Switch mechanism and earth box shall be insulated for signaling circuits.

All gauge rods shall be drilled and secured to turnout after geometry dimensions and tolerances have been satisfied.

Switch box drain to be connected to overall drainage network. Provide powered connections for switch heaters and power switches.

Earthbox machine and switch heater boxes shall be designed for HS20 loading.

Left-hand turnout shown, right-hand is mirror image.

Flog shall be flange bearing welded boltless manganese.

See train control drawings for insulated joint location and layout.
1. The switch will be powered or manual (see systems plans) with accommodation for point detection. The switch must be provided with a spring and return mechanism (or other approved mechanism). Switch mechanism and earth box shall be insulated for signaling circuits.

2. All joints and connections to be field welded unless noted otherwise.

3. All dimensions are in feet and inches.

4. Turnout to be fully insulated for electrical isolation provided through encapsulation per manufacturer and material supplier specifications and approved by engineer. Isolation shall satisfy resistivity requirements per specifications.

5. Switch machine shall be centered between tongue switches after geometry dimensions and tolerances have been satisfied.

6. All gauge rods shall be drilled and secured to turnout after geometry dimensions and tolerances have been satisfied.

7. Switch box drain to be connected to overall drainage network, provide powered connections for switch heaters and power switches.

8. Earthbox machine and switch heater boxes shall be designed for load.

9. Left-hand turnout shown; right-hand is mirror image.

10. Frog shall be flange bearing welded boltless manganese.

11. See train control drawings for insulated joint location and layout.

NOTES:

- Provide drainage connection for switch drain (location to be determined with approved shop drawings).
- Switch drain to be PVC with rubber gasket.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

DATE: 08-28-2019

25 M TURNOUT - CONTINUOUSLY CURVED FROG

NOT FOR CONSTRUCTION
NOTES:

1. Track gauge is measured at 3" below top of rail and from the gauge face to gauge face.

2. Where manhole conflicts with steel gauge ties (adjust gauge ties) in conflict with spacing no greater than 7/8" to avoid conflict. No gaps between gauge ties small exceed 10'.

3. Where less than 6" between manhole lid casting and rail boot, contractor shall submit field verified location and offset between manhole lid casting and rail boot to engineer for approval prior to placing slab with elastomeric grout. No rebar shall be placed where elastomeric grout is needed.

4. Manhole shown in detail, but same requirements apply for inlets of different shapes and materials.

5. Utility locations to be verified by contractor in the field.

UTILITY LOCATIONS TO BE VERIFIED BY CONTRACTOR IN THE FIELD.
NOT TO SCALE

MANHOLE REBAR DETAIL

NOTES:

1. WHERE MANHOLE CONFLICTS WITH STEEL GAUGE TIE ADJUST GAUGE TIES IN CONFLICT WITH SPACING NO GREATER THAN 7/8" TO AVOID CONFLICT, NO GAPS BETWEEN GAUGE TIES SMALLER THAN 10".

2. WHERE LESS THAN 6" BETWEEN MANHOLE LID CASTING AND RAIL BOOT, CONTRACTOR SHALL SUBMIT FIELD VERIFIED LOCATION AND OFFSET BETWEEN MANHOLE LID CASTING AND RAIL BOOT TO ENGINEER PRIOR TO FILLING AREA WITH ELASTOMERIC GROUT. NO REBAR SHALL BE PLACED WHERE ELASTOMERIC GROUT IS NEEDED.

3. MANHOLE SHOWN IN DETAIL, BUT SAME REQUIREMENTS APPLY FOR INLETS OF DIFFERENT SHAPES AND MATERIALS.

4. UTILITY LOCATIONS TO BE VERIFIED BY CONTRACTOR IN THE FIELD.

5. PER CITY OF MILWAUKEE STANDARD SPECIFICATIONS, TIE BAR IS TO EXTEND 6" INTO PAVEMENT ON EITHER SIDE OF THE JOINT.

NOTES:

1. WHERE MANHOLE CONFLICTS WITH STEEL GAUGE TIE ADJUST GAUGE TIES IN CONFLICT WITH SPACING NO GREATER THAN 7/8" TO AVOID CONFLICT, NO GAPS BETWEEN GAUGE TIES SMALLER THAN 10".

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3. MANHOLE SHOWN IN DETAIL, BUT SAME REQUIREMENTS APPLY FOR INLETS OF DIFFERENT SHAPES AND MATERIALS.

4. UTILITY LOCATIONS TO BE VERIFIED BY CONTRACTOR IN THE FIELD.

5. PER CITY OF MILWAUKEE STANDARD SPECIFICATIONS, TIE BAR IS TO EXTEND 6" INTO PAVEMENT ON EITHER SIDE OF THE JOINT.
GENERAL NOTES

1. CURVE GEOMETRY SHOWN IS FOR TRACK CENTERLINE.

2. SUPPLIERS SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S APPROVAL PER SPECIFICATIONS.

FOR ENGINEERS APPROVAL, PER SPECIFICATIONS.

1. CURVE GEOMETRY SHOWN IS FOR TRACK CENTERLINE.

2. SUPPLIERS SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S APPROVAL PER SPECIFICATIONS.
EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

MAIN STREET
1027+00 TO 1037+00

OCS POLE (SEE OCS DRAWINGS)

ADJUSTED CROWN LINE

VARIABLES

EXISTING SIDEWALK
EXISTING PARKSTRIP
OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET
1037+00 TO 1050+00

1069+00 TO 1075+00

1090+00 TO 1095+00

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.

OCS POLE FOUNDATION

EXISTING CURB

MAIN STREET

EXISTING PARKSTRIP
OCS POLE FOUNDATION
EXISTING CURB

FACE EXPOSURE, TYP.
MAINTAIN 4" MIN CURB FACE EXPOSURE, TYP.
**Typical Sections SH5**

**Main Street**

1180-00 to 1181+50

- **Existing OCS Pole**
- **Existing Sidewalk**
- **Existing OCS Pole Foundation**
- **Existing Curb**
- **Existing Track Slab**

**Remove & Replace Existing OCS Pole**

- **OCS Pole (See OCS Drawings)**
- **Platform**
- **1'-0"**
- **Existing Sidewalk**

**Remove & Replace Existing Asphalts**

- **Pavement (Match Existing, 10" Min.)**
- **Aggregate Base**
- **Aggregate Base**

**Compressed and Prepared Subgrade**

- **Reinforced Concrete Track Slab, Typ.**
- **9" Min. Sawcut**

**Kansas City Streetcar Main Street Extension**

RideKC Streetcar

PRELIMINARY PLANS - 30%

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION

TYPICAL SECTIONS

SHEET 5 OF 5
CONSTRUCTION NOTES

LEGEND
- TRACK SLAB
- HMAC FULL DEPTH
- CONCRETE SIDEWALK/PATH
- CONCRETE INFILL
- ASPHALT PAVEMENT
- BRIDGE WALL AND CONCRETE OVERLAY
- LANDSCAPE
- COLORED STAMPED CONCRETE

SCALE
H: 1" = 20'

MAIN STREET
EDGE OF TRACK SLAB
EDGE OF TRACK SLAB
EDGE OF TRACK SLAB
EDGE OF TRACK SLAB

EXISTING R/W
EXISTING R/W
EXISTING R/W
EXISTING R/W

SOUTHBOUND TRACK
NORTHBOUND TRACK
SOUTHBOUND TRACK
NORTHBOUND TRACK

CIVIL PLAN
SOUTHBOUND AND NORTHBOUND TRACK
STA 1029+00 TO STA 1033+00
STA 1033+00 TO STA 1037+00

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND AND NORTHBOUND TRACK
CIVIL PLAN
STA 1029+00 TO STA 1033+00
STA 1033+00 TO STA 1037+00

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND AND NORTHBOUND TRACK
CIVIL PLAN
STA 1061+00 TO STA 1065+00
STA 1065+00 TO STA 1069+00
DATE: 08-28-2019
NOT FOR CONSTRUCTION

LEGEND

- TRACK SLAB
- HMAC FULL DEPTH
- CONCRETE
- SIDEWALK/TRAIL
- CONCRETE INFILL
- ASPHALT PAVEMENT
- BRIDGE MILL AND CONCRETE OVERLAY
- LANDSCAPE
- COLORED, STAMPED CONCRETE

SCALE
H: 1"=20'
DATE: 08-28-2019
CONSTRUCTION NOTES

LEGEND

- TRACK SLAB
- HMAC FULL DEPTH
- CONCRETE SIDEWALK/TRAIL
- CONCRETE INFILL
- ASPHALT PAVEMENT
- BRIDGE WALL AND CONCRETE OVERLAY
- LANDSCAPE
- COLORED, STAMPED CONCRETE

MATCHLINE ABOVET

MATCHLINE ABOVE

MATCHLINE STA. 1141+00

MATCHLINE STA. 1149+00

MATCHLINE BELOW

MATCHLINE STA. 1145+00

SOUTHBOUND AND NORTHBOUND TRACK

CIVIL PLAN

STA 1141+00 TO STA 1145+00

STA 1145+00 TO STA 1149+00

KANSAS CITY STREETCAR MAIN STREET EXTENSION

DATE: 08-28-2019

FILENAME: KCC-MainSt-1141-1149

DRAWN BY:

APPROVED BY:

DESIGNED BY:

CHECKED BY:

CONTRACT NO.

VOLUME:

1

DRAWING NO.:

CIVIL STA 1141+00 - 1149+00

REV

DATE:

08-28-2019

PLOT DATE:

08/27/2019

SCALE FOR 22"x34":

60

40

20

0

H: 1"=20'

NOT FOR CONSTRUCTION
MAIN STREET

MATCHLINE STA. 1149+00

EDGE OF TRACK SLAB

EDGE OF TRACK SLAB

SOUTHBOUND TRACK

NORTHBOUND TRACK

EXISTING R/W

MATCHLINE ABOVE

MATCHLINE STA. 1155+00

MATCHLINE BELOW

MATCHLINE STA. 1157+00

EXISTING R/W

EXISTING R/W

M A T C H L I N E  S T A . 1 1 4 9 + 0 0

CIVIL PLAN

SOUTHBOUND AND NORTHBOUND TRACK

H: 1"=20'

SCALE

SWATCHS
TYPICAL PLAN - SOUTHBOUND STREETCAR STOP

TYPICAL PLAN - NORTHBOUND STREETCAR STOP

TYPICAL ELEVATION - STREETCAR STOP
1. SEE DRAWING D201 FOR PLATFORM INFORMATION.
2. ONLY NON-TYPICAL DIMENSIONS SHOWN; SEE DRAWING D200 FOR TYPICAL STREETCAR STOP DIMENSIONS.
3. MARK MATCHING EXISTING

KANSAS CITY STREETCAR MAIN STREET EXTENSION
STREETCAR STOP
SOUTH END PLATFORM
NORTHBOUND / SOUTHBOUND

DATE: 08-28-2019
SCALE: 1"=10'
1. SEE DRAWING O00 FOR PLATFORM INFORMATION.
2. ONLY NON-TYPICAL DIMENSIONS SHOWN. SEE DRAWING O00 FOR TYPICAL STREETCAR STOP DIMENSIONS.
3. MATCH EXISTING

---

**LEGEND / NOTES**

- **Passenger Loading Platform**
- **Ramp Between Loading Platforms**
- **Slope Trans. Area**

---

**SCALE**

- **30**
- **20**
- **10**
- **0**

---

**EXISTING R/W**

---

**CONSTRUCT STREETCAR STOP**

---

**45TH STREET STOP**

---

**STREETCAR STOP**

---

**45TH STREET PLATFORM**

---

**EXECUTIVE OVERVIEW**

---

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

---

**STREETCAR STOP**

---

**45TH STREET PLATFORM**

---

**SOUTHBOUND**

---

**DATE: 08-28-2019**

---

**FILENAME:**

---

**DRAWING NO.:**

---

**SHEET NO.:**

---

**CONTRACT NO.:**

---

**H: 1"=10'**

---

** HDR Engineering, Inc.**

---

**Certificate of Authority: 000856**

---

**816-360-2700**

---

**811 Kirk Drive**

---

**Kansas City, MO 64105**

---

**INFRASTRUCTURE SOLUTIONS**

---

**The HNTB COMPANIES**

---

**PRELIMINARY PLANS - 30%**

---

**DATE:**

---

**FILE:**

---

**NOT FOR CONSTRUCTION**

---

**FILE:**

---

**C203**

---

**168**
Typical Streetcar Stop Dimensions shown. See Drawing C200 for only non-typical dimensions.

Match Existing

Passenger Loading Platforms

Ramp Between Loading Platforms

Slope Trans. Area

**8/27/2019 Plot Date:**

**FILENAME:**

**DRAWING NO.:**

**SHEET NO.:**

**NOT FOR CONSTRUCTION**

**Certificate of Authority:** 000856

**816-360-2700**

**Kansas City, MO 64131-3471**

**Suite 600**

**10450 Holmes Road**

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**08-28-2019**

**8/28/2019**

**LM**

**LM**

**CJH**

**CJH**

**NKS**

**H: 1"=10'**

**CERTIFIED**

**169**

**CON0077290**

**Phone: 816-472-1201**

**Kansas City, MO 64105**

**715 Kirk Drive**

**INFRASTRUCTURE SOLUTIONS**

**The HNTB COMPANIES**

**DATE:** 08-28-2019

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**STREETCAR STOP 43RD STREET PLATFORM NORTHBOUND**

**NOT FOR CONSTRUCTION**

**HDR Engineering, Inc.**

**PRELIMINARY PLANS - 30%**

**Contract No.:**

**DESIGNED BY**

**CHECKED BY**

**APPROVED BY**

**DRAWN BY**
LEGEND / NOTES
1. SEE DRAWING C200 FOR PLATFORM INFORMATION
2. ONLY NON-TYPICAL DIMENSIONS SHOWN; SEE DRAWING C200 FOR TYPICAL STREETCAR STOP DIMENSIONS.
3. WORK MATCH EXISTING

SCALE

KANSAS CITY STREETCAR MAIN STREET EXTENSION
STREETCAR STOP
AROUR STREET PLATFORM
SOUTHBOUND

PRELIMINARY PLANS - 30%
DATE: 08-28-2019

SCALe FOR 22"x34":
**Legend/Notes**

1. See drawing C208 for platform information.
2. Only non-typical dimensions shown. See drawing C206 for typical streetcar stop dimensions.
3. Work matches existing.

### Existing R/W

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 981.81'</th>
<th>E 2764530.78</th>
<th>N 1057607.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 982.05'</td>
<td>E 2764522.84</td>
<td>N 1057612.76</td>
</tr>
<tr>
<td>ELEV. 982.30'</td>
<td>E 2764522.94</td>
<td>N 1057620.75</td>
</tr>
</tbody>
</table>

### Existing R/W - Main Street Northbound

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 981.86'</th>
<th>E 2764530.78</th>
<th>N 1057607.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 982.11'</td>
<td>E 2764530.84</td>
<td>N 1057612.66</td>
</tr>
<tr>
<td>ELEV. 982.39'</td>
<td>E 2764530.94</td>
<td>N 1057620.66</td>
</tr>
</tbody>
</table>

### Existing R/W

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 983.29'</th>
<th>E 2764523.10</th>
<th>N 1057633.50</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 983.70'</td>
<td>E 2764523.26</td>
<td>N 1057646.50</td>
</tr>
<tr>
<td>ELEV. 983.87'</td>
<td>E 2764531.26</td>
<td>N 1057646.40</td>
</tr>
</tbody>
</table>

### Existing R/W

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 983.42'</th>
<th>E 2764531.10</th>
<th>N 1057633.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 983.93'</td>
<td>E 2764523.58</td>
<td>N 1057672.25</td>
</tr>
<tr>
<td>ELEV. 984.19'</td>
<td>E 2764523.68</td>
<td>N 1057680.25</td>
</tr>
</tbody>
</table>

### Existing R/W

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 984.26'</th>
<th>E 2764523.74</th>
<th>N 1057685.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 984.54'</td>
<td>E 2764531.68</td>
<td>N 1057680.15</td>
</tr>
</tbody>
</table>

### Existing R/W

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 984.54'</th>
<th>E 2764531.68</th>
<th>N 1057680.15</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 984.93'</td>
<td>E 2764531.58</td>
<td>N 1057672.15</td>
</tr>
<tr>
<td>ELEV. 985.32'</td>
<td>E 2764531.42</td>
<td>N 1057665.40</td>
</tr>
</tbody>
</table>

### Existing R/W

**31ST STREET PLATFORM**

<table>
<thead>
<tr>
<th>ELEV. 984.17'</th>
<th>E 2764531.58</th>
<th>N 1057672.15</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEV. 985.19'</td>
<td>E 2764531.42</td>
<td>N 1057665.40</td>
</tr>
<tr>
<td>ELEV. 985.26'</td>
<td>E 2764531.30</td>
<td>N 1057665.25</td>
</tr>
</tbody>
</table>

### Scale:

- 1" = 10'

---

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**31ST STREET STOP**

**NOT FOR CONSTRUCTION**

**DATE: 08-28-2019**

---

**RideKC STREETCARS**

**NOT FOR CONSTRUCTION**

---

**DATE: 08-28-2019**

---

**C206 171**
LEGEND / NOTES
1. SEE DRAWING P20 FOR PLATFORM INFORMATION
2. ONLY NON-TYPICAL DIMENSIONS SHOWN. SEE DRAWING C200 FOR TYPICAL STREETCAR STOP DIMENSIONS.
3. MARK MATCH EXISTING

SCALE
0  10  20  30

H: 1"=10'

EXISTING R/W

CONSTRUCT STREETCAR STOP

STREETCAR STOP
UNION STATION PLATFORM
NORTHBOUND

TYPICAL STREETCAR STOP DIMENSIONS. SHOWN. SEE DRAWING C200 FOR NON-TYPICAL DIMENSIONS

**

KANSAS CITY STREETCAR MAIN STREET EXTENSION

FILENAME: C208

DATE: 08-28-2019

NOT FOR CONSTRUCTION
KANSAS CITY STREETCAR MAIN STREET EXTENSION

TRACTION POWER SUBSTATION (TPSS)

C10 SITE PLAN

8/27/2019

PROPOSED STREETCAR STOP

EXISTING R/W

TOP SLAB
EL 838 (APPROX.)

DISCONNECT
SWITCH PAD

FENCE ENCLOSURE

TOP SLAB
EL 838 (APPROX.)

Existing R/W

EXISTING R/W

12' SWING GATE

ACCESS ENTRANCE

CURB CUT FOR ACCESS ENTRANCE

ACCESS DRIVE

CONC. LANDING

CONC. LANDING

CONC. LANDING

C10
350 KW

4' GATE

ACCESS ENTRANCE

CURB CUT FOR ACCESS ENTRANCE

ACCESS DRIVE

CONC. LANDING

CONC. LANDING

C10
350 KW

12' SWING GATE

ACCESS ENTRANCE

CURB CUT FOR ACCESS ENTRANCE

ACCESS DRIVE

CONC. LANDING

CONC. LANDING

C10
350 KW

4' GATE

ACCESS ENTRANCE

CURB CUT FOR ACCESS ENTRANCE

ACCESS DRIVE

CONC. LANDING

CONC. LANDING

C10
350 KW

12' SWING GATE

ACCESS ENTRANCE

CURB CUT FOR ACCESS ENTRANCE

ACCESS DRIVE

CONC. LANDING

CONC. LANDING

C10
350 KW
GENERAL NOTES
1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

SCALE
60
40
20
0

STA 1005+00 TO STA 1009+00

STA 1009+00 TO STA 1013+00

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND AND NORTHBOUND TRACK

DRAINAGE PLAN

NOVEMBER PLANS - 30%

DATE: 08-28-2019

SCALE
60
40
20
0

H: 1"=20'

DRAINAGE STA 1005+00 - 1013+00

BROOKSIDE BLVD

EXISTING R/W

E NORTHBOUND TRACK

E SOUTHBOUND TRACK

30" RCP

36" RCP

30" RCP

DRAINAGE PLAN

SOUTHBOUND AND NORTHBOUND TRACK

DATE: 08-28-2019

SCALE
60
40
20
0
GENERAL NOTES
1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.
2. THE AREA EAST OF MAIN STREET BETWEEN NORTHBOUND TRACK STATION 2021+00 AND 2025+00 IS AVAILABLE TO BE EVALUATED FOR A GREEN SOLUTION.
SOUTHBOUND AND NORTHBOUND TRACK
DRAINAGE PLAN
STA 1061+00 TO STA 1065+00
STA 1066+00 TO STA 1069+00

GENERAL NOTES

1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

EXISTING R/W

EXISTING R/W

EXISTING R/W
GENERAL NOTES

1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

SCALE FOR 22"x34":

DRAINAGE STA 1085+00 - 1093+00

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SOUTHBOUND AND NORTHBOUND TRACK

DRAINAGE PLAN

STA 1085+00 TO STA 1089+00
STA 1089+00 TO STA 1093+00

POTENTIAL GREEN SOLUTION AREA

EXISTING R/W

RELOCATE MANHOLE

RELOCATE MANHOLE

INSTALL 5'X3' NON-SETBACK CI

INSTALL TRACK DRAIN

INSTALL 6" PIPE

INSTALL TRACK DRAIN

EXISTING R/W

MATCHLINE STA. 1093+00

MATCHLINE ABOVE

MATCHLINE STA. 1095+00

MATCHLINE BELOW

MAIN STREET

SOUTHBOUND TRACK

NORTHBOUND TRACK

EXISTING R/W

EXISTING R/W

EXISTING R/W

EXISTING R/W

EXISTING R/W

15" PIPE

6" PIPE

DATE: 08-28-2019

PLOT DATE: 8/27/2019

FILENAME: 08-28-2019 DRAWING NO.:

DRAWN BY:

APPROVED BY:

DESIGNED BY:

CHECKED BY:

NOT FOR CONSTRUCTION

187
GENERAL NOTES
1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED INLETS SMALL SIZE DELIVERED.

EXISTING R/W

SOUTHBOUND TRACK

MAIN STREET

NORTHBOUND TRACK

EXISTING R/W

RELOCATE MANHOLE

INSTALL 5'x3'
CI TYPE 2, CONNECT TO EXIST. 30" PVC

INSTALL 5'x3'
CI TYPE 2, CONNECT TO EXIST. 30" PVC

RELOCATE MANHOLE

REPLACE W/ 5'x3'
CI TYPE 2

RELOCATE MANHOLE

15" PVC

EXISTING R/W

SOUTHBOUND TRACK

NORTHBOUND TRACK

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND AND NORTHBOUND TRACK
DRAINAGE PLAN
STA 1101+00 TO STA 1105+00
STA 1105+00 TO STA 1109+00

189
GENERAL NOTES
1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND AND NORTHBOUND TRACK
DRAINAGE PLAN
STA 1109+00 TO STA 1113+00
STA 1113+00 TO STA 1117+00

MAIN STREET
EXISTING R/W
SOUTHBOUND TRACK
NORTHBOUND TRACK
RELOCATE MANHOLE
RELOCATE MANHOLE
EXISTING R/W
EXISTING R/W

SCALE
0 20 40 60
0 20 40 60

DATE: 08-28-2019
SCALE FOR 22"x34":

DRAINAGE STA 1109+00 - 1117+00

SOUTHBOUND TRACK
NORTHBOUND TRACK
EXISTING R/W
RELOCATE MANHOLE

SCALE
0 20 40 60

DATE: 08-28-2019

GENERAL NOTES
SHALL NOT BE DISTURBED.
TO BE REMOVED. IF NOT NOTED, INLETS
1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

MAIN STREET
EXISTING R/W
SOUTHBOUND TRACK
NORTHBOUND TRACK
RELOCATE MANHOLE
RELOCATE MANHOLE
EXISTING R/W
EXISTING R/W

SCALE
0 20 40 60
0 20 40 60

DATE: 08-28-2019
SCALE FOR 22"x34":

DRAINAGE STA 1109+00 - 1117+00

SOUTHBOUND TRACK
NORTHBOUND TRACK
EXISTING R/W
RELOCATE MANHOLE

SCALE
0 20 40 60

DATE: 08-28-2019

GENERAL NOTES
SHALL NOT BE DISTURBED.
TO BE REMOVED. IF NOT NOTED, INLETS
GENERAL NOTES

1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS WILL NOT BE DISTURBED.

SOUTHBOUND AND NORTHBOUND TRACK

STATION 1117+00 TO 1121+00
STATION 1121+00 TO 1125+00

DRAINAGE PLAN

MAINTENANCE OF WAY, ROADWAY

SCALE

BELLOWS MANHOLE

RELOCATE MANHOLE

DRAINAGE PLAN

MAIN STREET

RELOCATE MANHOLE

SCALE

MAIN STREET

EXISTING R/W

EXISTING R/W

1120+00

2120+00

1125+00
GENERAL NOTES
1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

EXISTING R/W

SOUTHBOUND TRACK

NORTHBOUND TRACK

MAIN STREET

EXISTING R/W

SCALE

H: 1"=20'

DRAINAGE STA 1141+00 - 1149+00

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SOUTHBOUND AND NORTHBOUND TRACK
DRAINAGE PLAN
STA 1141+00 TO STA 1145+00
STA 1145+00 TO STA 1149+00

DATE: 08-28-2019
GENERAL NOTES

1. REFER TO DEMO DRAWINGS FOR INLETS TO BE REMOVED. IF NOT NOTED, INLETS SHALL NOT BE DISTURBED.

DRAINAGE PLAN

SOUTHBOUND AND NORTHBOUND TRACK

STA 1149+00 TO STA 1153+00
STA 1153+00 TO STA 1157+00

H: 1"=20'
GENERAL NOTES:

1. SEE CIVIL DWGS FOR ADDITIONAL INFORMATION.
2. PLATFORM CONC PAVING TO MATCH EXIST SIDEWALK MATERIAL W/ WHITE PORTLAND CEMENT APPEARANCE.
3. SEE CIVIL DWGS FOR PLATFORM STRUCTURAL REQUIREMENTS, EXPANSION JOINTS, REINFORCEMENT, ETC.
4. PAVING ADJACENT TO PLATFORM TO MATCH EXIST SIDEWALK MATERIAL.
5. SEE CIVIL DWGS FOR TOPOGRAPHIC ELEVATIONS.

KEYNOTES:

1. WALKWAYS/SIDEWALKS
2. SHELTER
3. SHIELD RENCH
4. CANOPY ABOVE
5. TICKET VENDING MACHINE (FUTURE)
6. SIGN KIOSK MARKER

LEGEND:

PLATFORM
EXIST RAW
EXIST OR RELOCATED LIGHT POLE
SERVICE EQUIPMENT
METER
CONC LOW WALL
OCS CATenary POLE, SEE OVERHEAD CONTACT SYSTEM DWGS
OCS W/ LIGHT POLE
ADA ACCESSIBLE ROUTE

GENERAL NOTES:

1. SEE CIVIL DWGS FOR ADDITIONAL INFORMATION.
2. PLATFORM CONC PAVING TO MATCH EXIST SIDEWALK MATERIAL.
3. SEE CIVIL DWGS FOR TOPOGRAPHIC ELEVATIONS.
4. PAVING ADJACENT TO PLATFORM TO MATCH EXIST SIDEWALK MATERIAL.
5. SEE CIVIL DWGS FOR PLATFORM STRUCTURAL REQUIREMENTS, EXPANSION JOINTS, REINFORCEMENT, ETC.

KEYNOTES:

1. WALKWAYS/SIDEWALKS
2. SHELTER
3. SHIELD RENCH
4. CANOPY ABOVE
5. TICKET VENDING MACHINE (FUTURE)
6. SIGN KIOSK MARKER

LEGEND:

PLATFORM
EXIST RAW
EXIST OR RELOCATED LIGHT POLE
SERVICE EQUIPMENT
METER
CONC LOW WALL
OCS CATenary POLE, SEE OVERHEAD CONTACT SYSTEM DWGS
OCS W/ LIGHT POLE
ADA ACCESSIBLE ROUTE
TYPICAL PLATFORM ELEVATION AND SECTION

KEYNOTES:
1. WALKWAYS/SIDEWALKS
2. PLATFORM
3. DETECTABLE WARNING TILE
4. SHELTER
5. SHELTER BENCH
6. CANOPY
7. SIDEWALK BEHIND STREETCAR STOP
8. PROFILE GRADE TRACK STATION/OFFSET
9. CONC WALL AS CAST, FORM FINISH - SMOOTH
10. TICKET VENDING MACHINE (FUTURE)
11. SIGN KIOSK MARKER
12. OCS POLE
13. ELECTRICAL EQUIPMENT
14. VARIABLE MESSAGE SIGN (FUTURE)
15. ARCHITECTURE CONTROL POINT
16. ADA DIRECTIONAL SIGN

GENERAL NOTE:
ALL CONC WALLS TO HAVE A MINIMUM HEIGHT OF 1'-4". SEE CIVIL DRAWINGS FOR SLOPE OF SIDEWALKS.
KEYNOTES:
1. WALKWAYS/SIDEWALKS
2. PLATFORM
3. DETECTABLE WARNING TILE
4. SHELTER
5. SHELTER BENCH
6. CANOPY
7. SIDEWALK BEHIND STREETCAR STOP
8. PROFILE SHAPE TRACK SYSTEM (OFFSET)
9. CONC WALL AS CAST FORM FINISH - SMOOTH
10. TICKET VENDING MACHINE (FUTURE)
11. SIGN KIOSK MARKER
12. OCS POLE
13. ELECTRICAL EQUIPMENT
14. VARIABLE MESSAGE SIGN (FUTURE)
15. ARCHITECTURE CONTROL POINT
16. ADA DIRECTIONAL SIGN

LEGEND:
- JUNCTION BOX
- SEE ELECTRICAL
- JUNCTION BOX AT BACK OF WALL, SEE ELECTRICAL
- RECESSED LIGHT, SEE ELECTRICAL

GENERAL NOTE:
SEE SHEET P401 FOR PLATFORM FURNISHINGS SCHEDULE

ALL SEAT WALLS TO HAVE A MINIMUM HEIGHT OF 1'-4". SEE CIVIL DRAWINGS FOR SLOPE OF SIDEWALKS.
**KEYNOTES:**

1. RECESSED CONTINUOUS LED LIGHT FIXTURE
2. CAST-IN-PLACE CONCRETE WALL
3. HSS POST
4. LAMINATED TEMPERED GLASS PANELS
5. ALUMINUM CLADDING
6. ACRYLIC ROOF PANEL
7. HSS BEAM
8. IPE WOOD BENCH
9. CANOPY ABOVE
10. VARIABLE MESSAGE SIGN (FUTURE)

**GENERAL NOTES:**

1. BASE DESIGN FOR THE SHELTER STRUCTURE IS AN EXTRUDED ALUMINUM FRAME WELDED TOGETHER WITH CONNECTING JOINTS.

---

**SQUARE SHELTER FLOOR PLAN**

---

**SQUARE SHELTER ROOF PLAN**
KEYNOTES:
1. Recessed continuous LED light fixture
2. Cast-in-place conc.
3. HSS post
4. Laminated tempered glass panels
5. Aluminum cladding
6. Acrylic roof panel
7. HSS beam
8. IPE wood bench
9. Canopy
10. Variable message sign (future)
11. Rain gutter

GENERAL NOTES:
1. Base design for the shelter structure is an extruded aluminum frame with welded connections at the joints.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
RECTANGLE SHELTER
PLANS, ELEVATIONS, SECTIONS

PRELIMINARY PLANS - 30%
DATE: 08-28-2019

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

DRAWING NO.:
FILENAME:
SHEET NO.:
DRAWN BY:
APPROVED BY:
DESIGNED BY:
CHECKED BY:
CHECKED BY:
CONTRACT NO.:
VOLUME:
SCALE FOR 22"x34":

NOT FOR CONSTRUCTION
TRAFFIC SIGNAL LAYOUT PLAN
BROOKSIDE BLVD
AND WARD PKWY / VOLKER BLVD

EXISTING SIGNAL VERTICAL,
LUMINAIRE DAVIT, AND
40' MAST ARM WITH:
2 - 3 SECTION SIGNAL HEADS
1 - RADAR DETECTION UNIT (FAACING NORTH)
1 - LED/PV/EVP DETECTION UNIT
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - 3 SECTION SIGNAL HEAD
1 - PEDESTRIAN COUNTDOWN
INDICATION

INSTALL B12 FOUNDATION
INSTALL SIGNAL VERTICAL,
LUMINAIRE DAVIT, AND
40' MAST ARM WITH:
3 - 3 SECTION SIGNAL HEADS
1 - TOP/PV/EVP DETECTION UNIT
1 - STREET NAME SIGN
MOUNT ON SIGNAL POST:
2 - 3 SECTION SIGNAL HEAD
1 - PEDESTRIAN COUNTDOWN
INDICATION
1 - APS PUSH BUTTON

REMOVE EXISTING POLE,
FOUNDATION, MAST ARM, AND
ALL SIGNAL EQUIPMENT

EXISTING SIGNAL VERTICAL,
24' MAST ARM
EXISTING TO REMAIN IN PLACE, WITH:
3 - 3 SECTION SIGNAL HEADS
2 - 3 SECTION SIGNAL HEADS
1 - PEDESTRIAN COUNTDOWN
INDICATION

INSTALL TYPE C FOUNDATION
INSTALL PEDESTAL WITH:
1 - APS PUSH BUTTON

FURNISH AND INSTALL ON MAST ARM:
1 - RADAR DETECTION UNIT (FAACING SOUTH)
1 - RADAR DETECTION UNIT (FAACING NORTH)
1 - TOP/PV/EVP DETECTION UNIT
MOUNT ON SIGNAL POST:
1 - APS PUSH BUTTON
1 - PEDESTRIAN COUNTDOWN
INDICATION

INSTALL B12 FOUNDATION
INSTALL SIGNAL VERTICAL,
LUMINAIRE DAVIT, AND
40' MAST ARM WITH:
1 - STREET NAME SIGN
MOUNT ON SIGNAL POST:
1 - STREET NAME SIGN

EXISTING R/W

INSTALL 332 CABINET WITH:
2070 SIGNAL CONTROLLER
WITH 16 MODULES

INSTALL CABINET FOUNDATION
INSTALL 332 CABINET WITH
2070 SIGNAL CONTROLLER
WITH 16 MODULES

INTERSECTION NOTES
1. REMOVE AND REPLACE ALL WIRING
AND CONDUIT.

2. REMOVE EXISTING SIGNAL
CONTROLLER, CABINET, AND
CABINET.

LEGEND

<table>
<thead>
<tr>
<th>SIGN</th>
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<tr>
<td>Y</td>
<td>TRAFFIC SIGNAL HEAD WITH BACK PLATE</td>
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<tr>
<td>G</td>
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<td>C</td>
<td>MAST ARM POLE</td>
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<td>T</td>
<td>SIGNAL PEDISTAL</td>
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<td>L</td>
<td>SIGNAL FACE NUMBER</td>
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<tr>
<td>F</td>
<td>SHOEBOX LUMINAIRE</td>
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<td>S</td>
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INTERSECTION NOTES

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AND CONDUIT.

2. REMOVE EXISTING SIGNAL
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</table>

INTERSECTION NOTES

1. REMOVE AND REPLACE ALL WIRING
AND CONDUIT.

2. REMOVE EXISTING SIGNAL
CONTROLLER, CABINET, AND
CABINET.
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - PTZ CAMERA WITH 360 DEGREE
ATTACHMENT
1 - SIGNAL FACE KEY
1 - Radar Detection
UNIT (FACING WEST)
REMOVE EXISTING POLE,
FOUNDATION, MAST ARM,
AND ALL SIGNAL EQUIPMENT
1. REMOVE ALL EXISTING SIGNAL
EQUIPMENT FROM THIS SIGNAL
SYSTEM.
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
INSTALL SIGNAL FACE KEY
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - PTZ CAMERA WITH 360 DEGREE
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INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
INSTALL SIGNAL FACE KEY
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
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ATTACHMENT
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1 - Radar Detection
UNIT (FACING WEST)
REMOVE EXISTING POLE,
FOUNDATION, MAST ARM,
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EQUIPMENT FROM THIS SIGNAL
SYSTEM.
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
INSTALL SIGNAL FACE KEY
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - PTZ CAMERA WITH 360 DEGREE
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UNIT (FACING WEST)
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INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
INSTALL SIGNAL FACE KEY
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - PTZ CAMERA WITH 360 DEGREE
ATTACHMENT
1 - SIGNAL FACE KEY
1 - Radar Detection
UNIT (FACING WEST)
REMOVE EXISTING POLE,
FOUNDATION, MAST ARM,
AND ALL SIGNAL EQUIPMENT
1. REMOVE ALL EXISTING SIGNAL
EQUIPMENT FROM THIS SIGNAL
SYSTEM.
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
INSTALL SIGNAL FACE KEY
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - PTZ CAMERA WITH 360 DEGREE
ATTACHMENT
1 - SIGNAL FACE KEY
1 - Radar Detection
UNIT (FACING WEST)
REMOVE EXISTING POLE,
FOUNDATION, MAST ARM,
AND ALL SIGNAL EQUIPMENT
1. REMOVE ALL EXISTING SIGNAL
EQUIPMENT FROM THIS SIGNAL
SYSTEM.
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
1 - APS PUSH BUTTON
1 - RADAR DETECTION
UNIT (FACING WEST)
INSTALL SIGNAL FACE KEY
1 - INTERNALLY ILLUMINATED SNS
MOUNT ON SIGNAL POST:
1 - PTZ CAMERA WITH 360 DEGREE
ATTACHMENT
1 - SIGNAL FACE KEY
1 - Radar Detection
UNIT (FACING WEST)
REMOVE EXISTING POLE,
FOUNDATION, MAST ARM,
AND ALL SIGNAL EQUIPMENT
1. REMOVE ALL EXISTING SIGNAL
EQUIPMENT FROM THIS SIGNAL
SYSTEM.
TRAFFIC SIGNAL LAYOUT PLAN
MAIN ST AND 46TH ST

1. REMOVE PEDESTRIAN HYBRID BEACON NORTH OF 46TH ST

INTERSECTION NOTES

1. REMOVE AND REPLACE ALL WIRING AND CONDUIT.
2. REMOVE PEDESTRIAN HYBRID BEACON NORTH OF 46TH ST

LEGEND

- TRAFFIC SIGNAL HEAD
- TRAFFIC SIGNAL HEAD WITH BACK PLATE
- PEDESTRIAN SIGNAL HEAD
- MAST ARM POLE
- SIGNAL PEDESTAL
- CONTROLLER
- SPAN WIRE WITH SIGNAL HEAD
- OPTICOM DETECTOR
- RADAR DETECTOR
- SIGNAL FACE KEY
- SIGN POST
- PAN, TILT AND ZOOM CAMERA
- SHOEBOX LUMINAIRE
- SIGNAL PEDESTAL
- MAST ARM POLE
- PEDESTRIAN SIGNAL HEAD
- TRAFFIC SIGNAL HEAD WITH BACK PLATE

NOTE: ALL SIGNS AND SIGNALS SHALL BE MARKED WITH THE APPROPRIATE SYMBOLS AND LETTERS AS PER KANSAS CITY STREETCAR MAIN STREET EXTENSION GUIDELINES.

SIGNAL FACE NUMBER

1. APS PUSH BUTTON
2. PEDESTRIAN COUNTDOWN INDICATION
3. TRAFFIC SIGNAL HEAD
4. PEDESTRIAN SIGNAL HEAD
5. OPTICOM DETECTOR
6. RADAR DETECTOR
7. PAN, TILT AND ZOOM CAMERA
8. SHOEBOX LUMINAIRE

 KEY: 1 - APS PUSH BUTTON
          2. PEDESTRIAN COUNTDOWN INDICATION
          3. TRAFFIC SIGNAL HEAD
          4. PEDESTRIAN SIGNAL HEAD
          5. OPTICOM DETECTOR
          6. RADAR DETECTOR
          7. PAN, TILT AND ZOOM CAMERA
          8. SHOEBOX LUMINAIRE

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
PRELIMINARY PLANS - 30%
DATE: 08-28-2019
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL,

INSTALL TYPE C FOUNDATION

LUMINAIRE DAVIT, AND

INSTALL PEDESTAL WITH:

SCALE

13' MAST ARM WITH:

1 - 3 SECTION SIGNAL HEAD

1 - 3 SECTION SIGNAL HEAD

1 - PEDESTRIAN COUNDOWN

1 - TSP/EVP DETECTION UNIT

INDICATION

0

20

40

60

1 - APS PUSH BUTTON
MOUNT ON SIGNAL POST:
1 - 3 SECTION SIGNAL HEAD
INSTALL B8 FOUNDATION

INTERSECTION NOTES

REMOVE EXISTING POLE,

INSTALL SIGNAL VERTICAL,

1.

FOUNDATION, MAST ARM, AND

LUMINAIRE DAVIT, AND

REMOVE AND REPLACE ALL WIRING
AND CONDUIT.

ALL SIGNAL EQUIPMENT

29' MAST ARM WITH:
2.

2 - 3 SECTION SIGNAL HEAD
EXISTING R/W

1 - TSP/EVP DETECTION UNIT
1 - INTERNALLY ILLUMINATED SNS

INSTALL AUXILIARY CABINET TO
EXISTING SIGNAL CONTROLLER

INSTALL TYPE C FOUNDATION

FH

CABINET

INSTALL PEDESTAL WITH:
INSTALL TYPE C FOUNDATION

1 - PEDESTRIAN COUNTDOWN

MOUNT ON SIGNAL POST:

INSTALL PEDESTAL WITH:

INDICATION

1 - PTZ CAMERA WITH 360 DEGREE

1 - 3 SECTION SIGNAL HEAD

1 - APS PUSH BUTTON

ATTACHMENT

1 - PEDESTRIAN COUNTDOWN

1 - 3 SECTION SIGNAL HEAD

INDICATION

1 - RADAR DETECTION

1 - APS PUSH BUTTON

UNIT (FACING WEST)

LEGEND

1 - LEFT TURN RESTRICTED SIGN
1 - PEDESTRIAN COUNTDOWN
INDICATIONS

8A

8

TRAFFIC SIGNAL HEAD

EXISTING R/W

1 - APS PUSH BUTTON
TRAFFIC SIGNAL HEAD WITH BACK PLATE

2C

6

REMOVE EXISTING POLE,

PEDESTRIAN SIGNAL HEAD

FOUNDATION, MAST ARM, AND

10' LANE

6A

ALL SIGNAL EQUIPMENT

MAST ARM POLE

12' LANE

11' LANE
SIGNAL PEDESTAL

6B
11' LANE

11' LANE

CONTROLLER

C
L SOUTHBOUND TRACK

11' LANE

11' LANE

MAI
NST

2B
17' LANE

SPAN WIRE WITH SIGNAL HEAD

C
L NORTHBOUND TRACK

OPTICOM DETECTOR

11' LANE

2A

RADAR DETECTOR

4

6C

2

5

4A

SIGNAL FACE NUMBER
SHOEBOX LUMINAIRE
PAN, TILT AND ZOOM CAMERA
SIGN POST

INSTALL TYPE C FOUNDATION
INSTALL PEDESTAL WITH:
1 - PEDESTRIAN COUNDOWN
INDICATION
1 - APS PUSH BUTTON

INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
(OCS/SIGNAL COMBINED),
LUMINAIRE DAVIT AND
22' MAST ARM WITH:
1 - 3 SECTION SIGNAL HEAD

ARM OUR BLVD

1 - 3 SECTION SIGNAL HEAD
INSTALL OCS FOUNDATION
INSTALL SIGNAL VERTICAL
(OCS/SIGNAL COMBINED),
LUMINAIRE DAVIT AND
26' MAST ARM WITH:
INSTALL CABINET FOUNDATION

2 - 3 SECTION SIGNAL HEAD

SALVAGE AND INSTALL 332 CABINET

1 - TSP/EVP DETECTION UNIT

WITH 2070 SIGNAL CONTROLLER

1 - INTERNALLY ILLUMINATED SNS

WITH 1C MODULES
MOUNT ON SIGNAL POST:

LINES UNDERGROUND

1 - 3 SECTION SIGNAL HEAD

1 - TSP/EVP DETECTION UNIT
MOUNT ON SIGNAL POST:

1 - RADAR DETECTION

R

UNIT (FACING WEST)

EXISTING R/W

1 - RADAR DETECTION

1 - 3 SECTION SIGNAL HEAD
1 - RADAR DETECTION

SIGNAL FACE KEY

REROUTE OVERHEAD POWER

UNIT (FACING EAST)
INSTALL TYPE C FOUNDATION

EXISTING R/W

UNIT (FACING SOUTH)

INSTALL PEDESTAL WITH:

1 - PEDESTRIAN COUNTDOWN

1 - PEDESTRIAN COUNTDOWN

INDICATION

INDICATION

1 - APS PUSH BUTTON

Y

1 - LEFT TURN RESTRICTED SIGN
1 - PEDESTRIAN COUNTDOWN
INDICATION
1 - APS PUSH BUTTON

G

1 - APS PUSH BUTTON
REMOVE EXISTING POLE,

REMOVE EXISTING POLE,

FOUNDATION, MAST ARM, AND

FOUNDATION, MAST ARM, AND

ALL SIGNAL EQUIPMENT

ALL SIGNAL EQUIPMENT

REV

DATE

DESCRIPTION

DESIGNED BY

AJH

CHECKED BY

MJM

PRELIMINARY PLANS - 30%

2, 2A, 2B, 2C
6, 6A, 6B, 6C,
4, 4A,
8, 8A

DATE:06-28-2019
DATE:
08-28-2019 KANSAS CITY STREETCAR MAIN STREET EXTENSION

SCALE FOR 22"x34":
H: 1"=20'

FILENAME:

DRAWN BY

T113.dgn

HDR Engineering, Inc.

SY

10450 Holmes Road
CHECKED BY

MJM

Kansas City, MO 64131-3471

APPROVED BY

NKS

816-360-2700

CONTRACT NO.:

TRAFFIC SIGNAL LAYOUT PLAN

Suite 600

MAIN ST AND ARMOUR BLVD

############

VOLUME:
1

DRAWING NO.:

Certificate of Authority: 000856

PLOT DATE:

8/25/2019

11:59:29 AM

DATE

NOT FOR CONSTRUCTION

T113

SHEET NO.:

218
218


TRAFFIC SIGNAL LAYOUT PLAN
MAIN ST AND GRAND BLVD

INTERSECTION NOTES
1. REMOVE AND REPLACE ALL WIRING AND CONDUIT.
2. INSTALL AUXILIARY CABINET TO EXISTING SIGNAL CONTROLLER CABINET

SIGNAL FACE KEY

LEGEND

T117
**EXISTING 332 CABINET WITH 2070 SIGNAL CONTROLLER TO REMAIN IN PLACE**

**INTERSECTION NOTES**

1. REMOVE AND REPLACE ALL WIRING AND CONDUIT.

2. INSTALL AUXILIARY CABINET TO EXISTING SIGNAL CONTROLLER CABINET

**LEGEND**

- **TRAFFIC SIGNAL HEAD**
- **PEDESTRIAN SIGNAL HEAD WITH BACK PLATE**
- **MAST ARM POLE**
- **SIGNAL PEDESTAL**
- **CONTRIBLER**
- **SPAN WIRE WITH SIGNAL HEAD**
- **OPTON DETECTOR**
- **RADAR DETECTOR**
- **SIGNAL FACE NUMBER**
- **SHEBOY LUMINAIRE**
- **PAN, TILT AND ZOOM CAMERA**
- **SIGN POST**

**SIGNAL FACE KEY**

- **R**
- **Y**
- **G**
- **SY**
- **FY**
- **R**
- **Y**
- **G**

**DATE: 08-28-2019**

**TRAFFIC SIGNAL LAYOUT PLAN**

**MAIN ST AND 27TH ST**

**NOT FOR CONSTRUCTION**
KANSAS CITY STREETCAR MAIN STREET EXTENSION

TRAFFIC SIGNAL DETAILS
CROSS SPAN JOINT USE

CONTACT WIRE
3.00

3 FOOT RADIAL CIRCLE
DEPICTING CLEAR AREA

REMARKS AROUND CONTACT WIRE

PRODUCT ENGINEERING

HDR Engineering, Inc.

816-360-2700

Kansas City, MO 64131-3471
Suite 600

10450 Holmes Road

Certificate of Authority: 000856

Contract No.

06-28-2019

DRAWING NO.

T120.dgn

SCALE FOR 22"x34":

8/25/2019

DATE:

12:02:08 PM

FILENAME:

REVISIONS

DRAWN BY

APPROVED BY

DESIGNED BY

CHECKED BY

NOT FOR CONSTRUCTION
DRAWING NO.:

Auxiliary Cabinet Detail

DATE: 08-28-2019

FILENAME:

KANSAS CITY STREETCAR MAIN STREET EXTENSION

TRAFFIC SIGNAL DETAILS

AUXILIARY CABINET MOUNTING DETAIL

H: 1"=20'

1. Drill hole in aux cabinet and main cabinet. Install 4" metal conduit. 4" in length. Seal with waterproof sealant.

2. Bolt aux cabinet to 2" square steel tube and main cabinet using 1/2 inch bolts, nuts, steel washers, and rubber washers (typical X4).

3. Bolt aux cabinet to 2" square steel tube and main cabinet using 1/2 inch bolts, nuts, steel washers, and rubber washers (typical X4).

4. Mount equip panel directly to aux cabinet using 2 screws. Seal with waterproof sealant.

5. Slide din relay onto din rail (10.8" tall x 5.9" deep)

6. Insync processor (9.5" wide x 10.6" tall x 5.9" deep)

7. Mount equip panel directly to aux cabinet using 2 screws. Seal with waterproof sealant.

8. Equip panel (13" wide x 10" tall x 3" deep)

9. Din relay (15.8" wide x 4.6" tall x 2.7" deep)

10. Seal with waterproof sealant.

11. Mounting detail

12. Main cabinet

13. Auxiliary cabinet


15. Bolt metal conduit. 4" in length. Seal with waterproof sealant.

16. Drill hole in aux cabinet and main cabinet. Install 4" metal conduit. 4" in length. Seal with waterproof sealant.

17. Mount din rail directly to aux cabinet using 2 screws. Seal with waterproof sealant.

18. Washers (typical x4)

19. Washers, and rubber bolts, nuts, steel cabinet using 1/2 inch square steel tube and main bolt aux cabinet to 2"

20. Install 4" metal conduit, 4" in length. Seal with waterproof sealant.
NOTES
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY

--- BROKEN LINE
--- SOLID LINE
--- DOUBLE SOLID LINE
--- DOTTED LINE AND AUXILIARY LANE LINE
--- SHARED LEFT TURN LANE
--- MEDIAN LINE
--- PAVEMENT MARKING ARROWS
--- STOP LINE
--- YIELD LINE
--- CROSSWALK LINES
--- BLOCK STYLE
--- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

EXISTING SIGN
ILLUMINATED STREET NAME SIGN

EXISTING INTERSECTIONS
PROPOSED INTERSECTIONS

NO STRIPING THIS SHEET

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
SB STA 1000+00 TO STA 1001+00

HDR Engineering, Inc.
Certificate of Authority: 000856
816-360-2700
Kansas City, MO 64131-3471
Suite 600
10450 Holmes Road
NO STRIPING THIS SHEET

NOTES

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LANE
- MATCH LINE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES BLOCK STYLE
- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
SB STA 1001+00 TO STA 1005+00

DATE: 08-28-2019
NOTES
1 EXISTING SIGN
2 PROPOSED SIGN
3 PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY
--- BROKEN LINE
--- SOLID LINE
--- DOUBLE SOLID LINE
--- DOTTED LINE AND AUXILIARY LANE LINE
--- SHARED LEFT TURN LINE
--- MATCH LINE
--- PAVEMENT MARKING ARROWS
--- STOP LINE
--- YIELD LINE
--- CROSSWALK LINES
--- BLOCK STYLE
--- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCARD OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
SB STA 1029+00 TO STA 1033+00

DATE: 08-28-2019

FILE: S109
DRAWN BY: HDR Engineering, Inc.
NOT FOR CONSTRUCTION
NOTES:

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY:

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LANE
- LANE LINE
- PAINTABLE MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE:

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SIGNING AND STRIPING PLAN
SB STA 1033+00 TO STA 1037+00

DATE: 08-28-2019
NOTES

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY

--- BROKEN LINE
--- SOLID LINE
--- DOUBLE SOLID LINE
--- DOTTED LINE AND AUXILIARY LANE LINE
--- SHARED LEFT TURN LANE
--- PAVEMENT MARKING ARROWS
--- STOP LINE
--- YIELD LINE
--- CROSSWALK LINES BLOCK STYLE
--- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

SIGNING AND STRIPING PLAN
SB STA 1041+00 TO STA 1045+00

DATE: 08-28-2019
NOTES

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LINE
- HATCH LINE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES
- BLOCK STYLE
- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NEEDED TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

REGULATIONS ARE NOT SHOWN IN THIS PLAN. MODIFICATIONS TO ON-STREET PARKING OPERATIONS, SIGN REMOVALS AND NECESSARY TO SUPPORT STREETCAR SIGNING AND ANTICIPATED PROPOSED SIGNING THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NEEDED TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
NOTES:

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY:

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LANE
- METERED TURN LANE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES BLOCK STYLE
- CROSSTRADED LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSTRADES

GENERAL NOTE:

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
43RD STREET
SB STA 1053+00 TO STA 1057+00

DATE: 08-22-2019

DRAWN BY
APPROVED BY

HDR Engineering, Inc.
PRELIMINARY PLANS - 30%

DRAWING NO.:
S115.dgn

FILENME:

SCALE FOR 22"X34":

CONTRACT NO.:

VOLUME:

HDR Engineering, Inc.
816-360-2700
Kansas City, MO 64131-3471
Suite 600
10450 Holmes Road

Certificate of Authority: 000856

08/25/2019

8/25/2019

08-22-2019

08/22/2019

MMQ

RPB

RPB

JWR

NKS

KANSAS CITY STREETCAR MAIN STREET EXTENSION

DATE:
08-28-2019

08-28-2019

DATE:

KEY DATE DESCRIPTION

RideKC STREETCAR

GENERAL NOTE
REGULATIONS ARE NOT SHOWN IN THIS PLAN.
MODIFICATIONS TO ON-STREET PARKING OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

PHOTOALIBRI

NOT FOR CONSTRUCTION

S115
241
KANSAS CITY STREETCAR MAIN STREET EXTENSION

DATE: 08-28-2019

PRELIMINARY PLANS - 30%

S116.dgn

Not for Construction

NOTES:
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY:
- BROWN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LINE
- MATCH LINE
- PAVEMENT MARKING ARROWS
- CROSSWALK LINES BLOCK STYLE
- Crosswalk lines parallel style for tinted concrete crosswalks

GENERAL NOTE:
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
VIETNAM VETERANS MEMORIAL DRIVE
SB STA 1067+00 TO STA 1061+00

DATE: 08-28-2019

Prepared By:

Certified By:

Certif. By:

Scale for 22"x34":

H: 1"=20'

816-360-2700

10450 Holmes Road

Kansas City, MO 64131-3471

Suite 600

Certificate of Authority: 000856

PRELIMINARY PLANS - 30%
GENERAL NOTE

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
40TH WAY
SB STA 1065+00 TO STA 1069+00

NOTES
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY
--- BROKEN LINE
--- SOLID LINE
--- DOUBLE SOLID LINE
--- DOTTED LINE AND AUXILIARY LANE LINE
--- SHARED LEFT TURN LINE
--- MATCH LINE
--- PAVEMENT MARKING ARROWS
--- STOP LINE
--- YIELD LINE
--- CROSSWALK LINES BLOCK STYLE
--- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

DATE: 08-28-2019

SCALE 60"=1'
NOTES:

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY:

- BOUND LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LANE BY TURN LINE
- YIELD LINE
- PAVEMENT MARKING ARROWS

CROSSWALK LINES BLOCK STYLE
CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE:

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
Kansas City Streetcar Main Street Extension

Signing and Striping Plan
37th Street
SB STA 1089+00 TO STA 1093+00

Notes:
1. Existing Sign
2. Proposed Sign
3. Proposed Internally Illuminated Street Name Sign

Payment Marking Key:
- Broken Line
- Solid Line
- Double Solid Line
- Dotted Line and Auxiliary Lane Line
- Shared Left Turn Line
- Match Line
- Pavement Marking Arrows

Stop Line
Yield Line

Crosswalk Lines
- Block Style
- Parallel Style for Tinted Concrete Crosswalks

General Note:
This plan shows existing corridor signing and anticipated proposed signing necessary to support streetcar operations. Sign removals and modifications to on-street parking regulations are not shown in this plan.

Certificates of Authority:
- HDR Engineering, Inc.
- Kansas City, MO 64131-3471

Scale:
- 1" = 20'

Key:
- Hidden
- Northbound Track
- Southbound Track
- Right Lane
- Left Lane
- Northbound Track
- Southbound Track
- Buses Only
- Crosswalk
- Stop
- Right Turn
- Left Turn
- 37th Street
- Main Street

Date: 08-28-2019
NOTES:
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY:
- --- BROKEN LINE
- --- SOLID LINE
- --- DOUBLE SOLID LINE
- --- DOTTED LINE AND AUXILIARY LANE LINE
- --- SHARED LEFT TURN LINE
- --- MIDDLE LINE
- --- PAINTED MARKING ARROWS

GENERAL NOTE:
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**SIGNING AND STRIPING PLAN**

**36TH STREET**

**SB STA 1097+00 TO STA 1101+00**

---

**NOTES**

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

**PAVEMENT MARKING KEY**

- **broken line**
- solid line
- double solid line
- dotted line and auxiliary lane line
- shared left turn line
- dashed line
- pavement marking arrows
- stop line
- yield line
- crosswalk lines block style
- crosswalk lines parallel style for tinted concrete crosswalks

**GENERAL NOTE**

This plan shows existing corridor signing and anticipated proposed signing necessary to support streetcar operations. Sign removals and modifications to on-street parking regulations are not shown in this plan.

---

**DATE:** 08-28-2019

---

**EXISTING SIGN**

- PROPOSED SIGN
- PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

---

**SCALE**

- 0
- 20
- 40
- 60

---

**DATE: 08-28-2019**

**FILENAME:** S126.dgn

**CONTRACT NO.:**

**Certificate of Authority:** 000856

816-360-2700

Kansas City, MO 64131-3471 Suite 600

10450 Holmes Road

---

**DRAWING NO.:**

**DRAWN BY:**

**APPROVED BY:**

**DESIGNED BY:**

**CHECKED BY:**

---

**SCALE FOR 22"x34":**

---

**NOT FOR CONSTRUCTION**
NOTES
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

Pavement Marking Key:
- Broken Line
- Solid Line
- Double Solid Line
- Dotted Line and Auxiliary Lane Line
- Shared Left Turn Line
- Pavement Marking Arrows
- Stop Line
- YIELD Line
- Crosswalk Lines Block Style
- Crosswalk Lines Parallel Style for Tinted Concrete Crosswalks

General Note:
This plan shows existing corridor signing and anticipated proposed signing necessary to support streetcar operations, sign removals and modifications to on-street parking regulations are not shown in this plan.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
SB STA 1101+00 TO STA 1105+00

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
SB STA 1105+00 TO STA 1109+00

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

NOTES
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY

BROKEN LINE
SOLID LINE
DOUBLE SOLID LINE
DOTTED LINE AND AUXILIARY LANE LINE
SHARED LEFT TURN LANE
MATCH LINE
PAVEMENT MARKING ARROWS

STOP LINE
YIELD LINE
CROSSWALK LINES BLOCK STYLE
CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
PRELIMINARY PLANS - 30%
DATE: 08-28-2019

H: 1"=20'

NOT FOR CONSTRUCTION
GENERAL NOTE

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
NOTES

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LANE
- LANE LINE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES
- CROSSWALK LINES PARALLEL
- STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NEEDED TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
NOTES:

1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY:
- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LINE
- MIDDLE TURN LANE
- STOP LINE
- YIELD LINE
- CROSSWALK LINES
- BLOCK STYLE
- CROSSWALK LINES PARALLEL
- STYLE FOR TINTED CONCRETE CROSSTREWS

GENERAL NOTE:

THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
KANSAS CITY STREETCAR MAIN STREET EXTENSION

SIGNING AND STRIPING PLAN
SB STA 1165+00 TO STA 1169+00

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR
SIGNING AND ANTICIPATED PROPOSED SIGNING
NECESSARY TO SUPPORT STREETCAR
OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING
REGULATIONS ARE NOT SHOWN IN THIS PLAN.

NOTES
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERMEDIATE ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY
--- BROKEN LINE
-- SOLID LINE
- DOUBLE SOLID LINE
--- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LANE
— PAVEMENT MARKING ARROWS

NOTES:
1. MATCH LINE
2. NORTHBOUND TRACK
3. SOUTHBOUND TRACK
4. NOISE ORDINANCE ENFORCED
5. SIGNAL AND STRIPING PLAN

Pavement Marking Arrows
- CROSSWALK LINES
- BLOCK STYLE
- CROSSWALK LINES PARALLEL
- STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR
SIGNING AND ANTICIPATED PROPOSED SIGNING
NECESSARY TO SUPPORT STREETCAR
OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING
REGULATIONS ARE NOT SHOWN IN THIS PLAN.
NOISE ORDINANCE ENFORCED

SB STA 1169+00 TO STA 1173+00

SOUTHBOUND TRACK
NORTHBOUND TRACK

EXISTING SIGN
PROPOSED SIGN
PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS, SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

PAVEMENT MARKING KEY

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LINE
- LANE LINE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES BLOCK STYLE
- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

NOTES
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS, SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.
NOT FOR CONSTRUCTION

GENERAL NOTE
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

SIGNING AND STRIPING PLAN
SB STA 1177+00 TO STA 1181+00

KANSAS CITY STREETCAR MAIN STREET EXTENSION

DATE: 08-28-2019

A. Pantle Engineering, Inc.
816-360-2700
Kansas City, MO 64131-3471
Suite 600
10450 Holmes Road

NOTE:
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAVEMENT MARKING KEY

- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LINE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES
- BLOCK STYLE
- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

NOTE: THE LAYOUT OF THE PROPOSED CENTER LANE BETWEEN PERSHING RD AND MAIN ST VARIES BASED UPON FREEWAY LANE SHAPES.
NOTES:
1. EXISTING SIGN
2. PROPOSED SIGN
3. PROPOSED INTERNALLY ILLUMINATED STREET NAME SIGN

PAYMENT MARKING KEY:
- BROKEN LINE
- SOLID LINE
- DOUBLE SOLID LINE
- DOTTED LINE AND AUXILIARY LANE LINE
- SHARED LEFT TURN LINE
- MATCH LINE
- PAVEMENT MARKING ARROWS
- STOP LINE
- YIELD LINE
- CROSSWALK LINES
- CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS

GENERAL NOTE:
THIS PLAN SHOWS EXISTING CORRIDOR SIGNING AND ANTICIPATED PROPOSED SIGNING NECESSARY TO SUPPORT STREETCAR OPERATIONS. SIGN REMOVALS AND MODIFICATIONS TO ON-STREET PARKING REGULATIONS ARE NOT SHOWN IN THIS PLAN.

KANSAS CITY STREETCAR MAIN STREET EXTENSION
SIGNING AND STRIPING PLAN
SB STA 1181+00 TO STA 1185+00

DATE: 08-28-2019
INSTALLATION PROCEDURE FOR SINGLE CONTACT WIRE:

1. BEFORE INSTALLATION, PULLOUTS WHERE REQUIRED ARE TO BE EXCAVATED. POLES WERE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE DOWNS强迫 X 72 INCHES OR 3 FEET FROM THE GROUND LEVEL.

2. INSTALLATION OF CABLE RISERS AND FEEDER TAPS SHALL CONNECT DIRECTLY TO THE CONTACT WIRE OF THE SINGLE CONTACT WIRE SYSTEM THROUGH A DISCONNECT SWITCH.

3. WHEN ALL WIRING HAS BEEN INSTALLED, TERMINATED PROPERLY, AND CLIPPED IN, CHECK CONTACT WIRE OFFSET AND MAKE ADJUSTMENTS AS NECESSARY. CHECK THAT THE CABLES ARE PROPERLY TERMINATED AND THAT THE WIRES ARE CORRECTLY CLASSIFIED.

4. AFTER THE OCS INSTALLATION IS COMPLETE, CHECK STAGGERS, OFFSETS, AND CONTACT WIRE HEIGHTS.

5. MAKE ADJUSTMENTS AND INSTALL ANY REQUIRED COMPONENTS OR ACCESSORIES.

6. BEFORE PERMITTING THE CONSTRUCTION TO PROCEED, THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL, A PLAT OF THE COMPLETE OCS INSTALLATION.

7. ALL BOLTED CONNECTIONS SHALL BE MADE WITH AN ASTM A325, TYPE 1, HEAVY HEXAGONAL BOLT IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.

8. ALL STRUCTURAL STEEL, STEEL FABRICATION, AND ALL COMPONENTS SHALL BE A-36 STEEL ALLOY UNLESS OTHERWISE NOTED. ALL BOLTS AND NUTS SHALL BE ASTM A325B, GRADE 50 BOLTS IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.

9. ALL BOLTS IN CONNECTIONS SHALL BE ATTACHED TO THE RIGIDITY OF THE CONTACT WIRE AND ALL CONNECTORS SHALL BE TIGHTENED TO A TIGHTNESS OF 70-120% MULTIPLIED BY THE CABLE LOAD.

10. ALL CEMENT FOUNDATION ARE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN 3 FEET OR THICKER.

11. THE DESIGN DRAWINGS. FIELD WELDING IS NOT PERMITTED EXCEPT IN LIMITED CASES OF THE ATTACHMENT OF CATENARY POLES TO RETAINING WALLS OR NOISE WALLS AND ONLY WITH PERMISSION AND DIRECTION OF THE ENGINEER. SEE STRUCTURAL STEEL NOTE 12 BELOW FOR THE REQUIREMENTS OF FIELD WELDING.

12. ALL CEMENT FOUNDATION ARE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.

13. ALL CEMENT FOUNDATION ARE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.

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16. ALL CEMENT FOUNDATION ARE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.

17. ALL CEMENT FOUNDATION ARE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.

18. ALL CEMENT FOUNDATION ARE TO BE EXCAVATED BY HAND WITH SHOVELS AND SPades OR EXCAVATOR (WHERE PREVIOUS WORK IS NOT COMPLETED). ALL CEMENT FOUNDATION ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED.
### Conductors Contact Wire Span Wire System Type Hardwires Fused Tap Size Flexible Hardwire Size

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<th>350 KCMIL</th>
<th>1/4</th>
<th>5/16</th>
<th>3/8</th>
<th>1/2</th>
<th>11 MM</th>
<th>4 MM</th>
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<tr>
<td>BRONZE</td>
<td>BROWN (5)</td>
<td>GALVANIZED STEEL</td>
<td>GALVANIZED STEEL</td>
<td>GALVANIZED STEEL</td>
<td>FULL STRAND</td>
<td>STAINLESS STEEL</td>
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<tr>
<td>BARE</td>
<td>SOLID GROOVED TROLLEY WIRE</td>
<td>7 WIRE STRAND</td>
<td>7 WIRE STRAND</td>
<td>7 WIRE STRAND</td>
<td>7 WIRE STRAND</td>
<td>BONDED JACKET TO SYNTHETIC ROPE</td>
<td>SOLE</td>
<td>63 WIRE</td>
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### Make-Up
- Solid Grooved Trolley Wire
- 7 Wire Strand
- 7 Wire Strand
- 7 Wire Strand
- 7 Wire Strand
- Bonded Jacket to Synthetic Rope

### Type
- Maximum: Copper
- Minimum: Steel
- Tungsten: Steel
- Aluminum: Steel

### Insulation
- Polyurethane
- 0.109" EPR / 0.06" Cross-Linked Polyolefin

### Weight - No Ice (Lbs/ft)
- 1.062
- 0.121
- 0.225
- 0.273
- 0.517
- 0.07
- 0.057
- 0.772
- 0.081

### Breaking Load (Lbs)
- 16,410
- 3,150
- 6,000
- 11,500
- 25,000
- 11,200
- 1,123
- 7,940
- 1,400

### Modulus of Elasticity (PSI)
- 16 x 10^6
- 29 x 10^6
- 29 x 10^6
- 29 x 10^6
- 29 x 10^6
- 28 x 10^6
- 16 x 10^6
- 16 x 10^6
- 16 x 10^6

### Thermal Coefficient (°F)
- 9.4 x 10^-6
- 6.7 x 10^-6
- 6.7 x 10^-6
- 6.7 x 10^-6
- 6.7 x 10^-6
- 17.3 x 10^-6
- 9.4 x 10^-6
- 9.4 x 10^-6
- 9.4 x 10^-6

### Normal Tension @ 60°F - No Wind (Lbs)
- 2480
- 213
- 213
- 213
- 213
- 213
- 213
- 213
- 213

### Weight With 1/2" Radial Ice (Lbs/ft)
- 1.760
- 1.760
- 1.760
- 1.760
- 1.760
- 1.760
- 1.760
- 1.760
- 1.760

---

HNTB Engineering, Inc.
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816-360-2700
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KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
CONDUCTOR PARTICULARS

DATE: 08-28-2019
KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
CONDUCTOR PARTICULARS

Y003 277
CASE 2
CLEARANCES AT CROSSING OF TRACKS OR ALONG AND ABOVE TRACKS OR SURFACE OF STREETS OF RAILROADS OPERATED BY OVERHEAD TROLLEY CONTACT WIRES

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

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

CASE 5
CLEARANCES ABOVE GROUND IN AREAS ACCESSIBLE TO PEDESTRIANS ONLY

MINIMUM OCS VERTICAL WIRE CLEARANCE UNDER OVERHEAD STRUCTURE

CONTACT WIRE OR DEPOT WIRE

NON-OCS CONDUCTOR CLEARANCES ABOVE CONTACT OR MESSENGER WIRES

PER NESC

OCS WIRE CLEARANCES ABOVE GROUND OR RAILS

NOTES:
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWINGS Y001.
2. ALL CLEARANCES SHALL CONFORM TO NATIONAL ELECTRICAL SAFETY CODE (NESC) UNLESS INDICATED OTHERWISE.
3. ALL CLEARANCES ARE MINIMUM VALUES.
4. VERTICAL CLEARANCES MEASURE GROUND OR RAIL, SHALL APPLY TO CONTACT WIRES UNDER THE FOLLOWING CONDITIONS:
   · CONDUCTOR TEMPERATURE OF -20°F AND 120°F, ICE, NO WIND, WITH FINAL SAG IN THE WIRE
   · SPAN LENGTHS NOT GREATER THAN 120 FT FOR SINGLE CONTACT SYSTEMS
5. CLEARANCES SHOWN WIRE SHALL BE A MINIMUM PROVIDE FOR THE NORMAL ELECTRICAL PASSING CLEARANCE OF 6 INCHES, UNDER PANTOGRAPH UPLIFT CONDITIONS, AND INCORPORATING ALL CONSTRUCTION TOLERANCES FOR THE TRACK, OCS, AND OVERHEAD STRUCTURES.
6. SOLUTIONS SERVICES ASSOCIATED TO DECK MAY BE CLOSER TO THE CONTACT WIRE AND SHALL BE PROTECTED FROM ACCIDENTAL ENERGIZATION WITH SPAN SPACERS, INSULATION OR USE OF SPAN ROPE IN LIEU OF STEEL GUY WIRE.
7. WHERE MINIMUM CLEARANCE CANNOT BE OBTAINED, CONTRACTOR SHALL TAKE DIRECTION FROM ENGINEER.

NOTE 4
SUPPLY LINES GREATER THAN 22 KV
SUPPLY LINES 751 V - 22 KV
SUPPLY LINES 0 V - 751 V
SURGE PROTECTION WIRES
COMMON WIRES, CABLES & MESSENGERS
SPAN & GUARD WIRES (FOREIGN UTILITIES)

NOTE 5
SPAN AND GUARD WIRES
CLASS "C" CIRCUITS, SUPPLY SERVICE DROPS, 0 - 750 VOLTS
TROLLEY CONTACT, SPAN AND FEEDER WIRES, 0 - 750 VOLTS
GROUND CABLES, 0 - 750 VOLTS
750 - 22,500 VOLTS
OVER 22,500 VOLTS

NOTE 7
WHERE MINIMUM CLEARANCE CANNOT BE OBTAINED, CONTRACTOR SHALL TAKE DIRECTION FROM ENGINEER.

NOTE 6
SPAN WIRES ASSOCIATED WITH THE OCS MAY BE CLOSER TO THE CONTACT WIRE AND SHALL BE PROTECTED FROM ACCIDENTAL ENERGIZATION WITH SPAN SPACERS, INSULATION OR USE OF SPAN ROPE IN LIEU OF STEEL GUY WIRE.

NOTE 1
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWINGS Y001.
2. ALL CLEARANCES SHALL CONFORM TO NATIONAL ELECTRICAL SAFETY CODE (NESC) UNLESS INDICATED OTHERWISE.
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6. SOLUTIONS SERVICES ASSOCIATED TO DECK MAY BE CLOSER TO THE CONTACT WIRE AND SHALL BE PROTECTED FROM ACCIDENTAL ENERGIZATION WITH SPAN SPACERS, INSULATION OR USE OF SPAN ROPE IN LIEU OF STEEL GUY WIRE.
7. WHERE MINIMUM CLEARANCE CANNOT BE OBTAINED, CONTRACTOR SHALL TAKE DIRECTION FROM ENGINEER.
KANSAS CITY STREETCAR PANTOGRAPH SECURITY

SINGLE CONTACT WIRE

TRACK PARAMETERS

ALIGNMENT

GAGE TOLERANCE 1.50 IN
RAIL WEAR 0.60 IN
WHEEL FL WEAR 0.36 IN
WHEEL/RAIL CLEARANCE 0.24 IN
CROSS LEVEL EFFECT

CROSS LEVEL TOLERANCE 0.96 IN
TRACK GAGE 56.50 IN
RAIL HEAD WIDTH 2.72 IN
TOTAL CROSS LEVEL EFFECT 3.79 IN

PANTO PARAMETERS

WIDTH OVER HORNS 78 IN
WIDTH ON FLAT 52.6 IN
CARBON WIDTH 40.80 IN
PANTO SWAY 2.04 IN
HORIZ HORN LENGTH 11.95 IN

VEHICLE PARAMETERS

ROLL AT: 3.00 DEGREES
11.44 IN
ROLL POINT ABOVE TOR 15.74 IN
LATERAL MOVEMENT 1.25 IN
TOTAL VEHICLE/PANTOGRAPH MOVEMENT 13.63 IN
50% REDUCTION INTO WIND (PER AREMA) 6.82 IN

WIRE PARAMETERS

DIAM. IN WT/FT CW 0.62 1.06
TENSION # CW 2480
CW HEIGHT FT 19.5
SPAN LENGTH (TANGENT) 125.00
WIND @ OPERATING CONDITION MPH 55
MAX WIND (W/ 10% GUST) MPH 60.50
ALLOWABLE MOVEMENT BEFORE HORN 26.30 IN
TOTAL WIRE MOVEMENT FROM PANTO CL 11.39 ON CARBON
FINAL LOCATION OF WIRE FROM START OF HORN 14.91 IN
ALLOWABLE STAGGER (SAFETY FACTOR 3") BEFORE HORN 11.91 IN

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SCALE: NTS
END VIEW STREETCAR STATIC/DYNAMIC POSITION

PLAN VIEW PAN HEAD

SIDE VIEW PAN HEAD

END VIEW STREETCAR STATIC/DYNAMIC POSITION

NOTES:
1. VALUES SHOWN ARE CONSERVATIVE AND BASED ON INDUSTRY PRACTICE.
2. SIDE OPERATING ZONE ON PANTOGRAPH HEAD IS BASED ON SINGLE ROLL OF 2" SHEET 50 INCHES WITH 1/2" DUFT ALLOWANCE FOR A CONSTANT TENSIONED CONTACT WIRE IN 4-LAUGE TENSION.
3. SPAN LENGTH IS BASED ON A SPAN LENGTH OF 120 FEET MAXIMUM, TYPICAL SPAN LENGTH IS 125 FEET.
4. MAXIMUM STAGGER TO BE 16 INCHES, MAXIMUM SIDE CLEARANCE TO BE 18 INCHES WITH A 9 INCH OFFSET AT PULLOVERS.
5. PANTOGRAPH CENTER IS LOCATED DIRECTLY OVER THE TRUCK KING PIN AND RIDES ALONG THE TRACK CENTERLINE.
6. ELECTRICAL AND MECHANICAL CLEARANCE NOT SHOWN ON THIS DRAWING.
1. CROSS CONTACT WIRE CLAMP TO BE POSITIONED AT A DISTANCE FROM THE POINT OF SWITCH AS INDICATED ON THE LAYOUT DRAWINGS.
2. FINAL POSITION OF CONTACT WIRE CLAMP SHOWN ON THE CURVE RAIL OF THE TRACK AT THE MID RANGE TEMPERATURE OF 60°F.
3. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
4. JUMPERS SHALL BE POSITIONED SO THAT MOVEMENT OF CONTACT WIRE DOES NOT ALLOW FOULING OF THE CROSS CONTACT WIRE CLAMP.
5. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
6. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
7. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
8. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
9. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
10. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.

NOTES:

1. FOR NOTES REFER TO DRAWING Y007. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y007.
2. CROSS CONTACT WIRE CLAMP TO BE POSITIONED AT A DISTANCE FROM THE POINT OF SWITCH AS INDICATED ON THE LAYOUT DRAWINGS.
3. FINAL POSITION OF CONTACT WIRE CLAMP TO BE POSITIONED AT A DISTANCE FROM THE POINT OF SWITCH AS INDICATED ON THE LAYOUT DRAWINGS.
4. JUMPERS SHALL BE POSITIONED SO THAT MOVEMENT OF CONTACT WIRE DOES NOT ALLOW FOULING OF THE CROSS CONTACT WIRE CLAMP.
5. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
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9. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
10. PULL OFFS / STEADY ARMS TO BE LOCATED AT REQUIRED DISTANCES FROM SUPERELEVATED TRACK CENTERLINE.
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y005.
2. FIXED TENSION VALUES CORRESPONDING TO CONTACT WIRES NOT SUBJECTED TO WIND OR ICE.
3. INITIAL TENSION VALUE OF 2,480 LBS AT 60°F USED IN CALCULATING CONTACT WIRE INSTALLATION TENSIONS.
4. TENSION CHART BASED ON TENSOREX SPRING WITH WIRE MOVEMENT OF 25.59 INCHES.

NOTES:
- INSTALLATION TENSION ASSUMED TO BE 2480 LBS @ 60° F

INSTALLATION TENSION CHART

OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS
INSTALLATION TENSION CHART

DATE: 08-28-2019

NOT FOR CONSTRUCTION
NOTES:
1. FOR INFORMATION REFER TO DRAWING V01 FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING V02
2. MATERIAL PORTION OF SHEET
3. STAGGER CHANGE "X" IS LIMITED BY PANTOGRAPH SECURITY
4. STAGGER CHANGE "X" IS FOR CANTILEVER SUPPORT
5. ALONG TRACK MOVEMENT FOR SINGLE CONTACT WIRE AND CATERYRI

TOTAL ALONG TRACK MOVEMENT - °ATM (IN)

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STAGGER CHANGE - "X" (IN)

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<th>LENGTH OF &quot;FPO&quot; ASSEMBLY - &quot;A&quot; (IN)</th>
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OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS
ALONG TRACK MOVEMENT CHART

DATED: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION

NOT FOR CONSTRUCTION

REV  DATE  DESCRIPTION
---  ---  -------------------------------------
1. For notes refer to drawing Y001. For symbols and abbreviations refer to drawing Y002.
2. Overlap shown is for typical arrangement for single contact wire system and may vary. Spans and support spacing vary according to location. Refer to OCS layout drawings and OCS profile drawings for additional information.
3. Pole and hanger spacing vary according to overlap location. Refer to OCS layout drawings and OCS profile drawings for additional information.
4. Pole and hanger spacing vary according to overlap location. Refer to OCS layout drawings and OCS profile drawings for additional information.
5. Pole and hanger spacing vary according to overlap location. Refer to OCS layout drawings and OCS profile drawings for additional information.
6. Pole and hanger spacing vary according to overlap location. Refer to OCS layout drawings and OCS profile drawings for additional information.
7. Pole and hanger spacing vary according to overlap location. Refer to OCS layout drawings and OCS profile drawings for additional information.
8. Pole and hanger spacing vary according to overlap location. Refer to OCS layout drawings and OCS profile drawings for additional information.
<table>
<thead>
<tr>
<th>POLE DESIGNATION</th>
<th>POLE TYPE</th>
<th>POLE BASE DIA. (IN)</th>
<th>OUTSIDE DIAMETER (IN)</th>
<th>WALL THICKNESS &quot;TW&quot; (IN)</th>
<th>POLE BASE ANCHOR BOLT DIA. (IN)</th>
<th>SQUARE &quot;SQ&quot; (IN)</th>
<th>BOLT CIRCLE &quot;D&quot; (IN)</th>
<th>THICKNESS &quot;T&quot; (IN)</th>
<th>ANCHOR BOLT HOLE &quot;Z&quot;</th>
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<tbody>
<tr>
<td>TP-1</td>
<td>8</td>
<td>0.5000</td>
<td>21</td>
<td>21</td>
<td>1 1/4</td>
<td>1 3/4</td>
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<td>1 3/4</td>
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<tr>
<td>TP-2</td>
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<td>TP-4</td>
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<td>21</td>
<td>21</td>
<td>2 1/4</td>
<td>2</td>
<td>1 3/4</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

1. 2'-0" POLE LENGTH AND TYPE REFER TO POLE SCHEDULE DRAWINGS Y091 THRU Y096.
2. FOR POLE TAG DETAILS, REFER TO DRAWING Y071.
3. SURGE ARRESTER HOLE IS ONLY NECESSARY FOR POLES WITH SURGE ARRESTER ATTACHED AS SHOWN IN DRAWING Y057.
4. POLE FABRICATOR SHALL PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MISSOURI.
5. IF POLE IS MADE OF FORMED PLATE AND WELDED, WELD SHALL BE FLUSH WITH SURFACE OF POLE.
1. For symbols and abbreviations, refer to drawing Y002.

2. For pole length and type for pole schedule drawings, refer to Y091 through Y096.

3. Provide reinforcement at spout where required by vendor calculations and testing.

4. For base plate details, refer to drawing Y021.

5. Welded spout detail, for spout fittings, see drawing Y022.

6. Street light and traffic light poles not to be used as feeder poles.
NOTES:

1. FOR ACCESS REFERENCE DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS. REFER TO DRAWING.

2. WHEN OCS POLES ARE IN THE SAME LOCATION AS AN EXISTING STREETLIGHT OR
   LANTERN POLE THE STREETLIGHT POLE AND TRANSFORMER SHALL BE REMOVED
   AND REPLACED WITH AN OCS POLE AND FOUNDATION. CARE SHALL BE EXERCISED
   DURING FOUNDATION REMOVAL TO NOT DAMAGE ANY CONDUITS OR WIRES.

3. WHERE OCS POLES ARE IDENTIFIED ON THE LAYOUT DRAWINGS.

4. EXISTING WIRES AND CONDUITS REQUIRE INSTALLATION OF A PULL BOX TO
   TERMINATE WIRES AND CONDUITS REPEATEDLY CAN BE CUT AND REPLACED
   DIRECTLY ON THE POLE. REFER TO PULL BOX DETAIL, DRAWING Y025, FOR
   MEANS AND METHODS.

5. OCS ATTACHMENTS MAY BE SPAN WIRES OR BRACKET ARMS.
### Pole Table

<table>
<thead>
<tr>
<th>Pole Type</th>
<th>Pole Base</th>
<th>Outside Diameter (in.)</th>
<th>Wall Thickness (in.)</th>
<th>Pole Base Anchor Bolt Diameter (in.)</th>
<th>Pole Base Anchor Bolt Circle Diameter (in.)</th>
<th>Pole Base Anchor Bolt Thickness (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP/TPC-1L</td>
<td>8</td>
<td>0.5000</td>
<td>21</td>
<td>21</td>
<td>1 1/4</td>
<td>1 3/4</td>
</tr>
<tr>
<td>TP/TPC-2L</td>
<td>9</td>
<td>0.5000</td>
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<td>21</td>
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<td>TP/TPC-3L</td>
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<td>0.5000</td>
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<td>21</td>
<td>21</td>
<td>1 3/4</td>
<td>2 1/4</td>
</tr>
</tbody>
</table>

### Notes:


2. Pole shall have a uniform taper of fourteen hundredths (0.14") per linear foot. The 0.14" / ft slope is the reduction rate in diameter.

3. Pole base anchor shall be in conformance with the ANSI A119.1 specifications of latest edition as determined by the manufacturer.

4. Pole base anchor bolt diameter and circle diameter shall be as determined by the manufacturer.

5. Pole type and length must refer to pole schedule drawings Y091 thru Y096.

6. For pole tag details, refer to drawing Y071.

7. Surge arrester hole is only necessary for poles with surge arrester attached as shown in drawing Y057.

8. The pole fabricator shall provide shop drawings signed and sealed by a professional engineer registered in the state of Missouri.

---

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Chelmsford, MA 01824
Phone: 978-905-4000

---

**Preliminary Plans - 30%'**

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**Overhead Contact System**

**Structural Details**

**Light Mounting Detail**

---

**NOT FOR CONSTRUCTION**
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.

2. ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.

3. PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION.

4. PROTECT CONDUITS DURING CONSTRUCTION.

5. GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE INSTALLER SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY.

6. GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.

7. FOR FOUNDATIONS LOCATED IN LANDSCAPE AREA, TOP OF FOUNDATIONS SHOULD BE LEVEL WITH TOP OF FINISH GRADE.

8. FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS.

9. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4.0 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/8" COARSE AGGREGATE.

10. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.

11. WHEN EMBEDDING THE BASE PLATE IN THE FOUNDATION IS NOT POSSIBLE, CONTRACTOR SHALL REFERENCE THE BASE PLATE ABOVE FOUNDATION DETAIL.

12. WHERE ROUND POLE FOUNDATIONS ARE IN LANDSCAPE AREAS, USE FOUNDATION FD-1. FOR ALL PAVED AND SIDEWALK AREAS, USE FOUNDATION FD-2.
### Notes:

1. Refer to drawing Y001 for symbols and abbreviations. Refer to drawing Y029 for notes.
2. Anchor bolts shall be hot-dip galvanized steel, conforming to AWS F1554 Grade 55. All bolts and plates on anchor bolts shall be hot-dip galvanized steel conforming to AWS F1554 Grade 55.
3. Protect all anchor bolts above top of foundation from damage and residue concrete during foundation construction.
4. Cap and protect the consents during construction.
5. Ground rod location and orientation relative to track and foundation is variable. The installer shall take care to avoid any utilities buried adjacent to the foundation and shall locate ground rod as required for proper track alignment.
6. Ground resistance for the pole shall be 25 ohms or less.
7. For foundations located in landscape areas, top of foundations shall be level with top of finished grade.
8. For site-specific foundation type and embedment, refer to foundation schedule drawings.
9. Concrete shall have a minimum 28-day compressive strength of 4,000 psi. Concrete shall have a maximum 3/8" coarse aggregate.
10. Ground resistance for the pole shall be 25 ohms or less.
11. Ground rod location and orientation relative to track and foundation is variable. The installer shall take care to avoid any utilities buried adjacent to the foundation and shall locate ground rod accordingly.
12. Where round pole foundations are in landscape areas, use Foundation FD-1. For all paved and sidewalk areas, use Foundation FD-2.

### Foundation/Anchor Bolt Table

<table>
<thead>
<tr>
<th>Foundation Type</th>
<th>REBAR (SEE TABLE)</th>
<th>MIN.</th>
<th>6&quot; MIN.</th>
<th>6&quot; MIN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Grade</td>
<td>Round Pole</td>
<td>3&quot;</td>
<td>3&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>Round Pole</td>
<td>Round Pole</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

- **TOP OF FOUNDATION = TOR**: 3" CLEAR MIN.
- **6" MIN.**
- **3" MIN.**
- **6" MIN.**
- **3" NOMINAL**
- **3" CLEAR MIN.**
- **3'-0"**
- **2% SLOPE TO EDGE**
- **6"**
- **14"**
- **14.5"**

---

**HDR Engineering, Inc.**
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816-360-2700

**Certificate of Authority: 000856**

**The HNTB Companies**
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
### Foundation/Anchor Bolt Table

<table>
<thead>
<tr>
<th>FDN. TYPE</th>
<th>VERTICAL REBAR</th>
<th>BOLT CIRCLE &quot;B&quot; (IN)</th>
<th>ANCHOR BOLT DIA. &quot;A&quot; (IN)</th>
<th>ANCHOR BOLT PROJECTION &quot;P&quot; (IN)</th>
<th>ANCHOR BOLT LENGTH &quot;C&quot; (IN)</th>
<th>&quot;D&quot; (IN)</th>
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</thead>
<tbody>
<tr>
<td>FD-1L</td>
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<td>21</td>
<td>11</td>
<td>66</td>
<td>14.85</td>
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<tr>
<td>FD-2L</td>
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<td>21</td>
<td>11</td>
<td>66</td>
<td>14.85</td>
<td>-</td>
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</tbody>
</table>

### Notes:
1. For notes refer to drawings Y028, Y029, and Y002 for anchor bolt diameter.
2. Anchor bolts shall be hot-dip galvanized steel conforming to ASTM A479 Grade 55. All nuts and plate washers shall be hot-dip galvanized steel conforming to ASTM A563 and F436, respectively.
3. Protect anchor bolts above top of foundation during construction.
4. Cap and protect the conduit during construction.
5. Ground rod location and orientation relative to track and foundation is variable. The installer shall take care to avoid any utilities buried adjacent to the foundation and shall locate them accordingly.
6. Ground resistance for the pole shall be 25 ohms or less.
7. For foundations located in landscape area, top of foundations should be flush with top of finished grade.
8. For site-specific foundation type and embedment, see foundation schedule drawings.
9. Concrete shall have a minimum 28-day compressive strength of 4 ksi. Concrete shall have a minimum 28-day compressive strength of 4 ksi. Concrete shall have a minimum 28-day compressive strength of 4 ksi.
10. Rebar shall conform to the requirements of ASTM A615 Grade 60. Rebar shall be epoxy coated.
11. When embedding the base plate in the foundation is not possible, contractor shall refer to the base plate above foundation detail.
12. Where round pole foundations are located in landscape areas, use foundation FD-1. For all paved and sidewalk areas, use foundation FD-2.
1. **EMBEDMENT PLATE**

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

2. **POLE ANCHOR BOLT**

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

**NOTES:**

1. For notes refer to drawing Y001. For symbols and abbreviations, refer to drawing Y002.
2. For pole anchor base plate details refer to drawing Y002.
3. For foundation type and embedment length, refer to pole and foundation schedule for arithmetic

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

4. Slope concrete away from anchor bolts for water runoff.
5. For additional grounding detail, refer to drawing Y006.

---

**FOUNDATION/ANCHOR BOLT TABLE**

<table>
<thead>
<tr>
<th>FOUNDATION TYPE</th>
<th>VERTICAL REBAR</th>
<th>ANCHOR BOLT SIZE</th>
<th>TOTAL BOLT CIRCLE &quot;B&quot;</th>
<th>ANCHOR BOLT DIA. &quot;A&quot;</th>
<th>ANCHOR BOLT PROJECTION &quot;P&quot;</th>
<th>ANCHOR BOLT LENGTH &quot;C&quot;</th>
<th>&quot;D&quot;</th>
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</thead>
<tbody>
<tr>
<td>FD-1</td>
<td>#9</td>
<td>8</td>
<td>21</td>
<td>11</td>
<td>11</td>
<td>66</td>
<td>17.68</td>
</tr>
</tbody>
</table>

* REFER TO DRAWING XXX FOR ANCHOR BOLT DIAMETER

---

**SCALE IN FEET**

0'-8" 0'-8" 1'-4"
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.
2. CONTRACT WIRE SUSPENSION ASSEMBLY ALLOCATED SEPARATELY.
3. SIZE OF DOUBLE CLAMP DEPENDANT UPON POLE SIZE.
4. BRACKET ARM GUARD WIRE AT END OF ARM TO BE CLAMPED TO OCS PIPE AT A 1:4 SLOPE.
5. USE INSIDE GUARD WIRE BRACKET ARM IF PIPE IS GREATER THAN 12 FEET LONG.
6. CONTRACTOR TO PURCHASE PIPE END FINIAL FOR APPROVAL BY KC STREETCAR. PIPE END FINIAL TO FIT OVER OUTSIDE OF PIPE AND BE SECURED USING A 1/4 INCH SQUARE HEAD SET SCREW.
7. CONTRACTOR SHALL ONLY HONE STEEL PLATES.
8. MAXIMUM REACH OF BRACKET ARM BA-1 IS 17 FEET.
9. ITEMS NOT REQUIRED WHEN CANTILEVERS ARE INSTALLED BACK-TO-BACK.

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
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<td>3</td>
<td>POLE CLAMP DETAILS</td>
<td>SEE DRAWING</td>
<td>Y036</td>
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<td>4</td>
<td>THIMBLE, 5/16&quot;, STL HDG</td>
<td>MAC</td>
<td>E0492-01</td>
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<td>5</td>
<td>LOOP INSULATOR</td>
<td>MAC</td>
<td>D2864-01</td>
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<td>6</td>
<td>SHACKLE FOR LOOP INSULATOR</td>
<td>MAC</td>
<td>E0928-02</td>
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<td>7</td>
<td>CHAIN LINK</td>
<td>MAC</td>
<td>E0159-01</td>
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<td>PIPE CLEVIS TWO PIECE G2.0&quot;</td>
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<td>C0145-02</td>
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<td>MAC</td>
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<td>056909-3002</td>
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<td>MAC</td>
<td>V9350</td>
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<tr>
<td>14</td>
<td>SHOCK, WIRE</td>
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<td>-</td>
</tr>
<tr>
<td>15</td>
<td>PIPE END CAP</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*PIPE END FINIAL TO BE FURNISHED BY CONTRACTOR AND SUBMITTED TO RESIDENT ENGINEER FOR APPROVAL.

NOTES:
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OVERHEAD CONTACT SYSTEM
BRACKET ARM ASSEMBLIES
SINGLE PIPE BRACKET ARM
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

2. ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.

3. BRACKET ARMS SHALL BE HORIZONTAL WITH RESPECT TO HORIZON.

4. ASSEMBLY TYPE SUSPENDED FROM BRACKET VARIES AND IS INDICATED ON LAYOUT PLANS.

5. FOR ASSEMBLY BA-2 USE SECOND BRACKET ARM SUPPORT GUY FOR ARMS LONGER THAN 12 FEET.

6. BRACKET ARM ASSEMBLY BA-1, ON DRAWING Y031, TO BE USED FOR BRACKET ARMS UP TO 17 FEET IN LENGTH. FOR LENGTHS GREATER THAN 17 FEET, USE BRACKET ARM ASSEMBLY BA-2. FINAL LENGTH OF BRACKET ARM TO BE DETERMINED IN THE FIELD ONCE THE OCS POLE HAS BEEN ERECTED.
NOTES:

1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

2. ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.

3. BRACKET ARMS SHALL BE HORIZONTAL WITH RESPECT TO GROUND.

4. ASSEMBLY TYPE SUSPENDED FROM BRACKET ARM VARIES AND IS INDICATED ON LAYOUT PLANS.

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
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<td>1</td>
<td>WIRE, SPAN, 5/16&quot;</td>
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<td>TERMINATION, SPAN WIRE, 5/16&quot;</td>
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<td>CLAMP FOR POLE, SINGLE SPAN</td>
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<td>4</td>
<td>THIMBLE, 5/16&quot;, STL HDG</td>
<td>MAC</td>
<td>KMA-140-4</td>
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<td>5</td>
<td>LOOP INSULATOR</td>
<td>MAC</td>
<td>D2864-01</td>
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<tr>
<td>6</td>
<td>SHACKLE FOR LOOP INSULATOR</td>
<td>MAC</td>
<td>KMA-010-3</td>
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<td>CHAIN LINK</td>
<td>MAC</td>
<td>E0159-01</td>
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<td>PIPE, STEEL, 2 IN., HDG, SCHEDULE 80</td>
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<td>MAC</td>
<td>KMC-676-1</td>
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<td>TURNBUCKLE, EYE &amp; EYE</td>
<td>MAC</td>
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<td>MOUNTING BRACKET</td>
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<td>13</td>
<td>1/2&quot; Ø CLEVIS PIN WITH COTTER KEY</td>
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<td>16</td>
<td>SLEEVE, NICOPRESS</td>
<td>NICOPRESS</td>
<td>188-8-VF6</td>
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<td>17</td>
<td>STEEL STRAP, 1/2&quot; THICK BY 1 5/8&quot; WIDE</td>
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</table>

SCALE: 3/4" = 1'-0"

SECURITY ASSEMBLY / ALLOCATED SEPARATELY (TYP)

OCS ASSEMBLY ALLOCATED SEPARATELY (TYP)

CONTACT WIRE (TYP)

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

OVERHEAD CONTACT SYSTEM

OVERLAP SINGLE PIPE BRACKET ARM
NOTES:
1. DRAWN TO OFICIAL DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFERENCE DRAWING Y002.
2. DETAIL 1 (SEE DETAIL 1)
3. DETAIL 2 (SEE DETAIL 2)

PART 1
SEE NOTE 1

PART 2
SEE NOTE 2

BRACKET ARM POLE SOCKET

SCALE: 6" = 1'-0"

PLAN VIEW

SCALE: 6" = 1'-0"

SIDE VIEW

SCALE: 6" = 1'-0"

DETAIL

SCALE: 6" = 1'-0"

TABLE 1

<table>
<thead>
<tr>
<th>PIPE OD</th>
<th>PIPE ID</th>
<th>POLE SOCKET PIPE ID (c)</th>
<th>POLE SOCKET PIPE OD (b)</th>
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<td>1 11/16&quot;</td>
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</table>

A. FOR NOTES REFER TO DRAWING Y001.
B. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.
C. MILL POLE SOCKET PIPE INSIDE DIAMETER TO PROVIDE 1/16" CLEARANCE AROUND CANTILEVER PIPE WHEN INSERTED (SEE DIMENSION (c) IN TABLE).
D. PART 2 TO BE MADE FROM STEEL.
E. COMPLETED UNIT TO BE HOT DIP GALVANIZED PER ASTM A53.
F. ALL DIMENSIONS IN INCHES.
G. GRIND SHARP EDGES.
H. USE 1 1/4" X 1 1/2" X 1 3/4" LIGHT BOX TYP. PIPE AND LOCKWASHERS. ALL GALVANIZED.
I. CHECK FOR SIZE PIPE AND INSULATOR PRIOR TO GALVANIZING. POLE SOCKET TO FIT WITH POLE CLAMP AND 2" PIPE. MAKE ALTERNATIONS AS NEEDED.
J. SOCKET IS MAC PRODUCTS PART NO. KMA-344.
1. FOR NOTES REFERENCE DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFERENCE DRAWING Y002.

2. BOLTS AND CLEVIS PINS SHALL BE STEEL CONFORMING TO ASTM A325, TYPE I, AND GALVANIZED IN CONFORMITY WITH ASTM A153, CLASS C.

3. NUTS SHALL BE STEEL CONFORMING TO ASTM A563, GRADE DH, AND GALVANIZED IN CONFORMITY WITH ASTM A153, CLASS C.

4. WASHERS SHALL BE FLAT AND GALVANIZED HARDENED STEEL FOR USE WITH FASTENERS TO ASTM A325.

5. FOR LOCATION OF DOUBLE CANTILEVER ARMS REFER TO LAYOUT PLANS.

6. DOUBLE CANTILEVER BRACKETS USED FOR OVERLAP.
BILL OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>MFR.</th>
<th>PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STEEL SPAN WIRE, 5/16&quot;</td>
<td>ASTM A475</td>
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<tr>
<td>2</td>
<td>BEAM CLAMP</td>
<td>MAC</td>
<td>SEE DWG. Y036</td>
</tr>
<tr>
<td>3</td>
<td>SHACKLE, TYPE 2</td>
<td>K+M</td>
<td>D0231-02</td>
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<tr>
<td>4</td>
<td>PREFORMED BIG-GRIP</td>
<td>PREFORMED LINE PRODUCTS</td>
<td>GDE-2106</td>
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<td>5</td>
<td>JB PORCELAIN INSULATOR</td>
<td>MACLEAN</td>
<td>DP54-3</td>
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<tr>
<td>6</td>
<td>HG-227 JAW &amp; EYE TURNBUCKLE</td>
<td>CROSBY</td>
<td>1031975</td>
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<td>7</td>
<td>THIMBLE, 5/16&quot;</td>
<td>CROSBY</td>
<td>1037559</td>
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<td>8</td>
<td>SPRING, CROSS SPAN</td>
<td>SIEMENS</td>
<td>8WL1080</td>
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<tr>
<td>9</td>
<td>POLE CLAMP</td>
<td>-</td>
<td>SEE DWG. Y036</td>
</tr>
<tr>
<td>10</td>
<td>INSULATOR, CLEVIS-TONGUE</td>
<td>MAC</td>
<td>D0107-01</td>
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<tr>
<td>11</td>
<td>COMPRESSION FITTING</td>
<td>NICOPRESS</td>
<td>26-15-00</td>
</tr>
</tbody>
</table>

NOTES:
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.
2. INSTALL SPRING IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.
3. FOR LOCATION OF SPRING TENSIONER DEVICES REFER TO LAYOUT PLANS.
4. SEE NOTE 4 ON DRAWING Y041 FOR ADDITIONAL INFORMATION ON INSULATOR PLACEMENT ALONG SPAN WIRES.
5. FOR HEAD SPAN ASSEMBLY DETAIL, REFER TO DRAWING Y049.
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

2. GUY WIRE FOR FLYING PULLOVERS MAY VARY. USE OF 4 mm HANGER WIRE FOR SHORT RUNS MAY BE SUBSTITUTED. IF LENGTH IS 3 FEET OR LESS.

3. USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER. SEE DRAWING Y054 FOR DETAILS.

4. WHEN CONNECTING TO CANTILEVER PIPE, SUBSTITUTE LINE INSULATOR, ITEM 9, WITH G2 SYNTHETIC FOR PIPE, ITEM 12, AS SHOWN ON THIS DRAWING.

5. MAXIMUM LOADING ON SINGLE PULLOVER IS 425 LBS.
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

2. USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER. SEE DRAWING Y054 FOR DETAILS.

3. GUY WIRE FOR FLYING PULLOVERS MAY VARY. USE OF 4 mm HANGER WIRE FOR SHORT RUNS MAY BE SUBSTITUTED. IF LENGTH IS 3 FEET OR LESS.

4. HANGER WIRE, ITEM 5 FOR ASSEMBLY PO-2 AND PO-2A, LENGTHS IS TYPICALLY 7.76". LENGTH MAY BE LENGTHEN TO SUIT CONDITIONS. MAXIMUM LENGTH IS 15 3/4".

5. MAXIMUM LOADING FOR A DOUBLE PULLOVER ASSEMBLY IS 865 LBS.

NOTES:
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.
2. USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER. SEE DRAWING Y054 FOR DETAILS.
3. USE 4 mm HANGER WIRE FOR SHORT RUNS MAY BE SUBSTITUTED. IF LENGTH IS 3 FEET OR LESS.
4. HANGER WIRE, ITEM 5 FOR ASSEMBLY PO-2 AND PO-2A, LENGTHS IS TYPICALLY 7.76". LENGTH MAY BE LENGTHEN TO SUIT CONDITIONS. MAXIMUM LENGTH IS 15 3/4".
5. MAXIMUM LOADING FOR A DOUBLE PULLOVER ASSEMBLY IS 865 LBS.
LOW PROFILE PENDULUM HANGERS

1. FOR NOTES REFER TO DRAWING Y001.
2. MAXIMUM LINE ANGLE FOR P-1 PENDULUM IS 4 DEGREES; SEE DETAIL 1. INCLINATION ANGLE NOT TO EXCEED 25°.
3. TOTAL ASSEMBLY WEIGHTS LISTED IN THE TABLE DO NOT INCLUDE THE WEIGHT OF THE SPAN WIRE OR BRACKET ARM.
4. LENGTH OF HANGER WIRE FOR SINGLE PENDULUM HANGER TO BE MEASURED IN THE FIELD SO THAT CONTACT WIRE HANGS AT THE REQUIRED HEIGHT. USE HANGER WIRE BENDING TOOL TO FORM LOOPS.
5. CONTACT WIRE CLAMP TO BE VERTICAL AFTER FINAL INSTALLATION.

NOTE 6:

3 3/4" (MIN) NO MAXIMUM LENGTH 25° MIN.

PENDULUM HANGER BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
<th>WEIGHT (LBS)</th>
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<tbody>
<tr>
<td>1.</td>
<td>2</td>
<td>PENDULUM HANGER - TYPE P-1</td>
<td>HDR Engineering, Inc.</td>
<td>D0719-01</td>
<td>0.004</td>
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<tr>
<td>2.</td>
<td>1</td>
<td>LINE INSULATOR, G1 FOR SPAN WIRE</td>
<td>HDR Engineering, Inc.</td>
<td>C1670-01</td>
<td>1.477</td>
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<tr>
<td>3.</td>
<td>2</td>
<td>CLAMP FOR CONTACT WIRE</td>
<td>HDR Engineering, Inc.</td>
<td>D1618-02</td>
<td>0.352</td>
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<tr>
<td>4.</td>
<td>1</td>
<td>PULLOFF BOW, TYPE 2</td>
<td>HDR Engineering, Inc.</td>
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<tr>
<td>5.</td>
<td>1</td>
<td>HANGER WIRE</td>
<td>HDR Engineering, Inc.</td>
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<td>0.209</td>
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<td>6.</td>
<td>1</td>
<td>LINE INSULATOR, G1, FOR 2&quot; PIPE</td>
<td>HDR Engineering, Inc.</td>
<td>C1682-02</td>
<td>2.293</td>
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</tbody>
</table>

ASSOCIATION WEIGH (LBS): P-1 = 3.721; P-1A = 4.537

NOTES:

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

THE HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000

KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
REGISTRATION ASSEMBLIES
PENDULUM SUSPENSION ASSEMBLIES

DATE: 08-28-2019

NOT FOR CONSTRUCTION
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>LINE INSULATOR, TYPE G1 FOR 2&quot; PIPE</td>
<td>MAC</td>
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<td>1A</td>
<td>LINE INSULATOR, TYPE G1 FOR SPAN</td>
<td>MAC</td>
<td>C1670-01</td>
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<tr>
<td>2</td>
<td>SHACKLE, TYPE 1</td>
<td>MAC</td>
<td>D0231-01</td>
</tr>
<tr>
<td>4</td>
<td>STITCH ROPE, 11MMØ KEVLAR</td>
<td>PHILLYSTRAN</td>
<td>HPTG11200I</td>
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<tr>
<td>5</td>
<td>CONTACT WIRE CLAMP FOR DELTA SUSP.</td>
<td>MAC</td>
<td>D1618-01</td>
</tr>
<tr>
<td>6</td>
<td>PULLOFF BRACKET FOR DELTA SUSP.</td>
<td>MAC</td>
<td>D3289-01</td>
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<tr>
<td>7</td>
<td>U-BOLT</td>
<td>MAC</td>
<td>D2340-05</td>
</tr>
<tr>
<td>8</td>
<td>JOINING PIECE</td>
<td>MAC</td>
<td>C1851-01</td>
</tr>
<tr>
<td>9</td>
<td>HEX HEAD BOLT, SS, Ø8MM X 50MM LONG</td>
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<td>---</td>
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<tr>
<td>10</td>
<td>HEX HEAD BOLT, SS, Ø12MM X 75MM LONG</td>
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<tr>
<td>11</td>
<td>STEEL ADAPTER PLATE</td>
<td>---</td>
<td>DETAIL 1</td>
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<tr>
<td>12</td>
<td>ELASTIC ARM</td>
<td>MAC</td>
<td>B0676-03</td>
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<tr>
<td>13</td>
<td>THIMBLE, J SYNTHETIC</td>
<td>K+M</td>
<td>D0719-01</td>
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<tr>
<td>17</td>
<td>CRIMP SLEEVE, 3/16&quot; WIRE</td>
<td>NICOPRESS</td>
<td>18-6-X</td>
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<td>18</td>
<td>WIRE ROPE, 3/16&quot; BRONZE</td>
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<td>19</td>
<td>CLAMP, CATENARY HANGER</td>
<td>MAC</td>
<td>KMA-238</td>
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<td>20</td>
<td>CLAMP, CONTACT WIRE</td>
<td>MAC</td>
<td>B0348-01</td>
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<tr>
<td>21</td>
<td>WASHER, FLAT, SS, FOR Ø8MM BOLT</td>
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<tr>
<td>22</td>
<td>WASHER, SPLIT LOCK, SS, FOR Ø8MM BOLT</td>
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<td>23</td>
<td>NUT, SS, FOR Ø8MM BOLT</td>
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<tr>
<td>24</td>
<td>WASHER, FLAT, SS, FOR Ø12MM BOLT</td>
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<tr>
<td>25</td>
<td>WASHER, SPLIT LOCK, SS, FOR Ø12MM BOLT</td>
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<td>26</td>
<td>NUT, SS, FOR Ø12MM BOLT</td>
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<td>27</td>
<td>PULLEY</td>
<td>MAC</td>
<td>300221</td>
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<td>28</td>
<td>THIMBLE, 3/16&quot;, S.S.</td>
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<tr>
<td>29</td>
<td>T-BOLT FOR UNISTRUT</td>
<td>MAC</td>
<td>350 373</td>
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<tr>
<td>30</td>
<td>MESSENGER CABLE INSULATOR, ROTATABLE</td>
<td>MAC</td>
<td>D2363-01</td>
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<tr>
<td>31</td>
<td>END TERMINATION FOR KEVLAR ROPE</td>
<td>PHILLYSTRAN</td>
<td>ESA 5112</td>
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</table>

NOTES:

- Scale: 1-1/2" = 1'-0"
<table>
<thead>
<tr>
<th>ITEM</th>
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<th>SUPPLIER</th>
<th>PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SECTION INSULATOR - DIODE: NON-BRIDGING</td>
<td>MAC</td>
<td>B1170-03</td>
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<tr>
<td>2</td>
<td>WIRE, SPAN, 5/16&quot;</td>
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<td>3</td>
<td>TERMINATION, SPAN WIRE, 5/16&quot;, COMPRESSION SLEEVE</td>
<td>MAC</td>
<td>E0493-01</td>
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<td>4</td>
<td>CLAMP FOR POLE, MULTIPLE SPANS</td>
<td>SEE DRAWING</td>
<td>Y036</td>
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<td>THIMBLE, 5/16&quot;, STL HDG</td>
<td>MAC</td>
<td>E0492-01</td>
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<tr>
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<td>LINE INSULATOR, TYPE G1 SYNTHETIC, SPAN WIRE</td>
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<td>C1669-01</td>
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<td>7</td>
<td>PIPE, SPREADING 30&quot; [762mm]</td>
<td>MAC</td>
<td>E0114-06</td>
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<td>8</td>
<td>SHACKLE</td>
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<td>THIMBLE, INSULATED J</td>
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<td>D0719-01</td>
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<td>10</td>
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<td>SUPPORT X BRACKET FOR SECTIONNER</td>
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<td>SECTION INSULATOR SUSPENSION TO STEEL PIPE</td>
<td>MAC</td>
<td>103456</td>
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</table>

**NOTES:**
1. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
2. REFER TO DRAWING Y002 FOR SYMBOLS AND ABBREVIATIONS.
3. REFER TO DRAWING Y001 FOR LOCATION AND TYPE OF SECTIONNER.
4. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
5. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
6. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
7. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
8. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
9. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.
10. REFER TO DRAWING Y001 FOR SYMBOLS AND ABBREVIATIONS.

---

**PLAN VIEW, SI-1**

**SECTION INSULATOR SI-1 (BRIDGING)**

**SECTION INSULATOR SUSPENSION FROM PIPE**

---

**Notes:**
1. For notes refer to drawings Y001 for symbols and abbreviations.
2. Refer to location and type of sectionner refer to layout drawings.
3. Refer to drawing Y001 for symbols and abbreviations.
4. Refer to drawing Y001 for symbols and abbreviations.
5. Refer to drawing Y001 for symbols and abbreviations.
6. Refer to drawing Y001 for symbols and abbreviations.
7. Refer to drawing Y001 for symbols and abbreviations.
8. Refer to drawing Y001 for symbols and abbreviations.
9. Refer to drawing Y001 for symbols and abbreviations.
10. Refer to drawing Y001 for symbols and abbreviations.

---

**DRAWING FACTORY**

**DATE: 08-28-2019**

**PRELIMINARY PLANS – 30%**

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**

**OVERHEAD CONTACT SYSTEM**

**IN-SPAN ASSEMBLIES**

**SECTION INSULATOR ASSEMBLY**
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

2. CONTACT WIRE SPLICE TO BE LOCATED NO FURTHER THAN 10' FROM REGISTRATION OR STEADY ARM.

### PIPE SPICE
- **Size of Pipe Joined**: OD, ID, T
- **2" Pipe (Sched. 40)**: 2.375, 2.067, 0.154
- **2" Pipe (Sched. 80)**: 2.375, 1.939, 0.218
- **3 1/2" Pipe**: 4, 2.728, 0.636

### SPAN WIRE SPLICE

### CONTACT WIRE SPLICE

### STRANDLINK (UNIVERSAL GRADE)

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Range (Inches)</th>
<th>Dim A (Inches)</th>
<th>Dim B (Inches)</th>
<th>MACLEAN CAT No.</th>
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<td>1/4&quot;</td>
<td>0.215-0.270</td>
<td>7.62</td>
<td>1.13</td>
<td>5040</td>
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<tr>
<td>5/16&quot;</td>
<td>0.270-0.315</td>
<td>9.28</td>
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<tr>
<td>3/8&quot;</td>
<td>0.325-0.392</td>
<td>10.62</td>
<td>1.45</td>
<td>5042</td>
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<tr>
<td>1/2&quot;</td>
<td>0.455-0.520</td>
<td>10.75</td>
<td>1.70</td>
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</tr>
</tbody>
</table>
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.

2. CROSS CONTACT CLAMPS TO BE POSITIONED ON UNDER RUNNING WIRE AFTER BOTH SETS OF CONTACT WIRES ARE PROPERLY TENSIONED AND TERMINATED.

3. CLAMP TO BE ATTACHED TO UNDER RUNNING WIRE AFTER UNDER RUNNING CONTACT WIRE IS CORRECTLY TENSIONED. MEASURE OF WEIGHT AFTER WIRE TENSIONING WILL AUTOMATICALLY POSITION THE CROSS CONTACT WIRE CLAMP.

4. USE POSITION CHART TO CHECK CLAMP POSITION AFTER CONTACT WIRE EXTENDING PROCESS IS COMPLETE. MAKE ADJUSTMENTS AS REQUIRED.

5. MAXIMUM WIRE RUN LENGTH IS 3,000 FT SPRING TO SPRING WITH THEORETICAL MID-POINT LENGTH TO EACH SPRING OF 1,500 FT.

6. FOR ALONG TRACK MOVEMENT, REFER TO DRAWING Y008.

CROSS CONTACT WIRE CLAMP XC-1

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>CW CLAMP, BRONZE</td>
<td>MAC</td>
<td>D0134-01</td>
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<tr>
<td>2</td>
<td>1</td>
<td>SQUARE BAR, 7/16&quot; S.S. 316</td>
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SPAN SPACER ASSEMBLY

BILL OF MATERIALS

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<th>PART NUMBER</th>
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</thead>
<tbody>
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<td>CW CLAMP, ETB, WITH 5/8&quot; THREAD, FOR ## CW</td>
<td>MAC</td>
<td>B0348-01</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>GLASTIC SPACER, GRADE 1130</td>
<td>MAC</td>
<td>KMA-672</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>5/8&quot; THREADED ROD 7&quot; LONG, WITH 2 NUTS, 2 LOCK WASHERS, 1 WASHER</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>GLASTIC BAR, GRADE 1130, 14&quot; x 1.5&quot; x 1/4&quot;</td>
<td>MAC</td>
<td>KMA-673</td>
</tr>
</tbody>
</table>

NOTES:

OVERHEAD CONTACT SYSTEM
IN-SPAN ASSEMBLIES
SPAN SPACER AND CONTACT WIRE BRIDGE ASSEMBLIES

DATE: 08-28-2019

PRELIMINARY PLANS – 30%

NOT FOR CONSTRUCTION
1. For notes, refer to drawing Y001. For symbols and abbreviations, refer to drawing Y002.

2. Arrangements shown are typical and construction crews may make alterations or adjustments to suit field conditions.

3. Lashing tie to have hook placed over span wire and bent tight. Loop end for feeder cable placed in loop to be pulled up tight.

4. Feeder cable to be bent away from span and line insulator as it passes by them.

5. Add pole clamp with insulator at pole if cable touches pole.

6. End of riser pipe to have a bushing sealing the pipe. If seal is insufficient, apply duct seal packed around feeder cable in a cone shape for water runoff.

8. Preferred disconnect switch assembly to use is FTA-2. Use FTA-1 only where FTA-2 cannot be used.

### BILL OF MATERIALS - Feeder Tap Support

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY.</th>
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<th>SUPPLIER</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A/R</td>
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<td>T &amp; B</td>
<td>TYM5418X</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Disconnect Switch, Pipe Mount</td>
<td>MAC</td>
<td>XXX</td>
</tr>
<tr>
<td>3</td>
<td>A/R</td>
<td>Clamp Ear for Feeder Tap Cable</td>
<td>MAC</td>
<td>D0445-01</td>
</tr>
<tr>
<td>4</td>
<td>A/R</td>
<td>250 KCMIL Insulated Feeder Cable - 2,000 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A/R</td>
<td>Cable Insulator Clamp for Pipe</td>
<td>MAC</td>
<td>XXX</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Pole Disconnect Switch, Pole Mount</td>
<td>MAC</td>
<td>XXX</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>3/8 Ø Steel Bolt with Nut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Wash for 3/8&quot; Ø Bolt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>Lockwash for 3/8&quot; Ø Bolt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>Tube, G10-FR4 Glass Reinforced Epoxy, O.D. = 2 3/8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>A/R</td>
<td>Threaded Rod, 5/8&quot; x 11&quot; Long</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>A/R</td>
<td>Hex Nut, 5/8&quot;, with Lockwasher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>A/R</td>
<td>Galvanized Plate, 5/16&quot; Thick, for 2&quot; Pipe Clamp</td>
<td>MAC</td>
<td>KMC-676-3-1</td>
</tr>
</tbody>
</table>

---

### FEEDER TAP ASSEMBLY AT CANTILEVER FTA-1

- CLAMP TO ACCEPT 2 - 250 KCMIL CABLES

### FEEDER TAP ASSEMBLY AT SPAN WIRE FTA-2

- BRACKET ARM PIPE 250 KCMIL CABLE (TYP)

---

**NOTES:**

- For symbols and abbreviations, refer to drawing Y002.
- Arrangements shown are typical and construction crews may make alterations or adjustments to suit field conditions.
- Lashing tie to have hook placed over span wire and bent tight. Loop end for feeder cable placed in loop to be pulled up tight.
- Feeder cable to be bent away from span and line insulator as it passes by them.
- Add pole clamp with insulator at pole if cable touches pole.
- End of riser pipe to have a bushing sealing the pipe. If seal is insufficient, apply duct seal packed around feeder cable in a cone shape for water runoff.
- Preferred disconnect switch assembly to use is FTA-2. Use FTA-1 only where FTA-2 cannot be used.
A - B

1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.
2. ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
3. CONSULT EXHIBIT B3-1 TO PROVIDE AN EXHIBIT TO PROVIDE A SEPARATE POLE GROUND TO A SEPARATE POLE. (SEE NOTE 6)
4. SURGE ARRESTER ASSEMBLY, SAA-1 (SEE DETAIL 3 ON XXX)
5. INSTALL ADDITIONAL GROUNDING RODS TO ACHIEVE A RESISTANCE TO GROUND OF NO MORE THAN 5 OHMS.

BILL OF MATERIALS - SURGE ARRESTER

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>3KV MCOV PDV-65 ARRESTER</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>3&quot; X 3&quot; X 3/8&quot; GLASTIC ANGLE, 3 IN LONG</td>
</tr>
<tr>
<td>3</td>
<td>A/R</td>
<td>NO. 2 AWG STRANDED INSULATED CU WIRE</td>
</tr>
<tr>
<td>4</td>
<td>A/R</td>
<td>4/0 AWG INSULATED COPPER WIRE</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>DUCT SEAL</td>
</tr>
<tr>
<td>6</td>
<td>A/R</td>
<td>CONDUIT CLAMP</td>
</tr>
<tr>
<td>7</td>
<td>A/R</td>
<td>1/4&quot;-20 X 3/4&quot; S.S. BOLT</td>
</tr>
<tr>
<td>8</td>
<td>A/R</td>
<td>FRE CONDUIT - 3/4&quot; ABOVE GROUND</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>COUPLING - 3/4&quot;</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>L3X3X3/8, GALV. DETAIL 3 ON XXX</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>5/8&quot; DIA. FULLY THREADED ROD W/ NUTS &amp; WASHERS</td>
</tr>
</tbody>
</table>

KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
SWITCHING AND FEEDER ASSEMBLIES
SURGE ARRESTER DETAILS

HDR Engineering, Inc.
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Certificate of Authority: 000856

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

DATE: 08-28-2019
NOT FOR CONSTRUCTION

SURGE ARRESTER SUPPORT ANGLE

POLE AND ARRESTER GROUNDING DETAIL

ARRESTER INSTALLATION DETAIL

SIDE VIEW

PLAN VIEW

SECTION

SCALE: NTS

ARRESTER SUPPORT ANGLE

SCALE: NTS

SURGE ARRESTER ASSEMBLY, SAA-1

SCALE: NTS

(FOUNDATION REINFORCEMENT NOT SHOWN FOR CLARITY)
### BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
<th>SUPPLIER</th>
<th>PART NUMBER</th>
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<tr>
<td>FXTA-1</td>
<td>1</td>
<td>POLE CLAMP</td>
<td>MAC</td>
<td>SEE DWG. Y036</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>THIMBLE, XX</td>
<td>CROSBY</td>
<td>XXX</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>STRANDVISE</td>
<td>MCLEAN</td>
<td>XXX</td>
</tr>
<tr>
<td></td>
<td>A/R</td>
<td>5/16&quot; STEEL SPAN WIRE</td>
<td>ASTM A475</td>
<td>EHS</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5/16&quot; PREFORMED END FITTING</td>
<td>PREFORMED LINE PRODUCTS</td>
<td>GDE-2106</td>
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<tr>
<td></td>
<td>1</td>
<td>JB PORCELAIN INSULATOR</td>
<td>MACLEAN</td>
<td>DP54-3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5/16&quot; THIMBLE</td>
<td>CROSBY</td>
<td>103738</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>INSULATOR - LOOP</td>
<td>MAC</td>
<td>D2786-01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DEADEND CLAMP FOR GROOVED CW</td>
<td>FLURY</td>
<td>610.047.000</td>
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</tbody>
</table>

**NOTES:**

1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.

**SCALE:** NTS

**FIXED TERMINATION ASSEMBLY FXTA-1**

**DATE:** 08-28-2019

**OVERHEAD CONTACT SYSTEM TERMINATION ASSEMBLIES**

**NOT FOR CONSTRUCTION**
1. FOR NOTES REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
3. POLE TAGS SHALL BE ASX OR APPROVED EQUAL.
4. BASE PLATES ON THE RIGHT OF WAY TO HAVE NUMBERS FACING THE TRACK AND DIRECTION OF TRAFFIC.
5. CENTER POLES IN LOCATIONS WITH TRACKS ON EACH SIDE TO HAVE TWO SETS OF NUMBERS, EACH FACING THE RESPECTIVE TRACK.
6. FOR POLE NUMBERS, REFER TO THE POLE SCHEDULE ON DRAWINGS Y091 THRU Y096.
7. THE POLE MANUFACTURER SHALL PROVIDE A PLATE TAG TO EACH POLE. THE PLATE TAGS SHALL BE ENGRAVED OR CAST WITH THE FOLLOWING INFORMATION: MANUFACTURER'S NAME, POLE SIZE, DATE MANUFACTURED, SECTION MODULUS OF BUTT SECTION (INCHES CUBED), AND STRENGTH OF STEEL (PSI). PLATE TAG SHALL BE 1/4" THICK, GRADE 304 STAINLESS STEEL WELDED TO POLE BUTT ALL AROUND EDGES TO PLATE TAG. LETTERING SHALL BE OF SUFFICIENT DEPTH IF ENGRAVED OR SUFFICIENT HEIGHT IF CAST THAT THE FINISH OF THE POLE SHALL NOT OBSCURE THE LETTERING.
8. POLE FABRICATOR SHALL PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI.
<table>
<thead>
<tr>
<th>POLE NO.</th>
<th>ALIGNMENT STATIONING</th>
<th>OFFSET (FT)</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>STRUCTURE TYPE</th>
<th>POLE LENGTH</th>
<th>POLE RAKE</th>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION EMBEDMENT LENGTH</th>
</tr>
</thead>
</table>

**NOTES:**

1. FOR NOTES REFER TO DRAWING Y001.
2. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING Y002.
3. FOR POLE NUMBER TAG DETAILS, SEE DRAWING Y071.
4. FOR RAKING ORIENTATION, REFER TO BASE MOMENT ARROW ORIENTATION ON OCS LAYOUT PLANS.

**HDR Engineering, Inc.**
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300 Apollo Drive
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Phone: 978-905-4000

**OVERHEAD CONTACT SYSTEM**
**STRUCTURE SCHEDULE**
**POLE AND FOUNDATION SCHEDULE**
(SHEET 1 OF 6)

**DATE:** 08-28-2019

---

**KANSAS CITY STREETCAR MAIN STREET EXTENSION**
# Pole & Foundation Installation Schedule

<table>
<thead>
<tr>
<th>POLE NO.</th>
<th>ALIGNMENT</th>
<th>STATIONING</th>
<th>OFFSET (FT)</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>STRUCTURE TYPE</th>
<th>POLE LENGTH</th>
<th>POLE RAKE</th>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION EMBEDMENT LENGTH</th>
</tr>
</thead>
</table>

1. See Appendix V01 for notes and pole numbering method.

---

**NOTES:**

HDR Engineering, Inc.
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816-360-2700
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300 Apollo Drive
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Phone: 978-905-4000

OVERHEAD CONTACT SYSTEM
STRUCTURE SCHEDULE
POLE AND FOUNDATION SCHEDULE
(SHEET 2 OF 6)

DATE: 08-28-2019

---

PRELIMINARY PLANS – 30%
<table>
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<tr>
<th>POLE NO.</th>
<th>ALIGNMENT</th>
<th>STATIONING</th>
<th>OFFSET (FT)</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>STRUCTURE TYPE</th>
<th>POLE TYPE</th>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION EMBEDMENT LENGTH</th>
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NOTES:  
1. SEE DRAWING Y091 FOR NOTES AND POLE NUMBERING METHOD.
<table>
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<tr>
<th>POLE NO.</th>
<th>ALIGNMENT</th>
<th>STATIONING</th>
<th>OFFSET (FT)</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>STRUCTURE TYPE</th>
<th>POLE LENGTH</th>
<th>POLE RACK</th>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION EMBEDMENT LENGTH</th>
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NOTES:
1. SEE DRAWING Y091 FOR NOTES AND POLE NUMBERING METHOD.
<table>
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<th>POLE NO.</th>
<th>ALIGNMENT</th>
<th>STATIONING</th>
<th>OFFSET (FT)</th>
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<th>EASTING</th>
<th>STRUCTURE TYPE</th>
<th>POLE LENGTH</th>
<th>POLE RAKE</th>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION EMBEDMENT LENGTH</th>
</tr>
</thead>
</table>

NOTES:

1. SEE DRAWING FOR NOTES AND POLE NUMBERING METHOD.

DATE: 08-28-2019

HDR Engineering, Inc.
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300 Apollo Drive
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OVERHEAD CONTACT SYSTEM
STRUCTURE SCHEDULE
POLE AND FOUNDATION SCHEDULE
(SHEET 5 OF 6)
<table>
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<th>POLE NO.</th>
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<th>EASTING</th>
<th>STRUCTURE TYPE</th>
<th>POLE LENGTH</th>
<th>POLE RAKE</th>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION EMBEDMENT LENGTH</th>
</tr>
</thead>
</table>

NOTES:

1. SEE DRAWING Y091 FOR NOTES AND POLE NUMBERING METHOD.

DATE: 08-28-2019
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT
   DRAWINGS ARE TEMPORARY.
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1. FOR NOTES, REFER TO DRAWING Y001.
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2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.

SB STA 1057+00 TO STA 1061+00

MATERIALS:
- Overhead Contact System

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

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
LAYOUT PLAN
(SHEET 16 OF 48)

SB STA 1057+00 TO STA 1061+00

NOT FOR CONSTRUCTION
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
2. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
3. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
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   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
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KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
LAYOUT PLAN
(SHEET 19 OF 48)
SB STA 1069+00 TO STA 1073+00

NOT FOR CONSTRUCTION

10/21/2019

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10450 Holmes Road

HDR Engineering, Inc.
978-905-4000
Chelmsford, MA 01824
300 Apollo Drive

THE HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS

FILE: Y119
DRAWN BY: DSK
APPROVED BY: PFW
DESIGNED BY: DSK
CHECKED BY: NKS
DRAWING NO.: 340
CONTRACT NO.: CN0077290
DATE: 08-28-2019
PLOT DATE: 08-28-2019
SCALE FOR 22"x34": 1"

MACHLINE STA. 1069+00
MACHLINE STA. 1073+00
MAIN STREET
E 40TH STREET
EXISTING R/W

SB STA 1069+00 TO STA 1073+00
(SHEET 19 OF 48)

LAYOUT PLAN
OVERHEAD CONTACT SYSTEM

NOT FOR CONSTRUCTION
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.

1073+00 TO 1077+00

WESTPORT ROAD

E NORTHBOUND TRACK

E WESTPORT CROSSEOVER

E SOUTHBOUND TRACK

MAIN STREET

EXISTING R/W

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

KANSAS CITY STREETCAR MAIN STREET EXTENSION
OVERHEAD CONTACT SYSTEM
LAYOUT PLAN
(SHEET 20 OF 48)
SB STA 1073+00 TO STA 1077+00
NOT FOR CONSTRUCTION
NOTES:

1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.

2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
NOTES:

1. FOR NOTES, REFER TO DRAWING Y001.
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   FOR SYMBOLS AND ABBREVIATIONS,
   REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT
   DRAWINGS ARE TEMPORARY.

E 34TH TERRACE

NORTHBOUND TRACK

SOUTHBOUND TRACK

EXISTING R/W

MAIN STREET

MATCHLINE STA. 1109+00

MATCHLINE STA. 1113+00

OVERHEAD CONTACT SYSTEM

KANSAS CITY STREETCAR MAIN STREET EXTENSION

OVERHEAD CONTACT SYSTEM

LAYOUT PLAN

(SHEET 29 OF 48)

SB STA 1109+00 TO STA 1113+00

NOT FOR CONSTRUCTION
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.

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   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
NOTES:
1. FOR NOTES, REFER TO DRAWING YD01.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING YD02.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
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2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.

SOUTHBOUND TRACK
NORTHBOUND TRACK
MAIN STREET

EXISTING R/W

EXISTING R/W

MATCHLINE STA. 1145+00
MATCHLINE STA. 1149+00

WARWICK TREF

EXISTING R/W

EXISTING R/W

SB STA 1145+00 TO STA 1149+00

OVERHEAD CONTACT SYSTEM
LAYOUT PLAN
(SHEET 38 OF 48)
KANSAS CITY STREETCAR MAIN STREET EXTENSION

NOT FOR CONSTRUCTION

SB STA 1145+00 TO STA 1149+00

DATE: 08-28-2019

SCALE

0 10 20 30 40 50

0 1"=20'   V: 1"=2'

12:50:23 PM

CERTIFICATE OF AUTHORITY 000856

HDR ENGINEERING, INC.

MAIN STREET

EXISTING R/W

EXISTING R/W

MATCHLINE STA. 1145+00
MATCHLINE STA. 1149+00

WARWICK TREF

EXISTING R/W

EXISTING R/W

SB STA 1145+00 TO STA 1149+00

OVERHEAD CONTACT SYSTEM
LAYOUT PLAN
(SHEET 38 OF 48)
KANSAS CITY STREETCAR MAIN STREET EXTENSION

NOT FOR CONSTRUCTION

DATE: 08-28-2019

SCALE

0 10 20 30 40 50

0 1"=20'   V: 1"=2'

12:50:23 PM

CERTIFICATE OF AUTHORITY 000856

HDR ENGINEERING, INC.
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.

OVERHEAD CONTACT SYSTEM
LAYOUT PLAN
(SHEET 40 OF 48)
SB STA 1153+00 TO STA 1157+00
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
   FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.
2. POLE NUMBERS SHOWN ON LAYOUT
   DRAWINGS ARE TEMPORARY.
NOTES:
1. FOR NOTES, REFER TO DRAWING Y001.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.

1. FOR NOTES, REFER TO DRAWING Y001.
2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
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1. FOR NOTES, REFER TO DRAWING Y001. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING Y002.

2. POLE NUMBERS SHOWN ON LAYOUT DRAWINGS ARE TEMPORARY.
TRACTION POWER SYMBOLS

- **Disconnect Switch**: Normally closed, unless designated with small normally open.
- **Fused Disconnect Switch**: Normally closed, unless designated.
- **Low Voltage Circuit Breaker**: Voltmeter.
- **Potential Transformer**: Ammeter.
- **Current Transformer**: Voltmeter.
- **Rectifier Transformer, 12 Pulse**: Circuit Breaker.
- **Rectifier Transformer, 6 Pulse**: Transformer.
- **Interphase Transformer**: Transformer.
- **Delta, Transformer Connection**: Transformer.
- **Wye, Transformer Connection**: Transformer.
- **Surge Arrester**: Transformer.
- **Traction Rectifier**: Transformer.
- **Fusion Fuse**: Transformer.
- **Dwarka Fuse**: Transformer.
- **Input Fuse System**: Transformer.
- **Utility Ground Connection**: Transformer.
- **Traction Rectifier**: Transformer.
- **Ammeter Switch**: Transformer.
- **Three-Way Switch**: Transformer.
- **Ground Panel**: Transformer.
- **Interlock**: Transformer.
- **Smoke Detector**: Transformer.
- **Receptacle**: Transformer.
- **Fluorescent Light**: Transformer.
- **Insulated Overlap (IOL)**: Transformer.
- **Section Isolator (SI)**: Transformer.

**Relay Operating Coincident Number System**: Device Function, System Number Designates Quantity of Devices.

**Emergency Stop Pushbutton**: Transformer.

**Rectifier Overtemp Alarm (1st Stage)**

**Rectifier Overtemp Trip (2nd Stage)**

**Undervoltag Relay**: Transformer.

**Reverse Current Relay**: Transformer.

**AC Circuit Breaker Main Door Switch**: Transformer.

**Freeze Breaker Rear Door Switch**: Transformer.

**Rectifier Door Switch**: Transformer.

**Transformer Door Switch**: Transformer.

**Manual Transfer or Selector Device**: Transformer.

**Rev. Phaze or Phaseบาล Current Relay**: Transformer.

**Phase Sequence**: Transformer.

**Gate Fault Time Overcurrent Relay (Var. and Time Delay)**

**Ground Fault Time Overcurrent Relay (Var. and Time Delay)**

**AC Circuit Breaker**: Transformer.

**AC Overvoltage**: Transformer.

**AC Circuit Breaker Rear Door Switch**: Transformer.

**Direct Acting Overcurrent Trip Device**: Transformer.

**Lockout Relay**: Transformer.

**Positive Line Switch**: Transformer.

**Negative Line Switch**: Transformer.

**Rectifier Diode Failure Alarm**: Transformer.

**Rectifier Diode Failure Trip**: Transformer.

**Undervoltag Relay**: Transformer.

**Reverse Current Relay**: Transformer.

**AC Time Overcurrent Relay**: Transformer.

**DC Lockout Relay**: Transformer.

**Ground Fault Overcurrent Relay**: Transformer.

**Phase Overcurrent Relay**: Transformer.

**Ground Fault Relay**: Transformer.

**Reference to Ground**: Transformer.

**AC Time of Rise Relay**: Transformer.

**DC Rate of Rise Relay**: Transformer.

**DC Rate of Rise Relay**: Transformer.

**DC Rate of Rise Relay**: Transformer.

**DC Rate of Rise Relay**: Transformer.
TRACTION POWER ABBREVIATIONS

A - AMPS
B - BAL.
C - CB
D - DC
E - ETS
F - DR
G - GFI
H - HH
I - INST.
J - K
K - KCMIL
L - M
M - MH
N - NEG.
O - OCS
P - P, POS.
Q - R
R - RT
S - SAS
T - TBD
U - U
V - V
W - X
Y - Z

NOTES:
1. SEE CITY OF KANSAS CITY STANDARD PLANS FOR ADDITIONAL ABBREVIATIONS.
POWER & LIGHT 13.2KV FROM KANSAS CITY (STA. TBD) TPSS C6 NEAR 31ST STREET 350KW TO RAILS NEGATIVE RETURN NOTE 2 (TYP.) TRANSFER TRIP OPTIC CABLE FUTURE FIBER MAIN STREET TO RAILS NEGATIVE RETURN (STA 1129+10) 2-250KCMIL (TYP.) 2-250KCMIL (TYP.) 2-250KCMIL (TYP.) 2-250KCMIL (TYP.) W 22ND STREET (UNDER BRIDGE) EXISTING TPSS AT 13.2KV FROM KANSAS CITY POWER & LIGHT TPSS C6 STATION 2129+02 MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET MAIN STREET NOTES:
1. SWITCHES ARE NORMALLY CLOSED UNLESS OTHERWISE NOTED.
2. CONFIGURE TRANSFER TRIP TO NEXT BREAKER WHEN ADJACENT TPSS IS BYPASSED FOR FUTURE FIBER OPTIC CONNECTION. 08/28/2019
NOTES:
1. UTILITY METERING INSTRUMENT TRANSFORMERS AND METER PROVIDED BY KCPL.
2. PROVIDE AC ARRESTER IN A SEPARATE ENCLOSURE WITH BARRIER WITHIN TRANSFORMER ENCLOSURE.
3. PROVIDE DEDICATED 120V AC CIRCUIT FOR TPSS BUILDING EXTERIOR RECEPTACLES.
4. DEVICE LABELING APPLIES TO SUBSTATION C5, C6, C7, C8, C9, AND C10.
5. AC SERVICE VOLTAGE FOR ALL SUBSTATIONS IS 13.2KV, 3-PHASE.
6. TRANSFER TO NEXT BREAKER WHEN ADJACENT TPSS IS IN BYPASS.
7. TYPICAL FOR EACH DC FEEDER BREAKER
8. AC AND DC PROTECTIVE RELAYS SHALL BE MULTIFUNCTION AND CAPABLE, AT A MINIMUM, OF HANDLING ALL FUNCTIONS SHOWN.
9. PROVIDE FEED TO THE BATTERY CHARGER AND OTHER BUILDING AUXILIARY LOADS.

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856
The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000

DATE: 08-28-2019

NOT FOR CONSTRUCTION
NOTES:

1. PROVIDE PREFABRICATED BUILDING AND EQUIPMENT UNDER THIS CONTRACT.

2. EQUIPMENT DIMENSIONS ARE APPROXIMATE. SUBMIT FINAL DIMENSIONS FOR APPROVAL.

3. LOCATE EXTERIOR BLUE LIGHT AS DIRECTED BY CITY.

4. INSTALL RECTIFIER AND DC SWITCHGEAR 2" OFF OF REAR WALL. THERE SHOULD BE NO GAP BEHIND THE DC SWITCHGEAR.

5. PROVIDE 1-4" GLASTIC ON INTERIOR OF DOOR AND INSULATE OVER PANEL BARS.
NOTES:
1. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS J601 AND J602.
2. FOR TYPICAL SUBSTATION LAYOUT AND EQUIPMENT CALLOUTS SEE SHEET J620.
3. DUCTBANK ROUTING TO BE DEVELOPED AT NEXT SUBMITTAL.

DATE: 08-28-2019

KANSAS CITY STREETCAR MAIN STREET EXTENSION
TRACTION POWER
TPSS C9 SITE ELECTRICAL PLAN

NOT FOR CONSTRUCTION
NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS J601 AND J602.
2. FOR TYPICAL SUBSTATION LAYOUT AND EQUIPMENT CALLOUTS SEE SHEET J620.
3. DUCTBANK ROUTING TO BE DEVELOPED AT NEXT SUBMITTAL.
TYPICAL SECTION - BRIDGE (SOUTHBOUND SIDE)  
(Looking North)

TYPICAL SECTION - BRIDGE (NORTHBOUND SIDE)  
(Looking North)

NOTE:
ALL STRUCTURE SHOWN IS EXISTING.
NEW CONSTRUCTION SHOWN IN HEAVY SOLID LINES.

* MILL AN ADDITIONAL 2" x 18" STRIP BELOW EACH RAIL.
TYPICAL SECTION
(LOOKING NORTH)

NOTES:
ALL STRUCTURE SHOWN IS EXISTING. NEW
CONSTRUCTION SHOWN IS HEAVY SOLID LINES.

* WILL AN ADDITIONAL 1/2" X 18" STRIP BELOW EACH RAIL.
NOTES:

1. USE NON-SHRINK CONCRETE AS NECESSARY FOR LEVELING PAD TO MAINTAIN PROPER HORIZONTAL AND VERTICAL ALIGNMENT.

2. WALL TO BE DESIGNED BY WALL MANUFACTURER. SMALL BE SIGNED AND SEALED BY MISSOURI PROFESSIONAL ENGINEER.

3. WALL DESIGN PARAMETERS TO BE PROVIDED WITH FINAL PLANS.
NOT TO SCALE

NOTES:
1. USE NON-SHRINK CONCRETE AS NECESSARY FOR LEVELING PAD TO MAINTAIN PROPER HORIZONTAL AND VERTICAL ALIGNMENT.
2. WALL TO BE DESIGNED BY WALL MANUFACTURER, SHALL BE SIGNED AND SEALED BY MISSOURI PROFESSIONAL ENGINEER.
3. WALL DESIGN PARAMETERS TO BE PROVIDED WITH FINAL PLANS.
KANSAS CITY STREETCAR MAIN STREET EXTENSION

BLOCK RETAINING WALL
BUS PLAZA PLATFORM
PLAN / ELEVATION VIEW

EREIGNING PLANS - 30%

DATE: 08-28-2019

HDR Engineering, Inc.
PRELIMINARY PLANS - 30%

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

SCALE FOR 22"x34":
NOT TO SCALE

EXISTING R/W

À NORTHBOUND TRACK
À SOUTHBOUND TRACK

TOP OF WALL
À (2' MIN EMBED)

TOP OF SIDEWALK
À ELEV 834.19
À STA 20+13

CONSTRUCT LARGE BLOCK MSE WALL

TOP OF BUS PLATFORM
À 8' CONCRETE SIDEWALK

EXISTING GROUND

TOP OF WALL
À ELEV 839.94
À STA 23+10

TOP OF SIDEWALK
À ELEV 834.19
À STA 20+13

STREETCAR PLATFORM

TOP OF WALL
À ELEV 837.94
À STA 22+50

TOP OF SIDEWALK
À ELEV 834.19
À STA 20+13

TOP OF WALL
À ELEV 837.94
À STA 22+50

TOP OF BUS PLATFORM
À 8' CONCRETE SIDEWALK

Bus Platform

8’ Concrete Sidewalk

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Sheet Number: W105
Revision: 584

FILE DATE: 08-28-2019

DRAWN BY
APPROVED BY
DESIGNED BY
CHECKED BY
CHECKED BY

CONTRACT NO.
VOLUME:

8/27/2019
NOTES:

1. USE NON-SHRINK CONCRETE AS NECESSARY FOR LEVELING PAD TO MAINTAIN PROPER HORIZONTAL AND VERTICAL ALIGNMENT.

2. WALL TO BE DESIGNED BY WALL MANUFACTURER, SHALL BE SIGNED AND SEALED BY MISSOURI PROFESSIONAL ENGINEER.

3. WALL DESIGN PARAMETERS TO BE PROVIDED WITH FINAL PLANS.

KANSAS CITY STREETCAR MAIN STREET EXTENSION

DATE: 08-28-2019