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March 29, 2022

EL-32933

Ms. Danielle Gosselin
Director, Office of Environmental Analysis
Surface Transportation Board
395 E Street, S.W.
Washington, D.C. 20423

Re: STB Docket No. FD 36406, Port Authority of Kansas City – Construction and Operation Exemption – in Jackson and Clay Counties, MO.; Applicant's Alternative Report and Funding Update

Dear Ms. Gosselin:

In response to your December 7, 2021 letter requesting an Alternatives Report and a funding update, Port KC is providing this letter and the enclosed Alternative Screening Analysis produced by Port KC's engineering contractor, TranSystems.

Alternative Screening Analysis: The TranSystems analysis identifies various alternatives and Port KC's preferred alternative, Alternative 4. This alternative features an at-grade crossing to enable access to the interstate rail system via the Kansas City Terminal Railway.

Funding Update: On March 28, 2022, Port KC's Board of Directors voted to approve Port KC's funding plan to finance pre-development work for the MRT Project. Port KC is funding the next stage of the MRT Project by borrowing based on dedicated future revenue streams it earns through annual administrative fees from Tax Compliance Agreements that are part of Port KC's development finance program to encourage economic development in Kansas City.

Port KC receives annual administrative fees by managing these Tax Compliance Agreements. Currently Port KC maintains a portfolio of 33 (by years end it is anticipated to be 40) such agreements, 11 of which are specifically dedicated towards this project. These 11 agreements are on a 20-year schedule, the first started in 2015 and the last will sun set in 2041. These annual administrative fees represent \$196,310, annually, or a total of \$3,398,622 from now until the full sunset of the final project. Port KC is leveraging this revenue source to borrow \$2,500,000 for the advanced planning activities for the MRT Project.

Now that Port KC has provided the attached Alternative Screening Analysis and the above funding update, Port KC respectfully requests that OEA remove the environmental review from its current hold status to reinstitute the environmental review process.

March 29, 2022
Page 2

Sincerely,

A handwritten signature in blue ink that reads "Justin J. Marks". The signature is written in a cursive style with a large, stylized "J" and "M".

Justin J. Marks
Counsel to Port Authority of Kansas City

Enclosure

ALTERNATIVES SCREENING ANALYSIS

PORT AUTHORITY OF KANSAS CITY
MISSOURI RIVER TERMINAL RAIL ACCESS
JACKSON AND CLAY COUNTIES, MO

STB FINANCE DOCKET NO. 36406

Prepared by



TranSystems

March 25, 2022

Table of Contents

1. Proposed Action.....	4
2. Alternatives Development	4
3. Port KC's Preferred Route and Alternative 3B.....	7
3.1 UPRR At-Grade Crossing (Alternative 4).....	7
3.2 Parallel Tunnel Crossing (Alternative 3B)	8
4. Alternatives Screening Analyses	8
4.1 Alternatives Screening Criteria	8
4.2 Railroad Construction Parameters.....	8
4.3 Railroad Operational Issues.....	11
4.4 Environmental Impacts to Land Use	11
4.5 Topography and Soils.....	11
4.6 Water Resources.....	12
4.6.1 Surface Water and Wetlands.....	12
4.6.2 Groundwater	12
4.6.3 Floodplains.....	12
4.7 Biological Resources	12
4.7.1 Endangered and Threatened Species	12
4.7.2 Flora.....	13
4.7.3 Terrestrial Wildlife	13
4.7.4 Aquatic Ecology	13
4.8 Cultural Resources	13
4.9 Transportation	13
4.10 Right-of-Way Acquisition	14
4.11 Air Quality.....	14
4.12 Noise and Vibration	14
4.13 Parks and Recreation	14
4.14 Hazardous Materials and Waste Sites	14
4.15 Socioeconomics	14
5. No-Build Alternative.....	15
6. Alternatives Previously Considered and Eliminated from Detailed Study.....	15
6.1 Original Tunnel Crossing to KCT Blue River Yard (Alternative 0).....	15
6.2 South Bridge Crossing to KCT Blue River Yard (Alternative 1)	15

6.3 South Tunnel Crossing to KCT Blue River Yard (Alternative 1A).....15

6.4 South Bridge Crossing from Sheffield Flyover (Alternative 2)16

6.5 Reuse Existing Tunnel Crossing (Alternative 3)16

6.6 Skewed Tunnel Crossing to Industry Loop (Alternative 3A).....16

7. Conclusion16

1. Proposed Action

The Port Authority of Kansas City (Port KC) proposes to develop an inland port called The Missouri River Terminal (MRT). The MRT will have access to the rail network, marine transportation via barge, and the interstate highway system via motor carriage. MRT will accommodate an intermodal container transfer facility as well, including interchanging double stacked container well cars, to facilitate expanded freight transportation capacity through Kansas City in anticipation of projected freight growth. MRT is proposing to construct 1.7 miles of common carrier rail line for the purpose of providing common carrier freight rail service at the intermodal facility.

Port KC bought 415 acres of former steel mill land in 2018 to develop MRT. Rail access between MRT and the Kansas City Terminal Railway (KCT) is important to connect MRT with the interstate rail network since KCT interchanges with all of the Class I railroads that operate in the region: BNSF Railway, Union Pacific Railroad (UPRR), Norfolk Southern Railway, Kansas City Southern (KCS), and Canadian Pacific Railway.

Port KC is seeking Surface Transportation Board (STB) authority for the construction of the common carrier rail line and is working with the STB's Office of Environmental Analysis (OEA) to develop an environmental analysis according to the STB's regulations for rail construction projects.

On December 7, 2021, OEA requested that Port KC provide an Alternatives Report clearly defining the alternatives it has developed for its proposed rail line. In response to OEA's letter, Port KC engaged the engineering firm TranSystems to provide this Alternatives Report of alignments that Port KC has considered for the MRT site.

This Alternatives Report provides a rationale and explanation of the constraints analysis that informed the design of each rail alignment under consideration and identifies and provides rationale for why certain alignments are not feasible. The Report also describes construction and operational issues that were considered in the design of the various alternative rail alignments.

A detailed map data for each of the alternatives has been shared with the OEA's third party contractor.

2. Alternatives Development

In this Alternative Report, TranSystems has identified two rail alternatives that it recommends be carried forward for further study and several rail alternatives that it proposed to Port KC but TranSystems and Port KC believe do not warrant further detailed study. Of the two alternatives that TranSystems is recommending for further study, Alternative 4, the at-grade alternative is Port KC's preferred alternative.

TranSystems evaluated an alternative using an existing tunnel that travels beneath the UPRR rail line that once served the former steel mill. However, the analysis determined that this tunnel does not accommodate double stack intermodal containers on well cars and could not be modified to do so. As a result, we studied various other alignments for bridge and tunnel options to include: a crossing over or under the UPRR rail line; a crossing over or under the KCT rail line, in order to connect MRT to KCT through either the KCT Blue River Yard, or

through an existing industry loop track owned by Molycop facility which then connects to the KCT Blue River Yard. These separated options involve steep grades for a project requiring switching and intermodal container handling.

In addition, we also developed an at-grade option involving connections to the UPRR rail line and then the Molycop industry loop with turnouts. We considered an additional option to install at-grade diamond crossings of both UPRR main line tracks. However, this option was not progressed due to operational and maintenance concerns with the diamonds, particularly within or immediately adjacent to the UPRR Rock Creek Crossover Plant.

In assessing these alternatives, TranSystems relied, in part, on information previously gathered to analyze these alternatives, supplemented by current or updated information where available and relevant. The two rail alternatives, Option 3B Site Access and Option 4 Site Access, that Port KC proposes for further detailed study are shown on Figure 1 with a detailed area of the crossing location shown in Figure 2. Option 4 is Port KC's preferred alternative.

Figure 1. Rail Access Alternatives Map

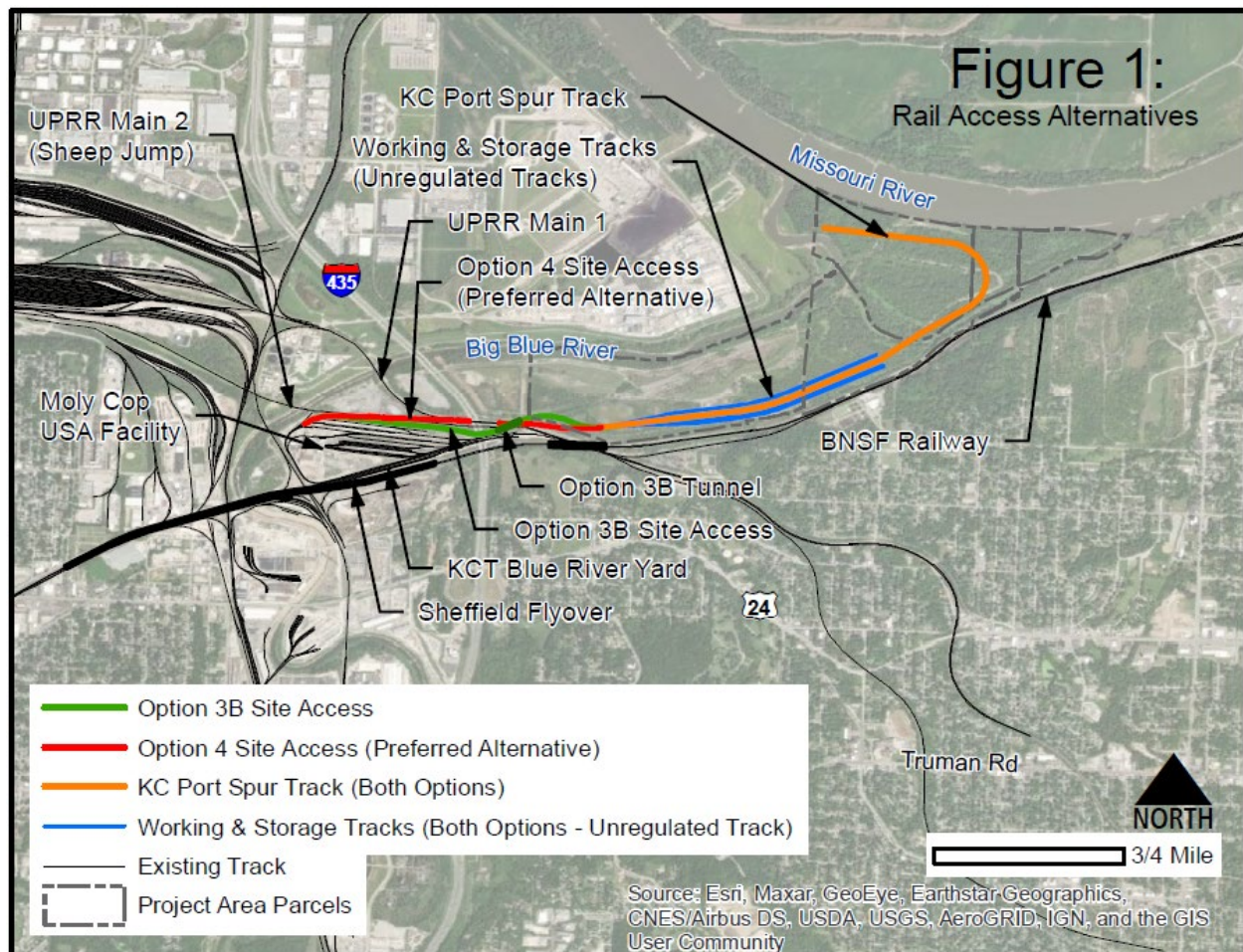
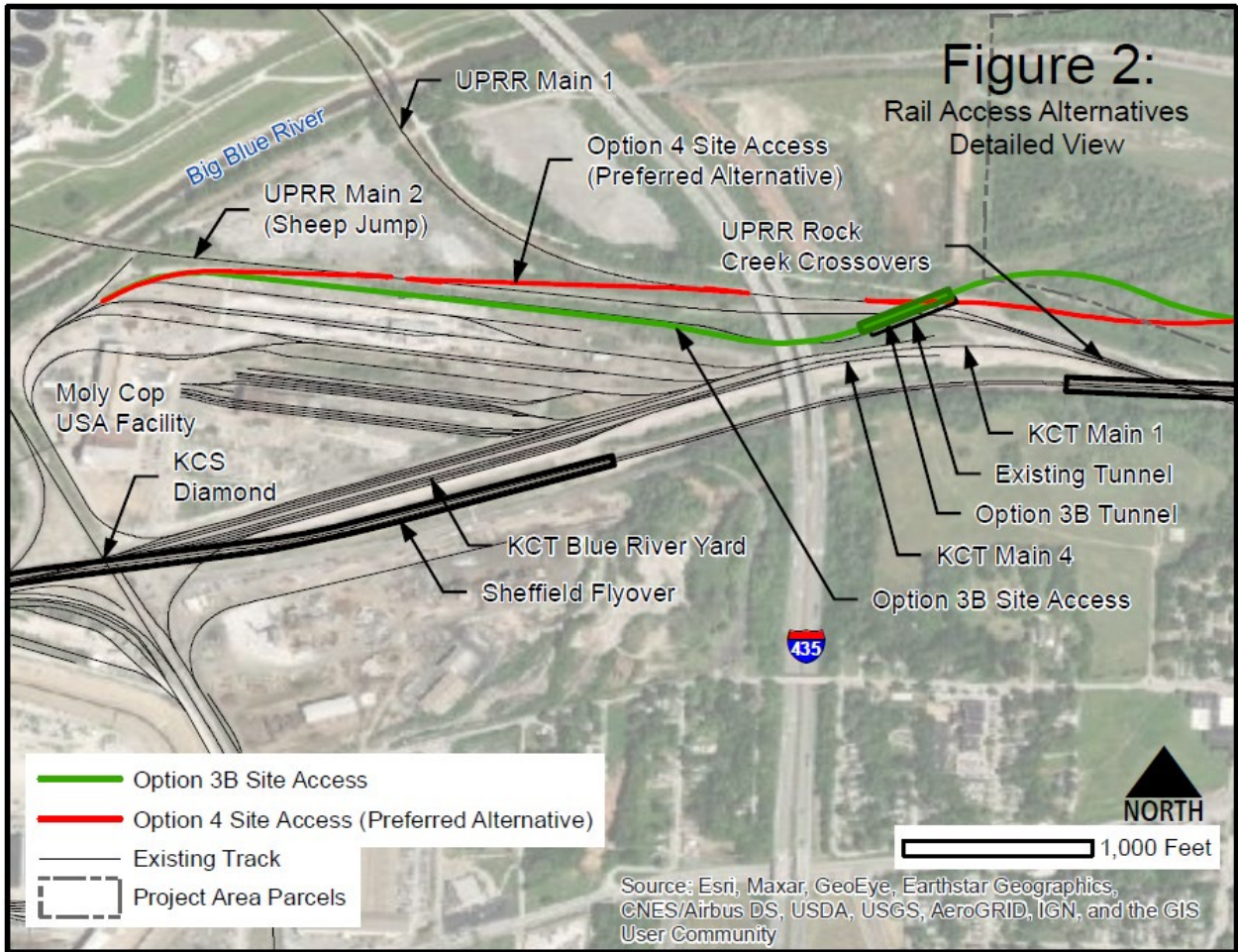


Figure 2. Rail Access Alternatives Map Detailed View of Crossing Area

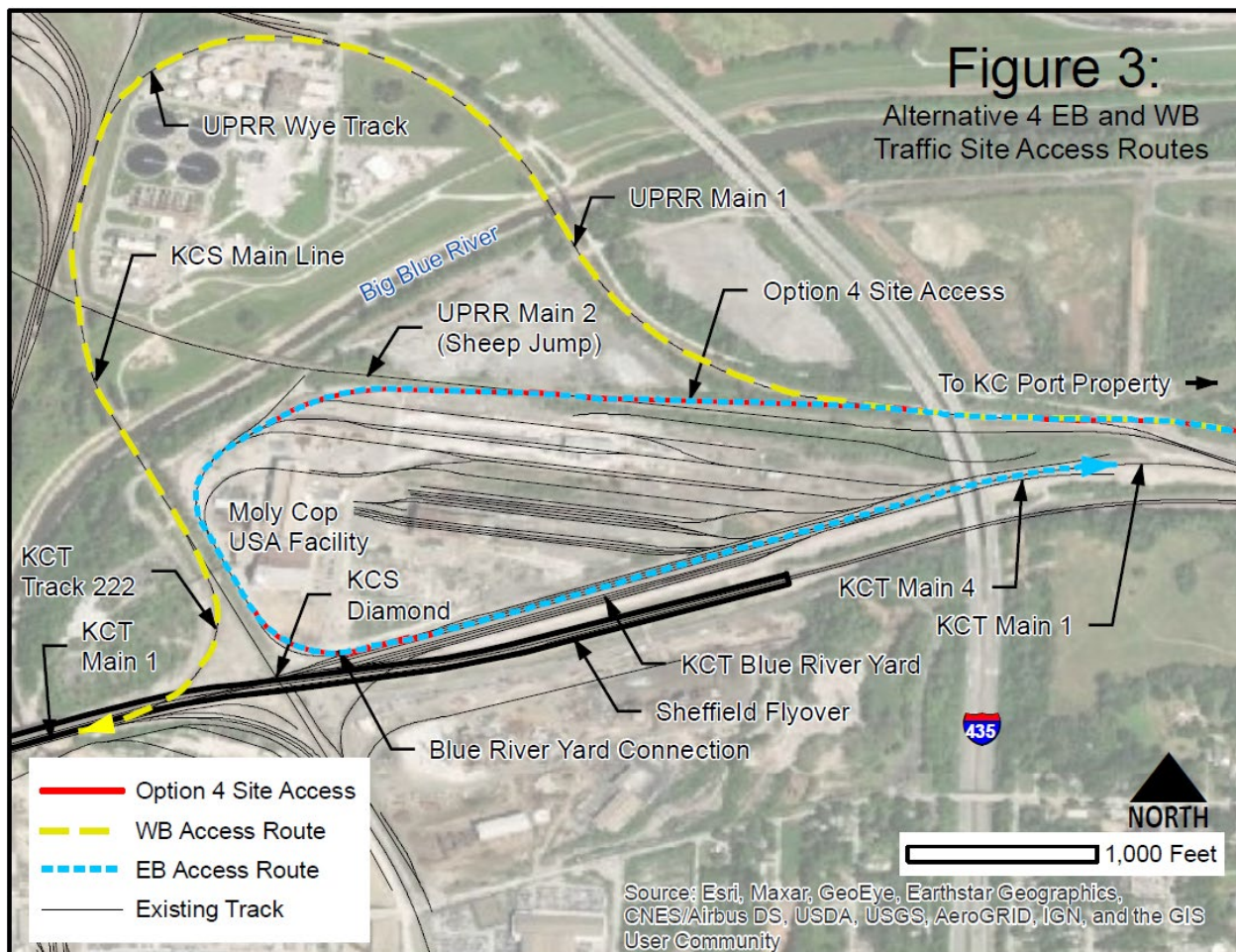


3. Port KC's Preferred Route and Alternative 3B

3.1 UPRR At-Grade Crossing (Alternative 4)

Due to the grade, reliability and connection issues associated with the bridge and tunnel alternatives, Port KC evaluated an at-grade crossing. This alternative connects directly from MRT to the UPRR Sedalia Subdivision Main 1, which is dispatched by KCT. Alternative 4 utilizes left-hand crossovers between UPRR Mains 1 and 2 and then UPRR Main 2 and the Molycop industry loop track. Trains departing from or arriving to MRT from the west will use the UPRR Main 1 route around Southwest Junction to the north and connect to KCT Main 1 via Track 222, which is the northwest wye leg at the KCS diamonds. Trains departing from or arriving to MRT from the east will use the Molycop industry loop track to connect to KCT's Blue River Yard. The westbound (WB) and eastbound (EB) rail access routes are depicted below in Figure 3. This is the only alternative that provides a natural connection allowing train movement to the west on a KCT-dispatched route. In addition, this alternative provides a crossing that does not require pumping as compared with the tunnel alternatives. The estimated cost to construct this alternative is \$8.8 Million (2022 Cost).

Figure 3. Westbound and Eastbound Access Routes



3.2 Parallel Tunnel Crossing (Alternative 3B)

Alternative 3B requires a tunnel crossing beneath UPRR Mains 1 and 2, as well as KCT Main 1 at a location immediately north of the existing tunnel beneath the UPRR main lines that once served the steel mill. The existing tunnel cannot accommodate double stack intermodal containers on well cars and cannot be modified to do so, thus the need for an option with a new tunnel accommodating the required double stack clearances. This alternative is preferred to the other tunnel and bridge alternatives due to comparative cost and the ability to provide relatively flat grades to the east for the proposed intermodal container handling operation and to the west for connection to KCT switching operations via the Molycop industry loop track. As with all of the studied tunnel options, a pump system will be required to maintain service. The estimated cost to construct this alternative is \$61.7 Million (2022 Cost).

4. Alternatives Screening Analyses

4.1 Alternatives Screening Criteria

TranSystems screening criteria includes engineering feasibility (construction and operating), environmental consequences discernable at this stage, and cost considerations. TranSystems designed track alignment using current industry track standards, including maximum curvature of 7.5-degrees except where geometry required sharper curves in which case a maximum of 9.5-degrees was used. Minimum turnout size is #9 except where connecting to other railroads in which case a #11 turnout is used. A maximum grade of 1.5% is used wherever possible on the connecting track while a maximum grade of 0.3% is required where intermodal container handling operations are planned within the proposed port.

Table 1 summarizes the descriptions, relative challenges, and wetland impacts of each of the alternatives identified for further analysis and also lists the alternatives not considered for further study. Previous studies are used to evaluate environmental features such as wetlands, flora and fauna, or cultural resources. It does not appear there are significant differentiators between the alternatives with respect to most environmental impacts. The exception is Alternative 4 (the at-grade alternative). This alternative has reduced wetland impacts as compared with the various bridge and tunnel alternatives.

4.2 Railroad Construction Parameters

Each of the proposed rail alternatives would utilize conventional steel-wheel on steel-rail train operations with diesel-electric locomotives. The connection would be a single track constructed of continuous-welded rail and would be built and maintained to FRA Class 2 standards. Access roads will only be provided directly to turnouts or signal infrastructure. Additional unregulated tracks serving the MRT, including the intermodal ramp tracks, storage tracks, on-dock transfer tracks and other tracks will be required. The unregulated tracks will be maintained to an FRA Class appropriate to their intended use. Intermodal ramp and storage (unregulated) tracks shown on various maps and figures provided to STB are conceptual in nature and only shown as a possible layout to develop approximate grading limits. Rail line construction will include clearing, filling and excavating earth on previously disturbed land.

Table 1. Port KC Alternatives Comparison

Highlighted Alternatives Studied Further						
Alternative No.	Alternative Name	Estimated Cost	Description	Challenges	Wetland Impacts (2015 Delineation)	Excavation Quantity
0	Original Tunnel Crossing to KCT Blue River Yard	\$ 61,412,000	Tunnel option beneath UPRR Main 1 and Main 2 tracks as well as KCT Main 1 south of existing tunnel and north of KCT Sheffield Flyover - Connects to east end of KCT Blue River Yard	Requires pump system and more impacts to UPRR and KCT tracks during construction than a bridge. Although this alternative connects to KCT Blue River Yard on the east end, possibly allowing short cuts of cars to be switched without blocking the KCT main track, the grade to accomplish this connection on the west end is 3.1%, which greatly exceeds the maximum for switching (1.5%). A bridge option was also evaluated along the same alignment and created similar issues, thus it was not studied further either.	Not Studied Further	Not Studied Further
1	South Bridge Crossing to KCT Blue River Yard	\$ 74,568,000	Bridge option over UPRR Main 1 and Main 2 tracks as well as KCT Main 1 south of existing tunnel and north of KCT Sheffield Flyover - Connects to west end of KCT Blue River Yard	Requires relatively steep grades (1.5% max.) to connect to MRT facility and KCT lowline track while passing under I-435 bridge. The 1.5% grade will be difficult to switch on the west end and the connection point is too far west to allow use of the yard without blocking the KCT main track. The 1.5% grade on the east end will not allow service as an intermodal facility due to grade limitations for intermodal equipment and spotted cars during container transfer (generally 0.3% or less). Based on coordination with KCT Railway regarding the west end connection proximity to the main track and KCS diamonds, and due to the intermodal operational issues, this alternative was not studied further.	Not Studied Further	Not Studied Further
1A	South Tunnel Crossing to KCT Blue River Yard	\$ 73,918,000	Tunnel option beneath UPRR Main 1 and Main 2 tracks as well as KCT Main 1 south of existing tunnel and north of KCT Sheffield Flyover tracks - Connects to west end of KCT Blue River Yard	Requires pump system, more impacts to UPRR and KCT tracks during construction than a bridge, and relatively steep grades for switching (1.29% max.) to connect to KCT Blue River Yard. The 1.29% grade will be difficult to switch on the west end and the connection point is too far west to allow use of the yard without blocking the KCT main track. Based on coordination with KCT Railway regarding the west end connection proximity to the main track, this alternative was not studied further.	Not Studied Further	Not Studied Further

Port KC Missouri River Terminal Alternatives Screening Analysis

Alternative No.	Alternative Name	Estimated Cost	Description	Challenges	Wetland Impacts (2015 Delineation)	Excavation Quantity
2	South Bridge Crossing from Sheffield Flyover	\$ 68,307,000	Bridge option over UPRR Main 1 and Main 2 tracks as well as KCT Main 1 south of existing tunnel and north of KCT Sheffield Flyover - Ties to KCT Sheffield Flyover Main 2	Requires relatively steep grades (1.5% max.) to connect to MRT facility and KCT Sheffield Flyover Main 2. The 1.5% grade on the east end will not allow service as an intermodal facility due to grade limitations for intermodal equipment and spotted cars during container transfer (generally 0.3% or less). Based on coordination with KCT Railway regarding not switching off of the high-traffic track Main 2 (it is a combined UPRR/BNSF transcontinental corridor), and due to the intermodal operational issues, this alternative was not studied further. A tunnel option was also evaluated, but since the Sheffield Flyover is elevated much higher than the KCT Blue River Yard, the grades to the west were far outside of acceptable track grades, thus that alternative was not studied further either, nor estimated.	Not Studied Further	Not Studied Further
3	Reuse Existing Tunnel Crossing	\$ 15,312,000	Reuses existing tunnel beneath UPRR Main 1 and Main 2 tracks	Tunnel does not accommodate intermodal well cars with double stacked containers. Cannot be modified to increase clearance. Requires pump system. Based on the inability to accommodate double stacked containers, which is a stated goal of the project, this alternative was not studied further.	Not Studied Further	Not Studied Further
3A	Skewed Tunnel Crossing to Industry Loop	\$ 89,415,000	Tunnel option beneath UPRR Main 1 and Main 2 tracks south of existing tunnel and north of KCT Sheffield Flyover tracks - Connects to industry loop and KCT	Requires pump system and relatively steep grades (1.56% max.) to connect to MRT facility and industry loop. This alternative is similar to 3B, but at a higher cost and with the same wetland impacts so it was not studied further.	Not Studied Further	Not Studied Further
3B	Parallel Tunnel Crossing	\$ 61,739,000	Tunnel option beneath UPRR Main 1 and Main 2 tracks running parallel and just north of existing tunnel - Connects to industry loop and KCT	Requires pump system and relatively steep grades (1.5% max.) to connect to MRT facility and industry loop.	4.0	320,000 Cubic Yards
4	UPRR At-Grade Crossing	\$ 8,859,000	Connects to UPRR Main 1 then uses crossover to Main 2 before connecting to industry loop and KCT, as well as UPRR Sheep Jump Track	Requires STB crossing authority and agreement with UPRR and KCS to use their main track.	3.5 Acres	22,000 Cubic Yards
No Build	No Build	\$ -	No rail connection to MRT Facility	Does not meet the purpose and need of the project	No Impact	No Impact

4.3 Railroad Operational Issues

Port KC anticipates about three to four trains per week on a 7-day weekly schedule. Railroad operational issues associated with the rail alternatives are generally associated with the grades encountered along each alignment in an attempt to gain vertical clearance through the tunnel crossing or vertical clearance beneath a proposed bridge crossing. Additional operational issues exist based on the connection to KCT Railway on the west side of the project area and usable area for spotting cars and intermodal operations on the east side of the project area. It was determined through consultation with the KCT that rail traffic arriving to or departing from the proposed port from the west would be best served accessing the UPRR Main 1 and running north to Southwest Junction before turning back south on the KCS and turning west on Track 222 at the northwest quadrant of the KCS diamonds. Conversely rail traffic arriving to or departing from MRT from the east would be best served by accessing the KCT Blue River Yard and then the Molycop industry loop track. Only the UPRR At-Grade Crossing Alternative (Alternative 4) can accommodate this operational requirement. The tunnel and bridge options that connect to the Blue River Yard directly cannot accommodate switching without blocking KCT Main 1 and the KCS diamond immediately west of Blue River Yard. The tunnel and bridge options that connect to the Molycop industry loop track can accommodate the eastern arrival and departure movements, but the grade differences prevent connection to the UPRR Sheep Jump track for western movements. Even if this connection were possible, KCT reports that it is unlikely UPRR would be able to accommodate mixing the port traffic into their current operations without difficulty. This is not to completely preclude those alternatives, including Alternative 3B, but would require further study and consultation with KCT and UPRR.

4.4 Environmental Impacts to Land Use

Among the potential environmental consequences associated with the rail alignments are temporary and permanent impacts to wetlands across the site. No residences would be displaced by any of the alternatives. The railroad construction and operation may also cause environmental impacts to natural and cultural resources. These potential environmental impacts that are currently discernible are discussed in the following sections. Additional data will be developed during the OEA review process.

4.5 Topography and Soils

The topography of the area is characterized by floodplain and areas previously disturbed by the former steel mill operation. The low-lying soils will likely consist of imported fill material and alluvial deposits from the Missouri River and the adjacent Blue River and Rock Creek. The construction of any of the rail alternatives would not cause any impacts to underlying geological resources.

Soils in the project area are not expected to be unsuitable for railroad construction. Geotechnical investigations are planned to characterize site soils and develop foundation recommendations for structures and large fills.

4.6 Water Resources

4.6.1 Surface Water and Wetlands

Based on desktop review and a 2015 wetland delineation performed by Burns and McDonnell, there are numerous wetlands throughout the site. No rail alternatives are planned to impact any of the Waters of the US stream channels in the area, which includes the Missouri River, Blue River, and Rock Creek. The impacts to wetlands would be coordinated with the US Army Corps of Engineers (USACE) through Clean Water Act Section 404/401 permitting. The approximate impacts based on overlaying proposed grading limits on the wetland shapes is as follows by alternative:

- Parallel Tunnel Crossing (Alternative 3B) – 4.0 acres (all other bridge and tunnel options created impacts of similar magnitude)
- UPRR At-Grade Crossing (Alternative 4) – 3.5 acres

4.6.2 Groundwater

Construction of each of the alternatives would occur at grades required to accomplish the clearances and track slopes necessary, with cuts required at tunnels and in some areas due to the topography. Localized groundwater infiltration may be altered within the footprint of the rail line. None of the alternatives are expected to cause significant effects to groundwater movement or quality.

4.6.3 Floodplains

The site is located at the confluence of the Missouri and Blue Rivers and adjacent to Rock Creek. The area is mapped as a Zone AE Special Flood Hazard Area with a floodway as shown on the FEMA Flood Insurance Rate Map for Jackson County. Levees are present for both rivers on the opposite side of the river as the project location indicating that the area likely experience flooding periodically. All trackage, roadways, and facilities will be designed to minimize the impact associated with fill in the floodplain and any necessary stream crossings. The tunnel options are clearly at greatest risk during flood events, even those less than the 100-year event. The selected alternative would be permitted through the City of Kansas City, Missouri as the floodplain administrator for this area.

4.7 Biological Resources

4.7.1 Endangered and Threatened Species

The Project Area was submitted online to the USFWS Information for Planning and Consultation (IPaC) system to obtain a report, which lists any protected species, critical habitat, migratory birds, or other natural resources that may be located in the Project Area (Appendix B). Based on this review, threatened and endangered species that may be found in the project area include gray bat, Indiana bat, northern long-eared bat, and pallid sturgeon. These species are protected under the Endangered Species Act (ESA). There are no ESA-designated critical habitats for these species within the Project Area. Migratory birds, which are protected under the Migratory Birds Treaty Act or the Bald and Golden Eagle Protection Act,

may also be found in the study area. These include the bald eagle, black-billed cuckoo, Kentucky warbler, prothonotary warbler, red-headed woodpecker, rusty blackbird, and wood thrush, among many others. There are no wildlife refuges or fish hatcheries located in the Project Area. It is anticipated that all alternatives may have similar impacts to the site with respect to endangered and threatened species.

4.7.2 Flora

Rail line construction will include clearing surface vegetation and excavating earth on previously disturbed land. Secondary impacts to vegetation may include loss or alteration of shrub or forested habitat, fragmentation of habitat types, and altered vegetation succession. Creation of staging areas and work pads would cause temporary vegetation impacts in all the rail alternatives. Areas disturbed during construction and not covered by railroad structures will be reseeded with native species. Impacts are anticipated to be the same for all alternatives.

4.7.3 Terrestrial Wildlife

A variety of wildlife species may inhabit areas within the project area, although impacts are anticipated to be the same for all alternatives. The anticipated species are:

- Gray Bat
- Indiana Bat
- Northern Long-Eared Bat
- Pallid Sturgeon
- Various migratory birds listed above in Section 4.7.1

4.7.4 Aquatic Ecology

All alternatives would cross wetlands within the site. Construction activities conducted in the wetlands may cause temporary increases in sedimentation and short-term degradation of water quality. Water quality and aquatic habitat would be expected to return to normal conditions when construction is completed, except in those wetlands that are filled as approved through Clean Water Act Section 404/401 permitting.

4.8 Cultural Resources

The alternative routes will be subject to updated comparative cultural resources reviews during the USACE Clean Water Act Section 404/401 permitting. Those updated reviews have not yet been undertaken, although desktop investigation indicated no resources are listed on the National Register of Historic Places.

4.9 Transportation

Roadway access to the facility is anticipated to be from the I-435 and Front Street interchange. Traffic will head east from the interchange on Front Street and turn south (right) on N. Century Avenue. Traffic will then head south on N. Century Avenue crossing E. Gardner

Road and the Blue River via bridge(s) to the MRT facility entrance. Vehicular access to the proposed facility is anticipated to be the same for all alternatives.

4.10 Right-of-Way Acquisition

Right of way acquisition is not anticipated from the UPRR or KCT Railway for any of the alternatives, but an agreement to construct and maintain the selected alignment would be required. An agreement with Molycop for use of their loop track would also be required for the selected alternative since that connection is preferable to the west end of KCT's Blue River Yard.

4.11 Air Quality

The U.S. Environmental Protection Agency (USEPA) National Ambient Air Quality Standards (NAAQS) regulations specify the maximum acceptable ambient concentration levels for six primary or "criteria" air pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), respirable particulate matter (PM), and lead (Pb).

Air emissions of PM may occur as fugitive dust from earthmoving activities during construction of the rail line. However, fugitive dust emissions during construction are temporary and can be readily controlled by water application.

4.12 Noise and Vibration

Port KC has not conducted modeling to estimate noise or vibration effects caused by construction or operation of the railroad. Each of the rail alternatives traverses a common area, so the potential effects of noise and vibration, if any, would be equivalent between the rail alternatives.

4.13 Parks and Recreation

There are no designated recreation areas within any of the rail alternative alignments.

4.14 Hazardous Materials and Waste Sites

The former steel mill site consists of parcels included within Resource Conservation and Recovery Act (RCRA) Post-Closure and Corrective Action Permits that are administered by the Missouri Department of Natural Resources (MDNR) and the United States Environmental Protection Agency (USEPA). The Port will comply with MDNR and USEPA requirements for corrective action and guidelines related to sampling, handling, and disposal procedures during construction activities of the project. Impacts and associated requirements are expected to be the same for all the rail alternatives.

4.15 Socioeconomics

All railroad alignments are on railroad property or on the former steel mill site. No residences would be displaced by any of the alternatives. Socioeconomic impacts to the region are

expected to be the same for all the rail alternatives. The no-build alternative would result in a lack of investment in a historically underserved area.

5. No-Build Alternative

The No-Build Alternative would result in no construction of any rail line to serve the Missouri River Terminal. The No-Build Alternative is based on the assumptions that there will not be a need to transport freight via rail from the terminal. At this time, planning for the terminal is progressing and the primary purpose of the terminal is transfer freight from barge to rail and rail to truck. Therefore, there will be a need to transport freight from the terminal via rail. However, we assume that the No-Build Alternative will be evaluated during the current STB proceeding.

6. Alternatives Considered and Eliminated from Detailed Study

Certain rail alternative routings were considered during the screening process and eliminated as being unfeasible or otherwise clearly inferior to the two rail alternatives described above on the basis of relevant screening criteria, including the grade of the track, particularly in areas of switching and storing cars, connection to a location where the facility can be switched without blocking high traffic main tracks, and the ability to accommodate double stacked intermodal containers on well cars. The use of a diamond crossing of UPRR Mains 1 and 2, as well as possibly KCT Main 1, was not studied due to the operational and maintenance concerns with the diamonds, particular within or immediately adjacent to the UPRR Rock Creek Crossover Plant. The following sub-sections summarize the evaluations of the rail alternatives that Port KC does not believe warrant further consideration.

6.1 Original Tunnel Crossing to KCT Blue River Yard (Alternative 0)

This alternative involves a tunnel crossing beneath UPRR Mains 1 and 2, KCT Main 1 at a location south of the existing tunnel beneath the UPRR Mains but north of the KCT Sheffield Flyover Mains 2 and 3. The west end of this alternative connects to the west end of the KCT Blue River Yard. The estimated cost to construct this alternative is \$61.4 Million (2022 Cost).

6.2 South Bridge Crossing to KCT Blue River Yard (Alternative 1)

This alternative involves a bridge crossing over UPRR Mains 1 and 2, KCT Main 1 at a location south of the existing tunnel beneath the UPRR Mains but north of the KCT Sheffield Flyover Mains 2 and 3. The west end of this alternative connects to the east end of the KCT Blue River Yard. The estimated cost to construct this alternative is \$74.6 Million (2022 Cost).

6.3 South Tunnel Crossing to KCT Blue River Yard (Alternative 1A)

This alternative is similar to Alternative 0 except it uses flatter grades (maximum 1.29%). Although the grades are flatter, the west connection to KCT's Blue River Yard would require any switching to occur on KCT Main 1 and blocking the KCS diamonds. The estimated cost to construct this alternative is \$73.9 Million (2022 Cost).

6.4 South Bridge Crossing from Sheffield Flyover (Alternative 2)

This alternative raises the connection track from the proposed port, over the UPRR Main 1 and 2 tracks, as well as KCT Main 1, then connects to the elevated Sheffield Flyover Main 2 on the west end. This alternative would require switching on the high train volume Main 2 and would preclude the use of the intermodal ramp tracks due to excessive grades. A tunnel option of the same alignment would have grades on the west end that far exceeded the 1.5% target. The estimated cost to construct this alternative is \$68.3 Million (2022 Cost).

6.5 Reuse Existing Tunnel Crossing (Alternative 3)

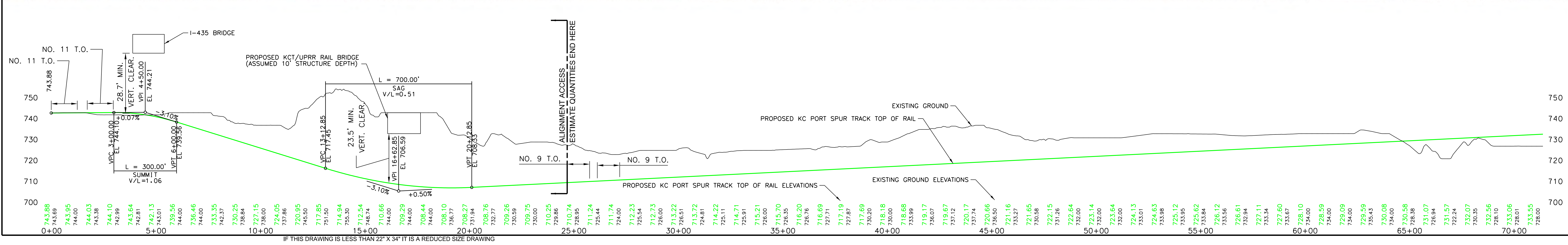
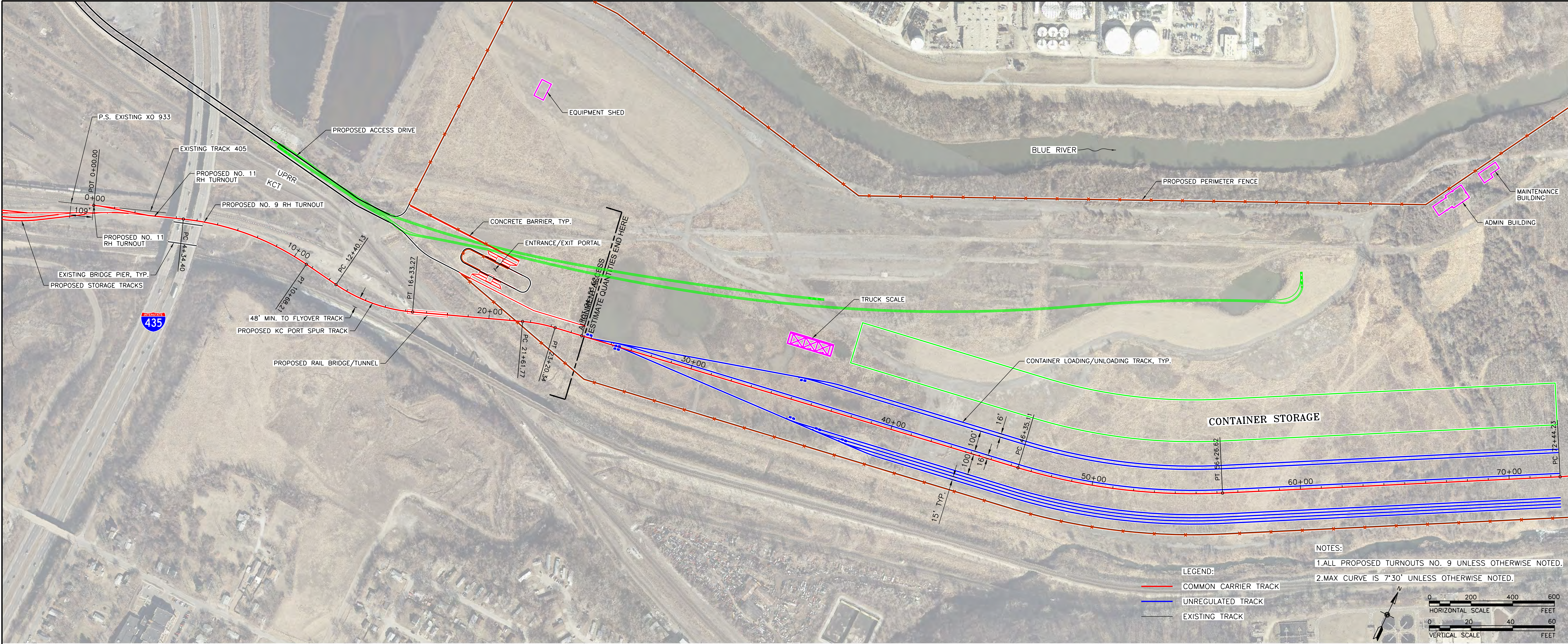
This alternative would reuse the existing tunnel beneath UPRR Mains 1 and 2 that was previously used by the former steel mill operation. The tunnel does not provide sufficient vertical clearance for double stack intermodal containers on well cars and cannot be modified. An inability to accommodate double stacks would likely render the intermodal facility non-competitive for that type of operation. The estimated cost to construct this alternative is \$15.3 Million (2022 Cost).

6.6 Skewed Tunnel Crossing to Industry Loop (Alternative 3A)

This alternative is very similar to Alternative 3B but with a higher cost. For that reason, it was not studied further. The estimated cost to construct this alternative is \$89.4 Million (2022 Cost).

7. Conclusion

Based on the analysis presented above, the UPRR At-Grade Crossing (Alternative 4) is the preferred alternative. The next most feasible alternative is the Parallel Tunnel Crossing (Alternative 3B).



TransSystems

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REVISIONS:

PROJ NO: 101160208
SCALE: AS SHOWN
DATE: \$DATES
DESIGNED BY: SMW
DRAWN BY: SMW
CHECKED BY: JPH

SHEET TITLE:
CURRENTLY PROPOSED MRT ALIGNMENT:
TUNNEL OR BRIDGE

SHEET NO.
EX-01

DATE

MARK

DESCRIPTION

