Rio Metro

Double Track Study

March 25, 2022

RIO METRO
REGIONAL TRANSIT DISTRICT

HUITT-ZOLLARS

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Project Team

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Introduction

Background

Founded in 1978, the Rio Metro Regional Transit District (Rio Metro) operates and manages the New Mexico Rail Runner Express and the NMRX system. The NMRX system provides passenger rail access to Santa Fe, the state capital, and Albuquerque, the state's largest city, and smaller communities and Native American pueblos along its 100-mile corridor. This connection is important as Santa Fe and Albuquerque are major employment drivers for the state and many people can park-and-ride between more suburban locations without having to drive into either city. This creates a significant increase in the number of people who are able to be employed in these two job centers.

Rio Metro operates 16 Rail Runner commuter trains between Albuquerque and Santa Fe to the north and 14 trains between Albuquerque and Belen to the south each weekday. Between 7 and 11 Rail Runner trains also operate on the weekends. Although much of the schedule is focused on peak commute trips, the rail line already carries many kinds of trips, such as leisure trips between Albuquerque and Santa Fe. But it has the potential to serve significantly more all day, non-commute-oriented demand in the corridor.

All-day Demand

Rail Runner serves as a regional transportation spine, making all of the various local transit, paratransit, and on-demand transit services that are along it more useful to more people—including visitors. It also connects the many small towns and pueblos between Belen and Santa Fe. Across the United States, commuter rail systems have been focusing more on all-day demand;

Denver runs trains at least once on hour from 6:00 am, to 10:00 pm on all its lines (with 15-minute service on one line) and Salt Lake City runs every 30 minutes at peak and every 60 the rest of the day. Many systems have adjusted schedules to "clockface" schedules where the train leaves at the same time every hour to make it easier for riders to understand and use.

This report considers what additional sidings and station platforms it would take for Rail Runner to operate more frequent all-day service on more regular schedules.

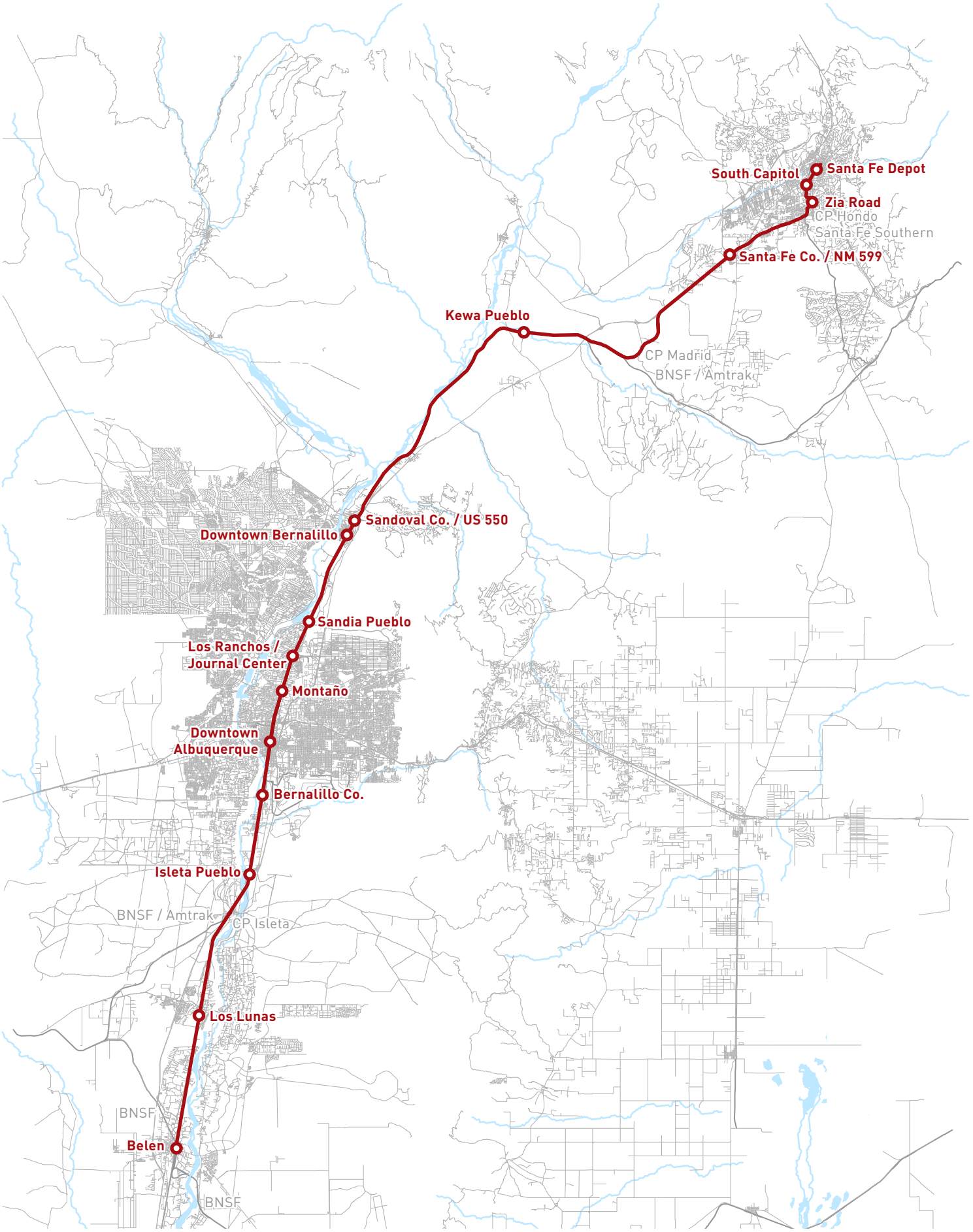
Current Operations

The current Rail Runner schedule is driven in large part by infrastructure. The schedules are designed to allow Amtrak and BNSF freight to utilize NMRX tracks midday without significant coordination. This allows a full schedule of peak trips to and from Albuquerque and Santa Fe but does not facilitate or prioritize other trips along the corridor at various times of day. The locations of passing sidings are also a major limitation; there are only hour locations in the 60 miles between Montaño and South Capitol where trains going opposite directions can meet, and the current schedule already maximizes what is possible with those locations.

On a single-track railroad, a single train delay can quickly ripple throughout the corridor. Today, for example, if a northbound #504 is late, southbound #507 will need to wait for it at Silva siding since the next passing opportunity is nearly 10 miles down the line. Adding more sidings or additional tracks at terminal stations gives dispatchers more options for where to put trains.

The Rail Runner system operates from 4:30 am to 10:30 pm. The current schedule has two trains 30 minutes apart northbound during the morning peak, leaving Downtown Albuquerque at 4:30 and 5:00 am. There is then an express route an hour later followed by an all-stop route the following hour, followed by the final northbound morning train two hours after it.

In the morning, the first southbound train leaves Santa Fe just after 5:30 am, but two trains go southward from Downtown Albuquerque to Belen before that. The second southbound train from Santa Fe leaves about an hour and a half after the first and stops at Downtown Albuquerque. There are no Rail Runner trains on the system between 11:30 am and 1:00 pm—northbound Amtrak is scheduled in this time period. Just after 1:00 pm, a southbound route runs from Santa Fe to Belen, and it is followed by the southbound Amtrak route. During the evening peak, there are trains each hour from Santa Fe to Downtown Albuquerque from 4:15 to 7:00 pm. The express pattern leaves around 5:15 pm and stops in Downtown Albuquerque. The final southbound train departs at 9:00 pm.



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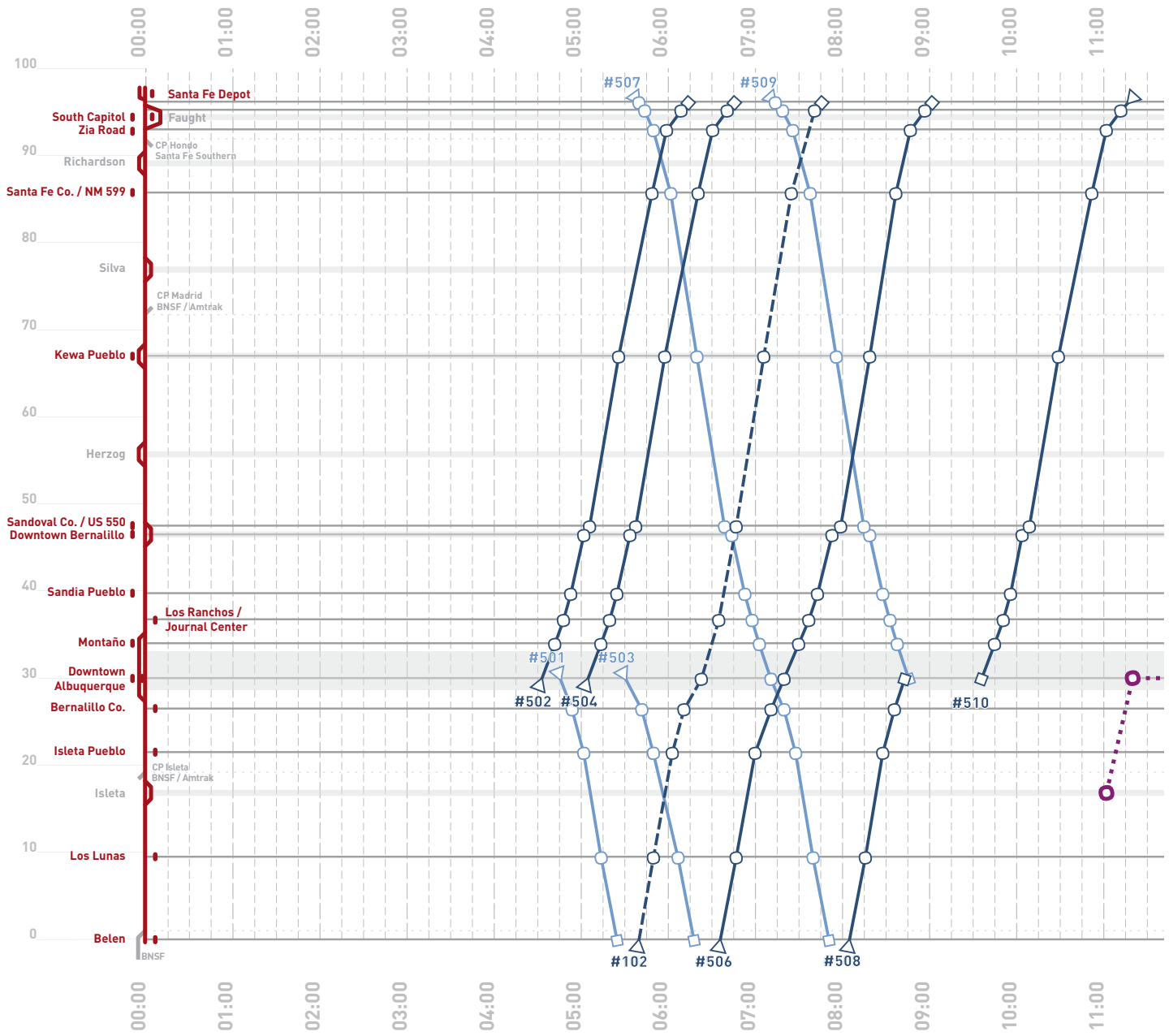
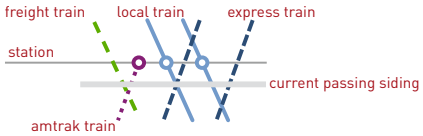
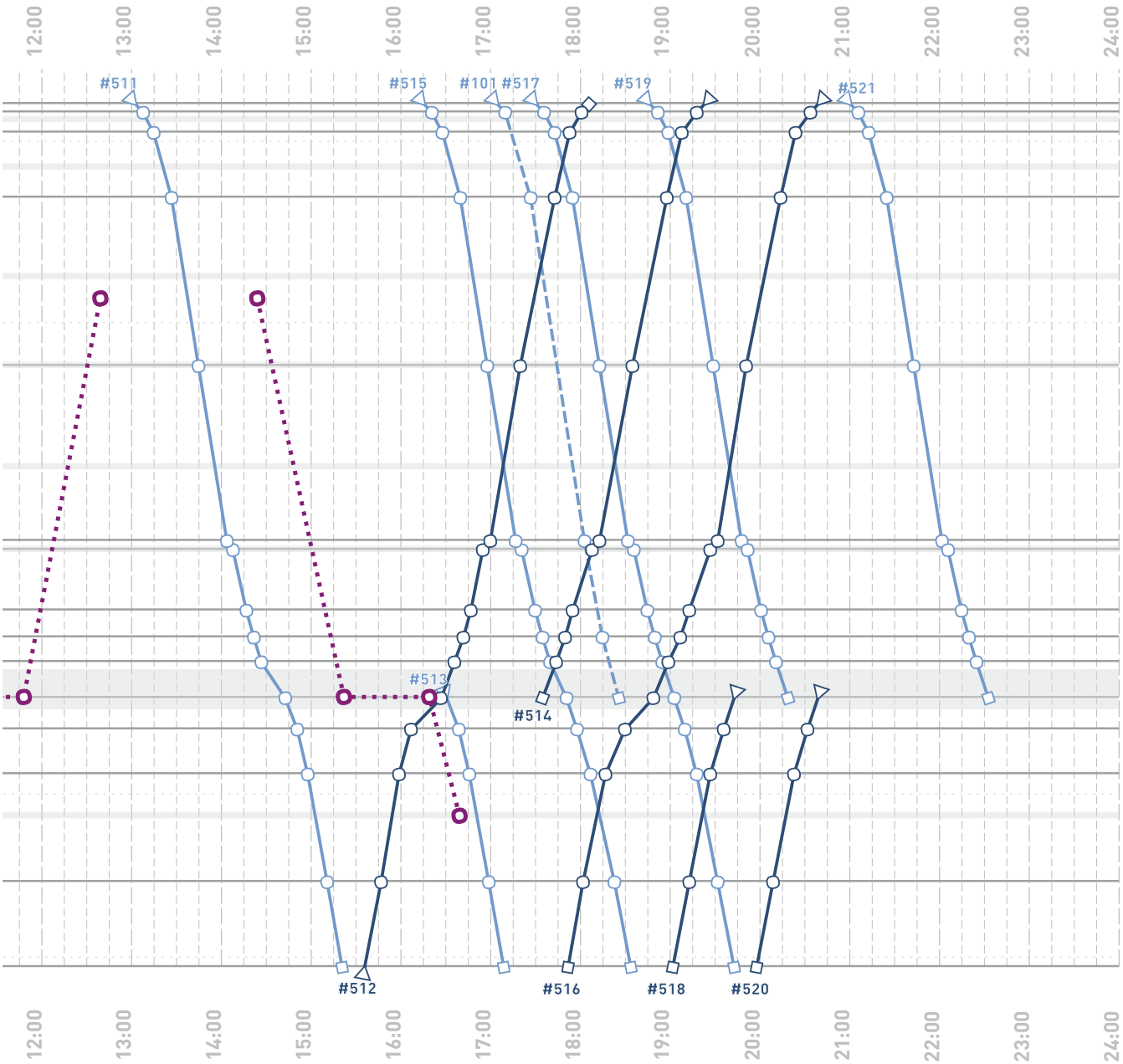
Current Schedule

Northbound and southbound trains pass each other either at standalone sidings or at stations with a siding in addition to the platform. These are primarily at Richardson siding, Silva siding, Herzog siding, Downtown Bernalillo station, the double track in Albuquerque, and Isleta siding. The current schedule requires many train meets at relatively short sidings that are not located at stations. This inherently requires at least one of the trains to come to a stop to allow the other train to pass, which increases travel time. The two ways to address that are to put sidings at schedules, so trains pass each other at a point where they are required to stop anyway or to lengthen sidings into segments of double track to allow trains to meet at-speed.



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Project Methodology

In order to fully understand where track improvements would most benefit Rio Metro Rail Runner's operations, the current operations of Rail Runner were reviewed using "stringline" track system diagrams to understand where bottlenecks and other limiting features occur in the system. This method allowed the project team to precisely determine areas of track conflict while visually communicating those conflicts.

To identify the locations for infrastructure updates, the project team identified several different possible scenarios for future service. By creating and studying multiple different operating scenarios, the different options for new siding locations were able to be compared to each other in order to recommend sidings and other projects that would make the greatest number of scenarios possible. Rather than suggesting one future schedule, the proposal provides infrastructure upgrades that serve multiple future service options. All of the proposed scenarios were based on the current schedules and station-to-station times. Evaluation of the potential for all-day hourly regular service as the baseline between Belen and Santa Fe led to an understanding of the types of projects and locations where additional infrastructure would make regular all-day service possible. Through analysis of the system's current constraints, a set of project recommendations was formed in addition to multiple schedule scenarios.

The following information was gathered and utilized for the analysis of the overall Rail Runner system from Belen to Santa Fe Depot:

- Wayside Track Chart for Albuquerque Sub. (11/8/2019) – Belen (MP 932.4) to Lamy (MP 834.0)
- Wayside Track Chart for Santa Fe Sub. (10/31/2019) – CP Madrid (MP 0.00) to Santa Fe (MP 22.3)
- Rail Runner Express Train Schedule (10/5/2016) – Employee Timetable No. 5
- RMRTD Budget and Capital Plan FY2021 – FY2027 (May 2020)
- Rail Runner System Map 2021
- Amtrak Service Schedule
- BNSF Freight Schedule

Wayside track charts were utilized in conjunction with Google Earth Pro to find and delineate 22 potential locations for double-track siding projects (9 locations in Santa Fe Subdivision & 13 locations in Albuquerque Subdivision). Google satellite imagery was utilized to generate KMZ files in Google Earth Pro to locate and clarify potential siding locations. No as-built plans for the existing NMRX track or the existing above-ground and buried utilities were obtained or utilized. The quantities and costs associated with the siding projects were estimated based on recently designed projects of similar scale and scope. It is anticipated that all of the identified siding and platform projects will be able to be constructed entirely within the state-owned NMRX railroad right-of-way. Therefore, it is anticipated that the environmental reviews for these projects would consist of the standard review process required to obtain a Categorical Exclusion from FTA.

The detailed analysis of the existing Rail Runner system has identified a number of conflict areas that cause blockages and limit the passing of trains. These conflict areas not only create issues with current system reliability, but they also prohibit other schedule patterns or improvements from being possible. The analysis of potential double track and siding solutions provides Rio Metro with many potential options to improve the overall performance of the system in ways that are duplicative in their purpose. The outcome of this analysis identified ten project locations recommended to provide basic hourly service; accommodate Amtrak's service schedule; to better manage BNSF schedule conflicts; and address service reliability issues. Eight of these project locations are within the Albuquerque Subdivision.

The ten proposed sidings identified in this study include four standalone siding projects as well as three locations where existing sidings could be extended in order to expand existing double tracking. Additional station platforms have also been recommended on three of the proposed sidings and on three existing siding locations to enhance or expand train service. The potential siding and platform areas were further studied in terms of constructability, environmental resources and permitting requirements, existing railroad right-of-way, physical constraints, obstructions, and right-of-way encroachments. The alignments were adjusted in some areas to avoid conflicts with existing features including rail bridge structures and at grade road crossings. The data utilized in this study were obtained from state and federal website resources.

The identified siding/siding extension projects typically involve track and signal infrastructure improvements, including:

- Ballast, Ties, Track, and Turnouts
- Grading, Drainage & Public/Private Utility adjustments
- Modify existing road crossing approaches for new signaled siding track
- New 2-Track crossing panels to replace existing single track crossing panels
- Pedestrian Grade Crossing
- PTC and Wayside Signal Equipment
- Crossing Warning System
- New Control Point (Ends of Siding)
- Interface to adjacent signal locations
- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site, etc.)
- Communication Modifications (ATCS & GPS/PTC Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

The approximate limits and geometry of siding have been drawn to scale on aerial photos of the areas in order to check and confirm the feasibility of each siding project. The existing NMRX single-track alignments are typically centered in the middle of the existing 100-foot wide railroad right-of-way (R.O.W.). The new siding track will be offset 15-feet from the existing main track (and ~35-feet from the NMRX R.O.W. line).

New Service Scenarios

The team developed 7 scenarios for future service. All of these scenarios represent a long-term vision. Such schedules would not likely be implemented at once, and they obviously would require additional equipment, operating facilities, crews, and budget. However, these are the building blocks of future service – schedules can be adjusted, and additional trains added, one at a time. Using these scenarios future-proofs the system.

A summary of the Design & Construction Activities required for each proposed area of infrastructure improvement is provided per Subdivision as listed below. The Rough Order of Magnitude cost for each of these improvements can be found in Table & Exhibits Section 5 of this document.

Regular Hourly

Regular Hourly service would offer passengers one train per hour in both directions along the entire line at an easy to remember schedule, allowing passengers more flexibility and better-serving midday and evening trips.

Peak Express

The Peak Express service scenario would replace local trains at rush hour with express trains, offering peak direction commuters faster trips.

Regular Hourly with Peak Express

Regularly Hourly with Peak Express would run both local and express trains at rush hour, providing regular service to all stations while offering passengers at the busiest stations faster trips.

Regular Hourly with Staggered Peak Express

Regularly Hourly with Staggered Peak Express would run dual-express trains at rush hour, providing regular service to all stations while offering express service to all stations as well.

15-minute Service Options (x2)

15-minute frequency would provide "show up and go" service in the densest parts of the corridor.

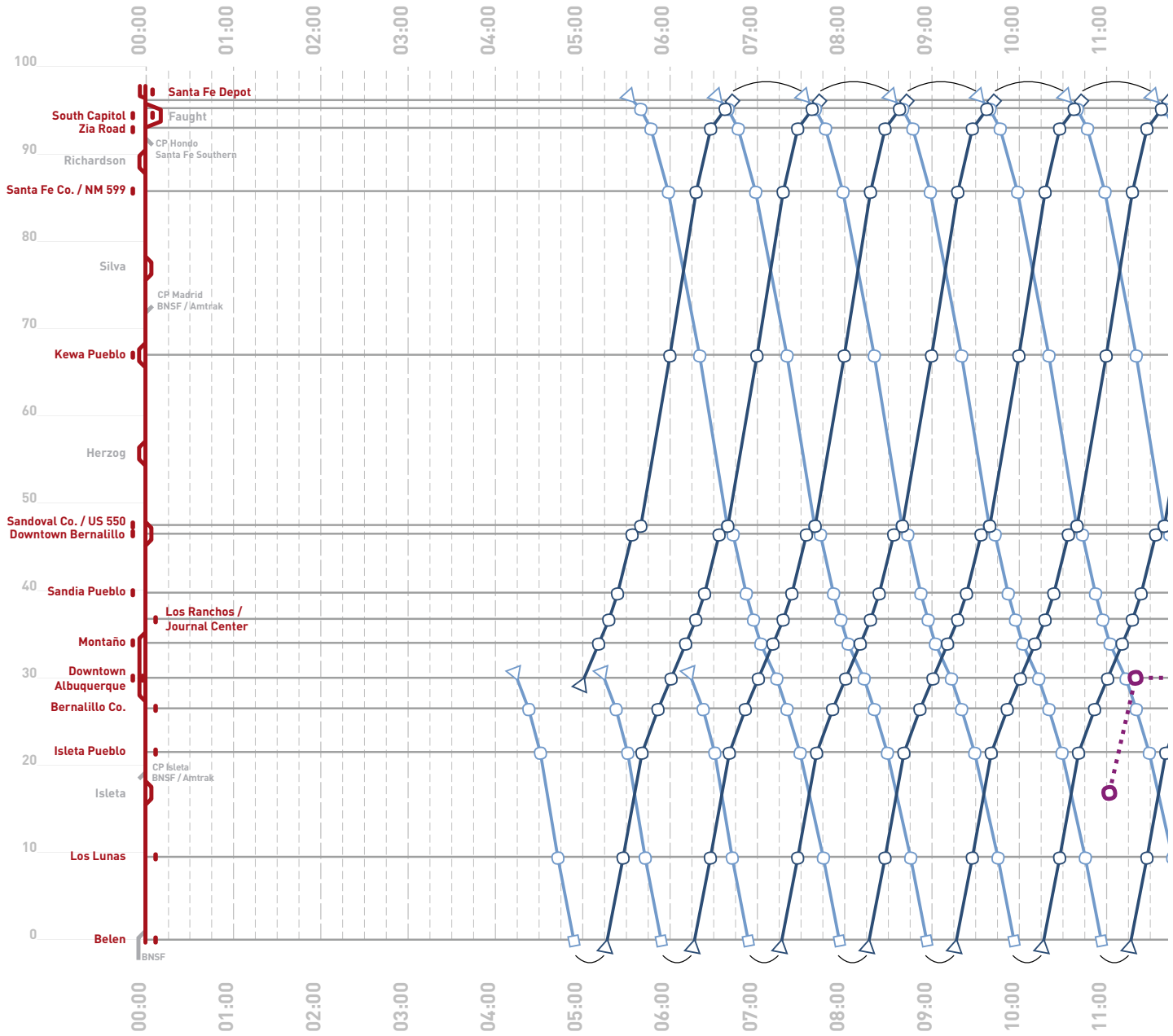
Staggered Service

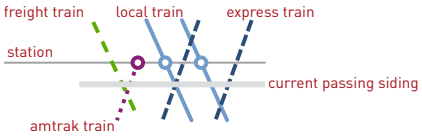
Staggered service would service all stations with alternating trains at rush hour.

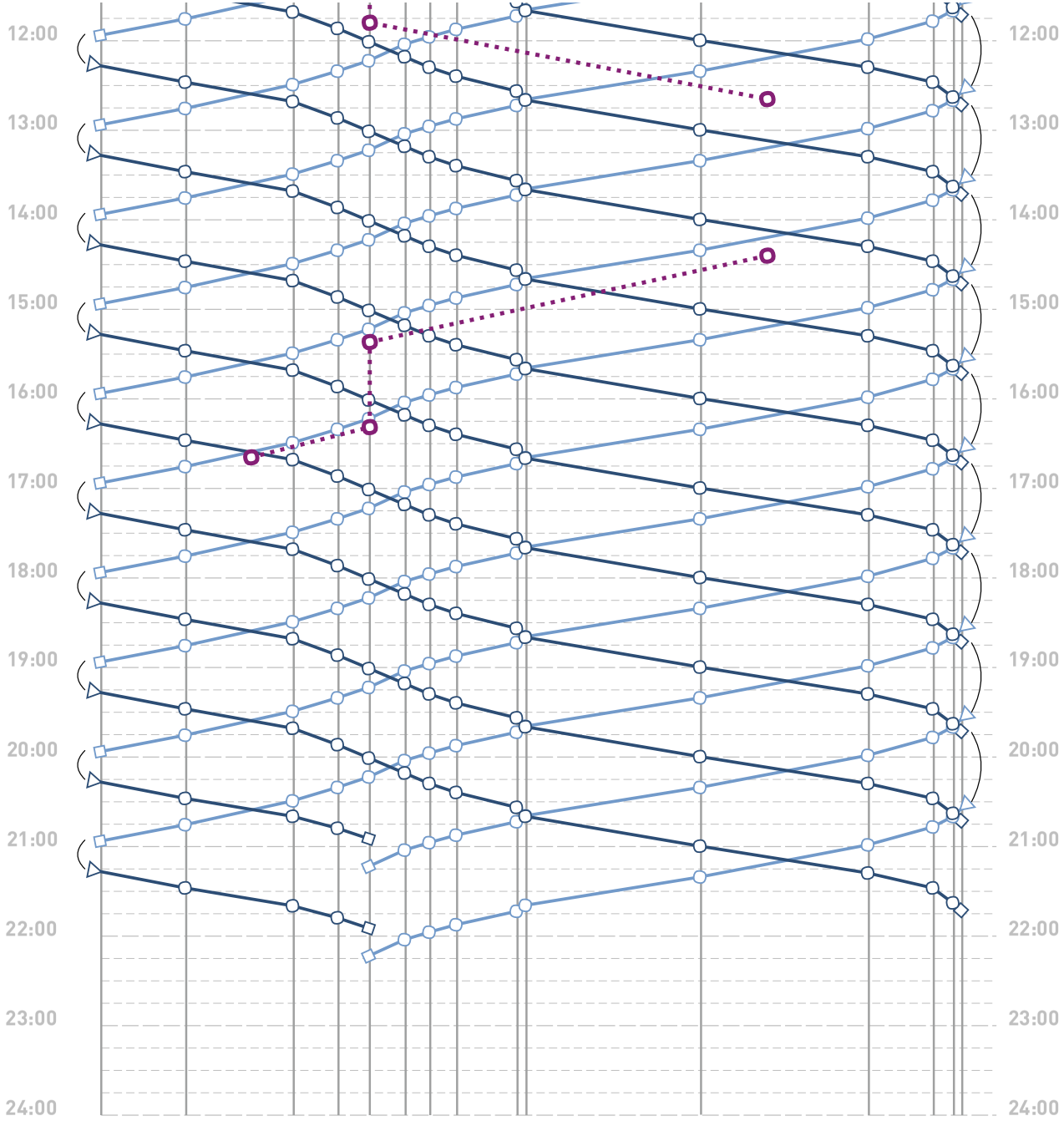
Regular Hourly Service Scenario

Regular Hourly service would offer passengers one train per hour in both directions along the entire line at an easy to remember schedule, allowing passengers more flexibility and better-serving midday and evening trips. Creating a schedule pattern that offers passengers the same boarding times each hour every day has the potential to drastically increase ridership as predictability is a primary factor in riders being able to depend on rail services for trips they may otherwise take via car. The Regular Hourly scenario is the backbone for the subsequent scenarios. Regular Hourly service is the backbone for all other scenarios, and all 10 proposed projects would help create dependable, reliable service for this service pattern.

In the proposed Regular Hourly scenario, northbound trains leave Downtown Albuquerque at the top of every hour and southbound trains depart the same station at 15 minutes past the hour. With current train times between stations, this means that the southbound trains leave Santa Fe just after 30 minutes past the hour and pass northbound trains at South Capitol, at Silwa siding between NM599 and Kewa, at US 550, between Montaño and Downtown ABQ, and at Isleta siding south of Isleta Pueblo station, then arrives at Belen about 2 hours and 30 minutes after it left Santa Fe.



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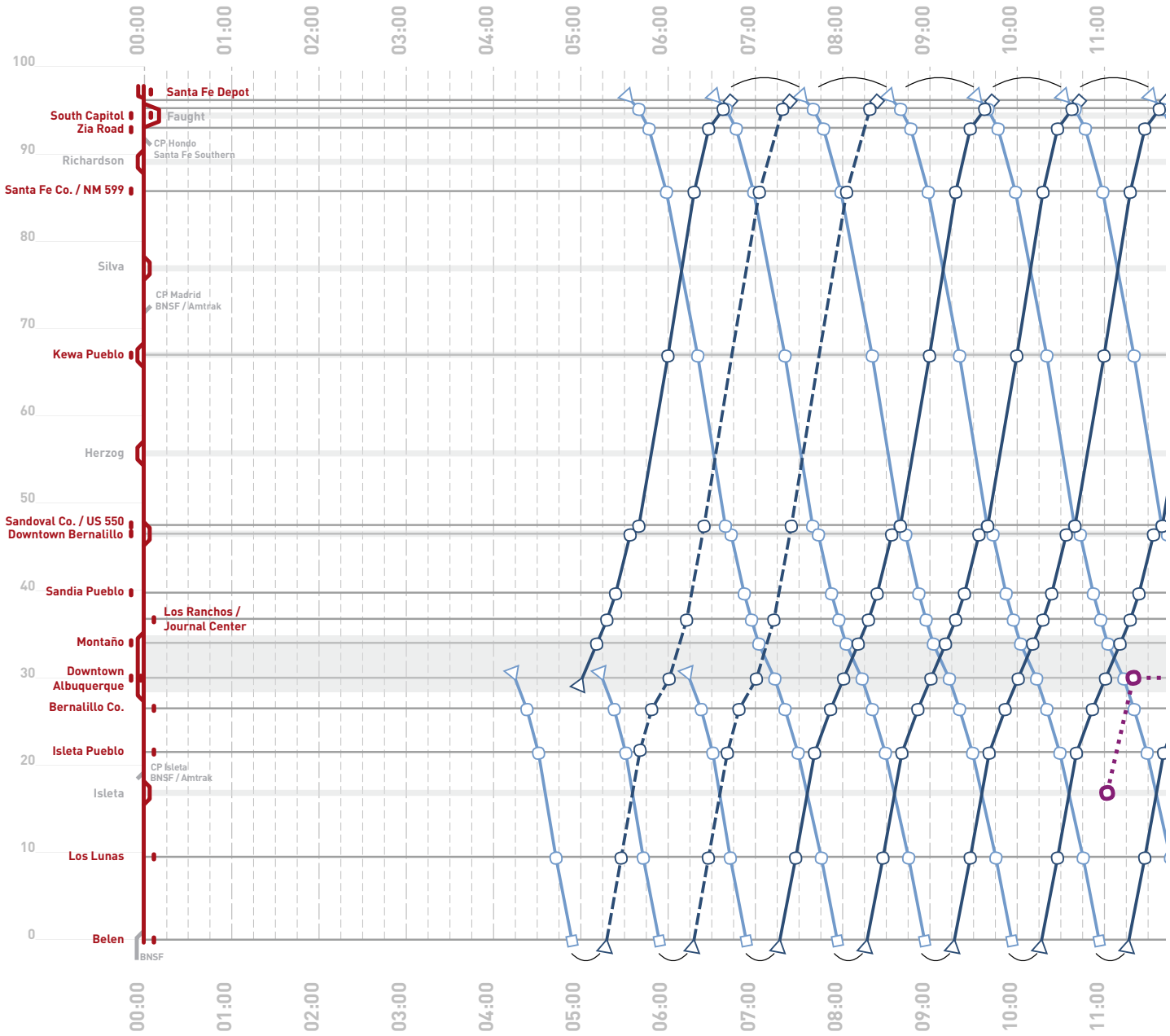
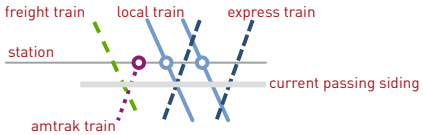
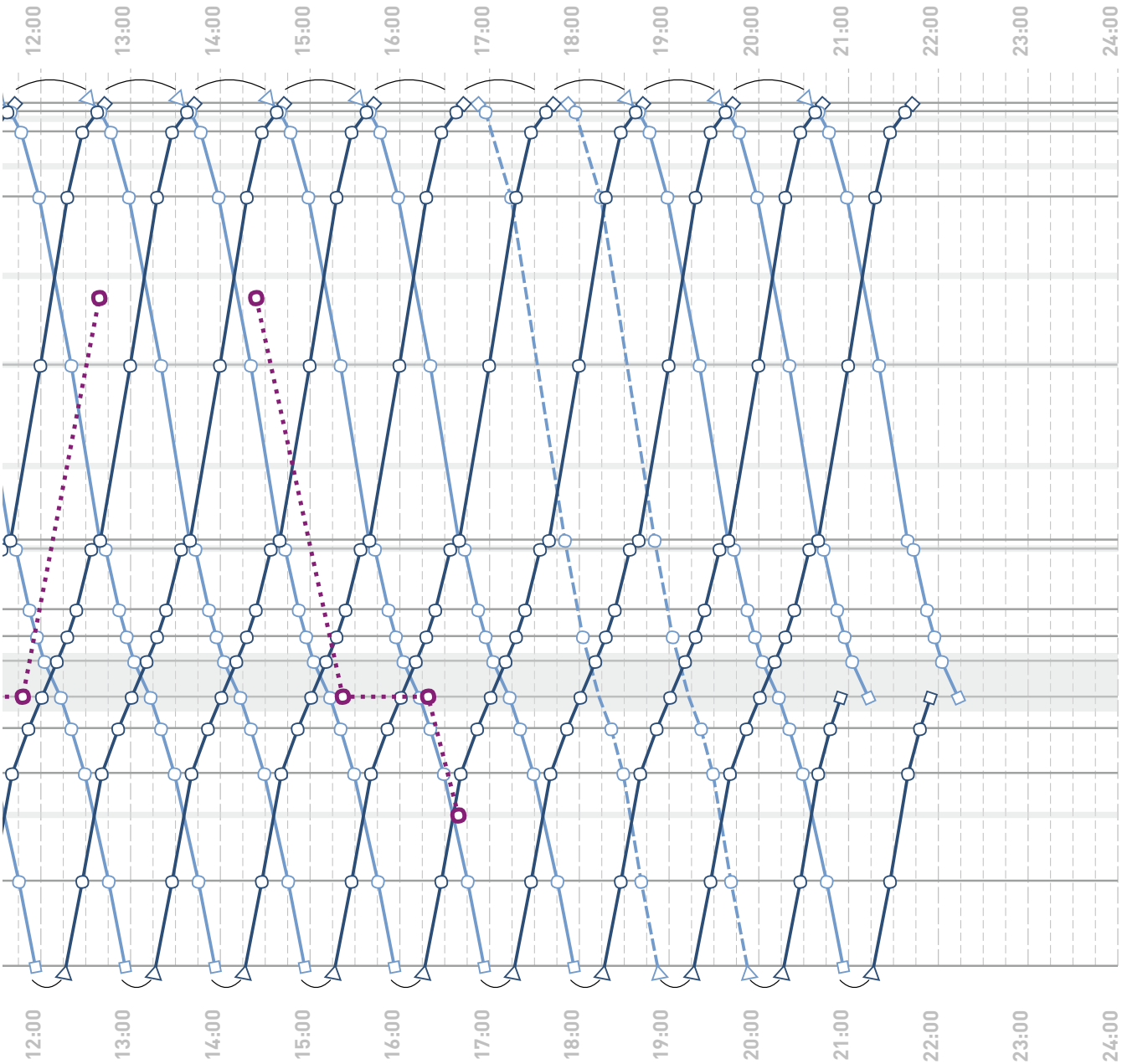
Peak Express Service Scenario

The Peak Express service scenario would replace local trains at rush hour with express trains, offering peak direction commuters faster trips. This scenario substitutes some hourly routes for express routes. This creates some stops that are not served during peak hours: Zia Road, Kewa Pueblo, Downtown Bernalillo, Sandia Pueblo, and Montaño. All stops are serviced between Belen and Downtown Albuquerque. Express routes go northward in the morning rush and go southward in the afternoon. The Peak Express scenario requires two additional sidings to operate—one South of Santa Fe Co./NM 59 in the vicinity of milepost SF-9.8 and one south of Herzog siding at milepost 879. Additional infrastructure was not studied for each subsequent scenario.



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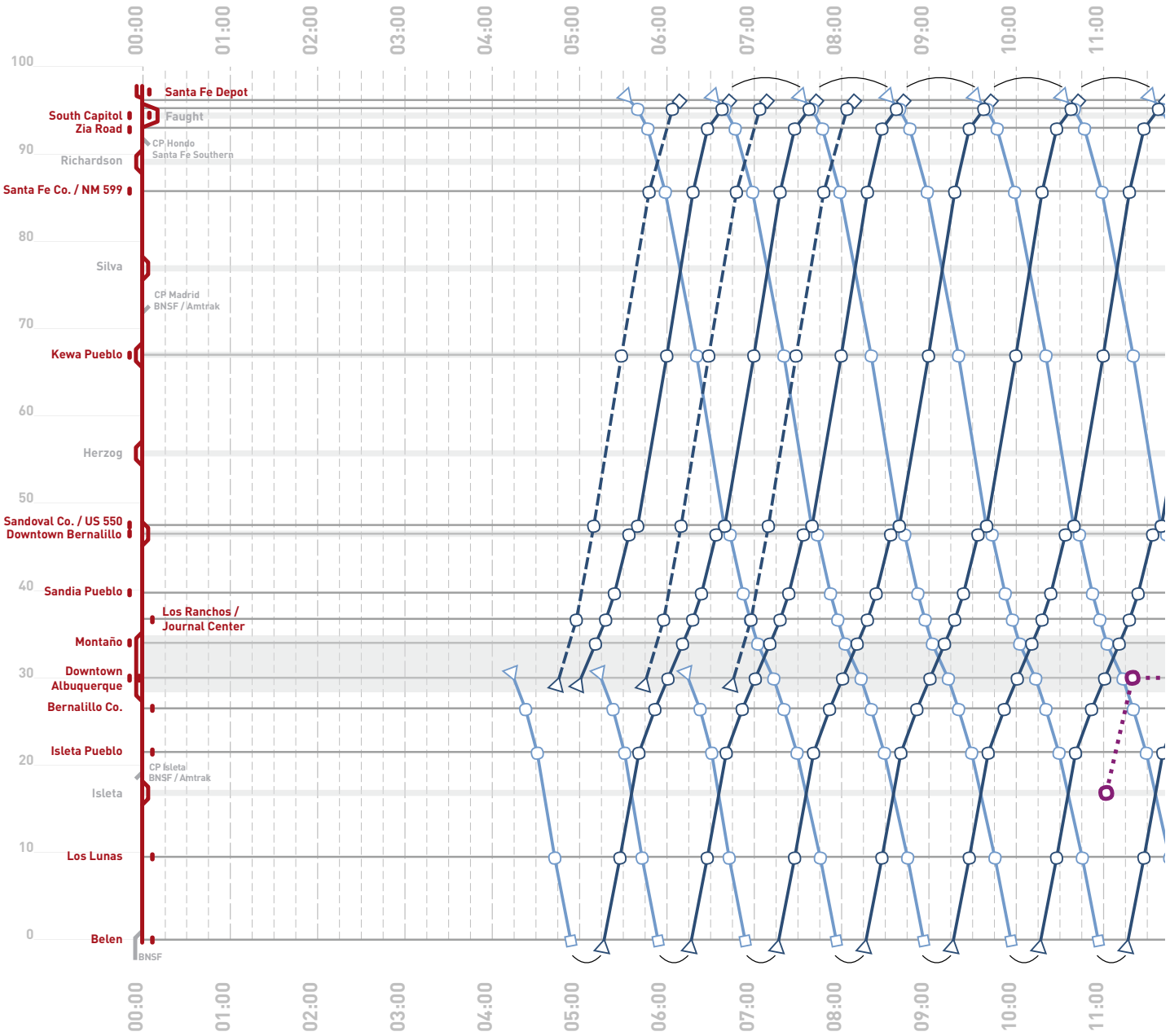
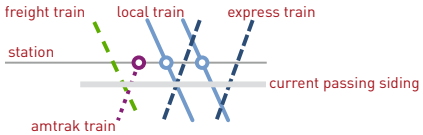
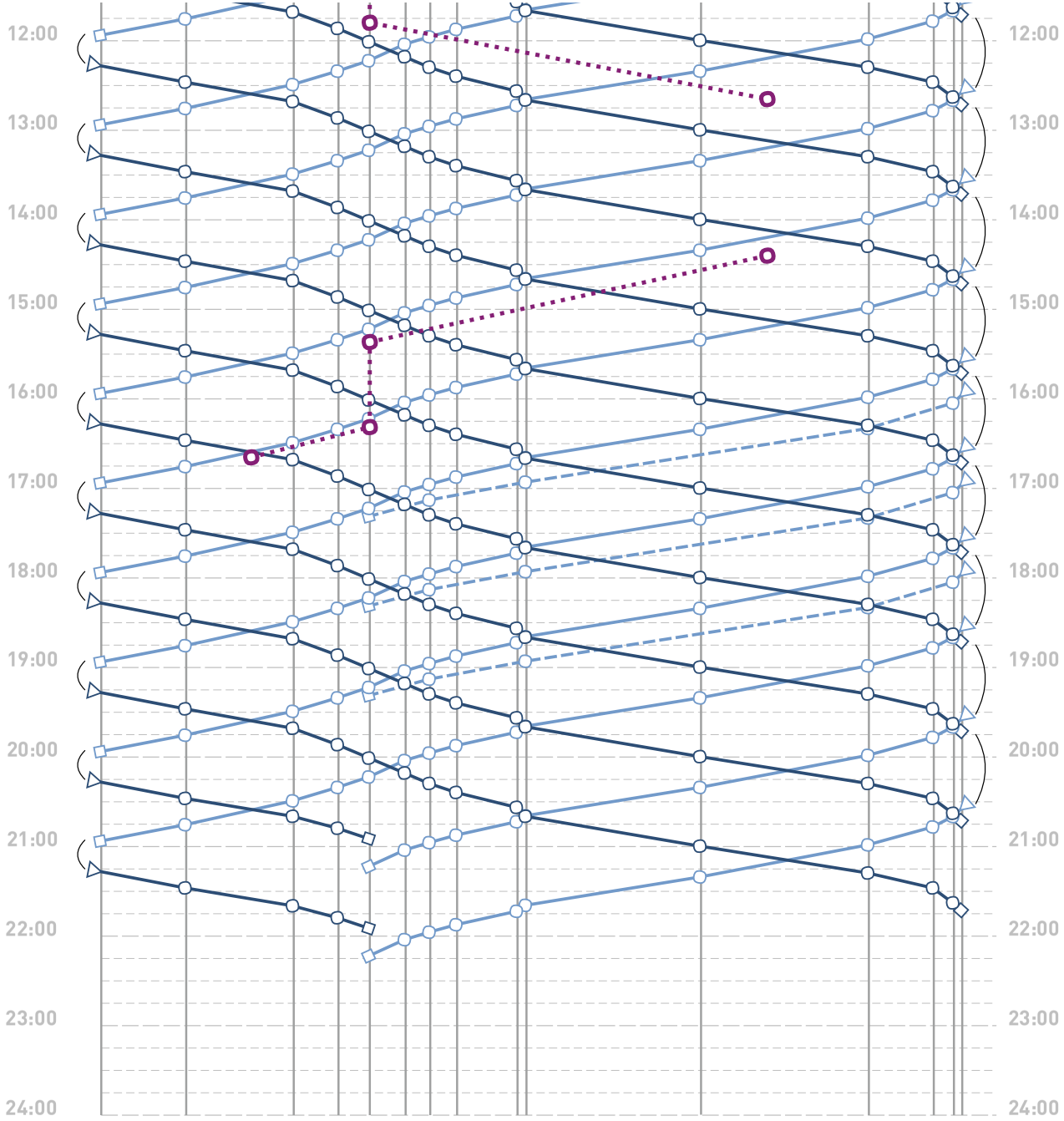
Regular Hourly with Peak Express Service Scenario

Regularly Hourly with Peak Express would run both local and express trains at rush hour, providing regular service to all stations while offering passengers at the busiest stations faster trips. The peak service fills in 30-minute gaps between the standard hourly, offering all stops at least one train per hour while serving some stops twice.



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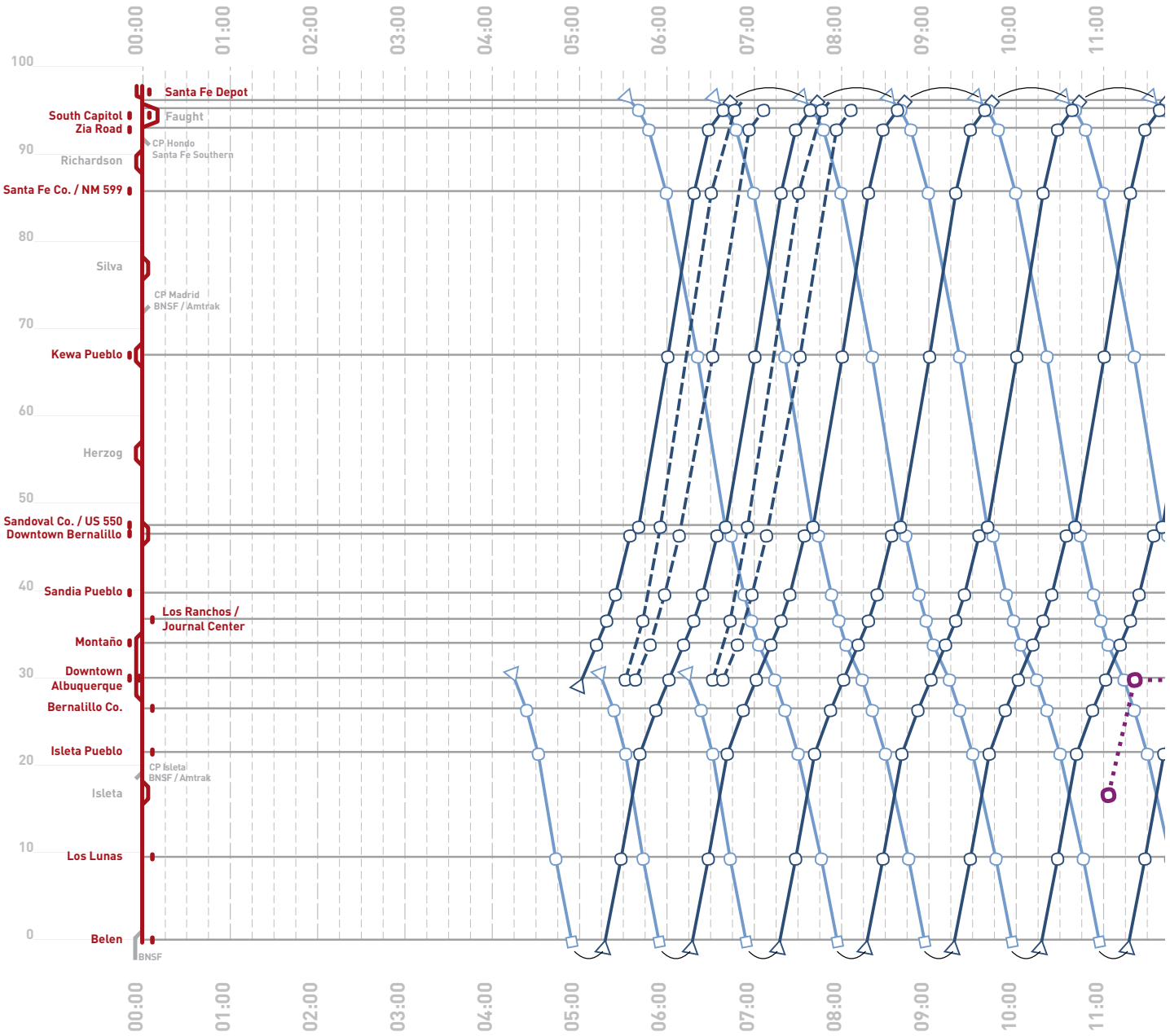
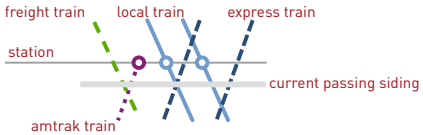
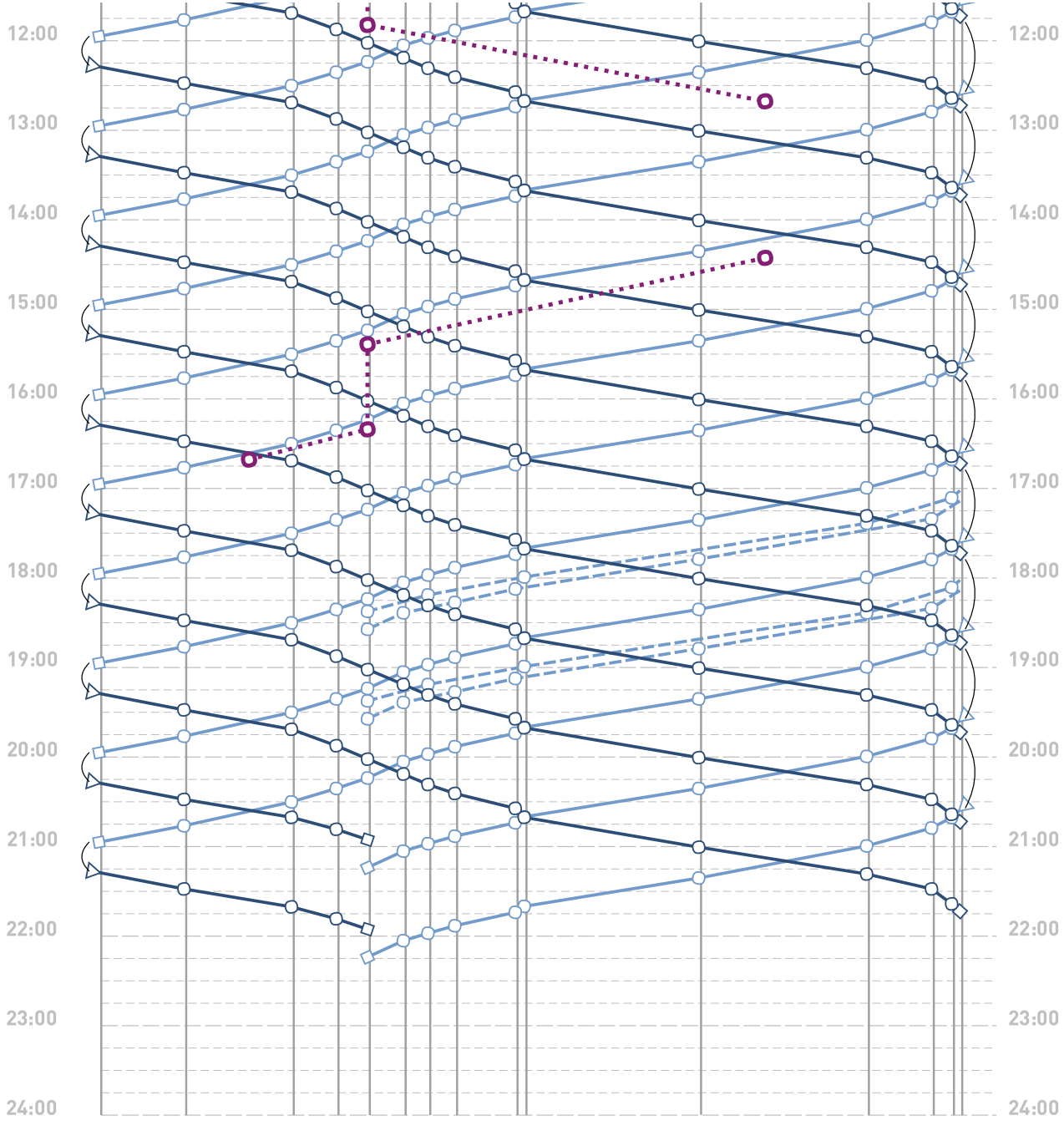
Regular Hourly with Staggered Peak Express Service Scenario

Regularly Hourly with Staggered Peak Express would run dual-express trains at rush hour, providing regular service to all stations while offering express service to all stations as well. This option replaces some Hourly with Staggered Peak Express, so all stops are still serviced each hour.



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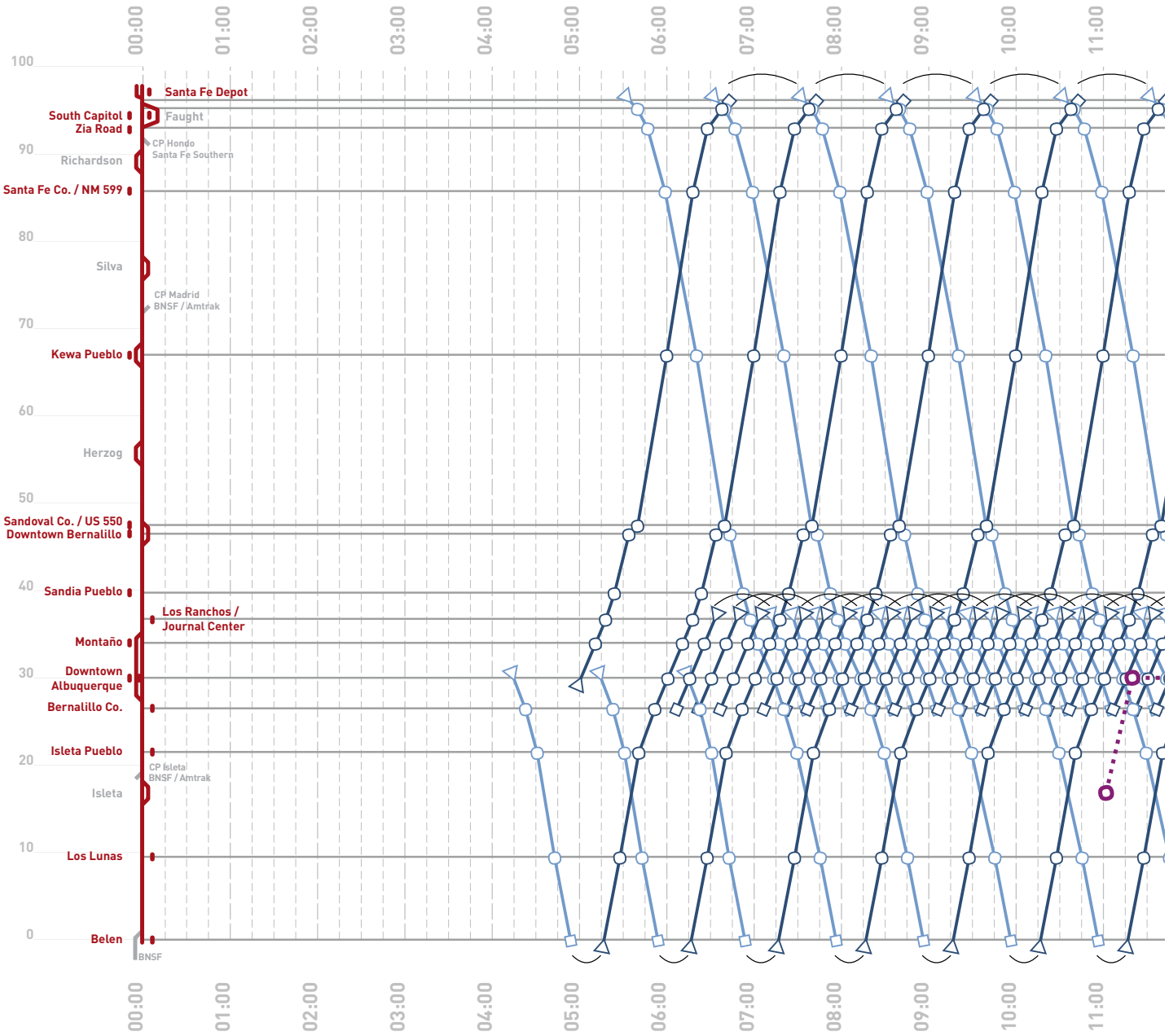
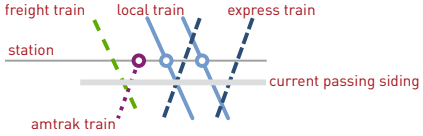
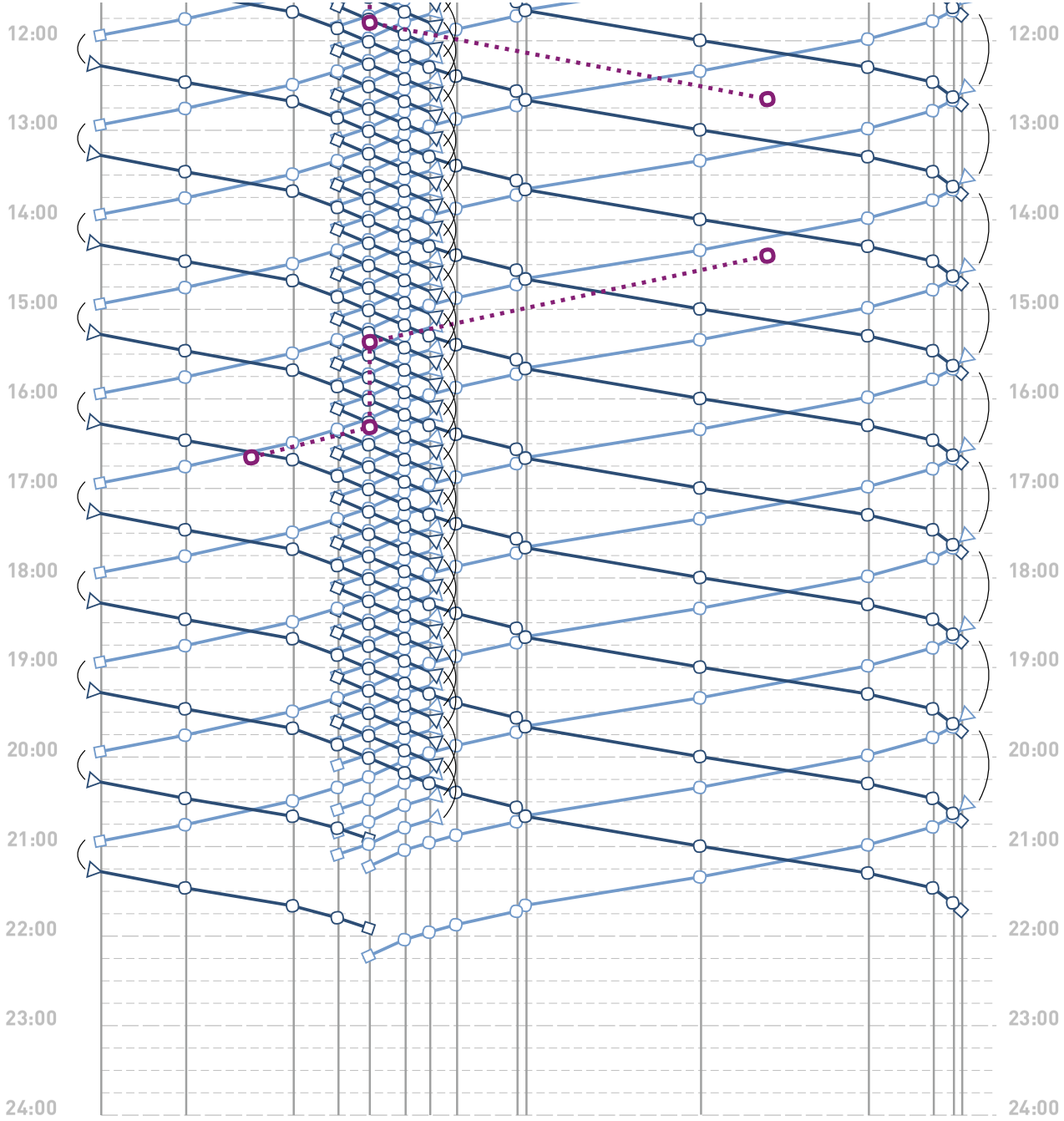
15-minute Service Scenario: Albuquerque

15-minute frequency would provide "show up and go" service in the densest parts of the corridor. 15-minute frequency between Los Ranchos/JC and Bernalillo County is possible with additional platforms and extended double track. 15-minute frequency is also possible between SF County/NM 599 and Santa Fe Depot through additional sidings and platforms.



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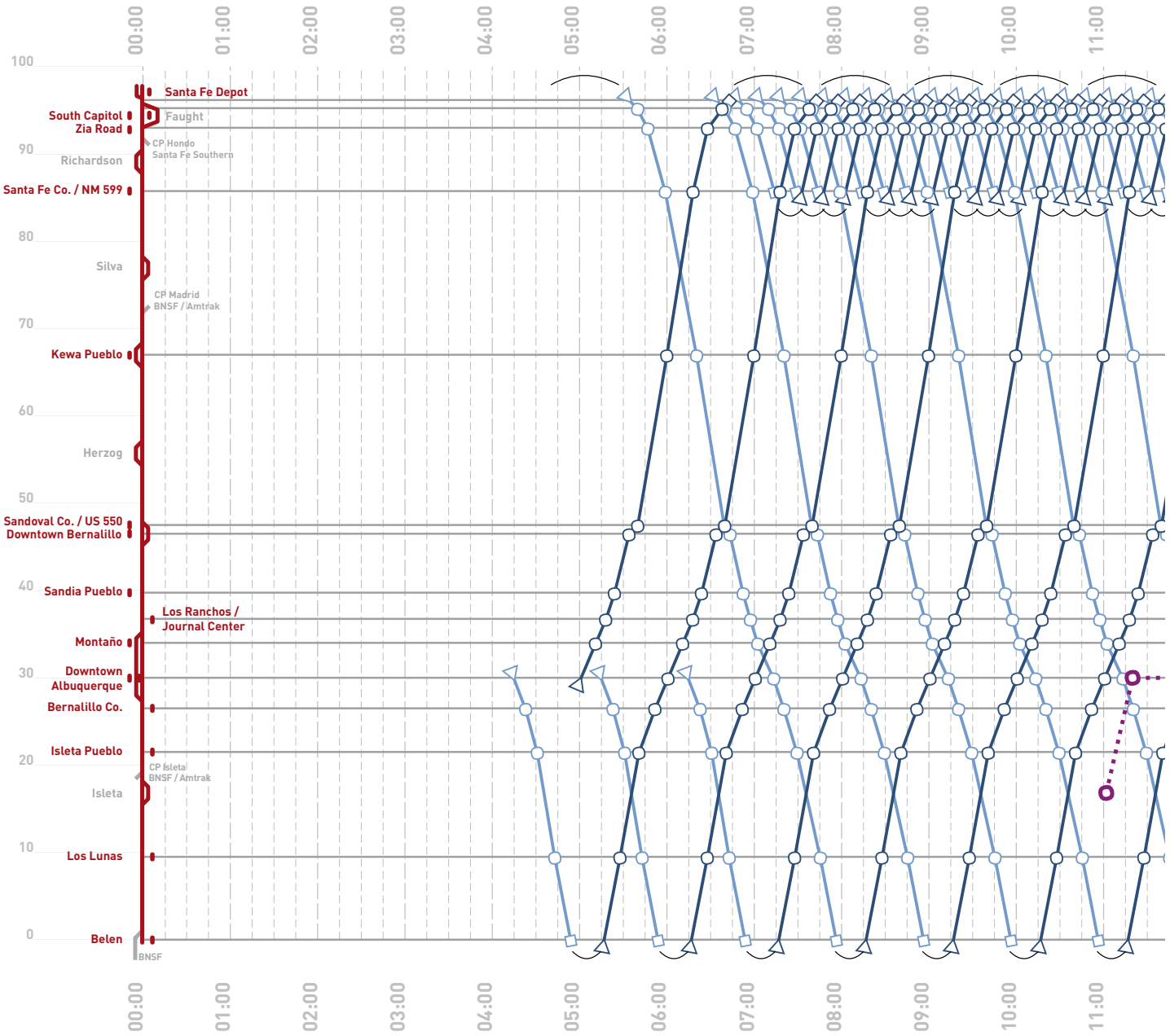
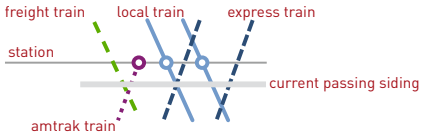
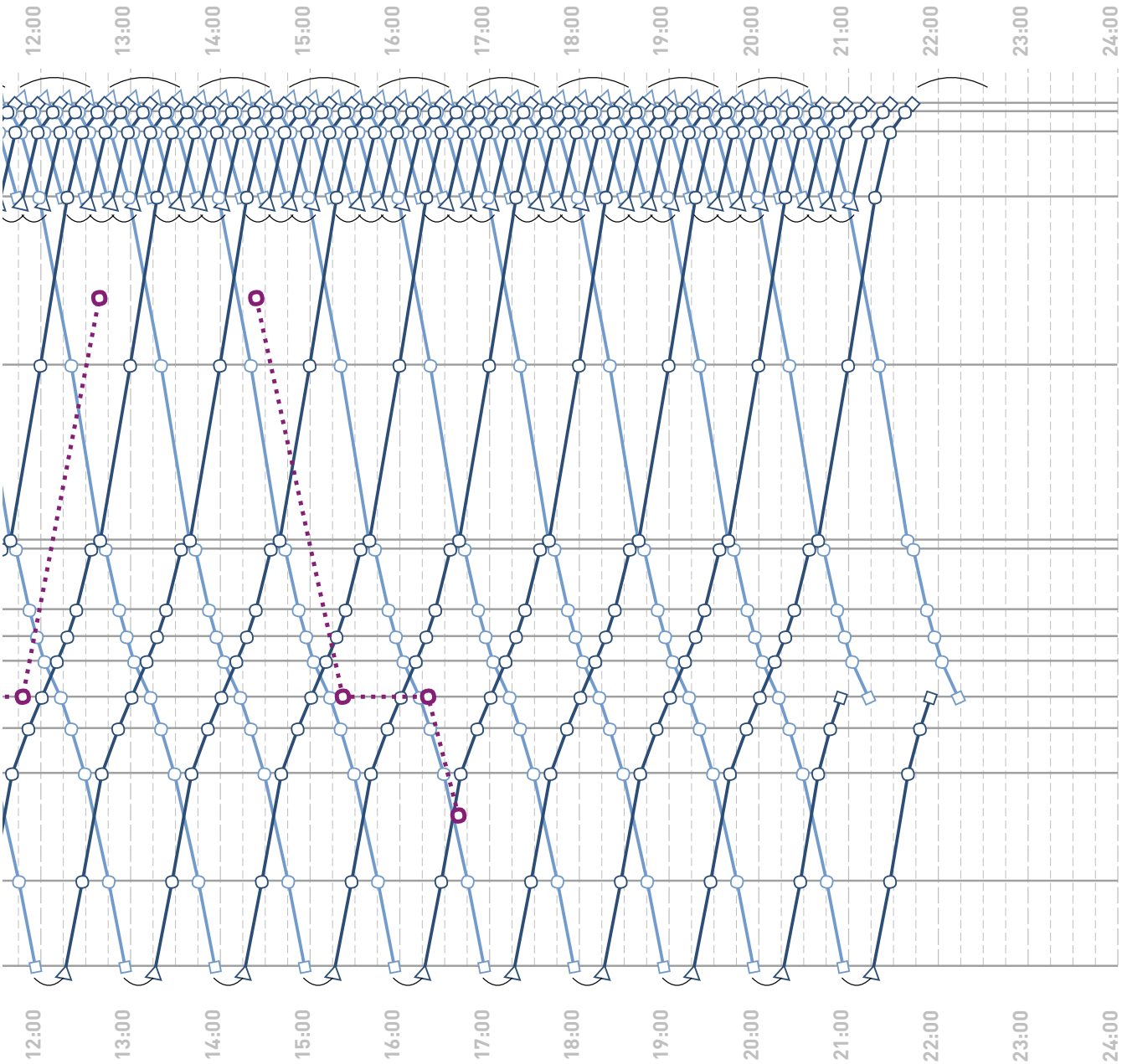
15-minute Service Scenario: Santa Fe

15-minute frequency is also possible between SF County/ NM 599 and Santa Fe Depot through additional sidings and platforms.



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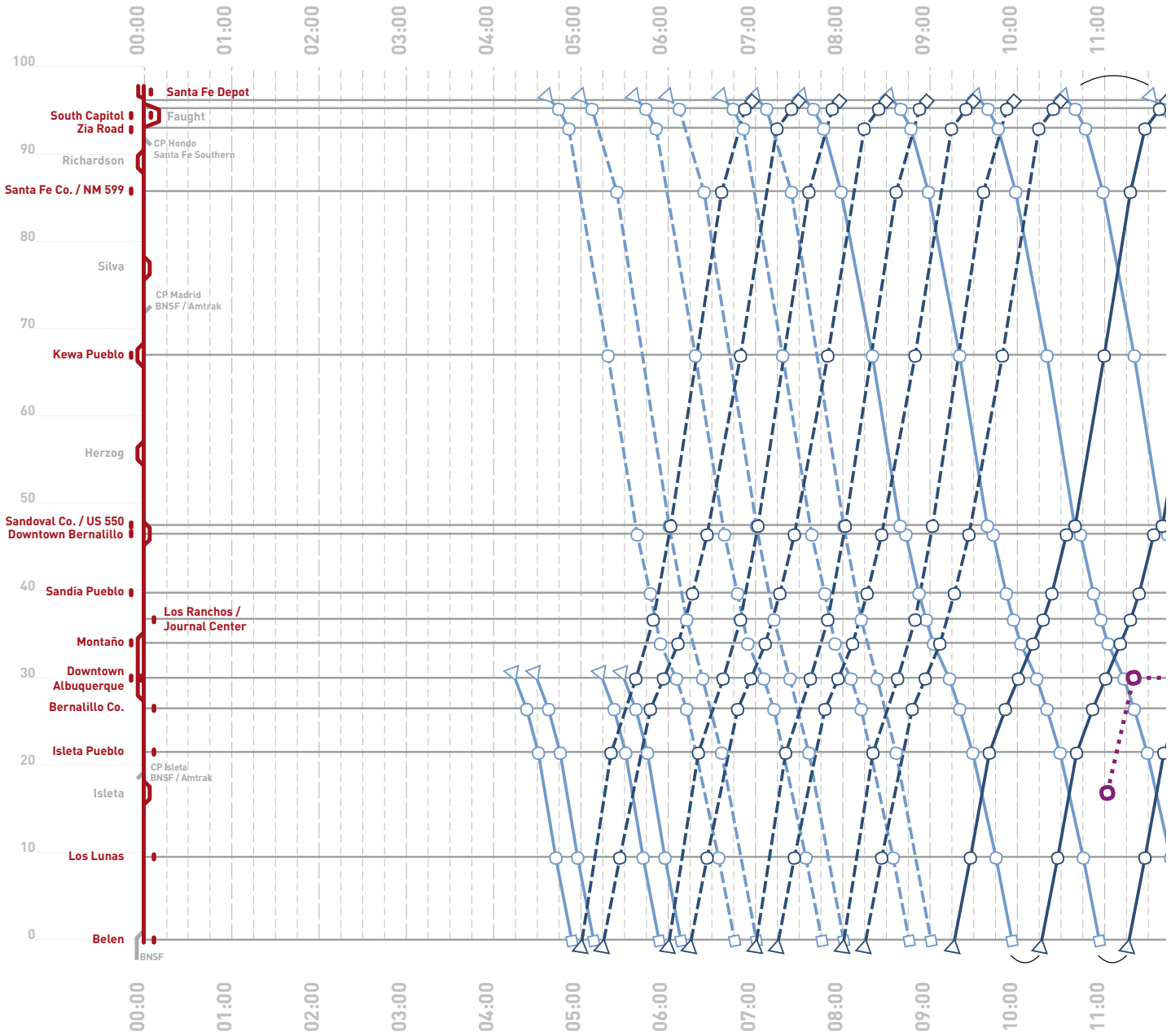
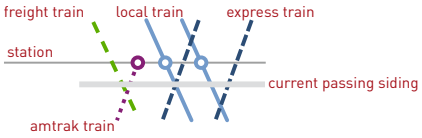
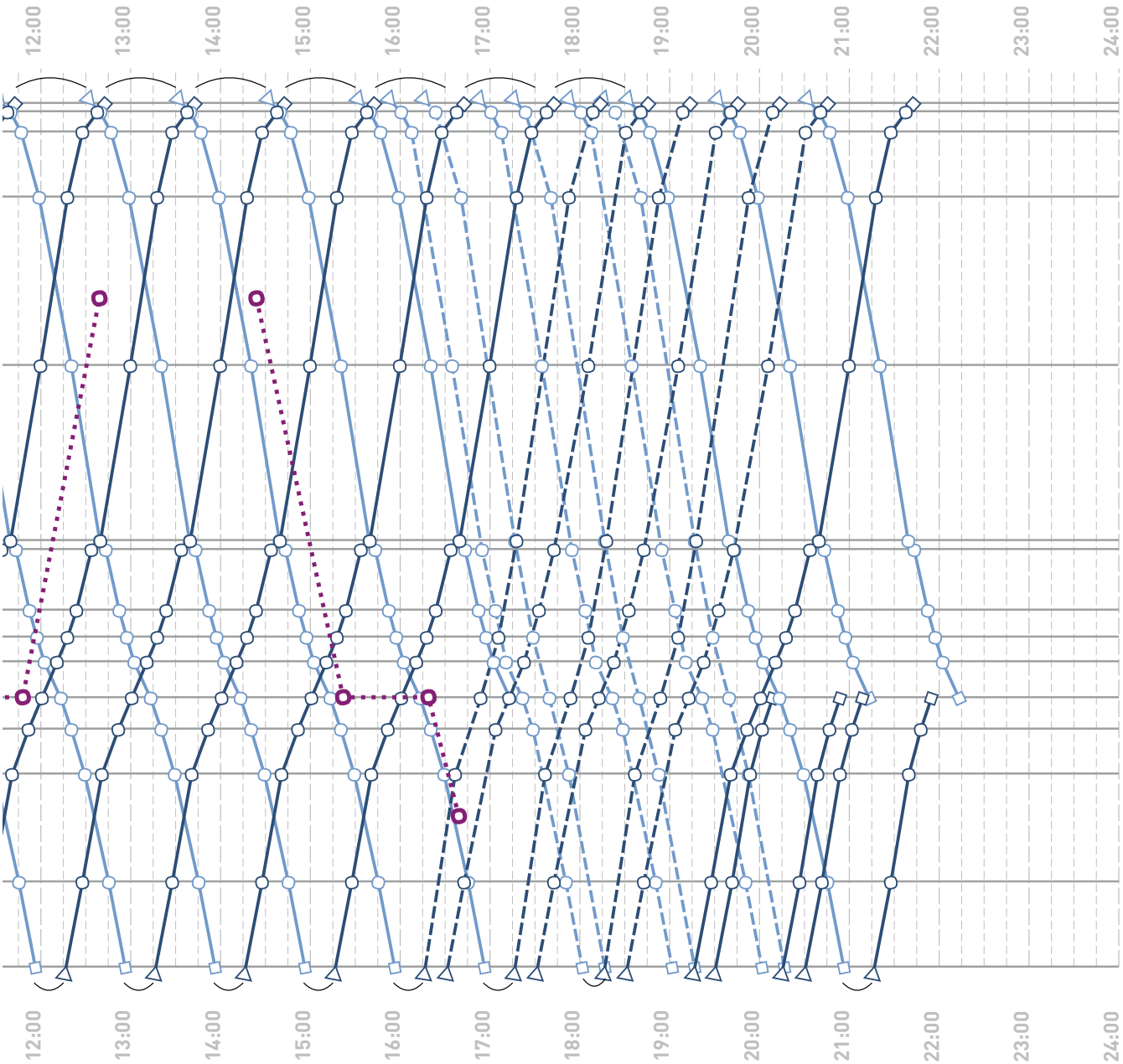
Staggered Service Scenario

Staggered service would service all stations with alternating trains at rush hour. Staggered trains would leave within 10 minutes of each other from Belen and stop at every other stop without passing each other on the track. Staggered service during Peak Hours would require long stretches of additional double track.



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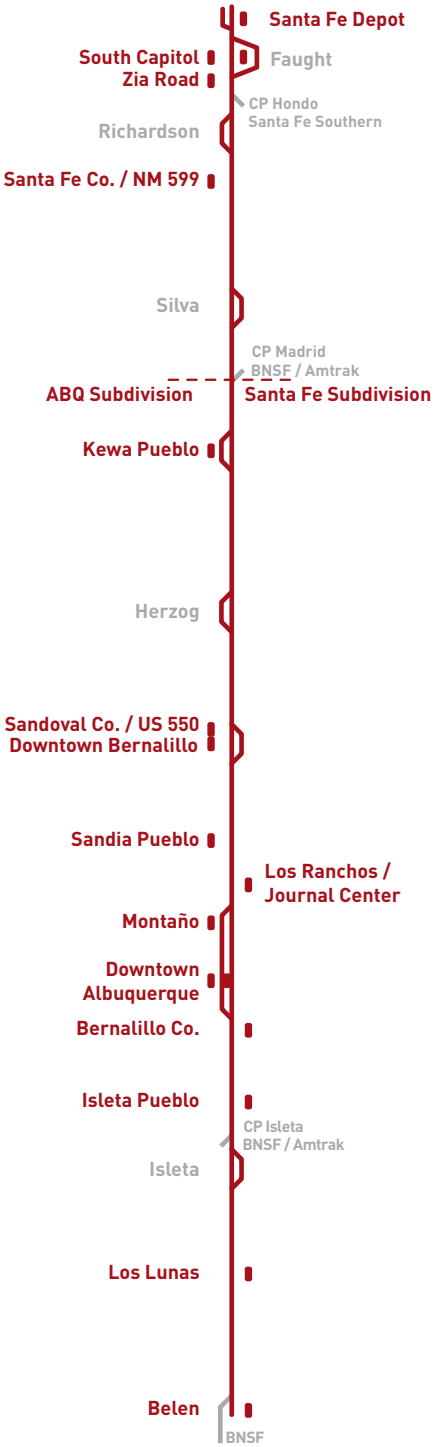
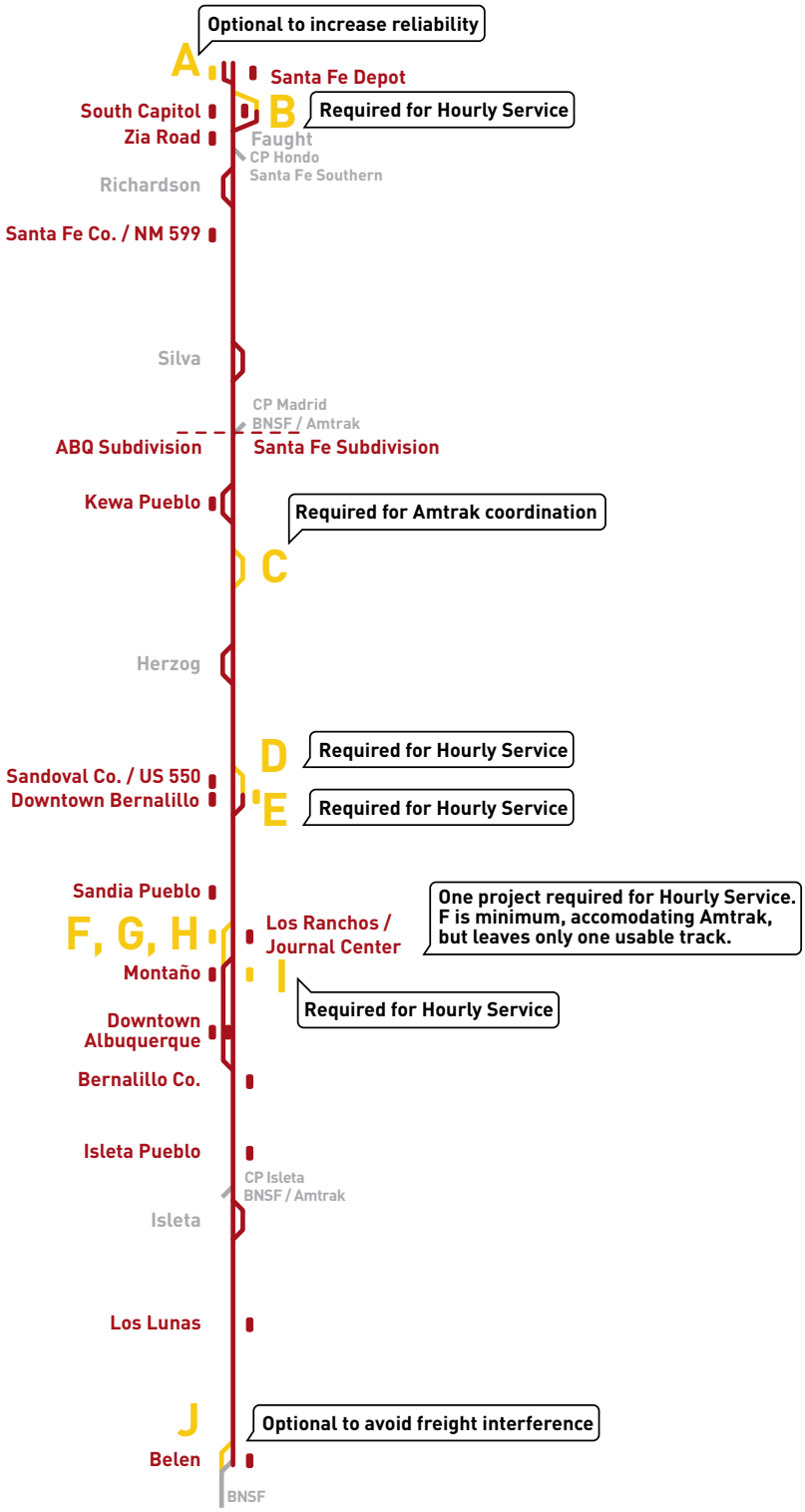
Proposed Projects

The Project includes the entire extent of Rio Metro's Railrunner commuter rail system. The project identifies and recommends the most appropriate locations for additional sidings and double in addition to providing a list of additional potential locations for future review. The selected locations are accompanied by potential train service schedule adjustments and scenarios that provide more regular, frequent service. These 10 (A-J) specific potential projects would allow Rio Metro to run all-day hourly service in addition to other potential service patterns.

Current System



Proposed Projects



PROJECT A: Additional Platform at Santa Fe Depot (M.P. 22.3)

Useful for reliability and freight coordination.

Description and Location

In Santa Fe, we propose extending Faught siding to South Capitol as well as adding an additional platform at Santa Fe Depot. Adding an additional platform at Santa Fe Depot is optional, but it will add resilience and efficiency to Rio Metro's service. This project will enable more service flexibility and resiliency at this end of the rail line. A new 16-foot x 250-foot platform could be built to serve Track 2 comparable to the existing Santa Fe Depot platform or other Rail Runner stations. A new pedestrian path or sidewalk would be required on the south end of the new platform for pedestrian and wheelchair access. The platform sidewalk would extend south to the nearest crossing at Manhattan Avenue. The sidewalk should also cross the NMRX R.O.W. along the north side of Manhattan Ave. to improve access and capacity for pedestrians coming to and leaving the new station platform. Other anticipated items involved with the new platform include the design and construction of canopy structures and amenities on the platform, installing new underdrains for surface drainage, lighting, CCTV cameras, and providing a new connection to electric service.

This project is included only to address service reliability issues and freight conflicts, but it is not required for Regular Hourly Service.

Operational Improvements

The use of two platforms allows for simultaneous boarding and de-boarding on Track 1 and Track 2 thereby, increasing service capacity and schedule resiliency in all potential scenarios in addition to the current schedule.

Signaling

From Santa Fe Depot (Yard) to CP Alarid (M.P. 21.8), NMRX Service currently operates in Dark Territory.

HZ proposes an additional platform be installed in the existing Yard Service area in the space currently occupied by Track 3. For a new platform to be installed, the existing track and hand throw switch to access Track 3 will need to be removed from service. Existing grade crossings and pedestrian crossings will be re-used as is, between Santa Fe Depot and CP Alarid. No other wayside signal changes are anticipated in this proposed area of improvement.

Cost

$3.1M (2023 Cost)

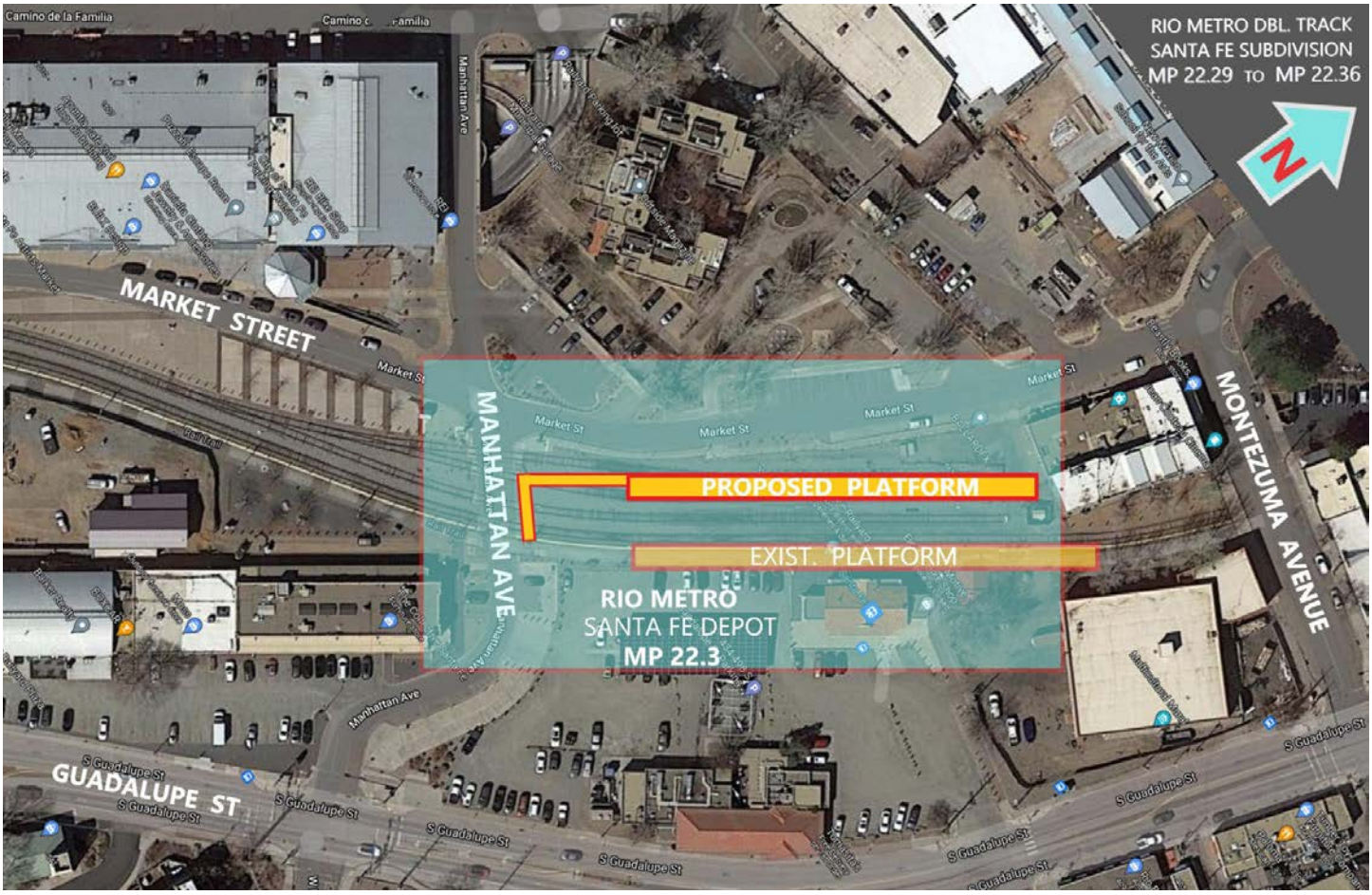
($3.0M Track & Platform + $52K Signals)

Cost Element Description	Project A
Construct New 16' X 250' Station Platform	$1,600,000
Track & Roadway Construction	$54,000
Cross Drainage Structures & Track Underdrain	$25,000
Utility Adjustments	$30,000
Contingency - 30% of the Above Listed Costs	$512,700
Sub-Total (Excluding R.O.W. & Signals)	$2,221,700
General Conditions - 6%	$133,302
SUBTOTAL	**$2,355,002**
Mobilization - 5%	$117,750
SUBTOTAL	**$2,472,752**
Bonds and Insurance - 4%	$98,910
SUBTOTAL	**$2,571,662**
Profit - 10%	$257,166
TOTAL TRACK CONSTRUCTION COST	**$2,828,828**
R.O.W. Costs	$0
Signals (2021) - L.S.	$48,736
Signals (2022) - L.S.	$50,236
Signals (2023) - L.S.	$52,417
PROJECT TOTAL (2021 COSTS) *	**$2,881,245**
Cost Escalation - 3.8%	$107,495.48
PROJECT TOTAL (2022 COSTS)	**$2,988,741**
Cost Escalation - 3.8%	$111,580.31
PROJECT TOTAL (2023 COSTS)	**$3,100,321**

Notes:

- Project A - Scope includes one new station platform with canopies and pedestrian walkways.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

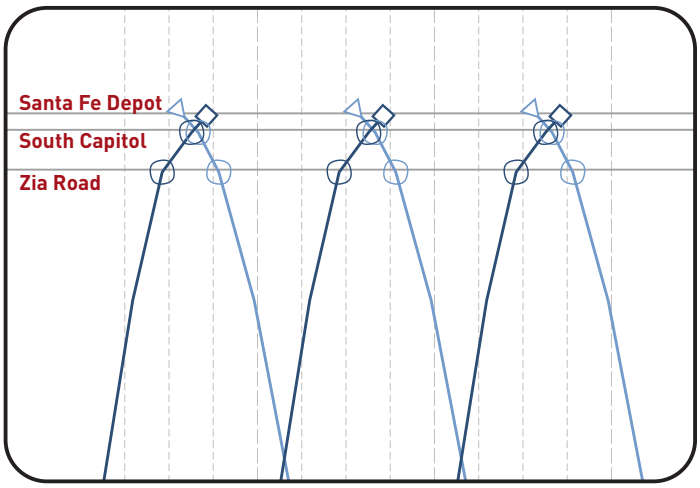
Project A Map



Feasibility and Impacts

The existing Santa Fe Depot service yard appears to have sufficient space to construct a second station platform; with no need to acquire additional right-of-way. The primary impact involves removing Track 3 in order to provide space to build the new/second platform. There would likely be some buried utilities in the construction area (such as fiber optic ducts, electric, water, or gas lines), that would need to be relocated and/or adjusted. Construction activities and permit approvals would need to be coordinated and obtained from the Santa Fe Public Works Department.

The logistics of removing Track 3 and building the new platform would need to be reviewed with Rio Metro rail operations staff to mitigate and/or minimize the potential disruption to normal train operations. There are no concerns with construction vehicle access with the adjacent streets in Downtown Santa Fe but, staging areas would likely need to be rented from adjacent parking lots or businesses for stockpiling track and platform materials.



PROJECT B: Extend Faught Siding through South Capital Station (M.P. 21.12 – 21.65)

Required for hourly service.

Description and Location

Extending Faught siding through South Capitol station is necessary to run Hourly Service due to trains arriving and departing at South Capitol and Santa Fe Depot stations in close proximity to one another in the proposed Hourly schedule scenario.

Operational Improvements

The 2,800-foot (0.53-mile) double-track extension would provide 1.0-mile of double track (between San Mateo Road and Cerrillos Road) for at-speed train passing. This increased passing area would eliminate train schedule conflicts and increase schedule flexibility.

Signaling

From CP Alarid (M.P. 21.8) to CP Madrid, NMRX Service operates in Centralized Traffic Control (CTC) Territory. Currently there are three Ends of Siding (EOS) in the area – Silva Siding, Richardson Siding and Faught Siding (longest of the three). HZ proposes to extend CP East Faught Siding from M.P. 21.2 through South Capital Station (M.P. 21.29) to the South side of Cerrilos Rd & St. Francis Drive. For this extension project several new infrastructure improvements will be necessary:

- New Ballast, Track and Turnout south of Cerrilos Rd and Francis Dr.
- New Control Point (EOS) on south side of Cerrilos Rd & Francis Dr Intersection.
- Modify existing crossing approaches at Cerrilos Rd & Francis Dr. for new signaled siding track.
- New 2-Track crossings will replace existing single track crossings at Cordova Rd & Alta Vista Street.
- Four new Pedestrian Grade Crossings will replace existing single track crossings.

As a result of these improvements, Signals assumes existing CP East Faught will be removed from service and that the new Control Point will require interface treatment to adjacent signal locations. Signals also assumes the following work to be performed:

- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside & Crossing Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (ATCS & GPS/PTC Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$24.0M (2023 Cost)

($14.6M Track & Platform + $9.4M Signals)

Cost Element Description	Project B
Construct New 16' X 500' Station Platform	$3,200,000
Track & Roadway Construction	$4,684,400
Cross Drainage Structures & Track Underdrain	$411,600
Utility Adjustments	$525,000
Contingency - 20% of the Above Listed Costs	$1,764,200
Sub-Total (Excluding R.O.W. & Signals)	$10,585,200
General Conditions - 6%	$635,112
SUBTOTAL	**$11,220,312**
Mobilization - 5%	$561,016
SUBTOTAL	**$11,781,328**
Bonds and Insurance - 4%	$471,253
SUBTOTAL	**$12,252,581**
Profit - 10%	$1,225,258
TOTAL TRACK CONSTRUCTION COST	**$13,477,839**
R.O.W. Costs	$0
Signals (2021) - L.S.	$8,953,750
Signals (2022) - L.S.	$9,128,750
Signals (2023) - L.S.	$9,450,225
PROJECT TOTAL (2021 COSTS) *	**$22,431,589**
Cost Escalation - 3.8%	$512,157.87
PROJECT TOTAL (2022 COSTS)	**$23,118,747**
Cost Escalation - 3.8%	$531,619.87
PROJECT TOTAL (2023 COSTS)	**$23,971,842**

Notes:

- Project B - Scope includes 2800 LF (0.53 mile) of Siding track and drainage; two At-grade roadway crossings; and one new station platform with canopies.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project B Map

Feasibility and Impacts

The proposed siding is located 15-feet east of the existing main track which will require removal of the existing platform on the east side of the main track. A new 16' x 500' platform would need to be constructed east of the new siding in addition to relocating about 680-feet of the 10-foot wide Rail Trail. This siding option is located in the heavily urbanized area of the South Capital NMRX Station. Therefore, a fair amount of utility adjustments would likely be required to build the siding extension and signals. This would involve shifting of some buried utility lines and relocation of utility boxes, poles, and pedestals. An existing 8-foot high concrete retaining wall at the north end of the Faught Siding appears to encroach into the NMRX 100-foot R.O.W. by about 19-feet. It appears that there is sufficient space to build the Faught siding extension between the privately owned retaining wall and the main track (since a short segment of the Faught siding track runs along the retaining wall.)

PROJECT C: New Siding to coordinate with Amtrak (M.P. 869.72-870.78)

Required for Amtrak with hourly service.

Description and Location

This project aids in coordination with NMRX (increased) Service with Amtrak trains and is necessary for Amtrak coordination with their current schedule. This siding will also add additional opportunities for Rio Metro train passings and build resilience in the system. It will require two right-of-way acquisitions for Temporary Access Roads with 50' X 50' Easements from BIA 84 Service Rd.

Operational Improvements

This additional siding project would provide 1.0-mile of double track (halfway between Santa Fe and Albuquerque) for at-speed train passing. This train passing area would eliminate Amtrak train schedule conflicts and improve NMRX schedule flexibility.

Signaling

HZ proposes a new siding from M.P. 869.72 to M.P. 870.78 to coordinate NMRX (increased) Service with Amtrak trains. The proposed siding location will be situated between two existing single-track railroad bridges. For this proposed improvement project, the following work will need to be performed:

- New Ballast, Track, and Turnouts.
- New CP (Ends of Siding) near MP 869.72 and MP 870.78.
- Interface to adjacent signal locations.

HZ does not anticipate any grade or pedestrian grade crossings for this project. However, the work will need to include:

- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (ATCS & GPS/PTC Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$17.1M (2023 Cost)

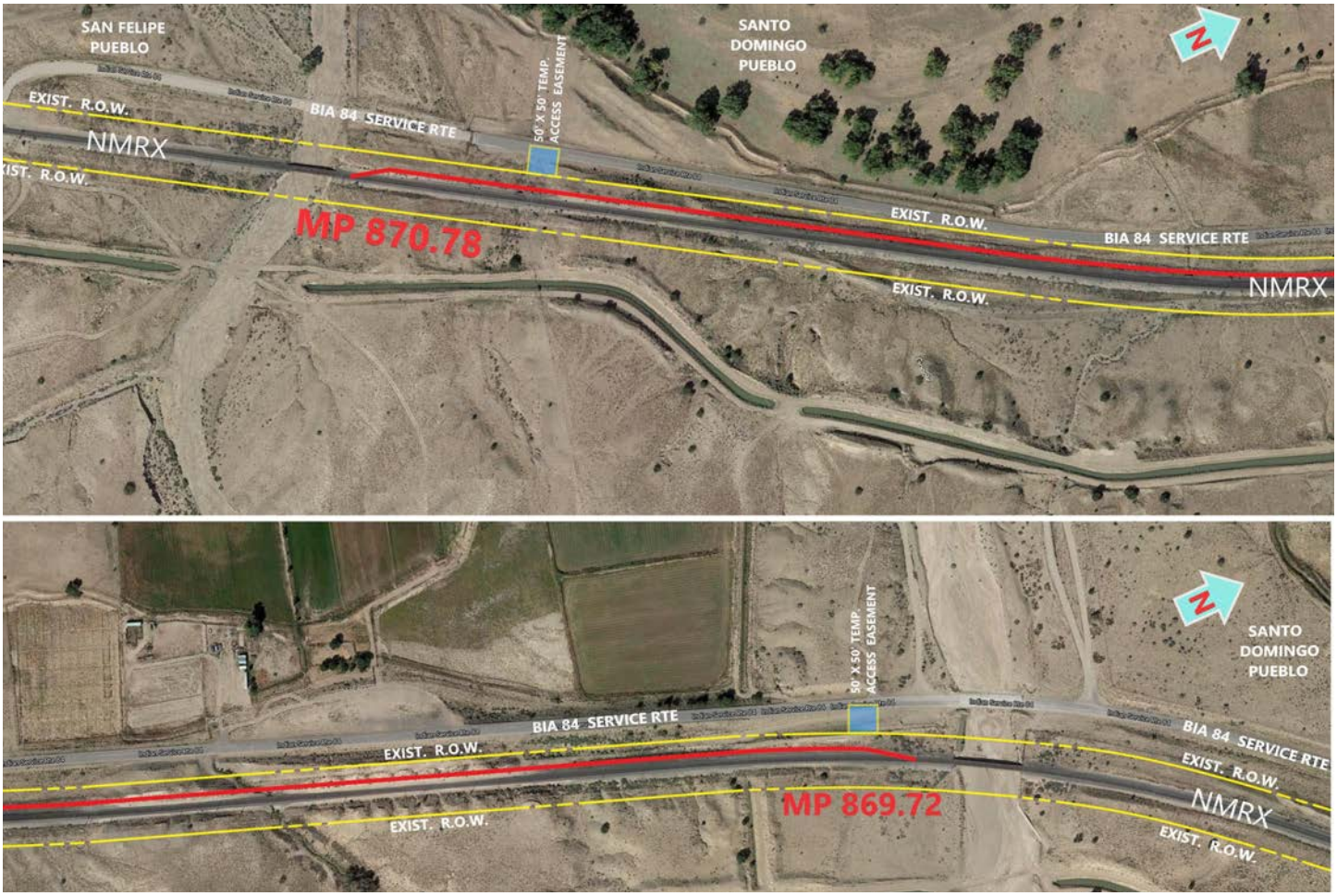
($9.0M Track + $8.1M Signals)

Cost Element Description	Project C
Construct New 16' X 500' Station Platform	N/A
Track & Roadway Construction	$4,552,800
Cross Drainage Structures & Track Underdrain	$823,200
Utility Adjustments	$100,000
Contingency - 20% of the Above Listed Costs	$1,095,200
Sub-Total (Excluding R.O.W. & Signals)	$6,571,200
General Conditions - 6%	$394,272
SUBTOTAL	**$6,965,472**
Mobilization - 5%	$348,274
SUBTOTAL	**$7,313,746**
Bonds and Insurance - 4%	$292,550
SUBTOTAL	**$7,606,295**
Profit - 10%	$760,630
TOTAL TRACK CONSTRUCTION COST	**$8,366,925**
R.O.W. Costs	$60,000
Signals (2021) - L.S.	$7,670,000
Signals (2022) - L.S.	$7,820,000
Signals (2023) - L.S.	$8,094,695
PROJECT TOTAL (2021 COSTS) *	**$16,036,925**
Cost Escalation - 3.8%	$317,943.15
PROJECT TOTAL (2022 COSTS)	**$16,504,868**
Cost Escalation - 3.8%	$330,024.99
PROJECT TOTAL (2023 COSTS)	**$17,109,588**

Notes:

- Project C - Scope includes 5600 LF (1.06 mile) of Siding track and drainage.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

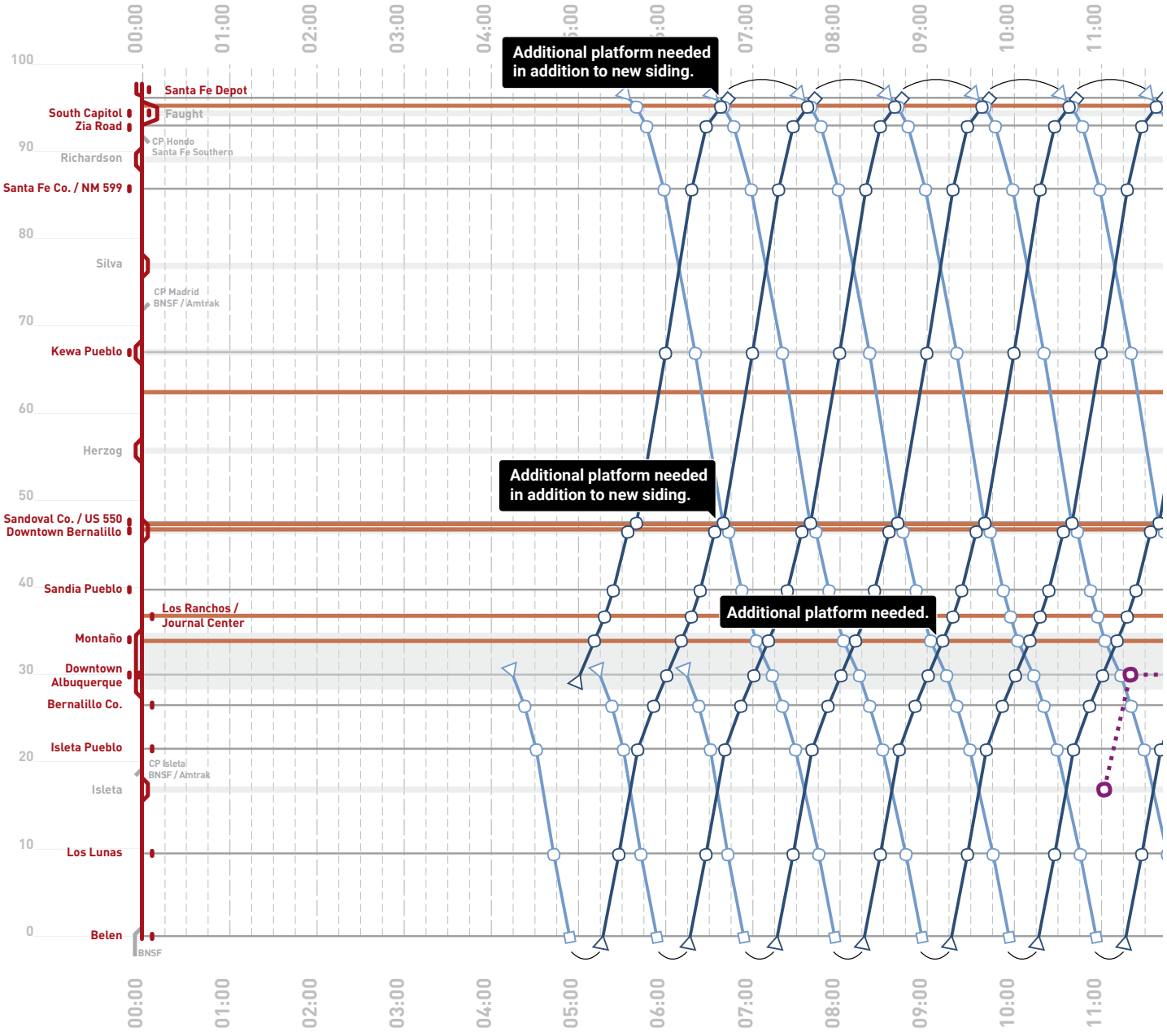
Project C Map

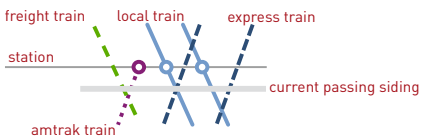


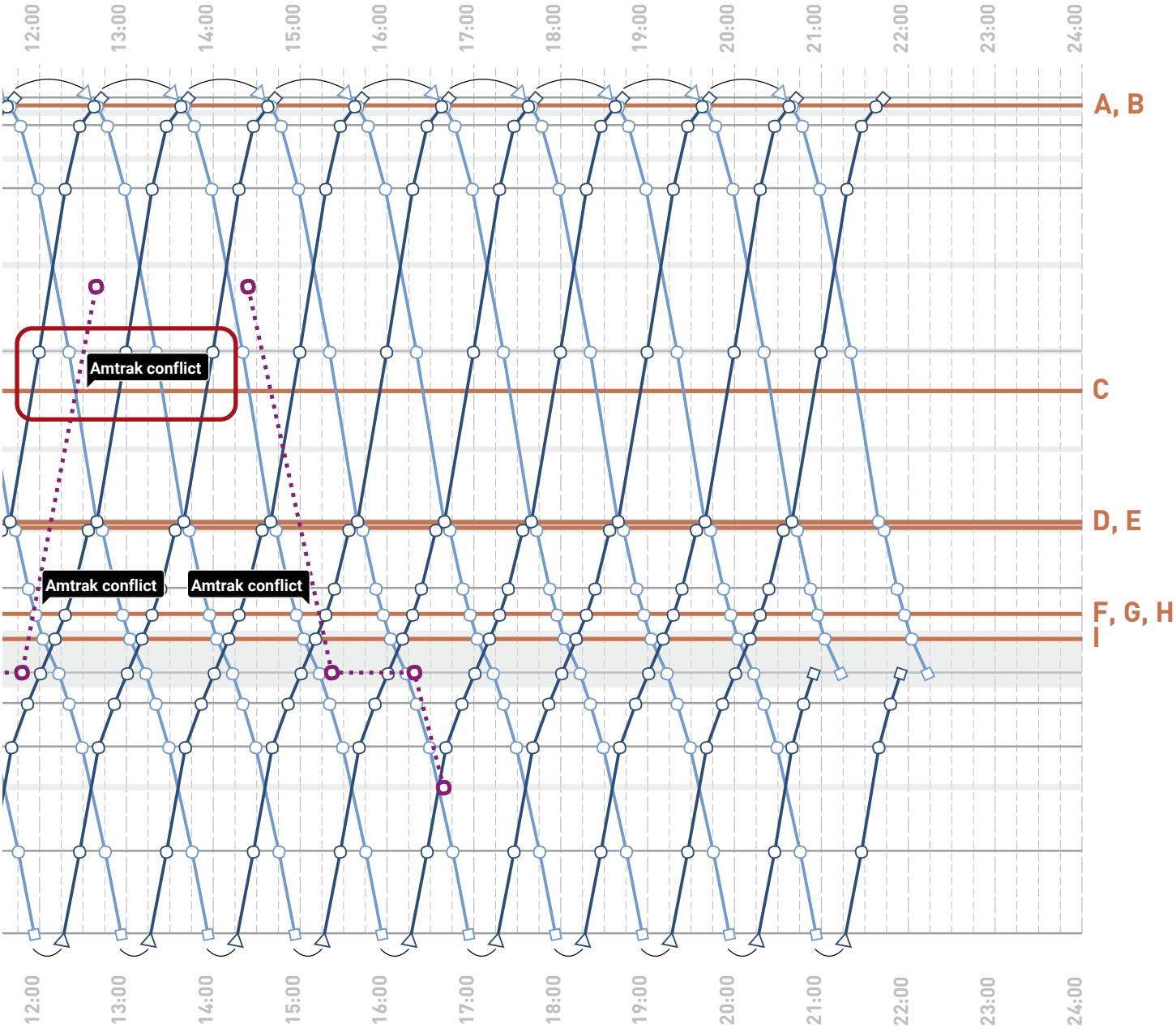
Feasibility and Impacts

Most of this 1.0-mile additional siding would be constructed within Santo Domingo Pueblo tribal land. About 475-feet on the south end falls within the San Felipe Pueblo tribal land. It appears that no additional right-of-way would be needed for the additional siding and there is sufficient space between the main track and BIA road to build the siding. The siding track would be about 65-feet from the edge of the BIA road at the closest point. The 100-foot wide NMRX railroad R.O.W. is parallel and/or next to Indian Service Route 84. The BIA 84 road would be convenient for a construction contractor to access the project area. The Cochiti Eastside Main Canal runs along the east side of the NMRX rail corridor. The only other physical features in this siding location are several culvert crossings that would need to be extended to cross below the new siding track section.

PROJECT C: New Siding to coordinate with Amtrak (M.P. 870.45)



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PROJECT D: Extend siding from Dtwn Bernalillo to Sandoval Co/US550 and Additional Platforms 550 Station (M.P. 884.98-885.26)

Required for hourly service.

Description and Location

This project, in combination with the subsequent, creates double track between Downtown Bernalillo and Sandoval County, in addition to adding platforms at both stations. This project specifically adds additional siding leading into the 550 station and adds additional platforms to the 550 station. In the hourly scenario, northbound and southbound trains meet here. By locating the siding at the station, neither train is delayed by the meet since they are both already stopping at the station.

Operational Improvements

The 1,480-foot (0.28-mile) double track extension would provide 1.0-mile of double track between the Bernalillo Station and Sandoval Station (with no road crossings) for at-speed train passing. This would provide 1.6-miles of double track overall between Lucero Avenue and US Highway 550. This additional passing area and additional NB Platform would eliminate train schedule conflicts and increase schedule flexibility.

Signaling

HZ proposed extending Bernalillo Siding through Sandoval Co/US-550 with an additional platform. This proposed solution will require the following infrastructure improvements:

- New Ballast, Track, and Turnouts.
- New Platform at Sandoval Co/US-550.
- New Control Point (End of Siding) north of US-550.
- New Intermediate to replace existing Hold Signal CP Ruiz.
- New Single Crossover at CP East Bernalillo.
- Interface to adjacent signal locations.

HZ does not anticipate any grade or pedestrian grade crossings for this project. However, the work will need to include:

- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (ATCS & GPS/PTC Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$16.0M (2023 Cost)

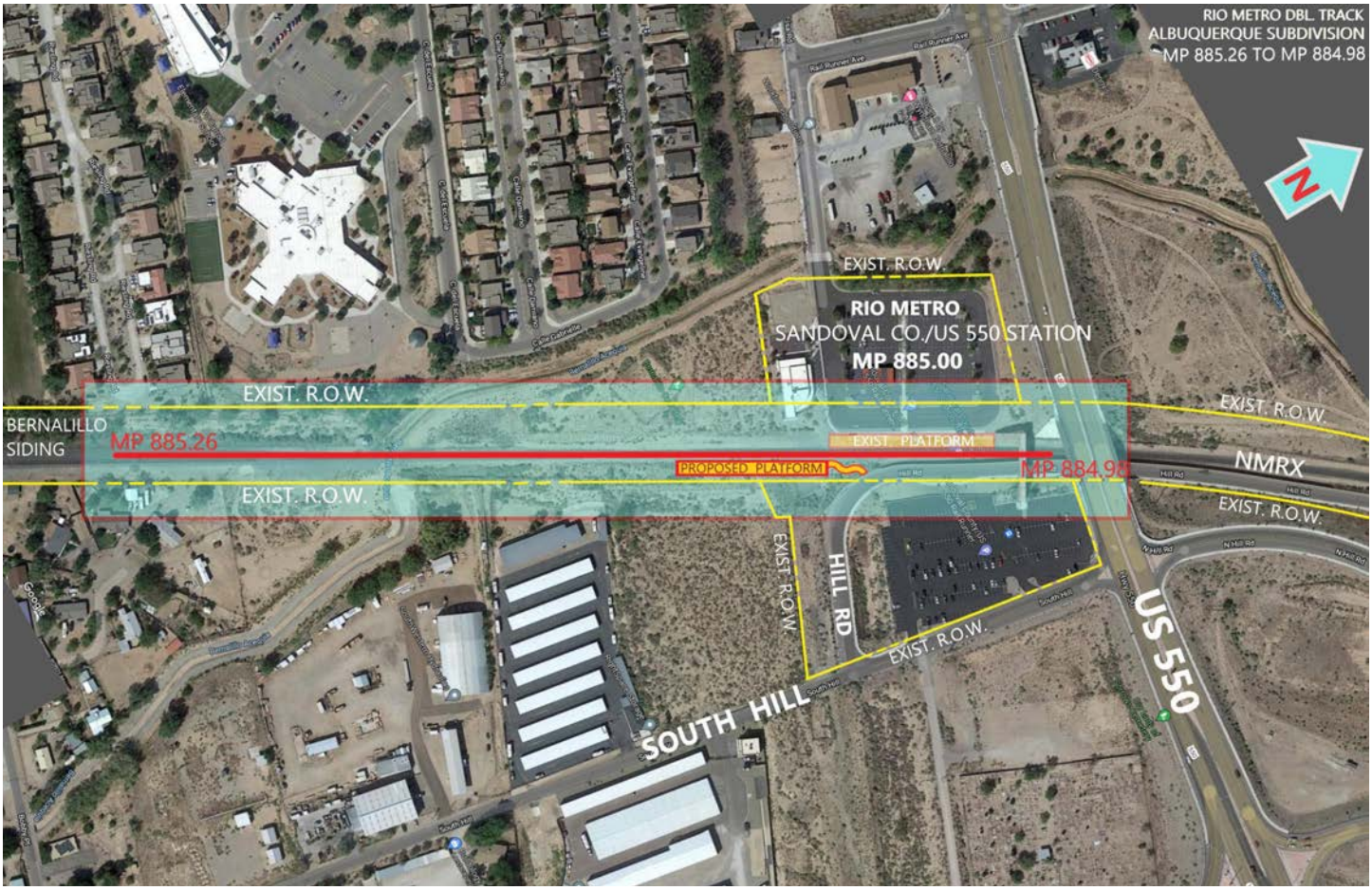
($4.6M Track & Platform + $11.4M Signals

Cost Element Description	Project D
Construct New 16' X 500' Station Platform	$1,300,000
Track & Roadway Construction	$1,203,240
Cross Drainage Structures & Track Underdrain	$217,560
Utility Adjustments	$100,000
Contingency - 20% of the Above Listed Costs	$564,160
Sub-Total (Excluding R.O.W. & Signals)	$3,384,960
General Conditions - 6%	$203,098
SUBTOTAL	**$3,588,058**
Mobilization - 5%	$179,403
SUBTOTAL	**$3,767,460**
Bonds and Insurance - 4%	$150,698
SUBTOTAL	**$3,918,159**
Profit - 10%	$391,816
TOTAL TRACK CONSTRUCTION COST	**$4,309,975**
R.O.W. Costs	$0
Signals (2021) - L.S.	$10,790,000
Signals (2022) - L.S.	$10,990,000
Signals (2023) - L.S.	$11,388,163
PROJECT TOTAL (2021 COSTS) *	**$15,099,975**
Cost Escalation - 3.8%	$163,779.04
PROJECT TOTAL (2022 COSTS)	**$15,463,754**
Cost Escalation - 3.8%	$170,002.65
PROJECT TOTAL (2023 COSTS)	**$16,031,919**

Notes:

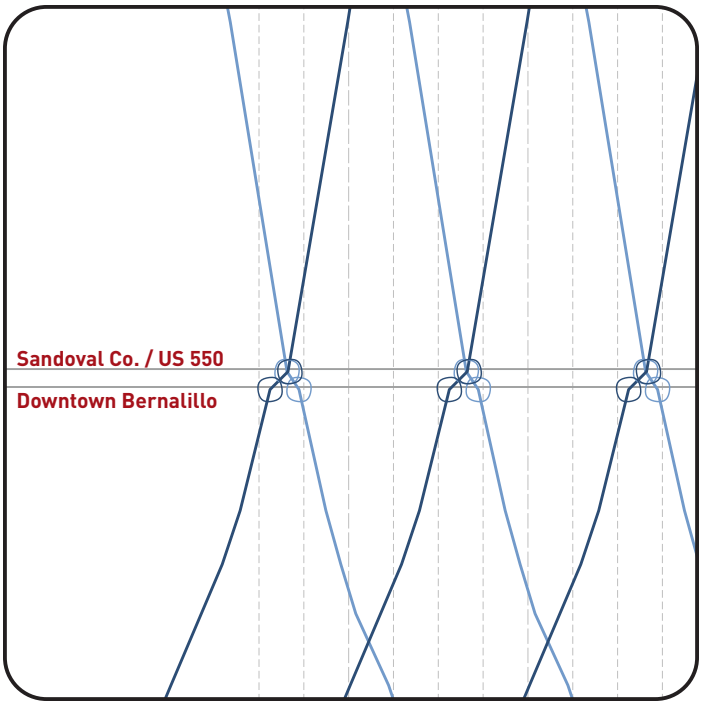
- Project D - Scope includes 1480 LF (0.28 mile) of Siding track and drainage; and one new station platform with canopies.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project D Map



Feasibility and Impacts

The additional siding would be located 15-feet east of the existing main track due to the location of the existing platform on the west side of the main track. A 16' x 250' NB platform would be constructed east of the new siding in addition to a new 10-foot wide sidewalk connecting to the Sandoval Station parking lot. The only apparent conflict on this proposed siding is with the existing storm detention basin located at M.P. 885.03 (east of the main track and south of the station parking lot). Vertical retaining walls along the backside of the new platform and detention pond walls will be needed to offset pond storage impacts (from the siding sub-grade embankment) and avoid any R.O.W. acquisition. It appears that there is sufficient space to build the siding track between the existing main track and the retaining wall that runs along the west side of Hill Road.



PROJECT E: New Platform at Downtown Bernalillo Station (M.P. 886)

Required for hourly service.

Description and Location

A new platform at Downtown Bernalillo station is needed in addition to the sidings to allow for multiple trains to stop at the same time at the station.

Operational Improvements

The use of two platforms allows for simultaneous boarding and de-boarding of NB and SB trains, therefore, allowing for increased service capacity and schedule resiliency.

Signaling

HZ proposes an additional platform at Downtown Bernalillo. The existing pedestrian grade crossing on the North side of the existing platform will be re-used, complete with gates and masts. A new platform will be designed for the east side of the tracks and will include a sidewalk from the new platform to the existing pedestrian grade crossing. Fencing will be installed between the tracks to prohibit the public from walking across the tracks short of the designated crossing.

Cost

$2.3M (2023 Cost)

($2.3M Platform + $0 Signals)

Cost Element Description	Project E
Construct New 16' X 500' Station Platform	$1,300,000
Track & Roadway Construction	$50,000
Cross Drainage Structures & Track Underdrain	$25,000
Utility Adjustments	$30,000
Contingency - 20% of the Above Listed Costs	$281,000
Sub-Total (Excluding R.O.W. & Signals)	$1,686,000
General Conditions - 6%	$101,160
SUBTOTAL	**$1,787,160**
Mobilization - 5%	$89,358
SUBTOTAL	**$1,876,518**
Bonds and Insurance - 4%	$75,061
SUBTOTAL	**$1,951,579**
Profit - 10%	$195,158
TOTAL TRACK CONSTRUCTION COST	**$2,146,737**
R.O.W. Costs	$0
Signals (2021) - L.S.	$0
Signals (2022) - L.S.	$0
Signals (2023) - L.S.	$0
PROJECT TOTAL (2021 COSTS) *	**$2,146,737**
Cost Escalation - 3.8%	$81,575.99
PROJECT TOTAL (2022 COSTS)	**$2,228,313**
Cost Escalation - 3.8%	$84,675.88
PROJECT TOTAL (2023 COSTS)	**$2,312,988**

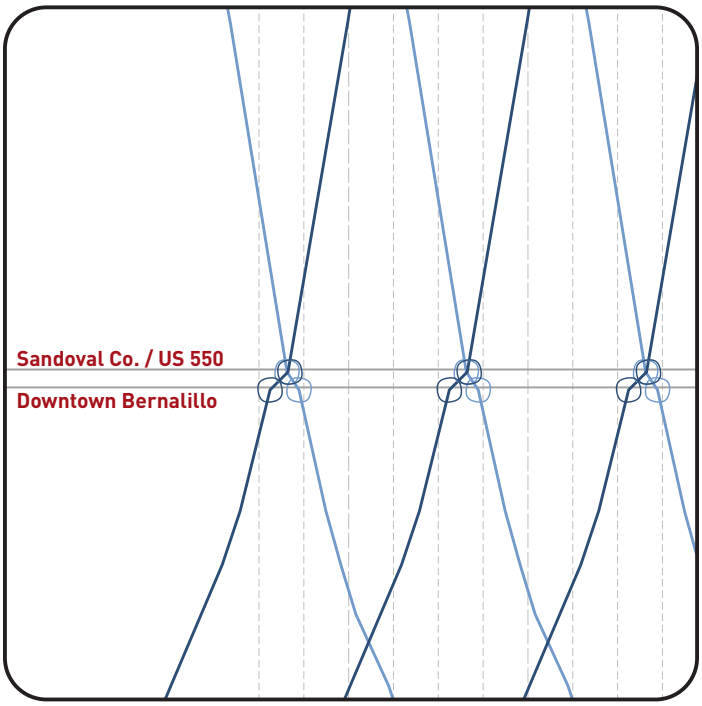
Notes:

- Project E - Scope includes one new station platform with canopies and pedestrian walkways.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

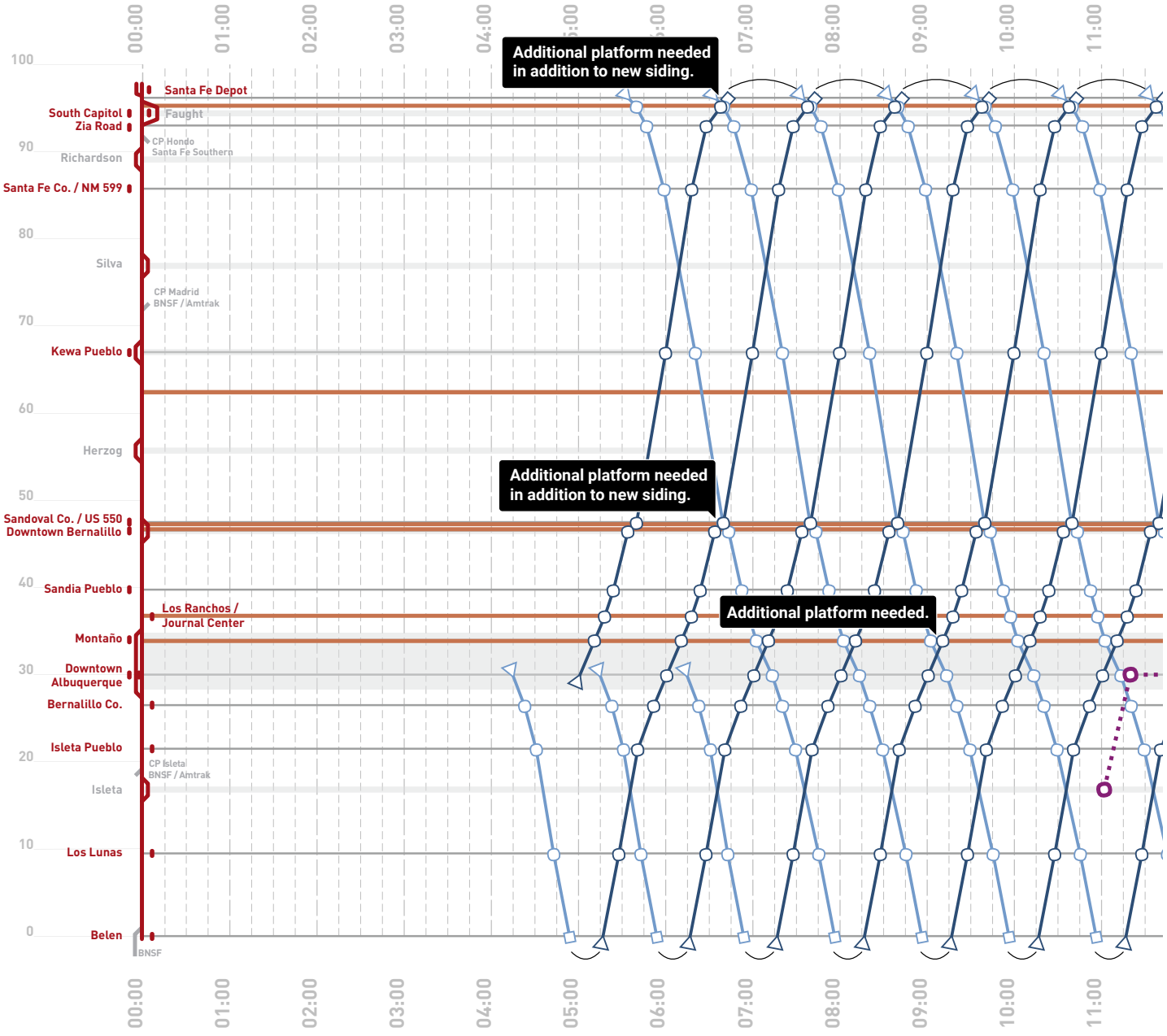
Project E Map

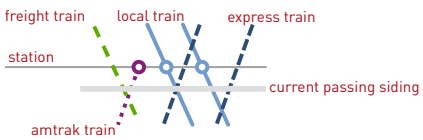
Feasibility and Impacts

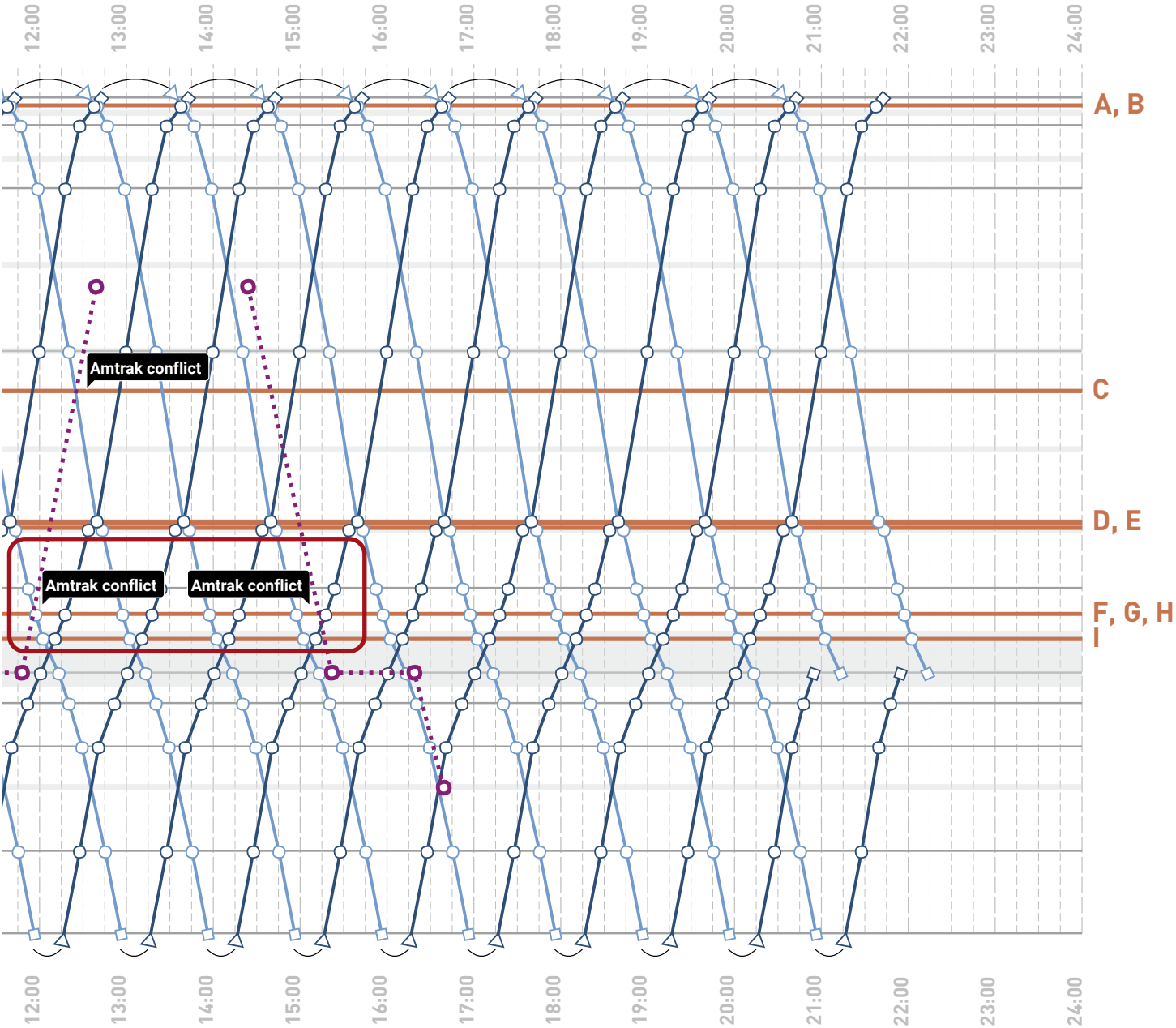
The existing Bernalillo Station already has double track siding and appears to have ample space to construct a second NB platform. The only apparent impacts would involve resolving conflicts with buried utilities (if present) and obtaining easement(s) on private property for building a temporary access road for transporting construction equipment and materials.



Rio Metro has 3 options to solve conflicts at Los Ranchos



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PROJECT F: New Siding at Los Ranchos – Amtrak (M.P. 895.6)

Project F, G, or H required for hourly service.

Description and Location

At Los Ranchos, Rio Metro has 3 options for potential solutions (Projects F, G, and H). Rio Metro only needs to build one of these three listed projects would be needed for maximizing the Regular Hourly Service between ABQ and Santa Fe.

Project F only accommodates Amtrak and leaves Rio Metro with only one usable track.

Operational Improvements

This additional siding project would provide 0.54-miles of double track (at Los Ranchos Station) for at-speed train passing. This train passing area would eliminate train schedule conflicts between Rail Runner and Amtrak and increase schedule flexibility.

Signaling

HZ proposes a new siding at Los Ranchos in an effort to coordinate NMRX (increased) Service with Amtrak trains. The proposed siding is planned from Ortega Rd NW to Ranchitos Rd. The following work will need to be performed:

- New Ballast, Track, and Turnouts.
- New CP (End of Siding) north of Ortega Rd NW.
- New 2Trk Crossing for Ortega Rd NW and El Pueblo Rd NW.
- New Pedestrian Xing between existing and new station platforms at Los Ranchos.
- Retire 1-Dir Signal locations at El Pueblo and Ortega.
- New CP (End of Siding) north of Ranchitos Rd.
- Modify existing crossing at Ranchitos Rd for new siding. Crossing to remain single track.
- Interface to adjacent signal locations.

In addition to the above, the following work will also need to be performed:

- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside & Crossing Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (ATCS & GPS/PTC Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$20.2M (2023 Cost)

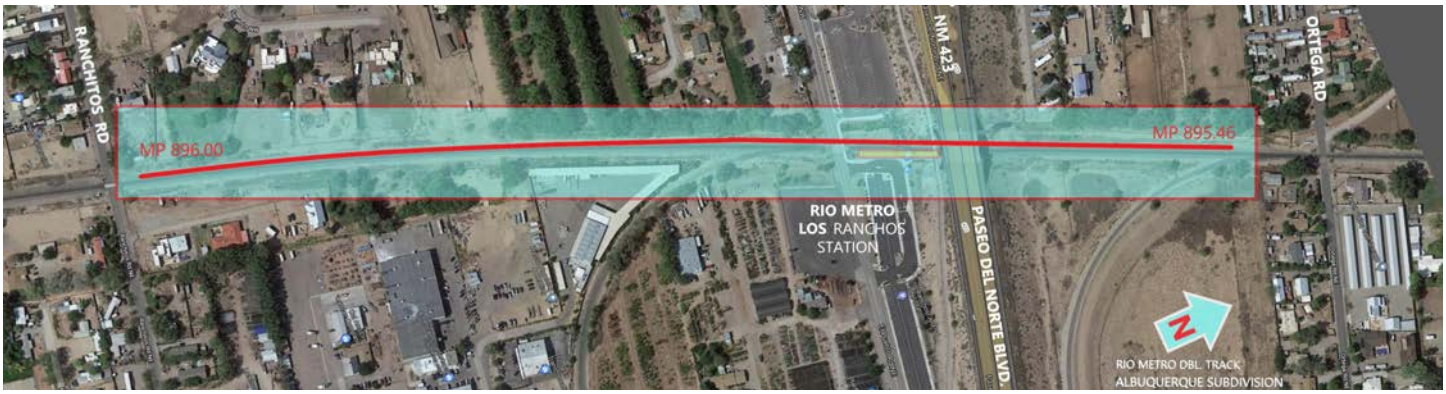
($9.0M Track + $11.2M Signals)

Cost Element Description	Project F
Construct New 16' X 250' Station Platform	N/A
Track & Roadway Construction	$4,771,396
Cross Drainage Structures & Track Underdrain	$419,244
Utility Adjustments	$262,500
Contingency - 20% of the Above Listed Costs	$1,090,628
Sub-Total (Excluding R.O.W. & Signals)	$6,543,768
General Conditions - 6%	$392,626
SUBTOTAL	**$6,936,394**
Mobilization - 5%	$346,820
SUBTOTAL	**$7,283,214**
Bonds and Insurance - 4%	$291,329
SUBTOTAL	**$7,574,542**
Profit - 10%	$757,454
TOTAL TRACK CONSTRUCTION COST	**$8,331,997**
R.O.W. Costs	$0
Signals (2021) - L.S.	$10,692,500
Signals (2022) - L.S.	$10,912,500
Signals (2023) - L.S.	$11,284,681
PROJECT TOTAL (2021 COSTS) *	**$19,024,497**
Cost Escalation - 3.8%	$316,616
PROJECT TOTAL (2022 COSTS)	**$19,561,112**
Cost Escalation - 3.8%	$328,647
PROJECT TOTAL (2023 COSTS)	**$20,261,941**

Notes:

- Project F - Scope includes 2852 LF (0.54 mile) of Siding track and drainage; and one (1) At-grade roadway crossing.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project F Map



Feasibility and Impacts

This 0.54-mile additional siding would be constructed within NMRX owned R.O.W. contained within Bernalillo County. About 2,059-feet of the siding would be on the south side of the NM 423 (Paseo Del Norte Blvd. M.P. 895.62) overpass and about 790-feet of the siding would run north of NM 423. It appears that no additional right-of-way would be needed for the additional siding and there is sufficient space between the NM 423 bridge abutments for the main track and the siding. The siding would be offset 15-feet from the center of the main track and be built west of the main track due to the existing platform sitting just east of the main track. There would be one roadway grade crossing on El Pueblo Road (just south of Los Ranchos Station) which would be convenient for construction access to the project work zone. The only physical features in conflict on this siding location are the signal bungalow (M.P. 895.70), crossing gates (at El Pueblo Road), and several culvert crossings that would need to be extended below the new siding track.

PROJECT G: Double Track from Osuna Blvd to Los Ranchitos Road (M.P. 897.4-896.0)

Project F, G, or H required for hourly service.

Description and Location

At Los Ranchos, Rio Metro has 3 options for potential solutions (Projects F, G, and H). Only one of the three listed projects would be needed for maximizing the Regular Hourly Service between ABQ and Santa Fe.

Project G includes double track from Osuna Blvd. through Los Ranchitos Rd. to provide additional passing opportunities.

Operational Improvements

This additional siding project would provide 1.42-miles of double track (between Montano Station and Los Ranchos Station) for at-speed train passing. This train passing area would eliminate Rail Runner train schedule conflicts and increase schedule flexibility.

Signaling

With a new double track siding from Osuna Blvd to Los Ranchos, the following infrastructure improvements include:

- New 2Trk Crossings for Los Ranchitos, Los Ranchos and Osuna Blvd
- New CP (EOS) south of Osuna Rd.
- Retire existing Intermediate.
- New CP (EOS) north of Los Ranchitos Rd.
- Interface to adjacent signal locations.
- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside & Crossing Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (Signal Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$34.3M (2023 Cost)

($23.7M Track + $10.6M Signals)

Cost Element Description	Project G
Construct New 16' X 250' Station Platform	N/A
Track & Roadway Construction	$12,544,154
Cross Drainage Structures & Track Underdrain	$1,102,206
Utility Adjustments	$787,500
Contingency - 20% of the Above Listed Costs	$2,886,772
Sub-Total (Excluding R.O.W. & Signals)	$17,320,632
General Conditions - 6%	$1,039,238
SUBTOTAL	**$18,359,870**
Mobilization - 5%	$917,993
SUBTOTAL	**$19,277,863**
Bonds and Insurance - 4%	$771,115
SUBTOTAL	**$20,048,978**
Profit - 10%	$2,004,898
TOTAL TRACK CONSTRUCTION COST	**$22,053,876**
R.O.W. Costs	$60,000
Signals (2021) - L.S.	$10,058,750
Signals (2022) - L.S.	$10,278,750
Signals (2023) - L.S.	$10,615,041
PROJECT TOTAL (2021 COSTS) *	**$32,112,626**
Cost Escalation - 3.8%	$838,047
PROJECT TOTAL (2022 COSTS)	**33,170,673**
Cost Escalation - 3.8%	$869,893
PROJECT TOTAL (2023 COSTS)	**$34,376,857**

Notes:

- Project G - Scope includes 7498 LF (1.42 mile) of Siding track and drainage; and three (3) At-grade roadway crossings.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project G Map

Feasibility and Impacts

This 1.42-mile additional siding would be constructed within NMRX owned R.O.W. contained within Bernalillo County (on the north side of Albuquerque). The southern end of the siding would need to be connected to a future siding terminus about 100-feet south of Osuna Road (M.P. 897.40). The north end of this siding would be connected to the future siding at Los Ranchos Station (at M.P. 896.0 about 100-feet north of Ranchitos Road). It appears that no additional R.O.W. would be needed for the additional siding. There is an existing timber railroad bridge for the main track (M.P. 897.20) and the siding track would need a similar bridge structure. Otherwise, the existing timber bridge at M.P. 897.20 could also be replaced with a multi-cell pre-cast box structure under both tracks. The siding would be offset 15-feet from the center of the main track and be built west of the main track. There would be three roadway grade crossings on Osuna Road (897.40), Los Ranchos Road (M.P. 896.24), and Ranchitos Road (M.P. 896.09); which, could all be used for construction access into the project work zone. Other physical features in conflict on this siding location are the signal bungalow (M.P. 897.41) and crossing gates (at Osuna Road) and several hydraulic box culvert crossings that would need to be extended below the new siding track.

PROJECT H: Additional Platform and Siding at Los Ranchos (M.P. 895.6)

Project F, G, or H required for hourly service.

Description and Location

At Los Ranchos, Rio Metro has 3 options for potential solutions (Projects F, G, and H). Only one of the three listed projects would be needed for maximizing the Regular Hourly Service between ABQ and Santa Fe.

Project H adds a platform at Los Ranchos in addition to the siding, facilitating multiple trains being able to stop for boardings at the same time.

Operational Improvements

This additional siding and new 16' x 250' SB platform project would provide 0.54-mile of double track (at Los Ranchos Station) for at-speed train passing. This train passing area would eliminate train schedule conflicts between Rail Runner and Amtrak and increase schedule flexibility for NB & SB train commuters.

Signaling

With a new siding at Los Ranchos, the following infrastructure improvements include:

- New CP (End of Siding) before Los Ranchos north of Ortega Rd NW.
- New 2Trk Crossing for Ortega Rd NW and El Pueblo Rd NW.
- New Pedestrian Xing between existing and new station platforms at Los Ranchos.
- Retire 1-Dir Signal locations at El Pueblo and Ortega.
- New CP (End of Siding) north of Ranchitos Rd.
- Modify existing crossing at Ranchitos Rd for new siding. Xing to remain single track.
- Interface to adjacent signal locations.
- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside & Crossing Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (Signal Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$22.4M (2023 Cost)

($23.7M Track + $11.3M Signals)

Cost Element Description	Project H
Construct New 16' X 250' Station Platform	$1,300,000
Track & Roadway Construction	$4,771,396
Cross Drainage Structures & Track Underdrain	$419,244
Utility Adjustments	$262,500
Contingency - 20% of the Above Listed Costs	$1,350,628
Sub-Total (Excluding R.O.W. & Signals)	$8,103,768
General Conditions - 6%	$486,226
SUBTOTAL	**$8,589,994**
Mobilization - 5%	$429,500
SUBTOTAL	**$9,019,494**
Bonds and Insurance - 4%	$360,780
SUBTOTAL	**$9,380,274**
Profit - 10%	$938,027
TOTAL TRACK CONSTRUCTION COST	**$10,318,301**
R.O.W. Costs	$0
Signals (2021) - L.S.	$10,692,500
Signals (2022) - L.S.	$10,912,500
Signals (2023) - L.S.	$11,284,681
PROJECT TOTAL (2021 COSTS) *	**$21,010,801**
Cost Escalation - 3.8%	392,095
PROJECT TOTAL (2022 COSTS)	**$21,622,896**
Cost Escalation - 3.8%	$406,995
PROJECT TOTAL (2023 COSTS)	**$22,402,072**

Notes:

- Project H - Scope includes 2852 LF (0.54 mile) of Siding track and drainage; one at-grade roadway crossing; and one (1) new station platform with canopies.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project H Map

Feasibility and Impacts

This 0.54-mile additional siding would be constructed within NMRX owned R.O.W. in Bernalillo County. About 2,059-feet of the siding would be on the south side of the NM 423 (Paseo Del Norte Blvd. M.P. 895.62) overpass and about 790-feet of the siding would run north of NM 423. It appears that no additional right-of-way would be needed for the additional siding and SB platform. The existing station parking lot conveniently sits on the west side of the NMRX R.O.W. next to the new SB platform location. There is also sufficient space between the NM 423 bridge abutments for the main track and additional siding to cross under NM 423. The additional siding would be offset 15-feet from the center of the main track and west of the main track due to the existing platform that sits along the east side of the main track. There would be one roadway grade crossing on El Pueblo Road (just south of Los Ranchos Station); which, would provide for construction access to the siding/platform work zone. The only physical features in conflict on this siding location are the signal bungalow (M.P. 895.70) and crossing gates (at El Pueblo Road) and several culvert crossings that would be extended below the new siding.

PROJECT I: New Platform at Downtown Montaño Station (M.P. 898.5)

Required for hourly service.

Description and Location

To run Hourly Service, an additional platform at Montaño Station would build resilience into the system as the train timing is tight.

Operational Improvements

The use of two platforms allows for simultaneous boarding and de-boarding of NB and SB commuter trains, therefore, allowing for increasing service capacity and schedule resiliency.

Signaling

With an additional platform at Montano, the following infrastructure improvements include:

- New CP (EOS) near existing turnout at MP 897.91
- New CP (EOS) near CP Hahn, retire existing.
- New Electric Locks and Derail and 6 Industry Leads.
- Modify crossing approaches at Montano Blvd for a signaled 2nd main.
- Reused existing grade crossing, complete with crossing gates and masts.
- New ped gate near the southeast corner of Montano Blvd.
- Interface to adjacent signal locations.
- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside & Crossing Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (Signal Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$16.6M (2023 Cost)

($2.3M Platform + $14.3M Signals)

Cost Element Description	Project I
Construct New 16' X 500' Station Platform	$1,300,000
Track & Roadway Construction	$50,000
Cross Drainage Structures & Track Underdrain	$25,000
Utility Adjustments	$30,000
Contingency - 20% of the Above Listed Costs	$281,000
Sub-Total (Excluding R.O.W. & Signals)	$1,686,000
General Conditions - 6%	$101,160
SUBTOTAL	**$1,787,160**
Mobilization - 5%	$89,358
SUBTOTAL	**$1,876,518**
Bonds and Insurance - 4%	$75,061
SUBTOTAL	**$1,951,579**
Profit - 10%	$195,158
TOTAL TRACK CONSTRUCTION COST	**$2,146,737**
R.O.W. Costs	$0
Signals (2021) - L.S.	$13,563,875
Signals (2022) - L.S.	$13,813,875
Signals (2023) - L.S.	$14,319,354
PROJECT TOTAL (2021 COSTS) *	**$15,710,612**
Cost Escalation - 3.8%	$81,575.99
PROJECT TOTAL (2022 COSTS)	**$16,042,188**
Cost Escalation - 3.8%	$84,675.88
PROJECT TOTAL (2023 COSTS)	**$16,632,342**

Notes:

- Project I - Scope includes one new station platform with canopies and pedestrian walkways.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project I Map

Feasibility and Impacts

The existing Montaño Station already has double track siding and appears to have plenty of space to construct a NB platform. The new NB platform would be constructed between the existing NMRX tracks and the industrial spur track, opposite of where the existing station parking lot and platform currently sits. The only apparent impacts would involve resolving any conflicts with buried utilities (if present). No easement would be needed on private property since the station is located at Montaño Road. Existing access is available via an entrance drive to the NMRX R.O.W. for transporting equipment and materials. About 100-feet of 10-foot wide sidewalk would be needed to direct NB commuters to and from the 16' x 250' NB platform to the station parking lot via the existing sidewalk on Montaño Road. Nominal coordination would be required for the adjacent industrial facility since the majority of the existing private Spur track is located outside the NMRX R.O.W. line (on private property).

PROJECT J: Extend Belen Northwards to Gabaldon Rd (M.P. 932.11-930.31)

Useful for reliability and freight coordination.

Description and Location

South of Albuquerque, Rail Runner shares track with BNSF interstate freight. Hourly service likely requires double track from Los Lunas to Belen to accommodate freight movements. This proposal extends Belen northwards to Gabaldon Rd. as a minimum to reduce freight interference.

This project is included only to address service reliability issues and freight conflicts, but it is not required for Regular Hourly Service.

Operational Improvements

This additional siding project would provide 1.78-miles of double track (between Belen Station and Gabaldon Road) for at-speed train passing. The Belen Siding extension will provide needed passing capacity along the largely single-track corridor and will be designed with number 24 switches with turnout speeds of 50 mph. This train passing area would eliminate BNSF/Rail Runner train schedule conflicts and increase schedule flexibility.

Signaling

Extend Belen northwards to Gabaldon Rd, the following infrastructure improvements include:

- New Control Point (End of Siding) north of Gabaldon Rd.
- Retire existing Intermediate.
- New 2 Trk Crossings at Gabaldon Rd, Molina Rd, Valentin Rd, and Aragon Rd.
- How to tie into CP Ross and/or CP Belen.
- Interface to adjacent signal locations and BNSF.
- GPS Mapping of new Wayside Assets
- Subdiv Modifications & PTC WIU Mapping
- Wayside & Crossing Software programming
- Back Office Modifications (Primary Site, Disaster Recovery Site & Remote Console for Dispatcher.
- Communication Modifications (Signal Towers & Antennas, PTC 220 MHz)
- Onboard System Modifications
- Testing and Inspections

Cost

$37.3M (2023 Cost)

($29.5M Track + $7.8M Signals)

Cost Element Description	Project J
Construct New 16' X 250' Station Platform	N/A
Track & Roadway Construction	$15,726,200
Cross Drainage Structures & Track Underdrain	$1,381,800
Utility Adjustments	$787,500
Contingency - 30% of the Above Listed Costs	$3,579,100
Sub-Total (Excluding R.O.W. & Signals)	$21,474,600
General Conditions - 6%	$1,288,476
SUBTOTAL	**$22,763,076**
Mobilization - 5%	$1,138,154
SUBTOTAL	**$23,901,230**
Bonds and Insurance - 4%	$956,049
SUBTOTAL	**$2,571,662**
Profit - 10%	$24,857,279
TOTAL TRACK CONSTRUCTION COST	**$27,343,007**
R.O.W. Costs	$60,000
Signals (2021) - L.S.	$7,442,500
Signals (2022) - L.S.	$7,592,500
Signals (2023) - L.S.	$7,855,232
PROJECT TOTAL (2021 COSTS) *	**$34,785,507**
Cost Escalation - 3.8%	$1,039,034
PROJECT TOTAL (2022 COSTS)	**$35,974,541**
Cost Escalation - 3.8%	$1,078,518
PROJECT TOTAL (2023 COSTS)	**$37,315,791**

Notes:

- Project J - Scope includes 9400 LF (1.78 mile) of Siding track and drainage; and three (3) At-grade roadway crossings.
- *2021 Project total = Track construction cost ($) + R.O.W. cost ($) + Signals cost ($)

Project J Map

Feasibility and Impacts

This proposed 1.78-mile long siding extension would be constructed within NMRX owned R.O.W. within Valencia County (~25-miles south of Albuquerque). The southern end of the siding would need to be connected to an existing siding terminus (M.P. 932.11) about 1,200-feet north of Belen Station. The north end of this siding would connect to the main track with a number 24 turnout at M.P. 930.32 (about 100-feet south of Gabaldon Road). It appears that no additional right-of-way would be needed for the additional siding. There is an open deck pile trestle railroad bridge on the main track (M.P. 932.02) and a ballast deck pile trestle bridge at M.P. 931.7. The siding track would need similar bridge structures at these two locations. Otherwise, the existing timber trestle bridges could be removed and replaced with multi-cell pre-cast box structures under both tracks.

The Belen Siding extension would be offset 15-feet from the center of the main track (on the west side of the main track). There would be three roadway grade crossings on Aragon Road (M.P. 931.99), Valentin Road (M.P. 931.63), and Molina Road (M.P. 931.18); which, could all be used for construction access into the siding work zone. Other physical features in conflict with this siding location are the signal crossing gates and two hydraulic box culvert crossings that would be extended below the new siding track.

External Coordination and Options

Amtrak

Southwest Chief westbound train #3 and eastbound train #4 pass through the NMRX system each day on their way between Chicago and Los Angeles. Both trains serve the Downtown Albuquerque Station. In 2018, the station served 64,382 boardings and alightings, and Albuquerque proved the fourth most popular Southwest Chief destination.

Currently, the Amtrak northbound schedule enters the Rio Metro system at 11:00 am at the Isleta siding and departs around 12:30 pm at CP Madrid. The southbound train enters the system around 2:15 pm and departs at Isleta at 4:45 pm. However, Amtrak trains are often delayed by freight interference on their 2,265-mile journey, and often run late. Currently, there are large gaps in the Rail Runner schedule north of Santa Fe that allow delays of half an hour or more with no impacts to Rail Runner service.

Since Amtrak is on Rail Runner tracks for nearly an hour north of Albuquerque, frequent Rail Runner schedules would require additional passing tracks to allow Amtrak to meet oncoming trains. Projects C and F/G/H address these.

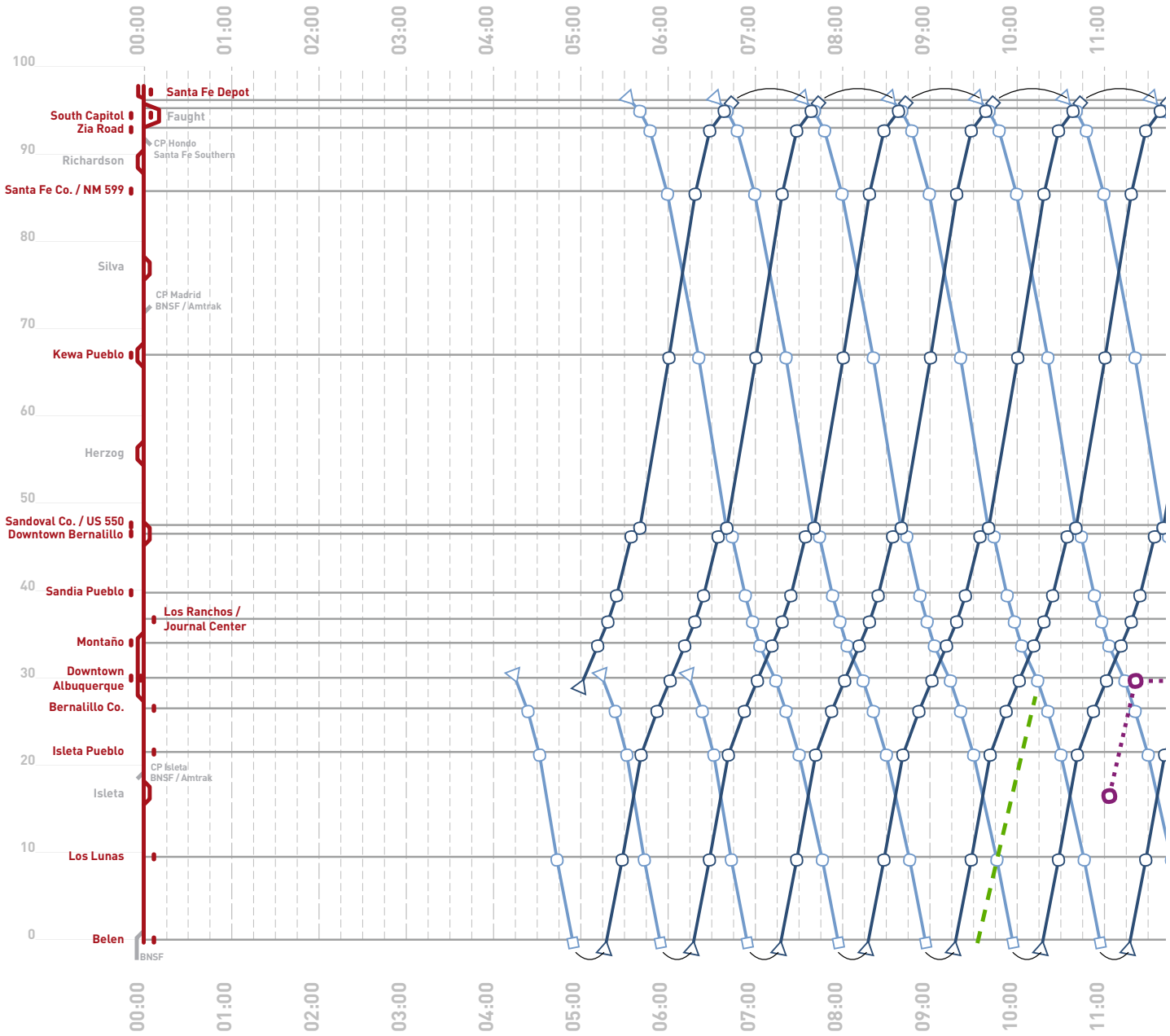
Freight

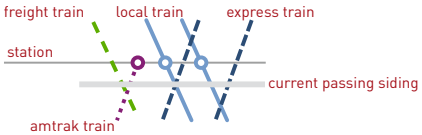
While owned by the State of New Mexico, the BNSF retains an exclusive freight easement on the NMRX system. Rail freight shipments to local customers are routed via Belen to the Abajo yard in Albuquerque, and local rail freight service operates seven days per week from Abajo yard to customers in the Albuquerque area. BNSF owns an intermodal yard for trailer on flatcar (TOFC) and container shipments on Woodward Avenue in Albuquerque, which operates seven days per week. Rail freight shipments to the Woodward TOFC yard come directly from Belen.

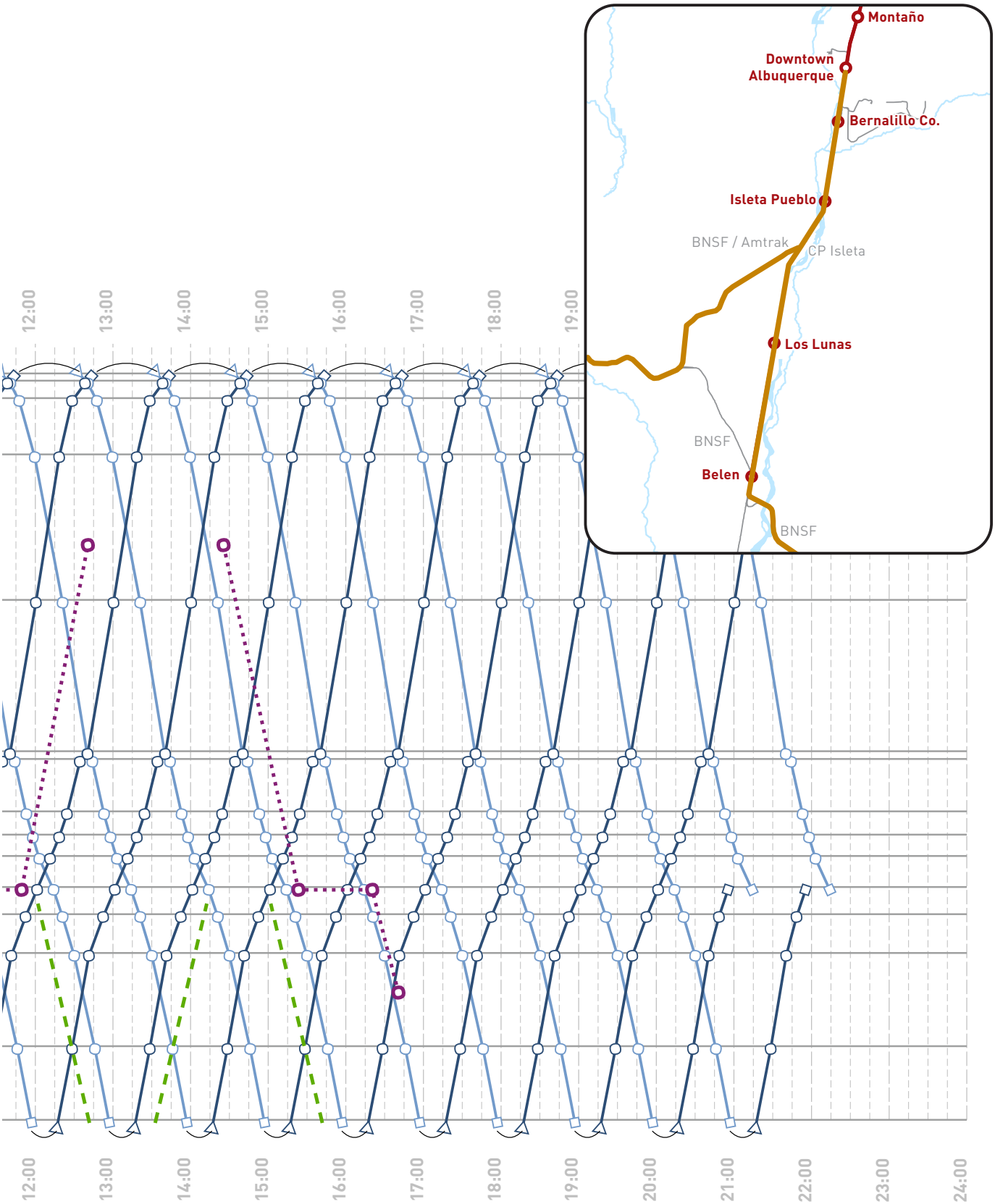
South of Albuquerque, Rail Runner shares track with BNSF interstate freight. If service south of ABQ is only every 2 hours during midday, there are four available slots (2 northbound, 2 southbound) for freight without adding new track. Hourly service likely requires double track from Los Lunas to Belen to accommodate freight. Another option would require a new track connection to reroute freight off Belen-Isleta. New dedicated freight track South of ABQ would also be an option as to not limit passenger service. We propose extending Belen northwards to Gabaldon Rd. as a minimum to reduce freight interference as shown in Project J ($37.3M, 2023 Cost).

Freight Considerations

Regular hourly service likely requires double track from Los Lunas to Belen to accommodate freight.



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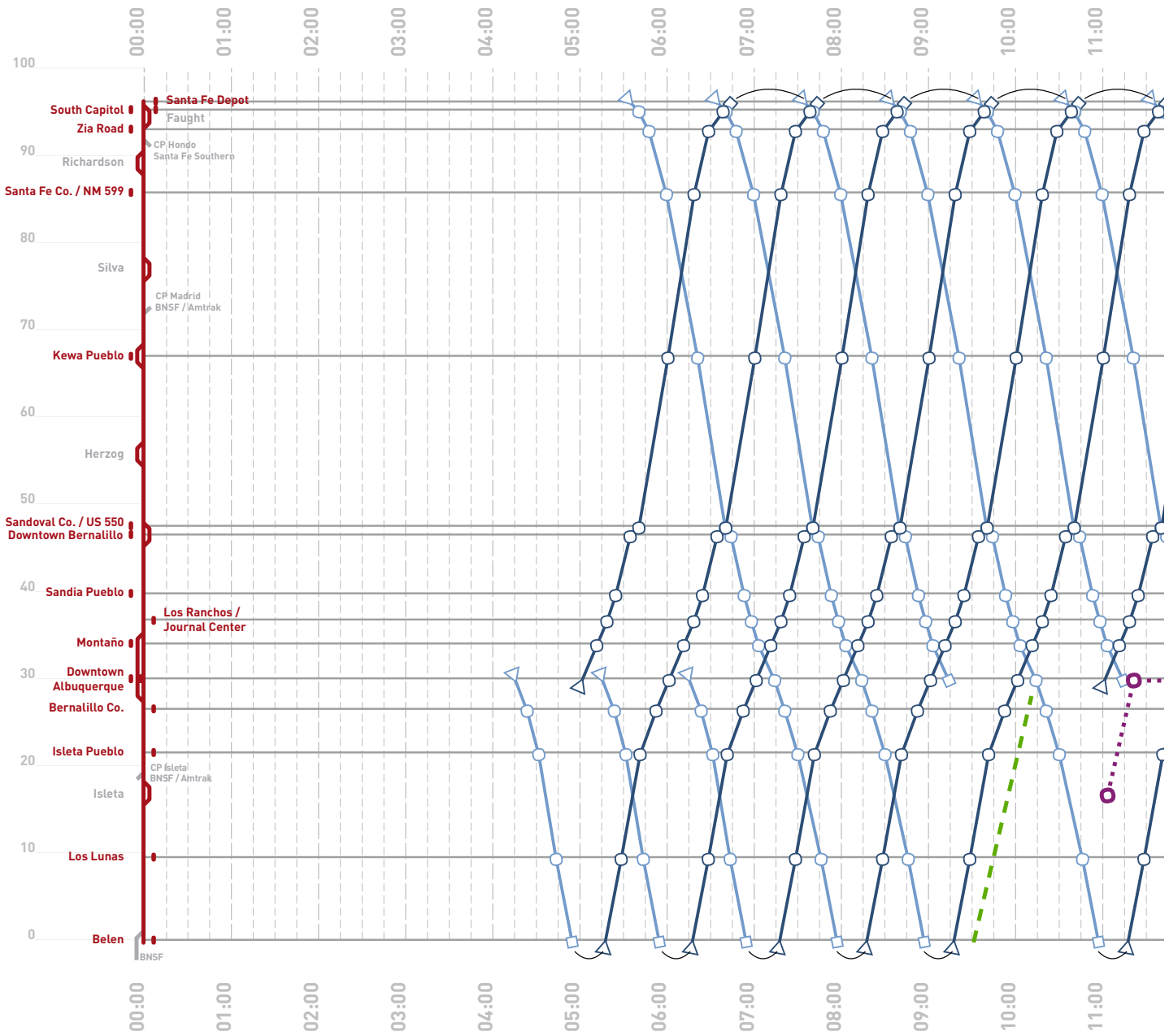
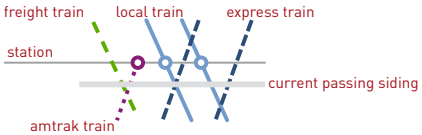
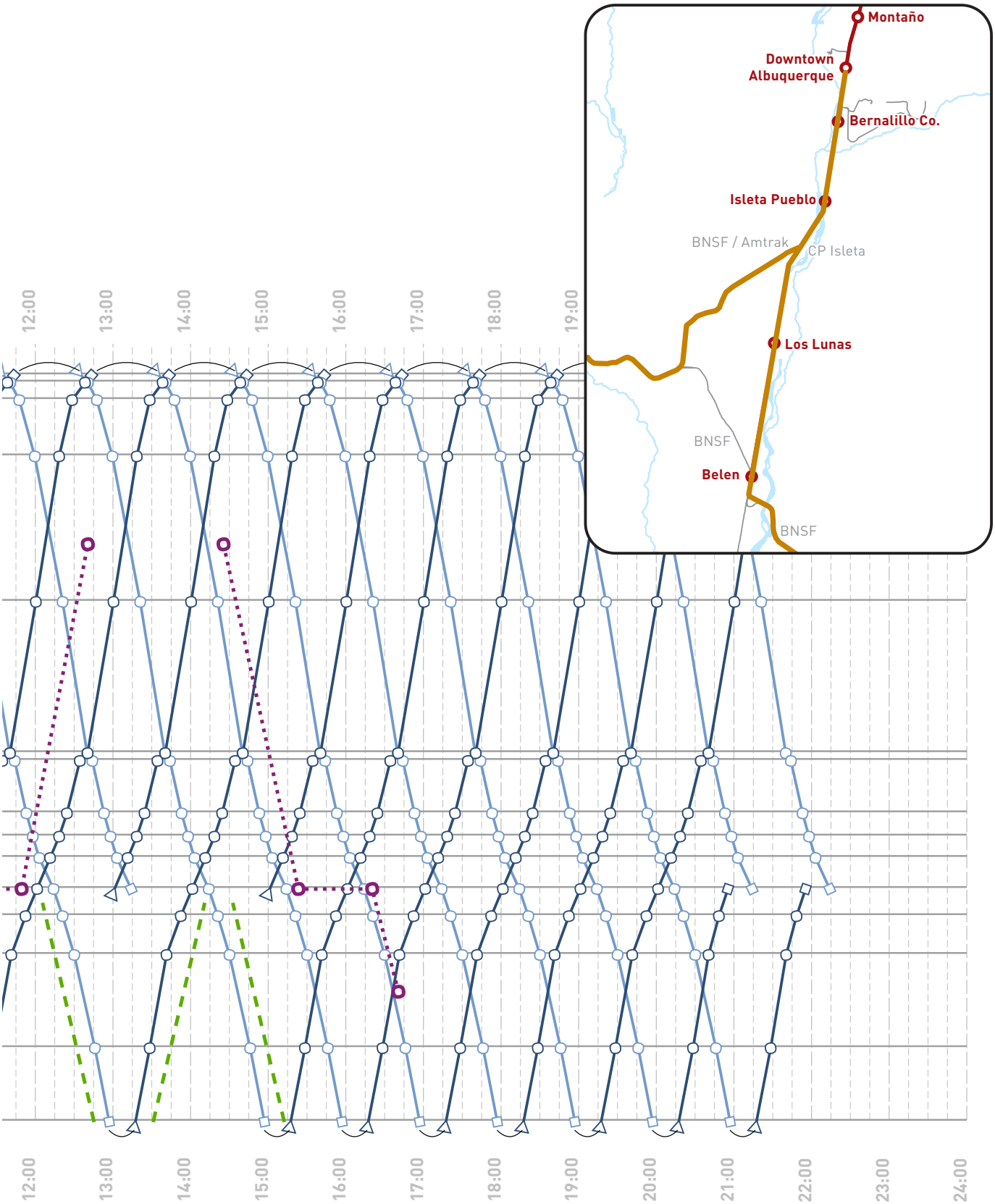
Freight Considerations

If service south of ABQ is only every 2 hours during midday, there are limited windows available for freight to pass through the Rio Metro territory without adding new track.



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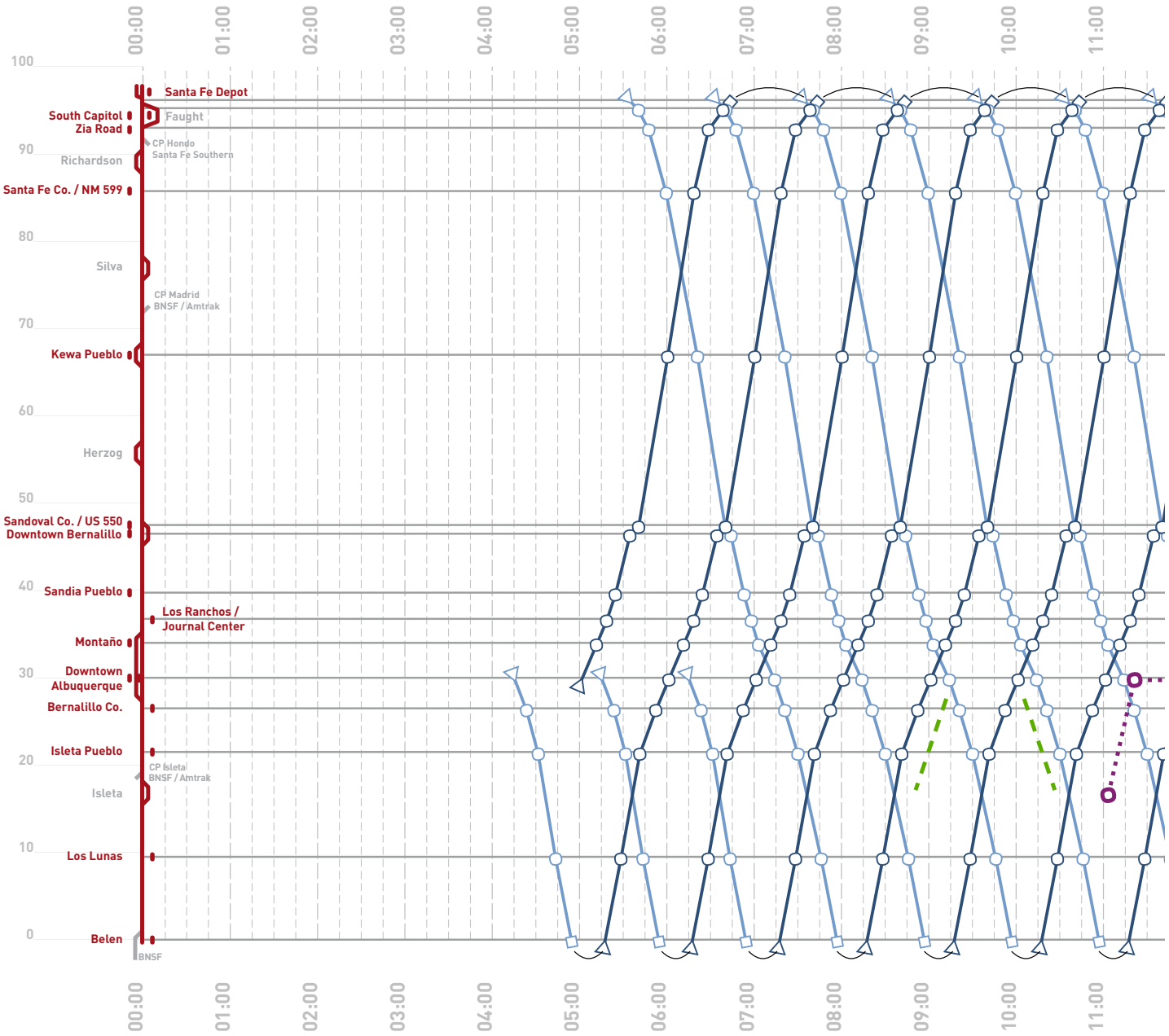
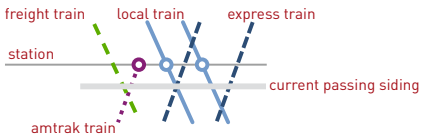
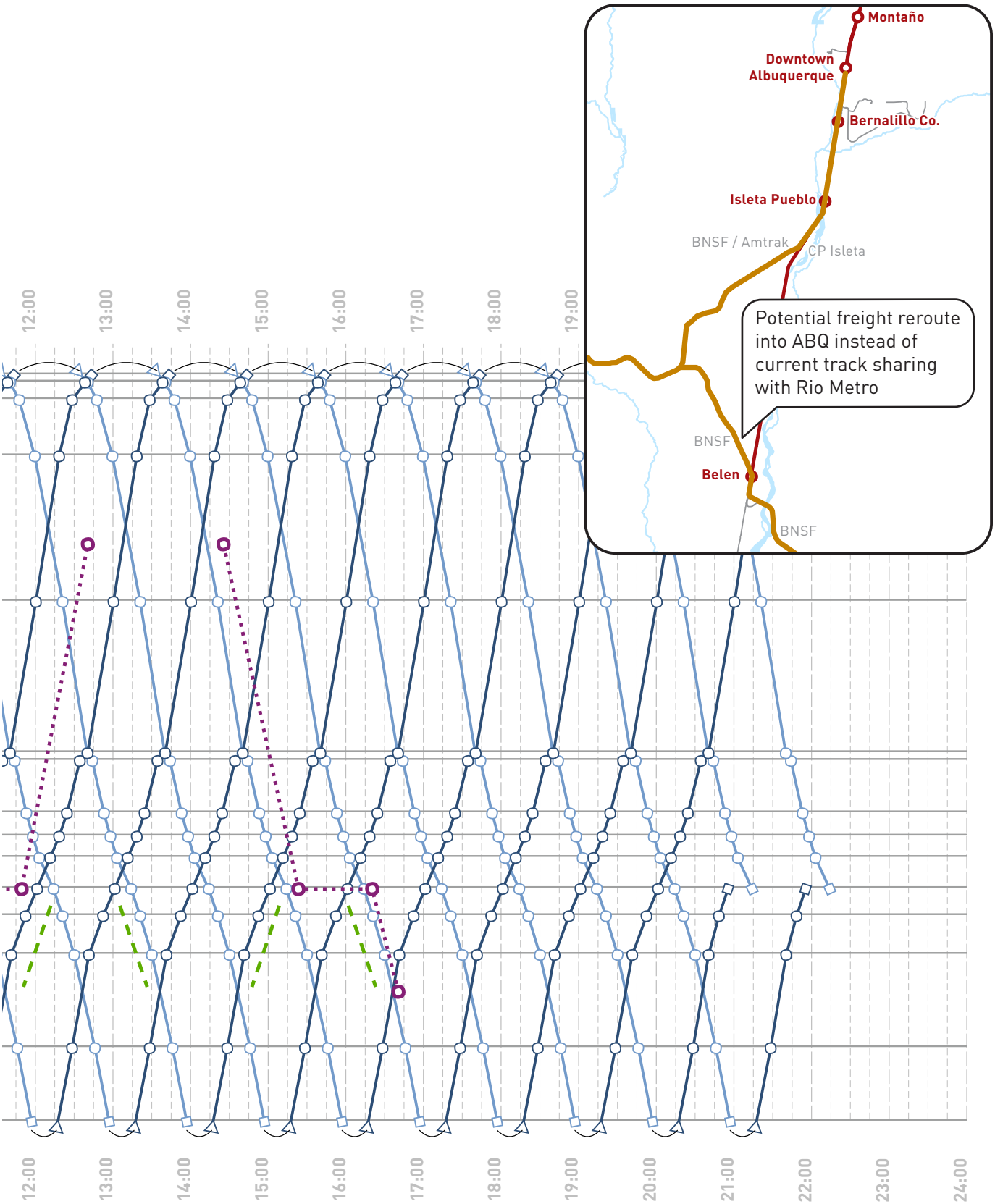
Freight Considerations

A third option requires a new track connection to reroute freight off Belen-Isleta.



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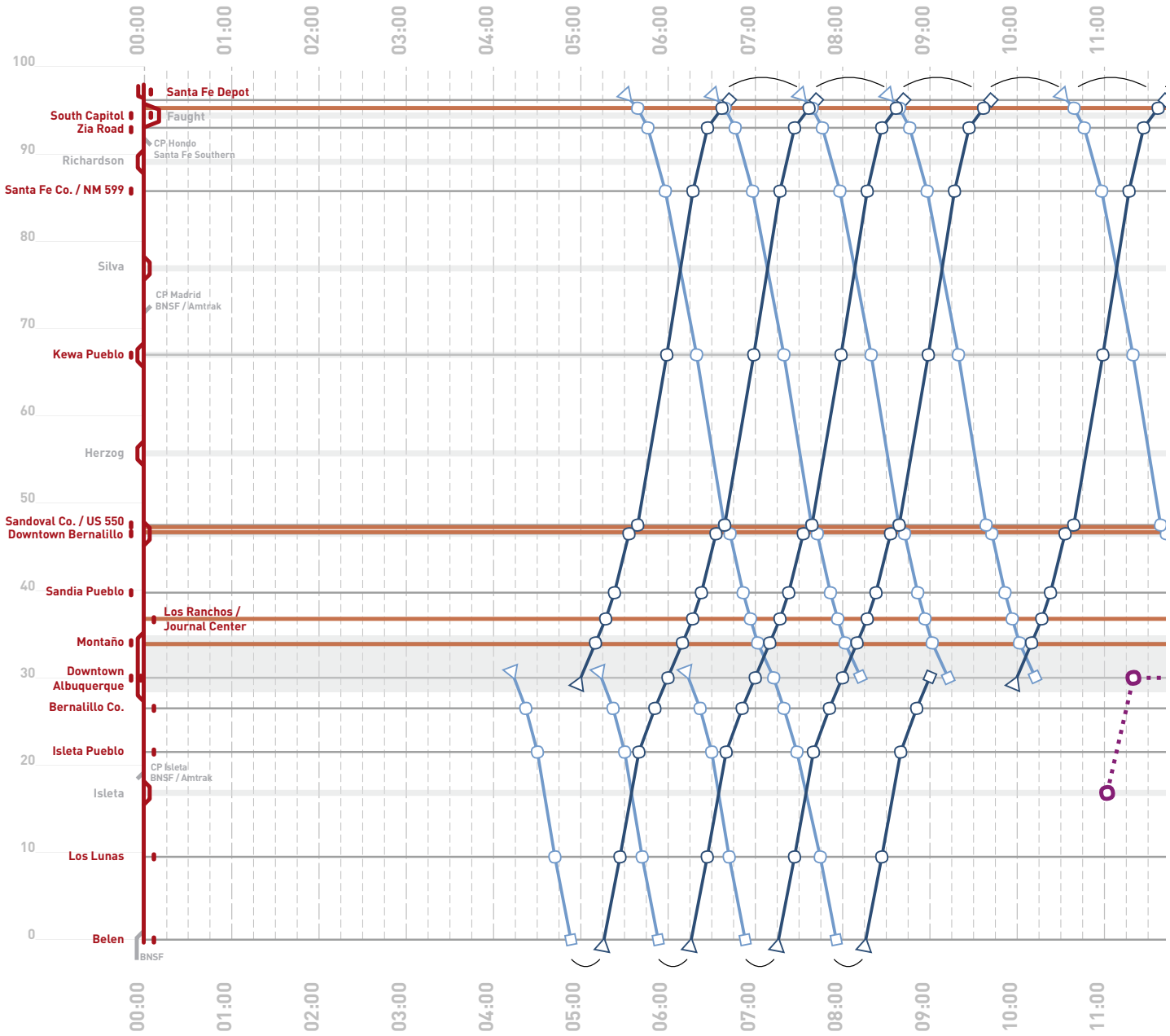
Montaño
Downtown Albuquerque
Bernalillo Co.
Isleta Pueblo
BNSF / Amtrak
CP Isleta
Potential freight reroute into ABQ instead of current track sharing with Rio Metro
BNSF
Belen
BNSF

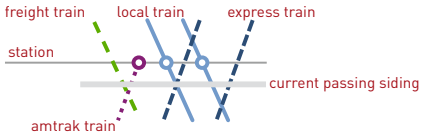
Project Phasing

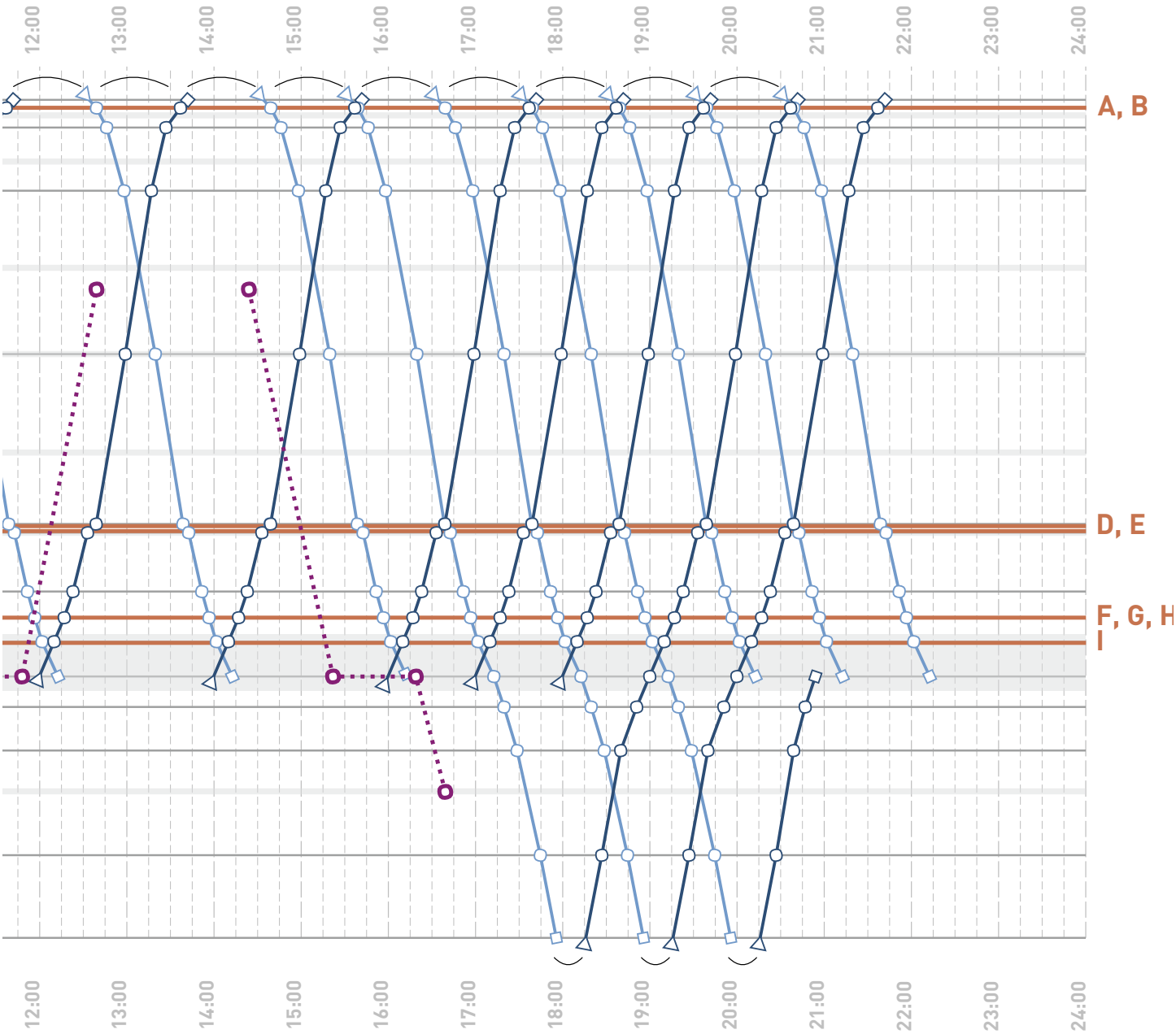
Prior to hourly service being available all day, Rio Metro could take a phased approach with less service midday. This could include hourly service only at rush hour and every two hours midday or a variation with hourly service only north or Albuquerque with the same infrastructure changes proposed above prior to full-service adoption of any of the proposed scenarios.

Rio Metro could look at track speeds and find opportunities to speed up service, which would decrease trip times and potentially reduce operating costs.

Rio Metro could also look at opportunities to build segments of double track, particularly between Kewa and NM 599 and between Albuquerque and Isleta. And they could look at diesel multiple unit trains like those used by TexRail, which are well suited to more frequent service and accelerate well, or at electrification.



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Next Steps and Additional Considerations

As shown in the Transportation Project Development Process flowchart, the process includes the following phases: conceptual design/planning, preliminary design, environmental studies, final design, right-of-way (ROW) acquisition and utility relocations, final design (plans, specifications and estimates [PS&E]), and construction. In addition to being an important component of the transportation project development process, public outreach/involvement is conducted continuously through each phase of project development.

At the conclusion of the conceptual design/planning phase the intended outcome is to provide a roadmap to assist decision-making responsible parties in determining how (1) the corridor improvements fit into the larger system network, (2) to prioritize improvements, and (3) to allocate funding.

Upon selecting the preferred siding/platform options and schedule that best meet Rio Metro's needs, the siding projects will be further developed during preliminary design and environmental studies. Preliminary Design and NEPA Environmental Studies will proceed once funding is secured. Rio Metro, in collaboration with NMDOT will then coordinate with the Federal Transit Administration to establish the appropriate level of environmental documentation. Given that all of the proposed improvements would likely occur within the existing railroad ROW and no relocations are required, a categorical exclusion (CE) is anticipated.

During preliminary design, typical tasks would include performing topographic survey, ROW survey, hydrologic/hydraulic studies, track alignment study, signal planning, cost analysis, and develop schematic level plans. Detailed environmental studies using GIS supported by field investigations will be conducted to evaluate the impacts of the proposed improvements. Resources and/or impacts to be analyzed and documented in the CE would include:

- Land Use
- Traffic
- Noise & Vibration
- Environmental Justice
- Historic/Cultural Resources
- Section 4(f)
- Biological Resources
- Property Acquisition/Relocations
- Wetlands/waters of the US
- Water Quality
- Air Quality
- Hazardous Materials
- Prime and Unique Farmlands
- Safety/Security
- Construction Impacts
- Mitigation Measures

Environmental permits necessary to obtain environmental clearance will also be identified in coordination with resource agencies. Depending on the project areas, agency coordination may include NM tribes, State Historic Preservation Office (SHPO), NM Environment Department (NMED), New Mexico Department of Game and Fish (NMDGF), NM National Park Service (NPS), USACE, and USFWS.

As shown in the flowchart, public outreach and involvement are an integral component of the project development process. Tribal and resource agencies coordination and public outreach will be conducted to obtain input and feedback on the proposed improvements during all phases of project development.

Transportation Project Development Process

*As funding is identified