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# 1. RED LINE BUS RAPID TRANSIT OPERATIONS PLAN OVERVIEW

## 1.1. PURPOSE OF PROJECT OPERATIONS PLAN

This operations plan is built as a reference to be used by any employee of IndyGo and will address the first phase of the IndyGo Red Line BRT system. It serves to build a unified, effective, system-wide plan by which the Red Line can:

- Implement policies and procedures to allow for operations that are efficient and minimize delays by allowing for a company-wide understanding of operational expectations.
- Implement guidelines for BRT system operational staff that can be used to set a standard level of service.



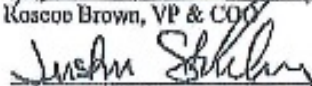
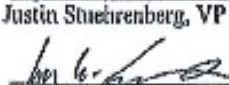
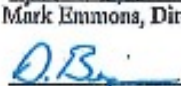
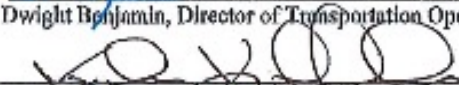

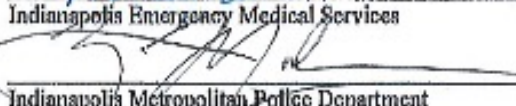
The Operations Plan is intended to be a living document and will be maintained by the IndyGo Operations, Red Line and Safety and Security Departments. Operation Plan will also be provided to FTA, emergency entities, and others as needed and deemed appropriate.

***The Operations Plan references some additional documents that are not included as appendices. These include some of IndyGo's Security and Safety Sensitive Information that may be furnished upon request.***

The Operations Plan will be periodically updated as the BRT system progresses to implementation. At a minimum, the Operations Plan will be updated prior to testing and implementation of the system. The following table will reflect versioning control.

|  |  |  |
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It is a goal of IndyGo, through the effective implementation and administration of this Operations Plan, to take proactive measures and to plan to incorporate standard operational policies and procedures of the Red Line BRT system and implement into IndyGo's transit operations and services.

|   |                           |
|---|---------------------------|
| <br>Michael Terry, President & CEO                         | <u>7-18-19</u><br>Date    |
| <br>Roscoe Brown, VP & COO                                 | <u>7-16-19</u><br>Date    |
| <br>Justin Stuehrenberg, VP of Planning & Capital Projects | <u>7/11/19</u><br>Date    |
| <br>Mark Emmons, Director of Training & Security           | <u>7-11-19</u><br>Date    |
| <br>Dwight Benjamin, Director of Transportation Operations | <u>12 July 19</u><br>Date |
| <br>Indianapolis Fire Department                           | <u>7-26-19</u><br>Date    |
| <br>Indianapolis Emergency Medical Services                | <u>7-22-19</u><br>Date    |
| <br>Indianapolis Metropolitan Police Department            | <u>8/13/19</u><br>Date    |

## 2. RED LINE RAPID TRANSIT OVERVIEW

The IndyGo Red Line Rapid Transit project, Phase I in partnership with the city will begin service in 2019. The Red Line will be the first all-electric BRT and the first rapid transit service in Indiana.

The project provides BRT service 20 hours per day Monday through Friday, 18 hours on Saturday and 16 hours on Sunday and 365 days per year. Fourteen of the 20 weekday daily hours will include 10-minute headway service. The project will use BRT electric vehicles.

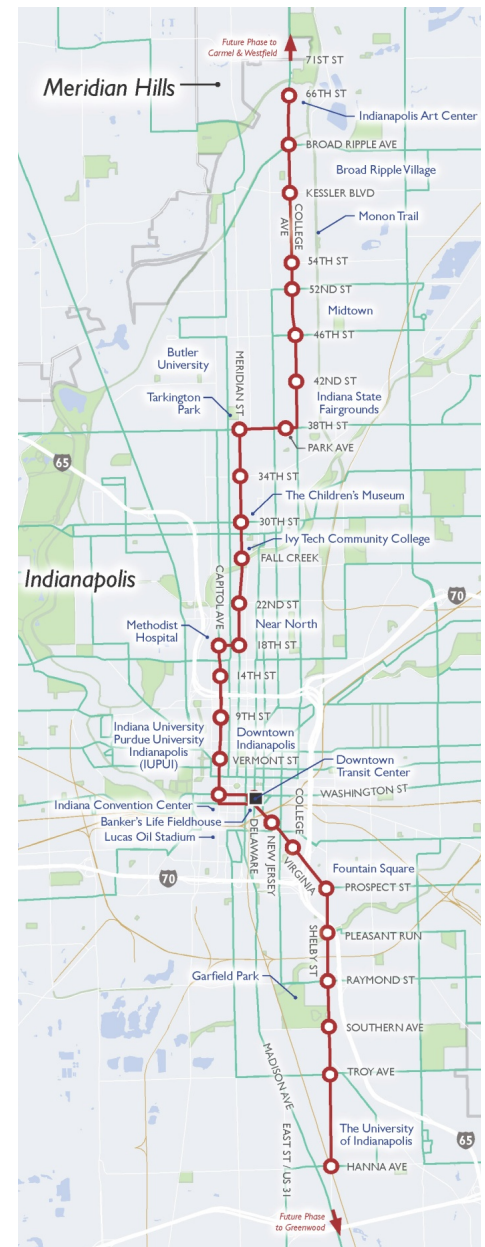
As shown in Figure 1, Phase I is a 13.1-mile initial operating segment with 34 stations that will operate from the Village of Broad Ripple to the north through the central business district of Indianapolis to the University of Indianapolis in the south. This Operations Plan only addresses Phase I of the Red Line project but will serve as a framework for guiding operational decisions on rapid transit lines to be developed in the future. Every other bus will continue either to the north to 86<sup>th</sup> and College or to the south to Greenwood Park Mall in local service.

In order to improve travel speeds and provide frequent, reliable service, 59 percent of the project will operate in dedicated transit lanes, either center- or curb-running exclusive transit lanes or dedicated business access transit/bus and turn (BAT) lanes, depending on the existing street configuration and current traffic volume. The project will also include transit signal priority (TSP) at signalized intersections throughout the corridor.

Stations located throughout the corridor will have a canopy, real-time transit arrival, and self-service ticketing equipment. The stations will provide level boarding on buses to and from the platform, allowing all passengers to quickly board and alight without waiting in line or navigating steps. Other station amenities include benches, information kiosks, security cameras, a public announcement system, and opportunities for public art.

The 34 stations include both curbside and center stations. The center stations boarding will occur on the left and curbside stations boarding will occur on the right.

The Red Line BRT project Phase I is the first step to significantly improving mobility in one of the strongest travel corridors in central Indiana. It has been planned and designed to be consistent with the regional transportation vision, which aspires to create a more livable, accessible, sustainable, and vibrant Central Indiana region. The design utilizes state of the art BRT running



way options to minimize project costs while maximizing transit frequency and reliability. The Red Line will be an all-electric BRT and the first rapid transit service in Indiana.

The Red Line Project is led by IndyGo but receiving crucial support from the City of Indianapolis Department of Public Works (DPW), the Indianapolis Metropolitan Planning Organization (MPO), and the Central Indiana Regional Transportation Association (CIRTA). The project is entirely contained within one jurisdiction (City of Indianapolis) and does not operate on any state right-of-way. A memorandum of agreement is in place for the long-term maintenance of the street infrastructure between IndyGo and DPW. The project began construction May of 2018 and opened for service in 2019.

## 2.1. DEFINITIONS

**Alight** – When a passenger exits a bus.

**Automatic Vehicle Location** - Provides real-time positioning of each vehicle using Global Positioning System (GPS) technology, relaying the location to dispatch.

**BAT Lane** – BAT stands for Business Access Transit or Bus and Turn. A lane which is shared by transit vehicles and general traffic vehicles that are turning left at the next intersection or curb cut.

**Block** – A transit vehicle’s daily assignment, containing both revenue and non-revenue trips.

**Bridge Plate** – A flat, retractable metal plate used to allow access to a bus for passengers with mobility limitations.

**Bus Only Lane** – A lane within the public right of way that is solely dedicated for transit vehicles. Emergency response vehicles are also allowed access to this lane.

**Bus Rapid Transit** – a fixed guideway, bus-based mass transit system that offers frequent service, rapid service, level-boarding platforms, and pre-paid fares to reduce the overall time of travel for passengers.

**Bus Starter** – The individual tasked with assigning which buses will operate on which routes each day. Also known as Bus Starter or Wrangler.

**Carey Fingers** – A synthetic, rubber-like device that extends 3.75” from a boarding platform and aids in minimizing the gap between the bus floor and the platform edge.

**Computer Aided Dispatch** – A comprehensive, centralized real-time tracking and dispatching system that provides bus positions, headway adherence, and incident information to dispatchers.

**Curb Cut** – A ramp that has been “cut” into a curb and sloped down from the top of a sidewalk to street level to allow access to either the sidewalk itself or an adjoining area. Thinner curb cuts are used at intersections for ADA compliance, while wider curb cuts are used to allow vehicles access to parking lots or otherwise that are separated from the street by a sidewalk.



**Dispatch** – The central control center of daily bus operations which oversees operator adherence to schedules (for fixed routes) and headways (for BRT service) and responds to calls from operators in emergencies and aids supervisor in similar situations.

**Docking** – The process of pulling a transit vehicle up to a specified location.

**Dwell Time** – The amount of time a transit vehicle spends loading passengers.

**Fall Back Scheduling** – Scheduling which uses more operators than vehicles on a line with operators swapping vehicles during their runs. Also known as Drop Back Scheduling.

**Fare Inspector** – An individual tasked with enforcing the fare policies of IndyGo.

**Fare Media** – Valid payment approved by IndyGo and presented by passengers.

**Far-side Station** – A curb-side station located adjacent to an intersection which is positioned past the intersection in the direction of travel.

**Fixed Route** – Local bus routes; these routes typically have stops that are closer together and less frequent service relative to rapid transit lines.

**Frequent Service** – Transit service that offers headways of 15 minutes or less.

**Garage** – The location where IndyGo vehicles are stored and maintained.

**Headway** – The time between the arrival of consecutive buses at any given station or stop.

**Kneel** – The pneumatic or hydraulic lowering of a bus while stopped to aid in boarding or alighting.

**Level-Boarding Platform** – A boarding platform built high enough to match the floor height of a transit vehicle when docking.

**Lift** – A motorized platform used to carry a person in a wheelchair over a given barrier.

**Midblock Station** – Any station that is not adjacent to any given intersection and is located between two consecutive intersections.

**Mobile Data Terminal** – A device placed in eyesight of a transit operator which acts as a communication link between operators and dispatch to inform operators as to how well they are adhering to the schedule.

**Nearside Station** – A curb-side station located adjacent to an intersection which is positioned prior to the intersection in the direction of travel.

**Pre-Trip** – An assessment of the condition of a bus, performed by the operator of the bus, to ensure that the bus is in good working order prior to operation of that bus.

**Proof of Payment System** – A fare collection system that relies on passengers paying their fares prior to boarding and showing proof of payment, through an approved form of fare media, when requested by a Fare Enforcement Officer.



**Pull-In** – The term used to describe a bus returning to the bus garage.

**Pull-Out** – The term used to describe a bus leaving the bus garage.

**Recovery Time** – Time built into operator schedules that allows for the operator to take a short break and/or stay on schedule due to unexpected delays.

**Rolling or Rolled Curb** -Mountable curbs, sometimes referred to as roll curbs, have sloping faces that allow vehicles to encroach on them without damaging tires and wheels, but used as a deterrent to cross at that location;

**Run** – A transit operator’s daily work assignment.

**Ticket Vending Machine** – A machine used at stations that allows passengers to purchase their fare prior to boarding the transit vehicle.

**Transit Signal Priority (TSP)** – Technology used at traffic intersections to reduce delay and improve service for mass transit vehicles. IndyGo will use traffic signals that communicate with BRT vehicles to allow for alteration to traffic signal patterns.

**Transit Signals** – Signals used at traffic intersections to govern the movement of mass transit vehicles through an intersection without confusing other motorists.

**ZEPS** – Although the acronym actually stands for the propulsion system used by buses, it is also used to refer to the year model rebuilt, fully-electric Gillig buses currently used by IndyGo; comprising the entirety of its 40’ electric fleet.

## 2.2. ACRONYMS

ADA – Americans with Disabilities Act, 1990

BAT – Business Access and Transit

BRT – Bus Rapid Transit

CAD/AVL – Computer Aided Dispatch/Automatic Vehicle Location

DTC – Downtown Transit Center

ECB – Emergency Call Box

FI – Fare Inspector

Flowbird – New Fare System Vendor

GFI – GenFare System (On board cash payment)

GPS – Global Positioning System

IP – Internal Protocol

MDT – Mobile Data Terminal (Device on bus. Works with GenFare)





POP – Proof of Payment  
SOP – Standard Operating Procedure  
TSP – Transit Signal Priority  
TVM – Ticket Vending Machine  
ZEPS – Zero Emission Propulsion System

### 2.3. EXTERNAL SERVICE PROVIDERS

IndyGo uses contractors or other outside entities to perform various tasks on the Red Line...

#### **Station Maintenance and Repair Vendor – Shuck Corporation**

**Armored Car Vendor** – To be determined through RFP process. Should be identified by August 2019

#### **Transit Signal Priority Vendor - Global Traffic Technology**

Contact IndyGo's Director of Service Planning or IndyGo's Speed & Reliability Engineer for the contact information of GTT's current project manager. IndyGo's maintenance and managed services contracts with GTT extend through September 2029.

#### **Snow Removal in Bus Lanes Partner – Indianapolis Department of Public Works**

#### **CAD/AVL System – Avail**

#### **Camera Systems – Safety Vision and Milestone**

Bus CCTV - Safety Vision is the manufacturer. Currently the system does not have live look capability. We have no contract with them at this time as the CVT team takes care of the maintenance of the system. We just make sure that we put the latest, compatible, system in the bus scope when it goes out. We are looking at this to go back for bid in early Q1 of 2020.

Milestone Pro+ - Building and Red Line CCTV - We currently have a maintenance contract with Johnson Controls for this system which will end in February 2020. Milestone is a Tyco product and will not work end-users. You have to go through an authorized distributor for support.



### 3. TRANSIT OPERATIONS

The Red Line BRT is comprised of several core BRT components, including dedicated bus lanes, transit signal priority, half-mile station spacing, level-boarding, off-board fare payment and ticketing, and BRT-specific buses. The service is managed and operated by IndyGo, with support from the Indianapolis Department of Public Works for maintenance of the roadways that the Red Line runs along. This section clarifies the Red Line operations.

#### 3.1. ADMINISTRATION

Service of the Red Line will be administered, managed, and operated by IndyGo staff working out of IndyGo's administrative offices located at 1501 West Washington Street Indianapolis, IN 46222

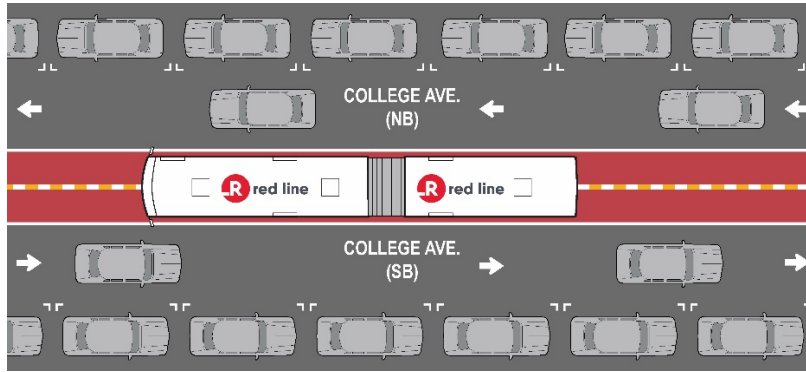
#### 3.2. BUS LANE CONFIGURATION

To facilitate rapid service at all times along the Red Line, dedicated bus lanes have been implemented along the highest demand portions of the rapid transit corridor. Several different bus lane configurations are present along the Red Line corridor.

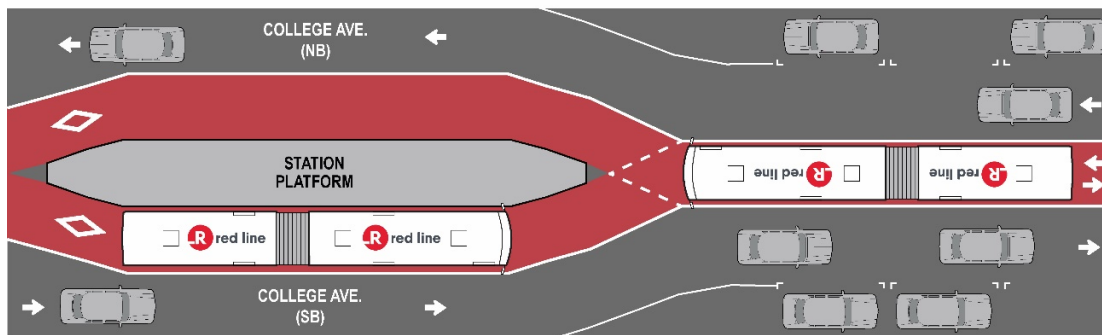
Overall, 59 percent of the Red Line corridor includes dedicated bus lanes, which includes center-running exclusive lanes, curb-running exclusive lanes, or dedicated business access transit (BAT) lanes, which are shared bus and turn lanes that allow for use by buses as well as turning vehicles. Existing street configurations, traffic volumes, and right-of-way width were all taken into consideration in selecting the specific configuration of dedicated bus lanes. While lane configurations are different along each section of the corridor, existing traffic lane widths will be maintained to accommodate traffic flow. Left turn movements are limited or restricted in some portions of the corridor, but in those locations U-turns are permitted at specific signalized intersections to ensure that roadway users can still access all businesses and destinations along the Red Line.

Starting from the northern end of Phase I of the Red Line, College Avenue contains a single, bi-directional dedicated bus lane that extends south from Broad Ripple Avenue to 38th Street. The center of the bi-directional bus lane will have a 14" wide and 4" tall mountable median with sloped edges, which is used to restrict non-authorized use of the lane and restrict unauthorized left turn movements (while still allowing left turns at signalized intersections). Northbound and southbound buses will share this single-lane, which will open up to one lane in each direction as the lane approaches station platforms. This configuration will allow buses to pass at stations along College Avenue. IndyGo's new CAD/AVL system, Avail, will monitor and direct operators to ensure safe and efficient operations along the College Avenue bi-directional bus lane.

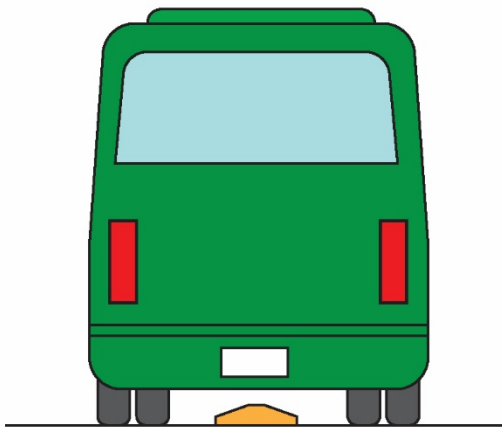




College Ave. – 66<sup>th</sup> St. to 38<sup>th</sup> St.

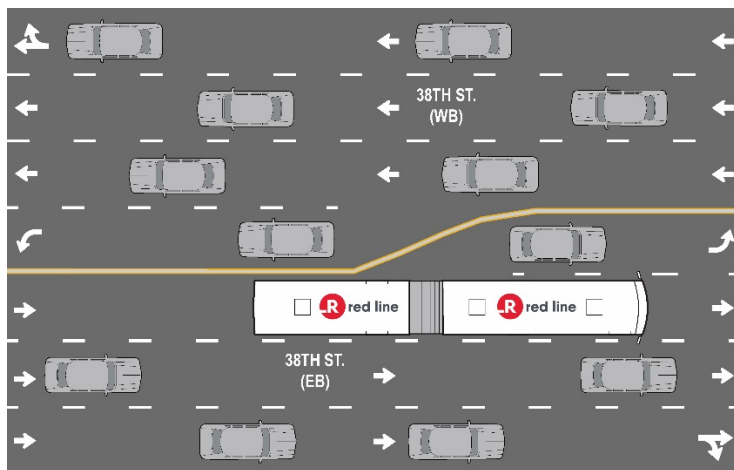


College Ave. (at station platforms) – 66<sup>th</sup> St. to 38<sup>th</sup> St.



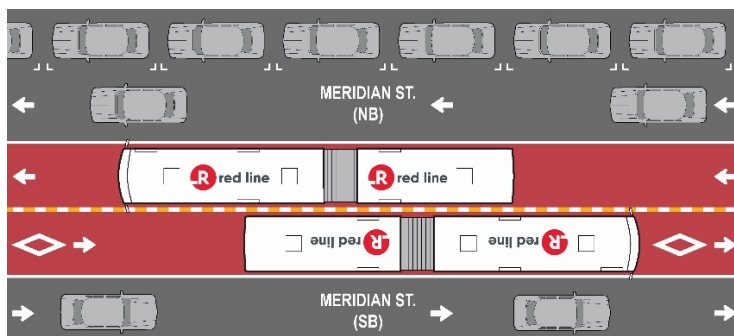
College Ave. – Mountable median location

Along 38<sup>th</sup> Street from College Avenue to Meridian Street, the Red Line operates in mixed traffic with no dedicated bus lane. There is one Red Line station along this section of the transit line, located at Park Avenue & 38<sup>th</sup> Street.

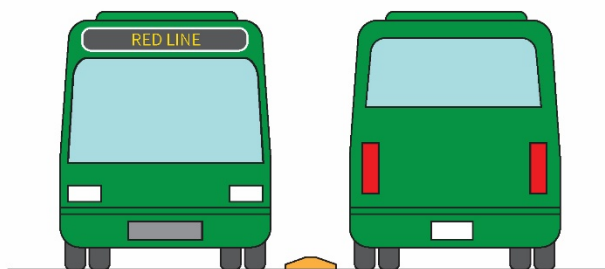


### 38<sup>th</sup> St. – College Ave. to Meridian St.

Meridian Street contains center-running dedicated bus lanes from 38<sup>th</sup> Street to 18<sup>th</sup> Street, with one northbound and one southbound lane provided. Left turning movements will be restricted along Meridian Street, with left turns and U-turns permitted at signalized intersections only. The center-running dedicated bus lanes along Meridian Street are divided by a 14" wide and 4" tall mountable median with sloped edges, which is used to restrict unauthorized left turn movements (while still allowing left turns at signalized intersections).

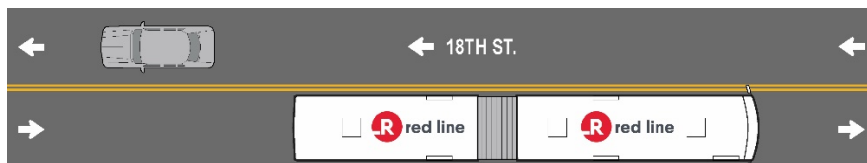


### Meridian St. – 38<sup>th</sup> St. to 18<sup>th</sup> St.



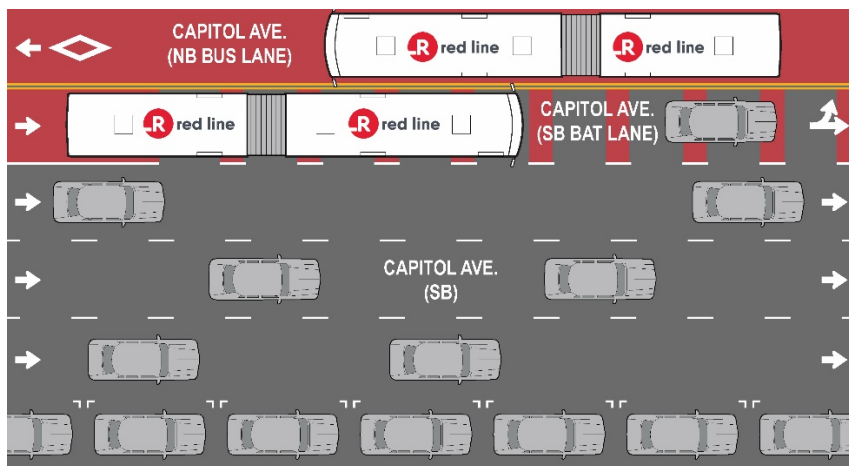
Along 18<sup>th</sup> Street from Meridian Street to Capitol Avenue, the Red Line operates in mixed traffic with no dedicated bus lane.





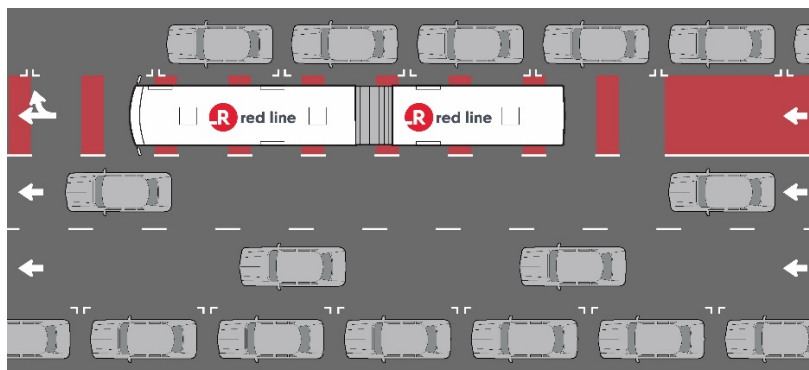
18<sup>th</sup> St. – Meridian St. to Capitol Ave.

Capitol Avenue, between 18<sup>th</sup> Street and Washington Street, utilizes a northbound contraflow dedicated bus lane and a southbound BAT lane. On the east side of Capitol Avenue, a curb-running contraflow dedicated bus lane is provided for northbound buses, which replaced an existing parking lane. Adjacent to this contraflow lane is a southbound BAT lane, which allows southbound vehicles to turning left to utilize the lane as well.

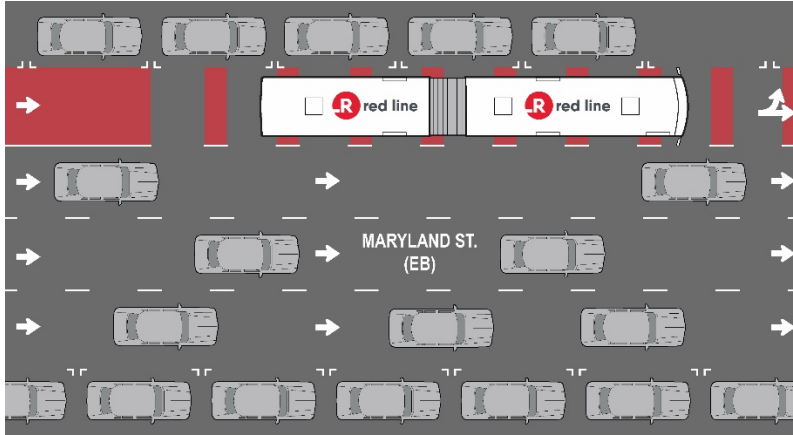


Capitol Ave. – 18<sup>th</sup> St. to Washington St./Maryland St.

Washington Street and Maryland Street each have a BAT lane for westbound and eastbound Red Line bus service, respectively. The BAT lanes will provide service from Capitol Avenue to IndyGo's Downtown Transit Center (DTC).

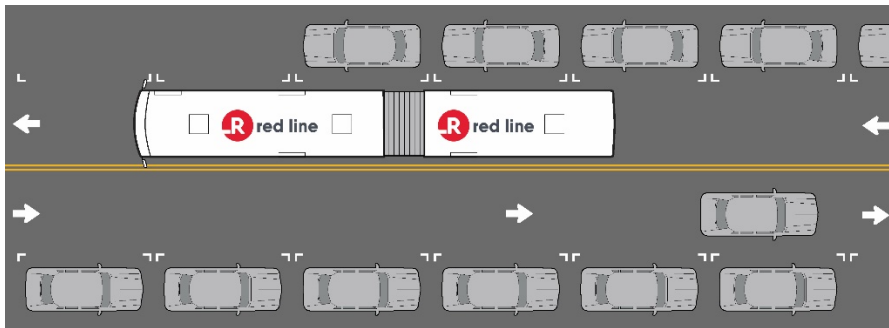


Washington St. – Capitol Ave. to Delaware St.

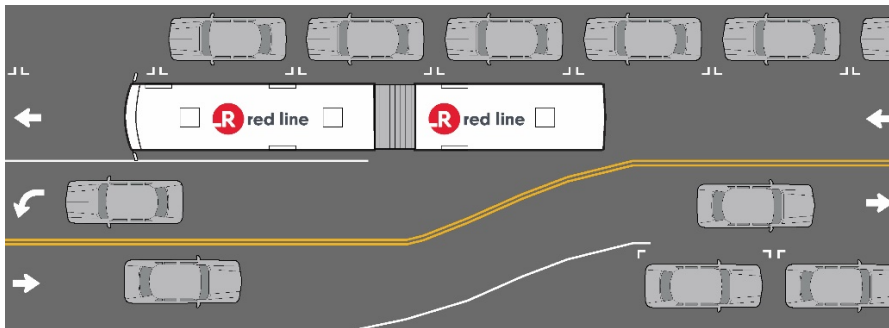


Maryland St. – Capitol Ave. to Delaware St.

South of the DTC, the Red Line will operate in mixed traffic, with no dedicated bus lanes along Virginia Avenue or Shelby Street. Red Line buses will serve curbside station platforms for both northbound and southbound travel, from the DTC all the way south to the University of Indianapolis (just north of Hanna Avenue).



Virginia Ave. & Shelby St. – Downtown Transit Center to UIndy



Virginia Ave. & Shelby St. – Downtown Transit Center to UIndy

To allow access to those homes and businesses along sections of the corridor where left turns are prohibited, certain intersection lights along the route are equipped with dedicated U-turn arrows,

allowing general traffic to safely execute U-turns at intersections and turn right into their destination.

### 3.3. TRANSIT SIGNAL PRIORITY

Transit Signal Priority (TSP) will be installed at all 76 signalized intersections along the Red Line corridor. TSP prioritizes the mobility of transit vehicles by temporarily increasing the probability that an approaching bus receives a green light. The system works in the background, automatically requesting priority as the bus approaches each traffic signal without requiring interaction from the bus's operator. Similar to Emergency Vehicle Preemption (EVP) systems that have been in use by fire trucks, ambulances, and police for decades, TSP has the ability to change the traffic signal to green for higher priority vehicles. The primary difference is an EVP system forces the traffic signal to give priority to an emergency vehicle without regard for other traffic, where a TSP system only fulfills a bus's priority request if the request doesn't create too great of an impact on other traffic.

The following 76 intersections will be equipped as part of the Red Line TSP system:

- College Ave. and 66<sup>th</sup> St.
- College Ave. and 64<sup>th</sup> St.
- College Ave. and Fresh Thyme
- College Ave. and Broad Ripple Ave.
- College Ave. and Parking Garage
- College Ave. and 61<sup>st</sup> St.
- College Ave. and Kessler Blvd.
- College Ave. and South of Kessler Blvd.
- College Ave. and 57<sup>th</sup> St.
- College Ave. and Bungalow
- College Ave. and 54<sup>th</sup> St.
- College Ave. and 52<sup>nd</sup> St.
- College Ave. and South of 52<sup>nd</sup> St.
- College Ave. and 49<sup>th</sup> St.
- College Ave. and 46<sup>th</sup> St.
- College Ave. and 42<sup>nd</sup> St.
- College Ave. and 38<sup>th</sup> St.
- 38<sup>th</sup> St. and Park Ave.
- 38<sup>th</sup> St. and Central Ave.
- 38<sup>th</sup> St. and N. Washington Blvd.
- 38<sup>th</sup> St. and Pennsylvania Ave.
- 38<sup>th</sup> St. and Meridian St.
- Meridian St. and 34<sup>th</sup> St.
- Meridian St. and 32<sup>nd</sup> St.
- Meridian St. and 30<sup>th</sup> St.
- Meridian St. and 29<sup>th</sup> St.
- Meridian St. and 28<sup>th</sup> St.
- Meridian St. and Fall Creek Pkwy. N. Dr.
- Meridian St. and 25<sup>th</sup> St.
- Meridian St. and 22<sup>nd</sup> St.
- Meridian St. and 21<sup>st</sup> St.
- Meridian St. and 18<sup>th</sup> St.
- 18<sup>th</sup> St. and Illinois St.
- Capitol Ave. and 18<sup>th</sup> St.
- Capitol Ave. and 16<sup>th</sup> St.
- Capitol Ave. and 14<sup>th</sup> St.
- Capitol Ave. and 12<sup>th</sup> St.
- Capitol Ave. and 11<sup>th</sup> St.
- Capitol Ave. and 10<sup>th</sup> St.
- Capitol Ave. and 9<sup>th</sup> St.
- Capitol Ave. and St. Clair St.
- Capitol Ave. and Walnut St.
- Capitol Ave. and North St.
- Capitol Ave. and Michigan St.
- Capitol Ave. and Vermont St.
- Capitol Ave. and New York St.

- Capitol Ave. and Ohio St.
- Capitol Ave. and Market St.
- Capitol Ave. and Washington St.
- Washington St. and Illinois St.
- Washington St. and Meridian St.
- Washington St. and Pennsylvania St.
- Washington St. and Delaware St.
- Maryland St. and Capital Ave.
- Maryland St. and Illinois St.
- Maryland St. and Meridian St.
- Maryland St. and Pennsylvania St.
- Maryland St. and Delaware St.
- Maryland St. and Alabama St.
- Alabama St. and Pearl St.
- Virginia Ave. and Alabama St.
- Virginia Ave. and East St. and South St.
- Virginia Ave. & College Ave. & Stevens St.
- Virginia Ave. and Calvary St./McCarty St.
- Virginia Ave. and Woodlawn Ave.
- Virginia Ave. and Prospect St. and Shelby St.
- Shelby St. and Morris St.
- Shelby St. and Pleasant Run Pkwy. S. Dr.
- Shelby St. and Raymond St.
- Shelby St. and Bradbury Ave.
- Shelby St. and Southern Ave.
- Shelby St. and Cameron St. and Carson Ave.
- Shelby St. and Troy Ave.
- Shelby St. and Sumner Ave.
- Shelby St. and Wesley Dr.

The TSP system is monitored and maintained by Global Traffic Technologies (GTT). They are responsible for performance monitoring, system optimization, data collection, data hosting on a SQL server, data reporting, network administration of the intersection equipment and cloud-based server, and on-site repair of vehicle and intersection equipment.

If staff is concerned that the TSP system is not operating properly, they should contact IndyGo's Director of Service Planning or IndyGo's Speed & Reliability Engineer identify the correct contact person at GTT.

# Transit Signal Priority – Transit Signals

How to read the Transit Signal head indications:

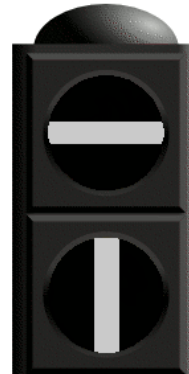
**Solid Horizontal Line = STOP**

*(horizontal line, like a gate blocking your way)*

**Flashing Vertical Line = CAUTION**

**Solid Vertical Line = GO**

*(vertical line, like a clear road ahead)*

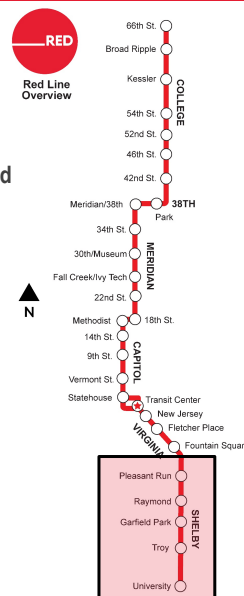


# Transit Signal Priority – Transit Signals

Shelby St. section:



 = Transit Signal Head Location

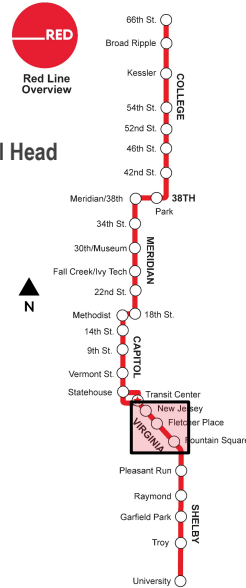


# Transit Signal Priority – Transit Signals

Virginia Ave. section:



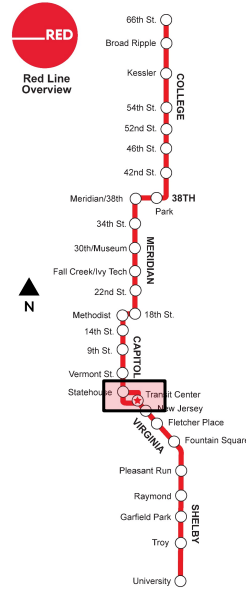
= Transit Signal Head Location





# Transit Signal Priority – Transit Signals

Washington/Maryland St. section:

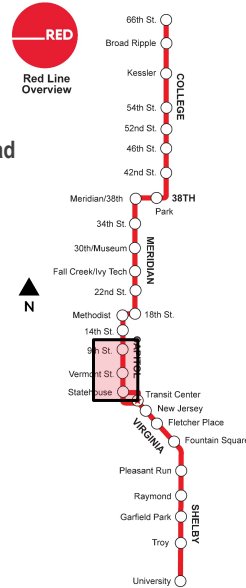


# Transit Signal Priority – Transit Signals

South Capitol Ave. section:



= Transit Signal Head Location



# Transit Signal Priority – Transit Signals

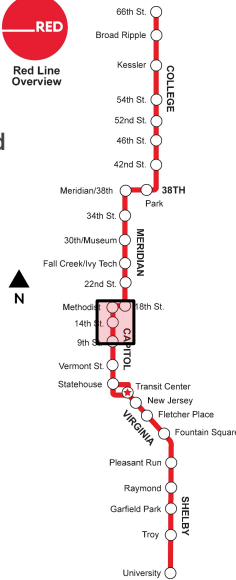
North Capitol Ave. section:



= Transit Signal Head Location



Red Line Overview

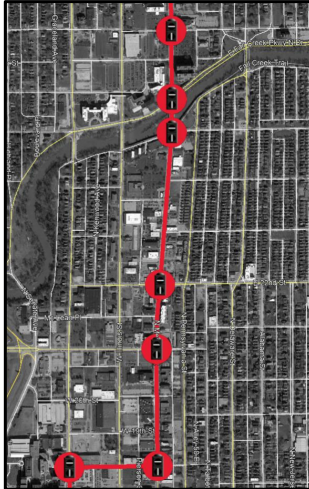


red line

Operator Training

# Transit Signal Priority – Transit Signals

## South Meridian St. section:



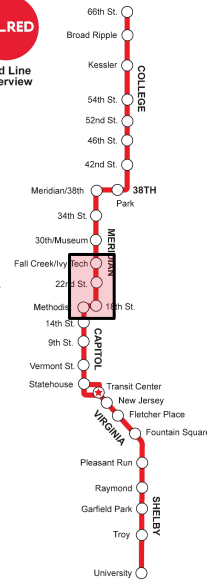
= Transit Signal Head Location



Red Line Overview



N




red line

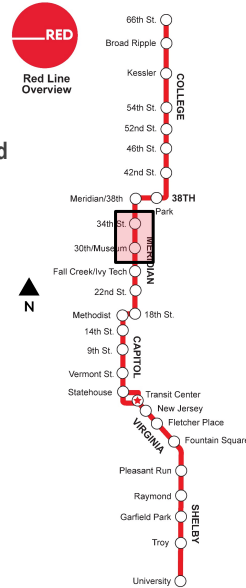
Operator Training

# Transit Signal Priority – Transit Signals

## North Meridian St. section:



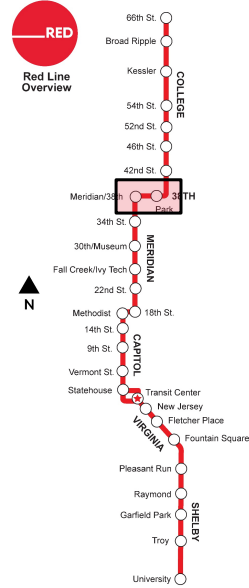
 = Transit Signal Head Location



## Transit Signal Priority – Transit Signals

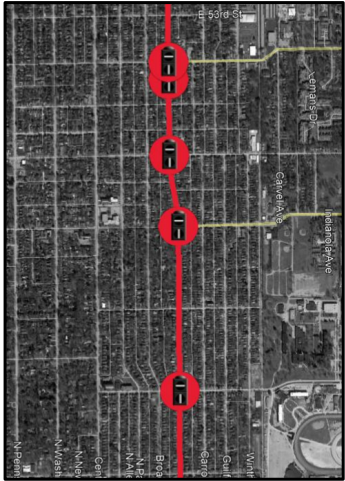
### 38<sup>th</sup> St. section:


 = Transit Signal Head Location

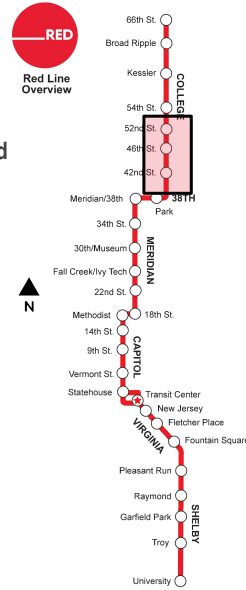


# Transit Signal Priority – Transit Signals

South College Ave. section:

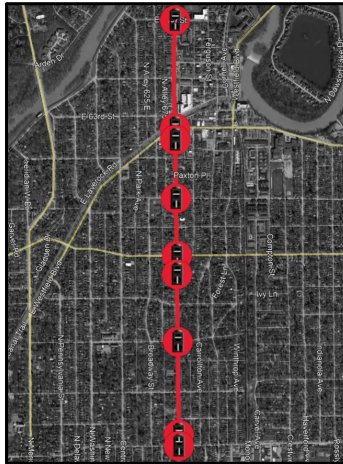


 = Transit Signal Head Location

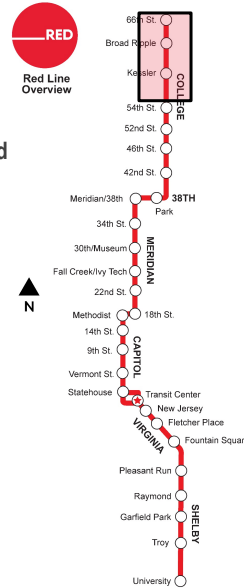


# Transit Signal Priority – Transit Signals

## North College Ave. section:



 = Transit Signal Head Location



### 3.5. BUS SCHEDULE

The Red Line operates using a set schedule but is utilizing limited time points compared to other fixed route (non-BRT) bus routes. The goal is to monitor buses to ensure service is meeting the planned weekday headways of 10 minutes (15 minutes in late-night service). Operators are instructed to adhere to the scheduled time points but may be directed by dispatch to delay or speed up service to minimize any inconsistent time gaps between Red Line buses. A headway adherence system bases the timing of buses on their headways, or the gap between buses, and no timetables will be published for public consumption – service will be advertised as “every 10 minutes”. Recovery time has been built into the schedule at the northern and southern termini of the route. This headway adherence system will be controlled by the CAD/AVL system.

### 3.6. CAD/AVL SYSTEM

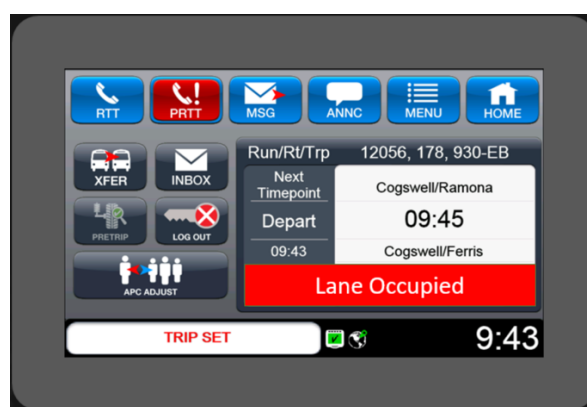
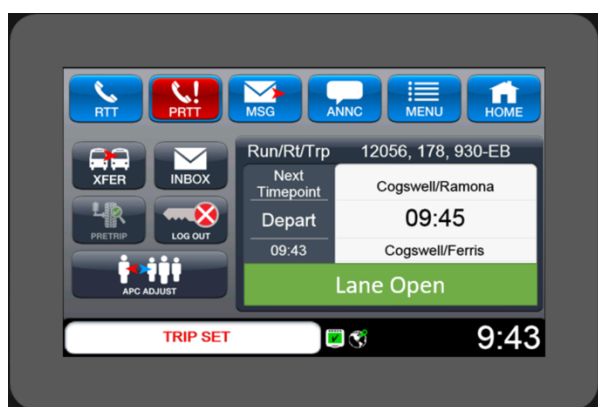
The Red Line utilizes the same CAD/AVL system as IndyGo’s local buses, which is through Avail. The CAD/AVL system for all IndyGo service allows staff to know where all vehicles are at all times as well as providing schedule and real-time information to customers and operators, passenger counts, incident and fleet management. For general system functionality and operating procedures, please see the fixed route documentation.

In addition to the basic features, there are a few BRT-specific features of the Avail system.



First, Avail uses a door lockout system that will only allow the correct boarding side doors to open onto the station platform. For example, at a center station only left side doors will open. This system uses GPS location to determine what doors should open. If an operator needs to open doors at a location other than a station, or if this system is not functioning as intended, there is a lockout override switch that may be toggled

Second, Avail has a feature to let Operators know when they should hold at a station in the bi-directional lane to allow passage of oncoming bus. While at each station, the Operator should look at the Mobile Data Terminal (MDT) to see if they are clear to proceed. If they are clear to proceed, the MDT screen will read “Lane Open”. If they are not clear to proceed, the MDT will read “Lane Occupied” and should wait for the oncoming bus to clear the lane. After the oncoming bus has cleared the lane and stopped at the station, the MDT will change to “Lane Open”.



Finally, there are three additional BRT features that are still in development and are not yet functional. These include a headway management tool for the operator displayed on the MDT, acceleration and braking rate display for the operator on the MDT, and a signal prediction service that lets operators know when to depart a station to maximize the chances of hitting a green light. These features will be detailed in this document once they are implemented. In the event of a malfunction or breakdown of the CAD/AVL system, dispatch will contact operators at recovery points (northern/southern termini and DTC) to instruct them on when they need to depart to begin northbound or southbound service.

### 3.7. SERVICE SPAN

The number of buses required at a given time of day will be based on expected time of travel, average speed, and desired headways at that time of day.

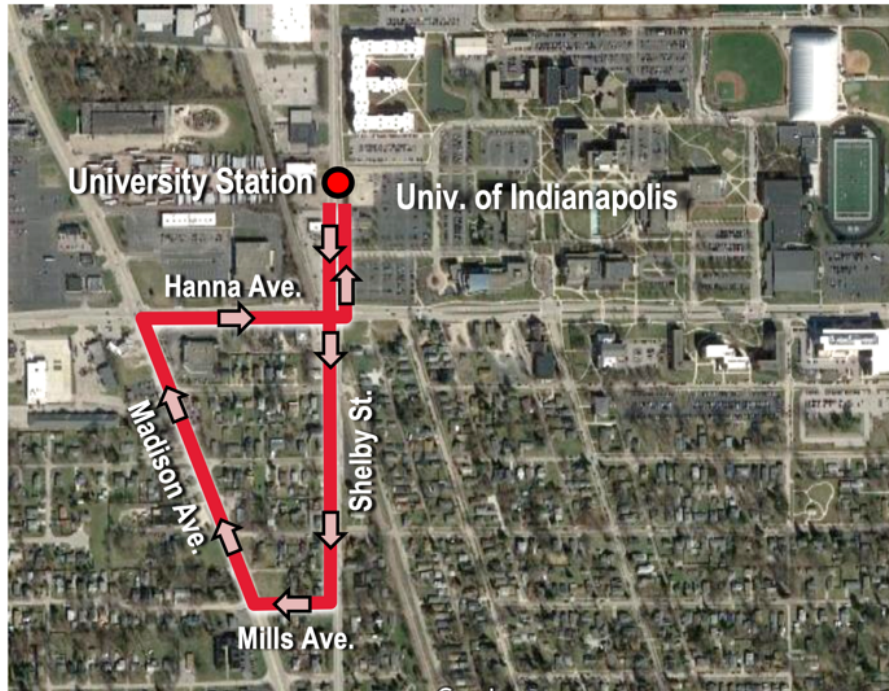
| Day             | Span of Service  | Frequency  |
|-----------------|------------------|------------|
| <b>Weekday</b>  | 5:00am - 9:00pm  | 10 minutes |
| <b>Weekday</b>  | 9:00pm - 1:00am  | 15 minutes |
| <b>Saturday</b> | 6:00am - 1:00am  | 15 minutes |
| <b>Sunday</b>   | 7:00am - 8:00pm  | 15 minutes |
| <b>Sunday</b>   | 8:00pm - 10:00pm | 20 minutes |

### 3.8. RECOVERY TIME AND TURN-A-ROUND'S

The Red Line will essentially operate as two distinct routes that overlap with each other in the core section between College Ave & 66<sup>th</sup> St and Shelby St & Campus Drive.

The first route runs from Shelby St. & Campus Drive. to a point near 96<sup>th</sup> St and College Ave. The northern terminus point is not yet confirmed but will be defined in a future version of this document.

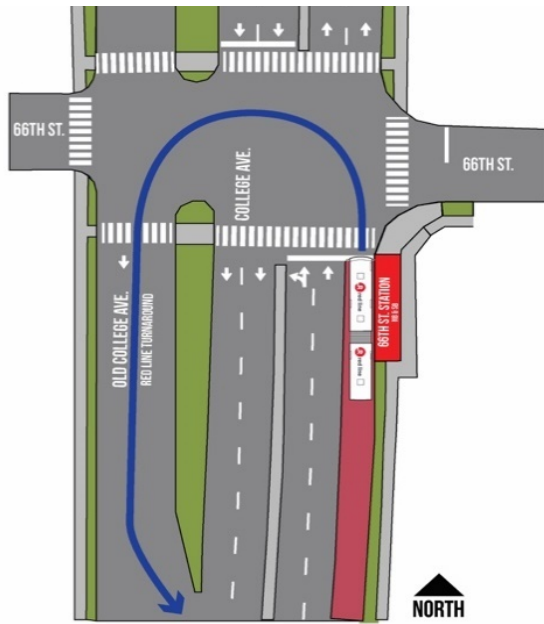
At the southern end of this route at the University of Indianapolis station (Shelby Street & Campus Drive), Red Line buses will drop-off all passengers using the center-running station platform. Once all passengers exit the bus, the operator will proceed south on Shelby Avenue to begin the turnaround procedure. Operators are to continue travel south on Shelby past Hanna Avenue and the railroad crossing, turn right onto Mills Avenue, turn right onto Madison Avenue, turn right onto Hanna Avenue, and turn left onto Shelby Street. Operators will take the layover at the northbound side of the station platform. Operators are to then pick up northbound passengers at the center-running station platform at the University of Indianapolis before beginning northbound Red Line service.



#### University of Indianapolis turnaround

Operators are instructed to take their layover/recovery time at the bus stop located at **96<sup>th</sup> Street & College Avenue**, which is the second northern end of the line of the Red Line. Buses will proceed south on College Avenue to begin southbound Red Line service.

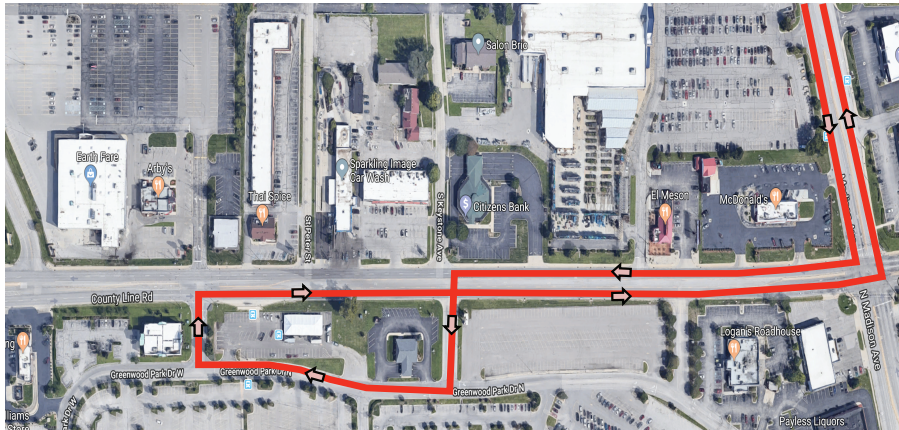
The second route runs from 66<sup>th</sup> St & College Ave to the Greenwood Park Mall. At the northern end of the route at College Avenue & 66<sup>th</sup> Street, Red Line buses drop-off and pick-up passengers using the curbside station platform. Once passengers board, the operator makes a protected U-Turn from the 66<sup>th</sup> Street station platform to Old College Avenue using the traffic signal at 66<sup>th</sup> Street. The signal will be equipped with TSP equipment that will recognize when a bus is present and provide a protected interval for the operator to make the U-turn maneuver. After the bus enters Old College Avenue, it will merge back onto southbound College Avenue to continue southbound Red Line service.



College Ave. & 66<sup>th</sup> St. turnaround

At the southern end of the line of the Red Line at Greenwood Park Mall, Red Line buses are instructed to take their layover/recovery time at the bus stop located on Greenwood Park Mall property located adjacent to the Park & Ride lot off of County Line Road.

The bus will enter the Greenwood mall via the drive at the Huntington Bank and turn right on Perimeter Rd. to layover.



The amount recovery time of each bus is based on distance and speed of the bus as well as union contract requirements. In addition, extra time is added for bus charging at the furthest turn-around locations at 96<sup>th</sup> Street and Greenwood Park Mall on County Line Road.

### 3.9. OPERATOR QUALIFICATIONS AND TRAINING

All IndyGo operators are required to undergo a system-wide operator training when they begin work at IndyGo. Specific training for the Red Line was incorporated into that training starting in April 2019. A training process for current operators also began in April 2019. Each operator was required to attend a one-day training which included two hours of classroom training and six hours of training while driving the bus. The classroom training will include the following information:

- Red Line lane configurations
- Red Line station configurations
- Station operations, including boarding and alighting, bicycles, and wheelchair access
- Red Line end of line turnarounds
- Overview of the BYD electric bus
- Overview of the TSP system
- Emergency vehicle interactions along each section of the Red Line corridor
- Overview of the docking procedures
- New fare policies and MyKey fare system devices
- Red Line fare inspections

On-the-road training will include the following driving skills and techniques:

- Driver familiarization of the new BYD bus
- Expectations of driving style and speed and how driving style relates to electric vehicle battery efficiency
- Precision docking performance is maintained within an acceptable distance

For operators that pick the Red Line Route or the extra board, refresher trainings will be conducted in August 2019 to allow operators to practice along the actual Red Line stations.

### 3.9. FIELD SUPERVISION

Red Line bus operators will be supervised by Transportation Supervisors, who are staffed within IndyGo's Operations division. This supervision is expected to operate in the same way as supervision of bus operators on non-BRT bus routes. Since the Red Line is operating within much of the same area as IndyGo's previous bus routes, there will be no changes to supervision procedures.

### 3.10. INCIDENT MANAGEMENT

If there is an incident on the bus, such as passenger disputes, bus issues, accidents, road closures, etc., the operator will report the incident to IndyGo radio dispatch as soon as possible to seek direction. The radio dispatcher will follow service policies and procedures based on incident type.

### 3.11. DETOUR ROUTES

In the instance that a bus lane (or lanes) are blocked along the Red Line corridor, the BRT vehicle operators on Meridian St. and southbound Capitol Ave. are to use general traffic lanes to safely detour around the obstruction. In the case of a blockage in the northbound bus-only lane on Capitol, BRT vehicle operators are to use the Bus and Turn (BAT) lane to travel around the obstruction. The current Standard Operating Procedure (SOP) will apply for detour routes. *See Appendix for Full Route Detour SOP. Each situation will be evaluated case by case.*

Detours on the Red Line will require unique detour procedures due to the differences between the Red Line and IndyGo's other non-BRT bus routes. Because station platforms on the Red Line are spaced farther apart compared to bus stops on local bus routes, it is extremely important that detours are used which do not restrict buses from serving every Red Line station or, at the least, minimize the number of stations that cannot be served due to a detour. If stations cannot be served, dropping off at a curb side stop may be allowed if needed.

To assist in the detour selection process, IndyGo has developed an online mapping tool that clearly identifies a grid of roads and streets that have been deemed acceptable for Red Line detours. These roads were individually reviewed to ensure that there is adequate width and turning radii to allow for safe passage of Red Line buses.



Supervisors should consult this mapping tool when constructing a detour route, with the goal being to minimize the length of time a bus is detoured from of its normal routing and minimize the number of stations that cannot be accessed due to a detour.

### 3.12. PARATRANSIT/SPECIAL SERVICES

All Red Line stations are ADA accessible and include signalized and audible pedestrian crossings, marked crosswalks, curb ramps, and level boarding at station platforms. Preferred transfer points for transferring between Paratransit and BRT services are being defined and will be updated in a future version of this document.

### 3.13. RESTROOM FACILITIES

Restroom facilities have been identified for Operators along the route. Operators should not stop along the core BRT routing unless it is an emergency. Facilities have been identified outside of the core BRT area.

*See appendix for locations*

### 3.14. END OF LINE CHARGING

The furthest northern and southern end of the line will have a Momentum Dynamic charging station. These chargers will allow the electric buses to charge wirelessly simply by driving the vehicles over charging pads embedded into the ground to a receiving pad mounted on the vehicle's undercarriage. This section will be updated with additional details on the charging process and procedures once the charging stations are designed.

## 4. STATIONS

There are 36 stations along Phase I of the Red Line corridor. This includes 19 center-running platforms and 17 curb-running platforms. Center-running stations share a station platform for northbound and southbound bus service, while curbside stations have separate platforms for northbound and southbound bus service. Stations are spaced approximately every half-mile. BRT vehicles will stop at every station along the route, negating the need for a rider-activated stop request.

Additionally, pedestrian crossings will be installed at key locations to facilitate passenger access to midblock stations and to allow for access to destinations along the corridor.

Besides Route 39, which will operate along the Red Line corridor from 18<sup>th</sup> Street to 38<sup>th</sup> Street, no other local routes will be permitted to dock at rapid transit stations. Passengers desiring to transfer between the Red Line and other local bus routes will be required walk to (or from) an adjacent bus stop to complete their transfer. Station Platform Locations



Red Line station platform locations are identified in the table below, with relevant information about each station also included.

**TABLE 2: STATION ADDRESSES, NAMES, AND DIRECTIONS AND BISECTING LOCAL ROUTES**

| <b>Station Name</b>                | <b>Direction of travel</b> | <b>Intersection</b>                    | <b>Address</b>       | <b>Platform type</b> | <b>Station Placement</b> | <b>Intersecting routes</b> |
|------------------------------------|----------------------------|--|----------------------|----------------------|--------------------------|----------------------------|
| 66th Street (NB & SB)              | NB & SB                    | College Ave. & 66 <sup>th</sup> St.    | 6585 N. College Ave. | Curb-running         | Nearside                 |                            |
| Broad Ripple                       | NB & SB                    | College Ave. & Broad Ripple Ave.       | 6291 N. College Ave. | Center-running       | Southside                | 18                         |
| Kessler Blvd.                      | NB & SB                    | College Ave. and Kessler Blvd E Dr.    | 5865 N. College Ave. | Center-running       | Midblock-south           |                            |
| 54 <sup>th</sup> Street            | NB & SB                    | College Ave. and 54 <sup>th</sup> St.  | 5439 N. College Ave. | Center-running       | Midblock-north           |                            |
| 52 <sup>nd</sup> Street            | NB & SB                    | College Ave. and 52 <sup>nd</sup> St.  | 5129 N. College Ave. | Center-running       | Midblock-south           | 19                         |
| 46 <sup>th</sup> Street            | NB & SB                    | College Ave. and 46 <sup>th</sup> St.  | 4572 N. College Ave. | Center-running       | Southside                | 19                         |
| 42 <sup>nd</sup> Street            | NB & SB                    | College Ave. and 42 <sup>nd</sup> St.  | 4208 N. College Ave. | Center-running       | Northside                |                            |
| Park Avenue                        | NB & SB                    | 38 <sup>th</sup> St. and Park Ave.     | 603 E. 38th St.      | Center-running       | Eastside                 |                            |
| Meridian & 38 <sup>th</sup> Street | NB & SB                    | Meridian St. and 38 <sup>th</sup> St.  | 3786 N. Meridian St. | Center-running       | Southside                | 39                         |
| 34 <sup>th</sup> Street            | NB & SB                    | Meridian St. and 34 <sup>th</sup> St.  | 3406 N. Meridian St. | Center-running       | Northside                |                            |
| 30 <sup>th</sup> Street / Museum   | NB & SB                    | Meridian St. and 30 <sup>th</sup> St.  | 3006 N. Meridian St. | Center-running       | Northside                | 30                         |
| Fall Creek / Ivy Tech              | NB & SB                    | Meridian St. and Fall Creek Pkwy N Dr. | 2606 N. Meridian St. | Center-running       | Northside                |                            |



| Station Name            | Direction of travel | Intersection                           | Address              | Platform type  | Station Placement | Intersecting routes |
|-------------------------|---------------------|--|----------------------|----------------|-------------------|---------------------|
| 22 <sup>nd</sup> Street | NB & SB             | Meridian St. and 22 <sup>nd</sup> St.  | 2184 N. Meridian St. | Center-running | Southside         | 39                  |
| 18 <sup>th</sup> Street | NB & SB             | Meridian St. and 18 <sup>th</sup> St.  | 1810 N. Meridian St. | Center-running | Northside         |                     |
| Methodist               | NB & SB             | Capitol Ave. and 18 <sup>th</sup> St.  | 1759 N. Capitol Ave. | Center-running | Southside         |                     |
| 14 <sup>th</sup> Street | NB & SB             | Capitol Ave. and 14 <sup>th</sup> St.  | 1409 N. Capitol Ave. | Center-running | Northside         |                     |
| 9 <sup>th</sup> Street  | NB & SB             | Capitol Ave. and 9 <sup>th</sup> St.   | 831 N. Capitol Ave   | Center-running | Southside         |                     |
| Vermont                 | NB & SB             | Capitol Ave. and Vermont St.           | 409 N. Capitol Ave.  | Center-running | Northside         |                     |
| Statehouse              | NB & SB             | Capitol Ave. and Washington St.        | 3 N. Capitol Ave.    | Center-running | Northside         | 8 & 24              |
| DTC (Bay _)             | NB                  | Downtown Transit Center                |                      | Curb-running   | Bay _             | All DT Routes       |
| DTC (Bay _)             | SB                  | Downtown Transit Center                |                      | Curb-running   | Bay _             | All DT Routes       |
| New Jersey Street       | NB                  | Virginia Ave. and New Jersey St.       | 304 Virginia Ave.    | Curb-running   | Midblock          | 12,13,14            |
| New Jersey Street       | SB                  | Virginia Ave. and New Jersey St.       | 303 Virginia Ave.    | Curb-running   | Farside           | 12,13,14            |
| Fletcher Place          | NB                  | Virginia Ave. and Merrill St.          | 542 Virginia Ave.    | Curb-running   | Midblock          | 14                  |
| Fletcher Place          | SB                  | Virginia Ave. and Merrill St.          | 541 Virginia Ave.    | Curb-running   | Nearside          | 14                  |
| Fountain Square         | NB                  | Virginia Ave. and Woodlawn Ave.        | 1042 Virginia Ave.   | Curb-running   | Farside           | 14                  |
| Fountain Square         | SB                  | Virginia Ave. and Woodlawn Ave.        | 1041 Virginia Ave.   | Curb-running   | Nearside          | 14                  |
| Pleasant Run Pkwy.      | NB                  | Shelby St. and Pleasant Run Pkwy S Dr. | 1740 Shelby St.      | Curb-running   | Nearside          | 12                  |
| Pleasant Run Pkwy.      | SB                  | Shelby St. and Pleasant Run Pkwy S Dr. | 1741 Shelby St.      | Curb-running   | Farside           | 12                  |

| Station Name  | Direction of travel | Intersection                 | Address         | Platform type  | Station Placement | Intersecting routes |
|---------------|---------------------|------------------------------|-----------------|----------------|-------------------|---------------------|
| Raymond St.   | NB                  | Shelby St. and Raymond St.   | 1741 Shelby St. | Curb-running   | Farside           | 13                  |
| Raymond St.   | SB                  | Shelby St. and Raymond St.   | 2202 Shelby St. | Curb-running   | Farside           | 13                  |
| Garfield Park | NB                  | Shelby St. and Southern Ave. | 2601 Shelby St. | Curb-running   | Nearside          |                     |
| Garfield Park | SB                  | Shelby St. and Southern Ave. | 2554 Shelby St. | Curb-running   | Nearside          |                     |
| Troy Ave.     | NB                  | Shelby St. and Troy Ave.     | 2959 Shelby St. | Curb-running   | Farside           |                     |
| Troy Ave.     | SB                  | Shelby St. and Troy Ave.     | 3004 Shelby St. | Curb-running   | Farside           |                     |
| University    | NB & SB             | University of Indianapolis   | 3705 Shelby St. | Center-running | Midblock          |                     |

#### 4.2. STATION MAINTENANCE/SERVICE

Maintenance of Red Line station platforms will be managed by IndyGo through a company contracted for the station maintenance and cleaning services. The contractor will be responsible for general cleaning of stations, emptying trash cans, power-washing station platforms/sidewalk, and graffiti. Maintenance crews will be required to transport any cleaning supplies and/or cleaning equipment to each station when it is serviced. When servicing each station during the operational hours of the Red Line (5:00 am to 1:00 am), the maintenance crew will be required to park any vehicles within a designated parking area or at any on-street parking space that is within walking distance to the station platform. If maintenance or cleaning is being performed during non-operating hours, then maintenance crews may park service vehicles at the station platforms. *See appendix for detailed procedures*

Currently, station maintenance will follow the schedule below. However, as real-world experience is gained this schedule is likely to change, and could vary between station locations:

- Trash Collection: Once per day per station
- Power Washing of platform surface: Once per week per station
- Cleaning of glass surfaces: Once per week per station
- Cleaning of all other surfaces within the station: Once per month per station
- Testing/Inspection of all electronic systems: Once per month per station

When routine maintenance or service must be done at center stations, vehicles may park at the end of the stations. Vehicles must pull all the way through the station and stop out of the way of

the bus and crosswalks. Some services include but are not limited to: cash collection or maintenance of TVMs, IT maintenance or repairs, trash collection etc. This parking provision is limited to ten minutes or less and should not happen during peak passenger times (6am-9am and 4pm-7pm).



When routine maintenance or service must be done at curb-side stations, vehicles will be required to park within a designated parking area (Green Area) or at any on-street parking space that is within walking distance to the station platform. Some areas are identified below:

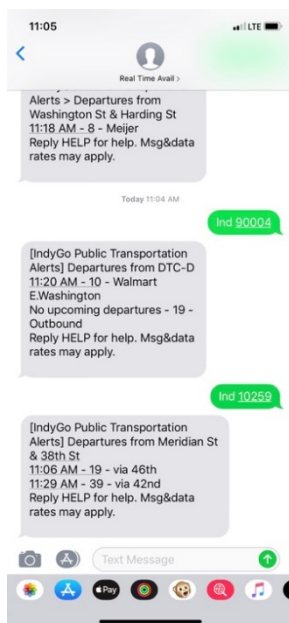
- College Ave. and 66<sup>th</sup> St. station park on 66<sup>th</sup> St.
- Virginia Ave. and New Jersey St. park on New Jersey St.
- Virginia Ave. and Merrill St. park on Merrill St.
- Virginia Ave. and Woodlawn Ave. park on Woodlawn Ave.
- Shelby St. and Pleasant Run Parkway park on Iowa St.
- Shelby St. and Raymond St. park at BP (Southbound) or White Castle (Northbound)
- Shelby St. and Southern Ave. park at lot on southwest corner of intersection
- Shelby St. and Troy Ave. park on Albany St., Knox St. or at Church's Chicken
- Shelby St. and Hanna Ave. park at Books & Brews

#### 4.3. REAL TIME ARRIVAL

Real-time arrival screens will be located at each Red Line station. The screens are all-in-one windows PC's running a custom software that drive both the information screens and the public address system. The screens will display real-time arrival information for Red Line buses and Route 39 buses (future Purple Line), as well as the local time, day of week, and date. Relevant service alerts will be pushed to the screens as well, station closures, or current or planned detours.

The public address system will be used for general announcements, severe weather announcements, bus arrival, and mass notifications. The station announcement system automatically detects the bus's position via GPS. As a bus is approaching, the direction and route will be announced.

Customers will also be able to check real-time arrival information, bus schedules, and the precise location of all IndyGo buses using Avail's MyStop Mobile application on their smartphones or other mobile devices. The MyStop Mobile app will also provide trip planning, service alerts, bus capacity information, and notifications to help enhance the customer experience on the Red Line and all other IndyGo bus routes. Avail also has a texting feature for IndyGo. The number to text is 321123. The code (IND) and stop ID number are texted and departure information at the stop is provided. See figure below.



#### 4.4. FARE PAYMENT

Bus fare for Red Line service will be the same fare structure as the rest of the IndyGo transit system, including \$1.75 for full-fare customers and \$0.85 for half-fare customers. The Red Line will utilize IndyGo's new fare payment system, branded as MyKey. One ticket vending machine (TVM) and one station fare validator will be located at each Red Line station platform. Passengers will be required to pay their bus fare prior to boarding a Red Line bus. Off-board fare payment will help to reduce bus dwell times at stations, thereby speeding up Red Line bus service.

##### FARE MEDIA

Fares can be paid using two types of fare media: a MyKey reloadable fare card or the MyKey mobile application. Fare cards are available for purchase at any TVM located at Red Line



stations or at the DTC customer service desk. The mobile app is available for download free of charge on the Apple App Store or Google Play Store.

#### RED LINE FARE SYSTEM HARDWARE

The MyKey TVMs and station fare validators installed at station platforms were purchased through a contract with Flowbird, a transit fare system vendor that has been contracted to develop IndyGo's modernized fare system. The TVMs are Strada ticket vending machines, which is a Flowbird TVM model. The Strada TVMs allow customers to purchase a reloadable fare card that can be loaded with funds to pay bus fare. The station fare validators utilize the same fare validation device that will be installed on IndyGo's full fixed-route bus fleet. The fare validation device is used to pay bus fare using stored value that has been loaded onto a fare card or the MyKey mobile app. The TVMs and station fare validators will be maintained by the Treasury department.



**Ticket vending machine (left) and fare validator (right)**

#### RELOADING FARE MEDIA

A customer with a previously purchased fare card will scan their card at a TVM to reload funds onto the card. There is no fee associated with adding funds to a fare card. The TVMs at each Red Line station accept payments in the form of cash (bills or coins) or credit/debit card. There is no minimum for cash payments, but there is a \$5 minimum for credit/debit transactions. A \$2 card issuance fee is applied to each transaction in which a new fare card is dispensed. This \$2 fee is reimbursed to the customer's fare card when he/she registers the vended card to a MyKey personal account for the first time. Fare cards can be registered either via the IndyGo fare system online portal, via the IndyGo fare payment mobile app, at the DTC customer service desk, or by calling IndyGo customer service.

#### FARE MEDIA VALIDATION

Fare media is validated by either tapping a fare card on the station fare validator, or by scanning a MyKey mobile app QR code on the station validator. By validating a fare media, the fare payment will be deducted from the fare media's stored value balance. Once the fare media has been successfully validated, the customer can board the bus using any door once it arrives at the station. No interaction with the driver or on-vehicle farebox is required for BRT fare payment. Fare Inspectors (FI) will be responsible for ensuring fare payment along the Red Line.

#### WALK-UP HALF-FARE PAYMENT

IndyGo will be maintaining an option for walk-up half-fare customers via the farebox on Red Line buses. Any customer that is eligible for half-fare can purchase either a two-hour ticket or a one-day pass via the farebox located at the front door. The farebox will vend the appropriate ticket or pass for the customer to use as proof of fare payment.

#### PAPER PASSES

IndyGo will also be maintaining its existing paper fare passes until a retail network is operational that will allow for the sale and reloading of MyKey fare cards. Customers using a paper pass must activate the pass using the on-vehicle farebox, if the paper pass has not already been activated. If a paper pass has previously been activated, the customer is not required to swipe the pass at the farebox. In this case, the customer can board the bus without interacting with the driver or on-vehicle farebox. All paper passes must be held by the customer for proof of fare payment.

See section 6.1 for more details on FI responsibilities.

#### TVM CASH COLLECTION

Cash from the TVMs will be collected by an armored car service twice per week or more frequently as needed. IndyGo will be able to monitor the status of each TVM, including the amount of cash in each TVM as well as the operational status.

RFP for armored car and TVM cash collection is out for bid. More info to be added later.

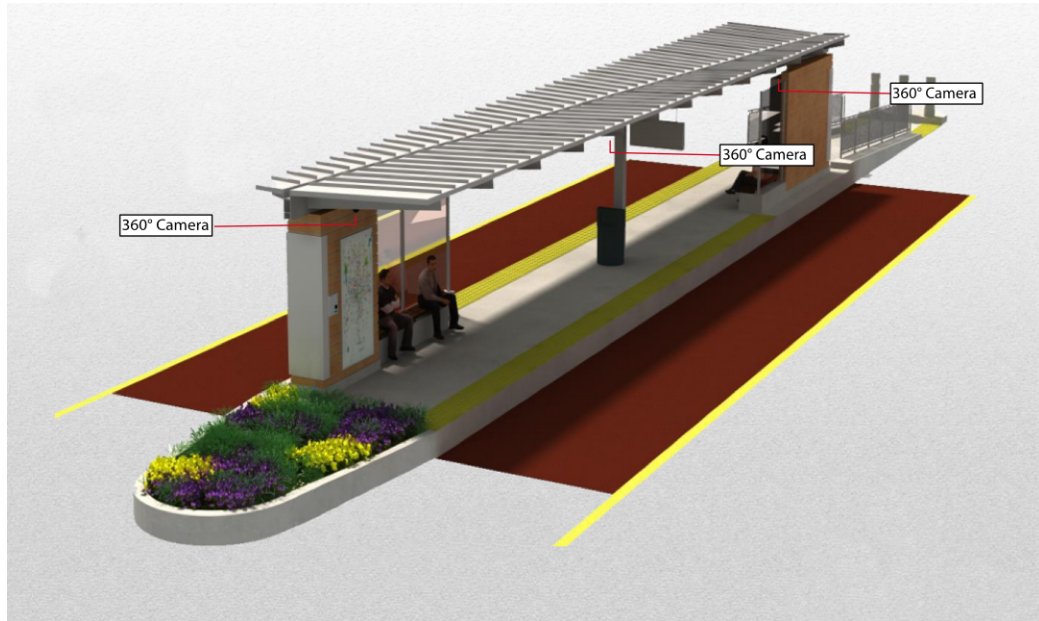
### 4.5. CAMERA SPECIFICATIONS AND PLACEMENT

There will be three 360-degree cameras located at each station. The camera feed can be viewed in real time by dispatch, and with downloadable footage for viewing upon request. Feed will be stored on the internal SD card on each camera for up to 30 days. After the 30 days, the files will be archived for up to 30 days. Footage can be downloaded and viewed upon request.

IndyGo Dispatch and external public safety agencies will be given access to view camera feeds through a client in the Milestone camera management software. That system is being configured and detailed procedures for how to access the camera footage will be added here once complete.







## 5. VEHICLES

### 5.1. BRT VEHICLES

The Red Line will have a fleet of sixty-foot electric Bus Rapid Transit Vehicles manufactured by BYD (“buses”). *SEE APPENDIX FOR BRT SPECIFICATIONS.*

#### DOORS/TWO-SIDED BOARDING

The BRT vehicles have 5 passenger doors, each no less than 40 inches in width:

- One (1) door at the front of the vehicle opposite the driver’s compartment (“front door”)
- Two (2) doors, one on each side of the vehicle, between the front and middle wheels (“middle doors”).
- Two (2) doors, one on each side of the vehicle, between the rear wheels and the articulated joint (“rear doors”).

Each of the middle and rear doors shall come equipped with a lighted passenger activated button on both the inside and outside surfaces of the doors for passengers to open the doors when allowed by the lockout system and the vehicle operator. The button illuminates when the vehicle operator and the lockout system has enabled the door to be opened. This allows doors to only open upon request during times of adverse weather, such as extreme heat or cold, to maintain battery capacity.





**Passenger-activated door buttons**

The driver controls the passenger doors through a five-position control device. For curbside stations the Operator will turn the switch to “Right”. For center stations the Operator will turn the switch to “Left”. A lock out system is in place to only allow the correct doors to open at the station platform. If an Operator must stop at a non-station, there is an override switch located in a locked compartment above the driver, which requires a square key for access.



A control toggle switch permits the operator to switch between either operator controlled or passenger-controlled opening of the bus doors. If switched to “Driver” the Operator controls the opening and closing of all doors. If switched to “Passenger”, the passenger can press a touch pad on the inside of the door to open the door. These functions are locked out while the bus is in motion.

Avail uses a door lockout system that will only allow the correct boarding side doors to open onto the station platform. For example, at a center station only left side doors will open. This system uses GPS location to determine what doors should open. If an operator needs to open

doors at a location other than a station, or if this system is not functioning as intended, there is a lockout override switch that may be toggled.

The switch should be used in the “Passenger” position during very cold or very hot weather. The switch should be in the “Driver” position at other times.

## 5.2. DESTINATION SIGNS

The front and side destination signs on the outside of the bus visually show the route number and destination. The rear display is route number only. These displays are preprogrammed and are activated by the operator log-in process to the Avail CAD/AVL system.

The destination sign should read one of the following:

- RED LINE 96<sup>th</sup>/College
- RED LINE 66<sup>th</sup>/College
- RED LINE UIndy
- RED LINE County Line

## 5.3. ON-BOARD ANNOUNCEMENTS

As the bus is approaching a station, the on-board annunciators will announce the station name, which side the doors will open on, and the connecting routes.

| Station              | Doors Open | Connecting Route |
|----------------------|------------|------------------|
| 66 <sup>th</sup> St. | Right      | N/A              |
| Broad Ripple Ave.    | Left       | 18               |
| Kessler Blvd.        | Left       | N/A              |
| 54 <sup>th</sup> St. | Left       | N/A              |
| 52 <sup>nd</sup> St. | Left       | 19               |

|  |       |          |
|--|-------|----------|
| 46 <sup>th</sup> St.                   | Left  | 19       |
| 42 <sup>nd</sup> St.                   | Left  | N/A      |
| Park Ave.                              | Left  | 38       |
| Meridian &<br>38 <sup>th</sup> St.     | Left  | 38       |
| 34 <sup>th</sup> St.                   | Left  | N/A      |
| 30 <sup>th</sup> St. /<br>Museum       | Left  | 30       |
| Fall Creek &<br>Ivy Tech               | Left  | N/A      |
| 22 <sup>nd</sup> St.                   | Left  | N/A      |
| 18 <sup>th</sup> St. /<br>Meridian St. | Left  | N/A      |
| IU Health                              | Left  | 18 & 28  |
| 14 <sup>th</sup> St.                   | Left  | 18 & 28  |
| 9 <sup>th</sup> St.                    | Left  | 18 & 28  |
| Vermont St.                            | Left  | 18 & 28  |
| Statehouse                             | Left  | 8 & 24   |
| Transit<br>Center                      | Left  | N/A      |
| New Jersey<br>St.                      | Right | 12,13,14 |
| Fletcher Place                         | Right | 14       |

|                 |       |     |
|-----------------|-------|-----|
| Fountain Square | Right | 14  |
| Pleasant Run    | Right | 12  |
| Raymond St.     | Right | 13  |
| Garfield Park   | Right | N/A |
| Troy Ave.       | Right | 16  |
| University      | Left  | N/A |

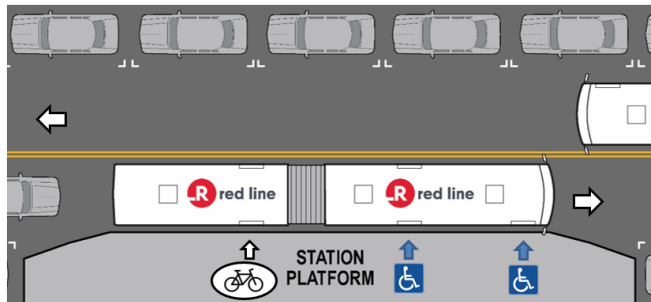
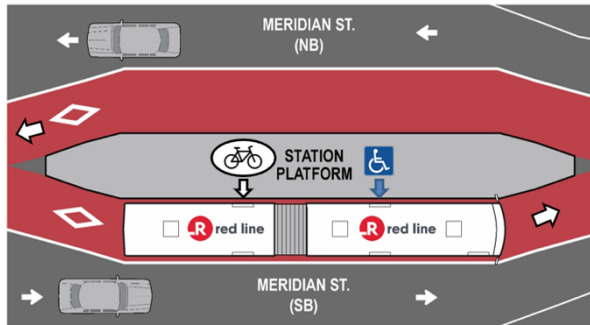
#### 5.4. BUS CAMERAS

Each bus is equipped with six security cameras looking at the interior of the bus and three looking at the exterior of the bus. Each camera has a built-in microphone. On bus cameras are recording during service hours and footage can be downloaded and viewed upon request.

#### 5.5. BICYCLES

Bicycle passengers will board using the rearmost door. Each bus is marked with a sticker at the rear door indicating where a bike can be brought on the bus. Each BRT vehicle will be equipped with two bike racks for bicyclists to store their bicycles.

A detailed procedure for how to secure the bike will be added in a future revision.



## 5.6. MOBILITY DEVICES

Wheelchair passengers will board using the front door (or middle door, if at a curbside station platform). Each BRT vehicle will be equipped with two wheelchair securement areas, one using a passive securement system facing the rear of the bus, and one using a traditional securement system facing the front of the bus.

At the DTC, the platform is not at level-boarding height. To help facilitate the alighting and boarding of passengers, the bus should always be knelt and, in the case of a passenger in a wheelchair, they should be advised to utilize the front door and the ramp to be deployed.

## 5.7. STROLLERS AND PASSENGER CARTS

A child may remain in stroller during boarding bus, but must be held by a guardian while bus is in motion. Strollers must be collapsed and stowed out of the aisle/walkway (this may be done after the customer has boarded). Strollers need to be stowed so they are not obstructing adjacent seats.

Passengers with a cart are not restricted to any seating area. The cart must be secured, and the passenger must maintain control of cart during trip and is not obstructing aisle/walkway.

## 5.8. PRECISION DOCKING

The ADA gives requirements for platform gaps for rapid rail systems, governed by §1192.53(2)(d)(1)1, and requires a 3" horizontal gap and a 5/8ths" vertical gap. The Red Line has 15" high station platforms to match the height of the BRT vehicles. In order to reduce the

risk to passengers and facilitate rapid boarding, minimization of the horizontal gap between the BRT vehicle door and the platform is crucial.

Precision docking allows for BRT vehicles to dock within an acceptable distance from the boarding platform. As operators have traditionally been trained to be as close as possible to stops while still avoiding contact as to avoid damage to the buses, there is a natural tendency of operators to shy away from the platform edge. To relieve operators of their fears of colliding with the platforms, a “guide wheel” will be installed on the buses. A painted guide line at each station will help Operators with the docking process.

#### BRIDGE PLATE

In situations in which there is more than a 3” gap, the bus is equipped with a bridge plate at each door. The bridge plate is a deployable extension of the floor that can cover up to a 12” gap. The Operators deploys the bridge plate as needed.



#### GAP FILLER

The Red Line uses a Gap Filler to keep the gap between the BRT vehicle floor and the platform below three (3) inches. Gap Filler include rubber protrusions from the platform edge that are strong enough to hold the weight of crossing patrons and allow a bus to rub against them as it docks, thereby further decreasing the horizontal gap. Examples of Gap Fillers are shown below.





Gap Filler

#### 5.9. VEHICLE STORAGE MAINTENANCE AND CHARGING

Red Line vehicles and their charging stations will be housed and maintained at the IndyGo facilities located at 1501 W Washington Street. Bus charging and maintenance will be handled by the Fleet Services and Preventative Maintenance departments.

## 6. SAFETY AND SECURITY

#### 6.1. LAW ENFORCEMENT OFFICERS

Uniformed law enforcement officers (LEO) will be assigned to IndyGo through IndyGo's existing security contract to serve as LEO's for the Red Line. Specific responsibilities include of patrolling Red Line vehicles and Red Line station platforms. The LEO will be assigned in close proximity to where Fare Inspectors are focusing their fare inspections for the day, but will be available to assist when any issues arise along the entirety of the Red Line corridor.

These officers will serve as a resource for IndyGo Fare Inspectors, Transportation Supervisors, and Bus Operators when needs arise, including resolving disputes with passengers, responding to medical emergencies, or providing assistance following accidents or bus breakdowns. These LEO's will also be responsible for enforcing driving or parking in bus-only lanes, enforcing turn restrictions, making necessitated arrests on Red Line vehicles or at Red Line stations, regularly



patrolling Red Line stations, and filing citations and criminal charges for incidents within their scope of duties.

LEO's will not check passengers for paid fare or issue fare evasion citations, as those roles are reserved for Fare Inspectors.

There will be one (1) LEO on-duty at all times during Red Line service hours, starting at 5:00am and ending at 1:00am. The proposed schedule for LEO's is below:

- **1<sup>st</sup> shift:** 5:00 AM to 10:00 AM
- **2<sup>nd</sup> shift:** 10:00 AM to 3:00 PM
- **3<sup>rd</sup> shift:** 3:00 PM to 8:00 PM
- **4<sup>th</sup> shift:** 8:00 PM to 1:00 AM

## 6.2. FARE INSPECTORS AND FARE INSPECTION

Unarmed contracted security will also be assigned to IndyGo through IndyGo's existing security contract to serve as Fare Inspectors for the Red Line.

Fare inspectors will be thoroughly trained on Crisis Awareness Intervention (CAT), Crisis Intervention Training (CIT), and Community Homeless Intervention and Prevention Services (CHIPS) by IndyGo's Security Department in partnership with IMPD and the Coalition for Homeless Intervention and Prevention (CHIP).

Fare inspectors will have the following responsibilities: customer service, transit security, fare inspection, interfacing with individuals experiencing homelessness (including communication with IMPD homeless unit) as well as mental health awareness.

Fare inspectors will be trained to provide customer service in a professionally courteous manner through answering questions, giving directions, and rendering assistance on Red Line vehicles and at Red Line stations. They will also engage in transit security to maintain the safety and the public perception of the Red Line. Finally, Fare Inspectors will conduct regular inspections to ensure that all passengers have paid their fare prior to boarding a Red Line vehicle, using the policies and procedures outlined in fare inspection SOP's to be adopted by IndyGo's Board of Directors.

Fare Inspectors have a dual responsibility of patrolling vehicles and stations. Although they do not have the power of arrest, they are equipped with direct radio communication to contracted Law Enforcement Officers. This will serve the primary purpose of calling on LEO's in the need of assistance. This includes, but is not limited to, handling an individual who refuses to offer their name for the purpose of issuing a fine or warning for fare evasion, uncooperative individuals at stations, and the occurrence of an emergency situation.

### FARE INSPECTOR RESPONSIBILITIES

#### Customer Service



- Answer any questions posed by passengers at Red Line stations and platforms as well as on Red Line vehicles.
- Offer directions to assist passengers in reaching their destination.
- Provide additional assistance as needed to passengers.
- Engage passengers to educate on the following: IndyGo fare policies, the role of Fare Inspectors, how to pay and validate fares, and how to use IndyGo services.

### **Transit Security**

- Maintain discipline, professional demeanor and appearance, and integrity.
- Notify law enforcement of any illegal or unauthorized activity, assist law enforcement as needed, and provide description of all activity witnessed
- Ensure that prompt action is taken to prevent or minimize losses, accidents, fires, property damage, safety hazards, and security incidents. Conduct stabilization activities until maintenance and safety personnel arrive.
- Use necessary and reasonable force only as a last resort or to protect oneself and/or others from physical harm. This shall be done in accordance with IndyGo policies.

### **Fare Inspection**

- Conduct fare inspections on Red Line vehicles and at Red Line stations to ensure that customers have proof of fare payment while riding IndyGo's services. This shall be done in accordance to specific policies and procedures as outlined by IndyGo to ensure fare inspection is conducted in a fair and impartial manner.
- Inspections will be conducted to achieve an overall inspection goal of 20% of Red Line ridership. These goals will be evaluated monthly and are subject to change at any time based on IndyGo's needs. Fare inspection staffing level may increase or decrease based on achievement of these goals.
- Issue appropriate warnings and/or civil citations for fare evasion violations. For non-intentional fare evasion, Fare Inspector is to educate passenger on how to properly obtain valid fare or how to properly validate fare media for proof of payment.
- Security Manager tracks and documents detailed reports/data of fare enforcement daily activity to track trends and ensure compliance with IndyGo policy.
- Participates in regular training to ensure proficiency in knowledge of current policy/procedures and tactics as is relevant to performance of their duties.
- Performs any additional duties as specified by the Director of Training and Security.

### **FARE INSPECTOR SHIFTS AND SCHEDULES**

IndyGo will establish a fare inspection schedule based on a baseline of 5.0 full-time equivalent (FTE) Fare Inspectors. A projected weekly shift schedule can be found below. This projected schedule allows for overlap of Fare Inspector shifts during peak morning and evening ridership periods. The contracted security firm will be responsible for assigning shifts to Fare Inspectors. The Fare Inspectors will be managed by IndyGo's Security Department when on-duty for IndyGo.



**Shift 1:** 5:00am-1:30pm  
**Shift 2:** 7:00am-3:30pm  
**Shift 3:** 2:00pm-10:30pm  
**Shift 4:** 4:00pm-1:00am

### Legal Authority

IndyGo staff will be presenting fare inspection policies and procedures for approval by IndyGo's Board of Directors in summer 2019. Once approved, the fare inspection policies and procedures would be sent to Indianapolis City and County Council for approval, along with a proposed city ordinance that would give IndyGo fare inspectors the power to give civil citations for fare inspection.

### 6.3. EMERGENCY CALL BOX AND PROTOCOL

Located at each rapid transit station, there will be at least one Emergency Call Box (ECB) that will be answered 24 hours a day 7 days a week. The following responsibilities and protocols will be followed by IndyGo's Dispatch:

#### DISPATCH RESPONSIBILITIES

- Communication by IndyGo Dispatch to the customer using the ECB should be performed in a professional manner at all times, and the use of call codes should be restricted.
- A call from an ECB, and resultant actions, takes precedence over all other communication from within the radio room.

#### ECB PROTOCOL

- Upon activation by the customer, the ECB will call to IndyGo dispatch in the Radio Room.
- Upon receiving a call from an ECB, the assigned IndyGo dispatcher shall respond with, "This is IndyGo Dispatch, what is your emergency?"
- Camera feed from the specific station can be viewed by the IndyGo dispatcher at any time, and IMPD's Regional Operations Center has additional access to view camera feed.
- The responding dispatcher is to listen to the customer, assess the situation, and respond accordingly.
  - If the call to dispatch is deemed to be an emergency, the responding dispatcher is to immediately inform the proper authorities of the specifics of the situation, including the address of the station in question.
  - If the call is deemed an abuse of the ECB (i.e. it is not an emergency), the responding dispatcher is to inform the caller of the purpose of the ECB and ask them to refrain from using the ECB for non-emergency uses in the future. If abuse continues from the

individual, a Road Supervisor is to be called to remove the individual from the station.

Testing of each ECB will take place monthly, according to the SOP included in the appendix. Fare Inspectors will check each ECB on the 1<sup>st</sup> of each month.

#### 6.4. EMERGENCY AND ACCIDENT RESPONSE POLICY

Red Line BRT emergency and Accident Response procedure is in accordance with local fixed route current protocol.

Operators and Non-operators must immediately notify the on-duty dispatcher or supervisor of any IPTC vehicle accident or incident. Operators with onboard passengers will distribute witness cards to be completed and returned for documentation.

No employee will leave the scene of any accident involving property damage or personal injury until so instructed by the investigating supervisor, Law Enforcement or Emergency Response personnel, or unless necessary to make proper phone notification.

Employee must submit written accident report and witness cards to supervisor before end of shift, unless medically prohibited.

Employee will cooperate fully with his/her supervisor and Risk Management in the investigation for cause of accident or incident, including submitting any post-accident drug and alcohol testing when required by FTA regulation.

#### RISK MANAGEMENT RESPONSIBILITIES:

The Risk Management Department will notify the 3<sup>rd</sup> party claims adjuster within 48 hours by phone and or e- file. All major vehicular accidents or incidents will be investigated, and the documentation of our findings sent to the 3<sup>rd</sup> party claims adjuster to make the determination of liability. The 48-hour time frame excludes Saturday, Sunday, and Holidays. This time frame may take longer depending on the severity of the event.

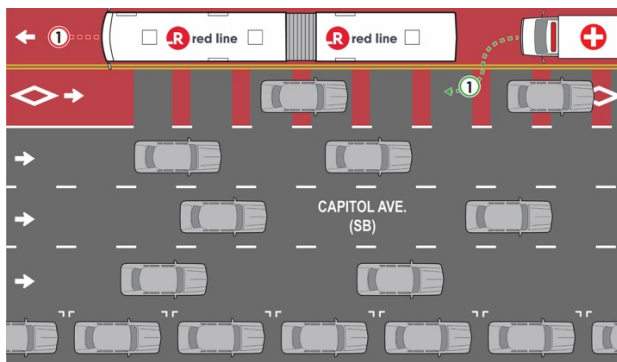
Operations Transportation Supervisors will ensure the post-accident drug and alcohol testing is accomplished in accordance with FTA regulations. The determination form for post-accident testing will be forwarded with the supervisor's accident report to Risk Management by the close of business that day. Risk management and safety will evaluate and determine if an accident is rated as preventable or non-preventable using standards from the National Safety Council.

#### 6.5. INTERACTION WITH EMERGENCY VEHICLES

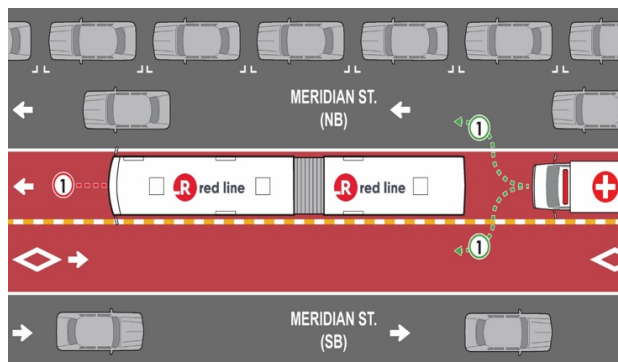
To better facilitate the movement of emergency services, large emergency vehicles (e.g., fire trucks and ambulances) may utilize the bus-only lanes at their discretion. The sloped edges of the raised curves will allow large emergency vehicles to access the bus-only lanes along any portion of the route, allowing them to bypass any traffic that they would normally be required to maneuver around.

In the instance of an upcoming emergency vehicle along Capitol Avenue or Meridian Street, operators are to stop and allow the emergency vehicles to pass using the bus-only lane for the other direction. While travelling along College Avenue, operators are to stop as soon as possible in a manner that will allow the emergency vehicle to pass using a normal traffic lane. See appendix for complete plan.

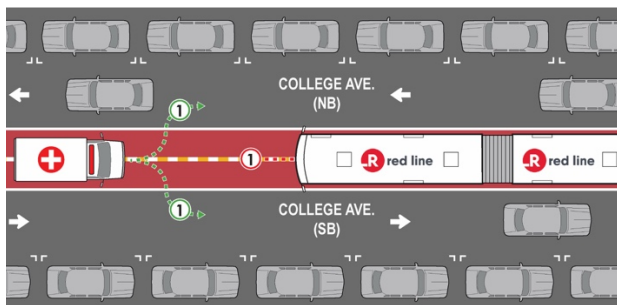
Capitol Ave.



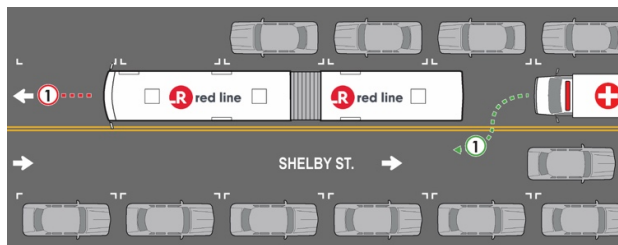
Meridian St.



College Ave.



Shelby St.



## 6.6. SECURITY CERTIFICATION OF BRT SYSTEM

After construction completion and prior to opening for service, a safety Certification checklist must be completed to ensure there are no hazards to rider safety. This checklist and procedures are included in the appendix.

## 7. APPENDICES

### 7.1. STANDARD OPERATING PROCEDURES (SOP's)

See attached

## 7.2. SAFETY CERTIFICATION CHECKLIST