Attachment A

LYNX BLUE LINE EXTENSION — PROJECT LAYOUT

TO BE USED FOR DEVELOPMENT OF FINAL DESIGN

DATE: DECEMBER 31, 2012

REV. 01

LEGEND

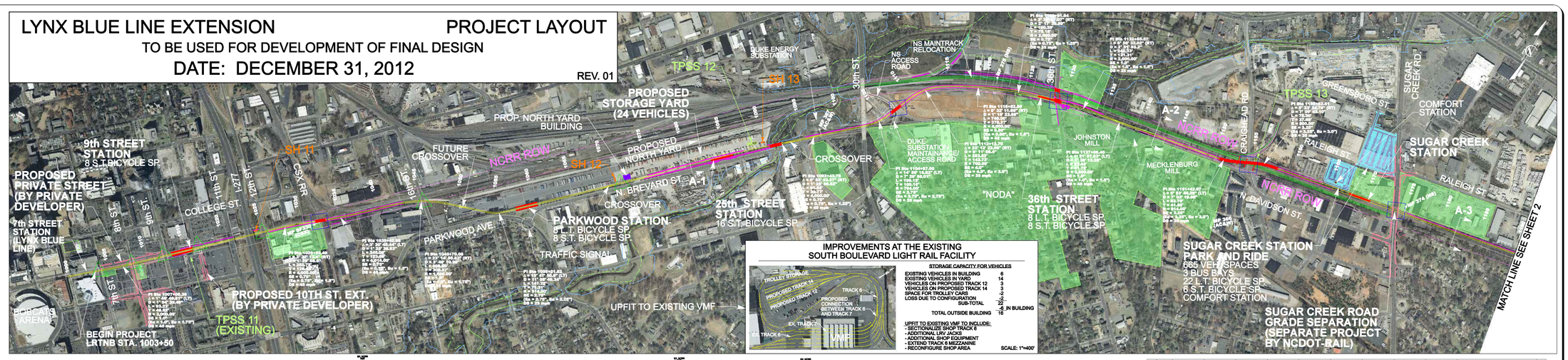
- NCRR ROW
- PROPOSED LRT ALIGNMENT
- STATIONS
- BRIDGES
- RETAINING WALLS
- NS MAIN TRACK RELOCATION
- IMPROVEMENTS BY OTHERS
- HISTORIC DISTRICT/ PROPERTY BOUNDARY
- POTENTIAL PARKING FACILITIES
- FLOODPLAIN BOUNDARY
- FLOODWAY BOUNDARY
- PROPOSED SUBSTATION (TPSS #)
- PROPOSED SIGNAL HOUSE (SH #)
- NORTH YARD BUILDING
- COMFORT STATION
- AT GRADE CROSSING WITH TRAFFIC SIGNAL (0 THIS SHEET)
- AT-GRADE CROSSING (7 THIS SHEET)
- GRADE SEPARATION (5 THIS SHEET)

S.T. SHORT TERM

L.T. LONG TERM

SP. SPACES

PLAN
SCALE: 1" = 800'
0 200 400 800



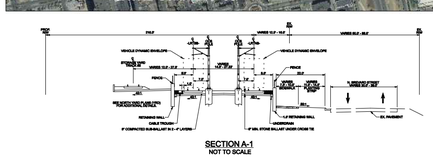
IMPROVEMENTS AT THE EXISTING SOUTH BOULEVARD LIGHT RAIL FACILITY

STORAGE CAPACITY FOR VEHICLES

EXISTING VEHICLES IN BUILDING	6
EXISTING VEHICLES IN YARD	14
VEHICLES ON PROPOSED TRACK 12	3
VEHICLES ON PROPOSED TRACK 14	3
SPACE FOR TROLLEY CARS	-2
LOSS DUE TO CONFIGURATION	-2
SUB-TOTAL	22
TOTAL OUTSIDE BUILDING	16
	-6 IN BUILDING
	16

UPFIT TO EXISTING VMF TO INCLUDE:
- SECTIONALIZE SHOP TRACK 6
- ADDITIONAL LIFT JACKS
- ADDITIONAL SHOP EQUIPMENT
- EXTEND TRACK 6 MEZZANINE
- RECONFIGURE SHOP AREA

SCALE: 1"=400'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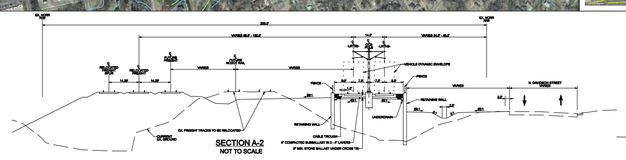
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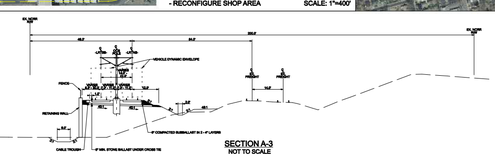
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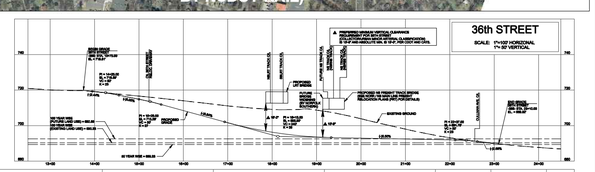

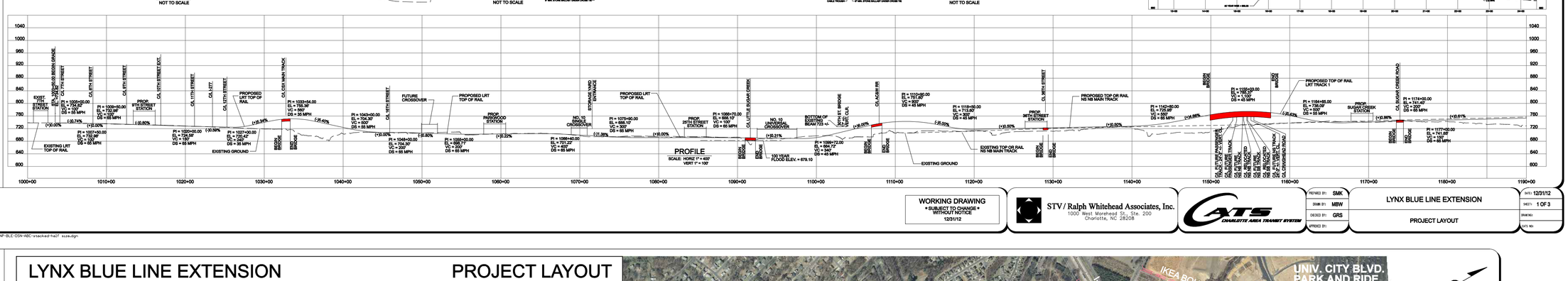

LEGEND

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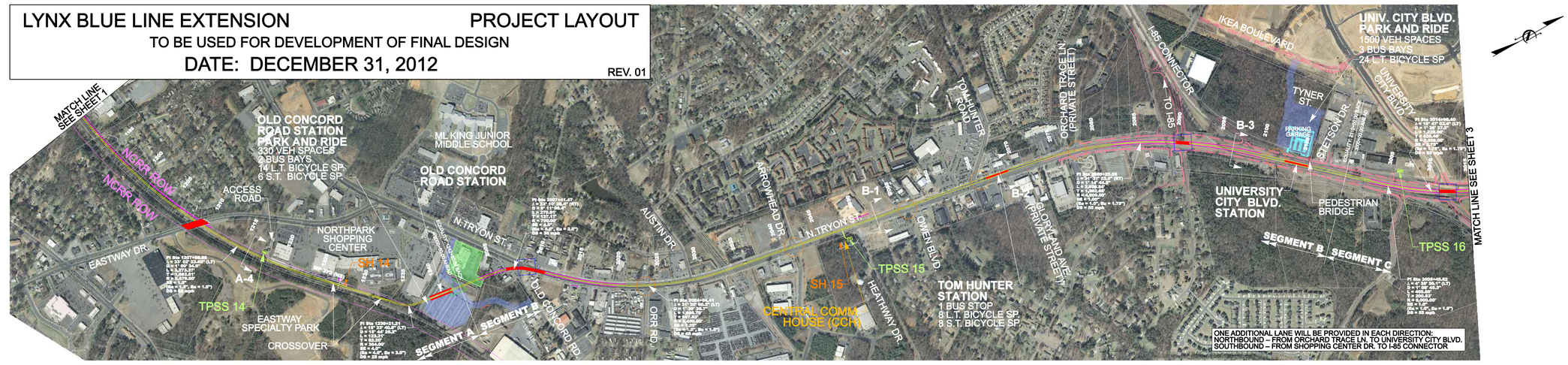
- PROPOSED SUBSTATION (TPSS #)
- PROPOSED SIGNAL HOUSE (SH #)
- NORTH YARD BUILDING
- COMFORT STATION
- AT GRADE CROSSING WITH TRAFFIC SIGNAL (6 THIS SHEET)
- AT-GRADE CROSSING (1 THIS SHEET)
- GRADE SEPARATION (3 THIS SHEET)

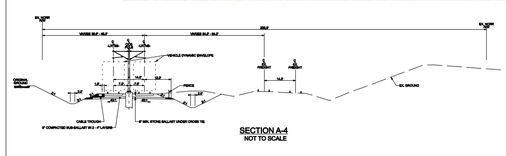
S.T. SHORT TERM

L.T. LONG TERM

SP. SPACES

PLAN
SCALE: 1" = 800'
0 200 400 800

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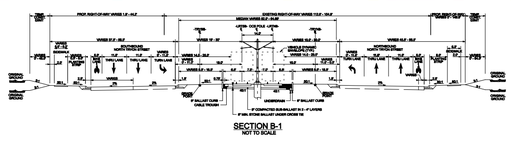
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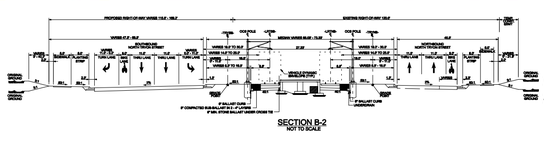
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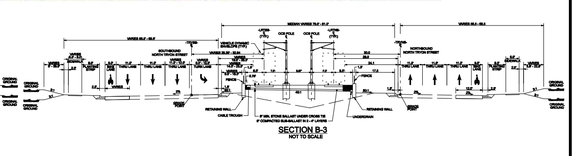
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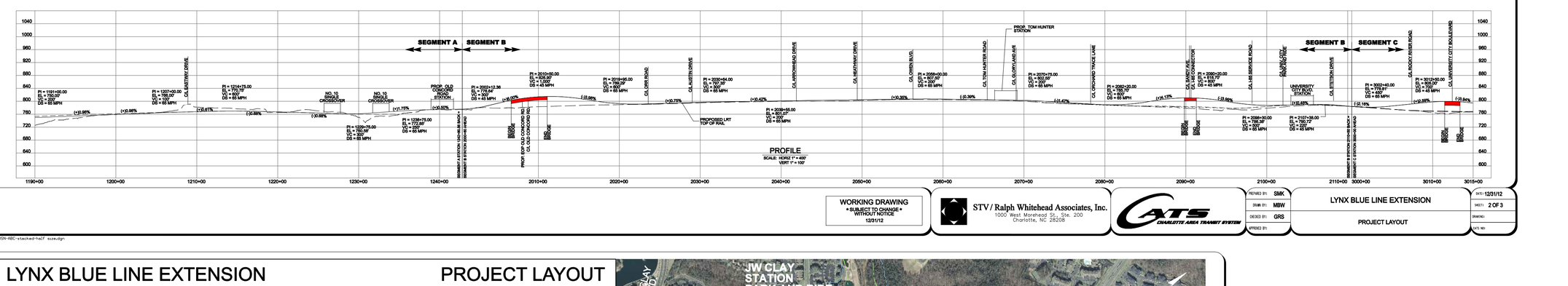

NO.	DATE	REVISION	BY	DWN	CHK	APP'D

TRK1-T-PNP-BLE-DSN-ABC-stacked-half size.dgn

WORKING DRAWING
* SUBJECT TO CHANGE * WITHOUT NOTICE
12/31/12

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208

CATS CHARLOTTE AREA TRANSIT SYSTEM

PREPARED BY:	SMK
DRAWN BY:	MBW
CHECKED BY:	GRS
APPROVED BY:	

LYNX BLUE LINE EXTENSION
PROJECT LAYOUT

DATE: 12/31/12
SHEET: 2 OF 3
DRAWING:
CATS NO:

LEGEND

- NCRR ROW
- PROPOSED LRT ALIGNMENT
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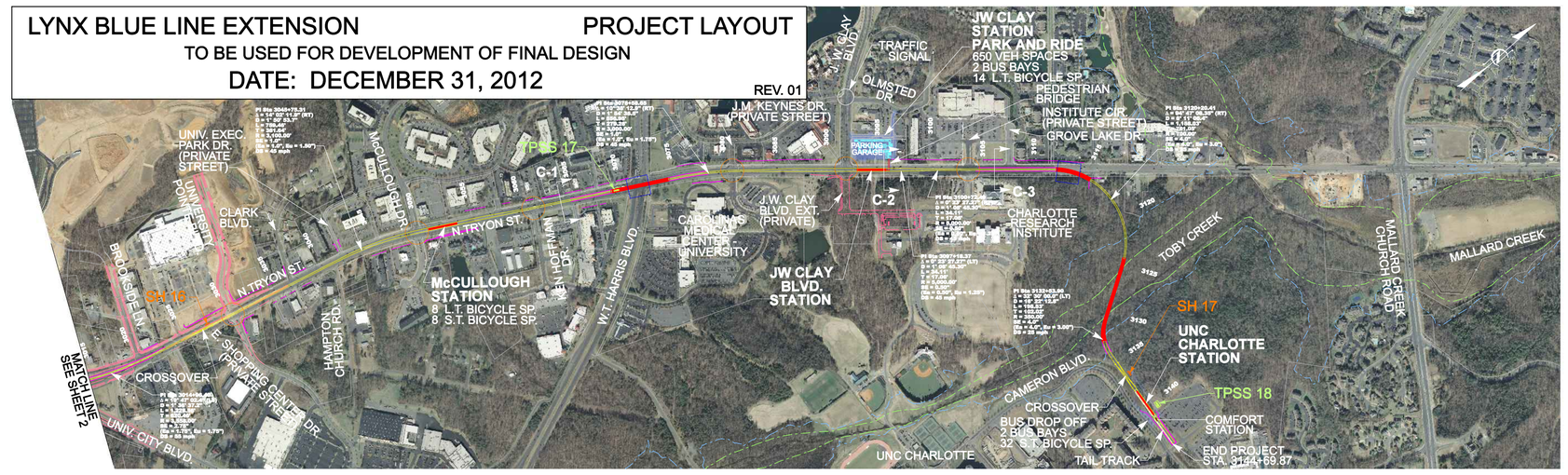

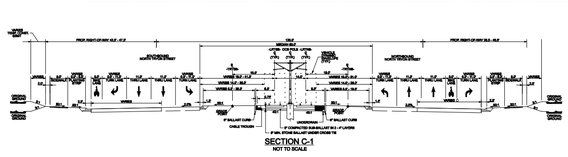
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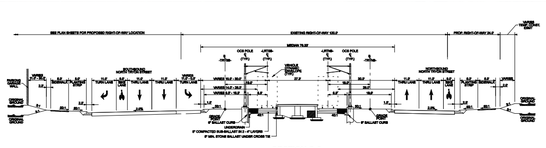
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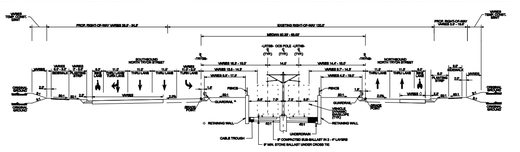
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NO.	DATE	REVISION	BY	DWN	CHK	APP'D

TRK1-T-PNP-BLE-DSN-ABC-stacked-half size.dgn

WORKING DRAWING
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12/31/12

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208

CATS CHARLOTTE AREA TRANSIT SYSTEM

PREPARED BY:	SMK
DRAWN BY:	MBW
CHECKED BY:	GRS
APPROVED BY:	

LYNX BLUE LINE EXTENSION
PROJECT LAYOUT

DATE: 12/31/12
SHEET: 3 OF 3
DRAWING:
CATS NO:

PROJECT LAYOUT TO BE USED FOR FINAL DESIGN

December 31, 2012

	DESCRIPTION	PROJECT TEAM APPROVAL
1.	Connect to existing Blue Line tracks south of 7th Street. Two TVMs will be added to the north end of the existing 7th Street station.	☑
2.	The Trolley will not be accommodated in the design of the BLE. A portion of the existing 144 strand fiber optic cable along the existing Blue Line will be allocated to the Street Car project. The original request was for 4 strands, but a 12 strand tube may be allocated.	☑
3.	The 9th Street station (side loaded platform, loaded from both ends) is located between 9th Street and the proposed 10th Street extension. Four (4) Ticket Vending Machines (TVMs) will be provided. Eight (8) short-term bicycle spaces will be provided.	☑
4.	STATIONS: Center platform stations will have platforms 18' wide and 278'-6" long. Side loaded platforms will be 15' wide and 278'-6" long. The distance from the cross street to the end of platform will be evaluated at each location. Landings at the end of sloped walks will not be used unless geometry dictates otherwise. The sloped walkways will be 25' long unless conditions allow shorter ramps, which will be evaluated on a case-by-case basis. A designated CATS parking space for maintenance/operation will be provided at each station, as space permits.	☑
5.	At-grade light rail crossings with gates will be used at 7th Street, 8th Street, 9th Street, proposed 10th Street extension and 12th Street.	☑
6.	INTERSECTIONS: Flashing Lights and Gates will be provided at ALL grade crossings. Additionally, left turn gates will be used for North Tryon Street grade crossing. Intersection treatments (number of turn lanes, etc…) will be as shown on the 65% plans.	☑
7.	A 110' long bridge (prestressed concrete beams) with a total MSE wall length of approximately 2,730' will be utilized over the CSXT crossing. A total opening of 88' (beginning 29' south from centerline of existing track) will be provided. The approach grade will be approx. 5.3 percent and the departing grade will be approx. 5.4 percent. Noise barrier will be provided on the Alpha Mill side of the retaining wall.	☑
8.	BRIDGES and RETAINING WALLS: Light rail bridges with a track spacing of 14' will be 32' wide. Bridges will not be unnecessarily lengthened to accommodate the substations. The inside faces of retaining walls (including coping) will be placed a minimum of 8'-6" from the centerline of nearest track. For all retaining walls supporting Light Rail Tracks (LRT) above existing	☑

	DESCRIPTION	PROJECT TEAM APPROVAL

ground, MSE walls will be used. Track guardrail will be provided as required by Design Criteria on LRT bridges and beneath 11th Street, I-277, 30th Street and Eastway Drive bridges and at the LRT underpass under NB N. Tryon St.

9. The existing Norfolk Southern (NS)/CSXT double-track freight connection track will remain in its current alignment, including the current at-grade crossing of 16th Street. The existing freight yard tracks will be truncated north of 16th Street as part of the BLE project, leaving only the NS/CSXT connection tracks crossing 16th Street. ☑

10. An at-grade light rail crossing with gates will be used at 16th Street. The grade crossing design will address the issue of vehicles backing up across the freight tracks waiting for LRT gates. ☑

11. The light rail alignment will traverse the southeast corner of the existing NS Intermodal facility using a 1,500' radius curve followed by a 514' radius curve (25 mph; superelevation controls the design speed). ☑

12. The existing Parkwood Avenue/North Brevard Street intersection will be widened; signalized and pedestrian improvements will be made to the intersection. ☑

13. The Parkwood station (side loaded platforms) will be located on the triangular parcel between Parkwood Avenue and N. Brevard Street. Two (2) TVMs will be provided and located off platform. Eight (8) long-term and eight (8) short-term bicycle spaces will be provided. No kiss-and-ride spaces will be provided. ☑

14. A. The existing NS Intermodal facility will be relocated to a new site at the Airport as part of a separate project. The existing site will be available for use by the BLE project. An approximate 5,000 SF North Yard Operations Building will be located near the center of the site. A lead track and four 6-car (24 vehicles total) dead-end storage tracks will occupy the north end of the site. Access to the site will be via an at-grade light rail crossing with gates near 22nd Street. CATS will provide a future crossing north of 16th Street for NS access to the freight tracks. ☑

    B. The following improvements will be made to the existing South Boulevard Light Rail Facility (SBLRF): ☑

    - Existing track 19 will be converted to a storage track for 3 trolley vehicles.
    - Two (2) new storage tracks will be constructed for light rail vehicles bringing the total storage capacity in the South Boulevard yard to 16 vehicles (excluding the trolley track and storage capacity inside the SBLRF).

DESCRIPTION	PROJECT TEAM APPROVAL
• Selected modifications to the existing Vehicle Maintenance Facility (VMF). • Existing Track 7 will be connected to the yard loop, Track 6, north of the VMF. • Note: a Maintenance-of-Way facility will be constructed as a separate project and is not part of the BLE project.	
15. The light rail alignment will be located between N. Brevard Street and the current NS intermodal yard/proposed storage yard. Approximately 1,200' of cast-in-place retaining walls will be required between the light rail and the north storage yard. Additionally, approximately 2,220' of cast-in-place retaining walls will be required between the light rail and N. Brevard Street north of the entrance into the proposed storage yard.	☑
16. Existing N. Brevard Street will be left as is and no enhancements or improvements will be made to existing N. Brevard Street. A sidewalk will be added along the west side of N. Brevard Street between the Parkwood station and the 25th Street station.	☑
17. The 25th Street station (center platform, loaded from both ends, with approach access ramps) will be placed along the western side of N. Brevard Street and centered between 25th Street and 26th Street. Two (2) TVMs will be provided. Sixteen (16) short-term bicycle spaces will be provided.	☑
18. A 135' long by 35' wide prestressed concrete beam bridge will carry the light rail over Little Sugar Creek. The bridge will be flared to accommodate the wider track for the station platform. The light rail alignment will continue under the existing 30th Street (Matheson Ave.) bridge along the existing NS spur track (to be abandoned).	☑
19. A 135' long prestressed concrete beam bridge will carry the light rail tracks over the AC&W railroad connection track with approximately 3,600' of total MSE wall length. The bridge opening will accommodate the existing freight tracks and a maintenance/access road for the existing Duke Energy substation located at the north end of the existing intermodal yard. An access road for Norfolk Southern Railroad will be included, which will begin at the Duke maintenance/access road and run parallel to the existing AC&W Railroad connection track. The approach grade of the light rail vertical alignment will be no more than 6.0 percent and the departing grade will be approx. 5.0 percent.	☑
20. The light rail alignment will follow the east side of the existing North Carolina Railroad (NCRR) right-of-way from north of 30th Street to Craighead Road. Where the light rail tracks are at-grade, the light rail tracks will be a minimum	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
	of 88' from the centerline of existing and/or proposed relocated freight tracks and 53' from the centerline of proposed passenger tracks. Where the light rail tracks are elevated on a retaining wall, the light rail tracks will be a minimum of 43' from centerline of the existing and/or proposed relocated freight tracks and 35' from the proposed centerline of passenger tracks. Where slopes would extend beyond the existing NCRR right-of-way, MSE retaining walls will be used along the east side of the LRT to contain the LRT improvements within the existing NCRR right-of-way. An intrusion fence will be provided between the LRT and freight tracks.	
21.	The 36th Street station (center platform, loaded from one end) will be approximately 6-8 feet above grade with the surrounding topography just south of 36th Street. A 67' long by 18' wide steel plate girder bridge will be required for a portion of the station across 36th Street. An Area of Refuge will be required. Two (2) TVMs will be provided. Eight (8) long-term and eight (8) short-term bicycle spaces will be provided. Access to the station will be via ramps and stairs from the north side of 36th Street. No elevators will be provided.	☑
22.	The light rail will be grade separated at the 36th Street crossing. The existing freight tracks will be relocated to the west from south of the AT&O turnout to north of Craighead Road and also grade separated with the 36th Street crossing. The AT&O turnout will be realigned to a tangent alignment. The LRT and freight tracks will be raised approximately 6-8 feet above the existing grade. The freight track design will accommodate the future NCDOT-Rail CRISP Project and Norfolk Southern requirements for current operations.	☑
23.	36th Street will be lowered to accommodate the required vertical clearance under both the LRT and freight tracks. Approximately 440' of pile panel retaining wall will be required along the south side of 36th Street and approximately 425' of cast-in-place retaining wall will be required along the north side of 36th Street. The maximum grade on the street will be 6.8%. Sidewalks of varying widths will be provided along both sides of the street. The minimum vertical clearance under both freight and LRT bridges is 15'-6".	☑
24.	Two 67' long by 15' wide light rail bridges with steel plate girders will be required to span across the proposed 36th Street grade separation.	☑
25.	A 65' long 2-track bridge carrying freight tracks will be required to span across the proposed 36th Street grade separation. Approximately 1,725' of cast-in-place retaining walls will be required along the west side of the freight tracks.	☑
26.	The light rail alignment will shift from the east side to the west side of the NCRR right-of-way by grade separating over the existing freight tracks at Craighead Road. The S-shaped steel plate girder bridge over the freight	☑

DESCRIPTION	PROJECT TEAM APPROVAL
tracks and Craighead Road will be 735' long and supported on three straddle bents with approximately 3,835' of total MSE wall length. The approach grade will be approx. 4.9 percent and the departing grade will be approx. 5.4 percent. The alignment and profile will accommodate a 35 mph design speed.	
27. The existing spur track along the west side that leads to a concrete plant will be relocated in order to accommodate the straddle bent column for the light rail bridge.	☑
28. The light rail alignment will continue along the west side of the NCRR right-of-way from Craighead Road to north of Eastway Drive. The light rail tracks will be a minimum of 54' from the centerline of existing freight tracks. The light rail tracks will be a minimum of 18' from the western NCRR right-of-way line within the Sugar Creek station area and 32' from the western NCRR right-of-way line outside the Sugar Creek station area.	☑
29. Existing Sugar Creek Road will be raised and bridge over the existing NCRR/NS tracks and the BLE light rail tracks (under a separate project being undertaken by NCDOT-Rail).	☑
30. The Sugar Creek station (center platform, loaded from one end) will be at-grade approximately 330' south of Sugar Creek Road. Access to the station from the south side of Sugar Creek Road will be determined by CATS, depending on NCDOT Rail's design of the Sugar Creek Road grade separation. Currently, an Area of Refuge will be provided at the north end of the station. Three (3) TVMs will be provided.	☑
31. Currently, a parking garage is NOT included at the Sugar Creek station. If changes occur on adjacent parcels a parking garage could replace some of the proposed parking. Two parking lots located on the west side of the LRT alignment will provide approximately 665 parking spaces (approx. 175 spaces in the Southern lot and approx. 490 spaces in the Western lot). An exclusive bus-only circle drive around the Southern lot will accommodate three (3) bus bays. Twenty-two (22) long-term and six (6) short-term bicycle spaces will be provided. Access to the south end of the station will be provided via a walkway from a sidewalk along the north side of the Southern parking lot. A crew comfort station will be provided in the Southern lot.	☑
32. Raleigh Street will be reconfigured as part of the NCDOT-Rail Sugar Creek Road grade separation project. Greensboro Road will be improved to provide the lane configuration at Sugar Creek Road in accordance with analysis to be performed by NCDOT-Rail. Driveway entrances to the Western parking lot will be via Sugar Creek Road, Raleigh Street and a connection to Greensboro Street.	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
33.	The light rail alignment will pass under the existing highway bridge approach (Eastway Drive over railroad). The existing highway bridge will be lengthened approximately 104'. Eastway Drive will be closed to highway traffic during construction of the highway bridge.	☑
34.	The light rail alignment will exit the NCRR right-of-way just north of the North Park Shopping Center.	☑
35.	The Old Concord Road station (side platforms, loaded from each end) will be at-grade. Two (2) TVMs will be provided and located off platform. The station will be located at the site of the existing mini-warehouses.	☑
36.	A park-and-ride lot (approximately 330 spaces) will be located at this station. Two (2) bus bays will be provided along Public Road A between the light rail crossing and the parking lot entrance. Fourteen (14) long-term and six (6) short-term bicycle spaces will be provided. An at-grade light rail crossing with gates will be provided at the park-and-ride access road. The access roads to the park-and-ride will be public roads with intersections at N. Tryon Street and Old Concord Road. A stub end road will be provided for future access to Parcel 1349.	☑
37.	The bridge over Old Concord Road/N. Tryon Street intersection will be 445' long on a 700' radius (35 mph). The bridge will consist of 3 spans and curved steel plate girders. MSE walls, approximately 2,910' in total length will be used. The approach grade will be no more than 6.0 percent and the departing grade will be approx. 4.0 percent. Traffic signals may be attached to this bridge.	☑
38.	A signalized intersection with North Bound (NB) single left turn lane and right turn lane and a South Bound (SB) single left turn lane at Old Concord Road is included. Old Concord Road will have 4 lanes with an East Bound (EB) 5' bike lane, and 8' planting strip and 6' sidewalk on both sides. The existing free-flowing NB right lane from N. Tryon Street onto Old Concord Rd. will be reconfigured to a slip lane with a traffic signal. A bike lane on the West Bound (WB) side will not be provided.	☑
39.	The light rail will be located in the median of N. Tryon Street. Nominal right-of-way may be required on the east side of N. Tryon Street. The roadway widening will be to the west from Old Concord Road to south of the N. Tryon Street / Sandy Avenue intersection. Some widening of intersections is anticipated on the east side.	☑
40.	The standard typical section width in N. Tryon Street south of the I-85 Connector / Sandy Avenue intersection will be 143'. This section will provide for 14' track centers, 14' clear from the light rail vehicle to the travel lane, two 11' lanes, a 5' bike lane, 8' planting strip and 6' sidewalk. Sections within	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
	station areas will include 8' sidewalks as determined in the development of the station site plans. Left and right turn lanes will be 11' wide and the 14' clear from the light rail vehicle to the travel lane will be maintained. Short retaining walls and narrower planting strips and/or sidewalks may be used in some locations to minimize impacts to existing conditions.	
41.	An at-grade signalized intersection with NB single left turn lane and SB single left turn lane with gates at Orr Road is included. Orr Road will have 3 lanes with a 5' bike lane, 5' planting strip and 6' sidewalk along both sides.	☑
42.	An unsignalized right in/right out intersection with no gates at Austin Drive is included. Austin Drive will have 2 lanes with no bike lanes, no planting strips and no sidewalks.	☑
43.	An at-grade signalized intersection with NB single left turn lane and SB single left turn lane with gates at Arrowhead Drive is included. East Arrowhead Drive will have 3 lanes with a 5' bike lane, 4' planting strip and 5' sidewalk on the EB side. The WB side will have a 5' bike lane with no planting strip and no sidewalk. West Arrowhead Drive will have 3 lanes, a 5' bike lane, 8' planting strip and 6' sidewalk on both sides.	☑
44.	An unsignalized right in/right out intersection with no gates at Heathway Drive is included. Heathway Drive will have 2 lanes with a 4' planting strip and 5' sidewalk on the WB side.	☑
45.	An at-grade signalized intersection with NB single left turn lane and SB single left turn lane with gates at Owen Boulevard is included. Owen Boulevard will have 3 lanes, no bike lanes, with a 4' planting strip and 5' sidewalk on the EB side. The WB side will have no curb and gutter, no bike lanes, varying planting strip and no sidewalk.	☑
46.	The Tom Hunter station (center platform, loaded from one end) will be located just north of the existing Tom Hunter Road/N. Tryon Street intersection. A secondary emergency egress to N. Tryon Street at the north end of the station platform will be required. Two (2) TVMs will be provided. Tom Hunter Road will be realigned to provide a 90° intersection with N. Tryon Street.	☑
47.	A park-and-ride lot is NOT included at the Tom Hunter station. Two (2) bus stops (i.e. no bays) are being provided, both on N. Tryon Street. . Eight (8) long-term and eight (8) short-term bicycle spaces will be provided.	☑
48.	An at-grade signalized intersection with NB single left turn lane and SB single left turn lane and right turn slip lane with gates at Tom Hunter Road is included. Tom Hunter Road will have 3 lanes with, 5' bike lanes, varying planting strips and varying width sidewalks (tying to existing sidewalks) on	☑

DESCRIPTION	PROJECT TEAM APPROVAL
both sides and a pork-chop shaped island.	
49. An unsignalized right in/right out intersection with no gates at Gloryland Avenue is included. Gloryland Avenue will have 2 lanes with no bike lanes, no planting strips and no sidewalks.	☑
50. An at-grade signalized intersection with NB single left turn lane and SB single left turn lane with gates at Orchard Trace Lane is included. Orchard Trace Lane will have 3 lanes with a median, no bike lane, no planting strip and no sidewalk on both sides. Orchard Trace Lane will remain a private road.	☑
51. Due to the terminus at UNC Charlotte, the additional parking needs at University City Boulevard will require one additional lane to be constructed along both sides of N. Tryon Street between Orchard Trace Lane and Shopping Center Drive. In the NB direction, the additional lane will run from north of Orchard Trace Lane to University City Boulevard. In the SB direction, the additional lane will run from Shopping Center Drive to I-85 Connector/Sandy Avenue. The existing right turn lane on SB North Tryon at City Boulevard will be retained and shifted west to accommodate the additional SB thru lane.	☑
52. The standard typical section width in N. Tryon Street from south of the I-85 Connector / Sandy Avenue intersection to just south of Brookside Lane will be 189'. This section will provide for 14' track centers, 24' clear from the light rail vehicle to the travel lane, one 12' lane, two 11' lanes, a 5' bike lane, 8' planting strip and 6' sidewalk. Sections within station areas will include 8' sidewalks as determined in the development of the station site plans. Left and right turn lanes will be 11' wide and 14' clear from the light rail vehicle to the travel lane. Short retaining walls and narrower planting strips and/or sidewalks may be used in some locations to minimize impacts to existing improvements.	☑
53. A 150' long by 33' wide steel plate girder bridge over I-85 Connector/Sandy Avenue intersection will be used along with approximately 3,390' of total MSE wall length. The approach grade will be approx. 4.1 percent and the departing grade will be approx. 4.0 percent. Traffic signals may be attached to this bridge.	☑
54. The University City Blvd. station (center platform, loaded from both ends) will be at-grade. Three (3) TVMs will be provided (2 on the platform and 1 in the parking garage at the entrance to the Pedestrian Bridge). A secondary emergency egress to N. Tryon Street at the north end of the station platform will be required. The station will be located approximately 1,250' north of the new N. Tryon Street/I-85 connecter intersection at a new road to provide access to the parking garage. The access road will have 2 lanes plus turn lanes, a median, 4' bike lanes, 8' planting strips and 8' sidewalks on both	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
	sides. The access road will extend to Ikea Boulevard.	
55.	Approximately 1,500 parking spaces will be provided in a six-level parking garage. Twenty-four (24) long-term bicycle spaces will be provided in the parking garage. Access to the parking garage will be via Tyner Street and a private driveway. Three (3) bus bays will be provided along the private driveway. A pedestrian bridge crossing over SB North Tryon will connect the parking garage on the fourth level to the north end of the station platform. Elevators will be provided at both ends of the pedestrian bridge.	☑
56.	A crew comfort station, ticket office, CATS office, communication room, maintenance room, storage room, and electrical room will be located in the parking garage at University City Blvd. station. Ground floor active use space will be provided in the garage.	☑
57.	A 190' long by 34' wide steel plate girder bridge over University City Boulevard will be used along with approximately 3,800' of total MSE wall length. Traffic signals may be attached to this bridge.	☑
58.	The light rail will remain in the median of N. Tryon Street from Brookside Lane to the exit from the median at UNC Charlotte. The roadway widening from Brookside Lane to the exit of the median at UNC Charlotte will be symmetrical.	☑
59.	The standard typical section width in N. Tryon Street from just south of Brookside Lane heading north will be 143'. This section will provide for 14' track centers, 14' clear from the light rail vehicle to the travel lane, two 11' lanes, a 5' bike lane, 8' planting strip and 6' sidewalk. Sections within station areas will include 8' sidewalks as determined in the development of the station site plans. Left and right turn lanes will be 11' wide and the 14' clear from the light rail vehicle to the travel lane will be maintained. Short retaining walls and narrower planting strips and/or sidewalks may be used in some locations to minimize impacts to existing conditions.	☑
60.	An unsignalized right in/right out intersection with no gates at Brookside Lane is included. Brookside Lane will have 2 lanes, 5' bike lanes, 8' planting strips and 6' sidewalks.	☑
61.	An at-grade signalized intersection with NB dual left turn lanes and a right turn lane and SB dual left turn lanes and right turn lane with gates at Shopping Center Drive is included. East Shopping Center Drive will have 5 lanes with no bike lanes, no planting strips and no sidewalks. East Shopping Center Drive) will remain a private road. University Pointe Blvd. (West Shopping Center Drive will have 6 lanes with a median, 5' bike lane, 8' planting strip, 6' sidewalk on the WB side, and no bike lane, 8' planting strip and 6' sidewalk on	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
	the EB side.	
62.	An unsignalized right in/right out intersection with no gates at Clark Boulevard is included. Clark Boulevard will have 2 lanes, no bike lanes, 3' planting strips and 5' sidewalks on both sides.	☑
63.	An unsignalized right in/right out intersection with no gates at Hampton Church Road is included. Hampton Church road will have 2 lanes, no bike lanes, no planting strips and 6' sidewalk on the EB side. Hampton Church Road will be realigned to provide a 90° intersection with N. Tryon Street.	☑
64.	An unsignalized right in/right out intersection with no gates at University Executive Park Drive is included. University Executive Park Drive will have 2 lanes, no bike lanes, no planting strips and no sidewalks. University Executive Park Drive will remain a private road.	☑
65.	An at-grade signalized intersection with NB dual left turn lanes and SB single left lane and right turn lane at McCullough Drive is included. East McCullough Drive will have 5 lanes, a median, no bike lanes, 4' planting strips and 5' sidewalks. West McCullough Drive will have 5 lanes, a median, no bike lanes, 4' planting strips and 5' sidewalk on the WB side.	☑
66.	The McCullough station (center platform, loaded from one end) will be located just north of the McCullough Drive/N. Tryon Street intersection. A secondary emergency egress to N. Tryon Street at the north end of the station platform will be required. Two (2) TVMs will be provided.	☑
67.	A park-and-ride lot is NOT included at the McCullough station. Two (2) bus stops (i.e. no bays) are provided; one on N. Tryon Street and one on McCullough. Eight (8) long-term and eight (8) short-term bicycle spaces will be provided.	☑
68.	An at-grade signalized intersection with NB single left turn lane and right turn lane and a SB single left turn lane with gates at Ken Hoffman Drive is included. Ken Hoffman Drive will have 4 lanes with a median, no bike lanes, 6' sidewalk and 8.5' planting strip on the WB side and an 8' sidewalk and 8' planting strip on the EB side. Ken Hoffman Drive will be realigned to line up with the Burger King entrance across N. Tryon Street at this intersection.	☑
69.	The steel plate girder bridge over W.T. Harris Boulevard will be 550' long with approximately 1,950' of total MSE wall length. The bridge configuration, including the 230' main span, will accommodate the existing intersection as well as a proposed future interchange at this site. The approach grade will be approx. 4.6 percent and the departing grade will be approx. 5.6 percent (35 mph). Traffic signals may be attached to this bridge.	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
70.	An at-grade signalized intersection with NB single left turn and right turn lane and SB single left turn lane and right turn lane with gates at J.M. Keynes Drive and the existing CMC-University hospital entrance is included. J.M. Keynes Drive will have 3 lanes with a median, no bike lanes, no planting strips and no sidewalks. The hospital entrance road will have 4 lanes, no bike lanes, 6' planting strip and 5' sidewalk on the WB side. The EB side will have no planting strip and no sidewalk. Both J.M. Keynes and the hospital entrance will remain private roads.	☑
71.	An at-grade signalized intersection with a SB single left and right turn lane and NB single right turn lane with gates at J.W. Clay Boulevard is included. The existing NB dual left turn lanes will be replaced by a NB single left turn lane. J.W. Clay Boulevard (west of the LRT) will have 5 lanes with a median, no bike lanes, 15' planting strip and 8' sidewalk on the EB side, and an 8' planting strip and 8' sidewalk on the WB side. The J.W. Clay Boulevard Extension (east of LRT) will have 4 lanes with a median, 4' bike lanes on both sides, 9' planting strip and 8' sidewalk on the EB side and no planting strip and no sidewalk on the WB side. The J.W. Clay Boulevard Extension Road will remain a private road. J.W. Clay Boulevard and the J.W. Clay Boulevard Extension Road will not be realigned and will remain offset.	☑
72.	The existing J.W. Clay Boulevard/Olmsted Drive intersection will be signalized and the intersection laneage will be adjusted per the traffic analysis report. The private streets from J.W. Clay Boulevard and Olmsted Drive serving the parking garage will be rebuilt to accommodate the anticipated bus traffic.	☑
73.	The J.W. Clay Blvd. station (center platform, loaded from both ends) will be at-grade located just north of the J.W. Clay Boulevard/N. Tryon Street intersection. Three (3) TVMs will be provided (2 on the platform and 1 in the parking garage at the entrance to the pedestrian bridge). Conduit will be provided for two (2) future TVMs on the northeast corner of N. Tryon Street and J.W. Clay Boulevard. A secondary emergency egress to N. Tryon Street at the north end of the station platform will be required.	☑
74.	A 4-level parking garage with approximately 610 spaces (consisting of regular and compact spaces) will be located in the northwest quadrant of the N. Tryon/J.W. Clay Boulevard intersection. As a bid alternate, a 5th level will be included in the design increasing the number to approximately 800 spaces (consisting of regular and compact spaces). Fourteen (14) long-term bicycle spaces will be provided in the parking garage. Two (2) bus bays along the private street adjacent to the parking garage are included at the J.W. Clay Boulevard station. A pedestrian bridge crossing over SB North Tryon will connect the parking garage on the third level to the north end of the station platform. Elevators will be provided at both ends of the pedestrian bridge.	☑

	DESCRIPTION	PROJECT TEAM APPROVAL
75.	A crew comfort station, ticket office, CATS office, communication room, storage rooms, and electrical room will be located in the parking garage at J.W. Clay Boulevard station. Ground floor active use space will be provided in the garage.	☑
76.	An at-grade signalized intersection with NB single left turn lane and right turn lane and SB single left turn lane and thru/right turn lane with gates at Institute Circle is included. Institute Circle will have 3 lanes with a median, no bike lanes, 10' planting strips and 6' sidewalk on both sides. The shopping center entrance road will have 3 lanes, no bike lanes, no planting strip and no sidewalk on the WB side and a varying planting strip and sidewalk on the EB side. Institute Circle will remain a private road.	☑
77.	An unsignalized right in/right out intersection with no gates at Grove Lake Drive is included. Grove Lake Drive will have 3 lanes, no bike lanes, 4' planting strips and 5' sidewalks on both sides.	☑
78.	The light rail alignment will remain in the median and drop vertically between two retaining walls to pass under the NB lanes of N. Tryon Street approximately 900' north of Institute Circle. This grade separation will utilize a concrete flat slab bridge approximately 36' wide by 340' long. The alignment will enter University of North Carolina (UNC) Charlotte's campus on a 700' radius (35 mph).	☑
79.	The alignment on campus will avoid significant impacts to the existing veterinary business located just off N. Tryon Street. Approximately 180' of total retaining wall length and laid back slopes will be used from N. Tryon Street to the bridge over Toby Creek.	☑
80.	The alignment will cross the Toby Creek floodplain at an approximately 45° skew with a prestressed concrete bridge 822' long with perpendicular bents.	☑
81.	The alignment consists of curves with 350' radius (25 mph design speed) entering the UNC Charlotte station area.	☑
82.	The UNC Charlotte station (center platform, loaded from both ends) will be located near Wallis Hall, on a fill embankment adjacent to Cameron Boulevard. Two (2) TVMs will be provided. Two (2) bus bays will be provided. Thirty-two (32) short-term bicycle spaces will be provided.	☑
83.	The light rail tracks will extend beyond the UNC Charlotte station for approximately 330' to provide storage for light rail trains. Approximately 515' of pile panel retaining wall with tie backs will be used around the tail tracks. A crew comfort station will be located between the light rail tracks north of the UNC Charlotte station platform.	☑

DESCRIPTION	PROJECT TEAM APPROVAL
84. TRACTION POWER SUBSTATIONS (TPSS): Traction Power Substations will be constructed at the following locations: • TPSS 11 – east side between 9th Street and 10th Street (retain existing TPSS) • TPSS 12 – west side, north of the 25th Street station, in the storage yard • TPSS 13 – west side, north of Craighead Road • TPSS 14 – west side, between Eastway Drive and the existing medical clinic • TPSS 15 – east side, with the Central Communication House (CCH) on the water tower site • TPSS 16 – west side, south of University City Boulevard • TPSS 17 – median, beneath the south span of the LRT bridge over W.T. Harris Boulevard • TPSS 18 – northwest side, at the edge of parking lot at UNC Charlotte station.	☑
85. SIGNAL HOUSES (SH): Signal Houses will be constructed at the following locations: • SH 11 – west side, south of 12th Street • SH 12 – west side, at entrance drive to storage yard • SH 13 – west side, in the north end of the North Yard • SH 14 – west side, south of the Old Concord Road station • SH 15 – east side, with Central Communication House (CCH) on the water tower site • SH 16 – median, south of University Pointe Boulevard / Shopping Center Drive • SH 17 – northwest side, at south end of platform at UNC Charlotte station	☑
86. CROSSOVERS for the Project are located along the alignment. The crossovers are located in pairs (universal crossover), in singles (crossover) and as diamonds depending on the operational requirements of train movements and available space. The crossovers are located in tangent track for both horizontal and vertical alignment. From the south end to the north end of the Project, the crossovers are located at the following locations:	☑

DESCRIPTION

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- Future crossover north of 16th Street
- No. 10 crossover south of the entrance into the North Yard
- No. 10 universal crossover north of the entrance into the North Yard
- No. 10 universal crossover south of the Old Concord Road station
- No. 10 diamond crossover south of University Pointe Boulevard / Shopping Center Drive
- No. 8 diamond crossover south of the UNC Charlotte station