

D2 East End Evaluation – First Level Screening

Alternative	Vision & Key Issues ¹	D2 Purpose and Need ²	LRT Design Criteria	Impacts to I-345 Design Scenarios	First Level Screening Recommendation
Baseline - FEIS 30% Design	● Redevelopment of surface parking lots between Swiss and Pacific Avenues could create large TOD site	● Meets purpose and need	● Meets LRT design criteria	○ D2 Depth – 22 ft or less While the option does not preclude any of the I-345 options it would require depressed options to be deeper; increases costs and drainage and ramping challenges	Move to Second Level Screening
1-1: FEIS LPA + Enhanced Urban Design	● Redevelopment of surface parking lots between Swiss and Pacific Avenues could create large TOD site	● Meets purpose and need	● Meets LRT design criteria	○ D2 Depth – 22 ft or less While the option does not preclude any of the I-345 options it would require depressed options to be deeper; increases costs and drainage and ramping challenges	Move to Second Level Screening
1-2: 2017 City Council Adopted LPA	● Same temporary/permanent impacts to streets ● Likely cut-and-cover through portion of Main Street Garden ● Redevelopment of parking garage could create a large TOD site	● Meets purpose and need	● Meets LRT design criteria but raises profile under Main Street Garden and portion of Commerce	○ D2 Depth – 22 ft or less While the option does not preclude any of the I-345 options it would require depressed options to be deeper; increases costs and drainage and ramping challenges	Move to Second Level Screening
1-3: FEIS LPA with Portal West of I-345	● Significant impacts to streets (Pearl, Pacific, Cesar Chavez, Elm, Main, Commerce) ● Impacts to existing development ● Significant impact to access to existing businesses because of changes to street	● Meets purpose and need ● Closure of Elm would impact bus operations	● Portal exit at major north-south thoroughfare (Cesar Chavez)	● At-grade at I-345; maintains most flexibility for I-345 Design Options	Document and eliminate
1-4: 2017 City Council LPA with Portal West of I-345	● Impacts to streets [Pearl (reroute), Pacific, Cesar Chavez, Good-Latimer, Swiss, Gaston] ● Impacts to existing development ● Significant impact to access to existing businesses because of changes to street	● Meets purpose and need ● Closure of Pearl would impact bus operations	●	● At-grade at I-345; maintains most flexibility for I-345 Design Options	Document and eliminate
1-5: 2017 City Council LPA with Two-Portals East of I-345	● Impacts to streets (Good-Latimer, others?)	●	● Portals will not fit; shifts the wye south and directly impacts the Epic Development	○ While the option does not preclude any of the I-345 options it would require depressed options to be deeper; increases costs and drainage and ramping challenges	Document and eliminate
2-1: Elm Street Alignment/Portal, East of I-345	● Additional station on Elm and could maintain existing Deep Ellum station ● Uses mostly city street right-of-way ● Would require acquisition of multi-family property ● Close Elm due to station	●	● Feasible but includes less than desirable curve from Elm to Good Latimer	● D2 Depth ~ 10 or less Closes NB I-345 Elm Street off-ramp Could I-345 still gravity drain?	Move to Second Level Screening

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2-2: Commerce Street Alignment with Two Portals (Good-Latimer and existing Green Line)	●	<ul style="list-style-type: none"> Impacts to streets (Good-Latimer is reconstructed; can maintain lanes) Would disrupt service to Green Line during construction 	●	Would not serve Good Latimer corridor/Deep Ellum station area (no station)	●	D2 Depth ~ 55-60 feet	Move to Second Level Screening	
2-3: Commerce Street Alignment with One Portal (along existing Green Line)	○		○	Does not provide operational flexibility	○	D2 crosses I-345 twice. South crossing would be 55-60 ft deep. North crossing would be ~ 30 feet	Document and eliminate	
2-4: Main Street Alignment with One Portal (along existing Green Line)	●	Impacts to streets (Pacific-Gaston would likely be closed); impacts to real estate	●		○	To connect north leg of wye prior to existing Deep Ellum station is not feasible due to distance/grade. If portal along this leg of wye was extended north it would close Pacific/Gaston	D2 Depth ~ 30 feet. Would preclude depressed options	Document and eliminate
2-5: Original AA and 2010 DEIS	●	<ul style="list-style-type: none"> Impacts to streets (portal to north of Commerce St may reduce by 1 lane, LRT in median of Good-Latimer. others?) Impacts to park 	●		●	Meets LRT design criteria	At-grade under I-345. Would need to place portal to minimize impacts to Main on-ramp to southbound I-345. Would need to design around columns	Move to Second Level Screening
3-1: 2017 City Council LPA with Wye under I-345 and Two Portals	●	<ul style="list-style-type: none"> Maximize use of public rights-of way Lessens impacts to development 	●		●	To hold Elm Street with station only gets D2 to 45 ft depth at 345 requires design exceptions	D2 Depth – 35-45 feet Would preclude depressed options	Move to Second Level Screening
3-2: Commerce Street Alignment with Wye under I-345 and Two Portals	●	<ul style="list-style-type: none"> Maximize use of public rights-of way Lessens impacts to development 	●	May not be able to have Good Latimer/Deep Ellum Station	●	Meets LRT design criteria		Move to Second Level Screening
3-3: Harwood Street Alignment with Tie into Existing Portal	●	<ul style="list-style-type: none"> Maximize use of public rights-of way Lessens impacts to development 	○	<ul style="list-style-type: none"> Potential operational conflicts which may impact long-term capacity and affect ability to hold trains (storage) Would result in circuitous Green Line route 	○	Creates complicated junction/signal system (still investigating). Need to ensure Green Line bypasses SE junction and may not be feasible with portal location.	Green Line connection south of existing track may impact multiple columns and existing on-ramps	Document and eliminate
3-4: I-345 Median Alignment	○		○	Does not enhance operational flexibility	○	Not designed due to operational fatal flaws	Would preclude existing and future I-345 design options	Document and eliminate
3-5: Alignment under I-345 and Tying to Existing Portal	●	No impacts to streets east of I-345	●	Slightly less operational flexibility without Good Latimer to D2 connection	●		Being optimized with 3-7 under future I-345 service road	Combine with Option 3-7 and refine
3-6: Alignment under I-345 and Tying to Existing Portal with Wye Connections	○	<ul style="list-style-type: none"> Large use of I-345 right-of-way Impacts to streets (Live Oak, others) Options 3-5 and 3-7 are better versions of this concept 	●	Would result in circuitous Green Line route	○	Connection to existing wye not feasible	Major conflicts with existing and future I-345	Combine with Option 3-7 and refine
3-7: Alignment Under Southbound I-345 Access Road	●	<ul style="list-style-type: none"> Maximize use of public rights-of way Lessens impacts to development No impacts to streets east of I-345 	●	Slightly less operational flexibility without Good Latimer to D2 connection	●	<ul style="list-style-type: none"> Meets LRT design criteria Merge junction at portal is better than flat junction 	Coordinate with I-345 design or create variation that follows 3-3 alignment	Move to Second Level Screening

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Ratings ○ = Does not achieve the parameter ◐ = Neutral ● = Meets parameter

Notes

1. D2 East End Evaluation Vision & Key Issues: The overall vision will be based on looking at the D2 Subway, I-345, local street network, and other related infrastructure projects in a coordinated and holistic manner to:
 - Minimize right-of-way needs
 - Maximize economic development potential
 - Reduce the potential for “throw-away” reconstruction of local streets
 - Lessen business, property, and travel impacts during construction
 - Enhance the city street grid and pedestrian network to reconnect neighborhoods
 - Maximize the experience for transit, bicycle, pedestrian, roadway, and freight/goods movement
2. D2 Purpose and Need
 - Add capacity through downtown
 - Enhance operational flexibility
 - Improve system reliability and quality
 - Serve new markets (continue to serve Deep Ellum area and CBD east area)
 - Support land use and economic development

D2 East End Evaluation – Second Level Screening

Community, Economic, and Environmental Impacts

Alternative	East End Property Impacts	Stations	Economic & Transit-Oriented Development Opportunities ³	Impacts to Riders & Environmental Justice
Baseline - FEIS 30% Design	<ul style="list-style-type: none"> 40 parcels <ul style="list-style-type: none"> 35 private – 415,000 sf 5 public – 23,000 sf Some business displacements 	<ul style="list-style-type: none"> 2 - CBD East (subway) and Live Oak (at-grade center) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 2,400,000 sf Maximum Lost Development Value: \$703.2 million Realistic Lost Development Potential: 1,152,000 sf Realistic Lost Development Value: \$343.8 million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Additional walk time from CBD East to Pearl/Arts District destinations
1-1: FEIS LPA + Enhanced Urban Design + West Side Running LRT	<ul style="list-style-type: none"> 40 parcels <ul style="list-style-type: none"> 35 private – 415,000 sf 5 public – 23,000 sf Some business displacements 	<ul style="list-style-type: none"> 2 - CBD East (subway) and Live Oak (at-grade side) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 2,400,000 sf Maximum Lost Development Value: \$703.2 million Realistic Lost Development Potential: 1,152,000 sf Realistic Lost Development Value: \$343.8million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Additional walk time from CBD East to Pearl/Arts District destinations
1-2: 2017 City Council Adopted LPA	<ul style="list-style-type: none"> 42 parcels <ul style="list-style-type: none"> 29 private – 473,000 sf 13 public – 79,000 sf 2,000 space garages displaced Park -Main Street Garden potential temporary impact 	<ul style="list-style-type: none"> 2 – CBD East (subway) and Live Oak (at-grade center) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 2,440,000 sf Maximum Lost Development Value: \$714.9 million Realistic Lost Development Potential: 1,171,200 sf Realistic Lost Development Value: \$349.5million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Additional walk time from CBD East to Pearl/Arts District destinations
2-1: Elm Street Alignment/Portal, East of I-345	<ul style="list-style-type: none"> 15 parcels <ul style="list-style-type: none"> 11 private – 649,000 sf 4 public – 32,000 sf 480 multi-family units displaced 2,000 space garages displaced Park - Main Street Garden potential temporary impact Historic -Knights of Pythias/Deep Ellum district effects 	<ul style="list-style-type: none"> 3 - CBD East (subway), Elm (at-grade side), retain Deep Ellum 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 5,600,000 sf Maximum Lost Development Value: \$1.641 billion Realistic Lost Development Potential: 2,688,000 sf Realistic Lost Development Value: \$802.1 million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Additional walk time from CBD East to Pearl/Arts District destinations
2-2: Commerce Street Alignment with Two Portals (Good-Latimer and existing Green Line)	<ul style="list-style-type: none"> 15 parcels <ul style="list-style-type: none"> 13 private – 278,000 sf 2 public – 13,000 sf Some business displacements Historic - Automobile row district effects 	<ul style="list-style-type: none"> 1 – CBD East (subway under Commerce) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 540,000 sf Maximum Lost Development Value: \$158.2 million Realistic Lost Development Potential: 259,200 sf Realistic Lost Development Value: \$77.3 million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Reduced access to Deep Ellum area Highest walk time from CBD East to Pearl/Arts District destinations
2-5: Original AA and 2010 DEIS	<ul style="list-style-type: none"> 5 parcels <ul style="list-style-type: none"> 3 private – 55,000 sf 2 public – 18,000 sf Park - Permanent impacts to Julius Schepps Park Historic - Knights of Pythias/Deep Ellum/Automobile row district potential effects 	<ul style="list-style-type: none"> 2 – CBD East (subway under Commerce and retain Deep Ellum) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 1,060,000 sf Maximum Lost Development Value: \$310.6 million Realistic Lost Development Potential: 508,800 sf Realistic Lost Development Value : \$151.8 million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Highest walk time from CBD East to Pearl/Arts District destinations
New 3-1a: 2017 City Council LPA with Wye under I-345 and Two Portals	<ul style="list-style-type: none"> 30 parcels <ul style="list-style-type: none"> 16 private – 382,000sf 14 public – 76,000 sf Some business displacements Requires TxDOT right-of-way easement Park - Main Street Garden potential temporary impact Historic - Knights of Pythias (indirect), Deep Ellum district resource (direct) effects 	<ul style="list-style-type: none"> 2 – CBD East (subway under Main) and Deep Ellum/Monument (open-cut depressed) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 1,100,000 sf Maximum Lost Development Value: \$322.3 million Realistic Lost Development Potential: 528,000 sf Realistic Lost Development Value : \$157.6 million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Highest walk time from CBD East to Pearl/Arts District destinations
3-2: Commerce Street Alignment with Wye under I-345 and Two Portals	<ul style="list-style-type: none"> 15 parcels <ul style="list-style-type: none"> 13 private – 278,000 sf 2 public – 13,000 sf Requires TxDOT right-of-way easement Some business displacements 	<ul style="list-style-type: none"> 1 – CBD East (subway under Commerce) 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 540,000 sf Maximum Lost Development Value: \$158.2 million Realistic Lost Development Potential: 259,200 sf Realistic Lost Development Value : \$77.3 million 	<ul style="list-style-type: none"> Maintains proposed FEIS LPA rail service patterns Transfer (all lines) at Metro Center Reduced access to Deep Ellum area Highest walk time from CBD East to Pearl/Arts District destinations

D2 East End Evaluation – Second Level Screening

Alternative	East End Property Impacts	Stations	Economic & Transit-Oriented Development Opportunities ³	Impacts to Riders & Environmental Justice
3-7a: Alignment Under Southbound I-345 Access Road	<ul style="list-style-type: none"> 12 parcels <ul style="list-style-type: none"> 3 private – 29,000 sf 9 public – 349,000 sf No displacements Requires TxDOT right-of-way easement Park - Carpenter Park temporary impact (northwest corner clip) Historic - Dallas High School potential indirect/visual effect 	<ul style="list-style-type: none"> 2 – CBD East (subway under transfer center) and retain Deep Ellum 	<ul style="list-style-type: none"> Maximum Lost Development Potential: 340,000 sf Maximum Lost Development Value: \$96.6 million Realistic Lost Development Potential: 163,200 sf Realistic Lost Development Value: \$48.7 million 	<ul style="list-style-type: none"> Modifies proposed FEIS LPA rail service patterns and increases transfers Transfer opportunities enhanced (all lines) at both Metro Center and CBD East-Pearl/Arts District

Transportation & Temporary (Construction) Effects

Alternative	Street Grid/Traffic Impacts	Pedestrian, Bicycle, and Micro-Transit Safety Effects	Temporary Construction Impacts	DART Service Impacts/O&M Considerations	Impacts to Future Design Options for I-345
Baseline - FEIS 30% Design	<ul style="list-style-type: none"> Number of streets to be permanently removed/closed: 2 <ul style="list-style-type: none"> Closes Miranda Street between Hawkins and Good Latimer Closes northbound I-345 frontage road between Pacific Avenue and Swiss Avenue Restrictions to roadway access/egress: <ul style="list-style-type: none"> West of Good Latimer, Swiss Avenue is converted to one-way westbound operations (Good Latimer to Hawkins) Removes westbound free right-turn from Pacific to northbound Cesar Chavez Hawkins (Swiss to Gaston) is straightened to align with Jett Way south of Gaston Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 80 	<ul style="list-style-type: none"> Number of at-grade crossings: 3 <ul style="list-style-type: none"> Creates an at-grade LRT crossing at Hawkins Street On southbound Good-Latimer, the wye creates two new at-grade LRT crossings. Gated crossings to reduce the likelihood of vehicles /pedestrians “caught” between turnouts 	<ul style="list-style-type: none"> Cut and cover along block requires temporary closure of Commerce Street between Harwood Street and Pearl Expressway Cut and cover requires short-term temporary closure until decking in place of: <ul style="list-style-type: none"> Pearl Street between Commerce Street and Main Street Main Street between Pearl Street and Cesar Chavez Boulevard Elm Street between Pearl Street and Cesar Chavez Boulevard Intersection of Cesar Chavez and Pacific Avenue Traffic on Good Latimer between Live Oak Street and Gaston Avenue would be impacted during the construction of the wye and relocation of the Deep Ellum Station Connection from Cesar Chavez to the northbound frontage road on the east side of I-345 and the northbound frontage road on the east side of I-345 will likely need to be closed during construction 	<ul style="list-style-type: none"> Potential for short term or reduced service on Green Line due to reconstruction along Good Latimer and relocation of Deep Ellum Station Temporary bus detours as part of traffic management plans as needed during construction 	<ul style="list-style-type: none"> Depressed or Hybrid Option for I-345: <ul style="list-style-type: none"> Unless D2 is designed for a depressed I-345, would likely close D2 during to take I-345 under D2 Due to the depth of D2 as it crosses I-345, in a depressed I-345 option, the I-345 mainlanes will not be able to gravity drain and a pump station and vault will be needed; cost estimated at \$100 million plus O&M. TxDOT will require others to pay for the capital costs of the pump station/vault as well as maintenance and operations of the pump station and vault. At Grade/Boulevard I-345 Option: Due to the volume of traffic now utilizing city streets, grade separations of D2 and an at-grade I-345 option would likely be warranted at some city streets

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Alternative	Street Grid/Traffic Impacts	Pedestrian, Bicycle, and Micro-Transit Safety Effects	Temporary Construction Impacts	DART Service Impacts/O&M Considerations	Impacts to Future Design Options for I-345
1-1: FEIS LPA + Enhanced Urban Design + West Side Running LRT	<ul style="list-style-type: none"> ● Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> ○ Closes Miranda Street between Hawkins and Good Latimer ○ Closes northbound I-345 frontage road between Pacific Avenue and Swiss Avenue ● Restrictions to roadway access/egress: <ul style="list-style-type: none"> ○ Just south of Gaston, modifies driveway access to the one property from southbound Good Latimer ○ Good Latimer reduced to 3 lanes (1 southbound, 2 northbound) between Live Oak and Swiss to accommodate side-platform station south of Live Oak ○ West of Good Latimer, Swiss Avenue is converted to one-way westbound operations (Good Latimer to Hawkins) ○ Left turn opportunity created to/from Swiss east of Good Latimer, and for cars to travel straight on Swiss across Good Latimer ○ Removes westbound free right-turn from Pacific to northbound Cesar Chavez ○ Hawkins (Swiss to Gaston) is straightened to align with Jett Way south of Gaston ○ Simplifies left-turn movement from southbound Good Latimer to eastbound Live Oak. ● Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 64 	<ul style="list-style-type: none"> ● Number of at-grade crossings: <ul style="list-style-type: none"> ○ Creates an at-grade LRT crossing at Hawkins Street (south of Swiss) ○ Removes two at-grade crossings for southbound Good Latimer ● Bike/Ped (360 Connectors): <ul style="list-style-type: none"> ○ Simplifies bicycle crossing of Good Latimer and train tracks at Swiss, and for pedestrian crossings of Good Latimer at Live Oak and Pacific 	<ul style="list-style-type: none"> ● Cut and cover along blocks requires temporary closure of Commerce Street between Harwood Street and Pearl Expressway ● Cut and cover in a perpendicular manner across roadways results in short-term/temporary closure of the following streets because they can accommodate paneling/decking of roadway to maintain traffic: <ul style="list-style-type: none"> ○ Pearl Street between Commerce Street and Main Street ○ Main Street between Pearl Street and Cesar Chavez Boulevard ○ Elm Street between Pearl Street and Cesar Chavez Boulevard ○ Intersection of Cesar Chavez and Pacific Avenue ● Traffic on Good Latimer between Live Oak Street and Gaston Avenue would be impacted during the construction/relocation of tracks to the west-side of the street and relocation of the Deep Ellum Station to Live Oak ● Connection from Cesar Chavez to the northbound frontage road on the east side of I-345 and the northbound frontage road on the east side of I-345 will likely need to be closed during construction 	<ul style="list-style-type: none"> ● Potential for short term or reduced service on Green Line due to reconstruction along Good Latimer and relocation of Deep Ellum Station ● Temporary bus detours as part of traffic management plans as needed during construction ● O&M – Reduced auto conflicts with west-side running track 	<ul style="list-style-type: none"> ○ Depressed or Hybrid Option for I-345: <ul style="list-style-type: none"> ○ Unless D2 is designed for a depressed I-345, would likely close D2 during to take I-345 under D2 ○ Due to the depth of D2 as it crosses I-345, in a depressed I-345 option, the I-345 mainlanes will not be able to gravity drain and a pump station and vault will be needed; cost estimated at \$100 million plus O&M. TxDOT will require others to pay for the capital costs of the pump station/vault as well as maintenance and operations of the pump station and vault. ● At Grade/Boulevard I-345 Option: Due to the volume of traffic now utilizing city streets, grade separations of D2 and an at-grade I-345 option would likely be warranted at some city streets
1-2: 2017 City Council Adopted LPA	<ul style="list-style-type: none"> ● Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> ○ Closes Miranda Street between Hawkins and Good Latimer ○ Closes northbound I-345 frontage road between Pacific Avenue and Swiss Avenue ● Restrictions to roadway access/egress: <ul style="list-style-type: none"> ○ West of Good Latimer, Swiss Avenue is converted to one-way westbound operations (Good Latimer to Hawkins) ○ Removes westbound free right-turn from Pacific to northbound Cesar Chavez ○ Hawkins (Swiss to Gaston) is straightened to align with Jett Way south of Gaston ● Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 80 	<ul style="list-style-type: none"> ● Number of at-grade crossings: <ul style="list-style-type: none"> ○ Creates an at-grade LRT crossing at Hawkins Street ○ On southbound Good-Latimer, the wye creates two new at-grade LRT crossings. Gated crossings to reduce the likelihood of vehicles /pedestrians “caught” between turnouts ● Bike/Ped (360 Connectors): <ul style="list-style-type: none"> ○ Stays the same 	<ul style="list-style-type: none"> ● Cut and cover in a perpendicular manner across roadways results in short-term/temporary closure of the following streets because they can accommodate paneling/decking of roadway to maintain traffic: <ul style="list-style-type: none"> ○ Intersection of Harwood Street and Main Street ○ Elm Street between Harwood Street and Pearl Street ○ Pearl Street between Elm Street and Pacific Avenue ○ Intersection of Cesar Chavez and Pacific Avenue ● Traffic on Good Latimer between Live Oak Street and Gaston Avenue would be impacted during the construction of the wye and relocation of the Deep Ellum Station ● Northbound I-345 frontage road from Elm to Pacific will likely need to be closed during construction 	<ul style="list-style-type: none"> ● Potential for short term or reduced service on Green Line due to reconstruction along Good Latimer and relocation of Deep Ellum Station ● Temporary bus detours as part of traffic management plans as needed during construction 	<ul style="list-style-type: none"> ○ Depressed or Hybrid Option for I-345: <ul style="list-style-type: none"> ○ Unless D2 is designed for a depressed I-345, would likely close D2 during to take I-345 under D2 ○ Due to the depth of D2 as it crosses I-345, in a depressed I-345 option, the I-345 mainlanes will not be able to gravity drain and a pump station and vault will be needed; ; cost estimated at \$100 million plus O&M. TxDOT will require others to pay for the capital costs of the pump station/vault as well as maintenance and operations of the pump station and vault. ● At Grade/Boulevard I-345 Option: Due to the volume of traffic now utilizing city streets, grade separations of D2 and an at-grade I-345 option would likely be warranted at some city streets

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2-1: Elm Street Alignment/Portal, East of I-345	○ <ul style="list-style-type: none"> Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> Elm Street between I-345 and Good Latimer permanently closed to through traffic due to LRT at-grade station. Number of lanes on Elm between Cesar Chavez and I-345 is reduced Northbound I-345 exit to Elm Street removed, but there is a reasonable alternate route to Main Street Restrictions to roadway access/egress: <ul style="list-style-type: none"> Swiss Ave could have two-way operations west of Good Latimer Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 112 	● <ul style="list-style-type: none"> Number of at-grade crossings: <ul style="list-style-type: none"> No at-grade crossing of Hawkins Creates an at-grade LRT crossing at the Good Latimer/Monument/Elm Street intersection Bike/Ped (360 Connectors): <ul style="list-style-type: none"> Narrow sidewalk on Elm (pedestrian connector) - one more crossing of a bike/ped district connector than baseline 	● <ul style="list-style-type: none"> Cut and cover requires long-term closure of Commerce Street between St. Paul Street and Harwood Street Cut and cover in a perpendicular manner across roadways results in short-term/temporary closure of the following streets because they can accommodate paneling/decking of roadway to maintain traffic: <ul style="list-style-type: none"> Intersection of Harwood Street and Main Street Pearl Street between Elm Street and Main Street Cesar Chavez between Elm Street and Main Street Elm Street between Cesar Chavez Boulevard and Good Latimer Intersections of Elm Street and Pacific Avenue with Good Latimer would be impacted during track construction 	● <ul style="list-style-type: none"> Potential for short term or reduced service on Green Line due to and tie-ins between Deep Ellum and Baylor Stations Temporary bus detours as part of traffic management plans as needed during construction Due to Elm Street closure, shift bus routes that use Elm Street to Main Street 	○ <ul style="list-style-type: none"> Depressed or Hybrid Option for I-345: <ul style="list-style-type: none"> Unless D2 is designed for a depressed I-345, would likely close D2 during to take I-345 under D2 Due to the depth of D2 as it crosses I-345, in a depressed I-345 option, the I-345 mainlanes will not be able to gravity drain and a pump station and vault will be needed; cost estimated at \$100 million plus O&M. TxDOT will require others to pay for the capital costs of the pump station/vault as well as maintenance and operations of the pump station and vault. At Grade/Boulevard I-345 Option: Due to the volume of traffic now utilizing city streets, grade separations of D2 and an at-grade I-345 option would likely be warranted at some city streets
2-2: Commerce Street Alignment with Two Portals (Good-Latimer and existing Green Line)	● <ul style="list-style-type: none"> Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> Would not close Miranda Street Would not close northbound I-345 frontage road Restrictions to roadway access/egress: <ul style="list-style-type: none"> Swiss Avenue could have two-way operations west of Good Latimer Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 40 	● <ul style="list-style-type: none"> Number of at-grade crossings: <ul style="list-style-type: none"> Removes four at-grade LRT crossings north and south of Pacific Avenue (three on Good Latimer and one at Pacific/Good Latimer intersection) No at-grade crossing of Hawkins Bike/Ped (360 Connectors): <ul style="list-style-type: none"> Due to portal in middle of Good Latimer, Bike District Connector on Swiss would need to be relocated. Improves Pedestrian. District Connector across Pacific 	● <ul style="list-style-type: none"> Cut and cover construction (including the portal) along Good Latimer between Pacific and Live Oak will reduce the number of travel lanes for an extended period of time Cut and cover construction of the wye junction at Monument/Good Latimer/Elm intersection and the Good Latimer portal, requires long-term closure of: <ul style="list-style-type: none"> Good Latimer between Pacific and Main Street Monument Street between Good Latimer and Indiana Street 	○ <ul style="list-style-type: none"> Due to two portal connections and replacement of Green Line in tunnel, there will be long-term service impact to Green Line and bus bridge requirements between Baylor and Pearl Stations for riders in southeast Dallas O&M - Undesirable below grade wye with special trackwork, signals. Less accessible for emergency or regular repairs so response time will be increased and potential for longer service delays. May be desirable to have parallel access road underground. 	● <ul style="list-style-type: none"> Depressed or Hybrid Option for I-345: D2 would be depressed over 50 feet below ground at I-345, which would accommodate a depressed I-345 option and allow for the mainlanes to gravity drain At Grade/Boulevard I-345 Option: No impact to proposed design options
2-5: Original AA and 2010 DEIS	○ <ul style="list-style-type: none"> Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> Would not close Miranda Street Restrictions to roadway access/egress: <ul style="list-style-type: none"> Swiss Avenue could have two-way operations west of Good Latimer Location of the portal within Commerce between Cesar Chavez and I-345, would result in a reduction of travel lanes on Commerce Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 136 <ul style="list-style-type: none"> LRT operations would increase traffic delay at the intersections of Good Latimer and Elm Street and Good Latimer and Main Street Good Latimer traffic would continue to be impacted LRT in the median of the roadway 	○ <ul style="list-style-type: none"> Number of at-grade crossings: <ul style="list-style-type: none"> New at-grade crossings at Good Latimer & Main, Good Latimer and Elm Bike/Ped (360 Connectors): <ul style="list-style-type: none"> Two more at-grade LRT crossings of bike/ped District Connectors than baseline (Main and Elm) 	● <ul style="list-style-type: none"> Cut and cover construction along Commerce requires long-term closure of some travel lanes on Commerce between Pearl and entrance-ramp to southbound I-345 Good Latimer between Main Street and Pacific Avenue would be impacted by track construction Construction would impact I-345 column foundations and likely require closures of I-345 	● <ul style="list-style-type: none"> Minor closure of Green Line to tie in new track connection from the south [weekend(s)] O&M – Need to incorporate ability to hold train under/over I-345 in case of street closure/incident along short blocks. 	● <ul style="list-style-type: none"> Depressed or Hybrid Options: D2 would be at grade as it crosses I-345, therefore there will be no drainage impacts At Grade/Boulevard I-345 Option: Due to the volume of traffic now utilizing city streets, grade separations of D2 and an at-grade I-345 option would likely be warranted at some city streets

D2 East End Evaluation – Second Level Screening

Alternative	Street Grid/Traffic Impacts	Pedestrian, Bicycle, and Micro-Transit Safety Effects	Temporary Construction Impacts	DART Service Impacts/O&M Considerations	Impacts to Future Design Options for I-345
<p>New 3-1a: 2017 City Council LPA with Wye under I-345 and Two Portals</p>	<ul style="list-style-type: none"> ● Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> ○ Closes Monument Street between Good Latimer and Indiana Street ○ Would not close Miranda Street ● Restrictions to roadway access/egress: <ul style="list-style-type: none"> ○ Swiss Avenue made a through street at Good Latimer with two-way operations on both sides of Good Latimer ● Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 32 ● Other: <ul style="list-style-type: none"> ○ Northbound Cesar Chavez between Elm Street and Good Latimer relocated from east side of I-345 into the middle of I-345 	<ul style="list-style-type: none"> ● Number of at-grade crossings: <ul style="list-style-type: none"> ○ Removes at-grade crossings at Good Latimer north of Live Oak, three between Swiss and Elm, at-grade crossing at Pacific ● Bike/Ped (360 Connectors): <ul style="list-style-type: none"> ○ Improves District Connector crossings at Pacific and Swiss. Simplified ped. District Connector at Live Oak 	<ul style="list-style-type: none"> ○ Cut and cover requires long-term closure of: <ul style="list-style-type: none"> ○ Main Street between Harwood Street and western right-of-way of I-345 ○ Northbound I-345 exit ramp to west Main Street ○ Elm Street between I-345 and Good-Latimer ○ Monument Street between Good Latimer and Indiana Street ● Cut and cover in a perpendicular manner across roadways results in only short-term/temporary closure of the following streets because they can accommodate paneling/decking of roadway to maintain traffic: <ul style="list-style-type: none"> ○ Pearl Street across Main Street ○ Cesar Chavez across Main Street ○ Good Latimer north of Elm Street ● Northbound I-345 frontage road (Pacific to Cesar Chavez connection) and Cesar Chavez/northbound frontage road to Good Latimer/Live Oak is closed before relocating replacement road. ● Southbound Central (just south of Good Latimer) would be impacted during track construction ● To remove the existing Green Line, Good Latimer requires reconstruction ● Construction of the wye would impact I-345 column foundations and likely require closures of I-345 	<ul style="list-style-type: none"> ○ Due to new Baylor portal connections and replacement of Green Line in tunnel, there will be long-term service impact to Green Line and bus bridge requirements between Baylor and Pearl Stations for riders in southeast Dallas. ● O&M – Undesirable below grade wye with special trackwork, signals. Less accessible for emergency or regular repairs so response time will be increased and potential for longer service delays. May be desirable to have parallel access road underground. Undesirable reverse curves combined with grades leads to poor train performance. Proximity of stations with 5 to 6 percent grade in between is undesirable due to short acceleration up grade then immediate brake. 	<ul style="list-style-type: none"> ● Depressed or Hybrid Options: <ul style="list-style-type: none"> ○ D2 would be at grade as it crosses I-345, therefore there will be no drainage impacts D2 would be depressed over 50 feet below ground at I-345, which would accommodate a depressed I-345 option and allow for the mainlanes to gravity drain ○ Depressed and Hybrid I-345 options will need to be modified to allow room for D2 on the east right-of-way line. TxDOT believes modifications can be made ● At Grade/Boulevard I-345 Option: No impact to proposed design options

D2 East End Evaluation – Second Level Screening

Alternative	Street Grid/Traffic Impacts	Pedestrian, Bicycle, and Micro-Transit Safety Effects	Temporary Construction Impacts	DART Service Impacts/O&M Considerations	Impacts to Future Design Options for I-345
3-2: Commerce Street Alignment with Wye under I-345 and Two Portals	<ul style="list-style-type: none"> ● Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> ○ Closes Monument Street between Good Latimer and Indiana Street ○ Would not close Miranda Street ● Restrictions to roadway access/egress: <ul style="list-style-type: none"> ○ Swiss Avenue made a through street at Good Latimer with two-way operations on both sides of Good Latimer ● Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 32 ● Other: <ul style="list-style-type: none"> ○ Northbound Cesar Chavez between Elm Street and Good Latimer relocated from east side of I-345 into the middle of I-345 	<ul style="list-style-type: none"> ● Number of at-grade crossings: <ul style="list-style-type: none"> ○ Removes at-grade crossings at Good Latimer north of Live Oak, three between Swiss and Elm, at-grade crossing at Pacific ● Bike/Ped (360 Connectors): <ul style="list-style-type: none"> ○ Improves District Connector crossings at Pacific and Swiss. Simplified pedestrian District Connector at Live Oak 	<ul style="list-style-type: none"> ○ Cut and cover requires long-term closure of: <ul style="list-style-type: none"> ○ Commerce Street between Harwood Street and western right-of-way of I-345 ○ Southbound I-345 entrance ramp from Commerce Street ○ Elm Street between I-345 and Good-Latimer ○ Monument Street between Good Latimer and Indiana Street ● Cut and cover in a perpendicular manner across roadways results in short-term/temporary closure of the following streets because they can accommodate paneling/decking of roadway to maintain traffic: <ul style="list-style-type: none"> ○ Southbound I-345 entrance ramp from Main Street ○ Northbound I-345 exit ramps to Main Street and Elm Street ○ Main Street at I-345 ● Northbound I-345 frontage road (Pacific to Cesar Chavez connection) and Cesar Chavez/NB frontage road to Good Latimer/Live Oak is closed before relocating replacement road. ● Southbound Central (just south of Good Latimer) would be impacted during track construction ● To remove the existing Green Line, Good Latimer requires reconstruction ● Construction of the wye would impact I-345 column foundations and likely require closures of I-345 	<ul style="list-style-type: none"> ○ Due to new Baylor portal connections and replacement of Green Line in tunnel, there will be long-term service impact to Green Line and bus bridge requirements between Baylor and Pearl Stations for riders in southeast Dallas. ● O&M – undesirable below grade wye with special trackwork, signals. Less accessible for emergency or regular repairs so response time will be increased and potential for longer service delays. May be desirable to have parallel access road underground. 	<ul style="list-style-type: none"> ● Depressed or Hybrid Options: <ul style="list-style-type: none"> ○ D2 would be at grade as it crosses I-345, therefore there will be no drainage impacts D2 would be depressed over 50 feet below ground at I-345, which would accommodate a depressed I-345 option and allow for the mainlanes to gravity drain ○ Depressed and Hybrid I-345 options will need to be modified to allow room for D2 on the east right-of-way line. TxDOT believes modifications can be made ● At Grade/Boulevard I-345 Option: No impact to proposed design options
3-7a: Alignment Under Southbound I-345 Access Road	<ul style="list-style-type: none"> ● Number of streets to be permanently removed/closed: <ul style="list-style-type: none"> ○ Would not close Miranda Street ○ Closes exit from southbound I-345 to Live Oak Street but there is a reasonable alternate route; lane balance on I-345 will need to be evaluated ● Restrictions to roadway access/egress: <ul style="list-style-type: none"> ○ Swiss Avenue could have two-way operations west of Good Latimer ● Travel Time Impacts – Number of at-grade train crossings of arterials in Zone B, per hour⁴: 64 	<ul style="list-style-type: none"> ● Number of at-grade crossings: <ul style="list-style-type: none"> ○ Would not add at-grade LRT crossing at Hawkins Street ○ Would not create two new at-grade LRT crossings on southbound Good Latimer. ● Bike Ped (360 Connectors): <ul style="list-style-type: none"> ○ Minimal change 	<ul style="list-style-type: none"> ● Cut and cover requires long-term closure of Good Latimer Expressway, west of I-345 ● Cut and cover in a perpendicular manner across roadways results in short-term/temporary closure of the following streets because they can accommodate paneling/decking of roadway to maintain traffic: <ul style="list-style-type: none"> ○ Pearl south of Live Oak ○ Live Oak east of Pearl ● Would impact bus operations at the East CBD Transfer Center 	<ul style="list-style-type: none"> ● Potential for short term closure or reduced service on Red/Blue/Orange lines due to parallel portal construction, cut-and-cover construction of southbound D2 track connection and tie into existing tunnel portal tracks ● Potential short term closure of Green Line for D2 cut-and-cover construction at southeast junction 	<ul style="list-style-type: none"> ● Depressed and Hybrid Options: Would require modifications to the conceptual I-345 designs to allow room for D2 on the east west right-of-way line. TxDOT believes modifications can be made ● At Grade/Boulevard I-345 Option: No impact to proposed design options

D2 East End Evaluation – Second Level Screening

Costs/Funding and Schedule

Alternative	Additional D2 Project Cost ⁵	Annual Transit Operating Costs	FTA Grant Implications	DART Project Schedule
Baseline - FEIS 30% Design	● na	● na	● Continue under FTA Core Capacity; possible shift to FTA New Starts	● Minimal delay assuming agency support
1-1: FEIS LPA + Enhanced Urban Design	● Up to \$20 million	● Similar to Baseline - FEIS 30% Design	● Continue under FTA Core Capacity; possible shift to FTA New Starts	● Minimal delay assuming agency support
1-2: 2017 City Council Adopted LPA	● \$175 million: \$83 million capital costs \$93 million right-of-way	● Similar to Baseline - FEIS 30% Design	● Continue under FTA Core Capacity; possible shift to FTA New Starts	● Potential minor delay due to shift in alignment and likely need to mitigate parking garage loss
2-1: Elm Street Alignment/Portal, East of I-345	○ \$300 million: \$74 million capital costs \$217 million right-of-way	● Similar to Baseline - FEIS 30% Design	○ • Shift to FTA New Starts due to delay to enter FTA Capital Investment Grant (CIG) Engineering phase • Added cost may remove project from cost-effectiveness range	● Approximately 1 to 2 year delay to update design/environmental
2-2: Commerce Street Alignment with Two Portals (Good-Latimer and existing Green Line)	○ \$300+ million: \$273 million capital costs \$29 million right-of-way	● Up to \$1 million higher due to longer route/below grade wye may add costs	○ • Shift to FTA New Starts due to delay to enter FTA CIG Engineering phase • Added cost may remove project from cost-effectiveness range	● Approximately 1 to 2 year delay to update design/environmental
2-5: Original AA and 2010 DEIS	● \$50+ million: \$47 million capital costs \$5 million right-of-way	● Up to \$1 million higher due to longer route	● • Shift to FTA New Starts due to delay to enter FTA CIG Engineering phase	● Approximately 1 to 2 year delay to update design/environmental
New 3-1a: 2017 City Council LPA with Wye under I-345 and Two Portals/Open Cut Station	○ \$390+ million:	● Up to \$1 million higher due to longer route/below grade wye may add costs	○ • Shift to FTA New Starts due to delay to enter FTA CIG Engineering phase • Added cost may remove project from cost-effectiveness range	○ • Approximately 2 to 3 year delay to update design/environmental in coordination with I-345 • May need to tie construction schedule to I-345 due to construction risk
3-2: Commerce Street Alignment with Wye under I-345 and Two Portals	○ \$300+ million: \$276 million capital costs \$27 million right-of-way	● Up to \$1 million higher due to longer route/below grade wye may add costs	○ • Shift to FTA New Starts due to delay to enter FTA CIG Engineering phase • Added cost may remove project from cost-effectiveness range	○ • Approximately 2 to 3 year delay to update design/environmental in coordination with I-345 • May need to tie construction schedule to I-345 due to construction risk
3-7a: Alignment Under Southbound I-345 Access Road	● \$125 million: \$113 million capital costs \$12 million right-of-way	● • Up to \$1 million lower due to different operating plan statistics • Insert peak period short train opportunities would add \$6 to 8 million each to maintain direct access	● Shift to FTA New Starts due to delay to enter FTA CIG Engineering phase	● Approximately 1 to 2 year delay to update design/environmental and shift to new program

D2 East End Evaluation – Second Level Screening

Support

Alternative	Stakeholder Support
Baseline - FEIS 30% Design	
1-1: FEIS LPA + Enhanced Urban Design	
1-2: 2017 City Council Adopted LPA	
2-1: Elm Street Alignment/Portal, East of I-345	
2-2: Commerce Street Alignment with Two Portals (Good-Latimer and existing Green Line)	
2-5: Original AA and 2010 DEIS	
3-1a: 2017 City Council LPA with Wye under I-345 and Two Portals	
3-2: Commerce Street Alignment with Wye under I-345 and Two Portals	
3-7a: Alignment Under Southbound I-345 Access Road	

Ratings ○ = Substantial impact or effect ◐ = Moderate impact or effect ● = Minimal impact or effect

Notes

3. For economic and transit-oriented development opportunities, two measures were developed:

- Maximum lost development potential (a total amount of developable square feet that could be built but cannot be because of D2). Calculated using the total square feet of the private property acquisitions times a Floor Area Ratio (FAR) of 20 (what is currently allowed in all downtown zoning).
- Realistic lost development potential (assume almost no development will build 100 percent lot coverage at an FAR of 20). Calculated using the total square feet of the private property acquisitions times 80 percent lot coverage (reasonable assumption looking at other downtown developments) times FAR of 12.
- Assumptions:
 - Improvement Value: \$288/square feet (sf), blended from \$275/sf for multifamily and \$300/sf commercial which is current values downtown
 - Land Value: \$100/sf (downtown has a wide range from \$30 to 160/sf. \$100/sf is the rate the Office of Economic Development suggested.
 - Values were derived from current comps taken from Dallas County Appraisal District from eastern Downtown and Deep Ellum developments
 - Does not assume air rights development, which is possible in many locations.
 - The City of Dallas Office of Economic Development helped provide comp and guidance based of recent projects in and around the project area.
 - Rating was determined as follows: ● or Green < \$100 million in lost development value, ◐ or Yellow = \$101-\$300 million in lost value, and ○ or Orange > \$301 million in lost value.

4. Travel time impacts along Good Latimer was assessed by the change in number of trains crossing lanes of any street on the City of Dallas Thoroughfare Plan in Zone B, at-grade, per hour, total in both directions. The goal was to measure the potential extent of vehicular travel disruptions to arterials that carry the bulk of the through traffic in the area.

- Streets on the Thoroughfare Plan that are impacted by at-grade train crossings in Zone B include Good Latimer, Cesar Chavez, Live Oak, Pacific/Gaston, Elm, and Main.
- It is assumed that the Green and Orange LRT lines will have 15 minute frequency. Therefore, where present at a given location, each line would have four trains arriving per hour in each direction, or a total of eight in both directions.

It is assumed that trains traveling in different directions or on different lines will not cross an arterial at the same time. Therefore, if the Orange line crosses X Arterial, it would do so eight times per hour. If both lines cross X Arterial, the arterial would experience 16 train crossings per hour. 5. Change in costs compared to the Baseline - FEIS 30 Percent Design. Due to the conceptual nature of the options, costs are order of magnitude with limited information relative to geological conditions, utilities, and street and/or I-345 modifications.