Meeting Summary Notes

Project: DART Dallas CBD Second Light Rail Alignment (D2 Project) – D2 Subway

Subject: Technical Committee Meeting for D2 Subway Project Refinement Phase

Date: Thursday, December 15, 2016 at 1:30 PM

Location: DART Headquarters, 1401 Pacifica, Dallas, TX – Room 1C

Attendees: Steve Salin, DART VP Capital Planning, Keith Williams, Oncor
Chad Edwards, DART AVP Capital Planning, Chad Little, Atmos
Ernie Martinez, DART D2 Project Manager, Brian Hooker, Federal Transit Admin.
Kay Shelton, DART Capital Planning, Stephen Endres, TxDOT
Carlos Huerta, Community Engagement, Frank Honeycutt, City of Dallas
Mike Holbrook, DART, Chelsea St. Louis, City of Dallas
Gonzalo Briones, DART, Theresa O’Donnell, City of Dallas
Rob Smith, DART, Micah Baker, Dallas County
Leroy Cox, Jr., DART, David Williams, Kinetic Spectrum
Eben Cobb, DART, Allan Zreet, DDI
Mack Turner, DART, Jacob Browning, DDI
Greg Althoff, DART, Jing Xu, NCTCOG
Michael Miles, DART, Larry Good, GFF/DDI
Evelio Hernandez, DART, Minesha Reese, Dallas County
John Rhone, DART, Dustin Bullard, DDI
Todd Plesko, DART, Steven Duong, AECOM (for City of Dallas)
Tom Shelton, GPC6 Program Manager, Sarah Chadderdon, NCTCOG
Steve Knobbe, GPC6 D2 Project Manager, John Reynolds, City of Dallas
Israel Crowe, GPC6 D2 Engineering Lead, Pete Mazurek, Federal Transit Admin.
Frank Turner, GPC6 Project Team, Peer Chacko, City of Dallas
Teresa Hanson, GPC6 Project Team, Cathy Nadals, Federal Transit Admin.
Pete Russell, AT&T

These notes document the presentation and the question and answer discussion for the Dallas CBD Second Light Rail Alignment (D2 Project) Technical Committee meeting held at the DART Headquarters on Thursday, December 15, 2016 at 1:30 PM. Attachments are listed below. Several additional items were included in a follow-up email to the Technical Committee after the meeting.

Attachments

- Presentation
- D2 Subway Ideas Packet
Welcome & Introductions

Steve Salin, DART Vice President of Capital Planning, opened the meeting by welcoming attendees. Steve said the role of the Technical Committee is to provide data to help figure out where the line goes, where the general location of the stations, and where the portals should go. The key objectives for the meeting included:

- Review stakeholder feedback
- Develop reasonable range of potential subway alternatives
  - Focus on alignment, portals and station locations
- Discuss potential fatal flaws and introduce screening criteria
- Question & Answer (Q&A) session

Steve mentioned homework for attendees – to review thoughts and ideas we put on paper and help fill in the gaps to discuss and share next time.

Agenda

The agenda for the meeting included a discussion of:

- Background and project status
- Schedule and Decision Making Process
- Public and Stakeholder Involvement and the role of the Technical Committee
- Subway Construction Overview
- Stakeholder Feedback and Evaluation Criteria
- Review of Reasonable Subway Alternatives
- Next Steps

Following Steve’s introductions, Chad Edwards provided an overview of the project status, focusing on the FTA Core Capacity criteria. D2 is intended to not only address the immediate core capacity issue but to provide operational flexibility for the system and enhanced mobility. The key issue is capacity on the Red Line between Pearl and CityPlace. Orange and Blue Line capacity is approaching the FTA threshold (which uses space/passenger to assess capacity) but Red Line meets the threshold.

To address the core capacity problem, additional service (more trains) need to be added in the Red Line Corridor. To accomplish this, the operating concept shifts Orange and Green to D2, freeing up space on the existing LRT corridor to add Red Line service. The Orange Line terminus is to be determined – it could end in Deep Ellum, continue to Lawnview, or continue north to Plano as it does today.

Chad then reviewed existing ridership trip purpose and CBD destinations from the 2014 on-board transit survey. Most trips are work trips with the highest density seen in the core of downtown mostly between Jackson and Ross. Employment is projected to see some growth in downtown through 2040 to 183,000 jobs, while residential growth is projected to grow to over 30,000 residents.
The discussion then shifted to schedule, focusing on current 2-year project development phase of the project, which ends in November 2017. DART requested an extension from FTA; however, FTA feels it is premature at this time and will discuss it again at the date gets closer.

The critical path schedule item is to refine the D2 LPA and get approvals from the DART Board and Dallas City Council in summer 2017 in order to meet the September 2017 FTA Core Capacity submittal deadline. The technical committee will play a key role in helping the team gather information and data on potential subway options to carry forward to stakeholders and decision makers.

Steve Knobbe, GPC6 Project Manager, then reviewed subway construction considerations including geology considerations. Given that the original Trinity River was closer to downtown, there is poor geology for tunnel generally west of Lamar Street. Austin Chalk becomes thicker and more prominent to the west which is good for tunneling.

He then reviewed various construction methods and the need for land area to launch equipment and for staging/hauling. There will likely be a need for some cut and cover areas as well. Stations can have different types of access and can have multiple access points. Plazas, use of public right-of-way or integration into adjacent buildings/properties are options.

Kay Shelton then transitioned the discussion to stakeholder feedback. At the December 7 meeting, the team discussed what’s important to stakeholders and what the key concerns were related to a subway. Many of these factors are being integrated into the evaluation process and criteria.

There are some objectives that are more important and can be used to define the initial set of reasonable alternatives. These include budget, constructability, core capacity objectives including shifting Green and Orange lines to D2, operational flexibility, ease of transfer/access to jobs, and minimizes curves.

Kay mentioned that draft evaluation screening criteria have been developed and will be sent to the Committee via email for review. The criteria will be used to narrow the list of reasonable alternatives to a short list by the end of February so we can focus on 2-3 key corridor options.

Streetcar will have a concurrent effort with D2 to assess a central link corridor. The current Alternatives Analysis staff recommendation is Main Street but an Elm/Commerce couplet will be evaluated as well. With D2 being refined as a subway there may be other routes to consider as well.

Several ideas were submitted during and prior to the stakeholder meeting. A Subway Ideas Packet was distributed to the group. The D2 Team took these ideas and using design criteria has developed an initial set of alternatives that need to be reviewed. Some ideas submitted are still under development such as options in the uptown area.

The team walked the group through six alignment corridors, some with options for connection points or portals. These included Pacific, Elm, Commerce, Wood, Young and Canton. Some options included connection from Victory via the existing RR ROW or the DART owned ROW through Victory to serve Perot Museum. A new option developed to address Deep Ellum concerns was a Swiss Avenue connection to the Green Line. This would require removal or relocation of the Deep Ellum station.
The Technical Committee was asked to review the options and provide feedback on known issues, conflicts or opportunities by January 6. A follow up meeting will be held in mid-January to discuss findings and initiate the screening evaluation.

The group was informed that there will be a Stakeholder Meeting on January 18 and public meetings on January 19.

**Question & Answer Session**

**Question:** What about new replaced Good Latimer Deep Ellum Station if west of IH 345; could it be in retained cut?

**Response:** It could be similar to Mockingbird station. We are convinced we will be there first before anything happens to IH-345 and will consider status quo on IH-345; research has been done on columns and piers.

**Comment:** On the slide with concentration of employment, we are looking at this in the Dallas 360 plan and would like to share that additional information with the team.

**Response:** Yes, we need that information and it would be good to share it with the team.

**Question:** Are we assuming flat junctions across the board?

**Response:** No, it depends on how much room we have; prefer to not do flat junctions but it many cases it may be the only option.

**Comment:** We have gotten positive feedback from Deep Ellum foundation on the Swiss option; resolves many of their previous issues.

**Question:** Would Orange Line come in at Swiss Option?

**Response:** We will look at options to continue to balance operations and will decide best fit.

**Question:** If we move Good Latimer Deep Ellum station, where would it be?

**Response:** It depends on the option picked; there are pros and cons for each one.

**Comment:** On Elm, concerned about JFK 6th Floor museum for an option the comes down the existing railroad ROW - elevation change to consider and geology is poor.

**Question:** Are we replicating the S-curve we got rid of on Hawkins Street with the Commerce to Swiss option?

**Response:** Assumed a 300-foot radius on these drawings, may have to do larger radius but there is a parking garage we would have to go under or acquire.

**Comment:** Explain the merits of larger radius curves.
Response: A radius of 300 feet has issues of noise and wear on the rails and wheels; hard to replace rails in a tunnel. Noise may not be issue on the surface but can be heard in the subway.

Question: Which one wears down faster – wheels or track?
Response: The wheels wear down faster.

Question: If we go with a 500-foot radius, will this help?
Response: No, would need 1,200 feet for it to be minimal wear.

Question: We need to understand what you have no problem going under and those that we cannot.
Response: We don’t know enough about some of the foundations yet but not going under a hotel; tunnels can be built through foundations, but can become a fatal flaw and be a liability issue.

Question: Generally speaking, the best alignment will utilize ROW or public parks or property?
Response: Yes, trying to go deep to avoid utilities; tall buildings have deep foundations – we could go adjacent to those. It is the smaller buildings that have foundations that are in the rock we would need to go through; may be a building or two or a parking lot could be acquired or redeveloped to reduce the curves.

Question: When we get homework, do we get those drawings?
Response: Yes, we will email them.

Question: In eliminating s-curve, would we build over it?
Response: Yes, build around or over it.

Question: On Swiss Avenue, related to customer access, what is over on the east side? Station at Deep Ellum, takes them further from where they want to go.
Response: On this option, this piece of Swiss Avenue is used very little. Deep Ellum Foundation is excited that there could be redevelopment opportunities in this area. Question: Has Meadows Foundation weighed in? NOTE: When I heard this comment, I was sure they meant the Parks for Downtown Dallas, headed up by Amy Meadows
Response: Not sure if they turned in a drawing at the Stakeholder Meeting but they were invited to the meeting

Question: If straighten the s-curve in the Commerce to Swiss alignment, does station remain in same location?
Response: The at-grade station could stay there but it depends on where the alignment and portal transition is.

Question: On Wood Option, could the station be on the east side?
Response: It could be.
**Question:** Are you keeping Carpenter Park in mind?

**Response:** Yes, unfortunately the Swiss Option goes through two dog parks under construction. We have limited options in downtown. Need to think about trade-offs for a Billion dollar project and making modifications to other properties.

**Question:** Describe the section of Young as it heads east.

**Response:** That section is still in full subway; goes under dance studio and comes out of the ground and splits at Cesar Chavez into different options.

**Comment:** Depending on the option, it swings slightly in one or the other direction to accommodate curves.

**Comment:** You’ll get an email with these sheets - come back to next meeting with annotations, issues, concerns, positives, tweaks to options; think about where stations need to go. In the Commerce option, do not have room for two stations in a subway option. Each station is about two long blocks underground given mechanical systems and access needs. Where should vent shafts come up? Each station will have two vent shafts. With narrow sidewalks, consider where it will fit. Sewer, water, gas, etc. will have to be considered as well.

**Question:** On rough cost estimate, did you have an idea of how much tunnel we can do and how long before the tunnel length becomes a fatal flaw?

**Response:** Will bring cost estimates to a future meeting. The DART Board established $1.3 Billion (year of expenditure) as the new budget. This is about $1.1 Billion in today’s dollars.

**Question:** Is it feasible to have center platforms for ventilation?

**Response:** Depends on how wide the street ROW is; is it twin bore or single bore? Depends on opportunities for the vertical circulation and design elements which are not known at this time.

**Question:** Will there be cross overs for operations in these alignments?

**Response:** Yes, we need cross overs for operational flexibility and also need to consider if there will be future extensions (D3 / D4).

**Question:** Will we incorporate automated train detection into this project?

**Response:** That is a detail that will be addressed in subsequent project phases.

**Question:** Will we have drawings that have more detail?

**Response:** Not yet, but will in the future. Take into account the “muck house” if it’s a long corridor. Will need to look at where truck routes need to go; consider street repairs; lay down yards for tunnel construction; and parking lots for stations.

**Question:** What stage in this process determines where the tunnels go and what construction method will be used?
Response: It would be best if we can stay out of the worst geology and use a single-tunnel method; however, although all three methods may be used.

Question: Does DART have to own all the ROW?

Response: No, but dealing with property owners complicates the issues. We prefer to be the owners.

Question: On the last three corridors shown on the packet list, are they dead?

Response: We have not developed them yet; probably will not satisfy core capacity requirements.

Question: How long is portal transition area?

Response: We can generate a rough cross section and provide it to the group.

Question: Idea on how many substations?

Response: Do not know yet.

Question: How big of an area does a station normally serve?

Response: They can draw walks from immediate area. For this project, customers using Green and Orange line would be coming into a new corridor such as the Commerce corridor. There is a lot of density in this corridor. There isn’t a whole lot of demand for going to the south side of downtown. We need to serve the current customer base to address core capacity.

Question: Couldn’t they just get off and get on another line?

Response: Have to look at transfers; don’t want to hurt existing ridership. And too many transfers will results in unbalanced loads and not address the core capacity problem.

Question: If you created another alignment, wouldn’t that help ridership?

Response: It’s about a quarter mile walk distance (up to half mile for rail) – based on trip destination map there is good coverage on highest density office space along Commerce corridor. Could reach new market area and add ridership.

Question: How about streetcar?

Response: The central link is being advanced through planning concurrent with D2. The City owns streetcar so further expansion is dependent on their funding plan. Depending on where D2 and central link streetcar end up, they may need to be done at the same time. Other expansion would be phased.

Question: Streetcar needs to take into account future traffic on streets like Commerce especially since buses operate significant service on Elm and Commerce. Is there capacity with lanes being reduced?

Response: We’ll look at traffic as part of that analysis.

Question: Regarding station locations and corridors, we will have to answer a philosophical conflict that needs to be resolved with the city; are we providing more capacity for current riders or create better access for future riders?
Response: This project is a core capacity project to serve our current riders.

Question: While we are doing that, we should also consider future ridership. If don’t settle it now, would have to go back to the drawing board next September.

Response: Have to get Green and Orange into a second alignment and not penalize riders by increasing travel through downtown too much.

Comment: Increase demand capacity should be considered and aligned with City priorities. We need to resolve this now.

Response: Other cities will be involved too, since their citizens use the system today. We can look at opportunities. We have to find common ground and stand before the DART Board and the City Council to present the preferred alternative. Streetcar will be large part of this discussion to open expansion for future riders.

A calendar invitation will be provided for the next meeting and a follow-up email will be sent with “homework” information.
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## DART - D2 Subway Technical Committee Meeting
### Thursday December 15, 2016 at 1:30 pm  DART HQ Room 1-C

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Meeting Objectives

- Review stakeholder feedback
- Develop reasonable range of potential subway alternatives
  - Focus on alignment, portals and station locations
- Discuss potential fatal flaws and introduce screening criteria

Discussion Items

- Background
- Schedule and Decision Making Process
- Public/Stakeholder Involvement
  - Role of Technical Committee
- Subway Construction Overview
- Stakeholder Feedback and Evaluation Criteria
  - Subway Route Ideas
  - Range of Reasonable Subway Alternatives
- Next Steps

Redefining D2 as a Subway

- Concerns with D2 mostly at-grade
- Recent Actions:
  - Dallas City Council approved resolution to pursue subway option from Woodall Rodgers to IH-345
  - DART Board approved FY17 Financial Plan with increased budget ($1.3 Billion YOE) for subway and larger FTA grant amount

Why is D2 Important?

- Add Core Capacity to and through downtown
  - Some trains will be at capacity within a few years
- Provide Operational Flexibility for the system
  - Continuity of service during incidents
  - System expansion/added service
- Enhance Mobility and Access for existing and future riders
  - Get our riders where they need to go
Core Capacity – What it means for D2

• The Red Line from Pearl to CityPlace/Uptown is key issue
• FTA considers:
  1. Usable space per passenger in peak hour peak direction to determine if project qualifies as a Core Capacity project
     – must be less than 5.7 sq ft usable space per passenger
  2. Usable space per passenger in peak hour peak direction with D2 in place to determine capacity increase
     – must be at least 10% improvement

Operating Plan Concept

• Green and Orange to shift to D2
• Orange Line terminus to be determined
  – Deep Ellum
  – Lawnview
  – Other
• Red Line loads addressed by insert trains
  – Note added post meeting: Red Line insert trains would be more frequent than today's Orange Line service in order to meet core capacity issue on Red Line. This improved frequency is not reflected on the concept map.

Usable Space on Red Line

Existing Ridership

Work Trips
2014 On Board Survey (Transit Only)

Work Trips
All Trips from the Regional Model
Employment Density

2014
175,000 Employees

2040
183,000 Employees

Source: NCTCOG Demographic Data

Population Density

2014
6,500 Residents

2040
31,000 Residents

Source: NCTCOG Demographic Data

Schedule and Decision-Making Process

FTA Core Capacity Funding

- November 2015
  - FTA authorization to enter two-year Project Development (PD) phase to complete PE/EIS
- February 2016
  - D2 receives “Medium-High” rating from FTA
- September 2016
  - DART submits annual update to FTA
  - FTA held its review pending subway discussion
  - D2 will receive “not rated” in next report to Congress

FTA Project Development Extension

- DART has requested extension of PD by two years to November 4, 2019
- FTA has indicated extension is premature at this time and asks that DART:
  - Continue to work expeditiously on advancing D2
  - Request extension closer to current deadline of November 4, 2017
- FTA appreciated the advance notice

LPA Refinement Phase
LPA Refinement Evaluation Process

- **Key Objectives**
- **Range of Reasonable Subway Alternatives**
- **Screening Evaluation**
- **Short List of Subway Alternatives**
- **Detailed Evaluation**
- **Refined D2 LPA Recommendation**

Dec-Jan | Jan-Feb | Mar-May | May-June

Public and Agency Involvement

**Key to Success**

- Policy & Management
- Stakeholders
- DART Board
- Dallas City Council
- Policy Committee
- DART Staff/Consultant Team
- Stakeholder Committee
- Technical Committee
- QOZ Mobility Committee

**Role of Technical Committee**

- Provide existing reports, data, analyses
- Validate technical work
- Represent respective agency policies and perspectives
- Increase technical credibility of effort
- Address issues relative to your expertise to stakeholders and public
- Attend meetings regularly

**Representation**

- DART Departments
  - City Manager’s Office
  - Planning and Urban Design
  - Mobility and Streets
  - Public Works
  - Parks and Recreation
  - Historic Preservation
  - Economic Development
  - Water Utilities
  - Resiliency
- Utility Companies
  - Oncor
  - AT&T
  - ATMOS
  - Time Warner
  - Verizon
- FTA
- DDI
- TxDOT
- Dallas County
- NCTCOG
- Texas Central Railway

**Subway Considerations**

- Geology of the CBD
- Portal Transition Areas
- Subway Construction Methods
  - Tunnel Boring Machine (TBM)
  - Sequential Excavation Method (SEM)
  - Cut and Cover Method
- Station Construction and Access
**Geology**

**Portal Transition Areas**
Mockingbird Station & North Portal

- Open shaft for lowering/assembling equipment
- Construction staging area
- Hauling routes

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**Subway Construction Methods**

**Tunnel Boring Machine (TBM)**

**Sequential Excavation Method (SEM)**

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**Subway Construction Methods**

**Sequential Excavation Method (SEM)**

- Can be used for portions of subway
- Common construction method for stations, ventilation shafts, emergency access
- Requires temporary and/or permanent use of surface right-of-way
1. Utility relocation and initial street excavation

2. Install concrete decking/ temporary street surface

3. Station or subway construction and street restoration

Tunnel Earth Removal

Muck house

Subway Station Access

- Integrate into building
- Station plaza
- Sidewalk / Public right-of-way
- Connections to pedestrian tunnel system
- Multiple access points possible
- Urban design opportunity at station access points

Station Integration into Adjacent Building Site or Plaza
Stakeholder Input and Evaluation Criteria

Initial D2 Stakeholder Meeting Input

- What’s important relative to locating of D2?
  - High Importance
    - Minimize long-term impacts to pedestrian/automobile traffic in surface/portal sections (Victory and Deep Ellum)
    - Proximity to existing/future employment
    - Ease of transfer to other modes
    - Proximity to hotels/entertainment
  - Moderate Importance
    - Proximity to existing/future residential
    - Economic development/redevelopment potential
    - Minimize impacts to resources (parks, historic, etc)
    - Access to Convention Center
  - Low Importance
    - Connections to underground pedestrian tunnel system
    - Travel time through downtown
    - Construction disruption/duration

Objectives to Identify Reasonable Set of Subway Alternatives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within $1.3 Billion Budget (YOE)</td>
<td>DART</td>
</tr>
<tr>
<td>Constructability/Favorable geology conditions</td>
<td>DART</td>
</tr>
<tr>
<td>Subway between Woodall Rodgers and IH 345</td>
<td>City Council</td>
</tr>
<tr>
<td>Ability to shift Green/Orange Line operations to D2</td>
<td>FTA (Core Capacity)</td>
</tr>
<tr>
<td>Ease of transfers (Proximity to Existing Bus/Rail)</td>
<td>City Council/DART</td>
</tr>
<tr>
<td>Access to Jobs (Employment density)</td>
<td>City Council/DART</td>
</tr>
<tr>
<td>Interoperability between both downtown LRT lines</td>
<td>DART</td>
</tr>
<tr>
<td>Minimize curves (travel time, O&amp;M, construction)</td>
<td>DART</td>
</tr>
</tbody>
</table>

Screening Evaluation Criteria

- See Handout of Draft Screening Evaluation Criteria
  - Key objectives are highlighted
  - Stakeholder input to date is noted as H, M, L importance
- Detailed Evaluation Criteria will be developed to evaluate the shortlist of D2 subway options
- Discussion:
  - Are we missing something for screening level?
  - Are there some that can wait for detailed evaluation?
  - Data needs and sources are noted
D2 Stakeholder Meeting Input

- Alignment and station ideas
  - 10-15 alignments ideas from north of existing Pacific Avenue to south along Canton
  - Consider fewer stations with multiple access points
  - Integration of portals is key
- Informal poll of top alignments to consider:
  - Commerce Street
  - Young Street
- Technical Committee objective:
  - Develop range of reasonable alignments
  - Evaluation criteria

Streetcar Central Link Considerations

- Prior staff recommendation was Main Street
- City of Dallas and DDI asked DART to evaluate Elm-Commerce couplet
- Concurrent effort with D2 to identify Central Link LPA
- With D2 Subway:
  - Are there other streetcar routes to consider?
  - How can streetcar best complement D2?

Discussion of Subway Alternatives

- See D2 Subway Ideas Packet
  - Maps received prior to and during December 7, 2016 Stakeholder Meeting

Primary Corridors
- Pacific
- Elm
- Commerce
- Wood
- Young
- Canton

West/Victory Connection
- Existing rail corridor
- DART-owned Victory ROW

East/Deep Ellum Connection
- Swiss
- Good Latimer

PACIFIC CORRIDOR
- DART Victory ROW Option
- Swiss Option Portal west of IH 345

ELM CORRIDOR
- DART Victory ROW Option
- Swiss Option Portal west of IH 345

COMMERCE CORRIDOR
- DART Victory ROW Option
- Swiss Option Portal west of IH 345

Green Line track reconstruction (embedded track) and Deep Ellum Station removal/relocation

This note added post meeting to reflect discussion.
Discussion of Subway Alternatives

Primary Corridors

WOOD CORRIDOR

- Good Latimer Option
  - Portal west of IH 345

- Swiss Option
  - Portal west of IH 345

DART Victory ROW Option

YOUNG CORRIDOR

- Good Latimer Option
  - Portal west of IH 345

- Swiss Option
  - Portal west of IH 345

DART Victory ROW Option

CANTON CORRIDOR

- Good Latimer Option
  - Portal west of IH 345

DART Victory ROW Option

Next Steps

- December
  - Refine and review range of subway alignments
  - Options will be emailed to Technical Committee to provide feedback on issues, opportunities

- January
  - Technical Committee feedback due January 6
  - Technical Committee Meeting (mid-January, 2017)
    - Summarize key issues, opportunities of alignments
    - Initiate screening of alignments
  - Stakeholder Committee Meeting (January 18, 2017)
  - General public meeting (January 19, 2017)

- February
  - Stakeholder Committee Meeting
  - Screening Evaluation/Short List

How to Stay Involved

- Attend project meetings
- View materials and progress on www.DART.org/D2
- Comments? Email D2@DART.org
- Provide comments on key issues that DART should address in the process
The following maps were received prior to or at the D2 Stakeholders Meeting on December 7, 2016. The maps are arranged by primary corridor. Some maps contain references to multiple corridors. Preliminary route alternatives have been developed for several of the ideas. Others are under review to determine if there is a feasible option or if it would meet core capacity or operational flexibility needs.

<table>
<thead>
<tr>
<th>Map #</th>
<th>Street Corridor</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Pacific</td>
<td>Alternative developed</td>
</tr>
<tr>
<td>3,4,5</td>
<td>Elm</td>
<td>Alternative developed</td>
</tr>
<tr>
<td>6-13</td>
<td>Commerce</td>
<td>Alternative developed</td>
</tr>
<tr>
<td>11</td>
<td>Wood</td>
<td>Alternative developed</td>
</tr>
<tr>
<td>12,16</td>
<td>Young</td>
<td>Alternative developed</td>
</tr>
<tr>
<td>13,14,15</td>
<td>Canton</td>
<td>Alternative developed</td>
</tr>
<tr>
<td>16,17</td>
<td>Uptown</td>
<td>Under review</td>
</tr>
<tr>
<td>18</td>
<td>Arts District</td>
<td>Under review</td>
</tr>
<tr>
<td>19</td>
<td>Reroute Red/Blue via Pearl/Canton</td>
<td>Under review</td>
</tr>
</tbody>
</table>
D2 Subway - Elm
D2 Subway - Commerce
D2 Subway - Wood
D2 Subway - Young
D2 Subway - Arts District
D2 Subway - Reroute Red/Blue via Canton/Pearl