

January 25, 2013

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NE 6th St. Subsurface Arterial Evaluation

The concept of a sub-surface arterial below the Transit Center and the Pedestrian Corridor between 112th Ave. NE and Bellevue Way has been suggested.

The Downtown Transportation Plan Update may be a tool to evaluate the various transportation benefits of such an additional connection to downtown.

The Downtown Transportation Plan Update is informed by the Planning Principles adopted by the City Council. This concept may fit under one or more of the following Planning Principles:

1. Plan for multiple modes of travel within and to and from Downtown Bellevue.
2. Accommodate the anticipated travel demands from the 2030 land use forecast.
3. Advance the adopted vision for Downtown Bellevue.
4. NA
5. Integrate City Council Direction.
6. NA
7. Minimize traffic impacts on neighborhoods.
8. Involve regional transportation and planning partners.
9. Leverage funding from outside sources to implement projects.
10. Utilize measures of effectiveness to evaluate potential projects.

The following is a preliminary identification of what it might do for us, what it might look like, why would we want to evaluate it now and what action the Commission might take to include the evaluation of the concept in this Downtown Transportation Plan Update process.

WHAT MIGHT IT DO FOR US?

The four major elements of the transportation system that may be enhanced by such an arterial would include:

1. **Transit access to the corridor.**

The Transit Rider Mobility Measures of Effectiveness (MOE) that may be impacted include those that relate to Bus Stop location, travel time per rider, Trip ends within a five minute walk and the percent of total daily person trip ends.

The existing transit center is reported to be at or near capacity. About 75% of the total transit 'boardings' and 'alightings' in downtown (about 14,200 in 2010) occur at the transit center. About 20 % of these are transfers, resulting in

the 11,200 transit trips in 2010 in the BKR model estimates. The other 25% of the 11,200 transit trips are distributed at bus stops around downtown. The current transit center is reported to currently be at or near 'capacity' to handle transit trips and/or number of buses.

The BKR model results show this 11,200 transit trips grow to 62,042 transit trips by 2030.

Sound Transit's projections show about 6,000 boardings per day at the Downtown Station for East Link light rail in 2030, which equates to 12,000 downtown transit trips. The Main St. Station will add an additional 2000 downtown transit trips. A large portion of the East Link trips are currently using the bus system at the Transit Center. The start of East Link system will likely relieve the Transit Center short term capacity problem, but our growth projections show that will be quickly backfilled with new riders and routes.

This results in about 20-25,000 downtown transit trips being able to be handled at the current Transit Center plus the East Link Stations, leaving over 35-40,000 trips to go somewhere else.

We need a new Transit Center.

A second level under the current Transit Center may be a good place. It would be exactly in the right location, with escalator/pedestrian tunnel access to the East Link Downtown Station and the surface Transit Center. The lower level could serve the routes using the I-405 interchange or buses from East Bellevue on the NE 6th St. Extension to 120th Ave. NE, while the surface Transit Center could serve the more local bus routes, with both making good connections to East Link.

The transit operators also need bus layover space. Could that be worked into a subsurface arterial?

2. **Freight access to the planned high rise developments along the pedestrian corridor.**

The MOE for Private Vehicle Occupant Mobility for Segment or Corridor measuring the number of On-Street Spaces for Loading could be positively impacted.

Freight access to these high rise buildings allowed per the Comprehensive Plan will need to be provided somewhere. Trucks loading zones on the NE 6th St. surface Pedestrian Corridor is not a desirable combination. A second level under the transit center could allow truck access to the 'center of gravity' of the allowed high rise buildings adjacent to the Pedestrian Corridor without using surface streets.

3. Parking access to the garages of the planned high rise developments.

High rise office buildings in downtown tend to have large parking garages under them. As an example, the Lincoln Square garage has nearly 2000 stalls. HOV and Vanpool vehicles are encouraged by Transportation Demand Management (TDM) policies and the desire to reduce single occupant vehicles (SOV). A direct access from the NE 6th St./I-405 HOV/Bus interchange to the high rise parking garages would provide an added time incentive to increase HOV/Vanpool usage and at the same time relieve the surface streets of some of the HOV traffic volume.

4. Relief of surface street conflicts.

All five of the MOE's for Private Vehicle Occupant Mobility could be positively impacted. All five of the MOE's for Sustainability Outcomes in the Downtown Subarea could be positively impacted.

Transit buses, freight vehicles and HOV's are all part of the mix of vehicles, pedestrians and bicycles that need to be planned for to serve our dynamic downtown. To the extent some of the buses, trucks and HOV's can be relocated to a grade separated roadway, the rest of the downtown transportation system would be relieved of surface street conflicts. This does good things for some of our MOE's such as intersection level of service (delay), pedestrian conflicts (Intersection Crosswalk rating, Walkway Quality Rating, Internal Walking Trips), and Bicycle Facility rating.

WHAT MIGHT IT LOOK LIKE?

One vision would start in the Convention Center vicinity in the center of NE 6th St. using the center three lanes as a two lane "Portal" to the subsurface arterial. Inside the portal it would divide into an upper roadway for buses to the Transit Center and a lower roadway for the HOV/Vanpool access and the freight access. These both fit under the ridge where the transit center is located, between 110th Ave. NE and 108th Ave. NE.

The bus level would need a turn-around for the buses underground. This may be at an intersection, likely either at 106th Ave. NE, 105th Ave. NE or Bellevue Way NE. Metro buses need a turn-around circle of about 120 feet or less in outside diameter.

The HOV/Vanpool/freight level could terminate in the garages of the new high rises on the Pedestrian Corridor at loading docks or garage accesses.

The Transit Center would likely need bus loading zones, bus passing areas and pedestrian platforms with access to the street level. This would use up the 60 feet of right of way on NE 6th St. between 110th Ave. NE and 108th Ave. NE. No sub-surface pedestrian facilities would be needed outside of the transit center.

The design could be more like a garage than a public access tunnel. Vehicle size could be limited by height (the legal limit is 13.5 ft.) and design speeds could be lowered to 15 mph to reduce the geometrics of the roadways (curves, tapers, lane widths, clearance heights, etc.).

WHY EVALUATE THE CONCEPT NOW?

The Downtown Transportation Plan Update process only comes along every 10 years or so. We are now in about the 10th month of a 20 month or so process. The staff has created a very sophisticated Travel Demand Model version (BKR) and traffic operations model (Dynameq) for this process.

These models are the perfect tools to use to evaluate concepts, when the proposed transit and pedestrian networks are included. It's best to use them when they are fresh (i.e., BKR recently updated to a 2010 base year and enhanced for downtown evaluation purposes; Dynameq is new for this process).

The economy is recovering from the Great Recession, with few downtown development projects in recent years. New development proposals are being brought forward. The developable properties adjacent to the pedestrian corridor are likely to fill in during the next development cycle, pre-empting the option of the concept.

The Downtown Livability Initiative process is starting. The NE 6th St. Subsurface Arterial concept could fit well. Principles 1 and 10 from the Jan. 22, 2013 Draft Principles relate to an incentive system and code provisions to attract and realize high quality development in downtown.

The East Link light rail tunnel option with either the 110th Ave. NE Station or the NE 6th St. Station could fit, but there would clearly be design considerations. Now is the time to think about it.

ACTION REQUESTED OF THE TRANSPORTATION COMMISSION

1. Request the staff to prepare an appropriate staff scope of work and work hour estimate to provide a concept evaluation using the available simulation models.
2. Request the City Council to authorize staff funds to evaluate the concept.
3. Consider the results of the evaluation in the Downtown Transportation Plan Update process and reports to the council.

NE 6th Sub-Surface Arterial

(or, "Tunnel", if you prefer)

For Kemper Development

by TDA & ERMSI

10 Jan 2013

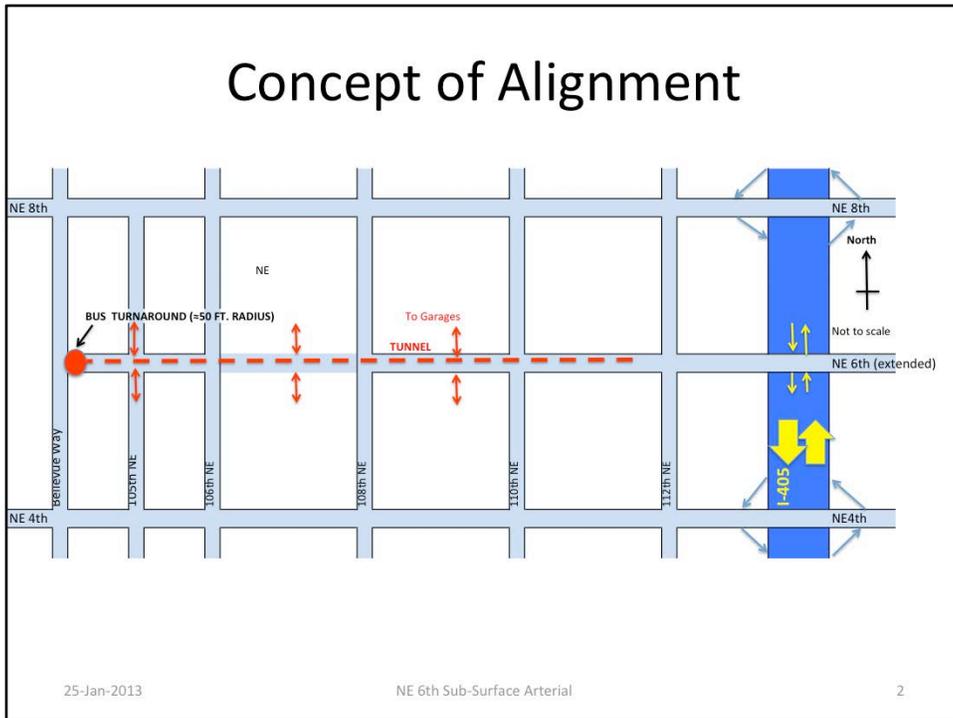
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NE 6th Sub-Surface Arterial

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This summarizes a concept that appears to be worthy of further study.

Concept of Alignment



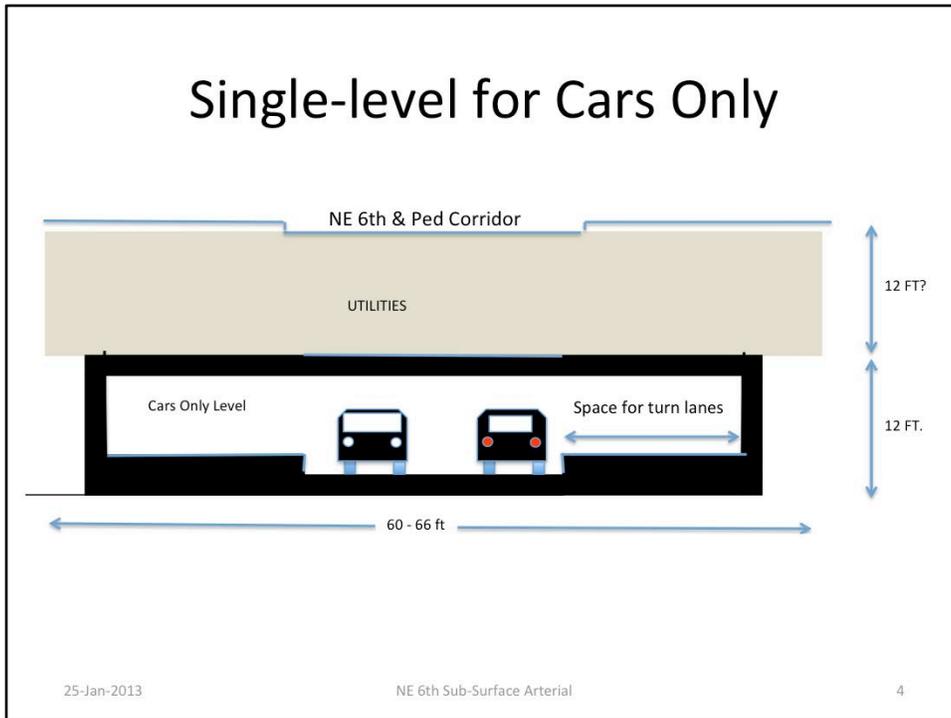
A one or two-level underground arterial would begin on the east between 112th NE and 110th NE. The western terminus would be east of Bellevue Way. Total length would be about 2,200 feet.

Portal Location, looking west toward 110th NE



NE 6th at this location is wide enough to allow a two-lane portal and still maintain two surface lanes

Single-level for Cars Only



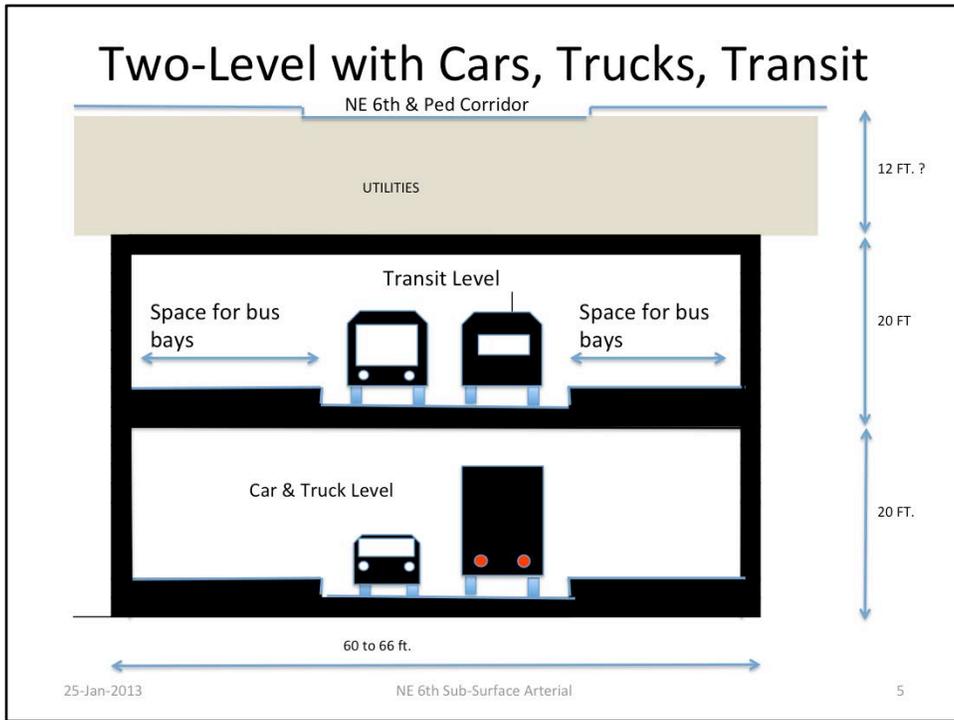
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NE 6th Sub-Surface Arterial

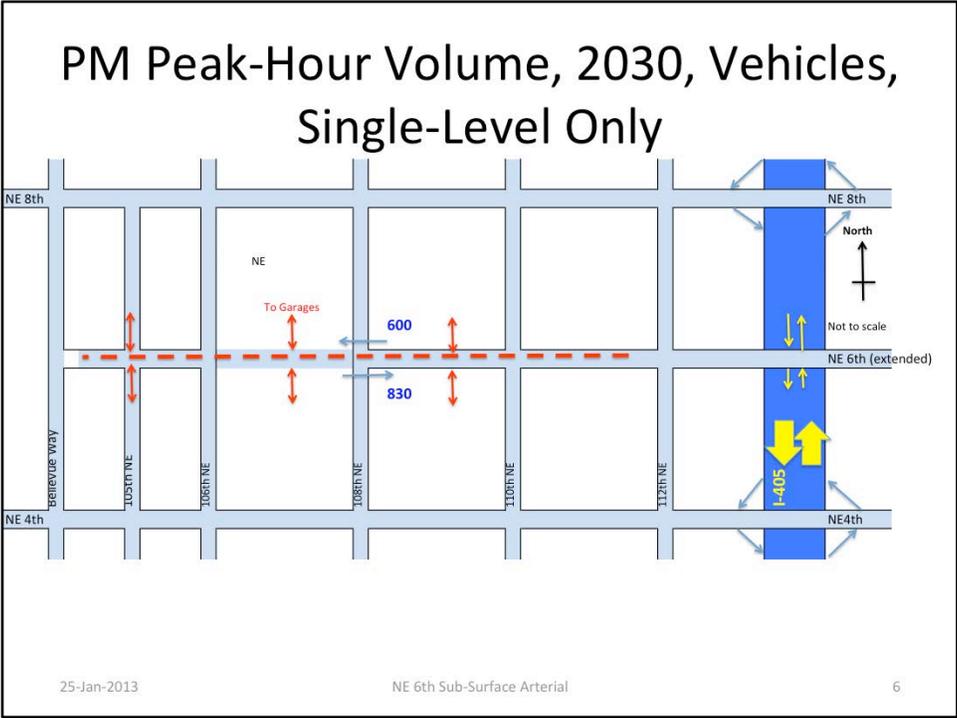
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This is the smallest of 5 cross-sections considered. The 5 are:

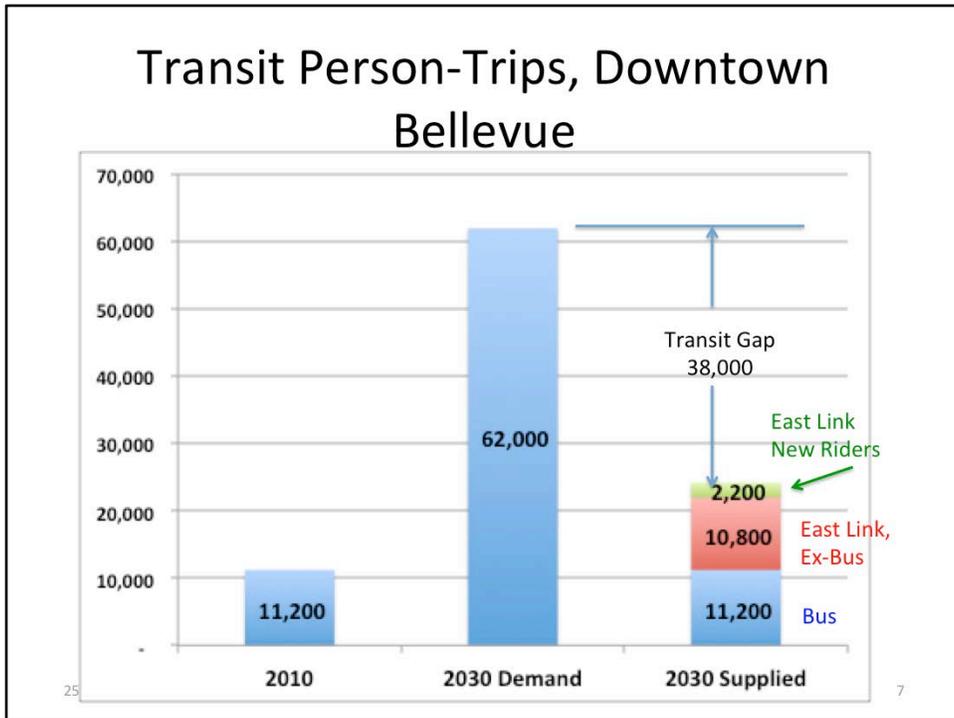
- Single-level for autos only (above)
- Single level for cars and trucks
- Two-level for cars and transit
- Two-level for cars, transit and trucks
- Two-level for cars, trucks and people-mover



This is potentially the most productive cross-section. Truck access will be of limited use to existing buildings that have already provided their truck loading areas. New buildings could use the sub-surface route.



This shows about 1,430 vehicles per hour, eastbound +westbound, at the maximum load point. Volume based on BKR model of about 1-year ago.



Transit demand of 62,000 daily person-trips is from the City of Bellevue. “2030 Supplied” assumes:

- Opening of East Link will eliminate some surface-street bus traffic.
- By 2030, transit demand will restore today’s 11,200 bus person-trips on the surface.
- East Link figures are from Sound Transit with a total of 13,000 daily boardings plus alightings in downtown Bellevue. Of these, about 2,200 are new transit trips. The remainder are previous bus person-trips.

The “transit” level of a sub-surface arterial could provide expanded transit terminal facilities and fill some portion of the transit gap. Please see the next slide.

NE 6th Sub-Surface & the Transit Gap

- 38,000 transit rider gap (see previous slide)
- Existing Transit Center has 10 Bus Bays
- If Transit Center growth proportional to downtown transit 2030 growth:
 - About 34 more bays needed
 - NE 6th could provide roughly 26 to 30 more bays

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NE 6th Sub-Surface Arterial

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Additional bays needed by 2030: $35000/11200*10$ bays = 31

Potential Benefit Summary

- + Expanded mission for NE 6th Direct Access
- + Added Transit Terminal Capacity
- + Significant Traffic Capacity Addition, equivalent to a new arterial
- + Remove Some Truck Traffic from Surface

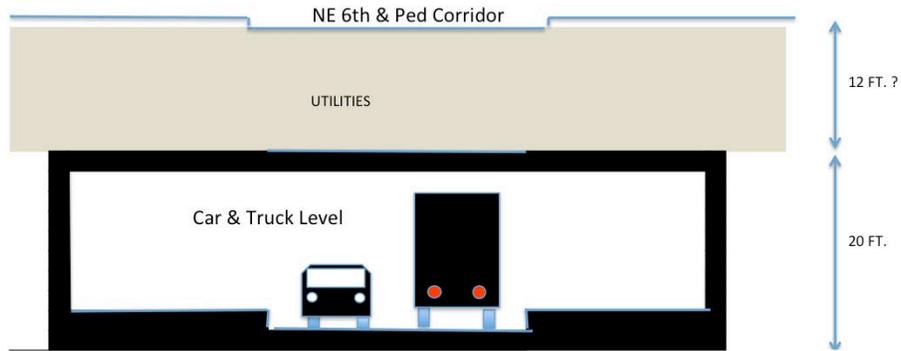
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NE 6th Sub-Surface Arterial

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Single-Level with Cars and Trucks



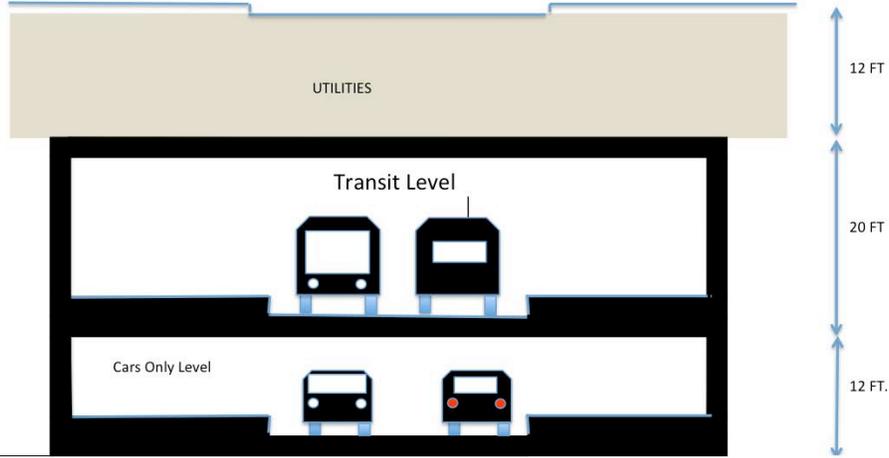
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NE 6th Sub-Surface Arterial

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Two-Level for Cars & Transit

NE 6th & Ped Corridor

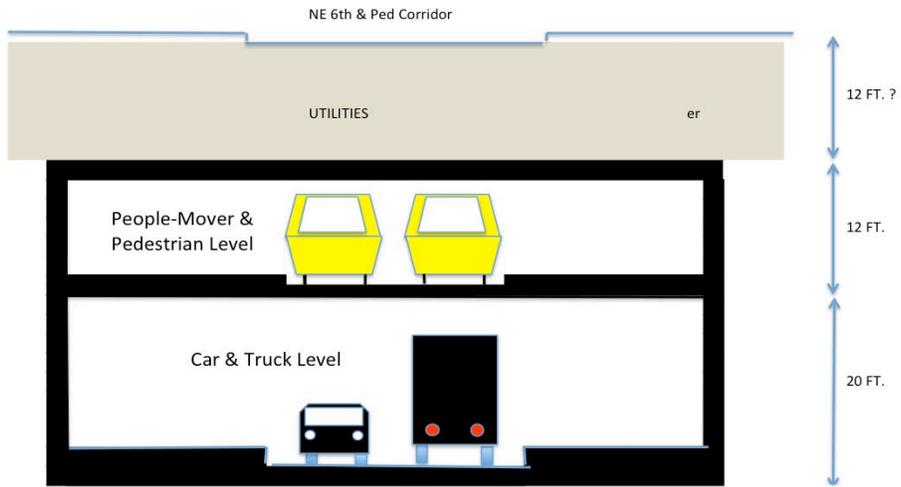


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NE 6th Sub-Surface Arterial

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Two-Level for Cars, Trucks, People-Mover



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NE 6th Sub-Surface Arterial

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