




Potential Managed Lane Alternatives




Typical Section Between Junctions

Existing Typical Section Looking North*



Existing Roadway Width

*NLSD between Grand and Montrose Avenues is depicted.




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Managed Lanes

Managed Lanes *(Options that **convert one or more existing general purpose lanes** to a managed lane to provide high mobility for buses and some autos)*

Potential managed lane roadway designs:

- **Option A** – Three-plus-One Managed Lane (Bus-only or Bus & Auto)
- **Option B** – Two-plus-Two Managed Lanes
- **Option C** – Three-plus-Two Reversible Managed Lanes
- **Option D** – Four-plus-One Moveable Contraflow Lane (NB and SB, or SB Only)

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Option A – 3+1 Bus-Only Managed Lane*

**Proposed Typical Section Looking North
Between Junctions****



Existing Roadway Width




*Converts one general purpose lane in each direction to a *Bus-Only Managed Lane*.
**NLSD between Grand and Montrose Avenues is depicted.

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3+1 Bus-Only Managed Lane

- **Benefits**
 - Bus travel speeds would be unencumbered by vehicle speeds in adjacent travel lanes (same transit performance as Dedicated Transitway on Left Side)
 - Bus lanes would be available at all times and would not be affected by police or disabled vehicles
 - Bus lanes combined with exclusive bus-only queue-jump lanes at junctions would minimize bus travel times and maximize transit service reliability
 - Forward-compatible with future light rail transit option
- **Challenges**
 - Conversion of general purpose traffic lane to bus-only operation will divert some traffic onto remaining NLSD lanes and/or adjacent street network

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Option A – 3+1 Managed Lane*


***Proposed Typical Section Looking North
Between Junctions*****




Existing Roadway Width

*Converts one general purpose lane in each direction to a **Shared Bus/Auto Managed Lane**.
 **NLSD between Grand and Montrose Avenues is depicted.









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3+1 Managed Lane

- **Benefits**
 - Same transit travel time and reliability benefits as Dedicated Transitway on Left Side
 - Excess managed lane capacity is shared with some autos
 - Exclusive bus-only queue-jump lanes at junctions would minimize bus travel times and maximize transit service reliability
 - Forward-compatible with future light rail transit option
- **Challenges**
 - Conversion of general purpose traffic lane to managed lane will divert some traffic onto remaining NLSD lanes and/or adjacent street network



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Option B – 2+2 Managed Lanes*

***Proposed Typical Section Looking North
Between Junctions*****




Existing Roadway Width

*Converts two general purpose lanes in each direction to **Shared Bus/Auto Managed Lanes**.
 **NLSL between Grand and Montrose Avenues is depicted.









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2+2 Managed Lane

- **Benefits**
 - Similar transit travel time and reliability benefits as Dedicated Transitway on Left Side
 - Excess managed lane capacity is shared with some autos
 - Exclusive bus-only queue-jump lanes at junctions would minimize bus travel times and maximize transit service reliability
 - Forward-compatible with future light rail transit option
- **Challenges**
 - Conversion of two general purpose traffic lanes to managed lanes will **divert larger amounts of traffic** onto remaining NLSL lanes and/or adjacent street network



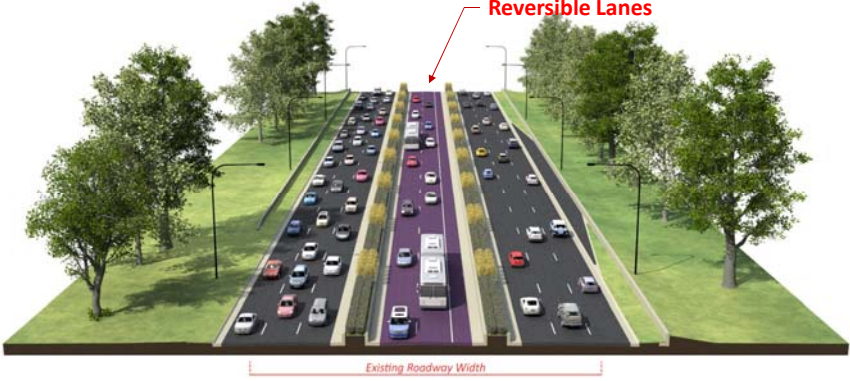



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Option C – 3+2 Reversible Managed Lanes*



*Proposed Typical Section Looking North
Between Junctions***

Reversible Lanes



Existing Roadway Width



*Replaces one general purpose lane in each direction with two Reversible Managed Lanes.
**NLSL between Grand and Montrose Avenues is depicted.

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3+2 Reversible Managed Lanes

- **Benefits**
 - Similar transit travel time and reliability benefits as Dedicated Transitway on Left Side
 - **Adds 5th travel lane** in the peak traffic flow direction which will reduce congestion and improve mobility for all vehicles
 - **No diversion of peak traffic** to other lanes or adjacent streets
- **Challenges**
 - Large footprint required at junctions to accommodate both general purpose and reversible lanes as well as exit/entrance ramps

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Option D – 4+1 Contraflow Managed Lane*

Proposed Typical Section Looking North Between Junctions

*Provides **Contraflow Bus-only Lane** in off-peak directions via moveable concrete barriers.

**Contraflow Bus-only Lane
A.M. Peak Period Shown**

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4+1 Contraflow Managed Lane

- **Benefits**
 - Same transit travel time and reliability benefits as Dedicated Transitway on Left Side
 - Bus-only managed lane is provided in non-peak traffic flow direction, therefore **no reduction of peak general purpose traffic lanes**
 - **No diversion of peak traffic** to other lanes or adjacent streets
 - Minimizes transportation footprint
- **Challenges**
 - Not compatible with future light rail transit option
 - Requires use of two “Zipper-wall” Barrier Transfer Machines to deploy and retract barriers

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“Zipper-wall” Barrier Transfer Machine

Barrier Transfer Machine



- 55-foot length similar to large semi-truck trailer
- Two Barrier Transfer Machines required with garage storage

