

WS  
10-23-02

**CITY COUNCIL WORK SESSION  
ON  
EISENHOWER-TO-DUKE STREET CONNECTOR**

**WEDNESDAY, OCTOBER 23, 2002  
5:30 P.M.  
COUNCIL CHAMBERS**

**AGENDA**

- I. INTRODUCTION
- II. STAFF PRESENTATION
  - A. Review of No Build and Build Alternatives
  - B. Staff Recommendation
- III. COUNCIL DISCUSSION

*Individuals with disabilities who require assistance or special arrangements to participate in the City Council Work Session may call the City Clerk and Clerk of Council's Office at 703-838-4500 (TTY/TDD 703-838-5056). We request that you provide a 48-hour notice so that the proper arrangements may be made.*



WS  
10-23-02

# Eisenhower Avenue to Duke Street Connector

*City Council Work Session*  
*October 23, 2002*



# *Agenda*

- Overview
- Task Force Accomplishments
- Review of Findings
- Staff Recommendations
- Discussion



## *Background*

- |                |   |
|----------------|---|
| 1973 &<br>1980 | Council requests new interchange at Clermont Avenue                 |
| 1984           | FHWA approves Clermont Interchange                                  |
| 1987           | FHWA rejects request to terminate project at Eisenhower Avenue      |
| 1993           | Environmental review completed                                      |
| 1997           | Clermont Interchange opened to traffic                              |
| 2001           | Council creates Task Force to re-study Eisenhower-to-Duke Connector |

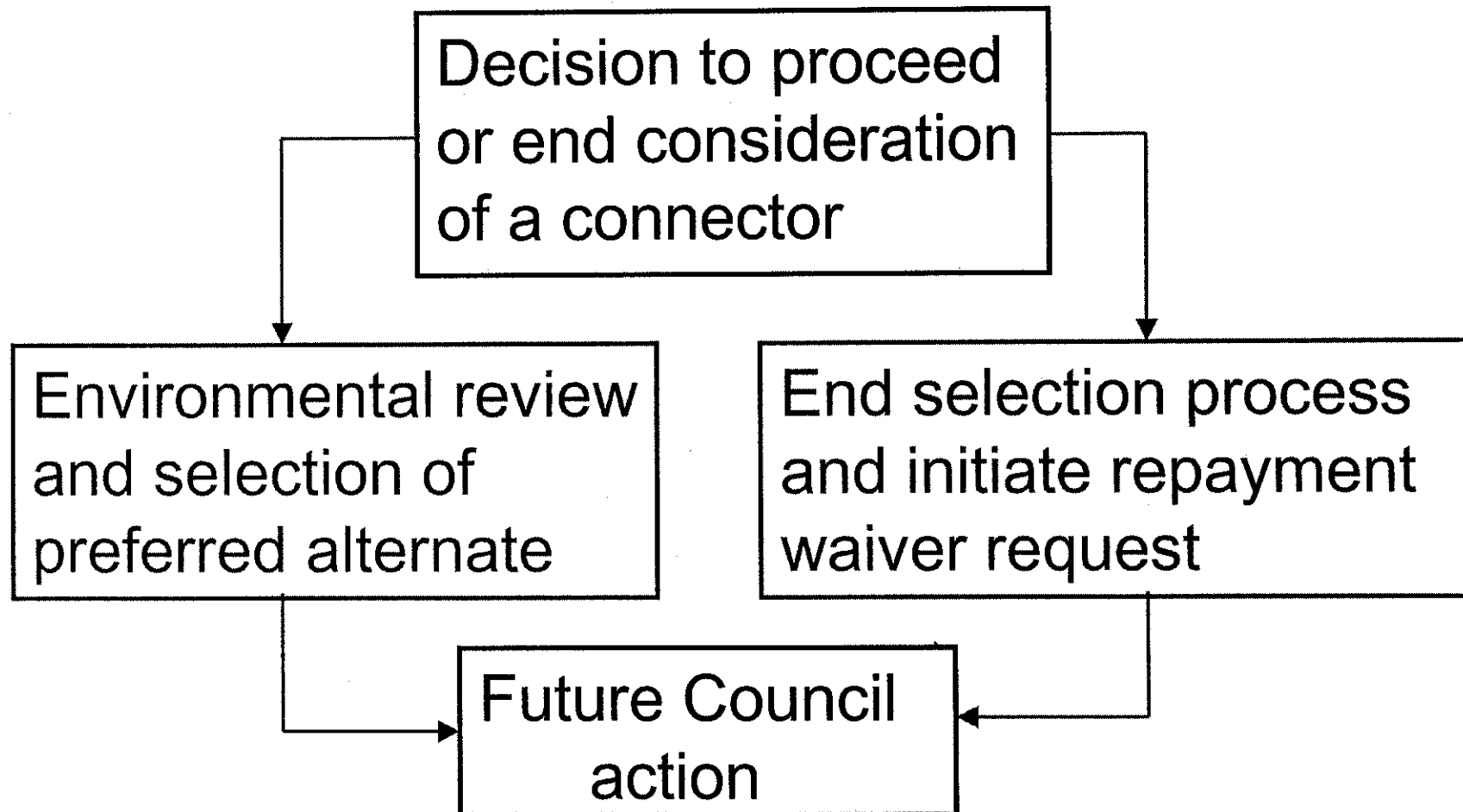


## *Current Issues*

1. Should the City proceed with a connector roadway between Eisenhower Avenue and Duke Street?
2. If so, what location(s) should be carried forward to the next phase - environmental review?



# Next Steps





## Project Objectives

*“To improve access and ease traffic congestion along the Eisenhower Avenue and Duke Street corridors to meet current and future traffic demands while minimizing visual and environmental impacts and avoiding degradation of neighborhoods.”*



## *Task Force Accomplishments*

- Developed objective and purpose
- Reviewed inventory information
- Developed preliminary alternates
- Selected candidate alternates
- Participated in citizens meeting
- Directed survey for 2<sup>nd</sup> public meeting





# *Task Force Accomplishments*

(continued)

- Selected decision criteria
- Identified data and analyses needs
- Compiled data and analysis results
- Created summary matrix
- Voted “Build” vs. “No Build” Alternates



## *Task Force Votes*

No Build	7	vs.	No Build w/ Imp	7
No Build	11	vs.	Alternate D	3
No Build w/ Imp	9	vs.	Alternate D	5
No Build	9	vs.	Alternate C	5
No Build w/ Imp	9	vs.	Alternate C	5
No Build	9	vs.	Alternate B-1	5
No Build w/ Imp	9	vs.	Alternate B-1	5



# *Staff Findings*

*Eisenhower-to-Duke Connector*

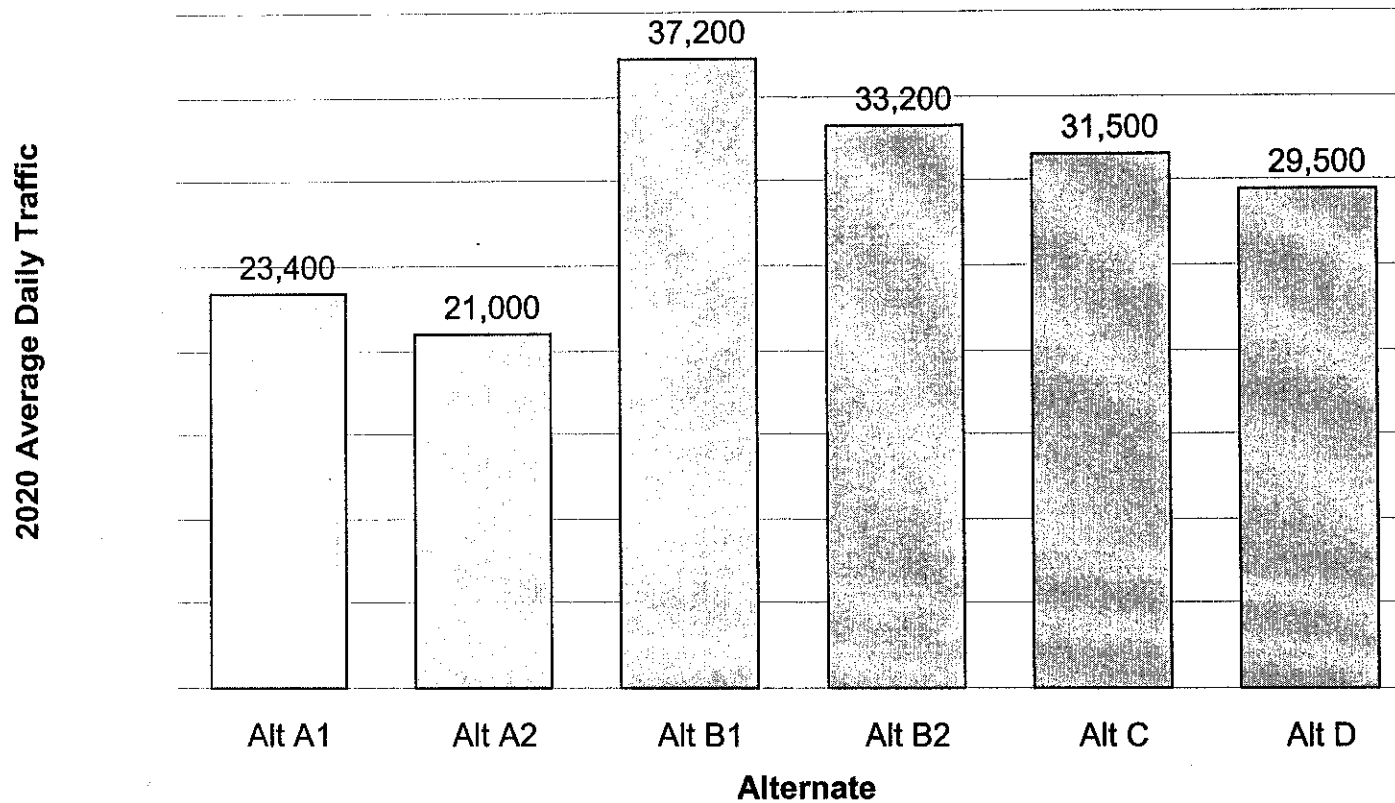


## *Guiding Principles*

- Keep traffic on the arterials
- Drivers select routes based on –
  - Time
  - Distance
  - Convenience
- Local trips have priority over through trips
- Increase effectiveness of roadway network



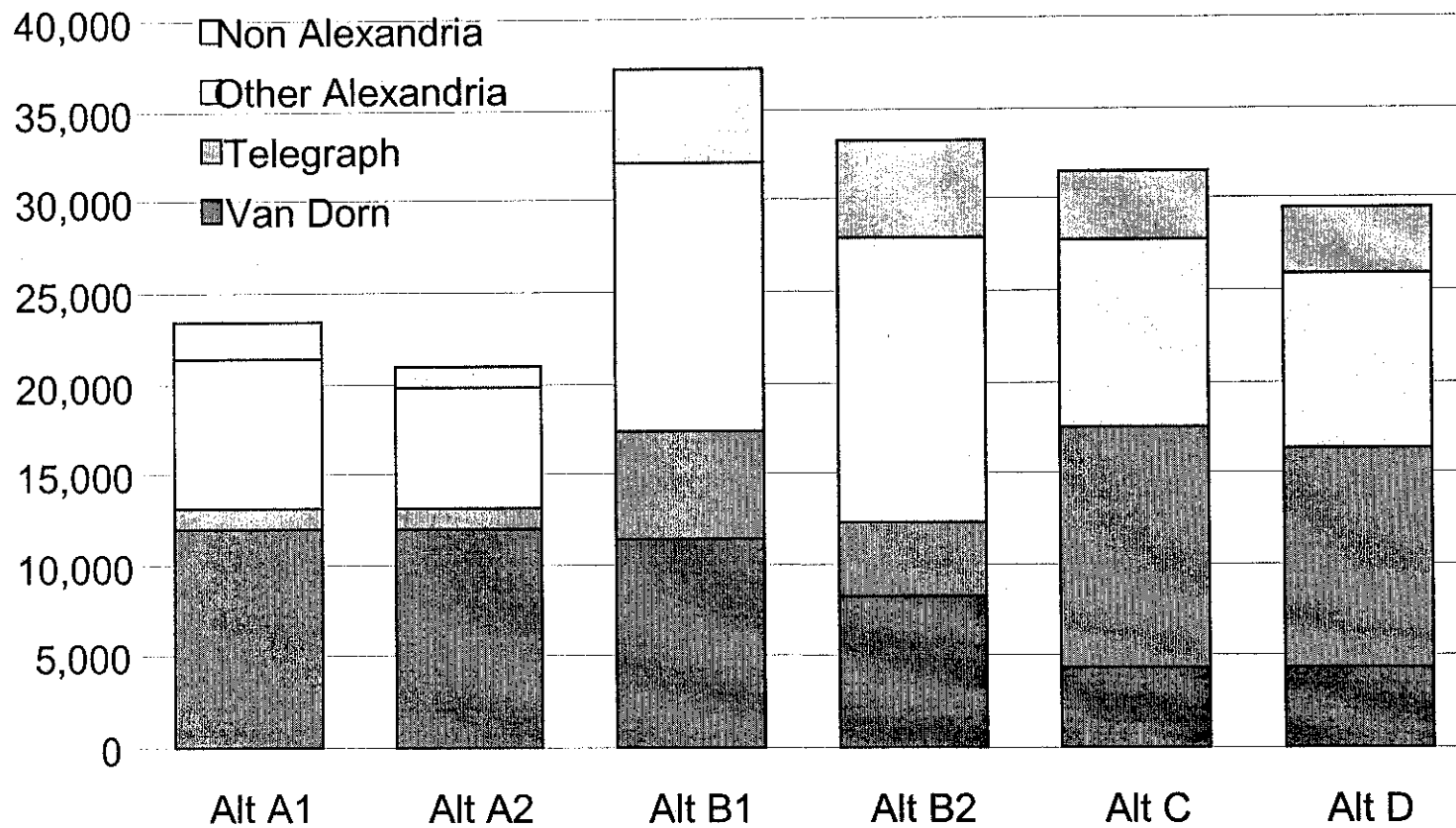
# Connectors Serve Significant Travel Demand



*Eisenhower-to-Duke Connector*

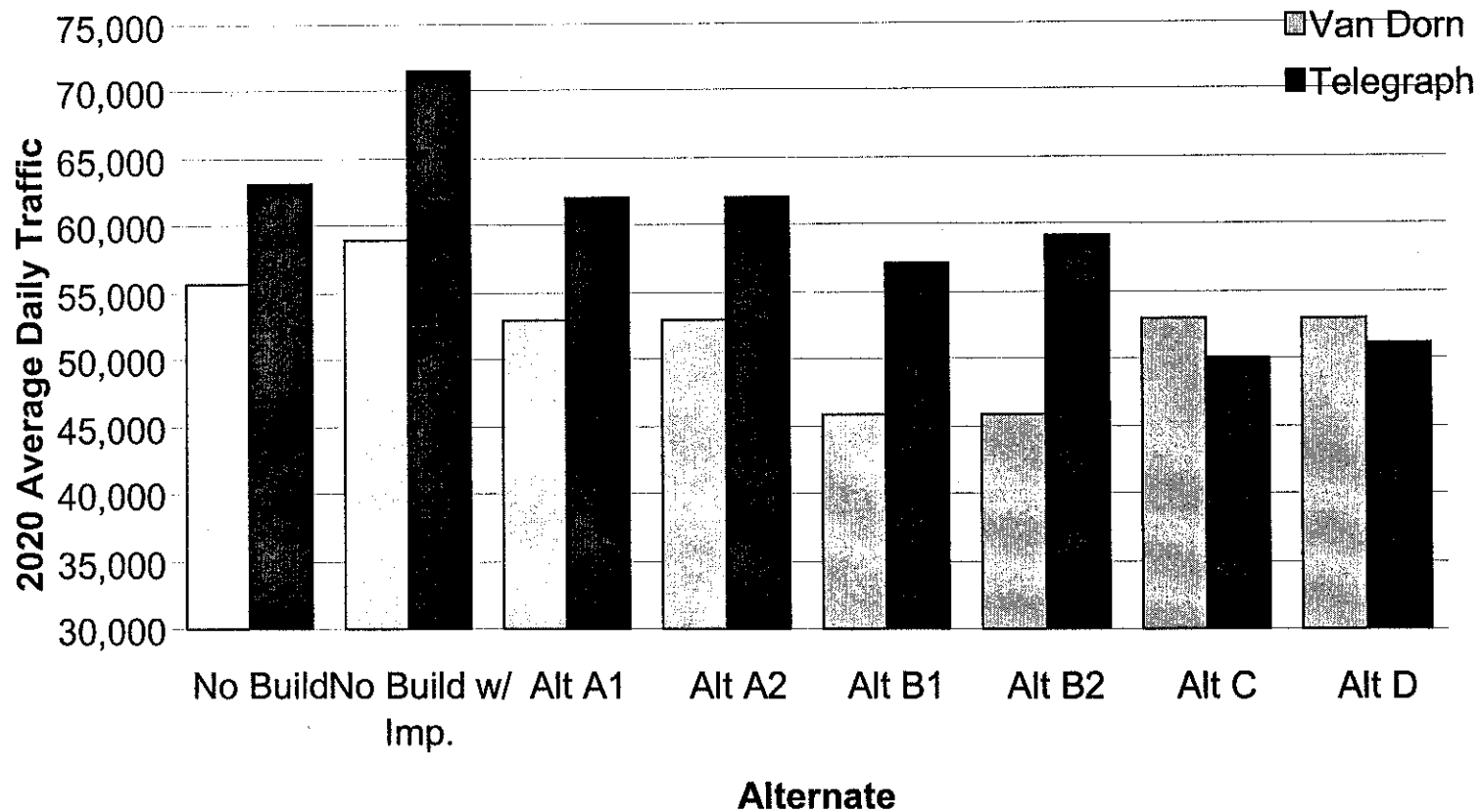


# Sources of Connector Traffic



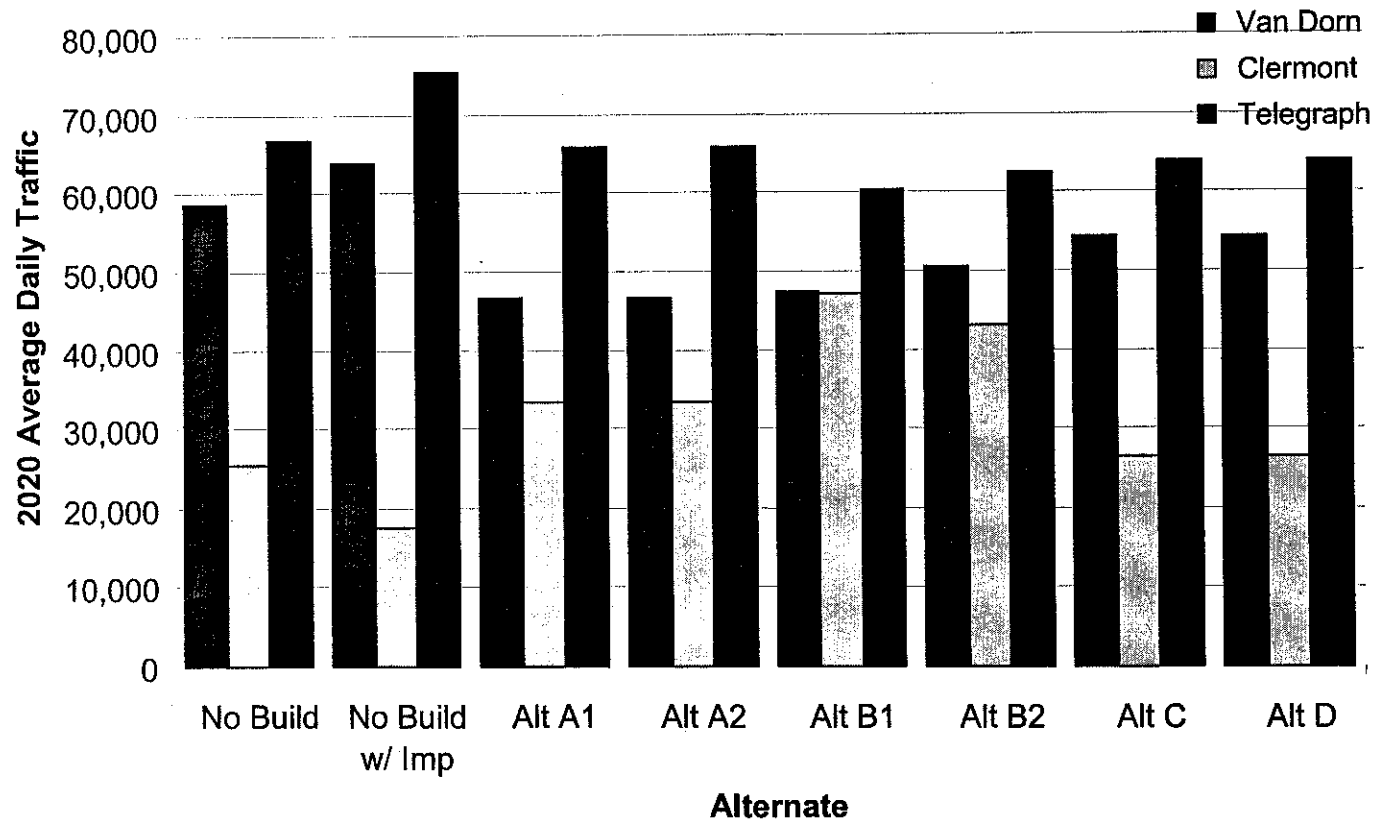


# Connectors Reduce Traffic on Van Dorn and Telegraph





# Connectors Improve Balance of Interchange Demands







# Connectors Improve Traffic Conditions on Area Roadways

## Change in Average Delay at Signalized Intersections

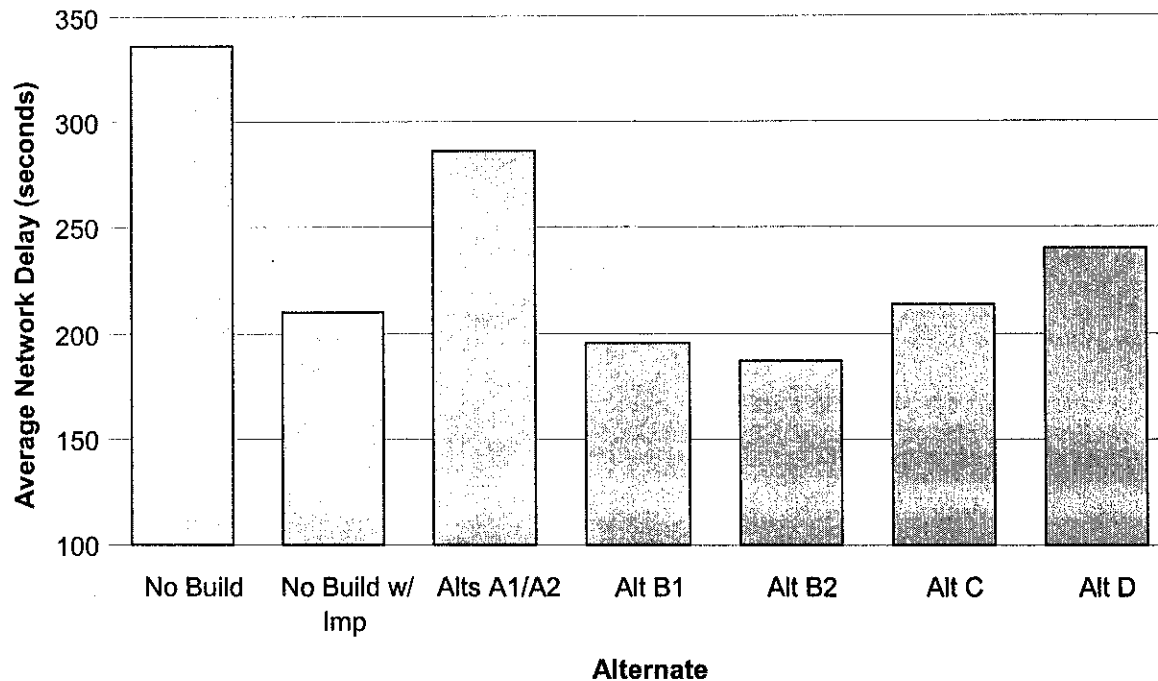
Roadway	No Build	No Build w/ Imp	Alts A1/A2	Alt B1	Alt B2	Alt C	Alt D
Duke Street	Base	-62%	-62%	-55%	-60%	-61%	-54%
Van Dorn Street	Base	-64%	8%	-44%	-45%	-29%	-24%
Eisenhower Avenue	Base	-84%	-70%	-57%	-51%	-41%	-54%
Seminary Road/ Janney's Lane	Base	-20%	-3%	-11%	-15%	-7%	-29%

*Eisenhower-to-Duke Connector*



# Connectors Improve Traffic Conditions on Area Roadways

## Average Network Travel Delay





# Connectors Improve Traffic Conditions on Area Roadways

## 2020 Traffic Queues at Selected Intersections

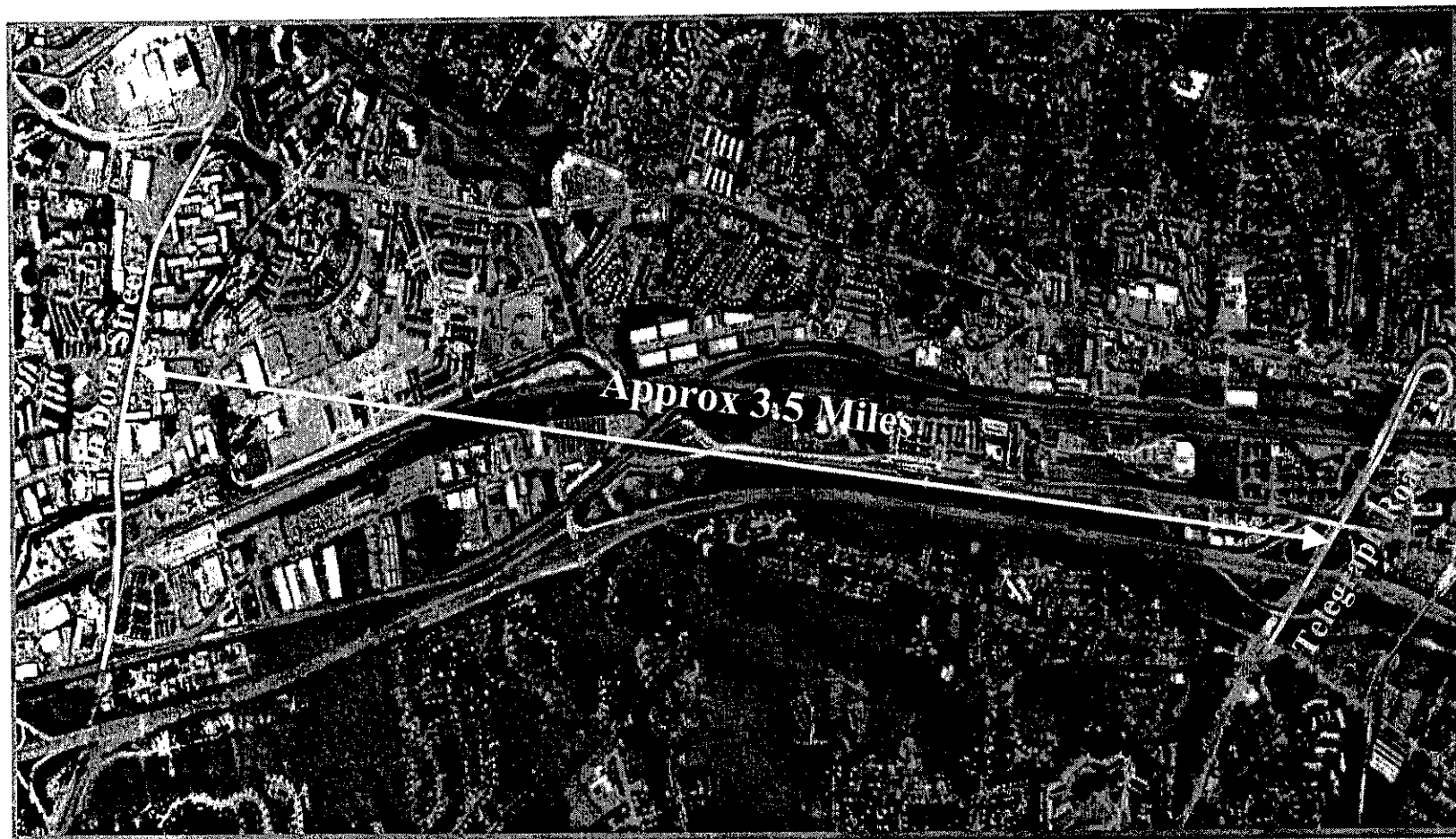
Intersection	Direction	Maximum Queue Length (feet)					
		No Build	No Build w/ Imp	Alt A1/A2	Alt B1/B2	Alt C	Alt D
Duke at Daingerfield	EB	1,542	1,542	1,400	1,141	600	600
Duke at Telegraph	EB	3,540	1,180	2,222	1,130	1,040	1,010
North Quaker at Duke	SB	1,746	216	497	429	300	290
Van Dorn at Edsall	SB	580	104	579	535	348	524
Van Dorn at South Pickett	SB	176	25	164	112	143	179

1. EB = eastbound, SB = southbound

2. All data for PM peak period, except Duke at Daingerfield which is AM peak period



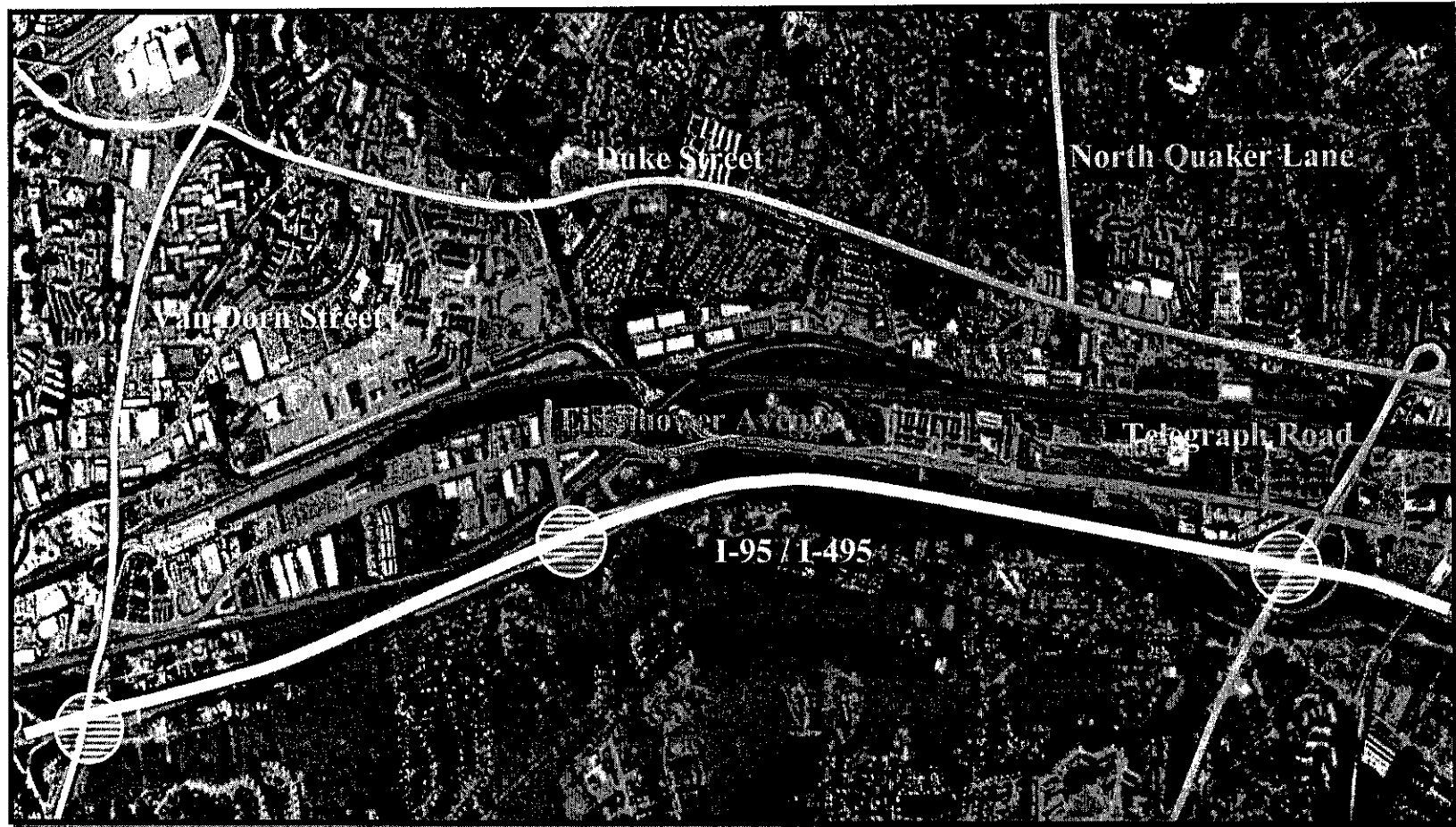
# *Connectors Increase Connectivity*



*Eisenhower-to-Duke Connector*



# *Connectors Increase Connectivity*



*Eisenhower-to-Duke Connector*



# Benefits of Connectivity



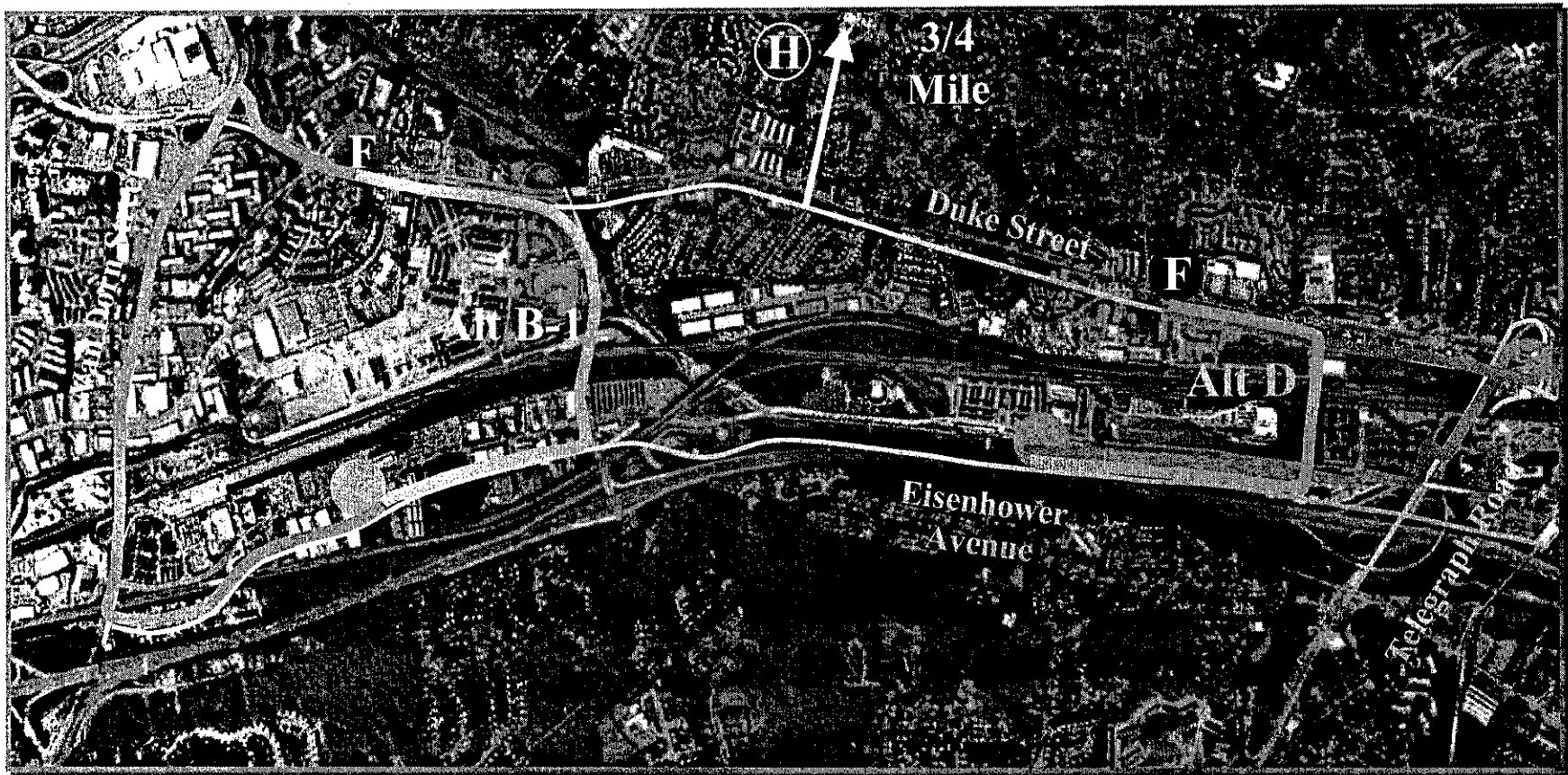
*“From a transportation standpoint [street] **grid systems** provide an almost infinite number of paths between various points. It therefore tends to distribute traffic over the network rather than concentrating it on a few facilities.”*

*ITE Transportation Planning Handbook*

*Eisenhower-to-Duke Connector*



# Connectors Enhance Public Safety



*Eisenhower-to-Duke Connector*



# Connectors Enhance Public Safety

Change in Emergency Response Time  
(minutes)

No Build	No Build w/ Imp	Alt A1/A2	Alt B1	Alt B2	Alt C	Alt D
0.0	0.0	-2.0	-2.1	-2.2	-3.3	-2.0

Response times for Stations 207 and 208 to central points in west Eisenhower Valley





# Connectors Do Not Adversely Impact Neighborhood Residential Streets

## 2020 Potential Cut-Through Traffic Volume

Roadway	Potential Cut-Through Traffic (vehicles per hour)					
	No Build	No Build w/ Imp.	Alts A1/A2	Alts B1/B2	Alt C	Alt D1
West Taylor Run	430	780	310	350	200	420
Cambridge	130	20	120	110	80	40
Ft. Williams	120	80	190	190	50	40
Jordan	290	340	500	360	450	140

1. No through movements are permitted between Connector Alternative D and Cambridge



# Connectors Serve Alexandria Traffic

## 2020 Connector Traffic

	No Build	No Build w/ Imp.	Alts A1/A2	Alts B1/B2	Alt C	Alt D1
Internal to Study Area	N/A	N/A	43%	33%	24%	34%
Internal to Alexandria	N/A	N/A	65%	62%	67%	70%

*Study area includes both original and expanded study areas as defined in the Technical Report*



# Connectors Serve Alexandria Traffic

## 2020 Traffic on North Quaker Lane

	Existing	No Build	No Build w/ Imp.	Alts A1/A2	Alts B1/B2	Alt C	Alt D1
Internal to Study Area	N/A	57%	56%	57%	56%	57%	57%
Internal to Alexandria	55%	66%	65%	66%	65%	66%	67%
Average Daily Traffic	22,000	28,500	30,200	28,500	32,900	31,500	32,000
Volume External to Alexandria	9,900	9,700	10,700	9,800	11,500	10,600	10,600
Percent Change	Base	-2%	8%	-1%	16%	7%	7%

*Study area includes both original and expanded study areas as defined in the Technical Report*



## Estimated Construction Costs

Alternate	Estimated Cost <sup>1</sup>		
	Right-of-Way <sup>2</sup>	Construction <sup>3</sup>	Total
No Build	0	0	0
No Build w/ Imp.	\$17,000,000	\$38,000,000	\$55,000,000
Alternate A1	8,100,000	26,900,000	35,000,000
Alternate A2	16,600,000	19,000,000	35,600,000
Alternate B1	500,000	33,000,000	33,500,000
Alternate B2	500,000	35,200,000	35,700,000
Alternate C	3,000,000	15,700,000	18,700,000
Alternate D	5,800,000	19,000,000	24,800,000

1. All costs in 2002 dollars

2. Right-of-way includes land (\$1,000,000 per acre), value of improvements and relocation

3. Construction costs include 25% contingency



Eisenhower Avenue  
To Duke Street Connector Study

Summary Matrix - September, 2002

Staff Findings

# Task Force Summary Matrix

Criteria	No Build	Improve Exist. Algn.	Alt A1	Alt A2	Alt B1	Alt B2
<b>Traffic Service - 2020</b>						
ADT Reduction on Telegraph Road	●	●	●	●	⊙	⊙
ADT Reduction on Van Dorn	●	●	●	●	⊙	⊙
Reduction in Delay - Van Dorn	●	●	●	●	●	●
Reduction in Delay - Duke Street	●	●	●	●	●	●
Reduction in Unserviced Vehicles	●	⊙	●	●	●	●
Reduction in Queue Length - EB Duke @ Diagonal	●	●	⊙	⊙	⊙	⊙
Reduction in Queue Length - SB Quaker @ Duke	●	●	●	●	⊙	⊙
Reduction in Queue Length - SB Van Dorn @ Edball	●	●	●	●	⊙	⊙
Growth in External - External - North Quaker	●	●	●	●	⊙	⊙
Potential increase in Cut Through	⊙	●	⊙	⊙	⊙	⊙
<b>Natural Environment</b>						
Wetland Impact	○	○	○	○	○	○
Permitting Challenge	○	○	○	○	○	○
Acres of forests taken	○	○	○	○	○	○
Acres in Floodplain	○	○	○	○	○	○
Acres within 100' waterway 'buffer'	○	○	○	○	○	○
Stream Crossings	○	○	○	○	○	○
<b>Socio-Economic Benefits</b>						
Change in emergency response time to Point East Eisenhower Location	●	●	-	-	-	-
Change in emergency response time to Point West Eisenhower Location	●	●	⊙	⊙	○	○
Community facilities within 1/4 mile of terminus	●	●	○	○	○	○
Bicycle or general use trails connected	●	●	○	○	○	○
<b>Socio-Economic Impacts</b>						
Acres of Parks taken	○	○	●	○	●	●
Park activities impacted	○	○	○	○	○	○
Number of residences taken	○	○	○	○	○	○
Number of businesses taken	○	○	○	○	○	○
Number of sensitive noise receptors 1/4 mile	○	○	○	○	○	○
<b>Cultural Resources</b>						
Potential for archeological resources	○	○	○	○	○	○
Known archeological sites within 100'	○	○	○	○	○	○
Registered historic resources within 1/4 mile	○	○	○	○	○	○
<b>Engineering and Estimated Costs</b>						
Construction Cost	○	●	⊙	○	●	●
Right of Way Cost	○	●	●	●	○	○
Length on existing roadways	○	●	●	●	○	○



## Summary of Benefits

Criteria	Alternate							
	No Build	No Build w/ Imp	A1	A2	B1	B2	C	D
<b>Traffic Service Benefits</b>								
ADT reduction - Telegraph	?	?	?	?	?	?	?	?
ADT reduction - Van Dorn	?	?	?	?	?	?	?	?
Balanced interchange demand	?	?	?	?	?	?	?	?
Delay reduction - Network	?	?	?	?	?	?	?	?
Delay reduction - Van Dorn	?	?	?	?	?	?	?	?
Delay reduction - Duke	?	?	?	?	?	?	?	?
Service to East Eisenhower	?	?	?	?	?	?	?	?
Service to external traffic	?	?	?	?	?	?	?	?
Potential for cut-through traffic	?	?	?	?	?	?	?	?
Completion of roadway grid	?	?	?	?	?	?	?	?
<b>Socio-Economic Benefits</b>								
Public safety response time	?	?	?	?	?	?	?	?
Community facilities served	?	?	?	?	?	?	?	?
Trails connected	?	?	?	?	?	?	?	?
Connectivity to Eisenhower	?	?	?	?	?	?	?	?



## Summary of Impacts

Criteria	Alternate							
	No Build	No Build w/ Imp	A1	A2	B1	B2	C	D
<b>Natural Environment Impacts</b>								
Wetland impacts	?	?	?	?	?	?	?	?
Permit challenges	?	?	?	?	?	?	?	?
Forest impacts	?	?	?	?	?	?	?	?
Floodplain impacts	?	?	?	?	?	?	?	?
RPA and stream crossings	?	?	?	?	?	?	?	?
<b>Socio-Economic Impacts</b>								
Impacts to park land	?	?	?	?	?	?	?	?
Impacts to park activities	?	?	?	?	?	?	?	?
Proximity to noise receptors	?	?	?	?	?	?	?	?
Residential takings	?	?	?	?	?	?	?	?
Commercial takings	?	?	?	?	?	?	?	?
<b>Cultural Resource Impacts</b>								
Historic/prehistoric resources	?	?	?	?	?	?	?	?
Archaeological sites	?	?	?	?	?	?	?	?
Listed/eligible historic sites	?	?	?	?	?	?	?	?
<b>Construction Costs and Impacts</b>								
Construction cost	?	?	?	?	?	?	?	?
Right of way cost	?	?	?	?	?	?	?	?
Disruption of existing traffic	?	?	?	?	?	?	?	?



### Ranking of Alternates - Benefits

Criteria	Criteria Weight	Alternate							
		No Build	No Build w/ Imp	A1	A2	B1	B2	C	D
<b>Traffic Service Benefits</b>	65	10	147	260	262	477	477	305	245
ADT reduction - Telegraph	6	0	-3	2	2	5	4	8	7
ADT reduction - Van Dorn	6	0	-3	9	9	8	7	3	3
Balanced interchange demand	12	0	0	5	5	10	9	2	2
Delay reduction - Network	12	0	5	2	2	8	9	5	3
Delay reduction - Van Dorn	5	0	9	0	0	7	7	3	3
Delay reduction - Duke	6	0	7	7	7	5	7	7	4
Service to East Eisenhower	4	0	5	2	2	4	4	5	6
Service to external traffic	2	5	0	8	9	3	3	5	5
Potential for cut-through traffic	4	0	4	5	5	6	6	7	7
Completion of roadway grid	8	0	0	3	3	9	9	5	3
<b>Socio-Economic Benefits</b>	35	0	35	136	136	244	262	248	250
Public safety response time	16	0	0	5	5	8	8	9	8
Community facilities served	6	0	0	3	3	4	5	4	7
Trails connected	6	0	0	4	4	6	8	4	4
Connectivity to Eisenhower	7	0	5	2	2	8	8	8	8





**Ranking of Alternates - Impacts**

Criteria	Criteria Weight	Alternate							
		No Build	No Build w/ Imp	A1	A2	B1	B2	C	D
<b>Natural Environment Impacts</b>	<b>23</b>	<b>230</b>	<b>190</b>	<b>110</b>	<b>140</b>	<b>120</b>	<b>110</b>	<b>230</b>	<b>230</b>
Wetland impacts	7	10	10	10	10	10	10	10	10
Permit challenges	2	10	5	0	5	5	5	10	10
Forest impacts	6	10	5	5	10	5	5	10	10
Floodplain impacts	2	10	10	5	0	5	0	10	10
RPA and stream crossings	6	10	10	0	0	0	0	10	10
<b>Socio-Economic Impacts</b>	<b>37</b>	<b>370</b>	<b>290</b>	<b>245</b>	<b>365</b>	<b>198</b>	<b>185</b>	<b>286</b>	<b>328</b>
Impacts to park land	8	10	10	3	10	1	0	10	10
Impacts to park activities	8	10	10	8	10	0	0	10	10
Proximity to noise receptors	5	10	10	9	9	6	5	6	8
Residential takings	8	10	10	10	10	10	10	10	10
Commercial takings	8	10	0	4	10	10	10	2	6
<b>Cultural Resource Impacts</b>	<b>17</b>	<b>170</b>	<b>140</b>	<b>140</b>	<b>140</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>140</b>
Historic/prehistoric resources	6	10	5	5	5	5	5	5	5
Archaeological sites	5	10	10	10	10	5	5	5	10
Listed/eligible historic sites	6	10	10	10	10	10	10	10	10
<b>Construction Costs and Impacts</b>	<b>23</b>	<b>230</b>	<b>0</b>	<b>152</b>	<b>120</b>	<b>169</b>	<b>168</b>	<b>152</b>	<b>137</b>
Construction cost	8	10	0	8	8	5	4	8	7
Right of way cost	8	10	0	4	0	10	10	4	4
Disruption of existing traffic	7	10	0	8	8	7	8	8	7
<b>Total Points</b>		<b>1010</b>	<b>802</b>	<b>1043</b>	<b>1163</b>	<b>1323</b>	<b>1317</b>	<b>1336</b>	<b>1330</b>



**The City should proceed with a connector  
between Eisenhower Avenue and  
Duke Street because ...**



## *A connector improves traffic movement on existing roadways*

- Makes travel easier for *Alexandrians*
- Reduces delay and congestion
- Reduces through traffic in neighborhoods
- Minimizes potential cut-through traffic



## *A connector improves connectivity between two major arterials*

- Additional access to and egress from Eisenhower Valley
- Roadway grid increases the efficiency of existing roadways
- Makes travel more convenient



## *A connector enhances public safety*

- More options for police, fire and EMS
- Reduces response times
- Eliminates need to use non-roadway routes



*A connector helps neighborhoods by encouraging vehicles to travel on major roadways.*

- Cut-through primarily caused by delay and congestion on arterials and collectors
- Connector reduces delay and congestion on major roadways



## *A connector relieves congestion at the Telegraph Road and Van Dorn Street interchanges*

- Use of Clermont interchange is increased significantly
- Demand at Telegraph and Van Dorn interchanges is reduced
- Future improvements may be avoided or minimized



## *A connector supports the economic vitality of Alexandria*

- Eisenhower Valley is more accessible
- Travel between the Valley and the rest of Alexandria is easier
- Residential, employment and social / recreational opportunities are more accessible





*A connector does not attract a significant amount of new traffic to Alexandria roadways; nor does it increase significantly the amount of traffic cutting through Alexandria.*



## *Recommendations*

1. Select B1 as the preferred build alternate
2. Select D as the back-up preferred build alternate
3. Authorize staff to proceed with environmental study



Thank You

*Eisenhower-to-Duke Connector*