



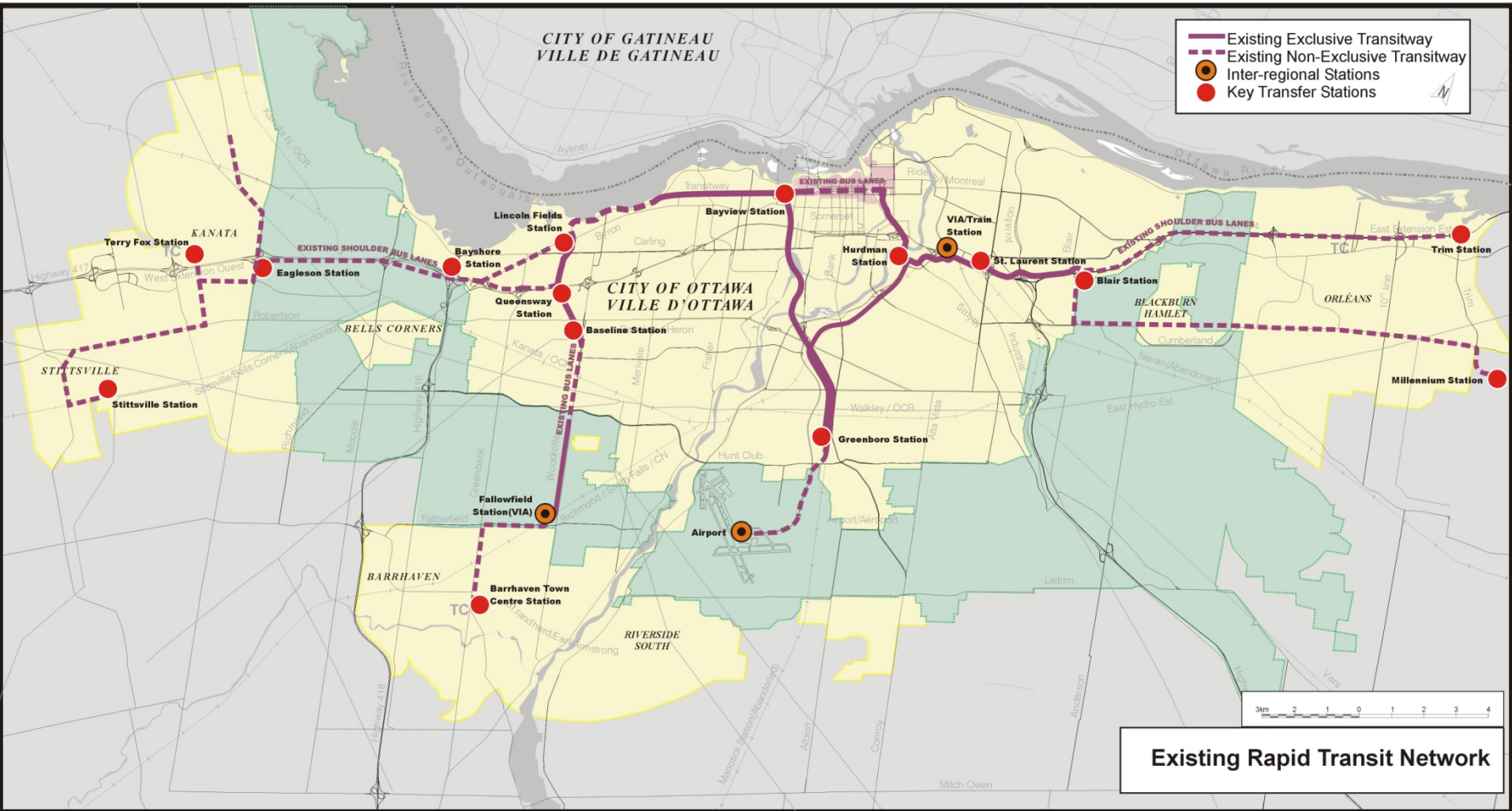
West Transitway Tunnel

Pinecrest Road to the Southwest Transitway

Value Engineering Study

24 November 2009

Context: Existing Network



Existing Rapid Transit Network

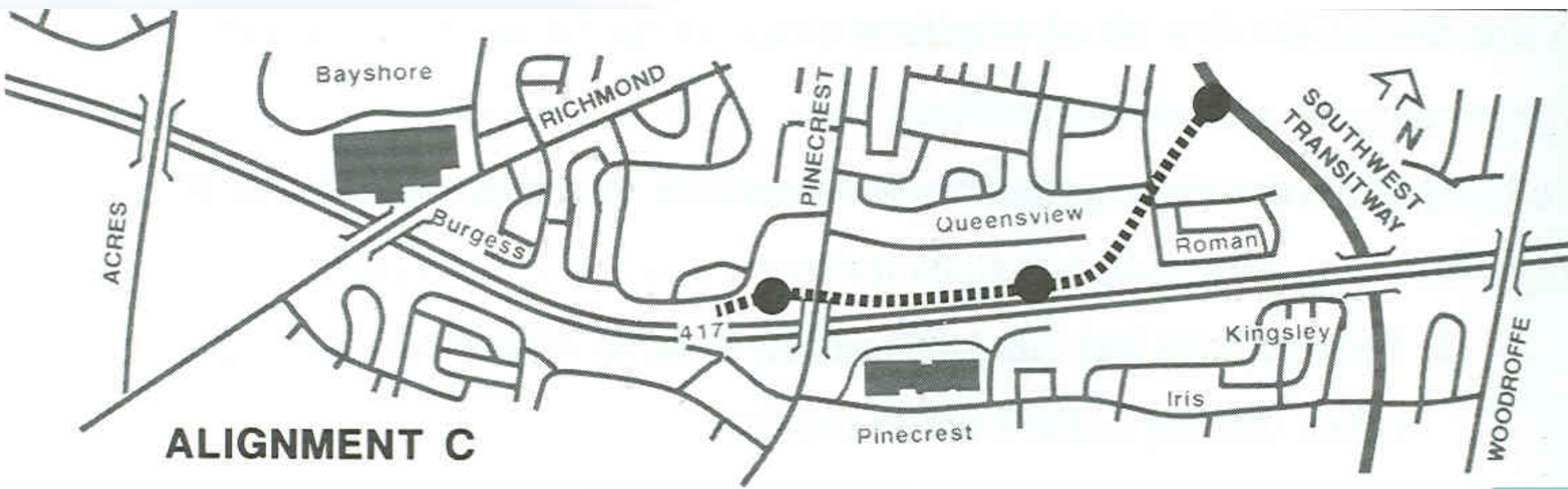
Context: Existing Network



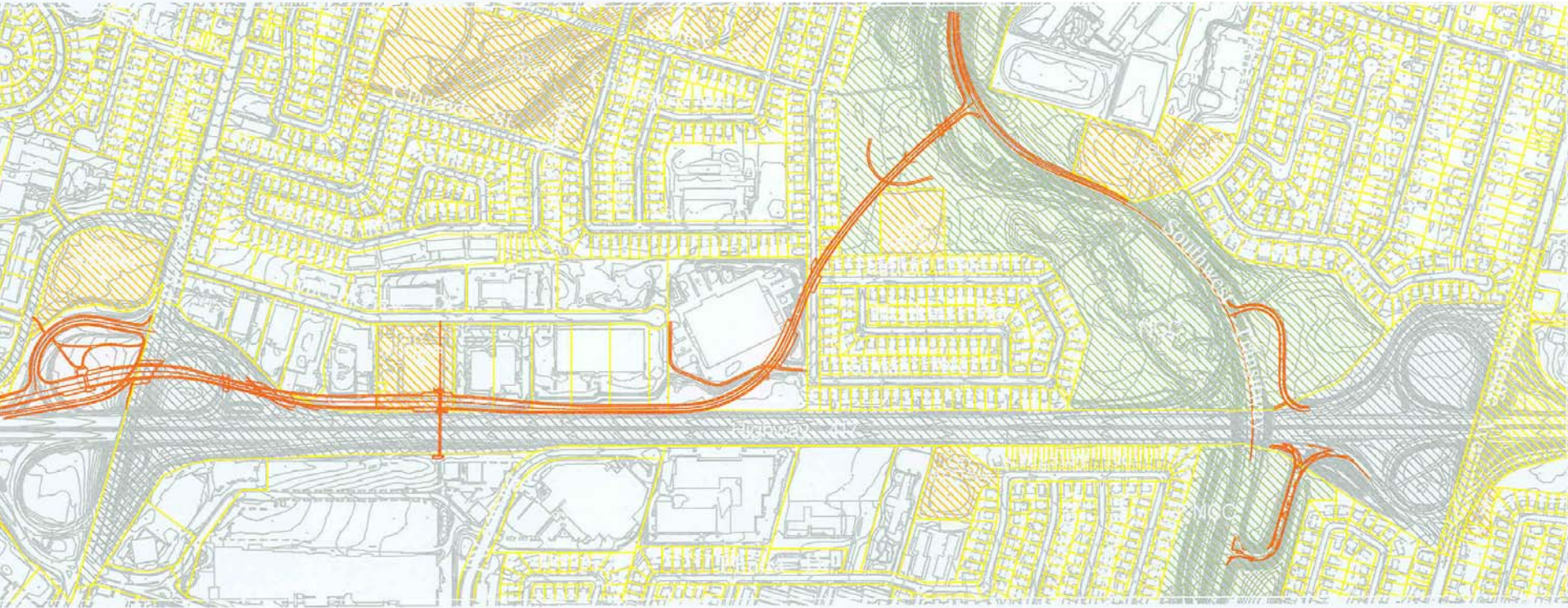
Background

- **Original study 1994**
- **Implementation delay as City's emphasis changed to north-south LRT link**
- **Affordability has changed since the 1990's**
- **MTO EA established a new baseline for Hwy 417 (Queensway)**
- **VE selected as a tool to revisit previous decisions**

Context: Study Area, 1994 EA



Functional Design, 1997



What were the study issues?

- **Value, Cost, long term maintenance.**
- **Accommodation of existing development and preparation for anticipated growth**
- **Short term and long term alternatives**

Context: Future Network (as of 2008)



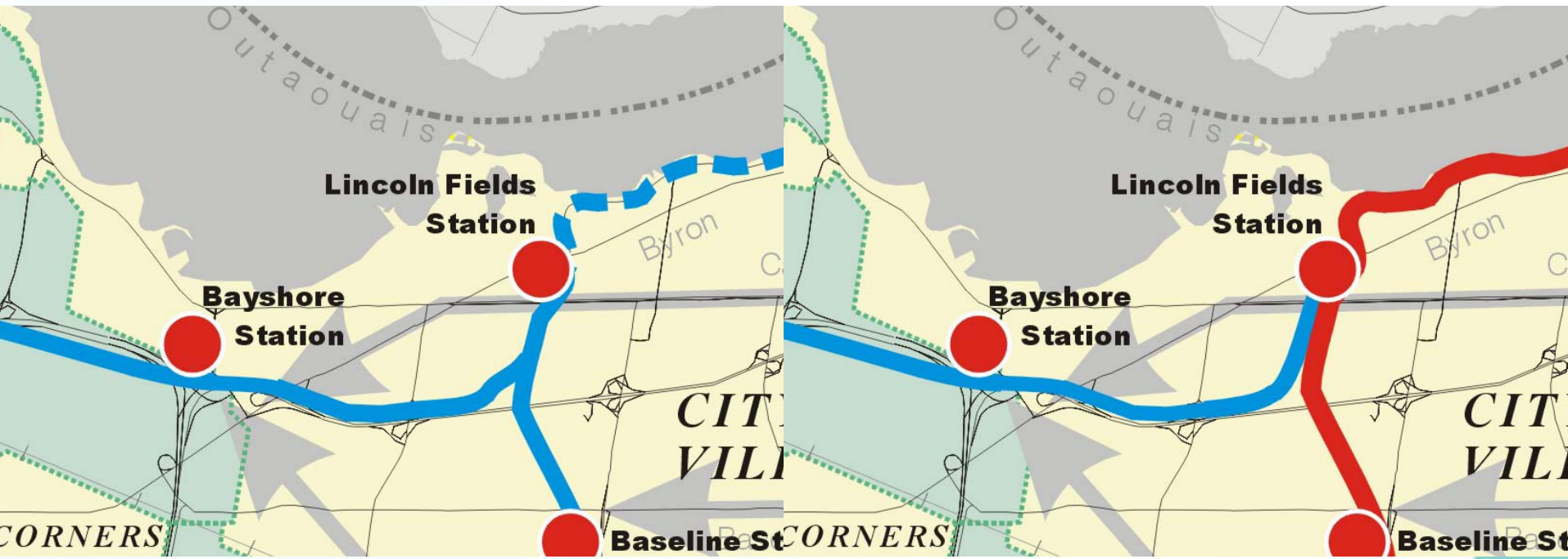
Context: Future Network (as of 2008)



Context: Future Network (as of 2008)



Context: Future Network (as of 2008)



Key Issues

- **There appeared to be a mismatch in value i.e. high capital cost for small change in travel times**
- **MTO plan must be respected including 4 continuous lanes for Hwy 417**
- **Two pinch points with delays:**
 - **Westbound signalized intersection at Pinecrest Avenue**
 - **Eastbound merge in through traffic on N-E ramp**

Study Process

- **Question all Previous Decisions**
- **Focus on Value**
- **Mandate to provide shopping list of ideas back to City of Ottawa design team**
- **Ideas present consensus of 3 days of review realizing verification will be required after workshop**

Project Functions

- **Highest Order Goals**

- **Satisfy Customers**

- **Move People**

- **Increase Ridership**

- **Basic Function**

- **Transfer Riders**

- **Reduce Travel Time**

- **Supporting Functions:**

- **Satisfy Stakeholders**

Provide customers with reliable travel times and perceived time savings versus auto



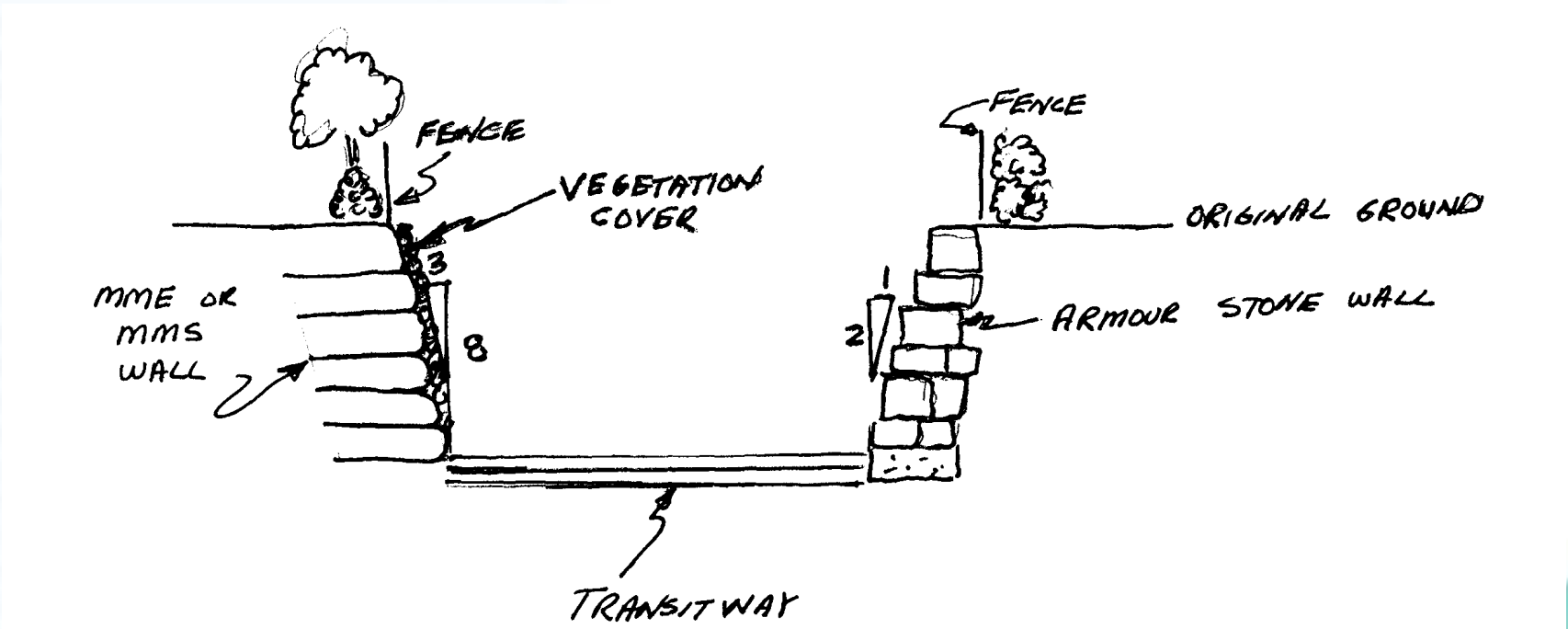
Development

- **Estimate Update**
- **Project Implementation**
- **Transit Operational Improvements**
- **Station Design**
- **Tunnel Design**
- **Design Standards**
- **Design Suggestions**

Idea Development

- **Two general categories of ideas**
 - **Modifications to the original EA design**
 - **Staging approach to allow deferral of major capital costs (including innovative use of Queensway corridor)**

Sample VE Idea Modifying Original Design



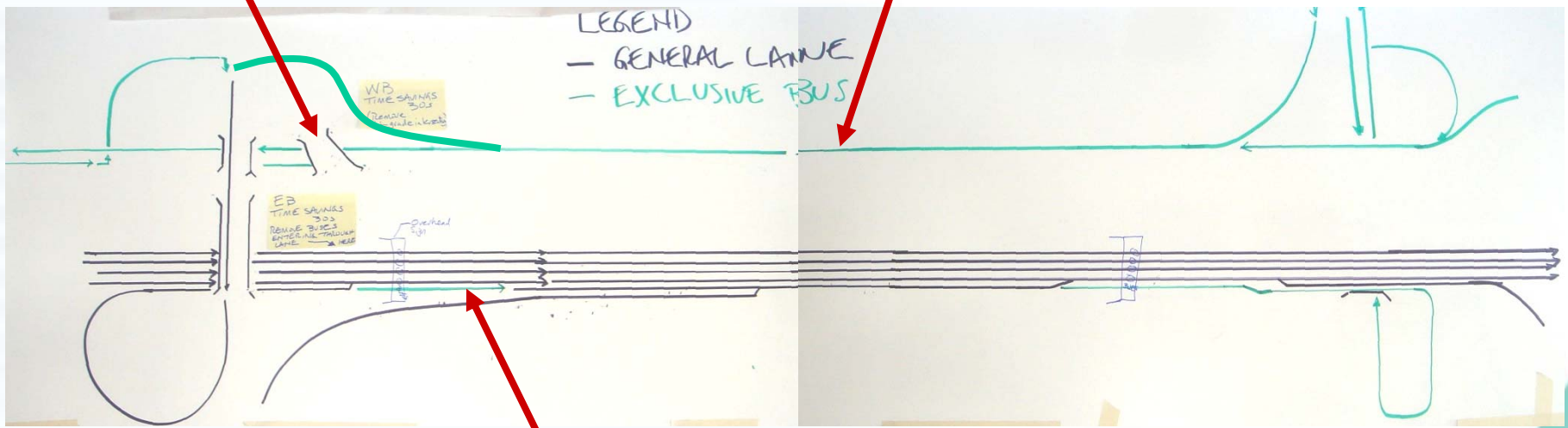


Staging Alternatives

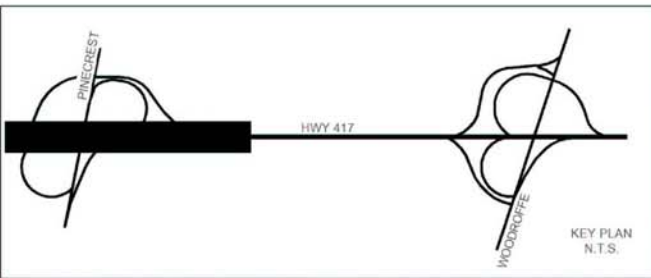
Sample Innovative Phase 1 on Bus Lanes on Queensway

Westbound buses can avoid Pinecrest signals by staging grade separation

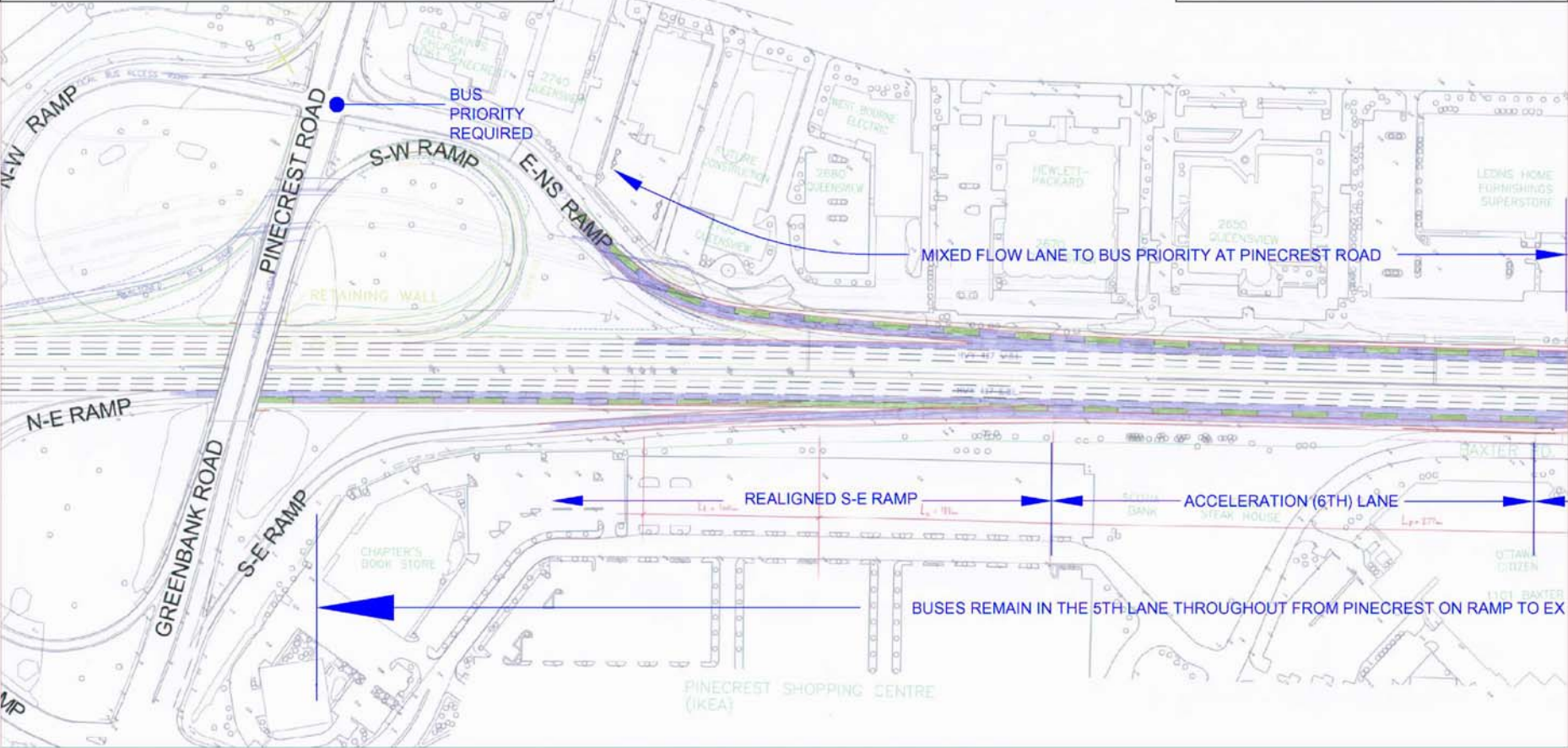
Westbound buses use exclusive bus lanes (consistent travel speeds)

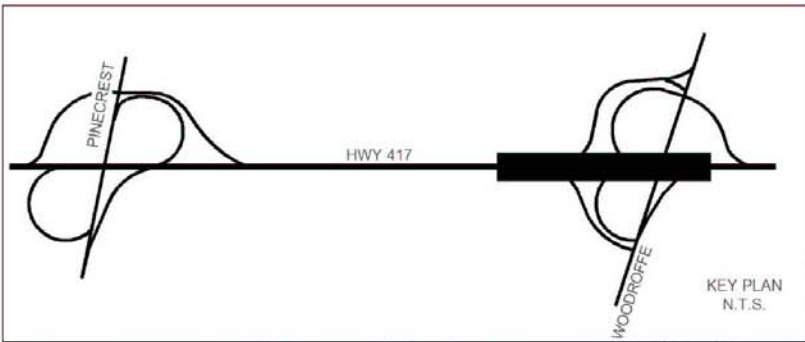


Eastbound buses have several sub-alternatives including innovative alternative with ramp crossing bus lane

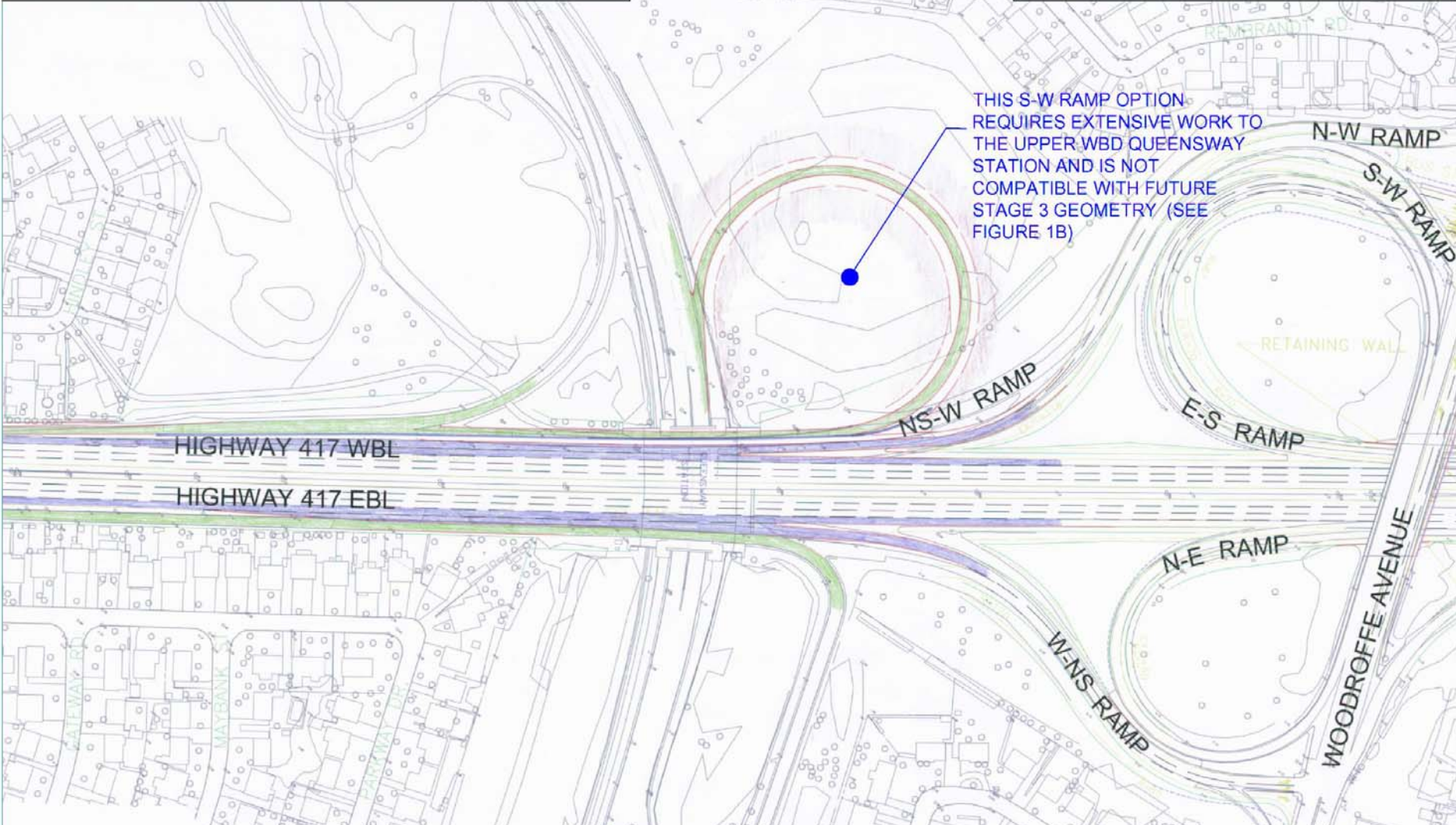


STAGE 1	FIGURE 1A
TRANSIT VEHICLES IN THE 417 CORRIDOR - BOTH DIRECTIONS	

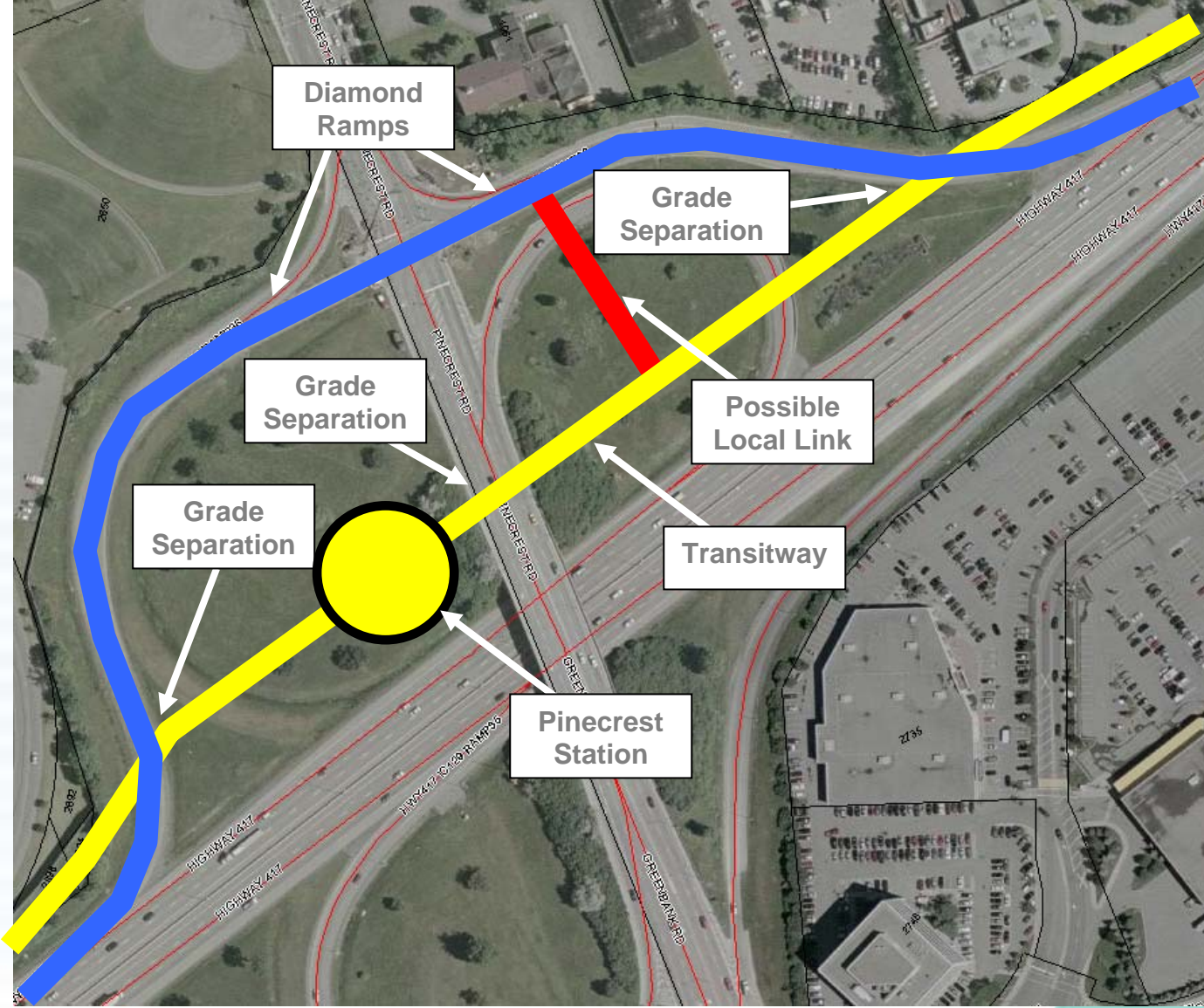




STAGE 1	FIGURE 1C
TRANSIT VEHICLES IN THE 417 CORRIDOR - BOTH DIRECTIONS	



Sample VE Idea Level of Detail



ST-32: Review Queensway Corridor as Long Term Alternative

- **Description**
 - **Construct transitway adjacent to 417 on north side by removing houses on south side of Roman Avenue to eliminate tunnel and park crossing (Alternative A)**
- **Advantages**
 - **Tunnel not required**
 - **Minimal service disruption during construction**
 - **Minimal increase in noise**
 - **Provides direct access to Pinecrest garage**
 - **May be convertible to LRT**
- **Disadvantages**
 - **Removal of 25 homes on Roman Avenue**
 - **Increases exhaust and noise in MTO corridor**
 - **New structure required at Queensway station**
- **Cost implications**
 - **Approximately \$30 million Cost Savings**

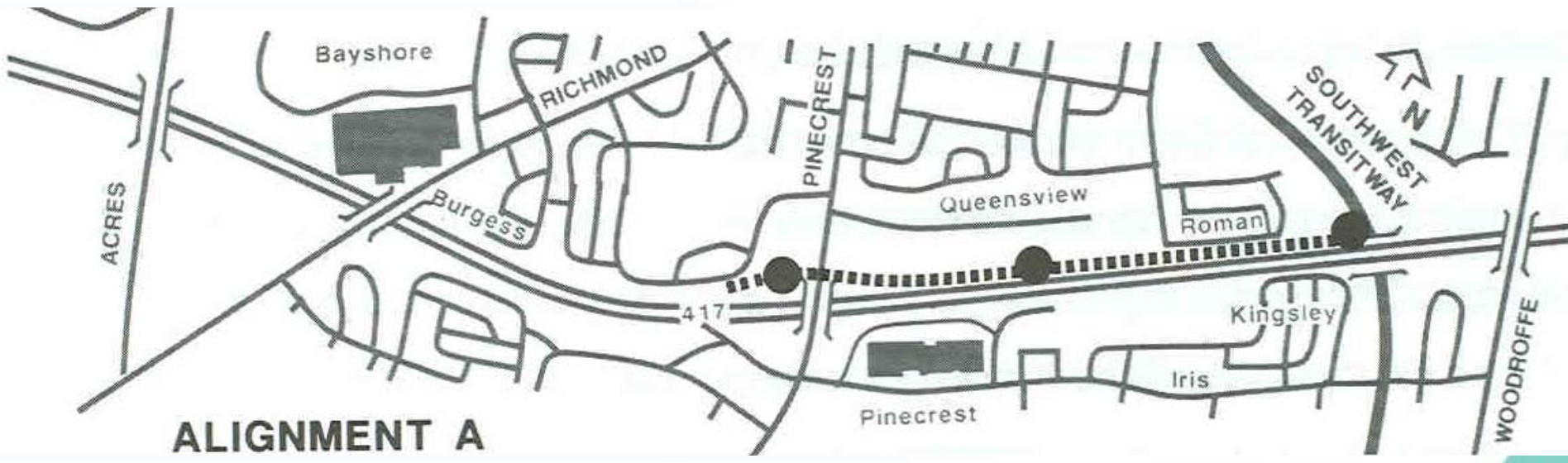
Lessons Learned/Notable Aspects

- **Very contentious EA originally**
- **Passage of time has seen budget become a larger issue**
- **There are financial stresses to complete projects identified in the TMP**

Lessons Learned/Notable Aspects

- **VE is best for internal advice**
- **Requires further development and future EA will consider questions in greater detail**
- **VE helps in scoping the work for revisiting the EA**

Alignment recommended for review



Questions?