CAMBRIDGE SYSTEMATICS

Eagle Road Arterial Study Workshop

Report of Discussion and Conclusions

final report

prepared for

Idaho Transportation Department

prepared by

Cambridge Systematics, Inc.

with

SRF Consulting Group, Inc.

and

PBS&J

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Table of Contents

Eagle Road Arterial Study Workshop

1.0 Introduction

The Idaho Transportation Department (ITD) sponsored a three-day workshop to develop a plan of action for addressing transportation and land use issues in the Eagle Road corridor. This workshop, held February 18 to 20, 2004, was an extension of ITD's ongoing Eagle Road Arterial Study, which is investigating the need for, and impacts of, traffic signals and traffic medians on Eagle Road in the corridor extending from I-84 in the south to State Highway 44 in the north. Other workshop participants included representatives of the Ada County Highway District (ACHD), the Community Planning Association of Southwest Idaho (COMPASS), the Cities of Boise, Meridian, and Eagle; Ada County, homeowners associations, and Valley Ride, the public transportation agency for Ada and Canyon Counties. Representatives of the engineering firm Entranco, ITD's consultant for the Eagle Road Arterial Study, were present. The consulting firms of Cambridge Systematics, Inc., SRF Consulting Group, Inc., and PBS&J were retained by ITD to facilitate the workshop, provide expert opinion in a variety of subject areas, and to prepare this documentation of the workshop findings and conclusions.

Sections 2.0 through 5.0 of this report describe important assumptions that were made to guide workshop participants, detailed features of the resulting "vision" for Eagle Road as a landscaped parkway, and recommendations, developed jointly by workshop participants, for implementation of this vision.

Several important supporting items are presented as appendices to this report, under separate cover. These include a more detailed presentation of the design elements of the vision, concept-level sketches of median openings, construction cost estimates, and a discussion of access to two particular residential subdivisions.

2.0 Assumptions Regarding Corridor Design

After the first day of the workshop, the consultant team identified several assumptions or "givens" that were made explicitly or implicitly, in order to allow further progress on development of solutions, as follows:

1. Available right-of-way varies from 110 to 140 feet. Only minor incremental purchases of additional right-of-way would be considered feasible or realistic.

2. The desired cross-section for the corridor is four through lanes plus auxiliary lanes as required to facilitate smooth and safe traffic flow at intersections. In the southern end of the corridor, continuous right-turn auxiliary lanes are assumed, consistent with ACHD plans.

3. Double left-turn lanes can be accommodated on northbound and southbound approaches at major signalized intersections on Eagle Road.

4. Sidewalks and bicycle lanes should be present on both sides of the road for the entire length of the study corridor.

5. A curbed and landscaped median will be present over the length of the corridor, with channelized breaks at specified locations to permit property access and left and U-turns.

6. To accommodate the increased number of U-turns, the exit leg of signalized intersections will be widened as required; these will double as far-side bus pull-outs to accommodate future scheduled transit service on the corridor.

7. Continuous curb and gutter through length of corridor.

3.0 Detailed Features of the Eagle Road Vision

The following features of a comprehensive, long-term vision for the Eagle Road corridor were worked out over the three-day workshop. They are organized into three focus areas:

1. Traffic engineering design and operations
2. Accessibility and mobility needs
3. Context sensitive design considerations

3.1 Traffic Engineering Design and Operations

The following specific actions or design treatments were identified:

1. The center median will be continuous over the length of the corridor. Breaks in the median will be provided at approximate one-quarter-mile spacing, but final determination of location of the median breaks should be flexible enough to accommodate reasonable access to *existing* development on parcels with existing access.

2. Traffic signals will eventually be placed at approximate one-half-mile **minimum** spacing. Not all one-half-mile intersections need to be signalized at the outset, but signals will not be introduced at other than the locations indicated on the corridor map.

3. A variety of median break channelization types will be utilized to provide the highest degree of access at unsignalized locations that is consistent with safety and maintenance of traffic flow on Eagle Road. The intent is to provide safe left- and U-turn movements at an adequate number of locations, so as to balance the need for reasonable parcel access with the need to reduce the number of full-access points on

Eagle Road, and, thus, maintain safe and efficient flow. The median breaks need to be designed to accommodate emergency vehicle turning requirements.

4. For the segment of Riverside Drive to State Highway 44, future consideration is to be given to closing the exiting unsignalized median breaks, and accommodating north-to-southbound U-turns at the Eagle/State Highway 44 intersection.

5. Advanced signal control technology will be used to optimize operations. At a minimum, this will include demand responsive signals and controllers. Adaptive signal control technology will be considered at the time of implementation to provide more efficient allocation of green-time and to optimize the coordination of signals along the corridor. Issues to be considered and refined include:

   a. Cost of the installation, including necessary modifications to the traffic management center;

   b. Cost of training and ongoing operations of the selected traffic control hardware and software; and

   c. Appropriate hardware and software selection for corridor application.

3.2 Accessibility and Mobility

This area focused on the need to provide reasonable levels of access to parcels adjacent to Eagle Road, while maintaining mobility on Eagle Road itself. These two needs are often in direct conflict, since additional access points on the roadway increase the likelihood of traffic congestion and accidents. Many of the workshop conclusions in this area have to do with planning and zoning processes, rather than with physical modifications or projects.

1. It is critical to implement a process by which developers can work with the Cities and Ada County to develop internal circulation plans in advance of development application and approval. Where a single large parcel is developed or where multiple parcels are assembled, municipal planning and zoning procedures should require identification of a feasible internal (i.e., off the state highway) circulation plan to minimize the number of direct access points to the state route, and to identify local road construction or modification needs to provide the level of access required by the new development.

2. "Secondary access," as used in the ITD access management policy, should be defined as access to cross streets, rather than to Eagle Road itself. Wherever possible, secondary access should be directed to signalized locations (existing or planned) on those cross streets.

3. Heavy-truck traffic should be directed to cross streets with signals on Eagle Road, rather than to direct access points on Eagle Road.

4. Compass, as the MPO for the region, has a role to play in defining and hosting multi-agency processes for corridor planning and specific area planning. These processes

should define access and circulation standards, should be compatible with city comprehensive plans, and should provide a mechanism for review of parcel access circulation and access plans and applications.

5. ITD and ACHD should work together with the municipalities to identify the specific public streets and private approaches on Eagle Road to be closed, over time, via access consolidation, provision of secondary access, etc. The workshop corridor map identified the public streets that should be closed; a similar but more detailed inventory and study of private approaches remain to be conducted.

6. The existing circulation network within and between existing developed parcels should be reconfigured to reduce the number of access points to Eagle Road and to allow more local trips to be made without the need to travel on Eagle Road. This concept should be incorporated into municipal planning and zoning policies and procedures, and implemented over time as redevelopment activities present opportunities to modify the internal circulation elements, including sidewalks and bike lanes as well as streets. New construction on currently undeveloped parcels should follow these same principles.

3.3 Context-Sensitive Design

The summary of context-sensitive design features were recreated in color by SRF Consulting, with supporting illustrations of several of the concepts developed at the workshop. These include typical cross-sections indicating typical median and lane widths, sidewalk and trail configuration, etc. This summary is provided as Appendix A to this report.

4.0 Recommended Institutional Elements of the Vision

Workshop participants identified several "process" and "institutional" elements that are essential or highly desirable components of a comprehensive solution to balancing competing demands of access and mobility on Eagle Road. A broad-based, phased implementation plan for comprehensive solutions was sketched out, broken down into near- and longer-term actions in each of three functional areas: 1) Planning, 2) Design and Implementation, and 3) Management and Operations.

4.1 Planning

Near-Term Actions:

1. Conduct final Eagle Road Arterial Study Open House and present findings of this workshop.

2. Conduct meetings with planning and zoning staff, city councils, etc. to present and build support for the Eagle Road vision.

3. Develop detailed cost estimates and financing plan for implementation of the Eagle Road vision.

Longer-Term Actions:

1. Pursue necessary administrative or legislative actions to require cities to develop corridor and specific area planning processes. These processes would define future primary highway access possibilities, secondary access routes, and internal circulation systems in advance of development proposals, based upon intensity and type of land use permitted by current or future zoning. Such plans can be adopted as an amendment to a city comprehensive plan without waiting for periodic update cycle of the comprehensive plan. As suggested in Item 4 above, pursue amendments to planning and zoning codes to give strength and legal standing to these procedures.

2. Define and implement a cooperative (voluntary) corridor planning process involving land use planners, transportation experts, and planning and zoning staff at the Cities, Ada County, ITD, ACHD, and Compass. Focus on rapid education of staff and decision-makers on aspects of a comprehensive solution that includes zoning and access controls, as well as traffic engineering and design features.

3. Develop more detailed access policies and design guidelines to be applied in all development applications along the corridor. Example policies and design standards for both access management and parcel development are available from other agencies (see for example Oregon DOT, Colorado DOT, or Portland, Oregon METRO) and industry groups, such as ITE and AASHTO. Implement these changes through local planning and zoning ordinances, as these will tend to have more legal standing than other jurisdictions.

4.2 Design and Implementation

Near-Term Actions

1. Develop more detailed median design plan, including traffic operations features, such as median openings and channelization, as well as related design and environmental components, such as landscaping, lighting, and drainage.

2. Develop detailed specifications for improvements to traffic control system to incorporate advanced technology, including demand-responsive and/or adaptive traffic control methods.

3. Solicit input from stakeholder groups, including cyclists, transit advocates, and landscape experts to identify special needs and refine design features.

Longer-Term Actions

1. Develop flexible frontage road policy and design guidelines for application in other corridors where sufficient right-of-way is reasonably available.

4.3 Management and Operations

Workshop participants described and discussed the need for a cooperative approach to corridor management and operation in order to successfully implement the vision created for Eagle Road. This approach could serve as a model for more broad application throughout the Treasure Valley. Key partners in a multi-jurisdictional management and operations "consortium" would include ITD, ACHD, the Idaho State Patrol, and city and county Emergency Medical Service (EMS) providers.

Management and operations of the corridor would be directed from a Traffic Management and Emergency Response Center, where these various service providers would locate the necessary staff, equipment, and communications support to provide key services, including:

1. Routine traffic management built upon advanced technology for traffic signal monitoring and operation.

2. Emergency response coordinating all aspects of incident detection and response.

3. Traveler information providing pre-trip and *en route* information, utilizing all appropriate channels for distribution of information, such as changeable message signs, highway advisory radio, public and private broadcast media, web site, etc.

Near Term Actions

1. Form a consortium or coalition of agencies and organizations to jointly manage and operate the Eagle Road corridor (and subsequent components of the Treasure Valley transportation system as well).

2. Review and revise as necessary language in ITD's access agreement deeds to clarify meaning of "secondary access" and other key definitions and phrases.

Longer-Term Actions

1. Pursue development of a new Traffic Management Center accommodating co-located service providers and system managers/operators.

2. Develop comprehensive "511" traveler information service for Treasure Valley.

4.4 Phased Implementation

Workshop participants identified the following likely phasing of physical improvements in the corridor, once the necessary institutional arrangements are in place.

Corridor Segments

1. The southerly end of the corridor will be first in line for modifications; this is in part due to the pace of commercial development and redevelopment in that segment, and the fact that planning is already underway to add auxiliary lanes on Eagle Road

between approximately I-84 and Franklin Road (or slightly further north to the Union Pacific right-of-way.) Required actions include development of a median plan, modification of traffic signals and control equipment as necessary, and landscape and lighting plans. Because of the proximity of St. Luke's Hospital, the signal pre-empt issues should also be worked out in this first phase to minimize, as far as practical, the negative impact of signal preemption on traffic flow and traffic signal operations.

2. The more highly-developed residential segment extending from approximately Ustick Road north to Chinden Boulevard should be the second segment to be improved, in part again because of the likelihood of significant additional residential and commercial development in the near future. Highway access needs to be coordinated with development plans to ensure that any further development in the area can be accommodated within the basic parameters of the Eagle Road vision (i.e., signalized access only at the one-half-mile points, and highly limited access at points in-between. Location of unsignalized median breaks can be fine tuned in concert with parcel development plans.

3. The northerly segment from Chinden Boulevard to State Highway 44 would be the next segment improved. This area has already received significant landscape treatment along the highway as a result of recent residential developments. Work needs to be done to consolidate access needs of the remaining residential parcels.

4. The segment from approximately Franklin Road or the Union Pacific railroad right-of-way north to Ustick Road could be the last to be improved, based on the relatively slower rate of development there, at least at the present time. Much of the land adjacent to the corridor in this segment is zoned Rural/Urban Transition (RUT) and it would be very desirable to develop a corridor or specific area plan for these parcels prior to finalizing corridor improvements. Such planning should work out the details of primary and secondary access points, as well as internal circulation needs.

Phased Construction

In addition to phased implementation of the major corridor segments, as described above, the various components of each segment can be phased to minimize cost and disruption to traffic flows.

1. Improvements in the traveled way should be constructed as a group. These include added turn lanes and auxiliary lanes, curbs and gutters, and related improvements falling mostly within the existing paved right-of-way. While sidewalks could be part of this phase or not, they have been included with curb and gutter in the cost estimates.

2. Median improvements should be constructed as a group, including median lighting, landscaping, and drainage. The overall median plan needs to specify final location of median breaks, median width, and median configuration at special locations such as signalized intersections with left-turn lanes, slough and river crossings, and locations where the median design will be used to prohibit certain turn movements while permitting others.

3. Multimodal improvements and related enhancements should be constructed as a group. These include the shared pedestrian/bicycle trail, lighting for this trail, the landscape strips buffering the sidewalks from the roadway, and landscaping around the trail.

4. Traffic signal improvements, including an advanced traffic signal control system, can be implemented to a limited extent in independent phases. The central control system needs to be put in place, and then signal and local controller upgrades can be performed in each of the four major segments independently of one another. The benefits of advanced signal control will be most fully realized once all existing signals in the corridor have been upgraded and brought under the new central control system.

The sequence in which these groups of components are constructed can vary. There is no hard and fast reason why one group needs to be constructed before the other. If the more aesthetic improvements are made first, such as landscaping, lighting, and the multimodal trail, the "look and feel" of the parkway concept will be established early-on. This could help generate further public support for the remaining capacity- and safety-related improvements. However, practical considerations may dictate that street, median and traffic signal improvements should precede the multimodal improvements and landscape projects. This sequence will probably offer the most flexibility in terms of construction equipment staging and access, re-routing of vehicle traffic in work zones, utility work, etc. From the perspective of the corridor driver, this sequence may also provide the most immediate benefit from investment, as traffic flow becomes better managed. If the initial construction phase in each segment includes median landscaping and lighting, then to a certain extent the new look of the parkway concept will be established.

5.0 Other Implementation Considerations

The following additional points were raised as presenting potential challenges to implementation of various components of the Eagle Road vision.

1. Multi-agency agreements are needed to define funding and responsibility for operation and maintenance of more routine elements (e.g., lighting, landscape, litter control, etc.) The ongoing cost of operations and maintenance, in general, is an issue; and a special assessment district or other funding mechanism might be desirable to secure necessary O&M funds.

2. Significant pressure from land owners and the development community, as well as the desire of municipalities to obtain revenue from development, presents an obstacle to some of the elements, such as access consolidation and limits on future highway access.

3. There is a need for well-documented access agreements between ITD and local jurisdictions, land owners, and developers. Provision of "secondary access" needs to be clarified, preferably to guarantee only access to a local (non-state) route, rather than a second point of direct access to the state highway. Comprehensive plan amendments should confirm the access agreements.

4. The public needs to be involved in developing details of the Eagle Road vision, and reasonable consensus should be sought on important issues, such as median design and parcel access guidelines.

5. Reconfiguring existing developed parcels to provide more internal circulation within and between developments is desirable, and will be necessary to reduce the number of direct approaches on Eagle Road.

6. Signal pre-emption activity needs to be better monitored and managed, and the impact of pre-emption on traffic signal cycle and traffic flow needs to be minimized as much as practical through optimization of the pre-empt routines. A memorandum of understanding among the chief parties, ITD, ACHD, and St. Luke's Hospital.

7. There is a need for improved public education regarding the changing nature of travel in the Eagle Road corridor. Residents and others will benefit from a proactive outreach effort that defines the proposed changes and their benefits, and explains how features, such as median breaks, secondary access points, acceleration and deceleration lanes, etc., should be used to optimize safety and mobility in the corridor.

6.0 Summary of Appendices

Several important pieces of supporting information have been assembled as appendices to this report. These are summarized below, and provided under separate cover.

Appendix A, Context Sensitive Design: The vision for a functional, safe and attractive parkway with dividing median includes numerous functional and aesthetic design features such as lighting, recreational paths and sidewalks, and landscaping. These design features have been summarized in a color report prepared by SRF Consulting, with illustrations of several of the concepts developed at the workshop. These include conceptual cross-sections indicating typical median and lane widths, sidewalk and trail configuration, etc.

Appendix B, Hobble Creek/Bristol Heights Access Options: The workshop included discussion of access to two existing residential subdivisions, Hobble Creek and Bristol Heights. Appendix B summarizes the key points of the discussion including options for providing signalized traffic control at the entrance to these two subdivision.

Appendix C, Approximate Construction Costs: The consultant team developed a spreadsheet model to estimate approximate, planning-level costs for construction of the many different physical design elements of the Eagle Road vision. While very preliminary, these estimates provide an indication of the construction costs by corridor segment and major components, including implementation of advanced technology signal control.

Appendix D, Map of Recommended Corridor Improvements and: Median Channelization Concepts Four maps depict the main physical elements to be constructed in each of four segments of the corridor. The discussion and evaluation of access options to the Hobble Creek and Bristol Heights subdivisions generated four concept-level schematic sketches of different median treatments to permit certain turning movements and prohibit others. These schematics are presented only to clarify the intended function of different median openings; they do not indicate the actual detailed median and roadway design elements that would be necessary to implement the concept.

Eagle Road Parkway

Context Sensitive Design. . .

Considers all modes of transportation, is balanced, involves interdisciplinary design, involves the public, encourages good aesthetics, and incorporates design flexibility.

Why Context Sensitive Design for Eagle Road Parkway? It enhances community livability, sustainability and creates an asset for the communities. It builds community support. It is good design.

Features of the Eagle Road Parkway Action Plan:

Speed Reduction (40-45 mph) is Achieved Through Design Features

Consistent with parkway environment:

- 11-foot wide lanes, where possible
- 14-foot outside lane for shared bicycle use
- Minimum setback of parkway amenities and lighting

Designated and shared bike lanes for Eagle Road Parkway can connect to regional trails.

Bike Facilities and Recreational Trails

Inclusion of shared bike lanes and trails emphasizes multi-modal approach:

- 14-foot shared auto/bike lanes
- "Connectivity" to regional bike routes and recreational trails

Sidewalks

Emphasis on pedestrian use of the parkway:

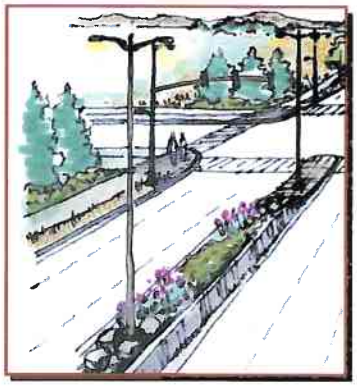
- Sidewalk widths: 6-foot minimum; 10-foot shared use (pedestrian and bikes)
- Varying alignments (straight or curvilinear) appropriate to location/neighborhood
- Sidewalk paving; vary material, coloration and texture

Cast-in-place sidewalk and cross-walk materials, such as concrete, can be textured and colored to define pedestrian areas on the parkway.

Medians

Defining the parkway character:

- 12-foot median, where possible
- Attractive xeriscape landscaped median
- Native vegetation with emphasis on low-maintenance
- Vertical manipulation of median height through decorative landscape walls, land forms (mounding), decorative paving, stone/boulders
- Maintenance/irrigation agreements with adjacent neighborhoods to ensure viability of landscape



Parkway median treatments, varying heights and interesting landscape design, help define parkway "character."

Landscape Strip (Verge)

Providing a parkway and community interface:

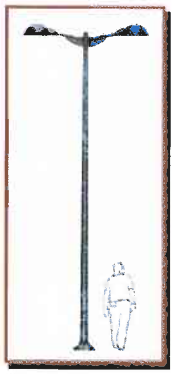
- Varying widths corresponding to location and sidewalk alignment (minimum 6 feet)
- Varying landscape design and character corresponding to neighborhoods, shopping areas, community schools and recreational facilities
- Low-maintenance vegetation appropriate to parkway/community character

Landscape strips adjacent to the parkway enhance the corridor and neighborhood edges.

Lighting

Emphasizing safety, security and reinforcing parkway/community image:

- School area and student-crossings safety lighting
- Parks area security and enhancement lighting
- Bridges, community entry and interpretive sign monuments architectural lighting
- Parkway and pedestrian lighting with light cut-offs/neighborhood screening
- Median lighting/continuous parkway lighting for safety and parkway image
- Median openings and intersection safety lighting



Median parkway lighting enhances safety and the fixture style reinforces the "parkway" image.

Pedestrian lighting for Eagle Road Parkway can contribute to security and be provided with light "cut-offs" to prevent neighborhood glare.

Parkway Structures

Enhancing parkway/community aesthetics and function:

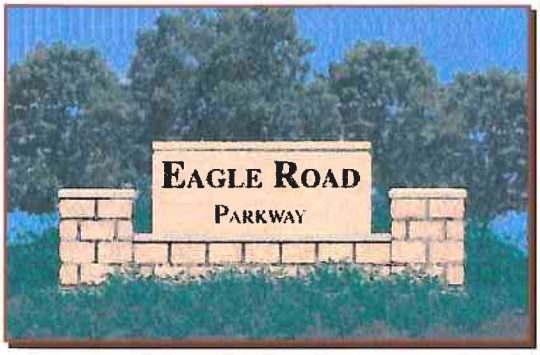
- Bridge parapets/railings and bridgehead treatments
- Public art opportunities
- Monuments to mark transitions (bench to valley and river), parkway announcement and community entrances

Bridge parapets, railings and bridgehead treatments can be distinctive to Eagle Road Parkway.

Pedestrian Safety Features

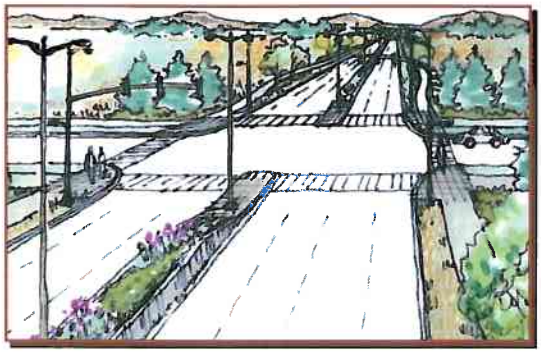
Emphasizing pedestrian safety and security:

- Pedestrian crossing treatments near special generators (schools, parks, hospital) incorporating textured paving and color
- Pedestrian refuges in median areas/crossings (minimum 8 feet)

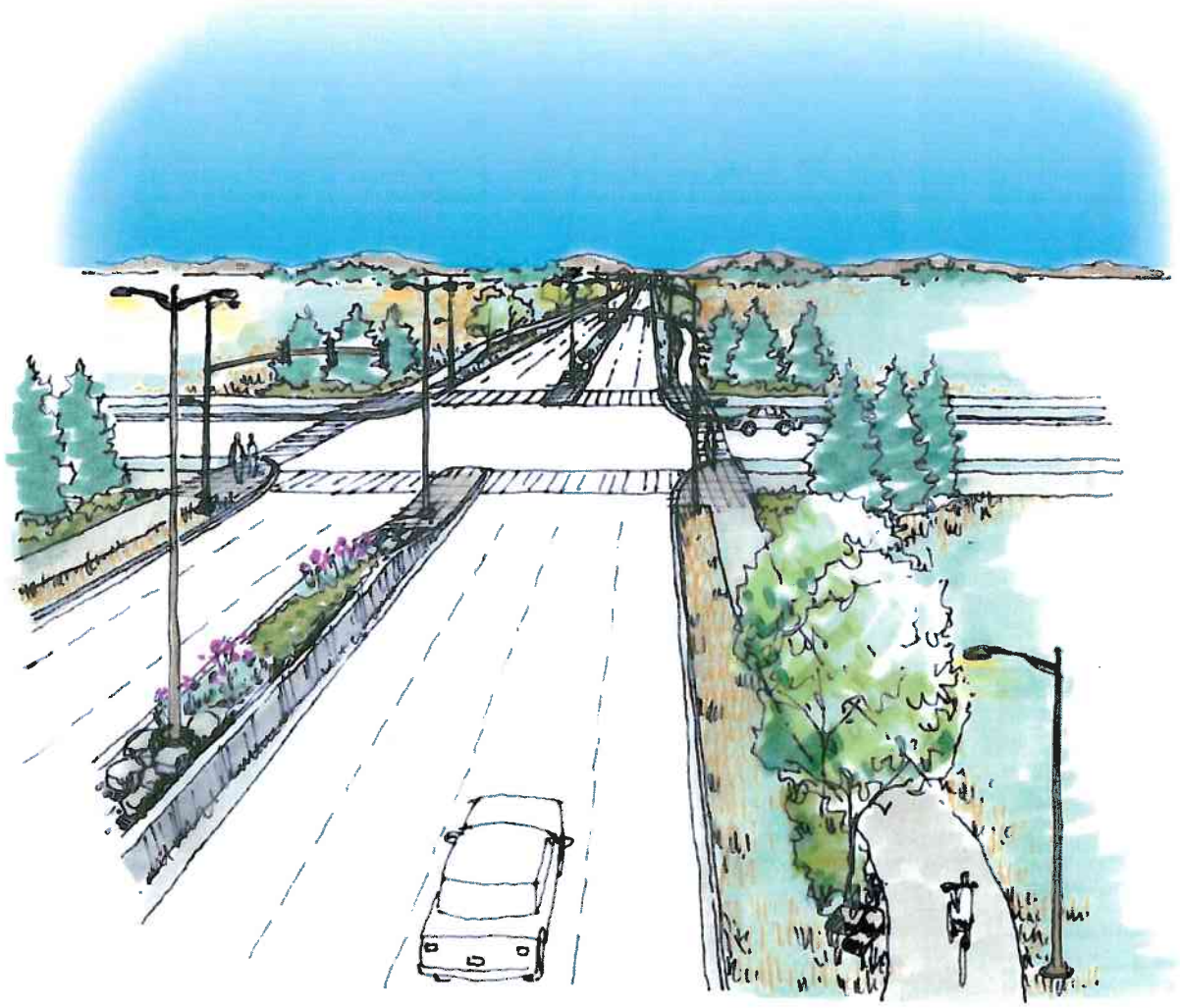


Community entrances can be announced with sign monuments appropriate to a parkway character.

Signs can mark transitions along a parkway corridor.



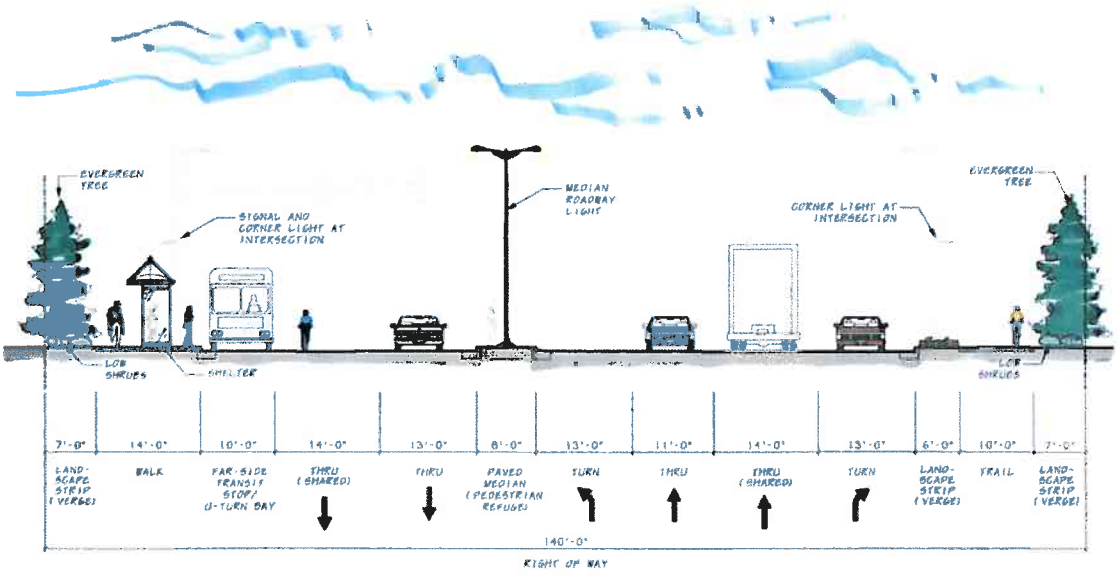
Parkway medians can provide pedestrian refuges at crossings.



PERSPECTIVE VIEW OF EAGLE ROAD PARKWAY CONCEPT

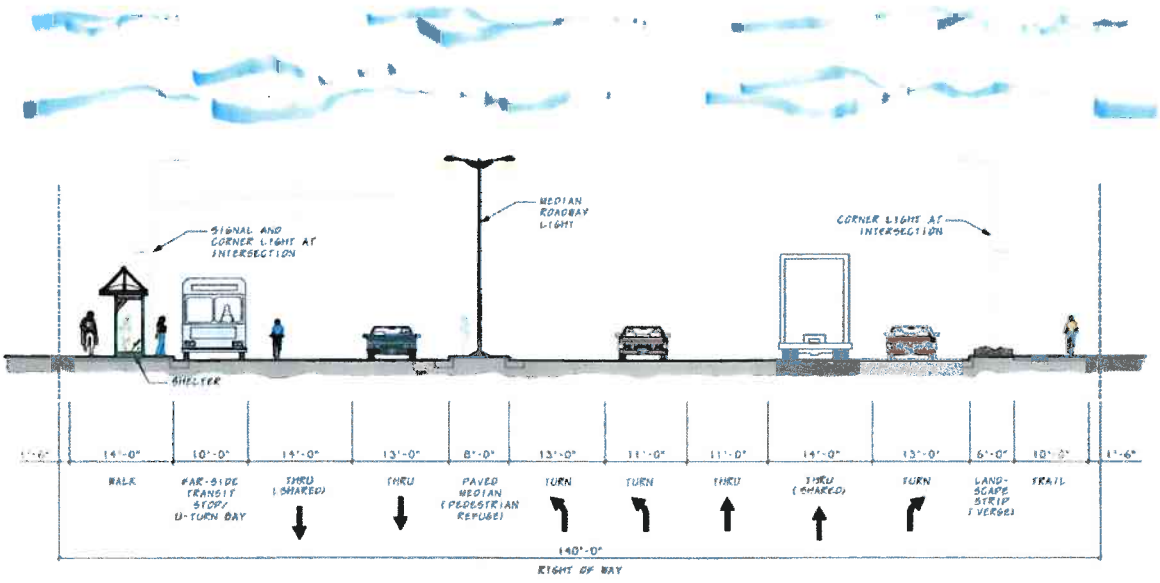
SRF CONSULTING GROUP, INC.

MARCH 3, 2004



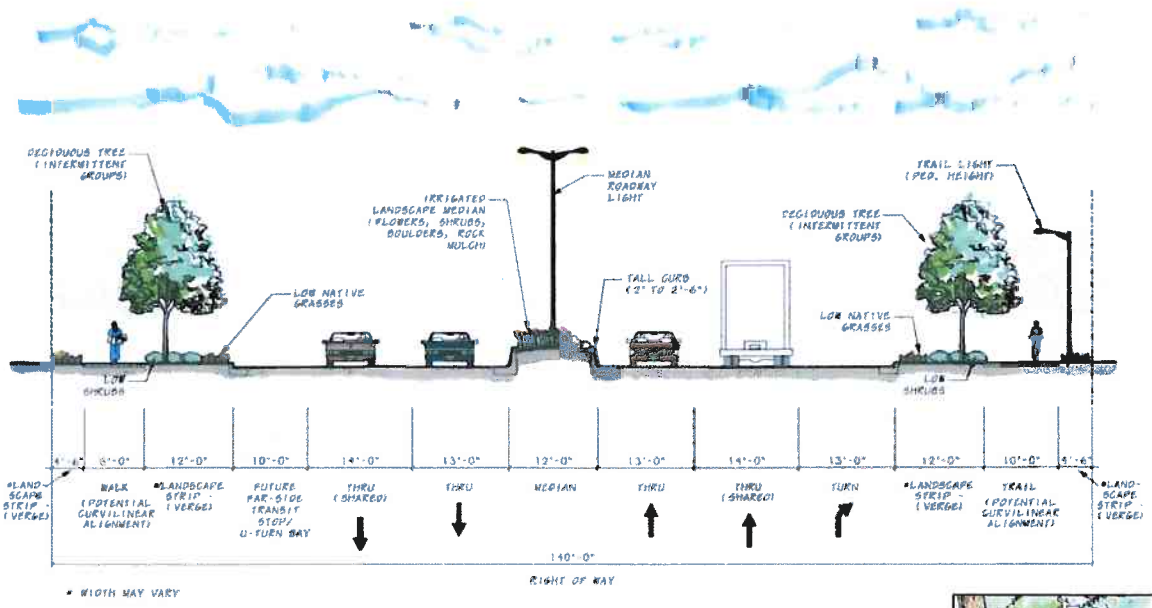
ROAD CROSS SECTION #1 CONCEPT - AT INTERSECTION WITH SINGLE LEFT TURN LANE

0 5' 10' 20'



ROAD CROSS SECTION #2 CONCEPT - AT INTERSECTION WITH DOUBLE LEFT TURN LANES

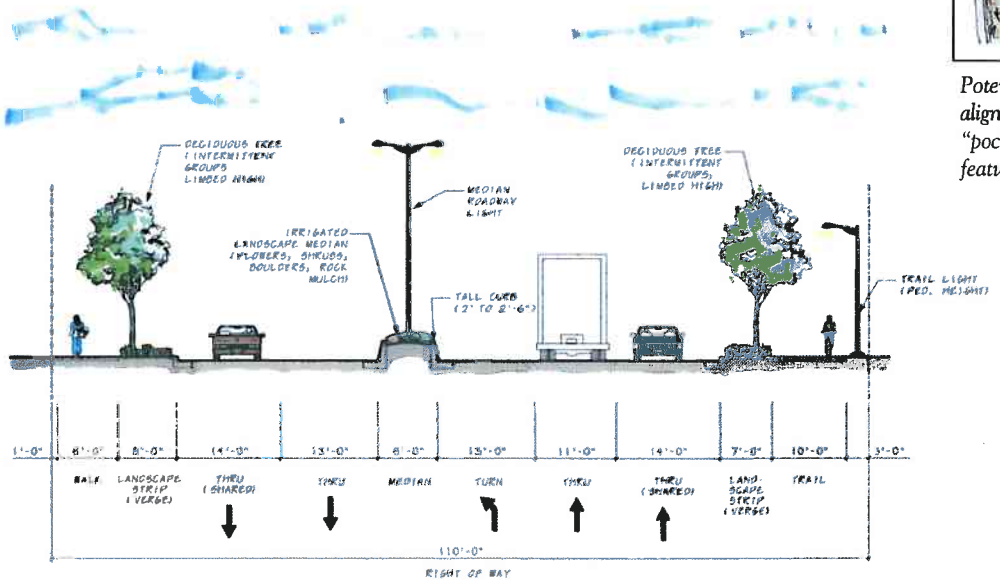
0 5' 10' 20'



ROAD CROSS SECTION #3 CONCEPT - MIDBLOCK IN 140' RIGHT OF WAY

0 5' 10' 20'

Potential curvilinear alignment creates wider "pockets" for landscape features in 140' right of way



ROAD CROSS SECTION #4 CONCEPT - MIDBLOCK IN 110' RIGHT OF WAY

0 5' 10' 20'

Appendix B. Evaluation of Access to Hobble Creek/Bristol Heights Subdivision

The workshop also addressed the issue of access to two existing residential subdivisions, Hobble Creek and Bristol Heights. Extensive discussion covered historical actions that resulted in the current unsignalized access location and configuration, as well as safety data, traffic volumes, and adjacent property uses. Participants acknowledged that in the future, greater attention must be paid to the location of primary and secondary access points when properties undergo development or redevelopment. It was also concluded that a major reconstruction of any of the internal circulation roads in either of these two subdivisions was unlikely.

B.1 Recommended Signalization Scheme

Workshop participants reviewed four alternative retro-fitted access schemes. Ultimately, the consultant team recommended Option 4, which calls for installation of a traffic signal at the existing subdivision entrance. This option provides the most immediate relief, in terms of improved access, for existing residents of the two subdivisions. The principal drawback to the recommended option is that the traffic signal would be located at other than one-half-mile spacing between existing and proposed future traffic signals. As documented in the Draft Eagle Road Arterial Study Draft Report (Entranco, December 2003) the traffic signal control in this segment of the corridor is time-based. Fixed signal timing and offset, rather than demand-responsive signal control, is used to maintain platoons of vehicles moving at or near the posted speed limit. Placing a signal at this location, which is not precisely on the half-mile mark between the two major adjacent signalized intersections (Chinden Boulevard and McMillan Road) will result in slight reduction of the green band of the corridor under the current signal system control. This would make it more difficult to maintain average speeds in the desired range (40-45mph) in both directions during peak periods. This impact can be mitigated by changing the way the signal system is managed and operated, through implementation of one or more of the following strategies:

1. Addressing the northbound green-band separate from the southbound green-band, that is, favoring peak-direction travel rather than trying to optimize in both directions simultaneously;

2. Evaluate the signal operations (phasing sequence) at each intersection to consider lag-lead operations for the north and south bound flows;

3. Evaluate the signal phasing for side streets, and consider switching some of the minor side street left turns from Protective to Permissive;

4. Evaluating the cycle splits to favor Eagle Road over side streets, which would result in slightly more delay per vehicle on side streets but would generate an overall reduction in total delay due to the much higher volume on Eagle Road.

Implementing these strategies will result in improvement to the traffic flow on Eagle Road with the current signal system, even with the addition of the Hobble Creek signal.

We recommend that the existing traffic signal control system be replaced with a more sophisticated system that responds to changes in traffic flow rates on Eagle Road and side streets. This type of adaptive signal control technology will significantly improve traffic flow handling at *all* signalized intersections on the corridor, and will minimize the degree to which the signal at Hobble Creek, or other additional signals on Eagle Road, impact average corridor travel times or speeds.

Any new signal hardware installed must be forward-compatible with the most likely type of advanced traffic control system to be installed. This will minimize the need for further upgrades in order for signals to be compatible with the new control system.

We recommend that until the advance traffic control system has been selected and is ready for operation, the only other signals installed on Eagle Road should be limited to the remaining three half-mile points where signals do no currently exist: Colchester Drive, Wainwright Drive, and River Valley. Consideration of any further signalized access points should be deferred until an advanced control system is operational and delivering satisfactory performance.

B.2 Access Options Considered

The following four options for improving access to the Hobble Creek and Bristol Heights subdivisions were considered.

Option A. Full-Movement Signalized Intersection at One-Half-Mile Point

- Build new east/west access connections to existing subdivisions approximately 500 feet south of the existing access intersection.
- Requires acquisition and removal of several residences on Hobble Creek side.
- Requires construction of new access road to existing stubbed-off local street in the Bristol Heights subdivision
- **Pros:** Best fits existing signal coordination capabilities, providing smoother progression of traffic on Eagle Road with existing traffic control technology; provides safe ingress/egress to subdivisions; provides the possibility for combining access with Sedona Subdivision.
- **Cons:** Requires costly and disruptive parcel acquisition; changes function of some internal streets from local to collector, with resulting potential claims for loss of property value.

Option B. Partial-Movement Signalized Intersection at One-Half-Mile Point

- Construct new signalized access road at the one-half-mile point to existing stubbed-off local street in the Bristol Heights Subdivision.
- Eliminate left-turns in and out of Bristol Heights at existing main entrance; permit only right-turns to/from Bristol Heights at this location.
- Provide channelized access to Hobble Creek at existing entrance; retain left-turn in and left-turn out for Hobble Creek.
- **Pros:** Does not require parcel acquisition; improves access and safety relative to existing levels to both subdivisions, while maintaining preferred signal spacing.
- **Cons:** Access to the Bristol Heights Subdivision is less direct; the function of some internal streets changes from local to collector.

Option C. "Super Arterial" Intersection at Existing Entrance

- Construct a partial-access signalized intersection at existing subdivision entrance.
- Left-turn in from Eagle Road permitted to both Hobble Creek and Bristol Heights sides; left-turns are signal controlled and may be operated independently of one another. Only the opposing through traffic is stopped during the left-turn phase.
- No left-turn out permitted from either Hobble Creek or Bristol Heights.
- Outbound left-turn movements replaced with right-turn and immediate U-Turn median breaks north and south of entrance.
- **Pros:** Provides safer ingress/egress than existing, while causing less disruption to Eagle Road traffic than other options. Retains relatively direct ingress by preserving in-bound left-turns.
- **Cons:** Introduces additional turning movements (U-turns) at unsignalized median breaks; provides only indirect egress for residents of both subdivisions.

Option D (Recommended Option). Full-Movement Signalized Intersection at Existing Entrance

- Provide full-movement, demand-actuated signal controlled access.
- **Pros:** Most immediate improvement in access for existing residents; improves safety over existing conditions. Likely to be least costly of the options.
- **Cons:** Sub-optimal location for signal in terms of maintaining signal progression.

Three median channelization concepts were developed during the workshop to help visualize and describe different methods of providing access to the Hobbs Creek and Bristol Heights Subdivisions. A fourth concept was developed to accommodate a specific

case of off-set unsignalized approaches, unrelated to the Hobble Creek access issue. These concepts are presented as schematic sketches in Appendix C, under separate cover.

Eagle Road Parkway Improvement Cost Estimates

4/14/2004 \\D3issv208446\D3\Projects\traffic\documents\Eagle Road Study\Workshops\[Eagle Rd Costs 05-14-04.xls]Signal Cost Details PBS&J

Improvement Category	No	Project(s)	Item	Unit	Width	Length	Quantity	Unit Cost	Origin of unit cost	Item Cost
Segment	**1**	**Overland to Franklin**	**5,300 = Segment Length**							
		Overland	No Change							na
		I-80 EB Off Ramp	No Change							na
		I-80 WB Off Ramp	No Change							na
Street	101	West Magic SB to I-84 On ramp, add 3rd lane	Add lane, 12 ft by 1000 ft	SY	12	1,000	1,330	$39	ITD Statewide Low bid Averages	$51,804
Street	102	Franklin SB to West Magic, add 3rd lane	Add lane, 12 ft by 1500 ft	SY	12	1,500	2,000	$39	ITD Statewide Low bid Averages	$77,900
Street	103	St Luke's, add NB Dual Left turn only	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
		Franklin, NB dual left turn exists	No Change							na
Street	104	Franklin, add SB Dual left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Street	105	Franklin, add SB right/thru lane	Add lane, 14 ft by 1000 ft	SY	14	1,000	1,560	$39	ITD Statewide Low bid Averages	$60,762
Street	105	Franklin, add NB 3d lane to function as thru/right lane	Add lane, 14 ft by 1000 ft	SY	14	1,000	1,560	$39	ITD Statewide Low bid Averages	$60,762
Street	107	Franklin, add NB right accelaration lane up to UPRR	Add lane, 14 ft by 1000 ft	SY	14	1,000	1,560	$39	ITD Statewide Low bid Averages	$60,762
Gutter	108	Add conc curb & gutter project length, 2 sides	Curb/gutter	LF	na	5,300	10,600	$7	Avg Unit Bid Price	$74,200
Sidewalk	109	Add concrete sidewalk, project length, 2 sides	Sidewalk	SY	8	5,300	4,710	$41	Avg Unit Bid Price	$193,110
Median	110	Construct landscaped median with breaks at appropriate locations	Landscaped median	mile	na	5,300	1.00	$605,000	Centennial PKWY project	$607,292
Lighting Median	111	Install overhead high-mast lighting, continuous over median length	Lighting, at 160' spacing	EA	na	5,300	33	$6,000	SRF Consulting, adjusted by TJD	$198,000
Lighting Sidewalk	112	Install overhead low-mast lighting, over sidewalk/trail length, 2 sides	Lighting continuous Ovrlnd to Frnkln	EA	na	10,600	133	$4,500	SRF Consulting, adjusted by TJD	$598,500
									Subtotal	**$2,107,700**
							0.25		**Add for mobilization and other conting**	**$526,900**
									Total Roadway Estimate for Segment 1	**$2,634,600**
Rebabilitated Signal	113	Rehabilitate traffic signal at Overland, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	114	Rehabilitate traffic signal at I-84 EB Off ramp see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	115	Rehabilitate traffic signal at I-84 WB Off ramp see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	116	Rehabilitate traffic signal at St Luke's, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	117	Rehabilitate traffic signal at Franklin, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
									Traffic Signal Estimate for Segment 1	**$170,500**
									Total Estimate for Segment 1	**$2,805,100**

Eagle Road Parkway Improvement Cost Estimates

4/14/2004 \\D3issv208446\D3\Projects\traffic\documents\Eagle Road Study\Workshops\[Eagle Rd Costs 05-14-04.xls]Signal Cost Details PBS&J

Improvement Category	No	Project(s)	Item	Unit	Width	Length	Quantity	Unit Cost	Origin of unit cost	Item Cost
Segment	**2**	**Franklin to Ustick**	**10,500 = Segment Length**							
		Pine	No Change							na
Street	201	Fairview, add NB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Street	202	Fairview, add SB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Street	203	River Valley, add new signalized configuration, NB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	204	River Valley, add new signalized configuration, SB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	205	Ustick, add NB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Street	206	Ustick, add SB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Gutter	207	Add conc curb & gutter project length, 2 sides	Curb/gutter	LF	na	10,500	21,000	$7	Avg Unit Bid Price	$147,000
Sidewalk	208	Add concrete sidewalk, project length, 2 sides	Sidewalk	SY	8	10,500	9,330	$41	Avg Unit Bid Price	$382,530
Median	209	Construct landscaped median with breaks at appropriate locations	Landscaped median	mile	na	10,500	1.99	$605,000	Centennial PKWY project	$1,203,125
Lighting Median	210	Install overhead high-mast lighting, continuous over median length	Lighting, at 160' spacing	EA	na	10,500	66	$6,000	SRF Consulting, adjusted by TJD	$396,000
Lighting Sidewalk	211	Install overhead low-mast lighting, over sidewalk/trail length, 2 sides	Lighting, at 80' spacing, 50%	EA	na	21,000	132	$4,500	SRF Consulting, adjusted by TJD	$591,750
									Subtotal	**$3,115,400**
							0.25		**Add for mobilization and other conting**	**$778,900**
									Roadway Estimate for Segment 2	**$3,894,300**
New Signal	212	Install new traffic signal at River Valley, see template below	Traffic Signal lump sum	na	na	na	1	$45,900	includes contingencies	**$45,900**
Rebabilitated Signal	213	Rehabilitate traffic signal at Pine, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	214	Rehabilitate traffic signal at Fairview, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	215	Rehabilitate traffic signal at Ustick, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
									Traffic Signal Estimate for Segment 2	**$148,200**
									Total Estimate for Segment 2	**$4,042,500**

Eagle Road Parkway Improvement Cost Estimates

4/14/2004 \\D3issv208446\D3\Projects\traffic\documents\Eagle Road Study\Workshops\[Eagle Rd Costs 05-14-04.xls]Signal Cost Details PBS&J

Improvement Category	No	Project(s)	Item	Unit	Width	Length	Quantity	Unit Cost	Origin of unit cost	Item Cost
Segment	**3**	**Ustick to Chinden**	**9,500 = Segment Length**							
Street	301	Wainwright, add new signalized configuration, NB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	302	Wainwright, add new signalized configuration, SB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	303	McMillan, add NB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Street	304	McMillan, add SB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Street	305	Hobble Creek, add new signalized configuration, NB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	306	Hobble Creek, add new signalized configuration, SB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	307	Chinden, add NB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Gutter	308	Add conc curb & gutter project length, 2 sides	Curb/gutter	LF	na	19,000	19,000	$7	Avg Unit Bid Price	$133,000
Sidewalk	309	Add concrete sidewalk, project length, 2 sides	Sidewalk	SY	8	9,500	8,440	$41	Avg Unit Bid Price	$346,040
Median	310	Construct landscaped median with breaks at appropriate locations	Landscaped median	mile	na	9,500	1.80	$605,000	Centennial PKWY project	$1,088,542
Lighting Median	311	Install overhead high-mast lighting, continuous over median length	Lighting, at 160' spacing	EA	na	9,500	59	$6,000	SRF Consulting, adjusted by TJD	$354,000
Lighting Sidewalk	312	Install overhead low-mast lighting, over sidewalk/trail length, 2 sides	Lighting, at 80' spacing, 50%	EA	na	19,000	119	$4,500	SRF Consulting, adjusted by TJD	$535,500
									Subtotal	**$2,935,400**
							0.25		**Add for mobilization and other conting**	**$733,900**
									Roadway Total for Segment 3	**$3,669,300**
New Signal	313	Install new traffic signal at Wainwright, see template below	Traffic Signal lump sum	na	na	na	1	$45,900	includes contingencies	$45,900
New Signal	314	Install new traffic signal at Hobble Creek, see template below	Traffic Signal lump sum	na	na	na	1	$45,900	includes contingencies	$45,900
Rebabilitated Signal	315	Rehabilitate traffic signal at McMillan, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	316	Rehabilitate traffic signal at Chinden, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
									Traffic Signal Estimate for Segment 2	**$160,000**
									Total Estimate for Segment 3	**$3,829,300**

Eagle Road Parkway Improvement Cost Estimates

4/14/2004 \\D3issv208446\D3\Projects\traffic\documents\Eagle Road Study\Workshops\[Eagle Rd Costs 05-14-04.xls]Signal Cost Details PBS&J

Improvement Category	No	Project(s)	Item	Unit	Width	Length	Quantity	Unit Cost	Origin of unit cost	Item Cost
Segment	**4**	**Chinden to SH 44**	**9,000 = Segment Length**							
		Island Wood	No Change							na
		Riverside	No Change							na
Street	401	Colchester, add new signalized configuration, NB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	402	Colchester, add new signalized configuration, SB	Add total width = 14' for 1200	SY	14	1,200	1,870	$39	ITD Statewide Low bid Averages	$72,837
Street	403	SH 44, add NB Dual Left turn	Add lane, 12 ft by 1200 ft	SY	12	1,200	1,600	$39	ITD Statewide Low bid Averages	$62,320
Gutter	404	Add conc curb & gutter project length, 2 sides	Curb/gutter	LF	na	18,000	18,000	$7	Avg Unit Bid Price	$126,000
Sidewalk	405	Add concrete sidewalk, project length, 2 sides	Sidewalk	SY	8	18,000	16,000	$41	Avg Unit Bid Price	$648,000
Median	406	Construct landscaped median with breaks at appropriate locations	Landscaped median	mile	na	9,000	1.70	$605,000	Centennial PKWY project	$1,031,250
Lighting Median	407	Install overhead high-mast lighting, continuous over median length	Lighting, at 160' spacing	EA	na	9,000	56	$6,000	SRF Consulting, adjusted by TJD	$336,000
Lighting Sidewalk	408	Install overhead low-mast lighting, over sidewalk/trail length, 2 sides	Lighting, at 80' spacing, 20%	EA	na	18,000	45	$4,500	SRF Consulting, adjusted by TJD	$202,500
									Subtotal	**$2,551,700**
							0.25		**Add for mobilization and other conting**	**$637,900**
									Roadway Total for Segment 4	**$3,189,600**
New Signal	409	Install new traffic signal at Colchester, see template below	Traffic Signal lump sum	na	na	na	1	$45,900	includes contingencies	$45,900
Rebabilitated Signal	410	Rehabilitate traffic signal at Island Wood see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	411	Rehabilitate traffic signal at Riverside Drive, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
Rebabilitated Signal	412	Rehabilitate traffic signal at SH-44, see template below for items	Traffic Signal lump sum	na	na	na	1	$34,100	includes contingencies	$34,100
									Traffic Signal Estimate for Segment 2	**$148,200**
									Total Estimate for Segment 4	**$3,337,800**

Eagle Road Parkway Improvement Cost Estimates

4/14/2004 \\D3issv208446\D3\Projects\traffic\documents\Eagle Road Study\Workshops\[Eagle Rd Costs 05-14-04.xls]Signal Cost Details PBS&J

Improvement Category	No	Project(s)	Item	Unit	Width	Length	Quantity	Unit Cost	Origin of unit cost	Item Cost
Segment	**5**	**Traffic Controll Center Improvements**								
	501	Additional Equipment for signal system		LS	na	na	1	$50,000		$50,000
	502	Flat-Panel Plasma Video Monitor		EA	na	na	1	$25,000		$25,000
	503	SCATS Central Software		LS	na	na	1	$187,500		$187,500
	504	Integration		LS	na	na	1	$100,000		$100,000
								Total Estimate for Segment 5		**$287,500**

		Cost Estimates by Segments	
Segment	1	Cost Estimate	**$2,634,600**
Segment	2	Cost Estimate	**$34,100**
Segment	3	Cost Estimate	**$3,829,300**
Segment	4	Cost Estimate	**$3,337,800**
Segment	5	Cost Estimate	**$287,500**
Segment	ALL	Cost Estimate	**$10,123,300**

Eagle Road Parkway Improvement Cost Estimates

4/14/2004 \\D3issv208446\D3\Projects\traffic\documents\Eagle Road Study\Workshops\[Eagle Rd Costs 05-14-04.xls]Signal Cost Details PBS&J

Improvement Category	No	Project(s)	Item	Unit	Width	Length	Quantity	Unit Cost	Origin of unit cost	Item Cost
Improv Category	No	New Traffic Signal Installation Cost Template	Item	Unit	W	L	Qty	Unit Cost	Origin of unit cost	Item Cost
Roadway		Signal Subsystem								
Signal	601	Signal Cabinets and Controllers	new signal	EA	na	na	1	$15,000		$15,000
Equipment	602	SCATS Local Software	new signal	EA	na	na	1	$7,500		$7,500
	603	Sensors	new signal	EA	na	na	1	$2,500		$2,500
		Communication								
	604	Modem	new signal	EA	na	na	1	$1,000		$1,000
	605	Conduits	new signal	LF	na	na	1	$15		$15
	606	Fiber Optic Cable	new signal	LF	na	na	1	$3		$3
	607	Pull Boxes	new signal	EA	na	na	1	$500		$500
	608	Splice Vaults	new signal	EA	na	na	1	$700		$700
		Power Service								
	609	Service wire	400 ft per new	LF	na	na	400	$1		$400
	610	Disconnect and Service Pole	new signal	EA	na	na	4	$1,000		$4,000
		Percent Allowance Factors							Subtotal	$31,618
	0.05	for Mobilization					0.4520	= Total Factor for contingencies		$14,291
	0.05	for Maintenance of Traffic						Total for Traffic Signal Cost each, rounded		$45,900
	0.1	Subtotal for construction and Integration								
	0.1	Contingency, 10% of subtotal								
	0.12	Design, 12% of subtotal								
	0.1	Construction and Integration, 10% of subtotal								
	0.4520	Total Allowance Factor								

Improv Category	No	Existing Traffic Signal Rehabilitation Cost Template	Item	Unit	W	L	Qty	Unit Cost	Origin of unit cost	Item Cost
Signal	601	Signal Cabinets and Controllers	new signal	EA	na	na	1	$15,000		$15,000
Equipment	602	SCATS Local Software	new signal	EA	na	na	1	$7,500		$7,500
	604	Modem	new signal	EA	na	na	1	$1,000		$1,000
		Percent Allowance Factors							Subtotal	$23,500
	0.05	for Mobilization					0.4520	= Total Factor for contingencies		$10,622
	0.05	for Maintenance of Traffic						Total for Traffic Signal Cost each, rounded		$34,100
	0.1	Subtotal for construction and Integration								
	0.1	Contingency, 10% of subtotal								
	0.12	Design, 12% of subtotal								
	0.1	Construction and Integration, 10% of subtotal								
	0.4520	Total Allowance Factor								

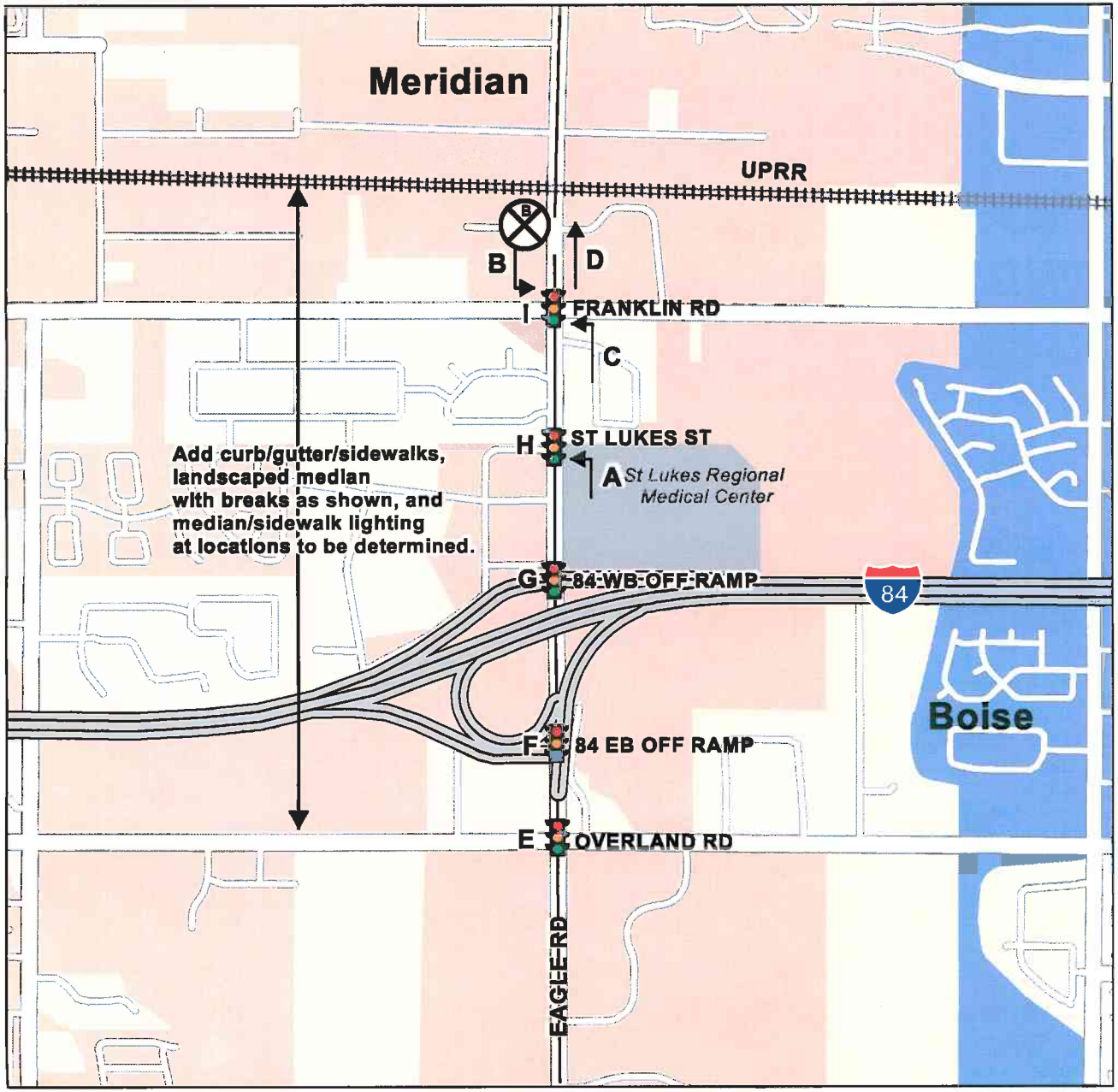
Improv Category	No	Existing Traffic Signal Rehabilitation Cost Template	Item	Unit	W	L	Qty	Unit Cost	Origin of unit cost	Item Cost
Median Lighting		Median, 25'H Center Mounted, 150w HPS Twin	new street light	EA	na	160	1	$6,000	SRF Consulting, adjusted by TJD	$6,000
Trail Lighting		Trail, low intensity, number vary by land use along Eagle Road	new street light	EA	na	na	1	$4,500	SRF Consulting, adjusted by TJD	$4,500

Cost Estimates for Adaptive Signal System

Eagle Road Workshop
Boise, Idaho

3/10/2004

ITEM	Unit	QTY	UNIT COST	TOTAL COST	NOTES	
Traffic Control Center						
Additional Equipment for signal system	LS	1	$50,000	$50,000	in existing Traffic center	
Flat-Panel Plasma Video Monitor	EACH	1	$25,000	$25,000	in existing Traffic Center	
SCATS Central Software	LS	1	$187,500	$187,500	in existing Traffic Center	
Integration	LS	1	$100,000	$100,000	in existing Traffic Center	
Roadside Signal Equipment						
Signal Subsystem						
Signal Cabinets and Controllers	EACH	17	$15,000	$255,000	Replace old cabinets/add 4 new	
SCATS Local Software	EACH	17	$7,500	$127,500		
Sensors	EACH	24	$2,500	$60,000	at new signals 16 per location	
Communications						
Modem	EACH	17	$1,000	$17,000	one for each controller	
Conduits	LF	0	$15.0	$0	Existing	
Fiber Optic Cable	LF	0	$3.0	$0	Existing	
Pull Boxes	EACH	4	$500	$2,000	for new signals	
Splice Vaults	EACH	4	$700	$2,800	for new signals	
Power Service						
Service wire	LF	1,200	$1.0	$1,200	assuming 400 ft per new signal	
Disconnect and Service Pole	EACH	4	$1,000	$4,000		
Construction & Integration Items Sub-Total=				$832,000		
Mobilization (5% of total construction)	LS	1	$41,600	$41,600		0.452
Maintenance of Traffic(5% of total construction)	LS	1	$41,600	$41,600		
Construction & Integration Total=				$915,200		$376,064
Contingency (10%)	LS	1	$91,520	$91,520		
Design (12% of Construction and Integration)	LS	1	$109,824	$109,824		
CE&I (10% of Construction and Integration)	LS	1	$91,520	$91,520		$376,064
TOTAL				**$1,208,064**		$1,208,064



Eagle Road Corridor
Segment 1

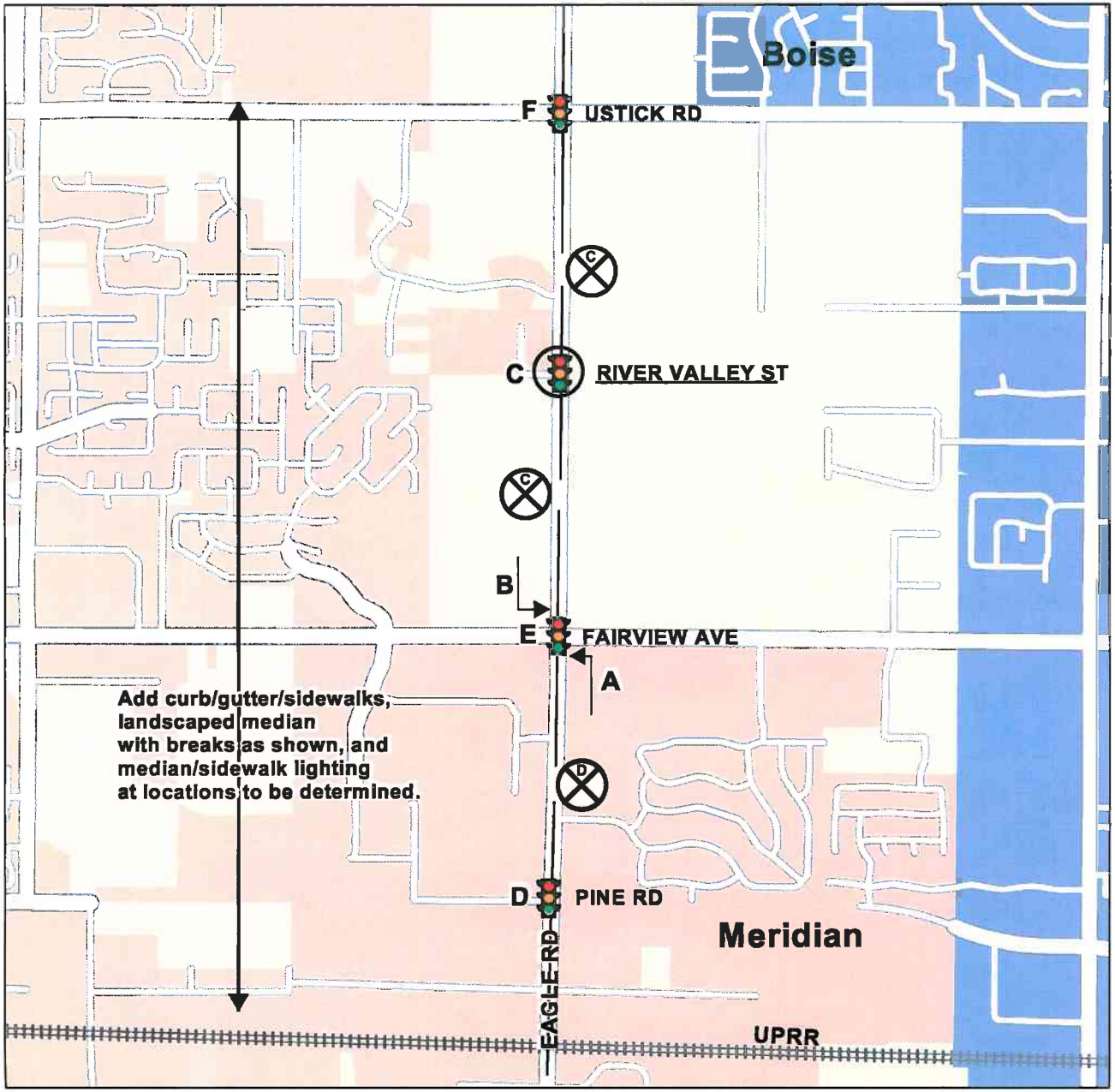
A - Add 2nd NB Left Turn Lane at St Lukes
B - Add 2nd SB Left Turn Lane at Franklin
C - Add 2nd NB Left Turn Lane at Franklin
D - Add 3rd NB Acceleration Lane, Franklin to to UPRR
E - Rehab Existing Traffic Signal at Overland
F - Rehab Existing Traffic Signal at I-84 EB OFF
G - Rehab Existing Traffic Signal at I-84 WB OFF
H - Rehab Existing Traffic Signal at St Lukes
I - Rehab Existing Traffic Signal at Franklin

Highways
Major Roads
Minor Roads
Median
Rail
Existing Traffic Signal

Median Break
Median Access
Type B

0.25 0.125 0 0.25
Miles

Cambridge Systematics, April 2004



Eagle Road Corridor
Segment 2

A - Add 2nd NB Left Turn Lane at Fairview
B - Add 2nd SB Left Turn Lane at Fairview
C - Add New Traffic Signal at River Valley
D - Rehab Existing Traffic Signal at Pine
E - Rehab Existing Traffic Signal at Fairview
F - Rehab Existing Traffic Signal at Ustick

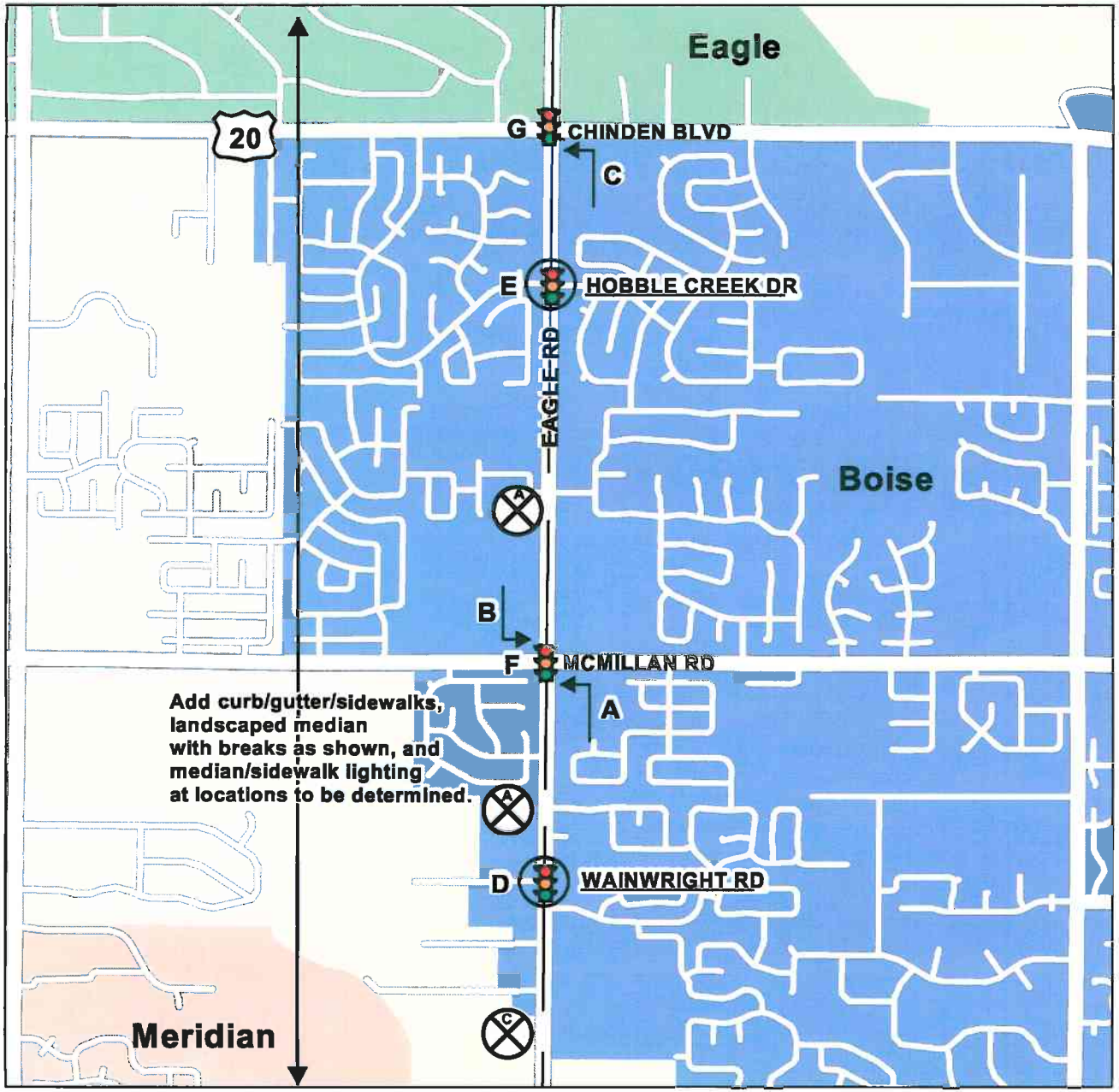
Major Roads
Minor Roads
Median
Rail
Existing Traffic Signal
New Traffic Signal

Median Break
Median Access
Type C

Median Break
Median Access
Type D

0.25 0.125 0 0.25
Miles

Cambridge Systematics, April 2004



Eagle Road Corridor

Segment 3

A - Add 2nd NB Left Turn Lane at McMillan
B - Add 2nd SB Left Turn Lane at McMillan
C - Add 2nd NB Left Turn Lane at Chinden
D - Add New Traffic Signal at Wainwright
E - Add New Traffic Signal at Hobble Creek
F - Rehab Existing Traffic Signal at McMillan
G - Rehab Existing Traffic Signal at Chinden

Major Roads

Minor Roads

Median

Existing Traffic Signal

New Traffic Signal

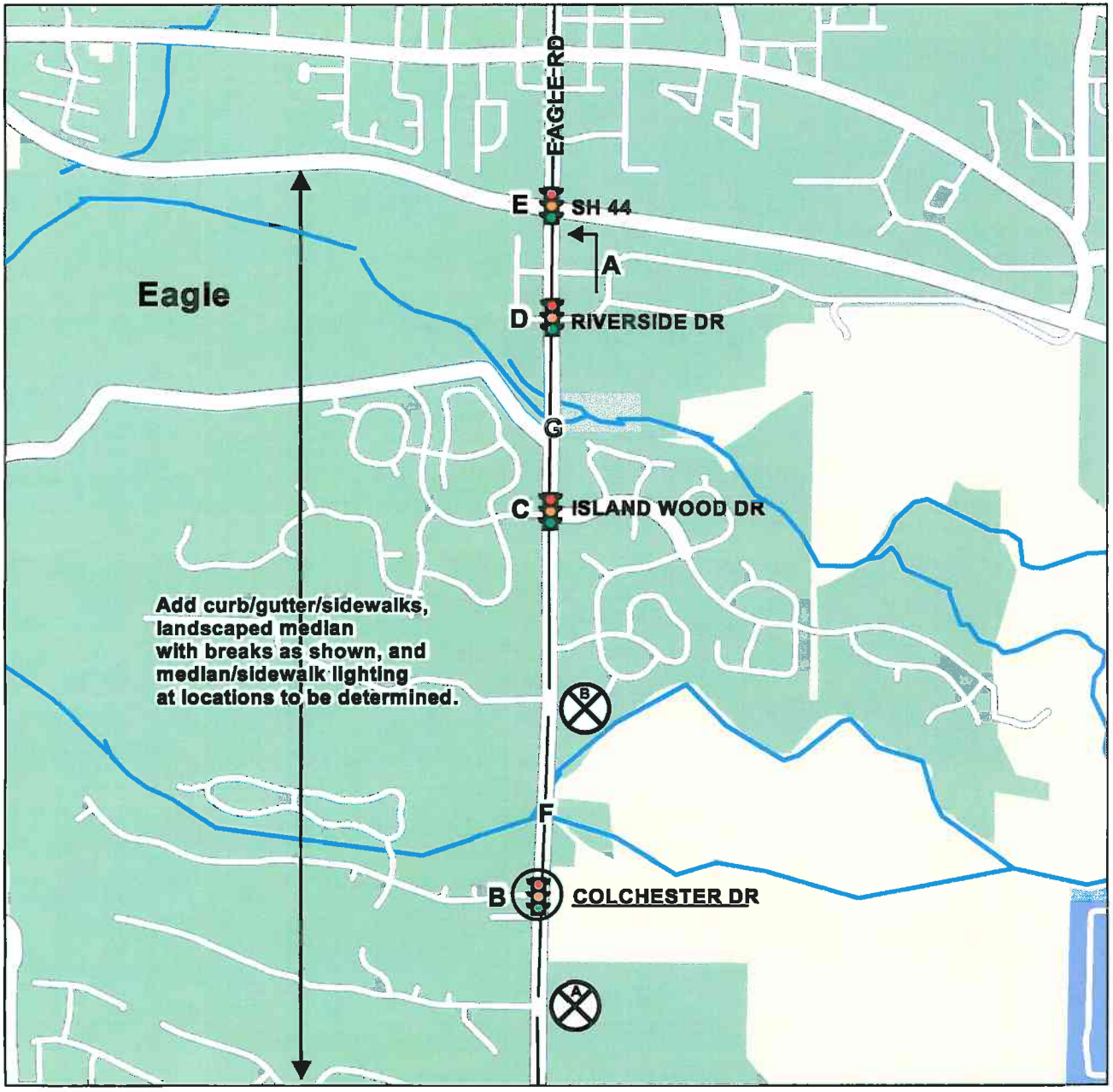
Median Break
Median Access
Type A

Median Break
Median Access
Type C

0.25 0.125 0 0.25

Miles

Cambridge Systematics, April 2004



Eagle Road Corridor

Segment 4

A - Add 2nd NB Left Turn Lane at SH 44
B - Add New Traffic Signal at Colchester
C - Rehab Existing Traffic Signal at Island Wood
D - Rehab Existing Traffic Signal at Riverside
E - Rehab Existing Traffic Signal at SH 44
F - Add Bridge Lighting at Boise River Crossing
G - Add Bridge Lighting at Boise River Crossing

Major Roads

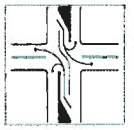
Minor Roads

Median

Existing Traffic Signal

New Traffic Signal

Median Break
Median Access
Type A



Median Break
Median Access
Type B

Cambridge Systematics, April 2004