

## 2 ALTERNATIVES

Four build alternatives and a no-build were developed and evaluated for their ability to meet the project purpose and need. All alternatives investigated generally follow the existing KGB Road alignment with slight variations to lane and median configurations. The existing multi-use pathway would remain on the north side of KGB Road in every alternative and would be reconstructed as necessary. Transportation System Management (TSM) and Transportation Demand Management (TDM) do not address the safety needs of this project and were not considered as components of any alternative. Early project planning and preliminary design relied on a historical 2.7% annual growth rate provided by DOT&PF Highway Data Services. During evaluation of alternatives, additional traffic and intersection analyses were performed based on updated growth rates from the land-use-based PHAC transportation model. The MSB adopted the PHAC model for use in their Long Range Transportation Plan (LRTP) as well. Updated growth rates from the PHAC model were equal to or higher than the historic 2.7%.

### 2.1 Alternative Evaluation Criteria

FHWA cites the following criteria in 23 CFR 771.111(f) to ensure meaningful evaluation of practicable alternatives, and to avoid commitments to transportation improvements before their full evaluation. The environmental review will cover a broad area around the proposed transportation improvement. The action evaluated in each Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI) shall:

- 1) Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
- 2) Have independent utility or independent significance, that is, be usable and be a reasonable expenditure of funds even if no additional transportation improvements are made in the area; and
- 3) Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

#### Criterion 1, Logical Termini

The KGB Road Reconstruction Project is a priority safety and capacity project for the DOT&PF. The high traffic volumes and crash history of the road led to its designation as a TSC in July 2009. The TSC encompasses twenty-one miles of KGB Road, but this project's 6.5 mile length is in a shorter, 8.3 mile segment of greater concern.

The proposed 6.5 mile project corridor lies in two jurisdictional areas. The northernmost 3.5 miles are inside Wasilla city limits, while the remainder is in the Knik-Fairview planning area of the MSB. There is sufficient overall length within these two jurisdictions to analyze and address environmental issues on a broad scope.

The intersection of KGB Road and Centaur Avenue was selected as the northern project terminus for the following reasons:

- The distance between the PWH Intersection and Centaur Avenue, about three tenths of a mile, provides sufficient length to widen the road to six lanes and accommodate projected traffic entering KGB Road via the PWH Extension

- This distance also allows for roadway expansion without impacting Wasilla's Greater Downtown Area, whose traffic and safety challenges are the subject of other, separate projects
- This intersection is just south of the Parks Highway and north of the PWH Extension, both major traffic sources on KGB Road
- Centaur Avenue lies just south of the Greater Downtown Area of Wasilla (COW Comprehensive Plan, 2011)

The project's southern terminus is Vine Road for the following reasons:

- Traffic volumes and development density decrease as you head south on KGB Road and they drop substantially south of Vine Road. Traffic volumes dropped by 40 percent in 2008 and by 22 percent in 2011 at Vine Road (DOT&PF Traffic Volume Report, Route 170044, 2008-2011);
- Lower traffic volumes correspond with a reduced fatal and major injury crash rate south of Vine Road;
- Although the TSC designation extends another 15 miles beyond this point, two-thirds of all historic crashes on KGB Road have occurred within the limits of this proposed six-and-a-half mile long project.

### Criterion 2, Independent Utility

Independent utility is based on a project's ability to provide benefit regardless of any other transportation improvements in the area. The project's value or use cannot be dependent on other nearby improvements. A proposed project does not have independent utility if other improvements are needed to make it beneficial. This project would improve the primary surface transportation link between downtown Wasilla, the Knik-Fairview planning area, and points further south, as well as provide access to developing areas between KGB Road and the Parks Highway. The KGB Road Reconstruction project would operate safely and efficiently regardless of other nearby projects being constructed.

### Criterion 3, Foreseeable Improvements

A project corridor should not restrict or influence alternative selection of other foreseeable transportation improvements in the area. KGB Road is the primary surface transportation link between Wasilla and the Knik-Fairview planning area and would not restrict consideration of alternatives for any other reasonably foreseeable transportation improvements. In its 20-year design life, this project would neither restrict, nor be made unnecessary by, a potential Parks Highway Alternate Corridor (Wasilla Bypass), Knik Arm Crossing, Fairview Loop Rehabilitation, or the already underway Wasilla Main Street Rehabilitation project. There are many other projects in the MSB area, however, these particular projects are directly connected to KGB Road.

The Wasilla Main Street Rehabilitation Project is a separate federally-funded project currently in final design. It will begin just north of the KGB Road/PWH intersection and extend north towards Centaur Avenue and across the Parks Highway. This project addresses mobility, connectivity, and congestion issues in the core area of downtown Wasilla. While the Wasilla Main Street and KGB Road projects exhibit some overlap, each has independent utility. Should construction of the Wasilla Main Street project occur prior to that of the KGB Road project, the section between PWH and Centaur Avenue will have already been improved. Design of the

adjoining typical sections would be easily coordinated connect the southern end of the couplet (PWH) with KGB Road's north- and southbound lanes. The couplet project would reduce costs and impacts associated with this larger reconstruction project, but either project can stand alone.

A separate state-funded project currently in design, would improve KGB Road between Vine Road and Settlers Bay. The existing two-lane road would be widened to a four-lane divided roadway. That project is intended to extend the safety and capacity benefits of a four-lane divided road past Settlers Bay, which is another major traffic contributor to KGB Road. These two projects share Vine Road as a project terminus and typical sections at this location would be easily coordinated. Coordination between both projects began early in the project development process and is ongoing.

A separate DOT&PF project currently in design would consolidate the offset Clapp Street and Fairview Loop Road intersections into a signalized and illuminated four-way intersection. The existing Fairview Loop intersection would be decommissioned and become a dead-end road with no connection to KGB Road. Clapp Road would be extended north to connect to Mack Road and ultimately to the Parks Highway. This intersection is anticipated to become a substantial traffic generator for KGB Road, but could also decrease traffic demand on some portions of KGB Road by providing north-south connectivity to the Parks Highway.

## **2.2 Alternatives**

### **Alternatives Carried Forward**

1. Preferred: Six-lanes (three lanes in each direction) from PWH to Mack Road with a raised urban median and four-lanes (two in each direction) from Centaur Avenue to PWH and from Mack Road to Vine Road, with a non-traversable depressed grass median.
2. No-Build

### **Alternatives Dropped from Further Consideration**

3. Four-lanes (two in each direction) with a center two-way left-turn lane (TWLTL) from Centaur Avenue to Mack Road, and a non-traversable depressed grass median from Mack Road to Vine Road.
4. Four-lanes (two in each direction) with a non-traversable depressed grass median from Centaur Avenue to Vine Road.
5. Four-lanes (two in each direction) with a non-traversable depressed grass median from Centaur Avenue to Vine Road. All intersections within Wasilla city limits south of PWH and at the realigned Fairview Loop/Clapp Road intersection would be roundabout controlled.

All alternatives were screened for their ability to meet the project purpose and need, costs, impacts to the natural and human environment, utility impacts, and right-of-way (ROW) impacts. The no-build alternative and the preferred alternative were selected for further evaluation.

#### **2.2.1 Alternative 1: Preferred Alternative**

The Preferred Alternative would expand the existing road to a six-lane divided roadway from PWH to Mack Road, and a four-lane divided roadway from Mack Road to Vine Road (Figures 2.1 and 2.2A-G). The section from Centaur Avenue to PWH would provide the space to transition from two to four lanes. The six-lane section would consist of three 12-foot wide travel lanes in each direction with two-foot wide outside shoulders and curb and gutter, four-foot wide inside shoulders, and a 30-foot wide raised median. Construction phasing would postpone the

full build-out of six-lanes, initially constructing four-lanes is recommended until traffic volumes warrant additional lanes. The four-lane section would consist of two 12-foot wide lanes in each direction with eight-foot outside shoulders, four-foot wide inside shoulders, and a 30-foot wide depressed grass median. Increased shoulder widths provide greater recovery space and distressed vehicle refuge. Transitions to the existing two-lane section would occur on each end of the project. Side slopes would be traversable within the clear zone. Median breaks would be installed roughly every one-quarter mile within Wasilla city limits and roughly every one-half mile along the remainder of the corridor to accommodate turning and U-turn movements. The posted speed limit will change to 45 miles-per-hour between PWH and Mack Road. Vegetation would be cleared to ROW limits as recommended by the Moose-Vehicle Collisions (MVC) analysis (On file – DOT&PF).

Dedicated turn lanes at full-access intersections would be designed to accommodate signage, provide physical channelization and pedestrian refuge. Dedicated turn lanes would be provided at full access median breaks spaced one-quarter to one-half-mile apart, generally where existing at-grade intersections currently exist. U-turn openings may be provided as frequently as every one-eighth mile or centered between full access median breaks inside Wasilla city limits. These turn lanes would have a narrower raised median to separate opposing traffic from turning vehicles as well as allow for deceleration outside of through travel lanes. Dedicated turn lanes would be provided at the following eleven intersections:

- Palmer-Wasilla Highway
- Fern Street
- Endeavor Street
- Edlund Road
- Lakewood Drive
- South Donna's Way
- Mack Road/South Heritage Farm Road
- Clapp Street/Fairview Loop Road (to be realigned in a separate project)
- Donovan Drive
- Foothills Boulevard
- Vine Road

Intersecting roadways would remain in the same locations; however, some would be slightly realigned to allow for correction of skews, widening, consolidation, or other improvements. Three intersections proposed for realignment are Endeavor Street, Foothills Boulevard, and Vine Road. Intersections with opposing offset approaches in close proximity would be realigned as four-way intersections as needed and identified during final design. Right turn lanes will also be provided to those approach roads not located at full access median breaks.

Intersections currently signalized and illuminated would remain so throughout the corridor, with no additional signals anticipated at the initial construction year. Existing equipment may be replaced, upgraded, or slightly relocated to accommodate the new roadway. Signalized intersections could remain in the green phase for mainline movement in the absence of approach road traffic. A signalized corridor would produce a consistent speed profile, reduced travel times, acceptable queuing, and opportunity for side street access. Other intersections would be signalized as conditions warrant. Corridor analysis did not indicate a need for additional illumination; however it is DOT&PF policy to provide illumination in areas with urban medians and the section between Centaur Avenue and Mack Road will be illuminated. The need for additional illumination elsewhere would be reviewed during the final design process. Signage

would be replaced or updated in accordance with applicable design standards and the moose-vehicle crash analysis.

The areas adjacent to the project corridor are developing rapidly and the preferred alternative has identified opportunities to consolidate access to developing properties. It is reasonable to expect that demands and opportunities for further connectivity will become apparent during final design. An access road would be constructed from the Birch Harbor Estates townhouses to Harbor View Drive. Harbor View Drive connects to a full access intersection at Vine Road. Construction of a retaining wall is necessary to avoid displacement of these same properties and necessitates the access road.

The existing 10-foot wide separated multi-use pathway would be reconstructed as necessary. It generally follows the existing alignment along the north side of the roadway for the length of the project. Any changes in alignment would be in response to the widened roadway; these would locate the path adjacent to the curb in the six-lane section and a minimum of 18 feet from the edge of travel lanes in the four-lane section.

Stormwater drainage facilities will be replaced or improved throughout the project corridor to accommodate the wider roadway and resolve known drainage issues. This work would necessitate some vertical realignment of the roadway, expansion of roadside ditches, relocation of culverts, and other treatments. The road would be raised approximately 1.5 feet between Foothills Boulevard and Pinnacle Peak to accommodate improved drainage structures and inlet elevation targets. A storm drain system would be installed in the urban median section to provide drainage along the proposed six-lane section.

Roadway and intersection geometry would be adjusted to meet current design standards. Some elements of the existing alignment do not meet design standards for new construction; three horizontal and nine vertical curves require minor alteration to conform to current standards. Vertical curve alteration would be required to meet current design standards for grade and sight distance; raising or lowering of the roadway at some features would resolve grade and sight distance issues throughout the corridor.

Design and construction of the Preferred Alternative would likely occur in phases due to the length of the project, cost of construction, community travel impacts, and construction season limitations. Because forecast traffic volumes are higher at the north end than the south, DOT&PF anticipates construction would begin at the northern terminus and proceed south. Design and construction phasing would likely follow the schedule outlined below but may change during the final design process.

- Phase 1 – Centaur Avenue to Fern Street (4-lanes)
- Phase 2 – Fern Street to Fairview Loop (4-lanes)
- Phase 3 – Fairview Loop to Vine Road (4-lanes)
- Phase 4 – PWH to Mack Road Expansion (Expand to 6-lanes when volumes require)

The expansion from four- to six-lanes between PWH and Mack Road is scheduled last because forecast traffic volumes do not necessitate the additional capacity until approximately the

project's mid-life (2028). Traffic growth and facility performance would continue to be monitored after initial construction of the four-lane section for the purposes of planning future expansion.

Analysis indicates the Preferred Alternative meets the project purpose and need. Additional through-lanes would provide capacity to accommodate forecast design-year traffic. Peak-hour traffic congestion would be reduced. Access management, median construction, shoulder widening and decreased congestion and delays would improve safety and efficiency. The Preferred Alternative was selected because it provides considerable safety, capacity, and efficiency advantages, and it effectively balances competing demands for through-traffic mobility, local access, and public safety.

### **2.2.2 Alternative 2: No-Build Alternative**

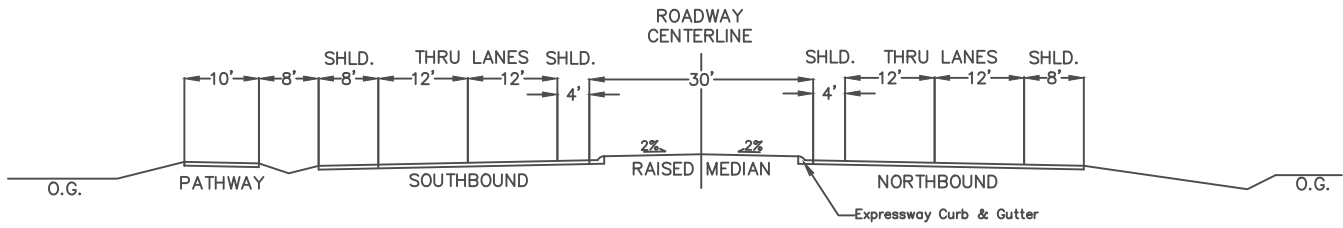
The National Environmental Policy Act (NEPA) and Council on Environmental Quality regulations at 40 CFR 1502.14(d) require the analysis of a no-build alternative for the environmental document. The no-build alternative would leave KGB Road in its current condition, which provides a baseline to compare against other build alternatives. Under the no-build alternative, KGB Road would remain a two-lane undivided roadway along its existing alignment within the project corridor. Existing pedestrian facilities, illumination, and drainage facilities would remain. The facility would undergo routine maintenance for the 20-year design life.

The following needs would not be addressed by the no-build alternative:

- Access management
- Roadway capacity
- Existing road does not meet current design standards including:
  - Sight distances
  - Grades
  - Curvature
- Drainage issues
- Deteriorating structural section

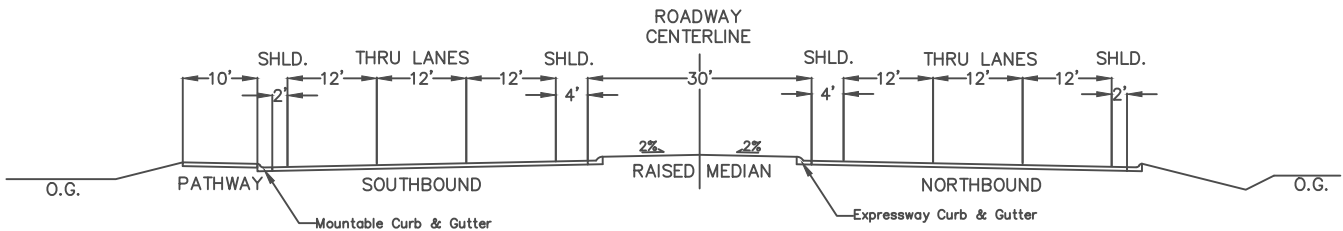
The no-build alternative does not address capacity, congestion, or safety issues throughout the corridor and does not meet the purpose and need of this project. Current traffic congestion and safety concerns would persist and likely worsen as traffic volumes continue to increase.

## CENTAUR AVENUE TO MACK ROAD



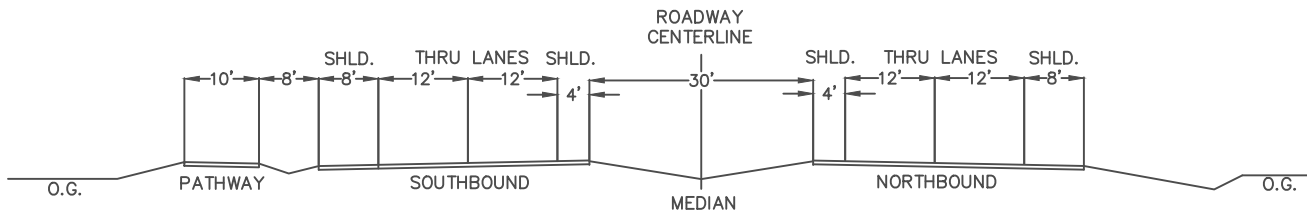
### 4-LANE URBAN SECTION RAISED MEDIAN AND SEPARATED MULTI-USE PATHWAY (INITIAL CONSTRUCTION)

## CENTAUR AVENUE TO MACK ROAD



### 6-LANE URBAN SECTION RAISED MEDIAN WITH MULTI-USE PATHWAY BEHIND CURB (FULL BUILD-OUT)

## MACK ROAD TO VINE ROAD



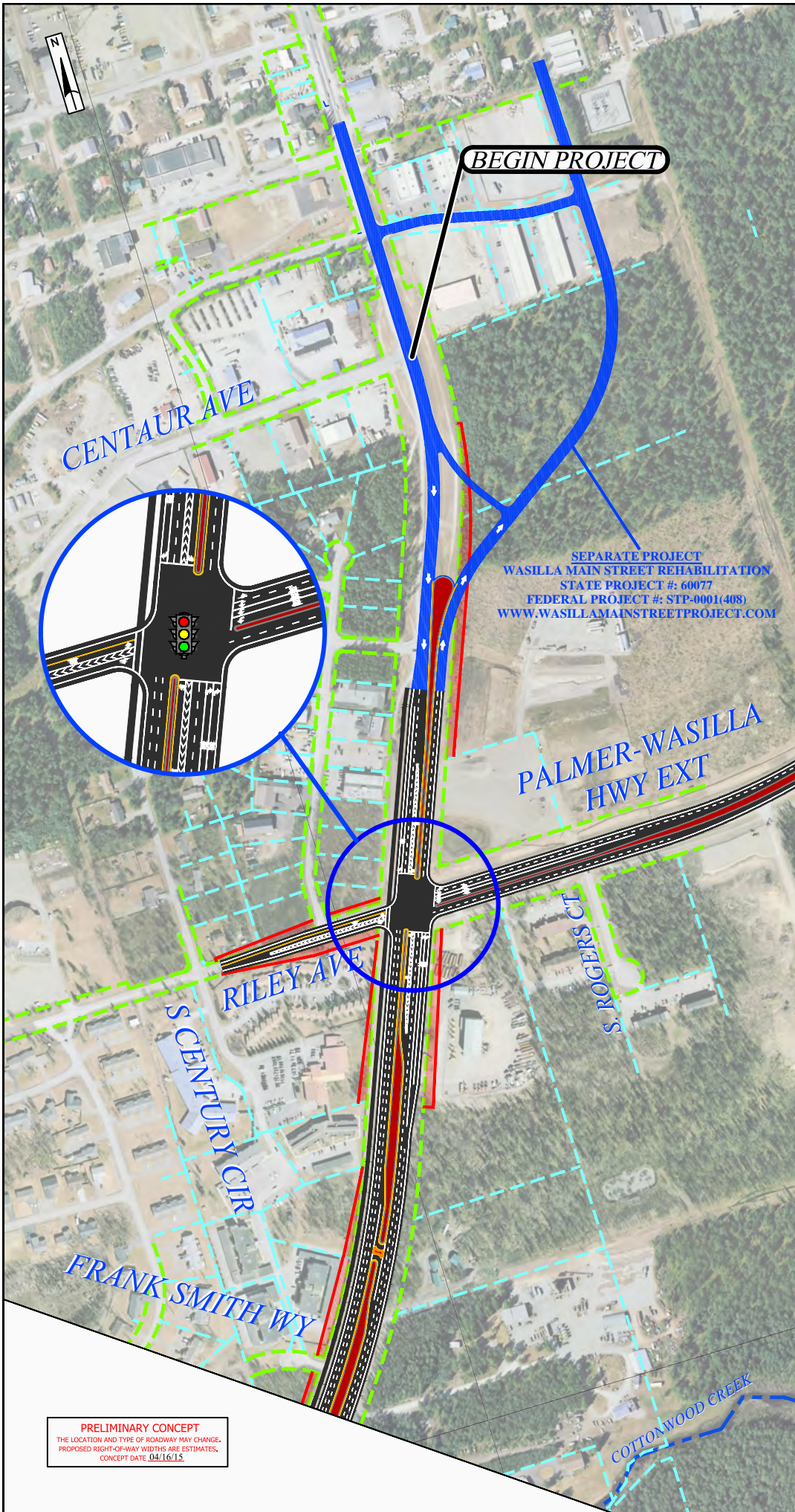
### 4-LANE RURAL SECTION DEPRESSED GRASS MEDIAN AND SEPARATED MULTI-USE PATHWAY

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KNIK-GOOSE BAY ROAD RECONSTRUCTION  
PROJECT NO. 52464

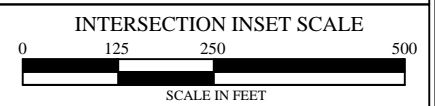
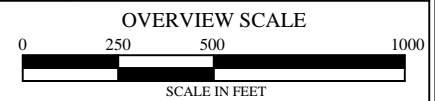
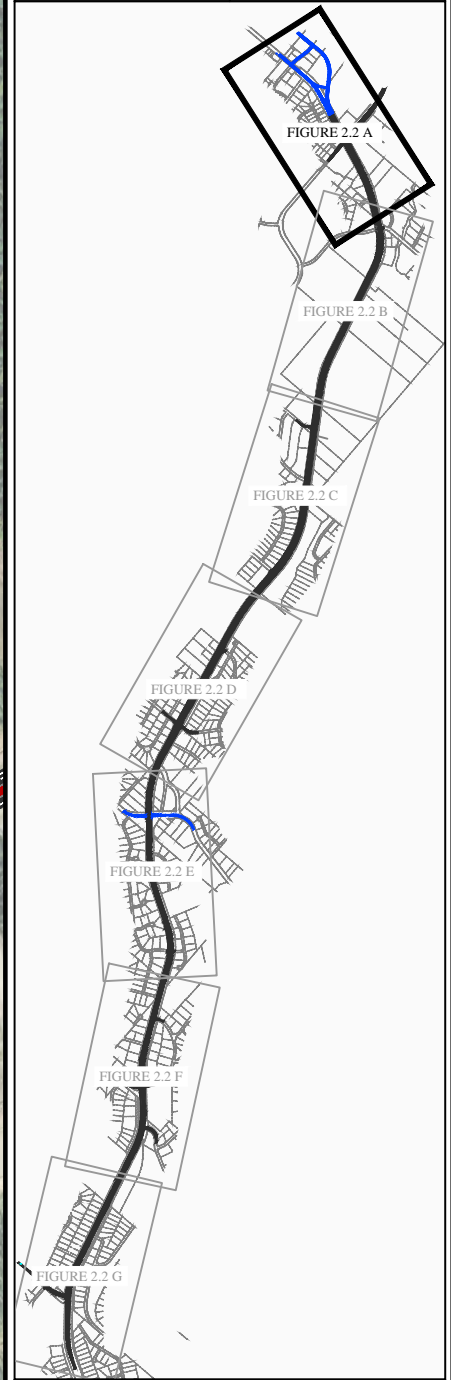
TYPICAL SECTIONS

FIGURE 2.1





LEGEND	
EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	} RIGHT-OF-WAY



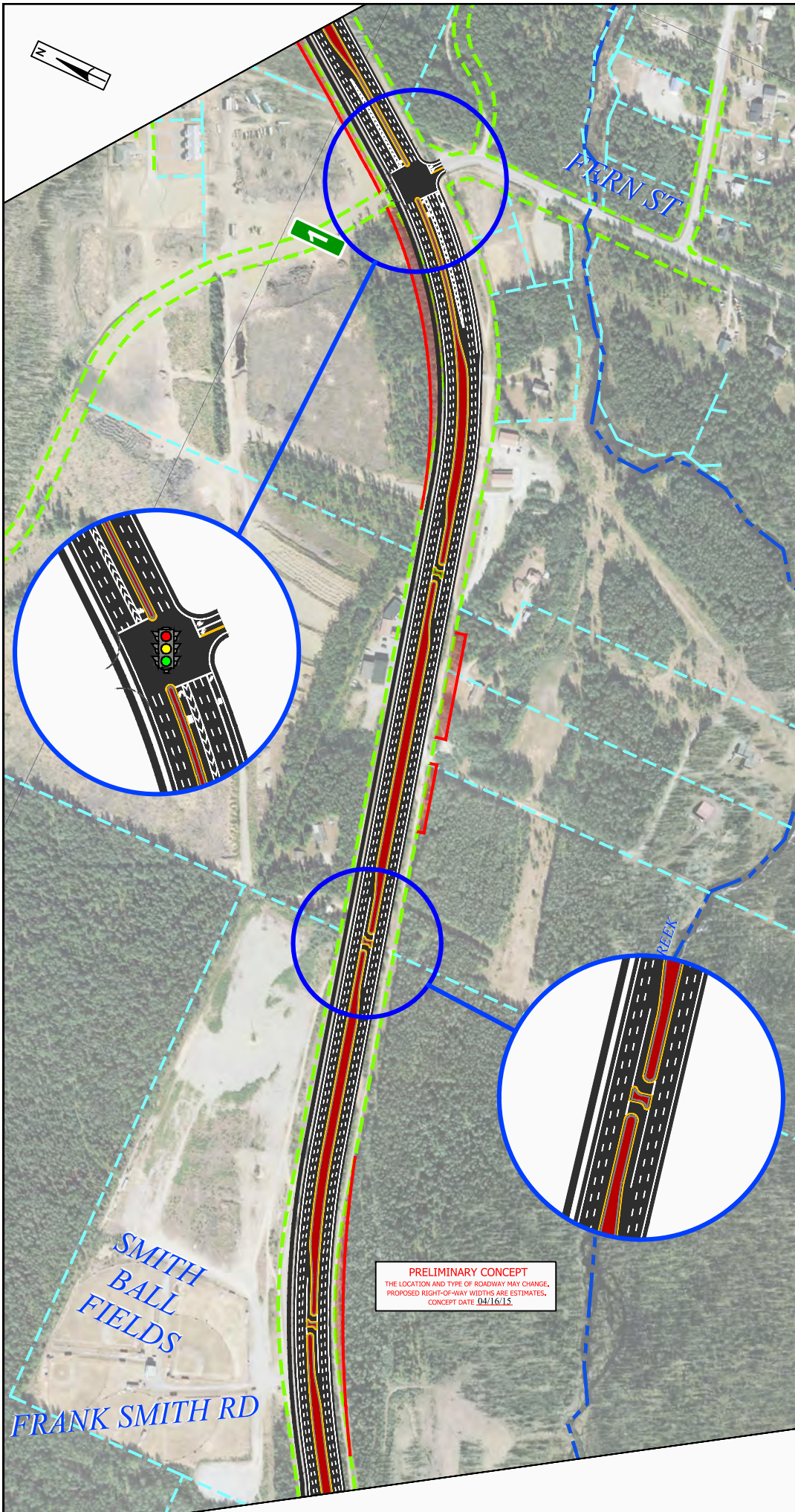
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**KNIK-GOOSE BAY ROAD  
 RECONSTRUCTION PROJECT #52464**

PREFERRED ALTERNATIVE **FIGURE 2.2 A**

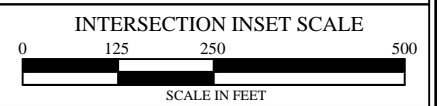
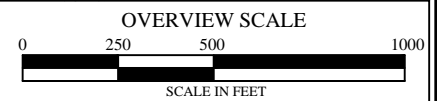
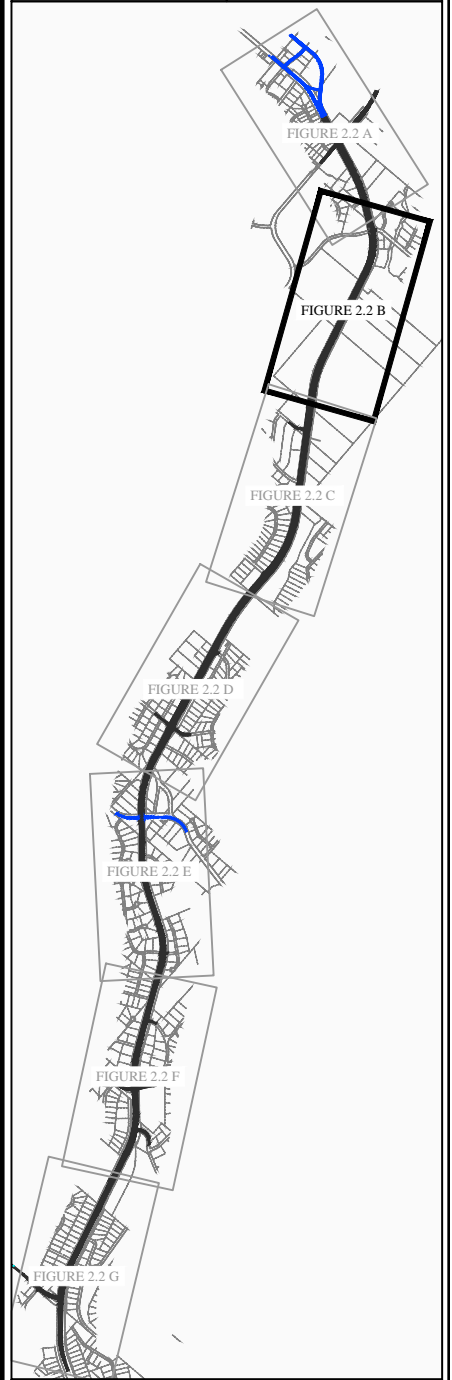
PRELIMINARY CONCEPT  
 THE LOCATION AND TYPE OF ROADWAY MAY CHANGE.  
 PROPOSED RIGHT-OF-WAY WIDTHS ARE ESTIMATES.  
 CONCEPT DATE: 04/16/15





**LEGEND**

EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	} RIGHT-OF-WAY

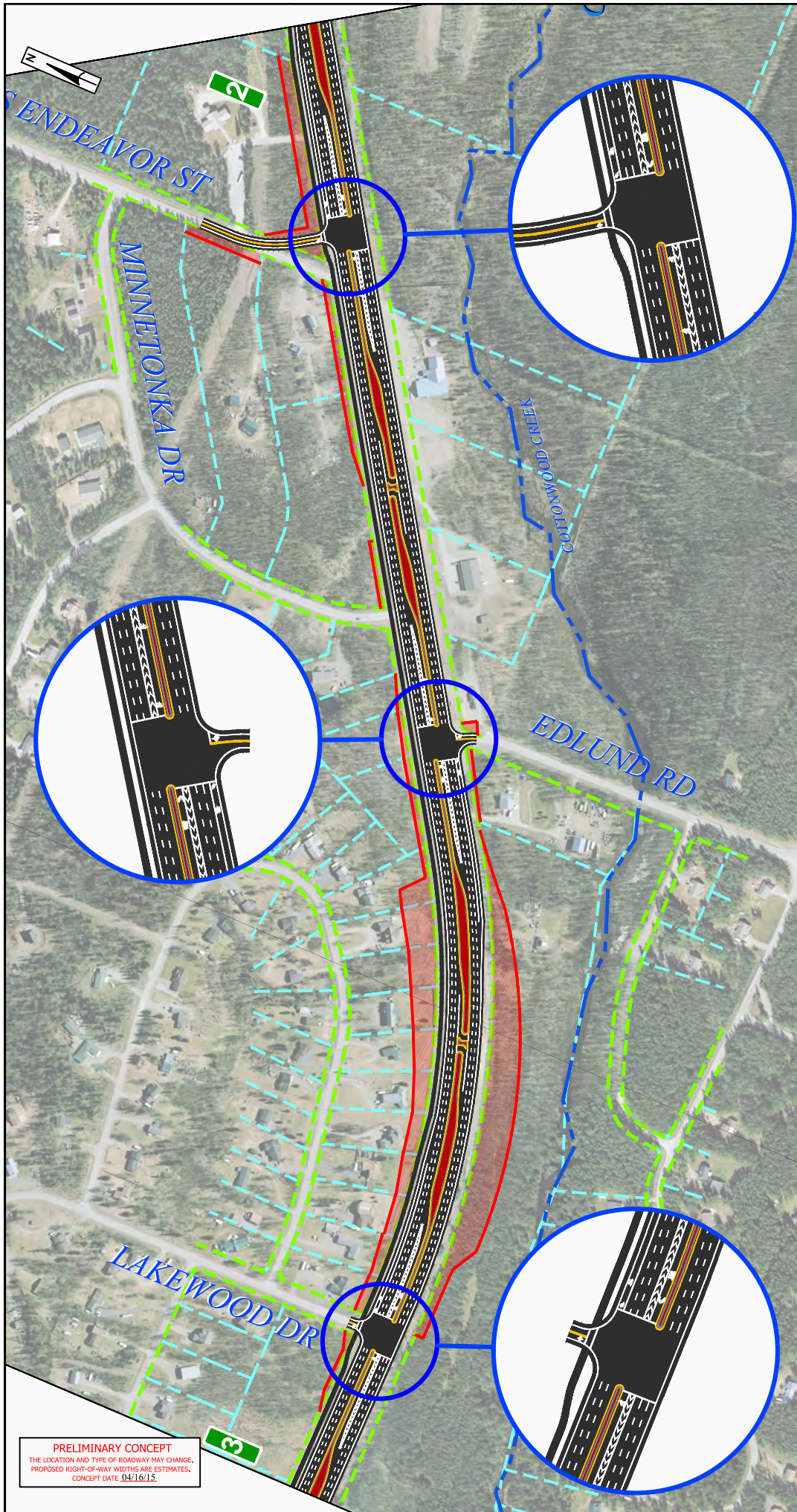


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**KNIK-GOOSE BAY ROAD  
RECONSTRUCTION PROJECT #52464**

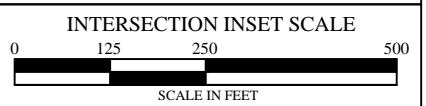
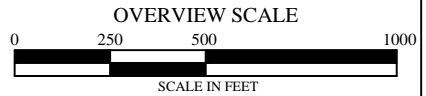
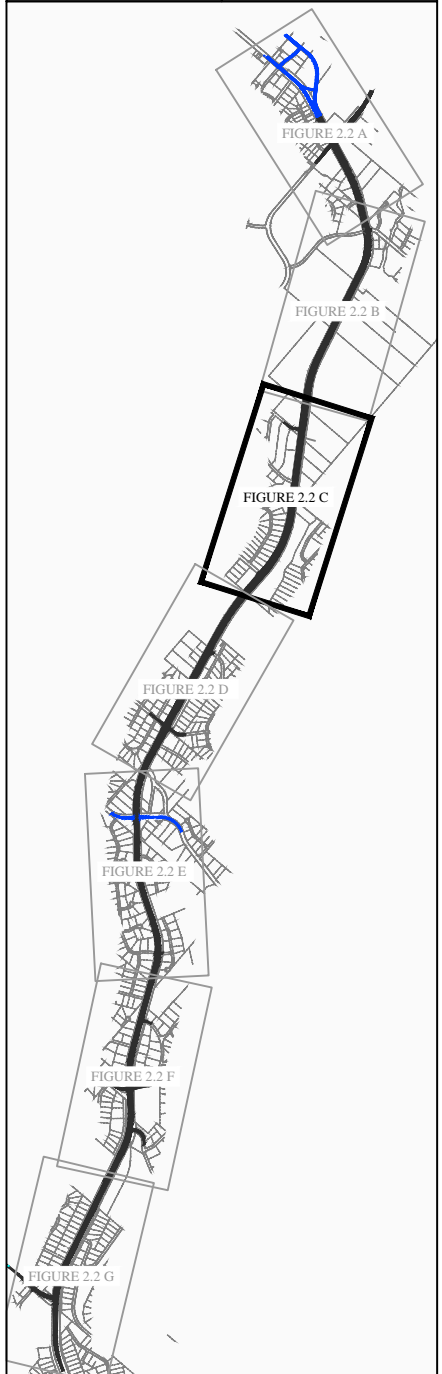
PREFERRED ALTERNATIVE	FIGURE 2.2 B
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**LEGEND**

EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	} RIGHT-OF-WAY



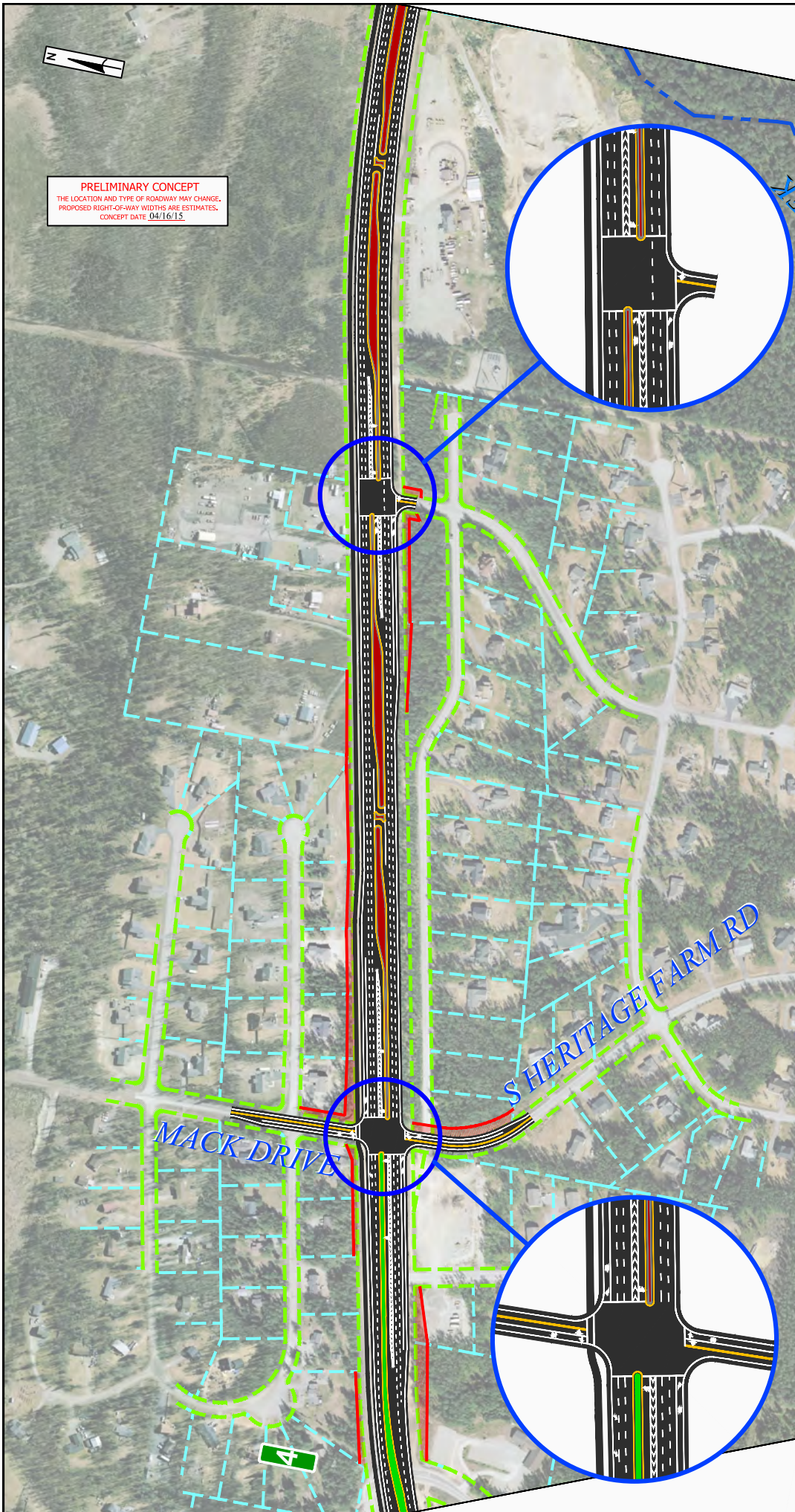
**PRELIMINARY CONCEPT**  
 THE LOCATION AND TYPE OF ROADWAY MAY CHANGE.  
 PROPOSED RIGHT-OF-WAY WIDTHS ARE ESTIMATES.  
 CONCEPT DATE 04/16/15

**STATE OF ALASKA**  
 DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

**KNIK-GOOSE BAY ROAD**  
**RECONSTRUCTION PROJECT #52464**

PREFERRED ALTERNATIVE **FIGURE 2.2 C**

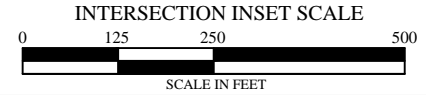
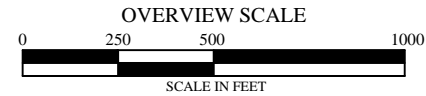
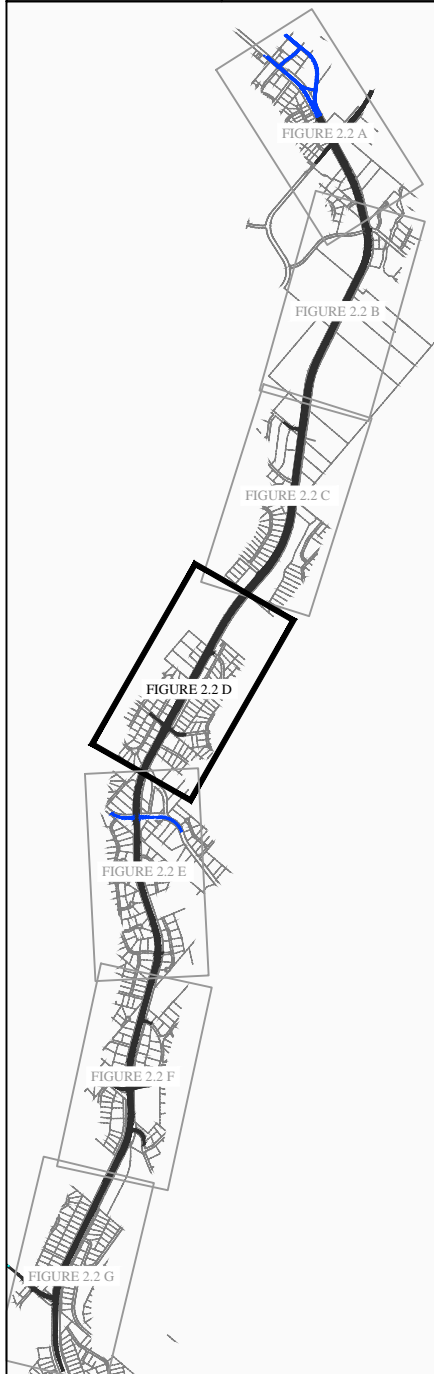




**PRELIMINARY CONCEPT**  
 THE LOCATION AND TYPE OF ROADWAY MAY CHANGE.  
 PROPOSED RIGHT-OF-WAY WIDTHS ARE ESTIMATES.  
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**LEGEND**

EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	} RIGHT-OF-WAY

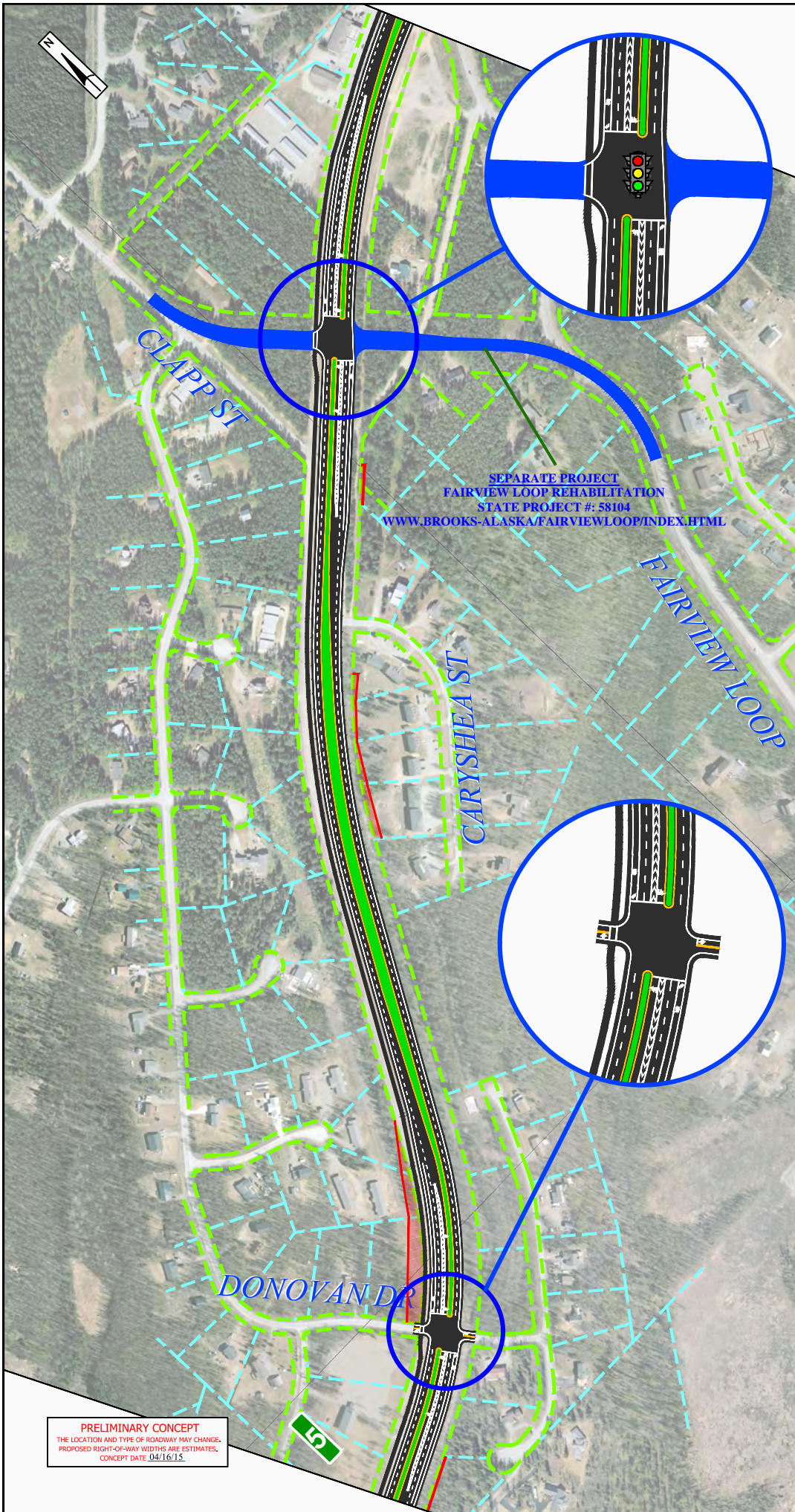


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**RECONSTRUCTION PROJECT #52464**

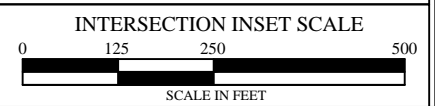
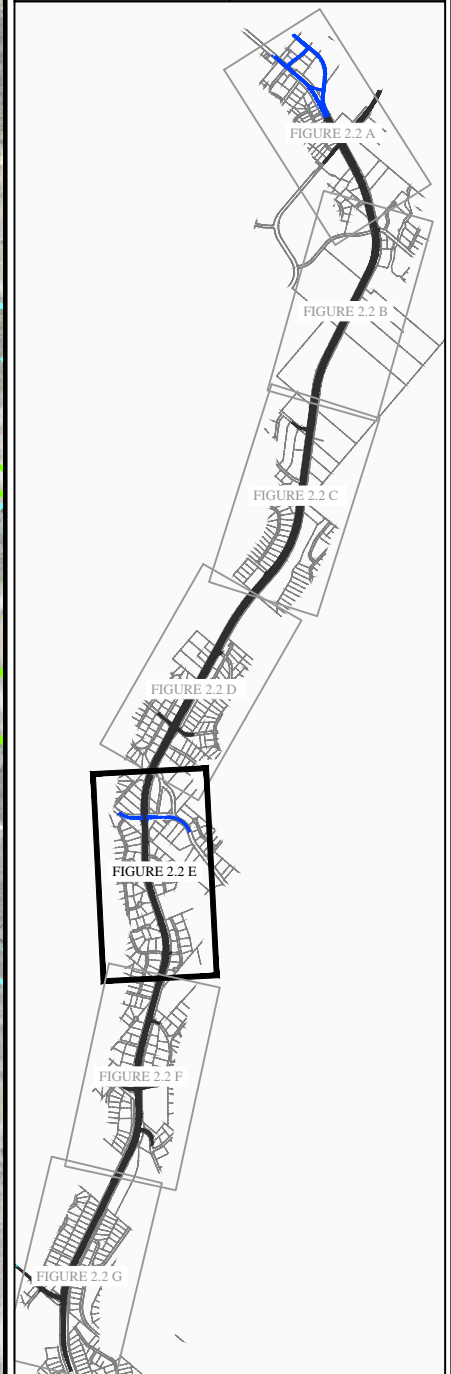
PREFERRED ALTERNATIVE **FIGURE 2.2 D**





LEGEND	
EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	} RIGHT-OF-WAY

SEPARATE PROJECT  
 FAIRVIEW LOOP REHABILITATION  
 STATE PROJECT #: 58104  
[WWW.BROOKS-ALASKA/FAIRVIEWLOOP/INDEX.HTML](http://WWW.BROOKS-ALASKA/FAIRVIEWLOOP/INDEX.HTML)



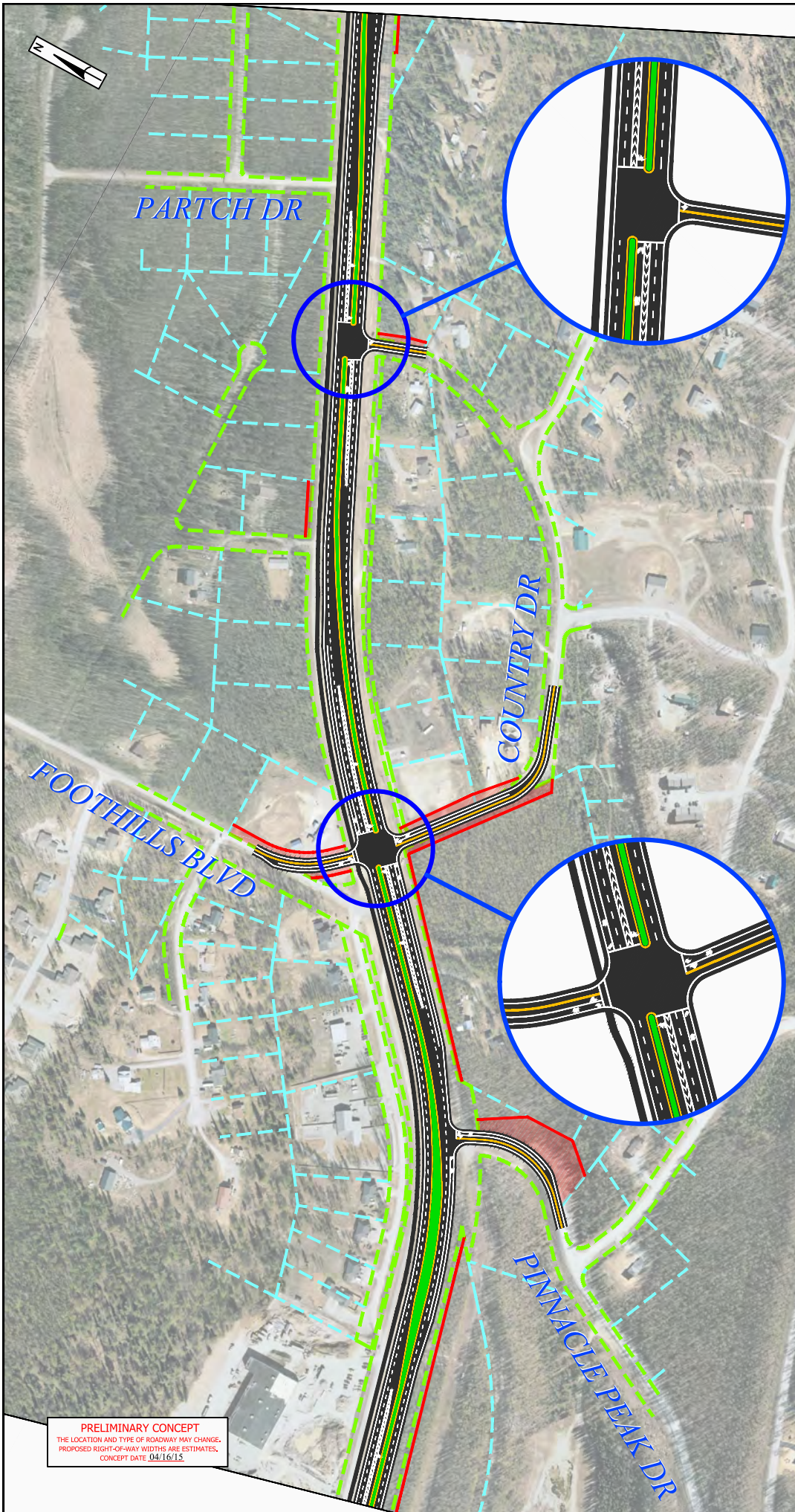
STATE OF ALASKA  
 DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

**KNIK-GOOSE BAY ROAD  
 RECONSTRUCTION PROJECT #52464**

PREFERRED ALTERNATIVE **FIGURE 2.2 E**

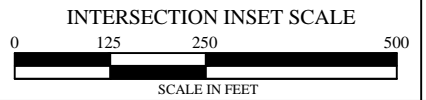
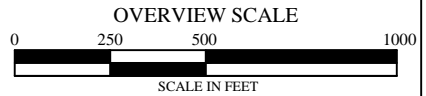
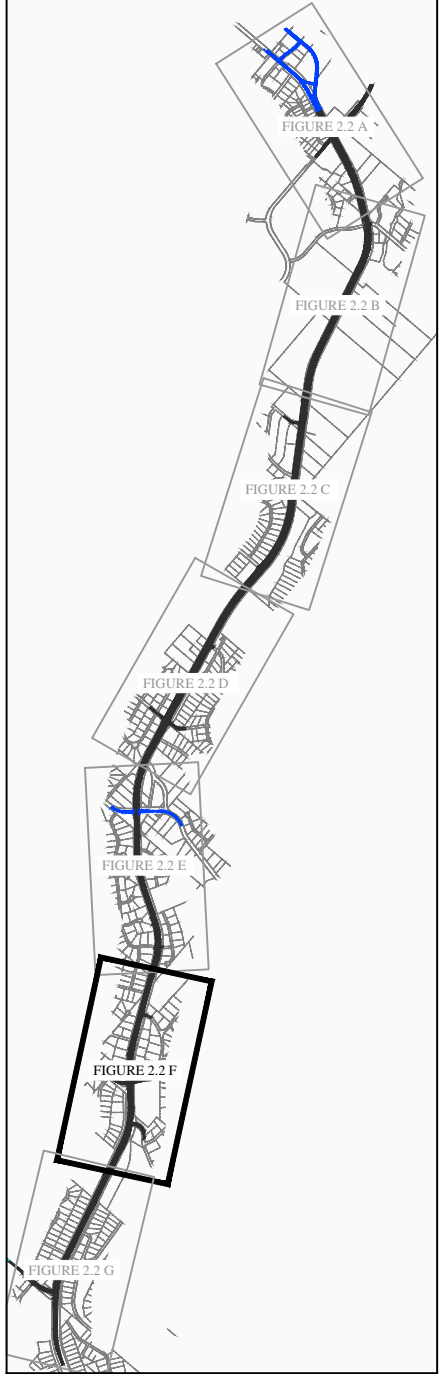
PRELIMINARY CONCEPT  
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 PROPOSED RIGHT-OF-WAY WIDTHS ARE ESTIMATES.  
 CONCEPT DATE: 04/16/15





**LEGEND**

EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	} RIGHT-OF-WAY



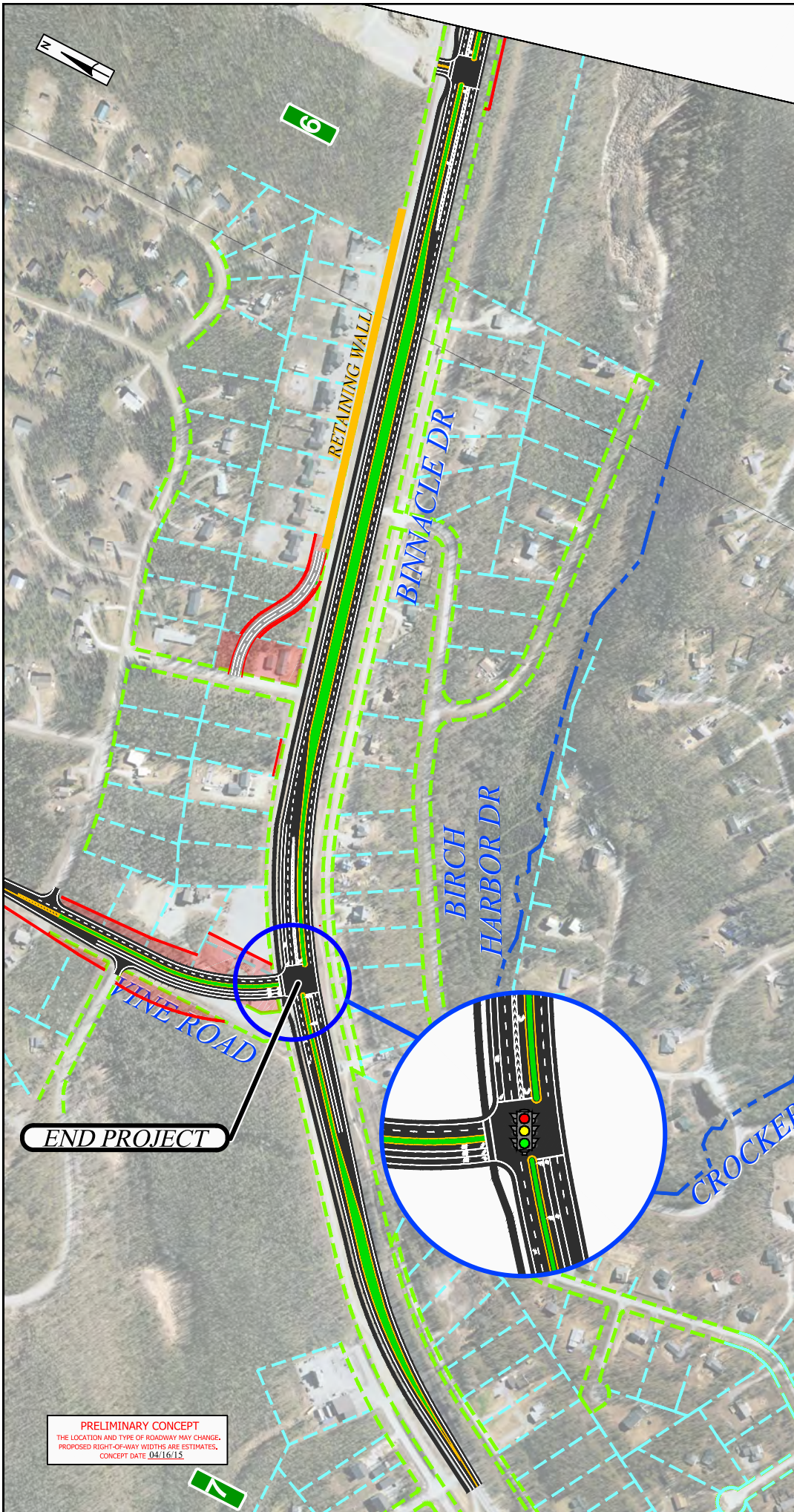
**STATE OF ALASKA**  
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**KNIK-GOOSE BAY ROAD**  
**RECONSTRUCTION PROJECT #52464**

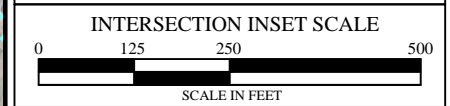
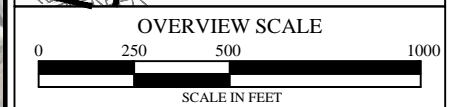
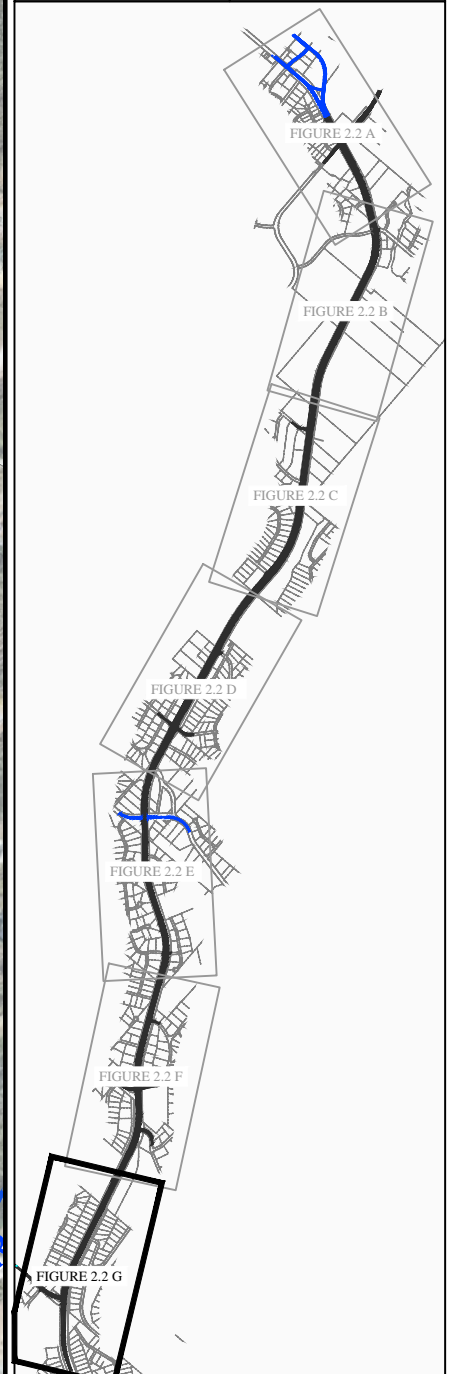
PREFERRED ALTERNATIVE **FIGURE 2.2 F**

**PRELIMINARY CONCEPT**  
THE LOCATION AND TYPE OF ROADWAY MAY CHANGE.  
PROPOSED RIGHT-OF-WAY WIDTHS ARE ESTIMATES.  
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LEGEND	
EXISTING INFORMATION	PROPOSED INFORMATION
RIGHT-OF-WAY	NEW PAVEMENT
PROPERTY LINES	GRASS MEDIAN
RIVER/CREEK	URBAN MEDIAN
	RIGHT-OF-WAY



STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

**KNIK-GOOSE BAY ROAD  
RECONSTRUCTION PROJECT #52464**

PREFERRED ALTERNATIVE **FIGURE 2.2 G**

**PRELIMINARY CONCEPT**  
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CONCEPT DATE: 04/16/15



### 2.2.3 Alternatives Dropped from Further Consideration

#### Alternative 3

Alternative 3 would expand the existing road to four-lanes with a center TWLTL from Centaur Avenue to Mack Road and a non-traversable depressed grass median from Mack Road to Vine Road. Existing intersections between Centaur Avenue and Mack Road would remain in the same locations. Some intersections would be slightly relocated or realigned to allow for correction of skews and necessary expansion. Other elements of this alternative include:

- Dedicated turning lanes approximately every half-mile through the project corridor at existing at-grade intersections
- Currently signalized intersections would remain signalized and no new signals would be installed
- Construct access road at Harbor View Drive to preserve existing access to townhouses
- Reconstruct and/or realign the pathway on north side of the road as necessary
- Improve drainage infrastructure
- Roadway geometry and intersections would be adjusted to meet current design standards.

Alternative 3 was eliminated from consideration because it does not comply with DOT&PF Policy and Procedure (P&P) 05.05.050. This P&P requires positive separation between opposing traffic on roadways with design speeds of 45 mph or higher and forecast traffic equal to or greater than 20,000 AADT. The policy requires that these routes be planned, designed, and constructed with a non-traversable median. Alternative 3 also fails to provide sufficient capacity to accommodate forecast traffic.

#### Alternative 4

Alternative 4 would expand the existing road to a four-lane divided roadway with a depressed grass median between opposing traffic lanes from Centaur Avenue to Vine Road. Other elements of this alternative include:

- Dedicated turn lanes approximately every one-quarter to one-half through the project corridor at existing intersection locations
- Currently signalized intersections would remain signalized and no new signals would be installed
- Construct access road at Harbor View Drive to preserve existing access to townhouses
- Reconstruct and/or realign the pathway on north side of the road as necessary
- Improve drainage infrastructure
- Roadway geometry and intersections would be adjusted to meet current design standards

Alternative 4 was eliminated from consideration because it fails to provide sufficient capacity to accommodate forecast traffic. Alternative 4 would only accommodate anticipated traffic growth to about the mid-life of the project, at which time six lanes would be necessary.

#### Alternative 5

Alternative 5 would expand the existing road to a four-lane divided roadway with a non-traversable depressed grass median from Centaur Avenue to Vine Road. Roundabouts would be constructed at nine intersections within Wasilla city limits. Other elements of this alternative include:

- Intersections not treated with roundabouts would retain their existing intersection control and be upgraded with dedicated turn pockets constructed as warranted
- Intersections currently signalized, unless treated with roundabouts, would remain signalized; no new signals would be installed
- Construct access road at Harbor View Drive to preserve existing access to townhouses
- Reconstruct and/or realign the pathway on north side of the road as necessary
- Improve drainage infrastructure
- Roadway geometry and intersections would be adjusted to meet current design standards

The DOT&PF analyzed roundabout intersection treatments on KGB Road to determine their effectiveness and functionality to satisfy the project purpose and need. This analysis served to ensure that alternative screening wasn't solely based on segment LOS. Analysis of a four-lane divided roadway with roundabouts at all intersections within city limits was performed regardless of identified performance problems.

The roundabout analysis (February 2014) compared the performance of roundabouts to signals and/or two-way stop controlled (TWSC) intersections on the segment inside Wasilla city limits. The analysis included speed profiles, delay times, traffic queue lengths, corridor travel times, and estimated costs of different intersection treatments, and a cost-benefit analysis. Lanes were configured to accommodate design year traffic.

Results of the analysis show degraded roadway mobility and extremely slow progression speeds. Roundabout intersection treatments would result in erratic speed profiles through the entire travel day, longer travel times than a signalized corridor, and extensive delays for side street users. A lifecycle cost analysis shows a corridor of roundabouts having a higher overall life cycle cost than a signalized corridor. The analysis also demonstrated that roundabouts at all intersections would be over capacity before the design year (2039), requiring demolition and replacement within the 20-year design life of this project.

The four-lane section with roundabout intersection treatments would also not provide sufficient through lane capacity for design year traffic between PWH and Mack Road and was eliminated from consideration for these reasons.

## **2.3 Alternative Development Considerations**

### **Right-of-Way and Utilities**

Existing ROW throughout the corridor varies from 100 feet wide near downtown Wasilla and expands to 200 feet wide just north of Centaur Avenue. The existing alignment is generally centered in the existing ROW throughout the project corridor. Alternative centerlines are generally centered in the ROW where feasible and reasonable with the goal of minimizing ROW acquisition. Despite this, all evaluated alternatives would require some ROW acquisition.

Anticipated utility impacts did not drive or alter the alternative alignments; however impacts to utilities were minimized as much as possible. Utility companies who own and operate facilities within the proposed project corridor include: Matanuska Electric Association (MEA), ENSTAR Natural Gas Company (ENSTAR), Matanuska Telephone Association (MTA), and General Communications Incorporated (GCI). The project would likely require some utility relocations and coordination with the appropriate companies would be done during the final design process.



## Access Management

Departmental Policy & Procedure (P&P) 05.05.050 (May 2013) requires positive separation between opposing direction traffic on principal arterials with design speeds of 45 mph or greater and design-year forecast traffic volumes equal to or greater than 20,000 AADT. The P&P requires that these roadways be planned, designed, and constructed with non-traversable medians. KGB Road meets these thresholds and should be reconstructed as a partially limited access roadway. Full-access points would be limited to the planned median breaks. The Preferred Alternative includes non-traversable medians in the form of a raised urban median, depressed grass median, deliberately spaced intersections, traffic channelization, and access consolidation.

Access management would protect and preserve the proposed benefits of safety, capacity, and traffic efficiency improvements of this project. Relocating access points from the arterial to collector roads aim to preserve the mobility function of this route. Development of the local roadway system would be encouraged and local traffic circulation patterns would improve.

Restricting left-turn movements to median breaks is a safety improvement that greatly reduces the number of conflict points for vehicles entering and exiting the roadway. A non-traversable median would restrict direct access at driveways and some intersecting roads to right-in, right-out maneuvers. Where possible, driveways would be relocated to local or collector roads that have full access to KGB Road. The proposed alternative would not eliminate access to any properties adjacent to the roadway.

## Pedestrian Facilities

Pedestrian crashes are not an identified safety concern on KGB Road. Existing pedestrian facilities consist of a 10-foot wide, separated multi-use paved pathway along the north side of KGB Road throughout the project limits. Dedicated crosswalks would be located at signalized intersections throughout the project corridor.

The existing pathway would remain on the north side of KGB in every alternative. It would be reconstructed as necessary following the preferred alternative's proposed alignment. The pathway would comply with the Americans with Disabilities Act (ADA). ADA-compliant pedestrian crossings would be provided at signalized intersections and pedestrian refuges would be constructed within the median to further improve pedestrian safety.

## Moose-Vehicle Crash Reduction Measures

Between 2002 and 2011, the proposed project corridor experienced approximately nine MVC per year, with approximately 50% of these collisions occurring between MP 1 and 3. This resulted in crash frequencies that meet or exceed the 75<sup>th</sup> percentile for the entire corridor and meet or exceed the 95<sup>th</sup> percentile between MP 1 and 3, as described in the 1995 DOT&PF study "Moose-Vehicle Accidents on Alaska's Rural Roads". According to the 2014 DOT&PF MVC Priority List Memo, moose crash reduction measures are warranted on 75<sup>th</sup> and 95<sup>th</sup> percentile roadways. For 75<sup>th</sup> percentile roadways, reduction measures include warning signs approximately every two miles and clearing and removing or stunting moose browse at least 50 feet off the roadway or to the ROW extents. For 95<sup>th</sup> percentile roadways the memo suggests quantifying, comparing, and selecting cost effective mitigation. All alternatives would include moose crash reduction measures. A moose warning sign plan would be developed during final design.

### Transportation System/Demand Considerations

TSM and TDM improve efficiency and overall performance of existing roadways. Management strategies include ride-sharing, flex-time work schedules, high-occupancy vehicle (HOV) lanes, signal optimization, and mass transit services. Although no mass-transit stops currently exist along the corridor, any future locations could be coordinated in final design. While TSM and TDM techniques could improve travel efficiency, they would not address safety and congestion on KGB Road. TSM and TDM alternatives do not fulfill the needs of this project and were eliminated from consideration.

### 2.4 Alternative Cost Estimates

Planning level cost estimates for all alternatives include engineering design, ROW, utilities, and construction costs and are summarized in Table 2.4.1. The Preferred Alternative is estimated to cost \$96.0 million which is \$9.2 to \$21.6 million more expensive than other build alternatives considered. The additional cost is due to the wider footprint and greater ROW requirements.

**Table 2.4.1 - Alternative Cost Estimate Comparison (\$ Million)**

	Alternative				
	1.	2.	3.	4.	5.
	Preferred	No Build	Four lane divided with a TWLTL	Four lane divided with a depressed grass median	Four lane divided with roundabouts in the COW and a depressed grass median
Design	11.9	0	8.8	9.1	10.5
ROW	6.4	0	5.7	6.0	6.6
Utilities	9.2	0	9.2	9.2	9.2
Construction	68.5	0	50.7	52.0	60.5
Total Cost	96.0	0	74.4	76.3	86.8

\*Includes environmental activities

Preliminary estimates show Alternative 3 as the least expensive build alternative with an estimated cost of \$74.4 million. Preliminary cost estimates for all build alternatives include moose crash reduction measures, pathway facilities, one access road, and stormwater infrastructure.