Introduction

The Regional Intergovernmental Council (RIC) has completed its study of transportation needs in the Cross Lanes community, with assistance from the West Virginia Department of Transportation, Planning and Research Division. RIC retained Kimley-Horn and Associates in October 1997 to update the transportation plan that was prepared for Cross Lanes in 1981. Based on analysis of technical data, anticipated growth, observed traffic characteristics, and extensive citizen participation, alternatives have been developed and evaluated. The plan includes roadway improvements, new highways, proposed bicycle and pedestrian facilities, and transit recommendations.

Existing Conditions

An extensive data collection and review process was the first step in the study. The data sources included the following:

- Traffic counts from WVDOT, supplemented by additional counts by RIC and Kimley-Horn staff at key roadway segments and intersections
- Accident data for the most recent three-year period (1994-1996)
- *Charleston Metropolitan Area Transportation Plan* (1996) and *Cross Lanes Subarea Transportation Study* (1981)
- Adopted plans and development proposals
- Current and programmed projects by WVDOT
- Inventory of households and employment
- Transit routes and schedules

Using these data, accident and traffic analyses were conducted. As a result, the following locations of safety and congestion problems were identified:

- WV 622 (Big Tyler Road) north of WV 62
- WV 622 east of Kanawha County Route (Kan. Co.) 10
- WV 62 (Cross Lanes Drive) west of WV 622
- WV 62 (Washington Street West) south of WV 501
- Intersection of WV 622 and Kan. Co. 10

Socioeconomic Analysis and Projections

As part of the data collection effort in the fall of 1997, RIC staff conducted windshield surveys of the study area, recording commercial and industrial locations, houses, apartments, mobile homes, public facilities, and recreational sites on county tax maps. To estimate employment, RIC staff used data from the West Virginia Bureau of Employment, the windshield surveys, and follow-up telephone calls to businesses, as needed. The population estimate is based on the persons per

household factors in the study area, applied to the counted dwelling units. The estimated 1997 population in the study area is 15,644, with 6,001 households and employment of 3,302.

Refining Traffic Analysis Zones

The Cross Lanes study area lies within the boundaries of the regional transportation model, which divides Kanawha and Putnam Counties into traffic analysis zones (TAZs). Each zone includes demographic data within its boundaries, specifically population, households, and employment. The TAZ structure for the regional model enables an understanding of traffic patterns across the region. To address more specific traffic issues in Cross Lanes, 12 new TAZs were developed as subdivisions of the original TAZs.

The growth in Cross Lanes is expected to continue as it has during the past decade. While established sections of the community are nearing build-out, growth is occurring on the fringes of the study area. Specifically, proposed residential development and new employment in the Nitro Marketplace, Goff Crossing, and Lakeview Drive area will have the greatest influence on economic and traffic characteristics. Additional growth is anticipated northeast of Cross Lanes, extending to just inside the boundaries of the study area. For the period from 1990 to 2020, overall increases in population (32.3%) and employment (80.2%) are projected within the TAZs that comprise the study area.

Focused Area Model Development

To enhance the roadway network in the Cross Lanes area, 40th Street from WV 25 east to WV 62 was added to the 1990 base network, as well as the 2005 and 2020 networks. In addition, recently programmed projects were added to the future base networks.

Modeled Deficiencies

The Cross Lanes model was then used to simulate future deficiencies in the study area (for the years 2005 and 2020). As a measure of deficiency, the methodology used in the Charleston Metropolitan Transportation Plan was followed. The regional model includes steps to determine congestion based on a volume-to-capacity (V/C) ratio with average daily traffic (ADT) volumes. The ratios are classified as under capacity (less than 0.80), near capacity (0.80 to 0.99), and over capacity (1.0 and higher, with severe conditions over 1.2).

Short-Range (2005)

Based on the 2005 land use scenario, the following links will operate over capacity:

- WV 622 (Goff Mountain Road) from north of the I-64 Cross Lanes interchange to WV 62 (Cross Lanes Drive)
- WV 622 (Big Tyler Road) from Cross Lanes Drive to just west of Kanawha County Route (Kan. Co.) 10 (Doc Bailey Road)
- WV 25 (First Avenue) from the I-64 Nitro interchange to WV 62 (Cross Lanes Drive)
- WV 62 from First Avenue to Second Street

In addition, the following links will operate near capacity:

- Big Tyler Road from 0.5 mile west of Kan. Co. 10 (Doc Bailey Road) to WV 622 (Rocky Fork Road)
- WV 62 from Second Street to Etta Street
- WV 62 (Washington Street West) from WV 501 (Big Tyler Road) to just north of Melody Lane

Long-Range (2020)

Based on the 2020 land use scenario, the following links will operate over capacity:

- WV 622 (Goff Mountain Road) from north of the I-64 Cross Lanes interchange to WV 62 (Cross Lanes Drive)
- WV 622 (Big Tyler Road) from WV 62 (Cross Lanes Drive) to Kan. Co. 10 (Doc Bailey Road)
- WV 25 (First Avenue) from the I-64 Nitro interchange to WV 62
- WV 62 from WV 25 (First Avenue) to Second Street

The following segments will approach capacity in the 2020 scenario:

- WV 622 (Big Tyler Road) from Kan. Co. 10
- WV 62 from Second Street to School Road/Dairy Road
- WV 62 from WV 622 Big Tyler Road to just north of Melody Lane

Roadway Alternatives

Alternatives were developed to address identified needs for existing and future conditions, respond to citizen concerns, and improve overall transportation options in the study area. Major unprogrammed alternatives from the 1981 study are carried forward, along with new options for better connectivity and capacity.

Primary concerns for roadway improvements have related to safety problems, peak-hour congestion, lack of access, and poor connectivity. The development of alternatives considered previous studies, citizen suggestions, projects currently programmed or underway, and modeled deficiencies. Fifteen preliminary alternatives were developed, including segments of the Northern Connector previously recommended in the regional transportation plan.

Alternatives Analysis

The preliminary alternatives were grouped into three scenarios, each with short-range and long-range projects. Scenarios 1 and 2 include the Northern Connector, while Scenario 3 does not. These scenarios were evaluated based on environmental and modeling criteria, as well as public comment. The evaluation criteria included the following:

- Cost (estimate of probable cost including construction, right-of-way, utilities, and engineering)
- Relocation of residences, businesses, and community facilities
- Wetlands/natural resources
- Economic development potential
- Projected traffic served
- Capacity
- Volume-to-capacity ratio
- Cost per vehicle

Tables 1, 2 and 3 list the alternatives included in each scenario.

Table 1 Scenario 1 Alternatives	
Alternative (Year)	**Description**
A. Institute Connector (2005)	2- to 4-lane highway from Institute I-64 Interchange to Little Tyler Road
B1. Big Tyler – Little Tyler Connector (2005)	2- to 4-lane highway from Big Tyler Road / Rocky Fork Road intersection to Alternative J (extension of Dalewood Drive)
B2. Big Tyler – Little Tyler Connector (2020)	2- to 4-lane highway from Institute Connector to Alternative B1
C. Cross Lanes Drive – Doc Bailey Road Connector (2020)	4-lane freeway from Cross Lanes Drive to Doc Bailey Road, serving as potential segment of Northern Connector
D. Northern Connector (2020)	4-lane freeway extending from I-64 to east of study area (I-77)
E. Northern Connector Interchange (2020)	Interchange with I-64 and access to Lakeview Drive development
F. Lakeview Drive Extension (2020)	2-lane service road from 40th Street to Lakeview Drive
H/I. Hopewell Road / Waycross Road Improvement/Realignment (2005)	Improve 2-lane street for better neighborhood circulation and connection with Dalewood Drive
J. Dalewood Drive Improvement (2005)	Improve 2-lane street for better circulation as a parallel route to Big Tyler Road and extend to Alternative B1
K. Dalewood – Little Tyler Connector (2005)	Extend Dalewood to the southwest, connecting to Little Tyler Road
M. Alpine Drive Extension (2005)	Improve 2-lane street and connect dead-end sections with extension to Rocky Fork Road.
Q. WV 622 Widening (2005)	Widen 3-lane section to 5 lanes
R. WV 25 / WV 62 Widening (2005)	Widen/construct third lane to alleviate congestion near intersection

Table 2 Scenario 2 Alternatives	
Alternative (Year)	**Description**
A. Institute Connector (2005)	2- to 4-lane highway from Institute I-64 Interchange to Little Tyler Road
B1. Big Tyler – Little Tyler Connector (2005)	2- to 4-lane highway from Big Tyler Road / Rocky Fork Road intersection to Alternative J (extension of Dalewood Drive)
B2. Big Tyler – Little Tyler Connector (2020)	2- to 4-lane highway from Institute Connector to Alternative B1
C. Cross Lanes Drive – Doc Bailey Road Connector (2020)	4-lane freeway from Cross Lanes Drive to Doc Bailey Road, serving as potential segment of Northern Connector
D. Northern Connector (2020)	4-lane freeway extending from I-64 to east of study area (I-77)
E. Northern Connector Interchange (2020)	Interchange with I-64 and access to Lakeview Drive development
F. Lakeview Drive Extension (2020)	2-lane service road from 40th Street to Lakeview Drive
G. DeWitt Road Improvement/Extension	Improvements with extension to Northern Connector
H/I. Hopewell Road / Waycross Road Improvement/Realignment (2005)	Improve 2-lane street for better neighborhood circulation and connection with Dalewood Drive
J. Dalewood Drive Improvement (2005)	Improve 2-lane street for better circulation as a parallel route to Big Tyler Road and extend to Alternative B1
L. Koontz Drive Improvement (2005)	Improve 2-lane road and extend north for access to Northern Connector
M. Alpine Drive Extension (2005)	Improve 2-lane street and connect dead-end sections with extension to Rocky Fork Road
O. Nitro – Lakeview Connector (2020)	2- to 4-lane highway from WV 25 in Nitro to Lakeview Drive.
Q. WV 622 Widening (2005)	Widen 3-lane section to 5 lanes
R. WV 25 / WV 62 Widening (2005)	Widen/construct third lane to alleviate congestion near intersection.

Table 3 Scenario 3 Alternatives	
Alternative (Year)	**Description**
A. Institute Connector (2005)	2- to 4-lane highway from Institute I-64 Interchange to Little Tyler Road
B1. Big Tyler – Little Tyler Connector (2005)	2- to 4-lane highway from Big Tyler Road / Rocky Fork Road intersection to Alternative J (extension of Dalewood Drive)
B2. Big Tyler – Little Tyler Connector (2020)	2- to 4-lane highway from Institute Connector to Alternative B1
C. Cross Lanes Drive – Doc Bailey Road Connector (2020)	2- to 4-lane highway from Cross Lanes Drive to Doc Bailey Road
F. Lakeview Drive Extension (2020)	2-lane service road from 40th Street to Lakeview Drive
G. DeWitt Road Improvement/Extension	Improvements with extension to Northern Connector
H/I. Hopewell Road / Waycross Road Improvement/Realignment (2005)	Improve 2-lane street for better neighborhood circulation and connection with Dalewood Drive
J. Dalewood Drive Improvement (2005)	Improve 2-lane street for better circulation as a parallel route to Big Tyler Road and extend to Alternative B1.
K. Dalewood – Little Tyler Connector (2005)	Extend Dalewood to the southwest, connecting to Little Tyler Road.
M. Alpine Drive Extension (2005)	Improve 2-lane street and connect dead-end sections with extension to Rocky Fork Road.
O. Nitro – Lakeview Connector (2020)	2- to 4-lane highway from WV 25 in Nitro to Lakeview Drive.
P. WV 501 Improvements (2005)	Improve 2-lane highway.
Q. WV 622 Widening (2005)	Widen 3-lane section to 5 lanes
R. WV 25 / WV 62 Widening (2005)	Widen/construct third lane to alleviate congestion near intersection.

Recommended Plan

Based on the preliminary impacts and the model results, Scenario 2 was determined to be the best of the three systems of alternatives. Within this scenario, further analysis and modeling indicated the need for specific refinements to alternatives. Proposed widths (number of lanes) were decreased on Alternatives A, B, and O to two lanes. Alternative B2 was moved to a short-range priority to provide a complete connection between I-64 and Rocky Fork Road. In conjunction with the long-range timing of the Northern Connector, Alternative M was moved from 2005 to 2020. Based on further analysis and citizen comments, Alternative I was chosen while Alternative

H was dropped from further consideration. Alternative R was widened to four through lanes with an option for a center turn lane. Projects G,K, and L were eliminated due to low projected volumes. The resulting system of improvements is described in Table 4 as the recommended plan for Cross Lanes.

Table 4
Recommended Highway Plan

Alternative	Description	Length (Miles)	Cost (Millions)	Year
A. Institute Connector	2-lane highway from Institute I-64 Interchange to Little Tyler Road	1.3	$16.4	2005
B. Big Tyler – Little Tyler Connector	2-lane highway from Institute Connector to Big Tyler Road at Rocky Fork intersection	2.9	$15.6	2005
C. Northern Connector	4-lane freeway from Cross Lanes Drive to Doc Bailey Road, serving as potential segment of Northern Connector	2.9	$33.4	2020
D. Northern Connector	4-lane freeway extending from Doc Bailey Road to east of study area (I-77)	8.7	$100.1	2020
E. Northern Connector Interchange	Interchange with I-64 and access to Lakeview Drive development	0.5	$25.2	2020
F. Lakeview Drive Extension	2-lane service road from 40th Street to Lakeview Drive	1.2	$9.8	2005
I. Waycross Road Improvement	Improve 2-lane street for better neighborhood circulation and connection with Dalewood Drive	0.4	$0.4	2005
J. Dalewood Drive Improvement	Improve 2-lane street for better circulation as a parallel route to Big Tyler Road	1.3	$1.1	2005
M. Alpine Drive Extension	Improve 2-lane street and connect dead-end sections with extension to Rocky Fork Road	1.3	$5.8	2020
O. Nitro – Lakeview Connector	2-lane highway from WV 25 in Nitro to Lakeview Drive	1.9	$19.8	2020
Q. WV 622 Widening	Widen 3-lane section to 4 or 5 lanes	0.5	$4.2	2005
R. WV 25 / WV 62 Widening	Widen/construct third lane to alleviate congestion near intersection	1.9	$14.0	2005

These recommended alternatives will require additional studies to determine more definite alignments. The overall estimated cost for the program is $87.1 million within Cross Lanes. On a regional scale, the Northern Connector continues as a recommendation, with an estimated cost of $158.7 million. Implementation of specific projects will be dependent on continued support at the local, regional, and state levels.

Sidewalks/Bicycle Facilities

In accordance with WVDOT policy, new sidewalks will be considered in conjunction with any new widening project. Facilities on both sides of Big Tyler Road will improve safety for students walking or being dropped off at one of the three schools located on the road.

Specific recommendations include new sidewalks in conjunction with the current Big Tyler Road widening and recommended alternatives F, J, M, and R. In addition, a bicycle facility should be considered along Koontz Drive to serve students and other bicyclists in the vicinity.

Transit

Representatives of the Kanawha Valley Regional Transportation Authority (KVRTA) participated on the Steering Committee throughout the study. Recently, the agency has begun to review its routing and schedules to consider improvements in high growth areas including Cross Lanes. As part of this new program, KVRTA has decided to extend coverage to the Lakeview Drive commercial areas by offering stops on both the Cross Lanes and Nitro routes. In addition, bus shelters and a circulation plan are recommended to better accommodate passengers and the buses.