

CHAPTER 6: EVALUATION OF TRANSPORTATION SYSTEM IMPROVEMENT OPTIONS

This chapter of the Philomath TSP provides an evaluation of identified potential transportation system improvement options for the Philomath area over the 20-year planning period. The evaluation includes an analysis of land use and transportation demand management strategies, transportation system management options, major street improvement projects, new bicycle and pedestrian facilities, and potential projects for other modes of travel in the city, including transit service, and rail, air, water, and pipeline facilities. The evaluation for a future No-Build option is summarized in Chapter 5. A summary listing of the options discussed in this chapter and the recommendation for each option is included at the end of the chapter.

The transportation needs and alternatives for Philomath, identified with the help of the public through an open house and the Transportation and Traffic Safety Commission (TTSC), address the concerns specified in the goals and objectives of Chapter 2. Except for the No-Build option, the transportation improvement options considered are described and discussed with the evaluations later in this chapter.

Based on the analysis of all transportation system improvements, a detailed list of improvements to be incorporated into the TSP is recommended in Chapter 7. As discussed in the remaining sections of this chapter, not all of the considered improvement options were recommended. These recommendations were based on public opinion, environmental considerations, project costs, and benefits relative to traffic operations, the transportation system, and community livability including land use.

EVALUATION CRITERIA

The evaluation of all potential transportation improvements was based on a quantitative analysis of traffic projections and street system operations, and a qualitative review of safety, environmental, socioeconomic, and land use impacts, as well as estimated project costs.

The quantitative analysis of each improvement considered different factors, such as overall traffic volume flows, changes in travel patterns, and the impact to operations of critical streets and intersections.

In addition to the quantitative traffic analysis, three factors were evaluated qualitatively: 1) safety; 2) environmental factors, such as historic impacts, wetlands impacts, and threatened or endangered species impacts; and 3) socioeconomic and land use impacts, such as right-of-way (ROW) requirements, community livability, existing land use, and impacts to any adjacent homes or businesses. The existing land use and wetlands distribution maps are shown in Figures 1-1 and 1-2 in Chapter 1.

The final factor in the evaluation of the potential transportation improvements was project cost. Costs were estimated in 1998 dollars based on the project limits of each potential transportation system improvement. A matrix was prepared and included later in this chapter showing positive and negative factors for the major transportation infrastructure alternatives.

EVALUATION OF POTENTIAL TRANSPORTATION IMPROVEMENT OPTIONS

Land Use Strategy - Revise Zoning and Development Codes

Overview: This strategy could result in amending the City of Philomath Comprehensive Plan and zoning and development codes to permit mixed-use developments and increase density in certain areas. Specific amendments include allowing neighborhood commercial uses within residential zones and allowing residential uses within commercial zones. The existing land use is shown in Figure 1 in Chapter 1.

Traffic Projections: Such code amendments can encourage residents to walk and bicycle throughout the community by providing shorter travel distances between land uses. A shift in travel mode would reduce reliance on the automobile, a goal of the state Transportation Planning Rule (TPR).

Operations: These changes combined with the construction of new street, bicycle, and pedestrian facilities can help reduce traffic congestion and improve the livability of Philomath.

Impacts: Maintaining the livability of the community encourages new residents and businesses to locate in Philomath, helping to maintain the area's economic vitality.

Costs: No direct costs are associated with translating comprehensive plan policy into zoning code amendments.

Recommendations: Permitting mixed-use developments and increased density is encouraged within the city limits of Philomath. Appropriate changes in land use should be considered as part of any major street improvement project that makes substantial changes in traffic routing. Implementation of these measures and changes to the comprehensive plan and zoning ordinances should be at the discretion of city officials.

Transportation Demand Management Strategy

The TPR recommends that a city evaluate Transportation Demand Management (TDM) measures as part of its TSP. TDM strategies are intended to change the demand on the transportation system by providing facilities for alternative modes of transportation, implementing carpooling programs, and applying other transportation measures such as staggered work schedules. Generally, these strategies would be more effective in larger cities, but some strategies can still be useful in cities the size of Philomath. Provisions for alternative modes of transportation, such as sidewalks for pedestrians and bicycle lanes for bicyclists, will be beneficial. Even though carpool lots were discussed by the TTSC, it does not appear that the expected use is high enough to justify carpool lot costs at the present time. Other TDM measures, such as staggered work hours or carpools, are not expected to be effective enough to justify the costs of implementation within the City of Philomath due to the small business, employer and population sizes.

However, there are efforts to implement TDM measures for Corvallis. With major employers such as Oregon State University and Hewlett-Packard attracting employees from Philomath, the city could be involved in Corvallis TDM implementation. The Cascades West Council of Governments is working on implementing TDM projects for the Corvallis area.

Impacts: Providing adequate pedestrian/bicycle facilities will increase the livability and transportation safety in Philomath.

Costs: The estimated construction cost for concrete sidewalks and asphalt bicycle lanes on both sides of a street is approximately \$100 per linear foot. This cost does not include right-of-way or drainage costs that may need to be included. Cost estimates were not made for the carpooling and Corvallis TDM strategies.

Recommendation: Implementing TDM would provide needed facilities for pedestrians and bicyclists, improve safety, and enhance quality of life in Philomath. Therefore, TDM strategies as previously discussed are recommended.

Transportation System Management Options

Transportation System Management (TSM) options are designed to increase the capacity, or improve access and safety, along roadways and at intersections while maintaining and preserving the existing transportation system. TSM improvements usually include smaller scale or smaller cost projects, such as improved traffic control at an intersection, but may also include larger projects to improve management of the transportation system.

The TSM options for the Philomath area were identified from the TTSC and public meetings, as well as the analyses of existing and future No-Build traffic conditions (Chapters 3, 4 and 5). The locations of the TSM options are illustrated in Figure 6-1 with complete descriptions and evaluations found later in this chapter.

1. Install traffic signal at the intersection of US Highway 20 and OR Highway 34.
2. Install traffic signal at the intersection of Main Street and 9th Street.
3. Install traffic signal at the intersection of Main Street and 26th Street.
4. Bridge and intersection improvements along Grange Hall Road. ✓
5. Truck route improvements:
 - A. Grange Hall Road (options 4 above and 8C below). ✓
 - B. 13th Street – Main Street to Chapel Drive. ✓
6. Access improvement for Clemens Mill Road along Highway 20/34.
7. Extend (connect) Newton Street to 26th Street.
8. Street overlays for roads having poor pavement conditions:
 - A. Highway 20/34 - West city limits to Newton Creek Bridge.
 - B. College Street - 12th Street to 20th Street.
 - C. Grange Hall Road - Alsea Highway to Fern Road. ✓
 - D. Mt. Union Avenue - Benton View Drive to Plymouth Drive.
9. Improved street signing in the city.

It is important to note that several TSM projects interrelate with other Major Street Improvement Options as indicated in each evaluation.

Major Street Improvement Options

The street improvements listed in this section are larger scale projects designed to dramatically enhance the local street system in Philomath. They address specific major capacity, operations, and accessibility issues that currently exist or are expected to exist in the future.

The following list includes the major street improvement options considered. Each project has been numbered in consecutive order after the TSM options. Options 10, 11 and 12 are illustrated in Figure 6-2 with options 13 through 17 illustrated in Figure 6-3.

10. Improve College Street, Main Street, and Applegate Street, maintaining two-way traffic.
11. Establish a one-way couplet along Highway 20/34 using College Street and/or Applegate Street.
 - A. College/Main/Applegate one-way couplet (between the railroad crossing and Green Street).
 - B. Main/Applegate one-way couplet (between the railroad crossing and Green Street).
 - C. One-way couplet with additional capacity improvements.
 - D. Extended one-way couplet to the west.
12. Widen Highway 20/34 to five lanes (between railroad crossing and Green Street).
13. Bypass Option - extend West Hills Road to the US Highway 20/Alesea Highway intersection.
14. Extend Applegate Street over Newton Creek (Newton Creek Bridge).
15. Construct a new road between Industrial Way and 13th Street.
16. Construct new roads connecting 26th Street to West Hills Road and Chapel Drive.
 - A. North part of 26th Street extended due north.
 - B. North part of 26th Street extended to northeast.
17. Construct new roads connecting 71st Street to West Hills Road and Mt. Union Avenue (Bellfountain Extension).

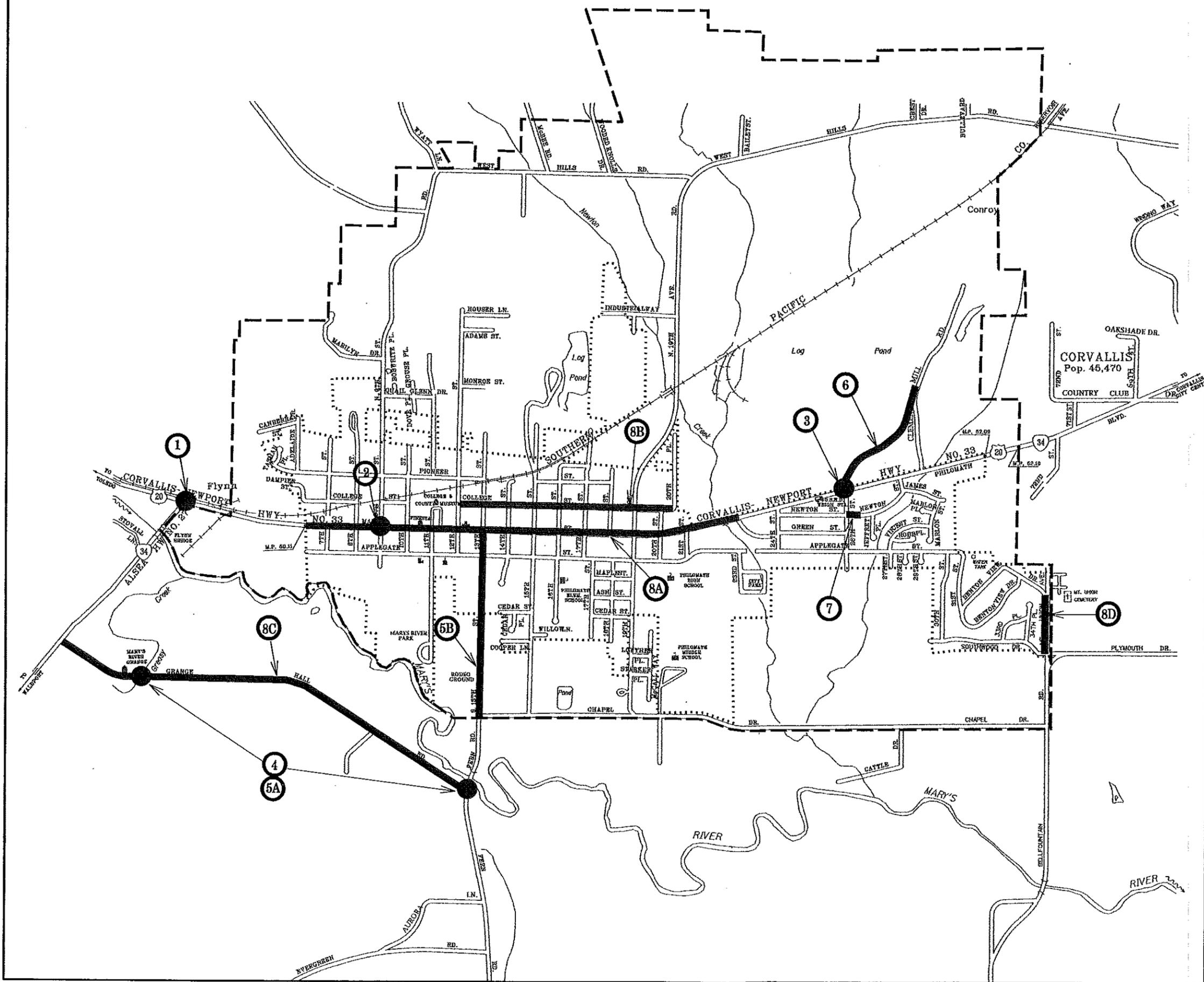
Table 6-1 was presented at the second Open House. It summarizes the positive and negative considerations for the No-Build scenario described in Chapter 5 and the major Highway 20/34 Improvement Options 10, 11 and 12, described in more detail later in this chapter.



(NOT TO SCALE)

LEGEND:

- U.G.B. LINE
- CITY LIMITS
- ① STREET OR INTERSECTION IMPROVEMENT OPTION NUMBER
- PROJECT LOCATION FOR STREET OR INTERSECTION IMPROVEMENT

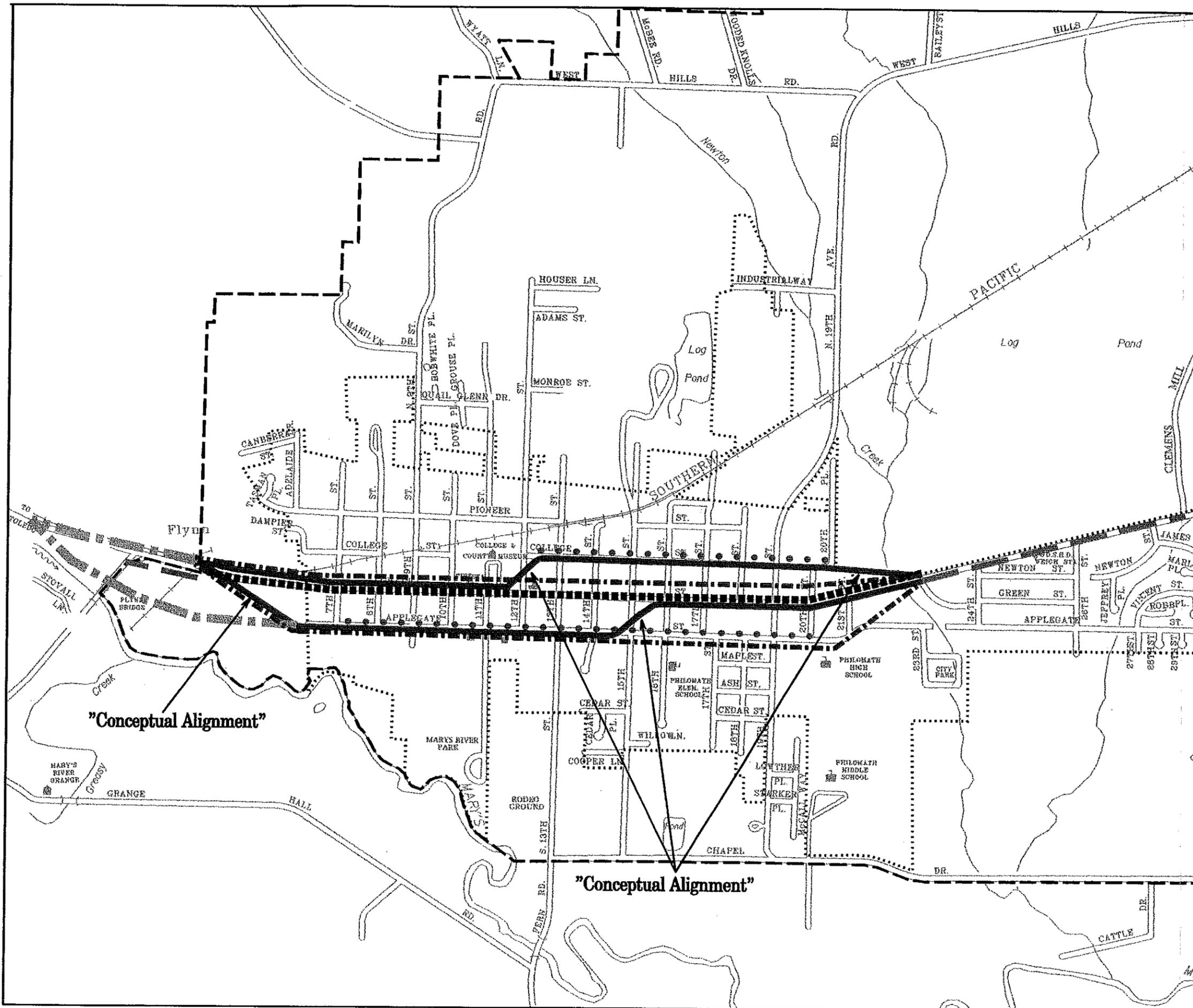


ODOT0254/FIG6-1.DGN/TNT/07-08-98

FIGURE 6-1

TSM Improvement Options

ODOT0254/FIG6-3.DGN/BJD/06-30-98



(NOT TO SCALE)

LEGEND:

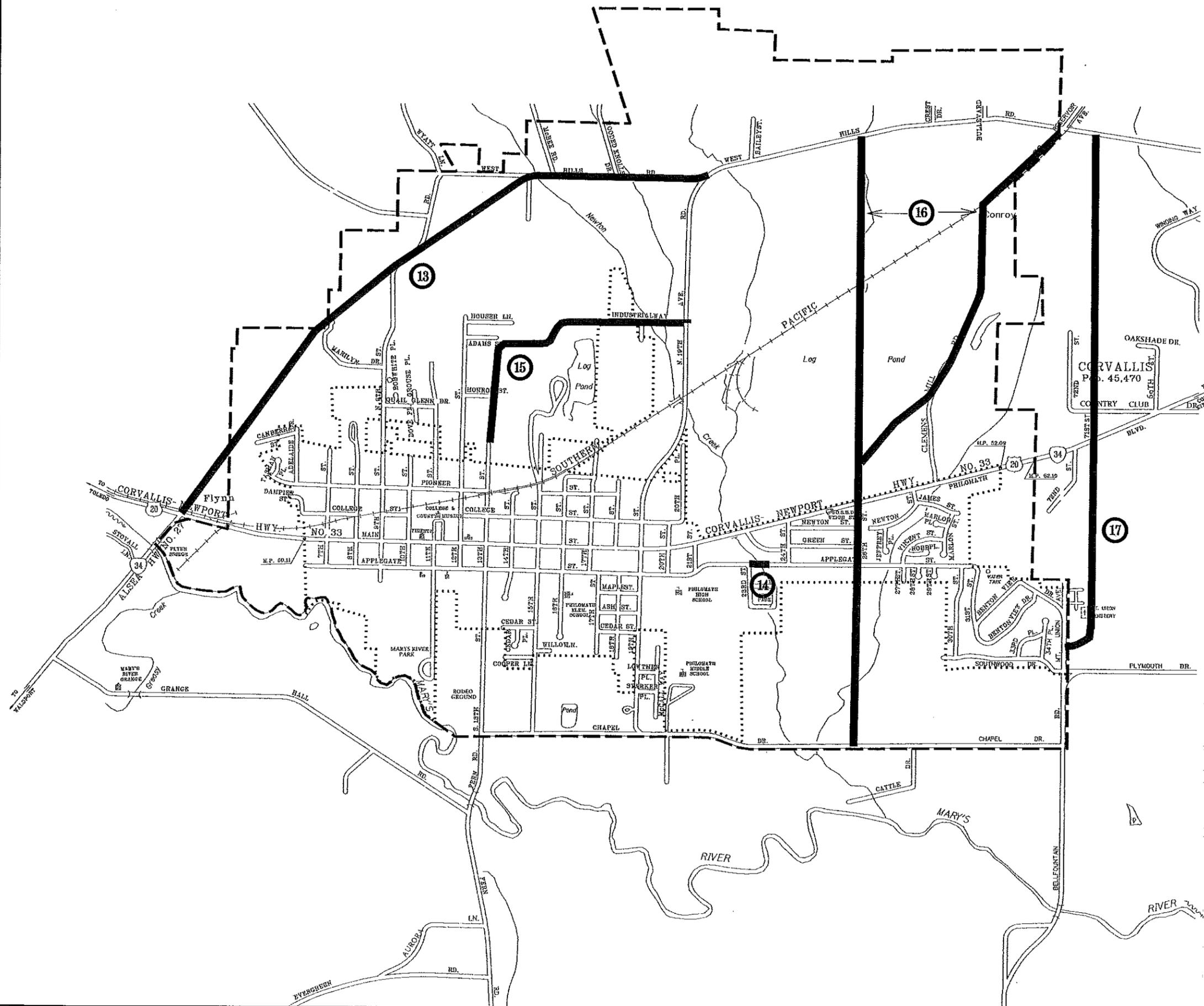
- U.G.B. LINE
- CITY LIMITS

OPTION

- 10- TWO-WAY STREETS
- 11A-ONE-WAY COUPLET (COLLEGE/MAIN/APPLEGATE)
- 11B-ONE-WAY COUPLET (MAIN/APPLEGATE)
- 11C-ONE-WAY COUPLET WITH ADD'L CAPACITY IMPROVEMENTS
- 11D-EXTENDED ONE-WAY COUPLET
- 12- WIDEN MAIN ST. TO FIVE LANES

FIGURE 6-2

Major Street Improvement Options - Highway 20 /34



(NOT TO SCALE)

LEGEND:

- U.G.B. LINE
- CITY LIMITS
- ① NEW STREET CONSTRUCTION OPTION NUMBER
- PROJECT LOCATION FOR STREET CONSTRUCTION

FIGURE 6-3

Potential New Street Construction Options

TABLE 6-1
MAJOR HIGHWAY IMPROVEMENT ALTERNATIVES

| TRANSPORTATION IMPROVEMENT CHOICE | EST. COSTS (Million) | EST. YEAR 2016 LEVEL OF SERVICE | IDENTIFIED POSITIVE CONSIDERATIONS | IDENTIFIED NEGATIVE CONSIDERATIONS |
|---|----------------------|---------------------------------|--|---|
| No Build: Maintains the highway through most of town as a 3-lane facility | \$0 | F | <ul style="list-style-type: none"> + Maintains existing features + No additional cost + Continues two-way traffic on all streets | <ul style="list-style-type: none"> - Doesn't address congestion - May not be acceptable by stakeholders - US HW 20/34 is a significant freight route; this option would increase travel time for freight movement - Doesn't address bicycle or pedestrian needs as well as other alternatives - Truck traffic would continue through downtown - Increases traffic on 9th Street and West Hills Rd. |
| College, Main, Applegate Two-way streets (Improvement Option 10) | \$4.6*** | E or better | <ul style="list-style-type: none"> + Cost less than couplet and five-lane option + Some traffic still routed by all businesses + Continues two-way traffic on all streets + This option fits as Phase 1 of option 11A | <ul style="list-style-type: none"> - Increases traffic on College and Applegate streets by schools and residences while decreasing traffic by most businesses - Level of service will not be acceptable without major intersection improvement at the west end of Applegate |
| College/Main/Applegate St. Couplet Alignment (Improvement Option 11A) | \$10.5* | D or better ** | <ul style="list-style-type: none"> + Improves traffic flows through community + Doesn't directly impact schools + Consistent with City's Comprehensive Plan + Would allow the City to expand business district along College Street + There is adequate road right of way (ROW) width except at crossovers + This couplet option was identified as a "preferred" option in 1992 and is in the City's comprehensive plan + Allows for more accesses and traffic signals + Easier to cross for pedestrians, bicycles, and vehicles + Allows for a townsquare development if desired | <ul style="list-style-type: none"> - Proposed crossover near 14th - 15th streets would require property acquisition and may require relocation of a business and demolition or moving of house(s) - Would require a bridge crossing for College Street to connect back into the highway (environmental impacts?) - Residents along College Street would have to deal with increased traffic, including trucks - At least two blocks in the downtown would no longer have highway frontage - West-bound through traffic would be on College Street rather than on Main St., which some downtown business owners have expressed objections to - May have environmental impacts on stream natural areas and historical resources |
| Main/Applegate Couplet (Improvement Option 11B) | \$8* | ** | <ul style="list-style-type: none"> + Requires two less cross-overs + There is adequate ROW except at crossover + Would not appear to displace any residences or businesses + Keeps west-bound traffic moving through the downtown, which some downtown business owners strongly prefer + Allow for accesses and traffic signals + Easier to cross for pedestrian, bicycles, and vehicles | <ul style="list-style-type: none"> - Leg of the couplet would pass by the school - May have environmental impacts on stream/natural area - Residents along Applegate St. would have to deal with increased traffic, including trucks - Impacts schools |
| Expanding Main Street to Five Lanes (Improvement Option 12) | \$14* | D or better ** | <ul style="list-style-type: none"> + Keeps tourist traffic moving both east and west through downtown + Does not require any crossovers + Doesn't directly impact schools + Doesn't add traffic on residential streets | <ul style="list-style-type: none"> - There is insufficient width to put in this type of facility through downtown without building demolition - Five-lane roadways are not pedestrian-friendly, with long crossing distances and delays - Extensive right-of-way required, including building demolitions through the Central Business District - Less traffic signals and access allowed may have environmental impact on historical resources |

* Needed highway 20/34 widening east and west from these projects is estimated to cost \$4.4 Million.

** This is the current standard for metropolitan areas. It is planned that Philomath will be part of a metropolitan area before 2016.

*** This doesn't include crossovers

Table 6-2 summarizes the recommendations for all of the project improvement options. Detailed discussions of the project improvement options evaluations follow the table.

**TABLE 6-2
SUMMARIZED RECOMMENDATIONS
FOR ALL PROJECT IMPROVEMENT OPTIONS**

| Option | Description | Proj. No. | Recommendation |
|---|--|------------------------------|--|
| | Revise Zoning and Development Codes | | Implement as transportation system change opportunities occur. |
| TDM Strategy | None evaluated at this time. | | Implement as opportunities occur. |
| TSM Options | | | |
| 1 | Install Traffic Signal at Intersection of US Highway 20 and OR 34. | 1. | Implement as a long-range project. |
| 2 | Install Traffic Signal at the Intersection of Main St. and 9th St.. | 2. | Implement as part of Option 11C. |
| 3 | Install Traffic Signal at the Intersection of Main St. and 26th St. | 3. | Implement as a long-range project (after or part of Option 6). |
| 4 | Bridge Improvement on Grange Hall Rd. (Greasy Creek Bridge) | 4. | Implement as a short-range project (Benton County TSP project). |
| 5 | Truck Route Improvements. | 5A. 5B. | Implement Option 5A as a short-range project. Implement Option 5B as an intermediate-range project. |
| 6 | Access Improvement for Clemens Mill Rd. along Highway 20/34. | 6. | Implement Option 6 as a long-range project. |
| 7 | Extend (connect) Newton Street to 26 th Street | 7. | Implement Option 7 as a short-range project. |
| 8 | Street Overlays for roads having poor pavement conditions. | 8A. 8B. 8C. 8D. | Implement Option 8A as an intermediate-range project. Implement Option 8B as part of Project 10. Implement Option 8C as a intermediate-range project. Implement Option 8D as a short-range project. |
| 9 | Improved street signing in the city. | 9. | Implement as a short-term project. |
| Major Street Improvement Options | | | |
| 10 | College/Main/Applegate Two-Way Streets | 10. | Implement as a short-term project. |
| 11 | Establish a One-Way Couplet Along Highway 20/34 Using College St. and/or Applegate St. | 11A. 11B. 11C. 11D. | Implement project 11A as an intermediate-range project. Project 11B is not recommended. Implement project 11C as an intermediate-range project. Project 11D is not recommended. |
| 12 | Widen Highway 20/34 to Five Lanes (Railroad Crossing to Green St.). | 12. | Not recommended. |
| 13 | Bypass Option- Extend West Hills Rd. to the US Highway 20/Alsea Highway Intersection. | 13. | Identify as a potential project occurring beyond the 20-year planning horizon. |
| 14 | Extend Applegate St. over Newton Creek. | 14. | Implement as a short-range project. |

TABLE 6-2 Summary Recommendations, Cont.

| Option | Description | Proj. No. | Recommendation |
|--|--|------------------|---|
| Major Street Improvement Options, cont. | | | |
| 15 | Construct a new road between Industrial Way and 13th St. | 15. | Identify as a potential project dependent on development of adjacent parcels, probably occurring beyond the 20-year planning horizon. |
| 16 | Construct new roads connecting 26th St. to West Hills Rd. and Chapel Dr. | 16. | Identify as potential projects dependent on development of adjacent parcels, probably occurring beyond the 20-year planning horizon of this TSP. |
| 17 | Construct new roads connecting 71st St. to West Hills Rd. and Mt. Union Ave. (Bellfountain extension). | 17. | Identify as a potential project dependent on development of adjacent parcels, probably occurring beyond the 20-year planning horizon of this TSP. |
| Bicycle Improvement Options | | | |
| | Add bike lanes along 13th St. extension to 19th St. | | Develop in conjunction with project #15 above, probably occurring beyond the 20-year planning horizon. |
| | Add bike lanes to US Highway 20/OR 34 along couplet alignment. | | Implement in conjunction with project #11 above as an intermediate-range project. |
| | Add bike lanes along 71st St. (Bellfountain) extension. | | Develop in conjunction with project #17 above, probably occurring beyond the 20-year planning horizon. |
| | Add bike lanes along West Hills Rd. extension. | | Develop in conjunction with project #13 above, probably occurring beyond the 20-year planning horizon. |
| | Add bike lanes along 26th St. extension. | | Develop in conjunction with project #16 above, probably occurring beyond the 20-year planning horizon. |
| B1 | Extend bike lanes along S. 19th St. from College St. to Chapel Dr. | B1. | Implement as a short-term project. |
| B2 | Extend route from Plymouth Dr. to Central Bike Path. | B2. | Implement as a short-term project. |
| B3 | Add multi-use houlder paths along Chapel Dr. from 13th to Bellfountain Rd. | B3. | Implement in conjunction with Benton Co. TSP timeline (to be determined), probably occurring as an intermediate-term project. |
| B4 | Add bike lanes along S. 13th St. from Main St. to Chapel Dr. | B4 | Implement as an intermediate-term project. |
| B5 | Add bike lanes along Applegate St. from couplet to Central Bike Path | B5. | Implement in conjunction with project #11A above as an intermediate-term project. |
| B6 | Add bike lanes along N. 9th St. from Main St. to West Hills Rd. | B6 | Identify as a potential project in conjunction with development or resurfacing, probably occurring beyond the 20-year planning horizon. |
| B7 | Add bike lanes along West Hills Rd. from Wyatt Ln. to North 19th St. | B7. | Implement as a long-term project. |
| Pedestrian Improvement Options | | | |
| P1 | Develop multi-use path from South 13th to Marys River across Rodeo Grounds. | P1. | Implement as an intermediate-term project. |
| P2 | Develop multi-use path from Fern Rd. west along Marys River. | P2. | Implement as a long-term project. |
| P3 | Develop multi-use path from West Hills Rd. to Benton Co. Open Space Park. | P3 | Identify as a potential project, probably occurring beyond the 20-year planning horizon. |

TABLE 6-2 Summary Recommendations, Cont.

| Option | Description | Proj. No. | Recommendation |
|--|---|------------------|---|
| P4 | Extend Central Bike Path west to South 19th St. | P4. | Implement in conjunction with project #1 above as a short-term project, alternatively implement in conjunction with project #11A above as an intermediate-term project. |
| Transit, Rail, Air, Water, and Pipeline Options | | | |
| R1 | Rail Siding and Spur. | R1. | Implement as a short term project. |

Evaluation TSM and Major Street Improvement Options

Option 1. Install Traffic Signal at the Intersection of US Highway 20 and OR Highway 34 (Recommended in 10 - 20 years)

Overview: This project includes the installation of a traffic signal to maintain future acceptable levels of service and also to improve safety. Without a signal, traffic operations for the left-turn movement on the south approach of OR Highway 34 (Aalsea Highway) are expected to deteriorate from a current LOS C to a LOS E by the year 2016. Traffic operations for the left-turn movement from the east approach on Highway 20/34 will also deteriorate from LOS A to LOS D for the same time period. Driver safety will become worse as traffic volumes entering this intersection increase over time and left turns become more difficult.

Under current traffic conditions, this intersection only meets one signal warrant (Warrant 11 – Peak Hour Warrant) and it is not expected that a traffic signal will be required at this intersection until nearly the year 2016. As a result this is currently expected to be a long term project (10 –20 years)

Traffic Projections: With US Highway 20 and OR Highway 34 providing the only primary routes leading west from Corvallis, Albany, and Philomath, traffic flow through this intersection is expected to increase significantly over the next 20 years. The 2016 No-Build scenario indicates that the volume of PM peak hour traffic entering the intersection will increase by 73 percent (514 vehicles) on the east approach, 70 percent (245 vehicles) on the west approach, and 43 percent (59 vehicles) on the south approach.

Operations: Without a signal, future traffic operations at this intersection will reach a LOS E for the northbound left turn and LOS D for the westbound left turn. With a traffic signal, operations for the same movements would improve to LOS A and LOS C to D, respectively. Overall, the intersection is expected to operate at a LOS C to D. However, the delay for the eastbound and westbound through movements, which have the greatest amount of traffic, will increase without the installation of a signal. Details of the operations analysis at this intersection can be found in Appendix E.

Impacts: As traffic volumes increase over time, left-turn movements will be more difficult to perform as gaps in conflicting traffic will be less prevalent. A future traffic signal, when required, would improve safety by controlling conflicting traffic to provide gaps as needed.

Costs: The cost of installing a traffic signal is approximately \$200,000.

Recommendations: A future traffic signal installation is recommended at this intersection. The timing of the installation should be dependent upon several factors: 1) ongoing operations of the northbound left-turn and westbound left-turn movements, 2) ongoing analysis of signal warrants, and 3) implementation of the Major Street Improvement Options 11 and 12, where each of these options includes a future traffic signal at this location. It is not expected that the traffic signal will be required until near the year 2016. This is recommended as long term project when intersection widening is also required on Highway 20.

**Option 2. Install Traffic Signal at the Intersection of Main Street and 9th Street
(Recommended in 5 - 10 years as part of the one-way couplet project 11)**

Overview: This project includes the installation of a traffic signal to maintain future acceptable levels of service and also to improve safety on the minor approaches to 9th Street. Without a signal, traffic operations for the north and south approaches to 9th Street are expected to deteriorate from a current LOS D to a LOS F by the year 2016. Even with the center left-turn lane along Main Street, traffic operations for the eastbound and westbound left-turn movements will also deteriorate from an LOS A to an LOS F because of increased traffic flow in opposing directions.

The signal warrant analysis performed at this intersection for existing traffic conditions indicates only one traffic signal warrant is met (Warrant 11 - Peak Hour Volume). As the total traffic entering this intersection increases, more warrants will be met.

Traffic Projections: Without street improvements, traffic volumes are expected to increase significantly along North 9th Street. As congestion increases along Main Street over the next 20 years, drivers will soon look for alternative routes, one such route being North 9th Street to West Hills Road. The 2016 No-Build scenario indicates PM peak hour traffic volumes at this intersection will increase along North 9th Street by about 245 northbound vehicles and 480 southbound vehicles. A majority of this additional traffic will be vehicles traveling west between 9th Street and Main Street in an effort to avoid the congested downtown area.

Operations: It is estimated that the installation of a traffic signal will only improve the operations from LOS F to LOS E in the future. The LOS for unsignalized and signalized intersection operations is not directly comparable. For the unsignalized intersection, the side street through-traffic and left turn traffic have lower levels of service that are improved by installing a traffic signal. After the traffic signal is installed the operations for the side street approaches is improved at the expense of lowering the LOS on the Main Street approaches. Traffic operations cannot be improved to meet the required minimum standard for this intersection without widening because of the capacity limitations created by current lane geometry, particularly for the eastbound and westbound through movements along Main Street where there is only one through lane for both approaches.

Impacts: The installation of a traffic signal at this intersection will provide better access for vehicles on 9th Street but will increase delays along Main Street. Also, the city has closed the street accesses at the railroad crossings located on 8th, 10th, and 12th streets. These crossing closures will shift more traffic onto 9th Street as well as 13th Street.

Costs: The cost of installing a traffic signal is approximately \$200,000.

Recommendations: A traffic signal is not recommended at the present time. However, as the total traffic entering this intersection increases, more warrants will be met and it is expected that a traffic signal will be required.

A traffic signal alone should not be installed at this intersection unless other major street improvement projects, such as Options 10, 11, or 12, are implemented to accommodate future east-west traffic demand in Philomath. Under the No-Build scenario, installing a traffic signal at this intersection would be futile, since the minimum required standard LOS D cannot be reached. However, the LOS would be acceptable if a traffic signal were installed along with either the construction of a one-way couplet (Option 11), the widening of Main Street to five lanes (Option 12), or the construction of a new connector between West Hills Road and the Alsea Highway (Option 13). A traffic signal at 9th Street with Option 10 would not provide for good two-way traffic progression and may not be acceptable as a result of the impacts from the additional stopping of traffic on Highway 20/34. Traffic LOS operations on the 9th Street approach at this intersection would remain unacceptable in the future without a traffic signal, even with any of these major capacity improvements.

**Option 3. Install Traffic Signal at the Intersection of Main Street and 26th Street
(Recommended in 10 - 20 years)**

Overview: This project includes the installation of a traffic signal to ensure acceptable levels of service in the future and improve safety. Another goal is to make access to and from Highway 20/34 at this location more efficient than the other multiple access points that exist in the vicinity of Green Street, 24th Street, Newton Street, and Clemens Mill Road.

Results from a signal warrant analysis revealed that a traffic signal is not warranted under current traffic conditions. However, future traffic volumes may warrant a signal.

Traffic Projections: Traffic projections for the year 2016 indicate a 10 to 20 percent increase in traffic flow during the PM peak hour along Highway 20/34 in the vicinity of 26th Street, with an increase of 60 vph westbound and 100 vph eastbound. Increases over the next 20 years would be much higher along the highway if it were not for the capacity restraints of Highway 20/34. Traffic projections also show a combined increase of 90 vehicles northbound and 114 vehicles southbound during the PM peak hour for those roads intersecting the highway in the area (Green Street, 24th Street, 26th Street, and Newton Street).

Operations: Without a signal, traffic operations are expected to remain unchanged at LOS D at the 26th Street approach and LOS A for the westbound left-turn from the highway. The analysis of future traffic operations at this intersection was based on two assumptions: 1) no other street improvements will occur in the city; and, 2) the future increases in traffic accessing and egressing the highway will be spread out over the four roads that intersect the highway from the south.

Although the operations for left-turn maneuvers from the highway at these four intersections are projected to remain at LOS A, the combined effect of cars making these left turns in addition to stopping westbound through traffic will create additional delays on the highway. A traffic signal with a left-turn storage bay would separate those left-turning vehicles from the through traffic providing more efficient traffic progression.

A traffic signal installed at 26th Street may also help to create platooning of vehicles along the highway as they enter the city and pass through the other two existing signalized intersections on Main Street, at 19th Street and 13th Street.

Impacts: A traffic signal installed at 26th Street would have a more positive impact than any of the three other locations in the immediate area. This location would provide efficient circulation of neighborhood traffic, and create safe conditions for pedestrians who need to cross the highway. There would be increased overall delay but the level of accident severity should be decreased.

Costs: The cost of installing a traffic signal and providing the necessary left-turn storage bays is approximately \$300,000.

Recommendation: A future traffic signal installation is recommended at this intersection. The timing of the installation should be dependent upon several factors: 1) ongoing analysis of operations and safety of the northbound left-turn and westbound left-turn movements; 2) ongoing analysis of signal warrants; 3) implementation of Options 10 and 11, which would attract more traffic along either Highway 20/34 or 26th Street and would necessitate the installation of a traffic signal; 4) implementation of Option 6 which would attract Clemens Mill Road traffic; and, 4) implementation of Options 12 and 13, which may delay the installation.

***Option 4. Bridge and Intersection Improvements Along Grange Hall Road in Benton County
(Recommended in 0-5 years)***

Overview: This project involves planned structural improvements to one bridge and potential sight distance improvements at one intersection along Grange Hall Road, outside the city limits and the Urban Growth Boundary.

Benton County is planning to make structural improvements to Greasy Creek Bridge near the western end of Grange Hall Road. Currently, there are weight restrictions posted on this bridge that prevent specific types of trucks with specific payloads from traveling along this road. Posted truck weight restrictions are as follows: three-axle (24 tons), five-axle (37 tons), and six-axle (34 tons). The goal of strengthening this bridge is to allow heavier trucks to access Grange Hall Road. This improvement, in conjunction with integrating Grange Hall Road into a future truck route system, could help to reduce future truck traffic levels along Main Street through Philomath.

The second improvement is to realign a section of Fern Road including its intersection with Grange Hall Road. Currently, there is some sight distance concerns along Fern Road, just south of the bridge over Marys River. Fern Road has a sharp turn before the bridge crossing and the intersection at Grange Hall Road is just along this turn. Relocating the curve along Fern Road to the south would improve sight distance at the intersection.

Traffic Projections: An additional traffic forecast was performed with the EMME/2 model for the year 2016 with the inclusion of Grange Hall Road.

It should be noted that the 1991 and 2016 No-Build scenarios did not include Grange Hall Road in the major street network of the model. Reasons for not including this road in the model include its present location outside the city limits and Urban Growth Boundary, the street's classification as a county minor collector street, and the presence of low traffic volumes (currently about 50 vph in each direction).

Results from adding Grange Hall Road indicate a sizable number of vehicles will potentially use this route in the future, particularly during peak travel periods. The model indicates some traffic will be directed away from Highway 20/34 in downtown Philomath, where traffic congestion along the highway is expected to be heavy. It also indicates driver demand will increase along the Plymouth Drive/Chapel Drive route from or to 53rd Street in Corvallis, as these drivers will find a quicker route to US Highway 20 along Grange Hall Road.

Traffic Operations: Traffic operations along critical streets and at key intersections along Highway 20/34 in Philomath will not change as a result of the proposed improvements, relative to the No-Build scenario. The improvements proposed along Grange Hall Road are for allowing truck usage and improving driver safety and not for increasing capacity.

Impacts: The improvements to the Greasy Creek Bridge would allow more trucks to use Grange Hall Road and bypass Main Street downtown. Less trucks in the downtown area would improve community livability and reduce noise levels.

The realignment of the Fern Road and Grange Hall Road intersection would improve safety for drivers.

Costs: The estimated costs, which include design and engineering expenses, are approximately \$620,000 for the bridge improvement and approximately \$200,000 for the intersection realignment, for a total project cost of \$820,000.

Recommendations: The improvement along Fern Road was identified in the draft *Benton County Transportation System Plan*. Implementation of this project and the Greasy Creek Bridge project fall under county jurisdiction,

since the county owns and maintains Grange Hall Road and Fern Road. These improvements would provide an alternative route for trucks and is discussed as part of Option 5A in the following section.

Option 5. Truck Route Improvements (Recommended in 0-10 years)

Overview: Both projects identified here will enable Grange Hall Road and 13th Street to become part of the existing truck route system through the Philomath area.

- A. The first project includes the street improvements identified along Grange Hall Road (Options 4 and 8C). This project is outside the Urban Growth Boundary for Philomath but impacts traffic in Philomath.
- B. The second involves improvements along 13th Street, between Chapel Drive and Main Street. Complete reconstruction of this road is required to provide the structural integrity needed to support heavier truck loads. Also assumed as part of this upgrade are sidewalks and bicycle lanes along the entire length. On-street parking is assumed along both sides of the road between Applegate Street and Main Street.

Traffic Projections: Project A traffic projections were discussed in the previous section for Option 4. Based on the traffic model results it is expected that a number of trucks will use this route as an alternative to Highway 20/34 through the downtown part of Philomath. Project B is also expected to attract truck traffic off Highway 20/34 to avoid the downtown area between 13th and 19th streets.

Traffic Operations: Traffic operations levels of service are not expected to change as a result of the truck traffic attracted by projects A and B.

Impacts: Both projects will improve the connectivity of the regional and local truck route system.

Costs:

- A. Grange Hall Road Improvements
(included in the draft Benton County TSP) \$ 820,000
- B. 13th Street Improvements \$2,000,000

Recommendations: These improvement projects are recommended to provide for alternative routing for trucks south of the downtown Philomath area.

Option 6. Access Improvement for Clemens Mill Road Along Highway 20/34 (Recommended in 10-20 years)

Overview: Concerns have been expressed about the conflict between left-turning vehicles accessing Clemens Mill Road and Newton Street along Highway 20/34. The access points to these two roads are located only 350 feet apart on opposite sides of the highway. Twenty-sixth Street is located approximately 1000 feet west of Newton Street. These three intersections are too close together to install more than one traffic signal and allow for acceptable two-way traffic progression.

Several alternatives were considered in the public involvement process and by the TAC/TTSC. In the Newton Creek – Neer Street Environmental Assessment, a new connection south of the highway to James/Newton Street, was proposed at Clemens Mill Road. However this connection would go through East Newton Creek Park. A new connection on the north side of Highway 20/34 between Newton Street and Clemens Mill Road was also discussed. This location would require some building removal. Twenty-sixth Street is located approximately half-way between Bellfountain Road and 19th Street, which are major north/south roads. Based on traffic operations, the best location for a new traffic signal would be at 26th Street. However, there are some wetland

areas north of the highway that will need to be considered in determining the alignment for a connection between 26th Street and Clemens Mill Road. After discussing the alternatives, the TTSC decided to include a project for a new connection north of Highway between 26th Street and Clemens Mill Road as part of this plan. Newton Street should also be connected to the east side of 26th Street south of Highway 20/34 (Option 7).

Impacts: Construction of a new connection north of Highway 20/34 directly across from 26th Street to Clemens Mill Road would create a common four-way intersection and remove the conflict of left-turning movements at staggered intersections. This new connection would also provide for better local access to Highway 20/34 and safety would be improved.

Costs: \$975,000

Recommendation: The previously discussed new connection project north of Highway 20/34 from Clemens Mill Road to 26th Street is recommended to provide safe highway access. This project will also provide for better connectivity in the local areas north of Highway 20/34.

Option 7. Extend Newton Street to 26th Street (Recommended in 5-10 years)

Overview: Newton Street is not a continuous street; it intersects 26th Street on the west, but not on the east. This gap in Newton Street has been mentioned as a concern by local residents of Philomath. The connection of Newton Street also would complement project Option 6 on the south side of Highway 20/34.

Impacts: Extending and connecting Newton Street would provide an alternate east/west street south of Highway 20/34. The new connection of Newton Street would provide for better local access to Highway 20/34. The City of Philomath owns the right-of-way (ROW) needed to construct the street.

Costs: \$125,000

Recommendation: This project will provide for better connectivity in the local area south of the Highway 20/34 and is recommended to improve local access.

Option 8. Street Overlays for Roads Having Poor Pavement Conditions (Recommended in 0-10 years)

Overview: The following is a list of streets identified in the existing street inventory as having poor pavement conditions:

- Highway 20/34 - West City Limits to Newton Creek Bridge.
- College Street - 12th Street to 20th Street.
- Grange Hall Road - Alsea Highway to Fern Road.
- Mt. Union Avenue - Benton View Drive to Plymouth Drive.

This project involves excavating (grinding) the old pavement in some cases and overlaying with new pavement on the roads listed above.

Impacts: Overlaying these roads will improve overall safety for drivers and bicyclists. It will also help to reduce road noise and improve street aesthetics.

Costs: Cost estimates for excavating and resurfacing are about \$2.35 per square foot of pavement area. This includes a 40 percent Engineering Contingency fee. The estimated costs for the pavement overlay projects are as follows:

| | |
|---|-----------|
| A. Highway 20/34 - West City Limits to Newton Creek Bridge. | \$730,000 |
| B. College Street - 12th Street to 20th Street. | \$690,000 |
| C. Grange Hall Road - Alsea Highway to Fern Road. | \$300,000 |
| D. Mt. Union Avenue - Benton View Drive to Plymouth Drive. | \$60,000 |

Recommendations: Resurfacing Highway 20/34 should take into consideration the implementation of any of the one-way couplet alternatives (Option 11), or widening Main Street to five lanes (Option 12). The resurfacing of College Street should take into consideration and be part of the two-way street project Option 10. Resurfacing Grange Hall Road and Mt. Union Avenue is recommended with the timing of these projects to be decided by county or city officials.

Option 9. Improved Street Signing in the City (Recommended in 0-5 years)

Overview: This project involves replacing all street name signs within the city limits with newer signs and was identified during the safety analysis. The existing city street signs are old and faded and in need of replacement.

Impacts: It is expected that traffic operations will be improved as a result of drivers being able to identify streets further in advance. More visible street signs at night are also expected to make night driving easier.

Costs: Costs to replace each sign are estimated at \$25 per sign for high intensity (high reflectivity) signs. Assuming that four signs are needed with two posts located at each of the 113 street intersections in the city, placed back to back for all lines of sight, a total cost of \$40,000 is estimated.

Recommendations: This project is recommended as a short-range project to improve traffic safety and to also help bicyclists and pedestrians identify their locations.

A summary matrix comparing positive and negative considerations for the No-Build scenario and the next three options is shown in Table 6-1. Detailed discussions of the potential improvement options follow Table 6-1.

Option 10. Improve College, Main, and Applegate as Two-way Streets (Recommended in 0-5 years)

Overview: This option was proposed as an alternative to developing a one-way couplet system along Highway 20/34 through Philomath, by providing optional travel routes along the existing roadway sections of College Street and Applegate Street, which parallel Main Street.

The proposed parallel alignment along College Street extends from 20th Street to 12th Street, creating an alternative route north of Main Street that extends over half the length of the downtown grid. The second alignment along Applegate Street, extends from 21st Street to 7th Street, south of Main Street, and covers the entire length of the downtown grid system. Both College and Applegate streets were assumed to maintain a 25 mph speed with a street capacity of 700 vph, which is representative of a two-way street with one lane for each direction of travel.

Some major roadway improvements will be necessary to implement this option, particularly the widening and repaving of College Street. Applegate Street will also need subgrade improvements and new pavement, between 11th Street and 21st Street. Other improvements include two traffic signal installations at Main Street and 7th Street, and at College Street and 19th Street. Traffic signals will be necessary at these two locations to handle future traffic demand.

Traffic Projections: Two important observations were made when comparing the 2015 p.m. peak hour traffic projections of this option with the No-Build alternative. One observation was that the establishment of the parallel routes north and south of Main Street reduced the overall travel time through the downtown area. This, in turn, enticed more vehicles to use the major routes along Highway 20/34 and 19th Street, east and northeast of the city, instead of bypassing most of the downtown area by way of the West Hills Road and 9th Street route. Comparison of the traffic model output for both scenarios showed that a total of 400 westbound and 225 eastbound PM peak hour vehicles heading into and out of Philomath were diverted from the West Hills Road and 9th Street route, and rerouted onto Highway 20/34 and 19th Street.

With more traffic flowing through the downtown area, a second observation was noted. As congestion increased along Main Street, many vehicles shifted over to the parallel routes along College Street and Applegate Street. The magnitude of this shift was checked at two locations in the downtown area. The first location was between 20th Street and 12th Street, where both parallel routes are provided, and the second location was between 12th Street and 7th Street, where only one parallel route is provided along Applegate Street. In the first area, an average of 1,050, 1000, and 750 vehicles used College Street, Main Street, and Applegate Street, respectively.

These traffic volumes represent about 37%, 36%, and 27% of the total traffic moving through this section of the downtown area. In the second area, an average of 1,500 and 900 vehicles used Main Street and Applegate Street, respectively. These traffic volumes represent about 63% and 37% of the total traffic moving through this section of the downtown area.

Operations: Analyses of the traffic operations for existing signalized intersections and other critical unsignalized intersections were performed for this alternative. Results indicate the signalized intersections along Main Street, at 13th Street and 19th Street, will function sufficiently at LOS C and D, respectively. However, the operations of minor street movements at several unsignalized intersections will be insufficient with LOS E to F. These intersections include Main Street and 7th Street, Main Street and 9th Street, and 19th Street and College Street. It is possible to reach an acceptable LOS D at the intersection of 19th Street and College Street. This condition is also possible for the intersection of Main Street and 9th Street. However, the uneven spacing between this intersection and the existing signalized intersections at 13th Street and 19th Street, and the planned traffic signal at the Alsea Highway intersection, would inhibit good traffic signal progression along the highway. The estimated traffic operation for the intersection of Main Street and 7th Street with a traffic signal is LOS E. The poor level-of-service can be attributed to the estimated high volume of left-turn movements on the south approach of 7th Street.

Traffic operations for those remaining unsignalized intersections along Main Street, at 12th Street, 20th Street, and 21st Street, where the parallel routes of College Street and Applegate Street diverge from or merge into Main Street, are expected to be adequate (LOS D or better).

The v/c ratios along all sections of Main Street were analyzed for this alternative to determine resulting roadway operations. V/C ratios in excess of 0.85 are indications of a substandard level-of-service (LOS E to F). The analysis indicates a moderate but tolerable amount of congestion will exist between 12th Street and 19th Street, where v/c ratios will reach up to a maximum of 0.72. However, congestion will be considerably higher, east and west of this area. The corresponding v/c ratios along Main Street, or Highway 20/34, from 12th Street west past the Alsea Highway intersection, and from 19th Street east to the UGB exceed 0.85, representing an LOS of E to F.

Impacts: This alternative adds considerable amounts of traffic to both College Street and Applegate Street through residential areas. The two-way street alternative utilizes the capacity of the existing local street system and requires no additional right-of-way to be secured. However, this alternative cannot solve all the future congestion issues identified along Main Street (Highway 20/34), particularly east of 19th Street and west of 13th Street. This is due to the shortness in length and discontinuity of the proposed parallel routes of College Street and Applegate Street. These routes may divert some of the traffic off of Main Street for a distance of a few blocks, but where they reconnect into Main Street, bottleneaking of traffic will occur.

Future traffic operations at the unsignalized intersection of Main Street at 9th Street will be substandard, as will be the intersection of Main Street at 7th Street, even with a traffic signal installation.

Costs: The total estimated cost for this option is \$4.6 million. This includes roadway improvement costs of \$2.2 million and \$2.0 million along College Street and Applegate Street, respectively. It also includes costs associated with two traffic signal installations at Main Street and 7th Street and at 19th Street and College Street, each at an estimated cost of \$200,000 per signal. No right-of-way acquisition is necessary.

Recommendations: Since this option will not solve the future traffic congestion issues projected for Main Street (Highway 20/34), this option is not recommended as a permanent solution. However, this option fits as phase 1 of the Applegate/College/Main one-way couplet and as such is recommended. As a result, a traffic signal is recommended at 9th Street instead of 7th Street, as discussed in the following option.

Option 11. Establish a One-Way Couplet along Highway 20/34 Using College Street and/or Applegate Street (Recommended in 5 - 10 years)

This option involves establishing a one-way couplet through the city center of Philomath along Highway 20/34 (Main Street). The overall focus of this project is to mitigate the current and projected capacity deficiencies along the highway through town. A specific focus is to utilize the capacity of existing parallel roads such as College Street and Applegate Street, and to minimize the costs associated with major capacity improvements.

Both directions of travel along the one-way couplet would include two lanes of traffic, a striped bicycle lane on one side of the street, and on-street parking on both sides. A 25-mph design/operating speed was assumed along the proposed couplet alignment between 9th Street and 19th Street. Currently, the posted speed along the highway is 25 mph between 12th Street and 19th Street. Maintaining and extending this 25-mph design/operating speed to include an area between 9th Street and 19th Street may be desirable for several reasons.

First, the proposed couplet alignment will continue to traverse the central business district of the city where pedestrian activity is the highest. Slower travel speeds result in safer conditions for pedestrians. Second, as the city grows, more traffic will be accessing the highway from intersecting streets and driveways. Third, the couplet will traverse areas zoned for office and residential uses where 25 mph is an appropriate speed. Outside this area, a 35-mph design/operating speed was assumed between the western end of the couplet and 9th Street, and between 19th Street and the eastern end of the couplet. These areas will have little traffic demand on minor intersecting streets and driveways, which would enable traffic on the highway to move safely at higher speeds.

Four potential one-way couplet improvements have been identified by the TTSC for analysis. Factors taken into consideration when selecting couplet route alignments include: utilizing the reserve capacity of existing roads; minimizing the impacts to existing land usage; minimizing overall project costs; improving traffic circulation and street connectivity; and retaining community safety and livability. The four potential one-way couplet improvements are described and evaluated in the following paragraphs (Couplet Improvements 11A, 11B, 11C, and 11D).

Improvement 11A. College/Main/Applegate One-Way Couplet (Between the Railroad Crossing and Green Street)

Overview: This alternative establishes a one-way couplet beginning east of the railroad crossing on Highway 20/34 and ending at approximately Green Street. The description of connection locations may vary during the project development process as the designs are refined. In the eastbound direction, the one-way couplet includes a new roadway connection beginning east of the highway railroad crossing and proceeding to the west end of Applegate Street. The couplet then utilizes the existing alignment of Applegate Street east of 14th Street, where a new crossover roadway would proceed in a northeasterly direction and reconnect back into Main Street east of

15th Street. From there, the couplet continues along Main Street, ending at Green Street. In the westbound direction, the couplet includes a new roadway connection between the highway at Green Street, and proceeds to the east end of College Street. It then follows along College Street west of 13th Street, where it proceeds southwest along a new road to Main Street west of 12th Street. From there, the alignment continues along Main Street to the west end of the couplet (see Figure 6-2).

Several factors were considered when determining the proposed locations for the two street connections which cross between Applegate Street and Main Street and between College Street and Main Street. One factor included maximizing the use of vacant land available in the area. This was done through discussion with local residents, the inspection of aerial photographs, and a cursory field review. Another factor included minimizing the impact to existing land uses (building removal, including structures having historic value). Another factor considered was the assumed curvature and length of the proposed couplet crossovers. With the proposed street cross-section and assumed design speed of 25 mph for the highway, a minimum length of less than 400 feet was assumed for each crossover, spanning a distance of less than one standard city block.

It should be noted that although the main goal of this potential couplet improvement is to use the existing alignments of College Street and Applegate Street, sections of these roads designated to be a part of the couplet would need to be redesigned and reconstructed to ODOT highway standards. This is due, in part, to an insufficient base and pavement strength of these city streets for the expected highway traffic.

The couplet project also includes the proposed installation of five new traffic signals: one on 9th Street and Main Street, two along 13th Street at College Street and Applegate Street, and two along 19th Street at College Street and Main Street. The existing signal at 19th Street and Main Street will have to be reconstructed to facilitate one-way travel for eastbound traffic.

Other improvements within the couplet area include adding two-way stop control at all minor streets and driveways intersecting the one-way couplet, except where a traffic signal exists or is proposed. Stop-control may be used at the intersections on Main Street where it is not part of the couplet, including the current signalized intersection at 13th Street. Also included in this project will be signing and striping for the one-way couplet. Bus stops and street lighting should be considered as part of this project.

Traffic Projections: The one-way couplet will allow more traffic to flow freely through the city center along Highway 20/34 in the future. This will attract traffic away from other less attractive alternative routes, such as West Hills Road/9th Street which bypasses the downtown area, and redirect it onto the couplet.

A direct comparison between traffic projections for the No-Build scenario and this couplet alternative indicates a significant portion of the PM peak hour traffic will change routes. Approximately 400 vehicles westbound and 220 vehicles eastbound during the PM peak hour will shift from the West Hills Road/9th Street route to the two, more direct routes through the city, along West Hills Road/19th Street and Highway 20/34.

Operations: Establishing a one-way couplet through the city center of Philomath will reduce congestion considerably along Highway 20/34 in the area bounded by the couplet. Assuming a capacity of 2,000 vph exists for the two-lane one-way couplet, prospective v/c ratios for the PM peak hour along the couplet range between 0.43 and 0.79, indicating a moderate but acceptable level of congestion (LOS C to D).

Future traffic operations at each of the five proposed signalized intersections are estimated to operate at an acceptable LOS D or better. Results of the operations analysis for these intersections are located in Appendix E.

Based on future traffic projections, highway traffic operations west and east of the couplet will not, however, be adequate. Traffic demand will roughly double the street capacity on Highway 20/34 between the Alsea Highway and the west end of the proposed couplet. As a two-lane highway, this section of road will have a v/c ratio during

the PM peak hour of 1.71 in the westbound direction and 1.08 in the eastbound direction, indicating a LOS F rating. East of the couplet, traffic demand will exceed the highway's capacity to the eastern city limits. Volume-to-capacity ratios in this area will reach as high as 1.09 for the westbound traffic and 0.96 for the eastbound direction, also indicating a LOS F rating.

Future traffic projections also indicate a heavy level of congestion may exist during the PM peak hour along 19th Street, between College Street and Industrial Way, for the southbound direction. With traffic demand expected to reach 757 vehicles, a v/c ratio of 1.09 was calculated for southbound traffic. Although such a high v/c ratio may indicate an unacceptable level of congestion, actual congestion is expected to be less due to the functional characteristics of this particular section of 19th Street. Traffic on this road is essentially free-flowing since 19th Street has a three-lane cross-section, with a continuous left-turn lane and only one driveway over a distance of 2,000 feet. This suggests the assumed EMME/2 model capacity of 700 vph is actually higher, somewhere in the vicinity of 900 vph.

Impacts: The proposed alignment would require obtaining ROW in the two areas where the couplet is redirected onto another existing road, i.e., Applegate Street to Main Street and College Street to Main Street. This could include the removal and/or relocation of four historic homes for the connection between Applegate Street and Main Street, and one home for the connection between College Street and Main Street. ROW will also have to be acquired in the two vacant areas located at the west and east ends of the couplet. There may be environmental impacts on wetlands and the stream/natural area in the vicinity of Newton Creek near the east end of the couplet project.

The proposed alignment would also require closing and/or rerouting several streets along College Street, Main Street, and Applegate Street to provide good street connectivity, safe driving conditions, and efficient traffic flow.

Costs: The following table provides the estimated costs for constructing this one-way couplet.

TABLE 6-3
ESTIMATED COSTS FOR
COLLEGE/MAIN/APPLEGATE ONE-WAY COUPLET

| Improvement | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right- of-Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|---|------------------|---|---|--|--|---------------------------|-----------------------|
| <i>New Highway Connections</i> | | | | | | | |
| East end of couplet to East end of College St. | 1,200 | 0 | 46 | 0 | 60 | \$700,000 | \$1,600,000 |
| College St. west of 13th St. to Main St. west of 12th St. | 600 | 0 | 46 | 0 | 60 | \$700,000 | \$550,000 |
| Main St. west of 15th St. to Applegate St. west of 14th St. | 600 | 0 | 46 | 0 | 60 | \$700,000 | \$550,000 |
| West end of Applegate St. to west end of couplet | 1,200 | 0 | 46 | 0 | 60 | \$700,000 | \$1,100,000 |
| <i>Upgrade Existing Streets to Highway Standards</i> | | | | | | | |
| East end of College St. to west of 13th St. | 3,150 | 20 | 46 | 80 | 80* | \$0 | \$2,200,000 |
| West end of Applegate St. to west of 14th St. | 2,900 | 42 | 46 | 60 | 60* | \$0 | \$1,000,000 |
| <i>Five Traffic Signal Installations</i> | | | | | | | \$750,000 |
| Subtotal | | | | | | \$2,800,000 | \$7,750,000 |
| Total | | | | | | | \$10,550,000 |

*The proposed ROW width for College Street maintains the existing 80-foot width. The city owns the right of way along both College and Applegate streets. This right of way would be a substantial contribution from the city towards implementation of this project.

Recommendations: This project alone is not recommended because it would not correct all of the future capacity deficiencies identified along Highway 20/34 in Philomath. Additional improvements such as the ones identified in Improvement 11C must be implemented along with the proposed one-way couplet for the highway system to function at an acceptable level of service.

Improvement 11B. Main/Applegate One-Way Couplet (Between the Railroad Crossing and Green Street)

Overview: It should be noted that this one-way couplet route was proposed in 1959. The alignment of this couplet was designed to fully utilize Main Street for westbound traffic and Applegate Street for eastbound traffic. The west end terminus of the couplet is east of the railroad, with the east end near Green Street.

This alternative establishes a one-way couplet beginning east of the railroad crossing on Highway 20/34 and ending at approximately Green Street. The description of connection locations may vary during the project development process as the designs are refined. In the eastbound direction, the one-way couplet includes a new roadway connection beginning east of the highway railroad crossing and proceeding to the west end of Applegate Street. The couplet then utilizes the existing alignment of Applegate Street to approximately Green Street, where a new crossover roadway would proceed in a northeasterly direction and reconnect back into Main Street. In the westbound direction, the couplet follows the existing Highway 20/34 (Main Street) alignment.

It should be noted that although the main goal of this potential couplet improvement is to use the existing alignments of Main Street and Applegate Street, sections of Applegate Street designated to be a part of the couplet would need to be redesigned and reconstructed to ODOT highway standards. This is due, in part, to an insufficient base and pavement strength of this city street for the expected highway traffic.

The couplet project also includes the proposed installation of six new traffic signals: three on Main Street, at the intersections with 9th, 13th and 19th streets; and, three on Applegate Street, at the intersections with 13th, 15th, and 19th streets. The existing signal at 19th Street and Main Street will have to be reconstructed to facilitate one-way travel for eastbound traffic. The traffic signal on Applegate at 15th Street would be expected to be needed to provide for school crossings with this couplet project.

Other improvements within the couplet area include adding two-way stop control at all minor streets and driveways intersecting the one-way couplet, except where a traffic signal exists or is proposed. Also included in this project will be signing and striping for the one-way couplet.

Traffic Projections: The one-way couplet will allow more traffic to flow freely through the city center along Highway 20/34 in the future. This will attract traffic away from other less attractive alternative routes, such as West Hills Road/9th Street which bypasses the downtown area, and redirect it onto the couplet.

A direct comparison between traffic projections for the No-Build scenario and this couplet alternative indicates a significant portion of the PM peak hour traffic will change routes. Approximately 400 vehicles westbound and 220 vehicles eastbound during the PM peak hour will shift from the West Hills Road/9th Street route to the two, more direct routes through the city, along West Hills Road/19th Street and Highway 20/34.

Operations: Establishing a one-way couplet through the city center of Philomath will reduce congestion considerably along Highway 20/34 in the area bounded by the couplet. Assuming a capacity of 2,000 vph exists for the two-lane one-way couplet, prospective v/c ratios for the PM peak hour along the couplet range between 0.43 and 0.79, indicating a moderate but acceptable level of congestion (LOS C to D).

Future traffic operations at the proposed signalized intersections are estimated to operate at an acceptable LOS D or better. Results of the operations analysis for these intersections are located in Appendix E.

Based on future traffic projections, highway traffic operations west and east of the couplet will not, however, be adequate. Traffic demands will roughly double the street capacity on Highway 20/34 between the Alsea Highway and the west end of the proposed couplet. As a two-lane highway, this section of road will have a v/c ratio during the PM peak hour of 1.71 in the westbound direction and 1.08 in the eastbound direction, indicating a LOS F rating. East of the couplet, traffic demand will exceed the highway's capacity to the eastern city limits. Volume-to-capacity ratios in this area will reach as high as 1.09 for the westbound traffic and 0.96 for the eastbound direction, also indicating a LOS F rating.

Future traffic projections also indicate a heavy level of congestion may exist during the PM peak hour along 19th Street, between Main Street and Industrial Way, for the southbound direction. With traffic demand expected to reach 757 vehicles, a v/c ratio of 1.09 was calculated for southbound traffic. Although such a high v/c ratio may indicate an unacceptable level of congestion, actual congestion is expected to be less due to the functional characteristics of this particular section of 19th Street. Traffic on this road is essentially free-flowing since 19th Street has a three-lane cross-section, with a continuous left-turn lane and only one driveway over a distance of 2,000 feet. This suggests the assumed EMME/2 model capacity of 700 vph is actually higher, somewhere in the vicinity of 900 vph.

Impacts: ROW will have to be acquired in the two vacant areas located at the west and east ends of the couplet where the eastbound traffic is redirected to and from Applegate Street. There may be environmental impacts on wetlands and the stream/natural area in the vicinity of Newton Creek near the east end of the couplet project.

This one-way couplet project was mentioned at both community open houses but there was little support for it. Residents along Applegate do not want the additional traffic, including trucks. The TTSC also discussed this option and decided it was not a viable couplet project. The TTSC does not want additional highway traffic

passing by the schools as it would create safety concerns for students at the elementary and high schools. There would also be other compatibility concerns with the schools, such as additional noise and the other impacts of large vehicles adjacent to the schools.

Costs: The following table provides the estimated costs for constructing this one-way couplet project.

**TABLE 6-4
ESTIMATED COSTS FOR
MAIN/APPLEGATE ONE-WAY COUPLET**

| Improvement | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right- of-Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|---|------------------|---|---|--|--|---------------------------|-----------------------|
| <i>New Highway Connections</i> | | | | | | | |
| East End of Couplet to Applegate St. | 1,200 | 0 | 46 | 0 | 60 | \$700,000 | \$1,100,000 |
| West End of Applegate St. to West End of Couplet | 1,200 | 0 | 46 | 0 | 60 | \$700,000 | \$1,100,000 |
| <i>Upgrade Existing Streets to Highway Standards</i> | | | | | | | |
| West End of Applegate St. to East End Couplet Connection. | 6,000 | 42 | 46 | 60 | 60 | \$0 | \$2,200,000 |
| Main St. Improvements | 2,800 | 42 | 46 | 80 | 80 | \$0 | \$1,000,000 |
| <i>Six Traffic Signal Installations</i> | | | | | | | \$1,000,000 |
| Subtotal | | | | | | \$1,400,000 | \$6,400,000 |
| Total | | | | | | | \$7,800,000 |

Recommendations: This project is not recommended based on the lack of public support and the impacts on schools.

Improvement 11C. One-Way Couplet With Additional Capacity Improvements

Overview: This project includes the proposed one-way couplet (Improvement 11A) plus additional capacity improvements along Highway 20/34 within and just outside the UGB of Philomath. The first additional capacity improvement includes widening Highway 20/34 to four lanes, between the Alsea Highway intersection and the west end of the proposed couplet, with left-turn bays. It will also include reconstructing and widening the current railroad crossing on the highway. The second additional improvement includes widening the highway to four lanes between the east end of the proposed couplet and the east UGB, with left-turn bays at one or more intersections (possibly at 24th Street, 26th Street, Newton Street, or Clemens Mill Road). Raised medians may be installed with openings at the left turn bays. Both improvements include the addition of bicycle lanes.

These additional capacity improvements were designed to address future capacity deficiencies in the highway system west and east of the proposed couplet, as identified in Improvement 11A.

Traffic Projections: The street improvements identified in this alternative will facilitate the movement of more through traffic along Highway 20/34 in Philomath, with less traffic using other alternative east-west routes. A direct comparison of projected PM peak hour traffic volumes between the proposed original one-way couplet alternative (Improvement 11A) and this alternative for the section of highway near the east city limits indicates an increase of 400 vehicles in the westbound direction and 270 vehicles in the eastbound direction. Most of this

traffic was diverted from the alternative east-west routes along West Hills Road to 9th Street and 19th Street, and Plymouth Drive to Chapel Drive and 26th Street. Traffic volumes west of the proposed couplet will not change as Highway 20/34 is the only primary connection to the west.

Traffic Operations: With the establishment of a one-way couplet and the additional capacity improvements east and west of the couplet, future traffic operations along Highway 20/34 through Philomath are expected to meet minimum operating standard requirements. Volume-to-capacity ratios for the PM peak hour along the highway are not expected to exceed 0.85, which is the threshold point between LOS D and E. It should be noted that the EMME/2 traffic model estimated a v/c ratio of 0.92 along a section of the couplet between 15th Street and 17th Street for the westbound direction. From close inspection of the EMME/2 model, it was determined that future traffic volumes along this section of road will actually be lower. This error was due to the limitations of the EMME/2 street network, where not all of the intersecting local roads could be represented in the model.

Traffic operations at the proposed signalized intersections will operate sufficiently at a LOS of C to D or better with the construction of a one-way couplet and the additional capacity improvements.

Future traffic projections also indicate a heavy level of congestion may exist during the PM peak hour along 19th Street, between College Street and Industrial Way, for the southbound direction. With traffic demand expected to reach 725 vehicles with an hourly capacity of 700 vph assumed in the EMME/2 traffic model, a v/c ratio of 1.04 was calculated for southbound traffic. Although such a high v/c ratio may indicate an unacceptable level of congestion, actual congestion is expected to be less due to the functional characteristics of this particular section of 19th Street. Traffic on this road is essentially free-flowing since 19th Street has a three-lane cross section, with a continuous left-turn lane, and only one driveway over a distance of 2,000 feet. This suggests the assumed model capacity of 700 vph is too low, and should be higher (somewhere in the vicinity of 900 vph).

Impacts: Most impacts related to the proposed additional capacity improvements with the one-way couplet are similar to those of Improvement 11A with a considerable amount of traffic shifted off of local streets. Exceptions are that additional ROW will be necessary to widen Highway 20/34 between the Alsea Highway and the west end of the couplet. Also, the city must coordinate plans for this project with the county and ODOT, since a portion of this project falls outside the city's UGB (between the west UGB and Alsea Highway).

The existing rail line crossing Highway 20/34 is privately owned. The city would need to confer with ODOT officials and the private owner of the rail line about plans to reconstruct and widen the existing railroad crossing.

No additional ROW is needed for widening Highway 20/34 between the east end of the couplet and the east UGB. However there could be some wetlands impacts in this section.

Costs: The following table summarizes the estimated costs for development of the one-way couplet (Improvement 11A) with additional capacity improvements (Improvement 11C) along Highway 20/34.

TABLE 6-5
ESTIMATED COSTS FOR ONE-WAY COUPLET IMPROVEMENT 11A
WITH ADDITIONAL CAPACITY IMPROVEMENTS 11C

| Improvement | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right-of- Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|---|------------------|---|---|--|--|---------------------------|-----------------------|
| One-Way Couplet (11A)* | | | | | | \$2,800,000 | \$7,750,000 |
| Additional Capacity Improvements (11C) | | | | | | | |
| <i>Widen Highway to Four Lanes and Median</i> | | | | | | | |
| From Alsea Highway to West End of Couplet | 800 | 36 (used) | 72 | 60 | 90 | \$300,000 | \$450,000 |
| <i>Widen Highway to Four Lanes & Median</i> | | | | | | | |
| From East End of Couplet to Country Club Rd. | 4,000 | 36 (used) | 72 | 80 | 100 | \$800,000 | \$2,150,000 |
| Reconstruct Railroad Crossing | | | | | | | \$700,000 |
| Subtotal | | | | | | \$3,900,000 | \$11,050,000 |
| Total | | | | | | | \$14,950,000 |

*Cost estimates for the one-way couplet includes five proposed traffic signals.

Recommendations: This street improvement project is recommended based on its ability to mitigate all future capacity deficiencies projected along Highway 20/34 in Philomath and to accommodate the travel demands.

Improvement 11D. Extended One-Way Couplet to the West

Overview: This potential improvement is a variation of the proposed one-way couplets (Improvements 11A or 11B). It includes extending the one-way couplet west of the Alsea Highway before merging together at the existing US Highway 20. In the westbound direction, the extended couplet would follow the existing alignment of Highway 20/34. In the eastbound direction, traffic would follow a new highway connection beginning approximately 1,000 feet west of the current intersection of the Alsea Highway and US Highway 20. This connection would create a new intersection with the Alsea Highway and continue east to the west end of Applegate Street. A new railroad crossing would be necessary at one point along the new connection.

Traffic Projections: The traffic volumes projected for this couplet extension improvement are similar to the other one-way couplet improvements (11A & 11B). However, with the couplet extended further west, westbound traffic would now flow along the two existing lanes of Highway 20/34 with eastbound traffic flowing along the new highway connector.

Traffic Operations: Projected traffic operations along all major streets will be similar to conditions projected under the first one-way couplet improvement 11A except in the vicinity where the couplet extends further west. With westbound traffic now utilizing both existing lanes along Highway 20/34, v/c ratios in this area are expected to reach 0.67. Along the new highway connector for eastbound traffic, v/c ratios are estimated to reach 0.43.

The projected traffic operations for the signalized intersections proposed in the one-way couplet improvements 11A or 11B will not be affected by the couplet extension. Traffic operations at these intersections are expected to remain at LOS D or better.

Additional operations analyses were performed at the two intersections where the extended couplet at US Highway 20 intersects the Alsea Highway. These intersections were analyzed using stop control on the minor

approaches to Highway 20. The results indicate a LOS D would exist at the north intersection and a LOS E to F would exist at the south intersection for through movements.

Impacts: This improvement would have impacts similar to the one-way couplet improvements 11A or 11B with additional impacts related to the couplet extending further to the west. Additional ROW will be necessary along the new highway connection south of the existing Highway 20/34. Also, the proposed alignment for the new highway connection crosses over a rail line and traverses directly through a wood products mill on the southeast corner of the US Highway 20 and Alsea Highway intersection. As a result, it is expected that the adverse economic impacts of this alternative would not be acceptable.

Costs: The following table summarizes the estimated costs for development of the extended one-way couplet system.

**TABLE 6-6
ESTIMATED COSTS FOR EXTENDED ONE-WAY COUPLET TO THE WEST**

| Improvement | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right- of-Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|---|------------------|---|---|--|--|---------------------------|-----------------------|
| <i>One-Way Couplet*</i> | | | | | | \$2,800,000 | \$7,750,000 |
| <i>New Highway Connections</i> | | | | | | | |
| West end of Applegate St. to west end of extended couplet | 3,200 | 0 | 46 | 0 | 60 | \$1,900,000 | \$2,200,000 |
| <i>Railroad Crossing</i> | | | | | | | \$700,000 |
| Subtotal | | | | | | \$4,700,000 | \$10,650,000 |
| Total | | | | | | | \$15,350,000 |

*The projected cost for the one-way couplet includes the five proposed traffic signals.

Recommendations: Based on the ROW costs, negative economic impacts, and the difficult railroad crossing impacts (new crossing), this option is not recommended.

***Option 12. Widen Highway 20/34 to Five Lanes (Between Railroad Crossing and Green Street)
(Not Recommended)***

Overview: This street improvement option was developed to address the current and future street capacity deficiencies identified along Highway 20/34 in Philomath with improvements made only to the existing highway. It includes widening the highway to five lanes, with a continuous left-turn lane between the railroad crossing and the east end of the proposed one-way couplet near Green Street. Bicycle lanes and sidewalks are proposed along the entire project limits, also the addition of on-street parking on both sides of the highway from the west city limits to Green Street. A typical curb-to-curb street width for a highway such this one would be 72 feet without on-street parking and 88 feet with on-street parking. These widths are considerably larger than the existing street widths, which are 48 feet or less.

This project also assumes the installation of two new traffic signals on Highway 20/34, at the Alsea Highway intersection, and at 9th Street. Good traffic progression in both directions would not be achievable with these signals on a two-way street. The evaluation of the 2016 No-Build scenario indicates that traffic signals are necessary at these two locations due to increased traffic flow along the highway. With the highway widening, the two existing traffic signals at 13th Street and 19th Street would also have to be reconstructed.

Traffic Projections: A direct comparison of projected traffic volumes between this alternative and the No-Build scenario indicates more drivers will use the widened portion of Main Street through the center of town with less reliance on other east-west routes, such as West Hills Road to 9th Street and Chapel Drive to 13th Street. For the PM peak hour, traffic volumes are expected to increase along the highway east of 9th Street by 430 vehicles in the westbound direction and 200 vehicles in the eastbound direction. The most significant increases are expected west of 19th Street where traffic will increase by 530 and 320 vehicles for the same directions.

The traffic volume comparison does not show a significant increase in traffic on the highway east of 19th Street. Delays are expected to be heavy in this area as demand will exceed the highway's capacity (currently there is only one lane in each direction). Therefore, drivers will continue to rely heavily on the 19th Street/West Hills Road route to and from Corvallis, as in the No-Build scenario.

Traffic Operations: Traffic operations along the widened portion of Highway 20/34 are expected to be acceptable, with PM peak hour v/c ratios reaching a maximum value of 0.87 westbound and 0.73 eastbound, in the town center. However, capacity deficiencies will still exist, east of the proposed improvement near 26th Street, where v/c ratios are projected to reach 1.07 for westbound traffic and 0.95 for eastbound traffic.

PM peak hour traffic operations at the two proposed and two reconstructed traffic signals along Main Street are projected to maintain a LOS D or better. Analysis of these intersections assumed optimal lane configurations and signal phasing to achieve the best possible LOS. Impacts on 19th Street for this option are similar to the previously discussed options with southbound PM peak traffic volumes near capacity.

Impacts: Widening Highway 20/34 through Philomath would require the city and ODOT to secure additional ROW west of the city limits, where the existing ROW is 60 feet. In order to construct a five-lane road without parking and with bicycle lanes and sidewalks, a minimum ROW of 90 feet would be necessary. In the town center, between 7th Street and 19th Street, the existing ROW is 80 feet. If on-street parking, wide sidewalks (10 feet) and/or planting strips are desired in this area, which is typical for a main street arterial, a minimum ROW width of over 100 feet would be necessary. Such a ROW width may be difficult and prohibitively expensive (both monetary and livability impacts) to obtain along Main Street. At a minimum, all existing buildings on one side of Main Street through the downtown would require removal.

Most of the commercial activity in Philomath is along or around Main Street, between 7th Street and 19th Street. There are on-street parking and planting strips in some areas providing a buffer between moving cars and pedestrians. By establishing a five-lane facility along Main Street, the environment would be less conducive to the needs of pedestrians. It may not be practical to maintain on-street parking and planting strips with the wider ROWs associated with constructing five traffic lanes. Pedestrian safety may decline from the lack of these buffers as sidewalks may be placed adjacent to moving traffic. Also, crosswalk lengths will be longer as the number of travel lanes a pedestrian will have to cross increases from three to five, along with the additional width for bike lanes and on-street parking. This distance may be unacceptable and unsafe for crossings at unsignalized intersections. These factors may be overly detrimental to the economy and livelihood of the town center.

Costs: The following table summarizes the estimated costs for widening Highway 20/34 to five lanes.

**TABLE 6-7
ESTIMATED COSTS TO WIDEN HIGHWAY 20/34
TO FIVE LANES IN PHILOMATH**

| Improvement | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right- of-Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|---|------------------|---|---|--|--|---------------------------|-----------------------|
| <i>Widen Highway to Five Lanes</i> | | | | | | | |
| Alsea Highway to West City Limits | 1,900 | 36 (used) | 72 | 60 | 90 | \$600,000 | \$1,100,000 |
| West City Limits to 19th St. | 5,000 | 48 | 88 | 80 | 100 | \$4,000,000 | \$5,600,000 |
| 19th St. to East End of Proposed Couplet | 1,700 | 24 (used) | 88 | 80 | 100 | \$300,000 | \$1,600,000 |
| <i>Four Traffic Signal Installations</i> | | | | | | | \$800,000 |
| Subtotal | | | | | | \$4,900,000 | \$9,100,000 |
| Total | | | | | | | \$14,000,000 |

Recommendations: Although this project would mediate the capacity deficiencies identified along Main Street, this project is not recommended because of several negative impacts. Widening Main Street to five lanes (88 feet) would not be acceptable for pedestrians either to walk along the highway or to cross it. This would be detrimental to the economy and livelihood of the town center.

***Option 13. Extend West Hills Road to the US Highway 20/Alsea Highway Intersection
(Recommended beyond 20-year plan)***

Overview: Another possible solution to mitigate future capacity deficiencies identified along Main Street would be to extend West Hills Road to the US Highway 20/Alsea Highway intersection. This new road connection would be mostly in the City of Philomath and would allow traffic to bypass the city center. A similar road connection was shown in a draft of the Benton County TSP. It is expected that this road would be a collector street under city and/or county jurisdiction. A bypass option identified but not evaluated as part of this TSP included a bypass north of Philomath providing a new connection between the city of Corvallis and US Highway 20/Kings Valley Highway near the city of Wren. This option was excluded under the assumption that the West Hills Road extension option would achieve results similar, if not better, than a bypass route further north of the city in terms of relieving congestion along Main Street in Philomath. The West Hills Road extension would also provide direct access to the Alsea Highway.

The West Hills Road option involves extending West Hills Road to the US Highway 20/Alsea Highway intersection, establishing a new route around the town center of Philomath. The goal of this roadway extension is to provide better road connectivity that will relieve future congestion along Highway 20/34 on Main Street while maximizing the utilization of existing roads, i.e., West Hills Road.

It was assumed that the West Hills Road extension would function as a major collector street for the city with a width of 40 feet to include two lanes of traffic and shoulders striped for bicycle lanes. A design/operations speed of 45 mph and a directional peak hour capacity of 1,000 vph were assumed. These design characteristics were selected to represent future urban controlled access conditions along this road when developments have been built along this road.

The project begins at the intersection of West Hills Road and 19th Street where the intersection will be realigned and a traffic signal installed. The proposed alignment then proceeds west along an existing section of West Hills

Road, about 2,500 feet in length. This section of existing road will need to be widened from 20 feet to 40 feet. From this point, a new roadway will proceed to the southwest over open land for about 1,800 feet, where it will reconnect with and continue along another existing portion of West Hills Road, about 500 feet in length. Another new roadway, approximately 4,800 feet long, will extend further to the southwest where it will connect into the north side of the intersection of US Highway 20 and OR Highway 34. A traffic signal will also be necessary at this intersection.

Traffic Projections: Analysis between the future No-Build and West Hills Road extension scenarios indicates PM peak hour traffic will be reduced along Highway 20/34 by about 49 percent east of the Alsea Highway intersection, 20 percent east of 9th Street, and only two percent east of 19th Street. Future (2016) traffic volumes along the new West Hills Road extension are expected to range between 700 and 870 for the westbound direction, and 380 and 460 in the eastbound direction.

Traffic Operations: Even with the proposed West Hills Road extension, traffic operations are expected to remain poor, particularly in the downtown area, if No-Build conditions exist along Highway 20/34. PM peak hour v/c ratios will still reach unacceptable levels in the future along the highway, i.e., east of 9th Street (0.94 westbound and 0.73 eastbound), west of 19th Street (1.14 westbound and 1.10 eastbound), and east of 26th Street (0.99 westbound and 0.83 eastbound). This means that there would be considerable traffic delay and traffic operations would not meet acceptable LOS standards.

Traffic operations at the proposed four-way traffic signal where West Hills Road will connect with the Alsea Highway/US Highway 20 intersection are projected to reach LOS C. Traffic operations at the other two existing traffic signals in town along Main Street at 13th and 19th Street will be at LOS C to D, and D to E, respectively. Poor traffic operations will result at the existing unsignalized intersection of Main Street and 9th Street, particularly for the southbound and northbound movements (LOS F). A traffic signal would still be necessary at this intersection even with the proposed West Hills Road extension.

Impacts: Extending West Hills Road would require the cooperation between the city and county to secure the needed ROW along the proposed 1.8-mile alignment. Also, a portion of this project, about 30 percent, falls outside the city's UGB, which could require both jurisdictions to pursue an exception to the statewide planning goals when amending their comprehensive plans to include this project. Other impacts include possible environmental concerns where the southwestern section of the proposed alignment will traverse over hilly terrain. There are no expected historic property impacts.

Costs: The following table summarizes the estimated costs for extending West Hills Road to the US Highway 20/Alsea Highway intersection.

**TABLE 6-8
ESTIMATED COSTS FOR THE**

| WEST HILLS ROAD EXTENSION | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right- of-Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|--------------------------------------|--------------------------|---|---|--|--|------------------------------------|-------------------------------|
| Improvement | | | | | | | |
| New Roadway Connections | 1,800 | 0 | 40 | 60 | 60 | \$0 | \$700,000 |
| | 4,800 | 0 | 40 | 0 | 60 | \$1,450,000 | \$1,900,000 |
| Upgrade Existing Road | 2,500 | 20 | 40 | 60 | 60 | \$0 | \$1,000,000 |
| | 500 | 20 | 40 | 40 | 60 | \$50,000 | \$250,000 |
| Railroad Crossing | | | | | | | \$700,000 |
| Two Traffic Signal Installations | | | | | | | \$400,000 |
| Subtotal | | | | | | \$1,500,000 | \$4,950,000 |
| Total | | | | | | | \$6,450,000 |

Recommendations: This option is not recommended for implementation as a road construction project within the 20-year planning period. The improvements identified and recommended in Options 10, 11A, and 11C are expected to delay the need for this collector road. However, the city and county should reserve the ROW along the proposed alignment and have portions of the road constructed as development occurs. The West Hills Road extension will be needed to provide for transportation beyond the 20-year planning period when traffic demands are again expected to exceed the capacity on Highway 20/34 in Philomath. This option is shown as part of the future street network in Philomath. It would serve as a future partial bypass and truck route and at the same time provide for better transportation system connectivity in Philomath. This option is also included to be consistent with the draft Benton County TSP.

***Option 14. Extend Applegate Street Over Newton Creek (Newton Creek Bridge)
(Recommended in 0-5 years)***

Overview: This project addresses the public's concern about a new roadway connecting Applegate Street between 23rd Street and 24th Street, over Newton Creek. Currently, drivers traveling between the city center and the residential neighborhoods south of Highway 20/34 and east of Newton Creek are limited to two routes: a somewhat indirect and short route along the highway, or an indirect and long route along Chapel Drive. By providing a connection along Applegate Street, a more direct route between the two areas will be established.

This project would include the construction of a 75-foot bridge over Newton Creek with 50-foot connections at each end to connect with Applegate Street. The estimated width of this bridge is approximately 48 feet, which is wide enough to handle two lanes of traffic, bike lanes, and six-foot sidewalks. The estimated street width of the new approaches to the bridge is around 36 feet to allow two lanes of traffic and bike lanes. Five-foot sidewalks should also be provided on both sides of these approaches.

Traffic Projections: A direct comparison between the PM peak hour volumes projected for the Applegate Street connection and the No-Build scenario indicate that approximately 250 vehicles in the westbound direction and 300 vehicles in the eastbound direction will use the new Newton Creek bridge. Much of this traffic would otherwise use the highway to the north, also Chapel Drive to the south.

Traffic Operations: With the Applegate Street connection in place, drivers making left turns from the minor street approaches along the highway at Green Street, 24th Street, 26th Street, and Newton Street would choose an easier route along Applegate Street. Future PM peak hour traffic operations for left-turn movements at each of these intersections is estimated to be at LOS D with long delays.

Access management measures could be instituted at these intersections along the highway to encourage driver usage of Applegate Street, such as allowing only right-in and right-out movements.

Impacts: The new Applegate Street connection would improve the safety and convenience for local drivers who would otherwise access the highway. This connection is an important piece in linking the eastern residential neighborhoods to the rest of the city. It also improves the street connectivity and grid system of the city. There may be some natural area/wetland impacts near Newton Creek.

The city currently owns the right-of-way along the Applegate Street alignment.

Currently, a multi-use path crosses over Newton Creek in the vicinity of the proposed bridge. The new connection would include new bike lanes and sidewalks in place of this pathway.

Costs:

| | |
|--|------------------|
| 75' x 48' Bridge | \$450,000 |
| <u>Two Street Approaches @ 50' x 36'</u> | <u>\$150,000</u> |
| Total | \$600,000 |

Cost estimates for this project assume a 40 percent engineering and contingencies fee. The estimate for the street approaches also includes costs for sidewalks.

Recommendations: This project is recommended to remove local intracity traffic along Highway 20/34 and to improve access between the residential neighborhoods in the eastern part of the city and the town center for Philomath residents.

Option 15. Extend 13th Street and Construct a New Road Between Industrial Way and 13th Street (Not Recommended as project in the current Philomath TSP)

Overview: This project would provide a connection between the east-west road of Industrial Way and the north-south road of 13th Street. The proposed alignment would extend Industrial Way about 1,600 feet to the west and extend 13th Street around 1,900 feet to the north, with possible connections at Houser Lane, Adams Street, and Monroe Street.

The existing dead-end section of Industrial Way provides access to industrial land uses, such as the mill on the south side of Industrial Way west of 19th Street. The existing dead-end section of 13th Street provides access to a residential area. This new connector road would be constructed to collector street standards to serve both types of land uses.

Traffic Projections: Because of anticipated delays in the future along Main Street between 13th Street and 19th Street, the PM peak hour traffic projections indicate a considerable amount of traffic will use the new Industrial Way/13th Street connector. Traffic volume output shows a maximum of 410 vehicles heading west and south along the new road and 360 vehicles heading north and east. Most of this traffic would otherwise use 19th Street and Main Street to access or traverse the downtown area.

Traffic Operations: The traffic volume projections indicate that high levels of traffic accessing Industrial Way from 19th Street would necessitate a traffic signal installation at this intersection.

Impacts: The connection would allow residents from the neighborhoods north of Main Street and west of 13th better access to 19th Street. It would also enhance the existing grid system of the city and create good connections with existing local streets and other local roads planned for the future. Access would also be improved with this connector. The land for the new road sections is vacant.

Negative impacts would be expected for residences along the route due to increased traffic and noise..

Costs:

| | |
|-------------------|-------------|
| Roadway Cost | \$2,500,000 |
| Right-of-Way Cost | \$1,000,000 |
| Total | \$3,500,000 |

The total cost for this project is estimated at \$3,500,000. Project cost estimates assume a two-lane roadway around 3,500 feet in length and 48 feet wide, with bike lanes, on-street parking, and sidewalks on both sides of the street. The total roadway construction cost is estimated at \$2,500,000. The right-of-way cost is estimated at \$1,000,000 based on a 60-foot minimum width.

Recommendations: This project is expensive with no funding source and is not recommended as a project to be implemented as part of the current TSP. There are expected access benefits and some challenges with the negative residential impacts. It is recommended that the ROW be reserved and additional sections of this road network be constructed as development occurs. This road network should be included in the future street classification map for Philomath.

***Option 16. Construct New Roads Connecting 26th Street to West Hills Road and Chapel Drive.
(Not Recommend as project in the current Philomath TSP)***

Overview: This project includes two new roadway connections between West Hills Road and Chapel Drive along an alignment following 26th Street. The southern connection is between Chapel Drive and the south end of 26th Street (2,700 feet in length). There are two alternatives for the northern connection. Alternative A would extend 26th Street at the highway due north along the existing dirt road and between the two logging ponds maintained by one of the mills in Philomath to connect with West Hills Road west of a creek (5,400 feet in length). Alternative B would extend 26th Street at the highway north and then northeast to overlap Clemens Mill Road. It would end with a connection to West Hills Road directly across from Reservoir Avenue (6,100 feet in length).

Both options assume a two-lane roadway with bicycle lanes and sidewalks and a minimum ROW width of 60 feet. On-street parking on both sides of the street was assumed for the south connection but not for either of the north connections since the southern area is zoned for residential use and the northern area for industrial use.

Traffic Projections: The proposed street connection will essentially remove a minor amount of traffic (73 PM peak hour vehicles in the northbound direction and 147 vehicles in the southbound direction) that would otherwise use the West Hills Road/19th Street route to and from Philomath.

This project would not change the amount of traffic and congestion projected in the downtown area along Main Street in the future.

Operations: Traffic operations along Main Street and at critical intersections in the downtown area of Philomath are not expected to change relative to the No-Build scenario.

Impacts: Cooperation would be necessary between the city and the county to develop both the north and south street connections. The alignments for both connections pass over relatively open land outside the city limits but inside the UGB.

The south connection would serve as a primary connector to future residential developments. It also would expand the grid system of the city.

Alternative A of the north connection would pass over open land zoned for industrial use. Environmental considerations may be necessary in the vicinity of the logging ponds.

The proposed alignment of Alternative B of the north connection passes through the Pacific Softwoods Mill logging facility south of the railroad. The access to this facility would have to be retrofitted to the new street connector.

Both options for the north connection would provide an alternative access to Highway 20/34 from the industrial site located along Clemens Mill Road (see Option 6). These two north connection options may also have wetland impacts.

Costs: The following cost estimates for the south and north connections take into account the costs associated with drainage, curbs and sidewalks, signing, and a 40 percent engineering and contingencies fee.

| | |
|--------------------------|------------------|
| South Connection | |
| Roadway Cost | \$3,240,000 |
| <u>Right-of-Way Cost</u> | <u>\$810,000</u> |
| Total | \$4,050,000 |

| | |
|-------------------------------------|--------------------|
| North Connection (Alternative A) | |
| Roadway Cost | \$4,590,000 |
| <u>Right-of-Way Cost</u> | <u>\$1,620,000</u> |
| Total | \$6,210,000 |

| | |
|--------------------------|------------------|
| (Alternative B) | |
| Roadway Cost | \$5,185,000 |
| <u>Right-of-Way Cost</u> | <u>\$675,000</u> |
| Total | \$2,970,000 |

Recommendations: There is no funding source identified and the projects are not a high enough priority to include as a TSP project. The expected traffic impacts were not substantial and wetlands may be impacted. However, the project would provide for better local access and street connectivity. Based on the impacts, it is recommended that the south connection of 26th Street to Chapel Road and Alternative B (the north connection along Clemens Mill Road) be included on the future street classification map for Philomath. ROW should be reserved as development occurs.

Option 17. Construct New Roads Connecting 71st Street to West Hills Road, and Mt. Union Avenue(Bellfountain Extension) (Not Recommended as project in the current Philomath TSP)

Overview: This project includes a new street connection east of Philomath along 71st Street in Corvallis. Even though the road is outside of Philomath it would provide better connectivity for the area transportation system. The street connection would extend northeast and then north from Mt. Union Avenue to West Hills Road; it is approximately 8,000 feet in length. Depending on the final alignment the project could create an additional crossing at Highway 20/34. The main goal for establishing a road at this location is to relieve future congestion along the highway by providing a route that links West Hills Road with Plymouth Drive/Chapel Drive (via Mt. Union Avenue)—two alternative routes to using the highway. This would serve as an alternate route for truck traffic on Bellfountain Road. It was assumed this roadway would function as a rural collector and would be designed as a two-lane roadway, 36 feet wide, and have a design/operating speed of 45 mph.

Traffic Projections: The traffic forecast for this new connection indicates the north section of 71st Street, from Highway 20/34 to West Hills Road, would not attract many drivers. PM peak hour volume projections for the year 2016 show only 170 vehicles in the southbound direction and 90 vehicles in the northbound direction. However, the southern section is expected to experience heavier traffic demand during the same time period at an estimated 300 vehicles in the southbound direction and 260 vehicles in the northbound direction.

Traffic Operations: This new connection would not improve the street or intersection deficiencies identified in the No-Build scenario.

Impacts: The proposed alignment is located primarily over open farmland and could utilize the ROW along several gravel roads. The proposed location of this roadway is outside the UGB of Philomath and partly inside the city limits of Corvallis. Therefore, this project would properly be addressed by city of Corvallis and Benton County officials in their TSPs. The proposed project has minimal traffic impacts in Philomath. It could attract some truck traffic away from the city.

It was determined by the TTSC that an extension of Mt. Union Avenue to Highway 20/34 would not be a feasible connection to Bellfountain Road because of the topographical features of the area and the current use of Mt. Union Avenue as a local neighborhood street. Also, the TTSC does not want to encroach on the cemetery located on the east side of Mt. Union Avenue with new road construction. Therefore, an alignment further to the east was proposed which is outside the city's UGB. The draft Benton County TSP also shows an alignment to the east outside the City of Philomath.

Costs: The following cost estimates for the 71st Street connection take into account the costs associated with drainage, curbs and sidewalks, signing, and an engineering and contingencies fee.

| | |
|--------------------------|--------------------|
| Roadway Cost | \$6,000,000 |
| <u>Right-of-Way Cost</u> | <u>\$1,600,000</u> |
| Total | \$7,600,000 |

Recommendations: This project is not recommended for the City of Philomath transportation project list during the next 20 years since traffic benefits for the City of Philomath are expected to be low on the north connection and the project cost is \$7,600,000. There would be some expected benefits for truck traffic on Bellfountain Road. This project lies outside the Philomath UGB and would be more appropriate for the city of Corvallis and or Benton County to include in their TSPs. However, since this project has future expected benefits and provides a missing link in the street grid it is also recommended to be shown on the future Philomath street network to be consistent with the draft Benton County TSP.

Bicycle Improvement Options

The City of Philomath developed the *Master Philomath Bike Path and Trails Plan* in 1994 identifying 11 improvement projects aimed at increasing bicycle connectivity throughout the city. None of the improvement projects have been implemented to date. Some of the identified projects are associated with proposed roadway improvements or new roadways, while others involve improvements along existing roadways or involve new pathways. These and other projects were evaluated to develop a list of potential bike improvements. A total of 16 improvement options have been identified and are illustrated in Figure 6-4. Not all of these projects have been recommended over the 20-year planning period (See Chapter 7 - Bicycle Plan). The identified bicycle improvement options fall into three categories: (1) new roadway or roadway improvement options, (2) new or extended multi-use path improvement options, and (3) stand-alone bicycle improvement options not associated with identified roadway improvements.

According to the *Draft Benton County TSP*, all new roads, whether under state, county, or city jurisdiction, will include bike lanes. Roadway widening projects on state highways and county roadways will also provide for bicycle/pedestrian paths on shoulders.

Based on these guidelines, bicycle improvements (primarily bike lanes) were included in the new and improved roadway options evaluated previously in this chapter. Bicycle improvements associated with these roadway improvement options are listed, but not evaluated, in this section. Although multi-use path improvement options support bicycle use, these options are evaluated in the subsequent section on pedestrian improvement projects. Therefore, only those remaining bicycle improvement options not associated with identified roadway improvements are evaluated in detail in this section.

Bicycle Improvements Associated with Identified New Roadway Projects

Overview: The street improvements listed previously in this chapter are larger scale projects designed to dramatically enhance the local street system in Philomath. They address specific major capacity, operations, and accessibility issues that currently exist or are expected to exist in the future. These roadway projects have provisions for developing bike and pedestrian facilities in the form of sidewalks, bike lanes, and/or multi-use paths.

The following bicycle projects have been identified in association with potential roadway improvements that involve construction of new roads or major redevelopment of existing roads. Some of these projects have been identified in the *Master Philomath Bike Path and Trails Plan*.

All potential bicycle improvement options associated with new roadway projects are shown graphically on Figure 6-4.

1. Add bike lanes to the proposed North 13th Street extension/Industrial Way connection between Main Street and 19th Street. Alternatively, improve 9th Street by adding bike lanes from Main Street to West Hills Road
2. Add bike lanes to Highway 20/34, College Street, and Applegate Street within the city limits as part of the projects selected (Options 10, 11, and/or 12).
3. Add bike lanes along potential 71st Street (Bellfountain) extension from Mt. Union Avenue to West Hills Road (Benton County TSP).
4. Add bike lanes to potential West Hills Road extension westbound to Highway 20/Alesea Highway intersection.
5. Add bike lanes to potential 26th Street extension between Chapel Drive and West Hills Road.

Impacts: Bike lanes provide an increased sense of safety and connectivity for users due to the provision of a clearly defined ROW that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed when passing bicyclists that are traveling in a separated and well-designed bike lane. This is not to say that motorists should not continue to pass bicyclists with caution, however they should feel more comfortable driving at the posted speed with bicyclists better separated from the traffic stream.

Costs: The cost of bicycle improvements along these potential roadway improvement projects was figured into the unit costs used to develop the overall project costs. However, a typical unit cost applied to construct six-foot asphalt bike lanes along an existing roadway, including ROW and engineering costs, is approximately \$130 per linear foot. This cost can be significantly reduced if bike lanes are included as part of planned roadway improvements.

Recommendation: Projects 1 and 2 are recommended as street improvement projects. Therefore, associated bicycle facilities are recommended for development with these two projects as well. Since Projects 3 through 5 are not recommended as new roadway projects, bicycle improvements will not occur as part of this TSP with these projects.

Bicycle Improvements Not Associated with Identified New Roadway Projects

All potential bicycle improvement options are shown graphically on Figure 6-4.

Option B1. Extend Existing Bike Lanes on North 19th from College Street to Chapel Drive (Recommended in 0–5 years)

Overview: This improvement option involves paving South 19th Street to accommodate six-foot bike lanes on both sides of the road. South 19th Street already has gravel shoulders allowing pavement of bike lanes.

Traffic Projections: According to the *Oregon Bicycle and Pedestrian Plan*, bike lanes are appropriate on minor collectors or arterials where speeds exceed 25 mph or average daily traffic (ADT) exceeds 3,000. Although the posted speed on this major collector is 25 mph, the 1996 ADT along South 19th Street was 3,800. Assuming a modest one percent per year increase over the next 20 years, the ADT would increase to over 4,500.

Impacts: Bike lanes provide an increased sense of safety and connectivity for users due to the provision of a clearly defined space to ride in that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed or weave across the roadway center-line when passing bicyclists that are traveling in a separated and well-designed bike lane. The middle school and a new grade school are also located off of South 19th Street.

South 19th Street is a county road and a coordinated street design standard and funding program between the jurisdictions would likely be needed. However, bike lanes along South 19th Street have also been identified as a proposed improvement option under the *Draft Benton County TSP*.

Costs: A cost estimate for this project was developed under the *Draft Benton County TSP* at a total cost of \$291,000 in 1996 dollars. Assuming a five percent per year increase, the 1998 estimated project cost is \$320,000.

Recommendation: This project is recommended as a near-term project (0-5 years). However, Benton County funding availability will be a determining factor in the timing of this project and, as yet, the *Draft Benton County TSP* does not specify project timing.

Option B2. Extend Bike Route From Plymouth Drive to Central Bike Path (Recommended in 0–5 years)

Overview: This improvement option involves signing for a bike route from Plymouth Drive along Southwood Drive, 30th Street, and Applegate Street to 26th Street. This route would also connect with the Central Bike Path at the south tip of 26th Street. The city currently lacks a dedicated bicycle route connection between the downtown core and the increasing residential development in the southeast quadrant of the city near Plymouth Drive. This project would connect existing bike lanes along Plymouth Drive to the Central Bike Path connecting Philomath and Corvallis.

Traffic Projections: It is not anticipated that Southwood Drive and 30th Street would experience ADTs of 3,000 or more in the year 2016, although traffic will increase subsequent to development of the Newton Creek Bridge. With a posted speed of 25 mph, these local streets will likely operate well as shared roadway facilities, not



(NOT TO SCALE)

LEGEND:

- URBAN GROWTH BOUNDARY
- CITY LIMITS

- o o o o o POTENTIAL BIKE LANES
- POTENTIAL MULTI-USE PATH

(B1) BIKE OR PEDESTRIAN IMPROVEMENT OPTION

* CROSSOVER ALIGNMENT NEEDS TO BE REFINED.

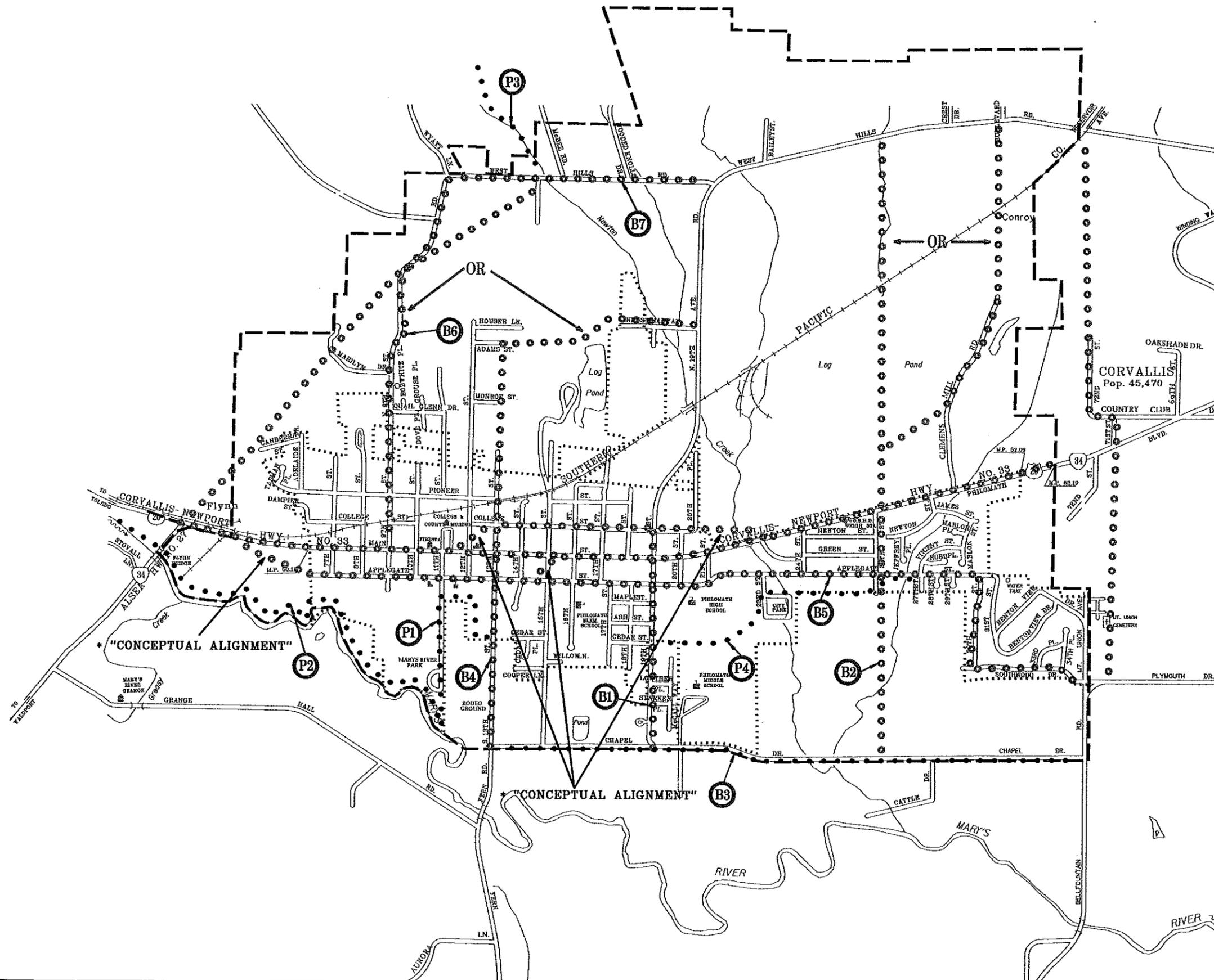


FIGURE 6-4

Potential Bicycle and Pedestrian Facilities

requiring dedicated bike lanes. However, it may be desirable to sign this as an on-street bike route connection between the established bike lanes on Plymouth Drive and the Central Bike Path.

Impacts: Both Southwood Drive and 30th Street are approximately 32 feet wide and operate one lane in each travel direction, which would support an on street bike route.

Costs: The total cost to sign the bike route would be less than \$5,000.

Recommendation: This project is recommended as a near-term project (0-5 years).

***Option B3. Add Bike Lanes Along Chapel Drive Between 13th Street and Bellfountain Road
(Recommended in 5-10 years)***

Overview: This improvement option involves widening this rural section of Chapel Drive, which is under county jurisdiction, to accommodate 6-foot multi-use paths in each direction.

Traffic Projections: According to the *Oregon Bicycle and Pedestrian Plan*, bike lanes are appropriate on minor collectors or arterials where speeds exceed 25 mph or ADT exceeds 3,000. Based on EMME/2 model results assuming build conditions, the 2016 PM peak hour volume along Chapel Drive between South 13th Street and Bellfountain Road is expected to exceed 500 vph. Using the rule-of-thumb that PM peak hour volumes represent 10 percent of the ADT, the ADT is expected to be approximately 5,000. The posted speed along this major collector varies between 40 and 55 mph.

Impacts: As volumes continue to increase, bike lanes will provide an increased sense of safety and connectivity for users due to the provision of a clearly defined space to ride in that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed or weave across the roadway centerline when passing bicyclists that are traveling in a separated and well-designed bike lane.

Costs: A cost estimate was developed under the *Draft Benton County TSP* to widen Chapel Drive between South 19th Street and Bellfountain road at a total cost of \$744,000 in 1996 dollars. Assuming a five percent per year increase, the 1998 estimated project cost is \$820,000. The total cost, including widening between South 13th Street and South 19th Street is estimated at \$1.1 million.

Recommendation: The project between South 19th Street and Bellfountain Road is recommended as an intermediate-term project (5-10 years). However, Benton County funding availability will be a determining factor in the timing of this project and, as yet, the *Draft Benton County TSP* does not specify project timing. If possible, the city should work with the county to extend the project limit westward to South 13th.

***Option B4. Add Bike Lanes Along South 13th Street from Main Street to Chapel Drive
(Recommended in 5-10 years)***

Overview: This improvement option involves widening South 13th Street to accommodate six-foot bike lanes in each direction. As a major collector, South 13th Street should be designed with bike lanes. This project would provide an additional north-south bikeway, in addition to potential bike lanes along South 19th Street, improving connectivity. Philomath is in the process of developing street design standards. In this evaluation, it was assumed that this collector roadway would consist of two 11-foot travel lanes, two six-foot bike lanes, two eight-foot parking lanes, and five-foot sidewalks on both sides. The overall pavement width would be 50 feet and the ROW width would be 60 feet, resulting in no necessary ROW purchase. This new design would be implemented south of Applegate Street only. North of Applegate, South 13th Street could be restriped to include bike lanes.

Traffic Projections: According to the *Oregon Bicycle and Pedestrian Plan*, bike lanes are appropriate on minor collectors or arterials where speeds exceed 25 mph or ADT exceeds 3,000. Based on EMME/2 model results assuming build conditions, the 2016 PM peak hour volume along South 13th Street between Chapel Drive and Main Street is expected to exceed 500 vph. Using the rule-of-thumb that PM peak hour volumes represent 10 percent of the ADT, the ADT is expected to be approximately 5,000. The posted speed along this major collector varies between 45 and 25 mph.

Impacts: As volumes continue to increase, bike lanes will provide an increased sense of safety and connectivity for users due to the provision of a clearly defined ROW that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed or weave across the roadway centerline when passing bicyclists that are traveling in a separated and well-designed bike lane. South 13th Street crosses from city jurisdiction to county jurisdiction near Cedar Street. A coordinated street design standard and funding program between the jurisdictions would likely be needed. No bike lane project along South 13th Street has been identified under the *Draft Benton County TSP*.

Costs: The unit cost used per linear foot in 1998 dollars, including engineering, was \$310. The total project cost is estimated at \$780,000.

Recommendation: This project is recommended as an intermediate-term project (5-10 years) to be completed in conjunction with identified future pavement rehabilitation work. Since the roadway is currently in fair to good pavement condition, this project most realistically would take place in five to ten years. The city should coordinate with Benton County for funding and project timing.

Option B5. Add Bike Lanes Along Applegate Street Between Proposed Couplet and Central Bike Path (Recommended in 5-10 years)

Overview: Under the *Master Philomath Bike Path and Trails Plan*, the city has identified the need to add bike lanes along Applegate Street between 11th and 26th streets. However, the couplet alignment would provide bike lanes between approximately 7th and 15th streets. Therefore, this improvement option completes the connection from 15th Street to the Central Bike Path at 26th Street. Applegate Street is approximately 42 feet wide and operates one lane in each travel direction that would support restriping the roadway to include bike lanes. A street design including two 10-foot travel lanes with 4-foot bike lanes could be accommodated while allowing 7 feet on each side for on-street parking.

Traffic Projections: According to the *Oregon Bicycle and Pedestrian Plan*, bike lanes are appropriate on minor collectors or arterials where speeds exceed 25 mph or ADT exceeds 3,000. Based on EMME/2 model results assuming build conditions, the 2016 PM peak hour volume along Applegate Street at 26th Street is expected to exceed 370 vph. Using the rule-of-thumb that PM peak hour volumes represent ten percent of the ADT, the ADT is expected to exceed 3,700. The posted speed along this local street is 25 mph. With a posted speed of 25 mph, and relatively low projected traffic volumes, Applegate Street would probably continue to operate well in 2016 as a shared roadway facility, not requiring dedicated bike lanes. However, given the presence of schools that may generate a fair level of bicycle and pedestrian traffic, bike lanes would provide an increased sense of safety and a formal bikeway connection between other potential bikeway facilities.

Impacts: As volumes continue to increase, bike lanes will provide an increased sense of safety and connectivity for users due to the provision of a clearly defined right-of-way that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed or weave across the roadway center-line when passing bicyclists that are traveling in a separated and well designed bike lane.

Costs: The unit cost per linear foot used for striping was \$0.50. Unit costs for roadway stencils and signs are \$30 and \$100 each, respectively. Assuming the need for approximately 16 stencils and eight signs, the total cost to stripe and sign bike lanes would be approximately \$5,000.

Recommendation: This project is recommended as an intermediate-term project (5-10 years) to be implemented in conjunction with couplet development and/or construction of the Newton Creek Bridge. Until such time as the Newton Creek Bridge is constructed, the eastern portion of Applegate Street should continue to operate effectively as a low-speed, low-volume shared roadway facility.

***Option B6. Add Bike Lanes Along North 9th Street Between Main Street and West Hills Road
(Not Recommended in this TSP)***

Overview: As an alternative to extending North 13th Street to West Hills Road, the city has identified the option to add bike lanes along North 9th Street between Main Street and West Hills Road. If North 13th Street is extended north to West Hills Road, it would be expected that bicycle lanes would be provided as part of that project. The north 13th Street extension could serve as an alternate route for bikes. North 9th Street converts from city to county jurisdiction about 1,000 feet north of Main Street. North 9th Street is fairly steep heading northbound, and sight distance could be a concern as bicyclists and motorists crest the hill. Within the city limits, 9th Street is approximately 40 feet wide and could be restriped to accommodate bike lanes and one lane of on-street parking. The majority of 9th Street is a 20-foot-wide rural road with no shoulders and narrow ROW.

Traffic Projections: According to the *Oregon Bicycle and Pedestrian Plan*, bike lanes are appropriate on minor collectors or arterials where speeds exceed 25 mph or ADT exceeds 3,000. Based on EMME/2 model results assuming build conditions, the 2016 PM peak hour volume along 9th Street/West Hills Road between Marilyn Drive and Wyatt Lane is expected to exceed 800 vph. Using the rule-of-thumb that PM peak hour volumes represent 10 percent of the ADT, the ADT is expected to exceed 8,000. The posted speed along this major collector varies from 25 to 45 mph.

Impacts: As volumes continue to increase, bike lanes will provide an increased sense of safety and connectivity for users due to the provision of a clearly defined space to ride in that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed or weave across the roadway center-line when passing bicyclists that are traveling in a separated and well designed bike lane. One lane of on-street parking would need to be eliminated. Being fairly steep, the alignment of 9th Street would not work as well as the 13th Street extension and does not work as well as 19th Street. However, most older children and adults could ascend 9th Street by bicycle. The right-of-way along most of 9th Street/West Hills Road is between 40 to 50 feet. However, acquisition would not be required since providing on-street parking north of the city limits is not needed. North of the city limits, the potential alignment would consist of the 12-foot travel lanes and six-foot bike lanes, resulting in a 36-foot pavement width.

Costs: The unit cost per linear foot used for striping was \$0.50. Unit costs for roadway stencils and signs are \$30 and \$100 each, respectively. Assuming the need for approximately eight stencils and four signs, the total cost to stripe and sign bike lanes would be approximately \$4,000. The unit cost per linear foot used to widen the roadway to 36-feet was \$160 including engineering and construction. Table 6-9 shows the total estimated costs for this project.

**TABLE 6-9
ESTIMATED COSTS FOR WIDENING 9TH STREET/WEST HILLS ROAD FOR BIKE LANES**

| Improvement | Length (feet) | Existing Pavement Width (feet) | Proposed Pavement Width (feet) | Existing Right- of-Way (feet) | Proposed Right-of- Way (feet) | Right-of- Way Costs | Construction Costs |
|---|------------------|---|---|--|--|---------------------------|-----------------------|
| Main St. to city limits (restriping only) | 1,000 | 40 | 40 | 40 | 40 | \$0 | \$5,000 |
| North of city limits to West Hills Road (widening) | 4,500 | 19 | 36 | 40-50 | 40-50 | \$0 | \$765,000 |
| Total | | | | | | \$0 | \$770,000 |

Recommendation: This project is recommended as a potential long-term project (beyond 20 years). However, it is also recommended that this project be constructed as part of any development along 9th Street and any street resurfacing projects which occur before this proposed retrofit project can be implemented.

***Option B7. Add Bike Lanes Along West Hills Road Between Wyatt Lane and North 19th Street
(Recommended in 10-20 years)***

Overview: This option extends existing bike lanes along West Hills Road westward from North 19th Street to Wyatt Lane. This portion of West Hills Road is 20 feet wide with no shoulders and a 60-foot ROW. It is outside the City of Philomath and is a Benton County road inside the UGB. Extending these bike lanes to the west will provide for connections to other bicycle/pedestrian trails to the north in Benton County

Traffic Projections: According to the *Oregon Bicycle and Pedestrian Plan*, bike lanes are appropriate on minor collectors or arterials where speeds exceed 25 mph or ADT exceeds 3,000. Based on EMME/2 model results assuming build conditions, the 2016 PM peak hour volume along West Hills Road between Wyatt Lane and North 19th Street is expected to nearly reach 700 vph. Using the rule-of-thumb that PM peak hour volumes represent 10 percent of the ADT, the ADT is expected to nearly reach 7,000. The posted speed along this major collector is 45 mph.

Impacts: As volumes continue to increase, bike lanes will provide an increased sense of safety and connectivity for users due to the provision of a clearly defined right-of-way that does not require weaving around parked cars or other impediments. Traffic capacity, if anything, may slightly improve since many motorists will not feel the need to unduly slow below the posted speed or weave across the roadway centerline when passing bicyclists that are traveling in a separated and well-designed bike lane. The potential roadway cross section would consist of two 12-foot travel lanes and 6-foot bike lanes, resulting in a 36-foot pavement width.

Costs: The unit cost per linear foot used to widen the roadway to 36 feet was \$170 including engineering and construction. This unit cost results in an estimated total project cost of \$770,000.

Recommendation: This project is recommended as a potential long-term project (10-20 years).

Pedestrian Improvement Options

As discussed in Chapter 3, Transportation System Inventory, the City of Philomath lacks sidewalk connectivity along one or both sides of many roadways maintained by the city, county and state. As a result, pedestrians must frequently share the road with cars. Many sidewalk segments also lack curb cuts for wheelchair access. Projects

listed in this section serve to enhance pedestrian access, safety, and connectivity between residential areas and community activity centers, such as schools, parks, and open spaces.

The city has developed, and is in the third year of implementing, a comprehensive ten-year sidewalk development plan to address sidewalk deficiencies along roadways under its jurisdiction. Under the plan, all city streets with curbs and gutters, but without sidewalks, will be retrofitted with sidewalks. However, wheelchair curb cuts are not included. Additionally, the city's subdivision ordinance requires installation of sidewalks for all new development.

All potential non-sidewalk pedestrian projects are shown graphically on Figure 6-4.

Recommendation: Include wheelchair curb cuts in plan.

***Option P. Develop Multi-Use Paths
(Recommended Path 1 in 5-10 years, Path 2 in 10-20 years and Path 4 in 5-10 years)***

Overview: Under its *Master Philomath Bike Path and Trails Plan*, the city identified development of four potential multi-use path facilities. These paths would provide access to both pedestrians and bicyclists.

Path 1 (P1): Under the city's proposed alignment, the first multi-use path would begin on South 13th Street west of Cedar Street, trend northwesterly across the Rodeo Grounds, follow South 11th Street south alongside Marys River Park, and terminate at the Marys River.

Path 2 (P2): Under the city's proposed alignment, the second multi-use path would begin at Fern Road, either near the Marys River or at Chapel Drive, and would follow the north bank of the Marys River west, crossing the Alea Highway. This alignment could support future connectivity as part of the proposed Corvallis-to-the Sea Trail.

Path 3 (P3): The third multi-use path would connect West Hills Road, between Wyatt Lane and McBee Road, to the Benton County Open Space Park to the north.

Path 4 (P4): Under the city's proposed alignment, the fourth multi-use path would involve extending the existing Central Bike Path from its intersection with Applegate Street (just west of Vincent Street) to the City Park/Philomath High School, terminating near the intersection of 19th Street and Cedar Street. The western terminus at 19th Street would provide access to proposed bike lanes north and south along 19th Street.

Impacts: Paths 1 and 2 would connect the city's urban core with popular and scenic local destinations, improving pedestrian access, safety, and connectivity. The third path would connect Philomath with a desirable county resource -- Benton County Open Space Park. The fourth path would provide improved connectivity between Philomath parks and schools, Philomath's residential areas, and the city of Corvallis.

The character of a multi-use path supports safe and leisurely use by people of all ages. It is not intended to replace the need for a safe and connective system of sidewalks and bike paths along the surrounding street system. Rather, the multi-use path supplements these facilities.

Costs: A typical unit cost for a ten-foot wide multi-use path involving clearing, preparation, and construction of a two-inch asphalt surface over four-inch aggregate is \$50 per linear foot. This cost includes special engineering of potential problems, such as steep grades, retaining walls, and drainage but does not include land acquisition. Estimated construction cost of Paths 1 and 4 is \$150,000 and \$200,000, respectively. Without a sense of potential alignment and connection to the proposed Corvallis-to-the-Sea Trail, reasonable cost estimates for Paths 2 and 3 would be very rough estimates. However Path 2 was estimated to cost roughly \$320,000. Path 3 is a long term

project mostly outside the UGB and a cost estimate was not prepared for it. It would be more appropriate as a Benton County project.

Recommendations: It is recommended that the city design and construct Path 1 connecting South 13th Street to Marys River as an intermediate term project within the next five to ten years. This project would improve pedestrian and bicycle access to desirable civic areas and scenic destinations at a reasonably low cost. It is also recommended that the city pursue development of the Marys River path (Path 2) as a long-term scenic development project. Construction of the Marys River path could easily be staged to complete shorter segments over the years as funding becomes available.

Additionally, it is recommended that the city extend the Central Bike Path (Path 4) to connect city resources, such as City Park and the high school, as an intermediate range project (5 to 10 years), potentially developed in concert with planned roadway improvements along Applegate Street. The larger scale and costlier Path 3 should be reviewed with the public to gauge public interest in its development. Path 3 is also outside the city and is more appropriate as a future Benton County TSP project. As a result, Path 3 is not recommended for this Philomath TSP plan.

Transit

The Linn/Benton Transit Feasibility Study has been started and is expected to provide the policy and direction for transit in the City of Philomath. Results from this study should be used for the City of Philomath transit policies as part of the TSP in the future. It is also expected that any transit improvement projects needed for the City of Philomath will be identified as a part of the Linn/Benton Transit Feasibility Study or other Corvallis-area transit study efforts.

Rail

It does not appear that additional rail service specifically for passengers to and from Philomath is economically practical at the present time for the Willamette and Pacific Railroad. However, this is being investigated for future feasibility and inclusion in a future update of the TSP.

Option 1. Rail Siding and Spur (Recommended in 0-5 years)

A new section of rail and spur is needed from the Willamette & Pacific Railroad to Georgia Pacific in Philomath.

Cost: \$250,000

Option 2. Intermodal freight facility

The possibility of a truck/rail intermodal freight facility in Philomath is also being explored consistent with the draft *Highway 20/34 Interim Corridor Strategy Plan*. However, there does not appear to be the needed land available for this type of facility in Philomath. There also is a desire to develop freight rail service to the south and the most likely location for a truck/rail intermodal facility is south of the Corvallis and Philomath UGBs. This project would be expected to have some benefits for Philomath industries. As a result, this project is recommended to be listed but not included in the project cost for Philomath.

Air, Water, and Pipeline

Air service is provided at the Corvallis Airport located in Benton County. There are no air transportation facilities available in the City of Philomath UGB.

The City of Philomath has no waterborne transportation facilities.

The City of Philomath has no pipeline transportation facilities.