CITY OF MERRITT

Voght Corridor Traffic Study

FINAL REPORT

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APPENDICES

1.0 BACKGROUND

Voght Street, as the terminus in Merritt of Highway 5(Highway 5A after 1986) in Merritt has served as the northern entrance to the City. With the construction of the Coquihalla in 1986/87 this role was enhanced.

Following the opening of the Coquihalla there was significant development in the vicinity of the north interchange and stretching west towards the City. This lead to concerns from the Ministry of Transportation (MoT) regarding the future need and costs for upgrading Voght Street to accommodate the traffic generated (or attracted) by this development.

To address these issues MoT, in consultation with the City and a number of the major landholders/developers developed an approach to funding the required works. The approach was based on "trigger points" – the capacity of the road was determined at a number of these "trigger points", the traffic volume on Voght was to be monitored, and whichever new development (or phase of a development) caused the traffic to increase above the trigger point, would be required to design, build and pay for the works required to accommodate that trigger. This "approach" was embodied in traffic studies (and various amendments) which were then registered on title for all of the developable properties.

This approach met MoT's primary goals:

1. Works would be built as required to ensure adequate capacity on Voght Street.
2. MoT would not have to pay for such works.

A number of the current aspects of Voght Street between the Coquihalla ramps and the Belshaw Street/River Ranch Road intersection were constructed under this model including, modifications and additions to the island and access to DeWolf Way, no post barriers along Voght, additional lanes and drainage improvements at Voght/Belshaw/River Ranch Road, etc.

While this approach met MoT needs it was a concern to the City:

- Due to its complexity it was hard to understand or explain to developers.
- It was costly due to the need for frequent traffic studies.

- It was not equitable; some development avoided all costs while other development faced significant costs.

This last item could, in some situations, become a serious impediment to development; a smaller development could hit the trigger for some upgrading (e.g., signalization of an intersection) which was very costly and completely beyond the potential of that development to recover the costs.

In 1998, the Ministry of Transportation devolved responsibility of Voght Street to the City of Merritt. This devolution was part of a major provincial initiative which saw portions of many major roads within municipal areas "devolved" to municipalities. Like many municipalities, the City of Merritt, concerned about operations and maintenance costs and existing deficiencies objected to this "downloading" of responsibility. However, a traffic study jointly funded by the City and MoT evenutally confirmed that the majority of traffic on Voght Street was in fact local, (i.e., residents of Merritt). This confirmed that under the MoT criteria established under the devolution process, Voght Street should be a City responsibility.

In order to adequately address this responsibility the City recognized the need for long-term planning related to the Voght Corridor. During development of the City's recent Official Community Plan (OCP) the Voght Corridor received significant discussion and consideration, from a number of perspectives:

- its current and future function;
- the need for increased capacity either through upgrading of Voght Street itself or through the development of alternate routes; and
- the issues with respect to the "trigger" approach to funding of required upgrading noted above.

The City's previous "Major Street Network Plan" portion of their OCP was developed while MoT retained responsibility for Voght Street. The approach embodied in these plans was to identify several alternative routes with the intent of relieving the pressure on Voght Street. The alternatives to be developed included extensions of both River Ranch Road and Grimmett Street and a new major east-west connection through the North Bench Crown lands. The routes of most relevance to this report involved extension of River Ranch Road south to connect to Bann Street or perhaps Houston Street and the extension of Grimmett Street south to connect to

Houston Street. Both the River Ranch and Grimmett extensions would involve significant environmental and technical challenges:

- extension through private land;
- extension through ALR lands;
- crossing Nicola River floodplain, riparian areas and the river itself; and
- descending over the "silt bluffs".

All of the above elements would likely result in very significant capital costs, as well as public opposition. In addition, since the extensions both traverse ALR lands there would be little potential for development adjacent to the road, which might offset costs.

Another issue which became apparent in recent years was posed by the rapid development of commercial space east of River Ranch Road and also east of the Coquihalla on the Parker/Airport lands. This issue from the city's perspective was two-fold:

- to provide access to these developments from elsewhere in the City; and
- to encourage more traffic to proceed "downtown" to avoid further erosion of that commercial area.

Therefore, during updating of the City's Official Community Plan in 2004, Council set a policy to focus on upgrades to Voght Street in the short to medium term prior to consideration of the other "alternative route" options.

In addition the OCP, by policy, reiterated the importance of the Voght Street corridor:

- northern "Gateway" into City
- critical link from Coquihalla and Highway 5A to City Centre; and
- access to numerous commercial, residential, recreational and institutional developments along the corridor.

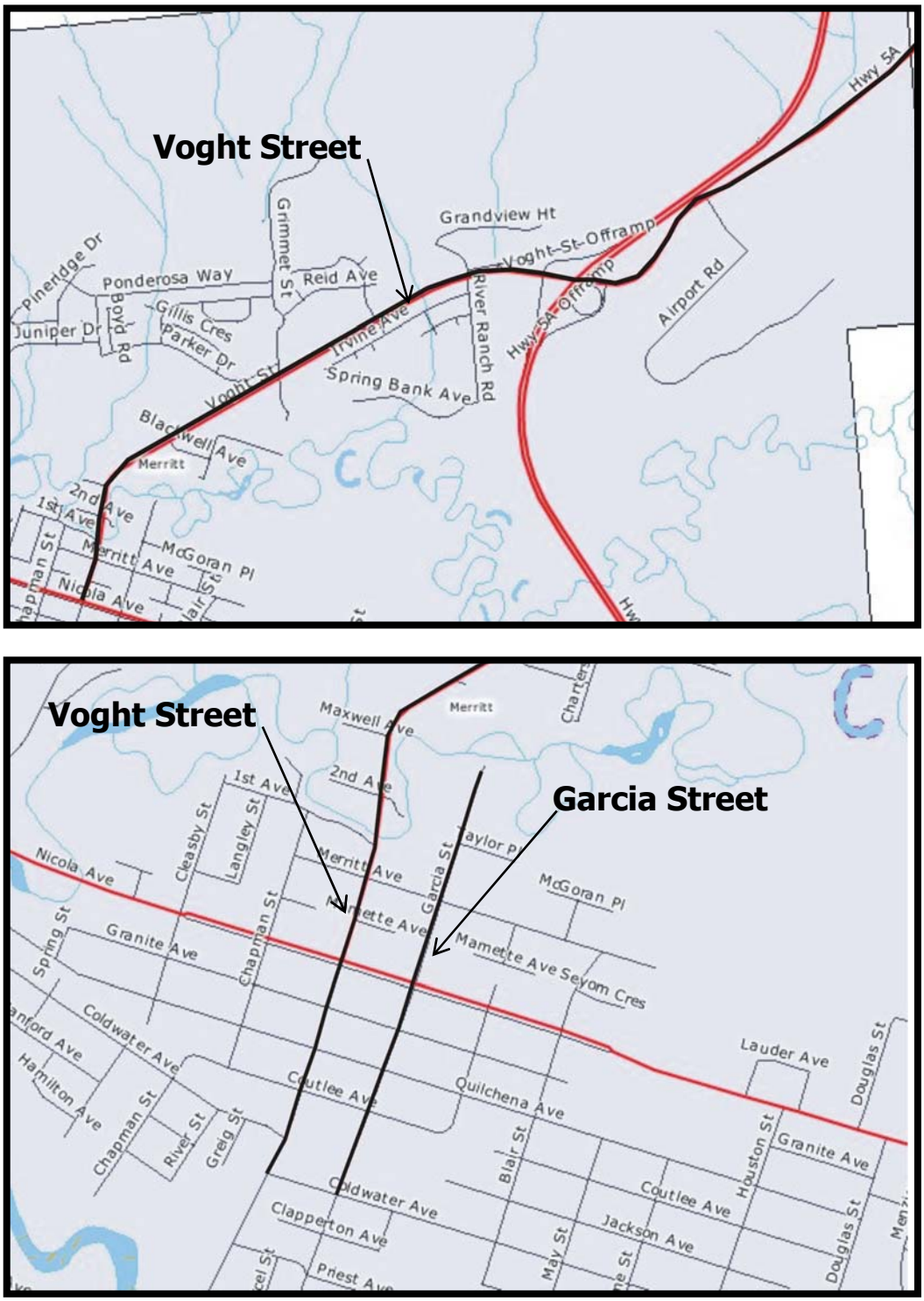
Also in 2004 the City undertook the updating of its Development Cost Charge (DCC) bylaw. Early in this process it was decided that the "trigger" approach to upgrading on the Voght Street

corridor would be replaced in favour of the City assuming responsibility for the various upgrades. Funding for these projects would be generated by the imposition of Development Cost Charges.

1.1 Purpose

The purpose of this study is therefore to provide recommended intersection and road improvements (along with estimated costs) along the Voght Street corridor to accommodate future development and traffic. Recommended timing of the upgrades is also provided based on a projected long-term growth rate. Anticipated population thresholds are also provided. This is so that if growth greatly exceeds the long-term rate, the need for the recommended works can still be determined. Figure 1.1 provides an illustration of the extents of the Voght Corridor Traffic Study.

Figure 1.1: Voght Corridor Study Extents



2.0 EXISTING CONDITIONS

2.1 Merritt – General Population

According to BC Statistics, the 2004 population of Merrit is 7,580. As part of the 2004 DCC Bylaw Update, historic population trends were analyzed for the City. As the BC Statistics information in Figure 2.1 depicts, the population in Merritt has varied considerably since 1985. This variance is indicative of the many factors that affect the population of Merritt, including boundary expansions, and periods of rapid growth or decline due to economic cycles. It is therefore difficult to predict with any certainty what the future population growth pattern will be. However, the long-term trend can be estimated.

A best fit line based on the census data was utilized to obtain an average growth rate over the last 30 years. A growth rate of 1.2% matches this population growth line, and thus 1.2% was utilized as a future long-term growth rate to determine future traffic on the Voght Street Corridor.

This study has been based on a 20 year planning horizon. Utilizing a growth rate of 1.2%, it was determined that the population would increase from approximately 7,580 in 2004 to 9,730 in 2024; an increase of 2,150 people over the 20 year period.

Figure 2.1 - City of Merritt Historic Population

2.2 Corridor Characteristics

The Voght Street Corridor begins at the eastern City boundary east of the Coquihalla Highway, (Highway 5) and continues west to link to Merritt's downtown. East of the Coquihalla, Voght Street links via Airport Road to the Ministry of Forests and the Husky Travel Centre (Wagon West Travel Plaza). There is also direct access to the truck stop. West of the Coquihalla the corridor links, via Belshaw Street and River Ranch Road, to several commercial businesses including gas stations, convenience stores, fast food restaurants, and grocery/department stores.

Proceeding west several motels front onto Voght Street as well as the Nicola Valley Health Centre and the local RCMP detachment. The City's major park, Central Park, with its associated sports fields, youth park, etc. are also accessed from Voght Street. Residential developments are accessed via Belshaw Street, River Ranch Road, Walters Street, and Grimmett Street.

North of the Nicola River crossing, Voght Street turns from a generally east-west orientation to north-south. South of the Nicola River, Voght Street crosses all of the City's major east-west Avenues including:

- Nicola Avenue (Highway 8);
- Quilchena Avenue – "Downtown"; and
- Coldwater Avenue – major east-west link.

This portion of Voght Street is therefore the major north-south route in the west/central area of the City.

Voght Street continues south from Coldwater Avenue to cross the Coldwater River and terminate at Lindley Creek Road where it provides passenger vehicle (not truck) access to the Tolko Sawmill and the eastern portions of the Collettville neighbourhood.

The majority of the land adjacent to the Voght Street Corridor is zoned as follows:

- East of Coquihalla – Commercial/Light Industrial
- West of Coquihalla – Commercial/Residential/Public Use Facilities
- South of Nicola River – Central Business Commercial

The Voght Street Corridor is attractive to development for a number of reasons. While there are two main entrances to the City from Highway 5, Voght Street is the primary gateway to Merritt and its downtown core from the north. Commercial businesses are visible from the highway and attract tourist and other traffic along this corridor. Several other businesses have recently opened in this area including grocery stores, department stores, fast food restaurants, and service stations. The area is also open for future development of residential neighbourhoods, some of which are underway.

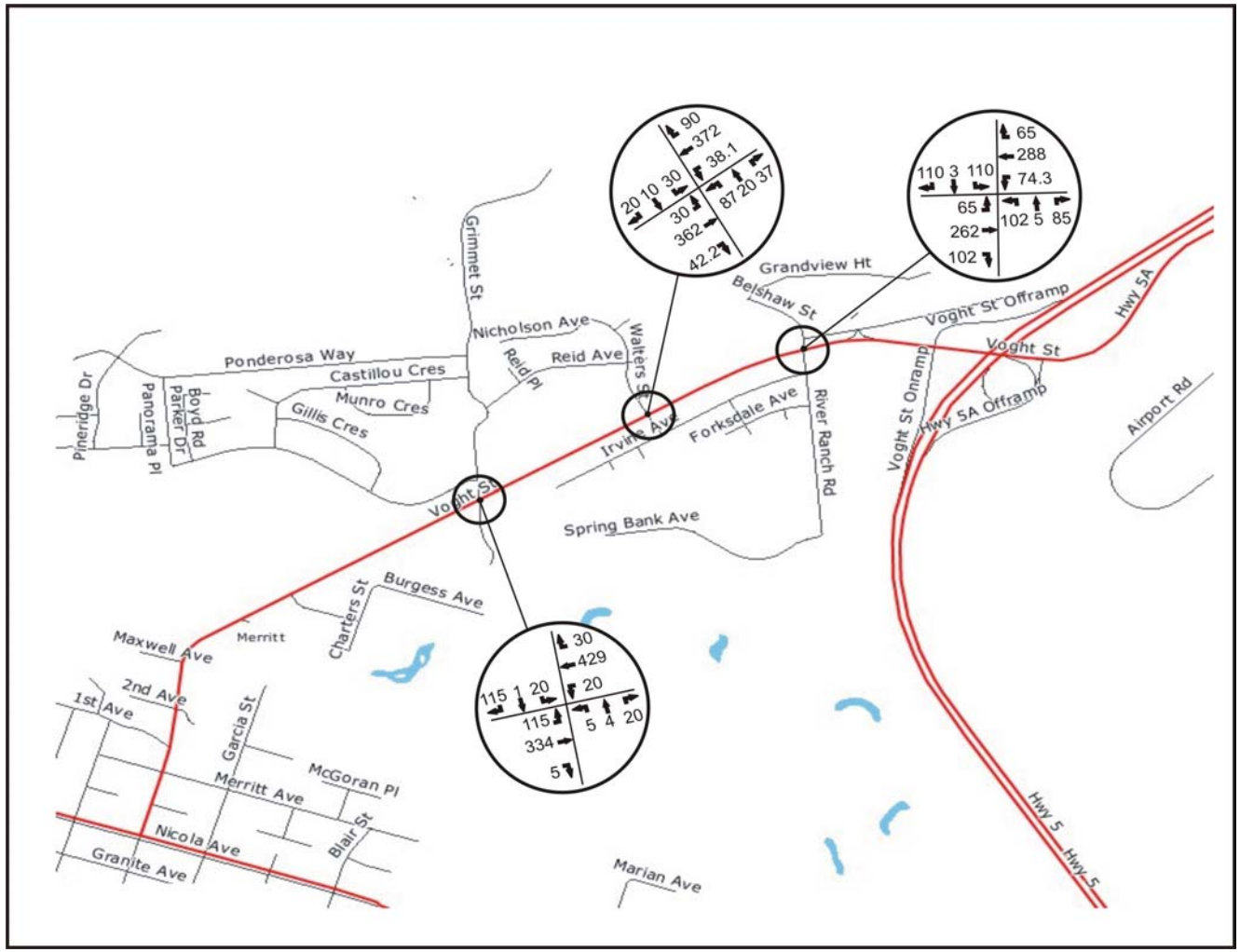
2.3 Current Traffic Volumes

In the early 1990's interest in the development potential of the City's northeast sector lead to a major traffic study for this area undertaken by Ward Consulting. Development related impacts were addressed in several subsequent studies. These studies have been used as background. Most recently in August of 2003, G.D. Hamilton Associates Consulting Ltd. prepared a report entitled, *Traffic Impact Assessment for a Commercial Development in Merritt, B.C.* This report discussed the traffic impacts that would result from development in the Voght Street/River Ranch Road area of Merritt. The report provided traffic conditions for 2003. These volumes were utilized as the 2004 base traffic volumes as development in the area did not occur as quickly as expected in the report. Figure 2.2 shows the base traffic volumes.

2.4 Level of Service

Level of service analysis at the intersections of Voght Street with Belshaw Street/River Ranch Road, Walters Street, and Grimmett Street were performed using Synchro V.5 traffic modeling software. The purpose of this analysis was to identify and determine the likely timing (year) when various intersection upgrades would be required.

Figure 2.2 – 2004 Traffic Volumes



Under existing conditions, all movements along the corridor operate within acceptable limits. However, there are indications that movements at the intersection of Walters and Voght will become an issue in the future as northbound movements perform at LOS E. Table 2.1 below provides a summary of the current level of service at each of the intersections.

Table 2.1 – Synchro V.5 Analysis – Present Conditions (2004)

Intersection	Signalized	Movements at LOS D or Worse	Maximum v/c Ratio	Intersection Delay (in seconds)
Belshaw and Voght	Yes	None	0.53	7.4
Walters and Voght	No	NB E SB D	0.65	7.4
Grimmett and Voght	No	None	0.37	3.9

2.5 Known Issues

There are several known issues associated with the Voght Street Corridor that will be compounded as development in the area proceeds. East of the Coquihalla, as the "Parker Brothers" property (around the Husky Truck Centre) develops, some additional upgrading may be required. However, it is assumed that this will be directly attributable to that new development.

Immediately west of the Coquihalla, truck traffic, and a lack of parking cause concerns along DeWolf Way.

Residential development backs onto Voght Street for much of the distance between River Ranch Road and Grimmett Street. As residential development increases in the Coyote Bluffs area there will be a greater need for pedestrian facilities along the Voght Street corridor. Merritt Bench Elementary School is located to the north of Voght Street on Grimmett Street. As Coyote Bluffs develops, there will become a greater need for safe crosswalks and sidewalks to accommodate the pedestrian traffic accessing this school, or proceeding west on Voght Street.

The Nicola Valley Health Centre is located mid block between Walters Street and Grimmett Street. As traffic increases along Voght Street, accessing this site will become more difficult.

Much of the development of Voght Street from the eastern end to the Nicola River to date has occurred while Voght was under MoT jurisdiction. It therefore does not meet usual City of Merritt standards; there are open ditches for drainage, no curb and gutter or sidewalk and in some areas asphalt curb and sidewalk rather than City standard concrete.

As noted, south of the Nicola River as far south as Coldwater Avenue, Voght functions as a major north-south route. However, in this area there are significant property constraints to expanding the capacity of the corridor. Based on a study undertaken by USL in 1994 the concept of developing a "one way couplet" was suggested. This was re-considered and accepted during the recent OCP update. This is therefore the option considered in this report.

3.0 FUTURE CONDITIONS

3.1 Description of Development

Utilizing the population forecast mentioned previously, the population of Merritt is anticipated to increase by 2,150 people over the 20 year planning period. This is an increase from approximately 7,580 in 2004 to 9,730 in 2024. Based on planned development cells within the City, the Coyote Bluffs development is the area most likely to accommodate a large proportion of this growth. The predicted population of the Coyote Bluffs area at build out is approximately 760 people based on planned development outlined in the *Merritt Northeast Sector Traffic Planning Study* prepared by the Ward Consulting Group in March of 1996.

It is anticipated that in the short to medium term the majority of new residential growth within Merritt will occur within this development area. Therefore, 70% of the yearly growth is attributed to this area until the build out population is reached. Using this rationale, it is anticipated that build out will occur in approximately 10 years or when the City's population reaches approximately 8,700. The remainder of the projected development will be spread amongst a number of other (often smaller) cells such as Bann Street in the southeast, Fir Street in Collettville, and north of Armstrong Street, west of Bann Street, etc.

Although the majority of development in the northeast sector is anticipated in the Coyote Bluffs area, there are also other development parcels in the area. These include properties owned by Merritt Benchlands and Crown lands (Lands managed by Land and Water BC Inc. – Strategic Initiatives Division). Both of these areas are uphill from (to the north of) Voght Street. Development in this area is limited by the requirement for a new water booster station and reservoir to provide both domestic water service and emergency fire flows, to lands above the service level of the existing City reservoirs.

3.2 Future Intersection Volumes

Based on planned commercial development outlined in the Hamilton Associates report and residential development within the Coyote Bluffs area, and a community growth rate of 1.2% per year, future intersection volumes were estimated for the years 2008 and 2013. The traffic volumes were calculated based on local development trends by amalgamating information from several different sources which include:

- *Traffic Impact Assessment for a Commercial Development in Merritt, BC* – G.D. Hamilton Associates Consulting Ltd. – August 2003
- *Merritt Northeast Sector Traffic Planning Study* – Ward Consulting Group – March 1996
- Knowledge of local development trends.

Projected traffic volumes on Voght Street for the years 2008 and 2013 are presented in Figures 3.1 and 3.2.

3.3 Future Level of Service

As traffic volumes on Voght Street increase and development occurs in the vicinity of the Voght Street Corridor, the level of service at the intersections will deteriorate. By 2008, the northbound movements at Walters will have failed. By 2013 the southbound movements at Walters will have failed as well, minor lane reconfigurations will be required at Belshaw Street/River Ranch Road (depending on actual turning frequencies), and also by 2013, the southbound movements at Grimmett will have failed in the absence of traffic signals. Tables 3.1 and 3.2 summarize the performance at each of the intersections at 2008 and 2013 respectively.

Table 3.1 – Intersection Performance – 2008

Intersection	Signalized	Movements at LOS D or Worse	Maximum v/c Ratio	Intersection Delay (in seconds)
Belshaw and Voght	Yes	None	0.56	6.3
Walters and Voght	No	NB F	1.03	18.1
Grimmett and Voght	No	SB D	0.53	4.7

Table 3.2 – Intersection Performance – 2013

Intersection	Signalized	Movements at LOS D or Worse	Maximum v/c Ratio	Intersection Delay (in seconds)
Belshaw and Voght	Yes	None	0.90	10.3
Walters and Voght	No	SB F NB F	1.56	45.2
Grimmett and Voght	No	NB D SB F	0.77	7.9

Figure 3.1 – Projected 2008 Traffic Volumes

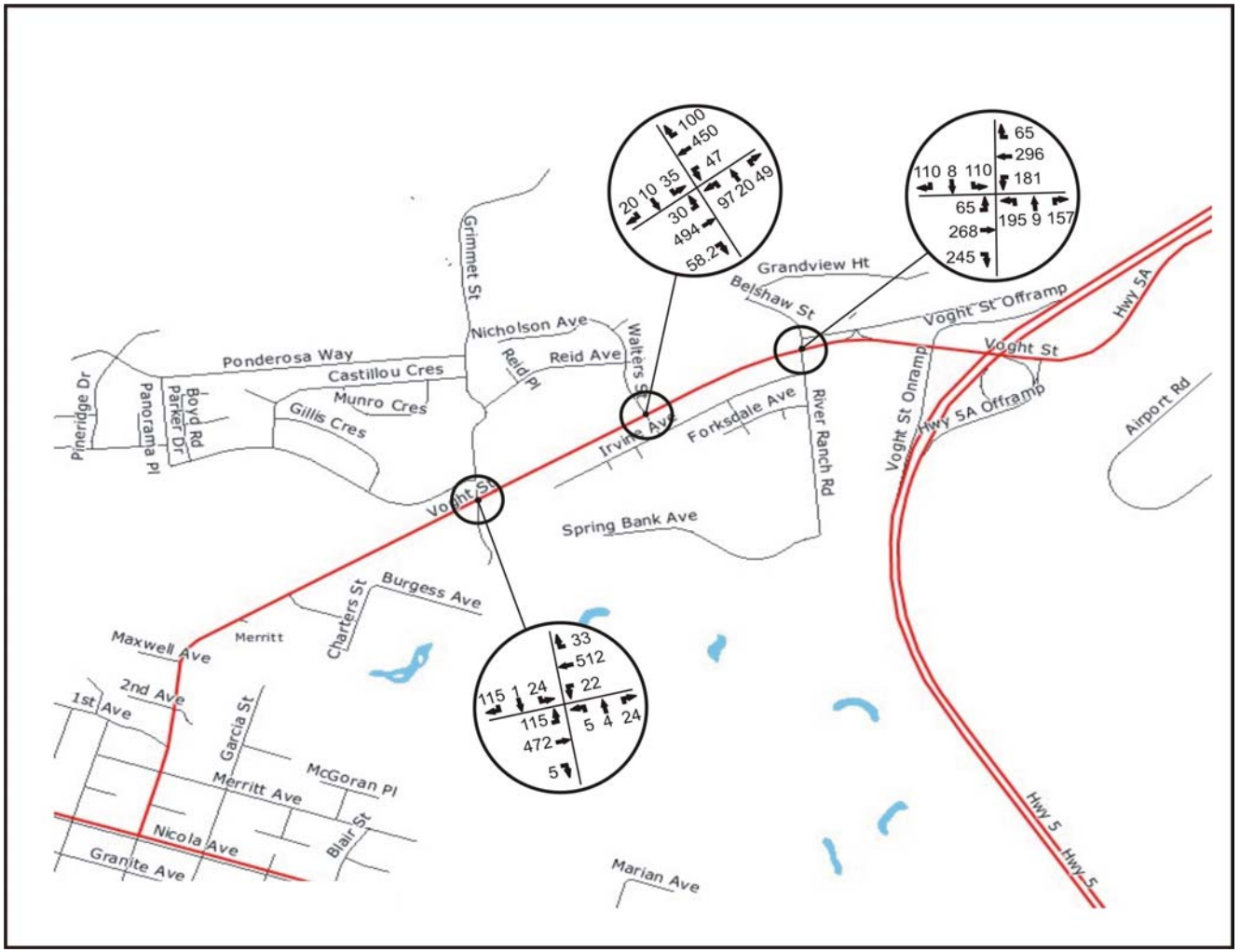
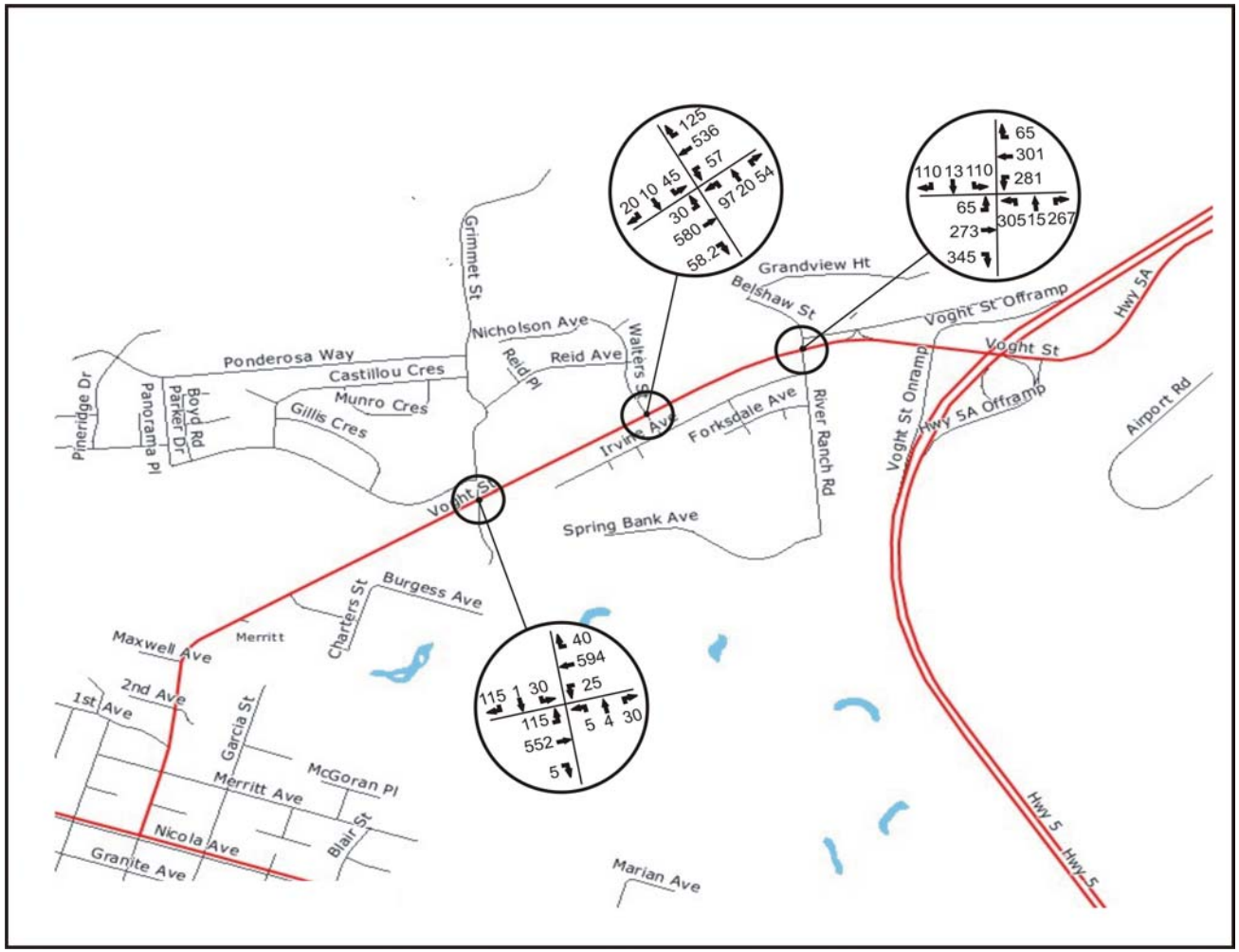


Figure 3.2 – Projected 2008 Traffic Volumes



To address these problems in isolation would result in overcompensation for the problems experienced and would in fact adversely impact the corridor as a whole. The analysis is consistent with the previous modeling and recommendations that the level of traffic accessing Voght Street via Walters should be minimized. However, this may be difficult given the fact that the previously favoured major route (Belshaw) to service the North Bench Crown lands is no longer viable (due to the location of the NVIT buildings). Never-the-less the negative impact of excess traffic on Walters should be considered when an updated plan is prepared for the North Bench Crown lands. However, improvements at the other intersections will mitigate some of the problems at Walters Street.

Traffic signals installed at Grimmett Street in conjunction with the signals already installed at Belshaw/River Ranch will create gaps in the traffic stream that will provide time required for drivers to make left hand turns into and out of Walters Street. These gaps caused by grouping or "platooning" of the traffic stream are not well modeled by the computer simulation software.

The software also does not take into account driver intuition. Local residents will look for alternatives to accessing and exiting Walters Street at peak traffic times to avoid the excessive cuing times predicted by the computer. Therefore, if the assumption is made that motorists will begin to utilize the Belshaw/River Ranch intersection due to the greater mobility provided by a signalized intersection, northbound movements will be at LOS D. Further, if it is assumed that the Grimmett intersection is signalized and that southbound left turning motorists from Walters utilize this intersection, southbound performance at Walters will improve to LOS C.

Table 3.3 below summarizes performance at the intersections due to the signalization of Grimmett and the assumption that left turning traffic from the south and northbound directions at Walters will now use the signalized intersections. Thus, the excess delays predicted by the computer model, will not likely occur.

Table 3.3 – Intersection Performance with Changes – 2013

Intersection	Signalized	Movements at LOS D or Worse	Maximum v/c Ratio	Intersection Delay (in seconds)
Belshaw and Voght	Yes	None	0.91	10.6
Walters and Voght	No	NB D	0.42	2.4
Grimmett and Voght	Yes	None	0.93	18.3

For the long term, an alternate access point to the Coyote Bluffs development should also be considered. Locating this alternate access at Grimmett Street will provide the benefit of a signalized intersection and also the benefit of having access points at both the east and west sides of the Coyote development. It is therefore recommended that the City require that any development west of the current Coyote Bluffs consider the need for this connection. Specifically the westward extension and/or interconnection of Spring Bank Avenue, Forksdale Avenue and Irvine Avenue to intersect with the extension of Grimmett Street south of Voght should be planned and implemented.

4.0 DISCUSSION OF UPGRADING PROJECTS

In order to accommodate future traffic volumes on the Voght Street corridor, the following sequence of upgrades are suggested. They were developed based on current road conditions and are presented in the likely sequence of implementation.

1. Signalize Voght at Belshaw/River Ranch Road Intersection – Installed June 2004;

2. Install sidewalk on South side of Voght Street from West end of Irvine Avenue (right of way between houses) to intersection at Grimmett Street. Include pedestrian signal across Voght Street;

3. Parking and traffic circulation enhancements at Belshaw Street and De Wolf Way;

4. Install left turn bay for eastbound traffic on Voght Street turning into the Nicola Valley Health Centre main entrance;

5. Traffic Signal at Voght Street and Grimmett Street intersection;

6. Upgrade Voght from Belshaw/River Ranch Intersection to Garcia/Blackwell intersection by providing 4 lanes with dedicated left turn lanes at all intersections;

7. Downtown one-way couplet (Voght and Garcia) with bridge upgrades.

These items are discussed in further detail below. Included is project justification, scope of work, and cost estimates. In order to establish recommended project timing, the growth in traffic was modeled as previously described. Table 5.1 provides a summary of all of the projects including timing and costs with detailed cost estimates provided in Appendix A.

4.1 Project 1 – Signals at Voght Street and Belshaw/River Ranch Road – Installed June 2004

Based on the rapid development of commercial space east of River Ranch Road, signals were considered necessary to facilitate access to this area. The addition of signals, including advance left turns also enhances access to and exit from NVIT on Belshaw and the commercial businesses on DeWolf Way.

4.2 Project 2 - Pedestrian Access from Coyote Bluffs/Irvine Avenue to Voght Street Sidewalk and Grimmett Street

Currently pedestrians within the Coyote Bluffs and Irvine Avenue developments utilize a pedestrian right-of-way at the west end of Irvine Avenue to access Voght Street. At this point, a crosswalk directs pedestrians to cross Voght Street mid-block between Walters Street and Grimmett Street. The sidewalk then continues on the north side of Voght, extending to the Grimmett Street intersection and continues west past Central Park and on to the City Centre. To the east of the crosswalk, past Walters Street there is currently no sidewalk on either the north or south side of Voght Street. As commercial development east of River Ranch Road becomes a destination for vehicle and pedestrians, this sidewalk will need to be installed. This is addressed in the Voght Street widening option presented in Section 4.6.

Although the sight lines for the mid-block crosswalk between Grimmett Street and Walters Street are good, it is not desirable to encourage pedestrians to cross a major road mid-block at an uncontrolled crossing. This issue will be compounded as development in the northeast sector causes traffic volumes on Voght Street to increase. The crosswalk was located at this location to address the poor sight lines at Grimmett Street associated with cresting the hill when driving east on Voght. The crest of the hill screens pedestrians crossing at Grimmett Street from view. The current mid-block crossing farther east, allows drivers to reach the "top of the crest" where pedestrians are visible in the crossing, with sufficient time and distance to stop safely.

It is recommended that the sidewalk be extended from the pedestrian walkway connecting Irvine Avenue and Voght Street, along the south side of Voght Street to the Grimmett Street intersection. A pedestrian crossing signal should be installed to mitigate the sight line issues associated with the crest of the hill located directly west of the intersection. The crossing signal will notify eastbound motorists that the crosswalk is in use. There are three main options for implementation and the final option should be based on when Grimmett actually requires full signalization.

1. The mid-block crosswalk could be relocated to Grimmett Street before such a time that signals are warranted. If this option is pursued, a pedestrian activated overhead flashing pedestrian crossing signal could be installed to warn motorists that the crosswalk at Grimmett Street is in use.

2. Install full intersection signalization at the time of crosswalk relocation. A pedestrian controlled stop signal could then be installed at this intersection. Although intersection

performance analysis does not indicate that full signalization is required until after 2008 (City population about 8,000), full intersection lights could be put in early based on the pedestrian safety issue. The signal could then function as a pedestrian demand signal, until such time as full signalization is warranted by traffic volumes.

3. Install full intersection signals at the time of crosswalk relocation. Operate the signals in conjunction with the signals at Belshaw Street/River Ranch Road or based on vehicle demand.

For the purposes of costing and timing, we have assumed that a pedestrian crossing signal will be installed in the interim (Option 1 above) until such a time that full intersection signals are required and installed (Project 4.5).

Estimated timing for this project and costs along with a brief summary of expected works can be found in Table 5.1.

4.3 Project 3 - Parking and Traffic Circulation Enhancements at Belshaw Street and DeWolf Way

Convenience stores, gas stations, and fast food businesses fronting on DeWolf Way attract significant numbers of private and commercial vehicles traveling the Coquihalla Highway. Traffic improvements have been made to limit access and egress points from DeWolf, but there is still a parking issue associated with this area. Commercial trucks are often parked on the wrong side of the road and add to the overall congestion of traffic movements on and around DeWolf Way.

There are two dirt "pad" areas to the south of the east end of DeWolf Way that are currently utilized as parking/turn-around areas. Traffic could be better managed in this area by designing a dedicated truck and RV parking area, perhaps utilizing the western dirt "pad". Previous discussions regarding this area also indicated a wish to incorporate aesthetic enhancements to improve visual appearances.

Estimated timing for this project and costs along with a brief summary of expected works can be found in Table 5.1.

4.4 Project 4 - Eastbound Left Turn Bay at Health Centre Entrance

The Nicola Valley Health Centre is currently undergoing renovations to include a new ambulance facility. Locating this facility on the hospital site will increase the amount of traffic accessing the hospital. Further, if this hospital becomes a regional hospital for the area, traffic accessing the site will continue to increase. By providing a left turn bay, eastbound through traffic will be able to continue past left turning vehicles without delay.

A right turn bay accessing the hospital is not recommended at this time as only pedestrian movements will conflict with right turning vehicles. Thus, westbound traffic accessing the hospital will not significantly delay through traffic.

Installation of the left turn bay will involve widening the asphalt surface to accommodate another lane. A curbed island should be installed opposite to the turning bay to ensure safe traffic movement. This could also provide an opportunity for a landscaping boulevard within the island.

Estimated timing for this project and costs along with a brief summary of expected works can be found in Table 5.1.

4.5 Project 5 - Signalize Voght Street at Grimmett Street

Signalization of Voght Street at Grimmett Street is the next improvement that is likely to be required, assuming that full intersection signalization was not performed as part of the pedestrian improvements in Project 2. Signals at Grimmett Street will increase the level of service for motorists entering and exiting Grimmett Street, provide continued safe pedestrian movements across Voght Street, and provide incidental benefits at other intersections along the corridor. For example turning movements to and from Walters Street will be enhanced.

Long term development of the Crown lands will increase traffic utilizing the Voght/Grimmett intersection as it is part of the planned road network to service this area. Development within this area will likely be residential in nature and as such, there will be a need for access onto and off of Voght Street.

Traffic issues at Walters Street may be another factor supporting the installation of traffic signals at Grimmett Street. Signals at Grimmett Street in conjunction with the existing signals at Belshaw Street/River Ranch Road will provide gaps in the traffic stream allowing motorists the opportunity for safe access to and exit from Walters Street.

Estimated timing for this project and costs along with a brief summary of expected works can be found in Table 5.1.

4.6 Project 6 - Widen Voght Street from Belshaw/River Ranch Intersection to Downtown

Currently, Voght Street provides access from Highway 5A and the Coquihalla to the downtown core, as well as serving the residential and commercial areas along the way. As traffic volumes increase, maintaining this road as a major connector is desired. To accommodate the future traffic volumes and maintain the level of service at intersections, the corridor will need to be upgraded to four lanes with left turn bays at all of the intersections. This is not likely to be required within the next 20 years. However, in the long-term it will be essential to maintain an acceptable level of service for "through" traffic.

Although widening of the corridor will not likely occur within the next 20 years, it is sensible for the City to plan for the day when it is required. Considerations include:

- Acquiring property in the vicinity of the Grimmett Street/Voght Street intersection
- Relocation of power poles away from the shoulder of the street
- Fill requirements to the west of Grimmett Street, between a point west of the western entrance to the Days Inn (Grasslands Hotel) and about the RCMP entrance.

Estimated timing for this project and costs along with a brief summary of expected works can be found in Table 5.1.

4.7 Project 7 - Downtown One-Way Couplet

One-way couplets provide a variety of benefits, especially when utilized in a downtown environment. Utilizing existing asphalt widths, traffic congestion can be reduced, delays can be reduced, and parking access can be improved with little infrastructure improvements required. By synchronizing the signal lights along a one-way road, through capacity can be increased without increasing the speed limit.

In Merritt's downtown core, there is currently congestion issues associated with Voght Street, especially between Nicola Avenue and Quilchena Avenue. Narrow asphalt widths, on street

parking, and commercial properties in this area all contribute to the congestion. By creating a one-way couplet utilizing Voght Street and Garcia Street, traffic congestion in this area will be reduced.

Creating the one way couplet will involve improving Garcia Street from Merritt Ave to the Nicola River and the construction of a new bridge across the Nicola River. On the north side of the river, a new intersection will need to be constructed to provide a link from Garcia Street to Voght Street for both westbound and eastbound movements in the vicinity of Conklin and Blackwell Avenues.

South of the Nicola River, residents of Taylor Place will have their southbound downtown access along Garcia Street disrupted as part of the one-way couplet. Access can be maintained utilizing the return route on the north side of the Nicola River, although this will involve some level of inconvenience. Another option is to provide a secondary (southern) return route utilizing the Second Avenue right of way and developing a southbound road along the eastern boundary of N'quila Park. This would provide a return ("U-turn") route via Second Avenue, south along N'quila Park and west to Voght Street on Merritt Avenue.

Given the property constraints along Voght Street south of the Nicola River, the couplet is considered the best option to increase traffic flow, parking and the level of service.

Estimated timing for this project and costs along with a brief summary of expected works can be found in Table 5.1.

5.0 CONCLUSIONS

5.1 Aesthetic Considerations

The primary purpose of this evaluation is technical – to provide supporting costs and substantiation for the City's 2004 Development Cost Charge (DCC) Bylaw. Although not specifically costed, many of the projects discussed could also present opportunities for aesthetic improvements. These additional project elements would greatly enhance the amenity and visual appeal of the corridor. They would buttress the Voght corridor's function as the "northern gateway" to the City and encourage visitors to proceed downtown.

Aesthetic improvements along the corridor could include;

- trees along the boulevards;
- shrubs/planting areas;
- banners, etc.;
- special lighting; and
- furnishings/rest areas for pedestrians.

Depending on the specific issues that evolve as traffic volumes increase it may also be desirable to incorporate "traffic calming" measures to promote steady traffic flows while discouraging high speeds.

5.2 Conclusions

It is recommended that the City consider the suggested implementation dates and population thresholds for the projects and periodically measure traffic volumes on the Voght corridor to verify the need and timing for the specific projects. Project population thresholds and estimated timing is presented in Table 5.1. As the need for a project approaches a more detailed evaluation (preliminary design) should be undertaken for each project. At that time it is recommended that the need or opportunity for traffic calming measures and the opportunity for aesthetic enhancements be considered. This will allow for the design and implementation of selected measures/components to be undertaken in a comprehensive and integrated manner.

For the longer term projects (beyond 5 years – 2010) it is recommended that the estimated costs be reviewed and updated in concert with the updating of the City's DCC Bylaw.

Table 5.1 - Proposed Traffic Improvements with Estimated Cost and Timing

WITHIN 20–YEAR HORIZON

PROJECT		PROJECT ITEMS
#1	Improve Pedestrian access from Coyote Bluffs to Grimmett Street Estimated Cost: $105,000 Population Trigger: n/a Estimated Timing: 2005	Clearing, base preparation and fill Curb and gutter on south side of Voght Street Sidewalk from Grimmett to Pedestrian Right-of-way Install pedestrian crossing lights Other related works
#2	Parking Enhancements at Belshaw St and DeWolf Way Estimated Cost: $173,000 Population Trigger: n/a Estimated Timing: 2006	Clearing and base preparation Development of commercial truck parking area Landscape improvements Traffic flow improvements Other related works
#3	Add Left turn bay for eastbound traffic at the Nicola Health Centre entrance Estimated Cost: $163,000 Population Trigger: n/a Estimated Timing: 2007	Clearing and base preparation Addition of Eastbound left turn bay at hospital entrance Sidewalk improvements Drainage improvements Other related works
#4	Signalize Voght Street at Grimmett Street Estimated Cost: $334,000 Population Trigger: 8,200 Estimated Timing: 2009	Clearing and base preparation Addition of Westbound Right-In at Grimmett Street Other related works

Table 5.1 - Proposed Traffic Improvements with Estimated Cost and Timing (continued. . .)

OUTSIDE 20–YEAR HORIZON

PROJECT		PROJECT ITEMS
#5	Additional through lanes from Belshaw/River Ranch intersection to Downtown Estimated Cost: $2,720,000 Estimated Timing: Beyond 2025	Provide 2 through lanes in each direction Signalize Walters Intersection Relocate power poles
#6	Voght/Garcia One-Way Couplet Estimated Cost: $4,800,000 Estimated Timing: Beyond 2025 *	Extend Garcia north to river New Garcia Street Bridge over River Voght/Garcia/Blackwell/Conklin intersection/return route Upgrade/replace Voght Street Bridge Intersection signalization at Garcia St. and Nicola Ave. Intersection signalization at Coldwater Ave and Garcia St. Modify existing intersection signals for use in one-way couplet

* Note: May be desirable sooner to enhance mobility, parking, etc. downtown.

APPENDIX A

Improvement Cost Estimates

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Sidewalk - Grimmet - Cedar, Voght Street Southside

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	450	$ 450
	2.0			remove and dispose asphalt pavement	m2	$6	90	$ 540
	3.0			remove and dispose curb and gutter	lm	$20		$ -
	4.0			remove and dispose sidewalk	lm	$30		$ -
	5.0			remove signage, boulevard fixtures, or trees	LS			$ -
						Sub-Total Part 1.0		**$ 990**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	180	$ 1,440
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 1,440**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2		$ -
		2.0		Sub-Base (450mm)	m2	$10		$ -
		3.0		road base (100mm)	m2	$6		$ -
		4.0		100 mm of hot mix asphalt	m2	$25		$ -
		5.0		concrete curb and gutter (inclusive)	lm	$65	180	$ 11,700
		6.0		line painting	ls			
		7.0		2m sidewalk (including base gravels)	m	$150	180	$ 27,000
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15		$ -
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120		$ -
		2.0		catch basins	ea	$2,000		$ -
		3.0		catch basin lead	lm	$60		$ -
		4.0		manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0		ditching	lm	$15		$ -
		6.0		culvert	lm	$120		$ -
		7.0		headwall	ea	$1,500		$ -
						Sub-Total Part 3.0		**$ 38,700**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection (pedestrian only)	ls			$ 40,000
		2.0		relocate power pole	ea	$7,500		$ -
		3.0		civil / islands	ls			$ -
						Sub-Total Part 4.0		**$ 40,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Sidewalk - Grimmet - Cedar, Voght Street Southside

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0	Furnishings & Amenities					
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		**$ -**
6.0	**Land Acquisition and Misc.**						
	1.0	Land Acquisition		LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		**$ -**
SUB - TOTAL (Rounded)							**$ 81,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)							**$ 24,000**
TOTAL (Rounded)							**$ 105,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Truck Parking / Beautification @ DeWolf

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	2100	$ 2,100
	2.0			remove and dispose asphalt pavement	m2	$6		$ -
	3.0			remove and dispose curb and gutter	lm	$20		$ -
	4.0			remove and dispose sidewalk	lm	$30		$ -
	5.0			remove signage, boulevard fixtures, or trees	LS			$ -
						Sub-Total Part 1.0		**$ 2,100**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	1470	$ 11,760
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 11,760**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	2100	$ 4,200
		2.0		Sub-Base (450mm)	m2	$10	2100	$ 21,000
		3.0		road base (100mm)	m2	$6	2037	$ 12,222
		4.0		100 mm of hot mix asphalt	m2	$25	1935	$ 48,379
		5.0		concrete curb and gutter (inclusive)	lm	$65		$ -
		6.0		line painting	ls			$ 2,000
		7.0		2m sidewalk (including base gravels)	m	$150		$ -
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15		$ -
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120		$ -
		2.0		catch basins	ea	$2,000		$ -
		3.0		catch basin lead	lm	$60		$ -
		4.0		manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0		ditching	lm	$15		$ -
		6.0		culvert	lm	$120		$ -
		7.0		headwall	ea	$1,500		$ -
						Sub-Total Part 3.0		**$ 87,801**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			
		2.0		relocate power pole	ea	$7,500		$ -
		3.0		civil / islands	ls			$ 2,000
						Sub-Total Part 4.0		**$ 2,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800	5	$ 4,000
		2.0		small tree planting (5-7cm cal.)	ea	$600	10	$ 6,000
		3.0		shrub planting (inclusive)	m2	$45	150	$ 6,750
		4.0		grass planting and establish	m2	$2	3400	$ 5,100
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Truck Parking / Beautification @ DeWolf

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0	Furnishings & Amenities					
		1.0	benches	ea	$1,000	4	$ 4,000
		2.0	trash receptacles	ea	$1,500	2	$ 3,000
					Sub-Total Part 5.0		**$ 28,850**
6.0	**Land Acquisition and Misc.**						
	1.0	Land Acquisition		LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		**$ -**

SUB - TOTAL (Rounded)	**$ 133,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$ 40,000**
TOTAL (Rounded)	**$ 173,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Left-Turn @ Hospital

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	385	$ 385
	2.0			remove and dispose asphalt pavement	m2	$6	75	$ 450
	3.0			remove and dispose curb and gutter	lm	$20	161	$ 3,210
	4.0			remove and dispose sidewalk	lm	$30	161	$ 4,815
	5.0			remove signage, boulevard fixtures, or trees	LS			$ -
						Sub-Total Part 1.0		**$ 8,860**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	270	$ 2,156
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 2,156**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	385	$ 770
		2.0		Sub-Base (450mm)	m2	$10	385	$ 3,850
		3.0		road base (100mm)	m2	$6	341	$ 2,046
		4.0		100 mm of hot mix asphalt	m2	$25	330	$ 8,250
		5.0		concrete curb and gutter (inclusive)	lm	$65	330	$ 21,450
		6.0		line painting	ls			$ 2,000
		7.0		2m sidewalk (including base gravels)	m	$150	150	$ 22,500
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15	2000	$ 30,000
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120		$ -
		2.0		catch basins	ea	$2,000		$ -
		3.0		catch basin lead	lm	$60		$ -
		4.0		manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0		ditching	lm	$15	155	$ 2,325
		6.0		culvert	lm	$120	25	$ 3,000
		7.0		headwall	ea	$1,500	2	$ 3,000
						Sub-Total Part 3.0		**$ 99,191**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			$ -
		2.0		relocate power pole	ea	$7,500	2	$ 15,000
		3.0		civil / islands	ls			$ -
						Sub-Total Part 4.0		**$ 15,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Left-Turn @ Hospital

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0		Furnishings & Amenities				
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		$ -
6.0	Land Acquisition and Misc.						
	1.0		Land Acquisition	LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		$ -

SUB - TOTAL (Rounded)	**$ 125,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$ 38,000**
TOTAL (Rounded)	**$ 163,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Signals @ Grimmett

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	90	$ 90
	2.0			remove and dispose asphalt pavement	m2	$6	70	$ 420
	3.0			remove and dispose curb and gutter	lm	$20	90	$ 1,800
	4.0			remove and dispose sidewalk	lm	$30	90	$ 2,700
	5.0			remove signage, boulevard fixtures, or trees	LS			$ -
						Sub-Total Part 1.0		**$ 5,010**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	282	$ 2,254
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 2,254**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	280	$ 560
		2.0		Sub-Base (450mm)	m2	$10	280	$ 2,800
		3.0		road base (100mm)	m2	$6	248	$ 1,488
		4.0		100 mm of hot mix asphalt	m2	$25	240	$ 6,000
		5.0		concrete curb and gutter (inclusive)	lm	$65	150	$ 9,750
		6.0		line painting	ls			$ 2,000
		7.0		2m sidewalk (including base gravels)	m	$150	90	$ 13,500
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15	2400	$ 36,000
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120	200	$ 24,000
		2.0		catch basins	ea	$2,000	4	$ 8,000
		3.0		catch basin lead	lm	$60	20	$ 1,200
		4.0		manholes - base, barrels, and covers	ea	$2,800	2	$ 5,600
		5.0		ditching	lm	$15	150	$ 2,250
		6.0		culvert	lm	$120	30	$ 3,600
		7.0		headwall	ea	$1,500	2	$ 3,000
							Sub-Total Part 3.0	**$ 119,748**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			$ 120,000
		2.0		relocate power pole	ea	$7,500	1	$ 7,500
		3.0		civil / islands	ls			$ 2,000
						Sub-Total Part 4.0		**$ 129,500**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Signals @ Grimmett

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0		Furnishings & Amenities				
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		$ -
6.0	Land Acquisition and Misc.						
	1.0		Land Acquisition	LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		$ -

SUB - TOTAL (Rounded)	**$ 257,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$ 77,000**
TOTAL (Rounded)	**$ 334,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Belshaw Intersection - Add Two Through Lanes
-include sidewalk northside - Belshaw to Walters

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	2260	$ 2,260
	2.0			remove and dispose asphalt pavement	m2	$6	180	$ 1,080
	3.0			remove and dispose curb and gutter	lm	$20	80	$ 1,600
	4.0			remove and dispose sidewalk	lm	$30	100	$ 3,000
	5.0			remove signage, boulevard fixtures, or trees	LS			$ -
						Sub-Total Part 1.0		**$ 7,940**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	1582	$ 12,656
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 12,656**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	2260	$ 4,520
		2.0		Sub-Base (450mm)	m2	$10	2260	$ 22,600
		3.0		road base (100mm)	m2	$6	2116	$ 12,696
		4.0		100 mm of hot mix asphalt	m2	$25	2080	$ 52,000
		5.0		concrete curb and gutter (inclusive)	lm	$65	510	$ 33,150
		6.0		line painting	ls			$ 5,000
		7.0		2m sidewalk (including base gravels)	m	$150	300	$ 45,000
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15	2160	$ 32,400
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120		$ -
		2.0		catch basins	ea	$2,000		$ -
		3.0		catch basin lead	lm	$60		$ -
		4.0		manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0		ditching	lm	$15		$ -
		6.0		culvert	lm	$120		$ -
		7.0		headwall	ea	$1,500		$ -
						Sub-Total Part 3.0		**$ 207,366**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			$ 160,000
		2.0		relocate power pole	ea	$7,500	4	$ 30,000
		3.0		civil / islands	ls			$ -
						Sub-Total Part 4.0		**$ 190,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Belshaw Intersection - Add Two Through Lanes
-include sidewalk northside - Belshaw to Walters

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0		Furnishings & Amenities				
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		**$ -**
6.0	**Land Acquisition and Misc.**						
	1.0		Land Acquisition	LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		**$ -**

SUB - TOTAL (Rounded)	**$**	**418,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$**	**125,000**
TOTAL (Rounded)	**$**	**543,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Grimmett Intersection - Add Two Through Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**						
	1.0		strip topsoil and organics	m2	$1	1400	$ 1,400
	2.0		remove and dispose asphalt pavement	m2	$6	100	$ 600
	3.0		remove and dispose curb and gutter	lm	$20	100	$ 2,000
	4.0		remove and dispose sidewalk	lm	$30	100	$ 3,000
	5.0		remove signage, boulevard fixtures, or trees	LS			$ 5,000
					Sub-Total Part 1.0		**$ 12,000**
2.0	**Earthworks**						
	1.0		excavation	m3	$8	980	$ 7,840
	2.0		imported structural fill	m3	$20		$ -
					Sub-Total Part 2.0		**$ 7,840**
3.0	**Civil Infrastructure**						
	1.0	Asphalt Roads & Sidewalk					
		1.0	subgrade preparation	m2	$2	1400	$ 2,800
		2.0	Sub-Base (450mm)	m2	$10	1400	$ 14,000
		3.0	road base (100mm)	m2	$6	1240	$ 7,440
		4.0	100 mm of hot mix asphalt	m2	$25	1200	$ 30,000
		5.0	concrete curb and gutter (inclusive)	lm	$65	220	$ 14,300
		6.0	line painting	ls			$ 5,000
		7.0	2m sidewalk (including base gravels)	m	$150	100	$ 15,000
		8.0	mill and overlay existing ashpalt (match crowns)	m2	$15	2000	$ 30,000
		9.0	bridge construction	m2	$2,000		$ -
		10.0	shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage					
		1.0	collection mains	lm	$120		$ -
		2.0	catch basins	ea	$2,000	2	$ 4,000
		3.0	catch basin lead	lm	$60	10	$ 600
		4.0	manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0	ditching	lm	$15	200	$ 3,000
		6.0	culvert	lm	$120	35	$ 4,200
		7.0	headwall	ea	$1,500	3	$ 4,500
					Sub-Total Part 3.0		**$ 134,840**
4.0	**Electrical/Signage/Signalization**						
		1.0	signalize intersection	ls			$ 160,000
		2.0	relocate power pole	ea	$7,500	3	$ 22,500
		3.0	civil / islands	ls			$ -
					Sub-Total Part 4.0		**$ 182,500**
5.0	**Landscape and Amenities**						
	1.0	Planting					
		1.0	large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0	small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0	shrub planting (inclusive)	m2	$45		$ -
		4.0	grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces					

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Grimmett Intersection - Add Two Through Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0		Furnishings & Amenities				
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		**$ -**
6.0	**Land Acquisition and Misc.**						
	1.0		Land Acquisition	LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		**$ -**

SUB - TOTAL (Rounded)	**$**	**337,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$**	**101,000**
TOTAL (Rounded)	**$**	**438,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Walters Intersection - Add Two Through Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**						
	1.0		strip topsoil and organics	m2	$1	1260	$ 1,260
	2.0		remove and dispose asphalt pavement	m2	$6	200	$ 1,200
	3.0		remove and dispose curb and gutter	lm	$20	100	$ 2,000
	4.0		remove and dispose sidewalk	lm	$30	100	$ 3,000
	5.0		remove signage, boulevard fixtures, or trees	LS			$ 1,750
					Sub-Total Part 1.0		**$ 9,210**
2.0	**Earthworks**						
	1.0		excavation	m3	$8	882	$ 7,056
	2.0		imported structural fill	m3	$20		$ -
					Sub-Total Part 2.0		**$ 7,056**
3.0	**Civil Infrastructure**						
	1.0	Asphalt Roads & Sidewalk					
		1.0	subgrade preparation	m2	$2	1260	$ 2,520
		2.0	Sub-Base (450mm)	m2	$10	1260	$ 12,600
		3.0	road base (100mm)	m2	$6	1116	$ 6,696
		4.0	100 mm of hot mix asphalt	m2	$25	1080	$ 27,000
		5.0	concrete curb and gutter (inclusive)	lm	$65	280	$ 18,200
		6.0	line painting	ls			$ 5,000
		7.0	2m sidewalk (including base gravels)	m	$150	200	$ 30,000
		8.0	mill and overlay existing ashpalt (match crowns)	m2	$15	2000	$ 30,000
		9.0	bridge construction	m2	$2,000		$ -
		10.0	shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage					
		1.0	collection mains	lm	$120	200	$ 24,000
		2.0	catch basins	ea	$2,000	6	$ 12,000
		3.0	catch basin lead	lm	$60	30	$ 1,800
		4.0	manholes - base, barrels, and covers	ea	$2,800	3	$ 8,400
		5.0	ditching	lm	$15		$ -
		6.0	culvert	lm	$120	30	$ 3,600
		7.0	headwall	ea	$1,500	2	$ 3,000
					Sub-Total Part 3.0		**$ 184,816**
4.0	**Electrical/Signage/Signalization**						
		1.0	signalize intersection	ls			
		2.0	relocate power pole	ea	$7,500	4	$ 30,000
		3.0	civil / islands	ls			$ -
					Sub-Total Part 4.0		**$ 30,000**
5.0	**Landscape and Amenities**						
	1.0	Planting					
		1.0	large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0	small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0	shrub planting (inclusive)	m2	$45		$ -
		4.0	grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces					

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Walters Intersection - Add Two Through Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0	Furnishings & Amenities					
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		**$ -**
6.0	**Land Acquisition and Misc.**						
	1.0	Land Acquisition		LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		**$ -**

SUB - TOTAL (Rounded)	**$**	**231,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$**	**69,000**
TOTAL (Rounded)	**$**	**300,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Belshaw to Walters - Add Two Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	1820	$ 1,820
	2.0			remove and dispose asphalt pavement	m2	$6	260	$ 1,560
	3.0			remove and dispose curb and gutter	lm	$20		$ -
	4.0			remove and dispose sidewalk	lm	$30		$ -
	5.0			remove signage, boulevard fixtures, or trees	LS			$ 750
						Sub-Total Part 1.0		**$ 4,130**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	1529	$ 12,230
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 12,230**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	1820	$ 3,640
		2.0		Sub-Base (450mm)	m2	$10	1820	$ 18,200
		3.0		road base (100mm)	m2	$6	1612	$ 9,672
		4.0		100 mm of hot mix asphalt	m2	$25	1560	$ 39,000
		5.0		concrete curb and gutter (inclusive)	lm	$65	520	$ 33,800
		6.0		line painting	ls			$ 3,000
		7.0		2m sidewalk (including base gravels)	m	$150	260	$ 39,000
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15	2600	$ 39,000
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120	200	$ 24,000
		2.0		catch basins	ea	$2,000	8	$ 16,000
		3.0		catch basin lead	lm	$60	80	$ 4,800
		4.0		manholes - base, barrels, and covers	ea	$2,800	4	$ 11,200
		5.0		ditching	lm	$15		$ -
		6.0		culvert	lm	$120		$ -
		7.0		headwall	ea	$1,500		$ -
						Sub-Total Part 3.0		**$ 241,312**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			
		2.0		relocate power pole	ea	$7,500	4	$ 30,000
		3.0		civil / islands	ls			$ -
						Sub-Total Part 4.0		**$ 30,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Belshaw to Walters - Add Two Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0		Furnishings & Amenities				
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		**$ -**
6.0	**Land Acquisition and Misc.**						
	1.0		Land Acquisition	LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		**$ -**

SUB - TOTAL (Rounded)	**$**	**288,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$**	**86,000**
TOTAL (Rounded)	**$**	**374,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Walters to Grimmett - Add Two Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	2030	$ 2,030
	2.0			remove and dispose asphalt pavement	m2	$6	290	$ 1,740
	3.0			remove and dispose curb and gutter	lm	$20	290	$ 5,800
	4.0			remove and dispose sidewalk	lm	$30	290	$ 8,700
	5.0			remove signage, boulevard fixtures, or trees	LS			$ -
						Sub-Total Part 1.0		**$ 18,270**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	1421	$ 11,368
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 11,368**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	2030	$ 4,060
		2.0		Sub-Base (450mm)	m2	$10	2030	$ 20,300
		3.0		road base (100mm)	m2	$6	1798	$ 10,788
		4.0		100 mm of hot mix asphalt	m2	$25	1740	$ 43,500
		5.0		concrete curb and gutter (inclusive)	lm	$65	580	$ 37,700
		6.0		line painting	ls			$ 2,000
		7.0		2m sidewalk (including base gravels)	m	$150	290	$ 43,500
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15	2900	$ 43,500
		9.0		bridge construction	m2	$2,000		$ -
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120	200	$ 24,000
		2.0		catch basins	ea	$2,000	6	$ 12,000
		3.0		catch basin lead	lm	$60	60	$ 3,600
		4.0		manholes - base, barrels, and covers	ea	$2,800	3	$ 8,400
		5.0		ditching	lm	$15		$ -
		6.0		culvert	lm	$120		$ -
		7.0		headwall	ea	$1,500		$ -
						Sub-Total Part 3.0		**$ 253,348**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			
		2.0		relocate power pole	ea	$7,500	4	$ 30,000
		3.0		civil / islands	ls			$ -
						Sub-Total Part 4.0		**$ 30,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Walters to Grimmett - Add Two Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0	Furnishings & Amenities					
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		$ -
6.0	Land Acquisition and Misc.						
	1.0	Land Acquisition		LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		$ -

SUB - TOTAL (Rounded)	**$**	**313,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$**	**125,000**
TOTAL (Rounded)	**$**	**438,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Grimmett to Blackwell - Add Two Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**						
	1.0		strip topsoil and organics	m2	$1	3220	$ 3,220
	2.0		remove and dispose asphalt pavement	m2	$6	460	$ 2,760
	3.0		remove and dispose curb and gutter	lm	$20	460	$ 9,200
	4.0		remove and dispose sidewalk	lm	$30	460	$ 13,800
	5.0		remove signage, boulevard fixtures, or trees	LS			$ -
					Sub-Total Part 1.0		**$ 28,980**
2.0	**Earthworks**						
	1.0		excavation	m3	$8	2254	$ 18,032
	2.0		imported structural fill	m3	$20		$ -
					Sub-Total Part 2.0		**$ 18,032**
3.0	**Civil Infrastructure**						
	1.0	Asphalt Roads & Sidewalk					
		1.0	subgrade preparation	m2	$2	3220	$ 6,440
		2.0	Sub-Base (450mm)	m2	$10	3220	$ 32,200
		3.0	road base (100mm)	m2	$6	2852	$ 17,112
		4.0	100 mm of hot mix asphalt	m2	$25	2760	$ 69,000
		5.0	concrete curb and gutter (inclusive)	lm	$65	460	$ 29,900
		6.0	line painting	ls			$ 1,000
		7.0	2m sidewalk (including base gravels)	m	$150	460	$ 69,000
		8.0	mill and overlay existing ashpalt (match crowns)	m2	$15	4600	$ 69,000
		9.0	bridge construction	m2	$2,000		$ -
		10.0	shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage					
		1.0	collection mains	lm	$120		$ -
		2.0	catch basins	ea	$2,000		$ -
		3.0	catch basin lead	lm	$60		$ -
		4.0	manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0	ditching	lm	$15	460	$ 6,900
		6.0	culvert	lm	$120	60	$ 7,200
		7.0	headwall	ea	$1,500	4	$ 6,000
					Sub-Total Part 3.0		**$ 313,752**
4.0	**Electrical/Signage/Signalization**						
		1.0	signalize intersection	ls			
		2.0	relocate power pole	ea	$7,500	16	$ 120,000
		3.0	civil / islands	ls			$ -
					Sub-Total Part 4.0		**$ 120,000**
5.0	**Landscape and Amenities**						
	1.0	Planting					
		1.0	large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0	small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0	shrub planting (inclusive)	m2	$45		$ -
		4.0	grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces					

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Grimmett to Blackwell - Add Two Lanes

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0		Furnishings & Amenities				
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		$ -
6.0	**Land Acquisition and Misc.**						
	1.0		Land Acquisition	LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		$ -

SUB - TOTAL (Rounded)	**$**	**481,000**
CONTINGENCY and ENGINEERING (20% + 10% = 30%) (Rounded)	**$**	**144,000**
TOTAL (Rounded)	**$**	**625,000**

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Voght Street Upgrades- Downtown Couplet

DATE: January, 2005
FILE: 0521.0160.01

Item				Description	Unit	Unit Rate	Total Quantity	Total Amount
1.0	**Removals, Relocations, Salvage & Disposals**							
	1.0			strip topsoil and organics	m2	$1	960	$ 960
	2.0			remove and dispose asphalt pavement	m2	$6	170	$ 1,020
	3.0			remove and dispose curb and gutter	lm	$20	340	$ 6,800
	4.0			remove and dispose sidewalk	lm	$30	340	$ 10,200
	5.0			remove signage, boulevard fixtures, or trees	LS		340	$ -
						Sub-Total Part 1.0		**$ 18,980**
2.0	**Earthworks**							
	1.0			excavation	m3	$8	672	$ 5,376
	2.0			imported structural fill	m3	$20		$ -
						Sub-Total Part 2.0		**$ 5,376**
3.0	**Civil Infrastructure**							
	1.0	Asphalt Roads & Sidewalk						
		1.0		subgrade preparation	m2	$2	2160	$ 4,320
		2.0		Sub-Base (450mm)	m2	$10	2160	$ 21,600
		3.0		road base (100mm)	m2	$6	2095	$ 12,571
		4.0		100 mm of hot mix asphalt	m2	$25	1990	$ 49,761
		5.0		concrete curb and gutter (inclusive)	lm	$65	460	$ 29,900
		6.0		line painting	ls			$ 1,000
		7.0		2m sidewalk (including base gravels)	m	$150	460	$ 69,000
		8.0		mill and overlay existing ashpalt (match crowns)	m2	$15	4600	$ 69,000
		9.0		bridge construction	m2	$2,000	1440	$ 2,880,000
		10.0		shoulder surfacing	m2	$10		$ -
	2.0	Storm Drainage						
		1.0		collection mains	lm	$120		$ -
		2.0		catch basins	ea	$2,000		$ -
		3.0		catch basin lead	lm	$60		$ -
		4.0		manholes - base, barrels, and covers	ea	$2,800		$ -
		5.0		ditching	lm	$15		$ -
		6.0		culvert	lm	$120		$ -
		7.0		headwall	ea	$1,500		$ -
						Sub-Total Part 3.0		**$ 3,137,152**
4.0	**Electrical/Signage/Signalization**							
		1.0		signalize intersection	ls			$ 250,000
		2.0		relocate power pole	ea	$7,500		$ -
		3.0		civil / islands	ls		1	$ -
						Sub-Total Part 4.0		**$ 250,000**
5.0	**Landscape and Amenities**							
	1.0	Planting						
		1.0		large tree planting (8-10cm cal.)	ea	$800		$ -
		2.0		small tree planting (5-7cm cal.)	ea	$600		$ -
		3.0		shrub planting (inclusive)	m2	$45		$ -
		4.0		grass planting and establish	m2	$2		$ -
	2.0	Pedestrian Surfaces						

CITY OF MERRITT

VOGHT STREET CORRIDOR STUDY
PROJECT: Voght Street Upgrades- Downtown Couplet

DATE: January, 2005
FILE: 0521.0160.01

Item			Description	Unit	Unit Rate	Total Quantity	Total Amount
		1.0	concrete pavers (inclusive)	m2	$90		$ -
	3.0	Furnishings & Amenities					
		1.0	benches	ea	$1,000		$ -
		2.0	trash receptacles	ea	$1,500		$ -
					Sub-Total Part 5.0		$ -
6.0	Land Acquisition and Misc.						
	1.0	Land Acquisition		LS			$ -
	2.0						$ -
	3.0						$ -
					Sub-Total Part 6.0		$ -

SUB - TOTAL (Rounded)	**$**	**3,400,000**
CONTINGENCY and ENGINEERING (30% + 10% = 40%) (Rounded)	**$**	**1,400,000**
TOTAL (Rounded)	**$**	**4,800,000**