


MEMORANDUM

TO: Kevin Frazier
 Dick Fisher, Cobalt Design-Build
 Louise Herbert, VF Ripley
 City of Fort Collins

FROM: Matt Delich 

DATE: August 26, 2002

SUBJECT: Centerpoint Plaza Transportation Impact Study - Building
 A Adequate Public Facilities Analysis
 (File: 0153ME06)

This memorandum addresses the adequate public facilities (APF) issues at the Prospect/Timberline intersection for Building A within Centerpoint Plaza. The transportation impact study guidelines indicate that significant impact is defined in Section 4.5.2.A.2 in the "Larimer County Urban Area Street Standards," as follows: "When the background traffic conditions (without project traffic) causes an intersection to fail the minimum acceptable level of service standards; and when the project traffic causes more than a 2 percent increase in the intersection delay."

The "Centerpoint Plaza Transportation Impact Study," August 2001 demonstrated that all of the key intersections would operate acceptably with full development of Centerpoint Plaza in the short range (2006) future. Given this analysis timeframe, it was assumed that the Prospect/Timberline intersection would be improved beyond that which exists today. This analysis included a number of developments which have approved overall development plans, but no approved preliminary development plans or final development plans. The assumed improvements at the Prospect/Timberline intersection were reasonable for this analysis.

The original cited TIS used base (existing) traffic conditions at the Prospect/Timberline intersection that were dated October 2000. The analyses contained in this memorandum use more recent traffic counts (supplied by the City) dated November 2001. These traffic counts are shown in Figure 1. These counts indicate that the Prospect/Timberline intersection is operating at level of service F during both peak hours with the existing geometry.

Since improvements to this intersection are not on a capital improvement program, City staff requested an APF analysis that included existing traffic factored to the year 2006 at 1.5 percent per year, plus known/approved projects that impact the subject intersection. These projects are: Rigden Farm 6th Filing, Spring Creek Center, and Midpoint Self Storage. The base (2006) peak hour traffic at the Prospect/Timberline intersection is shown in Figure 2. The APF analysis must use the existing geometry at the subject intersection. Table 1 shows the intersection level of service and delay using the volumes shown in Figure 2. Calculation forms are provided in Appendix A. Clearly, this intersection will operate unacceptably with the existing geometry. In order to meet the APF

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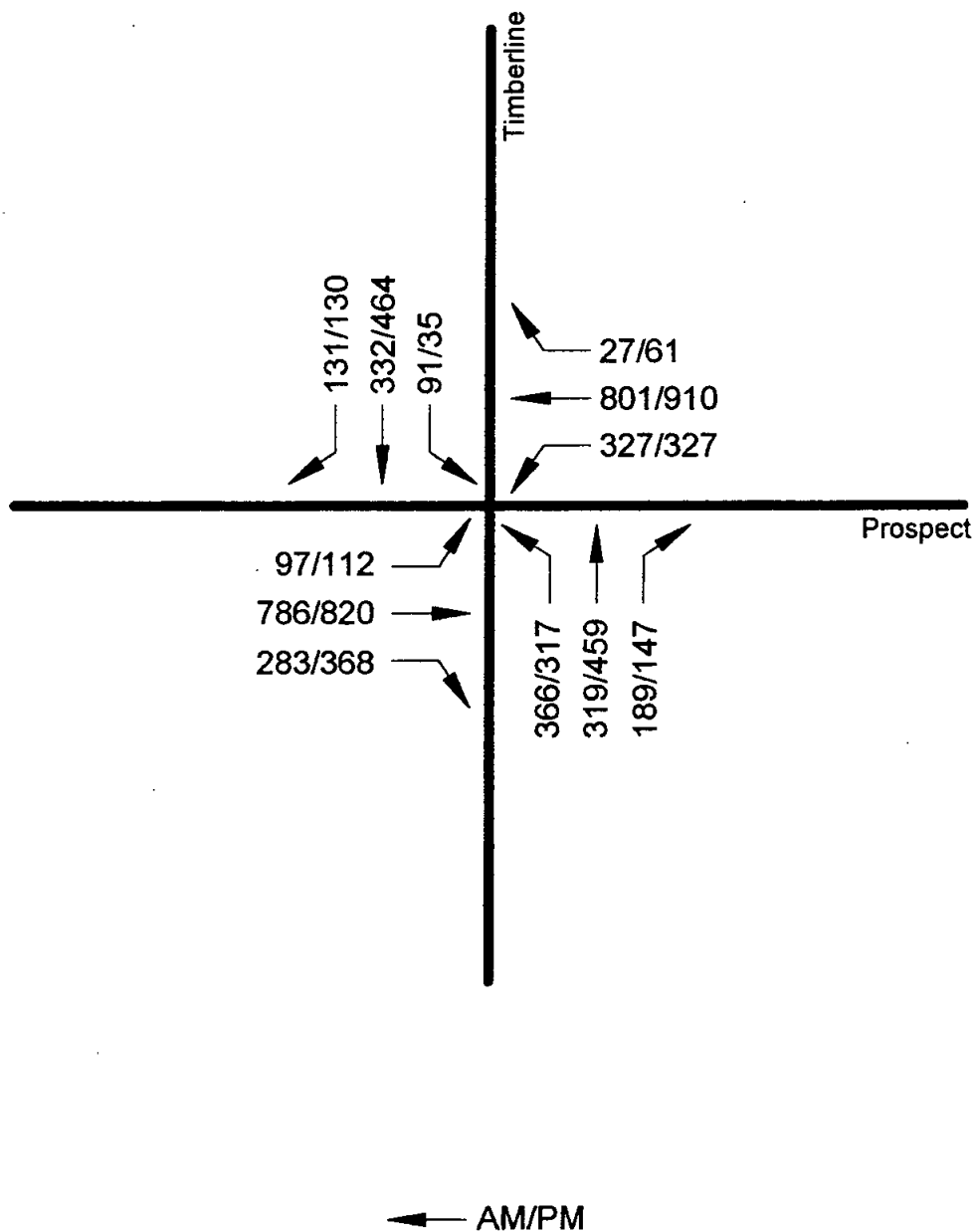
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criteria, the delay at the Prospect/Timberline intersection could not exceed 109.8 seconds and 111.0 seconds in the respective peak hours. These values reflect a 2 percent increase in delay at this intersection with the current geometry.

In the course of conducting these evaluations, it was determined that full development of Centerpoint Plaza (Buildings A, B, and C) would not meet the APF criteria. In fact, development of Buildings A and B would meet the APF criteria in the morning peak hour, but would not meet the APF criteria in the afternoon peak hour. In light of this, an assignment was conducted using just Building A. The trip generation for Building A is provided in Table 2. The total floor area in Building A is 7062 square feet. As analyzed in this memorandum, the use within Building A was 7062 square feet of specialty retail. The description of specialty retail in Trip Generation, 6th Edition, ITE closely matches convenience retail in the Fort Collins Code. This trip generation was assigned to the Prospect/Timberline intersection using the accepted trip distribution shown in the cited TIS. The forecasted (2006) peak hour volumes are shown in Figure 3. Table 3 shows the intersection level of service and delay using the volumes shown in Figure 3. Calculation forms are provided in Appendix B. The increase in delay is 1.5 percent and 1.4 percent in the respective peak hours. Based upon this analysis, it is concluded that Centerpoint Plaza, Building A will meet the APF criteria at the Prospect/Timberline intersection.

If, after Building A was approved for development by the City of Fort Collins, Building B was proposed as a PDP or FDP to the City, an APF analysis would be required. That analysis, like the Building A analysis, would need to include the current traffic factored to reflect the analysis year plus all approved developments which are not built at the time of the Building B proposal. This would include Building A. From the foregoing analyses reflected in this memorandum, it is likely that Building B would meet the APF criteria.



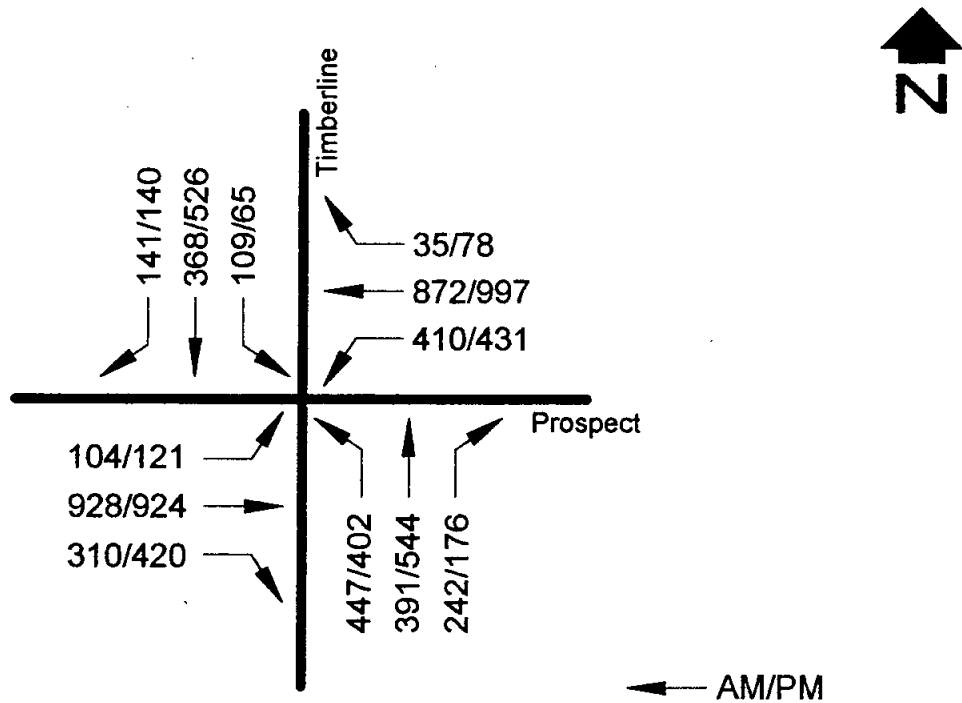
RECENT (11/01) PEAK HOUR TRAFFIC

Figure 1

| TABLE 1 Short Range (2006) Base Condition | | |
|--|------------|--------------|
| <u>Peak Hour</u> | <u>LOS</u> | <u>Delay</u> |
| Morning | F | 107.6 secs. |
| Afternoon | F | 108.8 secs. |

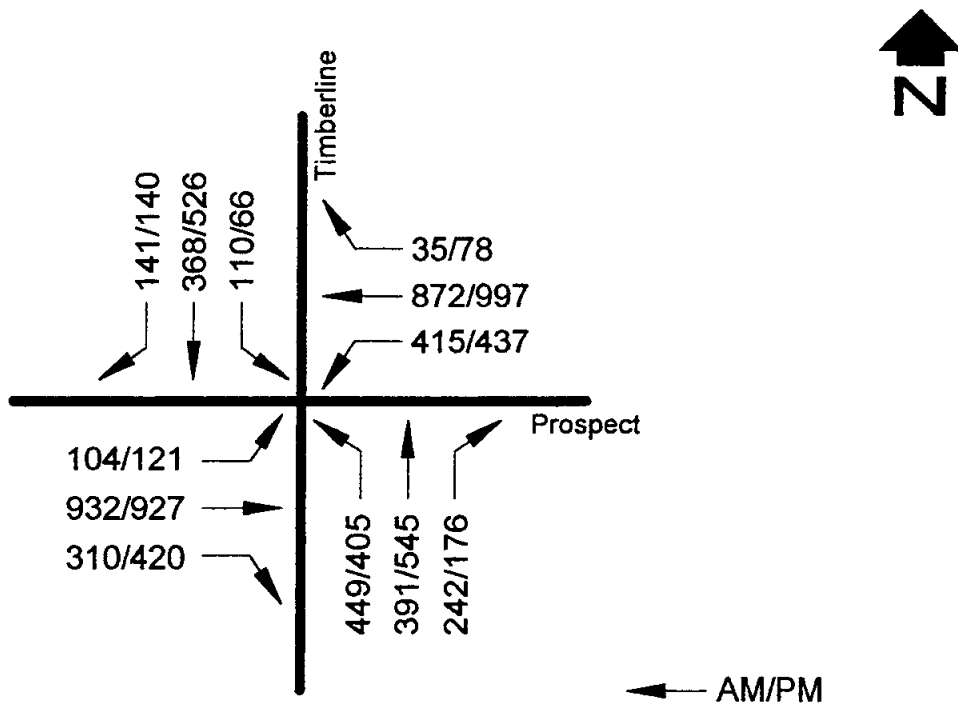
| TABLE 2 Trip Generation | | | | | | | | | | | | |
|----------------------------|------------------|-----------|-------|-------|--------------|----|------|-----|--------------|----|------|-----|
| Code | Use | Size | AWDTE | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | | Rate | Trips | Rate | In | Rate | Out | Rate | In | Rate | Out |
| Building A (7062 S.F.) | | | | | | | | | | | | |
| 814 | Specialty Retail | 7.062 KSF | 40.67 | 268 | 1.92 | 14 | 1.44 | 10 | 1.11 | 8 | 1.48 | 10 |

| TABLE 3 Short Range (2006) Base Condition Plus Building A | | | |
|--|------------|--------------|--------------------------|
| <u>Peak Hour</u> | <u>LOS</u> | <u>Delay</u> | <u>Increase in Delay</u> |
| Morning | F | 109.2 secs. | 1.5% |
| Afternoon | F | 110.3 secs. | 1.4% |



SHORT RANGE (2006) BASE PEAK HOUR TRAFFIC

Figure 2



SHORT RANGE (2006) BASE PLUS BUILDING A PEAK HOUR TRAFFIC

Figure 3

APPENDIX A

Agency: Matthew J. Delich, P.E.
 Date: 11/17/01
 Period: am pm
 Project ID: 0153 apf
 E/W St: Prospect

Area Type: All other areas
 Jurisd: Fort Collins
 Year : recent short bkgd total
 N/S St: Timberline

BASE
 CONDITION

SIGNALIZED INTERSECTION SUMMARY

| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|------------|-----------|------|-----|-----------|------|----|------------|------|-----|------------|------|------|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| No. Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| LGConfig | L | TR | | L | TR | | L | TR | | L | T | R |
| Volume | 104 | 928 | 310 | 410 | 872 | 35 | 447 | 391 | 242 | 109 | 368 | 141 |
| Lane Width | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | 12.0 |
| RTOR Vol | | | 0 | | | 0 | | | 0 | | | 0 |

| Duration | 0.25 | Area Type | All other areas | | | | | |
|-------------------|------|-----------|-----------------|--------------------------|----------|-----|------|------|
| Signal Operations | | | | | | | | |
| Phase Combination | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| EB Left | | A | P | | NB Left | A | A | A |
| Thru | | | P | | Thru | | A | A |
| Right | | | P | | Right | | A | A |
| Peds | | | X | | Peds | | | X |
| WB Left | | A | P | | SB Left | A | | A |
| Thru | | | P | | Thru | | | A |
| Right | | | P | | Right | | | A |
| Peds | | | X | | Peds | | | X |
| NB Right | | | | | EB Right | | | |
| SB Right | | A | | | WB Right | | | |
| Green | | 14.0 | 51.0 | | | 4.0 | 21.0 | 30.0 |
| Yellow | | 0.0 | 3.0 | | | 0.0 | 0.0 | 3.0 |
| All Red | | 0.0 | 2.0 | | | 0.0 | 0.0 | 2.0 |
| | | | | Cycle Length: 130.0 secs | | | | |

Intersection Performance Summary

| Appr/ Lane | Lane Group | Adj Sat Flow Rate | Ratios | | Lane Group | | Approach | |
|--------------------------------------|------------|-------------------|--------|------|----------------------|-----|----------|-----|
| Grp | Capacity | (s) | v/c | g/C | Delay | LOS | Delay | LOS |
| Eastbound | | | | | | | | |
| L | 288 | 1770 | 0.42 | 0.51 | 24.1 | C | | |
| TR | 1336 | 3406 | 1.09 | 0.39 | 92.7 | F | 87.4 | F |
| Westbound | | | | | | | | |
| L | 288 | 1770 | 1.66 | 0.51 | 352.0 | F | | |
| TR | 1381 | 3519 | 0.76 | 0.39 | 38.3 | D | 136.0 | F |
| Northbound | | | | | | | | |
| L | 438 | 1770 | 1.20 | 0.43 | 149.7 | F | | |
| TR | 689 | 1756 | 1.08 | 0.39 | 97.9 | F | 119.3 | F |
| Southbound | | | | | | | | |
| L | 193 | 1770 | 0.66 | 0.28 | 46.9 | D | | |
| T | 430 | 1863 | 1.01 | 0.23 | 95.2 | F | 71.4 | E |
| R | 597 | 1583 | 0.28 | 0.38 | 28.4 | C | | |
| Intersection Delay = 107.6 (sec/veh) | | | | | Intersection LOS = F | | | |

HCS2000: Signalized Intersections Release 4.1b

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OPERATIONAL ANALYSIS

Analyst: Michael
 Agency: Matthew J. Delich, P.E.
 Date: 11/17/01
 Period: am/pm
 Project ID: 0153 apf
 E/W St: Prospect

Area Type: All other areas
 Jurisd: Fort Collins
 Year : recent (short) (bkgrd) total
 N/S St: Timberline

BASE
 CONDITION

SIGNALIZED INTERSECTION SUMMARY

| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|------------|-----------|------|-----|-----------|------|----|------------|------|-----|------------|------|------|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| No. Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| LGConfig | L | TR | | L | TR | | L | TR | | L | T | R |
| Volume | 121 | 924 | 420 | 431 | 997 | 78 | 402 | 544 | 176 | 65 | 526 | 140 |
| Lane Width | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | 12.0 |
| RTOR Vol | | | 0 | | | 0 | | | 0 | | | 0 |

Duration 0.25 Area Type: All other areas

Signal Operations

| Phase Combination | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------|---|-----|------|------|----------|-----|------|------|
| EB Left | | A | P | | NB Left | A | A | A |
| Thru | | | P | | Thru | | A | A |
| Right | | | P | | Right | | A | A |
| Peds | | | X | | Peds | | | X |
| WB Left | | A | A | P | SB Left | A | | A |
| Thru | | | A | P | Thru | | | A |
| Right | | | A | P | Right | | | A |
| Peds | | | | X | Peds | | | X |
| NB Right | | | | | EB Right | | | |
| SB Right | | A | | | WB Right | | | |
| Green | | 4.0 | 14.0 | 48.0 | | 4.0 | 15.0 | 35.0 |
| Yellow | | 0.0 | 0.0 | 3.0 | | 0.0 | 0.0 | 3.0 |
| All Red | | 0.0 | 0.0 | 2.0 | | 0.0 | 0.0 | 2.0 |

Cycle Length: 130.0 secs

Intersection Performance Summary

| Appr/ Lane Grp | Lane Group Capacity | Adj Sat Flow Rate (s) | Ratios | | Lane Group | | Approach | |
|--------------------------------------|---------------------------|-----------------------------|--------|------|----------------------|-----|----------|-----|
| | | | v/c | g/c | Delay | LOS | Delay | LOS |
| Eastbound | | | | | | | | |
| L | 228 | 1770 | 0.58 | 0.42 | 29.5 | C | | |
| TR | 1245 | 3373 | 1.19 | 0.37 | 133.2 | F | 124.7 | F |
| Westbound | | | | | | | | |
| L | 343 | 1770 | 1.35 | 0.52 | 217.5 | F | | |
| TR | 1670 | 3501 | 0.69 | 0.48 | 27.8 | C | 82.0 | F |
| Northbound | | | | | | | | |
| L | 357 | 1770 | 1.15 | 0.42 | 134.3 | F | | |
| TR | 690 | 1794 | 1.07 | 0.38 | 93.0 | F | 107.8 | F |
| Southbound | | | | | | | | |
| L | 193 | 1770 | 0.39 | 0.32 | 36.1 | D | | |
| T | 502 | 1863 | 1.23 | 0.27 | 168.8 | F | 130.8 | F |
| R | 536 | 1583 | 0.31 | 0.34 | 32.1 | C | | |
| Intersection Delay = 108.8 (sec/veh) | | | | | Intersection LOS = F | | | |

HCS2000: Signalized Intersections Release 4.1b

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OPERATIONAL ANALYSIS

APPENDIX B

Analyst: Michael
 Agency: Matthew J. Delich, P.E.
 Date: 11/17/01
 Period: am pm
 Project ID: 0153 apf
 E/W St: Prospect

Inter.: Timberline/Prospect
 Area Type: All other areas
 Jurisd: Fort Collins
 Year : recent short bkgnd total **B L G D A**
 N/S St: Timberline

SIGNALIZED INTERSECTION SUMMARY

| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|------------|-----------|------|-----|-----------|------|----|------------|------|-----|------------|------|------|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| No. Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| LGConfig | L | TR | | L | TR | | L | TR | | L | T | R |
| Volume | 104 | 932 | 310 | 415 | 872 | 35 | 449 | 391 | 242 | 110 | 368 | 141 |
| Lane Width | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | 12.0 |
| RTOR Vol | | | 0 | | | 0 | | | 0 | | | 0 |

Duration 0.25 Area Type: All other areas

Signal Operations

| Phase Combination | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------|------|------|---|---|----------|------|------|---|
| EB Left | A | P | | | NB Left | A | A | A |
| Thru | | P | | | Thru | | A | A |
| Right | | P | | | Right | | A | A |
| Peds | | X | | | Peds | | | X |
| WB Left | A | P | | | SB Left | A | | A |
| Thru | | P | | | Thru | | | A |
| Right | | P | | | Right | | | A |
| Peds | | X | | | Peds | | | X |
| NB Right | | | | | EB Right | | | |
| SB Right | A | | | | WB Right | | | |
| Green | 14.0 | 51.0 | | | 4.0 | 21.0 | 30.0 | |
| Yellow | 0.0 | 3.0 | | | 0.0 | 0.0 | 3.0 | |
| All Red | 0.0 | 2.0 | | | 0.0 | 0.0 | 2.0 | |

Cycle Length: 130.0 secs

Intersection Performance Summary

| Appr/Lane Grp | Lane Group Capacity | Adj Sat Flow Rate (s) | Ratios | | Lane Group | | Approach | |
|--------------------------------------|---------------------|-----------------------|--------|------|----------------------|-----|----------|-----|
| | | | v/c | g/C | Delay | LOS | Delay | LOS |
| Eastbound | | | | | | | | |
| L | 288 | 1770 | 0.42 | 0.51 | 24.1 | C | | |
| TR | 1337 | 3407 | 1.09 | 0.39 | 93.5 | F | 88.1 | F |
| Westbound | | | | | | | | |
| L | 288 | 1770 | 1.68 | 0.51 | 361.1 | F | | |
| TR | 1381 | 3519 | 0.76 | 0.39 | 38.3 | D | 139.7 | F |
| Northbound | | | | | | | | |
| L | 438 | 1770 | 1.21 | 0.43 | 151.5 | F | | |
| TR | 689 | 1756 | 1.08 | 0.39 | 97.9 | F | 120.1 | F |
| Southbound | | | | | | | | |
| L | 193 | 1770 | 0.67 | 0.28 | 47.2 | D | | |
| T | 430 | 1863 | 1.01 | 0.23 | 95.2 | F | 71.5 | E |
| R | 597 | 1583 | 0.28 | 0.38 | 28.4 | C | | |
| Intersection Delay = 109.2 (sec/veh) | | | | | Intersection LOS = F | | | |

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OPERATIONAL ANALYSIS

Analyst: Michael
 Agency: Matthew J. Delich, P.E.
 Date: 11/17/01
 Period: am pm
 Project ID: 0153 apf
 E/W St: Prospect

Inter.: Timberline/Prospect
 Area Type: All other areas
 Jurisd: Fort Collins
 Year : recent short bkgrd total ~~BLDG~~ A
 N/S St: Timberline

SIGNALIZED INTERSECTION SUMMARY

| | Eastbound | | | Westbound | | | Northbound | | | Southbound | | |
|------------|-----------|------|-----|-----------|------|----|------------|------|-----|------------|------|------|
| | L | T | R | L | T | R | L | T | R | L | T | R |
| No. Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| LGConfig | L | TR | | L | TR | | L | TR | | L | T | R |
| Volume | 121 | 927 | 420 | 437 | 997 | 78 | 405 | 545 | 176 | 66 | 526 | 140 |
| Lane Width | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | 12.0 |
| RTOR Vol | | | 0 | | | 0 | | | 0 | | | 0 |

Duration 0.25 Area Type: All other areas

Signal Operations

| Phase Combination | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------|-----|------|------|---|----------|------|------|---|
| EB Left | | A | P | | NB Left | A | A | A |
| Thru | | | P | | Thru | | A | A |
| Right | | | P | | Right | | A | A |
| Peds | | | X | | Peds | | | X |
| WB Left | | A | A | P | SB Left | A | | A |
| Thru | | | A | P | Thru | | | A |
| Right | | | A | P | Right | | | A |
| Peds | | | X | | Peds | | | X |
| NB Right | | | | | EB Right | | | |
| SB Right | | A | | | WB Right | | | |
| Green | 4.0 | 14.0 | 48.0 | | 4.0 | 15.0 | 35.0 | |
| Yellow | 0.0 | 0.0 | 3.0 | | 0.0 | 0.0 | 3.0 | |
| All Red | 0.0 | 0.0 | 2.0 | | 0.0 | 0.0 | 2.0 | |

Cycle Length: 130.0 secs

Intersection Performance Summary

| Appr/ Lane Grp | Lane Group Capacity | Adj Sat Flow Rate (s) | Ratios | | Lane Group | | Approach | |
|--------------------------------------|---------------------------|-----------------------------|--------|------|----------------------|-----|----------|-----|
| | | | v/c | g/C | Delay | LOS | Delay | LOS |
| Eastbound | | | | | | | | |
| L | 228 | 1770 | 0.58 | 0.42 | 29.5 | C | | |
| TR | 1246 | 3374 | 1.19 | 0.37 | 134.2 | F | 125.5 | F |
| Westbound | | | | | | | | |
| L | 343 | 1770 | 1.37 | 0.52 | 226.1 | F | | |
| TR | 1670 | 3501 | 0.69 | 0.48 | 27.8 | C | 85.1 | F |
| Northbound | | | | | | | | |
| L | 357 | 1770 | 1.16 | 0.42 | 137.4 | F | | |
| TR | 690 | 1794 | 1.07 | 0.38 | 93.4 | F | 109.2 | F |
| Southbound | | | | | | | | |
| L | 193 | 1770 | 0.40 | 0.32 | 36.2 | D | | |
| T | 502 | 1863 | 1.23 | 0.27 | 168.8 | F | 130.6 | F |
| R | 536 | 1583 | 0.31 | 0.34 | 32.1 | C | | |
| Intersection Delay = 110.3 (sec/veh) | | | | | Intersection LOS = F | | | |

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